Scenic Pacifica
Incorporated Nov. 22, 1957

PLANNING COMMISSION
Staff Report

DATE: October 3, 2016
ITEM: 4

FILE: CDP-364-16

PUBLIC NOTICE: Notice of Public Hearing was published in Pacifica Tribune on September 21, 2016, and mailed to 96 surrounding property owners and occupants. Notice was also posted at three locations in the vicinity of the project site and hand-delivered to 79 mobile home units.

APPLICANT/OWNER: Carissa Savant
CFP/PSE Seaside Pacifica Owner LLC
5000 Birch, Suite 400
Newport Beach, CA 92660
(949) 333-8500

PROJECT LOCATION: 1300 Palmetto Avenue (APN 009-291-020)

PROJECT DESCRIPTION: Renovate the existing 93-unit mobile home park known as Pacific Skies Estates located at 1300 Palmetto Avenue. The renovation includes 93 new mobile home units in a reconfigured layout in order to move the westernmost units away from the coastal bluff, demolition of the common buildings, replacement of utilities, the connection of Third Avenue to Sixth Avenue, and landscaping, including a public trail along the bluff as required by California Coastal Commission-issued Coastal Development Permit CDP 3-83-172-A7.

SITE DESIGNATIONS: General Plan: Medium Density Residential (MDR)
Zoning: R-2 (Two-Family Residential) / CZ (Coastal Zone Combining)

RECOMMENDED CEQA STATUS: Class 2 Categorical Exemption, Section 15302, Replacement or Reconstruction; and, Class 4, Section 15304, Minor Alterations to Land

ADDITIONAL REQUIRED APPROVALS: None. Subject to appeal to the City Council and California Coastal Commission.

RECOMMENDED ACTION: Approve as conditioned.

PREPARED BY: Cindy Gnos, Contract Planner

BACKGROUND

A Use Permit for the development of the Pacific Skies Estates mobile home park was submitted to the County of San Mateo prior to the City of Pacifica's incorporation in 1957. The application was transferred to the City for review in 1958. The Use Permit was approved on appeal to the City Council in 1961. The mobile home park's approval by the City pre-dated the California Coastal Commission (CCC), which was established by voter initiative in 1972 (Proposition 20) and later made permanent by the Legislature through adoption of the California Coastal Act of 1976. The first CCC permit for the site (CDP No. 3-83-172-A2) was approved in 1984 as part of a master plan to provide shoreline protection along a designated portion of the Pacifica coastline. The revetment was approved and constructed in 1984 to protect the existing mobile home park after winter storms in 1983 caused the loss of up to 80 feet of bluff and damaged a former revetment that pre-dated the Coastal Act. In early 1996, extreme erosion at the site undermined the access road (Sixth Avenue) along the bluff top and threatened the homes located directly behind the road. The CCC approved Emergency Permit No. 1-96-05G to repair the collapsed revetment. Condition No. 4 of the Emergency Permit required the permittee to submit a regular CDP application. The application (CDP No. 3-83-172-A3) included after-the-fact authorization of the emergency repairs performed in 1996, on-going maintenance and dedication of a shoreline lateral public access easement as well as a bluff top public access easement.

More recently, under the jurisdiction of the State of California Department of Housing and Community Development (HCD), the applicant received approval to upgrade utilities, relocate homes away from the bluff, demolish the clubhouse, pool, restrooms and modular homes, create a bluff top walkway in the current public access easement, and install landscaping on the individual mobile home spaces and along the bluff. During the construction of such improvements, tenants with month-to-month leases were given notice to vacate and the owner instituted a tenant relocation assistance program. The City granted an exemption from a CDP, based on the understanding that the improvements were repair and maintenance. Subsequently, the CCC requested that the City require the processing of a CDP rather than an exemption. After evaluating the CCC's position, the applicant submitted an application for a CDP to the City under protest.

PROJECT SUMMARY

1. Project Description

The proposed project is the renovation of an existing 93-unit mobile home park on 8.74 acres. The renovation includes the removal of the 93 units and replacing them with 93 new units in a new configuration. The boundaries of the mobile home park are not changing. The new configuration is necessary to provide additional setbacks from the bluff and to accommodate the offer of dedication of land along the bluff for the construction of a public trail. The clubhouse and pool will also be demolished in order to accommodate the increased setback

from the bluff. Under State law, the installation of the new mobile homes and improvements to the site are overseen and inspected by HCD. Thus, the City's review of the project is limited to consideration of the CDP application only, and the City has no authority to issue a building permit for the project if the CDP is approved.

Application Modifications

The applicant has had ongoing meetings with the CCC relating to the proposed project. City staff did not participate in these meetings. City staff understands that the CCC has urged the applicant to modify the project to take account of conditions that would exist if the shoreline protections currently in place were removed. In an attempt to address the concerns of the CCC regarding project setbacks assuming no shoreline protections at the bluff, the applicant has submitted the following amendments (Attachment E) to the submitted application and has indicated that they believe these amendments address the concerns expressed by CCC:

- A setback of 35 feet from the bluff top to the development. This will require a revised site plan reconfiguring the four home sites at the north end of the bluff top.
- In the event that bluff retreat results in mobile homes becoming closer than 15 feet from the bluff, such mobile homes shall be removed and/or when two overflow events cause sea water to cause flooding in the area that is occupied by the mobile homes, mobile homes shall be removed or relocated further inland.
- The applicant/owner will provide a full reevaluation of flooding risks in 2046.

The City does not currently have adopted policies that require analysis of sea level rise assuming existing shoreline protections are not present. The City and the applicant's representative have agreed that the applicant's amendments will be incorporated into the application by including them as conditions of approval.

Utilities

Aging utilities will be upgraded and replaced with capacity remaining adequate to service the 93 units. Existing water lines within the streets will be replaced with four-inch polyvinyl chloride (PVC) pipes and eight-inch fire lines will be provided to allow for three fire hydrants. Fire service is not currently provided. Existing sewer lines and laterals are also being replaced. Electrical service is being upgraded through a main switch board with three transformers to serve the site. Existing on-site transformers are being relocated to accommodate the modified unit placements. Gas, telephone, and cable lines are also being installed.

Circulation

The circulation in the park is being revised to accommodate the increased bluff setback. Sixth Avenue is being relocated to approximately Third Avenue, eliminating a street adjacent to the bluff. The remaining circulation in the park will remain substantially the same.

Landscaping

Very little landscaping exists on the site. As part of the renovation, each home site will be landscaped with drought tolerant plant material, resulting in an increase of approximately 10,000 square feet of landscaping. In addition, as required by the CCC, the offer to dedicate area along the bluff will be landscaped with approximately 40,000 square feet of shrubs, trees, and grasses along with a trail. Trail connections will be provided from Fifth Avenue, Dahlberg Drive, and Sixth Avenue to the bluff trail.

2. General Plan, Zoning, and Surrounding Land Uses

The subject site's General Plan land use designation is Medium Density Residential (MDR). The MDR land use designation permits residential development at an average density of 10 to 15 units per acre.

The subject site's location is within the R-2 (Two-Family Residential) and CZ (Coastal Zone Combining) zoning districts. A mobile home park is a conditional use in the R-2 zone. The CZ zone supplements the underlying zoning district (R-2) with additional standards.

Land uses surrounding the project site consist of commercial to the north and east of the site, and single-family residences to the south. The bluff and Pacific Ocean are located to the west of the site.

3. Municipal Code

Although the applicant has submitted for a Coastal Development Permit (CDP-364-16), the City's discretion is very limited. The mobile home park was approved by the City with a Use Permit in 1961, prior to enactment of the Coastal Act and the requirement for a CDP. Modifications within the boundaries of the mobile home park are under the regulatory authority of HCD. Therefore, the Planning Commission's action is restricted to determining whether the findings can be made pursuant to PMC Sec. 9-4.4304(k) for approval of a CDP.

4. Required Findings

The PMC sets forth required findings for each permit considered by the Planning Commission. The findings required for approval of a Coastal Development Permit are discussed below.

i. Required Finding: *The proposed development is in conformity with the City's certified Local Coastal Program.*

Discussion: The City's certified Local Coastal Program includes a Local Coastal Land Use Plan (LCLUP) that contains policies to further the City's coastal planning activities. The proposed project's consistency with applicable policies is discussed below.

- Coastal Act Policy No. 2: *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 rock coastal beaches to the first line of terrestrial vegetation.*

  The proposed project includes public trails at Fifth Avenue, Dahlberg Drive, and Sixth Avenue. These trails are connected via a proposed trail paralleling the edge of the bluff. Therefore, the proposed project is not interfering with the public's right of access to the sea.

- Coastal Act Policy No. 3: *Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects...Dedicated accessway shall not be required to be opened to the public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.*

  Although the proposed project is not new development, the project includes public trails at Fifth Avenue, Dahlberg Drive, and Sixth Avenue. These trails are connected via a proposed trail paralleling the edge of the bluff which will be dedicated. Therefore, the proposed project is providing dedicated public access along the coast.

- Coastal Act Policy No 5: *Lower cost visitor and recreational facilities and housing opportunities for persons of low and moderate income shall be protected, encouraged, and, where feasible, provided...*

  The proposed project renovates an existing mobile home park which protects an existing housing opportunity for persons of low and moderate income levels.

- Coastal Act Policy No. 23: *New development, except as otherwise provided in this policy, 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...

Although the project is not new development, the project is a renovation of an existing mobile home park that is surrounded by existing developed areas.

- Coastal Act Policy No. 24: *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 landforms, to be visually compatible with the character of surrounding areas, and where feasible, to restore and enhance visual quality in visually degraded areas...*

  The proposed project includes renovation of an existing mobile home park which will enhance the existing views just by the nature of providing new units. Many of the old units were in substandard condition. All new units installed at the site will be one story tall, and as a result, will not create visual obstructions as a result of excessive height. Furthermore, these single-story units will be visually compatible with the character of surrounding area which consists of predominantly one-story structures. In addition, views along the ocean are enhanced by the provision of the public trail paralleling the bluff.

ii. Required Finding: *Where the Coastal Development Permit is issued for any development between the nearest public road and the shoreline, the development is in conformity with the public recreation policies of Chapter 3 of the California Coastal Act.*

Discussion: The public recreation policies of Chapter 3 of the California Coast Act are applicable to development of oceanfront land suitable for recreational use. The proposed project does not include new development; therefore these policies do not apply. In addition, the proposed project renovations include providing a public trail where none currently exists.

5. CEQA Recommendation

The proposed project qualifies for a categorical exemption from the California Environmental Quality Act (CEQA) under Class 2 and 4 exemptions, CEQA Guidelines Sections 15302 and 15304, as described below:

15302. Replacement or Reconstruction

Class 2 consists of replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity and the structure replaced.

The proposed project includes the replacement and reconstruction of 93 existing mobile homes and associated utility lines and streets on the same mobile home park site and with the same purpose and capacity which existed prior to the project. Therefore, the project is exempt from further analysis under CEQA.

15304. Minor Alternations to Land

Class 4 consists of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry and agricultural purposes. Examples include but are not limited to: . . .

(b) New gardening or landscaping, including the replacement of existing conventional landscaping with water efficient or fire resistant landscaping.

The proposed project includes the addition of new landscaping at each of the mobile home units as well as along the bluff top dedicated trail area. The proposed landscaping will be drought tolerant in compliance with the State water efficient landscaping requirements. No healthy, mature, scenic trees are proposed to be removed. Therefore, the project is exempt from further analysis under CEQA.

Additionally, none of the exceptions to application of a categorical exemption in Section 15300.2 of the CEQA Guidelines apply, as described below.

- Sec. 15300.2(a): There is no evidence in the record that the project will impact an environmental resource of hazardous or critical concern in an area designated, precisely mapped, and officially adopted pursuant to law by federal, State, or local agencies. The project site is located within a substantially developed residential neighborhood and is not located in a sensitive environmental area. Therefore, it would not have a significant impact on the environment.

- Sec. 15300.2(b): There is no evidence in the record that successive projects of the same type in the area would have a significant environmental impact. The project involves renovation of an existing 93-unit mobile home park within a developed area and would not have a significant impact on the environment either alone or cumulatively with other projects in the vicinity.

- Sec. 15300.2(c): There is no evidence in the record of any possibility that the project would have a significant effect on the environment due to unusual circumstances. The

project site is zoned for residential use and consists of an existing mobile home park with no habitat value. Therefore, there are no unusual circumstances applicable to the project.

- Sec. 15300.2(d) through (f): The project is not proposed near a scenic highway, does not involve a current or former hazardous waste site, and, does not affect any historical resources. Therefore, the provisions of subsections (d) through (f) are not applicable to this project.

Because the project is consistent with the requirements for a Class 2 exemption, and because it is also consistent with the requirements for a Class 4 exemption and none of the exceptions in Section 15300.2 apply, there is substantial evidence in the record to support a finding that the project is categorically exempt from CEQA.

6. Staff Analysis

As noted in the required findings above, in staff's opinion, as conditioned, the project is consistent with the Local Coastal Plan policies. Therefore, staff recommends that the Planning Commission approve the Coastal Development Permit subject to the conditions attached.

COMMISSION ACTION

MOTION FOR APPROVAL:

Move that the Planning Commission finds the project is exempt from the California Environmental Quality Act; **APPROVES** Coastal Development Permit CDP-364-16 by adopting the attached resolution, including conditions of approval in Attachment A; and, incorporates all maps and testimony into the record by reference.

Attachments:

A. Draft Resolution and Conditions of Approval
B. Proposed Renovation Plans for Pacific Skies Estates
C. Coastal Commission comments regarding project dated August 29, 2016
D. Applicant's response to Coastal Commission dated September 27, 2016
E. Applicant's revisions to application dated September 20, 2016

RESOLUTION NO. _____

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF PACIFICA APPROVING COASTAL DEVELOPMENT PERMIT CDP-364-16, SUBJECT TO CONDITIONS, FOR RENOVATION OF THE EXISTING PACIFIC SKIES ESTATES MOBILE HOME PARK AT 1300 PALMETTO AVENUE (APN 009-291-020), AND FINDING THE PROJECT EXEMPT FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA).

Initiated by: CFP/PSE Seaside Pacifica Owner LLC ("Applicant").

WHEREAS, an application has been submitted to renovate the existing Pacific Skies Estates mobile home park at 1300 Palmetto Avenue (APN 009-291-020); and

WHEREAS, the project is located within the Coastal Zone and within the California Coastal Commission's ("CCC") appeal jurisdiction; and

WHEREAS, the application includes a request for a Coastal Development Permit under the City's Local Coastal Plan; and

WHEREAS, all modifications and improvements within the boundaries of the mobile home park are under the jurisdiction of the State of California Department of Housing and Community Development, and the City lacks authority to issue a building permit for the project; and

WHEREAS, the applicant has had ongoing meetings with the CCC related to the project, and the City understands that the CCC has urged the applicant to modify the project to take account of conditions that would exist if the shoreline protections currently in place were removed; and

WHEREAS, in an attempt to address the concerns of the CCC regarding project setbacks assuming no shoreline protections at the bluff, the applicant has submitted several amendments to its application, as shown in Exhibit B to this Resolution, and has indicated that it expects these amendments will address the concerns expressed by the CCC; and

WHEREAS, City staff and the applicant have agreed that the applicant's proposed amendments will be incorporated into its application by including them as conditions of approval; and

WHEREAS, the Planning Commission of the City of Pacifica did hold a duly noticed public hearing on October 3, 2016, at which time it considered all oral and documentary evidence presented, and incorporated all testimony and documents into the record by reference.

NOW, THEREFORE BE IT RESOLVED by the Planning Commission of the City of Pacifica as follows:

ATTACHMENT A

1. The above recitals are true and correct and material to this Resolution.

2. In making its findings, the Planning Commission relied upon and hereby incorporates by reference all correspondence, staff reports, and other related materials.

3. The Project is categorically exempt from the requirements of CEQA pursuant to CEQA Guidelines Sections 15302 and 15304 and therefore directs staff to file a Notice of Exemption for the Project.

BE IT FURTHER RESOLVED that the Planning Commission of the City of Pacifica does hereby make the following findings pertaining to Coastal Development Permit CDP-364-16 for development within the Coastal Zone:

1. Required Finding: *The proposed development is in conformity with the City's certified Local Coastal Program.*

   Discussion: The City's certified Local Coastal Program includes a Local Coastal Land Use Plan (LCLUP) that contains policies to further the City's coastal planning activities. The proposed project in consistent with the applicable policies, as discussed below.

   - Coastal Act Policy No. 2: *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 rock coastal beaches to the first line of terrestrial vegetation.*

     The proposed project includes public trails at Fifth Avenue, Dahlberg Drive, and Sixth Avenue. These trails are connected via a proposed trail paralleling the edge of the bluff. Therefore, the proposed project is not interfering with the public's right of access to the sea.

   - Coastal Act Policy No. 3: *Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects...Dedicated accessway shall not be required to be opened to the public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.*

     Although the proposed project is not new development, the project includes public trails at Fifth Avenue, Dahlberg Drive, and Sixth Avenue. These trails are connected via a proposed trail paralleling the edge of the bluff which will be dedicated. Therefore, the proposed project is providing dedicated public access along the coast.

- Coastal Act Policy No 5: *Lower cost visitor and recreational facilities and housing opportunities for persons of low and moderate income shall be protected, encouraged, and, where feasible, provided...*

  The proposed project renovates an existing mobile home park which protects an existing housing opportunity for persons of low and moderate income levels.

- Coastal Act Policy No. 23: *New development, except as otherwise provided in this policy, 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...*

  Although the project is not new development, the project is a renovation of an existing mobile home park that is surrounded by existing developed areas.

- Coastal Act Policy No. 24: *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 landforms, to be visually compatible with the character of surrounding areas, and where feasible, to restore and enhance visual quality in visually degraded areas...*

  The proposed project includes renovation of an existing mobile home park which will enhance the existing views just by the nature of providing new units. Many of the old units were in substandard condition. All new units installed at the site will be one story tall, and as a result, will not create visual obstructions as a result of excessive height. Furthermore, these single-story units will be visually compatible with the character of surrounding area which consists of predominantly one-story structures. In addition, views along the ocean are enhanced by the provision of the public trail paralleling the bluff.

2. Required Finding: *Where the Coastal Development Permit is issued for any development between the nearest public road and the shoreline, the development is in conformity with the public recreation policies of Chapter 3 of the California Coastal Act.*

   Discussion: The public recreation policies of Chapter 3 of the California Coast Act are applicable to development of oceanfront land suitable for recreation use. The proposed project does not include new development; therefore these policies do not apply. In addition, the proposed project renovations include providing a public trail where none currently exists.

BE IT FURTHER RESOLVED that the Planning Commission of the City of Pacifica does hereby make the following findings pertaining to the project:

1. That the project is exempt from the CEQA under Class 2 and 4 exemptions provided in Sections 15302 and 15304 of the CEQA Guidelines.

   15302. Replacement or Reconstruction
   Class 2 consists of replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purposed and capacity and the structure replaced.

   The proposed project includes the replacement and reconstruction of 93 existing mobile homes and associated utility lines and streets on the same mobile home park site and with the same purpose and capacity which existed prior to the project. Therefore, the project is exempt from further analysis under CEQA.

   15304. Minor Alternations to Land
   Class 4 consists of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry and agricultural purposes. Examples include but are not limited to: . . .

   (b) New gardening or landscaping, including the replacement of existing conventional landscaping with water efficient or fire resistant landscaping.

   The proposed project includes the addition of new landscaping at each of the mobile home units as well as along the bluff top dedicated trail area. The proposed landscaping will be drought tolerant in compliance with the State water efficient landscaping requirements. No healthy, mature, scenic trees are proposed to be removed. Therefore, the project is exempt from further analysis under CEQA.

2. That none of the exceptions to application of a categorical exemption in Section 15300.2 of the CEQA Guidelines apply.

   A. Sec. 15300.2(a): There is no evidence in the record that the project will impact an environmental resource of hazardous or critical concern in an area designated, precisely mapped, and officially adopted pursuant to law by federal, State, or local agencies. The project site is located within a substantially developed residential neighborhood and is not located in a sensitive environmental area. Therefore, it would not have a significant impact on the environment.

   B. Sec. 15300.2(b): There is no evidence in the record that successive projects of the same type in the area would have a significant environmental impact. The project involves renovation of an existing 93-unit mobile home park within a developed

area and would not have a significant impact on the environment either alone or cumulatively with other projects in the vicinity.

C. Sec. 15300.2(c): There is no evidence in the record of any possibility that the project would have a significant effect on the environment due to unusual circumstances. The project site is zoned for residential use and consists of an existing mobile home park with no habitat value. Therefore, there are no unusual circumstances applicable to the project.

D. Sec. 15300.2(d) through (f): The project is not proposed near a scenic highway, does not involve a current or former hazardous waste site, and, does not affect any historical resources. Therefore, the provisions of subsections (d) through (f) are not applicable to this project.

3. Because the project is consistent with the requirements for a Class 2 exemption, and because it is also consistent with the requirements for a Class 4 exemption and none of the exceptions in Section 15300.2 apply, there is substantial evidence in the record to support a finding that the project is categorically exempt from CEQA.

NOW, THEREFORE, BE IT FURTHER RESOLVED that the Planning Commission of the City of Pacifica approves Coastal Development Permit CDP-364-16 for renovation of the existing Pacific Skies Estates mobile home park at 1300 Palmetto Avenue (APN 009-291-020), subject to conditions of approval included as Exhibit A to this resolution.

* * * * *

Passed and adopted at a regular meeting of the Planning Commission of the City of Pacifica, California, held on the 3rd day of October, 2016.

AYES, Commissioners:

NOES, Commissioners:

ABSENT, Commissioners:

ABSTAIN, Commissioners:

_____
Josh Gordon, Chair

ATTEST:

_____
Tina Wehrmeister, Planning Director

APPROVED AS TO FORM:

_____
Michelle Kenyon, City Attorney

Exhibit A

Conditions of Approval: Coastal Development Permit CDP-364-16 for renovation of the existing Pacific Skies Estates mobile home park located at 1300 Palmetto Avenue (APN 009-291-012)

Planning Commission Meeting of October 3, 2016

Planning Division of the Planning Department

1. Development shall be substantially in accord with the plans submitted to the City on May 6, 2016, as modified by the letter from the applicant attached hereto as Exhibit B outlining changes to the project application, dated September 20, 2016. Exact placement of the mobile home units may be adjusted further within the limits of the mobile home park.

2. That the approval is valid for a period of one year from the date of final determination. If the use or uses approved is/are not established within such period of time, the approval(s) shall expire unless Applicant submits a written request for an extension and applicable fee prior to the expiration date, and the Planning Director or Planning Commission approves the extension request as provided below. The Planning Director may administratively grant a single, one year extension provided, in the Planning Director's sole discretion, the circumstances considered during the initial project approval have not materially changed. Otherwise, the Planning Commission shall consider a request for a single, one year extension.

3. Applicant shall maintain its site in a fashion that does not constitute a public nuisance and that does not violate any provision of the Pacifica Municipal Code.

4. The applicant shall indemnify, defend and hold harmless the City, its Council, Planning Commission, advisory boards, officers, employees, consultants and agents (hereinafter "City") from any claim, action or proceeding (hereinafter "Proceeding") brought against the City to attack, set aside, void or annul the City's actions regarding any development or land use permit, application, license, denial, approval or authorization, including, but not limited to, variances, use permits, developments plans, specific plans, general plan amendments, zoning amendments, approvals and certifications pursuant to the California Environmental Quality Act, and/or any mitigation monitoring program, or brought against the City due to actions or omissions in any way connected to the applicant's project, but excluding any approvals governed by California Government Code Section 66474.9. This indemnification shall include, but not be limited to, damages, fees and/or costs awarded against the City, if any, and costs of suit, attorneys fees and other costs, liabilities and expenses incurred in connection with such proceeding whether incurred by the applicant, City, and/or parties initiating or bringing such Proceeding. If the applicant is required to defend the City as set forth above, the City shall retain the right to select the counsel who shall defend the City.

5. Roadways adjacent to the park shall be maintained clear of construction materials, equipment, storage, and debris, especially mud and dirt tracked onto Palmetto Avenue. Dust control and daily road cleanup will be strictly enforced. A properly signed no-parking zone may be established during normal working hours only.

6. Existing curb, sidewalk or other street improvements adjacent to the property frontage that is damaged or displaced shall be repaired or replaced as deemed by the City Engineer even if damage or displacement occurred prior to any work performed for this project.

7. All recorded survey points, monuments, railroad spikes, pins, cross cuts on top of sidewalks and tags on top of culvert headwalls or end walls whether within private property or public right-of-way shall be protected and preserved. If survey point/s are altered, removed or destroyed, the applicant shall be responsible for obtaining the services of a licensed surveyor or qualified Civil Engineer to restore or replace the survey points and record the required map prior to occupancy.

8. An Encroachment Permit must be obtained for all work within public right-of-way. Any proposed improvements within public right-of-way shall be constructed per City Standards.

9. All utilities shall be installed underground.

10. All proposed sanitary sewer system and storm drain system elements, including detention facilities, shall be privately maintained up to their connections to the existing mains.

END

ATTACHMENT B

PACIFIC SKIES ESTATES

Mobile Home Park

May 25, 2016

CDP Application Submittal – 364-16
1300 Palmetto Avenue, Pacifica CA

Project Agent:

Carol McDermott
Phone: (949) 717-7939

... PER
... LAND TITLE
...NCE COMPANY
...MINARY TITLE REPORT
NO. SLC07010271
DATED APRIL 5, 2010

[illegible]

1. Any adverse claim based upon the assertion that some portion of said land is tide or submerged lands, or has been created by artificial means or has accreted to such portion so created.

2. Any adverse claim based upon the assertion that any portion of said land was not patented subject to disposition by the State of California, or that any portion thereof has become submerged land by reason of erosion or has become upland by reason of accretion.

3. Rights and easements for commerce, navigation and fishery.

4. Any rights in favor of the public which may exist on said land if said land or portions thereof are or were at any time used by the public.

5. An easement for the purpose shown below and rights incidental thereto as set forth in a document.

Granted to:	County of San Mateo
Purpose:	Storm water drainage ditch and draining structure
Recorded:	February 3, 1954, in Book 2533, Page 420, Instrument No. 84604-L, Official Records
Affects:	A portion of PARCEL III

6. An easement for the purpose shown below and rights incidental thereto as set forth in a document.

Granted to:	City of Pacifica
Purpose:	Storm drainage facilities and other public utilities
Recorded:	December 7, 1961, in Book 5402, Page 650, Instrument No. 2892 AB, Official Records
Affects:	A portion of PARCEL III

7. The effect of a Maintenance Access - Easement Agreement

Dated:	August 8, 1985
By and Between:	The City of Pacifica and Brookside Savings and Loan Association, a California Corporation
Recorded:	September 13, 1985, Instrument No. 85-096723, Official Records
	By reason that Brookside Savings and Loan Association held no record interest at the time of execution or recording.

8. [illegible] "Agreement Regarding Emergency Protective Measures and Payment Obligations..."

Dated:	September 15, 1998
By and Between:	The City of Pacifica, Pacific Skies Estates, Ltd., a California limited partnership, Jeffrey Siegel, Trustee of the Testamentary Trust u/Will of [illegible], established under the Decree of a Final Distribution filed January 9, 1962 in the Los Angeles Superior Court for Case No. P234619
Recorded:	September 25, 1998, Instrument No. 98-155026, Official Records

Note: The Deed of Trust contained in said Agreement has been reconveyed by instrument recorded August 2, 2007 [illegible], Official Records.

9. A deed of trust to secure an indebtedness in the amount shown below, and any other obligations secured thereby.

Amount:	$6,000,000.00
Dated:	February 27, 2003
Trustor:	Palmetto 1300, LLC, a California limited liability company
Trustee:	First American Title Insurance Company
Beneficiary:	GMAC Commercial Mortgage Corporation, a California corporation
Recorded:	February 27, 2003, Instrument No. 2003-[illegible], Official Records

An assignment of the beneficial interest under said deed of trust which names:

As Assignee:	LaSalle Bank National Association, as trustee for the registered holders of GMAC Commercial Mortgage Securities, Inc., Mortgage Pass-Through Certificates, Series 2003-C1
Recorded:	August 6, 2003, Instrument No. 2003-[illegible], Official Records

Note: The interest of GMAC Commercial Mortgage Corporation in said Deed of Trust is now held by Capmark Finance Inc., as disclosed by [illegible] information.

10. An assignment of all the moneys due or to become due as rental, as additional security for the obligations secured by deed of trust:

Recorded:	February 27, 2003, Instrument No. 2003-051739, Official Records
Assigned to:	GMAC Commercial Mortgage Corporation, a California corporation
By Assignment Recorded:	February 27, 2003, Instrument No. 2003-051740, Official Records

11. A Notice of Violation of the Coastal Act

File Number:	009-291-020
Dated:	August 23, 2007
Executed by:	The California Coastal Commission
Recorded:	August 27, 2007, Instrument No. 2007-128219, Official Records

12. An easement for the purpose shown below and rights incidental thereto as set forth in a document.

Granted to:	Comcast of California [illegible], Inc.
Purpose:	The construction, use, maintenance, repair, inspection and operation of a broadband communication system
Recorded:	December 18, 2007, Instrument No. 2007-177104, Official Records
Affects:	The exact locations are not defined of record

13. Any rights, interests, or claims which may exist or arise by reason of the following facts shown on a survey plat

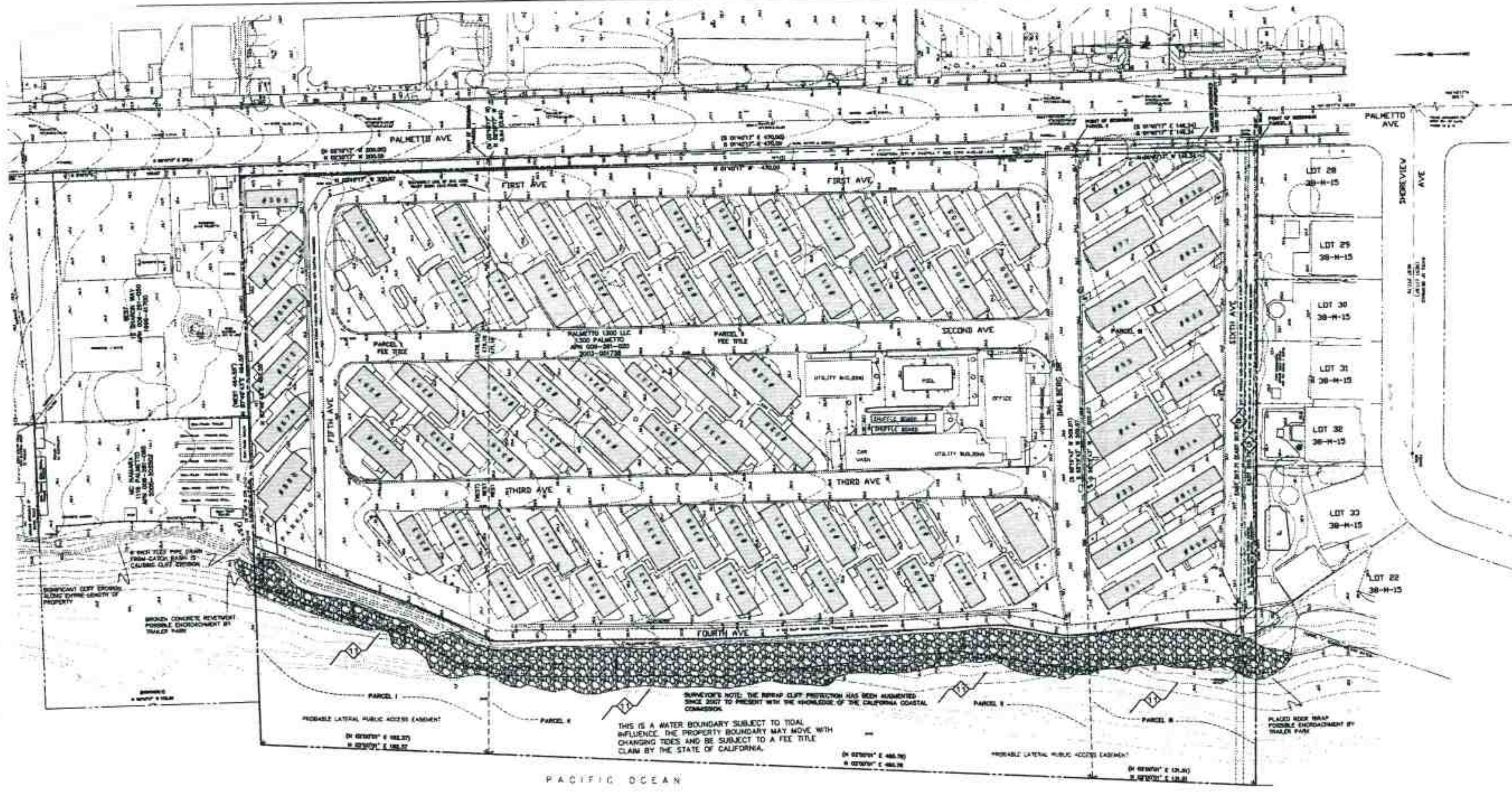
Entitled:	ALTA/ACSM Land Title Survey
Dated:	September 7, 2002
Prepared by:	Survey Construction Staking Co., Inc.

[illegible] The fact that the concrete curb, gutter and sidewalk along the easterly boundary line of said land are into the adjoining property to the east.

14. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires for value of record the estate or interest or mortgages thereon covered by this commitment.

NOTE: AN OWNER'S POLICY ISSUED IN CONNECTION WITH THIS COMMITMENT WILL CONTAIN THE FOLLOWING PRE-PRINTED EXCEPTIONS.

1. Rights or claims of parties other than the insured in actual possession of any or all of the property.
2. Unrecorded easements, discrepancies or conflicts in boundary lines, shortage in area and encroachments which an accurate and complete survey would disclose.
3. Unfiled mechanic's or materialmen's liens.



PROPERTY DESCRIPTION

[illegible]

Assessor's Parcel Number: 009-291-020

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

SURVEYORS CERTIFICATE

The undersigned, being a registered surveyor of the State of California, certifies to (i) COMMONWEALTH LAND TITLE INSURANCE COMPANY, their successors and assigns, (ii) PACIFIC SKIES ESTATES, LLC, its successors and/or assigns, as its [illegible]

[illegible]

Signed: [signature] Dated: June 15, 2010

CURT G. DUNBAR

[illegible]

LICENSED LAND SURVEYOR CURT G. DUNBAR 5619 STATE OF CALIFORNIA

SURVEYOR'S NOTE

ALL UTILITIES HAVE BEEN COMPILED FROM RECORD DATA AND MAY NOT BE COMPLETE AND MAY NOT DEPICT ACTUAL EXISTING UTILITY LINE LOCATIONS.

UTILITIES SHOULD BE VERIFIED PRIOR TO ANY CONSTRUCTION OR DESIGN.

THERE WAS NO EVIDENCE OF OBSERVED CEMETERIES.

THERE ARE NO RECORDED BUILDING SETBACKS AS SHOWN IN THE REFERENCE DOCUMENTS.

BASIS OF BEARINGS

BEARINGS ARE BASED UPON THE CENTER LINE OF PALMETTO AVENUE (S.H. RT2, DIV 2) AS SHOWN ON THAT MAP FILED IN VOLUME 38 OF MAPS AT PAGES 15 & 16, SAN MATEO COUNTY RECORDS, AND ESTABLISHED BETWEEN MONUMENTS FOUND.

= NORTH 1°40'17" WEST

FEMA FLOOD ELEVATION DETERMINATION

ESTABLISHMENT OF FLOOD ZONE V5

FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 060323 0002 D, FEBRUARY 19, 1982.

PANEL 2 OF 7

ZONE V5= AREAS OF 100-YEARS FLOOD; BASED FLOOD ELEVATION & FLOOD HAZARDS FACTORS ELEVATION = 27.0 FEET

LEGEND

- ● INDICATES SURVEY MONUMENT, FOUND AS NOTED
- ( ) INDICATES RECORD DATA PER DEEDS & MAPS
- ALL DISTANCES SHOWN ARE IN FEET AND DECIMALS THEREOF
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- FENCE LINE, AS NOTED
- FLOWLINE
- PROPERTY LINE
- SPOT ELEVATION
- SHORELINE PROTECTION ROCK RIP-RAP

TECHNICAL INFORMATION

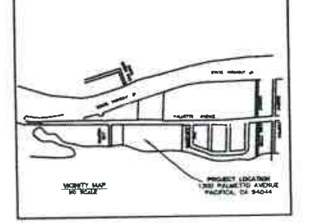
- ASSESSOR'S PARCEL NUMBER: APN: 009-291-020
- ZONING: C30000
- LOT SIZE: 388,570+/- SQ FT (8.1 ACRES +/-)
- INDICATES DATA FROM FIRST AMERICAN [illegible] DATA

REFERENCES

(A) 38-MAPS- PAGES 15 & 16

BASIS OF ELEVATIONS

THE BASIS OF ELEVATIONS FOR THIS MAP IS FEMA BENCHMARK RM #30 EL=49.29' (NGVD)



VICINITY MAP
NO SCALE

APN: 009-291-020

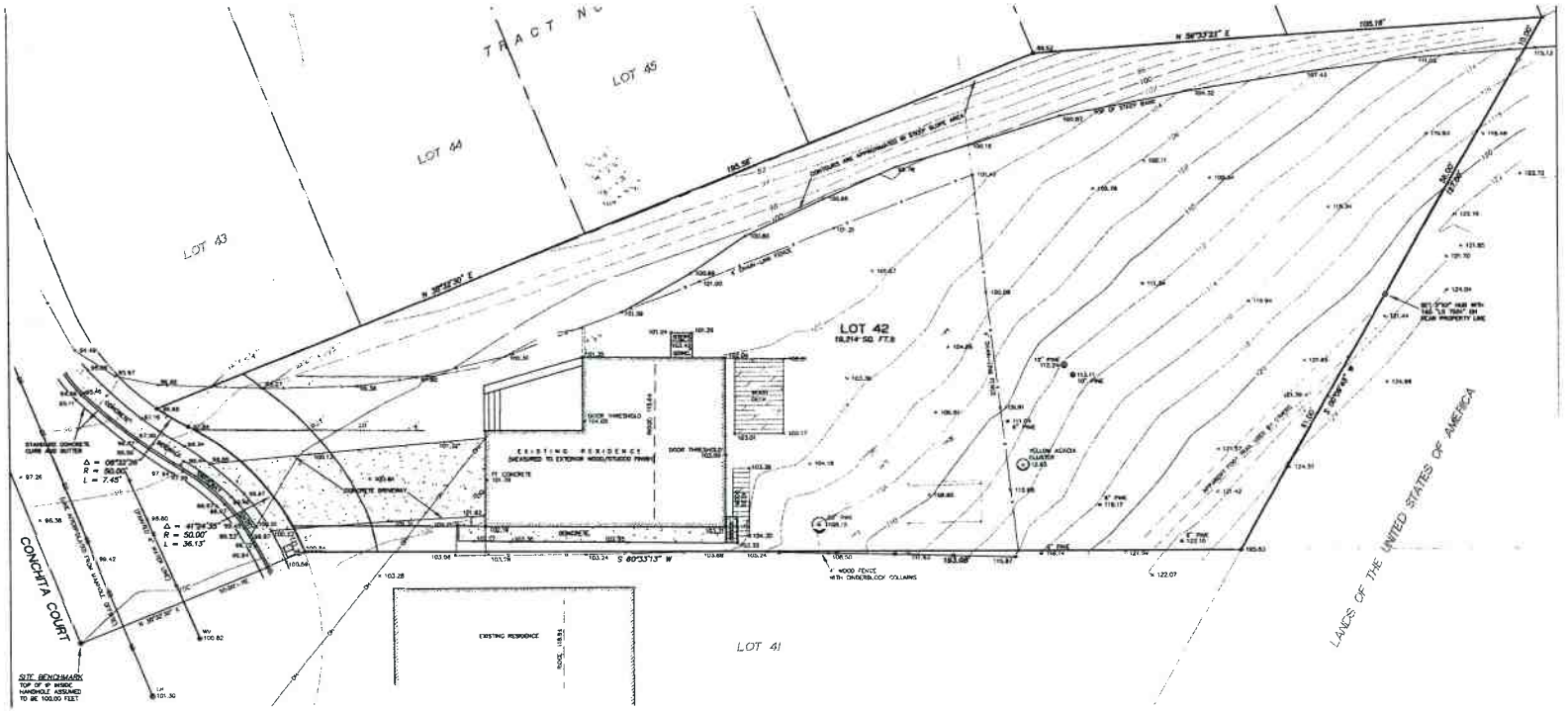
REVISED JUNE 21, [illegible]

DUNBAR and CRAIG
LICENSED LAND SURVEYORS

ALTA SURVEY
1300 PALMETTO AVENUE

CITY OF PACIFICA
County of San Mateo, State of California

SCALE: 1 INCH = 30 FEET | DRAWN: CGD | CHECKED: CGD
ACAD NO. 2010-078A.dwg
SHEET ONE OF ONE



SITE PLAN

EXISTING

TOLBERT DESIGN
ARCHITECTS

257 COMMERCIAL STREET
SAN JOSE, CA 95112
PH: (650) 200-0093
JEREMIAH@TOLBERTDESIGNARCHITECTS.COM

WILSON ADDITION

7 CONCHITA COURT
PACIFICA, CA 94044
A.P.N.:009-273-280

Revisions:

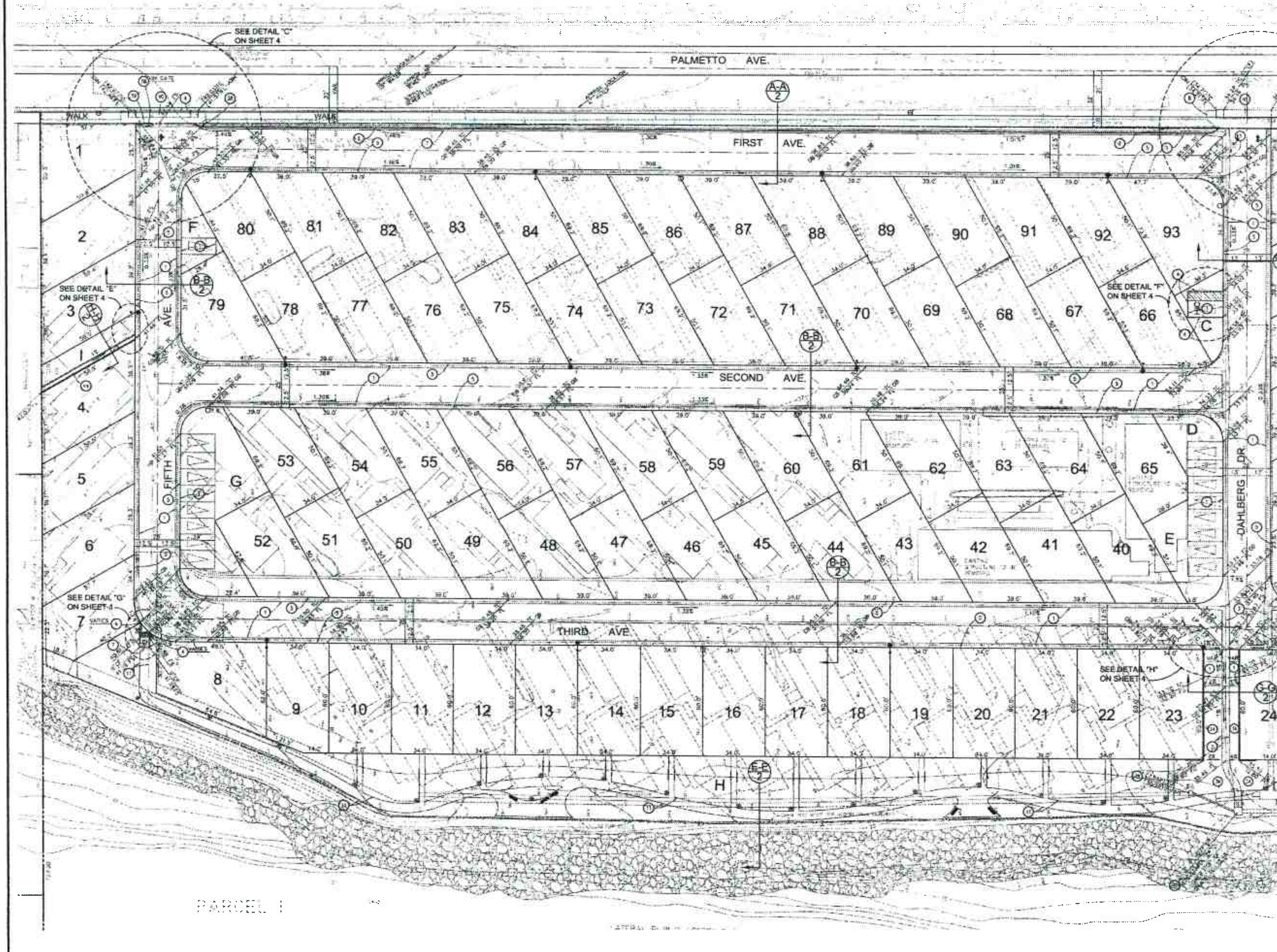
No.	Date	Revision

Sheet Description:

EXISTING SITE PLAN

Scale	1/16
Drawn	JT
Checked	JT
Date	09-05-16
Project#	1605

SP .1



CONSTRUCTION NOTES:

GRADING-STREET-DRAINAGE

1. CONSTRUCT A.C. PAVEMENT AND BASE PER RECOMMENDATIONS OF THE SOILS ENGINEER
2. CONSTRUCT CONCRETE CURB AND GUTTER TYPE "A" MODIFY TO 12" GUTTER PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A. MODIFY HEIGHT & WIDTH PER PLAN.
3. CONSTRUCT CROSS AND LONGITUDINAL GUTTERS PER S.P.P.W.C. STD PLAN 122-1, W=4'. SEE DETAIL ON SHEET 4.
4. CONSTRUCT CONCRETE CURB MODIFY TYPE "E" TO 5" C.F. PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A. HEIGHT PER PLAN
5. CONSTRUCT CONCRETE ROLLED CURB PER DETAIL ON SHEET 2
6. SAW CUT AND JOIN CITY OF PACIFICA STD. DWG. NO. 100 & 101A
7. CONSTRUCT CURB RAMP WITH TRANSVERSE BROOMED SURFACE TEXTURE AND GROOVING AND DETECTABLE WARNING SURFACE PER DETAIL ON SHEET 4.
8. CONSTRUCT LONGITUDINAL GUTTER PER S.P.P.W.C. STD. PLAN 122-1 SEE DETAIL ON SHEET 2.
10. CONSTRUCT 4" P.C.C. SIDEWALK PER CITY OF PACIFICA STD. DWG. 100
13. CONSTRUCT TRAIL PER LANDSCAPE ARCHITECTURAL PLAN.
14. PLANT VERY SHORT GRASS PER LANDSCAPE ARCHITECTURAL PLAN.
30. EXISTING CATCH BASIN TO REMAIN
33. CONSTRUCT CONCRETE PER LANDSCAPE ARCHITECTURAL PLANS
36. INSTALL EXIT ONLY SIGN
38. CONSTRUCT ROLLING GATE PER LANDSCAPE ARCHITECTURAL PLAN.
39. CONSTRUCT DRIVEWAY APPROACH PER CITY OF PACIFICA STD. DWG. NO. 102, MODIFIED PER CONFIGURATION HEREON. TRANSITION 5'. SEE DETAILS ON SHEET 4.
40. REMOVE EXISTING CATCH BASIN AND RECONSTRUCT REPLACEMENT CATCH BASIN S'LY HEREOF PER CONSTRUCTION NOTE 43.
41. ASSUMED LOCATION OF EXISTING PIPE. VERIFY PRIOR TO CONSTRUCTION. REMOVE INTERFERING PORTION OF EXISTING PIPE
42. INSTALL 36"x36" CATCH BASIN AND PARKWAY GRATE PER BROOKS PRODUCT NO. 3636CB (OR APPROVED EQUAL).
43. CONSTRUCT CONCRETE DRAINAGE CHANNEL PER SECTIONS ON SHEET 4.
44. INSTALL 10" P.V.C. (SDR35, A.S.T.M., D3034) OR EQUAL
45. INSTALL 12" P.V.C. (SDR35, A.S.T.M., D3034) OR EQUAL

Parking Lot Sign: Exit Only Sign

EXIT ONLY

APPROVED

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

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PLANS PREPARED BY
R. T. QUINN & ASSOCIATES
CIVIL ENGINEERS LAND SURVEYORS
1907 Border Avenue
Torrance, California 90501

DATE: 7-29-13 | JOB N°: 209008-100 | DRAWN BY: SAZ

	DATE	BY	DESCRIPTION

REVISIONS

PLANS PREPARED FOR
PACIFIC SKIES ESTATES, LLC
5000 BIRCH STREET
EAST TOWER, SUITE 400
NEWPORT BEACH, CA 92660
ATTN: TONY FERRERO
(949) 333-8500 MAIN
(949) 333-8550 DIRECT

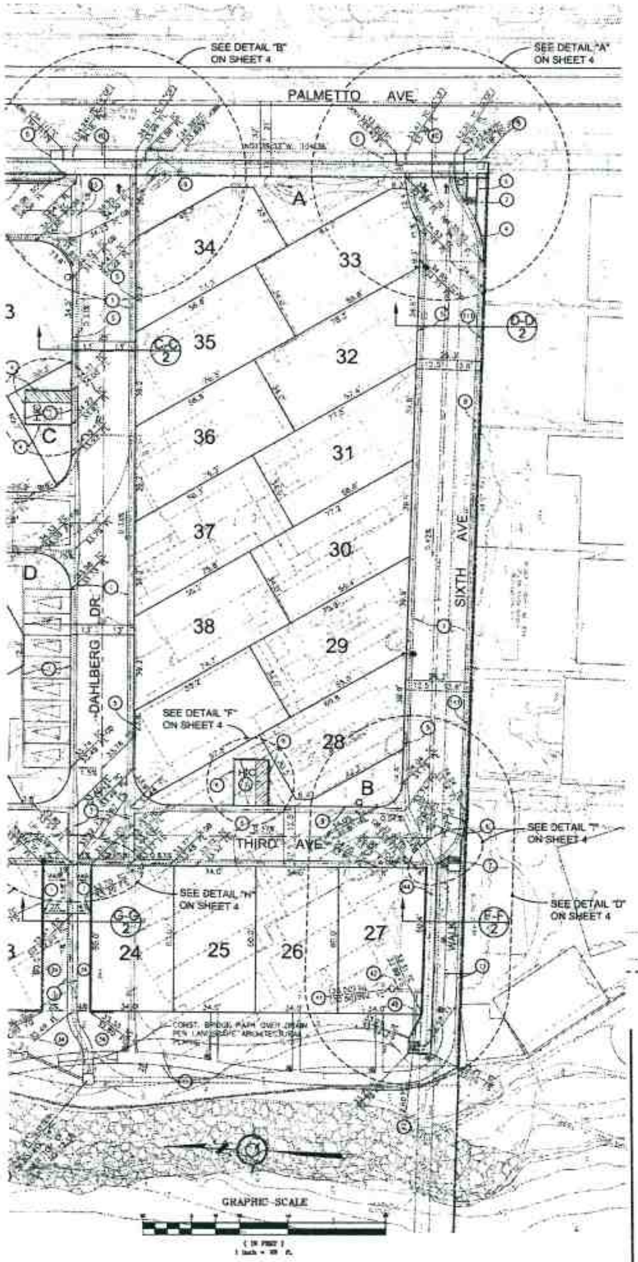
PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES
(41-0032-MP)

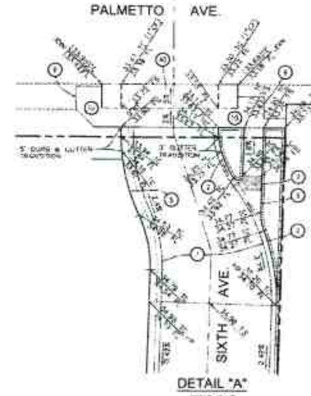
JOB ADDRESS
1300 PALMETTO AVENUE
PACIFICA, CA 94044

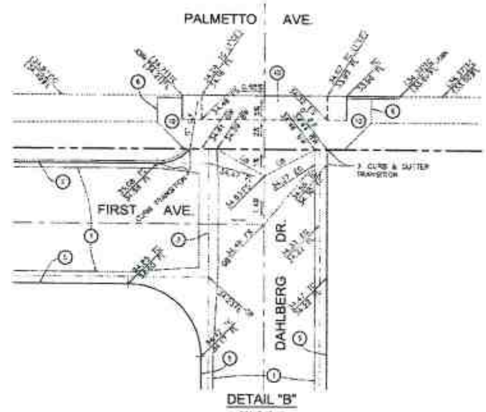
TRACT NO.
DRAWING FILE NO.
SCALE: 1"= 20'
SHEET 3 OF 7

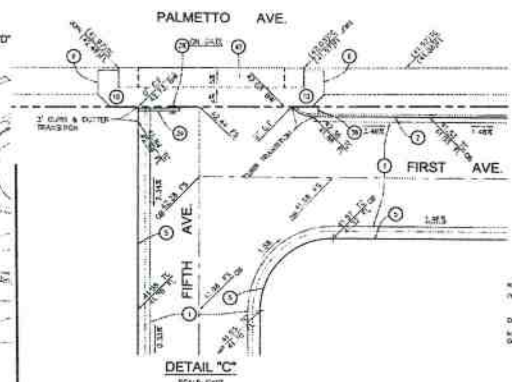
SHEET TITLE
SITE IMPROVEMENTS

BLUE BOOK REVIEW SET









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3. CONSTRUCT CROSS AND LONGITUDINAL GUTTERS PER S.P.P.W.C. STD PLAN 120-1, [illegible] SEE DETAIL ON SHEET 4.
4. CONSTRUCT CONCRETE CURB MODIFY TYPE "B" TO 6" C.F. PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A. HEIGHT PER PLAN.
5. CONSTRUCT CONCRETE ROLLED CURB PER DETAIL ON SHEET 2.
6. SAW CUT AND JOIN CITY OF PACIFICA STD. DWG. NO. 100 & 101A.
7. CONSTRUCT CURB RAMP WITH TRANSVERSE BROOMED SURFACE TEXTURE AND GROOVING AND DETECTABLE WARNING SURFACE PER DETAIL ON SHEET 4.
8. CONSTRUCT LONGITUDINAL GUTTER PER S.P.P.W.C. STD. PLAN 122-1 SEE DETAIL ON SHEET 2.
10. CONSTRUCT 4" P.C.C. SIDEWALK PER CITY OF PACIFICA STD. DWG. 105.
11. CONSTRUCT TRAIL PER LANDSCAPE ARCHITECTURAL PLAN.
34. PLANT VERY SHORT GRASS PER LANDSCAPE ARCHITECTURAL PLAN.
35. EXISTING CATCH BASIN TO REMAIN.
36. CONSTRUCT CONCRETE PER LANDSCAPE ARCHITECTURAL PLANS.
38. INSTALL EXIT ONLY SIGN.
39. CONSTRUCT ROLLING GATE PER LANDSCAPE ARCHITECTURAL PLAN.
40. CONSTRUCT DRIVEWAY APPROACHE PER CITY OF PACIFICA STD. DWG. NO. 102, MODIFIED PER CONFIGURATION HEREON, TRANSITION [illegible] SEE DETAILS ON SHEET 4.
41. REMOVE EXISTING CATCH BASIN AND RECONSTRUCT REPLACEMENT CATCH BASIN [illegible] HEREOF PER CONSTRUCTION NOTE 43.
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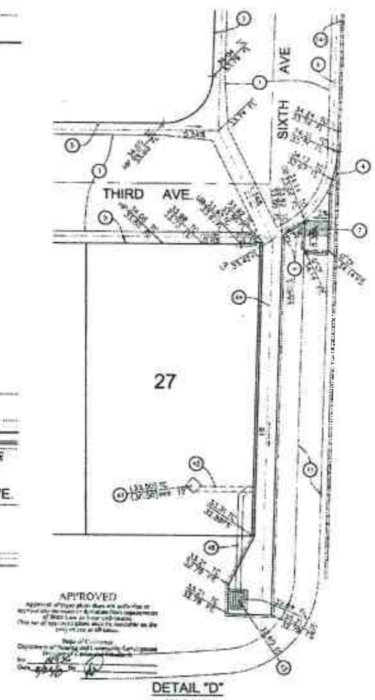

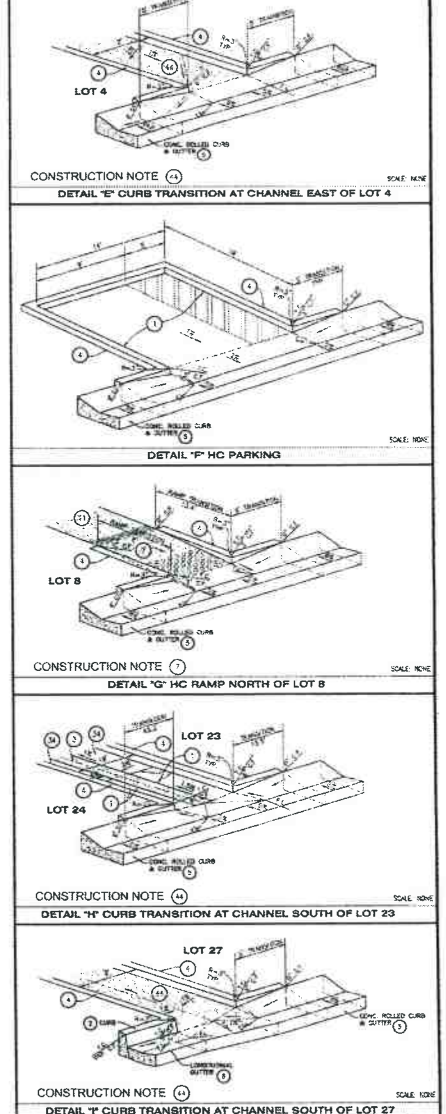

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R. T. QUINN & ASSOCIATES
CIVIL ENGINEERS · LAND SURVEYORS
1907 Border Avenue, Torrance, California 90501
Voice (310) 320-4125 Fax (310) 320-5125

DATE: 7-26-13 | JOB N°: 208008-100 | DRAWN BY: SAZ

Nº	DATE	BY	DESCRIPTION

PLANS PREPARED FOR
PACIFIC SKIES ESTATES, LLC
5000 BIRCH STREET, EAST TOWER, SUITE 400
NEWPORT BEACH, CA 92660
ATTN: TONY FERRERO
(949) 333-8500 MAIN
(949) 333-8580 DIRECT

PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES (41-0032-MP)
JOB ADDRESS
1300 PALMETTO AVENUE, PACIFICA, CA. 94044

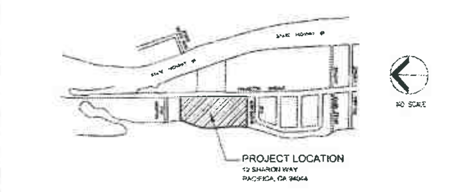
SCALE: 1" = 20'
SHEET 4 OF 7

SHEET TITLE
SITE IMPROVEMENTS

BLUE BOOK REVIEW SET

State of California

IMPROVEMENT PLANS

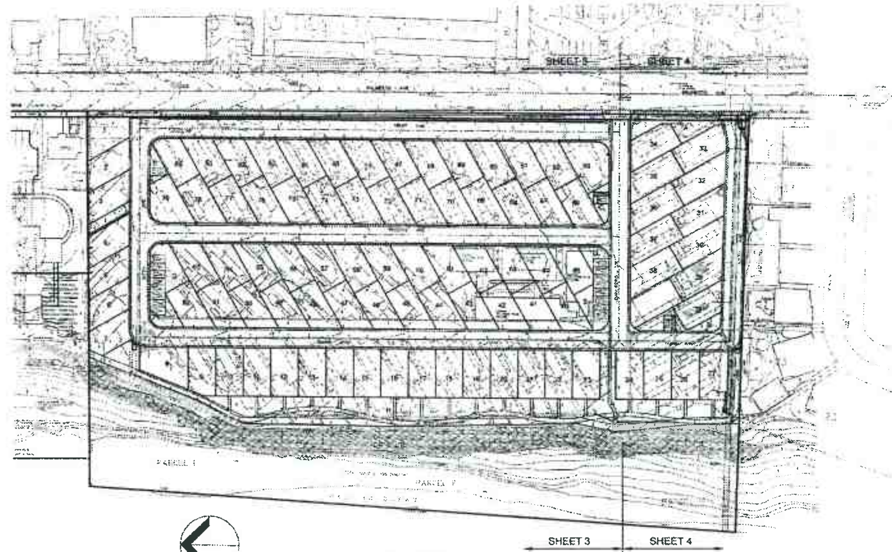


VICINITY MAP

ABBREVIATIONS

LEGEND:	
	SEWER LINE
	WATER LINE
	SEWER MANHOLE
	SEWER CLEAN OUT
	GATE VALVE
	THRUST BLOCK
###	STREET ADDRESS
	SPACE NUMBER

LEGEND



INDEX MAP

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	NOTES AND DETAILS
3	SITE IMPROVEMENTS
4	SITE IMPROVEMENTS
5	SEWER AND WATER PLAN
6	SEWER AND WATER PLAN
7	PHOTOMETRIC PLAN

AREA:

ENTIRE PROPERTY CONSIST OF: ±1.90 ACRES

APPROVED

LEGAL DESCRIPTION:

PARCEL I:
BEGINNING AT THE INTERSECTION OF THE WESTERLY LINE OF COUNTY ROAD DESIGNATED (S.M.R.T. 2, DIV. 2) WITH THE SOUTHERLY LINE OF THAT CERTAIN 2.43 ACRE TRACT OF LAND DESCRIBED IN THE DEED FROM BILL PAPPAS AND WIFE, TO RAY T. HIGGINS, DATED NOVEMBER 30, 1945, AND RECORDED FEBRUARY 19, 1946, IN BOOK [illegible] OFFICIAL RECORDS OF SAN MATEO COUNTY, PAGE 418, THENCE FROM SAID POINT OF BEGINNING ALONG SAID WESTERLY LINE OF COUNTY ROAD (S.M.R.T. 2, DIV. 2), NORTH 2° 10' 17" WEST, 200.00 FEET TO THE SOUTHERLY LINE OF THE LANDS DESCRIBED IN DEED FROM RAY T. HIGGINS, INC., TO FRANK P. GITTINGS AND WIFE, DATED AUGUST 25, 1947, AND RECORDED SEPTEMBER 15, [illegible], IN BOOK 1492 OFFICIAL RECORDS OF SAN MATEO COUNTY, PAGE 32 [illegible]; THENCE ALONG SAID SOUTHERLY LINE OF LANDS OF FRANK P. GITTINGS AND WIFE, SOUTH 87° 49' 43" WEST 464.85 FEET; THENCE SOUTH 2° 00' WEST 182.90 FEET TO THE NORTHERLY LINE OF THE LANDS DESCRIBED [illegible] DECREE OF DISTRIBUTION OF THE ESTATE OF JOSEPH M. COMERFORD, DECEASED, TO ALICE COMERFORD, ET AL, RECORDED FEBRUARY 15, 1962, IN BOOK 92 OF DEEDS, PAGE [illegible]; THENCE ALONG SAID NORTHERLY LINE OF LANDS OF ALICE COMERFORD, ET AL, EAST 476.15 FEET TO THE POINT OF BEGINNING.

PARCEL II:
BEGINNING AT A POINT IN THE WESTERLY LINE OF COUNTY ROAD (S.M.R.T. 2, DIV. 2) DISTANT THEREON NORTH 1° 40' 17" WEST 140.34 FEET FROM THE NORTHEASTERLY CORNER OF THE LANDS DESIGNATED ON THE MAP ENTITLED "TRACT NO. 684 OCEAN PARK MANOR SUBDIVISION NO. 3 SAN MATEO COUNTY, CALIFORNIA" WHICH MAP WAS FILED IN THE OFFICE OF THE RECORDER OF THE COUNTY OF SAN MATEO, STATE OF CALIFORNIA ON FEBRUARY 2, 1954, IN BOOK 39 OF MAPS AT PAGES 15 AND 16; [illegible] ROAD (S.M.R.T. 2, DIV. 2) NORTH 1° 40' 17" WEST 470.00 FEET; [illegible] 43" WEST 509.07 FEET FROM THE POINT OF BEGINNING; THENCE NORTH 88° 19' 43" EAST 509.07 FEET TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM ANY PORTION OF THE LAND BELOW THE ORDINARY HIGH WATER MARK WHERE IT WAS LOCATED PRIOR TO ANY ARTIFICIAL OR AVULSIVE CHANGES IN THE LOCATION OF THE SHORELINE.

ALSO EXCEPTING THEREFROM THE LANDS DESCRIBED IN DEED FROM ERIC DAHLBERG AND SONS, A CO-PARTNERSHIP TO THE CITY OF PACIFICA, A MUNICIPALITY INCORPORATED NOVEMBER 22, 1957, DATED JANUARY 26, 1962, AND RECORDED FEBRUARY 13, 1962, IN BOOK 4145 OFFICIAL RECORDS OF SAN MATEO COUNTY, PAGE 418 [illegible].

PARCEL III:
BEGINNING AT THE NORTHEASTERLY CORNER OF THE LANDS DESIGNATED ON THE MAP ENTITLED "TRACT NO. 684 OCEAN PARK MANOR SUBDIVISION 3 SAN MATEO COUNTY, CALIFORNIA" WHICH MAP WAS FILED IN THE OFFICE OF THE RECORDER OF THE COUNTY OF SAN MATEO, STATE OF CALIFORNIA ON FEBRUARY 2, 1954, IN BOOK 39 OF MAPS AT PAGES 15 AND 16; THENCE FROM SAID POINT OF BEGINNING ALONG THE WESTERLY LINE OF COUNTY ROAD (S.M.R.T. 2, DIV. 2) NORTH 1° 40' 17" WEST 140.34 FEET; THENCE SOUTH 88° 19' 43" WEST 509.07 FEET; THENCE SOUTH 2° 10' WEST 131.51 FEET TO A POINT, SAID POINT BEARING WEST 517.71 FEET FROM THE POINT OF BEGINNING; THENCE EAST 517.71 FEET TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM ANY PORTION OF THE LAND BELOW THE ORDINARY HIGH WATER MARK WHERE IT WAS LOCATED PRIOR TO ANY ARTIFICIAL OR AVULSIVE CHANGES IN THE LOCATION OF THE SHORELINE.

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ASSESSOR'S PARCEL NUMBER 009-281-020

GENERAL NOTES: (FOR MOBILE SPACES)

1. LISTED NON METALLIC PIPE AND FITTINGS INSTALLED IN MOBILEHOME PARK DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THEIR LISTING AND APPLICABLE STANDARDS. WHEN INSTALLED UNDER THE ROADWAYS, THE PIPE SHALL BE CAREFULLY BEDDED ON A LAYER OF CLEAN SAND A MINIMUM OF THREE INCHES IN DEPTH. THE TRENCH SHALL BE BACKFILLED WITH A MINIMUM DEPTH OF COVER OF SIX INCHES OF CLEAN SAND, GRANULATED EARTH OR SIMILAR MATERIAL. THE TRENCH SHALL THEN BE BACKFILLED IN THIN LAYERS TO 12" ABOVE THE TOP OF PIPE WITH CLEAN EARTH WHICH SHALL NOT CONTAIN STONES, BOULDERS OR OTHER MATERIALS WHICH WOULD DAMAGE OR BREAK THE PIPE. MINIMUM DEPTH OF COVER FOR NONMETALLIC DRAIN PIPE UNDER ROADWAYS SHALL BE 26" (SEC. 1252, T-25, CH. 2)

2. MOBILEHOME LOT DRAIN INLET (IF NECESSARY)

(a) EACH LOT SHALL BE PROVIDED WITH A DRAIN INLET NOT LESS THAN 3" IN DIAMETER

(b) DRAIN INLETS SHALL BE PROVIDED FOR A THREADED OR CLAMP - TYPE FITTING FOR CONNECTION DRAIN CONNECTORS AT PROPER GRADE. THE DRAIN INLET SHALL BE ACCESSIBLE AT GROUND LEVEL. THE VERTICAL RISER OF A DRAIN INLET SHALL NOT EXCEED 3" IN HEIGHT ABOVE THE CONCRETE SUPPORTING SLAB. DRAIN INLETS SHALL BE CAPPED WHEN NOT IN USE.

(c) EACH DRAIN INLET SHALL BE PROTECTED FROM MOVEMENT BY BEING ENCASED IN A CONCRETE SLAB NOT LESS THAN THREE AND ONE HALF INCHES IN THICKNESS AND SURROUNDING THE INLET NOT LESS THAN SIX INCHES ON ANY SIDE

(d) MOBILEHOME LOT DRAIN INLETS AND EXTENSIONS TO GRADE SHALL BE OF MATERIAL APPROVED FOR UNDERGROUND USE WITHIN A BUILDING (SEC. 1254, T-25, CH. 2)

3. LOCATION OF LOT DRAIN INLET: THE LOT DRAIN INLET SHALL BE LOCATED AS INDICATED ON THESE PLANS AND AS APPROVED BY STATE OF CALIFORNIA, DEPARTMENT OF HOUSING ALTERNATE APPROVAL. (IF APPLICABLE)

4. LOT WATER SERVICE OUTLET: EACH MOBILEHOME LOT SHALL BE PROVIDED WITH A WATER SERVICE OUTLET DELIVERING SAFE, PURE AND POTABLE WATER. THE WATER SERVICE OUTLET RISER SHALL BE NOT LESS THAN THREE-FOURTHS OF AN INCH NOMINAL PIPE SIZE. EACH WATER SERVICE OUTLET SHALL BE PROVIDED WITH AN ACCESSIBLE WATER OUTLET DESIGNED FOR CONNECTING A 3/4 INCH FEMALE SWIVEL HOSE CONNECTION. TWO SUCH CONNECTIONS SHALL BE PROVIDED AT EACH LOT, IN ADDITION TO THE WATER CONNECTION FOR THE MOBILEHOME, FOR THE FIRE SUPPRESSION USE. (SEC. 1274, T-25, CH. 2) (IF APPLICABLE.)

5. SHUTOFF VALVE: A SEPARATE WATER SERVICE SHUTOFF VALVE SHALL BE INSTALLED IN EACH WATER SERVICE OUTLET AT A MOBILEHOME LOT. (SEC. 1272, T-25, CH. 2) 6" ABOVE GRADE

6. LOCATION OF WATER SERVICE: THE MOBILEHOME WATER SERVICE SHALL BE INDICATED ON THESE PLANS AND AS APPROVED BY THE STATE OF CALIFORNIA, DEPARTMENT OF HOUSING ALTERNATE APPROVAL. (IF APPLICABLE)

7. PRESSURE: EACH MOBILEHOME PARK WATER SYSTEM SHALL BE DESIGNED AND MAINTAINED AS TO PROVIDE A PRESSURE NOT LESS THAN 15 POUNDS PER SQUARE INCH AT EACH MOBILEHOME LOT AT MAXIMUM OPERATING CONDITIONS. (SEC. 1278, T-25, CH. 2)

8. WATER PIPE SIZE: 2" & 4" PVC MAIN, 3/4" PVC LATERAL
(a) THE QUANTITY OF WATER REQUIRED TO BE SUPPLIED TO EACH MOBILEHOME LOT SHALL BE AS REQUIRED FOR SIX FIXTURE UNITS.

