

CALIFORNIA COASTAL COMMISSION

SAN DIEGO AREA
7575 METROPOLITAN DRIVE, SUITE 103
SAN DIEGO, CA 92108-4402
(619) 767-2370



Th18a

Click here to go to
original staff report

Addendum

January 12, 2016

To: Commissioners and Interested Persons

From: California Coastal Commission
San Diego Staff

Subject: Addendum to **Item Th18a**, Coastal Commission Permit Application
#6-96-102-A2 (Solana Beach & Tennis Club), for the Commission
Meeting of January 14, 2016

Staff recommends the following changes be made to the above-referenced staff report. The recommended changes are proposed to address concerns raised in a letter received from the Surfrider Foundation and to address concerns raised by the applicant via telephone and email. Additions are shown in underline text and deletions are shown in ~~strike-out~~.

1. On Page 1 of the staff report, the staff report date shall be corrected as follows:

12/17/~~2016~~2015

2. On Page 2 of the staff report continuing onto Page 3, the final paragraph shall be revised as follows:

In addition, special conditions placed on the project require close monitoring and evaluation of the specific infill mixture. Special Condition 18 requires that prior to the construction of any seacave/notch infill, the applicant provide a formulation for erodible concrete that has an erodibility index within 20 percent of the erodibility index of the native sandstone of the coastal bluff, as determined from a method that has been submitted by the applicant and approved, in writing, by the Executive Director of the Commission. Special Condition 18 also requires that prior to issuance of this CDP amendment, the applicant shall submit to the Executive Director of the Commission for review and written approval, the credentials of an independent quality control engineer to provide inspection services on behalf of the Coastal Commission at both the batch plant where the concrete mix will be manufactured and at the job site. Within 14 days after project completion, the chosen engineer will certify in writing to the Commission that the concrete utilized at the job site complies with the erodible concrete mix approved by the City and the Commission. This third party verification has been proposed by the applicant

and is an important measure to ensure that errors at the concrete mix plant or during installation do not occur.

Special Condition 18 also requires that testing of the new erodible concrete infills be conducted 28 days after installation and if the erodibility index of the new concrete is not within 20 percent of the erodibility index of the native sandstone, the seaward five feet of new infill material will be removed and replaced. If the Executive Director determines that removal and replacement of the seaward five feet of new infill is infeasible, the applicant shall apply to the Commission for an amendment to this CDP to retain the non-erodible concrete and propose mitigation to offset the impacts of the non-erodible concrete. As detailed in the City's certified LUP, erodible concrete is permitted to be installed pre-emptively, as its impacts to coastal resources are significantly less than those for seawalls. However, non-erodible concrete is not permitted to be installed pre-emptively and has many of the same adverse impacts as seawalls and would likely require mitigation for impacts to sand supply and public access and recreation.

3. On Page 4 of the staff report, the following shall be added to the list of exhibits:

Exhibit 8 – Applicant Response to Staff Report Email

Exhibit 9 – Public Comment Letter (Surfrider Foundation)

Exhibit 10 – Commission Engineer File Notes Memo

4. On Page 11 of the staff report, Special Condition 18 shall be revised as follows:

Concrete Erodibility Testing. PRIOR TO ISSUANCE OF THIS CDP AMENDMENT, the applicant shall submit to the Executive Director and the City of Solana Beach for review and written approval, a formulation for erodible concrete that has an erodibility that is within 20 percent of the erodibility of the native sandstone. The method used to determine erodibility and the results of the testing shall be approved, in writing, as an acceptable method by the Executive Director of the Commission.

PRIOR TO ISSUANCE OF THIS CDP AMENDMENT, the applicant shall submit to the Executive Director for review and written approval, the credentials of an independent quality control engineer who will provide inspection services on behalf of the Coastal Commission at both the batch plant where the concrete mix will be manufactured and at the job site. Within 14 days after project completion, the quality control engineer will certify in writing to the Commission that the concrete utilized at the job site complies with the erodible concrete mix approved by the Commission.

Testing of the new erodible concrete infills shall be conducted 28 days after installation and if the infill is not within the required 20 percent of the erodibility index of the native sandstone, the seaward five feet of new infill material will be removed and replaced with erodible concrete that meets the erodibility requirements of this condition. If the Executive Director of the Commission

determines that removal and replacement of the seaward five feet of new infill is infeasible, the applicant shall apply to the Commission for an amendment to this CDP to retain the non-erodible mix and propose mitigation to offset the impacts of the non-erodible concrete.

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

5. On Page 13 of the Staff Report, the first quoted text shall be revised as follows:

“...infill retreat has been on the order of 0 to ~~0.98~~ 0.08 foot for the concrete infills over the last 15 years. Although few monitoring points remain for the adjacent bluff, recent measurements indicate local bluff erosion on the order of 0.19 to 0.33 foot over the last 15 years. It is unknown if the monitoring pins that no longer exist fell out due to erosion, or were destroyed as a result of corrosion and wave and cobble impact...”

6. On Page 23 of the Staff Report, the first complete paragraph shall be modified and additional paragraphs added as follows:

Special Condition 18 requires that prior to the construction of any seacave/notch infill, the applicant perform a test of the proposed formulation of erodible concrete and a sample of the bluffs that determines that the infill material has an erodibility index within 20 percent of the erodibility index of the native sandstone of the coastal bluff (the test method and test results must be submitted by the applicant and approved, in writing, by the Executive Director of the Commission). A similar condition was applied to the CDP approval in 2014 for the seacave infill project at 523 and 525 Pacific Avenue in Solana Beach. The applicant at 523 and 525 Pacific Avenue has submitted a report detailing the erodibility test results for the property, ~~which is still under review~~ which has been reviewed by the Commission’s technical staff. In addition, Special Condition 18 also requires that testing of the new erodible concrete infills be conducted 28 days after installation and if the infill is not within the required 20 percent of the erodibility index of the native sandstone, the seaward five feet of new infill material will be removed and replaced.

After the staff report was released, the applicant submitted comments stating that the applicant was not in agreement with the requirement to remove and replace the seaward five feet of concrete if post installation testing shows that the concrete used by the applicant is not in fact erodible (Exhibit 8). The applicant’s geotechnical engineer stated that the only situation that the concrete will not meet the erodibility requirements is if there is an error at the concrete mixing plant. The applicant’s representatives assert that it would not be feasible based on cost, bluff stability, or worker safety to remove concrete infill once it has been installed if it

doesn't meet the erodibility requirements of this CDP. However, the applicant has not provided any geotechnical evidence to substantiate the claim that removal would be infeasible.

The purpose of Special Condition 18 is to ensure that if the erodible concrete does not erode as predicted by the testing, either because the approved mixture is implemented incorrectly, or because the concrete performs unexpectedly under real life conditions, the hardened material will be removed promptly, rather than wait until the concrete actually extends on the beach, impacting public access, public recreation, and visual quality. Removal of the concrete after application is clearly not the ideal situation, which is why pre-testing the material is required. To further reduce the chances that the concrete mixture will be applied incorrectly, Special Condition 18 has been modified to incorporate the applicant's suggestion that an independent third party quality control engineer provide inspection services on behalf of the Coastal Commission at both the batch plant where the concrete mix will be manufactured and at the job site. Within 14 days after project completion, the quality control engineer will certify in writing to the Commission that the concrete utilized at the job site complies with the erodible concrete mix approved by the Commission. This third party verification is an important measure to ensure that errors at the concrete mix plant or during installation do not occur.

Nevertheless, if despite these measures, testing after 28 days determines that the concrete mixture is not within 20 percent of the erodibility index of the native sandstone, Special Condition 18 requires that the seaward five feet of new infill material must be removed and replaced. If the Executive Director of the Commission determines that removal and replacement of the seaward five feet of new infill is infeasible, the applicant must apply to the Commission for an amendment to this CDP to retain the non-erodible concrete and propose mitigation to offset the impacts of the non-erodible concrete. As detailed in the City's certified LUP, erodible concrete is permitted to be installed pre-emptively, as its impacts are significantly less than those for seawalls. However, non-erodible concrete is not permitted to be installed pre-emptively and has many of the same adverse impacts as seawalls and would likely require mitigation for impacts to sand supply and public access and recreation.

The applicant also requested that Special Condition 18 be further revised to clarify that the 28 day post construction test be found in compliance if the erodible concrete has an erodibility of less than 80% of the native sandstone. However, the Commission geologist has determined that erodible concrete that is substantially more erodible than the native sandstone would be undesirable, as it could focus erosion on the infill and result in new seacaves in the near future.

After the staff report was released, the Surfrider Foundation also submitted comments stating that they objected to the conditions of approval of the staff report. Surfrider raised various concerns in the comment letter.

First, Surfrider does not believe that there is sufficient evidence to support the applicant's claim that the proposed erodible concrete infills will erode at the same rate as the surrounding bluffs. This concern has already been addressed elsewhere in the staff report. The Commission Engineer has reviewed the erodible concrete proposal and found that it is likely to erode as predicted. Furthermore, past infill projects which used the same erodible concrete mix have performed adequately in Solana Beach.

Second, Surfrider argues that the new proposed 75 ft. long notch infill will prevent a block failure that is expected to occur if the infill is not constructed and that an impact fee should be assessed until such time that the actual performance of the proposed erodible concrete infills can be assessed. This concern is also addressed elsewhere in the staff report. The proposed project is consistent with the requirements of the City's certified LUP, which allows pre-emptive installation of erodible concrete seacave and notch infills that do not fix the back of the beach, without requiring mitigation.

Third, Surfrider contends that the previous seacave infills at this site did not erode as predicted by the applicant and thus, it may also be the case that the currently proposed infills will not erode as predicted. As described elsewhere in this report, the previously approved infills at the subject site incorporated the use of rebar and a different concrete mix than is currently proposed. Thus, the fact that the existing infills did not erode at the predicted rate is not indicative of how the currently proposed infills will erode.

Fourth, Surfrider maintains that the applicant has avoided the use of two tests that have previously been suggested to measure erodible concrete, the JET erodibility test and the Annandale's erodibility index and that the proposed erodibility of the infills does not take into account the stratification of the natural bluffs. The Commission engineer has written a File Notes Memo to better explain how erodible concrete is analyzed by Commission technical staff and to provide additional information related to acceptable concrete testing methods (Exhibit 10).

7. On Page 42 of Appendix A of the Staff Report, Special Condition 18 shall be revised as follows:

Concrete Erodibility Testing. PRIOR TO ISSUANCE OF THIS CDP AMENDMENT, the applicant shall submit to the Executive Director and the City of Solana Beach for review and written approval, a formulation for erodible concrete that has an erodibility that is within 20 percent of the erodibility of the native sandstone. The method used to determine erodibility and the results of the testing shall be approved, in writing, as an acceptable method by the Executive Director of the Commission.

PRIOR TO ISSUANCE OF THIS CDP AMENDMENT, the applicant shall submit to the Executive Director for review and written approval, the credentials of an independent quality control engineer who will provide inspection services on

behalf of the Coastal Commission at both the batch plant where the concrete mix will be manufactured and at the job site. Within 14 days after project completion, the quality control engineer will certify in writing to the Commission that the concrete utilized at the job site complies with the erodible concrete mix approved by the Commission.

Testing of the new erodible concrete infills shall be conducted 28 days after installation and if the infill is not within the required 20 percent of the erodibility index of the native sandstone, the seaward five feet of new infill material will be removed and replaced with erodible concrete that meets the erodibility requirements of this condition. If the Executive Director of the Commission determines that removal and replacement of the seaward five feet of new infill is infeasible, the applicant shall apply to the Commission for an amendment to this CDP to retain the non-erodible mix and propose mitigation to offset the impacts of the non-erodible concrete.

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

Stevens, Eric@Coastal

From: joncorn@gmail.com on behalf of Jon Corn <joncorn@axelsoncorn.com>
Sent: Thursday, January 07, 2016 4:25 PM
To: Stevens, Eric@Coastal
Cc: Lilly, Diana@Coastal; 7 Walt Crampton
Subject: SBTC - QC Engineer Proposal

Dear Eric,

Here is the detailed proposal in follow up to what we discussed on the phone yesterday:

*We propose that in order to ensure that the erodible concrete mix to be used for this project meets the criteria for erodibility, per Special Condition 18, * and as previously reported by TerraCosta Consultants, the Applicant shall pay for an independent quality control engineer, licensed by the State of California with appropriate concrete certifications, and approved by the Executive Director, to provide inspection services on behalf of the Coastal Commission at both the batch plant where the concrete mix will be manufactured and at the job site to ensure compliance with Special Condition 18. Promptly after project completion, the chosen engineer will certify in writing to the Commission that the concrete utilized at the job site complies with Special Condition 18.*

Let me know what you think about this or whether you have any questions.

Sincerely,

Jon

**As
amended per Walt's comment yesterday
regarding the 120% versus the 20%*

Jon Corn
Axelson & Corn, P.C.
160 Chesterfield Drive, Suite 201
Cardiff by the Sea, CA 92007
760-944-9006 (office)
858-367-5192 (direct)
760-271-2600 (cell)
joncorn@axelsoncorn.com
www.axelsoncorn.com

EXHIBIT NO. 8
APPLICATION NO.
6-96-102-A2
 Applicant Response California Coastal Commission

The information contained in this electronic mail message is confidential information intended only for the use of the individual or entity to whom it is intended to be directed. The sender of this message is a Member of the State Bar of California, and its contents may be privileged from disclosure under the Attorney Client Privilege, the Attorney Work Product Privilege, the Right of Privacy contained in the California Constitution, and other rights and privileges that preclude disclosure of confidential information. The information in this message may also be protected by the Electronic Communications Privacy Act, 18 USC Sections 2510-2521. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please immediately notify the sender by return e-mail or at the telephone number above and delete the original message. Thank you.

January 8, 2016

Delivered via email

To: Eric Stevens
California Coastal Commission
7575 Metropolitan Drive Ste 103
San Diego, CA 92108-4402

EXHIBIT NO. 9
APPLICATION NO.
6-96-102-A2
Public Comment  California Coastal Commission

Re: Item Th18a, Staff Report: Amendment, Application No. 6-92-102-A2 Solana Beach & Tennis Club

Dear Mr. Stevens,

The Surfrider Foundation San Diego County Chapter recognizes beaches as a public resource held in the public trust. Surfrider Foundation is an organization representing 250,000 surfers and beach-goers worldwide that value the protection and enjoyment of oceans, waves and beaches. For the past decade, San Diego Chapter has reviewed and commented on coastal construction projects and policy in San Diego County. We appreciate the opportunity to provide comments to the California Coastal Commission about these important issues.

We object to the conditions for approval described in the staff recommendation for the following reasons:

1. There is no evidence to support that the textured soil/concrete mixture used for the sea cave in-fill will erode at the same rate as the surrounding bluffs.
2. If approved, there will be no impact fee for the loss of beach by fixing the back of the beach. Please either assess an impact fee that may be refunded if there is no impact or deny the permit until viability of erodible concrete may be assessed.

To our first point, the proposed project to remove protruding infills is a very supportable project. We would like to note for the record that these sea-cave infills that are currently protruding were previously deemed to be constructed of erodible concrete. This demonstrates that determining the rate of erosion for any proposed erodible concrete infill should be demonstrated *before* any future erodible concrete infills are constructed. The very same applicants from this same project previously promised it would erode at the same rate as the adjacent bluffs. Therefore any current and future claims by this applicant should be scrutinized to a higher level.

