Geotechnical Engineering Report

Proposed Project Bruin (Confidential)

Southwest Corner of Hwy 101 and N Del Norte Blvd.

Oxnard, California

March 20, 2020

Terracon Project No. 60205029

Prepared for:

Seefried Industrial Properties, Inc.

El Segundo, California

Prepared by:

Terracon Consultants, Inc.

Tustin, California

March 20, 2020

Seefried Industrial Properties, Inc.
2301 Rosecrans Avenue, Suite 3165
El Segundo, CA 90245

Attn: Mr. Dan Bick
P: 310-536-7900
E: danbick@seefriedproperties.com

Re: Geotechnical Engineering Report
Proposed Project Bruin (Confidential)
Southwest Corner of Hwy 101 and N Del Norte Blvd.
Oxnard, California
Terracon Project No. 60205029

Dear Mr. Bick:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. These services were performed in general accordance with our proposal number P60205029 dated February 14, 2020.

This geotechnical engineering report presents the results of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slab, pavements, and infiltration systems for the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Sivasubramaniam (Raj) Pirathiviraj, P.E., G.E.
Senior Geotechnical Engineer

F. Fred Buhamdan, P.E.
Principal

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PROPOSED PROJECT BRUIN (CONFIDENTIAL)
SOUTHWEST CORNER OF HWY 101 AND N DEL NORTE BLVD.
OXNARD, CALIFORNIA

Terracon Project No. 60205029
March 20, 2020

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the Project Bruin to be located at the southwest corner of Hwy 101 and N Del Norte Blvd. in Oxnard, California. The Site Location Plan (Exhibit A-1) is included in Appendix A of this report. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- earthwork
- seismic considerations
- floor slab design and construction
- groundwater conditions
- foundation design and construction
- pavement design and construction
- infiltration systems

Our geotechnical engineering scope of work for this project included the advancement of six (6) test borings during the current field explorations and thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings that were previously conducted in 2018. All the borings and CPTs were advanced to approximate depths ranging between 5 to 58 feet below existing site grades.

Logs of the borings along with the Exploration Location Plan are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Site layout	Refer to the Exploration Location Plan.
Structures	The proposed project will consist in the development of the 64.65-acre project site to include a 857,173-square foot (approximately 1,500 feet by 570 feet) warehouse surrounded by rigid and flexible pavement.

ITEM	DESCRIPTION
Construction	Reinforced concrete columns and masonry walls or tilt-up walls supported on a reinforced concrete foundation system with concrete slab-on-grade floors.
Finished floor elevation	Based on the grading plans provided by civil designers, the finished floor elevation is 67.1 feet. As a result, finished floor elevation is approximately 3 to 7 feet above the existing ground levels.
Maximum loads	Provided structural loads are presented below: ▪ Columns: 250 to 860 kips ▪ Walls: 20 kips per linear foot (klf) ▪ Slabs: 500 pounds per square foot (psf) plus weight of the slab
Proposed Roadway	A new approximately 100-foot wide roadway (Labelled as Road A) is proposed with an east-west alignment and approximate length of 3,200 feet. The road will pass along the northern border of the project and extends from N Del Norte Boulevard to new roadway, labelled as Road B. Road B is extending to the south and connecting to the project site.
Grading	Based on the provided cut and fill maps prepared by Kimley-Horn and dated March 5, 2020, mass grading includes 3 to 7 feet of fill within the footprint of the proposed building. Additionally, up to 4 feet of cut is anticipated near the western end of the project site. Grading for the proposed stormwater basins includes cuts on the order of 5 to 12 feet.
Below Grade Structures / Basements	Not Anticipated
Onsite Infiltration Systems	The development will also include a storm water retention system along the south side of the property.
Pavements	Paved driveway and parking will be constructed as part of the project. We assume both rigid (concrete) and flexible (asphalt) pavement sections should be considered. Based on the information provided by client, anticipated traffic during peak hours is as follows: ■ Cars: 6,202 vehicles per day ■ Trucks: 594 vehicles per day ■ Tractor-trailer trucks in drive lanes: approximately 200 vehicles per day (assumed) The pavement design period is 20 years based on Caltrans Highway Design Manual.

2.2 Site Location and Description

Item	Description
Location	The site is located west of North Del Norte Boulevard approximately 2,250 feet south of Highway 101 in Oxnard, California. The site encompasses an approximate area of 64.65 acres.
Existing improvements	The project site is currently vacant agricultural land.
Current ground cover	Asphalt pavement with associated hardscape and landscape.
Existing topography	Based on the grading plan provided by the civil designers, the existing ground surface elevation varies between 60 feet near the eastern end of the project site and 66 feet near the western end of the project site.
Anticipated Seismic Hazards	Based on our review of the State Fault Hazard Maps, the project site is not located within Alquist-Priolo Earthquake Fault Zones. However, the project site is mapped within a liquefaction potential zone as designated by the California Geologic Survey.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The site is situated within the eastern Transverse Range Geomorphic Province in Southern California. Geologic structures within the Transverse Ranges Province trend mostly east west, in contrast to the prevailing northwest trend elsewhere in the state. The Transverse Range Province contains the highest peaks composed of pre-Phanerozoic rocks south of the Sierra Nevada, four of the eight islands off the southern California coast, and is both bounded and transected by several major fault zones.[1, 2] Based on the geologic map of California (Los Angeles Sheet), the proposed project site is underlain by Alluvium (Qal).

3.2 Typical Subsurface Profile

Specific conditions encountered at the boring locations are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the boring logs included in Appendix A. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

[1] Harden, D. R., "*California Geology, Second Edition*," Pearson Prentice Hall, 2004.

[2] Norris, R. M. and Webb, R. W., *"Geology of California, Second Edition,"* John Wiley & Sons, Inc., 1990.

Description	Approximate Depth to Bottom of Stratum	Material Encountered	Consistency/ Density
Stratum 1	2 to 8	Clayey Sand	Very Loose to Loose
Stratum 2	10 to 15	Sand with variable amounts of silt and clay with interbedded layers of Lean Clay with variable amounts of sand	Very Loose to Medium Dense
Stratum 3	25 to 29	Lean Clay with variable amounts of sand with interbedded layers of Sand with variable amounts of silt and clay	Very Soft to Hard
Stratum 4	28 to 35	Sand with variable amounts of clay, silt and gravel	Medium Dense
Stratum 5	51½	Lean Clay and Silt with variable amounts of sand with interbedded layers of Clayey Sand	Medium Stiff to Hard

Laboratory tests were conducted on selected soil samples and the test results are presented in Appendix B. Atterberg limits test indicates that on-site clayey soils have low to medium plasticity. An Expansion Index test was performed on the near surface clayey soils and indicates that these materials have an Expansion Index of 12 and 17. Consolidation/swell tests indicate that the clayey soils encountered at approximate depth of 2½ feet have slight collapse potential when saturated under normal footing loads of 2,000 psf. Direct shear test was performed in a sandy soils encountered at the depth of 7½ feet indicates a ultimate friction angle of 32 degrees and corresponding cohesion of 78 psf. R-value test indicates that the near surface clayey sand materials have R-values ranging between 69 and 72 and clay materials have R-value of 6.

3.3 Geophysical Survey

A site-specific seismic refraction survey was performed on-site to develop shear wave velocity profiles. The Geophysical Evaluation report, dated June 6, 2018, is included in Appendix A of this report. The results of seismic shear wave velocity surveys indicate an average shear wave velocity in the upper 100 feet of site soils of 757 feet per second (231 meters per second).

3.4 Groundwater

Groundwater was observed in the test borings at depths ranging between 8 and 11 feet below ground surface (bgs) in the most recent exploration and between the depths of 3 and 11 feet bgs in the 2018 borings. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

In clayey soils with low permeability, the accurate determination of groundwater level may not be possible without long term observation. Long term observation after drilling could not be performed as borings were backfilled immediately upon completion due to safety concerns.

Groundwater levels can best be determined by implementation of a groundwater monitoring plan. Such a plan would include installation of groundwater monitoring wells, and periodic measurement of groundwater levels over a sufficient period of time.

Based on regional data, historical groundwater is anticipated to occur at depths of less than 10 feet below the ground surface at the project location.[3]

3.5 Seismic Considerations

3.5.1 Faulting and Estimated Ground Motions

The site is located in a seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. The following table indicates the distance of the fault zones and the associated maximum credible earthquake that can be produced by nearby seismic events, as calculated using the USGS Unified Hazard Tool. The Simi-Santa Rosa Fault, which is located approximately 3.5 kilometers from the site, is considered to have the most significant effect at the site from a design standpoint.

Estimated Earthquakes for Regional Faults		
Fault Name	**Approximate Distance to Site (kilometers)**	**Maximum Credible Earthquake (MCE) Magnitude**
Simi-Santa Rosa	3.5	6.94
Oak Ridge (Onshore)	6.5	7.36
Ventura-Pitas Point	10.4	7.41
Oak Ridge (Offshore)	13.3	6.87

The site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of the State Fault Hazard Maps.[4]

3.5.2 Site Specific Ground Motion Study

We performed a site-specific ground motion study consisting of a ground motion hazard analysis per Section 21.2 of ASCE 7-16. Based on a site-specific seismic refraction survey, average shear wave velocity in the upper 100 feet of site soils is 757 feet per second (231 meters per second). According to ASCE 7-16, the **Site Classification is D**.

3. California Geologic Survey, Seismic Hazard Zone Report for the Oxnard 7.5-Minute Quadrangle, Orange County, CA.
4. California Department of Conservation Division of Mines and Geology (CDMG), *"Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region"*, CDMG Compact Disc 2000-003, 2000.

An addendum report is being prepared to present the results of this site-specific ground motion study. This addendum report will be submitted separately. The addendum report presents the seismic design acceleration parameters based on Section 21.4 of ASCE 7-16. Based on the study, a magnitude of (M) 7.1 and peak ground acceleration (PGA_M) of 0.69g were used for the liquefaction evaluation.

3.5.3 Liquefaction Potential

Liquefaction is a mode of ground failure that results from the generation of high pore water pressures during earthquake ground shaking, causing loss of shear strength. Liquefaction is typically a hazard where loose sandy soils exist below groundwater. The California Geologic Survey (CGS) has designated certain areas within southern California as potential liquefaction hazard zones. These are areas considered at a risk of liquefaction-related ground failure during a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table.

The project site is located within a potential liquefaction hazard zone as designated by the CGS. Materials encountered at the project site generally consisted of interbedded layers of fine and coarse grained soils. Groundwater was observed in the test borings at depths ranging between 8 and 11 feet below ground surface (bgs) in the current boring and between the depths of 3 and 11 feet bgs in the 2018 borings. Historical high groundwater in the project vicinity is shallower than 10 feet below the ground surface.

Liquefaction analysis for the site was performed in general accordance with the DMG Special Publication 117. The liquefaction study utilized the software “LiquefyPro” by CivilTech Software. This analysis was based on the soils data using CPT soundings CPT-16, CPT-18, CPT-19 and CPT-20. Peak Ground Acceleration (PGA_M) was of 0.69 g was used. The CPT calculation was performed using the modified Robertson et al method which includes fine correction for liquefaction and settlement. Settlement analysis used the Tokimatsu, M-correction method. Liquefaction potential analysis was calculated from a depth of 0 to 50 feet bgs. Liquefaction potential analysis is attached in Appendix D of this report.

Based on the subsurface conditions presented in CPTs and based on the calculation results, seismically-induced settlements are expected to range between 2.5 and 2.75 inches. Typically, seismically-induced differential settlements are expected to be on the order of 50% to 67% of the total calculated settlement, which results in a range between 1.2 and 1.8 inches. However, the differential settlement among the four performed analysis was found to be between ¼ and ½ of an inch.

3.6 Percolation Test Results

Six (6) borings were advanced to approximate depths ranging between 3 and 7 feet bgs and were utilized for percolation testing (falling head borehole permeability). After the borings were advanced the augers were removed from the ground and an approximately 2-inch thick layer of gravel was placed in the bottom of each boring, and a 3-inch diameter perforated pipe was installed on top of the gravel layer in the three borings. Gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period. At the beginning of each test, the pipes were refilled with water and readings were taken at 10-minute time intervals. Percolation rates are provided in the following table:

TEST RESULTS				
Test Location (depth of percolation)	**Soil Classification**	**Percolation Rate, in/hr**	**Infiltration Rate[1], in/hr**	**Initial Water Head, in**
Perc-1 (0ft - 5ft)	Clayey Sand	5.0	0.44	42
Perc-2 (0ft - 5ft)	Clayey Sand	0.5	<0.1	56
Perc-3 (0ft - 5ft)	Clayey Sand	2.0	0.15	51
Perc-4 (0ft - 6ft)	Clayey Sand	19.5	1.35	57
Perc-5 (0ft - 7ft)	Clayey Sand	3.0	0.31	35
Perc-6 (0ft - 3ft)	Clayey Sand	1.0	0.11	31

[1]If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The correlated infiltration rates were calculated using the LA County Reduction Factor method

Based on the test results and the shallow depth of groundwater, it is our opinion that infiltration onsite may not be considered feasible. However, the feasibility of infiltration onsite will be evaluated by the civil engineer. The field test results are not intended to be design rates. They represent the result of our tests, at the depths and locations indicated, as described above.

The design rate should be determined by the designer by applying an appropriate factor of safety. The factor of safety may be calculated by considering the reduction factors based on the reliability of the test method, site variability, number of tests and level of pre-treatment. Based on this, we recommend a minimum safety factor of 2 to be applied to the test rates. Higher safety factors will be required if the water will not be treated prior to infiltration. The designer should take into consideration the variability of the native soils when selecting appropriate design rates. With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation test was performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration system. Design of the storm water infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials.

Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth, along with other factors, may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located at least 10 feet from any existing or proposed foundation system.

3.7 Corrosion Potential

Results of soluble sulfate testing indicate that ASTM Type V Portland cement should be used for all concrete on and below grade. Foundation concrete may be designed for exposure class S2 in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 19.

Laboratory test results indicate the on-site soils have a pH of 7.97 and 8.43, a minimum resistivity values of 669 and 1,164 ohm-centimeters, sulfate contents of 0.04 and 0.37 percent, and a chloride contents of 95 and 170 ppm, as shown on the attached Summary of Laboratory Results sheet.

These values indicate corrosive environment for the ferrous metals and corrosion engineer should be consulted to further evaluate corrosive potential of the on-site soils to underground ferrous metals.

Refer to the Summary of Laboratory Results in Appendix B for the complete results of the corrosivity testing conducted in conjunction with this geotechnical exploration.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings and provided the geotechnical engineering recommendations included in this report are implemented in the design and construction of the project.

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility of clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate pier (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

Based on the grading plans provided by civil designers, major rough grading operations are proposed within the entire project site. Based on the grading plan, grading includes up to 7 feet of fill and 4 feet of excavations. Excavations are proposed near the western end of the project site. Within the building footprint, the proposed new fill thickness varies between 3 feet near the western end of the building and 7 feet near the eastern end of the building. Additionally, about 1.5 feet of cut is proposed near the western edge of the building footprint. The site should be initially graded to create a relatively level surface to receive fill and provide for a relatively uniform thickness of engineered fill beneath proposed building structure.

Overexcavation should be performed to the depth of about 2 to 6 feet prior to place the new fill. Based on the amount of overexcavation and proposed new fill, the mass grading operation should accommodate placement of minimum of 9 feet of uniform engineered fill beneath floor slab within the entire building footprint. Additionally, grading for the proposed building should incorporate the limits of the proposed building plus a lateral distance of 10 feet beyond the outside edge of perimeter footings. On-site soils are considered suitable for use as engineered fill beneath floor slabs and foundations.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for the design and construction of earth supported elements including, foundations, slabs, and pavements, are contingent upon following the recommendations outlined in this section.

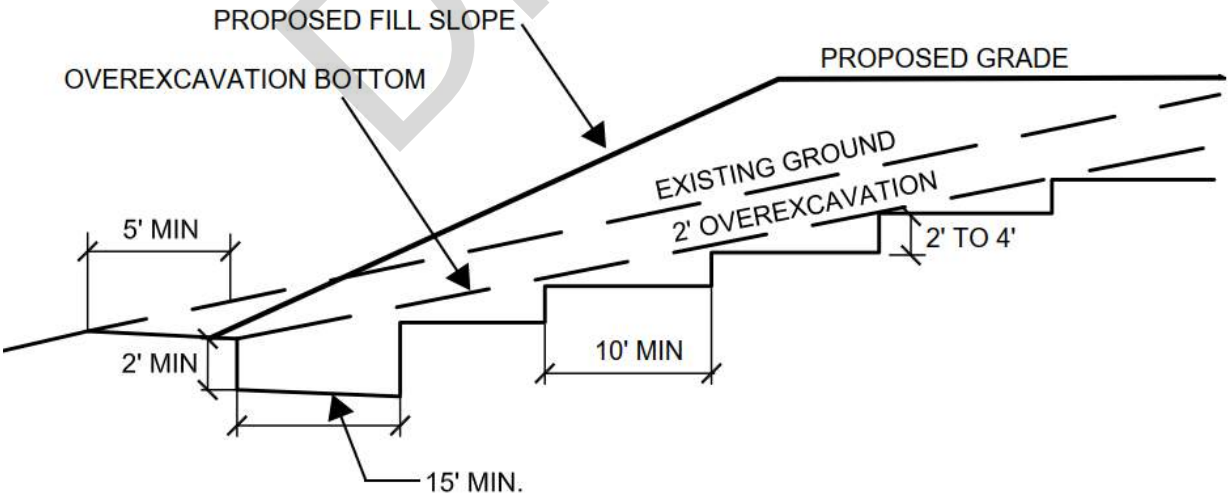
Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

Based on the grading plan, up to 7 feet of fill and 4 feet of cut will be required to bring the site to planned construction grade. Excavations are primarily proposed near the western end of the project site.

Prior to the mass grading, within the entire project site, strip and remove existing vegetation, top soil, organic materials, root systems, and other deleterious materials from proposed building and pavement areas. We recommend stripping topsoil to depths that expose soils with less than 3 percent organics and no roots having a diameter greater than 1/8 inch. While the depth of the unsuitable soils should be expected to vary, the thickness of the top soil layer may be estimated to range between 6 and 12 inches for construction budgeting purposes. The thickness of the top soil layer was not determined during our field exploration. Therefore, the actual depth of stripping should be verified by engineering observations made during the grading operations at the project. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

For sloped areas receiving fill, the overexcavation bottom should be benched per the following detail prior to placing the fill materials.



Stripped materials consisting of vegetation and organic materials should be wasted from the site, or used to revegetate landscaped areas or exposed slopes after completion of grading operations.

If it is necessary to dispose of organic materials on site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height

Although evidence of fill or underground facilities such as septic tanks, cesspools, basements, and utilities was not observed during the site reconnaissance, such features could be encountered during construction. If fill materials or underground facilities are encountered, such materials and features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

4.2.2 Excavation

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to backfill placement and/or construction.

Depending upon depth of excavation and seasonal conditions, groundwater may be encountered in excavations on the site. Pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth. Excavation contractors are responsible for dewatering the planned temporary excavations.

Care should be taken in determining the dewatering procedures. Lowering groundwater beneath nearby improvements may cause unwanted settlements. However, while locating recharge points close to the excavation may maintain groundwater levels beneath surrounding improvements, groundwater levels may rise surrounding the excavation. Additional hydrostatic loads should be accounted for in the design of shoring with adjacent recharge points.

Prior to the construction phase of the project, additional evaluation of groundwater and fluctuations in groundwater levels should be performed. Depending upon the depth of excavation and seasonal conditions, groundwater may be encountered within the excavations planned on the site.

Soils from the excavation should not be stockpiled higher than six (6) feet or within ten (10) feet of the edge of an open trench. Construction of open cuts adjacent to existing structures, including underground pipes, is not recommended within a 1½ H:1V plane extending beyond and down from the perimeter of the structure. Cuts that are proposed within five (5) feet of light standards, other utilities, underground structures, and pavement should be provided with temporary shoring.

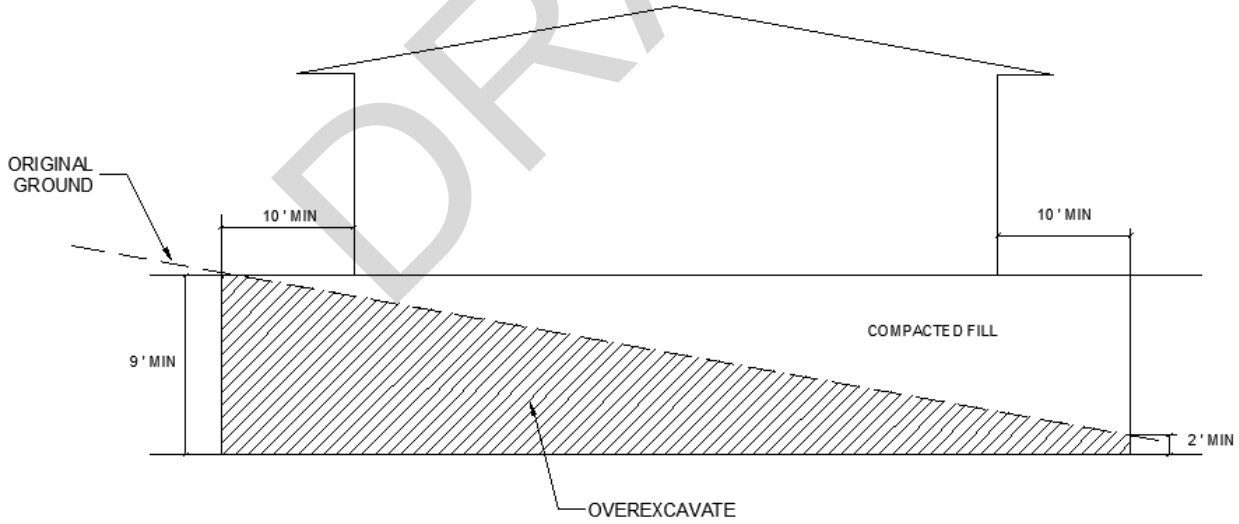
It may be necessary for the contractor to retain a geotechnical engineer to monitor the soils exposed in all excavations and provide engineering services for slopes. This will provide an opportunity to monitor the soils encountered and to modify the excavation slopes as necessary. It also offers an opportunity to verify the stability of the excavation slopes during construction.

Individual contractors are responsible for designing and constructing stable, temporary excavations. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

4.2.3 Subgrade Preparation

Based on the grading plans provided by civil designers, major rough grading operations are proposed within the entire project site. Within the building footprint, new fill thickness varies between 3 feet near the western end of the building and 7 feet near the eastern end of the building. Additionally, about 1.5 feet of cut is proposed near the western edge of the building footprint. The site should be initially graded to create a relatively level surface to receive fill and provide for a relatively uniform thickness of engineered fill beneath proposed building structure.

The mass grading operation should accommodate placement of minimum of 9 feet of uniform engineered fill beneath floor slab within the entire building footprint. Based on the existing ground surface elevation and proposed fill thicknesses, we anticipate approximately 6 feet of overexcavation is required near the western end of the building and approximately 2 feet of overexcavation is required near the eastern end of the building. Grading for the proposed building should incorporate the limits of the proposed building plus a lateral distance of 10 feet beyond the outside edge of perimeter footings.



Excavations should then be backfilled with engineered fill placed in lifts of 8 inches or less in loose thickness and should be moisture conditioned and compacted following the recommendations in section 4.2.6 of this report.

Care should be taken to prevent wetting or drying of the bearing materials during construction. Wet, dry, or loose/disturbed material in the bottom of the footing excavations should be removed before foundation concrete is placed.

Exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, moisture conditioned, and compacted per the compaction requirements in Section 4.2.6.

Subsequent to the surface clearing, grubbing, and other overexcavation efforts, subgrade soils beneath exterior slabs and pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until slab or pavement construction.

The exposed soils at the bottom of the excavations are expected to have elevated water contents and may pump or yield during attempts to compact the bottom of the excavation. If such conditions occur, the bottom of the excavations should be over-excavated to a minimum depth of 12 inches, and replaced with well sorted crushed aggregate materials. The aggregate materials should be wrapped (top, bottom and sides) with non-woven geotextile such as Mirafi 140N, or an approved equivalent. The crushed aggregate could have a nominal particle size of ¾ to 1 inch. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the overlying backfill materials.

4.2.4 Fill Placement and Settlement Monitoring

Based on the grading plans, approximately 7 feet of new engineered fill will be placed within the footprint of the proposed building. Additionally, overexcavation should be performed to depths up to 6 feet. Due to the new fill, settlement analyses were performed using Hough and Westergaard methods. The soil parameters were derived based on the lab consolidation tests and Hough method. Based on our engineering analysis, up to 6 inches of settlement is anticipated due to the placement of this new fill. Due to this anticipated settlement, we recommend settlement monitoring for a minimum period of six weeks to monitor the settlement and rate of settlement. After the minimum settlement period of six weeks, it is anticipated that the remaining settlement may be on the order of the 30% of the total calculated settlement. Once the settlement monitoring is completed, additional fill may be necessary to bring the site to the proposed grade.

Instrumentation including a system of settlement plates and survey monuments would be required, along with period surveys to record the time rate and magnitude of the expected settlement. The engineering analyses of this data will be necessary to determine when primary consolidation is complete prior to the construction of the building foundations.

We recommend that an instrumentation program, consisting of nine settlement monitoring hubs within the footprint of the building be developed before the placement of the engineered fill. The settlement monitoring hubs should be mounted at the bottom of the overexcavation.

We recommend that the settlements should be recorded by a licensed surveyor on a daily basis during grading. After completion of grading, settlement should be recorded weekly basis for a minimum period of six (6) weeks. We recommend that the settlement readings be forwarded to Terracon to evaluate the settlement rate. Based on the settlement rate, the remaining settlement could be evaluated.

Since proposed foundations will be supported on RAP elements, we recommend that the RAP elements for the foundations would be installed after the placement of the engineered fill. Based on this, the installation of the RAP elements would occur during the period of settlement monitoring.

4.2.5 Fill Materials

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer. The on-site soils are considered suitable for use as engineered fill for this project.

Approved on-site and imported materials may be used as fill material for the following:

- general site grading
- foundation areas
- interior floor slab areas
- foundation backfill
- pavement areas
- exterior slab areas

Imported soils for use as fill material within proposed building and structure areas should conform to low volume change materials as indicated below:

Gradation	Percent Finer by Weight (ASTM C 136)
3”	100
No. 4 Sieve	50-100
No. 200 Sieve	20-50

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansion index* ..... 20 (max)

*ASTM D 4829

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed eight inches loose thickness.

4.2.6 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
On-site soils and low volume change imported fill:			
Beneath foundations:	95	0%	+3%
Beneath interior slabs:	95	0%	+3%
Fill greater than 5 feet in depth	95	0%	+3%
Miscellaneous backfill and behind retaining walls:	90	0%	+3%
Beneath pavements:	95	0%	+3%
Utility Trenches*:	90	0%	+3%
Bottom of native soil excavation receiving fill:	95	0%	+3%
Aggregate base (beneath pavements):	95	0%	+3%

* Upper 12 inches should be compacted to 95% within pavement and structural areas. Low-volume change imported soils should be used in structural areas.

4.2.7 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls.

Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

Roof drainage should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems and landscaped irrigation should not be installed within 5 feet of foundation walls.

4.2.8 Exterior Slab Design and Construction

Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill may experience some movement due to the volume change of the backfill. To reduce the potential for damage caused by movement, we recommend:

- exterior slabs should be supported directly on subgrade fill with no, or very low expansion potential;
- strict moisture-density control during placement of subgrade fills;
- maintain proper subgrade moisture until placement of slabs;
- placement of effective control joints on relatively close centers and isolation joints between slabs and other structural elements;
- provision for adequate drainage in areas adjoining the slabs;
- using of designs which allow vertical movement between the exterior slabs and adjoining structural elements.