(b) PARK WATER DISTRIBUTION SYSTEM SHALL BE DESIGNED AND INSTALLED AS SET FORTH IN THE 1991 EDITION OF THE UNIFORM PLUMBING CODE, CHAPTER 10 AND APPENDIX A

(c) A NUMBER 18 GAUGE COPPER TRACER WIRE SHALL BE RUN WITH ALL UNDERGROUND NONMETALLIC WATER PIPING. THE TRACER WIRE SHALL TERMINATE ABOVE GRADE AT ONE END OF THE PIPING. (SEC. 1275, T-25, CH. 2)

9. MECHANICAL PROTECTION: WHERE SUBJECT TO DAMAGE BY VEHICLES OR OTHER CAUSES, ALL PARK WATER SERVICE OUTLETS SHALL BE PROTECTED BY POSTS, FENCING OR OTHER PERMANENT BARRIERS APPROVED BY THE ENFORCEMENT AGENCY. SEC. 1280, T-25.

10. MOBILEHOME WATER CONNECTOR: A MOBILEHOME SHALL BE CONNECTED TO THE LOT WATER SERVICE OUTLET BY AN APPROVED CONNECTOR OR COPPER TUBING, NOT LESS THAN THREE-QUARTERS INCH INTERIOR DIAMETER. (SEC. 1274, T-25, CH. 2)

11. CLEANOUTS: [illegible]

12. CROSS-CONNECTION CONTROL: NO PERSON SHALL INSTALL ANY WATER OPERATED EQUIPMENT OR MECHANISM, OR USE ANY WATER TREATING CHEMICAL OR SUBSTANCE, IF IT IS FOUND THAT SUCH EQUIPMENT, MECHANISM, CHEMICAL OR SUBSTANCE MAY CAUSE POLLUTION OF THE DOMESTIC WATER SUPPLY. SUCH EQUIPMENT OR MECHANISM MAY BE PERMITTED ONLY WHEN EQUIPPED WITH AN APPROVED BACK FLOW PREVENTION DEVICE

13. ALL REQUIREMENTS OF TITLE 25, CHAPTER 2 REGARDING INSTALLATION, INSPECTION AND TESTING FOR UTILITY INSTALLATIONS SHALL BE ADHERED TO.

14. THE EXISTING PARK RESIDENTS SHALL BE NOTIFIED IN WRITING A MINIMUM OF 72 HOURS IN ADVANCE OF ANY WORK BEING DONE ON OR IN ANY STREETS, SEWER, WATER, GAS, POWER, TELEPHONE, ECT

15. ALL PARK AND TENANT FACILITIES SHALL BE OPERATIONAL AT THE END OF EVERY DAY.

16. ALL WORK WITHIN THE PALMETTO AVENUE PUBLIC RIGHT OF WAY SHALL CONFORM TO CITY OF PACIFICA STD. PLANS & SPECIFICATIONS AND TO "[illegible] STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION" [illegible] REFERRED TO AS "APWA" [illegible] AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. THE LATEST EDITIONS OF THESE MANUALS SHALL BE USED UNLESS OTHERWISE NOTED ON THE PLANS

SUBSTRUCTURE NOTICE:

THE LOCATION OF ALL UNDERGROUND UTILITY PIPES OR STRUCTURES WITHIN THIS PROJECT ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO LOCATE AND PROTECT ALL UTILITY LINES AND ANY OTHER LINES WITHIN THIS PROJECT WEATHER SHOWN OR NOT SHOWN

THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER.

H.C.D. NOTE:

1. THIS PERMIT DOES NOT INCLUDE DIRECTIONAL BORING WHICH MUST BE AN ALTERNATE APPROVAL

2. ELECTRICAL GROUNDING MUST BE 25 OHMS OR LESS, TEST REGROUND AND (2) NIEMAN RODS AT ELECTRICAL SERVICE TRANSFORMERS UNDER THIS PERMIT ART 250-53 CEC

3. TEST AND DISINFECT WATER SYSTEM PER CPC 609.4 AND 609.9.

4. SEPERATE PERMIT REQUIRED FOR GAS INSTALLATION WITH METER AS SHOWN ON SHT 2 OF 6

DIGALERT
DIAL TOLL FREE 1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG

R. T. QUINN & ASSOCIATES
DATE: 7-29-13 JOB N°: 103003.100 DRAWN BY: SAZ

PLANS PREPARED FOR
PACIFIC SKIES ESTATES, LLC
5000 BIRCH STREET
EAST TOWER, SUITE 400
NEWPORT BEACH, CA 92660

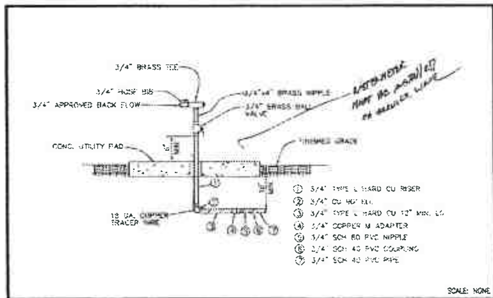
PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES
(41-0032-MP)

JOB ADDRESS
1300 PALMETTO AVENUE
PACIFICA, CA 94044

TRACT NO.
DRAWING FILE NO.
SCALE: AS SHOWN
SHEET 1 OF 7

COVER SHEET

BLUE BOOK REVIEW SET



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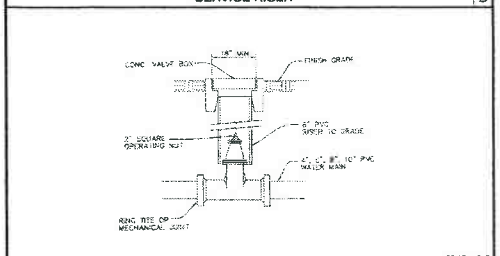
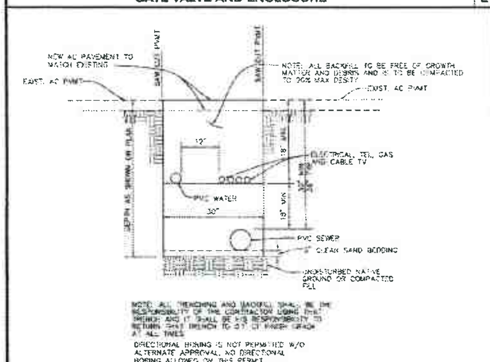
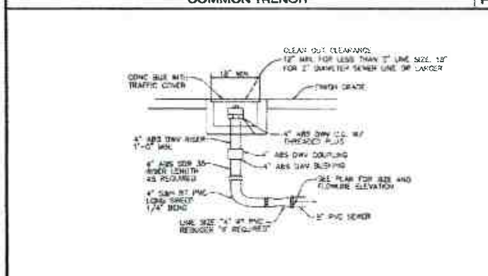


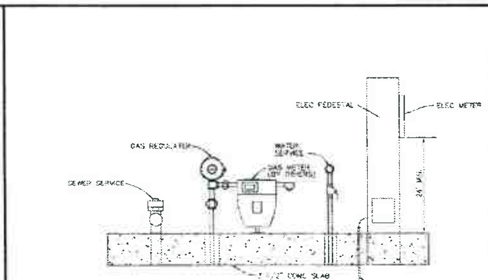
GATE VALVE AND ENCLOSURE — E — SCALE: NONE



COMMON TRENCH — F — SCALE: NONE



TERMINAL CLEANOUT — G



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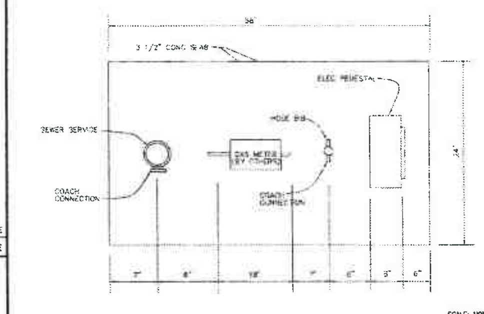

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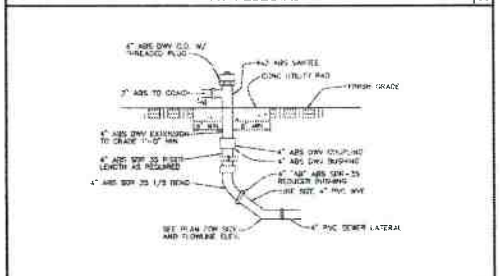

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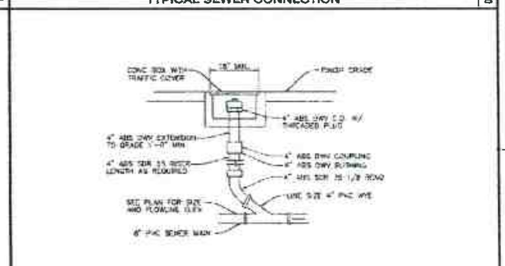
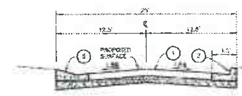
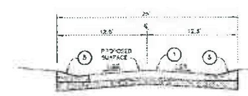


IN LINE CLEANOUT — C — SCALE: NONE



STREET SECTION A-A
NOT TO SCALE



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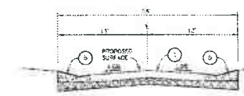

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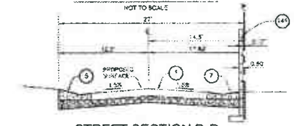

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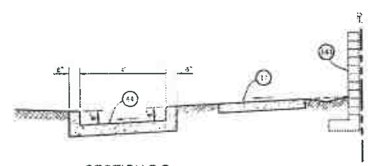

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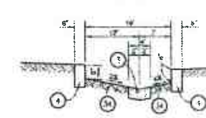

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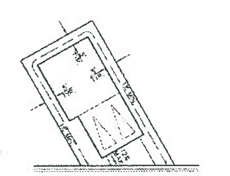
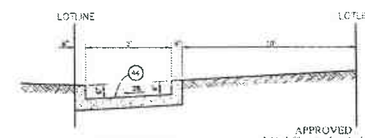


TYPICAL LOT DRAINAGE DETAIL
NOT TO SCALE



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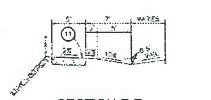
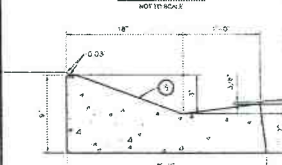
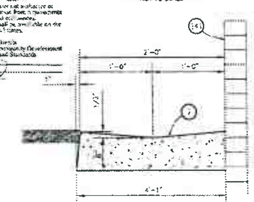


SECTION E-E
NOT TO SCALE

APPROVED



PCC ROLLED CURB AND GUTTER
NOT TO SCALE



LONGITUDINAL GUTTER
NOT TO SCALE

POTABLE WATER SYSTEM

1. THE POTABLE WATER SYSTEM SHALL BE INSTALLED AND CONSTRUCTED ACCORDING TO TITLE 25, ARTICLE 5 OF THE STATE OF CALIFORNIA DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT AND THE UNIFORM PLUMBING CODE APPENDIX B.
2. ALL 8" THRU 4" PIPING SHALL BE PVC C-900 CLASS 150 WITH RING TIGHT JOINTS.
3. ALL 3" THRU 3/4" PIPING SHALL BE PVC SCHEDULE 40 WITH SCHEDULE 40 SOLVENT WELD FITTINGS.
4. ALL PVC PIPING SHALL HAVE A COPPER TRACER WIRE ATTACHED TO THE PIPING AND COME TO THE SURFACE AT EACH SERVICE RISER.
5. ALL SERVICE RISERS SHALL BE 3/4 COPPER WITH A 3/4 BRASS SHUT OFF VALVE, A COACH CONNECTION, AND A HOSE BIB PER DETAIL HEREON.
6. ALL PIPING SHALL HAVE A COVER OF 18" MINIMUM.
7. TEST AND DISINFECT WATER SYSTEM PER CPC 609.4 AND 609.9.
8. GATE VALVES LARGER THAN 2" INSTALLED IN THE SYSTEM SHALL BE EPOXY COATED CAST IRON. EACH VALVE SHALL BE RESILIENT WEDGE, RING TIGHT WITH A 2" OPERATING NUT. EACH VALVE WILL HAVE A 6" PVC VALVE BOX WITH A CAST IRON DROP IN LID MARKED "WATER".
9. CONCRETE THRUST BLOCKS SHALL BE INSTALLED, PER DETAIL HEREON ACCORDING TO SIZE OF PIPING AND GROUND CONDITIONS.
10. THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT REFLECT ALL EXISTING CONDITIONS OF THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXAMINE THE PLANS, EXAMINE THE SITE AND ANY AVAILABLE SOILS REPORT AND MAKE HIS OWN DECISION AS TO THE CORRECTNESS OF PLANS. ANY CHANGES TO THESE PLANS MUST BE APPROVED IN WRITING BY THE DESIGN ENGINEER. ANY APPROVED CHANGES SHALL BE NOTED ON AN ACCURATE "AS BUILT" DRAWING AND FURNISHED TO THE OWNER AND DESIGN ENGINEER UPON COMPLETION OF THE WORK.

SEWER

1. CLEANOUTS SHALL BE LOCATED A MAXIMUM OF 100 FEET APART PER SECTION 406 U.P.C.
2. CHANGING DIRECTION OF FLOW FROM A VERTICAL TO HORIZONTAL FLOW SHALL BE DONE WITH A LONG SWEEP 90 FITTING.
3. NONMETALLIC SEWER LINES INSTALLED BENEATH ROADWAYS SHALL HAVE A MINIMUM DEPTH OF COVER OF 30" BEDDING AND BACKFILL SHALL BE PER SECTION 1292, TITLE 25, CHAPTER 2.
4. UNIVERSAL SOLVENT WELD CEMENT SHALL BE USED ONLY AT THE SINGLE POINT OF ABS TO P.V.C. SEWER CHANGE.
5. ALL P.V.C. SEWER PIPE SHALL BE J-M PIPE "GREEN-TITE" OR EQUAL AND SHALL BE INSTALLED PER MANUFACTURES INSTALLATION GUIDE. PIPE SDR RATING = 35.
6. MINIMUM GRADES FOR SEWER PIPE:
4" = 0.0125; 6" = 0.0057; 8" = 0.0039

CONSTRUCTION NOTES:

GRADING-STREET-DRAINAGE

(1) CONSTRUCT A.C. PAVEMENT AND BASE PER RECOMMENDATIONS OF THE SOILS ENGINEER.
(2) CONSTRUCT CONCRETE CURB AND GUTTER TYPE "A" MODIFY TO 12" GUTTER PER CITY OF PACIFICA STD. DWG. NO. 103 & 104, MODIFY HEIGHT & WIDTH PER PLAN.
(3) CONSTRUCT CROSS AND LONGITUDINAL GUTTERS PER S.P.P.W.C. STD. PLAN 122-1. SEE DETAIL ON SHEET 4.
(4) CONSTRUCT CONCRETE CURB MODIFY TYPE "E" TO 9" C.F. PER CITY OF PACIFICA STD. DWG. NO. 103 & 104, HEIGHT PER PLAN.
(5) CONSTRUCT CONCRETE ROLLED CURB PER DETAIL ON SHEET 2.
(6) SAW CUT AND JOIN CITY OF PACIFICA STD. DWG. NO. 103 & 104.
(7) CONSTRUCT CURB RAMP WITH TRANSVERSE GROOVED SURFACE TEXTURE AND GROOVING AND DETECTABLE WARNING SURFACE PER DETAIL ON SHEET 4.
(8) CONSTRUCT LONGITUDINAL GUTTER PER S.P.P.W.C. STD. PLAN 122-1. SEE DETAIL ON SHEET 2.
(10) CONSTRUCT 4" P.C.C. SIDEWALK PER CITY OF PACIFICA STD. DWG. 105.
(11) CONSTRUCT TRAIL PER LANDSCAPE ARCHITECTURAL PLAN.
(34) PLANT VERY SHORT GRASS PER LANDSCAPE ARCHITECTURAL PLAN.
(35) EXISTING CATCH BASIN TO REMAIN.
(36) CONSTRUCT CONCRETE PER LANDSCAPE ARCHITECTURAL PLANS.
(38) INSTALL EXIT ONLY SIGN.
(39) CONSTRUCT ROLLING GATE PER LANDSCAPE ARCHITECTURAL PLAN.
(40) CONSTRUCT DRIVEWAY APPROACHES PER CITY OF PACIFICA STD. DWG. NO. 102, MODIFIED FOR CONFIGURATION HEREON, TRANSITION 5'. SEE DETAILS ON SHEET 4.
(41) REMOVE EXISTING CATCH BASIN AND RECONSTRUCT REPLACEMENT CATCH BASIN 5' LY HEREOF PER CONSTRUCTION NOTE 43.
(42) ASSUMED LOCATION OF EXISTING PIPE. VERIFY PRIOR TO CONSTRUCTION. REMOVE INTERFERING PORTION OF EXISTING PIPE.
(43) INSTALL 36"X36" CATCH BASIN AND PARKWAY GRATE PER BROOKS PRODUCT NO. 3636CB (OR APPROVED EQUAL).
(44) CONSTRUCT CONCRETE DRAINAGE CHANNEL PER SECTIONS ON SHEET 4.
(45) INSTALL 10" P.V.C. (SDR35, A.S.T.M. D3034) OR EQUAL.
(46) INSTALL 12" P.V.C. (SDR35, A.S.T.M. D3034) OR EQUAL.

SEWERS

(51) CONSTRUCT 8" P.V.C. SEWER MAIN (SDR35, A.S.T.M. D3034).
(52) CONSTRUCT 4" P.V.C. SEWER LATERAL (SDR35, A.S.T.M. D3034).
(53) CONSTRUCT 6" P.V.C. SEWER MAIN (SDR35, A.S.T.M. D3034).
(54) CONSTRUCT IN LINE SEWER CLEANOUT PER DETAIL "C" ON SHEET 2.
(55) CONSTRUCT TERMINAL SEWER CLEANOUT PER DETAIL "G" ON SHEET 2.
(56) CONSTRUCT AND INSTALL PRECAST CONCRETE SEWER MANHOLE PER S.P.P.W.C. STD. PLAN 200-2.
(57) RECONSTRUCT EXISTING 6" SEWER LATERAL. CONTRACTOR TO VERIFY WITH CITY IF TRENCHLESS OR PIPE BURSTING CAN BE USED IN LIEU TRENCHING.
(58) CONNECT TO EXISTING SEWER MANHOLE.

WATER

(62) CONSTRUCT 4" P.V.C. C-900 150 WATER MAIN & STD. THRUST BLOCK PER NORTH COUNTY WATER DISTRICT STD. DETAIL NC-20.
(63) INSTALL GATE VALVE AND ENCLOSURE PER DETAIL "E" ON SHEET 2.
(64) INSTALL SERVICE RISER PER DETAIL "D" ON SHEET 2.
(65) CONSTRUCT 3/4" P.V.C. WATER LATERAL.
(66) 2" DOUBLE CHECK VALVE ASSEMBLY (FEBCO 850V) OR APPROVED EQUAL.
(67) CONSTRUCT 6" P.V.C. C-900-150 FIRE LINE & STD. THRUST BLOCK PER NORTH COUNTY WATER DISTRICT STD. DETAIL NC-20.
(68) CONSTRUCT 8" P.V.C. C-900-150 FIRE LINE & STD. THRUST BLOCK PER NORTH COUNTY WATER DISTRICT STD. DETAIL NC-20.
(69) CONTACT NORTH COUNTY WATER DISTRICT FOR CONNECTION TO EXISTING 10" WATER MAIN.
(70) CONSTRUCT PEDESTAL PER DETAIL "A" SHEET 2.
(71) EXISTING 2" WATER SERVICE METER TO BE UPGRADED AS NECESSARY.
(72) INSTALL FIRE HYDRANT ASSEMBLY PER NORTH COAST COUNTY WATER DISTRICT STD. DETAIL NC 15A.
(73) CONSTRUCT 3" P.V.C. C-900 150 WATER MAIN & STD. THRUST BLOCK PER NORTH COUNTY WATER DISTRICT STD. DETAIL NC-20.

MISCELLANEOUS

(141) CONSTRUCT 6' HIGH MASONRY WALL PER LANDSCAPE ARCHITECTURAL PLANS.

DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE PLOTTED FROM CITY RECORDS OR RECORDS PROVIDED BY OWNER. NO ADDITIONAL UTILITY OR SUBSTRUCTURE RESEARCH HAS BEEN PERFORMED. THE CONTRACTOR SHALL DETERMINE THE EXISTENCE AND THE TRUE HORIZONTAL AND VERTICAL LOCATION AND SIZE OF ANY UNDERGROUND UTILITIES OR STRUCTURES AND SHALL BE RESPONSIBLE FOR PROTECTION, ADJUSTMENT, OR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES SHOWN OR NOT SHOWN HEREON. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NOTIFYING U.S.A./DIG ALERT AT 1-800-227-2600 FOR UNDERGROUND UTILITY MARKING AT LEAST 48 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION. CONSTRUCTION SHALL NOT COMMENCE PRIOR TO SAID UNDERGROUND UTILITY MARKING.

AERIAL TOPOGRAPHY, BOUNDARY, LEGAL DESCRIPTION AND SURVEY SHOWN HEREON WERE PROVIDED BY OWNER AND PREPARED BY DUNBAR and CRAIG ON JANUARY 19, 2010

BASIS OF BEARINGS
BEARINGS ARE BASED UPON THE CENTER LINE OF PALMETTO AVENUE (S.W. RTE. 2) AS SHOWN ON THAT MAP FILED IN VOLUME 32 OF MAPS AT PAGES 15 & 16, SAN MATEO COUNTY RECORDS, AND ESTABLISHED BETWEEN MONUMENTS FOUND.

NORTH 1°40'17" WEST

PLANS PREPARED BY:
R. T. QUINN & ASSOCIATES
CIVIL ENGINEERS · LAND SURVEYORS

DATE: 7-29-13 | JOB NO.: 209008-103 | DRAWN BY: SAZ

REVISIONS			
NO.	DATE	BY	DESCRIPTION

PLANS PREPARED FOR:
PACIFIC SKIES ESTATES, LLC
5000 BIRCH STREET
EAST TOWER, SUITE 400
NEWPORT BEACH, CA 92660
ATTN: TONY FERRERO
(949) 333-8500 MAIN
(949) 333-8580 DIRECT

PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES
(41-0032-MP)

JOB ADDRESS:
1300 PALMETTO AVENUE
PACIFICA, CA 94044

TRACT NO.

DRAWING FILE NO.

SCALE: AS SHOWN
SHEET 2 OF 7

SHEET TITLE
NOTES AND DETAILS

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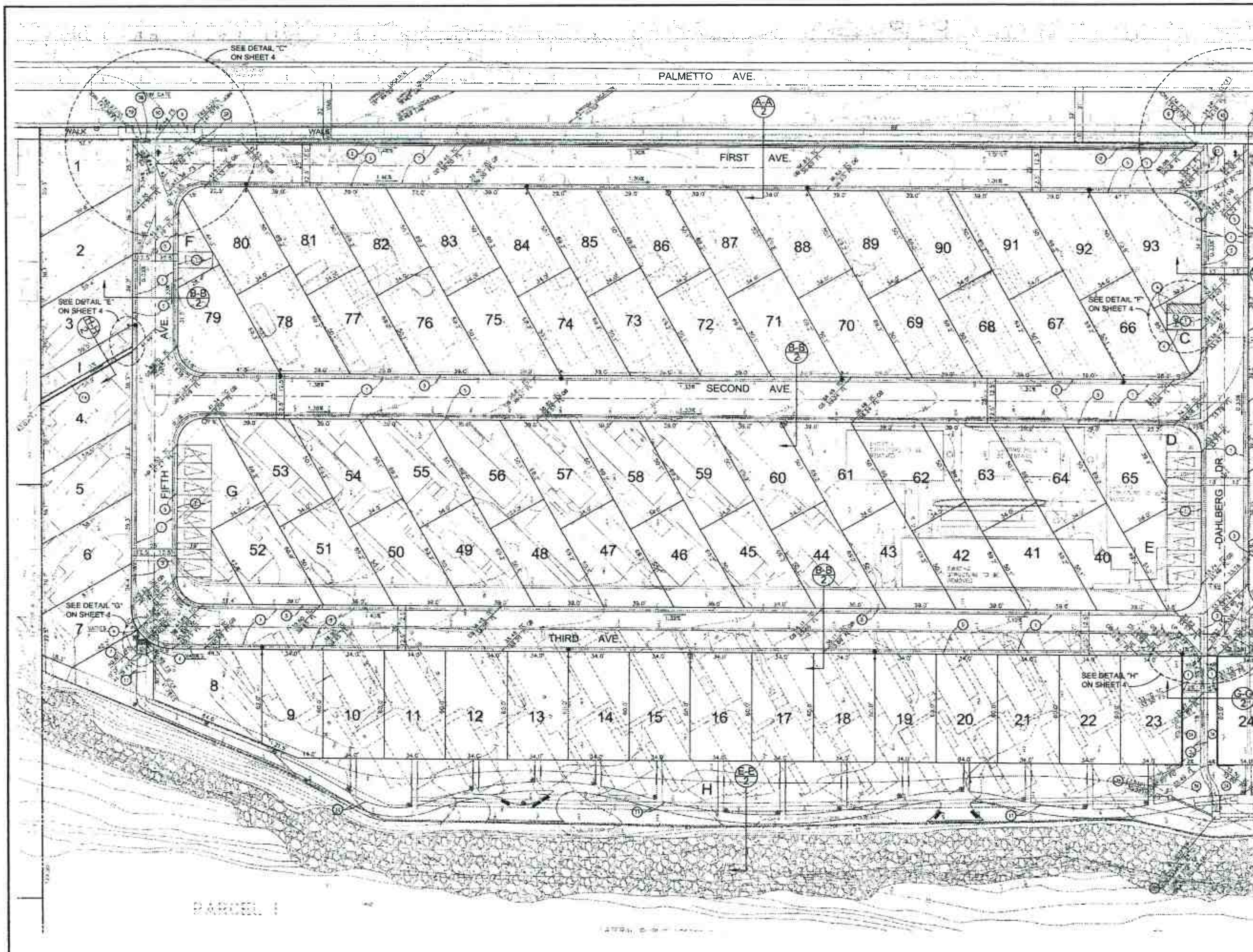

CONSTRUCTION NOTES:

GRADING-STREET-DRAINAGE

1. CONSTRUCT A.C. PAVEMENT AND BASE PER RECOMMENDATIONS OF THE SOILS ENGINEER.
2. CONSTRUCT CONCRETE CURB AND GUTTER TYPE "A" MODIFY TO 12" GUTTER PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A. MODIFY HEIGHT & WIDTH PER PLAN.
3. CONSTRUCT CROSS AND LONGITUDINAL GUTTERS PER S.P.P.W.C. STD PLAN 122-1, W=4'. SEE DETAIL ON SHEET 4
4. CONSTRUCT CONCRETE CURB MODIFY TYPE "E" TO 6" C.F. PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A, HEIGHT PER PLAN
5. CONSTRUCT CONCRETE ROLLED CURB PER DETAIL ON SHEET 2
6. SAW CUT AND JOIN CITY OF PACIFICA STD. DWG. NO. 100 & 101A
7. CONSTRUCT CURB RAMP WITH TRANSVERSE BROOMED SURFACE TEXTURE AND GROOVING AND DETECTABLE WARNING SURFACE PER DETAIL ON SHEET 4.
9. CONSTRUCT LONGITUDINAL GUTTER PER S.P.P.W.C. STD. PLAN 122-1 SEE DETAIL ON SHEET 2.
10. CONSTRUCT 4" P.C.C. SIDEWALK PER CITY OF PACIFICA STD. DWG. 100
11. CONSTRUCT TRAIL PER LANDSCAPE ARCHITECTURAL PLAN.
14. PLANT VERY SHORT GRASS PER LANDSCAPE ARCHITECTURAL PLAN.
15. EXISTING CATCH BASIN TO REMAIN.
16. CONSTRUCT CONCRETE PER LANDSCAPE ARCHITECTURAL PLANS
38. INSTALL EXIT ONLY SIGN.
39. CONSTRUCT ROLLING GATE PER LANDSCAPE ARCHITECTURAL PLAN.
40. CONSTRUCT DRIVEWAY APPROACHE PER CITY OF PACIFICA STD. DWG. NO. 102, MODIFIED PER CONFIGURATION HEREON. TRANSITION 5'. SEE DETAILS ON SHEET 4.
41. REMOVE EXISTING CATCH BASIN AND RECONSTRUCT REPLACEMENT CATCH BASIN S'LY HEREOF PER CONSTRUCTION NOTE 43
42. ASSUMED LOCATION OF EXISTING PIPE. VERIFY PRIOR TO CONSTRUCTION. REMOVE INTERFERING PORTION OF EXISTING PIPE
43. INSTALL 36"x36" CATCH BASIN AND PARKWAY GRATE PER BROOKS PRODUCT NO. 3636CB (OR APPROVED EQUAL).
44. CONSTRUCT CONCRETE DRAINAGE CHANNEL PER SECTIONS ON SHEET 4.
45. INSTALL 10" P.V.C. (SDR35, A.S.T.M., D3034) OR EQUAL
46. INSTALL 12" P.V.C. (SDR35, A.S.T.M., D3034) OR EQUAL

Parking Lot Sign: Exit Only Sign

EXIT ONLY

APPROVED

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG

R. T. QUINN & ASSOCIATES

DATE: 7-29-13 | JOB N°: 200008 10C | DRAWN BY: SAZ

REVISIONS			
N°	DATE	BY	DESCRIPTION

PLANS PREPARED FOR
PACIFIC SKIES ESTATES, LLC
5000 BIRCH STREET
EAST TOWER, SUITE 400
NEWPORT BEACH, CA 92660
ATTN: TONY FERRERO

PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES
(41-0032-MP)

JOB ADDRESS
1300 PALMETTO AVENUE
PACIFICA, CA 94044

TRACT NO.

DRAWING FILE NO.

SCALE: 1" = 20'

SHEET 3 OF 7

SHEET TITLE
SITE IMPROVEMENTS

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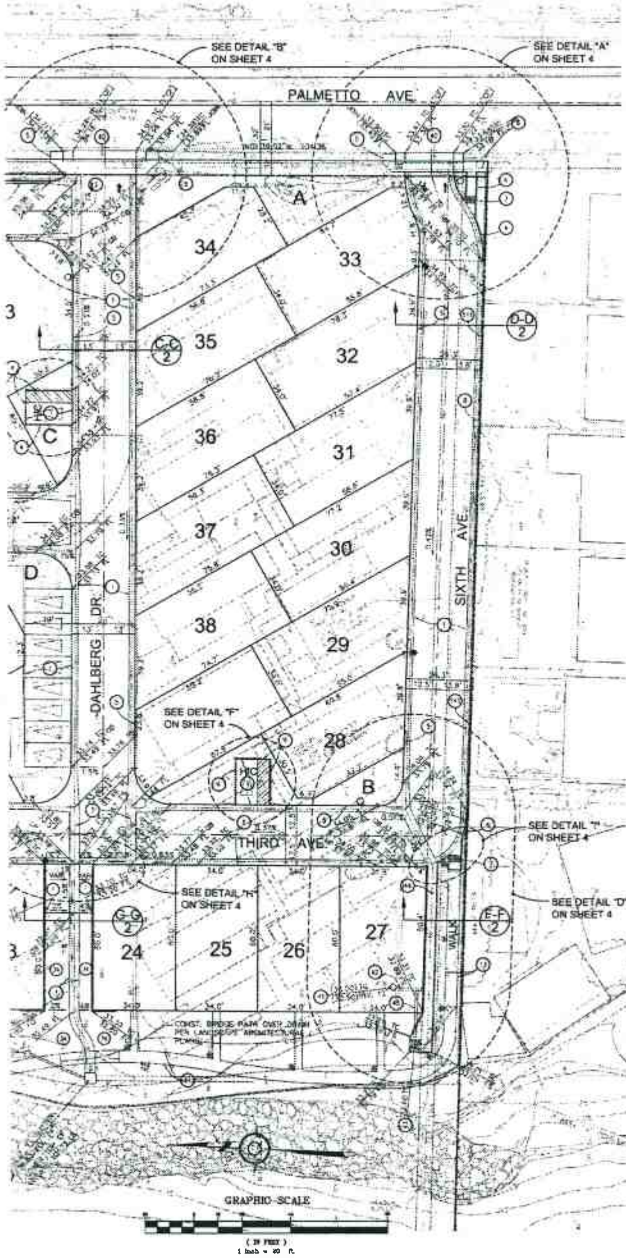
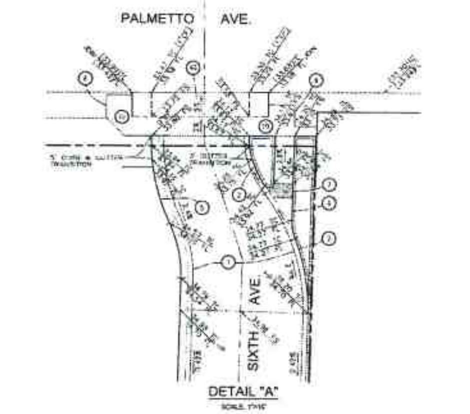
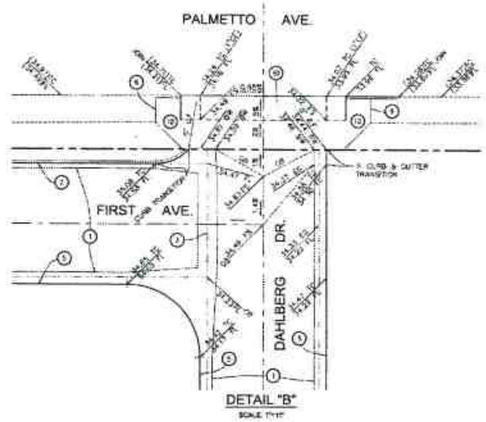
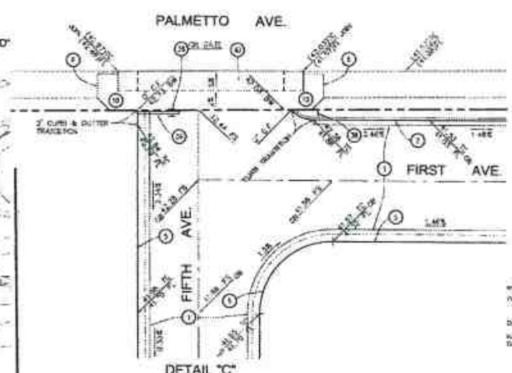








CONSTRUCTION NOTES:

GRADING-STREET-DRAINAGE

(1) CONSTRUCT A.C. PAVEMENT AND BASE PER RECOMMENDATIONS OF THE SOILS ENGINEER.

(2) CONSTRUCT CONCRETE CURB AND GUTTER TYPE "A" MODIFY TO 12" GUTTER PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A. MODIFY HEIGHT & WIDTH PER PLAN.

(3) CONSTRUCT CROSS AND LONGITUDINAL GUTTERS PER S.P.P.W.C. STD PLAN 122-1. SEE DETAIL ON SHEET 4.

(4) CONSTRUCT CONCRETE CURB MODIFY TYPE "B" TO 6" C.F. PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A. HEIGHT PER PLAN.

(5) CONSTRUCT CONCRETE ROLLED CURB PER DETAIL ON SHEET 2.

(6) SAW CUT AND JOIN CITY OF PACIFICA STD. DWG. NO. 100 & 101A.

(7) CONSTRUCT CURB RAMP WITH TRANSVERSE BROOMED SURFACE TEXTURE AND GROOVING AND DETECTABLE WARNING SURFACE PER DETAIL ON SHEET 4.

(8) CONSTRUCT LONGITUDINAL GUTTER PER S.P.P.W.C. STD. PLAN 122-1. SEE DETAIL ON SHEET 2.

(10) CONSTRUCT 4" P.C.C. SIDEWALK PER CITY OF PACIFICA STD. DWG. 105.

(11) CONSTRUCT TRAIL PER LANDSCAPE ARCHITECTURAL PLAN.

(34) PLANT VERY SHORT GRASS PER LANDSCAPE ARCHITECTURAL PLAN.

(35) EXISTING CATCH BASIN TO REMAIN.

(36) CONSTRUCT CONCRETE PER LANDSCAPE ARCHITECTURAL PLANS.

(38) INSTALL EXIT ONLY SIGN.

(39) CONSTRUCT ROLLING GATE PER LANDSCAPE ARCHITECTURAL PLAN.

(40) CONSTRUCT DRIVEWAY APPROACHE PER CITY OF PACIFICA STD. DWG. NO. 102. MODIFIED PER CONFIGURATION HEREON. TRANSITION 3'. SEE DETAILS ON SHEET 4.

(41) REMOVE EXISTING CATCH BASIN AND RECONSTRUCT REPLACEMENT CATCH BASIN 8'LY HEREOF PER CONSTRUCTION NOTE 43.

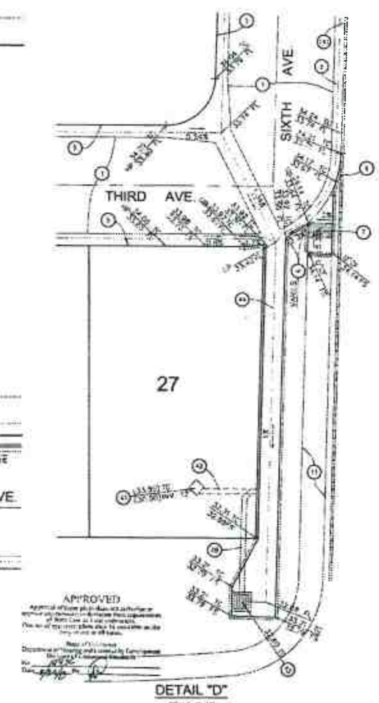
(42) ASSUMED LOCATION OF EXISTING PIPE. VERIFY PRIOR TO CONSTRUCTION. REMOVE INTERFERING PORTION OF EXISTING PIPE.

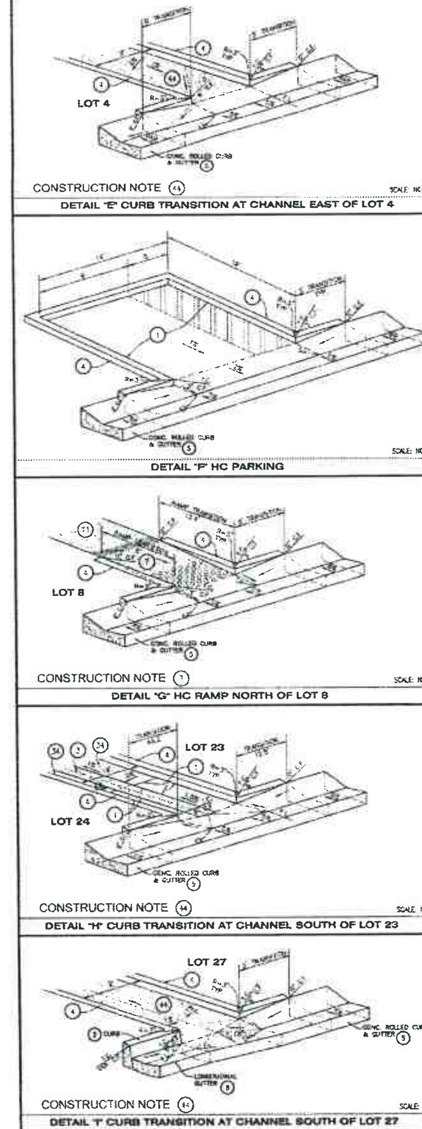
(43) INSTALL 36"x36" CATCH BASIN AND PARKWAY GRATE PER BROOKS PRODUCT NO. 3636 (OR APPROVED EQUAL).

(44) CONSTRUCT CONCRETE DRAINAGE CHANNEL PER SECTIONS ON SHEET 4.

(45) INSTALL 10" P.V.C. (SDR35, A.S.T.M. D3034) OR EQUAL.

(46) INSTALL 12" P.V.C. (SDR35, A.S.T.M. D3034) OR EQUAL.





DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG

ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE PLOTTED FROM CITY RECORDS OR RECORDS PROVIDED BY OWNER. NO ADDITIONAL UTILITY OR SUBSTRUCTURE RESEARCH HAS BEEN PERFORMED. THE CONTRACTOR SHALL DETERMINE THE EXISTENCE AND THE TRUE HORIZONTAL AND VERTICAL LOCATION AND SIZE OF ANY UNDERGROUND UTILITIES OR STRUCTURES AND SHALL BE RESPONSIBLE FOR PROTECTION, ADJUSTMENT, OR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES SHOWN OR NOT SHOWN HEREON. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NOTIFYING U.S.A./DIG ALERT AT 1-800-227-2600 FOR UNDERGROUND UTILITY MARKING AT LEAST 48 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION. CONSTRUCTION SHALL NOT COMMENCE PRIOR TO SAID UNDERGROUND UTILITY MARKING.

AERIAL TOPOGRAPHY, BOUNDARY, LEGAL DESCRIPTION AND SURVEY SHOWN HEREON WERE PROVIDED BY OWNER AND PREPARED BY DUNBAR and CRAIG ON JANUARY 19, 2010.

PLANS PREPARED BY
R. T. QUINN & ASSOCIATES

No.	DATE	BY	REVISIONS DESCRIPTION

DATE: 7-26-13 | JOB N°: 209FOR-100 | DRAWN BY: SAZ

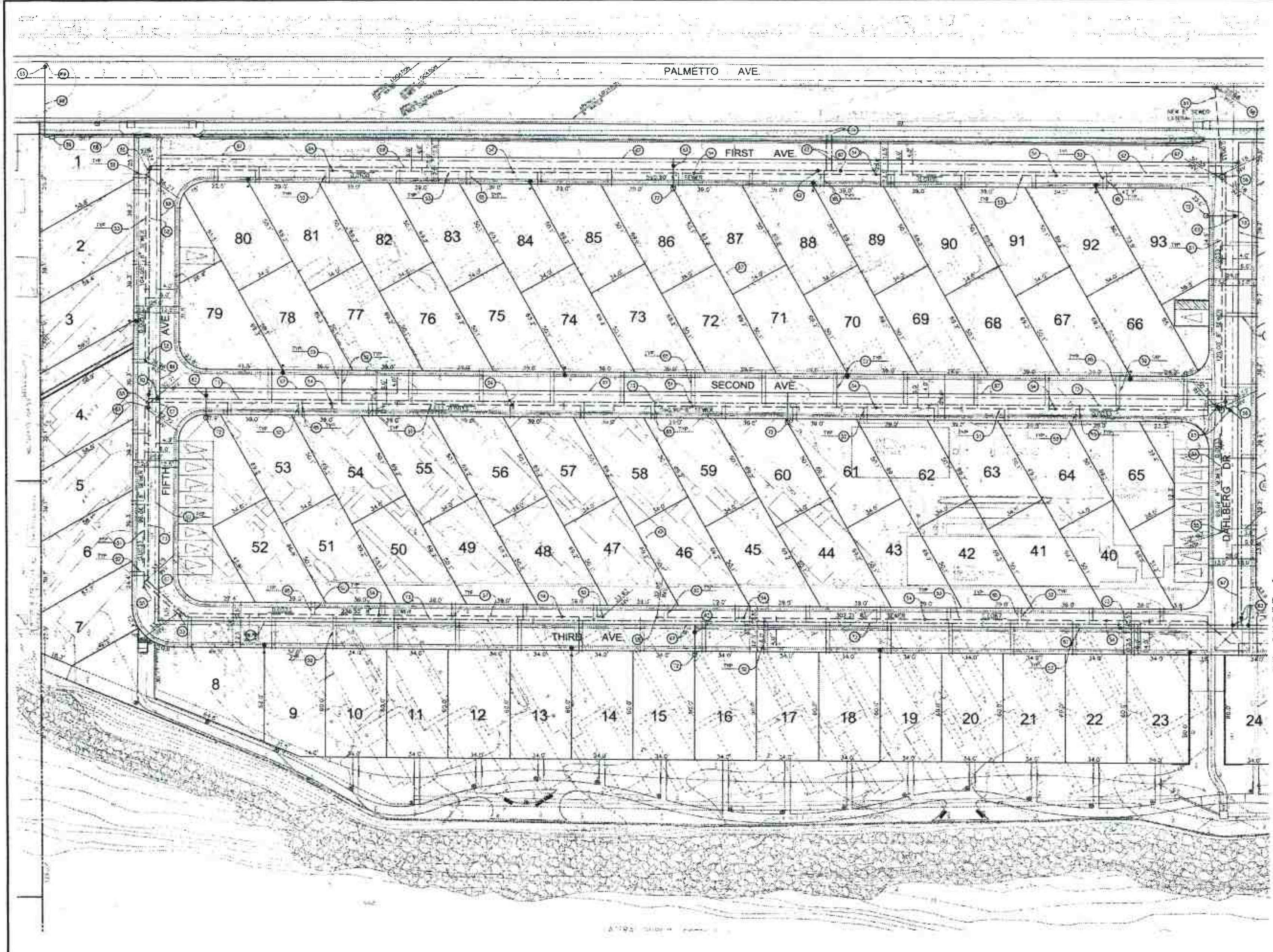
PLANS PREPARED FOR
PACIFIC SKIES ESTATES, LLC

PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES
(41-0032-MP)
1000 PALMETTO AVENUE
PACIFICA, CA 94044

SCALE: 1"= 20'
SHEET 4 OF 7

SHEET TITLE
SITE IMPROVEMENTS

BLUE BOOK REVIEW SET



CONSTRUCTION NOTES:

GRADING-STREET-DRAINAGE

(1) CONSTRUCT A.C. PAVEMENT AND BASE PER RECOMMENDATIONS OF THE SOILS ENGINEER

(2) CONSTRUCT CONCRETE CURB AND GUTTER TYPE "A" MODIFY TO 12" GUTTER PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A. MODIFY HEIGHT & WIDTH PER PLAN.

(3) CONSTRUCT CROSS AND LONGITUDINAL GUTTERS PER S.P.P.W.C. STD. PLAN 122-1, W=4'. SEE DETAIL ON SHEET 4.

(4) CONSTRUCT CONCRETE CURB MODIFY TYPE "E" TO 5" C.F. PER CITY OF PACIFICA STD. DWG. NO. 100 & 101A. HEIGHT PER PLAN.

(5) CONSTRUCT CONCRETE ROLLED CURB PER DETAIL ON SHEET 2

(6) SAW CUT AND JOIN CITY OF PACIFICA STD. DWG. NO. 100 & 101A

(7) CONSTRUCT CURB RAMP WITH TRANSVERSE BROOMED SURFACE TEXTURE AND GROOVING AND DETECTABLE WARNING SURFACE PER DETAIL ON SHEET 4.

(8) CONSTRUCT LONGITUDINAL GUTTER PER S.P.P.W.C. STD. PLAN 122-1 SEE DETAIL ON SHEET 2

(10) CONSTRUCT 4" P.C.C. SIDEWALK PER CITY OF PACIFICA STD. DWG. 100.

(11) CONSTRUCT TRAIL PER LANDSCAPE ARCHITECTURAL PLAN.

(34) PLANT VERY SHORT GRASS PER LANDSCAPE ARCHITECTURAL PLAN

(35) EXISTING CATCH BASIN TO REMAIN

(36) CONSTRUCT CONCRETE PER LANDSCAPE ARCHITECTURAL PLANS.

(38) INSTALL EXIT ONLY SIGN

(39) CONSTRUCT ROLLING GATE PER LANDSCAPE ARCHITECTURAL PLAN

(40) CONSTRUCT DRIVEWAY APPROACHE PER CITY OF PACIFICA STD. DWG. NO. 122, MODIFIED PER CONFIGURATION HEREON, TRANSITION 5'. SEE DETAILS ON SHEET 4

(41) REMOVE EXISTING CATCH BASIN AND RECONSTRUCT REPLACEMENT CATCH BASIN SLY HEREOF PER CONSTRUCTION NOTE 43

(42) ASSUMED LOCATION OF EXISTING PIPE. VERIFY PRIOR TO CONSTRUCTION. REMOVE INTERFERING PORTION OF EXISTING PIPE

(43) INSTALL 36"x36" CATCH BASIN AND PARKWAY GRATE PER BROOKS PRODUCT NO. 3636CB (OR APPROVED EQUAL).

(44) CONSTRUCT CONCRETE DRAINAGE CHANNEL PER SECTIONS ON SHEET 4

(45) INSTALL 10" P.V.C. (SDR35, A.S.T.M., D3034) OR EQUAL

(46) INSTALL 12" P.V.C. (SDR35, A.S.T.M., D3034) OR EQUAL

SEWERS

(51) CONSTRUCT 8" P.V.C. SEWER MAIN (SDR35, A.S.T.M., D3034)

(52) CONSTRUCT 4" P.V.C. SEWER LATERAL(SDR35, A.S.T.M., D3034)

(53) CONSTRUCT 6" P.V.C. SEWER MAIN (SDR35, A.S.T.M., D3034)

(54) CONSTRUCT IN LINE SEWER CLEANOUT PER DETAIL "C" ON SHEET 2.

(55) CONSTRUCT TERMINAL SEWER CLEANOUT PER DETAIL "E" ON SHEET 2.

(56) CONSTRUCT AND INSTALL PRECAST CONCRETE SEWER MANHOLE PER S.P.P.W.C. STD. PLAN 200-2

(57) RECONSTRUCT EXISTING 6" SEWER LATERAL. CONTRACTOR TO VERIFY WITH CITY IF TRENCHLESS OR PIPE BURSTING CAN BE USED IN LIEU TRENCHING.

(58) CONNECT TO EXISTING SEWER MANHOLE

WATER

(62) CONSTRUCT 4" P.V.C. C-900-150 WATER MAIN & STD. THRUST BLOCK PER NORTH COUNTY WATER DISTRICT STD. DETAIL NC-20.

(63) INSTALL GATE VALVE AND ENCLOSURE PER DETAIL "E" ON SHEET 2.

(64) INSTALL SERVICE RISER PER DETAIL "D" ON SHEET 2.

(65) CONSTRUCT 3/4" P.V.C. WATER LATERAL

(66) 6" DOUBLE CHECK VALVE ASSEMBLY (FEBCO 870V) OR APPROVED EQUAL

(67) CONSTRUCT 6" P.V.C. C-900-150 FIRE LINE & STD. THRUST BLOCK PER NORTH COUNTY WATER DISTRICT STD. DETAIL NC-20.

(68) CONSTRUCT 8" P.V.C. C-900-150 FIRE LINE & STD. THRUST BLOCK PER NORTH COUNTY WATER DISTRICT STD. DETAIL NC-20

(69) CONTACT NORTH COUNTY WATER DISTRICT FOR CONNECTION TO EXISTING 10" WATER MAIN.

(70) CONSTRUCT PEDISTAL PER DETAIL "A" SHEET 2

(71) EXISTING 2" WATER SERVICE METER TO BE UPGRADED IF NECESSARY

(72) INSTALL FIRE HYDRANT ASSEMBLY PER NORTH COAST COUNTY WATER DISTRICT STD. DETAIL NC-15A

(73) CONSTRUCT 3" P.V.C. C-900-150 WATER MAIN & STD. THRUST BLOCK PER NORTH COUNTY WATER DISTRICT STD. DETAIL NC-20.

MISCELLANEOUS

(141) CONSTRUCT 6' HIGH MASONRY WALL PER LANDSCAPE ARCHITECTURAL PLANS.

APPROVED

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

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UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

R. T. QUINN & ASSOCIATES
CIVIL ENGINEERS LAND SURVEYORS

DATE: 7-29-13 | JOB NO. 201208-100 | DRAWING BY: SAZ

NO.	DATE	BY	REVISIONS DESCRIPTION

PLANS PREPARED FOR:
PACIFIC SKIES ESTATES, LLC
5000 BIRCH STREET
EAST TOWER, SUITE 400
NEWPORT BEACH, CA 92660
ATTN: TONY FERRERO
(949) 333-6600 MAIN
(949) 333-6550 DIRECT

PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES
(41-0032-MP)

JOB ADDRESS
1300 PALMETTO AVENUE
PACIFICA, CA 94044

TRACT NO.

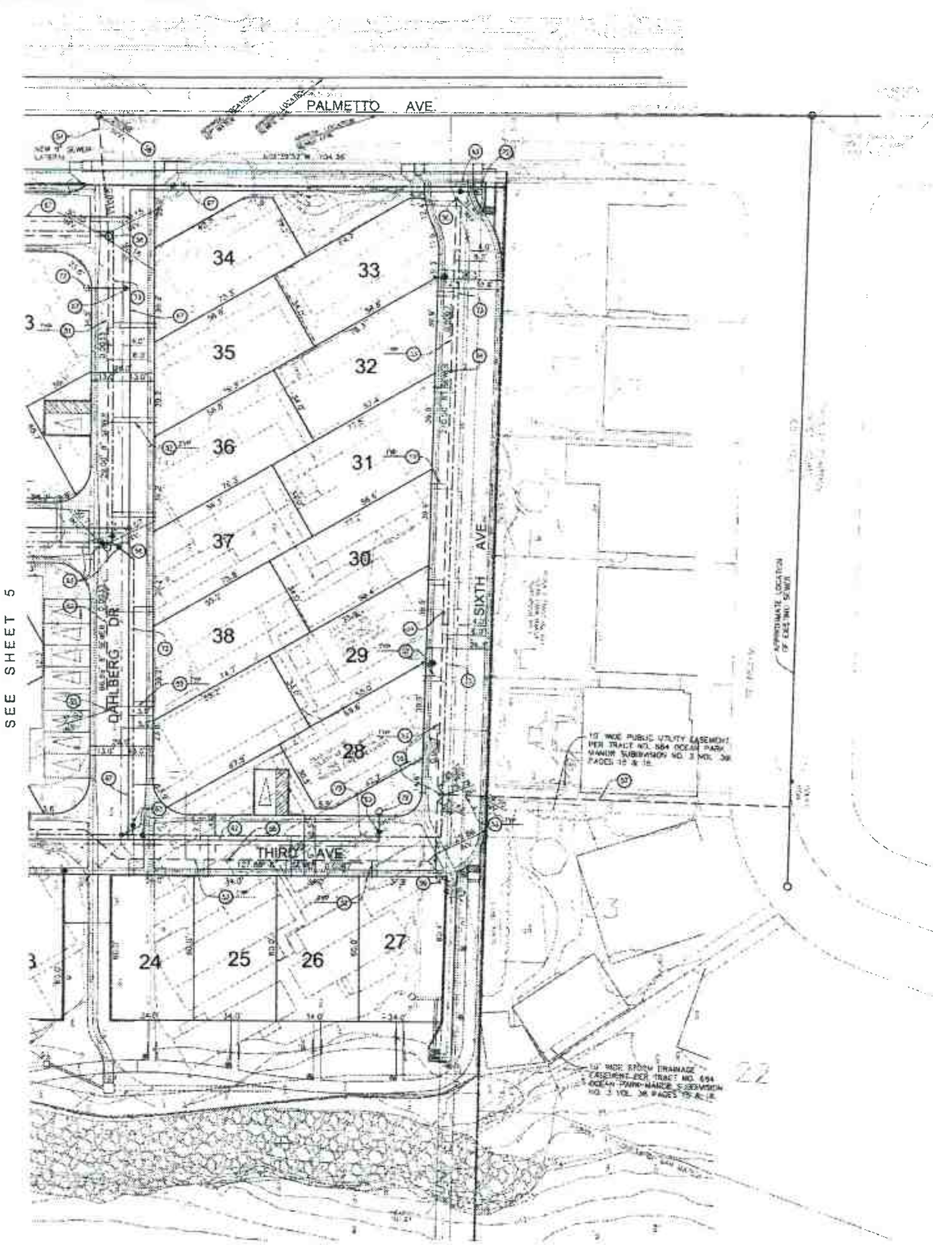
DRAWING FILE NO.

SCALE 1"= 20'

SHEET 5 OF 7

SHEET TITLE
SEWER AND WATER PLAN

BLUE BOOK REVIEW SET



CONSTRUCTION NOTES:

GRADING-STREET-DRAINAGE

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4. CONSTRUCT CONCRETE CURB MODIFY TYPE "E" TO 8" C.F. PER CITY OF PACIFICA STD. DWG. NO. 101 & 101A, HEIGHT PER PLAN
5. CONSTRUCT CONCRETE ROLLED CURB PER DETAIL ON SHEET 2
6. SAW CUT AND JOIN CITY OF PACIFICA STD. DWG. NO. 100 & 101A
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MISCELLANEOUS

141. CONSTRUCT 6' HIGH MASONRY WALL PER LANDSCAPE ARCHITECTURAL PLANS

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.

APPROVED
State of California
Department of Housing and Community Development
Division of Codes and Standards

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UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

R. T. QUINN & ASSOCIATES
CIVIL ENGINEERS · LAND SURVEYORS

DATE: 7-29-13 | JOB NO.: 209008-133 | DRAWN BY: SAZ

REVISIONS			
NO.	DATE	BY	DESCRIPTION

PLANS PREPARED FOR
PACIFIC SKIES ESTATES, LLC
5000 BIRCH STREET
EAST TOWER, SUITE 400
NEWPORT BEACH, CA 92660
ATTN: TONY FERRERO
(949) 333-8600 MAIN
(949) 333-8560 DIRECT

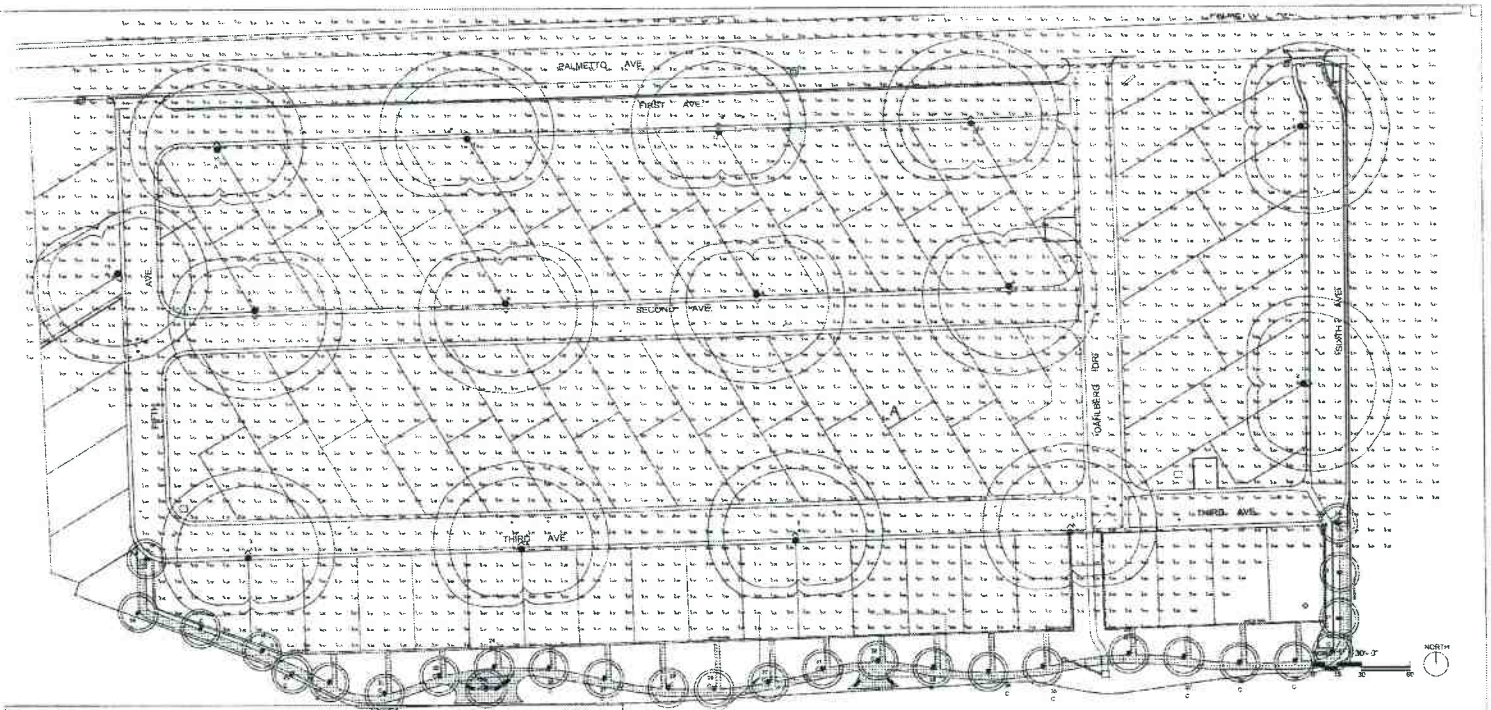
PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES
(41-0032-MP)

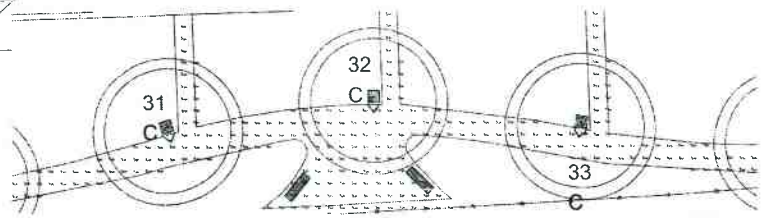
JOB ADDRESS
1300 PALMETTO AVENUE
PACIFICA, CA 94044

TRACT NO.
DRAWING FILE NO.
SCALE: 1" = 20'
SHEET 6 OF 7

SHEET TITLE
SEWER AND WATER PLAN

BLUE BOOK REVIEW SET





Luminaire Location Summary

Project: PACIFIC SKIES MOBILE ESTATES - SITE LIGHTING

Number	Label	X	Y	Z	Orient	Tilt	Symbol
1	A	-30.12.871	6997.475	13.1	0	0	On
2	A	-9132.295	6797.334	13.1	0	0	On
3	A	-9297.287	6753.71	13.1	183.288	0	On
4	A	-9647.641	6636.187	13.1	183.153	0	On
5	A	-9422.250	6542.518	13.1	93.105	0	On
6	A	-9252.29	6442.589	13.1	93.153	0	On
7	A	-9456.827	6799.389	13.1	278.152	0	On
8	A	-9636.940	6858.735	13.1	278.162	0	On
9	A	-9742.647	6894.785	13.1	278.182	0	On
10	A	-9798.70	6038.48	13.1	93.161	0	On
11	A	-9859.161	6581.125	13.1	93.184	0	On
12	A	-9473.926	6958.935	13.1	87.453	0	On
13	A	-9371.947	6970.470	13.1	95.182	0	On
14	A	-9294.248	6746.588	13.1	276.180	0	On
15	A	-9467.471	6809.221	13.1	276.148	0	On
16	C	-9458.983	6826.844	2.5	189	0	On
17	C	-9297.269	6797.506	2.5	268.179	0	On
18	C	-9.788.14	6783.772	2.5	269.196	0	On
19	C	-9636.794	6806.836	2.5	36.462	0	On
20	C	-9741.099	6966.238	2.5	84.718	0	On
21	C	-9712.264	6966.862	2.5	246.846	0	On
22	C	-9651.098	6942.151	2.5	281.741	0	On
23	C	-9648.139	6967.264	2.5	291.877	0	On
24	C	-9618.117	6961.43	2.5	278.071	0	On
25	C	-9584.787	6952.714	2.5	278.181	0	On
26	C	-9581.213	6942.956	2.5	188.581	0	On
27	C	-9584.374	6936.228	2.5	281.464	0	On
28	C	-9669.28	6956.25	2.5	278	0	On
29	C	-9476.664	6946.875	2.5	278.087	0	On
30	C	-9441.388	6955.949	2.5	268.131	0	On
31	C	-9411.824	6961.758	2.5	278.977	0	On
32	C	-9377.978	6969.392	2.5	278.487	0	On
33	C	-9360.24	6975.418	2.5	281.240	0	On
34	C	-9356.183	6958.92	2.5	174.315	0	On
35	C	-9378.915	6947.634	2.5	278.488	0	On
36	C	-9321.453	6910.911	2.5	277.799	0	On
37	C	-9381.2	6948.698	2.5	284.884	0	On
38	C	-9412.286	6958.377	2.5	268.911	0	On
39	C	-9419.365	6959.913	2.5	274.821	0	On
40	L	-9436.299	6947.324	2.5	313.884	0	On
41	C	-9369.381	6951.429	2.5	0	0	On
42	L	-9381.721	6948.845	2.5	0	0	On
43	C	-9362.948	6958.328	2.5	0	0	On

Total Quantity: 43

Luminaire Schedule

Project: PACIFIC SKIES MOBILE ESTATES - SITE LIGHTING

Symbol	Qty	Label	Arrangement	Lumens/Lamp	Lum. Lumens	LLD	LDD	TL-Z	DP	Description	Part Number
	15	A	SINGLE	5600	2388	0.786	0.900	0.849	1.000	WESTAMERICA AVENUE 10-UV (60+100A-CAMPS) - 10'-0" A 12-GA AL - 12' POLE	WAS-60w-HS-UV
	28	C	SINGLE	N.A.	690	0.899	0.576	0.944	1.000	BOREON 730-ES-HA2-T-MPX - 3.5' OFFSET, HEIGHT	Pole: 4 YR_LED_72"BSS ACT

Calculation Summary

Project: PACIFIC SKIES MOBILE ESTATES - SITE LIGHTING

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	# Pts	Description
DP	Illuminance	Fc	0.60	25.10	0.00	N.A.	N.A.	Multi	ALL POINTS SHOWN ON PATHWAY
EA	Illuminance	Fc	0.92	2.74	0.21	24.03	76.86	105	FIRST AVENUE
SA	Illuminance	Fc	0.72	2.27	0.14	29.65	111.00	119	SECOND AVENUE
THC	Illuminance	Fc	0.91	2.73	0.24	22.00	73.00	119	THIRD AVENUE
ED	Illuminance	Fc	0.45	2.13	0.11	25.00	76.00	84	ADDED ENTRY ROAD
EP	Illuminance	Fc	0.99	11.30	0.21	69.90	140.7	78	TYPICAL PATHWAY SECTION

PHOTOMETRIC DATA USED AS INPUT FOR THESE CALCULATIONS IS BASED ON ESTABLISHED IES PROCEDURES AND PUBLISHED LAMP, RATINGS, FIELD PERFORMANCE WILL DEPEND ON ACTUAL LAMP, BALLAST, ELECTRICAL AND SITE CHARACTERISTICS.

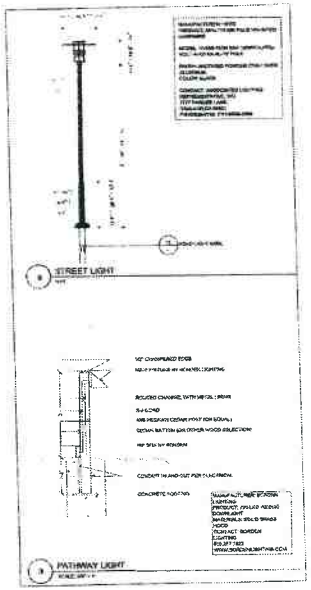
ALL VALUES SHOWN ARE MAINTAINED HORIZONTAL FOOTCANDLES AT GRADE

Calculations have been performed according to IES standards and good practice. Some differences between measured values and calculated results may occur due to measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

ASSOCIATED LIGHTING REPRESENTATIVES, INC.
7777 PARDEE LANE
P.O. BOX 2285
OAKLAND, CA. 94621
PHONE: (510) 638-0158 - FAX (510) 638-7508

APDW
APPEL PHILIPS DESIGN WORKS, INC.

PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA



Drawing Title:
PHOTOMETRIC PLAN

Date: 6/26/13
Project Number: 134w203
Drawn by: KP
Checked by: AP
Scale: As Noted

Project Status	
100% CD	6/19/13
100% CD	8/20/13
100% CD	1/31/13

L3.0

APPROVED
Approval of these plans does not authorize or approve any omission or deviation from requirements of State Law or local ordinances. Grant of approval of the plans does not relieve the permittee of any duty.
State of California
Department of Housing and Community Development
By: _____ Date: 9/4/13
No. 1777

DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE PLOTTED FROM CITY RECORDS OR RECORDS PROVIDED BY OWNER. NO ADDITIONAL UTILITY OR SUBSTRUCTURE RESEARCH HAS BEEN PERFORMED. THE CONTRACTOR SHALL DETERMINE THE EXISTENCE AND THE TRUE HORIZONTAL AND VERTICAL LOCATION AND SIZE OF ANY UNDERGROUND UTILITIES OR STRUCTURES AND SHALL BE RESPONSIBLE FOR PROTECTION, ADJUSTMENT, OR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES SHOWN OR NOT SHOWN HEREON. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NOTIFYING U.S.A. (UNDERGROUND SERVICE ALERT AT 1-800-422-4133) FOR UNDERGROUND UTILITY MARKING AT LEAST 48 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION. CONSTRUCTION SHALL NOT COMMENCE PRIOR TO SAID UNDERGROUND UTILITY MARKING.

TOPOGRAPHY, BOUNDARY, LEGAL DESCRIPTION AND SURVEY SHOWN HEREON WERE PROVIDED BY OWNER AND PREPARED BY [illegible] AND DATED ON JANUARY 18, 2013.

BASIS OF BEARINGS
BEARINGS ARE BASED UPON THE CENTER LINE OF PALMETTO AVENUE (S.W. 972, BW 31 RS 9) SHOWN ON THAT MAP FILED IN VOLUME 39 OF MAPS AT PAGES 10 & 16, SAN MATEO COUNTY RECORDS, AND ESTABLISHED BETWEEN MONUMENTS FOUND.

= NORTH 74°07'37" WEST

REGISTERED PROFESSIONAL ENGINEER — No. 24928 — Exp. 12/31/13 — CIVIL — STATE OF CALIFORNIA

PLANS PREPARED BY
R. T. QUINN & ASSOCIATES
CIVIL ENGINEERS AND SURVEYORS
1407 Rollins Avenue
Torrance, California 90501
Voice (310) 320-4129 Fax (310) 320-9123
E-Mail: rquinn@rtquinn.com

DATE: 7-25-13 | JOB N°: 2006016-100 | DRAWN BY: SAZ

REVISIONS		
N°	DATE	BY	DESCRIPTION
1			
2			
3			
4			
5			

PLANS PREPARED FOR
PACIFIC SKIES ESTATES, LLC
9046 BIRCH STREET
EAST TOWER, SUITE 402
NEWPORT BEACH, CA 92660
ATTN: TONY FERRERO
(949) 333-8592 MAIN
(949) 333-8145 DIRECT
EMAIL: TFERRERO@PACIFICSKIES.COM

PROJECT TITLE
PACIFIC SKIES MOBILE ESTATES
(41-0032-MP)

JOB ADDRESS
1000 PALMETTO AVENUE
PACIFICA, CA 94044

TRACT NO.