Unfortunately, now the applicant proposes to use monitoring results and prediction of erosion rates that are of dubious quality and questionable with respect to peer review. Walter Crampton, representative for the applicant, has submitted a report purporting to prove erodibility of the infill material utilizing Schmitt Hammers to measure compressive strength of the bluffs and the alleged mix that is designed to erode at the same rate as the bluffs.¹ In his reports, Mr. Crampton avoided two tests prescribed by the Coastal Commission's Geologist and Engineer, specifically, the JET erodibility test and Annandale's erodibility index. Mr. Crampton tested his allegedly erodible concrete samples at AMEC. We attempted to contact, David Wilson, the

¹ See permit history for CDP NO. 6-13-0948

author of AMEC's report to get feedback on the following statement (especially the highlighted section) in the AMEC report:

Subject: **Report of Trial Batch Testing
Erodible Concrete
523-525 Pacific Avenue - Erodible Mix Design
San Diego, California
AMEC Project 5014090006.47**

Dear Mr. Crampton:

It is the understanding of AMEC Environment and Infrastructure, Inc. (AMEC) that Superior Ready Mix Concrete mix design FCS-4 was utilized in the late 1990's to fill sea caves and currently there are other sea caves that need to be filled and they are proposed to be filled with the a mix design of the proportion in mix FCS-4.

We understand that you require information about the strength of the subject concrete and how the strength is affected as the slump is changed to facilitate placement. We understand this information will be used to evaluate its suitability as an erodible concrete to fill sea caves. Perhaps the greatest testament of the use of this mix is the success of the previously filled sea caves and the actual in-place erosion that has been observed. Any time actual in-place data is available it is usually considered more reliable than laboratory tests that attempt to ascertain results through assumptions.

We were unable to receive feedback from AMEC and Mr. Wilson because Mr. Crampton instructed them to have us contact their lawyer, Anna Roppo. AMEC pointed out that in-place data is more reliable than laboratory tests that attempt to ascertain results through assumptions. As Mr Crampton wouldn't allow Mr Wilson of AMEC to have an intelligent discussion with us regarding what AMEC's opinion might be to alternative in-situ testing, or even whether the Surfrider Foundation, San Diego Chapter, could hire AMEC to do such testing prior to the installation of either the Bannasch fill or the fill for the present project, we cannot know that the erodible concrete will erode as promised.

Making an error in determining the impact of this material for this project site will have grave and precedent setting consequences. We must be certain that this material is effective.

Secondly, the applicant states at page 19 of the staff report (quoting a geotechnical memo):

"...a substantial length of clay seam within the Torrey Sandstone remains unprotected...In the central portion of the subject site, the clay seam is situated below a large overhang. We recommend placing a concrete infill in this notch to encapsulate the clay seam and to preserve the stability of the bluff overhang...Erosion of the clay seam has caused the undermining of the overlying formational block resulting in the past failures, including the large formational block now the beach..."

This underscores the futility of using compressive strength as an indication of the erosion rate of heavily stratified geologic feature. Was the erosion rate of the concrete compared to the erosion rate considering stratified layers?

Surfrider Foundation, San Diego County Chapter
9883 Pacific Heights Blvd, Suite D
San Diego, CA 92121
Phone (858) 622-9661 Fax (858) 622-9961

San Diego County Chapter of the Surfrider Foundation
Resident of Solana Beach

Kristin Brinner
Beach Preservation Committee Member
San Diego County Chapter of the Surfrider Foundation
Resident of Solana Beach

Julia Chunn-Heer
Policy Manager
San Diego County Chapter of the Surfrider Foundation


M E M O R A N D U M**N O T E S T O F I L E**

DATE: January 12, 2016

TO: Eric Stevens, Coastal Program Analyst

FROM: Lesley Ewing, Ph.D., PE, D.CE, Sr. Coastal Engineer

SUBJECT: Erodible Concrete

EXHIBIT NO. 10
APPLICATION NO.
6-96-102-A2
Staff File Note  California Coastal Commission

Erodible concrete has been discussed for many years as an alternative to full strength, non-erodible concrete. In the past decade, erodible concrete has been considered for coastal applications such as cave infills or on eroding bluffs, where the use of full-strength concrete has been determined to have adverse impacts by fixing the back beach location. As the applications for erodible concrete have increased, there has been greater concern that this material may not actually perform as intended. This note to the files provides a summary overview of erodible concrete, options for testing erodibility and remedies for concrete with an unacceptable rate of erodibility.

Erodible Concrete: All concrete is a mix of cement, sand, aggregate and water. Over millennia the mixes have been tested and varied and admixtures have been included to develop concretes for different purposes. Specialized concrete now exists for many applications, such as super high strength, high density, cold climate applications, underwater installations, and such. Concrete is widely used in building, numerous textbooks cover concrete construction, and many civil engineering programs dedicate a full course to the uses of concrete as a building material. The dominant focus for concrete mixtures in the building profession is to develop a product that exhibits sufficient strength for the intended application. Low strength or erodible concrete is gaining in interest, but the idea of 'weak enough' remains a niche market and one with less industry focus than for 'strong enough' concrete.

The ideal characteristics for an erodible concrete are that it erode at a rate that is comparable to the native material. One application where the Commission specified the use of erodible concrete was for the full removal of a revetment. A keyway had been cut into bedrock to stabilize the toe of the revetment and erodible concrete was used for refilling the keyway. The intent for the keyway replacement was for the erodible concrete to scour down at a rate comparable to the native bedrock and prevent the formation of a scour trench seaward of the unarmored bluff. More frequently, erodible concrete has been used for cave infills, as a way to

prevent sudden collapse but also prevent fixing the position of the back beach. The intent of the erodible concrete cave fills is to have the concrete replicate the retreat rate of the native bluff materials and avoid the need for more massive armoring structures such as seawalls or revetments.

However, the use of erodible concrete has not been universal and some existing cave fills used high-strength concrete. The Commission has specified the use of erodible concrete in a number of permits, but some cave fills occurred prior to the use of this condition. Sea caves and lower bluff undercuts have been a significant problem along the back shore in Solana Beach and the City's LCP includes the use of erodible concrete for cave and notch fills and specifies conditions under which erodible concrete cave fills can occur.

Tests for Erodible Concrete: The term 'erodible concrete' has been defined conceptually, and some mixes have been developed that have been considered erodible. However, unlike tests to determine whether concrete is strong enough, there is not accepted industry standard for erodible enough. In CDP 6-13-0948, the Commission approved the project with the following condition:

Concrete Erodibility Testing. PRIOR TO THE CONSTRUCTION OF ANY SEACAVE/NOTCH INFILL, the applicant shall submit to the Executive Director for review and written approval, a formulation for erodible concrete that has an erodibility index that is within 20 percent of the erodibility index of the native sandstone, as determined from either (1) a Jet Erodibility Test (JET) (for both the erodible concrete formulation and the native sandstone), (2) by Annandale's Erodibility Index ($K = M_s \cdot K_b \cdot K_d \cdot J_s$, where M_s is the Mass Strength number, K_b is the block size, K_d is the joint shear strength number and J_s is the ground structure number) (for both the erodible concrete formulation and native sandstone), or (3) through a comparable method that has been submitted by the applicant with the revised final plans and approved, in writing, as an acceptable method by the Executive Director of the Commission.

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

Commission staff worked with the applicant's consulting engineer to review the available erodibility tests and determine what testing method would best characterize both the concrete material and the native sandstone. After several meetings and conversations, staff found that testing the unconfined compressive strength of the concrete and the native soil would be 'a comparable method' for quantifying and comparing the erodibility of concrete and native sandstone. The commission staff also accepted the use of Schmidt Hammer Tests for the measure of unconfined compressive strength.

Unconfined compressive strength is a materials property used by both civil engineers and engineering geologists as a quantitative characterization of the material, be it concrete or bedrock. For engineers, unconfined compressive strength of concrete is often part of the

building specification to determine that the concrete will be adequate for the intended use. For engineering geologists, the unconfined compressive strength of sediments and bedrock are part of an analysis of stability and adequacy of a site to support intended loads. Also, the Mass Strength, M_s , in the Annandale Erodibility Index is normally defined as the unconfined compressive strength; thus, the unconfined compressive strength measure is also one of the key components of the Annandale test for erodibility.

The two general ways to do materials testing are in a laboratory and in the field. Laboratory testing requires that samples be brought into the lab. This is possible for testing the initial samples of erodible concrete or for testing sandstone samples obtained from a soil boring. However, once the erodible concrete is installed, in-situ testing is less destructive of both the infill and the native sandstone. For the CDP 6-13-0948 project, the applicant's engineer proposed to use the Schmidt Hammer test for in-situ comparison of the unconfined compressive strengths of the installed concrete and the native sandstone. Staff determined that this would be an appropriate testing method to compare the two different materials in the field.

The second aspect of using unconfined compressive strength for concrete is with the time period at which unconfined compression is determined. When concrete is first mixed, it is a malleable, viscous material that can be poured or pumped into forms and shapes and its unconfined compressive strength is minimal. As it cures, the unconfined compressive strength will increase and unlike many materials, concrete gains strength throughout its lifetime. The transition from viscous to solid occurs rapidly and the industrial standard is to test the unconfined compressive strength of concrete after 28 days. If it meets or surpasses the specified unconfined compressive strength, it is deemed to meet the design specifications. For purposes of condition compliance, the unconfined compressive strength of the erodible concrete mix, after 28 days of curing, will need to be within 20% of the unconfined compressive strength of the native sandstone. Compliance with this condition would be based upon both testing a sample of the proposed erodible concrete in a lab and an in-site test of the mix once it has been installed.

In the event that the installed mix does not erode at a rate that is comparable to the native sandstone, a final check should be a condition to remove as soon as possible after detection, any concrete that extends seaward of the horizontal or vertical profile of the native sandstone bluff. This removal should not be the only option for a cave or notch-fill since the act of concrete removal can be disruptive to the beach and the coastal environment. However, the final option of removal does provide a final point of assurance the erodible concrete cave and notch infills will not fix the back beach location or become obstructions to beach access.

CALIFORNIA COASTAL COMMISSION

SAN DIEGO AREA
7575 METROPOLITAN DRIVE, SUITE 103
SAN DIEGO, CA 92108-4421
(619) 767-2370



Th18a

Filed: 10/1/2015
270th Day: 3/29/2016
Staff: E. Stevens-SD
Staff Report: 12/17/2016
Hearing Date: 1/14/2016

STAFF REPORT: AMENDMENT

Application No.: 6-96-102-A2

Applicant: Solana Beach & Tennis Club

Agent: Walt Crampton

Location: On the bluff fronting 347-459 South Sierra Avenue, Solana Beach, San Diego County (APN Nos. 298-053-20-01 to 57, 298-053-22-01 to 45, 298-053-23-01 to 50)

Original Project Description: Fill five sea caves at beach level below the existing Solana Beach & Tennis Club multi-story condominium development with textured soil/concrete mixture.

Proposed Amendment: Infill 75 ft. long notch in coastal bluff with erodible concrete; maintenance and repairs to existing infills to include removal of protruding concrete edges, additional concrete infilling where undermining and flanking of the existing infill has occurred, and installation of carved and colored erodible concrete on face of existing infills.

Staff Recommendation: Approval with Conditions

SUMMARY OF STAFF RECOMMENDATION

The proposed project is located on a city-owned beach fronting an existing 152 unit condominium complex in the City of Solana Beach. The site currently contains five

existing seacave infills on the public beach at the toe of the bluff, which were constructed pursuant to the originally approved Coastal development permit (CDP). The subject project would maintain and minimally expand the 5 existing seacave infills and infill a new 75 ft. long notch in the coastal bluff. The City's certified Land Use Plan (LUP) allows for pre-emptive construction of erodible concrete seacave/notch infills, even when a bluff top structure is not imminently threatened, which is the case for the subject proposal. The construction of seacave/notch infills helps to prevent catastrophic bluff failure, but will still allow the bluff to erode landward, when maintained to do so. Seacave/notch infills are designed to erode at the same rate as the adjacent natural bluff, thus there are no impacts to sand supply or to public access and recreation. In addition, seacave infills are placed within the bluff and do not result in immediate encroachment on usable public beach area. Staff, including the Commission's coastal engineer and geologist, have evaluated the relevant project materials, have visited the site, and have determined that the proposed seacave infills represent the minimum amount of armoring necessary to maintain the existing seacaves and to address the expansion of the seacaves and notches at the subject site.

The applicant has worked with Coastal Commission staff to ensure that the proposed project is consistent with the requirements of the City's certified Land Use Plan. The proposed seacave and notch infill expansions will consist of erodible concrete that will be aesthetically colored and sculpted and are designed to erode at the same rate as the adjacent natural bluffs. In addition, the applicant proposes to remove all portions of the existing infills that are located seaward of the bluff face, and to install a new six inch thick aesthetic layer of erodible concrete on the face of the existing infills. The infill expansions will be keyed into formational bedrock and are proposed to extend vertically up to the bluff face of the Torrey Sandstone.

In past erodible concrete seacave infill projects, objections have been raised that erodible concrete does not always erode at the same rate as the surrounding natural bluffs. In the case of the original concrete application, the approved concrete mixture did not erode at the expected rate, and thus, the concrete fill currently extends seaward of the surface of the natural bluff face. However, the proposed amendment demonstrates that it is feasible to remove the concrete if it does not erode at the anticipated rate. The concrete mixture used in 1996 has significantly less erodible mix properties from the erodible concrete currently proposed, and thus, the proposed erodible concrete should erode more like natural bluff material. The Commission's Coastal Engineer has reviewed the currently proposed material specifications and concurs with the design parameters.

In addition, special conditions placed on the project require close monitoring and evaluation of the specific infill mixture. Special Condition 18 requires that prior to the construction of any seacave/notch infill, the applicant provide a formulation for erodible concrete that has an erodibility index within 20 percent of the erodibility index of the native sandstone of the coastal bluff, as determined from method that has been submitted by the applicant and approved, in writing, by the Executive Director of the Commission. Special Condition 18 also requires that testing of the new erodible concrete infills be conducted 28 days after installation and if the erodibility index of the new concrete is not

within 20 percent of the erodibility index of the native sandstone, the seaward five feet of new infill material will be removed and replaced.

The proposed seacave/notch infill maintenance and expansion project has been designed to erode at a comparable rate as the natural bluff or will be maintained to do so if needed, and is not predicted to significantly impact available beach area in the future. Special Condition 2 requires that the applicant submit and implement a comprehensive monitoring program to ensure that the proposed seacave/notch infills are functioning as designed and are not adversely impacting coastal resources. If the estimates of fill erodibility do not prove accurate over time, Special Condition 3 requires that if any portion of the existing or proposed seacave/notch infills encroaches greater than 6 inches seaward of the adjacent natural bluffs, that the property owner obtain a CDP amendment from the Commission to remove and/or remedy the situation.

In addition, if the seacave/notch infills do not function as designed, such that the back of the beach is essentially fixed, Special Condition 2 requires that the applicant return to the Commission to mitigate for any unmitigated impacts to public access, recreation, shoreline sand supply and visual quality. Mitigation could include sand supply mitigation, additional public access and recreation mitigation, an encroachment agreement with the City, and/or application of policies related to the imposition of the authorization period for shoreline armoring in the LUP that would require the proposed seacave/notch infills be authorized only so long as they are required to protect the existing bluff top structures.

The proposed seacave infill maintenance and expansion project is within the Commission's coastal development permit jurisdiction. The Commission certified the City's Land Use Plan (LUP); however, the City of Solana Beach does not yet have an implementation plan; thus, the LCP is not fully certified. Therefore, the Chapter 3 policies of the Coastal Act are the standard of review, with the City's certified LUP used as guidance.

Commission staff recommends **approval** of Coastal Development Permit amendment application #6-96-102-A2, as conditioned.