4.2.9 Utility Trenches

It is anticipated that the on-site soils and fill materials will provide suitable support for underground utilities and piping that may be installed. Any soft and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. A non-expansive granular material with a sand equivalent greater than 30 should be used for bedding and shading of utilities, unless specified otherwise by the utility manufacturer.

On-site materials are considered suitable for backfill of utility and pipe trenches from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

4.2.10 Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

On-site clayey soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance. Should unstable subgrade conditions develop stabilization measures will need to be employed.

At the time of our study, moisture contents of the surface and near-surface native soils ranged from about 10 percent to 25 percent. Based on these moisture contents, some moisture conditioning will likely be needed for the project. The soils may need to be dried by aeration during dry weather conditions, or an additive, such as lime, cement, or kiln dust, may be needed to stabilize the soil.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork operations may require additional mitigative measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

Excavations into the on-site soils will possibly encounter groundwater, depending upon the final depth of excavation. The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

4.3 Foundations

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate piers (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

4.3.1 Rammed Aggregate Pier (RAP) Recommendations

Rammed Aggregate Pier elements may be installed for support of the main building. RAP elements provide increased bearing capacity, reduce liquefaction potential, and enhance settlement control by delivering a composite stiffened bearing materials to reduce the matrix soil compressibility.

New fills will be placed to raise the grade within the entire project site. Within the building footprint, up to 7 feet of new engineered fill is anticipated. Due to the anticipated settlement, we are recommending settlement monitoring to determine the settlement due to the new fill surcharge. Therefore, we recommend that the RAP elements be installed after the placement of the new fill during the periods of settlement monitoring. Based on this, the installation of the RAP elements and settlement monitoring would occur concurrently.

The construction process typically consists of utilizing pre-augered or displacement methods. The augered or displaced cavities are backfilled with aggregate that is compacted in place using static crowd pressure augmented with a high frequency, low amplitude, vibratory hammer. The impact hammer densifies aggregate vertically while the tamper foot forces aggregate laterally into cavity sidewalls resulting in stiff RAP elements and a stiffened matrix/soil. Constructed diameters may range from 20 to 30 inches depending on the method of installation.

In the event that RAP foundation systems are considered for the project, the proposed buildings can be supported on shallow foundations. RAP design is typically performed by a specialty design build ground improvement contractor who should be consulted to provide further analysis and recommendations. The specialty contractor shall make their own interpretation of strength parameters and soil characteristics from the boring logs, CPT soundings, and laboratory testing presented in Appendix A and B of this report.

4.3.2 Shallow Foundations with RAP Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Proposed Main Building
Bearing Material	Improved subsurface soils comprised of a composite of RAP systems and engineered fill extending to a minimum of 9 feet below floor slabs.
Allowable Bearing Pressure	To be provided by specialty contractor based on RAP design
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch (should be achieved by specialty contractor design)
Estimated Differential Static Settlement	¾ inch in 40 feet. (should be achieved by specialty contractor design)

4.3.3 Shallow Foundations Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Minor structures with foundation width less than 5 feet such as trash enclosures, equipment pads, and low retaining walls.
Bearing Material	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Allowable Bearing Pressure	2,000 psf for footing widths up to 6 feet.
Maximum Width	6 feet
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch**
Estimated Differential Static Settlement	¾ inch in 40 feet.

** Settlement value is based on structural loading of minor structures. Additional settlement may be caused by the fill materials placed onsite.

4.4 Floor Slab

DESCRIPTION	VALUE
Interior floor system	Slab-on-grade concrete.
Floor slab support	Engineered fill extending to a minimum of 9 feet below floor slab.
Sub-base/Capillary break	4-inches of Class II Aggregate Base materials
Modulus of subgrade reaction for a small loaded area (1 Sq. ft or less) such as for forklift loads	200 pounds per square inch per inch (psi/in) (The modulus was obtained based on engineered fill, aggregate sub-base, and estimates obtained from NAVFAC 7.1 design charts).
Modulus of subgrade reaction for racking posts with up to 45 kip loads	100 psi/in (The modulus was obtained based on engineered fill, aggregate sub-base)

Based on the proposed placement of engineered fill and overexcavation, the floor slab will be underlain by minimum of 9 feet of engineered fill within the entire footprint of the building. Based on the information provided structural designers, due to the dead and live loads of the floor slab, the uniform bearing pressure at the bottom of the floor slab will be approximately 500 psf. Based on the placement of new fill and anticipated bearing pressure underneath the floor slab, a total static settlement of 6 to 8 inches are anticipated. Anticipated differential settlement is on the order of 2 inches. Additionally, based on the liquefaction evaluations, a total liquefaction induced settlement of 2.5 to 2.75 inches are anticipated. Liquefaction induced differential settlements are expected to be range between 1.2 and 1.8 inches. Based on this, the total differential settlement is anticipated to be within the L/500 criteria for the proposed building.

In areas of exposed concrete, control joints should be saw cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). Additionally, dowels should be placed at the location of proposed construction joints. To control the width of cracking (should it occur) continuous slab reinforcement should be considered in exposed concrete slabs.

Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined in the Earthwork section of this report. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

The use of a vapor retarder or barrier should be considered beneath concrete slabs on grade that will be covered with moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture to prevent moisture migration. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

4.5 Lateral Earth Pressures

The lateral earth pressure recommendations herein are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of geogrid-reinforced-backfill walls. Recommendations covering these types of wall systems are beyond the scope of services for this assignment; however, we are available to develop recommendations for the design of such wall systems upon request.

For onsite soils used as engineered fill above any free water surface, recommended equivalent fluid pressures for foundation elements are:

ITEM	VALUE (Onsite Soils)
Active Case	37 psf/ft
Passive Case[1]	385 psf/ft
At-Rest Case	57 psf/ft
Surcharge Pressure	0.31*(Surcharge)
Coefficient of friction	0.35[2]

[1] Note: Ignore passive pressure in the upper 18 inches because of soil disturbance.
[2] Note: Reduce to 0.30 when used in conjunction with passive pressure.

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if such conditions are to be included in the design.

Surcharge pressure for uniform pressure acting at the back of the wall should be applied to the wall as a uniform pressure over the entire wall height and is added to the static earth pressures. Other surcharge loads should be considered where they are located within a horizontal distance behind the wall equal to 1.5 times the height of the wall. Surcharge stresses due to point loads, line loads, and those of limited extent, such as compaction equipment, should be evaluated using elastic theory.

Fill against foundation and retaining walls should be compacted to densities specified in the Earthwork section of this report. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors.

Adequate drainage should be provided behind the walls to collect water from irrigation, landscaping, surface runoff, or other sources, to achieve a free-draining backfill condition. The wall back drain should consist of Class 2 permeable materials that are placed behind the entire wall height to within 18 inches of ground surface at the top of the wall. As a minimum, the width of Class 2 permeable materials behind the wall should be two feet. Water collected by the back drain should be directed to an appropriate outlet, such as weep holes or perforated pipes, for disposal.

4.6 Pavements

4.6.1 Design Recommendations

Total of four (4) samples of the near surface soils were obtained and tested to determine their Resistance Value (R-value). These tests all produced R-values above 50 in the sandy materials and R-value of 6 in clay materials. These samples were taken in the upper 24 inches of the surface. Given the cut and fills anticipated at the site, we recommend obtaining additional R-value samples once rough grading is near completion, within 1 foot. Some of the underlying soils have more fines and will eventually be mixed with the upper materials, likely resulting in lower R-values as indicated in the R-value test in clay materials.

At this time, a design R-value of 45 was used for the Asphalt Concrete (AC) and Portland Cement Concrete (PCC) pavement designs. The anticipated daily traffic of 200 semi-trailer trucks only corresponds to a traffic index (TI) of 10.0. The anticipated combines daily traffic including passenger cars, trucks and semi-trailer trucks corresponds to a traffic index (TI) of 11.0. Since the entire parking area will not receive this much semi-trailer truck traffic, we are also providing pavement sections for TI's of 6.0, 7.0, and 8.0 for use by the civil engineer in determining which pavement section to use for the parking areas. These TI's correspond to daily truck traffic volumes of 2, 10, and 30, respectively. We have also included a pavement section for automobile traffic using a TI of 5.0.

Assuming the pavement subgrades will be prepared as recommended within this report, the following pavement sections should be considered minimums for this project for the traffic indices assumed in the table below. As more specific traffic information becomes available, we should be contacted to reevaluate the pavement design recommendations.

Conventional Asphalt Concrete Design						
Layer	**Thickness (inches)**					
	TI=5.0	**TI=6.0**	**TI=7.0**	**TI=8.0**	**TI= 10.0**	**TI = 11.0**
Asphalt Concrete	3.0	3.0	3.5	4.0	5.0	6.0
Aggregate Base	4.0	6.0	7.0	9.0	12.0	12.0

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current California Department of Transportation (Caltrans) Standard Specifications, latest edition.

Portland Cement Concrete Design [1]				
Layer	**Thickness (inches)**			
	TI=5.0	**TI=10.0**	**TI=11.0**	**Dumpster Pad [2]**
PCC	4	8” Jointed reinforced with dowels or 10” Plain Jointed	10” Jointed reinforced with dowels or 12” Plain Jointed	7
Aggregate Base	--	4	4	4

1. All materials should meet the current Caltrans Standard Specifications, latest edition.
2. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

These pavement sections are considered minimal sections based upon the expected traffic and the existing subgrade conditions. However, they are expected to function with periodic maintenance and overlays if good drainage is provided and maintained.

Subgrade soils beneath all pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. All materials should meet the CALTRANS Standard Specifications for Highway Construction. Aggregate base materials should meet the gradation and quality requirement of Class 2 Aggregate Base in Caltrans Standard Specifications, latest edition, Sections 25 through 29.

All concrete for rigid pavements should have a minimum flexural strength of 600 psi, and be placed with a maximum slump of four inches. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

It is our experience that asphalt pavement sections will suffer severe distress and shoving in tight turning radiuses areas. We recommend that portland cement concrete pavement should be used for such areas.

Asphalt concrete sections must be thickened to 8 inches at transitions with concrete, especially at the trash enclosure pad, loading zones, escape lane intersections, and any other transitions with concrete.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the

first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

4.6.2 Pavement Construction Considerations

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the State of California Department of Transportation, or other approved local governing specifications.

Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between explorations, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

FIELD EXPLORATION

SITE LOCATION

Project Bruin ■ Oxnard, CA

March 18, 2020 ■ Terracon Project No. 60205029

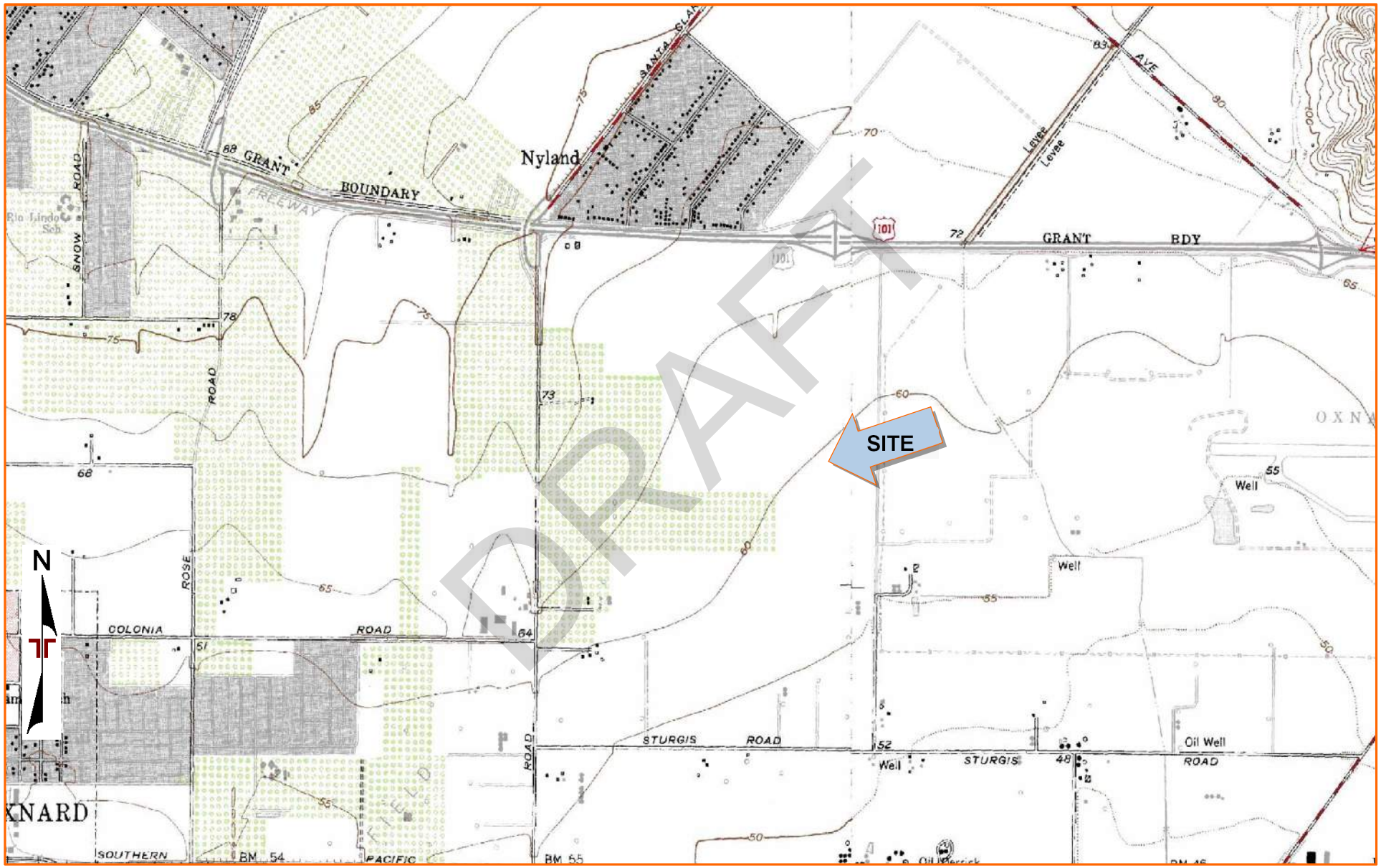
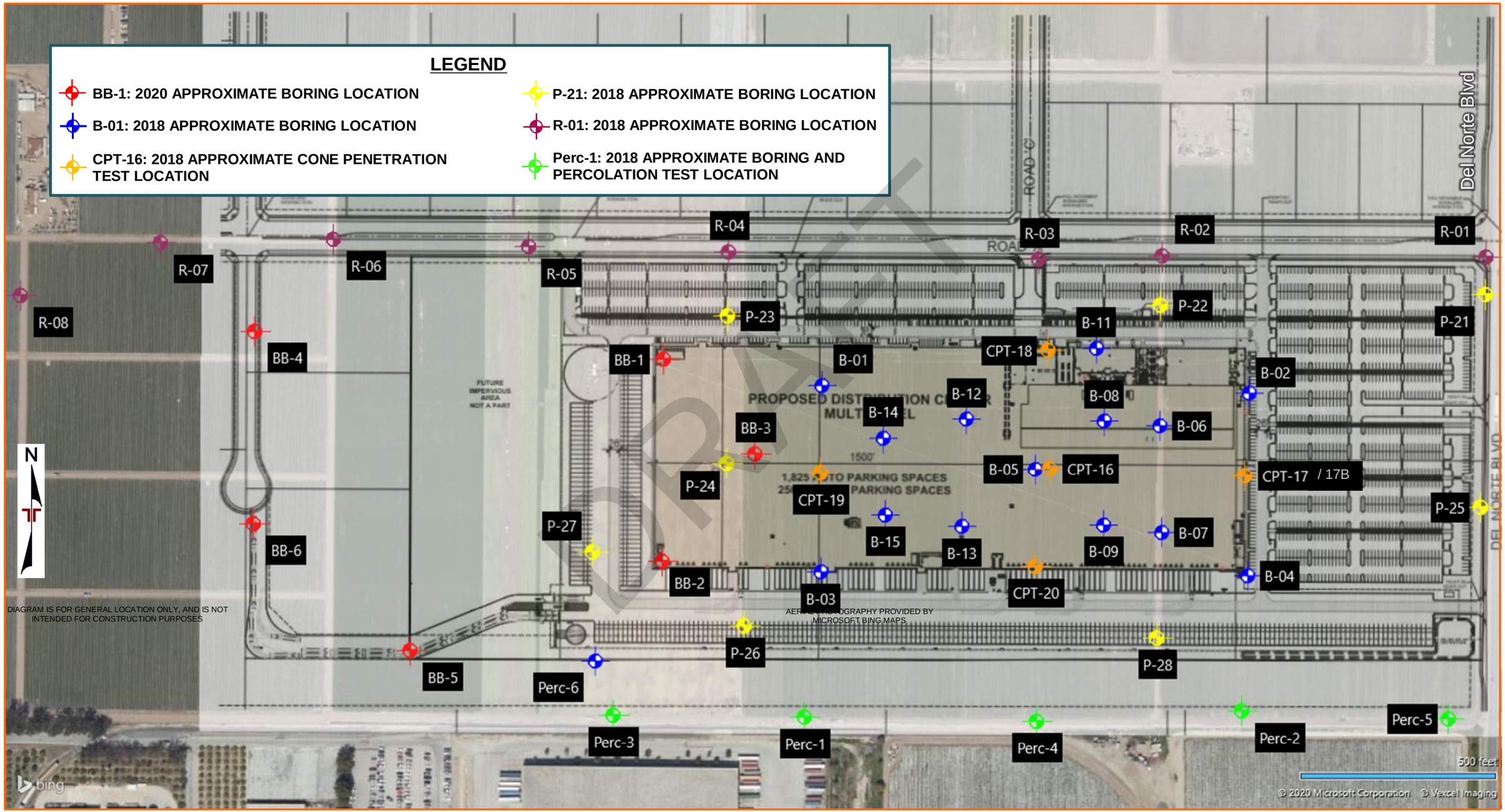


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: OXNARD, CA (1/1/1967) and CAMARILLO, CA (1/1/1967).

EXPLORATION PLAN
Project Bruin ■ Oxnard, CA
March 18, 2020 ■ Terracon Project No. 60205029

Terracon GeoReport



Field Exploration Description

Field exploration program included the advancement of six (6) test borings during the current field explorations and thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings that were previously conducted in 2018. All the borings and CPTs were advanced to approximate depths ranging between 5 to 58 feet below existing site grades. The field program was performed on February 27, 2020 and between the periods of April 3 and April 11, 2018.

The drilled test borings were advanced with a truck-mounted CME-85 drill rig utilizing 8-inch diameter hollow-stem augers and Mobil B-61 drill rig utilizing 6-inch diameter hollow-stem auger. CPT soundings were advanced with a 30-ton truck providing the reaction weight for pushing the cone assembly into the ground at a constant rate of 20-mm per second (approximately four feet per minute). The cone tip resistance and sleeve friction resistance were recorded every 2-cm (approximately ¾-inch) and stored in digital form.

The borings were located in the field by using the proposed site plan, an aerial photograph of the site, a hand-held GPS device, and measuring from existing site features and property lines. The accuracy of boring locations should only be assumed to the level implied by the method used. The location of the borings and CPT soundings is shown on the attached Boring Location Plan, Exhibit A-2.

Continuous lithologic logs of the borings were recorded by the field engineer during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers. Bulk samples of subsurface materials were also obtained. Groundwater conditions were evaluated in the borings at the time of site exploration.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

An automatic hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings prior to the drill crew leaving the site.

BORING LOG NO. BB-1

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2146° Longitude: -119.1341°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
						17						24-14-10	36
	CLAYEY SAND (SC), brown loose				4-4-4					20	101		
5.0		5			2-2-4					25	96		52
7.5	**SANDY LEAN CLAY (CL)**, brown, medium stiff												
	SILTY SAND (SM), light brown, loose		▽		2-2-6 N=8								
10.0		10			11-10-5					21	102		
15.0	**POORLY GRADED SAND WITH SILT (SP)**, trace gravel, light brown, loose												
	LEAN CLAY WITH SAND (CL) light brown, medium stiff	15			1-2-3 N=5								78
	gray	20			3-4-4					31	90		
	brown, stiff	25			4-6-6 N=12								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:
Caving observed at 9 ft bgs after completion.

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 02-27-2020 | Boring Completed: 02-27-2020

Drill Rig: CME 85 | Driller: S&G

Project No.: 60205029

BORING LOG NO. BB-1

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2146° Longitude: -119.1341°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
LEAN CLAY WITH SAND (CL) *(continued)*													
30.0		30											
SILTY SAND (SM), gray, medium dense					22-27-30					20	104		
35.0		35											
SILT (ML), trace sand, gray, stiff					2-4-6 N=10								
very stiff		40			6-9-17					28	93		
gray, hard		45			6-13-22 N=35								
50.0		50											
SILTY SAND (SM), gray, very dense					15-25-50/6"					25	100		
51.5													
Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 02-27-2020 | Boring Completed: 02-27-2020

Drill Rig: CME 85 | Driller: S&G

Project No.: 60205029

BORING LOG NO. BB-2

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2132° Longitude: -119.1341°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC) stiff					4-6-6					18	108		
5.0		5											
POORLY GRADED SAND (SP), trace silt, tan, loose					2-2-2 N=4								
7.5													
CLAYEY SAND (SC), trace gravel, brown, loose			▽		2-6-7								27
10.0		10											
POORLY GRADED SAND (SP), tan, medium dense					4-7-8 N=15								
15.0		15											
LEAN CLAY WITH SILT (CL), trace sand, gray, soft					1-2-2					29	92		
		20			1-1-1 N=2								
25.0		25											
SILTY CLAYEY SAND (SC-SM), gray, medium dense					11-13-15					25	97		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:
Caving observed at 25 ft bgs after completion.

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 02-27-2020 | Boring Completed: 02-27-2020

Drill Rig: CME 85 | Driller: S&G

Project No.: 60205029

BORING LOG NO. BB-2

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2132° Longitude: -119.1341°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
SILTY CLAYEY SAND (SC-SM), gray, medium dense *(continued)*													
30.0		30											
SILTY SAND (SM), brown, medium dense				X	6-7-11 N=18								
35.0		35											
LEAN CLAY (CL), gray, stiff					3-7-10					29	89		
stiff to very stiff		40		X	3-6-9 N=15								
45.0		45											
SANDY SILT (ML), gray, hard					16-22-26					23	101		
50.0		50											
LEAN CLAY (CL), trace sand, gray, hard				X	5-12-26 N=38								
51.5													
Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 02-27-2020 | Boring Completed: 02-27-2020

Drill Rig: CME 85 | Driller: S&G

Project No.: 60205029

BORING LOG NO. BB-3

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2139° Longitude: -119.1333°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SILTY CLAYEY SAND, brown loose			6-7-6					12	106		
5				1-2-3 N=5								
7.5	**POORLY GRADED SAND (SP)**, trace silt, loose	▽		3-6-9					19	109		
10				3-9-8 N=17								
15.0	**LEAN CLAY (CL)**, trace sand, medium stiff			1-4-5					28	91		
15												
20	soft			1-1-2 N=3								
21.5	***Boring Terminated at 21.5 Feet***											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 02-27-2020 | Boring Completed: 02-27-2020

Drill Rig: CME 85 | Driller: S&G

Project No.: 60205029

BORING LOG NO. BB-4

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2148° Longitude: -119.1376°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
SANDY LEAN CLAY (CL), brown													
soft to medium stiff		5			2-2-2 N=4								
10.0													
POORLY GRADED SAND (SP), trace silt, medium dense		10			4-6-10 N=16								
11.5													
Boring Terminated at 11.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 02-27-2020 | Boring Completed: 02-27-2020

Drill Rig: CME 85 | Driller: S&G

Project No.: 60205029

BORING LOG NO. BB-5

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2125° Longitude: -119.1362°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), brown												50
	medium stiff	5			3-3-2 N=5								
	10.0												
	POORLY GRADED SAND (SP), trace silt, medium dense	10	▽		6-7-11 N=18								
	11.5												
	Boring Terminated at 11.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 02-27-2020 | Boring Completed: 02-27-2020

Drill Rig: CME 85 | Driller: S&G

Project No.: 60205029

BORING LOG NO. BB-6

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2134° Longitude: -119.1376° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), brown medium stiff	5			3-2-3 N=5								
	10.0 **POORLY GRADED SAND (SP)**, trace silt, tan, medium dense 11.5	10			5-7-9 N=16								
	Boring Terminated at 11.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 02-27-2020 | Boring Completed: 02-27-2020

Drill Rig: CME 85 | Driller: S&G

Project No.: 60205029

BORING LOG NO. B-01

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2144° Longitude: -119.1328°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
												25-16-9	41
4.0					2-2-2					25	96		
		5	▽		0-0-1 N=1								
7.5					1-5-11					22	100		
		10			4-7-7 N=14								10
14.5					7-6-6					21	105		
		20			0-0-0 N=0							37-25-12	72
		25											

CLAYEY SAND (SC), dark brown, very loose

SANDY LEAN CLAY (CL), dark brown, very soft

POORLY GRADED SAND WITH SILT (SP-SM), trace clay, brown, loose

medium dense

LEAN CLAY WITH SAND (CL), dark grayish brown
stiff

very soft

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018

Boring Completed: 04-06-2018

Drill Rig: LAR

Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-01

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2144° Longitude: -119.1328°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
					4-5-5					32	92		
28.0													
POORLY GRADED SAND WITH SILT (SP-SM), grayish brown, medium dense		30			3-7-5 N=12							NP	11
33.5													
SANDY LEAN CLAY (CL), dark grayish brown, very stiff		35			5-10-31					21	104		
39.5													
FAT CLAY (CH), dark grayish brown, medium stiff		40			2-2-5 N=7							54-27-27	97
43.3													
SANDY LEAN CLAY (CL), dark grayish brown, very stiff		45			6-15-10					41	85		
47.3													
CLAYEY SAND (SC), dark grayish brown													
50.0		50											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-01

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LOCATION See Exploration Plan Latitude: 34.2144° Longitude: -119.1328°												
	SANDY LEAN CLAY (CL), dark grayish brown, very stiff				8-10-11 N=21								52
	51.5												
	Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-02

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2143° Longitude: -119.1292°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0.0					15						24-16-8	37
				0-2-1 N=3								
5.0												
				5-9-12					21	106		
				4-7-3 N=10								
10				1-1-1					20			
15.5				2-2-1 N=3								
19.5												
				5-9-7					24	101		
25.0												

0.0 **CLAYEY SAND (SC)**, dark brown, very loose

5.0 **POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense

very loose

15.5 **SANDY LEAN CLAY (CL)**, dark brown, soft

19.5 **LEAN CLAY WITH SAND (CL)**, brown, stiff

25.0

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-02

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2143° Longitude: -119.1292°

DEPTH	GRAPHIC LOG	DESCRIPTION	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		CLAYEY SAND (SC), brown, medium dense			4-7-5 N=12								
28.5		**POORLY GRADED SAND WITH GRAVEL (SP)**, tan, medium dense	▽										
30					8-10-35					17			
35.0		**SANDY LEAN CLAY (CL)**, dark grayish brown, stiff			4-6-7 N=13								
39.3		**LEAN CLAY WITH SAND (CL)**, dark gray stiff											
40					4-7-8					45	78		
45		very stiff			2-7-12 N=19								
50													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-02

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2143° Longitude: -119.1292° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY WITH SAND (CL), dark gray *(continued)* 51.5 hard ***Boring Terminated at 51.5 Feet***				10-21-23					22	103		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-03

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2131° Longitude: -119.1328°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SILTY CLAYEY SAND (SC-SM), dark brown, very loose					12						24-17-7	45
4.8						0-2-1 N=3								
		SANDY LEAN CLAY (CL), dark brown, medium stiff	5			0-3-2					22	104		
7.3														
		POORLY GRADED SAND WITH CLAY (SP), brown, loose				0-0-5 N=5								
9.8														
		CLAYEY SAND (SC), dark brown, medium dense	10			11-14-9					22	103		
		loose	15			1-3-2 N=5								
16.0														
		SANDY LEAN CLAY (CL), dark grayish brown, medium stiff												
19.5														
		LEAN CLAY WITH SAND (CL), dark grayish brown medium stiff	20			3-4-5					30	96		
			25											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-03

