

Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604

6/9/2022

GEOTECHNICAL lic Works County of Orange CONSTRUCTOPROFEDVICES COASTAL/MARINE GEOILECHNICKSt on the

> Project No. 19026.000 001 cia

April 15, 2022

Mr. Dustin Saldivar Bellingham Marine Industries, Inc. 8810 Sparling Lane Dixon, CA 95620

Subject: Dana Point Marina Rehabilitation Project Dana Point, California

RESPONSE TO OCPW REVIEW COMMENTS

Dear Mr. Saldivar:

We are pleased to present the following letter responding to comments received by Orange County Public Works (OCPW). For our use we were provided OCPW comments pages 23 to 33 (not dated).

Comment No. 3.001

Geotechnical consultant must review the Dock Plans submitted to the County that will be utilized during construction of the project and provide additional recommendations as necessary. The approved dock plans and applicable details must be reviewed and signed/stamped by the geotechnical engineer and engineering geologist prior to permit issuance. 2nd Submittal Review Comment: This comment will be marked as "Satisfied" upon confirmation of plan check completion/approval and geotechnical signed/stamped approved plans.

ENGEO Response to Comment 3.001

See revised drawings. ENGEO reviewed the drawings and sealed sheet PE1.

Comment No. 3.006

Geotechnical consultant must provide comment/discussion on project demo operations of existing docks/piles and provide additional geotechnical recommendations as necessary. Specifically, are the existing piles to be removed and if so, what impact may that have on the proposed pile installation and performance. 2nd Submittal Review Comment: As previously requested, please provide additional comment/discussion on project demo operations of existing docks/piles and provide additional geotechnical recommendations as necessary. Specifically, are the existing piles to be removed and if so, what impact may that have on the proposed pile installation and performance. If existing piles can't be removed, how will possible conflicts between new and existing piles be revolved. Please refer to and reference currently submitted project demo permit/plans (DMO22-0032) as part of response. Additional geotechnical recommendations should be provided as necessary.

ENGEO Response to Comment 3.006

Supplemental plan showing proposed piles and abandoned piles has been attached for reference. ENGEO provided a consideration with reference to pile abandonment Section 3.2.3. If piles to be abandoned in place have a distance less than 1 foot as discussed in Section 3.2.3, pull testing should be performed on the subject pile to confirm lateral performance during construction.

Comment No. 3.009



Geotechnical consultant must provide comment/discussion and geotechnical conclusion of specific tsunami impact on the proposed dock piles. Additional geotechnical recommendations for design and construction of the proposed dock piles must be provided as necessary. 2nd Submittal Review Comment: As previously requested, please provide comment/discussion and geotechnical conclusion on site specific tsunami impact on the proposed dock piles. Additional geotechnical conclusion site specific tsunami impact on the proposed dock piles. Additional geotechnical recommendations for design and construction of the proposed dock piles must be provided as necessary.

ENGEO Response to Comment 3.009

Per 2019 CBC 1615.1, only risk category III and IV buildings shall be designed per Chapter 6 of ASCE 7. The docks in the marina are risk category I. The store building, which will be a deferred submittal, will be risk category II. Neither will be subject to Chapter 6 of ASCE 7. ENGEO is not aware of county, city, or state requirements for guide pile elements to be designed for tsunami loading.

Comment No. 3.010

Geotechnical consultant must provide comment/discussion and geotechnical conclusion on site specific wave impact on the proposed dock piles. Additional geotechnical recommendations for design and construction of the proposed dock piles must be provided as necessary. 2nd Submittal Review Comment: As previously requested, please provide comment/discussion and geotechnical conclusion on site specific wave impact on the proposed dock piles. Additional geotechnical conclusion site specific wave impact on the proposed dock piles. Additional geotechnical conclusion on site specific wave impact on the proposed dock piles. Additional geotechnical recommendations for design and construction of the proposed dock piles must be provided as necessary.

ENGEO Response to Comment 3.010

ENGEO has provided lateral pile analysis and maximum loading in Tables 3.2.2-2 to 3.2.2-4. Provided loading is less than the maximum lateral load provided in Tables 3.2.2-2 to 3.2.2-4, it is our opinion the piles can withstand intended design loads which consider wave loading within the marina.

Comment No. 3.011

Geotechnical consultant must provide comment/discussion and geotechnical conclusion on site specific flow sand velocity impact on the proposed dock piles. Additional geotechnical recommendations for design and construction of the proposed dock piles must be provided as necessary. 2nd Submittal Review Comment: The geotechnical report (ENGEO, 2/23/22) included with the 2nd submittal document package references a 3-foot thick sand section utilized in the pile design model (Section 3.2.2 / Page 7). Provide additional comment/discussion to confirm the basis for limiting the "sand" to only 3 feet when the exploratory boring logs indicate the observed "sand" section varied in thickness from approximately 2 feet to 10 feet in Borings B-1 through B-3. Please also comment if thicker sections of "sand" were analyzed, and if so what impact the additional analysis had on the design. Provide additional geotechnical recommendations as necessary.

ENGEO Response to Comment 3.011

ENGEO has attached an updated site plan and geologic cross sections for reference.

Comment No. 3.016

Geotechnical consultant must provide comment/discussion and geotechnical conclusion of Istered specific settlement values for design and construction of the proposed dock piles. Additional geotechnical recommendations should be provided as necessary. 2nd Submittal Review Comment: The geotechnical report (ENGEO, 2/23/22) included with the 2nd submittal document package provides conclusions/recommendations for the anticipated magnitude of remaining vertical settlement for design/construction of different aspects of the subject project (including landside improvements). However the report only addresses TOTAL vertical settlement. Please provide additional comment/discussion and geotechnical conclusion on site specific differential settlement values for design and construction of the proposed project. Additional geotechnical recommendations should be provided as necessary.

ENGEO Response to Comment 3.016

ENGEO provided total vertical settlement associated with the Gangway Landing in Section 3.1. It is our opinion differential settlement will be low due to uniform load transfer. For conservative analysis, the structural engineer may consider half the total settlement across the structural footing for differential settlement. For guide pile elements for floating docks, it is our opinion vertical loading will not be applied therefore no settlement is anticipated.

Comment No. 3.019

Provide updated/additional geotechnical cross-section(s) as necessary based on your review of the currently submitted project plans and your responses the review comments contained herein. At a minimum, cross-section(s) should extend beyond property lines/limits of permit as necessary to accurately depict site conditions that may impact the proposed grading and construction. Cross section/ exhibit/detail should indicate the proposed site grading/improvements, as graded site anticipated subsurface conditions conditions/existing *improvements*, (e.g. geologic contacts/structure, existing improvement foundations, etc.), slope setback requirements and the geotechnical remedial grading, temporary excavation (including shoring or specialized excavation method as necessary), slope setback and foundation recommendations from your submitted report(s). 2nd Submittal Review Comment: The geotechnical report (ENGEO. 2/23/22) included in the 2nd submittal document package did not address this review comment. As previously requested, please provide geotechnical cross sections applicable to the proposed scope of work per the subject permit.

ENGEO Response to Comment 3.019

ENGEO has attached an updated site plan and geologic cross sections for reference.

Comment No. 3.020

Provide updated plot plan/map to indicate the location of any new cross sections/ exhibits/details prepared in response to the review comments contained herein. 2nd Submittal Review Comment: The geotechnical report (ENGEO, 2/23/22) included in the 2nd submittal document package did not address this review comment. As previously requested, please provide updated plot plan/map as necessary to indicate the location of any new cross-sections/exhibits/details prepared in response to the review comments contained herein.

ENGEO Response to Comment 3.020

ENGEO has attached an updated site plan and geologic cross sections for reference.



Comment No. 3.021

Update Exhibit 3.2.2-1 from the submitted ENGEO report dated 2/23/22 to label be contact/bedrock unit and 3-foot thick overlying sand unit. Provide additional geotechnical recommendations as necessary.

ENGEO Response to Comment 3.021

ENGEO has attached an updated site plan and geologic cross sections for reference.

Comment No. 3.022

Update Exhibit 3.2.2-1 from the submitted ENGEO report dated 2/23/22 to label sand movement force (w/magnitude). Provide additional geotechnical recommendations as necessary.

ENGEO Response to Comment 3.021

High flows for sand movement not anticipated within marina bays.

Comment No. 3.023

Update Exhibit 3.2.2-1 from the submitted ENGEO report dated 2/23/22 to label wave load (w/magnitude). Provide additional geotechnical recommendations as necessary.

ENGEO Response to Comment 3.023

ENGEO has provided lateral pile analysis and maximum loading in Tables 3.2.2-2 to 3.2.2-4. Provided loading is less than the maximum lateral load provided in Tables 3.2.2-2 to 3.2.2-4, it is our opinion the piles can withstand intended design loads which consider wave loading within the marina.

Comment No. 3.024

Update Exhibit 3.2.2-1 from the submitted ENGEO report dated 2/23/22 to indicate typical location of existing piles to be removed (or abandoned in place if applicable) with respects to the proposed new piles. Provide additional geotechnical recommendations as necessary.

ENGEO Response to Comment 3.024

Supplemental plan showing proposed piles and abandoned piles has been attached for reference. ENGEO provided a consideration with reference to pile abandonment Section 3.2.3. If piles to be abandoned in place have a distance less than 1 foot as discussed in Section 3.2.3, pull testing should be performed on the subject pile to confirm lateral performance during construction.

Comment No. 3.025

Provide additional comment/discussion to define "Point of Load Application" as indicated on Exhibit 3.2.2-1 from the submitted ENGEO report dated 2/23/22.Clarify load combination and impact load. Updated Exhibit 3.2.2-1 with applicable information (location/load combination).Provide additional recommendations as necessary.

ENGEO Response to Comment 3.025

Point of Load Application is the applied lateral force in our L-Pile analysis and is provided to us by BMI as worst case loading. Pile loading and structural analysis is performed by BMI's structural engineer and EOR Craig Funston S.E. Pile demand is compared to the pile capacity in the submitted structural calculations prepared by BMI.



Comment No. 3.026

Per the submitted geotechnical report prepared by ENGEO dated 2/23/22, the deflection in the proposed piles has been calculated to vary from approximately 8.75 inches to 13.75 inches. Please provide additional comment/discussion on the anticipated deflection, including anticipated pile/dock performance and if reported deflection is maximum or combined. Please also update Exhibit3.2.2-1 from the submitted ENGEO report dated 2/23/22 to label/clarify location of deflection. Provide additional geotechnical recommendations as necessary.

ENGEO Response to Comment 3.026

ENGEO has provided lateral pile analysis and maximum loading in Tables 3.2.2-2 to 3.2.2-4. Provided loading is less than the maximum lateral load provided in Tables 3.2.2-2 to 3.2.2-4, it is our opinion the piles can withstand intended design loads and anticipated deflection. Maximum deflection is anticipated at the point of applied loading.

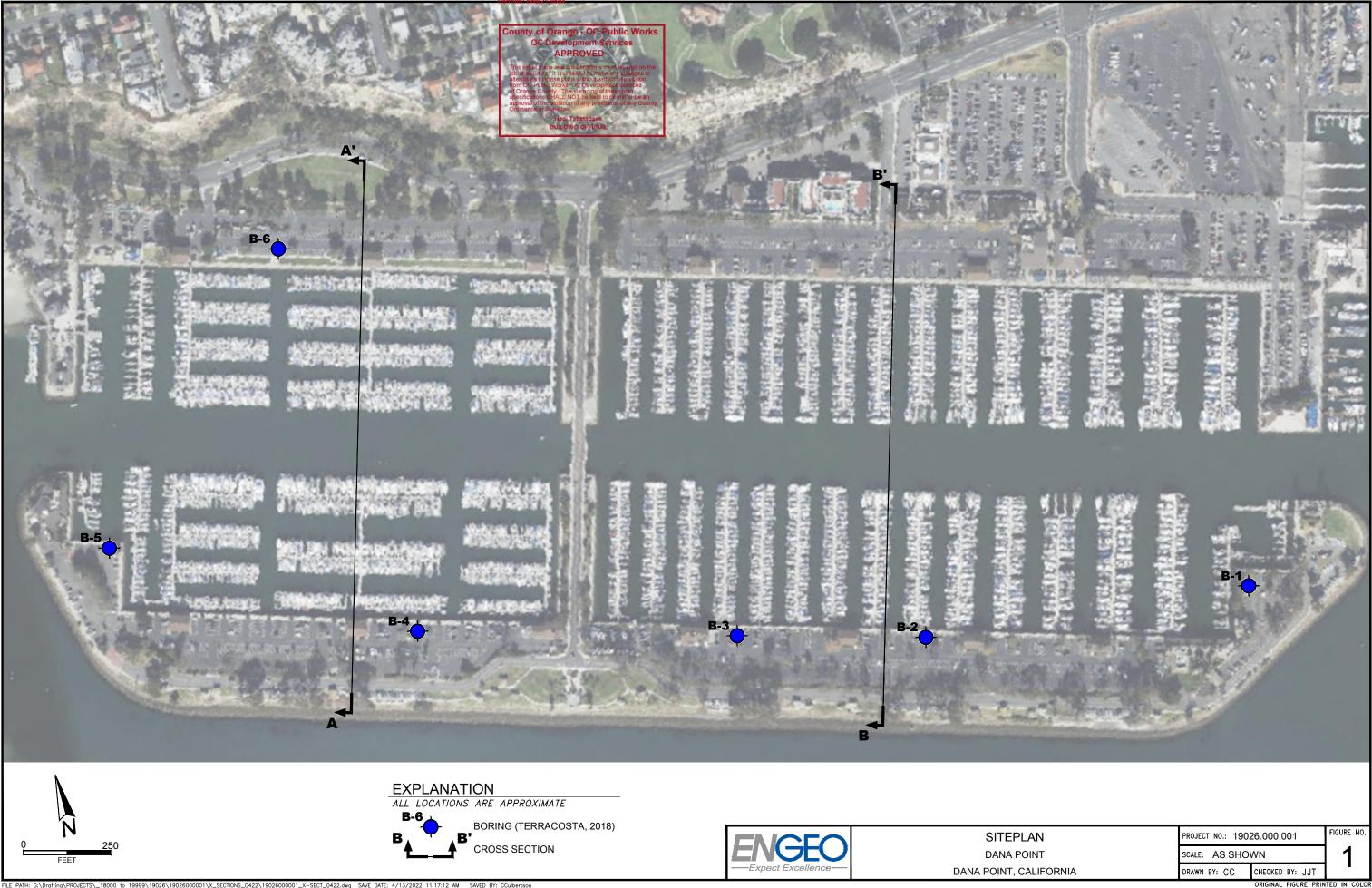
If you have any questions or comments regarding this letter, please call.

Sincerely, ROFESSION **ENGEO** Incorporated REGIST Z No. 87513 Josef J/Tootle, GE Taylor Strack, P OF CA\ CA ts/jjt/cjn

Attachments: Figure 1 – Site Plan Figure 2 – Cross Sections A-A' and B-B' Figure 3 – Historic Photograph New and Existing Pile Map

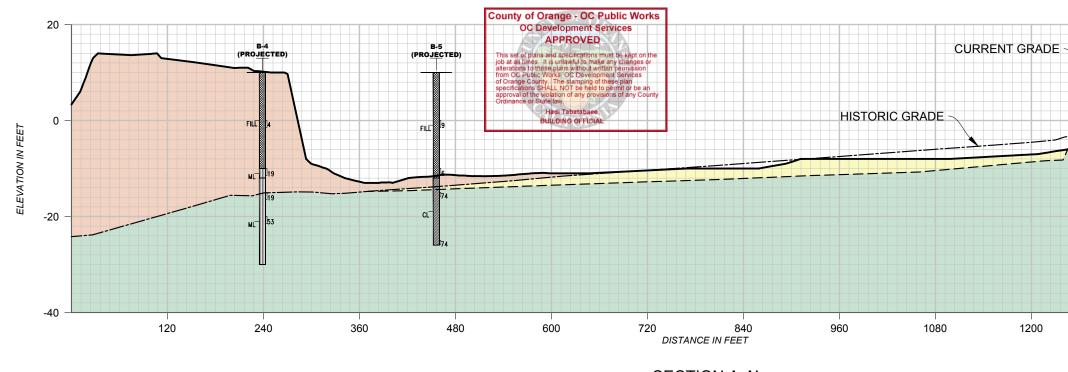


Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports

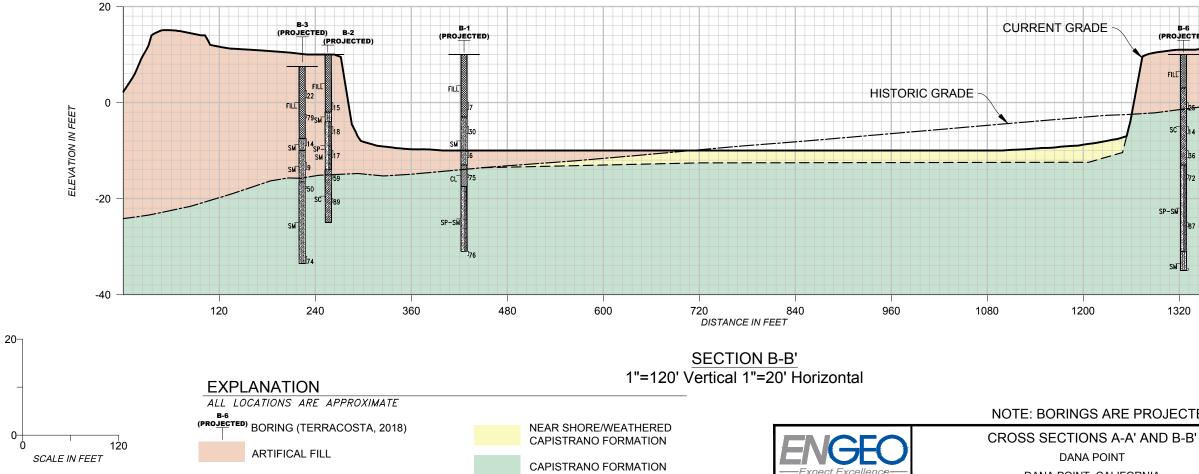


FILE PATH: G:\Drafting\PROJECTS_18000 to 19999\19026\19026000001\X_SECTIONS_0422\19026000001_X-SECT_0422.dwg SAVE DATE: 4/13/2022 11:17:12 AM SAVED BY: CCulbertson

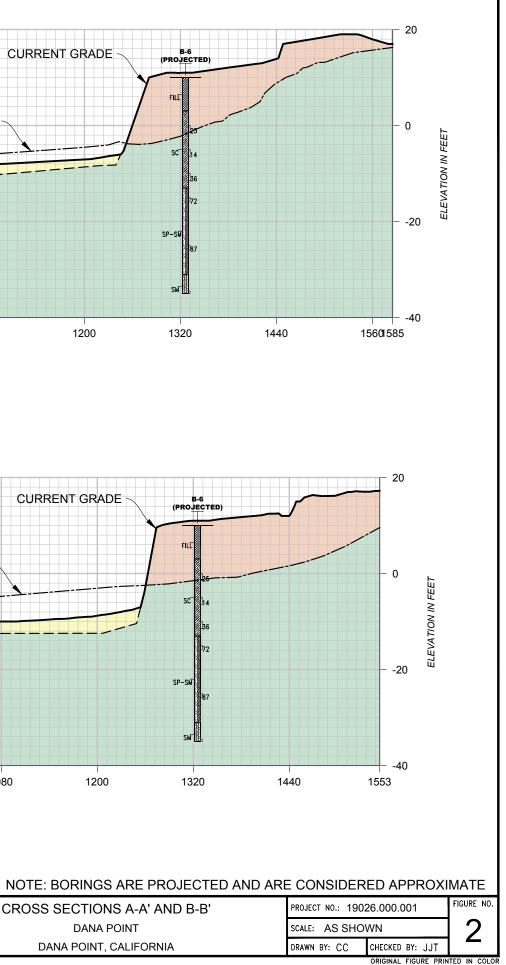




SECTION A-A' 1"=120' Vertical 1"=20' Horizontal



FILE PATH: G:\Drafting\PROJECTS_18000 to 19999\19026\19026000001\X_SECTIONS_0422\19026000001_X-SECT_0422.dwg SAVE DATE: 4/13/2022 11:17:12 AM SAVED BY: CCulbertson



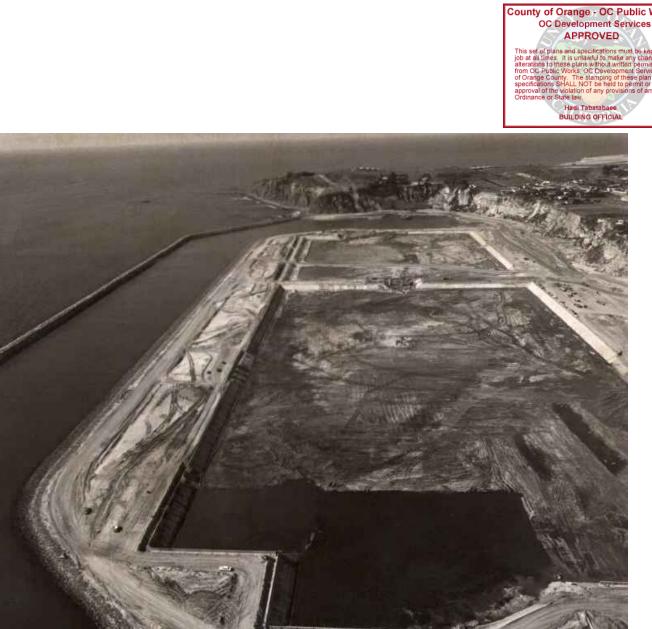
6/9/2022

orks

the

ntv

8000

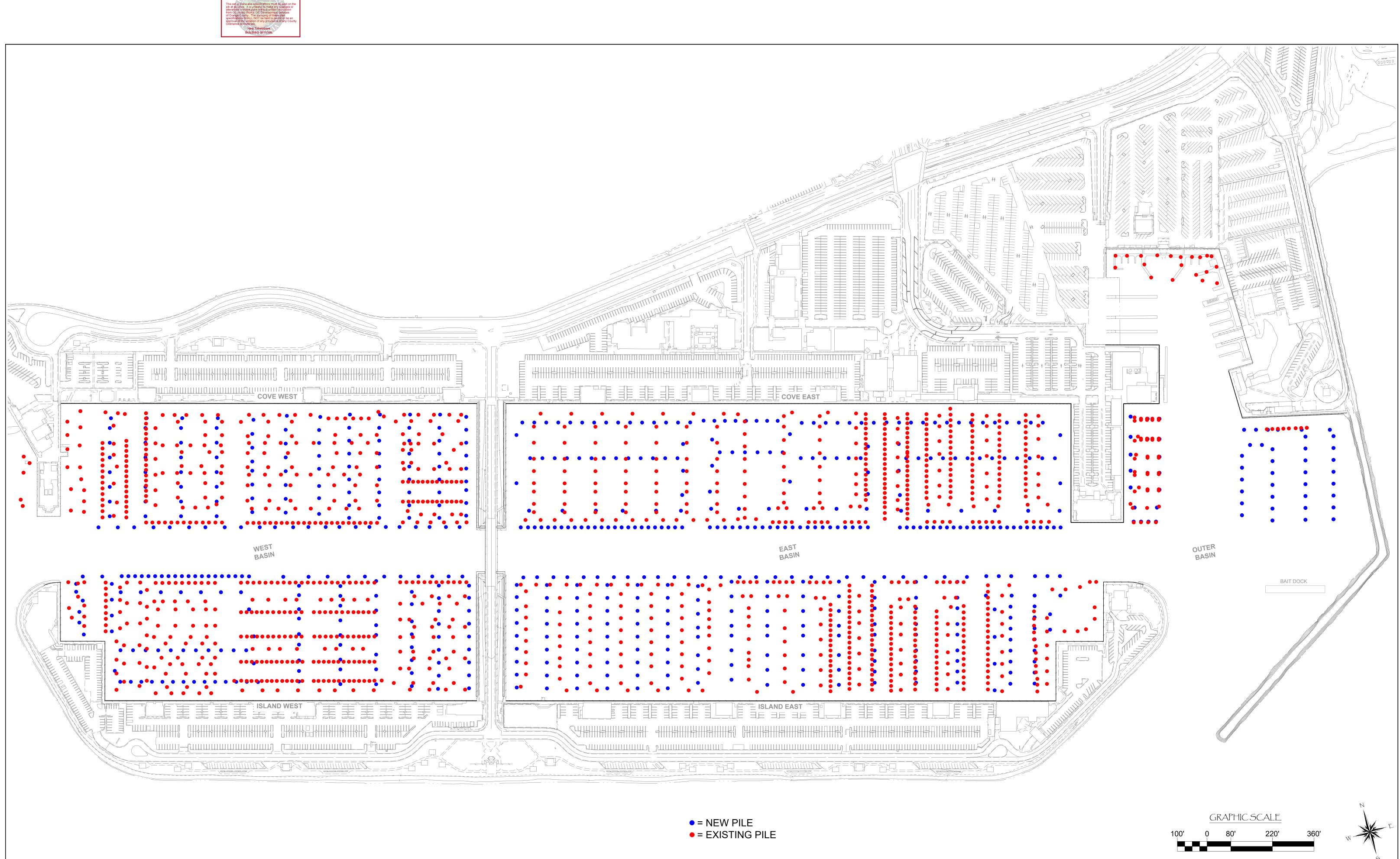


1971 PHOTOGRAPH OF CONSTRUCTION. LIMITED EXCAVATION ACTIVITIES PERFORMED ACROSS MAJORITY OF SITE AS ILLISTRATED IN CROSS SECTIONS A AND B AND SHOWN IN PHOTOGRAPH.

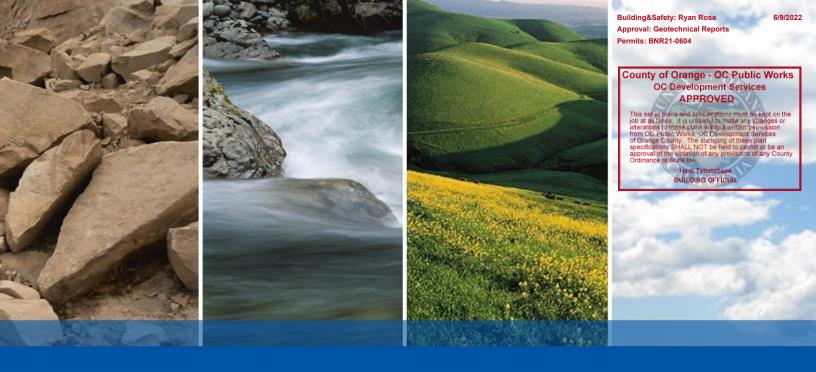


HISTORIC PHOTOGRAPH - JULY 1971 DANA POINT DANA POINT, CALIFORNIA

PROJECT NO.: 1902	26.000.001	FIGURE NO.
SCALE: AS SHO	3	
DRAWN BY: CC	CHECKED BY: JJT	Ŭ



pproval: Geotechnical Repo ermits: BNR21-0604



DANA POINT MARINA REHABILITATION PROJECT DANA POINT, CALIFORNIA

GEOTECHNICAL REPORT

SUBMITTED TO:

Mr. Dustin Saldivar Bellingham Marine Industries, Inc. 8810 Sparling Lane Dixon, CA 95620

> PREPARED BY: ENGEO Incorporated

> > February 23, 2022

PROJECT NO. 19026.000.001



Copyright © 2022 by ENGEO Incorporated. This document may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without the express written consent of ENGEO Incorporated.





Hadi Tabatabaee BUILDING OFFICIAL

Project No. 19026.000.001 6/9/2022

Building&Safety: Ryan Rose

February 23, 2022

Mr. Dustin Saldivar Bellingham Marine Industries, Inc. 8810 Sparling Lane Dixon, CA 95620

Subject: Dana Point Marina Rehabilitation Project Dana Point, California

Expect Excellence

GEOTECHNICAL REPORT

Dear Mr. Saldivar:

ENGEO prepared this geotechnical report for the Dana Point Marina Rehabilitation project in Dana Point, California. We reviewed existing geotechnical exploration information performed by TerraCosta (an ENGEO company) to characterize the subsurface conditions at the site to provide the enclosed geotechnical recommendations for design.

If you have any questions or comments regarding this report, please call and we will be glad to discuss them with you.

Sincerely,

ENGEO Incorporated No. 87513 a Taylor \$track, PE OF ts/jjt/dt



Bellingham Marine Industries, Inc. 19026.000.001

Dana Point Marina Rehabilitation Project

LETTER OF TRANSMITTAL

Ge Councy of Orange OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit of be an approval of the violation of any provisions of any County Ordinance or state law. Hadi Tabatabaee BuilLDING OFFICIAL

6/9/2022

Building&Safety: Ryan Rose

Approval: Geotechnical Reports Permits: BNR21-0604

1.0	INTRO	ODUCT	10N		F
	1.1 1.2 1.3 1.4 1.5	EXISTII SITE BA	CT LOCATION AND DESCRIPTION NG GEOTECHNICAL DOCUMENTS ACKGROUND IRFACE EXPLORATION DGY AND SEISMICITY	······	1 1 2
		1.5.1 1.5.2	Site Geology Site Seismicity		
	1.6 1.7		NDWATER CONDITIONS IRFACE SOIL		
2.0	CONC	CLUSIC	DNS		5
	2.1	SEISMI	C HAZARDS		5
		2.1.1 2.1.2 2.1.3 2.1.4	Ground Rupture Ground Shaking Liquefaction Lateral Spreading		5 5
	2.2 2.3 2.4	SOIL C	STABILITY ORROSION POTENTIAL BC SEISMIC DESIGN PARAMETERS		6
3.0	FOUN	IDATIO	N RECOMMENDATIONS		6
	3.1 3.2		VAY LANDING DUNDATION DESIGN		
		3.2.1 3.2.2 3.2.3	Vertical Pile Capacity Lateral Pile Analysis Lateral Capacity Reduction	.	7
	3.3	CONST	RUCTION CONSIDERATIONS		9
4.0	EART	HWOR	K RECOMMENDATIONS		D
		4.1.1	Grading in Structural Areas	1(0
5.0	PAVE	MENT	RECOMMENDATIONS	1 1	1
6.0	LIMIT	ATION	S AND UNIFORMITY OF CONDITIONS	1 1	1
7.0	LIST	OF SEL	-ECTED REFERENCES		3

FIGURES

APPEN	VDIX	A –	Exploration	Loas
/ · · · — ·			Exploration	Logo

- **APPENDIX B** Laboratory Test Data
- **APPENDIX C** Analysis Results



Building&Safety: Ryan Rose

1.0 INTRODUCTION

1.1 **PROJECT LOCATION AND DESCRIPTION**

OC Development Services ADPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works, OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be and approval of the violation of any provisions of any County Ordinance or State law.

6/9/2022

This report presents the results of exploration and analysis performed by ENGEO and TerraCostant Consulting Group (an ENGEO company) in support of improvements at the Dana Point Marina in Dana Point, California. The Dana Point Marina is located along the west side of Dana Point Harbor Drive in Dana Point, California. The marina is bordered to the north by the Ocean Institute and by Parking and Harbor Drive to the east. Documents provided by you for our use are listed below.

- 1. Building Plan Check Comments for Dana Point Harbor Revitalization prepared by Orange County Public Works.
- 2. Site Plan with New and Existing Pile Locations prepared by Bellingham Marine Industries.
- 3. Geotechnical Review of Deep Soil Mixing Submittal prepared by GMU dated May 27, 2021.
- 4. Geotechnical Investigation Report prepared by GMU dated May 27, 2021.

Additional geotechnical information reviewed for this report includes the Guide Pile Design Criteria Report prepared by TerraCosta Consulting Group dated August 15, 2019, and Supplemental L-Pile analysis prepared by ENGEO on July 15, 2021.

Based on our discussion with you and review of the information provided, we understand the proposed project is part of the rehabilitation of the existing approximately 50-year-old marina facilities and infrastructure. Improvements will include seawall repairs, gangway and approach pier replacement, and reconfiguration and replacement of the existing floating docks throughout the marina. We understand the existing docks and guide piles will be replaced with a new dock system, including new open steel pipe guide piles. In addition, we understand landward improvements included in the renovation provided consist of minor re-paving at handicap parking stalls and concrete hardscape along boardwalk walkways.

1.2 EXISTING GEOTECHNICAL DOCUMENTS

As mentioned above, multiple geotechnical studies have been performed for various improvements at the Dana Point Marina. Two geotechnical reports prepared by GMU were provided for reference which include an overall geotechnical investigation report pertaining to landward improvements including new retail, restaurants and existing structure renovations, and review of ground improvements on the landward portion of the Dana Point Marina project. For use in preparation of this report, we rely on the Guide Pile Design Criteria report prepared by TerraCosta Consulting and supplemental L-Pile analysis prepared by ENGEO.

1.3 SITE BACKGROUND

As noted in TCG, 2019, the area selected for the marina was naturally protected by the Dana Point Headland, creating a shallow anchorage west of San Juan Creek. To the southeast of the headland, a series of jetties was constructed to enclose the area further and protect it from westerly and southerly swells as shown in Exhibit 1.3-1 below. In addition, the TCG report notes the U.S. Army Corps of Engineers, originally designed and constructed the Dana Point Harbor in the late 1960s.



Building&Safety: Ryan Rose Approval: Geotechnical Reports

Geocounty of orange? OC Public Works **OC Development Services** APPROVED

6/9/2022

EXHIBIT 1.3-1: 1953 Aerial



Research performed by TCG, 2019 indicates that the harbor was developed initially by constructing the island and a series of cofferdams to enclose the marina basins. Dewatering of the basin allowed construction to move forward in the dry, excavating the basins to an average elevation of -10 feet MLLW. As we understand, because of the hard excavation characteristics of the soil/bedrock, the northwest basin was excavated to an elevation of -8 feet MLLW. Based on our understanding of the site, we anticipate dredging of the marina removed loose and/or soft deposits such that foundation materials consist of consolidated marine deposits and siltstones consistent with the Capistrano Formation.

1.4 SUBSURFACE EXPLORATION

In 2019, TerraCosta (TCG) performed six geotechnical explorations on January 22 and January 23, 2019. In addition, TCG retained the services of a geophysical contractor to perform four refraction microtremor (ReMi) surveys to develop a shear-wave velocity profile down to a depth of approximately 100 feet at the locations shown on Figure 2.

Borings performed by TCG utilized 6-inch-diameter hollow-stem methods to a maximum depth of approximately 46 feet below existing grade. TCG retrieved disturbed soil samples at various intervals in the boring using a 2-inch O.D. standard penetration test split-spoon sampler. TCG obtained the blow counts recorded by dropping a 140-pound hammer with a 30-inch free fall drop. Blows were recorded for 6 inches of penetration, the blows recorded on the boring logs represent the accumulated number of blows required to drive the last 1 foot of penetration; the blow counts have not been converted using any correction factors. When sampler driving was difficult, the recorded penetration was recorded as inches per hammer blows.

Report logs are provided in Appendix A. The logs depict subsurface conditions at the exploration locations on the date of exploration; however, subsurface conditions may vary with time. Representative samples were collected, sealed in plastic containers to preserve moisture content, and taken to the laboratory for grain-size and plasticity testing. Results of the laboratory tests are presented in Appendix B. A copy of the ReMi survey completed by Southwest Geophysics is provided in Appendix C



OC Development Services
APPROVED

es. It is unlawful to

of plans and specifications must be kept on the

6/9/2022

Dana Point Marina Rehabilitation Project Gerocing Gero angeroc Public Works

1.5 GEOLOGY AND SEISMICITY

1.5.1 Site Geology

We reviewed the Geologic Map of the Oceanside Quadrangle prepared by Kennedy 2007. Beschert on our review of the geologic map, we understand surficial geologic units underlying the site include Tmo, undivided sedimentary rocks in the offshore region.

EXHIBIT 1.5.1-1: Geologic Mapping by Kennedy 2007



According to TCG 2019, artificial fills, beach sands, alluvial deposits, and recent bay deposits, all underlain by older Quaternary to Miocene-aged formational bedrock units are present in the areas surrounding the marina. These surficial deposits were encountered in explorations performed by TCG (located on artificial fills associated with the harbor construction in the late 1960s). These materials should be anticipated landward of the harbor and in construction of gangway approach platforms and other ancillary improvements on the land side of the marina.

TCG, 2019 notes the primary formational unit that will be encountered during pile driving for the new marina is the late Miocene to early Pliocene-age Capistrano Formation. The Capistrano Formation is of marine origin and primarily consists of interbedded siltstones, sandstone, and localized conglomerates. The siltstone was encountered in generally all of the borings across the site, with limited amounts of sandstone encountered in borings across the northern edge of the marina. In addition, Remi surveys performed across the site also indicate shear wave velocities of 1200 to 2500 ft/s for Capistrano formation.

1.5.2 Site Seismicity

Moderate to large earthquakes have historically occurred in the region and many earthquakes of low magnitude occur every year. Figure 4, Regional Faulting and Seismicity, shows the



OC Development Services

6/9/2022

approximate locations of nearby faults and significant earthquakes recorded within the region. We utilized the USGS Unified Hazard Tool to understand contributing active faults the second sec

FAULT NAME	DISTANCE (miles)	DIRECTION
Newport-Inglewood	2.2	Southwest
San Mateo	9.5	South
Pelican Hill	12.5	Northwest
San Joaquin Hills	12.8	North
Palos Verde	21	Southwest
Elsinore	28	Northeast

TABLE 1.5.2-1: Active Faults

The State of California has prepared maps designating zones for special studies that contain these active earthquake faults. No known active faults cross the property and the site is not located within an Earthquake Fault Special Study Zone;

1.6 **GROUNDWATER CONDITIONS**

According to TCG, 2019, static or perched groundwater was not encountered in any subsurface explorations performed in their study. Based on our review of the GMU, 2021, report, we understand groundwater was encountered at approximately 5 to 16 feet below the ground surface to the landward, or southeast, of the Dana Point Marina. Based on proximity to the Pacific Ocean, it is our opinion groundwater is tidally influenced and should be assumed to be approximately consistent or equal in elevation to sea level.

1.7 SUBSURFACE SOIL

Based on our review of borings performed by TCG in 2019, we understand artificial fill soil was encountered within the upper 5 to 20 feet of all explorations performed within the existing parking lot. Fill soil generally consisted of loose to medium-dense clayey sand and soft to stiff sandy clay. Below artificial fill soil, TCG encountered near shore deposits to approximately 15 to 25 feet depth for Boring B-1 to B-3 consisting of medium-dense clayey sand with varying amounts of fines and sand. Below artificial fill soil and near shore deposits, TCG encountered Capistrano formation consisting of weathered clayey siltstones to the total depth explored.

In general boring explorations performed by TCG were specifically performed to identify consistency of foundations soil likely to be encountered for new pile elements. Based on our understanding of the site history and review of geotechnical borings, we anticipate pile foundations to be embedded within 3 feet of medium dense to dense granular stratum and moreover into competent siltstone bedrock of the Capistrano Formation.



Ge County of Orange OC Public Works OC Development Services APPROVED

> This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission

2.0 CONCLUSIONS

From a geotechnical engineering viewpoint, in our opinion, the proposed project may be designed by the view of the

2.1 SEISMIC HAZARDS

Potential seismic hazards resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. The common secondary seismic hazards include ground shaking, liquefaction, and lateral spread. The following sections present a discussion of these hazards as they apply to the site.

2.1.1 Ground Rupture

Since there are no known active faults crossing the property and the site is not located within an Earthquake Fault Special Study Zone, it is our opinion that ground rupture is unlikely at the subject property.

2.1.2 Ground Shaking

An earthquake of moderate to high magnitude generated within region could cause considerable ground shaking at the site, similar to that which has occurred in the past. To mitigate the shaking effects, structures should be designed using sound engineering judgment and the 2019 California Building Code (CBC) requirements.

2.1.3 Liquefaction

Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. The soil type considered most susceptible to liquefaction is clean, loose, saturated, and uniformly graded, fine-grained sand.

In general, artificial fills encountered in the borings are considered to be potentially liquefiable. As noted in Section 1.0, geotechnical explorations performed by TerraCosta were not performed to evaluate the liquefaction potential of artificial fills in the vicinity of the floating dock improvements. Since this geotechnical report was performed specifically in support of pile elements for floating docks, liquefaction analysis was not performed. Since historical dredging within the marina in the 1960s was performed into the underlying Capistrano bedrock formation, we believe proposed piles will be embedded within non-liquefiable bedrock stratum.

2.1.4 Lateral Spreading

Lateral spreading is a failure within a nearly horizontal soil zone (possibly due to liquefaction) that causes the overlying soil mass to move toward a free face or down a gentle slope. It is our opinion the potential for lateral spreading for artificial fills landward of the floating docks may be moderate. However, for proposed piles located within the previously dredged marina, it is our opinion the potential for lateral spread damage to dock piles to be low.



he an

2.2 SLOPE STABILITY

Based on the improvements consisting of renovation to existing docks and construction of new pile foundations for new dock construction, static and seismic slope stability was not performed."

2.3 SOIL CORROSION POTENTIAL

Based on the presence of water, we recommend a chloride class of C2, which indicates 'concrete exposed to moisture and an external source of chlorides from deicing chemicals, salt, brackish water, seawater, or spray from these sources' exposure. In addition, we anticipate bedrock materials consist of clayey siltstone bedrock to be potentially corrosive with electrical resistivity in range of 500 to 2000 ohms-cm. Based on discussions with you, we understand additional corrosion measures include plastic sleeves will be placed on proposed piles.

2.4 2019 CBC SEISMIC DESIGN PARAMETERS

The 2019 CBC utilizes design criteria set forth in the 2010 ASCE 7 Standard. Based on the subsurface conditions encountered, we characterized the site as Site Class C in accordance with the 2019 CBC. We provide the 2019 CBC seismic design parameters in Table 2.4-1 below, which include design spectral response acceleration parameters based on the mapped Risk-Targeted Maximum Considered Earthquake (MCER) spectral response acceleration parameters.

PARAMETER	VALUE
Site Class	С
Mapped MCE _R Spectral Response Acceleration at Short Periods, S_S (g)	1.28
Mapped MCE _R Spectral Response Acceleration at 1-second Period, S_1 (g)	0.459
Site Coefficient, F _A	1.2
Site Coefficient, F _V	1.5
MCE_R Spectral Response Acceleration at Short Periods, S_{MS} (g)	1.536
MCE_R Spectral Response Acceleration at 1-second Period, S_{M1} (g)	0.689
Design Spectral Response Acceleration at Short Periods, SDS (g)	1.024
Design Spectral Response Acceleration at 1-second Period, S _{D1} (g)	0.459
Mapped MCE Geometric Mean (MCE _G) Peak Ground Acceleration, PGA (g)	0.563
Site Coefficient, FPGA	1.2
MCE_G Peak Ground Acceleration adjusted for Site Class effects, PGA_M (g)	0.675
Long-period transition-period, T∟	8 sec

TABLE 2-4-1: 2019 CBC Seismic Design Parameters, Latitude: 33.459913 Longitude: -117.699604

If proposed floating docks are subjected to seismic loading, the above parameters should be used for seismic design.

3.0 FOUNDATION RECOMMENDATIONS

3.1 GANGWAY LANDING

Based on discussions with you, we understand new access gangways will be attached to the existing seawall similar to the existing gangways at the Dana Point Marina. We understand at one



This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or

Hadi Tabatabaee BUILDING OFFICIAL

Ge County of Orange OC Public Works OC Development Services APPROVED

Dana Point Marina Rehabilitation Project

6/9/2022

he an

unty

t on the

Geocounty of orange OC Public Works

location the proposed gangway includes a new concrete cantilever slab above the existing seawall. We understand the proposed slab is anticipated to load the existing seawall with a load of approximately 4 kips per linear foot. Based on the size of the retaining wall of the existing wall of the existing wall. Based on preliminary analysis, we estimate static settle interview.

3.2 PILE FOUNDATION DESIGN

As discussed above, we anticipate primary lateral and vertical support to be derived from competent siltstone bedrock of the Capistrano Formation. Based on these conditions, we recommend pile foundations consist of open pipe piles based on drivability. Provided recommendations and embedment depths are achieved, it is our opinion the proposed improvements may be constructed as planned with no supplemental ground improvement required.

3.2.1 Vertical Pile Capacity

We anticipate pile foundations to be embedded within competent siltstone bedrock of the Capistrano Formation. For compression or tensile loading (uplift or buoyancy) calculations, we recommend an allowable vertical capacity of 500 psf within siltstone bedrock. The uplift capacity should be taken as 0.75 of the vertical capacity. The allowable capacity is calculated using a factor of safety of 2. Since proposed dock piles are primarily for lateral pile support, we do not anticipate significant vertical or uplift loading. As such, we anticipate negligible vertical settlement or movement of dock piles.

3.2.2 Lateral Pile Analysis

In accordance with the referenced document, we modeled the subsurface conditions with 3 feet of sand underlain by hard clay to rock-like conditions to the total depth of the model. L-Pile parameters used in our analysis are provided in Table 3.2.2-1 below.

SOIL TYPE	THICKNESS (feet)	UNIT WEIGHT (pcf)	COHESION (psf)	FRICTION ANGLE (Ø)	LATERAL REACTION MODULUS (pci)	STRAIN FACTOR
Sand (Reese)	3	55		34	60	
Stiff Clay (No Free Water)	78	60	4000			0.004

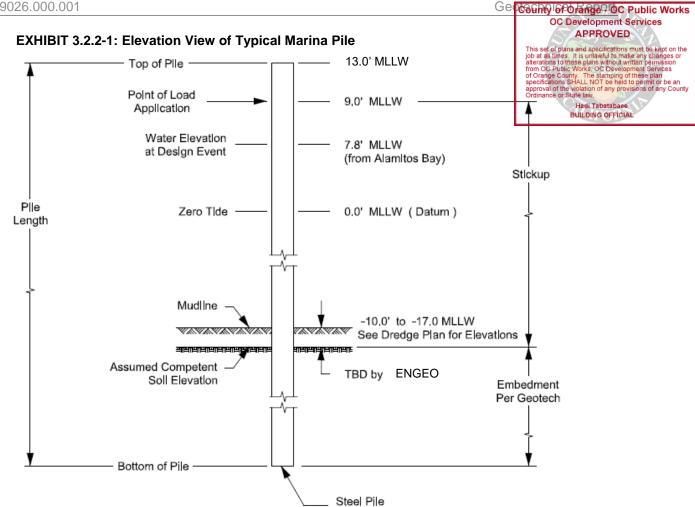
TABLE 3.2.2-1: Soil Condition Parameters

We reviewed the elevation view for typical Marina piles shown in Exhibit 3.2.2-1. Multiple mulline conditions were evaluated to account for varying thickness of the mulline deposits and depth across the site from elevation -10 to -17 feet (MLLW).



Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604 6/9/2022

Dana Point Marina Rehabilitation Project



Based on Exhibit 3.2.2-1, we understand the elevation of the applied lateral loading is at elevation 9 feet (MLLW). Based on our discussions with you and review of the Request of Geotechnical Design Information prepared by Bellingham Marine Industries dated February 8, 2019, we understand pile design is controlled by the maximum pile moment of 213 ft-kips. Results of our L-Pile analysis are shown in Table 3.2.2-2 below.

BOTTOM OF MUDLINE (feet)	PILE STICKUP (feet)	PILE EMBEDMENT (feet)	TOTAL PILE LENGTH (feet)	MAXIMUM LATERAL LOAD(kips)	DEFLECTION (Inches)	PILE TIP ELEVATION (feet)	MAXIMUM MOMENT (ft-kip)
-10	19	17	36	9.76	8.75	-27	213
-13	22	15	37	8.60	10.75	-28	213
-15	24	13	37	7.99	12.5	-28	213
-17	26	13	39	7.41	13.75	-30	213



Geocounty of Orange OC Public Works

6/9/2022

TABLE 3.2.	2-3: L-Pile	Results for 14-I	nch Steel I	Pipe Pile (Pre	pared by TCG,	2019)	OC Development Services APPROVED	of on the
BOTTOM OF MUDLINE (feet)	PILE STICKUP (feet)	PILE EMBEDMENT (feet)	TOTAL PILE LENGTH (feet)	MAXIMUM LATERAL LOAD(kips)	DEFLECTION (Inches)	PILE T P ELEVAT O (feet)	And MAXIMUM and a statement Service of MAXIMUM and service and MAMENT and these plan and MOMENT and permit or provisions of an (ft-kp) (ft-kp)	ssion ces be an
-10	19	18	37	11	10	-28	BUILDING OFFICIAL	
-13	22	15	37	11	10	-28	259	
-15	24	13	37	10.4	11.4	-28	259	
-17	26	13	39	9.4	12.5	-30	259	

TABLE 3.2.2-4: L-Pile Results for 18-Inch Steel Pipe F	Pile (Prepared by TCG 2019)
TADLE 3.2.2-4. L-FILE RESULTS IOF TO-INCIT SLEEP FIPE F	rie (Frepareu by TCG, 2013)

BOTTOM OF MUDLINE (feet)	PILE STICKUP (feet)	PILE EMBEDMENT (feet)	TOTAL PILE LENGTH (feet)	MAXIMUM LATERAL LOAD(kips)	DEFLECTION (Inches)	PILE TIP ELEVATION (feet)	MAXIMUM MOMENT (ft-kip)
-10	19	18	37	19	9	-28	434
-13	22	15	37	19	9	-28	434
-15	24	13	37	17.6	10.2	-28	434
-17	26	13	39	16.4	11.4	-30	434

It should be noted the provided moment capacity was not factored and assumed to include bending capacity reduction from corrosion. Shear capacity of the pile was set to 100 kips to avoid shear from controlling the design. Moment of inertia of the pile is assumed to be 361.5 in⁴ with a total area of the pile at 19.2 in². Steel pipe pile modulus of elasticity is assumed to be 29,000,000 psi.

3.2.3 Lateral Capacity Reduction

We understand proposed dock piles will be located adjacent to abandoned/demolished existing piles. Provided approximately 1 foot of clearance from an existing pile location is provided, it is our opinion lateral or vertical pile support will not be significantly reduced.

3.3 CONSTRUCTION CONSIDERATIONS

TCG, 2019 notes new piles are proposed for the Dana Point floating docks. These piles are primarily laterally loaded piles with negligible axial load requirements. As such, the key construction requirement for these piles is to drive the piles to their design specified tip elevations. The new piles are to be located within the main harbor area where the existing floating docks are located.

We understand that Bellingham drove piles for guide piles near the travel lift area of the marina, where they encountered hard driving conditions such that some piles mushroomed at the top during driving. As a result, we understand that pile design and driving operations were modified and some piles driven using stingers and/or driving shoes.

It is interesting to note that the existing piles in the marina appear to be a combination of both steel pipe piles and concrete piles. However, a review of the as-built drawings suggests that the concrete piles observed in the western basin required steel stingers to be able to drive the piles to desired tip.



Geocounterior in Speet Geocounty of Orange Oc Public Works OC Development Services

We anticipate that pile operations will likely be on-water, with piles located and barge using a pile driving hammer. While we anticipate that most piles can be installed to specifications must be kept on the pile driving hammer, it is possible that approximately 5 to 10 percent of the pile pre-drilling or jetting at the pile location prior to driving.

4.0 EARTHWORK RECOMMENDATIONS

The following earthwork recommendations are provided in support of the landward improvements discussed in Section 1.0.

The relative compaction and optimum moisture content of soil, rock, and aggregate base referred to in this report are based on the most recent ASTM D1557 test method. Compacted soil is not acceptable if it is unstable. It should exhibit only minimal flexing or pumping, as observed by an ENGEO representative. As used in this report, the term "moisture condition" refers to adjusting the moisture content of the soil by either drying if too wet or adding water if too dry. We define "structural areas" in this report as any area sensitive to settlement of compacted soil. These areas include, but are not limited to building pads, sidewalks, pavement areas, and retaining walls.

4.1.1 Grading in Structural Areas

Subgrade compaction should be performed prior to fill placement, following cutting operations, and in areas left at grade as follows.

- 1. Scarify to a depth of at least 8 inches.
- 2. Moisture condition soil to at least 2 percentage points above the optimum moisture content.
- 3. Compact the subgrade to at least 90 percent relative compaction. Compact the upper 6 inches of finish pavement subgrade to at least 95 percent relative compaction prior to aggregate base placement. Fill deeper than 10 feet should be compacted to a minimum of 95 percent relative compaction.

After the subgrade soil has been compacted, place and compact acceptable fill as follows.

- 1. Spread fill in loose lifts that do not exceed 8 inches.
- 2. Moisture condition lifts to at least 2 percentage points above the optimum moisture content.
- Compact fill to a minimum of 90 percent relative compaction; Compact the upper 6 inches of fill in pavement areas to 95 percent relative compaction prior to aggregate base placement. Fill deeper than 10 feet should be compacted to a minimum of 95 percent relative compaction.

4.1.1.1 Pavement Aggregate Base

Pavement base materials should meet Crushed Aggregate Base (CAB) or Crushed Miscellaneous Base (CMB) specifications in accordance with 2019 Greenbook standards, and should be compacted to at least 95 percent relative compaction (ASTM D1557). Moisture condition aggregate base to or slightly above the optimum moisture content prior to compaction.



6/9/2022

5.0

Geocounty of orange? OC Public Works **OC Development Services** APPROVED PAVEMENT RECOMMENDATIONS This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or imes. It is unlawful to to these plans without Based on the soil encountered in the explorations, an R-value of 10 was deemed to be appropriate. for preliminary pavement design. Using estimated traffic indices for various pavement orading requirements, the following recommended pavement sections were developed using Topic barrier of the Caltrans Highway Design Manual (including the asphalt factor of safety), presented in the table below.

	SECTION					
TRAFFIC INDEX	ASPHALT CONCRETE (AC) (INCHES)	CLASS 2 AGGREGATE BASE (CAB) (INCHES)				
5	3	81/2				
6	31⁄2	101⁄2				
7	4	13				
8	5	15				
9	5½	17½				
10	6½	19½				

TABLE 5.0-1: Recommended Asphalt Concrete Pavement Sections

The Civil Engineer should determine the appropriate traffic indexes based on the estimated traffic loads and frequencies. Representative bulk samples of subgrade soil should be obtained during construction to allow confirmation R-value testing for the design.

Based on our review of the Civil Plans prepared by Tait, we understand boardwalk walkways are planned to consist of 4 inches of concrete over compacted subgrade. For higher performance of walkways we suggest placement of approximately 4 inches of aggregate base to support concrete pavements.

6.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report presents geotechnical recommendations for design of the improvements discussed in Section 1.0 for the Dana Point Marina Rehabilitation Project. If changes occur in the nature or design of the project, we should be allowed to review this report and provide additional recommendations, if any. It is the responsibility of the owner to transmit the information and recommendations of this report to the appropriate organizations or people involved in design of the project, including but not limited to developers, owners, buyers, architects, engineers, and designers. The conclusions and recommendations contained in this report are solely professional opinions and are valid for a period of no more than 2 years from the date of report issuance.

We strived to perform our professional services in accordance with generally accepted geotechnical engineering principles and practices currently employed in the area; no warranty is provided, express or implied. There are risks of earth movement and property damages inherent in building on or with earth materials. We are unable to eliminate all risks; therefore, we are unable to guarantee or warrant the results of our services.

This report is based upon field and other conditions discovered at the time of report preparation. We developed this report with limited subsurface exploration data. We assumed that the existing subsurface exploration data is representative of the actual subsurface conditions across the site. Considering possible underground variability of soil, rock, stockpiled material, and groundwater,



Gepcount for ange oc Public Works

OC Development Services

6/9/2022

ot on the

additional costs may be required to complete the project. We recommend that the owner establish a contingency fund to cover such costs. If unexpected conditions are encountered, **ENGEO** must make be notified immediately to review these conditions and provide additional recommendations, as necessary.

This document must not be subject to unauthorized reuse, that is, reusing without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time.

Actual field or other conditions will necessitate clarifications, adjustments, modifications or other changes to ENGEO's documents. Therefore, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include on-site construction observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims arising from or resulting from the performance of such services by other persons or entities, and from any or all claims arising from or resulting from the performance of necessary to reflect changed field or other conditions.

We determined the lines designating the interface between layers on the exploration logs using visual observations. The transition between the materials may be abrupt or gradual. The exploration logs contain information concerning samples recovered, indications of the presence of various materials such as clay, sand, silt, rock, existing fill, etc., and observations of groundwater encountered. The field logs also contain our interpretation of the subsurface conditions between sample locations. Therefore, the logs contain both factual and interpretative information. Our recommendations are based on the contents of the final logs, which represent our interpretation of the field logs.

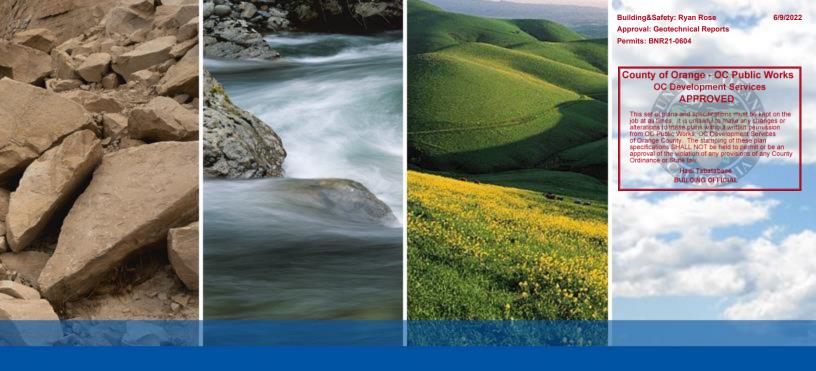




Building&Safety: Ryan Rose Approval: Geotechnical Reports

- 7.0 LIST OF SELECTED REFERENCES
- Federal Highway Administration (FHWA). (2016). Design and Construction Foundations; Publication No. FHWA NHI-16-009.
- California Building Code. (2019). California Building Standards Commission, http://www.bsc.ca.gov/codes.aspx.
- Kennedy (2007); Geologic Map of the Oceanside 30'x60' Quadrangle, California; California Department of Conservation Geological Survey.
- ENGEO (2021); Supplemental L-Pile Analysis; Dana Point Marina Rehabilitation Project; Dana Point, California; Project No. 19026.000.001; July 15, 2021.
- TerraCosta Consulting Group (2019); Guide Pile Design Criteria ;Dana Point Marina Rehabilitation Project; Dana Point, California; Project No. 2975; August 15, 2019.
- GMU (2021); Geotechnical Review of AGI Deep Soil Mixing; Dana Point Harbor Revitalization Commercial Component, City of Dana Point, County of Orange, California; Project No. 17-206-02; May 27, 2021.
- GMU (2021); Geotechnical Investigation Report- Volumes 1 to 2 Building 1 to 12; Dana Point Harbor Revitalization – Commercial Component, City of Dana Point, County of Orange, California; Project No. 17-206-02; May 27, 2021.
- Tait (2022); West Cove ADA Improvement Plans; Dana Point Harbor, City of Dana Point, County of Orange, State of California, Sheets 1 to 5, Project No. ME0381; February 16, 2022.





FIGURES

FIGURE 1: Vicinity Map FIGURE 2: Site Plan FIGURE 3: Seismic Hazard Map FIGURE 4: Regional Faulting and Seismicity



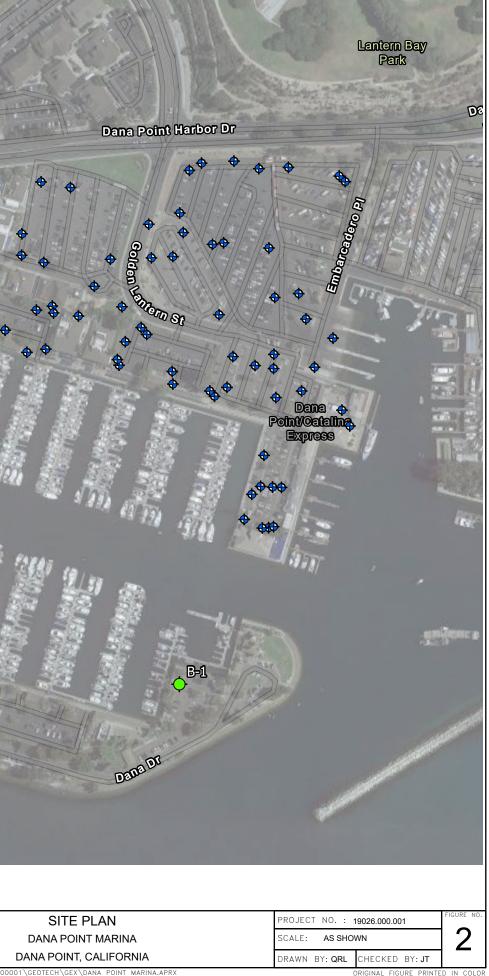




Building&Safety: Ryan Rose

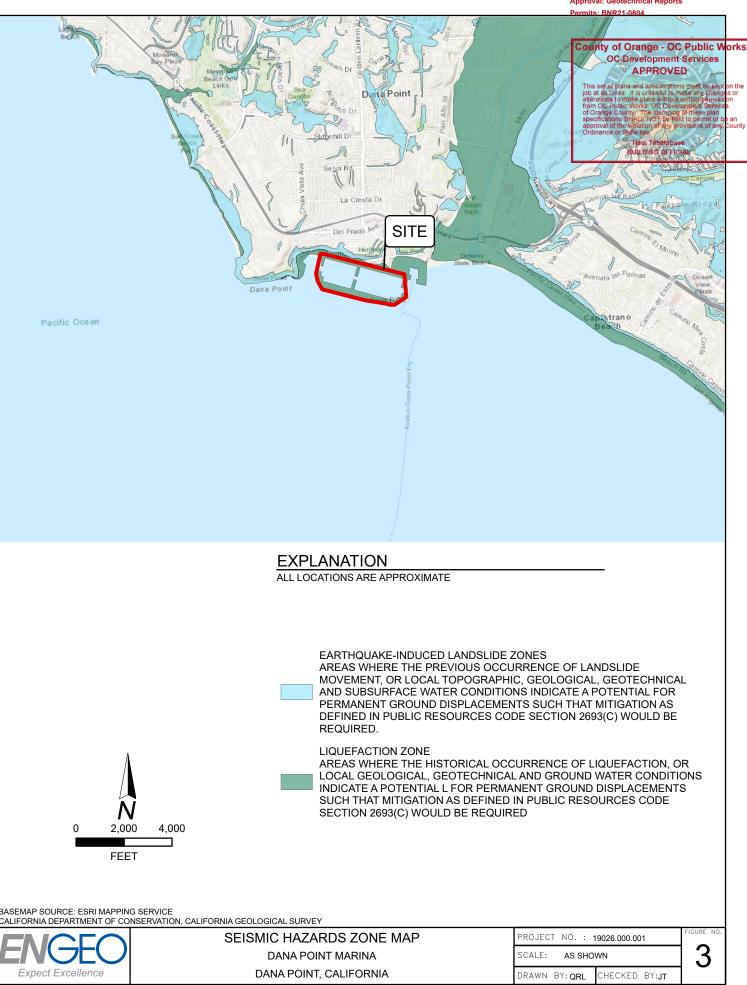
6/9/2022





ORIGINAL FIGURE PRINTED IN COLOR

6/9/2022

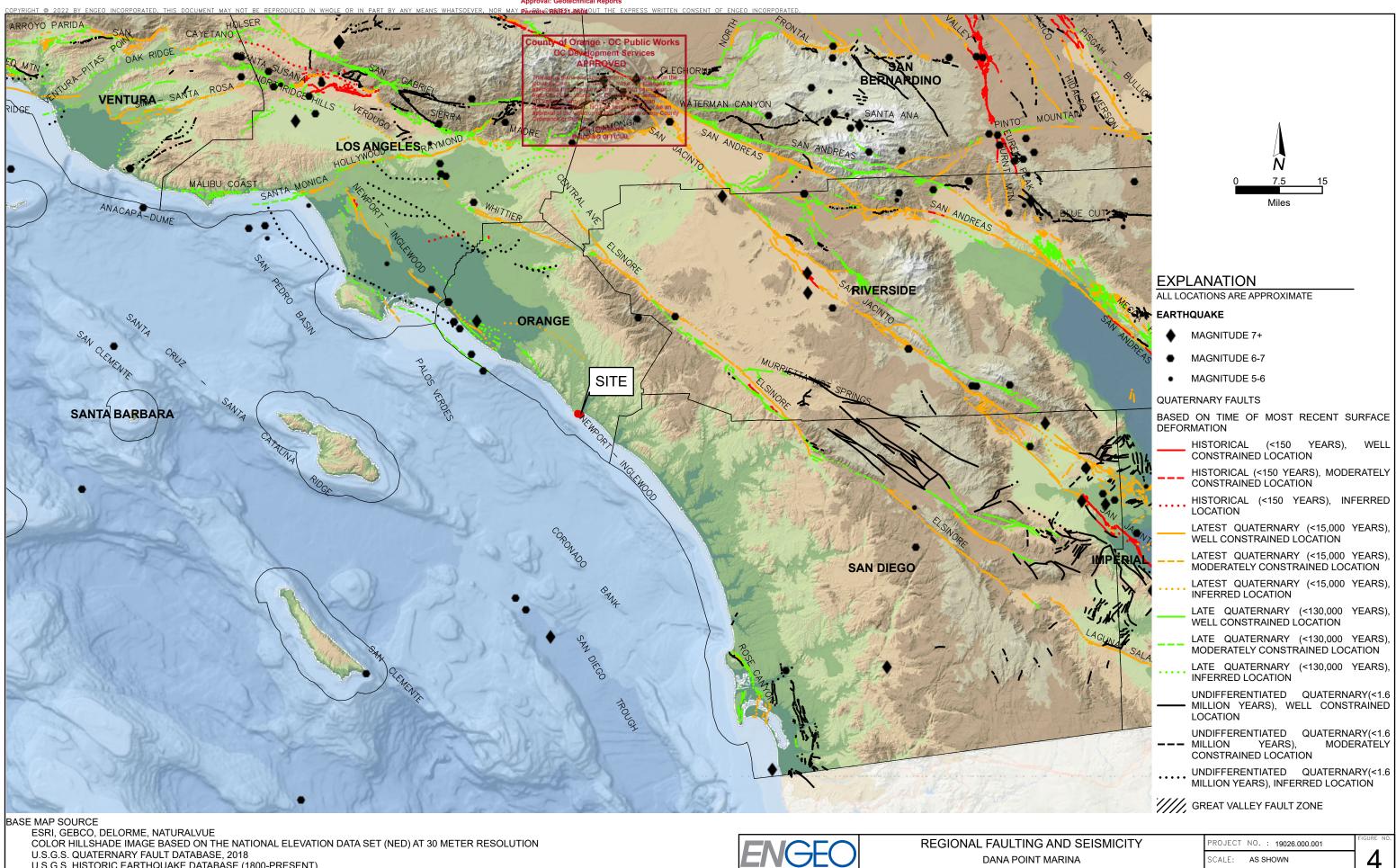


PATH: G:\DRAFTING\PROJECTS_18000 TO 19999\19026\19026000001\GEOTECH\GEX\DANA POINT MARINA.APRX LAYOUT: SEISMIC HAZARD USER: QLIANG

ORIGINAL FIGURE PRINTED IN COLOR



6/9/2022

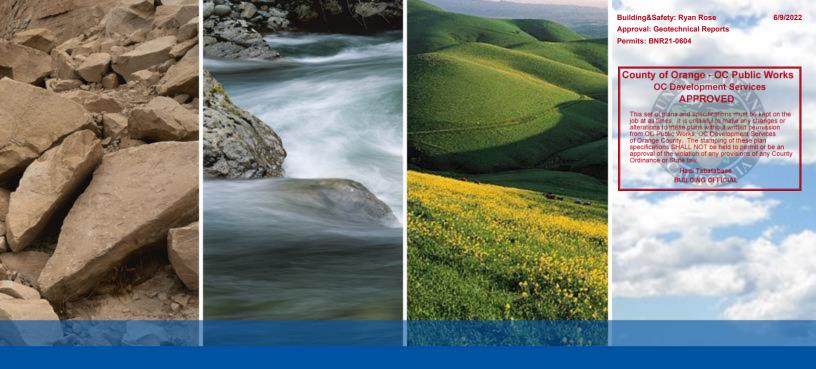


U.S.G.S. HISTORIC EARTHQUAKE DATABASE (1800-PRESENT)



DANA POINT MARINA DANA POINT, CALIFORNIA

DRAWN	BY: QRL	CHECK	ED BY	:JT		
	(DRIGINAL	FIGURE	PRINTED	IN	



APPENDIX A

EXPLORATION LOGS

				Т ВС				CT NAME			OC Development Services				
					וורוכ	٩G	Dana	Point Ha	arbor Revitatilzation	2975	975 OC Development Services D APPROVED CEND				
Dan	a Point	t							1/22/2019)	This set of plans and specifications must be kept on the 1/20/2010es. It is unlawing to make any changes or participation of these plans without burgers are participation.				
DRILL	NG COM	IPANY							IG METHOD LOGGED By OC Public CHECKED By ent Sen						
DRILLI	fic Dril NG EQU	ling JIPMEN	T						v Stem Auger DIA. (in) TOTAL DEPTH (ft) GROUN	ID ELEV (and the second s				
Mar		TUCE					NOTE	6"	40 10.0		Hadi Tabatabaee ¥ 2.0 / Bil Ding OFFICIAL				
SAMPL	ING ME	THOD					NOTES	5							
		ш		Zш											
DEPTH (ft)	EVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	′ DENSITY (pcf)	MOISTURE (%)	ER TS	GRAPHIC LOG							
EPT	VAT	APLE	MPL	NETF SIS:	, DE (pci	DIST (%)	OTHER TESTS	LO	DESCRIPTION AND) CLASS	IFICATION				
		SAN	SA	PEr RE BR	DRY	ž									
F	-								<u>key to exc</u>	ΑΥΑΤ	IUN LOGS				
+	_							-	WATER TABLE MEASURED AT T	IME OF	DRILLING				
+	_								OTHER TESTS						
-	_								CC Confined Compression CL Chloride Content	R F	parts per million of VOCs* Resistivity				
F	F								CS Consolidation DS Direct Shear	CS Consolidation RV R-Value					
5	5								EI Expansion Index GS Grain Size Analysis	SE S	Sand Equivalent Sulfate				
-	-								LC Laboratory Compaction pH Hydrogen Ion	SG S	Specific Gravity Swell				
	_								PI Plasticity Index	UVV C					
									PENETRATION RESISTANCE (B	PENETRATION RESISTANCE (BLOWS/ft)					
									Number of blows required to advance the sampler 1 foot.						
- 10	 0								California Sampler blow counts car counts by using an end-area conve 140-pound hammer and a 30-inch	ersion fac					
+	_								SAMPLE TYPE						
-	_	РB							PB ("Plastic Bag") - a disturbed, but representative sample obtained from a specific depth interval placed in a large plastic bag.						
-	_	S							S ("SPT") - a.k.a. Standard Penetr O.D., 1-3/8-inch I.D. drive sampler.		st, an 18-inch-long, 2-inch				
4/19															
¹ 5 ⊢	 5														
11.GD															
LOGN															
GDC	-														
- L	 _														
2975															
06(3)	-								(00)						
									•						
TCG_METRIC_LOG(3) 2975.GPJ GDCLOGMT.GDT 8/14/19		3890	Murp	sta Cor hy Cany , Califori	on Ro	ad, S	-		THIS SUMMARY APPLIES ONLY AT T OF THIS BORING AND AT THE TIME (SUBSURFACE CONDITIONS MAY DIF LOCATIONS AND MAY CHANGE AT T WITH THE PASSAGE OF TIME. THE I PRESENTED IS A SIMPLIFICATION O	of Drill Fer At (His Loc/ Data	ING. OTHER ATION FIGURE B-1 a				
	o P								CONDITIONS ENCOUNTERED.						

SITE LOCATION Dana Point DRILLING COMPANY Pacific Drilling Hollow									PROJEC NUMBER Orange BORNAUDIC Works arbor Revitatilzation 2975 START 2975 In Start START 1/22/2019 1/23/2019 IG METHOD LOGGED W Stem Auger G. Spaulding of the solution of any provisions of any courty IG IA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft) 40 10.0
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
Tcc. METRIC LOG(3) 2975.6PU GDCLOGMT.GDT 8/14/19									<section-header><section-header><section-header><section-header><section-header><text><text><text></text></text></text></section-header></section-header></section-header></section-header></section-header>
	TerraCosta 3890 Murphy Canyon Road, Suite 200 Consulting Group San Diego, California 92123								THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SITE LO			ΓES	ST BC	DRIN			ст NAME Point Ha	error Revitatilzation PROJEC VOINBERT Orange BORINGIDIIC WORKS arbor Revitatilzation 2975 APPROVED START FINISH SHEET NO. 1/22/2019 1/22/2019 Sheet of plans and specifications must be kept on the 1/22/2019 Sheet of plans a					
Daria DRILLIN Pacifi DRILLIN Marl I SAMPLI SPT	IG COM IC Drilli IG EQU M5	ng IPMEN					NOTES	Hollov BORING 6"	G METHOD ∧ Stem Auger DIA. (in) TOTAL DEPTH (ft) 41 CARCENDA V Intess plans with Objective provisions of any provisions of any courty DIA. (in) TOTAL DEPTH (ft) 41 COGGEL C					
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION					
-									2" - 3" AC / 4" - 6" Class II Base <u>FILL</u> CLAYEY SAND(SC) TO SANDY CLAY (CL) , damp, medium dense, olive to olive-gray					
- - 5 -	5	ΡB	1						- Becomes moist					
- 10 -	0 	S	2	7										
- - - - - - - - - - - - - - - - - - -	 5 	S	3	30					NEAR SHORE DEPOSITS SILTY TO CLAYEY SAND (SC-SM), wet, medium dense, olive gray					
									- Becomes sandier					
TerraC	3	890	Murp	sta Cor hy Cany , Califorr	on Ro	oad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.					

SITE LO	CATION		ΓES	ST BC	DRIN			ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services START FINISH SHEET NO. This set of plans and soldifications must be ket on the						
Dana		ΡΑΝΥ	,						1/22/2019 1/22/2019 1/22/2019 1/22/2019 1/22/2019 Is an adverted as a factor of the set of						
Pacifi									v Stem Auger G. Spaulding the standard of an experimentation of any provisions of any courty						
DRILLIN Marl N		PMEN	IT					BORING 6"	DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV GROUND WATER (ft) 41 10.0 ▼ n/a BUILDING OFFICIAL						
SAMPLI	NG MET	HOD					NOTES								
SPT								1							
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION						
-		S	4	6											
- 25 -	15 	S	5	79/8"			GS PI		CAPISTRANO FORMATION SILT TO CLAYEY SILT (ML) & FINE SANDY CLAY (CL), damp, hard, dark gray, interbedded w/ cemented zones - Hard drilling cemented zone						
- 30 -	 20 								CLAYEY SILT (ML) TO SAND (SP-SM), moist to wet, very dense, gray to dark gray, interbedded, w/ occasional concretions and cemented zones						
- 35	25 														
TerraCosta 3890 Murphy Canyon Road, Suite 200 San Diego, California 92123									THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.						

					אוסר			CT NAME				PROJEC	RUMBA	RT OrangeBORINGIBLIC Works		
				ST BC	JKI	٧G	Dana	Point Ha	arbor Revitatilzation 297			2975	OC Development Services			
	CATION									STAF			ISH This set	SHEET NO. of plans and specifications must be kept on the		
	N Point	ΣΔΝΥ	,						G METHOD	1/2	22/2019		22/20 Blym OC	Des. It is unlawfuoto make any changes or is to these plans without written permission Public Would Concerning went Services		
									v Stem Auger			G Sn	of Orang specifica	Public VCHECKEPIBYent Services e County. The stamping of these plan tions SHALL NOT be held to permit or be an of the violation of any provisions of any County		
DRILLIN	ic Drillir NG EQUII	PMEN	IT					BORING	DIA. (in) TOTAL	DEPTH (ft)	GROUND	ELEV (fi) DEPT	HIELEV. GROUND WATER (ft)		
Mar								6"	41		10.0			A BUILDING OFFICIAL		
	ING MET	HOD					NOTES	3								
SPT				1												
DEPTH (ft)	DEPTH (ft) ELEVATION (ft) SAMPLE TYPE SAMPLE TYPE SAMPLE NO. PENETRATION RESISTANCE (BLOWS/ft) DRY DENSITY (pcf) MOISTURE (%) OTHER TESTS CORPHIC									DESCRIPTION AND CLASSIFICATION						
-	_	S	6	76/11"												
-	_								Botton of hole @ drilling.	2) 41 feet. N	lo free gro	oundwate	er encou	intered at time of		
-	_															
45 _	35 															
-																
-	_															
- 50	 40															
-																
-	_															
F	-															
- 8/14/10 	 45															
I I I I I I I I I I I I I I I I I I I	_															
	-															
1106_METRIC_LOG(3)_2975.GPJ_GDCLOGMT.GDT_8/14/19	– –															
	TerraCosta 3890 Murphy Canyon Road, Suite 200 Consulting Group San Diego, California 92123								THIS SUMMARY A OF THIS BORING SUBSURFACE CC LOCATIONS AND WITH THE PASSA PRESENTED IS A CONDITIONS ENC	AND AT TH ONDITIONS MAY CHAN AGE OF TIMI SIMPLIFICA	E TIME OF MAY DIFF IGE AT TH E. THE DA ATION OF	F DRILLIN ER AT O IS LOCAT ATA	ig. Ther Fion	FIGURE B-2 c		

$(A \cap A) = T = O \cap D \cap D \cap O \cap A$	PROJECT NAME	PROJEC WOMBERT Orange BOR Works
LOG OF TEST BORING	Dana Point Ha	arbor Revitatilzation 2975 OC Development Services
Dana Point		START FINISH Set of plans and solchications must be dept on the 1/22/2019 1/22/2019 1/22/2019 to under write optimizing changes of
Dana Point DRILLING COMPANY	DRILLIN	G METHOD LOGGED Bym OC Public CHECKED Byen Services of Orange County The Stamping of these plan
Pacific Drilling DRILLING EQUIPMENT		N Stem Auger G. Spaulding of the violation of any provisions of any Courty
DRILLING EQUIPMENT Marl M5	BORING 6"	DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEW GROUND WATER (ft) 35 10.0 ▼ n/a Building of Fickat
SAMPLING METHOD	NOTES	
SPT		
DEPTH (ft) ELEVATION (ft) SAMPLE TYPE SAMPLE TYPE SAMPLE NO. PENETRATION RESISTANCE (BLOWS/ft) DRY DENSITY (pcf) MOISTURE (%)	OTHER TESTS GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	7777	2" - 3" AC
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		FILL CLAYEY SAND (SC) & SANDY CLAY (CL), damp to moist, medium dense, olive to olive-gray, interbedded - Becomes clayier
		NEAR SHORE DEPOSITS SILTY TO CLAYEY SAND (SC/SM), becomes olive-gray to gray CAPISTRANO FORMATION SILTY SAND (SC/SM), becomes olive-gray to gray
61/16 -5 -5 100 -5 2 17 - -		SILTY SAND (SP-SM), moist, medium dense, yellow to yellow-brown, w/ occasional gravels
TerraCosta 3890 Murphy Canyon Road, S Consulting Group San Diego, California 92123	-	THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SITE LO	CATION		ΓES	ST BC	DRIN	1721		ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services START FINISH SHEET NO. This set of plans and solcifications must be keet on the
Dana DRILLIN		PANY	,					DRILLIN	G METHOD 1/22/2019 1/26 Set is underword agree any changes or G METHOD LOGGED By m CC PUBLIC CHECK EPE By end Services of Crange Could CHECK EPE By end Services of Crange Could CHECK EPE By end Services
Pacifi	<u>c Drillin</u> G FOUI	ng PMEN	л						w Stem Auger G. SpaulCations HALL NOT be held to permit or be an G. SpaulCations HALL NOT be held to permit or be an DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft)
Marl I	M 5		••					6"	35 10.0 ¥ n/a_BULDING OFFICIAL
SAMPLI SPT	NG MET	HOD					NOTES	6	
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
-		S	3	17			GS		SILTY SAND (SM), moist to wet, medium dense, olive-gray, w/ occasional gravels
- - - 25 - - - - - - - - - - - - - - - -			4	59/11" 89/9"			GS PI		Harder drilling Gravels SILT (ML) & FINE SAND (SC), moist, very dense, dark gray, interbedded, occasional cemented zones Becomes Silty Sand (SM) - Very hard drilling
	25 								Practical refusal @ 35 feet. No free groundwater encountered at time of drilling.
Consulting	38	890	Murp	sta Cor hy Cany , Califori	on Ro	ad, S	-		THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SITE LO	CATION		ΓES	ST BC	RIN	1 C L		CT NAME Point H	arbor Revitat	ilzation	STAR		297	'5 FINIS	C SH This set o	C Development Services APPROVED SHEET NO.	i s
Dana		PANY						DRILLIN	G METHOD		1/2	2/2019			atteration	Des. It is unlawful to parket in y changes or is to these plans without written permission Public CHECKEPIEVent Services e County . In estamping of these plan	
Pacifi	<u>c Drillir</u>	ng						Hollo	w Stem Auge		,		G. 3	Spaι	Jaing	tions SHALL NOT be held to permit or be an of the violation of any provisions of any Court	тy
DRILLIN Marl I		PMEN	IT					BORING 6"	DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV GROUND WATER (ft) 41 7.5 ▼ n/a BUILDING OFFICIAL								
SAMPLI		HOD					NOTES			<u> </u>		7.5			÷ 11/	a	┢
SPT																	
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG		DESCF	RIPTIO	ON AND	CLAS	SIFIC	CATIO	DN	
-	 5								2" - 3" AC <u>FILL</u> SILTY TO		AND	(SM/SC	:) , dam	p, me	edium	dense, olive	
- 5 -		S	1	22					<u>FILL</u> SILT (ML)), damp, me	dium	dense, ç	gray, w	/ silts	tone c	chunks	
- - 	0 	S S	2	79/8"					- Large pi	ece of ceme	nted	siltstone	(move	d hol	le 4')		
- - 15	5 		3	14					RECENT	NEAR SHO	RED	FPOSIT	<u>.</u>				
	— —-10	0	3	14					SILTY TO gray	RED CAPIS	AND	(SM/SC	;), dam	-	moist,	medium dense,	
									SAND TO mottled ye	SILTY FIN ellow-brown	E SAI to ligł	ND (SM) nt olive-g), moist gray, w	t, loos / occa	asiona	nedium dense, al gravel	
TerraCo	38	390	Murp	ta Con hy Cany Califorr	on Ro	ad, S			OF THIS BC SUBSURFA LOCATIONS WITH THE F PRESENTE	MARY APPLIE DRING AND A CE CONDITI S AND MAY (PASSAGE OF D IS A SIMPI NS ENCOUNT	AT THI ONS I CHAN TIME LIFICA	E TIME C MAY DIF GE AT TI E. THE D ATION OF	DF DRIL FER AT HIS LOO DATA	LING F OTH CATIO). IER ON	FIGURE B-4 a	

SITE LO	CATION		ΓES	ST BC	DRI	111		ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services START FINISH SHEET NO. This set of plans and specifications must be kept on the
DRILLIN Pacifi DRILLIN Marl	Point IG COMF IC Drillir IG EQUIF M5 NG MET	ng PMEN					NOTES	Hollov BORING 6"	I/22/2019 I/22/2019 G METHOD LOGGED W Stem Auger G. Spaulding of these plant with the sample of these plant of the
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
-		S	4	9			GS PI		- Becomes Clayey Sand (SC)
- 25 - -	 	S	5	50/4"			GS		CAPISTRANO FORMATION SAND TO SILTY FINE SAND (SM), damp, very dense, olive-gray to gray, interbedded, w/ occasional gravels - Cemented - Hard drilling - Interbedded siltstone (ML) & sandstone (SM)
- 30 - -	 								- Very hard drilling
0GMT.GDT 8/14/19 	_								- Cemented zone 34' to 35'
100 METRIC_LOG(3) 2975.GPJ GDCLOGONT.GDT 8/14/19	30 								- Cemented zone 37' to 39'
TerraC DOC Consulting	38	390	Murp	sta Cor hy Cany , Califori	on Ro	oad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

Γ					Т ВС				CT NAME							ERI OrangeBORINGIBLIC Works
							NG	Dana	Point Ha	arbor Revita	tilzation			2975		OC Development Services APPROVED
ľ	SITE LO											STAF				of plans and specifications must be kept on the
-	Dana DRILLIN	G COMI	PANY	,						G METHOD		1/2	2/2019		Bipm Of	A Des. It is unlawfub to barke any changes or ins to these plans without written permission D Public CHECKED By Ant Services ge County : The stamping of these plan
										v Stem Aug	er			GS		ge County. The stamping of these plan ations SHALL NOT be held to permit or be an Oof the violation of any provisions of any County
Ī	Pacifi DRILLIN	G EQUI	PMEN	T					BORING	DIA. (in)	TOTAL DEP	TH (ft)	GROUN	D ELEV (ft) DEP	THIELEV. GROUND WATER (ft)
	Marl M								6"		41		7.5		_ ⊻ r	a Building OFFICIAL
1	SAMPLI	NG MET	HOD					NOTES	5							
-	SPT															
	DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG		DESC	RIPTI	ON AND	CLASS	IFICATI	N
-	-		S	6	74											
-	-	35								Bottom c drilling.	of hole @ 41	feet. N	lo free g	roundwa	ater enco	ountered at time of
	-															
-	_45	_														
	-	_														
	-	40 														
	- 															
-	-															
	-	4 5														
19	-	_														
F.GDT 8/14/	- 55															
GDCLOGM	-	— —-50														
(3) 2975.GPJ																
LOG																
TCG_METRIC_LOG(3) 2975.GPJ_GDCLOGMT.GDT_8/14/19	TerraCosta 3890 Murphy Canyon Road, Suite 200 San Diego, California 92123									OF THIS B SUBSURF LOCATION WITH THE PRESENT	MARY APPLI ORING AND ACE CONDIT IS AND MAY PASSAGE O ED IS A SIMP INS ENCOUN	AT TH IONS I CHAN F TIME LIFICA	E TIME C MAY DIFI GE AT TI E. THE D ATION OF	OF DRILL FER AT (HIS LOCA ATA	ING. DTHER ATION	FIGURE B-4 c

			ES	т вс	DRIN	101		<mark>ст NAME</mark> Point Ha	arbor Revitatilzation 2975 OC Development Services
SITE LO Dana		1							START FINISH SHEET NO. 1/23/2019 1/23/2019 5. It is underwide parket on the 1/23/2019 1/23/2019 5. It is underwide parket on the 1/23/2019 5. It is underwide parket on the state of the
DRILLIN	G COM								G METHOD LOGGEL By MOC Public VCHE CKEPT By An Services of Orange County The stamping of these plan
Pacifi DRILLIN	c Dri ll i G EQUI	ng PMEN	т					Hollo BORING	w Stem Auger G. Spacifications of Ault Drop behald to permit or be an under the violation of any provisions of any p
Marl N							NOTE	6"	40 10.0 ▼ n/a_Building official
SAMPLII SPT	NGMEI	HOD					NOTES	5	
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									2" - 3" AC / 3" Class II
	5 0 0 0 0 	S	1	4					FLL CLAYEY SAND (SC) & SANDY CLAY (CL), damp, medium stiff, olive-gray, mix - Becomes mostly olive Sandy Clay (CL)
TerraCo Consulting (3	890	Murp	sta Cor hy Cany , Califorr	on Ro	ad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SITE LO	CATION		ΓES	ST BC	DRIN	101		ст NAME Point Ha	arbor Revitatilzation 2975 C Development Services START FINISH SHEET NO. This set of plans and specifications must be kept on the
Dana DRILLIN Pacifi DRILLIN	G COM							Hollo	G METHOD LOGGED By m OC Public CHECKED By end Services of Orange County. The stamping of hese plan software w Stem Auger G. SpaulCHING of the violation of any provisions of any County DIA. (in) TOTAL DEPTH (ftt) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft)
Marl M SAMPLII SPT		HOD					NOTES	6" 5	40 10.0 ¥ n/a_BULDING OFFICIAL
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
_		S	2	19					WEATHERED CAPISTRANO FORMATION SAND (SP-SM) & SILT (ML), damp, medium dense, olive and dark gray, interbedded
- - 25	 15		3	19			GS		CAPISTRANO FORMATION SAND (SP-SM) & SILT (ML), damp, medium dense to dense, olive and dark gray, interbedded w. occasional cemented zones - Harder drilling cemented zone
-)							- Harder drilling cemented zone
30 -	20 _	S	4	53			GS		- Becomes Silty Sand (SM)
-									- Harder drilling
35	25 								- Cemented zone
	_								- Hard drilling Bottom of hole @ 40 feet sanding in. No free groundwater encountered at
TerraCo	sta -		- 0						time of drilling. THIS SUMMARY APPLIES ONLY AT THE LOCATION
Consulting	38	390	Murp	sta Cor hy Cany , Califorr	on Ro	ad, S	-		OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

LOC SITE LOC Dana DRILLING Pacific DRILLING Marl M SAMPLIN SPT	CATION Point G COMP C Drillin G EQUII 15	PANY ng PMEN		ST BC	DRIN	1721		DRILLIN Hollov BORING 6"	arbor Revitatilzation 2975 C Development Services Appendent START FIN ISH 1/23/2019 I /23/2019 I /2
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		S	1	9					P"- 3" AC FILL SANDY CLAY (CL) & CLAYEY SAND (SC), damp, loose to medium dense, dark gray and olive, w/ occasional gravels - Becomes moist to wet
TerraCo Consulting G	38	390	Murp	ta Con hy Cany Califorr	on Ro	ad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

	G OI		ſES	т вс	DRIN			ст NAME Point Ha	arbor Revitatilzation 2975 Approved Start Finish Start
	Point								1/23/2019 This set of plans and specifications must be kept on the 1/23/2019 1/23/2019 1/23/2019
DRILLIN	IG COMF								G METHOD LOGGED BY OC Public CHECKED By Ment Services
Pacif	ic Drillir IG EQUIF	IG MEN	т						v Stem Auger DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft)
Marl								6"	36 10.0 ▼ n/a Building OFFICIAL
SAMPL	NG MET	HOD					NOTES		
SPT	1			1				1	
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
-	_	S	2	6			GS PI		
- - 25									CAPISTRANO FORMATION SILT (ML) & FINE SANDY CLAY (CL), damp, very dense, dark gray, interbedded, w/ occasional cemented zones
-	_	S	3	74/10"			GS PI		- Becomes Silty Sand (SM)
- 30 -	 20								- Very hard drilling
	 		4	72/10"					- Cemented zone
106_METRIC_LOG(3) 2975.GPJ GDCLOGMT.GDT 8/14/19			-					/ ` / `	Practical refusal @ 36 feet. No free groundwater encountered at time of drilling.
TerraC UU Consulting	38	390	Murp	sta Cor hy Cany , Califori	on Ro	ad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SITE LO	CATION		ΓES	ST BC	DRIN	101		ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services START FINISH SHEET NO. This set of plans and soldifications must be keet on the
Dana DRILLIN Pacifi DRILLIN Marl N SAMPLI	<mark>с сом</mark> <u>с Drilli</u> с еси и5	ng PMEN					NOTES	Hollow BORING 6"	1/23/2019 1/23/2019 1/23/2010 €s. The undervise based on the period of
SPT (tt) DEPTH (tt)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
-									2" - 3" AC / 3" Class II Base <u>FILL</u> CLAYEY SAND (SC) & SANDY CLAY (CL), moist, soft to medium stiff, olive & gray, mix
5 _ _ _	5 								WEATHERED CAPISTRANO FORMATION CLAYEY SAND (SC), moist, medium dense, light olive w/ yellow-brown iron oxide staining
- 10 - - -	0 	S	1	25					- Gravels
	5 	S	2	14					- Rock in tip of sampler, poor recovery
TerraCo Consulting	3	890	Murp	sta Con hy Cany , Califorr	on Ro	ad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

LOC SITE LO Dana DRILLIN Pacifi DRILLIN Marl I SAMPLI	CATION Point G COM C Drillir G EQUI	PANY ng PMEN		ST BC	DRIN			DRILLIN Hollov BORING 6"	PROJECT PROJECT WWMBERI Orange Bork McIDIIC Works arbor Revitatilzation 2975 OC Development Services START FIN ISH SHEET NO. 1/23/2019 1/23/2019 This set of plans and specifications must be kept on the 1/23/2019 G METHOD LOGGED Bym OC Public CHECKEP Byeat Services of Orange County of these plant who in the same signal who in the services of Orange County of these plant services of Orange County of these plant services of Orange County of these plant of these plant services of Orange County of these plant of these plant services of Orange County of these plant of these plant services of Orange County of these plant of these plants of these plants of the plant of these plants of the plant of these plants of these plants of these plants of these plants of the plant of the p
SPT (#)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			3 4	36 72 87/10"			GS		- Poor recovery CAPISTRANO FORMATION SILTY SAND TO SAND (SP-SM), moist, very dense, light olive-gray w/ yellow iron oxide staining, interbedded - Hard drilling - w/ occasional dark gray clay chunks - Very hard drilling
TerraC	38	390	Murp	sta Cor hy Cany , Califori	on Ro	ad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

LOC SITE LO			ΓES	ST BC	DRIN			ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services
Dana		ναν							I/23/2019 This set of plans and specifications must be kept on the 1/23/2010 Set is undwriting parketing between young set 23/2010 Set is undwriting parketing between young set 20/2010 Set is undwriting parketing set is the parket of the set of the set of the set of the set of the Set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of t
Pacifi								Hollov	v Stem Auger G. Spacifications SHALL NOT be held to permit or be an G. Spacifications of any provisions of any County
DRILLIN Marl N		PMEN	IT					BORING 6"	DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV GROUND WATER (ft) 46 10.0 ▼ n/a BUILDING OFFICIAL
SAMPLI	NG MET	HOD					NOTES		
SPT				_					
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
- - - -45	 	S	6	71			GS		- Hard drilling SAND (SM), moist, very dense, gray
- - 50	 40								Bottom of hole @ 46 feet. No free groundwater encountered at time of drilling.
- 55	 45 								
TerraCo Consulting	38	390	Murp	ita Cor hy Cany Califori	on Ro	ad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.



Project No. 119031

Mr. Gregory A. Spaulding TerraCosta Consulting Group, Inc. 3890 Murphy Canyon Road, #200

YOUR SUBSURFACE SOLUTION

Subject: Geophysical Evaluation Dana Point Harbor Dana Point, California

Dear Mr. Spaulding:

San Diego, CA 92123

In accordance with your authorization, we have performed geophysical survey services pertaining to the Dana Point Harbor project located in Dana Point, California (Figure 1). The purpose of our survey was to develop Shear-wave velocity profiles to be used for design and construction at the site. Our services were performed on January 23, 2019. This report presents the survey methodology, equipment used, analysis, and findings from our study.

Our scope of services included the performance of four refraction microtremor (ReMi) profiles (RL-1 through RL-4) at preselected areas of the project site (see Figures 2 and 3). The ReMi technique uses recorded surface waves (specifically Rayleigh waves) that are contained in background noise to develop a Shear-wave velocity profile of the study area down to a depth, in this case, of approximately 100 feet. The depth of exploration is dependent on the length of the line and the frequency content of the background noise. The results of the ReMi method are displayed as a one-dimensional sounding which represents the average condition across the length of the line. The ReMi method does not require an increase of material velocity with depth; therefore, low velocity zones (velocity inversions) are detectable with ReMi.

Our ReMi survey included the use of a 24-channel Geometrics Geode seismograph and 24 4.5-Hz vertical component geophones. The geophones were spaced 10 feet apart for a total line

job at all t

Permits: BNR21-0604 February & 2019 County of Orange - OC Public Works Project Not Development Services APPROVED

6/9/2022

pt on the

length of 230 feet. Fifteen records, each 32 seconds long, were recorded and ther a computer. The data were later processed using SeisOpt® ReMiTM software (© Optim+L Decease Build by orficer

2005), which uses the refraction microtremor method (Louie, 2001). The program generates phase-velocity dispersion curves for each record and provides an interactive dispersion modeling tool where the users determine the best fitting model. The result is a one-dimensional shear-wave velocity model of the site with roughly 85 to 95 percent accuracy. Figure 3 depicts the general site conditions in the survey area.

Figures 4a through 4d present the results from our survey. Based on our analysis of the collected data, the average characteristic site Shear-wave velocity down to a depth of 100 feet is 1,399 feet per second (ft/s) for RL-1, 1,352 ft/s for RL-2, 1,381 ft/s for RL-3, and 1,118 ft/s for RL-4 (CBC, 2016). These values correspond to site classifications of **C** for RL-1 through RL-3 and **D** for RL-4. The results also indicate a substantial, abrupt, increase in velocity at an approximate depth of 22 feet and 25 feet at locations RL-1 through RL-3, and RL-4 respectively. It should be noted the ReMi results represent the average condition across the length of the line.

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Southwest Geophysics should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended

Figure 2019 Project Noc Del Hubble Int Services APPROVED This set of plane and specifications must be kept on the set of plane and specifications must be kept on the plane and specifications must be kept on the set of plane and specifications must be kept on the set of plane and specifications must be kept on the set of plane and specifications must be kept on the set of plane and specifications must be kept on the set of plane and specifications must be kept on the set of plane and specifications of any County of the violation of any provisions of any County of nance or State law. partices' sole pisk spatial base Buildone of Fricial

exclusively for use by the client. Any use or reuse of the findings, conclusions, and of the client is undertaken at said parties' sole risk abraba

We appreciate the opportunity to be of service on this project. Should you have any questions related to this report, please contact the undersigned at your convenience.

Sincerely,

SOUTHWEST GEOPHYSICS, LLC

Aaron T. Puente Project Geophysicist

ATP/HV/hv

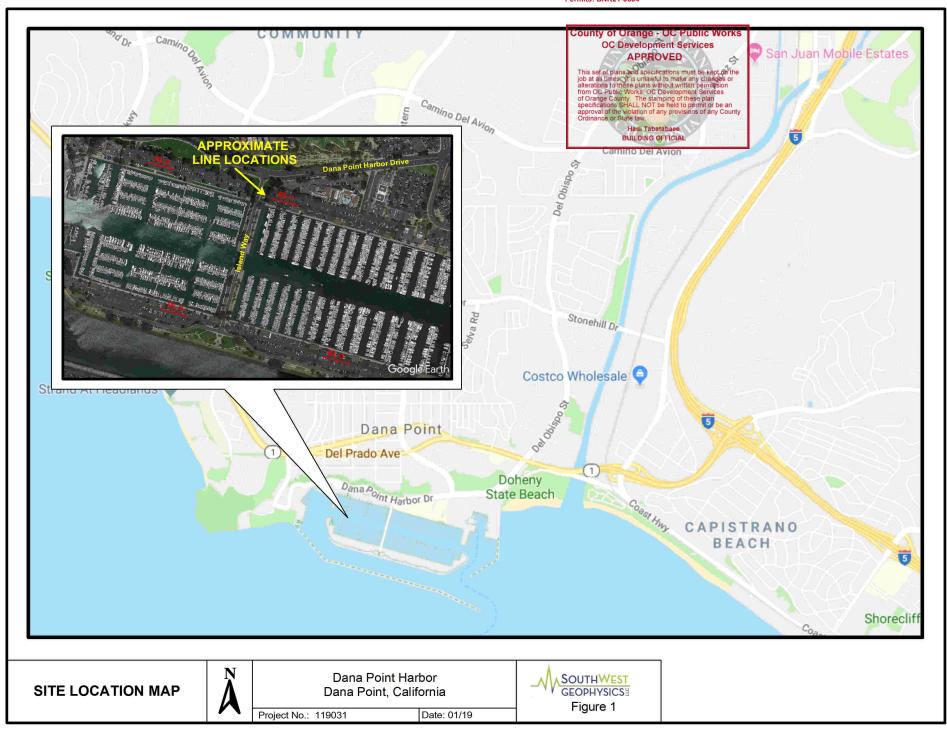
Attachments: Figure 1 – Site Location Map Figure 2 – Seismic Line Location Map Figure 3 – Site Photographs Figure 4a – ReMi Results, RL-1 Figure 4b – ReMi Results, RL-2 Figure 4c – ReMi Results, RL-3 Figure 4d – ReMi Results, RL-4

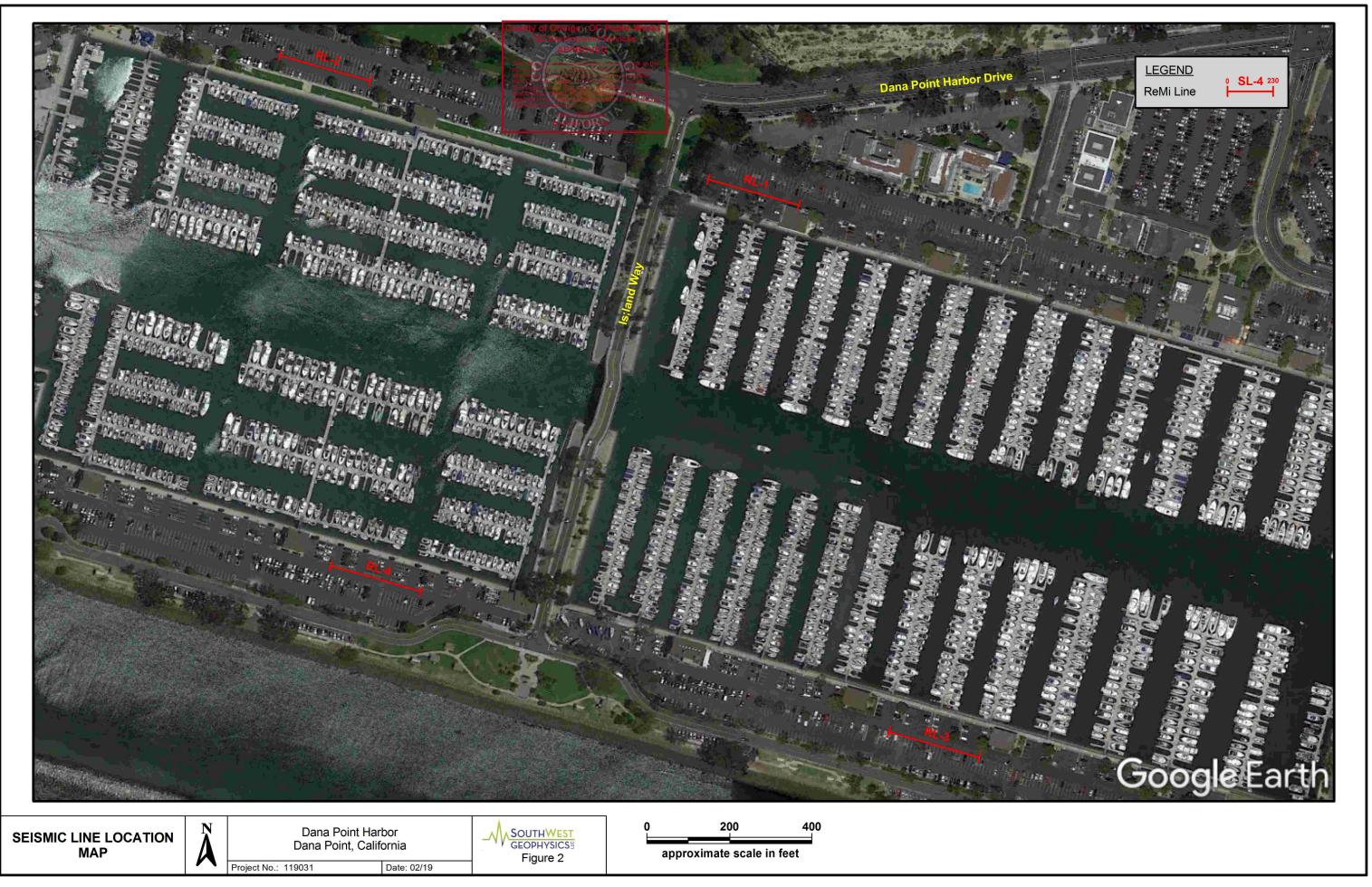
Distribution: Addressee (electronic)



Hans van de Vrugt, C.E.G., P.Gp. Principal Geologist/Geophysicist



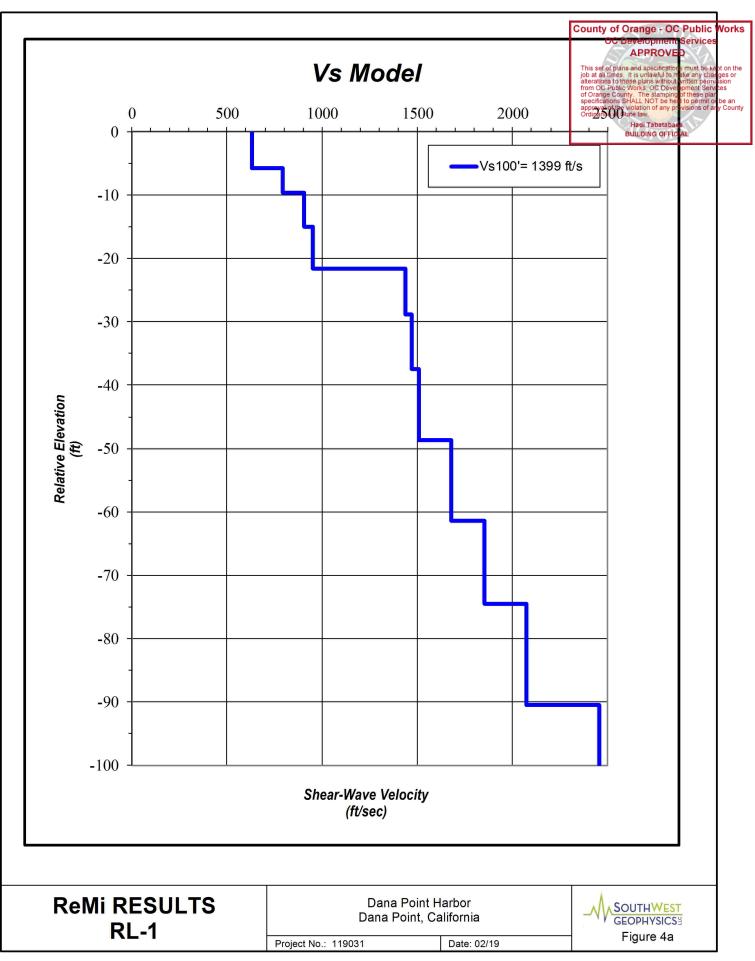


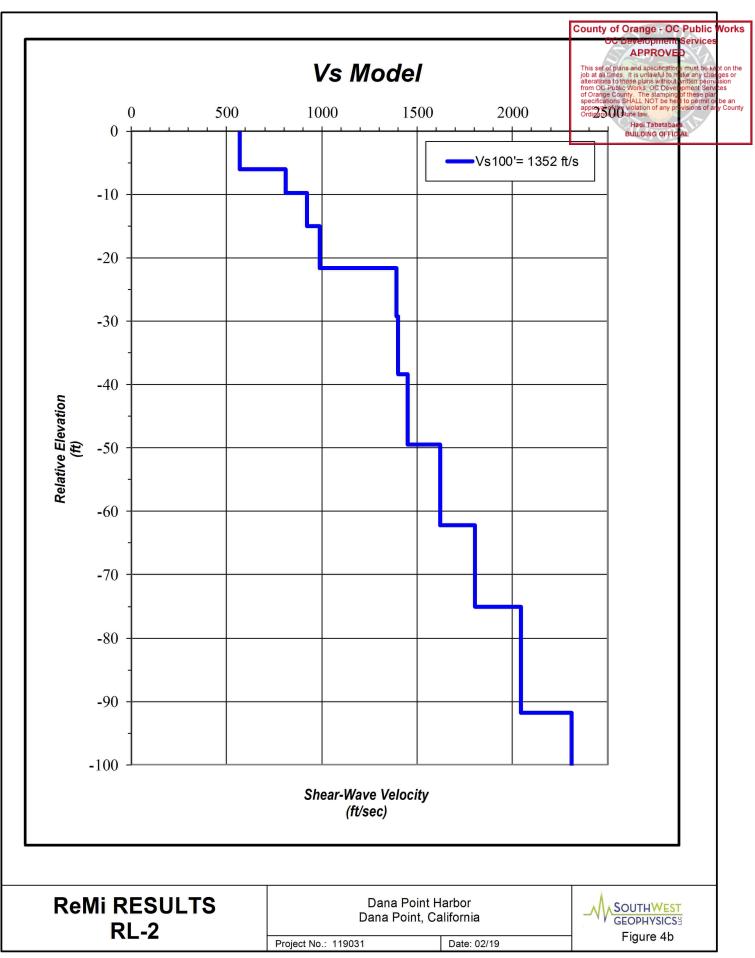


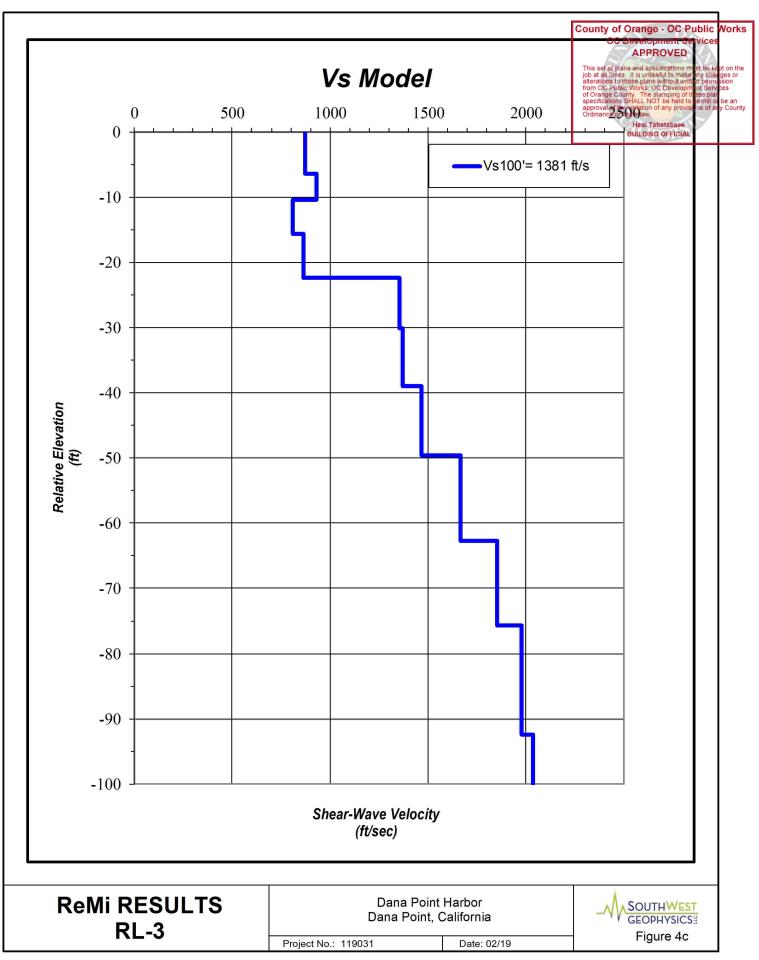


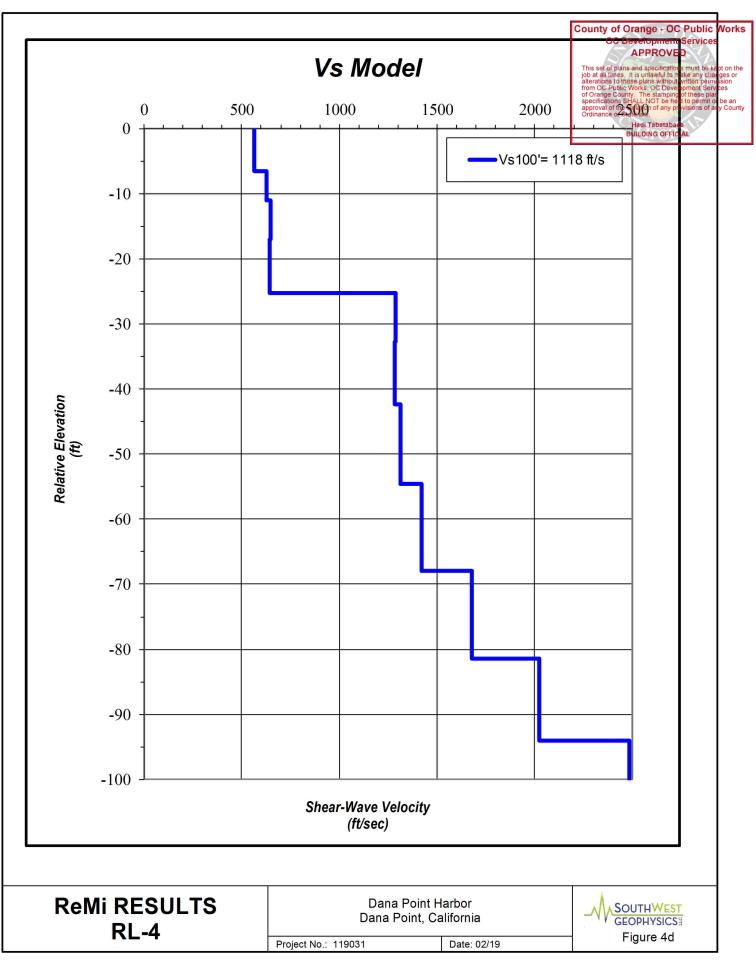


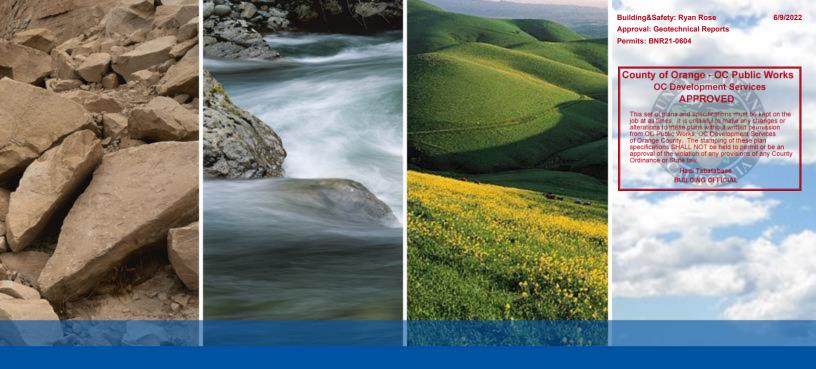






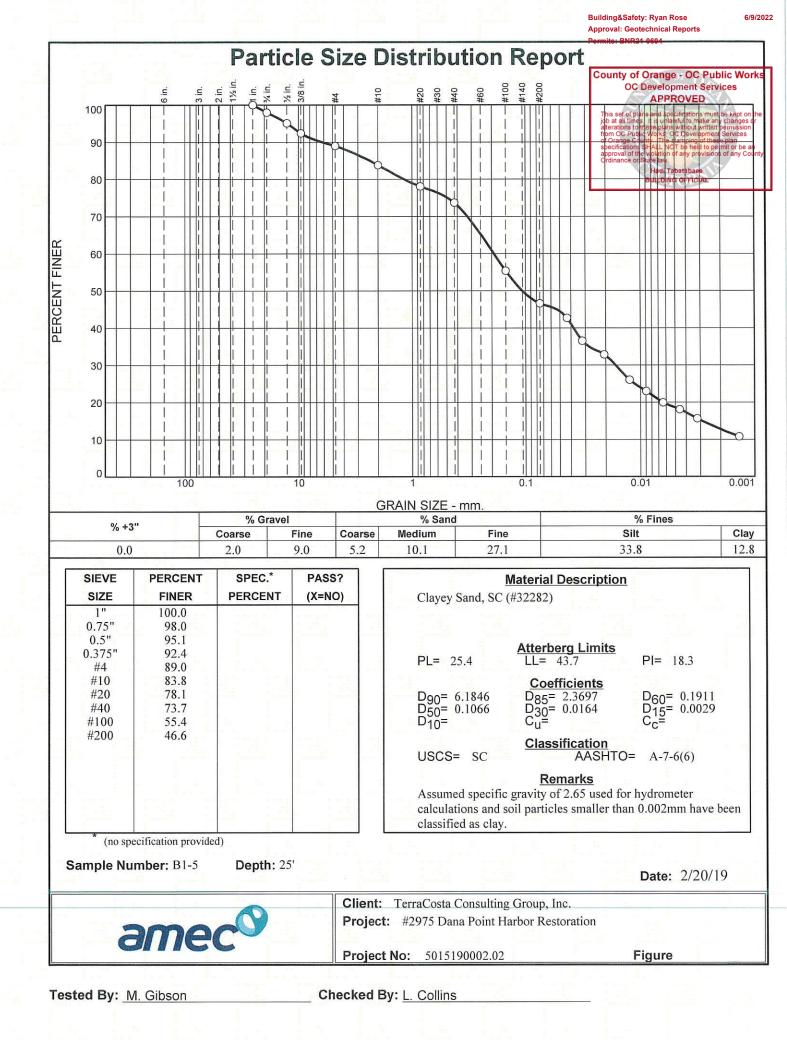






APPENDIX B

LABORATORY TEST DATA



			and the same site					Permits: BN	eotechnical Reports
			GRAIN S	IZE DISTI	RIBUTIC		Γ DATA		of Orange - OC 8/6/20/
								0	C Development Services APPROVED
Client: Terra	Costa Consul	ting Group,	Inc.					This set of job at all tir	plans and specifications must be kep nes. It is unlawful to make any chang
Project: #297	5 Dana Poin	t Harbor Res	storation					alterations from OC P	to these plans without written permiss ublic Works. OC Development Service
Project Numb	per: 5015190	002.02						specificatio	County. The stamping of these plan ons SHALL NOT be held to permit or to f the violation of any provisions of any or State law.
Depth: 25'					Samp	le Numbe	er: B1-5	Ordinance	Hadi Tabatabaee
Material Desc	cription: Cla	yey Sand, SC	C (#32282)						BUILDING OFFICIAL
Date: 2/20/19		PL: 2:	5.4		LL: 43	3.7		PI: 18.3	
USCS Classif	fication: SC				AASH	TO Class	sification: A-	7-6(6)	
Testing Rema	arks: Assum	ed specific g	ravity of 2.65	used for h	ydromete	er calcula	tions and soil	particles small	ler than 0.002mm
	have be	een classified	l as clay.						
Tested by: M	. Gibson				and second s	ked by: L	. Collins		
				Sieve	Test Da	ta			
Sieve									
Opening Size	Percent Finer								
1"	100.0								
0.75"	98.0								
0.5"	95.1								
0.375"	92.4								
#4	89.0								
#10	83.8								
#20	78.1								
#40	73.7								
#100	55.4								
#200	46.6			Hydrome	eter Test	Data			
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weigh	46.6 st uses mater ng #10 based rometer samp noisture corre t and tare = 7	upon comple ole =70.33 ection: 78.74	10 te sample = 83		eter Test	Data			
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight	46.6 st uses mater ng #10 based rometer samp noisture corre t and tare = and tare =	upon comple ble =70.33 ection: 78.74 77.14 26.27	10 s te sample = 83		eter Test	Data			
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight Hygroscopic	46.6 st uses mater ng #10 based ometer samp noisture corre t and tare = and tare = = c moisture =	upon comple ble =70.33 ection: 78.74 77.14 26.27 3.1%	10 te sample = 8:		eter Test	Data			
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight	46.6 st uses mater ng #10 based ometer samp noisture corre- t and tare = and tare = = c moisture = osite correcti	upon comple ble =70.33 ection: 78.74 77.14 26.27 3.1%	10 ote sample = 83 20.3	3.8 20.9	21	3	22.6		
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp, deg. Comp. corr.:	46.6 st uses matering #10 based rometer samp noisture correct and tare = = c moisture = c moisture = c soite correcti C:	upon comple ble =70.33 ection: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5	te sample = 83	3.8	22	3	22.6 -2.5		
#200 Hydrometer te Percent passin Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty	46.6 st uses matering #10 based rometer samp noisture correct and tare = and tare = c moisture = cosite correcti C: ection only = y of solids = pe = 152H	upon comple ole =70.33 ection: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65	20.3 -3.0	20.9 -2.8	211 -2.	3			
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer	46.6 st uses matering #10 based rometer samp noisture correct and tare =	upon comple ole =70.33 ection: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation:	20.3 -3.0 L = 16.294964	20.9 -2.8	211 -2.	38	-2.5	Parrent	
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp, deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer	46.6 st uses matering #10 based rometer samp noisture correct and tare = and tare = c moisture = cosite correcti C: ection only = pe = 152H effective dep Temp.	upon comple ole =70.33 ection: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation: Actual	20.3 -3.0 L = 16.294964 Corrected	3.8 20.9 -2.8 164 x Rn	21 -2.	3 8 Eff.	-2.5 Diameter	Percent Finer	
#200 Hydrometer te Percent passin Weight of hydr Hygroscopic n Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Elapsed Time (min.)	46.6 st uses mater ng #10 based rometer samp noisture correct and tare = = c moisture = c moisture = c moisture = c moisture = c moisture = c moisture = c moisture = posite correcti C: t moisture = c	upon comple ole =70.33 ection: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	20.9 -2.8 164 x Rn K	21. -2. Rm	3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
#200 Hydrometer te Percent passin Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00	46.6 st uses mater ng #10 based rometer samp noisture correct and tare = = c moisture = c moisture = c moisture = c moisture = c moisture = posite correcti C: = c moisture = y of solids = pe = 152H effective dep Temp. (deg. C.) 19.7	upon comple ole =70.33 ection: 78.74 77.14 26.27 3.1% on values: [9.1 -3.5 0.0 2.65 th equation: Actual Reading 38.0	20.3 -3.0 L = 16.294964 Corrected Reading 34.8	20.9 -2.8 164 x Rn K 0.0137	211 -2. n Rm 38.0	3 8 Eff. Depth 10.1	-2.5 Diameter (mm.) 0.0434	Finer 42.7	
#200 Hydrometer te Percent passin Weight of hydr Hygroscopic n Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.)	46.6 st uses mater ng #10 based rometer samp noisture correct and tare = = c moisture = c moisture = c moisture = c moisture = c moisture = c moisture = c moisture = posite correcti C: t moisture = c	upon comple ole =70.33 ection: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	20.9 -2.8 164 x Rn K	21. -2. Rm	3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00	46.6 st uses mater ng #10 based rometer samp noisture correct and tare = c moisture	upon comple ole =70.33 section: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 38.0 33.0	20.3 -3.0 L = 16.294964 Corrected Reading 34.8 29.8	20.9 -2.8 164 x Rn K 0.0137 0.0137	21. -2. Rm 38.0 33.0	3 8 Eff. Depth 10.1 10.9	-2.5 Diameter (mm.) 0.0434 0.0319	Finer 42.7 36.6	
#200 Hydrometer te Percent passir Weight of hydr Hygroscopic n Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00	46.6 st uses matering #10 based rometer samp noisture correct and tare = c moisture = c moisture = cosite correcti C: ection only = y of solids = pe = 152H effective dep Temp. (deg. C.) 19.7 19.7 19.7	upon comple ole =70.33 section: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 38.0 33.0 30.0	20.3 -3.0 L = 16.294964 Corrected Reading 34.8 29.8 26.8	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137	21 -2. Rm 38.0 33.0 30.0	3 .8 Eff. Depth 10.1 10.9 11.4	-2.5 Diameter (mm.) 0.0434 0.0319 0.0207	Finer 42.7 36.6 32.9	
#200 Hydrometer ter Percent passir Weight of hydr Hygroscopic n Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00	46.6 st uses matering #10 based rometer samp noisture correction and tare = $\frac{1}{2}$ c moisture = $\frac{1}{2}$ cosite correction C: $\frac{1}{2}$ ection only = $\frac{1}{2}$ y of solids = $\frac{1}{2}$ pe = 152 H effective dep Temp. (deg. C.) 19.7 19.7 19.7 19.6	upon comple ole =70.33 ection: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 38.0 33.0 30.0 24.5	20.3 -3.0 L = 16.294964 Corrected Reading 34.8 29.8 26.8 21.2	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	211. -2. Rm 38.0 33.0 30.0 24.5	3 .8 Eff. Depth 10.1 10.9 11.4 12.3	-2.5 Diameter (mm.) 0.0434 0.0319 0.0207 0.0124	Finer 42.7 36.6 32.9 26.1	
#200 Hydrometer ter Percent passin Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00	46.6 st uses matering #10 based rometer samp noisture correct and tare = c moisture = f c moisture = f c m p. (deg. C.) 19.7 19.7 19.7 19.6 19.6 19.6	upon comple ole =70.33 ection: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 38.0 33.0 30.0 24.5 22.0	20.3 -3.0 L = 16.294964 Corrected Reading 34.8 29.8 26.8 21.2 18.7	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	211 -2. Rm 38.0 33.0 30.0 24.5 22.0	3 8 Eff. Depth 10.1 10.9 11.4 12.3 12.7	-2.5 Diameter (mm.) 0.0434 0.0319 0.0207 0.0124 0.0089	Finer 42.7 36.6 32.9 26.1 23.0	
#200 Hydrometer ter Percent passin Weight of hydr Hygroscopic n Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	46.6 st uses mater ng #10 based rometer samp noisture correct and tare = c moisture	upon comple ole =70.33 section: 78.74 77.14 26.27 3.1% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 38.0 33.0 30.0 24.5 22.0 19.5	20.3 -3.0 L = 16.294964 Corrected Reading 34.8 29.8 26.8 21.2 18.7 16.3	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. Rm 38.0 33.0 30.0 24.5 22.0 19.5	3 8 Eff. Depth 10.1 10.9 11.4 12.3 12.7 13.1	-2.5 Diameter (mm.) 0.0434 0.0319 0.0207 0.0124 0.0089 0.0064	Finer 42.7 36.6 32.9 26.1 23.0 20.0	

AMEC

Building&Safety: Ryan Rose Арр

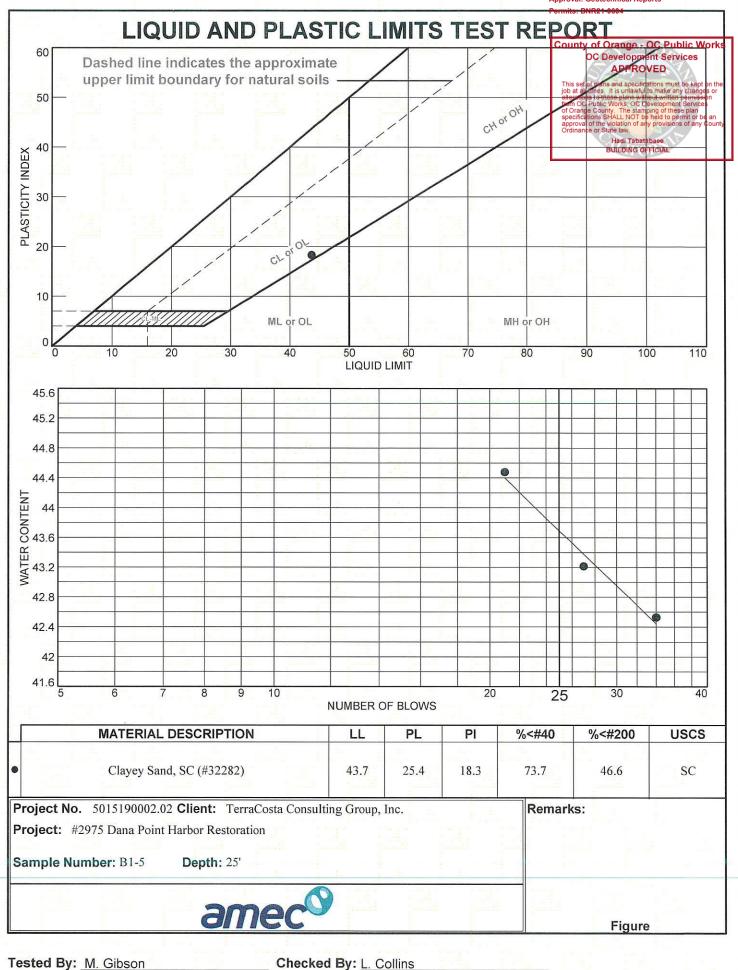
6/9/2022

proval:	Geoteo	chnical	Reports

Cobbles									County of Orange - OC Public OC Divesopment Service		
Copples	Coarse	Fine	Tota	I Coa	rse Mec	dium 👘 I	Fine	Total	Silt	CARPRO	
0.0	2.0	9.0	11.0	5.2	2 10	0.1	27.1	42.4	33. Shis set	of plans and specification times. It is unlawful t	tions must be kept on o make any changes
									from OC of Orang	Public Works, OC De e County. The stamp	velopment Services ing of these plan
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	of Orang specifica	Public Works, OC De e County. The stamp tions SHALL NOT be of the violation of any or State law. Hardi Tabata Buil EING OF	ing of these plan held to permit or be a provisions of any Co

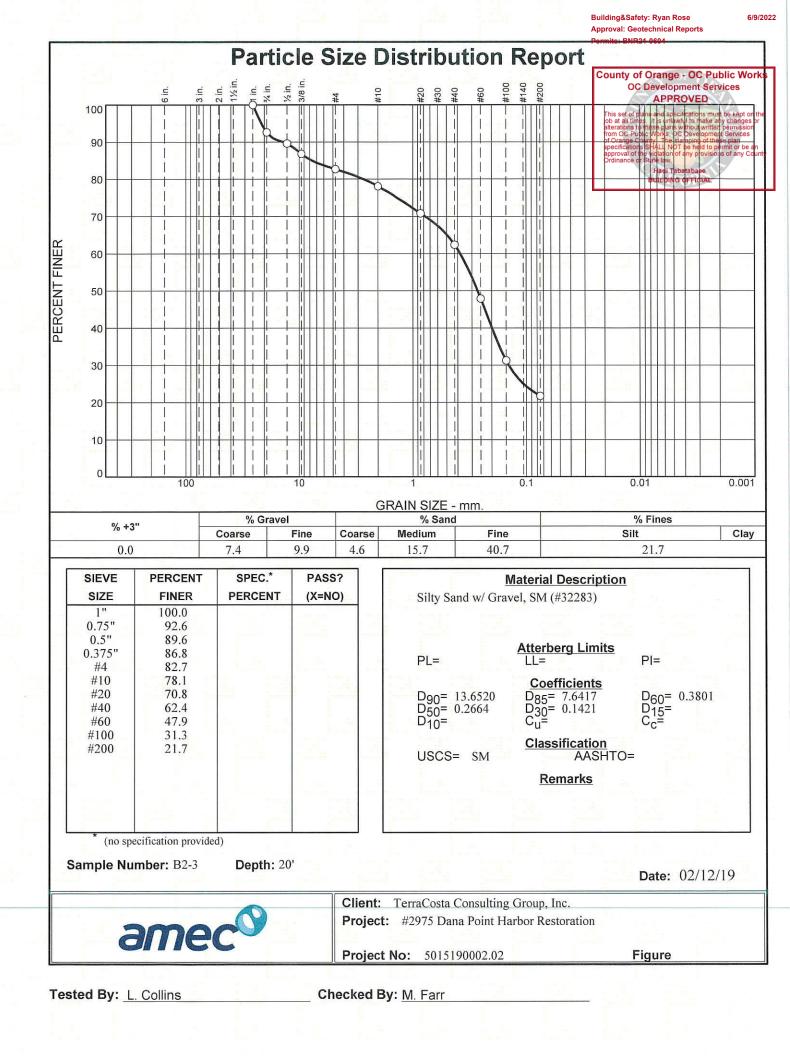
1.55

Building&Safety: Ryan Rose Approval: Geotechnical Reports



Depth: 25' Material Desc %<#40: 73.7		Sand, SC (#32282) %< #200: 46.6	USCS		AASHTO:	Hadi Tabatabaee BUILDING OFFICIAL
ested by: M	. Gibson		Checl Liquid Limit D	<mark>ked by:</mark> L. Collins ata		
Run No.	1	2	3	4	5	6
Net+Tare	24.29	26.02	24.17		3	0
Dry+Tare	21.33	22.58	21.15			
Tare	14.37	14.62	14.36		1.051	1
# Blows	34	27	21			
Moisture	42.5	43.2	44.5			
45.6					1.14	uid Limit= 43.
45.2						uid Limit= <u>43.7</u> stic Limit= <u>25.4</u>
44.8						75219 13
0.77					Plastic	city Index=18.3
44.4		3				
44						
43.6						
≥ 43.2			2			
12.0						
42.8	and S. Sarah					
42.4						
42						
41.6	7 8 9 10	20 2	5 30 40			
		Blows	5			
			Plastic Limit D	ata		
	1	2	3	4		
Run No.	27.68	27.51				
Vet+Tare		26.19		8 j8	and a second	
Vet+Tare Dry+Tare	26.35					
Run No. Wet+Tare Dry+Tare Tare Moisture	26.35 21.11 25.4	21.01 25.5				

Building&Safety: Ryan Rose



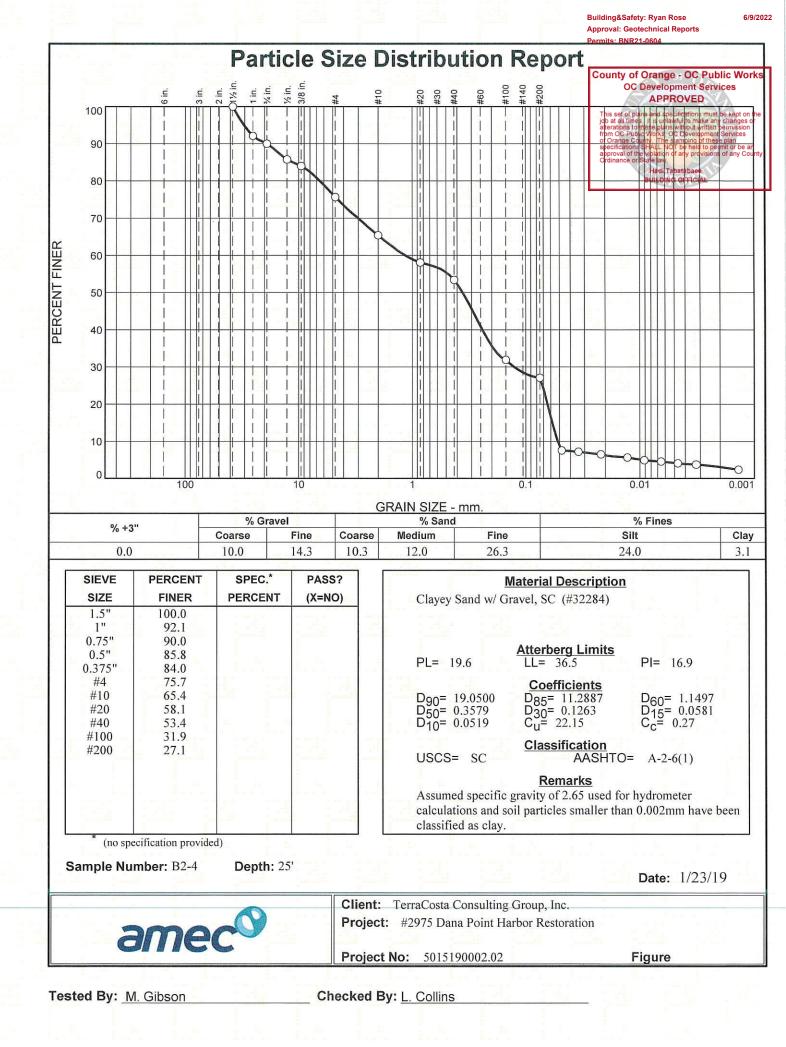
		Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-9004
GRA	IN SIZE DISTRIBUTION TEST DATA	County of Orange - OGHA/2018brks
Client: TerraCosta Consulting Group, Inc. Project: #2975 Dana Point Harbor Restoration		OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these of law without writing the promission
Project Number: 5015190002.02		alterations to these plans without written permission from OC Public Works, OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law.
Depth: 20' Material Description: Silty Sand w/ Gravel, SM	Sample Number: B2-3	Hadi Tabatabaee BUILDING OFFICIAL
Date: 02/12/19 USCS Classification: SM		
Tested by: L. Collins	Checked by: M. Farr	And a line of the line
	Sieve Test Data	
Sieve Opening Percent Size Finer		

	100.0	1"
	92.6	0.75"
	89.6	0.5"
	86.8	0.375"
	82.7	#4
	78.1	#10
	70.8	#20
	62.4	#40
	47.9	#60
	31.3	#100
12	21.7	#200

		and the second		Fracti	onal Compo	nents				
Cabblaa		Gravel			Sar	nd		Fines		
Cobbles	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	7.4	9.9	17.3	4.6	15.7	40.7	61.0		1.448	21.7

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D50	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		_		0.1421	0.1989	0.2664	0.3801	2.6913	7.6417	13.6520	21.3081

Fineness Modulus 2.32



							and the second second	Building&Safety: Approval: Geote Permits: BNR21-	chnical Reports	
			GRAIN S	IZE DISTI	RIBUTIC	ON TEST	DATA	County of C	Drange - OC Pil	6//2003
	Josto Carro II	ing Casara	Inc						APPROVED	VIL'ES
Client: Terra(job at all times.	s and specifications mus It is unlawful to make ar	ny changes
Project: #297			storation					from OC Public	ese plans without written Works, OC Developmenty. The stamping of the HALL NOT be held to pe	nt Services
Project Numb	ber: 3013190	002.02			Comm	la Numbe	- D2 4	specifications S approval of the Ordinance or St	violation of any provision	ermit or be a ns of any Co
Depth: 25'	nintians Clas	.a. Cand .u/	Croupl CC (#22284)	Samp	le Numbe	er. D2-4		Hadi Tabatabaee BUILDING OFFICIAL	7
Material Desc Date: 1/23/19		PL: 19		#32204)	LL: 30	5		PI: 16.9	BOILDING OFFICIAL	
		PL: IS	9.0				ifi anti ann. A			
USCS Classif		d anasifis a		used for h			ification: A-		r than 0 002m	
lesting Rema				used for n	yaromete	er calcula	lions and soll	particles smaller	r than 0.002m	un
		en classified	as clay.		01	d d have T	Calling			
Tested by: M	. Gibson				CONTRACTOR OF THE OWNER	ked by: L	. Collins			
				Sieve	Test Da	ita		and the second second		
Sieve										
Opening	Percent Finer									
Size										
1.5"	100.0									
1"	92.1									
0.75"	90.0									
0.5"	85.8									
0.375" #4	84.0 75.7									
#10	65.4									
#20	50 1									
#20 #40	58.1									
#40	53.4									
#40 #100	53.4 31.9									
#40 #100 #200 Hydrometer tes	53.4 31.9 27.1 st uses materi	ial passing #	10 te sample = 63	Hydrome	eter Test	t Data				
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyj	53.4 31.9 27.1 st uses matering #10 based of rometer samp noisture correct and tare = 8 and tare = 8 and tare = 2 cosite correction C: 1 ection only = 2 pe = 152H effective dept	upon comple le =194.09 ction: 33.21 31.57 25.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation:	20.3 -3.0 L = 16.294964	20.9 -2.8	21 -2	.3 .8	22.6 -2.5			
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer tyj Hydrometer	53.4 31.9 27.1 st uses matering #10 based of rometer samp noisture correct and tare = 8 and tare = 8 and tare = 2 cosite correction C: 1 ection only = 2 pe = 152H effective dept Temp.	upon comple le =194.09 ction: 33.21 31.57 25.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual	20.3 -3.0 L = 16.294964 Corrected	5.4 20.9 -2.8 164 x Rn	21 -2	.3 .8 Eff.	-2.5 Diameter	Percent		
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyj Hydrometer tyj Hydrometer tyj Elapsed Time (min.)	53.4 31.9 27.1 st uses matering #10 based of rometer samp noisture corrections and tare = 88 and tare = 88 and tare = 22 consisture = 22 consist corrections C: 1 ection only = 22 pe = $152H$ effective deptons Temp. (deg. C.)	upon comple le =194.09 ction: 33.21 51.57 55.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	5.4 20.9 -2.8 164 х Rn К	21 -2 n Rm	.3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer		
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp. Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer Elapsed Time (min.) 1.00	53.4 31.9 27.1 st uses matering #10 based of rometer samp noisture correct t and tare = 8 and tare = 8 and tare = 2 c moisture = 2 cosite correction c: 1 ection only = y of solids = 2 pe = $152H$ effective dept Temp. (deg. C.) 19.6	upon complete = 194.09 ction: 33.21 31.57 25.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 25.0	20.3 -3.0 L = 16.294964 Corrected Reading 21.7	20.9 -2.8 164 x Rn K 0.0137	21 -2 n Rm 25.0	.3 .8 Eff. Depth 12.2	-2.5 Diameter (mm.) 0.0479	Finer 7.5		
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corm Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00	53.4 31.9 27.1 st uses matering #10 based of cometer samp noisture correct t and tare = 8 and tare = 8 c moisture = 2 cosite correction C: 1 ection only = y of solids = 2 pe = $152H$ effective dept Temp. (deg. C.) 19.6 19.6	upon complete = 194.09 ction: 33.21 31.57 25.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 25.0 24.0	20.3 -3.0 L = 16.294964 Corrected Reading 21.7 20.7	20.9 -2.8 164 x Rn K 0.0137 0.0137	21 -2 Rm 25.0 24.0	.3 .8 Eff. Depth 12.2 12.4	-2.5 Diameter (mm.) 0.0479 0.0341	Finer 7.5 7.2		
#40 #100 #200 Hydrometer tee Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corrvit Hydrometer typ Hydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00	53.4 31.9 27.1 st uses matering #10 based of rometer samp noisture corrected and tare = 8 and tare = 8 c moisture = 2 cosite corrected C: 1 ection only = 2 pe = $152H$ effective dept Temp. (deg. C.) 19.6 19.6 19.6	upon complete = 194.09 ction: 33.21 31.57 25.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 25.0 24.0 22.0	20.3 -3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137	21 -2 n Rm 25.0 24.0 22.0	.3 .8 Eff. Depth 12.2 12.4 12.7	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218	Finer 7.5 7.2 6.5		
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr 1.00 2.00 5.00 15.00	53.4 31.9 27.1 st uses matering #10 based of rometer samp noisture corrections and tare = $\frac{8}{2}$ c moisture = 2 cosite corrections C: 1 ection only = 2 pe = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6	upon complete =194.09 ction: 3.21 5.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 25.0 24.0 22.0 19.5	20.3 -3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7 16.2	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 25.0 24.0 22.0 19.5	.3 .8 Eff. Depth 12.2 12.4 12.7 13.1	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218 0.0128	Finer 7.5 7.2 6.5 5.6		
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp. Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyy Hydrometer tyy Hydrometer ty Hydrometer ty Hydrometer ty 1.00 2.00 5.00 15.00 30.00	53.4 31.9 27.1 st uses matering #10 based of rometer samp noisture corrections and tare = 8 and tare = 8 and tare = 2 consisture = 2 cons	upon complete le =194.09 ction: 33.21 31.57 25.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 25.0 24.0 22.0 19.5 17.5	20.3 -3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7 16.2 14.2	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 25.0 24.0 22.0 19.5 17.5	.3 .8 Eff. Depth 12.2 12.4 12.7 13.1 13.4	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218 0.0128 0.0092	Finer 7.5 7.2 6.5 5.6 4.9		
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	53.4 31.9 27.1 st uses matering #10 based of cometer samp noisture correct t and tare = 8 and tare = 8 c moisture = 2 cosite correction c moisture = 2 cosite correction c moisture = 2 st cosite correction c moisture = 2 cosite correction c moisture = 2 cosite correction c moisture = 2 cosite correction c moisture = 2 st cosite correction c moisture = 2 cosite correction c moisture = 2 st cosite correction c moisture = 2 cosite correctio	upon complete = 194.09 ction: 33.21 31.57 25.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 25.0 24.0 22.0 19.5 17.5 16.5	20.3 -3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7 16.2	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 25.0 24.0 22.0 19.5	.3 .8 Eff. Depth 12.2 12.4 12.7 13.1	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218 0.0128	Finer 7.5 7.2 6.5 5.6		
#40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp. Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyy Hydrometer tyy Hydrometer ty Hydrometer ty Hydrometer ty 1.00 2.00 5.00 15.00 30.00	53.4 31.9 27.1 st uses matering #10 based of rometer samp noisture correct t and tare = 8 and tare = 8 and tare = 2 c moisture = 2 osite correction C: 1 ection only = y of solids = 2 pe = $152H$ effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6 19.6	upon complete le =194.09 ction: 33.21 31.57 25.85 2.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 25.0 24.0 22.0 19.5 17.5	20.3 -3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7 16.2 14.2 13.2	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 Rm 25.0 24.0 22.0 19.5 17.5 16.5	.3 .8 Eff. Depth 12.2 12.4 12.7 13.1 13.4 13.6	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218 0.0128 0.0092 0.0065	Finer 7.5 7.2 6.5 5.6 4.9 4.6		

AMEC

Building&Safety: Ryan Rose Approval: Geotechnical Reports

6/9/2022

٦

nits: BNR21-0604

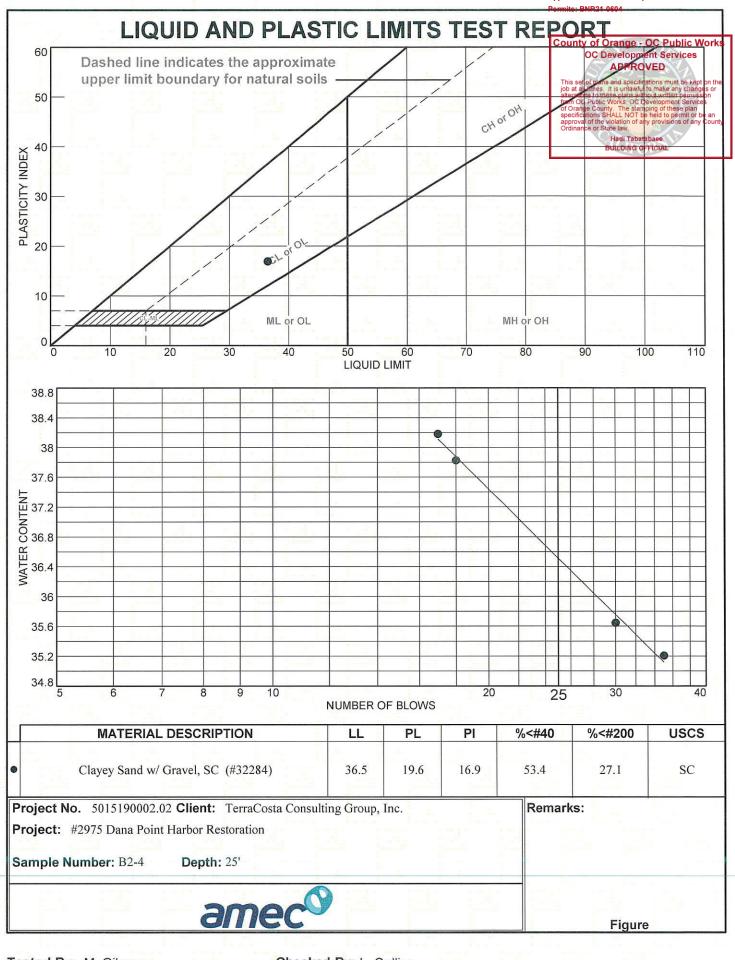
	avita de la compañía			F	ractional C	Componer	its			County	of Orange -	OC Public W	Vo
Cabbles		Gravel	Sand								OCHIBES opment Services		
Cobbles	Coarse	Fine	Tota	I Coa	rse Med	lium 📔 I	Fine	Total	S	lt /	CIAPPRO	VEDTotal	
0.0	10.0	14.3	24.3	10.	3 12	2.0	26.3	48.6	24	.0 This set of job at all ti	plans and specification of the second specification of the	ations must be kept to make any chang	t or ges
										of Orange	County. The stamp	ping of these plan	
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀		approval o	ons SHALL NOT be of the violation of an or State law. Hadi Tabata Boil900 G OF	held to permit or b y provisions of any	
D 5 0.0096	D ₁₀ 0.0519	D ₁₅ 0.0581	D ₂₀ 0.0641	D ₃₀ 0.1263	D₄₀ 0.2415	D ₅₀ 0.3579	D ₆₀ 1.1497	D ₈₀ 6.5105		approval o Ordinance	ons SHALL NOT be of the violation of an or State law	held to permit or b y provisions of any	

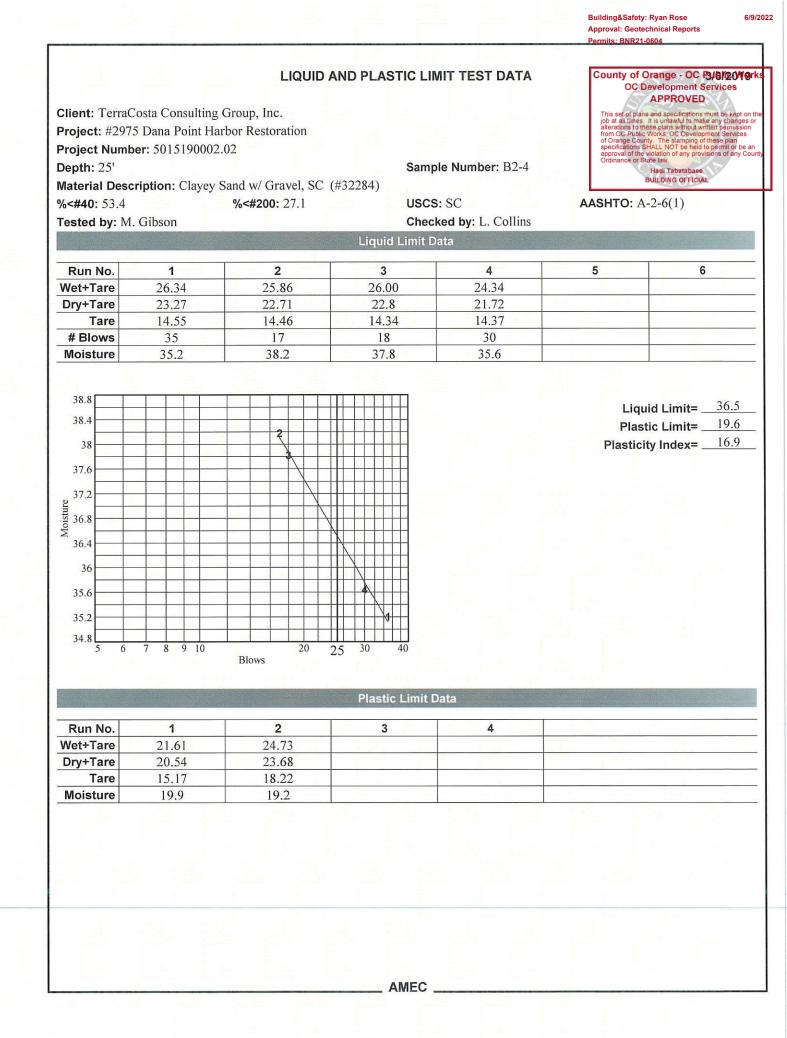
22.15

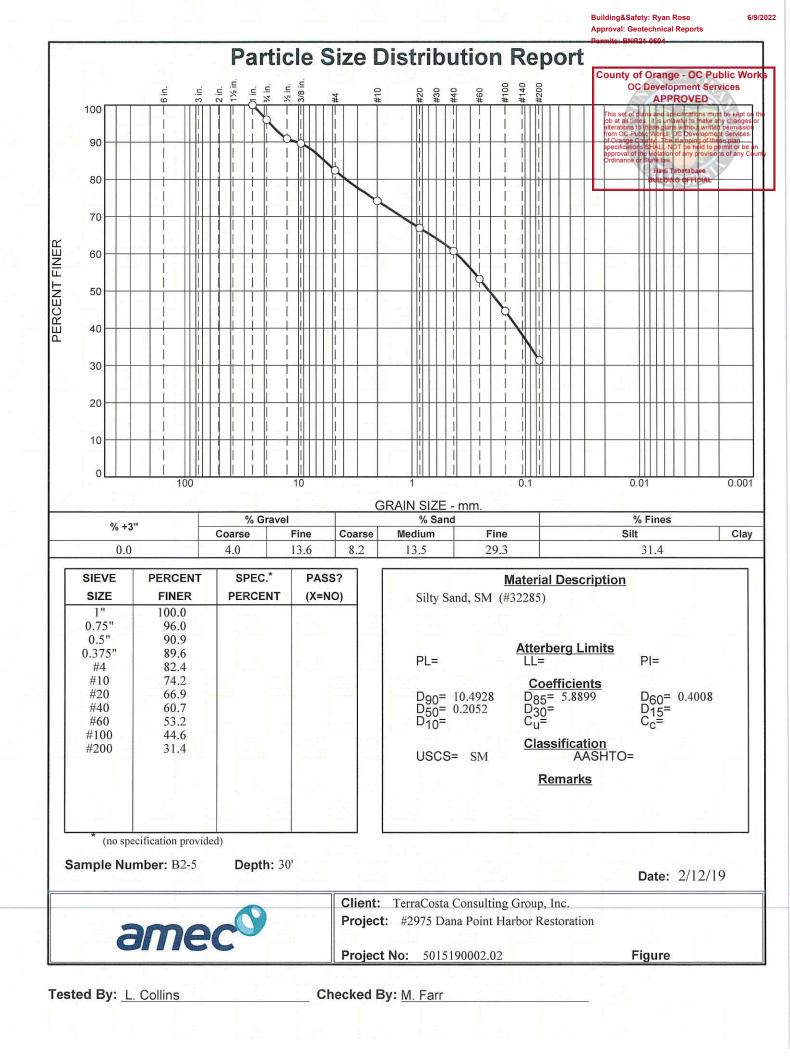
2.89

0.27

Building&Safety: Ryan Rose Approval: Geotechnical Reports



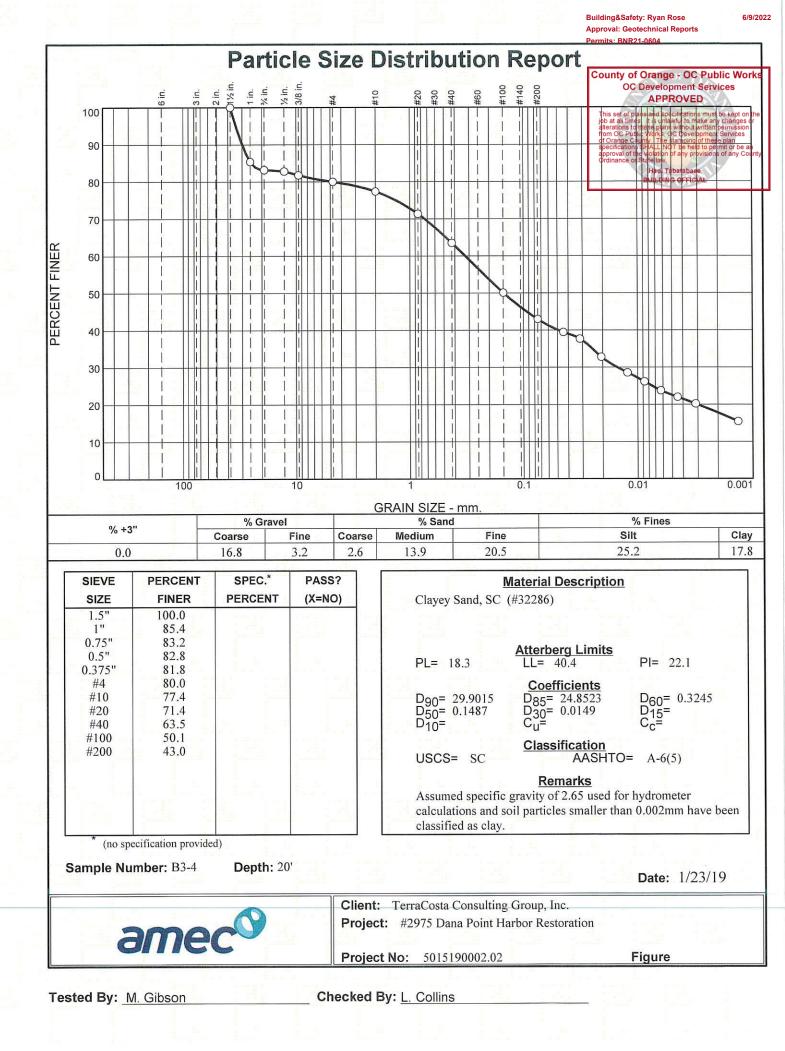




								Approva	&Safety: Ryan Rose I: Geotechnical Reports -BNR21-0604	6/9/20
			GRA	IN SIZE DI	STRIBUTIC	N TEST	DATA	Coun	ty of Orange - OC OC Development S APPROVED	Services
Client: Terra	aCosta Consi	ulting Grou	p, Inc.					This s	et of plans and specifications	must be kept on the
Project: #29	75 Dana Poi	nt Harbor H	Restoration					altera	all times. It is unlawful to mak tions to these plans without wi DC Public Works, OC Develop	ritten nermission
Project Nun	nber: 501519	0002.02				OC Public Works, OC Develop ange County. The stamping of fications SHALL NOT be held val of the violation of any prov	f these plan to permit or be an risions of any County			
Depth: 30'					Samp	e Number:	B2-5	Ordin	ance or State law. Hadi Tabatabaee	
Material De	scription: Sil	lty Sand, SI	M (#32285)				·	BUILDING OFFICIA	IL.
Date: 2/12/1	9									
USCS Class	ification: SN	Λ								
Tested by: I	. Collins				Check	ed by: M.	Farr			-
				Si	ieve Test Da	ta				
Sieve Opening Size 1" 0.75" 0.5" 0.375" #4 #10 #20	Percent Finer 100.0 96.0 90.9 89.6 82.4 74.2 66.9									
#40	60.7									1. T
#40	53.2									
#100	44.6									s.,
#200	31.4									
				Fracti	onal Compo	nents				
	T	Gravel		1	Sa	ad			Fines	
Cobbles	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt		Total
0.0	4.0	13.6	17.6	8.2	13.5	29.3	51.0			31.4
	100.000	100000333720033	100000000000000000000000000000000000000	2543361C5+0	and a second value of the	2110-00 PM (199-002)	15823489192/32		1	NCTINE (CATALO)

D ₅	D ₁₀	D ₁₅	D ₂₀	D30	D40	D50	D60	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		_			0.1169	0.2052	0.4008	3.8061	5.8899	10.4928	17.7952

Fineness Modulus 2.22



								Building&Safety: R Approval: Geotech Permits: BNR21-00	nical Reports	
			GRAIN	SIZE DIST	RIBUTI	ON TES			ange - OC Pdb velopment Servi	
liont Torra	Costa Consult	ing Crown	Inc						APPROVED	663
Client: Terra Project: #297		-			a 14 114 14 104			iob at all times. It	and specifications must is unlawful to make any	changes
Project Numb			storation					from OC Public W	e plans without written p orks, OC Development The stamping of these	Services
-	ber: 3013190	002.02			0	la Norra	D2 4	specifications SH/ approval of the vic Ordinance or State	. The stamping of these ALL NOT be held to period to blation of any provisions	mit or be a of any Co
Depth: 20'	windlaw. Clar	ion Cond C	7 (#2228()		Samp	le Numb	er: B3-4		ladi Tabatabaee	
Material Desc Date: 1/23/19		ey Sand, So PL: 1				0.4			JILDING OFFICIAL	1
JSCS Classif		PL; I	0.3		LL: 4		161 - Al A	PI: 22.1		
		d analifia a	mouity of 26	5 used for h			sification: A-		them 0.000	22
esting Rema				5 used for n	iyaromet	er calcula	tions and sol	l particles smaller	than 0.002mr	n
ested by: M		en classifie	a as clay.		Choo	ked by: L	Collins			
ested by. M	. 0105011			Siove	e Test Da	CARLING THE STORE	. Comins			
				JIEVE	e rest Da	ala				A. State
Sieve Opening	Percent									
Size	Finer									
1.5"	100.0									
1"	85.4									
0.75"	83.2									
0.5"	82.8									
0.375"	81.8									
#4	80.0									
#10	77.4									
#20	71.4									
	(25									
#40	63.5									
#40 #100	50.1									
#100 #200 lydrometer tes	50.1 43.0 st uses materi			Hydrom	eter Tes	t Data				
#100 #200 lydrometer test ercent passin Veight of hydr ygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity	50.1 43.0 st uses materi ig #10 based to ometer sample to observe correct t and tare = 7 and tare = 7 = 2 consisture correction C: 1 ection only = 0 y of solids = 2 be = 152H	upon comple le =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65	20.3 -3.0	20.9 -2.8	21 -2	.3	22.6 -2.5			
#100 #200 wdrometer test ercent passin Veight of hydr ygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity Hydrometer typ	50.1 43.0 st uses matering #10 based of ometer sample noisture correct and tare = 7 = 22 consist correction C: 1 ection only = 0 y of solids = 2 boe = 152H effective dept	upon comple le =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation:	20.3 -3.0 L = 16.294964	20.9 -2.8	21 -2	.3 .8	-2.5			
#100 #200 lydrometer test ercent passin Veight of hydr ygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity	50.1 43.0 st uses materi ig #10 based to ometer sample to observe correct t and tare = 7 and tare = 7 = 2 consisture correction C: 1 ection only = 0 y of solids = 2 be = 152H	upon comple le =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65	20.3 -3.0	20.9 -2.8	21 -2	.3	22.6 -2.5 Diameter (mm.)	Percent		
#100 #200 hydrometer test ercent passin Veight of hydr ygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity ydrometer typ Hydrometer Elapsed Time (min.) 1.00	50.1 43.0 st uses materi ig #10 based to ometer sample to based to ometer sample to based to ometer sample to and tare = 7 = 2 consisture = 2 consister correction C: 1 constance = 1 constan	upon comple le =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 36.0	20.3 -3.0 L = 16.294964 Corrected Reading 32.7	20.9 -2.8 4164 x Rn K 0.0137	21 -2 n	.3 .8 Eff. Depth 10.4	-2.5 Diameter (mm.) 0.0442	Finer 39.5		
#100 #200 wydrometer test ercent passin Veight of hydr bygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corres pecific gravity ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00	50.1 43.0 st uses materi og #10 based of cometer sample to based of cometer sample to based of cometer sample to and tare = 7 = 2 c moisture = 2 c moisture	upon comple le =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 36.0 34.5	20.3 -3.0 L = 16.29496 Corrected Reading 32.7 31.2	20.9 -2.8 4164 x Rn K 0.0137 0.0137	21 -2 m 36.0 34.5	.3 .8 Eff. Depth 10.4 10.6	-2.5 Diameter (mm.) 0.0442 0.0316	Finer 39.5 37.7		
#100 #200 hydrometer test ercent passin Veight of hydr hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00	50.1 43.0 st uses materi or $p = 10$ based of cometer sample to based of cometer sample to based of cometer sample to and tare = 7 = 2 consisture = 2 consi	upon completer = 66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 36.0 34.5 30.5	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2 27.2	20.9 -2.8 4164 x Rn K 0.0137 0.0137 0.0137	21 -2 m 36.0 34.5 30.5	.3 .8 Eff. Depth 10.4 10.6 11.3	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206	Finer 39.5 37.7 32.8		
#100 #200 lydrometer test ercent passin Veight of hydr ygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo remp., deg. Comp. corr.: leniscus corre pecific gravity ydrometer typ Hydrometer typ Hydrometer typ Inne (min.) 1.00 2.00 5.00	50.1 43.0 st uses materi ig #10 based in ometer sample noisture correct and tare = 7 = 2 consisture = 2 consisture = 2 consist correction C: 1 ection only = 0 y of solids = 2 cosite correction C: 1 ection only = 0 y of solids = 2 cosite correction constance = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6	upon comple le =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 36.0 34.5 30.5 27.0	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2 27.2 23.7	20.9 -2.8 4164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 36.0 34.5 30.5 27.0	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122	Finer 39.5 37.7 32.8 28.6		
#100 #200 hydrometer test ercent passin Veight of hydr Dry weight a Tare weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity ydrometer typ Hydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00	50.1 43.0 st uses materi ig #10 based i ometer sample to based i ometer sample to based i ometer sample to based i ometer sample to and tare = 7 = 2 consisture correction C: - 1 exposite correction C: - 1 exposed co	upon complete =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 36.0 34.5 30.5 27.0 25.0	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2 27.2 23.7 21.7	20.9 -2.8 4164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 36.0 34.5 30.5 27.0 25.0	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9 12.2	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122 0.0087	Finer 39.5 37.7 32.8 28.6 26.2		
#100 #200 wight of hydr bygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	50.1 43.0 st uses materi or #10 based of cometer sample to based of cometer sample to and tare = 7 = 2 consist correction C: 1 consisture = 2 consist correction C: 1 consist consist	apon complete =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 36.0 34.5 30.5 27.0 25.0 23.0	20.3 -3.0 L = 16.29496 Corrected Reading 32.7 31.2 27.2 23.7 21.7 19.7	20.9 -2.8 4164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 36.0 34.5 30.5 27.0 25.0 23.0	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9 12.2 12.5	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122 0.0087 0.0063	Finer 39.5 37.7 32.8 28.6 26.2 23.8		
#100 #200 ydrometer test ercent passin Veight of hydr ygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00 120.00	50.1 43.0 st uses materi or #10 based of cometer sample to based of cometer sample to and tare = 7 = 2 c moisture = 2 c moistu	upon completer = 66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 36.0 34.5 30.5 27.0 25.0 23.0 21.5	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2 27.2 23.7 21.7 19.7 18.3	20.9 -2.8 4164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 36.0 34.5 30.5 27.0 25.0 23.0 21.5	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9 12.2 12.5 12.8	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122 0.0087 0.0063 0.0045	Finer 39.5 37.7 32.8 28.6 26.2 23.8 22.0		
#100 #200 wight of hydr bygroscopic m Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: leniscus corre pecific gravity ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	50.1 43.0 st uses materi or #10 based of cometer sample to based of cometer sample to and tare = 7 = 2 consist correction C: 1 consisture = 2 consist correction C: 1 consist consist	apon complete =66.01 ction: 6.75 5.30 5.42 .9% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 36.0 34.5 30.5 27.0 25.0 23.0	20.3 -3.0 L = 16.29496 Corrected Reading 32.7 31.2 27.2 23.7 21.7 19.7	20.9 -2.8 4164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 36.0 34.5 30.5 27.0 25.0 23.0	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9 12.2 12.5	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122 0.0087 0.0063	Finer 39.5 37.7 32.8 28.6 26.2 23.8		

AMEC

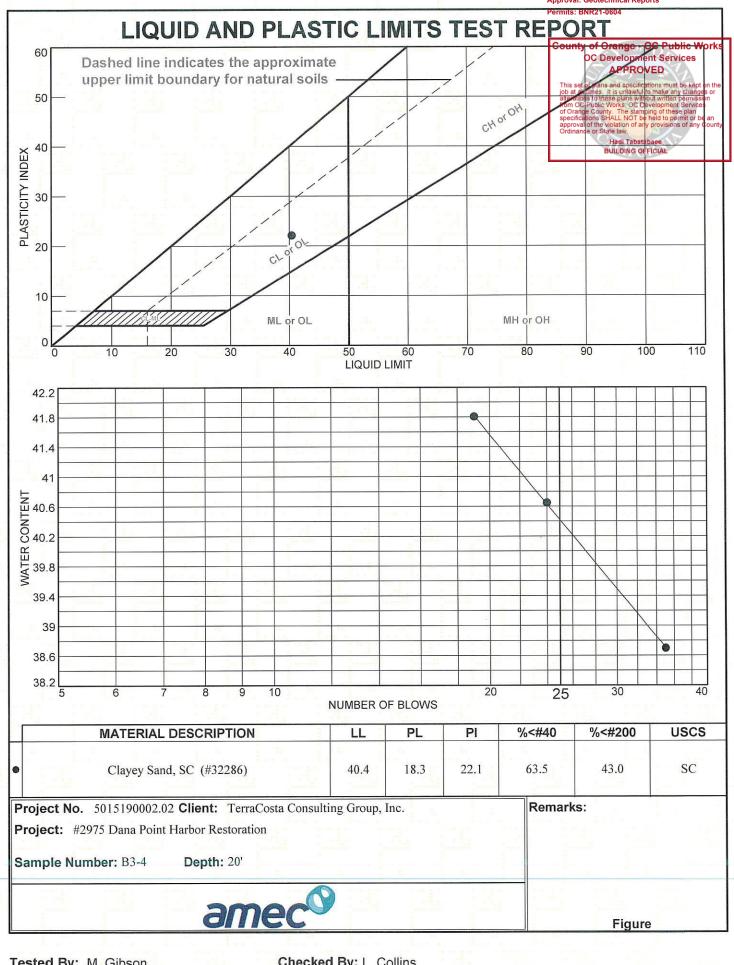
Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604

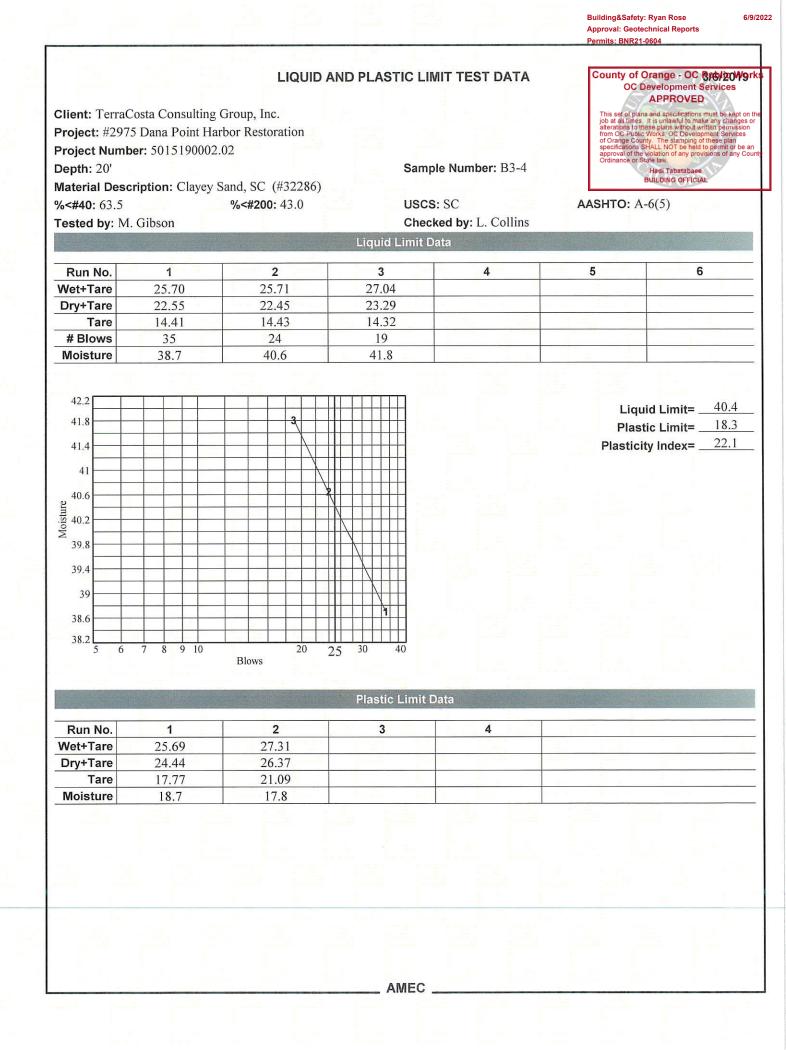
6/9/2022

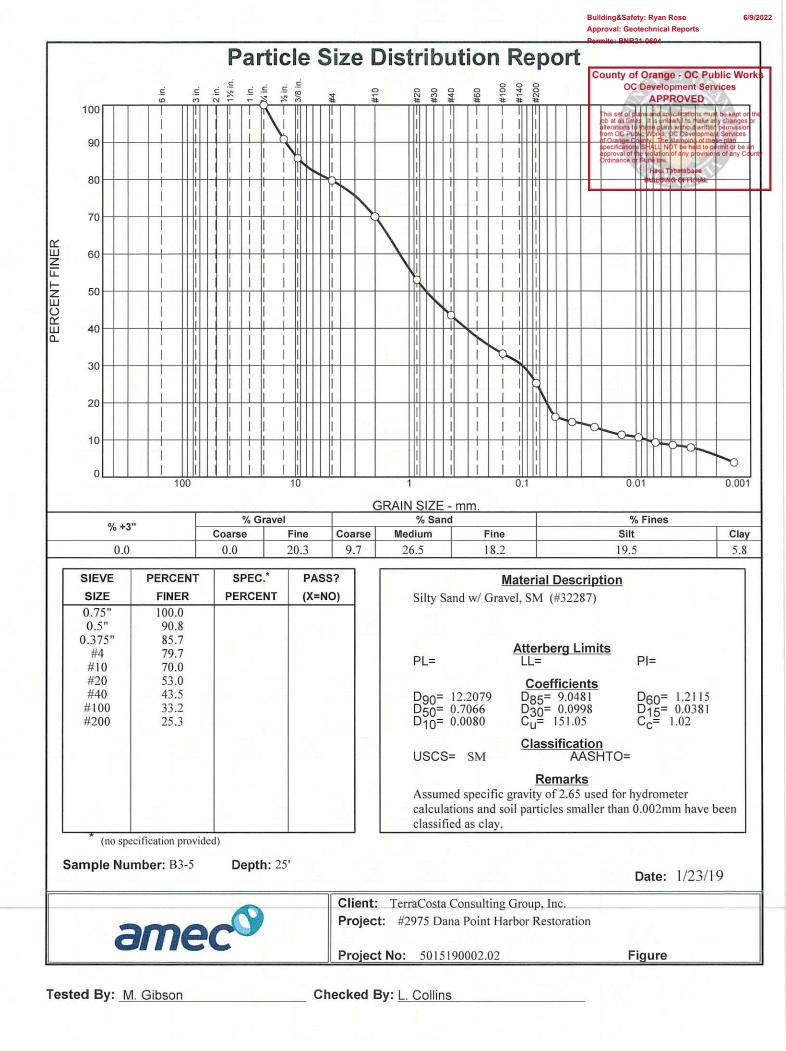
٦

		Grave				Sand				of Orange - (C Dievesopme	DC Public Wo nt Services
Cobbles	Coarse	Fine	Tota	I Coar	se Me	dium	Fine	Total	Silt	CAPPRO	/EDTotal
0.0	16.8	3.2	20.0	2.6	5 1	3.9	20.5	37.0	25.2job at all ti	plans and specifica nes. It/isonlawful to these plans with	tions must be kept o o make any change
									of Orange specification approval of	County. The stamp	evelopment Services ing of these plan held to permit or be provisions of any C
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D40	D ₅₀	D ₆₀	D ₈₀	D85	Hadi Tabata Butt 90 G OF	FICIAL D95
5											

Fineness Modulus 2.26





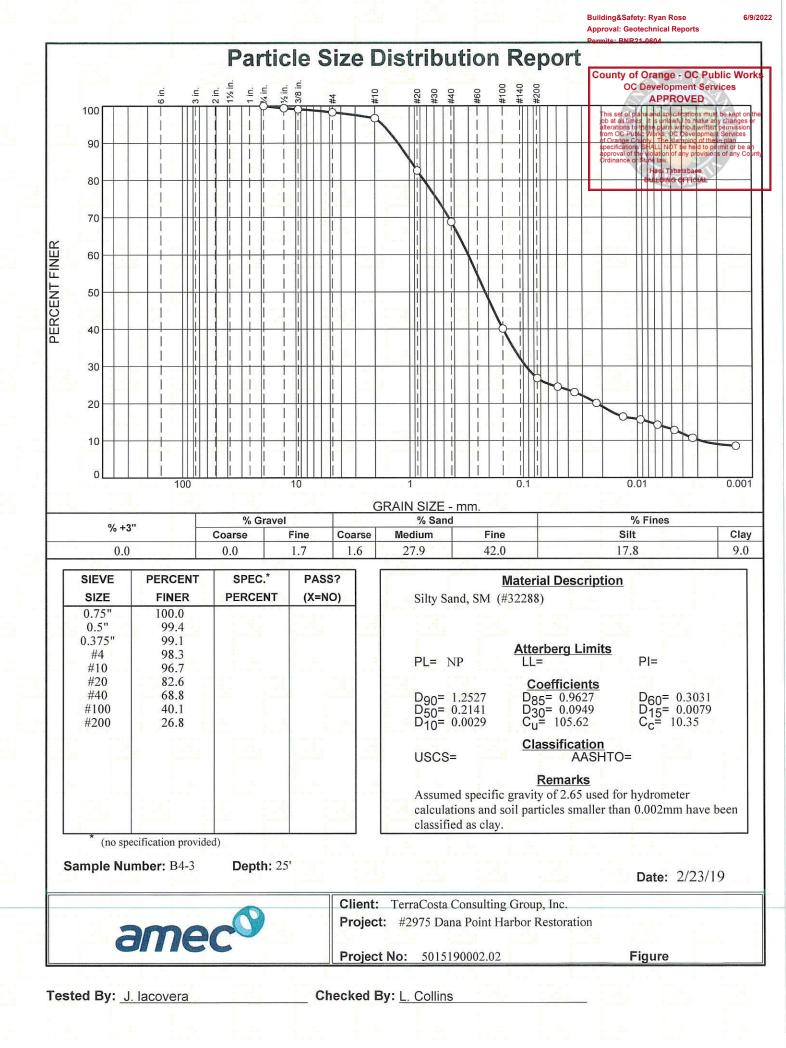


-								Approval: Geotechnical Reports Pormite: BNR21-0604	
			GRAIN S	IZE DISTI	RIBUTI	ON TEST		County of Orange - OC Plut / OC Development Servic	
Client: Terra	Costa Consult	ting Group.	Inc.					APPROVED	
Project: #297		-						This set of plans and specifications must be job at all times. It is unlawful to make any c atterations to these plans without written pe from OC Public Works, OC Development S	hanges
Project Numb									
Depth: 25'		002.02			Samr	le Numbe	er: B3-5	specifications SHALL NOT be held to permi approval of the violation of any provisions o Ordinance or State law.	f any C
Material Desc	cription: Silty	Sand w/ G	ravel SM (#	32287)	Callip	i i i i i i i i i i i i i i i i i i i	11 25 5	Hadi Tabatabaee BUILDING OFFICIAL	
Date: 1/23/19		, Sund III G	uvei, sivi (#.	,2201)					
USCS Classif									
		ed specific g	ravity of 2.65	used for h	vdromet	er calcula	tions and soil	particles smaller than 0.002mm	
, eeting rien		en classified		abea for h	jaromee	er eureara	inonio una oon		
Tested by: M					Chec	ked by: L	. Collins		
				Sieve	Test Da	CONTRACTOR OF THE OWNER			
<u>.</u>									in the second
Sieve Opening Size	Percent Finer								
0.75"	100.0								
0.5"	90.8								
0.375"	85.7								
#4	79.7								
#10	70.0								
110									
#20	53.0								
	53.0 43.5								
#20 #40 #100	43.5 33.2								
#20 #40 #100 #200	43.5 33.2 25.3			Hydrome	eter Tes	t Data			
#20 #40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer tyj Hydrometer	43.5 33.2 25.3 st uses materin and 410 based of rometer samp moisture correction and tare = 3 and tare = 3 and tare = 3 and tare = 2 c moisture = 0 osite correction C: 1 ection only = 2 pe = 152H effective dept	upon comple le =51.24 ction: 44.28 44.21 26.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: 1	te sample = 70 20.3 -3.0 L = 16.294964	20.9 -2.8	21 -2	.3 .8	22.6 -2.5		
#20 #40 #100 #200 Hydrometer ter Percent passir Veight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyj Hydrometer	43.5 33.2 25.3 st uses materin g #10 based or rometer samp noisture corre- tit and tare = 3 and tare = 3 and tare = 3 a = 2 c moisture = 0 osite correction C: 1 ection only = 0 y of solids = 2 pe = 152H effective dept Temp.	upon comple le =51.24 ction: 44.28 44.21 26.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual	20.3 -3.0 L = 16.294964 Corrected	20.9 -2.8 164 x Rn	21 -2	.3 .8 Eff.	-2.5 Diameter	Percent	
#20 #40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.)	43.5 33.2 25.3 st uses matering frometer samp noisture correct and tare = 3 and tare = 3 and tare = 2 c moisture = 0 osite correction C: 1 ection only = 2 pe = 152H effective dept Temp. (deg. C.)	upon comple le =51.24 ction: 14.28 14.21 16.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	20.9 -2.8 164 x Rn K	21 -2 n Rm	.3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
#20 #40 #100 #200 Hydrometer ter Percent passir Veight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of comp. Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Elapsed Time (min.) 1.00	43.5 33.2 25.3 st uses matering #10 based of rometer samp noisture corrections and tare = 3 and tare = 3 and tare = 2 c moisture = 0 osite correction C: 1 ection only = 0 y of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.7	upon comple le =51.24 ction: 14.28 14.21 16.23 0.9% on values: 9.1 3.5 0.0 0.0 2.65 th equation: 1 Actual Reading 15.0	20.3 -3.0 L = 16.294964 Corrected Reading 11.8	20.9 -2.8 164 x Rn K 0.0137	21 -2 n Rm 15.0	.3 .8 Eff. Depth 13.8	-2.5 Diameter (mm.) 0.0509	Finer 16.2	
#20 #40 #100 #200 Hydrometer ter Percent passir Veight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyf Hydrometer tyf Hydrometer tyf Elapsed Time (min.)	43.5 33.2 25.3 st uses matering frometer samp noisture correct and tare = 3 and tare = 3 and tare = 2 c moisture = 0 osite correction C: 1 ection only = 2 pe = 152H effective dept Temp. (deg. C.)	upon comple le =51.24 ction: 14.28 14.21 16.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	20.9 -2.8 164 x Rn K	21 -2 n Rm	.3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
#20 #40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic fable of comp Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer tyr Hydrometer tyr Hydrometer Elapsed Time (min.) 1.00 2.00	43.5 33.2 25.3 st uses matering #10 based of rometer samp noisture corrections and tare = 3 and tare = 3 and tare = 3 c moisture = 0 consist correction C: 1 ection only = 0 y of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.7 19.7	upon comple le =51.24 ction: 44.28 44.21 26.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 15.0 14.0	20.3 -3.0 L = 16.294964 Corrected Reading 11.8 10.8	20.9 -2.8 164 x Rm K 0.0137 0.0137	21 -2 n Rm 15.0 14.0	.3 .8 Eff. Depth 13.8 14.0	-2.5 Diameter (mm.) 0.0509 0.0362	Finer 16.2 14.8	
#20 #40 #100 #200 Hydrometer ter Percent passir Veight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer tyr Hydrometer tyr Hydrometer Elapsed Time (min.) 1.00 2.00 5.00	43.5 33.2 25.3 st uses materin and tare = 3 and tare = 3 and tare = 3 and tare = 2 c moisture correction C: 1 ection only = 2 pe = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7	upon comple le =51.24 ction: 44.28 44.21 26.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 15.0 14.0 13.0	20.3 -3.0 L = 16.294964 Corrected Reading 11.8 10.8 9.8	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137	21 -2 n 15.0 14.0 13.0	.3 .8 Eff. Depth 13.8 14.0 14.2	-2.5 Diameter (mm.) 0.0509 0.0362 0.0231	Finer 16.2 14.8 13.4	
#20 #40 #100 #200 Hydrometer ter Percent passir Veight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp Temp., deg. Comp. corr.: Meniscus corr Specific gravit Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Specific gravit	43.5 33.2 25.3 st uses matering frometer samp noisture corrections and tare = 3 and tare = 3 and tare = 3 c moisture = 0 osite correction C: 1 ection only = 2 pe = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7 19.7	upon comple le =51.24 ction: 44.28 44.21 6.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 15.0 14.0 13.0 11.5	20.3 -3.0 L = 16.294964 Corrected Reading 11.8 10.8 9.8 8.3	20.9 -2.8 164 x Rm K 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n 15.0 14.0 13.0 11.5	.3 .8 Eff. Depth 13.8 14.0 14.2 14.4	-2.5 Diameter (mm.) 0.0509 0.0362 0.0231 0.0134	Finer 16.2 14.8 13.4 11.4	
#20 #40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of comp. Temp., deg. Comp. corr.: Weniscus corr. Specific gravit Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr Hydrometer tyr 1.00 2.00 5.00 15.00 30.00	43.5 33.2 25.3 st uses matering #10 based or rometer samp noisture correction and tare = 3 and tare = 3 and tare = 3 and tare = 2 c moisture = 0 osite correction C: 1 ection only = 0 y of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7	upon comple le =51.24 ction: 14.28 14.21 16.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 15.0 14.0 13.0 11.5 11.0	20.3 -3.0 L = 16.294964 Corrected Reading 11.8 10.8 9.8 8.3 7.7	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 15.0 14.0 13.0 11.5 11.0	.3 .8 Eff. Depth 13.8 14.0 14.2 14.4 14.5	-2.5 Diameter (mm.) 0.0509 0.0362 0.0231 0.0134 0.0095	Finer 16.2 14.8 13.4 11.4 10.7	
#20 #40 #100 #200 Hydrometer ter Percent passir Weight of hydr Hygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic Table of comp. Temp., deg. Comp. corr.: Meniscus corr. Specific gravit Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	43.5 33.2 25.3 st uses matering #10 based of rometer samp noisture correct and tare = 3 and tare = 3 and tare = 3 c moisture = 0 osite correction C: 1 ection only = 0 y of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7 19.7 19.7	upon comple le =51.24 ction: 44.28 44.21 26.23 0.9% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 15.0 14.0 13.0 11.5 11.0 10.0	20.3 -3.0 L = 16.294964 Corrected Reading 11.8 10.8 9.8 8.3 7.7 6.7	20.9 -2.8 164 x Rm K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 15.0 14.0 13.0 11.5 11.0 10.0	.3 .8 Eff. Depth 13.8 14.0 14.2 14.4 14.5 14.7	-2.5 Diameter (mm.) 0.0509 0.0362 0.0231 0.0134 0.0095 0.0068	Finer 16.2 14.8 13.4 11.4 10.7 9.3	

BNR21-0604

									Permits: BN	R21-0604	The second second second
				F	ractional (Componen	its				
		Grave	1		.	Sand		-		of Orange	OC Public Wo
Cobbles	Coarse	1.000	Tota	I Coa	rse Me		-ine	Total	Silt	CAPPRO	
0.0	0.0	20.3	20.3	9.	9.7 26.5 18.2 54.4				19.5 ^{This set of}	f plans and specification in the second s	ations must be kept o to make any changes
									from OC of Orange specificat approval	Public Works, OC D County. The stam ons SHALL NOT be	evelopment Services bing of these plan held to permit or be y provisions of any C
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D40	D50	D ₆₀	D ₈₀	D85	Hadi Tabata BUIL 901G OF	FICIALD95
							1.2115	4.9661	9.0481	12.2079	15.3933

Fineness Modulus	Cu	с _с
2.82	151.05	1.02



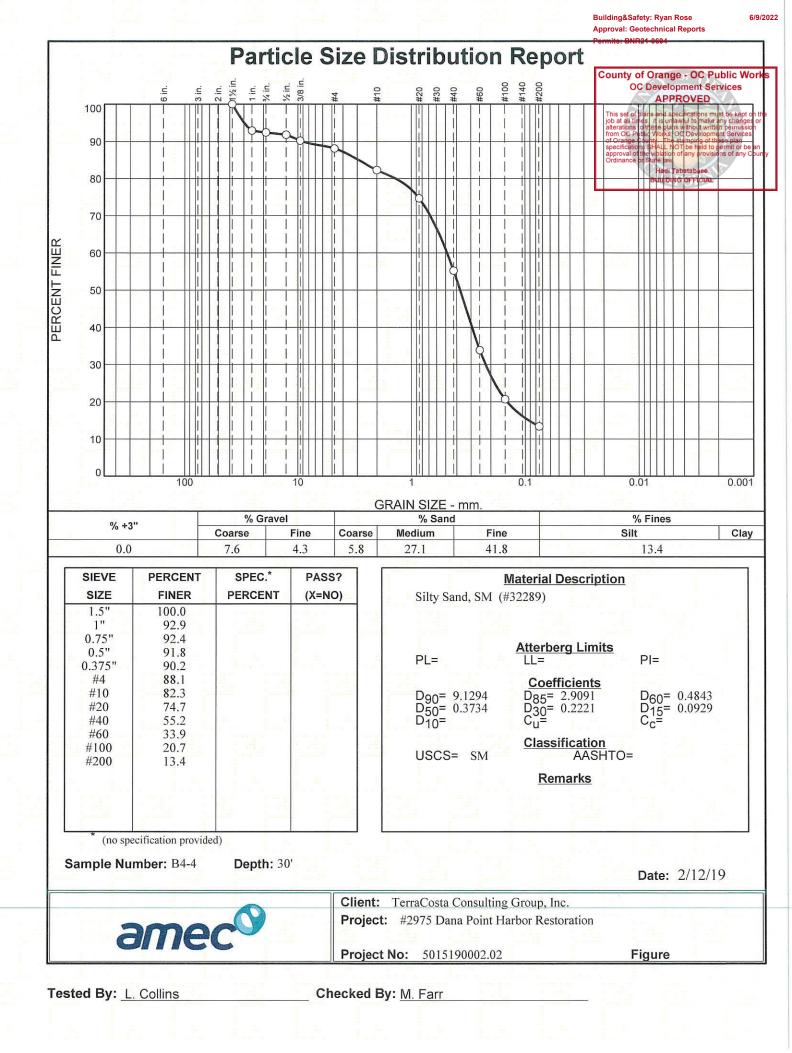
			GRAIN S	IZE DIST	RIBUTI	ON TEST		County of Orange - OC Developm	ent Services
lient: Terra	Costa Consul	ting Group,	Inc.					This set of plans and specifi	cations must be kent
roject: #297	5 Dana Poin	t Harbor Re	storation					job at all times. It is unlawfu alterations to these plans wil from OC Public Works, OC (thout written permissi Development Service
roject Numb	per: 5015190	0002.02						of Orange County. The star specifications SHALL NOT be approval of the violation of a	nping of these plan be held to permit or b inv provisions of any
epth: 25'					Samp	le Numbe	er: B4-3	Ordinance or State law. Hadi Taba	
laterial Desc	ription: Silt	y Sand, SM	(#32288)					BUILDING C	
ate: 2/23/19		PL: N	P						
esting Rema				used for h	ydromet	er calcula	tions and soi	particles smaller than ().002mm
ested by: J.		een classifie	u as clay.		Chao	kad huu I	Calling		
ested by: J.	lacovera			01	Contraction of the local division of the loc	ked by: L	. Comms		
				Sieve	e Test Da	ata			
Sieve Opening Size	Percent Finer								
0.75"	100.0								
0.5"	99.4								
0.375"	99.1								
#4	98.3								
#10	96.7								
	00 (
#20	82.6								
#20 #40	82.6 68.8								
#40 #100 #200 ydrometer tes ercent passin	68.8 40.1 26.8 st uses mater ng #10 based	upon comple	10 ete sample = 9	Hydrome	eter Tes	t Data			
#40 #100 #200 ydrometer tee ercent passin Yeight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of comp Temp., deg. Comp. corr.: eniscus corr	68.8 40.1 26.8 st uses mater og #10 based ometer samp noisture correct t and tare = 8 mol tare = 2 c moisture =	upon comple le =67.5 sction: 38.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0	10 ete sample = 90 20.3 -3.0		eter Tes 21 -2	.3	22.6 -2.5		
#40 #100 #200 ydrometer tes ercent passin veight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: eniscus corr pecific gravit ydrometer typ	68.8 40.1 26.8 st uses mater og #10 based ometer samp noisture correct and tare = 8 and tare = 2 consisture = 2 consisture correction C: 1 ection only = y of solids = 2 be = 152H	upon comple le =67.5 sction: 88.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65	20.3 -3.0	6.7 20.9 -2.8	21 -2	.3	22.6 -2.5		
#40 #100 #200 ydrometer test ercent passin Veight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: eniscus corri- pecific gravity Hydrometer typ	68.8 40.1 26.8 st uses mater og #10 based rometer samp noisture correct t and tare = 8 and tare = 2 c moisture	upon comple le =67.5 ection: 38.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation:	20.3 -3.0 L = 16.294964	6.7 20.9 -2.8	21 -2	.3 .8	-2.5		
#40 #100 #200 wdrometer test ercent passim // weight of hydr // weight of hydr // weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: eniscus corri- becific gravity // drometer tyg Hydrometer Elapsed	68.8 40.1 26.8 st uses mater og #10 based ometer samp noisture correct and tare = 8 and tare = 2 consisture = 2 consisture correction C: 1 ection only = y of solids = 2 be = 152H	upon comple le =67.5 sction: 88.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65	20.3 -3.0	6.7 20.9 -2.8	21 -2	.3	22.6 -2.5 Diameter (mm.)	Percent	
#40 #100 #200 wdrometer test ercent passin Veight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: eniscus corri- pecific gravity Hydrometer typ	68.8 40.1 26.8 st uses mater og #10 based rometer samp noisture correct t and tare = 8 and tare = 2 consite correction C: 1 ection only = 2 osite correction C: 1 ection only = 2 os solids = 2 be = 152H effective deptored	upon comple le =67.5 ection: 38.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation: Actual	20.3 -3.0 L = 16.294964 Corrected	6.7 20.9 -2.8 164 x Rn	21 -2	.3 .8 Eff.	-2.5 Diameter		
#40 #100 #200 yedrometer test ercent passin yeight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: eniscus comp. corr.: eniscus corr.: eniscus corr.: eniscus corr.: Elapsed Time (min.)	68.8 40.1 26.8 st uses mater og #10 based rometer samp poisture correct and tare = 8 and tare = 8 c moisture = 2 cosite correcti C: 1 ection only = 2 posite correcti C: 1 ection only = 2 pos = 152H effective depr Temp. (deg. C.)	upon comple le =67.5 ection: 88.74 87.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	6.7 20.9 -2.8 164 x Rn K	21 -2 n Rm	.3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
#40 #100 #200 ydrometer test ercent passin Yeight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: eniscus corru- pecific gravit ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00	68.8 40.1 26.8 Ist uses matering #10 based rometer samp noisture corrections t and tare = 8 and tare = 2 consist correction C: 1 explore solids = 2 bos = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7	upon completer = 67.5 section: 38.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 20.0 19.0 17.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137	21 -2 n Rm 20.0	.3 .8 Eff. Depth 13.0 13.2 13.5	-2.5 Diameter (mm.) 0.0494	Finer 24.5 23.0 20.1	
#40 #100 #200 ydrometer tes ercent passin /eight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: eniscus comp. comp. corr.: eniscus comp. gecific gravit ydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00	68.8 40.1 26.8 st uses mater ng #10 based rometer samp poisture correct and tare = 8 = 2 consisture = 2 consisture = 2 consistere = 2 consist	upon completer le =67.5 section: 88.74 87.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 20.0 19.0 17.0 14.5	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 20.0 19.0	.3 .8 Eff. Depth 13.0 13.2	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132	Finer 24.5 23.0	
#40 #100 #200 ydrometer test ercent passin /eight of hydr ygroscopic m Moist weigh Dry weight at Tare weight Hygroscopic able of comp. Temp., deg. Comp. corr.: eniscus corr. pecific gravit ydrometer typ Hydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00	68.8 40.1 26.8 st uses mater ig #10 based ometer samp noisture correct t and tare = 8 and tare = 2 c moisture = 2 c	upon completer le =67.5 sction: 88.74 87.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 20.0 19.0 17.0 14.5 14.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 20.0 19.0 17.0 14.5 14.0	.3 .8 Eff. Depth 13.0 13.2 13.5 13.9 14.0	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094	Finer 24.5 23.0 20.1 16.4 15.7	
#40 #100 #200 ydrometer tes ercent passin /eight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of comp. Temp., deg. Temp., deg. Comp. corr.: leniscus corrr pecific gravit ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	68.8 40.1 26.8 st uses mater og #10 based ometer samp noisture correct t and tare = 8 and tare = 2 consisture = 2 consist correcting C: 1 ection only = y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7 19.7 19.7	upon completer = 67.5 sction: 38.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 20.0 19.0 17.0 14.5 14.0 13.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7 9.8	 20.9 -2.8 164 x Rn 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 	21 -2 n 20.0 19.0 17.0 14.5 14.0 13.0	.3 .8 Eff. Depth 13.0 13.2 13.5 13.9 14.0 14.2	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094 0.0067	Finer 24.5 23.0 20.1 16.4 15.7 14.3	
#40 #100 #200 ydrometer tes ercent passin /eight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of compo Temp., deg. Comp. corr.: eniscus corro pecific gravit ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00 120.00	68.8 40.1 26.8 st uses mater ometer samp noisture correct t and tare = 8 and tare = 2 c moisture = 2 cosite correction C: 1 ection only = y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7	upon completer = 67.5 section: 38.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 20.0 19.0 17.0 14.5 14.0 13.0 12.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7 9.8 8.8	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n 20.0 19.0 17.0 14.5 14.0 13.0 12.0	.3 .8 Eff. Depth 13.0 13.2 13.5 13.9 14.0 14.2 14.3	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094 0.0067 0.0047	Finer 24.5 23.0 20.1 16.4 15.7 14.3 12.8	
#40 #100 #200 ydrometer tes ercent passin /eight of hydr ygroscopic m Moist weigh Dry weight a Tare weight Hygroscopic able of comp. Temp., deg. Comp. corr.: eniscus corrr pecific gravit ydrometer typ Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	68.8 40.1 26.8 st uses mater og #10 based ometer samp noisture correct t and tare = 8 and tare = 2 consisture = 2 consist correcting C: 1 ection only = y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7 19.7 19.7	upon completer = 67.5 sction: 38.74 37.46 25.30 2.1% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 20.0 19.0 17.0 14.5 14.0 13.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7 9.8	 20.9 -2.8 164 x Rn 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 	21 -2 n 20.0 19.0 17.0 14.5 14.0 13.0	.3 .8 Eff. Depth 13.0 13.2 13.5 13.9 14.0 14.2	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094 0.0067	Finer 24.5 23.0 20.1 16.4 15.7 14.3	

AMEC

Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604

				F	ractional (Componer	nts		County	of Orange -	OC Public Wor	
0.1.1.1.	Sec. 2	Grave	vel Sand						(OC Preselopment Services		
Cobbles	Coarse	Fine	Tota	I Coai	rse Med	dium 📄	Fine	Total	Silt	Clay	Total	
0.0	0.0	1.7	1.7	1.0	5 2	7.9	42.0	71.5	1 / O alteration	s to these plans with	ations must be kept on to make any changes o nout which permission evelopment Services	
									of Orange specificat approval	County. The stam	ping of these plan held to permit or be an provisions of any Cou	
D5	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D85			
- B.	0.0029	0.0079	0.0222	0.0949	0.1494	0.2141	0.3031	0.7401	0.9627	1.2527	1.7161	

Fineness Modulus	Cu	Cc
1.41	105.62	10.35



				Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permite: BNR21 0604
		GRAIN SIZE DIS	TRIBUTION TEST DATA	County of Orange - OGPL4/2010Brks OC Development Services APPROVED
Client: Terr	aCosta Consulting Group,	Inc.		This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or
Project: #29	975 Dana Point Harbor Re	job at all reads. It is unaward to have any usary son alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan		
Project Nur	nber: 5015190002.02	of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County		
Depth: 30'			Sample Number: B4-4	Ordinance or State law. Hadi Tabatabaee
Material De	scription: Silty Sand, SM	(#32289)		BUILDING OFFICIAL
Date: 2/12/1	19			
USCS Class	sification: SM			
Tested by:	L. Collins		Checked by: M. Farr	the term of the
		Sie	ve Test Data	
Sieve Opening Size	Percent Finer			
1.5"	100.0			
1"	92.9			
0.75"	92.4			And the second
0.5"	91.8			
0.375"	90.2			
#4	88.1			a
#10	82.3			
#20	74.7			
#40	55.2			
#60	33.9			
#100	20.7			
#200	13.4			

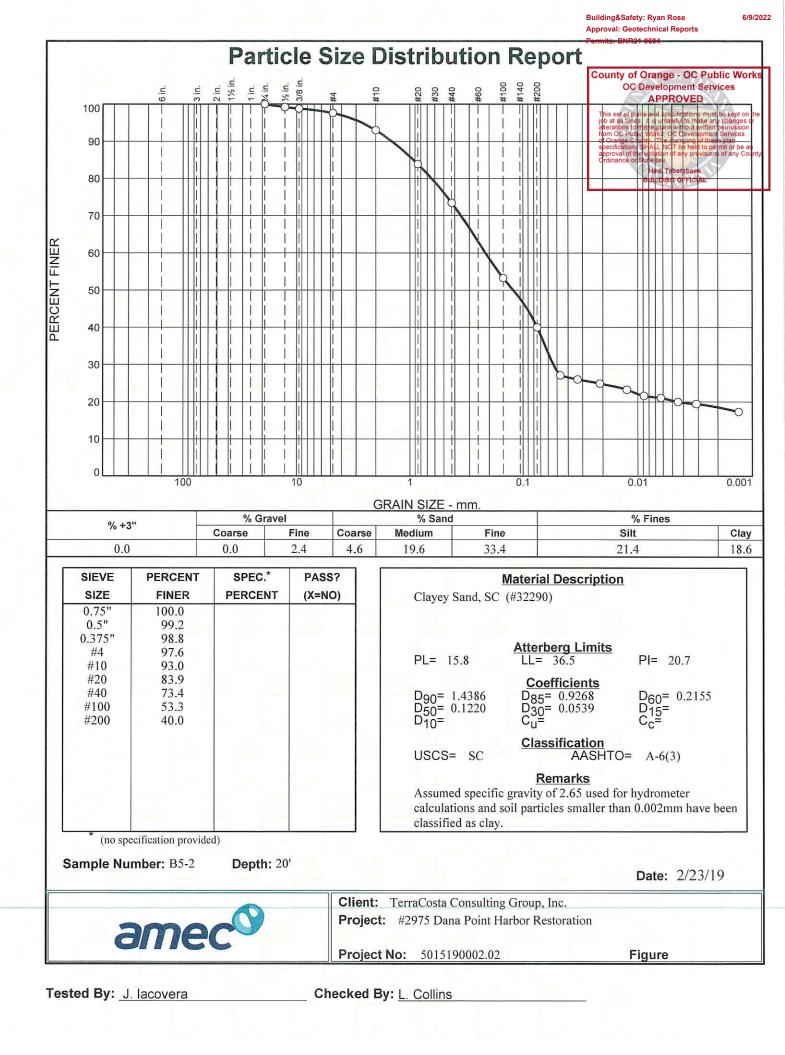
Cobbles		Gravel		Sand				Fines		
Cobbles	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	7.6	4.3	11.9	5.8	27.1	41.8	74.7			13.4

Fractional Components

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D85	D ₉₀	D ₉₅
Ē.		0.0929	0.1438	0.2221	0.2934	0.3734	0.4843	1.3674	2.9091	9.1294	29.865

Fineness Modulus

2.39



		61						Approval: Geot Permits: BNR2	technical Reports 1-0604
			GRAIN S	IZE DISTI	RIBUTI			County of OC	Orange - OC B/6/20// Development Services
lient: Terra	Costa Consul	ting Group	Inc.					S	APPROVED ans and specifications must be kept of
	75 Dana Poin	•						job at all time alterations to	 It is unlawful to make any change these plans without written permission lic Works, OC Development Services
	ber: 5015190							of Orange Co	SHALL NOT be held to permit or be
Depth: 20'					Samp	le Numbe	er: B5-2	Ordinance or	violation of any provisions of any C State law. Hadi Tabatabaee
	cription: Cla	vev Sand, So	C (#32290)						BUILDING OFFICIAL
Date: 2/23/19		PL: 1	A STREET STREET		LL: 30	5.5		PI: 20.7	
JSCS Classi							sification: A-		
		ed specific g	ravity of 2.65	used for h				and the second	er than 0.002mm
ooung nom		een classifie	M. Mar M.		Jaronier			. p	
ested by: J.					Chec	ked by: L	. Collins		
	1			Sieve	Test Da	Internet in the local division			
Sieve Opening Size	Percent Finer								
0.75"	100.0								
0.73	99.2								
0.375"	98.8								
#4	97.6								
#10	93.0								
#20	83.9								
#40	73.4								
#100	53.3								
#100 #200	53.3 40.0								
				Hydrome	eter Test	: Data			
#200 Hydrometer te	40.0 st uses mater	rial passing #	10		eter Tesi	Data			
#200 Hydrometer te Percent passi	40.0 st uses mater ng #10 based	upon comple	10 ete sample = 9:		eter Test	: Data			
#200 lydrometer te Percent passi Veight of hyd lygroscopic r	40.0 est uses mater ng #10 based rometer samp noisture corre	upon comple ble =87.04 action:	10 ete sample = 9:		eter Test	: Data			
#200 lydrometer te Percent passi Veight of hyd lygroscopic r Moist weigl	40.0 st uses mater ng #10 based rometer samp noisture corre at and tare = {	upon comple ble =87.04 ection: 84.70	10 ete sample = 9:		eter Test	: Data			
#200 lydrometer te Percent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight	40.0 st uses matering #10 based rometer samp noisture corrent and tare = { and tare = {	upon comple ble =87.04 ection: 84.70 83.27 25.38	10 ete sample = 9:		eter Test	: Data			
#200 lydrometer te Percent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Hygroscopi	40.0 st uses matering #10 based rometer samp noisture corrent and tare = { and tare = { c moisture = 2	upon comple ble =87.04 ection: 84.70 83.27 25.38 2.5%	10 ete sample = 9:		eter Test	Data			
#200 lydrometer te Percent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Tare weight Hygroscopi Table of comp	40.0 st uses mater ng #10 based rometer samp noisture corre t and tare = { and tare = { c moisture = 2 cosite correcti	upon comple ble =87.04 ection: 84.70 83.27 25.38 2.5%	ete sample = 9:	3.0			22.6		
#200 Aydrometer te Percent passi Veight of hyd Aygroscopic r Moist weigh Dry weight Tare weight Hygroscopi Table of comp Temp., deg. Comp. corr.	40.0 st uses matering #10 based rometer samp noisture correction and tare = { and tare = { c moisture = 2 cosite correction C: 1	upon completed ble =87.04 ection: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5	10 ete sample = 93 20.3 -3.0		eter Test 21 -2	.3	22.6 -2.5		
#200 Aydrometer te Percent passi Veight of hyd Aygroscopic r Moist weigh Dry weight Tare weight Hygroscopi Table of comp Temp., deg. Comp. corr.	40.0 st uses mater ng #10 based rometer samp noisture correct and tare = { and tare = { c moisture = 2 posite correcti C:]	upon comple ble =87.04 action: 84.70 83.27 25.38 2.5% ion values: 19.1 -3.5 0.0	ete sample = 93	3.0 20.9	21	.3	22.6 -2.5		
#200 lydrometer te Percent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Hygroscopi rable of comp. Temp., deg. Comp. corr. Meniscus corrispecific gravi lydrometer ty	40.0 st uses matering #10 based rometer samp noisture correction and tare = { and tare = { c moisture = 2 c moisture =	upon comple ole =87.04 action: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65	20.3 -3.0	3.0 20.9 -2.8	21 -2	.3	22.6 -2.5		
#200 lydrometer te bercent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Tare weight Hygroscopi fable of comp Temp., deg Comp. corr. leniscus corr ipecific gravi	40.0 st uses matering #10 based rometer samp noisture correction and tare = { and tare = { c moisture = 2 c moisture =	upon comple ole =87.04 action: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65	ete sample = 93	3.0 20.9 -2.8	21 -2	.3	22.6 -2.5		
#200 lydrometer te Percent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Tare weight Hygroscopi fable of comp Temp., deg Comp. corr. Meniscus corr specific gravi lydrometer ty	40.0 st uses matering #10 based rometer samp noisture correction and tare = { and tare = { c moisture = 2 c moisture =	upon comple ole =87.04 action: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65	20.3 -3.0	3.0 20.9 -2.8	21 -2	.3	22.6 -2.5 Diameter (mm.)	Percent	
#200 lydrometer te bercent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Hygroscopi able of comp Temp., deg Comp. corr. Ieniscus corr pecific gravi lydrometer ty Hydrometer	40.0 st uses mater ng #10 based rometer samp noisture correction and tare = 8 and tare = 8 c moisture = 2 posite correction C: 1 rection only = ty of solids = 2 pe = 152H effective dep Temp.	upon comple ole =87.04 ection: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65 th equation: Actual	20.3 -3.0 L = 16.294964 Corrected Reading 24.8	3.0 20.9 -2.8 164 x Rn	21 -2	.3 .8 Eff.	Diameter		
#200 lydrometer te Percent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Hygroscopi fable of comp Temp., deg Comp. corr. Meniscus corri pecific gravi lydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00	40.0 st uses mater ng #10 based rometer samp noisture correct and tare = { c moisture = 2 c moisture = 2 c moisture = 2 c moisture = 2 posite correcti C: 1 rection only = ty of solids = 2 pe = 152H effective dep Temp. (deg. C.) 19.7 19.7	upon comple ole =87.04 ection: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 28.0 27.0	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8	3.0 20.9 -2.8 164 x Rn K 0.0137 0.0137	21 -2 n Rm 28.0 27.0	.3 .8 Eff. Depth 11.7 11.9	Diameter (mm.) 0.0469 0.0334	Finer 27.1 26.0	
#200 lydrometer te bercent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Hygroscopi table of comp Temp., deg Comp. corr. Ieniscus corr. pecific gravi lydrometer ty Hydrometer ty Hydrometer ty Elapsed Time (min.) 1.00 2.00 5.00	40.0 est uses matering #10 based rometer samp noisture correction and tare = $\begin{cases} 2\\ 3\\ 3\\ 4\\ 4\\ 5\\ 6\\ 7\\ 6\\ 7\\ 19.7\\ 10.7\\$	upon comple ole =87.04 ection: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 28.0 27.0 26.0	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8	3.0 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137	21 -2 m 28.0 27.0 26.0	.3 .8 Eff. Depth 11.7 11.9 12.0	Diameter (mm.) 0.0469 0.0334 0.0212	Finer 27.1 26.0 24.9	
#200 lydrometer te vercent passi Veight of hyd Dry weight Dry weight Tare weigh Hygroscopi able of comp Temp., deg. Comp. corr. leniscus corr pecific gravi lydrometer ty Hydrometer ty Elapsed Time (min.) 1.00 2.00 5.00 15.00	40.0 est uses matering #10 based rometer samp noisture correction and tare = $\begin{cases} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	upon completed ble = 87.04 ection: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 28.0 27.0 26.0 24.5	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3	3.0 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 28.0 27.0 26.0 24.5	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3	Diameter (mm.) 0.0469 0.0334 0.0212 0.0124	Finer 27.1 26.0 24.9 23.3	
#200 lydrometer te bercent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Hygroscopi able of comp Temp., deg. Comp. corr. Ieniscus corr pecific gravi lydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00	40.0 st uses mater ng #10 based rometer samp noisture correct and tare = { c moisture = 2 posite correcti C: 1 rection only = ty of solids = 2 pe = 152H effective dep Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7	upon comple ole =87.04 ection: 84.70 83.27 25.38 2.5% ion values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 28.0 27.0 26.0 24.5 23.0	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3 19.8	3.0 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 28.0 27.0 26.0 24.5 23.0	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3 12.5	Diameter (mm.) 0.0469 0.0334 0.0212 0.0124 0.0088	Finer 27.1 26.0 24.9 23.3 21.6	
#200 lydrometer te Percent passi Veight of hyd lygroscopic r Moist weigh Dry weight Tare weight Hygroscopi fable of comp Temp., deg. Comp. corr. Meniscus corr Specific gravi lydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	40.0 st uses mater ng #10 based rometer samp noisture correct and tare = { c moisture = 2 c moisture = 2 c moisture = 2 c moisture = 2 posite correcti C: 1 rection only = ty of solids = 2 pe = 152H effective dep Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7	upon comple ole =87.04 ection: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 28.0 27.0 26.0 24.5 23.0 22.5	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3 19.8 19.3	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 Rm 28.0 27.0 26.0 24.5 23.0 22.5	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3 12.5 12.6	Diameter (mm.) 0.0469 0.0334 0.0212 0.0124 0.0088 0.0063	Finer 27.1 26.0 24.9 23.3 21.6 21.1	
#200 Aydrometer te Percent passi Veight of hyd Aygroscopic r Moist weigh Dry weight Tare weigh Hygroscopi Table of comp Temp., deg Comp. corr. Meniscus corr Specific gravi Hydrometer ty Hydrometer ty Hydrometer ty Hydrometer ty 1.00 2.00 5.00 15.00 30.00 60.00 120.00	40.0 est uses matering #10 based rometer samp noisture correction and tare = $\begin{cases} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	upon comple oble =87.04 ection: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 28.0 27.0 26.0 24.5 23.0 22.5 21.5	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3 19.8 19.3 18.3	3.0 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n 28.0 27.0 26.0 24.5 23.0 22.5 21.5	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3 12.5 12.6 12.8	Diameter (mm.) 0.0469 0.0334 0.0212 0.0124 0.0088 0.0063 0.0045	Finer 27.1 26.0 24.9 23.3 21.6 21.1 20.0	
#200 Aydrometer te Percent passi Veight of hyd Aygroscopic r Moist weigh Dry weight Tare weight Hygroscopi Table of comp Temp., deg. Comp. corr. Meniscus corr Specific gravi Aydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	40.0 st uses mater ng #10 based rometer samp noisture correct and tare = { c moisture = 2 c moisture = 2 c moisture = 2 c moisture = 2 posite correcti C: 1 rection only = ty of solids = 2 pe = 152H effective dep Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7	upon comple ole =87.04 ection: 84.70 83.27 25.38 2.5% on values: 19.1 -3.5 0.0 2.65 th equation: Actual Reading 28.0 27.0 26.0 24.5 23.0 22.5	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3 19.8 19.3	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 Rm 28.0 27.0 26.0 24.5 23.0 22.5	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3 12.5 12.6	Diameter (mm.) 0.0469 0.0334 0.0212 0.0124 0.0088 0.0063	Finer 27.1 26.0 24.9 23.3 21.6 21.1	

Building&Safety: Ryan Rose Арр

6/9/2022

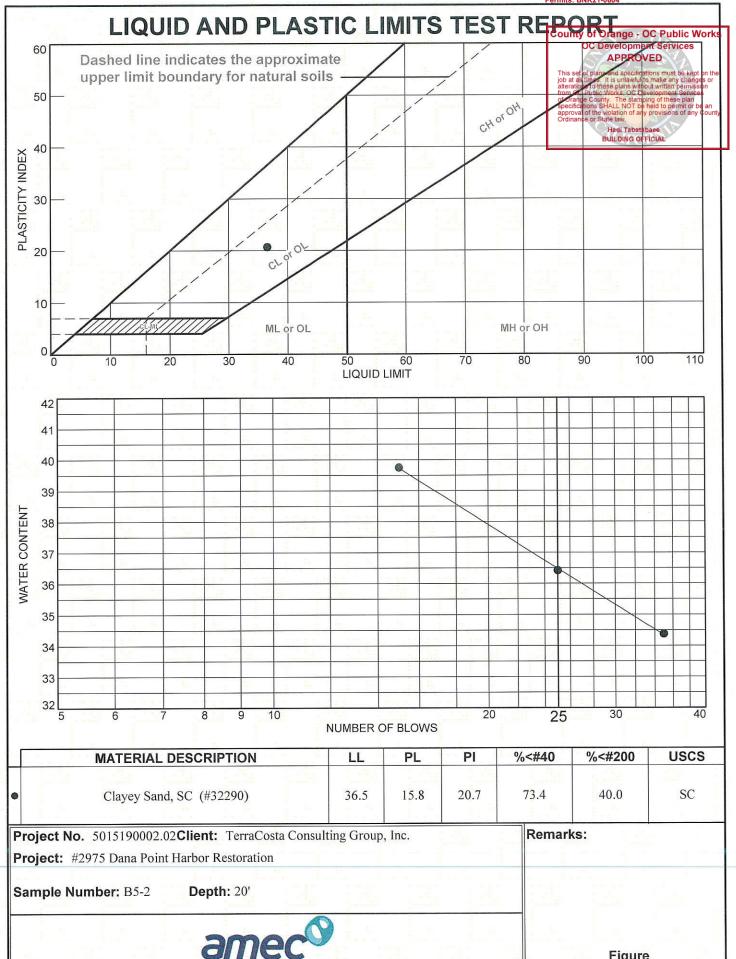
proval:	Geote	chnical	Reports
	ALDOA		

Cobbles		Grave	I		12	Sand				o f Orange - C с Білабрте	
Jobbles	Coarse	Fine	Tota	l Coa	rse Mee	dium	Fine	Total	Silt	CAPPRO	
0.0	0.0	2.4	2.4	4.0	6 1	9.6	33.4	57.6	21.4his set of	plans and specificatines. It is what has a second sec	ions must be kept o make aby changes
									alterations from OC P of Orange specificatio	ublic Works, OC De	velopment Services ing of these plan held to permit or be
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	of Orange specification approval of		velopment Services ng of these plan held to permit or be provisions of any C

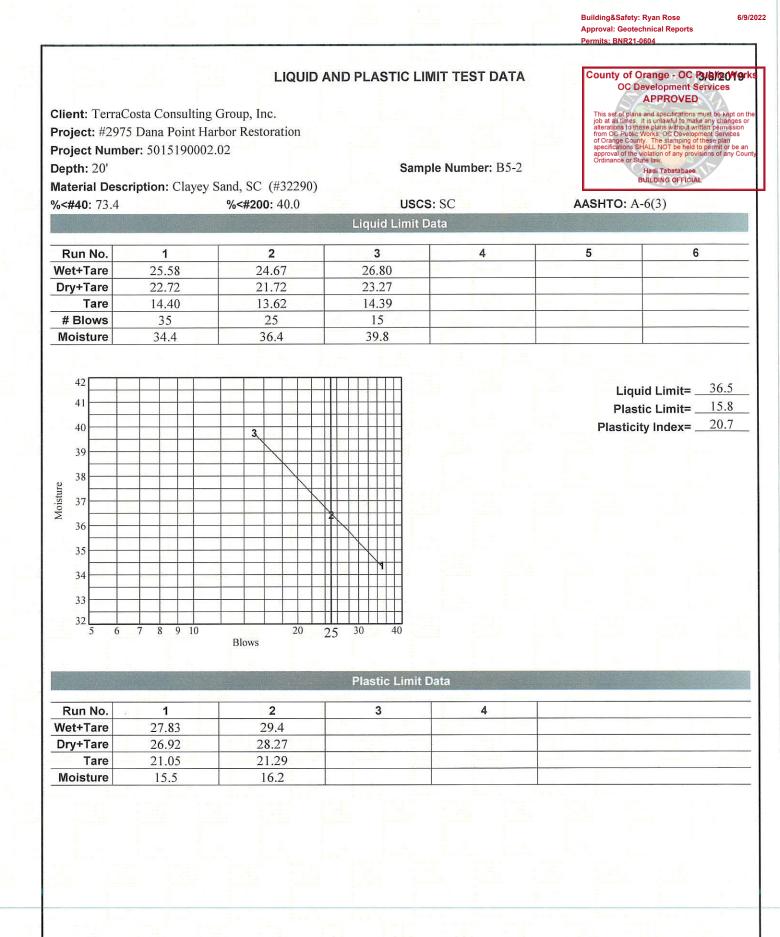
1.22

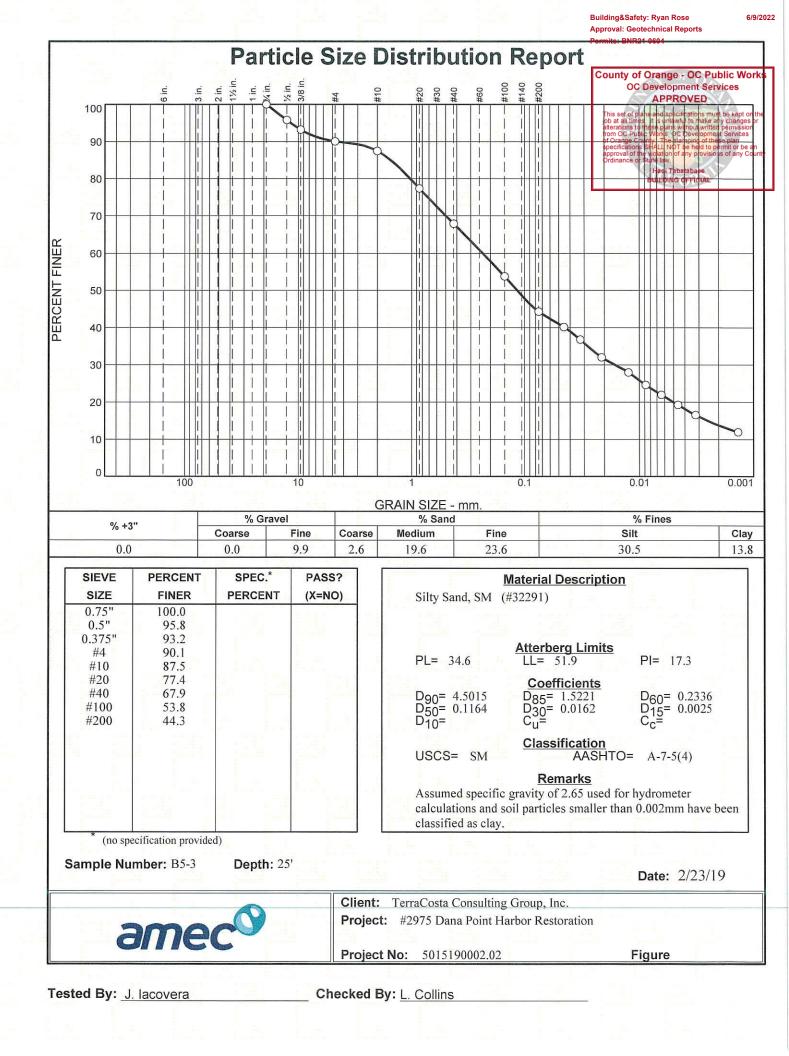
Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604

6/9/2022



Figure





									Geotechnical Reports
			GRAIN S	IZE DIST	RIBUTI				/ of Orange - OC3₽1⊮6
									OC Development Servi APPROVED
Client: TerraC	Costa Consul	ting Group,	Inc.					This set	of plans and specifications must to times. It is unlawful to make any
Project: #297	5 Dana Poin	t Harbor Res	storation						
Project Numb	er: 5015190	002.02						of Orang specifica approva	Public Works, OC Development ge County. The stamping of these ations SHALL NOT be held to per I of the violation of any provisions
Depth: 25'					Samp	le Numbe	er: B5-3	Ordinan	ce or State law. Hadi Tabatabaee
Material Desc	ription: Silt	y Sand, SM	(#32291)					Sec.	BUILDING OFFICIAL
Date: 2/23/19		PL: 34	4.6		LL: 5	1.9		PI: 17.3	
USCS Classif	ication: SM				AASH	ITO Class	sification: A-	7-5(4)	
Testing Rema	arks: Assume	ed specific g	ravity of 2.65	used for h	ydromet	er calcula	tions and soil	particles sma	aller than 0.002mn
	have be	en classified	l as clay.						
Fested by: J.	Iacovera				Chec	ked by: L	. Collins		
				Sieve	Test Da	ita			
Sieve									
Opening	Percent								
Size	Finer								
0.75"	100.0								
0.5"	95.8								
0.375"	93.2								
#4 #10	90.1 87.5								
#10 #20	87.5 77.4								
	67.9								
#(1)									
#40 #100									
#100	53.8								
#100 #200 Hydrometer tes	53.8 44.3			Hydrom(eter Tes	t Data			
#100 #200 Hydrometer tes Percent passin Weight of hydr Hygroscopic m Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corre Specific gravity	53.8 44.3 st uses mater g #10 based ometer samp toisture correct and tare = 7 = 2 moisture = 4 cosite correction C: 1 ection only = y of solids = 2	upon comple le =67.27 ction: 11.99 29.87 26.37 4.0% on values: 9.1 3.5 0.0			eter Tes 21 -2	.3	22.6 -2.5		
#100 #200 Hydrometer tes Percent passin Weight of hydr Hygroscopic m Dry weight a Tare weight Hygroscopic Fable of compo Temp., deg. Comp. corr.: Meniscus corre Specific gravity Hydrometer typ	53.8 44.3 st uses mater g #10 based ometer samp ioisture correct and tare = 7 = 2 moisture = 4 posite correction C: 1 ection only = y of solids = 2 poe = 152H	upon comple le =67.27 ction: 11.99 29.87 26.37 4.0% on values: 9.1 3.5 0.0 2.65	20.3	7.5 20.9 -2.8	21 -2	.3	22.6 -2.5		
#100 #200 Hydrometer tes Percent passin Weight of hydr Hygroscopic m Dry weight a Tare weight Hygroscopic Fable of compo Temp., deg. Comp. corr.: Meniscus corre Specific gravity Hydrometer typ	53.8 44.3 st uses mater g #10 based ometer samp ioisture correct and tare = 7 = 2 moisture = 4 posite correction C: 1 ection only = y of solids = 2 poe = 152H	upon comple le =67.27 ction: 11.99 29.87 26.37 4.0% on values: 9.1 3.5 0.0 2.65	20.3 -3.0	7.5 20.9 -2.8	21 -2	.3	22.6 -2.5 Diameter (mm.)	Percent Finer	
#100 #200 Hydrometer tes Percent passin Weight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corres Specific gravity Hydrometer typ Hydrometer typ	53.8 44.3 st uses mater g #10 based ometer samp ioisture correct and tare = 8 moisture = 4 soite correction C: 1 cection only = y of solids = 2 be = 152H effective dept Temp.	upon comple le =67.27 ction: 81.99 79.87 26.37 4.0% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual	20.3 -3.0 L = 16.294964 Corrected	7.5 20.9 -2.8 164 x Rn	21 -2	.3 .8 Eff.	-2.5 Diameter		
#100 #200 Hydrometer tes Dercent passin Veight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corres Specific gravity Hydrometer typ Hydrometer typ Elapsed Time (min.)	53.8 44.3 st uses mater g #10 based ometer samp to sture correct and tare = $\frac{5}{7}$ = 22 moisture = 4 bosite correction C: 1 construct = 4 construct = 4 construc	upon comple le =67.27 ction: \$1.99 9.87 26.37 4.0% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	7.5 20.9 -2.8 164 x Rn K	21 -2 n Rm	.3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
#100 #200 Hydrometer tespected Percent passin Veight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corres Specific gravity Hydrometer typ Hydrometer typ Hydrometer typ Internet for Elapsed Time (min.) 1.00 2.00 5.00	53.8 44.3 st uses mater g #10 based ometer samp ioisture correct and tare = $\frac{7}{7}$ = 2 moisture = 4 posite correction C: 1 ection only = y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.6	upon comple le =67.27 ction: 31.99 79.87 26.37 2.0% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 33.0 30.5 27.0	20.3 -3.0 L = 16.294964 Corrected Reading 29.7	7.5 20.9 -2.8 164 x Rn K 0.0137	21 -2 n Rm 33.0	.3 .8 Eff. Depth 10.9	-2.5 Diameter (mm.) 0.0452	Finer 40.2	
#100 #200 Hydrometer tes Percent passin Weight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corres Specific gravity Hydrometer typ Hydrometer typ Hydrometer typ Hydrometer typ 1.00 2.00 5.00 15.00	53.8 44.3 st uses mater g #10 based ometer samp toisture correct and tare = 5 r = 22 moisture = 4 cosite correction C: 1 section only = y of solids = 2 to solid = 2 to solids = 2 to solid	upon comple le =67.27 ction: 31.99 29.87 26.37 5.0% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 33.0 30.5 27.0 24.0	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n 33.0 30.5 27.0 24.0	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124	Finer 40.2 36.8 32.1 28.0	
#100 #200 Hydrometer tess Percent passin Weight of hydr Hygroscopic m Moist weight Dry weight a Tare weight Hygroscopic Fable of compo Temp., deg. Comp. corr.: Meniscus corre Specific gravity Hydrometer typ Hydrometer typ Hydrometer typ I.00 2.00 5.00 15.00 31.00	53.8 44.3 st uses mater g #10 based ometer samp noisture correct and tare = $\frac{7}{7}$ = 2 moisture = 4 posite correction C: 1 ection only = y of solids = 2 to solid = 2	upon comple le =67.27 ction: 1.99 29.87 26.37 2.0% on values: 9.1 3.5 0.0 2.65 th equation: 1 Reading 33.0 30.5 27.0 24.0 21.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 33.0 30.5 27.0 24.0 21.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088	Finer 40.2 36.8 32.1 28.0 24.6	
#100 #200 Hydrometer test Percent passin Weight of hydr Hygroscopic m Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corres Specific gravity Hydrometer typ Hydrometer typ Hydrometer typ Hydrometer typ 1.00 2.00 5.00 15.00 31.00 60.00	53.8 44.3 st uses mater g #10 based ometer samp poisture correct and tare = $\frac{5}{7}$ moisture = 4 moisture = 4 moisture = 4 cosite correction C: 1 section only = y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6 19.6 19.6 19.7	upon comple le =67.27 ction: 31.99 79.87 26.37 3.0% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 33.0 30.5 27.0 24.0 21.5 19.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2 16.3	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 33.0 30.5 27.0 24.0 21.5 19.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8 13.1	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088 0.0064	Finer 40.2 36.8 32.1 28.0 24.6 22.0	
#100 #200 Hydrometer tesp Percent passin Weight of hydr Hygroscopic m Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corres Specific gravity Hydrometer typ Hydrometer typ Hydrometer typ 1.00 2.00 5.00 15.00 31.00 60.00 120.00	53.8 44.3 st uses mater g #10 based ometer samp poisture correct and tare = 8 moisture = 4 moisture = 7 moisture = 4 moisture = 4 mo	upon comple le =67.27 ction: 31.99 79.87 26.37 2.6.37 3.5 0.0 2.65 th equation: 1 Actual Reading 33.0 30.5 27.0 24.0 21.5 19.5 17.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2 16.3 14.3	7.5 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n 33.0 30.5 27.0 24.0 21.5 19.5 17.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8 13.1 13.4	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088 0.0064 0.0046	Finer 40.2 36.8 32.1 28.0 24.6 22.0 19.3	
#100 #200 Hydrometer tesp Percent passin Weight of hydr Hygroscopic m Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corres Specific gravity Hydrometer typ Hydrometer typ Hydrometer typ 1.00 2.00 5.00 15.00 31.00 60.00	53.8 44.3 st uses mater g #10 based ometer samp poisture correct and tare = $\frac{5}{7}$ moisture = 4 moisture = 4 moisture = 4 cosite correction C: 1 section only = y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6 19.6 19.6 19.7	upon comple le =67.27 ction: 31.99 79.87 26.37 3.0% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 33.0 30.5 27.0 24.0 21.5 19.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2 16.3	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 33.0 30.5 27.0 24.0 21.5 19.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8 13.1	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088 0.0064	Finer 40.2 36.8 32.1 28.0 24.6 22.0	

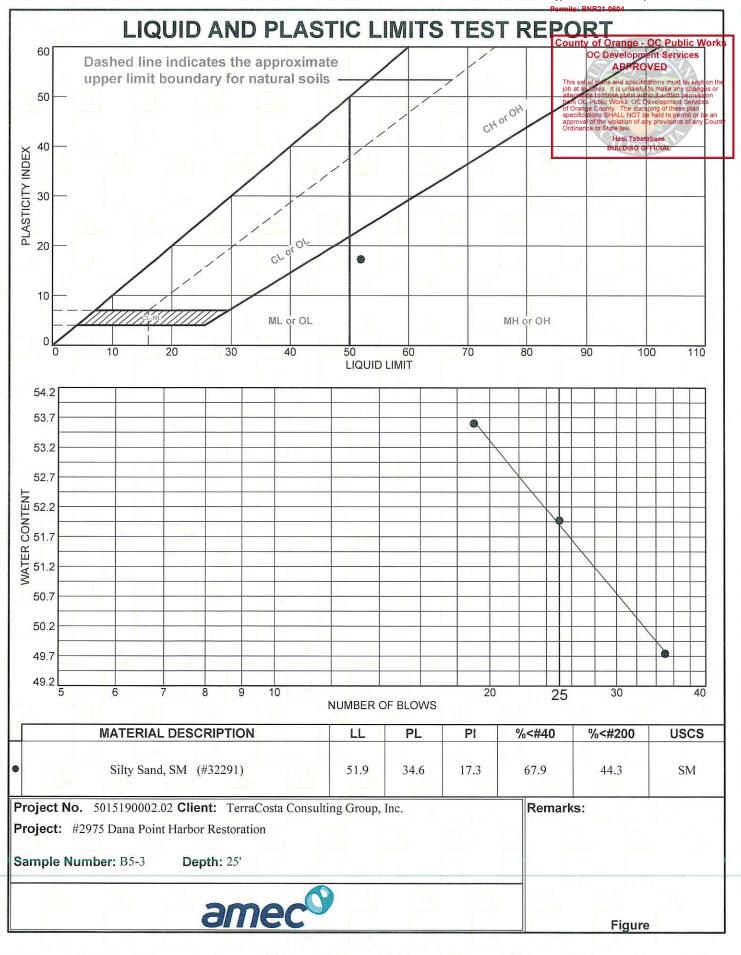
ts: BNR21-0604

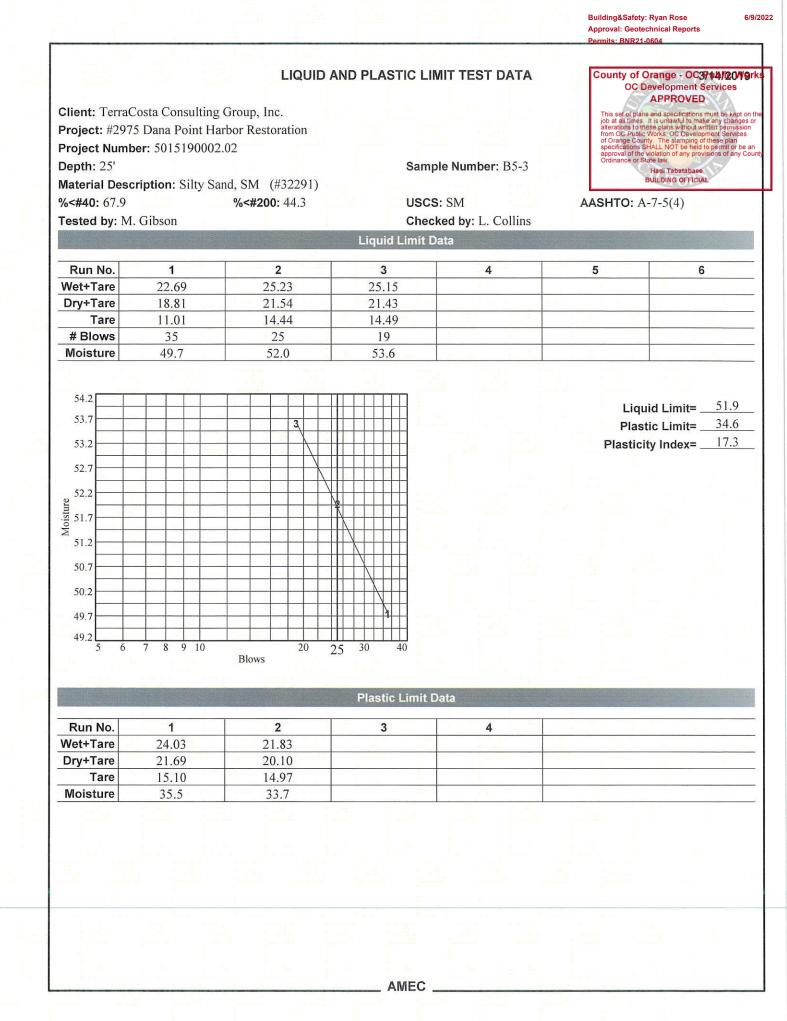
6/9/2022

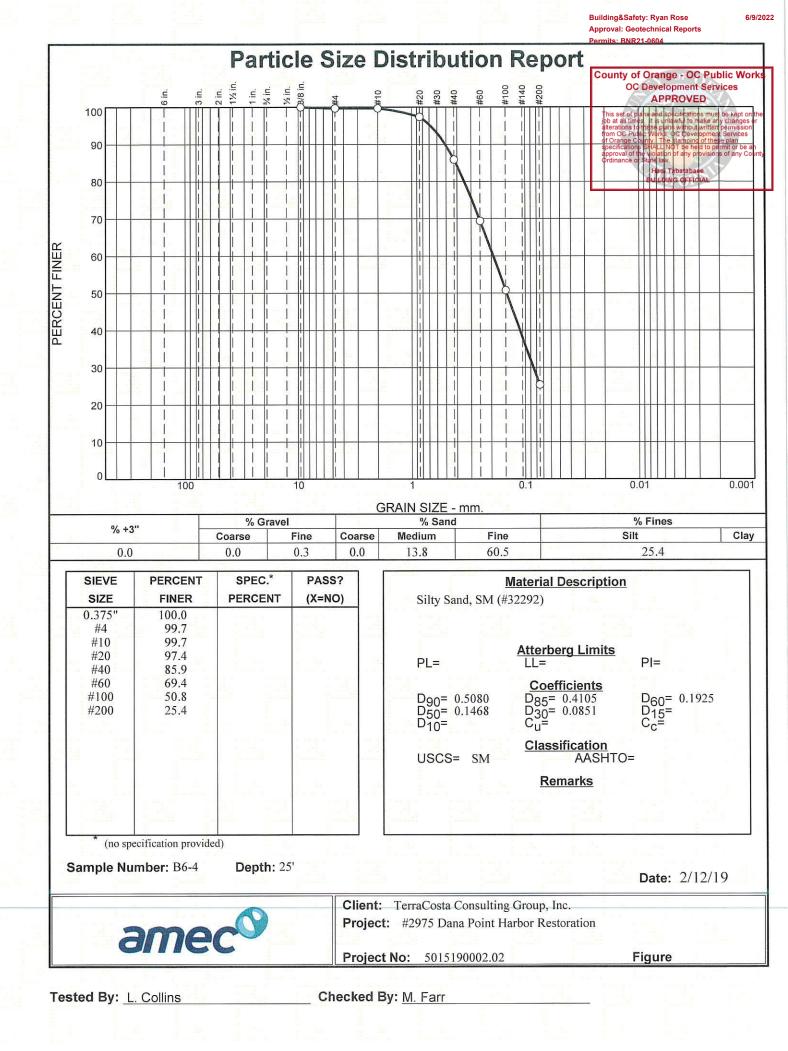
٦

Cobbles		Grave	1			Sand					OC Public W ent Services
cobles	Coarse	Fine	Tota	I Coa	rse Me	dium	Fine	Total	Silt		VECTotal
0.0	0.0	9.9	9.9	2.0	5 1	9.6	23.6	45.8	30.5 This set of	of plans and specifi times! D isounlawfu	cations must be kept to make anochang
									of Orange specificat approval	e County. The star	Development Service nping of these plan be held to permit or b ny provisions of any
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D40	D ₅₀	D ₆₀	D ₈₀	D ₈₅	Hadi Taba BDI 900 NG C	FFICIAL 95
1.00		0.0025	0.0050	0.0162	0.0444	0.1164	0.2336	1.0241	1,5221	4.5015	11.6995

Fineness Modulus 1.57







		Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604
GRAIN	SIZE DISTRIBUTION TEST DATA	County of Orange - OC P3/B/p2/W9rks OC Development Services APPROVED
Client: TerraCosta Consulting Group, Inc.		This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or
Project: #2975 Dana Point Harbor Restoration		alterations to these plans without written permission from OC Public Works, OC Development Services
Project Number: 5015190002.02		of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law.
Depth: 25'	Sample Number: B6-4	Hadi Tabatabaee
Material Description: Silty Sand, SM (#32292)		BUILDING OFFICIAL
Date: 2/12/19		
USCS Classification: SM		
Tested by: L. Collins	Checked by: M. Farr	La la la la
	Sieve Test Data	
Sieve Opening Percent Size Finer		
0.375" 100.0		
#4 99.7		

Cobbles		Gravel			Sar	nd 🚽			Fines	
Copples	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	0.0	13.8	60.5	74.3		2	25.4

Fractional Components

D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D85	D ₉₀	D ₉₅
E. A.	8			0.0851	0.1118	0.1468	0.1925	0.3444	0.4105	0.5080	0.6825

Fineness Modulus 99.7

97.4

85.9

69.4

50.8

25.4

#10

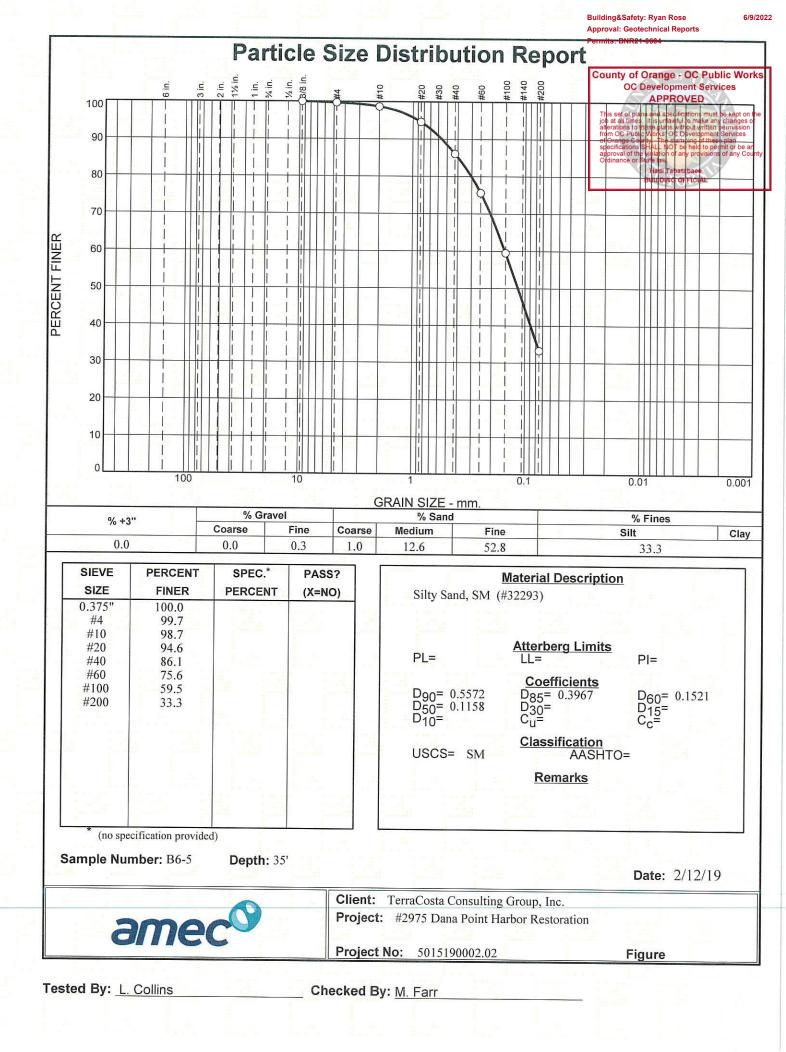
#20

#40

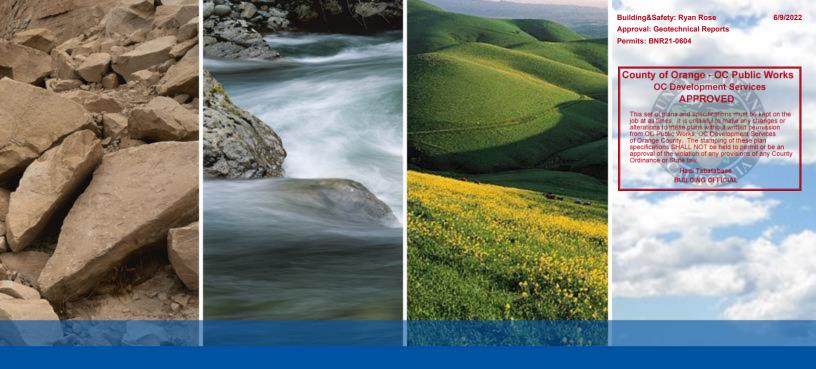
#60

#100 #200

0.83



Fineness Modulus 0.0891 0.1158 0.1521 0.3022 0.3967 0.5572 0.892	tient: TerraCosta Consulting Group, Inc. roject: #2975 Dana Point Harbor Restoration The Standard Stand	ana Point Har 5015190002. ion: Silty Sar ion: SM lins cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5	bor Restora	ation		Checked k			job at all tin alterations i from OC Pu of Orange (specificatio approval of	plans and specificat hes. It is unlawful to to these plans withoublic Works, OC De- County. The stampions SHALL NOT be is the violation of any or State law. Hadi Tabatat	tions must be ke make any chan out written permit velopment Servi ing of these plan held to permit or provisions of an oaee						
ate: 2/12/19 Side of the second	Sete 2/12/19 Side classification: SM Side classification: SM <th cl<="" colspan="6" side="" th=""><th>ion: SM lins cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5</th><th></th><th></th><th>NAME AND ADDRESS OF A DRESS OF A D</th><th>the second second second second</th><th>oy: M. Farr</th><th></th><th></th><th></th><th></th></th>	<th>ion: SM lins cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5</th> <th></th> <th></th> <th>NAME AND ADDRESS OF A DRESS OF A D</th> <th>the second second second second</th> <th>oy: M. Farr</th> <th></th> <th></th> <th></th> <th></th>						ion: SM lins cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5			NAME AND ADDRESS OF A DRESS OF A D	the second second second second	oy: M. Farr				
Sieve Sieve Test Data Sieve Test Data Sieve Opening Size Percent Finer 0.375" 100.0 #4 99,7 #10 98.7 #20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Fine Coarse Fine Total Coarse Fines O.0.0 0.3 10 Cobbles Fine Total Coarse Medium Fine O.0.0 0.3 10 O.10 O.20 Sand Fine Coarse Fine Total Coarse Fine O.0 0.0 0.1 1 0.33.3 Total Coarse <th colsp<="" th=""><th>Checked by: M. Fart Sieve Test Data Sieve Opening Size Percent Sieve Percent Finer Percent Finer Sieve Finer Sieve Finer Sieve Sieve Finer Sieve</th><th>lins cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5</th><th></th><th></th><th>NAME AND ADDRESS OF A DRESS OF A D</th><th>the second second second second</th><th>oy: M. Farr</th><th></th><th></th><th></th><th></th></th>	<th>Checked by: M. Fart Sieve Test Data Sieve Opening Size Percent Sieve Percent Finer Percent Finer Sieve Finer Sieve Finer Sieve Sieve Finer Sieve</th> <th>lins cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5</th> <th></th> <th></th> <th>NAME AND ADDRESS OF A DRESS OF A D</th> <th>the second second second second</th> <th>oy: M. Farr</th> <th></th> <th></th> <th></th> <th></th>	Checked by: M. Fart Sieve Test Data Sieve Opening Size Percent Sieve Percent Finer Percent Finer Sieve Finer Sieve Finer Sieve Sieve Finer Sieve	lins cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5			NAME AND ADDRESS OF A DRESS OF A D	the second second second second	oy: M. Farr									
Sieve Test Data Sieve Opening Size Percent Finer 0.375" 100.0 #4 99.7 #10 98.7 #20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Caravel Sand Fines Cobbles Coarse Medium Fine Total Silt Clay On 0.0 0.3 0.3 Medium Fine Total Silt Clay On 0.0 0.0 No On Pine Total Silt Clay Total On On On On On	Sieve Test Data Sieve Opening Size Percent Finer 0.375" 100.0 #4 99.7 #10 98.7 #20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Sand Fines Cobbles Gravel Sand Fines Option 0.0 0.0 0.3 10 Dia Gravel Sand Fines Cobbles Gravel Sand Fines Option 0.3 10 0.3 10 Pine Total Colspan="5">Colspan= 5 Cobbles Gravel Colspan=5 Site Colspan=5 <tr< th=""><th>cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5</th><th></th><th></th><th>NAME AND ADDRESS OF A DRESS OF A D</th><th>the second second second second</th><th>oy: M. Farr</th><th></th><th></th><th></th><th></th></tr<>	cent her 0.0 9.7 8.7 4.6 5.1 5.6 9.5			NAME AND ADDRESS OF A DRESS OF A D	the second second second second	oy: M. Farr										
Sieve Opening Size Percent Finer 0.375" 100.0 #4 #4 99.7 #10 #10 98.7 #20 #40 86.1 #40 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Silt Clay Cobbles Gravel Silt Clay On 0 0.3 10.0 Fines One Silt Clay Fines One Silt Clay Fines One	Sieve Opening Size Percent Finer 0.375" 100.0 #4 #4 99.7 #10 #40 98.7 #20 #40 86.1 #40 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Coarse Fine Cobbles Gravel coarse Medium O.0 0.0 0.3 O.0 O.0 O.0 O.0 O.0	ner 0.0 9.7 8.7 4.6 5.1 5.6 9.5			Sieve T	est Data											
Opening Size Percent Finer Finer 0.375" 100.0 #4 99.7 #10 98.7 #20 94.6 #40 86.1 #40 86.1 #60 75.6 #200 33.3 Fractional Components Cobbles Carse Fine Total Site Clay Total 0.0 0.3 0.3 1.0 12.6 52.8 66.4 E 33.3 0.0 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D89 Fineness Modulus L <thl< th=""> <thl< th=""><th>Opening Size Percent Finer 0.375" 100.0 #4 99.7 #10 98.7 #20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Sand Fines Cobbles Garse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 I 33. Fineessing D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D8 Fineess Fineess Fineess Fineess Fineess Fineess Fineess</th><th>ner 0.0 9.7 8.7 4.6 5.1 5.6 9.5</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></thl<></thl<>	Opening Size Percent Finer 0.375" 100.0 #4 99.7 #10 98.7 #20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Sand Fines Cobbles Garse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 I 33. Fineessing D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D8 Fineess Fineess Fineess Fineess Fineess Fineess Fineess	ner 0.0 9.7 8.7 4.6 5.1 5.6 9.5															
#4 99.7 #10 98.7 #20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Sand Fines Cobbles Fine Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 - 1 33.3 P10 P15 P20 P30 P40 P50 P60 P80 P85 P90 P92 Fineness Modulus 0.158 0.1521 0.3022 0.3967 0.5572 0.892	#4 99,7 #10 98,7 #20 94,6 #40 86,1 #60 75,6 #100 59,5 #200 33.3 Fractional Components Cobbles Gravel Sand Fine Total Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: Sand Total Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: Sand Image: San	9.7 8.7 4.6 5.1 5.6 9.5															
#10 98.7 #20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Fractional Components Cobbles Gravel Sand Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 - 1 33.3 P10 P15 P20 P30 P40 P50 P60 P80 P85 P90 P92 Fineness Modulus 0.1158 0.1521 0.3022 0.3967 0.5572 0.892	#10 98.7 #20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Fractional Components Cobbles Gravel Sand Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 - - 33. D D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D85 Fineess Modulus Fineess D152 0.3022 0.3967 0.5572 0.867	8.7 4.6 5.1 5.6 9.5															
#20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Coarse Fine Total Sand Fines Cobbles Coarse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 1 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D92 Fineess Modulus Fineess	#20 94.6 #40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Coarse Fine Total Silt Clay Tot 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: Clay Tot 0.0 0.15 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D8 Fineeness Modulus Fineeness	4.6 5.1 5.6 9.5															
#40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Coarse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 1 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D92 Fineess Modulus Fineess	#40 86.1 #60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Sand Fine Coarse Fine Total Silt Clay Tot 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 - - 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D8 Fineness Modulus Fineness	5.1 5.6 9.5															
#60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Sand Fine Fines Cobbles Gravel Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: Clay Total 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D92 Fineness Modulus Image: Clause in the image	#60 75.6 #100 59.5 #200 33.3 Fractional Components Cobbles Gravel Sand Fine Cobbles Gravel Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: Clay in the image: Clay in t	5.6 9.5															
#100 59.5 #200 33.3 Fractional Components Cobbles Coarse Fine Total Coarse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 I I 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D92 Fineness Modulus I	#100 59.5 #200 33.3 Fractional Components Fractional Components Cobbles Coarse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: classical state	9.5															
#200 33.3 Fractional Components Cobbles Fine Total Coarse Medium Fine Total Coarse Fine Cobbles Gravel Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4	#200 33.3 Fractional Components Cobbles Gravel Sand Fine Cobbles Gravel Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 1 33.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D85 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D85 Fineness Modulus Fineness																
Fractional Components Cobbles Gravel Sand Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: Clay 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D92 Fineness Modulus Image: Clay Image: Clay <th< th=""><th>Fractional Components Cobbles Gravel Sand Fine Fines Cobbles Gravel Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 1 33. D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D8 Fineness Modulus Fineness</th><th>3.3</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<>	Fractional Components Cobbles Gravel Sand Fine Fines Cobbles Gravel Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 1 33. D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D8 Fineness Modulus Fineness	3.3															
Cobbles Gravel Total Coarse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: Clay 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D98 Fineness Modulus Clay O.0891 O.1158 O.1521 O.3022 O.3967 O.5572 O.892	Cobbles Gravel Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 Image: Clay 33. D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90																
Cobbles Coarse Fine Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 33.3 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D96 D96 D80 D85 D90 D96 D96 D80 D85 D90 D96 D80 D80 </th <th>Cobbles Coarse Fine Total Coarse Medium Fine Total Silt Clay Tot 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 1 33. D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D90</th> <th></th> <th></th> <th></th> <th>-ractional C</th> <th>Jomponen</th> <th>ts</th> <th></th> <th></th> <th></th> <th>and the second second</th>	Cobbles Coarse Fine Total Coarse Medium Fine Total Silt Clay Tot 0.0 0.0 0.3 0.3 1.0 12.6 52.8 66.4 1 33. D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90				-ractional C	Jomponen	ts				and the second second						
0.0 0.3 0.3 1.0 12.6 52.8 66.4 33.3 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D96 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D96 Fineness Modulus Modulus Image: Non-state	0.0 0.3 0.3 1.0 12.6 52.8 66.4 33. D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D90 D90 Fineness Modulus Fineness	1 200															
D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D92 Image: Ima	D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D60 Image: Ima								Silt	Clay	and an						
Fineness Modulus 0.0891 0.1158 0.1521 0.3022 0.3967 0.5572 0.892	Fineness Modulus 0.0891 0.1158 0.1521 0.3022 0.3967 0.5572 0.89	0.0 0.	3 0.	.3 1.	.0 12	2.6 5	52.8	66.4			33.3						
Fineness Modulus 0.0891 0.1158 0.1521 0.3022 0.3967 0.5572 0.892	Fineness Modulus 0.0891 0.1158 0.1521 0.3022 0.3967 0.5572 0.89																
Fineness	Fineness	0 D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D80	D ₈₅	D ₉₀	D ₉₅						
Modulus	Modulus	20 B.C	5. 8.3	÷	0.0891	0.1158	0.1521	0.3022	0.3967	0.5572	0.8920						
0.77			0.0 0.	0.0 0.3 0	0.0 0.3 0.3 1	0.0 0.3 0.3 1.0 12 0 D ₁₅ D ₂₀ D ₃₀ D ₄₀	0.0 0.3 0.3 1.0 12.6 5 0 D ₁₅ D ₂₀ D ₃₀ D ₄₀ D ₅₀	0.0 0.3 0.3 1.0 12.6 52.8 0 D ₁₅ D ₂₀ D ₃₀ D ₄₀ D ₅₀ D ₆₀	0.0 0.3 0.3 1.0 12.6 52.8 66.4 0 D ₁₅ D ₂₀ D ₃₀ D ₄₀ D ₅₀ D ₆₀ D ₈₀	0.0 0.3 0.3 1.0 12.6 52.8 66.4 0 D ₁₅ D ₂₀ D ₃₀ D ₄₀ D ₅₀ D ₆₀ D ₈₀ D ₈₅	0.0 0.3 0.3 1.0 12.6 52.8 66.4 0 D ₁₅ D ₂₀ D ₃₀ D ₄₀ D ₅₀ D ₆₀ D ₈₀ D ₈₅ D ₉₀						

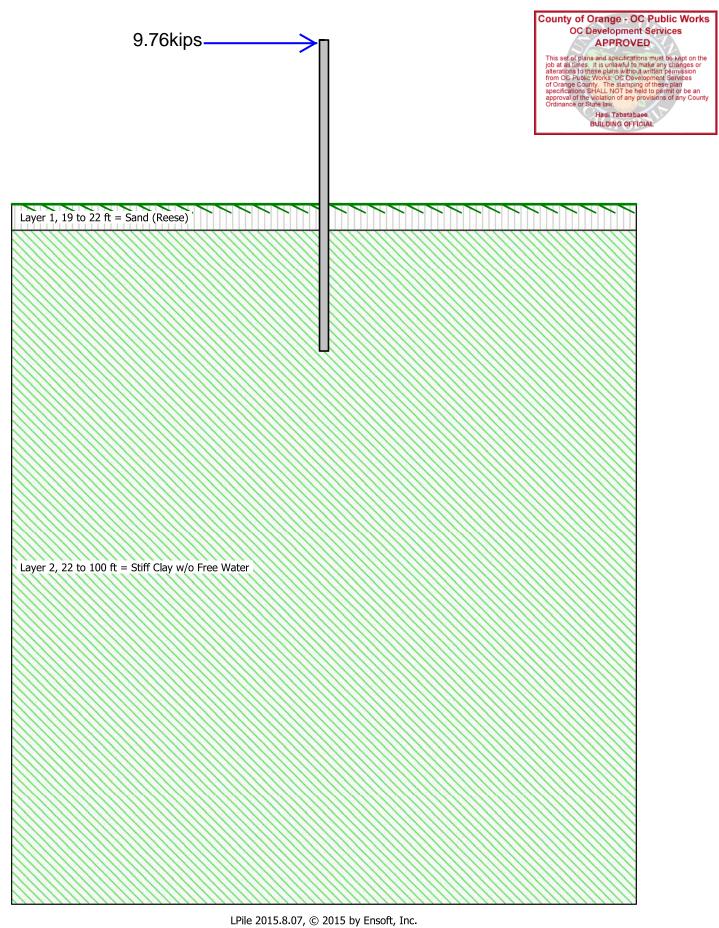


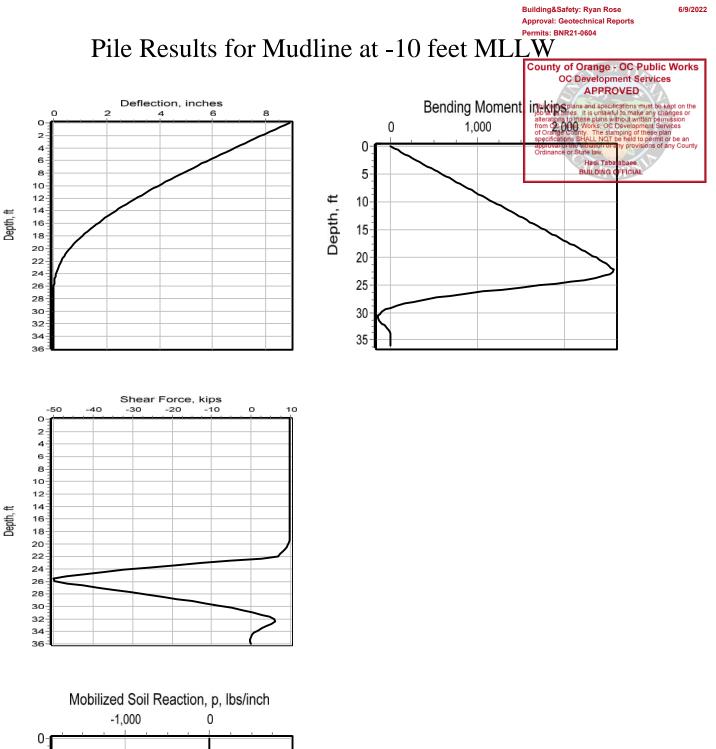
APPENDIX C

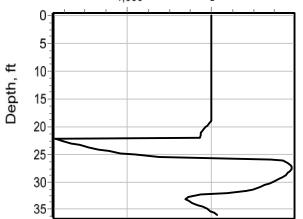
ANALYSIS RESULTS

Soil Profile for Mudline at -10 feet MLL

Building&Safety: Ryan Rose







Building&Safety: Ryan Rose

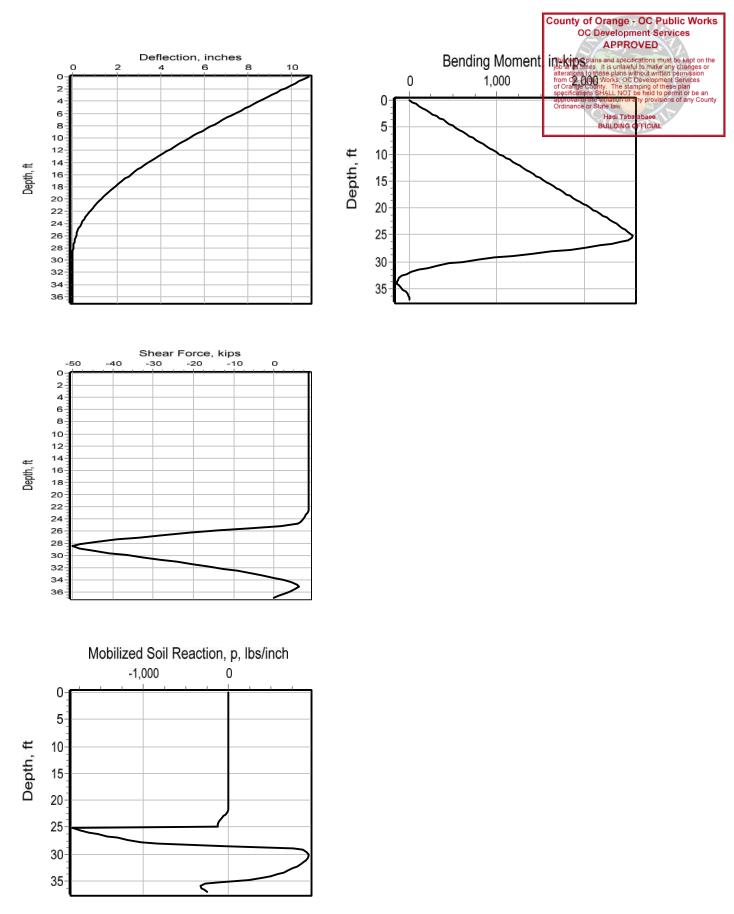
6/9/2022

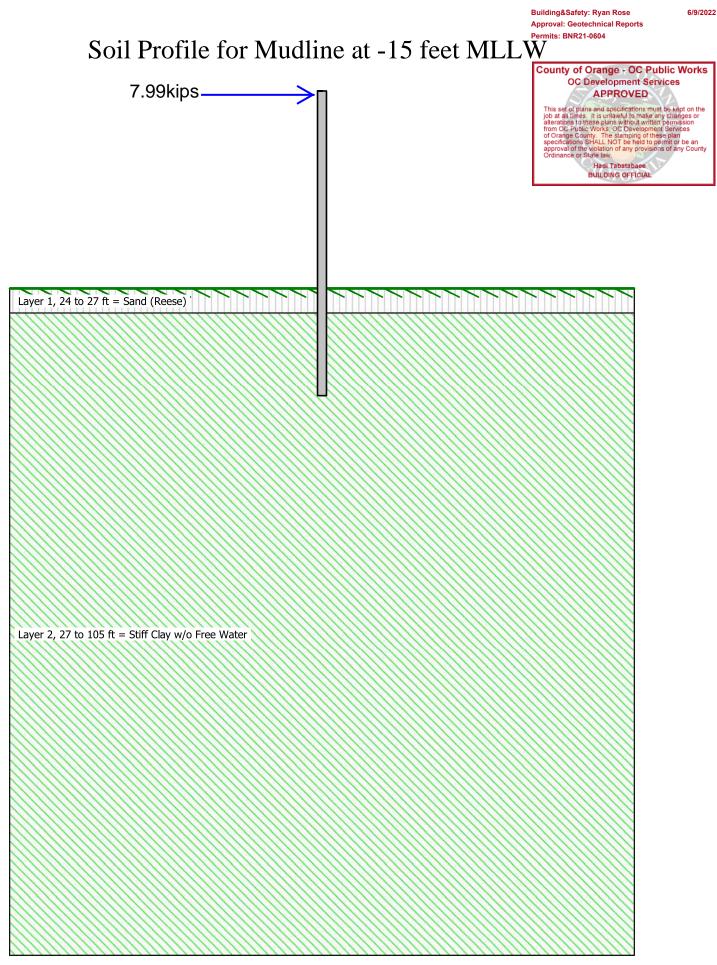
Soil Profile for Mudline at -13 feet MLL^{PW BNR21-0604}

8.60kips	County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without writes plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law. Hadi Tabatabace BUILDING OFFICIAL
Layer 1, 22 to 25 ft = Sand (Reese)	
Layer 2, 25 to 103 ft = Stiff Clay w/o Free Water	

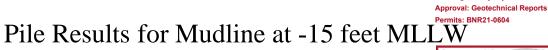
Pile Results for Mudline at -13 feet MLL

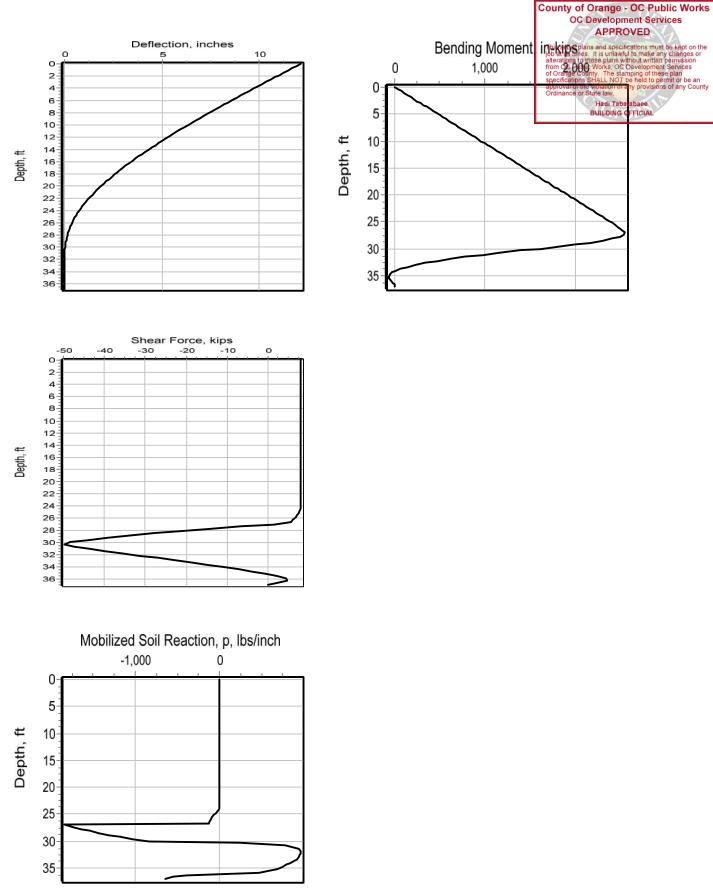
Building&Safety: Ryan Rose



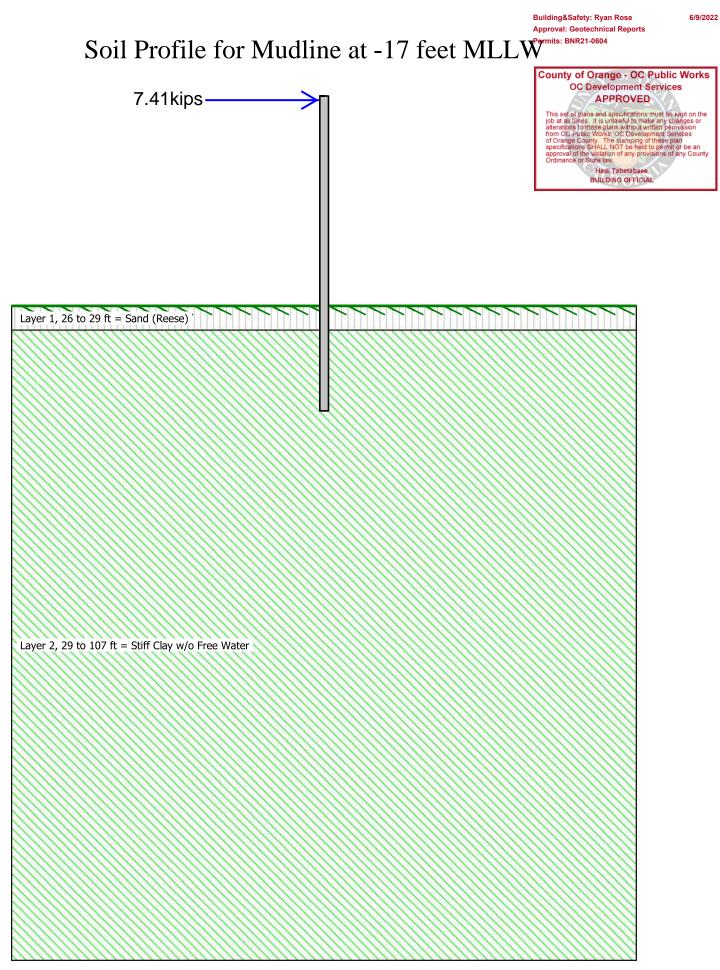


LPile 2015.8.07, © 2015 by Ensoft, Inc.





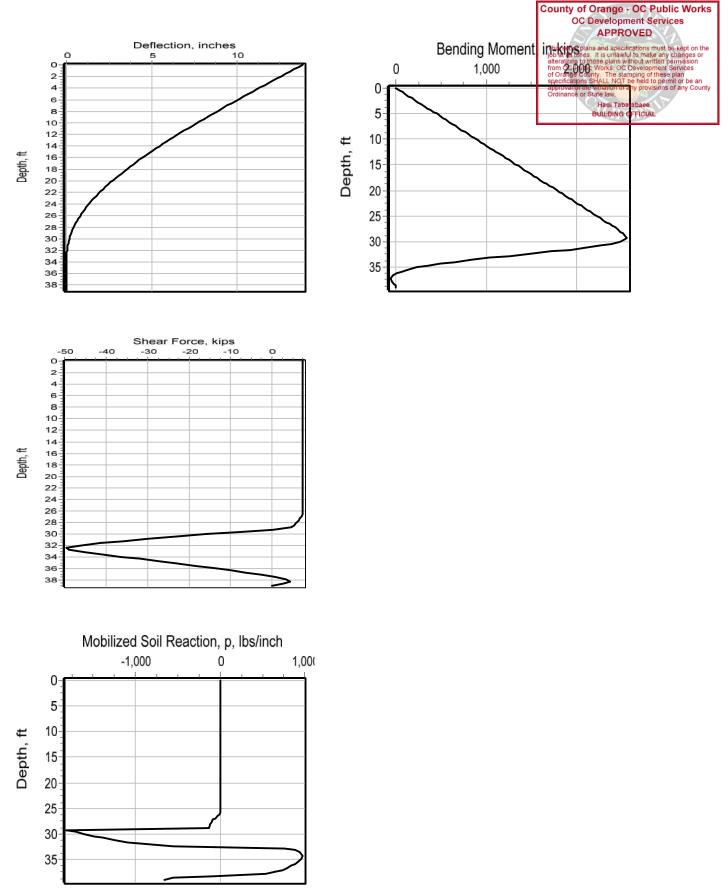
Building&Safety: Ryan Rose



LPile 2015.8.07, © 2015 by Ensoft, Inc.

6/9/2022

Pile Results for Mudline at -17 feet MLL



Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604 County of Orange - OC Public Works **OC Development Services** APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC-public Works. OC Bevelopment Services of Orange County. The stamping of these plan specifications SHALL MOT be held to permit or be an ______ LPile for Windows, Version 2015-08.007 untv Analysis of Individual Piles and Drilled Shafts Hadi Tabatabaee BUILDING OFFICIAL Subjected to Lateral Loading Using the p-y Method © 1985-2015 by Ensoft, Inc. All Rights Reserved _____ This copy of LPile is being used by: ENGEO Irvine Serial Number of Security Device: 227883240 This copy of LPile is licensed for exclusive use by: EnGeo, Inc., San Ramon, CA Use of this program by any entity other than EnGeo, Inc., San Ramon, CA is a violation of the software license agreement. Files Used for Analysis -----_____ Path to file locations: \Active Projects_Promo\P2021\P2021001661 Dana Point Marina\wp\ Name of input data file: danapt_n10ml.lp8d Name of output report file: danapt_n10ml.lp8o Name of plot output file: danapt_n10ml.lp8p Name of runtime message file: danapt_n10ml.lp8r Date and Time of Analysis _____ Date: February 18, 2022 Time: 9:03:33

	Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604
	County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all Lines. It is unlawful to make any changes or atterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications StALL NOT be held to permit or be an approval of the avolation famy provisions of any County
Problem Title	Ordinance or State law. Hadi Tabatabaee BUILDING OFFICIAL
Project Name:	
Job Number:	
Client:	
Engi neer:	
Description:	
Program Options and Settings	
Computational Options: - Use unfactored loads in computations (conventional analysis) Engineering Units Used for Data Input and Computations: - US Customary System Units (pounds, feet, inches)	
Analysis Control Options:=75- Maximum number of iterations allowed=1.0000E-0- Deflection tolerance for convergence=1.0000E-0- Maximum allowable deflection=100.000- Number of pile increments=10	3 in 0 in
Loading Type and Number of Cycles of Loading: - Static Loading specified	
 Use of p-y modification factors for p-y curves not selected No distributed lateral loads are entered Loading by lateral soil movements acting on pile not selected 	

6/9/2022

- Input of shear resistance at the pile tip not selected

- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:

- Output files use decimal points to denote decimal symbols.
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural Pro	operties and Geometry	

Number of pile sections defined	=	1
Total length of pile	=	36.000 ft
Depth of ground surface below top of pile	=	19.0000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

Depth Below	Pile
Pile Head	Diameter
feet	i nches
0.000	12.7500
36 000	12,7500
	Pile Head feet

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is an elastic pile with a specified mo	oment ca	paci ty
Cross-sectional Shape	=	Circular Pipe
Length of section	=	36.000000 ft
Width of top of section	=	12.750000 in
Width of bottom of section	=	12.750000 in
Wall Thickness at Top	=	0.500000 in
Wall Thickness at Bottom	=	0.500000 in
Top Area	=	19.242255 sq. in
Bottom Area	=	19.242255 sq. in



Approval: Geotechnical Reports Permits: BNR21-0604 County of Orange - OC Public Works **OC Development Services** 361. 543932 i n^4 APPROVED Moment of Inertia at Top

 301.543932
 1 n^4

 361.543932
 This set of plans and specifications must be kept on the ipp milling millin = Moment of Inertia at Bottom = Elastic Modulus = Plastic Moment Capacity at Top = Plastic Moment Capacity at Bottom = Top Elastic Bending Stiffness = Bot Elastic Bending Stiffness 1.0485E+10 lbs-in^2 = Shear Capacity at top of section 100000. Ibs = Shear Capacity at bottom of section 100000. Lbs = _____ Ground Slope and Pile Batter Angles _____ Ground Slope Angle 0.000 degrees = 0.000 radians = Pile Batter Angle 0.000 degrees = 0.000 radi ans = _____ Soil and Rock Layering Information _____ The soil profile is modelled using 2 layers Layer 1 is sand, p-y criteria by Reese et al., 1974 Distance from top of pile to bottom of layer = 19.000000 ft Effective unit weight at top of layer = 22.000000 ft 55.000000 pcf Effective unit weight at bottom of layer = 55.000000 pcf Friction angle at top of layer = 34.000000 deg. Friction angle at bottom of layer = 34.000000 deg. = Subgrade k at top of layer 60.000000 pci Subgrade k at bottom of layer = 60.00000 pci Layer 2 is stiff clay without free water Distance from top of pile to bottom of layer = Effective unit weight at top of layer 22.000000 ft 100.000000 ft = 60.00000 pcf = = Effective unit weight at bottom of layer 60.000000 pcf Undrained cohesion at top of layer 4000. psf = 0.004000 Undrained cohesion at bottom of layer 4000. psf Epsilon-50 at top of layer

Building&Safety: Ryan Rose

County of Orange - OC Public Works OC Development Services

This set of plans and specifications must be kapt on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Bevelopment Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County ordinance state law.

Hadi Tabatabaee BUILDING OFFICIAL

APPROVED

Epsilon-50 at bottom of layer

0.004000 =

(Depth of the lowest soil layer extends 64.000 ft below the pile tip)

	Summ	ary of Input S	Soil Propertie	2S	
Layer	Soi I Type	Layer	Effective	Undrai ned	Angle of
E50 Layer	Name	Depth	Unit Wt.	Cohesi on	Friction
or Num. krm	kpy (p-y Curve Type) pci	ft	pcf	psf	deg.
1	Sand	19.0000	55.0000		34.0000
	60.0000 (Reese, et al.) 60.0000	22.0000	55.0000		34.0000
2 . 00400	Stiff Clay	22.0000	60.0000	4000.	
0.00400	w/o Free Water	100.0000	60.0000	4000.	
Static Id	oading criteria were	Static Load used when com			anal yses.
		ading and Pile	e-head Fixity	Condi ti ons	
lumber of	f loads specified =				
Compute ⁻	Type 1	on	Condi ti on 2		Axial Thrust Force, Ibs
1 No	1 V = 97	55.lbs M =	0. 0000	in-lbs	0. 0000000

6/9/2022

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or aron OC Public Works. OC Development Samasion of Orange County. The stamping of these plan specifications SFALL NOT be held to permit or be an approval of the violation of any provisions of any County. Ordinance or State law. Hedd Tabatabase Building OFFICIAL

V = shear force applied normal to pile axis M = bending moment applied to pile head y = lateral deflection normal to pile axis S = pile slope relative to original pile batter angle R = rotational stiffness applied to pile head Values of top y vs. pile lengths can be computed only for load types with specified shear loading (Load Types 1, 2, and 3). Thrust force is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic-plastic section properties

	Layeri n	g Correction	Equi val ent	Depths of So	I & Rock Lay	yers
Layer No.	Top of Layer Below Pile Head ft	Equi val ent Top Depth Bel ow Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer Ibs	F1 Integral for Layer Ibs
1 2	19.0000 22.0000	0. 00 22. 0000	N. A. No	No No	0. 00 3268.	3268. N. A.

Notes: The FO integral of Layer n+1 equals the sum of the FO and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

> Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

				Approval: Geotechr Permits: BNR21-060	nical Reports
				OC Dev A This set of plans ar job at all times. It is	ange - OC Public Works elopment Services PPROVED dispecifications must be kept on the sundavidu for make any changes or plans without written permission it's OC Developmend Services
Pile-head conditions are Shear and	a moment (L	oading type	1)	of Orange County. specifications SHAI approval of the viol	plans without written permission riks. OC Development Services The stamping of these plan LL NOT be held to permit or be an ation of any provisions of any County law.
Shear force at pile head		:		5.0 lbs 📲	law. adi Tabatabaee LDING OFFICIAL
Applied moment at pile head Axial thrust load on pile head				0.0 in-1bs	
Depth Deflect. Bending Res. Soil Spr. Distrib.	Shear	SI ope	Total	Bendi ng	Soi I
X ' y Moment Es*h Lat. Load	Force	S	Stress	Stiffness	р
	Ibs	radi ans	psi *	i n-1 b^2	
0.00 8.9268 2.99E-05 0.00 0.00 0.00	9755.	-0.04360	5.28E-07	1.05E+10	
0.3600 8.7384 42142.	9755.	-0.04359	743.0707	1.05E+10	
0.00 0.7200 0.5502 0.00 0.00 8.5502 84283.	9755.	-0.04356	1486.	1.05E+10	
0.00 1.0800 0.00 0.00 0.00 126425.	9755.	-0.04352	2229.	1.05E+10	
0.00 0.00 0.00					
1.44008.1742168566.0.000.000.00	9755.	-0.04346	2972.	1.05E+10	
1.80007.9866210708.0.000.000.00	9755.	-0.04338	3715.	1.05E+10	
2. 1600 7. 7994 252850.	9755.	-0.04328	4458.	1.05E+10	
0.00 2.5200 0.00 0.00 0.00 2.94991.	9755.	-0.04317	5201.	1.05E+10	
0.00 2.8800 0.00 0.00 0.00 0.00 0.00 0.337133.	9755.	-0.04304	5945.	1.05F+10	
0.00 0.00 0.00					
3. 2400 7. 2407 379274. 0. 00 0. 00 0. 00	9755.	-0. 04289	6688.	1.05E+10	
3.60007.0558421416.0.000.000.00	9755.	-0.04273	7431.	1.05E+10	
3.9600 6.8716 463558.	9755.	-0.04255	8174.	1.05E+10	
0.00 4.3200 0.00 0.00 0.00 0.00 0.00	9755.	-0.04235	8917.	1.05E+10	
0.00 4.6800 0.00 0.00 0.00 0.00 0.47841.	9755.	-0.04213	9660	1.05E+10	
0.00 0.00 0.00					
5.04006.3242589982.0.000.000.00	9755.	-0. 04189	10403.	1.05E+10	
5.4000 6.1437 632124.	9755.	-0.04164	11146.	1.05E+10	
0.00 0.00 0.00 5.7600 5.9644 674266.	9755.	-0.04137	11889.	1.05E+10	
0.00 6.1200 0.00 0.00 0.00 0.00 0.00	9755	-0, 04109	12632	1.05F+10	
		0.01107			

Building&Safety: Ryan Rose

			County of Orange - OC Public Works OC Development Services APPROVED
9755.	-0.04078	13375.	This set of plans and specifications must be kept on the i the set of plans and specifications must be kept on the alternations to these plans without written permission from OC Public Works. OC Development Services
9755.	-0.04046	14118.	of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an apply by at the oblation of any provisions of any County Ordinatice or state law. Had Tabatabase
9755.	-0.04012	14861.	1. 05E+10
9755.	-0.03977	15604.	1.05E+10
9755.	-0.03939	16348.	1.05E+10
9755.	-0.03900	17091.	1.05E+10
9755.	-0.03860	17834.	1.05E+10
9755.	-0.03817	18577.	1.05E+10
9755.	-0.03773	19320.	1.05E+10
9755.	-0.03727	20063.	1.05E+10
9755.	-0.03679	20806.	1.05E+10
9755.	-0.03629	21549.	1.05E+10
9755.	-0.03578	22292.	1.05E+10
9755.	-0.03525	23035.	1.05E+10
9755.	-0.03471	23778.	1.05E+10
9755.	-0.03414	24521.	1.05E+10
9755.	-0.03356	25264.	1.05E+10
9755.	-0.03296	26007.	1.05E+10
9755.	-0.03234	26751.	1.05E+10
9755.	-0.03171	27494.	1.05E+10
9755.	-0.03106	28237.	1.05E+10
9755.	-0.03039	28980.	1.05E+10
9755.	-0. 02971	29723.	1.05E+10
9755.	-0.02900	30466.	1.05E+10
9755.	-0.02828	31209.	1.05E+10

0.00 0.00 0.00 6.4800 5.6094 758549. 0.00 0.00 0.00 6.8400 5.4339 800690. 0.00 0.00 0.00 7.2000 5.2598 842832. 0.00 0.00 0.00 7.5600 5.0872 884974. 0.00 0.00 0.00 7.9200 4.9162 927115. 0.00 0.00 0.00 8.2800 4.7469 969257. 0.00 0.00 0.00 8.6400 4.5792 1011398. 0.00 0.00 0.00 9.0000 4.4134 1053540. 0.00 0.00 0.00 9.3600 4.2494 1095682. 0.00 0.00 0.00 9.7200 4.0874 1137823. 0.00 0.00 0.00 10.0800 3.9275 1179965. 0.00 0.00 0.00 10.4400 3.7696 1222106. 0.00 0.00 0.00 10.8000 3.6139 1264248. 0.00 0.00 0.00 11.1600 3.4604 1306390. 0.00 0.00 0.00 3.3093 1348531. 11.5200 0.00 0.00 0.00 11.8800 3.1605 1390673. 0.00 0.00 0.00 12.2400 3.0143 1432814. 0.00 0.00 0.00 12.6000 2.8706 1474956. 0.00 0.00 0.00 12.9600 2.7295 1517098. 0.00 0.00 0.00 13.3200 2.5911 1559239. 0.00 0.00 0.00 13.6800 2.4555 1601381. 0.00 0.00 0.00 14.0400 2.3228 1643522. 0.00 0.00 0.00 14.4000 2.1929 1685664. 0.00 0.00 0.00 14.7600 2.0661 1727806. 0.00 0.00 0.00 15.1200 1.9424 1769947. 0.00 0.00 0.00

						County of Oronno, OC Public Works
						County of Orange - OC Public Works OC Development Services
15. 4800 0. 00	1. 8218 0. 00	1812089. 0. 00	9755.	-0.02754	31952.	• 05E+10 ^{APPROVED} This set of plans and specifications must be kapt on the poble of plans and specifications must be kapt on the poble of the set of plans without written permission for the plans without written permission specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law.
15.8400	1. 7044		9755.	-0.02679	32695.	alterations to these plans without written permission from the Public Works. OC Development Services out a get caudy. The stamping of these plan specifications SHALL NOT the bald to permit or be an
0.00 16.2000	0.00 1.5903	0.00 1896372.	9755.	-0.02602	33438.	approval of the violation of any provisions of any County Ordinance or State law.
	0.00	0.00	7700.	-0.02002	JJ430.	
16.5600	1. 4796 0. 00	1938514. 0.00	9755.	-0. 02523	34181.	1.05E+10
16.9200	1.3724	1980655.	9755.	-0.02442	34924.	1.05E+10
0.00 17.2800	0.00	0.00 2022797.	9755.	-0.02359	35667.	1.05E+10
0.00	0.00	0.00				
17.6400 0.00	1.1685 0.00	2064938. 0.00	9755.	-0.02275	36410.	1.05E+10
18.0000	1. 0721	2107080.	9755.	-0.02189	37154.	1.05E+10
	0.00	0.00	0755	0 00101	27007	1 000.10
18.3600 0.00	0. 9794 0. 00	2149222. 0.00	9755.	-0. 02101	37897.	1.05E+10
18.7200	0.8905	2191363.	9755.	-0. 02012	38640.	1.05E+10
0.00 19.0800	0.00 0.8055	0.00 2233505.	9747.	-0.01921	39383.	1.05E+10
-3.7437	20.0770	0.00				
19. 4400 -23. 8497	0. 7245 142. 2026	2275577. 0.00	9687.	-0.01828	40125.	1.05E+10
19.8000	0.6476	2317203.	9533.	-0.01733	40859.	1.05E+10
-47. 3768 20. 1600	316. 0452 0. 5748	0.00 2357946.	0774	-0.01637	11577	1. 05E+10
-71.9486	0. 5748 540. 7699	2357946. 0.00	9276.	-0.01037	41577.	1. UJE+1U
20. 5200	0. 5061	2397345.	8914.	-0.01539	42272.	1.05E+10
-95.6898 20.8800	816. 7218 0. 4418	0.00 2434959.	8460.	-0.01440	42935.	1.05E+10
-114.2443	1117.	0.00	0400.	0.01440	72/33.	1.000110
21.2400	0. 3818 1715	2470441.	7943.	-0.01339	43561.	1.05E+10
-125.0050 21.6000	1415. 0. 3261	0.00 2503590.	7391.	-0.01236	44145.	1.05E+10
-130.6695	1731.	0.00				
21.9600 -134.0843	0. 2750 2107.	2534301. 0.00	6819.	-0.01132	44687.	1.05E+10
22. 3200	0. 2283		2547.	-0.01025	45184.	1.00E+10
-1844.	34889.	0.00		0 00017		
22.6800 -1753.	0. 1864 40619.	2556305. 0.00	-5222.	-0.00917	45075.	1.05E+10
23.0400	0. 1491	2517390.	-12589.	-0.00812	44388.	1.05E+10
-1658. 23.4000	48032. 0. 1162	0.00 2447539.	-19534.	-0.00710	43157.	1.05E+10
	57895.	0.00	-17004.	-0.00710	43137.	I. UJLTIU
23.7600	0.08773	2348619.	-26034.	-0.00611	41413.	1.05E+10
-1452. 24.1200	71497. 0.06341	0.00 2222601.	-32063.	-0.00517	39190.	1.05E+10
-1339.	91213.	0.00				
24.4800	0.04305	2071596.	-37580.	-0.00429	36528.	1.05E+10

						County of Orange - OC Public Works
101/	01074	0.00				OC Development Services APPROVED
	121974.	0.00	40500	0 000 47	004/5	
24.8400	0. 02638	1897906.	-42529.	-0.00347	33465.	This set of plans and specifications must be kept on the j() m # tanes () is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services
	176184.	0.00	44004	0 00070	20040	alterations to mess plants without white permission from OC Public Works, OC Development Services of Orange County. The stamping of these plan specifications Stratell NOT be held to permit or be an efficient of the Octation of any provisions of any County Officiantee of state law.
25.2000	0.01308	1704142.	-46804.	-0.00273	30049.	
-903.2989	298358.	0.00 1402510	E0001		1400E	Hadi Tabatabaee BUILDING OFFICIAL
25.5600 -618.3016	0. 00282 948667.	1493519. 0.00	-50091.	-0.00207	26335.	1. U0E+ IU
25. 9200	-0.00479	0.00 1271358.	-49916.	-0.00150	22417.	1.05E+10
699.2590	630714.	0.00	-47710.	-0.00130	22417.	1.002+10
26. 2800	-0. 01013	1062246.	-46580.	-0.00102	18730.	1.05E+10
844.9435	360274.	0.00	+0500.	0.00102	10730.	1.002+10
26.6400	-0. 01358	868903.	-42791.	-6.20E-04	15321.	1.05E+10
909.6304	289303.	0.00	121/11	0.202 01	10021.	
27.0000	-0.01549	692536.	-38795.	-2.98E-04	12211.	1.05E+10
940. 1687	262241.	0.00			· _ _ · · · ·	
27.3600	-0.01616	533715.	-34711.	-4.56E-05	9411.	1.05E+10
950. 3179	254047.	0.00				
27.7200	-0.01588	392629.	-30615.	1.45E-04	6923.	1.05E+10
946.2736	257392.	0.00				
28.0800	-0.01491	269203.	-26559.	2.82E-04	4747.	1.05E+10
931. 4191	269954.	0.00				
28.4400	-0.01345	163159.	-22586.	3.71E-04	2877.	1.05E+10
907.8171	291597.	0.00				
28.8000	-0.01170	74057.	-18731.	4.20E-04	1306.	1.05E+10
876.8098	323663.	0.00				
29.1600	-0.00982	1319.	-15025.	4.35E-04	23.2593	1.05E+10
839.2989	369043.	0.00			000 4077	
29.5200	-0.00794	-55756.	-11493.	4.24E-04	983.1277	1.05E+10
795.8855	432792.	0.00	01/0		1700	1 055 10
29.8800	-0.00616	-97978.	-8160.	3.92E-04	1728.	1. 05E+10
746. 9361	523567.	0.00			2224	1 055.10
30.2400	-0.00456	-126260.	-5051.	3.46E-04	2226.	1.05E+10
692.5956 30.6000	656695.	0.00 141617	2100	2.91E-04	2407	1.05E+10
00.0000	-0. 00317 861184.	-141617.	-2188.	2.91E-04	2497.	T. USE+TU
632.7382 30.9600		0.00 -145165.	402. 9051	2.32E-04	2560.	1.05E+10
	-0.00204 1197936.	-145165. 0.00	402. 900 I	Z. 32E-04	2000.	1.052+10
31. 3200		-138136.	2693.	1.73E-04	2436.	1.05E+10
493. 2233	1817551.	0.00	2075.	1.75L-04	2430.	1. 002+10
	-5. 47E-04	-121901.	4638.	1.20E-04	2149.	1.05E+10
407.5055	3221224.	0.00	1000.		2.17.	
	-1. 38E-04	-98062.	5911.	7.44E-05	1729.	1.05E+10
181. 9857	5709805.	0.00				
32.4000	9.66E-05	-70827.	6029.	3.96E-05	1249.	1.05E+10
-127.6554	5709805.	0.00				
32.7600	2.05E-04	-45974.	5168.	1.56E-05	810. 6407	1.05E+10
-270. 6702	5709805.	0.00				
33.1200	2.31E-04	-26172.	3924.	7.13E-07	461.4818	1.05E+10
-305.5279	5709805.	0.00				
33.4800	2.11E-04	-12072.	2662.	-7.17E-06	212.8626	1.05E+10
-278.8138	5709805.	0.00				

						County of Orange - OC Public Works OC Development Services
33.8400	1.69E-04	-3175.	1576.	-1.03E-05	55.9923	1.05E+10 ^{APPROVED}
-223.6992	5709805.	0.00				This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission
34.2000	1.22E-04	1546.	745.0003	-1.06E-05	27.2656	from CC Public Works, OC Development Services - of Contiger Cutury, The stamping of these plan specifications SHALL NOT be held to permit or be an
-161.1140	5709805.	0.00				approval of the violation of any provisions of any County Ordinance or State law.
34.5600	7.73E-05	3261.	176. 3142	-9.65E-06	57.5060	1. 05E+10Hadi Tabatabaee
-102.1666	5709805.	0.00				BULLDING OFFICIAL
34.9200	3.85E-05	3070.	-154.2919	-8.35E-06	54.1265	1. 05E+10
-50. 8918	5709805.	0.00				
35.2800	5.17E-06	1928.	-278. 9896	-7.32E-06	34.0001	1. 05E+10
-6.8386 5	709805.	0.00				
35.6400	-2.47E-05	659. 1947	-223. 1762	-6.79E-06	11. 6234	1. 05E+10
32.6782 5	709805.	0.00				
36.0000	-5.34E-05	0.00	0.00	-6.65E-06	0.00	1. 05E+10
70.6441 2	854902.	0.00				

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

=	8.92675169 inches
=	-0. 04359613 radi ans
=	2562509. inch-lbs
=	-50091. Ibs
=	22.32000000 feet below pile head
=	25.56000000 feet below pile head
=	21
=	3
	= = =

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, Ibs, and Load 2 = Moment, M, in-Ibs Load Type 2: Load 1 = Shear, V, Ibs, and Load 2 = Slope, S, radians Load Type 3: Load 1 = Shear, V, Ibs, and Load 2 = Rot. Stiffness, R, in-Ibs/rad. Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-Ibs Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

Load Load Load Axial Pile-head Pile-head Max Shear Max Moment Case Type Pile-head Type Pile-head Loading Deflection Rotation in

Pile in Pile					County of Orange - OC Public Works OC Development Services APPROVED
No. 1 Load 1 in-Ibs	2	Load 2	l bs	i nches	This set of plans and specifications must be kept on the advectional specifications must be kept on the advectional specification of the specification of the form OC Public Works, OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County
1 V, Ib 9755. -50091. 2562509.	M, in-Ib	0.00	0.00	8. 9268	Ordinance or State law. Hadi Tabatabaee. BUILDING OFFICIAL

Maximum pile-head deflection = 8.9267516946 inches Maximum pile-head rotation = -0.0435961265 radians = -2.497874 deg.

This analysis ended normally

Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604 County of Orange - OC Public Works **OC Development Services** APPROVED This set of plans and specifications must be job at all times. It is unlawful to make any ci alterations to these plans without written per from OC Publics Works. OC Development Se of Orange County. The stamping of these p specifications SHALL NOT be held to permit ______ kept on the ges o LPile for Windows, Version 2015-08.007 he an untv Analysis of Individual Piles and Drilled Shafts Hadi Tabatabaee BUILDING OFFICIAL Subjected to Lateral Loading Using the p-y Method © 1985-2015 by Ensoft, Inc. All Rights Reserved _____ This copy of LPile is being used by: ENGEO Irvine Serial Number of Security Device: 227883240 This copy of LPile is licensed for exclusive use by: EnGeo, Inc., San Ramon, CA Use of this program by any entity other than EnGeo, Inc., San Ramon, CA is a violation of the software license agreement. Files Used for Analysis -----_____ Path to file locations: \Active Projects_Promo\P2021\P2021001661 Dana Point Marina\wp\ Name of input data file: danapt_n13ml.lp8d Name of output report file: danapt_n13ml.lp8o Name of plot output file: danapt_n13ml.lp8p Name of runtime message file: danapt_n13ml.lp8r Date and Time of Analysis _____ Date: February 18, 2022 Time: 9:01:20

	Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604
	County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the sublano farm provisions of any County
Problem Title	Ordinance or State law. Hødi Tabatabase BUILDING OFFICIAL
Project Name:	
Job Number:	
Client:	
Engi neer:	
Description:	
Program Options and Settings	
Computational Options: - Use unfactored loads in computations (conventional analysis) Engineering Units Used for Data Input and Computations: - US Customary System Units (pounds, feet, inches)	
- Deflection tolerance for convergence = 1.0000E- - Maximum allowable deflection = 100.000	
Loading Type and Number of Cycles of Loading: - Static Loading specified	
 Use of p-y modification factors for p-y curves not selected No distributed lateral loads are entered Loading by lateral soil movements acting on pile not selected 	

6/9/2022

- Input of shear resistance at the pile tip not selected

- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:

- Output files use decimal points to denote decimal symbols.
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural	Properties and	Geometry

Number of pile sections defined	=	1
Total length of pile	=	37.000 ft
Depth of ground surface below top of pile	=	22.0000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

Depth Below	Pile
Pile Head	Diameter
feet	i nches
0.000	12.7500
37.000	12.7500
	Pile Head feet 0.000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is an elastic pile with a specified mo	ment ca	ipaci ty
Cross-sectional Shape	=	Circular Pipe
Length of section	=	37.000000 ft
Width of top of section	=	12.750000 in
Width of bottom of section	=	12.750000 in
Wall Thickness at Top	=	0.500000 in
Wall Thickness at Bottom	=	0.500000 in
Top Area	=	19.242255 sq. in
Bottom Area	=	19.242255 sq. in



Approval: Geotechnical Reports Permits: BNR21-0604 County of Orange - OC Public Works **OC Development Services** 361. 543932 i n^4 APPROVED Moment of Inertia at Top

 301.543932
 1 n^4

 361.543932
 This set of plans and specifications must be kept on the ipp milling millin = Moment of Inertia at Bottom = Elastic Modulus = Plastic Moment Capacity at Top = Plastic Moment Capacity at Bottom = Top Elastic Bending Stiffness = Bot Elastic Bending Stiffness 1.0485E+10 lbs-in^2 = Shear Capacity at top of section 100000. Ibs = Shear Capacity at bottom of section 100000. Lbs = _____ Ground Slope and Pile Batter Angles _____ Ground Slope Angle 0.000 degrees = 0.000 radians = Pile Batter Angle 0.000 degrees = 0.000 radi ans = _____ Soil and Rock Layering Information _____ The soil profile is modelled using 2 layers Layer 1 is sand, p-y criteria by Reese et al., 1974 Distance from top of pile to top of layer=22.000000 ftDistance from top of pile to bottom of layer=25.000000 ftEffective unit weight at top of layer=55.000000 pcf 55.000000 pcf = 55.000000 pcf Friction angle at top of layer = 34.000000 deg. Friction angle at bottom of layer = 34.000000 deg. = Subgrade k at top of layer 60.000000 pci Subgrade k at bottom of layer = 60.00000 pci Layer 2 is stiff clay without free water Distance from top of pile to bottom of layer = Effective unit weight at top of layer 25.000000 ft 103.000000 ft = 60.00000 pcf = = Effective unit weight at bottom of layer 60.000000 pcf Undrained cohesion at top of layer 4000. psf = 0.004000 Undrained cohesion at bottom of layer 4000. psf Epsilon-50 at top of layer

Building&Safety: Ryan Rose

County of Orange - OC Public Works OC Development Services

This set of plans and specifications must be kapt on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Bevelopment Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County ordinance state law.

Hadi Tabatabaee BUILDING OFFICIAL

APPROVED

Epsilon-50 at bottom of layer

0.004000 =

(Depth of the lowest soil layer extends 66.000 ft below the pile tip)

	Sumn	nary of Input S	oil Propertie	S	
_ayer E50	Soi I Type	Layer	Effective	Undrai ned	Angle of
ayer or	Name kpy	Depth	Unit Wt.	Cohesi on	Friction
Num. krm	(p-y Curve Type) pci	ft	pcf	psf	deg.
1	Sand 60. 0000	22.0000	55.0000		34.0000
	(Reese, et al.) 60.0000	25.0000	55.0000		34.0000
 2). 00400	Stiff Clay	25.0000	60.0000	4000.	
). 00400	w/o Free Water	103.0000	60.0000	4000.	
tatic lo	oading criteria were	Static Load		irves for al	
	Pile-head Lo	ading and Pile	head Fixity	Conditions	
lumber of	floads specified =	1			
	Load Conditi	on	Condi ti on		Axial Thrust
Compute No. s. Pile	Type 1		2		Force, Ibs
1 No	1 V = 86	000.lbs M =	0.0000	in-Ibs	0.000000

6/9/2022

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the obtat all times. It is unlawful for make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law. Hadi Tabatabae BUILDING OFFICIAL

V = shear force applied normal to pile axis M = bending moment applied to pile head y = lateral deflection normal to pile axis S = pile slope relative to original pile batter angle R = rotational stiffness applied to pile head Values of top y vs. pile lengths can be computed only for load types with specified shear loading (Load Types 1, 2, and 3). Thrust force is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic-plastic section properties

	Layeri n	g Correction	Equi val ent	Depths of So	il & Rock Lay	yers
Layer No.	Top of Layer Below Pile Head ft	Equi val ent Top Depth Bel ow Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	FO Integral for Layer Ibs	F1 Integral for Layer Ibs
 1 2	22. 0000 25. 0000	0. 00 25. 0000	N. A. No	No No	0. 00 3268.	3268. N. A.

Notes: The FO integral of Layer n+1 equals the sum of the FO and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

> Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

				Approval: Geotechr Permits: BNR21-060	
				OC Dev A This set of plans ar job at all times. It is elecctione to these	ange - OC Public Works elopment Services PPROVED di specifications must be kept on the sundavidu to make any changes or plans without written periods
Pile-head conditions are Shear and	Moment (L	oading Type	1)	of Orange County. specifications SHAI approval of the viol	rks. OC Development Services The stamping of these plan LL NOT be held to permit or be an ation of any provisions of any County law.
Shear force at pile head		:	= 860	0. 🕕 I bs 🔍 🗯	law. adi Tabatabaee LDING OFFICIAL
Applied moment at pile head Axial thrust load on pile head				0.0 lbs	LUING OFFICIAL
Depth Deflect. Bending Res. Soil Spr. Distrib.	Shear	SI ope	Total	Bendi ng	Soi I
X y Moment Es*h Lat. Load	Force	S	Stress	Stiffness	р
feet inches in-Ibs Ib/inch Ib/inch Ib/inch	l bs	radi ans	psi *	in-1b^2	
0.00 10.7745 -2.36E-05 0.00 0.00 0.00	8600.	-0. 04741	4. 16E-07	1. 05E+10	
0. 3700 10. 5640 38184. 0. 00 0. 00 0. 00	8600.	-0.04740	673. 2875	1.05E+10	
0.7400 10.3536 76368. 0.00 0.00 0.00	8600.	-0.04737	1347.	1.05E+10	
1. 1100 10. 1434 114552. 0. 00 0. 00 0. 00	8600.	-0.04733	2020.	1.05E+10	
1. 4800 9. 9333 152736. 0. 00 0. 00 0. 00	8600.	-0.04728	2693.	1.05E+10	
1.8500 9.7235 190920. 0.00 0.00 0.00	8600.	-0.04720	3366.	1.05E+10	
2. 2200 9. 5141 229104. 0. 00 0. 00 0. 00	8600.	-0.04712	4040.	1.05E+10	
2.5900 9.3051 267288. 0.00 0.00 0.00	8600.	-0.04701	4713.	1.05E+10	
2. 9600 9. 0967 305472. 0. 00 0. 00 0. 00	8600.	-0.04689	5386.	1.05E+10	
3.3300 8.8888 343656. 0.00 0.00 0.00	8600.	-0.04675	6060.	1.05E+10	
3.7000 8.6815 381840. 0.00 0.00 0.00	8600.	-0.04660	6733.	1.05E+10	
4. 0700 8. 4750 420024. 0. 00 0. 00 0. 00	8600.	-0.04643	7406.	1.05E+10	
4.4400 8.2692 458208. 0.00 0.00 0.00	8600.	-0.04624	8079.	1.05E+10	
4.8100 8.0643 496392. 0.00 0.00 0.00	8600.	-0.04604	8753.	1.05E+10	
5. 1800 7. 8604 534576. 0. 00 0. 00 0. 00	8600.	-0.04582	9426.	1.05E+10	
	8600.	-0.04559	10099.	1.05E+10	
5.9200 7.4556 610944. 0.00 0.00 0.00	8600.	-0.04534	10773.	1.05E+10	
6. 2900 7. 2548 649128.	8600.	-0.04507	11446.	1.05E+10	

Building&Safety: Ryan Rose

ì				County of Orange - OC Public Works OC Development Services APPROVED
5 587312.	8600.	-0.04479	12119.	This set of plans and specifications must be kept on the IOD in time Or is unlawful to make any changes or an additions to intesse plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an appled up in Colation of any provisions of any County Ordinance or State law.
, 725496.	8600.	-0.04449	12792.	of Orange County. The stamping of these plan specifications CHALL NOT be held to permit or be an apply in the Volation of any provisions of any County Ordinance or State law. Hadi Tabatabase
763680.	8600.	-0.04417	13466.	1.05E+10
301864.	8600.	-0.04384	14139.	1.05E+10
340048.	8600.	-0.04349	14812.	1.05E+10
, 378232.	8600.	-0.04313	15486.	1.05E+10
916416.	8600.	-0.04275	16159.	1.05E+10
954600.	8600.	-0.04235	16832.	1.05E+10
992784.	8600.	-0.04194	17505.	1.05E+10
)30968.	8600.	-0. 04151	18179.	1.05E+10
) 69152.	8600.	-0.04107	18852.	1.05E+10
, 107336.	8600.	-0.04061	19525.	1.05E+10
, 145520.	8600.	-0.04013	20199.	1.05E+10
, 183704.	8600.	-0. 03964	20872.	1.05E+10
221888.	8600.	-0.03913	21545.	1.05E+10
260072.	8600.	-0.03860	22218.	1.05E+10
298256.	8600.	-0.03806	22892.	1.05E+10
336440.	8600.	-0. 03750	23565.	1.05E+10
374624.	8600.	-0. 03693	24238.	1.05E+10
, 12808.	8600.	-0.03634	24912.	1.05E+10
, 150992.	8600.	-0.03573	25585.	1.05E+10
, 189176.	8600.	-0. 03511	26258.	1.05E+10
5 527360.	8600.	-0.03447	26931.	1.05E+10
565544.	8600.	-0.03382	27605.	1.05E+10
503728.)	8600.	-0.03315	28278.	1. 05E+10

0.00 0.00 0.00 6.6600 7.0553 68 0.00 0.00 0.00 7.0300 6.8571 72 0.00 0.00 0.00 7.4000 6.6603 76 0.00 0.00 0.00 7.7700 6.4649 80 0.00 0.00 0.00 6.2710 8.1400 84 0.00 0.00 0.00 8.5100 6.0786 8 0.00 0.00 0.00 8.8800 5.8880 9 0.00 0.00 0.00 9.2500 5.6990 9 0.00 0.00 0.00 9.6200 5.5119 9 0.00 0.00 0.00 9.9900 5.3266 10 0.00 0.00 0.00 10.3600 5.1432 10 0.00 0.00 0.00 10.7300 4.9619 110 0.00 0.00 0.00 11.1000 4.7826 11 0.00 0.00 0.00 11.4700 4.6055 118 0.00 0.00 0.00 4.4306 122 11.8400 0.00 0.00 0.00 12.2100 4.2581 120 0.00 0.00 0.00 12.5800 4.0879 129 0.00 0.00 0.00 12.9500 3. 9201 13 0.00 0.00 0.00 13.3200 3.7548 13 0.00 0.00 0.00 13.6900 3.5922 14 0.00 0.00 0.00 14.0600 3.4321 14 0.00 0.00 0.00 14.4300 3.2749 14 0.00 0.00 0.00 14.8000 3.1204 152 0.00 0.00 0.00 15.1700 2.9687 150 0.00 0.00 0.00 15.5400 2.8201 160 0.00 0.00 0.00

						County of Orongo - OC Dublic Martin
						County of Orange - OC Public Works OC Development Services
	2.6744 0.00	1641912. 0. 00	8600.	-0.03246	28951.	OSE+10 APPROVED This set of plans and specifications must be kept on the pot at all times. It is unlawful to make any changes or alterations to these plans without written premission thoreas plans without written premission thoreas plans without written premission specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law.
16.2800	2.5318	1680096.	8600.	-0.03175	29625.	alterations to these plans without written permission for CE Public Works, OC Development Services of Dataset duty. The stamping of these plan specifications SHALL NOT be held to permit or be an
16.6500	0. 00 2. 3924		8600.	-0.03104	30298.	approval of the violation of any provisions of any County Ordinance or State law. 1. 05E+10Hadi Tabatabaee BULDING OFFICIAL
0.00 (17.0200). 00 2. 2563	0.00 1756464.	8600.	-0.03030	30971.	1.05E+10
	0. 00 2. 1234	0.00	8600.	-0.02955	31645.	1.05E+10
0.00	D. 00	0.00				
	1. 9939). 00	0.00	8600.	-0.02878	32318.	1. 05E+10
18.1300 0.00 (1.8678 0.00	1871016. 0.00	8600.	-0.02800	32991.	1.05E+10
18.5000	1. 7453 0. 00	1909200. 0. 00	8600.	-0. 02719	33664.	1.05E+10
18.8700	1. 6263 0. 00		8600.	-0.02638	34338.	1.05E+10
19.2400	1.5110	1985568.	8600.	-0.02555	35011.	1.05E+10
19.6100	0. 00 1. 3995	0.00 2023752.	8600.	-0.02470	35684.	1.05E+10
0.00 (19.9800). 00 1. 2917	0.00 2061936.	8600.	-0.02383	36358.	1.05E+10
0.00 (20.3500	0. 00 1. 1879	0.00	8600.	-0.02295	37031.	1.05E+10
0.00	0. 00	0.00				
	1.0879).00	0.00	8600.	-0.02205	37704.	1.05E+10
21.0900 0.00 (0. 9920). 00	2176488. 0. 00	8600.	-0.02114	38377.	1. 05E+10
21.4600 0.00 (0. 9002 0. 00	2214672. 0.00	8600.	-0. 02021	39051.	1.05E+10
21.8300	0.8126	2252856.	8600.	-0.01926	39724.	1.05E+10
22.2000	0. 7292	2291040.	8578.	-0.01830	40397.	1.05E+10
22.5700	50. 2725 0. 6501	0.00 2329029.	8485.	-0.01732	41067.	1.05E+10
-32.0966 2 22.9400	219. 2263 0. 5753	0.00 2366385.	8287.	-0.01633	41726.	1.05E+10
	439. 0445 0. 5051	0. 00 2402620.	7979.	-0. 01532	42365.	1. 05E+10
-82.0799	721. 5788	0.00				
23. 6800 -101. 6461	0. 4393 1027.	2437236. 0. 00	7571.	-0.01429	42975.	1. 05E+10
24.0500 -114.9755	0. 3781 1350.	2469849. 0. 00	7090.	-0.01326	43550.	1.05E+10
24. 4200 -123. 3345	0. 3216 1703.	2500195. 0.00	6561.	-0.01220	44085.	1.05E+10
24.7900	0. 2698	2528110.	6005.	-0.01114	44577.	1.05E+10
-127. 2723 25. 1600	2095. 0. 2227	0.00 2553516.	1655.	-0.01006	45025.	1.05E+10

						County of Orange - OC Public Works OC Development Services
-1832.	36532.	0.00				APPROVED
25. 5300	0. 1804	2542803.	-6272.	-0.00898	44837.	This set of plans and specifications must be kept on the OB H Trade O is unlawful to make any changes or alterations to these plans without written permission from OC Public Works, OC Development Services
	42781.	0.00	10771	0 00700	44042	from OC Public Works OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an address of the Optation of any provisions of any County Ordinated or State law.
25. 9000 -1640.	0. 1429 50950.	2497824. 0. 00	-13771.	-0. 00792	44043.	Hadi Tabatabaee
26.2700	0. 1101	2420517.	-20822.	-0.00687	42680.	1.05E+10
-1536. (26.6400	61955. 0.08186	0.00 2312924.	-27400.	-0.00587	40783.	1.05E+10
	77382.	0.00	27400.	0.00007	40703.	1.002110
27.0100	0.05796	2177206.	-33472.	-0.00492	38390.	1.05E+10
-1309. 10 27.3800	00254. 0.03815	0.00 2015691.	-38994.	-0.00403	35542.	1.05E+10
	37183.	2013091. 0.00	-30994.	-0.00403	30042.	1. 05E+10
27.7500	0. 02213	0.00 1830938.	-43895.	-0.00322	32284.	1.05E+10
	06358.	0.00	-43095.	-0.00322	32204.	1. 05E+10
28. 1200	0.00956	1625905.	-48030.	-0.00249	28669.	1.05E+10
-834.0202	387287.	0.00	-40030.	-0.00249	20007.	1:032+10
28.4900	4. 52E-05	1404430.	-50014.	-0.00185	24764.	1.05E+10
	5868411.	0.00	-30014.	-0.00105	24704.	1:032+10
28.8600	-0. 00683	1181776.	-48445.	-0.00130	20838.	1.05E+10
766. 7605	498418.	0.00	-40445.	-0.00130	20030.	1:032+10
29.2300	-0. 01148	974239.	-44804.	-8.42E-04	17178.	1.05E+10
873. 1163	337565.	0.00	-44004.	-0.42L-04	17170.	1:032+10
29.6000	-0. 01431	783914.	-40818.	-4.70E-04	13823.	1.05E+10
922. 4183	286281.	0.00	-40010.	-4.70L-04	13023.	1:032+10
29.9700	-0. 01565	611772.	-36676.	-1.74E-04	10787.	1.05E+10
943. 4204	267586.	0.00	-30070.	-1.742-04	10707.	1.032+10
30. 3400	-0. 01585	458230.	-32481.	5.25E-05	8080.	1.05E+10
946. 3874	265079.	438230.	-32401.	5.25L-05	0000.	1: 03L+10
30. 7100	-0.01519	323343.	-28301.	2.18E-04	5701.	1.05E+10
936. 3218	273723.	0.00	-20301.	2. TOL-04	5701.	1: 03L+10
31.0800	-0. 01392	206915.	-24189.	3.30E-04	3648.	1.05E+10
916.0758	292279.	0.00	-24109.	3.30E-04	3040.	1. 05E+10
		108547.	20105	3.97E-04	1914.	1. 05E+10
887.4301	-0.01226 321512.	0.00	-20185.	3.97E-04	1914.	1. 05E+10
	-0. 01039	27672.	-16324.	4.26E-04	487.9367	1.05E+10
851.5549	363889.	0.00	-10524.	4.20L-04	407.9307	1. 03L+10
32. 1900	-0.00847	-36415.	-12638.	4.24E-04	642.0933	1.05E+10
809. 2293	424036.	-36415. 0.00	-12030.	4.24E-04	042.0933	1. USE+10
	-0. 00662	-84549.	-9152.	3.98E-04	1491.	1.05E+10
760.9477	509995.	0.00	-7152.	J. 70L-04	1471.	1: 03L+10
	-0.00494	-117682.	-5893.	3.56E-04	2075.	1.05E+10
706.9577	636015.	0.00	-3093.	3.30E-04	2075.	1. 05E+10
33.3000	-0.00347	-136879.	-2887.	3.02E-04	2414.	1.05E+10
647.2319	828879.	0.00	-2007.	J. 02L-04	2414.	1:032+10
33.6700		-143316.	-159.3098	2.42E-04	2527.	1.05E+10
	-0.00226 1144057.	-143310. 0.00	-107.0070	Z. 42C-04	2027.	
34.0400	-0. 00131	-138294.	2259.	1.83E-04	2438.	1.05E+10
	-0.00131 1715426.	-138294. 0.00	2207.	1.03E-04	2430.	
		-123258.	1006	1.27E-04	2172	1.05E+10
	-6.33E-04 2967129.	-123258. 0.00	4326.	1.Z/E-U4	2173.	1. USE+10
723.1030	2707127.	0.00				

						County of Orange - OC Public Works OC Development Services
34.7800	-1.84E-04	-99881.	5804.	8.01E-05	1761.	. 05E+10 ^{APPROVED} This set of plans and specifications must be kept on the
242.6060	5868411.	0.00				job at all times. It is unlawful to make any changes or alterations to these plans without written permission
35.1500	7.83E-05	-71720.	6113.	4.38E-05	1265.	front CC Public Vorks, OC Development Services
-103.5108	5868411.	0.00				specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law.
35.5200	2.05E-04	-45600.	5280.	1.90E-05	804.0596	1.05E+10Hadi Tabatabaee
-271. 3956	5868411.	0.00				BUILDING OFFICIAL
35.8900	2.47E-04	-24831.	3954.	4.04E-06	437.8360	1.05E+10
-325.9586	5868411.	0.00				
36.2600	2.41E-04	-10487.	2523.	-3.44E-06	184.9170	1.05E+10
-318.8143	5868411.	0.00				
36.6300	2.16E-04	-2428.	1181.	-6.17E-06	42.8192	1.05E+10
-285.6083	5868411.	0.00				
37.0000	1.86E-04	0.00	0.00	-6.69E-06	0.00	1.05E+10
-246. 3674	2934205.	0.00				

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

Pile-head deflection	=	10.77453533 inches
Computed slope at pile head	=	-0.04740707 radi ans
Maximum bending moment	=	2553516. inch-lbs
Maximum shear force	=	-50014. Ibs
Depth of maximum bending moment	=	25.16000000 feet below pile head
Depth of maximum shear force	=	28.49000000 feet below pile head
Number of iterations	=	23
Number of zero deflection points	=	2

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, Ibs, and Load 2 = Moment, M, in-Ibs Load Type 2: Load 1 = Shear, V, Ibs, and Load 2 = Slope, S, radians Load Type 3: Load 1 = Shear, V, Ibs, and Load 2 = Rot. Stiffness, R, in-Ibs/rad. Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-Ibs Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

Load Load Load Axial Pile-head Pile-head Max Shear Max Moment Case Type Pile-head Type Pile-head Loading Deflection Rotation in

Pile in Pile					County of Orange - OC Public Works OC Development Services APPROVED
No. 1 Load 1 in-Ibs	2	Load 2	l bs	i nches	This set of plans and specifications must be kept on the an an analysis of the set of the set of the set of the set of the and the set of the of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the acidition of any provisions of any County
1 V, Ib 8600. -50014. 2553516.	M, in-Ib	0.00	0.00	10. 7745	Ordinance or State law. Hadi Tabatabaee BuilDING OFFICIAL

Maximum pile-head deflection = 10.7745353251 inches Maximum pile-head rotation = -0.0474070746 radians = -2.716225 deg.

This analysis ended normally

6/9/2022

Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604 County of Orange - OC Public Works **OC Development Services** APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC-public Works. OC Bevelopment Services of Orange County. The stamping of these plan specifications SHALL MOT be held to permit or be an ______ LPile for Windows, Version 2015-08.007 untv Analysis of Individual Piles and Drilled Shafts Hadi Tabatabaee BUILDING OFFICIAL Subjected to Lateral Loading Using the p-y Method © 1985-2015 by Ensoft, Inc. All Rights Reserved _____ This copy of LPile is being used by: ENGEO Irvine Serial Number of Security Device: 227883240 This copy of LPile is licensed for exclusive use by: EnGeo, Inc., San Ramon, CA Use of this program by any entity other than EnGeo, Inc., San Ramon, CA is a violation of the software license agreement. Files Used for Analysis -----_____ Path to file locations: \Active Projects_Promo\P2021\P2021001661 Dana Point Marina\wp\ Name of input data file: danapt_n15ml.lp8d Name of output report file: danapt_n15ml.lp8o Name of plot output file: danapt_n15ml.lp8p Name of runtime message file: danapt_n15ml.lp8r Date and Time of Analysis _____ Date: February 18, 2022 Time: 8:59:53

	Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604
	County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the sublano farm provisions of any County
Problem Title	Ordinance or State law. Hødi Tabatabase BUILDING OFFICIAL
Project Name:	
Job Number:	
Client:	
Engi neer:	
Description:	
Program Options and Settings	
Computational Options: - Use unfactored loads in computations (conventional analysis) Engineering Units Used for Data Input and Computations: - US Customary System Units (pounds, feet, inches)	
- Deflection tolerance for convergence = 1.0000E- - Maximum allowable deflection = 100.000	
Loading Type and Number of Cycles of Loading: - Static Loading specified	
 Use of p-y modification factors for p-y curves not selected No distributed lateral loads are entered Loading by lateral soil movements acting on pile not selected 	

6/9/2022

- Input of shear resistance at the pile tip not selected

- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:

- Output files use decimal points to denote decimal symbols.
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural	Properties a	and Geometry	

Number of pile sections defined	=	1
Total length of pile	=	37.000 ft
Depth of ground surface below top of pile	=	24.0000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

	Depth Below	Pile
Point	Pile Head	Diameter
No.	feet	i nches
1	0.000	12.7500
2	37.000	12.7500

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is an elastic pile with a specified mo	ment ca	ipaci ty
Cross-sectional Shape	=	Circular Pipe
Length of section	=	37.000000 ft
Width of top of section	=	12.750000 in
Width of bottom of section	=	12.750000 in
Wall Thickness at Top	=	0.500000 in
Wall Thickness at Bottom	=	0.500000 in
Top Area	=	19.242255 sq. in
Bottom Area	=	19.242255 sq. in



Approval: Geotechnical Reports Permits: BNR21-0604 County of Orange - OC Public Works **OC Development Services** 361. 543932 i n^4 APPROVED Moment of Inertia at Top

 301.543932
 1 n^4

 361.543932
 This set of plans and specifications must be kept on the ipp milling millin = Moment of Inertia at Bottom = Elastic Modulus = Plastic Moment Capacity at Top = Plastic Moment Capacity at Bottom = Top Elastic Bending Stiffness = Bot Elastic Bending Stiffness 1.0485E+10 lbs-in^2 = Shear Capacity at top of section 100000. Ibs = Shear Capacity at bottom of section 100000. Lbs = _____ Ground Slope and Pile Batter Angles _____ Ground Slope Angle 0.000 degrees = 0.000 radians = Pile Batter Angle 0.000 degrees = 0.000 radi ans = _____ Soil and Rock Layering Information _____ The soil profile is modelled using 2 layers Layer 1 is sand, p-y criteria by Reese et al., 1974 Distance from top of pile to top of layer=24.000000 ftDistance from top of pile to bottom of layer=27.000000 ftEffective unit weight at top of layer=55.000000 pcf 55.000000 pcf = 55.000000 pcf Friction angle at top of layer = 34.000000 deg. Friction angle at bottom of layer = 34.000000 deg. = Subgrade k at top of layer 60.000000 pci Subgrade k at bottom of layer = 60.00000 pci Layer 2 is stiff clay without free water Distance from top of pile to bottom of layer = Effective unit weight at top of layer 27.000000 ft 105.000000 ft = 60.00000 pcf = = Effective unit weight at bottom of layer 60.000000 pcf Undrained cohesion at top of layer 4000. psf = 0.004000 Undrained cohesion at bottom of layer 4000. psf Epsilon-50 at top of layer

Building&Safety: Ryan Rose

County of Orange - OC Public Works OC Development Services

This set of plans and specifications must be kapt on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Bevelopment Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County ordinance state law.

Hadi Tabatabaee BUILDING OFFICIAL

APPROVED

Epsilon-50 at bottom of layer

0.004000 =

(Depth of the lowest soil layer extends 68.000 ft below the pile tip)

Summary of Input Soil Properties								
_ayer E50	Soil Type	Layer	Effecti ve	Undrai ned	Angle of			
_ayer or	Name kpy	Depth	Unit Wt.	Cohesi on	Friction			
Num. krm	(p-y Curve Type) pci	ft 	pcf	psf	deg.			
1	Sand 60. 0000	24.0000	55.0000		34.0000			
	(Reese, et al.) 60.0000	27.0000	55.0000		34.0000			
2 0. 00400	Stiff Clay	27.0000	60.0000	4000.				
0.00400	w/o Free Water	105.0000	60.0000	4000.				
Static Loading Type Static loading criteria were used when computing p-y curves for all analyses.								
	Pile-head Lo	ading and Pile	-head Fixity	Condi ti ons				
lumber of	f loads specified =	1						
_oad I Compute ⁻	Load Conditi	on	Condi ti on		Axial Thrust			
	Type 1		2		Force, Ibs			
1	1 V = 79	90. Ibs M =	0.0000	in-Ibs	0.000000			

6/9/2022

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the other and times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan approval of the valuation of any provisions of any County Ordinance State law. Hadi Tabatabase BUILDING OFFICIAL

V = shear force applied normal to pile axis M = bending moment applied to pile head y = lateral deflection normal to pile axis S = pile slope relative to original pile batter angle R = rotational stiffness applied to pile head Values of top y vs. pile lengths can be computed only for load types with specified shear loading (Load Types 1, 2, and 3). Thrust force is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic-plastic section properties

Layering Correction Equivalent Depths of Soil & Rock Layers							
Layer No.	Top of Layer Below Pile Head ft	Equi val ent Top Depth Bel ow Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	FO Integral for Layer Ibs	F1 Integral for Layer Ibs	
1 2	24.0000 27.0000	0. 00 27. 0000	N. A. No	No No	0. 00 3268.	3268. N. A.	

Notes: The FO integral of Layer n+1 equals the sum of the FO and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

> Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

				Building&Safety: Ry Approval: Geotechn Permits: BNR21-060	ical Reports
				OC Dev	nge - OC Public Works elopment Services PROVED d specifications must be kept on the unlawful to make any changes or
Pile-head conditions are Shear and	d Moment (L	oadi ng Type	1)	from OC Public Wo of Orange County. specifications SHAL	plans without written permission ks, OC Development Services The stamping of these plan L NOT be held to permit or be an tion of any provisions of any County
Shear force at pile head Applied moment at pile head				0. 🛛 I bs 🖉 🗯	di Tabatabaee DING OFFICIAL
Axial thrust load on pile head			=	0.0 lbs	
Depth Deflect. Bending Res. Soil Spr. Distrib.	Shear	SI ope	Total	Bendi ng	Soi I
X y Moment Es*h Lat. Load	Force	S	Stress	Stiffness	р
feet inches in-Ibs Ib/inch Ib/inch Ib/inch	lbs	radi ans	psi *	in-1b^2	
0.00 12.1258 1.32E-05 0.00 0.00 0.00	7990.	-0.05006	2.33E-07	1.05E+10	
0. 3700 11. 9035 35476.	7990.	-0.05006	625.5310	1.05E+10	
0.00 0.00 0.00 0.7400 11.6813 70951.	7990.	-0.05003	1251.	1.05E+10	
0.00 0.00 0.00 1.1100 11.4592 106427.	7990.	-0.05000	1877.	1.05E+10	
0.00 1.4800 0.00 0.00 0.00 1.41902.	7990.	-0.04994	2502.	1.05E+10	
0.00 0.00 0.00		-0.04994	2002.		
1.8500 11.0158 177378. 0.00 0.00 0.00	7990.	-0.04988	3128.	1.05E+10	
2.2200 10.7945 212854.	7990.	-0.04979	3753.	1.05E+10	
0.00 0.00 0.00 2.5900 10.5736 248329.	7990.	-0.04970	4379.	1.05E+10	
0.00 2.9600 10.3532 283805.	7000	-0.04958	5004.	1.05E+10	
0.00 0.00 0.00					
3. 3300 10. 1333 319280. 0. 00 0. 00 0. 00	7990.	-0.04945	5630.	1.05E+10	
3.7000 9.9140 354756.	7990.	-0.04931	6255.	1.05E+10	
0.00 0.00 0.00 4.0700 9.6954 390232.	7990.	-0.04915	6881.	1.05E+10	
0.00 4.4400 9.4775 425707.	7990.	-0.04898	7506.	1.05E+10	
0.00 0.00 0.00					
4.8100 9.2605 461183. 0.00 0.00 0.00	7990.	-0.04879	8132.	1.05E+10	
5.1800 9.0442 496658.	7990.	-0.04859	8757.	1.05E+10	
0.00 0.00 0.00 5.5500 8.8290 532134.	7990.	-0.04837	9383.	1.05E+10	
0.00 0.00 0.00 5.9200 8.6147 567610.	7990.	-0,04814	10008.	1.05E+10	
0.00 0.00 0.00					
6.2900 8.4015 603085.	7990.	-0.04/89	10034.	1. USE+10	

			County of Orange - OC Public Works OC Development Services APPROVED
7990.	-0.04763	11260.	This set of plans and specifications must be kept on the in the set of the sum of the set of the s
7990.	-0.04735	11885.	specifications SHALL NOT be held to permit or be an applyed of the old to permit or be an ordinance or State law.
7990.	-0.04706	12511.	Hadi Tabatabase BUILDING OFFICIAL 1.05E+10
7990.	-0.04675	13136.	1.05E+10
7990.	-0.04643	13762.	1.05E+10
7990.	-0.04609	14387.	1.05E+10
7990.	-0.04574	15013.	1.05E+10
7990.	-0.04537	15638.	1.05E+10
7990.	-0.04499	16264.	1.05E+10
7990.	-0.04459	16889.	1.05E+10
7990.	-0.04417	17515.	1.05E+10
7990.	-0.04375	18140.	1.05E+10
7990.	-0.04330	18766.	1.05E+10
7990.	-0.04284	19391.	1.05E+10
7990.	-0.04237	20017.	1.05E+10
7990.	-0.04188	20643.	1.05E+10
7990.	-0.04138	21268.	1.05E+10
7990.	-0.04086	21894.	1.05E+10
7990.	-0.04033	22519.	1.05E+10
7990.	-0.03978	23145.	1.05E+10
7990.	-0.03922	23770.	1.05E+10
7990.	-0.03864	24396.	1.05E+10
7990.	-0.03804	25021.	1.05E+10
7990.	-0.03744	25647.	1.05E+10
7990.	-0. 03681	26272.	1.05E+10

0.00 0.00 0.00 6.6600 8.1894 638561. 0.00 0.00 0.00 7.0300 7.9785 674036. 0.00 0.00 0.00 7.4000 7.7689 709512. 0.00 0.00 0.00 7.7700 7.5607 744988. 0.00 0.00 0.00 8.1400 7.3538 780463. 0.00 0.00 0.00 8.5100 7.1484 815939. 0.00 0.00 0.00 8.8800 6.9445 851414. 0.00 0.00 0.00 9.2500 6.7422 886890. 0.00 0.00 0.00 9.6200 6.5416 922366. 0.00 0.00 0.00 9.9900 6.3428 957841. 0.00 0.00 0.00 10.3600 6.1457 993317. 0.00 0.00 0.00 10.7300 5.9505 1028792. 0.00 0.00 0.00 11.1000 5.7572 1064268. 0.00 0.00 0.00 11.4700 5.5660 1099744. 0.00 0.00 0.00 11.8400 5.3768 1135219. 0.00 0.00 0.00 12.2100 5.1897 1170695. 0.00 0.00 0.00 12.5800 5.0049 1206170. 0.00 0.00 0.00 12.9500 4.8223 1241646. 0.00 0.00 0.00 13.3200 4.6420 1277122. 0.00 0.00 0.00 13.6900 4.4641 1312597. 0.00 0.00 0.00 14.0600 4.2888 1348073. 0.00 0.00 0.00 14.4300 4.1159 1383548. 0.00 0.00 0.00 14.8000 3.9456 1419024. 0.00 0.00 0.00 15. 1700 3. 7781 1454500. 0.00 0.00 0.00 15.5400 3.6132 1489975. 0.00 0.00 0.00

					County of Orange - OC Public Works OC Development Services
15.9100 3.4512	1525451	7990.	-0.03617	26898.	1 OFF 10 APPROVED
	0.00	7770.	-0.03017	20070.	This set of plans and specifications must be kept on the job at all Lines. It is unlawful to make any changes or alterations to these plans without written permission from CE Puel or Works. Oc Development Services count and the set of the
	1560926.	7990.	-0.03552	27523.	alterations to these plans without written permission fround Public Vorks. OC Development Services
	0.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0100002	270201	specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County
	1596402.	7990.	-0.03485	28149.	())) + ()Hadi Tabatabaee
	0.00				BUILDING OFFICIAL
	1631878.	7990.	-0.03417	28774.	1.05E+10
0.00 0.00	0.00				
17.3900 2.8323	1667353.	7990.	-0.03347	29400.	1. 05E+10
	0.00				
	1702829.	7990.	-0.03276	30025.	1.05E+10
	0.00				
18.1300 2.5414	1738304.	7990.	-0.03203	30651.	1.05E+10
	0.00				
18.5000 2.4009	1773780.	7990.	-0.03128	31277.	1.05E+10
	0.00	7000	0 00050	21000	1 055 10
18.8700 2.2636	1809256.	7990.	-0. 03053	31902.	1.05E+10
0.00 0.00 19.2400 2.1298	0.00 1844731.	7990.	-0.02975	32528.	1.05E+10
	0.00	7990.	-0.02975	32320.	1. 03E+10
19.6100 1.9994		7990.	-0.02896	33153.	1.05E+10
	0.00	7770.	-0.02070	55155.	1.032+10
19.9800 1.8726	1915682.	7990.	-0.02816	33779.	1. 05E+10
	0.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	01 02010	001171	11 002 110
	1951158.	7990.	-0.02734	34404.	1.05E+10
	0.00				
20.7200 1.6298	1986634.	7990.	-0.02651	35030.	1.05E+10
0.00 0.00	0.00				
21.0900 1.5140	2022109.	7990.	-0.02566	35655.	1.05E+10
0.00 0.00	0.00				
21.4600 1.4020		7990.	-0.02479	36281.	1.05E+10
	0.00				
21.8300 1.2938	2093060.	7990.	-0.02392	36906.	1.05E+10
	0.00				
22.2000 1.1896		/990.	-0.02302	37532.	1.05E+10
0.00 0.00		7000	0 00011	20157	
22.5700 1.0894		7990.	-0. 02211	38157.	1.05E+10
0.00 0.00 22.9400 0.9932		7990.	-0.02119	38783.	1.05E+10
0.00 0.00		7990.	-0.02119	30703.	1: 03E+10
23.3100 0.9012		7990.	-0.02025	39408.	1.05E+10
0.00 0.00		7770.	0.02020	37100.	1.032110
23.6800 0.8134		7990.	-0.01930	40034.	1.05E+10
0.00 0.00		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0101700	100011	11 002 110
24.0500 0.7299		7985.	-0.01833	40660.	1.05E+10
-2.3036 14.0137					
24.4200 0.6507		7930.	-0.01734	41284.	1.05E+10
-22.6113 154.2958					
24.7900 0.5759		7776.	-0.01634	41901.	1.05E+10
-46. 6897 359. 9886					
25.1600 0.5055	2410393.	7512.	-0.01533	42502.	1.05E+10

						County of Orange - OC Public Works
71 0004	621 7000	0.00				OC Development Services APPROVED
	631.7808	0.00	71 /7	0 01400	12077	
25.5300	0.4397	2443039.	7147.	-0.01430	43077.	This set of plans and specifications must be kept on the ion the set of the
-92. 4305 25. 9000	933. 3013 0. 3785	0.00 2473862.	6704.	-0.01326	43621.	of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an apply at the obtain of any provisions of any County Ordinance or State law.
-107.2603	0.3785 1258.	2473862. 0.00	0704.	-0.01320	43021.	
26. 2700	0. 3220	0.00 2502572.	6206.	-0.01221	44127.	
-117. 1197	0. 3220 1615.	2502572. 0.00	0200.	-0.01221	44127.	I. UUE † IU
26.6400	0. 2701	0.00 2528972.	5676.	-0.01114	44593.	1.05E+10
-121.8445	2003.	2526972.	5070.	-0.01114	44070.	
27.0100	0. 2230	2552971.	1336.	-0.01007	45016.	1.05E+10
	36492.	0.00	1550.	-0.01007	+3010.	1.002+10
27.3800	0. 1807	2540838.	-6593.	-0.00899	44802.	1.05E+10
	42727.	2.00 0.00	0070.	0.00077	77002.	1.002+10
27.7500	0. 1432	0.00 2494424.	-14096.	-0.00792	43983.	1.05E+10
	50875.	0.00	14070.	0.00772	-3703.	1.002+10
28. 1200	0. 1104	2415666.	-21151.	-0.00688	42595.	1.05E+10
	61850.	0.00	21101.	0.00000	TZJ/J.	1.002+10
28.4900	0. 08207	2306605.	-27733.	-0.00588	40672.	1.05E+10
	77234.	0.00	21100.	0.00000	10072.	1. 002 10
28.8600	0. 05811	2169401.	-33809.	-0.00494	38252.	1.05E+10
	00051.	0.00	00007.	0.00474	55252.	1. 002 10
29.2300	0. 03824	2006382.	-39334.	-0.00405	35378.	1.05E+10
	36940.	0.00	07004.	0.00400	00070.	
29.6000	0. 02214	1820112.	-44237.	-0.00324	32094.	1.05E+10
	06315.	0.00	11207.	0.00021	52071.	
29.9700	0.00946	1613560.	-48368.	-0.00251	28451.	1.05E+10
-831.8693	390305.	0.00				
30. 3400	-1.81E-04	1390608.	-49683.	-0.00188	24520.	1. 05E+10
	5868411.	0.00				
30.7100	-0.00721	1172372.	-47427.	-0.00133	20672.	1.05E+10
777.2084	478589.	0.00				
31.0800	-0.01204	969457.	-43740.	-8.81E-04	17094.	1.05E+10
883. 4155	325900.	0.00				
	-0.01504	783958.	-39706.	-5.10E-04	13823.	1.05E+10
933.9992	275768.	0.00				
31.8200	-0.01657	616871.	-35508.	-2.14E-04	10877.	1.05E+10
956.8794	256459.	0.00				
32.1900	-0.01693	468647.	-31248.	1.62E-05	8264.	1.05E+10
962.1610	252264.	0.00				
32.5600	-0.01642	339391.	-26992.	1.87E-04	5984.	1.05E+10
954.8005	258149.	0.00				
32.9300	-0.01527	228958.	-22791.	3.08E-04	4037.	1.05E+10
937.6220	272609.	0.00				
33.3000	-0.01369	137008.	-18684.	3.85E-04	2416.	1.05E+10
912.3558	295903.	0.00				
33.6700	-0.01185	63045.	-14705.	4.28E-04	1112.	1.05E+10
880.0540	329716.	0.00				
34.0400	-0.00989	6430.	-10883.	4.42E-04	113. 3837	1.05E+10
841.2362	377530.	0.00				
34.4100	-0.00792	-33600.	-7249.	4.36E-04	592.4672	1.05E+10
795.8480	445934.	0.00				

						County of Orange - OC Public Works OC Development Services
34.7800	-0.00602	-57942.	-3833.	4.17E-04	1022.	05E+10APPROVED
742.9728	548192.	0.00				This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission
35.1500	-0.00422	-67637.	-674.0387	3.91E-04	1193.	 from OE Public Works. OC Development Services obcongerCauby. The stamping of these plan specifications SHALL NOT be held to permit or be an
679.9708	715387.	0.00				approval of the violation of any provisions of any County Ordinance or State law.
35.5200	-0.00255	-63928.	2167.	3.63E-04	1127.	
599.6243	1044071.	0.00				BULDING OFFICIAL
35.8900	-1.00E-03	-48397.	4552.	3.39E-04	853.3757	1.05E+10
474.8843	2108670.	0.00				
36.2600	4.59E-04	-23505.	4742.	3.24E-04	414.4615	1.05E+10
-389.2653	3764367.	0.00				
36.6300	0. 00187	-6287.	2647.	3.17E-04	110. 8577	1.05E+10
-554.4990	1313768.	0.00				
37.0000	0.00328	0.00	0.00	3.16E-04	0.00	1. 05E+10
-637.8385	432102.	0.00				

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

Pile-head deflection	=	12.12581990 inches
Computed slope at pile head	=	-0. 05006314 radi ans
Maximum bending moment	=	2552971. inch-lbs
Maximum shear force	=	-49683. Ibs
Depth of maximum bending moment	=	27.01000000 feet below pile head
Depth of maximum shear force	=	30.34000000 feet below pile head
Number of iterations	=	27
Number of zero deflection points	=	2

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, Ibs, and Load 2 = Moment, M, in-Ibs Load Type 2: Load 1 = Shear, V, Ibs, and Load 2 = Slope, S, radians Load Type 3: Load 1 = Shear, V, Ibs, and Load 2 = Rot. Stiffness, R, in-Ibs/rad. Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-Ibs Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

Load Load Load Axial Pile-head Pile-head Max Shear Max Moment Case Type Pile-head Type Pile-head Loading Deflection Rotation in

Pile in Pile					County of Orange - OC Public Works OC Development Services APPROVED
No. 1 Load 1 in-Ibs	2	Load 2	l bs	i nches	This set of plans and specifications must be kept on the and the plans. It is unlawful to mo my changes or alteratorial to these plans without written permission from OC Public Works, OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the availation of any provisions of any County
1 V, Ib 7990. -49683. 2552971.	M, in-Ib	0.00	0.00	12. 1258	Ordinance or State law. Hadi Tabatabase BuilDING OFFICIAL

Maximum pile-head deflection = 12.1258198966 inches Maximum pile-head rotation = -0.0500631363 radians = -2.868406 deg.

This analysis ended normally

6/9/2022

Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604 County of Orange - OC Public Works **OC Development Services** APPROVED This set of plans and specifications must be job at all times. It is unlawful to make any ci alterations to these plans without written per from OC Publics Works. OC Development Se of Orange County. The stamping of these p specifications SHALL NOT be held to permit ______ kept on the ges o LPile for Windows, Version 2015-08.007 he an untv Analysis of Individual Piles and Drilled Shafts Hadi Tabatabaee BUILDING OFFICIAL Subjected to Lateral Loading Using the p-y Method © 1985-2015 by Ensoft, Inc. All Rights Reserved _____ This copy of LPile is being used by: ENGEO Irvine Serial Number of Security Device: 227883240 This copy of LPile is licensed for exclusive use by: EnGeo, Inc., San Ramon, CA Use of this program by any entity other than EnGeo, Inc., San Ramon, CA is a violation of the software license agreement. Files Used for Analysis -----_____ Path to file locations: \Active Projects_Promo\P2021\P2021001661 Dana Point Marina\wp\ Name of input data file: danapt_n17ml.lp8d Name of output report file: danapt_n17ml.lp8o Name of plot output file: danapt_n17ml.lp8p Name of runtime message file: danapt_n17ml.lp8r Date and Time of Analysis _____ Date: February 18, 2022 Time: 8:59:18

	Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604
	County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the sublano farm provisions of any County
Problem Title	Ordinance or State law. Hødi Tabatabase BUILDING OFFICIAL
Project Name:	
Job Number:	
Client:	
Engi neer:	
Description:	
Program Options and Settings	
Computational Options: - Use unfactored loads in computations (conventional analysis) Engineering Units Used for Data Input and Computations: - US Customary System Units (pounds, feet, inches)	
- Deflection tolerance for convergence = 1.0000E- - Maximum allowable deflection = 100.000	
Loading Type and Number of Cycles of Loading: - Static Loading specified	
 Use of p-y modification factors for p-y curves not selected No distributed lateral loads are entered Loading by lateral soil movements acting on pile not selected 	

6/9/2022

- Input of shear resistance at the pile tip not selected

- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:

- Output files use decimal points to denote decimal symbols.
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural	Properties and	Geometry		
			1	

Number of pile sections defined	=	
Total length of pile	=	39.000 ft
Depth of ground surface below top of pile	=	26.0000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

Depth Below	Pile
Pile Head	Diameter
feet	i nches
0.000	12.7500
39.000	12.7500
	Pile Head feet 0.000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is an elastic pile with a specified mor	ment ca	ipaci ty
Cross-sectional Shape	=	Circular Pipe
Length of section	=	39.000000 ft
Width of top of section	=	12.750000 in
Width of bottom of section	=	12.750000 in
Wall Thickness at Top	=	0.500000 in
Wall Thickness at Bottom	=	0.500000 in
Top Area	=	19.242255 sq. in
Bottom Area	=	19.242255 sq. in



Approval: Geotechnical Reports Permits: BNR21-0604 County of Orange - OC Public Works **OC Development Services** 361. 543932 i n^4 APPROVED Moment of Inertia at Top

 301.543932
 1 n^4

 361.543932
 This set of plans and specifications must be kept on the jdp mit affects. It is unlawful to make any changes or alterations to these plans without written permission from CCP Public Works. OC Development Services cp354 county. The stamping of these plan specifications SHALL NOT be held to permit or be an approval if Dr violation of any provisions of any County critications. It is unlawful to make the permit of the and the permit or be an approval if Dr violation of any provisions of any County critications. It is unlawful to the set of the permit or be an approval if Dr violation of any provisions of any County critication. It is the set of the set o = Moment of Inertia at Bottom = Elastic Modulus = Plastic Moment Capacity at Top = Plastic Moment Capacity at Bottom = Top Elastic Bending Stiffness = Bot Elastic Bending Stiffness 1.0485E+10 lbs-in^2 = Shear Capacity at top of section 100000. Ibs = Shear Capacity at bottom of section 100000. Lbs = _____ Ground Slope and Pile Batter Angles _____ Ground Slope Angle 0.000 degrees = 0.000 radians = Pile Batter Angle 0.000 degrees = 0.000 radi ans = _____ Soil and Rock Layering Information _____ The soil profile is modelled using 2 layers Layer 1 is sand, p-y criteria by Reese et al., 1974 Distance from top of pile to bottom of layer = 26.000000 ft Effective unit weight at top of layer = 29.000000 ft 55.000000 pcf Effective unit weight at bottom of layer = 55.000000 pcf Friction angle at top of layer = 34.000000 deg. Friction angle at bottom of layer = 34.000000 deg. = Subgrade k at top of layer 60.000000 pci Subgrade k at bottom of layer = 60.00000 pci Layer 2 is stiff clay without free water Distance from top of pile to top of layer = Effective unit weight at top of layer = 29.000000 ft 107.000000 ft = 60.00000 pcf = = Effective unit weight at bottom of layer 60.000000 pcf Undrained cohesion at top of layer 4000. psf = 0.004000 Undrained cohesion at bottom of layer 4000. psf Epsilon-50 at top of layer

Building&Safety: Ryan Rose

County of Orange - OC Public Works OC Development Services

This set of plans and specifications must be kapt on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Bevelopment Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County ordinance state law.

Hadi Tabatabaee BUILDING OFFICIAL

APPROVED

Epsilon-50 at bottom of layer

0.004000 =

(Depth of the lowest soil layer extends 68.000 ft below the pile tip)

Summary of Input Soil Properties							
Layer E50	Soi I Type	Layer	Effective	Undrai ned	Angle of		
Layer or	Name kpy	Depth	Unit Wt.	Cohesi on	Friction		
Num. krm	(p-y Curve Type) pci	ft 	pcf	psf	deg.		
1	Sand 60. 0000	26.0000	55.0000		34.0000		
	(Reese, et al.) 60.0000	29.0000	55.0000		34.0000		
2). 00400	Stiff Clay	29.0000	60.0000	4000.			
D. 00400	w/o Free Water 	107.0000	60.0000	4000.			
Static Loading Type Static loading criteria were used when computing p-y curves for all analyses.							
	Pile-head	Loading and Pile	e-head Fixity	Conditions			
Number of	f loads specified	= 1					
	Load Condi	tion	Condi ti on		Axial Thrust		
Compute ⁻ No. ⁻ vs. Pile	Type 1		2		Force, Ibs		
1 No	1 V =	7410.lbs M =	0.0000	in-Ibs	0. 0000000		

6/9/2022

County of Orange - OC Public Works **OC Development Services** APPROVED This set of plans and specifications must be kept on the ob at all t es. It is unlawful to to make any changes of out written permission alteration se plan untv Hadi Tabatabaee BUILDING OFFICIAL Values of top y vs. pile lengths can be computed only for load types with

specified shear loading (Load Types 1, 2, and 3). Thrust force is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

V = shear force applied normal to pile axis

y = lateral deflection normal to pile axis

R = rotational stiffness applied to pile head

S = pile slope relative to original pile batter angle

M = bending moment applied to pile head

Pile Section No. 1:

Moment-curvature properties were derived from elastic-plastic section properties

	Layeri n	g Correction	Equi val ent	Depths of So	il & Rock Lay	yers
Layer No.	Top of Layer Below Pile Head ft	Equi val ent Top Depth Bel ow Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	FO Integral for Layer Ibs	F1 Integral for Layer Ibs
1 2	26.0000 29.0000	0.00 29.0000	N. A. No	No No	0. 00 3268.	3268. N. A.

Notes: The FO integral of Layer n+1 equals the sum of the FO and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

> Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

				Building&Safety: Ry Approval: Geotechn Permits: BNR21-060	ical Reports
				OC Dev A	nge - OC Public Works elopment Services PPROVED
Pile-head conditions are Shear and	d Moment (L	oadi ng Type	1)	atterations to these from OC Public Wo of Orange County. specifications SHAL approval of the viola	d specifications must be kept on the unlawful to make any changes or plans without written permission rks. OC Development Services The stamping of these plan L NOT be held to permit or be an ation of any provisions of any County
Shear force at pile head		=	= 741	BUIL	law. Idi Tabatabaee LDING OFFICIAL
Applied moment at pile head Axial thrust load on pile head			=	0.0 in-165 0.0 lbs	
Depth Deflect. Bending	Shear	SI ope	Total	Bendi ng	Soi I
Res. Soil Spr. Distrib. X y Moment Es*h Lat. Load	Force	S	Stress	Stiffness	р
feet inches in-Ibs Ib/inch Ib/inch Ib/inch	Ibs	radi ans	psi *	in-1b^2	
0.00 13.8612 1.62E-05 0.00 0.00 0.00	7410.	-0.05339	2.85E-07	1.05E+10	
0. 3900 13. 6114 34679.	7410.	-0.05338	611. 4813	1.05E+10	
0.00 0.7800 0.00 0.00 0.00 0.00 0.00 0.0	7410.	-0.05336	1223.	1.05E+10	
0.00 0.00 0.00					
1. 170013. 1120104036.0. 000. 000. 00	7410.	-0.05332	1834.	1.05E+10	
1.560012.8625138715.0.000.000.00	7410.	-0.05326	2446.	1.05E+10	
0.00 1.9500 0.00 0.00 0.00 12.6134 173394.	7410.	-0.05320	3057.	1.05E+10	
0.00 0.00 0.00 2.3400 12.3646 208073.	7410.	-0.05311	3669.	1.05E+10	
0.00 0.00 0.00					
2. 730012. 1163242752.0. 000. 000. 00	7410.	-0.05301	4280.	1.05E+10	
3. 1200 11. 8685 277430.	7410.	-0.05289	4892.	1.05E+10	
0.00 3.5100 0.00 0.00 0.00 3.12109.	7410.	-0.05276	5503.	1.05E+10	
0.00 0.00 0.00					
3. 900011. 3746346788.0. 000. 000. 00	7410.	-0.05261	6115.	1.05E+10	
4. 2900 11. 1287 381467.	7410.	-0.05245	6726.	1.05E+10	
0.00 4.6800 0.00 0.00 0.00 416146.	7410.	-0.05227	7338.	1.05E+10	
0.00 0.00 0.00					
5.070010.6394450824.0.000.000.00	7410.	-0.05208	7949.	1.05E+10	
5.4600 10.3962 485503.	7410.	-0.05187	8561.	1.05E+10	
0.00 5.8500 0.00 0.00 5.20182.	7410.	-0.05165	9172.	1.05E+10	
0.00 0.00 0.00					
6. 24009. 9128554861.0. 000. 000. 00					
6. 6300 9. 6728 589540.	7410.	-0. 05115	10395.	1.05E+10	

				County of Orange - OC Public Works OC Development Services APPROVED
3.	7410.	-0.05088	11007.	This set of plans and specifications must be kept on the interface of the set of the se
<i>.</i>	7410.	-0.05059	11618.	of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an aD-SH-i of the Oclation of any provisions of any County Ordinance or State law.
D.	7410.	-0.05029	12230.	Hadi Tabatabaee BUILDING OFFICIAL
ō.	7410.	-0.04998	12841.	1.05E+10
ł.	7410.	-0.04964	13453.	1.05E+10
2.	7410.	-0.04929	14064.	1.05E+10
Ι.	7410.	-0. 04893	14676.	1.05E+10
).	7410.	-0.04855	15287.	1.05E+10
9.	7410.	-0.04816	15899.	1.05E+10
3.	7410.	-0.04775	16510.	1.05E+10
	7410.	-0.04732	17121.	1.05E+10
ō.	7410.	-0.04688	17733.	1.05E+10
ł.	7410.	-0.04642	18344.	1.05E+10
8.	7410.	-0.04595	18956.	1.05E+10
2.	7410.	-0.04546	19567.	1.05E+10
).	7410.	-0.04496	20179.	1.05E+10
9.	7410.	-0.04444	20790.	1.05E+10
3.	7410.	-0.04391	21402.	1.05E+10
7.	7410.	-0.04336	22013.	1.05E+10
	7410.	-0.04279	22625.	1.05E+10
ł.	7410.	-0.04221	23236.	1.05E+10
3.	7410.	-0.04162	23848.	1.05E+10
2.	7410.	-0.04101	24459.	1.05E+10
Ι.	7410.	-0.04038	25071.	1.05E+10
).	7410.	-0.03974	25682.	1.05E+10

0.00 0.00 0.00 7.0200 9.4340 624218 0.00 0.00 0.00 7.4100 9.1965 658897 0.00 0.00 0.00 7.8000 8.9604 693576 0.00 0.00 0.00 8.1900 8.7258 728255 0.00 0.00 0.00 8.5800 8.4926 762934 0.00 0.00 0.00 8.9700 8.2611 797612 0.00 0.00 0.00 9.3600 8.0312 832291 0.00 0.00 0.00 9.7500 7.8031 866970 0.00 0.00 0.00 10.1400 7.5768 901649 0.00 0.00 0.00 10.5300 7.3524 936328 0.00 0.00 0.00 10.9200 7.1299 971006 0.00 0.00 0.00 11.3100 6.9095 1005685 0.00 0.00 0.00 11.7000 6.6911 1040364 0.00 0.00 0.00 12.0900 6.4749 1075043 0.00 0.00 0.00 12.4800 6.2610 1109722 0.00 0.00 0.00 12.8700 6.0494 1144400 0.00 0.00 0.00 13.2600 5.8402 1179079 0.00 0.00 0.00 13.6500 5.6334 1213758 0.00 0.00 0.00 14.0400 5.4292 1248437 0.00 0.00 0.00 14.4300 5.2276 1283116 0.00 0.00 0.00 14.8200 5.0287 1317794 0.00 0.00 0.00 15.2100 4.8325 1352473 0.00 0.00 0.00 15.6000 4.6391 1387152 0.00 0.00 0.00 15.9900 4.4487 1421831 0.00 0.00 0.00 16.3800 4.2612 1456510 0.00 0.00 0.00

						County of Orange - OC Public Works OC Development Services
		1491188.	7410.	-0.03908	26294.	1. 05E+10 ^{APPROVED}
0.00 17.1600	0.00 3.8954	0.00 1525867.	7410.	-0.03840	26905.	. 05E +10 ^{APPROVED} This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission trope put works. OC Development Services out after cluby. The stamming of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law.
0.00	0.00	0.00				specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law.
17.5500 0.00	3. 7173 0. 00	1560546. 0.00	7410.	-0.03772	27517.	
17.9400	3.5424 0.00	1595225. 0.00	7410.	-0.03701	28128.	1.05E+10
18.3300	3.3708	1629904.	7410.	-0.03629	28740.	1.05E+10
0.00 18.7200	0.00	0.00 1664582.	7410.	-0.03556	29351.	1.05E+10
0.00	0.00	0.00				
19. 1100 0. 00	3. 0380 0. 00	1699261. 0.00	7410.	-0. 03481	29963.	1.05E+10
19.5000	2.8769	1733940.	7410.	-0.03404	30574.	1.05E+10
0.00 19.8900	0.00 2.7194	0.00 1768619.	7410.	-0.03326	31186.	1.05E+10
0.00 20.2800	0.00 2.5656	0.00 1803298.	7410.	-0.03246	31797.	1. 05E+10
	0.00	0.00	7410.	-0. 03240	51/7/.	1.052+10
20.6700 0.00	2. 4156 0. 00	1837976. 0.00	7410.	-0.03165	32409.	1.05E+10
21.0600	2.2694	1872655.	7410.	-0.03082	33020.	1.05E+10
0.00 21.4500	0.00 2.1271	0.00 1907334.	7410.	-0.02998	33631.	1.05E+10
0.00 21.8400	0.00	0.00 1942013.	7410.	-0. 02912	34243.	1.05E+10
0.00	0.00	0.00	7410.	-0. 02912	54245.	1.052+10
22.2300 0.00	1.8546 0.00	1976692. 0.00	7410.	-0.02824	34854.	1.05E+10
22.6200	1.7245	2011370.	7410.	-0.02735	35466.	1.05E+10
0.00 23.0100	0.00	0.00 2046049.	7410.	-0.02645	36077.	1. 05E+10
0.00	0.00	0.00				
0.00	0.00	0.00	7410.	-0. 02553	36689.	1.05E+10
			7410.	-0.02459	37300.	1.05E+10
0.00 24.1800			7410.	-0.02364	37912.	1.05E+10
0.00			7410.	-0.02267	38523.	1.05E+10
0.00	0.00	0.00				
	1.0346 0.00	2219443. 0.00	7410.	-0.02169	39135.	1.05E+10
25.3500	0. 9354	2254122.	7410.	-0.02069	39746.	1.05E+10
	0.00 0.8409	0.00 2288801.	7410.	-0.01967	40358.	1.05E+10
0.00	0.00	0.00		0 01045		1.055,10
-6.2324	38.8258	2323480. 0. 00	7395.		40969.	I. UJE+IU
26.5200	0. 6664	2358022.	7313.	-0.01760	41578.	1.05E+10

						County of Orange - OC Public Works
						OC Development Services APPROVED
-28.8854	202.8516	0.00		0.01/5/	10171	
26.9100	0.5865	2391932.	7117.	-0.01654	42176.	This set of plans and specifications must be kept on the jet 方 計 times of is unlawful to make any changes or alterations to these plans without written permission from OC Public Works, OC Development Services
-54.8449	437.6309	0.00	(700	0 01547	40750	of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an apply and the obtain of any provisions of any County Ordinance or State law.
27.3000	0.5116	2424640.	6798.	-0.01547	42753.	
-81. 4125 27. 6900	744. 7468 0. 4418	0.00 2455565.	6368.	-0.01438	43298.	
-102.5558	1086.	2455505. 0.00	0300.	-0.01436	43290.	<u>↓, USE+ IU</u>
28.0800	0. 3770	2484244.	5856.	-0.01327	43804.	1.05E+10
-116. 2947	1444.	0.00	5050.	0.01027	10001.	1.002110
28.4700	0.3175	2510376.	5292.	-0.01216	44265.	1.05E+10
-124.5692	1836.	0.00				
28.8600	0. 2632	2533780.	4700.	-0.01103	44677.	1.05E+10
-128. 4075	2283.	0.00				
29.2500	0.2142	2554371.	153.7669	-0.00990	45040.	1.05E+10
-1815.	39639.	0.00				
29.6400	0. 1706	2535219.	-8103.	-0.00876	44703.	1.05E+10
-1714.	47027.	0.00				
30.0300	0. 1322	2478525.	-15878.	-0.00764	43703.	1.05E+10
-1608.	56926.	0.00	00140		10000	
30. 4200	0.09904	2386604.	-23142.	-0.00656	42082.	1.05E+10
-1496.	70701.	0.00	20044		20004	1 055.10
30. 8100 -1376.	0. 07085 90897.	2261912. 0.00	-29864.	-0.00552	39884.	1. 05E+10
31.2000	0. 04738	0.00 2107082.	-35995.	-0.00454	37154.	1.05E+10
	22917.	0.00	-33773.	-0.00434	57154.	1.052+10
31.5900	0. 02831	1924996.	-41467.	-0.00364	33943.	1.05E+10
	80860.	0.00			007101	
31.9800	0.01326	1718948.	-46146.	-0.00283	30310.	1.05E+10
-905.2066	319389.	0.00				
32.3700	0.00181	1493073.	-49551.	-0.00211	26327.	1.05E+10
-550. 2944	1424424.	0.00				
32.7600	-0.00653	1255146.	-49065.	-0.00150	22132.	1.05E+10
758.0338	543365.	0.00				
33.1500		1033821.	-45216.	-9.90E-04	18229.	1.05E+10
887.1376	339091.	0.00	40007			4 955 49
33.5400	-0.01580	831927.	-40927.	-5.74E-04	14669.	1.05E+10
945.5390	280083.	0.00	26441		11171	1 055.10
33. 9300 971. 6411	-0. 01762 258122.	650742. 0.00	-36441.	-2.43E-04	11474.	1. 05E+10
34. 3200	-0. 01807	490839.	-31879.	1.17E-05	8655.	1.05E+10
977.9021	253201.	0.00	-31077.	1.172-05	0000.	1.032+10
34.7100	-0. 01751	352354.	-27321.	2.00E-04	6213.	1.05E+10
970. 1407	259329.	0.00	270211	21002 01	02101	11 002 10
35.1000	-0.01620	235117.	-22824.	3.31E-04	4146.	1.05E+10
951.5606	274821.	0.00				
35.4900	-0.01441	138722.	-18435.	4.14E-04	2446.	1.05E+10
924.0473	300108.	0.00				
35.8800	-0.01233	62566.	-14193.	4.59E-04	1103.	1. 05E+10
888.6520	337415.	0.00				
36.2700	-0.01011	5874.	-10135.	4.75E-04	103. 5662	1.05E+10
845.7165	391458.	0.00				

Building&Safety: Ryan Rose
Approval: Geotechnical Reports
Permits: BNR21-0604

						County of Orange - OC Public Works OC Development Services
36.6600	-0.00788	-32296.	-6296.	4.69E-04	569.4636	05E+10 ^{APPROVED}
794.7112	471770.	0.00				This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission
37.0500	-0.00572	-53059.	-2720.	4.50E-04	935.5769	 from Or Public Works, OC Development Services docatinger duby, The stamping of these plan specifications SHALL NOT be held to permit or be an
733. 5846	599800.	0.00				approval of the violation of any provisions of any County Ordinance or State law.
37.4400	-0.00367	-57755.	533.1588	4.25E-04	1018.	
656.6606	836243.	0.00				BOLDING OFFICIAL
37.8300	-0.00175	-48069.	3346.	4.01E-04	847.5833	1.05E+10
	1460843.	0.00				
38.2200	8.11E-05	-26440.	4371.	3.85E-04	466. 2167	1.05E+10
-107.1928	6185622.	0.00				
38.6100	0.00185	-7160.	2825.	3.77E-04	126. 2479	1.05E+10
-553.3962	1397149.	0.00				
39.0000	0.00361	0.00	0.00	3.76E-04	0.00	1.05E+10
-653.7978	423634.	0.00				

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

Pile-head deflection	=	13.86123977 inches
Computed slope at pile head	=	-0.05338865 radi ans
Maximum bending moment	=	2554371. inch-lbs
Maximum shear force	=	-49551. Ibs
Depth of maximum bending moment	=	29.25000000 feet below pile head
Depth of maximum shear force	=	32.37000000 feet below pile head
Number of iterations	=	27
Number of zero deflection points	=	2

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, Ibs, and Load 2 = Moment, M, in-Ibs Load Type 2: Load 1 = Shear, V, Ibs, and Load 2 = Slope, S, radians Load Type 3: Load 1 = Shear, V, Ibs, and Load 2 = Rot. Stiffness, R, in-Ibs/rad. Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-Ibs Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

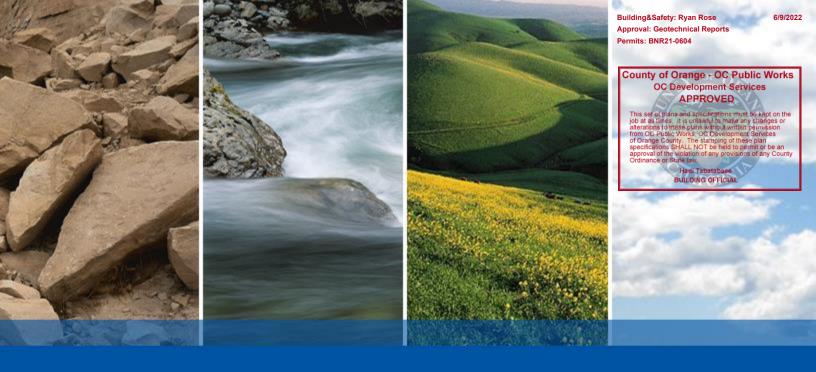
Load Load Load Axial Pile-head Pile-head Max Shear Max Moment Case Type Pile-head Type Pile-head Loading Deflection Rotation in

Pile in Pile					County of Orange - OC Public Works OC Development Services APPROVED
No. 1 Load 1 in-Ibs	2	Load 2	l bs	i nches	This set of plans and specifications must be kept on the additional specifications and an additional specifications of the additional specification of the specifications and the specifications SHALL NOT be held to permit or be an approval of the selation of any provisions of any County
1 V, Ib 7410. -49551. 2554371.	M, in-Ib	0.00	0.00	13.8612	Ordinance or State law. Hadi Tabatabase BuilDING OFFICIAL

Maximum pile-head deflection = 13.8612397695 inches Maximum pile-head rotation = -0.0533886505 radians = -3.058944 deg.

This analysis ended normally

6/9/2022





6/9/2022

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kapt on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law. Bull_DING OFFICIAL

TerraCosta

Project No. 2975 August 15, 2019

Geotechnical Engineering Coastal Engineering Maritime Engineering

Mr. Eric Noegel **BELLINGHAM MARINE INDUSTRIES, INC.** 8810 Sparling Lane Dixon, California 95620

GUIDE PILE DESIGN CRITERIA DANA POINT MARINA REHABILITATION PROJECT DANA POINT, CALIFORNIA

Dear Mr. Noegel:

In accordance with your request, TerraCosta Consulting Group, Inc. (TerraCosta) is pleased to provide guide pile design criteria for the proposed renovation of the Dana Point Harbor Marina Restoration Project located in Dana Point, California (Figure 1). The proposed project is part of the rehabilitation of the existing approximately 50-yearold marina facilities and infrastructure, and will include seawall repairs, gangway and approach pier replacement, and reconfiguration and replacement of the existing floating docks throughout the marina. This limited geotechnical investigation was performed to provide update geotechnical input for the replacement of the guide piles and floating docks, and to provide specific foundation design criteria for the proposed marina remodel as part of the design-build project.

PROJECT DESCRIPTION AND SCOPE OF WORK

As we understand, the existing docks and guide piles will be replaced with a new dock system, including new guide piles. We also understand that the rehabilitation work will likely be performed in phases, on a basin-by-basin basis. Lastly, we understand that various types of guide piles have been and are being considered. More specifically, we were requested to provide specific geotechnical design information for dock design for both concrete and steel piles. A copy of Bellingham's February 8, 2019, request letter is provided in Appendix A. We understand that because of the hard driving conditions, the proposed guide piles are likely to consist of steel pipe piles.



6/9/2022

In order to provide the requested information, TerraCosta performed the following scope of work:

- 1. Reviewed available plans, reports, and our in-house files.
- 2. Conducted a field investigation consisting of performing four ReMi surveys and drilling, sampling, and logging six soil borings to supplement the data presented in previous studies and investigations.
- 3. Developed a site model to evaluate the lateral load behavior of the proposed piles.
- 4. Performed lateral load pile analyses using the computer program, LPILE.
- 5. Developed recommendations pertaining to the requested geotechnical design information.
- 6. Prepared this brief findings report.

LITERATURE REVIEW

To aid in our understanding of the project, we reviewed the project schematic drawings, as well as various geotechnical reports and other studies. A summary of the documents reviewed is presented under References at the end of this report.

FIELD INVESTIGATION

Prior to our field investigation, and to aid in our characterization of the subsurface conditions at the site, we reviewed published and unpublished reports, maps, and historical photographs of the site and surrounding area.

Our field investigation and testing program was conducted January 22 and 23, 2019, and included advancing six test borings around the marina ranging in depth from 34 to 46 feet below the existing ground surface at the locations shown on Figure 1. In addition, four refraction microtremor (ReMi) surveys were completed to develop a shear-wave velocity profile down to a depth of approximately 100 feet at the locations shown on Figure 1, to further broaden geotechnical site characterization for use in our studies.





6/9/2022

The test borings were advanced using a truck-mounted 6-inch-dia neter hollow stem auger drill rig. Once the desired sample depth was reached, a 2-inch outside diameter Standard Penetration Test (SPT) sampler was driven into the soil through the auger at the bottom of the boring. The borings were generally sampled at 5-foot intervals. Samplers were driven using a 140-pound hammer with a 30-inch drop. Blow counts were recorded in 6-inch intervals.

Field logs of the materials encountered in the test borings were prepared based on a visual examination of the materials encountered and the action of the drilling and sampling equipment. A Key to Excavation Logs is presented as Figure B-1 in Appendix B. Final logs of the test borings are presented as Figures B-2 through B-7. Descriptions on the logs are based on the field logs, sample inspection, and the results of laboratory test data.

Representative samples were collected, sealed in plastic containers to preserve moisture content, and taken to the laboratory for grain-size and plasticity testing. Results of the laboratory tests are presented in Appendix C.

A copy of the ReMi survey completed by Southwest Geophysics is provided in Appendix D.

EXISTING CONDITIONS

The County of Orange, in concert with the U.S. Army Corps of Engineers, originally designed and constructed the Dana Point Harbor in the late 1960s. The northern half of the harbor, locally known as the Cove Region, contains mostly commercial property. The southerly half, known as the Island Region, contains a linear park and parking for the marina, as well as some smaller businesses and restaurants. The island is connected by a bridge (Island Way), which separates the harbor into east and west basins. The two basins are, in turn, divided into north and south for four separate quadrants.

Prior to development and construction of the harbor in the 1960s, the area was naturally protected by the Dana Point Headland, creating a shallow anchorage westerly of San Juan Creek. Taking advantage of the headland, a series of jetties was constructed to enclose





6/9/2022

the area further and protect it from westerly and southerly swells. Our research indicates

that the harbor was developed by initially constructing the island and a series of cofferdams to enclose the marina basins. Dewatering of the basin allowed construction to move forward in the dry, excavating the basins to an average elevation to -10 feet MLLW. As we understand, because of the hard excavation characteristics of the soils, the northwest basin was excavated to an elevation of -8 feet MLLW.

Plans showing the construction of the marina are presented in Appendix E. In addition, plans showing the existing guide piles are presented in Appendix F.

GEOLOGIC AND SITE CONDITIONS

The project site is located within the Dana Point Quadrangle at 33.460248 degrees north latitude 117.699313 west longitude, near the mouth of the San Juan Creek Valley.

Surficial Geology

Surficial geologic units underlying the area include artificial fills, beach sands, alluvial deposits, and recent bay deposits, all underlain by older Quaternary to Miocene-aged formational bedrock units. Most of these surficial deposits will likely only be encountered during the construction of the gangway approach platforms and other ancillary improvements on the land side of the marina.

While a number of older geologic units, such as marine and non-marine terrace deposits and the middle Miocene-age San Onofre Breccia and Monterey Formations, are mapped as being exposed within the area, the primary formational unit that will be encountered during pile driving for the new marina is the late Miocene to early Pliocene-age Capistrano Formation. The Capistrano Formation is of marine origin and primarily consists of interbedded siltstones, sandstone, and localized conglomerates. The siltstone is generally dark gray to olive-gray, and poorly to moderately consolidated. The sandstone generally consists of a yellowish-brown to gray, weakly to moderately cemented, massive to poorly bedded sandstone. The siltstone was encountered in generally all of the borings across the site, with limited amounts of sandstone encountered in borings across the northern edge of the marina.





6/9/2022

GUIDE PILE DESIGN INFORMATION

Guide Pile Design Input

Both concrete and steel piles have been and are being considered for use as guide piles for the new marina floating docks. In their February 8, 2019, letter (Appendix A), Bellingham requested the following design input for use in their design of the guide pile systems:

- 1. Ultimate lateral load,
- 2. Maximum deflection at the point of loading, and
- 3. Pile tip elevations.

The point of loading for the piles is at elevation 9.0 feet MLLW. The piles under consideration include 16-inch and 20-inch round concrete piles, 24-inch octagonal concrete piles, and 14-inch, 16-inch, and 18-inch steel pipe piles. The mulline elevations for the guide piles range from -10 to -17 feet MLLW.

Site Model

Using the information collected from of our field investigation and data from previous studies, TerraCosta developed a subsurface model for use in lateral load pile analyses. The data show that the formational soils become very competent near elevation -12 to -14 feet MLLW. Using this observation, we developed the following analytical subsurface model consisting of nearshore deposits modeled as sands from the mudline to elevation -13 feet, which were in turn underlain by competent formational materials to depth. The formational material consists primarily of a clayey siltstone. To evaluate the lateral load behavior of this material, we examined the lateral response of the pile using a variety of p-y curve models ranging from sands, stiff clays with and without free water, and weak rock. From this assessment, we selected a p-y curve model corresponding to stiff clay without free water. Table 1 summarizes the LPILE material parameters used in our lateral load analyses of the piles.





6/9/2022

Lateral Load Analyses

TerraCosta evaluated the three steel pipe piles and three pre-stressed concrete piles requested by Bellingham. We analyzed three mudline conditions: -10 to -13 feet, -15 feet, and -17 feet. Our results may be interpreted for other mudline conditions. Subsurface conditions indicated that formational materials began at approximate elevation -13 feet, with less competent soils above this elevation.

Our analyses focused on developing recommendations for an ultimate load in kips corresponding to the ultimate moment capacity provided by Bellingham, the deflection at the point of load application of the maximum lateral load assuming elastic behavior of the pile, and the pile tip elevation in MLLW below the mudline.

From our analyses, we noted that the concrete piles will start to behave inelastically near 55 percent of the ultimate load based on the concrete steel reinforcing information provided by Bellingham. As such, assessing the piles as elastic pile materials will underestimate the pile deflection as the piles start to experience yielding of the pile materials.

As part of our analyses, we also evaluated the effects of different soil models and, as such, the results provided in the attached tables are estimates based on the average condition of the various models used, where the actual displacements are anticipated to lie within 10 percent (plus or minus) of our estimates.

The results of our analyses are based on the assumption that all piles will be driven.

Recommendations

Recommended maximum lateral force, pile deflection, and pile tip elevations for the requested concrete piles are presented in Tables 2A, 2B, and 2C, and for the requested steel pipe piles in Tables 3A, 3B, and 3C.





6/9/2022

CONSTRUCTION CONSIDERATIONS

As we understand, new piles are proposed for the Dana Point floating docks. These piles are primarily laterally loaded piles with negligible axial load requirements. As such, the key construction requirement for these piles is to drive the piles to their design specified tip elevations. The new piles are to be located within the main harbor area where the existing floating docks are located.

We understand that Bellingham drove piles for guide piles near the travel lift area of the marina, where they encountered hard driving conditions such that some piles mushroomed at the top during driving. As a result, we understand that pile design and driving operations were modified and some piles driven using stingers and/or driving shoes.

It is interesting to note that the existing piles in the marina appear to be a combination of both steel pipe piles and concrete piles. However, a review of the as-built drawings suggests that the concrete piles observed in the western basin required steel stingers to be able to drive the piles to desired tip.

We anticipate that pile operations will likely be on-water, with piles located and installed from a barge using a pile driving hammer. While we anticipate that most piles can be installed using the pile driving hammer, it is possible that approximately 5 to 10 percent of the piles may require pre-drilling or jetting at the pile location prior to driving.

LIMITATIONS

This letter-report presents data collected during our field investigation for the purpose of developing recommendations for the minimum tip elevations required to achieve lateral load pile behavior for the new marina piles. The conclusions and information presented in this report are intended to assist Bellingham in their design of guide piles for the new proposed floating docks. Use of this information for any other intended purpose is not recommended.





This firm does not practice or consult in the field of safety engineering. We do mot threat

the contractor's operations, and we cannot be responsible for the safety of other than our own personnel on the site. Therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any of the recommended actions presented herein to be unsafe.

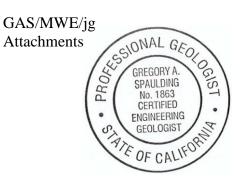
CLOSURE

We appreciate the opportunity to work with you on this project. If you have any questions or require additional information, please give us a call.

Very truly yours,

TERRACOSTA CONSULTING GROUP, INC.

Gregory A). Spaulding, Project Geologist P.G. 5892, C.E.G. 1863



Matthew W. Eckert, Director of Engineering R.C.E. 45171, R.G.E. 2316







6/9/2022

REFERENCES

- Blue Water Design Group, December 2003, DPH RFQ Resource Documents #7 Dana Point Marina Redevelopment Bulkhead Structural Evaluation, County of Orange, Dana Point Marina Redevelopment, Bulkhead Structural Evaluation.
- Blue Water Design Group, January 2005, DPH RFQ Resource Documents #5 Dana Point Marina Conditions survey Vol I and II, County of Orange, Dana Point Harbor, Marina Condition Evaluation.
- Broms, B.B., 1965, "Design of Laterally Loaded Piles," in Journal of the Soil Mechanics and Foundations Division, American Society of Civil Engineers, Vol. 91, No. SM3, May 1965, pp. 79-99.
- Broms, B.B., 1964, Lateral Resistance of Piles in Cohesive Soils, in Journal of the Soil Mechanics and Foundations Division, American Society of Civil Engineers, Vol. 90, No. SM2, March 1964, pp. 27-63.
- California Department of Conservation, Division of Mines and Geology, 1974, Geology of the Dana Point Quadrangle, Orange County, California, Special Report 109.
- California Department of Conservation, 2001, Division of Mines and Geology, Seismic Hazard Zone Report for the Dana Point 7.5-Minute Quadrangle, Orange County, California, Seismic Hazard Zone Report 049.
- Diaz, Yourman & Associates, October 26, 2015, "Addendum No. 4, Response to Orange County Public Works – Grading/Geotechnical Unity, Geotechnical Services – Dana point Shipyard, 34671 Puerto Place #A, Dana Point, California," Project No. 2012-034.01.
- GMU Geotechnical, Inc., July 19, 2013, "Report of Geotechnical Investigation, Dana Point Harbor Revitalization Project, Phase 1, Dan Point Harbor, County of Orange, California," GMU Project 11-161-00.
- GMU Geotechnical, Inc., December 13, 2018, "Commercial Component Summary of Geotechnical Findings and Preliminary Geotechnical Design Considerations and Recommendations, Dana Point Harbor Revitalization, City of Dan Point, California," GMU Project 17-206-02.



Mr. Eric Noegel BELLINGHAM MARINE INDUSTRIES, INC. Project No. 2975



REFERENCES (continued)

- GMU Geotechnical, Inc., December 17, 2018, "Hotel Component Summary of Geotechnical Findings and Preliminary Geotechnical Design Considerations and Recommendations, Dana Point Harbor Revitalization, City of Dan Point, California," GMU Project 17-206-01.
- GMU Geotechnical, Inc., December 19, 2018, "Marine Dry Stack Storage Component – Summary of Geotechnical Findings and Preliminary Geotechnical Design Considerations and Recommendations, Dana Point Harbor Revitalization, City of Dan Point, California," GMU Project 17-206-03.
- 12. Kinnetic Laboratories Incorporated & Moffat I Nichol, March 2007, Dredge Material Evaluation, Dana Point Harbor Maintenance Dredging Report.
- Matlock, H., and L.C. Reese, 1962, "Generalized Solutions for Laterally Loaded Piles," in *Transactions of the American Society of Civil Engineers*, Vol. 127, Part 1, Paper No. 3370, pp. 1220-1251.
- 14. Norris, Robert M., and R.W. Webb, 1990, Geology of California, Second Edition. John Wiley & Sons, Inc., New York.
- Orange County Harbor District, DPH RFQ Resource Documents #1 As Built Plans 9-22-70, Dana Point Harbor, Dana Point, California, Heavy Construction, Title Sheet & Vicinity Map.
- OC Dana Point Harbor, April 2014, DPH RFQ Resource Documents #12 Commercial Core Project Technical Studies, Reports and Information, Dana Point Marina Harbor Revitalization, Commercial Core Project, Coastal Development Permit (CDP13-0018).
- 17. OC Dana Point Harbor, March 2014 (Revised October 2014), Dana Point Marina Harbor Revitalization, Preliminary Shoreline Management Plan.
- U.S. Department of the Navy, Naval Facilities Engineering Command, 1986, Foundations and Earth Structures, NAVFAC DM 7.02.



K:\29\2975\2975 TCG Reports\2975 R01 Guide Pile Design Criteria.doc

Mr. Eric Noegel BELLINGHAM MARINE INDUSTRIES, INC. Project No. 2975

County of Grange 1 OC Public Works August Development Services Reserve VED
This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law.
Hadi Tabatabaee BUILDING OFFICIAL

TABLE 1

SUMMARY OF LPILE PARAMETERS FOR LATERAL LOAD ANALYSES OF PILES

Material	Depth, feet	Unit Weight, pcf	Friction Angle, deg.	K, pci	Undrained Strength, psf	Strain Factor
Sand	19 to 22	55	34	60	na	na
Stiff clay No free water	22 to 100	60	na	na	4000	0.004





6/9/2022

SUMMARY OF LATERAL LOAD RECOMMENDATIONS

TABLE 2A16-INCH ROUND PRE-STRESSED CONCRETE PILE

Mudline, feet	Max. Lateral Load, kips	Deflection at Point of Load, inches	Pile Tip Elevation, feet	Phi*Mu, kip-feet
-10 to -13	4.8	3.6	-28	105
-15	4.4	4.0	-30	105
-17	4.0	4.4	-31	105

TABLE 2B20-INCH ROUND PRE-STRESSED CONCRETE PILE

Mudline, feet	Max. Lateral Load, kips	Deflection at Point of Load, inches	Pile Tip Elevation, feet	Phi*Mu, kip-feet
-10 to -13	9.9	3.4	-28	223
-15	9.1	3.9	-30	223
-17	8.4	4.2	-31	223

TABLE 2C 24-INCH OCTAGONAL PRE-STRESSED CONCRETE PILE

Mudline, feet	Max. Lateral Load, kips	Deflection at Point of Load, inches	Pile Tip Elevation, feet	Phi*Mu, kip-feet
-10 to -13	15.2	2.8	-28	346
-15	14.0	3.1	-30	346
-17	13.2	3.5	-31	346

NOTES:

- 1. Deflection of pile assumes that pile is elastic. Inelastic behavior begins at an approximate lateral load equal to 0.55 times the maximum lateral load.
- 2. Lateral displacements for loads in excess of 0.55 times the maximum lateral load will exceed those presented in the table above.
- 3. Phi*Mu is the factored ultimate moment capacity of the pile.
- 4. Pile Tip Elevation is the minimum required for the pile in question.





6/9/2022

SUMMARY OF LATERAL LOAD RECOMMENDATIONS

TABLE 3A <u>14-INCH STEEL PIPE</u>

Mudline, feet	Max. Lateral Load, kips	Deflection at Point of Load, inches	Pile Tip Elevation, feet	Phi*Mu, kip-feet
-10 to -13	11.0	10.0	-28	259
-15	10.4	11.4	-28	259
-17	9.4	12.5	-30	259

TABLE 3B16-INCH STEEL PIPE PILE

Mudline, feet	Max. Lateral Load, kips	Deflection at Point of Load, inches	Pile Tip Elevation, feet	Phi*Mu, kip-feet
-10 to -13	15.0	9.7	-28	341
-15	13.8	10.6	-28	341
-17	12.8	12.2	-30	341

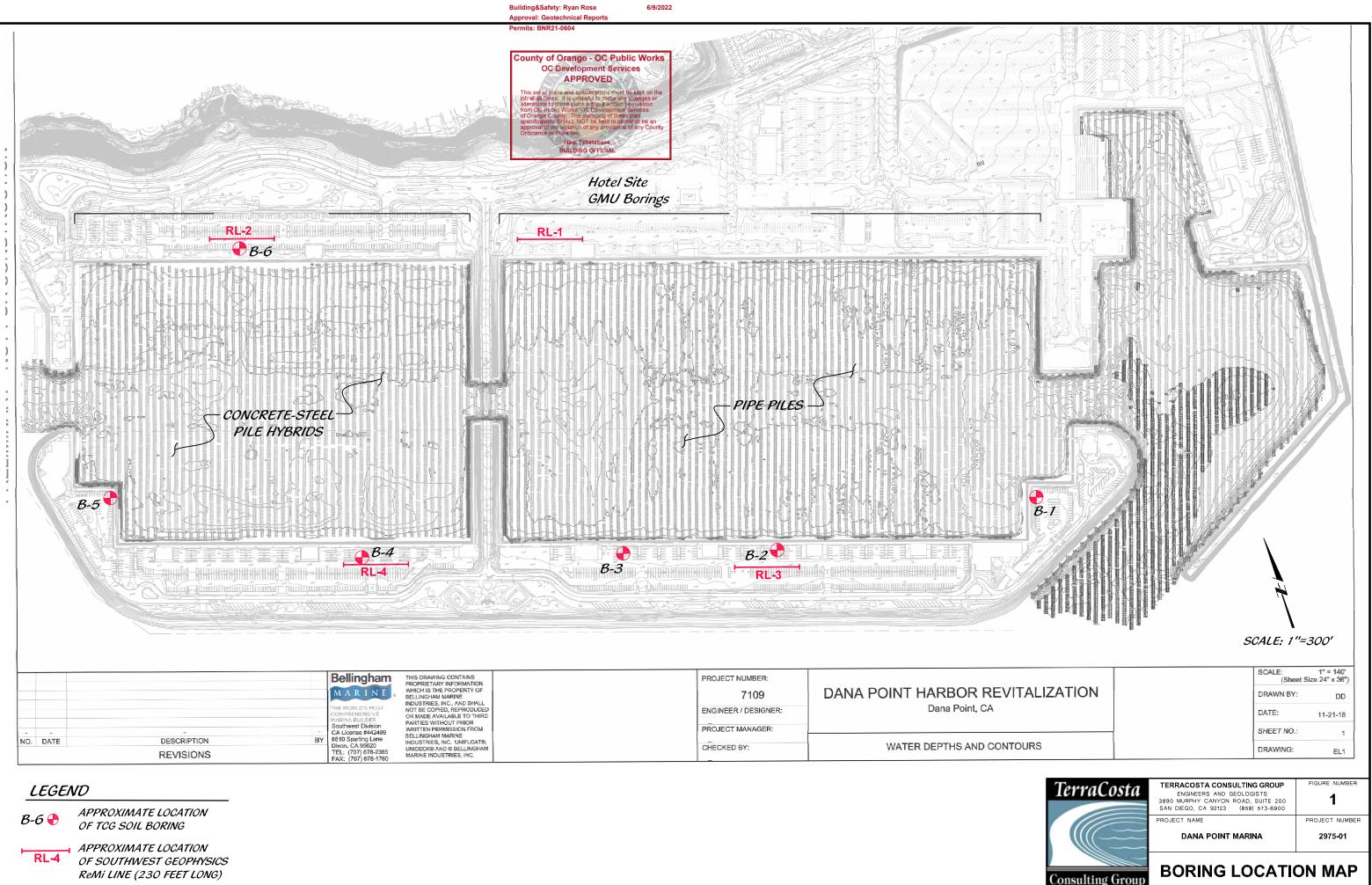
TABLE 3C18-INCH STEEL PIPE PILE

Mudline, feet	Max. Lateral Load, kips	Deflection at Point of Load, inches	Pile Tip Elevation, feet	Phi*Mu, kip-feet
-10 to -13	19.0	9.0	-28	434
-15	17.6	10.2	-28	434
-17	16.4	111.4	-30	434

NOTES:

- 1. Deflection of pile assumes that pile is elastic until the pile capacity is reached.
- 2. Phi*Mu is the factored ultimate moment capacity of the pile.
- 3. Pile Tip Elevation is the minimum required for the pile in question.





County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law. Heid Tabatabase BUILDING OFFICIAL

6/9/2022

APPENDIX A

LETTER OF REQUEST FROM BELLINGHAM DATED FEBRUARY 8, 2019



6/9/2022



February 8, 2019

Bellingham

MARINE

Mr. Eric Noegel Manager of Project Development, Southwest Division Bellingham Marine Industries, Inc. 8810 Sparling Lane Dixon, CA 95620

Project: BMI – Dana Point Marina Subject: Request for Geotechnical Design Information Job # 7109

Dear Eric,

This letter is provided to identify geotechnical information necessary to perform a structural analysis of the floating dock system.

In general, the docks are restrained against lateral loads by piles embedded in the basin floor; the piles are not subjected to appreciable vertical loading. The dock design requires that adequate pile embedment is provided to fully develop the ultimate moment capacity (ΦM_n) of the piles. The design is typically not deflection limited; however the lateral pile stiffnesses are needed to accurately model the dock system.

Please provide the ultimate lateral load (ΦP_n), the maximum deflection at the point of loading, and the pile tip elevation for the piles shown on the attached elevation drawings.

If you have any questions or concerns, please don't hesitate to contact us.

Sincerely,

to J. the

Patrick J. Staron, P.E., Ph.D.

Enclosure: Pile Elevation Drawings Basin Bathymetry Pile Capacity Calculations

Bellingham Marine Engineering 3825 E. Sunset Dr Bellingham, Washington 98228 T 360.715.0121

6/9/2022

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law. Hadi Tabatabase BUILDING OFFICIAL

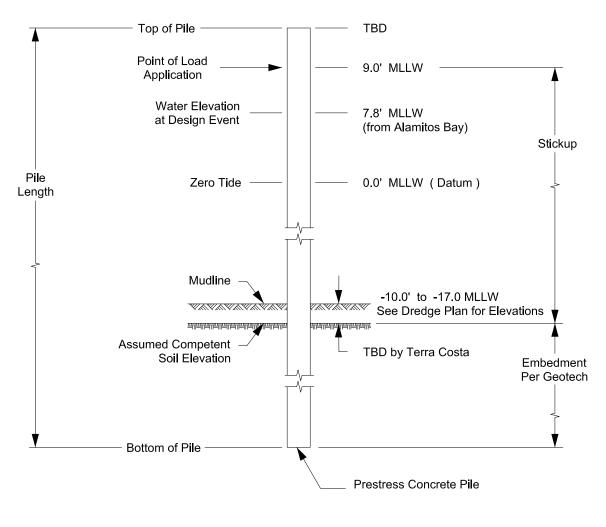
Dana Point Marina - Concrete Piles

PJS 2/8/2019

Pile Diameter (inch)	Ultimate Moment Capacity (ΦΜ _n) (ft-kips)	Ultimate Lateral Load (ΦΡ _n) (kips)	Deflection at Max. Lateral Load (inch)	Pile Tip Elevation (ft) (MLLW)
16 rnd.	105			
20 rnd.	223			
24 oct.	346			

Concrete Strength: Min f 'c = 6,000 psi

W4 spiral: 5 turns @ 1" pitch at ends, 3" pitch over top and bottom thirds, 6" pitch over middle third 2.5" clear cover over spiral



ELEVATION VIEW OF TYPICAL MARINA PILE

(N.T.S)

6/9/2022

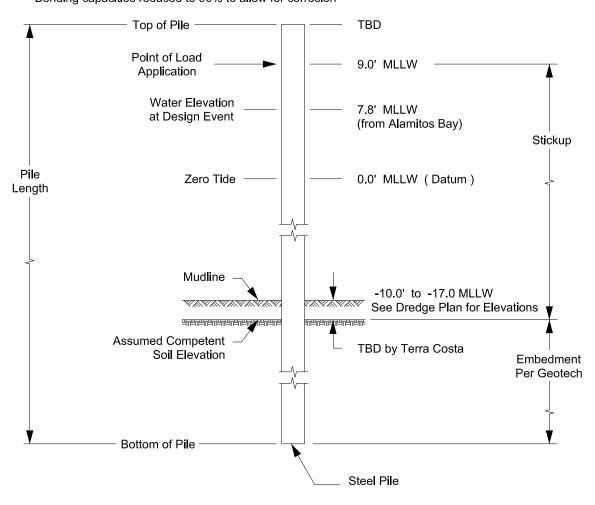
County of Orange - OC Public Works OC Development Services APPROVED This set of plane and specifications must be kept on the job at all times. It is unlawful to make any changes or about the set of plane and specifications must be kept on the job at all times. It is unlawful to make any changes or of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law. Had Tabatabase BUILDING OFFICIAL

Dana Point Marina - Steel Piles

PJS 2/8/2019

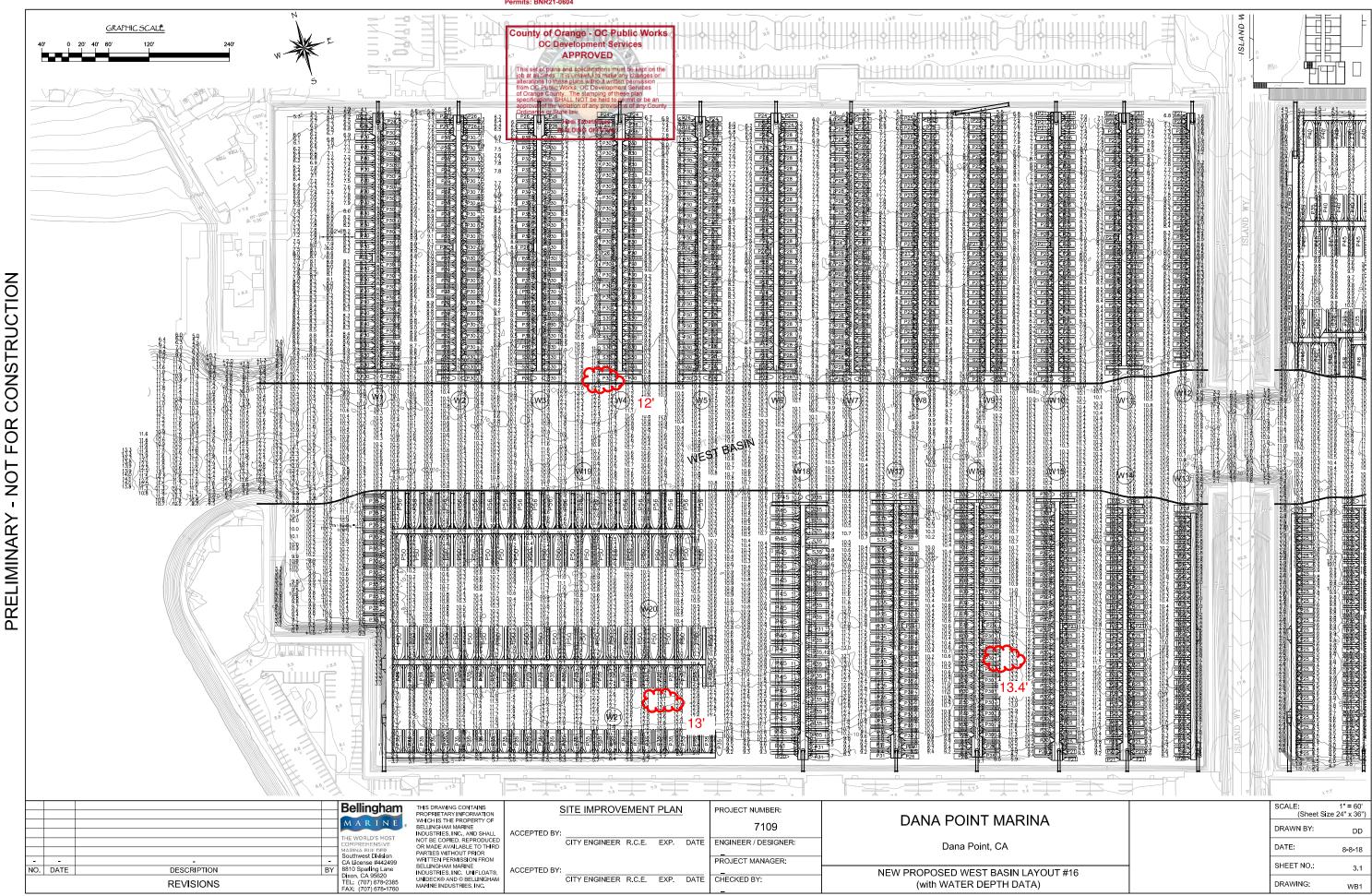
Pile Diameter (inch)	Ultimate Moment Capacity (ΦΜ _n) (ft-kips)	Ultimate Lateral Load (ΦΡ _n) (kips)	Deflection at Max. Lateral Load (inch)	Pile Tip Elevation (ft) (MLLW)
14	259			
16	341			
18	434			

Fy = 45 ksi; Wall Thickness = 0.5" Bending capacities reduced to 90% to allow for corrosion



ELEVATION VIEW OF TYPICAL MARINA PILE

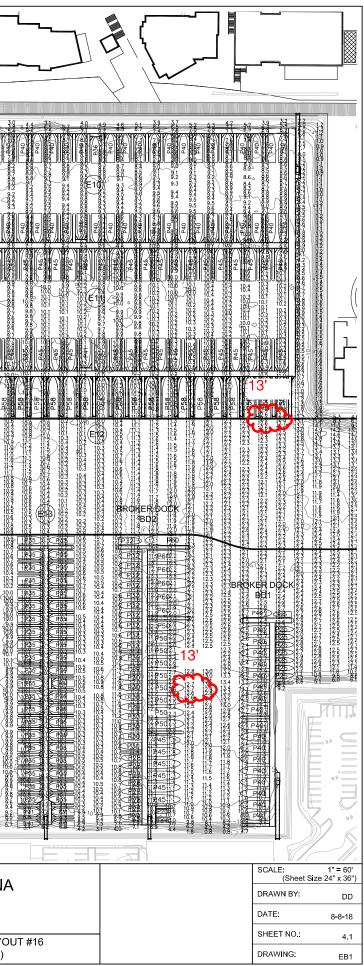
(N.T.S)

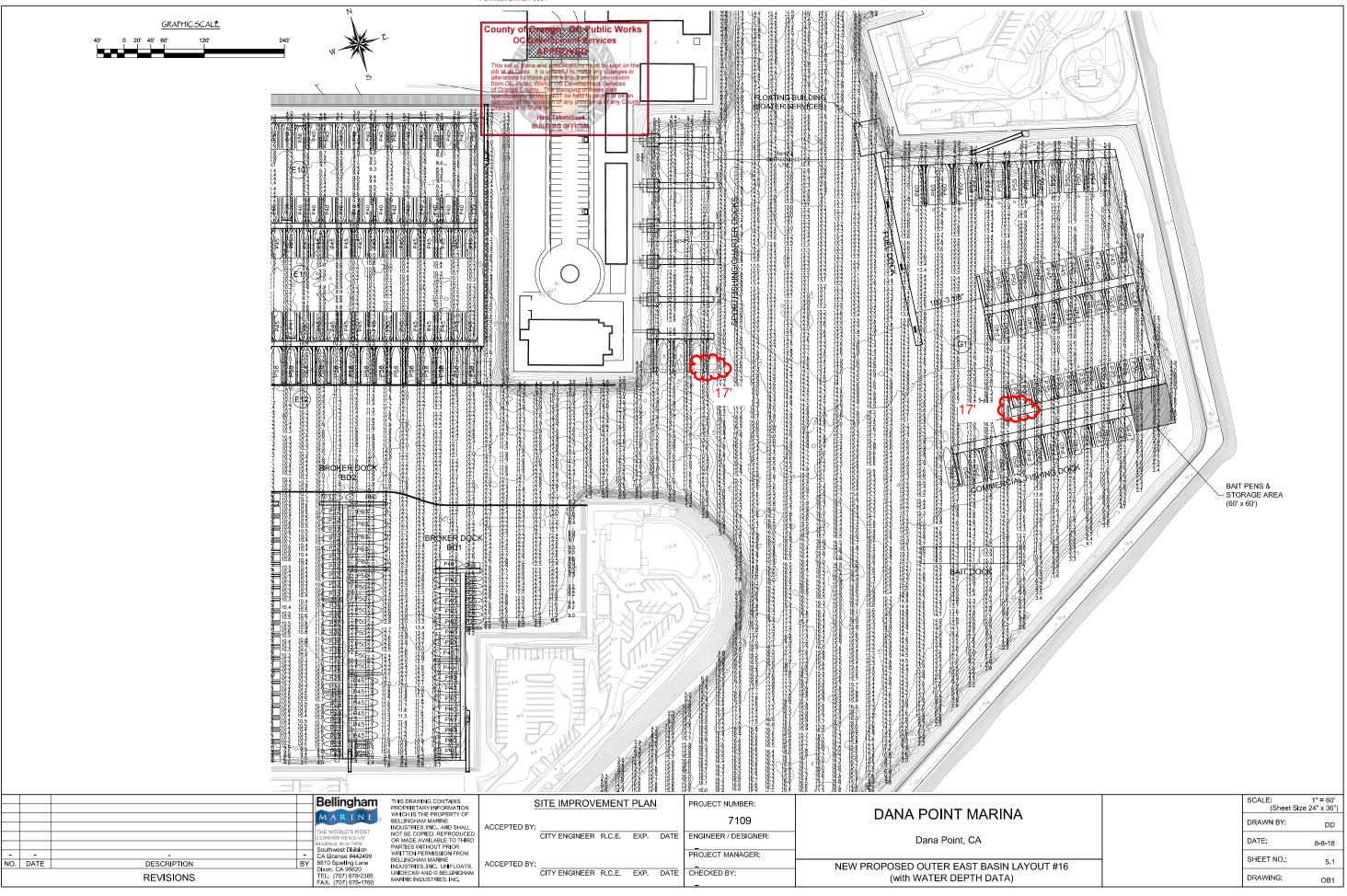


6/9/2022

-						Approval: Geotechnical Report Permits: BNR21-0604				
	40' 0 2	GRAPHIC 5CAL [®] 0' 40' 60' 120'	240' W K S			County of Orange - OC OC Bevelopment APPROVE	C Public Works t Services D ns must be kept on the nake any changes or written percension			
-							of these plan rovisions of any County		-	•
,	405500					Ordinance or State law.				
	67 643 633 603									
				PLAD The Active Plant of t						Contraction of the contraction o
	INFISI									
RUCIE										
NS.										
NOI FOR CO										
- KELIMINAKY -					INTERNATIONAL IN ANALANAN ANALANA					
	1946 A LANDAR AND				LET & THE TRANSMISSION OF THE T					
				Bellingham	THIS DRAWING CONTAINS	SITE IMPF		PROJECT NUMBER:		
				MARINE THE WORLD'S MOST COMPREHENSIVE	PROPRIETARY INFORMATION WHICH IS THE PROPERTY OF BELLINGHAM MARINE INDUSTRIES, INC., AND SHALL NOT BE COPIED, REPRODUCED OF MORE AVAILABLE TO THE	ACCEPTED BY:	JEER R.C.E. EXP. DATE	7109 ENGINEER / DESIGNER:	DAI	NA POINT MARINA
	IO. DATE	DESCRIPTIO		MARINA RUILDER Southwest Division CA License #442499 8810 Sparling Lane Dixon. CA 95620	OR MADE AVAILABLE TO THIRD PARTIES WITHOUT PRIOR WRITTEN PERMISSION FROM BELLINGHAM MARINE INDUSTRIES, INC. UN FLOAT®, UNDECK® AND © BELLINGHAM	ACCEPTED BY:		PROJECT MANAGER:		Dana Point, CA
		REVISION	NS	TEL: (707) 678-2385 FAX: (707) 678-1760	UNIDECK® AND © BELLINGHAM MARINE INDUSTRIES, INC.		JEER R.C.E. EXP. DATE		(v	with WATER DEPTH DATA)

PRELIMINARY - NOT FOR CONSTRUCTION





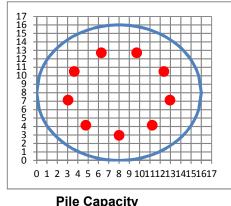
6/9/2022

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without writine permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law. Held Tabatabase BUILDING OFFICIAL

Ultimate Bending Capacity of Prestressed Concrete Pile

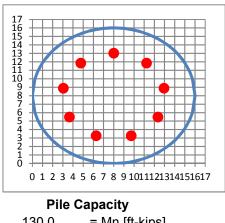
round	= pile type
16.00	= pile size [in]
0.00	= chamfer size [in]
1/2" Seven-Wire 270 ksi LRS	= strand type
9	= number of strands
0.00575	= initial strand strain (after losses) [in/in]
0.003	= concrete ultimate strain [in/in]
6	= fc [ksi]
2.5	
2.5 W4	= concrete cover [in]
۷۷4	= spiral steel
201.1	
201.1	= gross area [in ²]
3217	= moment of inertia [in ⁴]
4415	= concrete E [ksi]
270	= f _{pu} [ksi]
163.7	= f _{se} , initial stress (after losses) [ksi]
1.121	= initial concrete stress (after losses) [ksi]
0.0003	= initial concrete strain (after losses) [in/in]
	· · · ·
0.50	= strand diameter [in]
0.153	= area of strand [in]
0.226	= spiral steel diameter [in]
10.05	= diameter of strand layout circle [in]
10.00	

Strand Configuration 1



i ne oapacity				
130.0	= Mn [ft-kips]			
0.80	= Φ			
104.1	= ΦMn [ft-kips]			

Strand Configuration 2



130.0	= Mn [ft-kips]
0.81	= Φ
105.1	= ΦMn [ft-kips]

6/9/2022

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without writine permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or State law. Held Tabatabase BUILDING OFFICIAL

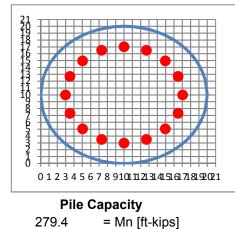
Ultimate Bending Capacity of Prestressed Concrete Pile

round 20.00 0.00 1/2" Seven-Wire 270 ksi LRS 16 0.00575 0.003 6 2.5	 = pile type = pile size [in] = chamfer size [in] = strand type = number of strands = initial strand strain (after losses) [in/in] = concrete ultimate strain [in/in] = f'c [ksi] = concrete cover [in]
W4	= spiral steel
314.2 7854 4415 270 163.7 1.276 0.0003	 = gross area [in²] = moment of inertia [in⁴] = concrete E [ksi] = f_{pu} [ksi] = f_{se}, initial stress (after losses) [ksi] = initial concrete stress (after losses) [ksi] = initial concrete strain (after losses) [in/in]
0.50 0.153 0.226 14.05	 strand diameter [in] area of strand [in] spiral steel diameter [in] diameter of strand layout circle [in]

Strand Configuration 1

0.80

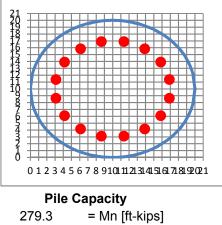
223.9



=Φ

= ΦMn [ft-kips]

Strand	Configuration	2
--------	---------------	---



279.3	= Mn [ft-kips]
0.80	= Φ
223.1	= ΦMn [ft-kips]

223/29 = 7.6 kip

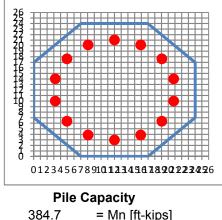
6/9/2022

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stanping of these plan specifications SHALL NOT be held to permit or be an approval of the woldation of any provisions of any County Ordinance or State law. Held Tabatabase BUILDING OFFICIAL

Ultimate Bending Capacity of Prestressed Concrete Pile

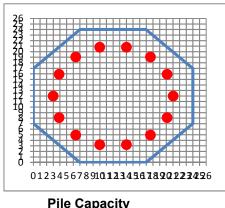
octogon	= pile type
24.00	= pile size [in]
0.00	= chamfer size [in]
1/2" Seven-Wire 270 ksi LRS	= strand type
14	= number of strands
0.00575	= initial strand strain (after losses) [in/in]
0.003	= concrete ultimate strain [in/in]
6	= f'c [ksi]
2.5	= concrete cover [in]
W4	= spiral steel
476.9	= gross area [in ²]
18148	= moment of inertia [in⁴]
4415	= concrete E [ksi]
270	= f _{pu} [ksi]
163.7	= f _{se} , initial stress (after losses) [ksi]
0.735	= initial concrete stress (after losses) [ksi]
0.0002	= initial concrete strain (after losses) [in/in]
0.50	= strand diameter [in]
0.153	= area of strand [in]
0.226	= spiral steel diameter [in]
18.05	= diameter of strand layout circle [in]

Strand Configuration 1



Flie Capacity								
384.7	= Mn [ft-kips]							
0.90	= Φ							
346.2	= ΦMn [ft-kips]							

Strand Configuration 2



1 110	oupdoily
384.4	= Mn [ft-kips]
0.90	= Φ
345.9	= ΦMn [ft-kips]

6/9/2022



Pile Diameter [in]	Wall Thickness [in]	Yield [ksi]	Area [in ²]	Weight [plf]	l [in ⁴]	Z [in ³]	ФМ _n [kip-ft]	0.9*ФМn [kip-ft]	M _n /Ω [kip-ft]	Compact Section [Y/N]
14.0	0.465	45	19.8	67	453.3	85.2	288	259	191.4	Y
16.0	0.465	45	22.7	77	685.2	112.3	379	341	252.1	Y
18.0	0.465	45	25.6	87	985.2	143.0	483	434	321.1	Y

Nominal Wall Thickness [in]	Actual Wall Thickness [in]*
0.500	0.465
0.432	0.402
0.375	0.349
0.312	0.291
0.280	0.260
0.250	0.233

*AISC Steel Construction Manual 14th Edition

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kapt on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or state law. Heid Tabatabase BUILDING OFFICIAL

6/9/2022

APPENDIX B

LOGS OF EXCAVATIONS



	PROJECT NAME	PROJEC WUMBERT Orange BORINGUBIIC WORKS
LOG OF TEST BORING	Dana Point H	arbor Revitatilzation 2975
SITE LOCATION		START FIN ISH SHEET NO. This set of plans and specifications must be kept on the
Dana Point DRILLING COMPANY		I/22/2019 1/23/2019 1/23/2010 is the understate optimizing changes or IG METHOD LOGGED By CC Public CHECKED By end Services
Pacific Drilling		w Stem Auger G. Spatiations SHALL NOT be held to permit or be an
DRILLING EQUIPMENT	BORING	G DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft)
Marl M5 SAMPLING METHOD	6"	40 10.0 ¥ 2.0 / 8100 MS OFFICIAL
SPT		
DEPTH (ft) ELEVATION (ft) ELEVATION (ft) SAMPLE TYPE SAMPLE NO. SAMPLE NO. PENETRATION RESISTANCE (BLOWS/ft) DRY DENSITY (pcf) MOISTURE (%)	OTHER TESTS GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		KEY TO EXCAVATION LOGS
		WATER TABLE MEASURED AT TIME OF DRILLING
		OTHER TESTS
-5 $-5-5$ $-5 - - --10$ $-0 - - - - - - - - - -$		CC Confined Compression ppm parts per million of VOCs* CL Chloride Content R Resistivity CS Consolidation RV R-Value DS Direct Shear SA Sieve Analysis EI Expansion Index SE Sand Equivalent GS Grain Size Analysis SF Sulfate LC Laboratory Compaction SG Specific Gravity pH Hydrogen Ion SW Swell PI Plasticity Index SW Swell PENETRATION RESISTANCE (BLOWS/ft) Number of blows required to advance the sampler 1 foot. California Sampler blow counts can be converted to equivalent SPT blow counts by using an end-area conversion factor of 0.67 when using a 140-pound hammer and a 30-inch drop. SAMPLE TYPE PB ("Plastic Bag") - a disturbed, but representative sample obtained from a specific depth interval placed in a large plastic bag. S ("SPT") - a.k.a. Standard Penetration Test, an 18-inch-long, 2-inch O.D., 1-3/8-inch 1.D. drive sampler.
61/F1/8 -15 -5 109 -15 -5 109 - - 109 - - 109 - - 109 - - 109 - - 109 - - 100 - -		(CONTINUED)
TerraCosta TerraCosta 3890 Murphy Canyon Road, S Consulting Group San Diego, California 92123	•	THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

	OG C		TES	ST BC	DRIN	111		ст NAME Point Ha	arbor Revitatilz		STAR		PROJE	5 FINISH	ERI Orangebork Works OC Development Services APPROVED END SHEET NO.
Dar	na Point	t										2/2019		1/23/20	of plans and specifications must be kept on the Pieces. It is unlawfubto make any changes or ns to these plans without written permission
						-							LOGG	ED Brom OC of Oran specific	Public Verific CKEPPI Brytent Services ge County. The stamping of these plan ations SHALL NOT be held to permit or be an
DRILL	Pacific Drilling Hollow DRILLING EQUIPMENT BORING								W Stem Auger		H (ft)	GROUND	LG. S DELEV	ft DEP	tions SHALL NOT be held to permit or be an Dof the violation of any provisions of any Courty TH/ELEV, GROUND WATER (ft)
Ma	Marl M5 6"									40	,	10.0			
	SAMPLING METHOD NOTES														
SP				-											
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG		DESCR	IPTIC	DN AND	CLAS	SIFICATIO	ON
	_									<u>K E Y</u>	то	EXC	AVA	TION	LOGS
												(CON	TINUE	D)	
╞	-								NOTES ON	I FIELD IN	<u>/EST</u>	<u>IGATIOI</u>	N		
-	-									re advance	d usir			nted Marl	M5 drill rig with a
-	-								SPT were d	Iriven into t	he soi	il at the l	bottom	of the bo	ain soil samples. The rings with a 140-pound withdrawn from the
25	<u> </u>								boring, the s	samples we	ere re	moved,	visually	y classifie	d, sealed in plastic
									Free ground noted on the			untered	in the	borings a	t the time of drilling as
-	_								include cold modified to	or, moisture reflect resu . At the co	, and ilts of	consiste laborato	ency. F ory insp	Field desc bection wh	sification System and riptions have been here deemed were sealed per state
30	20														
F	-														
-	-														
14/19	0.5														
₩ 10	25														
MT.G	_														
CLOG															
GD															
75.GP	-														
3) 297															
LOG	_														
TCG	TerraCosta 3890 Murphy Canyon Road, Suite 200 San Diego, California 92123									ARY APPLIE RING AND A E CONDITIO AND MAY C ASSAGE OF IS A SIMPL S ENCOUNT	T THE ONS M HANC TIME IFICA	E TIME O MAY DIFF GE AT TH THE DA TION OF	F DRIL ER AT IIS LOC ATA	LING. OTHER CATION	FIGURE B-1 b

LOC SITE LO Dana DRILLIN Pacifi DRILLIN Marl I SAMPLI SPT	CATION Point IG COMI C Drillin G EQUII	PANY ng PMEN	,	ST BC	DRIN	1721		DRILLIN Hollov BORING 6"	arbor Revitatilzation 2975 C Development Services Approved Approve
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
- - 5 -	 5 	PB	1						2" - 3" AC / 4" - 6" Class II Base FILL CLAYEY SAND(SC) TO SANDY CLAY (CL), damp, medium dense, olive to olive-gray
- 10 - -	0 0 	S	2	7					- Becomes moist
- 15	5 		3	30					SILTY TO CLAYEY SAND (SC-SM), wet, medium dense, olive gray
TerraCo Consulting	38	890	Murp	ta Con hy Cany Califorr	on Ro	ad, S	-		- Becomes sandier THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SITE LOCATION									arbor Revitatilzation 2975 OC Development Services START FINISH SHEET NO. This set of plans and soldifications must be keet on the
Dana DRILLIN		PANY	,					DRILLIN	1/22/2019 1/22/2010 <t< td=""></t<>
									v Stem Auger G. Spacifications SHALL NOT be held to permit or be an
Marl M	M5		• •					6"	DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft) 41 10.0 ▼ n/a_ BUILDING OFFICIAL
SAMPLII SPT	NG MET	HOD					NOTES	6	
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
-	_	S	4	6					
- 25 -	 15 	S	5	79/8"			GS PI		CAPISTRANO FORMATION SILT TO CLAYEY SILT (ML) & FINE SANDY CLAY (CL), damp, hard, dark gray, interbedded w/ cemented zones
- 30 - -	20 								CLAYEY SILT (ML) TO SAND (SP-SM), moist to wet, very dense, gray to dark gray, interbedded, w/ occasional concretions and cemented zones
- 35	25 								
TerraCo Consulting	3	890	Murp	ita Cor hy Cany Califori	on Ro	ad, S	-		THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

LOC SITE LO			TES	ST BC	DRIN			ст NAME Point Ha	arbor Revitatilzation	START		975 FINISH	MBERT Orange BORMODIC Works OC Development Services Approved SHEET NO. s set of plans and social continues must be kapt on the
Dana										1/22/2	2019	1/22/	2010es. It is unlawfuoto parketany changes or
DRILLIN									G METHOD		LO		m OC Public CHECKEPIEN ent Services Drange County. The stamping of these plan sofications BHALL NOT be held to permit or be an HOG of the violation of any provisions of any County
Pacifi DRILLIN	<u>c Drill</u> G EQU	ING IPME	NT						<u>v Stem Auger</u> DIA. (in) TOTAL DEP	TH (ft) GF		EV (ff	EPTH/ELEV. GROUND WATER (ft)
Marl N								6"	41		10.0		Hadi Tabatabaee
SAMPLI	NG ME	THOD)				NOTES	6					
SPT	1												
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESC	RIPTION	I AND CLA	ASSIFICA	TION
		S	6	76/11"									
- - 45	 35		-					<u></u>	Botton of hole @ 41 drilling.	feet. No f	free ground	dwater en	acountered at time of
- - - 50	 												
- - - 55	 45												
Consulting	3	890	Murp	sta Cor hy Cany , Califori	on Ro	ad, S			THIS SUMMARY APPL OF THIS BORING AND SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE C PRESENTED IS A SIMF CONDITIONS ENCOUN	AT THE T FIONS MA CHANGE OF TIME. PLIFICATION	FIME OF DF AY DIFFER AT THIS L THE DATA	RILLING. AT OTHEF LOCATION	FIGURE B-2 C

LOG SITE LOG Dana F DRILLING Pacific DRILLING Marl M SAMPLIN SPT	CATION Point COMP Drillin EQUIF 15	PANY Ig PMEN		ST BC	DRIN	111		DRILLIN Hollov BORING 6"	PROJEC WUMBER' Orange BORINGIDIC Works arbor Revitatilzation 2975 START FIN ISH 1/22/2019 Start 1/22/2019 G METHOD LOGGET w Stem Auger G. Sp au/GHIQ of the volution of any provisions of any Courty DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) 35 10.0
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	5 5 0 		1	15					2" - 3" AC FILL CLAYEY SAND (SC) & SANDY CLAY (CL), damp to moist, medium dense, olive to olive-gray, interbedded - Becomes clayier Becomes clayier NEAR SHORE DEPOSITS SILTY TO CLAYEY SAND (SC/SM), becomes olive-gray to gray CAPISTRANO FORMATION SILTY SAND (SP-SM), moist, medium dense, yellow to yellow-brown, w/ occasional gravels
TerraCos Consulting G	38	390	Murpl	t a Con hy Cany Califorr	on Ro	ad, S	-		THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SITE LO	CATION		ΓES	ST BC	DRIN	1721		ст NAME Point Ha	arbor Revitatilzation 2975 C Development Services START FINISH SHEET NO. This set of plans and sole/informs must be ked on the
Dana DRILLIN		PANY	,					DRILLIN	G METHOD LOGGED By MOC Public Charge of these plane who who who are an
Pacifi	<u>c Drillir</u>	ng						Hollov	N Stem Auger G. Spacifications SHALL NOT be held to permit or be an G. Spacifications SHALL NOT be held to permit or be an G. Spacification of any provisions of any County
DRILLIN Marl N		PMEN	IT					BORING 6"	DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft) 35 10.0 ▼ n/a Bulloing OFFICIAL
SAMPLI		HOD					NOTES		
SPT									
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
_		S	3	17			GS		SILTY SAND (SM), moist to wet, medium dense, olive-gray, w/ occasional gravels
-									- Harder drilling - Gravels
- 25	— —-15	0	4	59/11"			GS PI		SILT (ML) & FINE SAND (SC), moist, very dense, dark gray, interbedded, occasional cemented zones
-			-	39/11			0011		
30 -	20 		5	89/9"			GS		- Becomes Silty Sand (SM)
-									- Very hard drilling
35	25 								Practical refusal @ 35 feet. No free groundwater encountered at time of drilling.
TerraCo Consulting	38	890	Murp	sta Cor hy Cany , Califori	on Ro	ad, S	-		THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

LOC SITE LO			ΓES	ST BC	DRIN	. (' L		ст NAME Point Ha	arbor Revitat	tilzation	STAF	RT.	297		C Development Services APPROVED SHEET NO. is set of plans and specifications must be kept of	orks
Dana			,								1/2	2/2019		an	2010es. It is unlawful to arke any changes	or n
DRILLIN									G METHOD	~~					or OC Public Vice ECKEPEIByent Services Orange County. The stamping of these plan optimistions SHALL NOT be held to permit or be CHNQof the violation of any provisions of any Ci	an
Pacifi DRILLIN	<u>C Drillin</u> G EQUIR	ng PMEN	Т						w Stem Auge	TOTAL DEPT	H (ft)	GROUN		spaulic (ft) D	DEPTH/ELEV. GROUND WATER (ounty (ft)
Marl M								6"		41		7.5			In/a BUILDING OFFICIAL	
SAMPLI	NG MET	HOD					NOTES	8								
SPT								1								_
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG		DESCF	RIPTI	ON AND	CLAS	SIFICA	ATION	
-	 5								2" - 3" AC <u>FILL</u> SILTY TC		AND	(SM/SC	;), dam	p, med	lium dense, olive	-
- 5 -		S	1	22					<u>FILL</u> SILT (ML) , damp, me	dium	dense, g	gray, w	/ siltsto	one chunks	_
- - 10 -	0 5	S	2	79/8"					- Large pi	ece of ceme	nted	siltstone	(move	d hole	4')	
- 15	 	S I	3	14					SILTY TO gray WEATHE	RED CAPIS	TRAN	(SM/SC	;), dam MATIO	<u>IN</u>	oist, medium dense,	-
									SAND TC mottled ye	O SILTY FIN ellow-brown MARY APPLIE	E SAI to ligh	ND (SM) nt olive-g), moist gray, w/	, loose / occas	-	
TerraCo Consulting	38	390	Murp	ta Cor hy Cany Califorr	on Ro	ad, S	-		OF THIS BO SUBSURFA LOCATION WITH THE PRESENTE	MARY APPLIE ORING AND A ACE CONDITI S AND MAY (PASSAGE OF ED IS A SIMPI NS ENCOUNT	AT TH ONS I CHAN F TIME LIFICA	E TIME (MAY DIF GE AT TI E. THE D ATION OI	of Dril Fer At His Loo Data	LING. OTHE CATION	FIGURE B-4 a	

SITE LO Dana DRILLIN Pacifi DRILLIN Marl I	CATION Point IG COMP C Drillir IG EQUIP	PANY ng PMEN	,	ST BC	DRIN	111		DRILLIN Hollov BORING 6"	PROJEC WUMBERT Orange BORINGIDIC Works arbor Revitatilzation 2975 START FIN ISH 1/22/2019 This set or plans and specifications must be kapt on the 1/22/2019 G METHOD LOGGED W Stem Auger G. Spaulicity of the sampling of these plans DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) Total DEPTH (ft) GROUND ELEV (ft) Total DEPTH (ft)
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
-	 15	S	4	9			GS PI		- Becomes Clayey Sand (SC)
- 25 - - -	 20	S	5	50/4"			GS		CAPISTRANO FORMATION SAND TO SILTY FINE SAND (SM), damp, very dense, olive-gray to gray, interbedded, w/ occasional gravels - Cemented - Hard drilling - Interbedded siltstone (ML) & sandstone (SM)
30 - - -	 25								- Very hard drilling
									- Cemented zone 34' to 35' - Cemented zone 37' to 39'
TerraCo Consulting	38	390	Murp	sta Cor hy Cany , Califorr	on Ro	ad, S	-		THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

		- -			אוסר	1/ 1		CT NAME					PROJEC	NUMB	ERI OrangeBORINGIBLIC WORKS
			IES	ST BC	JRII	NG	Dana	Point Ha	arbor Revita	atilzation			2975		OC Development Services
	OCATION	I									STAR			ISH This set	of plans and specifications must be kept on the
Dan	a Point	ΡΔΝΥ	,						G METHOD		1/2	2/2019			Tioes. It is unlawfub to make any changes or na to these plans without written permission . Public CHECKEP By ent Services a County. The stamping of these plan
									w Stem Aug	ner			G Sr	of Orang specifica	ge County. The stamping of these plan ations SHALL NOT be held to permit or be an of the violation of any provisions of any County
DRILL	ific Drilli ING EQUI	PMEN	IT						DIA. (in)	TOTAL DEP	TH (ft)	GROUN	D ELEV (f	DEP	HIELEV. GROUND WATER (ft)
	1 M5							6"		41		7.5		IĮĮn	/a_BUILDING OFFICIAL
	LING MET -	HOD					NOTES	6							
SP1								1							
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG		DESC	RIPTIO	ON AND	CLASSI	FICATIO	DN
_	-	S	6	74											
-	35 								Bottom drilling.	of hole @ 41	feet. N	lo free g	ıroundwa	ter enco	ountered at time of
45	_														
-	 40														
-	_														
50 _	_														
-	<u>-45</u>														
- - - - 55															
GDCLOGMT.G	-														
TGG_METRIC_LOG(3) 2975.GPU GDCLOGMT.GDT 8/14/19	50 														
	3	890	Murp	sta Cor hy Cany , Califori	on Ro	oad, S			OF THIS E SUBSURF LOCATIO WITH THE PRESENT	IMARY APPLI BORING AND FACE CONDIT NS AND MAY E PASSAGE C FED IS A SIMF DNS ENCOUN	AT THI TONS I CHAN F TIME PLIFICA	E TIME (MAY DIF GE AT TI E. THE [ATION OF	OF DRILLI FER AT O HIS LOCA DATA	NG. OTHER ATION	FIGURE B-4 c

SITE LO	CATIO	N	ΓES	ST BC	RIN	\//		ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services START FINISH SHEET NO. This set of plans and soldifications must be keet on the
Dana DRILLIN Pacifi DRILLIN Marl N	G CON <u>C Drill</u> G EQU	IPANY							1/23/2019 1/23
SAMPLI SPT		тнор					NOTES		
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									2" - 3" AC / 3" Class II
	5 		1	4					FIL CLAYEY SAND (SC) & SANDY CLAY (CL), damp, medium stiff, olive-gray, mix - Becomes mostly olive Sandy Clay (CL)
TerraCo Consulting	3	890	Murp	sta Cor hy Cany , Califorr	on Ro	oad, S			THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

			FES	ST BC	DRIN	. / ` I		ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services
	Point								START FINISH SHEET NO. This set of plans and specifications much be kept on the 1/23/2019 1/26/2019s. Its underword official control of the set
	IG COMF	PANY						DRILLIN	G METHOD LOGGED BY OC Public CHECKED By Motor Vince Vinces
_Pacifi	ic Drillir IG EQUI	ng						Hollow	N Stem Auger G. Spacifications Stall NOT be held to permit or be an G. Spaulic Moder the violation of any provisions of any County
		PMEN	IT						DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft)
Marl	M5 NG MET						NOTES	6"	40 10.0 Interview 10.0
SPT								,	
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
-		s S	2	19	0				WEATHERED CAPISTRANO FORMATION SAND (SP-SM) & SILT (ML), damp, medium dense, olive and dark gray, interbedded
- - 25 -	 15 	S	3	19			GS		CAPISTRANO FORMATION SAND (SP-SM) & SILT (ML), damp, medium dense to dense, olive and dark gray, interbedded w. occasional cemented zones - Harder drilling cemented zone
									- Harder drilling cemented zone
- 30	_	S	4	53			GS		- Becomes Silty Sand (SM)
-	_								- Harder drilling
14/19 	25 								- Cemented zone
11cc_metric_tod(s) 28/s.gev dbccoom.cou 8/14/19	_								- Hard drilling Bottom of hole @ 40 feet sanding in. No free groundwater encountered at time of drilling.
TerraC	38	390	Murp	ta Con hy Cany , Califorr	on Ro	ad, S	-		THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SITE LO	CATION	N	ΓES	ST BC	RIN	17 1		ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services START FINISH SHEET NO. This set of plans and specifications must be keet on the
Dana DRILLIN			,					DRILLIN	G METHOD LOGGED By Concerning States and Sta
Pacifi	<u>c Drilli</u>	ing						Hollov	N Stem Auger G. Spaulding of the violation of any provisions of any Courty
Marl N		PMEN						BORING 6"	DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft) 36 10.0 ▼ n/a BUILDING OFFICIAL
SAMPLI		THOD					NOTES		
SPT				_					
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
-									2" - 3" AC <u>FILL</u> SANDY CLAY (CL) & CLAYEY SAND (SC) , damp, loose to medium dense, dark gray and olive, w/ occasional gravels
	5 								
- 	0 0		1	9					- Becomes moist to wet
- 15	5 5 								
TerraCo	3	890	Murp	ita Cor hy Cany Califorr	on Ro	ad, S	-		THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

LOG OF TEST BORING Dana Point Harbor Revitatilization 2975 OC Development Fee SITE LOCATION START FINISH Appendix SHEET N Dana Point 1/23/2019 1/23/2019 1/25/2019 DRILLING COMPANY DRILLING METHOD LOGGED BY MC Public Charles of the color of the follow Stem Auger G. Spauldeing the follow of the color of the follow Stem Auger DRILLING EQUIPMENT BORING DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV GROUND V Marl M5 6" 36 10.0 ¥ n/a Dulows of the Sterio of the follow of the color of the color of the follow of the color of the follow of the color of the follow of the color of the color of the follow of the color of the co	NO. ust be kept on the pany changes or an permission ent Services tese plan permit or be an ons of any County
Dana Point 1/23/2019 1/2	any changes or an permission ent Services nese plan permit or be an ons of any County
Pacific Drilling Overage Could Orange Could Orange Could DRILLING EQUIPMENT Hollow Stem Auger G. Spaulcing of the bield of any provide the location of any provide the loca	permit or be an ons of any County
DRILLING EQUIPMENT BORING DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/// LGROUND / High Habradae Mari M5 6" 36 10.0 ¥ n/a Depth// LGROUND elev (ft) SAMPLING METHOD SPT NOTES (‡) HAL NOTES Description and classification Description and classification	WATER (ft)
Mari M5 6" 36 10.0 ▼ n/a_Building official SAMPLING METHOD SPT NOTES NOTES In/a_Building official (¥) Had Tabetabase NOTES (¥) Had Tabetabase NOTES (¥) Had Tabetabase (¥) </td <td></td>	
SAMPLING METHOD SPT NOTES SPT Image: Second construction (t) I	
DEPTH (ft) ELEVATION (ft) SAMPLE TYPE SAMPLE TYPE SAMPLE TYPE SAMPLE TYPE SAMPLE TYPE SAMPLE TYPE SAMPLE NO. (ft) MOISTURE (%) (%) (%) (%) (%) (%) (%) (%)	
CAPISTRANO FORMATION CAPISTRANO FORMATION Silt (ML) & FINE SANDY CLAY (CL), damp, very dense, dark gray, interbedded, w/ occasional cemented zones	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Bit Difference -35 -25 4 72/10" Practical refusal @ 36 feet. No free groundwater encountered at time o drilling. Practical refusal @ 36 feet. No free groundwater encountered at time o drilling. Practical refusal @ 36 feet. No free groundwater encountered at time o drilling. Image: Difference -<	

I OC OF TEST BODINO	PROJECT N			NUMBERT Orange ORINGIDIIC WORKS
LOG OF TEST BORING	Dana Poir	nt Harbor Revitatilzation	2975	OC Development Services APPROVED SH SHEET NO.
Dana Point		START 1/23/201		SHEEINO. This set of plans and specifications must be kept on the 29/2010es. It is unlawful to parke any changes or anerations to these plans without written permission
DRILLING COMPANY	DRI	LLING METHOD	LOGGED	Brom OC Public VCHECKEDEB Went Services
Pacific Drilling DRILLING EQUIPMENT			G. Spa	specifications SHALL NOT be held to permit or be an USCHOOD of the violation of any provisions of any County
Marl M5	ВО 6"		· · ·	DEPTH/ELEV GROUND WATER (ft) Hadi Tabatabaee
SAMPLING METHOD	NOTES	10.0	·	
SPT				
DEPTH (ft) ELEVATION (ft) SAMPLE TYPE SAMPLE NO. SAMPLE NO. PENETRATION RESISTANCE (BLOWS/ft) DRY DENSITY (pcf) MOISTURE (%)	OTHER TESTS GRAPHIC	DESCRIPTION AN	D CLASSIFI	CATION
		2" - 3" AC / 3" Class II Base		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		FILL CLAYEY SAND (SC) & SANDY C olive & gray, mix WEATHERED CAPISTRANO FO CLAYEY SAND (SC), moist, med iron oxide staining	RMATION	
15 -5 2 14 15 -5 2 14 16 - - - 17 - - - 18 - - - 19 - - - 14 - - - 14 - - - 14 - - - 14 - - - 15 - - - 14 - - - 15 - - - 16 - - - 17 - - - 18 - - - 19 - - - 10 - - - 10 - - - 10 - - - 10 - - - 11 - - - 14 - - - 14 - - - 15 - - - 16 - - - 17 - - <		- Gravels - Rock in tip of sampler, poor reco	-	
TerraCosta 3890 Murphy Canyon Road, S San Diego, California 92123	-	C. THIS SUMMARY APPLIES ONLY AT OF THIS BORING AND AT THE TIME SUBSURFACE CONDITIONS MAY DI LOCATIONS AND MAY CHANGE AT WITH THE PASSAGE OF TIME. THE PRESENTED IS A SIMPLIFICATION O CONDITIONS ENCOUNTERED.	OF DRILLING FFER AT OTH THIS LOCATI DATA	G. HER ION FIGURE B-7 a

LOC SITE LO			ΓES	ST BC	DRIN			ст NAME Point Ha	arbor Revitatilzation	STAR		2975		C Development Services Approver
	Point		,							1/23	3/2019			t of plans and specifications must be kept on the Des. It is unlawfub to parke any changes or ons to these plans without written permission
DRILLIN									G метнор v Stem Auger			GS		C Public VCHECKED By ent Services ge County. The stamping of these plan actions SHALL NOT be held to permit or be an Gof the violation of any provisions of any County
Pacifi DRILLIN	IG EQUI	PMEN	іт					BORING	DIA. (in) TOTAL DEPTH	l (ft)	GROUNI	DELEV	(ft) DEP	THIELEV. GROUND WATER (ft)
Marl I SAMPLI							NOTE	6"	46		10.0		⊻ r	n/a_BUILDING OFFICIAL
SPT		HOD					NOTES	>						
	4 (ft)	ΥPE	ġ	10N ACE	Ł	щ		0						
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRI	IPTIC)n and	CLASS	SIFICATI	ON
-	_	S	3	36					- Poor recovery					
- - 25	 15								CAPISTRANO FORM/ SILTY SAND TO SANI yellow iron oxide stainir	D (SF	-SM) , n	– – – – noist, vi led	– – – – ery dens	— — — — — — — — — —
-	_	S	4	72			GS		- Hard drilling					
- 	 20 													
- 35	 25 	S I	5	87/10"					- w/ occasional dark gra	ay cla	ay chunł	ks		
	_								- Very hard drilling					
TerraCo Consulting	38	890	Murp	ta Cor hy Cany Califori	on Ro	ad, S	-		THIS SUMMARY APPLIES OF THIS BORING AND AT SUBSURFACE CONDITIC LOCATIONS AND MAY CI WITH THE PASSAGE OF PRESENTED IS A SIMPLI CONDITIONS ENCOUNTE	T THE DNS M HANG TIME IFICA	E TIME C MAY DIFF GE AT TH . THE D TION OF	OF DRILI FER AT HIS LOC DATA	LING. OTHER ATION	FIGURE B-7 b

			ΓES	ST BC	DRIN			ст NAME Point Ha	arbor Revitatilzation 2975 OC Development Services START FINISH SHEET NO.
Dana DRILLIN		PANY	,						1/23/2019 1/23/2019 <t< td=""></t<>
Pacifi								Hollo	w Stem Auger G. Spacifications Stall NOT be held to permit or be an G. Spacifications of any provisions of any County
DRILLIN Marl N		PMEN	IT					BORING 6"	DIA. (in) TOTAL DEPTH (ft) GROUND ELEV (ft) DEPTH/ELEV. GROUND WATER (ft) 46 10.0 ▼ n/a Building OFFICIAL
SAMPLI		HOD					NOTES		
SPT									
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
- - 45	 	()	6	71			GS		- Hard drilling SAND (SM), moist, very dense, gray
- - 50	 40								Bottom of hole @ 46 feet. No free groundwater encountered at time of drilling.
- 55	 45 								
TerraCo Consulting	38	390	Murp	ta Cor hy Cany Califorr	on Ro	ad, Si	-		THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

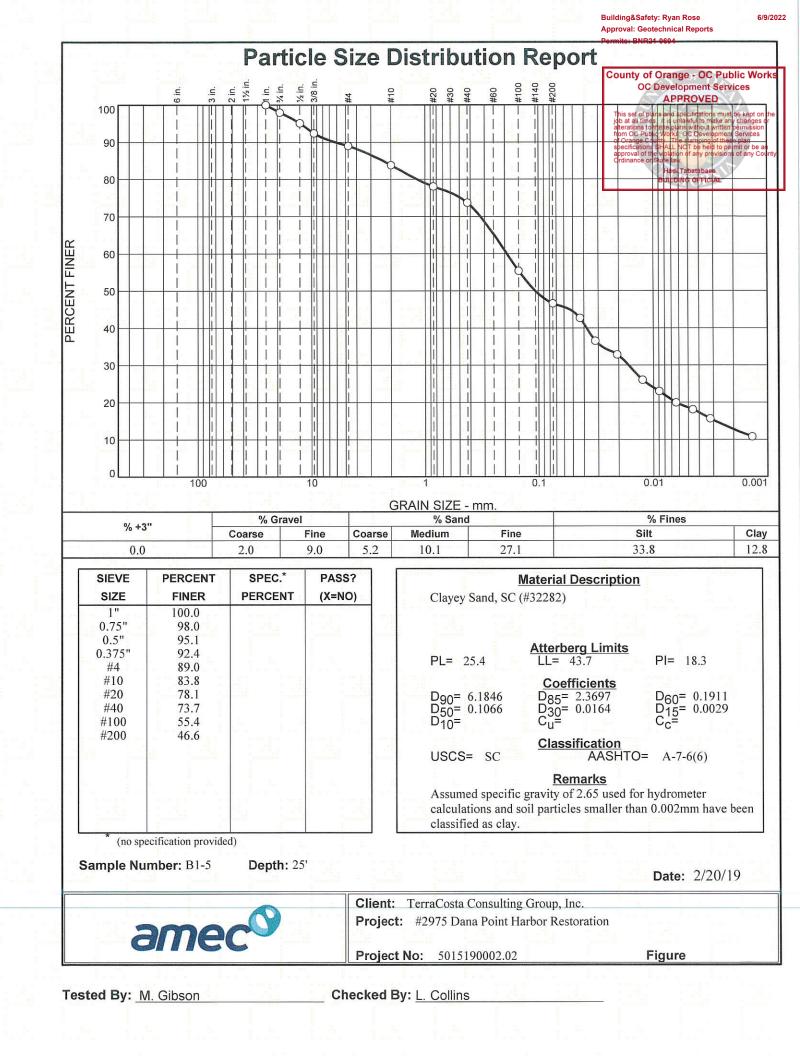
County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or state law. Heid Tabatabase BUILDING OFFICIAL

6/9/2022

APPENDIX C

LABORATORY TEST RESULTS





				111111]anaa 		andi jam	Approval: Geotechnical Reports Permits: BNR21-0604	6/9
			GRAIN S	SIZE DISTI	RIBUTIC	ON TES	T DATA	County of Orange - OC OC Development S	
Client: TerraC	Costa Consult	ing Group	Inc					APPROVED	
Project: #297:								This set of plans and specifications job at all times. It is unlawful to mal alterations to these plans without w from OC Public Works, OC Develop	ritten permission
Project Numb			storation					from OC Public Works, OC Develop of Orange County. The stamping o specifications SHALL NOT be held	ment Services these plan to permit or be ar
Depth: 25'	el. 3013190	002.02			Samp	la Numb	er: B1-5	approval of the violation of any prov Ordinance or State law.	visions of any Cou
Vaterial Desc	rintion: Clas	New Sand S(- (#32282)		Jamp	ie Numb	CI . D1-5	Hadi Tabatabaee BUILDING OFFICIA	
Date: 2/20/19		PL: 2:			LL: 43	7		PI: 18.3	1.1
USCS Classif	ication: SC	1 h , 2.					sification: A-		
		d specific a	ravity of 2 64	used for h				particles smaller than 0.002	mm
resung Kema		en classified		used for in	yuronnete	a calcula		particles smaller than 0.002	
Tested by: M.		en classifier	i as ciay.		Check	ed by I	. Collins		
	. 0103011			Sieve	Test Da	States States	. comis		
									a service service
Sieve Opening Size	Percent Finer								
1"	100.0								
0.75"	98.0								
0.5"	95.1								
0.375"	92.4								
#4	89.0								
#10	83.8								
#20	78.1								
#40	73.7								
#100	55.4								
#200	46.6								
Dry weight a Tare weight Hygroscopic Table of compo Temp., deg. Comp. corr.: Meniscus corre Specific gravity Hydrometer typ	g #10 based of ometer samp ioisture correct and tare = 7 md tare = 7 = 2 moisture = 3 posite correction C: 1 - ection only = 1 y of solids = 2 poe = 152H	upon comple le =70.33 ction: 8.74 7.14 6.27 .1% on values: 9.1 3.5 0.0 2.65	20.3 -3.0 L = 16.294964	20.9 -2.8	21. -2.		22.6 -2.5		
Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	к	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	
1.00	19.7	38.0	34.8	0.0137	38.0	10.1	0.0434	42.7	
2.00	19.7	33.0	29.8	0.0137	33.0	10.9	0.0319	36.6	
5.00	19.7	30.0	26.8	0.0137	30.0	11.4	0.0207	32.9	
15.00	19.6	24.5	21.2	0.0137	24.5	12.3	0.0124	26.1	
30.00	19.6	22.0	18.7	0.0137	22.0	12.7	0.0089	23.0	
60.00	19.7	19.5	16.3	0.0137	19.5	13.1	0.0064	20.0	
120.00	19.7	18.0	14.8	0.0137	18.0	13.3	0.0046	18.1	
250.00	19.7	16.0	12.8	0.0137	16.0	13.7	0.0032	15.7	
1440.00	19.8	12.0	8.8	0.0137	12.0	14.3	0.0014	10.8	

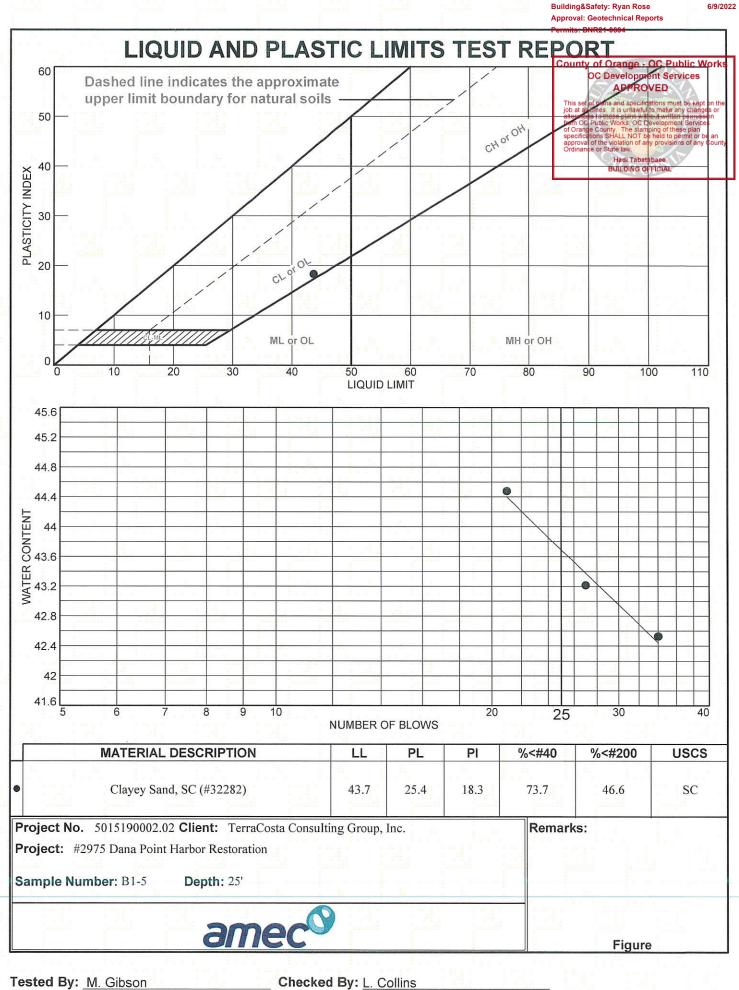
_ AMEC

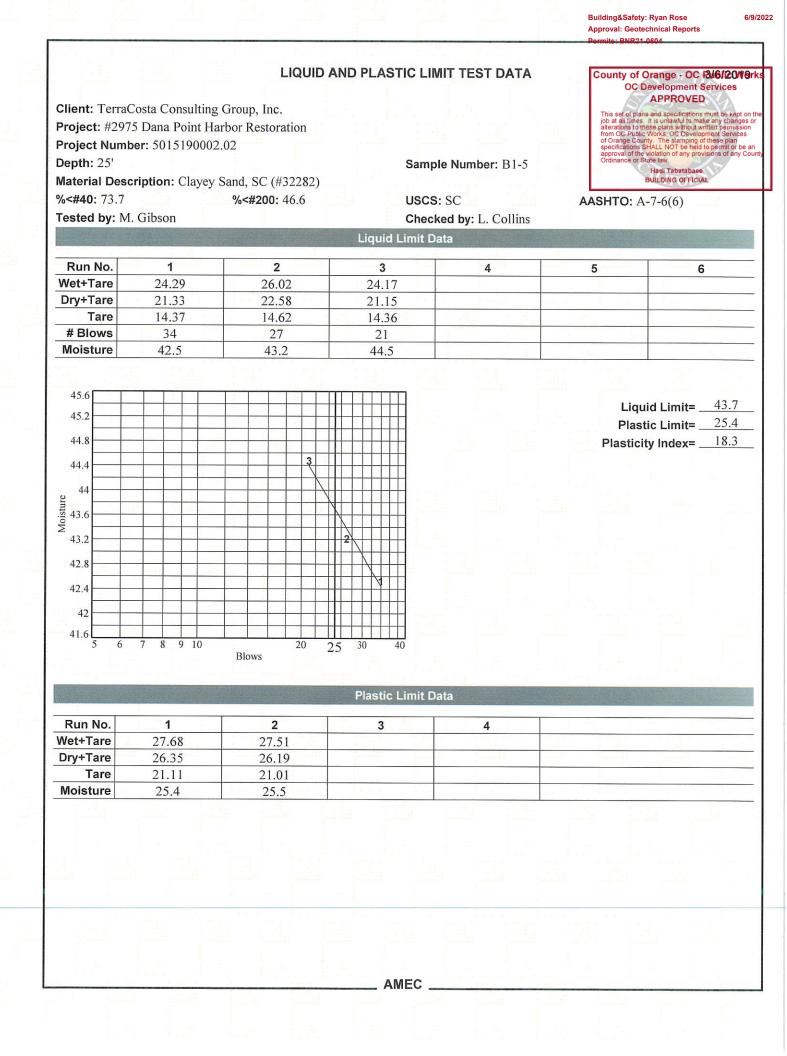
Rose 6/9/2022 Il Reports

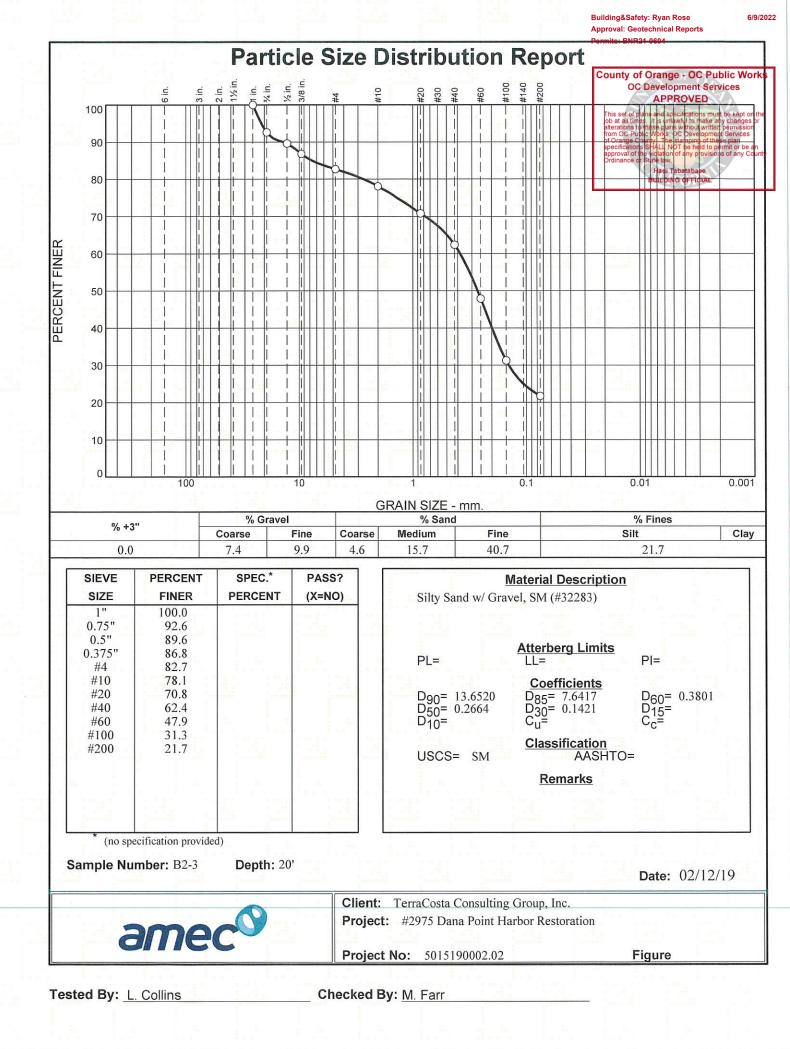
	and the second			F	ractional (Componer	nts					
	1	Grave				Sand			Count	y of Orange - (oc 5Ю€брте	C Public Works	s
Cobbles	Coarse	Fine	Tota	l Coa	rse Med	dium	Fine	Total	Silt	CARPRO	/EDTotal	
0.0	2.0	9.0	11.0	5.2	2 10	0.1	27.1	42.4	33.8 his se	t of plans and specifical times. It is unlawful	tions must be kept on the o make any enanges or	•
									of Oran specific	ations SHALL NOT be	eut written permission evelopment Services ing of these plan held to permit or be an provisions of any Count	y
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D50	D ₆₀	D ₈₀	D ₈₅	Hani Tabata BUILONG OF	BICIAL D95	
t stiller Same	i.i.i.i	0.0029	0.0064	0.0164	0.0379	0.1066	0.1911	1.1726	2.3697	6.1846	12.5588	1
Fineness Modulus 1.55												

A	M	F	C
		-	~

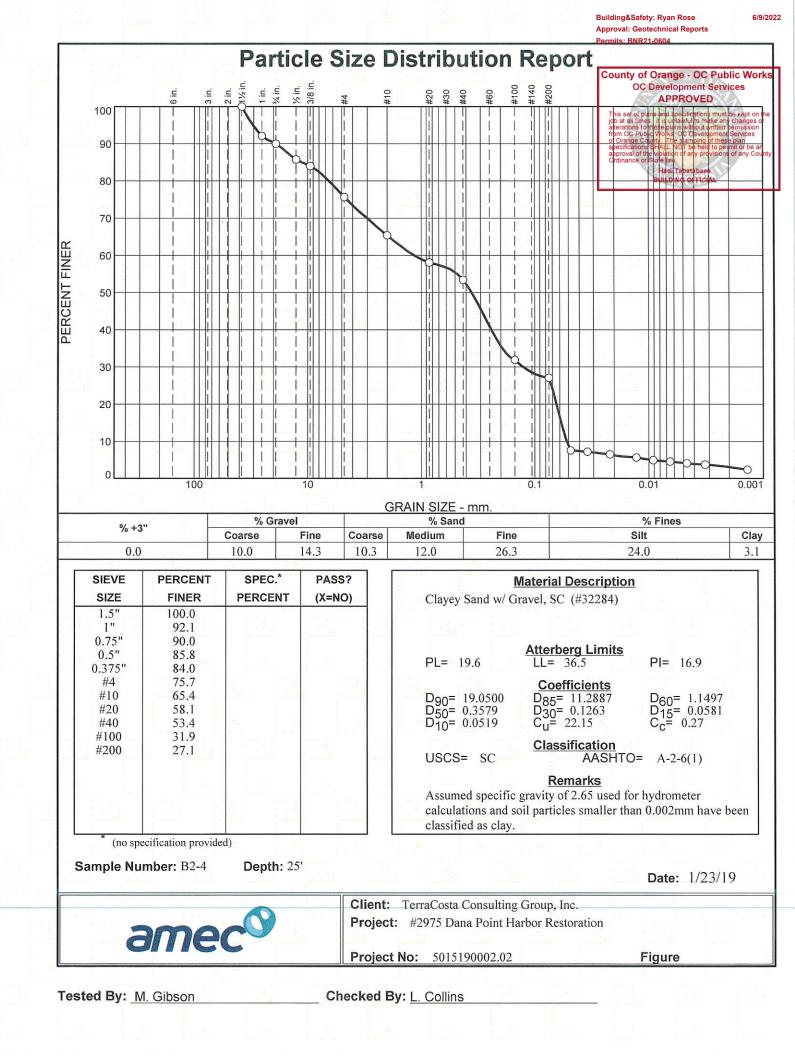
Building&Safety: Ryan Rose Approval: Geotechnical Reports







Client: Terra			up, Inc.		E DISTRIE	BUTION	I TEST DA	ATA		of Orange - OC Developm APPRC of plans and specifi- times. It is unlawfu- ns to these plans wi Public Works. OC I e County. The star titons SHALL NOT the e County. The star titons SHALL NOT to of the violation of a ce or State law.	ent Se VED
Project: #29			Restoratio	on					from OC of Orang	Public Works, OC I je County. The star	Developm nping of t
Project Num	ber: 50151	90002.02					N	22.2	specifica approval Ordinand	itions SHALL NOT to of the violation of a se or State law.	e held to ny provis
Depth: 20'			/ Constal 4			Sample	Number: E	32-3		Hadi Taba BUILDING C	tabaee
Material Des Date: 02/12/		sitty Sand W	// Gravel, a	SIVI (#3228	83)					Bolebillo	Tion
USCS Class		M									
Tested by: L						Checked	d by: M. Fa	rr			
					Sieve Te	of the local division of the local divisiono					
Sieve											
Opening	Percent										
Size	Finer										
1"	100.0										
0.75"	92.6										
0.5" 0.375"	89.6 86.8										
0.375 #4	80.8 82.7										
#4	78.1										
#20	70.8										
#40	62.4										
#60	47.9										
#100	31.3										
#200	21.7										
				Fr	actional C	ompone	ents				in the second
Cobbles		Gravel				Sand				Fines	
Cobbles	Coarse	Fine	Total	Coar		ium	Fine	Total	Silt	Fines Clay	-
Cobbles	Coarse 7.4		Total 17.3	Coar 4.6		ium		Total 61.0	Silt		-
		Fine				ium	Fine	and the second second	Silt		-
		Fine				ium	Fine	and the second second	Silt		2
0.0	7.4	Fine 9.9	17.3	4.6	5 15	ium .7	Fine 40.7 D ₆₀	61.0		Clay	2
0.0	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	T 2 2
0.0 D ₅	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2
0.0	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D ₄₀	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	
0.0 D5 Fineness Modulus	7.4	Fine 9.9	17.3	4.6 D ₃₀	D40 0.1989	ium .7 D ₅₀	Fine 40.7 D ₆₀	61.0	D ₈₅	Clay D ₉₀	2



				IZE DISTF	RIBUTIC	N TEST	DATA	County of Orange - OC OC Development APPROVEI	Services
	Costa Consult							This set of plans and specifications job at all times. It is unlawful to ma	s must be kept
	75 Dana Point		toration					alterations to these plans without v from OC Public Works, OC Develo	vritten permissi opment Service
1.77	ber: 5015190	002.02						of Orange County. The stamping specifications SHALL NOT be held approval of the violation of any pro-	of these plan to permit or be visions of any
epth: 25'					Samp	le Numbe	r: B2-4	Ordinance or State law. Hadi Tabatabae	
		yey Sand w/	Gravel, SC (#	¥32284)				BUILDING OFFICE	
ate: 1/23/19		PL: 19	9.6		LL: 36	.5		PI: 16.9	
SCS Classif							ification: A-2		
esting Rema		ed specific g een classified	the second second	used for hy	/dromete	r calculat	ions and soil	particles smaller than 0.00	2mm
ested by : M		on oldssinee	t ds oldy.		Check	ked by: L.	Collins		
				Sieve	Test Da	ta			
Sieve	_								
Opening Size	Percent Finer								
1.5"	100.0								
1.5	92.1								
0.75"	90.0								
0.75	85.8								
0.375"	84.0								
#4	75.7								
#10	65.4								
#20	58.1								
#40	53.4								
#100	31.9								
#200	27.1								
				Hydrome	eter Test	Data			
Veight of hydi ygroscopic n	rometer samp moisture corre nt and tare = 8 and tare = 8	le =194.09 ection: 33.21 31.57 25.85	te sample = 65						
Dry weight a Tare weight Hygroscopic able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer	c moisture = 2 posite correction c: 1 rection only = 1 ty of solids = 2 pe = 152H reffective dept	on values: 9.1 -3.5 0.0 2.65 th equation: I	20.3 -3.0 L = 16.294964	20.9 -2.8 164 x Rm	21. -2.	8	22.6 -2.5		
Dry weight a Tare weight Hygroscopic able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty	c moisture = 2 posite correction c: 1 rection only = 1 ty of solids = 2 pe = 152H reffective dept Temp.	on values: 9.1 -3.5 0.0 2.65	-3.0 L = 16.294964 Corrected	-2.8 164 x Rm	-2.	8 Eff.	-2.5 Diameter	Percent Finer	
Dry weight a Tare weight Hygroscopid able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer Elapsed Time (min.)	c moisture = 2 posite correction C: 1 rection only = 1 ty of solids = 2 pe = 152H effective dept Temp. (deg. C.)	on values: 9.1 -3.5 0.0 2.65 th equation: I Actual Reading	-3.0 L = 16.294964 Corrected Reading	-2.8 164 x Rm K	-2. 1 Rm	8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
Dry weight a Tare weight Hygroscopid able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer Elapsed Time (min.) 1.00	c moisture = 2 posite correction C: 1 rection only = 1 ty of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.6	on values: 9.1 -3.5 0.0 2.65 th equation: I Actual Reading 25.0	-3.0 L = 16.294964 Corrected Reading 21.7	-2.8 164 x Rm K 0.0137	-2. 1	8 Eff.	-2.5 Diameter		
Dry weight a Tare weight Hygroscopic able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00	c moisture = 2 posite correction C: 1 rection only = 1 ty of solids = 2 pe = 152H effective dept Temp. (deg. C.)	on values: 9.1 -3.5 0.0 2.65 th equation: I Actual Reading	-3.0 L = 16.294964 Corrected Reading	-2.8 164 x Rm K	-2. n Rm 25.0	8 Eff. Depth 12.2	-2.5 Diameter (mm.) 0.0479	Finer 7.5	
Dry weight a Tare weight Hygroscopid able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer Elapsed Time (min.) 1.00	c moisture = 2 posite correction c: 1 rection only = 1 ty of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.6 19.6	on values: 9.1 -3.5 0.0 2.65 th equation: I Actual Reading 25.0 24.0	-3.0 L = 16.294964 Corrected Reading 21.7 20.7	-2.8 164 x Rm K 0.0137 0.0137	-2. Rm 25.0 24.0	8 Eff. Depth 12.2 12.4	-2.5 Diameter (mm.) 0.0479 0.0341	Finer 7.5 7.2	
Dry weight a Tare weight Hygroscopic able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00	c moisture = 2 posite correction C: 1 rection only = 1 ty of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6	on values: 9.1 -3.5 0.0 2.65 th equation: I Actual Reading 25.0 24.0 22.0	-3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7	-2.8 164 x Rm K 0.0137 0.0137 0.0137	-2. Rm 25.0 24.0 22.0	8 Eff. Depth 12.2 12.4 12.7	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218	Finer 7.5 7.2 6.5	
Dry weight a Tare weight Hygroscopid able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00	c moisture = 2 posite correction C: 1 rection only = 1 ty of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6	on values: 9.1 -3.5 0.0 2.65 th equation: I Actual Reading 25.0 24.0 22.0 19.5	-3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7 16.2	-2.8 164 x Rm K 0.0137 0.0137 0.0137 0.0137	-2. Rm 25.0 24.0 22.0 19.5	8 Eff. Depth 12.2 12.4 12.7 13.1	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218 0.0128	Finer 7.5 7.2 6.5 5.6	
Dry weight a Tare weight Hygroscopid able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00	c moisture = 2 posite correction c: 1 rection only = 1 ty of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6 19.6	on values: 9.1 -3.5 0.0 2.65 th equation: I Actual Reading 25.0 24.0 22.0 19.5 17.5	-3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7 16.2 14.2	-2.8 164 x Rm K 0.0137 0.0137 0.0137 0.0137 0.0137	-2. Rm 25.0 24.0 22.0 19.5 17.5	8 Eff. Depth 12.2 12.4 12.7 13.1 13.4	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218 0.0128 0.0092	Finer 7.5 7.2 6.5 5.6 4.9	
Dry weight a Tare weight Hygroscopid able of comp Temp., deg. Comp. corr.: leniscus corr pecific gravit ydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	c moisture = 2 posite correction c: 1 rection only = 1 ty of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6 19.6 19.6	on values: 9.1 -3.5 0.0 2.65 th equation: I Actual Reading 25.0 24.0 22.0 19.5 17.5 16.5	-3.0 L = 16.294964 Corrected Reading 21.7 20.7 18.7 16.2 14.2 13.2	-2.8 164 x Rm K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	-2. Rm 25.0 24.0 22.0 19.5 17.5 16.5	8 Eff. Depth 12.2 12.4 12.7 13.1 13.4 13.6	-2.5 Diameter (mm.) 0.0479 0.0341 0.0218 0.0128 0.0092 0.0065	Finer 7.5 7.2 6.5 5.6 4.9 4.6	

Building&Safety: Ryan Rose

6/9/2022

AMEC

6/9/2022

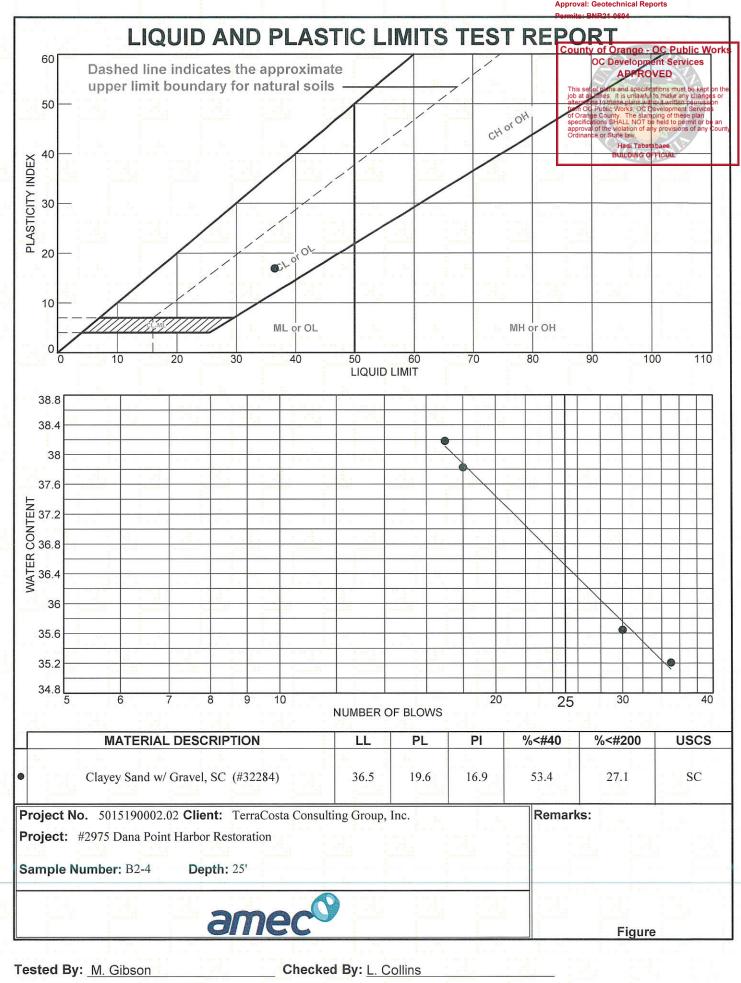
					actional	Componen	ll S				
	1.1.1.1.1	Grave			÷	Sand				Chillesopme	OC Public W ent Services
Cobbles	Coarse	Fine	Tota	I Coa	rse Mee	dium F	Fine	Total	SIt	CIAPPRO	
0.0	10.0	14.3	24.3	10.	3 12	2.0 2	26.3	48.6	24.0 This set of job at all ti	plans and specific mes . It is unlawful	ations must be kept to make any change out written permissi
									of Orange specificati approval of	County. The stam	evelopment Service: ping of these plan held to permit or be y provisions of any (
	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	Hadi Tabata Boligiong of	FICIAL D95
D ₅				0.1263	0.2415	0.3579	1.1497	6,5105	11,2887	19.0500	30.4481

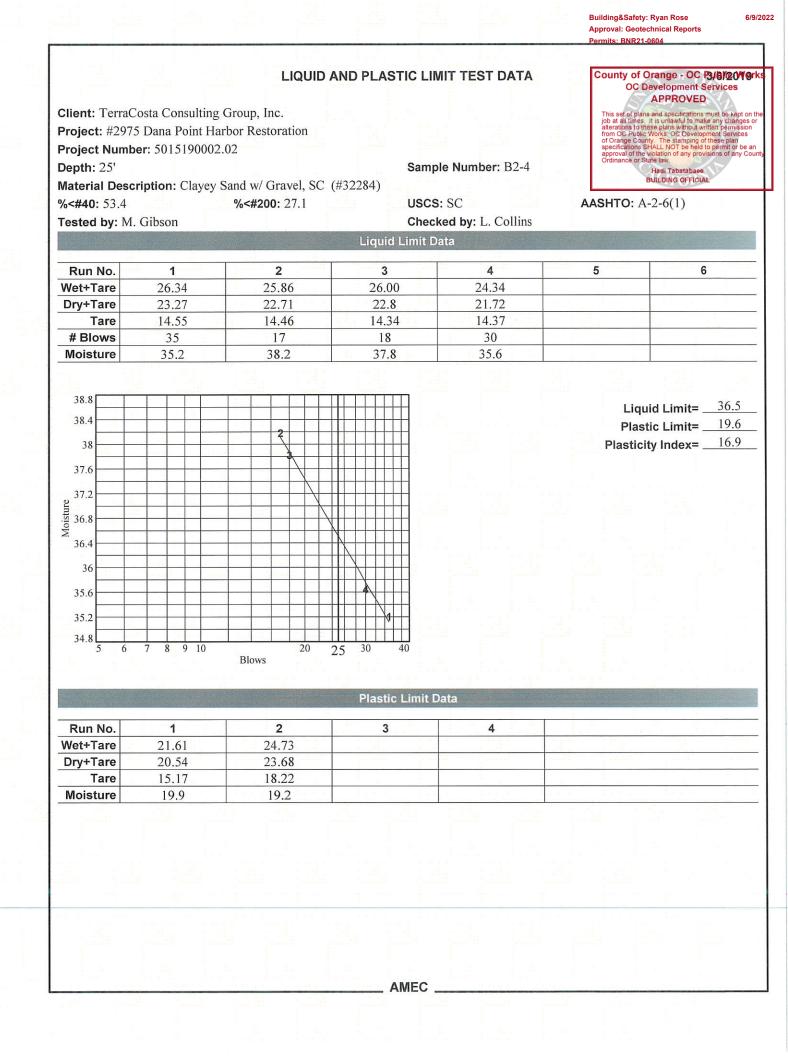
Fineness Modulus	c _u	C _C	
2.89	22.15	0.27	

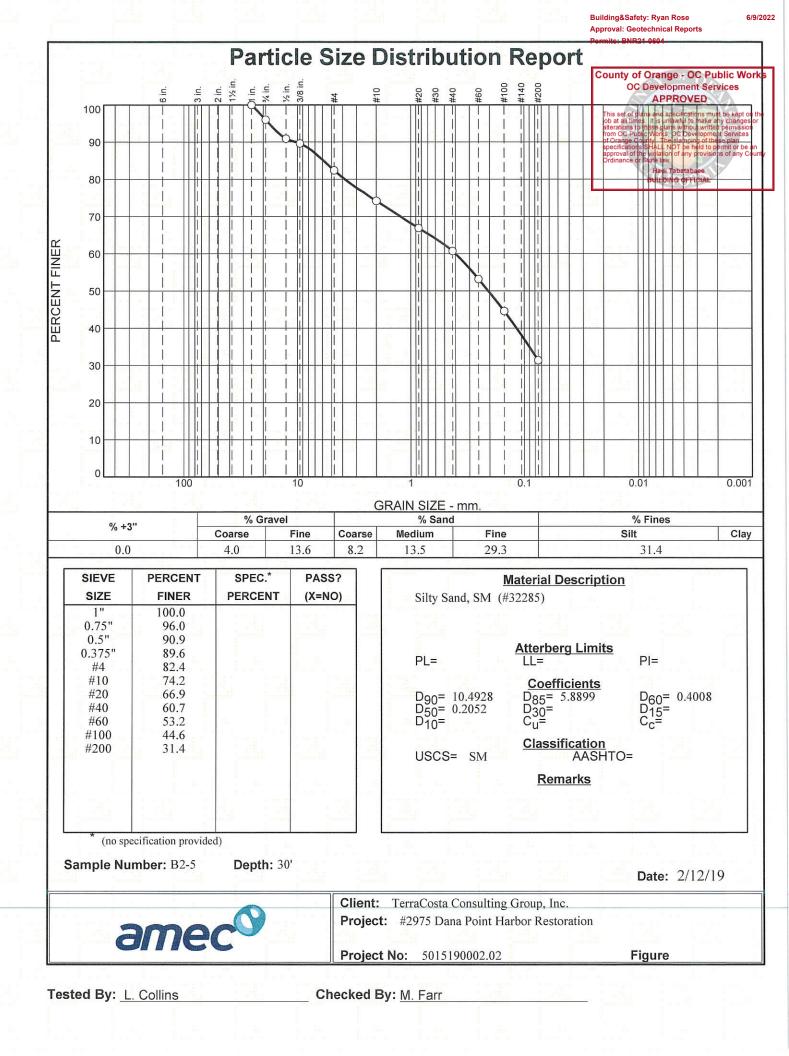
	 	AMEC		
1				



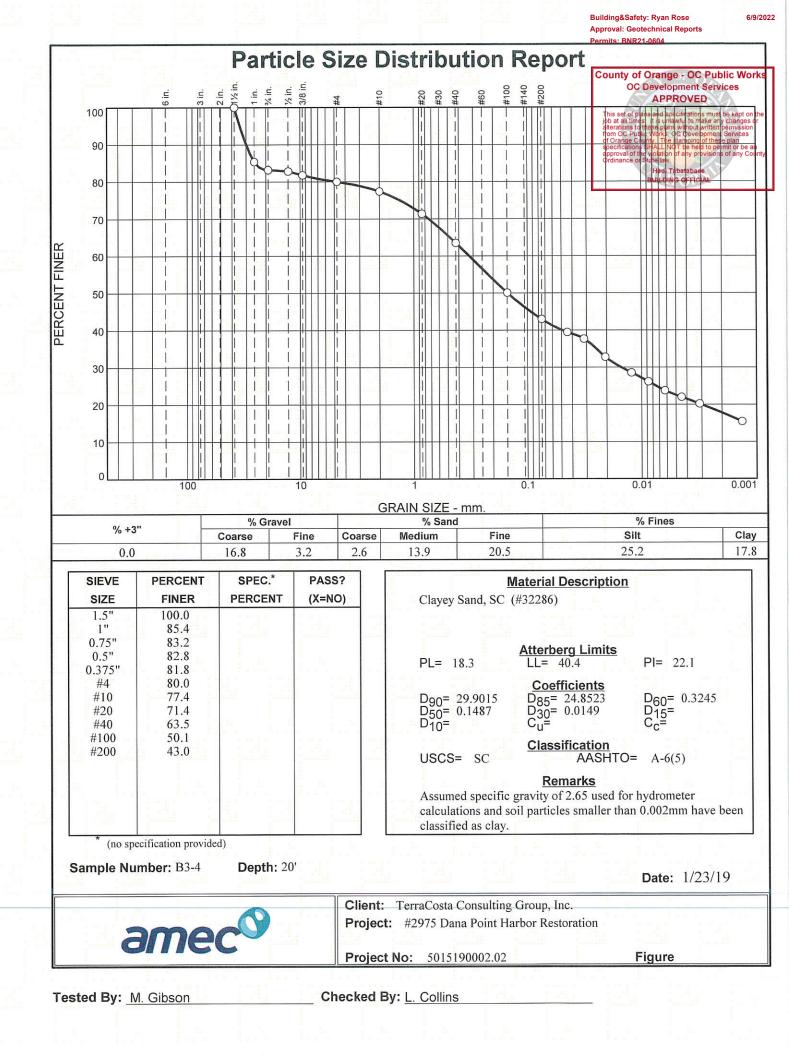
6/9/2022







			GR	AIN SIZI	E DISTRII	T NOITUE	EST DAT	A	County	of Orange - I OC Developme	OC3PLA/120V
ent: Terra	Costa Con	sulting Gro	un Inc						. /	APPRO	VED
			Restoratio	n					job at all t alteration	of plans and specifications. It is unlawful to these plans with Public Works, OC D	to make any chang out written permis
ject Num									specificat	ons SHALL NOT be of the violation of an	held to permit or I
pth: 30'						Sample N	umber: B2	-5	Ordinance	e or State law. Hadi Tabata	
terial Des	cription: S	ilty Sand,	SM (#3228	5)					4 - 4 - 4 19 - 19 - 19 - 19 - 19 - 19 - 19 - 19 -	BUILDING OF	
te: 2/12/19											
CS Classi		М				1	1				
sted by: L	. Collins		· · · ·		the Carl of Carl Street Street Street	Checked b	y: M. Farr	• • •			
					Sieve To	est Data					A State of the second
Sieve Opening	Percent										
Size	Finer										
1"	100.0										
0.75"	96.0										
0.5"	90.9										
0.375"	89.6										
#4	82.4										
#10	74.2										
#20	66.9										
#40 #60	60.7 53.2										
#00 #100	44.6										
#200	31.4										
				F	ractional C	componen	ts				
		Gravel			1 11	Sand				Fines	
Cobbles	Coarse	Fine	Total	Coar	se Mec		ine	Total	Silt	Clay	Total
0.0	4.0	13.6	17.6	8.2	2 13	3.5 2	9.3	51.0		·····	31.4
- 2.	1		1 14			D.	i	1. j	4.		
	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
De	210	515	20	230				3.8061			- 95
D ₅		-					0.4008	3 806			1 7 70 70
D ₅ Fineness					0.1169	0.2052	E an an an	5.8001	5.8899	10.4928	17.7952



			GRAIN S	SIZE DIST	RIBUTIO	ON TEST		County of Orange - OC P OC Development Ser	
Client: Terra	Costa Consul	ting Group,	Inc.					APPROVED	YZ.
Project: #29	75 Dana Poin	t Harbor Res	storation					This set of plans and specifications mu job at all times. It is unlawful to make a alterations to these plans without writte	n permissio
Project Num	ber: 5015190	002.02						from OC Public Works, OC Developme of Orange County. The stamping of th specifications SHALL NOT be held to p	ese plan permit or be a
Depth: 20'					Samp	le Numbe	er: B3-4	approval of the violation of any provisio Ordinance or State law.	ons of any C
laterial Des	cription: Cla	yey Sand, SO	C (#32286)					Hadi Tabatabaee BUILDING OFFICIAL	<i>y</i>
Date: 1/23/1	9	PL: 1	8.3		LL: 4(0.4		PI: 22.1	
JSCS Class	ification: SC				AASH	ITO Class	ification: A-	6(5)	
esting Rem				used for h	ydromete	er calculat	tions and soil	particles smaller than 0.002r	nm
ested by: N		een classified	l as clay.		Checl	ked by: L	. Collins		
				Sieve	e Test Da	Contractor and the state			
Sieve							114.1		÷
Opening Size	Percent Finer								
1.5"	100.0								
1.5	85.4								
0.75"	83.2								
0.5"	82.8								
0.375"	81.8								
#4	80.0								
#10	77.4								
	77.4 71.4								
#10									
#10 #20	71.4								
#10 #20 #40	71.4 63.5								
#10 #20 #40 #100 #200	71.4 63.5 50.1 43.0	ial passing #	10 te sample = 7	Hydrom(eter Test	: Data			
#10 #20 #40 #100 #200 Hydrometer to Percent passi Veight of hydrometer to Moist weig Dry weight Tare weigh Hygroscopi Table of comg Temp., deg Comp. corr. Meniscus cor Specific gravi	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture correct and tare = $\frac{7}{20}$ and tare = $\frac{7}{20}$ is consisture = 2 consiste correction . C: 1 : rection only = 1	upon comple le =66.01 ection: 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65	20.3 -3.0	7.4 20.9 -2.8	21. -2.	.3	22.6 -2.5		
#10 #20 #40 #100 #200 lydrometer to bercent passive Veight of hyco lygroscopic i Moist weigi Dry weight Tare weigh Hygroscop able of comp table of comp temp., deg Comp. corr. leniscus cor pecific gravi lydrometer to Hydrometer	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture corrected thand tare = $\frac{7}{7}$ and tare = $\frac{7}{7}$ and tare = $\frac{7}{2}$ ic moisture = 2 cosite corrected . C: 1 : rection only = ty of solids = 2 refective dept Temp.	upon comple le =66.01 cction: 76.75 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: I Actual	20.3 -3.0 L = 16.294964 Corrected	7.4 20.9 -2.8 164 x Rn	21. -2.	.3 .8 Eff.	-2.5 Diameter	Percent	
#10 #20 #40 #100 #200 lydrometer to ercent passi Veight of hyd lygroscopic Moist weigh Dry weight Tare weigh Hygroscop able of comp Temp., deg Comp. corr. Meniscus cor pecific gravi lydrometer ty Hydrometer ty Hydrometer ty Elapsed Time (min.)	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture correct ht and tare = 7 and tare = 7 t = 2 cosite correction . C: 1 : cosite correction . cosite cosite correction . cosite cosite correction . cosite cosite correction . cosite cosi	upon comple le =66.01 ection: 76.75 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	7.4 20.9 -2.8 164 x Rn K	21. -2. n Rm	.3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
#10 #20 #40 #100 #200 lydrometer to Percent passively lygroscopic Moist weig Dry weight Tare weigh Hygroscopic able of comp table of comp comp. corr. Meniscus corr pecific gravit lydrometer ty Hydrometer Elapsed Time (min.) 1.00	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture correct nd tare = $\frac{7}{2}$ and tare = $\frac{7}{2}$ ic moisture correct t = $\frac{2}{2}$ cosite correction . C: 1 :	upon comple le =66.01 sction: 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 36.0	20.3 -3.0 L = 16.294964 Corrected Reading 32.7	20.9 -2.8 164 x Rn K 0.0137	21. -2. n Rm 36.0	.3 .8 Eff. Depth 10.4	-2.5 Diameter (mm.) 0.0442	Finer 39.5	
#10 #20 #40 #100 #200 Aydrometer to Percent passive Veight of hyce Aygroscopic f Moist weigi Dry weight Tare weigh Dry weight Tare weigh Hygroscopic f Moist weigi Dry weight Tare weigh Dry weight Tare weigh Comp. corr. Meniscus corr pecific gravi lydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00	71.4 63.5 50.1 43.0 est uses matering #10 based frometer samp moisture correction and tare = $\frac{7}{2}$ t = $\frac{2}{2}$ t c moisture = 2 cosite correction . C: 1 :	upon comple le =66.01 ction: 76.75 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 36.0 34.5	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2	20.9 -2.8 164 x Rn K 0.0137 0.0137	21. -2. n Rm 36.0 34.5	.3 .8 Eff. Depth 10.4 10.6	-2.5 Diameter (mm.) 0.0442 0.0316	Finer 39.5 37.7	
#10 #20 #40 #100 #200 Aydrometer to Percent passi Veight of hyc Aygroscopic i Moist weigi Dry weight Tare weigh Hygroscop Table of comp Temp., deg Comp. corr. Meniscus cor Specific gravi Hydrometer to Hydrometer to Hydrometer to Hydrometer Elapsed Time (min.) 1.00 2.00 5.00	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture corrected thand tare = $\frac{7}{7}$ and tare = $\frac{7}{7}$ ic moisture = 2 cosite correction . C: 1 : rection only = ty of solids = 2 refective dept Temp. (deg. C.) 19.6 19.6	upon comple le =66.01 cction: 76.75 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 36.0 34.5 30.5	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2 27.2	7.4 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137	211. -2. n Rm 36.0 34.5 30.5	.3 .8 Eff. Depth 10.4 10.6 11.3	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206	Finer 39.5 37.7 32.8	
#10 #20 #40 #100 #200 Aydrometer to Percent passi Veight of hyc Moist weigi Dry weight Tare weigh Hygroscopic able of comp Temp., deg Comp. corr. Meniscus cor Specific gravi Hydrometer ty Hydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture corrected t and tare = 77 and tare = 77 t = 22 cosite correction C: 1 rection only = ty of solids = 27 ype = $152H$ r effective dept Temp. (deg. C.) 19.6 19.6 19.6	upon comple le =66.01 sction: 76.75 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 36.0 34.5 30.5 27.0	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2 27.2 23.7	7.4 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137	21. -2. n Rm 36.0 34.5 30.5 27.0	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122	Finer 39.5 37.7 32.8 28.6	
#10 #20 #40 #100 #200 Aydrometer to Percent passis Veight of hyce Aygroscopic Moist weigh Dry weight Tare weigh Hygroscop Table of comp Temp., deg Comp. corr. Meniscus cor Specific gravid Aydrometer ty Hydrometer ty Hydrometer ts Hydrometer ts 1.00 2.00 5.00 15.00 30.00	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture correct t and tare = 7 and tare = 7 t = 2 cosite correcti. . C: 1 :	upon comple le =66.01 sction: 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 36.0 34.5 30.5 27.0 25.0	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2 27.2 23.7 21.7	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. n Rm 36.0 34.5 30.5 27.0 25.0	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9 12.2	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122 0.0087	Finer 39.5 37.7 32.8 28.6 26.2	
#10 #20 #40 #100 #200 Aydrometer to Percent passi Veight of hyce Aygroscopic f Moist weigi Dry weight Tare weigh Hygroscopic able of comp. Temp., deg Comp. corr. Meniscus corr Specific gravit Aydrometer ty Hydrometer Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture correction and tare = $\frac{7}{2}$ ic moisture correction t = $\frac{7}{2}$ ic moisture = 2 posite correction C: 1 :	upon comple le =66.01 ction: 76.75 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 36.0 34.5 30.5 27.0 25.0 23.0	20.3 -3.0 -= 16.294964 Corrected Reading 32.7 31.2 27.2 23.7 21.7 19.7	7.4 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. m 36.0 34.5 30.5 27.0 25.0 23.0	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9 12.2 12.5	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122 0.0087 0.0063	Finer 39.5 37.7 32.8 28.6 26.2 23.8	
#10 #20 #40 #100 #200 lydrometer tr ercent passi Veight of hyd lygroscopic Moist weigh Dry weight Tare weigh Hygroscopi able of comp Temp., deg Comp. corr. Meniscus cor pecific gravi lydrometer ty Hydrometer ty Hydrometer ty Hydrometer ty 1.00 2.00 5.00 15.00 30.00	71.4 63.5 50.1 43.0 est uses mater ng #10 based frometer samp moisture correct t and tare = 7 and tare = 7 t = 2 cosite correcti. . C: 1 :	upon comple le =66.01 sction: 75.30 25.42 2.9% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 36.0 34.5 30.5 27.0 25.0	20.3 -3.0 L = 16.294964 Corrected Reading 32.7 31.2 27.2 23.7 21.7	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. n Rm 36.0 34.5 30.5 27.0 25.0	.3 .8 Eff. Depth 10.4 10.6 11.3 11.9 12.2	-2.5 Diameter (mm.) 0.0442 0.0316 0.0206 0.0122 0.0087	Finer 39.5 37.7 32.8 28.6 26.2	

AMEC

Building&Safety: Ryan Rose

6/9/2022

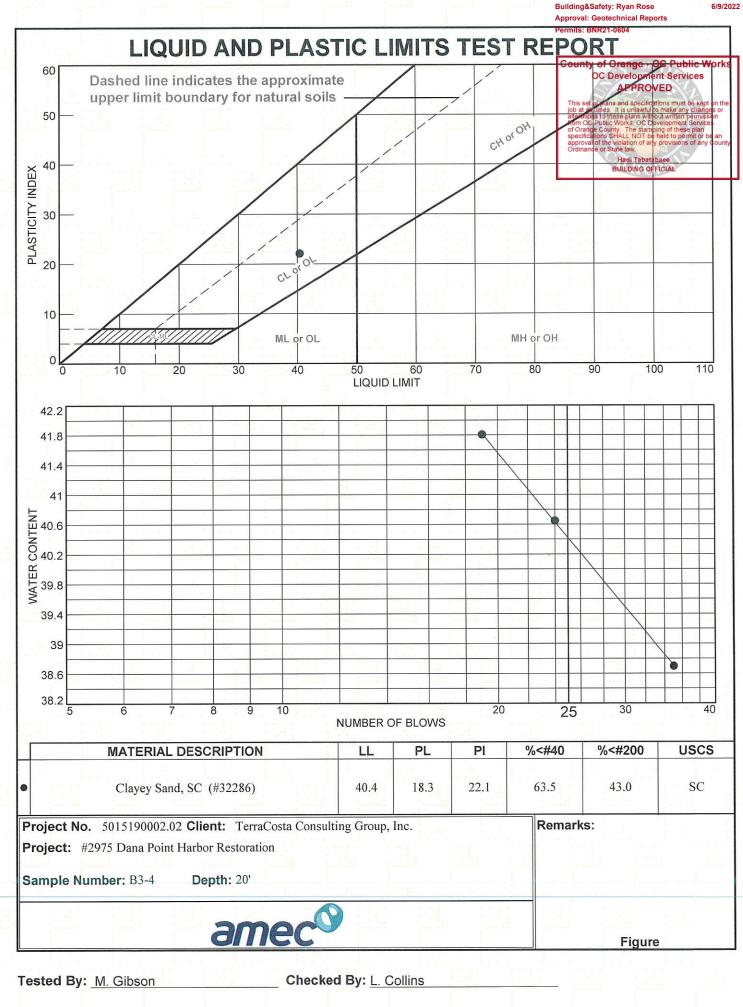
٦

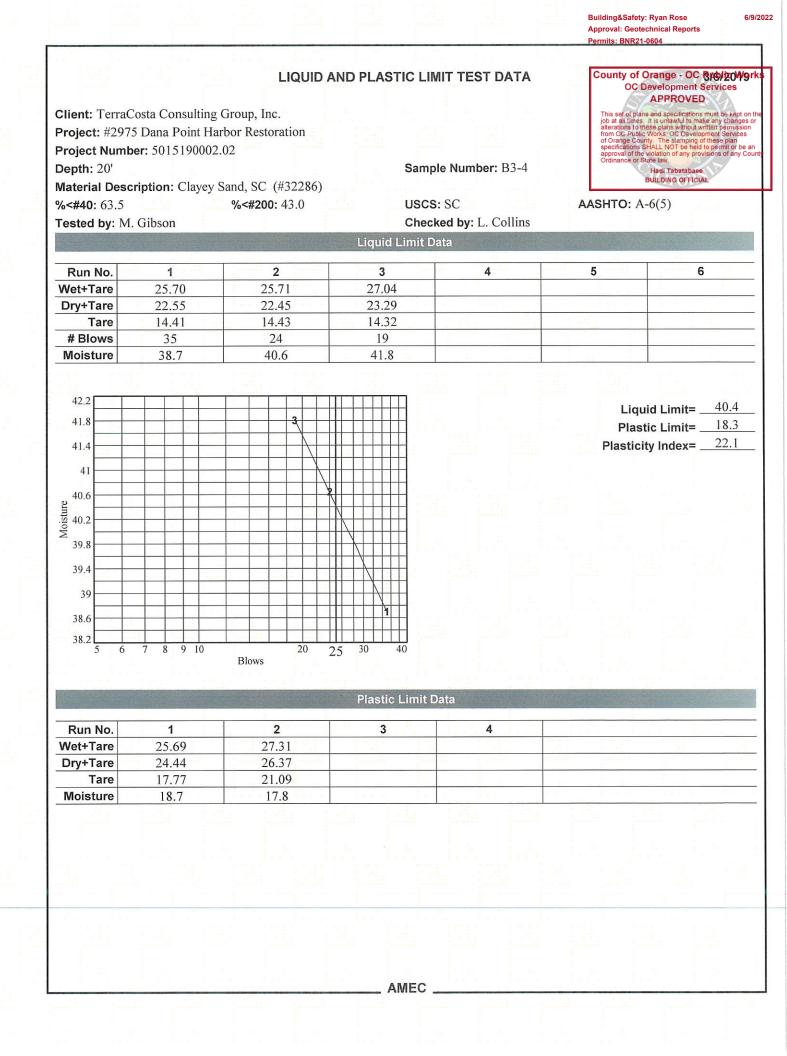
				F	ractional (Componer	its					
		Gravel				Sand				of Orange - (OC Eimesopme	OC Public Wor	rk
Cobbles	Coarse	Fine	Tota	Coai	rse Med		Fine	Total	Silt	CAPPRO		
0.0	16.8	3.2	20.0	2.0	5 1.	3.9	20.5	37.0	25.2job at all t		tions must be kept on to make any changes o out written permission	
		3. 1							of Orange specificati approval	County. The stamp ons SHALL NOT be	evelopment Services bing of these plan held to permit or be a y provisions of any Co	an our
D5	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D40	D ₅₀	D ₆₀	D80	D85	Hadi Tabata BUIL90 G OF	FICIAL D95	
t, etta	1.014	t offer	0.0030	0.0149	0.0491	0.1487	0.3245	4.7500	24.8523	29.9015	33.9663	

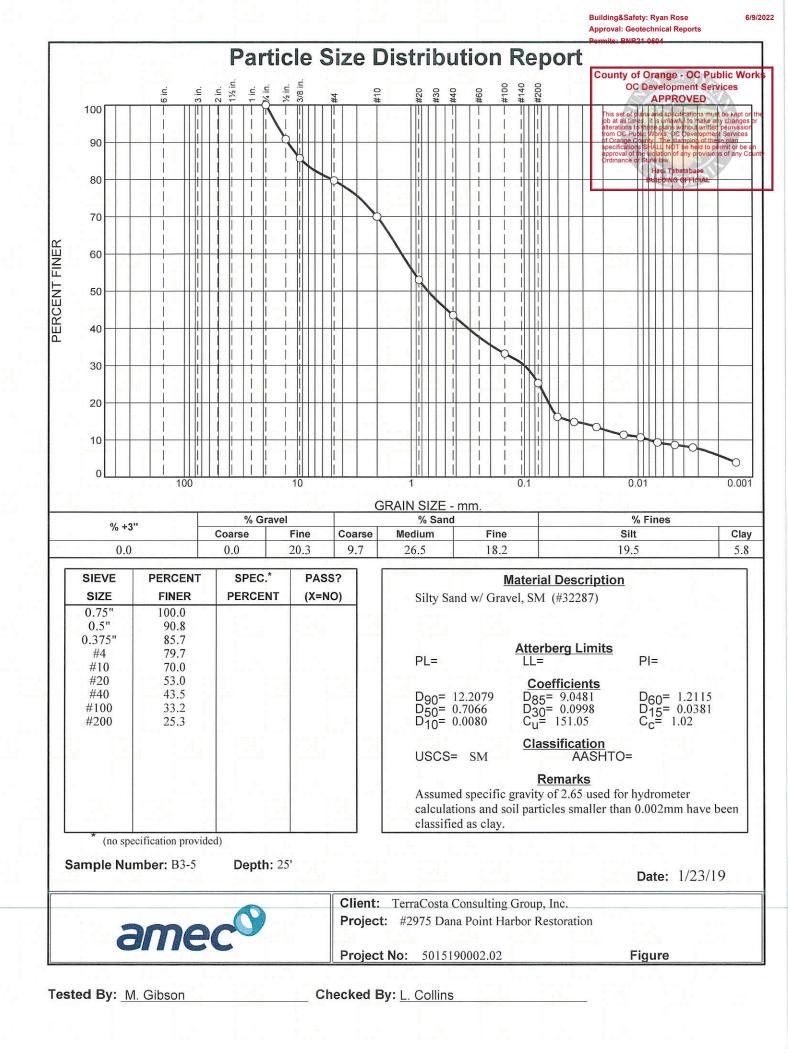
Fineness Modulus 2.26

AMEC .









								Approval:	Safety: Ryan Rose Geotechnical Reports NR21-0604	6/9/2
			GRAIN S	SIZE DIST	RIBUTI	ON TEST	T DATA	Count	y of Orange - OC3Plu OC Development Ser	
Client: Terra	Costa Consul	ting Group,	Inc.					This se	APPROVED t of plans and specifications mu	ist be kept on the
Project: #297		-						iob at a	It times. It is unlawful to make a ons to these plans without writte C Public Works, OC Developme	any changes or
Project Numb	per: 5015190	0002.02						of Oran specific	ge County. The stamping of the ations SHALL NOT be held to p al of the violation of any provisio	ese plan bermit or be an
Depth: 25'					Samp	le Numbe	er: B3-5	Ordinar	nce or State law. Hadi Tabatabaee	ons of any Couri
Material Desc	ription: Silt	y Sand w/ G	ravel, SM (#	32287)					BUILDING OFFICIAL	
Date: 1/23/19								i di se	Radia Radia	
USCS Classif	fication: SM									
Testing Rema	arks: Assume	ed specific g	gravity of 2.65	5 used for l	hydromet	er calcula	tions and soi	l particles sma	aller than 0.002m	m
	have be	een classifie	d as clay.							
Tested by: M	. Gibson				Chec	ked by: L	. Collins			
				Siev	e Test Da	ata				
Sieve										
Opening	Percent									
Size	Finer									
0.75"	100.0									
0.5"	90.8									
0.375"	85.7									
#4	79.7									
#10	70.0									
#20	53.0									
#40	43.5									
#100	33.2									
#200	25.3	in the second			and and and an other states of the	and the state of the local data in the				Contract Contractor (se
Dry weight a Tare weight Hygroscopic Table of comp	rometer samp noisture correct t and tare = 2 and tare = 2 c moisture = 0 cosite correction	ble =51.24 ection: 34.28 34.21 26.23 0.9% on values:								
Temp., deg. Comp. corr.:		9.1 -3.5	20.3 -3.0	20.9 -2.8	21 -2	.3	22.6 -2.5			
Meniscus corr Specific gravit Hydrometer ty	ection only = y of solids = 2 pe = 152H	2.65	L = 16.294964							
Elapsed	Temp.	Actual	Corrected			Eff.	Diameter	Percent		
Time (min.)	(deg. C.)	Reading	Reading	к	Rm	Depth	(mm.)	Finer		
1.00	19.7	15.0	11.8	0.0137	15.0	13.8	0.0509	16.2		
2.00	19.7	14.0	10.8	0.0137	14.0	14.0	0.0362	14.8		
5.00	19.7	13.0	9.8	0.0137	13.0	14.2	0.0231	13.4		
15.00	19.7	11.5	8.3	0.0137	11.5	14.4	0.0134	11.4		
30.00	19.7	11.0	7.7	0.0137	11.0	14.5	0.0095	10.7		
60.00	19.7	10.0	6.7	0.0137	10.0	14.7	0.0068	9.3		
120.00	19.7	9.5	6.2	0.0137	9.5	14.7	0.0048	8.6		
250.00	19.7	9.0	5.7	0.0137	9.0	14.8	0.0033	7.9		
1440.00	19.9	6.0	2.8	0.0137	6.0	15.3	0.0014	3.9		
a de la composición d	is distri	n finis	i kara		a a b a a a a a a	1. 			an a	

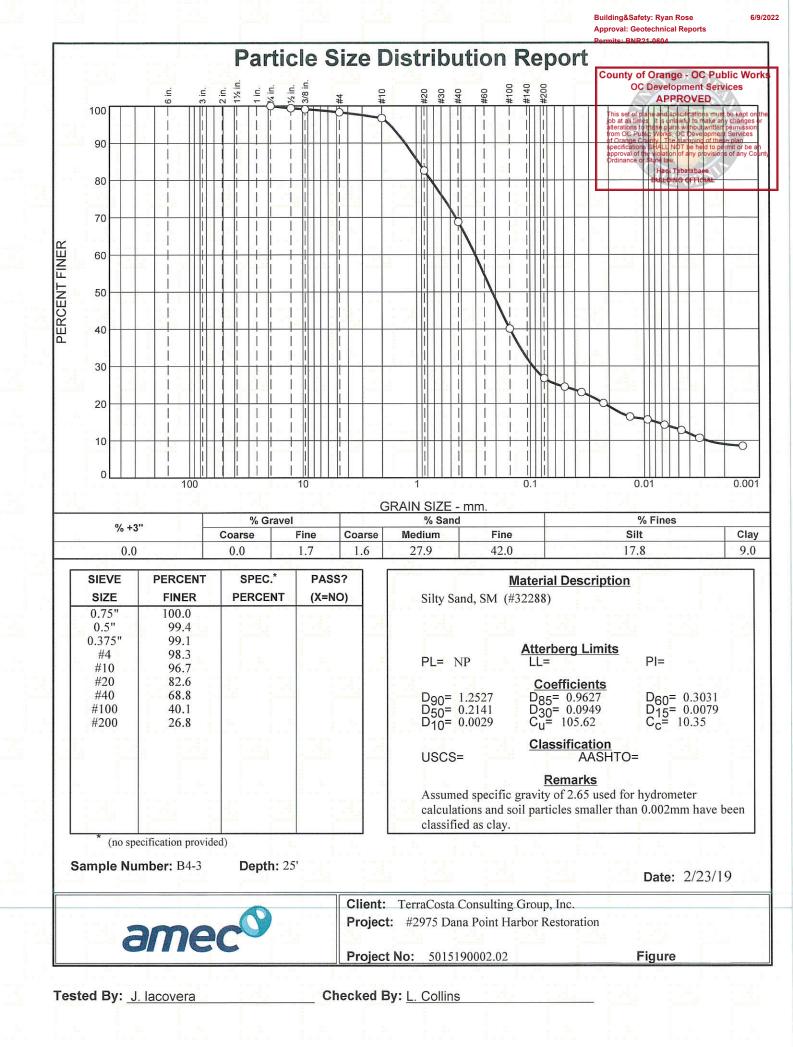
_ AMEC

6/9/2022

									Permits: BN	IR21-0604
				F	ractional (Componer	its			
<u></u>		Grave	1	1		Sand				of Orange - OC Public Wo
Cobbles	Coarse		Tota	I Coar	rse Med		Fine	Total	Silt	ClapPROVEDTotal
0.0	0.0	20.3	20.3	9.1	7 20	5.5	18.2	54.4	19.5 ^{This set o}	f plans and specifications must be kept or imes. It is unlawful to make my changes
		114	<u>a</u> ta						of Orange specificat approval	Public Works, OC Development Services County. The stamping of these plan ions SHALL NOT be held to permit or be a of the violation of any provisions of any Co or State law.
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D50	D ₆₀	D ₈₀	D85	Hadi Tabatabaee BUILSUNG OFFICIALD95
0.0017	0.0080	0.0381	0.0610	0.0998	0.3121	0.7066	1.2115	4.9661	9.0481	12.2079 15.3933

Fineness Modulus	c _u	С _с
2.82	151.05	1.02

AMEC .



meter sample poisture correct and tare = 8 d tare = 8 moisture = 2 site correction ction only = (of solids = 2 a = 152H	upon comple le =67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 65	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7 9.8 8.8 7.3 5.8	6.7 20.9 -2.8	eter Test 21. -2. n 20.0 19.0 17.0 14.5 14.0 13.0 12.0 10.5 9.0	3	22.6 -2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094 0.0067 0.0047 0.0033 0.0014	Percent Finer 24.5 23.0 20.1 16.4 15.7 14.3 12.8 10.7 8.5
26.8 uses materi #10 based u meter sampl bisture correct and tare = 8 #2 moisture = 2 site correction : 14 ction only = (of solids = 2 = 152H ffective dept Temp. (deg. C.) 19.7 19.8	upon complete = 67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 20.0 19.0 17.0 14.5 14.0 13.0 12.0 10.5	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7 9.8 8.8 7.3	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. n 20.0 19.0 17.0 14.5 14.0 13.0 12.0 10.5	3 8 Eff. Depth 13.0 13.2 13.5 13.9 14.0 14.2 14.3 14.6	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094 0.0067 0.0047 0.0033	Finer 24.5 23.0 20.1 16.4 15.7 14.3 12.8 10.7
26.8 uses materi #10 based u meter sampl bisture correct and tare = 8 #2 moisture = 2 site correction : 14 ction only = (of solids = 2 = 152H ffective dept Temp. (deg. C.) 19.7 19.8	upon complete = 67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 20.0 19.0 17.0 14.5 14.0 13.0 12.0 10.5	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7 9.8 8.8 7.3	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. n 20.0 19.0 17.0 14.5 14.0 13.0 12.0 10.5	3 8 Eff. Depth 13.0 13.2 13.5 13.9 14.0 14.2 14.3 14.6	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094 0.0067 0.0047 0.0033	Finer 24.5 23.0 20.1 16.4 15.7 14.3 12.8 10.7
26.8 uses materi #10 based used meter samploisture correct and tare = 8 id tare = 8 2 moisture = 2 site correction cition only = (1) of solids = 2 = 152H ffective depti Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7	upon complete = 67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 20.0 19.0 17.0 14.5 14.0 13.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7 9.8	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. Rm 20.0 19.0 17.0 14.5 14.0 13.0	3 8 Eff. Depth 13.0 13.2 13.5 13.9 14.0 14.2	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094 0.0067	Finer 24.5 23.0 20.1 16.4 15.7 14.3
26.8 uses materi y #10 based uses meter samploisture correct and tare = 8 d tare = 8 2 moisture = 2 site correction citic corection citic correction citic correction citic correcti	upon complete = 67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 20.0 19.0 17.0 14.5 14.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3 10.7	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. n 20.0 19.0 17.0 14.5 14.0	3 8 Eff. Depth 13.0 13.2 13.5 13.9 14.0	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132 0.0094	Finer 24.5 23.0 20.1 16.4 15.7
26.8 uses materia #10 based uses materia #10 based uses #10 based uses	upon complete = 67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 65 h equation: Actual Reading 20.0 19.0 17.0 14.5	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8 11.3	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	21. -2. n 20.0 19.0 17.0 14.5	3 8 Eff. Depth 13.0 13.2 13.5 13.9	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225 0.0132	Finer 24.5 23.0 20.1 16.4
26.8 uses materi f = 10 based uses meter sample bisture correct and tare = 8 id tare = 8 id tare = 8 2 moisture = 2 site correction f = 152H ffective dept Temp. (deg. C.) 19.7 19.7 19.7	upon complete = 67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 20.0 19.0 17.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8 13.8	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137	21. -2. n 20.0 19.0 17.0	3 8 Eff. Depth 13.0 13.2 13.5	-2.5 Diameter (mm.) 0.0494 0.0352 0.0225	Finer 24.5 23.0 20.1
26.8 uses materi f = 10 based uses meter sample bisture correct and tare = 8 2 moisture = 2 site correction f = 152H ffective depted Temp. (deg. C.) 19.7 19.7	upon complete = 67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 20.0 19.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8 15.8	6.7 20.9 -2.8 164 x Rn K 0.0137 0.0137	21. -2. n 20.0 19.0	3 8 Eff. Depth 13.0 13.2	-2.5 Diameter (mm.) 0.0494 0.0352	Finer 24.5 23.0
26.8 uses materi g #10 based uses meter samploisture correct and tare = 8 do tare = 8 2 moisture = 2 site correction critical correction $critical correction critical correction cr$	upon comple le =67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 .65 h equation: Actual Reading 20.0	20.3 -3.0 L = 16.294964 Corrected Reading 16.8	6.7 20.9 -2.8 164 x Rn K 0.0137	21. -2. n Rm 20.0	3 8 Eff. Depth 13.0	-2.5 Diameter (mm.) 0.0494	Finer 24.5
26.8 uses materia #10 based used to meter sample bisture correct and tare = 8 #10 based used and tare = 8 #10 based used #10 based u	upon comple le =67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 65 h equation: Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	6.7 20.9 -2.8 164 х Rn К	21. -2. n Rm	3 8 Eff. Depth	-2.5 Diameter (mm.)	Finer
26.8 t uses materi t #10 based used to meter samploisture correct and tare = 8 t d tare = 8 t d tare = 8 t d tare = 2 site correction t for only = (of solids = 2 to a solids = 2 t = 152H ffective dept Temp.	upon comple le =67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 .65 h equation: Actual	20.3 -3.0 L = 16.294964 Corrected	6.7 20.9 -2.8 164 x Rn	21. -2. n	3 8 Eff.	-2.5 Diameter	
26.8 uses materi g #10 based uses meter samploisture correct and tare = 8 do tare = 8 2 moisture = 2 site correction c: 19 ction only = 0 of solids = 2 g = 152H	upon comple le =67.5 ction: 8.74 7.46 5.30 .1% on values: 9.1 3.5 0.0 65	20.3 -3.0	6.7 20.9 -2.8	21. -2.	3	22.6 -2.5	
			Hydrome	eter Test	Data		
40.1							
Percent Finer							
			Sieve	Test Da	ld		
acovera			Siam	COLUMN TWO IS NOT	THE R. P. LEWIS CO., LANSING, No.	Comins	
	en classifie	d as clay.		Charl		Calling	
r ks : Assume	PL: N d specific g	IP gravity of 2.65	5 used for h	ydromete	er calculat	tions and soil	l particles smaller than 0.002mm
iption: Silty	Sand, SM	(#32288)		Samp	le Numbe	er: B4-3	Hadi Tabatabaee BuilDING OFFICIAL
er: 5015190	002.02						of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or to approval of the violation of any provisions of any Ordinance or State law.
		storation					job at all times. It is unlawful to make any chang alterations to these plans without written permiss from OC Public Works. OC Development Servic of Occase County. The steman of these plan
osta Consult	ing Group,	Inc.					APPROVED This set of plans and specifications must be kep
		GRAIN S	SIZE DIST	RIBUTIC	ON TEST	DATA	County of Orange - OC P3/6/20 OC Development Services
	Dana Point er: 5015190 iption: Silty rks: Assume have be acovera Percent	Dana Point Harbor Reser: 5015190002.02 Piption: Silty Sand, SM PL: N rks: Assumed specific g have been classified acovera Percent Finer 100.0 99.4 99.1 98.3 96.7 82.6	Desta Consulting Group, Inc. Dana Point Harbor Restoration Per: 5015190002.02 Piption: Silty Sand, SM (#32288) PL: NP Pks: Assumed specific gravity of 2.65 have been classified as clay. acovera Percent Finer 100.0 99.4 99.1 98.3 96.7 82.6	Desta Consulting Group, Inc. Dana Point Harbor Restoration Pr: 5015190002.02 Piption: Silty Sand, SM (#32288) PL: NP Pks: Assumed specific gravity of 2.65 used for h have been classified as clay. acovera Sieve Percent Finer 100.0 99.4 99.1 98.3 96.7 82.6	Desta Consulting Group, Inc. Dana Point Harbor Restoration Pr: 5015190002.02 Samp ription: Silty Sand, SM (#32288) PL: NP rks: Assumed specific gravity of 2.65 used for hydrometer have been classified as clay. acovera Check Sieve Test Da Percent Finer 100.0 99.4 99.1 98.3 96.7 82.6	Desta Consulting Group, Inc. Dana Point Harbor Restoration Pr: 5015190002.02 Sample Number ription: Silty Sand, SM (#32288) PL: NP rks: Assumed specific gravity of 2.65 used for hydrometer calculat have been classified as clay. acovera Checked by: L. Sieve Test Data Percent Finer 100.0 99.4 99.1 98.3 96.7 82.6	Dana Point Harbor Restoration er: 5015190002.02 Sample Number: B4-3 iption: Silty Sand, SM (#32288) PL: NP rks: Assumed specific gravity of 2.65 used for hydrometer calculations and soi have been classified as clay. acovera Checked by: L. Collins Sieve Test Data Percent Finer 100.0 99.4 99.1 98.3 96.7 82.6

Building&Safety: Ryan Rose

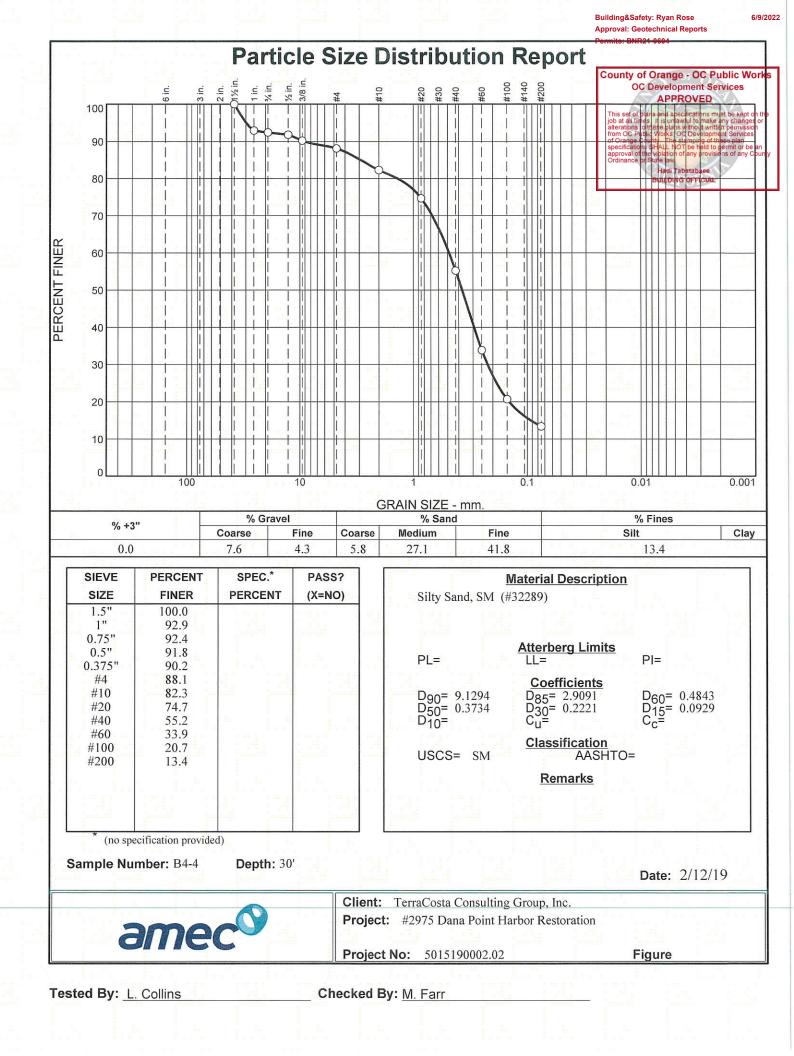
6/9/2022

٦

				F	ractional (Compone	nts				
1	5	Grave		1.11	<u>) - 1-1</u>	Sand			· · · · · · · · · · · · · · · · · · ·	OC Developm	OC Public Wor ent Services
Cobbles	Coarse	Fine	Tota	I Coai	rse Me	dium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.7	1.7	1.0	5 2	7.9	42.0	71.5	17.8 job at all alteration	times of the second specific times of the second specific times of the second s	
									specificat approval	e County. The stam tions SHALL NOT b	CASH AND MICHINE OF MICHINE
D5		D ₁₅	D ₂₀	D ₃₀	D ₄₀	D50	D ₆₀	D ₈₀	D ₈₅	Hadi Tabat	
1.184	0.0029	0.0079	0.0222	0.0949	0.1494	0.2141	0.3031	0.7401	0.9627	1.2527	1.7161

Fineness Modulus	cu	с _с
1.41	105.62	10.35

_ AMEC _



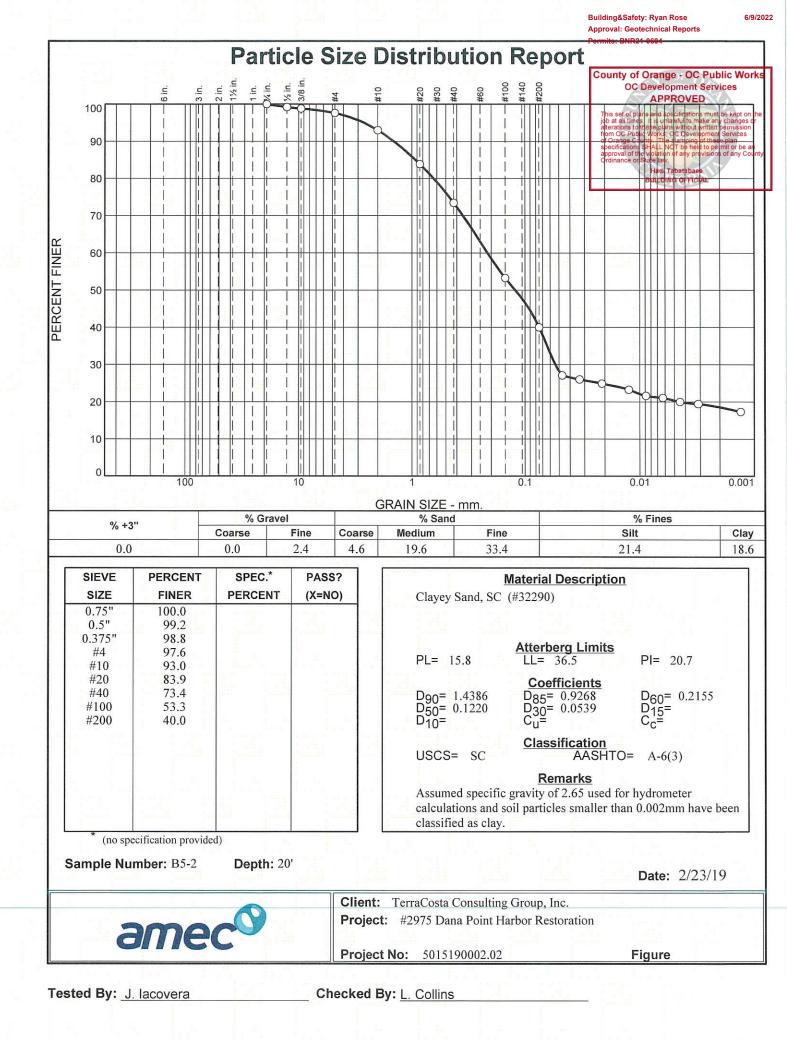
								Approva	g&Safety: Ryan Ros al: Geotechnical Rej : BNR21-9694		6/9/20
	.h. 1.		1. L.	⁶ . E.	1. E.S.	1. E.L.		Permits	BNR21-0604		
			GRAI	N SIZE DI	STRIBUTIC	ON TEST	DATA	Cour	nty of Orange - OC Developm APPRC	ent Services	
Client: Terra	aCosta Cons	ulting Group	o, Inc.					This	set of plans and specific	cations must be ke	pt on the
Project: #29	75 Dana Po	int Harbor F	Restoration					altera	t all times. It is unlawfu ations to these plans wit OC Public Works, OC I	thout written permi	ission
Project Num	ber: 501519	90002.02						of Or	ange County. The stan ifications SHALL NOT b	nping of these plan be held to permit or	r be an
Depth: 30'					Samp	e Number	: B4-4	Ordin	oval of the violation of a nance or State law. Hadi Tabat		iy County
Material Des	scription: Si	Ity Sand, SI	M (#32289)) 				1	BUILDING O		
Date: 2/12/1		1.11						1.13		1.1	
USCS Class	ification: SI	Ν									
Tested by: I	. Collins				Check	ed by: M.	Farr				
				Si	eve Test Da	ta					
Sieve Opening Size	Percent Finer										
1.5"	100.0										
1"	92.9										÷
0.75"	92.4										÷
0.5"	91.8										
0.375"	90.2										-
#4	88.1										
#10	82.3										
#20	74.7										
#40	55.2										
#60	33.9										
#100	20.7										
#200	13.4	an gal	-16 - j	ai (8 <u>- 1</u> -1-1	-76 Jahr	9. jež		.:	
				Fracti	onal Compo	nents					
		Gravel			Sa	nd			Fines		ן ך
Cobbles	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total	

Cabbles	Gravel			Sand				Fines		
Cobbles	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	7. <mark>6</mark>	4.3	11.9	5.8	27.1	41.8	74.7			13.4

1.1	5	- No. 1	1.1	- 3 a	i selêta	1 d 2 d	1.18		1 - 12 -	1. dia		
	D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D80	D ₈₅	D ₉₀	D ₉₅
ан (т.)	Ξ.	. ¹¹ - 1	0.0929	0.1438	0.2221	0.2934	0.3734	0.4843	1.3674	2.9091	9.1294	29.8650

AMEC

1.11.	 1.11.1	1 (a.G.) -	1.25.4	2.12
Fineness Modulus				
2.39				



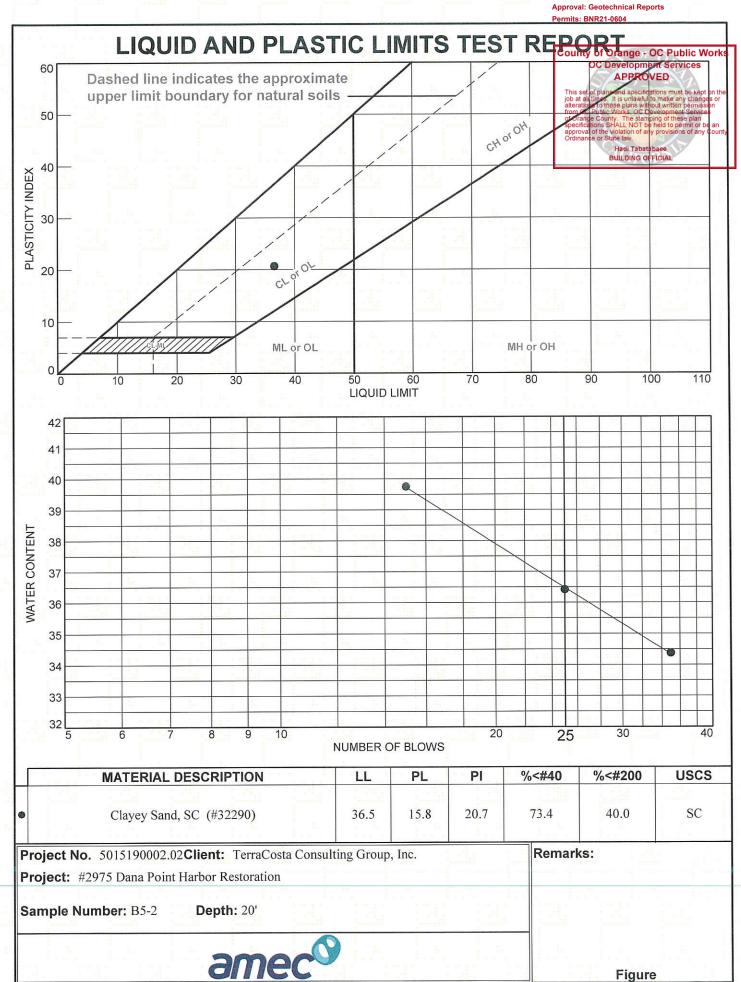
			GRAIN S	IZE DIST	RIBUTI		DATA	County of Orange - OC By	6/20/
								OC Development Ser APPROVED	
lient: TerraC	Costa Consul	ting Group,	Inc.					This set of plans and specifications mu job at all times. It is unlawful to make a	ust be kept o
Project: #2975	5 Dana Point	t Harbor Res	storation					from OC Public Works, OC Developme	ent Services
roject Numb	er: 5015190	002.02						of Orange County. The stamping of th specifications SHALL NOT be held to p approval of the violation of any provisio	permit or be ons of any (
epth: 20'					Samp	le Numbe	er: B5-2	Ordinance or State law. Hadi Tabatabaee	
laterial Desc	ription: Clar	yey Sand, SC	C (#32290)					BUILDING OFFICIAL	
Date: 2/23/19		PL: 1:	5.8		LL: 30	5.5		PI: 20.7	
JSCS Classifi	ication: SC				AASH	ITO Class	ification: A-	6(3)	
esting Rema	irks: Assume	ed specific g	ravity of 2.65	used for h	ydromet	er calcula	tions and soil	particles smaller than 0.002m	nm
	have be	en classified	l as clay.						
ested by: J. I	Iacovera				Chec	ked by: L	. Collins		
				Sieve	Test Da	ita			
Sieve									
	Percent Finer								
0.75"	100.0								
0.5"	99.2								
0.375"	98.8								
#4	97.6								
	93.0								
#10									
#10 #20	83.9								
#20	83.9								
#20 #40	83.9 73.4								
#20 #40 #100 #200	83.9 73.4 53.3 40.0	ial passing #	10	Hydrome	eter Tes	t Data			
#20 #40 #100 #200 Hydrometer tes Percent passing Veight of hydro Hygroscopic m Moist weight Dry weight at Tare weight Hygroscopic Table of compo Temp., deg. 0 Comp. corr.: Meniscus corre Specific gravity Hydrometer typ	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp poisture correct and tare = $\begin{cases} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	upon comple le =87.04 sction: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 0.0 2.65	20.3 -3.0	3.0 20.9 -2.8	21 -2	.3	22.6 -2.5		
#20 #40 #100 #200 Aydrometer tes Percent passing Veight of hydro Aygroscopic m Moist weight at Tare weight at Tare weight at Tare weight at Hygroscopic Cable of compo Temp., deg. 0 Comp. corr.: Meniscus corre Specific gravity Hydrometer typ	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp ioisture correct t and tare = $\begin{cases} 8\\ = 22\\ \\ moisture = 22\\$	upon comple le =87.04 stion: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: 1	20.3 -3.0 L = 16.294964	3.0 20.9 -2.8	21 -2	.3 .8	-2.5		
#20 #40 #100 #200 Aydrometer tes Percent passing Veight of hydro Aygroscopic m Moist weight Dry weight at Tare weight at Tare weight at Tare weight at Tare weight at Tare weight at Comp. corr.: Meniscus corres Specific gravity Aydrometer typ Hydrometer of Elapsed	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp oisture correct t and tare = 8 = 22 moisture = 2 osite correction C: 1 ection only = 2 y of solids = 2 be = 152H effective deput	upon comple le =87.04 sction: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual	20.3 -3.0 L = 16.294964 Corrected	3.0 20.9 -2.8 164 x Rn	21 -2	.3 .8 Eff.	-2.5 Diameter	Percent	
#20 #40 #100 #200 Aydrometer tes Percent passing Veight of hydro Aygroscopic m Moist weight at Tare weight at tare weight at Tare weight at tare weight at Tare weight at tare weight at t	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp poisture correct t and tare = $\begin{cases} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	upon comple le =87.04 ection: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading	20.3 -3.0 L = 16.294964 Corrected Reading	3.0 20.9 -2.8 164 x Rn K	21 -2 n Rm	.3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer	
#20 #40 #100 #200 Aydrometer tes Percent passing Veight of hydro Aygroscopic m Moist weight Dry weight at Tare weight = Hygroscopic Temp., deg. 0 Comp. corr.: Meniscus corres Specific gravity Hydrometer typ Hydrometer typ Elapsed Time (min.) 1.00	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp oisture correct and tare = $\begin{cases} 1 \\ 2 \\ 3 \\ 3 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5$	upon comple le =87.04 sction: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 28.0	20.3 -3.0 L = 16.294964 Corrected Reading 24.8	3.0 20.9 -2.8 164 x Rn K 0.0137	21 -2 n Rm 28.0	.3 .8 Eff. Depth 11.7	-2.5 Diameter (mm.) 0.0469	Finer 27.1	
#20 #40 #100 #200 lydrometer tes ercent passing Veight of hydro lygroscopic m Moist weight Tare weight = Hygroscopic Table of compo Temp., deg. 0 Comp. corr.: Meniscus corre pecific gravity lydrometer typ Hydrometer typ Hydrometer typ Inne (min.) 1.00 2.00	$\begin{array}{c} 83.9\\ 73.4\\ 53.3\\ 40.0\\ \end{array}$	upon comple le =87.04 sction: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 28.0 27.0	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8	20.9 -2.8 164 x Rn K 0.0137 0.0137	21 -2 n Rm 28.0 27.0	.3 .8 Eff. Depth 11.7 11.9	-2.5 Diameter (mm.) 0.0469 0.0334	Finer 27.1 26.0	
#20 #40 #100 #200 Aydrometer test ercent passing Veight of hydro Aygroscopic m Moist weight at Tare weight at Tare weight at Tare weight at Hygroscopic Comp. corr.: Meniscus corre Specific gravity Aydrometer typ Hydrometer typ Hydrometer typ Elapsed Time (min.) 1.00 2.00 5.00	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp oisture correction t and tare = $\begin{cases} 8\\ = 22\\ \\ moisture = 2$	upon comple le =87.04 stion: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 28.0 27.0 26.0	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8	3.0 20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137	21 -2 n Rm 28.0 27.0 26.0	.3 .8 Eff. Depth 11.7 11.9 12.0	-2.5 Diameter (mm.) 0.0469 0.0334 0.0212	Finer 27.1 26.0 24.9	
#20 #40 #100 #200 Aydrometer tes Percent passing Veight of hydro Aygroscopic m Moist weight at Tare weight at T	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp ioisture correct at and tare = $\begin{cases} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	upon comple le =87.04 ection: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 28.0 27.0 26.0 24.5	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n Rm 28.0 27.0 26.0 24.5	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3	-2.5 Diameter (mm.) 0.0469 0.0334 0.0212 0.0124	Finer 27.1 26.0 24.9 23.3	
#20 #40 #100 #200 Aydrometer tes Percent passing Veight of hydro Aygroscopic m Moist weight at Tare weight at T	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp oisture correct and tare = 8 and tare = 8 moisture = 2 osite correction C: 1 ection only = 2 y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7	upon comple le =87.04 sction: 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 28.0 27.0 26.0 24.5 23.0	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3 19.8	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 Rm 28.0 27.0 26.0 24.5 23.0	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3 12.5	-2.5 Diameter (mm.) 0.0469 0.0334 0.0212 0.0124 0.0088	Finer 27.1 26.0 24.9 23.3 21.6	
#20 #40 #100 #200 Percent passing Veight of hydro Hygroscopic m Moist weight Tare weight = Hygroscopic Temp., deg. 0 Comp. corr.: Meniscus corre Specific gravity Hydrometer typ Hydrometer typ Hydrometer of Elapsed Time (min.) 1.00 2.00 5.00 15.00 30.00 60.00	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp poisture correction and tare = $\begin{cases} 1 \\ 2 \\ 2 \\ 3 \\ 3 \\ 4 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5$	upon comple le =87.04 sction: 34.70 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: 1 Actual Reading 28.0 27.0 26.0 24.5 23.0 22.5	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3 19.8 19.3	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 Rm 28.0 27.0 26.0 24.5 23.0 22.5	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3 12.5 12.6	-2.5 Diameter (mm.) 0.0469 0.0334 0.0212 0.0124 0.0088 0.0063	Finer 27.1 26.0 24.9 23.3 21.6 21.1	
#20 #40 #100 #200 Hydrometer tes Percent passin Veight of hydro Hygroscopic m Moist weight at Tare weight at Ta	83.9 73.4 53.3 40.0 at uses mater g #10 based ometer samp oisture correct and tare = 8 and tare = 8 moisture = 2 osite correction C: 1 ection only = 2 y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.7 19.7 19.7 19.7 19.7	upon comple le =87.04 sction: 33.27 25.38 2.5% on values: 9.1 3.5 0.0 2.65 th equation: I Actual Reading 28.0 27.0 26.0 24.5 23.0	20.3 -3.0 L = 16.294964 Corrected Reading 24.8 23.8 22.8 21.3 19.8	20.9 -2.8 164 x Rn K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 Rm 28.0 27.0 26.0 24.5 23.0	.3 .8 Eff. Depth 11.7 11.9 12.0 12.3 12.5	-2.5 Diameter (mm.) 0.0469 0.0334 0.0212 0.0124 0.0088	Finer 27.1 26.0 24.9 23.3 21.6	

AMEC

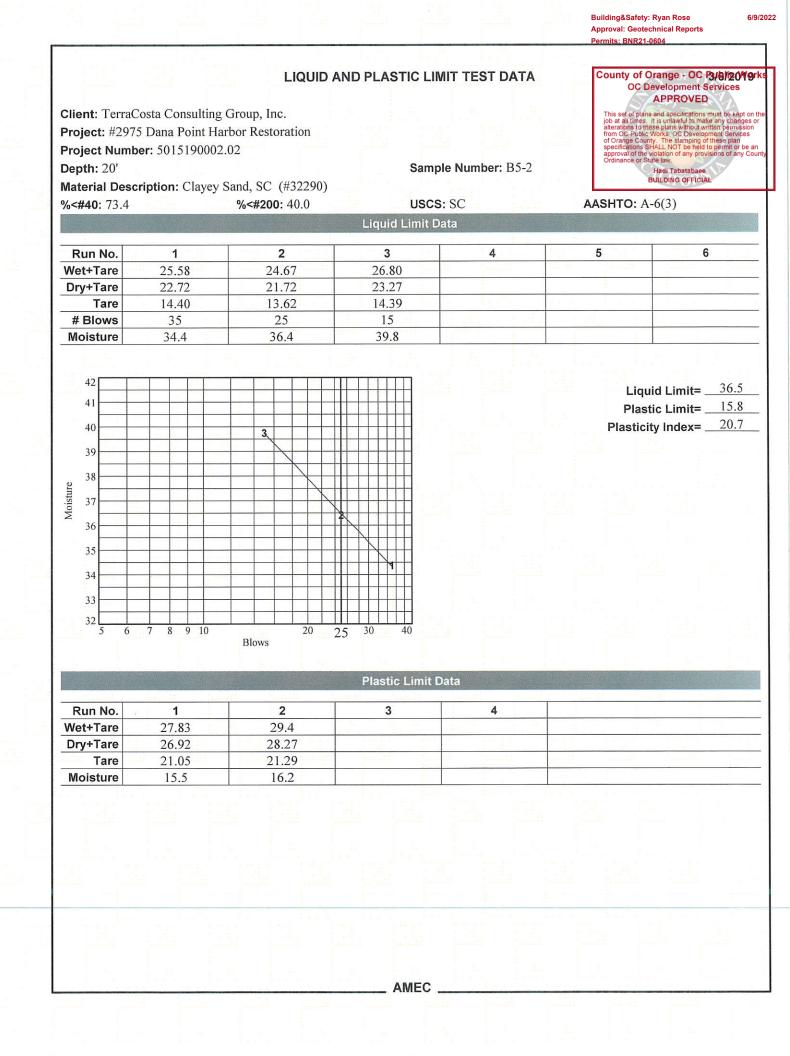
/9/2022

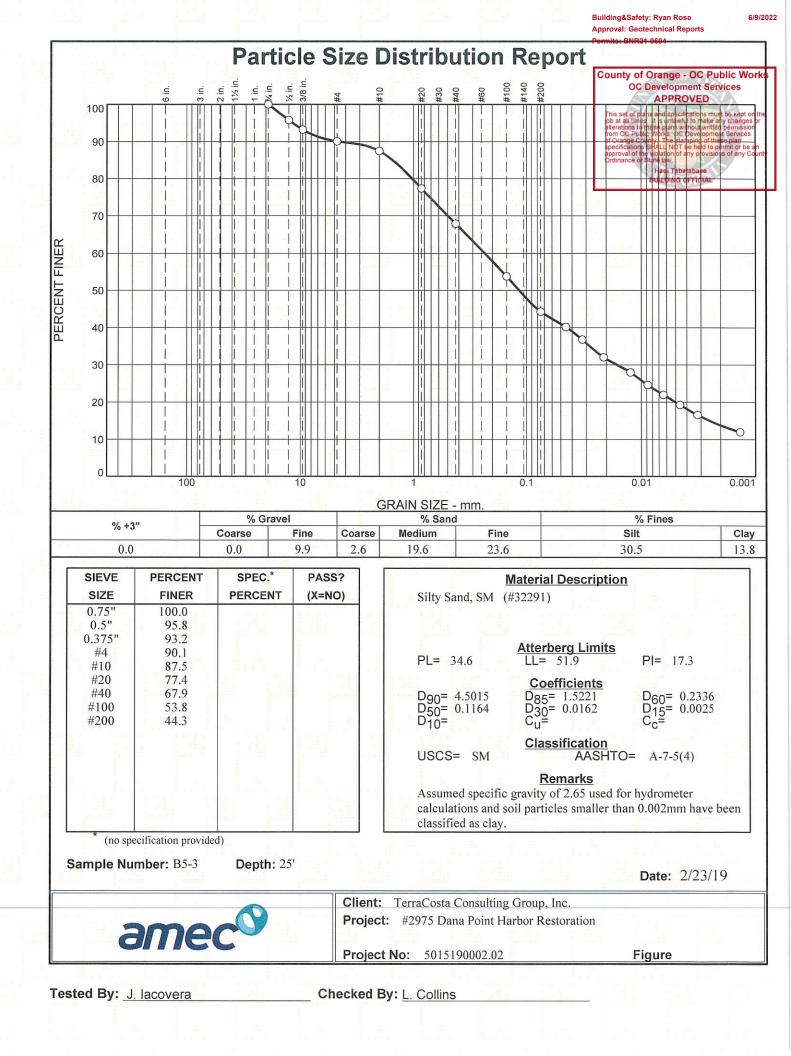
				Fracti	onal Compoi	nents				
		Gravel	- inter-	1	San	d		County	of Orango - O	C Publi
Cobbl	es Coarse		Total	Coarse	Medium	Fine	Total	Silt	CARPROV	it <u>Servic</u> EDTota
0.0	0.0	2.4	2.4	4.6	19.6	33.4	57.6	21. This set of	plans and specificati mes. It is what up to	
. Ca								alteratione	Pothese plans without Public Works, OC Dev County. The stamping ons SHALL NOT be h of the violation of any	it written nei
5. D						8	1	Orginance	or state law	
D ₅	D ₁₀	D ₁₅	D ₂₀		040 D ₅₀	D ₆₀	D80	D ₈₅	Hadi Tabatab BUILGING OFF	ICIAL D95
1.1.1	1.112	1.1.1.1	0.0045	0.0539 0.0	0750 0.122	0 0.2155	0.6393	0.9268	1.4386	2.652
Finene										
Modulu	IS									
1.22	a da s									

AMEC



Building&Safety: Ryan Rose





			GRAIN S	SIZE DIST	RIBUTI	ON TES	Γ DATA	Coun	ty of Orange - (OC Developme APPRO	nt Services
lient: TerraC	Costa Consult	ting Group,	Inc.					This s	et of plans and specifica all times. It is unlawful t	
roject: #297:	5 Dana Point	t Harbor Res	storation							
roject Numb	er: 5015190	002.02						of Ora specif	DC Public Works, OC De nge County. The stamp cations SHALL NOT be val of the violation of any	held to permit or l provisions of any
epth: 25'					Samp	le Numb	er: B5-3	Ordina	ance or State law. Hadi Tabata	
aterial Desc	ription: Silty	y Sand, SM	(#32291)					n an an Airtean Taonacha	BUILDING OF	
ate: 2/23/19		PL: 34	4.6		LL: 5	1.9		PI: 17.3		
SCS Classif	ication: SM				AASH	ITO Class	sification: A-	-7-5(4)		
esting Rema		ed specific g en classifie		5 used for h	ydromet	er calcula	tions and soi	l particles sn	naller than 0.0	002mm
ested by: J.]			i as clay.		Station and an and an	ked by: L	. Collins			
				Sieve	e Test Da	ita				
Sieve										
Opening Size	Percent Finer									
0.75"	100.0									
0.75	95.8									
0.375"	93.2									
0.575 #4	90.1									
#10	87.5									
#20	77.4									
#40	67.9									
#100	53.8									
11000										
#200 /drometer tes	44.3 st uses mater	ial passing #	10	Hydrom	eter Test	t Data				
rdrometer tes ercent passin eight of hydro groscopic m Moist weight Dry weight a	t uses mater g #10 based ometer samp oisture corre and tare = 8 nd tare = 7	upon comple le =67.27 ction: \$1.99 '9.87	10 ete sample = 8		eter Tesi	t Data				
/drometer tes	t uses mater g #10 based ometer samp oisture corre and tare = 8 nd tare = 7 = 2	upon comple le =67.27 ction: 81.99 79.87 26.37			eter Tesi	t Data				
drometer tes ercent passin eight of hydru groscopic m Moist weight Dry weight a Tare weight : Hygroscopic ble of compo	at uses materi g #10 based ometer samp oisture corre t and tare = 8 nd tare = 7 = 2 moisture = 4 osite correctio	upon comple le =67.27 ction: 31.99 79.87 26.37 4.0% on values:	ete sample = 8	7.5			22.6			
ydrometer tes ercent passin eight of hydry ygroscopic m Moist weight Dry weight a Tare weight a Tare weight a Hygroscopic tble of compo Temp., deg. (at uses mater g #10 based ometer samp oisture corre t and tare = 8 nd tare = 7 = 2 moisture = 4 osite correctio C: 1	upon comple le =67.27 ction: 81.99 79.87 26.37 4.0% on values: 9.1 3.5			eter Test 21 -2	.3	22.6 -2.5			
vdrometer tes ercent passin eight of hydri vgroscopic m Moist weight Dry weight a Tare weight a Tare weight a Hygroscopic ble of compo temp., deg. (Comp. corr.: eniscus corre	at uses mater g #10 based ometer samp oisture corre t and tare = 8 nd tare = 7 = 2 moisture = 4 osite correctio C: 1 	upon comple le =67.27 ction: 81.99 79.87 26.37 4.0% on values: 9.1 3.5 0.0	20.3	20.9	21	.3	22.6 -2.5			
drometer tes ercent passin eight of hydr groscopic m Moist weight Dry weight a Tare weight Hygroscopic ble of compo Temp., deg. Comp. corr.: eniscus corre pecific gravity drometer typ	at uses matering #10 based for ometer samp oisture correct and tare = $\frac{8}{2}$ moisture = $\frac{2}{2}$ moisture = $\frac{4}{2}$ cosite correction C: 1 ection only = $\frac{1}{2}$ of solids = $\frac{2}{2}$ be = 152 H	upon comple le =67.27 ction: 1.99 29.87 26.37 4.0% on values: 9.1 3.5 0.0 2.65	20.3 -3.0	7.5 20.9 -2.8	21 -2	.3	22.6 -2.5			
adrometer tes precent passin eight of hydru groscopic m Moist weight Dry weight a Tare weight a Tare weight a Hygroscopic ble of compo Temp., deg. Comp. corr.: eniscus corre pecific gravity drometer typ Hydrometer of	at uses matering #10 based of ometer samp oisture correct and tare = 7 = 2 moisture = 4 posite correction C: 1 	upon comple le =67.27 ction: 81.99 29.87 26.37 5.0% on values: 9.1 3.5 0.0 2.65 th equation:	20.3 -3.0 L = 16.294964	7.5 20.9 -2.8	21 -2	.3 .8	-2.5			
drometer tes rcent passin eight of hydro groscopic m Moist weight Dry weight a Tare weight : Hygroscopic ble of compo Temp., deg. (Comp. corr.: eniscus corre ecific gravity drometer typ Hydrometer of Elapsed	at uses matering #10 based for ometer samp oisture correct and tare = $\frac{8}{2}$ moisture = $\frac{2}{2}$ moisture = $\frac{4}{2}$ cosite correction C: 1 ection only = $\frac{1}{2}$ of solids = $\frac{2}{2}$ be = 152 H	upon comple le =67.27 ction: 1.99 29.87 26.37 4.0% on values: 9.1 3.5 0.0 2.65	20.3 -3.0	7.5 20.9 -2.8	21 -2	.3	22.6 -2.5 Diameter (mm.)	Percent Finer		
drometer tes rcent passin eight of hydro groscopic m Moist weight Dry weight a Tare weight : Hygroscopic ble of compo Temp., deg. (Comp. corr.: eniscus corre ecific gravity drometer typ Hydrometer of Elapsed	at uses matering #10 based of ometer samp oisture correct and tare = 8 moisture = 4 posite correction C: 1 continue = 152H effective dept Temp.	upon comple le =67.27 ction: 81.99 79.87 26.37 4.0% on values: 9.1 3.5 0.0 2.65 th equation: Actual	20.3 -3.0 L = 16.294964 Corrected	7.5 20.9 -2.8 4164 x R r	21 -2 n	.3 .8 Eff.	-2.5 Diameter			
drometer tes rcent passin eight of hydri groscopic m Moist weight Dry weight a Tare weight : Hygroscopic ble of compo Temp., deg. (Comp. corr.: eniscus corre eccific gravity drometer typ Hydrometer of Elapsed Time (min.) 1.00 2.00	at uses matering #10 based for ometer samp oisture corrections and tare = 8 motisture = 4 posite correction C: 1 pection only = 2 y of solids = 2 be = 152 H effective dept Temp. (deg. C.) 19.6 19.6	upon comple le =67.27 ction: 31.99 79.87 26.37 3.0% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2	7.5 20.9 -2.8 4164 x Rr K	21 -2 n Rm	.3 .8 Eff. Depth	-2.5 Diameter (mm.)	Finer		
rdrometer tes recent passin eight of hydre groscopic m Moist weight Dry weight a Tare weight: Hygroscopic ble of compo Temp., deg. (Comp. corr.: eniscus corre becific gravity drometer typ Hydrometer typ Hydrometer (Elapsed Time (min.) 1.00 2.00 5.00	at uses matering #10 based of ometer samp oisture corrections and tare = 7 = 2 moisture = 4 posite correction C: 1 contron only = 2 vof solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6	upon completer = 67.27 ction: 81.99 79.87 26.37 2.0% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5 27.0	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7	7.5 20.9 -2.8 4164 x Rr K 0.0137 0.0137 0.0137	21 -2 n 33.0 30.5 27.0	.3 .8 Eff. Depth 10.9 11.3 11.9	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211	Finer 40.2 36.8 32.1		
drometer tes procent passin eight of hydru- groscopic m Moist weight Dry weight a Tare weight: Hygroscopic ble of compo Temp., deg. Comp. corr.: eniscus correc- becific gravity drometer typ Hydrometer of Elapsed Time (min.) 1.00 2.00 5.00 15.00	at uses matering #10 based of ometer samp obsture correct is and tare = 8 and tare = 8 moisture = 4 obsite correction $C: 1$ moisture = 4 obsite correction $C: 1$ moisture = 4 obsite correction $C: 1$ moisture = 152 me	upon complete =67.27 ction: 1.99 9.87 26.37 2.0% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5 27.0 24.0	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7	20.9 -2.8 4164 x Rr K 0.0137 0.0137 0.0137 0.0137	21 -2 m 33.0 30.5 27.0 24.0	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124	Finer 40.2 36.8 32.1 28.0		
drometer tes ercent passin Moist weight Dry weight a Tare weight Hygroscopic ble of compo Temp., deg. Comp. corr.: eniscus corre becific gravity drometer typ Hydrometer typ Hydrometer typ 1.00 2.00 5.00 15.00 31.00	at uses matering #10 based ometer samp oisture correction and tare = 8 moisture = 4 posite correction C: 1 y of solids = 2 pe = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6	upon complete =67.27 ction: 1999 29.87 26.37 2.0% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5 27.0 24.0 21.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2	20.9 -2.8 4164 x Rr K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 33.0 30.5 27.0 24.0 21.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088	Finer 40.2 36.8 32.1 28.0 24.6		
vdrometer tes ercent passin eight of hydry vgroscopic m Moist weight Dry weight a Tare weight: Hygroscopic able of compo Temp., deg. 6 Comp. corr.: eniscus corre becific gravity vdrometer typ Hydrometer typ Hydrometer (min.) 1.00 2.00 5.00 15.00 31.00 60.00	at uses matering #10 based for ometer samp oisture corrections and tare = 8 and tare = 7 = 2 moisture = 4 bosite correction C: 1 	upon complete =67.27 ction: s1.99 79.87 26.37 2.0% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5 27.0 24.0 21.5 19.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2 16.3	20.9 -2.8 4164 x Rr K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 n 33.0 30.5 27.0 24.0 21.5 19.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8 13.1	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088 0.0064	Finer 40.2 36.8 32.1 28.0 24.6 22.0		
vdrometer tes ercent passin Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. 6 Comp. corr.: eniscus corres becific gravity vdrometer typ Hydrometer typ Hydrometer typ 1.00 2.00 5.00 15.00 31.00 60.00 120.00	at uses matering #10 based of ometer samp oisture corrections and tare = 7 = 2 moisture = 4 posite correction C: 1 	upon completer = 67.27 ction: 81.99 79.87 26.37 2.0% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5 27.0 24.0 21.5 19.5 17.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2 16.3 14.3	7.5 20.9 -2.8 4164 × Rr K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 33.0 30.5 27.0 24.0 21.5 19.5 17.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8 13.1 13.4	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088 0.0064 0.0046	Finer 40.2 36.8 32.1 28.0 24.6 22.0 19.3		
vdrometer tes ercent passin Moist weight Dry weight a Tare weight Hygroscopic ble of compo Temp., deg. Comp. corr.: eniscus corre becific gravity vdrometer typ Hydrometer of Elapsed Time (min.) 1.00 2.00 5.00 15.00 31.00 60.00 120.00 250.00	t uses materi g #10 based ometer samp oisture correct and tare = 7 = 2 moisture = 4 osite correction C: 1 ection only = 1 y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6 19.6 19.7 19.7	upon completer = 67.27 ction: 31.99 79.87 26.37 26.37 26.37 26.37 3.0% oon values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5 27.0 24.0 21.5 19.5 17.5 15.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2 16.3 14.3 12.3	20.9 -2.8 4164 x Rr K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 33.0 30.5 27.0 24.0 21.5 19.5 17.5 15.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8 13.1 13.4 13.8	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088 0.0064 0.0046 0.0032	Finer 40.2 36.8 32.1 28.0 24.6 22.0 19.3 16.6		
vdrometer tes ercent passin Moist weight Dry weight a Tare weight Hygroscopic able of compo Temp., deg. 6 Comp. corr.: eniscus corres becific gravity vdrometer typ Hydrometer typ Hydrometer typ 1.00 2.00 5.00 15.00 31.00 60.00 120.00	at uses matering #10 based of ometer samp oisture corrections and tare = 7 = 2 moisture = 4 posite correction C: 1 	upon completer = 67.27 ction: 81.99 79.87 26.37 2.0% on values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5 27.0 24.0 21.5 19.5 17.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2 16.3 14.3	7.5 20.9 -2.8 4164 × Rr K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 33.0 30.5 27.0 24.0 21.5 19.5 17.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8 13.1 13.4	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088 0.0064 0.0046	Finer 40.2 36.8 32.1 28.0 24.6 22.0 19.3		
vdrometer tes ercent passin Moist weight Dry weight a Tare weight Hygroscopic ble of compo Temp., deg. Comp. corr.: eniscus corre becific gravity vdrometer typ Hydrometer of Elapsed Time (min.) 1.00 2.00 5.00 15.00 31.00 60.00 120.00 250.00	t uses materi g #10 based ometer samp oisture correct and tare = 7 = 2 moisture = 4 osite correction C: 1 ection only = 1 y of solids = 2 be = 152H effective dept Temp. (deg. C.) 19.6 19.6 19.6 19.6 19.6 19.7 19.7	upon completer = 67.27 ction: 31.99 79.87 26.37 26.37 26.37 26.37 3.0% oon values: 9.1 3.5 0.0 2.65 th equation: Actual Reading 33.0 30.5 27.0 24.0 21.5 19.5 17.5 15.5	20.3 -3.0 L = 16.294964 Corrected Reading 29.7 27.2 23.7 20.7 18.2 16.3 14.3 12.3	20.9 -2.8 4164 x Rr K 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137 0.0137	21 -2 m 33.0 30.5 27.0 24.0 21.5 19.5 17.5 15.5	.3 .8 Eff. Depth 10.9 11.3 11.9 12.4 12.8 13.1 13.4 13.8	-2.5 Diameter (mm.) 0.0452 0.0326 0.0211 0.0124 0.0088 0.0064 0.0046 0.0032	Finer 40.2 36.8 32.1 28.0 24.6 22.0 19.3 16.6		

AMEC

-

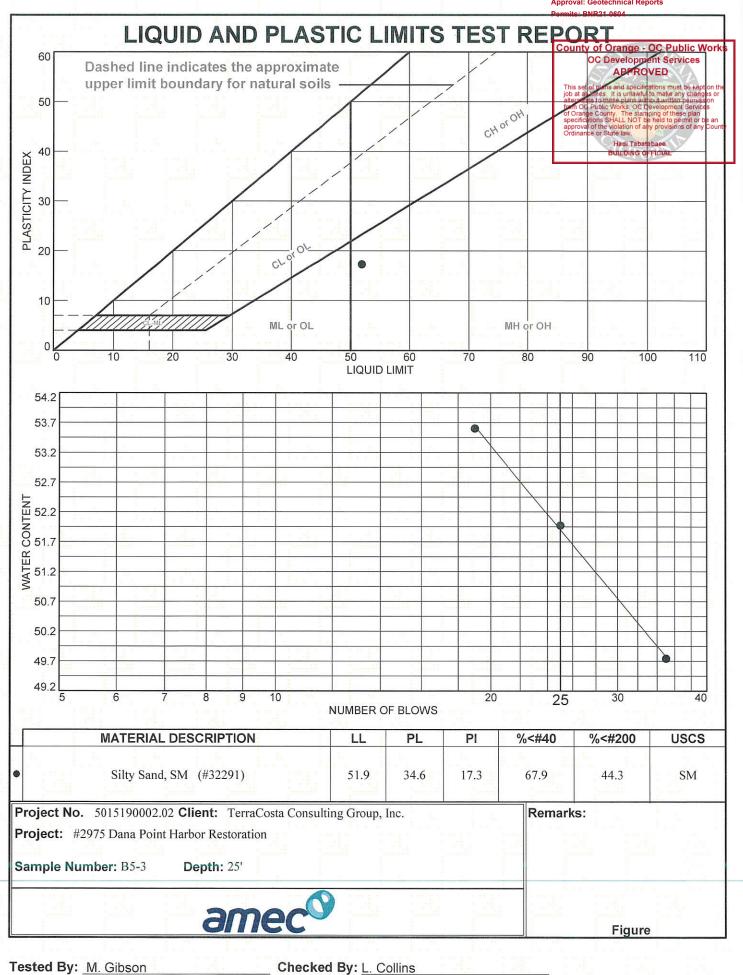
Building&Safety: Ryan Rose Approval: Geotechnical Reports

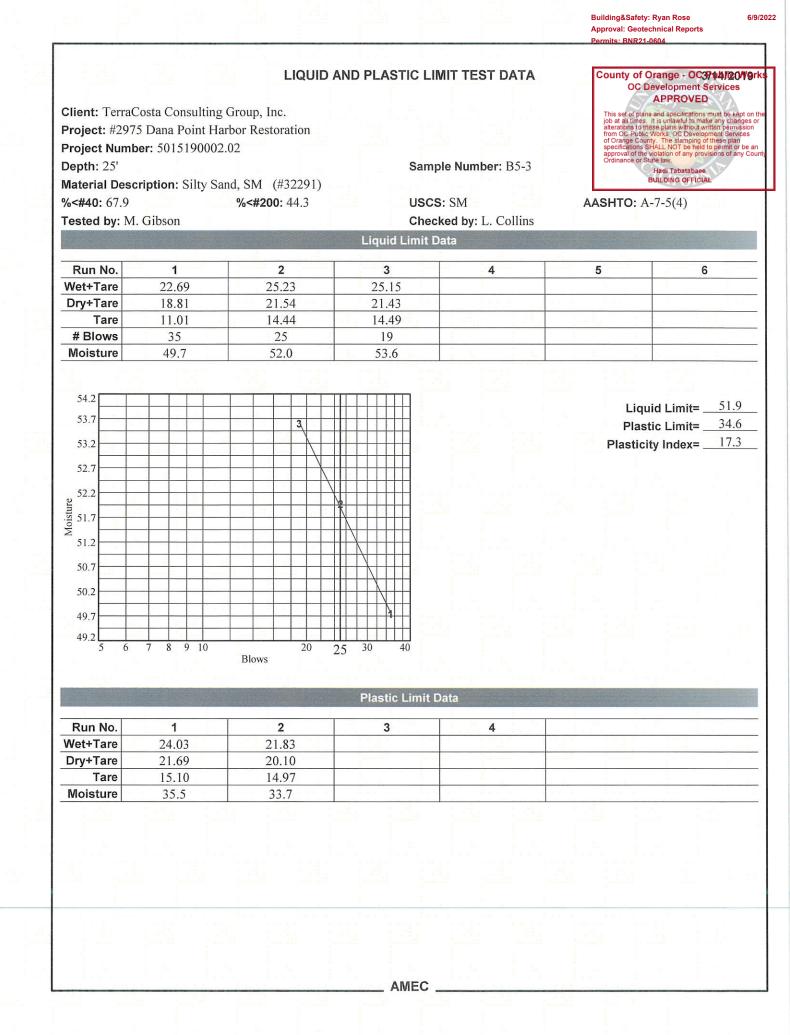
al Reports 6/9/2022

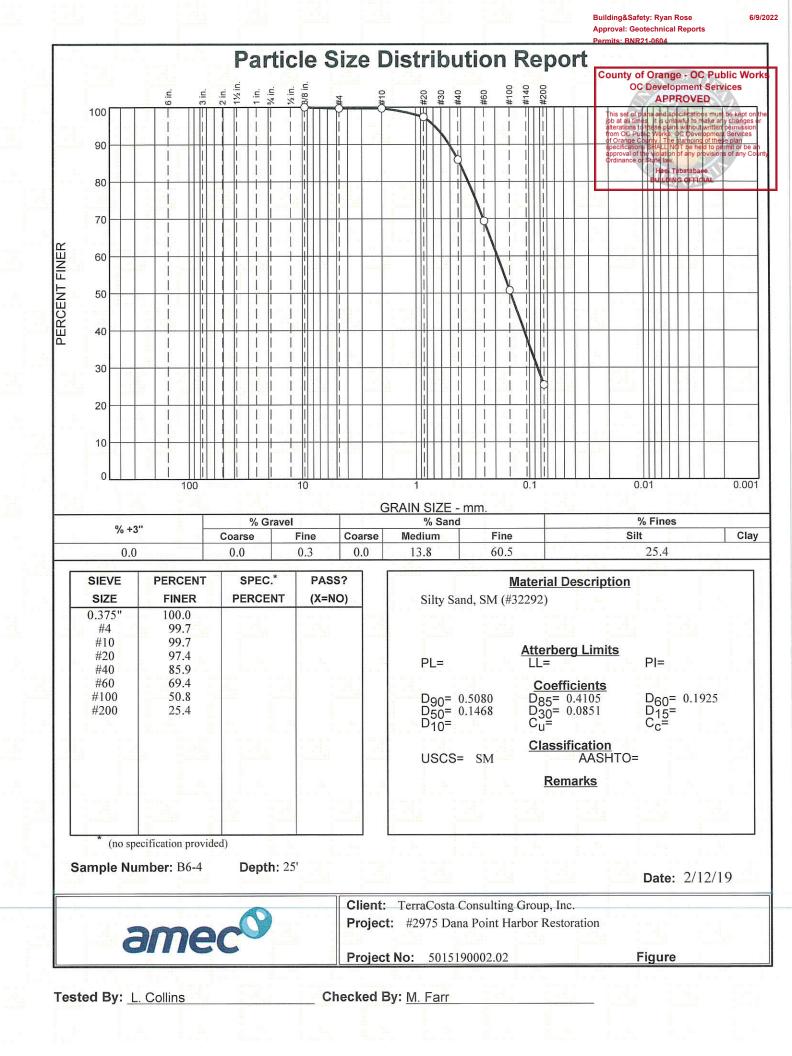
				Fr	actional C	Componen	its				
1000 C		Grave	1			Sand			County	of Orange - OCFDBCBopm	OC Public Wor
Cobbles	Coarse		Total	Coar	se Med		-ine	Total	SIt	CIAPPRO	VEDiotal
0.0	0.0	9.9	9.9	2.6	19	9.6	23.6	45.8	30.5 This set	of plans and specific times. It is unlawful	cations must be kept on I to make any changes of hout written permission
					1.54		1.1.1.6		from OC	Public Morke OC P	hout written permission Development Services nping of these plan be held to permit or be an ny provisions of any Cou
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅		
: - ⁴ .	t eta	0.0025	0.0050	0.0162	0.0444	0.1164	0.2336	1.0241	1.5221	4.5015	11.6995
lodulus 1.57											

			_ AMEC			

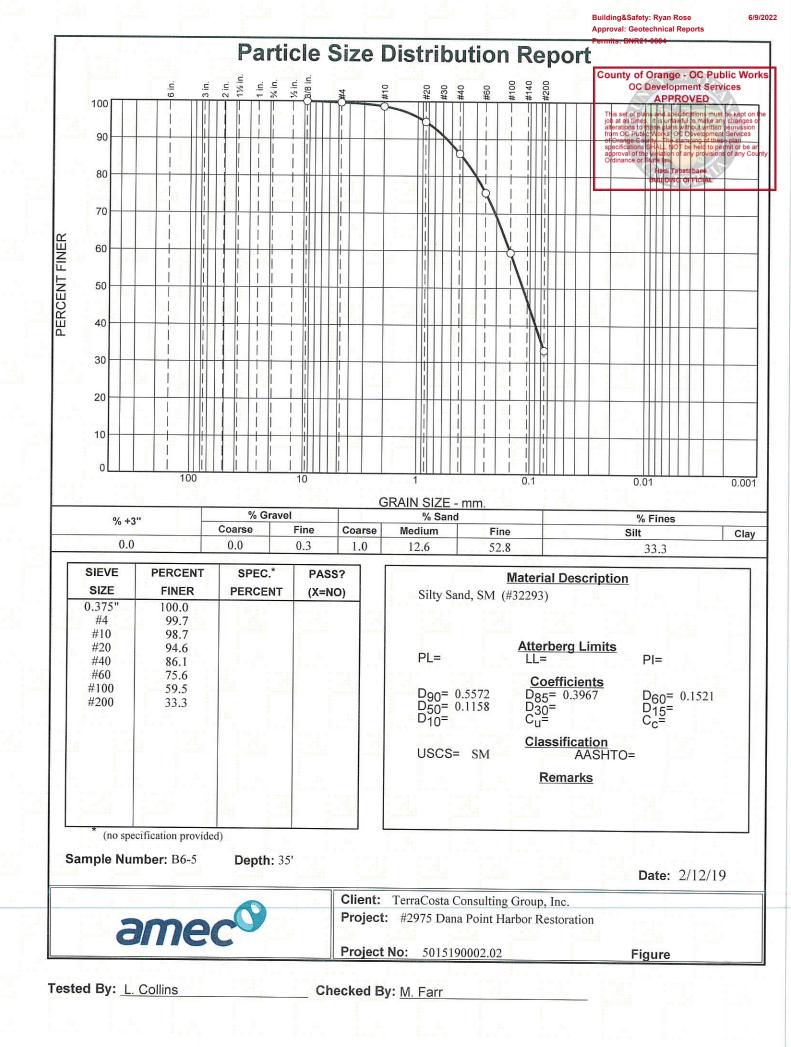
Building&Safety: Ryan Rose Approval: Geotechnical Reports







D ₅ D ₁₀ D ₁₅ D ₂₀ D ₃₀ D ₄₀ D ₅₀ D ₆₀ D ₈₀ D ₈₅ D ₉₀ D ₉	lient: Torr	Costa Com	wilting Cro		AIN SIZ	E DISTRII	BUTION ⁻	TEST DA	TA		of Orange - 0 C Developme APPROV	nt Services (ED				
roject Number: 5015190002.02 epth: 25' Sample Number: B6-4 Sample Number: B6-4 staterial Description: Silty Sand, SM (#32292) ate: 2/12/19 SCS Classification: SM ested by: L. Collins Checked by: M. Farr Sieve Tost Data Sieve Tost Tost Data Sieve Tost Tost Data Sieve Tost Tost Tost Tost Tost Tost Tost Tost					n					job at all ti alterations	mes. It is unlawful to to these plans with	o make any char out written permi				
Sample Number: B6-4 Contract Relation: SM Sise in the second of				Restoration						of Orange specification	County. The stamp ons SHALL NOT be	ing of these plan held to permit or				
Buildes or rick Site 2/12/19 Site 2/12/19 Site 2/12/19 Site 2/12/19 Site 2/12/19 Site Collins Site Collins Site Test Data Site Finer 0.375" 100.0 #4 99.7 #10 99.7 #20 97.4 #400 85.9 #60 69.4 #100 50.8 #200 25.4 Fractional Components Cobbles Fines Cobbles Gravel Fines Coarse Fine Total Silt Clay Total 0.0 0.0 13.8 6.0.5 7.4.3 1 <th <="" colspan="4" th=""><th></th><th></th><th>,</th><th></th><th></th><th></th><th>Sample N</th><th>lumber: B</th><th>6-4</th><th>Ordinance</th><th>or State law.</th><th></th></th>	<th></th> <th></th> <th>,</th> <th></th> <th></th> <th></th> <th>Sample N</th> <th>lumber: B</th> <th>6-4</th> <th>Ordinance</th> <th>or State law.</th> <th></th>						,				Sample N	lumber: B	6-4	Ordinance	or State law.	
Size colspan="6">Checked by: M. Far: Size Test Data #4 99.7 #10 99.7 #20 97.4 #440 85.9 #60 69.4 #100 50.8 Teractional Components Fine Caravel Site Clay Cobles Total Coarse Fine Coarse Fine Total Clay Coarse Fine Total Site Clay Obles Cravel Coarse Fine <		scription: S	ilty Sand, S	SM (#32292	2)					de e						
Checked by: M. Farr Sieve Test Data Sieve Opening Size Percent Finer Sieve Test Data 0.375" 100.0 + #4 99.7 + #10 99.7 + #20 97.4 + #40 85.9 + #60 69.4 + #100 50.8 + <th>ate: 2/12/1</th> <th>9</th> <th></th>	ate: 2/12/1	9														
Sieve Test Data Sieve Opening Size #4 Percent Finer Finer Sieve Test Data 0.375" 100.0 +			М													
Sieve Opening Size Percent Finer Percent Finer Percent Finer Percent Finer Sieve Finer Sieve F	ested by: I	L. Collins			· · ·	the same and the state of the		by: M. Fa	rr							
Opening Size Percent Finer 0.375" 100.0 #4 99.7 #10 99.7 #20 97.4 #40 85.9 #60 69.4 #100 50.8 #200 25.4 Fire/Cobbles Gravel subscription Cobbles Gravel Subscription Cobbles Gravel Subscription Subscription Subscription Subscription Subscription Subscription Subscription Subscription Subscription Subscription Subscription Pine Total Silt Classe Pine Total Silt Classe Pine Total Silt Classe Pine Total Silt Classe Pine T						Sieve Te	est Data	-								
Size Finer 0.375" 100.0 #4 99.7 #10 99.7 #20 97.4 #40 85.9 #60 69.4 #100 50.8 #200 25.4 Fractional Components Frines Cobbles Gravel Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 Image: Clay Clay Total 0.0 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Fineess Modulus Side in 1118 0.144 0.4105 0.5080 0.688		Percent														
#4 99.7 #10 99.7 #20 97.4 #40 85.9 #60 69.4 #100 50.8 #200 25.4 Fractional Components Cobbles Cobbles Coarse Fine Total Coarse Fine 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 Image: Colspan="5">Image: Colspan="5">Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 Image: Colspan="5">Image: Colspan="5">Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 Image: Colspan="5">Image: Colspan="5" Image: Colspa="5" Image: Colspan="5" Image: Colspan="5" Image: Cols																
#10 99,7 #20 97.4 #40 85.9 #60 69.4 #100 50.8 #200 25.4 Fractional Components Cobbles Cobbles Coarse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 1 25.4 P P P O P P Total Silt Clay Total P P P Total Silt Clay Total 0.0 0.13 0.0 13.8 60.5 74.3 1 25.4 P D P <td>0.375"</td> <td>100.0</td> <td></td>	0.375"	100.0														
#20 97.4 #40 85.9 #60 69.4 #100 50.8 #200 25.4 Fractional Components Cobbles Coarse Fine Total Silt Clay Total O.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 Image: Clay Total 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Fineess Medium Fine Silt Clay Total Silt Clay Tota 0.0 0.13 0.3 0.5 74.3 Image: Clay 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 D9 Grave: Clay Clay Clay Clay Clay																
#40 85.9 #60 69.4 #100 50.8 #200 25.4 Fractional Components Cobbles Coarse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 Image: Clay Total 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Fineness Modulus Fineness																
#60 69.4 #100 50.8 #200 25.4 Fractional Components Cobbles Gravel Sand Fine Cobbles Fine Total Coarse Fine Coarse Fine Total Coarse Fines 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Modulus Fineness Modulus Fineness																
$\begin{array}{c c c c c c c c c c c c c c c c c c c $																
#200 25.4 Fractional Components Cobbles Fine Total Coarse Medium Fine Total Sint Clay Total Cobbles Gravel Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Fineness Modulus Fineness Sitter																
Fractional Components Cobbles Gravel Coarse Total Coarse Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 1 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Fineness Modulus III 0.1468 0.1925 0.3444 0.4105 0.5080 0.688																
Cobbles Gravel Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 Image: Clay 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Efineness Modulus Efineness Clay O.0851 0.1118 0.1468 0.1925 0.3444 0.4105 0.5080 0.688	#200	25.4				i i i i i i i i i i i i i i i i i i i		10			A 10 10 10 10 10					
Cobbles Coarse Fine Total Coarse Medium Fine Total Silt Clay Total 0.0 0.0 0.3 0.3 0.0 13.8 60.5 74.3 Image: Clay Total 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Image: Clay Image: Clay 0.0851 0.1118 0.1468 0.1925 0.3444 0.4105 0.5080 0.68 Fineness Modulus Image: Clay		-			F	ractional C	omponer	115								
0.0 0.3 0.3 0.0 13.8 60.5 74.3 25.4 D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Image: Smooth and service	Cobbles	Cooreo	1	Total	Con	Mag		Fina	Total	Cilt		Total				
D5 D10 D15 D20 D30 D40 D50 D60 D80 D85 D90 D9 Image: Imag	202	Coarse	Fille	TOLA			2		TOLAT	Silt	Ciay	TOLAI				
Fineness Modulus 0.0851 0.1118 0.1468 0.1925 0.3444 0.4105 0.5080 0.68	0.0	0.0	0.2	0.2	0.0	0 1 12	20 4	60.5	74 2		2 1	25 1				
Fineness Modulus 0.0851 0.1118 0.1468 0.1925 0.3444 0.4105 0.5080 0.68	0.0	0.0	0.3	0.3	0.0	0 13	3.8 0	60.5	74.3			25.4				
Fineness Modulus																
Modulus				D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
				D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀							
0.83	D ₅ Fineness			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				
	D ₅ Fineness Modulus			D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀			D ₉₅				



lient: Torra	Costa Corr	ulting Gro		AIN SIZI	E DISTRI	BUTION	TEST DA	ТА		of Orange - C C Developme APPROV	nt Services /ED
lient: Terra				n					This set of job at all ti alterations	plans and specifications. It is unlawful to these plans without the back of th	tions must be kept o make any chang out written permiss
roject Num			Restoratio						of Orange specification	to these plans with ublic Works, OC De County. The stamp ons SHALL NOT be	ing of these plan held to permit or b
epth: 35'		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				Sample N	umber: B	5-5	Ordinance	f the violation of any or State law. Hadi Tabatal	
aterial Des	cription: S	ilty Sand, S	SM (#3229	93)						BUILDING OF	
ate: 2/12/19		1.034		1.01							
SCS Class	ification: S	М									
ested by: L	. Collins					Checked	by: M. Far	r, ^{la}			
					Sieve T	est Data					
Sieve Opening Size	Percent Finer										
0.375"	100.0										
#4	99.7										
#10	98.7										
#20	94.6										
#40	86.1										
#60	75.6										
#100	59.5										
#200	33.3										
				ini.	actional	Componer	its				
Cobbles		Gravel				Sand		1 22 2		Fines	
	Coarse	Fine	Total	Coar			Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	1.0		2.6	52.8	66.4			33.3
			in head			a a a a ga a a a	a a a a a — a g a	a sad s sga			
D ₅	D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₄₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
1	da da	4-			0.0891	0.1158	0.1521	0.3022	0.3967	0.5572	0.8920
	41 1	4.1		11	1141	1.14			1111		
Fineness											
Modulus											
Modulus 0.74											

Building&Safety: Ryan Rose

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without writine permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance of state law. Held Tabatabase BUILDING OFFICIAL

6/9/2022

APPENDIX D

ReMi SURVEY GEOPHYSICAL EVALUATION by SOUTHWEST GEOPHYSICS





Project No. 119031

Mr. Gregory A. Spaulding TerraCosta Consulting Group, Inc. 3890 Murphy Canyon Road, #200 San Diego, CA 92123

YOUR SUBSURFACE SOLUTION

Subject: Geophysical Evaluation Dana Point Harbor Dana Point, California

Dear Mr. Spaulding:

In accordance with your authorization, we have performed geophysical survey services pertaining to the Dana Point Harbor project located in Dana Point, California (Figure 1). The purpose of our survey was to develop Shear-wave velocity profiles to be used for design and construction at the site. Our services were performed on January 23, 2019. This report presents the survey methodology, equipment used, analysis, and findings from our study.

Our scope of services included the performance of four refraction microtremor (ReMi) profiles (RL-1 through RL-4) at preselected areas of the project site (see Figures 2 and 3). The ReMi technique uses recorded surface waves (specifically Rayleigh waves) that are contained in back-ground noise to develop a Shear-wave velocity profile of the study area down to a depth, in this case, of approximately 100 feet. The depth of exploration is dependent on the length of the line and the frequency content of the background noise. The results of the ReMi method are displayed as a one-dimensional sounding which represents the average condition across the length of the line. The ReMi method does not require an increase of material velocity with depth; therefore, low velocity zones (velocity inversions) are detectable with ReMi.

Our ReMi survey included the use of a 24-channel Geometrics Geode seismograph and 24 4.5-Hz vertical component geophones. The geophones were spaced 10 feet apart for a total line

Project Noc Delegondent Services

job at all t

APPROVED

6/9/2022

ot on the

OC Public Works

length of 230 feet. Fifteen records, each 32 seconds long, were recorded and ther a computer. The data were later processed using SeisOpt® ReMiTM software (© Optimile later base Building of August 10 and the volume of approximate later base Building of August 10 and the volume of approximate later base Building of August 10 and the volume of August 10 and the vo

2005), which uses the refraction microtremor method (Louie, 2001). The program generates phase-velocity dispersion curves for each record and provides an interactive dispersion modeling tool where the users determine the best fitting model. The result is a one-dimensional shear-wave velocity model of the site with roughly 85 to 95 percent accuracy. Figure 3 depicts the general site conditions in the survey area.

Figures 4a through 4d present the results from our survey. Based on our analysis of the collected data, the average characteristic site Shear-wave velocity down to a depth of 100 feet is 1,399 feet per second (ft/s) for RL-1, 1,352 ft/s for RL-2, 1,381 ft/s for RL-3, and 1,118 ft/s for RL-4 (CBC, 2016). These values correspond to site classifications of **C** for RL-1 through RL-3 and **D** for RL-4. The results also indicate a substantial, abrupt, increase in velocity at an approximate depth of 22 feet and 25 feet at locations RL-1 through RL-3, and RL-4 respectively. It should be noted the ReMi results represent the average condition across the length of the line.

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Southwest Geophysics should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended

Dana Point Harbor Dana Point, California Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604 6/9/2022

February 6, 2019 County of Orange - OC Public Works Project Not Deletable and security of the services APPROVED This set of plane and security to make any changes of alterations to these plans without written permission from OC Public Works, OC Development Services alterations to these plans without written permission from OC Public Works, OC Development Services alterations to these plans without written permission from OC Public Works, OC Development Services alterations to the services and any provisions of any County Ordinance of State law. d partices' sole pisk abatabase BUILDING OFFICIAL

exclusively for use by the client. Any use or reuse of the findings, conclusions, and or recommendations of this report by parties other than the client is undertaken at said parties' sole riskatetate

We appreciate the opportunity to be of service on this project. Should you have any questions related to this report, please contact the undersigned at your convenience.

Sincerely,

SOUTHWEST GEOPHYSICS, LLC

Aaron T. Puente Project Geophysicist

ATP/HV/hv

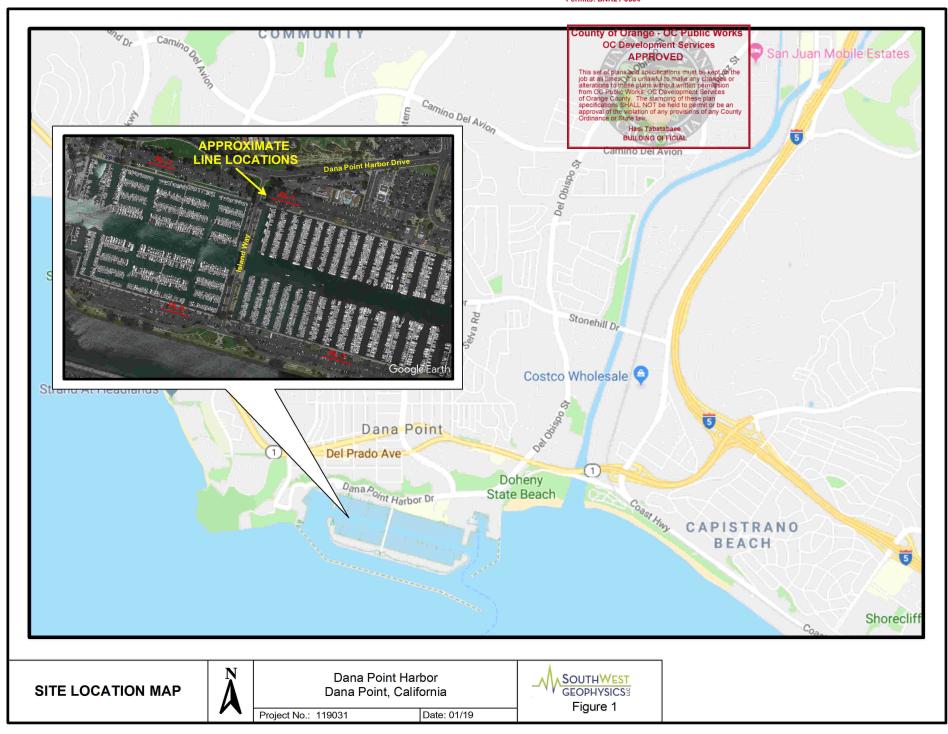
Attachments: Figure 1 – Site Location Map Figure 2 – Seismic Line Location Map Figure 3 – Site Photographs Figure 4a – ReMi Results, RL-1 Figure 4b – ReMi Results, RL-2 Figure 4c – ReMi Results, RL-3 Figure 4d – ReMi Results, RL-4

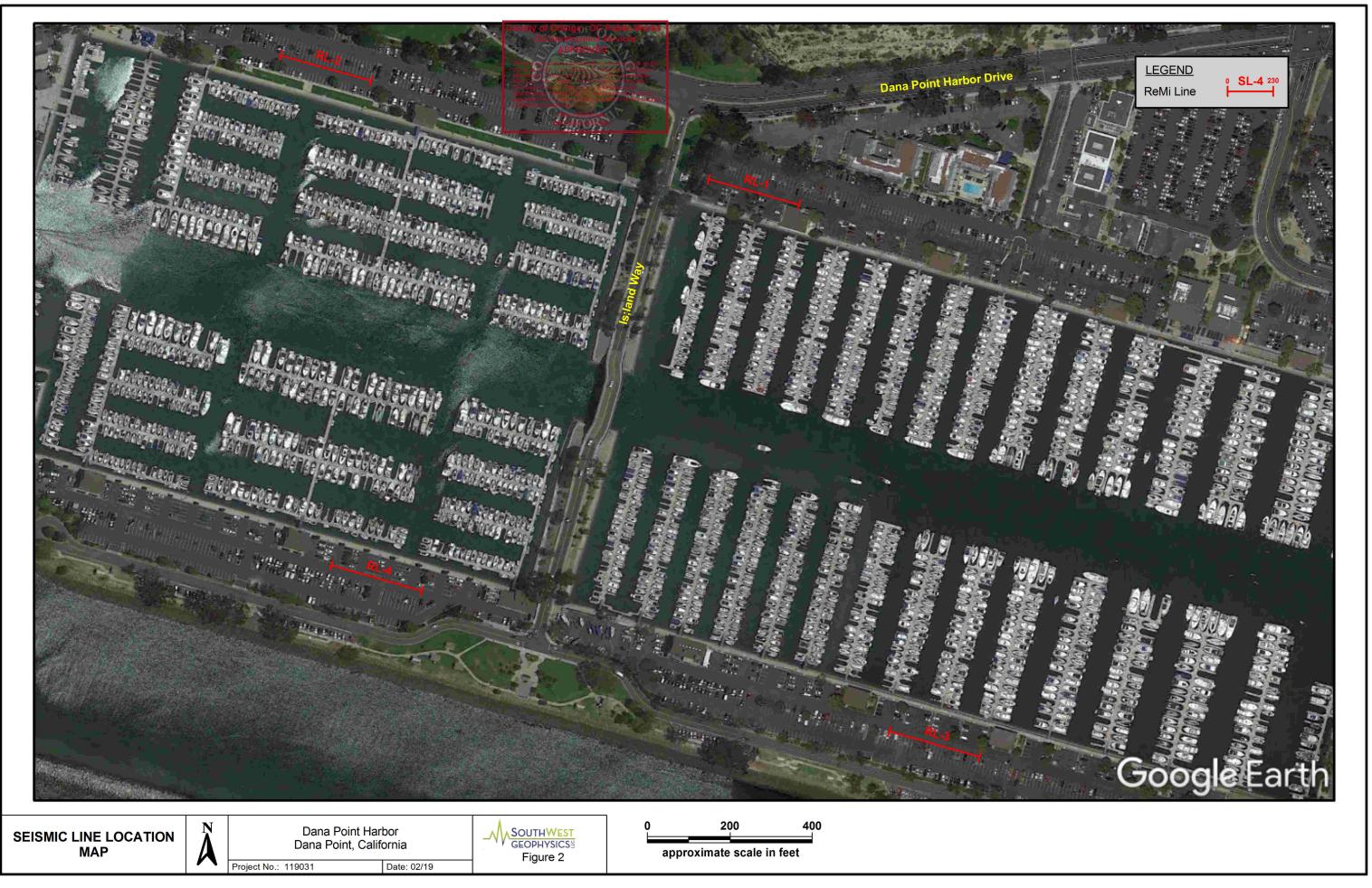
Distribution: Addressee (electronic)

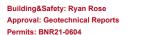


Hans van de Vrugt, C.E.G., P.Gp. Principal Geologist/Geophysicist



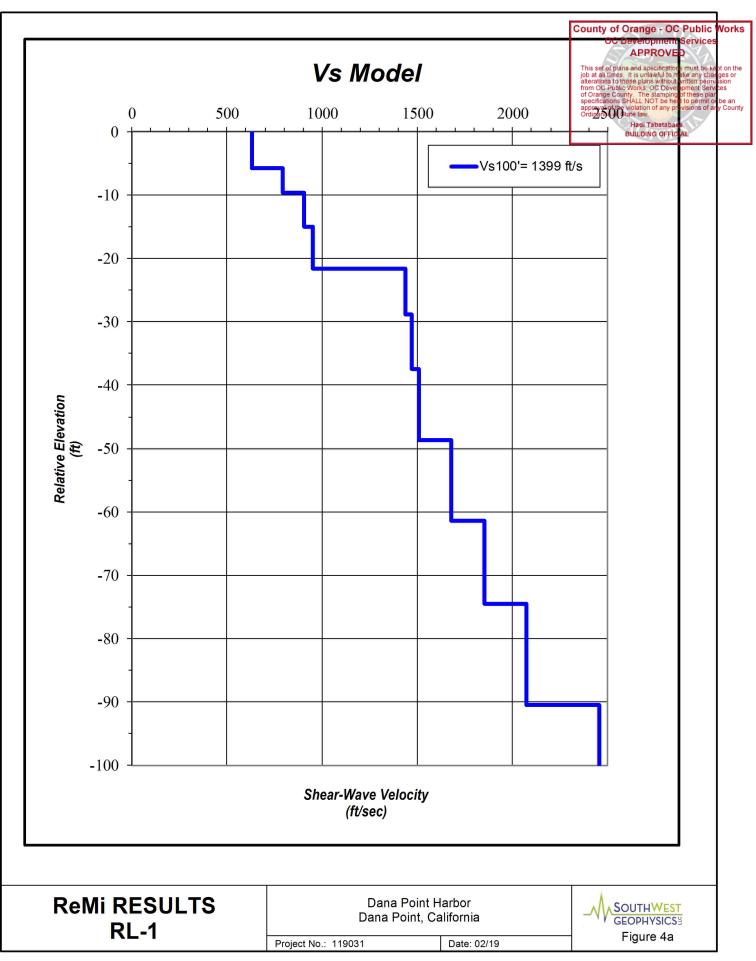


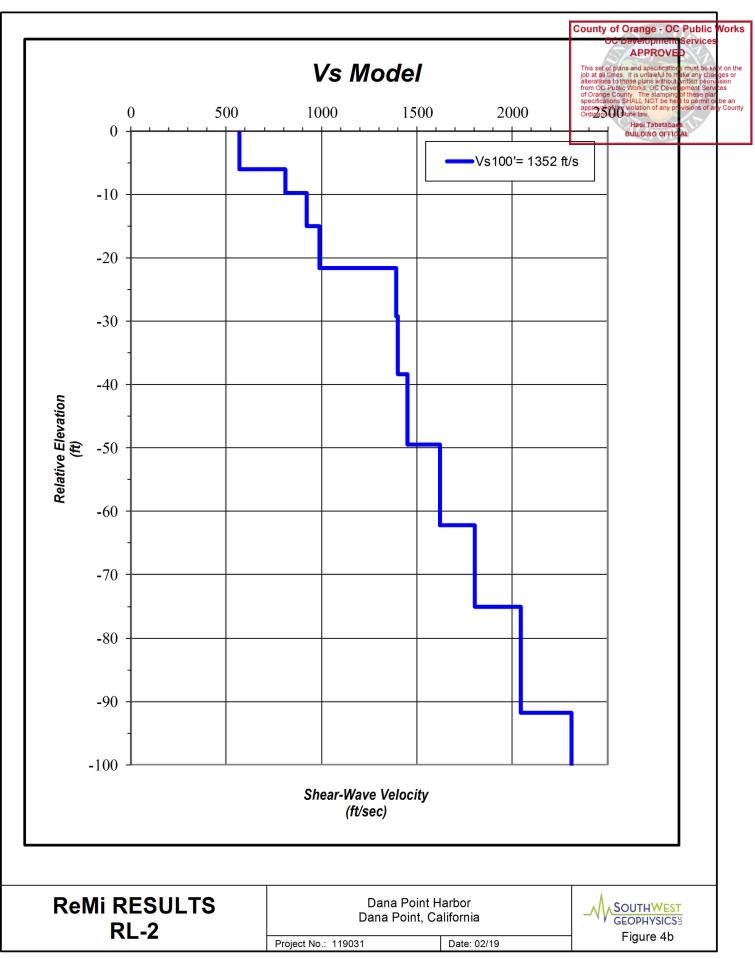




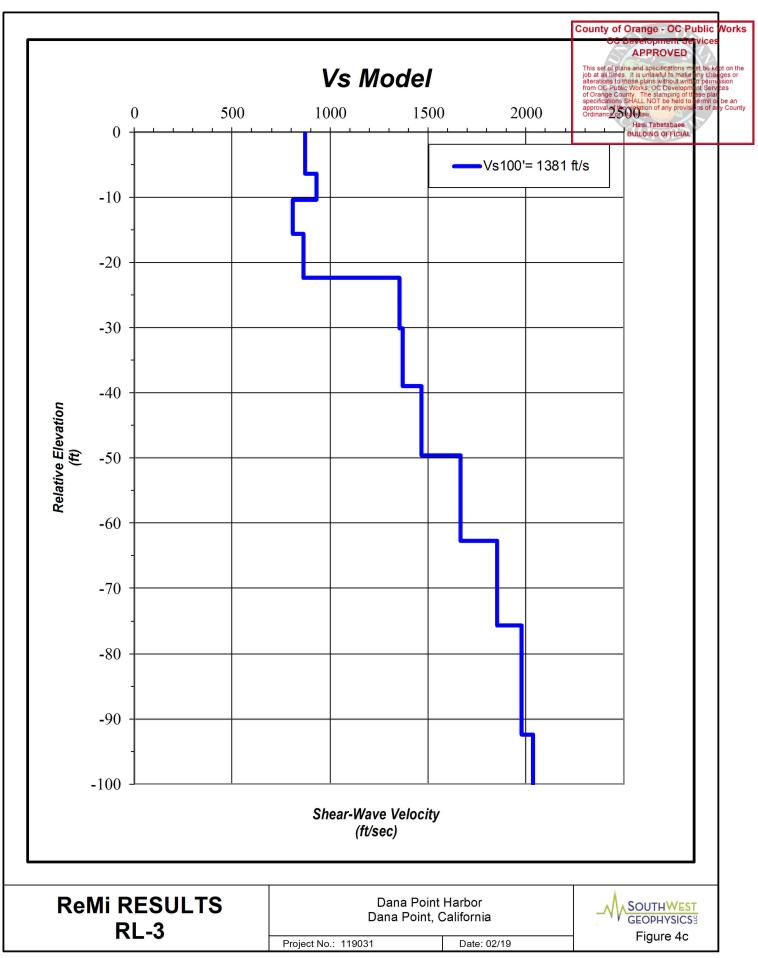






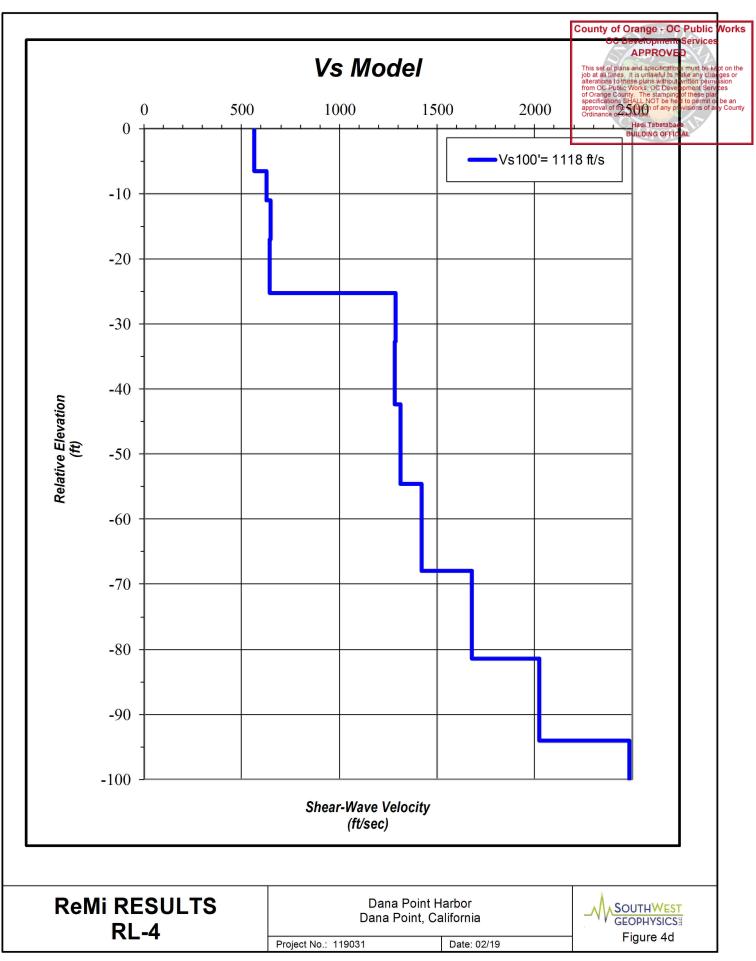


Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604



6/9/2022

Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604



6/9/2022

Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604

County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or state law. Heid Tabatabase BUILDING OFFICIAL

6/9/2022

APPENDIX E

MARINA CONSTRUCTION PLANS





6/9/2022

County of Orange - OC Public Works ORANGE COUNTY HARBO DANA POINT H DANA POINT, CALIFORNIA HEAVY CONSTRUCTION PROJECT LOCATION-ORANGE COUNTY HARBOR DISTRICT WPORT BEACH, CALIFORNI 714/834-3000 IN BAYSIDE DRIVE VICINITY MAP DANA POINT HARBOR PLANE PREPARED I HEAVY CONSTRUCTION Recommended for Approval by TITLE SHEET & VICINITY MAP Lunth Caugen OCTOBER . INES D10.5-AS SHOWN

DPH RFQ Resource Documents #1- As Built Plans 9-22-70

INDEX TO DRAWINGS

and the second second

1

6+1

<u>,</u>

~

100

- 27

ίς.

۰.

4

(r)

jan.

inge .

- States

SHEET NO.	TITLE	SHEET NO.	TITLE
1	TITLE SHEET & VICINITY MAP	27	BOAT RAMP - PLAN & SECTIONS
<u>2</u>	INDEX TO DRAWINGS, LEGEND & GENERAL NOTES	28	BOAT RAMP - DETAILS
& 3	INDEX TO FINISHED GRADING PLANS	29	DEL OBISPO STREET - PROFILES I
4	INDEX TO SECTIONS & TRANSITION DETAILS	30	DEL OBISPO STREET - PROFILES II
5	SURVEY CONTROL I	\$ 31	DRAINAGE PLAN
6	SURVEY CONTROL II	E 32	DRAINAGE PROFILES I
7	SURVEY CONTROL III	: 33	DRAINAGE PROFILES II
Š. 8	DEWATERING REQUIREMENTS	34	DRAINAGE DETAILS I
9	FINISHED GRADING PLAN - AREA IA & AREA IB	35	DRAINAGE DETAILS II
10	FINISHED GRADING PLAN - AREA II	36	BRIDGE ARCHITECTURAL PLAN, ELE
11	FINISHED GRADING PLAN - AREA III		MISCELLANEOUS DETAILS
12	FINISHED GRADING PLAN - AREA IV	37	BRIDGE HAND RAIL AND MISCELLA
13	FINISHED GRADING PLAN - AREA V	38	CONCRETE REVETTED SLOPE TYPICA ELEVATIONS & DETAILS
14	FINISHED GRADING PLAN - AREA VI	39	BRIDGE STRUCTURAL PLAN AND SEC
\$ 15	FINISHED GRADING PLAN - AREA VII	40	BRIDGE TYPICAL SECTIONS AND BO
16	FINISHED GRADING PLAN - AREA VIII	41	BRIDGE TYPICAL BENT AND APPRO
ζ 17 ς 17Α	DELETED FINISHED GRADING PLAN - AREA IX	42	QUAY WALL DETAILS
18	TYPICAL GRADING SECTIONS I	43	RETAINING WALLS - PLANS & ELI
19	TYPICAL GRADING SECTIONS II	44	RETAINING WALLS - DETAILS
20	TYPICAL GRADING SECTIONS III	45	BRIDGE ELECTRICAL PLAN AND EL
21	TYPICAL GRADING SECTIONS IV	46	BRIDGE ELECTRICAL MISCELLANE
22	TYPICAL GRADING SECTIONS V		
23	TYPICAL REVETMENT SECTIONS		CAPRON PROPERTY GRADING
24	REVERMENT TRANSITION DETAILS I	47	CAPRON PROPERTY ROUGH GRAD
25	REVERMENT TRANSITION DETAILS II	48	CAPRON PROPERTY - PRIORITY OF
26	REVERMENT TRANSITION DETAILS III	49	CAPRON PROPERTY - TYPICAL SEC
		50	CAPRON PROPERTY - DRAINAGE

Building&Safety: Ryan Rose

Approval: Geotechnical Reports Permits: BNR21-0604

> Inty of Orange - OC Public Works OC Development Services
> APPROVED

> > Hadi Tabatabaee BUILDING OFFICIAL

6/9/2022

251 Se .

LEGEND

(-15)

 $\mathbf{\Theta}$

(-10)

 \wedge

BOUNDARY OF HARBOR DISTRICT PROPERTY

SURVEY CONTROL LINE

EXISTING GRADE CONTOUR

TOP OF SLOPE

APPROXIMATE NATURAL FORMATION SURFACE

FLOW LINE

DREDGING DEPTH IN FEET (BY OTHERS)

WORKING POINT

REQUIRED BASIN DEPTH IN FEET (MINIMUM) SEE NOTE 6 HEREON

SECTION OR DETAIL IDENTIFICATION Α -SHEET ON WHICH SECTION OR DETAIL IS REFERENCED 2 DRAWING ON WHICH SECTION OR DETAIL APPEARS

TREET - PROFILES I TREET - PROFILES II FILES I OFILES II

TECTURAL PLAN, ELEVATION AND US DETAILS

RAIL AND MISCELLANEOUS DETAILS

ETTED SLOPE TYPICAL PLAN **DETAILS**

FURAL PLAN AND SECTION

L SECTIONS AND BOX GIRDER DETAILS

BENT AND APPROACH STRUCTURE DETAILS

LLS - PLANS & ELEVATIONS

RICAL PLAN AND ELEVATION

RICAL MISCELLANEOUS DETAILS

OPERTY GRADING DRAWINGS

ERTY ROUGH GRADING PLAN

ERTY - PRIORITY OF GRADING

ERTY - TYPICAL SECTIONS

ERTY - DRAINAGE DETAILS

PIER MODIFICATION STRUCTURAL & MISCELLANEOUS DETAILS)

GENERAL NOTES

STATIONS INDICATED ON ROAD PLAN AND PROFILE 1. ARE MEASURED ALONG CENTERLINE.

- THE CONTRACTOR SHALL DEWATER THE CONSTRUC-2. TION AREA AS INDICATED AND SPECIFIED. IT IS IMPERATIVE THAT THE AREA SURROUNDING AND INCLUDING THE BOAT RAMP BE COMPLETED WITHIN 240 DAYS AFTER AWARD OF CONTRACT, AS INDI-CATED ON SHEET 8 OF THESE DRAWINGS. AT THIS TIME ALL CONSTRUCTION IN THE DESIGNATED AREA SHALL BE COMPLETE AND THE AREA SHALL BE TURNED OVER TO THE ORANGE COUNTY HARBOR DISTRICT, TOGETHER WITH THE SOUTHEASTERLY 50 FEET OF DEL OBISPO STREET FROM PACIFIC COAST HIGHWAY TO STATION 84 + 00
- 3. THE LOWER LIMITS OF BOTH CONCRETE AND STONE REVETTED SLOPES HAVE BEEN INDICATED HEREIN BASED ON THE INFORMATION AVAILABLE. HOW-EVER, BECAUSE THE LIMITS ARE DEPENDENT ON THE DEPTH OF THE NATURAL FORMATION, THE ACTUAL LOCATION OF THE LOWER LIMITS WILL BE FIELD-DETERMINED DURING CONSTRUCTION IN ACCOR-DANCE WITH THE REQUIREMENTS OF SECTIONS

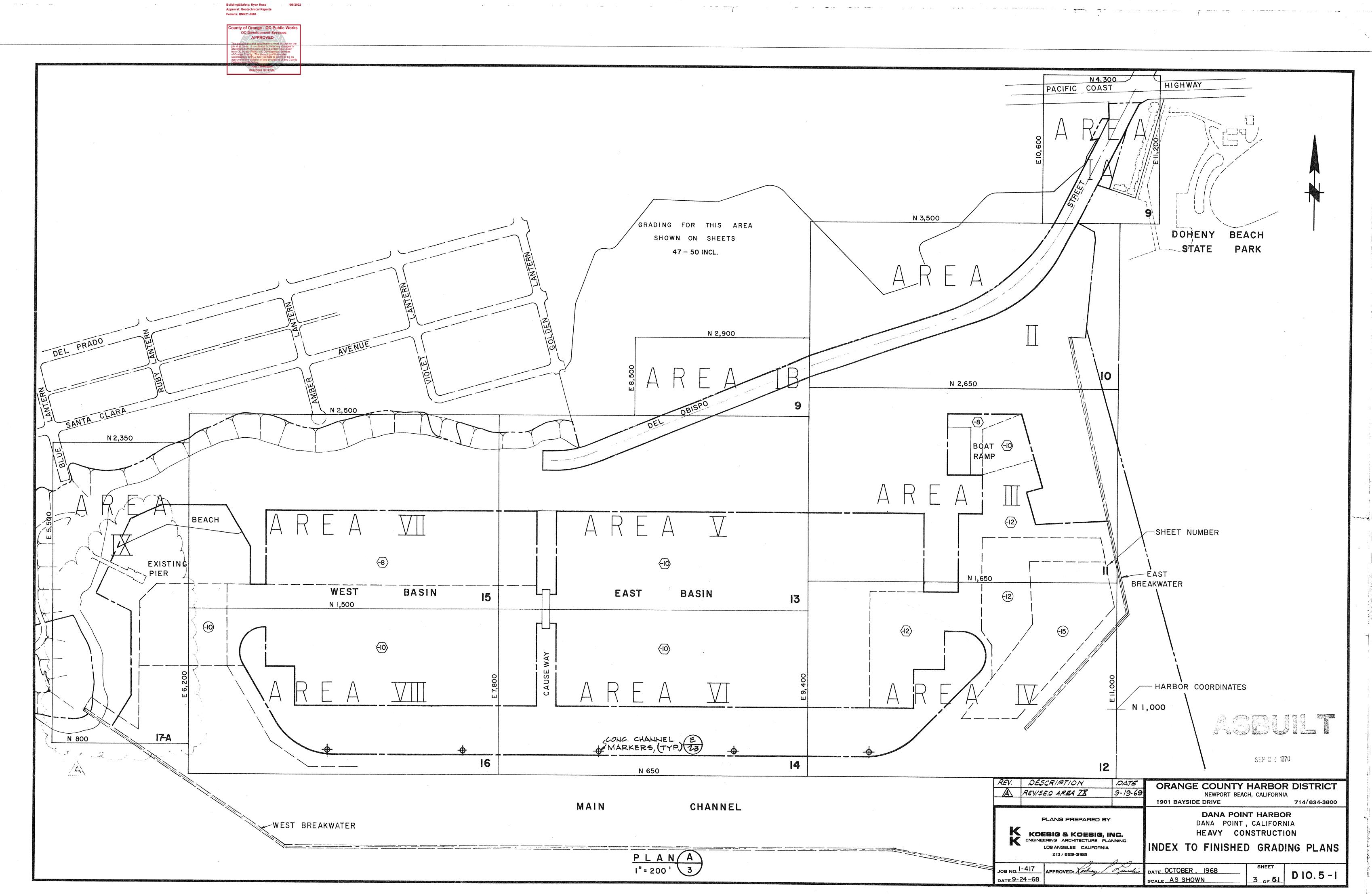
26

 $\begin{array}{c}
 B \\
 \hline
 23 \\
 \hline
 25 \\
 \hline
 26 \\
 \hline
 \end{array}$

- 4. ALL COORDINATES, GRID LINES, AND BEARINGS SHOWN ON THESE DRAWINGS ARE BASED ON THE HARBOR GRID SYSTEM EXCEPT WHEN OTHERWISE NOTED. THE HARBOR GRID IS BASED UPON THE MEARING OF THE LONGEST SECTION OF THE WEST BREAKWATER, WHICH IS S. 73º 40' E. ON THE LAM-BERT SYSTEM, BUT WHICH IS ARBITRARILY TAKEN AS DUE EAST ON THE HARBOR GRID. THE ORIGIN OF THE HARBOR GRID SYSTEM IS SUCH THAT THE NORTHERLY LIMIT OF THE BOAT BASINS IS EXACTLY N. 2000, WHILE THE CENTERLINE OF THE CAUSEWAY AND BRIDGE IS EXACTLY E. 8050. THE ORIGIN OF THE HARBOR GRID, IN TERMS OF LAMBERT COOR-DINATES, IS N. 474, 520.932 AND E. 1, 550, 090.335.
- 5. ALL ELEVATIONS HEREIN ARE BASED ON MEAN LOWER LOW WATER (MLLW) DATUM. PROJECT BENCH MARK IS CALIFORNIA STATE LAND COMMIS-SION MONUMENT B-4061, ELEVATION 15.75, LOCA-TED ON THE SOUTHWESTERLY SIDE OF THE RAMP ONTO THE EXISTING DANA POINT PIER.
- 6. THE TERMS "REQUIRED BASIN DEPTH" AND "EXCAVATE TO -8" (OR -10 OR -12), MEAN THAT THE MINIMUM ACCEPTABLE DEPTH IS THE ELEVATION SHOWN. DEEPER AREAS SHALL REMAIN AT NATURAL DEPTH. PINNACLES IN DEEPER AREAS, WHICH PROJECT ABOVE THE REQUIRED MINIMUM, SHALL BE REMOVED TO THE INDICATED DEPTH. OVER EXCAVATION OF NOT MORE THAN ONE FOOT IN WATER AREAS WILL BE PERMITTED.
- 7. IN AREAS WHERE CONCRETE OR OTHER CONSTRUCTION IS TO BE PLACED ON CUT SURFACES OF NATURAL FORMATION, OVER EXCAVATED AREAS SHALL BE FILLED WITH THE MATERIAL OF WHICH THE OVERLYING CONSTRUCTION IS COMPOSED.
- 8. UNLESS OTHERWISE INDICATED, THE NORTH ARROWS SHOWN HEREIN REFER TO HARBOR GRID NORTH

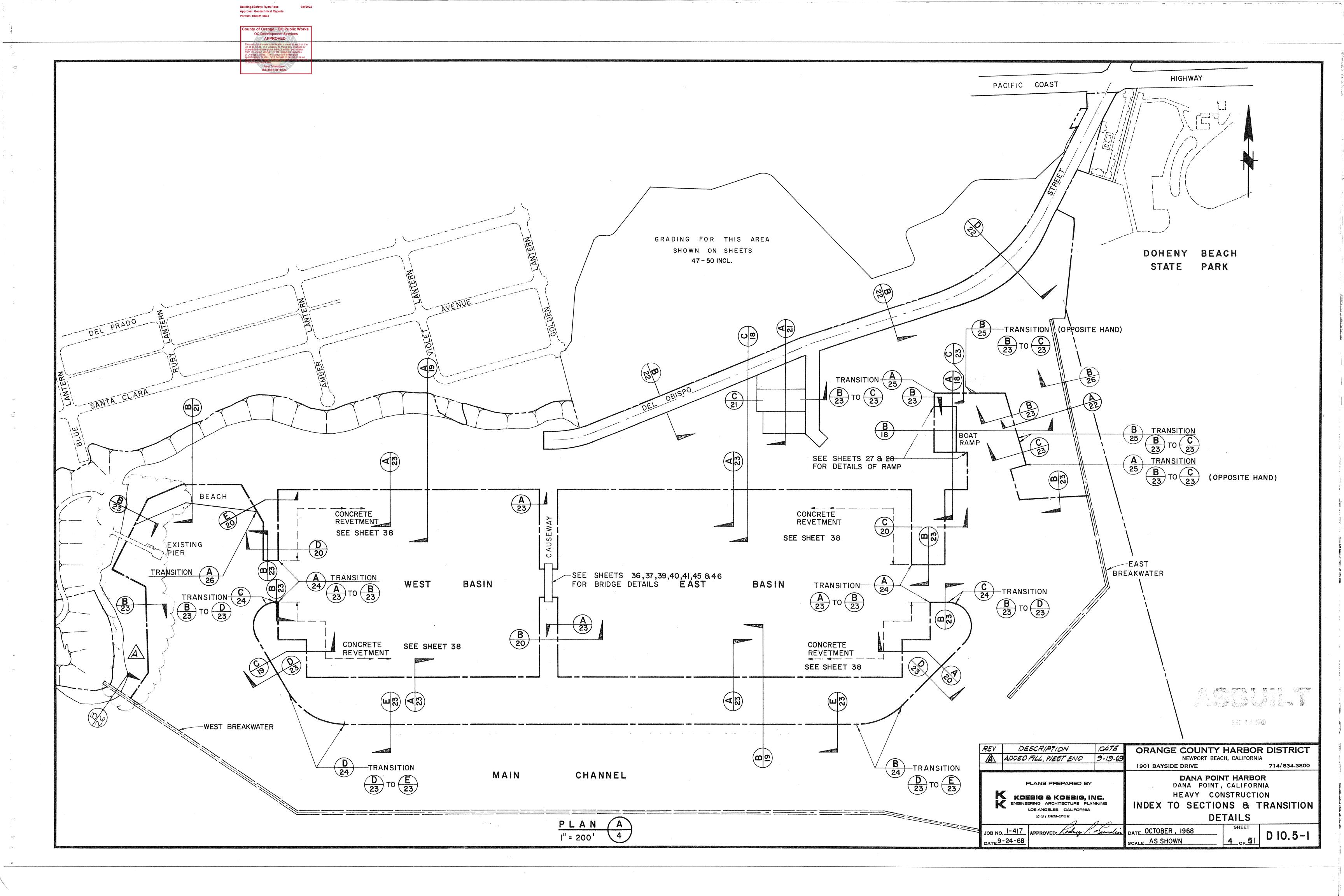


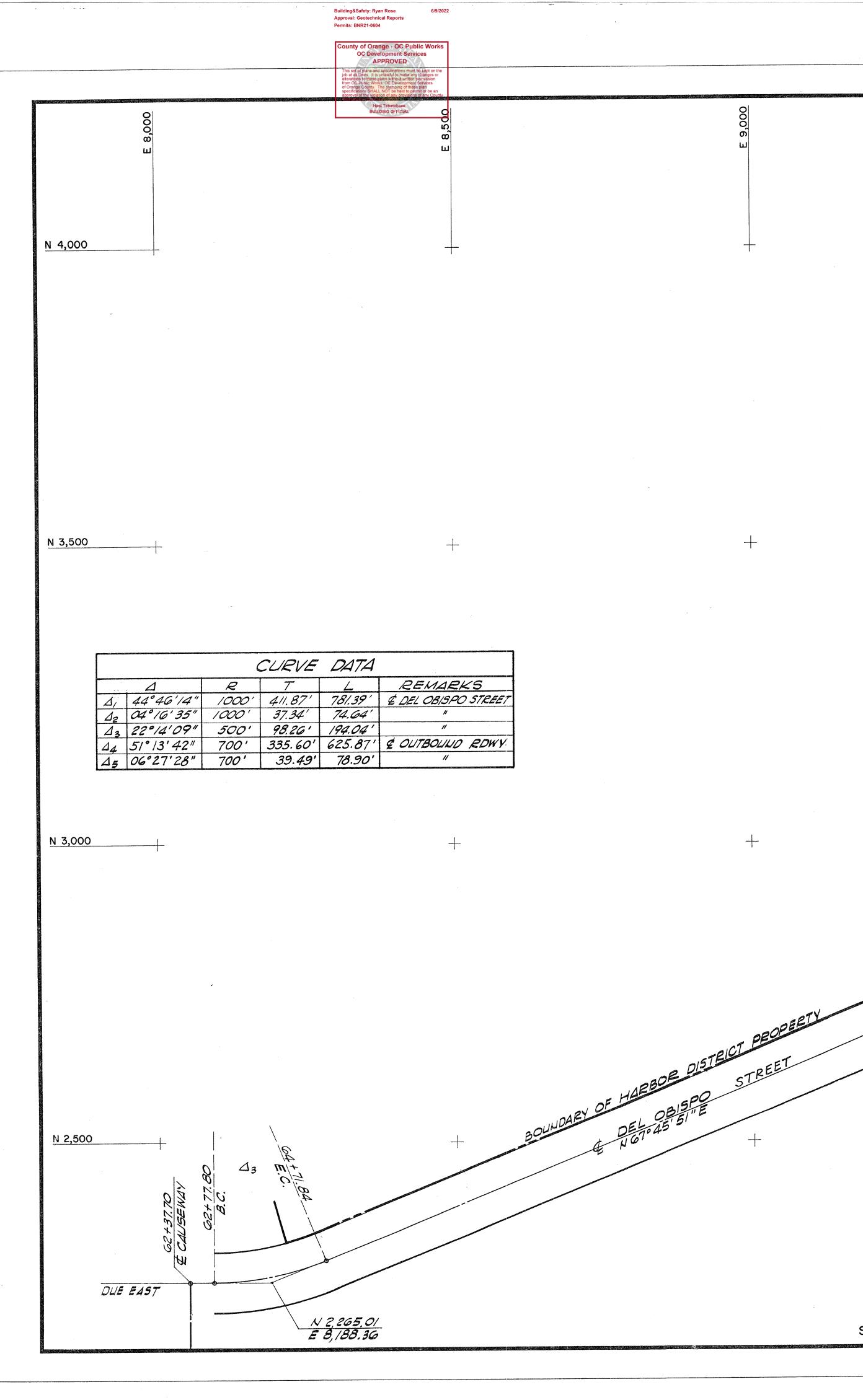
REV. DESCRIPTION DATE **ORANGE COUNTY HARBOR DISTRICT** ADDED 17-A\$51, DELETEDIT 9-19-69 $|A\rangle$ NEWPORT BEACH, CALIFORNIA 1901 BAYSIDE DRIVE 714/834-3900 DANA POINT HARBOR PLANS PREPARED BY DANA POINT, CALIFORNIA HEAVY CONSTRUCTION Kossis a Koebis, inc. INDERING ARCHITECTURE PLANNING INDEX TO DRAWINGS Los angeles calipornia LEGEND & GENERAL NOTES 213 / 629-3192 JOB NO. 1-417 PPROVED: Sector . Sunda SHEET DATE OCTOPER , 1968 D | 0.5 - |DATE 9-24-68 2 OF 51 SCALE NONE



ŝ

Lawson Constraints





-jinji C

-

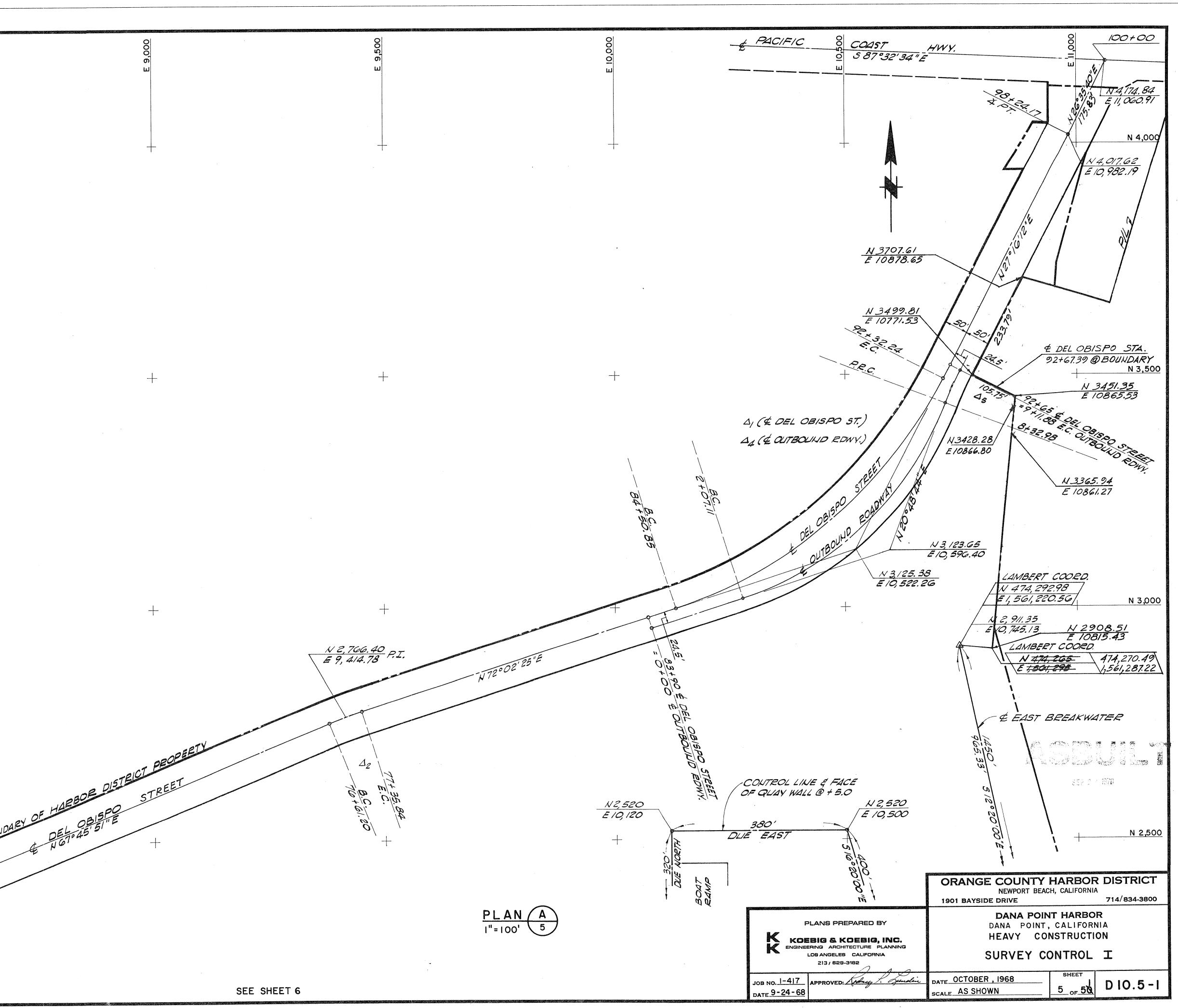
i dan Kinasi Anasa

No.

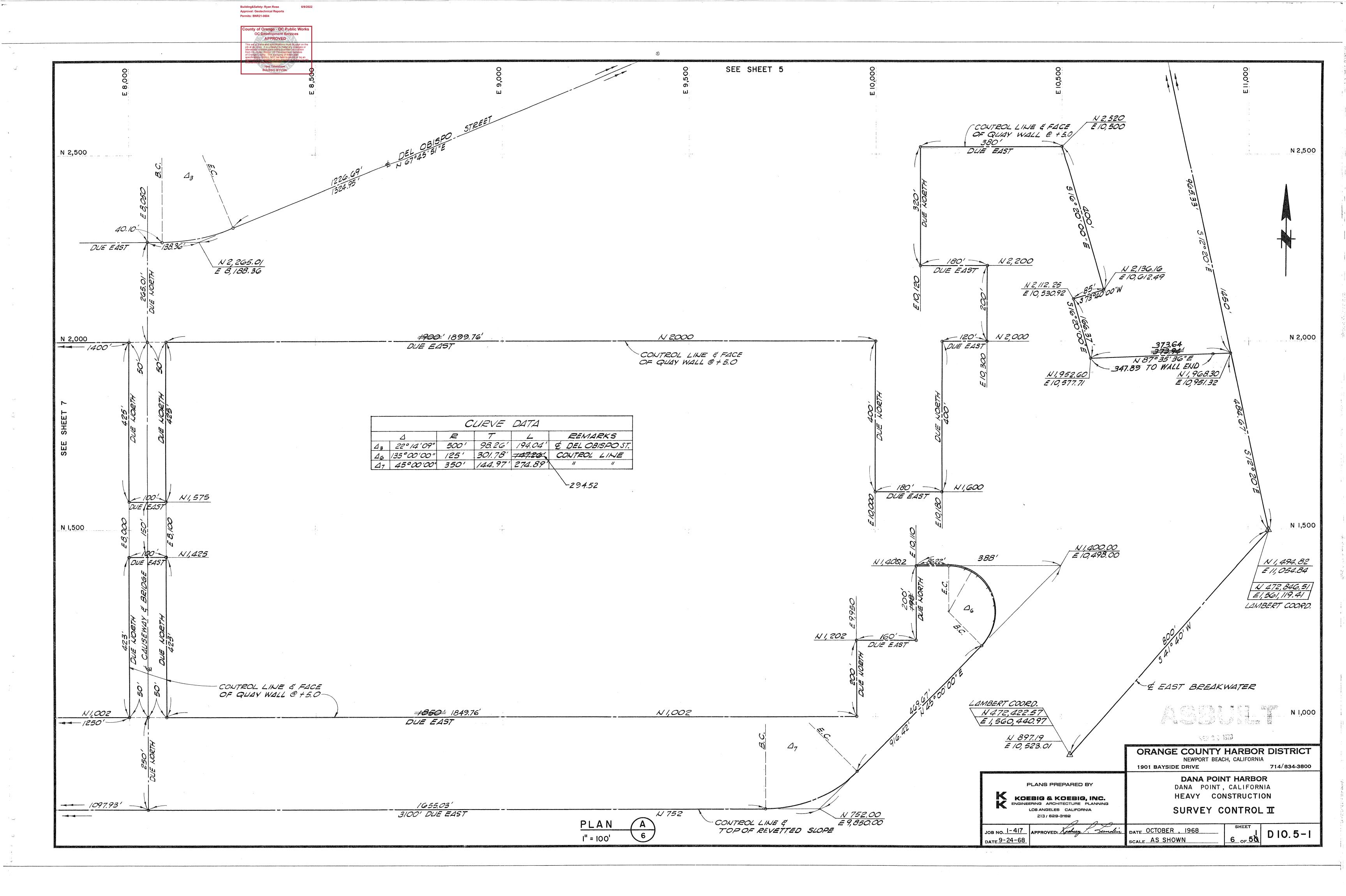
às,

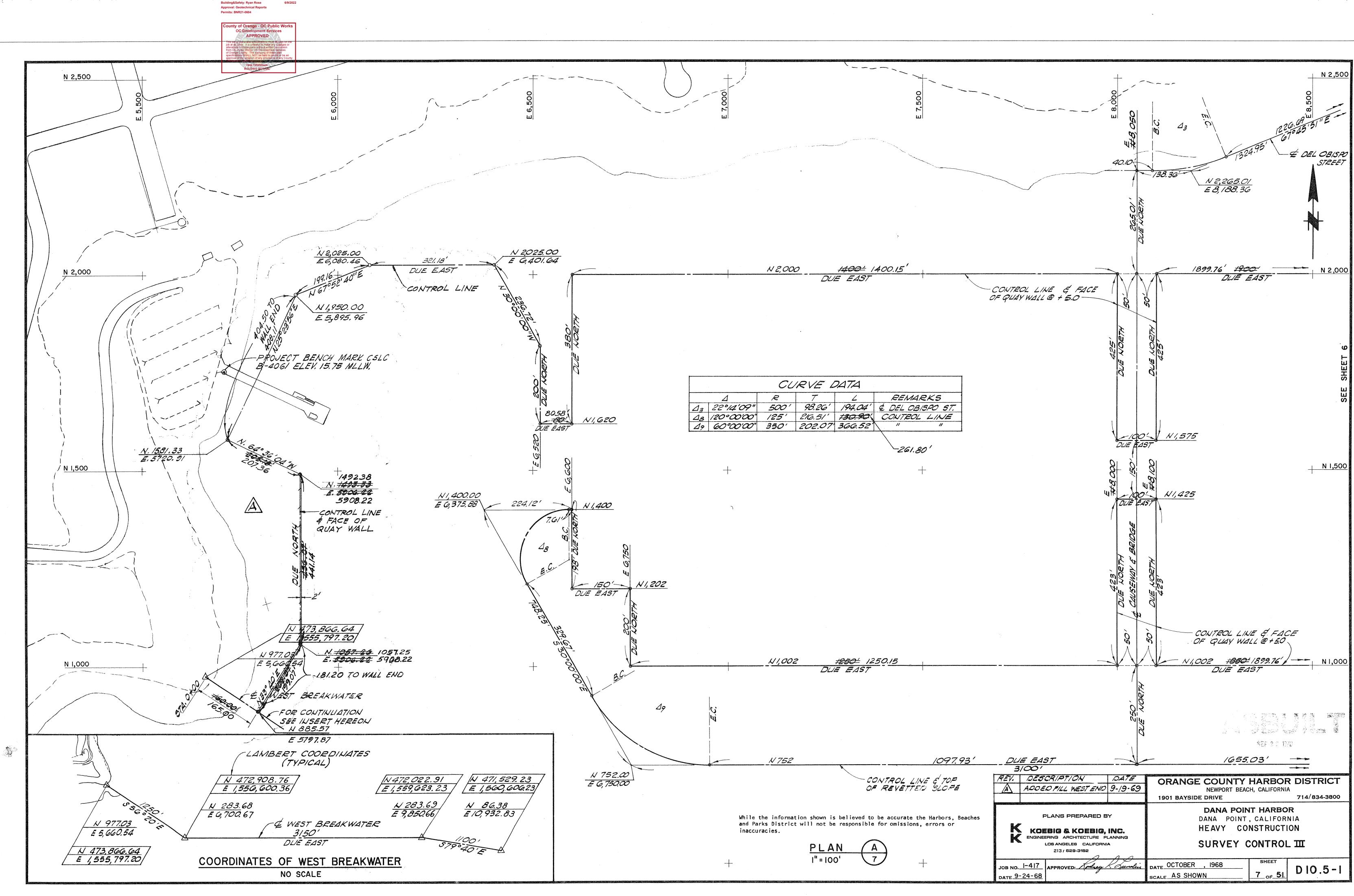
s-met

unites mail

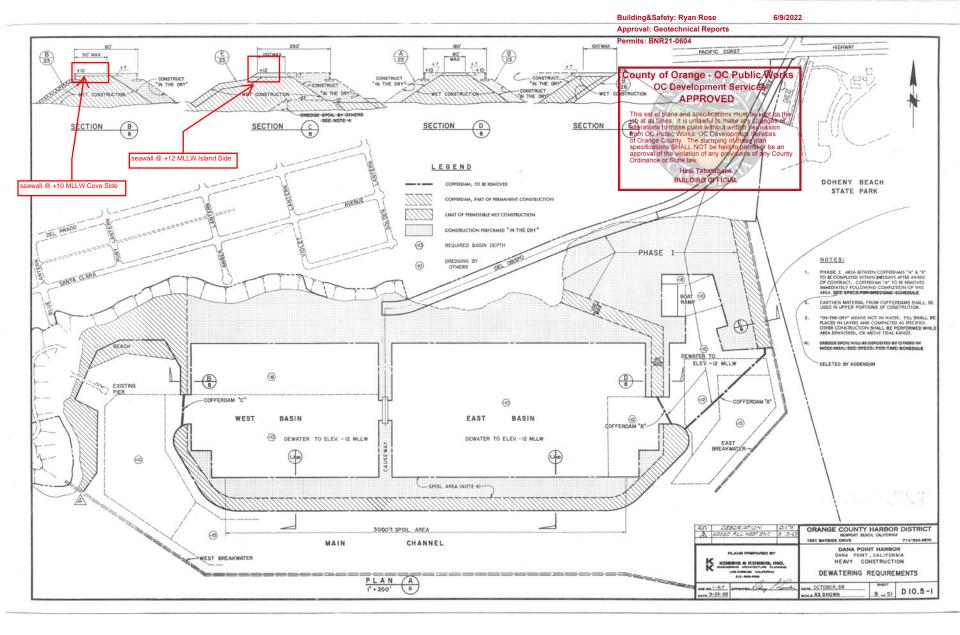


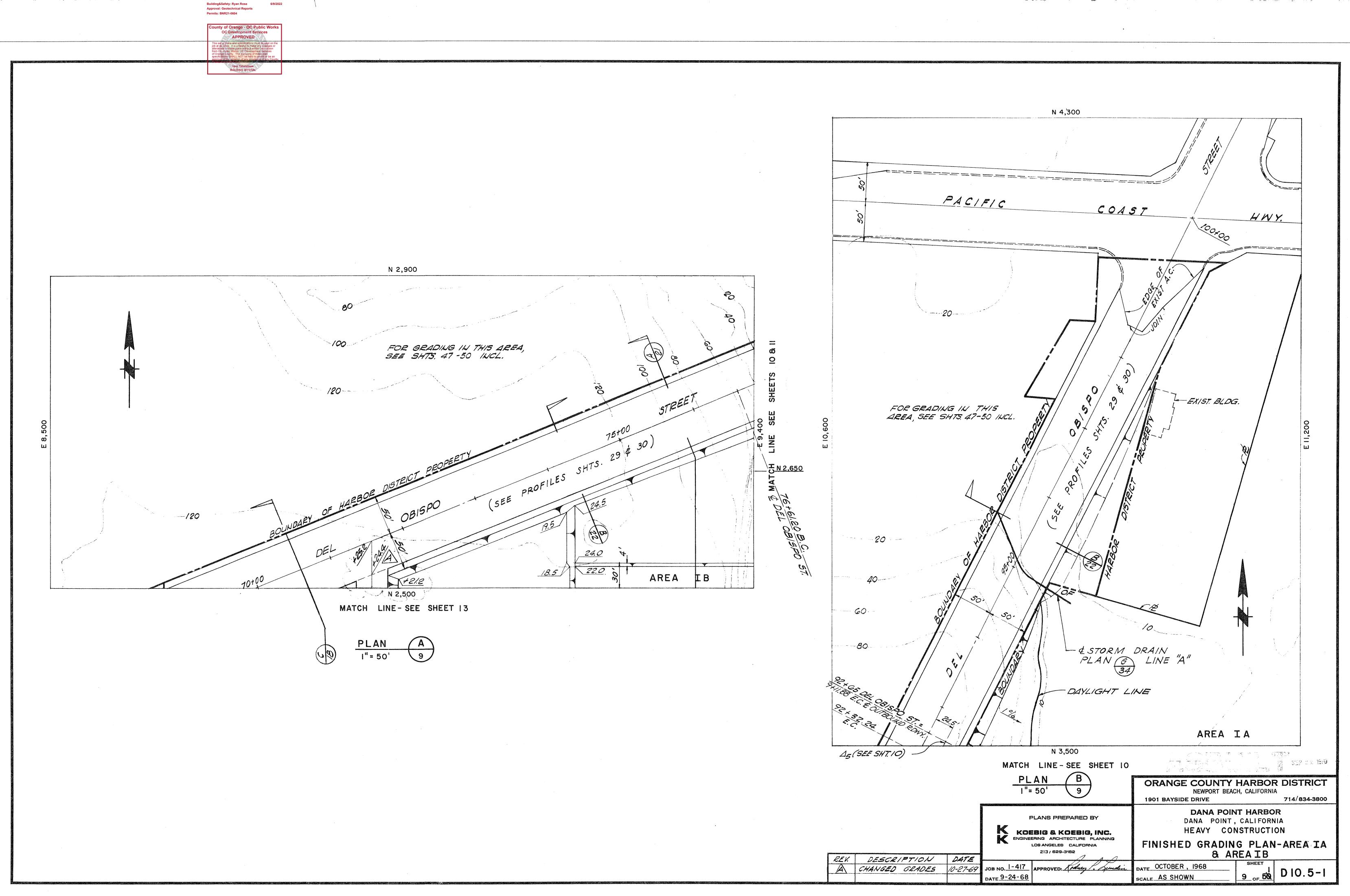
.





.





.....

w

~

si

...

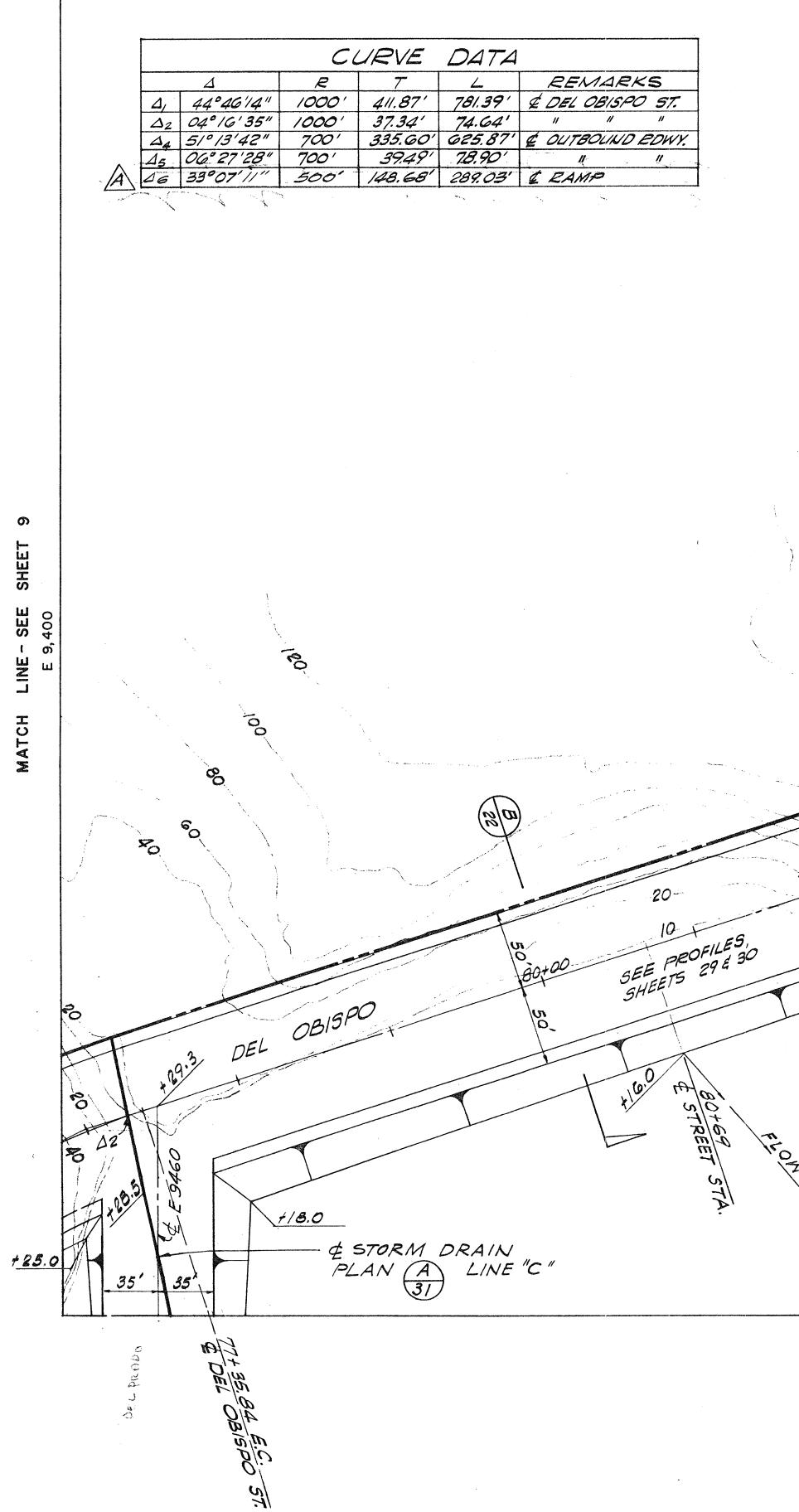
Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604 unty of Orange - OC Public Works OC Development Services APPROVED Hadi Tabatabaee BUILDING OFFICIAL

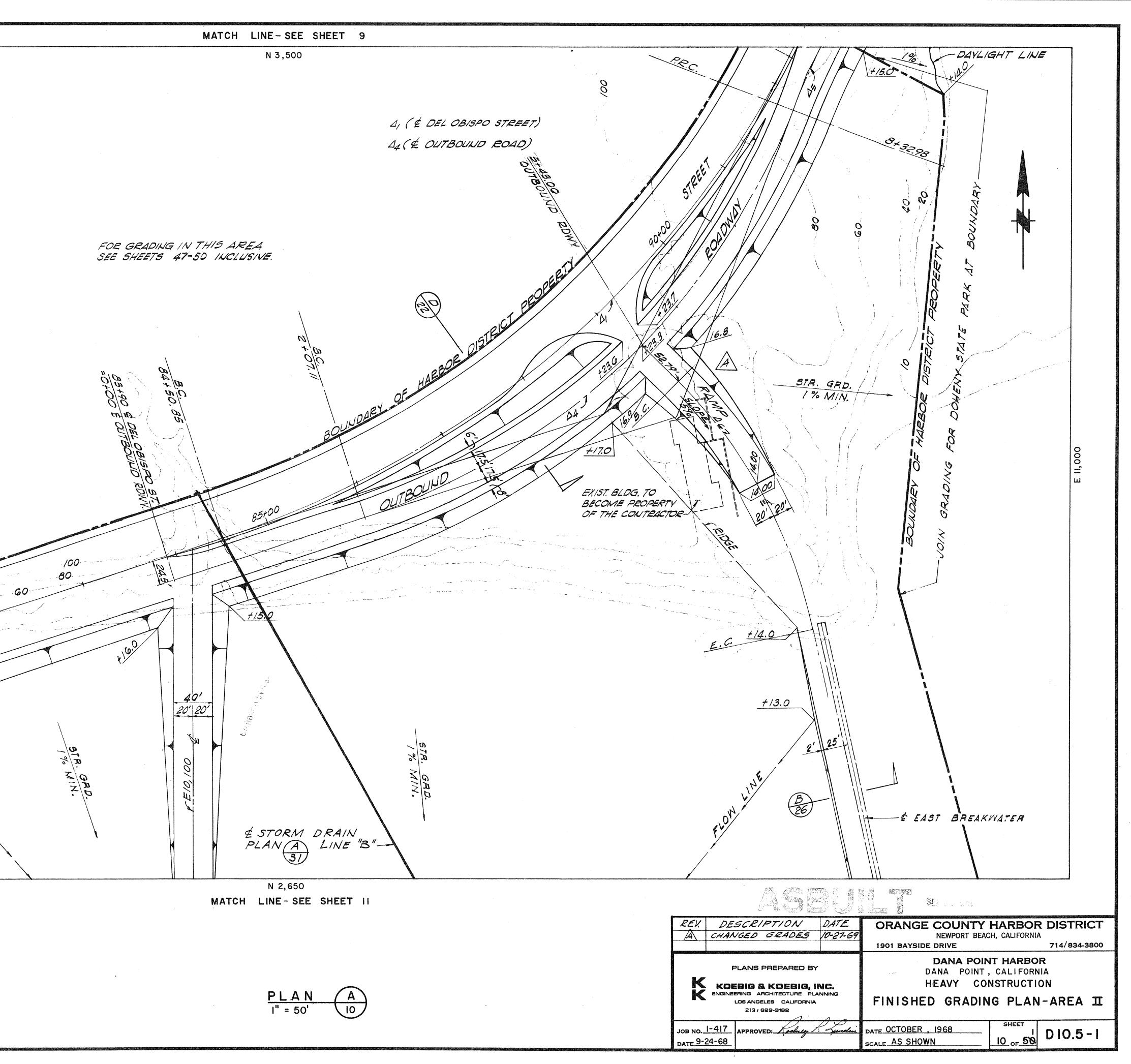
~

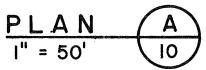
· 3

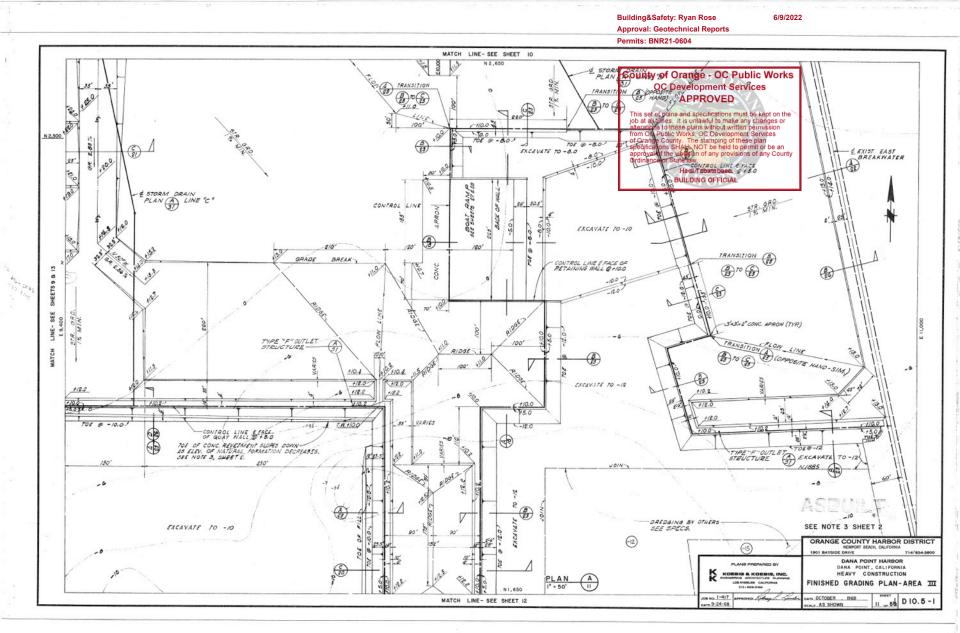
----ii

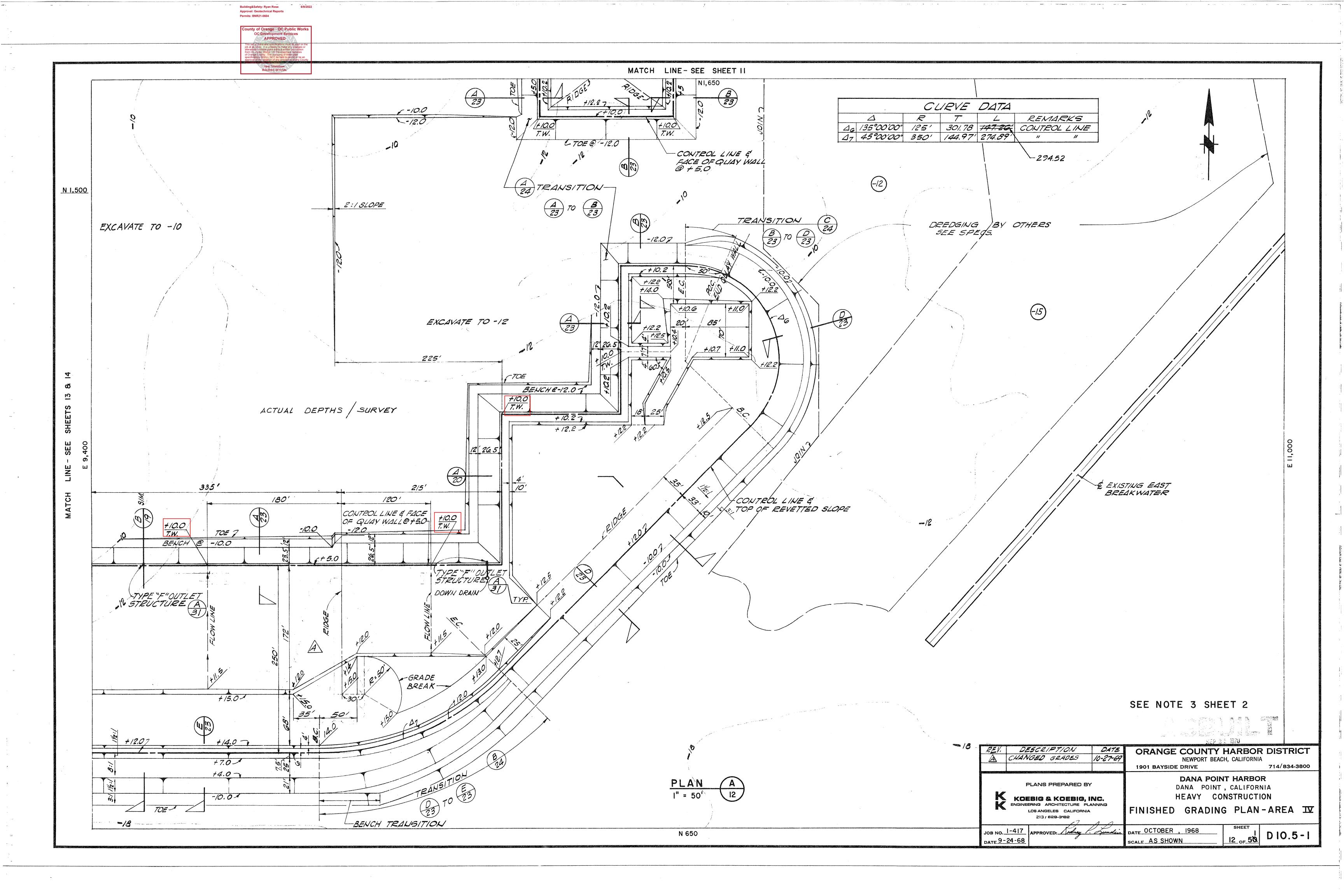
•.

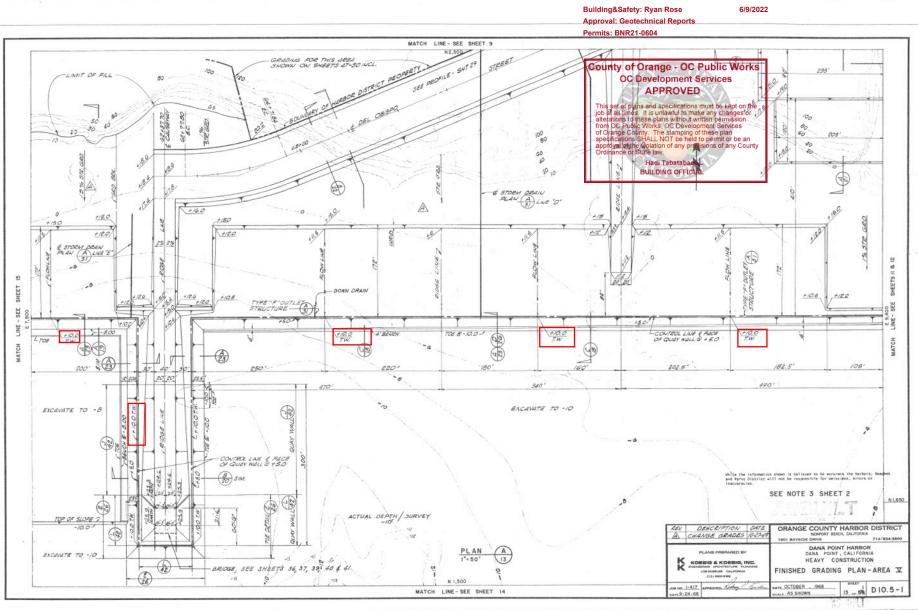


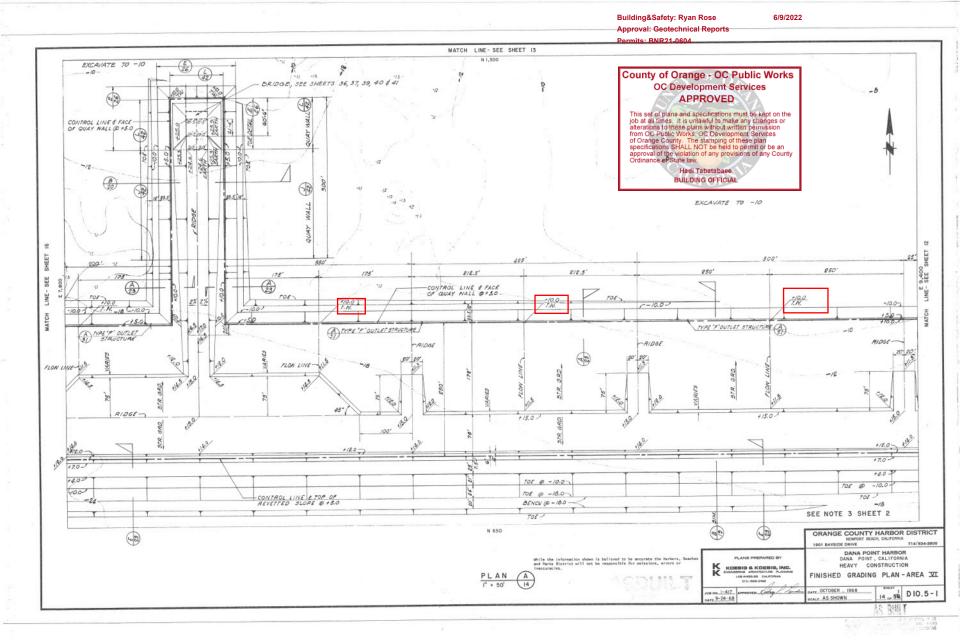


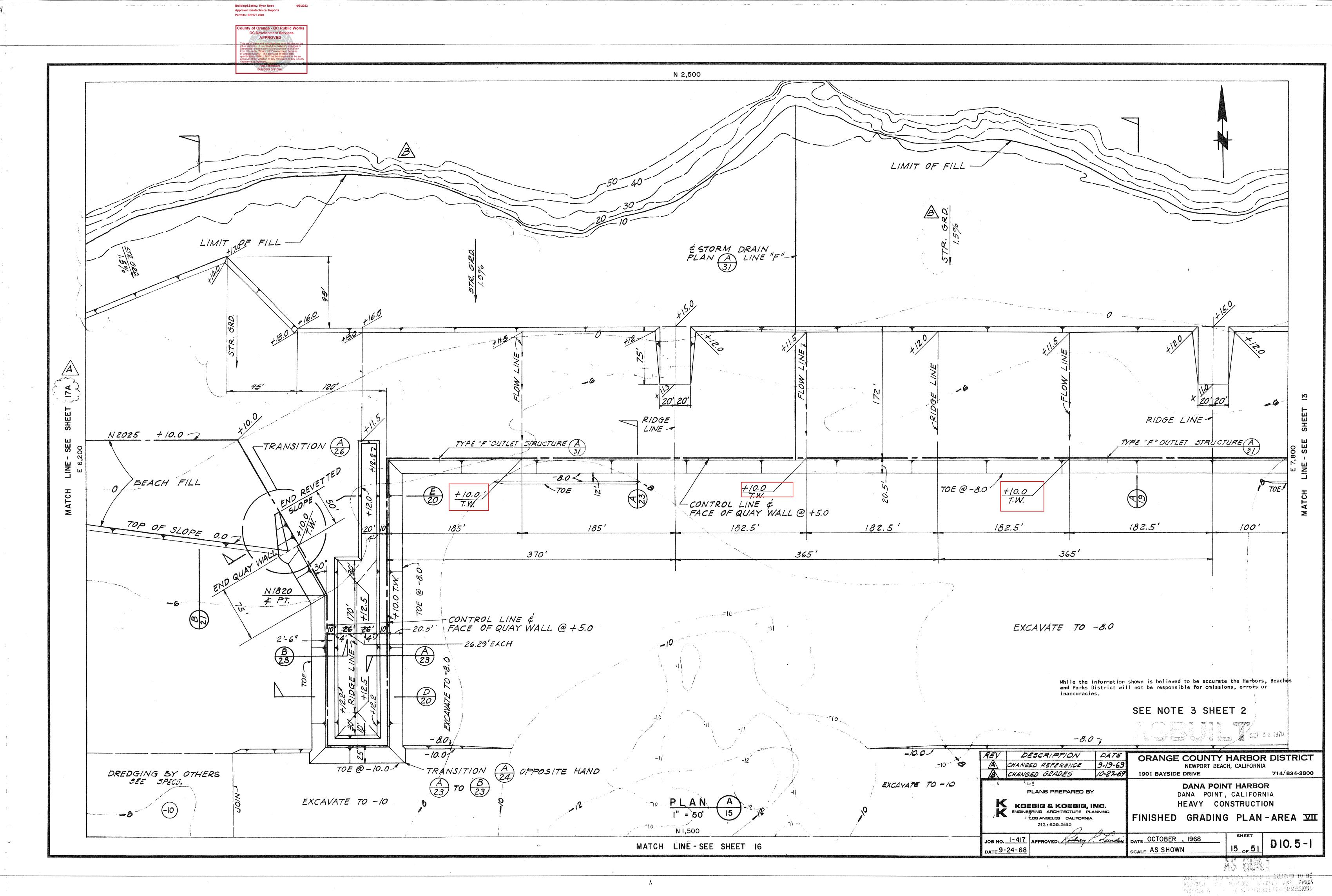


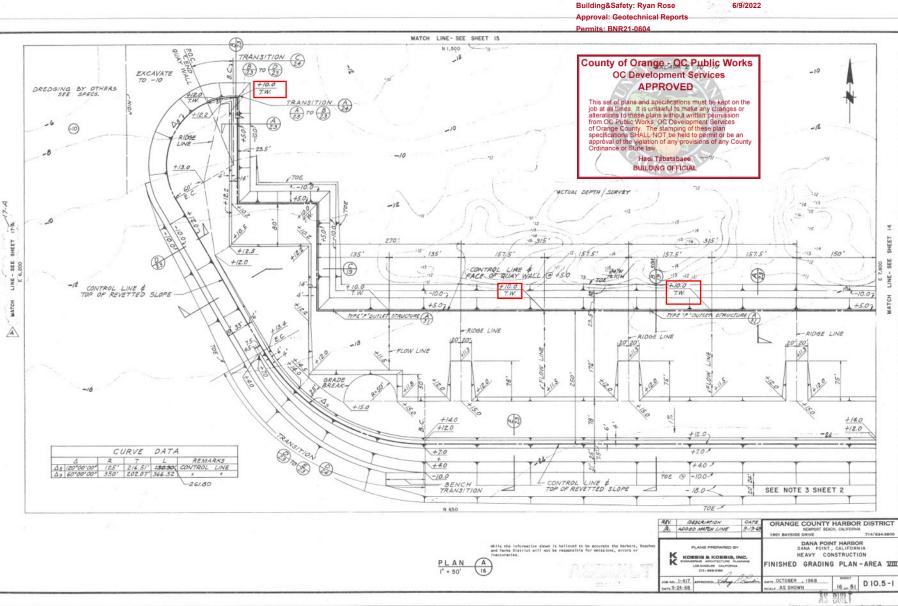












6/9/2022

Approval: Geotechnical Reports Permits: BNR21-0604 nty of Orange - OC Public Work OC Development Service APPROVED BUILDING OFFICIAL (29) + COORDINATE POINT NOT FORMED 6" PLACED ON ROCK TYP. FINISH GRADE モレ、 QUAY WALL CONTROL LINE & BRICK & FACE OF QUAY WALL MORTARSEAL @+5.0 ELEV. -----OPEN ROCK FACING ULAR BARS 6" O.C. 15-15" R.C.P. CLASS IV 10-15"R.C.P. CLASSIE ENCASE S.D. PER F VI-A 15"0R 24"k F 1,32 TYPICAL TYPE "G" OUTLET STRUCTURE (E) NO SCALE 17A31 SECTION NOSCALE NO SCALE STONE REVETMENT MATCH LINE SEE SHEET 15 tra \mathcal{O} \bigcap CONTROL LINE <u>E 6,000</u> m/ N 1,950 E 5,895.96 REMOVE EXIST. REVETMENT C.O. EXIST. BEDG. UDIN EXIST EXC. EXIST. BLDG. ~i/ Z/

Building&Safety: Ryan Rose

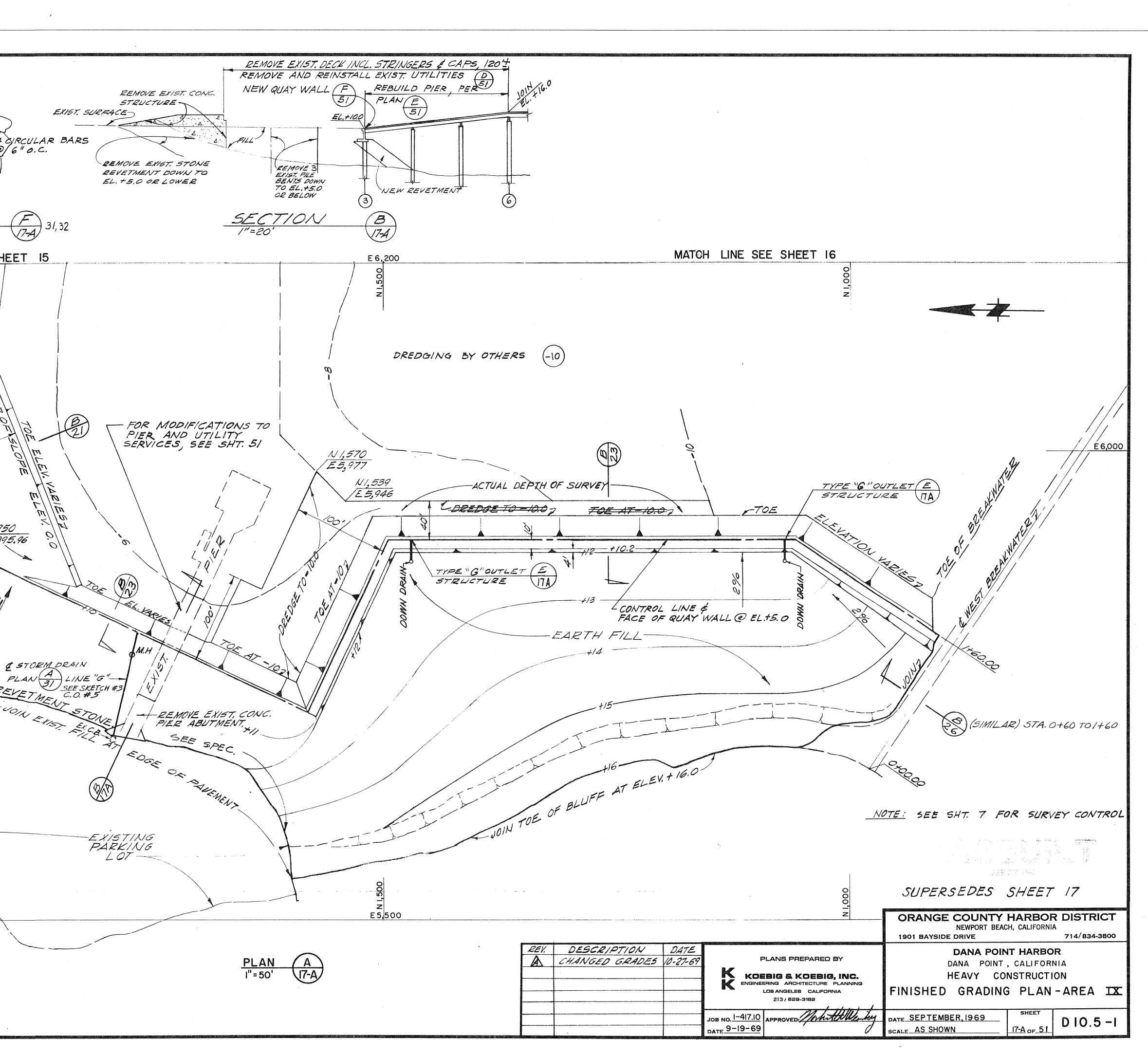
1

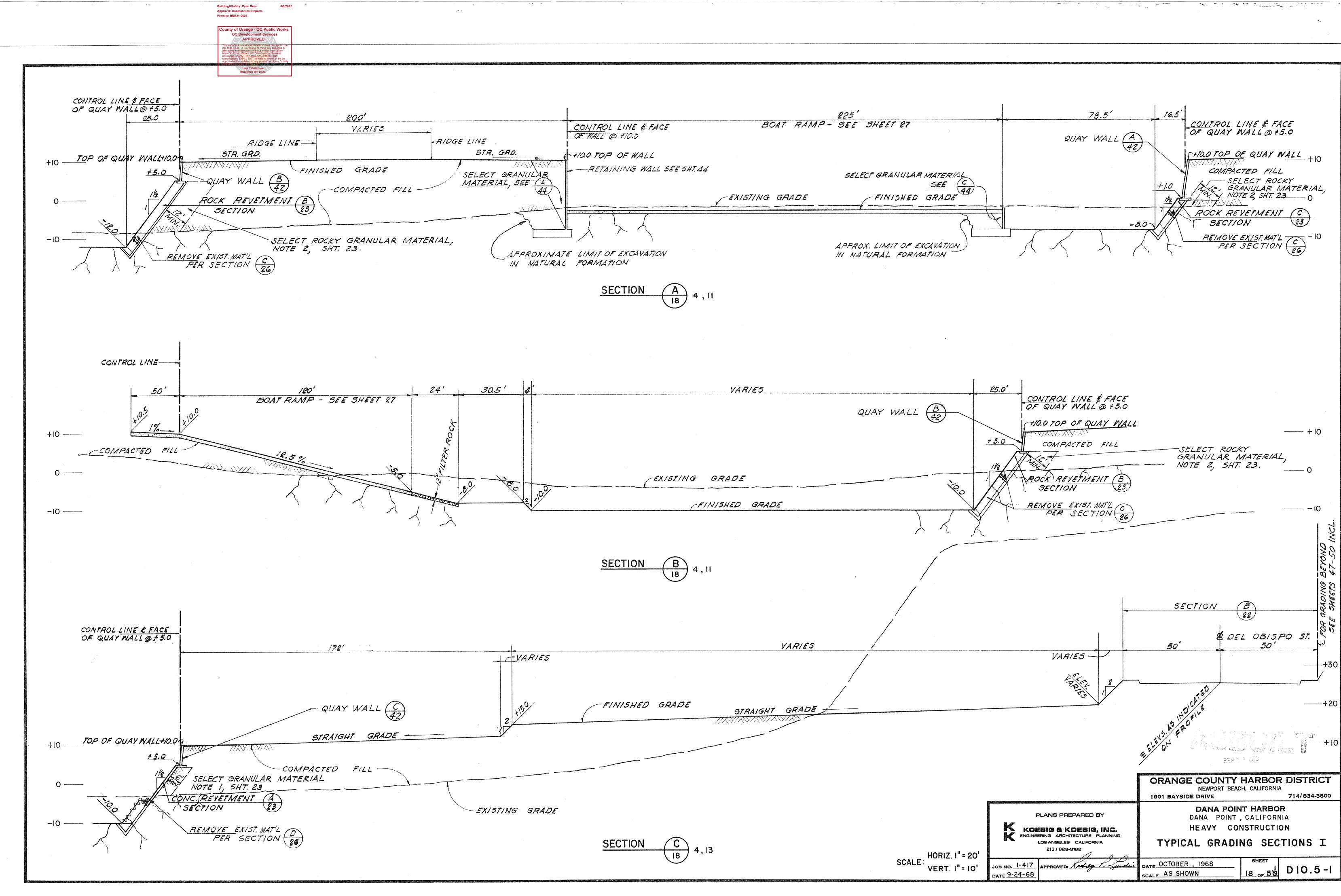
3

,

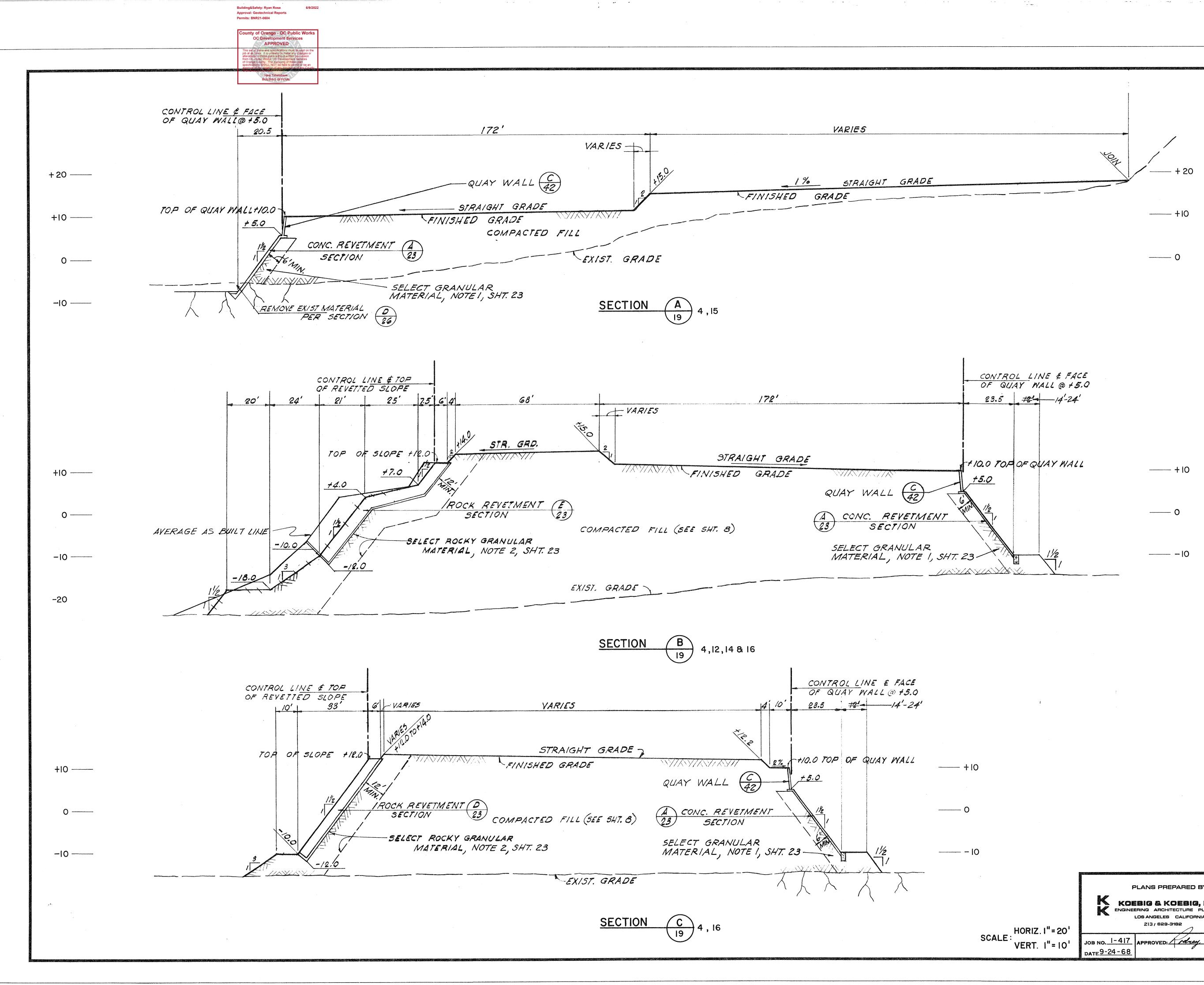
2

3





--10000



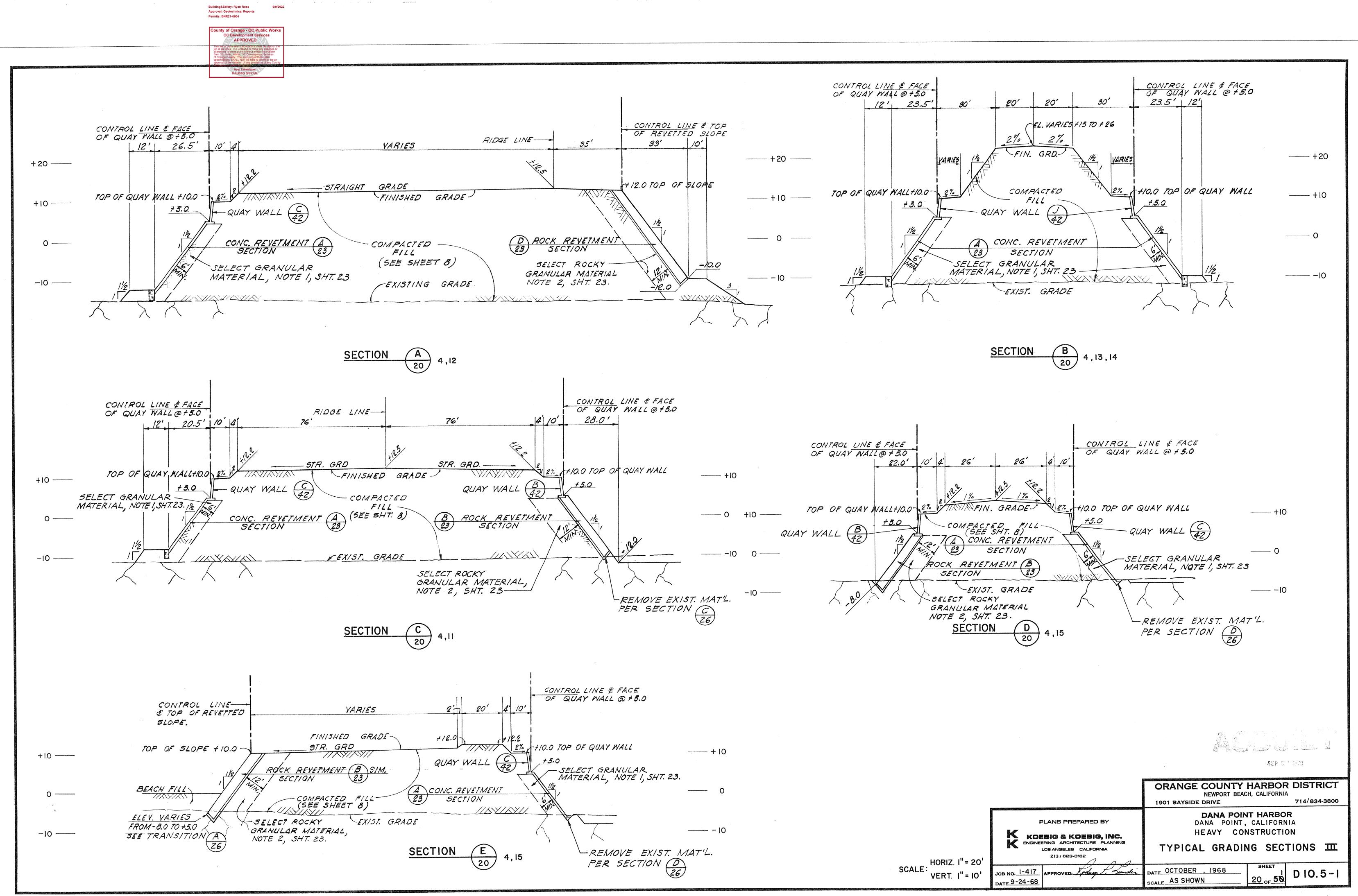
e.



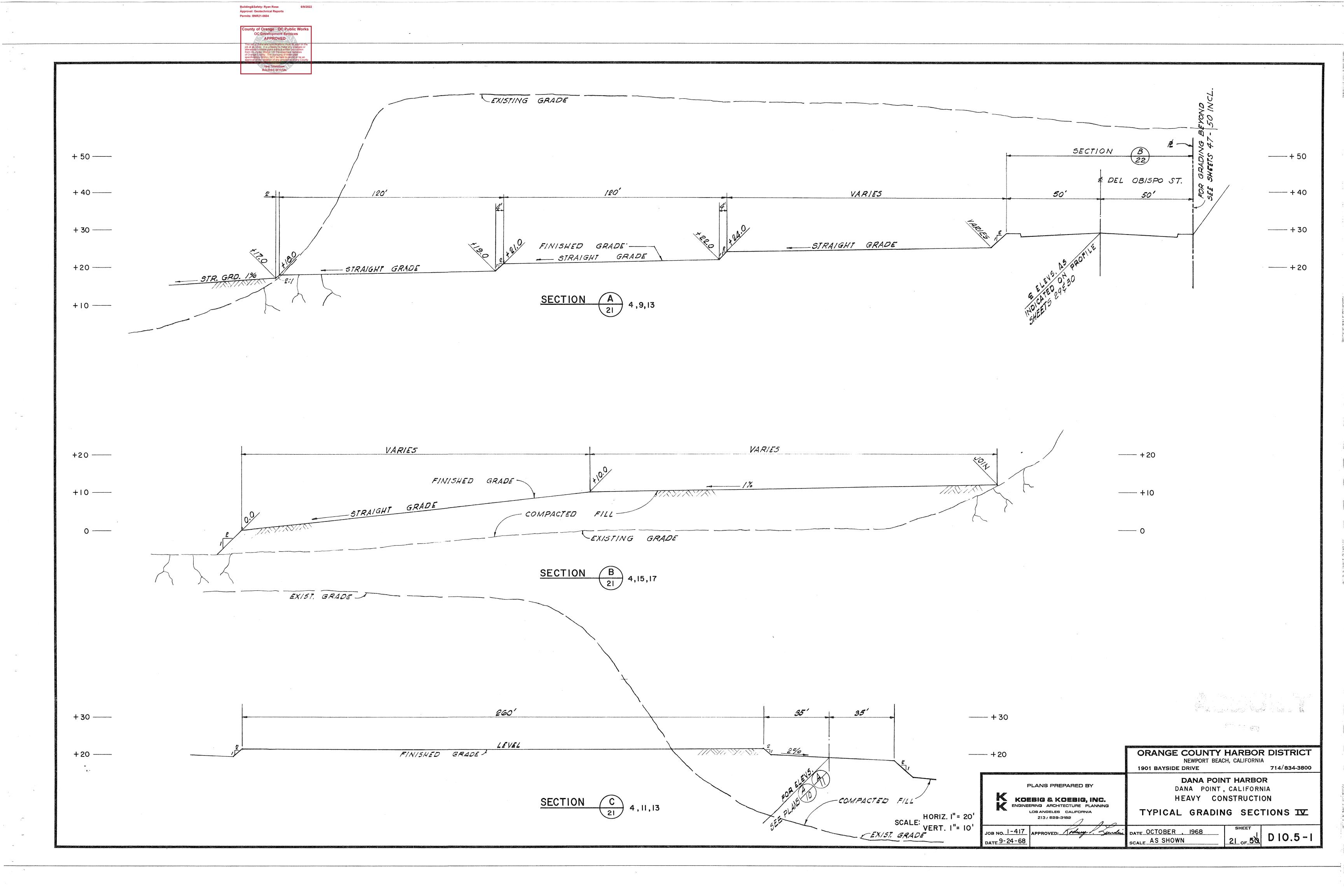
SEP 2 / 1970

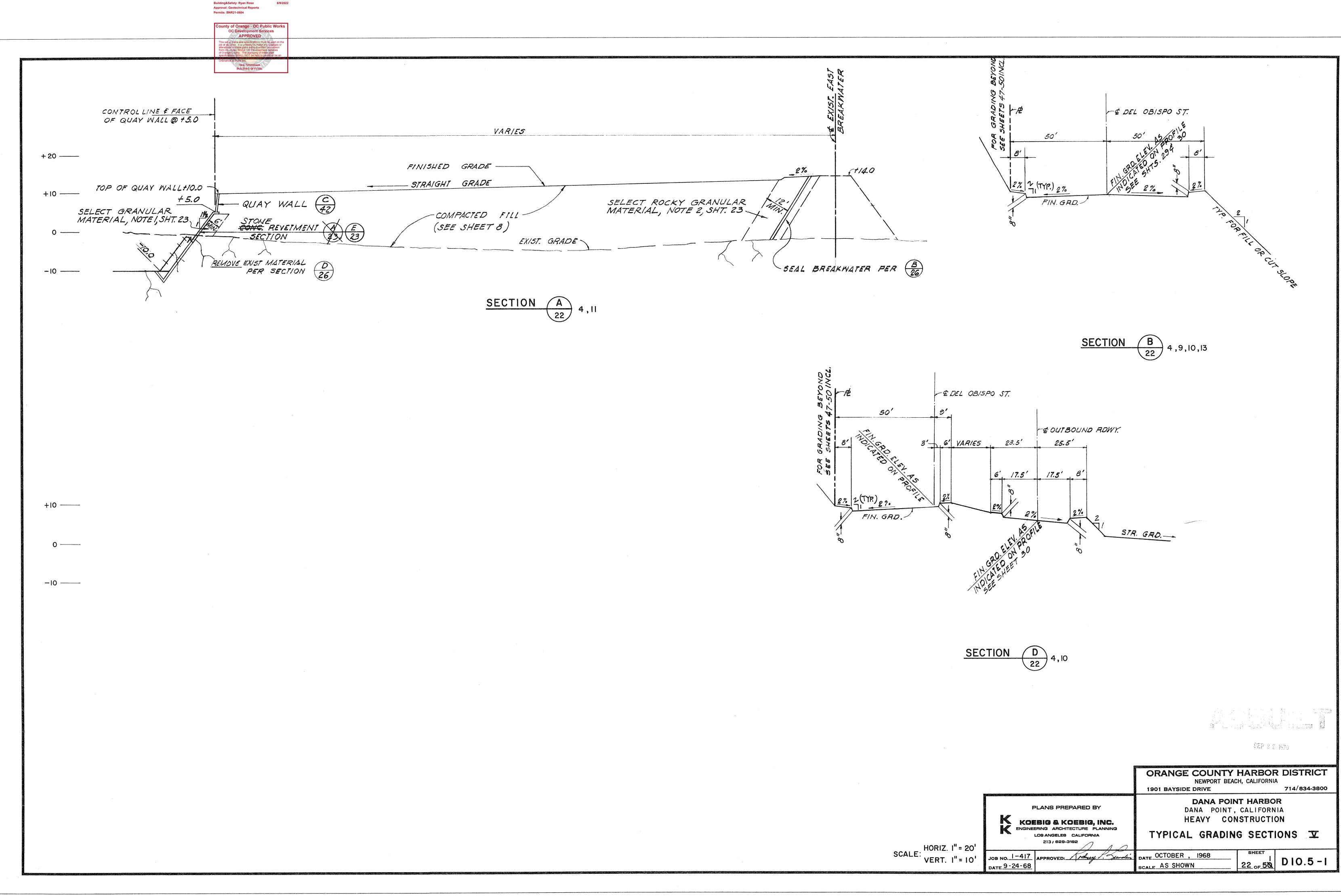
	ORANGE COUNTY NEWPORT BEAC 1901 BAYSIDE DRIVE	
PLANS PREPARED BY KOEBIG & KOEBIG, INC. ENGINEERING ARCHITECTURE PLANNING LOS ANGELES CALIFORNIA 213 / 529-3182	DANA POINT,	NSTRUCTION
JOB NO. 1-417 APPROVED: APPROVED: Jundin	date OCTOBER , 1968 scale AS SHOWN	SHEET D 10.5-1
	KOEBIG & KOEBIG, INC. ENGINEERING ARCHITECTURE PLANNING LOS ANGELES CALIFORNIA 213 / 629-3182 JOB NO. 1-417 APPROVED: Marey Jundin	NEWPORT BEAC 1901 BAYSIDE DRIVE DANA POINT DANA POINT HE AVY CON LOS ANGELES CALIFORNIA 213 / 529-3182 JOB NO. 1-417 APPROVED: Management of the second sec

الهجاب الدولة المادا بالمتهممين مربا مراجع



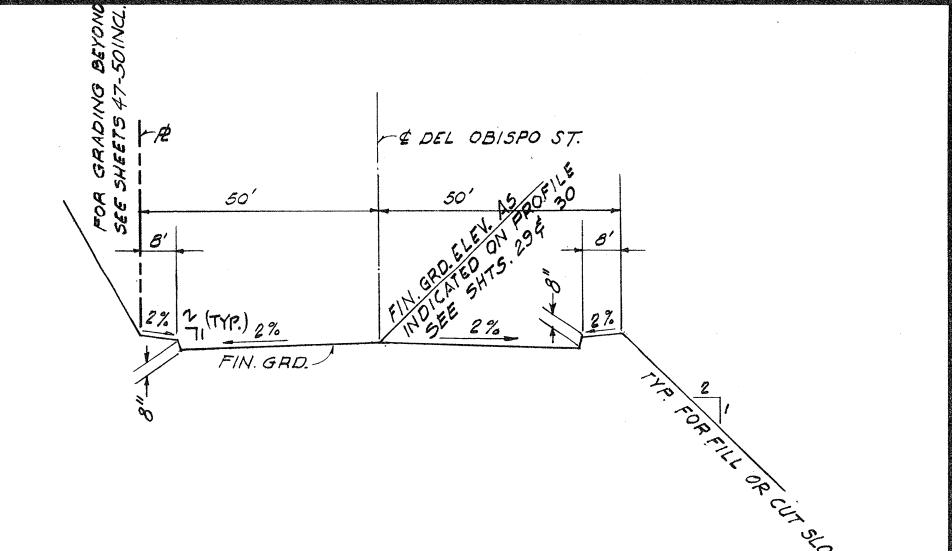
ŵ

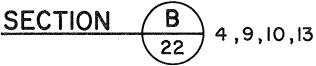


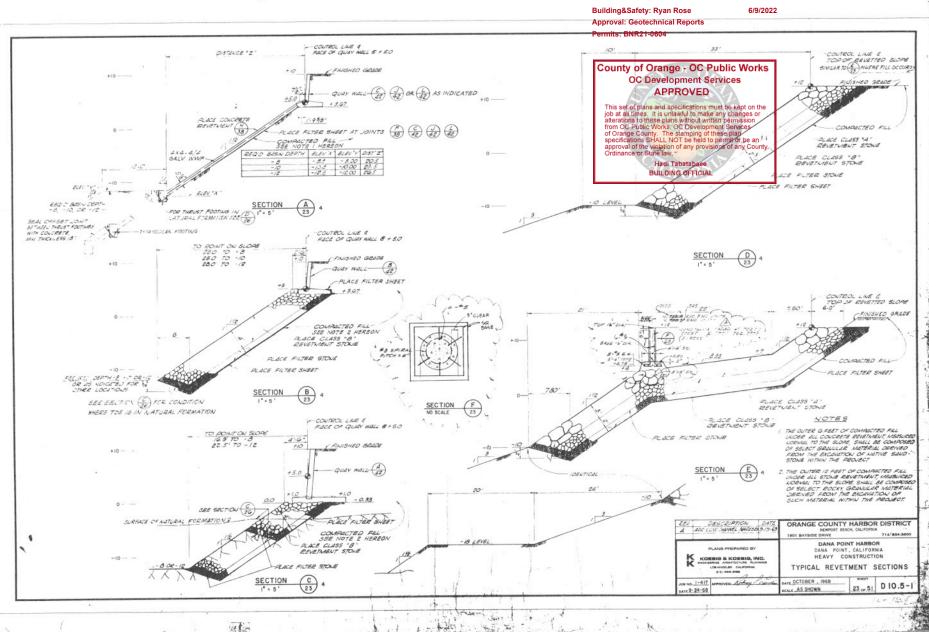


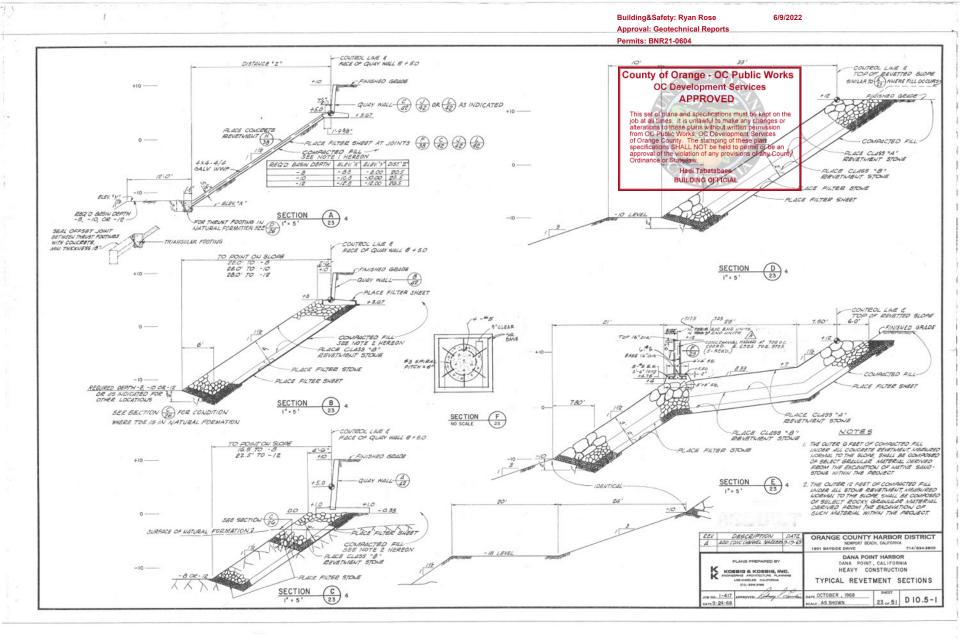
Ì.

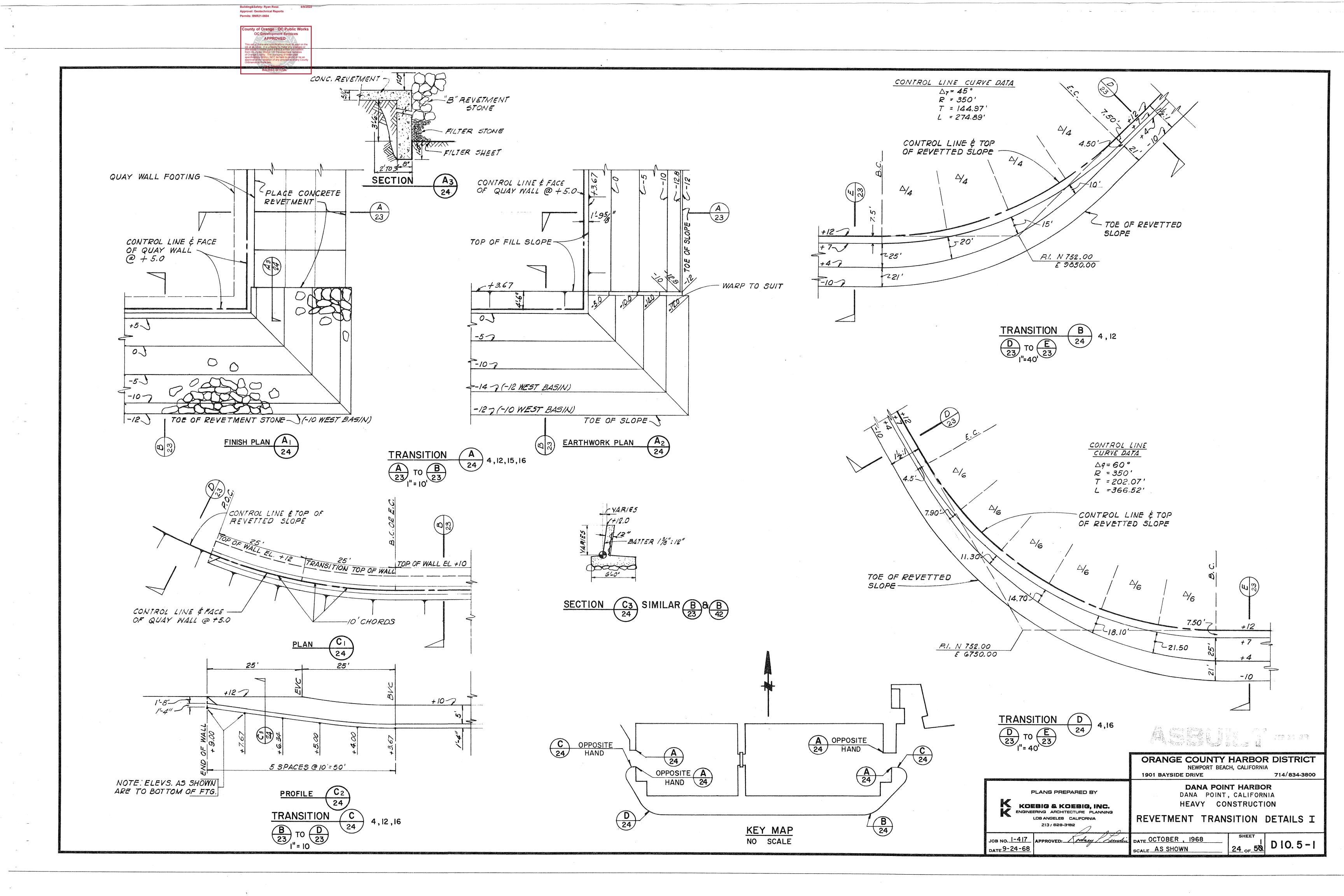
4

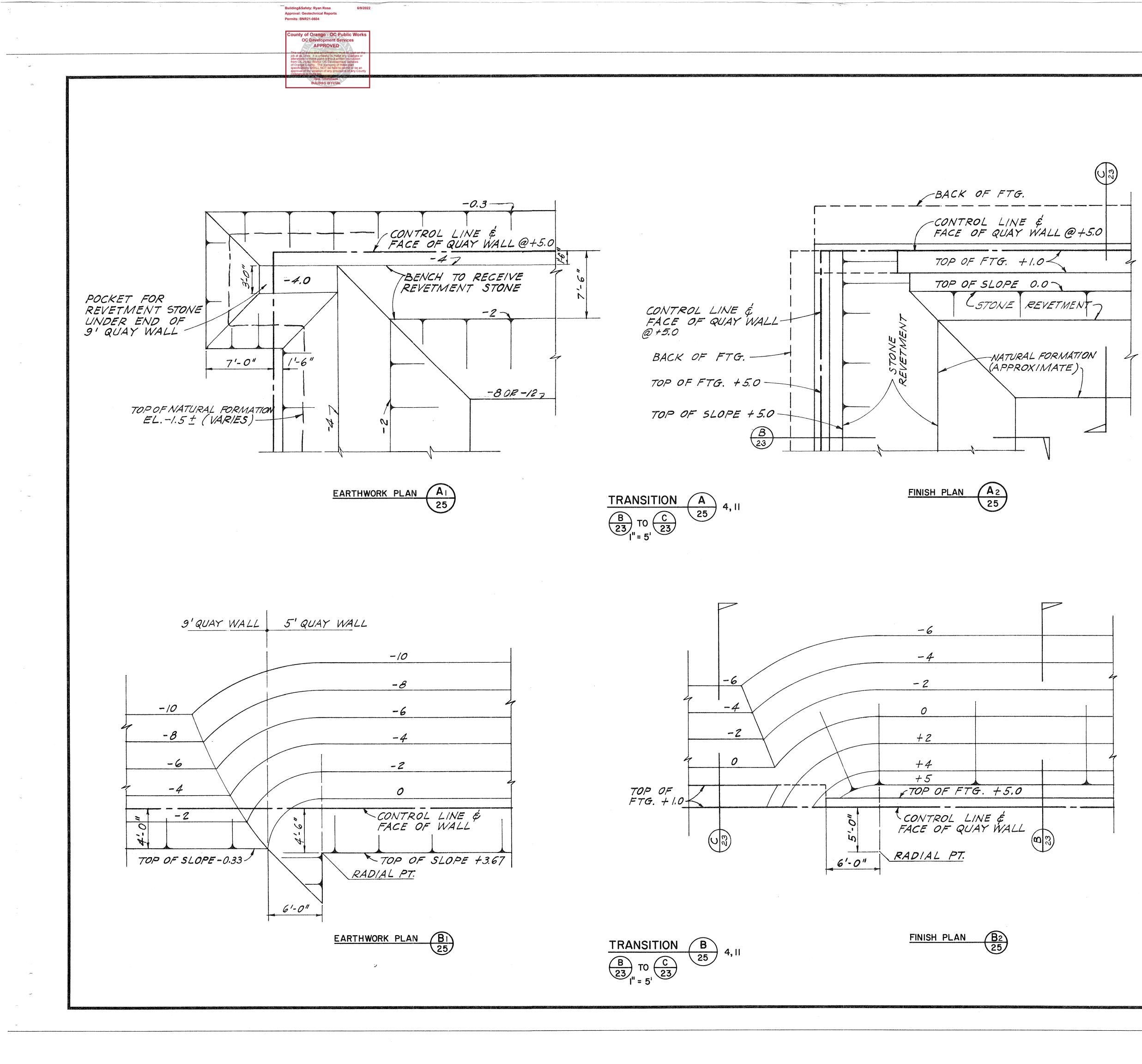




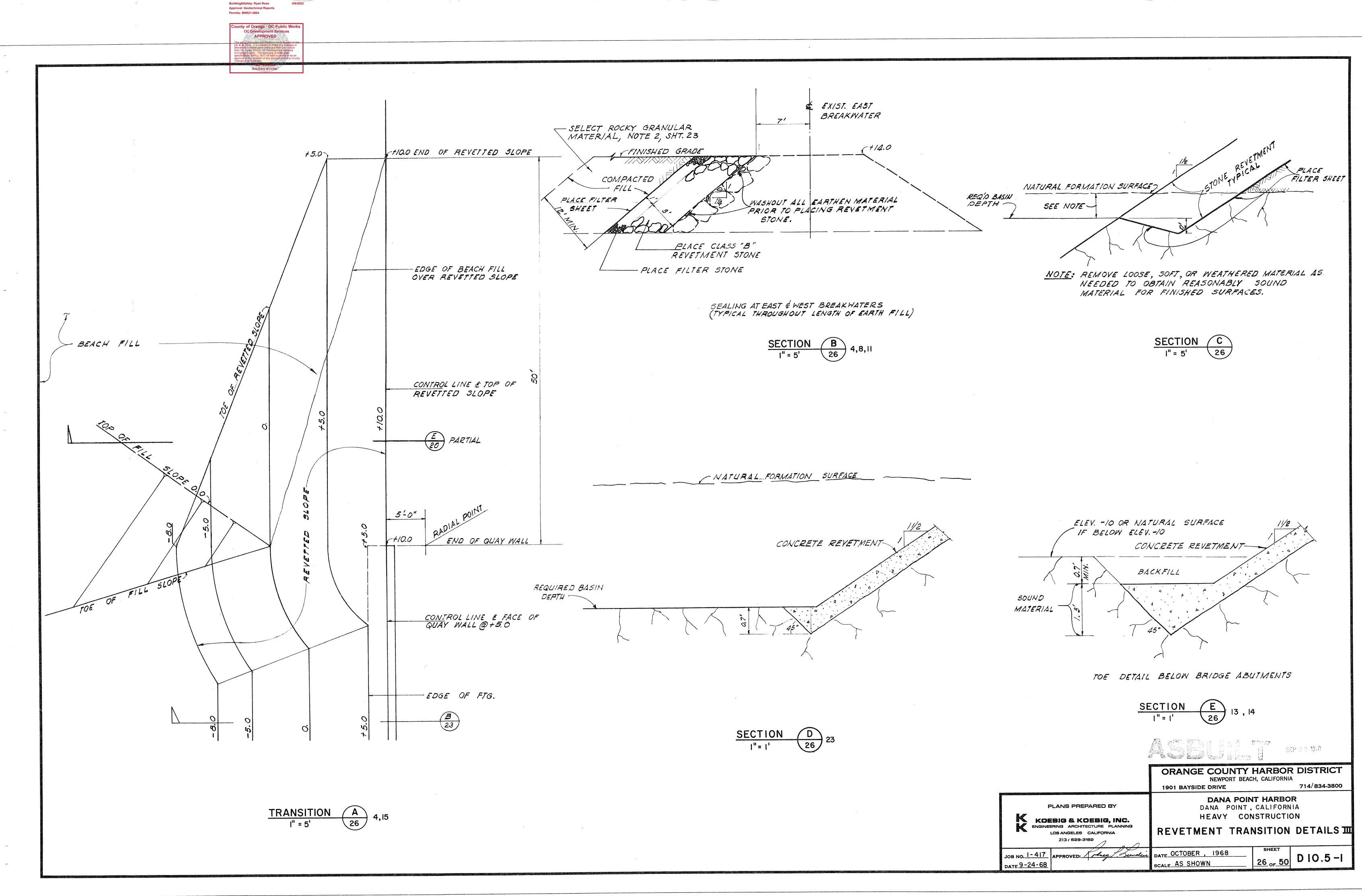




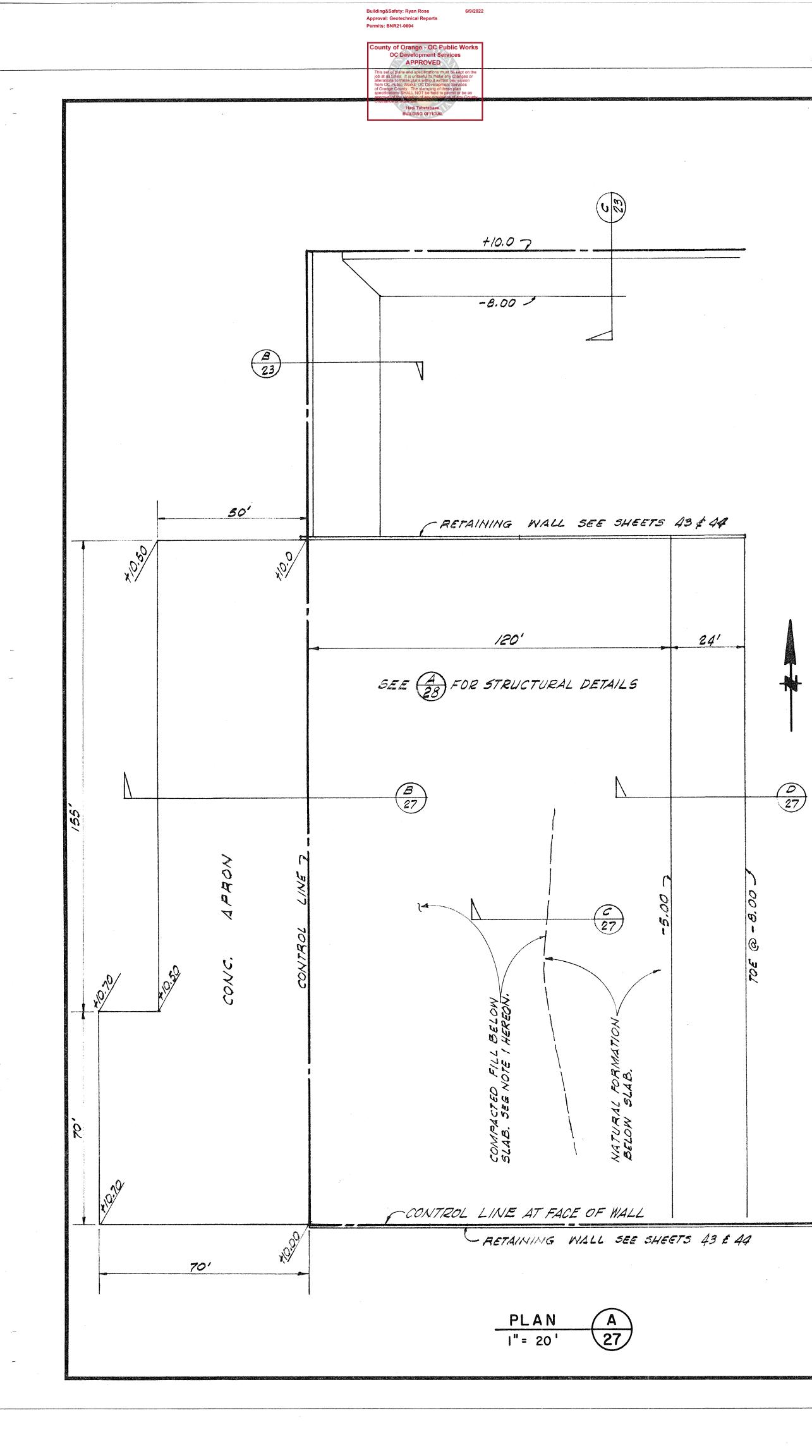


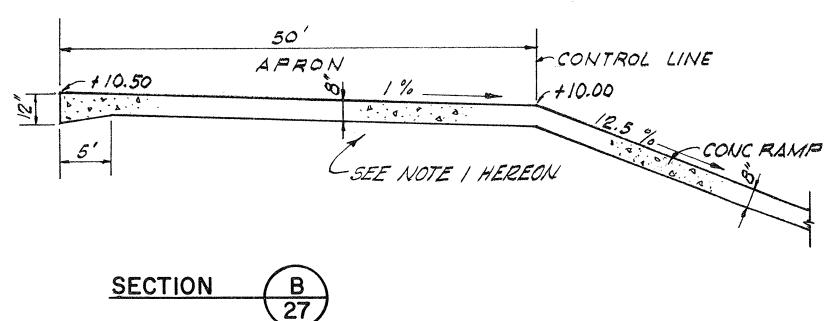


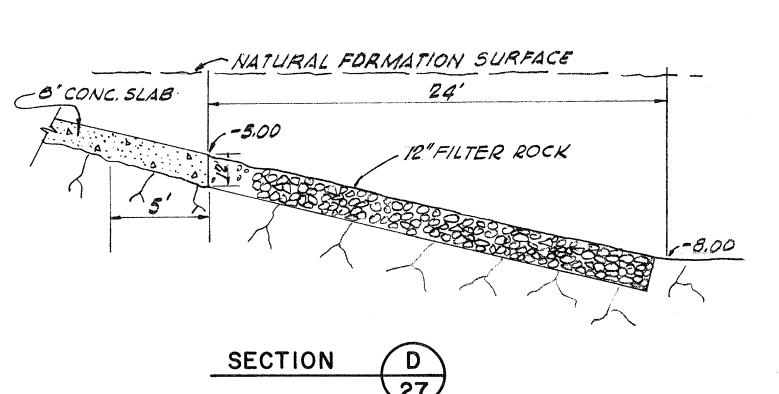
NOTE : TOE ELEVATION VARIES AT THE VARIOUS LOCATIONS WHERE THESE DETAILS APPLY. CONTINUE EARTHWORK AND FINISH SLOPES DOWN TO PROPER ELEVATIONS FOR BENCH TO RECEIVE REVETMENT STONE AND FOR TOE OF SLOPE. ORANGE COUNTY HARBOR DISTRICT NEWPORT BEACH, CALIFORNIA 1901 BAYSIDE DRIVE 714/834-3800 DANA POINT HARBOR PLANS PREPARED BY DANA POINT, CALIFORNIA KOEBIG & KOEBIG, INC. ENGINEERING ARCHITECTURE PLANNING LOS ANGELES CALIFORNIA HEAVY CONSTRUCTION REVETMENT TRANSITION DETAILS II 213/629-3182 JOB NO. 1-417 APPROVED: Traking Jundin DATE OCTOBER, 1968 25 of 50 D10.5 -1 DATE 9-24-68 SCALE AS SHOWN



· ____







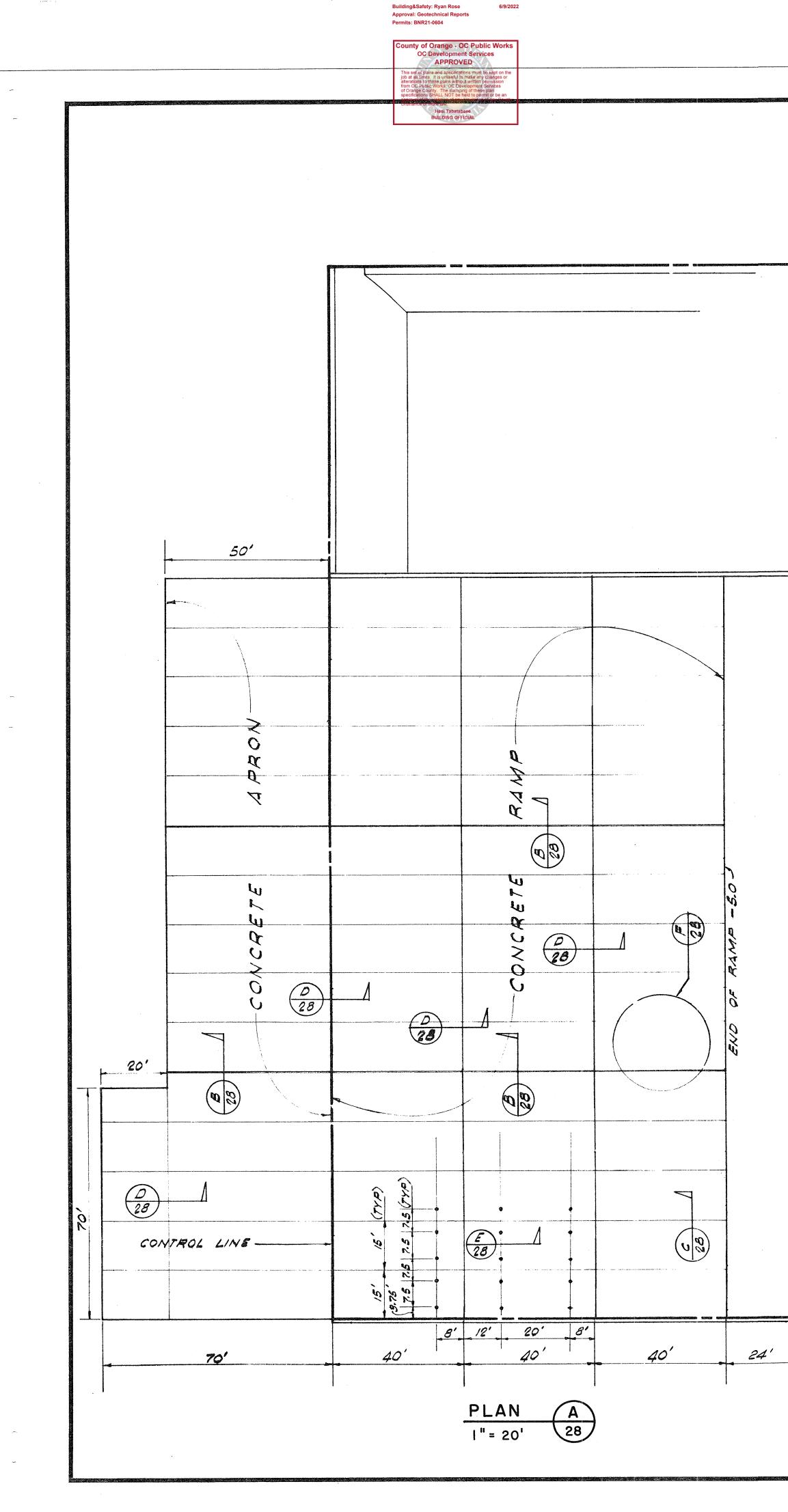
 $\begin{pmatrix} D\\ 27 \end{pmatrix}$

 $\left(\begin{array}{c} B\\ 27\end{array}\right)$

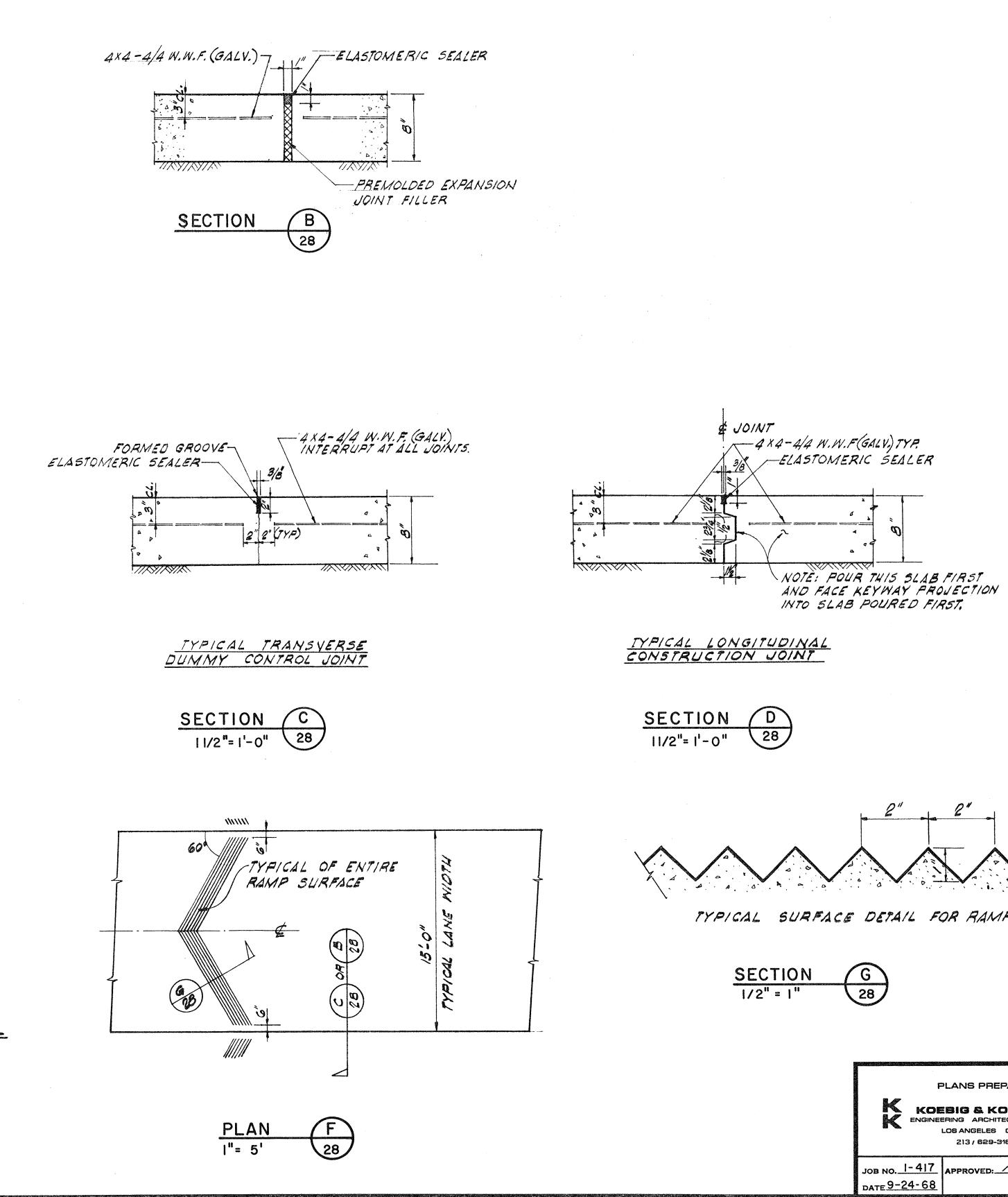
-NATURAL FORMATION SURFACE B' CONC SLAB 12" MIN .-SEE NOTE I HEREON $\begin{pmatrix} C \\ 27 \end{pmatrix}$ SECTION

NOTE: 1. PROVIDE A MIN. 12" THICK SUBGRADE LAYER OF GRANULAR FREE DRAINING MATERIAL BETWEEN COMPACTED FILL AND BOTTOM OF 8" CONC. PAVEMENT. Star Anna

ORANGE COUNTY HARBOR DISTRICT NEWPORT BEACH, CALIFORNIA 714/834-3800 1901 BAYSIDE DRIVE DANA POINT HARBOR DANA POINT, CALIFORNIA PLANS PREPARED BY KOEBIG & KOEBIG, INC. ENGINEERING ARCHITECTURE PLANNING LOS ANGELES CALIFORNIA HEAVY CONSTRUCTION BOAT RAMP - PLAN & SECTIONS 213 / 629-3182 SHEET јов <u>no. |-4|7</u> _{date}9-24-68 DATE OCTOBER , 1968 27_{of}50 D10.5-1 APPROVED: Cochery ΓX, SCALE AS SHOWN



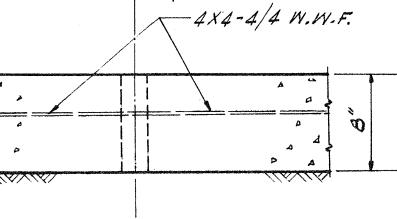
>



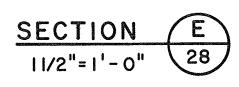
۵

9

E E A HOLE



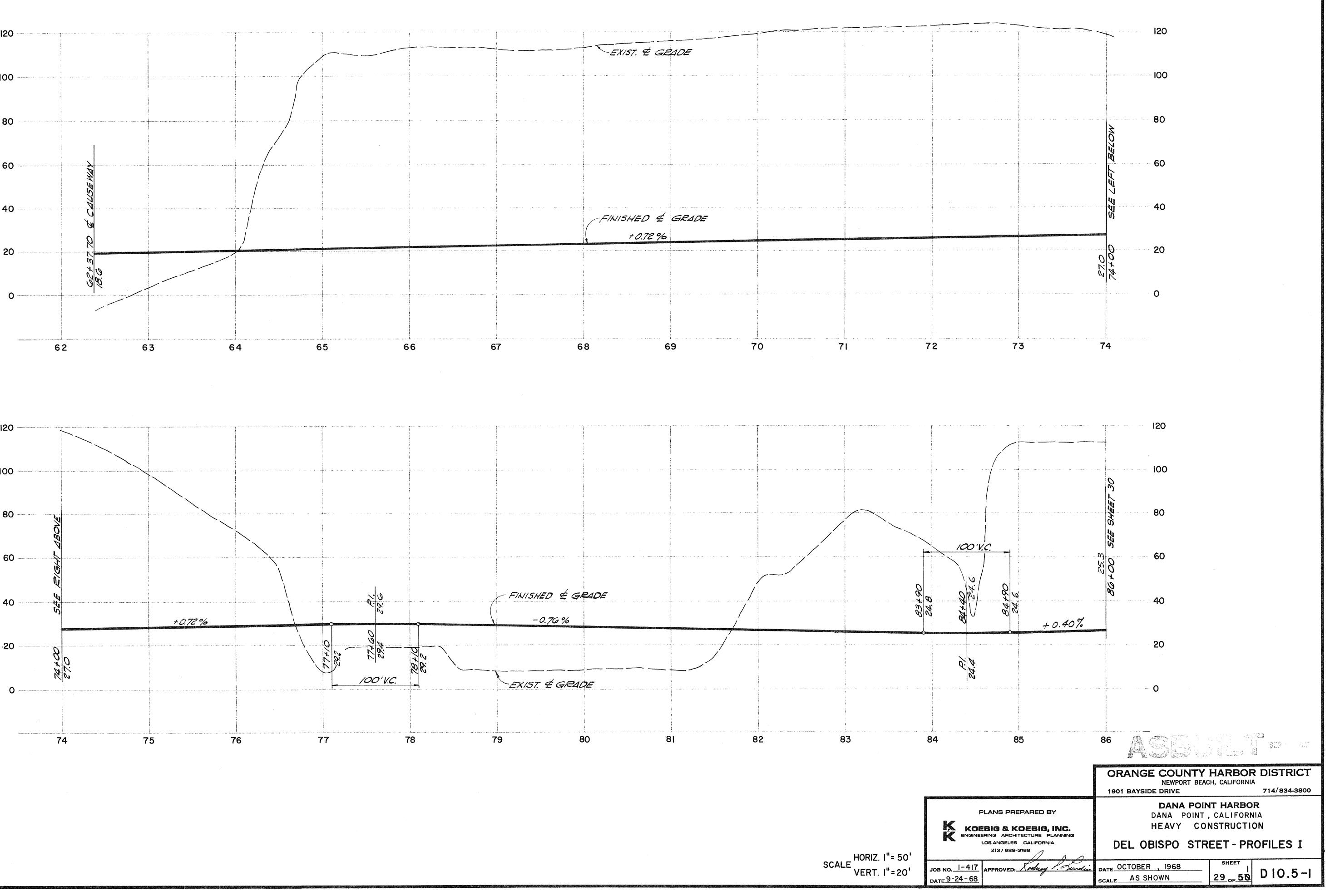
2" & WEEPHOLE DETAIL

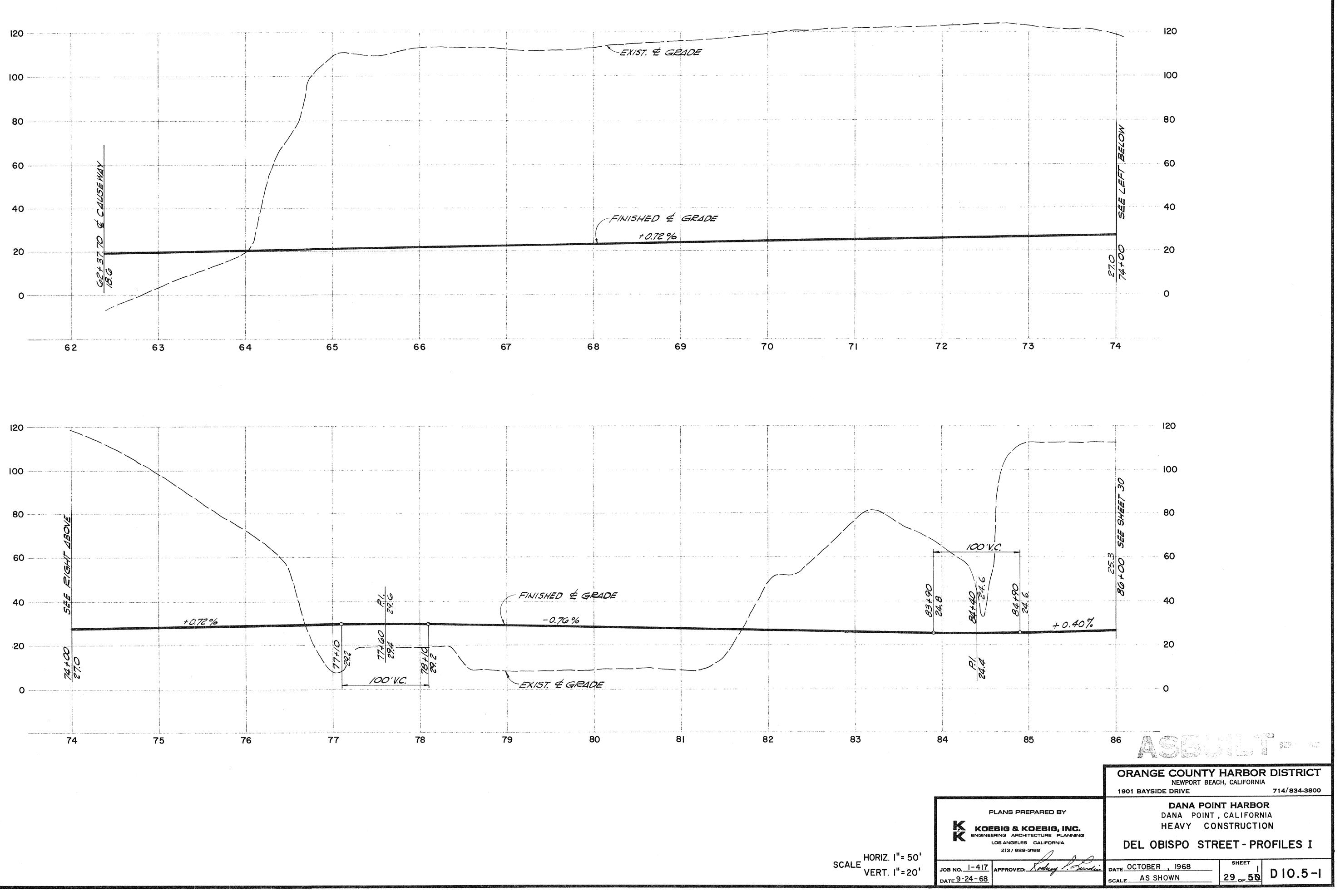


2" TYPICAL SURFACE DETAIL FOR RAMP SEP & 2 1670 28 ORANGE COUNTY HARBOR DISTRICT NEWPORT BEACH, CALIFORNIA 714/834-3800 1901 BAYSIDE DRIVE DANA POINT HARBOR

PLANS PREPARED BY DANA POINT, CALIFORNIA KOEBIG & KOEBIG, INC. ENGINEERING ARCHITECTURE PLANNING HEAVY CONSTRUCTION LOS ANGELES CALIFORNIA BOAT RAMP - DETAILS 213 / 629-3182 SHEET DATE OCTOBER , 1968 JOB NO. 1-417 APPROVED: Junely Junel 28 of 50 D 10.5-1 SCALE AS SHOWN DATE 9-24-68







~

434Î

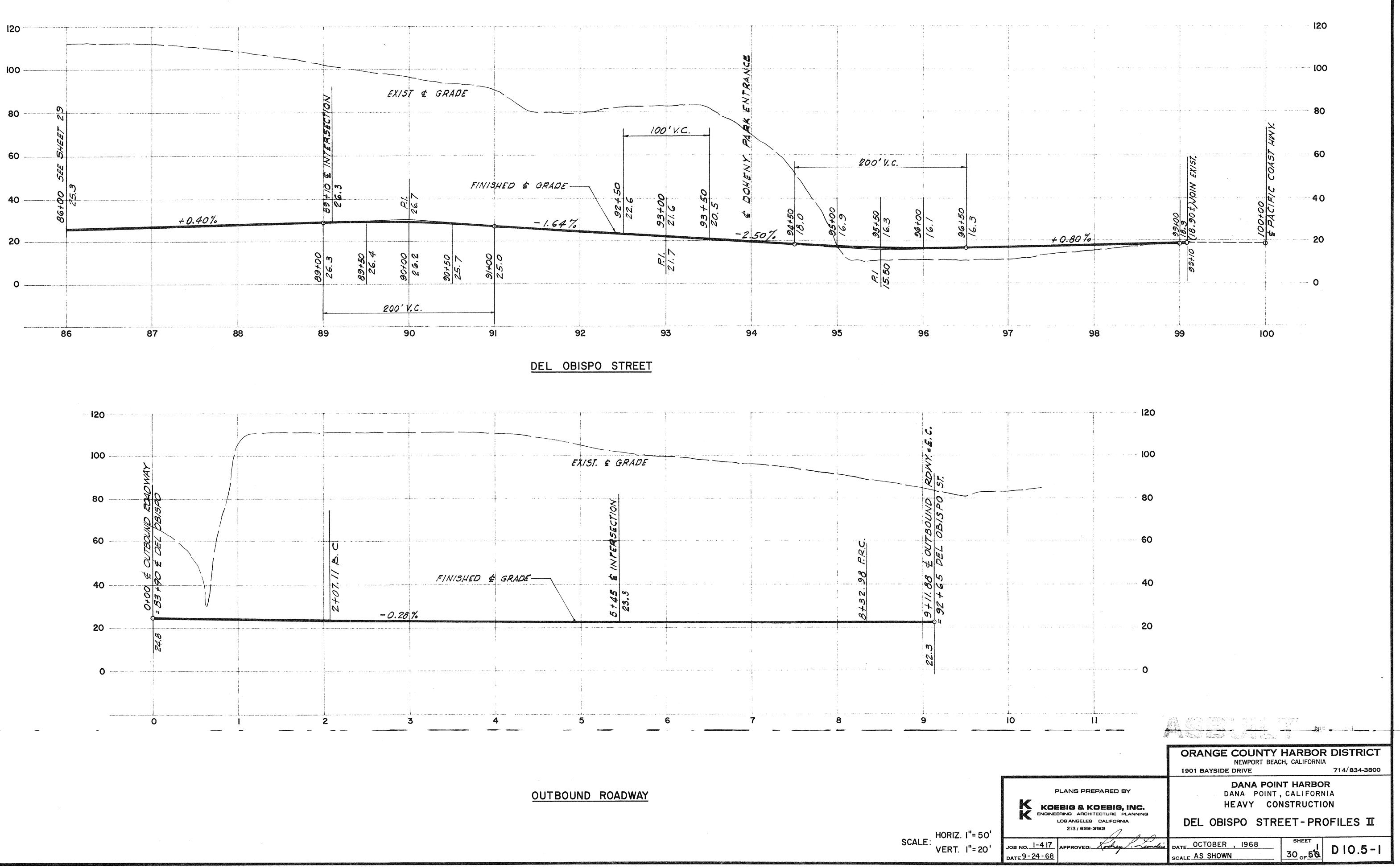
. ~~

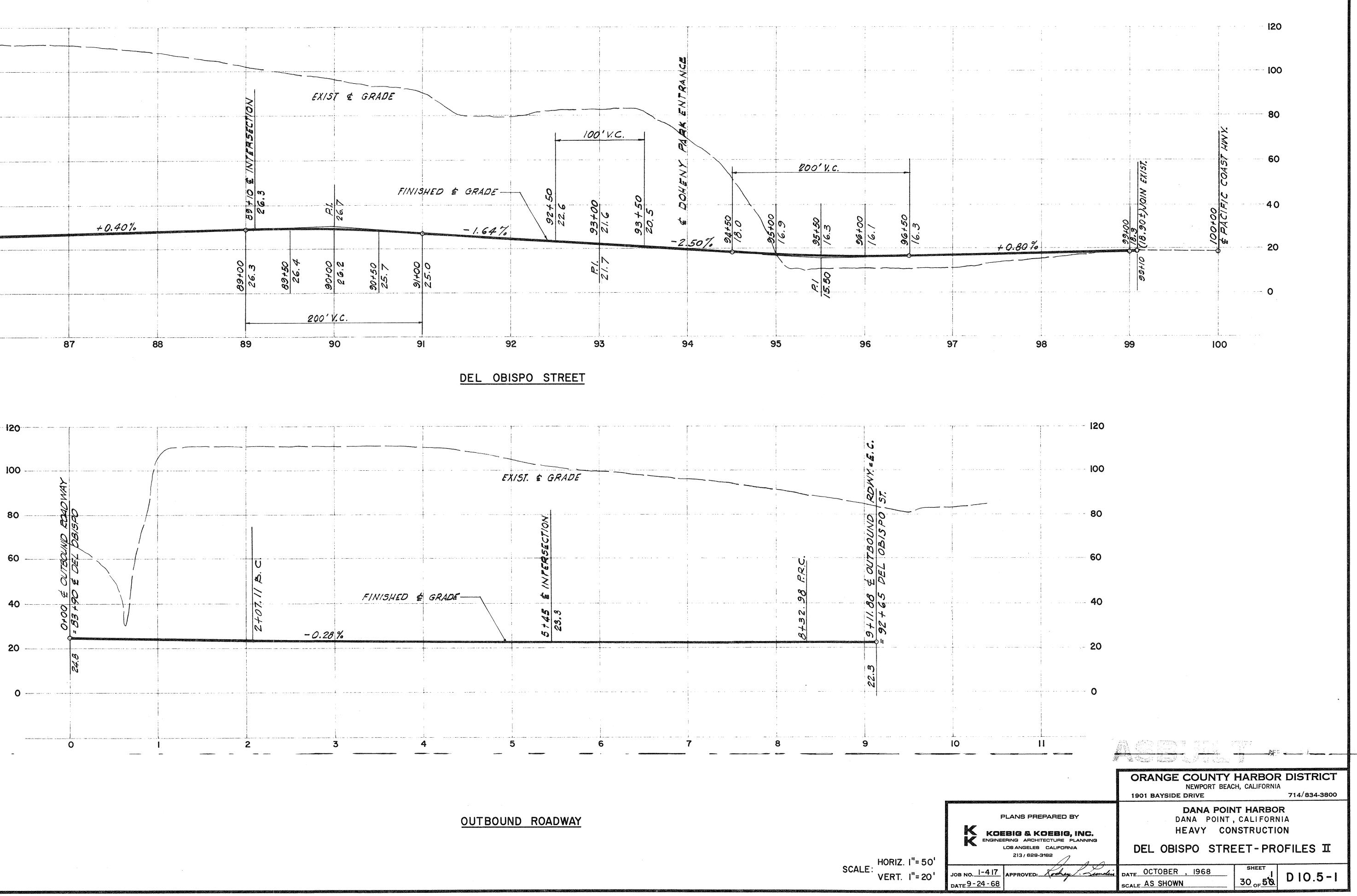
wer.

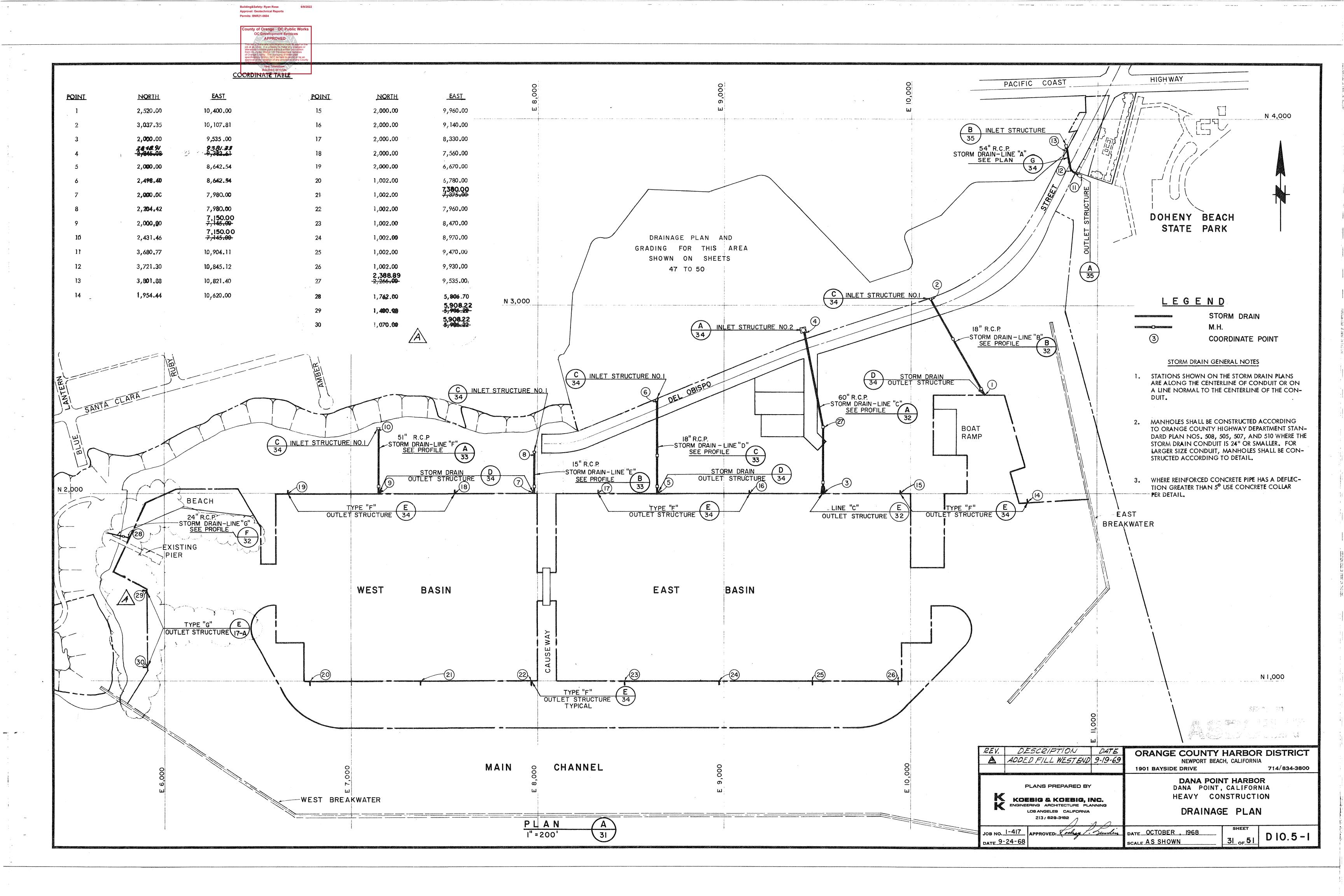
BUILDING OFFICIAL

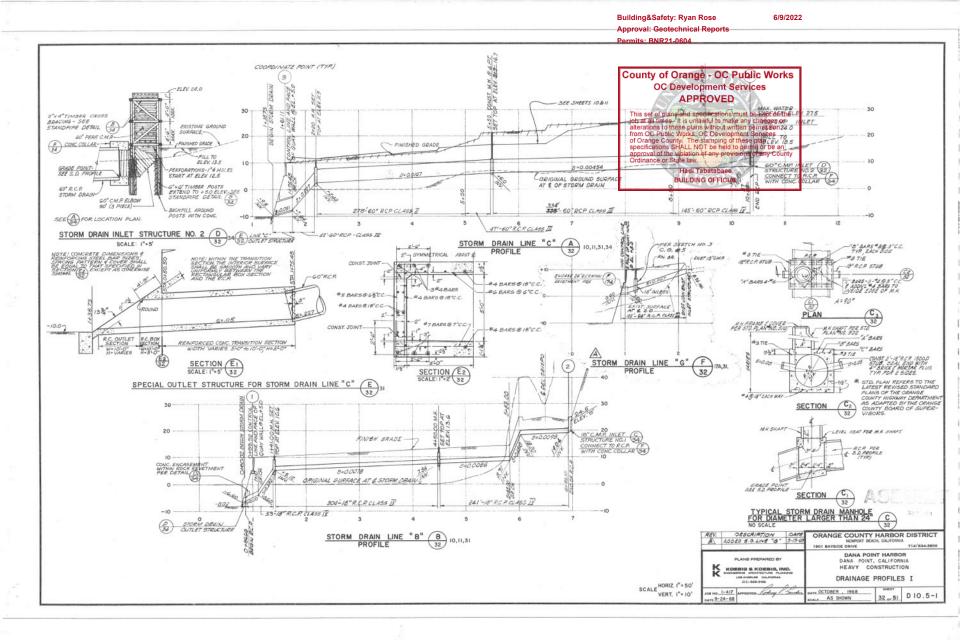
unty of Orange - OC Public Works OC Development Services APPROVED

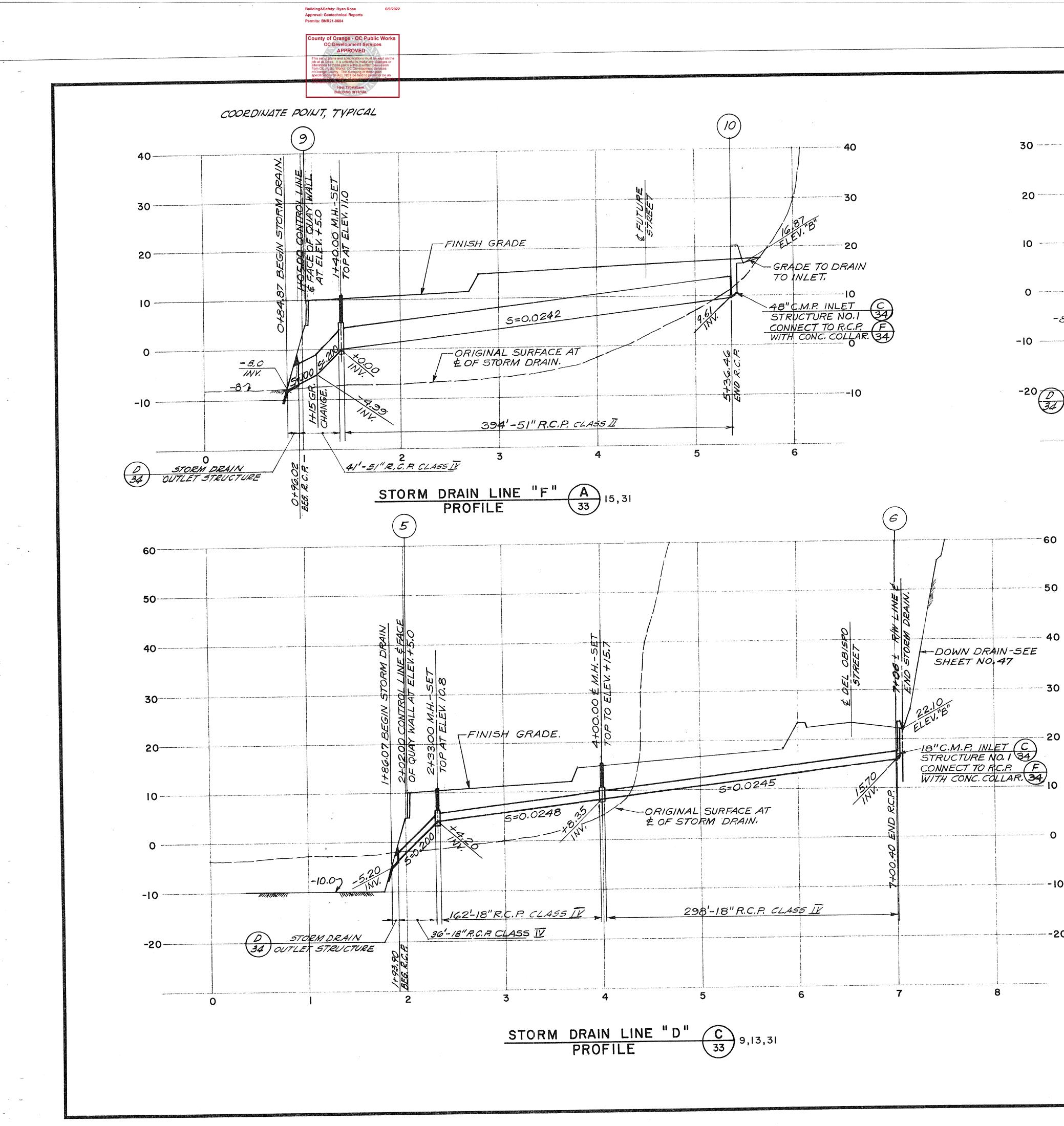
Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604

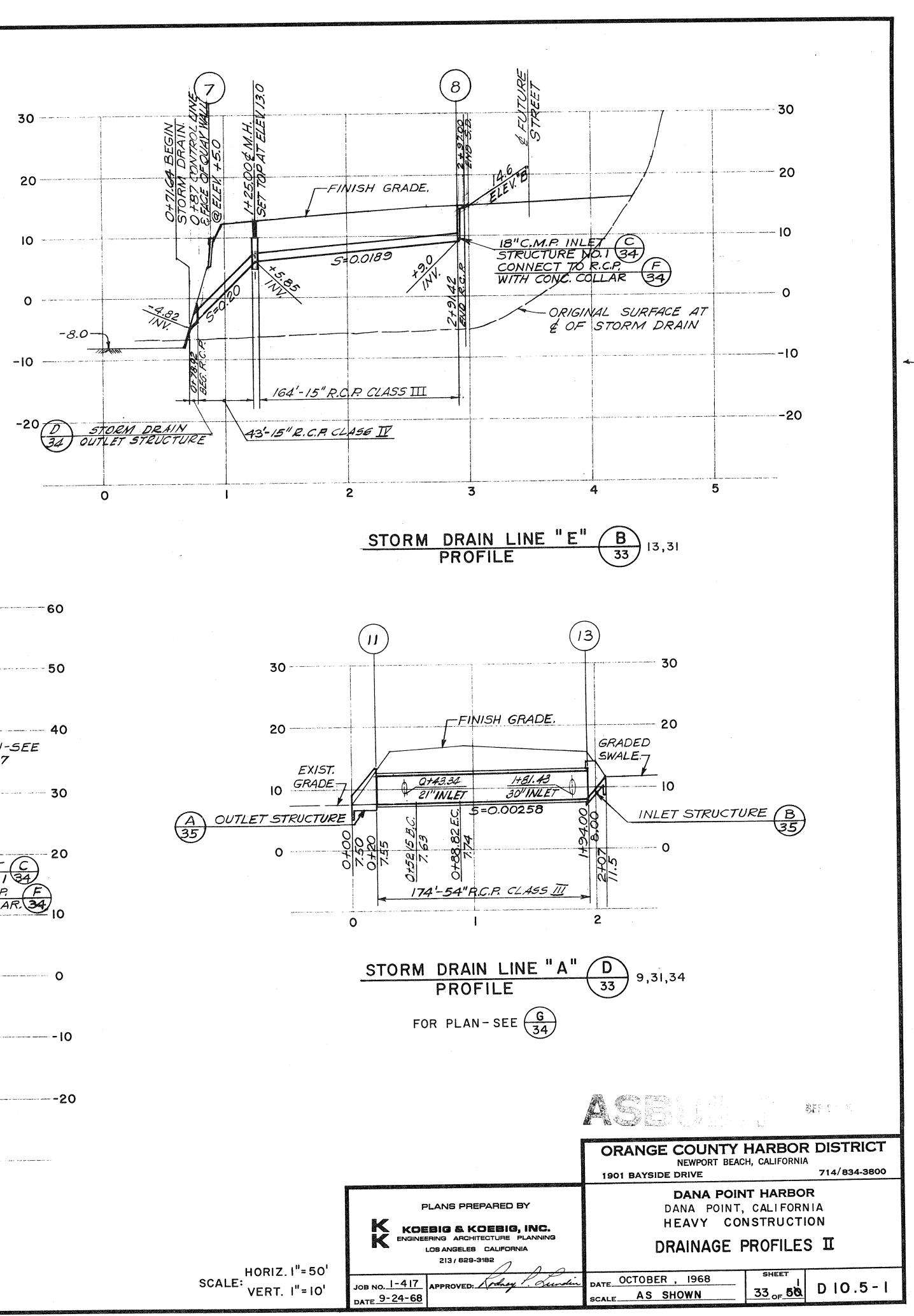


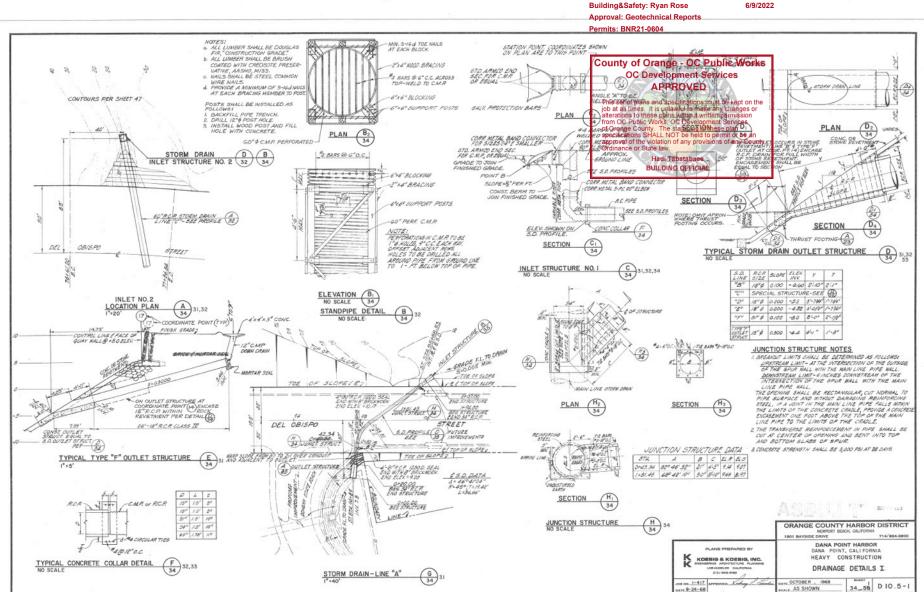


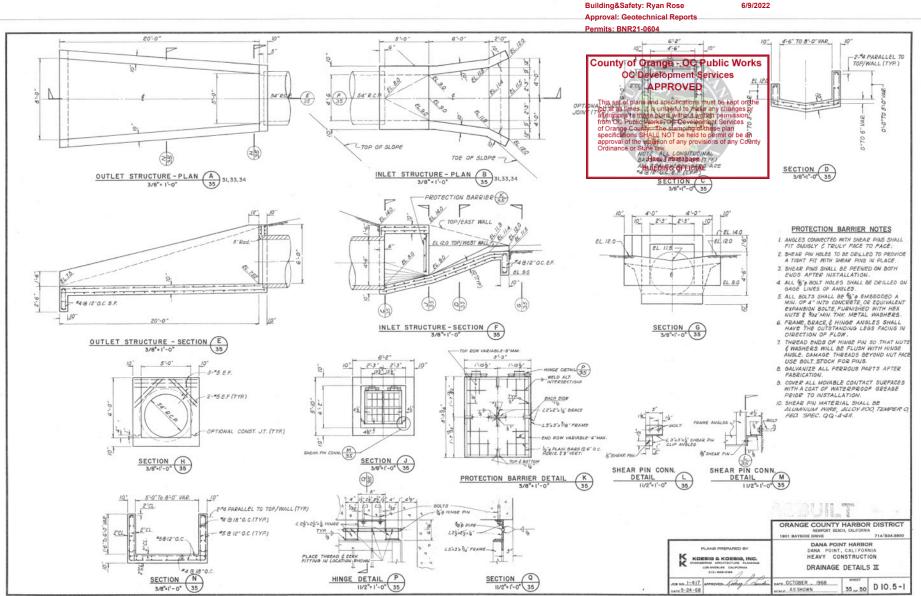


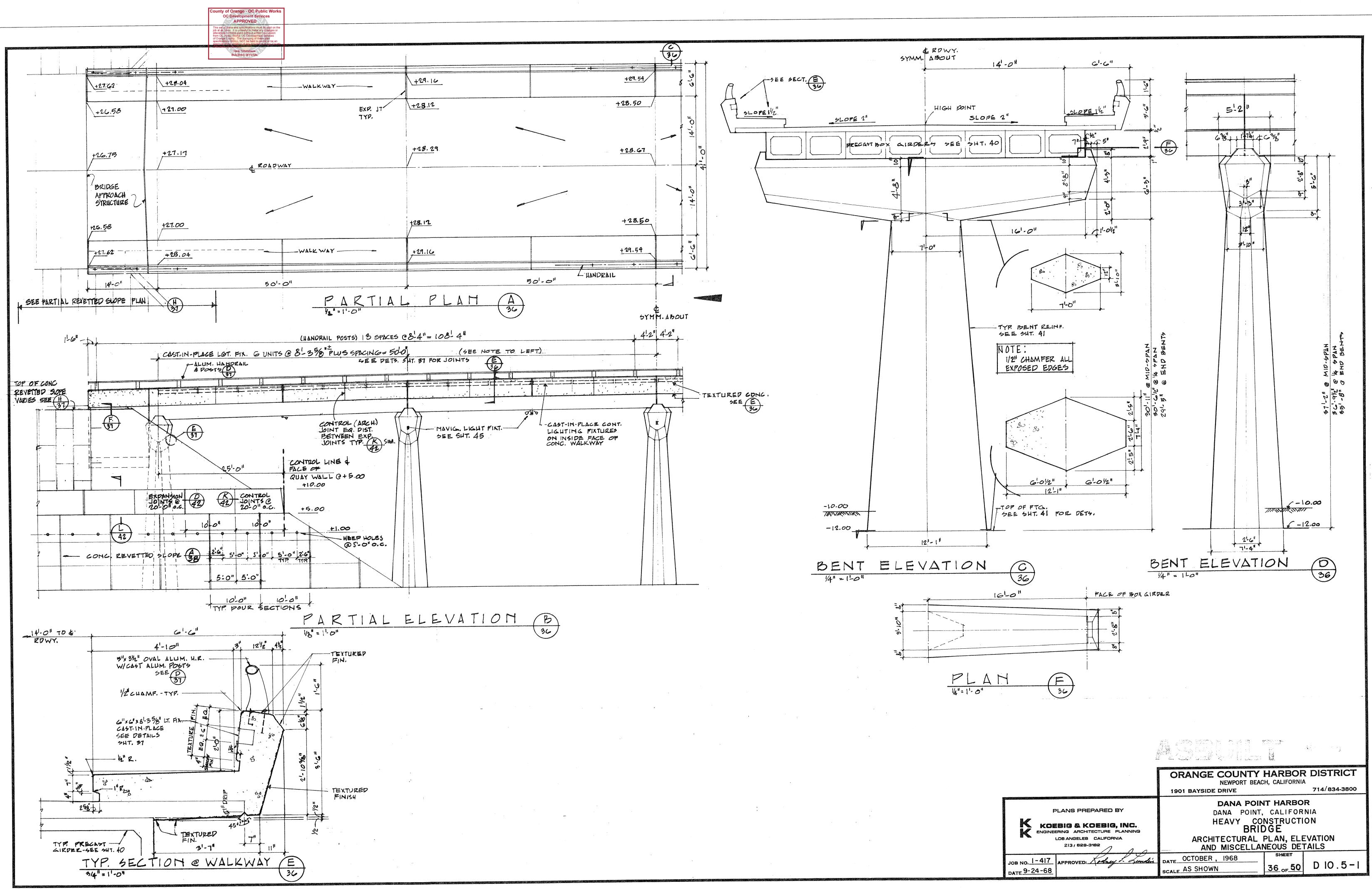










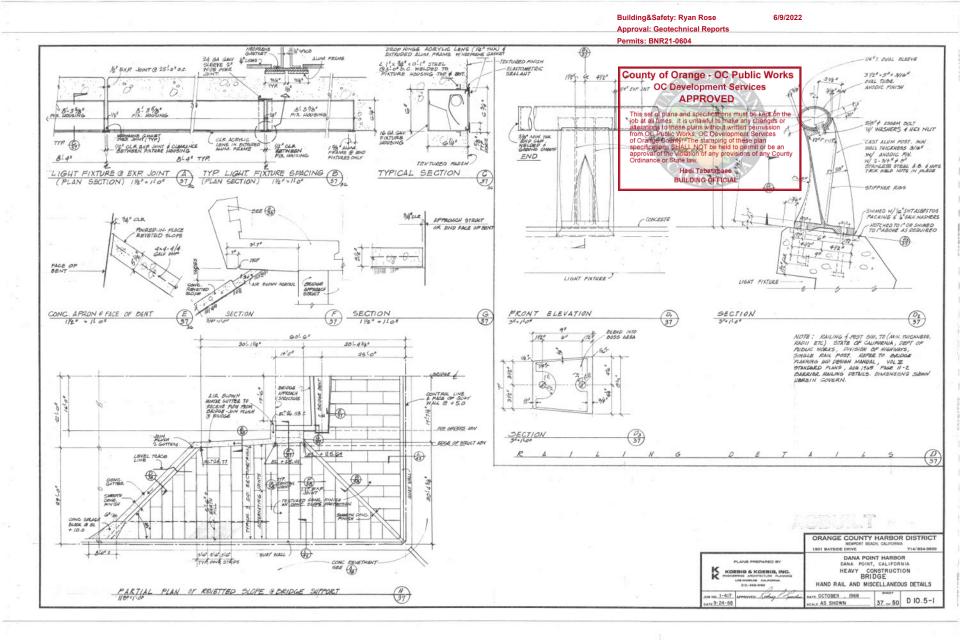


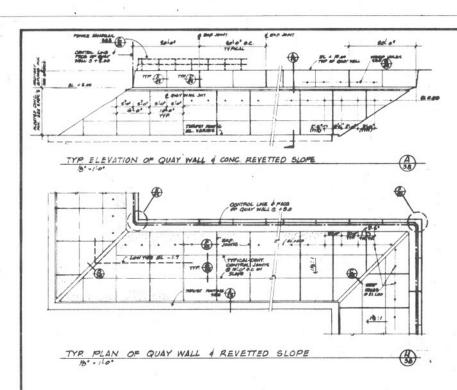
Building&Safety: Ryan Rose

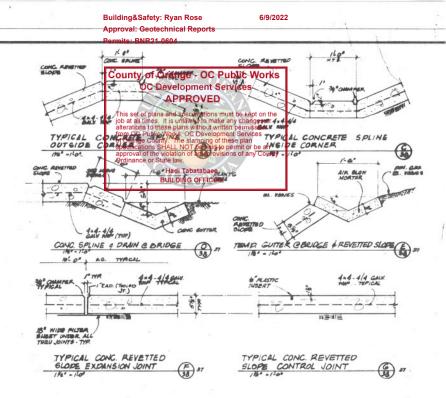
Approval: Geotechnical Reports Permits: BNR21-0604

1

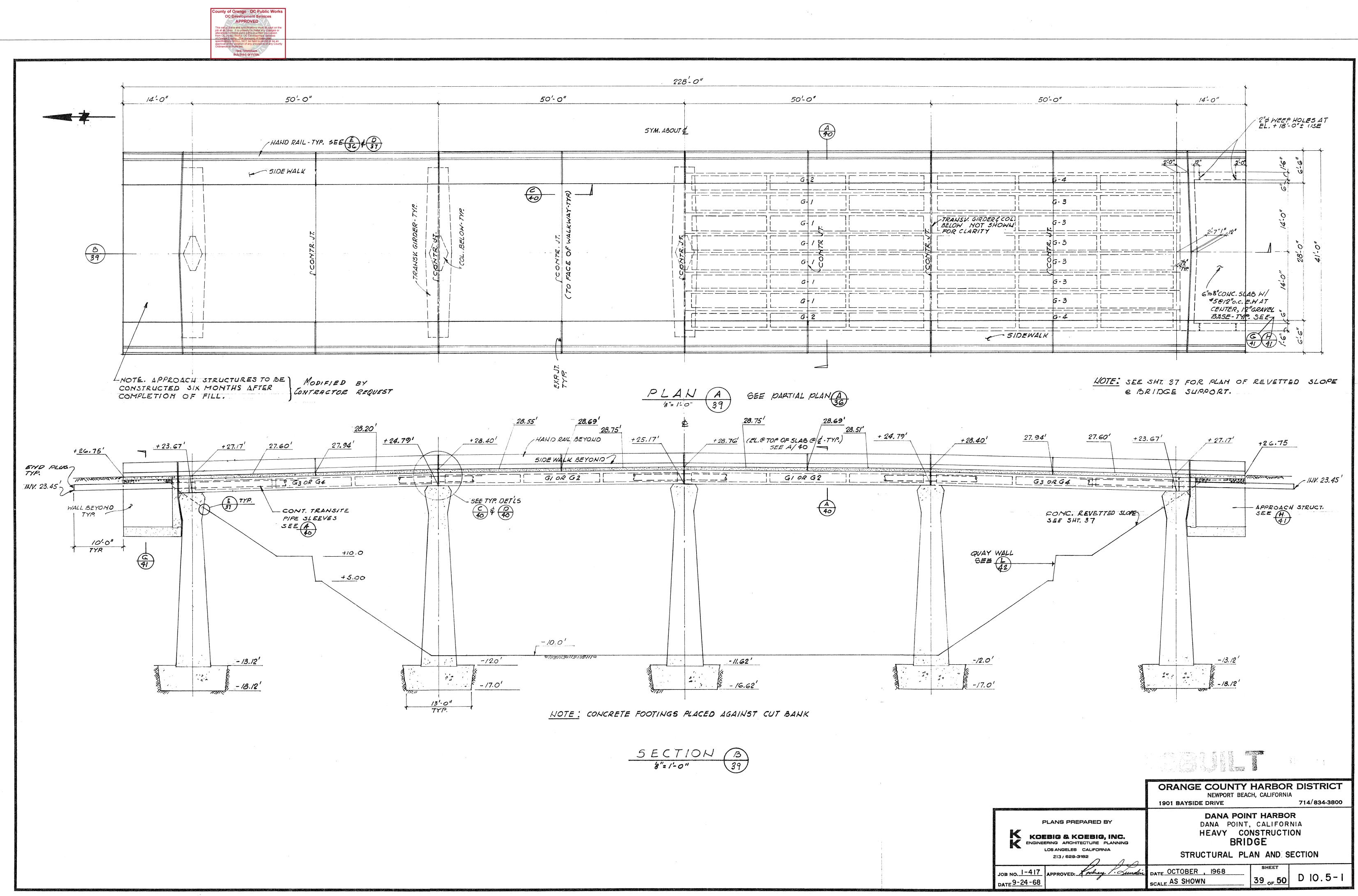
6/9/2022



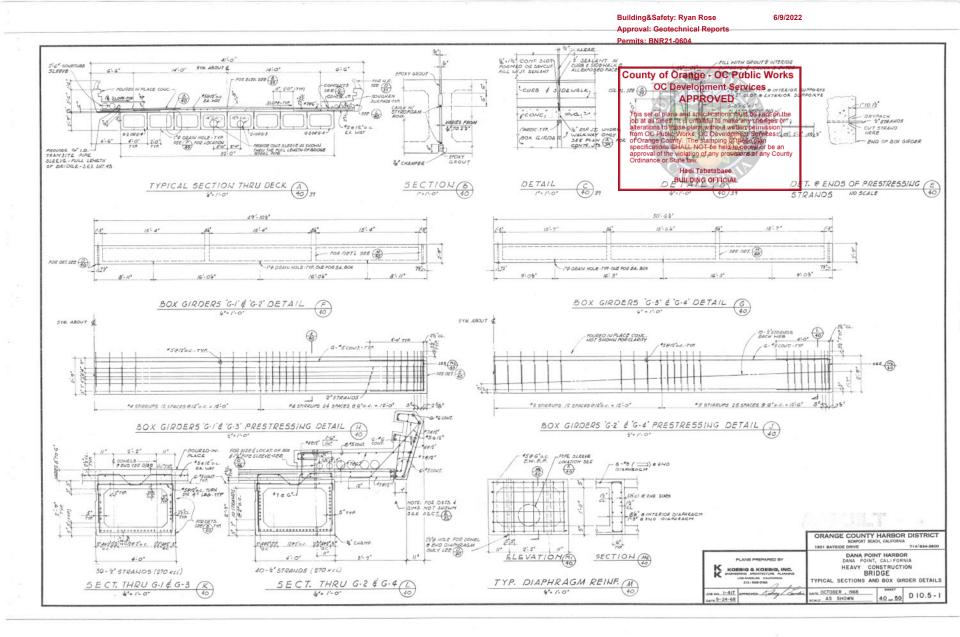








Building&Safety: Ryan Rose Approval: Geotechnical Report Permits: BNR21-0604 -

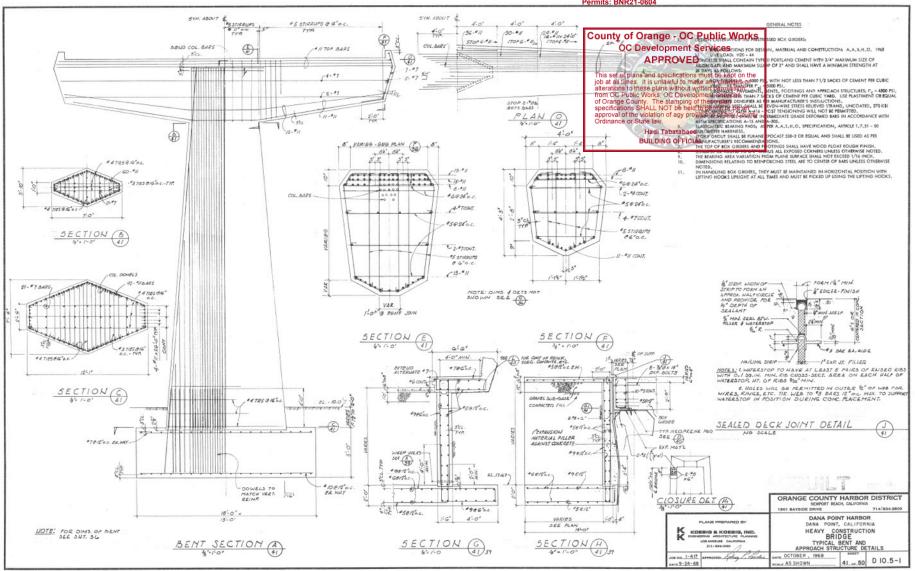


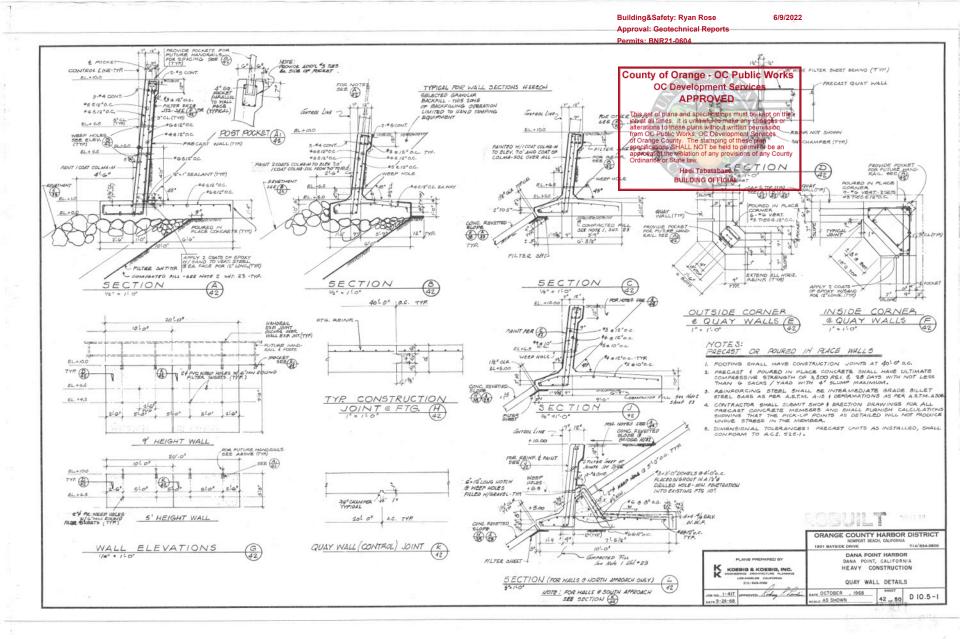


Approval: Geotechnical Reports

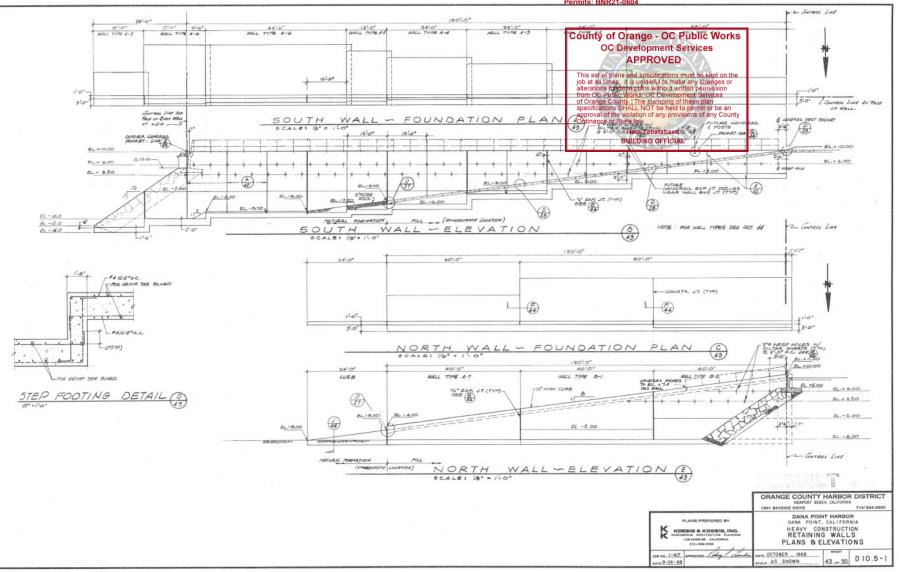
6/9/2022

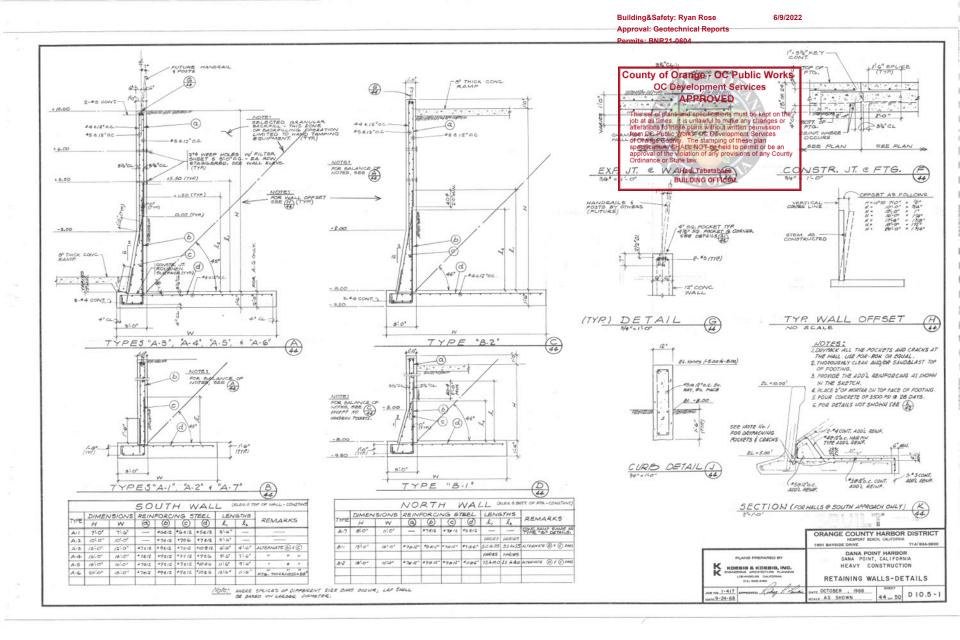
Permits: BNR21-0604

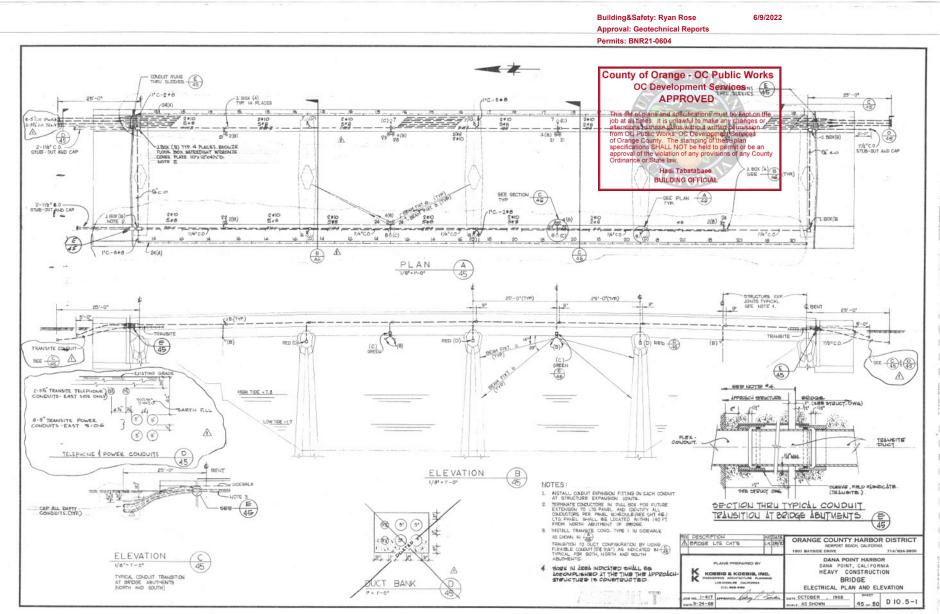




Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604





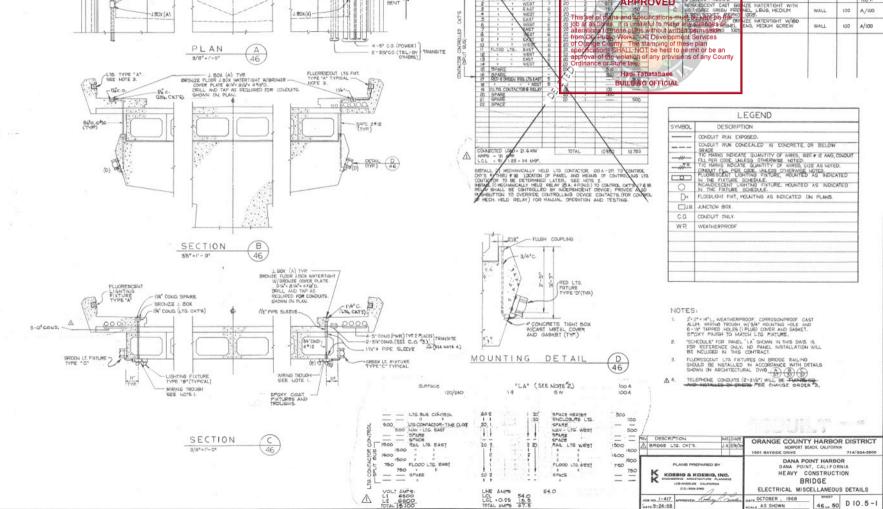


Ĭ

.

~

Building&Safety: Ryan Rose 6/9/2022 Approval: Geotechnical Reports Permits: BNR21-0604 RED LTG. IV+"O FIXTURE SCHEDULE SCHEDULE "LA"REE HATE & DESCRIPTION PANEL MOUNTING WATTS LAMP WARONCE CLEAR ACRYLIC PANEL SPECIFICATIONS) County of Orange - OC Public Works 40 VOLTS, 14, 3 WIRE RECESSED 260 F 96T12 CV LTG BREAKER OC Development Services CENT FLOO DESCRIPTION T WARROW BEAM LAMP APPROVED s and specifications must be read by the second of the second o SURFACE 200 PAR 46 **#** RENT MATERTIGHT WITH WALL 100 L'BOX (A) WATERTIGHT W/180 100 INS MEDELM GOREW WALL alte



-TY/4"C.

.

146

RED LTS

TYDE 'O

1-2-

. .

1

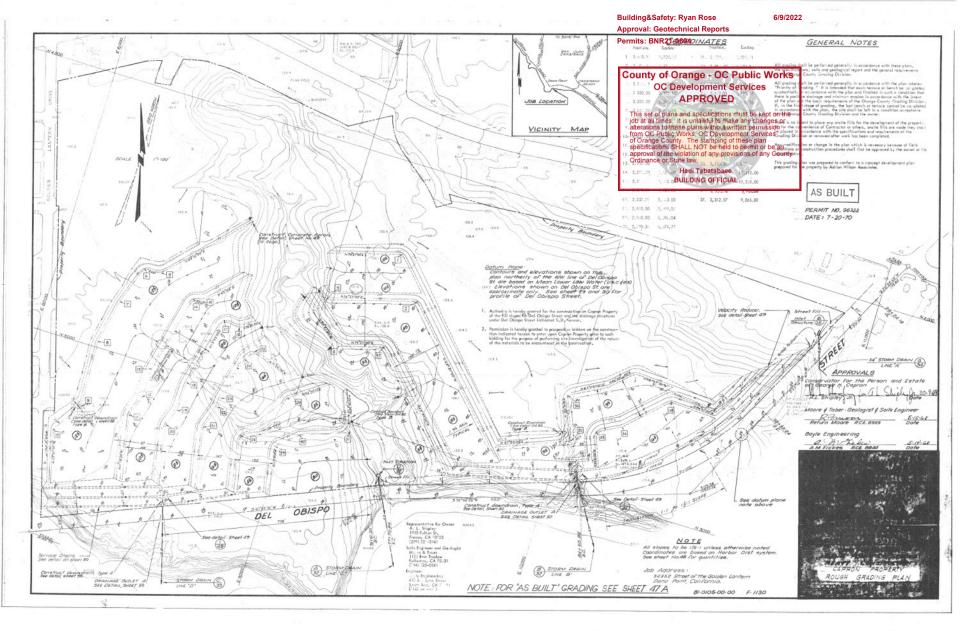
-

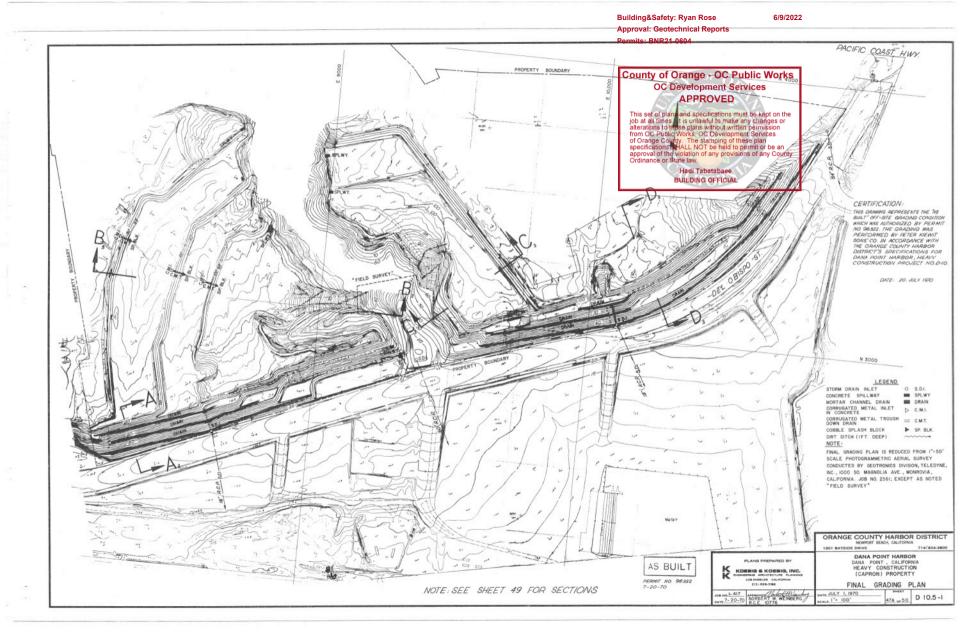
3

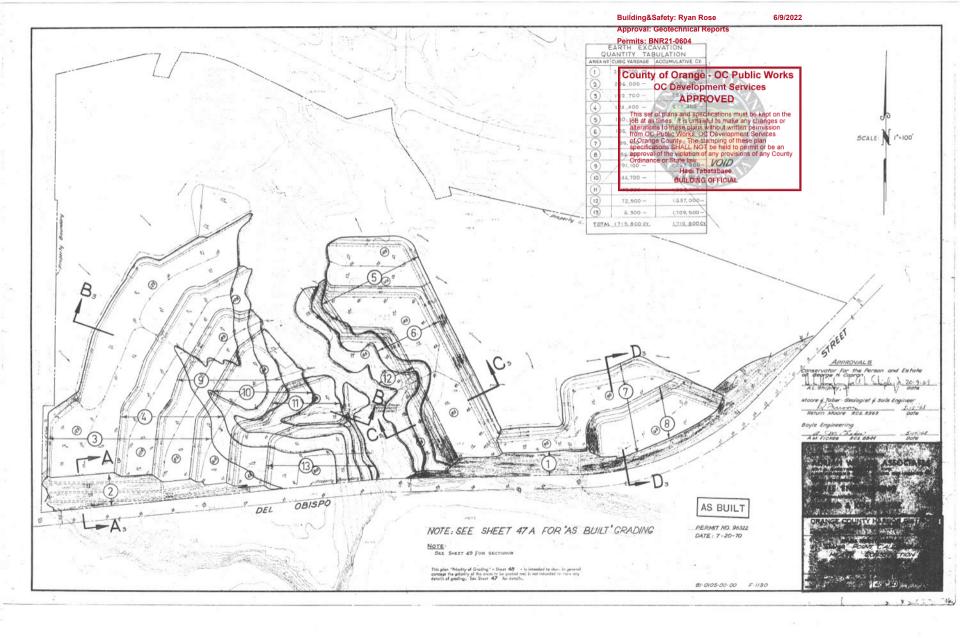
*

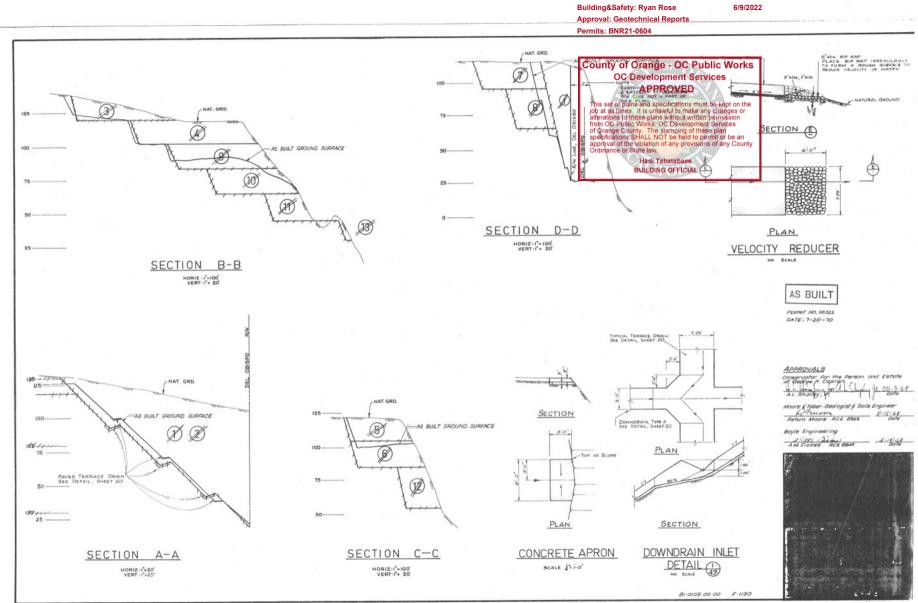
٠

in m



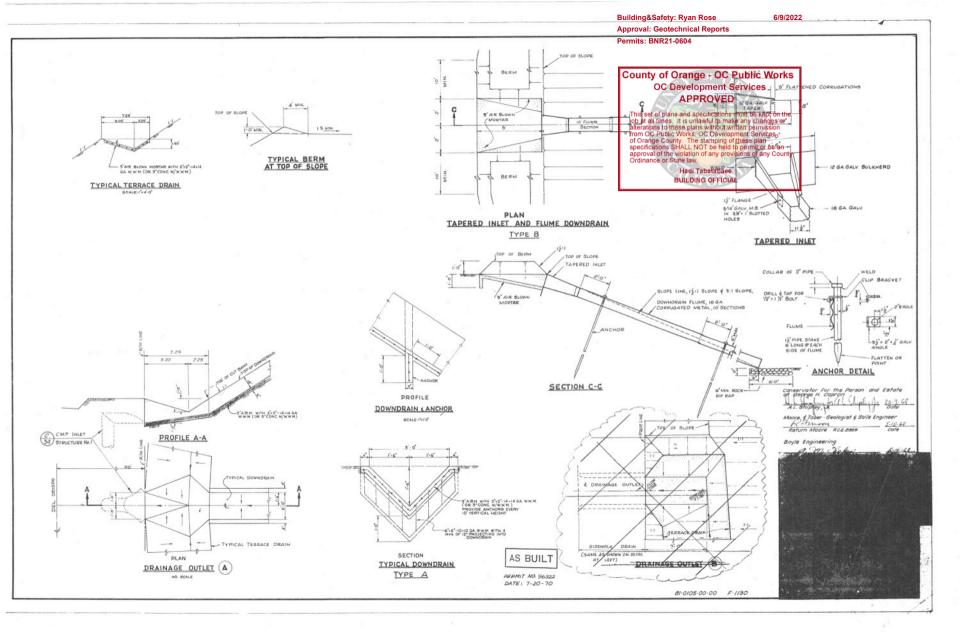


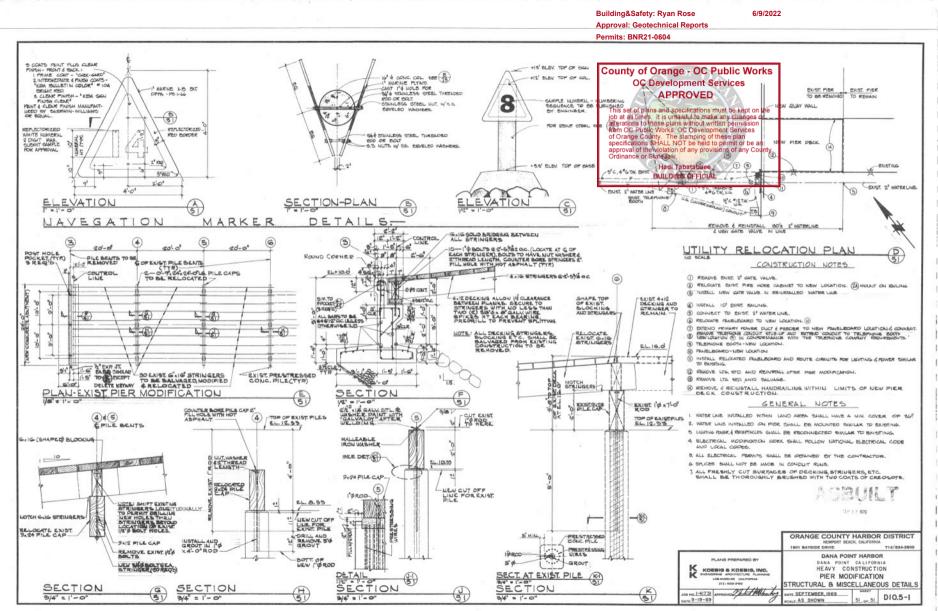




·

1. A.





Building&Safety: Ryan Rose Approval: Geotechnical Reports Permits: BNR21-0604

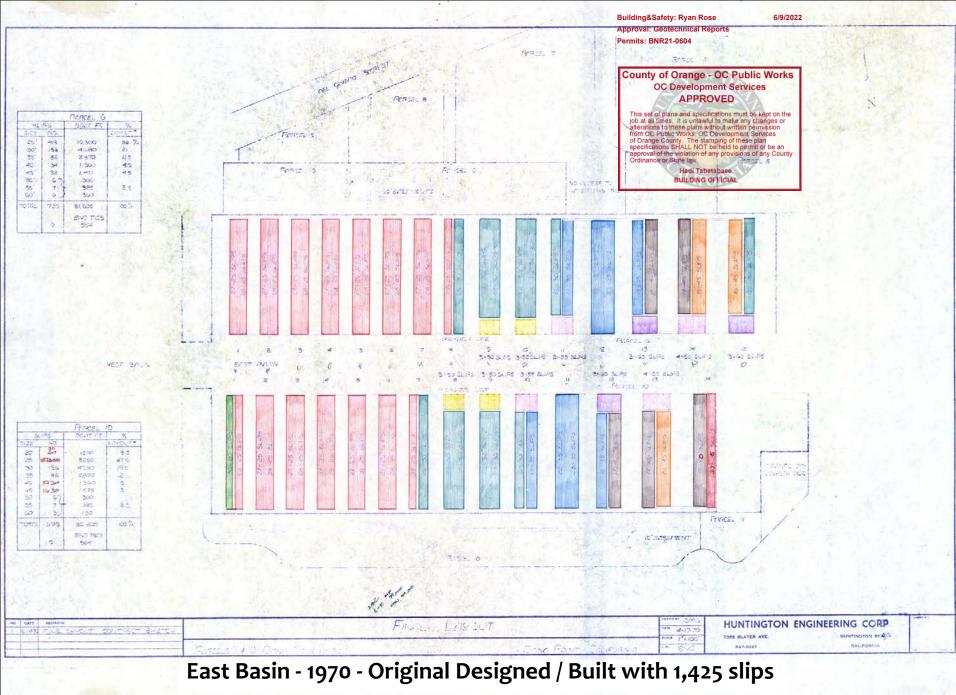
County of Orange - OC Public Works OC Development Services APPROVED This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations to these plans without written permission from OC Public Works. OC Development Services of Orange County. The stamping of these plan specifications SHALL NOT be held to permit or be an approval of the violation of any provisions of any County Ordinance or state law. Heid Tabatabase BUILDING OFFICIAL

6/9/2022

APPENDIX F

EXISTING GUIDE PILES PLANS





DPH RFQ Resource Documents #3- Original Marina Plans

