GeoTek, Inc.
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September 6, 2024
Project No. 3889-SD

Rincon Homes
5315 Avenida Encinas, Suite 200
Carlsbad, California 92008

Attention: Mr. Jonathan Frankel

Subject: Geotechnical Evaluation Lots 15 to 17 Re-Alignment
Proposed Ocean Bluff Residential Development
501 Ocean Bluff
Encinitas, California 92024

Dear Mr. Frankel:

As requested, GeoTek, Inc. (GeoTek) is providing a geotechnical evaluation of Lots 15 to 17 for the subject project.

The project resides in a hillside inland bluff zone. GeoTek provided a geotechnical evaluation for the subject project on August 11, 2023. At the time of the evaluation, building envelopes were not conceptualized. General slope stability analysis was performed with anticipated building loads.

Supplemental Evaluation

In preparation of a more detailed slope stability analysis, a supplemental subsurface evaluation was performed and consisted of advancement of four geotechnical small diameter borings advanced with a conventional rubber tire, truck mounted drilling rig to depths ranging between 30 to 50 feet. The borings were logged by a representative from GeoTek. Bulk and relatively undisturbed samples of earth materials were obtained and delivered to our laboratory for subsequent analysis. The approximate locations of explorations are shown in Figure 2, Geotechnical Map.

Laboratory testing was performed on relatively undisturbed samples collected during the field exploration. The purpose of the laboratory testing was to evaluate their physical properties for use in the engineering design and analysis. Testing included those to determine moisture content, density, and shear strength. Results of the laboratory testing program, along with a brief description and relevant information regarding testing procedures, by GeoTek are included in Appendix B.

Considerations

The California Coastal Commission published a memorandum entitled "Establishing development setbacks from coastal bluffs" dated January 16, 2003 document W11.5. Although the subject site is located in an inland bluff zone, the referenced document provides guidelines that are considered in this discussion. The California Coastal Commission memo references a presentation prepared by Coastal Staff Geologist Mark Johnsson. The presentation paper notes the following mechanisms of bluff failure to be considered in proposed developments.

> The mechanisms of coastal bluff retreat are complex (Emery and Kuhn 1982; Suna-Mura 1983; Vallejo 2002), but can be grouped into two broad categories. Bluff retreat may occur suddenly and catastrophically through slope failure involving the entire bluff, or more gradually through grain-by-grain erosion by marine, subaerial, and ground water processes. The distinction between the two categories may be blurred in 3 some cases—"grains" may consist of relatively large blocks of rock or shallow slumps, for example. Nevertheless, in establishing structural setbacks it is important to evaluate the susceptibility of the bluff to both catastrophic collapse and to more gradual erosion and retreat

The intent of this supplemental evaluation is to provide geotechnical commentary on the two primary bluff failures recommended to be evaluated. Those are global stability and erosion. A third mode of failure is discussed but is a combination of the two primary failures and stability of the two primary modes of failure the combination of the two as a mode of failure is not a reasonable consideration.

Supplemental Slope Stability Analysis

Geotechnical Cross Section CC' was prepared to evaluate the proposed improvements along Lot 17. This lot proposes the building most proximal to the top of the bluff at approximately 7.5 feet. Slope gradient and total height does not significantly differ below Lots 15 and 16 from Lot 17.

Slope stability analyses were performed from geologic cross sections CC utilizing Slide 9.0 Version 29 by circular methodologies. Soil strength of the Torrey Sandstone was obtained from the average strength of drained direct shear laboratory testing performed by GeoTek. The cohesion value was rounded down for conservancy. The Very Old Paralic deposits considered a remolded soil strength of 90% relative compaction based on ASTM D1557. A strip load of 2,000 lbs/linear foot was modeled as the perimeter loads of the proposed building and optional attached California Room. The stability modeling utilized Janbu Simplified, Spencer and Morgenstern-Price methods to determine factors of safety. The analysis resulted in Factors of Safety (FOS) of 1.8 for static conditions and 1.512 and 1.4 for seismic conditions for cross-sections CC'. The

analyzed slope conditions are considered grossly stable. The results of the slope stability analysis are provided in Appendix C.

Erosion from Grain-By-Grain loss

Erosion by grain loss primarily occurs by surface waters shedding on the surface of a slope. The proposed development is designed to direct surface waters on top of the bluff away from the bluff and into a stormdrain conveyance system, thus reducing the ability of surface waters to be transmitted over the bluff's edge and erosion of the bluff.

Conclusion

The proposed realignment of Lot 15, 16, and 17 is considered geotechnically suitable. Global stability analysis results in a FOS greater than 1.5 and 1.1, static and pseudostatic conditions respectively. The development proposes to mitigate surface waters from eroding the bluff by directing surface waters away from the bluff and into a stormdrain conveyance system and into the City of Encinitas' municipal system offsite.

CLOSURE

Since GeoTek's recommendations are based on the site conditions observed and encountered, and laboratory testing, GeoTek's conclusions and recommendations are professional opinions that are limited to the extent of the available data. Observations during construction are important to allow for any change in recommendations found to be warranted. These opinions have been derived in accordance with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

Should you have any questions after reviewing this supplementary letter, please feel free to contact our office at your convenience.

Respectfully submitted,
GeoTek, Inc.

Christopher D. Livesey
CEG, 2733 Exp. 05/31/25
Vice President

Edwin R. Cunningham
RCE 81687, Exp. 03/31/26
Project Engineer

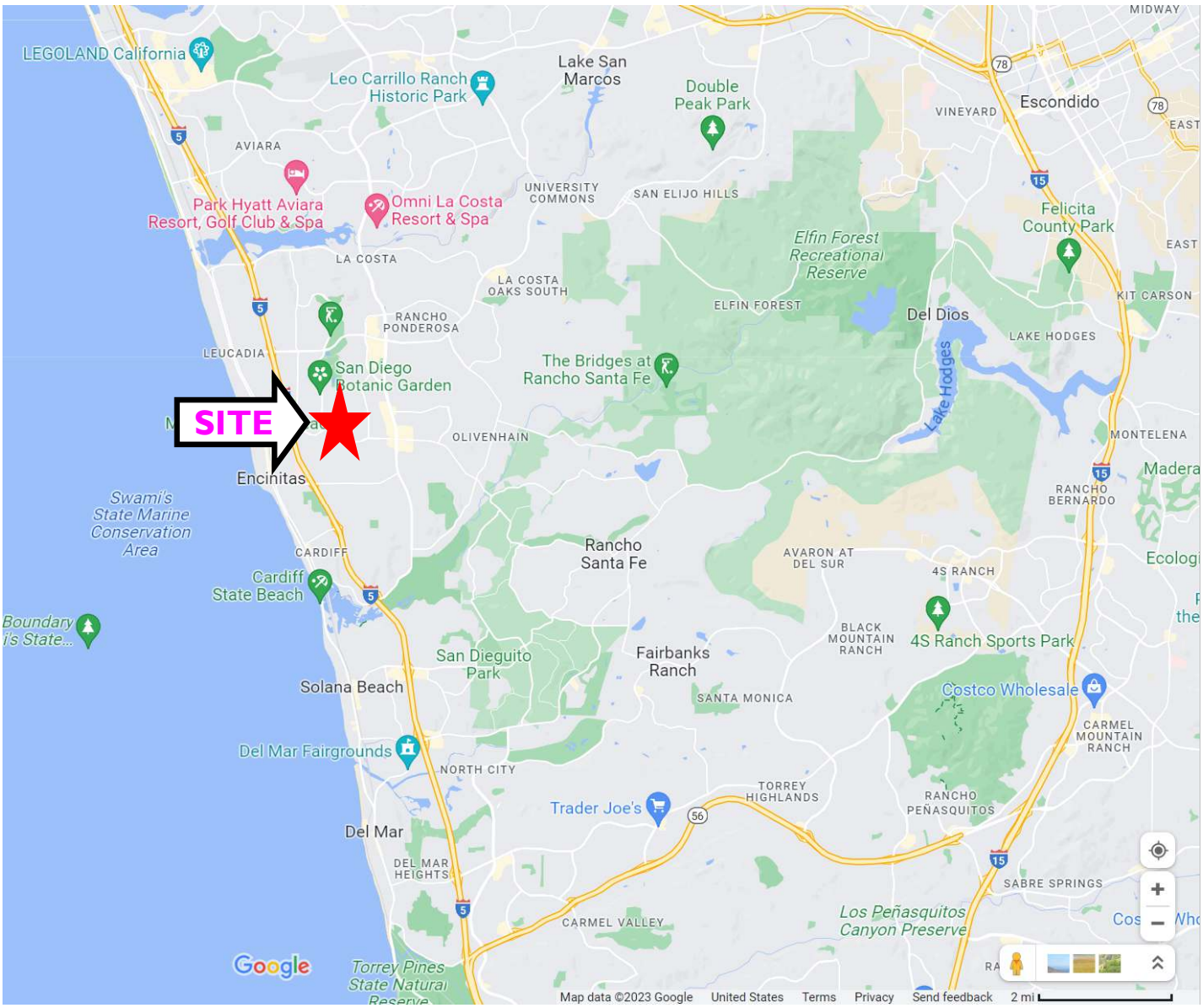
ENCLOSURES

Figure 1 – Site Location Map
Figure 2 – Geotechnical Map
Figure 3 – Geotechnical Cross Section A-A'

Appendix A – Logs of Exploration
Appendix B – Results of Laboratory Testing
Appendix C – Summary of Global Stability Analysis

REFERENCES

GeoTek, Inc. 2023, "Updated Geotechnical Evaluation, Ocean Bluff Development, North of Ocean Bluff Way and Camino El Darado, Encinitas, California," Project No. 3889-SD, dated August 11, 2023.