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2131° Longitude: -119.1328°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
					3-4-5 N=9								
29.0													
		30			11-19-11					17	111		
35.0													
		35			4-4-4 N=8								
40.3													
		40			5-7-10					38	82		
42.0													
45.0		45			6-10-9 N=19					33	92		
		50											

LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)*
stiff

CLAYEY SAND, dark grayish brown, medium dense

LEAN CLAY WITH SAND (CL), dark grayish brown, medium stiff

LEAN CLAY (CL), trace sand, dark grayish brown, stiff

CLAYEY SAND (SC), dark grayish brown

LEAN CLAY (CL), trace sand, dark grayish brown, very stiff

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-03

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2131° Longitude: -119.1328° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, very stiff *(continued)*				8-15-12					26	98		
	51.5 black												
	Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018

Boring Completed: 04-06-2018

Drill Rig: LAR

Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-04

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2131° Longitude: -119.1292°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		CLAYEY SAND (SC), dark brown, very loose												
4.5						2-2-4					20	104		
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense	5			3-5-5 N=10								
		loose, sample not recovered		▽		15-9-5								
		very loose	10			0-0-1 N=1								
11.0		**LEAN CLAY WITH SAND (CL)**, dark brown, very soft												
		dark grayish brown, medium stiff	15			0-3-3					32	89		
		brown, stiff	20			4-6-6 N=12								
24.0		**SANDY LEAN CLAY (CL)**, dark brown, hard	25											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-04

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2131° Longitude: -119.1292°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
				5-20-36					20	108		
30				3-6-9 N=15								
35				8-12-14					32	91		
40				3-7-4 N=11								
45				5-6-15								
50												

SANDY LEAN CLAY (CL), dark brown, hard *(continued)*

stiff

very stiff

39.0

LEAN CLAY WITH SAND (CL), dark grayish brown, stiff

43.0

SANDY LEAN CLAY (CL), dark brown, very stiff

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-04

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2131° Longitude: -119.1292° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), dark brown, very stiff *(continued)* 51.5				3-5-11 N=16								
	Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-05

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2138° Longitude: -119.131°

DEPTH	GRAPHIC LOG	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0						24-17-7	46
			0-0-1 N=1				
5			3-6-6 N=12			NP	18
			5-14-9 N=23				
10			2-1-1 N=2				
15			2-1-1 N=2			23-18-5	46
20			0-2-3 N=5				
25							

SILTY CLAYEY SAND (SC-SM), dark brown, very loose

brown

medium dense

6.0

SILTY SAND (SM), brown, medium dense

10.5

LEAN CLAY (CL), trace sand, dark grayish brown, soft

13.0

SILTY CLAYEY SAND (SC-SM), dark brown, very loose

loose

25.0

EXPANSION INDEX

STRENGTH TEST: TEST TYPE; COMPRESSIVE STRENGTH (tsf); STRAIN (%)

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-05

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2138° Longitude: -119.131°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
LEAN CLAY WITH SAND (CL), dark grayish brown, medium stiff					2-3-4 N=7							43-24-19	75
stiff		30			7-4-5 N=9								
31.0 **CLAYEY SAND**, dark brown, loose													
35.0 **SILT (ML)**, dark grayish brown, stiff		35			5-7-6 N=13							36-25-11	98
40.0 **LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff		40			2-3-6 N=9								
		45			2-4-5 N=9							40-24-16	87
		50											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-05

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2138° Longitude: -119.131° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, stiff *(continued)* 51.5				5-5-7 N=12								
	Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-06

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2141° Longitude: -119.1299°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown, very loose					2-1-2 N=3								
loose		5	▽		2-3-5					10	81		
7.3													
POORLY GRADED SAND WITH CLAY (SP), brown, medium dense			▽		2-5-9 N=14								
10.0		10											
LEAN CLAY WITH SAND (CL), dark grayish brown, soft					0-1-2					39	81		
13.5													
POORLY GRADED SAND WITH CLAY, grayish brown, very loose		15			0-1-2 N=3								
15.5													
LEAN CLAY WITH SAND (CL), dark grayish brown, soft													
very stiff		20			8-15-20					28	99		
21.5													
Boring Terminated at 21.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-09-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. B-07

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2134° Longitude: -119.1299°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown, very loose													
			▽		0-1-2					24	98		
loose		5											
			▽		2-2-3 N=5								
7.5													
POORLY GRADED SAND WITH CLAY (SP), brown, medium dense					9-16-26					16	108		
very loose		10			0-0-0 N=0								
11.0													
LEAN CLAY WITH SAND (CL), dark grayish brown, very soft													
14.8													
CLAYEY SAND (SC), grayish brown, medium dense		15			3-10-13					21	103		
loose		20			2-3-5 N=8								
20.8													
21.5 **LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff													
Boring Terminated at 21.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-09-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. B-08

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2141° Longitude: -119.1304°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		CLAYEY SAND (SC), dark brown, very loose												
						1-1-1 N=2								
4.5		**POORLY GRADED SAND WITH CLAY (SP)**, brown, loose	5			2-4-8					20	101		
6.5		**CLAYEY SAND (SC)**, dark brown		▽										
7.5		**POORLY GRADED SAND WITH CLAY (SP)**, brown, dense				17-23-23 N=46								
10.0		**LEAN CLAY WITH SAND (CL)**, dark grayish brown, very stiff	10	▽		22-22-12					38	87		
		soft	15			0-1-1 N=2								
		very stiff	20			4-11-13					24	101		
21.5		***Boring Terminated at 21.5 Feet***												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-03-2018 | Boring Completed: 04-03-2018

Drill Rig: LAR | Driller: CalPac

Project No.: 60205029

BORING LOG NO. B-09

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2134° Longitude: -119.1304°

DEPTH	GRAPHIC LOG	DESCRIPTION	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0		**CLAYEY SAND (SC)**, dark brown, very loose											
					2-3-3					25	99		
5		medium dense			4-7-10 N=17								
7.0		**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense	▽										
			▽		10-23-27					19	108		
9.8		**LEAN CLAY WITH SAND (CL)**, dark grayish brown, very soft											
10					0-0-1 N=1								
13.5		**CLAYEY SAND (SC)**, dark brown, loose											
15					4-8-7					21	102		
17.0		**SANDY LEAN CLAY (CL)**, dark grayish brown, very soft											
20					0-0-1 N=1								
21.0													
21.5		**CLAYEY SAND (SC)**, dark brown, very loose											
		Boring Terminated at 21.5 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-03-2018 | Boring Completed: 04-03-2018

Drill Rig: LAR | Driller: CalPac

Project No.: 60205029

BORING LOG NO. B-11

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2146° Longitude: -119.1305°

DEPTH	GRAPHIC LOG	DESCRIPTION	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		CLAYEY SAND (SC), dark brown, very loose											
4.5					2-2-4					19	106		
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense											
5					2-4-6 N=10								
		brown											
					16-21-24					20	110		
10		very loose											
10.8					1-1-1 N=2								
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft											
13.5													
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense											
15		sample not recovered			19-18-16								
19.5													
		SANDY LEAN CLAY (CL), dark brown, stiff											
20					0-4-7 N=11								
21.5													
		Boring Terminated at 21.5 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: LAR | Driller: CalPac

Project No.: 60205029

BORING LOG NO. B-12

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.214° Longitude: -119.1323°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0												
	CLAYEY SAND (SC), dark brown, very loose											
				4-3-3					23	102		
	brown, medium dense											
5				3-5-7 N=12								
6.0												
	POORLY GRADED SAND WITH CLAY (SP), brown, medium dense											
				13-23-33					21	107		
	very loose											
10				2-1-1 N=2								
10.8												
	LEAN CLAY WITH SAND (CL), dark grayish brown, soft											
	medium stiff											
15				3-2-5					35	89		
	medium stiff to stiff											
20				2-4-4 N=8								
21.5												
	Boring Terminated at 21.5 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-13

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2134° Longitude: -119.1316°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		CLAYEY SAND (SC), dark brown, very loose				1-1-1 N=2								
		brown	5	▽										
5.0		**CLAYEY SAND (SC)**, brown, medium dense		▽		2-6-12					19	111		
6.8		**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense				6-6-5 N=11								
		very loose	10			3-1-2					31	89		
11.0		**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft												
			15			1-1-1 N=2								
		stiff	20			2-4-9					25	99		
21.5		***Boring Terminated at 21.5 Feet***												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-14

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.214° Longitude: -119.1323°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose			1-1-1 N=2								
5	brown, loose			3-4-8					19	111		
6.5												
	POORLY GRADED SAND WITH CLAY (SP), brown, medium dense trace gravel			5-7-7 N=14								
10	no gravel			8-17-7					17	112		
13.3												
	LEAN CLAY WITH SAND (CL), dark grayish brown, soft			2-1-1 N=2								
20	very stiff			7-13-15					25	99		
21.5												
	Boring Terminated at 21.5 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. B-15

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2135° Longitude: -119.1323°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		CLAYEY SAND (SC), dark brown, very loose												
		brown				2-1-2					21	102		
5.8		loose	5	▽		1-5-4 N=9								
		POORLY GRADED SAND WITH CLAY (SP), brown, loose		▽										
		medium dense				19-24-24					19	107		
11.0		very loose	10			1-2-1 N=3								
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft												
14.0		**POORLY GRADED SAND WITH CLAY (SP)**, grayish brown, loose												
		sample not recovered	15			3-5-5								
20.3			20											
21.5		**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff				2-4-4 N=8								
		Boring Terminated at 21.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. P-21

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.215° Longitude: -119.1272°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	5.0	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60205029

BORING LOG NO. P-22

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2149° Longitude: -119.1299° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	POORLY GRADED SAND (SP), dark brown												
	brown											21-18-3	2
	5.0	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60205029

BORING LOG NO. P-23

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	See Exploration Plan Latitude: 34.2149° Longitude: -119.1336°												
	CLAYEY SAND (SC), dark brown												
	5.0	5	▽										
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018

Boring Completed: 04-11-2018

Drill Rig: CME 75

Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. P-24

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2138° Longitude: -119.1336°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SILTY CLAYEY SAND (SC-SM), dark brown											22-18-4	27
	4.0 **POORLY GRADED SAND WITH CLAY (SP)**, brown												
	5.0 ***Boring Terminated at 5 Feet***	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. P-25

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2135° Longitude: -119.1272° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	brown												
	dark brown												
	5.0	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60205029

BORING LOG NO. P-26

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2127° Longitude: -119.1334°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown brown 5.0	5	▽										
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60205029

BORING LOG NO. P-27

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2132° Longitude: -119.1347° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	4.0												
	LEAN CLAY WITH SAND, dark brown												
	5.0												
	Boring Terminated at 5 Feet	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. P-28

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2126° Longitude: -119.13° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	brown												
	5.0	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60205029

BORING LOG NO. Perc-1

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2121° Longitude: -119.1329° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, loose												
	5.0				1-3-5					18	102		
	Boring Terminated at 5 Feet	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-10-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. Perc-2

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2121° Longitude: -119.1292° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose												
	5.0				0-2-4					24	101		
	Boring Terminated at 5 Feet	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-10-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. Perc-3

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2121° Longitude: -119.1345°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose												
		5			1-1-4					16	82		
	6.0 **SANDY LEAN CLAY (CL)**, dark brown, medium stiff												
	7.0 ***Boring Terminated at 7 Feet***												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-10-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. Perc-4

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.212° Longitude: -119.131°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose												
		5			2-1-1					13			
	6.0 **SANDY LEAN CLAY (CL)**, dark brown												
	7.0 ***Boring Terminated at 7 Feet***												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-10-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. Perc-5

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2121° Longitude: -119.1275°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose	5			1-2-4					23	99		
	7.0												
	Boring Terminated at 7 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-10-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. Perc-6

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2125° Longitude: -119.1347° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	3.0												
	Boring Terminated at 3 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-10-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. R-01

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2153° Longitude: -119.1272° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	brown	5	▽										
	10.0	10											
	Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-09-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. R-02

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	See Exploration Plan Latitude: 34.2153° Longitude: -119.1299°												
	POORLY GRADED SAND (SP), dark brown		▽									22-17-5	2
	5												
	brown												
	10.0	10											
	Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-09-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60205029

BORING LOG NO. R-03

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2153° Longitude: -119.1309°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	5.0	5	▽										
	5.8 **POORLY GRADED SAND WITH CLAY (SP)**, brown												
	Boring Terminated at 5.75 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. R-04

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2153° Longitude: -119.1336° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	5.3	5											
	POORLY GRADED SAND WITH CLAY (SP), brown												
	10.0	10											
	Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. R-05

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 34.2153° Longitude: -119.1352° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	3.5												
	LEAN CLAY WITH SAND (CL), dark brown	5	▽										
	6.3												
	POORLY GRADED SAND WITH CLAY (SP), brown												
	10.0	10											
	Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. R-06

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2154° Longitude: -119.1369°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
2.8													
LEAN CLAY WITH SAND (CL), dark brown		5											
7.0													
POORLY GRADED SAND WITH CLAY (SP), brown													
10.0		10											
Boring Terminated at 10 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. R-07

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2154° Longitude: -119.1384°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES

CLAYEY SAND (SC), dark brown

3.0

LEAN CLAY WITH SAND (CL), dark brown

5

6.0

POORLY GRADED SAND WITH CLAY (SP), brown

9.0

CLAYEY SAND (SC), dark brown

10.0

10

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. R-08

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.215° Longitude: -119.1395°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
2.5													
LEAN CLAY WITH SAND (CL), dark brown													
5.5		5											
SANDY LEAN CLAY (CL), brown													
8.0													
CLAYEY SAND (SC), brown													
10.0		10											
Boring Terminated at 10 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60205029

BORING LOG NO. R-09

PROJECT: Project Bruin

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

LOCATION See Exploration Plan

Latitude: 34.2146° Longitude: -119.1415°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	6.0	5											
	POORLY GRADED SAND WITH CLAY (SP), brown												
	10.0	10											
	Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

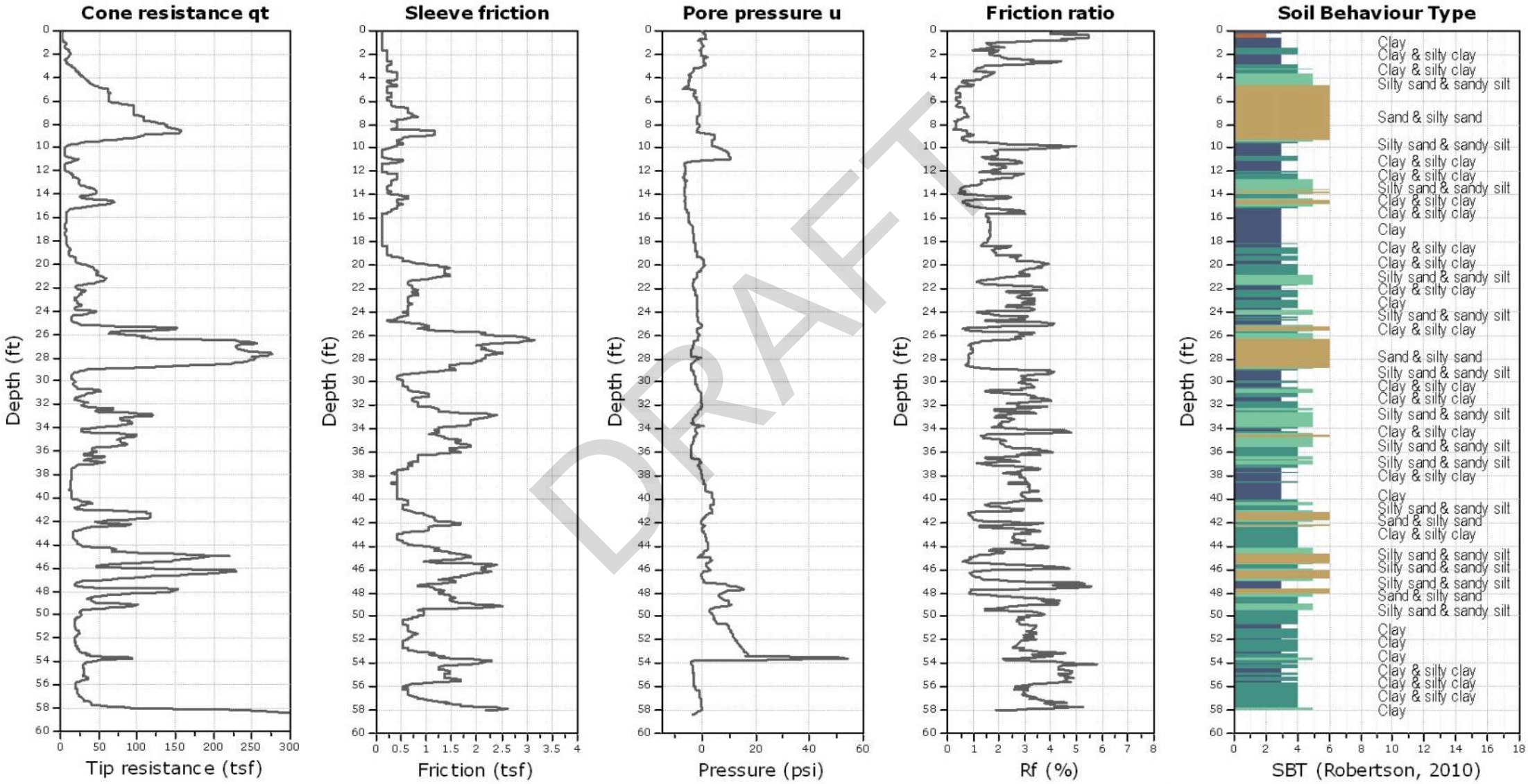
Project No.: 60205029

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-16

Project: **Terracon Consultants, Inc.**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 58.35 ft, Date: 5/3/2018
Cone Type: Vertek

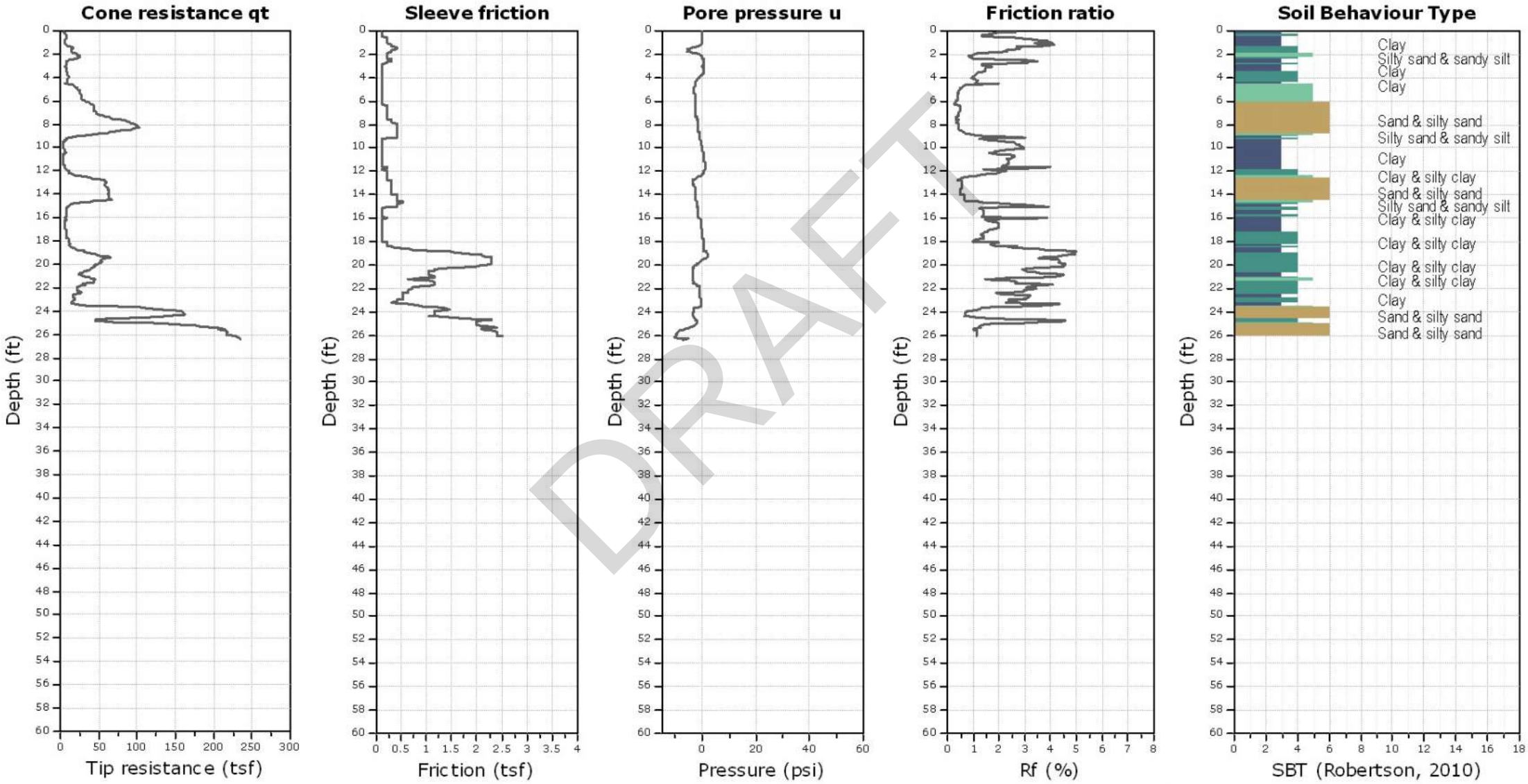


Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17

Project: **Terracon Consultants, Inc.**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 26.38 ft, Date: 5/4/2018
Cone Type: Vertek

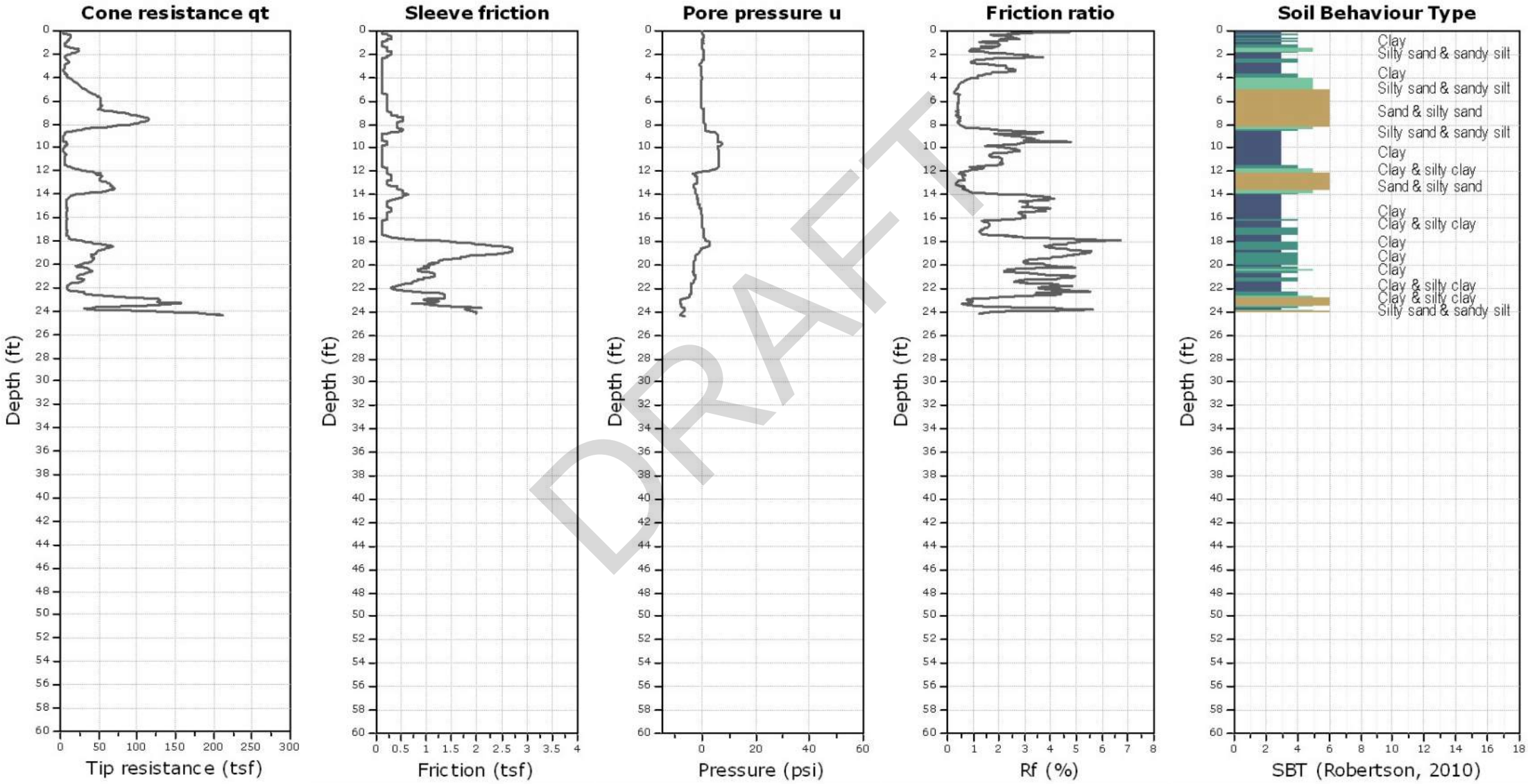


Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17B

Project: **Terracon Consultants, Inc.**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 24.43 ft, Date: 5/4/2018
Cone Type: Vertek

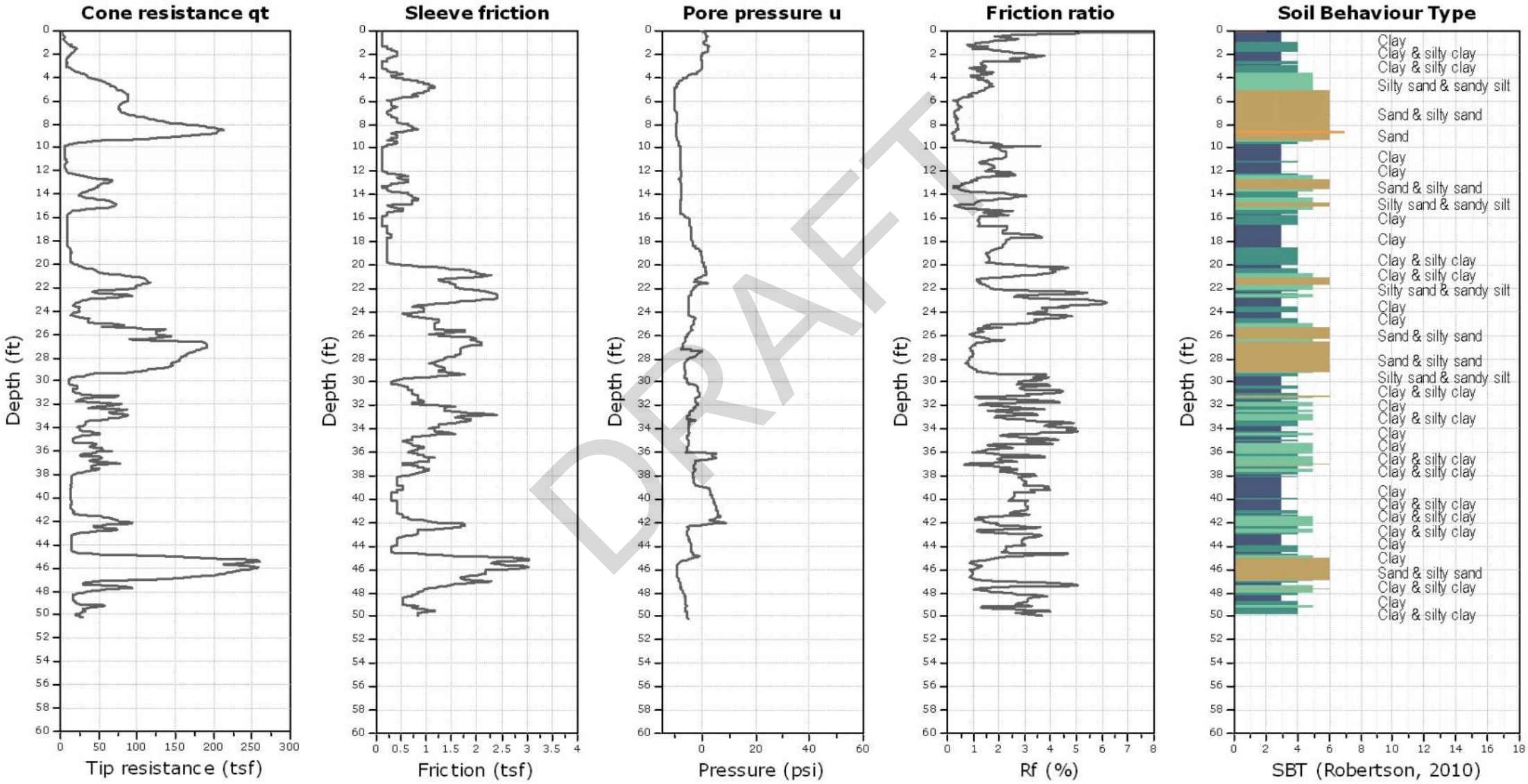


Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-18

Project: **Terracon Consultants, Inc.**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.22 ft, Date: 5/4/2018
Cone Type: Vertek