TABLE OF CONTENTS

I.	MOTION AND RESOLUTION	5
II.	SPECIAL CONDITIONS	5
III.	FINDINGS AND DECLARATIONS	12
	A. PROJECT HISTORY/ AMENDMENT DESCRIPTION.....	12
	B. GEOLOGIC STABILITY.....	14
	C. VISUAL RESOURCES.....	25
	D. PUBLIC ACCESS.....	27
	F. LOCAL COASTAL PLANNING	30
	G. CALIFORNIA ENVIRONMENTAL QUALITY ACT.....	31

APPENDICES

[Appendix A – Standard and Special Conditions for CDP #6-96-102 and #6-96-102-A2.](#)

[Appendix B – Substantive File Documents](#)

EXHIBITS

Exhibit 1 – Vicinity Map

Exhibit 2 – Aerial Site Photo

Exhibit 3 – Site Plan

Exhibit 4 – Section Plan

Exhibit 5 – Dimensions of Proposed New Notch Infill

Exhibit 6 – Dimensions of Proposed New Notch Infill

Exhibit 7 – Dripline Located Seaward of the Bluff Face

I. MOTION AND RESOLUTION

Motion:

*I move that the Commission **approve** the proposed amendment to Coastal Development Permit Application No. 6-96-102-A2 subject to the conditions set forth in the staff recommendation.*

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

Resolution:

The Commission hereby approves coastal development permit amendment 6-96-102-A2 and adopts the findings set forth below on grounds that the development as amended and conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

NOTE: Appendix A, attached, includes all standard and special conditions that apply to this permit, as approved by the Commission in its original action and modified and/or supplemented by all subsequent amendments, including this amendment number A2. All of the Commission's adopted special conditions and any changes in the project description proposed by the applicant and approved by the Commission in this or previous actions continue to apply in their most recently approved form unless explicitly changed in this action. New conditions and modifications to existing conditions imposed in this action on Amendment A2 are shown in the following section. Within Appendix A, changes to the previously approved special conditions are also shown in ~~strikeout~~/underline format. This will result in one set of adopted special conditions.

II. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

The following shall replace, in its entirety, Special Condition 2 of the original permit:

2. Monitoring Plan. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit to the Executive

Director for review and written approval, a monitoring plan prepared by a licensed geologist or geotechnical engineer for the existing and proposed sea cave/notch infills on the subject site which shall incorporate the following:

- a. Current measurements of the distance between the condominiums and the bluff edge (as defined by Section 13577, Title 14 of the California Code of Regulations), and provisions for these measures to be taken annually after completion of construction for the life of the project. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, etc. so that annual measurements can be taken at the same bluff location and comparisons between years can provide information on bluff retreat.
- b. Provisions for establishing any differential retreat between the natural bluff face and each of the seacaves/notches by measuring both ends of the seacaves/notches and at 20-foot intervals (maximum) along the top of the seacave/notch face, and the bluff face intersection annually after completion of construction for the life of the project. Measurements may be taken through aerial photography. The program shall describe the method by which such measurements shall be taken.
- c. Provisions for the annual measurement of the erodibility of the proposed erodible concrete infill. The program shall describe the method by which such measurements shall be taken.
- d. Provisions for submittal of a report to the Executive Director of the Coastal Commission on June 1st every two years for a six year period beginning after completion of construction. Each report shall be prepared by a licensed geologist or geotechnical engineer. The report shall contain the measurements and evaluation required in sections a, b, and c of this Special Condition. The report shall also summarize all measurements and provide analysis of trends, annual retreat or rate of retreat, and the stability of the overall bluff face, including the upper bluff area, and the impact of the seacave/notch infills on the natural bluff, and shall include suggestions that do not involve the construction of structures on the face of the bluff for correcting any problems. In addition, each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the project. If any portion of the existing or proposed seacave/notch infills is found to extend seaward of the 'drip line' of the natural bluff by more than six (6) inches in any location, the report shall include alternatives and recommendations to remove or otherwise remedy this condition such that no seaward extension of the infill will remain.
- e. Provisions for submission of a report containing the information identified in section (d) of this Special Condition at 3 year intervals following the last biannual report, for the life of the project. Additional reports shall be submitted in the spring of any year in which the following event occurs:

1. A 20-year storm event
2. An “El Niño” storm event
3. A major tectonic event magnitude 5.5 or greater affecting San Diego County

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

- f. An agreement that the permittee shall apply for a coastal development permit amendment within three months of submission of the report required in subsections (d) and (e) of this Special Condition for any necessary maintenance, repair, changes or modifications to the project recommended by the report, unless the Executive Director determines that a permit amendment is not legally required.
- g. An agreement that the permittee shall apply for a coastal development permit amendment within three months of submission of the report required in subsections (d) and (e) of this Special Condition if the monitoring report finds that the back of the beach has been effectively fixed by the new infills (new 75 ft. long notch infill and new 9 ft. expansion of the existing infills).

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

The following shall replace, in its entirety, Special Condition 3 of the original permit:

3. Future Maintenance. The permittee shall remove all debris deposited on the beach or in the water as a result of construction of the seacave/notch infill. The permittee shall also remove all debris deposited on the beach or in the water as a result of failure or damage of the shoreline protective device in the future. In addition, the permittee shall maintain the permitted seacave/notch infill in its approved state. Maintenance of the seacave/notch infills shall include maintaining their color, texture and integrity. Any change in the design of the project or future additions/reinforcement of the seacave/notch infill beyond minor re-grouting or other exempt maintenance as defined in Section 13252, Title 14 of the California Code of Regulations, will require a coastal development permit. However, in all cases, if, after inspection, it is apparent that repair and maintenance is necessary, the permittee shall contact the Commission’s San Diego office to determine whether permits are necessary, and shall subsequently apply for a coastal development permit amendment for the required maintenance. If at any time after

project completion, any portion of the existing or proposed seacave/notch infills is found to extend seaward of the face of the natural bluff by more than six (6) inches in any location located seaward of a demonstrated stringline between the adjacent natural bluff on either end of the infill, the permittee shall obtain and implement a coastal development amendment permit to remove and/or remedy this condition such that no portion of the infill remains seaward of a stringline between the adjacent natural bluff on either end of the infill.

The following shall be added as new Special Conditions 11- 20 to the permit:

11. Final Project Plans. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit for review and written approval of the Executive Director, final seacave/notch infill plans that are in substantial conformance with the plans dated June 22, 2015 by TerraCosta Consulting Group. Said plans shall first be approved by the City of Solana Beach and include the following:
 - a. Sufficient detail regarding the construction method and technology utilized for texturing and coloring the infill. Such plans shall confirm, and be of sufficient detail to verify, that the infill color and texture closely matches the adjacent natural bluffs, including provision of a color board indicating the infill material.
 - b. During construction of the approved development, disturbances to sand and intertidal areas shall be minimized to the maximum extent feasible. All excavated beach sand shall be re-deposited on the beach. Local sand, cobbles or shoreline rocks shall not be used for backfill or for any other purpose as construction material.
 - c. The seacave and notch infills shall conform as closely as possible to the natural contours of the bluff, and shall not protrude beyond the existing bluff face. The portions of existing infills that protrude beyond the bluff face shall be removed.
 - d. The erodible concrete for the seacave/notch infills shall be designed to provide a material with erosion characteristics similar to that of the adjacent natural bluff consistent with Special Condition 18.

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

12. Construction Access/Staging Areas. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, the applicant shall submit plans for the review and written approval of the Executive Director

indicating the location of access corridors to the construction site and staging areas. The final plans shall indicate that:

- a. No overnight storage of equipment or materials shall occur on sandy beach or at the Fletcher Cove Parking Lot, and the use of other public parking spaces shall be minimized. During the construction stages of the project, the permittee shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion. In addition, no machinery shall be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to construct the seacave/notch infills. Construction equipment shall not be washed on the beach or in the Fletcher Cove parking lot.
- b. Access corridors shall be located in a manner that has the least impact on public access to and along the shoreline.
- c. No work shall occur on the beach on weekends, holidays or between Memorial Day weekend and Labor Day of any year.
- d. The applicant shall submit evidence that the approved plans and plan notes have been incorporated into construction bid documents. The applicant shall remove all construction materials/equipment from the staging site and restore the staging site to its prior-to-construction condition immediately following completion of the development.

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

13. Deed Restriction/CC&R's Modification. PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, the applicant homeowners' association (HOA) shall do one of the following:
 - a. PRIOR TO ISSUANCE OF THIS COASTAL DEVELOPMENT PERMIT AMENDMENT (6-96-102-A2), the applicant shall submit to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded against the parcel(s) governed by this permit amendment a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, as amended, 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 amended, as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction shall include a legal description of the entire parcel or parcels governed by this permit

amendment. 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, as amended, 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. This deed restriction shall supersede and replace the deed restriction(s) recorded pursuant to [Special Condition(s) 6 & 7 of CDP 6-96-102] Coastal Development Permit(s) 6-96-102, approved on November 12, 1996, which deed restriction(s) is recorded as Instrument No. 1997-0203796 in the official records of San Diego County.

- b. Modify the condominium association's Declaration of Restrictions or CC&Rs, as applicable, in a form and content acceptable to the Executive Director, to reflect the obligations imposed on the homeowners' association by the conditions of this CDP. This addition to the CC&Rs shall not be removed or changed without a Coastal Commission-approved amendment to this coastal development permit.
14. Assumption of Risk. By acceptance of this permit, the applicant acknowledges and agrees (a) that the site may be subject to extraordinary hazards from bluff collapse and erosion; (b) to assume the risks to the applicant and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (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; and (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.
15. Future Shoreline Protective Devices. In the event any additional bluff or shoreline protective work is proposed in the future, the applicant acknowledges that, as a condition of filing an application for a coastal development permit, the applicant shall provide to the Commission or its successor agency an analysis of alternatives to bluff protective works. The alternatives shall include, but not be limited to, relocation of portions of the residential structures that are threatened, structural underpinning, or other remedial measures identified to stabilize the residential structures that do not include bluff or shoreline stabilization devices.
16. As-Built Plans. Within 60 days following completion of the project, the permittee shall submit as-built plans of the approved seacave/notch infill. In addition, within 60 days following completion of the project, the permittee shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying the seacave/notch infill has been constructed in conformance with the approved plans for the project.

17. Removal of Permanent Irrigation. PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, the applicant shall submit to the Executive Director for review and written approval, a landscape irrigation removal plan for the subject property. The plan shall detail the location of all existing permanent irrigation and fully describe the method of removal or capping such that no permanent irrigation features remain in service within 100 feet of the bluff edge. WITHIN 30 DAYS FOLLOWING ISSUANCE OF THE PERMIT, the applicant shall remove or cap all permanent irrigation features from each of the upper blufftop lots, consistent with the approved plans.

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

18. Concrete Erodibility Testing. PRIOR TO ISSUANCE OF THIS CDP AMENDMENT, the applicant shall submit to the Executive Director and the City of Solana Beach for review and written approval, a formulation for erodible concrete that has an erodibility that is within 20 percent of the erodibility of the native sandstone. The method used to determine erodibility and the results of the testing shall be approved, in writing, as an acceptable method by the Executive Director of the Commission.

Testing of the new erodible concrete infills shall be conducted 28 days after installation and if the infill is not within the required 20 percent of the erodibility index of the native sandstone, the seaward five feet of new infill material will be removed and replaced with erodible concrete that meets the erodibility requirements of this condition.

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

19. Reliance on Permitted Armoring. No future development, which is not otherwise exempt from coastal development permit requirements, and no redevelopment of the existing structure on the bluff top property, shall rely on the permitted bluff retention devices (existing and proposed seacave/notch infills) to establish geologic stability or protection from hazards. Such future development and redevelopment on the site shall be sited and designed to be safe without reliance on shoreline armoring. As used in these conditions, "redeveloped" or "redevelopment" consists of alterations including: (1) additions to an existing structure, (2) exterior and/or interior renovations, (3)

and/or demolition of an existing bluff structure, or portions thereof, which results in: alteration of 50 percent or more of major structural components including exterior walls, floor and roof structure, and foundation, or a 50 percent increase in floor area. Alterations are not additive between individual major structural components; however, changes to individual major structural components are cumulative over time from the date of certification of the LUP, as further defined in the Solana Beach LUP, as approved by the Commission.

20. Public Rights. By acceptance of this permit, the applicant acknowledges, on behalf of him/herself and his/her successors in interest, that issuance of the permit shall not constitute a waiver of any public rights which may exist on the property. The applicant shall also acknowledge that issuance of the permit and construction of the permitted development shall not be used or construed to interfere with any public prescriptive or public trust rights that may exist on the property.

III. FINDINGS AND DECLARATIONS

A. PROJECT HISTORY/ AMENDMENT DESCRIPTION

Project Description:

The proposed project involves the infilling of a 75 ft. long notch in the coastal bluff and the repair and minor expansion of five existing seacave/notch infills located at the beach level within the face of an approximately 65-foot high coastal bluff. Erodible concrete will be used for the new notch infill and expansion of the existing infills. The caves are beneath an existing multi-story, 152-unit condominium development known as the Solana Beach and Tennis Club. The site is located west of South Sierra Street, across from Dahlia Street, in the City of Solana Beach (Exhibit 1). The site was developed in the early 1970s. Currently, the closest portions of the condominium buildings are approximately 15.2 feet from the bluff edge. The bluffs are owned by the condominium homeowners association and there is an existing easement for public recreational use located from the mean high tide line to approximately the toe of the bluff, which was accepted by the County of San Diego in 1972.

The proposed new infill and the expansion of the existing infills will have a cumulative length of approximately 110 ft. (75 ft. new notch infill and 35 ft. expansion of existing infills), depths ranging from 1 to 4.8 feet, and will range from 1 to 5.5 feet high. The proposed new seacave/notch infill is in addition to the existing approximately 250 ft. of the bluff already covered by seacave/notch infills which were previously approved by the Commission through the original permit (Ref: CDP 6-96-102/Solana Beach and Tennis Club). Thus, a total of approximately 360 ft. of the approximate 600 ft.-long bluff fronting the subject site would be covered by seacave/notch infills.

The proposed seacave and notch infill expansions consist of erodible concrete that will be aesthetically colored and sculpted and are designed to erode at the same rate as the adjacent natural bluffs. In addition, the applicant proposes to remove all portions of the existing infills that are located seaward of the bluff face and to install a new six inch thick aesthetic layer of erodible concrete on the face of the existing infills. The infill expansions will be keyed into formational bedrock and are proposed to extend vertically up to the bluff face of the Torrey Sandstone.

The Commission recently certified the City's Land Use Plan; however, the City of Solana Beach does not yet have a certified Implementation Plan. Therefore, the Chapter 3 policies of the Coastal Act are the standard of review, with the City's LUP used as guidance.

Site History:

The five existing seacave infills on the subject site were approved by the Commission on November 12, 1996 (Ref: CDP 6-96-102/Solana Beach & Tennis Club). The infill construction consisted of a 12-inch thick cast-in-place or precast soil/cement mix facing embedded a minimum of two feet into the bedrock at the base of the bluff. The area behind the facing was backfilled with an air blown soil/cement mixture, and the facing was anchored to this mixture with 18-inch long reinforcing bars. The sea cave plugging and filling procedure was designed with a leaner soil-cement mix on the external facade and a stronger mix internally. This process was intended to allow erosion of the plugs to match the rate of natural erosion of the adjacent bluff. The external facade was then colored and textured to match the natural bluff. The concrete infills did not erode at the same rate as the adjacent natural bluffs, as was expected when the project was approved in 1996. The concrete used in 1996 is has different mix properties from the erodible concrete currently proposed.

A monitoring report, dated January 31, 2014, provides an analysis of the performance of the existing 'leaner soil-cement mix' concrete infills:

"...infill retreat has been on the order of 0 to 0.98 foot for the concrete infills over the last 15 years. Although few monitoring points remain for the adjacent bluff, recent measurements indicate local bluff erosion on the order of 0.19 to 0.33 foot over the last 15 years. It is unknown if the monitoring pins that no longer exist fell out due to erosion, or were destroyed as a result of corrosion and wave and cobble impact..."