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GEOTEK

GEOTECHNICAL | ENVIRONMENTAL | MATERIALS

1384 Poinsettia Avenue, Suite A, Vista, CA 92081
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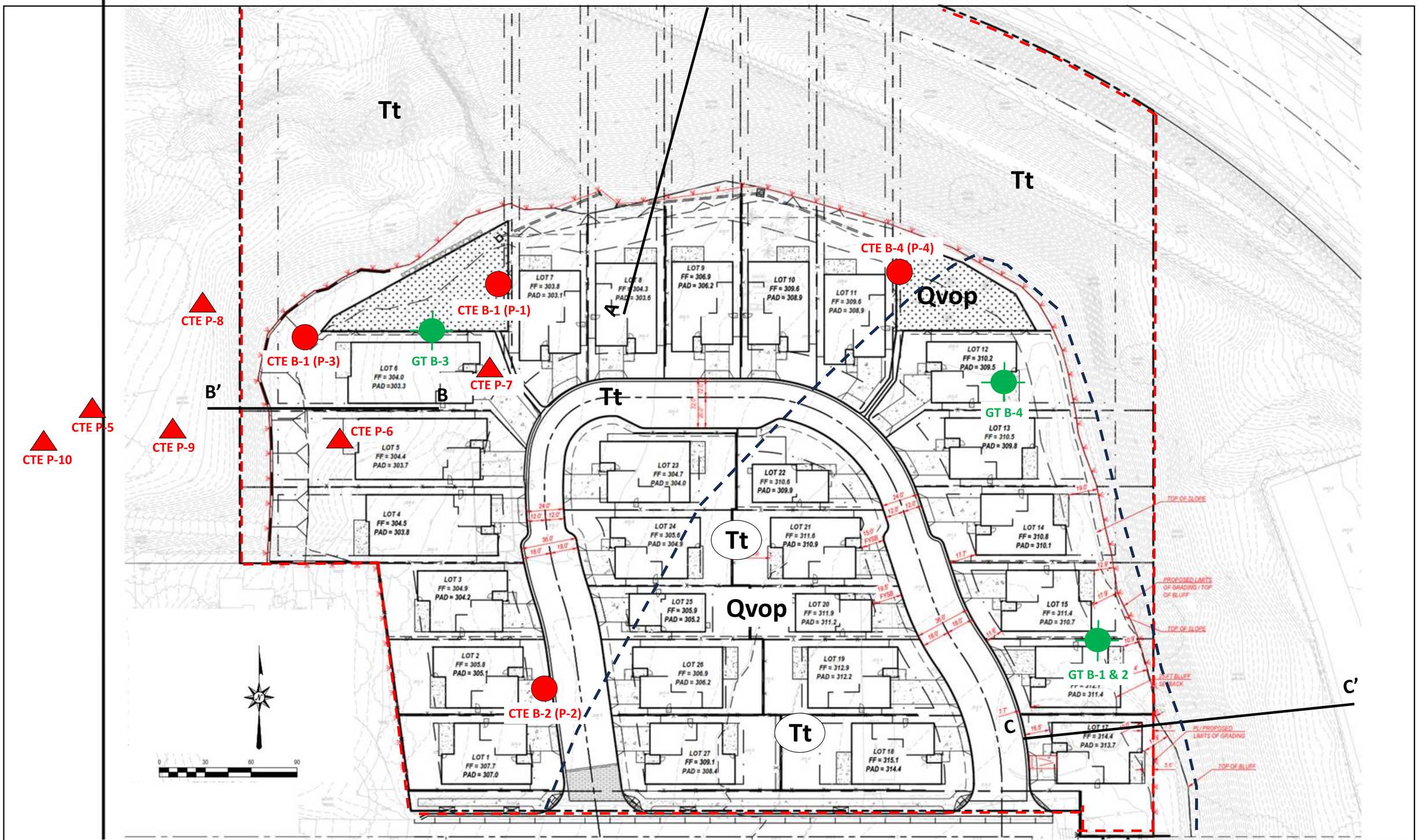
FIGURE 1
SITE LOCATION
OCEAN BLUFF
501 OCEAN BLUFF
ENCINITAS CALIFORNIA

Project No.:	Report Date:	Drawn By:
3889-SD	06/23	CDL



LEGEND

- Approximate Limits of Site
- Approximate Geologic Contact, Dashed Were Uncertain
- Qvop — Very Old Paralic Deposits
- Tt — Torrey Sandstone, Circled Where Buried
- CTE B-2 (P-2) — Geotechnical Boring and Converted to Percolation Test, By CTE
- CTE P-5 — Perc Test, By CTE
- A — A' — Slope Stability Section
- GT B-3 — Geotechnical Borings

Rincon Homes
Ocean Bluff
Encinitas, California

PN: 3889-SD

September 2024

Figure 2

Geotechnical Map

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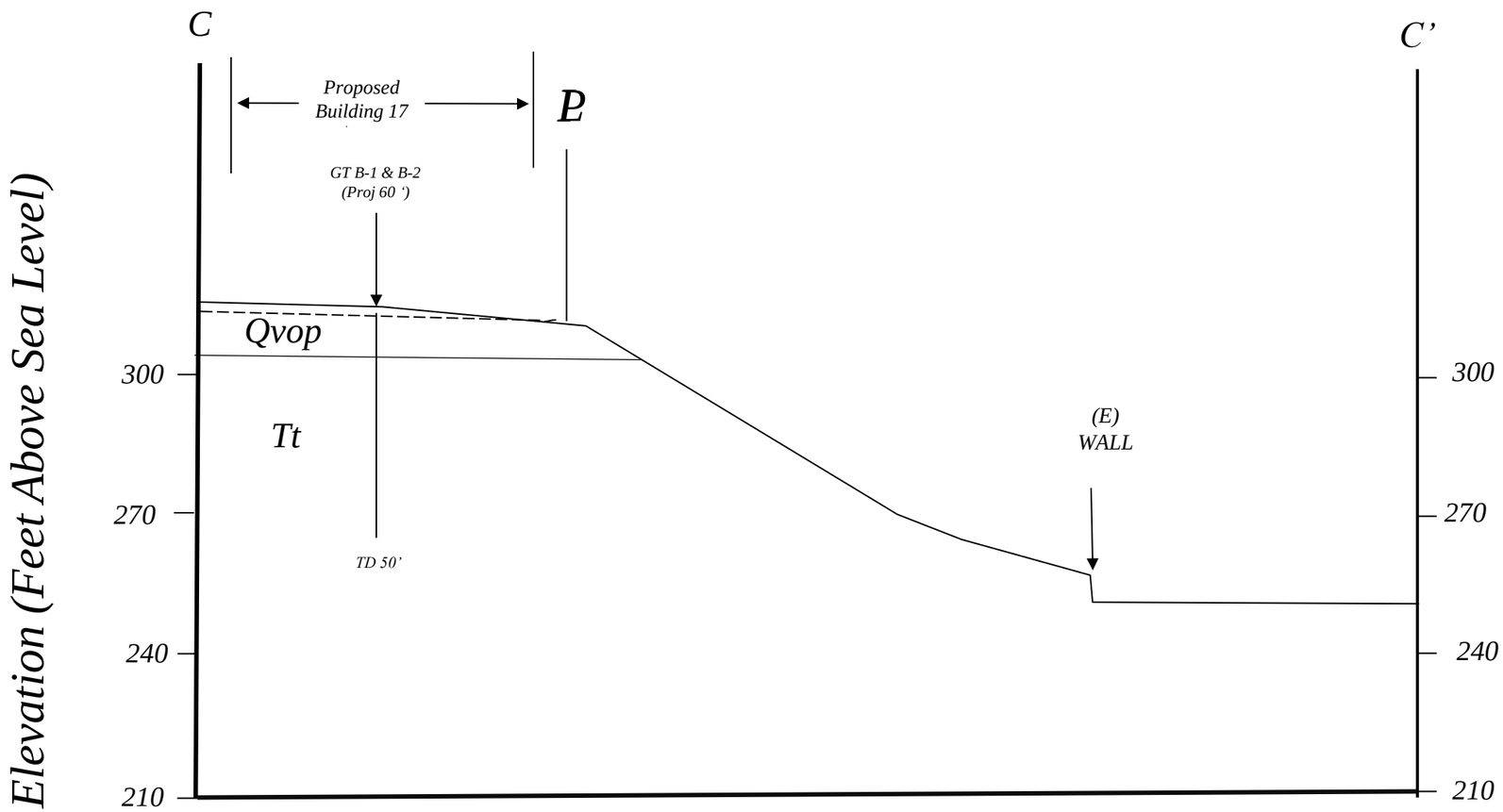
Vista, California 92081