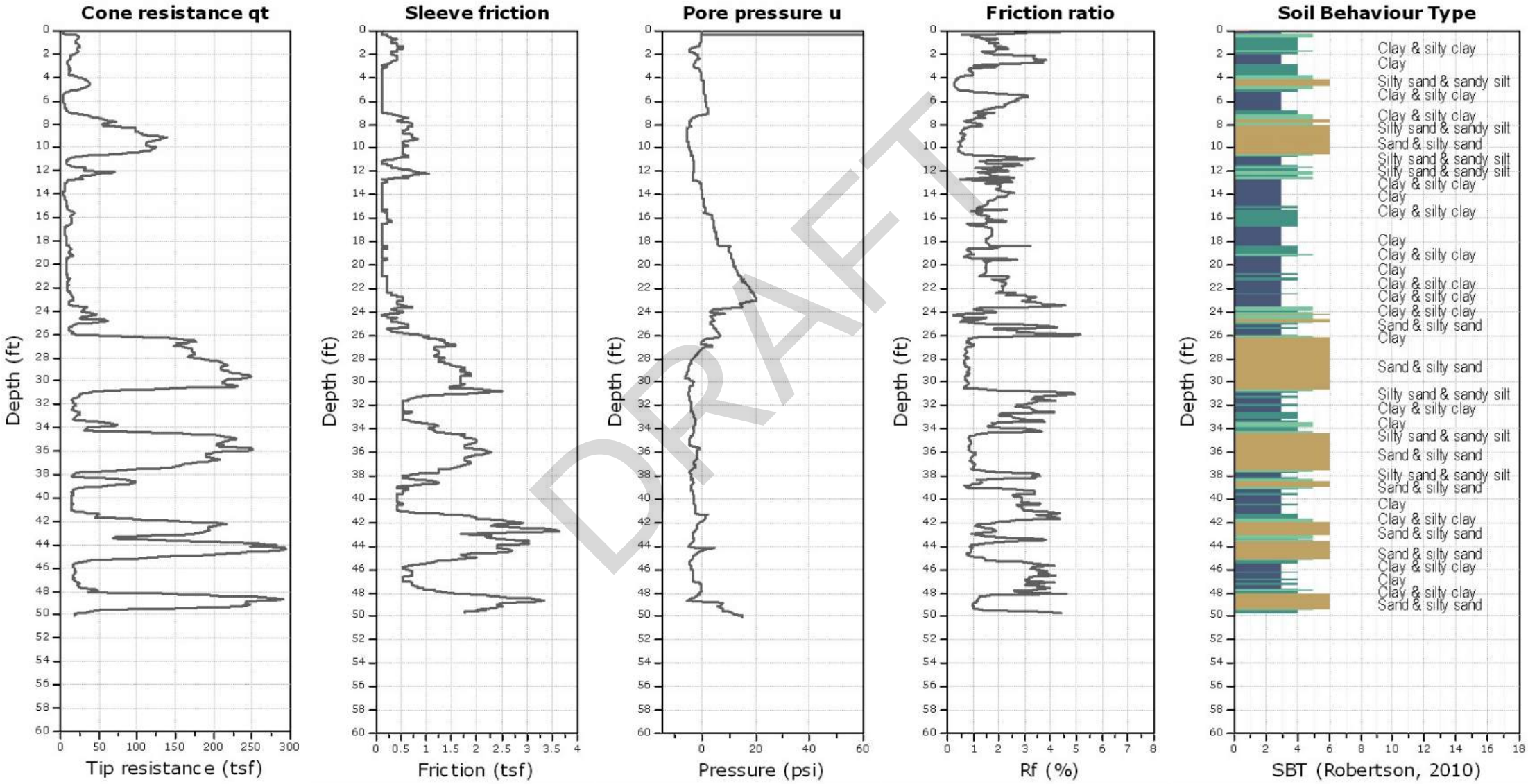


Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-19

Project: **Terracon Consultants, Inc.**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.02 ft, Date: 5/4/2018
Cone Type: Vertek

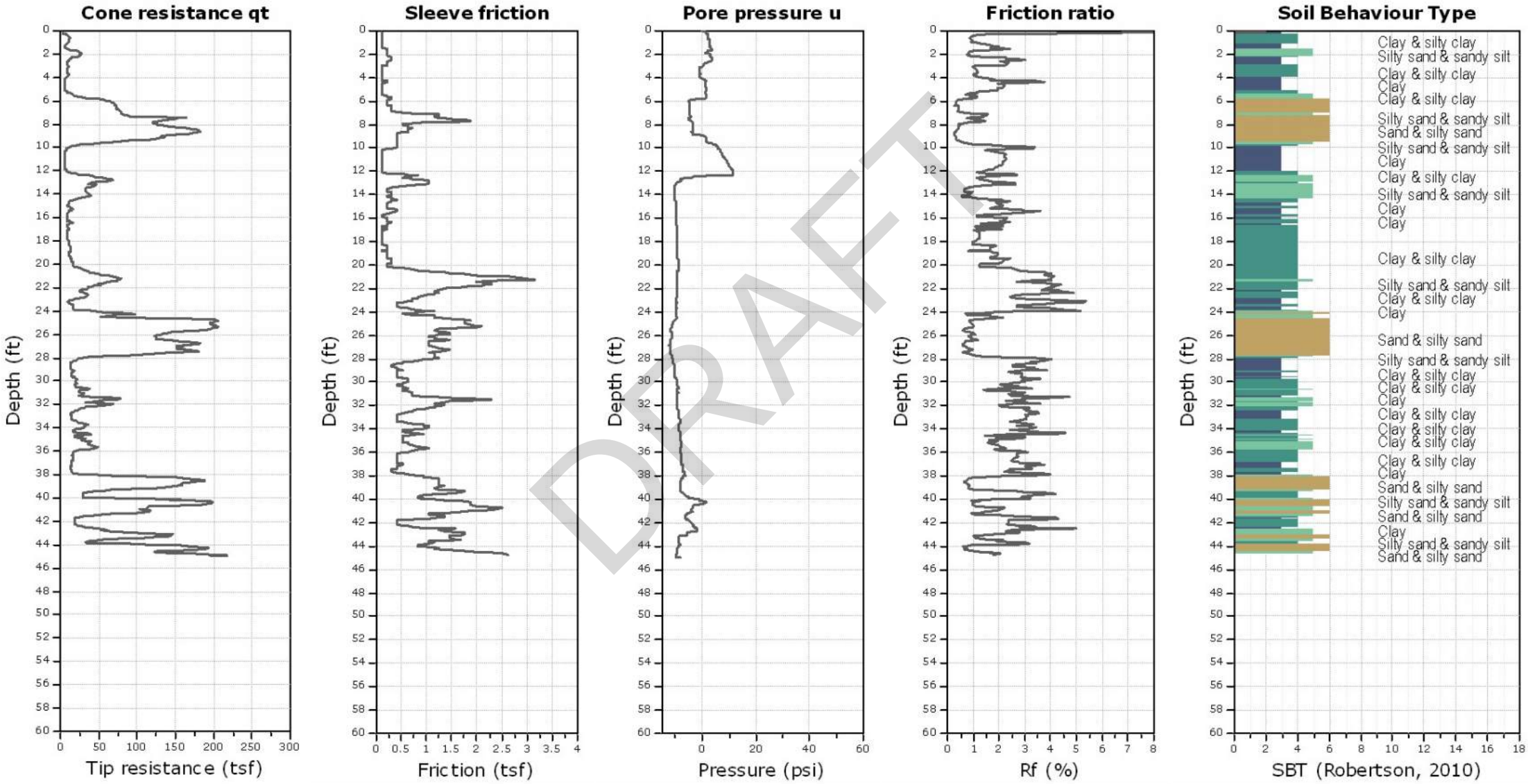


Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-20

Project: **Terracon Consultants, Inc.**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 45.02 ft, Date: 5/3/2018
Cone Type: Vertek



SOUTHWEST
GEOPHYSICS, INC.
YOUR SUBSURFACE SOLUTION

June 26, 2018
Project No. 118323

Mr. Josh Morgan, P.E.
Terracon, Inc.
1421 Edinger Avenue, Suite C
Tustin, CA 92780

Subject: Geophysical Evaluation
Project Bruin
Oxnard, California

Dear Mr. Morgan:

In accordance with your authorization, we have performed geophysical survey services pertaining to the subject project located in Oxnard, California (Figure 1). The purpose of our evaluation was to develop Shear-wave velocity profiles to be used in the design and construction of site improvements. Our services were performed on June 21, 2018. This report presents the survey methodology, equipment used, analysis, and findings from our study.

Our scope of services included the performance of three refraction microtremor (ReMi) profiles (RL-1 through RL-3) 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 length of 230 feet. Fifteen records, each 32 seconds long, were recorded and then downloaded to a computer. The data were later processed using SeisOpt® ReMi™ software (© Optim LLC, 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.

Figure 4a through 4c and Table 1 present the results from our survey. Based on our analysis of the collected data, the average characteristic site Shear-wave velocities down to a depth of 100 feet are 769, 770 and 734 feet per second for RL-1 through RL-3, respectively (CBC, 2016). These values correspond to site classifications of **D**. It should be noted that the ReMi results represent the average condition across the length of the line.

TABLE 1
ReMi Results

Line No.	Depth (feet)	Shear Wave Velocity (feet/second)
RL-1	0-11	470
	11-19	595
	19-28	528
	28-40	641
	40-54	877
	54-70	955
	70-90	1,177
	90-100	1,268
RL-2	0-11	394
	11-19	593
	19-28	568
	28-40	657
	40-54	924
	54-70	1,095
	70-90	1,190
	90-100	1,251
RL-3	0-11	443
	11-19	496
	19-28	546
	28-40	657
	40-54	813
	54-70	976
	70-90	1,090
	90-100	1,145

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, Inc. 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 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 risk.

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, INC.

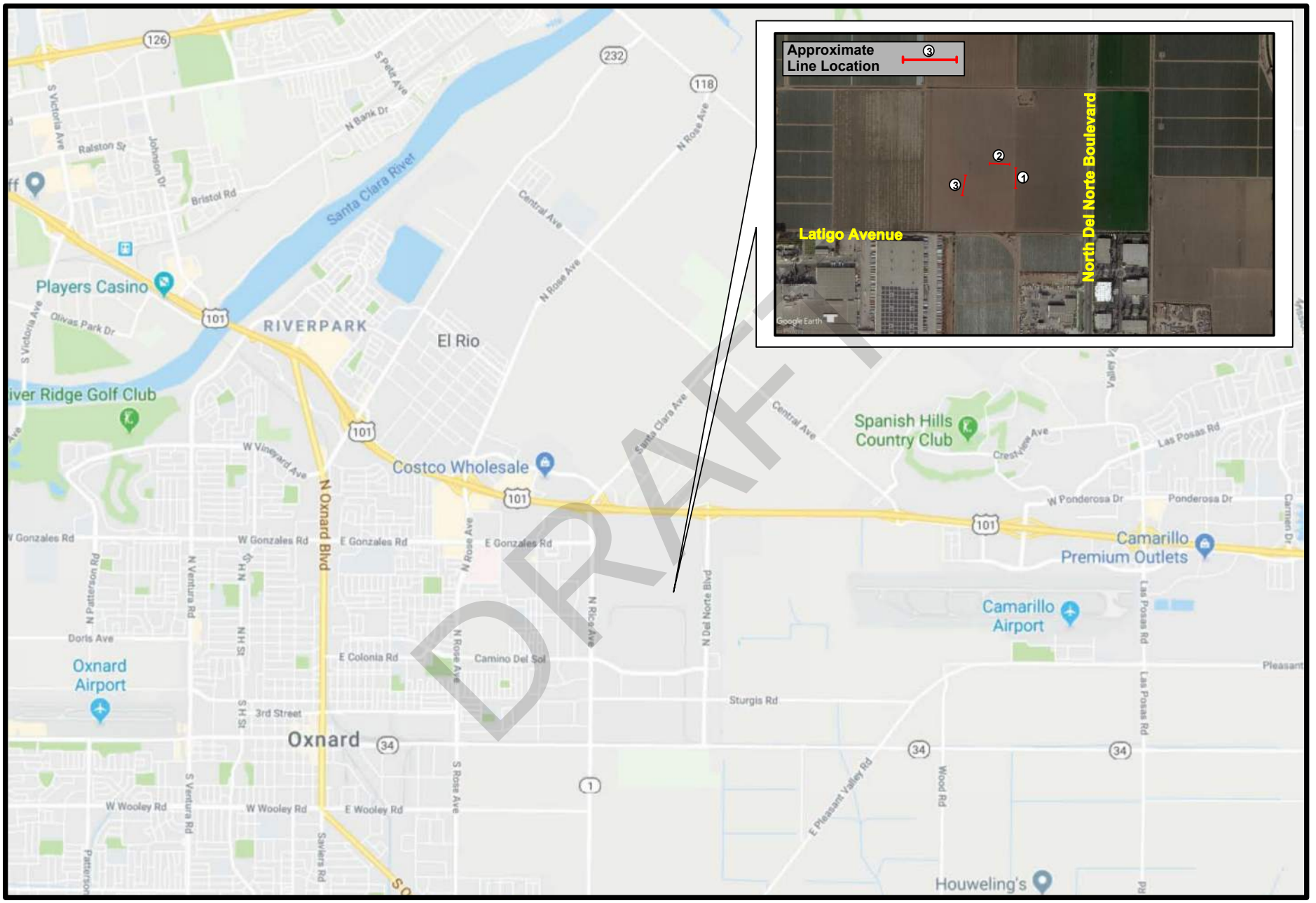
Hans van de Vrugt

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

HV/hv

Attachments: Figure 1 – Site Location Map
Figure 2 – 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

Distribution: Addressee (electronic)



SITE LOCATION MAP

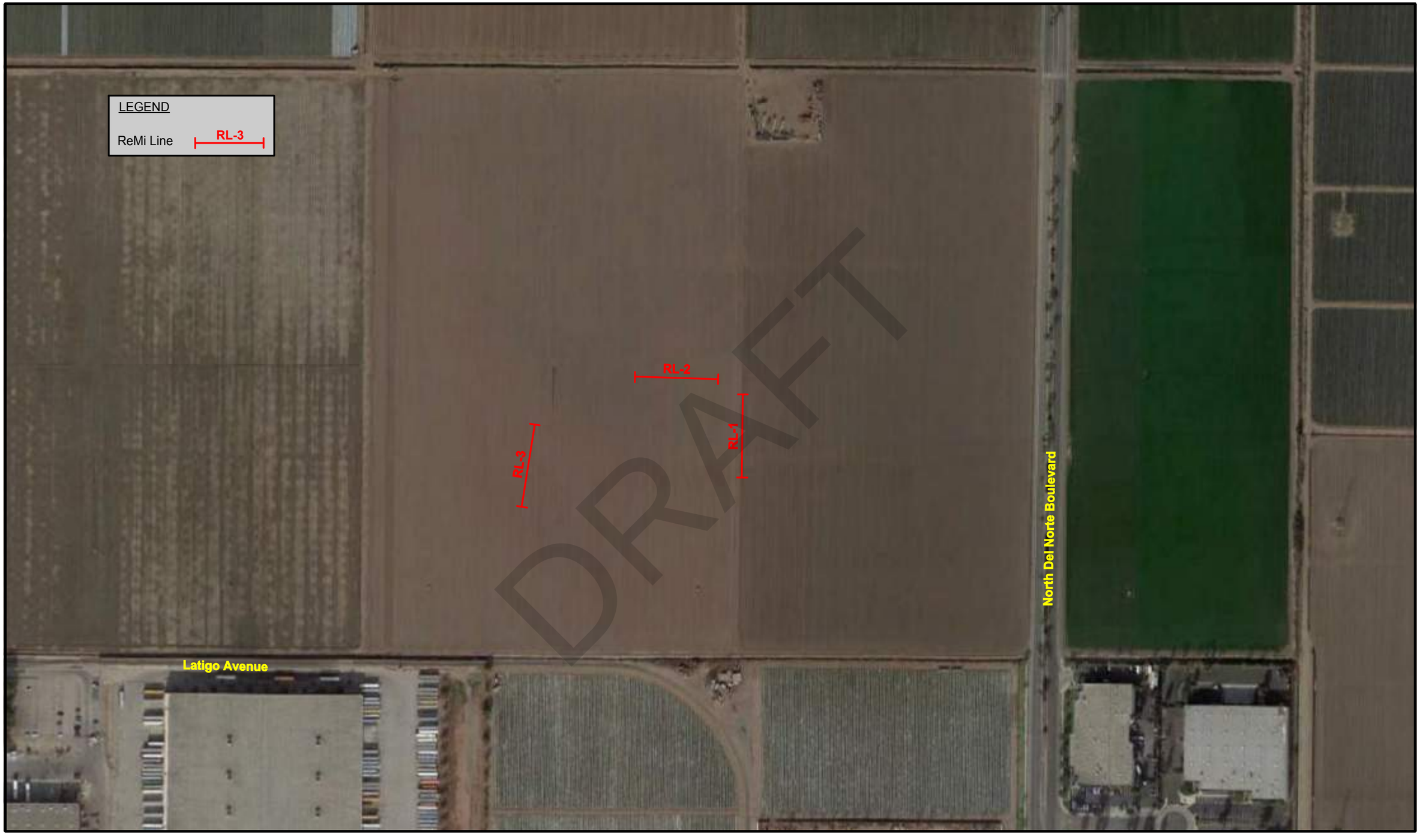
N

Project Bruin
Oxnard, California

Project No.: 118323 | Date: 06/18

SOUTHWEST GEOPHYSICS INC.

Figure 1



LINE LOCATION MAP

N

Project Bruin
Oxnard, California

Project No.: 118323 | Date: 06/18

SOUTHWEST GEOPHYSICS INC.

Figure 2

0 250 500

approximate scale in feet

SITE PHOTOGRAPHS

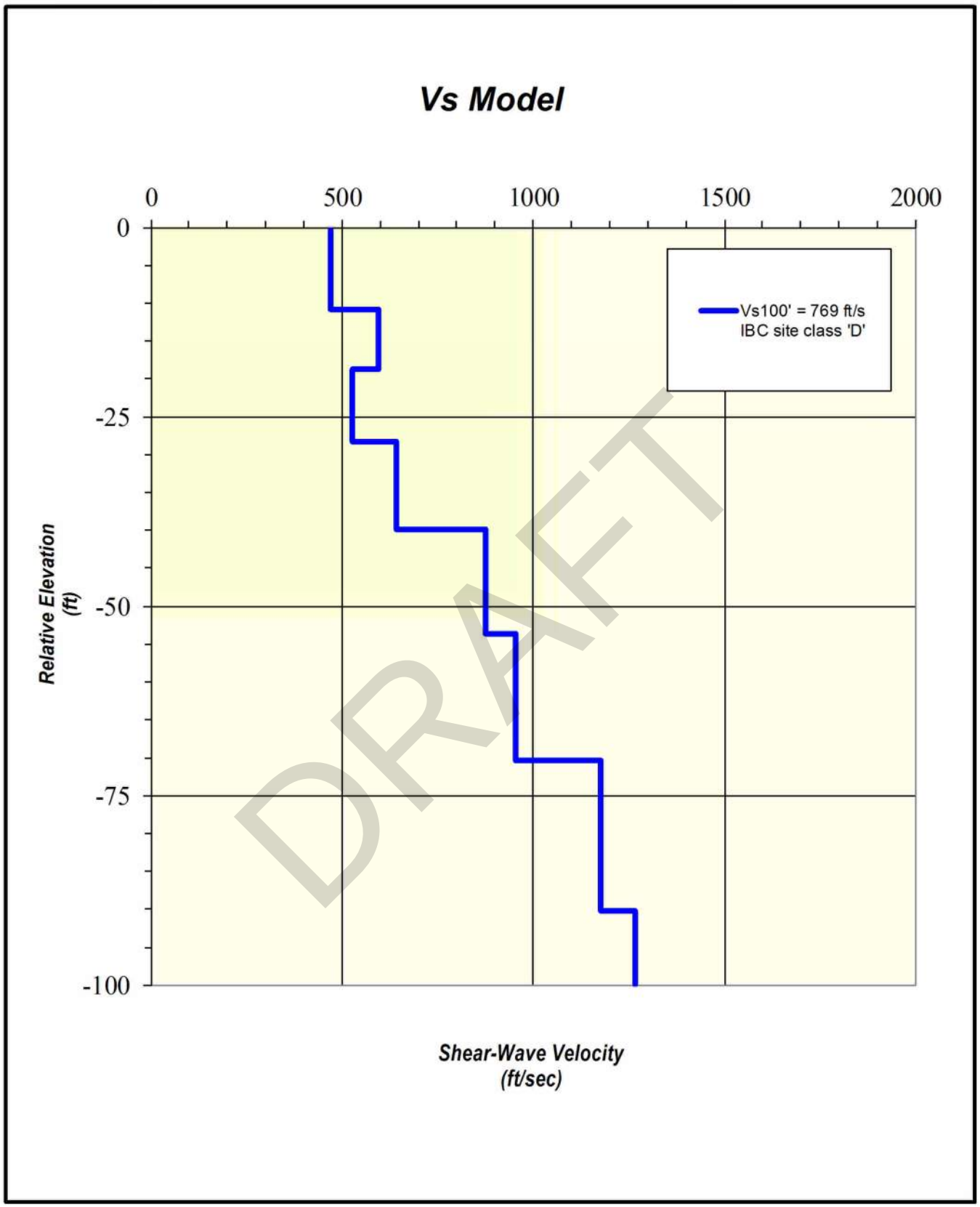
Project Bruin
Oxnard, California

Project No.: 118323

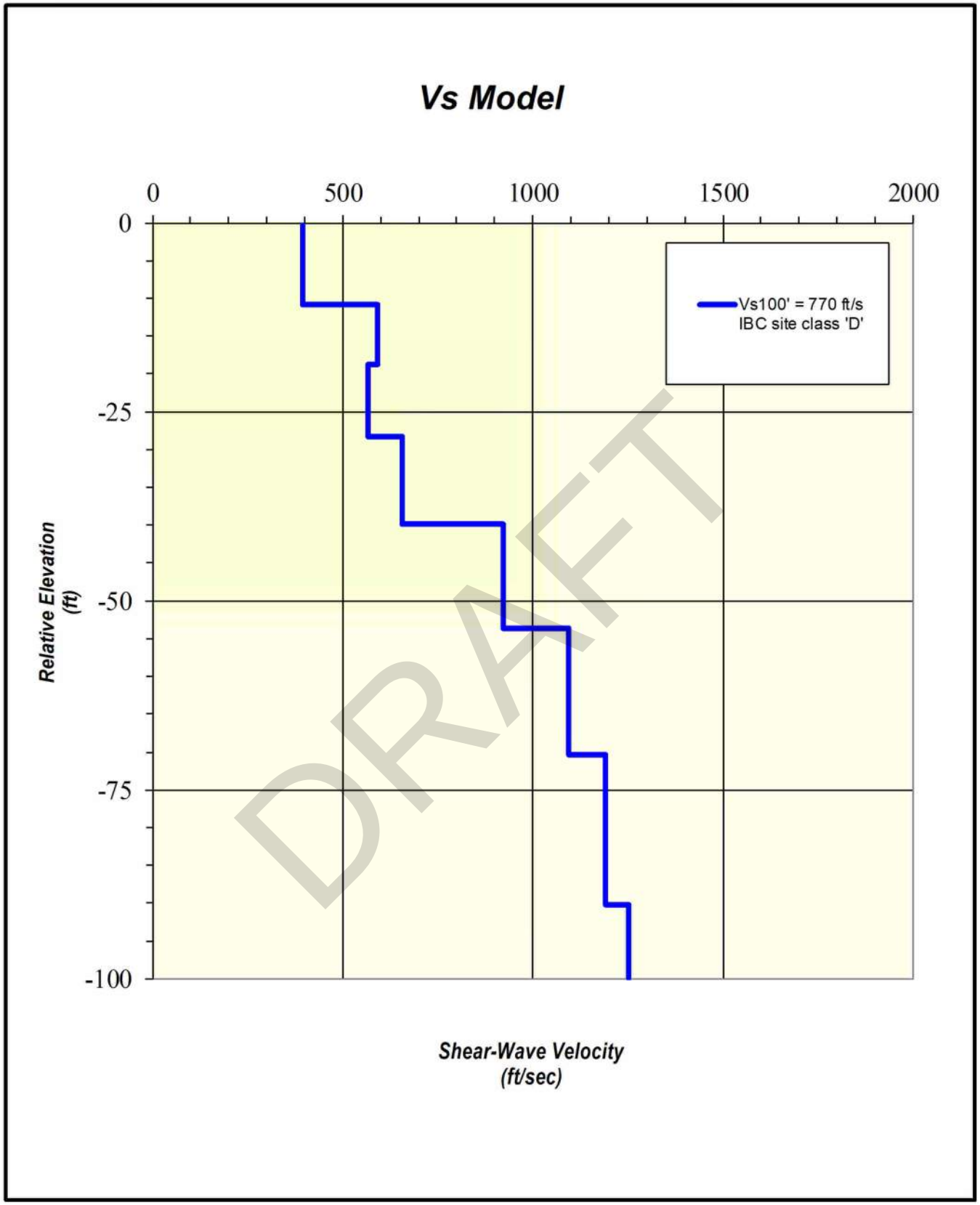
Date: 06/18

SOUTHWEST GEOPHYSICS INC.