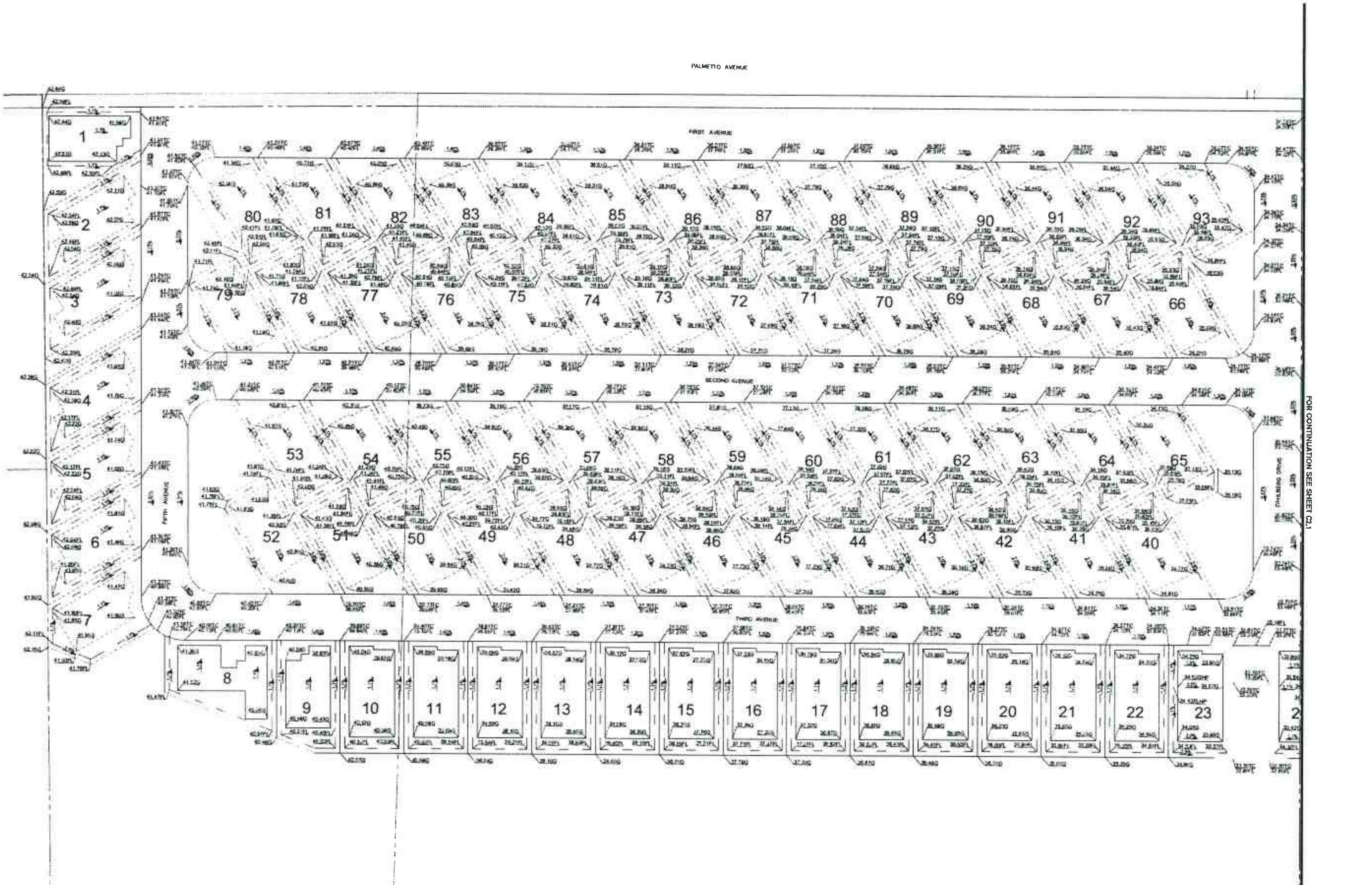
DRAWING FILE NO.

SCALE: 1" = 20'

SHEET 7 OF 7

SHEET TITLE: PHOTOMETRIC PLAN

BLUE BOOK REVIEW SET



NOTE:

1. THESE GRADING PLANS APPLY ONLY TO THE PROPOSED LOTS THEMSELVES AND THE GRADING INFORMATION WITHIN EACH LOT. ALL OTHER IMPROVEMENTS SHALL BE DONE ACCORDING TO IMPROVEMENT PLANS PROVIDED BY R.F. QUINN & ASSOCIATES, APPROVED ON AUGUST 26, 2010 BY THE STATE OF CALIFORNIA DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT DIVISION PERMIT NO. 1443B. ALL DRIVE AISLE GRADING AND LINEWORK IS FOR REFERENCE ONLY.

SCALE: 1"=20'

SIEGFRIED

3244 Brookside Road
Suite 100
Stockton, California 95219
209-943-2021
Fax: 209-943-0214
www.siegfriedeng.com

CIVIL ENGINEERING
STRUCTURAL ENGINEERING
LAND SURVEYING
LANDSCAPE ARCHITECTURE

REVISIONS

No. Date Description

PROJECT

PACIFICA COTTAGES

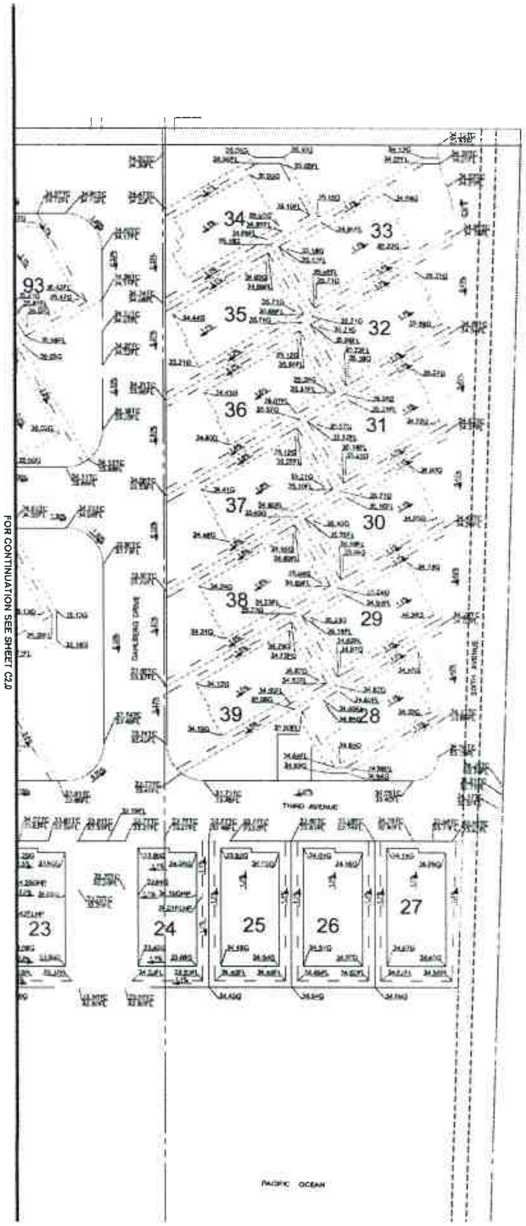
1300 Palmetto Avenue
Pacifica, CA 94044

REGISTERED PROFESSIONAL ENGINEER ADAM K. MERRILL No. 70604 Exp. 12/31/16 CIVIL STATE OF CALIFORNIA

SHEET TITLE

LOT GRADING
PLAN 1

Proj Mgr	AKM
Drawn by	NJB
Date	12/08/2015
Job No	15245
Sheet	C2.0



FOR CONTINUATION SEE SHEET C2.0

NOTE:

1. THESE GRADING PLANS APPLY ONLY TO THE PROPOSED LOTS THEMSELVES AND THE GRADING INFORMATION WITHIN EACH LOT. ALL OTHER IMPROVEMENTS SHALL BE DONE ACCORDING TO IMPROVEMENT PLANS PROVIDED BY R.T. DUNN & ASSOCIATES, APPROVED ON AUGUST 28, 2013 BY THE STATE OF CALIFORNIA DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT DIVISION PERMIT NO. 14436. ALL DRIVE AISLE GRADING AND LINEWORK IS FOR REFERENCE ONLY.

SCALE: 1"=20'

SIEGFRIED

3244 Brookside Road
Suite 100
Stockton, California 95219
209-943-2021
Fax 209-942-0214
www.siegfriedeng.com

REVISIONS
No. Date Description

PROJECT

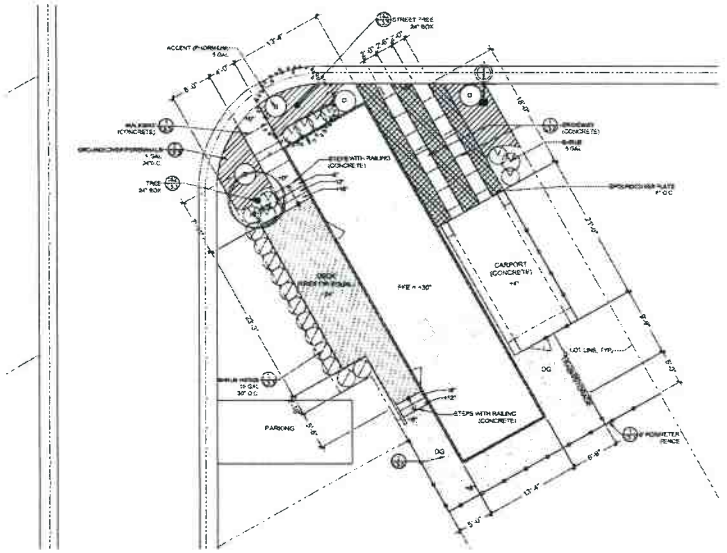
PACIFICA COTTAGES

1300 Palmetto Avenue
Pacifica, CA 94044

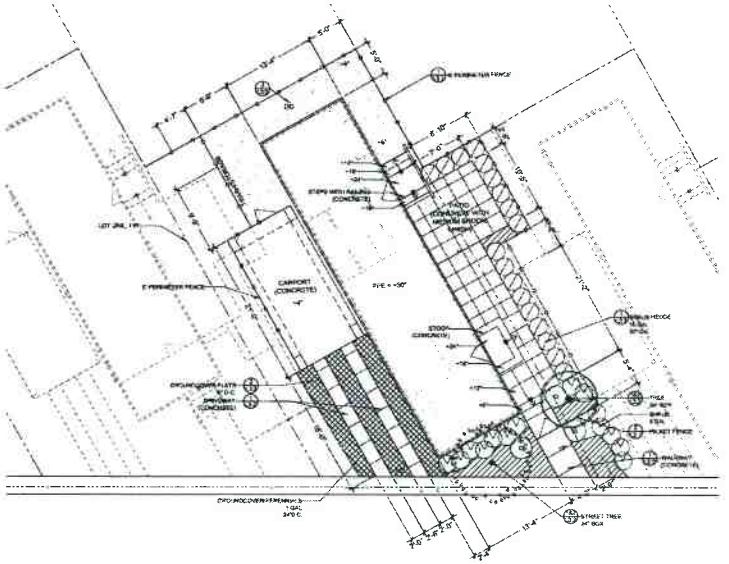
SHEET TITLE

LOT GRADING
PLAN 2

Proj Mgr	AKM
Drawn by	NJB
Date	12/08/2015
Job No	15345
Sheet	C2.1



1 LANDSCAPE PROTOTYPE A - TWO BEDROOM UNIT
SCALE: 1/8" = 1'-0"



2 LANDSCAPE PROTOTYPE B - ONE BEDROOM UNIT
SCALE: 1/8" = 1'-0"

APD
APRIL PHILIPS DESIGN WORKS, INC.

PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

Drawing Title:
PROTOTYPE LANDSCAPE PLANS

Date:	4/10/13
Project Number:	13dw285
Drawn by:	RP
Checked by:	AP
Scale:	As Noted

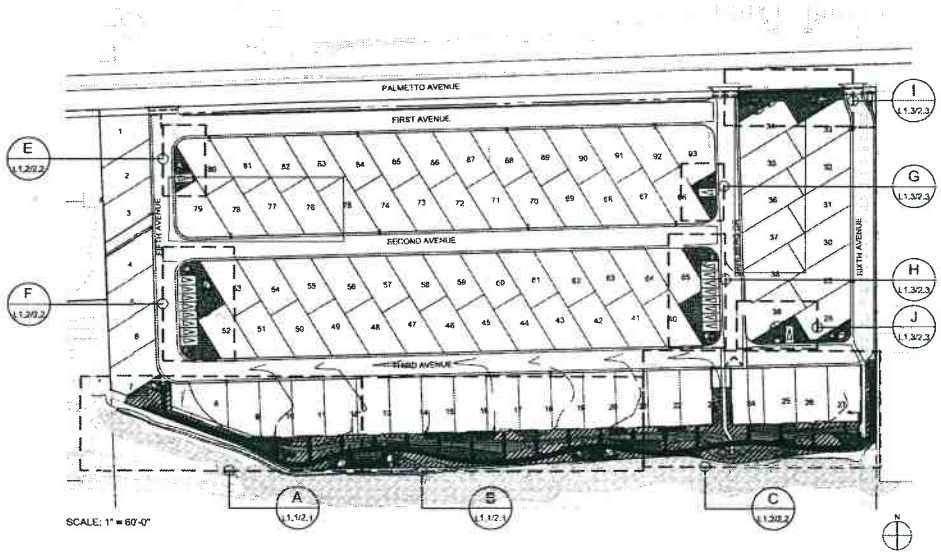
Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13
Addendum (1.4.0)	5/4/16

L4.0

PACIFIC SKIES MOBILE ESTATES

PACIFICA, CA

KEY PLAN:



SCALE: 1" = 60'-0"

SYMBOLS & ABBREVIATIONS:

	ALIGN
	(E) BACKFLOW PREVENTION
	CENTERLINE
	(E) CONTOUR
	(N) CONTOUR
	DETAIL CALLOUT
DIA	DIAMETER
(E)	EXISTING
EQ	EQUAL
EJ	EXPANSION JOINT
FFE	FINISHED FLOOR ELEVATION
HDR	HEADER
HT	HEIGHT
	(E) WATER VALVE
NIC	NOT IN CONTRACT
O.C.	ON CENTER
PA	PLANTING AREA
	PROPERTY LINE
	POINT OF BEGINNING
S.A.D.	SEE ARCHITECTURAL DRAWINGS
S.C.D	SEE CIVIL DRAWINGS
SIM	SIMILAR
SPECS	SPECIFICATIONS
+166	SPOT ELEVATION
TBD	TO BE DETERMINED
TC	TOP OF CURB
TP	TREATMENT PLANTER
TW	TOP OF WALL
TYP	TYPICAL
WP	WATER PROOFING
	LIMIT OF WORK
	MATCHLINE
QTY SPECIES SIZE COMMENT	PLANT CALLOUT
60	LOT PARCEL
	DIRECTION OF WATER FLOW

SHEET INDEX:

GENERAL NOTES:

1. DESIGN SHALL MEET ALL APPLICABLE CODES.
2. VERIFY EXISTING SITE INFORMATION, INCLUDING STREET GRADES, UTILITIES, PROPERTY LINES, LIMITS OF ROADWAYS, CURBS AND GUTTERS, TAKEN FROM THE CIVIL DRAWINGS. SEE CIVIL DRAWINGS.
3. PROTECT EXISTING TREES.
4. FOR BUILDING INFORMATION, REFER TO THE ARCHITECT'S DRAWINGS.
5. PROVIDE WRITTEN NOTIFICATION OF ALL DISCREPANCIES BETWEEN EXISTING AND PROPOSED SITE IMPROVEMENTS.
6. REFERENCE TO NORTH REFERS TO TRUE NORTH. REFERENCE TO SCALE APPLIES TO FULL-SIZED DRAWINGS ONLY. DO NOT SCALE FROM REDUCED DRAWINGS.
7. INFORMATION ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS APPROXIMATE ONLY. DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE INSTALLED. BEFORE PROCEEDING WITH ANY WORK, THE CONTRACTOR SHALL CHECK AND VERIFY ALL EXISTING CONDITIONS AND INFORM THE LANDSCAPE ARCHITECT OF ANY DISCREPANCY BETWEEN THE DRAWINGS AND ACTUAL CONDITIONS. THE CONTRACTOR SHALL EXERCISE CARE IN EXCAVATING AND WORKING NEAR EXISTING UTILITIES AND STRUCTURES.
8. ALL EXISTING STREET LIGHTS ARE TO REMAIN AND BE PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE INDICATED IN CIVIL DRAWINGS.

APDW
APRIL PHILIPS DESIGN WORKS, INC.

PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

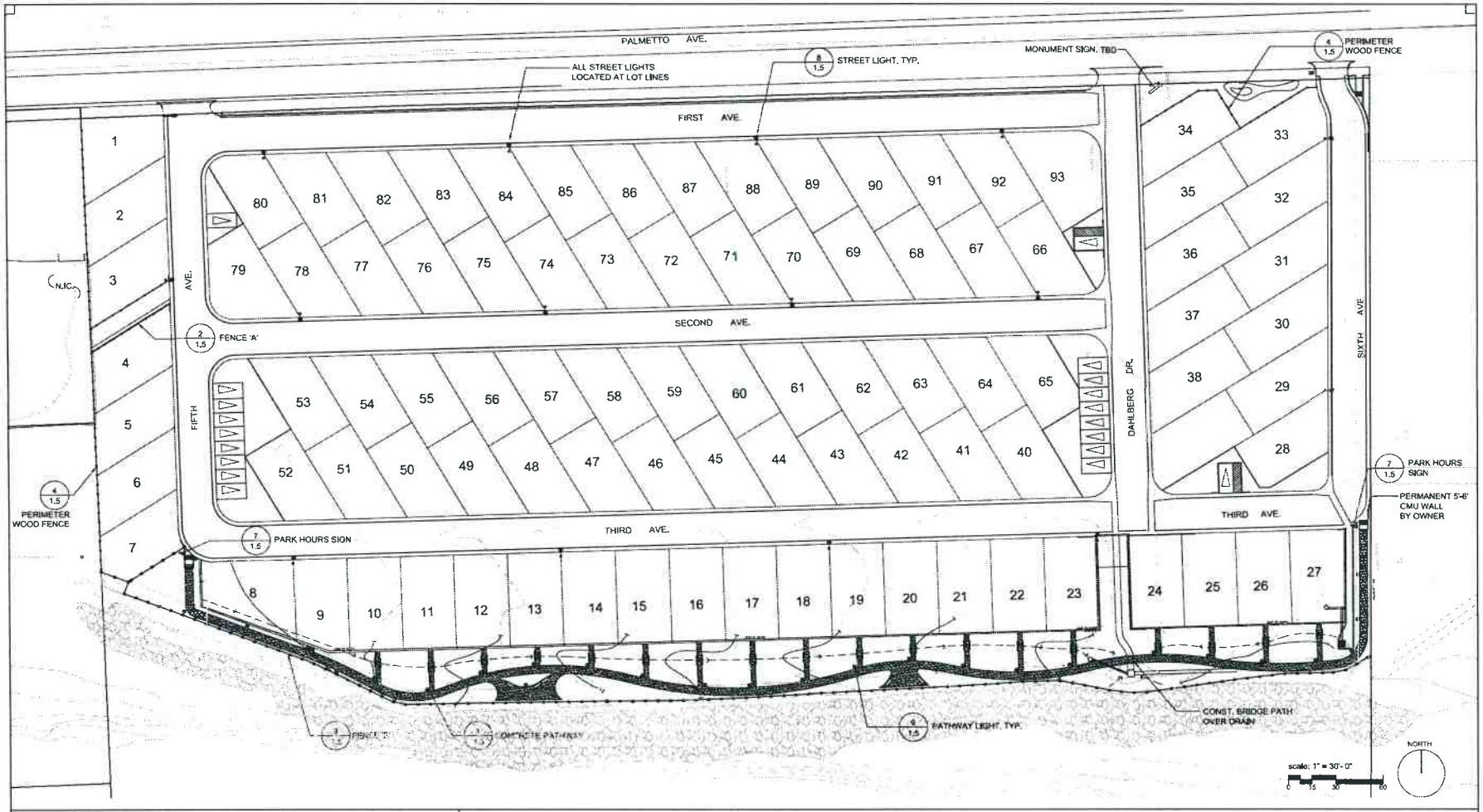
LICENSED LANDSCAPE ARCHITECT — STATE OF CALIFORNIA

Drawing Title:
COVER SHEET

Date:	4/10/13
Project Number:	13dw205
Drawn by:	BP
Checked by:	AP
Scale:	As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13
Addendum (L4.0)	5/4/16

L0.0



MATERIALS LEGEND

SYMBOL	MATERIAL	DESCRIPTION
	CONCRETE PATHWAY	SEE 1/L1.5
	BOULDER 24"-30" HIGH	SEE 5/L1.5
	FENCE 'A'	SEE 2/L1.5
	PERIMETER FENCE	SEE 4/L1.5
	FENCE 'B'	SEE 3/L1.5
	MONUMENT SIGN	
	PARK HOURS SIGN	SEE 7/L1.5
	STREET LIGHT	SEE 8/L1.5
	PATHWAY LIGHT	SEE 9/L1.5
	PROPERTY LINE	
	LIMIT OF WORK	

APDW
APRIL PHILIPS DESIGN WORKS, INC.

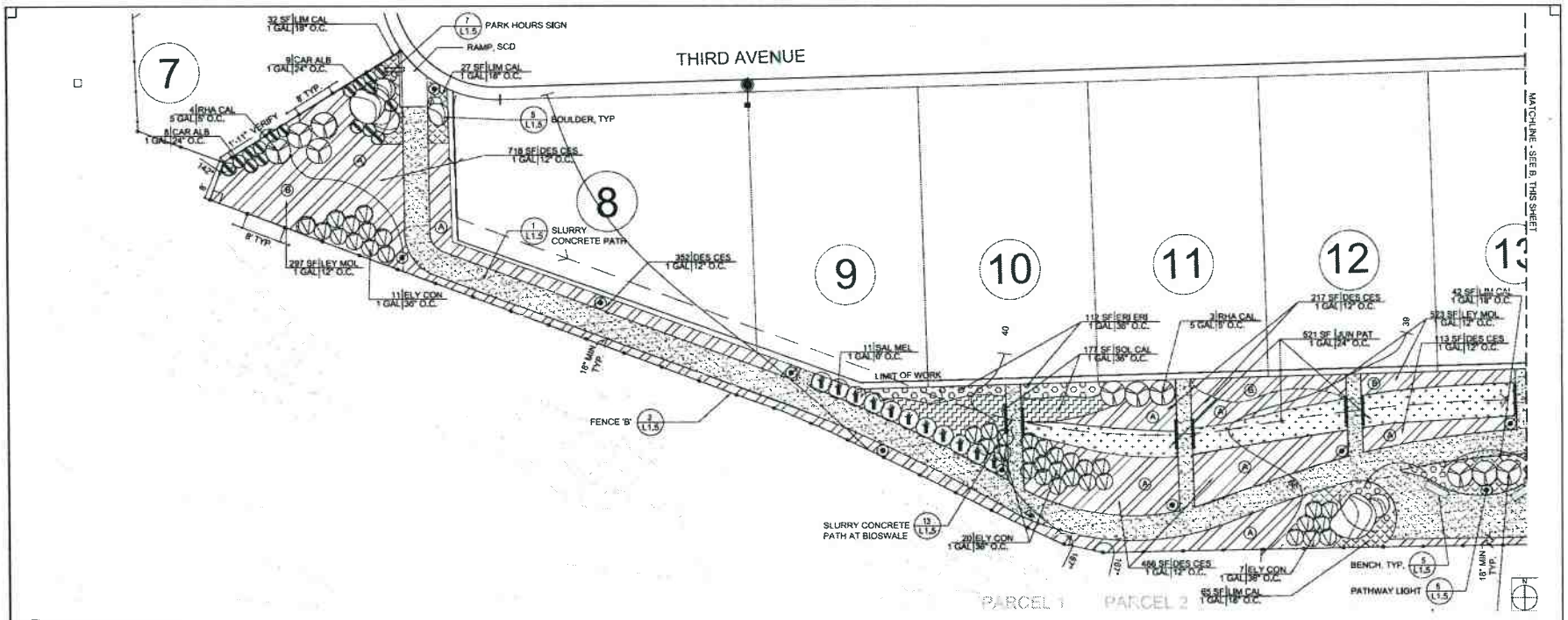
PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

Drawing Title:
OVERALL SITE PLAN

Date:	4/10/13
Project Number:	3dw203
Drawn by:	RP
Checked by:	AP
Scale:	As Noted

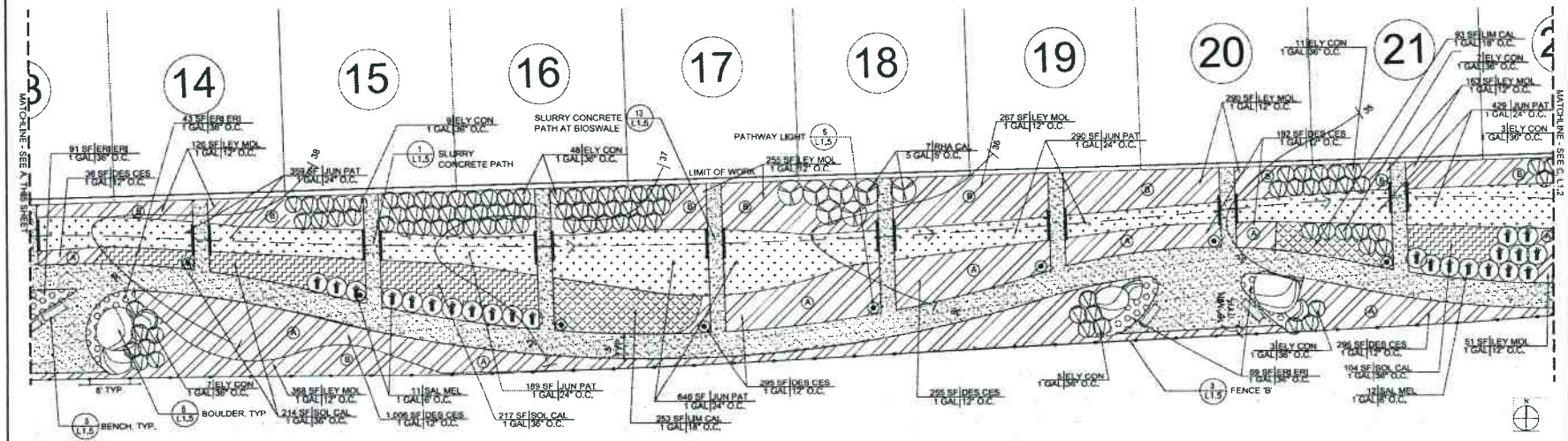
Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

L1.0



A BLUFF TRAIL WEST

SCALE: 1" = 10'-0"



B BLUFF TRAIL CENTRAL

SCALE: 1" = 10'-0"

APDW
APRIL PHILIPS DESIGN WORKS, INC.

PACIFIC SKIES MOBILE ESTATES

PACIFICA, CA

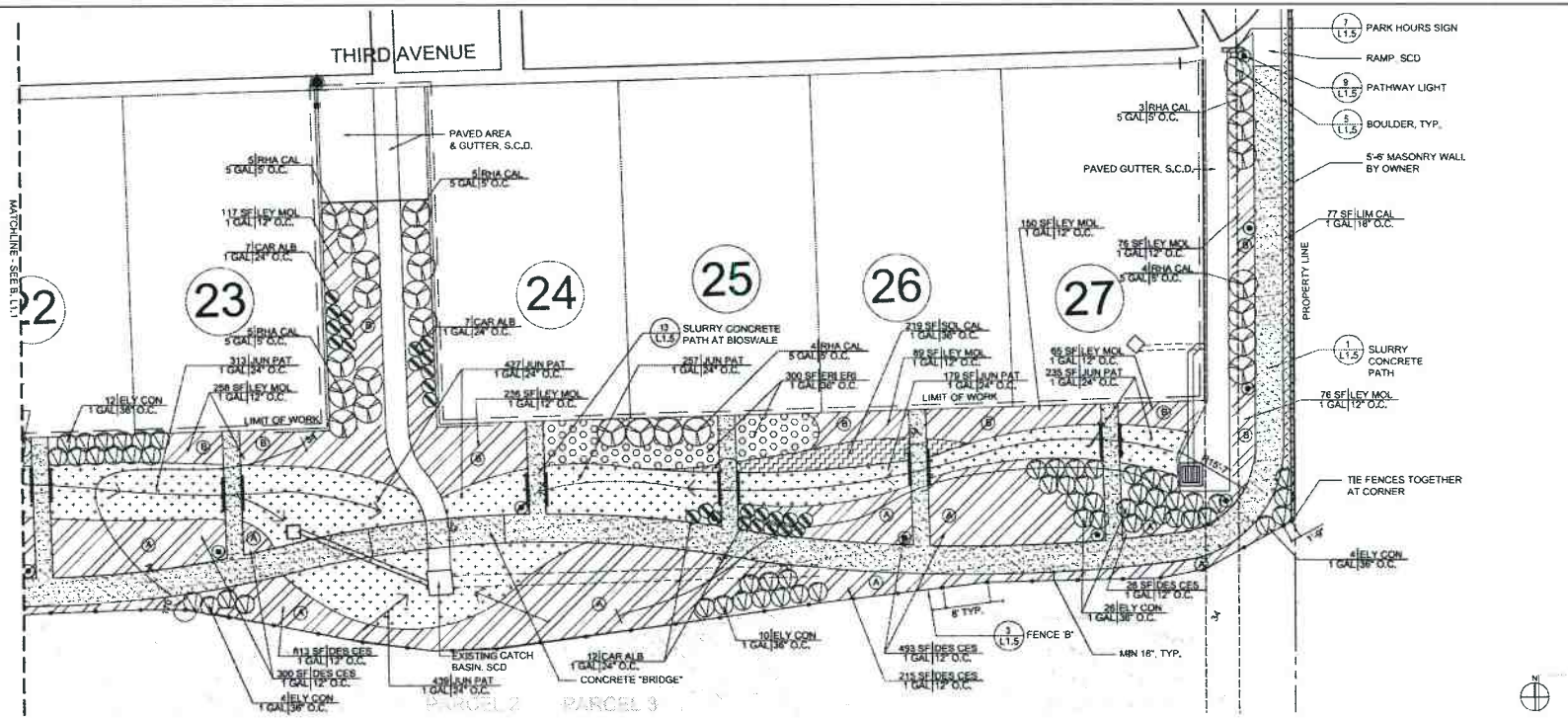
LANDSCAPE ARCHITECT STATE OF CALIFORNIA

Drawing Title:
LANDSCAPE PLAN

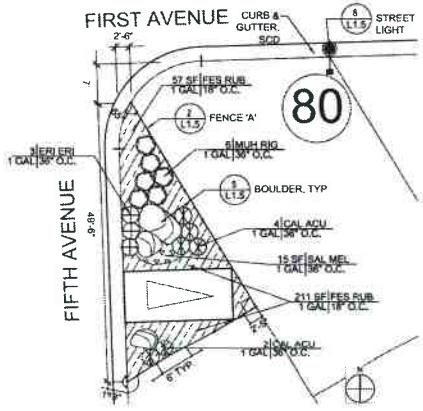
Date: 4/10/13
Project Number: 1dw203
Drawn by: RP
Checked by: AP
Scale: As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

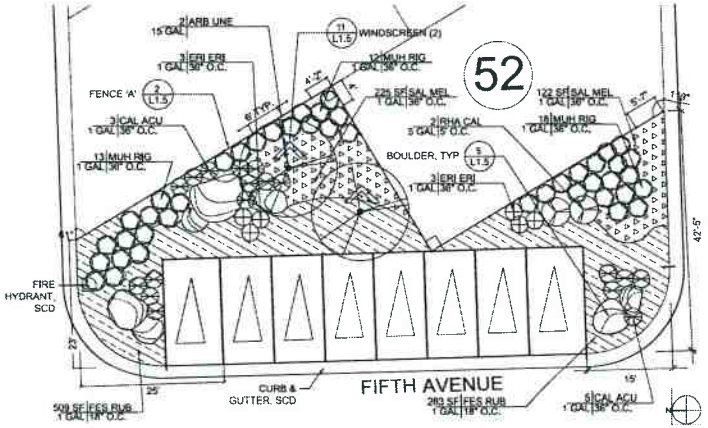
L1.1



C BLUFF TRAIL EAST
SCALE: 1" = 10'-0"



E FIFTH AVENUE PARKING 'A'
SCALE: 1" = 10'-0"



F FIFTH AVENUE PARKING 'B'
SCALE: 1" = 10'-0"

NOTE: FOR PLANT LEGEND SEE L1.4

APDW
APRIL PHILLIPS DESIGN WORKS, INC.

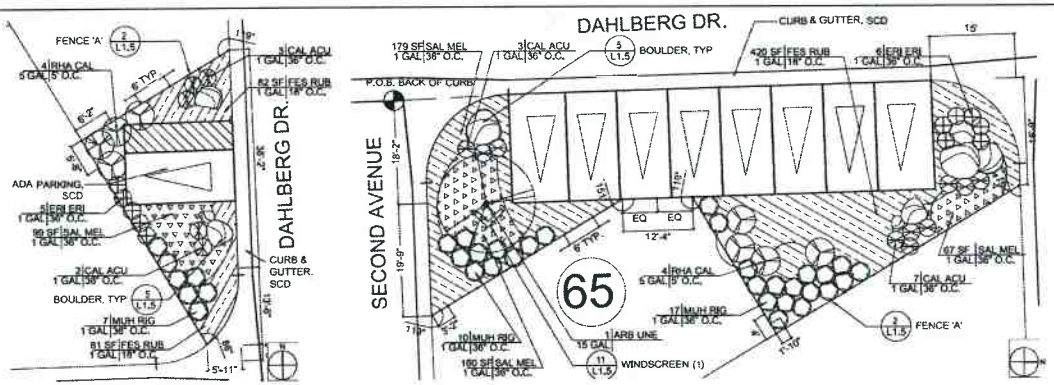
PACIFIC SKIES
MOBILE ESTATES
PACIFICA, CA

Drawing Title:
LANDSCAPE PLAN

Date: 4/10/13
Project Number: 3dw203
Drawn by: RP
Checked by: AP
Scale: As Noted

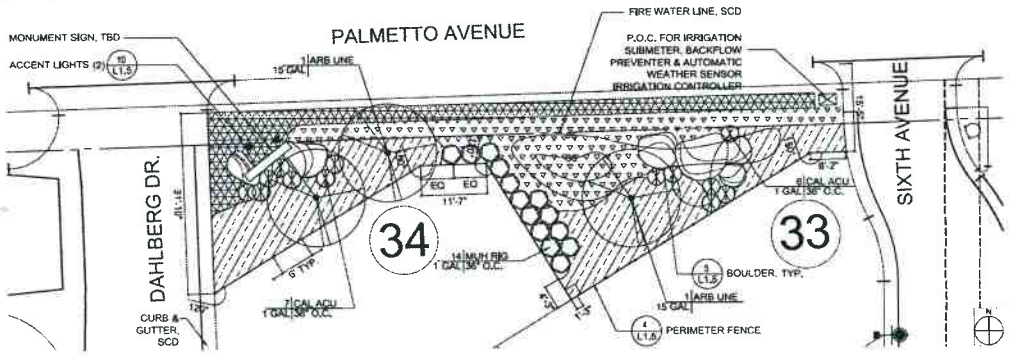
Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

L1.2

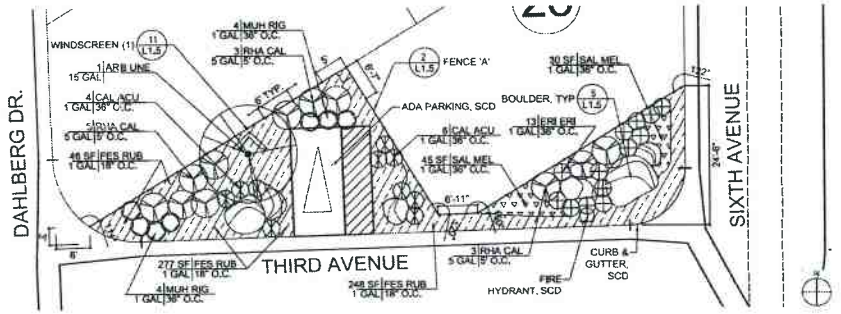


G DAHLBERG DRIVE PARKING 'A'
SCALE: 1" = 10'-0"

H DAHLBERG DRIVE PARKING 'B'
SCALE: 1" = 10'-0"



I PALMETTO AVENUE PARKING
SCALE: 1" = 10'-0"



J THIRD AVENUE PARKING
SCALE: 1" = 10'-0"

MATERIALS LEGEND

SYMBOL	MATERIAL	DESCRIPTION	QUANTITY
	SLURRY MIX COLORED CONCRETE	SEE 1/L1.5	5546 SF
	BOULDER 24"-30" HIGH	BLUFFS: 3 LG, 3 MD, 3 SM, 3 XS INTERIOR: 2 LG, 6 MED, 15 SM, 4 XS SEE 5/L1.5	42 TOTAL
	FENCE 'A'	SEE 2/L1.5	627 LF
	FENCE 'B'	SEE 3/L1.5	880 LF
	PERIMETER WOOD FENCE	SEE 4/L1.5	794 LF
	WIND SCREEN	SEE 11/L1.5	4 TOTAL
	BENCH	SEE 6/L1.5	5 TOTAL
	MONUMENT SIGN		1 TOTAL
	PARK HOURS SIGN	SEE 7/L1.5	2 TOTAL
	PATHWAY LIGHT	SEE 9/L1.5	17 TOTAL
	STREET LIGHT	SEE 8/L1.5	13 TOTAL
	ACCENT LIGHT	SEE 10/L1.5	2 TOTAL
	PROPERTY LINE		
	LIMIT OF WORK		
	DIRECTION OF WATER FLOW		

LAYOUT NOTES:

1. DIMENSIONS NOTED TAKE PRECEDENCE OVER SCALE.
2. ALL MEASUREMENTS ARE TO FACE OF BUILDING, WALL, CURB OR OTHER FIXED SITE IMPROVEMENT, OR TO CENTERLINE AS NOTED.
3. INSTALL ALL INTERSECTING ELEMENTS AT 90 DEGREE ANGLES TO EACH OTHER UNLESS OTHERWISE NOTED.
4. EXPANSION JOINTS SHALL BE INSTALLED WHERE CONCRETE PAVING ABUTS BUILDING WALL OR SILL.
5. FOR DRAINAGE & GRADING OF SIDEWALKS, DRIVES, AND UTILITIES ALL HATCHES TO BE WITHIN SIDEWALK ZONES OR PLANTING ZONES, NOT IN BOTH AT THE SAME TIME
6. WHERE DIMENSIONS ARE CALLED AS "EQUAL", ALL REFERENCED ITEMS SHALL BE SPACED EQUALLY, MEASURED TO THEIR CENTERLINES.
7. VERIFY EXISTING GUTTER GRADES AND FINISH FLOOR ELEVATIONS PRIOR TO COMMENCING WORK.
8. FINAL GRADES MAY BE DIFFERENT THAN DESIGN GRADES SHOWN. SEE CIVIL DRAWINGS FOR GRADING INFORMATION. CONTRACTOR TO BRING ANY GRADE DISCREPANCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR REVIEW, AS IT AFFECTS WALL HEIGHTS.
9. CONTRACTOR TO FOLLOW SCORELINE LAYOUT ON DRAWINGS. SCORELINE LAYOUT MAY BE AFFECTED BY UTILITY LOCATION CHANGES. SEE CIVIL DRAWINGS.
10. ALL UTILITY HATCHES, COVERS AND BOXES SHALL RESIDE IN PLANTING AREAS OR PAVING AREAS, NOT IN BOTH. ALIGN HATCHES AND CENTER UTILITIES IN PAVING SCORE PATTERNS
11. CONSTRUCTION TO MEET ALL STATE AND LOCAL CODES AS OUTLINED BY THE CITY OF PACIFICA BUILDING DIVISION.
12. PROJECT TO MEET CITY OF PACIFICA BEST MANAGEMENT PRACTICES.
13. PROJECT MEETS REQUIREMENTS OF THE WATER EFFICIENT ORDINANCE.
14. ALL PLANT MATERIAL TO BE NATIVE OR ADAPTED PLANTING FOR THE PACIFICA REGION.
15. ALL PLANT MATERIAL TO BE LOW WATER USAGE
16. IRRIGATION TO BE DRIP/BUBBLERS FOR ALL PLANTING AREAS. TIE INTO EXISTING SYSTEM.

NOTE: FOR PLANT LEGEND SEE L1.4

APRIL PHILIPS DESIGN WORKS, INC.

PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

LICENSED LANDSCAPE ARCHITECT STATE OF CALIFORNIA

Drawing Title:
LANDSCAPE PLAN

Date: 4/10/13
Project Number: jdw203
Drawn by: RP
Checked by: AP
Scale: As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

L1.3

PLANT LEGEND - INTERIOR

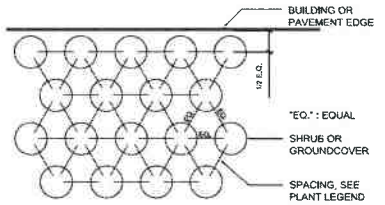
CALLOUT	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY.	WUCOLS	IRRIGATION	REMARKS
TREES									
ARB UNE		ARBUTUS UNEDO	STRAWBERRY TREE	15 GAL	AS SHOWN	7	L	BUBBLER	STANDARD, MATCH
FOUNDATION GRASS									
CAR TUM		CAREX TUMICOLA	BERKELEY SEDGE	1 GAL	18" O.C.	400 SF	M	DRIP	
FES RUB		FESTUCA RUBRA 'MOLATE'	CREEPING RED FESCUE	1 GAL	18" O.C.	3,424 SF	M	DRIP	
ACCENT GRASS									
CAL ACU		CALAMAGROTIS X ACUTIFLORA	FOERSTER'S FEATHER REED GRASS	1 GAL	36" O.C.	62	M	DRIP	
MUH RIG		MUHLENBERGIA RIGENS	DEER GRASS	1 GAL	36" O.C.	104	L	DRIP	
COASTAL MEADOW									
ERI ERI		ERICAMERIA ERICOIDES	MOCK HEATHER	1 GAL	36" O.C.	33	L	DRIP	YELLOW, 3-4' HT
RHA CAL		RHAMNUS CALIFORNICA	COFFEEBERRY	5 GAL	5' O.C.	21	L	DRIP	
SAL MEL		SALVIA MELLIFERA REPENS	CREEPING BLACK SAGE	1 GAL	36" O.C.	1,353 SF	L	DRIP	6"-1' HT

PLANT LEGEND - BLUFF

CALLOUT	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY.	WUCOLS	IRRIGATION	REMARKS
FOUNDATION GRASS									
DES CES		DESCHAMPSIA CESPITOSA	CALIFORNIA HAIRGRASS	1 GAL	12" O.C.	3,456 SF	L	TEMP DRIP	
LEY MOL		LEYMUS MOLLIS	AMERICAN DUNE SEDGE	1 GAL	12" O.C.	5,443 SF	L	DRIP	
ACCENT GRASS									
CAR ALB		CAREX ALBA	FROSTY CURLS SEDGE	1 GAL	24" O.C.	44	M	DRIP	
ELY CON		ELYMUS (LEYMUS) CONDENSATUS	GIANT WILD RYE	1 GAL	36" O.C.	187	L	DRIP	
BIOSWALE									
JUN PAT		JUNCUS PATENS	CALIFORNIA RUSH	1 GAL	24" O.C.	4,283 SF	H	DRIP	
COASTAL MEADOW									
ERI ERI		ERICAMERIA ERICOIDES	MOCK HEATHER	1 GAL	36" O.C.	500 SF	L	DRIP	
LIM CAL		LIMONIUM CALIFORNICUM	MARSH ROSEMARY / SEA LAVENDER	1 GAL	18" O.C.	573 SF	M	DRIP	
RHA CAL		RHAMNUS CALIFORNICA	COFFEEBERRY	5 GAL	5' O.C.	43	L	DRIP	
SAL MEL		SALVIA MELLIFERA REPENS	CREEPING BLACK SAGE	1 GAL	6' O.C.	34	L	DRIP	
SOL CAL		SOLIDAGO CALIFORNICA	CALIFORNIA GOLDENROD	1 GAL	36" O.C.	846 SF	L	DRIP	

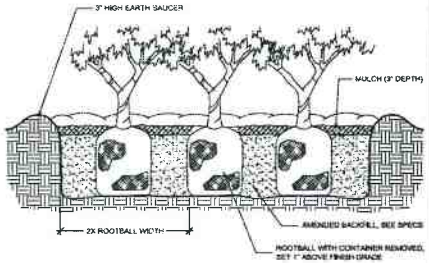
PLANTING NOTES:

1. ALL PLANTING MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD OF NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
2. ALL TREES TO BE STAKED PLUMB UNLESS OTHERWISE NOTED.
3. ALL PLANTED AREAS AND PLANT PITS SHALL BE FREE FROM ROCKS AND DEBRIS GREATER THAN 2" IN DIAMETER
4. APPLY A 3" LAYER OF BROWN PRO-CHIP RECYCLED WOOD MULCH OVER ALL PLANTED AREAS. VERIFY MULCH DISTRIBUTOR SOURCES WITH LANDSCAPE ARCHITECT IF NECESSARY.
5. ROOT BARRIERS SHALL BE PROVIDED FOR ALL TREES LOCATED WITH IN 4' OF SIDEWALKS, CURBS, OR WALLS.
6. FOR PLANTING DETAILS SEE THIS PAGE.
7. INSTALLATION SHALL MEET ALL APPLICABLE STATE AND LOCAL CODES.
8. THE LANDSCAPE CONTRACTOR SHALL VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND BRING ANY CONFLICTS WITH PLANT MATERIAL LOCATIONS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR A DECISION BEFORE PROCEEDING WITH THE WORK.
9. PLANT MATERIAL LOCATIONS SHOWN ARE DIAGRAMMATIC AND MAY BE SUBJECT TO CHANGE IN THE FIELD BY THE LANDSCAPE ARCHITECT. PLANT LOCATIONS ARE TO BE ADJUSTED IN THE FIELD AS NECESSARY TO SCREEN UTILITIES BUT NOT TO BLOCK WINDOWS, SIGNS NOR IMPEDE ACCESS.
10. ALL GROUNDCOVER PLANTING AREAS ARE EXPECTED TO UNIFORMLY COVER THE PLANTING AREA IN TWO (2) YEARS. ALL SHRUB PLANTING AREA ARE EXPECTED TO UNIFORMLY COVER THE PLANTING AREA IN FIVE (5) YEARS.
11. ALL NEW PLANTING AREA SHALL HAVE A MINIMUM OF 3" DEPTH LAYER OF MULCH APPLIED EXCEPT TURF. STABILIZING MULCH PRODUCTS SHALL BE APPLIED TO SLOPES OF 3 TO 1 OR GREATER. EACH PLANT SHALL RECEIVE SOIL AMENDMENTS AND COMPOST.
12. A SOIL ANALYSIS SHOULD BE PERFORMED DETERMINING THE SOIL TEXTURE, ORGANIC MATTER AND ESSENTIAL NUTRIENTS. FOR SOIL AMENDMENTS. SOIL INFILTRATION RATE, MEASURE OF PH AND TOTAL SOLUBLE SALTS. ALL RECOMMENDATIONS SHALL BE ORGANIC AND NON-SUNTHETIC AND BASED ON RECYCLED WATER USE. TOP SOIL SHALL BE STOCKPILED ON SITE AS SPACE ALLOWS.
11. PROTECT EXISTING TREES PER ARBORISTS RECOMMENDATIONS. ALL TREES ARE TO BE STAKED AS SHOWN ON THE TREE STAKING/GUYING DIAGRAMS. BRANCHING HEIGHT OF TREES SHALL BE 6'-0" MINIMUM ABOVE FINISH GRADE. ALL TREES IN A FORMAL GROUP PLANTING SHALL BE MATCHING IN SIZE AND SHAPE.
12. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO MAKE SUBSTITUTIONS, ADDITIONS, AND DELETIONS IN THE PLANTING SCHEME AS THEY FEEL NECESSARY WHILE WORK IS IN PROGRESS, UPON APPROVAL OF THE OWNER. SUCH CHANGES ARE TO BE ACCOMPANIED BY EQUITABLE ADJUSTMENTS IN THE CONTRACT PRICE IF NECESSARY.
13. ALL TREES TO BE 3' AWAY FROM WALKS OR BLDGS

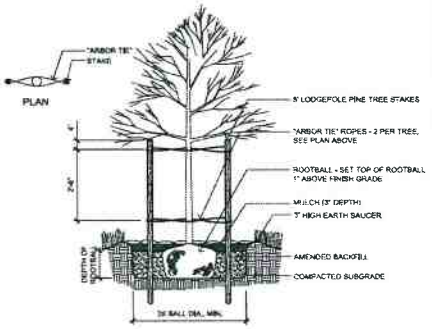


1 TRIANGULAR SHRUB & GROUNDCOVER SPACING
SCALE: 1 1/2" = 1'-0"

NOTES:
1. SEE PLANTING PLAN FOR PLANT SPACING
2. DO NOT PLACE MULCH DIRECTLY AGAINST PLANT STEM



2 SHRUB PLANTING
N.T.S.



3 TREE PLANTING & STAKING
N.T.S.

APDW
APRIL PHILIPS DESIGN WORKS, INC.

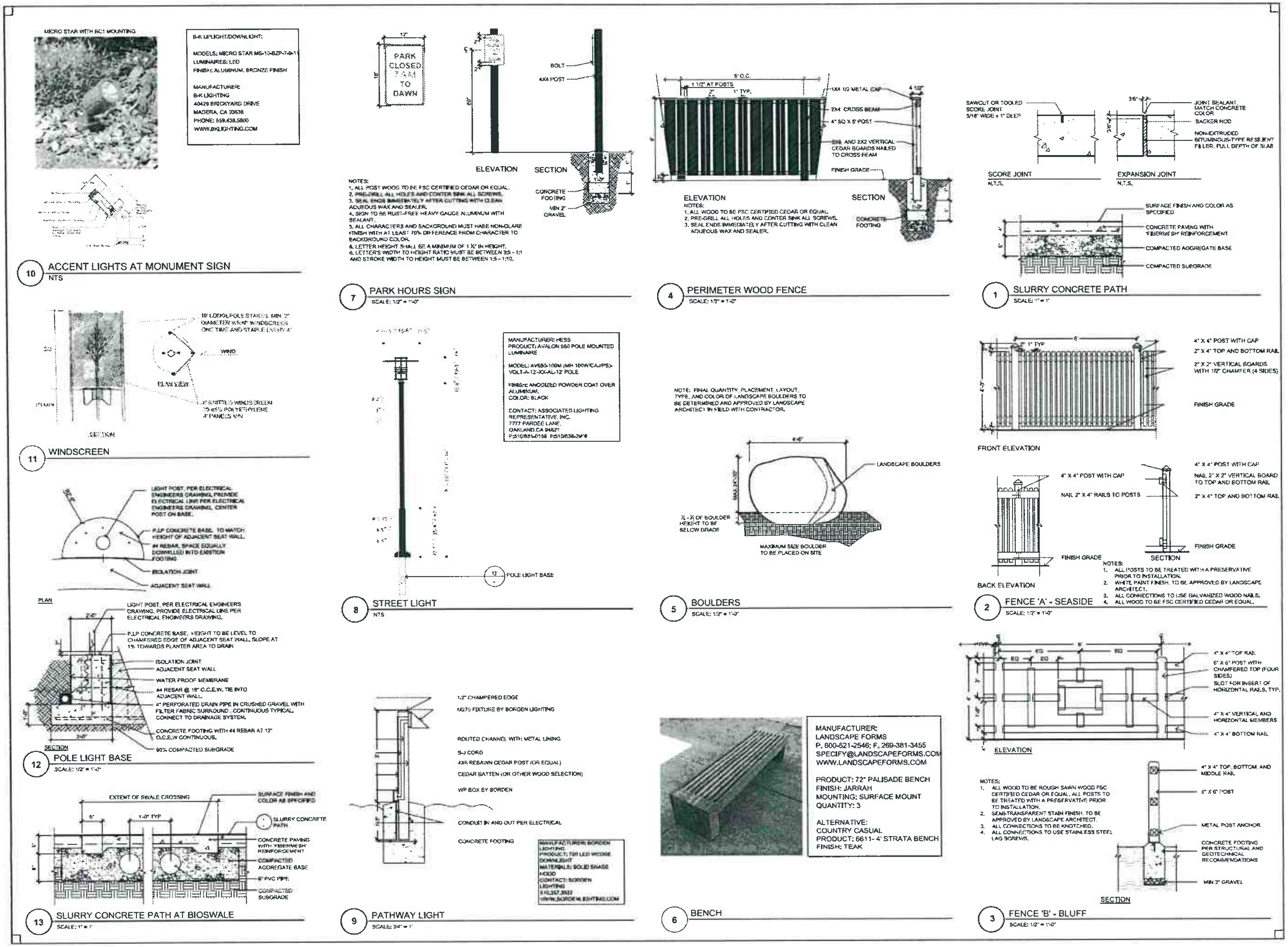
PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

Drawing Title:
LEGENDS & NOTES

Date:	4/10/13
Project Number:	Jdw203
Drawn by:	RP
Checked by:	AP
Scale:	As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

L1.4



10 ACCENT LIGHTS AT MONUMENT SIGN
NTS
MICRO STAR WITH BC1 MOUNTING
B-K UPLIGHT/DOWNLIGHT:
MODELS: MICRO STAR MS-13-BZP-7-9-1
LUMINAIRES: LED
FINISH: ALUMINUM, BRONZE FINISH
MANUFACTURER:
B-K LIGHTING
40429 BRICKYARD DRIVE
MADERA, CA 93636
PHONE: 559.438.5800
WWW.BKLIGHTING.COM
7 PARK HOURS SIGN
SCALE: 1/2" = 1'-0"
PARK CLOSED 7 AM TO DAWN
ELEVATION
SECTION
BOLT
4X4 POST
CONCRETE FOOTING
MIN 2" GRAVEL
NOTES:
1. ALL POST WOOD TO BE FSC CERTIFIED CEDAR OR EQUAL.
2. PRE-DRILL ALL HOLES AND CENTER SINK ALL SCREWS.
3. SEAL ENDS IMMEDIATELY AFTER CUTTING WITH CLEAN AQUEOUS WAX AND SEALER.
4. SIGN TO BE RUST-FREE HEAVY GAUGE ALUMINUM WITH SEALANT.
5. ALL CHARACTERS AND BACKGROUND MUST HAVE NON-GLARE FINISH WITH AT LEAST 70% DIFFERENCE FROM CHARACTER TO BACKGROUND COLOR.
6. LETTER HEIGHT SHALL BE A MINIMUM OF 1 ½" IN HEIGHT.
6. LETTER'S WIDTH TO HEIGHT RATIO MUST BE BETWEEN 3:5 - 1:1 AND STROKE WIDTH TO HEIGHT MUST BE BETWEEN 1:5 - 1:10.
4 PERIMETER WOOD FENCE
SCALE: 1/2" = 1'-0"
6' O.C.
1 1/2" AT POSTS
1" TYP.
1X4 1/2 METAL CAP
2X4 CROSS BEAM
4" SQ X 5' POST
2X6 AND 2X2 VERTICAL CEDAR BOARDS NAILED TO CROSS BEAM
FINISH GRADE
ELEVATION
SECTION
CONCRETE FOOTING
NOTES:
1. ALL WOOD TO BE FSC CERTIFIED CEDAR OR EQUAL.
2. PRE-DRILL ALL HOLES AND CENTER SINK ALL SCREWS.
3. SEAL ENDS IMMEDIATELY AFTER CUTTING WITH CLEAN AQUEOUS WAX AND SEALER.
1 SLURRY CONCRETE PATH
SCALE: 1" = 1'
SAWCUT OR TOOLED SCORE JOINT 3/16" WIDE x 1" DEEP
SCORE JOINT
N.T.S.
JOINT SEALANT, MATCH CONCRETE COLOR
BACKER ROD
NON-EXTRUDED BITUMINOUS-TYPE RESILIENT FILLER, FULL DEPTH OF SLAB
EXPANSION JOINT
N.T.S.
SURFACE FINISH AND COLOR AS SPECIFIED
CONCRETE PAVING WITH FIBERMESH REINFORCEMENT
COMPACTED AGGREGATE BASE
COMPACTED SUBGRADE
11 WINDSCREEN
PLAN VIEW
SECTION
WIND
8 STREET LIGHT
NTS
MANUFACTURER: HESS
PRODUCT: AVALON 550 POLE MOUNTED LUMINAIRE
MODEL: AV650-100M (MH 100W/CA/PS)-VOLT-A-12-XX-AL-12' POLE
FINISH: ANODIZED POWDER COAT OVER ALUMINUM.
COLOR: BLACK
CONTACT: ASSOCIATED LIGHTING REPRESENTATIVE, INC.
7777 PARDEE LANE,
OAKLAND, CA 94621
P:510/635-0158 F:510/638-2976
12 POLE LIGHT BASE
5 BOULDERS
SCALE: 1/2" = 1'-0"
NOTE: FINAL QUANTITY, PLACEMENT, LAYOUT, TYPE, AND COLOR OF LANDSCAPE BOULDERS TO BE DETERMINED AND APPROVED BY LANDSCAPE ARCHITECT IN FIELD WITH CONTRACTOR.
LANDSCAPE BOULDERS
⅓ - ½ OF BOULDER HEIGHT TO BE BELOW GRADE
MAXIMUM SIZE BOULDER TO BE PLACED ON SITE
2 FENCE 'A' - SEASIDE
SCALE: 1/2" = 1'-0"
FRONT ELEVATION
BACK ELEVATION
SECTION
4" X 4" POST WITH CAP
2" X 4" TOP AND BOTTOM RAIL
2" X 2" VERTICAL BOARDS WITH 1/2" CHAMFER (4 SIDES)
FINISH GRADE
NAIL 2" X 4" RAILS TO POSTS
NAIL 2" X 2" VERTICAL BOARD TO TOP AND BOTTOM RAIL
NOTES:
1. ALL POSTS TO BE TREATED WITH A PRESERVATIVE PRIOR TO INSTALLATION.
2. WHITE PAINT FINISH, TO BE APPROVED BY LANDSCAPE ARCHITECT.
3. ALL CONNECTIONS TO USE GALVANIZED WOOD NAILS.
4. ALL WOOD TO BE FSC CERTIFIED CEDAR OR EQUAL.
12 POLE LIGHT BASE
SCALE: 1/2" = 1'-0"
PLAN
SECTION
LIGHT POST, PER ELECTRICAL ENGINEERS DRAWING, PROVIDE ELECTRICAL LINE PER ELECTRICAL ENGINEERS DRAWING, CENTER POST ON BASE.
P.I.P CONCRETE BASE, TO MATCH HEIGHT OF ADJACENT SEAT WALL.
#4 REBAR, SPACE EQUALLY DOWELLED INTO EXISTING FOOTING
ISOLATION JOINT
ADJACENT SEAT WALL
LIGHT POST, PER ELECTRICAL ENGINEERS DRAWING, PROVIDE ELECTRICAL LINE PER ELECTRICAL ENGINEERS DRAWING.
P.I.P CONCRETE BASE, HEIGHT TO BE LEVEL TO CHAMFERED EDGE OF ADJACENT SEAT WALL, SLOPE AT 1% TOWARDS PLANTER AREA TO DRAIN
WATER PROOF MEMBRANE
#4 REBAR @ 18" O.C.E.W. TIE INTO ADJACENT WALL.
4" PERFORATED DRAIN PIPE IN CRUSHED GRAVEL WITH FILTER FABRIC SURROUND. CONTINUOUS TYPICAL. CONNECT TO DRAINAGE SYSTEM.
CONCRETE FOOTING WITH #4 REBAR AT 12" O.C.E.W CONTINUOUS.
90% COMPACTED SUBGRADE
13 SLURRY CONCRETE PATH AT BIOSWALE
SCALE: 1" = 1'
EXTENT OF SWALE CROSSING
1'-0" TYP
SURFACE FINISH AND COLOR AS SPECIFIED
SLURRY CONCRETE PATH
CONCRETE PAVING WITH FIBERMESH REINFORCEMENT
COMPACTED AGGREGATE BASE
6" PVC PIPE
COMPACTED SUBGRADE
9 PATHWAY LIGHT
SCALE: 3/4" = 1'
1/2" CHAMFERED EDGE
M270 FIXTURE BY BORDEN LIGHTING
ROUTED CHANNEL WITH METAL LINING
5-J CORD
4X6 RESAWN CEDAR POST (OR EQUAL)
CEDAR BATTEN (OR OTHER WOOD SELECTION)
WP BOX BY BORDEN
CONDUIT IN AND OUT PER ELECTRICAL
CONCRETE FOOTING
MANUFACTURER: BORDEN LIGHTING
PRODUCT: 720 LED WEDGE DOWNLIGHT
MATERIALS: SOLID BRASS H2O0
CONTACT: BORDEN LIGHTING
510.357.3932
WWW.BORDENLIGHTING.COM
6 BENCH
MANUFACTURER:
LANDSCAPE FORMS
P. 800-521-2546; F. 269-381-3455
SPECIFY@LANDSCAPEFORMS.COM
WWW.LANDSCAPEFORMS.COM
PRODUCT: 72" PALISADE BENCH
FINISH: JARRAH
MOUNTING: SURFACE MOUNT
QUANTITY: 3
ALTERNATIVE:
COUNTRY CASUAL
PRODUCT: 6611- 4' STRATA BENCH
FINISH: TEAK
3 FENCE 'B' - BLUFF
SCALE: 1/2" = 1'-0"
ELEVATION
SECTION
4" X 4" TOP RAIL
6" X 6" POST WITH CHAMFERED TOP (FOUR SIDES)
SLOT FOR INSERT OF HORIZONTAL RAILS, TYP.
4" X 4" VERTICAL AND HORIZONTAL MEMBERS
4" X 4" BOTTOM RAIL
4" X 4" TOP, BOTTOM, AND MIDDLE RAIL
6" X 6" POST
METAL POST ANCHOR
CONCRETE FOOTING PER STRUCTURAL AND GEOTECHNICAL RECOMMENDATIONS
MIN 2" GRAVEL
NOTES:
1. ALL WOOD TO BE ROUGH SAWN WOOD FSC CERTIFIED CEDAR OR EQUAL. ALL POSTS TO BE TREATED WITH A PRESERVATIVE PRIOR TO INSTALLATION.
2. SEMI-TRANSPARENT STAIN FINISH, TO BE APPROVED BY LANDSCAPE ARCHITECT.
3. ALL CONNECTIONS TO BE KNOTCHED.
4. ALL CONNECTIONS TO USE STAINLESS STEEL LAG SCREWS.

A P
D W
APRIL PHILIPS DESIGN WORKS, INC.

PACIFIC SKIES MOBILE ESTATES

PACIFICA, CA

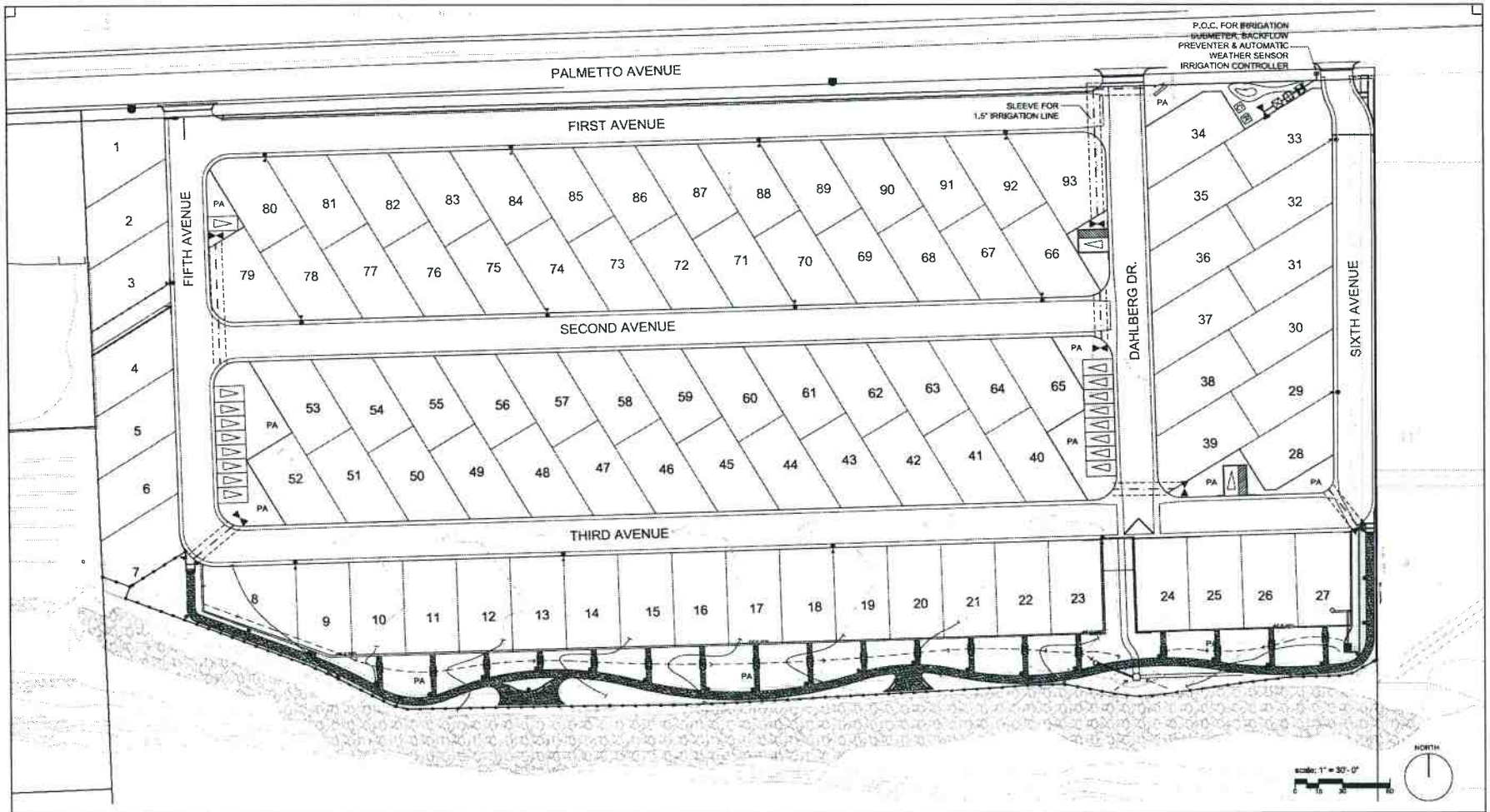
LICENSED LANDSCAPE ARCHITECT — STATE OF CALIFORNIA

Drawing Title:
SITE DETAILS

Date: 4/10/13
Project Number: 13dw203
Drawn by: RP
Checked by: AP
Scale: As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

L1.5



IRRIGATION LEGEND:

KEY	DESCRIPTION	MANUFACTURER
	1.5" WATER LINE	1120 SCHEDULE 40 PVC SOLVENT WELD PIPE WITH SCHEDULE 40 PVC SOLVENT WELD FITTINGS, 18" COVER
C	CONTROLLER	WEATHER TRAK OR EQUAL (36 STATION) - PEDESTAL MOUNT WITH ENCLOSURE
R	SOLAR SYNC	WIRED WEATHER SENSOR
	BACK FLOW	FEBCO REDUCED PRESSURE BACKFLOW PREVENTOR
	GATE VALVE	
HB	HOSE BIB	
	FLOW SENSOR	
	MASTER REMOTE CONTROL VALVE	
	BUBBLERS, 2 PER TREE (TOTAL 14 TOTAL)	TORO DRIP BUBBLERS OR EQUAL
	SLEEVES	IRRIGATION LINES UNDER PAVING ARE TO BE PLACED IN A SLEEVE 2 SIZES LARGER THAN PIB

NOTES:

1. SEE L2.3 FOR IRRIGATION NOTES & WATER CALCULATIONS.
2. FINAL DESIGN BUILD SYSTEM TO INCLUDE GATE VALVES, REMOTE CONTROL VALVES AND FLUSHING VALVES

APDW
APRIL PHILIPS DESIGN WORKS, INC.

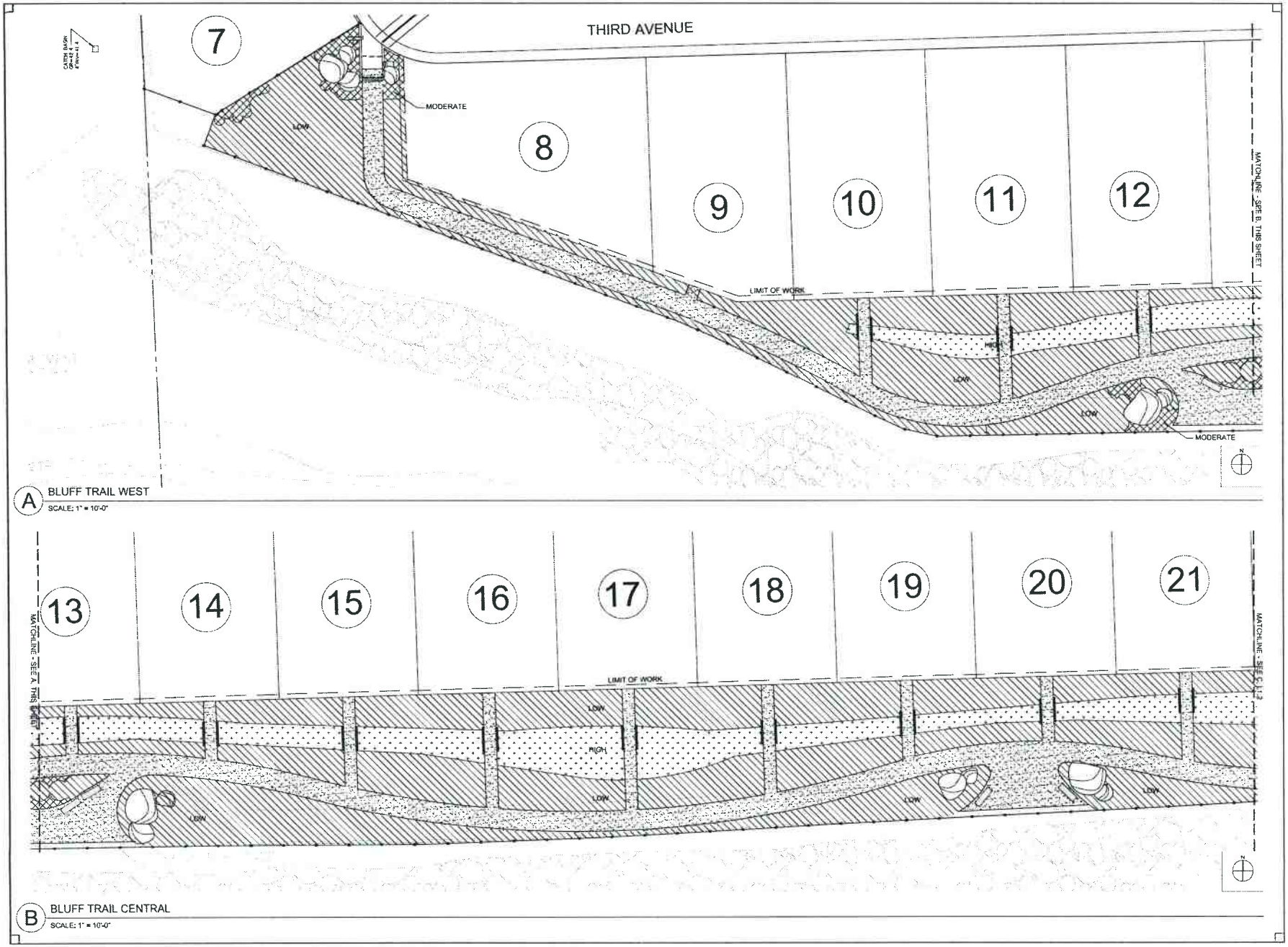
PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

Drawing Title:
SITE PLAN MAINLINE, METER/CONTROLLER

Date:	4/10/13
Project Number:	3dw203
Drawn by:	RP
Checked by:	AP
Scale:	As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

L2.0



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APRIL PHILLIPS DESIGN WORKS, INC.