The applicant states that the reason the infills have retreated at a slower pace than the natural Torrey Sandstone bluff material at the subject site is because:

"...the Torrey Sandstone has widely ranging strengths at any given location. Concrete, erodible or otherwise, has a relatively uniform strength. In areas where the formation is locally weaker than the infill, differential erosion will occur. In areas where the infill and formation have similar strength properties, erosion will be similar..." (Ref: TerraCosta Letter dated June 25, 2014)."

A condition of the 1996 approval required that the applicant monitor the seacave/notch infills and apply for a coastal development permit to implement corrective measures if the infills were ever found to extend seaward of the face of the natural bluff by more than six inches.

The area surrounding the site includes both natural bluffs and shoreline protection. Directly adjacent to the subject site to the south at 585 South Sierra, the Commission has approved various seacave/notch infills and a 20 ft. long seawall across a portion of the site (6-84-573 & 6-84-573-A1/Seascape Sur). Directly adjacent to the subject site to the north at 325 South Sierra, the bluff is partially armored with a seawall, seacave/notch infills, and mid/upper bluff retaining walls (Ref: CDP #6-04-092/Seascape Shores).

A version of this project that did not propose the new 75 ft. long notch infill in the coastal bluff and proposed significantly less removal of the portions of existing infill located seaward of the bluff face was previously approved by the City of Solana Beach (Ref: Resolution 2013-039 approved April 24, 2013). The applicant then applied to the Commission on June 21, 2013 for a CDP for the development approved by the City (CDP 6-96-102-A1). However, after discussions with Commission staff, on November 26, 2014, the applicant modified the project proposal to include the new 75 ft. long notch infill in the coastal bluff and significantly more removal of the portions of existing infill located seaward of the bluff face. As a result of the modified project proposal, the City alerted the applicant that a new City Resolution would be required. The applicant withdrew CDP 6-96-102-A1 on February 6, 2015 in order to obtain a new City Resolution (Ref: Resolution 2015-094 approved August 25, 2015).

B. GEOLOGIC STABILITY

As described above, the standard of review is Chapter 3 of the Coastal Act, with the City's LUP providing non-binding guidance. As such, applicable Coastal Act policies are cited in this report, as well as relevant LUP policies.

Section 30235 of the Coastal Act states, in part:

Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply...

Section 30253 of the Act states, in part:

New development shall do all of the following:

- (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
- (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...*

In addition, the following certified City of Solana Beach Land Use Plan (LUP) language provides additional guidance regarding geologic hazards and shoreline protection:

Page 13 of the Hazards and Shoreline/Bluff Development chapter states the following, in part:

- *Infill/Bluff Stabilization – Seacave/Notch Infill (See Appendix B Figure 1A) – This first solution is designed to address sea caves and undercut portions of the lower dense sandstone bluff where the clean sand lens is not yet exposed. If left uncorrected, the sea cave/undercut will eventually lead to block failures of the lower sandstone, exposure of the clean sand lens and landward bluff retreat. This failure exposes the clean sand lens of the upper bluff terrace deposits triggering rapid erosion and landward retreat of the upper bluff, which eventually endangers the structures at the top of the bluff. If treated at this stage, the Bluff Retention Device will minimize the need for a future higher seawall and future upper bluff repair. This alternative is not designed as a structural wall, is not reinforced, does not include tiebacks, and uses only erodible concrete which shall erode at the same erosion rate as the surrounding natural bluff material. The infill is required to maintain a textured and colored face mimicking the existing bluff material. Erodible concrete seacave/notch infills are designed to erode with the natural bluff and, when maintained to do so, are not subject to the sand supply mitigation, public access and recreation mitigation, encroachment/removal agreement, or authorization timeline policies of the LUP.*

The LUP defines Bluff Retention Devices as follows:

Bluff Retention Devices means a structure or other device, including seacave/notch infills, dripline infill, coastal structures, upper bluff systems, and temporary emergency devices, designed to retain the bluff and protect a bluff home or other principal structure, or coastal dependent use from the effects of wave action erosion and other natural forces.

The LUP defines Bluff Top Redevelopment as follows:

Bluff Top Redevelopment: *Shall apply to proposed development located between the sea and the first public road paralleling the sea (or lagoon) that consists of alterations including (1) additions to an existing structure, (2) exterior and/or interior renovations, (3) and/or demolition of an existing bluff home or other principal structure, or portions thereof, which results in:*

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

(b) Demolition, renovation or replacement of less than 50% of a major structural component where the proposed alteration would result in cumulative alterations exceeding 50% or more of a major structural component, taking into consideration previous alterations approved on or after the date of certification of the LUP; or an alteration that constitutes less than 50% increase in floor area where the proposed alteration would result in a cumulative addition of greater than 50% of the floor area, taking into consideration previous additions approved on or after the date of certification of the LUP.

Policies 4.26, 4.27, and 4.28 of the Hazards and Shoreline/Bluff Development chapter state the following in regards to bluff top irrigation, landscaping, and site drainage:

Policy 4.26: With respect to bluff properties only, the City will require the removal or capping of any permanent irrigation system within 100 feet of the bluff edge in connection with issuance of discretionary permits for new development, redevelopment, or shoreline protection, or bluff erosion, unless the bluff property owner demonstrates to the satisfaction of the Public Works Director, or the CCC if the project is appealed, that such irrigation has no material impact on bluff erosion (e.g., watering hanging plants over hardscape which drains to the street).

Policy 4.27: Require all bluff property landscaping for new development to consist of native, non-invasive, drought-tolerant, fire-resistant, and salt-tolerant species.

Policy 4.28: All storm water drain systems that currently drain or previously drained towards the west over the bluff shall be capped. These systems should be redesigned to drain directly, or through a sump system, and then pumped to the street in compliance with SWP 2007-0001 and consistent with SUSMP requirements. This policy shall be implemented as a condition of approval for all discretionary permits issued for bluff properties or within 5 years of adoption of the LCP, whichever is sooner.

Policies 4.18 and 4.48 of the Hazards and Shoreline/Bluff Development chapter state the following in regards to the required analysis for a new seacave/notch infill and the expansion and/or alteration of an existing seacave/notch infill:

Policy 4.18: A legally permitted bluff retention device shall not be factored into setback calculations. Expansion and/or alteration of a legally permitted bluff retention device shall include a reassessment of the need for the shoreline protective device and any modifications warranted to the protective device to eliminate or reduce any adverse impacts it has on coastal resources or public access, including but not limited to, a condition for a reassessment and reauthorization of the modified device pursuant to Policy 4.53.

Policy 4.48: A Seacave/Notch Infill shall be approved only if all the findings set forth below can be made and the stated criteria satisfied.

A. Based upon the advice and recommendation of a licensed Geotechnical or Civil Engineer, the City makes the findings set forth below:

- 1. The Seacave/Notch Infill is more likely than not to delay the need for a larger coastal structure or upper bluff retention structure, that would, in the foreseeable future, be necessary to protect an existing principal structure, City facility, and/or City infrastructure, from danger of erosion. Taking into consideration any applicable conditions of previous permit approvals for development at the site, a determination must be made based on a detailed alternatives analysis that none of the following alternatives to the coastal structure are currently feasible, including:*
 - Controls of surface water and site drainage;*
 - A smaller coastal structure; or*
 - Other non-beach and bluff face stabilizing measures, taking into account impacts on the near and long term integrity and appearance of the natural bluff face, and contiguous bluff properties.*
- 2. The bluff property owner did not create the necessity for the Seacave/Notch Infill by unreasonably failing to implement generally accepted erosion and drainage control measures, such as reasonable management of surface drainage, plantings and irrigation, or by otherwise unreasonably acting or failing to act with respect to the bluff property. In determining whether or not the bluff property owner's actions were "reasonable," the City shall take into account whether or not the bluff property owner acted intentionally, with or without knowledge, and shall consider all other relevant credible scientific evidence as well as relevant facts and circumstances.*
- 3. The location, size, design and operational characteristics of the proposed seacave/notch infill will not create a significant adverse effect on adjacent public or private property, natural resources, or public use*

of, or access to, the beach, beyond the environmental impact typically associated with a similar bluff retention device and the seacave/notch infill is the minimum size necessary to protect the principal structure, and has been designed to minimize all environmental impacts, and provides mitigation for all coastal and environmental impacts as provided for in this LCP.

B. The Seacave/Notch Infill shall be designed and constructed:

- 1. To avoid migration of the Seacave/Notch Infill onto the beach;*
- 2. To be re-contoured to the face of the bluff, as needed, on a routine basis, through a CDP or exemption, to ensure the seacave/notch infill conforms to the face of the adjoining natural bluff over time, and continues to meet all relevant aesthetic, and structural criteria established by the City;*
- 3. To serve its primary purpose which is to delay the need for a larger coastal structure, and designed to be removable, to the extent feasible, provided all other requirements under the LCP are satisfied; and,*
- 4. To satisfy all other relevant LCP and City Design Standards, set forth for Bluff Retention Devices.*

The bluffs in Solana Beach are mostly approximately 80-foot high (the bluff at the subject site is approximately 65 ft. high), and include a “clean sands” lens located between the Torrey Sandstone and Marine Terrace Deposits (at approximately elevation 25-35 ft.). The clean sand layer has been described as a very loose sandy material with a limited amount of capillary tension and a very minor amount of cohesion, both of which cause the sandy material to dissipate easily, making this clean sand layer, once exposed, susceptible to wind-blown erosion and continued sloughing as the sand dries out and loses the capillary tension that initially held the materials together.

When on-going wave action, often exacerbated by a lack of beach sand, results in bluff retreat and erosion, the presence of the clean sands creates a process where the clean sands rapidly undermine the upper sloping terrace deposits causing the upper bluff to collapse, thereby exposing more clean sands to wind erosion, which then results in more upper bluff collapses. This cycle can occur so quickly (over months or days, rather than years) that the upper bluff never achieves a stable angle of repose.

The process of undercutting and notching of the bluffs seen along the Solana Beach shoreline represents the natural process of bluff retreat and erosion in this portion of North San Diego County. The process has clearly accelerated in Solana Beach over the last decade as the amount of sand on the beaches has decreased and the bluffs are subject to more frequent wave action. Because all of the bluff top lots in Solana Beach (aside from the vacant lot at 523 Pacific Avenue) are currently developed with single and multi-family structures, there is very little opportunity for the bluffs to retreat without adversely

affecting the safety and stability of existing principal structures. Thus, some amount of shoreline protection along much of Solana Beach may be unavoidable. However, the cycle of collapse and retreat can be slowed through the construction of erodible concrete seacave/notch infills.

The formation of the notch overhangs along this portion of the Solana Beach shoreline are generally attributed to increasing amounts of wave action. The lower bluff along this section of shoreline consists of Torrey Sandstone, which is one of the least resistant bedrock formations along the North County coast. As waves impact the Torrey Sandstone, notches are formed creating an overhanging layer of Torrey Sandstone. As the overhang loses support from beneath, its weight along with any structural weakness in the Torrey Sandstone formation eventually leads to a block-like failure. These existing overhangs will eventually collapse, undermining the upper bluff and triggering progressive upper-bluff failures.

The seacave infill monitoring report for the subject site, submitted by the applicant on January 31, 2014, makes the following observation and maintenance recommendation for the subject site:

“...the existing infills, although generally performing satisfactorily, have experienced erosion along the infill edges and require maintenance. These infills are in need of localized infilling to prevent more serious flanking and potentially more aggressive stabilization measures in the future.”

In addition, the geotechnical memo, dated Revised March 17, 2015, submitted with this application states the following in terms of the need for the proposed infill maintenance and new infill:

“The existing concrete infills should be repaired. Without taking appropriate preventative measures, the notches above and behind the existing infills will continue to expand until collapse, enlarging unsupported overhangs and triggering a series of upper-bluff failures. Such failures would place both bluff-top residents and the beach-going public at significant risk. Furthermore, progressive coastal bluff failures will eventually result in the need for more extensive and costly bluff stabilization, such as a seawall, to stabilize the coastal bluffs...”

“...a substantial length of clay seam within the Torrey Sandstone remains unprotected...In the central portion of the subject site, the clay seam is situated below a large overhang. We recommend placing a concrete infill in this notch to encapsulate the clay seam and to preserve the stability of the bluff overhang...Erosion of the clay seam has caused the undermining of the overlying formational block resulting in the past failures, including the large formational block now the beach...”

In reviewing requests for shoreline protection, the Commission must assess the need to protect private residential development and the potential adverse impacts to public

resources associated with construction of shoreline protection. Shoreline protection projects do have the potential to impact existing lateral access along the beach. Structures which fix the back of the beach stop the landward migration of the beach profile while the seaward edge continues to erode, thereby reducing the amount of dry sandy beach available to the public.

In numerous past actions, the Commission has found that the filling of seacaves or notch overhangs as a preemptive measure has fewer impacts upon coastal resources and public access than the construction of seawalls and upper bluff structures, which are frequently required to protect existing structures after the collapse of seacaves or other bluff features (6-87-391/Childs; 6-92-82/Victor; 6-96-102/Solana Beach & Tennis Club; 6-97-1646/Lingenfelder; 6-98-25/Stroben; 6-98-29/Bennett; 6-99-091/Becker; 6-99-103/Coastal Preservation Association; 6-00-066/Pierce & Monroe; and 6-13-0948/Bannasch). Similarly, Policy 4.48 of the City's LUP allows seacave/notch infill projects to be approved, to prevent catastrophic bluff collapse, even when an existing principal structure is *not* in imminent danger or does not meet the standard for requiring or allowing construction of a seawall, because the adverse impacts associated with these projects are significantly less than those for seawalls.

The construction of seacave/notch infills helps to prevent catastrophic bluff failure, but will still allow the bluff to erode landward, when maintained to do so. Seacave/notch infills are designed to erode at the same rate as the adjacent natural bluff, thus there are no impacts to sand supply or to public access and recreation. In addition, seacave infills are placed within the bluff and do not result in immediate encroachment on usable public beach area. Seacave and notch infills allow the City, and the region as a whole, more time to pursue other non-structural methods, such as beach replenishment, to protect the bluffs and/or moving the line of bluff top development landward away from the bluff edge in order to delay the need for more substantial shoreline protection.

In the case of the proposed project, the filling of the subject notch and the minor expansion of the existing infills is a preventive measure to stop or reduce the potential for collapses of the overhanging area and to stabilize the bluff in an area where there is evidence of the presence of a "clean sands" lens. If erosion at the site is not slowed, the existing blufftop structures are likely to be threatened in the foreseeable future. The proposed project is a relatively minimal type of protection that can be expected to delay the need for a much larger seawall-type of shoreline protection that is far more visually obtrusive, and requires more alteration of the natural landform. Therefore, the Commission finds that approval of the proposed seacave and notch fill is consistent with the long-term goals of Coastal Act policies 30235 and 30253 regarding the protection of natural shoreline processes, natural landforms and local shoreline sand supply.

Alternatives

The City's certified LUP allows for the filling of seacaves/notches as a preventative measure. However, although a relatively minimal form of shoreline protection, seacave and notch infills do alter the natural coastline. Therefore, it is important to analyze whether there are alternatives to a seacave/notch fill that would delay the need for a

seawall with fewer adverse impacts. The City's certified LUP requires that alternatives such as controls of surface water and site drainage, a smaller coastal structure, and other non-beach and bluff face stabilizing measures be examined.

As detailed above, groundwater controls, irrigation restrictions, and installation of drought-tolerant plantings is required by the City's certified LUP. The applicant has submitted documentation that the subject site already drains towards the street, so that there is currently very little over-bluff discharge. Monitoring of the upper bluff edge in relation to the condominium structures during the past 15 years shows little to no erosion of the upper bluff. The applicant's engineer states that upper bluff runoff is not the cause of erosion and that stricter irrigation/landscaping controls will not mitigate ongoing enlargement of seacaves/notches. However, failures of irrigation lines or excess watering of the blufftop can trigger collapses of bluff-top sediments. The City's certified LUP recognizes this danger and requires that with the approval of any shoreline protection permit, irrigation located within 100 feet of the bluff edge must be capped or removed. Therefore, Special Condition 17 has been attached to require the applicant to remove or cap all permanent irrigation devices on the subject bluff top property within 100 ft. of the bluff edge to prevent over-watering or accidental breakage of irrigation lines. The certified LUP requires that bluff landscaping for new development consist of native, non-invasive, drought-tolerant, fire-resistant, and salt-tolerant species. The applicant states that the existing landscaping primarily consists of vegetation with low water needs. Any future applications for new development on the subject bluff top property will be conditioned to require only native, non-invasive, drought-tolerant, fire-resistant, and salt-tolerant species pursuant to the certified LUP.

Underpinning of the existing structures could potentially be considered as an alternative to the proposed project; however, this would not stop the seacaves/notches from collapsing and eventually undermining the structures. In addition, when the seacaves/notches and upper bluff eventually collapse, the underpinning system would be exposed to view, which is a less desirable visual condition than the relatively low-scale proposed seacave/notch infill. The eventual exposure of the underpinning in this case would be inconsistent with Coastal Act section 30253 as it would alter the natural landform of the bluff and would essentially create an upper bluff wall. An additional alternative is a smaller coastal structure. As proposed, the applicant will only be using erodible concrete which is the least impactful type of shoreline armoring and has fewer adverse impacts than a seawall or rip rap.

Given the above-described geological conditions on the subject site, these alternatives would not prevent collapse of the seacaves and notches on the subject site, and thus, would not be feasible alternatives. Thus, there are no less environmentally-damaging feasible alternatives that would delay the need for more substantial shoreline protection.

The applicant is proposing to remove the portions of the existing infills that extend beyond the current bluff face or dripline, whichever is more seaward (Exhibit 4). However, given the substantial variations in the contours of a 65-foot high bluff, there may be occurrences where the dripline is located substantially further seaward than the natural bluff face surrounding the seacave/notch infill. In those cases, the portions of the

existing infills located seaward of the natural bluff face immediately adjacent to the infill should be removed, even if the dripline associated with the upper bluff is located further seaward. Therefore, in order to ensure that the smallest possible coastal structure is maintained, Special Condition 3 requires that the portions of the existing infill that extend seaward of the natural bluff face be removed and further requires that the new 75 ft. long notch infill be located no further seaward than the natural bluff face. This follows with Special Condition 3 of the original permit, which requires that the applicant apply for a coastal development permit to implement corrective measures if the infills were ever found to extend seaward of the face of the natural bluff (not the dripline) by more than six inches. Special Condition 11 also requires that the final plans for this project be revised to reflect the requirement to remove any portion of existing infills that is found to be greater than six inches seaward of the bluff face.

The Commission engineer and geologist concur that the proposed project, as conditioned, is the minimal amount of development needed to allow the previously approved seacave infills to function as designed and to address the 75 ft. notch that is proposed to be filled with erodible concrete.

As noted, in order to minimize and avoid impacts to sand supply, the proposed seacave/notch fills have been designed to erode at a rate similar to the natural bluff face. The applicant's engineer has provided the proposed erodible concrete mix ratio for Commission review (Ref: Page 2 of Project Plans dated June 22, 2015). The mix proposed for the erodible concrete is 200 pounds of Type V Portland Cement, along with 180 pounds of Type F fly ash. The applicant's engineer has stated that the mix will have an approximate strength of 500 pounds per square inch (PSI). PSI standards are used to determine minimum strengths and for safety issues. As a reference, standard shotcrete seawalls (such as those seen elsewhere in Solana Beach) typically have a rating of about 3,000 PSI. With erodible concrete infills, the intent is to set a maximum strength ceiling, which is the opposite of what most engineering tries to do. The erodible concrete standard, in this case, is an attempt to use a constructible concrete mix that will match, as closely as possible, with the strength and erodibility of the native bluff material and 500 PSI concrete has been identified as a concrete that will be comparable to the native sandstone in the adjacent bluff. This concrete mix will have a higher unconfined compressive strength than the native material (which has been found to have an unconfined compressive strength between 170 and 300 psi¹). But, from experience with this mix in other cave fills, it is expected to be suitable for forming into the caves and to provide an acceptable erosive potential. In 2014, the Commission approved a seacave infill project in Solana Beach, approximately one mile north of the subject site at 523 and 525 Pacific Avenue (Ref: CDP 6-13-0984/Bannasch). The applicant proposes to use the same erodible concrete mixture as previously proposed for the 2014 seacave infill project.

¹ Group Delta Consultants, 1998, "Coastal Development Permit No. 6-97-165, Sea-cave infills, 517-521 Pacific Avenue, Solana Beach, California", dated 9 October 1998 and signed by W. F. Crampton (GE 245).

Special Condition 18 requires that prior to the construction of any seacave/notch infill, the applicant perform a test of the proposed formulation of erodible concrete and a sample of the bluffs that determines that the infill material has an erodibility index within 20 percent of the erodibility index of the native sandstone of the coastal bluff (the test method and test results must be submitted by the applicant and approved, in writing, by the Executive Director of the Commission). A similar condition was applied to the CDP approval in 2014 for the seacave infill project at 523 and 525 Pacific Avenue in Solana Beach. The applicant at 523 and 525 Pacific Avenue has submitted a report detailing the erodibility test results for the property, which is still under review by the Commission's technical staff. In addition, Special Condition 18 also requires that testing of the new erodible concrete infills be conducted 28 days after installation and if the infill is not within the required 20 percent of the erodibility index of the native sandstone, the seaward five feet of new infill material will be removed and replaced.

The Commission's engineer has reviewed the applicant's contentions and concurs that the proposed erodible concrete seacave/notch infills should erode at a comparable rate as the adjacent natural bluff. The four most recent seacave/notch infills constructed in Solana Beach, which used a similar erodible concrete mix as currently proposed, appear to be functioning as designed and are not currently encroaching significantly seaward of the adjacent natural bluff (Ref: 6-99-095/City of Solana Beach; 6-00-066/Pierce et. al.; 6-99-103/Coastal Preservation Association; 6-99-091/Becker). Each of the four seacave infill CDPs referenced above require removal of any portion of the seacave infill that encroached more than 6 inches seaward of the bluff as a result of erosion, but no removal has been required thus far.

However, in case the mixture proposed herein does not perform as expected, Special Condition 2 of this permit also requires regular monitoring and maintenance of the seacave/notch infills. If monitoring determines that any portion of the infill encroaches seaward of the adjacent bluff, the applicant is responsible to obtain the necessary permits to remove those portions (Special Condition 3). Thus, even if the erodible concrete does not erode at a comparable rate as the adjacent bluff, the encroaching portions of the infill must be removed so that the infill does not encroach seaward of a stringline of the adjacent natural bluff on either side of each infill. The current proposal to remove portions of the existing infills seaward of the bluff face shows that removal is feasible to undertake.

The performance of these past seacave/notch infills, the opinion of the applicant's professional geotechnical engineer and the Commission's engineer that the infills should erode at the desired rate, and the maintenance conditions of this CDP, support the project as proposed.

Special Condition 3 also requires the permittee to maintain the seacave/notch infills in their approved state. Minor re-grouting or exempt maintenance as defined by Section 13252 of Title 14, the California Code of Regulations (e.g., restoring color, texture, etc.) shall not require an additional coastal development permit or amendment. However, whenever changes or maintenance on the seacave/notch are proposed, the applicant must contact the Commission office to determine whether permits are necessary. Thus, the

Commission can be assured that, as conditioned, the infill will be properly maintained and will erode or be physically removed at the same rate as the adjacent bluff and that any adverse impacts to shoreline processes have been or will be avoided, minimized, or mitigated.

Although the Commission finds that the seacave/notch infills have been designed to minimize the risks associated with its implementation, the Commission also recognizes the inherent risk of shoreline development. The seacave/notch infills will be subject to wave action and will be at or landward of the drip line of the eroding bluff above the infill. Thus, there is a risk of bluff failure during and after construction of the notch infill and the removal of protruding portions of the existing infills. In addition, there is a risk of damage to the seacave/notch infills or damage to property as a result of wave action on the seacave/notch infills. Given that the applicant has chosen to construct the infills despite these risks, the applicant must assume the risks. Accordingly, Special Condition 14 requires that the applicant assume these risks and waive any claim of damage or liability against the Commission for approval of this application. To ensure that future property owners are properly informed regarding the terms and conditions of this approval, Special Condition 13 requires a deed restriction or CC&R amendment to be recorded against the property involved in the application. No other property interests are involved. The applicant has provided the Commission with a review from the State Lands Commission, dated April 11, 2014, asserting that no State Lands lease, permit, or authorization is required at this time.

Section 30253 requires that new development be independently stable and safe and not require the construction of protective devices that alter the natural landform of the bluffs. In addition, Policy 4.18 of the City's approved LUP requires that existing legally permitted bluff retention devices not be factored into setback calculations for new development or redevelopment of bluff top properties. Such future development must be located in an area where the development is consistent with Coastal Act and/or applicable LCP requirements regarding geologic safety and protection from hazards as if the protection did not exist. Thus, Special Condition 19 prohibits future development and redevelopment of the bluff top site from relying on the existing and proposed shoreline protection for stability.

Special Condition 19 defines "redevelopment" pursuant to the City's LUP, which defines redevelopment as alterations, including additions, exterior or interior renovations, or demolition that results in a 50 percent or greater alteration of a major structural component (including exterior walls, floor and roof structures, and foundation) or a 50 percent increase in floor area, cumulatively over time on or after certification of the City's LUP. Furthermore, changes to major structural elements are not additive between individual elements, while alterations to individual major structural elements are cumulative. Thus, if in the future, the applicant proposed to modify 40% of the exterior walls and 30% of the roof structure; this would not be considered redevelopment because it relates to two different major structural components. However, if the applicant were to come back for a subsequent CDP to modify an additional 10% of the exterior walls or an additional 20% of the roof structure, the project would be considered redevelopment because it would result in a cumulative alteration to 50% of a major structural

component. Additions are also cumulative over time, such that an initial 25% addition would not be considered redevelopment; but a subsequent 25% addition would result in a cumulative 50% increase in floor area, and would thus constitute redevelopment.

In summary, given the amount of coastal erosion which has occurred in the area over the last several years, Solana Beach is currently faced with the possibility of armoring the majority of the shoreline with seawalls. The subject site is an area where preventive measures such as the subject seacave and notch infills represent a feasible alternative to a seawall. The proposed project will delay or prevent the subject seacaves/notches from collapsing, which could result in eventual damage to the existing blufftop structures. In addition, as infill of the notch/seacaves will reduce the potential for a significant bluff failure, the applicant, the City and the region as a whole will have more time to pursue other non-structural methods, such as beach replenishment and moving the line of bluff top development landward away from the bluff edge, to protect the bluffs and delay the need for more substantial shoreline protection.

Therefore, the Commission finds that approval of the proposed seacave/notch infills is consistent with the long-term goals of Sections 30235 and 30253 of the Coastal Act regarding the protection of natural shoreline processes, natural landforms and local shoreline sand supply.

C. VISUAL RESOURCES

Sections 30240, 30250 and 30251 of the Coastal Act require that the scenic and visual qualities of coastal areas be protected, that new development adjacent to park and recreation areas be sited so as to not degrade or impact the areas and that new development not significantly adversely affect coastal resources:

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.

Section 30250 (a)

a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50

percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.

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.

In addition, the following certified City of Solana Beach LUP language, although not the standard of review, can provide pertinent guidance regarding the protection of coastal zone visual resources:

Policy 4.30: *Limit buildings and structures on the sloped face and toe of the bluff to lifeguard towers, subsurface public utility drainage pipes or lines, bluff retention devices, public stairs and related public infrastructure which satisfy the criteria established in the LCP. No other permanent structures shall be permitted on a bluff face. Such structures shall be maintained so that they do not contribute to further erosion of the bluff face and are to be visually compatible with the surrounding area to the maximum extent feasible.*

Policy 4.38: *Maximize the natural, aesthetic appeal and scenic beauty of the beaches and bluffs by avoiding and minimizing the size of bluff retention devices, preserving the maximum amount of unaltered or natural bluff face, and minimizing encroachment of the bluff retention device on the beach, to the extent feasible, while ensuring that any such bluff retention device accomplishes its intended purpose of protecting existing principal structures in danger from erosion.*

The proposed development is located on the face of a coastal bluff at or landward of the drip line and at or near the same level as the existing sandy beach. Seacaves and notch infills have been a fairly prominent feature of the shoreline in this area, and filling the cave and notch overhangs will alter the natural appearance of the bluffs. Matching infill material to the appearance of natural bluffs can be a challenging process and it can be difficult to tell at the time of application how well the infill material will blend into the surrounding natural bluffs. Another difficulty is that weathering can change the appearance of the seacave/notch infills. Thus, even if the infills match the natural bluffs closely one year, several years later there may be a distinct difference in appearances. Furthermore, the erodible concrete mix proposed by the applicant can be more difficult to treat aesthetically than full strength concrete, due to the nature of erodible concrete. However, in the past erodible concrete infills constructed in Solana Beach have been aesthetically treated to reasonably match the appearance of the adjacent bluffs (Ref: 6-99-

095/City of Solana Beach; 6-00-066/Pierce et. al.; 6-99-103/Coastal Preservation Association; 6-99-091/Becker).

Special Condition 11 requires the applicant to submit final plans of the method chosen to color and texturize the infill material, with a color board indicating the color of the infill material. Special Conditions 2 & 3 require the applicant to monitor and maintain the color of the infill to ensure the material continues to blend in with the surrounding bluffs in the future. Special Condition 16 also addresses this concern and requires the applicant to submit as-built plans within 60 days of construction of the proposed development to assure the infill has been constructed according to the approved plans.

There are numerous seacave and notch infills along the bluffs in Solana Beach. These infills, while mostly visible, are relatively inconspicuous and do not represent a significant visual blight. In addition, at times when the sand levels are high, these infills may not be visible. The appearance of the proposed project would be consistent with the various existing infills located in the bluffs along the Solana Beach coast. Seacave and notch infills are considerably less visually prominent than traditional seawall projects or riprap revetments. Thus, although the project will have an adverse impact on the appearance of the bluffs, the project has been designed and conditioned to match the surrounding natural bluffs to the maximum extent feasible, thereby reducing potential negative visual impacts to the maximum extent feasible. Therefore, the Commission finds that the subject development is consistent with the visual resource policies of the Coastal Act.

D. PUBLIC ACCESS

Pursuant to Section 30604(c), the Coastal Act emphasizes the need to protect public recreational opportunities and to provide public access to and along the coast. Coastal Act Sections 30210, 30211, 30212, 30212.5, and 30221 require that public access and use of the coast shall be maximized, that development shall not interfere with the public's right to access the coast and use of dry sand beaches, and that oceanfront land suitable for recreational activities shall be protected.

Section 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.

Section 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.

Section 30212

(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) It is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) Adequate access exists nearby, or, (3) Agriculture would be adversely affected. Dedicated accessways shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway. [...]

Section 30212.5

Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.

Section 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.

In addition, the following certified City of Solana Beach Land Use Plan (LUP) language provides additional guidance regarding mitigation for erodible concrete seacave/notch infills:

Page 13 of the Hazards and Shoreline/Bluff Development chapter states the following, in part:

- *Infill/Bluff Stabilization – Seacave/Notch Infill (See Appendix B Figure 1A) – This first solution is designed to address sea caves and undercut portions of the lower dense sandstone bluff where the clean sand lens is not yet exposed. If left uncorrected, the sea cave/undercut will eventually lead to block failures of the lower sandstone, exposure of the clean sand lens and landward bluff retreat. This failure exposes the clean sand lens of the upper bluff terrace deposits triggering rapid erosion and landward retreat of the upper bluff, which eventually endangers the structures at the top of the bluff. If treated at this stage, the Bluff Retention Device will minimize the need for a future higher seawall and future upper bluff repair. This alternative is not designed as a structural wall, is not reinforced, does not include tiebacks, and uses only erodible concrete which shall erode at the same erosion rate as the surrounding natural bluff material. The infill is required to maintain a textured and colored face mimicking the existing bluff material. **Erodible concrete seacave/notch infills are designed to erode with the natural bluff and, when maintained to do***

so, are not subject to the sand supply mitigation, public access and recreation mitigation, encroachment/removal agreement, or authorization timeline policies of the LUP. [Emphasis Added]

The subject project is located on the bluff formation directly adjacent to a public beach. In addition, there is an existing easement for public recreational use located from the mean high tide line to approximately the toe of the bluff. Although public lateral access is available along the entire stretch of coastline in this area, vertical access is available only at a limited number of public accessways. There is an existing public beach access stairway directly adjacent to the south of the subject site (Exhibit 2). The proposed seacave expansion and new notch fill will not impact this vertical accessway.

Shoreline protection projects have the potential to impact existing lateral access along the beach. Structures that fix the back of the beach stop the landward migration of the beach profile while the seaward edge continues to erode, thereby reducing the amount of dry sandy beach available to the public. However, the proposed new notch infill and the seacave/notch infill maintenance and expansion project has been designed to erode at a comparable rate to natural bluff and is not predicted to impact available beach area in the future. The Commission has not typically required the payment of funds to mitigate for the public access and recreation impacts of erodible concrete seacaves in Solana Beach, because they do not have the same type of adverse impacts that other types of shoreline armoring do, as described above. Thus, the Solana Beach LUP does not require sand supply or public access and recreation mitigation for erodible concrete seacave/notch infills when properly designed and maintained.

However, if not properly constructed and maintained, seacave infills can have an adverse impact on coastal resources if they do fix the back of the beach. As described above, special conditions require monitoring of the infills to make sure they are eroding as designed, and removal of any portion of the fill that does not erode. Furthermore, if monitoring reveals that the seacave/notch infills have fixed the back of the beach (either through design or through maintenance) and thus resulted in similar impacts to sand supply and public access as a seawall, Special Condition 2 requires that within three months of submission of the monitoring report, the applicant must submit a complete CDP application to the Commission to mitigate for any unmitigated impacts. Mitigation may include additional sand supply mitigation, additional public access and recreation mitigation, an encroachment agreement with the City, and/or enactment of the authorization timeline policies of the LUP that would require the proposed seacave/notch infills be authorized only so long as they are required to protect the existing bluff top structures.

Special Conditions 2 & 3 ensure that regular monitoring will be conducted and that if any portion of an existing infills, the new notch infill, or the proposed infill expansions do not erode landward, as designed, and encroach onto the public beach, that the encroaching portions will be removed. These conditions are necessary to ensure that the seacave fills do not encroach onto the public beach in the future.

The beach area fronting the subject site is a public resource, and thus, the protection of beach along the toe of the bluff is important. This stretch of beach has historically been used by the public for access and recreation purposes. Special Condition 20 acknowledges that the issuance of this permit does not waive the public rights that exist on the property. The use of the beach or public parking areas for staging of construction materials and equipment also adversely impacts the public's ability to gain access to the beach. Special Condition 12 prohibits the applicant from storing vehicles on the beach overnight, using any public parking spaces within the Fletcher Cove Parking Lot for staging and storage of equipment, and prohibits washing or cleaning construction equipment on the beach or in the parking lot. Special Condition 12 also prohibits construction on the sandy beach during weekends and holidays throughout the year, or between Memorial Day to Labor Day of any year.

Therefore, as conditioned, the Commission finds that the subject proposal will not result in any significant adverse impacts on beach access or public recreation consistent with Sections 30210, 30211, 30212.5, 30221, 30223 and 30252, pursuant to Section 30604(c) of the Coastal Act.

F. LOCAL COASTAL PLANNING

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

The Commission has approved the City's Local Coastal Program Land Use Plan. The City has not yet completed, nor has the Commission reviewed any implementing ordinances. Thus, the City's LCP is not certified. However, the Commission approved an amendment to the LUP to modify some of the key provisions relating primarily to bluff top development and shoreline protection, including policies related to erodible concrete seacave/notch infills. The recently approved LUP amendment found, in part, that erodible concrete seacave/notch infills, when maintained properly, are not subject to the sand supply mitigation, public access and recreation mitigation, encroachment removal agreement, or authorization timeline policies of the LUP. This is precisely the type of project envisioned and supported by the LUP amendment due to the project's goal of preventing catastrophic bluff failure. The location of the proposed infills is designated for Open Space Recreation in the City of Solana Beach LUP. The project, as conditioned, supports recreation as it prevents impacts to the beach.

As conditioned, the subject development is consistent with the land use designation and the shoreline protection policies of the LUP. Based on the above findings, the proposed development is consistent with the Chapter 3 policies of the Coastal Act in that the need for the shoreline protective devices has been documented and its adverse impacts on beach sand supply and on adjacent unprotected properties will be mitigated.

Therefore, the Commission finds the proposed development, as conditioned, is consistent with the Chapter 3 policies of the Coastal Act, and will not prejudice the ability of the City of Solana Beach to complete a certifiable local coastal program.

G. CALIFORNIA ENVIRONMENTAL QUALITY ACT

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

The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. The preceding coastal development permit findings in this staff report have discussed the relevant coastal resource issues with the proposal, and the permit conditions identify appropriate mitigations to avoid and/or lessen any potential for adverse impacts to said resources. The Commission incorporates these findings as if set forth here in full.

The City Council of the City of Solana Beach found that the proposed development was exempt from CEQA pursuant to State CEQA guidelines sections 153019d) and 15304(c).

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

Appendix A

Appendix A provides a list of all standard and special conditions that apply to this development, as approved by the Commission in its original action and as modified and/or supplemented by all subsequent amendments, including this amendment number 6-96-102-A2. All of the Commission's previously adopted special conditions pursuant to CDP No. 6-96-102 and any changes in the project description proposed by the applicants and approved by the Commission in this or previous actions continue to apply in their most recently approved form unless explicitly changed in this action. New conditions and modifications to existing conditions imposed in this action on Amendment 6-96-102-A2 are shown in the following section. Thus, Appendix A provides an aggregate list of all currently applicable adopted standard and special conditions.

Language added pursuant to 6-96-102-A2 is shown in underline; language deleted pursuant to 6-96-102-A2 is shown in ~~strikeout~~:

CDP No. 6-96-102

STANDARD CONDITIONS:

1. **Notice of Receipt and Acknowledgement.** 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. **Compliance.** All development must occur in strict compliance with the proposal as set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.
4. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
5. **Inspections.** The Commission staff shall be allowed to inspect the site and the development during construction, subject to 24-hour advance notice.
6. **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.

7. **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.

SPECIAL CONDITIONS:

1. Final Project Plans. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit for review and written approval of the Executive Director, final building, foundation, drainage and grading plans, stamped and approved by the City of Solana Beach, which shall include the following:
 - a. Said plans shall be in substantial conformance with the submitted plans dated April 4, 1996 (Revised 4/23/96) by R.B. Hill & Associates. The plans shall reflect compliance with all recommendations of the submitted geotechnical report dated April 3, 1995 by Vinje & Middleton Engineering, Inc.
 - b. Said plans shall indicate that the proposed seacave fill shall conform as closely as possible to the contours of the bluff, and shall be designed to incorporate surface treatments that resemble the color and surface of adjacent natural bluff areas (e.g., air-blown concrete). Detailed information shall also be provided on the construction method and technology to be utilized for texturing and coloring the fill. Plans shall be of sufficient detail to provide assurance that the herein approved concrete fill will closely match the adjacent natural bluff. Said color shall also be verified through submittal of a color board, subject to review and written approval of the Executive Director.
 - c. Said plans shall indicate that disturbance to sand and intertidal areas shall be minimized. Beach sand excavated shall be re-deposited on the beach. Local sand, cobbles or shoreline rocks shall not be used for back-fill or construction material.
- ~~2. Monitoring Plan. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit to the Executive Director for review and written approval, a monitoring plan for the sea cave infill which shall incorporate the following:~~
 - ~~1. An evaluation of the current condition and performance of the sea cave fill, addressing whether any significant weathering or damage has occurred that would adversely impact the future performance of the plugs;~~
 - ~~2. Measurements taken from the condominium to the bluff edge (as defined by PRC Section 13577) taken at 3 or more locations. The locations for these measurements shall be identified through markers, benchmarks, survey position,~~

~~written description, etc. so that annual measurements can be taken at the same bluff location and comparisons between years can provide information on bluff retreat.~~

- ~~3. Measurements of the differential retreat between the natural bluff face and the sea cave plug face, at both "Vertical" edges of the sea cave plug face and at 20-foot intervals (maximum) along the top of the sea cave plug face/bluff face intersection.~~
- ~~4. After the first year of measurements, summarizes all measurements and provides some analysis of trends, annual retreat or rate of retreat.~~
- ~~5. Recommends any necessary changes or modifications to the project. If, contrary to the expected performance of the fill material, the sea cave plug is found to extend seaward of the face of the natural bluff by more than six (6) inches in any location, the report shall include recommendations to correct this deficiency.~~
- ~~6. The above cited monitoring information shall be summarized in a report prepared by a licensed geologist or geotechnical engineer and submitted to the Executive Director for review and written approval on an annual basis for the first three years of the project. The report shall be submitted every year by May 1 (beginning the first season after construction of the project is completed). After the first three years, the reports shall be submitted at 5 year intervals following the last report; however, reports shall be submitted in the Spring of any year in which a 20-year storm event or a major tectonic event magnitude 5.5 or greater has occurred, thus reports may be submitted more frequently depending on the wave climate in any given year.~~
- ~~3. Future Maintenance. The permittees shall be responsible for maintenance of the permitted sea cave fill including removal of debris deposited on the beach or in the water during and after construction of the shoreline protective devices or resulting from failure or damage of the shoreline protective device. Any change in the design of the project or future additions/reinforcement of the fill beyond minor regrouting or maintenance to restore the plugs to their original condition as approved herein, will require a coastal development permit. If after inspection, it is apparent that repair and maintenance is necessary, the applicant shall contact the Commission office to determine whether permits are necessary. If at any time after project completion, the sea cave plug is found to extend seaward of the face of the natural bluff by more than six (6) inches in any location, the applicant shall apply for a coastal development permit to implement corrective measures.~~
4. Construction Access/Staging Areas. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit plans for the review and written approval of the Executive Director showing the locations which will be used as staging and storage areas for materials and equipment during the construction phase of this project. The plans shall show that no sandy beach and

public parking areas, including on-street parking, will be used for storage of equipment and materials.

5. **Project Timing.** Prior to the issuance of the coastal development permit, the applicant shall submit to the Executive Director for review and written approval, a final construction schedule which shall be incorporated into construction bid documents. The schedule shall indicate that no construction shall occur on the sandy beach area during weekends or holidays in the summer months (Memorial Day to Labor Day) of any year and that equipment used on the beach shall be removed from the beach at the end of each work day.
6. **Assumption of Risk.** Prior to the issuance of the coastal development permit, the applicant [and landowner] shall execute and record a deed restriction, in a form and content acceptable to the Executive Director, which shall provide: (a) that the applicant understands that the site may be subject to extraordinary hazard from bluff collapse and erosion and the applicant assumes the liability from such hazards, and (b) the applicant unconditionally waives any claim of liability on the part of the Commission or its successors in interest for damage from such hazards and agrees to indemnify and hold harmless the Commission, its officers, agents, and employees relative to the Commission's approval of the project for any damage. The document shall run with the land~ binding all successors and assigns, and shall be recorded free of prior liens.
7. **Future Shoreline Protective Devices.** Prior to the issuance of the coastal development permit, each applicant shall record a deed restriction in a form and content acceptable to the Executive Director, which shall provide that In the event any additional bluff or shoreline protective work is proposed in the future, the applicant acknowledges that, as a condition of filing an application for a coastal development permit, the applicant shall provide to the Commission or its successor agency an analysis of alternatives to bluff protective works. The alternatives shall include, but not be limited to, relocation of portions of the residential structures that are threatened, structural underpinning, or other remedial measures identified to stabilize the residential structures that do not include bluff or shoreline stabilization devices. The document shall be recorded and shall run with the land and bind all successors and assigns.
8. **U.S. Army Corps of Engineers Permit.** Prior to commencement of construction, the permittee shall provide to the Executive Director a copy of a U.S. Army Corps of Engineers permit, or letter of permission, or evidence that no Corps permit is necessary. Any mitigation measures or other changes to the project required through said permit shall be reported to the Executive Director and shall become part of the project. Such modifications, if any, may require an amendment to this permit or a separate coastal development permit.
9. **State Lands Commission Review.** Prior to the issuance of the coastal development permit, the applicant shall obtain a written determination from the State Lands Commission that:

- a) No state lands are involved in the development; or
 - b) State lands are involved in the development, and all permits required by the State Lands Commission have been obtained; or
 - c) State lands may be involved in the development, but pending a final determination of state lands involvement, an agreement has been made by the applicant with the State Lands Commission for the project to proceed without prejudice to the determination.
10. Public Rights. By acceptance of this permit, the applicant acknowledges, on behalf of him/herself and his/her successors in interest, that issuance of the permit shall not constitute a waiver of any public rights which may exist on the property. The applicant shall also acknowledge that issuance of the permit and construction of the permitted development shall not be used or construed to interfere with any public prescriptive or public trust rights that may exist on the property.

CDP No. 6-96-102-A2

STANDARD CONDITIONS

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. Interpretation. Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.
4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

SPECIAL CONDITIONS

2. Monitoring Plan. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit to the Executive Director for review and written approval, a monitoring plan prepared by a licensed geologist or geotechnical engineer for the existing and proposed sea cave/notch infills on the subject site which shall incorporate the following:
- a. Current measurements of the distance between the condominiums and the bluff edge (as defined by Section 13577, Title 14 of the California Code of Regulations), and provisions for these measures to be taken annually after completion of construction for the life of the project. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, etc. so that annual measurements can be taken at the same bluff location and comparisons between years can provide information on bluff retreat.
 - b. Provisions for establishing any differential retreat between the natural bluff face and each of the seacaves/notches by measuring both ends of the seacaves/notches and at 20-foot intervals (maximum) along the top of the seacave/notch face, and the bluff face intersection annually after completion of construction for the life of the project. Measurements may be taken through aerial photography. The program shall describe the method by which such measurements shall be taken.
 - c. Provisions for the annual measurement of the erodibility of the proposed erodible concrete infill. The program shall describe the method by which such measurements shall be taken.
 - d. Provisions for submittal of a report to the Executive Director of the Coastal Commission on June 1st every two years for a six year period beginning after completion of construction. Each report shall be prepared by a licensed geologist or geotechnical engineer. The report shall contain the measurements and evaluation required in sections a, b, and c of this Special Condition. The report shall also summarize all measurements and provide analysis of trends, annual retreat or rate of retreat, and the stability of the overall bluff face, including the upper bluff area, and the impact of the seacave/notch infills on the natural bluff, and shall include suggestions that do not involve the construction of structures on the face of the bluff for correcting any problems. In addition, each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the project. If any portion of the existing or proposed seacave/notch infills is found to extend seaward of the 'drip line' of the natural bluff by more than six (6) inches in any location, the report shall

include alternatives and recommendations to remove or otherwise remedy this condition such that no seaward extension of the infill will remain.

e. Provisions for submission of a report containing the information identified in section (d) of this Special Condition at 3 year intervals following the last biannual report, for the life of the project. Additional reports shall be submitted in the spring of any year in which the following event occurs:

1. A 20-year storm event

2. An “El Niño” storm event

3. A major tectonic event magnitude 5.5 or greater affecting San Diego County

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

f. An agreement that the permittee shall apply for a coastal development permit amendment within three months of submission of the report required in subsections (d) and (e) of this Special Condition for any necessary maintenance, repair, changes or modifications to the project recommended by the report, unless the Executive Director determines that a permit amendment is not legally required.

g. An agreement that the permittee shall apply for a coastal development permit amendment within three months of submission of the report required in subsections (d) and (e) of this Special Condition if the monitoring report finds that the back of the beach has been effectively fixed by the new infills (new 75 ft. long notch infill and new 9 ft. expansion of the existing infills).

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

3. Future Maintenance. The permittee shall remove all debris deposited on the beach or in the water as a result of construction of the seacave/notch infill. The permittee shall also remove all debris deposited on the beach or in the water as a result of failure or damage of the shoreline protective device in the future. In addition, the permittee shall maintain the permitted seacave/notch infill in its approved state. Maintenance of the seacave/notch infills shall include maintaining their color, texture and integrity. Any change in the design of the project or future additions/reinforcement of the seacave/notch infill beyond minor re-grouting or other exempt maintenance as defined in Section 13252, Title 14 of the California Code of Regulations, will

require a coastal development permit. However, in all cases, if, after inspection, it is apparent that repair and maintenance is necessary, the permittee shall contact the Commission's San Diego office to determine whether permits are necessary, and shall subsequently apply for a coastal development permit amendment for the required maintenance. If at any time after project completion, any portion of the existing or proposed seacave/notch infills is found to extend seaward of the face of the natural bluff by more than six (6) inches in any location located seaward of a demonstrated stringline between the adjacent natural bluff on either end of the infill, the permittee shall obtain and implement a coastal development amendment permit to remove and/or remedy this condition such that no portion of the infill remains seaward of a stringline between the adjacent natural bluff on either end of the infill.

11. Final Project Plans. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit for review and written approval of the Executive Director, final seacave/notch infill plans that are in substantial conformance with the plans dated June 22, 2015 by TerraCosta Consulting Group. Said plans shall first be approved by the City of Solana Beach and include the following:
- a. Sufficient detail regarding the construction method and technology utilized for texturing and coloring the infill. Such plans shall confirm, and be of sufficient detail to verify, that the infill color and texture closely matches the adjacent natural bluffs, including provision of a color board indicating the infill material.
 - b. During construction of the approved development, disturbances to sand and intertidal areas shall be minimized to the maximum extent feasible. All excavated beach sand shall be re-deposited on the beach. Local sand, cobbles or shoreline rocks shall not be used for backfill or for any other purpose as construction material.
 - c. The seacave and notch infills shall conform as closely as possible to the natural contours of the bluff, and shall not protrude beyond the existing bluff face. The portions of existing infills that protrude beyond the bluff face shall be removed.
 - d. The erodible concrete for the seacave/notch infills shall be designed to provide a material with erosion characteristics similar to that of the adjacent natural bluff consistent with Special Condition 18.

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

12. Construction Access/Staging Areas. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, the applicant shall submit plans for the review and written approval of the Executive Director indicating the

location of access corridors to the construction site and staging areas. The final plans shall indicate that:

- a. No overnight storage of equipment or materials shall occur on sandy beach or at the Fletcher Cove Parking Lot, and the use of other public parking spaces shall be minimized. During the construction stages of the project, the permittee shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion. In addition, no machinery shall be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to construct the seacave/notch infills. Construction equipment shall not be washed on the beach or in the Fletcher Cove parking lot.
- b. Access corridors shall be located in a manner that has the least impact on public access to and along the shoreline.
- c. No work shall occur on the beach on weekends, holidays or between Memorial Day weekend and Labor Day of any year.
- d. The applicant shall submit evidence that the approved plans and plan notes have been incorporated into construction bid documents. The applicant shall remove all construction materials/equipment from the staging site and restore the staging site to its prior-to-construction condition immediately following completion of the development.

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

13. Deed Restriction/CC&R's Modification. PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, the applicant homeowners' association (HOA) shall do one of the following:

- a. PRIOR TO ISSUANCE OF THIS COASTAL DEVELOPMENT PERMIT AMENDMENT (6-96-102-A2), the applicant shall submit to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded against the parcel(s) governed by this permit amendment a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, as amended, 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 amended, as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction shall include a legal description of the entire parcel or parcels governed by this permit amendment. 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, as amended, 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. This deed restriction shall supersede and replace the deed restriction(s) recorded pursuant to [Special Condition(s) 6 & 7 of CDP 6-96-102] Coastal Development Permit(s) 6-96-102, approved on November 12, 1996, which deed restriction(s) is recorded as Instrument No. 1997-0203796 in the official records of San Diego County.

- b. Modify the condominium association's Declaration of Restrictions or CC&Rs, as applicable, in a form and content acceptable to the Executive Director, to reflect the obligations imposed on the homeowners' association by the conditions of this CDP. This addition to the CC&Rs shall not be removed or changed without a Coastal Commission-approved amendment to this coastal development permit.

- 14. Assumption of Risk. By acceptance of this permit, the applicant acknowledges and agrees (a) that the site may be subject to extraordinary hazards from bluff collapse and erosion; (b) to assume the risks to the applicant and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (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; and (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.
- 15. Future Shoreline Protective Devices. In the event any additional bluff or shoreline protective work is proposed in the future, the applicant acknowledges that, as a condition of filing an application for a coastal development permit, the applicant shall provide to the Commission or its successor agency an analysis of alternatives to bluff protective works. The alternatives shall include, but not be limited to, relocation of portions of the residential structures that are threatened, structural underpinning, or other remedial measures identified to stabilize the residential structures that do not include bluff or shoreline stabilization devices.
- 16. As-Built Plans. Within 60 days following completion of the project, the permittee shall submit as-built plans of the approved seacave/notch infill. In addition, within 60 days following completion of the project, the permittee shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying the seacave/notch infill has been constructed in conformance with the approved plans for the project.

17. Removal of Permanent Irrigation. PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AMENDMENT, the applicant shall submit to the Executive Director for review and written approval, a landscape irrigation removal plan for the subject property. The plan shall detail the location of all existing permanent irrigation and fully describe the method of removal or capping such that no permanent irrigation features remain in service within 100 feet of the bluff edge. WITHIN 30 DAYS FOLLOWING ISSUANCE OF THE PERMIT, the applicant shall remove or cap all permanent irrigation features from each of the upper blufftop lots, consistent with the approved plans.

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

18. Concrete Erodibility Testing. PRIOR TO ISSUANCE OF THIS CDP AMENDMENT, the applicant shall submit to the Executive Director and the City of Solana Beach for review and written approval, a formulation for erodible concrete that has an erodibility that is within 20 percent of the erodibility of the native sandstone. The method used to determine erodibility and the results shall be approved, in writing, as an acceptable method by the Executive Director of the Commission.

Testing of the new erodible concrete infills shall be conducted 28 days after installation and if the infill is not within the required 20 percent of the erodibility index of the native sandstone, the seaward five feet of new infill material will be removed and replaced with erodible concrete that meet the erodibility requirements of this condition.

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

19. Reliance on Permitted Armoring. No future development, which is not otherwise exempt from coastal development permit requirements, and no redevelopment of the existing structure on the bluff top property, shall rely on the permitted bluff retention devices (existing and proposed seacave/notch infills) to establish geologic stability or protection from hazards. Such future development and redevelopment on the site shall be sited and designed to be safe without reliance on shoreline armoring. As used in these conditions, "redeveloped" or "redevelopment" consists of alterations including: (1) additions to an existing structure, (2) exterior and/or interior renovations, (3) and/or demolition of an existing bluff structure, or portions thereof, which results in: alteration of 50 percent or more of major structural components including exterior walls, floor and roof structure, and foundation, or a 50 percent

increase in floor area. Alterations are not additive between individual major structural components; however, changes to individual major structural components are cumulative over time from the date of certification of the LUP, as further defined in the Solana Beach LUP, as approved by the Commission.

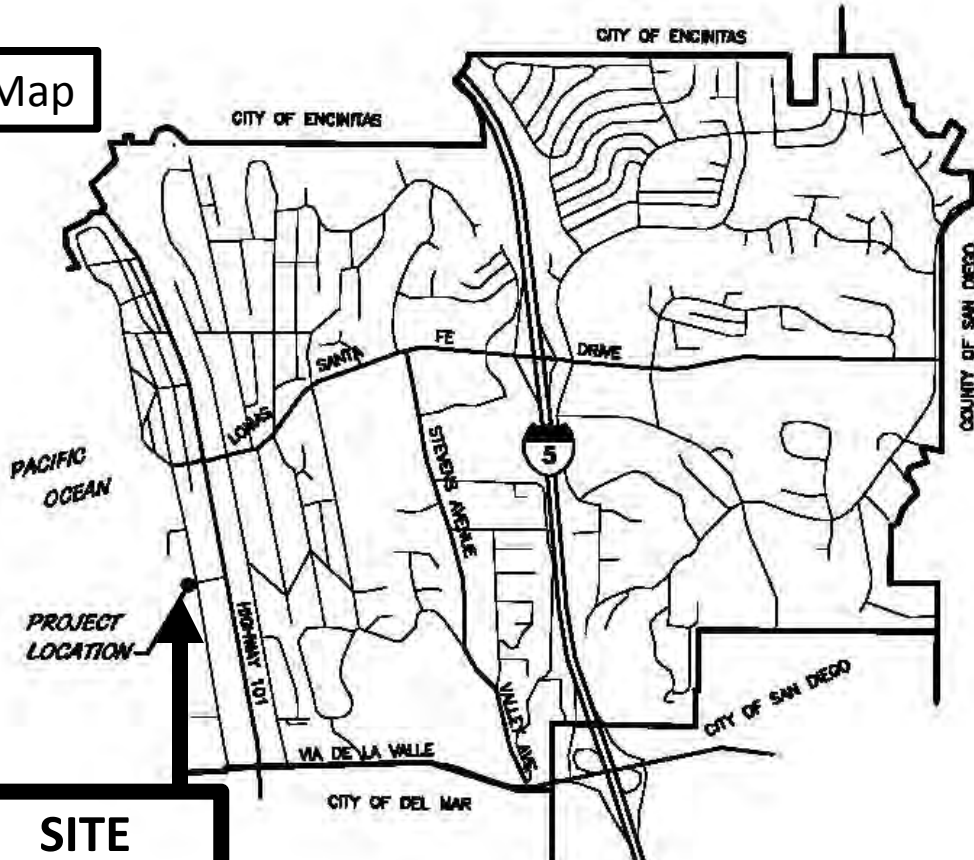
20. Public Rights. By acceptance of this permit, the applicant acknowledges, on behalf of him/herself and his/her successors in interest, that issuance of the permit shall not constitute a waiver of any public rights which may exist on the property. The applicant shall also acknowledge that issuance of the permit and construction of the permitted development shall not be used or construed to interfere with any public prescriptive or public trust rights that may exist on the property.

Appendix B

(Substantive File Documents)

- City of Solana Beach certified LUP
- City of Solana Beach General Plan and Zoning Ordinance
- City of Solana Beach Resolution 2013-039 approved April 24, 2013
- Project Plans, TerraCosta Consulting Group, dated November 26, 2014
- Infill Monitoring Report – Solana Beach and Tennis Club, TerraCosta Consulting Group, dated December 23, 2013
- Geotechnical Investigation Notch Infill Maintenance Solana Beach and Tennis Club Solana Beach, CA, prepared by TerraCosta Consulting Group, Inc., dated revised March 17, 2015
- CDP Nos.: 6-87-391/Childs, 6-91-081/Bannasch, 6-99-095/City of Solana Beach, 6-97-165-G/Lucker and Wood, 6-97-165/Lucker and Wood, 6-92-82/Victor; 6-96-102/Solana Beach & Tennis Club; 6-97-1646/Lingenfelder; 6-98-25/Stroben; 6-98-29/Bennett; 6-99-091/Becker; 6-99-103/Coastal Preservation Association; 6-00-066/Pierce & Monroe; 6-13-0948/Bannasch
- LCPA #SOL-MAJ-1-13
- Letter from the California State Lands Commission dated April 11, 2014

Vicinity Map



SITE

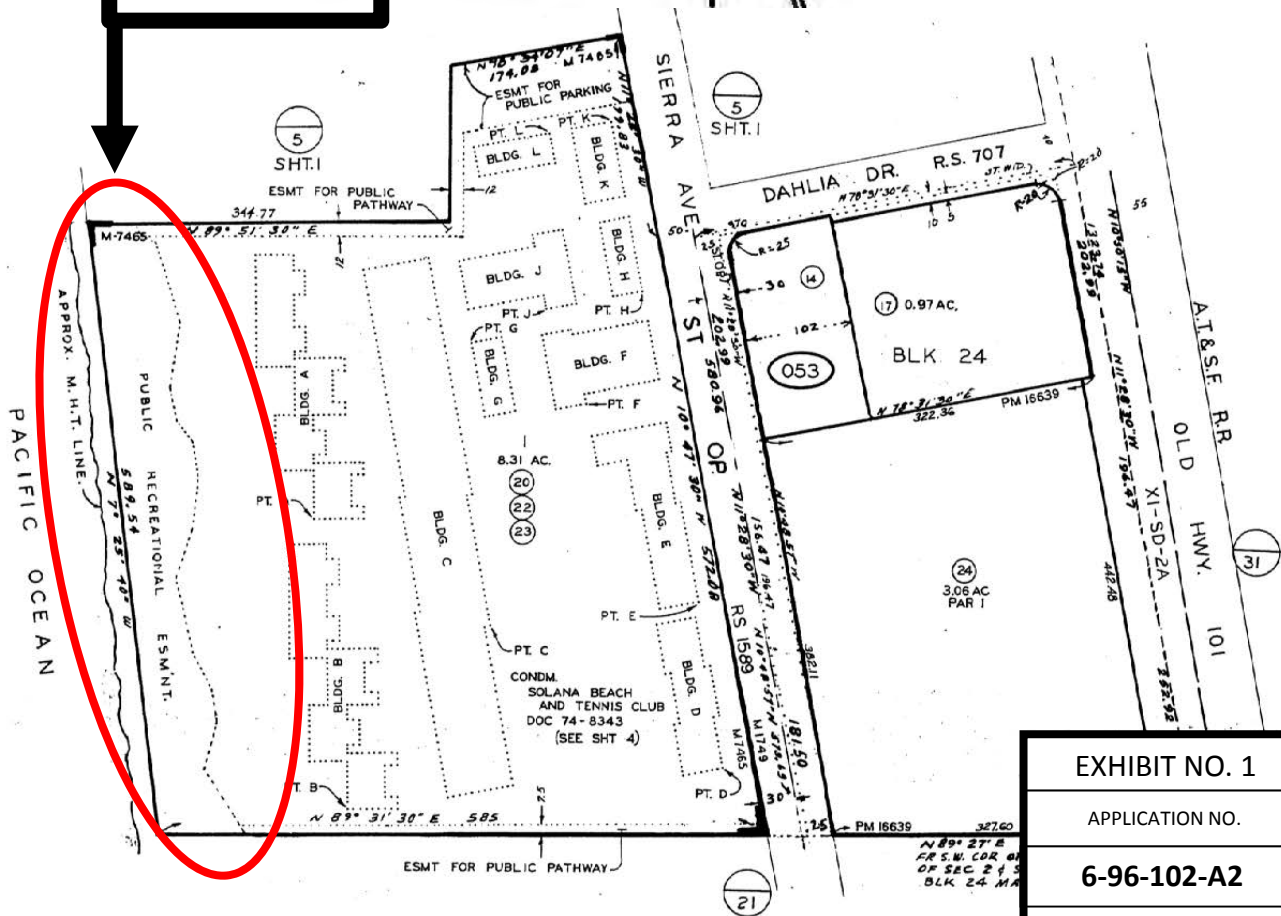


EXHIBIT NO. 1

APPLICATION NO.

6-96-102-A2

Vicinity Map



California Coastal Commission

Aerial Site Photo



[Copyright © 2013 Kenneth & Gabrielle Adelman. All rights reserved.](#)

Public Stairway

EXHIBIT NO. 2

APPLICATION NO.

6-96-102-A2

Aerial Site Photo



California Coastal Commission

Site Plan

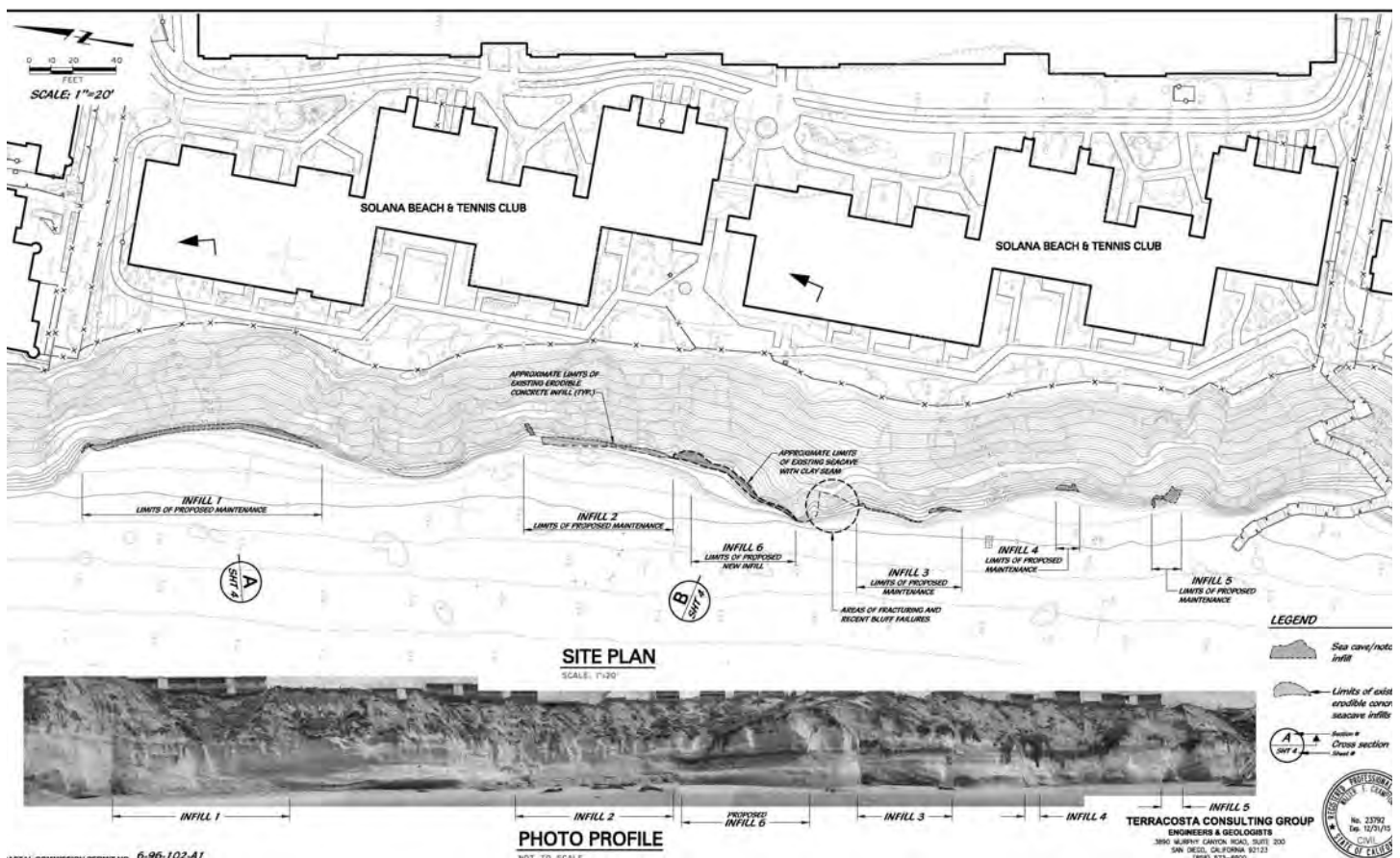


EXHIBIT NO. 3

APPLICATION NO.

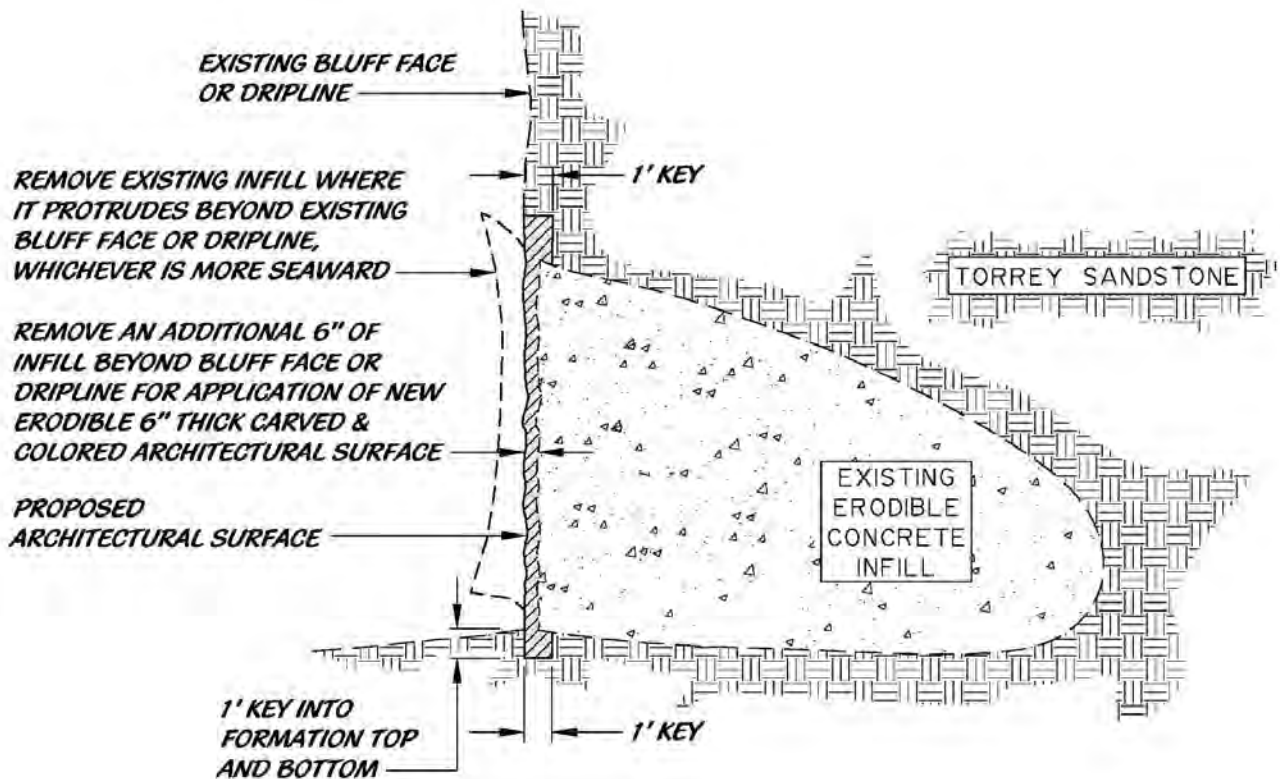
6-96-102-A2

Site Plan



California Coastal Commission

Section



TYPICAL MAINTENANCE AT EXISTING INFILL - SECTION

SCALE: 1"=5'

EXHIBIT NO. 4

APPLICATION NO.

6-96-102-A2

Section



California Coastal Commission

Proposed New Infill - Dimensions

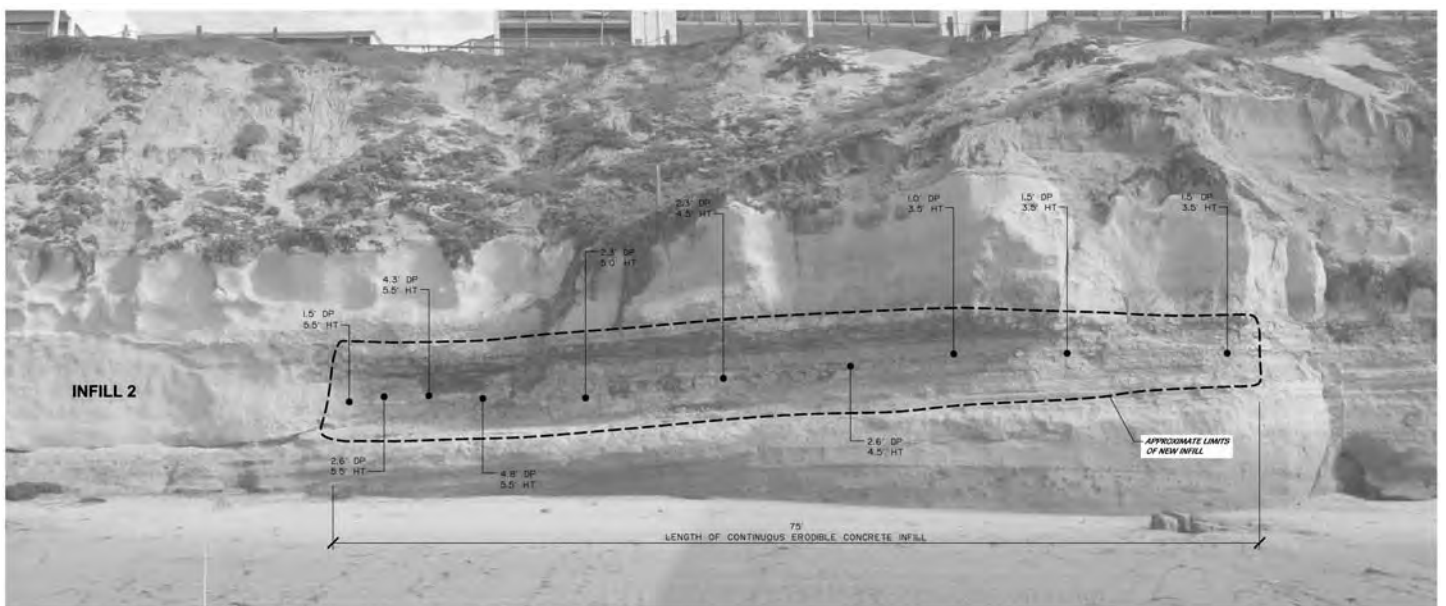


EXHIBIT NO. 5

APPLICATION NO.

6-96-102-A2

New Infill



California Coastal Commission

Proposed New Infill - Photograph



EXHIBIT NO. 6

APPLICATION NO.

6-96-102-A2

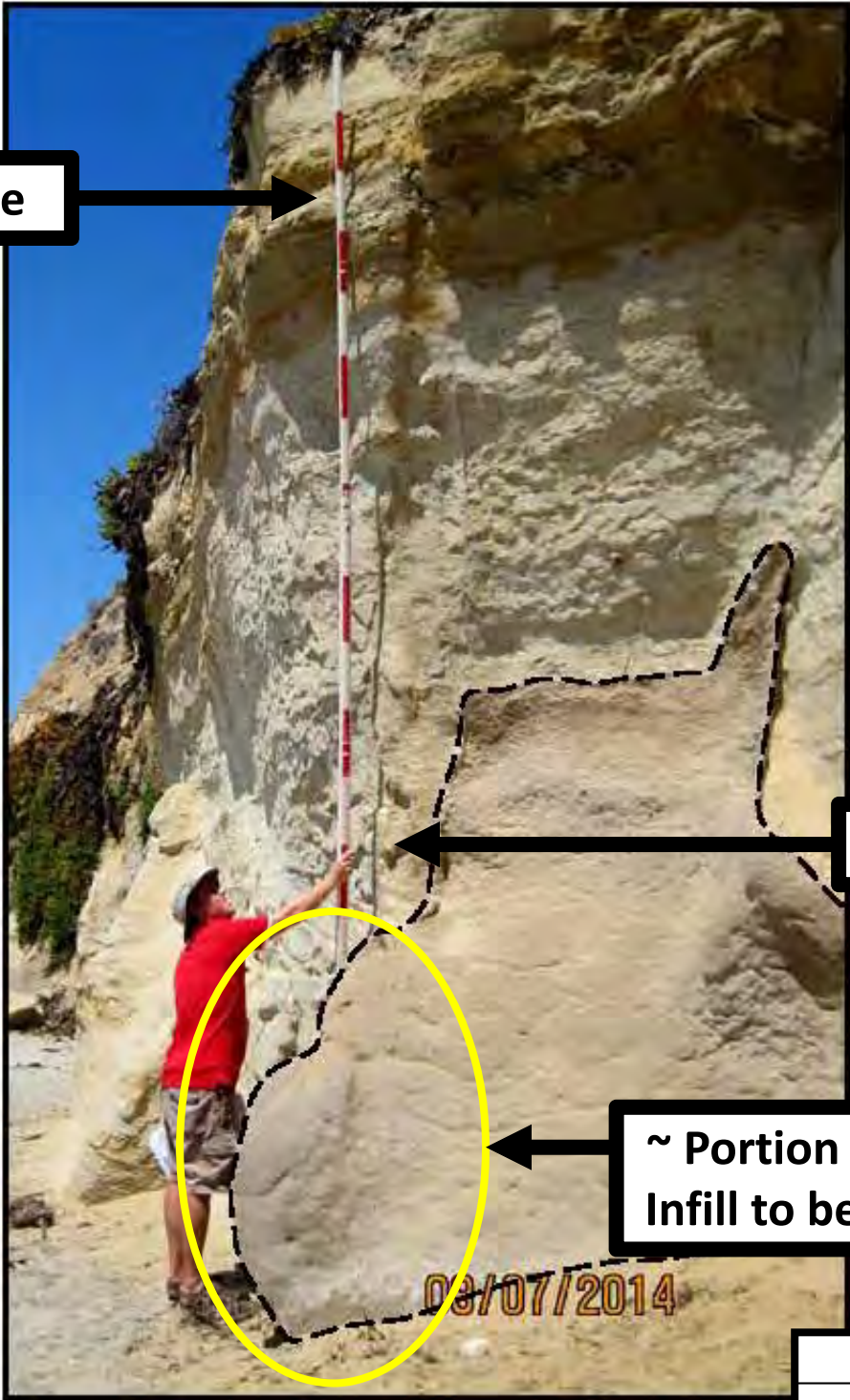


New Infill Photo

California Coastal Commission

Dripline Located Seaward of Bluff Face

Dripline



Bluff Face

~ Portion of Existing Infill to be Removed

INFILL 5 - SOUTH END
NOT TO SCALE

EXHIBIT NO. 7
APPLICATION NO.
6-96-102-A2
Dripline/Bluff Face
California Coastal Commission