Figure 3



ReMi RESULTS RL-1	Project Bruin Oxnard, California	SOUTHWEST GEOPHYSICS INC.
	Project No.: 118323 / Date: 06/18	Figure 4a



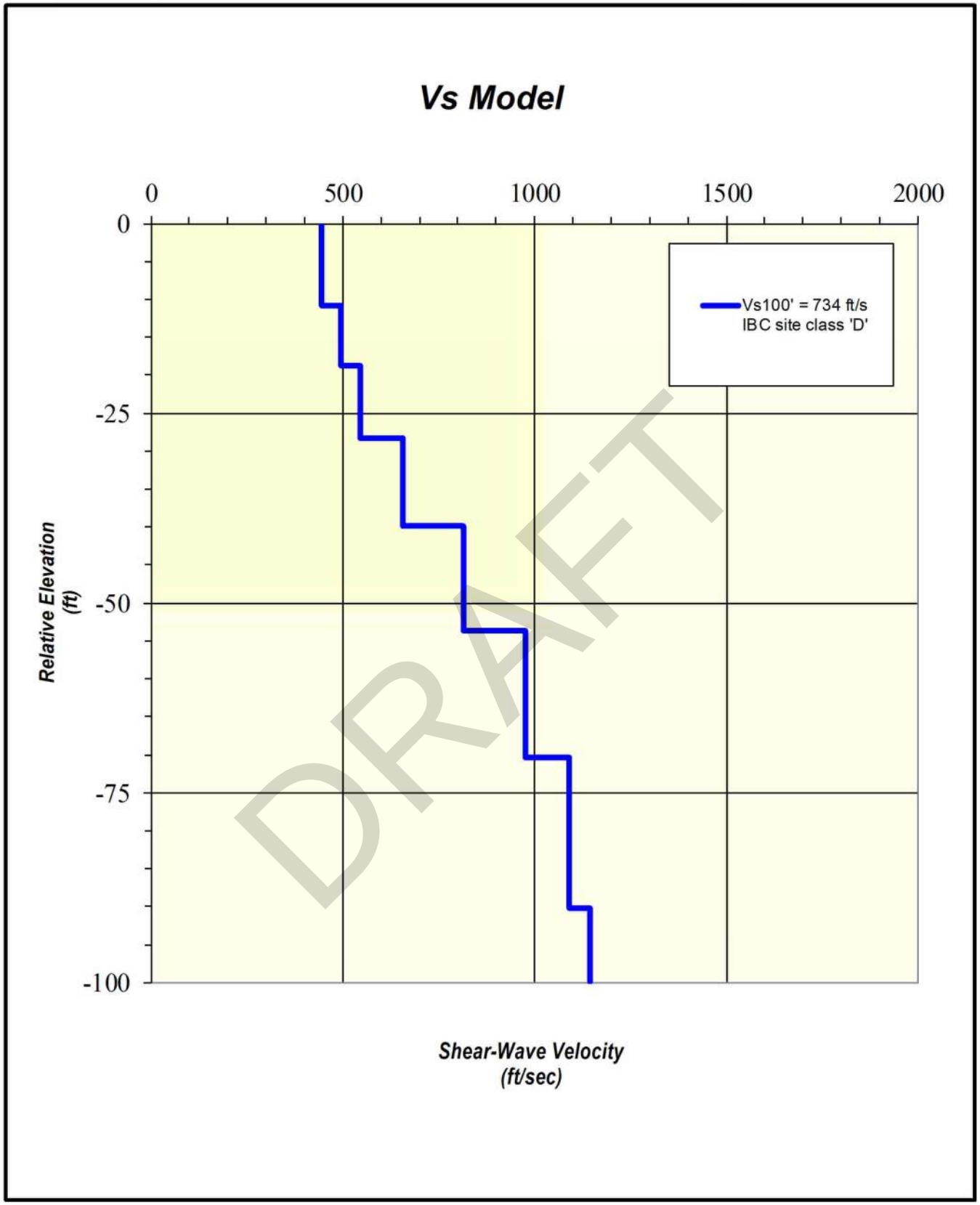
ReMi RESULTS
RL-2

Project Bruin
Oxnard, California

Project No.: 118323 | Date: 06/18

SOUTHWEST GEOPHYSICS INC.

Figure 4b



ReMi RESULTS
RL-3

Project Bruin
Oxnard, California

Project No.: 118323 | Date: 06/18

SOUTHWEST GEOPHYSICS INC.

Figure 4c

APPENDIX B

LABORATORY TESTING

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix A. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

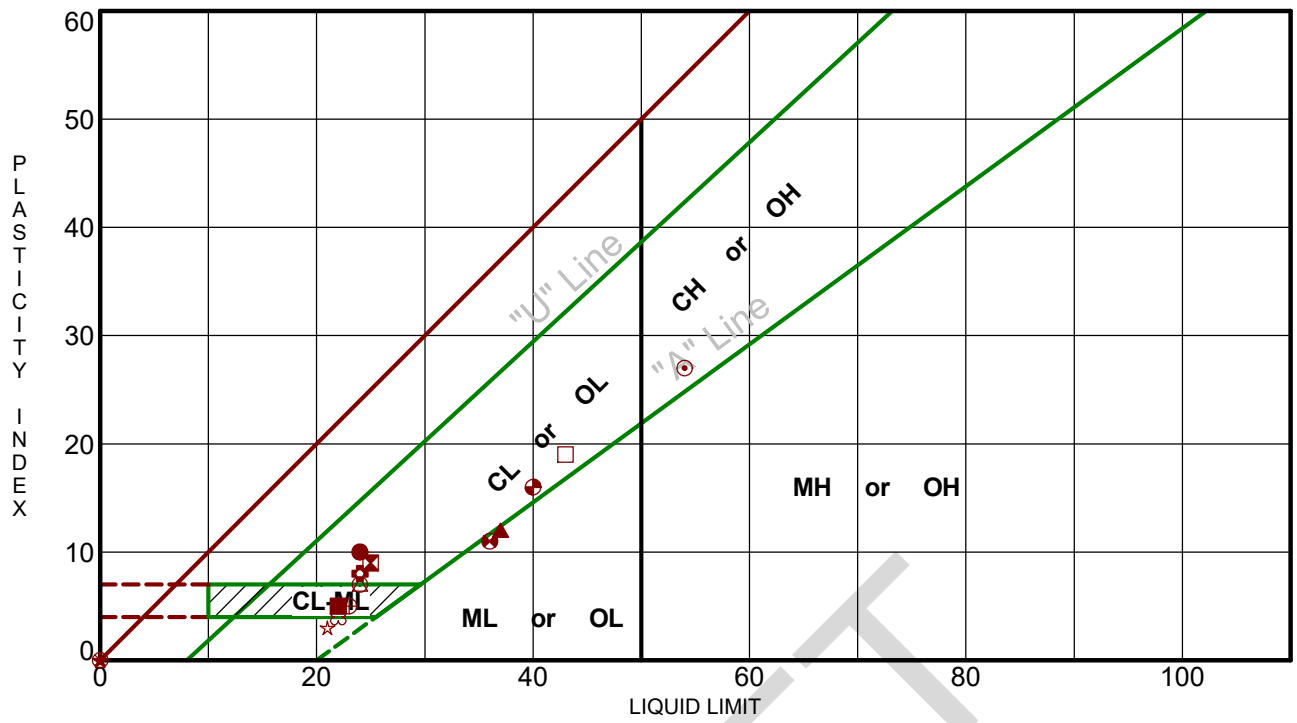
Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- In-situ Dry Density
- Soluble Chlorides
- pH
- Percent Passing #200 Sieve
- Atterberg Limits
- Direst Shear
- In-situ Water Content
- Soluble Sulfates
- Minimum Resistivity
- Consolidation/Collapse Potential
- Expansion Index
- R-Value

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID		Depth	LL	PL	PI	Fines	USCS	Description
●	BB-1	0 - 5	24	14	10	35.6	SC	CLAYEY SAND
⊠	B-01	0 - 2.5	25	16	9	40.7	SC	CLAYEY SAND
▲	B-01	20 - 21.5	37	25	12	71.7	ML	SILT with SAND
★	B-01	30 - 31.5	NP	NP	NP	11.0	SP-SM	POORLY GRADED SAND WITH SILT
⊙	B-01	40 - 41.5	54	27	27	97.4	CH	FAT CLAY
✿	B-02	0 - 2.5	24	16	8	37.3	SC	CLAYEY SAND
○	B-03	0 - 2.5	24	17	7	45.4	SC-SM	SILTY, CLAYEY SAND
△	B-05	0 - 2.5	24	17	7	46.1	SC-SM	SILTY, CLAYEY SAND
⊗	B-05	5 - 6.5	NP	NP	NP	18.1	SM	SILTY SAND
⊕	B-05	15 - 16.5	23	18	5	46.2	SC-SM	SILTY, CLAYEY SAND
□	B-05	25 - 26.5	43	24	19	75.3	CL	LEAN CLAY with SAND
⊠	B-05	35 - 36.5	36	25	11	97.7	ML	SILT
◕	B-05	45 - 46.5	40	24	16	86.5	CL	LEAN CLAY
☆	P-22	0 - 5	21	18	3	1.8	SP	POORLY GRADED SAND
⊠	P-24	0 - 4	22	18	4	27.5	SC-SM	SILTY, CLAYEY SAND
■	R-02	0 - 10	22	17	5	1.9	SP	POORLY GRADED SAND

PROJECT: Project Bruin

PROJECT NUMBER: 60205029

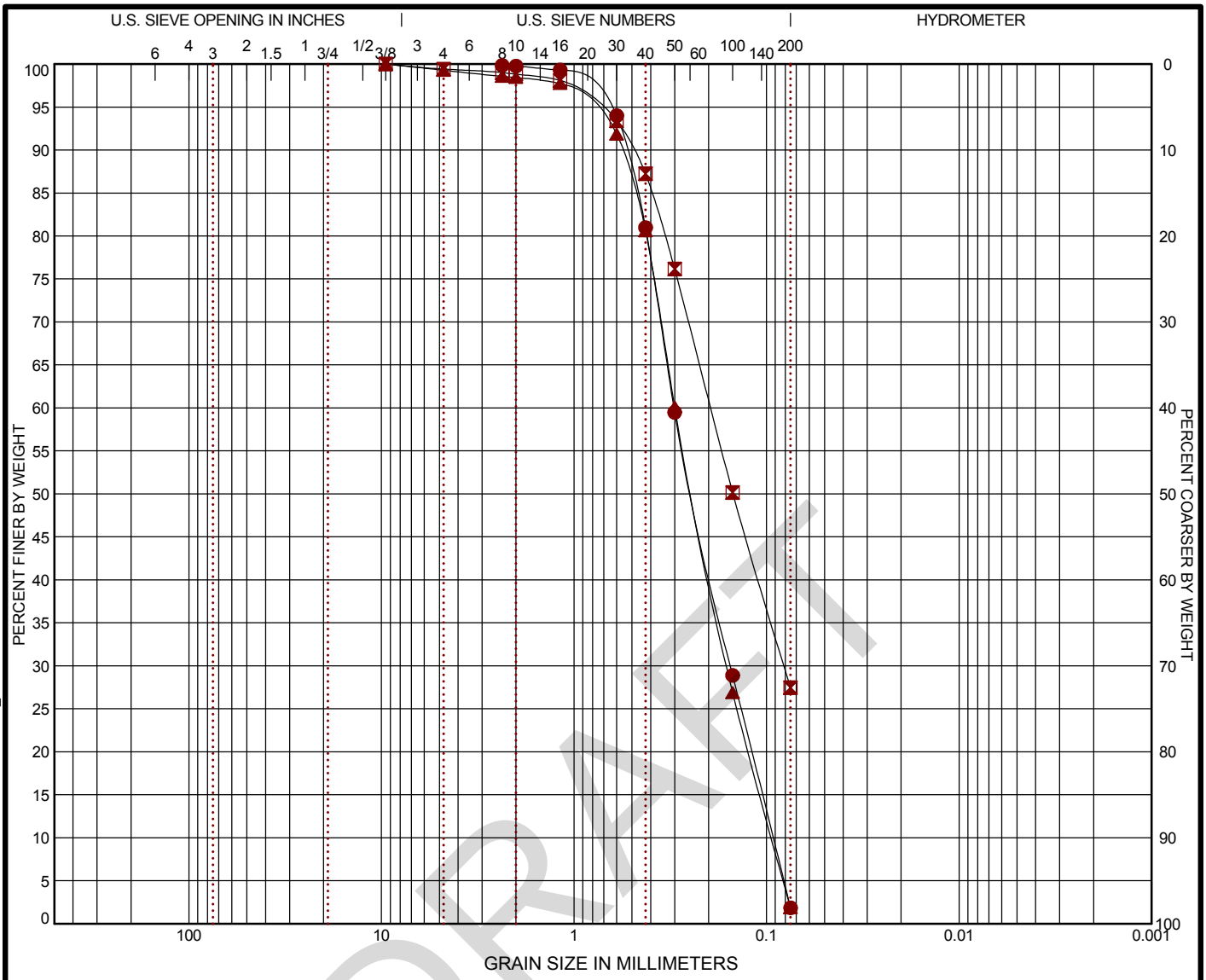
SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	**P-22**	**0 - 5**			**98.0**		**1.8**		**SP**
⊠	**P-24**	**0 - 4**	**0.0**	**0.6**	**72.0**		**27.5**		**SC-SM**
▲	**R-02**	**0 - 10**	**0.0**	**0.7**	**97.4**		**1.9**		**SP**

	GRAIN SIZE		
	●	⊠	▲
D_{60}	**0.303**	**0.195**	**0.299**
D_{30}	**0.154**	**0.081**	**0.16**
D_{10}	**0.092**		**0.094**
	COEFFICIENTS		
C_C	**0.85**		**0.91**
C_U	**3.27**		**3.18**

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
#8	99.84	3/8"	100.0	3/8"	100.0
#10	99.76	#4	99.41	#4	99.27
#16	99.3	#8	99.0	#8	98.57
#30	94.0	#10	98.82	#10	98.43
#40	80.98	#16	98.09	#16	97.73
#50	59.49	#30	93.4	#30	91.84
#100	28.89	#40	87.23	#40	80.6
#200	1.85	#50	76.14	#50	60.11
		#100	50.17	#100	26.89
		#200	27.45	#200	1.85

SOIL DESCRIPTION
- ● POORLY GRADED SAND (SP)
- ⊠ SILTY, CLAYEY SAND (SC-SM)
- ▲ POORLY GRADED SAND (SP)

REMARKS
- ●
- ⊠
- ▲

PROJECT: Oxnard Confidential Project
Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

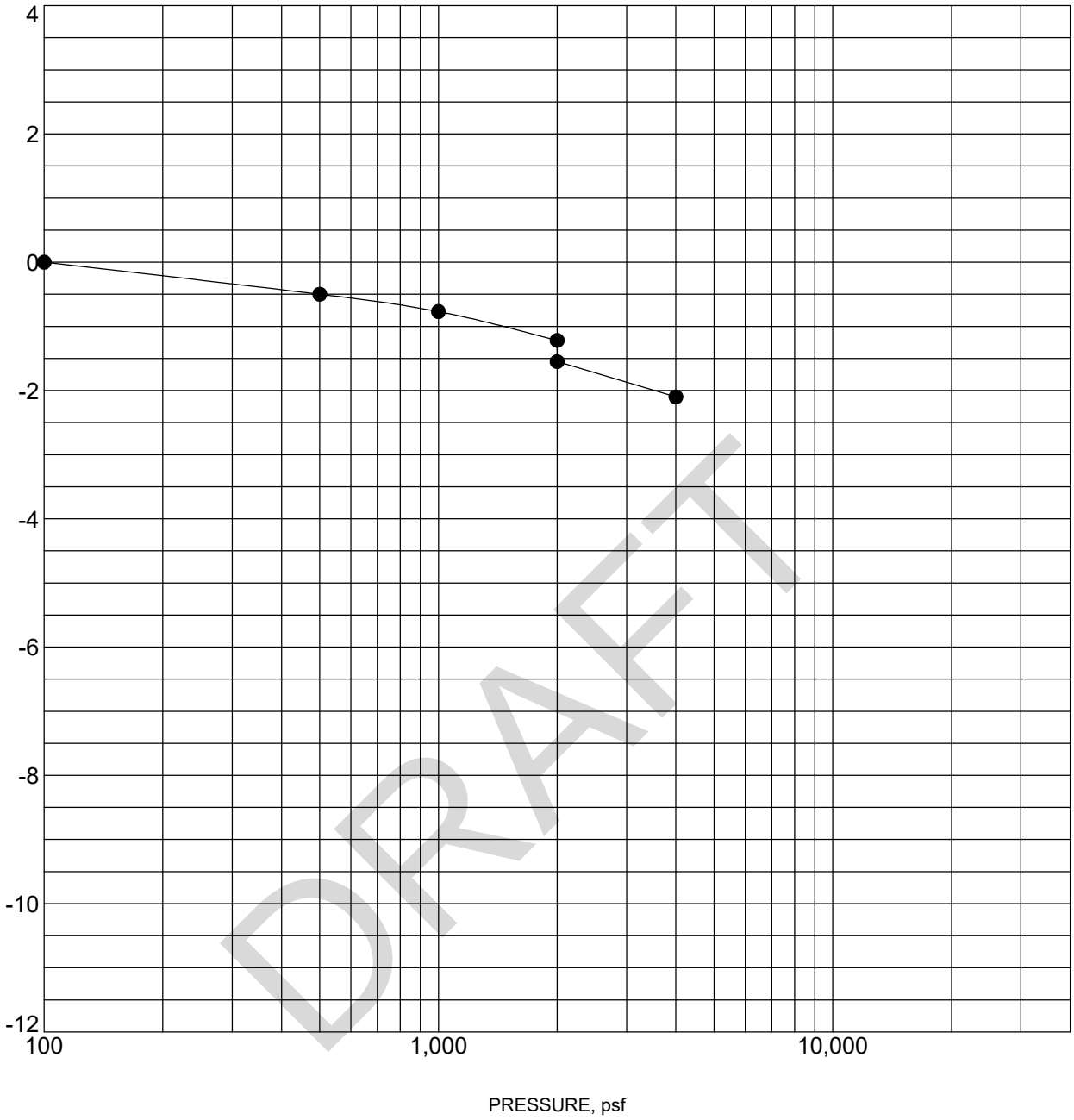
PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

EXHIBIT: B-3

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	BB-2	2.5 - 4 ft	CLAYEY SAND	108	18

NOTES: Water added at 2,000 psf

PROJECT: Project Bruin

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

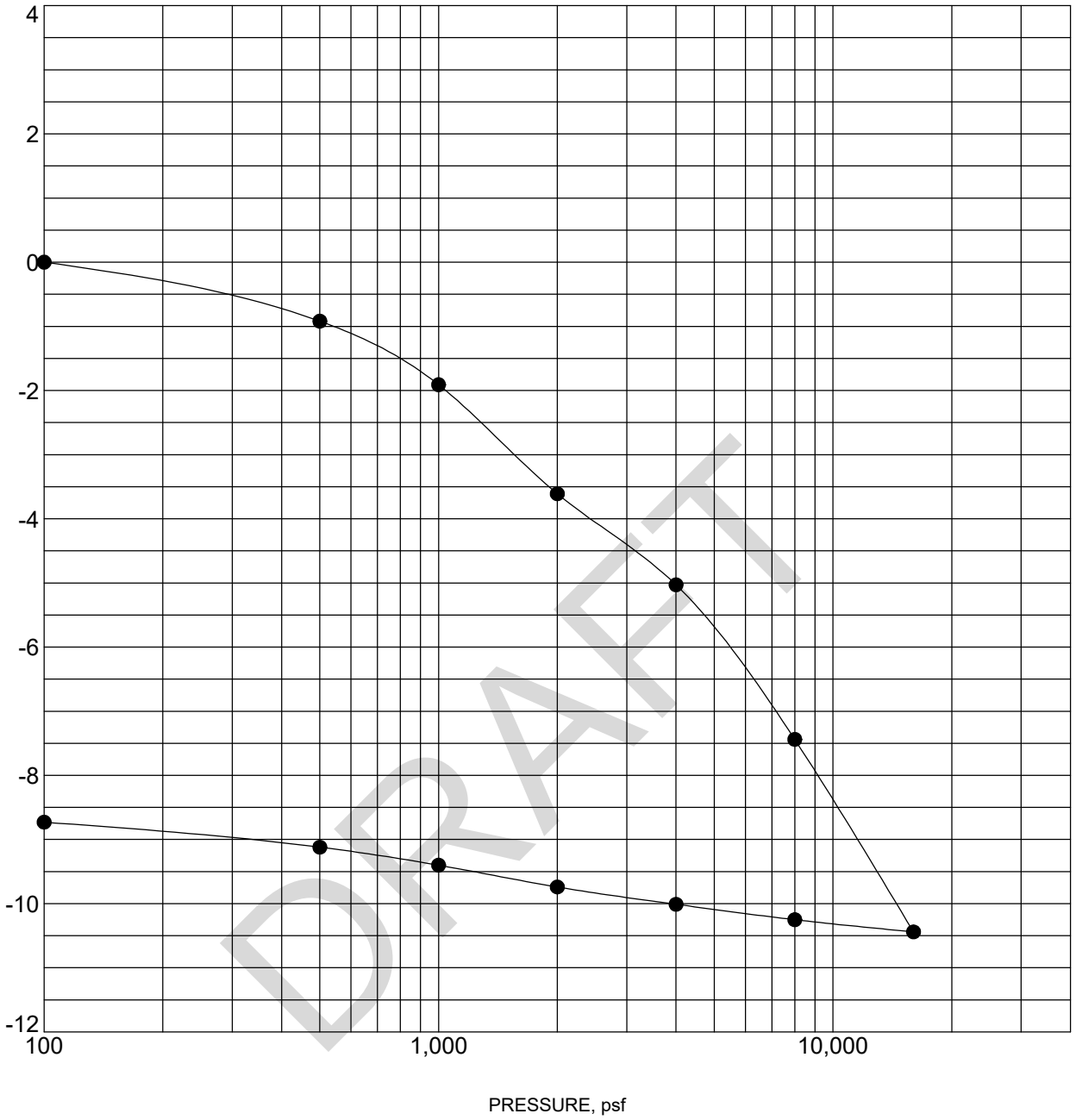
Terracon
1421 Edinger Ave, Ste C
Tustin, CA

PROJECT NUMBER: 60205029

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification		Classification	γ_d, pcf	WC, %
●	BB-3 15 - 16.5 ft	LEAN CLAY	91	28

NOTES: Water added prior to beginning of test.

PROJECT: Project Bruin

PROJECT NUMBER: 60205029

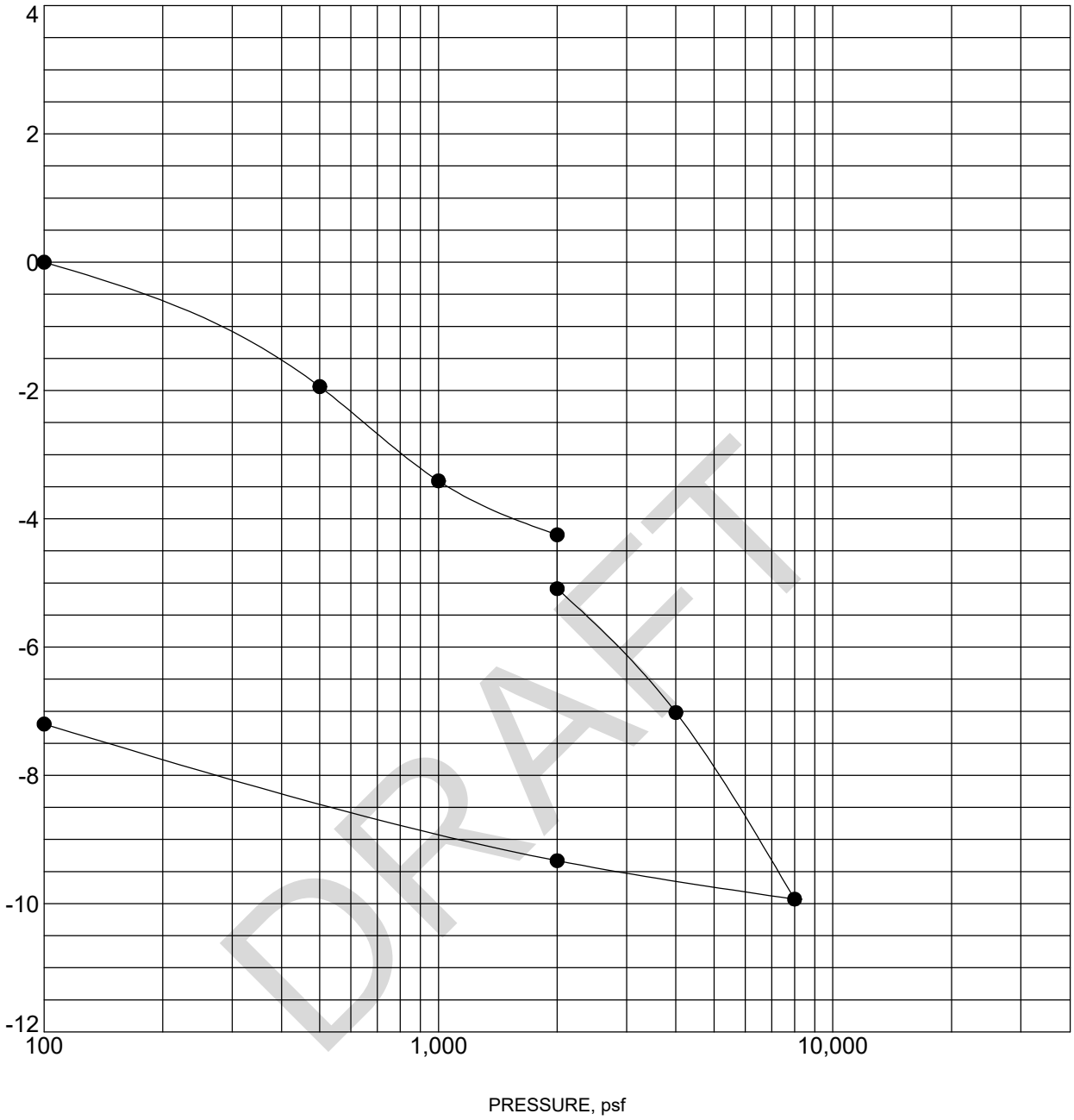
SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-01	2.5 - 4 ft	CLAYEY SAND	96	25

NOTES: Water added at 2,000 psf.