LEGEND

Qvop *Very Old Paralic Deposits*

Tt *Torry Sandstone*

Existing Grade

Proposed Grading Plans

No Groundwater Encountered

Approximate Scale
1"=30 feet

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Cross Section C-C"

OCEAN BLUFF

September 2024 *PN: 3889-SD*

Figure 3

APPENDIX A

LOGS OF EXPLORATION

A - FIELD TESTING AND SAMPLING PROCEDURES

Bulk Samples (Large)
These samples are normally large bags of earth materials over 20 pounds in weight collected from the field by means of hand digging or exploratory cuttings.

Bulk Samples (Small)
These samples are normally small bags of earth materials less than 10 pounds in weight collected from the field by means of hand digging or exploratory cuttings.

The Modified Split-Barrel Sampler (Ring)
The ring sampler is driven into the ground at various depths in accordance with ASTM D 3550 test procedures. The sampler, with an external diameter of 3.0 inches, is lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sampler is typically driven into the ground 12 or 18 inches with a 140-pound hammer free falling from a height of 30 inches. Blow counts are recorded for every 6 inches of penetration as indicated on the log of boring. The samples are removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

B – BORING/TRENCH LOG LEGEND

The following abbreviations and symbols often appear in the classification and description of soil and rock on the logs of borings/trenches:

SOILS

USCS	Unified Soil Classification System
f-c	Fine to coarse
f-m	Fine to medium

GEOLOGIC

B: Attitudes	Bedding: strike/dip
J: Attitudes	Joint: strike/dip
C: Contact line	
……..	Dashed line denotes USCS material change
———	Solid Line denotes unit / formational change
———	Thick solid line denotes end of boring/trench

(Additional denotations and symbols are provided on the log of borings/trenches)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Rincon Homes	**DRILLER:**	North County Drilling	**LOGGED BY:**	BJ
PROJECT NAME:	501 Ocean Bluff	**DRILL METHOD:**	8" HSA	**OPERATOR:**	Kimble
PROJECT NO.:	3889-SD	**HAMMER:**	140lbs/30in	**RIG TYPE:**	B-46
LOCATION:	Encinitas, CA	**ELEVATION:**	312 feet	**DATE:**	8/15/2024

BORING NO.: GT-B-1

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
			BB-1	SM	**Very Old Paralic Deposits (Qvop)** Silty fine SAND, dark brown with some orange mottling, dry to damp, loose			
5		2 11 15	R-1		Material becomes medium dense			
10		19 50/5"	R-2	SM	**Torrey Sandstone (Tt)** Silty medium SANDSTONE with some clay, light gray with green hue, moist, dense			DS
15								
20		50/6"	R-3		Material becomes very dense; water added to auger			DS
25			BB-2					
30		50	R-4		Sandy SILTSTONE, hard			

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; CO = Consolidation test; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Rincon Homes	**DRILLER:**	North County Drilling	**LOGGED BY:**	BJ
PROJECT NAME:	501 Ocean Bluff	**DRILL METHOD:**	8" HSA	**OPERATOR:**	Kimble
PROJECT NO.:	3889-SD	**HAMMER:**	140lbs/30in	**RIG TYPE:**	B-46
LOCATION:	Encinitas, CA	**ELEVATION:**	312 feet	**DATE:**	8/15/2024

BORING NO.: GT-B-1 (CONT.)

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
		50/5"						
35								
40		50	R-5		Silty SANDSTONE with some clay			DS
45					Fine SILTSTONE, white, damp, iron oxide staining			
50					**HOLE TERMINATED AT 50 FEET** Practical refusal No groundwater encountered Backfilled with spoils			
55								
60								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; CO = Consolidation test; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Rincon Homes	**DRILLER:**	North County Drilling	**LOGGED BY:**	BJ
PROJECT NAME:	501 Ocean Bluff	**DRILL METHOD:**	8" HSA	**OPERATOR:**	Kimble
PROJECT NO.:	3889-SD	**HAMMER:**	140lbs/30in	**RIG TYPE:**	B-46
LOCATION:	Encinitas, CA	**ELEVATION:**	312 feet	**DATE:**	8/15/2024

BORING NO.: GT-B-2

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Very Old Paralic Deposits (Qvop) Silty fine SAND, dark brown with orange mottling, dry to damp, loose			
					Boring offsite 5 feet north of GT-B-1 and advanced to a depth of 25 feet to sample			
5					**Torrey Sandstone (Tt)** @5': Increased density and cementation, rig advancement slows, fine to coarse sand from cuttings			
10					@12': Gravel conglomerate bed with a silty fine to coarse sandstone matrix one foot thick			
15					@15': Silty fine to medium SANDSTONE with clay, light brown with some gray			
20								
25		50/5"	R-1		@25': Fine sandy SILTSTONE, buff white with iron oxidized grains, hard			DS
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; CO = Consolidation test; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Rincon Homes	**DRILLER:**	North County Drilling	**LOGGED BY:**	BJ
PROJECT NAME:	501 Ocean Bluff	**DRILL METHOD:**	8" HSA	**OPERATOR:**	Kimble
PROJECT NO.:	3889-SD	**HAMMER:**	140lbs/30in	**RIG TYPE:**	B-46
LOCATION:	Encinitas, CA	**ELEVATION:**	305 feet	**DATE:**	8/15/2024

BORING NO.: GT-B-3

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Torrey Sandstone (Tt) Silty fine SANDSTONE, light brown to tan, dry, loose, 1/4" trace of gravel			
5		35 50	S-1					
10		32 50	S-2		Fine SANDSTONE, buff white, thin laminated orange bedding, weathered			
15		34 50	S-3		Fine SANDSTONE, buff white, thin laminated orange bedding, weathered			
20		50 50	S-4		Fine SANDSTONE, buff white, weathered orange to brown, moist			
25		50/4"	R-1		Fine SANDSTONE, buff white, weathered orange to brown, moist			
30		50/4"	R-2		Fine SANDSTONE, buff white, weathered orange to brown, moist			

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; CO = Consolidation test; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Rincon Homes	**DRILLER:**	North County Drilling	**LOGGED BY:**	BJ
PROJECT NAME:	501 Ocean Bluff	**DRILL METHOD:**	8" HSA	**OPERATOR:**	Kimble
PROJECT NO.:	3889-SD	**HAMMER:**	140lbs/30in	**RIG TYPE:**	B-46
LOCATION:	Encinitas, CA	**ELEVATION:**	305 feet	**DATE:**	8/15/2024

BORING NO.: GT-B-3 (CONT.)

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					HOLE TERMINATED AT 30.5 FEET			
					Practical refusal No groundwater encountered Backfilled with spoils			
35								
40								
45								
50								
55								
60								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing:

AL = Atterberg Limits	EI = Expansion Index	SA = Sieve Analysis	RV = R-Value Test
SR = Sulfate/Resisitivity Test	SH = Shear Test	CO = Consolidation test	MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Rincon Homes	**DRILLER:**	North County Drilling	**LOGGED BY:**	BJ
PROJECT NAME:	501 Ocean Bluff	**DRILL METHOD:**	8" HSA	**OPERATOR:**	Kimble
PROJECT NO.:	3889-SD	**HAMMER:**	140lbs/30in	**RIG TYPE:**	B-46
LOCATION:	Encinitas, CA	**ELEVATION:**	310 feet	**DATE:**	8/15/2024

BORING NO.: GT-B-4

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Very Old Paralic Deposits (Qvop) Silty fine SAND, dark brown with orange mottling, dry to damp, loose			
5					**Torrey Sandstone (Tt)** @5': Increased density and cementation, rig advancement slows, fine to coarse sand from cuttings, water added to auger			
10								
15								
20		35 50/2"	R-1		@20': Fine SANDSTONE, light brown to buff white, damp, very dense			
25		50	R-2		@25': Fine SANDSTONE. Light gray with traces of orange weathering, damp, very dense			
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; CO = Consolidation test; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Rincon Homes	**DRILLER:**	North County Drilling	**LOGGED BY:**	BJ
PROJECT NAME:	501 Ocean Bluff	**DRILL METHOD:**	8" HSA	**OPERATOR:**	Kimble
PROJECT NO.:	3889-SD	**HAMMER:**	140lbs/30in	**RIG TYPE:**	B-46
LOCATION:	Encinitas, CA	**ELEVATION:**	310 feet	**DATE:**	8/15/2024

BORING NO.: GT-B-4 (CONT.)

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					@30': Fine SANDSTONE. Light gray with traces of orange weathering, damp, very dense			
35					@35': Fine SANDSTONE. Light gray, damp, very dense			
					HOLE TERMINATED AT 35.5 FEET Practical refusal No groundwater encountered Backfilled with spoils			
40								
45								
50								
55								
60								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; CO = Consolidation test; MD = Maximum Density

APPENDIX B

RESULTS OF LABORATORY TESTING

SUMMARY OF LABORATORY TESTING

Identification and Classification

Soils were identified visually in general accordance with the standard practice for description and identification of soils (ASTM D 2488). The soil identifications and classifications are shown on the Logs of Exploration in Appendix A.

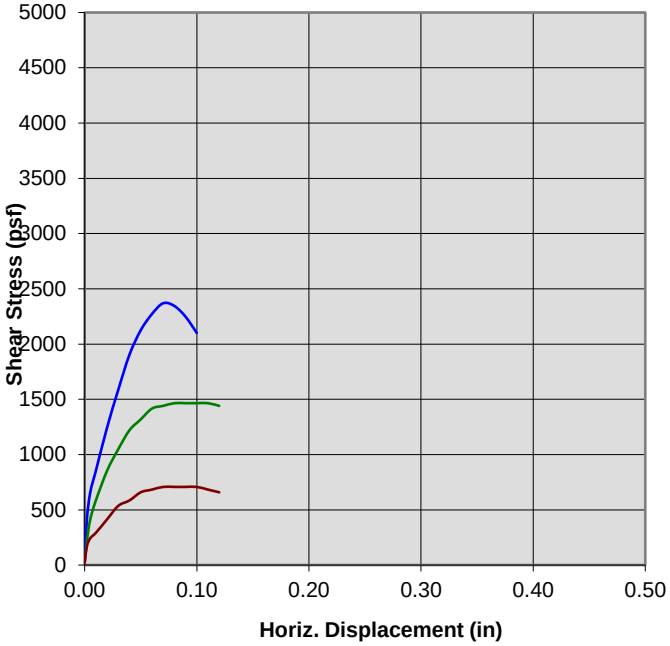
Moisture Density Modified Proctor

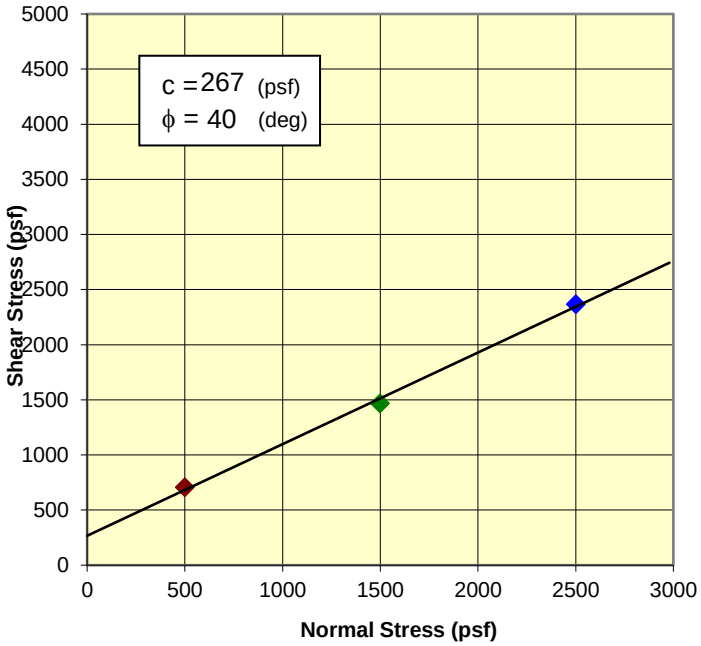
Laboratory testing was performed on one sample collected during the subsurface exploration for compaction characteristics. The laboratory maximum dry density and optimum moisture content for the soil was determined in general accordance with ASTM Test Method D 1557 procedures. The test results are graphically presented in Appendix B.

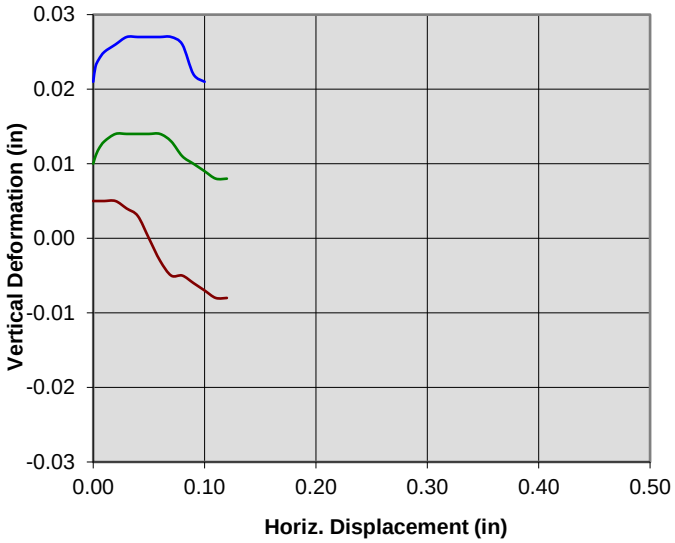
Direct Shear

Shear testing was performed in a direct shear machine of the strain-control type in general accordance with ASTM Test Method D 3080 procedures. The remolded samples were sheared under varying confining loads to determine the coulomb shear strength parameters, angle of internal friction and cohesion. The test was performed at a rate of deformation of approximately 0.01 inches per minute. The results of the testing are graphically presented in Appendix B.

DIRECT SHEAR TEST REPORT







Shear Strength: Φ = 40 ° C = 267 psf

Sample No.		1	2	3
Initial	Water Content, %	13.7	13.7	13.7
	Dry Density, pcf	108.5	110.4	109.7
	Saturation, %	67.9	71.4	70.0
	Void Ratio	0.54	0.51	0.52
	Diameter, in.	2.375	2.375	2.375
	Height, in.	1.0	1.0	1.0
At Test	Water Content, %	15.9	15.6	15.3
	Dry Density, pcf	109.1	111.5	112.0
	Saturation, %	80.0	83.9	83.4
	Void Ratio	0.53	0.50	0.49
	Height, in.	0.995	0.990	0.979
Normal Stress, psf		500	1500	2500
Failure Stress, psf		707	1465	2369
Displacement, in.		-0.008	0.004	0.006
Ultimate Stress, psf		0	0	0
Displacement, in.		0.000	0.000	0.000
Strain rate, in./min.		0.0100	0.0100	0.0100

Description: Reddish brown sandy silt

Remarks: Soaked, consolidated, drained. 2.375-in. remolded ring sample.

Condition: ■ In-situ ☐ Remolded

Project Name:	**Ocean Bluff**	**Technician:**	**MB**
Project Number:	**3889-SD**	**Location:**	
Sample ID:	**B-1 R-2**	**Apparatus:**	
Sample Depth:	**10'**	**Date:**	**8/21/2024**

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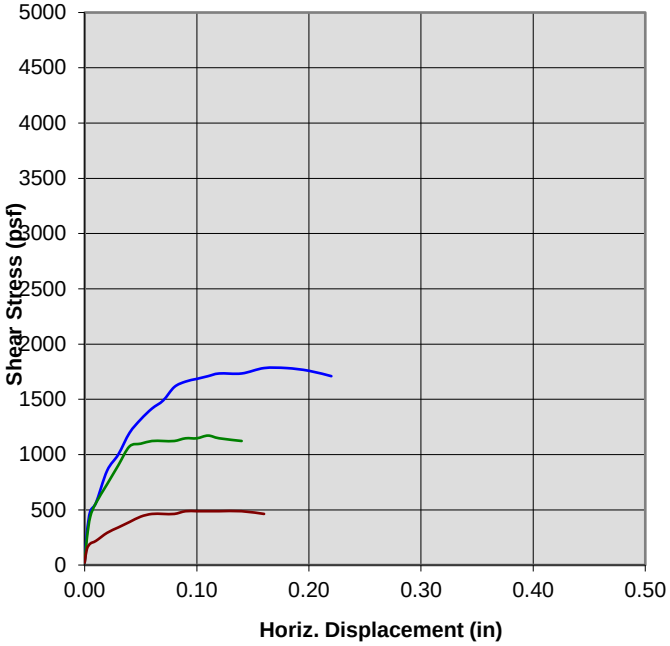
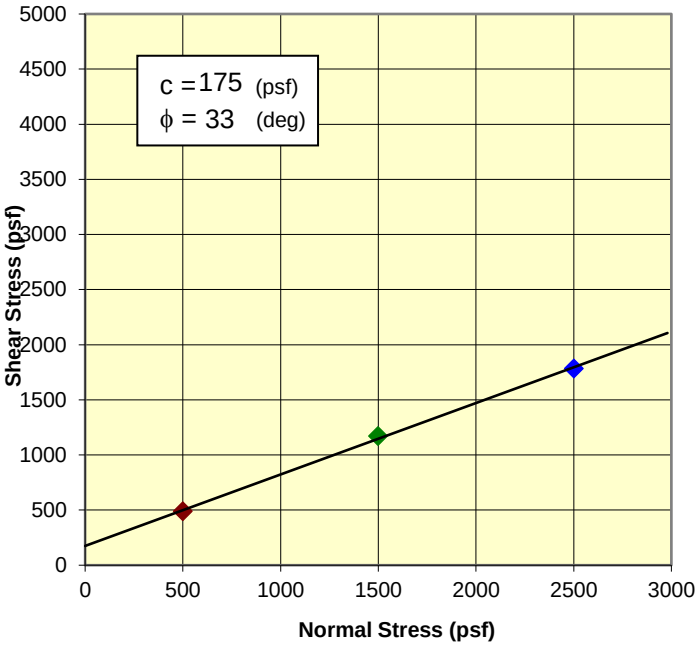
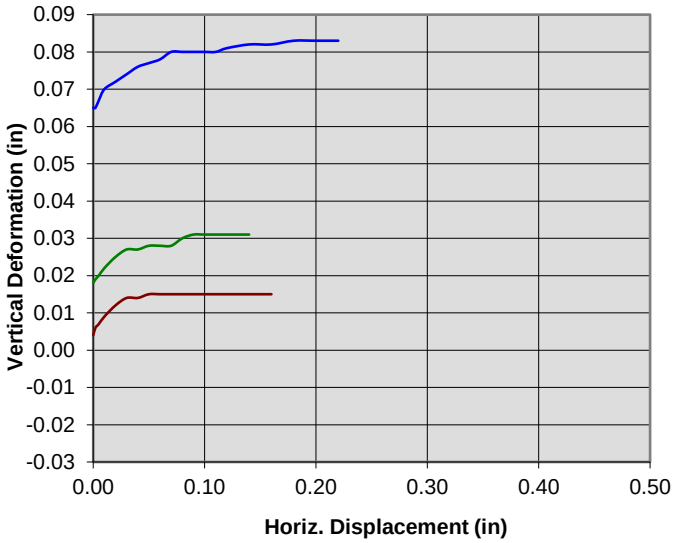
DIRECT SHEAR TEST REPORT







Shear Strength: Φ = 33 ° C = 175 psf

Sample No.		1	2	3
Initial	Water Content, %	13.1	13.1	13.1
	Dry Density, pcf	111.2	103.2	105.2
	Saturation, %	69.6	56.7	59.6
	Void Ratio	0.50	0.62	0.59
	Diameter, in.	2.375	2.375	2.375
	Height, in.	1.0	1.0	1.0
At Test	Water Content, %	17.7	21.3	16.6
	Dry Density, pcf	111.6	105.1	112.5
	Saturation, %	94.9	96.5	91.6
	Void Ratio	0.50	0.59	0.49
	Height, in.	0.996	0.982	0.935
Normal Stress, psf		500	1500	2500
Failure Stress, psf		487	1171	1783
Displacement, in.		0.011	0.013	0.018
Ultimate Stress, psf		0	0	0
Displacement, in.		0.000	0.000	0.000
Strain rate, in./min.		0.0100	0.0100	0.0100

Description: Reddish brown sandy silt

Remarks: Soaked, consolidated, drained. 2.375-in. remolded ring sample.

Condition: ■ In-situ ☐ Remolded

Project Name:	**Ocean Bluff**	**Technician:**	**MB**
Project Number:	**3889-SD**	**Location:**	
Sample ID:	**B-1 R-3**	**Apparatus:**	
Sample Depth:	**20'**	**Date:**	**8/16/2024**

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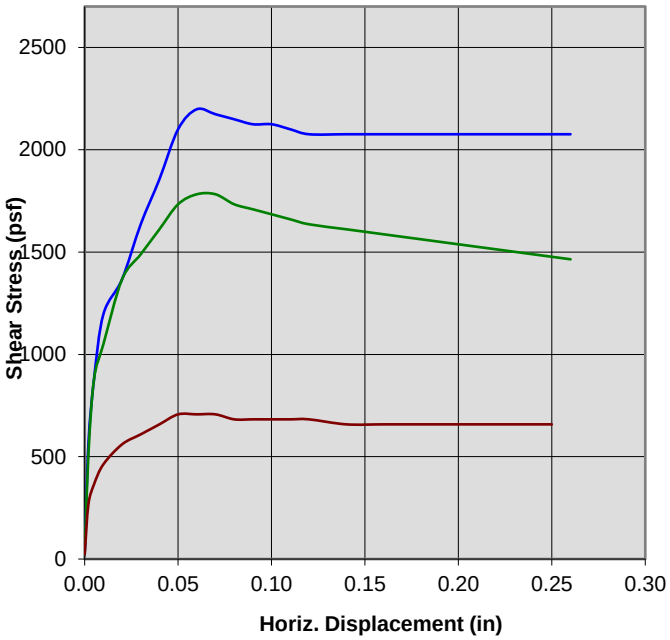
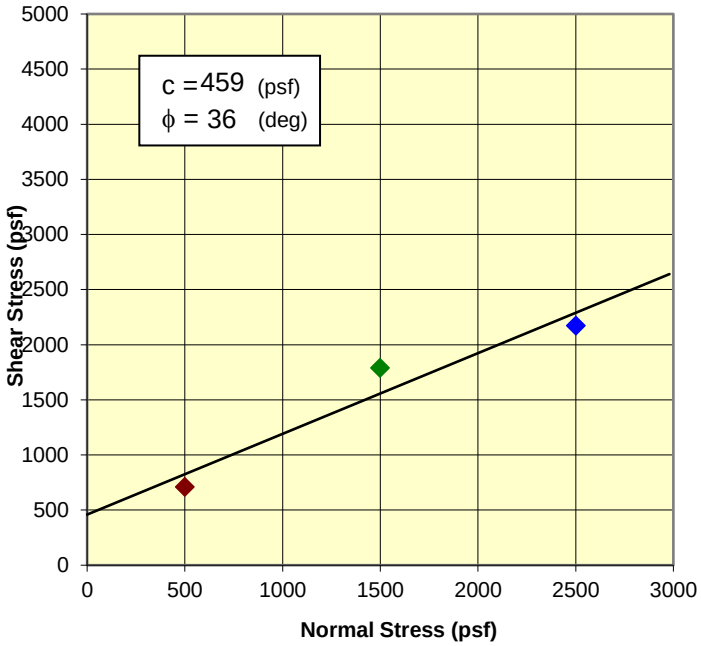
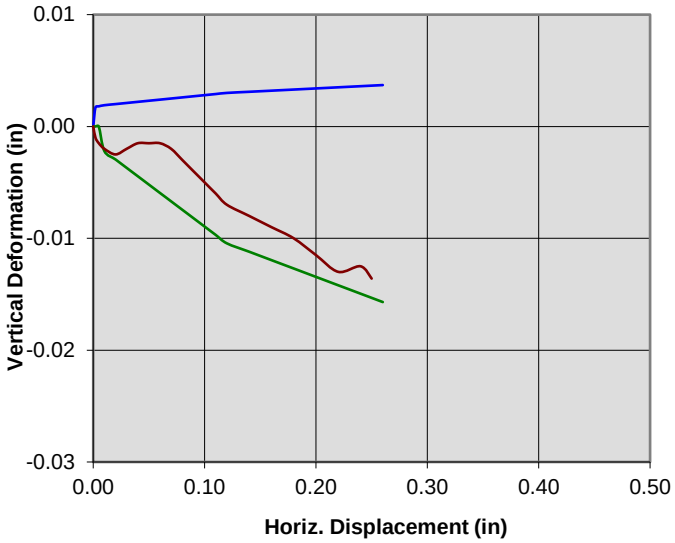
DIRECT SHEAR TEST REPORT







Shear Strength: Φ = 36 ° C = 459 psf

Sample No.		1	2	3
Initial	Water Content, %	13.1	13.1	13.1
	Dry Density, pcf	111.2	103.2	105.2
	Saturation, %	69.6	56.7	59.6
	Void Ratio	0.50	0.62	0.59
	Diameter, in.	2.375	2.375	2.375
	Height, in.	1.0	1.0	1.0
At Test	Water Content, %	17.7	21.3	16.6
	Dry Density, pcf	111.2	103.2	105.2
	Saturation, %	93.8	92.0	75.6
	Void Ratio	0.50	0.62	0.59
	Height, in.	1.000	1.000	1.000
Normal Stress, psf		500	1500	2500
Failure Stress, psf		709	1790	2173
Displacement, in.		-0.008	-0.011	0.003
Ultimate Stress, psf		0	0	0
Displacement, in.		0.000	0.000	0.000
Strain rate, in./min.		0.0100	0.0100	0.0100

Description: Reddish brown sandy silt

Remarks: Soaked, consolidated, drained. 2.375-in. remolded ring sample.

Condition: ■ In-situ ☐ Remolded

Project Name:	**Ocean Bluff**	**Technician:**	**Alex**
Project Number:	**3889-SD**	**Location:**	
Sample ID:	**B-2 R-1**	**Apparatus:**	
Sample Depth:	**25'**	**Date:**	**8/21/2024**

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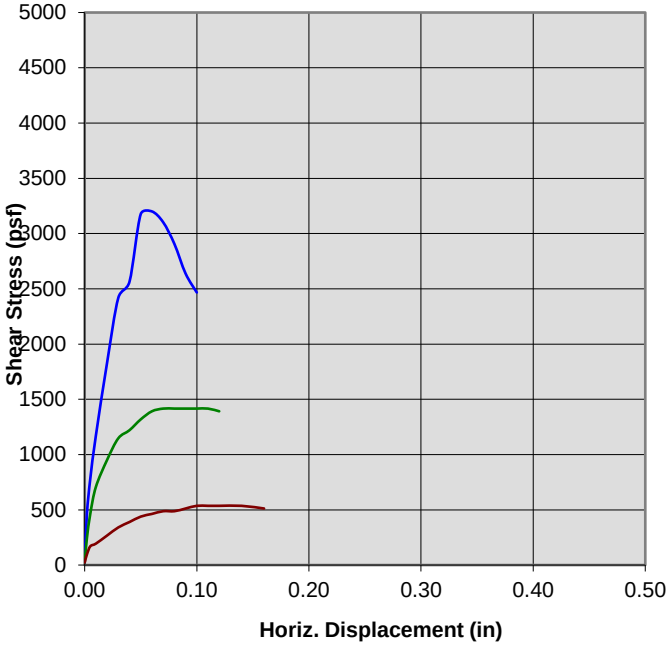
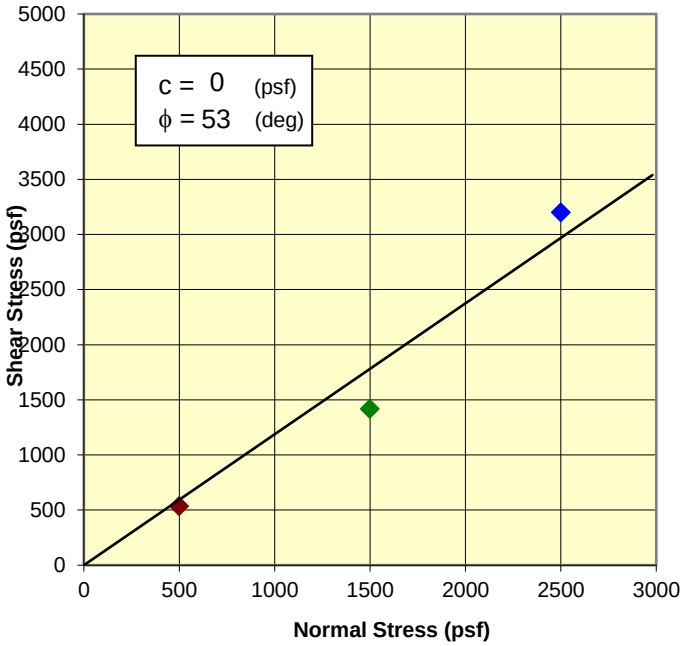
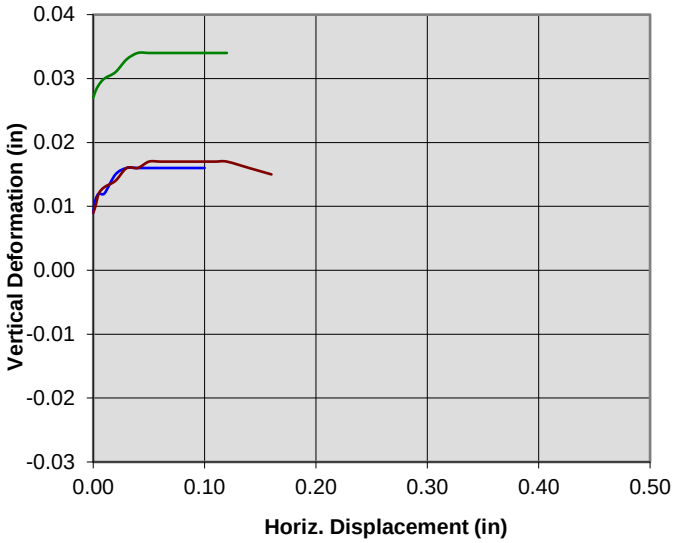
DIRECT SHEAR TEST REPORT







Shear Strength: Φ = 53 ° C = 0 psf

Sample No.		1	2	3
Initial	Water Content, %	18.2	18.2	18.2
	Dry Density, pcf	102.2	99.4	108.8
	Saturation, %	76.7	71.6	90.9
	Void Ratio	0.64	0.68	0.54
	Diameter, in.	2.375	2.375	2.375
	Height, in.	1.0	1.0	1.0
At Test	Water Content, %	22.4	23.0	19.2
	Dry Density, pcf	103.1	102.2	109.8
	Saturation, %	96.6	97.1	98.5
	Void Ratio	0.62	0.64	0.52
	Height, in.	0.991	0.973	0.991
Normal Stress, psf		500	1500	2500
Failure Stress, psf		536	1416	3200
Displacement, in.		0.008	0.007	0.007
Ultimate Stress, psf		0	0	0
Displacement, in.		0.000	0.000	0.000
Strain rate, in./min.		0.0100	0.0100	0.0100

Description: Reddish brown sandy silt

Remarks: Soaked, consolidated, drained. 2.375-in. remolded ring sample.

Condition: ■ In-situ ☐ Remolded

Project Name:	**Ocean Bluff**	**Technician:**	**MB**
Project Number:	**3889-SD**	**Location:**	
Sample ID:	**B-1 R-4**	**Apparatus:**	
Sample Depth:	**30'**	**Date:**	**8/21/2024**

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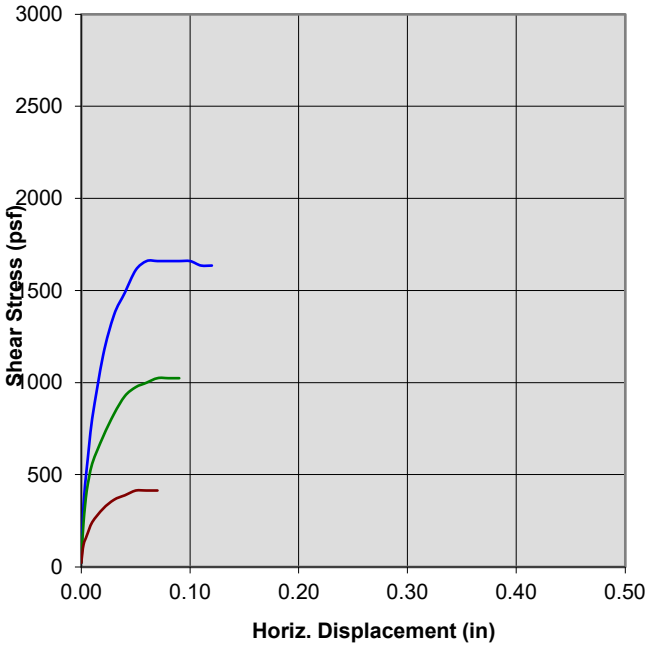
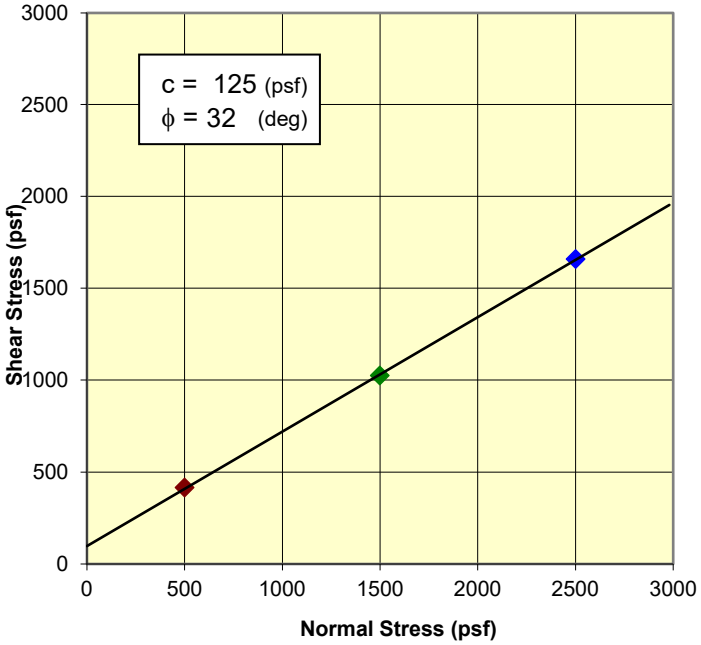
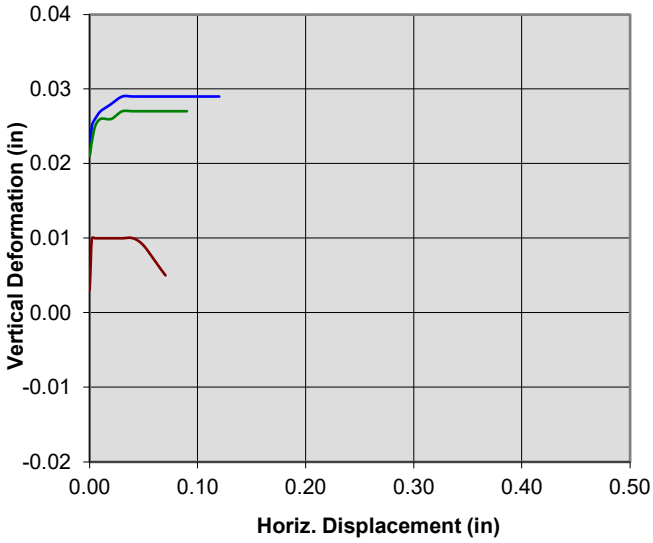
DIRECT SHEAR TEST REPORT







Shear Strength: Φ = 32 ° C = 125 psf

Sample No.		1	2	3
Initial	Water Content, %	7.0	7.0	7.0
	Dry Density, pcf	111.7	111.8	111.2
	Saturation, %	37.7	37.8	37.2
	Void Ratio	0.50	0.50	0.50
	Diameter, in.	2.375	2.375	2.375
	Height, in.	1.0	1.0	1.0
At Test	Water Content, %	14.0	17.0	14.8
	Dry Density, pcf	0.0	0.0	
	Saturation, %	#DIV/0!	#DIV/0!	
	Void Ratio	#DIV/0!	#DIV/0!	
	Height, in.	0.997	0.979	
Normal Stress, psf		500	1500	2500
Failure Stress, psf		414	1025	1660
Displacement, in.		0.000	0.000	0.000
Ultimate Stress, psf				
Displacement, in.				
Strain rate, in./min.		0.0100	0.0100	0.0100

Description: Soaked, consolidated, drained. 2.375-in. remolded ring sample.

Remarks: Low material recovery resulted in fewer data points

Condition: ☐ In-situ ■ Remolded

Project Name:	**Ocean Bluff**	**Technician:**	**ERC**
Project Number:	**3889-SD**	**Location:**	
Sample ID:	**TP-1**	**Apparatus:**	
Sample Depth:	**0-1.5'**	**Date:**	**8/10/2023**

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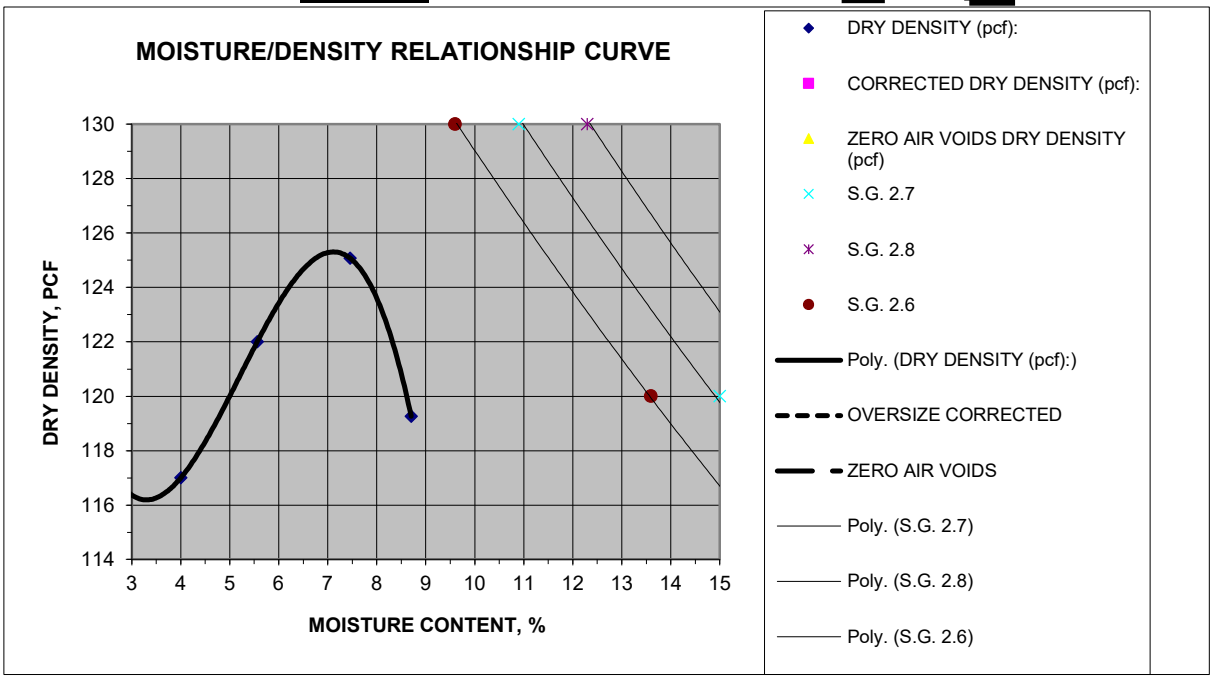
MOISTURE/DENSITY RELATIONSHIP

Client:	501 Ocean Bluff LLC	**Job No.:**	3889-SD
Project:	Ocean Bluff	**Lab No.:**	3969
Location:	Encinitas, CA		
Material Type:	M-F Silty Sand		
Material Supplier:	-		
Material Source:	-		
Sample Location:	TP-1		
	-		
Sampled By:	ERC	**Date Sampled:**	8/9/2023
Received By:	EAM	**Date Received:**	8/9/2023
Tested By:	EAM	**Date Tested:**	8/9/2023
Reviewed By:	-	**Date Reviewed:**	-

Test Procedure: ASTM D1557 **Method:** A

Oversized Material (%): 0.0 **Correction Required:** [ ] yes [x] no



MOISTURE DENSITY RELATIONSHIP VALUES

Maximum Dry Density, pcf	125.3	**@ Optimum Moisture, %**	7.0
Corrected Maximum Dry Density, pcf		**@ Optimum Moisture, %**	

MATERIAL DESCRIPTION

Grain Size Distribution:

	% Gravel (retained on No. 4)
	% Sand (Passing No. 4, Retained on No. 200)
	% Silt and Clay (Passing No. 200)

Classification:

Unified Soils Classification:

Atterberg Limits:

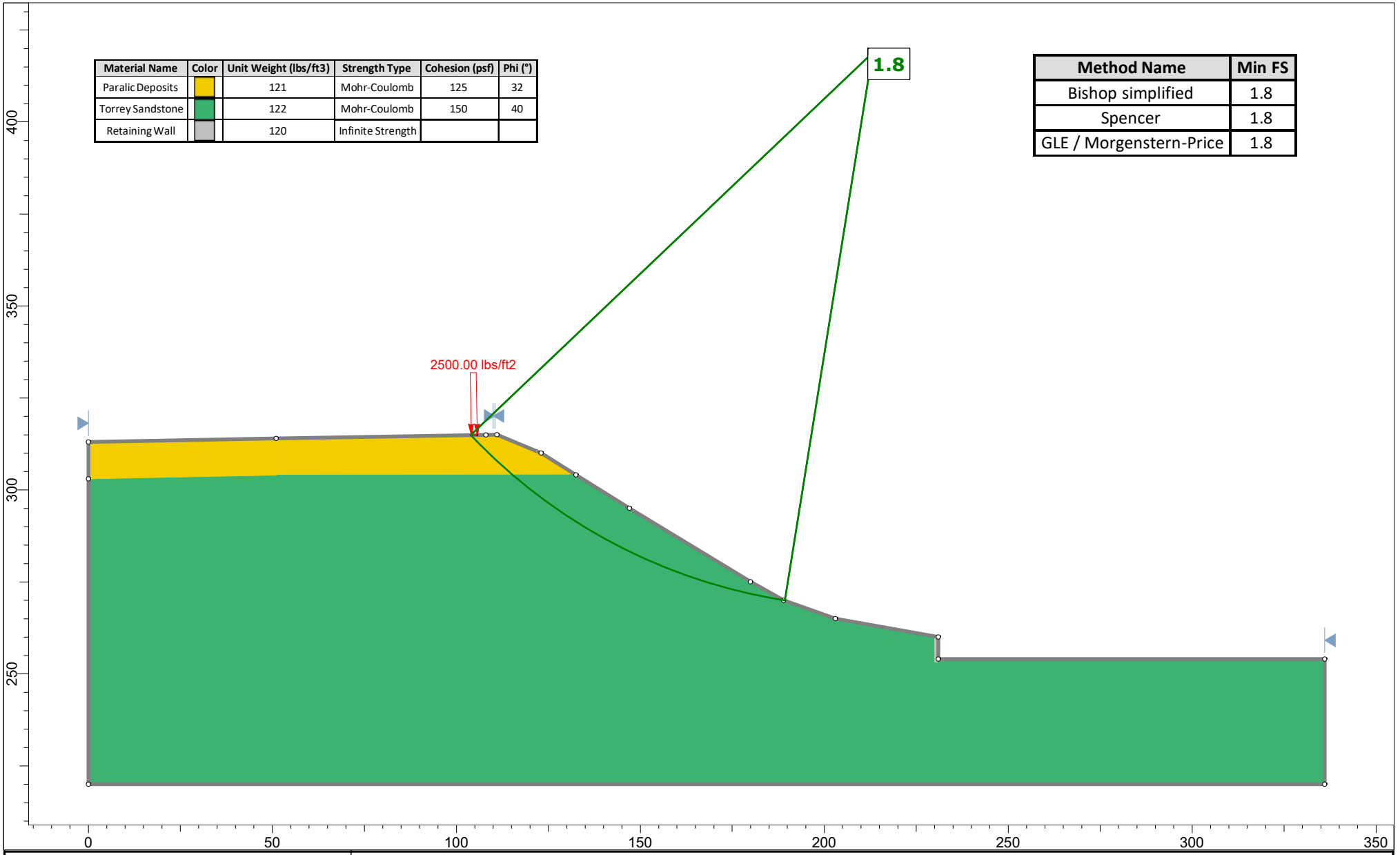
	Liquid Limit, %
	Plastic Limit, %
	Plasticity Index, %

APPENDIX C

SUMMARY OF GLOBAL STABILITY ANALYSIS

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)
Paralic Deposits		121	Mohr-Coulomb	125	32
Torrey Sandstone		122	Mohr-Coulomb	150	40
Retaining Wall		120	Infinite Strength		

Method Name	Min FS
Bishop simplified	1.8
Spencer	1.8
GLE / Morgenstern-Price	1.8



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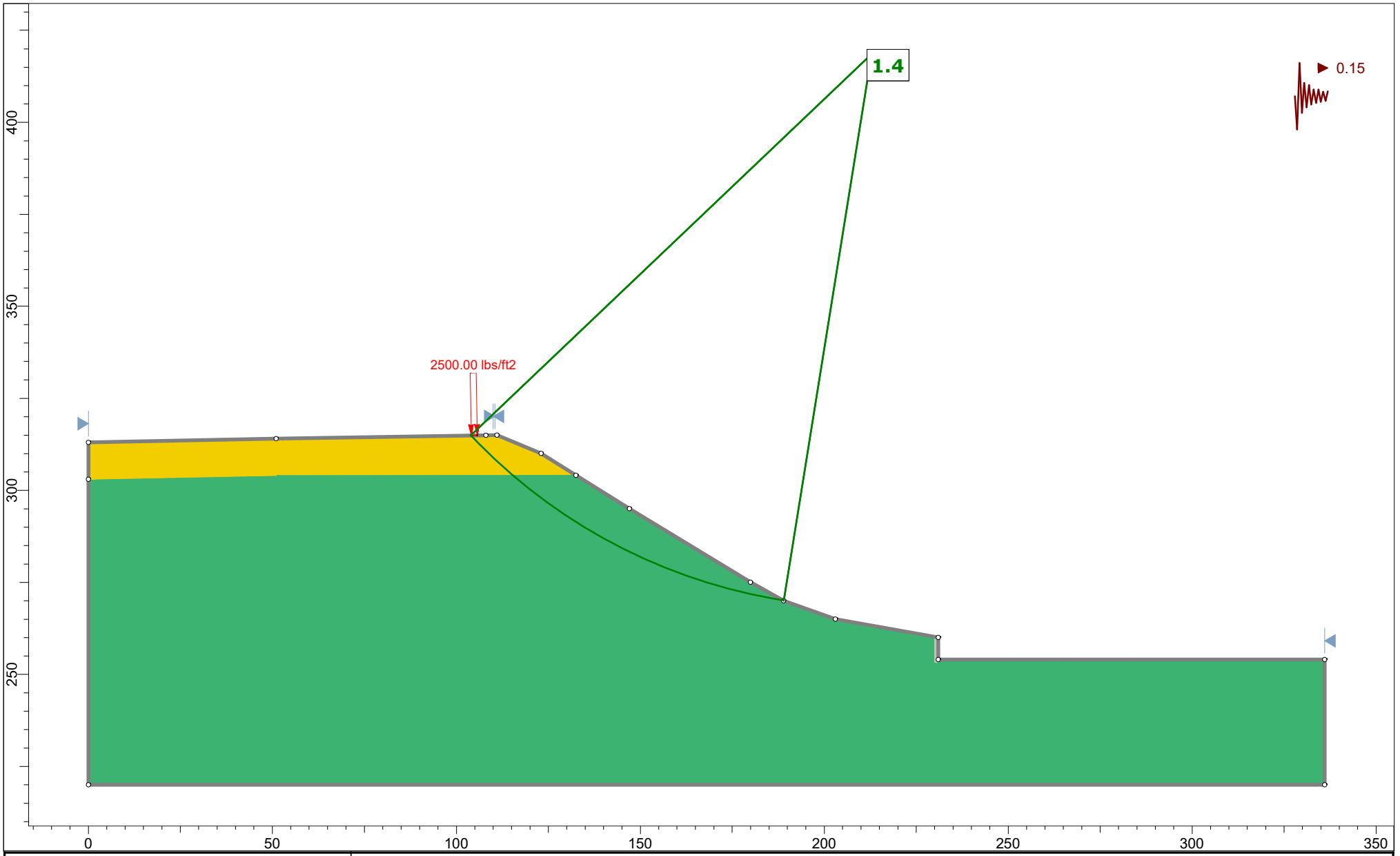
SLIDEINTERPRET 9.034

Project:	SUNPOINTE		
Group GEOTECHNICAL		*Analysis*	Circular - Auto Search - Static
Drawn By	ERC	*Company*	GeoTek, Inc.
Date	9/6/2024	*File Name*	CS_CC'_Static.slim



GEOTEK	Project:	SUNPOINTE	
	Group GEOTECHNICAL	Analysis	Circular - Auto Search - Pseudostatic
	Drawn By ERC	Company	GeoTek, Inc.
	Date 9/6/2024	File Name	CS_CC'_Static.slim

SLIDEINTERPRET 9.034