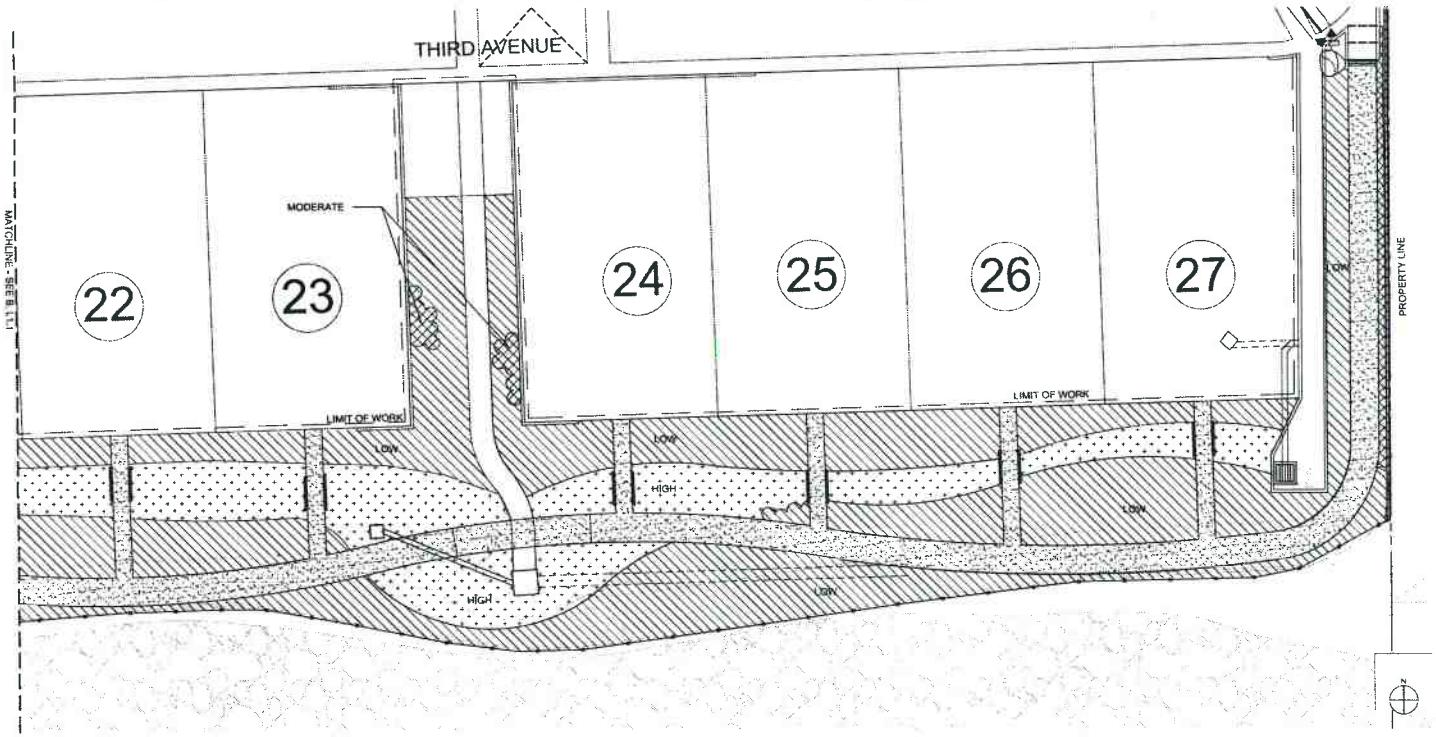
PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

Drawing Title:
HYDROLOGY AND IRRIGATION PLAN

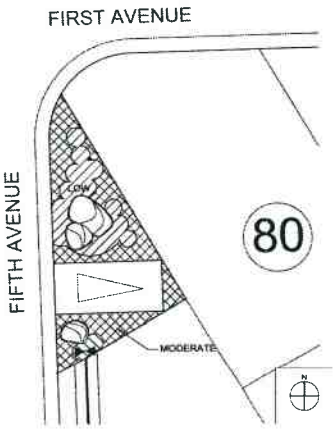
Date:	4/10/13
Project Number:	13dw203
Drawn. by:	RP
Checked by:	AP
Scale:	As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

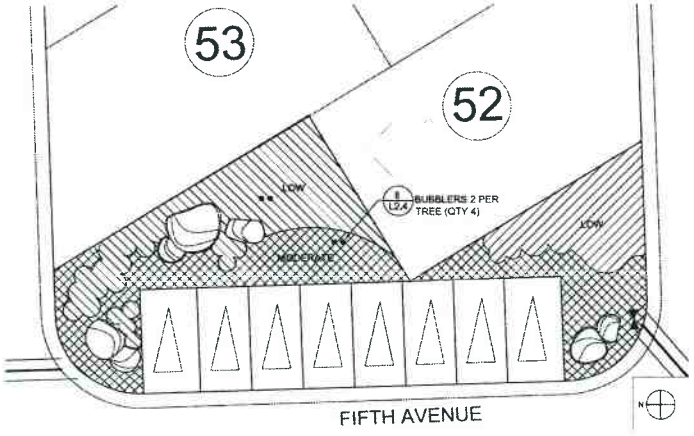
L2.1



C BLUFF TRAIL EAST
SCALE: 1" = 10'-0"



E FIFTH STREET PARKING 'A'
SCALE: 1" = 10'-0"



F FIFTH STREET PARKING 'B'
SCALE: 1" = 10'-0"

APDW
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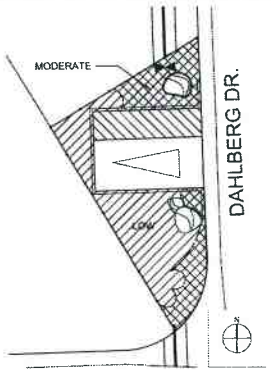
PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

Drawing Title:
HYDROLOGY AND IRRIGATION PLAN

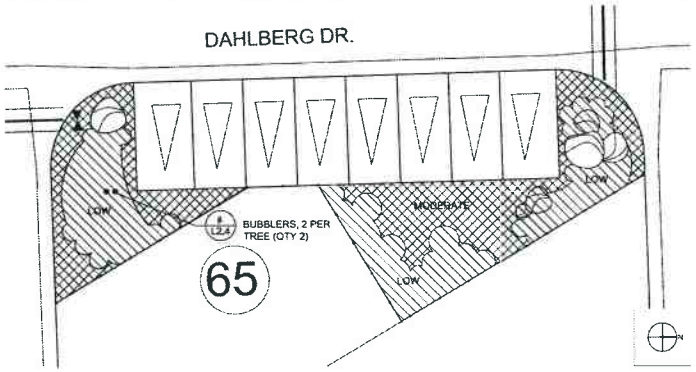
Date:	4/10/13
Project Number:	3dw203
Drawn by:	RP
Checked by:	AP
Scale:	As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

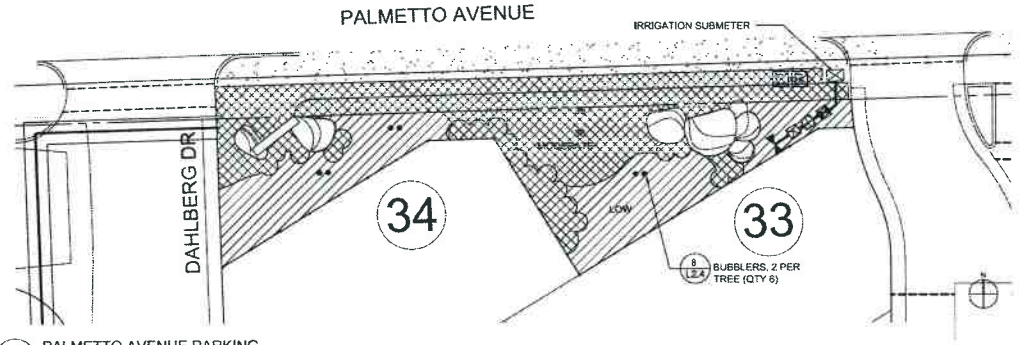
L2.2



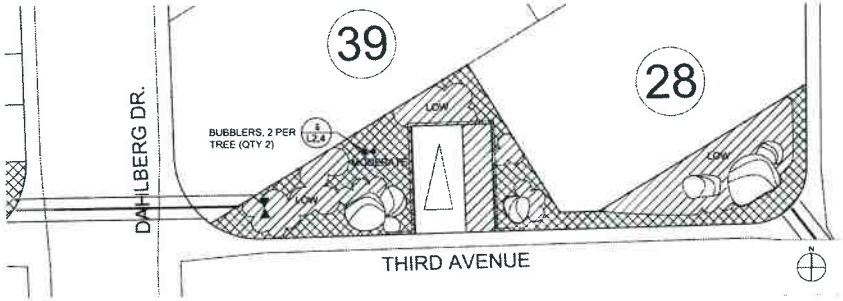
G DAHLBERG DRIVE PARKING 'A'
SCALE: 1" = 10'-0"



H DAHLBERG DRIVE PARKING 'B'
SCALE: 1" = 10'-0"



I PALMETTO AVENUE PARKING
SCALE: 1" = 10'-0"



J THIRD AVENUE PARKING
SCALE: 1" = 10'-0"

IRRIGATION NOTES:

1. IRRIGATION DRAWINGS ARE DIAGRAMMATIC PERFORMANCE BASED FOR DESIGN BUILD CONTRACTOR. CONTRACTOR IS TO WALK SITE PRIOR TO BID.
2. CONTRACTOR TO SUPPLY AS BUILT DRAWINGS ONCE INSTALLATION IS COMPLETE.
3. THE CONTRACTOR SHALL REVIEW RELATED DRAWINGS AND SHALL ENSURE COORDINATION WITH ALL APPLICABLE TRADES PRIOR TO SUBMITTING BID.
4. THE IRRIGATION SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES BY LICENSED CONTRACTORS AND EXPERIENCED WORKMEN. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND FEES RELATING TO HIS WORK.
5. IN ADDITION TO THE SLEEVES AND CONDUITS SHOWN ON THE DRAWINGS, THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF SLEEVES AND CONDUITS OF SUFFICIENT SIZE UNDER ALL PAVED AREAS.
6. ALL EXCAVATIONS ARE TO BE FILLED WITH COMPACTED BACKFILL. CONTRACTOR TO REPAIR ALL SETTLED TRENCHES PROMPTLY, FOR A PERIOD OF 1 YEAR AFTER COMPLETION OF WORK. ADDITIONALLY, CONTRACTOR SHALL WARRANT THAT THE IRRIGATION SYSTEM WILL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF 1 YEAR AFTER FINAL ACCEPTANCE OF WORK.
7. THE IRRIGATION CONTRACTOR SHALL VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. REPORT ANY DIFFERENCE BETWEEN THE WATER PRESSURE INDICATED ON THE DRAWINGS AND THE ACTUAL PRESSURE READING AT THE IRRIGATION POINT OF CONNECTION TO THE OWNER'S AUTHORIZED REPRESENTATIVE.
8. IRRIGATION DEMAND: CONTRACTOR TO VERIFY IRRIGATION POINTS OF CONNECTION.
9. PRIOR TO TRENCHING, CALL UNDERGROUND SERVICE ALERT
10. ADD A PRESSURE REGULATOR AND FILTER TO DRIPLINE VALVES TO REMOTE CONTROL VALVE DETAIL.
11. THOROUGHLY FLUSH EACH INSTALLATION SEGMENT TO ENSURE NO DEBRIS CONTAMINATION OCCURS.
12. INSTALL DRIPLINE 12-18" APART. DO NOT BURY THE DRIPLINE. INSTALL ON TOP OF LANDSCAPE FABRIC AND UNDER 3" OF MULCH. STAPLE DRIPLINE EVERY 18" USING MANUFACTURER'S STAPLES.
13. PROVIDE 2 BUBBLERS PER EACH IN-GROUND TREE.
14. SEE SHEET L2.4 FOR TYPICAL DETAILS.

WATER CALCULATIONS (INCLUDING BLUFF):

MAXIMUM APPLIED WATER ALLOWANCE (MAWA):

MAWA = (ETo) (0.62) [(0.7 X LA) + (0.3 X SLA)]

= (42.8) (0.62) [(0.7 X 25,870) + (0.3 x 0)]

= (26.54) X (18,109 + 0)

= (26.54) X 18,109 **= 480,613 GAL/YR**

ESTIMATED TOTAL WATER USE (ETWU):

$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$

= (42.8) (0.62) (8,986/.85 + 0)

= 26.54 X 10,572 **= 280,575 GAL/YR**

HYDROZONE	PLANT WATER USE TYPE(S)	PLANT FACTOR (PF)*	IRRIGAT. EFFIC.	HYDROZONE AREA (HA) (SQUARE FEET)	PF X HA (SQUARE FEET)
	LOW	0.2	.85	17,486	3,497
	MOD	0.5	.85	4,060	2,030
	HIGH	0.8	.85	4,324	3,459
TOTALS				25,870	8,986

SUMMARY
(MAWA): **480,613 GAL/YR**
(ETWU): **280,575 GAL/YR** (58%)

WATER CALCULATIONS (EXCLUDING BLUFF):

MAXIMUM APPLIED WATER ALLOWANCE (MAWA):

MAWA = (ETo) (0.62) [(0.7 X LA) + (0.3 X SLA)]

= (42.8) (0.62) [(0.7 X 7,206) + (0.3 x 0)]

= (26.54) X (5,044 + 0)

= (26.54) X 5,044 **= 133,873 GAL/YR**

ESTIMATED TOTAL WATER USE (ETWU):

$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$

= (42.8) (0.62) (2,555/.85 + 0)

= 26.54 X 3,006 **= 79,776 GAL/YR**

HYDROZONE	PLANT WATER USE TYPE(S)	PLANT FACTOR (PF)*	IRRIGAT. EFFIC.	HYDROZONE AREA (HA) (SQUARE FEET)	PF X HA (SQUARE FEET)
	LOW	0.2	.85	3,491	698
	MOD	0.5	.85	3,715	1,858
TOTALS				7,206	2,555

SUMMARY
(MAWA): **133,873 GAL/YR**
(ETWU): **79,776 GAL/YR** (60%)

ABBREVIATIONS

MAWA = MAXIMUM APPLIED WATER ALLOWANCE (GALLONS PER YEAR)

ETo = REFERENCE EVAPOTRANSPIRATION (INCHES PER YEAR) DERIVED FROM APDX A OF CALIFORNIA MODEL WATER EFFICIENT LANDSCAPE ORDINANCE, CALIFORNIA DEPARTMENT OF WATER RESOURCES.

0.7 = ET ADJUSTMENT FACTOR (ETAF)

LA = PLANTED LANDSCAPE AREA INCLUDING SLA AND NOT INCLUDING HARDSCAPES. ALSO INCLUDE SURFACE AREA OF WATER FEATURES NOT USING RECYCLED WATER.

0.62 = CONVERSION FACTOR (TO GALLONS PER SQUARE FOOT)

SLA = PORTION OF THE LANDSCAPED AREA IDENTIFIED AS SPECIAL LANDSCAPED AREA. ALSO INCLUDE SURFACE AREA OF WATER FEATURES USING RECYCLED WATER.

0.3 = THE ADDITIONAL ET ADJUSTMENT FACTOR FOR SLA (1.0 - 0.7 = 0.3)

APRIL PHILIPS DESIGN WORKS, INC.

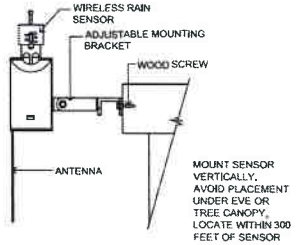
PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

Drawing Title:
HYDROLOGY AND IRRIGATION PLAN

Date: 4/10/13
Project Number: 13dw203
Drawn by: RP
Checked by: AP
Scale: As Noted

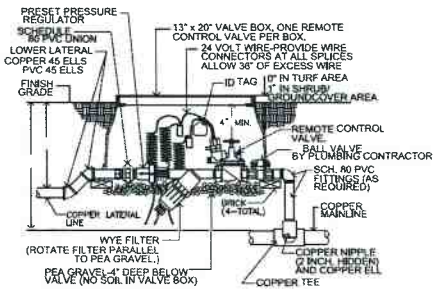
Project Status	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

L2.3

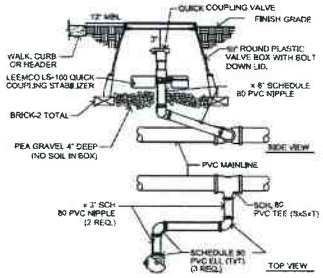


7 WIRELESS RAIN SENSOR INSTALLATION DETAIL
SCALE: NTS

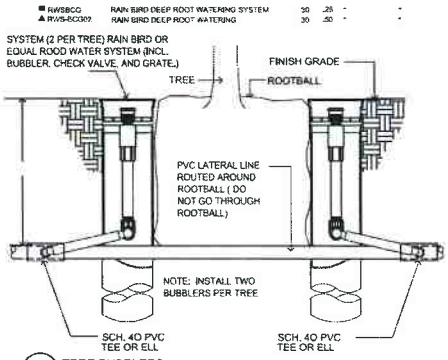
■ DZK-700-1"-MF TORO DRIP ZONE KIT



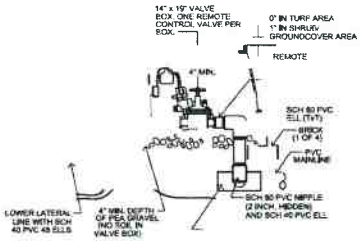
4 VALVE/ FILTER/ REGULATOR DETAIL
SCALE: NTS



1 QUICK COUPLER IN BOX DETAIL
SCALE: NTS

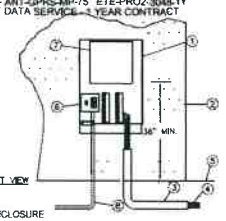


8 TREE BUBBLERS
SCALE: NTS



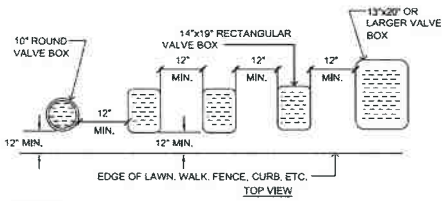
5 REMOTE CONTROL VALVE
SCALE: NTS

Ⓑ WEATHER TRAK - 12 STATION HYDROPOINT ET CONTROLLER - WALL MOUNT
Ⓐ WTPRO02-48-CH1- ANT-GPRS-MP-75 ETE-PRO2-3048-1Y
ET EVERYWHERE DATA SERVICE - 1 YEAR CONTRACT



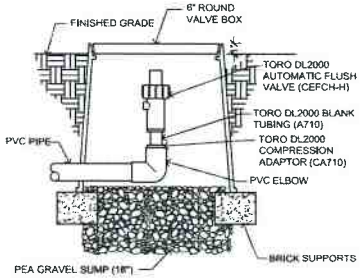
LEGEND:
1. CONTROLLER ENCLOSURE
2. OUTSIDE WALL
3. SIZE PVC LONG SWEEP ELL - USE ONE SWEEP ELL PER CONTROLLER
4. DIRECT BURIAL CONTROL WIRES TO CONTROL VALVES, ADD 1 SPARE TO EACH VALVE
5. FINISH GRADE
6. CONTROLLER SUB-ASSEMBLY (CSA) INCLUDES GFI AND TERMINAL STRIPS WITH PLACARDS
7. AUTOMATIC CONTROLLER
8. 120-VOLT SERVICE.

2 CONTROLLER ENCLOSURE - WALL MOUNT
SCALE: NTS



NOTES:
1. CENTER BOX OVER VALVE TO FACILITATE SERVICING VALVE.
2. SET BOXES 1" ABOVE FINISH GRADE OR MULCH COVER IN GROUNDCOVER/SHRUB AREA AND FLUSH WITH FINISH GRADE IN TURF AREA
3. SET VALVE BOX ASSEMBLY IN GROUNDCOVER/SHRUB AREA WHERE POSSIBLE. INSTALL IN LAWN AREA ONLY IF GROUNDCOVER/SHRUB AREA DOES NOT EXIST ADJACENT TO LAWN.
4. SET BOXES PARALLEL TO EACH OTHER AND PERPENDICULAR TO EDGE.
5. AVOID HEAVILY COMPACTING SOIL AROUND VALVE BOX EDGES TO PREVENT COLLAPSE AND DEFORMATION OF VALVE BOX SIDES.
6. VALVE BOXES SHALL HAVE BOLD DOWN LIDS WITH BOLTS INSTALLED.
7. VALVE BOXES SHALL BE BY CARSON, NDS, OR EQUAL.

6 VALVE BOX INSTALLATION DETAIL
SCALE: NTS



3 TORO DL2000 AUTOMATIC FLUSH VALVE
SCALE: NTS

APDW
APRIL PHILIPS DESIGN WORKS, INC.

PACIFIC SKIES MOBILE ESTATES
PACIFICA, CA

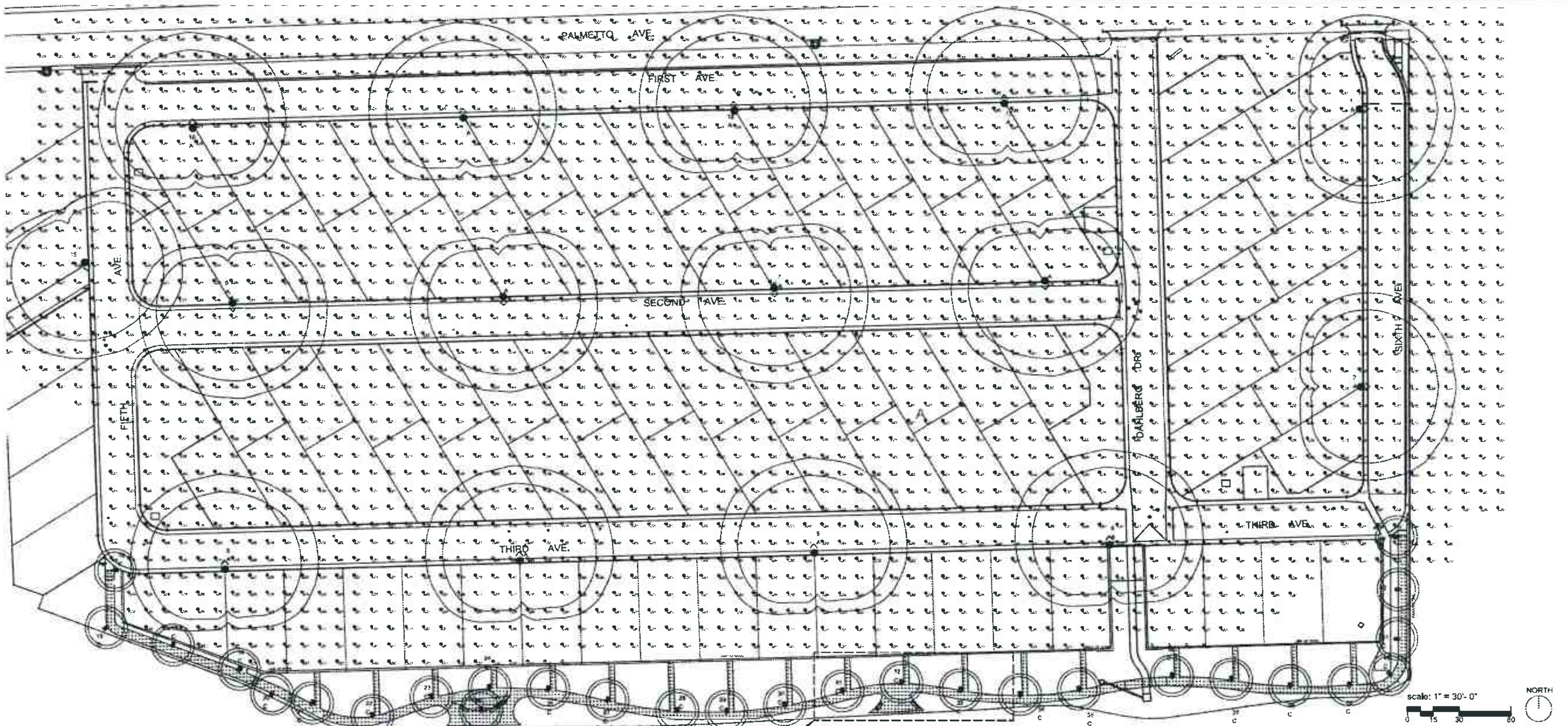
LANDSCAPE ARCHITECT STATE OF CALIFORNIA

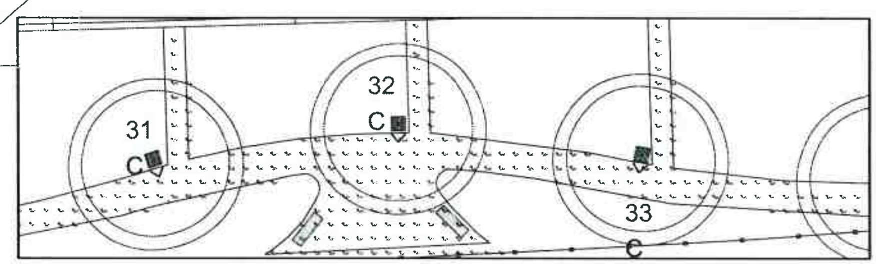
Drawing Title:
IRRIGATION DETAILS

Date: 4/10/13
Project Number: 13dw203
Drawn by: RP
Checked by: AP
Scale: As Noted

Project Status:
100% CD 5/15/13
100% CD 6/27/13
100% CD 7/15/13

L2.4





Luminaire Location Summary

Project: PACIFIC SKIES MOBILE ESTATES - SITE LIGHTING

LumNo	Label	X	Y	Z	Orient	Tilt	Switched
1	A	-6112.671	6697.475	13.1	0	0	On
2	A	-6112.265	6737.534	13.1	0	0	On
3	A	-6787.467	6631.11	13.1	33.163	0	On
4	A	-6637.471	6636.147	13.1	33.163	0	On
5	A	-6477.667	6641.015	13.1	33.163	0	On
6	A	-6257.23	6645.323	13.1	33.163	0	On
7	A	-6450.522	6793.653	13.1	279.162	0	On
8	A	-6605.643	6788.725	13.1	279.162	0	On
9	A	-6782.437	6784.735	13.1	278.162	0	On
10	A	-6785.03	6885.48	13.1	33.163	0	On
11	A	-6623.161	6871.575	13.1	33.163	0	On
12	A	-6473.265	6825.336	13.1	33.163	0	On
13	A	-6317.246	6806.432	13.1	33.163	0	On
14	A	-6794.238	6726.455	13.1	279.162	0	On
15	A	-6647.471	6606.231	13.1	233.518	0	On
16	C	-6873.936	6630.614	2.5	180	0	On
17	C	-5797.361	6567.909	2.5	249.179	0	On
18	C	-5759.14	6573.773	2.5	248.173	0	On
19	C	-6836.736	6606.639	2.5	38.452	0	On
20	C	-5741.008	6559.202	2.5	64.716	0	On
21	C	-5717.244	6554.323	2.5	246.866	0	On
22	C	-6683.065	6647.121	2.5	281.741	0	On

LumNo	Label	X	Y	Z	Orient	Tilt	Switched
23	C	-5643.139	6557.854	2.5	231.677	0	On
24	C	-5615.317	6565.43	2.5	276.071	0	On
25	C	-5620.257	6560.216	2.5	275.388	0	On
26	C	-5581.211	6562.666	2.5	280.861	0	On
27	C	-5546.374	6546.226	2.5	257.464	0	On
28	C	-5507.28	6550.336	2.5	270	0	On
29	C	-5476.683	6543.918	2.5	270.532	0	On
30	C	-5445.289	6553.543	2.5	265.337	0	On
31	C	-5411.836	6561.722	2.5	267.377	0	On
32	C	-5377.475	6566.703	2.5	270.447	0	On
33	C	-5343.24	6567.416	2.5	260.243	0	On
34	C	-5309.126	6560.82	2.5	274.316	0	On
35	C	-5275.313	6562.634	2.5	278.468	0	On
36	C	-5221.423	6570.631	2.5	271.780	0	On
37	C	-5187.27	6548.606	2.5	268.059	0	On
38	C	-5153.388	6564.377	2.5	267.511	0	On
39	C	-5113.269	6565.513	2.5	271.301	0	On
40	C	-5036.225	6571.524	2.5	313.484	0	On
41	C	-5032.307	6531.478	2.5	0	0	On
42	C	-5031.771	6470.047	2.5	0	0	On
43	C	-5032.545	6650.336	2.5	0	0	On
Total Quantity: 43							

Luminaire Schedule

Project: PACIFIC SKIES MOBILE ESTATES - SITE LIGHTING

Symbol	Qty	Label	Arrangement	Lumens/Lamp	Lum. Lumens	LLF	LDD	LLD	BF	Description	Filename
●>	17	A	SINGLE	8500	3755	0.565	0.900	0.650	1.000	HESSAMERICA AV650-1-XXM (MH 100W/C/U/PS)-VOLT-A-12-XX-AL + 12' POLE	F065-024-10.IES
■>	26	C	SINGLE	N.A.	635	0.850	0.900	0.344	1.000	BORDEN 720-LED/15-VOLT-XXX + 2.5' OPTICAL HEIGHT	Fixture 720_LED_727865.IES

Calculation Summary

Project: PACIFIC SKIES MOBILE ESTATES - SITE LIGHTING

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	# Pts	Description
CP	Illuminance	Fc	3.60	28.10	0.00	N.A.	N.A.	1606	ALL POINTS SHOWN ON PATHWAY
SA	Illuminance	Fc	0.20	0.74	0.01	20.00	74.00	173	FIRST AVENUE
SB	Illuminance	Fc	0.20	0.77	0.01	20.00	77.00	110	SECOND AVENUE
SC	Illuminance	Fc	0.21	0.72	0.01	21.00	72.00	114	THIRD AVENUE
SD	Illuminance	Fc	0.20	0.73	0.01	20.00	73.00	54	SOUTH ENTRY ROAD
SP	Illuminance	Fc	0.80	14.40	0.01	80.00	1440	76	TYPICAL PATHWAY SECTION

ALL VALUES SHOWN ARE MAINTAINED HORIZONTAL FOOTCANDLES AT GRADE

PHOTOMETRIC DATA USED AS INPUT FOR THESE CALCULATIONS IS BASED ON ESTABLISHED IES PROCEDURES AND PUBLISHED LAMP RATINGS. FIELD PERFORMANCE WILL DEPEND ON ACTUAL LAMP, BALLAST, ELECTRICAL AND SITE CHARACTERISTICS.

Calculations have been performed according to IES standards and good practice. Some differences between measured values and calculated results may occur due to measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

ALR

ASSOCIATED LIGHTING REPRESENTATIVES, INC
7777 PARDEE LANE
P.O. BOX 2265
OAKLAND, CA 94621
PHONE: (510) 638-0158 - FAX (510) 638-2908

AP DW

APRIL PHILIPS DESIGN WORKS, INC.

PACIFIC SKIES MOBILE ESTATES

PACIFICA, CA

LICENSED LANDSCAPE ARCHITECT - STATE OF CALIFORNIA

Drawing Title:

PHOTOMETRIC PLAN

Date: 4/10/13
Project Number: 3dw203
Drawn by: RP
Checked by: AP
Scale: As Noted

Project Status:	
100% CD	5/15/13
100% CD	6/27/13
100% CD	7/15/13

L3.0

STATE OF CALIFORNIA—NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

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

August 29, 2016

Tina Wehrmeister
Planning Director
City of Pacifica
1800 Francisco Blvd.
Pacifica, CA 94044

Subject: ***Application for Coastal Development Permit CDP-364-16 at 1300 Palmetto Avenue; Pacific Skies Estates Mobile Home Park (APN 009-291-020)***

Dear Ms. Wehrmeister:

Thank you for sharing the materials for an application with the City of Pacifica to grant a Coastal Development Permit (CDP) for the redevelopment of the Pacific Skies Estates Mobile Home Park. The redevelopment plan proposes removal of all existing mobile homes and other amenities, replacement and relocation of 93 mobile home units, installation of new utilities, a revised circulation plan, and additional landscaping. The subject parcel is within the Coastal Commission's appeals jurisdiction, and therefore, Coastal Commission staff appreciates the opportunity to communicate concerns regarding possible coastal resource impacts of the proposed development, especially as those possible impacts pertain to geotechnical issues and coastal hazards. Coastal Commission staff reviewed the application materials, including supplemental information submitted by the Applicant on July 6 of this year in response to a June 14, 2016 joint meeting between Commission staff and the Applicant. Despite that submittal of supplemental information, Commission staff still has outstanding concerns with this CDP application and has determined that further information is needed from the Applicant regarding bluff erosion rates, sea level rise, wave runup, slope stability, and potential triggers for relocation.

Bluff Erosion Rates

The bluff erosion rate proposed by the Applicant is an underestimate of the bluff erosion rate that Commission staff believes, based on experience at nearby sites, pertains to the project site. Furthermore, the proposed bluff erosion rate does not appear to adequately account for how erosion rates will be impacted in the future by higher sea levels. Both staff geologist, Dr. Mark Johnsson, and staff coastal engineer, Dr. Lesley Ewing, have reviewed all submitted materials and share this concern. Specifically, Dr. Johnsson observes that the 1.5 feet per year future bluff retreat rate adopted by the original Geosoils report is less than the 1.6 feet per year historic retreat rate calculated by the U.S. Geological Survey National Assessment of Shoreline Change for the project area, as well as the rate adopted for recent development projects in Pacifica, such as the Land's End shoreline protective device and access project (2 feet per year). Additionally, Dr. Ewing notes that the GeoSoils report fails to take into account the adjustments of the beach

ATTACHMENT C

to a higher sea level. Following the June 14, 2016 meeting, in an effort to justify their chosen retreat rate, including a discussion of the anticipated effects of sea level rise and episodic erosion, the Applicant provided a Supplemental Report which cites a USGS study by Hapke et al (2006). Dr. Johnsson indicates that while this study is an appropriate reference for evaluating changes to beach width, it only evaluates sandy shorelines and is not appropriate for evaluating cliff erosion. Dr. Johnsson cites a study published the following year (Hapke and Reid, 2007) to evaluate cliff erosion in California that provided the figure below:

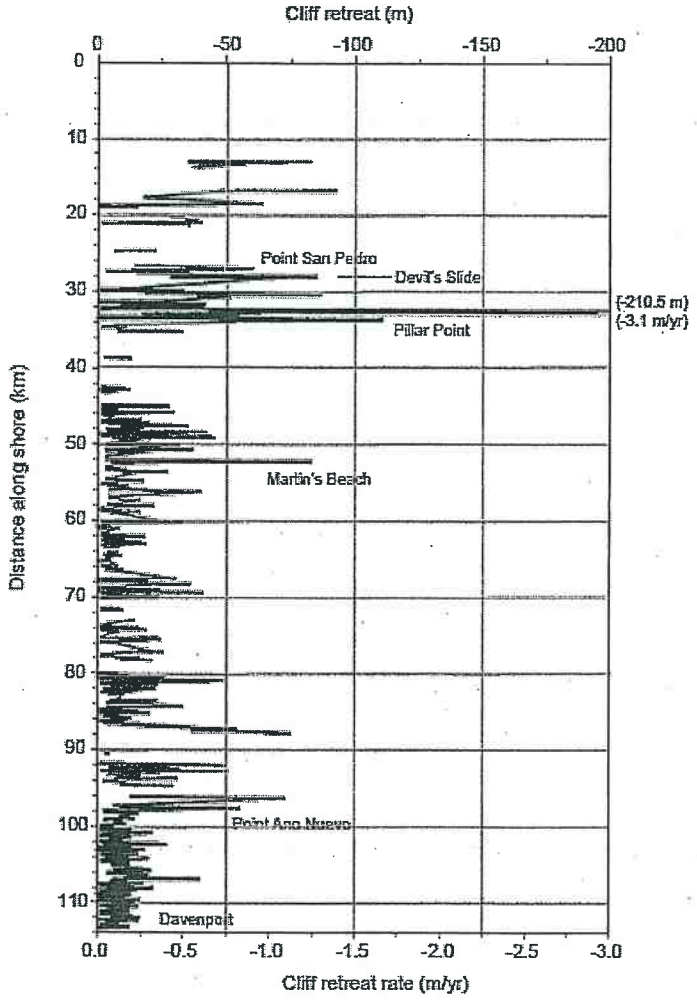


Figure 22. Cliff retreat rates and spatial distribution of rates for the San Francisco South region (see Figures 9 and 10B for reference).

According to this study, at points nearest to the location of the project site, which is 15 km south of the entrance to San Francisco Bay, the erosion rate is about 1.35-1.45 meters/year or 4.43-4.75 feet/year (the cliff immediately in front of the park was not measured, probably due to its current armored state). This is much higher than the rate of sandy beach change proposed by the Applicant (1.38 ft/yr), and translates to sea cliff retreat of 133-142 feet over 30 years. This amount of erosion is based on historic rates and it is the Commission's general practice to use the high end of measured historic rates for expected erosion in the future, as rates are expected to

rise due to future and continued sea level rise. The GeoSoils report uses an alternative method for predicting future bluff retreat due to sea level rise. As stated in the document:

> ...an alternative method to estimate the increase in erosion due to SLR is to increase the erosion rate proportionally to the ratio of the rise over the tidal range. This method yields a future erosion rate in the year 2046 of 1.7 ft/yr (1.5 + 0.159(1.5)). Using the average of the erosion rate today and the erosion rate in the year 2046 yields an average erosion rate of 1.6 ft/yr over the next 30 years, or 48 feet of retreat.

This method is acceptable, however the input number should be 4.6 feet/year (the average of the two retreat rates mentioned above), resulting in a predicted future erosion rate of 5.33 feet/year. This translates to 160 feet of bluff retreat over 30 years. Further, Dr. Ewing notes that the revetment fronting the subject parcel has held the bluff in a more seaward location than the adjacent bluffs. Therefore, revised analysis will likely result in a higher predicted erosion rate and may require a larger bluff setback.

Slope Stability and Design Life

At the June 14, 2016 meeting, Dr. Johnsson asked for quantitative evaluation of slope stability at the project site. Commission staff urged the Applicant to provide laboratory test data justifying the soil strength parameters used in their slope stability analyses presented to Commission staff on June 14th. Such slope stability calculations will ensure Coastal Act and Pacifica Local Coastal Program (LCP) requirements that new development be sited so as to ensure its stability for its economic life are met (Pacifica LCP, Plan Conclusions, "Geotechincal" pp.C-102, C-103; California Coastal Act, Section 30253(a)-(b)). Stability against bluff failure is defined as a factor of safety of 1.5 (static) or 1.1 (pseudostatic, using an appropriate seismic coefficient). Accordingly, it must be demonstrated that the proposed development will have such factors of safety throughout its economic life, thereby requiring a detailed discussion of the appropriate economic life of the development pads on which mobile homes will be placed.

The Supplemental Report of July 6, 2016 submitted by the Applicant states that "[d]ue to the persistent corrosive marine layer the design life of a new mobile home is between 25 to 30 years. For analysis purposes herein a design life of 30 years will be used." The Applicant supports the use of this design life figure by citing a letter from John M. George, who according to his CV is an expert in mobile home construction. The life of the actual mobile home may be less salient than the design life of the mobile home park as a whole. It is reasonable to assume that as a mobile home loses its functionality, it will be replaced by another mobile home on the same pad. Therefore, setting back individual mobile home pads so that they will be available throughout the economic life of the mobile home park may be a more important consideration than the life of any individual mobile home.

In the Supplemental Report, the Applicant states, based on their cross sections, factors of safety for the bluff are 2.2 and 1.5 at the two cross sections examined, and Dr. Johnsson agrees with these conclusions. However, only the most critical cross section – that is, the one that because of its topography and proximity to development has the lowest factor of safety at the location of proposed development – is pertinent to establishing setback. At that cross section, a setback of approximately 14 feet is necessary to establish the recommended factor of safety of 1.5. Due to the size of the site and variations in site bluff configuration, more cross sections would be needed

in order to find where the 1.5 factor of safety line exists across the entirety of the site. It is the Commission's general practice, in order to assure stability for the life of development, that the setback necessary to establish the required 1.5 factor of safety today be added to the expected bluff retreat over the life of development to assure stability throughout the life of the development. At this site, that translates to a 174 foot setback at the critical cross section. Dr. Johnsson also observes that no seismic (pseudostatic) slope stability analyses were performed by the Applicant. It is the Commission's practice to assure that development will be sited beyond the 1.1 factor of safety under seismic conditions in order to assure stability. Furthermore, the factor of safety analyses for an unarmored bluff condition should ignore the influence of both the revetment and the soldier pile wall that is inland of the revetment, as these two structures constitute shore protection that was used to protect development on this site which is planned for removal. Thus, current information indicates a 174 foot setback would be appropriate at the critical cross-section, but further work is needed to determine setbacks throughout the site, including analysis of seismic and unarmored conditions, which would potentially make the setback larger.

Wave Runup

The Applicant did not include a wave runup analysis for the subject site in the submitted GeoSoils report. Instead, results from an analysis of a property approximately one mile to the north were submitted as characteristic of the subject site. Further, the Applicant has proposed that this site is fronted by an equilibrium beach, which will counter the effects of sea level rise on bluff retreat rates at the site. Commission staff disagrees that such an equilibrium beach condition can be achieved at the project site since the back beach has been fixed here, due to the armoring fronting the site, essentially reducing or eliminating sand supply. Even if it is assumed that this armoring is not present (as is done for the building setback) it cannot be assumed that an equilibrium beach will form as there may not be sufficient room for such a beach to form seaward of any proposed or existing development. The Applicant should consider the effects of increased significant wave heights in relation to bluff erosion rates as a result of climate change, given that some northern California locations are already experiencing increased wave heights. At the June 14, 2016 meeting, Commission staff recommended that the Applicant perform a site-specific wave runup study using various scenarios of sea level rise (sensitivity analysis), and a 100-year wave event (maximum significant wave heights experienced during the winter storms of 1983 are sufficient) in order to provide sufficient analysis that accounts for this increased wave height.

The Supplemental Report submitted on July 6, 2016 has examined wave runup for the unarmored bluff condition and with a rise in sea level of 1.75 feet. This amount of sea level rise is the upper projection of future sea level by the year 2050. Since the Supplemental Report assumes that the proposed new mobile homes will have an expected life of 20 to 30 years, the end date analysis of 2046 was used for the time period during which the current proposed new group of mobile homes would be in place. The analysis notes that the upper bluff ranges in elevation from about +35 feet NGVD29 to +45 feet NGVD29 and assumes that the upper bluff elevation will not change with the removal of the shoreline armoring. Please note that based on the above, the flooding and the calculated runup or overtopping does not rely upon a specific bluff edge location. If the bluff were to erode inland as Commission staff projects, the flooding impacts would migrate inland with the bluff position over time. Based on this runup analysis,

the project site could experience a small amount of overtopping at the upper limit of the sea level projected for 2046. No analysis of runup or overtopping was undertaken for sea level rise in excess of the assumed 1.75 feet by 2046.

The project site will likely experience some splash and ocean spray during storm events, but should not experience much sheet flow of water across the site under the assumed conditions. However, if the site were to be used beyond the assumed 30-year proposed life of the project, and if sea level reaches or exceeds the 1.75 feet of rise, overtopping and sheet flow across the site could occur on a more regular basis. The Supplemental Report identifies a removal or project reevaluation trigger if structures are within 15 feet of the bluff edge, but does not identify any flooding triggers. Since sea level rise of 1.75 feet is near the lower limit for significant amounts of overtopping and sheet flow across the site, it is recommended that the 20 to 30 year time period be used for a full re-evaluation of flooding risks, prior to the introduction of numerous new mobile homes to the site. A second trigger point suggested by Commission staff would be to retreat once two overflow events cause water to reach the area that is occupied by the mobile homes. If these two removal triggers (when structures are within 15 feet of the bluff edge or once two flooding events reach developed area) are used, the reevaluation should occur once one of these events transpires, whichever occurs first.

Recommendations

- Future bluff retreat estimates and slope stability analyses for current conditions should be performed as described above.
- Using the bluff retreat estimates, possible triggers for relocation of the mobile structures should be identified based on encroachment of the bluff, as well as flooding and overtopping concerns.
- An examination of required setbacks in a scenario where the revetment is removed (as discussed above) should consider how the seaward location of the bluff is likely to adjust rapidly to the prevailing shore position before reverting to the typical erosion patterns of the area.
- Because of the onsite soil composition discussed above, it is strongly recommended the applicant evaluate the significance of clayey versus sandy soils for foundation design, and prepare an evaluation of the liquefaction potential of the soils on the site. Such an evaluation will make use of Standard Penetration Test (SPT) blow count or, better, Cone Penetrometer Test (CPT) results, and use quantitative methods such as those described in California Division of Mines and Geology Special Publication 117.
- Additional clarity is required with regard to the BAGG Report. Applicants should discuss the uplift conditions they anticipate (pg. 2) and how drainage of the site will operate once water is collected in catchments.
- Include a condition of approval requiring that surface water be discharged in a controlled manner into the City's stormwater system.
- Evaluate the current project pursuant to the public access policies of the Coastal Act and Pacifica's LCP. This demands an analysis of project alternatives to ensure ongoing pedestrian and vehicular public access to the recorded public access easements between the hours of 8am and one hour after sunset, as required by CDP No. 3-83-172-A3.

If you have any questions regarding these comments or wish to discuss the project further, please contact me at 415-904-5267.

Sincerely,

Patrick Foster
North Central District Planner

Cc:

Carissa Savant
CRP/PSE Seaside Pacifica Owner LLC
5000 Birch, Suite 400
Newport Beach, CA 92660

GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

5741 Palmer Way • Carlsbad, California 92010 • (760) 438-3155 • FAX (760) 931-0915 • www.geosoilsinc.com

September 27, 2016

W.O. S7009

City of Pacifica
1800 Francisco Boulevard
Pacifica, California 94004

Attention: Ms. Tina Wehrmeister, Planning Director

Subject: Response to August 29, 2016 California Coastal Commission ("CCC") staff letter providing comments on the "After-the-Fact" Coastal Development Permit Application ("CDP 364-16") for the Pacific Skies Estates Mobile Home Park ("PSE"), 1300 Palmetto Avenue, Pacifica, San Mateo County, California

Dear Ms. Wehrmeister:

At the request of the Applicant, GeoSoils Inc. ("GSI") is pleased to provide the following response to CCC staff comments contained in the August 29, 2016 letter pertaining to CDP 364-16. This response has been prepared with input from Mr. Boyd Hill, legal counsel to the project applicant. The CCC staff comments respond to the GSI July 6, 2016 letter providing supplemental information requested by CCC staff in a June 14, 2016 meeting between the Applicant's representatives and CCC staff.

BACKGROUND OF GSI STUDIES AND ANALYSIS

Before addressing the substantive issues raised in the CCC staff letter, it is important to place this matter in context. The City initially approved the PSE project pursuant to a Coastal Act exemption under the City's Ordinance, and the statute of limitations to challenge that exemption determination expired. Nearly three years later, to resolve threat of CCC staff "enforcement," the Applicant, under protest and without waiver of rights under the prior exemption determination, filed the "After the Fact" Application for CDP 364-16.

We understand that the Application for CDP 364-16 came about following an initial February 1, 2016 meeting between CCC staff and the Applicant's representatives. During that meeting, we understand that CCC staff generally was supportive of the PSE project. We also understand that, as a result of that meeting, CCC staff identified particular issues it wanted addressed with site specific studies and analysis, in order to provide "trigger point" project safety standards in the event of failure of the existing revetment armoring.

The studies and analysis requested by CCC staff included erosion rate, sea level rise, wave runup, and slope stability analyses. It must be emphasized that the City's Local Coastal Program ("LCP") does not require such analyses for the PSE project, but would

only require such analyses to determine the design and siting of new or revised shoreline protection, if such shoreline protection was being constructed at the time of the project to facilitate the project. (See City Code § 9-4.4406(c)(3))

The April 27, 2016 Application for CDP 364-16 included the April 19, 2016 GSI report of studies and analyses that GSI believed were responsive to the CCC staff requests. On June 14, 2016, Applicant representatives, including myself, attended a meeting with CCC staff, including CCC staff geologist Mark Johnsson. Dr. Johnsson requested supplemental information pertaining to the studies and analyses provided by GSI, including projections of what might happen in a fictional situation of no shoreline protection.

During that June meeting, CCC staff explained that CCC staff, in making its comments, is treating the Application as if it were filed directly with CCC. Thus, CCC staff's request for supplemental information treated the PSE project as if the existing shoreline protection was not in place.

CCC staff explained that with respect to redevelopment of pre-Coastal act developments protected by existing shoreline armoring, CCC staff considers the redevelopment as "new" development that cannot rely upon existing shoreline protection. However, CCC staff's explained that the CCC can approve of such redevelopment in consideration of the existing armoring if there are adequate "trigger" conditions to address safety factors in the event that the existing shoreline protection deteriorates or is removed. Please note that the Applicant considers the PSE project to be renovation (i.e., repairs and maintenance) rather than wholesale redevelopment.

Thus, while CCC staff insisted on analyses assuming a fictional non-armored state, CCC staff explained that setbacks and other conditions could be considered under the existing armored state, with appropriate "trigger" conditions to address any deterioration of the existing armored state. Although the Applicant disagrees with CCC staff interpretation of the Coastal Act to require exclusion of existing shoreline protection for the PSE project, based on the June 14, 2016 discussion with CCC staff, on July 6, 2016, GSI submitted the supplemental information requested by CCC staff.

The August 29, 2016 CCC staff comment letter does not take issue with the GSI methodology or analysis, but claims that certain data input such as erosion rates are not correct and that certain geotechnical data is incomplete. GSI believes that CCC staff misreads the reports that it relies upon for data input and that GSI has provided the most accurate and complete site-specific data with respect to the issues raised by CCC staff, as explained below in the substantive issue portion of this letter.

Regardless of whether the GSI data input is correct, the August 29, 2016 CCC staff letter provides CCC staff's data input information that CCC staff asserts was lacking and thus provides alternative non-armored analyses. Most importantly, CCC staff provides what it contends are the appropriate "trigger point" conditions for CDP 364-16 under its worst

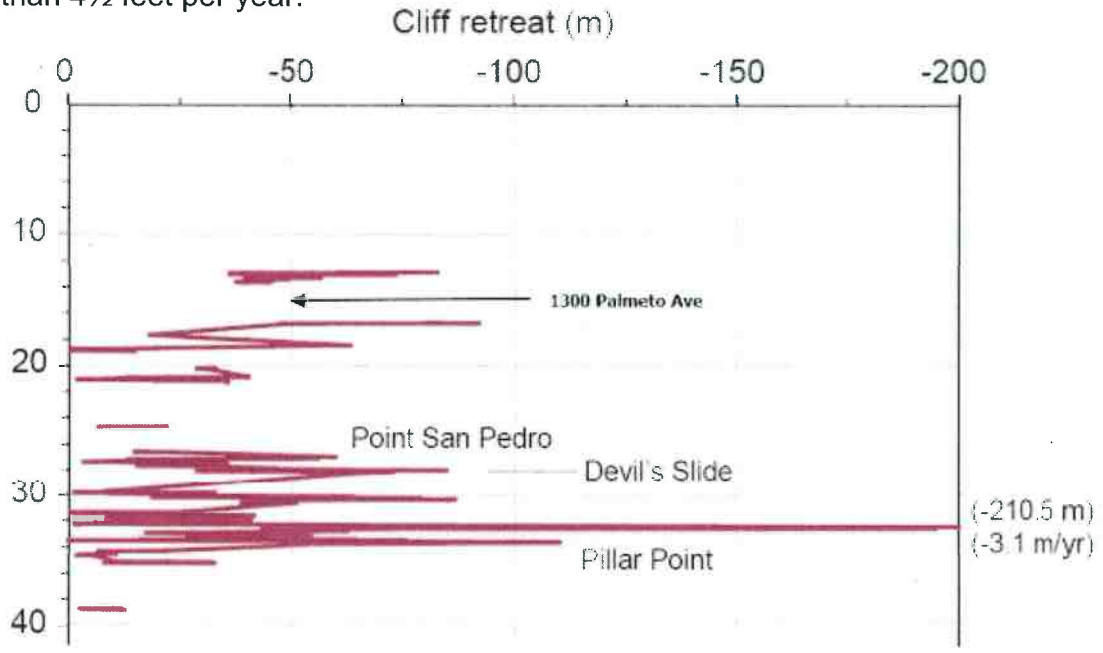
case alternative analysis. Those "trigger point" conditions are acceptable to Applicant, and thus the City may with confidence provide "trigger point" conditions that have been recommended, in advance, by CCC staff.

GSI RESPONSE TO SUBSTANTIVE ISSUES RAISED IN THE CCC COMMENT LETTER

Bluff Erosion Rates/Sea Level Rise

The shoreline erosion rate provided in the GSI July 6, 2016 letter was taken directly from the 2006 USGS report. It is the published long-term shoreline erosion rate at the PSE project site. The erosion of the shoreline is the same as the erosion of the bluff because the beach widths in Pacifica have remained relatively narrow over time. When the shoreline moves landward, so does the bluff, while the beach width remains relatively constant over time.

The 2007 USGS report cited by Dr. Johnsson does not provide any project site specific information. The figure below superimposes an arrow depicting the location of the project site on the cliff retreat rate figure from the 2007 USGS report. You will note that there is NO retreat estimate within 2 kilometers to the north or south of the project site. It is not scientifically acceptable to assign a cliff retreat rate for cliffs that are 2 kilometers from the project site. Nor is it scientifically acceptable to assign the highest offsite cliff retreat rate when there is wild variation within that offsite location from less than a foot per year to more than 4½ feet per year.



The reality is that with the permitted shore protection in place and maintained, there will be no movement of the shoreline or cliff. The existing shore protection primarily protects a dedicated lateral public access easement along the top of the bluff. The CCC staff request for a hypothetical future retreat rate without the existing shore protection in place is NOT required under the Pacifica LCP.

The CCC staff's educated guessing of the future retreat rate in consideration of future sea level rise (SLR), which also has a very broad rate of possibilities and NO assigned probabilities of any given future rise, is a policy that the CCC has adopted in an effort to setback development beyond the reasonable requirements of the local LCP.

It is also the policy of the CCC staff to use the highest retreat rate anywhere near the site and the highest SLR. The end result of the CCC methodology is a very high retreat rate with absolutely no information as to the probability of this to occur. The very high CCC retreat rate "guess" would result in a large setback that would unduly restrict land use so as to make the mobile home park no longer economically viable.

Under the LCP, the bluff erosion rate and sea level rise are simply considered as separate factors in the analysis of the design and siting of new shoreline protection, if needed, which it is not in this case. (See City Code § 9-4.4406(c)(3))

Slope Stability Analysis and Design Life

GSI presented its slope stability analysis in full compliance with the City's LCP standards. GSI provided soil strength parameters based upon several quantitative evaluations of slope stability at the project site. Those evaluations include laboratory test data justifying those soil strength parameters.

For example, as part of the Pacific Skies Estates previous coastal development permit applications, CCC staff and the City have been provided "Geotechnical and Coastal Engineering Evaluation for Pacific Skies Mobile Home Park," dated January 1997, by Haro, Kasunich and Associates, Inc. (HKAI). This report has been provided to CCC staff on at least two occasions. This report, a copy of which is enclosed, provides a comprehensive investigation of the site soils and soil strength determinations, and was used in the slope stability analysis.

In addition, CCC staff and the City have been provided a geotechnical report by East Investigations Consultants dated May 22, 2010 for the PSE project, a May 3, 2016 "Geotechnical Engineering Investigation and Report Update to that report by BAGG Engineers, a copy of which is enclosed.

In addition to the PSE site specific soils investigations, GSI reviewed several other geotechnical reports, by other consultants for nearby properties to determine reasonable (defensible) soil strength parameters for the stability analysis. GSI respectfully points out

the soil properties used in the stability analysis are more conservative than the soil strength parameters used very recently by RJR Engineering in support of a coastal development permit for the property just to the north of the mobile home park (West property). GSI's soils survey using these reports satisfies the soils survey requirements of the LCP (see City Code Code § 9-4.4404(c)), and it is GSI's professional opinion that no additional soils investigation is warranted.

The slope stability analysis provided by GSI was for the most critical section. That is the section where the bluff top is closest to the proposed development. It is GSI's opinion that using the most critical section and applying it to the entire site is a reasonable determination of the 1.5 Factor of Safety (FOS) line. It is also GSI's opinion that given the low height of the bluff, with the static FOS of ≥ 1.5, the seismic FOS should be greater than 1.1. The slope stability analysis and setback determination is based on commonly accepted geotechnical standards as required by the LCP. (See City Code § 9-4.4404(c)(5))

As referenced in the CCC letter, Dr. Johnsson in 2005 presented a method for setback determination (the "Johnsson Method"). The Johnsson Method believes the appropriate setback is to determine a site erosion rate without shore protection, numerically erode the bluff back over the life of the development, and then determine a ≥ 1.5 static FOS. However, the Johnsson Method is a Commission policy that arose decades after the Pacifica LCP certification, and is not required to be used as the setback methodology.

The CCC staff letter disputes that the economic life of mobile homes to be placed in the PSE project is indicative of the useful life of the PSE project. However, it is commonly accepted that the useful life of the mobile homes is indicative of the useful life of the mobile home park itself. We respectfully point out that the California Coastal Commission Sea Level Rise Policy Guidance paper has the following statement regarding the "Expected Project Life":

"Some LCPs include a specified design life for new development. (Note there is none specified in the Pacifica LCP). If no specified time frame is provided, a more general range may be chosen based on the type of development. For example ...moveable or expendable construction may identify a relatively short expected life such as 25 years or less..." Thus the nature of mobile homes, which are not on permanent foundations can and are routinely moved or replaced at or near a 30-year time frame.

In this respect, it is crucial to note that the CCC CDP for the existing revetment works is not tied to the life of the PSE project or the life of the existing home, but instead the CDP is tied to the revetment, which in GSI's opinion has a life of at least if not more than 75 years, if properly maintained. The CCC CDP for the life of the existing revetment works helps fulfill the express LCP policy to maintain in existence the existing PSE mobile home park to address low and moderate income housing needs.

Wave Runup

The GSI report provides a site specific wave runup analysis for the subject site. The analysis was NOT for a property about 1 mile away. In addition to the GSI wave runup analysis, the HKAI report provides a wave runup analysis for this specific site. The GIS and HKAI wave runup analysis are in reasonable agreement.

Response to CCC Recommendations

As set forth above, the bluff retreat estimates and slope stability analysis for current conditions were adequately and correctly performed.

The CCC staff letter recommends two trigger points. One is for full re-evaluation of flooding risks in 2046. A second is for removal of structures when structures are within 15 feet of the bluff edge or two overflow events cause water to reach the area that is occupied by the mobile homes. These trigger points are acceptable to the Applicant.

A revetment removal scenario is not required by the LCP and so one has not been provided.

The soils reports discussed above are sufficient. The compaction, fill and slab requirements contained on pages 11 and 12 of the BAGG report address the issues of sandy and clayey soils.

According to the geotechnical survey, there have been no reported occurrences of ground deformation in the Project area during major, historical earthquakes. Based on the studies performed for the Project, it was determined that liquefaction risk at the Project site is low. Given a low liquefaction potential, the risk is also low for lateral spreading or earthquake-induced landsliding of the bluff on which the Project is located.

Thus, the Project is feasible from a geotechnical standpoint. Furthermore, according to the geotechnical survey, all proposed upgrades on the Project site would be constructed according to Code requirements and based on observed geologic conditions of the Project site.

Regarding the BAGG Report, uplift is mitigated by following the home manufacturer's recommendations. Mobile home foundation requirements are well documented with strict guidelines by FEMA and/or other government agencies.

Surface water is already discharged into the City's stormwater system.

The GSI analysis relies upon the existing shoreline armoring to ensure ongoing pedestrian and vehicular access to the recorded public access easements. That is the preferred alternative.

CONCLUSION

In closing, the information provided to the CCC staff by GSI is accurate and complete. The information provided is beyond what is necessary or required by the Pacifica LCP.

The PSE project will assure stability and structural integrity and will not contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protection devices that would substantially alter natural landforms along the bluff. The life expectancy of the existing protection, if properly maintained, is sufficient to protect the PSE project.

The Applicant will accept a 35-foot setback with the two "trigger points" set forth above. The "trigger points" requested by the CCC staff are acceptable to the Applicant and should be included as conditions of approval of CDP 364-16.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to contact our office.

Respectfully submitted,

GeoSoils, Inc.

John P. Franklin
Engineering Geologist, CEG 1340

David W. Skelly
Civil Engineer, RCE 47857

DWS/JPF/jh

Distribution: (2) Addressee

Enclosures: HKAI Report
BAGG Report

GEOTECHNICAL AND COASTAL ENGINEERING EVALUATION
for
PACIFIC SKIES ESTATES MOBILE HOME PARK
1300 PALMETTO AVENUE
Pacifica, California

Prepared For
MR. ARTHUR P. HERRING
L & H GROUP
Lawndale, California

Prepared By
HARO, KASUNICH AND ASSOCIATES, INC.
Geotechnical & Coastal Engineers
Project No. SM5156
January 1997

HARO, KASUNICH AND ASSOCIATES, INC.
CONSULTING GEOTECHNICAL & COASTAL ENGINEERS

Project No. SM5156
29 January 1997

MR. ARTHUR P. HERRING
L & H Group
P. O. Box 728
Lawndale, California 90260

Subject: Repair and Reconstruction of Portions of
Coastal Protection Structure At
Pacific Skies Estates Mobile Home Park
1300 Palmetto Avenue
Pacifica, California

Dear Mr. Herring:

The following report presents the results of our Geotechnical and Coastal Engineering Evaluation of the subject property. This report addresses the coastal storm damage which occurred at the subject property in late January and February 1996, and the emergency measures enacted to protect the seaward boundary of the mobile home park and prevent complete loss of a soldier pile seawall which was constructed in 1984 after a series of coastal storms undermined gunite faced retaining walls, historic emergency riprap, an access roadway (4th Avenue) and a row of mobile home lots. During the 1983 storms, as much as 80 feet of the coastal bluff receded, causing the aforementioned damage and the need for the 1984 soldier pile seawall.

We have evaluated the existing soldier pile and riprap seawalls fronting the property and propose a riprap revetment structure utilizing methods outlined in the 1984 edition of the U. S. Army Corps of Engineers "Shore Protection Manual" as a permanent coastal protection structure where the seawall collapsed or was damaged. A Wave Runup Analysis was performed to determine wind generated, critical wave runup elevations at the subject property that potential winter storm waves may reach. Using site specific coastal parameters, our wave runup analysis predicted runup to elevations of about 33 feet, NGVD for the reconstructed riprap revetment when subjected to deep beach sand scour conditions of -6 feet, NGVD. Similar beach sand scour conditions in front of the 1984 soldier pile wall generate wave runup elevations to almost 40 feet, NGVD (provided the vertical seawall doesn't collapse).

Our investigation revealed that the existing riprap seawall on the south end of the property offers the best protection to the coastal bluff and mobile home park. The soldier pile seawall which protects most of the subject property is highly susceptible to collapse when beach sand levels lower to elevations close to the underlying terrace deposit material elevations (0 feet, NGVD) such as occurred in front of approximately 200 linear feet of the seawall where the structure collapsed and the mobile homes above were threatened.

Our investigation revealed that the coastal bluff fronting the subject property can best be protected by maintaining the emergency riprap revetment at a proper height and slope gradient. The proposed riprap revetment is compatible with the existing riprap structure

116 EAST LAKE AVENUE • WATSONVILLE, CALIFORNIA 95076 • (831) 722-4175 • FAX (831) 722-3202

on the south end of the property and is able to protect and buttress the existing vertical soldier pile seawall when beach sand in front of it scours to dangerously low elevations in the future.

The proposed riprap revetment structure does extend beyond the mean high tide line during severe winter beach level conditions when the sand has receded to lower than average elevations. The recently constructed revetment structures base, and much of its trunk is covered with beach sand most of the year, such that its exposed face is landward of the mean high tide line and lateral beach access is not impeded during periods of average beach sand elevation.

Included in this report are cross-sections across the beach and through the soldier pile seawall measured in March 1996 showing emergency conditions shortly after segments of the seawall collapsed and the same cross-sections measured in September 1996 showing the "as built" conditions across the project area. All cross-sections are referenced to an NGVD elevation datum.

If you have any questions, please call our office.

Very truly yours,

HARO, KASUNICH & ASSOCIATES, INC.

John E. Kasunich
C. E. 33177
G. E. 455

JEK/db
Copies: 1 to Addressee
2 to California Coastal Commission, North Coast Area
Attention: Mr. James Muth
1 to City of Pacifica
Attention: Mr. Tim Molinari
1 to California State Lands Commission
1 to Army Corps of Engineers
Attention: Mr. Robert Lawrence
1 to Monterey Bay National Marine Sanctuary
Attention: Mr. Scott Kathey
1 to Pacific Skies Estates
Attention: Mr. John S. May
1 to Pacific Skies Estates Homeowners Association
Attention: Ms. Lucy Aliano
1 to Power Engineering Contractors
Attention: Mr. Ken Lindberg

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GEOTECHNICAL AND COASTAL ENGINEERING EVALUATION

Introduction

In late January, early February 1996, beach sand levels in front of the Pacific Skies Estates Mobile Home Park severely lowered in elevation. The extreme beach scour exposed the base of vertical solider piles acting as a seawall to contain riprap backfill that supported a near vertical coastal bluff. An access roadway parallels the top edge of the riprap backfill. Mobile homes line the inland side of the access road. The scour conditions became so severe that many of the vertical solider piles began to rotate seaward due to loss of passive lateral support. The extreme low beach elevation continued for two to three weeks during moderate to strong coastal storm activity that was generating large surf. Eventually, all of the beach sand in front of the southern end of the solider pile seawall was removed exposing an old riprap apron and the underlying terrace deposit materials (a partially cemented silty sand). Extreme loss of beach sand removed enough passive lateral restraint below 49 piles that they overturned and fell onto the beach. The failure was progressive but continuous, occurring between 4 February and 18 February 1996. The riprap backfill behind the collapsed piles slumped to beach level undermining the access road and threatening the mobile homes directly behind them.

Power Engineering, a general engineering contractor, was called to the site to assess the damage and begin emergency protection measures. Huntington Design Associates, a structural engineering firm, which had assisted the mobile home park in maintenance of the vertical solider pile seawall and its backfill was also called in. Shortly thereafter, the geotechnical firm of Treadwell and Rollo, Inc., and the geotechnical and coastal engineering

firm of Haro, Kasunich and Associates were called to begin assessment of the immediate damage and to recommend short-term and long-term protection.

By the 12th of February 1996, fourteen piles had collapsed. By the 18th of February 1996, forty nine piles had collapsed and a number of piles were on the verge of collapse, leaning towards the ocean. Power Engineering began placing riprap rock in front of the collapsed area of the structure to buttress slump sliding and to protect the toe of the exposed seawall from wave inundation. Coastal storms during the month of February 1996 were strong and regular. Emergency rock was placed from the top of the bluff with crane equipment, and from the beach during low tide conditions with tractor equipment. During this period of time, beach elevations were lowering along the complete soldier pile seawall alignment. The elevation drop was as much as 15 feet in some areas and 10 feet in many. The lowered beach elevation exposed the vertical piles and beach sand behind them. The sand began to wash out during high tide strong wave action, causing large voids beneath the riprap backfill behind the vertical piles. Ultimately, large caverns formed and began to collapse. The collapsed backfill began to undermine the access roadway at the top of the reinforced slope. Smaller riprap was placed in these voids to contain the roadway.

The engineering firms and the general contractor evaluated the situation and determined that coastal erosion undermining the vertical pile structure was the major concern. The undermining of the structure due to loss of beach sand and the cantilever design of the vertical piles greatly endangered the structural integrity of the seawall. Loss of passive lateral restraint at the base of the vertical piles was causing collapse of the seawall and displacement and failure of the riprap fill behind it. Treadwell and Rollo, Inc. investigated the subsurface soil profile along the top of the coastal bluff where severe damage was

occurring with an exploratory boring. The exploratory boring is included in Appendix C of this report. A 66 foot exploratory boring was drilled at the top of the backfill on the access road adjacent to the major seawall collapsed area. Approximately 3 feet of fill overlying 5 feet of dune sand was encountered at the surface underlain by clayey gravelly sand defined as an old sea terrace deposit. The old terrace deposit extended to the depth drilled, 66 feet. The Franciscan sandstone that underlies the region and forms the basement bedrock unit was not encountered in the exploratory boring, nor is it observed on the exposed coastal bluff north of the property and immediately south of the property. The terrace deposit is only partially cemented and when beach sand is eroded from the beach completely, as it did in February 1996, the terrace deposit is subjected to wave action and it begins to erode.

Based on the results of the exploratory boring, the exposures of beach sand and soft terrace deposits which form the coastal bluff and the extreme erosion occurring at the base of the vertical seawall, a number of preliminary protection ideas were presented in the emergency permit application (16 February 1996, see Appendix C. These included, in addition to riprap rock protection, tieing back the vertical piles and retaining the fill and sand dune materials along the top of the bluff behind the soldier pile seawall to protect the roadway.

During this initial evaluation, destruction of the seawall was on-going due to continuation of lowering beach sand levels and daily storm wave activity. Power Engineering continued to place riprap where piles were falling over and backfill settlement was occurring. Riprap was placed at the northern end wall of the soldier pile seawall to protect it from being out flanked. Significant erosion of the sand under the backfill behind the northern wing wall

was occurring causing settlement and the potential for the northern wing wall to collapse. Riprap was placed in front of threatened piles by excavating the beach sand to the terrace deposit material, laying geotextile filter fabric in the excavated keyway and placing riprap to protect the northern end of the structure from wave attack and to develop long term buttress support for the vertical piles. (Refer to Appendix B for a photographic presentation of the undermined damaged seawall and subsequent placement of emergency riprap rock).

Additional meetings were held with the project contractor and engineers, the mobile home park owners and the California Coastal Commission to re-assess the on-going serious erosion and undermining of the vertical piles and the rapidly deteriorating coastal protection (on-going collapse of seawall piles). An on-site meeting, 28 February 1996, with the contractor (Power Engineering), the engineers (Haro, Kasunich and Associates; Treadwell & Rollo and Huntington Associates), the park owners (Arthur Herring, John May) and the Coastal Commission (James Muth) determined that the emergency problem was still very severe, that much of the mobile home park was still threatened and that a riprap revetment structure was the best short term and long term, permanent coastal protection structure for the mobile home park. A decision was made to redirect the engineering evaluation towards design of a permanent riprap rock revetment structure to act as a complete seawall where pile collapse had and was occurring, as a buttress wedge to secure vertical piles being undermined or having the potential to be undermined in the future, and as a fill buttress along the top of the coastal bluff to protect the access roadway that runs parallel to the blufftop. Ongoing emergency placement of riprap was modified or supplemented to place rock below all beach sand, on top of existing riprap aprons founded on terrace deposit material or into the underlying terrace deposit materials. Filter fabric

was to be placed in the base keyway and laid behind the riprap rock. Emergency riprap already placed on beach sand was to be extended through all beach sand, or its' base buttressed with an additional riprap wedge founded on filter fabric and terrace deposit materials. The Coastal Commission indicated at that time that riprap was a successful method of developing long term coastal protection in the Pacifica area, but that lateral beach access for the public was often restricted due to the extension of riprap onto the backshore and foreshore of the beach, especially where beaches become narrow during winter sand scour conditions; and that although emergency and permanent riprap rock protection in front of Pacific Skies Estates is probably technically sound, the lateral beach access problem would have to be addressed during processing of the regular permit after the emergency situation ceased to exist.

A riprap revetment structure is now being used to protect the referenced property where the vertical pile seawall failed, and to buttress the north and center sections of the seawall where deep beach sand erosion exposed the base of the piles and undermined the sand and riprap backfill behind the wall. A riprap revetment has been used as coastal protection since 1984 at the south end of the subject property and south of it to protect single family residential properties. Based on numerous discussions with the design team, the contractor and the owners of the mobile home park, and an evaluation of a number of alternative coastal protection structures, it became evident that a riprap rock revetment structure should be used in the future as permanent coastal protection where seawall failure occurred last year and where an increase in protection is needed north and south of the failure zone. A riprap protection structure has a number of favorable characteristics for combating the harsh beach and wave climate in front of the subject park. It is a flexible structure and offers continuing protection even while settling, distorting and loosing mass

by wave plucking. The structure can be maintained by retrieving rocks that have fallen seaward and/or by adding new rock to its trunk and top.

Purpose and Scope

This report describes our Geotechnical and Coastal Engineering Evaluation of the repair and reconstruction of the coastal protection structures at Pacific Skies Estates Mobile Home Park in Pacifica, California.

The purpose of this study is to update the Geotechnical, Geology and Coastal Engineering Reports prepared for the subject property in 1983, when serious erosion of the coastal bluff took place causing as much as 80 feet of recession of the bluff top and significant damage to the mobile parks' improvements. The 1983 engineering studies, included in Appendix D of this report, were used to design and construct the vertical soldier pile seawall which sustained serious damage in February 1996.

The scope of our services included:

1. Review of the data in our files pertinent to the site and information in the California Coastal Commission's Santa Cruz Office, regarding the 1983 soldier pile seawall design and permit.

2. Review of the following reports and documents, which are included in Appendix D of this report:

Geoconsultants, Inc., 27 September 1983 Report entitled "Geologic Reconnaissance and Shallow Seismic Refraction Survey Beach Off Palmetto Avenue, Pacifica, California".

Anil Butail, P.E., Consulting Geotechnical Engineer, 25 October 1983 Report entitled "Transmittal of Engineering Report Bluff Erosion Protection Pacific Skies Estates, Pacifica, California".

Noble Coastal & Harbor Engineering Ltd., 8 November 1983 Letter entitled "Review of Pacific Skies Estates Erosion Protection Plan".

Howard • Donley Associates, Inc., 17 November 1983 Letter entitled "Geotechnical Review Proposed Coastal Protection Pacific Skies Estates, Pacifica, California, by Anil Butail, P. E".

Anil Butail, P. E. Consulting Geotechnical Engineer, 28 November 1983 letter entitled "Request For Emergency Permit Coastal Bluff Erosion Protection, Pacific Skies Estates, Pacifica, California".

3. Review of the subsurface conditions at the site by reviewing a 66.5 foot deep exploratory boring drilled at the top of the coastal bluff by Treadwell & Rollo.

4. Wave runup analysis to determine critical wave runup elevations on the property for the 1984 soldier pile seawall and the reconstructed riprap revetment from future potential winter storm waves and deep beach sand scour conditions.

5. Responses to and information required by the California Coastal Commission's December 1993, Procedural Memo #19-Revised Review of Shoreline Projects.

6. Presentation of the results of our evaluation and review in this report.

Field Investigation

Field investigations were conducted to construct cross-sections of the damaged 1984 seawall and beach in front of the property in March 1996, including the existing emergency riprap structure, in order to redesign the new revetment structure and estimate quantities of rock materials necessary for the redesign. The investigations included surveying the area from existing survey marks established by Anil Butail, P.E. in October 1983. Hand levels, tapes and survey instruments were used in our field mapping. One deep boring was drilled at the top of the coastal bluff adjacent to the deepest beach scour and seawall damage area. Appendices A and C present the cross-sections and the exploratory boring.

Geologic Setting

Pacific Skies Estates Mobile Home Park fronts a west facing beach south of San Francisco and north of Rockaway Beach in Pacifica, California. The beach is exposed to northwest and west ocean swells which occur each winter and is exposed to infrequent storm waves coming from the southwest.

Earth materials that make up the coastal bluff at the subject property consist of surficial fill and dune sand overlying partially cemented marine terrace deposit materials. The Franciscan sandstone, which underlies the site, is not exposed within the coastal bluff north and south of the property nor was it encountered in the exploratory boring at a depth 26

feet below the vertical pile seawalls base.

The geology of the site is explained, in detail, in the September 1983 Geoconsultants Geologic Reconnaissance, prepared for the subject property, (Appendix D).

The Marine Terrace deposits are highly susceptible to erosion by waves washing onto the seacliff north and south of the property and being undermined when the beach sand erodes, exposing the terrace deposit platform during severe winter storms. The high rate of coastal retreat in this area is primarily related to erosion of the marine terrace deposits by wave runup forces. A secondary mechanism of cliff retreat involves sloughing of the terrace deposits due to local ground saturation.

Coastal Bluff Retreat

The primary mechanism of seacliff retreat at the Pacific Skies Estates property is surf action eroding the marine terrace deposits which form the seacliff. Rates of cliff retreat are episodic and vary from year to year depending on storm wave and beach sand scour activity. The coastal bluff in front of the mobile home park receded almost 80 feet in a one month period in 1983. The exposed seacliff adjacent to the north end of the 1984 soldier pile seawall appears to have eroded over 15 feet landward since 1984.

This high rate of coastal retreat is due to the erodible marine terrace deposits that form the seacliff and beach platform below the beach sands and the lack of more durable Franciscan bedrock in the area.

During and after the severe coastal storms of 1983 a vertical pile seawall was constructed adjacent to the exposed seacliff and riprap rock was placed against the bluff face at the south end of the subject property and adjacent to it against the cliff face of neighboring properties. The height of the seawall and riprap rock varies from about 40 to 32 feet, NGVD. Since 1983, erosion along the seacliff north of the subject property has occurred where no seawall or riprap structure exists. Slump scarps indicating continual retreat of the terrace deposits were evident along the coastal bluff north and south of the existing soldier pile and riprap protection structures. The cliff area protected by the existing riprap at the south end of the subject property experienced no retreat since the storms of 1983.

Riprap revetments are already in-place immediately downcoast of the study site. These revetments were installed under emergency conditions following the severe winter of 1983. Riprap rock exists at the south end of the subject property. This rock is piled against the coastal bluff at a slope gradient of about 1½:1 (horizontal to vertical). We could not determine if the complete base of the rock is founded on beach sand and/or the underlying terrace deposit platform. The southern riprap revetment does not appear to have settled since its 1984 placement. There is adequate access at the subject site to repair the riprap structure, maintain proper grades and slopes, and still allow beach sand frontage during the summer and fall seasons and most of the winter and spring seasons. The reconstructed revetment structure can easily tie into riprap structures south of the property.

Scouring and accretion of the beach sand along the subject property and adjacent properties has historically occurred seasonally with and without the presence of riprap coastal protection structures. The terrace platform directly in front of the coastal bluff is

usually buried and only becomes exposed episodically (15± years). The beach sand depths in front of the project vary from 5 feet to as much as 18 feet from season to season depending on coastal storm activities.

The presence of a riprap revetment structure that is founded on the terrace platform will not appreciably affect erosion or accretion of beach sand at the subject site. Scour at the base of the proposed revetment will take place to the same degree as ongoing scouring along the base of the exposed seacliff, north and south of the immediate study area.

We conclude that the coastal bluff at the subject site will continue to erode without a protection structure and that the vertical soldier pile seawall will continue to collapse if beach sand erodes down or close to the terrace deposit platform exposing its base. Construction the existing emergency riprap structure so that its base is founded on the terrace deposit platform and extending it high enough (15 feet, NGVD) to buttress the soldier pile seawall during deep beach sand scour conditions will not negatively affect the existing coastline north and south of the subject property.

Wave Runup Analysis

The Pacific Skies Estates Mobile Home Park property is exposed to the Pacific Ocean, which borders the property to the west. During severe coastal storms, large surf will runup the sand beach, vertical soldier pile seawall and riprap revetment to an elevation dependent on many factors. The wave runup, if severe, can impact improvements well above the high tide beach level.

Ocean wave runup is controlled by several interdependent factors. Wave runup calculations are based on a variety of theoretical and laboratory work, as well as empirical observations. Most laboratory measurements have been made in relatively small wave tanks. Specific model studies have not been made for the Pacific Skies Estates area, however, existing information, experimental work, and empirical observations allow us to calculate approximate runup elevations. To calculate wave runup on the subject site, several factors and conditions must be defined.

These are:

1. extreme stillwater level;
2. beach and coastal bluff slope and configuration;
3. beach slope roughness;
4. design wave size (height), and
5. design wave period.

The following is a discussion of these conditions and the results of our wave runup analysis for the subject property.

Stillwater Level

Stillwater level is the elevation that the surface of the water would assume if all wave action were absent. This super-elevation of the assumed static water surface is due to a combination of astronomical high tide, storm surge, wave setup and long term sea level rise.

Astronomical Tide

A mixed semi-diurnal tide characterizes the California coast, which means simply that we experience two high tides each day, of unequal height, and two low tides, also of unequal height. Normally tidal heights are stated in feet, relative to mean lower low water (MLLW - the mean or average elevation of the lower of the two low tides each day). According to the 1973 and 1974 Tide Tables (National Ocean Survey, 1972 and 1973), tide levels in the general vicinity of the subject property vary from a high tide of +6.9 feet above mean lower low water (MLLW), to a low of -1.7 feet MLLW. The average tide level is +3.0 MLLW. Tides above 6 feet MLLW occur about 13 percent of the time. During each year, we would expect tides to exceed 6.0 feet on portions of 47 days and to exceed 5.5 feet on portions of 123 days. The important consideration here is not simply the elevation, but as discussed previously, the simultaneous occurrence of a high tide and storm wave conditions. Because most periods of storm wave conditions will last for at least a day or two, it is more realistic to consider the number of days or recurrence interval of tidal levels above 5.5 feet, above 6.0 feet, etc.

The probability of high tides occurring with large storm waves is reasonably high, and therefore, must be considered.

Atmospheric Storm Surge

One of the highest documented tides since 1964 was 5.1 feet NGVD (8.0 feet MLLW) on 27 January 1983, at Monterey Harbor. The 5.1 foot tide was 1.4 feet above the predicted tide for that day.

Winds associated with coastal storms create a surge which increases sea levels above their normal, high tidal range. This simultaneous occurrence must be considered.

An important factor that influences the height of the stillwater level is storm surge. During large storms, on-shore winds push water toward shore where the water "mounds", raising sea level.

Similarly, the large, low atmospheric pressure systems associated with these storms allow sea level to rise above normal levels. During the severe 1983 coastal storms, surges reached heights of 1.4 feet above predicted levels. The severity of the 1983 coastal storms was affected by the El Nino climatic anomaly which caused a slowing of the California current and a general rise in sea level of about 8 inches (U.S. Army Corps of Engineers, 1983). Sea levels have probably reached elevations of 5.1 feet (NGVD) at the subject site and might be expected to rise to even higher levels under more extreme conditions.

Short-Term Increases (Due to Wave Setup)

The short-term increase in stillwater depth, due to mass onshore transport of water from breaking waves, is estimated to be approximately 0.5 foot. We base this estimate on our observations during the 1996 winter storms.

Long-Term Sea Level Rise

The tide records around the earth show that a world-wide rise in sea level has been occurring in historic time.

Thompson (1977) states:

> The sea level history determined from the tide measurements made at the N.O.S. reference tide station at San Francisco can be considered representative of Monterey Bay. At San Francisco, the sea level rise, derived from the 19-year running mean of 113 years of tide data from 1859 to 1972 (unpublished N.O.S. data), was about 0.73 feet (21.9 cm) from 1859 to 1887 (28 years), remained stationary from 1887 to 1929 (42 years), then rose 0.35 feet (10.5 cm) from 1929 to 1972 (43 years). Long-term shoreline erosion rates should be expected to reflect this trend. Sea level rise as a primary controlling factor in coastal erosion is only now gaining general recognition among coastal experts.

Emery (1980) states:

> Mean annual sea levels of 247 tide-gauge stations of the world exhibit a general rise of relative sea level of about 3 mm a year during the previous 40 years.

The U.S. Army Corps of Engineers (1985) states:

> Mean annual sea level in the San Diego Harbor area has been rising about 0.7 feet per 100 years between the years of 1905 to 1985.

Future changes in sea level cannot be accurately predicted, but it is obvious that the sea level will probably continue to rise slowly, due to melting of the polar ice caps, most probably caused by the "greenhouse effect." The "greenhouse effect" is the general increase of the earth's temperature that is caused by increased CO^2 levels in the atmosphere. The present rate of sea level rise is about one foot per 100 years (Environmental Protection Agency, 1983), however, the rate of rise is probably not constant

but increasing. The E.P.A. predicts that sea level will rise at least 5 inches in the next 40 years, but it may rise as much as 2 feet.

DESIGN STILLWATER LEVEL SUMMARY

Extreme high tide	+4.2 feet NGVD
Atmosphere storm surge	+1.4 feet
Short-term increases	+0.5 feet
Long-term sea level rise	+1.0 feet
Design stillwater level	7.1 feet NGVD

Beach and Seacliff Slope and Configuration

Beach and coastal bluff slope and protection structure configurations are important conditions controlling wave runup at the subject property. The beach slope and coastal protection configurations vary along the seaward edge of the property, depending on the average annual rate of sand accretion and erosion. We have used existing seawall and predicted worse case beach sand scour profiles of the referenced site to determine future wave runup elevations and breaking wave forces against the buttressed and unbuttressed soldier pile seawall and riprap revetment structures which exist at the subject site.

Beach Roughness

A smooth, sandy beach surface, exists most of the time in front of the subject property. Our wave runup analysis included scouring of the beach sand to the terrace deposit platform at assumed elevations of -3 to -6 feet, NGVD, as worst case scenarios.

Wave Height Variations

Because of the orientation of the site and its position north of Rockaway Beach, it is directly exposed to deep ocean waves from the west and northwest. As offshore waves approach the beach from these directions, the water shallows and breaking is initiated. Just prior to breaking, the wave usually steepens (crests) to a height substantially higher than its deep water height.

Larger, unrefracted, deep water waves will break at some distance from the beach and will reform and break again as smaller breakers on the beach. The larger waves break due to shoaling effects on sand bars further offshore. They then reform and break again as smaller waves.

Because of the orientation of the subject property, it is directly exposed to waves from the northwest and west. Storm waves from the southwest will refract and lose some energy, or will break against the rocky headlands south of Pacifica. Wave data from 1956-58 (National Marine Consultants, 1960) indicates that significant swell heights exceeding 15 feet in height occurred for about 40 hours a year. The maximum wave heights during this time period were 23 to 25 feet and occurred for about eight hours a year.

We used design breaking wave heights of 11 to 14 feet in our wave runup analysis. Larger waves will break at some distance from the beach and seacliff and will reform and break again as smaller breakers on the beach closer to the seacliff and coastal protection structures.

Design Wave Period

The wave periods of the majority of the largest waves during the winter 1983 severe coastal storms varied from 8 to 22 seconds. We used design wave periods of 8 to 20 seconds in our calculations.

Results of Runup Analysis and Discussion

Wave runup calculations were developed using field cross-sections measured at the site and presented in Appendix A of this report, and offshore and near-shore bathymetry determined from NOAA Nautical Charts and visual observations in February 1996 during severe beach sand scour conditions. Our calculations are based on methods outlined in the 1984 edition of the U.S. Army Corps of Engineers "Shore Protection Manual". A portion of our calculations were manually done. However, we used a wave runup software program (WRUP) for most of the calculations. This computer program allowed us to calculate runup for a series of design wave sizes, periods, and beach and seawall configurations.

Our wave runup profiles were modelled for a "winter storm beach scour" condition. Our model assumed all sand was scoured to the terrace deposit platform, resulting in deeper water adjacent to the soldier pile seawall and riprap revetments. The deeper water will potentially allow a higher breaking wave to generate greater wave runup elevations at the site.

Results of our highest runup calculations across the scoured sand beach and coastal protection structures is presented in the following table:

Coastal Protection Structure Configuration	Beach Scour Elevation At Toe of Structure (NGVD)	Breaking Wave Height (Feet)	Elevation Of Wave Runup (NGVD)
Reconstructed riprap revetment structure (1½:1 slope gradient)	-6	14	33
Riprap buttress wedge added to base of 1984 soldier pile seawall	-4	12	33
1984 Vertical soldier pile seawall (north end of property). No repair or buttress wedge added	-3	11	34
	-6	15	40*

* Hypothetical case-base of soldier pile designed to -5 feet, NGVD. Vertical seawall piles will collapse at this sand scour elevation.

The results of our calculations assumed the following design parameters:

1. The design stillwater level equals 7.0 feet NGVD;
2. Near-shore fronting beach slope of 30:1 (h:v) gradient;
3. Beach scour elevations of -3 to -6 feet, NGVD.
4. The wave runup surface varied from a semi-porous terrace deposit slope to a rough riprap rock surface;
5. A 1.5:1 rock revetment;
6. A vertical pile seawall;
7. Maximum breaking wave heights of 11 to 14 feet, and
8. Design wave periods T = 8 to 20 seconds.

Elevations along the top of the coastal protection structures fronting the access road within the mobile home park vary from about 40 to 32 feet, NGVD, (from north to south). Deep beach sand scour historically occurs at the southern end of the property. This was the case in February 1996. (See Photographs, Appendix B). The soldier pile seawall trends inland at its northern end (see Site Plan, Appendix A). This results in a wider winter beach, more natural protection and less beach sand erosion at the base of the coastal protection structure on the north end of the subject property.

Our wave runup calculations, for projected worst case beach sand scour elevations indicate that very little overtopping of the coastal protection structures onto the access road will occur at the site. The top of the vertical, soldier piles are at elevation 25 feet, NGVD. They have and will continue to be overtopped during severe winter wave activity. The grouted and ungrouted riprap backfill above the vertical piles acts to reflect and absorb the higher wave runup and must be maintained in the future.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our investigation, a riprap rock revetment structure offers the most durable coastal protection to Pacific Skies Estates Mobile Home Park. The 1984 soldier pile, vertical seawall is subject to collapse when beach sand in front of it erodes to elevations approaching 0 feet, NGVD, as was the case in February 1996. Scoured terrace deposit material was exposed at -4 feet, NGVD, on 15 February 1996 in front of the collapsed seawall. Future beach scour to these elevations in front of soldier piles not protected with a buttress riprap wedge will result in additional collapse of the unprotected seawall segments. Existing riprap protection placed against the damaged seacliff in 1984 protected the mobile home park well in February 1996.

We recommend strongly that a riprap rock revetment structure be used to protect the subject property permanently where seawall collapse occurred in February 1996. We recommend that the riprap revetment wedge be maintained in front of the standing vertical piles where it was placed north of the seawall collapse area and at the northern wing wall of the vertical seawall. We recommend that an additional riprap revetment wedge be placed in front of the vertical soldier piles that were not buttressed with riprap rock during the emergency construction operations, and that this wedge be tied into the existing emergency riprap structures to the north and south.

The beach in front of the mobile home park is a very dynamic environment. Beach sands rise and fall 8 (±) feet seasonally. Periodically, it is not unusual for the beach sand level to lower 12 to 15 feet as was the case in 1983 and again in February 1996. This deep beach sand scour exposes a highly erodible old terrace deposit which forms the backshore platform. The terrace deposits readily erode due to wave action and agitation of small riprap and cobble rocks that form a basil layer below the beach sand. In January/February 1996, field measurements indicated that the terrace deposits eroded vertical as much as 4 feet. Observations within voids behind the vertical seawall indicated that the terrace deposits eroded laterally as much as 25 feet since construction of the seawall in 1984. Although coastal bluff recession rates have not been formally determined, projections based on the peninsula forming at the north end of the referenced property, indicate that 1 foot a year of bluff recession is not out of the question.

Bluff and beach level measurements during the extreme scour conditions of early February in conjunction with beach profiles taken in March 1996, have allowed us to assess beach parameters and determine design criteria for a riprap revetment structure. The following design parameters were utilized in determining the size of rock and the estimated wave runup that can occur at the site. Still water level at the site will be 7 feet, NGVD. Design scour elevation for a fifty year project can be placed at -6 feet, NGVD at the toe of the revetment structure. The exposed marine terrace deposits at the base of the vertical piles scoured to an elevation of at least -2 feet in many areas of the southern beach this past February. The design depth of water at the base of the revetment structure will therefore be about 13 feet.

We have determined that breaking waves on the order of 11 to 15 feet high could occur just seaward of the revetment structure, projecting depth dependent breaking waves into the near shore environment. These breaking waves will impact the revetment structure and runup its face to elevations of about 33 feet, NGVD. Wave splash and wind generated spray could exceed the top of the bluff on an infrequent occasion. The top of the bluff varies from 40 to 32 feet, NGVD.

Using design procedures in the 1984 Shore Protection Manual by the U. S. Army Corp of Engineers and the aforementioned stillwater level, breaking wave heights and depth of water at the base of the revetment structure, we have calculated a requirement for 6 to 16 ton rock.

Riprap rocks in a 50 year engineered structure will need to range from 6 to 20 tons. A minimum two stone cover layer will be required with an underlying geotextile fabric to contain the embankment structure. The face slope of the riprap revetment structure should be 1½:1 (h:v) or flatter in gradient. The riprap structure should be keyed into the underlying terrace deposit material at an elevation of about -8 feet, NGVD.

A modified long term protection structure could consist of a rock revetment constructed in similar manner to the requirements presented above mimicking the existing riprap revetment structures on the south end of the subject property and adjacent to the south end of the property. These revetment structures utilized existing, local quarry rock located within 2 miles of the mobile home park. The rock at this quarry is very durable and ranges in size from 4 to 10 tons. The present emergency revetment structure does mimic the revetment structure south of it and has been built at a gradient no steeper than 1½:1 (h:v)

and embedded through all beach sand and onto the existing riprap rock apron or the underlying terrace deposit platform.

The revetment structure has been constructed with at least 2 layers of angular quarry stone. The larger available rock (8 to 10 tons) was placed at the base/toe keyway. A Mirafi 700X filter fabric was placed below and behind the emergency riprap structures base to contain beach sand and terrace deposit materials within the embankment behind the 2-layered rock structure. A significantly deep prism of rock was used, (i.e. 4 layers (±) of rock) in the upper trunk area where filter fabric was not placed. The ability of flushing wave action to draw sands and fines through the 4 layer emergency structure where filter fabric was not placed has been diminished, although not completely. The present riprap structures will be durable and will offer lasting protection, provided the following maintenance procedures are adhered to:

1. The revetment structure will need to be maintained on a regular basis. As the structure settles due to infrequent, but regular scour activity that lowers the elevation of the terrace deposit platform, additional rock will have to be placed on top of the structures trunk to maintain its design elevation.

2. Rock that is displaced or plucked from the structures trunk will have to be replaced on a regular basis as a maintenance procedure.

3. A means to provide regular maintenance should be established. This will include access onto the beach during non-violent, normal beach level conditions. An access ramp now exists at the south end of the property and at a State Park public parking area

north of the property 350 feet. Some means of adding rock to the structure on an emergency basis should be set up. This could be nothing more than the access roadway along the top of the bluff being maintained to support a 235 excavator or some other piece of equipment that could drop rock onto the structure from above should severe settlement occur and expose the upper reaches of the seacliff embankment the rock revetment structure is buttressing and protecting.

4. A regular, scheduled inspection by a qualified engineer, familiar with the local coastal process and the revetment seawall structure to monitor the stability and structural integrity of the revetment structure.

The present riprap revetment structures (1984 rock revetment and 1996 emergency revetment), and the riprap buttressed soldier pile seawall can offer lasting protection provided the maintenance procedures above are established and carried out on a regular basis. Adjacent rip rap structures built with undersized rock and not keyed deeply into the underlying terrace deposits have offered coastal protection since their construction in 1984. Although there is need for maintenance, the structures are still durable and capable of being repaired to offer continued coastal protection.

The Pacific Skies Estates Mobile Home Park is, at present, protected with a 1984 soldier pile vertical seawall (see Appendix D for engineering and geology reports prepared during its design), a riprap buttressed soldier pile seawall (1996), a 1984 riprap revetment structure and a 1996 reconstructed riprap revetment structure. All of these coastal protection structures must be maintained if coastal protection is to continue for the next 50 years. The north and south ends of the continuous seawall will have to be protected from

outflanking in the next 50 years by adding riprap to the north end and extending riprap downcoast at the south end to connect with existing riprap revetment structures approximately 120 feet from the south end.

During winter beach scour conditions, when the beach sand elevations have lowered, the riprap protection structures extend beyond the mean high tide line, (see Appendix A, Site Plan, Figure 1 and Projected Worst Case Beach Sand Scour Condition, Figure 16). During severe winter beach sand scour conditions, public access laterally along the beach is difficult at low tides and nearly impassible at high tides in front of the southern section of the coastal protection structure. During average winter beach sand scour conditions, public access is only difficult during extreme high tide cycles in front of the southern section of the coastal protection structure. Public access is not restricted laterally along the beach during most of spring, all of summer and fall, and often during a short portion of early winter, the remainder of the year, at high or low tide conditions.

Public access laterally along the beach is difficult at high tides north and south of the subject property when beach sand levels have eroded to extreme winter conditions due to existence of seawalls and revetments in front of other properties, narrow winter beaches and adjacent, high vertical seacliffs.

Without coastal protection, the mobile home park will be severely damaged each winter due to coastal bluff undermining and collapse. The park lost one row of mobile homes in 1983. It will loose a second row shortly after the vertical, 1984 seawall collapses and is not protected or the emergency riprap rock is removed from the base of the coastal bluff and 1984 seawall where it was recently placed.

Beach nourishment is not a viable long lasting protective measure due to the strong winter wave environment and littoral drift along the exposed coast, the lack of a resistant bedrock platform and extreme beach sand scour conditions that occur regularly in front of the subject property.

The beach and existing coastal protection structures in front of the subject property and properties up and down coast of it should be monitored on a yearly basis. When erosion of the coastal bluff or damage to existing seawalls occur (most of which are riprap rock revetment structures) maintenance procedures outlined in this report should be followed to repair and reconstruct the revetment structures; or extend riprap protection south to connect to existing revetment structures and develop a continuous line of protection.

Vertical seawalls are prone to undermining and outflanking along this stretch of beach because of the lack of a resistant bedrock platform for long term foundation support, the height of the seacliff that needs protection and the extreme winter beach sand erosion cycle that frequently lowers the beach to very shallow elevations (0 to -4 feet, NGVD).

To complete coastal protection of the damaged seawall areas in front of the mobile park with riprap rock, the emergency rock revetment toe was buttressed by the contractor with as large as rock as was possible to transport to the site (8 to 10 ton) from the local quarry. The irregular face slope was dressed to a 1½:1 gradient. The structure was extended from the top of the coastal bluff adjacent to the access roadway down into the terrace deposit material below the beach sand. A buttress revetment structure was then extended north of the collapsed vertical pile section to protect the leaning pile seawall and the soldier pile seawall where deep beach scour occurred and backfill was flushed from behind the

structure. The void behind the vertical piles at the north end of the 1984 structure was cleaned out and riprap placed in the void behind the vertical piles.

The access roadway was reestablished by adhering to the following procedure:

A. Excavate a trench 6 feet deep on the outboard edge of the road but landward of the riprap revetment structure recently placed. A filter fabric equivalent to Mirafi 700X was placed at the base of the trench and up the outboard side of the trench. The trench was backfilled with a Class 4 baserock material or equivalent.

B. Remove the asphalt, subexcavate 12 inches of subgrade and stockpile or remove from site.

C. Scarify the exposed subgrade material to a depth of 8 inches and compact it to 90 percent relative compaction.

D. Replace the subexcavated material (ground up asphalt may be included) and embellish it with a Class 4 subbase material and compact it to 95 percent relative compaction.

E. Place a 6 inch baserock section and compact it to 95 percent relative compaction. Cover it with an asphalt or oil screening chip surface.

This reestablished roadway should offer good access to the ocean front mobile homes as long as the emergency rock is maintained and continues to buttress its outboard edge.

RIPRAP REVETMENT RECONSTRUCTION

A riprap revetment structure is composed of several layers of random shaped and random-placed stones. Present technology does not provide specific guidance to determine the forces required to displace individual armor units from the cover layer sliding down the slope en mass, or individual armor units may be lifted and rolled either up or down the slope. Empirical formulas that have been developed are generally expressed in terms of the stone weight required to withstand design wave conditions. These formulas have only been partially substantiated in model tests and must be used with engineering judgment and experience.

Design breaking wave heights of H_b = 11 to 15 feet were used in the stone size calculations. A specific gravity for the armor stone of 2.8 was used. An armor stone weight ranging from 6 to 16 tons was calculated using 2 for the empirical stability coefficient Kd (see Appendix C). Kd varies primarily with the slope of the structure, shape of the armor units, roughness of the armor unit surface and sharpness of edges and the degree of interlocking obtained in placement.

Visual observations of wave action on riprap structures at and adjacent to the subject site over the past two winters suggests that the armor rock less than 16 tons offers good protection. We recommend the reconstructed armor rock weigh 4 to 10 tons and that the revetment structure be monitored on a regular basis and maintained when necessary.

We estimate that approximately 9,500 tons (±) of riprap rock was placed at the subject property during the emergency construction operations and that an additional 1,500 ± tons of riprap should be used to buttress vertical soldier piles that have not been protected with a revetment wedge.

Approximately 1,000 cubic yards of fill was necessary to reconstruct the upper slope that supports the access roadway and infill collapsed voids resulting from seawall backfill settlement. This fill consisted of small riprap and quarry bank run imported to the site.

Placement, size and quality of riprap stone delivered to the site should conform to the General Specifications section of this report.

Longevity and Maintenance

The proposed permanent coastal protection structure consists of the reconstructed riprap rock revetment structures placed February through October 1996 at the subject site. These flexible structures provide good bluff protection and are effective in dissipating and absorbing wave energy and reducing wave runup and overtopping. They can tolerate a certain degree of consolidation or settlement without structural failure. The rock comprising the revetment can readjust and settle without causing structural distress.

The existing emergency revetment structures are composed of at least two layers of randomly placed armor stones that form a face slope whose gradient is 1.5:1 (h:v). Severe wave forces during a major storm may cause an area of the cover layer to slide down the slope en masse, or individual armor stones may be lifted and rolled either up or down the slope. Damage due to rock weighing less than 16 tons or from waves higher than the

design wave used will be progressive. The displacement of several individual armor rocks will not result in complete loss of protection.

Maintenance of the riprap revetment can usually be accomplished without dismantling the structure. Displaced rocks must be relocated on the structure to ensure a double layer of armor rock and to re-establish design slope gradients. Severe beach scour may undermine the toe stone causing it to translate seaward. The resultant settlement of armor stone on the seaward face can be replaced with additional riprap to build up the cross-section of the structure to its original design elevation.

Maintenance, if required, can be carried out during the calmer summer months. It may be necessary, on rare occasions, to inspect the structure during and immediately following a severe ocean storm to determine if immediate maintenance is required to insure continued protection throughout the rest of the storm season.

We recommend that the 15 foot wide open ramp area along the subject properties south boundary be maintained to allow construction equipment easy access to the beach below.

GENERAL SPECIFICATIONS

Site Preparation

The required work consists of furnishing and placing a stone revetment, indicated on the drawings and Figures 17 and 18 in Appendix A of this report. All work shall be conducted so as to prevent damage to structures which are to remain.

Quarrystone

Areas where quarrystone is to be placed shall be excavated and dressed as needed to provide stable bedding and placement within allowable tolerances. To the extend practicable, the larger sizes of stone shall be placed at the toe of the revetment structure. Armor and toe stone shall be in pieces generally compact in shape and as nearly cubical as possible, with the least dimension of any stone being not less than one-third its greatest dimension.

All required stone shall be produced from quarries approved by the owners engineer.

It shall consist of a well-graded mixture of sizes that will form a compact mass in place. The armor and underlayer stone shall conform to maximum and minimum weights as specified on Figures 58 through 61, Appendix C of this report. All stone shall have a minimum specific gravity of 2.6.

Stones shall be placed by equipment suitable for handling material of the sizes required. The armor stone shall be placed a minimum of two layers thick. Suitable equipment shall be used to carefully place the stone. Riprap stone shall not be dropped a distance greater than 3 feet onto exposed filter fabric.

Armor and toe stones shall be placed to the grades shown on the drawings, Figure 17 and 18, Appendix A, within a tolerance of 0.5 foot above grade of 0.5 foot below grade, measured perpendicular to the grade lines. The intention is for the toe of the stone protection structure to be built to at least the elevation of the underlying terrace deposit material, below all beach sand deposits.

Filter Fabric

The armor and toe stone shall be underlain with synthetic filter cloth, Mirafi 700X or approved equal. The cloth shall contain stabilizers or inhibitors to prevent deterioration of the fabric due to ultraviolet light or heat exposure. The fabric should be manufactured so that the yarns maintain their relative positions and spacings. In addition, the edges of the fabric shall be finished to prevent ravelling or pulling away from the main body of the cloth.

All seams in the fabric shall be sewn with thread that matches the chemical and strength requirements described above, or they shall be bonded by cementing or by heat.

No fabric shall be used if it has defects, rips, flaws, holes or otherwise shows signs of deterioration or damage during manufacture, transportation or storage. The fabric shall be placed with the long dimension perpendicular to shore and shall be free of tension,

stress, folds, wrinkles or creases. Overlap between adjacent sheets shall be a minimum of 36 inches if secured by pins or 5 feet if not secured by pins. Securing pins shall penetrate overlapped fabric at 3 foot intervals. These pins shall be 3/16-inch in diameter, at least 18 inches long. If fabric sheets are sewn together, the sewing thread and stitch pattern shall be of a material that meets or exceeds the manufactured stitch of the approved fabric.

Quality Control

The Contractor shall establish and maintain a quality control system for all operations performed. and alter the project engineer when excavation of the base keyway and placement of filter fabric and toe stone is scheduled. The Contractor shall maintain records of his quality control for all operations performed.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical and coastal engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. The analysis and recommendations submitted in this report are based on our site reconnaissance, review of maps and photographs and pertinent geologic and oceanographic literature. Coastal protection structures have had a poor performance record at many locations on the California coast in recent years. coastal protection structures have finite lifespans, and typically require maintenance or repair during their lifespan. Some contingency fund is recommended to accommodate these possible extra costs. Construction of a shoreline protection structure does not guarantee protection from storms, it only reduces the risk of storm damage. If an extreme storm event (or series of storm events) strikes the Pacifica Beach area, severe damage could occur to much of the coastal property, regardless of what type of shore protection structure fronts the property.

2. The recommendations of this report are based upon the assumption that the beach and soil conditions do not deviate from those disclosed in the boring and observed during extreme beach sand scour conditions in February/March 1996. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the time, our firm should be notified so that supplemental recommendations can be given.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are called to the attention of the Architects and Engineers for the project and incorporated into the plans, and that the necessary steps are taken to ensure that the Contractors and Subcontractors carry out such recommendations in the field. The conclusions and recommendations contained herein are professional opinions derived

in accordance with current standards of professional practice. No other warranty expressed or implied is made.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside our control. Therefore, this report should not be relied upon after a period of three years without being reviewed by a coastal or geotechnical engineer.

Project No. SM5156
29 January 1997

APPENDIX A

Site Plan

March 1996 Cross-Sections A-A' through G-G'

September 1996 "As-Built" Cross-Sections A-A' through G-G'

Projected Worst Case Beach Sand Scour Condition

Typical Construction Details

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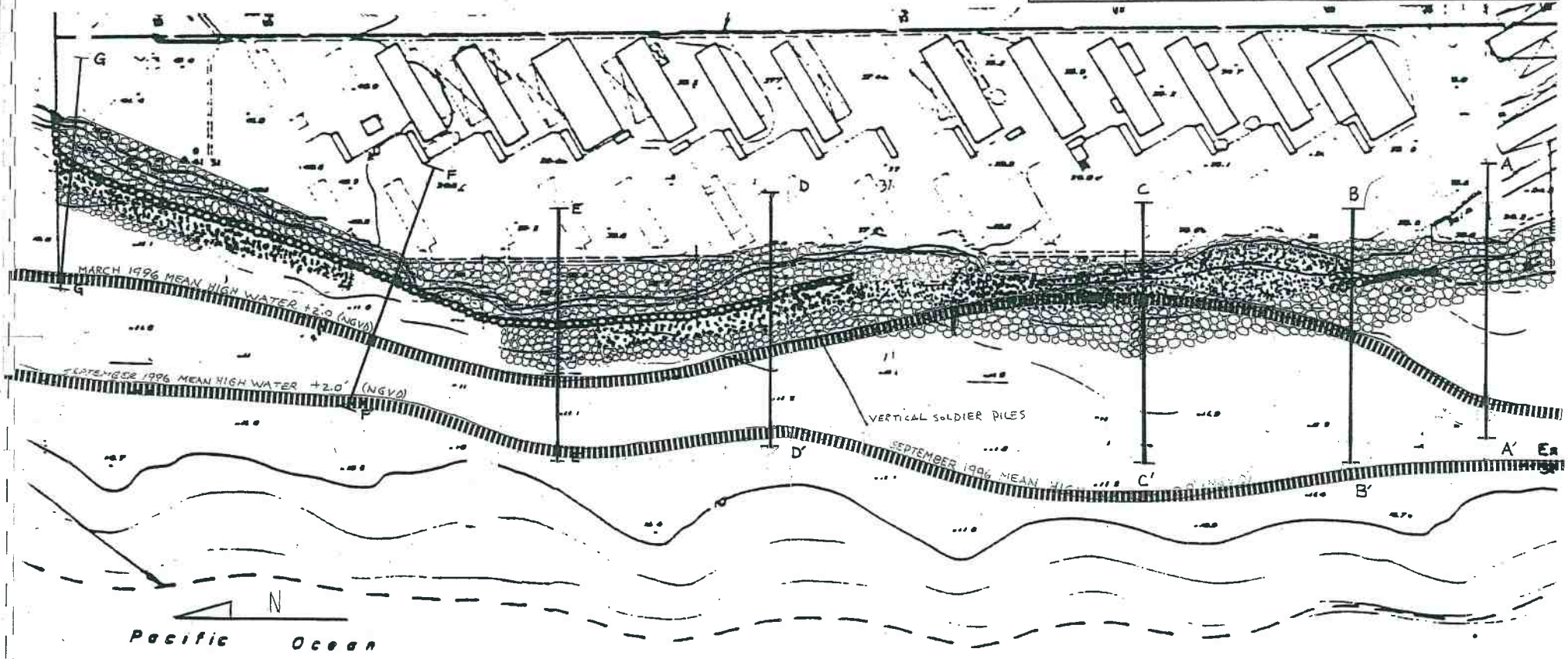
SCALE: 1" = 40'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-6-96		
SITE PLAN : PACIFIC SKIES ESTATES SM5156		
SAN MATEO COUNTY, CALIFORNIA		DRAWING NUMBER 1



BASE MAP: ANIL BUTAIL, DRAWING NO. C-118-E1
OCTOBER 1993

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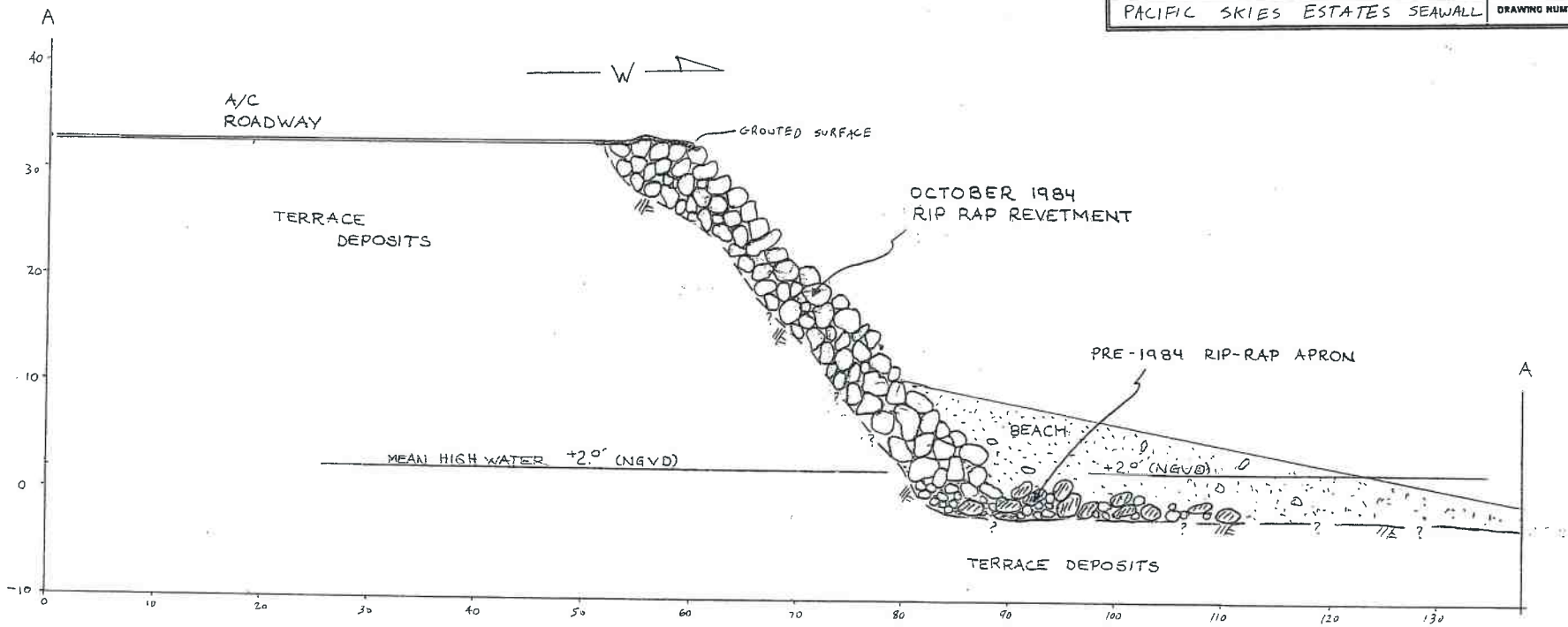
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO.: SM5156	
MARCH 1996 CROSS SECTION A-A',		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 2



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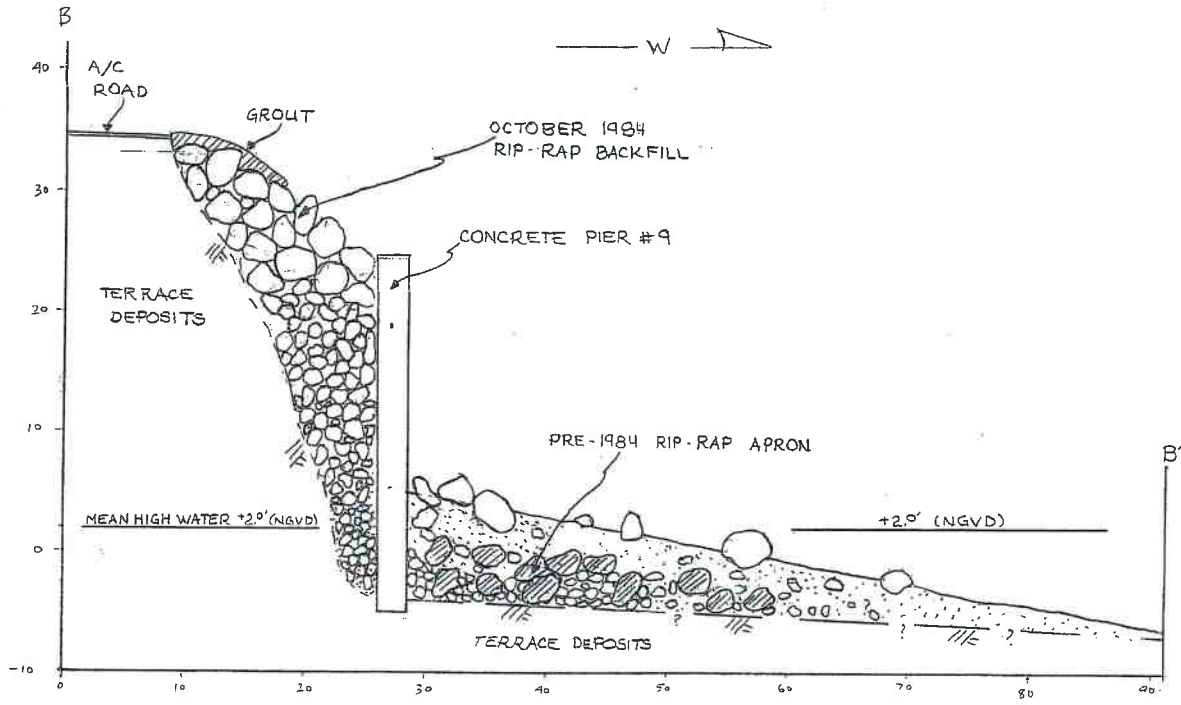
SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
MARCH 1996 CROSS SECTION B-B'		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 3



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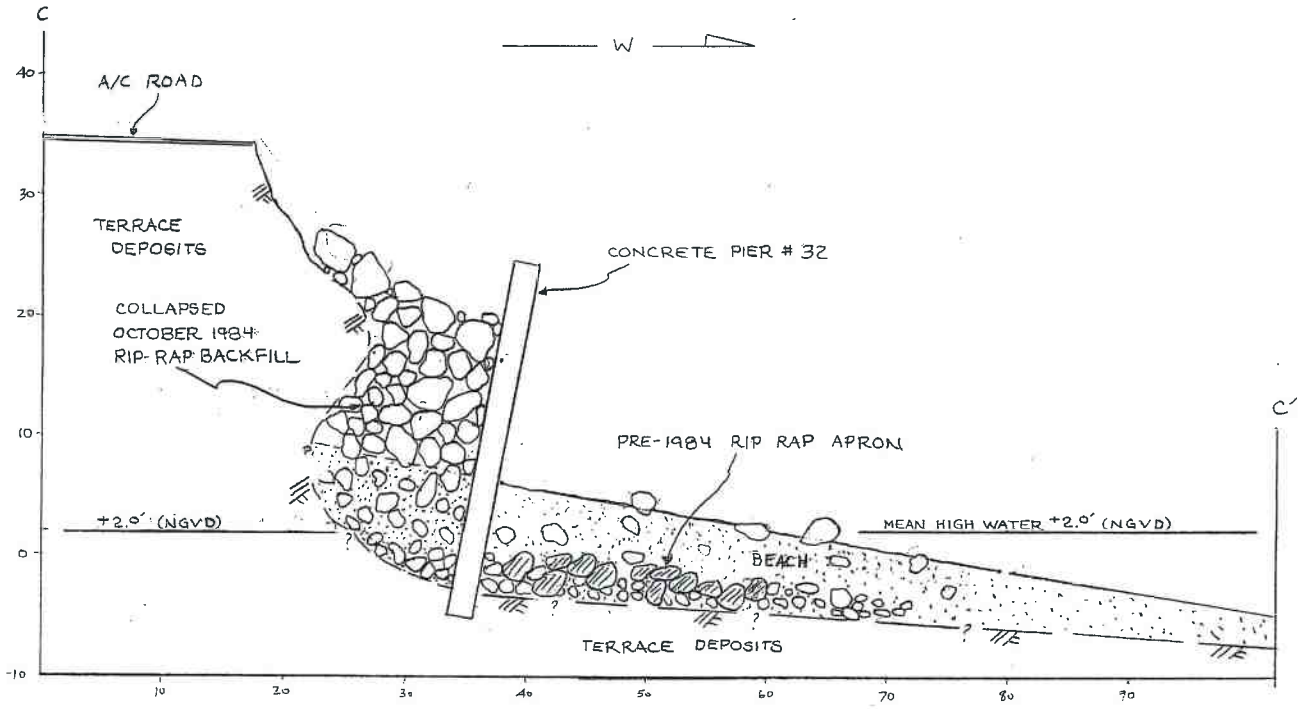
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
MARCH 1996 CROSS-SECTION C-C'		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 4



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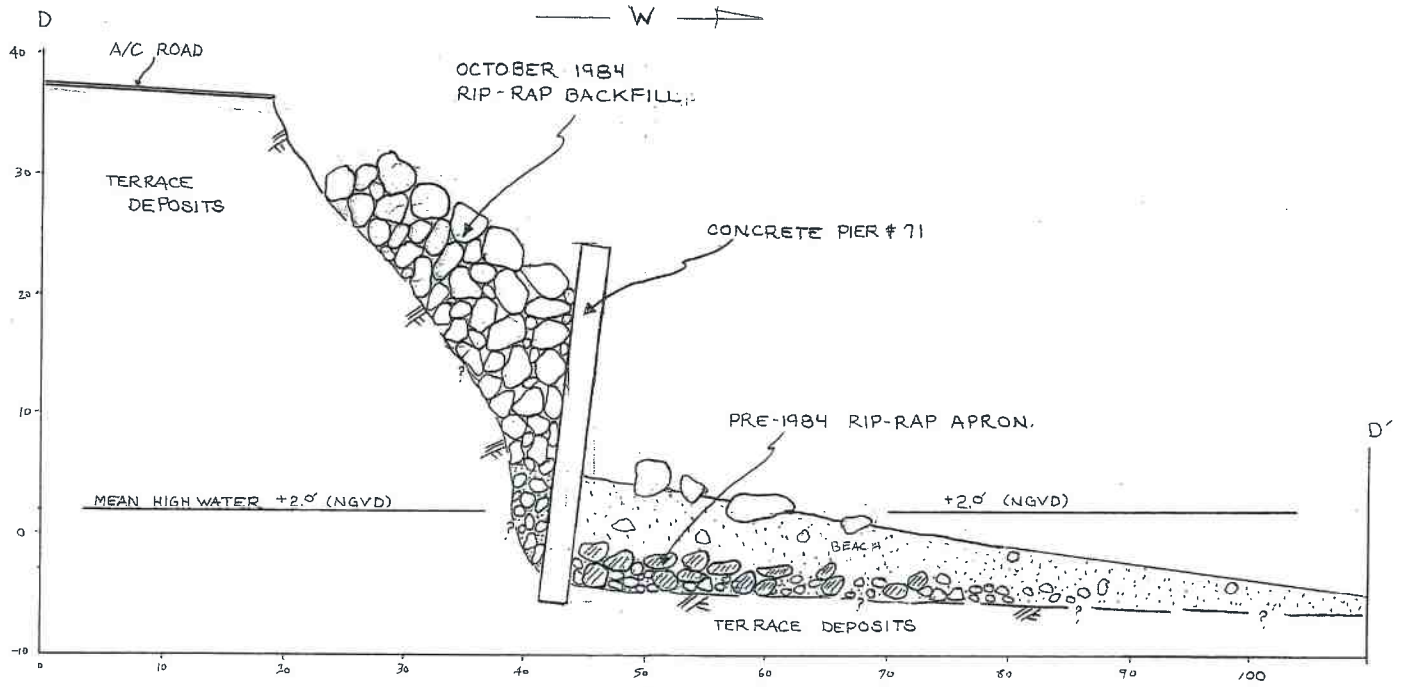
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SMS156	
MARCH 1996 CROSS SECTION D-D'		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 5



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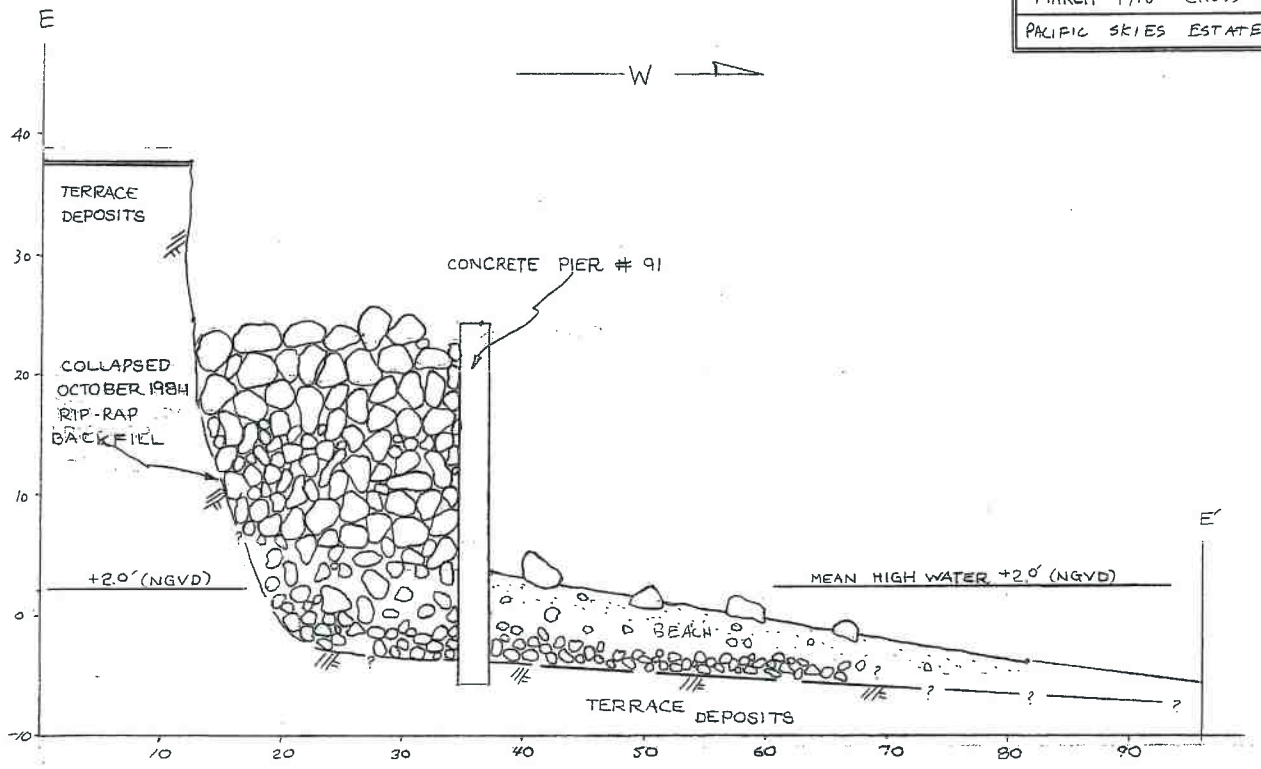
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
MARCH 1996 CROSS-SECTION E-E'		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 6



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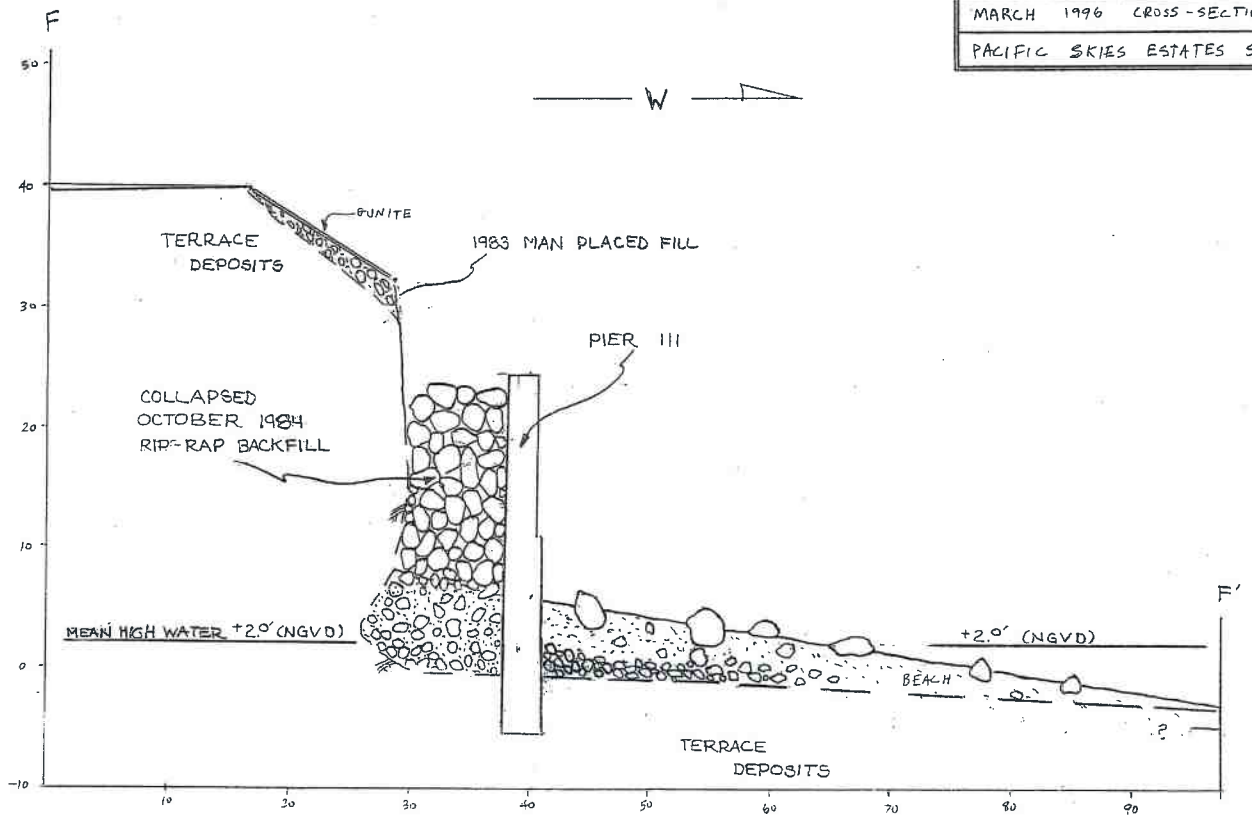
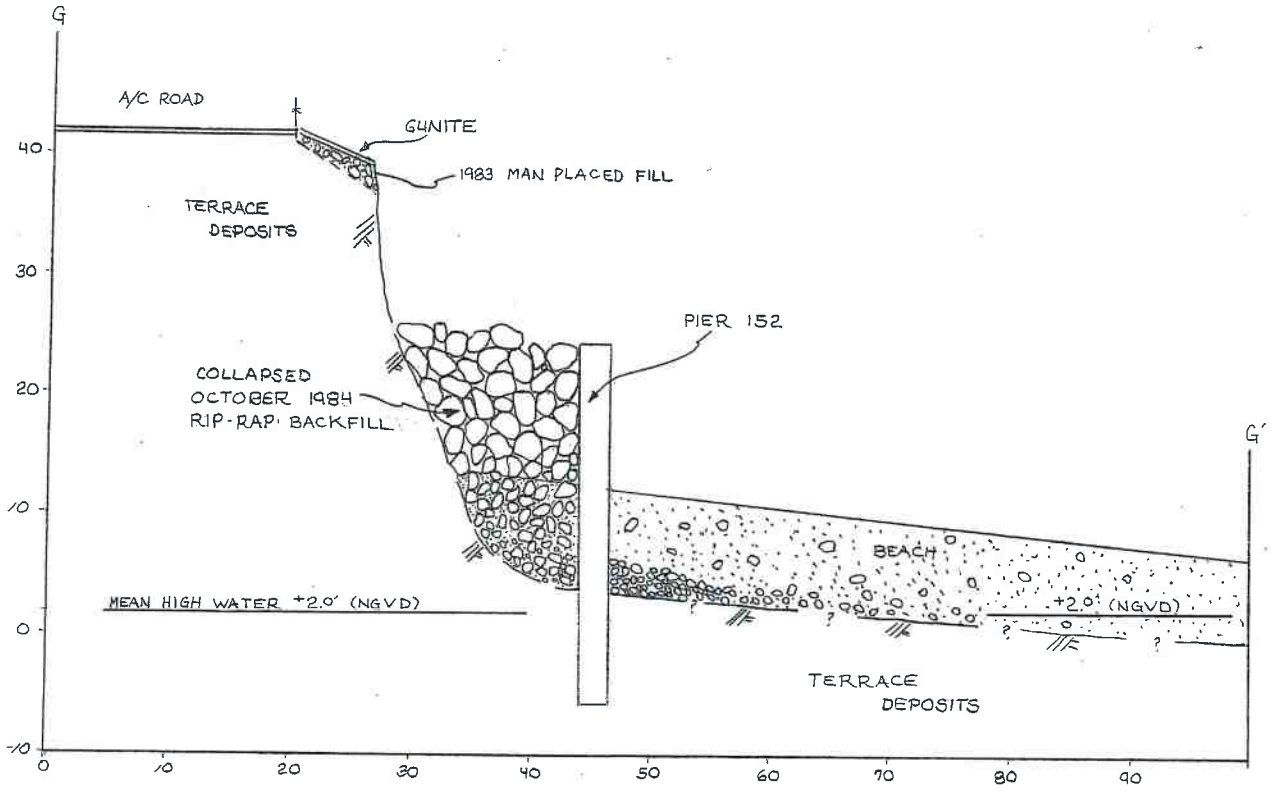
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
MARCH 1996 CROSS-SECTION F- F'		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 7





PROJECT NO. SM5156	MARCH 1996 CROSS-SECTION G-G'
DATE 9.9.96	PACIFIC SKIES ESTATES SEAWALL
SCALE 1" = 10', H=V.	
DRAWN BY CL	

HARO, KASUNICH & ASSOCIATES

FIGURE NO. 8

HARO, KASUNICH & ASSOCIATES, INC.
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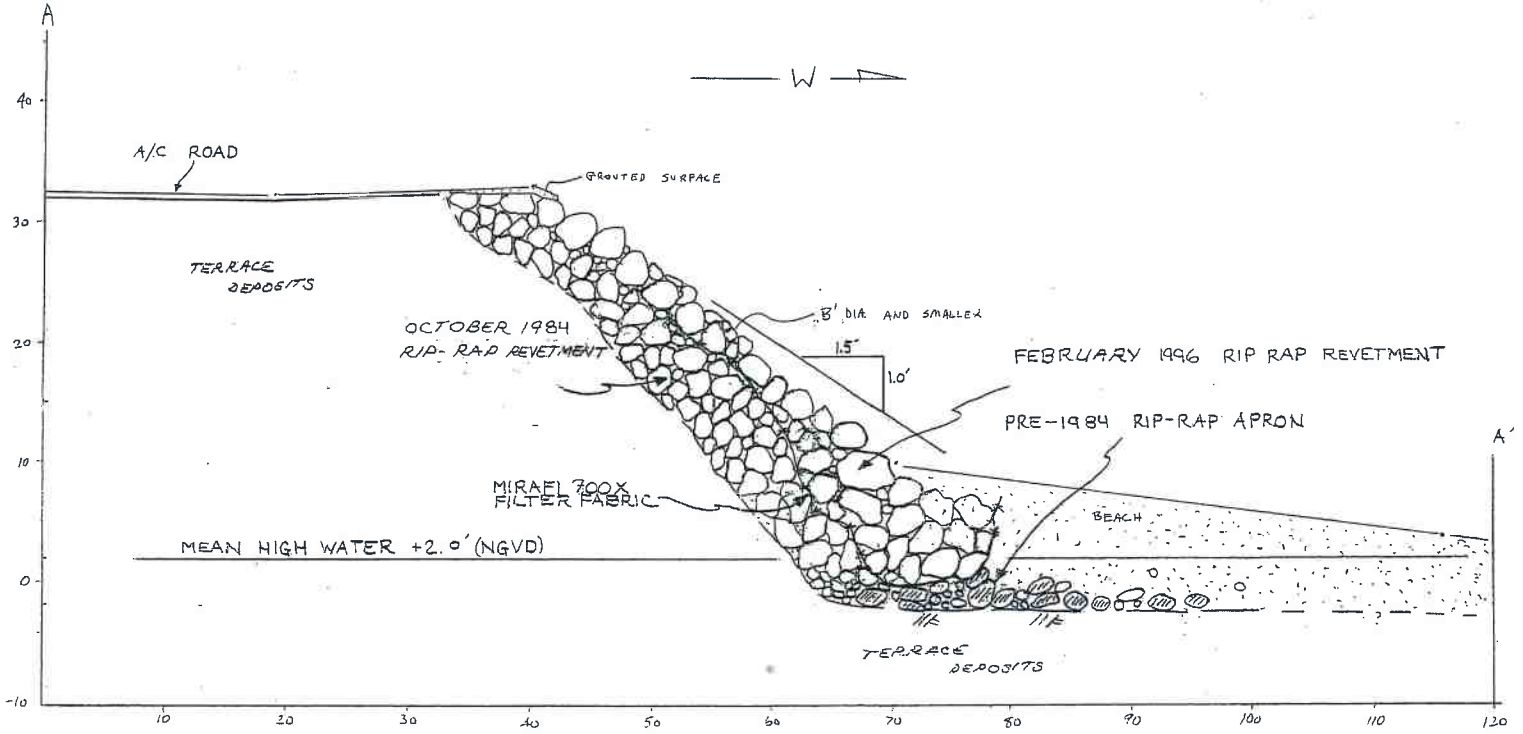
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
SEPTEMBER 1996 CROSS-SECTION A-A' AS BUILT		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 9



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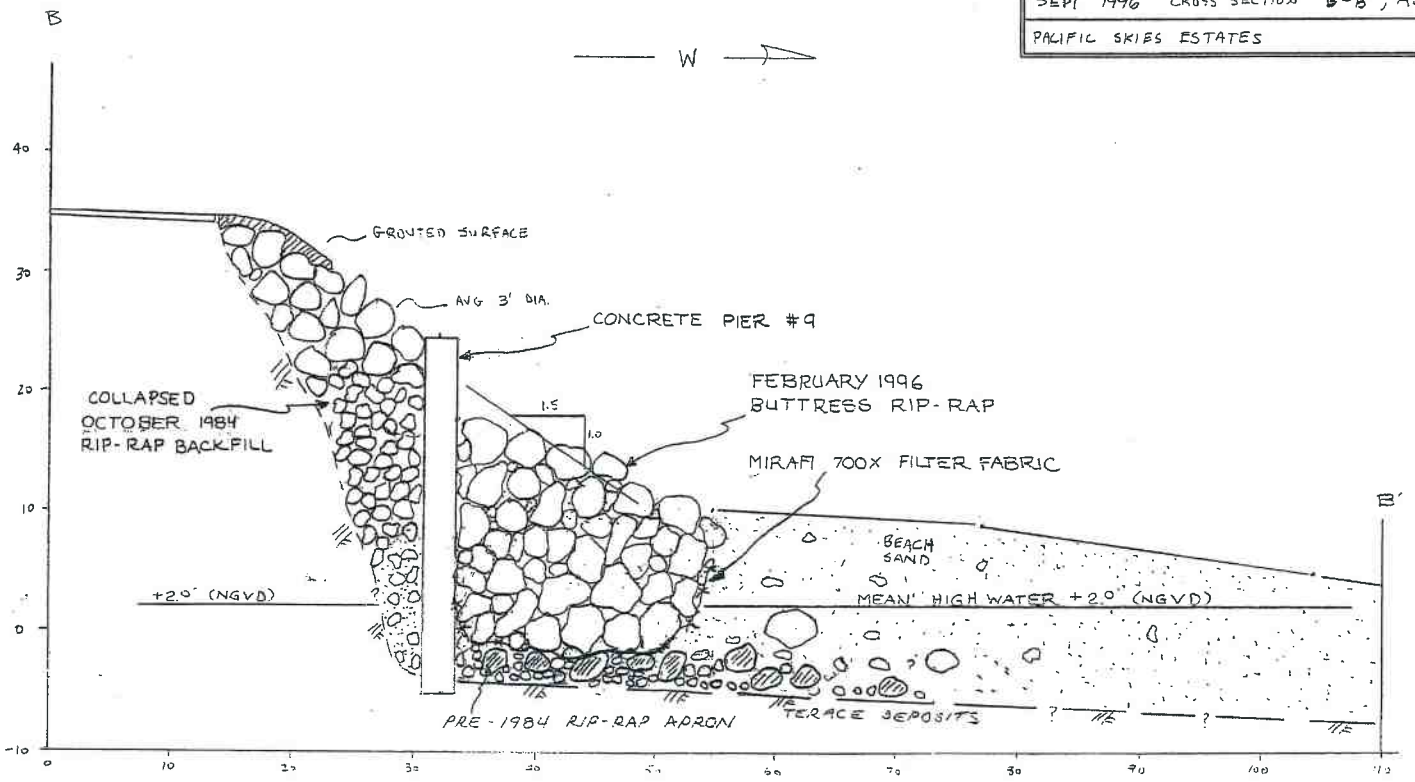
GEOTECHNICAL & COASTAL ENGINEERING
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

SCALE: 1" = 10' (H=V)	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
SEPT 1996 CROSS SECTION B-B', AS BUILT.		
PACIFIC SKIES ESTATES		DRAWING NUMBER 10



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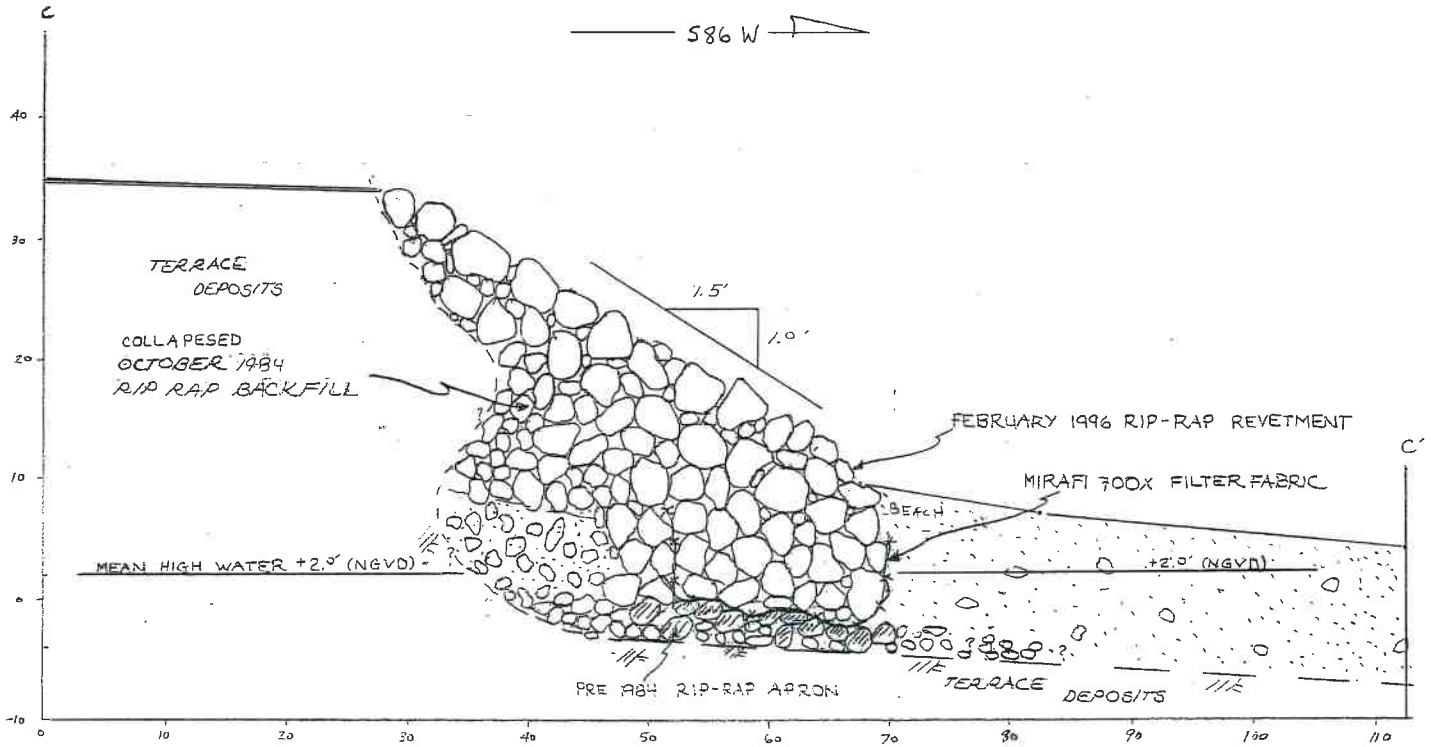
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
SEPTEMBER 1996 CROSS-SECTION C-C', AS BUILT		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 11



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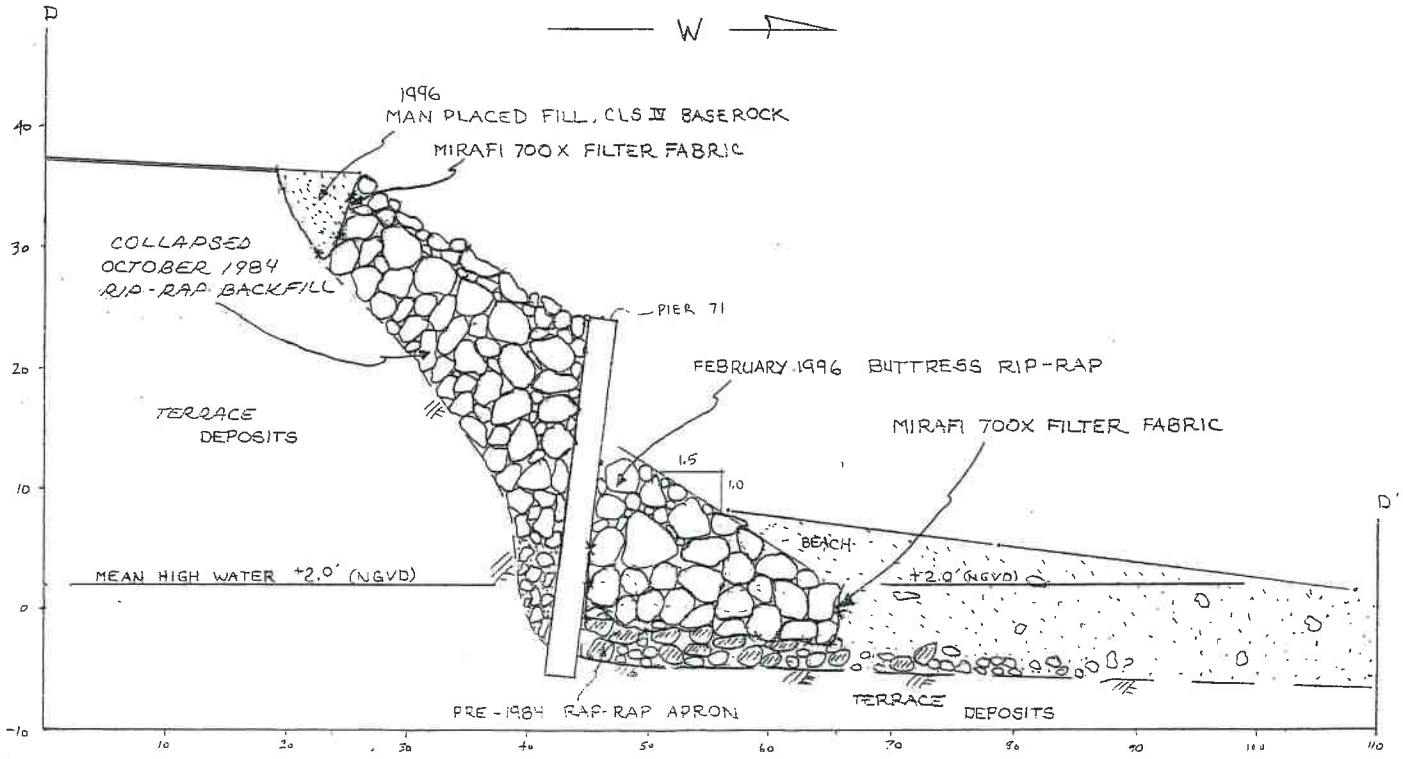
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
SEPTEMBER 1996 CROSS-SECTION D-D', AS BUILT		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 12



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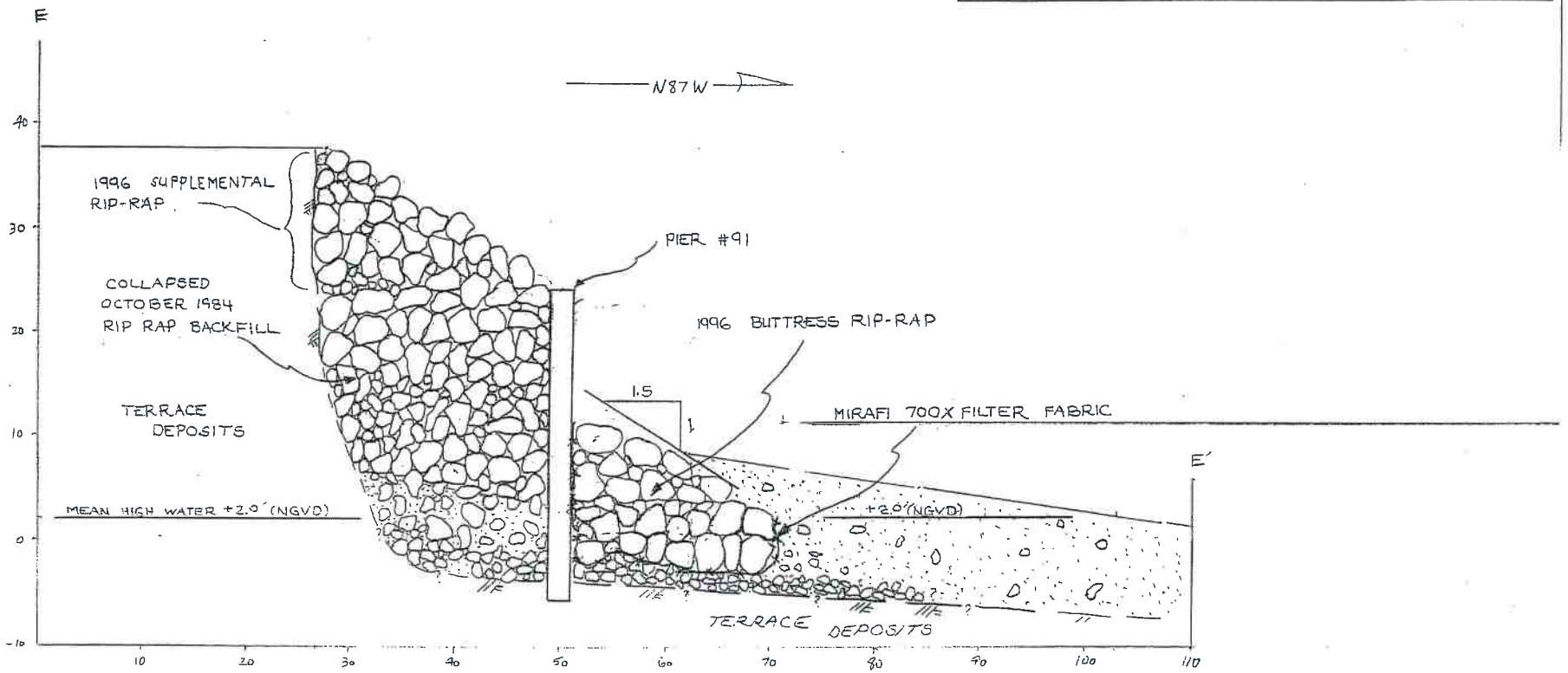
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB No. SM5156	
SEPTEMBER 1996 CROSS-SECTION E-E', AS BUILT.		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 13



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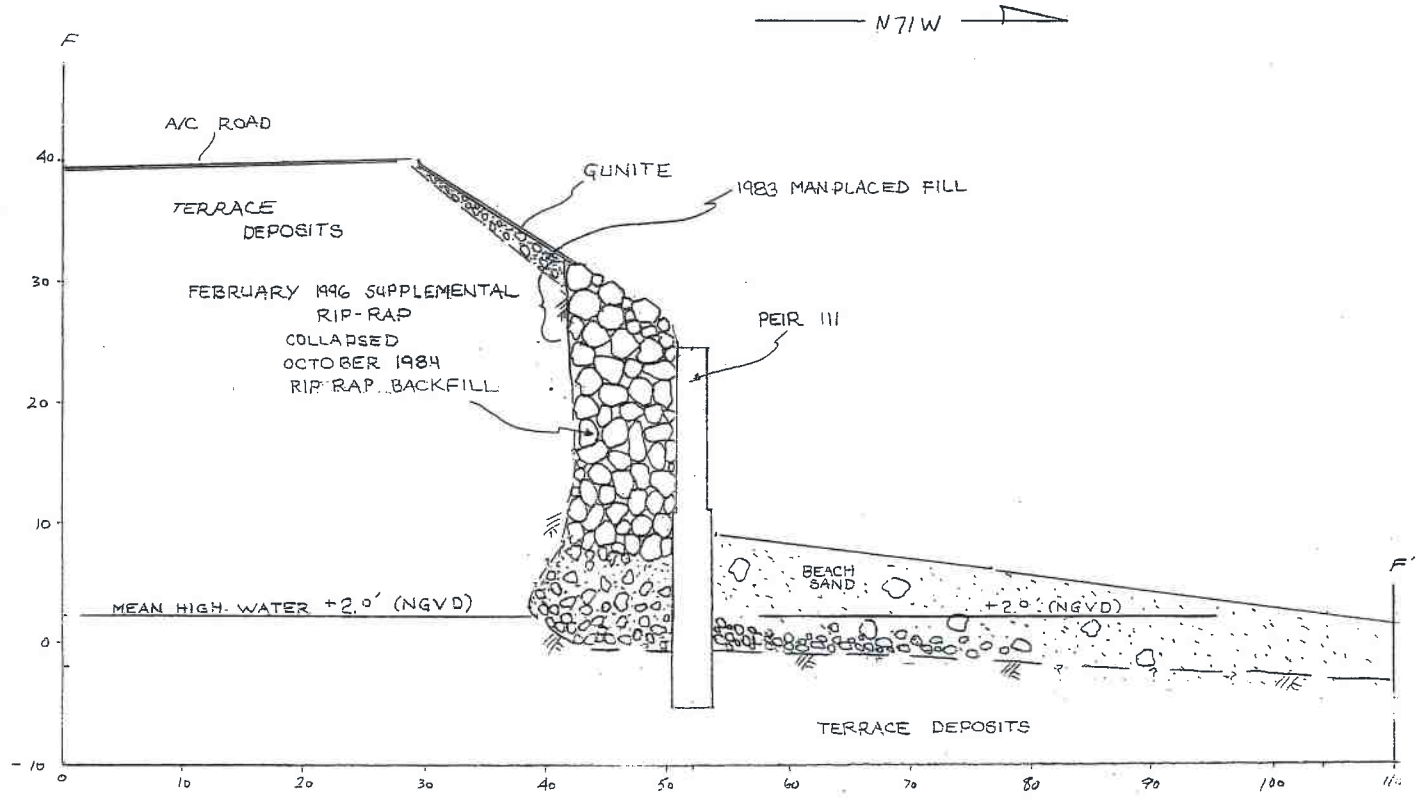
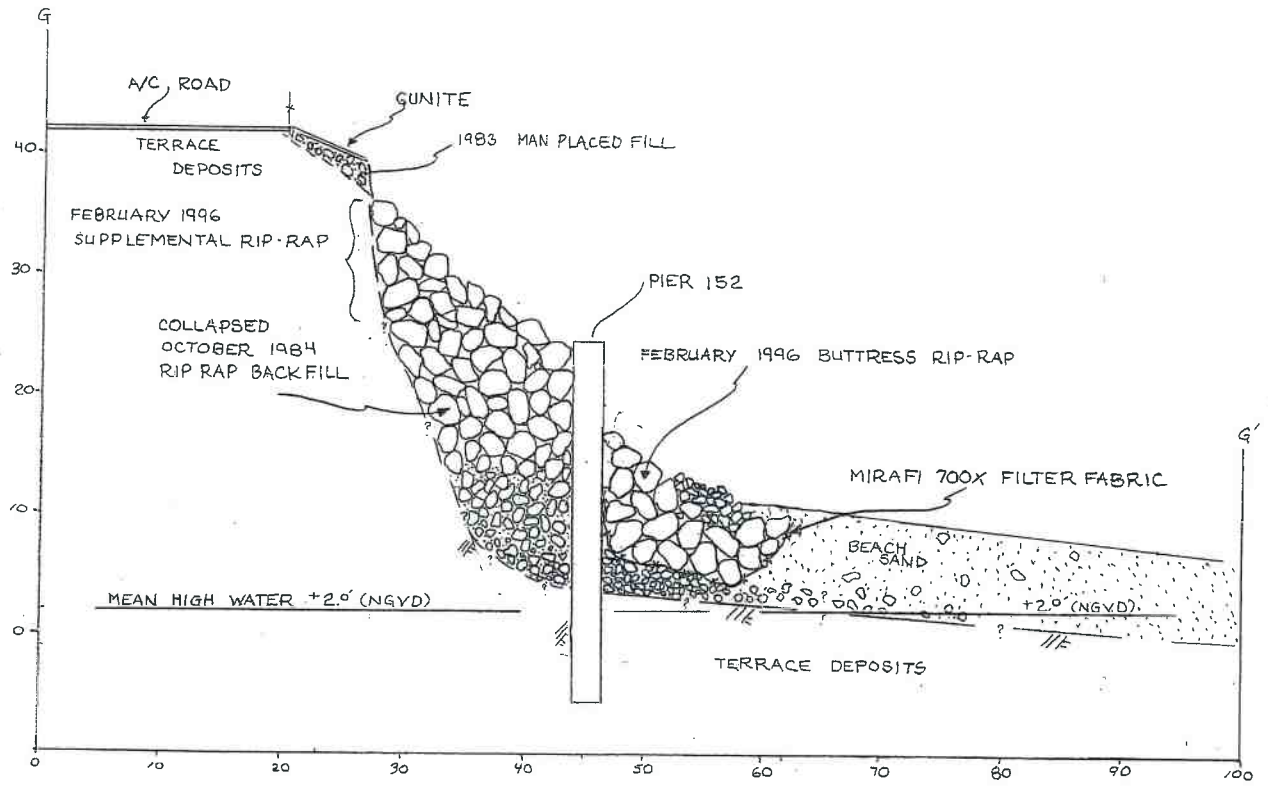
GEOTECHNICAL & COASTAL ENGINEERING
116 EAST LAKE AVENUE, WATSONVILLE, CALIFORNIA 95076
(408) 722-4175

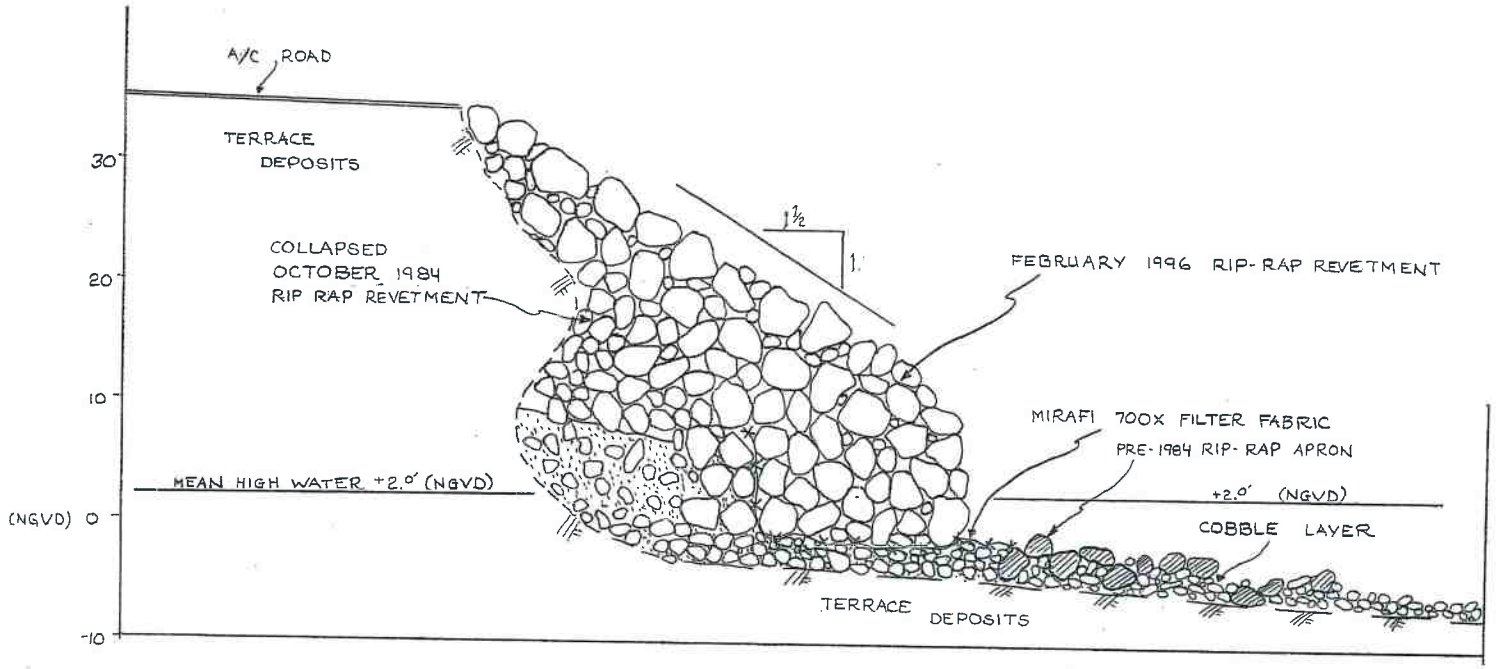
SCALE: 1" = 10'	APPROVED BY:	DRAWN BY: BJS
DATE: 9-9-96	JOB NO. SM5156	
SEPTEMBER 1996 CROSS-SECTION F-F', AS BUILT.		
PACIFIC SKIES ESTATES SEAWALL		DRAWING NUMBER 14





PROJECT NO. SM5156	SEPTEMBER 1996 CROSS-SECTION G-G' AS BUILT
DATE 9.9.96	
SCALE 1" = 10 ft, H = V.	PACIFIC SKIES ESTATES SEAWALL
DRAWN BY CL	
HARO, KASUNICH & ASSOCIATES	FIGURE NO. 15

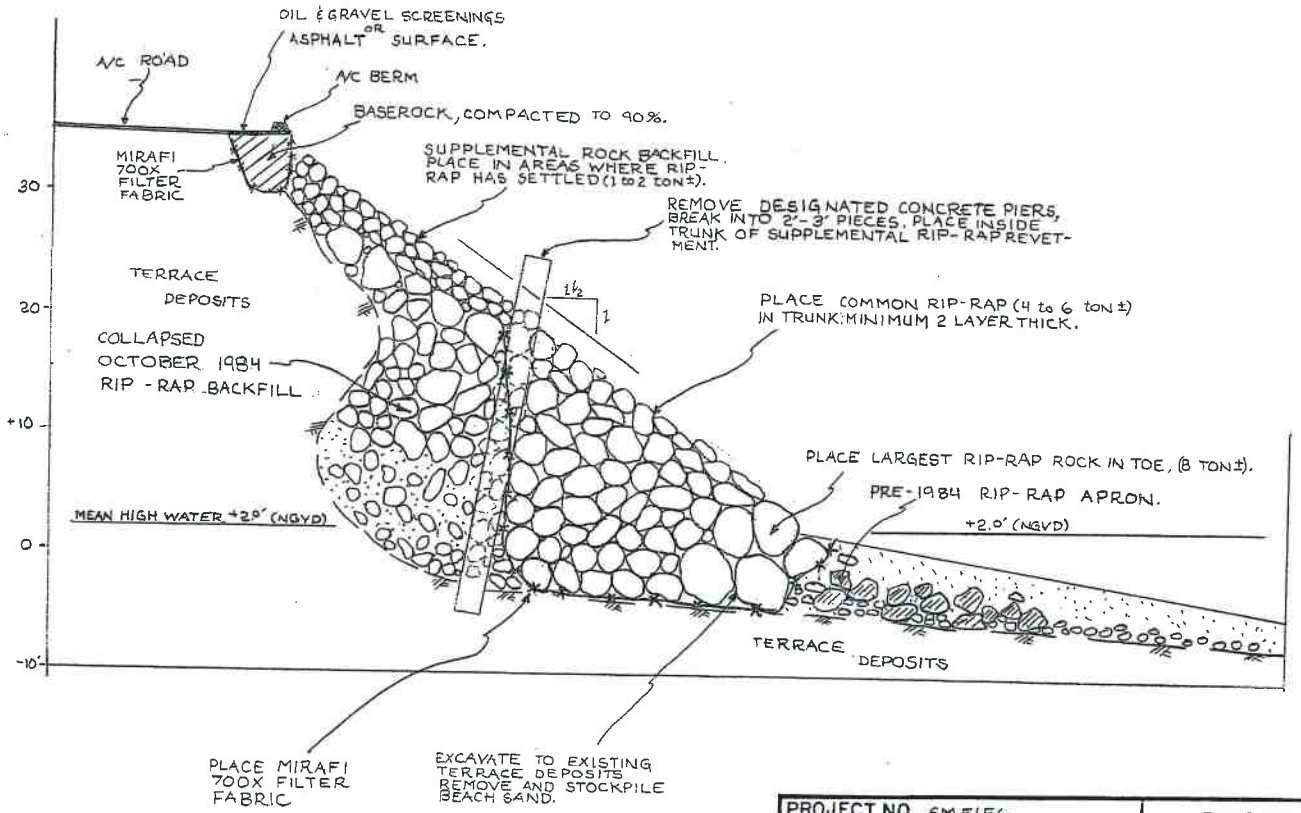
PROJECTED WORST CASE BEACH SCOUR



THIS PROFILE DEVELOPED BASED ON OBSERVATIONS MADE, DURING FEBRUARY 1996, AT SEAWALL FAILURE AREA.

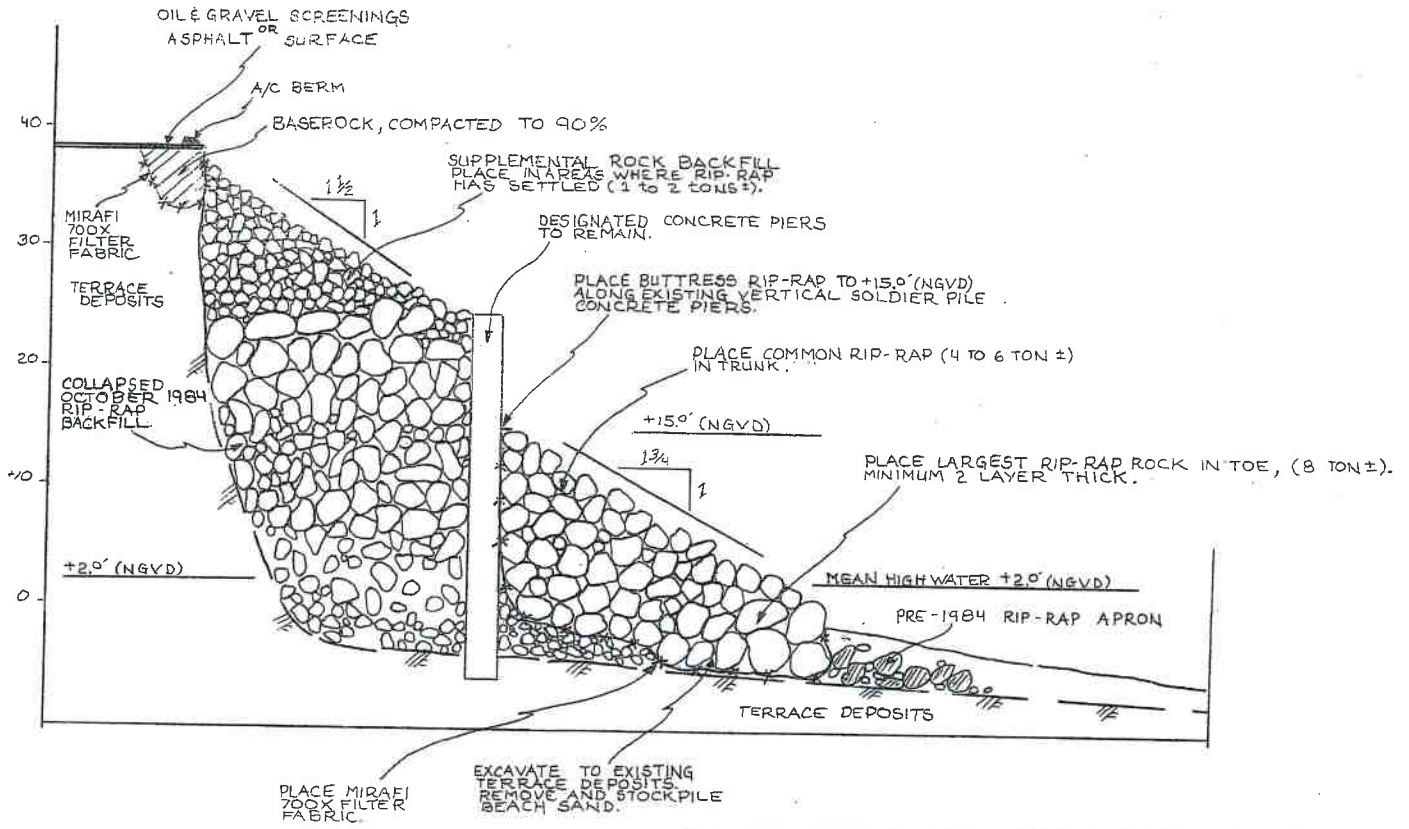
PROJECT NO. SM 5156	PROJECTED WORST CASE BEACH SAND SCOUR CONDITION.
DATE 10-10-96	
SCALE 1"=10 ft., H=V	
DRAWN BY CL	
HARO, KASUNICH & ASSOCIATES	FIGURE NO. 16

TYPICAL CONSTRUCTION DETAIL



PROJECT NO. SM5156	PROPOSED RIP-RAP REVETMENT STRUCTURE TO REPLACE VERTICAL SOLDIER PILE SEAWALL.
DATE 10·3·96	
SCALE 1" = 10' ft. H=V.	
DRAWN BY CL / JK	
HARO, KASUNICH & ASSOCIATES	FIGURE NO. 17

TYPICAL CONSTRUCTION DETAIL



PROJECT NO. SM5156	PROPOSED RIP-RAP REVETMENT BUTTRESS STRUCTURE TO INCREASE SUPPORT VERTICAL SOLDIER PILE SEAWALL.
DATE 10-4-96	
SCALE 1" = 10 Ft., H=V.	
DRAWN BY CL/JK	
HARO, KASUNICH & ASSOCIATES	FIGURE NO. 18

Project No. SM5156
29 January 1997

APPENDIX B

Photographs

Project No. SM5156
29 January 1997

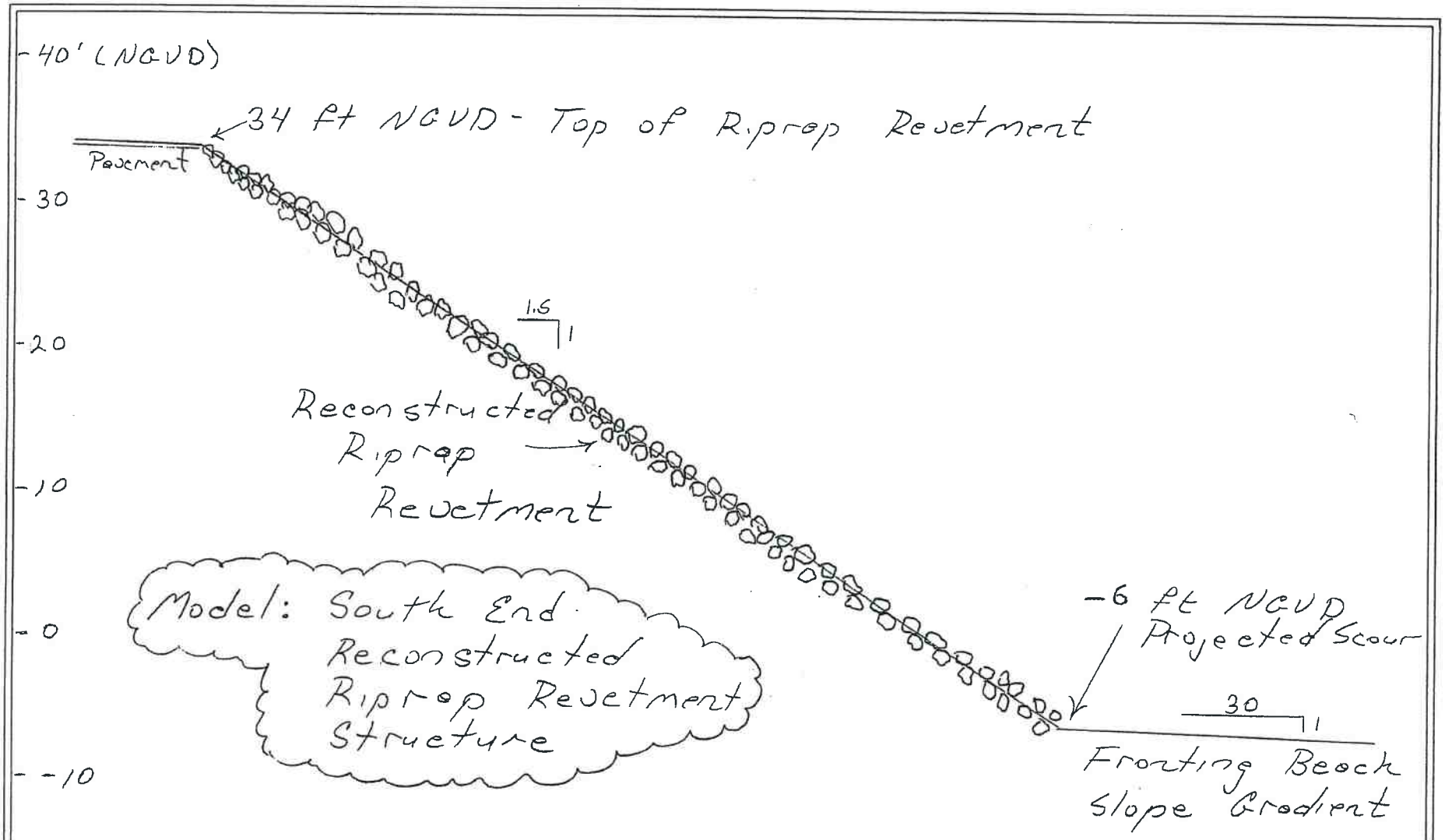
APPENDIX C

Wave Runup Calculations

Wave Force Riprap Sizing

Treadwell & Rollo Exploratory Boring Log

Pacific Skies Estates Seawall Emergency Permit, 3 April 1996



PROJECT NO: SM5156	Wave Runup Model
DATE: 24 Jan 1997	Profile → HKA-A1Ac
SCALE: 1 inch = 10 feet	Reconstructed Riprap
DRAWN BY: RP/JK	
HARO, KASUNICH & ASSOCIATES	FIGURE NO. 43

PACIFIC SKIES ESTATES SEAWALL
2-SLOPE METHOD HKA=A1Ac
1996 AS-BUILT

SM5156
24 JAN 1997

Summary of Cross-Section Data
(Two Slope Profiles)

Profile Name	Slope #	Slope (1 on_)	Roughness Coefficient	Elevation at Bottom of Slope (ft NGVD)
HKA=A1Ac	1	1.50	.65	-6.00
	2	30.00	.90	

PACIFIC SKIES ESTATES SEAWALL
2-SLOPE METHOD HKA=A1Ac
1996 AS-BUILT

SM5156
24 JAN 1997

Input Conditions:
Two Slope Cross-Section, 1 profile(s).
Stillwater Level, 1 condition(s).
Wave Conditions (T), 4 Hbmax wave combination(s).

Case 1
Profile HKA=A1Ac
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 8.0 sec

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	11.4	8.0	13.1	14.6	1.1	.00555	30.0	1.5	2.66	1.14	.65	22.4	29.4	

Case 2
Profile HKA=A1Ac
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 12.0 sec

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	9.9	12.0	14.2	14.7	1.3	.00214	30.0	1.5	3.61	1.14	.65	26.4	33.4	

Case 3
Profile HKA=A1Ac
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 16.0 sec

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	8.3	16.0	14.6	14.8	1.6	.00101	30.0	1.5	4.14	1.14	.65	25.4	32.4	

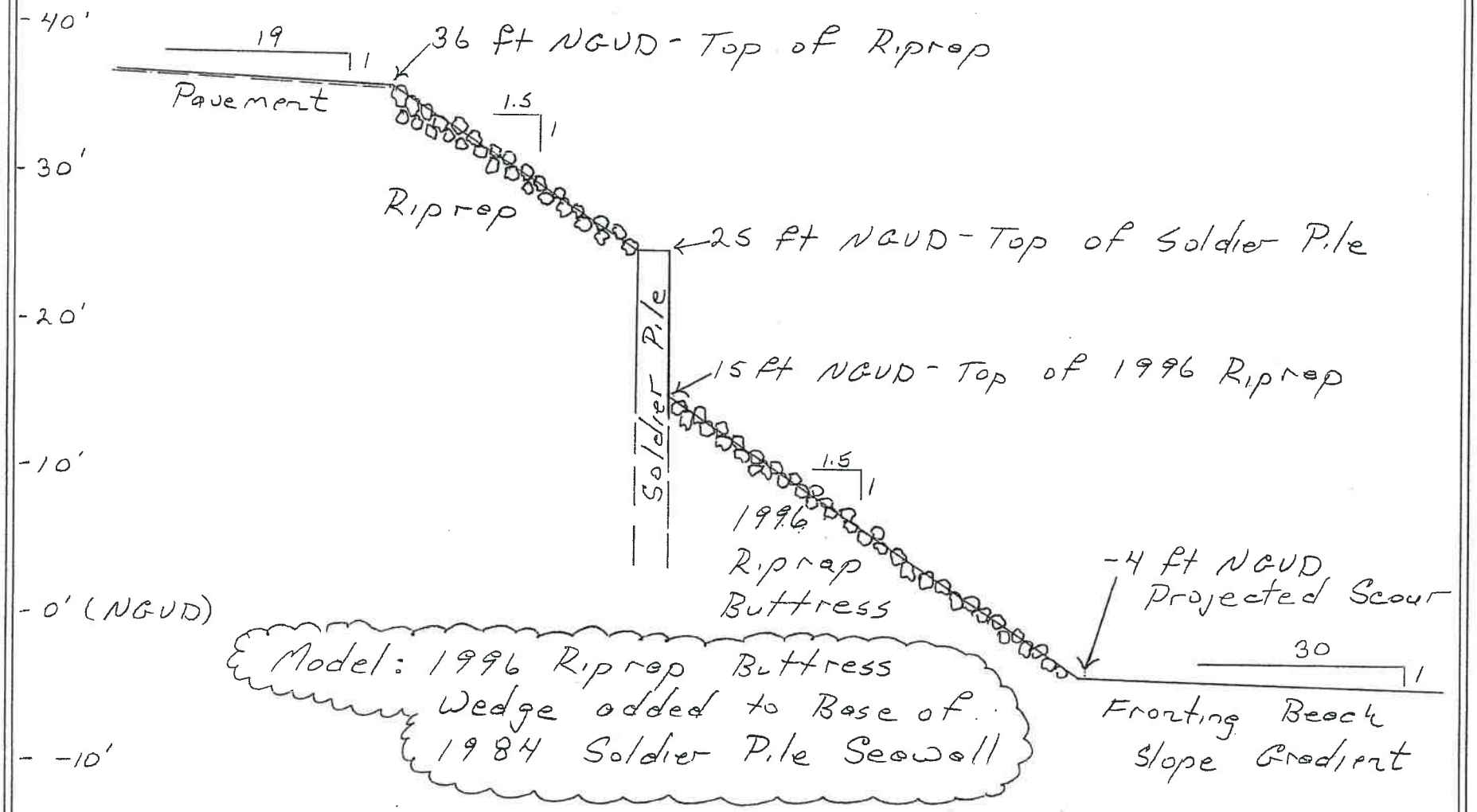
Case 4
Profile HKA=A1Ac
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 20.0 sec

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	7.0	20.0	14.8	14.8	1.9	.00055	30.0	1.5	4.13	1.14	.65	21.4	28.4	

* = Predominant wave period.

Column Labels for Wave Runup Level 3 Output

Label 1 = Unrefracted deepwater wave height, H'0 in ft.
Label 2 = Wave period, T in sec.
Label 3 = Breaking wave height, Hb in ft.
Label 4 = Breaking water depth, db in ft.
Label 5 = ds/H'0 (db/H'0 when composite) for use in runup curves.
Label 6 = Wave steepness, H'0/gT2.
Label 7 = Slope that wave breaks on, 1 on __.
Label 8 = Runup slope calculations made on, 1 on__.
Label 9 = Relative runup factor, R/H'0, from SPM runup curves.
Label 10 = Scale correction factor, K, from SPM.
Label 11 = Slope roughness factor (composite factor if computed).
Label 12 = Runup relative to SWL, in ft.
Label 13 = Runup elevation, in ft NGVD .
Label 14 = Notes on calculations.



PROJECT NO: SM5156	Wave Runup Model
DATE: 24 Jan 1997	Profile → HKA-C16
SCALE: 1 inch = 10 feet	As-Built 1996 S-Slope
DRAWN BY: RP / JK	
HARO, KASUNICH & ASSOCIATES	FIGURE NO. 47

PACIFIC SKIES ESTATES SEAWALL
VARIABLE SLOPE METHOD
AS-BUILT 1996 5-SLOPE

SM5156
24 JAN 1997

Summary of Cross-Section Data
(Variable Slope Profiles)

Profile Name	Slope #	Slope (1 on_)	Roughness Coefficient	Elevation at Bottom of Slope (ft NGVD)
HKA=C1b	1	19.00	1.00	36.00
	2	1.50	.85	25.00
	3	0.00	1.00	15.00
	4	1.50	.65	-4.00
	5	30.00	.90	

PACIFIC SKIES ESTATES SEAWALL
VARIABLE SLOPE METHOD
AS-BUILT 1996 5-SLOPE

SM5156
24 JAN 1997

Input Conditions:
Variable Slope Cross-Section, 1 profile(s).
Stillwater Level, 1 condition(s).
Wave Conditions (T), 4 Hbmax wave combination(s).

Case 1
Profile HKA=C1b
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 8.0 sec (Wave breaks on slope No. 5)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	9.5	8.0	11.3	12.4	1.3	.00460	30.0	2.2	2.46	1.13	.80	21.1	28.1	5

Case 2
Profile HKA=C1b
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 12.0 sec (Wave breaks on slope No. 5)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	8.0	12.0	12.1	12.5	1.6	.00173	30.0	2.2	3.54	1.13	.81	25.9	32.9	5

Case 3
Profile HKA=C1b
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 16.0 sec (Wave breaks on slope No. 5)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	6.7	16.0	12.5	12.5	1.9	.00081	30.0	2.3	3.98	1.13	.81	24.2	31.2	5

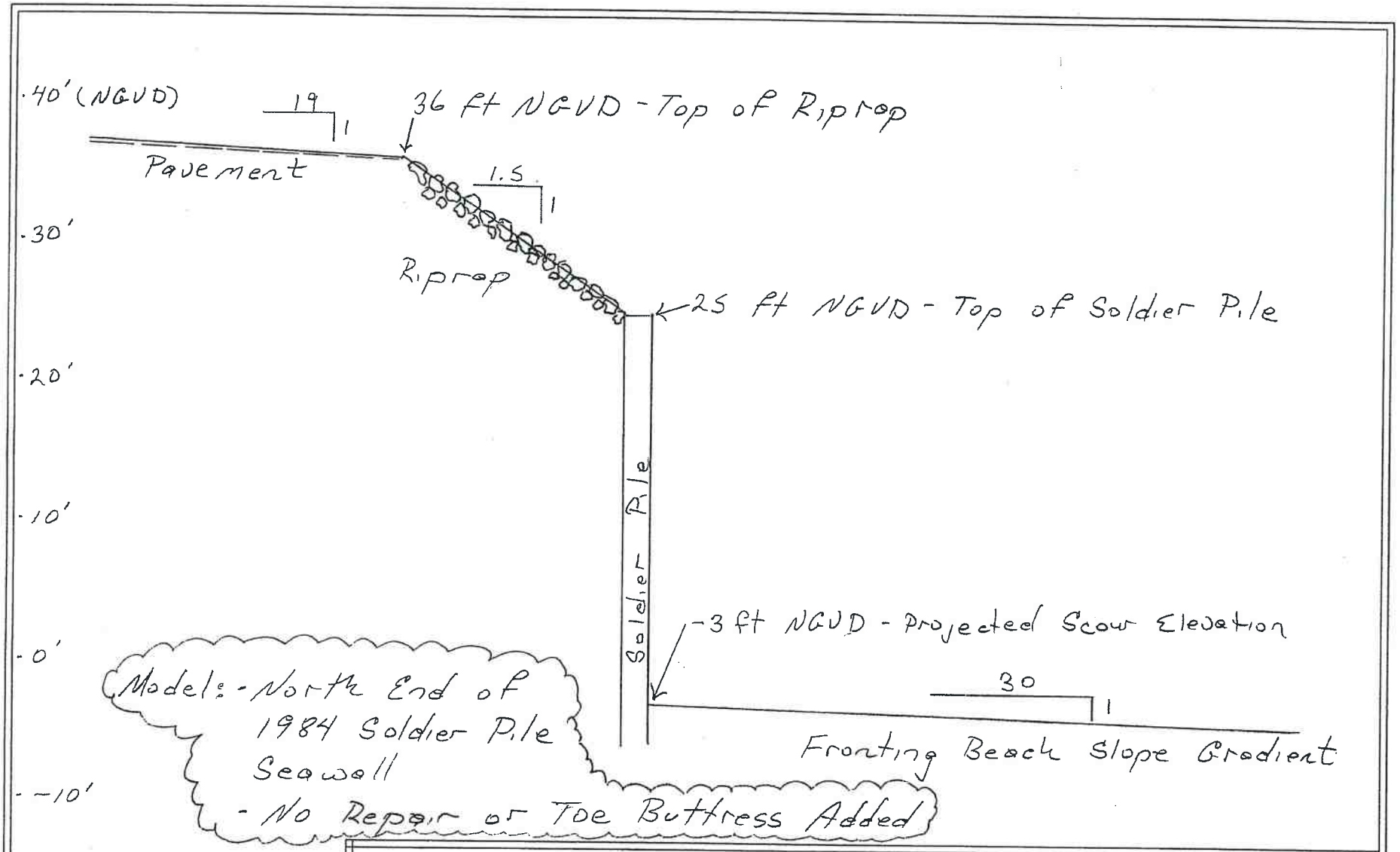
Case 4
Profile HKA=C1b
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 20.0 sec (Wave breaks on slope No. 5)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	5.6	20.0	12.6	12.6	2.2	.00044	30.0	2.4	3.99	1.13	.80	20.4	27.4	5

* = Predominant wave period.
Note 5 = Composite slope method used.

Column Labels for Wave Runup Level 3 Output

Label 1 = Unrefracted deepwater wave height, H'0 in ft.
Label 2 = Wave period, T in sec.
Label 3 = Breaking wave height, Hb in ft.
Label 4 = Breaking water depth, db in ft.
Label 5 = ds/H'0 (db/H'0 when composite) for use in runup curves.
Label 6 = Wave steepness, H'0/gT2.
Label 7 = Slope that wave breaks on, 1 on __.
Label 8 = Runup slope calculations made on, 1 on__.
Label 9 = Relative runup factor, R/H'0, from SPM runup curves.
Label 10 = Scale correction factor, K, from SPM.
Label 11 = Slope roughness factor (composite factor if computed).
Label 12 = Runup relative to SWL, in ft.
Label 13 = Runup elevation, in ft NGVD .
Label 14 = Notes on calculations.



PROJECT NO: SM5156	Wave Runup Model
DATE: 24 Jan 1997	Profile → HKA-D1a
SCALE: 1 inch = 10 feet	1984 original 4-Slope
DRAWN BY: RP/JK	
HARO, KASUNICH & ASSOCIATES	FIGURE NO. 51

PACIFIC SKIES ESTATES SEAWALL
VARIABLE SLOPE METHOD
1984 ORIGINAL 4-SLOPE

SM5156
23 JAN 1997

Summary of Cross-Section Data
(Variable Slope Profiles)

Profile Name	Slope #	Slope (1 on_)	Roughness Coefficient	Elevation at Bottom of Slope (ft NGVD)
HKA-D1	1	19.00	1.00	36.00
	2	1.50	.85	25.00
	3	0.00	1.00	-3.00
	4	30.00	.90	

PACIFIC SKIES ESTATES SEAWALL
VARIABLE SLOPE METHOD
1984 ORIGINAL 4-SLOPE

SM5156
23 JAN 1997

Input Conditions:
Variable Slope Cross-Section, 1 profile(s).
Stillwater Level, 1 condition(s).
Wave Conditions (T), 4 Hbmax wave combination(s).

Case 1
Profile HKA-D1
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 8.0 sec (Wave breaks on slope No. 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	8.5	8.0	10.4	11.3	1.3	.00414	30.0	1.4	2.89	1.14	.92	25.7	32.7	5

Case 2
Profile HKA-D1
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 12.0 sec (Wave breaks on slope No. 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	7.1	12.0	11.1	11.4	1.6	.00153	30.0	1.4	3.70	1.14	.91	27.2	34.2	5

Case 3
Profile HKA-D1
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 16.0 sec (Wave breaks on slope No. 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	5.8	16.0	11.4	11.4	2.0	.00070	30.0	1.4	3.91	1.14	.92	23.7	30.7	5

Case 4
Profile HKA-D1
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 20.0 sec (Wave breaks on slope No. 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	4.9	20.0	11.5	11.4	2.3	.00038	30.0	1.4	3.60	1.14	.93	18.8	25.8	5

* = Predominant wave period.
Note 5 = Composite slope method used.

Column Labels for Wave Runup Level 3 Output

Label 1 = Unrefracted deepwater wave height, H'0 in ft.
Label 2 = Wave period, T in sec.
Label 3 = Breaking wave height, Hb in ft.
Label 4 = Breaking water depth, db in ft.
Label 5 = ds/H'0 (db/H'0 when composite) for use in runup curves.
Label 6 = Wave steepness, H'0/gT2.
Label 7 = Slope that wave breaks on, 1 on __.
Label 8 = Runup slope calculations made on, 1 on__.
Label 9 = Relative runup factor, R/H'0, from SPM runup curves.
Label 10 = Scale correction factor, K, from SPM.
Label 11 = Slope roughness factor (composite factor if computed).
Label 12 = Runup relative to SWL, in ft.
Label 13 = Runup elevation, in ft NGVD .
Label 14 = Notes on calculations.

PACIFIC SKIES ESTATES SEAWALL
VARIABLE SLOPE METHOD
1984 ORIGINAL 4-SLOPE

SM5156
24 JAN 1997

Summary of Cross-Section Data
(Variable Slope Profiles)

Profile Name	Slope #	Slope (1 on_)	Roughness Coefficient	Elevation at Bottom of Slope (ft NGVD)
HKA-D1a	1	19.00	1.00	36.00
	2	1.50	.85	25.00
	3	0.00	1.00	-6.00
	4	30.00	.90	

PACIFIC SKIES ESTATES SEAWALL
VARIABLE SLOPE METHOD
1984 ORIGINAL 4-SLOPE

SM5156
24 JAN 1997

Input Conditions:
Variable Slope Cross-Section, 1 profile(s).
Stillwater Level, 1 condition(s).
Wave Conditions (T), 4 Hbmax wave combination(s).

Case 1
Profile HKA-D1a
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 8.0 sec (Wave breaks on slope No. 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	11.4	8.0	13.1	14.6	1.3	.00555	30.0	1.8	2.49	1.14	.92	29.7	36.7	5

Case 2
Profile HKA-D1a
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 12.0 sec (Wave breaks on slope No. 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	9.9	12.0	14.2	14.7	1.5	.00214	30.0	2.7	3.06	1.12	.94	32.1	39.1	5

Case 3
Profile HKA-D1a
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 16.0 sec (Wave breaks on slope No. 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	8.3	16.0	14.6	14.8	1.8	.00101	30.0	3.0	3.74	1.12	.95	32.9	39.9	5

Case 4
Profile HKA-D1a
For SWL = 7.0 ft NGVD
For Hbmax w/ T = 20.0 sec (Wave breaks on slope No. 4)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*	7.0	20.0	14.8	14.8	2.1	.00055	30.0	1.6	3.79	1.14	.91	27.5	34.5	5

* = Predominant wave period.
Note 5 = Composite slope method used.

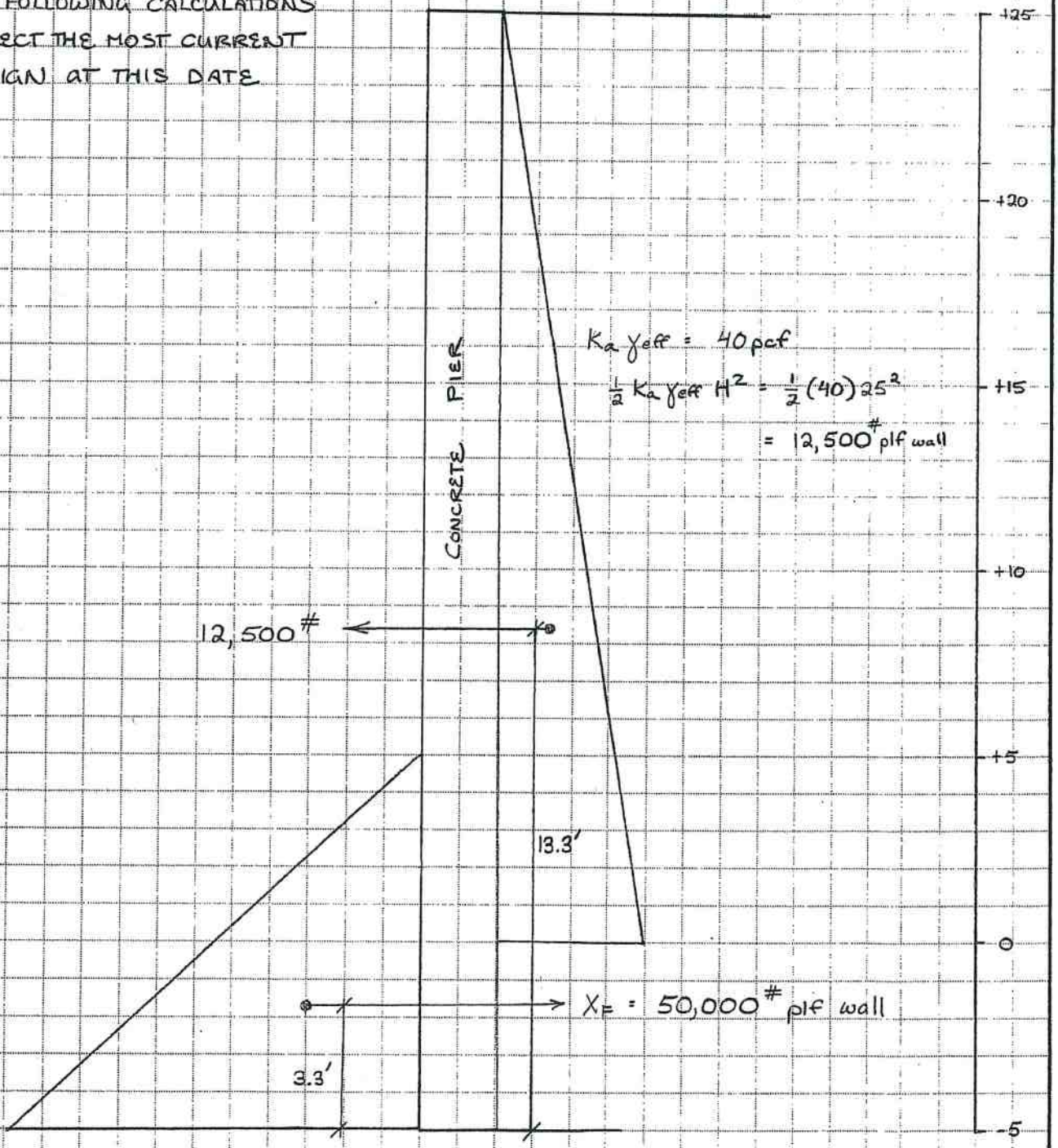
Column Labels for Wave Runup Level 3 Output

Label 1 = Unrefracted deepwater wave height, H'0 in ft.
Label 2 = Wave period, T in sec.
Label 3 = Breaking wave height, Hb in ft.
Label 4 = Breaking water depth, db in ft.
Label 5 = ds/H'0 (db/H'0 when composite) for use in runup curves.
Label 6 = Wave steepness, H'0/gT2.
Label 7 = Slope that wave breaks on, 1 on __.
Label 8 = Runup slope calculations made on, 1 on__.
Label 9 = Relative runup factor, R/H'0, from SPM runup curves.
Label 10 = Scale correction factor, K, from SPM.
Label 11 = Slope roughness factor (composite factor if computed).
Label 12 = Runup relative to SWL, in ft.
Label 13 = Runup elevation, in ft NGVD .
Label 14 = Notes on calculations.

HARO, KASUNICH
& ASSOCIATES, INC.
116 East Lake Avenue
WATSONVILLE, CALIFORNIA 95076
(408) 722-4175 FAX 722-3202

JOB PACIFIC SKIES ESTATES SEAWALL SM 5156
SHEET NO. 1 OF 4
CALCULATED BY RH DATE 1/24/97
CHECKED BY DATE
SCALE

THE FOLLOWING CALCULATIONS REFLECT THE MOST CURRENT DESIGN AT THIS DATE



$\Sigma M = 0 \quad 12,500^{\#}(13.3') - X_F^{\#}(3.3') \Rightarrow X_F = \frac{12,500^{\#}(13.3')}{3.3'}$

$X_F = 50,000^{\#}$ plf wall

GAVILAN PRINTERS

FIG. 58

HARO, KASUNICH & ASSOCIATES, INC.
116 East Lake Avenue
WATSONVILLE, CALIFORNIA 95076
(408) 722-4175 FAX 722-3202

JOB PACIFIC SKIES ESTATES SEAWALL SM 5156
SHEET NO. 2 OF 4
CALCULATED BY RH DATE 1/24/97
CHECKED BY DATE
SCALE

CALCULATE PER FOOT OF WALL & REVETMENT

$M_{wall} = 12{,}500^{\#}(13.3') = 166{,}250'-\#$ plf wall

Shear Strength of Revetment $= c + \sigma' \tan\phi = 0 + \sigma' \tan(40°) = 0.84\sigma'$

For a 1.75:1 slope $\sigma' = 68.4\frac{x}{1.75} = 39.1\,x$ Str $= .84(39.1)\,x$
$= 32.8\,x$

$$F = \int_0^x 32.8\,x\,dx = 16.4\,x^2$$

$$M = 16.4\,x^2 \cdot \frac{x}{5.25} = 3.12\,x^3$$

$3.12\,x^3 = 166{,}250'-\#$
$x^3 = 53{,}285$
$x = 37.6$

$37.6/1.75 \approx 21'$

$21 - 5' \approx 16'$ MSL

BUILD REVETMENT @ 1.75:1 H:V TO +16' MSL

GAVILAN PRINTERS

FIG. 59

HARO, KASUNICH & ASSOCIATES, INC.
116 East Lake Avenue
WATSONVILLE, CALIFORNIA 95076
(408) 722-4175 FAX 722-3202

JOB PACIFIC SKIES ESTATES SEAWALL SM5156
SHEET NO. 3 OF 4
CALCULATED BY RH DATE 1/24/97
CHECKED BY DATE
SCALE

Shear Strength = $0.84\,\sigma'$, $\sigma' = 68.4\,\frac{x}{1.75} = 39.1x$, $(.84)(39.1)x = 32.8x$

37.6' long wedge

$$\int_0^{37.6}\int_0^{4} 32.8\,x\,dy\,dx = \int_0^{37.6} 131.2\,x\,dx = \frac{131.2\,x^2}{2}\Big|_0^{37.6}$$

$= 93{,}000^{\#}$ RETAINING $2 \times 12{,}500^{\#} = 25{,}000^{\#}$

$93{,}000 / 25{,}000 = 3.7$ F.S.

EFW PASSIVE

$\gamma_{eff} = 68.4$ pcf

$\gamma_{eff} K_p = 68.4 \tan^2(45 + 40/2) = 68.4\,(4.60) = 314.6$ pcf

use d average $= 21/2 = 10.5'$

$\frac{1}{2}(314.6)\,10.5^2\,(4) \cong 69{,}400^{\#}$

$69400 / 25{,}000 = 2.8$ F.S.

GAVILAN PRINTERS

FIG. 60

HARO, KASUNICH & ASSOCIATES, INC.
116 East Lake Avenue
WATSONVILLE, CALIFORNIA 95076
(408) 722-4175 FAX 722-3202

JOB Pacific Skies Estates Seawall SM5156
SHEET NO. 4 OF 4
CALCULATED BY RH DATE 1/24/97
CHECKED BY DATE
SCALE

Rock Sizes

4 ton Rock $\phi \Rightarrow \frac{4}{3}(178)\pi R^3 = 8000 \Rightarrow R = 2.21'$, $D = 4.42'$

6 ton Rock $\phi \Rightarrow \frac{4}{3}(178)\pi R^3 = 12000 \Rightarrow R = 2.52'$, $D = 5.04'$

assume 40% voids $\frac{4.42 + 5.04}{2} = 4.73'$ use 4' for strength analysis *

* wall shape considerations / overlap

Rock Sizes 2-Layer Construction Rqmts (from JK&MF)

$$W = \frac{\omega_r H^3}{K_d (S_R - 1)^3 \cot\theta} = \frac{(178)(H^3)}{(2)(2.85-1)^3(1.5)}$$

use H = 11' ..... W = 12473 # ≈ 6 tons
14 ..... 25714 # ≈ 13 tons
15 ..... 31626 # ≈ 16 tons

Cover layer rocks can range from (.75 to 1.25)W
minimum 2 layer rock thickness

Bouyant Rock wt = 178 - 64 = 114 pcf × .6 = 68.4 pcf
w/ voids

FIG. 61

Treadwell&Rollo

Environmental and Geotechnical Consultants
555 Montgomery Street, Suite 1300
San Francisco, California 94111
Phone: 415/955-9040
Fax: 415/955-9041

FAX TRANSMITTAL

Date: 2·27·96 Send to fax #: 1-408-722-3202

To: John Kasunich - Haro Kasonich

From: Frank J. Rollo

Project name: Pacific Skies Project number: 1945.01

Number of pages including cover: 5

Notes: John a depth of ≈ 40 feet corresponds to the maximum scour observed at the failed section.

This document will also be mailed to you: NO

Should you encounter any difficulties with this fax, please call 415/955/9040

TREADWELL & ROLLO, INC.

PROJECT: PACIFIC SKIES ESTATES	PROJECT NO. 1945.01		SHEET 1 OF 4
LOCATION OF BORING: ENTRY 1; B-1; 9' ↕; 102' →; N ← OCEAN	DRILLING METHOD: Rotary Wash		BORING NO. B-1
	HAMMER WEIGHT: 140'	DROP: 30"	LOGGED BY: FJRollo
	SAMPLER(S): SH and SPT		DRILLING
	BACKFILL MATERIAL: Cuttings		START / FINISH
	WATER LEVEL		TIME / TIME
	TIME		0830 / 0930
	DATE		DATE / DATE 2/16/96 / 2/16/96
DATUM ____	ELEVATION ~34 Feet msl		CASING DEPTH

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	OVM/PID/FID READING	BLOWS/6" SAMPLER	SPT N-VALUE	DEPTH IN FEET	LITHOLOGY
						0	FILL
						1	
						2	
SH	18/18	1/3.0'	X	8/16		3	DUNE SAND
		2/3.5'		17/33	20	4	
				3		5	
SPT	18/18	3/6'		4/6	10	6	
						7	
SPT	18/18	4/8.5'		2/2	4	8	
				2		9	
				10		10	
SH	18/18	5/11'		20/28	29	1	
				48		2	
						3	
						4	
				8		15	
SPT	18/18	6/16'		9/12	21	6	
						7	
						8	
						9	
						20	

SURFACE CONDITIONS:

2 INCH Asphalt
2 inch Rock
SANDY Gravel to Gravelly SAND FILL w/ Clay
brown, medium dense, moist

SAND (SP) DUNE SAND
brown, med. dense, moist,

SILTY TO CLAYEY SAND (SM/SC)
d. brown, loose to med. dense, moist to wet TIDAL

CLAYEY SAND (SC)
yellow brown, med. dense to dense, moist
w/ Clay lenses

OLD SEA TERRACE

TREADWELL & ROLLO, INC.

PROJECT PACIFIC SKIES ESTATES	PROJECT NO. 1945.01		SHEET 2 OF 4
LOCATION OF BORING	DRILLING METHOD:		BORING NO. B-1
SEE PAGE 1/	HAMMER WEIGHT:	DROP:	LOGGED BY: FJR
	SAMPLER(S):		DRILLING START / FINISH
	BACKFILL MATERIAL:		
DATUM ELEVATION	WATER LEVEL		TIME / TIME
	TIME		0930 / 1000
	DATE		DATE / DATE
	CASING DEPTH		2/16/96 / 2/16/96

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	OVM/PID/FID READING	BLOWS/6" SAMPLER	SPT N-VALUE	DEPTH IN FEET	LITHOLOGY
						20	
						21	
						22	SC
						23	
						24	
				10		25	
SPT	18 / 12	7 / 26'		31 / 33	64	26	
						27	
						28	SW / GW
						29	
						30	
						31	
						32	
						33	
						34	
SPT	10 / 10	8 / 35'		35 / 50/4"	85 / 10"	35	
						36	
						37	SP
						38	
						39	
						40	

SURFACE CONDITIONS:

CLAYEY SAND (SC)
Yellow brown, dense to V. dense, moist
w/ some angular gravels
HARDER DRILLING @ 21' COLLECT CUT

GRAVELLY SAND (SW/GW)
SANDY GRAVEL
brown, dense, moist

OLD SEA TERRACE

SAND (SP)
brown, dense to very dense, moist
some trace coarse gravel

TREADWELL & ROLLO, INC.

PROJECT	PROJECT NO.	SHEET 3 OF 4
LOCATION OF BORING	DRILLING METHOD:	BORING NO. B-1
	HAMMER WEIGHT: / DROP:	LOGGED BY: FJ Rollo
	SAMPLER(S):	DRILLING
DATUM ELEVATION	BACKFILL MATERIAL:	START: 2/16/96 FINISH: 2/16/96
	WATER LEVEL / TIME / DATE / CASING DEPTH	TIME: 1000 TIME: 1030

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	OVM/PID/FID READING	BLOWS/6" SAMPLER	SPT N-VALUE	DEPTH IN FEET	LITHOLOGY
						40	
						41	
						42	SP
						43	
						44	
				31		45	
SPT	12/12	9/45		50	81	46	GW
						47	
						48	
						49	
						50	
						51	
						52	
						53	
						54	
SPT	12/12	10/55		50/6"	50/5"	55	
						56	SP
						57	
						58	
						59	
						60	

SURFACE CONDITIONS:

SAND (SP) Cont

POCKETS OF CLEAN SAND (SP)

SANDY GRAVEL (GW)
brown, dense to v. dense, moist
Fine to medium gravel

OLD SEA TERRACE

SOME Chatter in drill rod
51' to 53'

SAND (SP)
brown, dense to v. dense, moist

CLEAN SAND IN SAMPLE.

TREADWELL & ROLLO, INC.

PROJECT PACIFIC SKIES ESTATES
LOCATION OF BORING

SEE SHEET 1/4

DATUM _____ ELEVATION _____

PROJECT NO. 1945.01
DRILLING METHOD:
HAMMER WEIGHT: DROP:
SAMPLER(S):
BACKFILL MATERIAL:
WATER LEVEL
TIME
DATE
CASING DEPTH

SHEET 4 OF 4
BORING NO. B-1
LOGGED BY: FJR
DRILLING START: TIME 1030, DATE 2/16/96
DRILLING FINISH: TIME 1100, DATE 2/16/96

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	OVM/PID/FID READING	BLOWS/6" SAMPLER	SPT N-VALUE	DEPTH IN FEET	LITHOLOGY
						60	
						61	SP
						62	
						63	
						64	
				17		65	CL
SPT	18/14	11/	V	19 22	(41)	66	X
						67	
						68	
						69	
						70	
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	
						9	
						0	

SURFACE CONDITIONS:

SAND (SP) Continued

OLD SEA TERRACE

CLAY (CL)
Yellow brown, V. Stiff, moist

BOTTOM OF HOLE AT 66.5 Feet at 1100.

Borehole backfilled w/ Cuttings and quickcrete cement immediately upon completion

1. Elevation in Feet, Mean Sea Level (msl)
2.

CALIFORNIA COASTAL COMMISSION
NORTH COAST AREA
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
(415) 904-5260

EMERGENCY PERMIT

Arthur P. Herring
P.O. Box 728
Lawndale, CA 90260

April 3, 1996
Date

1-96-05G
(Emergency Permit No.)

Pacific Skies Estates Seawall, 1300 Palmetto Avenue, Pacifica, CA 94044
Location of Emergency Work

As more fully described in the submitted plans, the proposed work consists of a two-phased project to stop on-going seawall collapse by: (1) installing drilled, reinforced pier and grade beams with optional tiebacks and a cast-in-place concrete cap beam, (2) backfilling behind the existing seawall, and (3) placing about 20,000 tons of 4 to 8 ton riprap to buttress the base of the seawall.

Work Proposed

This letter constitutes approval of the emergency work you or your representative has requested to be done at the location listed above. I understand from your information and our site inspection that an unexpected occurrence in the form of winter storm waves which eroded the sandy beach have caused the sudden collapse of 170+ feet of the seawall and the subsidence of the access roadway behind the seawall, thereby exposing existing homes behind the seawall with the danger of erosion which requires immediate action to prevent or mitigate loss or damage to life, health, property or essential public services. 14 Cal. Admin. Code Section 13009. The Executive Director hereby finds that:

(a) An emergency exists which requires action more quickly than permitted by the procedures for administrative or ordinary permits and the development can and will be completed within 30 days unless otherwise specified by the terms of the permit;
(b) Public comment on the proposed emergency action has been reviewed if time allows; and
(c) As conditioned the work proposed would be consistent with the requirements of the California Coastal Act of 1976.

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

Very Truly Yours,

Peter M. Douglas
Executive Director

By: JAMES J. MUTH
Title: Coastal Planner

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

CALIFORNIA COASTAL COMMISSION
NORTH COAST AREA
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
(415) 904-5260

APPLICATION FOR EMERGENCY PERMIT

PLEASE NOTE: The following information and attachments must be submitted in writing in order to receive an Emergency Permit pursuant to Public Resources Code Section 30624(a). If the emergency situation is such that a verbal authorization is given by the District Director to commence emergency work, the application for emergency permit must still be submitted by the property owner within 3 days of the disaster or discovery of the danger. 14 Cal. Admin. Code Section 13139.

1. 16 February 1996 Request: [X] in person [ ] by telephone [ ] by mail
   Date/Time

2. Name(s) of Property Owner(s): _____
   Address: _____
   Phone Number: _____

   Name(s) of Representative(s): Arthur P. Herring
   Address: P. O. Box 728, Lawndale, CA 90260
   Phone Number: (310) 536-0926

3. Location of Emergency Work: 1300 Palmetto Ave., Pacifica, CA 94044

4. Evidence of applicant's interest in property on which emergency work is to be performed

5. Assessor's Parcel Number: 009-291-020

6. Contractor, or person(s) who will do emergency work/address/phone number (if different from representative) Power Engineering, 185 Berry St. San Francisco, CA 94107 (415) 546-7802, Contact: Ken Lindberg, P.E. (415) 969-9696

7. Nature and cause of emergency (brief description): See Attachment A.

8. The circumstances during the emergency that appeared to justify the course(s) of action taken, including the probable consequences of failing to take action: See Attachment A.

9. Method and preventive work requested (e.g., rip-rap, bulkhead, etc.): See Attachment A.

10. Timing of emergency work (estimate as to when work will be performed -- generally a period of 24 to 72 hours after the emergency occurrence): See Attachment A.

California Coastal Commission
Application For Emergency Permit
1300 Palmetto Avenue
Pacifica, CA 94944

"ATTACHMENT A"

Response to #7.
Storm waves eroded beach sand and underlying beach terrace deposits which undermined the existing piers causing failure to approximately 170 feet of seawall, backfill and access roadway.

Response to #8.
The coastal bluff along the failure zone is now exposed, threatening the existing homes.

Piers 1-13 and piers 62-88 are also exposed threatening further collapse of the seawall. (Pier 1 is at the south end of the wall). Without immediate action, all homes adjacent to the shoreline may be lost.

Response to #9.
The immediate and necessary long term coastal protection for the damaged seawall will be implemented in two phases. Phase 1 has already begun and consists of Items 1 through 4 below. Items 3 and 4 are on-going or have been completed. Items 1 and 2 are being designed and will be constructed as soon as possible. Phase 2 includes Items 5 though 7 below, and will be implemented within one year (weather, beach conditions and available financing cooperating). Items 8 through 10 are optional and will be worked out or abandoned during the Phase 1 upper bluff top lateral support and vertical crane support design process.

The objective of Phases 1 and 2 is to stop on-going seawall collapse, protect and support exposed bluff and backfill failure zones, instigate a means to access and support crane activity along the top of bluff for immediate riprap placement needs and future long term riprap maintenance needs; and to buttress the existing vertical piles with a riprap revetment to prevent future failure when sand levels are lowered again due to deep wave scour activities.

1. Install drilled reinforced pier and grade beam at the existing road elevation to act as:
   a. vertical and lateral crane support
   b. permanent lateral support for the existing seawall (below).

2. Layout steel beams and timber cribbing to support crane spanning the new piers and grade beams, or construct a tiedback retaining wall that supports crane loads.

3. Supplement riprap buttress at base of damaged wall with import riprap, 4 to 8 ton range.

   - Piers #12 to #61 - remove and break apart reinforced concrete piles. Place the segmented concrete piles landward of vertical wall.

   - Build a 2:1/1.75:1 buttress riprap revetment to protect eroded bluff face and new vertical concrete retaining wall.

- Construct wall facing from top of riprap buttress to top of bluff at roadway elevation.

4. Reinforce backfill behind exposed seawall and where voids were found within riprap for a linear distance of 400 feet. (Piers #60-#155).

5. Supplement existing riprap on property seaward of vertical pile wall to act as buttress against bottom of seawall soldier piles. This is necessary to develop and re-establish structural pin at base of vertical seawall.

6. Additional buttress riprap apron will extend seaward 20 to 35 feet from vertical seawall depending on final buttress needs and wave stability calculations. Buttress riprap will need to account for lateral beach access.

7. Placement of approximately 20,000 tons of riprap.

8. Structural tie the existing vertical piles together with a cast-in-place concrete cap beam (optional).

9. Construct reinforced concrete tie beam to deadman or anchor system located approximately 27 feet from top of reinforced coastal wall (optional).

10. Place necessary tieback and battered piers to act as anchors (optional).

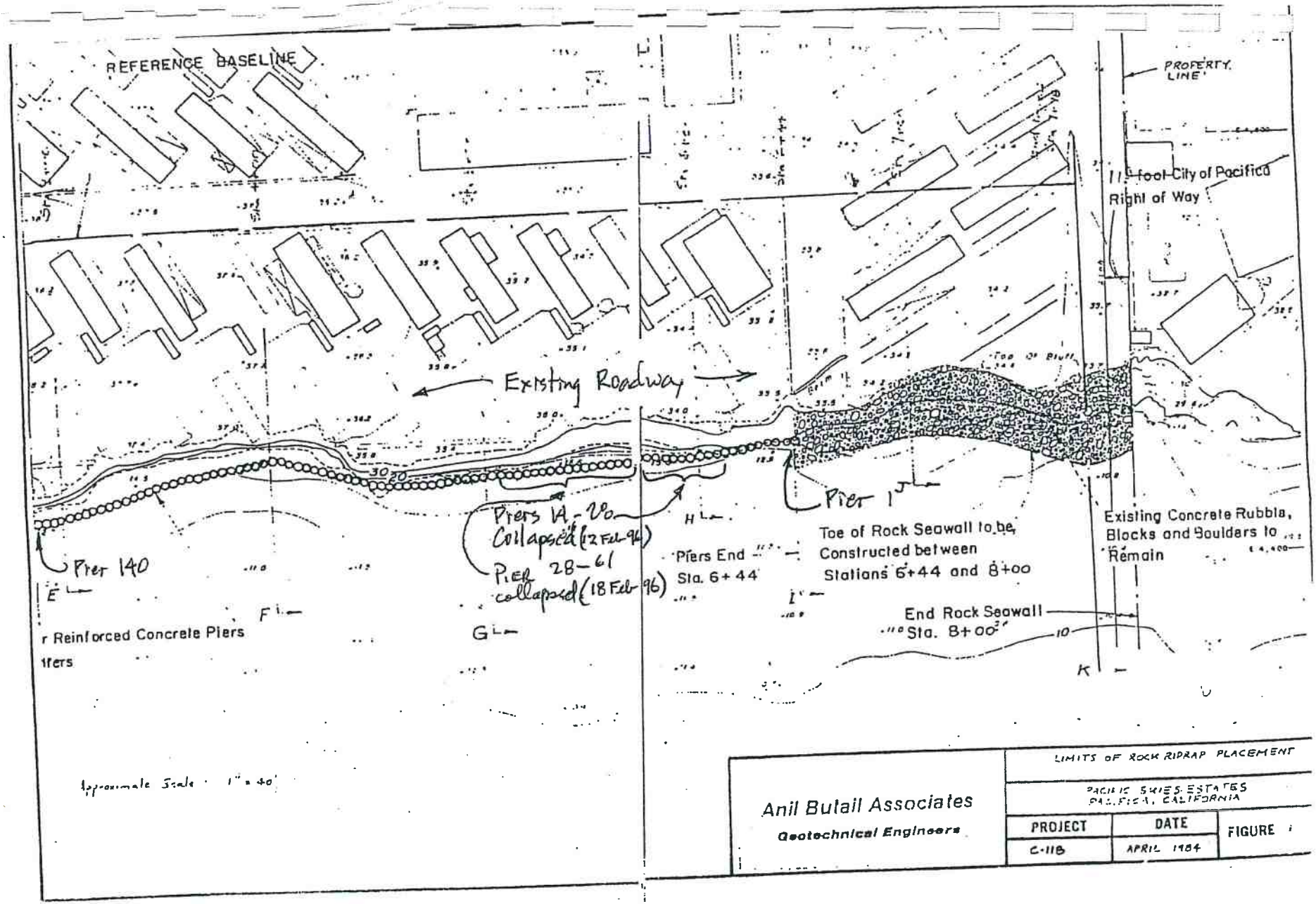
Response to #10.
Emergency work began as soon as possible (week of 19 February 1996). Phase 1 emergency work can take as long as 5 months. Phase 2 work should occur within 1 year and could take approximately 1 year to complete.

Response #11.

Tim Malaneria	Pacifica City Engineer
Scott Holmes	Pacifica Plant Waste Water Engineer

Response #12.
We will pursue communication with the following agencies:

a) California Coastal Commission
b) Monterey Bay National Marine Sanctuary
c) City of Pacifica
d) State Lands Commission
e) Army Corps of Engineers
f) California Regional Water Quality Control Board


REFERENCE BASELINE
PROPERTY LINE
Existing Roadway
Pier 140
Piers 14-20 Collapsed (12 Feb 96)
Pier 28-61 collapsed (18 Feb 96)
Piers End Sta. 6+44
Pier 1
Toe of Rock Seawall to be Constructed between Stations 6+44 and 8+00
End Rock Seawall Sta. 8+00
Existing Concrete Rubble, Blocks and Boulders to Remain
r Reinforced Concrete Piers
Approximate Scale : 1" = 40'
Anil Bulail Associates
Geotechnical Engineers
LIMITS OF ROCK RIPRAP PLACEMENT
PROJECT
C-118
DATE
APRIL 1984
FIGURE

GEOCONSULTANTS, INC.
Consultants in Geology, Hydrology, Engineering
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Project No. G547-04
September 27, 1983

Mr. Anil Butail, P.E.
P. O. Box 24249
San Jose CA 95133

RE: GEOLOIGC RECOMMAISSANCE AND
SHALLOW SEISMIC REFRACTION SURVEY
BEACH OFF PALMETTO AVENUE
PACIFICA, CALIFORNIA

Dear Mr. Butail:

In accordance with your verbal authorization of August 19, 1983, this letter presents the results of our shallow seismic refraction survey performed at the subject site. The primary purpose of this study was to determine the thickness of the beach sand and rippability of the underlying bedrock. The investigation consisted of a brief review of available geologic literature, the performance of the seismic lines, and geologic mapping.

SITE GEOLOGY

The project site is located just north of Shoreview Avenue in Pacifica, California. In general, the site vicinity is underlain by marine Quaternary terrace deposits with localized exposures of Franciscan greenstones. The marine terrace outcrops are covered by a mantle of slope wash or topsoil a few feet thick. A number of ravines perpendicular to the shoreline and adjacent residential developments contain Quaternary surficial landslide and slope deposits.

The surficial units consist of alluvial deposits, beach deposits, and slope debris. The slope debris includes masses of fragmental bedrock, colluvium and soil that have slumped downslope from the shoreline bluffs.

The marine Quaternary terrace deposits are a series of emerged wave cut platforms that are best exposed as bluffs paralleling the shoreline. These marine terrace deposits consist predominantly of thick interbedded sandstones and sandy gravels. The sandstones are generally friable, well sorted,

fine grained, yellowish-orange units that may include occassional lenses of alluvial gravels. The sandstone beds vary in thickness from four to eight feet. A number of the beds show several sedimentary structures such as paralles lamination and ripple cross-stratification; other beds are massive and structureless. Contacts between the sandstone beds and sandy gravel units are somewhat abrupt and irregular.

The sandy gravel beds are friable to mildly indurated, poorly sorted, yellowish-brown units that contain occassional sandy lenses. The beds vary in thickness from four to fifteen feet. The only notable sedimentary structure is occassional parallel lamination in some of the sandier sections. The gravels consist of angular to subrounded clasts of granite, black chert, quartizite and felsic volcanic rocks.

The Franciscan greenstones are locally exposed during low tides as highly altered fine grained, olive-gray basalts.

Instability along the bluffs appears to be concentrated in the southern part of the study area. The northern section of the study area seems to be relatively stable. Abundant vegetation was growing on the bluff faces and little evidence of structural instability was noted.

Evidence of structural instability is exhibited through four features, as noted on the accompnaying Site Plan:

1. Earth flows and debris slumps are present in ravines, areas of local water discharge, and along slopes that have been over steepened by wave action.

2. Rock falls are occassionally observed along over steepened bluffs.

3. Vertical tension cracks are a prevalent feature along the face of the bluffs.

4. Significantly greater erosion has effected the upper section of the marine terrace deposits (predominately sandy gravels) than the lower section of the marine terrace deposits (laminated and massive sandstones).

FAULTS AND SEISMICITY

The project site lies within a known, seismically active area. The major active fault affecting the site is the San Andreas, which is approximately 1½ miles northeast of the site.

The Hayward and Calaveras Faults east of San Francisco Bay also are active features capable of generating earthquakes which could affect the site. Of these faults, the San Andreas is considered to have the potential for generating the largest earthquakes (Richter magnitude 8.0+), and thus presents the greatest seismic hazard, in our opinion.

The largest historic earthquake affecting the area was the 1906 San Francisco earthquake on the San Andreas Fault, which resulted in extensive damage. Lawson (1908) estimated the apparent intensity in the vicinity of the site at VIII to IX on the Rossi-Forel scale, corresponsding to VIII on the currently used Modified Mercalli scale (Steinbrugge, 1968). This intensity of shaking could damage most structures, although specially designed structures should sustain only slight damage.

Because no faults are mapped at the site and none were encountered during our investigation, the risk of ground rupture from fault displacement is, in our opinion, negligible. The most serious potential seismic hazard in the area is ground shaking caused by major earthquakes on the San Andreas Fault. This ground shaking could promote failure of the bluff materials, although no such result was observed in the immediate area after the 1906 earthquake.

Greensfelder (1972) indicates a maximum bedrock acceleration in access of 0.5g for the entire San Francisco Bay Area. Ground underlain by unconsolidated material usually experiences more severe shaking, hence a conservative design should be applied for structures founded on these materials.

The forecast return period (in years) of peak ground acceleration in San Mateo County is 100 years for 0.30g (San Mateo County Planning Department, 1976). The datum can be used for design puposes noting that 65 percent peak ground acceleration is roughly equivalent to the sustained acceleration (Ploessel & Slosson, 1974).

SHALLOW SEISMIC REFRACTION SURVEY

Five shallow seismic refraction lines were performed at the approximate locations shown on the Site Plan, Figure 1. The resulting time-distance curves and geoseismic cross-sections are presented on Figures 2 through 6.

The seismic refraction survey was conducted primarily to gather data relating to the depth of beach sand and the rippability of the undelying bedrock. A Nimbus Model ES-125 signal enhancement seismograph was utilized. The seismic

instrument, which is a very accurate timing device, is effective in delineating lateral changes in the subsurface.

The materials encountered at the locations of the seismic lines exhibit relatively low velocity beach sands (1106 to 1348 feet per second) to depth ranging from 0 to 12 feet. The bedrock velocities range from 4505 to 8772 feet per second. In Seismic Line S-2 a high velocity zone was encountered which we believe to be a buried concrete block.

CONCLUSIONS

Based on our investigation, it is our opinion that the maximum depth to bedrock in the areas surveyed is 12 feet. Furthermore, in general, the bedrock appears rippable, with the exception of line S-5, where the bedrock could be marginally rippable.

This evaluation, consisting of professional opinions and recommendations, has been made in accordance with generally accepted principles and practices in the field of engineering geology. This acknowledgement is in lieu of all warranties either express or implied.

Unanticipated soil and bedrock conditions are commonly encountered and cannot be fully determined by surface geological and geophysical surveys.

It has been a pleasure performing this service for you. Should you have any questions, please call.

Very truly yours,

GEOCONSULTANTS, INC.

John K. Hofer
Engineering Geologist, EG-1065

JKH:sen

SELECTED REFERENCES

Brabb, Earl E., and Pampeyan, Earl H. (1972) Preliminary Geologic Map of San Mateo County, California: U. S. Geological Survey Miscellaneous Field Studies Map MF-328.

Greensfelder, R. W. (1974) Maximum Credible Rock Accelerations from Earthquakes in California: California Division of Mines and Geology, Map Sheet 23.

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Ploessel, M. R., and Slossen, J. E. (1974) Repeatable High Ground Accelerations from Earthquakes - Important Design Criteria: California Geology, September, p. 195-199.

San Mateo County Planning Department (1976) Seismic and Safety Elements of the General Plan, Vol. I and II.

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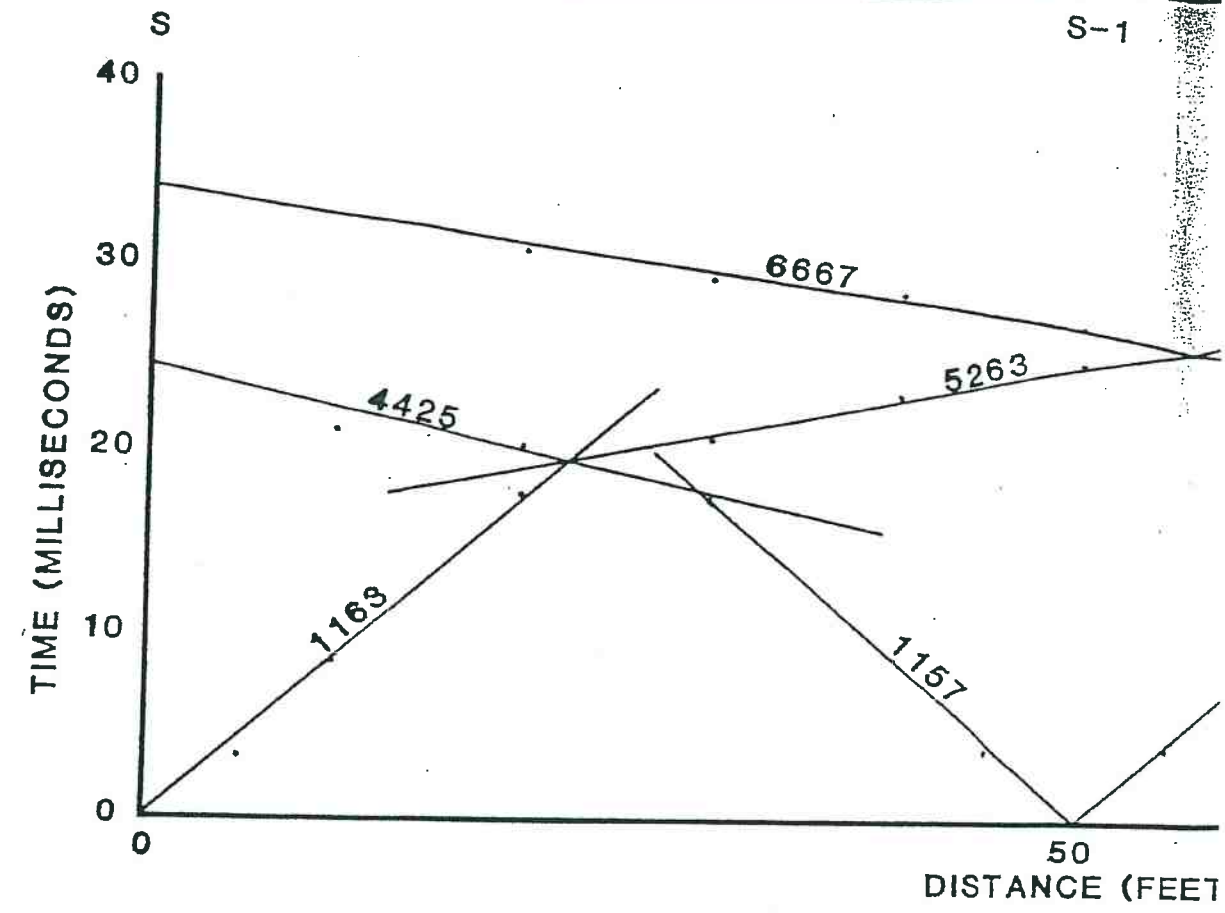
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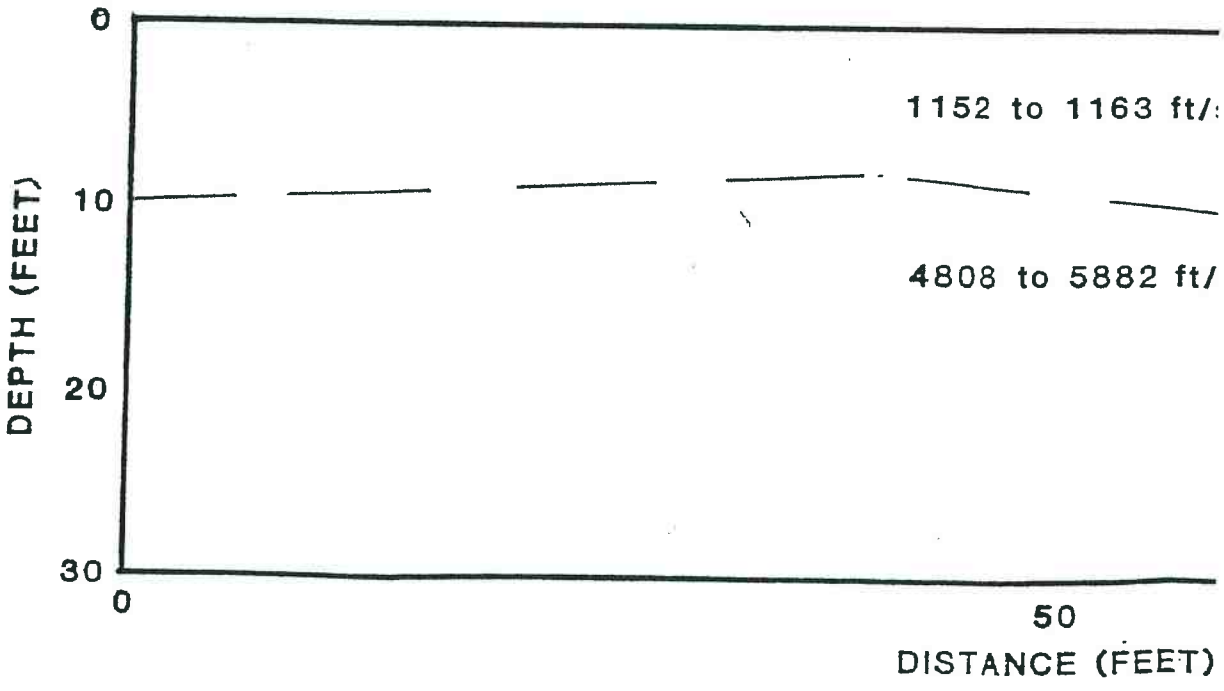
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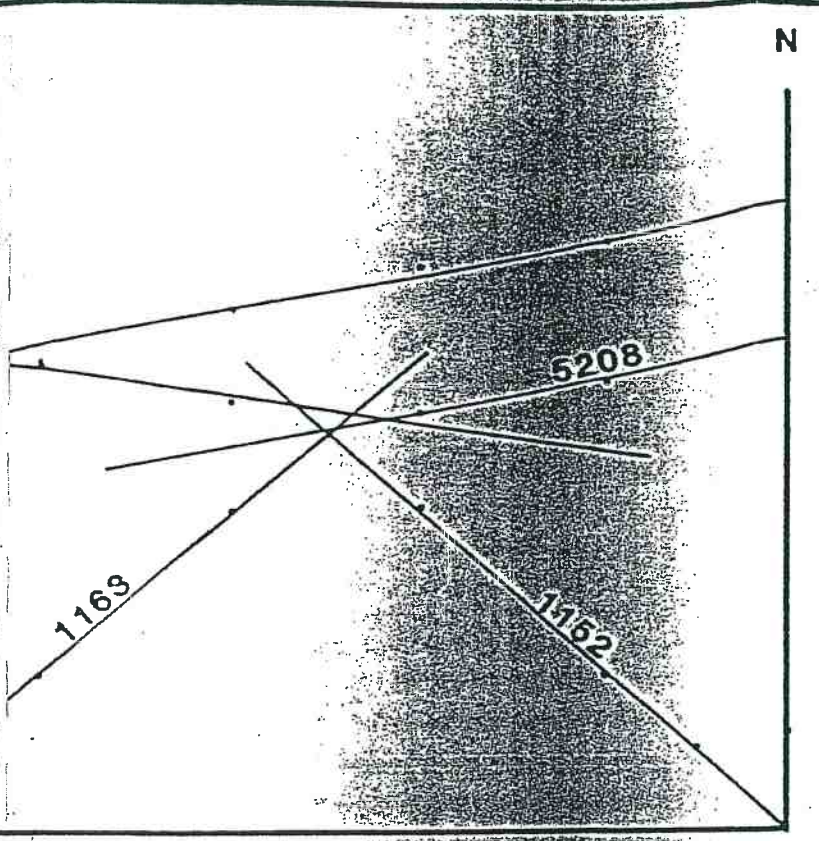

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G547-04
9/83

Anil Butail, P.E.

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October 25, 1983
Project C-118

Clarence & Harvey Dahlberg
Pacific Skies Estates
1300 Palmetto Avenue
Pacifica, California 94044

Subject: Transmittal of
Engineering Report
Bluff Erosion Protection
Pacific Skies Estates
Pacifica, California

Gentlemen:

As requested, we have completed an evaluation of the bluff erosion along your property. The attached report describes our work and presents our conclusions and recommendations for providing erosion protection to the bluff. With this report, we are also submitting project plans for construction of the work.

Thank you for the opportunity to be of service to you on this project. If you have any questions or need further assistance, please call.

Very truly yours,

Anil Butail, P.E.
R.E. C21135

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INTRODUCTION

Pacific Skies Estates is located along the bluff overlooking the Pacific Ocean in Pacifica, California as shown on the Site Plan and Vicinity Map, Figure 1. During the past winter, the bluff face adjacent to the ocean has undergone severe erosion and in some locations has retreated as much as 80 feet. As a result of this erosion, several mobile homes located in the western portion of Pacific Skies Estates were in immediate danger of losing ground support and had to be moved. We were retained by Pacific Skies Estates to evaluate the existing conditions and develop measures for reducing the potential for future erosion.

SUMMARY

The study consisted of developing several options for providing the erosion protection to the face of the bluff. These included:

A Concrete Retaining Wall

A Soldier Pile and Tieback Wall

A Sheet Pile Wall with Tiebacks

A Rock Riprap Wall

A Row of Drilled Piers

Preliminary Designs and Cost Estimates were prepared for each of these alternates and presented to the owners of Pacific Skies Estates. From these presentations, it was concluded that the costs for these measures, was generally beyond the means of Pacific Skies Estates. The rock riprap wall was not considered acceptable. Hence, after additional discussion, a scaled-down version of a row of drilled piers in conjunction with a rock riprap wall was selected which would provide erosion protection within Pacific Skies Estates' means, but with an increased risk and potential for maintenance.

SCOPE OF WORK

The scope of work performed for this study included the following:

1. Review of Published Literature pertinent to the area, its problems with bluff erosion, and methods used to retard erosion

2. Preparation of a topographic map at a scale of 1 inch = 40 feet, with a two foot contour interval

3. A geologic reconnaissance and mapping of the site

4. A seismic refraction study along the base of the bluff to determine qualitatively the character of the soils underlying the beach and the depth at which relatively competent soils could be anticipated

5. Obtaining Baseline Data for design of the shore protection measures

6. Developing the various alternative options that could be used for providing the protection desired and preparation of preliminary cost estimates for the various options

7. Discussions with the owners and selection of the option to be used

8. Preparation of Construction Drawings

9. Preparation of this report.

This report discusses the work performed above and presents the results of our study.

FIELD STUDIES

The first phase of our field studies consisted of preparation of a topographic map. This was accomplished by aerial photography and photogrammetric methods by Aero-Geodetic Corporation of Santa Clara, California. The map prepared by Aero-Geodetic was the basis for all layouts studied by us as well as the final design layouts.

The next phase of our study was a geologic research and reconnaissance of the entire area under study. This work was performed by Geoconsultants, Inc., of San Jose, California. This was followed by a seismic refraction survey along the base of the bluff to establish the general characteristics of the subsurface soils and to determine the estimated depths of the competent soils present beneath the beach sands. For this study, a detailed subsurface exploration was not performed since the soil stratigraphy is clearly visible on the face of the bluff. However, it should be noted that observations will need to be made during construction to verify that soil conditions are as anticipated. The results of the geologic reconnaissance and the seismic refraction survey are discussed in detail in Appendix A. They are also briefly discussed in the following section.

SITE CONDITIONS

Regional Conditions

The area of study is an approximately 800-foot stretch of oceanfront along Palmetto Avenue. The configuration of the site is shown on Figure 1. Along this stretch of the oceanfront, the height of the bluff above the beach varies between approximately twenty and thirty feet.

Historically, this region of the coastal bluff has always been subjected to erosion by wave action as well as by wind forces. Typically, wave action has caused erosion near the toe of the bluff and has partially removed toe support. Due to this loss of toe support, weakness of the bluff immediately above has resulted and slumping of portions of the bluff has occurred. In the past, this process occurred continually but at a relatively slow rate. During the past winter, when weather conditions were particularly severe, the rate of bluff retreat accelerated drastically and it is estimated that as much as 80 feet of bluff retreat may have occurred.

Due to the severe erosion suffered by the bluff, the edge of the bluff is quite irregular and the slopes vary widely. The inclinations on the bluff are nearly vertical in the northern part and about 2:1 (horizontal:vertical) in the southern part. Along almost the entire bluff face, there are small deposits of fallen materials at the toe of the bluff, representing recent erosion of the bluff, and indicating that the bluff erosion is continuing.

Existing Site Conditions and Site History - Pacific Skies Estate is a mobile home park located on the west side of Palmetto Avenue in Pacifica, California. It is bordered on the north by the Masonic Lodge and on the south by single family residences. The property covers approximately 9.15 acres and fronts the Pacific Ocean on the west side. It extends approxiamtely 800 feet in a north-south direction.

On the west side of the property there is a steep near vertical bluff extending down from the mobile home park to the beach. The height of the bluff at this location is between 20 and 30 feet and increases towards the north. During the last winter, when exceptionally heavy storms occurred, the bluff retreated as much as 40 to 80 feet. Due to this bluff retreat, Fourth Avenue, which was located along the western edge of the property was completely eroded away. In addition, it was necessary to move the westernmost row of mobile homes off the property.

There have been previous measures to protect this portion of the coastal bluff from erosion. Originally large amounts of rock riprap were placed along the toe of the bluff to prevent erosion. This riprap was gradually washed away by the storm and wave action. Subsequently, and more recently, we understand that large rock riprap was placed at the toe of the bluff and cement treated base placed behind the riprap at the toe of the bluff. Above the toe there was a row of piles installed along the edge of the mobile home park, placed on

approximately 6-foot centers. The entire face of the bluff was covered with a coating of gunite which was sprayed on to a wire mesh anchored into the face of the bluff.

At the south end of the site, we understand that a 22 foot right of way exists that was given to the City of Pacifica by Pacific Skies Estates. This right of way supports a street (Sixth Avenue) and several storm drain pipes buried below the street. We understand that these pipes include a 36 inch diameter and a 24 inch diameter corrugated metal pipe. The 36 inch diameter pipe serves as a primary discharge point for storm runoff collected from a large area east of Pacific Skies Estates including a large portion of Palmetto Avenue. The 36 inch pipe starts on Palmetto Avenue from a catch basin just off the east end of the property. At this same catch basin, and at a slightly higher level, a 24 inch diameter corrugated metal pipe (CMP) also starts and flows towards the west. It is our understanding that the purpose of the 24 inch pipe is to handle excess storm flows that cannot be carried in the 36 inch concrete pipe. Both of these pipes run towards the west beneath 6th Avenue and discharge into two manholes near the west end of 6th Avenue. From the manhole that the 24 inch pipe discharges into, we understand there is another pipe that leads flow into the manhole that the 36 inch pipe discharges into. From this manhole, a 36 inch pipe conveys the collected runoff towards the ocean. We understand that the outfall of this pipe was approximately 30 to 40 feet from the edge of the bluff. A portion of the 24 inch CMP is presently visible at the edge of the bluff and it appears to be quite corroded.

In addition to the above, a 16 inch diameter asbestos cement pipe discharges into the manhole that the 36 inch pipe discharges into. This pipe conveys runoff from the northern portion of the area along Shoreview Avenue, located just south of the site.

During the last winter it was noted that high flows from the 36-inch storm drain pipe exiting the bluff at the south end of the property caused a washout of some materials along the toe of the bluff near the southern end of the property. This erosion continued and some of the soils behind the gunite on the bluff face were eroded. As the result, the gunite started peeling off towards the north, starting from the southern property line. Continued wave action by the ocean resulted in additional materials being washed out from behind the gunite and eventually the entire gunite facing and the piles at the edge of mobile home park were washed away. The erosion from wave action continued and ultimately resulted in a loss of an additional 40 to 80 feet or so of the bluff face including all of Fourth Avenue and a portion of the westernmost row of the mobile home pads, from which the mobile homes had to be moved before they were affected. The amount of bluff retreat was approximately 40 feet or so at the south end of the site. At the extreme northern end, adjacent to the Masonic Lodge property, the bluff retreat was as much as 80 feet.

We have reviewed several photographs taken of the site at various times during the last storm season. Based on this review, it is our opinion that the bluff erosion that occurred at the Pacific Skies Estates was initiated by storm runoff exiting the 36-inch storm drain pipe at the south end of the property. Very little or no erosion protection or energy dissipation had been provided at the outlet of this pipe to prevent the erosion around its immediate vicinity. In addition, the 24 inch CMP drain pipe beneath 6th Avenue was observed to be quite corroded. It is likely that there were some leaks in this pipe that could have caused water to escape this pipe and flow along the outside of the pipe. As a result, it is likely that a "piping" condition developed along this pipe and carried some of the sandy soils around the pipe downstream towards the bluff. This movement of soils through the subsurface probably created some voids around the pipe and accelerated the erosion of the bluff face. Had adequate erosion protection been provided around the pipe, an appropriate energy dissipation zone provided adjacent to the bluff at the Pacific Skies Estate frontage along the ocean and if leakage had not occurred through the 24 inch CMP, it is likely that far less or no erosion damage would have occurred to the bluff at the site.

At the southernmost portion of the site, adjacent to the street and storm drain right of way, the erosion was particularly severe. Along this portion of the bluff, several large concrete blocks, broken concrete and large rock riprap were placed to provide temporary storm erosion protection. These materials are still in place.

At the north end of the site, we understand there a considerable flow of surface runoff from the east to the west. Most of this flow discharges directly over the bluff face. This uncontrolled flow has also caused a large amount of bluff erosion. We understand that at the height of the storm season last winter, erosion of the bluff face near the north end of the property was so severe that the Masonic Lodge building had to be lifted and moved eastward to prevent it from being lost.

Subsurface Conditions

The soils on the site are Marine Terrace Deposits which cover greenstone of the Franciscan Assemblage. The soils exposed on the face of the bluff represent these terrace deposits.

In general, the uppermost layer of the soils at the top of the bluff consists of a medium dense, medium grained sand with no binder or fines. This layer has a thickness of about 8 feet and is underlain by a lighter brown fine to coarse grained sand that exhibits some cementation and has a considerable amount of silt within it. This unit generally extends to the base of the bluff.

Bedrock is not exposed on the face of the bluff at the site. However, bedrock exposures are visible on the face of the bluff along Shoreview Avenue, immediately to the south of the site. The bedrock exposed is a siltstone/sandstone type material and appears to be quite fractured. A generalized geologic map of the site has been prepared and is presented in Appendix A.

Also included in the above appendix are the results of seismic refraction surveys conducted at the base of the bluff to determine the depth to competent soils or bedrock. These surveys indicated that bedrock is present at a relatively shallow depth of between six and ten feet below the surface of the beach at the toe of the bluff.

During our field studies, we did not observe any significant signs of groundwater seepage. Although we did not observe any significant zones of seepage, we believe it is likely that conditions of perched groundwater could develop within the surficial sand unit during periods of sustained wet weather.

For this study, we did not conduct a detailed subsurface exploration since the soil stratigraphy and conditions are clearly exposed on the face of the bluff. There is no history of inherent instability in these terrace deposits. Localized instability reported on the coastline in this area has primarily been caused by undercutting of the toe of the bluff and subsequent slumping of the materials further up on the bluff. Also, in the vicinity of the site, some instability is known to have been caused by uncontrolled surface runoff down the face of the bluff or near the toe.

DISCUSSION

A considerable amount of erosion has occurred at the Pacific Skies Estates due to the storm and wave action from the ocean in this area. If some remedial measures are not implemented, it is likely that these processes will continue and may result in the loss of considerably more of the property than has been lost until now. Hence, it is imperative that at least some erosion protection be provided along the bluff to reduce the rate of future erosion.

We have examined several photographs of the site and reviewed the sequence in which erosion of the bluff occurred during last winter. Before the erosion occurred, erosion protection had been provided along the bluff by a combination of boulders along the toe, a row of reinforced concrete piles and a layer of gunite sprayed on the bluff face on a wire mesh that was anchored into the face of the bluff. Photographs taken before the storm damage occurred indicate that the above erosion protection was intact in its entirety.

The 36 inch diameter corrugated metal pipe present beneath Sixth Avenue at the south end of the site collects storm water from a portion of Palmetto Avenue and further upslope, and discharges the water on the beach. There is also a 24 inch diameter CMP and a 16 inch diameter ACP that discharge flow into the 36 inch

pipe. When the heavy storms first started, the 36 inch pipe overflowed at the catch basin located on Palmetto Avenue. The excess flow entered the 24 inch CMP at this location. Since the pipe can be presently observed to be quite corroded, it is likely that water leaked out of this pipe and flowed towards the ocean along the outside face of the pipe. This flow most likely carried fine soil particles with it and caused some erosion of the bluff. In addition to the above, large amounts of water were discharged by the 36 inch storm drain pipe on the beach. The combination of this flow, the flow of water along the outside face of the 24 inch pipe, and wave action quickly removed the small amount of rock that had been placed below the exit point of this storm drain pipe. Continued storms resulted in erosion at the toe of the bluff below the pipe. The erosion gradually progressed into the bluff, eventually eroding away some of the soils behind the gunite wall existing on the face of the bluff along Pacific Skies Estates. As this erosion occurred, the southernmost portion of the gunite facing lost its backing support and fell off the bluff. This initial loss of the gunite resulted in this portion of the bluff at Pacific Skies Estates becoming directly exposed to storm and wave action. Continued storm action resulted in erosion and retreat of the bluff at this location, as well as erosion behind the gunite facing further towards the north. The process continued and erosion kept proceeding further inland as well as towards the north as more and more of the gunite facing had support eroded away from behind it. Eventually, the entire section of previously provided erosion protection was lost as well as upto 80 feet of the bluff adjacent to Pacific Skies Estates. Due to the continual loss of the bluff during a few days when storm action was very strong, Fourth Avenue was completely lost, and the westernmost row of mobile homes was in severe danger of being destroyed. These mobile homes were therefore removed and relocated.

The erosion damage was particularly severe at the south end of the property, in the vicinity of the storm drain pipe. To reduce erosion at this location, large concrete blocks, broken concrete and boulders were placed as a temporary emergency measure. Most of these are still in place.

Based on our review of the site conditions as they existed previously, and as they exist now, it is our opinion that the erosion that occurred at the Pacific Skies Estates was initiated by uncontrolled flow from the storm drain at the south end of the property. In addition, it is likely that the 24 inch line beneath Sixth Avenue had leaks in it which caused a "piping" situation to develop along the pipe resulting in soils being washed out along the length of the pipe.

As we understand, no significant improvements have been made at any of these pipes. Hence, regardless of any erosion protection improvements made at Pacific Skies Estates, it is imperative that these lines be examined for leaks, storm flow capabilities and be improved as necessary to prevent additional erosion from occurring. If this is not done, it is possible and likely that any erosion protection measures provided at Pacific Skies Estates will continue to be susceptible to storm damage as has occurred before.

The following sections of this report discuss the design parameters used in our study, the various alternative options studied by us, and our recommendations for construction of the erosion protection measures.

DESIGN CRITERIA

The design criteria used in this study were based on information provided in "Shore Protection Manual", Volumes 1,2 and 3, by the U.S. Army Corps of Engineers, 1977; and information developed by the Department of Boating and Waterways for the Beach Boulevard Seawall immediately to the south of Shoreview Avenue. The following criteria were used in preparing the designs:

1. Tidal Range

Mean Sea Level (USGS Datum)	:	0.0 Feet
Highest Estimated Water Level	:	+5.04 Feet
Mean Higher High Water	:	+2.54 Feet
Mean High Water	:	+1.94 Feet
Mean Tide Level	:	+0.04 Feet
Mean Low Water	:	-1.96 Feet
Mean Lower Low Water	:	-2.96 Feet
Lowest Estimated Water Level	:	-5.46 Feet
2. Deep Water Wave Height	:	12.7 Feet
3. Breaking Wave Height	:	12.3 Feet
4. Deep Wave Water Period	:	12 to 16 seconds
5. Average Beach Slope	:	1 ft in 15 feet
6. Highest Estimated Still Water Level	:	+6.04 Feet

Other criteria used for preparing the plans were:

1. The protection will generally follow the existing alignment of the bluff At no location will any land lost be restored.

2. Regardless of the option selected, it must extend into competent native soils and/or bedrock.

3. Additional erosion protection is needed at the north and south ends of the property where the adjoining properties may be unprotected.

ALTERNATIVE DESIGN OPTIONS

Based on the above design criteria, and our field studies and research, we developed five alternative methods to provide long term erosion protection to the bluff. These alternatives were:

1. A reinforced concrete retaining wall

2. A soldier pile and tieback wall

3. A sheet pile wall with tiebacks

4. A seawall constructed of rock riprap

5. A row of drilled piers

Preliminary designs were prepared for each of these alternatives were discussed with you. All of the alternatives have one thing in common. The protection measures in each option extend to bedrock to reduce the possibility of sand being washed out beneath the protection and thereby resulting in loss of foundation support. Each of the options considered above is discussed briefly below.

1. Reinforced Concrete Wall: This option would consist of constructing a reinforced concrete wall to approximate Elev. 30. The wall would be constructed roughly at the toe of the existing bluff and would be backfilled with compacted sand. It would be provided with subsurface drainage to prevent development of hydrostatic pressures. The foundation of the wall would be placed on the beach sand at a depth of three feet, however, below the wall a keyway would be excavated down to bedrock and rock riprap placed in the keyway to reduce toe erosion and scour. A layer of filter cloth will be placed between the existing ground surface and the backfill to prevent migration of fines through the wall backfill and the rock riprap toe.

2. Soldier Pile and Tieback Wall: This alternative would consist of installing soldier piles on 8-foot centers along the entire length of the shoreline alignment. For each soldier pile, a 2.5 foot diameter hole would be drilled to approximate Elev. -5. The hole would be filled with grout and a 12 inch (HP12x74) H-pile section inserted in each hole to the bottom of the hole, with the top of the H-pile being at about Elev. 30. On each H-pile a single tieback would be installed at Elev. 25, inclined at 30 degrees to the horizontal and extending back approximately 40 to 50 feet. Between adjacent piles, lateral support for the bluff would be provided by placement of a series of 4 inch by 12 inch sections of treated timber. As for the previous option, it would be necessary to excavate a keyway to the natural ground

surface and to place a layer of rock riprap at the toe of the wall to prevent scour and erosion at the toe of the wall. Filter cloth would be provided behind the wall and at the native soil interface to facilitate subsurface drainage, as well as to prevent migration of fines.

3. Sheet Pile Wall with Tiebacks: For this option a row of interlocking sheet piles would be driven into the beach to Elev. -5.0 along the edge of the bluff. On approximately six foot centers, a single row of tiebacks would be installed extending approximately 40 feet back into the bluff. A layer of filter cloth would be placed immediately behind the sheet pile wall to prevent migration of fines and the wall backfilled with compacted sand. In this option, it would not be necessary to provide riprap protection at the toe since the sheet piles would form a continuous barrier extending down to bedrock.

4. Rock Seawall: As another option, we evaluated constructing a rock seawall along the bluff. This would consist of excavating an approximately 15 foot wide keyway to a depth of 5 feet below the beach sands and building up a rock seawall from this point up. The wall would slope up at an inclination of 2:1 (horizonatal:vertical) and have an eleven foot wide horizontal bench at Elev. 20. Above the bench, the rock wall would continue up to the top of the existing bank at an inclination of 1.5:1. Two zones of rock would be used. On the face of the wall, below Elev. 20, large, 4 to 8 ton rock would be used. Behind the face layer of rock, and above Elev. 20, smaller rock, 1 to 3 ton in size would be used. A layer of filter cloth would be placed between the rock and the existing natural ground surface to facilitate subsurface drainage and prevent migration of fines through the rock.

5. Drilled Piers: For this option a row of drilled piers be installed along the beach, extending from Elev. -10 at the bottom to Elev. 30 to 35 at the top. The higher wall would be required in the northern portion of the property where the bluff is also higher. The piers would have a diameter of 30 inches and would be placed on 4 foot centers. The piers would be provided with continuous reinforcement consisting of a single HP12x74 H-Pile section. The area behind the wall would be filled with 6 to 18-inch rock and a layer of filter fabric placed between the rock and the existing bluff face. The rock riprap would extend up to the existing top of the bluff at an inclination varying from 1.5:1 to 2:1.

   The space between adjacent piers will be left open and it is expected that the 18 inch open area will be bridged by the 6 to 18-inch riprap placed behind the wall.

SELECTED OPTION

The preceding options were developed and preliminary layouts as well as rough cost estimates prepared for each option. These were discussed in several meetings with Pacific Skies Estates. At these meetings, we pointed out that the costs of the concrete, soldier pile, and sheet pile walls would be roughly comparable, and could exceed $1,000 per foot of wall. The cost of the rock seawall and the drilled piers would be between five and ten percent less. We were informed that Pacific Skies Estates could not afford this magnitude of cost and we were requested to prepare plans for a scaled down version of a drilled pier wall which would involve some increased risk and maintenance. We were also requested to incorporate the existing concrete blocks at the south end of the site, into the protection plan, in an attempt to reduce the cost.

Subsequently we prepared plans for construction of a row of drilled piers along the base of the bluff. The piers extend from the northern property line to a point approximately 644 feet south of the noth property line. From this point to the south property line, additional rock is to be placed above the existing concrete blocks and rubble, to form a rock seawall. It is planned to slope this portion of the rock seawall at an inclination of 1:1 or flatter.

The piers are to be 30 inch diameter and will be drilled on 4 foot centers to Elev. -5. With this bottom elevation, we expect the piers will extend ten feet or more into the bedrock surface beneath the beach. The piers will protrude out of the ground about 10 to 15 feet and will have their tops at Elev. 25.0. Each pier will have steel reinforcing consisting of a single HP 12x74 section extending the full length of the pier. The area behind the piers will be backfilled with 6 to 18 inch rock riprap which will extend up to the top of the bluff at an inclination of 1:1 or flatter. It is expected that the rock will bridge the 18 inch space between adjacent piers and it is not planned to place any lagging or other retention between the piers. A layer of filter cloth will be placed between the rock and the existing bluff face. The layout and the locations of the rock seawall and the piers are shown on Figure 1.

It is expected that with this type of construction, some erosion may occur at the toe of the piers and may also result in washing out some soils between the piers, below the rock blaced behind the wall. If this occurs, voids may be created below the rock zone and the rock will settle into the voids to fill them. This process may continue until the sand is washed away completely to the level of the bedrock and the rock settles to bear directly on the bedrock surface. During the life of the facility, as the rock settles, it will be necessary to place additional rock behind the wall to maintain the slope going up to the edge of the bluff. Once the rock has settled to the level of the bedrock, future erosion should be minimal. At that time, the erosion may be reduced even further by grouting the voids within the rock below the beach level.

At the time this report was written, construction cost estimates were being obtained from several contractors. If the costs are excessive, it may be necessary to shorten the total length of the pier wall and increase the length of the rock wall. Consideration may also be given to using more large concrete blocks such as are present in the southern portion of the property.

EFFECT ON BEACH

The effect of the wall construction on the beach below the bluff is expected to be minimal. Very little, if any beach is expected to be lost, since the wall will generally be constructed along the location of the slopewash deposits present at the base of the bluff. There will be some reduction in the width of the beach from its present configuration. However, it should be noted that the beach will still be considerably wider than it was when the present cycle of accelerated erosion started approximately two years ago.

There is presently no public access to the beach, hence public access will remain unaffected. There will no doubt be some disruption during construction of the wall, however this should be for a relatively short period only. Also, the contractor will be required to remove all construction debris from the site and restore it to as nearly its present condition as possible. Considering the above factors, public use of the beach for recreation purposes should remain unaffected in the long term.

CONCLUSIONS AND RECOMMENDATIONS

It is recommended that the piers and the rock seawall be constructed to the general alignment shown on Figure 1. Several cross-sections have been drawn through the wall and are shown on Figures 2 and 3. Significant features of the wall are as follows:

Pier Installation

1. Piers should have a diameter of 30 inches and should be drilled at least 10 feet into bedrock present at a depth of 6 to 10 feet below the beach level. Drilling the piers to Elev. -5.0 should generally satisfy this requirement. The recommended pier bottom elevations are shown on Figures 2 and 3.

2. Piers should be provided with a single HP 12x74 H beam running the full length of the pier. Alternatively, an equivalent reinforcing cage may be provided.

3. Some caving may occur in the pier holes between the beach level and the top of the bedrock. If caving occurs, appropriate casing should be provided. This may consist of sonotube forms which will also be required to construct the piers above the beach level.

4. Groundwater is likely to be encountered in the pier excavations. This should be removed from the excavation before pouring concrete. If the water is not removed, tremie concrete should be used.

5. Rock riprap placed behind the piers should be in the 6 to 18-inch size range and should meet all specifications of the City of Pacifica and Caltrans. The rock should not be placed until at least ten days after the piers have been poured. Forms for the piers should not be removed. These will provide some protection to the relatively fresh concrete. Ultimately the forms will decay.

6. Filter cloth placed behind the rock should be Mirafi 700x or equivalent. The filter cloth should be properly anchored into the slope face to prevent becoming dislodged during rock placement. Approximately ten feet of slack should be allowed immediately behind the piers to allow for some settling of the rock in future.

7. All piers should be installed under the observation of qualified geotechnical personnel to verify that they extend to the design depths and that they are cleaned of all loose materials before concrete is poured.

Rock Riprap Seawall

1. The wall should have a minimum width of 12.5 feet at the top, measured horizontally.

2. A keyway should be excavated to a depth of at least 5 feet below the beach level. The wall should be built up from this keyway.

3. The existing concrete blocks and fragments should be left in place as far as possible and additional rock placed around the concrete blocks to fill large voids and form the seawall. At locations where the toe of the seawall will be at the existing concrete blocks, a keyway need not be excavated.

4. To construct the wall, competent, sound, unfractured rock with weights in the range of 1 to 8 tons should be used. On the face of the wall, at least one half of the rocks used should be at least 4 tons, with no rock placed on the face having a size less than 2 tons. Rounded rocks should not be used. Rocks should be as nearly cubical as possible.

5. A filter cloth such as Mirafi 700x should be placed between the rock layer and the sand.

6. Construction of the seawall should be observed by qualified geotechnical personnel to verify that an adequate keyway will exist and to verify that rock of adequate quality is being used in the construction.

In addition to the above recommendations for wall construction, we also have the following suggestions that are not directly related to construction of the wall, but could effect its performance.

1. Storm runoff from the mobile home park should be directed towards Palmetto Avenue, wherever possible. Where this is not possible, we recommend that the water be collected in closed pipes and discharged below the toe of the wall. A berm or an asphalt or concrete curb should be constructed at the top of the bluff to prevent uncontrolled runoff down the slope.

2. You may wish to construct a small wall and/or fence at the top of the bluff to reduce splashing from large ocean waves, which sometimes occurs now.

3. We suggest you contact the City of Pacifica and request them to improve the storm drain system beneath 6th Avenue so that it cannot cause erosion adjacent to your property as has occurred in the past.

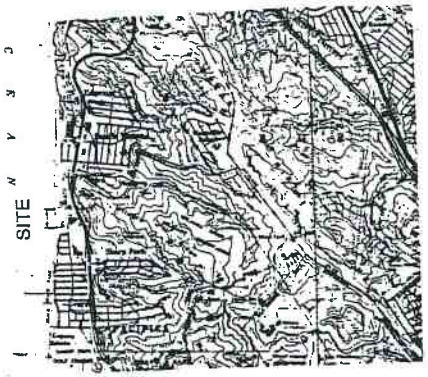
4. You should also contact property owners to your north to control the uncontrolled surface runoff on their property which could cause additional problems for you.

Finally please note that this wall is not intended to function as a permanent, maintenance free facility, particularly since it has been scaled down from the various original engineering concepts to reduce costs. Increased risk is inherent whenever a reduction of an engineering design occurs, and the need for future maintenance increases accordingly.

This report has been prepared solely for the use of Pacific Skies Estates. Use of any of the information presented in this report by other persons must be authorized by Pacific Skies Estates and by us, in writing.

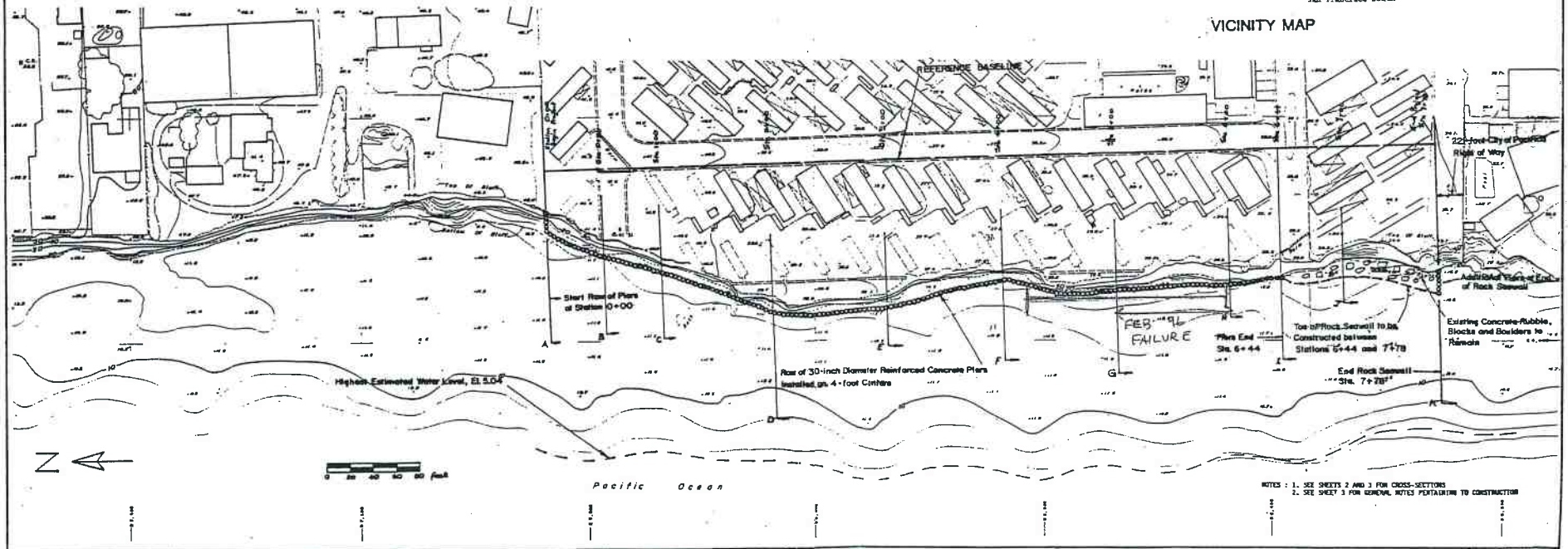
Our work has been performed in accordance with generally accepted engineering principles and practices, within the economic constraints imposed. No other warranty is expressed or implied.

PLAN AND CROSS-SECTIONS
BLUFF EROSION PROTECTION
PACIFIC SKIES ESTATES
PACIFICA, CALIFORNIA



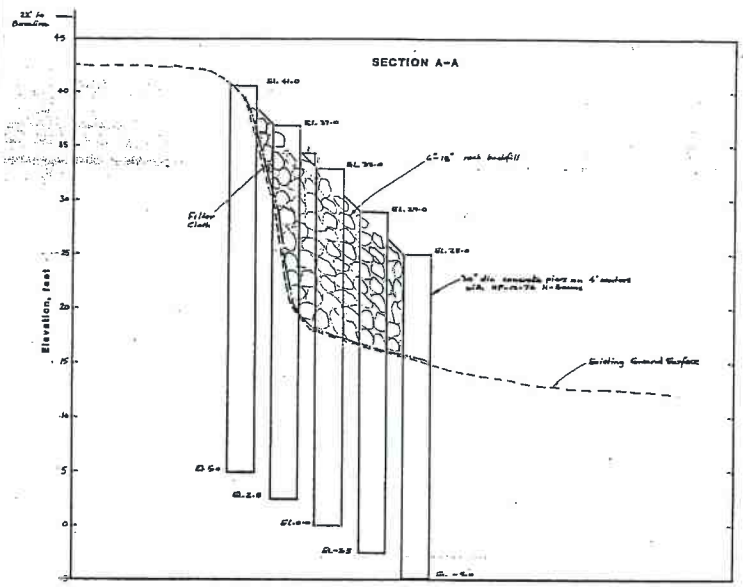
VICINITY MAP

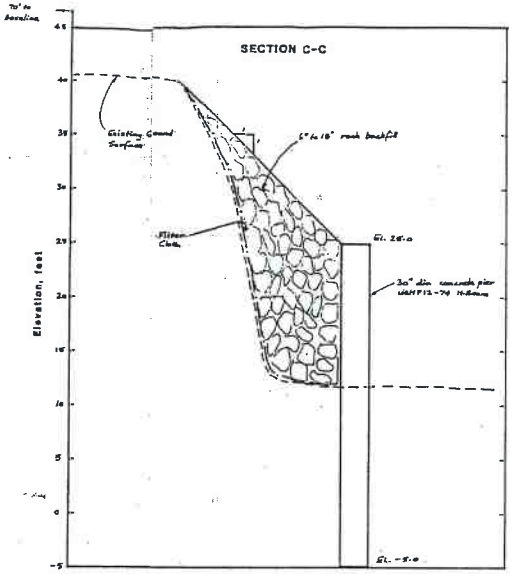
1" ≈ 80'

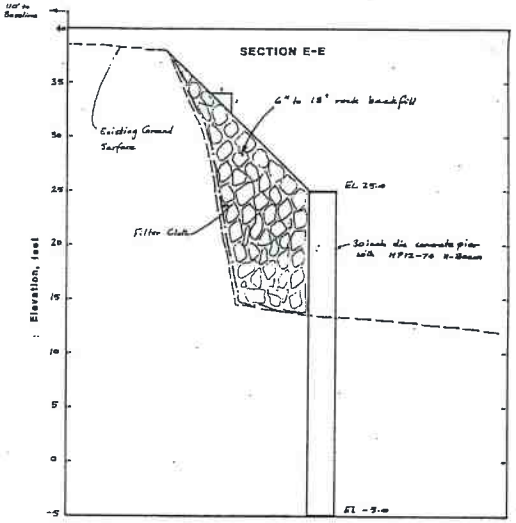


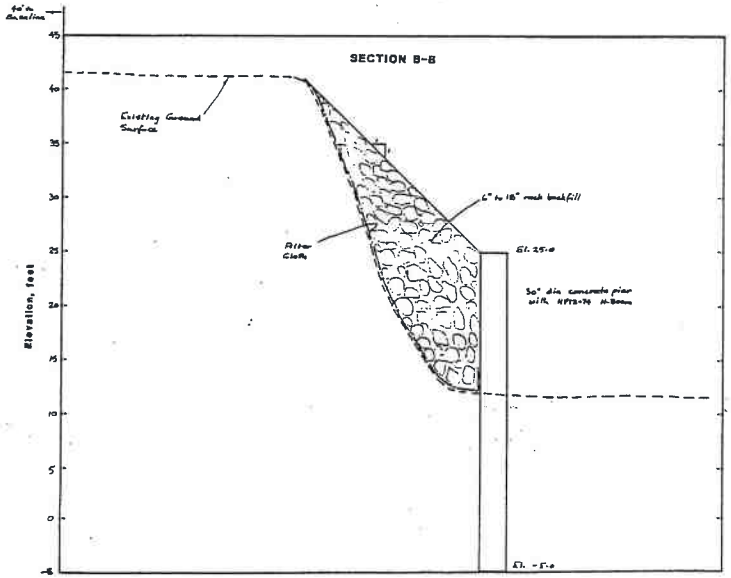
NOTES : 1. SEE SHEETS 2 AND 3 FOR CROSS-SECTIONS
2. SEE SHEET 3 FOR GENERAL NOTES PERTAINING TO CONSTRUCTION

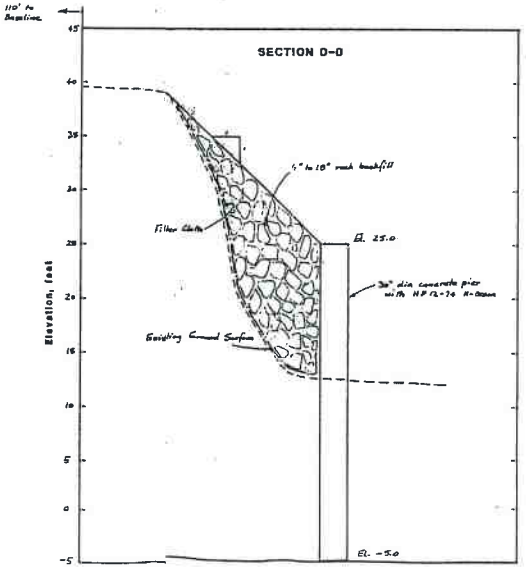
Alfred Zinn Corporation	DATE: Oct. 1993 SCALE: 1"=40' DRAWN BY: A.B. DESIGNED BY: A.B. PROJ. ENGR.: A.B. JOB NUMBER: C-118	BY | DATE | REVISIONS | BY | DATE	Anil Butail, P.E. CONSULTING ENGINEER SAN JOSE, CALIFORNIA (408) 286-7707 (408) 723-0100	PACIFIC SKIES ESTATES - BLUFF EROSION PROTECTION PACIFICA, CALIFORNIA SITE PLAN AND VICINITY MAP	SHEET SHEET 1 OF 3 OF SHEETS DRAWING NUMBER: C-118-E

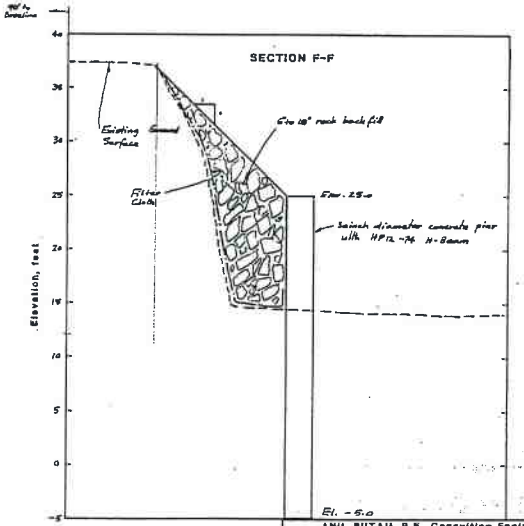












NOTES : 1. SEE SHEET 1 FOR LOCATION OF CROSS-SECTIONS
2. SEE SHEET 3 FOR GENERAL NOTES PERTAINING TO CONSTRUCTION

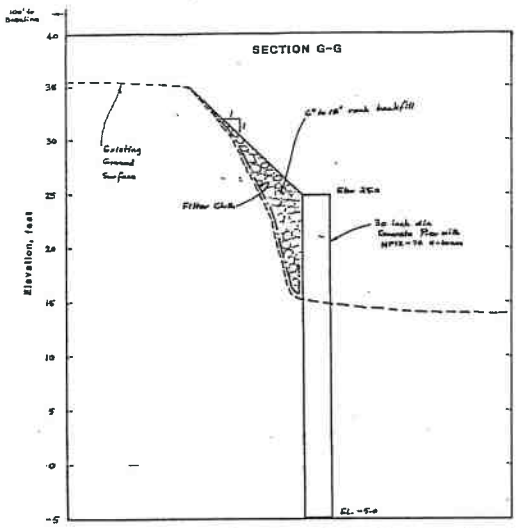
ANIL BUTAIL P.E., Consulting Engineer
San Jose California

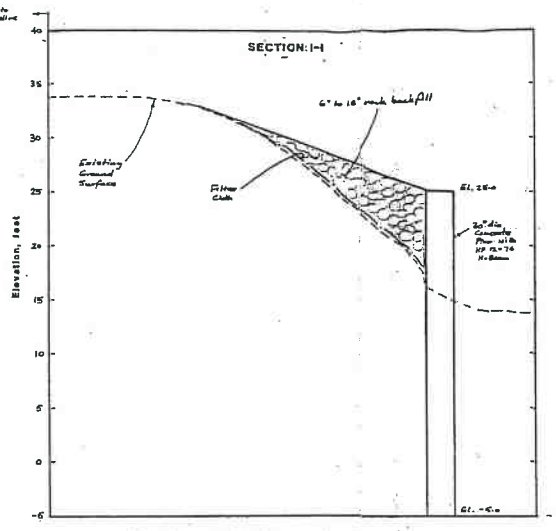
EROSION PROTECTION - PACIFIC SKIES ESTATES
PACIFICA, CALIFORNIA

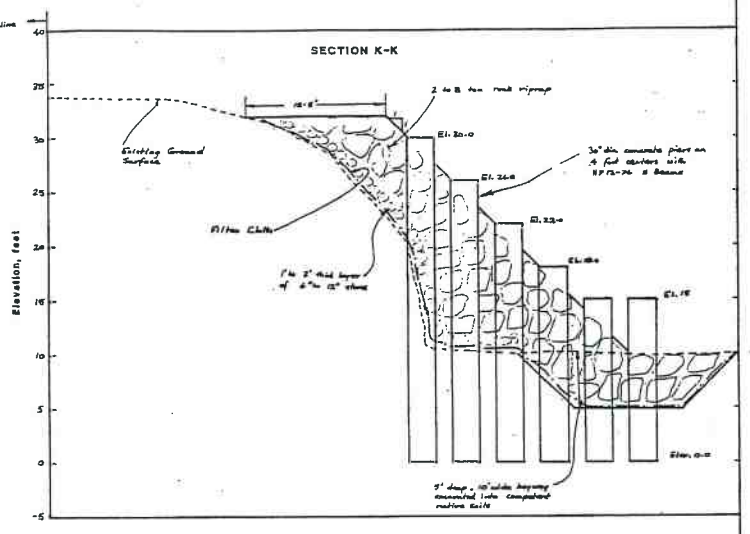
SCALE 1" = 5' | APPROVED BY A.B. | DRAWN BY A.B.
DATE Oct. 1983 | REVISIONS

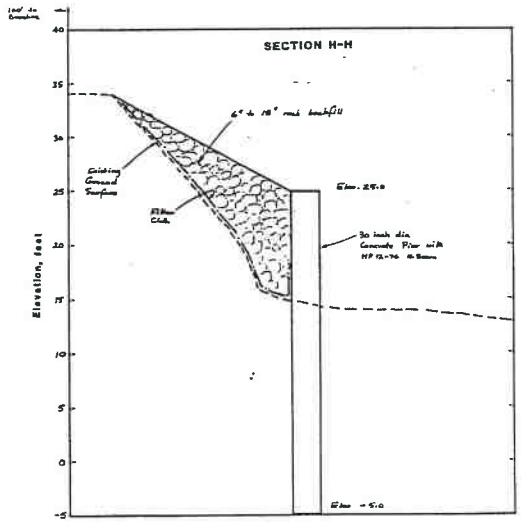
CROSS-SECTIONS

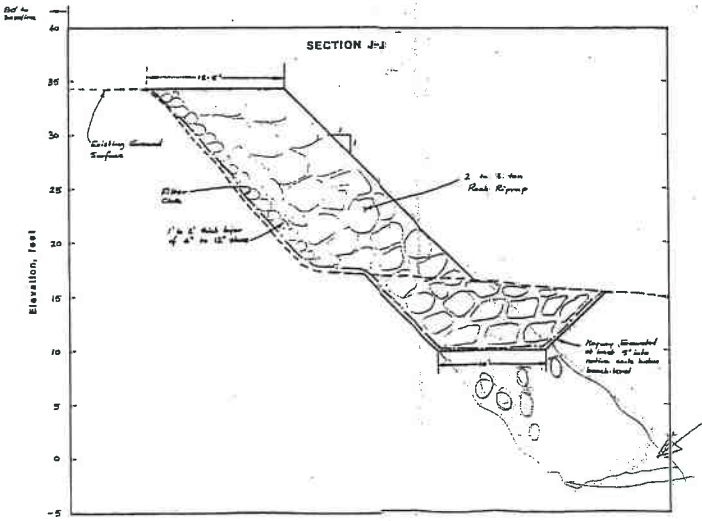
SHEET 2 OF 3 | C-118-12











Fill-96

GENERAL NOTES

1. LOCATION OF ALL CROSS-SECTIONS ARE SHOWN ON SHEET 1
2. BEDROCK DEPTHS USED IN DETERMINING PIER DEPTHS ARE APPROXIMATE AND ARE BASED ON SEISMIC REFRACTION SURVEY
3. FILTER CLOTH TO BE MIRAFI 700X OR EQUIVALENT
4. ALL CONSTRUCTION TO BE PERFORMED UNDER THE OBSERVATION OF QUALIFIED GEOTECHNICAL PERSONNEL.

DRILLED PIERS

1. PIERS TO BE 30-INCH DIAMETER CONCRETE
2. CONCRETE STRENGTH REQUIRED - 3000 PSI AT 28 DAYS
3. EACH PIER TO HAVE REINFORCEMENT CONSISTING OF ONE HP 12-74 H-PILE SECTION, STEEL TO CONFORM TO ASTM A36 CARBON STEEL. REINFORCING TO EXTEND FULL LENGTH OF PIERS.
4. ALL PIERS TO EXTEND FROM ELEV. -5.0 TO ELEV. 25.0 UNLESS OTHERWISE NOTED ON DRAWINGS
5. PIER LOCATIONS AT SECTIONS ARE SHOWN, AT OTHER LOCATIONS, THEY MAY BE SCALED FROM THE BASELINE TO AN ACCURACY OF ONE FOOT.
6. ALL PIER EXCAVATIONS ARE TO BE EXAMINED BY QUALIFIED GEOTECHNICAL PERSONNEL

ROCK PLACEMENT

1. ALL KEYWAY EXCAVATIONS TO EXTEND AT LEAST 5 FEET INTO COMPETENT NATIVE SOILS BELOW BEACH SANDS.
2. ROCK SIZES TO BE AS SHOWN ON THE DRAWINGS. ROCK TO CONFORM TO CALTRANS AND CITY OF PACIFICA STANDARD SPECIFICATIONS
3. ROCKS TO HAVE FLAT FACES AS FAR AS POSSIBLE. ROUND OR NEARLY ROUND ROCKS ARE NOT TO BE USED.
4. ALL ROCKS ARE TO BE PLACED SO THEY FIT SNUGLY AGAINST ALL SURROUNDING ROCKS AND INTO THE VOIDS BETWEEN LARGE ROCKS AND EXISTING CONCRETE BLOCKS. POINT CONTACTS BETWEEN ADJACENT ROCKS OR STRESS CONCENTRATIONS SHOULD NOT BE ALLOWED.

ANIL BUTAIL, P.E., Consulting Engineer
San Jose, California

EROSION PROTECTION - PACIFIC SKIES ESTATES
PACIFICA, CALIFORNIA

scale: 1" = 5' | approved by: J.B. | designed by: J.E.
date: Oct. 1983 | | drafted:

CROSS-SECTIONS

SHEET 3 OF 3 | drawing number C-116-83

Noble Coastal & Harbor Engineering Ltd.
1640 Tiburon Blvd., Suite 2-D, Tiburon, CA 94920 (415) 435-4677
MAILING ADDRESS
98 Main St. Suite 222
Tiburon, CA 94920

November 8, 1983

507-01

Mr. Ernest Renner
City Engineer
Pacifica
City Hall
170 Santa Maria Avenue
Pacifica, CA 94044

SUBJECT: REVIEW OF PACIFIC SKIES ESTATES EROSION PROTECTION PLAN

Dear Mr. Renner:

In compliance with your request, I have reviewed the above subject plans and have the following comments to make.

The crib type concept which is used in the plans, has been successful in protecting property from wave attack. It is necessary that the following is accomplished.

- The soil behind the rock must not leach out into the rock and be lost. The filter cloth shown is to prevent this but under the steep conditions depicted, it would be very difficult to hold the filter cloth in place. Therefore, there is the possibility that back soil could be lost.

- With the crib design it is necessary that the rock be held in place. As shown, the rock is a 6' x 18' size. Even though the specifications on sheet three, under Rock Placement indicate that rock should have flat faces and be placed snuggly against all surrounding rocks. It appears that these points are good theoretically but very hard to carry out in the field. Any slight movement of the rock would displace the stone between the piling, particularly as the piling is smooth and round.

It is also necessary that the concrete piling not move. This will depend on how securely they are founded in the underlying soil. Even if the refraction of the rock, as shown on the plans indicates there is possible solid material 12 feet from the top of the beach, that leaves only an 8 foot maximum depth penetration in a still not determined soil. There very likely will be beach scour at the base of the piling from continual storm wave attack.

With the potential scour in front of the piling, support for the rock behind the piling will be lost and the rock could drop down into the scoured zone. The filter cloth will not stop this from happening. Some type of toe cut off wall to the hard material would be necessary to stop such erosion and loss of rock.

Also, the rock slope of 1 to 1, as shown on Section J-J is too steep, especially when placed on filter cloth. It would be better to have a 2 to 1 slope when using filter cloth to avoid slippage of the rock. The 1 to 1 slope is not stable when subject to wave action.

I have asked the geotechnical firm of Howard.Donley Associates, Inc. to review the geotechnical aspects of the plans which would include analysis of the rock refraction study. To date I have not received their review so I will file this report and then you can attach their review to it to complete the review.

Very truly yours,

H. Morgan Noble

H. Morgan Noble

HMN:mg

HOWARD • DONLEY ASSOCIATES, INC.

Consulting Engineers and Geologists

Howard F. Donley, President
RE C16961

Terry R. Howard, Vice-President
CEG 794

Idaho
Casper, Wyoming
Moscow, Idaho
Redwood City, California

609 Price Avenue, Suite 102 • Redwood City, California 94063-1472 • (415) 367-8744

November 17, 1983
0834-90

Mr. Morgan Noble
Noble Coastal and Harbor Engineering
98 Main Street, Suite 222
Tiburon, California 94920

RE: Geotechnical Review
Proposed Coastal Protection
Pacific Skies Estates
Pacifica, California
By Anil Butail, P.E.

Dear Mr. Noble:

INTRODUCTION

Pursuant to your request, we hereby submit the results of our geotechnical review for the referenced project. Items of concern included herein, to serve as an appendix to your overall review, stem from review of the project engineering report and design plans and calculations submitted by Mr. Anil Butail, consulting geotechnical engineer.

PROPOSED DESIGN

We understand that the proposed design concept is a row of drilled piers that extend from the northern property line, parallel to the existing bluff for a distance of 660± feet. A rock riprap seawall is proposed to extend for the remaining 135± feet of bluff frontage to the southern property line (refer to Sheet 1 of 3, Site Plan and Vicinity Map).

CONCERNS

Design and Construction Plans

1. Abrupt endpoints of the pier wall proposed for design at the north and south property lines will cause wave refraction. The design engineer must critically evaluate and address the potential for severe erosion of the weak terrace soil beyond the project limits.

2. "Bedrock" has been interpreted by the project consultant to occur within ten feet of the present beach surface based upon seismic velocity contrasts. Without empirical boring or test pit data, the inferred depths to bedrock must be considered minimums subject to verification during construction. This should be clearly reflected in pier design and understood that variable depths to bedrock are likely to be encountered during construction.

3. Scour of the present beach surface should be anticipated and effects of such reflected in passive pressure design for caisson and toe support design for riprap.

4. A 1:1 (horizontal to vertical) riprap slope is too steep.

5. Sonotubes for pier construction will be problematic within supersaturated beach sand and a depth greater than five feet due to squeezing and collapsing.

6. Six-to eighteen-inch diameter rock proposed for backfill behind the row of piers, will be subject to settlement and loss between pier spacing during severe storms.

24' min.

7. Surface drainage at the top of the bluff must be controlled and channeled to the street.

Design Calculations

1. Check area of active sliding block shown on Page 2, instead of 134 square feet as shown.

2. Active pressure against unsupported piers could be 25 feet or more depending on depth to bedrock. Passive resistance from beach sand may be lost due to erosion.

3. Equivalent fluid pressure should begin at top of piers only if the ground surface is flat and at same elevation as the top of the wall. A sloped embankment above the wall applies a surcharge load to the piers.

4. Net passive and active pressure is used to calculate depth of embedment into bedrock when using the cantilever wall design method.

5. A safety factor of two against overturning is normally included when calculating the depth of embedment.

If you have any questions regarding this report, please call.

Very truly yours,

Joel E. Baldwin, II, E.G.
Project Geologist

Vincent N. Pascucci

Vincent N. Pascucci, P.E.
Project Engineer

JEB/VNP/bl

Anil Butail, P.E.
Consulting Geotechnical Engineer
P.O. Box 24249 • San Jose, CA 95154
(408) 292-7707 (408) 723-0100

November 28, 1983
Project No. C-118

Mr. Steve Maki
California Coastal Commission
701 Ocean Street
Room 310
Santa Cruz, CA 95060

Subject - Request For Emergency Permit
Coastal Bluff Erosion Protection
Pacific Skies Estates
Pacifica, California

Dear Mr. Maki:

Recently, on behalf of Pacific Skies Estates, I submitted an application for a California Coastal Commission permit to construct a seawall along the coastal bluff within Pacific Skies Estates' property to reduce erosion and retreat of the bluff face.

This portion of the coastal bluff has suffered severe erosion during the last winter and as much as 80 feet of the property was lost due to storm and wave action. In addition, due to the bluff retreat, over 20 mobile homes had to be moved to prevent loss of these homes and the residents' belongings. Additional erosion is continuing to occur and may soon encroach upon the remaining mobile homes on the property. An emergency situation exists and the potential for property loss is increasing every day. If construction is not started very soon it is certain that additional property damage will occur.

To enable construction at the earliest possible date, we have also concurrently filed permit applications with the City of Pacifica and the Corps of Engineers. We have obtained a commitment from the Small Business Administration for funds for construction of the project. We have also obtained bids from several contractors and are in the process of negotiating a contract with a specific contractor. As you can see, we are ready to start construction at any time that the paperwork regarding the various permits required can be completed.

The project is part of the overall Shore Protection Master Plan of the City of Pacifica which has been approved by the Coastal Commission. This project is the third phase of the City's Master Plan. The first phase lies north of the site and construction was started recently. The second phase lies immediately to the south and construction is expected to start at any time. It is our understanding that going through the normal permit process will require approximately 2 months. A delay of this amount of time will most certainly result in considerable damage at the site. Hence, to reduce the immediate potential of damage to the site, and the possibility of human injury and loss of property, we request that an emergency permit be issued to us for construction of the planned erosion protection measures. This would be consistent with the City's Master Plan which has been approved by the Coastal Commission.

Thank you for your assistance and cooperation in getting this project started so that the residents of Pacific Skies Estates can live without the constant fear of losing their homes.

If you need any additional information from us in granting us an emergency permit, please call.

Sincerely Yours

Anil Butail, P.E.

AB:ab

cc: Mr. Clarence Dahlberg

May 3, 2016
BAGG Job No: BERGM-16-02

CRP PSE Seaside Pacifica Owner L.L.C.
5000 Birch Street
Palo Alto, California 94303

Geotechnical Engineering Investigation and Report Update
Proposed Improvement to
Pacific Skies Estates
1300 Palmetto Avenue
Pacifica, California

Dear Ms. Carissa Savant:

Transmitted herewith is our geotechnical engineering investigation report providing additional subsurface information and providing updates to the previously issued geotechnical report concerning the proposed improvements to Pacific Skies Estates, prepared by Earth Investigations Consultants, dated May 22, 2010. The following report addresses the geotechnical engineering aspects of the project as outlined in BAGG Engineers Proposal # 16-190r and summarizes the results of our subsurface exploration and laboratory testing, which formed the basis of our conclusions, and presents our recommendations related to the geotechnical engineering aspects of the proposed improvements.

SITE DESCRIPTION

The subject site is located at 1300 Palmetto Avenue and is bordered by Palmetto Avenue to the east, Pacific Ocean to the west, Sixth Avenue to the south and residential and commercial properties to the north. The site area is roughly rectangular in shape except in the northern 1/4th portion of the property where the coastline curves in a northeasterly direction. The site area has an elevation of 35 to 45 feet above mean sea level on a graded flat to very gentle, westerly sloping marine terrace surface. The bluff separating the property area from the Pacific Ocean to the west is protected by a riprap sea wall and concrete stich piers in the northern 1/4th portion of the property. The site area was improved with the mobile home park in the 1960's and at that time rip rap was placed along the beach to protect the bluff. Subsequently in

1983, concrete stich piers were installed in the northern portion of property to protect the bluff. It is our understanding that in 2011 the California Coastal Commission granted approval for the placement of additional rip rap to further protect the bluff. The site area houses 93 mobile cottages separated by 1st, 2nd, 3rd, and 4th avenues which roughly parallel Palmetto Avenue. 5th Avenue, 6th Avenue, and Dahlberg Drive also run though the subject property but in the direction perpendicular to Palmetto Avenue.

PROJECT DESCRIPTION

It is our understanding that the proposed project includes upgrading the existing utilities and improving the paved drive isles on the property, removal of the existing club house building and ancillary structures including the carwash, pool, restrooms and laundry facilities. The proposed project also includes realigning the lots to allow for the replacement of homes and to accommodate construction of the proposed bluff top trail. Review of the preliminary Lot Grading Plan issued by Siegfried Architecture and Engineering on December 8, 2015 indicates that as part of the improvements to Pacific Skies Estates, Fourth Avenue will be removed and the lots west of Third Avenue will be reconfigured and located further back to the east to allow for more open space and the construction of a trail along the top of the bluff. We further understand that similar improvements depicted in a Site Improvements Plan issued by R.T. Quinn & Associates on July 29, 2013 have been approved by the State of California Department of Housing and Community Development Division of Codes and Standards, Permit #14436, dated August 26, 2013. It is also our understanding that the mitigation of bluff retreat and enhancement of bluff stability will be evaluated by another firm.

Since the building loads are expected to be relatively light, the gravity loads will be supported on adjustable jacks supported on 2-inch thick, pressure-treated wooden planks similar to the existing cottages. The uplift loads will be supported by connecting the cottage structures with ground anchors, once again, similar to the current arrangement. According to the above referenced grading plan, prepared by Siegfried Architecture and Engineering, dated December 8, 2015, the proposed site grading will consist of minimal cuts and fills on the order of 1 foot or less.

PURPOSE AND SCOPE OF SERVICES

As stated above, a geotechnical report for the proposed project has been prepared by Earth Investigations Consultants (EIC) in May 2010. BAGG reviewed the report prepared by EIC, performed additional subsurface investigation, and updated the May 2010 report. This report includes our conclusions, opinions, and recommendations regarding:

- Seismicity of the project site, including appropriate soil profile type and other seismic parameters per the 2013 Edition of the California Building Code.
- Specific soil conditions discovered by our exploratory pits, such as loose, saturated, expansive, or sensitive soils that may require special mitigation measures or impose restrictions on the project.
- Appropriate grading recommendations for preparation of the pavement subgrade and building pads, walkway subgrades, and placement of fills and backfills, including soil treatment with lime or cement, if deemed necessary.
- Recommendations for foundation support of proposed structures and associated improvements with vertical and lateral bearing and design criteria under both static and seismic conditions.
- Recommendations for subgrade preparation and baserock placement for pavement components, to include conventional asphaltic concrete paving with or without treated subgrade.
- Excavation and backfill criteria for utility trenches.
- Criteria for the support of slab-on-grade floors and exterior flatwork.
- General provisions for the control of surface and subsurface drainage.

Based on our understanding of the proposed project, the scope of our geotechnical engineering services consisted of the following specific tasks:

- Visited the site, marked the exploration pit locations, and contacted Underground Service Alert.
- Reviewed available geologic and geotechnical reports including geologic maps and reports pertinent to the site and immediate vicinity.
- Reviewed the preliminary lot grading plan issued by Siegfried Architecture and Engineering, dated December 8, 2015.
- Explored subsurface conditions at six (6) locations within the site with a backhoe. The exploration pits were excavated to depths of about 4 to 6 feet. The exploration was directed by one of our geologists, who maintained a continuous log of the materials encountered, and obtained disturbed bulk samples of the subsurface materials for laboratory testing.
- Following exploration process, the exploration pits were backfilled with previously removed soil.

- Performed a laboratory testing program on the collected soil samples to evaluate the engineering characteristics of the subsurface soils. Tests included Atterberg Limits, wash over #200 sieve, and particle size distribution, as judged appropriate.
- Performed engineering analyses based on the results obtained from the above tasks and oriented towards the above-stated purpose of the investigation.
- Prepared an updated report summarizing our findings and recommendations, including a vicinity map, a site plan, an area geologic map, a regional fault map, exploration pit logs, our laboratory test results, and our conclusions, opinions, and recommendations.

SUBSURFACE INVESTIGATION AND LABORATORY TESTING

As a part of the current investigation, six (6) exploration pits were excavated to a maximum depth of 6 feet using a backhoe at the approximate locations shown on Plate 2, Site Plan. The exploration process consisted of scooping out the subsurface materials using a backhoe bucket and bringing it to the surface for visual examination. Soil layers distribution within the exploration pits was logged through visual examination of exploration pit walls and field classification of soil retrieved to the surface. Representative bulk samples of subsurface materials encountered in the exploration pits were collected in polythene bags and transported to our laboratory for testing. The soil samples were tested to measure Atterberg Limits, and grain size distribution. Logs of exploration pits are included in Appendix A. The results of laboratory tests are summarized on the logs of exploration pits.

SEISMIC SETTING

The site and the San Francisco Bay Area lie within the Coast Ranges geomorphic province, a series of discontinuous northwest trending mountain ranges, ridges, and intervening valleys characterized by complex folding and faulting. These faults are in a zone that extends eastward from off the Pacific Coast through the San Francisco Bay area to the western side of the Great Valley. This region has one of the highest rates of seismic moment release per square mile of any urban area in the United States. It is emerging from the stress shadow of the 1906 San Francisco Earthquake and future large earthquakes are considered a certainty.

Three, northwest-trending major earthquake faults that comprise the San Andreas fault system, extend through the Bay Area. They include the San Andreas fault, the Hayward-Rodgers Creek fault, and the Calaveras fault, respectively located approximately 2.0 km (1.2 miles) northeast,

31.7 km (19.7 miles) northeast, and 45.5 km (28.3 miles) northeast of the site. The subject site is not located within an Alquist-Priolo zone and no active faults traverse the site. There has been no history of reported ground or building failure at or around the site during a seismic event on the nearby faults.

The San Andreas and Hayward-Rodgers Creek faults are believed to be the principal seismic hazards in this area because of their activity rates and proximity to the site. The Working Group on California Earthquake Probabilities (2014) has estimated that the probability for a major earthquake (Mw 6.7 or greater) within 30 years on the nearby Peninsula Section of the San Andreas Fault is about 7 percent and about 33 percent for a similar earthquake located anywhere on the Northern San Andreas Fault. The Working Group on California Earthquake Probabilities (2014) has estimated that the probability for a major earthquake (Mw 6.7 or greater) within 30 years on the nearby Northern Section of the Hayward fault is about 14 percent and about 32 percent for a similar earthquake located anywhere on the Hayward-Rodgers Creek Fault.

Other significant regional faults are of greater distance, or have lesser probabilities of a major earthquake in the next 30 years or so. Of particular importance are the Pilarcitos and San Gregorio faults located approximately 4.0 km (2.5 miles) southwest and 5.7 km (3.5 miles) west-southwest of the subject property, respectively. The Pilarcitos fault reportedly has a 0.2 percent probability and the San Gregorio fault reportedly has a 2.7 percent probability for a magnitude 6.7 or greater in 30 years. In addition, the Northern section of the Calaveras Fault, located approximately 45.5 km (28.3 miles) northeast of the site, reportedly has a 7 percent probability a magnitude 6.7 or greater in 30 years and about 25 percent for a similar size earthquake located anywhere on the Calaveras Fault.

The predominant seismic hazard at this site will be from shaking caused by a large earthquake. ABAG (Association of Bay Area Governments) has published earthquake intensity maps that indicate the scenario earthquake listed for the entire northern San Andreas Fault (1906-size earthquake) would produce a "violent" shaking intensity, and the Peninsula Segment of the San Andreas Fault would produce a "very strong" to "violent" shaking intensity at the site. The shaking resulting from a scenario earthquake on the Hayward-Rodgers Creek fault will be "moderate" in nature. The shaking resulting from a scenario earthquake on the San Gregorio fault will be "very strong" in nature and the shaking resulting from a scenario earthquake on the Calaveras fault will be "light" to "moderate" in nature.

The distances to the major active faults from the project site and the estimated probability of a $M_w \geq 6.7$ within 30 years for each fault are listed on the following table.

Table 1
Distance and Estimated Probabilities of Magnitude 6.7 Earthquake

Fault	Distance from the Site (miles)	Direction	Estimated Probability of Magnitude 6.7 Earthquake
San Andreas (Entire)	1.2	NE	33%
San Andreas (Peninsula)	1.2	NE	7%
Pilarcitos	2.5	SW	0.2%
San Gregorio	3.5	W-SW	2.7%
Hayward (Entire)	19.7	NE	32%
Hayward (North)	19.7	NE	14%
Calaveras (North)	28.3	NE	7%

A seismic hazard zone map for the site has not yet been generated by the State of California; however, according to the Association of Bay Area Governments, the site has a "low" to "moderate" liquefaction susceptibility.

GEOLOGIC SETTING

The subject site is located immediately adjacent to Pacific Ocean in Pacifica, California. A review of the "Geology of the Onshore Part of San Mateo County, California, derived from the Digital Database Open File 98-137, by E.E. Brabb, R.W. Graymer, and D.L. Jones indicates that the site is underlain by Younger (Outer) Alluvial Fan Deposits (Qyfo) of the Holocene Epoch. The Qyfo materials are reported to consist of unconsolidated fine sand, silt, and clayey silt. The younger alluvial fan deposits in the vicinity of the site are underlain by Holocene age sand dune and beach deposits consisting of predominantly loose, medium- to coarse-grained, well sorted sand. A map showing the Regional Geologic Map is included herein as Plate 3.

According to Bonilla (1998), and Leighton Associates (1976) the site area is underlain by unconsolidated to semi-consolidated, terrestrial sediment exposed in the sea cliff to the north of the site. It can generally be described as indistinctly bedded to massive medium dense to dense, gravelly, fine- to medium-grained sands, and stiff to hard clays with variable amount of sand and gravel, sandy gravels, and sandy clays. The granular sediment contains matrix supported, fine- to coarse-grained angular gravels. The upper sands reflect local cross bedding.

A boring drilled in 1996 by Treadwell and Rollo in the southwest margin of the site encountered 67 feet of interbedded colluvial/alluvial clays and sands with less gravel beneath approximately 2½ feet of dune sand and 3 feet of undocumented fill (EIC, 2010).

SUBSURFACE SOIL AND GROUNDWATER CONDITIONS

As a part of our subsurface exploration, a total of 6 exploration test pits were excavated at the site on March 21, 2016. Please note that the ground surface elevations at Exploration Test Pit TP-1 (southern portion of the site) is approximately 10 feet lower than the ground surface elevation at Exploration Test Pit TP-5 located in the northern portion of the site. With the exception of TP-5, the exploration pits revealed the presence of clayey sand in the top approximately 2 feet underlain by poorly graded sand and silt mixes to the final depth of exploration (approximately 6 feet). Exploration Test Pit TP-5 revealed the presence of mostly sandy clay with Liquid Limit of 36 and Plasticity Index of 20. Based on the presence of manmade objects in the top approximately 2 feet thick soil layer, it was interpreted to be imported fill. The Liquid Limit of the clayey sand layer encountered in the top 2 feet at the site was measured to be 29 with a Plasticity Index of 14 indicating the near surface soils have a low shrinkage/swelling potential. The poorly graded sands below the top approximately 2 feet bgs contained more than 95 percent sand. Details of the subsurface soil conditions encountered at the site are shown on the Logs of Exploration Test Pits included in Appendix A.

Groundwater was not encountered in any of the exploration pits excavated at the site. Please note that the site elevations range from 35 to 45 feet above mean sea level and the site is located immediately adjacent to Pacific Ocean, the depth to groundwater may be more than 30 feet bgs. Perched water table may be encountered locally across the site during the wet season.

CBC 2013 SEISMIC DESIGN PARAMETERS

Based on the review of the cut slopes around the site, the soil profile at the site was classified as a Class "D", defined as a "stiff soil" profile with an average shear wave velocity in the range of 600 to 1200 feet per second (180 to 360 m/s), average Standard Penetration Test (N) values in the range of 15 to 50, and/or average undrained shear strength in the range of 1,000 to 2,000 psf in the top 100 feet of the soil profile.

Using the site coordinates of 37.6412 degrees North Latitude and 122.4933 degrees West Longitude, earthquake ground motion parameters were computed in accordance with 2013 California Building Code are as listed in the following table.

Parameters for Seismic Design

2013 CBC Site Parameter	Value
Site Class,	Stiff Soil, Class D
Mapped Spectral Acceleration for Short Periods S_s	2.203 g
Mapped Spectral Acceleration for a 1-second Period S_1	1.051 g
Site Coefficient F_a	1.00
Site Coefficient F_v	1.50
Site-Modified Spectral Acceleration for short Periods S_{MS}	2.203 g
Site-Modified Spectral Acceleration for a 1-second Period S_{M1}	1.576 g
Design Spectral Acceleration for short Periods S_{DS}	1.469 g
Design Spectral Acceleration for short Periods S_{D1}	1.051 g

CONCLUSIONS AND RECOMMENDATIONS

General

Based on the results of our subsurface exploration and laboratory testing, it is our opinion that the proposed project is feasible from a geotechnical engineering standpoint, provided the recommendations presented in this report are incorporated into the project design and implemented during construction. Based on a review of the soil conditions revealed by our exploration pits and the previously drilled borings at the site by other consultants and the results of laboratory tests performed on the samples collected site, it is our opinion that the proposed cottages, mobile homes, garages, and carports may be supported on conventional spread/strip footings. Temporary loads may be supported on foundation jacks resting on treated wood plans placed directly on the ground surface. Detailed site grading and foundation design recommendations are included in the following sections of the report.

The site could experience very strong ground shaking from future earthquakes during the anticipated lifetime of the project. The intensity of ground shaking will depend on the magnitude of earthquake, distance to epicenter, and response characteristics of the on-site soils. While it is not possible to totally prelude damage to structures during major earthquakes, strict adherence to good engineering design and construction practices will help reduce the risk to damage. The 2013 California Building Code defines the minimum standards of good engineering practice.

The site area is located adjacent to the Pacific Ocean and the general site vicinity has experienced on-going bluff retreat. During the site visit in March 2016, we observed that the coastal bluff in the vicinity of the subject site has retreated more than 20 feet inland just in the past year. It is our understanding that the mitigation of bluff retreat and enhancement of bluff stability will be evaluated by another firm.

Site Grading

Review of the preliminary site grading plan prepared by Siegfried Architecture and Engineering, dated December 8, 2015, indicates that the majority of the site grading will involve minor cuts in order to prepare a subgrade for the on-site streets, installation of new utilities, preparation for the replacement of cottages and mobile homes and for the construction of garages and carports. As used in this report, the term "compact" and its derivatives mean that all native site soils in the areas of the proposed improvements should be compacted to a minimum of 90 percent of the maximum dry density, at moisture content that is slightly above optimum, as determined by ASTM Test Method D1557. In the areas of the proposed improvements, the aggregate baserock layer should be compacted to a minimum of 95 percent relative compaction. In the areas where the poorly graded sand is exposed at the surface, it may be necessary to add some binding agent, such as cement, to hold together the soil matrix and allow compaction. Detailed recommendations related to soil cement mixing are provided in the following sections of the report.

It is our understanding that the previously existing swimming pool and clubhouse buildings have been demolished backfilled. While BAGG Engineers was not involved in the removal and backfilling of the clubhouse and swimming pool area, it is our understanding that the backfill is interim. Since the above referenced grading plan by Siegfried Architecture and Engineering, dated December 8, 2015, indicates that several residences are planned in the area of the former clubhouse and swimming pool, we recommend that the area be regraded per the following recommendations:

Any existing decks and utility lines around the former swimming pool should be removed. The swimming pool shell should be removed to a minimum depth of 3 feet below the final finished grade. The remaining portion of the swimming pool shell should be broken in place so it does not act as a barrier to percolating surface water. The swimming pool area should then be backfilled with on-site fill placed in thin lifts not exceeding 8 inches in loose thickness. The fill material should be compacted to a minimum of 90 percent relative compaction at a moisture content that is slightly above optimum. Fill material in the top three feet should be flared out

into the areas extending a minimum of three feet beyond the perimeter of the removed pool. BAGG Engineers should be allowed an opportunity to measure the in-place relative compaction of the fill material.

The following grading procedures should be followed for preparation of the areas to receive fill:

- Prior to placing fill, scarify the exposed surfaces to depth of 6 to 8 inches.

- Thoroughly moisture condition the scarified surfaces to a moisture content that is a minimum of 3 percent over optimum, and re-compact as specified above. Further excavate as necessary any area still containing weak and/or yielding (pumping) soils, as determined in the field by the Geotechnical Engineer.

- Place fill on any over-excavated surfaces and in the holes/depressions created by the above actions in uniformly moisture conditioned and compacted lifts not exceeding 8 inches in loose thickness. Rocks or cobbles larger than 3 inches in maximum dimensions should not be allowed to remain within the foundation areas, unless they can be crushed in-place by the construction equipment.

The native soils are suitable for use as structural fill. Imported, non-expansive fill soils, if needed, should be predominately granular in nature and should be free of organics, debris, and rocks over 3 inches in size, and should be approved by the Geotechnical Engineer before importing to the site. As a general guide to acceptance, imported soils should have a Plasticity Index less than 15, and an R-value of at least 20, and fines content between 15 and 60 percent. All aspects of site grading including clearing/stripping, demolition, pad preparation, and placement of fills or backfills should be performed under the observation of BAGG's field representatives.

It must be the Contractor's responsibility to select equipment and procedures that will accomplish the grading as described above. The Contractor must also organize his work in such a manner that one of our field representatives can observe and test the grading operations, including clearing, excavation, compaction of fill and backfill, and compaction of subgrades.

Foundations

Provided site grading has been performed as recommended above, the permanent loads at the site may be satisfactorily supported on conventional spread footing foundations. The footings should be established a minimum of 18 inches below the lowest adjacent grade, and should not

be less than 12 inches in width. With these dimensions, footings may be designed using allowable bearing pressures of 2,500 pounds per square foot (psf) for dead loads, and 3,000 psf for total design loads. The latter value may be increased by one-third for short-term wind and seismic loads. All footings should be appropriately reinforced with top and bottom reinforcing steel.

The bottom of footing excavations should be firm, clean, and free of any loose or yielding soils. To the extent possible, footings should be poured in neat excavations without the use of side forms and the soils exposed in the excavations should not be allowed to dry out or crack before concrete placement. Any dry and cracked soils should be excavated and replaced with properly-compacted fill soils or lean concrete.

Lateral loads, such as wind or seismic may be resisted by passive earth pressures acting on the sides of foundations members which have been poured in neat excavations. The allowable passive resistance to wind or seismic loads may be taken as an equivalent fluid pressure of 300 pcf (triangular). A coefficient of friction of 0.35 may be used between the soil and concrete in conjunction with the passive soil pressure for resisting the lateral loads.

Temporary loads from the cottages may be supported on properly installed isolated foundation members placed directly on compacted soil. These isolated foundations should be sized for an allowable bearing pressure of 1,000 psf for dead plus live loads.

Uplift loads may be supported using ground anchors embedded a minimum of 3 feet into the ground. BAGG should be allowed an opportunity to review the design of ground anchors prior to their use at the site. The purpose of our review will be to evaluate the validity of the geotechnical parameters used for the design of ground anchors. Pilot testing may be required to measure the uplift capacity of the ground anchors prior to their use at the site.

Slabs-on-Grade and Exterior Flatwork

The top 12-inches of the soil subgrade in the areas to receive concrete slab-on-grade should be compacted to a minimum of 90 percent relative compaction and a moisture content that is slightly above optimum. The subgrade should be maintained at the proper moisture content until the concrete is poured, and should be approved by the Geotechnical Engineer immediately before the slab is poured. The slab should be reinforced as per the project Structural Engineer's recommendations.

In areas where moisture on the slab surface would be undesirable, 4 inches of approved, clean, free draining angular gravel should be placed beneath the concrete slab. The base course is intended to serve as a capillary break; however, moisture may accumulate in the base course zone. Therefore, a vapor barrier with a thickness of at least 15 mil (such as, Stegowrap or an approved equivalent) should be placed on the gravel base if moisture protection and a dry floor slab are desirable. The vapor barrier should be installed and sealed per the manufacturer's recommendations. The concrete slabs-on-grade should have a minimum thickness of 4-inches in non-traffic areas and 5-inches in the areas where vehicular traffic is anticipated.

Drainage

Site drainage should be considered an integral part of the proposed project. The ground surface of the proposed improvement areas should be graded to facilitate runoff flow into existing or proposed catch basins or area drains. In landscaped areas the ground should slope away from adjacent structures at 5 percent for a distance of at least 5 feet. Paved areas should slope away from the structures at 2 percent for a distance of at least 5 feet. Any area where surface run-off becomes concentrated should be provided with a catch basin. The collected runoff from the catch basins should be discharged in a manner that will not cause erosion or saturation of soils in the vicinity of foundations. The downspouts from the cottages should be intercepted and collected in a closed pipeline system to facilitate quick removal of any surface water away from the building area.

Utility Trench Backfill

The utility trenches may be backfilled with on-site soils, provided they are free of debris, roots and other organic matter, and rocks or lumps exceeding 3 inches in greatest dimension. The fill material should be uniformly moisture conditioned to the proper moisture content and compacted as per the recommendations included in the "Site Grading" section of this report. The utility lines should be properly bedded and shaded with granular material, such as, sand or pea gravel. As a general rule, the bedding layer should be about 4 inches thick. The utility lines should be shaded with the granular materials to a minimum of 4 inches above the utility line. The bedding and shading layers should be compacted using a vibratory compactor. The contractor should use extreme caution with the vibratory compactor on the shading layer because excessive vibrations and/or imbalanced shading materials could result in loosening of the pipe joints.

In order to avoid accumulation of surface water runoff in the utility trenches, the top 12 inches of the utility trench backfill should consist of uniformly moisture conditioned, and compacted, on-site clayey soils with lower permeability. BAGG Engineers should be contracted to observe the trench backfill operations and perform field compaction tests to evaluate the moisture content and relative compaction of the backfill materials.

Alternatively, the utility trenches may be backfilled with flowable fill (a cementitious slurry consisting of a mixture of fine aggregate or filler, water, and cementitious material(s)) capable of filling all voids in irregular excavations and hard to reach places. The flowable fill is self leveling material that hardens in a matter of few hours without the need for compaction in layers. Flowable fill is sometimes referred to as controlled density fill (CDF), controlled low strength material (CLSM), or lean concrete slurry. A 1- to 2-sack flowable fill material is considered acceptable for this project.

Vertical trenches deeper than 5 feet will require temporary shoring. Where shoring is not used, the sides should be sloped or benched, with a maximum slope of 1:1 (horizontal: vertical). The trench spoils should not be placed closer than 3 feet or one-half of the trench depth (whichever is greater) from the trench sidewalls. All work associated with trenching must conform to the State of California, Division of Industrial Safety requirements.

Any proposed utility trenches located parallel to footings for the proposed cottages, mobile homes, garages or carports should not extend below an imaginary 1H:1V plane projected downward from the base of adjacent footing. If deeper utility trenches are located adjacent to the footings, the footing depths should be increased so that the utility trench excavation is above this imaginary plane.

Flexible Pavements

It is our understanding that as a part of the proposed development the existing onsite pavements may be rehabilitated. In addition, the grading plan prepared by Siegfried Architecture and Engineering, dated December 8, 2015, indicates that Fourth Avenue is to be demolished to allow for construction of a proposed pedestrian pathway in approximately the same area. In our opinion the most economical and expeditious way to upgrade the pavements and allow for construction of the proposed pathway would be to pulverize the existing pavement in place and thoroughly mix it with the top 12 inches of soil subgrade. Upon mixing the pulverized pavement with the soil subgrade, the subject section of the pavement should be regraded to 3 inches below the top of pavement graded. Once the subgrade is graded, it should be thoroughly mixed with 5 percent cement (by weight, assuming the dry unit weight of

the underlying soil to be 115 pcf) and moisture conditioned as necessary to achieve near optimum moisture content. Once mixed with cement, the subgrade should be compacted to a minimum of 95 percent relative compaction, relative to maximum dry density using ASTM D1557.

Using the design methodology described in Caltrans Highway Design Manual, the thickness of the asphalt concrete on top of 12-inch thick soil layer with a conservatively assumed R-value of 65, the thickness of asphalt concrete layer was calculated to be 3 inches. Since the pavement section may not include an aggregate baserock layer and in order to minimize projection of expansion cracks potentially appearing in the cement treated soil subgrade through the asphalt concrete layer, we recommend that a layer of glass grid be added in the middle of the 3-inch thick asphalt concrete layer. The glass grid should be installed as per the manufacturer's recommendations.

During the site grading, ruts and depressions resulting from removal of utilities or any yielding area should be cleaned down to firm soil. The bottom of resulting depression should be scarified to a depth of 8 inches and compacted to a minimum of 95 percent relative compaction and sufficiently wet of optimum. The depressions should be backfilled with approved structural fill which should also be compacted to a minimum of 95 percent relative compaction.

Plan Review

It is recommended that the Geotechnical Engineer (BAGG Engineers) be retained to review the final grading, foundation, and drainage plans. This review is to assess general suitability of the earthwork, foundation, and drainage recommendations contained in this report and to verify the appropriate implementation of our recommendations into the project plans and specifications.

Observations and Testing

It is recommended that the Geotechnical Engineer (BAGG Engineers) be retained to provide observation and testing services during site grading, excavation, backfilling, and foundation construction phases of work. This is intended to verify that the work in the field is performed as recommended and in accordance with the approved plans and specifications, as well as verify that subsurface conditions encountered during construction are similar to those anticipated during the design phase. Changed or unanticipated soil conditions may warrant revised recommendations. For this reason, BAGG cannot accept responsibility or liability for

the recommendations in this report if we are not given the opportunity to provide observation and testing services during site grading and foundation construction.

CLOSURE

This report has been prepared in accordance with generally-accepted engineering practices. The recommendations presented in this report are based on our understanding of the proposed construction as described herein, and upon the soil conditions encountered in the boring performed for this investigation.

The conclusions and recommendations contained in this report are based on subsurface conditions revealed by the exploration pits and a review of available geotechnical and geologic literature pertaining to the project site. It is not uncommon for unanticipated conditions to be encountered during site grading and/or foundation installation and it is not possible for all such variations to be found by a field exploration program appropriate for this type of project. The recommendations contained in this report are therefore contingent upon the review of the final grading, drainage, and foundation plans by this office, and upon geotechnical observation and testing by BAGG of all pertinent aspects of site grading, including demolition, placement of fills and backfills, foundation construction, and preparation of subgrades, including maintenance of suitable moisture content during construction.

Soil conditions and standards of practice change with time. Therefore, we should be consulted to update this report, if the construction does not commence within 18 months from the date that this report is submitted. Additionally, the recommendations of this report are only valid for the proposed development as described herein. If the proposed project is modified, our recommendations should be reviewed and approved or modified by this office in writing.

The following references and plates are attached and complete this report:

Appendix A
Exploration Test Pit Logs
Unified Soil Classification System
Soil Terminology
Lab Notes

Plates

Plate 1	Vicinity Map
Plate 2	Site Plan
Plate 3	Regional Geologic Map
Plate 4	Regional Fault Map

ASFE document titled "Important Information About Your Geotechnical Engineering Report"

References:

1) Earth Investigations Consultants, Preliminary Geotechnical Investigation (report), Improvements to Pacific Skies Estates, 1300 Palmetto Avenue, Pacifica, California, dated May 22, 2010.

2) Brabb, E.E., Graymer, R.W., Jones, D.L., Geology of the Onshore Part of San Mateo County, California: Derived from the Digital Database, Open File Report 98-137.

3) Bonilla, M.G., 1998, Preliminary geologic map of the San Francisco south 7½ minute quadrangle and part of the Hunters Point 7½ minute quadrangle, San Francisco Bay Area, California, a digital database: U.S. Geological Survey Open File Report 98-354.

4) Leighton and Associates, 1976, Geotechnical Hazards synthesis map of San Mateo County, California: Geotechnical consultant's June report to the San Mateo County Planning Department, Sheet 1, scale 1:24,000.

We thank you for the opportunity to perform these services. Please do not hesitate to contact us, should you have any questions or comments.

Very truly yours,
BAGG Engineers

Evan Wolf
Project Geologist

REGISTERED PROFESSIONAL ENGINEER
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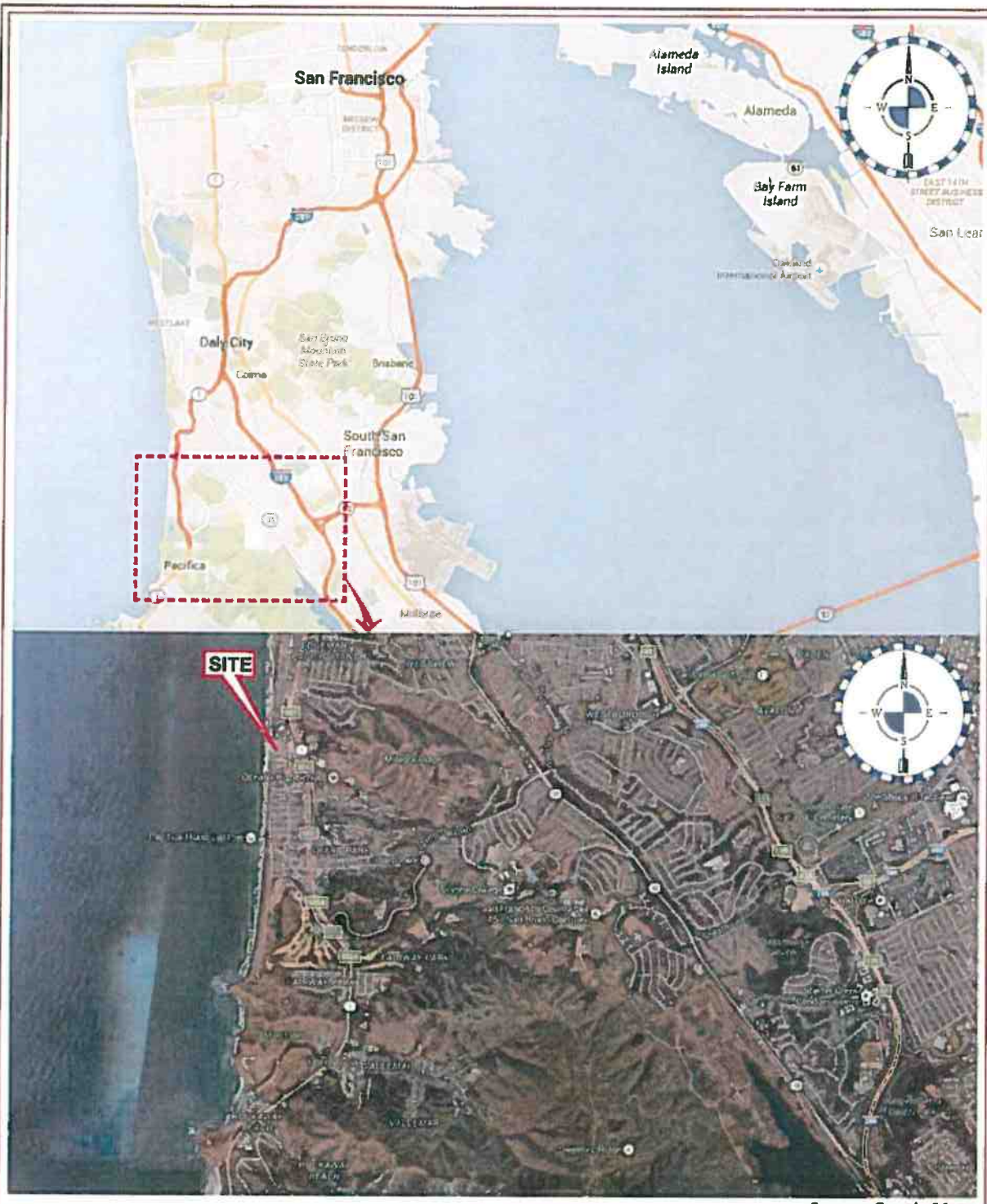
Senior Geotechnical Engineer

AS
Distribution: 2 copies to addressee

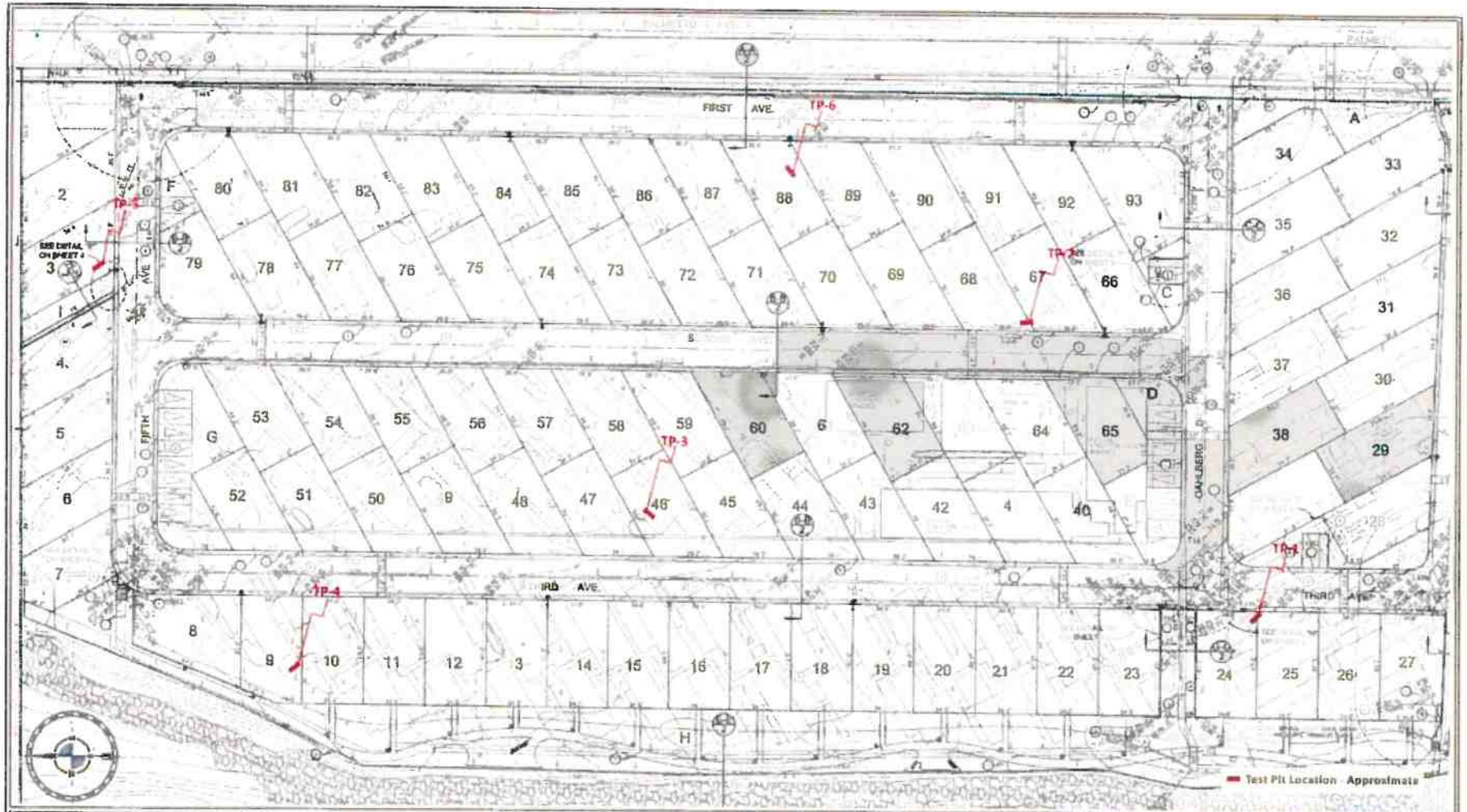
BAGG ENGINEERS



Source: Google Maps

GEOTECHNICAL ENGINEERING INVESTIGATION **PACIFIC SKIES ESTATES IMPROVEMENTS** **1300 PALMETTO AVENUE** **PACIFICA, CALIFORNIA**	**VICINITY MAP**		
	DATE: **April 2016**	**JOB NUMBER:** **BERGM-16-02**	**PLATE** **1**

BvGG ENGINEERS



Base: "Pacific Skies Mobile Estates, Sheet No. 3 & 4, R.T. Quinn & Associates Project #209008.100," Pacific Skies Mobile Estates, 1300 Palmetto Ave., Pacifica, CA 94044, dated 7/29/201

GEOTECHNICAL ENGINEERING INVESTIGATION
PACIFIC SKIES ESTATES IMPROVEMENTS
1300 PALMETTO AVENUE
PACIFICA, CALIFORNIA

BAGG ENGINEERS

SITE PLAN

JOB NO	SCALE	DATE	PLATE
BERGM-16-02	1"=50'	April 2016	2

LEGEND

Qcl **Colluvium (Holocene)** – Loose to firm, friable, unsorted sand, silt, clay, gravel, rock debris, and organic material in varying proportions.

Qyfo **Younger (outer) alluvial fan deposits (Holocene)** – Unconsolidated fine sand, silt, and clayey silt

Qcl **Colluvium (Holocene)** – Loose to firm, friable, unsorted sand, silt, clay, gravel, rock debris, and organic material in varying proportions

Qs **Sand dune and beach deposits (Holocene)** – Predominantly loose, medium- to coarse-grained, well-sorted sand but also includes pebbles, cobbles, and silt. Thickness less than 6 m in most places, but in other places may exceed 30 m

Qof **Coarse-grained older alluvial fan and stream terrace deposits (Pleistocene)** – Poorly consolidated gravel, sand, and silt, coarser grained at heads of old fans and in narrow canyons

QTm **Merced Formation (lower Pleistocene and upper Pliocene)** – Medium-gray to yellowish gray and yellowish orange, medium- to very fine-grained, poorly indurated to friable sandstone, siltstone, and claystone, with some conglomerate lenses and a few friable beds of white volcanic ash. In many places sandstone is silty, clayey, or conglomeratic.

fs **Sandstone** – Greenish-gray to buff, fine- to coarse-grained sandstone (graywacke), with interbedded siltstone and shale. Total thickness of unit is unknown but is probably at least many hundreds of meters

fg **Greenstone** – Dark-green to red altered basaltic rocks, including flows, pillow lavas, breccias, tuff breccias, tuffs, and minor related intrusive rocks, in unknown proportions. Unit includes some Franciscan chert and limestone bodies that are too small to show on map. Greenstone crops out in lenticular bodies varying in thickness from a few meters to many hundred of meters.

Reference: Geology of the Onshore Part of San Mateo County, California: Derived From the Digital Database Open-File 98-137, by E.E. Brabb, R.W. Graymer, and D.L. Jones, 1998.

GEOTECHNICAL ENGINEERING INVESTIGATION PACIFIC SKIES ESTATES IMPROVEMENTS 1300 PALMETTO AVENUE PACIFICA, CALIFORNIA	REGIONAL GEOLOGY MAP		
	DATE: April 2016	JOB NUMBER: BERGM-16-02	PLATE 3

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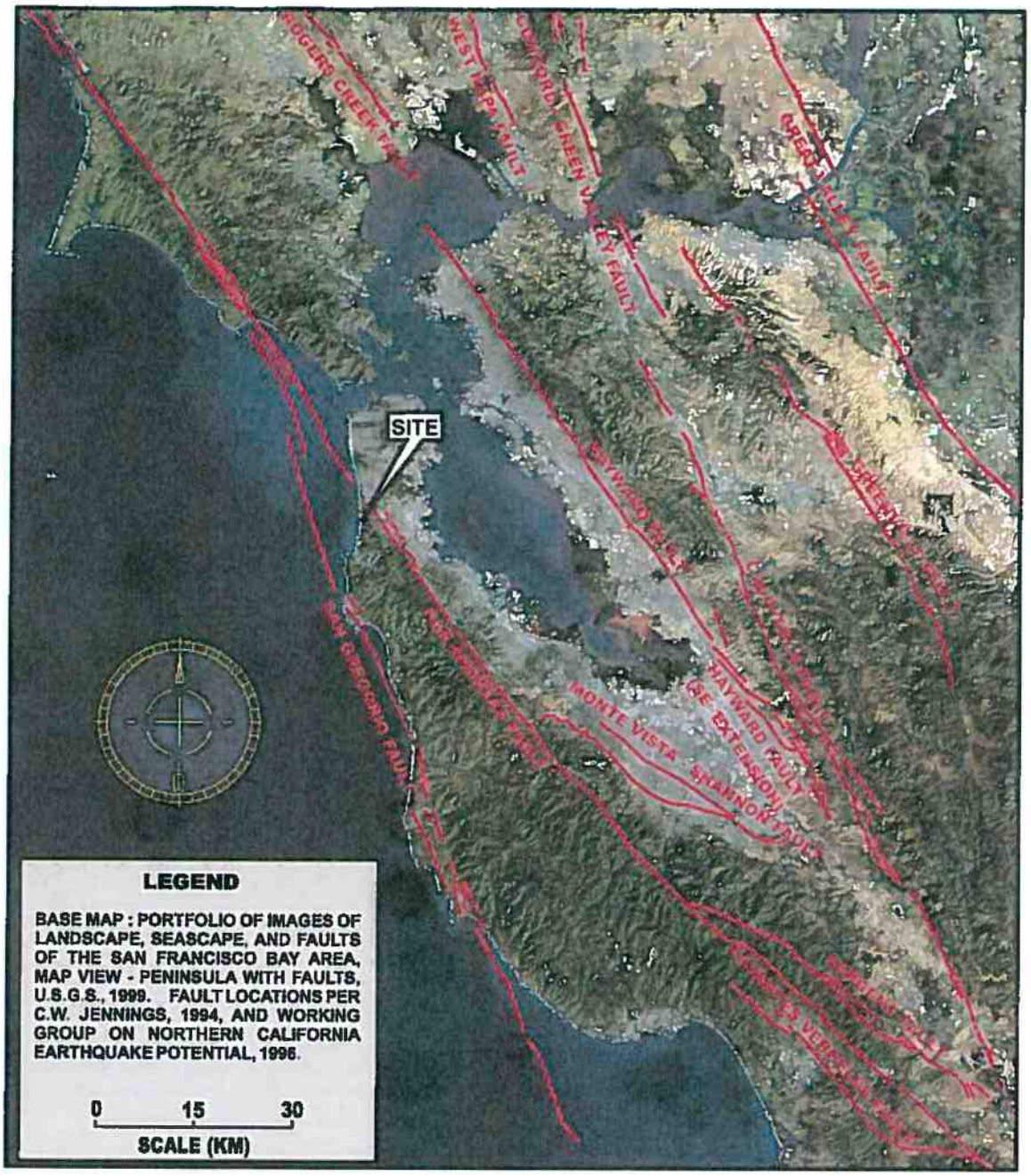

GEOTECHNICAL ENGINEERING INVESTIGATION PACIFIC SKIES ESTATES IMPROVEMENTS 1300 PALMETTO AVENUE PACIFICA, CALIFORNIA	**REGIONAL FAULT MAP**		
	DATE: April 2016	JOB NUMBER: BERGM-16-02	PLATE 4

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APPENDIX A

Exploration Test Pit Logs

Test Pit TP-1

0-¼': Aspahalt

¼'-¾':GRAVELLY SAND WITH CLAY (SC): orange-brown, medium dense, very moist, medium- to coarse-grained sand, little fine-grained sand, angular to subangular fine gravel, trace angular coarse gravel (Fill)

¾'-1½':CLAYEY SAND WITH GRAVEL (SC): medium brown to orange-brown, medium dense, moist , fine- to coarse-grained sand (well graded), some angular to subangular fine gravel, trace coarse gravel (Fill)

%Gravel=40
%Sand=47.5
%Fines=12.5

1½'-5': POORLY GRADED SAND (SP): yellow-brown, loose to medium dense, slightly moist to moist, fine-grained sand, trace medium-sand

%Sand=99.7
%Fines=0.2

Test Pit TP-2

0-¼': CLAYEY SAND (SC): medium brown to gray-brown, medium dense, slightly moist, fine- to medium-grained sand, little coarse-grained sand, few to little subangular to subrounded fine gravel (Fill)

¼'-1':CLAYEY SAND WITH GRAVEL (SC): orange-brown, medium dense, moist, fine-grained sand, few medium-grained sand, few coarse-grained sand, few subangular fine gravel, trace angular to subangular coarse gravel (Fill)

1'-1½':SANDY CLAY (CL): gray-brown, to olive-brown, stiff, moist, very fine- to fine-grained sand, few angular to subangular medium- to coarse-grained sand (Fill)

1½'-4½': POORLY GRADED SAND (SP): yellow-brown to medium-brown, loose to medium dense, slightly moist to moist, fine-grained sand, trace medium-grained sand

%Sand=99
%Fines=1

Test Pit TP-3

0-¼': CLAYEY SAND (SC): medium brown to gray-brown, medium dense, slightly moist, fine- to medium-grained sand, little coarse-grained sand, few to little subangular to subrounded fine gravel (Fill)

¼'-¾':GRAVELLY SAND WITH CLAY: orange-brown, medium dense, very moist, medium- to coarse-grained sand, little fine-grained sand, angular to subangular fine gravel, trace angular coarse gravel (Fill)

PI=22
LL=43

¾'-2':CLAYEY SAND WITH GRAVEL (SC): olive-gray, dense, moist, fine- to medium-grained sand, little to some coarse-grained sand, few to little angular to subangular fine gravel, trace to few angular to subangular coarse gravel (Fill)

2'-2¾': POORLY GRADED SAND (SP):medium-brown to reddish brown, loose to medium dense, slightly moist to moist, fine-grained sand

2¾'-6': POORLY GRADED SAND WITH SILT (SP-SM): Dark gray, medium dense, slightly moist, very fine- to fine-grained sand, slightly clayey, trace rootlets

Test Pit TP-4

0-¼': CLAYEY SAND (SC): medium brown to gray-brown, medium dense, slightly moist, fine- to medium-grained sand, little coarse-grained sand, few to little subangular to subrounded fine gravel (Fill)

¼'-1½':SANDY CLAY (CL): yellow- to olive-brown and orange-brown, stiff, moist, very fine- to fine-grained sand, few medium- to coarse-grained sand, trace to few fine gravel, trace coarse gravel, trace man-made debris (Fill)

1½'-4':POORLY GRADED SAND WITH SILT (SP-SM): dark-gray, slightly moist to moist, loose to medium-dense, very fine- to fine-grained sand, trace medium -grained sand, trace fine gravel

%Gravel=1.3
%Sand=91.3
%Fines=7.4

Test Pit TP-5

0-¼': SILTY SAND (SM): gray-brown, loose to medium dense, moist, very fine- to fine-grained sand, few to little medium-grained sand (Landscape Fill)

¼'-½':GRAVELLY SAND WITH CLAY : orange-brown, medium dense, very moist, medium- to coarse-grained sand, little fine-grained sand, angular to subangular fine gravel, trace angular coarse gravel (Fill)

½'-1½':SANDY CLAY (CL): olive-brown to brown, stiff, moist, very fine- to fine-grained sand, few medium-grained sand, trace to few coarse-grained sand, and angular to subangular fine gravel (Fill)

PI=20
LL=36

1½'-4': SANDY CLAY (CL): Dark gray, stiff, moist, very fine-grained sand, trace fine- to medium-grained sand

4'-6': BORDERLINE CLAYEY SAND/SANDY CLAY (SC/CL): orange-brown, stiff to very stiff, moist, very fine- to fine-grained sand, trace rootlets

Test Pit TP-6

0-¼': CLAYEY SAND (SC): medium brown to gray-brown, medium dense, slightly moist, fine- to medium-grained sand, little coarse-grained sand, few to little subangular to subrounded fine gravel (Fill)

¼'-¾':CLAYEY SAND WITH GRAVEL (SC): orange-brown, medium dense, moist, fine-grained sand, few to little medium- to coarse-grained sand, few subangular fine gravel, trace angular to subangular coarse gravel (Fill)

¾'-1½':CLAYEY SAND WITH GRAVEL (SC): olive-gray, medium dense to dense, moist, fine- to medium-grained sand, little coarse-grained sand, few to little angular to subangular fine gravel, trace subangular coarse gravel (fill)

PI=14
LL=29

1½'-2½': POORLY GRADED SAND (SP):yellow-brown to medium-brown, loose to medium dense, slightly moist to moist, fine-grained sand, trace medium-grained sand

%Sand=99
%Fines=1

2½'-4½':POORLY GRADED SAND WITH SILT (SP-SM): dark gray, moist, medium dense, very fine- to fine-grained sand, slightly clayey

Job No BERGM-16-02

COARSE-GRAINED SOILS

LESS THAN 50% FINES*

GROUP SYMBOLS	ILLUSTRATIVE GROUP NAMES	MAJOR DIVISIONS
GW	Well graded gravel Well graded gravel with sand	GRAVELS More than half of coarse fraction is larger than No. 4 sieve size
GP	Poorly graded gravel Poorly graded gravel with sand	
GM	Silty gravel Silty gravel with sand	
GC	Clayey gravel Clayey gravel with sand	
SW	Well graded sand Well graded sand with gravel	SANDS More than half of coarse fraction is smaller than No. 4 sieve size
SP	Poorly graded sand Poorly graded sand with gravel	
SM	Silty sand Silty sand with gravel	
SC	Clayey sand Clayey sand with gravel	

NOTE: Coarse-grained soils receive dual symbols if:
(1) their fines are CL-ML (e.g. SC-SM or GC-GM) or
(2) they contain 5-12% fines (e.g. SW-SM, GP-GC, etc.)

FINE-GRAINED SOILS

MORE THAN 50% FINES*

GROUP SYMBOLS	ILLUSTRATIVE GROUP NAMES	MAJOR DIVISIONS
CL	Lean clay Sandy lean clay with gravel	SILTS AND CLAYS liquid limit less than 50
ML	Silt Sandy silt with gravel	
OL	Organic clay Sandy organic clay with gravel	
CH	Fat clay Sandy fat clay with gravel	SILTS AND CLAYS liquid limit more than 50
MH	Elastic silt Sandy elastic silt with gravel	
OH	Organic clay Sandy organic clay with gravel	
PT	Peat Highly organic silt	HIGHLY ORGANIC SOIL

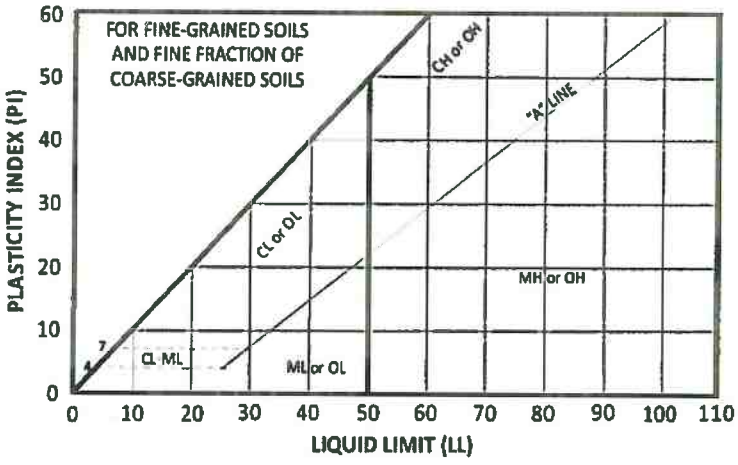
NOTE: Fine-grained soils receive dual symbols if their limits in the hatched zone on the Plasticity Chart(L-M)

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	ABOVE 12 in.
COBBLES	3 in. to 12 in.
GRAVEL	No. 4 to 3 in.
Coarse	¾ in to 3 in.
Fine	No. 4 to ¾ in.
SAND	No. 200 to No.4
Coarse	No. 10 to No. 4
Medium	No. 40 to No. 10
Fine	No. 200 to No. 40
*FINES:	BELOW No. 200

NOTE: Classification is based on the portion of a sample that passes the 3-inch sieve.

PLASTICITY CHART



Reference: ASTM D 2487-06, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

GENERAL NOTES: The tables list 30 out of a possible 110 Group Names, all of which are assigned to unique proportions of constituent soils. Flow charts in ASTM D 2487-06 aid assignment of the Group Names. Some general rules for fine grained soils are: less than 15% sand or gravel is not mentioned; 15% to 25% sand or gravel is termed "with sand" or "with gravel", and 30% to 49% sand or gravel is termed "sandy" or "gravelly". Some general rules for coarse-grained soils are: uniformly-graded or gap-graded soils are "Poorly" graded (SP or GP); 15% or more sand or gravel is termed "with sand" or "with gravel", 15% to 25% clay and silt is termed clayey and silty and any cobbles or boulders are termed "with cobbles" or "with boulders".

UNIFIED SOIL CLASSIFICATION SYSTEM

(04/16)

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SOIL TYPES (Ref 1)

Boulders:	particles of rock that will not pass a 12-inch screen.
Cobbles:	particles of rock that will pass a 12-inch screen, but not a 3-inch sieve.
Gravel:	particles of rock that will pass a 3-inch sieve, but not a #4 sieve.
Sand:	particles of rock that will pass a #4 sieve, but not a #200 sieve.
Silt:	soil that will pass a #200 sieve, that is non-plastic or very slightly plastic, and that exhibits little or no strength when dry.
Clay:	soil that will pass a #200 sieve, that can be made to exhibit plasticity (putty-like properties) within a range of water contents, and that exhibits considerable strength when dry.

MOISTURE AND DENSITY

Moisture Condition:	an observational term; dry, moist, wet, or saturated.
Moisture Content:	the weight of water in a sample divided by the weight of dry soil in the soil sample, expressed as a percentage.
Dry Density:	the pounds of dry soil in a cubic foot of soil.

DESCRIPTORS OF CONSISTENCY (Ref 3)

Liquid Limit:	the water content at which a soil that will pass a #40 sieve is on the boundary between exhibiting liquid and plastic characteristics. The consistency feels like soft butter.
Plastic Limit:	the water content at which a soil that will pass a #40 sieve is on the boundary between exhibiting plastic and semi-solid characteristics. The consistency feels like stiff putty.
Plasticity Index:	the difference between the liquid limit and the plastic limit, i.e. the range in water contents over which the soil is in a plastic state.

MEASURES OF CONSISTENCY OF COHESIVE SOILS (CLAYS) (Ref's 2 & 3)

Very Soft	N=0-1*	C=0-250 psf	Squeezes between fingers
Soft	N=2-4	C=250-500 psf	Easily molded by finger pressure
Medium Stiff	N=5-8	C=500-1000 psf	Molded by strong finger pressure
Stiff	N=9-15	C=1000-2000 psf	Dented by strong finger pressure
Very stiff	N=16-30	C=2000-4000 psf	Dented slightly by finger pressure
Hard	N>30	C>4000 psf	Dented slightly by a pencil point

*N=blows per foot in the Standard Penetration Test. In cohesive soils, with the 3-inch-diameter ring sampler, 140-pound weight, divide the blow count by 1.2 to get N (Ref 4).

MEASURES OF RELATIVE DENSITY OF GRANULAR SOILS (GRAVELS, SANDS, AND SILTS) (Ref's 2 & 3)

Very Loose	N=0-4**	RD=0-30	Easily push a ½-inch reinforcing rod by hand
Loose	N=5-10	RD=30-50	Push a ½-inch reinforcing rod by hand
Medium Dense	N=11-30	RD=50-70	Easily drive a ½-inch reinforcing rod
Dense	N=31-50	RD=70-90	Drive a ½-inch reinforcing rod 1 foot
Very Dense	N>50	RD=90-100	Drive a ½-inch reinforcing rod a few inches

**N=Blows per foot in the Standard Penetration Test. In granular soils, with the 3-inch-diameter ring sampler, 140-pound weight, divide the blow count by 2 to get N (Ref 4).

Ref 1: ASTM Designation: D 2487-06, **Standard Classification of Soils for Engineering Purposes** (Unified Soil Classification System).

Ref 2: Terzaghi, Karl, and Peck, Ralph B., **Soil Mechanics in Engineering Practice**, John Wiley & Sons, New York, 2nd Ed., 1967, pp. 30, 341, and 347.

Ref 3: Sowers, George F., **Introductory Soil Mechanics and Foundations: Geotechnical Engineering**, Macmillan Publishing Company, New York, 4th Ed., 1979, pp. 80, 81, and 312.

Ref 4: Lowe, John III, and Zaccheo, Phillip F., **Subsurface Explorations and Sampling**, Chapter 1 in "Foundation Engineering Handbook," Hsai-Yang Fang, Editor, Van Nostrand Reinhold Company, New York, 2nd Ed, 1991, p. 39.

SOIL TERMINOLOGY

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GENERAL NOTES FOR BORING LOGS:

The boring logs are intended for use only in conjunction with the text, and for only the purposes the text outlines for our services. The Plate "Soil Terminology" defines common terms used on the boring logs.

The plate "Unified Soil Classification System," illustrates the method used to classify the soils. The soils were visually classified in the field; the classifications were modified by visual examination of samples in the laboratory, supported, where indicated on the logs, by tests of liquid limit, plasticity index, and/or gradation. In addition to the interpretations for sample classification, there are interpretations of where stratum changes occur between samples, where gradational changes substantively occur, and where minor changes within a stratum are significant enough to log.

There may be variations in subsurface conditions between borings. Soil characteristics change with variations in moisture content, with exchange of ions, with loosening and densifying, and for other reasons. Groundwater levels change with seasons, with pumping, from leaks, and for other reasons. Thus boring logs depict interpretations of subsurface conditions only at the locations indicated, and only on the date(s) noted.

SPECIAL FIELD NOTES FOR THIS REPORT:

1. The test pits were excavated on March 21, 2016, with a mini excavator equipped with a 2 foot diameter bucket. The test pits were backfilled and compacted using a trench rammer immediately after the last soil sample was collected.

2. The test pit locations were approximately located by using a tape measure and/or pacing from known points on the site, as shown on Plate 2, Site Plan.

3. The soils' Group Names [e.g. SANDY LEAN CLAY] and Group Symbols [e.g. (CL)] were determined or estimated per ASTM D 2487-06, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System, see Plate 5). Other soil engineering terms used on the boring logs are defined on Plate 6, Soil Terminology.

4. Groundwater was encountered in the test pits excavated for this investigation as indicated in the test pit logs.

BORING LOG NOTES

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Glossary

Spread Footings: A typical foundation system used in residential construction. A spread footing foundation has a wider bottom portion than the foundation walls it supports such that the load is distributed over a wider area.

Base rock: Also referred to as Aggregate Base, is typically composed of crushed rock capable of passing through a 3/4-inch rock screen. The component particles compromising the aggregate base vary in size from 3/4-inch to silt size particles. Aggregate base may consist of virgin materials or of recycled asphalt or concrete.

Vapor Barrier: Any material used for damp proofing. Typically consisting of a plastic or foil sheet that resists diffusion of moisture through walls, ceiling or flooring. Vapor barrier materials may be categorized as either impermeable, semi-permeable or permeable based on testing conducted in accordance with ASTM E96.

PACIFIC SKIES ESTATES

A LIMITED LIABILITY COMPANY

September 20, 2016

Ms. Tina Wehrmeister
Director of Planning
1800 Francisco Blvd.
Pacifica, CA 94044

RE: Coastal Development Permit 364-16 for Pacific Skies Estates Mobile Home Park 1300 Palmetto Avenue, Pacifica

Dear Ms. Wehrmeister:

As you know, we have been working with the staff of the California Coastal Commission ("CCC") on their issues relating to the City's Coastal Development Permit (CDP) for the Mobile Home Park. While we continue to believe that your determination of an Exemption from the City's requirements for a CDP was correct; nonetheless, we wish to move the project forward and as a result we have filed the application forms and supporting information for a City CDP. In its August 29, 2016 letter, the CCC staff has requested calculation of a bluff setback based upon a fictional, non-armored state and on the life of the structures. Apparently, CCC staff bases its recommendations upon uncertain, unlikely potential acts of nature that may overcome the armoring. We understand CCC staff's policy reasons for using a non-armored state from which to calculate triggers, but we maintain that the current armoring must be taken into account in determining any permit condition for a setback. The armoring was recently reaffirmed by the CCC and now also serves the crucial purpose to protect a lateral public easement that the CCC required. Furthermore, we wish to emphasize that the mobile homes are in fact "mobile" and can be relocated because they are not built on a foundation, and that the homes have an estimated life of 30 years. Therefore, we are willing to agree to a reasonable setback condition that takes into account the current armoring in addition to triggers for future actions, even though neither your LCP nor zoning expressly requires such future actions. As you prepare the staff report for the Planning Commission we wish to indicate our agreement with the following and will accept them as conditions of approval:

- A setback of 35' from the bluff top to the development recognizing that Applicant needs to reconfigure 4 home sites at the north end of the bluff top and a revised plan reflecting such modification shall be submitted for Staff approval following Planning Commission action.

ATTACHMENT E

- Applicant agrees with all the suggested CCC triggers in the August 29th letter, as follows:
  - In the event bluff retreat results in mobile homes becoming closer than 15' from the bluff, such mobile homes shall be removed and/or when two overflow events cause sea water to cause flooding in the area that is occupied by the mobile homes, mobile homes shall be removed or relocated further inland
  - Applicant/owner to provide a full revaluation of flooding risks in 2046

Our response to the CCC letter dated August 29, 2016 and our reports from our Civil Engineer, Dave Skelly of Geosoils, Inc. and our Geologist BAAG Engineers shall be provided to you and the Coastal Staff by September 27, 2016. This response letter includes the project justification for our conclusion as to the safety of the mobile homes and the adequacy of the setback.

We appreciate your consideration of these commitments and look forward to answering any questions you may have as you proceed. Do not hesitate to call Carol McDermott at (949) 422-2303 or via email at Carol@entitlementadvisors.com.

Sincerely,
CRP/PSE PACIFICA SEASIDE OWNER, LLC

Carol McDermott on behalf of owner

Cc: Boyd Hill
Dave Skelly