PROJECT: Project Bruin

PROJECT NUMBER: 60205029

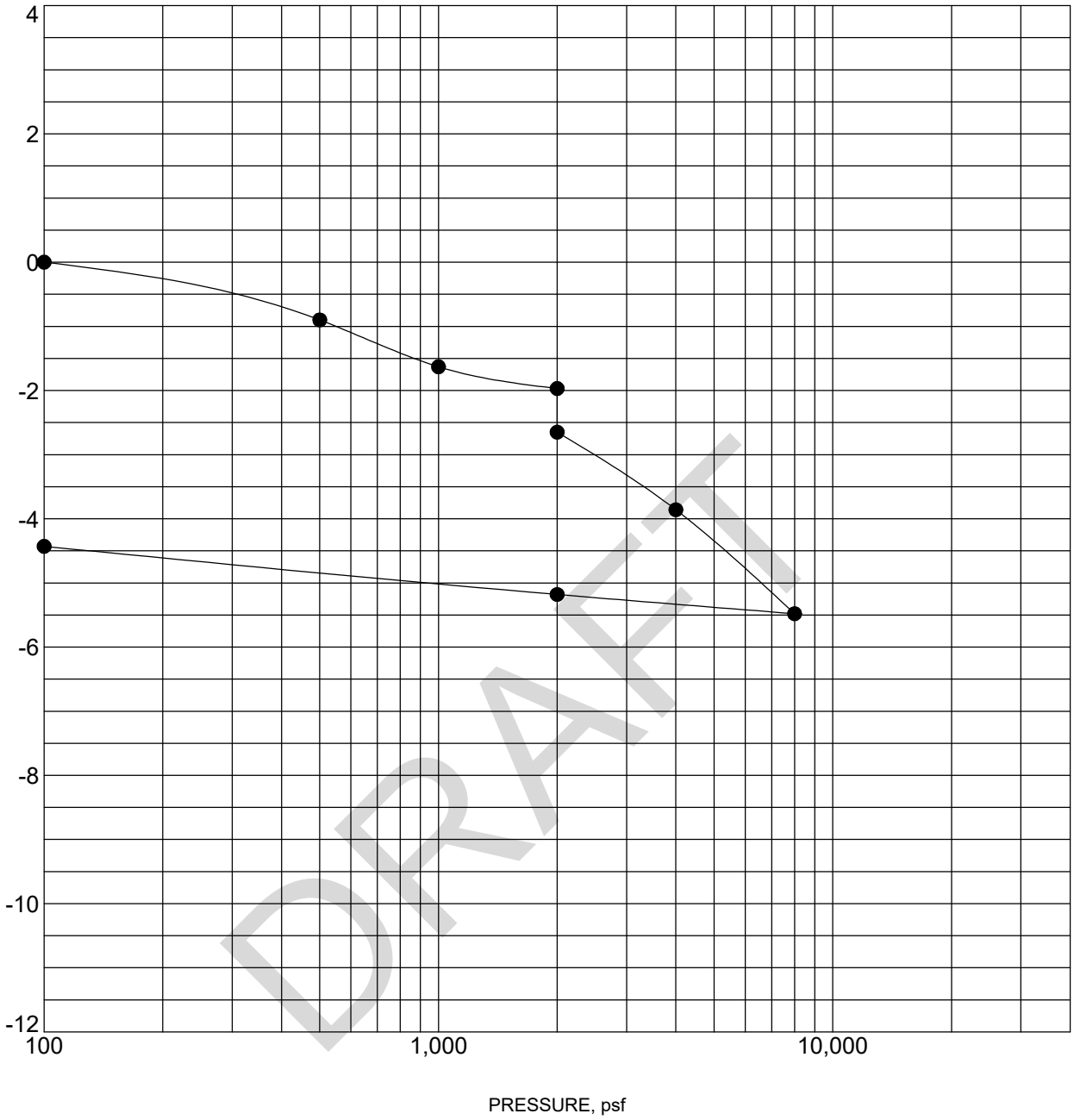
SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-04	2.5 - 4 ft	CLAYEY SAND	104	20

NOTES: Water added at 2,000 psf

PROJECT: Project Bruin

PROJECT NUMBER: 60205029

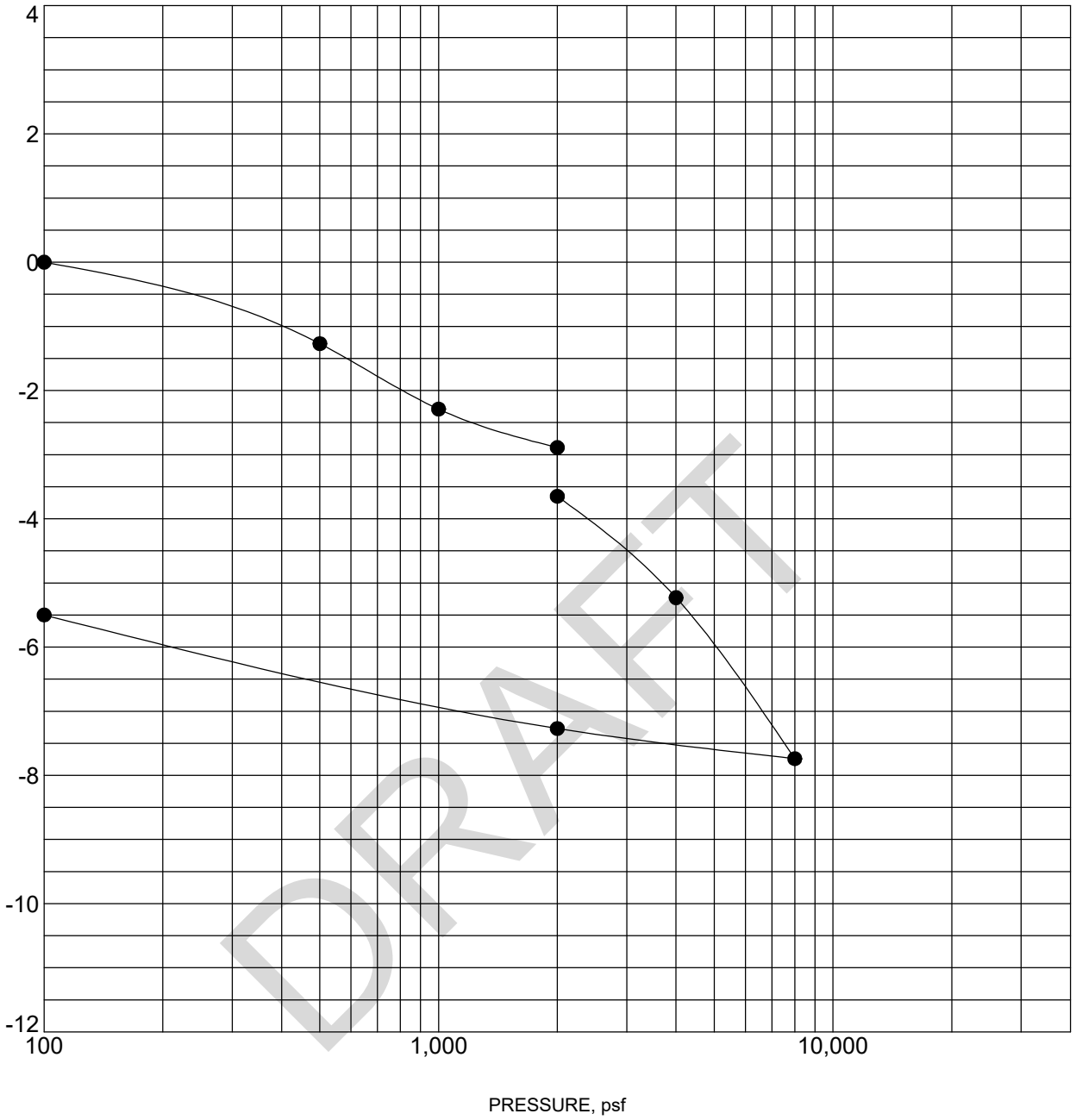
SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-07	2.5 - 4 ft	CLAYEY SAND	98	24

NOTES: Water added at 2,000 psf.

PROJECT: Project Bruin

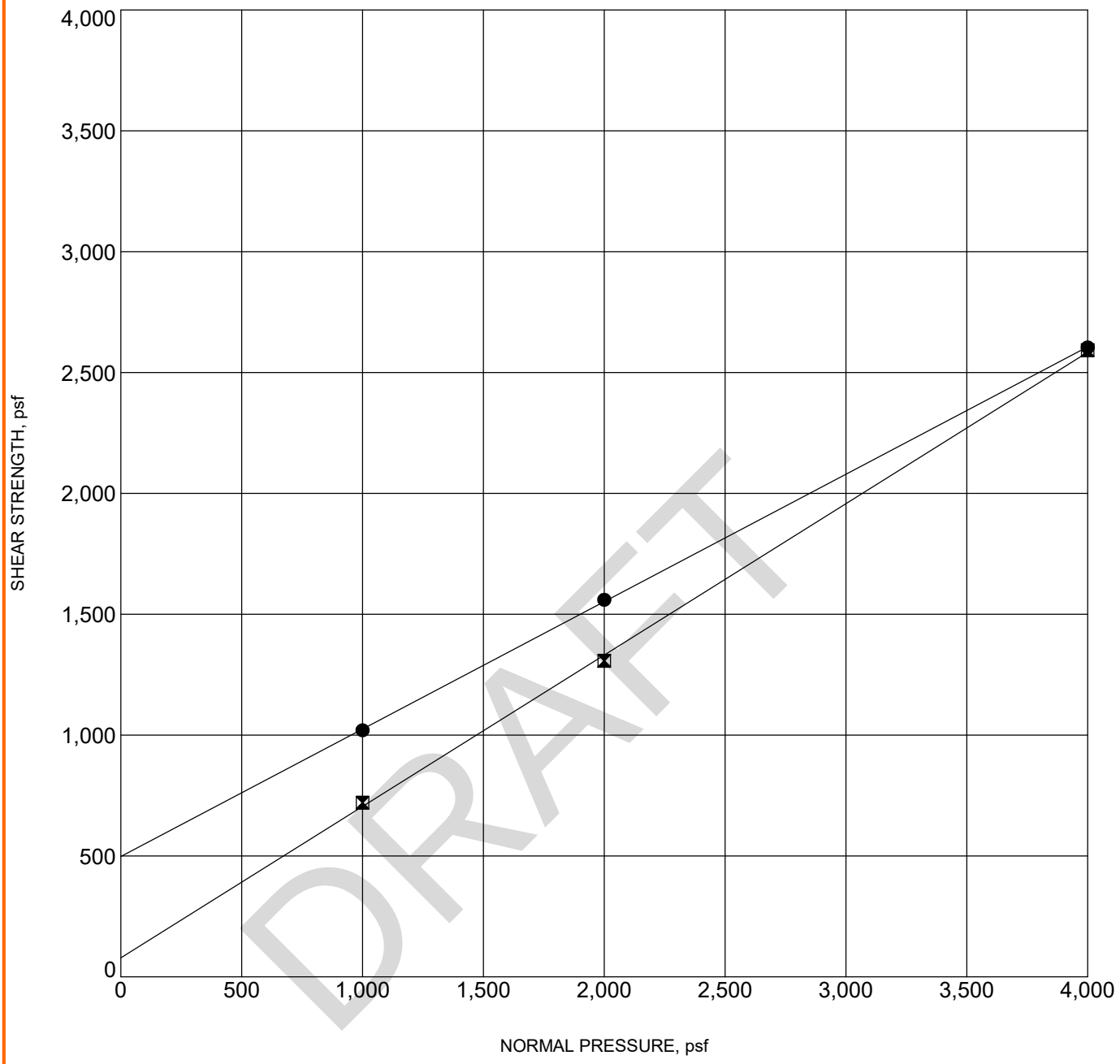
PROJECT NUMBER: 60205029

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

DIRECT SHEAR TEST ASTM D3080



Specimen Identification			Classification	γ_d, pcf	WC,%	c, psf	$\phi°$
●	BB-1	5.0ft	SANDY LEAN CLAY (CL)	96	25	498	28
⊠	B-01	7.5ft	POORLY GRADED SAND WITH SILT (SP-SM)	100	22	78	32

PROJECT: Project Bruin

PROJECT NUMBER: 60205029

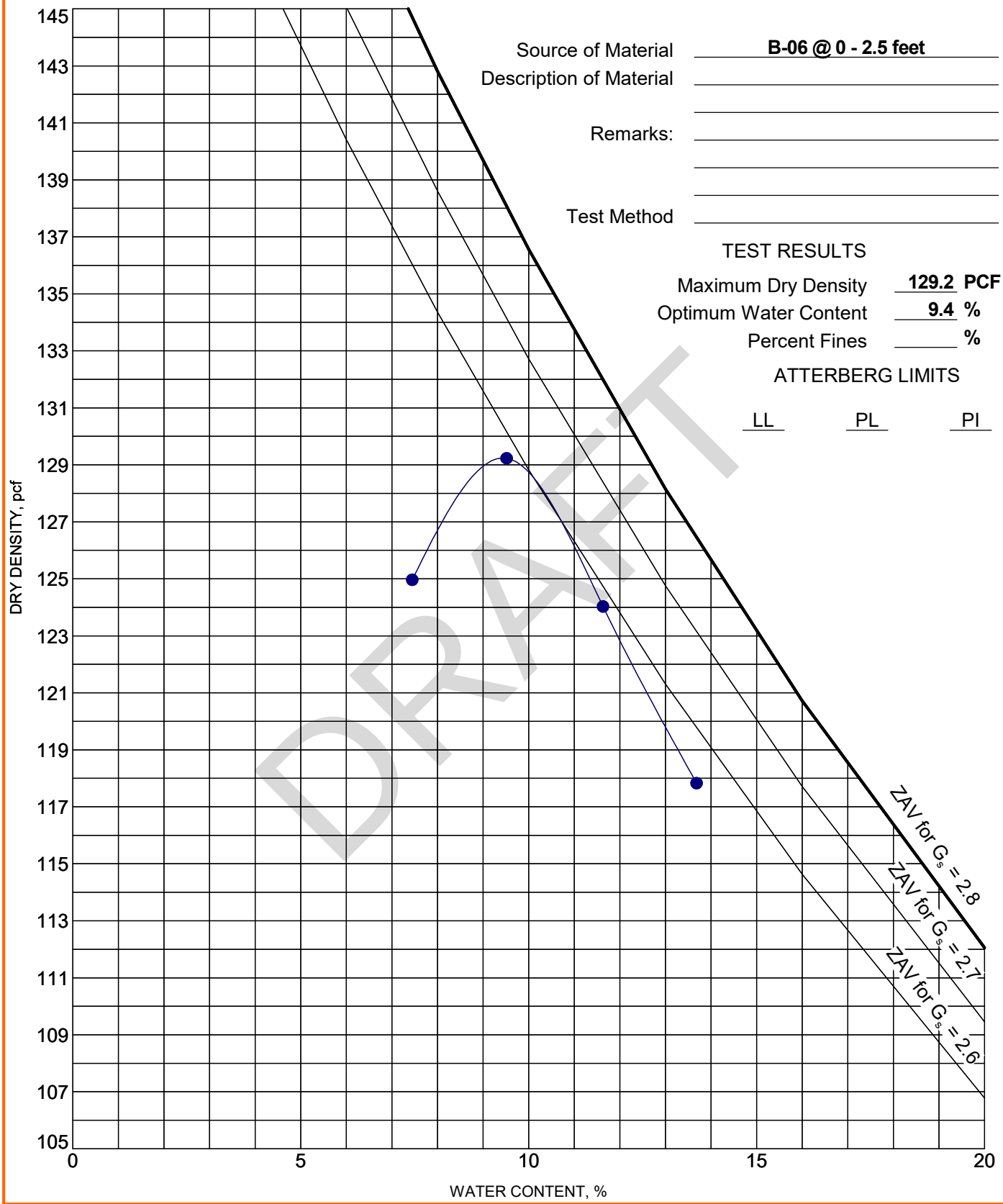
SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **B-06 @ 0 - 2.5 feet**

Description of Material:

Remarks:

Test Method:

TEST RESULTS

Maximum Dry Density	**129.2**	**PCF**
Optimum Water Content	**9.4**	**%**
Percent Fines		**%**

ATTERBERG LIMITS

LL	PL	PI

PROJECT: Project Bruin

PROJECT NUMBER: 60205029

SITE: Highway 101 and Del Norte Boulevard
Oxnard, CA

Terracon
1421 Edinger Ave, Ste C
Tustin, CA

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

CHEMICAL LABORATORY TEST REPORT

Project Number: 60295029
Service Date: 03/11/20
Report Date: 03/20/20
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Project
Project Bruin

Sample Submitted By: Terracon (60) **Date Received:** 3/5/2020 **Lab No.: 20-0258**

Results of Corrosion Analysis

Sample Number	
Sample Location	BB-2
Sample Depth (ft.)	0.0-5.0
pH Analysis, AWWA 4500 H	8.43
Water Soluble Sulfate (SO4), AWWA 4500 E (percent %)	0.04
Sulfides, AWWA 4500-S D, (mg/kg)	Nil
Chlorides, ASTM D 512, (mg/kg)	170
Red-Ox, AWWA 2580, (mV)	+685
Total Salts, AWWA 2540, (mg/kg)	1949
Resistivity, ASTM G 57, (ohm-cm)	1164

Analyzed By: Trisha Campo
Chemist

CHEMICAL LABORATORY TEST REPORT

Project Number: 60205029
Service Date: 04/30/18
Report Date: 05/04/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Seefried Industrial Properties, Inc.

Project

Seefried: Industrial Warehouse; Oxnard

Sample Submitted By: Terracon (60) **Date Received:** 4/27/2018 **Lab No.: 18-0481**

Results of Corrosion Analysis

Sample Number		
Sample Location	B-1	B-5
Sample Depth (ft.)	Bulk	Bulk
pH Analysis, AWWA 4500 H	8.19	7.97
Water Soluble Sulfate (SO4), AWWA 4500 E (percent %)	0.15	0.37
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	95	145
Red-Ox, AWWA 2580, (mV)	+661	+662
Total Salts, AWWA 2540, (mg/kg)	3786	8260
Resistivity, ASTM G 57, (ohm-cm)	970	669

Analyzed By: Trisha Campo

Trisha Campo
Chemist

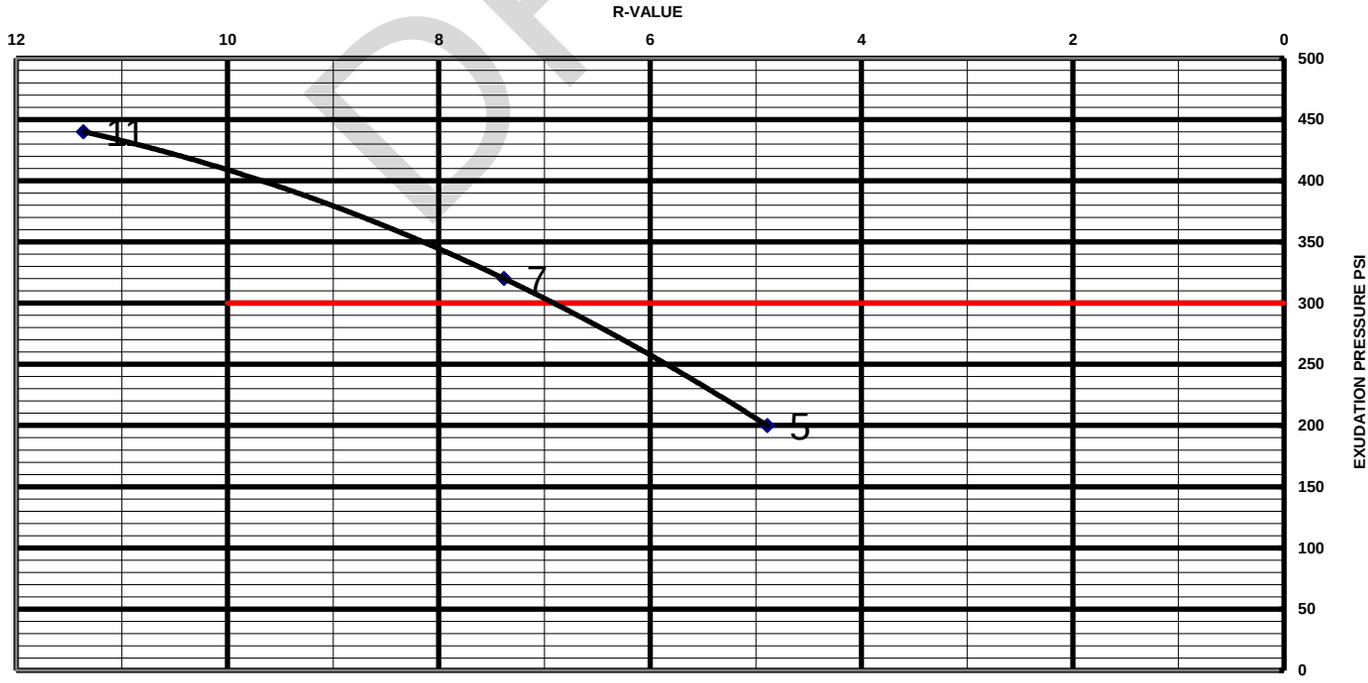
Job No. 60205029
Date. 3/20/2020

LABORATORY RECORD OF TESTS MADE ON SUBGRADES

CLIENT:
PROJECT Bruin-Oxnard
LOCATION: 0-2'
R-VALUE # : BB-5
T.I. :

	A	B	C	D
COMPACTOR AIR PRESSURE P.S.I.	50	75	100	
INITIAL MOISTURE %	11.6	11.6	11.6	
WATER ADDED, ML	40	30	20	
WATER ADDED %	4.1	3.1	2.0	
MOISTURE AT COMPACTION %	15.7	14.7	13.6	
HEIGHT OF BRIQUETTE	2.52	2.49	2.48	
WET WEIGHT OF BRIQUETTE	1097	1097	1101	
DENSITY LB. PER CU.FT.	114.0	116.4	118.4	
STABILOMETER PH AT 1000 LBS.	62	58	54	
2000 LBS.	144	138	130	
DISPLACEMENT	5.40	5.00	4.50	
R-VALUE	5	7	11	
EXUDATION PRESSURE	200	320	440	
THICK. INDICATED BY STAB.	0.00	0.00	0.00	
EXPANSION PRESSURE	0	0	5	
THICK. INDICATED BY E.P.	0.00	0.00	0.17	

EXUDATION CHART



R-Value: 6

'R' VALUE CA 301

Client: Terracon Date: 5/4/18 By: LD

Client's Job No.: Sample No.: P-22 / Bulk

GLA Reference: 2011-0104 Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**200**	**350**	**300**	
Initial Moisture Content	%	**10.4**	**10.4**	**10.4**	
Water Added	ml	**20**	**10**	**15**	
Moisture at Compaction	%	12.3	11.4	11.8	
Sample & Mold Weight	gms	**3173**	**3208**	**3196**	
Mold Weight	gms	**2098**	**2102**	**2104**	
Net Sample Weight	gms	1075	1106	1092	
Sample Height	in.	**2.44**	**2.49**	**2.48**	
Dry Density	pcf	118.9	120.9	119.3	
Pressure	lbs	**1905**	**6715**	**3650**	
Exudation Pressure	psi	152	535	291	
Expansion Dial	x 0.0001	**2**	**18**	**11**	
Expansion Pressure	psf	9	78	48	
Ph at 1000lbs	psi	**26**	**15**	**20**	
Ph at 2000lbs	psi	**44**	**26**	**33**	
Displacement	turns	**3.98**	**3.81**	**3.93**	
R' Value		62	77	71	
Corrected 'R' Value		**62**	**77**	**71**	

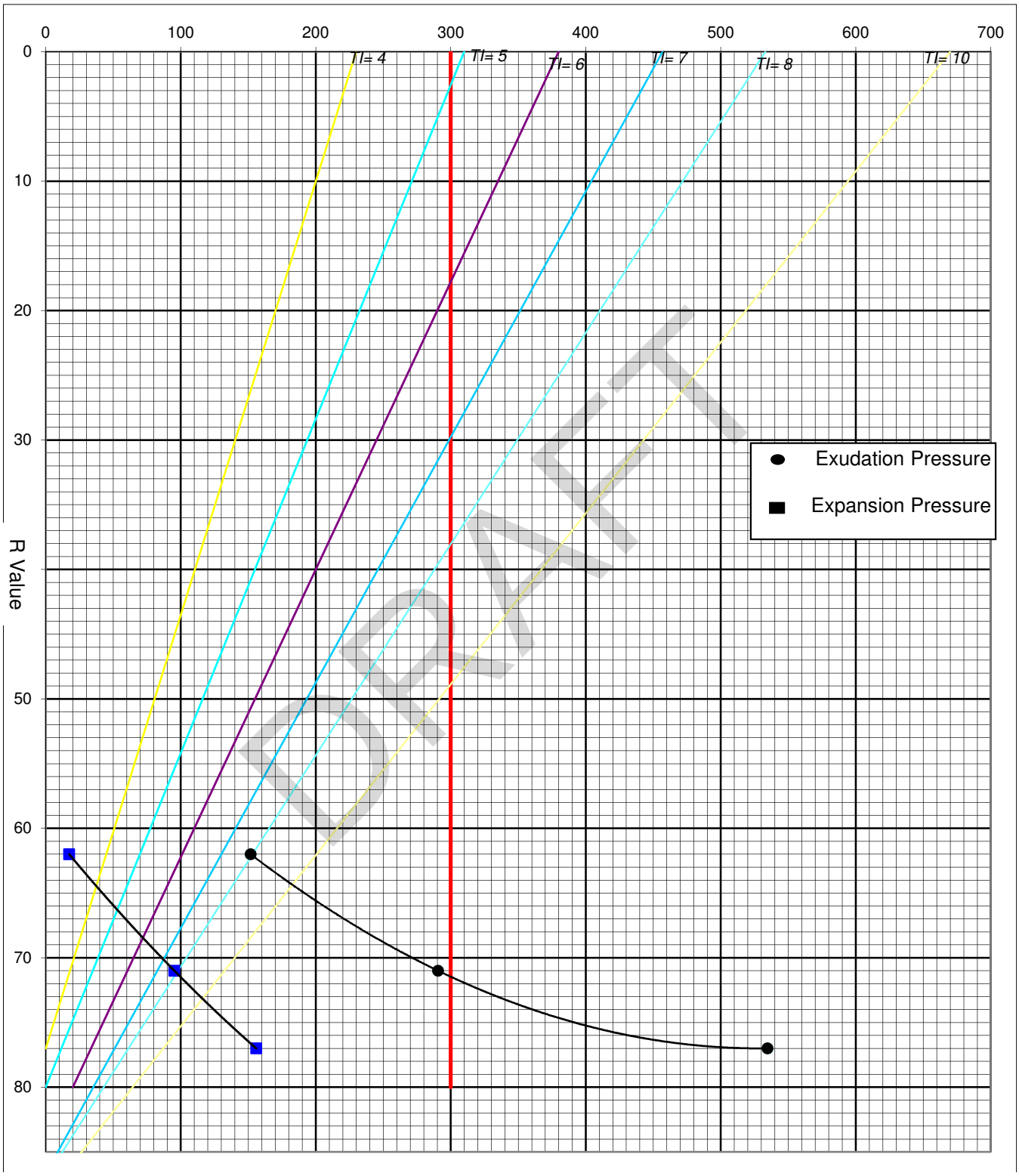
FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**72**
By Epansion Pressure :	**70**
TI = 5	

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# ,
Sample: P-22 / Bulk
1.104403

Exudation Pressure



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon Date: 5/4/18 By: LD

Client's Job No.: Sample No.: P-24 / Bulk

GLA Reference: 2011-0104 Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.2**	**8.2**	**8.2**	
Water Added	ml	**40**	**30**	**35**	
Moisture at Compaction	%	11.8	10.9	11.3	
Sample & Mold Weight	gms	**3172**	**3198**	**3168**	
Mold Weight	gms	**2105**	**2101**	**2096**	
Net Sample Weight	gms	1067	1097	1072	
Sample Height	in.	**2.48**	**2.472**	**2.466**	
Dry Density	pcf	116.6	121.3	118.3	
Pressure	lbs	**2270**	**6795**	**4050**	
Exudation Pressure	psi	181	541	322	
Expansion Dial	x 0.0001	**3**	**20**	**12**	
Expansion Pressure	psf	13	87	52	
Ph at 1000lbs	psi	**22**	**15**	**18**	
Ph at 2000lbs	psi	**41**	**29**	**34**	
Displacement	turns	**3.95**	**3.9**	**3.92**	
R' Value		65	74	70	
Corrected 'R' Value		**65**	**74**	**70**	

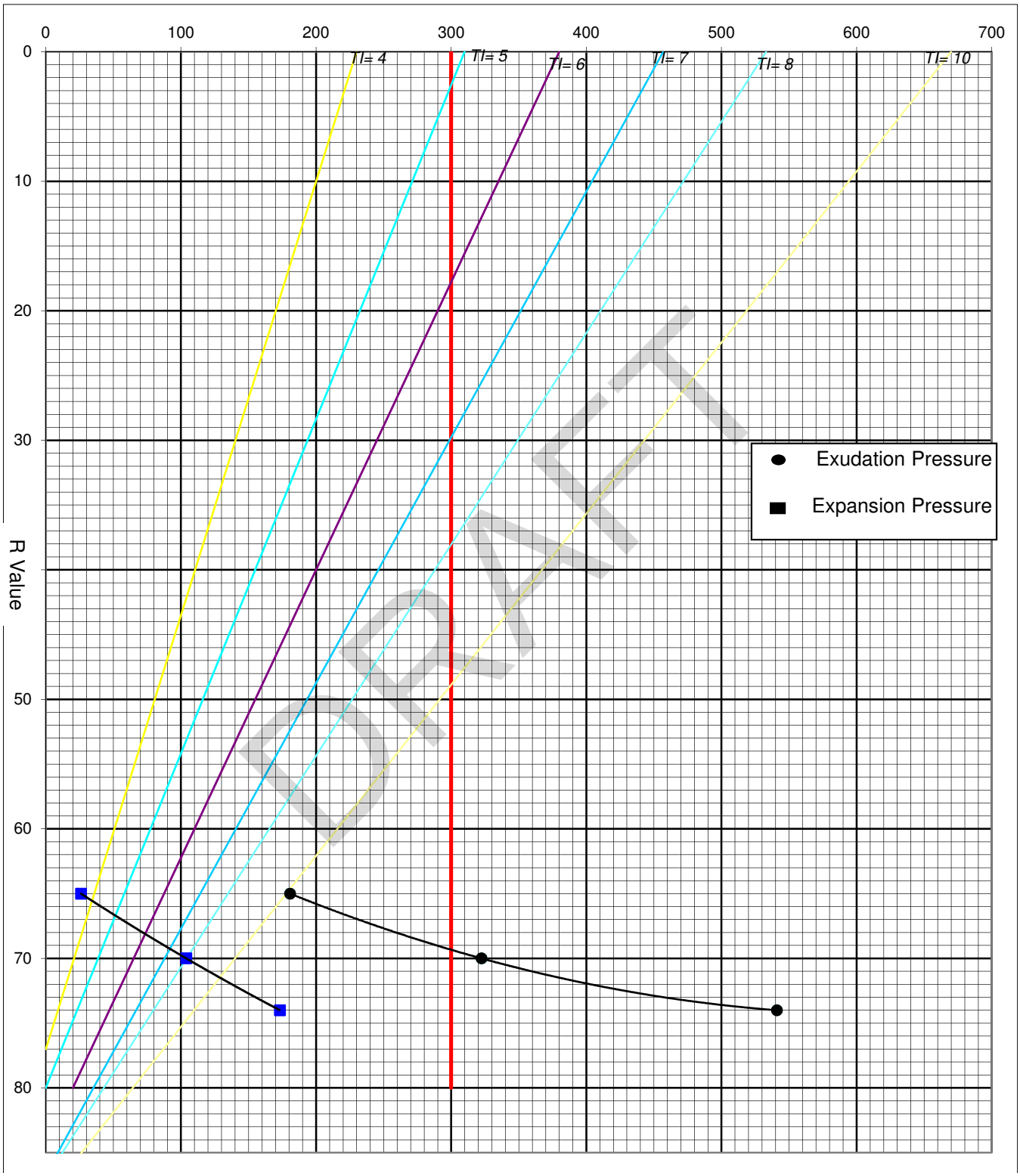
FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**69**
By Epansion Pressure :	**69**
TI = 5	

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client#
Sample: P-24 / Bulk
1.081525

Exudation Pressure



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon Date: 5/4/18 By: LD

Client's Job No.: Sample No.: R-2 / Bulk

GLA Reference: 2011-0104 Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.9**	**8.9**	**8.9**	
Water Added	ml	**30**	**20**	**25**	
Moisture at Compaction	%	11.6	10.7	11.2	
Sample & Mold Weight	gms	**3173**	**3179**	**3169**	
Mold Weight	gms	**2102**	**2104**	**2099**	
Net Sample Weight	gms	1071	1075	1070	
Sample Height	in.	**2.462**	**2.435**	**2.448**	
Dry Density	pcf	118.1	120.8	119.2	
Pressure	lbs	**2860**	**7855**	**4120**	
Exudation Pressure	psi	228	625	328	
Expansion Dial	x 0.0001	**2**	**14**	**7**	
Expansion Pressure	psf	9	61	30	
Ph at 1000lbs	psi	**21**	**15**	**18**	
Ph at 2000lbs	psi	**40**	**25**	**33**	
Displacement	turns	**3.95**	**3.61**	**3.88**	
R' Value		66	79	71	
Corrected 'R' Value		**66**	**79**	**71**	

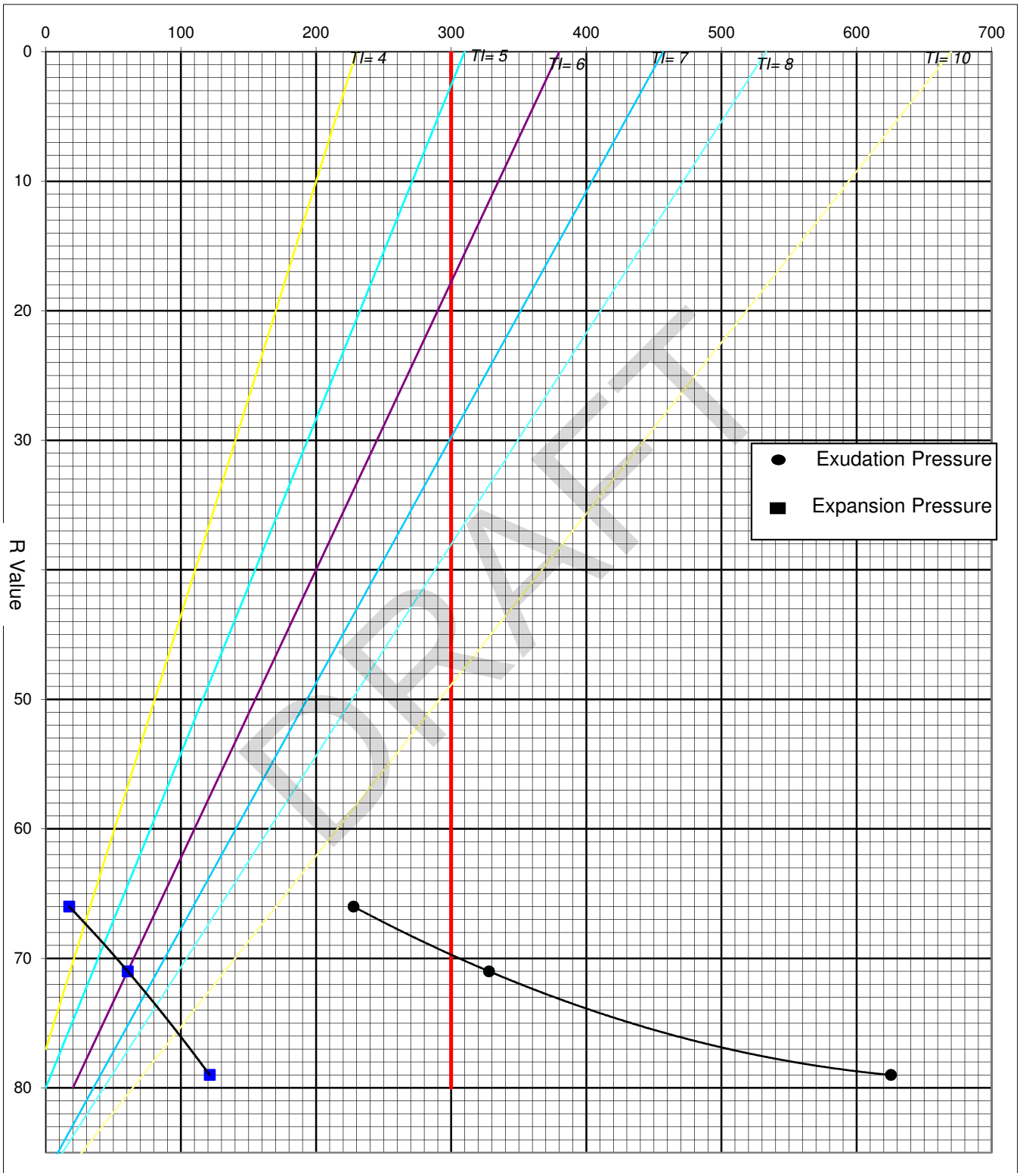
FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**70**
By Epansion Pressure :	**73**
TI = 5	

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client#
Sample: R-2 / Bulk
1.088829

Exudation Pressure



Geo-Logic ASSOCIATES

EXHIBIT B-11

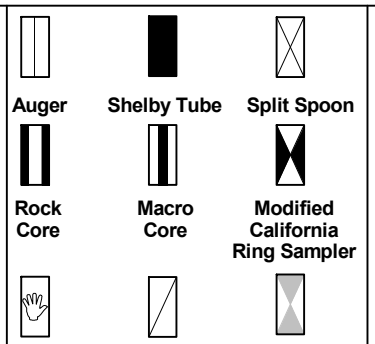
APPENDIX C

SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

- **Water Initially Encountered**
- **Water Level After a Specified Period of Time**
- **Water Level After a Specified Period of Time**

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	**Hand Penetrometer**
(T)	**Torvane**
(b/f)	**Standard Penetration Test (blows per foot)**
N	**N value**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**
(WOH)	Weight of Hammer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels and sands.			**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance Includes silts and clays.			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, psf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Terracon

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

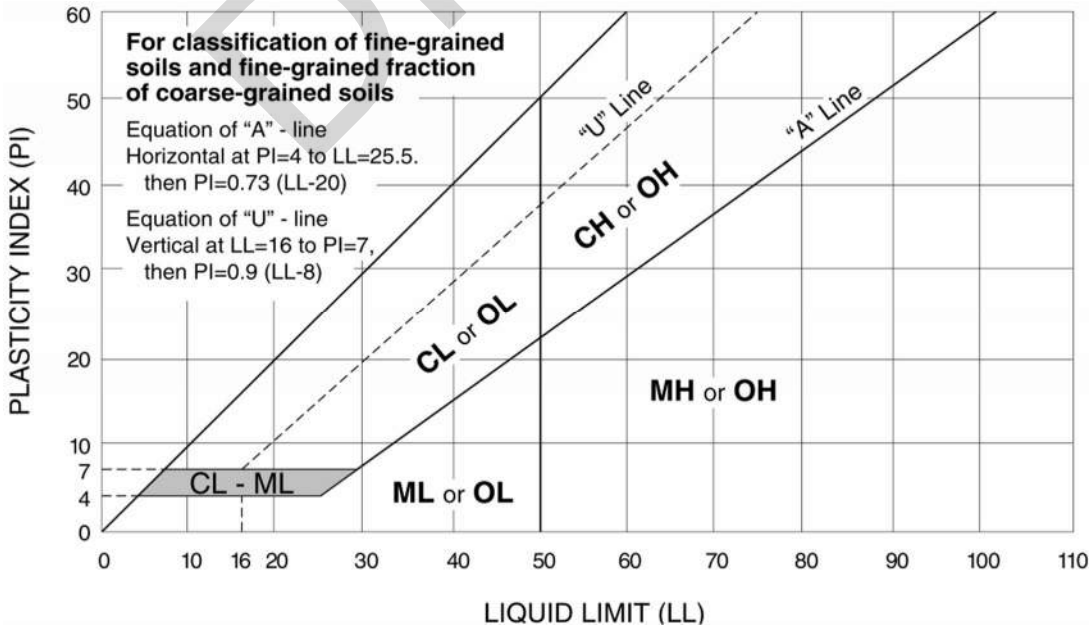
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



APPENDIX D

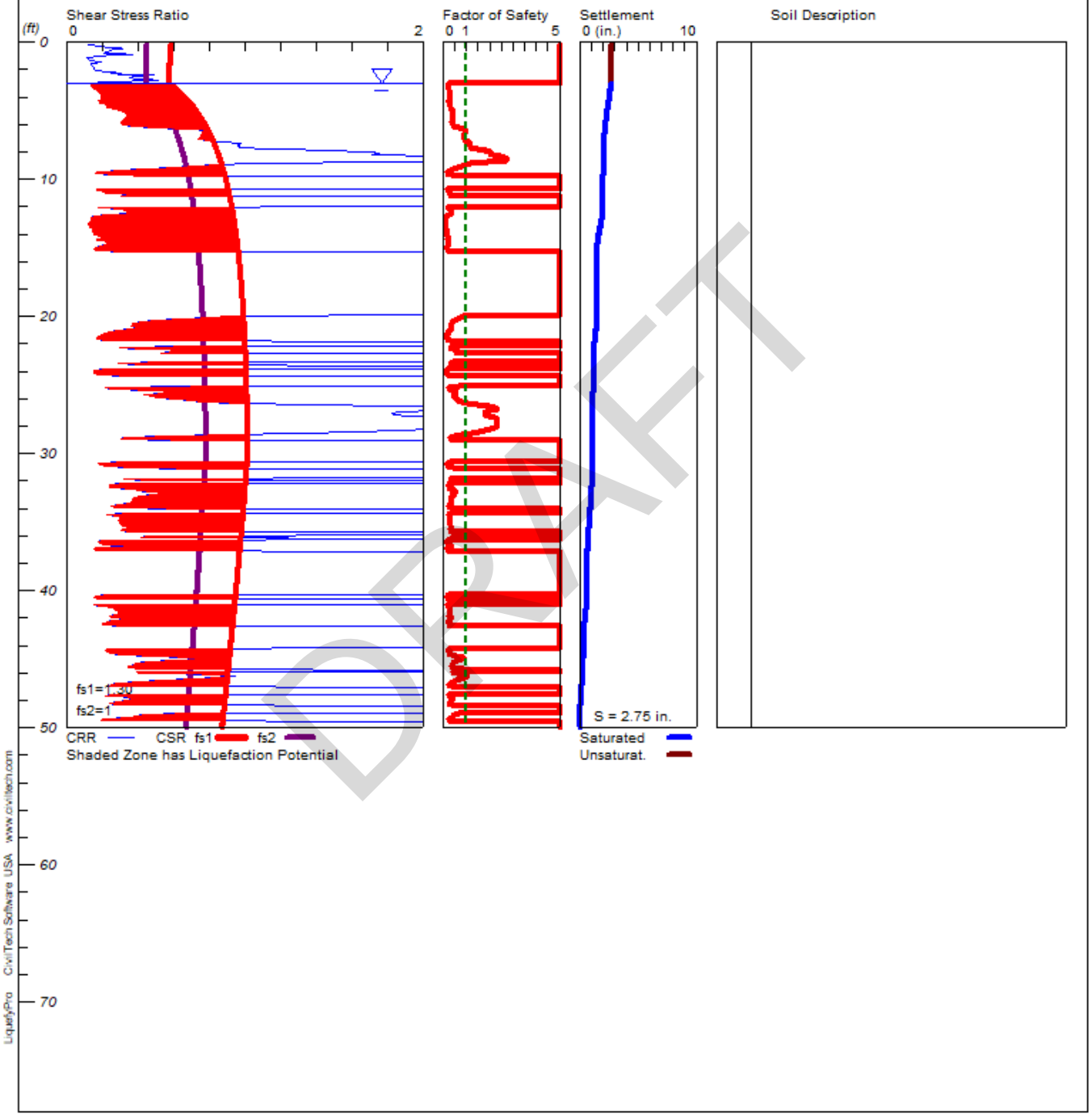
LIQUEFACTION ANALYSIS

LIQUEFACTION ANALYSIS

Project Bruin

Hole No.=CPT-16 Water Depth=3 ft

Magnitude=7.1
Acceleration=0.69g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: N:\Projects\2020\60205029\Working Files\Calculations-Analyses\CPT-16.liq
Title: Project Bruin
Subtitle: 60205029

Surface Elev.=
Hole No.=CPT-16
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.69 g
Earthquake Magnitude= 7.10

Input Data:
Surface Elev.=
Hole No.=CPT-16
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.69 g
Earthquake Magnitude=7.10
No-Liquefiable Soils: Based on Analysis

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth	qc	fs	Rf	gamma	Fines	D50
ft	atm	atm	pcf	%	mm	

0.16	2.60	0.03	1.15	120.00	0.00	0.50
1.15	6.80	0.07	1.03	120.00	0.00	0.50
2.13	11.00	0.22	2.00	120.00	0.00	0.50
3.12	17.10	0.22	1.29	120.00	0.00	0.50
4.10	32.80	0.39	1.19	120.00	0.00	0.50
5.09	61.20	0.25	0.41	120.00	0.00	0.50
6.07	65.20	0.29	0.44	120.00	0.00	0.50
7.05	96.50	0.68	0.70	120.00	0.00	0.50
8.04	138.60	0.41	0.30	120.00	0.00	0.50
9.02	105.10	0.67	0.64	120.00	0.00	0.50
10.00	5.80	0.22	3.79	120.00	0.00	0.50
10.99	20.00	0.41	2.05	120.00	0.00	0.50
11.97	7.10	0.09	1.27	120.00	0.00	0.50
12.95	23.90	0.31	1.30	120.00	0.00	0.50
13.94	45.20	0.33	0.73	120.00	0.00	0.50
14.92	54.60	0.46	0.84	120.00	0.00	0.50
15.91	6.80	0.13	1.91	120.00	0.00	0.50
16.89	6.40	0.11	1.72	120.00	0.00	0.50
17.88	6.80	0.10	1.47	120.00	0.00	0.50
18.86	11.30	0.22	1.95	120.00	0.00	0.50
19.84	22.30	0.88	3.95	120.00	0.00	0.50
20.83	46.50	1.42	3.05	120.00	0.00	0.50
21.81	23.10	0.69	2.99	120.00	0.00	0.50
22.80	20.90	0.67	3.21	120.00	0.00	0.50
23.78	19.10	0.65	3.40	120.00	0.00	0.50
24.77	14.20	0.31	2.18	120.00	0.00	0.50
25.75	75.20	2.06	2.74	120.00	0.00	0.50
26.73	254.20	2.12	0.83	120.00	0.00	0.50
27.72	273.10	2.21	0.81	120.00	0.00	0.50
28.70	159.10	1.46	0.92	120.00	0.00	0.50
29.69	14.10	0.43	3.05	120.00	0.00	0.50
30.67	31.00	0.63	2.03	120.00	0.00	0.50
31.66	21.80	0.78	3.58	120.00	0.00	0.50
32.64	51.20	1.79	3.50	120.00	0.00	0.50
33.62	92.90	1.79	1.93	120.00	0.00	0.50
34.61	98.70	1.29	1.31	120.00	0.00	0.50
35.59	64.50	1.56	2.42	120.00	0.00	0.50
36.58	46.60	0.88	1.89	120.00	0.00	0.50
37.56	14.60	0.42	2.88	120.00	0.00	0.50
38.54	13.30	0.37	2.78	120.00	0.00	0.50
39.53	14.50	0.41	2.83	120.00	0.00	0.50
40.51	35.50	0.55	1.55	120.00	0.00	0.50
41.50	116.70	1.10	0.94	120.00	0.00	0.50
42.48	53.00	1.07	2.02	120.00	0.00	0.50
43.47	16.20	0.50	3.09	120.00	0.00	0.50
44.45	68.90	1.32	1.92	120.00	0.00	0.50
45.43	138.60	1.53	1.10	120.00	0.00	0.50
46.42	203.80	1.89	0.93	120.00	0.00	0.50
47.40	17.90	0.91	5.08	120.00	0.00	0.50
48.39	51.70	1.54	2.98	120.00	0.00	0.50
49.37	63.20	1.12	1.77	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.72 in.
Settlement of Unsaturated Sands=0.03 in.
Total Settlement of Saturated and Unsaturated Sands=2.75 in.
Differential Settlement=1.376 to 1.817 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.12	0.58	5.00	2.72	0.03	2.75
1.16	0.12	0.58	5.00	2.72	0.03	2.75
2.16	0.20	0.58	5.00	2.72	0.02	2.74
3.16	0.14	0.59	0.23*	2.69	0.00	2.69
4.16	0.19	0.67	0.28*	2.51	0.00	2.51
5.16	0.33	0.74	0.44*	2.34	0.00	2.34
6.16	0.40	0.78	0.52*	2.18	0.00	2.18
7.16	0.77	0.82	0.94*	2.12	0.00	2.12
8.16	1.72	0.85	2.02	2.11	0.00	2.11
9.16	0.56	0.88	0.64*	2.10	0.00	2.10
10.16	2.00	0.90	5.00	2.02	0.00	2.02
11.16	0.34	0.92	0.37*	1.97	0.00	1.97
12.16	0.26	0.93	0.28*	1.96	0.00	1.96
13.16	0.13	0.94	0.13*	1.84	0.00	1.84
14.16	0.18	0.95	0.19*	1.62	0.00	1.62
15.16	0.16	0.96	0.16*	1.44	0.00	1.44
16.16	2.00	0.97	5.00	1.42	0.00	1.42
17.16	2.00	0.98	5.00	1.42	0.00	1.42
18.16	2.00	0.99	5.00	1.42	0.00	1.42
19.16	2.00	0.99	5.00	1.42	0.00	1.42
20.16	0.68	1.00	0.68*	1.42	0.00	1.42
21.16	0.24	1.00	0.24*	1.39	0.00	1.39
22.16	2.00	1.00	5.00	1.29	0.00	1.29
23.16	2.00	1.01	5.00	1.28	0.00	1.28
24.16	0.16	1.01	0.15*	1.23	0.00	1.23
25.16	0.24	1.01	0.23*	1.20	0.00	1.20
26.16	0.71	1.01	0.70*	1.14	0.00	1.14
27.16	1.84	1.02	1.81	1.14	0.00	1.14
28.16	2.21	1.02	2.17	1.14	0.00	1.14
29.16	2.00	1.02	5.00	1.11	0.00	1.11
30.16	2.00	1.02	5.00	1.11	0.00	1.11
31.16	2.00	1.01	5.00	1.06	0.00	1.06
32.16	2.00	1.01	5.00	1.05	0.00	1.05
33.16	0.39	1.00	0.39*	0.99	0.00	0.99
34.16	2.00	0.99	5.00	0.92	0.00	0.92
35.16	0.30	0.99	0.30*	0.82	0.00	0.82
36.16	0.48	0.98	0.49*	0.76	0.00	0.76
37.16	2.00	0.97	5.00	0.64	0.00	0.64

38.16	2.00	0.97	5.00	0.64	0.00	0.64
39.16	2.00	0.96	5.00	0.64	0.00	0.64
40.16	2.00	0.95	5.00	0.64	0.00	0.64
41.16	0.22	0.94	0.23*	0.58	0.00	0.58
42.16	0.29	0.94	0.31*	0.44	0.00	0.44
43.16	2.00	0.93	5.00	0.38	0.00	0.38
44.16	2.00	0.92	5.00	0.38	0.00	0.38
45.16	0.50	0.91	0.54*	0.29	0.00	0.29
46.16	0.83	0.91	0.91*	0.22	0.00	0.22
47.16	2.00	0.90	5.00	0.15	0.00	0.15
48.16	0.25	0.89	0.28*	0.08	0.00	0.08
49.16	0.37	0.88	0.42*	0.05	0.00	0.05

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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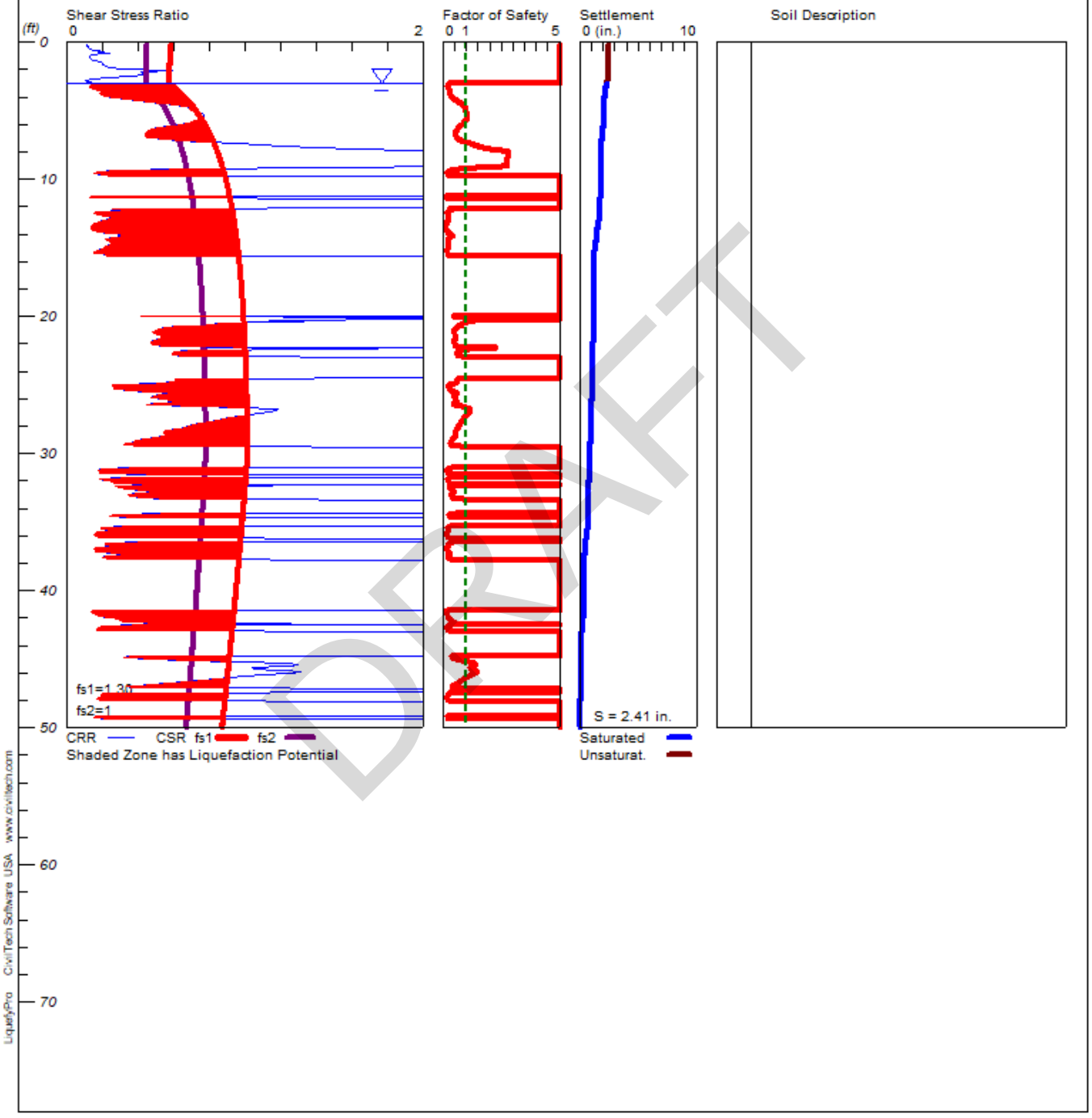
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

LIQUEFACTION ANALYSIS

Project Bruin

Hole No.=CPT-18 Water Depth=3 ft

Magnitude=7.1
Acceleration=0.69g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: N:\Projects\2020\60205029\Working Files\Calculations-Analyses\CPT-18.liq
Title: Project Bruin
Subtitle: 60205029

Surface Elev.=
Hole No.=CPT-18
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.69 g
Earthquake Magnitude= 7.10

Input Data:
Surface Elev.=
Hole No.=CPT-18
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.69 g
Earthquake Magnitude=7.10
No-Liquefiable Soils: Based on Analysis

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth	qc	fs	Rf	gamma	Fines	D50
ft	atm	atm	pcf	%	mm	

0.16	2.00	0.02	1.00	120.00	0.00	0.50
1.15	11.50	0.10	0.87	120.00	0.00	0.50
2.13	12.10	0.39	3.22	120.00	0.00	0.50
3.12	9.10	0.12	1.32	120.00	0.00	0.50
4.10	45.60	0.58	1.27	120.00	0.00	0.50
5.09	76.40	1.01	1.32	120.00	0.00	0.50
6.07	85.90	0.30	0.35	120.00	0.00	0.50
7.05	83.90	0.25	0.30	120.00	0.00	0.50
8.04	167.50	0.60	0.36	120.00	0.00	0.50
9.02	166.50	0.42	0.25	120.00	0.00	0.50
10.00	5.90	0.11	1.86	120.00	0.00	0.50
10.99	6.30	0.08	1.27	120.00	0.00	0.50
11.97	7.70	0.14	1.82	120.00	0.00	0.50
12.95	63.40	0.44	0.69	120.00	0.00	0.50
13.94	25.80	0.62	2.40	120.00	0.00	0.50
14.92	72.30	0.30	0.41	120.00	0.00	0.50
15.91	8.70	0.15	1.72	120.00	0.00	0.50
16.89	9.30	0.22	2.37	120.00	0.00	0.50
17.88	9.30	0.19	2.04	120.00	0.00	0.50
18.86	12.90	0.24	1.86	120.00	0.00	0.50
19.84	15.50	0.33	2.13	120.00	0.00	0.50
20.83	68.60	2.21	3.22	120.00	0.00	0.50
21.81	100.40	1.59	1.58	120.00	0.00	0.50
22.80	76.30	2.39	3.13	120.00	0.00	0.50
23.78	24.50	0.94	3.84	120.00	0.00	0.50
24.77	36.80	1.24	3.37	120.00	0.00	0.50
25.75	125.10	1.45	1.16	120.00	0.00	0.50
26.73	190.30	2.06	1.08	120.00	0.00	0.50
27.72	165.20	1.57	0.95	120.00	0.00	0.50
28.70	145.10	1.31	0.90	120.00	0.00	0.50
29.69	17.10	0.64	3.74	120.00	0.00	0.50
30.67	18.40	0.70	3.80	120.00	0.00	0.50
31.66	21.60	0.85	3.94	120.00	0.00	0.50
32.64	67.60	1.91	2.83	120.00	0.00	0.50
33.62	32.10	1.34	4.17	120.00	0.00	0.50
34.61	39.60	0.91	2.30	120.00	0.00	0.50
35.59	38.60	0.91	2.36	120.00	0.00	0.50
36.58	52.60	1.05	2.00	120.00	0.00	0.50
37.56	50.60	1.00	1.98	120.00	0.00	0.50
38.54	13.60	0.41	3.01	120.00	0.00	0.50
39.53	12.10	0.34	2.81	120.00	0.00	0.50
40.51	13.60	0.43	3.16	120.00	0.00	0.50
41.50	42.60	0.56	1.31	120.00	0.00	0.50
42.48	43.80	1.47	3.36	120.00	0.00	0.50
43.47	14.50	0.40	2.76	120.00	0.00	0.50
44.45	14.10	0.30	2.13	120.00	0.00	0.50
45.43	259.90	2.38	0.92	120.00	0.00	0.50
46.42	216.00	2.08	0.96	120.00	0.00	0.50
47.40	31.40	1.33	4.24	120.00	0.00	0.50
48.39	16.80	0.55	3.27	120.00	0.00	0.50
49.37	36.80	0.99	2.69	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.31 in.
Settlement of Unsaturated Sands=0.09 in.
Total Settlement of Saturated and Unsaturated Sands=2.41 in.
Differential Settlement=1.204 to 1.589 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.12	0.58	5.00	2.31	0.09	2.41
1.16	0.13	0.58	5.00	2.31	0.09	2.40
2.16	0.42	0.58	5.00	2.31	0.08	2.40
3.16	0.13	0.59	0.22*	2.29	0.00	2.29
4.16	0.34	0.67	0.51*	2.11	0.00	2.11
5.16	0.74	0.74	1.01	2.07	0.00	2.07
6.16	0.56	0.78	0.72*	2.02	0.00	2.02
7.16	0.61	0.82	0.74*	1.89	0.00	1.89
8.16	2.39	0.85	2.81	1.87	0.00	1.87
9.16	1.26	0.88	1.44	1.87	0.00	1.87
10.16	2.00	0.90	5.00	1.78	0.00	1.78
11.16	2.00	0.92	5.00	1.78	0.00	1.78
12.16	0.26	0.93	0.27*	1.76	0.00	1.76
13.16	0.17	0.94	0.17*	1.61	0.00	1.61
14.16	0.30	0.95	0.32*	1.44	0.00	1.44
15.16	0.18	0.96	0.19*	1.28	0.00	1.28
16.16	2.00	0.97	5.00	1.21	0.00	1.21
17.16	2.00	0.98	5.00	1.21	0.00	1.21
18.16	2.00	0.99	5.00	1.21	0.00	1.21
19.16	2.00	0.99	5.00	1.21	0.00	1.21
20.16	2.00	1.00	5.00	1.21	0.00	1.21
21.16	0.48	1.00	0.48*	1.20	0.00	1.20
22.16	0.53	1.00	0.52*	1.15	0.00	1.15
23.16	2.00	1.01	5.00	1.15	0.00	1.15
24.16	2.00	1.01	5.00	1.15	0.00	1.15
25.16	0.26	1.01	0.26*	1.12	0.00	1.12
26.16	0.59	1.01	0.58*	1.03	0.00	1.03
27.16	1.05	1.02	1.03	1.02	0.00	1.02
28.16	0.64	1.02	0.63*	1.00	0.00	1.00
29.16	0.37	1.02	0.37*	0.91	0.00	0.91
30.16	2.00	1.02	5.00	0.89	0.00	0.89
31.16	0.19	1.01	0.19*	0.88	0.00	0.88
32.16	0.27	1.01	0.26*	0.77	0.00	0.77
33.16	0.40	1.00	0.40*	0.71	0.00	0.71
34.16	2.00	0.99	5.00	0.71	0.00	0.71
35.16	2.00	0.99	5.00	0.69	0.00	0.69
36.16	0.22	0.98	0.22*	0.56	0.00	0.56
37.16	0.16	0.97	0.17*	0.45	0.00	0.45

38.16	2.00	0.97	5.00	0.38	0.00	0.38
39.16	2.00	0.96	5.00	0.38	0.00	0.38
40.16	2.00	0.95	5.00	0.38	0.00	0.38
41.16	2.00	0.94	5.00	0.38	0.00	0.38
42.16	0.30	0.94	0.33*	0.26	0.00	0.26
43.16	2.00	0.93	5.00	0.18	0.00	0.18
44.16	2.00	0.92	5.00	0.18	0.00	0.18
45.16	0.86	0.91	0.95*	0.17	0.00	0.17
46.16	1.09	0.91	1.20	0.17	0.00	0.17
47.16	2.00	0.90	5.00	0.13	0.00	0.13
48.16	2.00	0.89	5.00	0.03	0.00	0.03
49.16	0.16	0.88	0.18*	0.03	0.00	0.03

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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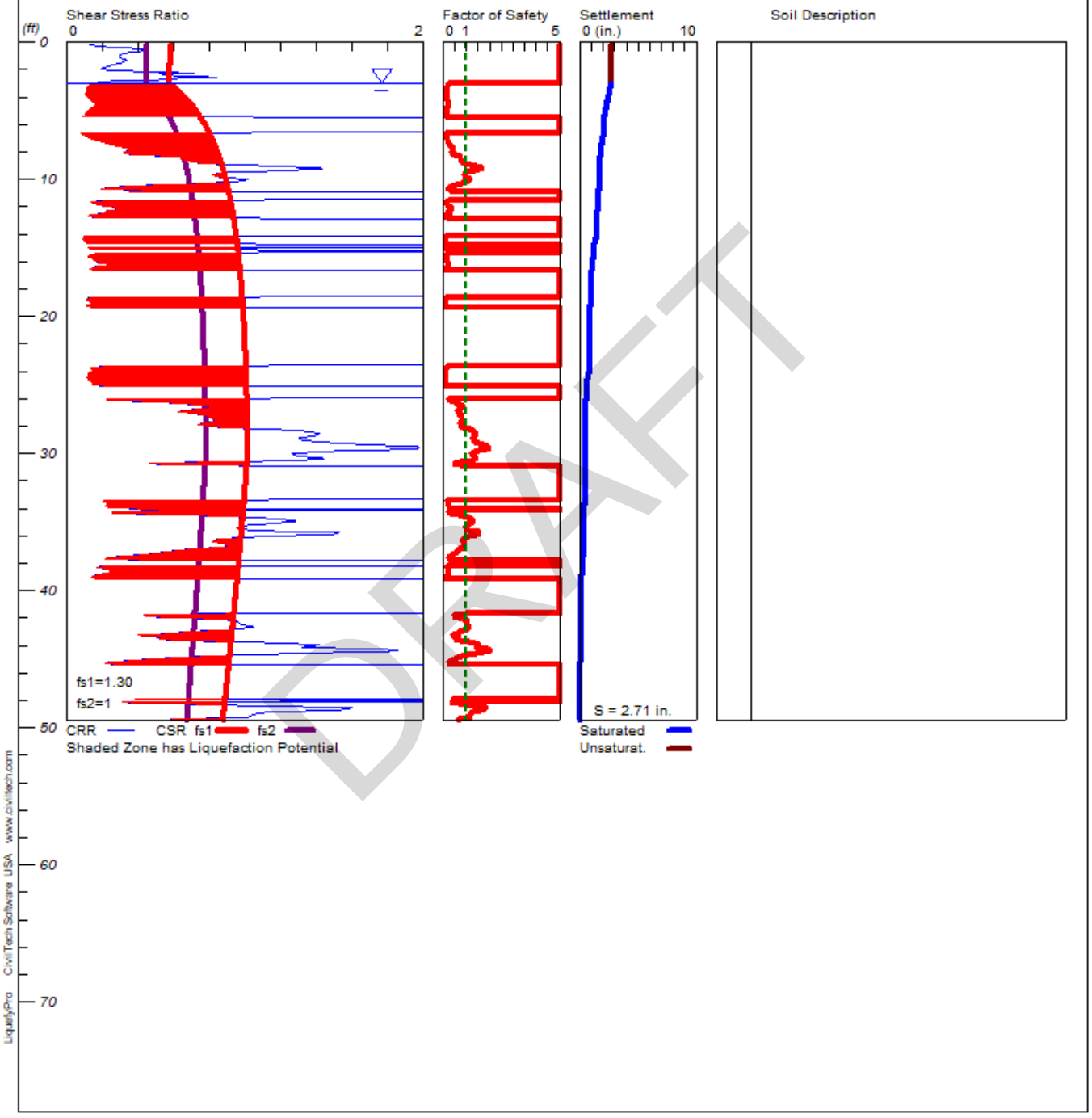
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

LIQUEFACTION ANALYSIS

Project Bruin

Hole No.=CPT-19 Water Depth=3 ft

Magnitude=7.1
Acceleration=0.69g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: N:\Projects\2020\60205029\Working Files\Calculations-Analyses\CPT-19.liq
Title: Project Bruin
Subtitle: 60205029

Surface Elev.=
Hole No.=CPT-19
Depth of Hole= 49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.69 g
Earthquake Magnitude= 7.10

Input Data:
Surface Elev.=
Hole No.=CPT-19
Depth of Hole=49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.69 g
Earthquake Magnitude=7.10
No-Liquefiable Soils: Based on Analysis

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth	qc	fs	Rf	gamma	Fines	D50
ft	atm	atm	pcf	%	mm	

0.16	3.50	0.04	1.14	120.00	0.00	0.50
1.15	22.30	0.38	1.70	120.00	0.00	0.50
2.13	13.50	0.40	2.96	120.00	0.00	0.50
3.12	11.90	0.15	1.26	120.00	0.00	0.50
4.10	29.20	0.07	0.24	120.00	0.00	0.50
5.09	17.80	0.13	0.73	120.00	0.00	0.50
6.07	4.10	-0.01	-0.24	120.00	0.00	0.50
7.05	17.70	0.25	1.41	120.00	0.00	0.50
8.04	55.30	0.76	1.37	120.00	0.00	0.50
9.02	125.10	0.75	0.60	120.00	0.00	0.50
10.00	123.70	0.53	0.43	120.00	0.00	0.50
10.99	10.10	0.30	2.97	120.00	0.00	0.50
11.97	31.40	0.76	2.42	120.00	0.00	0.50
12.95	7.20	0.10	1.39	120.00	0.00	0.50
13.94	4.40	0.01	0.23	120.00	0.00	0.50
14.92	7.00	0.06	0.86	120.00	0.00	0.50
15.91	12.90	0.17	1.32	120.00	0.00	0.50
16.89	5.80	0.10	1.72	120.00	0.00	0.50
17.88	6.80	0.12	1.76	120.00	0.00	0.50
18.86	11.70	0.08	0.68	120.00	0.00	0.50
19.84	6.60	0.11	1.67	120.00	0.00	0.50
20.83	7.80	0.09	1.15	120.00	0.00	0.50
21.81	9.50	0.19	2.00	120.00	0.00	0.50
22.80	15.00	0.46	3.07	120.00	0.00	0.50
23.78	29.90	0.37	1.24	120.00	0.00	0.50
24.77	53.20	0.30	0.56	120.00	0.00	0.50
25.75	15.30	0.47	3.07	120.00	0.00	0.50
26.73	159.10	1.50	0.94	120.00	0.00	0.50
27.72	173.00	1.18	0.68	120.00	0.00	0.50
28.70	215.10	1.65	0.77	120.00	0.00	0.50
29.69	246.00	1.68	0.68	120.00	0.00	0.50
30.67	122.00	2.27	1.86	120.00	0.00	0.50
31.66	15.00	0.56	3.73	120.00	0.00	0.50
32.64	23.00	0.57	2.48	120.00	0.00	0.50
33.62	66.80	1.16	1.74	120.00	0.00	0.50
34.61	200.40	1.73	0.86	120.00	0.00	0.50
35.59	213.40	1.81	0.85	120.00	0.00	0.50
36.58	200.00	1.75	0.88	120.00	0.00	0.50
37.56	93.90	1.21	1.29	120.00	0.00	0.50
38.54	95.30	1.21	1.27	120.00	0.00	0.50
39.53	15.70	0.44	2.80	120.00	0.00	0.50
40.51	15.50	0.45	2.90	120.00	0.00	0.50
41.50	48.40	1.87	3.86	120.00	0.00	0.50
42.48	194.50	3.18	1.63	120.00	0.00	0.50
43.47	74.10	2.76	3.72	120.00	0.00	0.50
44.45	286.10	2.55	0.89	120.00	0.00	0.50
45.43	31.40	1.02	3.25	120.00	0.00	0.50
46.42	19.10	0.74	3.87	120.00	0.00	0.50
47.40	23.00	0.77	3.35	120.00	0.00	0.50
48.39	220.20	2.80	1.27	120.00	0.00	0.50
49.37	177.00	2.08	1.18	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.69 in.
Settlement of Unsaturated Sands=0.02 in.
Total Settlement of Saturated and Unsaturated Sands=2.71 in.
Differential Settlement=1.357 to 1.791 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.13	0.58	5.00	2.69	0.02	2.71
1.16	0.30	0.58	5.00	2.69	0.02	2.71
2.16	0.44	0.58	5.00	2.69	0.01	2.70
3.16	0.13	0.59	0.21*	2.66	0.00	2.66
4.16	0.13	0.67	0.20*	2.41	0.00	2.41
5.16	0.11	0.74	0.15*	2.18	0.00	2.18
6.16	2.00	0.78	5.00	2.09	0.00	2.09
7.16	0.16	0.82	0.19*	1.94	0.00	1.94
8.16	0.36	0.85	0.42*	1.79	0.00	1.79
9.16	1.43	0.88	1.63	1.73	0.00	1.73
10.16	0.95	0.90	1.06	1.71	0.00	1.71
11.16	2.00	0.92	5.00	1.64	0.00	1.64
12.16	0.32	0.93	0.34*	1.54	0.00	1.54
13.16	2.00	0.94	5.00	1.43	0.00	1.43
14.16	0.09	0.95	0.10*	1.43	0.00	1.43
15.16	2.00	0.96	5.00	1.23	0.00	1.23
16.16	0.22	0.97	0.23*	1.10	0.00	1.10
17.16	2.00	0.98	5.00	1.02	0.00	1.02
18.16	2.00	0.99	5.00	1.02	0.00	1.02
19.16	0.11	0.99	0.11*	0.91	0.00	0.91
20.16	2.00	1.00	5.00	0.87	0.00	0.87
21.16	2.00	1.00	5.00	0.87	0.00	0.87
22.16	2.00	1.00	5.00	0.87	0.00	0.87
23.16	2.00	1.01	5.00	0.87	0.00	0.87
24.16	0.12	1.01	0.12*	0.77	0.00	0.77
25.16	2.00	1.01	5.00	0.55	0.00	0.55
26.16	0.30	1.01	0.30*	0.54	0.00	0.54
27.16	0.74	1.02	0.73*	0.49	0.00	0.49
28.16	1.02	1.02	1.01	0.46	0.00	0.46
29.16	1.44	1.02	1.42	0.46	0.00	0.46
30.16	1.29	1.02	1.27	0.46	0.00	0.46
31.16	2.00	1.01	5.00	0.46	0.00	0.46
32.16	2.00	1.01	5.00	0.46	0.00	0.46
33.16	2.00	1.00	5.00	0.46	0.00	0.46
34.16	0.52	0.99	0.52*	0.38	0.00	0.38
35.16	1.09	0.99	1.11	0.35	0.00	0.35
36.16	0.95	0.98	0.97*	0.35	0.00	0.35
37.16	0.58	0.97	0.59*	0.33	0.00	0.33

38.16	2.00	0.97	5.00	0.26	0.00	0.26
39.16	2.00	0.96	5.00	0.11	0.00	0.11
40.16	2.00	0.95	5.00	0.11	0.00	0.11
41.16	2.00	0.94	5.00	0.11	0.00	0.11
42.16	0.94	0.94	1.01	0.10	0.00	0.10
43.16	0.50	0.93	0.53*	0.10	0.00	0.10
44.16	1.43	0.92	1.55	0.08	0.00	0.08
45.16	0.29	0.91	0.31*	0.06	0.00	0.06
46.16	2.00	0.91	5.00	0.02	0.00	0.02
47.16	2.00	0.90	5.00	0.02	0.00	0.02
48.16	0.36	0.89	0.41*	0.02	0.00	0.02
49.16	1.03	0.88	1.16	0.01	0.00	0.01

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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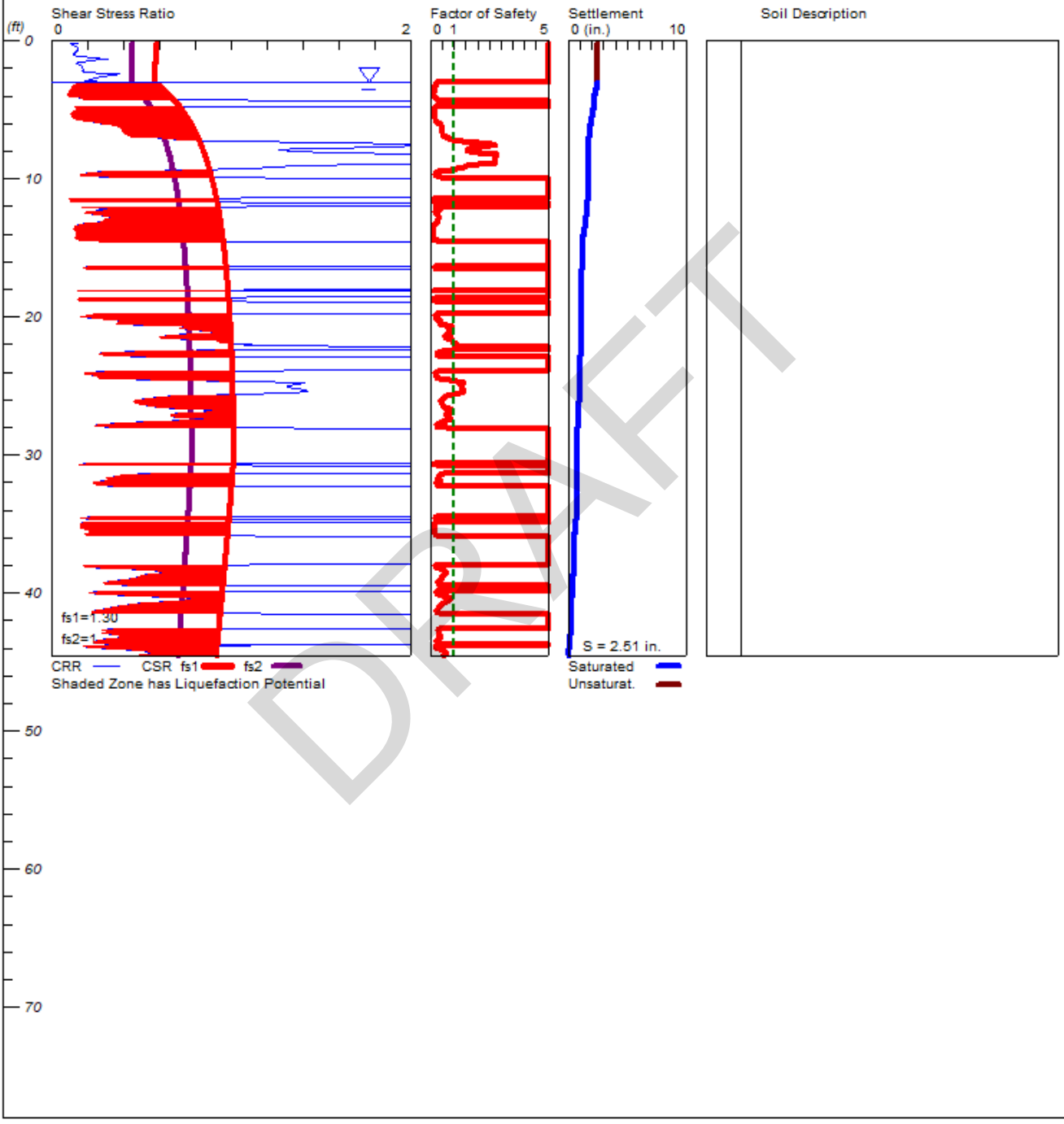
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

LIQUEFACTION ANALYSIS

Project Bruin

Hole No.=CPT-20 Water Depth=3 ft

Magnitude=7.1
Acceleration=0.69g



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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: N:\Projects\2020\60205029\Working Files\Calculations-Analyses\CPT-20.liq
Title: Project Bruin
Subtitle: 60205029

Surface Elev.=
Hole No.=CPT-20
Depth of Hole= 44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.69 g
Earthquake Magnitude= 7.10

Input Data:
Surface Elev.=
Hole No.=CPT-20
Depth of Hole=44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.69 g
Earthquake Magnitude=7.10
No-Liquefiable Soils: Based on Analysis

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth	qc	fs	Rf	gamma	Fines	D50
ft	atm	atm	pcf	%	mm	

0.16	1.70	0.02	1.18	120.00	0.00	0.50
1.15	7.60	0.13	1.71	120.00	0.00	0.50
2.13	24.70	0.26	1.05	120.00	0.00	0.50
3.12	10.30	0.14	1.36	120.00	0.00	0.50
4.10	5.90	0.07	1.19	120.00	0.00	0.50
5.09	5.40	0.05	0.93	120.00	0.00	0.50
6.07	65.50	0.20	0.31	120.00	0.00	0.50
7.05	79.40	1.01	1.27	120.00	0.00	0.50
8.04	128.80	0.57	0.44	120.00	0.00	0.50
9.02	132.30	0.37	0.28	120.00	0.00	0.50
10.00	9.30	0.28	3.01	120.00	0.00	0.50
10.99	4.30	0.03	0.70	120.00	0.00	0.50
11.97	7.00	0.08	1.14	120.00	0.00	0.50
12.95	45.90	1.05	2.29	120.00	0.00	0.50
13.94	37.00	0.28	0.76	120.00	0.00	0.50
14.92	10.20	0.23	2.25	120.00	0.00	0.50
15.91	9.40	0.18	1.91	120.00	0.00	0.50
16.89	10.20	0.17	1.67	120.00	0.00	0.50
17.88	9.70	0.11	1.13	120.00	0.00	0.50
18.86	12.40	0.15	1.21	120.00	0.00	0.50
19.84	16.00	0.28	1.75	120.00	0.00	0.50
20.83	49.50	1.91	3.86	120.00	0.00	0.50
21.81	44.10	1.81	4.10	120.00	0.00	0.50
22.80	30.70	0.79	2.57	120.00	0.00	0.50
23.78	17.00	0.75	4.41	120.00	0.00	0.50
24.77	202.70	1.80	0.89	120.00	0.00	0.50
25.75	149.30	1.42	0.95	120.00	0.00	0.50
26.73	180.50	1.02	0.57	120.00	0.00	0.50
27.72	104.50	1.13	1.08	120.00	0.00	0.50
28.70	12.70	0.37	2.91	120.00	0.00	0.50
29.69	17.50	0.57	3.26	120.00	0.00	0.50
30.67	36.00	0.56	1.56	120.00	0.00	0.50
31.66	57.00	1.46	2.56	120.00	0.00	0.50
32.64	16.30	0.53	3.25	120.00	0.00	0.50
33.62	30.80	0.89	2.89	120.00	0.00	0.50
34.61	33.10	0.55	1.66	120.00	0.00	0.50
35.59	47.20	0.98	2.08	120.00	0.00	0.50
36.58	17.00	0.41	2.41	120.00	0.00	0.50
37.56	13.70	0.33	2.41	120.00	0.00	0.50
38.54	184.00	1.26	0.68	120.00	0.00	0.50
39.53	34.30	1.35	3.94	120.00	0.00	0.50
40.51	189.80	1.91	1.01	120.00	0.00	0.50
41.50	35.80	1.26	3.52	120.00	0.00	0.50
42.48	29.70	1.31	4.41	120.00	0.00	0.50
43.47	79.70	1.47	1.84	120.00	0.00	0.50
44.45	150.20	1.99	1.32	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.47 in.
Settlement of Unsaturated Sands=0.04 in.
Total Settlement of Saturated and Unsaturated Sands=2.51 in.
Differential Settlement=1.256 to 1.658 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.14	0.58	5.00	2.47	0.04	2.51
1.16	0.17	0.58	5.00	2.47	0.03	2.50
2.16	0.17	0.58	5.00	2.47	0.02	2.49
3.16	0.13	0.59	0.22*	2.45	0.00	2.45
4.16	0.18	0.67	0.26*	2.18	0.00	2.18
5.16	0.12	0.74	0.16*	2.09	0.00	2.09
6.16	0.35	0.78	0.45*	1.88	0.00	1.88
7.16	0.70	0.82	0.85*	1.76	0.00	1.76
8.16	1.90	0.85	2.24	1.75	0.00	1.75
9.16	1.23	0.88	1.40	1.75	0.00	1.75
10.16	2.00	0.90	5.00	1.67	0.00	1.67
11.16	2.00	0.92	5.00	1.67	0.00	1.67
12.16	0.31	0.93	0.33*	1.58	0.00	1.58
13.16	0.23	0.94	0.25*	1.47	0.00	1.47
14.16	0.13	0.95	0.14*	1.25	0.00	1.25
15.16	2.00	0.96	5.00	1.18	0.00	1.18
16.16	2.00	0.97	5.00	1.18	0.00	1.18
17.16	2.00	0.98	5.00	1.15	0.00	1.15
18.16	2.00	0.99	5.00	1.14	0.00	1.14
19.16	2.00	0.99	5.00	1.10	0.00	1.10
20.16	0.28	1.00	0.29*	1.06	0.00	1.06
21.16	0.93	1.00	0.93*	1.05	0.00	1.05
22.16	2.00	1.00	5.00	1.05	0.00	1.05
23.16	2.00	1.01	5.00	1.03	0.00	1.03
24.16	0.21	1.01	0.21*	1.01	0.00	1.01
25.16	1.34	1.01	1.33	0.95	0.00	0.95
26.16	0.46	1.01	0.45*	0.91	0.00	0.91
27.16	0.66	1.02	0.65*	0.85	0.00	0.85
28.16	2.00	1.02	5.00	0.79	0.00	0.79
29.16	2.00	1.02	5.00	0.79	0.00	0.79
30.16	2.00	1.02	5.00	0.79	0.00	0.79
31.16	2.00	1.01	5.00	0.76	0.00	0.76
32.16	0.25	1.01	0.25*	0.70	0.00	0.70
33.16	2.00	1.00	5.00	0.69	0.00	0.69
34.16	2.00	0.99	5.00	0.69	0.00	0.69
35.16	0.16	0.99	0.16*	0.62	0.00	0.62
36.16	2.00	0.98	5.00	0.51	0.00	0.51
37.16	2.00	0.97	5.00	0.51	0.00	0.51
38.16	0.27	0.97	0.28*	0.48	0.00	0.48
39.16	0.32	0.96	0.33*	0.37	0.00	0.37
40.16	0.41	0.95	0.43*	0.31	0.00	0.31
41.16	0.30	0.94	0.32*	0.26	0.00	0.26
42.16	2.00	0.94	5.00	0.21	0.00	0.21

43.16	0.41	0.93	0.44*	0.16	0.00	0.16
44.16	0.50	0.92	0.54*	0.04	0.00	0.04

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils