Appendix D

Geotechnical Report

Zadoorian & Associates, Inc.
1467 Montgomery Street, Tustin CA 92782
714 425-0666

July 9, 2019

Soto Capital LP
P.O. Box 17119
Beverly Hills, CA 90209

Attention: Ben Soroudi

Addendum 1
Updated Recommendations
Proposed Mixed-Use Development
8527-8555 Santa Monica Boulevard
and 8532 to 8552 West Knoll Drive
West Hollywood, California
Zadoorian & Associates Project: SotoCapt-1-01

You furnished us with a geotechnical report dated July 23, 2018 prepared by GeoDesign, Inc. for the proposed mixed-use development to be constructed at 8527-8555 Santa Monica Boulevard and 8532 West Knoll Drive in West Hollywood, California.

We have reviewed the report and concur with the conclusions and findings presented therein and as such we assume the professional responsibility for the use and interpretation of the data, conclusions and recommendations presented therein.

Pedram Farashbandi of Holloway Partners furnished us with updated project plans on July 8, 2019. Based on our review of the current plans, the proposed development will now include an additional parcel located at 8552 West Knoll Drive.

The current proposed development remains feasible and the conclusions and recommendations presented in the July 23, 2018 report remain applicable.

• • •

We appreciate the opportunity to be of service to you. Please contact us if you have questions regarding this addendum.

Sincerely,

Zadoorian & Associates, Inc.

Christopher J. Zadoorian, G.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER JOHN ZADOORIAN
No.2493
Sign'd
7/9/19
GEOTECHNICAL
STATE OF CALIFORNIA

cc: Tony Ghodsi, Englekirk Institutional (via email only)

cjz
Attachments
Four copies submitted
Document ID: SotoCapt-1-01-070919-geol-cjz

REPORT OF GEOTECHNICAL ENGINEERING SERVICES

Proposed Mixed-Use Development
8527 - 8555 Santa Monica Boulevard
and 8532 - 8552 West Knoll Drive
West Hollywood, California

For
Soto Capital LP
July 23, 2018
(Revised October 31, 2019)

GeoDesign Project: SotoCapt-1-01

GEODESIGN INC

July 23, 2018
(Revised October 31, 2019)

Soto Capital LP
P.O. Box 17119
Beverly Hills, CA 90209

Attention: Ben Soroudi

Report of Geotechnical Engineering Services
Proposed Mixed-Use Development
8527 - 8555 Santa Monica Boulevard
and 8532 - 8552 West Knoll Drive
West Hollywood, California
GeoDesign Project: SotoCapt-1-01

GeoDesign, Inc. is pleased to submit this geotechnical report for the proposed mixed-use development to be constructed at 8527 - 8555 Santa Monica Boulevard and 8532 - 8552 West Knoll Drive in West Hollywood, California.

Our services were performed in general accordance with our proposal dated February 18, 2010, our revised proposals dated June 14, 2010 and June 28, 2010, and our e-mail correspondence dated March 21, 2018.

♦ ♦ ♦

We appreciate the opportunity to be of service to you. Please contact us if you have questions regarding this report.

Sincerely,

GeoDesign, Inc.

Jeffery D. Tucker, P.E., G.E. (Oregon)
Principal Engineer

cc: Scott Watterson, Cefali & Associates (via email only)
Tony Ghodsi, Englekirk Institutional (via email only)
Nickie Carlsen, Alston & Bird LLP (via email only)
Rachel Soroudi, Holloway Partners (via email only)

JM:AJA:JDT:kt
Attachments
One copy submitted (via email only)
Document ID: SotoCapt-1-01-103119-geor-rev.docx

TABLE OF CONTENTS **PAGE NO.**

TABLE OF CONTENTS PAGE NO.

ACRONYMS AND ABBREVIATIONS

AP	Alquist-Priolo
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
BGS	below ground surface
CBC	California Building Code
CDMG	California Division of Mines and Geology
CDWR	California Department of Water Resources
CGS	California Geological Survey
CPT	cone penetration test
g	gravitational acceleration (32.2 feet/second^2)
H:V	horizontal to vertical
HHGWL	historical high groundwater level
LFFE	lowest finish floor elevation
MCE	maximum considered earthquake
MSL	mean sea level
NCEER	National Center for Earthquake Engineering Research
OSHA	Occupational Safety and Health Administration
pcf	pounds per cubic foot
pci	pounds per cubic inch
PGA	peak ground acceleration
PGA_M	maximum considered earthquake geometric mean peak ground acceleration adjusted for site affects
psf	pounds per square foot
psi	pounds per square inch
SPT	standard penetration test
USGS	U.S. Geological Survey
UST	underground storage tank

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the proposed mixed-use development to be constructed at 8527 - 8555 Santa Monica Boulevard and 8532 - 8552 West Knoll Drive in West Hollywood, California. The site location is shown on Figure 1. Acronyms and abbreviations used herein are defined above, immediately following the Table of Contents.

The site is bound on the north and east by West Knoll Drive, on the south by Santa Monica Boulevard, and on the west by existing private developments, including existing two-story condominiums located at 8562 West Knoll Drive and an existing four-story Ramada hotel as shown on Figure 2. Based on information provided by Scott Watterson of Cefali and Associates, the existing structures are supported on spread and continuous footings.

The site is bi-level and the ground surface level varies from approximately Elevation 264 at the north side of the site to Elevation 235 at the southeastern corner of the site. An existing approximately 2H:1V, 10- to 15-foot-high, ascending slope partially supported by periodic make-shift 1- to 2-foot-high timber railroad tie bulkheads is present at the northwest site boundary.

The site is currently developed with single-story private residences within the north portion of the upper level, three two-story commercial structures adjacent to Santa Monica Boulevard along the southeast portion of the site, and surface parking lots north and west of the existing structures.

A UST may be present on the west side of the site. Attempts were made to locate the suspected UST with geophysical methods; however, these attempts were unsuccessful.

James Fischer and Robin Samara of DFH Architects furnished us with project plans dated March 1, 2018 they prepared. Based on our review of the plans and our discussions with the project team, the proposed development includes the construction of five above-grade levels and two subterranean parking levels.

The lowest finished floor level will established between approximately Elevation 225 to 227 as shown on Figure 2.

The proposed mixed-use building will be supported on a mat foundation that will be established approximately 3 to 5 feet below the lowest finish floor level, between approximately Elevation 224 and 221 MSL.

It should be noted that a project reference elevation has been established and the reference data shows the ground surface level at the southwest corner of the site to be Elevation 85.4, which corresponds approximately to Elevation 234.9 MSL.

Reza Bayat of Englekirk Institutional furnished us with structural loading information for the proposed development. Based on the information provided by Mr. Bayat, the average dead-plus-live applied pressure across the mat foundation will be on the order of 1,200 to 2,600 psf.

Our geotechnical investigation is summarized below followed by our conclusions and recommendations for the current proposed development

2.0 PURPOSE AND SCOPE

The purpose of our services was to perform a geotechnical investigation at the site to obtain data for use in the development of geotechnical design recommendations for the proposed development. The specific scope of our services for this current investigation is summarized as follows:

- Coordinated and managed the field investigation, including utility checks, site access authorizations, and scheduling subcontractors and GeoDesign field staff.
- Drilled three borings using mud rotary drilling methods.
- Installed one groundwater monitoring well at the site.
- Advanced three CPTs at the site.
- Collected soil samples for laboratory testing and maintained a detailed log of the soil and groundwater conditions encountered in the borings.
- Performed geotechnical laboratory testing on selected samples.
- Performed liquefaction analysis.
- Developed foundation design recommendations.
- Developed recommendations for the design of temporary shoring.
- Developed recommendations for the design of permanent below-grade walls.
- Evaluated surcharge loading from adjacent foundations.
- Developed recommendations for the design and construction of concrete floor slabs, including an estimate of the subgrade modulus.
- Developed recommendations for hydrostatic design for below-grade walls, foundations, and the lowest level building floor slab.
- Prepared this report summarizing the results of our geotechnical evaluation and presenting our conclusions and recommendations.

3.0 SITE CONDITIONS AND GEOLOGIC CONDITIONS

3.1 SURFACE CONDITIONS

The site is located at the northwest corner of Santa Monica Boulevard and West Knoll Drive in the city of West Hollywood, California.

The site is bi-level and the ground surface level varies from approximately Elevation 264 at the north side of the site to Elevation 235 at the southeastern corner of the site. An existing approximately 2H:1V, 10- to 15-foot-high, ascending slope partially supported by periodic make-shift 1- to 2-foot-high timber railroad tie bulkheads is present at the northwest site boundary.

The site is currently developed with single-story private residences within the north portion of the upper level, three two-story commercial structures adjacent to Santa Monica Boulevard along the southeast portion of the site, and surface parking lots north and west of the existing structures.

3.2 GEOLOGIC SETTING

The site is located along the northern margin of the Los Angeles Basin on a steep-sloping alluvial fan at the base of the Santa Monica Mountains (Dibblee, 1991; CDWR, 1961).

Geologic materials at the site consist of Holocene and Pleistocene Age alluvial fan deposits originating from the Santa Monica Mountains. The fan deposits consist of alternating layers of silty sand and sand with lesser amounts of clayey sand, silt, and clay. Together, the Holocene and Pleistocene Age sediments are approximately 600 feet thick in the site vicinity and are underlain by Tertiary Age sedimentary (CDWR, 1961).

Regionally, the site is located in the northern-most portion of the Peninsular Ranges Geomorphic Province, near the Transverse Ranges Geomorphic Province to the north. The Peninsular Ranges is characterized by northwest-trending geologic structures in contrast to the Transverse Ranges, which is characterized by east to west-trending geologic structures. The boundary between the two geomorphic provinces is a system of faults that include the active Malibu Coast, Santa Monica, Hollywood, Raymond, and Sierra Madre fault zones. Based on published geologic maps, splays of the Hollywood fault zone are located approximately 600 feet north of the site (CGS, 2010a; City of West Hollywood, 2010; Ziony and Jones, 1989).

The site is within an area designated as having a potential for liquefaction as indicated on the State of California Seismic Hazard Zone Map for the Beverly Hills 7.5-minute quadrangle published by CGS (CDMG, 1999).

3.3 FAULTS

3.3.1 General

Faults in Southern California are considered active, potentially active, and inactive based on criteria developed by CGS for the AP Earthquake Fault Zoning Program (CGS, 2018a). By definition, an active fault is one that has had surface displacement within Holocene time (approximately the last 11,000 years). A potentially active fault is one that has demonstrated surface displacement of Quaternary Age deposits (last 1.6 million years). Inactive faults have not moved in the last 1.6 million years.

The primary purpose of the AP Earthquake Fault Zoning Program is to identify sites that have a potential for surface rupture due to active faults that are in close proximity to the site. In such cases, a building setback zone is established to mitigate the potential for surface rupture. The site is not located within an Alquist-Priolo Earthquake Fault Zone (APZ). The most recent version of the APZ map for the Beverly Hills 7.5-minute quadrangle was published in January 2018 (CGS, 2018b). The zoning shown on this map is based on evaluation of data summarized by Olsen (2018). The site is not within a state-designated APZ according to the most recent version of the APZ map for the Beverly Hills quadrangle. The closest AP-zoned fault trace is the Hollywood fault located approximately 600 feet north-northwest.

The site is included within a City of West Hollywood Fault Precaution Zone FP-2 as designated in the Safety Element of the West Hollywood General Plan 2035 dated September 6, 2011. Based on the evaluation of Olsen (2018) and city and state fault zone maps, the potential for surface rupture at the site is considered low.

3.3.2 Hollywood Fault Zone

The closest active fault to the site capable of surface rupture is the Hollywood fault. The Hollywood fault trends approximately east-west along the base of the Santa Monica Mountains from the West Beverly Hills Lineament in the West Hollywood-Beverly Hills area to the Los Feliz area of Los Angeles (Dolan and Sieh, 1992). The heavily urbanized area of the fault zone has historically resulted in limited availability of investigations to define the location and age of faulting for zoning purposes. The recent release of an updated Earthquake Fault Zone map for the Beverly Hills quadrangle, based on Fault Evaluation Report 259 (published in January 2018) that documents consultants studies along the Hollywood fault trace, provides new zoning of faults in the region of the site.

Based on Plate 3 of the Fault Evaluation Report by Olsen (2018), the closest splay of the Hollywood fault is located approximately 600 feet to the north of the site.

The site is located in a City Fault Precaution Zone FP-1 or Fault Precaution Zone FP-2 (City of West Hollywood, 2010).

3.3.3 Regional Faults

Regional faults capable of generating strong ground shaking at the site include the Santa Monica fault (a westward extension of the Hollywood fault), Newport-Inglewood fault, the Los Angeles segment of the Puente Hills Blind Thrust, and San Andreas fault located 0.6 mile west, 3.3 miles west-southwest, 4.7 miles east, and 35 miles northeast, respectively. These faults do not present a surface rupture hazard at the site but can generate strong ground shaking.

3.4 SUBSURFACE CONDITIONS

We drilled three borings (B-1 through B-3) at the site to depths between 51.5 and 120.0 feet BGS between 2010 and 2017. The borings were drilled using mud rotary drilling equipment. Upon completion of boring B-3, we constructed a groundwater monitoring well. The locations of the explorations are shown on Figure 2.

Asphalt concrete, 3 inches thick, was encountered at the ground surface in each boring. Medium stiff clay and sandy clay soil with trace gravel was encountered in borings B-1 and B-2 immediately below the asphalt concrete to depths of 4 to 15.5 feet BGS. The clayey soil is underlain by fine to coarse sand with varying amounts of silt and fine gravel to the maximum depth explored (120.0 feet BGS). Fine to coarse sand with varying amounts of silt, clay, and fine gravel was encountered immediately beneath the asphalt concrete in boring B-3 to the maximum depth explored (51.5 feet BGS).

At depths of 34.5 and 49 feet BGS in borings B-1 and B-2, respectively, lenses of clayey sand, clay, and silt ranging from 4 to 7.5 feet in thickness are present in the primarily sand and silty sand alluvial deposits.

We also performed P-S logging in boring B-1 to develop an estimate of the shear wave velocity at the site. Based on the results of the borings, CPTs, and shear wave velocity measurements, the soil at the site is generally dense and stiff below the planned LFFE.

The general subsurface conditions at the site are presented on the geologic cross sections on Figures 3 and 4. Logs of the borings are presented in Appendix A and the results of the CPTs are presented in Appendix B.

The mud rotary drilling was performed by SoCal Drilling with a rig equipped with an automatic hammer to advance the samplers. At the time of our borings, the hammer energy efficiency measurements were performed on the drill rig by EarthSpectives. Based on the results of the energy efficiency testing, the automatic hammer generally had an energy efficiency ratio of approximately 80 percent.

3.5 GROUNDWATER

3.5.1 Data from Prior Borings

Groundwater was encountered in our explorations at depths between 30 and 49 feet BGS, corresponding to approximately Elevations 205 and 207 feet above MSL.

Table 1 summarizes the groundwater levels encountered in our explorations that were performed in August 2010 and May 2017. We also measured the groundwater level in boring B-3 in June 2018.

Table 1. Summary of Groundwater Levels

Exploration	Exploration Elevation (above MSL)	Date	Depth to Groundwater[1] (feet BGS)	Groundwater Elevation	
				MSL	Project Reference Datum
B-1	235	August 2010	30	205	56
B-2	255	August 2010	49	206	57
B-3	235	May 2017	32	203	54
B-3	235	June 2018	34	201	52
CPT-1	237	August 2010	30	207	58
CPT-2	253	August 2010	47	206	57
CPT-3	237	August 2010	30	207	58

1. Elevations and depths are reported to the nearest foot.

3.5.2 Historical High Groundwater Data

A map of historical artesian areas by Mendenhall (1905) includes the area of the site within an artesian area in 1904. A depth to water of 23 feet BGS was recorded in March 1930 in a Los Angeles County well (no. 2621A) located 180 feet south of the site. Based on the seismic hazards evaluation report for the Beverly Hills quadrangle published by CGS (CDMG, 1998), the HHGWL in the site vicinity is at a depth on the order of 10 feet BGS along Santa Monica Boulevard corresponding to Elevation 225, corresponding approximately to the planned lowest finish floor level.

Data from the Seismic Technical Background Report - City of West Hollywood General Plan Update prepared by KFM GeoSciences (March 2010) indicates that the HHGWL at the site is approximately 13.5 to 17 feet BGS along Santa Monica Boulevard, corresponding roughly to Elevations 222 to 225 feet above MSL (corresponding to project reference elevations 72.1 to 76.1) as shown on Figure 2. Table 2 summarizes the historical high groundwater levels at site boundaries.

Table 2. Summary of Historical High Groundwater Levels

Location	Historical High Groundwater Elevation[1]	
	MSL	Project Reference Datum
Southeast Corner	222.5	73.1
Southwest Corner	225.5	76.1
Northeast Corner	221.5	72.1
Northwest Corner	224.5	75.1

1. Elevations and depths reported in Table 2 are rounded to the nearest 0.5 foot to reflect the degree of precision in our interpretations from the KFM Geosciences plan.

Based on the data from the City of West Hollywood, the HHGWL at the site ranges from approximately 1.5 to 4.5 feet below the lowest planned finished floor level as shown on Figures 3 and 4.

3.6 SHEAR WAVE VELOCITY MEASUREMENTS

Suspension P-S logging was performed by GEOVision in the upper 115 feet of boring B-1 to estimate the stiffness of the subsurface soil profile.

The suspension P-S logging method uses a 7-meter probe that contains a source and two receivers. The probe is lowered down the drilled hole where the source generates a pressure wave in the drilling fluid within the hole. The pressure wave is converted to seismic P- and S-waves at the boring sidewalls, and at each receiver, the P- and S-waves are converted back to pressure waves. The elapsed time between wave arrivals at the receivers is used to determine the average velocity of a 1-meter-high column of soil. The process is repeated for the full depth of the boring to obtain a continuous log of the boring.

Based on the results of shear wave velocity measurements performed, the average shear wave velocity for the upper 100 feet was approximately 1,210 feet per second.

The results of the P-S logging are presented graphically on Figure 5. GEOVision's report of their geophysical testing P-S log results are presented in Appendix C.

3.7 LABORATORY TESTING

Geotechnical laboratory testing was performed on select samples from the borings. The following tests were performed:

- In-place moisture and density
- Atterberg limits
- Consolidation
- Direct shear strength
- Percent passing the U.S. Standard No. 200 sieve

Results of the geotechnical testing are presented in Appendix A.

4.0 SEISMIC ANALYSIS

Table 3 summarizes the seismic design parameters in accordance with the 2016 CBC and ASCE 7 based on a soil profile type S_C.

Table 3. Seismic Design Parameters

Parameter	Short Period (T_s = 0.2 second)	1 Second Period (T_1 = 1.0 second)
MCE Spectral Acceleration	S_S = 2.440 g	S_1 = 0.887 g
Site Class	C	
Site Coefficient	F_a = 1.0	F_v = 1.3
Adjusted Spectral Acceleration	S_{MS} = 2.440 g	S_{M1} = 1.153 g
Design Spectral Response Acceleration Parameters	S_{DS} = 1.627 g	S_{D1} = 0.769 g
PGA_M	0.941 g	

5.0 LIQUEFACTION ANALYSIS

5.1 GENERAL

Liquefaction generally occurs in saturated, loose to medium dense, granular soil and in saturated, soft to moderately firm silt as a result of strong ground shaking. As the density and/or particle size of the soil increases and as the confinement (overburden pressure) increases, the potential for liquefaction decreases.

According to seismic hazard maps published by the CGS (CDMG, 1999), the site is within an area identified as having a potential for liquefaction.

5.2 METHODOLOGY

We used the procedure outlined in the NCEER document titled *Proceedings of the NCEER Workshop of Liquefaction Resistance of Soils* (Youd and Idriss, 1997, updated in 2001).

The data available from the SPT hammer energy efficiency testing was used in our analysis along with the plasticity index and moisture content testing performed as part of our laboratory testing program.

To evaluate the liquefaction potential of fine-grained soil, we used the procedures summarized and/or suggested by Boulanger and Idriss (2006), which includes references to the work by Andrews and Martin (2000), Seed et al. (2003), and Bray et al. (2004).

These procedures evaluate whether soil will behave more like clay or more like sand. Clay-like behavior generally precludes liquefaction while sand-like behavior indicates soil may be subject to liquefaction and should be evaluated using the appropriate procedure.

Our determinations for clay- and sand-like behavior were made based on the plasticity data, moisture content, and grain-size distribution data from our laboratory testing.

5.3 GROUNDWATER AND GROUND SURFACE LEVELS

The groundwater level at the time of our field investigation is below the HHGWL in the area. Therefore, in performing SPT blow count and CPT tip resistance and sleeve friction correction calculations, the current groundwater level data was used for each boring. However, in evaluating liquefaction potential, the HHGWL was used.

We used an HHGWL equal to an elevation of 225 feet above MSL in our liquefaction analysis.

5.4 SEISMIC INPUT DATA

We evaluated liquefaction potential for 2,475-year recurrence interval ground motion levels defined as having a 2 percent probability of exceedance in 50 years.

We used the USGS web-based software application, accessible from http://earthquake.usgs.gov/designmaps/us/application.php, to provide the PGA and predominant earthquake magnitude for use in our evaluation. Based on our review of the data from the USGS web application, we used a liquefaction PGA_M equal to 0.941 g in conjunction with a predominant earthquake magnitude of 6.85 in our analysis.

5.5 LIQUEFACTION ANALYSIS AND RESULTS

The results of our analysis indicate the potential for liquefaction and associated settlement exists at the site. The liquefaction settlement computed in our analysis when considering the HHGWL ranges from approximately 0.9 inch to 1.8 inches as summarized in Table 4.

Table 4. Summary of Liquefaction Analysis

Exploration Number	Total Liquefaction Settlement (inches)
B-1	1.8
B-2	0.9
B-3	1.2

The results of our liquefaction analysis are presented in Appendix D.

5.6 LATERAL SPREADING
Lateral spreading may occur when potentially liquefiable soil is present in conjunction with a sloping ground surface and an "open-face" condition whereby the sloping surface daylights or is unsupported. If soil within the slope liquefies, the result may be temporary instability resulting in deformation or translation of the slope. In order for this to occur, the liquefiable soil needs to be continuous and the toe of the slope needs to be unsupported.

The depth of potentially liquefiable layers is below the lowest floor level, approximately 30 feet BGS along Santa Monica Boulevard. Open-face or unconfined conditions are not present; therefore, the potential for lateral spreading is not present at the site.

5.7 SEISMIC (DRY) SETTLEMENT
Seismic (dry) settlement can occur in relatively clean, loose to medium dense, granular soil as a result of strong ground shaking. Generally, the soil at the site contains greater than 15 percent fines, where tested and as observed in our laboratory, so relatively clean, granular soil is not present at the site.

In addition, our liquefaction analysis took into consideration the HHGWL, which is well above the planned bottom of foundation level.

Therefore, the potential for seismic (dry) settlement is not present at this site with respect to the proposed development.

6.0 CONCLUSIONS

6.1 GENERAL
Based on our review of available information, the results of our explorations, and the laboratory testing and analyses, the proposed development is feasible from a geotechnical perspective. The site is free of geologic or seismic hazards that would preclude the proposed development.

Potentially liquefiable soil is present at the site in the event of a significant rise in the groundwater level. However, the potential for excessive liquefaction-induced settlement can be mitigated with the use of a mat foundation established in the dense soil at the planned foundation depth.

Based on total static and seismic-induced settlement, the structure can be supported on spread, strip, or mat foundations established in the dense to very dense native soil at the planned foundation bottom elevations.

6.2 GROUNDWATER
The HHGWL is at approximately the lowest planned finish floor level, so the mat foundation must be designed to resist the resulting hydrostatic uplift pressure that could occur if the groundwater level rises to the historical high level.

The HHGWL is not above the bottom of planned below-grade building walls; therefore, hydrostatic design is not required for the below-grade building walls.

The current groundwater level is on the order of approximately 18 to 26 feet below the lowest planned finish floor level and approximately 12 to 20 feet below the anticipated bottom of foundation. Therefore, it is unlikely that groundwater control provisions will be required during construction for the mass excavation. However, it is possible that groundwater control provisions may be required for elevator pit, vault, and sump excavations.

A permanent waterproofing system is planned for the below-grade building walls and the floor slab/mat foundation.

7.0 RECOMMENDATIONS

The following sections present recommendations based on the results from our geotechnical evaluation of the site, our understanding of the proposed development, and our discussions with the project team.

7.1 MAT FOUNDATION

7.1.1 Bearing Pressure and Modulus of Subgrade Reaction

The proposed building may be supported on a mat foundation established in the dense to very dense native soil at the site at the planned foundation bottom level (approximately Elevation 223 feet above MSL).

Mat foundations established at least 3 feet below the lowest adjacent grade or top of floor slab can be designed using an allowable bearing pressure of 7,500 psf and a subgrade modulus of reaction equal to 100 pci. The assumed modulus includes a reduction for the size of the mat foundation.

The design bearing pressure is based on the results of strength testing presented in Appendix A. The subgrade modulus value is based on the shear wave velocity measurements made at the foundation level.

7.1.2 Settlement

Using an average allowable bearing pressure of approximately 2,600 psf applied over the entire footprint and noting that the pressure release from the planned excavation ranges from approximately 1,200 to 2,400 psf, we estimate that total static settlement of the mat foundation established in the dense to very dense native soil at the site will be ¾ inch or less. Differential settlement due to gravity loading across the mat foundation is estimated to be ½ inch or less.

As discussed in Section 5.5, liquefaction settlement on the order of 0.9 inch to 1.8 inches may occur during strong ground shaking and when a concurrent rise in the groundwater level to the historical high level. Therefore, when considering liquefaction settlement, the total estimated settlement will be on the order of 2.5 inches or less and the total differential settlement will be on the order of 1.25 inches or less across the mat foundation.

7.1.3 Lateral Resistance

Lateral loading may be resisted using a passive pressure of 300 psf per foot of embedment where concrete is placed directly against the undisturbed, dense native soil.

A coefficient of friction equal to 0.4 may be used when calculating resistance to sliding for footings bearing on the native soil.

The passive pressure and the frictional resistance may be used in combination without reduction and may be increased by one-third when considering short-term seismic and wind loading.

The above lateral bearing pressure takes into consideration that the foundations will be established near the potential HHGWL.

7.1.4 Groundwater Impact on Permanent Design

CBC Sections 1805.1.3 and 1805.3 define the conditions in which waterproofing will be required when the groundwater level is within 6 inches of the lowest planned finish floor level or higher. Therefore, since the lowest finish floor level is within 6 inches of the historical high levels at the site, waterproofing is required per CBC Sections 1805.1.3 and 1805.3.

It should be noted that in the event HHGWLs are experienced at the site, a condition could exist where the mat foundation will be submerged. This condition will not adversely impact the performance of the mat foundation as the hydrostatic pressure acting against the mat is considerably lower than the weight of the mat foundation.

7.2 PERMANENT BELOW-GRADE WALLS/PERMANENT SHORING WALLS

7.2.1 Design Lateral Earth Pressures

For static conditions, drained below-grade building walls should be designed to resist a trapezoidal-shaped at-rest lateral earth pressure distribution equal to 32H psf as shown on Figure 6.

If wall back-drainage is not provided, the below-grade building walls should be designed to resist a buoyant trapezoidal-shaped at-rest lateral earth pressure distribution equal to 16H psf in conjunction with a hydrostatic pressure equal to 62.4 pcf as shown on Figure 7.

For seismic loading conditions, drained below-grade building walls should be designed to resist a triangular-shaped active lateral earth pressure distribution also equal to 30H psf in conjunction and a triangular-shaped seismic lateral earth pressure distribution equal to 8H psf as shown on Figure 8.

If wall back-drainage is not provided, the below-grade building walls should be designed to resist a buoyant triangular-shaped active lateral earth pressure distribution equal to 15H psf in conjunction with a triangular-shaped seismic lateral earth pressure distribution equal to 8H psf as shown on Figure 9.

The load combination (active and seismic earth pressure) and the shape of the seismic pressure distribution are each based on the recent technical papers (Atik and Sitar, 2010; Sitar et al., 2010).

The upper 10 feet of the below-grade building walls should also be designed to resist a uniform lateral pressure of 100 psf to account for normal traffic loading as shown on Figures 7 through 9.

Where the surface at the top of the shoring is sloped, the recommended lateral earth pressures should be increased as indicated in Table 5.

Table 5. Permanent Below-Grade Walls
Increased Lateral Earth Pressure for Sloping Retained Surfaces

Slope Inclination at Top of Shoring (H:V)	Increase in Lateral Earth Pressure (percent)
1:1	200
1.5:1	165
2:1	150

7.2.2 Surcharge Loading from Adjacent Building Foundations

Surcharge loads from the adjacent building foundations can be determined by the structural engineer and/or the shoring designer using NAVFAC DM 7.2. We will review the surcharge calculations prior to approving and stamping the project plans indicating that the recommendations provided herein were properly incorporated in design of the permanent below-grade walls/permanent shoring walls.

7.2.3 Wall Back-Drainage

Wall back-drainage provisions should be provided and retaining walls should be constructed with adequate back-drainage to prevent the buildup of hydrostatic pressure behind the walls or the walls should be designed to resist hydrostatic pressure for the full depth of the wall.

Typically, a pre-fabricated geo-composite drainage board is fixed to the shoring wall and the below-grade building wall is constructed by the placement of shotcrete directly against the drainage board.

7.3 TEMPORARY SHORING

7.3.1 Design Lateral Earth Pressures

Typically, cantilevered shoring is feasible for retained heights of approximately 15 feet or less, and braced shoring typically becomes economical for retained heights exceeding 15 feet. Cantilevered shoring should be designed to resist a triangular lateral earth pressure distribution with a maximum value of 30 pcf.

Internally braced shoring should be designed to resist a trapezoidal earth pressure where the maximum value is equal to 24H, where H is the retained height.

The applicable surcharge loading from the adjacent building foundations can be determined following Section 7.2.2.

In addition, the upper 10 feet of the shoring should be designed to resist a uniform lateral pressure of 100 psf to account for normal traffic loading. When developing temporary shoring design drawings, the location of construction cranes and other potentially heavy equipment or loads that may act against the shoring system should be considered and incorporated into the design.

For cantilevered and braced shoring design, where the surface at the top of the shoring is sloped, the recommended lateral earth pressures should be increased as indicated in Table 6.

Table 6. Temporary Shoring – Lateral Earth Pressures

Slope Inclination at Top of Shoring (H:V)	Increase in Lateral Earth Pressure (percent)
1:1	200
1.5:1	165
2:1	150

7.3.2 Soldier Piles, Tiebacks, and Timber Lagging

For the design of soldier piles spaced at least 2 diameters on centers, the allowable lateral bearing value (passive value) of the native soils below the level of excavation may be assumed to be 600 psf per foot of depth, up to a maximum of 6,000 psf of depth. The recommended value includes a 200 percent increase for the case of isolated piles as allowed per the CBC. To develop the full lateral value, provisions should be taken to ensure firm contact between the soldier piles and the undisturbed soil.

If the embedded portion of the soldier pile shaft is filled with lean mix concrete with a minimum compressive strength of 2,000 psi, the effective width of the soldier pile shaft (for use in developing passive resistance) may be assumed to be twice the diameter of the shaft. If the embedded portion of the soldier pile shaft is filled with other materials (such as low strength sand-cement slurry), the effective width of the soldier pile should be limited to be the diagonal dimension of the soldier pile beam. The materials used to fill the portion of the shaft above the embedded depth should be of sufficient strength to adequately transfer the imposed loads to the surrounding soil.

The frictional resistance between the soldier piles and the retained earth may be used in resisting the downward component of the tieback anchor loads. For design, the coefficient of friction between the soldier piles and the retained earth is 0.4. This value is based on the assumption that uniform full bearing will be developed between the steel soldier beam and the retained earth against the shaft's backfilled material. In addition, provided that the portion of the soldier piles below the excavated level is backfilled with structural concrete, the soldier piles below the excavated level may be used to resist downward loads. For resisting downward loads, the frictional resistance between the concrete soldier piles and the soil below the excavated level may be taken equal to 400 psf.

Drilling for solider pile shafts will encounter groundwater, and provisions to control groundwater and mitigate potential caving of the shaft side walls may be required. Such provisions may consist of the use of steel shell casing and/or polymer-based drilling fluid, or other suitable alternatives proposed by the shoring contractor. The shoring contractor should provide a procedure for the installation of solider pile shafts for our review and comment.

Continuous lagging will be required between the soldier piles. The soldier piles and anchors should be designed for the full anticipated lateral pressure; however, the pressure on the lagging will be less due to arching in the soil. For clear spans of up to 6 feet, we recommend that the lagging be designed for a triangular distribution of earth pressure where the maximum pressure is 400 psf at the mid-line between soldier piles and 0 psf at the soldier piles.

Tieback friction anchors may be used to resist lateral loads. For design purposes, it may be assumed that the active wedge adjacent to the shoring is defined by a plane drawn at 35 degrees with the vertical through the bottom of the excavation. The anchors should extend at least 20 feet beyond the potential active wedge and to a greater length, if necessary, to develop the desired capacities.

The capacities of anchors should be determined by testing of the initial anchors as outlined below. We anticipate that the anchors will be capable of achieving an allowable bond strength of 3 kips per square foot, depending on the method of construction. A variety of methods are available for construction of anchors.

For design of temporary shoring tieback anchors, we recommend using a factor of safety not less than 1.5.

The shoring designer and the shoring contractor should be responsible for selecting the appropriate bonded length and installation methods to achieve the required capacity and our office should review the final shoring plans.

If post-grouted anchors are used, we estimate that the anchors will develop resistance on the order of three times the estimated value.

Only the frictional resistance developed beyond the active wedge would be effective in resisting lateral loads. If the anchors are spaced at least 6 feet on centers, reduction in the capacity of the anchors does not need to be considered due to group action.

The anchors should be installed at angles of 15 to 40 degrees below the horizontal. Caving of the anchor holes should be anticipated and provisions made to minimize such caving. The anchors should be filled with concrete placed by pumping from the tip out, and the concrete should extend from the tip of the anchor to the active wedge. To minimize chances of caving, we suggest that the portion of the anchor shaft within the active wedge be backfilled with sand before testing the anchor. This portion of the shaft should be filled tightly and flushed with the face of the excavation. The sand backfill may contain a small amount of cement to allow the sand to be placed by pumping. For post-grouted anchors of 8-inch diameter or less, the anchor may be filled with concrete to the surface of the shoring.

Our representative should select at least two of the initial anchors for 24-hour 200 percent tests and six additional anchors for quick 200 percent tests. The purpose of the 200 percent test is to verify the friction value assumed in design. The anchors should be tested to develop twice the assumed friction value. Where satisfactory tests are not achieved on the initial anchors, the anchor diameter and/or length should be increased until satisfactory test results are obtained.

For post-grouted anchors where concrete is used to backfill the anchor along its entire length, the test load should be computed as that required to develop the appropriate friction along the entire bonded length of the anchor.

Total deflection during the 24-hour 200 percent tests should not exceed 6 inches during loading; the anchor deflection should not exceed 0.75 inch during the 24-hour period, measured after the 200 percent test load is applied. If the anchor movement after the 200 percent load has been applied for six hours is less than 0.5 inch and the movement over the previous four hours has been less than 0.1 inch, the test may be terminated.

For the quick 200 percent tests, the 200 percent test load should be maintained for 30 minutes. Total deflection of the anchor during the quick 200 percent tests should not exceed 6 inches; deflection after the 200 percent test load has been applied should not exceed ¼ inch during the 30-minute period. Where satisfactory tests are not achieved on the initial anchors, the anchor diameter and/or length should be increased until satisfactory test results are obtained.

All of the production anchors should be pre-tested to at least 150 percent of the design load; total deflection during the tests should not exceed 6 inches. The rate of creep under the 150 percent test should not exceed 1/10 inch over a 15-minute period for the anchor to be approved for the design loading.

After a satisfactory test, each production anchor should be locked off at the design load. The locked-off load should be verified by rechecking the load in the anchor. If the locked-off load varies by more than 10 percent from the design load, the load should be reset until the anchor is locked off within 10 percent of the design load. Installation of the anchors and testing of the completed anchors should be observed by a representative of our firm.

As an alternative to tiebacks, raker bracing may be used to internally brace the soldier piles. If used, raker bracing could be supported laterally by temporary concrete footings (deadmen) or by the permanent interior footings. For design of such temporary footings poured with the bearing surface normal to the rakers inclined at 45 to 60 degrees with the vertical, a bearing value of 6,000 psf may be used for footings on the dense or stiff native soil provided the shallowest point of the footing is at least 1 foot below the lowest adjacent grade. To reduce movement of the shoring, rakers should be tightly wedged against the footings and/or shoring system.

It is difficult to accurately predict the amount of deflection of a shoring system. It should be realized, however, that some deflection will occur. We estimate that this deflection could be on the order of 1 inch at the top of the shored embankment. If greater deflection occurs during construction, additional bracing may be necessary to minimize settlement of utilities in the adjacent streets. If it is desired to reduce deflection of the shoring, a greater active pressure could be used in the shoring design.

Some means of monitoring the performance of the shoring system is recommended. The monitoring should consist of periodic surveying of the lateral and vertical locations of the tops of all the soldier piles. We will be pleased to discuss this further with the design consultants and the contractor when the design of the shoring system has been finalized.

7.4 TEMPORARY SLOPES AND VERTICAL CUTS

Temporary, unsurcharged slopes should not exceed a 1H:1V gradient when constructed in existing fill and/or native materials. Such temporary slopes should not exceed 15 feet high.

Temporary vertical cuts that will be beneficial for foundation construction may be made into the dense native materials but should not exceed 5 feet BGS.

Temporary cut slopes should be protected from erosion by directing surface water away from the top of slopes by placing sand bags at the top of slopes and covering the slopes with plastic sheeting during wet weather.

Surcharge loading, including (but not limited to) materials and equipment lay-down, cranes and concrete trucks, and construction or regular traffic, should not be allowed within 10 feet of temporary construction slopes.

7.5 FLOOR SLABS

The building floor slab will be constructed on approximately 1 foot of compacted fill placed on the top of the mat foundation.

7.6 GROUNDWATER CONTROL PROVISIONS

The planned construction will include mass excavations on the order of 5 feet below the lowest planned finish floor level to allow for the construction of the mat foundation. Localized deeper excavations may also be required for elevator pits and/or other depressed building features.

The required excavations will extend below the HHGWL, and there is a possibility that groundwater may be encountered during construction at the bottom of the excavation. In this case, suitable groundwater control provisions may be required.

It would be prudent to periodically check the groundwater level in the existing groundwater monitoring well installed in boring B-3 to verify the groundwater level at the time of construction.

It should be noted that other than the potential need for temporary groundwater control provisions during construction, the impact of the HHGWL on the project is negligible.

The contractor should be aware of requirements for discharge of water generated on site, including National Pollutant Discharge Elimination System, if it is intended to discharge groundwater to the storm drain system.

7.7 SITE PREPARATION

7.7.1 General

Site preparation includes tasks to be performed prior to the placement of new fill material at the site. Since the mat foundation will be established on dense native soil, the only areas to receive new fill will be for floor slab support and/or for non-structural features (such as behind below-grade walls and beneath landscaping or flatwork areas).

In these areas, all loose or otherwise unsuitable soil should be removed and the exposed surface of the soil should be scarified to a depth of 6 inches, moisture conditioned, and compacted as recommended in the "Compaction" section.

7.7.2 Bottom of Mass Excavation

The current groundwater level is several feet below the bottom of the planned mass excavation and groundwater is not anticipated to affect construction. However, the actual conditions at the bottom of the mass excavation could be affected by the combination of disturbance and intermittent loading from construction and excavation activities as well as the underlying groundwater table.

It may be prudent to consider construction of a waste slab at the bottom of the mass excavation to preserve the bottom and avoid localized or mass mitigation that may be required. As an alternative, if localized areas or the majority of the bottom are disturbed as described above or by other means, the disturbed areas should be removed and replaced with a sufficient thickness of ¾-inch-minus crushed rock to re-establish a firm bottom.

7.8 CONSTRUCTION CONSIDERATIONS

7.8.1 General

If not carefully executed, site preparation and basement and footing excavation can result in the presence of unsuitable (disturbed and/or excessively soft) soil conditions that may require additional effort to mitigate or, in more extreme cases (if not detected), could result in significant costs to repair damage to flatwork or structures.

Earthwork should be planned and executed to minimize subgrade disturbance. Soil that has been disturbed during site preparation activities or soft or loose zones identified during probing should be removed beneath foundations and floor slabs.

7.8.2 Compaction

All granular fill material should be compacted to at least 95 percent of the maximum dry density, as determined by ASTM D1557. Cohesive fill, though not anticipated for this project, should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557.

Fill material should be placed in loose lifts not exceeding 8 inches in thickness, properly moisture conditioned, and mechanically compacted to the minimum required density. For granular fill, compaction may be achieved using heavy equipment and vibration, although the use of such equipment should not be allowed within a horizontal distance of 3 feet from retaining walls. Backfill placed within 3 feet of retaining walls should be compacted in lifts less than 6 inches thick using hand-operated compaction equipment. If flatwork (slabs, sidewalk, or pavement) will be placed adjacent to retaining walls, we recommend that the upper 2 feet of fill be compacted to 95 percent of the maximum dry density, as determined by ASTM D1557.

7.8.3 Site Drainage

Adequate site drainage should be maintained at all times. Site drainage should be collected and routed to suitable discharge points.

7.9 FILL MATERIALS

Fill materials should be free of organic matter and other deleterious materials and, in general, should consist of particles no larger than 6 inches in largest dimension.

Existing asphalt pavement and base materials generated from on-site demolition can be used for structural fill, although the percentage of such materials should be limited to less than 5 percent of the fill content.

The following sections provide recommendations for the reuse of on-site materials in compacted fills and for the use of imported materials in required fills.

7.9.1 On-Site Native Soil

The on-site native soil is suitable for use in the required fills provided that particles larger than 3 inches in largest dimension are removed. However, the percentage of particles in excess of 3 inches should be less than 10 percent of the fill.

7.9.2 Imported Granular Material

If necessary, imported granular material should be pit- or quarry-run rock, crushed rock, or crushed gravel and sand that is well graded and has less than 5 percent by dry weight passing the U.S. Standard No. 200 Sieve. The percentage of fines can be increased to 12 percent if the fill is placed during dry weather and provided the fill material is properly moisture conditioned to achieve the required compaction. Imported fill material should have a sand equivalent of at least 35.

7.10 UTILITY TRENCHES

Trench cuts should stand near vertical to a depth of approximately 4 feet in the upper silt and sand provided groundwater seepage is not present. If seepage is encountered that undermines the stability of the trench, the sidewalls should be flattened or shored. All trench excavations should be in accordance with applicable OSHA, state, and local regulations.

It should be understood that it is the contractor's responsibility to select the excavation methods, monitor trench excavations for safety, and provide shoring required to protect personnel and adjacent improvements.

8.0 OBSERVATION OF CONSTRUCTION

Geotechnical testing and observation during construction is considered to be a continuing part of the geotechnical consultation. In order to confirm that the recommendations presented herein remain applicable, our representative should be present at the site to provide appropriate observation and testing.

As satisfactory earthwork and foundation performance depend to a large degree on the quality of construction, it is essential that qualified personnel be present to perform the required geotechnical testing and inspection.

The presence of an experienced representative at the site during construction provides value and benefits to the project and can often result in schedule and cost savings for the owner by approaching the geotechnical testing and inspection responsibilities in a proactive and team-oriented manner.

9.0 LIMITATIONS

We have prepared this report for use by Soto Capital and members of the design and construction team for the proposed development. The data and report can be used for estimating purposes, but our report, conclusions, and interpretations should not be construed as a warranty of the subsurface conditions and are not applicable to other sites.

Explorations indicate soil conditions only at specific locations and only to the depths penetrated. They do not necessarily reflect soil strata or water level variations that may exist between exploration locations. If subsurface conditions differing from those described are noted during the course of excavation and construction, re-evaluation will be necessary.

The recommendations presented in this report are based on the current site development plan and structural information provide to us by the project team. If design changes are made, we should be retained to review our conclusions and recommendations and to provide a written evaluation or modification.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with that degree of skill and care ordinarily exercised by reputable geotechnical consultants practicing in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

◆ ◆ ◆

We appreciate the opportunity to be of continued service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

GeoDesign, Inc.

John W. Halseth, P.E.
Senior Project Engineer

REGISTERED PROFESSIONAL ENGINEER
JOHN W. HALSETH
82559
CIVIL
STATE OF CALIFORNIA

Signed 10/31/2019

John S. McKeown

John S. McKeown, C.E.G.
Consulting Geologist

PROFESSIONAL GEOLOGIST
JOHN S. McKEOWN
No. EG2396
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Signed 10/31/2019

Jeffery D. Tucker, P.E., G.E. (Oregon)
Principal Engineer

REFERENCES

Andrews, D.C.A and Martin G.R., 2000 “Criteria for Liquefaction of Silty Soils,” Proceedings of the 12th World Conference on Earthquake Engineering.

Atik, L. A., and Sitar, N. 2010, “Seismic Earth Pressures on Cantilever Retaining Structures,” Journal of Geotechnical and Geoenvironmental Engineering, ASCE October 2010.

American Society of Civil Engineers, 2013, Minimum Design Loads for Buildings and Other Structures, ASCE/SEI Standard 7-10.

Boulanger, R.W. and Idriss, I.M., 2006, “Liquefaction Susceptibility Criteria for Silts and Clays” Journal of Geotechnical and Geoenvironmental Engineering, November 2006, pp. 1413 - 1426

Bray, J. D., et al., 2004, “Subsurface Characterization at Ground Failure Sites in Adapazari, Turkey,” Journal of Geotechnical and Geoenvironmental Engineering, 130 (7), pps 673-685.

California Department of Water Resources (CDWR), 1961, “Planned Utilization of Groundwater Basins of the Coastal Plain of Los Angeles County,” Bulletin 104, Appendix A.

California Division of Mines and Geology (CDMG), 1996, “Probabilistic Seismic Hazard Assessment for the State of California” Open File Report 96-08.

California Division of Mines and Geology (CDMG), 1998, "Seismic Hazard Evaluation of the Beverly Hills 7.5 Minute Quadrangle, Los Angeles County, California" Open-File Report 98-14.

California Division of Mines and Geology (CDMG), 1999, “State of California Seismic Hazard Zones, Beverly Hills Quadrangle, Official Map.”

California Geological Survey (CGS), 2000, “Epicenters of and Areas Damaged by M $\geq$5 California Earthquakes, 1800 – 1999,” CGS Map Sheet 49.

California Geological Survey (CGS), 2004, “Recommended Criteria for Delineating Seismic Hazard Zones in California,” Special Publication 118.

California Geological Survey (CGS), 2008, “Guidelines for Evaluating and Mitigating Seismic Hazards in California,” Special Publication 117.

California Geological Survey (CGS), 2010a, “Fault Activity Map of California - CGS Geologic Data Map No. 6,” Interpretation and Compilation by Jennings, C. W. and Bryant, W. A.

California Geological Survey (CGS), 2010b, “A Explanatory Text to Accompany the Fault Activity Map of California, Scale 1:750,000.”

California Geological Survey (CGS), 2018a, Earthquake Fault Zones – A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California CGS Special Publication 42.

California Geological Survey (CGS), 2018b, Earthquake Fault Zones – Beverly Hills 7.5 Minute Quadrangle, revised official map, dated January 11, 2018.

City of West Hollywood, , 2010, Seismic Technical Background Report – City of West Hollywood General Plan prepared by KFM Geoscience.

Crook, R., Jr., and Proctor, R.J., 1992 “The Santa Monica and Hollywood Faults and the Southern Boundary of the Transverse Ranges Province” in Engineering Geology Practice in Southern California.

Crook, R., Jr., Allen, C. R., Kamb, B., Payne, C. M., and Proctor, R. J., 1987, “Quaternary Geology and Seismic Hazard of the Sierra Madre and Associated Faults Western San Gabriel Mountains,” in U.S. Geological Survey Professional Paper 1339, Ch. 2, pp. 27–63.

Crook, R., Jr., Proctor, R. J., and Lindvall, E.E., 1983, “Seismicity of the Santa Monica and Hollywood Faults Determined by Trenching,” Technical Report to the U.S. Geological Survey, Contract No. 14-08-001-20523, p. 26.

Dibblee, T.W., Jr., 1991, “Geologic Map of the Beverly Hills and Van Nuys (South ½) Quadrangles, Los Angeles County, California,” Dibblee Geological Foundation Map No. DF-31.

Dolan, J. F. and Sieh, K., 1992, “Paleoseismology and Geomorphology of the Northern Los Angeles Basin: Evidence for Holocene Activity on the Santa Monica Fault and Identification of New Strike-Slip Faults through Downtown Los Angeles,” EOS, Transactions of the American Geophysical Union, Vol. 73, p. 589.

Dolan, J. F., Sieh, K. E., Rockwell, T. K., Guptill, P., and Miller, G., 1997, “Active Tectonics, Paleoseismology, and Seismic Hazards of the Hollywood Fault, Northern Los Angeles Basin, California,” Geological Society of America Bulletin, Vol. 109, No. 12.

Dolan, J. F., Stevens, D., and Rockwell, T. K., 2000, "Paleoseismologic Evidence for an Early to Mid-Holocene Age of the Most Recent Surface Fault Rupture on the Hollywood Fault, Los Angeles, California" Bulletin of the Seismological Society of America, April 2000.

Hill, R.L., Sprotte, E.C., Chapman, R.H., Chase, G.W., Bennett, J.H., Real, C.R., Borchardt, G., and Weber, F.H., Jr., 1979, “Earthquake Hazards Associated with Faults in the Greater Los Angeles Metropolitan Area, Los Angeles County, California, Including Faults in the Santa Monica–Raymond, Verdugo–Eagle Rock and Benedict Canyon Fault Zones,” California Division of Mines and Geology, Open File Report 79-16LA.

Los Angeles, County of, 2018, Department of Public Works web-based water well data, http://dpw.lacounty.gov/general/wells.

Mendenhall, W.C., 1905, Map Showing the Artesian Areas (1904) and Hydrographic Contours in the Valley of Southern California in, Hydrology of San Bernardino Valley, California, U.S. Geological Survey Water-Supply and Irrigation Paper 142.

Olsen, B.P.E., 2018, Faults Recommended for Zoning map (Plate 3) *in* California Geological Survey Fault Evaluation Report FER 259, The Hollywood, Santa Monica and Newport-Inglewood Faults in the Beverly Hills and Topanga 7.5' quadrangles, Los Angeles County, California, revised January 5, 2018.

Risk Engineering, Inc., 2010, EZFRISK Version 7.42

Seed, R.B. et al., 2003, "Recent Advances in Soil Liquefaction Engineering: A Unified and Consistent Framework", 26th Annual ASCE Los Angeles Geotechnical Spring Seminar.

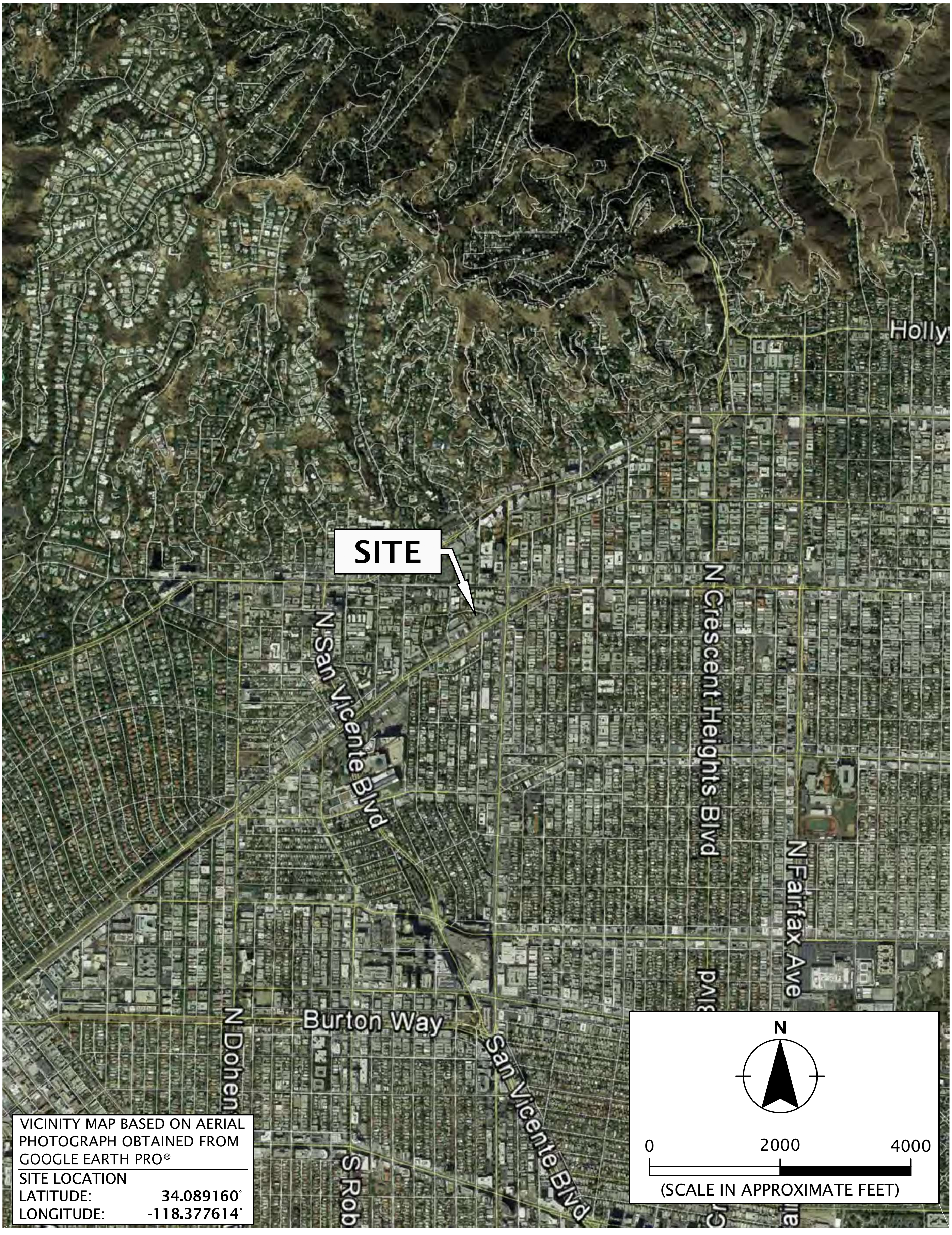
U.S. Geological Survey, 1966, "7.5-Minute Beverly Hills Quadrangle Map," photorevised 1981.

Youd and Idriss, 1997, "Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils," NCEER Technical Report 97-0022

Youd and Idriss, 2001, "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils", Journal of Geotechnical and Geoenvironmental Engineering, October 2001; pp 817 to 833

Ziony, J. I., and Jones, L. M., 1989, "Map Showing Late Quaternary Faults and 1978–1984 Seismicity of the Los Angeles Region, California," U.S. Geological Survey Miscellaneous Field Studies Map MF-1964.

FIGURES



VICINITY MAP BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®

SITE LOCATION

LATITUDE:	34.089160˚
LONGITUDE:	-118.377614˚

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

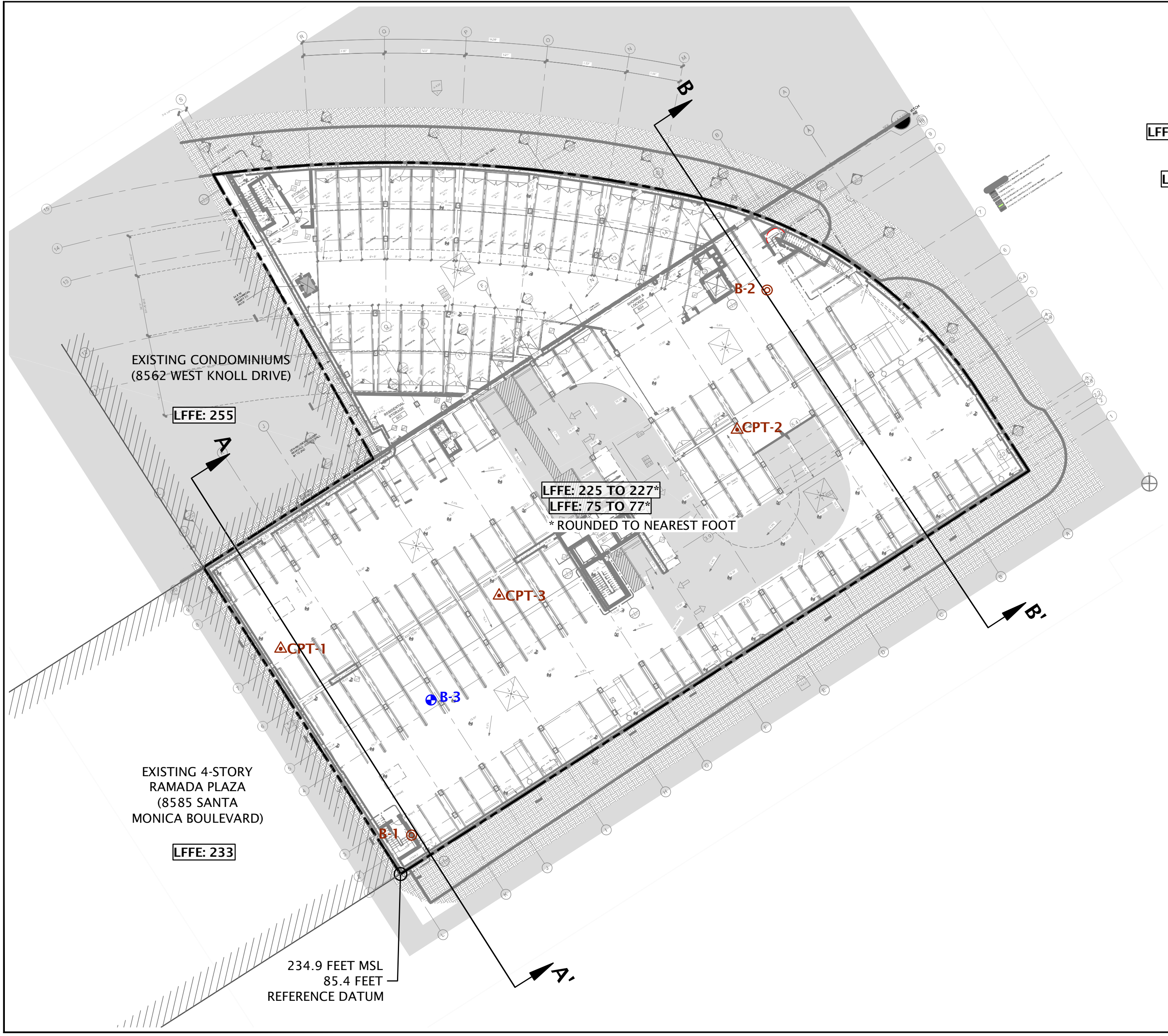
JULY 2018

VICINITY MAP

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

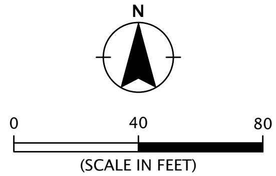
FIGURE 1

Printed By: mmiller | Print Date: 7/23/2018 8:15:36 AM
File Name: J:\S-Z\SotoCapt\SotoCapt-1\SotoCapt-1-01\Figures\CAD\SotoCapt-1-01-VM03.dwg | Layout: FIGURE 1



LEGEND:

B-3 ●	BORING (MAY 2017)
B-1 ◎	BORING (AUGUST 2010)
CPT-1 △	CONE PENETROMETER (AUGUST 2010)
LFFE: 225 TO 227	LOWEST FINISHED FLOOR ELEVATION ROUNDED TO THE NEAREST FOOT (MSL)
LFFE: 75 TO 77	LOWEST FINISHED FLOOR ELEVATION ROUNDED TO THE NEAREST FOOT (REFERENCE DATUM)
A ↑ ↑ A'	CROSS SECTION



SITE PLAN BASED ON DRAWINGS OBTAINED FROM
DFH ARCHITECTS MAY 24, 2018

Printed By: mmiller | Print Date: 7/23/2018 8:15:39 AM
File Name: J:\S-Z\SotoCapt\SotoCapt-1\SotoCapt-1-01\Figures\CAD\SotoCapt-1-01-SP08.dwg | Layout: FIGURE 2

FIGURE 2

SITE PLAN

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

SOTOCAPT-1-01

JULY 2018

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

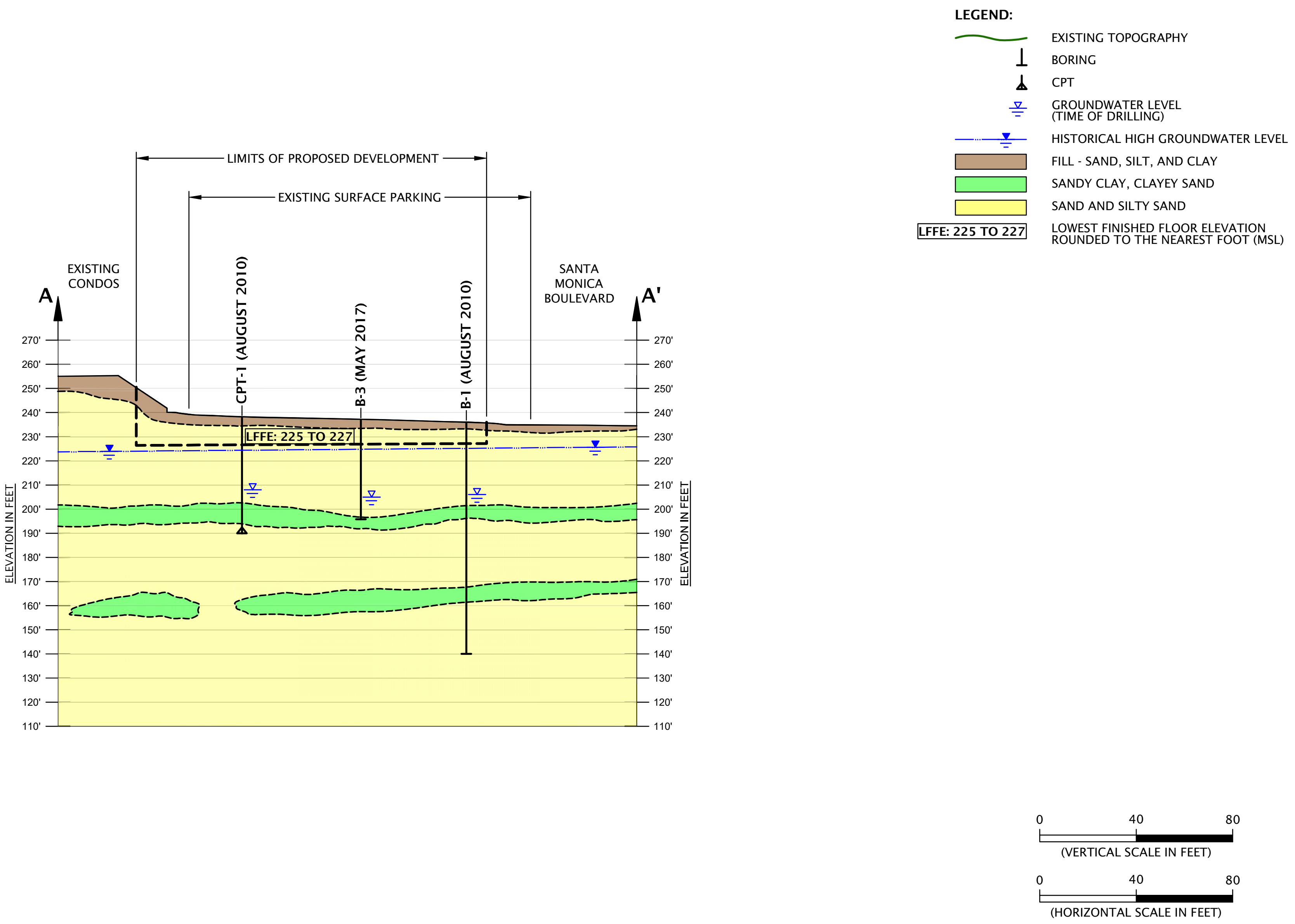


FIGURE 3

CROSS SECTION A-A'

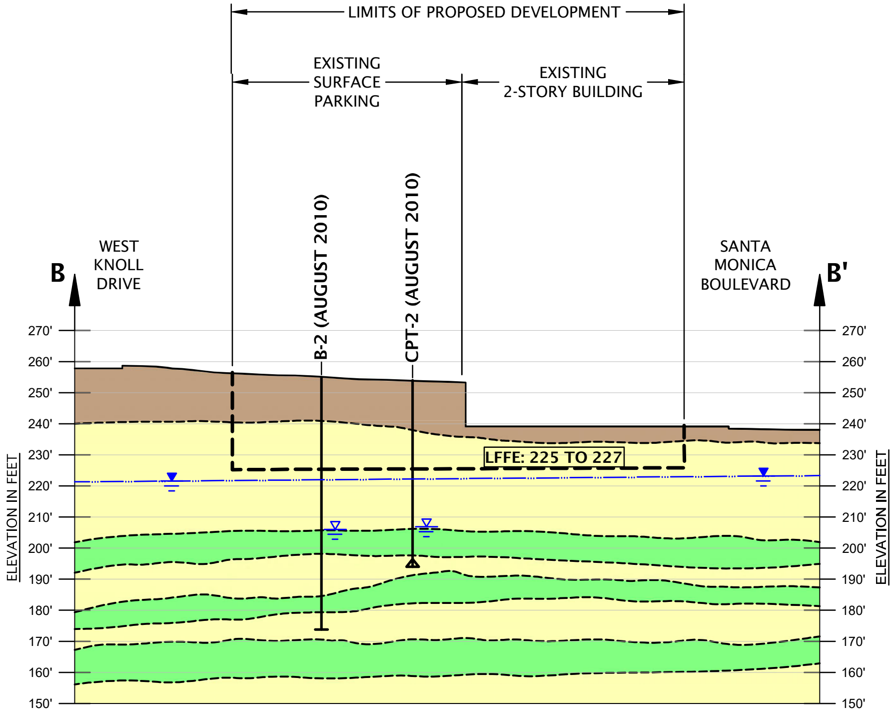
PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

SOTOCAPT-1-01

JULY 2018

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

Printed By: mmiller | Print Date: 7/23/2018 8:15:47 AM
File Name: J:\S-Z\SotoCapt\SotoCapt-1\SotoCapt-1-01\Figures\CAD\SotoCapt-1-01-CS02.dwg | Layout: FIGURE 3



LEGEND:

~	EXISTING TOPOGRAPHY
⊥	BORING
⊥	CPT
▽	GROUNDWATER LEVEL (TIME OF DRILLING)
▼	HISTORICAL HIGH GROUNDWATER LEVEL
🟫	FILL - SAND, SILT, AND CLAY
🟩	SANDY CLAY, CLAYEY SAND
🟨	SAND AND SILTY SAND
LFFE: 225 TO 227	LOWEST FINISHED FLOOR ELEVATION ROUNDED TO THE NEAREST FOOT (MSL)

0 40 80
(VERTICAL SCALE IN FEET)

0 40 80
(HORIZONTAL SCALE IN FEET)

Printed By: mmiller | Print Date: 7/23/2018 8:15:48 AM
File Name: J:\S-Z\SotoCapt\SotoCapt-1\SotoCapt-1-01\Figures\CAD\SotoCapt-1-01-CS02.dwg | Layout: FIGURE 4

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

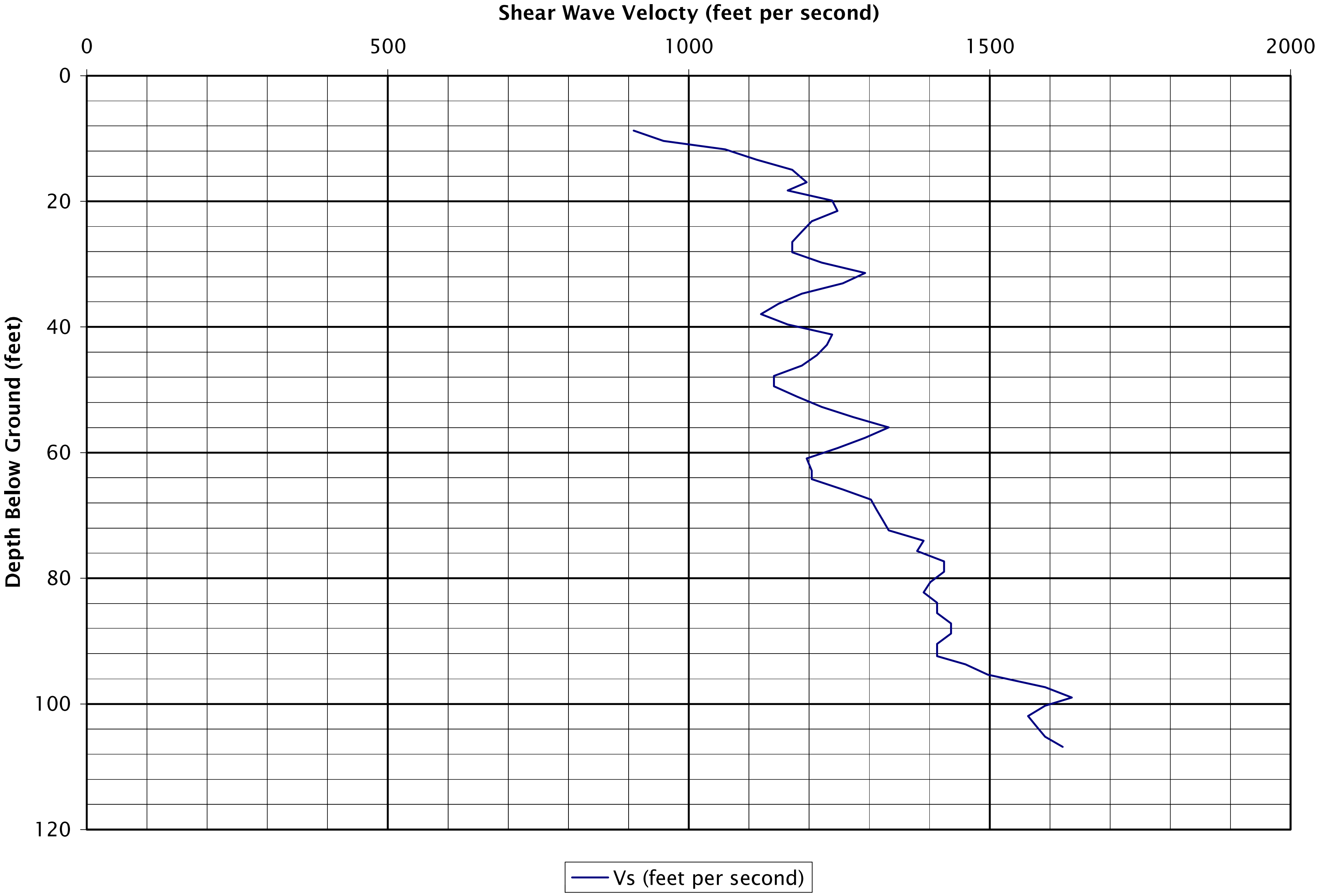
SOTOCAPT-1-01

JULY 2018

CROSS SECTION B-B'

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE 4



GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

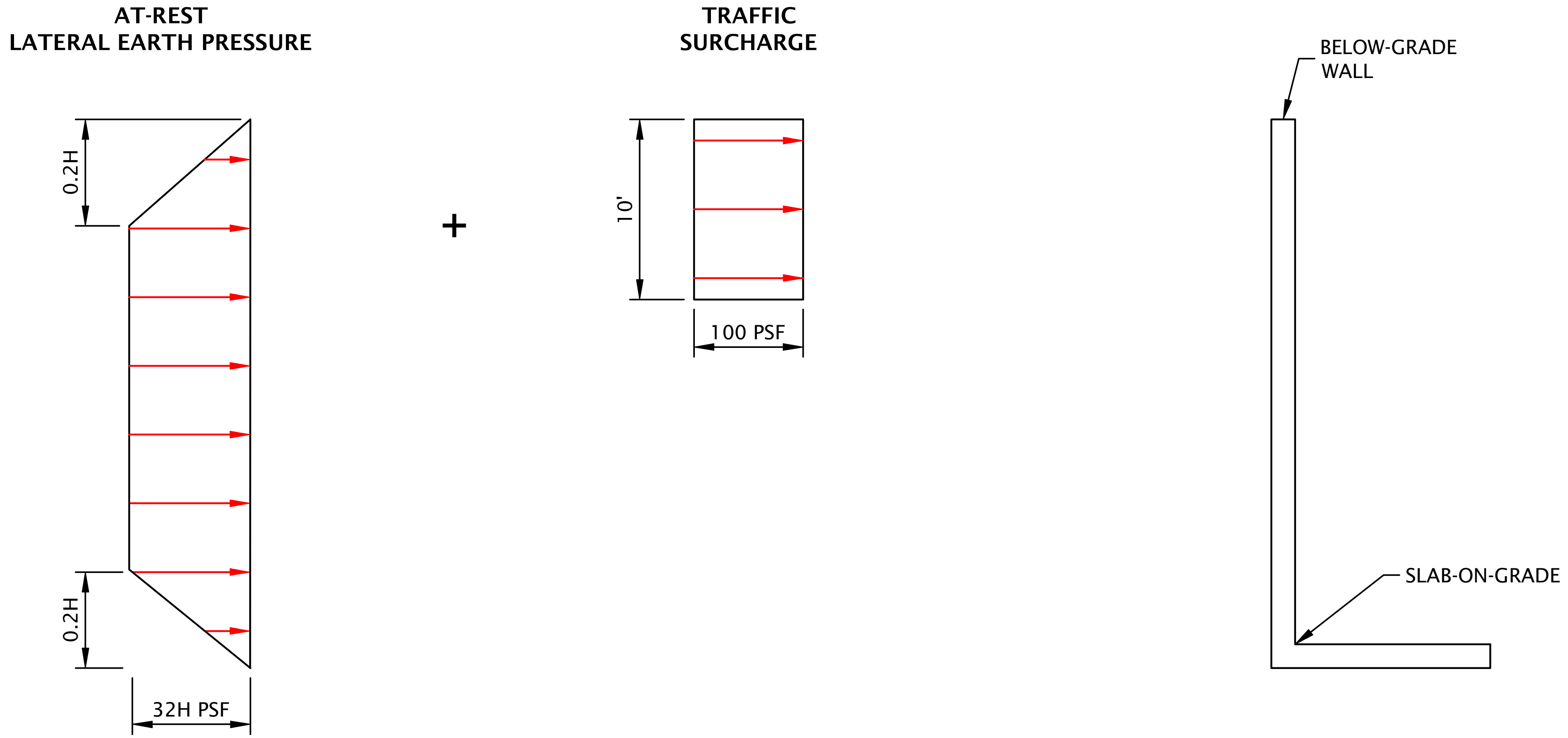
SOTOCAPT-1-01

JULY 2018

SHEAR WAVE VELOCITY

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE 5



NOTE:

1. SURCHARGE LOADING FROM EXISTING RAMADA AND CONDOMINIUM BUILDINGS SHOULD BE ADDED PER SECTION 7.2 OF REPORT.

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

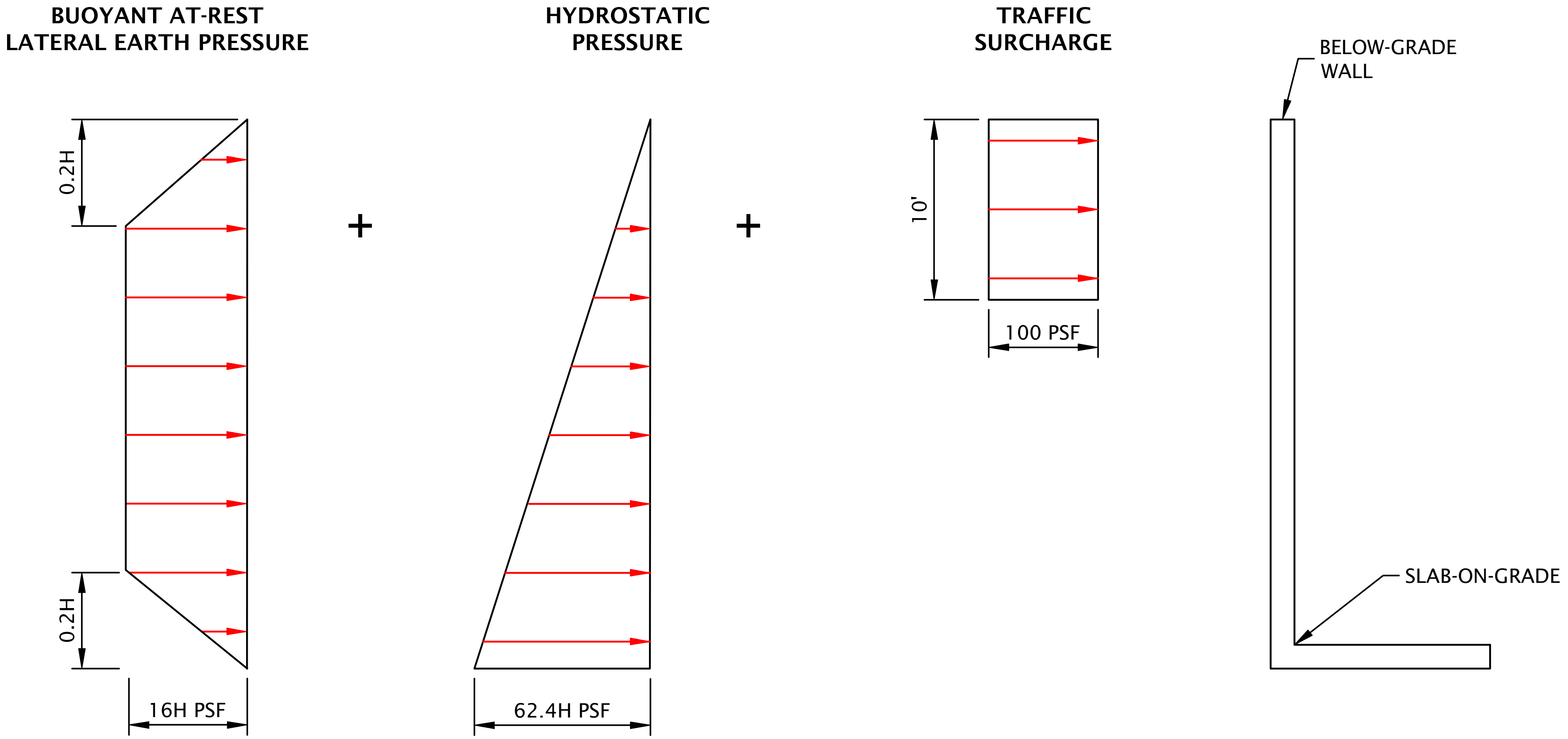
SOTOCAPT-1-01

JULY 2018

STATIC LATERAL EARTH PRESSURE - BELOW-GRADE WALLS (DRAINED)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE 6



NOTE:

1. SURCHARGE LOADING FROM EXISTING RAMADA AND CONDOMINIUM BUILDINGS SHOULD BE ADDED PER SECTION 7.2 OF REPORT.

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

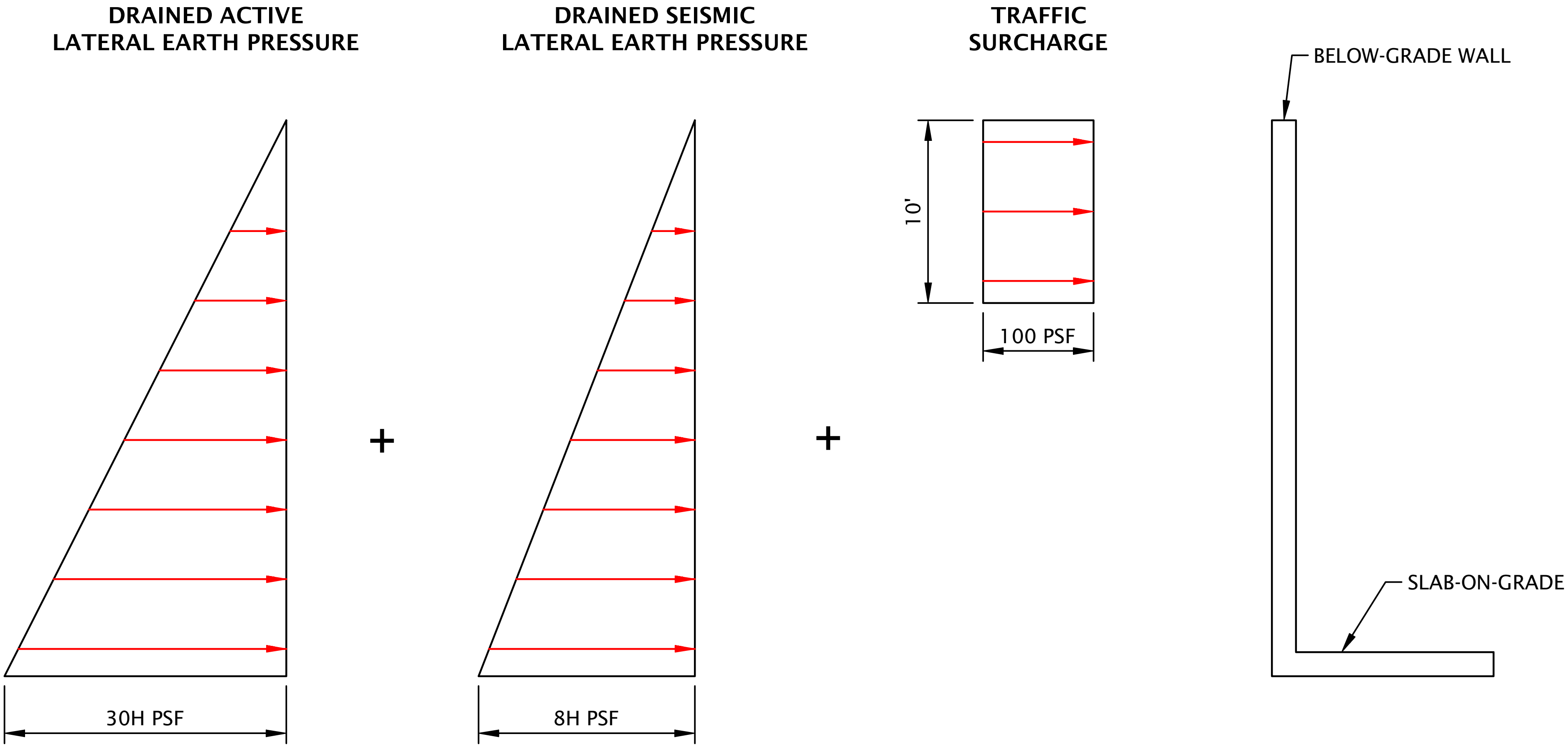
SOTOCAPT-1-01

JULY 2018

STATIC LATERAL EARTH PRESSURE - BELOW-GRADE WALLS (UNDRAINED)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE 7



NOTE:

1. SURCHARGE LOADING FROM EXISTING RAMADA AND CONDOMINIUM BUILDINGS SHOULD BE ADDED PER SECTION 7.2 OF REPORT.

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

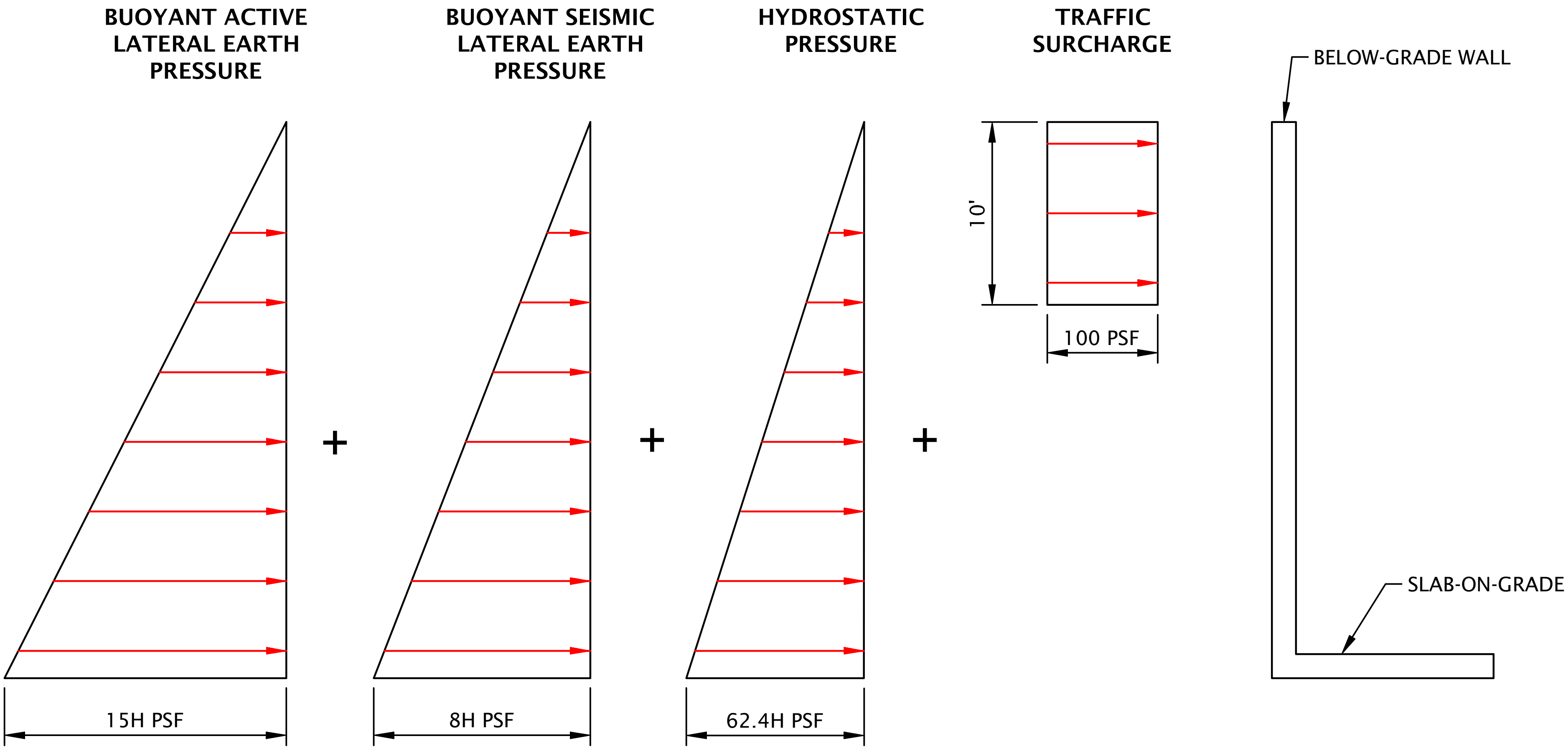
SOTOCAPT-1-01

JULY 2018

SEISMIC LATERAL EARTH PRESSURE - BELOW-GRADE WALLS (DRAINED)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE 8



NOTE:

1. SURCHARGE LOADING FROM EXISTING RAMADA AND CONDOMINIUM BUILDINGS SHOULD BE ADDED PER SECTION 7.2 OF REPORT.

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

JULY 2018

SEISMIC LATERAL EARTH PRESSURE - BELOW-GRADE WALLS (UNDRAINED)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE 9

APPENDIX A

APPENDIX A

FIELD EXPLORATIONS

GENERAL

We explored the subsurface conditions at the site by drilling two borings (B-1 and B-2) to depths of 101.5 and 120.0 feet BGS at the locations shown on Figure 2. The borings were drilled on August 4 and 5, 2010 by SoCal Drilling of La Habra, California, using a mud rotary drill rig. The exploration logs are presented in this appendix.

Three CPTs were also performed at the site by Kehoe Testing and Engineering of Huntington Beach, California. The CPTs were performed to depths of 60 to 75 feet BGS at the direction of our geotechnical staff. The graphical representations of the CPTs are presented in Appendix B.

We performed a supplemental exploration of the subsurface conditions at the site on May 1, 2017. The supplemental exploration consisted of drilling one boring (B-3) to a depth of 51.5 feet BGS at the location shown on Figure 2. The boring was drilled by 2R Drilling of Chino, California, using a mud rotary drill rig. The exploration log is presented in this appendix.

The locations of the borings and CPTs were determined in the field by measuring from surveyed existing site features. This information should be considered accurate only to the degree implied by the methods used.

A member of our geotechnical staff observed and logged the borings. We collected representative samples of the various soils encountered in the explorations for geotechnical laboratory testing.

SOIL SAMPLING

Samples were collected from the borings using a modified California split-spoon sampler in general accordance with guidelines presented in ASTM D3550. The split-spoon samplers were driven into the soil with a 140-pound hammer free-falling 30 inches. The samplers were driven a total distance of 18 inches or to refusal as indicated on the exploration logs. The number of blows required to drive the sampler the final 12 inches is recorded on the exploration logs presented in this appendix, unless otherwise noted.

In addition, SPTs were performed in the borings in general accordance with ASTM D1586. The 2-inch-diameter, split-spoon sampler was driven into the soil with a 140-pound hammer free-falling 30 inches. The samplers were driven a total distance of 18 inches or to refusal. The number of blows required to drive the sampler the final 12 inches is recorded on the exploration logs presented in this appendix, unless otherwise noted.

Sampling methods and intervals are shown on the exploration logs.

SOIL CLASSIFICATION

The soil samples were classified in accordance with the “Exploration Key” (Table A-1) and “Soil Classification System” (Table A-2), which are presented in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change actually could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

LABORATORY TESTING

CLASSIFICATION

The soil samples were classified in the laboratory to confirm field classifications. If those classifications differed from the field classifications, the laboratory classifications are shown on the exploration logs.

MOISTURE CONTENT

We tested the natural moisture content of select soil samples in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

DRY DENSITY

We tested select soil samples to determine the in situ dry density in general accordance with ASTM D2937. The dry density is defined as the ratio of the dry weight of the soil sample to the volume of that sample. The dry density typically is expressed in units of pcf. The test results are presented in this appendix.

ATTERBERG LIMITS

The plastic limit and liquid limit (Atterberg limits) of select soil samples were determined in accordance with ASTM D2937. The test results are presented in this appendix.

CONSOLIDATION TESTING

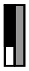
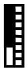
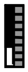
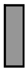
We performed one-dimensional consolidation tests in general accordance with ASTM D2435 on selected relatively undisturbed samples. The tests measure the volume change of a soil sample under predetermined loads. The test results are presented in this appendix.

PERCENT FINES DETERMINATIONS

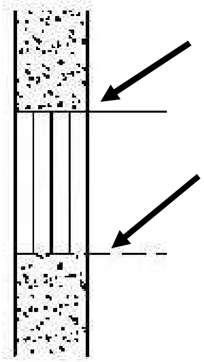
Percent fines determinations were performed in general accordance with ASTM C136 and ASTM D1140. The test results are presented in this appendix.

STRENGTH TESTING

Direct shear tests were completed on select soil samples in general accordance with ASTM D3080. The test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
	Location of sample obtained in general accordance with ASTM D 1586 Standard Penetration Test with recovery
	Location of sample obtained using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D 1587 with recovery
	Location of sample obtained using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample obtained using Dames & Moore and 140-pound hammer or pushed with recovery
	Location of sample obtained using 3-inch-O.D. California split-spoon sampler and 140-pound hammer
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



Observed contact between soil or rock units (at depth indicated)

Inferred contact between soil or rock units (at approximate depths indicated)

GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Nonplastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

RELATIVE DENSITY - COARSE-GRAINED SOIL

Relative Density	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very Loose	0 – 4	0 - 11	0 - 4
Loose	4 – 10	11 - 26	4 - 10
Medium Dense	10 – 30	26 - 74	10 - 30
Dense	30 – 50	74 - 120	30 - 47
Very Dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL

Consistency	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very Soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 - 4	3 – 6	2 - 5	0.25 - 0.50
Medium Stiff	4 - 8	6 – 12	5 - 9	0.50 - 1.0
Stiff	8 - 15	12 – 25	9 - 19	1.0 - 2.0
Very Stiff	15 - 30	25 – 65	19 – 31	2.0 - 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION

Term	Field Test
dry	very low moisture, dry to touch
moist	damp, without visible moisture
wet	visible free water, usually saturated

ADDITIONAL CONSTITUENTS

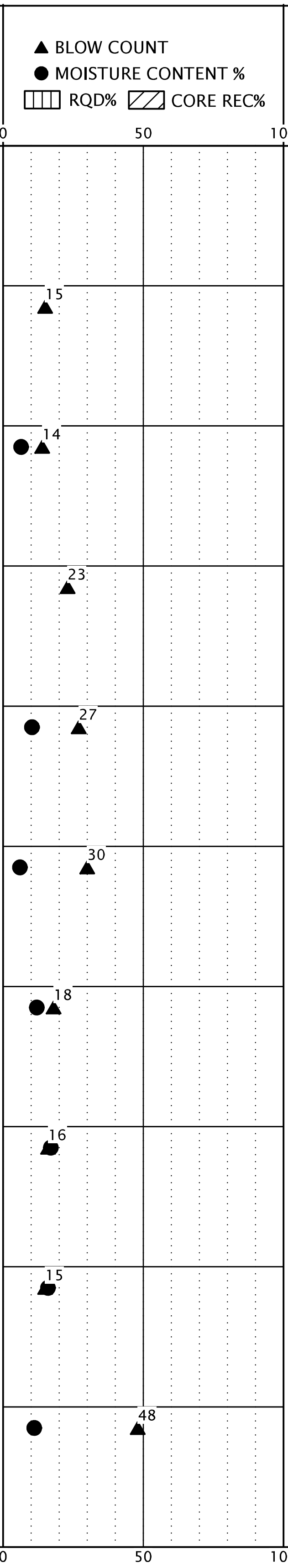
Secondary granular components or other materials such as organics, man-made debris, etc.					
Percent	Silt and Clay In:		Percent	Sand and Gravel In:	
	Fine-Grained Soil	Coarse-Grained Soil		Fine-Grained Soil	Coarse-Grained Soil
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	Indicate %

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOIL CLASSIFICATION SYSTEM

TABLE A-2

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	INSTALLATION AND COMMENTS
0	ASPHALT CONCRETE (3 inches).	235.0 234.7 0.3			
	Medium stiff, brown, sandy CLAY (CL), trace gravel (up to 1/2-inch diameter); moist.				
	Medium dense, brown, fine to coarse SAND with silt (SW-SM), trace clay; moist.	231.0 4.0			
5				▤	
10	without clay at 10.0 feet trace gravel (up to 1/4-inch diameter) at 10.5 feet		DD DS	▤	DD = 104 pcf
15				▤	
20	trace gravel (up to 1/2-inch diameter) at 21.0 feet		DD DS	▤	DD = 119 pcf
25			DD DS	▤	DD = 125 pcf
30			P200	▯	P200 = 20%
	Loose to medium dense, brown, fine to coarse, clayey SAND (SC) to stiff, sandy CLAY (CL); wet.	200.5 34.5			
35			P200 DD CON DS	▤	P200 = 25% DD = 113 pcf
	Medium dense, brown, fine to coarse SAND with silt (SW-SM); moist.	196.0 39.0			
40			P200	▯	P200 = 23%
45	12-inch layer of clayey SAND (SC) at 45.0 feet		P200 DD CON DS	▤	P200 = 35% DD = 123 pcf
50					



⊻ 30.0 feet, 15 minutes after drilling

DRILLED BY: SoCal Drilling

LOGGED BY: SFK

COMPLETED: 08/05/10

BORING METHOD: mud rotary (see report text)

BORING BIT DIAMETER: 4 5/8-inch

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

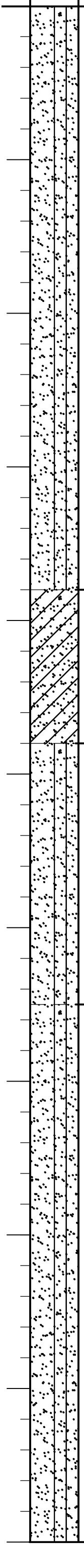
JULY 2018

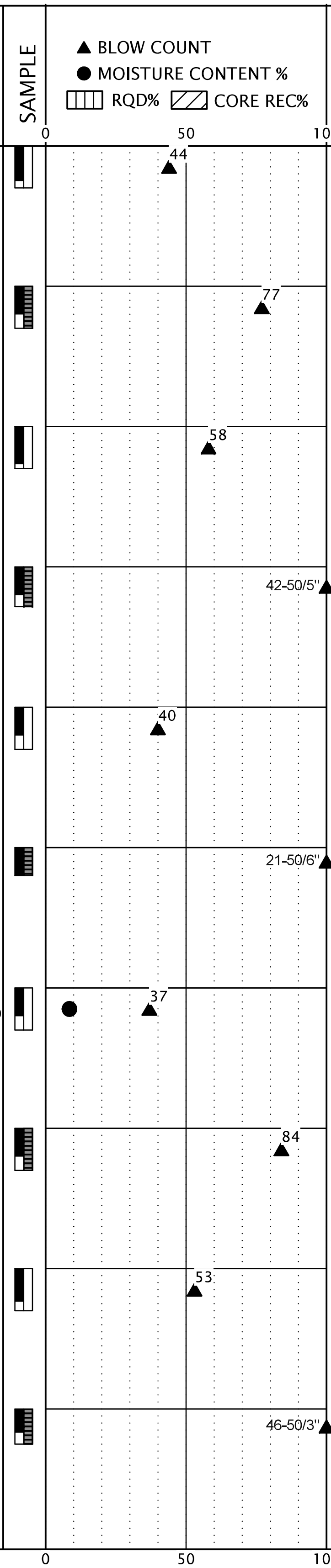
BORING B-1

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-1

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	BLOW COUNT	INSTALLATION AND COMMENTS
50	becomes fine to medium from 50.0 to 52.0 feet			44	
55				77	
60				58	
65	becomes dense, trace gravel (up to 1 1/2-inch diameter) at 65.0 feet			42-50/5"	
	Dense, brown, fine to coarse, clayey SAND (SC); moist.	166.0 69.0			
70				40	
	Dense, brown, fine to coarse SAND with silt (SW-SM), trace clay; moist.	161.0 74.0			
75				21-50/6"	
80	with clay, trace silt at 80.0 feet becomes very dense at 80.5 feet		P200	37	P200 = 25%
	Very dense, brown, fine to coarse SAND with silt (SW-SM), trace gravel (up to 1/4-inch diameter); moist.	152.5 82.5			
85				84	
90	trace clay at 90.5 feet			53	
95				46-50/3"	
100					





DRILLED BY: SoCal Drilling

LOGGED BY: SFK

COMPLETED: 08/05/10

BORING METHOD: mud rotary (see report text)

BORING BIT DIAMETER: 4 5/8-inch

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

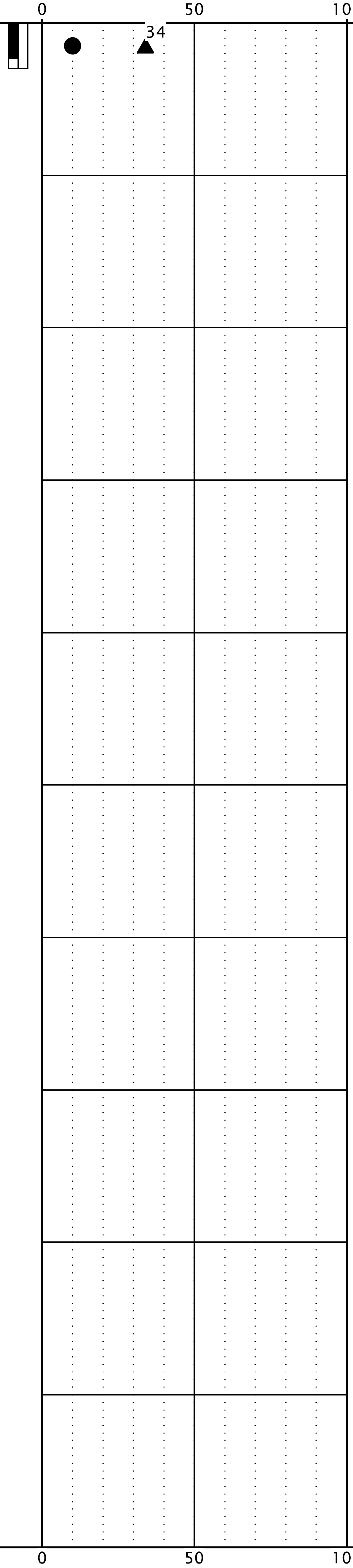
JULY 2018

BORING B-1
(continued)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-1

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % ▥ RQD% ▨ CORE REC%	INSTALLATION AND COMMENTS
100		(continued from previous page)					No sampling below 101.5 feet. Drilled from 101.5 to 120.0 feet for suspension logging.
120		**Exploration completed at a depth of 120.0 feet.** **Groundwater observed at a depth of 30.0 feet BGS 15 minutes after drilling.**	115.0 120.0				



DEPTH FEET: 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150

DRILLED BY: SoCal Drilling

LOGGED BY: SFK

COMPLETED: 08/05/10

BORING METHOD: mud rotary (see report text)

BORING BIT DIAMETER: 4 5/8-inch

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

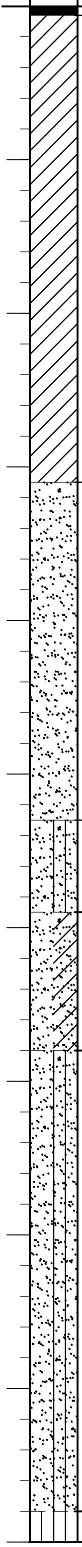
SOTOCAPT-1-01

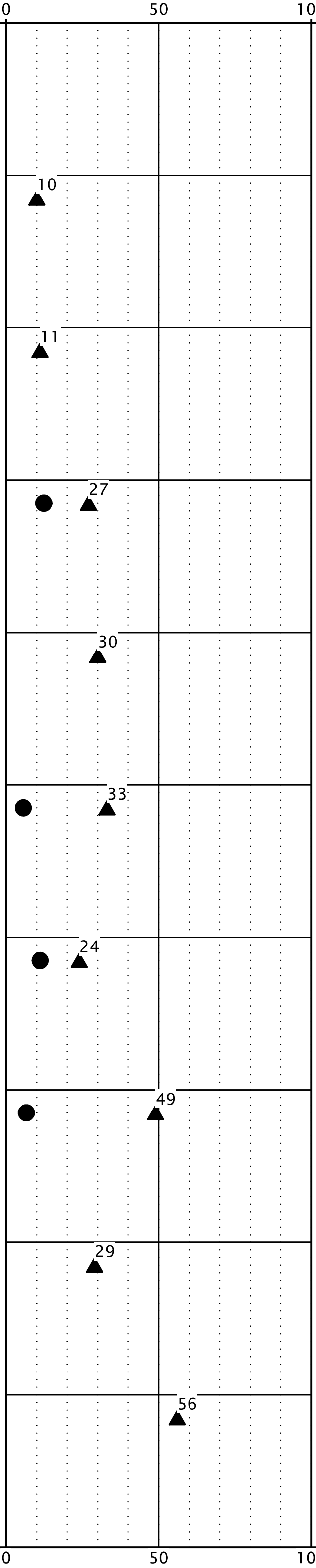
JULY 2018

BORING B-1
(continued)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-1





DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	BLOW COUNT	INSTALLATION AND COMMENTS
0	ASPHALT CONCRETE (3 inches).	255.0 254.7 0.3			
0.3	Medium stiff, brown, sandy CLAY (GC); moist, sand is fine to coarse.				
5				10	
10				11	
15			DD DS	27	DD = 124 pcf
15.5	Medium dense, brown, fine to coarse SAND (SP), trace silt; moist.	239.5 15.5			
18.5	minor gravel (up to 3/4-inch diameter) from 18.5 to 20.0 feet				Rig chatter at 18.5 feet.
20				30	
25			DD DS	33	DD = 118 pcf
26.25	with silt at 26.25 feet	228.5 26.5			
26.5	Medium dense, brown, fine to coarse SAND with silt (SP-SM), trace gravel (up to 3/4-inch diameter); moist.				
29.5	Medium dense, brown, fine to coarse SAND with clay (SP-SC), trace gravel (up to 1/2-inch diameter); moist.	225.5 29.5			
30			P200	24	P200 = 30%
34.0	Medium dense, brown, fine to coarse SAND with silt (SP-SM), trace gravel (up to 1/2-inch diameter); moist.	221.0 34.0			
35			DD DS	49	DD = 123 pcf
40	grades to silty SAND from 40.0 to 42.0 feet			29	
45				56	
49.0	Stiff, brown, fine to medium, sandy SILT	206.0 49.0			⊻ 49.0 feet, 15 minutes after drilling
50					

DRILLED BY: SoCal Drilling
LOGGED BY: SFK
COMPLETED: 08/04/10

BORING METHOD: mud rotary (see report text)
BORING BIT DIAMETER: 4 5/8-inch

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

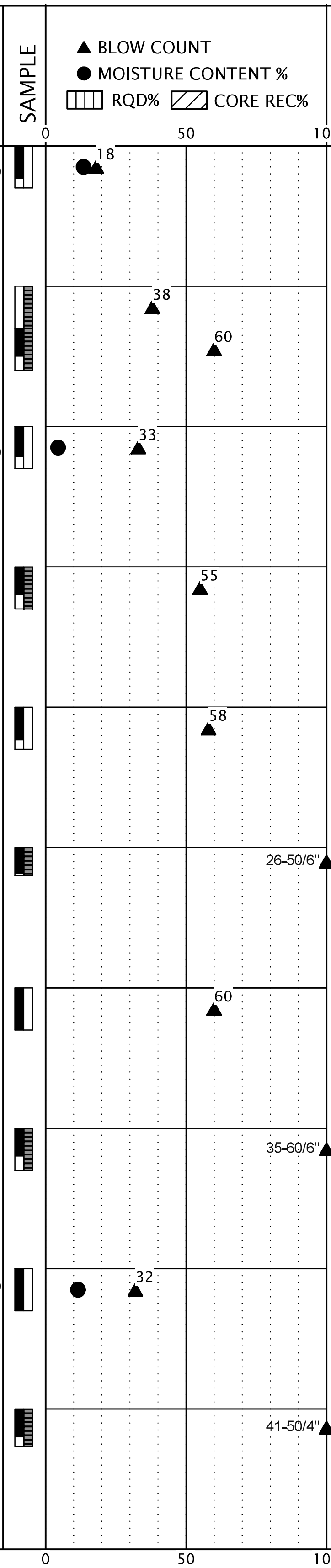
SOTOCAPT-1-01

JULY 2018

BORING B-2

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-2



DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	BLOW COUNT	INSTALLATION AND COMMENTS
50	(ML) or silty SAND (SM), trace gravel; moist		P200	18	P200 = 29%
	minor gravel (up to 3/4-inch diameter) at 54.0 feet				
55				38 60	No recovery (coarse sand with gravel on screen).
	Dense, brown, fine to coarse SAND (SW), trace silt, minor gravel (up to 1/2-inch diameter); moist. with gravel at 60.0 feet	197.5 57.5			
60			P200	33	P200 = 17%
	Stiff, brown, sandy CLAY/clayey SAND (CL/SC); moist, sand is fine to coarse. grades to CL at 61.0 feet	194.5 60.5			
65				55	
	Dense, brown, fine to medium SAND (SP), trace silt; moist. with silt at 69.5 feet	188.8 66.3			
70				58	
	Dense, brown, clayey SAND (SC), trace gravel (up to 1-inch diameter); moist.	183.0 72.0			Rig chatter at 72.0 feet.
75				26-50/6"	
	Dense, brown, fine to coarse SAND (SP), trace silt; moist.	179.0 76.0			
80	with silt at 80.0 feet with gravel (up to 3/4-inch diameter) from 82.0 to 84.0 feet			60	Rig chatter at 82.0 feet.
	Dense, brown, fine to coarse, clayey SAND (SC), trace gravel; moist. minor gravel at 86.0 feet	171.0 84.0			
85				35-60/6"	Rig chatter at 86.0 feet.
	Very stiff, brown, fine to coarse, sandy CLAY (CL); moist. with gravel (up to 1/4-inch diameter) from 92.0 to 95.0 feet	166.0 89.0			
90			P200 ATT	32	P200 = 40% LL = 23% PL = 16% Rig chatter from 92.0 to 95.0 feet (gravel mixed with clay on screen).
	Dense, brown, fine to coarse, clayey SAND (SC), trace gravel (up to 1/4-inch diameter); moist.	160.0 95.0			
95				41-50/4"	
	Dense, brown, fine to medium SAND	156.0 99.0			
100					

DRILLED BY: SoCal Drilling LOGGED BY: SFK COMPLETED: 08/04/10

BORING METHOD: mud rotary (see report text) BORING BIT DIAMETER: 4 5/8-inch

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

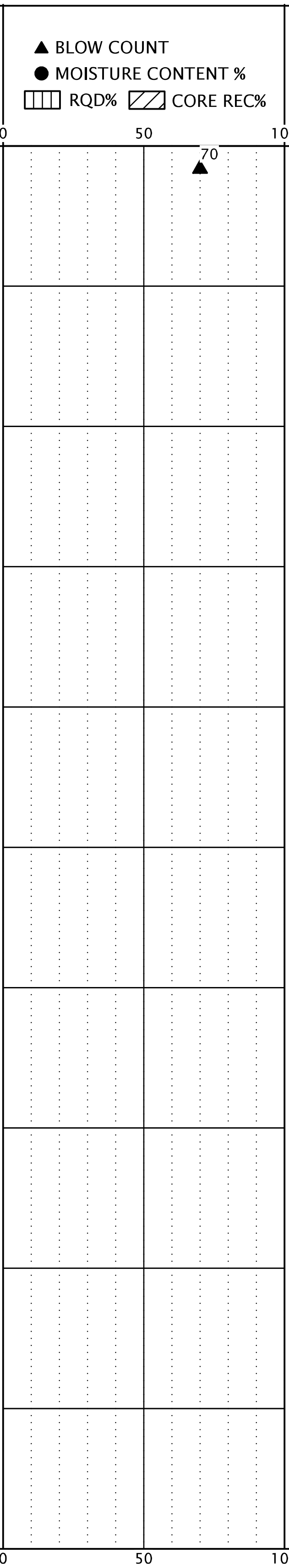
JULY 2018

BORING B-2
(continued)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-2

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	INSTALLATION AND COMMENTS
100		with silt (SP-SM); moist. (continued from previous page)	153.5 101.5			
		Exploration completed at a depth of 101.5 feet. **Groundwater observed at a depth of 49.0 feet 15 minutes after drilling.**				
105						
110						
115						
120						
125						
130						
135						
140						
145						
150						



DRILLED BY: SoCal Drilling

LOGGED BY: SFK

COMPLETED: 08/04/10

BORING METHOD: mud rotary (see report text)

BORING BIT DIAMETER: 4 5/8-inch

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

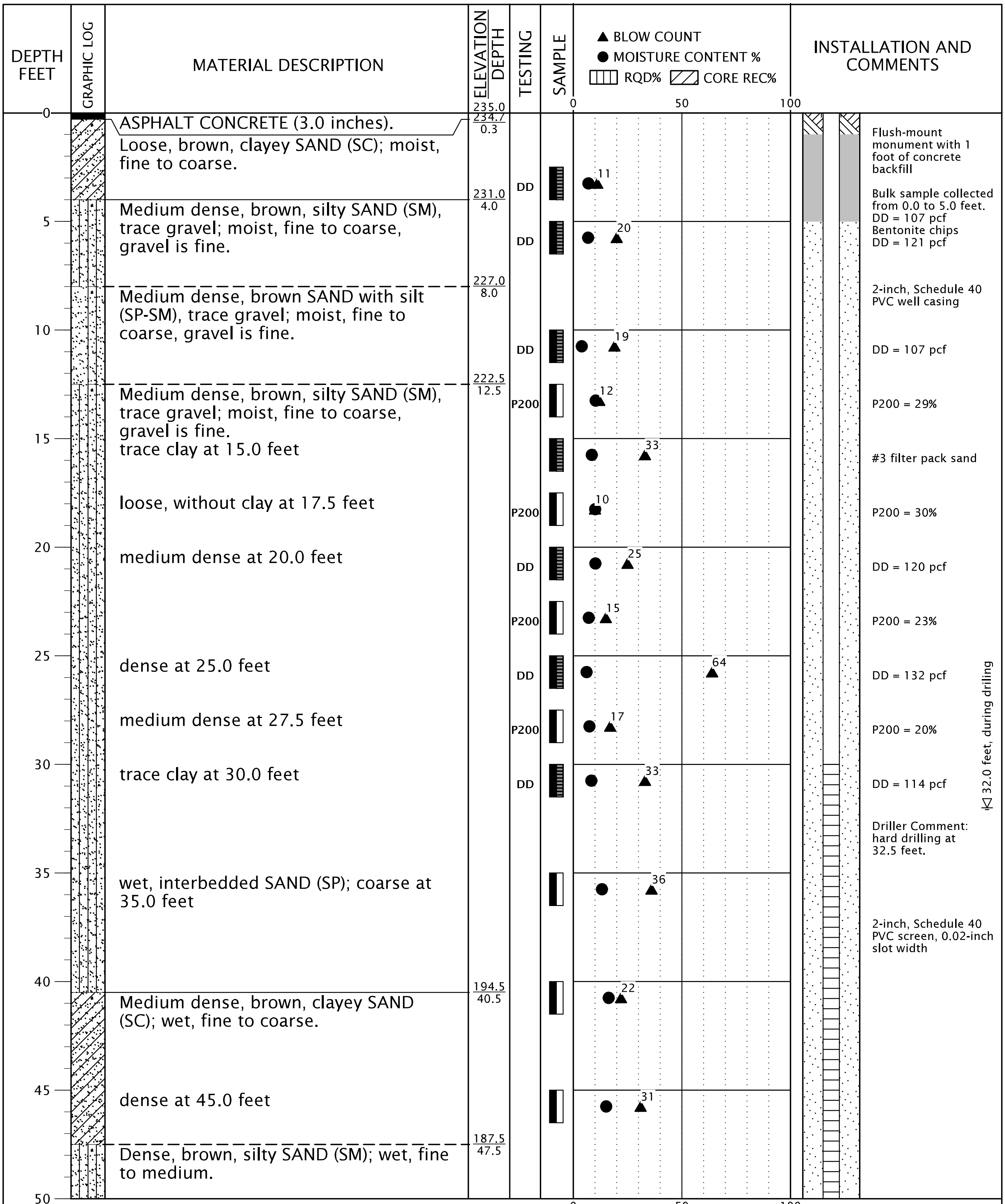
JULY 2018

BORING B-2
(continued)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-2

BORING LOG SOTOCAPT-1-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 7/20/18:RC:KT



DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	BLOW COUNT	INSTALLATION AND COMMENTS
0	ASPHALT CONCRETE (3.0 inches).	235.0 234.7 0.3			
	Loose, brown, clayey SAND (SC); moist, fine to coarse.		DD	11	Flush-mount monument with 1 foot of concrete backfill Bulk sample collected from 0.0 to 5.0 feet. DD = 107 pcf
5	Medium dense, brown, silty SAND (SM), trace gravel; moist, fine to coarse, gravel is fine.	231.0 4.0	DD	20	Bentonite chips DD = 121 pcf
	Medium dense, brown SAND with silt (SP-SM), trace gravel; moist, fine to coarse, gravel is fine.	227.0 8.0			2-inch, Schedule 40 PVC well casing
10			DD	19	DD = 107 pcf
	Medium dense, brown, silty SAND (SM), trace gravel; moist, fine to coarse, gravel is fine.	222.5 12.5	P200	12	P200 = 29%
15	trace clay at 15.0 feet			33	#3 filter pack sand
	loose, without clay at 17.5 feet		P200	10	P200 = 30%
20	medium dense at 20.0 feet		DD	25	DD = 120 pcf
			P200	15	P200 = 23%
25	dense at 25.0 feet		DD	64	DD = 132 pcf
	medium dense at 27.5 feet		P200	17	P200 = 20%
30	trace clay at 30.0 feet		DD	33	DD = 114 pcf ▽ 32.0 feet, during drilling
					Driller Comment: hard drilling at 32.5 feet.
35	wet, interbedded SAND (SP); coarse at 35.0 feet			36	2-inch, Schedule 40 PVC screen, 0.02-inch slot width
40	Medium dense, brown, clayey SAND (SC); wet, fine to coarse.	194.5 40.5		22	
45	dense at 45.0 feet			31	
	Dense, brown, silty SAND (SM); wet, fine to medium.	187.5 47.5			
50					

DRILLED BY: 2-R Drilling, Inc.

LOGGED BY: CC

COMPLETED: 05/01/17

BORING METHOD: mud rotary (see document text)

BORING BIT DIAMETER: 4 1/2 inches

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

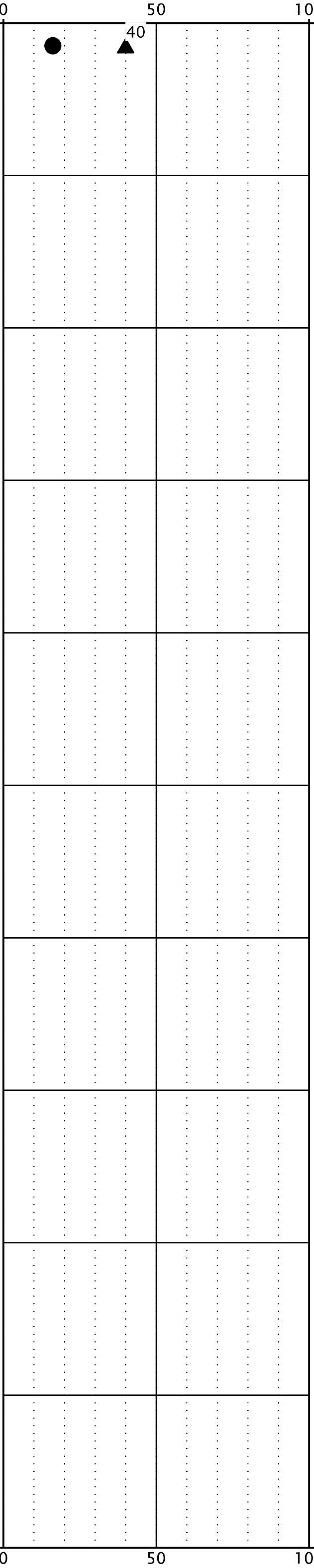
JULY 2018

BORING B-3

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-3

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % ▥ RQD% ▨ CORE REC%	INSTALLATION AND COMMENTS
50		(continued from previous page)					
		Exploration completed at 51.5 feet. **Groundwater encountered at 32.0 feet.** **Boring converted to groundwater monitoring well.**	183.5 51.5				



DRILLED BY: 2-R Drilling, Inc.　LOGGED BY: CC　COMPLETED: 05/01/17

BORING METHOD: mud rotary (see document text)　BORING BIT DIAMETER: 4 1/2 inches

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

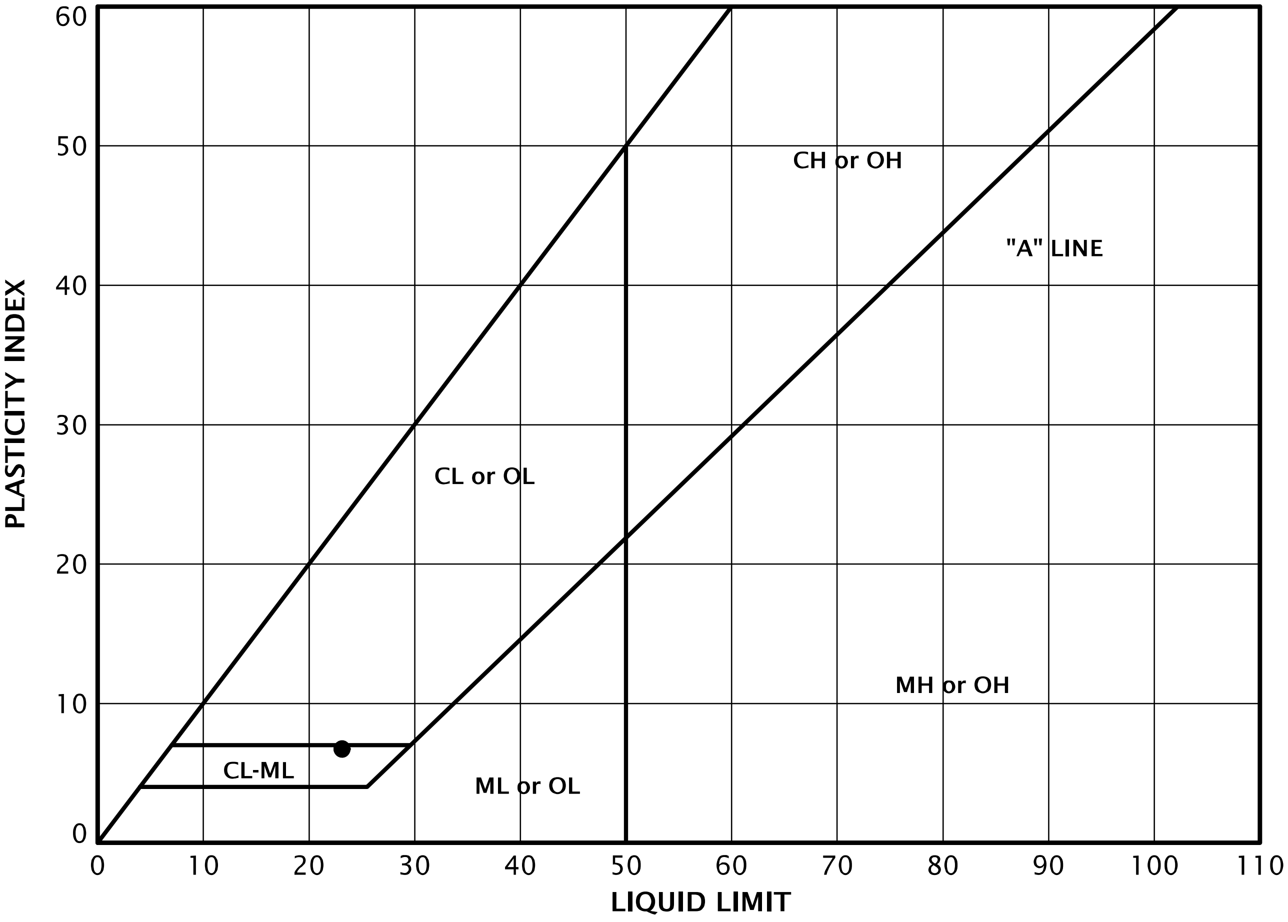
SOTOCAPT-1-01

JULY 2018

BORING B-3
(continued)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-3



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	B-2	90.0	11	23	16	7

ATTERBERG_LIMITS 7 SOTOCAPT-1-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 7/20/18:KT

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

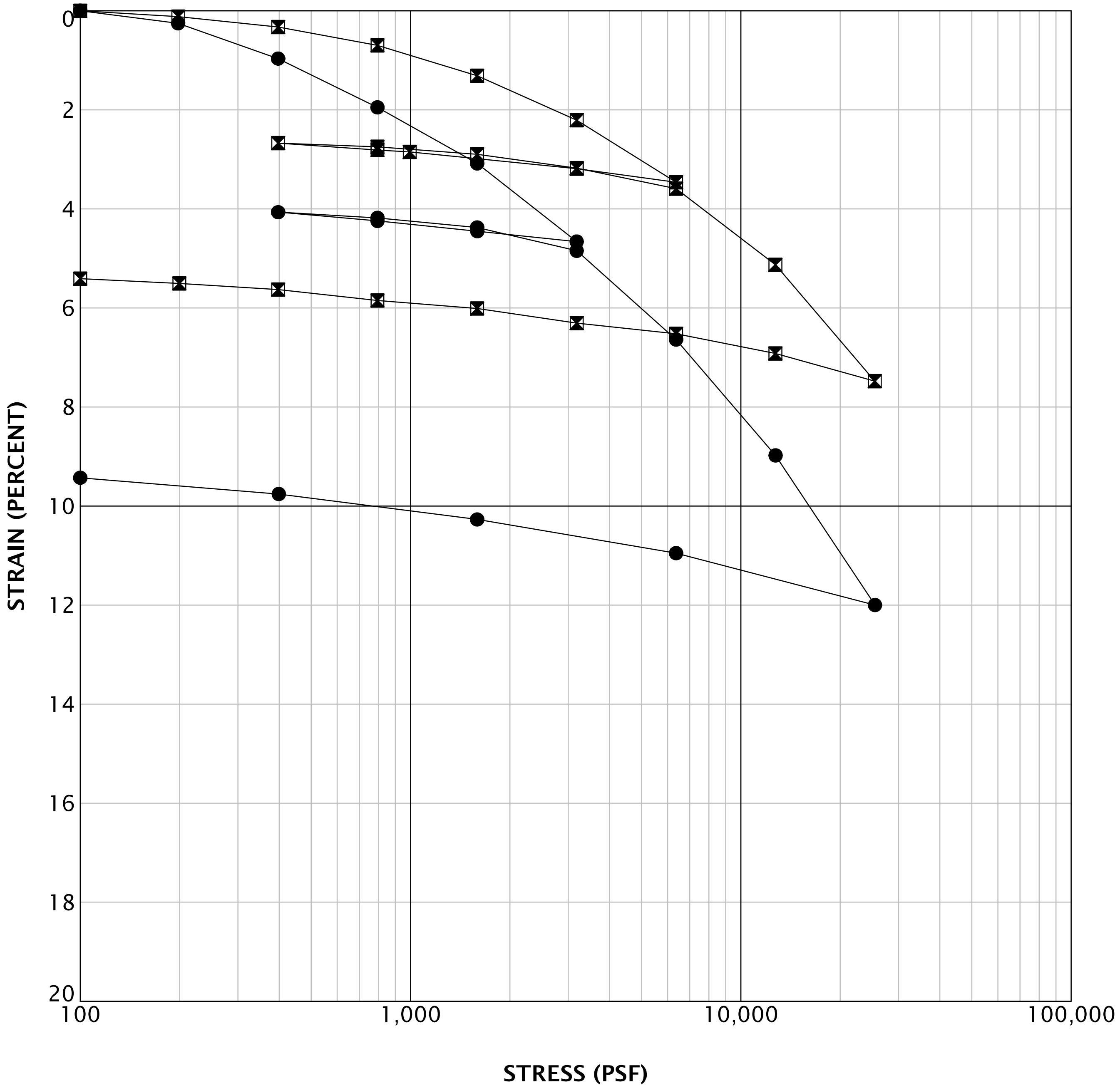
SOTOCAPT-1-01

JULY 2018

ATTERBERG LIMITS TEST RESULTS

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-4



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)
●	B-1	35.0	17	113
☒	B-1	45.0	11	123

GEODESIGN INC

2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

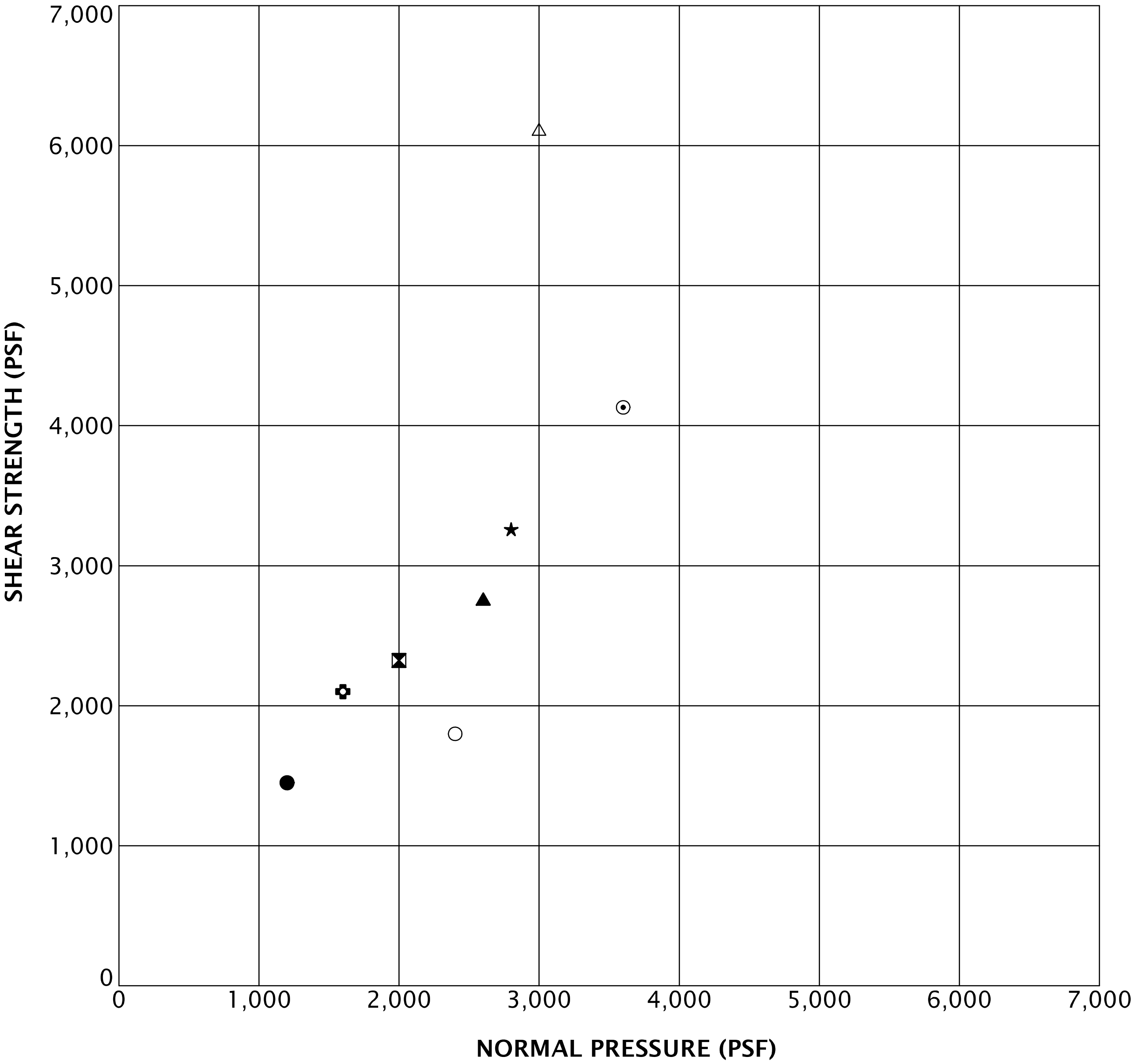
JULY 2018

CONSOLIDATION TEST RESULTS

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-5

CONSOL_STRAIN_100K SOTOCAPT-1-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 7/20/18:KT



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SOAKED
●	B-1	10.0	6	104	YES
⧗	B-1	20.0	10	119	YES
▲	B-1	25.0	6	125	YES
★	B-1	35.0	6	131	YES
⊙	B-1	45.0	11	126	YES
✿	B-2	15.0	12	124	YES
○	B-2	25.0	6	118	YES
△	B-2	35.0	7	123	YES

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

JULY 2018

DIRECT SHEAR TEST RESULTS

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-6

DIRECT_SHEAR_FAIL_ENV_NO BOX SOTOCAPT-1-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 7/20/18:KT

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1	10.0	225.0	6	104						
B-1	20.0	215.0	10	119						
B-1	25.0	210.0	6	125						
B-1	30.0	205.0	12				20			
B-1	35.0	200.0	17	113			25			
B-1	40.0	195.0	16				23			
B-1	45.0	190.0	11	123			35			
B-1	80.0	155.0	8				25			
B-1	100.0	135.0	10							
B-2	15.0	240.0	12	124						
B-2	25.0	230.0	6	118						
B-2	30.0	225.0	11				30			
B-2	35.0	220.0	7	123						
B-2	50.0	205.0	13				29			
B-2	60.0	195.0	4				17			
B-2	90.0	165.0	12				40	23	16	7
B-3	2.5	232.5	7	107						
B-3	5.0	230.0	7	121						
B-3	10.0	225.0	4	107						
B-3	12.5	222.5	10				29			
B-3	15.0	220.0	9							
B-3	17.5	217.5	10				30			
B-3	20.0	215.0	10	120						
B-3	22.5	212.5	7				23			
B-3	25.0	210.0	6	132						
B-3	27.5	207.5	7				20			
B-3	30.0	205.0	8	114						

GEODESIGN INC
2121 S Towne Centre Place - Suite 104
Anaheim CA 92806
714.634.3701 www.geodesigninc.com

SOTOCAPT-1-01

JULY 2018

SUMMARY OF LABORATORY DATA

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-7

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-3	35.0	200.0	13							
B-3	40.0	195.0	16							
B-3	45.0	190.0	15							
B-3	50.0	185.0	16							

SOTOCAPT-1-01

JULY 2018

SUMMARY OF LABORATORY DATA
(continued)

PROPOSED MIXED-USE DEVELOPMENT
WEST HOLLYWOOD, CA

FIGURE A-7

APPENDIX B

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

8555 Santa Monica Blvd.
W. Hollywood, CA
August 5, 2010

Prepared for:

Mr. Chris Zadoorian
GeoDesign, Inc.
2121 S. Town Centre Place, Ste 130
Anaheim, CA 92806
Office (714) 634-3701 / Fax (714) 634-3711

Prepared by:

KTE

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
Huntington Beach, CA 92649-1518
Office (714) 901-7270 / Fax (714) 901-7289

TABLE OF CONTENTS

SUMMARY

OF

CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the project located at 8555 Santa Monica Blvd. in W. Hollywood, California. The work was performed by Kehoe Testing & Engineering (KTE) on August 5, 2010. The scope of work was performed as directed by GeoDesign, Inc. personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at three locations to determine the soil lithology. The groundwater measurements were taken in the open CPT hole approximately 10 minutes after completion of CPT. The following **TABLE 2.1** summarizes the CPT soundings performed:

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	60	
CPT-2	75	
CPT-3	60	

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed
- Pore Pressure Dissipation (at selected depths)

The above parameters were recorded and viewed in real time using a portable computer and stored on a diskette for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the CPT Classification Chart (Robertson, 1986) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

Output from the interpretation program CPTINT provides averaged CPT data over one-foot intervals. The CPTINT output includes Soil Classification Zones, SPT N Values and Undrained Shear Strength (Su). A summary of the equations used for the tabulated parameters is provided in the CPTINT Correlation Table in the Appendix.

The interpretation of soils encountered on this project was carried out using correlations developed by Robertson et al, 1986. It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgment and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

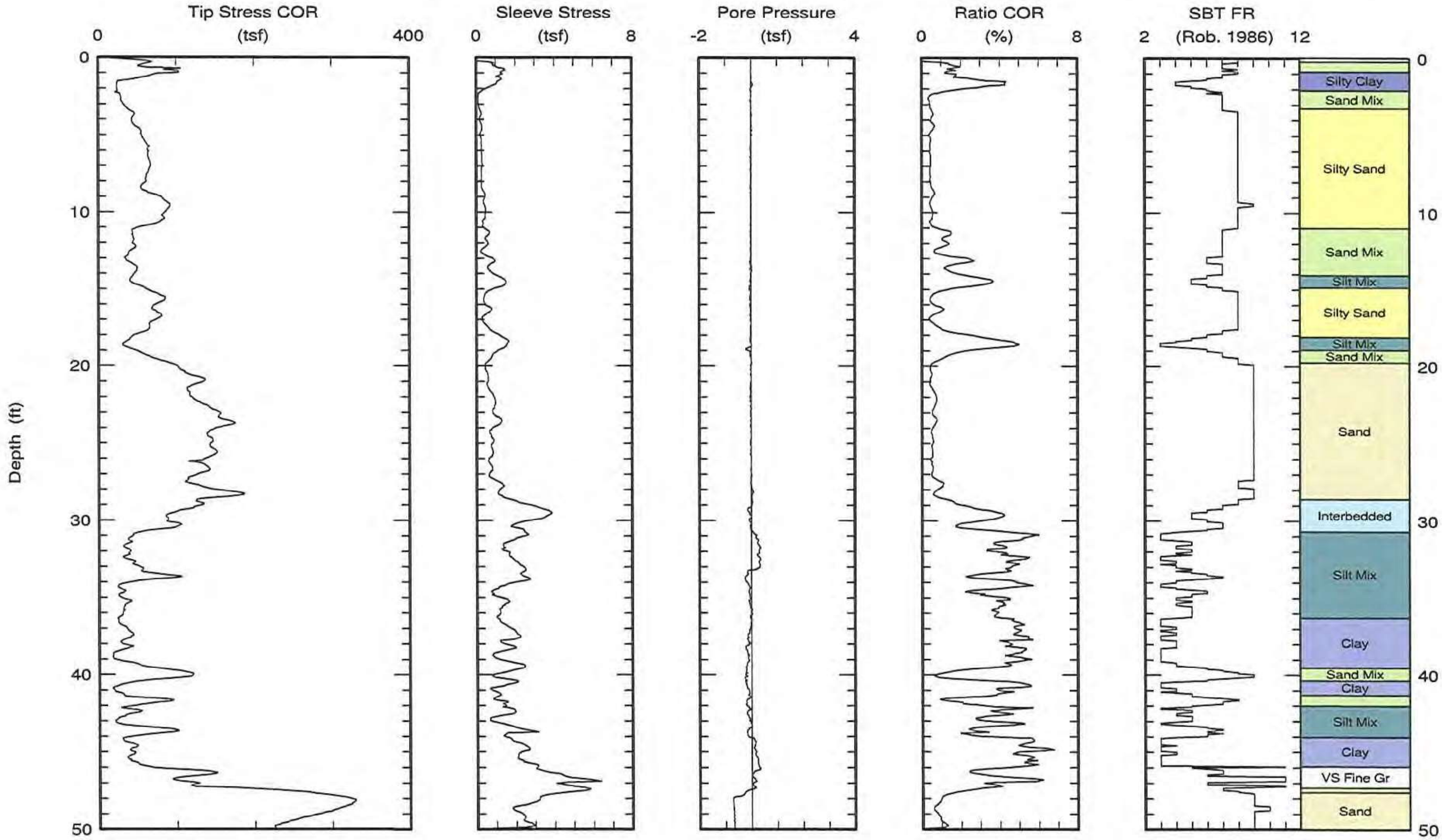
KEHOE TESTING & ENGINEERING

Richard W. Koester, Jr.
General Manager

08/11/10-at-7-0282-2

APPENDIX

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 05/Aug/2010 Test ID: CPT-1 Project: Hollywood
	Customer: GeoDesign, Inc. Job Site: 8555 Santa Monica Blvd	



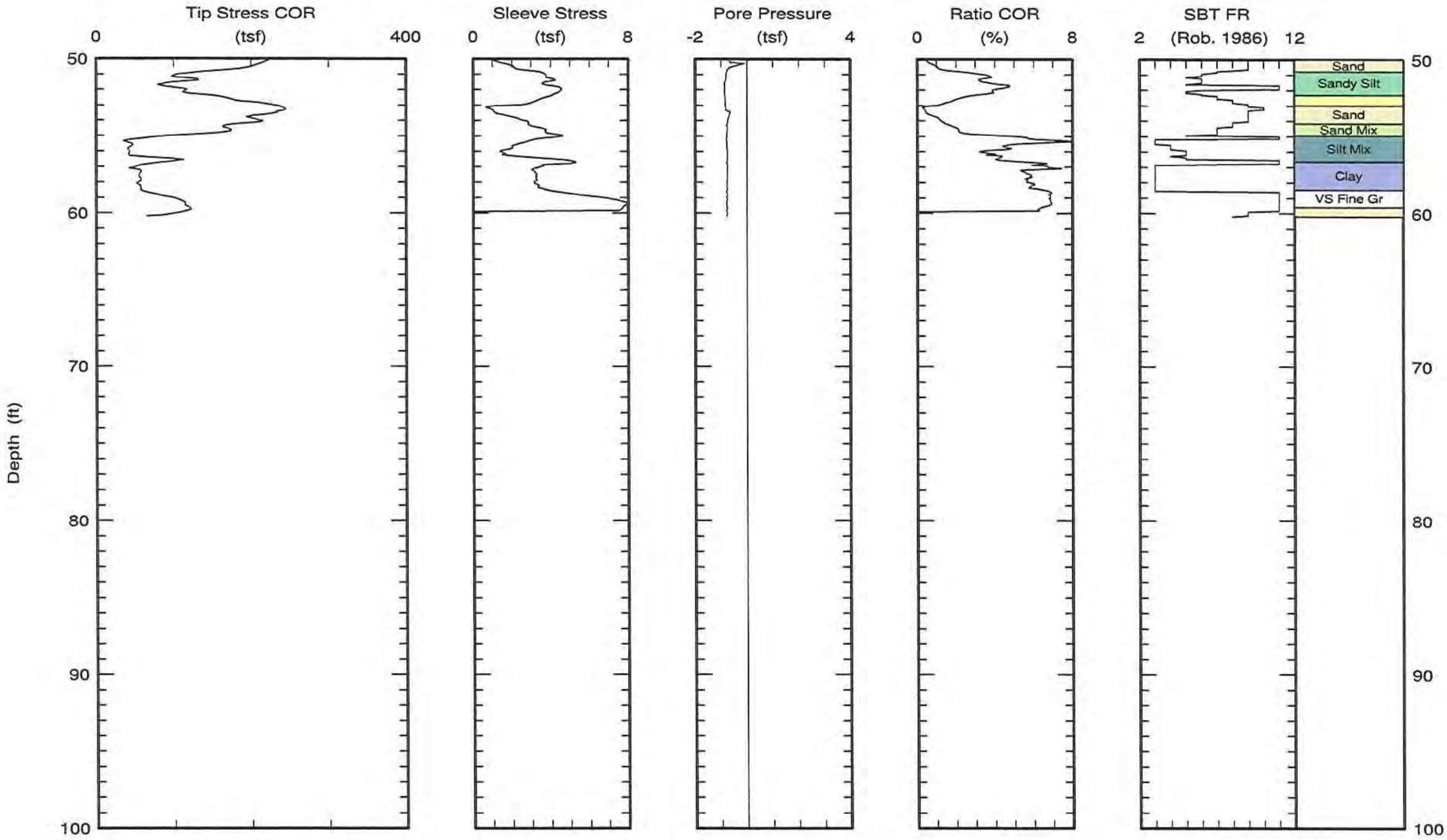
Maximum depth: 60.22 (ft)

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
rich@kehoetesting.com
www.kehoetesting.com

CPT Data
30 ton rig

Date: 05/Aug/2010
Test ID: CPT-1
Project: Hollywood

Customer: GeoDesign, Inc.
Job Site: 8555 Santa Monica Blvd



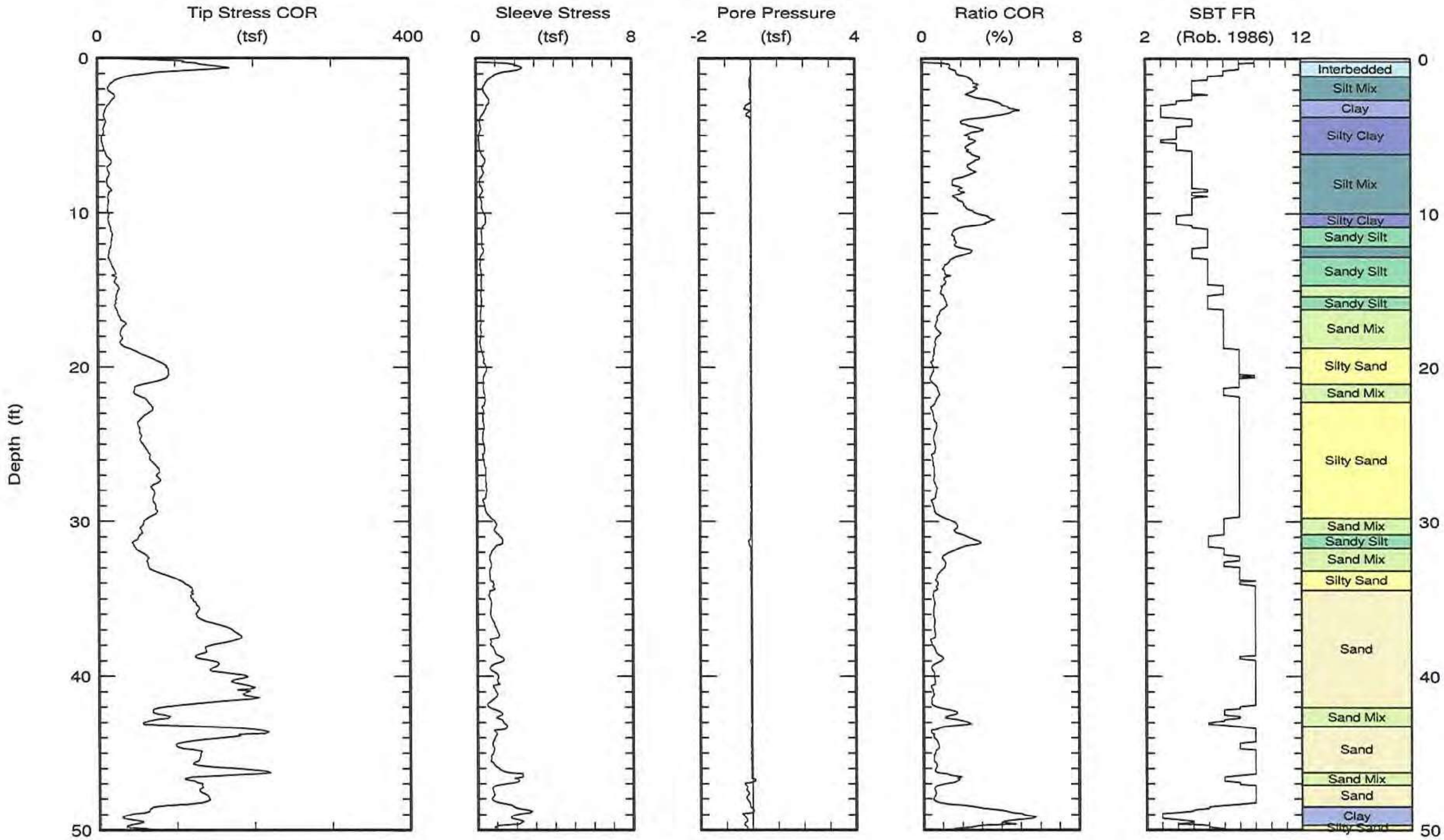
Maximum depth: 60.22 (ft)
Page 2 of 2

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
rich@kehoetesting.com
www.kehoetesting.com

CPT Data
30 ton rig

Date: 05/Aug/2010
Test ID: CPT-2
Project: Hollywood

Customer: GeoDesign, Inc.
Job Site: 8555 Santa Monica Blvd



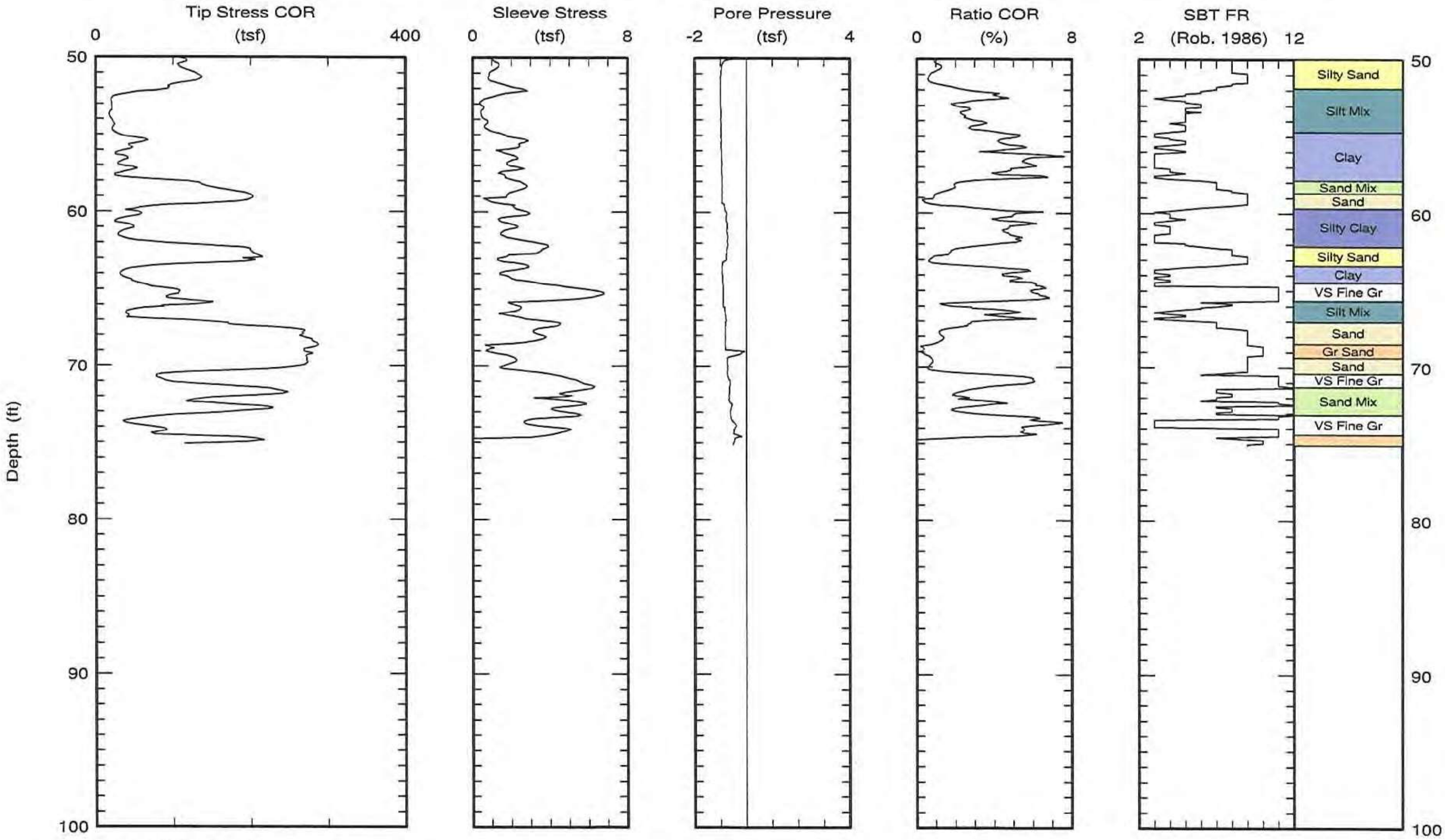
Maximum depth: 75.12 (ft)
Page 1 of 2

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
rich@kehoetesting.com
www.kehoetesting.com

CPT Data
30 ton rig

Date: 05/Aug/2010
Test ID: CPT-2
Project: Hollywood

Customer: GeoDesign, Inc.
Job Site: 8555 Santa Monica Blvd



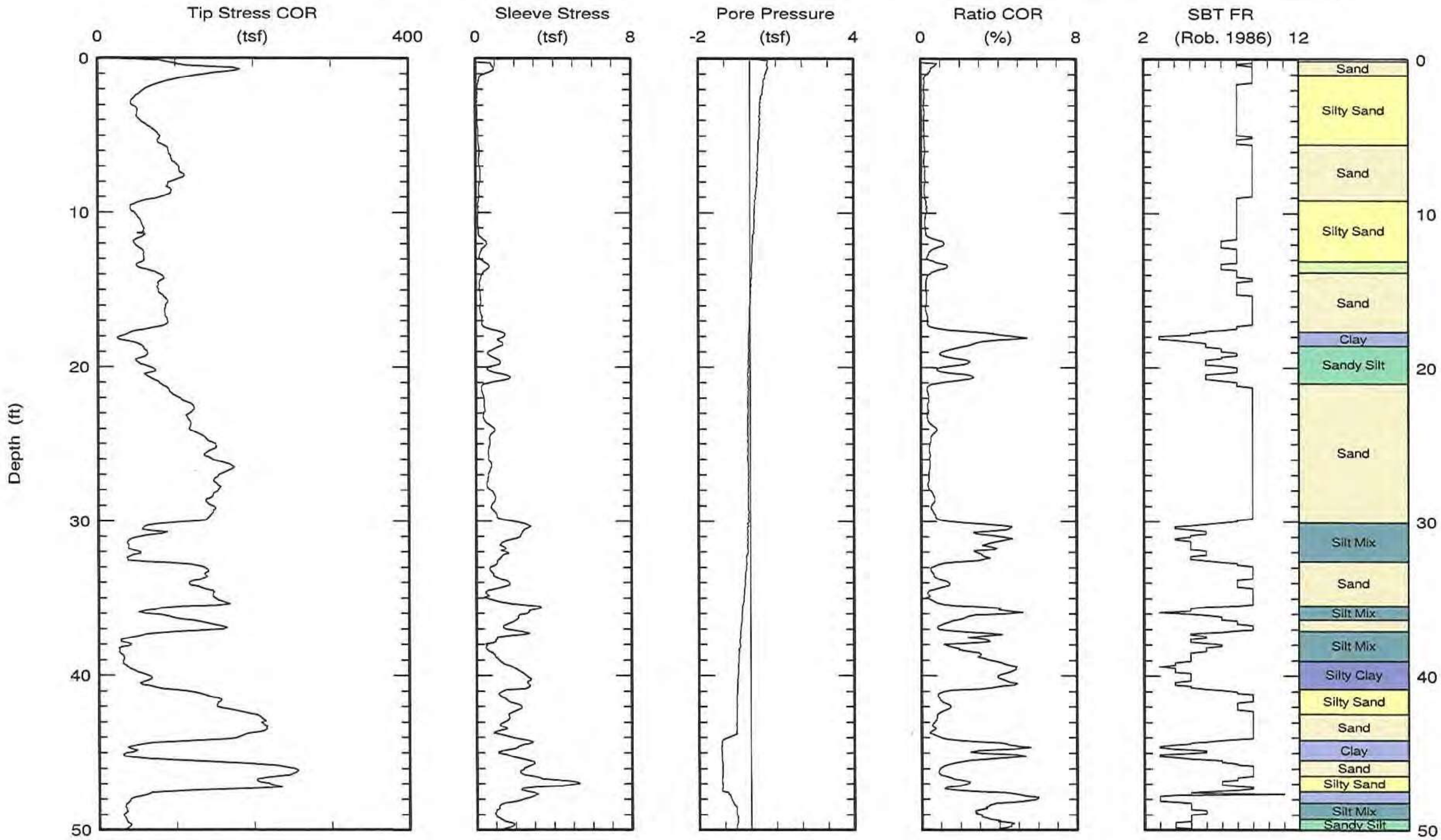
Maximum depth: 75.12 (ft)
Page 2 of 2

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
rich@kehoetesting.com
www.kehoetesting.com

CPT Data
30 ton rig

Date: 05/Aug/2010
Test ID: CPT-3
Project: Hollywood

Customer: GeoDesign, Inc.
Job Site: 8555 Santa Monica Blvd



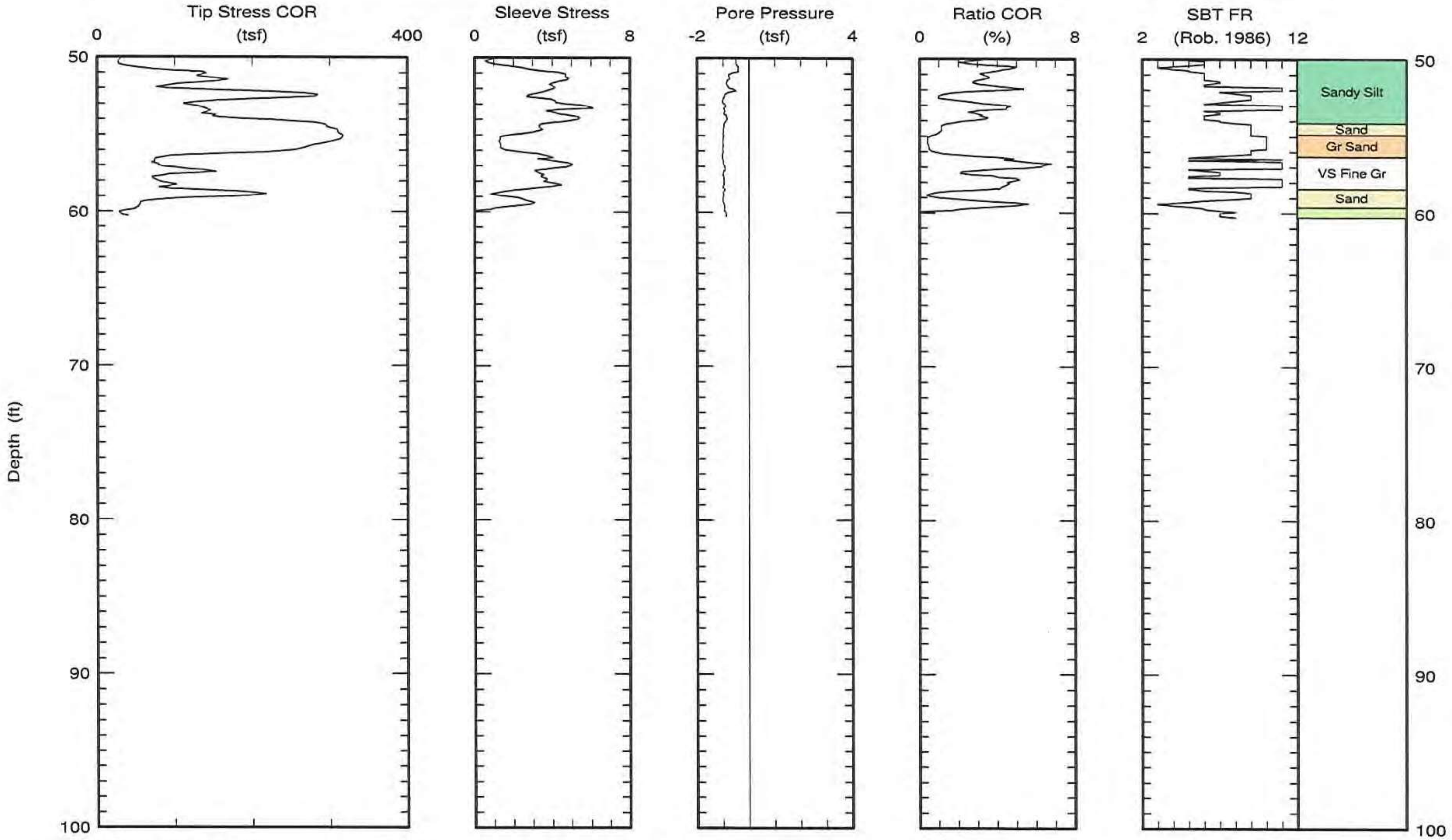
Maximum depth: 60.27 (ft)

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
rich@kehoetesting.com
www.kehoetesting.com

CPT Data
30 ton rig

Date: 05/Aug/2010
Test ID: CPT-3
Project: Hollywood

Customer: GeoDesign, Inc.
Job Site: 8555 Santa Monica Blvd



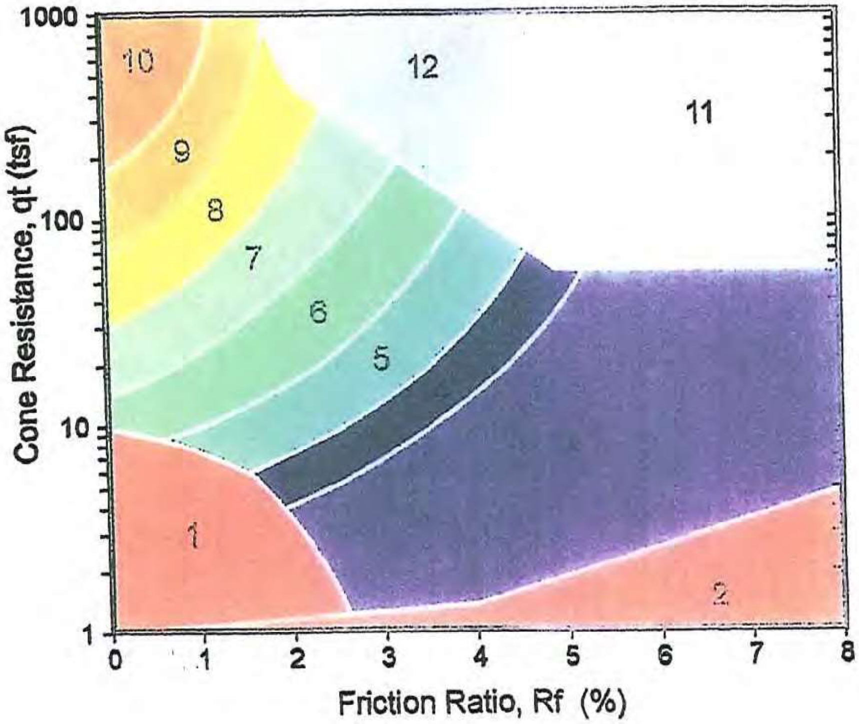
Maximum depth: 60.27 (ft)

Page 2 of 2

KEHOE TESTING & ENGINEERING

CPT Classification Chart

(after Robertson and Campanella, 1988)



Zone		q_t / N	Soil Behavior Type	UCSCS
1	🟥	2	sensitive fine grained	OL-OH
2	🟧	1	organic material	Pt-OH
3	🟪	1	clay	CH
4	🟪	1.5	silty clay to clay	CL-CH
5	🟦	2	clayey silt to silty clay	ML-CL
6	🟦	2.5	sandy silt to clayey silt	MH-ML
7	🟩	3	silty sand to sandy silt	SM-ML
8	🟨	4	sand to silty sand	SP-SM
9	🟨	5	sand	SP
10	🟨	6	gravelly sand to sand	SW-SP
11		1	very stiff fine grained *	CL-MH
12		2	sand to clayey sand *	SP-SC

* overconsolidated or cemented

```
INPUT FILE: C:\temp\CPT-1.CSV   |-----------------------------------------------
" Depth      Qc(avg)   Fs(avg)   Rf        Rf Zone   Spt N     Spt N1     Su
" (feet)     (TSF)     (TSF)     (%)       (zone #)  (blow/ft) (blow/ft)  (TSF)
"-------------------------------------------------------------------------------
   0.500     72.150     0.929     1.288      7         23        35         9E9
   1.500     39.802     1.056     2.653      6         15        23       2.648
   2.500     28.788     0.168     0.582      7          9        14         9E9
   3.500     41.830     0.221     0.527      7         13        20         9E9
   4.500     50.202     0.270     0.538      8         12        18         9E9
   5.500     61.490     0.278     0.451      8         15        23         9E9
   6.500     65.845     0.304     0.462      8         16        24         9E9
   7.500     64.262     0.289     0.450      8         15        23         9E9
   8.500     61.207     0.353     0.577      8         15        23         9E9
   9.500     88.020     0.444     0.504      8         21        32         9E9
  10.500     77.081     0.422     0.548      8         18        25         9E9
  11.500     45.035     0.591     1.313      7         14        18         9E9
  12.500     42.050     0.473     1.125      7         13        16         9E9
  13.500     45.652     0.788     1.725      7         15        17         9E9
  14.500     47.733     1.317     2.758      6         18        20       3.123
  15.500     78.268     0.476     0.608      8         19        20         9E9
  16.500     75.345     0.571     0.757      8         18        18         9E9
  17.500     65.090     0.612     0.941      8         16        15         9E9
  18.500     39.102     1.483     3.793      5         19        17       2.530
  19.500     69.183     0.799     1.155      8         17        15         9E9
  20.500    117.936     0.555     0.470      9         23        19         9E9
  21.500    118.913     0.717     0.603      9         23        18         9E9
  22.500    138.887     0.927     0.668      9         27        21         9E9
  23.500    163.097     1.114     0.683      9         31        23         9E9
  24.500    144.867     0.797     0.550      9         28        20         9E9
  25.500    147.578     0.793     0.538      9         28        20         9E9
  26.500    136.413     0.733     0.538      9         26        18         9E9
  27.500    123.418     1.066     0.863      8         30        21         9E9
  28.500    155.492     1.518     0.976      9         30        21         9E9
  29.500    105.282     3.491     3.316      6         40        27       6.897
  30.500     83.825     2.301     2.745      6         32        21       5.463
  31.500     39.433     1.735     4.393      4         25        16       2.502
  32.500     42.072     1.978     4.695      4         27        18       2.674
  33.500     70.270     2.476     3.524      5         34        22       4.545
  34.500     29.440     1.116     3.793      5         14         9       1.819
  35.500     35.107     1.409     4.013      4         22        14       2.194
  36.500     28.993     1.298     4.475      4         19        12       1.782
  37.500     37.963     1.910     5.032      3         36        22       2.375
  38.500     27.903     1.369     4.912      3         27        16       1.699
  39.500     67.377     1.901     2.822      6         26        15       4.327
  40.500     62.995     1.372     2.179      6         24        14       4.029
  41.499     51.673     1.181     2.286      6         20        12       3.272
  42.499     35.375     1.394     3.943      5         17        10       2.181
  43.499     64.128     1.840     2.869      6         25        14       4.094
  44.499     40.478     2.260     5.580      3         39        22       2.516
  45.499     46.345     2.475     5.335      3         44        24       2.904
  46.499    117.367     4.425     3.770      6         45        25       7.634
  47.499    222.862     4.581     2.056      8         53        29         9E9
  48.499    315.613     2.456     0.778      9         60        32         9E9
  49.499    249.848     2.563     1.026      9         48        25         9E9
```

```
 INPUT FILE: C:\temp\CPT-1.CSV  |------------------------------------------------
" Depth      Qc(avg)    Fs(avg)    Rf         Rf Zone    Spt N      Spt N1     Su
"  (feet)     (TSF)      (TSF)      (%)        (zone #)   (blow/ft)  (blow/ft)  (TSF)
"-------------------------------------------------------------------------------------
    50.499   193.208      2.019      1.045       9          37         19            9E9
    51.499   103.495      3.930      3.803       5          49         25          6.675
    52.499   163.147      3.676      2.256       7          52         27            9E9
    53.499   223.227      1.506      0.675       9          43         22            9E9
    54.499   164.847      3.516      2.135       7          53         27            9E9
    55.499    47.705      2.583      5.432       3          46         23          2.940
    56.499    68.240      3.413      5.012      11          65         33            9E9
    57.499    55.337      3.235      5.861       3          53         27          3.441
    58.499    64.852      4.212      6.509      11          62         31            9E9
    59.499   114.350      7.614      6.667      11         109         55            9E9
    60.499    85.550      0.000      0.000       9         9E9        9E9            9E9
```

```
INPUT FILE: C:\temp\CPT-2.CSV  |--------------------------------------------------
" Depth     Qc(avg)   Fs(avg)   Rf        Rf Zone   Spt N     Spt N1    Su
" (feet)    (TSF)     (TSF)     (%)       (zone #)  (blow/ft) (blow/ft) (TSF)
"---------------------------------------------------------------------------------
    0.500   118.810     1.507     1.269     8        28        42           9E9
    1.500    23.622     0.596     2.525     6         9        14         1.568
    2.500    19.090     0.586     3.068     5         9        14         1.262
    3.500    10.065     0.405     4.029     3        10        15         0.655
    4.500     8.993     0.223     2.482     4         6         9         0.581
    5.500     7.132     0.175     2.453     4         5         8         0.453
    6.500    14.753     0.387     2.621     5         7        11         0.957
    7.500    14.072     0.325     2.310     5         7        11         0.908
    8.500    15.213     0.281     1.847     5         7        11         0.980
    9.500    14.295     0.308     2.151     5         7        11         0.915
   10.500    15.611     0.458     2.936     5         7        10         0.998
   11.500    18.813     0.317     1.683     6         7         9         1.208
   12.500    16.120     0.331     2.052     5         8        10         1.025
   13.500    20.677     0.260     1.256     6         8         9         1.325
   14.500    25.325     0.293     1.157     6        10        11         1.630
   15.500    24.743     0.291     1.176     6         9         9         1.587
   16.500    26.977     0.254     0.940     7         9         9           9E9
   17.500    32.942     0.269     0.816     7        11        11           9E9
   18.500    35.047     0.244     0.697     7        11        10           9E9
   19.500    70.773     0.398     0.563     8        17        15           9E9
   20.500    86.254     0.454     0.526     8        21        18           9E9
   21.500    51.200     0.415     0.810     7        16        13           9E9
   22.500    67.887     0.406     0.598     8        16        13           9E9
   23.500    55.257     0.371     0.671     8        13        10           9E9
   24.500    56.113     0.361     0.643     8        13        10           9E9
   25.500    64.673     0.403     0.624     8        15        11           9E9
   26.500    75.427     0.449     0.596     8        18        13           9E9
   27.500    75.533     0.499     0.661     8        18        13           9E9
   28.500    72.890     0.466     0.640     8        17        12           9E9
   29.500    71.892     0.587     0.816     8        17        12           9E9
   30.500    57.518     1.009     1.754     7        18        12           9E9
   31.500    50.147     1.119     2.232     6        19        13         3.215
   32.500    64.315     0.727     1.130     7        21        14           9E9
   33.500    91.810     0.720     0.784     8        22        14           9E9
   34.500   119.922     0.780     0.650     9        23        15           9E9
   35.500   127.747     0.743     0.582     9        24        15           9E9
   36.500   145.968     0.873     0.598     9        28        17           9E9
   37.500   174.825     0.952     0.545     9        33        20           9E9
   38.500   135.628     1.033     0.762     9        26        16           9E9
   39.500   154.828     0.912     0.589     9        30        18           9E9
   40.500   186.623     1.054     0.565     9        36        21           9E9
   41.499   161.633     0.835     0.517     9        31        18           9E9
   42.499    74.920     1.194     1.593     7        24        14           9E9
   43.499   165.712     1.209     0.729     9        32        18           9E9
   44.499   117.108     0.859     0.734     9        22        12           9E9
   45.499   134.175     0.835     0.622     9        26        15           9E9
   46.499   159.495     1.934     1.213     8        38        21           9E9
   47.499   135.687     0.901     0.664     9        26        14           9E9
   48.499    95.573     1.807     1.890     7        31        17           9E9
   49.499    44.523     1.771     3.981     5        21        11         2.763
```

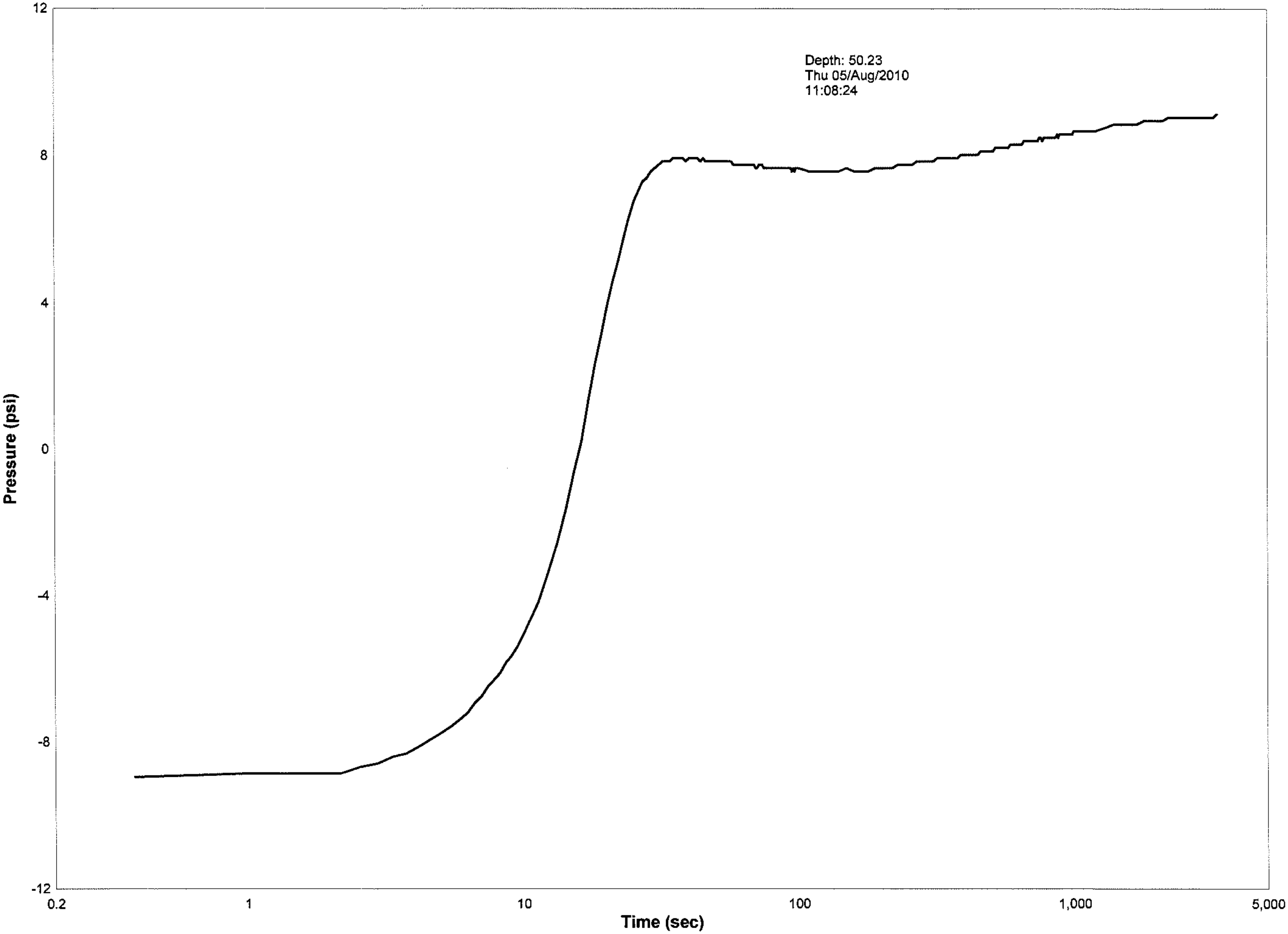
```
INPUT FILE: C:\temp\CPT-2.CSV   |------------------------------------------------
" Depth       Qc(avg)    Fs(avg)    Rf         Rf Zone    Spt N      Spt N1     Su
" (feet)      (TSF)      (TSF)      (%)        (zone #)   (blow/ft)  (blow/ft)  (TSF)
"-----------------------------------------------------------------------------------
   50.499    114.398      1.226      1.073      8          27         14            9E9
   51.499    124.387      1.152      0.927      8          30         16            9E9
   52.499     43.824      1.405      3.218      5          21         11          2.694
   53.499     21.452      0.547      2.572      5          10          5          1.199
   54.499     25.537      0.961      3.789      4          16          8          1.467
   55.499     52.055      2.385      4.598      4          33         17          3.231
   56.499     35.140      1.965      5.619      3          33         17          2.099
   57.499     45.460      1.975      4.360      4          29         15          2.783
   58.499    160.927      2.451      1.525      8          38         19            9E9
   59.499    136.203      1.692      1.243      8          33         17            9E9
   60.499     44.122      2.129      4.839      4          28         14          2.684
   61.499     40.695      1.958      4.826      4          26         13          2.452
   62.499    178.593      3.101      1.738      8          43         22            9E9
   63.499     91.155      2.175      2.390      7          29         15            9E9
   64.499     58.125      3.386      5.842      3          56         28          3.599
   65.499    115.552      5.001      4.334     11          111        56            9E9
   66.499     57.047      2.277      4.001      5          27         14          3.519
   67.499    220.950      3.825      1.732      8          53         27            9E9
   68.499    279.857      2.449      0.875      9          54         27            9E9
   69.499    275.357      1.829      0.665      9          53         27            9E9
   70.499    147.672      3.374      2.287      7          47         24            9E9
   71.499    190.688      5.579      2.927      7          61         31            9E9
   72.499    176.081      4.861      2.762      7          56         28            9E9
   73.499     70.205      3.883      5.538     11          67         34            9E9
   74.499    138.228      2.905      2.103      7          44         22            9E9
```

```
INPUT FILE: C:\temp\CPT-3.CSV   |-----------------------------------------------------------
" Depth        Qc(avg)    Fs(avg)    Rf         Rf Zone    Spt N      Spt N1     Su
" (feet)       (TSF)      (TSF)      (%)        (zone #)   (blow/ft)  (blow/ft)  (TSF)
"-------------------------------------------------------------------------------------------
    0.500    133.115      0.673      0.505         9         26         39          9E9
    1.500     88.077      0.171      0.194         9         17         26          9E9
    2.500     48.538      0.090      0.186         8         12         18          9E9
    3.500     51.052      0.096      0.188         8         12         18          9E9
    4.500     68.718      0.132      0.192         8         16         24          9E9
    5.500     83.493      0.175      0.209         9         16         24          9E9
    6.500     96.392      0.194      0.201         9         18         27          9E9
    7.500    106.902      0.253      0.236         9         20         30          9E9
    8.500     92.452      0.197      0.213         9         18         27          9E9
    9.500     55.058      0.163      0.295         8         13         19          9E9
   10.500     54.734      0.144      0.262         8         13         18          9E9
   11.500     54.568      0.323      0.592         8         13         17          9E9
   12.500     57.720      0.320      0.554         8         14         17          9E9
   13.500     61.492      0.550      0.894         8         15         17          9E9
   14.500     81.262      0.251      0.308         8         19         20          9E9
   15.500     85.998      0.265      0.308         9         16         16          9E9
   16.500     87.937      0.287      0.326         9         17         17          9E9
   17.500     67.892      0.796      1.173         8         16         15          9E9
   18.500     46.328      1.249      2.696         6         18         16        3.011
   19.500     58.805      0.987      1.679         7         19         16          9E9
   20.500     70.874      1.135      1.602         7         23         19          9E9
   21.500     94.373      0.376      0.399         9         18         14          9E9
   22.500    120.045      0.459      0.383         9         23         18          9E9
   23.500    118.380      0.594      0.502         9         23         17          9E9
   24.500    136.130      0.821      0.603         9         26         19          9E9
   25.500    146.183      0.685      0.469         9         28         20          9E9
   26.500    166.333      0.774      0.465         9         32         23          9E9
   27.500    154.707      0.637      0.412         9         30         21          9E9
   28.500    147.113      0.947      0.643         9         28         19          9E9
   29.500    147.610      1.016      0.688         9         28         19          9E9
   30.500     80.347      2.464      3.067         6         31         21        5.229
   31.500     44.827      1.644      3.668         5         21         14        2.857
   32.500     75.180      1.203      1.601         7         24         16          9E9
   33.500    136.505      1.087      0.796         9         26         17          9E9
   34.500    140.707      0.942      0.669         9         27         17          9E9
   35.500    117.355      2.262      1.928         7         37         23          9E9
   36.500    125.052      1.905      1.524         8         30         18          9E9
   37.500     66.937      1.617      2.418         6         26         16        4.302
   38.500     32.537      0.782      2.408         6         12          7        2.004
   39.500     41.527      1.824      4.400         4         26         15        2.599
   40.500     68.217      2.699      3.962         5         33         19        4.374
   41.499    145.850      1.644      1.128         8         35         20          9E9
   42.499    197.987      1.821      0.920         9         38         22          9E9
   43.499    205.883      1.344      0.653         9         39         22          9E9
   44.499     72.993      2.163      2.971         6         28         16        4.667
   45.499    130.897      2.396      1.833         7         42         23          9E9
   46.499    230.498      3.288      1.428         8         55         30          9E9
   47.499    126.168      3.094      2.456         7         40         22          9E9
   48.499     36.527      1.359      3.732         5         17          9        2.226
   49.499     36.358      1.469      4.053         4         23         12        2.212
```

```
INPUT FILE: C:\temp\CPT-3.CSV  |--------------------------------------------------
" Depth       Qc(avg)    Fs(avg)    Rf         Rf Zone    Spt N      Spt N1     Su
"  (feet)     (TSF)      (TSF)      (%)        (zone #)   (blow/ft)  (blow/ft)  (TSF)
"--------------------------------------------------------------------------------------
   50.499     46.968      1.710      3.647      5          22         12         2.916
   51.499    133.515      4.473      3.354      6          51         26         8.677
   52.499    185.029      3.769      2.039      7          59         30           9E9
   53.499    147.768      5.064      3.431      6          57         29         9.618
   54.499    296.602      3.380      1.140      9          57         29           9E9
   55.499    292.118      1.388      0.475     10          47         24           9E9
   56.499    115.413      3.858      3.348      6          44         22         7.448
   57.499    101.738      3.739      3.681      6          39         20         6.532
   58.499    132.873      2.768      2.086      7          42         21           9E9
   59.499     75.778      2.111      2.792      6          29         15         4.793
   60.499     32.775      0.000      0.000      8          9E9        9E9          9E9
```

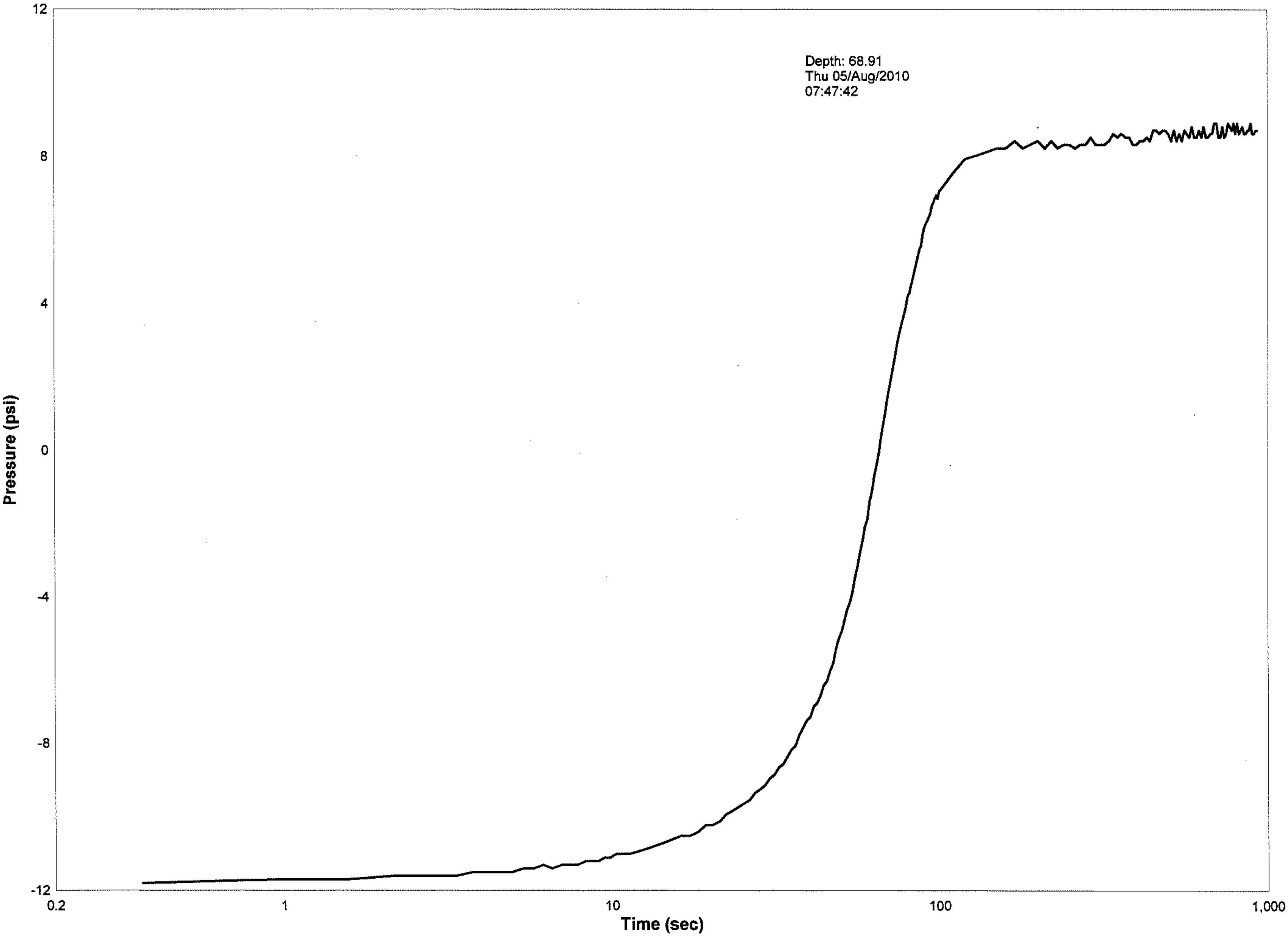
GeoDesign, Inc. CPT-1

Kehoe Testing



GeoDesign, Inc. **CPT-2**

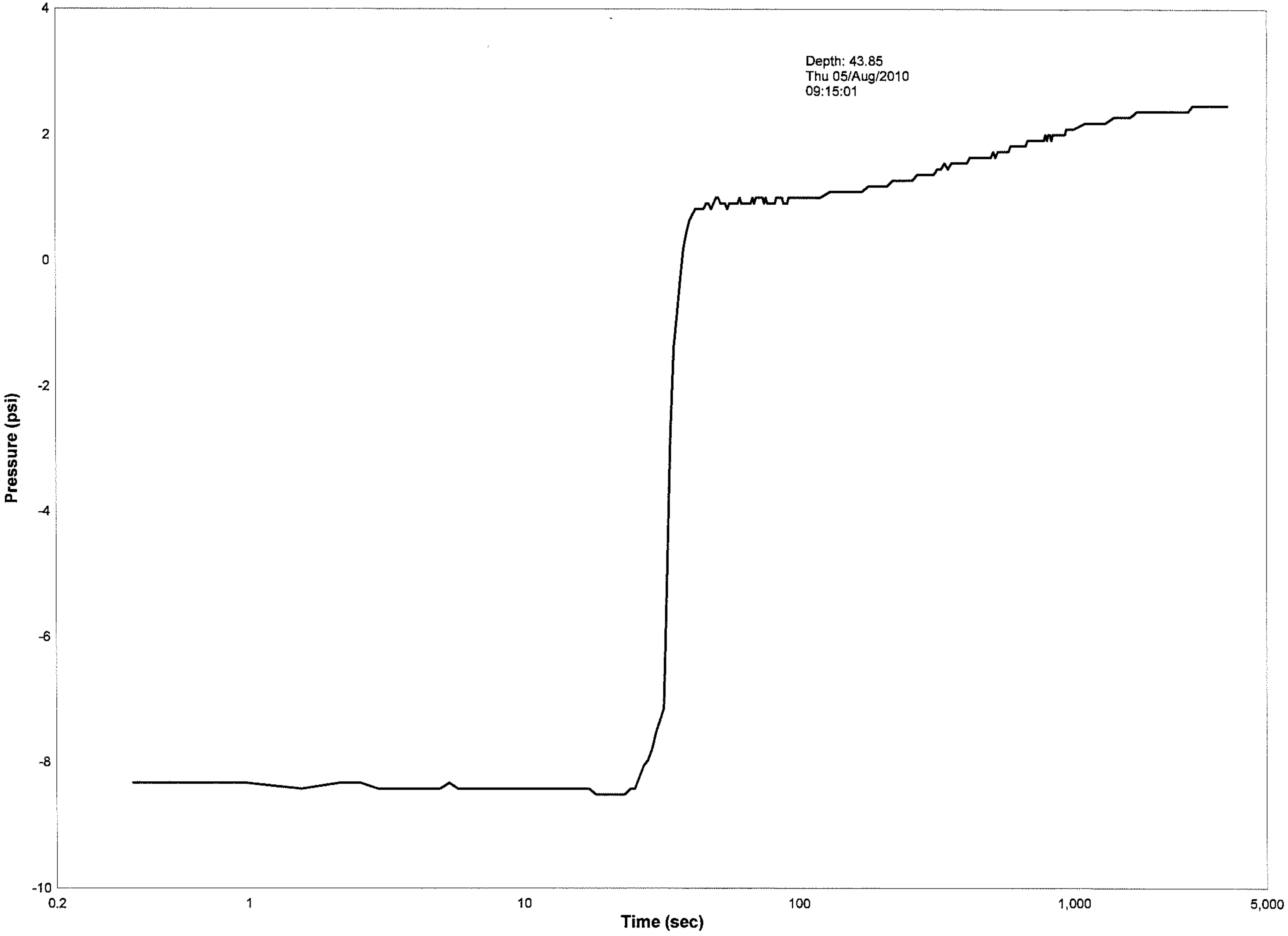
Kehoe Testing



Depth: 68.91
Thu 05/Aug/2010
07:47:42

GeoDesign, Inc. **CPT-3**

Kehoe Testing



Depth: 43.85
Thu 05/Aug/2010
09:15:01

CPTCP.TBL - CPTINT Correlation and Parameters Table File

-------------with NOTES & References at end-------------

Program: CPTINT - CPT Cone Interpretation Program
Version: 5.2
Table File by: Dr. R. G. (DICK) Campanella, P.Eng.
Rev. Dated: April 3, 2002

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Depth average see NOTE #1	Depth averaged over specified range (see menu)		All	All
Parameter Averaging	Averaged over range specified for depth. If no values exist, your choice is zero's or no value		All	All
Qc, Tip Stress	measured tip force/area	#6,#8	All	All
Qt corrtd for U2 see NOTE #2	Qt = Qc + (1 - a) x U2 and a = tip area ratio Defaults to U2 if given or uses U1 or U3 times Const.	#6,#8	All	All
[Note: Input value from input file is used if defined, not calculated]				
Q (Qt Normalized)	$Q = \frac{Qt - sv}{sv'}$	#9 & 13	All	All
Fs	measured sleeve force/area	#6,#8	All	All
Rf Friction Ratio (if Rf>8, Rf=8)	$Rf = \frac{Fs}{Qt} \times 100\%$	#6,#8	All	All
F (Rf Normalized)	$F = \frac{Fs}{(Qt - sv)} \times 100\%$	#9 & 13	All	All
Gamma Total Unit Weight (Soil + Water) see NOTE #3	Based on Rf or Bq Classif. Zone Zone # Gamma = kN/m^3 1 Qt<4bar 15.70 1 Qt=4bar 17.30 2 Rf<5% 13.36 2 Rf=5% 11.80 2 Bq Zone 12.58 3 Qt<10bar 18.86 3 Qt=10bar 19.65 4, 5 & 6 Qt<20bar 18.86 4, 5 & 6 Qt=20bar 19.65 7 18.86 8 & 9 19.65 10 20.44 11 & 12 21.22		All	All

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
U Penetration Pore Pressure see NOTE #4	U1,measured on Face of tip U2,measured Behind Tip at shoulder (std location) U3,measured Behind Friction Sleeve		All	All
Water Table	Depth below ground surface to where pore pressure = 0 Make negative if water level is above ground		All	All
Uo Hydrostatic Pore Pressure see NOTE #4	Uo = water depth,Hw x unit weight water, Gamma or Uo=Hw=depth-depth to water table if depth<water table,Uo = 0		All	All
dU Excess Pore Pressure	dU = U2 - Uo Defaults to U2 if given or uses U1 or U3 x const.		All	All
DPPR (Differential Pore Pressure Ratio)	$DPPR = \frac{dU}{Qt} = \frac{U - Uo}{Qt}$ Defaults to U2 if given or uses U1 or U3 x const.	#6,#8	All	All
Bq	$Bq = \frac{dU}{Qt - sv}$	# 4 # 8 # 13	All	All
OS (Overburden Stress)	OS = sv = S (Gamma x Depth)		All	All
EOS (Effective Overburden Stress)	EOS = sv' = OS - Uo = sv - Uo		All	All
Rf Zone Soil Behavior Type see NOTE #5	Classification chart for Qc and Rf Zone # = Soil Behavior Type 1=sensitive fine grained 2=organic material 3=clay 4=silty clay 5=clayey silt 6=sandy silt 7=silty sand 8=fine sand 9=sand 10=gravelly sand 11=very stiff fine grained ¥ 12=sand to clayey sand ¥ ¥ overconsolidated or cemented	#6 #8, Fig4.3	All	1<Qt<1000bar 0<Rf<8%

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Bq Zone Soil Behavior Type	Classification chart for Qc and Bq (same zone #'s as Rf above)	#8 Fig 4.3	All	0<Qt<1000bar -0.1<Bq<1.4
Spt N(60) Standard Penetration Test (Blows/foot) at 60% Energy After R&C(1983) see NOTE #6	Qt/N ratio per zone Zone # Qt/N Zone # Qt/N 1 2 7 3 2 1 8 4 3 1 9 5 4 1.5 10 6 5 2 11 1 6 2.5 12 2	# 7 # 8 Fig 4.2	All	All
Spt N1(60) Normalized for Overburden str	Spt N1(60) = Cn x Spt N(60) where Cn = (sv')^(-0.77)	# 8	All	0.5<Cn<1.5
Dr Relative Density see NOTE #7	Specific Sands: $Dr = \frac{100}{C2} * \ln\left[\frac{Qc}{C0\ sv'^{C1}}\right]$ where: All are NC & UNAGED	# 8		
Compressibility	Sand C0 C1 C2			
moderate	Ticino 17.37 .558 2.58	# 1	Sand	7 to 10 0<Qt<500bar 0<sv'<5bar
high	Schmertmann 15.32 .520 2.75	# 1		
all	ALL SANDS: NC, OC, ALL TESTS $Dr=C3 + C4\log_{10}\left[\frac{\left(\frac{Qc}{C1}\right)}{\left(\frac{sv'+C2}{C0}\right)}\right]$ where: C0 C1 C2 C3 C4 0.100 0.0981 0.5 -98 66	# 5	Sand	7 to 10 (6 possible)
Phi Friction Angle	Methods: 1) Robertson & Campanella 2) Durgunoglu & Mitchell 3) Janbu beta = +15 degree 4) Janbu beta = 0 degree 5) Janbu beta = -15 degree	#6, #8 # 2 #6, #8 #6, #8 #6, #8	Sand	7 to 10 & 6 0<Qt<500bar 0<sv'<4bar 29<phi<49

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Gmax Maximum Shear Modulus at very small strains	Clay: Gmax = alpha x Qt	# 8 Fig4.18	Clay	1 to 6
	Sand: Digitized figure of Qc vs Gmax with interpolation between sv'curves,R&C method	# 6 # 8 Fig4.13	Sand	(6 possible) 7 to 10 .25<sv'<8bar
CSR(Qc), t/s LEVEL ground Liquefaction SAND Resistance see NOTE #8	Seed's CSR vs N1(60) graph for specified equake Magnitude.Can include silty sand corr. for Zone 7. N1(60) from CPT correlations.	# 11 # 12	Sand	7 to 10 (6 possible)
CSR(Eq), t/s Cyclic Stress Ratio applied by design quake	$CSR(Eq) = 0.65 \frac{Amax}{g} \frac{sv}{svo'} rd$ Amax=max surface acceleratn including Amplification	# 12 # 3	Sand	7 to 10 (6 possible)
[Note: Input value from input file is used if defined, & not calculated]				
rd Reduction Factor to find CSR(Eq)	Digitized graph to use for depth vs rd: 1) Seed's mean 2) Fraser Delta	# 12 # 3	Sand	(6 possible) 7 to 10 0<depth<30m
FL,Safety Factor against Liquefaction	FL = CSR(Qc)/CSR(Eq)	# 3	Sand	7 to 10 (6 possible)
Qcr Critical Bearng required to resist Liquefctn	Qcr backcalculated from CSR(Eq) for a specified FL. Qcr is only for the given GWT,EOS,OS,Amax/g & Eq.Mag	# 12	Sand	7 to 10 (6 possible)
Su, Undrained Shear Strength of CLAY METHODS:	Nk: $Su = \frac{Qc - st}{Nk}$	# 8	Clay	1 to 6
	Nke: $Su = \frac{Qt - U2}{Nke}$		Clay	1 to 6
	Nkt: $Su = \frac{Qt - sv}{Nkt}$		Clay	1 to 6
	Nc: $Su = \frac{Qt}{Nc}$		Clay	1 to 6
see NOTE #9	NdU: $Su = \frac{dU2}{NdU}$ (dU1 or dU3)		Clay	1 to 6

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Su/EOS	$Su/EOS = \frac{Su}{sv'}$	# 8	Clay	1 to 6
Ko (NC) Normally Consolidated	$(Ko)NC = 1 - Sin(f)$ see NOTE #10	# 8	Sand	7 to 10 (6 possible)
Ko (OC) Over Consolidated	$(Ko)OC = (Ko)NC \times OCR^{0.42}$	# 8	Sand	7 to 10 (6 possible)
E25 Youngs Modulus	E25 = alpha x Qt where user input alpha	# 8 4.11&12	Sand	(6) 7 to 10 0<Qt<500bar
M Constrained Modulus	CLAY: M = alpha x Qt where user input alpha	# 8 Tabl4.3	Clay	1 to 6
	SAND: Methods: Qt: M = alpha x Qt		Sand	7 to 10 (6 possible)
	Baldi: $\frac{M}{Qt} = C0 \times pa \left(\frac{sv'}{pa} \right)^{C1} \times OCR^{C2} \times \exp(C3\ Dr)$	# 8 Fig4.10	Sand	7 to 10
OCR (Clay) Over-Consolidation Ratio see NOTE #11	$OCR = \left(\frac{\frac{Su}{svo'}}{\left(\frac{Su}{svo'} \right)_{NC}} \right)^{1.25}$	# 6 # 8 Fig4.19	Clay	1 to 6
Ic Material Index After J&D(1993) see NOTE #18	$Ic = \left(\left(3-\log_{10} (Q(1-Bq)) \right)^{2} + \left(1.5+1.3\log_{10} F \right)^{2} \right)^{0.5}$	# 13 # 17	All	All
Spt N(60) Standard Penetration Test (Blows/foot) at 60% Energy After J&D(1993) see NOTE #16	Qc/N = 8.5(1-(Ic/4.75)) where Qc in bars	# 13	All	All

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
State Parameter State, (e-units) Current Void Void Ratio minus Critical Void Ratio	$\text{State} = \dfrac{\ln\left(\dfrac{3M + 8.5M/F}{Q(1-Bq)}\right)}{11.9 - 1.33F}$ $M = \dfrac{6 \text{ Sin fcv}}{3 - \text{Sin fcv}}$ fcv = const. vol. Phi angle	# 14	All	All
Fines Content FC(%) Percent less than #200 Sieve After Davies,99	FC(%) = 42.4179(Ic) - 54.8574 FC(%) = 0% if Ic < 1.2933 FC(%) = 100% if Ic > 3.6508	# 15	All	All
OCR (Clay) Overcons. Ratio by Pore Press. U1 & U2 or U1 & U3 see NOTE #17	OCR = 0.5 + 1.50(PPD) PPD = (U1 - U2)/Uo or PPD = (U1 - U3)/Uo and default 0.5 & 1.5 are settable	# 16	Clay	1 to 6

1. Depth averaging may be in 0.5, 1, 2.5 or 5 ft. intervals or 0.1, 0.25, 0.5 or 1.0 m intervals, or no depth averaging if zero is selected. The average is the mean value of the readings in the interval. The depth value is the mid-depth of the averaged interval. It is convenient to start at half the depth averaging interval. For example, if you want "even" depths and the depth averaging is set at 0.50 m then start at 0.25 to get values of depth of 0.5, 1.0, 1.5, etc.

2. Basic input CPTU data columns are for Depth, Qc, Fs, U1, U2, U3, INC and TEMP may be selected. In addition the following parameters may also be specified as an INPUT data column: Qt, Gamma, Uo, Spt N, Rf Zone, Bq Zone and CSR(EQ). These values will be used where required to obtain other interpreted parameters. If they are not specified the program will estimate them when they are required. For example, you can create an OUTPUT data file of any of the above parameters and then edit some or all of the values to suite your measurements or your desires to specify their values. You can do that with "Gamma" values to input your measurements of unit weight, or with "Uo" if you want to input values of pore water pressure other than hydrostatic, or with any of the other input parameters. You would use your edited file of adjusted data as your new INPUT data file. Thus, you can specify these parameters if you want to override the Program's values.

You can also use the designated value of "9E9" to denote an unknown value.

You can use the "OTHER" designation to input other data that exists on your input file and identify its units. This allows you to output it, without operating on it, if you choose.

It is best NOT to use depth averaging when using input data that is not continuous at regular depth intervals. Always use DEPTH AVERAGING with extreme caution since the program averages ALL INPUT parameters over the interval chosen irregardless of soil type. Careful use of start and end depth choises can make depth averaging very effective.

3. Since there is no data in the file within the initial depth interval, a default Gamma (unit weight) must be specified from the surface to the starting depth. This is done in the "Param" Menu in units of kN/m^3 (1kN/m^3=6.36pcf). Also, you can specify the values of Gamma to be used by the program as in NOTE #2 above.

4. If pore pressures are not measured by the cone then the program will take Qc as being equal to Qt for all interpretations requiring Qt. Also, Uo may be specified in the input file as a column of Uo vs depth values, if the water pressures are not hydrostatic. See NOTE #2 for more info on customizing input data.

5. You can choose to use either the Rf classif. Zone or the Bq classif. Zone to divide soil into Undrained Parameters (Zones 1 to 6) and Drained Parameters (Zones 7 to 10) in the "Param" Menu. (However, in order to use the Bq Zone you must have Pore Pressure, U2, data.) Also, you may choose to switch Zone 6 to a Drained Zone from its Undrained Zone status. This is done if you feel that the soil identified as Zone 6 (sandy silt) is really coaser (using other sources of information) and/or you want it analyzed as a Drained rather than Undrained soil. Finally, the soil behavior names in each zone were shortened in version 5.0 for simplicity. For example, Zone 6 was named "sandy silt to clayey silt" but was shortened to "sandy silt".

6. Spt N is the same as Spt N(60) for 60% transferred energy. This value is calculated from the Qt/N ratios given for each Soil Zone (you can specify either Rf or Bq Zone) and these values are used in the Level Ground Liquefaction analysis. Values of Spt N may be specified in the Input File, if indepedently measured values are to be used. We suggest that you not use depth averaging if you only have selected Spt N values at a few depths. You may use "9E9" for missing data.

7. If Dr values are negative then soil is very loose or likely more of an undrained soil like a silty sand rather than a drained soil for which the Dr correlations were developed. Use Dr interpretations very cautiously since they also assume the soil is free draining, uncemented, unaged and has the same compressibility of grains as the soil used for the correlations in chamber calibration tests.

8. The simplified sand liquefaction analysis for level ground according to Seed et al requires Spt N1(60) and earthquake magnitude to obtain the cyclic stress ratio to cause liquefaction, CSR(Qc). The design maximum ground acceleration, the depth-reduction factor, Rd, and overburden total and effective stresses are required to calculate the cyclic stress ratio applied by the design earthquake, CSR(EQ). The program estimates the N1(60) values from the cone stresses, the operator identifies the earthquake magnitude and Seed et al chart is used to get CSR(Qc). The program also calculates CSR(EQ) from the user specified maximum ground acceleration including any amplification factors, the calculated overburden stresses and either Seed's mean or the Fraser Delta Rd factor. The Fraser Delta is used only when amplification factors of the order of 2 or more are used. See Reference Nos. 3, 6, 11 and 12 for more information. The user can INPUT specific values for Spt N, CSR(EQ), Soil Zones, Gamma's, etc. in order to customize the analysis for the existing data base of information. It is recommended that you do not use depth averaging when using specific input data but make calculations at specific depths where external input data exists. The calculated value of Qcr is the minimum value of cone bearing stress required at a given depth such that the factor of safety against liquefaction, or the ratio FL = CSR(Qc)/CSR(EQ) have the specified value for a given earthquake magnitude, max. ground acceleration, depth reduction factor, and calculated overburden stresses. This value of Qcr is useful to identify the required minimum level of soil improvement for a given design condition.

9. The NdU method to calculate undrained shear strength has been extended to allow the user to choose either dU1, or dU2 or dU3 provided such pore pressure measurements exist.

10. The Overconsolidation Ratio, OCR, for the sand must be estimated by the user in the "Param" menu if you want to estimate Ko in the sand layers. For the typical normally consolidated sand, OCR = 1.0.

11. It is currently only possible to estimate the OCR for a clay, which makes use of the correlations obtained from extensive laboratory tests.

12. An improved calculation and print routine was added to version 5.0 which uses swap routines to reduce memory requirements, but slows down the calculations.

13. The classification charts for Rf has been extended at all boundaries such that values of Rf>8 and values of Qc<1.00 are possible. The Bq classification chart which requires dU2 and can now accept values of Bq>1.2 and Qt<1. Unfortunately, this feature does not work.

14. Version 5.1ppd added several enhancements to the program. You may input an average vertical flow gradient, which is applied over the entire profile depth to be analysed so adjust the depth of interest accordingly. Zero gives hydrostatic and no flow, a negative gradient is upward flow which increases pore pressure and reduces vertical effective stress. A positive gradient gives downward flow.

15. A State Parameter or current void ratio minus critical void ratio is calculated according to the paper by Ref. 14, Plewes, Davies and Jefferies, 1994.

16. An alternate method to estimate SPT from CPT is provided according to Ref. 13, Jefferies and Davies, 1993 in ASTM.

17. An alternate method to estimate OCR in clays is provided which uses the measured pore pressure difference, ppd, so both U1 and U2 or U1 and U3 must be measured at the same time. (see Ref. 16)

18. Version 5.2 added the value Ic (Material Index) according to Jefferies & Davies, 1993, 1991 (Ref. 13 & 17) which combines all Normalized parameters Q, F and Bq.
(Note: QtN was changed to Q and RfN to F.)

18A. In Version 5.2, if at any depth the value of Bq>1 (in very sensitive saturated soil)then Bq is made equal to 0.99. Also, if Rf>8 it is made 7.99. These changes have a negligable effect on the results.

19. FC(%) or percent of dry weight less than #200 sieve (.074mm) was also added according to Davies, 1999 Ref.#15)

REFERENCES:

1) Bellotti, R., Crippa, V., Pedroni, S., Baldi, G., Fretti, C., Ostricati, D., Ghionna, V., Jamiolkowski, M., Pasqalini, E., 1985, "Laboratory Validation Of In-Situ Tests", Italian Geotechnical Society Jubilee Volume for the XI ICSMFE, S.F., Cal.

2) Durgunoglu, H.T. and Mitchell, J.K., 1975, "Static Penetration Resistance of Soils: I-Analysis", Proceedings of the ASCE Specialty Conference on In-Situ Measurement of Soil Properties, Raleigh, NC

3) "Earthquake Design in the Fraser Delta - Geotechnical Aspects" Task Force Report, May 1991 - Co-chair: Dr. P. M. Byrne, Univ. of British Columbia, Dept. of Civil Engineering, Vancouver, B.C., V6T 1Z4.

4) Janbu, N. and Senneset, K., 1974,. "Effective Stress Interpretation of In Situ Static Penetratuion Tests", Proceedings of the European Symposium on Penetration Testing,Stockholm Sweden, Vol. 2.2

5) Jamiolkowski, M., Ladd, C.C., Germaine, J.T., Lancellotta, R., 1985, "New Developments in Field and Laboratory Testing of Soils", State of the Art Address for XIth ICSMFE, San Francisco.

6) Robertson, P.K. and Campanella, R.G., 1983, "Interpretation of Cone Penetration Tests - PART I (SAND) and PART II (CLAY)", Canadian Geotechnical Journal, Vol. 20, No. 4.

7) Robertson, P.K., Campanella, R.G., and Wightman, A., 1983, "SPT - CPT Correlations", Journal of the Geotechnical Division, ASCE, Vol. 109, Nov.

8) Robertson, P.K. and Campanella, R.G., 1989 "Guidelines for Geotechnical Design using CPT and CPTU", Soil Mechanics Series N0. 120, Civil Eng. Dept., Univ. of B.C., Vancouver, B.C., V6T 1Z4, Sept 1989.

9) Robertson, P.K., 1990, Soil Classification using the CPT, Canadian Geot. Journal, V.27,No.1, Feb, p151-158.

10) Schmertmann, J.H., 1976, "An updated Correlation between Relative Density, Dr and Fugro-type Electric Cone Bearing, qc" Department of Civil Engineering Report, University of Florida, July.

11) Seed, H.B., Idriss, I.M. and Arango, I., 1983, "Evaluation of Liquefaction Potential Using Field Performance Data", Journal of Geot. Engrg. Div., ASCE, Vol. 109, No. 3, March 1983, pp. 458-482.

12) Seed, H.B. and Idriss, I.M., 1971, "Simplified procedure for Evaluation Soil Liquefaction Potential", Journal of Soil Mechanics and Foundations, ASCE, SM9, Vol. 97, Sept.

13) Jefferies, M.G. and Davies, M.P., 1993, "Use of CPTu to Estimate Equivalent SPT N60", ASTM, Geotechnical Testing Journal, V.16:4, 458-468.

14) Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1994, "CPT based Screening Procedure for Evaluating Liquefaction Susceptibility", Proc. Canadian Geot. Conference, Halifax

15) Davies, M.P., 1999, "Piezocone Technology for the Geoenvironmental Characterization of Mine Tailings", PhD Thesis, Univ. of British Columbia, Civil Eng. Dept, Vancouver, BC, V6T 1Z4, Canada.

16) Sully, J.P., Campanella, R.G. and Robertson, P.K., 1988, "Overconsolidation Ratio of Clays from Penetration Pore Pressures", ASCE Journal of Geotechnical Engineering, Vol. 114, No. 2, February, pp. 209-216.

17) Jefferies, M.G. and Davies, M.P.,1991,"Soil Classification by the CPT":Discussion.Canadian Geot. Jour.,V28(1),173-6

APPENDIX C

GEOVision
geophysical services

SUSPENSION P & S VELOCITIES
AND Vs30
SOTO CAPITAL PROJECT,
BORING B-1

August 18, 2010
Report 10262-01 rev A

SUSPENSION P & S VELOCITIES
AND Vs30
SOTO CAPITAL PROJECT,
BORING B-1

Prepared for

GeoDesign, Inc.
2121 Towne Centre Place, Suite 130
Anaheim, CA 92806
(714) 634-3701
Job #SotoCapt-1-01

Prepared by

GEOVision Geophysical Services
1124 Olympic Drive
Corona, California 92881
(951) 549-1234
Project #10262

August 18, 2010
Report 10262-01 rev A

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

APPENDIX A FIGURES

APPENDIX A TABLES

INTRODUCTION

OYO suspension PS velocity measurements were performed in one uncased boring at the SOTO Capital Project, located at 8527 Santa Monica Blvd., in West Hollywood, California. Data acquisition was performed on August 5, 2010 by Charles Carter of GEOVision. Data analysis and report preparation were performed by Robert Steller and reviewed by John Diehl. The work was performed under subcontract with GeoDesign, Inc, with Chris Zadoorian as the point of contact for GeoDesign.

This report describes the field measurements, data analysis, and results of this work.

SCOPE OF WORK

This report presents the results of suspension velocity measurements in one uncased boring, as detailed below. The purpose of these studies was to supplement stratigraphic information obtained from GeoDesign's soil sampling program and to acquire shear wave velocities and compressional wave velocities as a function of depth, as well as to determine Vs30 for the site.

BORING DESIGNATION	DATE LOGGED	BORING DEPTH (FEET)	LOCATION
B-1	8/5/2010	115	8527 SANTA MONICA BLVD, WEST HOLLYWOOD

Table 1. Boring location and logging date

The OYO Model 170 Suspension Logging Recorder and Suspension Logging Probe were used to obtain in-situ horizontal shear and compressional wave velocity measurements at 1.64 ft intervals. The acquired data was analyzed and a profile of velocity versus depth was produced for both compressional and horizontally polarized shear waves.

A detailed reference for the velocity measurement techniques used in this study is:

> <u>Guidelines for Determining Design Basis Ground Motions</u>, Report TR-102293, Electric Power Research Institute, Palo Alto, California, November 1993, Sections 7 and 8.

INSTRUMENTATION

Suspension soil velocity measurements were performed using the Suspension PS Logging system, manufactured by OYO Corporation, and their subsidiary, Robertson Geologging. This system directly determines the average velocity of a 3.28 ft high segment of the soil column surrounding the boring of interest by measuring the elapsed time between arrivals of a wave propagating upward through the soil column. The receivers that detect the wave, and the source that generates the wave, are moved as a unit in the boring producing relatively constant amplitude signals at all depths.

The suspension system probe consists of a combined reversible polarity solenoid horizontal shear-wave source (S_H) and compressional-wave source (P), joined to two biaxial receivers by a flexible isolation cylinder, as shown in Figure 1. The separation of the two receivers is 3.28 ft, allowing average wave velocity in the region between the receivers to be determined by inversion of the wave travel time between the two receivers. The total length of the probe as used in this survey is 21 ft, with the center point of the receiver pair 12.1 ft above the bottom end of the probe. The probe receives control signals from, and sends the amplified receiver signals to, instrumentation on the surface via an armored 4 conductor cable. The cable is wound onto the drum of a winch and is used to support the probe. Cable travel is measured to provide probe depth data.

The entire probe is suspended in the boring by the cable, therefore, source motion is not coupled directly to the boring walls; rather, the source motion creates a horizontally propagating impulsive pressure wave in the fluid filling the boring and surrounding the source. This pressure wave is converted to P and S_H-waves in the surrounding soil and rock as it passes through the casing and grout annulus and impinges upon the wall of the boring. These waves propagate through the soil and rock surrounding the boring, in turn causing a pressure wave to be generated in the fluid surrounding the receivers as the soil waves pass their location. Separation of the P and S_H-waves at the receivers is performed using the following steps:

1. Orientation of the horizontal receivers is maintained parallel to the axis of the source, maximizing the amplitude of the recorded S_H-wave signals.
2. At each depth, S_H-wave signals are recorded with the source actuated in opposite directions, producing S_H-wave signals of opposite polarity, providing a characteristic S_H-wave signature distinct from the P-wave signal.
3. The 7.0 ft separation of source and receiver 1 permits the P-wave signal to pass and damp significantly before the slower S_H-wave signal arrives at the receiver. In faster soils or rock, the isolation cylinder is extended to allow greater separation of the P- and S_H-wave signals.
4. In saturated soils, the received P-wave signal is typically of much higher frequency than the received S_H-wave signal, permitting additional separation of the two signals by low pass filtering.
5. Direct arrival of the original pressure pulse in the fluid is not detected at the receivers because the wavelength of the pressure pulse in fluid is significantly greater than the dimension of the fluid annulus surrounding the probe (meter versus centimeter scale), preventing significant energy transmission through the fluid medium.

In operation, a distinct, repeatable pattern of impulses is generated at each depth as follows:

1. The source is fired in one direction producing dominantly horizontal shear with some vertical compression, and the signals from the horizontal receivers situated parallel to the axis of motion of the source are recorded.
2. The source is fired again in the opposite direction and the horizontal receiver signals are recorded.
3. The source is fired again and the vertical receiver signals are recorded. The repeated source pattern facilitates the picking of the P and S_H-wave arrivals; reversal of the source changes the polarity of the S_H-wave pattern but not the P-wave pattern.

The data from each receiver during each source activation is recorded as a different channel on the recording system. The Model 170 has six channels (two simultaneous recording channels), each with a 16 bit 1024 sample record. The recorded data is displayed on the controlling computer display. Data is stored on disk for further processing. Up to 8 sampling sequences can be summed to improve the signal to noise ratio of the signals.

Review of the displayed data on the display allows the operator to set the gains, filters, delay time, pulse length (energy), sample rate, and summing number to optimize the quality of the data before recording. Verification of the calibration of the recorder is performed every twelve months using a NIST traceable frequency source and counter, as outlined in Appendix B.

MEASUREMENT PROCEDURES

The boring was logged uncased, filled with bentonite based drilling mud. The suspension probe was positioned with the mid-point of the receiver spacing at grade, and the mechanical and electronic depth counters were set to zero. The probe was lowered to the bottom of the boring, stopping at 1.64 ft intervals to collect data, as summarized below.

At each measurement depth the measurement sequence of two opposite horizontal records and one vertical record was performed, and the gains were adjusted as required. The data from each depth was checked and recorded on disk before moving to the next depth.

BORING NUMBER	RUN NUMBER	DEPTH RANGE (FEET)	DEPTH AS DRILLED (FEET)	LOST TO SLOUGH (FEET)	SAMPLE INTERVAL (FEET)	DATE LOGGED
B-1	1	3.6 – 101.7	115.0	1.2	1.64	8/5/2010

Table 2. Logging dates and depth ranges

DATA ANALYSIS

The recorded digital records were analyzed to locate the first minima on the vertical axis records, indicating the arrival of P-wave energy. The difference in travel time between receiver 1 and receiver 2 (R1-R2) arrivals are used to calculate the P-wave velocity for that 3.28 ft segment of the soil column. When observable, P-wave arrivals on the horizontal axis records are used to verify the velocities determined from the vertical axis data.

The P-wave velocity calculated from the travel time over the 7.0 ft interval from source to receiver 1 (S-R1) is calculated and plotted for quality assurance of the velocity derived from the travel time between receivers. During analysis, the depth values as recorded are increased by 5.15 ft to correspond to the mid-point of the 7.0 ft S-R1 interval, as illustrated in Figure 1. Travel times are obtained by picking the first break of the P-wave signal at receiver 1 and subtracting 0.3 milliseconds, the calculated and experimentally verified delay from source trigger pulse (beginning of record) to source impact. This delay corresponds to the duration of acceleration of the solenoid before impact.

The recorded digital records are studied to establish the presence of clear S_H-wave pulses, as indicated by the presence of opposite polarity pulses on each pair of horizontal records. Ideally, the S_H-wave signals from the 'normal' and 'reverse' source pulses are very nearly inverted images of each other. Digital FFT - IFFT lowpass filtering was used to remove the higher frequency P-wave signal from the S_H-wave signal. Different filter cutoffs are used to separate P- and S_H-waves at different depths, ranging from 500 Hz in the slowest zones to 2000 Hz in the regions of highest velocity. At each depth, the filter frequency is selected to be at least twice the fundamental frequency of the S_H-wave signal being filtered.

Generally, the first maxima were picked for the 'normal' signals and the first minima for the 'reverse' signals, although other points on the waveform were used if the first pulse was distorted. The absolute arrival time of the 'normal' and 'reverse' signals may vary by +/- 0.2 milliseconds, due to differences in the actuation time of the solenoid source caused by constant mechanical bias in the source or by boring inclination. This variation does not affect the R1-R2 velocity determinations, as the differential time is measured between arrivals of waves created by the same source actuation. The final velocity value is the average of the values obtained from the 'normal' and 'reverse' source actuations.

As with the P-wave data, S_H-wave velocity calculated from the travel time over the 7.0 ft interval from source to receiver 1 is calculated and plotted for verification of the velocity derived from the travel time between receivers. During analysis, the depth values are increased by 5.15 ft to correspond to the mid-point of the 7.0 ft S-R1 interval. Travel times are obtained by picking the first break of the S_H-wave signal at the near receiver and subtracting 0.3 milliseconds, the calculated and experimentally verified delay from the beginning of the record at the source trigger pulse to source impact.

Figure 2 shows an example of R1 - R2 measurements on a filtered sample suspension. In Figure 2, the time difference over the 3.28 ft interval of 2.46 milliseconds for the horizontal signals is equivalent to an S_H-wave velocity of 1334 ft/sec. Final S_H-wave velocity is the average of the horizontal normal and horizontal reverse (HR) signals. Whenever possible, time differences were determined from several phase points on the S_H-waveform records to verify the data obtained from the first arrival of the S_H-wave pulse. Figure 3 displays the same record before filtering of the S_H-waveform record with a 2000 Hz FFT - IFFT digital lowpass filter, illustrating the presence of higher frequency P-wave energy at the beginning of the record, and distortion of the lower frequency S_H-wave by residual P-wave signal.

At the request of the client, Vs30 was calculated by summing the calculated travel times over each 1.64 ft interval from 8.2 ft (2.5 m) to a depth of 106.6 ft (32.5 m).

RESULTS

Suspension P- and S_H-wave velocities are plotted with the calculated Vs30 of 367 m/sec (1210 ft/sec) in Figure 4. The calculated suspension travel time curves are presented with Vs30 in Figure 5. Tabulated measurement depths, pick times and velocities are presented in Table 3.

Calibration procedures and records for the measurement system are presented in Appendix B.

SUMMARY

Discussion of Suspension Results

Suspension PS velocity data are ideally collected in an uncased fluid filled boring, drilled with rotary mud (rotary wash) methods, as this boring was.

Suspension PS velocity data quality is judged based upon 5 criteria:

1. Consistent data between receiver to receiver (R1 – R2) and source to receiver (S – R1) data.
2. Consistent relationship between P-wave and S_H -wave (excluding transition to saturated soils)
3. Consistency between data from adjacent depth intervals.
4. Clarity of P-wave and S_H-wave onset, as well as damping of later oscillations.
5. Consistency of profile between adjacent borings, if available.

These data show excellent correlation between R1 – R2 and S – R1 data, as well as excellent correlation between P-wave and S_H-wave velocities. No adjacent borings were logged. P-wave and S_H-wave onsets are generally clear, and later oscillations are well damped. These are excellent quality velocity data. The velocity profile is indicative of very dense soils or soft rock. P-wave velocities rise above 5000 ft/sec (1500 m/sec) at a depth of 29 ft, indicating water table at this depth.

Discussion of Vs30

Vs30 for this site from 8.2 to 106.6 ft (2.5 - 32.5 m) was calculated at 1210 ft/sec (363 m/sec), classifying it as a NEHRP site class C.

Quality Assurance

These velocity measurements were performed using industry-standard or better methods for both measurements and analyses. All work was performed under GEOVision quality assurance procedures, which include:

- Use of NIST-traceable calibrations, where applicable, for field and laboratory instrumentation
- Use of standard field data logs
- Use of independent verification of data by comparison of receiver-to-receiver and source-to-receiver velocities
- Independent review of calculations and results by a registered professional engineer, geologist, or geophysicist.

Data Reliability

P- and S_H-wave velocity measurement using the Suspension Method gives average velocities over a 3.28 ft interval of depth. This high resolution results in the scatter of values shown in the graphs. Individual measurements are very reliable with estimated precision of +/- 5%. Standardized field procedures and quality assurance checks contribute to the reliability of these data.

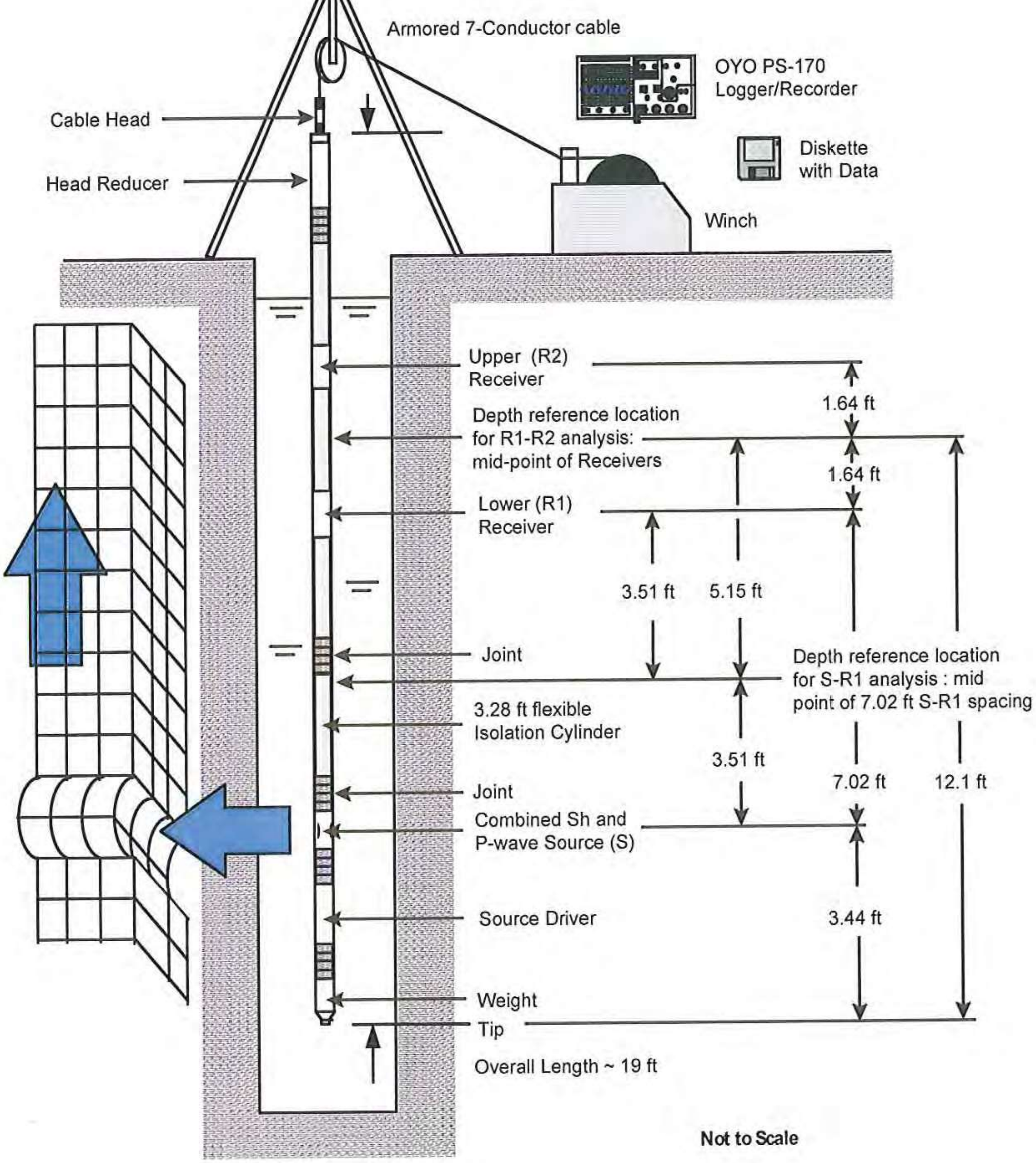


Figure 1. Concept illustration of P-S logging system

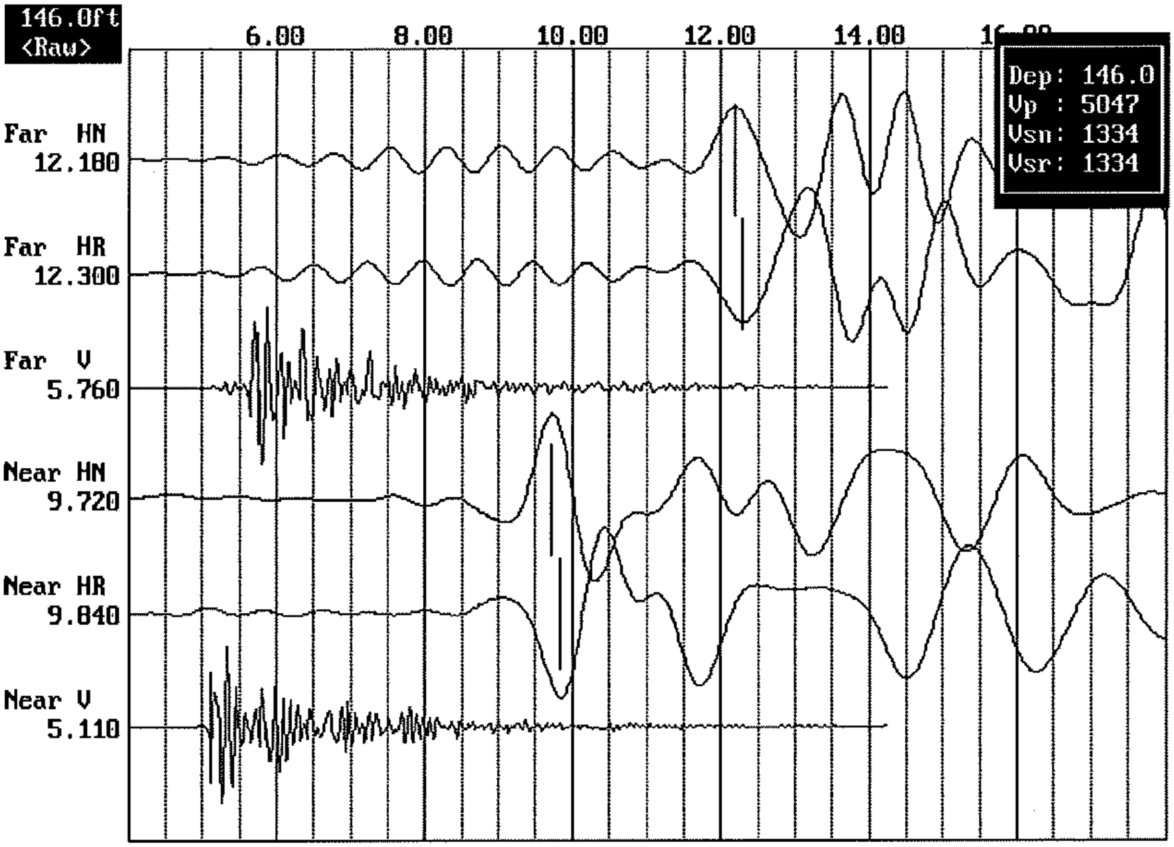


Figure 2. Filtered (2000 Hz lowpass) sample suspension record

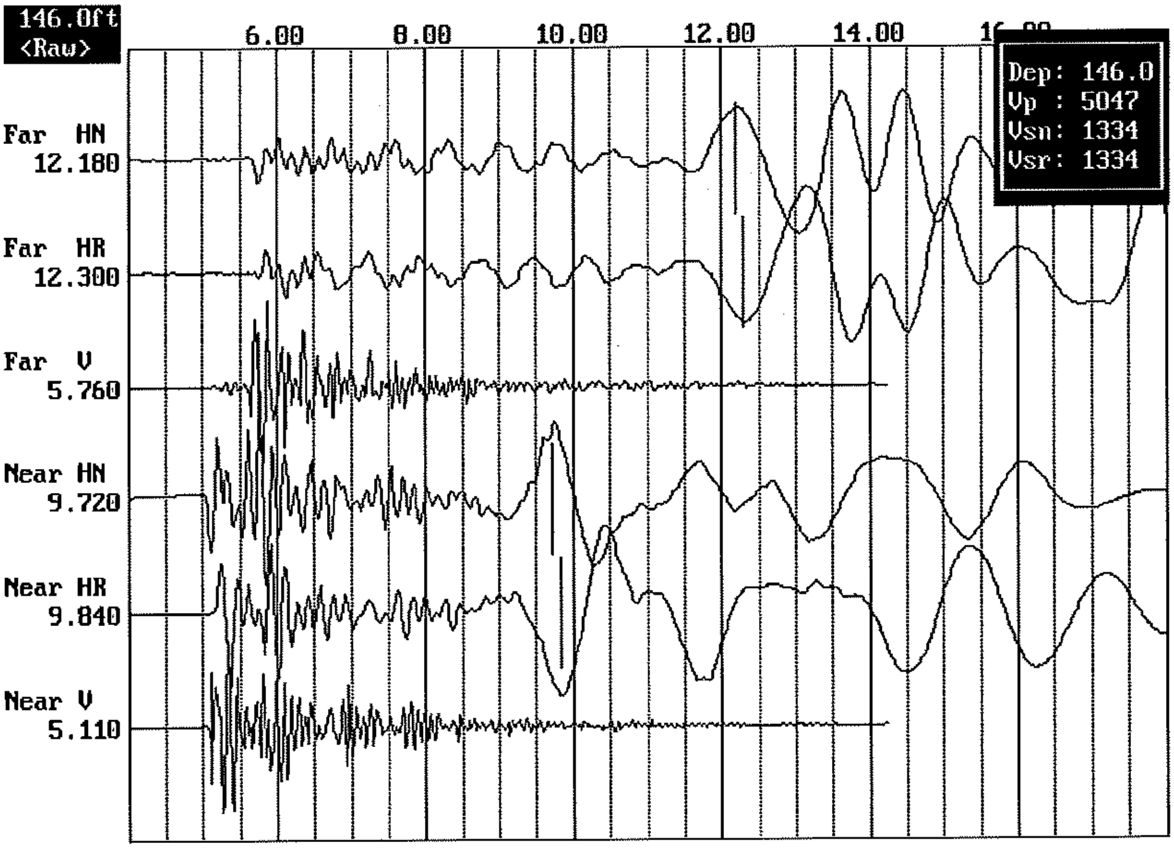


Figure 3. Unfiltered sample suspension record

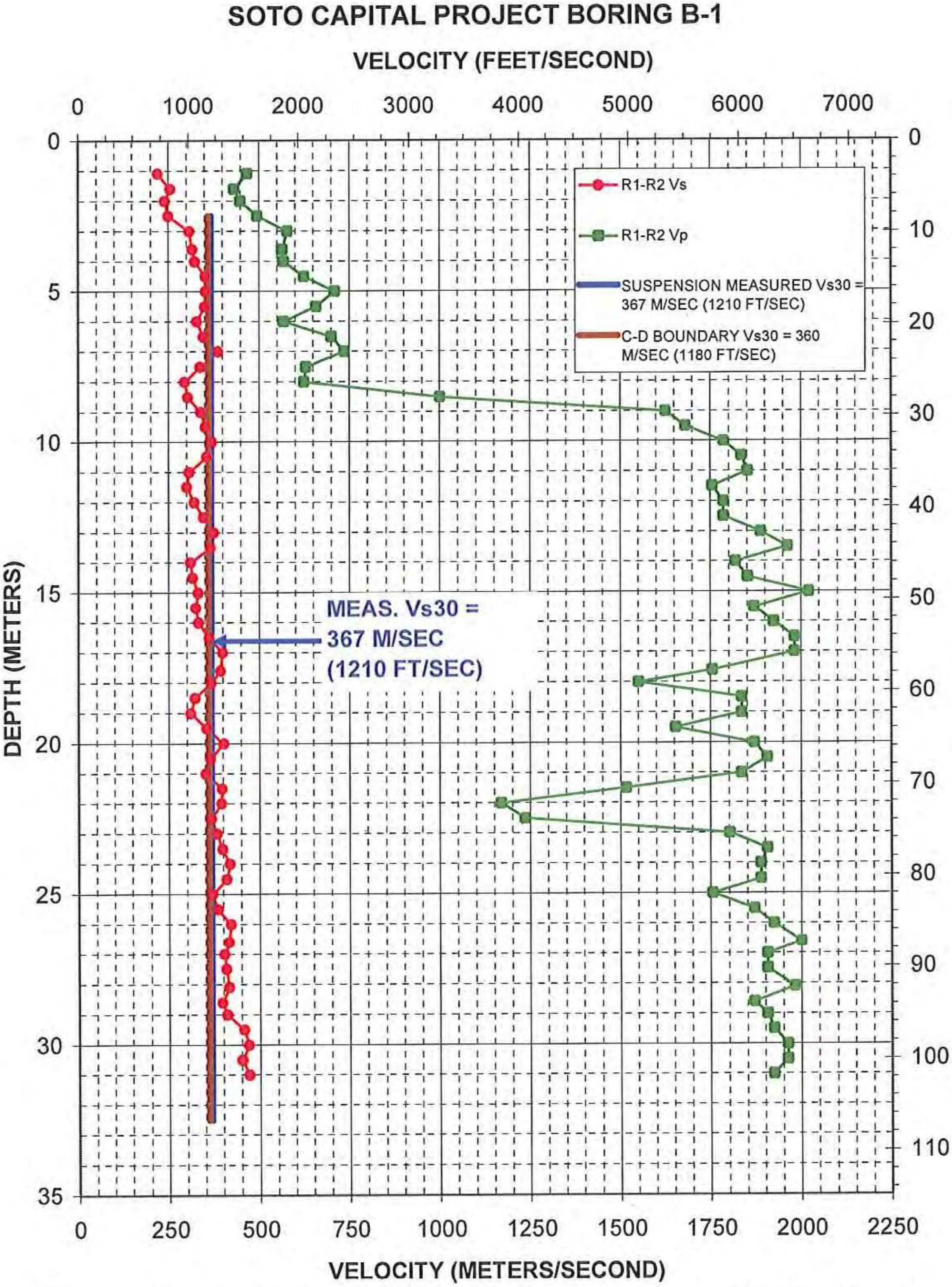


Figure 4. Boring B-2, Suspension P- and S_H-wave Velocities with Vs30 values

Depth		Velocity			
(m)	(feet)	V-S_H (m/sec)	V-P (m/sec)	V-S_H (ft/sec)	V-P (ft/sec)
1.1	223	467	3.61	731	1533
1.6	256	431	5.25	841	1414
2.0	242	448	6.56	792	1471
2.5	252	495	8.20	826	1624
3.0	309	578	9.84	1013	1896
3.6	316	565	11.81	1038	1854
4.0	325	568	13.12	1065	1864
4.5	353	625	14.76	1159	2051
5.0	353	709	16.40	1159	2327
5.5	351	658	18.04	1151	2158
6.0	329	568	19.69	1079	1864
6.5	347	699	21.33	1139	2294
7.0	388	735	22.97	1272	2412
7.5	339	629	24.61	1112	2063
8.0	296	625	26.25	971	2051
8.5	304	1000	27.89	997	3281
9.0	340	1626	29.53	1116	5335
9.5	352	1681	31.17	1155	5514
10.0	370	1786	32.81	1215	5859
10.5	356	1835	34.45	1168	6020
11.0	308	1852	36.09	1009	6076
11.5	301	1754	37.73	988	5756
12.0	322	1786	39.37	1055	5859
12.5	347	1786	41.01	1139	5859
13.0	376	1887	42.65	1233	6190
13.5	366	1961	44.29	1202	6433
14.0	312	1818	45.93	1022	5965
14.5	316	1852	47.57	1038	6076
15.0	332	2020	49.21	1090	6628
15.5	326	1869	50.85	1069	6132
16.0	333	1923	52.49	1094	6309
16.5	362	1980	54.13	1189	6497
17.0	400	1980	55.77	1312	6497
17.6	394	1754	57.74	1292	5756
18.0	368	1550	59.06	1206	5087
18.5	323	1835	60.70	1058	6020
19.0	312	1835	62.34	1022	6020
19.5	355	1653	63.98	1163	5423
20.0	402	1869	65.62	1318	6132
20.5	365	1905	67.26	1197	6249
21.0	352	1835	68.90	1155	6020
21.5	397	1515	70.54	1302	4971
22.0	395	1170	72.18	1297	3837
22.5	368	1235	73.82	1206	4050
23.0	383	1802	75.46	1257	5911
23.5	398	1905	77.10	1307	6249
24.0	418	1887	78.74	1373	6190
24.5	410	1887	80.38	1345	6190
25.0	370	1754	82.02	1215	5756
25.5	386	1869	83.66	1267	6132

Table 3. Boring B-2, Suspension R1-R2 depth and velocities

Depth		Velocity			
(m)	(feet)	V-S_H (m/sec)	V-P (m/sec)	V-S_H (ft/sec)	V-P (ft/sec)
20.0	402	1869	65.62	1318	6132
20.5	365	1905	67.26	1197	6249
21.0	352	1835	68.90	1155	6020
21.5	397	1515	70.54	1302	4971
22.0	395	1170	72.18	1297	3837
22.5	368	1235	73.82	1206	4050
23.0	383	1802	75.46	1257	5911
23.5	398	1905	77.10	1307	6249
24.0	418	1887	78.74	1373	6190
24.5	410	1887	80.38	1345	6190
25.0	370	1754	82.02	1215	5756
25.5	386	1869	83.66	1267	6132
26.0	422	1923	85.30	1384	6309
26.6	417	2000	87.27	1367	6562
27.0	403	1905	88.58	1323	6249
27.5	408	1905	90.22	1339	6249
28.1	417	1980	92.19	1367	6497
28.6	397	1869	93.83	1302	6132
29.0	411	1905	95.14	1347	6249
29.5	457	1923	96.78	1498	6309
30.0	469	1961	98.43	1540	6433
30.5	451	1961	100.07	1481	6433
31.0	472	1923	101.71	1548	6309

Table 3, continued. Boring B-2, Suspension R1-R2 depth and velocities

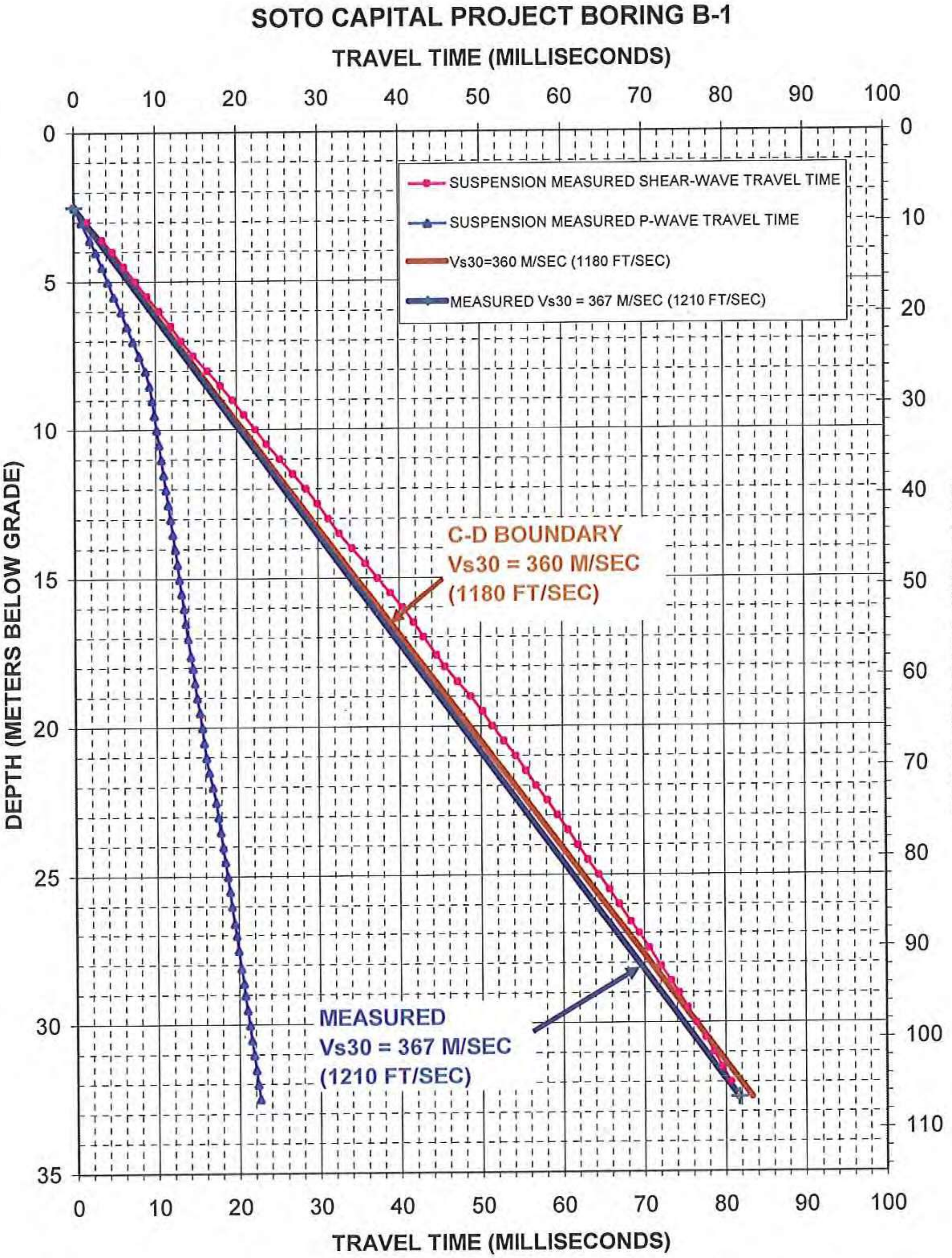


Figure 5. Boring B-2, Suspension P- and S_H-wave travel times with Vs30 values

APPENDIX A

SUSPENSION VELOCITY MEASUREMENT QUALITY ASSURANCE SUSPENSION SOURCE TO RECEIVER ANALYSIS RESULTS

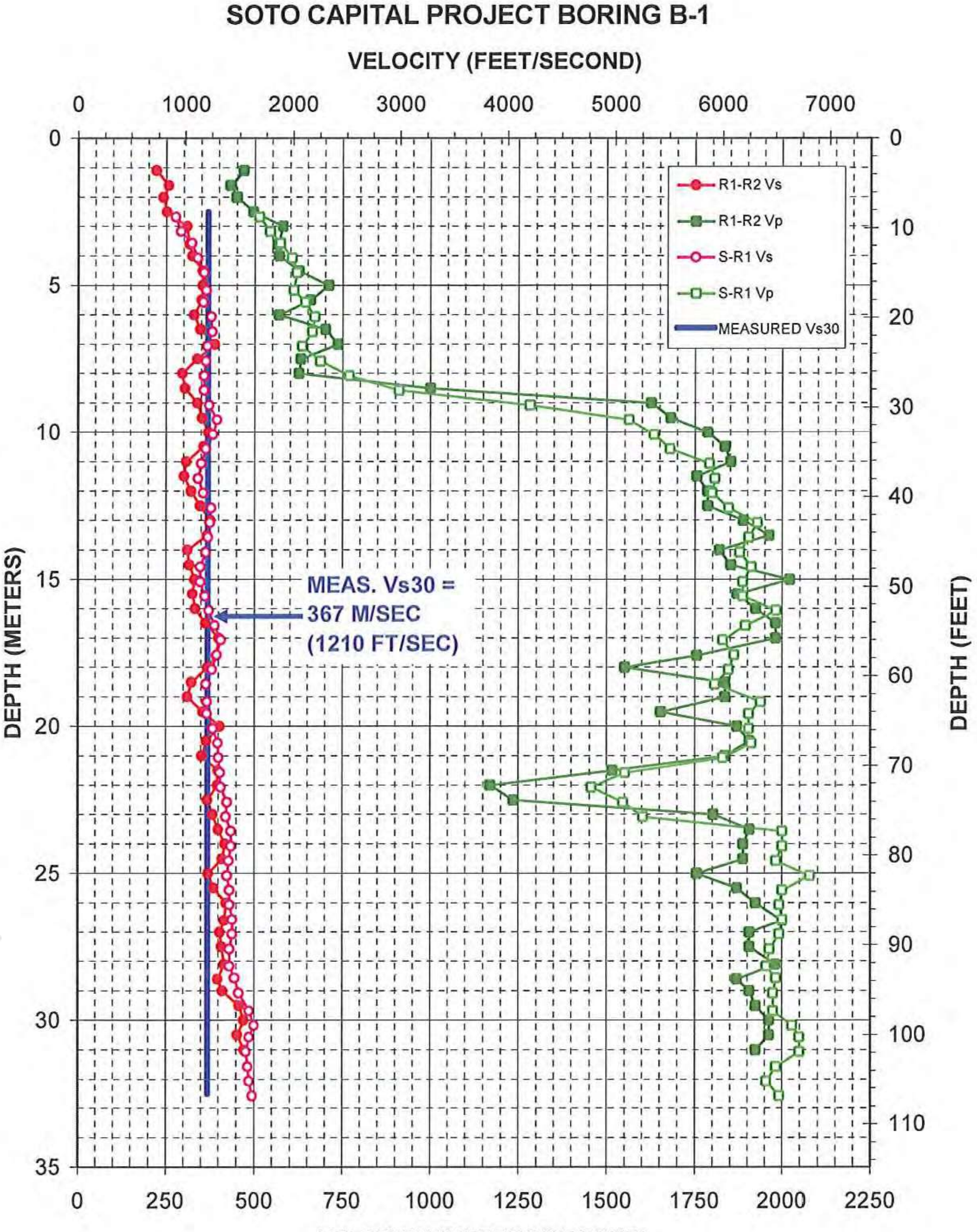


Figure A-1. Boring B-1, R1 - R2 high resolution analysis and S-R1 quality assurance analysis P- and S_H-wave data

Depth (meters)	Velocity		Depth (feet)	Velocity	
	V-S_H (m/sec)	V-p (m/sec)		V- S_H (ft/sec)	V-p (ft/sec)
2.7	277	512	8.76	908	1680
3.2	292	543	10.40	958	1782
3.6	323	571	11.71	1061	1872
4.1	339	605	13.35	1113	1983
4.6	357	618	14.99	1172	2029
5.2	365	610	16.96	1196	2000
5.6	355	643	18.27	1164	2108
6.1	377	669	19.91	1238	2194
6.6	380	663	21.56	1247	2174
7.1	367	633	23.20	1204	2077
7.6	362	686	24.84	1188	2250
8.1	357	767	26.48	1172	2516
8.6	357	911	28.12	1172	2988
9.1	372	1281	29.76	1221	4204
9.6	394	1562	31.40	1293	5125
10.1	383	1634	33.04	1256	5360
10.6	362	1678	34.68	1188	5507
11.1	350	1791	36.32	1149	5875
11.6	341	1806	37.96	1120	5925
12.1	355	1798	39.60	1164	5900
12.6	377	1845	41.24	1238	6053
13.1	375	1928	42.88	1230	6325
13.6	370	1902	44.52	1213	6241
14.1	362	1877	46.16	1188	6159
14.6	348	1911	47.80	1142	6269
15.1	348	1885	49.44	1142	6186
15.6	360	1885	51.08	1180	6186
16.1	372	1981	52.72	1221	6501
16.6	388	1894	54.36	1273	6213
17.1	406	1829	56.00	1332	6001
17.6	394	1861	57.64	1293	6105
18.1	380	1845	59.28	1247	6053
18.6	365	1806	60.93	1196	5925
19.2	367	1937	62.89	1204	6354
19.6	367	1902	64.21	1204	6241
20.1	383	1902	65.85	1256	6241
20.6	397	1911	67.49	1303	6269
21.1	400	1829	69.13	1312	6001
21.6	403	1551	70.77	1322	5088
22.1	406	1456	72.41	1332	4776
22.6	424	1545	74.05	1390	5069
23.1	420	1603	75.69	1379	5259
23.6	434	2000	77.33	1424	6562
24.1	434	2000	78.97	1424	6562
24.6	427	1981	80.61	1401	6501
25.1	424	2078	82.25	1390	6817
25.6	431	2000	83.89	1413	6562
26.1	431	1991	85.53	1413	6531
26.6	438	2000	87.17	1436	6562
27.1	438	1991	88.81	1436	6531
27.6	431	1963	90.45	1413	6441
28.2	431	1954	92.42	1413	6412
28.6	445	1981	93.73	1460	6501
29.1	456	1972	95.37	1497	6471
29.7	485	1972	97.34	1592	6471
30.2	499	2028	98.98	1637	6655
30.6	485	2048	100.30	1592	6719
31.1	477	2048	101.94	1564	6719
31.6	481	1981	103.58	1578	6501
32.1	485	1954	105.22	1592	6412
32.6	494	1991	106.86	1621	6531

Table A-1. Boring B-1, S - R1 quality assurance analysis P- and S_H-wave data

APPENDIX B

OYO 170 VELOCITY LOGGING SYSTEM
NIST TRACEABLE
CALIBRATION PROCEDURE

GEOVision SUSPENSION PS SEISMIC LOGGER/RECORDER

CALIBRATION PROCEDURE

Reviewed 7/21/08

Objective

The timing/sampling accuracy of seismic recorders or data loggers is required for several GEOVision field procedures including Seismic Refraction, Downhole P-S Seismic Velocity Logging, and Suspension P-S Seismic Velocity Logging. This procedure describes the method for measuring the timing accuracy of a seismic data logger, such as the OYO Model 170 or OYO/Robertson Model 3403. The objective of this procedure is to verify that the timing accuracy of the recorder is accurate to within 1%.

Frequency of Calibration

The calibration of each GEOVision seismic data logger is twelve (12) months. In the case of rented seismic logger/recorders, calibration must be performed prior to use.

Test Equipment Required

The following equipment is required. Item #2 must have current NIST traceable calibration.

1. Function generator, Krohn Hite 5400B or equivalent
2. Frequency counter, HP 5315A or equivalent
3. Test cables, from item 1 to item 2, and from item 1 to subject data logger.

Procedure

This procedure is designed to be performed using the accompanying Suspension P-S Seismic Logger/Recorder Calibration Data Form with the same revision number. All data must be entered and the procedure signed by the technician performing the test.

1. Record all identification data on the form provided.
2. Connect function generator to data logger (such as OYO Model 170) using test cable
3. Connect the function generator to the frequency counter using test cable.
4. Set signal generator to target frequency specified on data form, 0.25 volt (amplitude is approximate, modify as necessary to yield less than full scale waveforms on

logger display) peak sine wave. Verify frequency using the counter and note actual frequency on the data form.

5. Set data logger to file length specified on data form and record a data file to disk. Note file name on data form.
6. Measure the duration of 9 complete sine wave cycles on the data file. This measurement must be made using the analysis program PSLOG.EXE version 1.00, and saved as a .sps pick file. Note the duration in milliseconds in the spaces provided on the data form. Calculate average recorded sine wave frequency for each channel pair (Hn, Hr, V) by dividing the duration by 9. Note the average frequency of each channel pair on the data form.
7. Repeat steps 4 through 6 until all target frequencies have been recorded, producing 6 separate data and pick files.

Criteria

The average frequency for the nine cycles (obtained by dividing 9 cycles by the duration in seconds) must be within plus or minus 1% of the actual frequency for each of the 6 records.

If the results are outside this range, the data logger must be marked with a GEOVision REJECT tag until it can be repaired and retested.

If results are acceptable affix label indicating the initials of the person performing the calibration, the date of calibration, and the due date for the next calibration (12 months).

Procedure Approval

Approved by:

John G. Diehl	President
Name	Title
	July 21, 2008
Signature	Date

Calibration Laboratory Approval (if required):

Name	Title
Signature	Date

Page 1 of 4

TEST NUMBER
573795

EDISON ESI℠ **Calibration Report**

A SOUTHERN CALIFORNIA EDISON® Company

Metrology
7300 Fenwick Lane
Westminster, CA 92683
Toll Free: 866-723-2257

GEOVision Geophysical Services
1124 Olympic Drive
Corona, CA 92881-3390

NVLAP®
Lab Code: 105014-0

Manufacturer:	Oyo	**Ambient Temperature:**	23° C
Model Number:	3403	**Ambient Humidity:**	56% RH
Description:	Unit, Suspension Telemetry	**Condition As Found:**	In Tolerance
Asset Number:	160024	**Condition As Left:**	In Tolerance - No Adjustment
Serial Number:	160024	**Calibration Date:**	07/17/2009
Cal. Procedure:	Customer	**Calibration Due Date:**	07/17/2010
PO Number:	9200-090716-01	**Calibration Interval:**	12 Months

Remarks:
The unit was calibrated with the customer's procedure and specification's which have been reviewed by Metrology Engineering and documented in SCE Document M013987. The data can be found on pages 2 and 3 of this report with the original observation data on page 4.

Standards Utilized

I.D. No.	Manufacturer	Model No.	Description	Cal. Date	Due Date
S1-01252	Hewlett Packard	5335A OPT 010,203040	Counter, Universal	01/29/2009	07/29/2009
S1-01347	Hewlett Packard	3326A	Generator, Function, Synthesizer	05/04/2009	11/04/2009
S1-03686	Fluke	910	Standard, Frequency, Controlled, Gps	01/24/2009	01/24/2010

Calibration Performed By:			Quality Reviewer:	
Branson, Craig A CAB	Metrologist	714-895-0714		7/17/09
Name	Title	Phone	Name	Date

This report may not be reproduced, except in full, without written permission of this laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. The results stated in this report relate only to the items tested or calibrated. Measurements reported herein are traceable to SI units via national standards maintained by NIST. This laboratory and calibration are in compliance with NVLAP laboratory accreditation criteria established by NIST/NVLAP under the specific scope of accreditation for lab code 105014-0, and in compliance with ISO/IEC 17025:2005, ANSI/NCSL Z540-1-1994 and 10CFR50, Appendix B. Where uncertainties are provided, the uncertainty stated is the expanded uncertainty of the measurement, where k=2.

Test No. 573795
Asset No. 160024

Custom Specification Report

Oyo 3403 Unit, Suspension Telemetry,

Page 2 of 4

STEP NUM	FUNCTION TESTED	NOMINAL VALUE	AS FOUND	AS LEFT	Out of Tol	CALIBRATION TOLERANCE
	CH HN Frequency Sine Wave	50.00 Hz	50.00	Same		49.50 to 50.50 Hz [EMU 0.000250]
	|	100.0 Hz	100.0	Same		99.0 to 101.0 Hz [EMU 0.000500]
	|	200.0 Hz	200.2	Same		198.0 to 202.0 Hz [EMU 0.001000]
	|	500.0 Hz	500.0	Same		495.0 to 505.0 Hz [EMU 0.002500]
	|	1000 Hz	1000	Same		990 to 1010 Hz [EMU 0.005000]
	|	2000 Hz	2000	Same		1980 to 2020 Hz [EMU 0.010000]
	CH HR Frequency Sine Wave	50.00 Hz	50.00	Same		49.50 to 50.50 Hz [EMU 0.000250]
	|	100.0 Hz	100.0	Same		99.0 to 101.0 Hz [EMU 0.000500]
	|	200.0 Hz	200.0	Same		198.0 to 202.0 Hz [EMU 0.001000]
	|	500.0 Hz	500.0	Same		495.0 to 505.0 Hz [EMU 0.002500]
	|	1000 Hz	1001	Same		990 to 1010 Hz [EMU 0.005000]
	|	2000 Hz	2000	Same		1980 to 2020 Hz [EMU 0.010000]
	CH V Frequency Sine Wave	50.00 Hz	50.00	Same		49.50 to 50.50 Hz [EMU 0.000250]
	|	100.0 Hz	100.0	Same		99.0 to 101.0 Hz [EMU 0.000500]
	|	200.0 Hz	200.0	Same		198.0 to 202.0 Hz [EMU 0.001000]
	|	500.0 Hz	500.0	Same		495.0 to 505.0 Hz [EMU 0.002500]

Remarks:

MudCats CPM: Version 2.2.2 (Professional)
Src DUI: {9548AF3D-C74D-4C9F-AEEF-21EF360BC451} (c)
Doc DUI: {1269C0B2-3A13-416A-81BF-409D9887DDDA} (o)

Test No. 573795
Asset No. 160024

Custom Specification Report

Oyo 3403 Unit, Suspension Telemetry,

STEP NUM	FUNCTION TESTED	NOMINAL VALUE	AS FOUND	AS LEFT	Out of Tol	CALIBRATION TOLERANCE
	CH V Frequency Sine Wave	1000 Hz	1000	Same		990 to 1010 Hz [EMU 0.005000]
	|	2000 Hz	2000	Same		1980 to 2020 Hz [EMU 0.010000]

Remarks:

MudCats CPM: Version 2.2.2 (Professional)
Src DUT: {9348AF3D-C74D-4C9F-AEEF-21EF5608C451} (c)
Doc DUT: {1269C6B2-3A13-416A-81BF-409D9887DDDA} (c)

ATTACHMENT 2
Page 2 of 2

Customer

160024 Pg 4 of 4
~~160024~~ 7/17-09 [illegible]
573795

GEOVision
geophysical services

SUSPENSION PS SEISMIC LOGGER/RECORDER CALIBRATION DATA FORM

INSTRUMENT DATA

System mfg.: Oyo Model no.: 3403
Serial no.: 160024 Calibration date: 7/17/2009
By: Craig Branson Due date: 7/17/2010

Counter mfg.: Hewlett-Packard Model no.: 5335A
Serial no.: 2626A09881 Calibration date: 1/29/2009
By: SCE #S1-01252 Due date: 7/29/2009

Signal generator mfg.: Hewlett-Packard Model no.: 3325A
Serial no.: 2652A25647 Calibration date: 5/4/2009
By: SCE #S1-01347 Due date: 11/4/2009

SYSTEM SETTINGS:

Gain: 8
Filter: 10KHz
Range: See sample period in table below
Delay: 0
Stack (1 std): 1
System date = correct date and time: 7/17/2009 1037

PROCEDURE:

Set sine wave frequency to target frequency with amplitude of approximately 0.25 volt peak
Note actual frequency on data form.
Set sample period and record data file to disk. Note file name on data form.
Pick duration of 9 cycles using PSLOG.EXE program, note duration on data form, and save as .sps file. Calculate average frequency for each channel pair and note on data form.

Average frequency must be within +/- 1% of actual frequency at all data points.

Maximum error ((AVG-ACT)/ACT*100)% As found 0.10% As left 0.10%

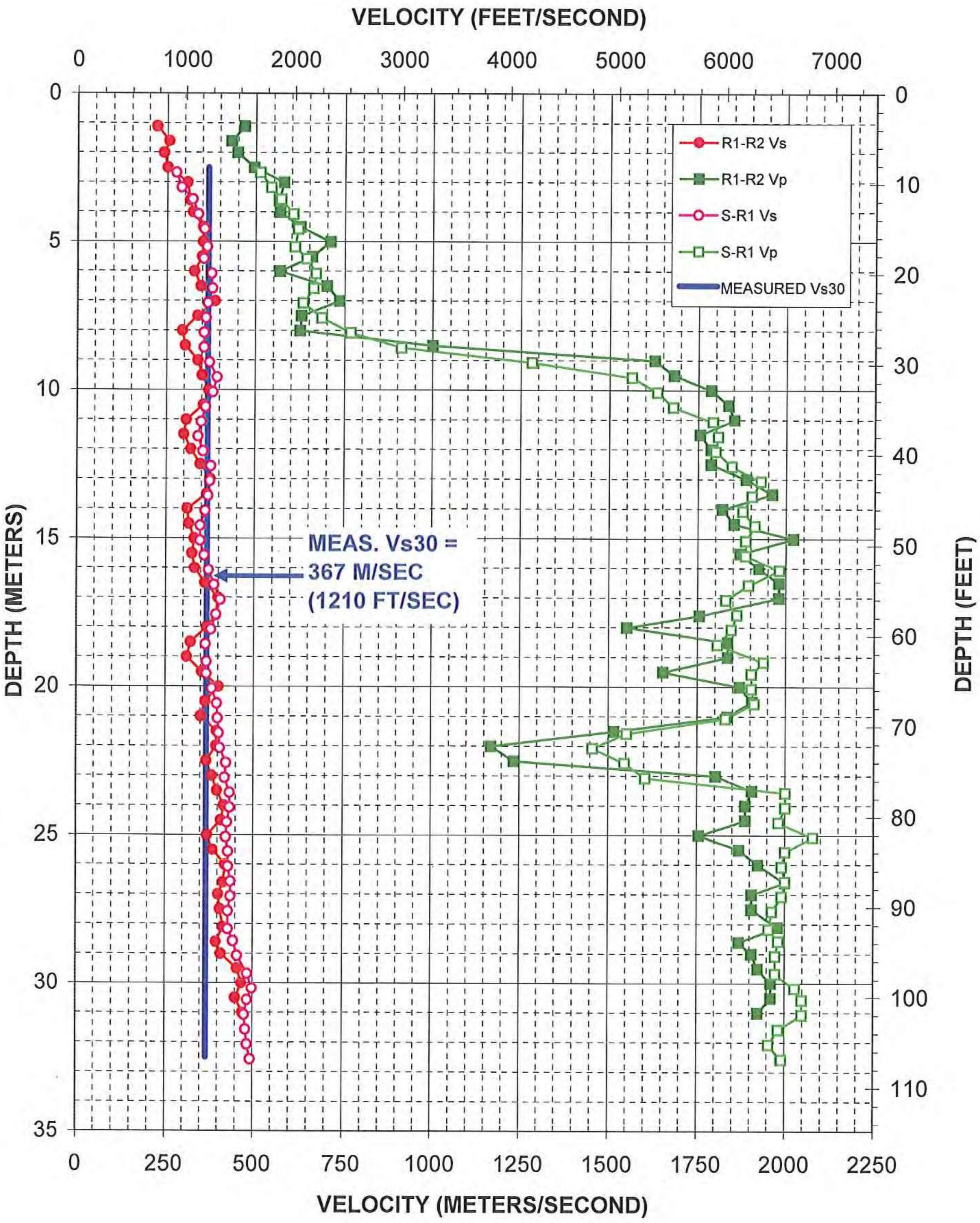
Target Frequency (Hz)	Actual Frequency (Hz)	Sample Period (microS)	File Name	Time for 9 cycles Hn (msec)	Average Frequency Hn (Hz)	Time for 9 cycles Hr (msec)	Average Frequency Hr (Hz)	Time for 9 cycles V (msec)	Average Frequency V (Hz)
50.00	50.00	200	501	180.00	50.00	180.00	50.00	180.00	50.00
100.0	100.0	100	502	90.00	100.0	90.00	100.0	90.00	100.0
200.0	200.0	50	503	44.95	200.2	45.00	200.0	45.00	200.0
500.0	500.0	20	504	18.00	500.0	18.00	500.0	18.00	500.0
1000	1000	10	505	9.000	1000	8.990	1001	9.000	1000
2000	2000	5	506	4.500	2000	4.500	2000	4.500	2000

Calibrated by: Craig Branson 7/17/2009 Craig Branson
Name Date Signature

Witnessed by: Robert Steller 7/17/2009
Name Date Signature

Suspension PS Seismic Recorder/Logger Calibration Data Form Rev 2.0 July 21, 2006

SOTO CAPITAL PROJECT BORING B-1



APPENDIX D

SPT Liquefaction Spreadsheet

PROJECT	SotoCapt-1-01			
JOB NAME	**Proposed Mixed Use Development**	Boring	**B-1**	
DATE	12/3/2010	*γ*	125	pcf
BY	DBS	GW level	30	ft
CHECKED BY	CJZ	HHGL	10	ft
DATE	2/1/2011	GS Elevation	235	
		LFFE	215	

	Magnitue	a max
	6.66	0.584
MSF	1.35	

Total Settlement **1.61** **INCHES**

Elevation **(MSL)**	**Depth** **(feet)**	**Soil** **Type**	**Nfield**	**Boulanger and Idriss (2006)**	**σo'** **(psf)** *current* **psf**	**σo'** **(psf)** *HHGWL* **psf**							**Fines Correction**					**CRR** *1998 eq.* *<N=30*	**Rd**	**CSR**	**FOS**	**SETTLEMENT**	
							C_E **energy**	C_N **stress**	C_B *5"* **diam**	C_S *w/out* **liner**	C_R **rod**	**$(N_1)_{60}$** ***interim Corr.***	**%fines**	**Alpha**	**Beta**	**ΔN**	**$(N_1)_{60}$**					(%)	(inches)
234	1	CL	10		125	125	1.3	1.75	1.05	1.3	0.75		15	2.50	1.05				1.000	**0.281**	2.00		
233.5	1.5	CL	10		188	188	1.3	1.71	1.05	1.3	0.75		15	2.50	1.05				0.998	**0.281**	2.00		
233	2	CL	10		250	250	1.3	1.67	1.05	1.3	0.75		15	2.50	1.05				0.997	**0.281**	2.00		
232.5	2.5	CL	10		313	313	1.3	1.63	1.05	1.3	0.75		15	2.50	1.05				0.996	**0.280**	2.00		
232	3	CL	10		375	375	1.3	1.60	1.05	1.3	0.75		15	2.50	1.05				0.995	**0.280**	2.00		
231.5	3.5	CL	10		438	438	1.3	1.56	1.05	1.3	0.75		15	2.50	1.05				0.994	**0.280**	2.00		
231	4	CL	10		500	500	1.3	1.53	1.05	1.3	0.75		15	2.50	1.05				0.993	**0.279**	2.00		
230.5	4.5	SW-SM	9		563	563	1.3	1.50	1.05	1.3	0.75		15	2.50	1.05				0.991	**0.279**	2.00		
230	5	SW-SM	9		625	625	1.3	1.47	1.05	1.3	0.75		15	2.50	1.05				0.990	**0.279**	2.00		
229.5	5.5	SW-SM	9		688	688	1.3	1.44	1.05	1.3	0.75		15	2.50	1.05				0.989	**0.278**	2.00		
229	6	SW-SM	9		750	750	1.3	1.42	1.05	1.3	0.75		15	2.50	1.05				0.988	**0.278**	2.00		
228.5	6.5	SW-SM	9		813	813	1.3	1.39	1.05	1.3	0.75		15	2.50	1.05				0.987	**0.278**	2.00		
228	7	SW-SM	9		875	875	1.3	1.36	1.05	1.3	0.75		15	2.50	1.05				0.986	**0.277**	2.00		
227.5	7.5	SW-SM	9		938	938	1.3	1.34	1.05	1.3	0.75		15	2.50	1.05				0.985	**0.277**	2.00		
227	8	SW-SM	9		1000	1000	1.3	1.32	1.05	1.3	0.75		15	2.50	1.05				0.983	**0.277**	2.00		
226.5	8.5	SW-SM	9		1063	1063	1.3	1.29	1.05	1.3	0.75		15	2.50	1.05				0.982	**0.276**	2.00		
226	9	SW-SM	9		1125	1125	1.3	1.27	1.05	1.3	0.75		15	2.50	1.05				0.981	**0.276**	2.00		
225.5	9.5	SW-SM	9		1188	1188	1.3	1.25	1.05	1.3	0.75		15	2.50	1.05				0.980	**0.276**	2.00		
225	10	SW-SM	9		1250	1250	1.3	1.23	1.05	1.3	0.75	14.7	15	2.50	1.05	3.2	**18**		0.979	**0.276**	2.00		
224.5	10.5	SW-SM	9		1313	1282	1.3	1.21	1.05	1.3	0.75	14.5	15	2.50	1.05	3.2	**18**		0.978	**0.282**	2.00		
224	11	SW-SM	9		1375	1313	1.3	1.19	1.05	1.3	0.75	14.2	15	2.50	1.05	3.2	**17**		0.977	**0.288**	2.00		
223.5	11.5	SW-SM	9		1438	1345	1.3	1.17	1.05	1.3	0.75	14.0	15	2.50	1.05	3.2	**17**		0.976	**0.294**	2.00		
223	12	SW-SM	9		1500	1376	1.3	1.15	1.05	1.3	0.75	13.8	15	2.50	1.05	3.2	**17**		0.975	**0.299**	2.00		
222.5	12.5	SW-SM	9		1563	1408	1.3	1.13	1.05	1.3	0.75	13.6	15	2.50	1.05	3.2	**17**		0.974	**0.304**	2.00		
222	13	SW-SM	9		1625	1439	1.3	1.12	1.05	1.3	0.85	15.2	15	2.50	1.05	3.2	**18**		0.973	**0.309**	2.00		
221.5	13.5	SW-SM	9		1688	1471	1.3	1.10	1.05	1.3	0.85	15.0	15	2.50	1.05	3.2	**18**		0.972	**0.314**	2.00		
221	14	SW-SM	15		1750	1502	1.3	1.09	1.05	1.3	0.85	24.6	15	2.50	1.05	3.7	**28**		0.971	**0.318**	2.00		
220.5	14.5	SW-SM	15		1813	1534	1.3	1.07	1.05	1.3	0.85	24.2	15	2.50	1.05	3.7	**28**		0.970	**0.323**	2.00		
220	15	SW-SM	15		1875	1565	1.3	1.05	1.05	1.3	0.85	23.9	15	2.50	1.05	3.6	**28**		0.969	**0.327**	2.00		
219.5	15.5	SW-SM	15		1938	1597	1.3	1.04	1.05	1.3	0.85	23.5	15	2.50	1.05	3.6	**27**		0.967	**0.330**	2.00		
219	16	SW-SM	15		2000	1628	1.3	1.03	1.05	1.3	0.85	23.2	15	2.50	1.05	3.6	**27**		0.966	**0.334**	2.00		
218.5	16.5	SW-SM	15		2063	1660	1.3	1.01	1.05	1.3	0.85	22.9	15	2.50	1.05	3.6	**26**		0.965	**0.338**	2.00		
218	17	SW-SM	15		2125	1691	1.3	1.00	1.05	1.3	0.85	22.6	15	2.50	1.05	3.6	**26**		0.964	**0.341**	2.00		
217.5	17.5	SW-SM	15		2188	1723	1.3	0.98	1.05	1.3	0.85	22.3	15	2.50	1.05	3.6	**26**		0.963	**0.344**	2.00		
217	18	SW-SM	15		2250	1754	1.3	0.97	1.05	1.3	0.85	22.0	15	2.50	1.05	3.6	**26**		0.962	**0.347**	2.00		
216.5	18.5	SW-SM	15		2313	1786	1.3	0.96	1.05	1.3	0.85	21.7	15	2.50	1.05	3.5	**25**		0.961	**0.350**	2.00		
216	19	SW-SM	15		2375	1817	1.3	0.95	1.05	1.3	0.85	21.4	15	2.50	1.05	3.5	**25**		0.959	**0.353**	2.00		
215.5	19.5	SW-SM	15		2438	1849	1.3	0.94	1.05	1.3	0.85	21.2	15	2.50	1.05	3.5	**25**		0.958	**0.356**	2.00		
215	20	SW-SM	18		2500	1880	1.3	0.92	1.05	1.3	0.95	28.0	15	2.50	1.05	3.8	**32**		0.957	**0.358**	2.00		
214.5	20.5	SW-SM	18		2563	1912	1.3	0.91	1.05	1.3	0.95	27.7	15	2.50	1.05	3.8	**32**		0.956	**0.361**	2.00		
214	21	SW-SM	18		2625	1943	1.3	0.90	1.05	1.3	0.95	27.4	15	2.50	1.05	3.8	**31**		0.954	**0.363**	2.00		
213.5	21.5	SW-SM	18		2688	1975	1.3	0.89	1.05	1.3	0.95	27.0	15	2.50	1.05	3.8	**31**		0.953	**0.365**	2.00		
213	22	SW-SM	18		2750	2006	1.3	0.88	1.05	1.3	0.95	26.7	15	2.50	1.05	3.8	**30**		0.951	**0.367**	2.00		
212.5	22.5	SW-SM	18		2813	2038	1.3	0.87	1.05	1.3	0.95	26.4	15	2.50	1.05	3.8	**30**		0.950	**0.369**	2.00		
212	23	SW-SM	18		2875	2069	1.3	0.86	1.05	1.3	0.95	26.1	15	2.50	1.05	3.8	**30**	0.457	0.948	**0.371**	1.67	0.000	0.000
211.5	23.5	SW-SM	18		2938	2101	1.3	0.85	1.05	1.3	0.95	25.8	15	2.50	1.05	3.7	**30**	0.438	0.947	**0.373**	1.59	0.000	0.001
211	24	SW-SM	20		3000	2132	1.3	0.84	1.05	1.3	0.95	28.3	15	2.50	1.05	3.9	**32**		0.945	**0.374**	2.00		
210.5	24.5	SW-SM	20		3063	2164	1.3	0.83	1.05	1.3	0.95	28.0	15	2.50	1.05	3.8	**32**		0.944	**0.376**	2.00		
210	25	SW-SM	20		3125	2195	1.3	0.82	1.05	1.3	0.95	27.7	15	2.50	1.05	3.8	**32**		0.942	**0.377**	2.00		
209.5	25.5	SW-SM	20		3188	2227	1.3	0.81	1.05	1.3	0.95	27.4	15	2.50	1.05	3.8	**31**		0.940	**0.379**	2.00		
209	26	SW-SM	20		3250	2258	1.3	0.80	1.05	1.3	0.95	27.1	15	2.50	1.05	3.8	**31**		0.938	**0.380**	2.00		
208.5	26.5	SW-SM	20		3313	2290	1.3	0.80	1.05	1.3	0.95	26.8	15	2.50	1.05	3.8	**31**		0.936	**0.381**	2.00		
208	27	SW-SM	20		3375	2321	1.3	0.79	1.05	1.3	0.95	26.5	15	2.50	1.05	3.8	**30**		0.934	**0.382**	2.00		
207.5	27.5	SW-SM	20		3438	2353	1.3	0.78	1.05	1.3	0.95	26.3	15	2.50	1.05	3.8	**30**		0.932	**0.383**	2.00		
207	28	SW-SM	20		3500	2384	1.3	0.77	1.05	1.3	0.95	26.0	15	2.50	1.05	3.7	**30**	0.450	0.930	**0.384**	1.59	0.000	0.001
206.5	28.5	SW-SM	20		3563	2416	1.3	0.76	1.05	1.3	0.95	25.7	15	2.50	1.05	3.7	**29**	0.434	0.928	**0.385**	1.53	0.000	0.001
206	29	SW-SM	20		3625	2447	1.3	0.76	1.05	1.3	0.95	25.5	15	2.50	1.05	3.7	**29**	0.419	0.925	**0.386**	1.47	0.000	0.001
205.5	29.5	SW-SM	20		3688	2479	1.3	0.75	1.05	1.3	0.95	25.2	15	2.50	1.05	3.7	**29**	0.406	0.923	**0.386**	1.42	0.000	0.002
205	30	SW-SM	18		3750	2510	1.3	0.74	1.05	1.3	0.95	22.5	20	3.61	1.08	5.4	**28**	0.365	0.921	**0.387**	1.28	0.000	0.002
204.5	30.5	SW-SM	18		3782	2542	1.3	0.74	1.05	1.3	0.95	22.3	20	3.61	1.08	5.4	**28**	0.361	0.918	**0.388**	1.26	0.000	0.002
204	31	SW-SM	18		3813	2573	1.3	0.73	1.05	1.3	0.95	22.2	20	3.61	1.08	5.4	**28**	0.357	0.915	**0.388**	1.25	0.001	0.005
203.5	31.5	SW-SM	18		3845	2605	1.3	0.73	1.05	1.3	0.95	22.1	20	3.61	1.08	5.4	**28**	0.353	0.913	**0.388**	1.23	0.001	0.005
203	32	SW-SM	18		3876	2636	1.3	0.73	1.05	1.3	0.95	22.0	20	3.61	1.08	5.4	**27**	0.349	0.910	**0.389**	1.22	0.001	0.005
202.5	32.5	SW-SM	18		3908	2668	1.3	0.72	1.05	1.3	0.95	21.9	20	3.61	1.08	5.4	**27**	0.346	0.907	**0.389**	1.21	0.001	0.005
202	33	SW-SM	18		3939	2699	1.3	0.72	1.05	1.3	1	23.0	20	3.61	1.08	5.4	**28**	0.384	0.904	**0.389**	1.34	0.000	0.002

201.5	33.5	SW-SM	18		3971	2731	1.3	0.72	1.05	1.3	1	22.8	20	3.61	1.08	5.4	**28**	0.379	0.901	**0.389**	1.32	0.000	0.002
201	34	SW-SM	18		4002	2762	1.3	0.71	1.05	1.3	1	22.7	20	3.61	1.08	5.4	**28**	0.375	0.897	**0.389**	1.31	0.000	0.002
200.5	34.5	SC	10		4034	2794	1.3	0.71	1.05	1.3	1	12.6	17	3.01	1.06	3.8	**16**	0.174	0.894	**0.388**	0.61	0.016	0.096
200	35	SC	10		4065	2825	1.3	0.70	1.05	1.3	1	12.5	17	3.01	1.06	3.8	**16**	0.173	0.891	**0.388**	0.60	0.016	0.096
199.5	35.5	SC	10		4097	2857	1.3	0.70	1.05	1.3	1	12.4	17	3.01	1.06	3.8	**16**	0.172	0.887	**0.388**	0.60	0.016	0.096
199	36	SC	10		4128	2888	1.3	0.70	1.05	1.3	1	12.4	17	3.01	1.06	3.8	**16**	0.172	0.883	**0.387**	0.60	0.016	0.096
198.5	36.5	SC	10		4160	2920	1.3	0.69	1.05	1.3	1	12.3	17	3.01	1.06	3.8	**16**	0.171	0.880	**0.387**	0.60	0.016	0.096
198	37	SC	10		4191	2951	1.3	0.69	1.05	1.3	1	12.3	17	3.01	1.06	3.7	**16**	0.171	0.876	**0.386**	0.60	0.016	0.096
197.5	37.5	SC	10		4223	2983	1.3	0.69	1.05	1.3	1	12.2	17	3.01	1.06	3.7	**16**	0.170	0.872	**0.386**	0.60	0.018	0.108
197	38	SC	10		4254	3014	1.3	0.69	1.05	1.3	1	12.2	17	3.01	1.06	3.7	**16**	0.169	0.868	**0.385**	0.60	0.018	0.108
196.5	38.5	SC	10		4286	3046	1.3	0.68	1.05	1.3	1	12.1	17	3.01	1.06	3.7	**16**	0.169	0.864	**0.384**	0.59	0.018	0.108
196	39	SW-SM	15		4317	3077	1.3	0.68	1.05	1.3	1	18.1	16	2.77	1.05	3.7	**22**	0.239	0.860	**0.383**	0.85	0.014	0.084
195.5	39.5	SW-SM	15		4349	3109	1.3	0.68	1.05	1.3	1	18.0	16	2.77	1.05	3.7	**22**	0.238	0.855	**0.382**	0.84	0.014	0.084
195	40	SW-SM	15		4380	3140	1.3	0.67	1.05	1.3	1	17.9	16	2.77	1.05	3.7	**22**	0.237	0.851	**0.381**	0.84	0.014	0.084
194.5	40.5	SW-SM	15		4412	3172	1.3	0.67	1.05	1.3	1	17.8	16	2.77	1.05	3.7	**22**	0.236	0.847	**0.380**	0.84	0.014	0.084
194	41	SW-SM	15		4443	3203	1.3	0.67	1.05	1.3	1	17.7	16	2.77	1.05	3.7	**21**	0.235	0.842	**0.379**	0.84	0.014	0.084
193.5	41.5	SW-SM	15		4475	3235	1.3	0.66	1.05	1.3	1	17.7	16	2.77	1.05	3.7	**21**	0.233	0.837	**0.378**	0.84	0.014	0.084
193	42	SW-SM	15		4506	3266	1.3	0.66	1.05	1.3	1	17.6	16	2.77	1.05	3.7	**21**	0.232	0.833	**0.377**	0.84	0.014	0.084
192.5	42.5	SW-SM	15		4538	3298	1.3	0.66	1.05	1.3	1	17.5	16	2.77	1.05	3.7	**21**	0.231	0.828	**0.375**	0.83	0.014	0.084
192	43	SW-SM	31		4569	3329	1.3	0.65	1.05	1.3	1	36.0	15	2.50	1.05	4.2	**40**		0.823	**0.374**	2.00		
191.5	43.5	SW-SM	31		4601	3361	1.3	0.65	1.05	1.3	1	35.9	15	2.50	1.05	4.2	**40**		0.818	**0.373**	2.00		
191	44	SW-SM	31		4632	3392	1.3	0.65	1.05	1.3	1	35.7	15	2.50	1.05	4.2	**40**		0.814	**0.371**	2.00		
190.5	44.5	SW-SM	31		4664	3424	1.3	0.65	1.05	1.3	1	35.6	15	2.50	1.05	4.2	**40**		0.809	**0.370**	2.00		
190	45	SC	31		4695	3455	1.3	0.64	1.05	1.3	1	35.4	35	5.00	1.20	12.1	**47**		0.804	**0.368**	2.00		
189.5	45.5	SC	31		4727	3487	1.3	0.64	1.05	1.3	1	35.2	35	5.00	1.20	12.0	**47**		0.799	**0.367**	2.00		
189	46	SW-SM	31		4758	3518	1.3	0.64	1.05	1.3	1	35.1	15	2.50	1.05	4.2	**39**		0.794	**0.365**	2.00		
188.5	46.5	SW-SM	31		4790	3550	1.3	0.64	1.05	1.3	1	34.9	15	2.50	1.05	4.2	**39**		0.788	**0.363**	2.00		
188	47	SW-SM	31		4821	3581	1.3	0.63	1.05	1.3	1	34.8	15	2.50	1.05	4.2	**39**		0.783	**0.362**	2.00		
187.5	47.5	SW-SM	31		4853	3613	1.3	0.63	1.05	1.3	1	34.6	15	2.50	1.05	4.2	**39**		0.778	**0.360**	2.00		
187	48	SW-SM	31		4884	3644	1.3	0.63	1.05	1.3	1	34.5	15	2.50	1.05	4.2	**39**		0.773	**0.358**	2.00		
186.5	48.5	SW-SM	31		4916	3676	1.3	0.62	1.05	1.3	1	34.4	15	2.50	1.05	4.2	**39**		0.768	**0.357**	2.00		
186	49	SW-SM	31		4947	3707	1.3	0.62	1.05	1.3	1	34.2	15	2.50	1.05	4.1	**38**		0.763	**0.355**	2.00		
185.5	49.5	SW-SM	31		4979	3739	1.3	0.62	1.05	1.3	1	34.1	15	2.50	1.05	4.1	**38**		0.758	**0.353**	2.00		
185	50	SW-SM	31		5010	3770	1.3	0.62	1.05	1.3	1	33.9	15	2.50	1.05	4.1	**38**		0.753	**0.351**	2.00		
184.5	50.5	SW-SM	44		5042	3802	1.3	0.61	1.05	1.3	1	47.9	15	2.50	1.05	4.8	**53**		0.748	**0.349**	2.00		
184	51	SW-SM	44		5073	3833	1.3	0.61	1.05	1.3	1	47.7	15	2.50	1.05	4.8	**53**		0.743	**0.348**	2.00		
183.5	51.5	SW-SM	44		5105	3865	1.3	0.61	1.05	1.3	1	47.6	15	2.50	1.05	4.8	**52**		0.738	**0.346**	2.00		
183	52	SW-SM	44		5136	3896	1.3	0.61	1.05	1.3	1	47.4	15	2.50	1.05	4.8	**52**		0.733	**0.344**	2.00		
182.5	52.5	SW-SM	44		5168	3928	1.3	0.60	1.05	1.3	1	47.2	15	2.50	1.05	4.8	**52**		0.728	**0.342**	2.00		
182	53	SW-SM	44		5199	3959	1.3	0.60	1.05	1.3	1	47.0	15	2.50	1.05	4.8	**52**		0.723	**0.340**	2.00		
181.5	53.5	SW-SM	44		5231	3991	1.3	0.60	1.05	1.3	1	46.8	15	2.50	1.05	4.7	**52**		0.718	**0.339**	2.00		
181	54	SW-SM	44		5262	4022	1.3	0.60	1.05	1.3	1	46.6	15	2.50	1.05	4.7	**51**		0.713	**0.337**	2.00		
180.5	54.5	SW-SM	44		5294	4054	1.3	0.59	1.05	1.3	1	46.4	15	2.50	1.05	4.7	**51**		0.708	**0.335**	2.00		
180	55	SW-SM	44		5325	4085	1.3	0.59	1.05	1.3	1	46.2	15	2.50	1.05	4.7	**51**		0.703	**0.333**	2.00		
179.5	55.5	SW-SM	50		5357	4117	1.3	0.59	1.05	1.3	1	52.3	15	2.50	1.05	5.0	**57**		0.699	**0.331**	2.00		
179	56	SW-SM	50		5388	4148	1.3	0.59	1.05	1.3	1	52.1	15	2.50	1.05	5.0	**57**		0.694	**0.330**	2.00		
178.5	56.5	SW-SM	50		5420	4180	1.3	0.58	1.05	1.3	1	51.9	15	2.50	1.05	5.0	**57**		0.689	**0.328**	2.00		
178	57	SW-SM	50		5451	4211	1.3	0.58	1.05	1.3	1	51.7	15	2.50	1.05	5.0	**57**		0.685	**0.326**	2.00		
177.5	57.5	SW-SM	50		5483	4243	1.3	0.58	1.05	1.3	1	51.5	15	2.50	1.05	5.0	**56**		0.680	**0.324**	2.00		
177	58	SW-SM	50		5514	4274	1.3	0.58	1.05	1.3	1	51.3	15	2.50	1.05	5.0	**56**		0.676	**0.323**	2.00		
176.5	58.5	SW-SM	50		5546	4306	1.3	0.58	1.05	1.3	1	51.1	15	2.50	1.05	5.0	**56**		0.672	**0.321**	2.00		
176	59	SW-SM	50		5577	4337	1.3	0.57	1.05	1.3	1	50.9	15	2.50	1.05	4.9	**56**		0.668	**0.319**	2.00		
175.5	59.5	SW-SM	50		5609	4369	1.3	0.57	1.05	1.3	1	50.7	15	2.50	1.05	4.9	**56**		0.663	**0.318**	2.00		
175	60	SW-SM	50		5640	4400	1.3	0.57	1.05	1.3	1	50.5	15	2.50	1.05	4.9	**55**		0.659	**0.316**	2.00		
174.5	60.5	SW-SM	50		5672	4432	1.3	0.57	1.05	1.3	1	50.3	15	2.50	1.05	4.9	**55**		0.655	**0.315**	2.00		
174	61	SW-SM	50		5703	4463	1.3	0.56	1.05	1.3	1	50.1	15	2.50	1.05	4.9	**55**		0.651	**0.313**	2.00		
173.5	61.5	SW-SM	50		5735	4495	1.3	0.56	1.05	1.3	1	49.9	15	2.50	1.05	4.9	**55**		0.647	**0.312**	2.00		
173	62	SW-SM	50		5766	4526	1.3	0.56	1.05	1.3	1	49.7	15	2.50	1.05	4.9	**55**		0.644	**0.310**	2.00		
172.5	62.5	SW-SM	50		5798	4558	1.3	0.56	1.05	1.3	1	49.5	15	2.50	1.05	4.9	**54**		0.640	**0.309**	2.00		
172	63	SW-SM	50		5829	4589	1.3	0.56	1.05	1.3	1	49.4	15	2.50	1.05	4.9	**54**		0.636	**0.307**	2.00		
171.5	63.5	SW-SM	50		5861	4621	1.3	0.55	1.05	1.3	1	49.2	15	2.50	1.05	4.9	**54**		0.632	**0.306**	2.00		
171	64	SW-SM	50		5892	4652	1.3	0.55	1.05	1.3	1	49.0	15	2.50	1.05	4.9	**54**		0.629	**0.304**	2.00		
170.5	64.5	SW-SM	50		5924	4684	1.3	0.55	1.05	1.3	1	48.8	15	2.50	1.05	4.8	**54**		0.625	**0.303**	2.00		
170	65	SW-SM	50		5955	4715	1.3	0.55	1.05	1.3	1	48.6	15	2.50	1.05	4.8	**53**		0.622	**0.302**	2.00		
169.5	65.5	SW-SM	50		5987	4747	1.3	0.55	1.05	1.3	1	48.4	15	2.50	1.05	4.8	**53**		0.619	**0.300**	2.00		
169	66	SW-SM	50		6018	4778	1.3	0.54	1.05	1.3	1	48.3	15	2.50	1.05	4.8	**53**		0.616	**0.299**	2.00		
168.5	66.5	SW-SM	50		6050	4810	1.3	0.54	1.05	1.3	1	48.1	15	2.50	1.05	4.8	**53**		0.612	**0.298**	2.00		
168	67	SW-SM	50		6081	4841	1.3	0.54	1.05	1.3	1	47.9	15	2.50	1.05	4.8	**53**		0.609	**0.297**	2.00		
167.5	67.5	SW-SM	50		6113	4873	1.3	0.54	1.05	1.3	1	47.7	15	2.50	1.05	4.8	**53**		0.606	**0.295**	2.00		
167	68	SW-SM	50		6144	4904	1.3	0.54	1.05	1.3	1	47.6	15	2.50	1.05	4.8	**52**		0.603	**0.294**	2.00		
166.5	68.5	SW-SM	50		6176	4936	1.3	0.53	1.05	1.3	1	47.4	15	2.50	1.05	4.8	**52**		0.600	**0.293**	2.00		
166	69	SW-SM	50		6207	4967	1.3	0.53	1.05	1.3	1	47.2	15	2.50	1.05	4.8	**52**		0.597	**0.292**	2.00		
165.5	69.5	SC	40		6239	4999	1.3	0.53	1.05	1.3	1	37.6	15	2.50	1.05	4.3	**42**		0.595	**0.291**	2.00		
165	70	SC	40		6270	5030	1.3	0.53	1.05	1.3	1	37.5	15	2.50	1.05	4.3	**42**		0.592	**0.290**	2.00		
164.5	70.5	SC	40		6302	5062	1.3	0.53	1.05	1.3	1	37.4	15	2.50	1.05	4.3	**42**		0.589	**0.289**	2.00		
164	71	SC	40		6333	5093	1.3	0.52	1.05	1.3	1	37.2	15	2.50	1.05	4.3	**42**		0.587	**0.288**	2.00		
163.5	71.5	SC	40		6365	5125	1.3	0.52	1.05	1.3	1	37.1	15	2.50	1.05	4.3	**41**		0.584	**0.287**	2.00		
163	72	SC	40		6396	5156	1.3	0.52	1.05	1.3	1	37.0	15	2.50	1.05	4.3	**41**		0.582	**0.286**	2.00		
162.5	72.5	SC	40		6428	5188	1.3	0.52	1.05	1.3	1	36.9	15	2.50	1.05	4.3	**41**		0.579	**0.285**	2.00		
162	73	SC	40		6459	5219	1.3	0.52	1.05	1.3	1	36.7	15	2.50	1.05	4.3	**41**		0.577	**0.284**	2.00		
161.5	73.5	SC	40		6491	5251	1.3	0.52	1.05	1.3	1	36.6	15	2.50	1.05	4.3	**41**		0.574	**0.283**	2.00		
161	74	SW-SM	50		6522	5282	1.3	0.51	1.05	1.3	1	45.6	15	2.50	1.05	4.7	**50**		0.572	**0.282**	2.00		
160.5	74.5	SW-SM	50		6554	5314	1.3	0.51	1.05	1.3	1	45.4	15	2.50	1.05	4.7	**50**		0.570	**0.281**	2.00		
160	75	SW-SM	50		6585	5345	1.3	0.51	1.05	1.3	1	45.3	15	2.50	1.05	4.7	**50**		0.568	**0.280**	2.00		
159.5	75.5	SW-SM	50		6617	5377	1.3	0.51	1.05	1.3	1	45.1	15	2.50	1.05	4.7	**50**		0.566	**0.279**	2.00		
159	76	SW-SM	50		6648	5408	1.3	0.51	1.05	1.3	1	45.0	15	2.50	1.05	4.7	**50**		0.563	**0.279**	2.00		
158.5	76.5	SW-SM	50		6680	5440	1.3	0.50	1.05	1.3	1	44.8	15	2.50	1.05	4.7	**49**		0.561	**0.278**	2.00		
158	77	SW-SM	50		6711	5471	1.3	0.50	1.05	1.3	1	44.7	15	2.50	1.05	4.6	**49**		0.559	**0.277**	2.00		
157.5	77.5	SW-SM	50		6743	5503	1.3	0.50	1.05	1.3	1	44.5	15	2.50	1.05	4.6	**49**		0.557	**0.276**	2.00		
157	78	SW-SM	50		6774	5534	1.3	0.50	1.05	1.3	1	44.3	15	2.50	1.05	4.6	**49**		0.555	**0.275**	2.00		

156.5	78.5	SW-SM	50		6806	5566	1.3	0.50	1.05	1.3	1	44.2	15	2.50	1.05	4.6	**49**	0.554	**0.275**	2.00
156	79	SW-SM	50		6837	5597	1.3	0.50	1.05	1.3	1	44.1	15	2.50	1.05	4.6	**49**	0.552	**0.274**	2.00
155.5	79.5	SW-SM	50		6869	5629	1.3	0.49	1.05	1.3	1	43.9	15	2.50	1.05	4.6	**49**	0.550	**0.273**	2.00
155	80	SW-SM	37		6900	5660	1.3	0.49	1.05	1.3	1	32.4	24	4.18	1.11	7.7	**40**	0.548	**0.273**	2.00
154.5	80.5	SW-SM	37		6932	5692	1.3	0.49	1.05	1.3	1	32.3	24	4.18	1.11	7.7	**40**	0.546	**0.272**	2.00
154	81	SW-SM	37		6963	5723	1.3	0.49	1.05	1.3	1	32.2	24	4.18	1.11	7.6	**40**	0.545	**0.271**	2.00
153.5	81.5	SW-SM	37		6995	5755	1.3	0.49	1.05	1.3	1	32.1	24	4.18	1.11	7.6	**40**	0.543	**0.271**	2.00
153	82	SW-SM	37		7026	5786	1.3	0.49	1.05	1.3	1	32.0	24	4.18	1.11	7.6	**40**	0.541	**0.270**	2.00
152.5	82.5	SW-SM	84		7058	5818	1.3	0.49	1.05	1.3	1	72.3	15	2.50	1.05	6.0	**78**	0.540	**0.269**	2.00
152	83	SW-SM	84		7089	5849	1.3	0.48	1.05	1.3	1	72.1	15	2.50	1.05	6.0	**78**	0.538	**0.269**	2.00
151.5	83.5	SW-SM	84		7121	5881	1.3	0.48	1.05	1.3	1	71.8	15	2.50	1.05	6.0	**78**	0.537	**0.268**	2.00
151	84	SW-SM	84		7152	5912	1.3	0.48	1.05	1.3	1	71.6	15	2.50	1.05	5.9	**78**	0.535	**0.268**	2.00
150.5	84.5	SW-SM	84		7184	5944	1.3	0.48	1.05	1.3	1	71.4	15	2.50	1.05	5.9	**77**	0.534	**0.267**	2.00
150	85	SW-SM	84		7215	5975	1.3	0.48	1.05	1.3	1	71.1	15	2.50	1.05	5.9	**77**	0.532	**0.266**	2.00
149.5	85.5	SW-SM	84		7247	6007	1.3	0.48	1.05	1.3	1	70.9	15	2.50	1.05	5.9	**77**	0.531	**0.266**	2.00
149	86	SW-SM	84		7278	6038	1.3	0.47	1.05	1.3	1	70.7	15	2.50	1.05	5.9	**77**	0.530	**0.265**	2.00
148.5	86.5	SW-SM	84		7310	6070	1.3	0.47	1.05	1.3	1	70.5	15	2.50	1.05	5.9	**76**	0.528	**0.265**	2.00
148	87	SW-SM	84		7341	6101	1.3	0.47	1.05	1.3	1	70.2	15	2.50	1.05	5.9	**76**	0.527	**0.264**	2.00
147.5	87.5	SW-SM	84		7373	6133	1.3	0.47	1.05	1.3	1	70.0	15	2.50	1.05	5.9	**76**	0.526	**0.264**	2.00
147	88	SW-SM	84		7404	6164	1.3	0.47	1.05	1.3	1	69.8	15	2.50	1.05	5.9	**76**	0.524	**0.263**	2.00
146.5	88.5	SW-SM	84		7436	6196	1.3	0.47	1.05	1.3	1	69.6	15	2.50	1.05	5.8	**75**	0.523	**0.263**	2.00
146	89	SW-SM	84		7467	6227	1.3	0.47	1.05	1.3	1	69.3	15	2.50	1.05	5.8	**75**	0.522	**0.262**	2.00
145.5	89.5	SW-SM	84		7499	6259	1.3	0.46	1.05	1.3	1	69.1	15	2.50	1.05	5.8	**75**	0.520	**0.262**	2.00
145	90	SW-SM	84		7530	6290	1.3	0.46	1.05	1.3	1	68.9	15	2.50	1.05	5.8	**75**	0.519	**0.261**	2.00
144.5	90.5	SW-SM	53		7562	6322	1.3	0.46	1.05	1.3	1	43.3	15	2.50	1.05	4.6	**48**	0.518	**0.261**	2.00
144	91	SW-SM	53		7593	6353	1.3	0.46	1.05	1.3	1	43.2	15	2.50	1.05	4.6	**48**	0.517	**0.260**	2.00
143.5	91.5	SW-SM	53		7625	6385	1.3	0.46	1.05	1.3	1	43.1	15	2.50	1.05	4.6	**48**	0.516	**0.260**	2.00
143	92	SW-SM	53		7656	6416	1.3	0.46	1.05	1.3	1	42.9	15	2.50	1.05	4.6	**48**	0.515	**0.260**	2.00
142.5	92.5	SW-SM	53		7688	6448	1.3	0.46	1.05	1.3	1	42.8	15	2.50	1.05	4.6	**47**	0.514	**0.259**	2.00
142	93	SW-SM	53		7719	6479	1.3	0.45	1.05	1.3	1	42.7	15	2.50	1.05	4.6	**47**	0.512	**0.259**	2.00
141.5	93.5	SW-SM	53		7751	6511	1.3	0.45	1.05	1.3	1	42.5	15	2.50	1.05	4.5	**47**	0.511	**0.258**	2.00
141	94	SW-SM	53		7782	6542	1.3	0.45	1.05	1.3	1	42.4	15	2.50	1.05	4.5	**47**	0.510	**0.258**	2.00
140.5	94.5	SW-SM	53		7814	6574	1.3	0.45	1.05	1.3	1	42.3	15	2.50	1.05	4.5	**47**	0.509	**0.258**	2.00
140	95	SW-SM	53		7845	6605	1.3	0.45	1.05	1.3	1	42.2	15	2.50	1.05	4.5	**47**	0.508	**0.257**	2.00
139.5	95.5	SW-SM	53		7877	6637	1.3	0.45	1.05	1.3	1	42.0	15	2.50	1.05	4.5	**47**	0.507	**0.257**	2.00
139	96	SW-SM	53		7908	6668	1.3	0.45	1.05	1.3	1	41.9	15	2.50	1.05	4.5	**46**	0.506	**0.256**	2.00
138.5	96.5	SW-SM	53		7940	6700	1.3	0.44	1.05	1.3	1	41.8	15	2.50	1.05	4.5	**46**	0.505	**0.256**	2.00
138	97	SW-SM	53		7971	6731	1.3	0.44	1.05	1.3	1	41.7	15	2.50	1.05	4.5	**46**	0.504	**0.256**	2.00
137.5	97.5	SW-SM	53		8003	6763	1.3	0.44	1.05	1.3	1	41.5	15	2.50	1.05	4.5	**46**	0.503	**0.255**	2.00
137	98	SW-SM	53		8034	6794	1.3	0.44	1.05	1.3	1	41.4	15	2.50	1.05	4.5	**46**	0.502	**0.255**	2.00
136.5	98.5	SW-SM	53		8066	6826	1.3	0.44	1.05	1.3	1	41.3	15	2.50	1.05	4.5	**46**	0.501	**0.255**	2.00
136	99	SW-SM	53		8097	6857	1.3	0.44	1.05	1.3	1	41.2	15	2.50	1.05	4.5	**46**	0.500	**0.254**	2.00
135.5	99.5	SW-SM	53		8129	6889	1.3	0.44	1.05	1.3	1	41.0	15	2.50	1.05	4.5	**46**	0.499	**0.254**	2.00
135	100	SW-SM	34		8160	6920	1.3	0.44	1.05	1.3	1	26.3	32	4.83	1.17	9.3	**36**	0.499	**0.253**	2.00
134.5	100.5	SW-SM	34		8192	6952	1.3	0.43	1.05	1.3	1	26.2	32	4.83	1.17	9.3	**35**	0.498	**0.253**	2.00
134	101	SW-SM	34		8223	6983	1.3	0.43	1.05	1.3	1	26.1	32	4.83	1.17	9.3	**35**	0.497	**0.253**	2.00
133.5	101.5	SW-SM	34		8255	7015	1.3	0.43	1.05	1.3	1	26.0	32	4.83	1.17	9.3	**35**	0.496	**0.252**	2.00
133	102	SW-SM	34		8286	7046	1.3	0.43	1.05	1.3	1	25.9	32	4.83	1.17	9.3	**35**	0.495	**0.252**	2.00
132.5	102.5	SW-SM	34		8318	7078	1.3	0.43	1.05	1.3	1	25.9	32	4.83	1.17	9.3	**35**	0.494	**0.252**	2.00
132	103	SW-SM	34		8349	7109	1.3	0.43	1.05	1.3	1	25.8	32	4.83	1.17	9.2	**35**	0.493	**0.251**	2.00
131.5	103.5	SW-SM	34		8381	7141	1.3	0.43	1.05	1.3	1	25.7	32	4.83	1.17	9.2	**35**	0.493	**0.251**	2.00
131	104	SW-SM	34		8412	7172	1.3	0.43	1.05	1.3	1	25.6	32	4.83	1.17	9.2	**35**	0.492	**0.251**	2.00
130.5	104.5	SW-SM	34		8444	7204	1.3	0.42	1.05	1.3	1	25.6	32	4.83	1.17	9.2	**35**	0.491	**0.251**	2.00
130	105	SW-SM	34		8475	7235	1.3	0.42	1.05	1.3	1	25.5	32	4.83	1.17	9.2	**35**	0.490	**0.250**	2.00
129.5	105.5	SW-SM	34		8507	7267	1.3	0.42	1.05	1.3	1	25.4	32	4.83	1.17	9.2	**35**	0.489	**0.250**	2.00
129	106	SW-SM	34		8538	7298	1.3	0.42	1.05	1.3	1	25.4	32	4.83	1.17	9.2	**35**	0.488	**0.250**	2.00
128.5	106.5	SW-SM	34		8570	7330	1.3	0.42	1.05	1.3	1	25.3	32	4.83	1.17	9.2	**34**	0.488	**0.249**	2.00
128	107	SW-SM	34		8601	7361	1.3	0.42	1.05	1.3	1	25.2	32	4.83	1.17	9.1	**34**	0.487	**0.249**	2.00
127.5	107.5	SW-SM	34		8633	7393	1.3	0.42	1.05	1.3	1	25.1	32	4.83	1.17	9.1	**34**	0.486	**0.249**	2.00
127	108	SW-SM	34		8664	7424	1.3	0.42	1.05	1.3	1	25.1	32	4.83	1.17	9.1	**34**	0.485	**0.248**	2.00
126.5	108.5	SW-SM	34		8696	7456	1.3	0.41	1.05	1.3	1	25.0	32	4.83	1.17	9.1	**34**	0.485	**0.248**	2.00
126	109	SW-SM	34		8727	7487	1.3	0.41	1.05	1.3	1	24.9	32	4.83	1.17	9.1	**34**	0.484	**0.248**	2.00
125.5	109.5	SW-SM	34		8759	7519	1.3	0.41	1.05	1.3	1	24.9	32	4.83	1.17	9.1	**34**	0.483	**0.248**	2.00
125	110	SW-SM	34		8790	7550	1.3	0.41	1.05	1.3	1	24.8	32	4.83	1.17	9.1	**34**	0.482	**0.247**	2.00
124.5	110.5	SW-SM	34		8822	7582	1.3	0.41	1.05	1.3	1	24.7	32	4.83	1.17	9.1	**34**	0.482	**0.247**	2.00
124	111	SW-SM	34		8853	7613	1.3	0.41	1.05	1.3	1	24.7	32	4.83	1.17	9.0	**34**	0.481	**0.247**	2.00
123.5	111.5	SW-SM	34		8885	7645	1.3	0.41	1.05	1.3	1	24.6	32	4.83	1.17	9.0	**34**	0.480	**0.246**	2.00
123	112	SW-SM	34		8916	7676	1.3	0.41	1.05	1.3	1	24.5	32	4.83	1.17	9.0	**34**	0.480	**0.246**	2.00
122.5	112.5	SW-SM	34		8948	7708	1.3	0.41	1.05	1.3	1	24.5	32	4.83	1.17	9.0	**33**	0.479	**0.246**	2.00
122	113	SW-SM	34		8979	7739	1.3	0.40	1.05	1.3	1	24.4	32	4.83	1.17	9.0	**33**	0.478	**0.246**	2.00
121.5	113.5	SW-SM	34		9011	7771	1.3	0.40	1.05	1.3	1	24.3	32	4.83	1.17	9.0	**33**	0.477	**0.245**	2.00
121	114	SW-SM	34		9042	7802	1.3	0.40	1.05	1.3	1	24.3	32	4.83	1.17	9.0	**33**	0.477	**0.245**	2.00
120.5	114.5	SW-SM	34		9074	7834	1.3	0.40	1.05	1.3	1	24.2	32	4.83	1.17	9.0	**33**	0.476	**0.245**	2.00
120	115	SW-SM	34		9105	7865	1.3	0.40	1.05	1.3	1	24.1	32	4.83	1.17	9.0	**33**	0.475	**0.245**	2.00
119.5	115.5	SW-SM	34		9137	7897	1.3	0.40	1.05	1.3	1	24.1	32	4.83	1.17	8.9	**33**	0.475	**0.244**	2.00
119	116	SW-SM	34		9168	7928	1.3	0.40	1.05	1.3	1	24.0	32	4.83	1.17	8.9	**33**	0.474	**0.244**	2.00
118.5	116.5	SW-SM	34		9200	7960	1.3	0.40	1.05	1.3	1	23.9	32	4.83	1.17	8.9	**33**	0.473	**0.244**	2.00
118	117	SW-SM	34		9231	7991	1.3	0.40	1.05	1.3	1	23.9	32	4.83	1.17	8.9	**33**	0.473	**0.244**	2.00
117.5	117.5	SW-SM	34		9263	8023	1.3	0.39	1.05	1.3	1	23.8	32	4.83	1.17	8.9	**33**	0.472	**0.243**	2.00
117	118	SW-SM	34		9294	8054	1.3	0.39	1.05	1.3	1	23.7	32	4.83	1.17	8.9	**33**	0.471	**0.243**	2.00
116.5	118.5	SW-SM	34		9326	8086	1.3	0.39	1.05	1.3	1	23.7	32	4.83	1.17	8.9	**33**	0.471	**0.243**	2.00
116	119	SW-SM	34		9357	8117	1.3	0.39	1.05	1.3	1	23.6	32	4.83	1.17	8.9	**32**	0.470	**0.242**	2.00
115.5	119.5	SW-SM	34		9389	8149	1.3	0.39	1.05	1.3	1	23.5	32	4.83	1.17	8.9	**32**	0.470	**0.242**	2.00
115	120	SW-SM	34		9420	8180	1.3	0.39	1.05	1.3	1	23.5	32	4.83	1.17	8.8	**32**	0.469	**0.242**	2.00

SPT Liquefaction Spreadsheet

PROJECT	SotoCapt-1-01				
JOB NAME	**Proposed Mixed Use Development**	Boring	**B-2**		
DATE	12/3/2010	*y*	120	pcf	
BY	DBS	GW level	49	ft	
CHECKED BY	2/1/2011	HHGL	30	ft	
DATE	CJZ	GS Elevation	255		
		LFFE	215		
			Magnitue	a max	
			6.66	0.584	
		MSF	1.35		

Total Settlement 0.01 **INCHES**

Elevation	Depth	Soil	Nfield	Boulanger	σo'	σo'							Fines Correction					CRR	Rd	CSR	FOS	SETTLEMENT	
(MSL)	(feet)	Type		and Idriss	(psf)	(psf)	C_E	C_N	C_B	C_S	C_R	$(N_1)_{60}$				ΔN	$(N_1)_{60}$	*1998 eq.*				(%)	(inches)
				(2006)	*current*	*HHGWL*			*5"*	*w/out*		***interim***											
					psf	psf	energy	stress	diam	liner	rod	***Corr.***	%fines	Alpha	Beta			*<N=30*					
254	1	CL	6		120	120	1.3	1.75	1.05	1.3	0.75		15	2.50	1.05				1.000	**0.281**	2.00		
253.5	1.5	CL	6		180	180	1.3	1.71	1.05	1.3	0.75		15	2.50	1.05				0.998	**0.281**	2.00		
253	2	CL	6		240	240	1.3	1.68	1.05	1.3	0.75		15	2.50	1.05				0.997	**0.281**	2.00		
252.5	2.5	CL	6		300	300	1.3	1.64	1.05	1.3	0.75		15	2.50	1.05				0.996	**0.280**	2.00		
252	3	CL	6		360	360	1.3	1.61	1.05	1.3	0.75		15	2.50	1.05				0.995	**0.280**	2.00		
251.5	3.5	CL	6		420	420	1.3	1.57	1.05	1.3	0.75		15	2.50	1.05				0.994	**0.280**	2.00		
251	4	CL	6		480	480	1.3	1.54	1.05	1.3	0.75		15	2.50	1.05				0.993	**0.279**	2.00		
250.5	4.5	CL	6		540	540	1.3	1.51	1.05	1.3	0.75		15	2.50	1.05				0.991	**0.279**	2.00		
250	5	CL	6		600	600	1.3	1.48	1.05	1.3	0.75		15	2.50	1.05				0.990	**0.279**	2.00		
249.5	5.5	CL	6		660	660	1.3	1.46	1.05	1.3	0.75		15	2.50	1.05				0.989	**0.278**	2.00		
249	6	CL	6		720	720	1.3	1.43	1.05	1.3	0.75		15	2.50	1.05				0.988	**0.278**	2.00		
248.5	6.5	CL	6		780	780	1.3	1.40	1.05	1.3	0.75		15	2.50	1.05				0.987	**0.278**	2.00		
248	7	CL	6		840	840	1.3	1.38	1.05	1.3	0.75		15	2.50	1.05				0.986	**0.277**	2.00		
247.5	7.5	CL	6		900	900	1.3	1.35	1.05	1.3	0.75		15	2.50	1.05				0.985	**0.277**	2.00		
247	8	CL	7		960	960	1.3	1.33	1.05	1.3	0.75		15	2.50	1.05				0.983	**0.277**	2.00		
246.5	8.5	CL	7		1020	1020	1.3	1.31	1.05	1.3	0.75		15	2.50	1.05				0.982	**0.276**	2.00		
246	9	CL	7		1080	1080	1.3	1.29	1.05	1.3	0.75		15	2.50	1.05				0.981	**0.276**	2.00		
245.5	9.5	CL	7		1140	1140	1.3	1.27	1.05	1.3	0.75		15	2.50	1.05				0.980	**0.276**	2.00		
245	10	CL	7		1200	1200	1.3	1.24	1.05	1.3	0.75		15	2.50	1.05				0.979	**0.276**	2.00		
244.5	10.5	CL	7		1260	1260	1.3	1.23	1.05	1.3	0.75		15	2.50	1.05				0.978	**0.275**	2.00		
244	11	CL	7		1320	1320	1.3	1.21	1.05	1.3	0.75		15	2.50	1.05				0.977	**0.275**	2.00		
243.5	11.5	CL	7		1380	1380	1.3	1.19	1.05	1.3	0.75		15	2.50	1.05				0.976	**0.275**	2.00		
243	12	CL	7		1440	1440	1.3	1.17	1.05	1.3	0.75		15	2.50	1.05				0.975	**0.274**	2.00		
242.5	12.5	CL	7		1500	1500	1.3	1.15	1.05	1.3	0.75		15	2.50	1.05				0.974	**0.274**	2.00		
242	13	CL	7		1560	1560	1.3	1.14	1.05	1.3	0.85		15	2.50	1.05				0.973	**0.274**	2.00		
241.5	13.5	CL	7		1620	1620	1.3	1.12	1.05	1.3	0.85		15	2.50	1.05				0.972	**0.273**	2.00		
241	14	CL	7		1680	1680	1.3	1.10	1.05	1.3	0.85		15	2.50	1.05				0.971	**0.273**	2.00		
240.5	14.5	CL	7		1740	1740	1.3	1.09	1.05	1.3	0.85		15	2.50	1.05				0.970	**0.273**	2.00		
240	15	CL	7		1800	1800	1.3	1.07	1.05	1.3	0.85		15	2.50	1.05				0.969	**0.273**	2.00		
239.5	15.5	SP	18		1860	1860	1.3	1.06	1.05	1.3	0.85		5	0.00	1.00				0.967	**0.272**	2.00		
239	16	SP	18		1920	1920	1.3	1.04	1.05	1.3	0.85		5	0.00	1.00				0.966	**0.272**	2.00		
238.5	16.5	SP	18		1980	1980	1.3	1.03	1.05	1.3	0.85		5	0.00	1.00				0.965	**0.272**	2.00		
238	17	SP	18		2040	2040	1.3	1.02	1.05	1.3	0.85		5	0.00	1.00				0.964	**0.271**	2.00		
237.5	17.5	SP	18		2100	2100	1.3	1.00	1.05	1.3	0.85		5	0.00	1.00				0.963	**0.271**	2.00		
237	18	SP	18		2160	2160	1.3	0.99	1.05	1.3	0.85		5	0.00	1.00				0.962	**0.271**	2.00		
236.5	18.5	SP	18		2220	2220	1.3	0.98	1.05	1.3	0.85		5	0.00	1.00				0.961	**0.270**	2.00		
236	19	SP	18		2280	2280	1.3	0.97	1.05	1.3	0.85		5	0.00	1.00				0.959	**0.270**	2.00		
235.5	19.5	SP	18		2340	2340	1.3	0.95	1.05	1.3	0.85		5	0.00	1.00				0.958	**0.270**	2.00		
235	20	SP	18		2400	2400	1.3	0.94	1.05	1.3	0.95		5	0.00	1.00				0.957	**0.269**	2.00		
234.5	20.5	SP	20		2460	2460	1.3	0.93	1.05	1.3	0.95		5	0.00	1.00				0.956	**0.269**	2.00		
234	21	SP	20		2520	2520	1.3	0.92	1.05	1.3	0.95		5	0.00	1.00				0.954	**0.269**	2.00		
233.5	21.5	SP	20		2580	2580	1.3	0.91	1.05	1.3	0.95		5	0.00	1.00				0.953	**0.268**	2.00		
233	22	SP	20		2640	2640	1.3	0.90	1.05	1.3	0.95		5	0.00	1.00				0.951	**0.268**	2.00		
232.5	22.5	SP	20		2700	2700	1.3	0.89	1.05	1.3	0.95		5	0.00	1.00				0.950	**0.267**	2.00		
232	23	SP	20		2760	2760	1.3	0.88	1.05	1.3	0.95		5	0.00	1.00				0.948	**0.267**	2.00		
231.5	23.5	SP	20		2820	2820	1.3	0.87	1.05	1.3	0.95		5	0.00	1.00				0.947	**0.266**	2.00		
231	24	SP	20		2880	2880	1.3	0.86	1.05	1.3	0.95		5	0.00	1.00				0.945	**0.266**	2.00		
230.5	24.5	SP	20		2940	2940	1.3	0.85	1.05	1.3	0.95		5	0.00	1.00				0.944	**0.266**	2.00		
230	25	SP	20		3000	3000	1.3	0.84	1.05	1.3	0.95		5	0.00	1.00				0.942	**0.265**	2.00		
229.5	25.5	SP	21		3060	3060	1.3	0.83	1.05	1.3	0.95		5	0.00	1.00				0.940	**0.265**	2.00		
229	26	SP	21		3120	3120	1.3	0.82	1.05	1.3	0.95		5	0.00	1.00				0.938	**0.264**	2.00		
228.5	26.5	SP-SM	21		3180	3180	1.3	0.81	1.05	1.3	0.95		15	2.50	1.05				0.936	**0.263**	2.00		

228	27	SP-SM	21		3240	3240	1.3	0.81	1.05	1.3	0.95		15	2.50	1.05				0.934	**0.263**	2.00		
227.5	27.5	SP-SM	21		3300	3300	1.3	0.80	1.05	1.3	0.95		15	2.50	1.05				0.932	**0.262**	2.00		
227	28	SP-SM	21		3360	3360	1.3	0.79	1.05	1.3	0.95		15	2.50	1.05				0.930	**0.262**	2.00		
226.5	28.5	SP-SM	21		3420	3420	1.3	0.78	1.05	1.3	0.95		15	2.50	1.05				0.928	**0.261**	2.00		
226	29	SP-SM	21		3480	3480	1.3	0.77	1.05	1.3	0.95		15	2.50	1.05				0.925	**0.260**	2.00		
225.5	29.5	SP-SC	21		3540	3540	1.3	0.77	1.05	1.3	0.95		30	4.71	1.15				0.923	**0.260**	2.00		
225	30	SP-SC	24		3600	3600	1.3	0.76	1.05	1.3	0.95	30.7	30	4.71	1.15	9.4	**40**		0.921	**0.259**	2.00		
224.5	30.5	SP-SC	24		3660	3629	1.3	0.75	1.05	1.3	0.95	30.4	30	4.71	1.15	9.4	**40**		0.918	**0.261**	2.00		
224	31	SP-SC	24		3720	3658	1.3	0.74	1.05	1.3	0.95	30.1	30	4.71	1.15	9.3	**39**		0.915	**0.262**	2.00		
223.5	31.5	SP-SC	24		3780	3687	1.3	0.74	1.05	1.3	0.95	29.8	30	4.71	1.15	9.3	**39**		0.913	**0.263**	2.00		
223	32	SP-SC	24		3840	3716	1.3	0.73	1.05	1.3	0.95	29.5	30	4.71	1.15	9.3	**39**		0.910	**0.265**	2.00		
222.5	32.5	SP-SC	24		3900	3745	1.3	0.72	1.05	1.3	0.95	29.2	30	4.71	1.15	9.2	**38**		0.907	**0.266**	2.00		
222	33	SP-SC	24		3960	3774	1.3	0.72	1.05	1.3	1	30.5	30	4.71	1.15	9.4	**40**		0.904	**0.267**	2.00		
221.5	33.5	SP-SC	24		4020	3803	1.3	0.71	1.05	1.3	1	30.2	30	4.71	1.15	9.4	**40**		0.901	**0.268**	2.00		
221	34	SP-SM	32		4080	3832	1.3	0.70	1.05	1.3	1	39.9	15	2.50	1.05	4.4	**44**		0.897	**0.269**	2.00		
220.5	34.5	SP-SM	32		4140	3861	1.3	0.70	1.05	1.3	1	39.6	15	2.50	1.05	4.4	**44**		0.894	**0.270**	2.00		
220	35	SP-SM	32		4200	3890	1.3	0.69	1.05	1.3	1	39.2	15	2.50	1.05	4.4	**44**		0.891	**0.271**	2.00		
219.5	35.5	SP-SM	32		4260	3919	1.3	0.68	1.05	1.3	1	38.9	15	2.50	1.05	4.4	**43**		0.887	**0.271**	2.00		
219	36	SP-SM	32		4320	3948	1.3	0.68	1.05	1.3	1	38.5	15	2.50	1.05	4.4	**43**		0.883	**0.272**	2.00		
218.5	36.5	SP-SM	32		4380	3977	1.3	0.67	1.05	1.3	1	38.2	15	2.50	1.05	4.3	**43**		0.880	**0.273**	2.00		
218	37	SP-SM	32		4440	4006	1.3	0.67	1.05	1.3	1	37.9	15	2.50	1.05	4.3	**42**		0.876	**0.273**	2.00		
217.5	37.5	SP-SM	32		4500	4035	1.3	0.66	1.05	1.3	1	37.6	15	2.50	1.05	4.3	**42**		0.872	**0.274**	2.00		
217	38	SP-SM	32		4560	4064	1.3	0.66	1.05	1.3	1	37.2	15	2.50	1.05	4.3	**42**		0.868	**0.274**	2.00		
216.5	38.5	SP-SM	32		4620	4093	1.3	0.65	1.05	1.3	1	36.9	15	2.50	1.05	4.3	**41**		0.864	**0.274**	2.00		
216	39	SP-SM	32		4680	4122	1.3	0.64	1.05	1.3	1	36.6	15	2.50	1.05	4.3	**41**		0.860	**0.275**	2.00		
215.5	39.5	SP-SM	32		4740	4151	1.3	0.64	1.05	1.3	1	36.3	15	2.50	1.05	4.2	**41**		0.855	**0.275**	2.00		
215	40	SP-SM	29		4800	4180	1.3	0.63	1.05	1.3	1	32.6	15	2.50	1.05	4.1	**37**		0.851	**0.275**	2.00		
214.5	40.5	SP-SM	29		4860	4209	1.3	0.63	1.05	1.3	1	32.4	15	2.50	1.05	4.1	**36**		0.847	**0.275**	2.00		
214	41	SP-SM	29		4920	4238	1.3	0.62	1.05	1.3	1	32.1	15	2.50	1.05	4.0	**36**		0.842	**0.275**	2.00		
213.5	41.5	SP-SM	29		4980	4267	1.3	0.62	1.05	1.3	1	31.9	15	2.50	1.05	4.0	**36**		0.837	**0.275**	2.00		
213	42	SP-SM	29		5040	4296	1.3	0.61	1.05	1.3	1	31.6	15	2.50	1.05	4.0	**36**		0.833	**0.275**	2.00		
212.5	42.5	SP-SM	29		5100	4325	1.3	0.61	1.05	1.3	1	31.4	15	2.50	1.05	4.0	**35**		0.828	**0.275**	2.00		
212	43	SP-SM	29		5160	4354	1.3	0.60	1.05	1.3	1	31.1	15	2.50	1.05	4.0	**35**		0.823	**0.275**	2.00		
211.5	43.5	SP-SM	29		5220	4383	1.3	0.60	1.05	1.3	1	30.9	15	2.50	1.05	4.0	**35**		0.818	**0.274**	2.00		
211	44	SP-SM	29		5280	4412	1.3	0.60	1.05	1.3	1	30.6	15	2.50	1.05	4.0	**35**		0.814	**0.274**	2.00		
210.5	44.5	SP-SM	36		5340	4441	1.3	0.59	1.05	1.3	1	37.7	15	2.50	1.05	4.3	**42**		0.809	**0.274**	2.00		
210	45	SP-SM	36		5400	4470	1.3	0.59	1.05	1.3	1	37.5	15	2.50	1.05	4.3	**42**		0.804	**0.273**	2.00		
209.5	45.5	SP-SM	36		5460	4499	1.3	0.58	1.05	1.3	1	37.2	15	2.50	1.05	4.3	**41**		0.799	**0.273**	2.00		
209	46	SP-SM	36		5520	4528	1.3	0.58	1.05	1.3	1	36.9	15	2.50	1.05	4.3	**41**		0.794	**0.272**	2.00		
208.5	46.5	SP-SM	36		5580	4557	1.3	0.57	1.05	1.3	1	36.6	15	2.50	1.05	4.3	**41**		0.788	**0.272**	2.00		
208	47	SP-SM	36		5640	4586	1.3	0.57	1.05	1.3	1	36.4	15	2.50	1.05	4.2	**41**		0.783	**0.271**	2.00		
207.5	47.5	SP-SM	36		5700	4615	1.3	0.57	1.05	1.3	1	36.1	15	2.50	1.05	4.2	**40**		0.778	**0.271**	2.00		
207	48	SP-SM	36		5760	4644	1.3	0.56	1.05	1.3	1	35.8	15	2.50	1.05	4.2	**40**		0.773	**0.270**	2.00		
206.5	48.5	SP-SM	36		5820	4673	1.3	0.56	1.05	1.3	1	35.6	15	2.50	1.05	4.2	**40**		0.768	**0.269**	2.00		
206	49	SP-SM	36		5880	4702	1.3	0.55	1.05	1.3	1	35.3	15	2.50	1.05	4.2	**40**		0.763	**0.269**	2.00		
205.5	49.5	ML-SM	18		5909	4731	1.3	0.55	1.05	1.3	1	17.6	29	4.64	1.15	7.2	**25**	0.288	0.758	**0.268**	1.46	0.000	0.001
205	50	ML-SM	18		5938	4760	1.3	0.55	1.05	1.3	1	17.5	29	4.64	1.15	7.2	**25**	0.287	0.753	**0.267**	1.46	0.000	0.001
204.5	50.5	ML-SM	18		5967	4789	1.3	0.55	1.05	1.3	1	17.5	29	4.64	1.15	7.2	**25**	0.286	0.748	**0.266**	1.45	0.000	0.001
204	51	ML-SM	18		5996	4818	1.3	0.55	1.05	1.3	1	17.4	29	4.64	1.15	7.2	**25**	0.284	0.743	**0.265**	1.45	0.000	0.001
203.5	51.5	ML-SM	18		6025	4847	1.3	0.54	1.05	1.3	1	17.4	29	4.64	1.15	7.2	**25**	0.283	0.738	**0.265**	1.45	0.000	0.001
203	52	ML-SM	18		6054	4876	1.3	0.54	1.05	1.3	1	17.3	29	4.64	1.15	7.2	**24**	0.282	0.733	**0.264**	1.45	0.000	0.001
202.5	52.5	ML-SM	18		6083	4905	1.3	0.54	1.05	1.3	1	17.2	29	4.64	1.15	7.2	**24**	0.281	0.728	**0.263**	1.45	0.000	0.001
202	53	ML-SM	18		6112	4934	1.3	0.54	1.05	1.3	1	17.2	29	4.64	1.15	7.1	**24**	0.279	0.723	**0.262**	1.44	0.000	0.001
201.5	53.5	ML-SM	18		6141	4963	1.3	0.54	1.05	1.3	1	17.1	29	4.64	1.15	7.1	**24**	0.278	0.718	**0.261**	1.44	0.000	0.001
201	54	ML-SM	18		6170	4992	1.3	0.53	1.05	1.3	1	17.1	29	4.64	1.15	7.1	**24**	0.277	0.713	**0.260**	1.44	0.000	0.001
200.5	54.5	ML-SM	18		6199	5021	1.3	0.53	1.05	1.3	1	17.0	29	4.64	1.15	7.1	**24**	0.276	0.708	**0.260**	1.44	0.000	0.001
200	55	ML-SM	25		6228	5050	1.3	0.53	1.05	1.3	1	23.6	29	4.64	1.15	8.1	**32**		0.703	**0.259**	2.00		
199.5	55.5	ML-SM	25		6257	5079	1.3	0.53	1.05	1.3	1	23.5	29	4.64	1.15	8.1	**32**		0.699	**0.258**	2.00		
199	56	ML-SM	25		6286	5108	1.3	0.53	1.05	1.3	1	23.4	29	4.64	1.15	8.1	**31**		0.694	**0.257**	2.00		
198.5	56.5	ML-SM	25		6315	5137	1.3	0.53	1.05	1.3	1	23.3	29	4.64	1.15	8.0	**31**		0.689	**0.256**	2.00		
198	57	SW	33		6344	5166	1.3	0.52	1.05	1.3	1	30.7	17	3.01	1.06	4.9	**36**		0.685	**0.255**	2.00		
197.5	57.5	SW	33		6373	5195	1.3	0.52	1.05	1.3	1	30.6	17	3.01	1.06	4.8	**35**		0.680	**0.254**	2.00		
197	58	SW	33		6402	5224	1.3	0.52	1.05	1.3	1	30.5	17	3.01	1.06	4.8	**35**		0.676	**0.254**	2.00		
196.5	58.5	SW	33		6431	5253	1.3	0.52	1.05	1.3	1	30.4	17	3.01	1.06	4.8	**35**		0.672	**0.253**	2.00		
196	59	SW	33		6460	5282	1.3	0.52	1.05	1.3	1	30.3	17	3.01	1.06	4.8	**35**		0.668	**0.252**	2.00		
195.5	59.5	SW	33		6489	5311	1.3	0.52	1.05	1.3	1	30.2	17	3.01	1.06	4.8	**35**		0.663	**0.251**	2.00		
195	60	SW	33		6518	5340	1.3	0.51	1.05	1.3	1	30.1	17	3.01	1.06	4.8	**35**		0.659	**0.250**	2.00		
194.5	60.5	CL/SC	33		6547	5369	1.3	0.51	1.05	1.3	1	30.0	15	2.50	1.05	3.9	**34**		0.655	**0.249**	2.00		
194	61	CL/SC	33		6576	5398	1.3	0.51	1.05	1.3	1	29.9	15	2.50	1.05	3.9	**34**		0.651	**0.249**	2.00		
193.5	61.5	CL/SC	33		6605	5427	1.3	0.51	1.05	1.3	1	29.8	15	2.50	1.05	3.9	**34**		0.647	**0.248**	2.00		
193	62	CL/SC	33		6634	5456	1.3	0.51	1.05	1.3	1	29.7	15	2.50	1.05	3.9	**34**		0.644	**0.247**	2.00		
192.5	62.5	CL/SC	33		6663	5485	1.3	0.51	1.05	1.3	1	29.6	15	2.50	1.05	3.9	**34**		0.640	**0.246**	2.00		
192	63	CL/SC	33		6692	5514	1.3	0.50	1.05	1.3	1	29.5	15	2.50	1.05	3.9	**33**		0.636	**0.245**	2.00		
191.5	63.5	CL/SC	33		6721	5543	1.3	0.50	1.05	1.3	1	29.4	15	2.50	1.05	3.9	**33**		0.632	**0.245**	2.00		
191	64	CL/SC	33		6750	5572	1.3	0.50	1.05	1.3	1	29.3	15	2.50	1.05	3.9	**33**		0.629	**0.244**	2.00		
190.5	64.5	CL/SC	33		6779	5601	1.3	0.50	1.05	1.3	1	29.3	15	2.50	1.05	3.9	**33**		0.625	**0.243**	2.00		
190	65	CL/SC	33		6808	5630	1.3	0.50	1.05	1.3	1	29.2	15	2.50	1.05	3.9	**33**		0.622	**0.243**	2.00		

189.5	65.5	CL/SC	33		6837	5659	1.3	0.50	1.05	1.3	1	29.1	15	2.50	1.05	3.9	**33**	0.619	**0.242**	2.00		
189	66	CL/SC	33		6866	5688	1.3	0.49	1.05	1.3	1	29.0	15	2.50	1.05	3.9	**33**	0.616	**0.241**	2.00		
188.5	66.5	SP	58		6895	5717	1.3	0.49	1.05	1.3	1	50.8	5	0.00	1.00	0.1	**51**	0.612	**0.241**	2.00		
188	67	SP	58		6924	5746	1.3	0.49	1.05	1.3	1	50.6	5	0.00	1.00	0.1	**51**	0.609	**0.240**	2.00		
187.5	67.5	SP	58		6953	5775	1.3	0.49	1.05	1.3	1	50.5	5	0.00	1.00	0.1	**51**	0.606	**0.239**	2.00		
187	68	SP	58		6982	5804	1.3	0.49	1.05	1.3	1	50.3	5	0.00	1.00	0.1	**50**	0.603	**0.239**	2.00		
186.5	68.5	SP	58		7011	5833	1.3	0.49	1.05	1.3	1	50.2	5	0.00	1.00	0.1	**50**	0.600	**0.238**	2.00		
186	69	SP	58		7040	5862	1.3	0.49	1.05	1.3	1	50.0	5	0.00	1.00	0.1	**50**	0.597	**0.237**	2.00		
185.5	69.5	SP	58		7069	5891	1.3	0.48	1.05	1.3	1	49.9	5	0.00	1.00	0.1	**50**	0.595	**0.237**	2.00		
185	70	SP	58		7098	5920	1.3	0.48	1.05	1.3	1	49.7	5	0.00	1.00	0.1	**50**	0.592	**0.236**	2.00		
184.5	70.5	SP	58		7127	5949	1.3	0.48	1.05	1.3	1	49.6	5	0.00	1.00	0.1	**50**	0.589	**0.236**	2.00		
184	71	SP	58		7156	5978	1.3	0.48	1.05	1.3	1	49.4	5	0.00	1.00	0.1	**49**	0.587	**0.235**	2.00		
183.5	71.5	SP	58		7185	6007	1.3	0.48	1.05	1.3	1	49.3	5	0.00	1.00	0.1	**49**	0.584	**0.235**	2.00		
183	72	SC	50		7214	6036	1.3	0.48	1.05	1.3	1	42.3	15	2.50	1.05	4.5	**47**	0.582	**0.234**	2.00		
182.5	72.5	SC	50		7243	6065	1.3	0.48	1.05	1.3	1	42.2	15	2.50	1.05	4.5	**47**	0.579	**0.234**	2.00		
182	73	SC	50		7272	6094	1.3	0.47	1.05	1.3	1	42.1	15	2.50	1.05	4.5	**47**	0.577	**0.233**	2.00		
181.5	73.5	SC	50		7301	6123	1.3	0.47	1.05	1.3	1	42.0	15	2.50	1.05	4.5	**46**	0.574	**0.233**	2.00		
181	74	SC	50		7330	6152	1.3	0.47	1.05	1.3	1	41.9	15	2.50	1.05	4.5	**46**	0.572	**0.232**	2.00		
180.5	74.5	SC	50		7359	6181	1.3	0.47	1.05	1.3	1	41.7	15	2.50	1.05	4.5	**46**	0.570	**0.232**	2.00		
180	75	SC	50		7388	6210	1.3	0.47	1.05	1.3	1	41.6	15	2.50	1.05	4.5	**46**	0.568	**0.232**	2.00		
179.5	75.5	SC	50		7417	6239	1.3	0.47	1.05	1.3	1	41.5	15	2.50	1.05	4.5	**46**	0.566	**0.231**	2.00		
179	76	SP	60		7446	6268	1.3	0.47	1.05	1.3	1	49.6	5	0.00	1.00	0.1	**50**	0.563	**0.231**	2.00		
178.5	76.5	SP	60		7475	6297	1.3	0.46	1.05	1.3	1	49.5	5	0.00	1.00	0.1	**50**	0.561	**0.230**	2.00		
178	77	SP	60		7504	6326	1.3	0.46	1.05	1.3	1	49.4	5	0.00	1.00	0.1	**49**	0.559	**0.230**	2.00		
177.5	77.5	SP	60		7533	6355	1.3	0.46	1.05	1.3	1	49.2	5	0.00	1.00	0.1	**49**	0.557	**0.230**	2.00		
177	78	SP	60		7562	6384	1.3	0.46	1.05	1.3	1	49.1	5	0.00	1.00	0.1	**49**	0.555	**0.229**	2.00		
176.5	78.5	SP	60		7591	6413	1.3	0.46	1.05	1.3	1	48.9	5	0.00	1.00	0.1	**49**	0.554	**0.229**	2.00		
176	79	SP	60		7620	6442	1.3	0.46	1.05	1.3	1	48.8	5	0.00	1.00	0.1	**49**	0.552	**0.229**	2.00		
175.5	79.5	SP	60		7649	6471	1.3	0.46	1.05	1.3	1	48.6	5	0.00	1.00	0.1	**49**	0.550	**0.228**	2.00		
175	80	SP	60		7678	6500	1.3	0.46	1.05	1.3	1	48.5	5	0.00	1.00	0.1	**49**	0.548	**0.228**	2.00		
174.5	80.5	SP	60		7707	6529	1.3	0.45	1.05	1.3	1	48.4	5	0.00	1.00	0.1	**48**	0.546	**0.228**	2.00		
174	81	SP	60		7736	6558	1.3	0.45	1.05	1.3	1	48.2	5	0.00	1.00	0.1	**48**	0.545	**0.227**	2.00		
173.5	81.5	SP	60		7765	6587	1.3	0.45	1.05	1.3	1	48.1	5	0.00	1.00	0.1	**48**	0.543	**0.227**	2.00		
173	82	SP	60		7794	6616	1.3	0.45	1.05	1.3	1	48.0	5	0.00	1.00	0.1	**48**	0.541	**0.227**	2.00		
172.5	82.5	SP	60		7823	6645	1.3	0.45	1.05	1.3	1	47.8	5	0.00	1.00	0.1	**48**	0.540	**0.226**	2.00		
172	83	SP	60		7852	6674	1.3	0.45	1.05	1.3	1	47.7	5	0.00	1.00	0.1	**48**	0.538	**0.226**	2.00		
171.5	83.5	SP	60		7881	6703	1.3	0.45	1.05	1.3	1	47.6	5	0.00	1.00	0.1	**48**	0.537	**0.226**	2.00		
171	84	SC	60		7910	6732	1.3	0.45	1.05	1.3	1	47.4	15	2.50	1.05	4.8	**52**	0.535	**0.226**	2.00		
170.5	84.5	SC	60		7939	6761	1.3	0.44	1.05	1.3	1	47.3	15	2.50	1.05	4.8	**52**	0.534	**0.225**	2.00		
170	85	SC	60		7968	6790	1.3	0.44	1.05	1.3	1	47.2	15	2.50	1.05	4.8	**52**	0.532	**0.225**	2.00		
169.5	85.5	SC	60		7997	6819	1.3	0.44	1.05	1.3	1	47.0	15	2.50	1.05	4.8	**52**	0.531	**0.225**	2.00		
169	86	SC	60		8026	6848	1.3	0.44	1.05	1.3	1	46.9	15	2.50	1.05	4.8	**52**	0.530	**0.225**	2.00		
168.5	86.5	SC	60		8055	6877	1.3	0.44	1.05	1.3	1	46.8	15	2.50	1.05	4.7	**52**	0.528	**0.224**	2.00		
168	87	SC	60		8084	6906	1.3	0.44	1.05	1.3	1	46.7	15	2.50	1.05	4.7	**51**	0.527	**0.224**	2.00		
167.5	87.5	SC	60		8113	6935	1.3	0.44	1.05	1.3	1	46.5	15	2.50	1.05	4.7	**51**	0.526	**0.224**	2.00		
167	88	SC	60		8142	6964	1.3	0.44	1.05	1.3	1	46.4	15	2.50	1.05	4.7	**51**	0.524	**0.224**	2.00		
166.5	88.5	SC	60		8171	6993	1.3	0.43	1.05	1.3	1	46.3	15	2.50	1.05	4.7	**51**	0.523	**0.224**	2.00		
166	89	CL	32		8200	7022	1.3	0.43	1.05	1.3	1	24.6	40	5.00	1.20	9.9	**35**	0.522	**0.223**	2.00		
165.5	89.5	CL	32		8229	7051	1.3	0.43	1.05	1.3	1	24.5	40	5.00	1.20	9.9	**34**	0.520	**0.223**	2.00		
165	90	CL	32		8258	7080	1.3	0.43	1.05	1.3	1	24.5	40	5.00	1.20	9.9	**34**	0.519	**0.223**	2.00		
164.5	90.5	CL	32		8287	7109	1.3	0.43	1.05	1.3	1	24.4	40	5.00	1.20	9.9	**34**	0.518	**0.223**	2.00		
164	91	CL	32		8316	7138	1.3	0.43	1.05	1.3	1	24.4	40	5.00	1.20	9.9	**34**	0.517	**0.223**	2.00		
163.5	91.5	CL	32		8345	7167	1.3	0.43	1.05	1.3	1	24.3	40	5.00	1.20	9.9	**34**	0.516	**0.222**	2.00		
163	92	CL	32		8374	7196	1.3	0.43	1.05	1.3	1	24.2	40	5.00	1.20	9.8	**34**	0.515	**0.222**	2.00		
162.5	92.5	CL	32		8403	7225	1.3	0.43	1.05	1.3	1	24.2	40	5.00	1.20	9.8	**34**	0.514	**0.222**	2.00		
162	93	CL	32		8432	7254	1.3	0.42	1.05	1.3	1	24.1	40	5.00	1.20	9.8	**34**	0.512	**0.222**	2.00		
161.5	93.5	CL	32		8461	7283	1.3	0.42	1.05	1.3	1	24.0	40	5.00	1.20	9.8	**34**	0.511	**0.222**	2.00		
161	94	CL	32		8490	7312	1.3	0.42	1.05	1.3	1	24.0	40	5.00	1.20	9.8	**34**	0.510	**0.222**	2.00		
160.5	94.5	CL	32		8519	7341	1.3	0.42	1.05	1.3	1	23.9	40	5.00	1.20	9.8	**34**	0.509	**0.221**	2.00		
160	95	SC	50		8548	7370	1.3	0.42	1.05	1.3	1	37.3	15	2.50	1.05	4.3	**42**	0.508	**0.221**	2.00		
159.5	95.5	SC	50		8577	7399	1.3	0.42	1.05	1.3	1	37.2	15	2.50	1.05	4.3	**41**	0.507	**0.221**	2.00		
159	96	SC	50		8606	7428	1.3	0.42	1.05	1.3	1	37.1	15	2.50	1.05	4.3	**41**	0.506	**0.221**	2.00		
158.5	96.5	SC	50		8635	7457	1.3	0.42	1.05	1.3	1	37.0	15	2.50	1.05	4.3	**41**	0.505	**0.221**	2.00		
158	97	SC	50		8664	7486	1.3	0.42	1.05	1.3	1	36.9	15	2.50	1.05	4.3	**41**	0.504	**0.221**	2.00		
157.5	97.5	SC	50		8693	7515	1.3	0.41	1.05	1.3	1	36.8	15	2.50	1.05	4.3	**41**	0.503	**0.220**	2.00		
157	98	SC	50		8722	7544	1.3	0.41	1.05	1.3	1	36.7	15	2.50	1.05	4.3	**41**	0.502	**0.220**	2.00		
156.5	98.5	SC	50		8751	7573	1.3	0.41	1.05	1.3	1	36.6	15	2.50	1.05	4.3	**41**	0.501	**0.220**	2.00		
156	99	SP-SM	70		8780	7602	1.3	0.41	1.05	1.3	1	51.1	5	0.00	1.00	0.1	**51**	0.500	**0.220**	2.00		
155.5	99.5	SP-SM	70		8809	7631	1.3	0.41	1.05	1.3	1	51.0	5	0.00	1.00	0.1	**51**	0.499	**0.220**	2.00		
155	100	SP-SM	70		8838	7660	1.3	0.41	1.05	1.3	1	50.8	5	0.00	1.00	0.1	**51**	0.499	**0.220**	2.00		
154.5	100.5	SP-SM	70		8867	7689	1.3	0.41	1.05	1.3	1	50.7	5	0.00	1.00	0.1	**51**	0.498	**0.220**	2.00		
154	101	SP-SM	70		8896	7718	1.3	0.41	1.05	1.3	1	50.6	5	0.00	1.00	0.1	**51**	0.497	**0.220**	2.00		
153.5	101.5	SP-SM	70		8925	7747	1.3	0.41	1.05	1.3	1	50.4	5	0.00	1.00	0.1	**51**	0.496	**0.219**	2.00		
																						0.007

Project: Proposed Mixed Use Development
Probe ID: CPT-1
Date: 2/3/2011

Design Earthquake Magnitude	6.66	MW
Magnitude Scaling Factor (MSF)	1.35	%
pga	0.584	g
Groundwater Depth:	28	ft
Elevation at GS	237.0	ft
HHGWL	12.0	ft

note: eff overburden set to depth increments of 0.1 meter

total settlement (inch)	total settlement below BOF (inch)
0.35	0.35

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	*w*	γ_M	n	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	F	r_d	Liquefiable	CSR	CRR_1	CRR	FS_{liq}	I_c	AFC	D_{50}	q_c/N	N	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
236.8	0.0	0.2	92	18	109	0.64	18	18	18	50.08	0	1.70	80.42	0.01	1.000	no	0.3796	0.090	0.12	2.0	1.75	8	0.187	4.75	17	18	no	zero	0.00
236.7	0.1	0.3	92	18	109	0.58	36	36	36	68.03	0.7919	1.70	109.24	1.16	1.00	no	0.3796	0.280	0.38	2.0	1.92	12	0.180	4.71	23	25	no	zero	0.00
236.5	0.1	0.5	92	18	109	0.63	53	53	53	53.63	0.8641	1.70	86.10	1.61	1.00	no	0.3796	0.287	0.39	2.0	2.10	17	0.172	4.65	19	24	no	zero	0.00
236.3	0.2	0.7	92	18	109	0.57	71	71	71	71.51	1.163	1.70	114.80	1.63	1.00	no	0.3796	0.305	0.41	2.0	2.01	14	0.177	4.68	25	27	no	zero	0.00
236.2	0.2	0.8	92	18	109	0.53	89	89	89	87.43	1.4779	1.70	140.36	1.69	1.00	no	0.3796	0.320	0.43	2.0	1.96	13	0.179	4.70	30	32	no	zero	0.00
236.0	0.3	1.0	92	18	109	0.49	107	107	107	102.23	1.2797	1.70	164.12	1.25	1.00	no	0.3796	0.310	0.42	2.0	1.82	10	0.184	4.74	35	36	no	zero	0.00
235.9	0.3	1.1	92	18	109	0.58	125	125	125	69.39	1.2281	1.70	111.35	1.77	1.00	no	0.3796	0.305	0.41	2.0	2.04	15	0.175	4.67	24	30	no	zero	0.00
235.7	0.4	1.3	92	18	109	0.62	142	142	142	55.89	1.2948	1.70	89.66	2.32	1.00	no	0.3796	0.310	0.42	2.0	2.19	20	0.167	4.61	19	25	no	zero	0.00
235.5	0.4	1.5	92	18	109	0.68	160	160	160	39.56	1.2529	1.70	63.41	3.17	1.00	no	0.3796	0.300	0.41	2.0	2.40	27	0.155	4.52	14	20	no	zero	0.00
235.4	0.5	1.6	92	18	109	0.75	178	178	178	25.21	1.0791	1.70	40.35	4.30	1.00	no	0.3796	0.290	0.39	2.0	2.63	38	0.138	4.38	9	16	no	zero	0.00
235.2	0.5	1.8	92	18	109	0.76	196	196	196	24.32	0.8832	1.70	38.91	3.65	1.00	no	0.3796	0.285	0.38	2.0	2.59	36	0.141	4.40	9	16	no	zero	0.00
235.0	0.6	2.0	92	18	109	0.76	214	214	214	24.48	0.5977	1.70	39.15	2.45	1.00	no	0.3796	0.285	0.38	2.0	2.47	30	0.150	4.48	9	15	no	zero	0.00
234.9	0.6	2.1	92	18	109	0.75	232	232	232	25.28	0.3414	1.70	40.42	1.36	1.00	no	0.3796	0.203	0.27	2.0	2.30	24	0.161	4.57	9	13	no	zero	0.00
234.7	0.7	2.3	92	18	109	0.75	249	249	249	25.79	0.1764	1.70	41.22	0.69	1.00	no	0.3795	0.130	0.18	2.0	2.13	18	0.170	4.64	9	13	no	zero	0.00
234.5	0.7	2.5	92	18	109	0.73	267	267	267	29.26	0.12	1.70	46.78	0.41	1.00	no	0.3793	0.075	0.10	2.0	1.98	14	0.178	4.69	10	11	no	zero	0.00
234.4	0.8	2.6	92	18	109	0.73	285	285	285	30.32	0.1037	1.70	48.47	0.34	1.00	no	0.3791	0.045	0.06	2.0	1.94	12	0.180	4.70	10	12	no	zero	0.00
234.2	0.8	2.8	92	18	109	0.73	303	303	303	30.11	0.1258	1.70	48.12	0.42	1.00	no	0.3789	0.075	0.10	2.0	1.98	13	0.178	4.69	10	12	no	zero	0.00
234.0	0.9	3.0	92	18	109	0.72	321	321	321	31.99	0.138	1.70	51.12	0.43	1.00	no	0.3786	0.083	0.11	2.0	1.96	13	0.179	4.70	11	13	no	zero	0.00
233.9	0.9	3.1	92	18	109	0.70	338	338	338	34.68	0.154	1.70	55.43	0.45	1.00	no	0.3784	0.100	0.13	2.0	1.93	12	0.180	4.71	12	14	no	zero	0.00
233.7	1.0	3.3	92	18	109	0.69	356	356	356	37.56	0.1867	1.70	60.04	0.50	1.00	no	0.3782	0.130	0.18	2.0	1.92	12	0.180	4.71	13	15	no	zero	0.00
233.6	1.0	3.4	92	18	109	0.67	374	374	374	42.23	0.2302	1.70	67.53	0.55	1.00	no	0.3780	0.156	0.21	2.0	1.90	11	0.181	4.72	14	16	no	zero	0.00
233.4	1.1	3.6	92	18	109	0.65	392	392	392	46.83	0.2748	1.70	74.90	0.59	1.00	no	0.3777	0.180	0.24	2.0	1.88	11	0.182	4.72	16	18	no	zero	0.00
233.2	1.1	3.8	92	18	109	0.65	410	410	410	46.46	0.2637	1.70	74.30	0.57	0.99	no	0.3775	0.180	0.24	2.0	1.87	11	0.182	4.72	16	18	no	zero	0.00
233.1	1.2	3.9	92	18	109	0.66	427	427	427	43.23	0.2145	1.70	69.09	0.50	0.99	no	0.3773	0.145	0.20	2.0	1.87	11	0.182	4.72	15	17	no	zero	0.00
232.9	1.2	4.1	92	18	109	0.66	445	445	445	43.85	0.2074	1.70	70.07	0.48	0.99	no	0.3770	0.160	0.22	2.0	1.86	10	0.183	4.73	15	17	no	zero	0.00
232.7	1.3	4.3	92	18	109	0.66	463	463	463	44.94	0.2766	1.70	71.81	0.62	0.99	no	0.3768	0.190	0.26	2.0	1.90	12	0.181	4.71	15	17	no	zero	0.00
232.6	1.3	4.4	92	18	109	0.65	481	481	481	48.14	0.319	1.70	76.94	0.67	0.99	no	0.3766	0.190	0.26	2.0	1.90	11	0.181	4.72	16	18	no	zero	0.00
232.4	1.4	4.6	92	18	109	0.63	499	499	499	52.98	0.3149	1.70	84.70	0.60	0.99	no	0.3763	0.193	0.26	2.0	1.84	10	0.184	4.73	18	19	no	zero	0.00
232.2	1.4	4.8	92	18	109	0.62	516	516	516	55.77	0.2754	1.70	89.16	0.50	0.99	no	0.3761	0.177	0.24	2.0	1.77	9	0.186	4.75	19	20	no	zero	0.00
232.1	1.5	4.9	92	18	109	0.62	534	534	534	55.57	0.2267	1.70	88.83	0.41	0.99	no	0.3758	0.167	0.23	2.0	1.73	8	0.187	4.76	19	20	no	zero	0.00
231.9	1.5	5.1	92	18	109	0.61	552	552	552	56.7	0.2476	1.70	90.63	0.44	0.99	no	0.3756	0.183	0.25	2.0	1.74	8	0.187	4.76	19	20	no	zero	0.00
231.8	1.6	5.2	92	18	109	0.61	570	570	570	58.89	0.2758	1.70	94.13	0.47	0.99	no	0.3753	0.193	0.26	2.0	1.74	8	0.187	4.76	20	21	no	zero	0.00
231.6	1.6	5.4	92	18	109	0.60	588	588	588	60.73	0.2845	1.70	97.07	0.47	0.99	no	0.3751	0.193	0.26	2.0	1.73	8	0.187	4.76	20	21	no	zero	0.00
231.4	1.7	5.6	92	18	109	0.60	605	605	605	62.8	0.2754	1.70	100.38	0.44	0.99	no	0.3749	0.200	0.27	2.0	1.70	7	0.188	4.76	21	22	no	zero	0.00
231.3	1.7	5.7	92	18	109	0.59	623	623	623	66.06	0.2959	1.70	105.60	0.45	0.99	no	0.3746	0.210	0.28	2.0	1.69	7	0.189	4.77	22	23	no	zero	0.00
231.1	1.8	5.9	92	18	109	0.59	641	641	641	63.78	0.2863	1.70	101.93	0.45	0.99	no	0.3744	0.210	0.28	2.0	1.70	7	0.188	4.76	21	22	no	zero	0.00
230.9	1.8	6.1	92	18	109	0.59	659	659	659	65.49	0.2699	1.70	104.66	0.41	0.99	no	0.3741	0.200	0.27	2.0	1.67	7	0.189	4.77	22	23	no	zero	0.00
230.8	1.9	6.2	92	18	109	0.59	677	677	677	64.52	0.2997	1.70	103.09	0.47	0.98	no	0.3739	0.210	0.28	2.0	1.71	7	0.188	4.76	22	23	no	zero	0.00
230.6	1.9	6.4	92	18	109	0.59	695	695	695	64.2	0.2965	1.70	102.56	0.46	0.98	no	0.3736	0.210	0.28	2.0	1.71	7	0.188	4.76	22	23	no	zero	0.00
230.4	2.0	6.6	92	18	109	0.59	712	712	712	65.91	0.3116	1.70	105.29	0.48	0.98	no	0.3733	0.210	0.28	2.0	1.70	7	0.188	4.76	22	23	no	zero	0.00
230.3	2.0	6.7	92	18	109	0.58	730	730	730	67.08	0.3214	1.70	107.16	0.48	0.98	no	0.3731	0.210	0.28	2.0	1.70	7	0.188	4.76	22	23	no	zero	0.00
230.1	2.1	6.9	92	18	109	0.58	748	748	748	67.9	0.3257	1.70	108.46	0.48	0.98	no	0.3728	0.210	0.28	2.0	1.70	7	0.188	4.77	23	24	no	zero	0.00
229.9	2.1	7.1	92	18	109	0.58	766	766	766	67.46	0.3199	1.70	107.74	0.48	0.98	no	0.3726	0.210	0.28	2.0	1.70	7	0.188	4.77	23	24	no	zero	0.00
229.8	2.2	7.2	92	18	109	0.59	784	784	784	65.85	0.2848	1.70	105.14	0.44	0.98	no	0.3723	0.200	0.27	2.0	1.68	7	0.189	4.77	22	23	no	zero	0.00
229.6	2.2	7.4	92	18	109	0.59	801	801	801	65.09	0.2895	1.70	103.90	0.45	0.98	no	0.3720	0.200	0.27	2.0	1.69	7	0.188	4.77	22	23	no	zero	0.00
229.5	2.3	7.5	92	18	109	0.59	819	819	819	63.37	0.2795	1.70	101.13	0.44	0.98	no	0.3718	0.200	0.27	2.0	1.70	7	0.188	4.76	21	22	no	zero	0.00
229.3	2.3	7.7	92	18	109	0.60	837	837	837	62.4	0.2912	1.70	99.55	0.47	0.98	no	0.3715	0.193	0.26	2.0	1.72	8	0.188	4.76	21	22	no	zero	0.00
229.1	2.4	7.9	92	18	109	0.60	855	855	855	61.41	0.2712	1.70	97.95	0.44	0.98	no	0.3712	0.183	0.25	2.0	1.71	7	0.188	4.76	21	22	no	zero	0.00
229.0	2.4	8.0	92	18	109	0.60	873	873	873	61.59	0.2913	1.70	98.22	0.48	0.98	no	0.3710	0.193	0.26	2.0	1.73	8	0.187	4.76	21	22	no	zero	0.00
228.8	2.5	8.2	92	18	109	0.61	890	890	890	57.86	0.2878	1.70	92.09	0.50	0.98	no	0.3707	0.197	0.27	2.0	1.76	8	0.186	4.75	19	20	no	zero	0.00
228.6	2.5	8.4	92	18	109	0.62	908	908	908	55.3	0.2893	1.69	87.55	0.53	0.98	no	0.3704	0.183	0.25	2.0	1.79	9	0.185	4.74	18	19	no	zero	0.00
228.5	2.6	8.5	92	18	109	0.61	926	926	926	56.8	0.3554	1.66	88.48	0.63	0.98	no	0.3702	0.203	0.27	2.0	1.83	10	0.184	4.73	19	20	no	zero	0.00
228.3	2.6	8.7	92	18	109	0.59	944	944	944	63.18	0.4176	1.62	95.73	0.67	0.97	no	0.3699	0.217	0.29	2.0	1.82	10	0.184	4.74	20	21	no	zero	0.00
228.1	2.7	8.9	92	18	109	0.57	962	962	962	72.52	0.4792	1.56	106.42	0.67	0.97	no	0.3696	0.230	0.31	2.0	1.78	9	0.186	4.75	22	23	no	zero	0.00
228.0	2.7	9.0	92	18	109	0.54	979	979	979	81.09	0.459	1.52	115.76	0.57	0.97	no	0.3693	0.225	0.30	2.0	1.71	7	0.188	4.76	24	25	no	zero	0.00
227.8	2.8	9.2	92	18	109	0.53	997	997	997	84.68	0.4199	1.49	118.90	0.50	0.97	no	0.3691	0.217	0.29	2.0	1.67	7	0.189	4.77	25	26	no	zero	0.00
227.6	2.8	9.4	92	18	109	0.52	1015	1015	1015	88.52	0.3887	1.47	122.29	0.44	0.97	no	0.3688	0.213	0.29	2.0	1.63	6	0.190	4.78	26	27	no	zero	0.00
227.5	2.9	9.5	92	18	109	0.51	1033	1033	1033	92.66	0.4232	1.45	125.97	0.46	0.97	no	0.3685	0.223	0.30	2.0	1.63	6	0.190	4.78	26	27	no	zero	0.00
227.3	2.9	9.7	92	18	109	0.52	1051	1051	1051	92.02	0.4767	1.44	124.12	0.52	0.97	no	0.3682	0.223	0.30	2.0	1.66	6	0.189	4.77	26	27	no	zero	0.00
227.2	3.0	9.8	92	18	109	0.52	1069	1069	1069	89.18	0.4945	1.43	119.77	0.56	0.97	no	0.3679	0.225	0.30	2.0	1.69	7	0.188	4.77	25	26	no	zero	0.00
227.0	3.0	10.0	92	18	109	0.53	1086	1086	1086	86.34	0.4958	1.42	115.45	0.58	0.97	no	0.3676	0.225	0.30	2.0	1.72	7	0.188	4.76	24	25	no	zero	0.00
226.8	3.1	10.2	92	18	109	0.54	1104	1104	1104	83.51	0.4742	1.42	111.19	0.57	0.97	no	0.3674	0.225	0.30	2.0	1.73	8	0.187	4.76	23	24	no	zero	0.00
226.7	3.1	10.3	92	18	109	0.53	1122	1122	1122	85.27	0.4692	1.40	112.25	0.55	0.97	no	0.3671	0.225	0.30	2.0	1.72	7	0.188	4.76	24	25	no	zero	0.00
226.5	3.2	10.5	92	18	109	0.54	1140	1140	1140	83.42	0.398	1.39	109.18	0.48	0.97	no	0.3668	0.210	0.28	2.0	1.69	7	0.189	4.77	23	24	no	zero	0.00
226.3	3.2	10.7	92	18	109	0.55	1158	1158	1158	79.42	0.3597	1.39	103.68	0.46	0.97	no	0.3665	0.210	0.28	2.0	1.70	7	0.188	4.76	22	23	no	zero	0.00

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
226.2	3.3	10.8	92	18	109	0.58	1175	1175	1175	68.07	0.3618	1.41	89.65	0.54	0.96	no	0.3662	0.183	0.25	2.0	1.79	9	0.185	4.74	19	20	no	zero	0.00
226.0	3.3	11.0	92	18	109	0.63	1193	1193	1193	53.57	0.3965	1.43	71.65	0.75	0.96	no	0.3659	0.200	0.27	2.0	1.95	13	0.179	4.70	15	17	no	zero	0.00
225.8	3.4	11.2	92	18	109	0.66	1211	1211	1211	44.67	0.5499	1.44	60.16	1.25	0.96	no	0.3656	0.245	0.33	2.0	2.14	18	0.170	4.63	13	17	no	zero	0.00
225.7	3.4	11.3	92	18	109	0.66	1229	1229	1229	44.85	0.6935	1.43	59.79	1.57	0.96	no	0.3653	0.248	0.33	2.0	2.21	20	0.167	4.61	13	18	no	zero	0.00
225.5	3.5	11.5	92	18	109	0.66	1247	1247	1247	43.96	0.6525	1.42	58.13	1.51	0.96	no	0.3650	0.248	0.33	2.0	2.21	20	0.167	4.61	13	18	no	zero	0.00
225.4	3.5	11.6	92	18	109	0.66	1264	1264	1264	45.52	0.5122	1.40	59.46	1.14	0.96	no	0.3647	0.215	0.29	2.0	2.12	18	0.171	4.64	13	17	no	zero	0.00
225.2	3.6	11.8	92	18	109	0.65	1282	1282	1282	46.48	0.5043	1.39	60.05	1.10	0.96	no	0.3644	0.230	0.31	2.0	2.11	17	0.172	4.65	13	17	no	zero	0.00
225.0	3.6	12.0	92	18	109	0.66	1300	1300	1300	44.75	0.6355	1.38	57.45	1.44	0.96	no	0.3641	0.248	0.33	2.0	2.20	20	0.167	4.61	12	16	no	zero	0.00
224.9	3.7	12.1	92	18	109	0.65	1318	1318	1309	47.65	0.6074	1.36	60.34	1.29	0.96	no	0.3662	0.245	0.33	2.0	2.15	18	0.170	4.63	13	18	no	zero	0.00
224.7	3.7	12.3	92	18	109	0.65	1336	1336	1317	47.61	0.4318	1.35	59.76	0.92	0.96	no	0.3687	0.195	0.26	2.0	2.07	16	0.174	4.66	13	17	no	zero	0.00
224.5	3.8	12.5	92	18	109	0.67	1353	1353	1324	42.85	0.2865	1.35	53.68	0.68	0.96	no	0.3712	0.150	0.20	2.0	2.03	15	0.175	4.67	11	13	no	zero	0.00
224.4	3.8	12.6	92	18	109	0.68	1371	1371	1332	40.24	0.2846	1.34	50.15	0.72	0.96	no	0.3737	0.160	0.22	2.0	2.07	16	0.174	4.66	11	15	no	zero	0.00
224.2	3.9	12.8	92	18	109	0.68	1389	1389	1339	38.69	0.4679	1.33	47.90	1.23	0.96	no	0.3760	0.211	0.29	2.0	2.22	21	0.166	4.60	10	14	no	zero	0.00
224.0	3.9	13.0	92	18	109	0.70	1407	1407	1347	35.29	0.7602	1.33	43.50	2.20	0.95	no	0.3784	0.290	0.39	2.0	2.41	28	0.154	4.51	10	15	no	zero	0.00
223.9	4.0	13.1	92	18	109	0.69	1425	1425	1355	36.55	0.9741	1.32	44.57	2.72	0.95	no	0.3807	0.290	0.39	2.0	2.46	30	0.151	4.48	10	15	no	zero	0.00
223.7	4.0	13.3	92	18	109	0.67	1442	1442	1362	41.26	0.9433	1.29	49.59	2.33	0.95	no	0.3830	0.295	0.40	2.0	2.38	27	0.156	4.53	11	16	no	zero	0.00
223.5	4.1	13.5	92	18	109	0.65	1460	1460	1370	46.6	0.6994	1.27	55.20	1.52	0.95	no	0.3853	0.248	0.33	2.0	2.23	21	0.166	4.60	12	17	no	zero	0.00
223.4	4.1	13.6	92	18	109	0.64	1478	1478	1377	50.69	0.5968	1.26	59.31	1.19	0.95	no	0.3875	0.215	0.29	2.0	2.14	18	0.170	4.64	13	17	no	zero	0.00
223.2	4.2	13.8	92	18	109	0.64	1496	1496	1385	50.73	0.683	1.25	58.89	1.37	0.95	no	0.3897	0.233	0.31	2.0	2.17	19	0.168	4.62	13	17	no	zero	0.00
223.1	4.2	13.9	92	18	109	0.65	1514	1514	1392	48.12	0.8295	1.24	55.57	1.75	0.95	no	0.3918	0.265	0.36	2.0	2.26	22	0.163	4.58	12	17	no	zero	0.00
222.9	4.3	14.1	92	18	109	0.66	1532	1532	1400	45.34	1.0355	1.24	52.08	2.32	0.95	no	0.3940	0.300	0.41	2.0	2.36	26	0.157	4.54	11	17	no	zero	0.00
222.7	4.3	14.3	92	18	109	0.67	1549	1549	1408	42.96	1.3363	1.23	49.07	3.17	0.95	no	0.3960	0.295	0.40	2.0	2.48	31	0.150	4.47	11	17	no	zero	0.00
222.6	4.4	14.4	92	18	109	0.68	1567	1567	1415	40.8	1.4942	1.23	46.32	3.73	0.95	no	0.3981	0.295	0.40	2.0	2.54	34	0.144	4.43	10	16	no	zero	0.00
222.4	4.4	14.6	92	18	109	0.66	1585	1585	1423	44.4	1.5471	1.21	49.87	3.55	0.95	no	0.4001	0.295	0.40	2.0	2.50	32	0.147	4.46	11	17	no	zero	0.00
222.2	4.5	14.8	92	18	109	0.63	1603	1603	1430	52.75	1.4608	1.19	58.46	2.81	0.95	no	0.4021	0.300	0.41	2.0	2.38	27	0.156	4.52	13	19	no	zero	0.00
222.1	4.5	14.9	92	18	109	0.60	1621	1621	1438	60.13	1.0256	1.17	65.85	1.73	0.94	no	0.4041	0.275	0.37	2.0	2.20	20	0.167	4.61	14	19	no	zero	0.00
221.9	4.6	15.1	92	18	109	0.58	1638	1638	1445	66.22	0.6897	1.16	71.78	1.05	0.94	no	0.4060	0.260	0.35	2.0	2.04	15	0.175	4.67	15	17	no	zero	0.00
221.7	4.6	15.3	92	18	109	0.56	1656	1656	1453	74.01	0.5137	1.15	79.37	0.70	0.94	no	0.4079	0.200	0.27	2.0	1.90	11	0.181	4.72	17	19	no	zero	0.00
221.6	4.7	15.4	92	18	109	0.55	1674	1674	1461	80.42	0.4306	1.14	85.45	0.54	0.94	no	0.4098	0.183	0.25	2.0	1.81	9	0.185	4.74	18	19	no	zero	0.00
221.4	4.7	15.6	92	18	109	0.53	1692	1692	1468	86.35	0.4012	1.13	90.98	0.47	0.94	no	0.4117	0.193	0.26	2.0	1.75	8	0.187	4.75	19	20	no	zero	0.00
221.3	4.8	15.7	92	18	109	0.53	1710	1710	1476	84.5	0.3877	1.12	88.59	0.46	0.94	no	0.4135	0.177	0.24	2.0	1.76	8	0.186	4.75	19	20	no	zero	0.00
221.1	4.8	15.9	92	18	109	0.55	1727	1727	1483	78.11	0.4315	1.12	81.64	0.56	0.94	no	0.4153	0.193	0.26	2.0	1.83	10	0.184	4.73	17	18	no	zero	0.00
220.9	4.9	16.1	92	18	109	0.57	1745	1745	1491	71.21	0.5435	1.12	74.19	0.77	0.94	no	0.4171	0.210	0.28	2.0	1.95	13	0.179	4.70	16	18	no	zero	0.00
220.8	4.9	16.2	92	18	109	0.57	1763	1763	1498	69.94	0.7616	1.11	72.47	1.10	0.94	no	0.4188	0.260	0.35	2.0	2.05	15	0.175	4.67	16	21	no	zero	0.00
220.6	5.0	16.4	92	18	109	0.56	1781	1781	1506	73.05	0.7677	1.10	75.17	1.06	0.94	no	0.4205	0.260	0.35	2.0	2.02	15	0.176	4.68	16	18	no	zero	0.00
220.4	5.0	16.6	92	18	109	0.55	1799	1799	1514	78.08	0.5968	1.09	79.77	0.77	0.94	no	0.4222	0.210	0.28	2.0	1.92	12	0.180	4.71	17	19	no	zero	0.00
220.3	5.1	16.7	92	18	109	0.54	1816	1816	1521	81.77	0.4371	1.09	83.00	0.54	0.94	no	0.4239	0.183	0.25	2.0	1.82	10	0.184	4.74	18	19	no	zero	0.00
220.1	5.1	16.9	92	18	109	0.55	1834	1834	1529	78.02	0.3171	1.08	78.84	0.41	0.93	no	0.4255	0.150	0.20	2.0	1.78	9	0.186	4.75	17	18	no	zero	0.00
219.9	5.2	17.1	92	18	109	0.57	1852	1852	1536	72.65	0.3293	1.08	73.09	0.46	0.93	no	0.4271	0.160	0.22	2.0	1.83	10	0.184	4.73	15	16	no	zero	0.00
219.8	5.2	17.2	92	18	109	0.58	1870	1870	1544	67.06	0.4002	1.07	67.16	0.61	0.93	no	0.4287	0.177	0.24	2.0	1.92	12	0.180	4.71	14	16	no	zero	0.00
219.6	5.3	17.4	92	18	109	0.58	1888	1888	1551	66.54	0.5085	1.07	66.26	0.78	0.93	no	0.4303	0.200	0.27	2.0	1.99	14	0.178	4.69	14	16	no	zero	0.00
219.4	5.3	17.6	92	18	109	0.58	1905	1905	1559	66.38	0.6454	1.06	65.73	0.99	0.93	no	0.4318	0.235	0.32	2.0	2.05	15	0.175	4.67	14	19	no	zero	0.00
219.3	5.4	17.7	92	18	109	0.59	1923	1923	1567	63.29	0.7932	1.06	62.34	1.27	0.93	no	0.4333	0.245	0.33	2.0	2.14	18	0.170	4.64	13	18	no	zero	0.00
219.1	5.4	17.9	92	18	109	0.62	1941	1941	1574	54.65	0.9969	1.06	53.53	1.86	0.93	no	0.4348	0.280	0.38	2.0	2.29	23	0.162	4.57	12	17	no	zero	0.00
219.0	5.5	18.0	92	18	109	0.65	1959	1959	1582	45.89	1.2475	1.05	44.64	2.78	0.93	no	0.4363	0.290	0.39	2.0	2.47	30	0.150	4.48	10	16	no	zero	0.00
218.8	5.5	18.2	92	18	109	0.67	1977	1977	1589	42.01	1.479	1.05	40.58	3.61	0.93	no	0.4377	0.290	0.39	2.0	2.57	35	0.142	4.41	9	16	no	zero	0.00
218.6	5.6	18.4	92	18	109	0.69	1995	1995	1597	38.21	1.6646	1.04	36.63	4.47	0.93	no	0.4391	0.285	0.38	2.0	2.67	40	0.134	4.34	8	15	no	zero	0.00
218.5	5.6	18.5	92	18	109	0.71	2012	2012	1604	33.78	1.6157	1.04	32.09	4.93	0.93	no	0.4405	0.280	0.38	2.0	2.74	44	0.128	4.29	7	13	no	zero	0.00
218.3	5.7	18.7	92	18	109	0.71	2030	2030	1612	33.53	1.54	1.03	31.64	4.74	0.92	no	0.4419	0.280	0.38	2.0	2.73	43	0.129	4.29	7	13	no	zero	0.00
218.1	5.7	18.9	92	18	109	0.67	2048	2048	1620	41.17	1.3515	1.02	38.78	3.37	0.92	no	0.4433	0.285	0.38	2.0	2.57	35	0.143	4.42	9	15	no	zero	0.00
218.0	5.8	19.0	92	18	109	0.64	2066	2066	1627	49.85	1.1163	1.02	46.85	2.29	0.92	no	0.4446	0.295	0.40	2.0	2.39	27	0.155	4.52	10	15	no	zero	0.00
217.8	5.8	19.2	92	18	109	0.62	2084	2084	1635	56.14	0.9235	1.01	52.57	1.68	0.92	no	0.4459	0.260	0.35	2.0	2.27	22	0.163	4.58	11	16	no	zero	0.00
217.6	5.9	19.4	92	18	109	0.59	2101	2101	1642	63.61	0.8347	1.00	59.36	1.33	0.92	no	0.4472	0.233	0.31	2.0	2.17	19	0.169	4.63	13	17	no	zero	0.00
217.5	5.9	19.5	92	18	109	0.57	2119	2119	1650	72.14	0.7646	1.00	67.12	1.08	0.92	no	0.4485	0.245	0.33	2.0	2.07	16	0.174	4.66	14	19	no	zero	0.00
217.3	6.0	19.7	92	18	109	0.54	2137	2137	1657	80.48	0.659	0.99	74.64	0.83	0.92	no	0.4498	0.220	0.30	2.0	1.96	13	0.179	4.70	16	18	no	zero	0.00
217.2	6.0	19.8	92	18	109	0.51	2155	2155	1665	92.89	0.4953	0.99	85.96	0.54	0.92	no	0.4510	0.183	0.25	2.0	1.81	9	0.185	4.74	18	19	no	zero	0.00
217.0	6.1	20.0	92	18	109	0.50	2173	2173	1673	101.14	0.4736	0.99	93.32	0.47	0.92	no	0.4522	0.193	0.26	2.0	1.75	8	0.187	4.75	20	21	no	zero	0.00
216.8	6.1	20.2	92	18	109	0.49	2190	2190	1680	104.67	0.4741	0.98	96.24	0.46	0.92	no	0.4534	0.193	0.26	2.0	1.73	8	0.187	4.76	20	21	no	zero	0.00
216.7	6.2	20.3	92	18	109	0.48	2208	2208	1688	109.75	0.521	0.98	100.60	0.48	0.92	no	0.4546	0.210	0.28	2.0	1.72	8	0.188	4.76	21	22	no	zero	0.00
216.5	6.2	20.5	92	18	109	0.47	2226	2226	1695	114.36	0.5864	0.98	104.51	0.52	0.91	no	0.4557	0.210	0.28	2.0	1.73	8	0.187	4.76	22	23	no	zero	0.00
216.3	6.3	20.7	92	18	109	0.45	2244	2244	1703	124.29	0.6142	0.97	113.37	0.50	0.91	no	0.4569	0.217	0.29	2.0	1.69	7	0.189	4.77	24	25	no	zero	0.00
216.2	6.3	20.8	92	18	109	0.43	2262	2262	1710	135.9	0.6116	0.97	123.78	0.45	0.91	no	0.4580	0.223	0.30	2.0	1.63	6	0.190	4.78	26	27	no	zero	0.00
216.0	6.4	21.0	92	18	109	0.43	2279	2279	1718	135.47	0.6025	0.97	122.96	0.45	0.91	no	0.4591	0.213	0.29	2.0	1.63	6	0.190	4.78	26	27	no	zero	0.00
215.8	6.4	21.2	92	18	109	0.45	2297	2297	1726	125.95	0.5428	0.96	113.70	0.43	0.91	no	0.4602	0.207	0.28	2.0	1.65	6	0.190	4.77	24	25	no	zero	0.00
215.7	6.5	21.3	92	18	109	0.46	2315	2315	1733	118.67	0.5845	0.96	106.55	0.50	0.91	no	0.4613	0.210	0.28	2.0	1.71	7	0.188	4.76	22	23	no	zero	0.00
215.5	6.5	21.5	92	18	109	0.47	2333	2333	1741	114.46	0.6614	0.96	102.29	0.58	0.91	no	0.4623	0.220	0.30	2.0	1.76	8	0.186	4.75	22	23	no	zero	0.00
215.3	6.6	21.7	92	18	109	0.46	2351	2351	1748	117.01	0.7572	0.95	104.26	0.65	0.91	no	0.4633	0.230	0.31	2.0	1.78	9	0.186	4.75	22	23	no	zero	0.00
215.2	6.6	21.8	92	18	109	0.46	2369	2369	1756	118.43	0.8578	0.95	105.20	0.73	0.91	no	0.4644	0.240	0.32	2.0	1.81	9	0.185	4.74	22	23	no	zero	0.00
215.0	6.7	22.0	92	18	109	0.46	2386	2386	1763	118.96	0.8967	0.95	105.32	0.76	0.91	no	0.4653	0.240	0.32	2.0	1.82	10	0.184	4.74	22	23	no	zero	0.00
214.9	6.7	22.1	92	18	109	0.45	2404	2404	1771	123.43	0.9604	0.94	109.05	0.79	0.90	no	0.4663	0.240	0.32	2.0	1.82	9	0.184	4.74	23	24	no	zero	0.00
214.7	6.8	22.3	92	18	109	0.44	2422	2422	1779	129.8	0.9818	0.94	114.53	0.76	0.90	no	0.4673	0.243	0.33	2.0	1.79	9	0.185	4.74	24	25	no	zero	0.00
214.5	6.8	22.5	92	18	109	0.43	2440	2440	1786	135.98	0.9743	0.94	119.83	0.72	0.90	no	0.4682	0.243	0.33	2.0	1.76	8	0.186	4.75	25	26	no	zero	0.00
214.4	6.9	22.6	92	18	109	0.42	2458	2458	1794	142.79	0.9197	0.94	125.71	0.65	0.90	no	0.4692	0.237	0.32	2.0	1.72	7	0.188	4.76	26	27	no	zero	0.00
214.2	6.9	22.8	92	18	109	0.41	2475	2475	1801	146.79	0.8756	0.94	129.00	0.60	0.90	no	0.4701	0.237	0.32	2.0	1.69	7	0.189	4.77	27	28	no	zero	0.00
214.0	7.0	23.0	92	18	109	0.40	2493	2493	1809	154.54	0.8523	0.94	135.75	0.56	0.90	no	0.4710	0.235	0.32	2.0	1.65	6	0.190	4.77	28	29	no	zero	0.00
213.9	7.0	23.1	92	18	109	0.39	2511	2511	1816	156.88	0.9037	0.94	137.51	0.58	0.90	no	0.4719	0.235	0.32	2.0	1.66	6	0.190	4.77	29	30	no	zero	0.00

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective Current GW	Effective HHGWL	Tip Resistance	Sleeve Friction																		
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
213.7	7.1	23.3	92	18	109	0.39	2529	2529	1824	155.5	1.1148	0.93	135.86	0.72	0.90	no	0.4727	0.250	0.34	2.0	1.72	7	0.188	4.76	29	30	no	zero	0.00
213.5	7.1	23.5	92	18	109	0.38	2547	2547	1832	161.87	1.2834	0.93	141.33	0.80	0.90	no	0.4736	0.253	0.34	2.0	1.73	8	0.187	4.76	30	31	no	zero	0.00
213.4	7.2	23.6	92	18	109	0.36	2564	2564	1839	175.11	1.2863	0.93	153.15	0.74	0.90	no	0.4744	0.257	0.35	2.0	1.68	7	0.189	4.77	32	33	no	zero	0.00
213.2	7.2	23.8	92	18	109	0.37	2582	2582	1847	171.39	1.1666	0.93	149.33	0.69	0.90	no	0.4753	0.250	0.34	2.0	1.67	7	0.189	4.77	31	32	no	zero	0.00
213.0	7.3	24.0	92	18	109	0.39	2600	2600	1854	157.84	0.9264	0.92	136.49	0.59	0.89	no	0.4761	0.235	0.32	2.0	1.66	6	0.189	4.77	29	30	no	zero	0.00
212.9	7.3	24.1	92	18	109	0.41	2618	2618	1862	147.37	0.777	0.92	126.55	0.53	0.89	no	0.4769	0.223	0.30	2.0	1.66	6	0.189	4.77	27	28	no	zero	0.00
212.7	7.4	24.3	92	18	109	0.42	2636	2636	1869	142.86	0.6983	0.91	122.10	0.49	0.89	no	0.4777	0.223	0.30	2.0	1.66	6	0.190	4.77	26	27	no	zero	0.00
212.6	7.4	24.4	92	18	109	0.42	2653	2653	1877	140.81	0.7533	0.91	119.89	0.54	0.89	no	0.4784	0.217	0.29	2.0	1.69	7	0.189	4.77	25	26	no	zero	0.00
212.4	7.5	24.6	92	18	109	0.41	2671	2671	1885	143.77	0.8072	0.91	122.23	0.57	0.89	no	0.4792	0.230	0.31	2.0	1.69	7	0.189	4.77	26	27	no	zero	0.00
212.2	7.5	24.8	92	18	109	0.41	2689	2689	1892	147.34	0.8745	0.91	125.12	0.60	0.89	no	0.4799	0.230	0.31	2.0	1.70	7	0.188	4.77	26	27	no	zero	0.00
212.1	7.6	24.9	92	18	109	0.41	2707	2707	1900	147.06	0.8741	0.90	124.52	0.60	0.89	no	0.4806	0.230	0.31	2.0	1.70	7	0.188	4.76	26	27	no	zero	0.00
211.9	7.6	25.1	92	18	109	0.41	2725	2725	1907	144.26	0.7911	0.90	121.65	0.55	0.89	no	0.4814	0.230	0.31	2.0	1.69	7	0.189	4.77	26	27	no	zero	0.00
211.7	7.7	25.3	92	18	109	0.41	2742	2742	1915	145.5	0.7848	0.90	122.43	0.54	0.89	no	0.4821	0.223	0.30	2.0	1.68	7	0.189	4.77	26	27	no	zero	0.00
211.6	7.7	25.4	92	18	109	0.40	2760	2760	1922	150.45	0.8154	0.90	126.57	0.55	0.89	no	0.4827	0.223	0.30	2.0	1.67	7	0.189	4.77	27	28	no	zero	0.00
211.4	7.8	25.6	92	18	109	0.40	2778	2778	1930	153.55	0.859	0.90	129.04	0.56	0.88	no	0.4834	0.230	0.31	2.0	1.67	7	0.189	4.77	27	28	no	zero	0.00
211.2	7.8	25.8	92	18	109	0.40	2796	2796	1938	149.75	0.8156	0.89	125.27	0.55	0.88	no	0.4841	0.223	0.30	2.0	1.67	7	0.189	4.77	26	27	no	zero	0.00
211.1	7.9	25.9	92	18	109	0.42	2814	2814	1945	141.98	0.6942	0.89	117.96	0.49	0.88	no	0.4847	0.217	0.29	2.0	1.67	7	0.189	4.77	25	26	no	zero	0.00
210.9	7.9	26.1	92	18	109	0.43	2832	2832	1953	134.98	0.6338	0.88	111.39	0.47	0.88	no	0.4854	0.217	0.29	2.0	1.68	7	0.189	4.77	23	24	no	zero	0.00
210.8	8.0	26.2	92	18	109	0.45	2849	2849	1960	126.1	0.6698	0.88	103.20	0.54	0.88	no	0.4860	0.210	0.28	2.0	1.74	8	0.187	4.76	22	23	no	zero	0.00
210.6	8.0	26.4	92	18	109	0.43	2867	2867	1968	136.77	0.7315	0.88	112.37	0.54	0.88	no	0.4866	0.217	0.29	2.0	1.71	7	0.188	4.76	24	25	no	zero	0.00
210.4	8.1	26.6	92	18	109	0.42	2885	2885	1975	141.71	0.833	0.88	116.47	0.59	0.88	no	0.4872	0.225	0.30	2.0	1.72	7	0.188	4.76	24	25	no	zero	0.00
210.3	8.1	26.7	92	18	109	0.41	2903	2903	1983	143.71	0.8107	0.88	117.95	0.57	0.88	no	0.4878	0.225	0.30	2.0	1.71	7	0.188	4.76	25	26	no	zero	0.00
210.1	8.2	26.9	92	18	109	0.43	2921	2921	1991	135.25	0.7216	0.87	110.12	0.54	0.88	no	0.4883	0.217	0.29	2.0	1.72	7	0.188	4.76	23	24	no	zero	0.00
209.9	8.2	27.1	92	18	109	0.45	2938	2938	1998	125.78	0.6674	0.86	101.48	0.54	0.88	no	0.4889	0.210	0.28	2.0	1.74	8	0.187	4.75	21	22	no	zero	0.00
209.8	8.3	27.2	92	18	109	0.46	2956	2956	2006	116.37	0.7391	0.86	92.97	0.64	0.87	no	0.4895	0.217	0.29	2.0	1.82	10	0.184	4.74	20	21	no	zero	0.00
209.6	8.3	27.4	92	18	109	0.46	2974	2974	2013	116.16	0.9677	0.85	92.52	0.84	0.87	no	0.4900	0.240	0.32	2.0	1.89	11	0.182	4.72	20	22	no	zero	0.00
209.4	8.4	27.6	92	18	109	0.47	2992	2992	2021	115.03	1.2858	0.85	91.28	1.13	0.87	no	0.4905	0.273	0.37	2.0	1.98	13	0.178	4.69	19	21	no	zero	0.00
209.3	8.4	27.7	92	18	109	0.44	3010	3010	2028	129.39	1.382	0.86	103.53	1.08	0.87	no	0.4910	0.280	0.38	2.0	1.92	12	0.180	4.71	22	24	no	zero	0.00
209.1	8.5	27.9	92	18	109	0.42	3027	3027	2036	137.81	1.3511	0.86	110.65	0.99	0.87	no	0.4915	0.273	0.37	2.0	1.87	11	0.182	4.72	23	25	no	zero	0.00
208.9	8.5	28.1	92	18	109	0.40	3045	3042	2044	154.05	1.2092	0.87	124.80	0.79	0.87	yes	0.4920	0.247	0.33	0.7	1.77	9	0.186	4.75	26	27	0.010	0.02	0.02
208.8	8.6	28.2	92	18	109	0.35	3063	3050	2051	183.47	1.1266	0.88	151.16	0.62	0.87	yes	0.4925	0.247	0.33	0.7	1.64	6	0.190	4.78	32	33	0.001	0.00	0.02
208.6	8.6	28.4	92	18	109	0.35	3081	3057	2059	183.48	1.2326	0.88	151.03	0.68	0.87	yes	0.4930	0.255	0.34	0.7	1.66	6	0.189	4.77	32	33	0.001	0.00	0.02
208.5	8.7	28.5	92	18	109	0.40	3099	3065	2066	151.89	1.4405	0.86	122.49	0.96	0.87	yes	0.4935	0.277	0.37	0.8	1.83	10	0.184	4.73	26	27	0.010	0.02	0.04
208.3	8.7	28.7	92	18	109	0.44	3116	3072	2074	126.61	1.8798	0.85	100.13	1.50	0.87	yes	0.4939	0.290	0.39	0.8	2.03	15	0.176	4.68	21	23	0.015	0.03	0.07
208.1	8.8	28.9	92	18	109	0.43	3134	3080	2082	133.54	2.2176	0.85	106.06	1.68	0.86	yes	0.4943	0.300	0.41	0.8	2.04	15	0.175	4.67	23	29	0.010	0.02	0.09
208.0	8.8	29.0	92	18	109	0.44	3152	3087	2089	131	2.9066	0.85	103.72	2.25	0.86	no	0.4948	0.330	0.45	2.0	2.14	18	0.170	4.64	22	28	no	zero	0.09
207.8	8.9	29.2	92	18	109	0.45	3170	3095	2097	122.51	3.2992	0.84	96.23	2.73	0.86	no	0.4952	0.320	0.43	2.0	2.23	21	0.166	4.60	21	27	no	zero	0.09
207.6	8.9	29.4	92	18	109	0.49	3188	3103	2104	104.71	3.7532	0.83	80.85	3.64	0.86	no	0.4956	0.310	0.42	2.0	2.37	26	0.157	4.53	18	25	no	zero	0.09
207.5	9.0	29.5	92	18	109	0.51	3206	3110	2112	95.81	3.8846	0.82	73.22	4.12	0.86	no	0.4960	0.300	0.41	2.0	2.44	29	0.152	4.50	16	22	no	zero	0.09
207.3	9.0	29.7	92	18	109	0.53	3223	3118	2119	87.48	3.6438	0.82	66.15	4.24	0.86	no	0.4964	0.300	0.41	2.0	2.48	31	0.149	4.47	15	22	no	zero	0.09
207.1	9.1	29.9	92	18	109	0.52	3241	3125	2127	90.16	3.4585	0.82	68.29	3.91	0.86	no	0.4968	0.300	0.41	2.0	2.44	29	0.152	4.49	15	21	no	zero	0.09
207.0	9.1	30.0	92	18	109	0.52	3259	3133	2135	89.04	2.6685	0.81	67.26	3.05	0.86	no	0.4972	0.300	0.41	2.0	2.37	26	0.157	4.53	15	21	no	zero	0.09
206.8	9.2	30.2	92	18	109	0.49	3277	3140	2142	102.12	2.1494	0.82	78.14	2.14	0.86	no	0.4975	0.300	0.41	2.0	2.21	20	0.166	4.61	17	22	no	zero	0.09
206.7	9.2	30.3	92	18	109	0.49	3295	3148	2150	103.41	1.7894	0.82	79.13	1.76	0.86	yes	0.4979	0.280	0.38	0.8	2.15	18	0.170	4.63	17	22	0.015	0.03	0.12
206.5	9.3	30.5	92	18	109	0.51	3312	3156	2157	94.88	2.14	0.82	71.86	2.30	0.85	no	0.4982	0.300	0.41	2.0	2.26	22	0.164	4.59	16	21	no	zero	0.12
206.3	9.3	30.7	92	18	109	0.59	3330	3163	2165	66.05	2.4562	0.79	48.09	3.81	0.85	no	0.4985	0.295	0.40	2.0	2.54	33	0.145	4.44	11	17	no	zero	0.12
206.2	9.4	30.8	92	18	109	0.65	3348	3171	2172	47.49	2.6024	0.77	33.32	5.68	0.85	no	0.4989	0.280	0.38	2.0	2.77	45	0.125	4.26	8	14	no	zero	0.12
206.0	9.4	31.0	92	18	109	0.66	3366	3178	2180	44.91	2.5177	0.77	31.26	5.82	0.85	no	0.4992	0.280	0.38	2.0	2.80	47	0.122	4.24	7	13	no	zero	0.12
205.8	9.5	31.2	92	18	109	0.68	3384	3186	2188	39.82	2.0508	0.76	27.29	5.38	0.85	no	0.4995	0.274	0.37	2.0	2.82	48	0.121	4.22	6	12	no	zero	0.12
205.7	9.5	31.3	92	18	109	0.67	3401	3193	2195	40.97	1.7783	0.76	28.12	4.53	0.85	no	0.4998	0.274	0.37	2.0	2.76	45	0.126	4.27	7	13	no	zero	0.12
205.5	9.6	31.5	92	18	109	0.68	3419	3201	2203	38.67	1.4272	0.75	26.31	3.86	0.85	no	0.5001	0.274	0.37	2.0	2.73	43	0.129	4.30	6	12	no	zero	0.12
205.3	9.6	31.7	92	18	109	0.71	3437	3209	2210	32.77	1.3894	0.74	21.81	4.47	0.85	no	0.5004	0.269	0.36	2.0	2.84	49	0.119	4.20	5	11	no	zero	0.12
205.2	9.7	31.8	92	18	109	0.69	3455	3216	2218	37.71	1.424	0.75	25.49	3.96	0.85	no	0.5006	0.274	0.37	2.0	2.75	44	0.127	4.28	6	12	no	zero	0.12
205.0	9.7	32.0	92	18	109	0.67	3473	3224	2225	41.57	1.5551	0.75	28.37	3.90	0.85	no	0.5009	0.274	0.37	2.0	2.71	42	0.131	4.31	7	13	no	zero	0.12
204.8	9.8	32.2	92	18	109	0.68	3490	3231	2233	38.66	1.7069	0.75	26.11	4.62	0.84	no	0.5012	0.274	0.37	2.0	2.79	46	0.124	4.25	6	12	no	zero	0.12
204.7	9.8	32.3	92	18	109	0.70	3508	3239	2241	35.75	1.6996	0.74	23.87	5.00	0.84	no	0.5014	0.269	0.36	2.0	2.84	49	0.119	4.20	6	12	no	zero	0.12
204.5	9.9	32.5	92	18	109	0.70	3526	3246	2248	35.74	1.8692	0.74	23.82	5.50	0.84	no	0.5016	0.269	0.36	2.0	2.87	51	0.116	4.17	6	12	no	zero	0.12
204.4	9.9	32.6	92	18	109	0.65	3544	3254	2256	45.96	2.0212	0.75	31.52	4.57	0.84	no	0.5019	0.280	0.38	2.0	2.72	43	0.129	4.30	7	13	no	zero	0.12
204.2	10.0	32.8	92	18	109	0.66	3562	3262	2263	44.73	2.199	0.75	30.52	5.12	0.84	no	0.5021	0.280	0.38	2.0	2.77	45	0.125	4.27	7	13	no	zero	0.12
204.0	10.0	33.0	92	18	109	0.63	3579	3269	2271	51.96	2.3743	0.76	36.02	4.73	0.84	no	0.5023	0.285	0.38	2.0	2.69	41	0.132	4.33	8	15	no	zero	0.12
203.9	10.1	33.1	92	18	109	0.61	3597	3277	2278	58.21	2.5178	0.77	40.83	4.46	0.84	no	0.5025	0.290	0.39	2.0	2.64	38	0.137	4.37	9	16	no	zero	0.12
203.7	10.1	33.3	92	18	109	0.62	3615	3284	2286	55.89	2.4682	0.76	38.95	4.56	0.84	no	0.5027	0.285	0.38	2.0	2.66	39	0.135	4.35	9	16	no	zero	0.12
203.5	10.2	33.5	92	18	109	0.56	3633	3292	2294	74.58	2.2767	0.78	53.67	3.13	0.84	no	0.5029	0.300	0.41	2.0	2.44	29	0.152	4.49	12	18	no	zero	0.12
203.4	10.2	33.6	92	18	109	0.48	3651	3299	2301	107.07	2.4636	0.81	80.25	2.34	0.84	no	0.5031	0.310	0.42	2.0	2.23	21	0.165	4.60	17	23	no	zero	0.12
203.2	10.3	33.8	92	18	109	0.55	3669	3307	2309	77.69	2.8154	0.78	56.02	3.71	0.83	no	0.5033	0.300	0.41	2.0	2.48	31	0.149	4.47	13	20	no	zero	0.12
203.0	10.3	34.0	92	18	109	0.65	3686	3315	2316	48.07	2.3137	0.75	32.69	5.01	0.83	no	0.5034	0.280	0.38	2.0	2.74	44	0.128	4.29	8	14	no	zero	0.12
202.9	10.4	34.1	92	18	109	0.72	3704	3322	2324	31.91	1.6496	0.72	20.56	5.49	0.83	no	0.5036	0.269	0.36	2.0	2.91	54	0.111	4.13	5	10	no	zero	0.12
202.7	10.4	34.3	92	18	109	0.75	3722	3330	2331	25.42	1.2315	0.71	15.83	5.23	0.83	no	0.5038	0.251	0.34	2.0	2.99	59	0.103	4.05	4	9	no	zero	0.12
202.6	10.5	34.4	92	18	109	0.73	3740	3337	2339	29.63	1.0404	0.72	18.82	3.75	0.83	no	0.5039	0.263	0.35	2.0	2.83	49	0.119	4.21	4	9	no	zero	0.12
202.4	10.5	34.6	92	18	109	0.70	3758	3345	2347	34.32	0.7596	0.72	22.20	2.34	0.83	no	0.5041	0.269	0.36	2.0	2.65	39	0.136	4.36	5	11	no	zero	0.12
202.2	10.6	34.8	92	18	109	0.74	3775	3353	2354	27.54	0.8757	0.71	17.24	3.41	0.83	no	0.5042	0.257	0.35	2.0	2.84	49	0.119	4.20	4	9	no	zero	0.12
202.1	10.6	34.9	92	18	109	0.74	3793	3360	2362	27.77	1.1417	0.71	17.37	4.41	0.83	no	0.5043	0.257	0.35	2.0	2.91	53	0.112	4.13	4	9	no	zero	0.12
201.9	10.7	35.1	92	18	109	0.70	3811	3368	2369	35.54	1.5804	0.72	22.97	4.70	0.83	no	0.5044	0.269	0.36	2.0	2.83	49	0.119	4.21	5	11	no	zero	0.12
201.7	10.7	35.3	92	18	109	0.67	3829	3375	2377	41.88	1.7029	0.73	27.62	4.26	0.83	no	0.5045	0.274	0.37	2.0	2.75	44	0.128	4.28	6	12	no	zero	0.12
201.6	10.8	35.4	92	18	109	0.70	3847	3383	2384	34.84	1.4865	0.72	22.38	4.52	0.82	no	0.5047	0.269	0.36	2.0	2.83	49	0.120	4.21	5	11	no	zero	0.12
201.4	10.8	35.6	92	18	109	0.71	3864	3390	2392	33.47	1.2943	0.72	21.34	4.10	0.82	no	0.5048	0.269	0.36	2.0	2.82	48	0.121	4.22	5	11	no	zero	0.12

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	*w*	γ_M	n	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	F	r_d	Liquefiable	CSR	CRR_1	CRR	FS_{liq}	I_c	AFC	D_{50}	q_c/N	N	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
201.2	10.9	35.8	92	18	109	0.71	3882	3398	2400	33.19	1.1823	0.71	21.10	3.78	0.82	no	0.5048	0.269	0.36	2.0	2.80	47	0.123	4.24	5	10	no	zero	0.12
201.1	10.9	35.9	92	18	109	0.72	3900	3406	2407	31.73	1.2072	0.71	20.00	4.05	0.82	no	0.5049	0.269	0.36	2.0	2.84	49	0.119	4.20	5	10	no	zero	0.12
200.9	11.0	36.1	92	18	109	0.71	3918	3413	2415	32.32	1.2007	0.71	20.39	3.95	0.82	no	0.5050	0.269	0.36	2.0	2.82	48	0.120	4.22	5	10	no	zero	0.12
200.7	11.0	36.3	92	18	109	0.74	3936	3421	2422	27.62	1.0538	0.70	16.99	4.11	0.82	no	0.5051	0.257	0.35	2.0	2.89	53	0.113	4.15	4	9	no	zero	0.12
200.6	11.1	36.4	92	18	109	0.76	3953	3428	2430	25.05	1.1623	0.69	15.15	5.04	0.82	no	0.5052	0.251	0.34	2.0	2.99	59	0.103	4.04	4	9	no	zero	0.12
200.4	11.1	36.6	92	18	109	0.75	3971	3436	2437	25.93	1.2552	0.70	15.73	5.24	0.82	no	0.5052	0.251	0.34	2.0	2.99	59	0.103	4.04	4	9	no	zero	0.12
200.3	11.2	36.7	92	18	109	0.74	3989	3443	2445	27.58	1.4533	0.70	16.86	5.68	0.82	no	0.5053	0.257	0.35	2.0	2.99	59	0.103	4.04	4	9	no	zero	0.12
200.1	11.2	36.9	92	18	109	0.70	4007	3451	2453	35.51	1.6608	0.71	22.50	4.96	0.81	no	0.5053	0.269	0.36	2.0	2.86	50	0.117	4.19	5	11	no	zero	0.12
199.9	11.3	37.1	92	18	109	0.69	4025	3459	2460	37.62	1.8612	0.71	23.99	5.23	0.81	no	0.5054	0.269	0.36	2.0	2.85	50	0.118	4.19	6	12	no	zero	0.12
199.8	11.3	37.2	92	18	109	0.67	4043	3466	2468	41.35	2.0358	0.72	26.67	5.18	0.81	no	0.5054	0.274	0.37	2.0	2.81	48	0.121	4.22	6	12	no	zero	0.12
199.6	11.4	37.4	92	18	109	0.66	4060	3474	2475	44.67	2.1489	0.72	29.07	5.04	0.81	no	0.5054	0.274	0.37	2.0	2.78	46	0.124	4.26	7	13	no	zero	0.12
199.4	11.4	37.6	92	18	109	0.67	4078	3481	2483	41.84	2.2602	0.72	26.94	5.68	0.81	no	0.5055	0.274	0.37	2.0	2.84	49	0.119	4.20	6	12	no	zero	0.12
199.3	11.5	37.7	92	18	109	0.71	4096	3489	2490	33.54	1.8972	0.70	20.88	6.02	0.81	no	0.5055	0.269	0.36	2.0	2.94	55	0.109	4.10	5	11	no	zero	0.12
199.1	11.5	37.9	92	18	109	0.73	4114	3496	2498	28.67	1.255	0.69	17.40	4.72	0.81	no	0.5055	0.257	0.35	2.0	2.93	55	0.110	4.11	4	9	no	zero	0.12
198.9	11.6	38.1	92	18	109	0.70	4132	3504	2506	35.88	1.6401	0.70	22.48	4.85	0.81	no	0.5055	0.269	0.36	2.0	2.85	50	0.118	4.19	5	11	no	zero	0.12
198.8	11.6	38.2	92	18	109	0.68	4149	3512	2513	40.42	2.0018	0.71	25.72	5.22	0.81	no	0.5055	0.274	0.37	2.0	2.83	49	0.120	4.21	6	12	no	zero	0.12
198.6	11.7	38.4	92	18	109	0.72	4167	3519	2521	31.55	1.6643	0.69	19.32	5.65	0.81	no	0.5055	0.263	0.35	2.0	2.94	56	0.108	4.10	5	10	no	zero	0.12
198.5	11.7	38.5	92	18	109	0.77	4185	3527	2528	22.07	1.1166	0.67	12.71	5.59	0.80	no	0.5055	0.246	0.33	2.0	3.08	65	0.093	3.93	3	8	no	zero	0.12
198.3	11.8	38.7	92	18	109	0.80	4203	3534	2536	18.99	0.8497	0.66	10.61	5.03	0.80	no	0.5055	0.240	0.32	2.0	3.11	67	0.089	3.89	3	8	no	zero	0.12
198.1	11.8	38.9	92	18	109	0.80	4221	3542	2543	18.35	0.9429	0.66	10.16	5.81	0.80	no	0.5055	0.240	0.32	2.0	3.16	71	0.083	3.81	3	8	no	zero	0.12
198.0	11.9	39.0	92	18	109	0.75	4238	3549	2551	26.09	1.3422	0.68	15.38	5.60	0.80	no	0.5054	0.251	0.34	2.0	3.01	60	0.100	4.01	4	9	no	zero	0.12
197.8	11.9	39.2	92	18	109	0.66	4256	3557	2559	43.67	1.8778	0.71	27.82	4.52	0.80	no	0.5054	0.274	0.37	2.0	2.76	45	0.126	4.27	7	13	no	zero	0.12
197.6	12.0	39.4	92	18	109	0.62	4274	3565	2566	53.86	2.4414	0.72	35.29	4.72	0.80	no	0.5054	0.285	0.38	2.0	2.70	41	0.132	4.32	8	15	no	zero	0.12
197.5	12.0	39.5	92	18	109	0.58	4292	3572	2574	67.92	2.4512	0.74	45.89	3.73	0.80	no	0.5053	0.295	0.40	2.0	2.55	34	0.144	4.43	10	16	no	zero	0.12
197.3	12.1	39.7	92	18	109	0.51	4310	3580	2581	94.62	1.9465	0.76	66.82	2.11	0.80	no	0.5053	0.300	0.41	2.0	2.26	22	0.164	4.59	15	20	no	zero	0.12
197.1	12.1	39.9	92	18	109	0.46	4327	3587	2589	117.96	1.3453	0.78	85.80	1.16	0.80	yes	0.5053	0.267	0.36	0.7	2.00	14	0.177	4.68	18	20	0.015	0.03	0.15
197.0	12.2	40.0	92	18	109	0.45	4345	3595	2596	121.3	0.8353	0.79	88.49	0.70	0.80	yes	0.5052	0.213	0.29	0.6	1.86	10	0.183	4.73	19	21	0.015	0.03	0.18
196.8	12.2	40.2	92	18	109	0.49	4363	3602	2604	102.24	1.0823	0.77	72.73	1.08	0.79	yes	0.5051	0.260	0.35	0.7	2.04	15	0.175	4.67	16	21	0.015	0.03	0.21
196.6	12.3	40.4	92	18	109	0.59	4381	3610	2612	66.09	1.8966	0.73	44.18	2.97	0.79	no	0.5051	0.290	0.39	2.0	2.49	31	0.149	4.47	10	16	no	zero	0.21
196.5	12.3	40.5	92	18	109	0.67	4399	3618	2619	41.83	2.0579	0.70	26.14	5.19	0.79	no	0.5050	0.274	0.37	2.0	2.82	48	0.120	4.22	6	12	no	zero	0.21
196.3	12.4	40.7	92	18	109	0.74	4416	3625	2627	27.41	1.5249	0.67	15.98	6.05	0.79	no	0.5049	0.251	0.34	2.0	3.02	61	0.099	4.00	4	9	no	zero	0.21
196.2	12.4	40.8	92	18	109	0.80	4434	3633	2634	18.88	0.8334	0.65	10.24	5.00	0.79	no	0.5049	0.240	0.32	2.0	3.12	68	0.088	3.87	3	8	no	zero	0.21
196.0	12.5	41.0	92	18	109	0.77	4452	3640	2642	22.06	0.8322	0.66	12.31	4.20	0.79	no	0.5048	0.246	0.33	2.0	3.01	60	0.101	4.02	3	8	no	zero	0.21
195.8	12.5	41.2	92	18	109	0.74	4470	3648	2649	28.49	1.1924	0.67	16.63	4.54	0.79	no	0.5047	0.257	0.35	2.0	2.93	55	0.109	4.11	4	9	no	zero	0.21
195.7	12.6	41.3	92	18	109	0.71	4488	3655	2657	33.28	1.2071	0.68	19.90	3.89	0.79	no	0.5046	0.263	0.35	2.0	2.83	49	0.120	4.21	5	10	no	zero	0.21
195.5	12.6	41.5	92	18	109	0.59	4506	3663	2665	64.73	0.9532	0.72	42.73	1.53	0.79	yes	0.5045	0.220	0.30	0.6	2.31	24	0.160	4.56	9	13	0.020	0.04	0.25
195.3	12.7	41.7	92	18	109	0.51	4523	3671	2672	95.72	1.0909	0.76	66.77	1.17	0.78	yes	0.5044	0.245	0.33	0.7	2.09	16	0.173	4.65	14	19	0.015	0.03	0.28
195.2	12.7	41.8	92	18	109	0.57	4541	3678	2680	69.98	1.4572	0.73	46.60	2.15	0.78	no	0.5043	0.295	0.40	2.0	2.38	27	0.156	4.53	10	15	no	zero	0.28
195.0	12.8	42.0	92	18	109	0.65	4559	3686	2687	47.34	1.5344	0.70	29.71	3.41	0.78	no	0.5042	0.274	0.37	2.0	2.66	39	0.135	4.35	7	13	no	zero	0.28
194.8	12.8	42.2	92	18	109	0.72	4577	3693	2695	30.82	1.684	0.67	18.03	5.90	0.78	no	0.5041	0.263	0.35	2.0	2.98	58	0.104	4.06	4	9	no	zero	0.28
194.7	12.9	42.3	92	18	109	0.63	4595	3701	2702	53.36	1.9662	0.70	34.00	3.85	0.78	no	0.5040	0.280	0.38	2.0	2.65	39	0.136	4.36	8	14	no	zero	0.28
194.5	12.9	42.5	92	18	109	0.65	4612	3708	2710	45.71	1.9515	0.69	28.40	4.50	0.78	no	0.5038	0.274	0.37	2.0	2.75	44	0.127	4.28	7	13	no	zero	0.28
194.3	13.0	42.7	92	18	109	0.70	4630	3716	2718	34.72	1.3255	0.67	20.62	4.09	0.78	no	0.5037	0.269	0.36	2.0	2.83	49	0.120	4.21	5	10	no	zero	0.28
194.2	13.0	42.8	92	18	109	0.75	4648	3724	2725	26.26	0.7237	0.66	14.82	3.02	0.78	no	0.5036	0.251	0.34	2.0	2.86	51	0.117	4.18	4	9	no	zero	0.28
194.0	13.1	43.0	92	18	109	0.78	4666	3731	2733	21.29	0.7152	0.64	11.51	3.77	0.78	no	0.5035	0.240	0.32	2.0	3.01	60	0.101	4.02	3	8	no	zero	0.28
193.9	13.1	43.1	92	18	109	0.76	4684	3739	2740	24.68	1.2792	0.65	13.72	5.73	0.78	no	0.5033	0.246	0.33	2.0	3.06	64	0.095	3.96	3	8	no	zero	0.28
193.7	13.2	43.3	92	18	109	0.65	4701	3746	2748	45.78	1.7558	0.69	28.24	4.04	0.77	no	0.5032	0.274	0.37	2.0	2.72	43	0.130	4.30	7	13	no	zero	0.28
193.5	13.2	43.5	92	18	109	0.53	4719	3754	2755	86.16	2.1863	0.74	58.43	2.61	0.77	no	0.5030	0.300	0.41	2.0	2.36	26	0.157	4.54	13	19	no	zero	0.28
193.4	13.3	43.6	92	18	109	0.49	4737	3761	2763	102.33	2.9026	0.75	71.14	2.90	0.77	no	0.5029	0.300	0.41	2.0	2.33	25	0.159	4.55	16	21	no	zero	0.28
193.2	13.3	43.8	92	18	109	0.55	4755	3769	2771	76.69	1.5583	0.73	50.98	2.10	0.77	no	0.5027	0.300	0.41	2.0	2.34	25	0.159	4.55	11	17	no	zero	0.28
193.0	13.4	44.0	92	18	109	0.64	4773	3777	2778	49.08	1.3551	0.69	30.42	2.90	0.77	no	0.5026	0.280	0.38	2.0	2.60	37	0.140	4.39	7	13	no	zero	0.28
192.9	13.4	44.1	92	18	109	0.72	4790	3784	2786	30.99	1.7304	0.66	17.77	6.05	0.77	no	0.5024	0.257	0.35	2.0	2.99	59	0.103	4.04	4	9	no	zero	0.28
192.7	13.5	44.3	92	18	109	0.71	4808	3792	2793	32.66	1.8648	0.66	18.87	6.16	0.77	no	0.5023	0.263	0.35	2.0	2.98	58	0.105	4.06	5	10	no	zero	0.28
192.5	13.5	44.5	92	18	109	0.66	4826	3799	2801	44	2.3198	0.68	26.68	5.58	0.77	no	0.5021	0.274	0.37	2.0	2.84	49	0.119	4.20	6	12	no	zero	0.28
192.4	13.6	44.6	92	18	109	0.64	4844	3807	2808	50.1	2.5117	0.69	30.97	5.27	0.77	no	0.5019	0.280	0.38	2.0	2.77	45	0.125	4.26	7	13	no	zero	0.28
192.2	13.6	44.8	92	18	109	0.66	4862	3814	2816	43.4	2.7086	0.68	26.18	6.61	0.77	no	0.5017	0.274	0.37	2.0	2.89	53	0.113	4.15	6	12	no	zero	0.28
192.1	13.7	44.9	92	18	109	0.67	4880	3822	2824	41.89	2.4266	0.67	25.08	6.15	0.76	no	0.5016	0.274	0.37	2.0	2.89	52	0.114	4.16	6	12	no	zero	0.28
191.9	13.7	45.1	92	18	109	0.65	4897	3830	2831	46.24	2.1878	0.68	28.10	5.00	0.76	no	0.5014	0.274	0.37	2.0	2.79	46	0.124	4.25	7	13	no	zero	0.28
191.7	13.8	45.3	92	18	109	0.68	4915	3837	2839	39.3	2.1395	0.67	23.21	5.81	0.76	no	0.5012	0.269	0.36	2.0	2.89	53	0.113	4.15	6	12	no	zero	0.28
191.6	13.8	45.4	92	18	109	0.69	4933	3845	2846	38.11	2.1012	0.66	22.35	5.90	0.76	no	0.5010	0.269	0.36	2.0	2.91	54	0.112	4.13	5	11	no	zero	0.28
191.4	13.9	45.6	92	18	109	0.67	4951	3852	2854	41.89	2.4534	0.67	24.93	6.22	0.76	no	0.5008	0.269	0.36	2.0	2.89	52	0.114	4.15	6	12	no	zero	0.28
191.2	13.9	45.8	92	18	109	0.64	4969	3860	2861	50.59	2.8106	0.68	31.01	5.84	0.76	no	0.5006	0.280	0.38	2.0	2.80	47	0.122	4.23	7	13	no	zero	0.28
191.1	14.0	45.9	92	18	109	0.60	4986	3867	2869	62.22	3.1574	0.70	39.38	5.29	0.76	no	0.5004	0.285	0.38	2.0	2.70	41	0.132	4.32	9	16	no	zero	0.28
190.9	14.0	46.1	92	18	109	0.52	5004	3875	2877	91.26	3.0659	0.73	61.30	3.45	0.76	no	0.5002	0.300	0.41	2.0	2.43	29	0.152	4.50	14	20	no	zero	0.28
190.7	14.1	46.3	92	18	109	0.41	5022	3883	2884	144.77	3.5297	0.78	104.69	2.48	0.76	no	0.5000	0.330	0.45	2.0	2.17	19	0.169	4.62	23	29	no	zero	0.28
190.6	14.1	46.4	92	18	109	0.41	5040	3890	2892	143.34	4.3679	0.78	103.39	3.10	0.76	no	0.4998	0.330	0.45	2.0	2.25	22	0.164	4.59	23	29	no	zero	0.28
190.4	14.2	46.6	92	18	109	0.47	5058	3898	2899	111.53	4.6278	0.75	77.13	4.25	0.75	no	0.4996	0.300	0.41	2.0	2.43	29	0.153	4.50	17	24	no	zero	0.28
190.2	14.2	46.8	92	18	109	0.51	5075	3905	2907	95.13	5.6058	0.73	64.05	6.05	0.75	no	0.4994	0.300	0.41	2.0	2.60	37	0.140	4.39	15	23	no	zero	0.28
190.1	14.3	46.9	92	18	109	0.46	5093	3913	2914	118.36	5.3552	0.75	82.49	4.62	0.75	no	0.4992	0.310	0.42	2.0	2.44	29	0.152	4.49	18	25	no	zero	0.28
189.9	14.3	47.1	92	18	109	0.45	5111	3920	2922	122.34	4.4238	0.76	85.65	3.69	0.75	no	0.4990	0.310	0.42	2.0	2.36	26	0.158	4.54	19	26	no	zero	0.28
189.8	14.4	47.2	92	18	109	0.43	5129	3928	2930	136.23	5.2067	0.77	97.01	3.90	0.75	no	0.4987	0.320	0.43	2.0	2.34	25	0.159	4.55	21	28	no	zero	0.28
189.6	14.4	47.4	92	18	109	0.31	5147	3936	2937	211.29	5.8723	0.82	162.23	2.81	0.75	no	0.4985	0.340	0.46	2.0	2.09	17	0.173	4.65	35	41	no	zero	0.28
189.4	14.5	47.6	92	18	109	0.25	5164	3943	2945	262.28	4.944	0.85	209.42	1.90	0.75	no	0.4983	0.340	0.46	2.0	1.89	11	0.182	4.72	44	46	no	zero	0.28
189.3	14.5	47.7	92	18	109	0.23	5182	3951	2952	289.27	3.8161	0.87	235.19	1.33	0.75	no	0.4981	0.310	0.42	2.0	1.74	8	0.187	4.76	49	50	no	zero	0.28
189.1	14.6	47.9	92	18	109	0.20	5200	3958	2960	315.62	3.2212	0.88	260.88	1.03	0.75	no	0.4978	0.300	0.41	2.0	1.62	6	0.191	4.78	55	56	no	zero	0.28
188.9	14.6	48.1	92	18	109	0.19	5218	3966	2967	330.54	3.2347	0.89	275.61	0.99	0.75	no	0.4976	0.290	0.39	2.0	1.59	5	0.191	4.79	58	59	no	zero	0.28

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
188.8	14.7	48.2	92	18	109	0.19	5236	3973	2975	328.55	3.0504	0.89	273.51	0.94	0.74	no	0.4974	0.280	0.38	2.0	1.58	5	0.192	4.79	57	57	no	zero	0.28
188.6	14.7	48.4	92	18	109	0.19	5253	3981	2983	323.56	2.5252	0.89	268.43	0.79	0.74	no	0.4971	0.260	0.35	2.0	1.53	4	0.193	4.80	56	56	no	zero	0.28
188.4	14.8	48.6	92	18	109	0.20	5271	3989	2990	314.49	1.8843	0.88	259.33	0.60	0.74	no	0.4969	0.250	0.34	2.0	1.46	3	0.195	4.81	54	54	no	zero	0.28
188.3	14.8	48.7	92	18	109	0.21	5289	3996	2998	303.09	1.883	0.87	248.01	0.63	0.74	no	0.4966	0.250	0.34	2.0	1.48	4	0.194	4.80	52	52	no	zero	0.28
188.1	14.9	48.9	92	18	109	0.22	5307	4004	3005	292.67	2.1567	0.87	237.73	0.74	0.74	no	0.4964	0.260	0.35	2.0	1.55	4	0.193	4.79	50	50	no	zero	0.28
188.0	14.9	49.0	92	18	109	0.24	5325	4011	3013	278.15	2.3639	0.86	223.59	0.86	0.74	no	0.4961	0.270	0.36	2.0	1.61	5	0.191	4.78	47	48	no	zero	0.28
187.8	15.0	49.2	92	18	109	0.25	5343	4019	3020	264	2.4895	0.85	209.97	0.95	0.74	no	0.4959	0.290	0.39	2.0	1.66	6	0.189	4.77	44	45	no	zero	0.28
187.6	15.0	49.4	92	18	109	0.26	5360	4026	3028	253.92	2.4009	0.84	200.33	0.96	0.74	no	0.4956	0.290	0.39	2.0	1.67	7	0.189	4.77	42	43	no	zero	0.28
187.5	15.1	49.5	92	18	109	0.28	5378	4034	3036	243.52	2.5726	0.84	190.48	1.07	0.74	no	0.4954	0.300	0.41	2.0	1.72	8	0.187	4.76	40	41	no	zero	0.28
187.3	15.1	49.7	92	18	109	0.29	5396	4042	3043	232.15	2.9016	0.83	179.83	1.26	0.74	no	0.4951	0.310	0.42	2.0	1.80	9	0.185	4.74	38	39	no	zero	0.28
187.1	15.2	49.9	92	18	109	0.30	5414	4049	3051	226.59	2.6498	0.83	174.61	1.18	0.73	no	0.4948	0.300	0.41	2.0	1.78	9	0.186	4.75	37	38	no	zero	0.28
187.0	15.2	50.0	92	18	109	0.30	5432	4057	3058	225.61	0.9371	0.82	173.61	0.42	0.73	no	0.4946	0.240	0.32	2.0	1.49	4	0.194	4.80	36	36	no	zero	0.28
186.8	15.3	50.2	92	18	109	0.31	5449	4064	3066	217.73	1.326	0.82	166.31	0.62	0.73	no	0.4943	0.250	0.34	2.0	1.61	5	0.191	4.78	35	36	no	zero	0.28
186.6	15.3	50.4	92	18	109	0.32	5467	4072	3073	207.3	1.8421	0.81	156.78	0.90	0.73	yes	0.4940	0.277	0.37	0.8	1.73	8	0.187	4.76	33	34	0.001	0.00	0.28
186.5	15.4	50.5	92	18	109	0.33	5485	4079	3081	197.09	2.1237	0.80	147.55	1.09	0.73	yes	0.4938	0.293	0.40	0.8	1.81	9	0.185	4.74	31	32	0.001	0.00	0.28
186.3	15.4	50.7	92	18	109	0.37	5503	4087	3089	172.8	2.4346	0.79	126.14	1.43	0.73	yes	0.4935	0.300	0.41	0.8	1.94	12	0.180	4.70	27	29	0.010	0.02	0.30
186.1	15.5	50.9	92	18	109	0.42	5521	4095	3096	138.02	3.4483	0.76	96.64	2.55	0.73	no	0.4932	0.320	0.43	2.0	2.20	20	0.167	4.61	21	27	no	zero	0.30
186.0	15.5	51.0	92	18	109	0.49	5538	4102	3104	105.31	3.7598	0.72	70.22	3.67	0.73	no	0.4930	0.300	0.41	2.0	2.41	28	0.154	4.51	16	22	no	zero	0.30
185.8	15.6	51.2	92	18	109	0.50	5556	4110	3111	99.41	3.7523	0.72	65.55	3.88	0.73	no	0.4927	0.300	0.41	2.0	2.45	30	0.151	4.49	15	21	no	zero	0.30
185.7	15.6	51.3	92	18	109	0.44	5574	4117	3119	131.15	4.2607	0.75	90.75	3.32	0.73	no	0.4924	0.320	0.43	2.0	2.31	24	0.161	4.56	20	26	no	zero	0.30
185.5	15.7	51.5	92	18	109	0.48	5592	4125	3126	108.14	3.7976	0.73	72.23	3.60	0.72	no	0.4921	0.300	0.41	2.0	2.40	27	0.155	4.52	16	22	no	zero	0.30
185.3	15.7	51.7	92	18	109	0.54	5610	4132	3134	83.01	3.6415	0.70	52.86	4.54	0.72	no	0.4918	0.300	0.41	2.0	2.56	35	0.143	4.42	12	18	no	zero	0.30
185.2	15.8	51.8	92	18	109	0.51	5627	4140	3142	92.97	4.3682	0.71	60.33	4.85	0.72	no	0.4915	0.300	0.41	2.0	2.55	34	0.144	4.43	14	21	no	zero	0.30
185.0	15.8	52.0	92	18	109	0.46	5645	4148	3149	115.9	4.5551	0.73	78.15	4.03	0.72	no	0.4912	0.300	0.41	2.0	2.41	28	0.154	4.51	17	24	no	zero	0.30
184.8	15.9	52.2	92	18	109	0.47	5663	4155	3157	112.03	4.433	0.73	75.01	4.06	0.72	no	0.4910	0.300	0.41	2.0	2.43	28	0.153	4.50	17	23	no	zero	0.30
184.7	15.9	52.3	92	18	109	0.43	5681	4163	3164	137.19	4.1204	0.75	95.23	3.07	0.72	no	0.4907	0.320	0.43	2.0	2.27	22	0.163	4.58	21	27	no	zero	0.30
184.5	16.0	52.5	92	18	109	0.38	5699	4170	3172	164.44	3.7518	0.77	117.97	2.32	0.72	no	0.4904	0.332	0.45	2.0	2.11	17	0.172	4.65	25	31	no	zero	0.30
184.3	16.0	52.7	92	18	109	0.36	5716	4178	3179	177.47	3.3653	0.78	129.09	1.93	0.72	yes	0.4901	0.323	0.44	0.9	2.03	15	0.176	4.68	28	30	0.010	0.02	0.32
184.2	16.1	52.8	92	18	109	0.32	5734	4185	3187	205.16	3.085	0.80	153.39	1.53	0.72	yes	0.4898	0.315	0.43	0.9	1.90	11	0.181	4.71	33	35	0.001	0.00	0.32
184.0	16.1	53.0	92	18	109	0.29	5752	4193	3195	228.68	2.4243	0.82	174.60	1.07	0.72	no	0.4895	0.300	0.41	2.0	1.75	8	0.187	4.75	37	38	no	zero	0.32
183.9	16.2	53.1	92	18	109	0.28	5770	4201	3202	240.52	0.6828	0.83	185.43	0.29	0.72	no	0.4892	0.230	0.31	2.0	1.38	2	0.196	4.82	38	38	no	zero	0.32
183.7	16.2	53.3	92	18	109	0.28	5788	4208	3210	243.16	1.014	0.83	187.78	0.42	0.71	no	0.4889	0.240	0.32	2.0	1.46	3	0.194	4.81	39	39	no	zero	0.32
183.5	16.3	53.5	92	18	109	0.29	5806	4216	3217	233.65	1.137	0.82	178.87	0.49	0.71	no	0.4886	0.250	0.34	2.0	1.52	4	0.193	4.80	37	37	no	zero	0.32
183.4	16.3	53.6	92	18	109	0.31	5823	4223	3225	216.05	1.5345	0.81	162.70	0.72	0.71	no	0.4883	0.260	0.35	2.0	1.66	6	0.190	4.77	34	35	no	zero	0.32
183.2	16.4	53.8	92	18	109	0.33	5841	4231	3232	196.64	2.1612	0.79	145.23	1.12	0.71	yes	0.4880	0.293	0.40	0.8	1.82	10	0.184	4.74	31	32	0.001	0.00	0.33
183.0	16.4	54.0	92	18	109	0.32	5859	4238	3240	208.48	2.5073	0.80	155.69	1.22	0.71	yes	0.4876	0.305	0.41	0.8	1.83	10	0.184	4.73	33	34	0.001	0.00	0.33
182.9	16.5	54.1	92	18	109	0.32	5877	4246	3248	206.63	2.8698	0.80	153.94	1.41	0.71	yes	0.4873	0.315	0.43	0.9	1.88	11	0.182	4.72	33	35	0.001	0.00	0.33
182.7	16.5	54.3	92	18	109	0.37	5895	4254	3255	170.9	2.8766	0.77	122.53	1.71	0.71	yes	0.4870	0.310	0.42	0.9	2.01	14	0.177	4.68	26	28	0.010	0.02	0.35
182.5	16.6	54.5	92	18	109	0.38	5912	4261	3263	163.73	3.3006	0.77	116.33	2.05	0.71	no	0.4867	0.332	0.45	2.0	2.08	16	0.173	4.66	25	31	no	zero	0.35
182.4	16.6	54.6	92	18	109	0.37	5930	4269	3270	174.02	3.7584	0.77	125.03	2.20	0.71	no	0.4864	0.333	0.45	2.0	2.08	16	0.173	4.66	27	33	no	zero	0.35
182.2	16.7	54.8	92	18	109	0.39	5948	4276	3278	160.23	3.7693	0.76	113.19	2.40	0.71	no	0.4861	0.332	0.45	2.0	2.14	18	0.170	4.64	24	30	no	zero	0.35
182.0	16.7	55.0	92	18	109	0.47	5966	4284	3285	112.68	4.5225	0.72	74.35	4.12	0.70	no	0.4858	0.300	0.41	2.0	2.43	29	0.152	4.50	17	23	no	zero	0.35
181.9	16.8	55.1	92	18	109	0.57	5984	4291	3293	69.77	3.965	0.67	42.05	5.94	0.70	no	0.4854	0.290	0.39	2.0	2.72	42	0.130	4.31	10	17	no	zero	0.35
181.7	16.8	55.3	92	18	109	0.67	6001	4299	3301	42.77	3.0587	0.62	23.43	7.69	0.70	no	0.4851	0.269	0.36	2.0	2.97	58	0.105	4.06	6	12	no	zero	0.35
181.6	16.9	55.4	92	18	109	0.67	6019	4307	3308	41.28	2.7069	0.62	22.42	7.07	0.70	no	0.4848	0.269	0.36	2.0	2.96	57	0.106	4.07	6	12	no	zero	0.35
181.4	16.9	55.6	92	18	109	0.65	6037	4314	3316	46.61	2.1601	0.63	25.90	4.96	0.70	no	0.4845	0.274	0.37	2.0	2.81	48	0.121	4.23	6	12	no	zero	0.35
181.2	17.0	55.8	92	18	109	0.67	6055	4322	3323	42.7	2.0468	0.62	23.28	5.16	0.70	no	0.4842	0.269	0.36	2.0	2.86	50	0.117	4.19	6	12	no	zero	0.35
181.1	17.0	55.9	92	18	109	0.67	6073	4329	3331	42.19	1.5605	0.62	22.92	3.99	0.70	no	0.4838	0.269	0.36	2.0	2.79	46	0.124	4.25	5	11	no	zero	0.35
180.9	17.1	56.1	92	18	109	0.66	6090	4337	3338	43.35	1.6092	0.62	23.64	3.99	0.70	no	0.4835	0.269	0.36	2.0	2.78	46	0.125	4.26	6	12	no	zero	0.35
180.7	17.1	56.3	92	18	109	0.67	6108	4344	3346	42.58	1.7203	0.62	23.11	4.35	0.70	no	0.4832	0.269	0.36	2.0	2.81	48	0.122	4.23	5	11	no	zero	0.35
180.6	17.2	56.4	92	18	109	0.55	6126	4352	3354	77.86	3.2851	0.67	47.48	4.39	0.70	no	0.4828	0.295	0.40	2.0	2.59	36	0.141	4.40	11	18	no	zero	0.35
180.4	17.2	56.6	92	18	109	0.48	6144	4360	3361	107.68	5.0124	0.71	69.79	4.79	0.70	no	0.4825	0.300	0.41	2.0	2.50	32	0.148	4.46	16	23	no	zero	0.35
180.2	17.3	56.8	92	18	109	0.55	6162	4367	3369	79.65	5.2092	0.67	48.68	6.80	0.69	no	0.4822	0.295	0.40	2.0	2.72	42	0.130	4.31	11	18	no	zero	0.35
180.1	17.3	56.9	92	18	109	0.61	6180	4375	3376	57.44	3.6394	0.64	32.92	6.70	0.69	no	0.4818	0.280	0.38	2.0	2.83	49	0.120	4.21	8	14	no	zero	0.35
179.9	17.4	57.1	92	18	109	0.65	6197	4382	3384	46.61	3.2988	0.62	25.59	7.58	0.69	no	0.4815	0.274	0.37	2.0	2.94	56	0.108	4.10	6	12	no	zero	0.35
179.7	17.4	57.3	92	18	109	0.61	6215	4390	3391	57.26	3.0778	0.64	32.72	5.68	0.69	no	0.4812	0.280	0.38	2.0	2.78	46	0.124	4.26	8	14	no	zero	0.35
179.6	17.5	57.4	92	18	109	0.61	6233	4397	3399	56.84	3.1621	0.64	32.39	5.89	0.69	no	0.4808	0.280	0.38	2.0	2.79	47	0.123	4.24	8	14	no	zero	0.35
179.4	17.5	57.6	92	18	109	0.62	6251	4405	3407	55.39	3.2737	0.64	31.36	6.26	0.69	no	0.4805	0.280	0.38	2.0	2.82	48	0.120	4.22	7	13	no	zero	0.35
179.3	17.6	57.7	92	18	109	0.61	6269	4413	3414	57.14	3.2957	0.64	32.51	6.10	0.69	no	0.4802	0.280	0.38	2.0	2.80	47	0.122	4.24	8	14	no	zero	0.35
179.1	17.6	57.9	92	18	109	0.61	6286	4420	3422	57.9	3.3004	0.64	32.99	6.03	0.69	no	0.4798	0.280	0.38	2.0	2.79	47	0.123	4.24	8	14	no	zero	0.35
178.9	17.7	58.1	92	18	109	0.63	6304	4428	3429	52.91	3.1916	0.63	29.57	6.41	0.69	no	0.4795	0.274	0.37	2.0	2.85	50	0.118	4.19	7	13	no	zero	0.35
178.8	17.7	58.2	92	18	109	0.61	6322	4435	3437	57.37	3.3798	0.64	32.55	6.23	0.69	no	0.4792	0.280	0.38	2.0	2.81	48	0.122	4.23	8	14	no	zero	0.35
178.6	17.8	58.4	92	18	109	0.61	6340	4443	3444	58.55	3.5937	0.64	33.32	6.49	0.69	no	0.4788	0.280	0.38	2.0	2.81	48	0.121	4.22	8	14	no	zero	0.35
178.4	17.8	58.6	92	18	109	0.60	6358	4450	3452	59.97	4.1303	0.64	34.25	7.27	0.68	no	0.4785	0.280	0.38	2.0	2.84	49	0.118	4.20	8	15	no	zero	0.35
178.3	17.9	58.7	92	18	109	0.57	6375	4458	3460	72.69	5.0199	0.66	43.08	7.22	0.68	no	0.4781	0.290	0.39	2.0	2.77	45	0.125	4.26	10	17	no	zero	0.35
178.1	17.9	58.9	92	18	109	0.53	6393	4466	3467	86.74	5.9547	0.67	53.18	7.13	0.68	no	0.4778	0.300	0.41	2.0	2.71	42	0.131	4.31	12	19	no	zero	0.35
177.9	18.0	59.1	92	18	109	0.49	6411	4473	3475	102.75	7.0045	0.69	65.08	7.04	0.68	no	0.4774	0.300	0.41	2.0	2.65	39	0.136	4.36	15	23	no	zero	0.35
177.8	18.0	59.2	92	18	109	0.47	6429	4481	3482	110.93	7.621	0.70	71.28	7.08	0.68	no	0.4771	0.300	0.41	2.0	2.63	38	0.138	4.38	16	24	no	zero	0.35
177.6	18.1	59.4	92	18	109	0.47	6447	4488	3490	115.43	8.0407	0.70	74.71	7.17	0.68	no	0.4768	0.300	0.41	2.0	2.62	37	0.139	4.38	17	25	no	zero	0.35
177.5	18.1	59.5	92	18	109	0.46	6464	4496	3498	117.06	7.7992	0.71	75.91	6.85	0.68	no	0.4764	0.300	0.41	2.0	2.60	36	0.140	4.40	17	25	no	zero	0.35
177.3	18.2	59.7	92	18	109	0.45	6482	4503	3505	123.16	7.736	0.71	80.63	6.45	0.68	no	0.4761	0.310	0.42	2.0	2.56	35	0.143	4.42	18	26	no	zero	0.35
177.1	18.2	59.9	92	18	109	0.46	6500	4511	3513	115.89	7.4854	0.70	74.87	6.65	0.68	no	0.4757	0.300	0.41	2.0	2.59	36	0.141	4.40	17	25	no	zero	0.35

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	$\mathbf{q_c}$	$\mathbf{f_s}$	$\mathbf{C_Q}$	$\mathbf{q_{c1}}$	**F**	$\mathbf{r_d}$	**Liquefiable**	**CSR**	$\mathbf{CRR_1}$	**CRR**	$\mathbf{FS_{\mathit{liq}}}$	$\mathbf{I_c}$	**AFC**	$\mathbf{D_{50}}$	$\mathbf{q_c/N}$	**N**	$\mathbf{N_{clean}}$	☮		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)

Project: Proposed Mixed Use Development
Probe ID: CPT-2
Date: 2/3/2011

Design Earthquake Magnitude	6.66	MW
Magnitude Scaling Factor (MSF)	1.35	%
pga	0.584	g
Groundwater Depth:	47	ft
Elevation at GS	253.0	ft
HHGWL	28.0	ft

total settlement (inch)	total settlement below BOF (inch)
0.98	0.98

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
252.8	0.0	0.2	92	18	109	0.49	18	18	18	101.58	0	1.70	163.14	0.01	1.000	no	0.3796	0.207	0.28	2.0	1.48	4	0.194	4.80	34	34	no	zero	0.00
252.7	0.1	0.3	92	18	109	0.44	36	36	36	129.21	1.5224	1.70	207.51	1.18	1.00	no	0.3796	0.300	0.41	2.0	1.73	8	0.187	4.76	44	45	no	zero	0.00
252.5	0.1	0.5	92	18	109	0.41	53	53	53	148.1	2.1314	1.70	237.84	1.44	1.00	no	0.3796	0.320	0.43	2.0	1.76	8	0.186	4.75	50	51	no	zero	0.00
252.3	0.2	0.7	92	18	109	0.38	71	71	71	163.04	2.3959	1.70	261.82	1.47	1.00	no	0.3796	0.320	0.43	2.0	1.74	8	0.187	4.76	55	56	no	zero	0.00
252.2	0.2	0.8	92	18	109	0.48	89	89	89	106.18	1.863	1.70	170.47	1.76	1.00	no	0.3796	0.330	0.45	2.0	1.92	12	0.180	4.71	36	38	no	zero	0.00
252.0	0.3	1.0	92	18	109	0.59	107	107	107	64.77	1.1304	1.70	103.95	1.75	1.00	no	0.3796	0.300	0.41	2.0	2.06	16	0.174	4.66	22	28	no	zero	0.00
251.9	0.3	1.1	92	18	109	0.67	125	125	125	42.02	0.9321	1.70	67.39	2.22	1.00	no	0.3796	0.300	0.41	2.0	2.27	22	0.163	4.58	15	20	no	zero	0.00
251.7	0.4	1.3	92	18	109	0.73	142	142	142	29.51	0.7338	1.70	47.28	2.49	1.00	no	0.3796	0.295	0.40	2.0	2.42	28	0.154	4.51	10	15	no	zero	0.00
251.5	0.4	1.5	92	18	109	0.77	160	160	160	22.68	0.5931	1.70	36.30	2.62	1.00	no	0.3796	0.285	0.38	2.0	2.52	32	0.146	4.45	8	14	no	zero	0.00
251.4	0.5	1.6	92	18	109	0.80	178	178	178	18.55	0.502	1.70	29.65	2.72	1.00	no	0.3796	0.274	0.37	2.0	2.59	36	0.140	4.40	7	13	no	zero	0.00
251.2	0.5	1.8	92	18	109	0.83	196	196	196	15.03	0.421	1.70	23.98	2.82	1.00	no	0.3796	0.269	0.36	2.0	2.68	40	0.134	4.34	6	12	no	zero	0.00
251.0	0.6	2.0	92	18	109	0.84	214	214	214	13.89	0.3957	1.70	22.14	2.87	1.00	no	0.3796	0.269	0.36	2.0	2.71	42	0.131	4.32	5	11	no	zero	0.00
250.9	0.6	2.1	92	18	109	0.82	232	232	232	16	0.4103	1.70	25.51	2.58	1.00	no	0.3796	0.274	0.37	2.0	2.63	38	0.138	4.37	6	12	no	zero	0.00
250.7	0.7	2.3	92	18	109	0.78	249	249	249	21.6	0.4846	1.70	34.49	2.26	1.00	no	0.3795	0.280	0.38	2.0	2.49	31	0.148	4.46	8	13	no	zero	0.00
250.5	0.7	2.5	92	18	109	0.77	267	267	267	22.42	0.5956	1.70	35.80	2.67	1.00	no	0.3793	0.285	0.38	2.0	2.53	33	0.146	4.44	8	14	no	zero	0.00
250.4	0.8	2.6	92	18	109	0.79	285	285	285	20.38	0.6757	1.70	32.51	3.34	1.00	no	0.3791	0.280	0.38	2.0	2.62	37	0.138	4.38	7	13	no	zero	0.00
250.2	0.8	2.8	92	18	109	0.80	303	303	303	18.05	0.6911	1.70	28.75	3.86	1.00	no	0.3789	0.274	0.37	2.0	2.70	42	0.131	4.32	7	13	no	zero	0.00
250.0	0.9	3.0	92	18	109	0.82	321	321	321	16.07	0.6561	1.70	25.55	4.12	1.00	no	0.3786	0.274	0.37	2.0	2.76	45	0.126	4.27	6	12	no	zero	0.00
249.9	0.9	3.1	92	18	109	0.85	338	338	338	12.44	0.5533	1.70	19.71	4.51	1.00	no	0.3784	0.263	0.35	2.0	2.87	51	0.115	4.17	5	10	no	zero	0.00
249.7	1.0	3.3	92	18	109	0.87	356	356	356	11.09	0.5269	1.70	17.53	4.83	1.00	no	0.3782	0.257	0.35	2.0	2.93	55	0.109	4.11	4	9	no	zero	0.00
249.6	1.0	3.4	92	18	109	0.88	374	374	374	10.03	0.4544	1.70	15.81	4.62	1.00	no	0.3780	0.251	0.34	2.0	2.95	56	0.107	4.09	4	9	no	zero	0.00
249.4	1.1	3.6	92	18	109	0.90	392	392	392	8.71	0.3611	1.70	13.68	4.24	1.00	no	0.3777	0.246	0.33	2.0	2.98	58	0.104	4.06	3	8	no	zero	0.00
249.2	1.1	3.8	92	18	109	0.90	410	410	410	8.36	0.2982	1.70	13.10	3.66	0.99	no	0.3775	0.246	0.33	2.0	2.95	56	0.107	4.09	3	8	no	zero	0.00
249.1	1.2	3.9	92	18	109	0.89	427	427	427	9.62	0.2333	1.70	15.11	2.48	0.99	no	0.3773	0.251	0.34	2.0	2.80	47	0.122	4.24	4	9	no	zero	0.00
248.9	1.2	4.1	92	18	109	0.87	445	445	445	10.73	0.2181	1.70	16.88	2.08	0.99	no	0.3770	0.257	0.35	2.0	2.72	42	0.130	4.31	4	9	no	zero	0.00
248.7	1.3	4.3	92	18	109	0.88	463	463	463	10.02	0.223	1.70	15.72	2.28	0.99	no	0.3768	0.251	0.34	2.0	2.77	45	0.126	4.27	4	9	no	zero	0.00
248.6	1.3	4.4	92	18	109	0.89	481	481	481	9.18	0.2406	1.70	14.36	2.69	0.99	no	0.3766	0.251	0.34	2.0	2.84	49	0.118	4.20	3	8	no	zero	0.00
248.4	1.4	4.6	92	18	109	0.91	499	499	499	7.82	0.2514	1.70	12.16	3.32	0.99	no	0.3763	0.246	0.33	2.0	2.95	56	0.107	4.08	3	8	no	zero	0.00
248.2	1.4	4.8	92	18	109	0.90	516	516	516	8.29	0.2212	1.70	12.90	2.75	0.99	no	0.3761	0.246	0.33	2.0	2.88	52	0.114	4.16	3	8	no	zero	0.00
248.1	1.5	4.9	92	18	109	0.91	534	534	534	7.92	0.1849	1.70	12.29	2.42	0.99	no	0.3758	0.246	0.33	2.0	2.87	51	0.116	4.17	3	8	no	zero	0.00
247.9	1.5	5.1	92	18	109	0.93	552	552	552	6.34	0.1589	1.70	9.74	2.62	0.99	no	0.3756	0.238	0.32	2.0	2.97	58	0.105	4.06	2	7	no	zero	0.00
247.8	1.6	5.2	92	18	109	0.94	570	570	570	5.95	0.1461	1.70	9.10	2.58	0.99	no	0.3753	0.238	0.32	2.0	2.99	59	0.102	4.04	2	7	no	zero	0.00
247.6	1.6	5.4	92	18	109	0.93	588	588	588	6.23	0.1693	1.70	9.53	2.85	0.99	no	0.3751	0.238	0.32	2.0	3.00	60	0.102	4.03	2	7	no	zero	0.00
247.4	1.7	5.6	92	18	109	0.92	605	605	605	7.14	0.1727	1.70	10.98	2.53	0.99	no	0.3749	0.240	0.32	2.0	2.92	54	0.110	4.12	3	8	no	zero	0.00
247.3	1.7	5.7	92	18	109	0.90	623	623	623	8.44	0.1874	1.70	13.06	2.31	0.99	no	0.3746	0.246	0.33	2.0	2.84	49	0.119	4.20	3	8	no	zero	0.00
247.1	1.8	5.9	92	18	109	0.90	641	641	641	8.7	0.2156	1.70	13.46	2.57	0.99	no	0.3744	0.246	0.33	2.0	2.85	50	0.117	4.19	3	8	no	zero	0.00
246.9	1.8	6.1	92	18	109	0.87	659	659	659	10.57	0.2593	1.70	16.45	2.53	0.99	no	0.3741	0.257	0.35	2.0	2.78	46	0.125	4.26	4	9	no	zero	0.00
246.8	1.9	6.2	92	18	109	0.86	677	677	677	11.71	0.305	1.70	18.27	2.68	0.98	no	0.3739	0.263	0.35	2.0	2.76	44	0.127	4.28	4	9	no	zero	0.00
246.6	1.9	6.4	92	18	109	0.84	695	695	695	13.64	0.406	1.70	21.35	3.05	0.98	no	0.3736	0.269	0.36	2.0	2.74	43	0.128	4.29	5	10	no	zero	0.00
246.4	2.0	6.6	92	18	109	0.81	712	712	712	16.75	0.4772	1.70	26.33	2.91	0.98	no	0.3733	0.274	0.37	2.0	2.65	39	0.136	4.36	6	12	no	zero	0.00
246.3	2.0	6.7	92	18	109	0.80	730	730	730	18.67	0.4724	1.70	29.40	2.58	0.98	no	0.3731	0.274	0.37	2.0	2.58	36	0.141	4.41	7	13	no	zero	0.00
246.1	2.1	6.9	92	18	109	0.81	748	748	748	17.2	0.401	1.70	27.03	2.38	0.98	no	0.3728	0.274	0.37	2.0	2.59	36	0.141	4.40	6	12	no	zero	0.00
245.9	2.1	7.1	92	18	109	0.84	766	766	766	14.04	0.3309	1.70	21.94	2.42	0.98	no	0.3726	0.269	0.36	2.0	2.67	40	0.135	4.35	5	11	no	zero	0.00
245.8	2.2	7.2	92	18	109	0.84	784	784	784	13.38	0.3369	1.70	20.86	2.59	0.98	no	0.3723	0.269	0.36	2.0	2.70	42	0.132	4.32	5	10	no	zero	0.00
245.6	2.2	7.4	92	18	109	0.83	801	801	801	14.79	0.4082	1.70	23.11	2.84	0.98	no	0.3720	0.269	0.36	2.0	2.69	41	0.133	4.33	5	11	no	zero	0.00
245.5	2.3	7.5	92	18	109	0.83	819	819	819	15.39	0.3696	1.70	24.06	2.47	0.98	no	0.3718	0.269	0.36	2.0	2.64	38	0.137	4.37	6	12	no	zero	0.00
245.3	2.3	7.7	92	18	109	0.83	837	837	837	14.39	0.2998	1.70	22.44	2.15	0.98	no	0.3715	0.269	0.36	2.0	2.63	38	0.138	4.38	5	11	no	zero	0.00
245.1	2.4	7.9	92	18	109	0.85	855	855	855	12.44	0.2046	1.70	19.29	1.70	0.98	no	0.3712	0.211	0.28	2.0	2.62	37	0.138	4.38	4	9	no	zero	0.00
245.0	2.4	8.0	92	18	109	0.85	873	873	873	12.97	0.2079	1.70	20.13	1.66	0.98	no	0.3710	0.217	0.29	2.0	2.60	36	0.140	4.39	5	10	no	zero	0.00
244.8	2.5	8.2	92	18	109	0.84	890	890	890	13.59	0.2187	1.70	21.11	1.66	0.98	no	0.3707	0.217	0.29	2.0	2.58	36	0.141	4.41	5	10	no	zero	0.00
244.6	2.5	8.4	92	18	109	0.82	908	908	908	15.76	0.329	1.70	24.58	2.15	0.98	no	0.3704	0.269	0.36	2.0	2.59	36	0.140	4.40	6	12	no	zero	0.00
244.5	2.6	8.5	92	18	109	0.80	926	926	926	18.7	0.3584	1.70	29.29	1.97	0.98	no	0.3702	0.243	0.33	2.0	2.51	32	0.147	4.45	7	12	no	zero	0.00
244.3	2.6	8.7	92	18	109	0.82	944	944	944	15.72	0.3318	1.70	24.49	2.18	0.97	no	0.3699	0.269	0.36	2.0	2.60	36	0.140	4.40	6	12	no	zero	0.00
244.1	2.7	8.9	92	18	109	0.83	962	962	962	14.56	0.2406	1.70	22.61	1.71	0.97	no	0.3696	0.217	0.29	2.0	2.57	35	0.143	4.42	5	10	no	zero	0.00
244.0	2.7	9.0	92	18	109	0.84	979	979	979	14.24	0.2462	1.70	22.09	1.79	0.97	no	0.3693	0.217	0.29	2.0	2.59	36	0.141	4.40	5	11	no	zero	0.00
243.8	2.8	9.2	92	18	109	0.83	997	997	997	14.75	0.2793	1.70	22.89	1.96	0.97	no	0.3691	0.236	0.32	2.0	2.60	36	0.140	4.40	5	11	no	zero	0.00
243.6	2.8	9.4	92	18	109	0.83	1015	1015	1015	14.54	0.3169	1.70	22.54	2.26	0.97	no	0.3688	0.269	0.36	2.0	2.64	38	0.137	4.37	5	11	no	zero	0.00
243.5	2.9	9.5	92	18	109	0.84	1033	1033	1033	14.3	0.312	1.70	22.14	2.26	0.97	no	0.3685	0.269	0.36	2.0	2.64	39	0.136	4.36	5	11	no	zero	0.00
243.3	2.9	9.7	92	18	109	0.84	1051	1051	1051	14.27	0.3264	1.70	22.08	2.37	0.97	no	0.3682	0.269	0.36	2.0	2.66	39	0.135	4.35	5	11	no	zero	0.00
243.2	3.0	9.8	92	18	109	0.84	1069	1069	1069	13.69	0.3643	1.70	21.13	2.77	0.97	no	0.3679	0.269	0.36	2.0	2.71	42	0.130	4.31	5	10	no	zero	0.00
243.0	3.0	10.0	92	18	109	0.83	1086	1086	1086	15.16	0.427	1.70	23.48	2.92	0.97	no	0.3676	0.269	0.36	2.0	2.69	41	0.132	4.33	5	11	no	zero	0.00
242.8	3.1	10.2	92	18	109	0.83	1104	1104	1104	15.27	0.5018	1.70	23.64	3.41	0.97	no	0.3674	0.269	0.36	2.0	2.73	43	0.129	4.30	6	12	no	zero	0.00
242.7	3.1	10.3	92	18	109	0.83	1122	1122	1122	14.64	0.51	1.70	22.56	3.62	0.97	no	0.3671	0.269	0.36	2.0	2.76	45	0.126	4.27	5	11	no	zero	0.00
242.5	3.2	10.5	92	18	109	0.83	1140	1140	1140	14.72	0.5066	1.67	22.37	3.58	0.97	no	0.3668	0.269	0.36	2.0	2.76	45	0.126	4.27	5	11	no	zero	0.00
242.3	3.2	10.7	92	18	109	0.83	1158	1158	1158	15.38	0.5013	1.65	23.02	3.39	0.97	no	0.3665	0.269	0.36	2.0	2.74	44	0.128	4.29	5	11	no	zero	0.00

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	*w*	γ_M	n	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	F	r_d	Liquefiable	CSR	CRR_1	CRR	FS_{liq}	I_c	AFC	D_{50}	q_c/N	N	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
242.2	3.3	10.8	92	18	109	0.82	1175	1175	1175	16.49	0.4284	1.62	24.29	2.69	0.96	no	0.3662	0.269	0.36	2.0	2.66	39	0.135	4.35	6	12	no	zero	0.00
242.0	3.3	11.0	92	18	109	0.81	1193	1193	1193	17.62	0.3334	1.59	25.55	1.96	0.96	no	0.3659	0.243	0.33	2.0	2.56	34	0.143	4.42	6	11	no	zero	0.00
241.8	3.4	11.2	92	18	109	0.80	1211	1211	1211	18.27	0.3079	1.56	26.12	1.74	0.96	no	0.3656	0.224	0.30	2.0	2.52	33	0.146	4.45	6	11	no	zero	0.00
241.7	3.4	11.3	92	18	109	0.79	1229	1229	1229	19.41	0.3077	1.54	27.34	1.64	0.96	no	0.3653	0.224	0.30	2.0	2.49	31	0.149	4.47	6	11	no	zero	0.00
241.5	3.5	11.5	92	18	109	0.79	1247	1247	1247	19.58	0.3191	1.52	27.24	1.68	0.96	no	0.3650	0.224	0.30	2.0	2.50	32	0.148	4.46	6	11	no	zero	0.00
241.4	3.5	11.6	92	18	109	0.80	1264	1264	1264	18.92	0.3237	1.51	26.05	1.77	0.96	no	0.3647	0.224	0.30	2.0	2.52	33	0.146	4.44	6	11	no	zero	0.00
241.2	3.6	11.8	92	18	109	0.80	1282	1282	1282	18.34	0.3244	1.49	24.99	1.83	0.96	no	0.3644	0.236	0.32	2.0	2.55	34	0.144	4.43	6	11	no	zero	0.00
241.0	3.6	12.0	92	18	109	0.80	1300	1300	1300	18.36	0.317	1.48	24.73	1.79	0.96	no	0.3641	0.217	0.29	2.0	2.55	34	0.144	4.43	6	11	no	zero	0.00
240.9	3.7	12.1	92	18	109	0.80	1318	1318	1318	18.2	0.3274	1.46	24.24	1.87	0.96	no	0.3638	0.236	0.32	2.0	2.56	35	0.143	4.42	5	10	no	zero	0.00
240.7	3.7	12.3	92	18	109	0.81	1336	1336	1336	16.67	0.386	1.46	22.00	2.41	0.96	no	0.3635	0.269	0.36	2.0	2.66	40	0.135	4.35	5	11	no	zero	0.00
240.5	3.8	12.5	92	18	109	0.82	1353	1353	1353	16.07	0.4047	1.44	20.98	2.63	0.96	no	0.3632	0.269	0.36	2.0	2.70	42	0.131	4.32	5	10	no	zero	0.00
240.4	3.8	12.6	92	18	109	0.82	1371	1371	1371	15.51	0.3492	1.43	20.04	2.36	0.96	no	0.3629	0.269	0.36	2.0	2.69	41	0.132	4.33	5	10	no	zero	0.00
240.2	3.9	12.8	92	18	109	0.83	1389	1389	1389	14.98	0.2759	1.42	19.14	1.93	0.96	no	0.3626	0.229	0.31	2.0	2.66	39	0.135	4.35	4	9	no	zero	0.00
240.0	3.9	13.0	92	18	109	0.83	1407	1407	1407	15.32	0.242	1.40	19.35	1.66	0.95	no	0.3623	0.211	0.28	2.0	2.61	37	0.139	4.38	4	9	no	zero	0.00
239.9	4.0	13.1	92	18	109	0.81	1425	1425	1425	17.17	0.2477	1.38	21.43	1.51	0.95	no	0.3620	0.191	0.26	2.0	2.56	34	0.144	4.43	5	10	no	zero	0.00
239.7	4.0	13.3	92	18	109	0.80	1442	1442	1442	18.53	0.2547	1.36	22.87	1.43	0.95	no	0.3617	0.191	0.26	2.0	2.52	33	0.146	4.45	5	10	no	zero	0.00
239.5	4.1	13.5	92	18	109	0.79	1460	1460	1460	19.59	0.2343	1.34	23.91	1.24	0.95	no	0.3614	0.175	0.24	2.0	2.47	30	0.150	4.48	5	10	no	zero	0.00
239.4	4.1	13.6	92	18	109	0.78	1478	1478	1478	21.84	0.2314	1.32	26.34	1.10	0.95	no	0.3611	0.166	0.22	2.0	2.41	28	0.154	4.51	6	10	no	zero	0.00
239.2	4.2	13.8	92	18	109	0.77	1496	1496	1496	23.14	0.2843	1.31	27.61	1.27	0.95	no	0.3608	0.180	0.24	2.0	2.42	28	0.153	4.50	6	10	no	zero	0.00
239.1	4.2	13.9	92	18	109	0.76	1514	1514	1514	23.84	0.3064	1.29	28.17	1.33	0.95	no	0.3604	0.180	0.24	2.0	2.43	28	0.153	4.50	6	10	no	zero	0.00
238.9	4.3	14.1	92	18	109	0.76	1532	1532	1532	23.51	0.2961	1.28	27.53	1.30	0.95	no	0.3601	0.180	0.24	2.0	2.43	29	0.153	4.50	6	10	no	zero	0.00
238.7	4.3	14.3	92	18	109	0.75	1549	1549	1549	25.13	0.2967	1.27	29.12	1.22	0.95	no	0.3598	0.180	0.24	2.0	2.39	27	0.155	4.52	6	10	no	zero	0.00
238.6	4.4	14.4	92	18	109	0.77	1567	1567	1567	22.79	0.2824	1.26	26.21	1.28	0.95	no	0.3595	0.180	0.24	2.0	2.44	29	0.152	4.49	6	10	no	zero	0.00
238.4	4.4	14.6	92	18	109	0.76	1585	1585	1585	24.94	0.3129	1.24	28.39	1.30	0.95	no	0.3592	0.180	0.24	2.0	2.42	28	0.154	4.51	6	10	no	zero	0.00
238.2	4.5	14.8	92	18	109	0.74	1603	1603	1603	27.24	0.2753	1.23	30.71	1.04	0.95	no	0.3589	0.170	0.23	2.0	2.34	25	0.159	4.55	7	11	no	zero	0.00
238.1	4.5	14.9	92	18	109	0.74	1621	1621	1621	28.39	0.2958	1.22	31.72	1.07	0.94	no	0.3585	0.170	0.23	2.0	2.33	25	0.159	4.55	7	11	no	zero	0.00
237.9	4.6	15.1	92	18	109	0.75	1638	1638	1638	26.04	0.2572	1.21	28.87	1.02	0.94	no	0.3582	0.166	0.22	2.0	2.36	26	0.158	4.54	6	10	no	zero	0.00
237.7	4.6	15.3	92	18	109	0.75	1656	1656	1656	25.6	0.2648	1.20	28.15	1.07	0.94	no	0.3579	0.166	0.22	2.0	2.38	26	0.156	4.53	6	10	no	zero	0.00
237.6	4.7	15.4	92	18	109	0.76	1674	1674	1674	24.09	0.2863	1.20	26.27	1.23	0.94	no	0.3576	0.180	0.24	2.0	2.43	29	0.152	4.50	6	10	no	zero	0.00
237.4	4.7	15.6	92	18	109	0.76	1692	1692	1692	24.59	0.3176	1.19	26.59	1.34	0.94	no	0.3572	0.180	0.24	2.0	2.45	29	0.151	4.49	6	10	no	zero	0.00
237.3	4.8	15.7	92	18	109	0.76	1710	1710	1710	24.18	0.3095	1.18	25.93	1.33	0.94	no	0.3569	0.180	0.24	2.0	2.46	30	0.151	4.49	6	10	no	zero	0.00
237.1	4.8	15.9	92	18	109	0.76	1727	1727	1727	23.97	0.3103	1.17	25.49	1.34	0.94	no	0.3566	0.180	0.24	2.0	2.46	30	0.150	4.48	6	11	no	zero	0.00
236.9	4.9	16.1	92	18	109	0.76	1745	1745	1745	23.79	0.2892	1.16	25.09	1.26	0.94	no	0.3563	0.180	0.24	2.0	2.46	30	0.151	4.49	6	10	no	zero	0.00
236.8	4.9	16.2	92	18	109	0.75	1763	1763	1763	25.6	0.2588	1.15	26.80	1.05	0.94	no	0.3559	0.166	0.22	2.0	2.39	27	0.156	4.52	6	10	no	zero	0.00
236.6	5.0	16.4	92	18	109	0.75	1781	1781	1781	26.52	0.2456	1.14	27.55	0.96	0.94	no	0.3556	0.156	0.21	2.0	2.36	26	0.157	4.54	6	10	no	zero	0.00
236.4	5.0	16.6	92	18	109	0.75	1799	1799	1799	26.69	0.2398	1.13	27.51	0.93	0.94	no	0.3553	0.146	0.20	2.0	2.35	26	0.158	4.54	6	10	no	zero	0.00
236.3	5.1	16.7	92	18	109	0.73	1816	1816	1816	28.73	0.2312	1.12	29.41	0.83	0.94	no	0.3550	0.127	0.17	2.0	2.30	24	0.161	4.57	6	10	no	zero	0.00
236.1	5.1	16.9	92	18	109	0.72	1834	1834	1834	30.55	0.2569	1.11	31.06	0.87	0.93	no	0.3546	0.140	0.19	2.0	2.29	23	0.162	4.57	7	11	no	zero	0.00
235.9	5.2	17.1	92	18	109	0.70	1852	1852	1852	35.48	0.2733	1.10	35.84	0.79	0.93	no	0.3543	0.140	0.19	2.0	2.22	21	0.166	4.60	8	12	no	zero	0.00
235.8	5.2	17.2	92	18	109	0.69	1870	1870	1870	36.67	0.2712	1.09	36.80	0.76	0.93	no	0.3540	0.140	0.19	2.0	2.20	20	0.167	4.61	8	12	no	zero	0.00
235.6	5.3	17.4	92	18	109	0.71	1888	1888	1888	33.6	0.2405	1.08	33.46	0.74	0.93	no	0.3536	0.120	0.16	2.0	2.23	21	0.165	4.60	7	11	no	zero	0.00
235.4	5.3	17.6	92	18	109	0.72	1905	1905	1905	31.83	0.2564	1.08	31.46	0.83	0.93	no	0.3533	0.130	0.18	2.0	2.28	23	0.163	4.58	7	11	no	zero	0.00
235.3	5.4	17.7	92	18	109	0.73	1923	1923	1923	30.08	0.2847	1.07	29.50	0.98	0.93	no	0.3529	0.156	0.21	2.0	2.34	25	0.159	4.55	6	10	no	zero	0.00
235.1	5.4	17.9	92	18	109	0.73	1941	1941	1941	30.02	0.2872	1.06	29.23	0.99	0.93	no	0.3526	0.156	0.21	2.0	2.34	25	0.158	4.55	6	10	no	zero	0.00
235.0	5.5	18.0	92	18	109	0.71	1959	1959	1959	32.39	0.2495	1.06	31.37	0.79	0.93	no	0.3523	0.130	0.18	2.0	2.27	22	0.163	4.58	7	11	no	zero	0.00
234.8	5.5	18.2	92	18	109	0.71	1977	1977	1977	32.38	0.2323	1.05	31.15	0.74	0.93	no	0.3519	0.120	0.16	2.0	2.26	22	0.164	4.59	7	11	no	zero	0.00
234.6	5.6	18.4	92	18	109	0.73	1995	1995	1995	30.19	0.2122	1.04	28.80	0.73	0.93	no	0.3516	0.117	0.16	2.0	2.28	23	0.162	4.57	6	10	no	zero	0.00
234.5	5.6	18.5	92	18	109	0.72	2012	2012	2012	31.58	0.2302	1.04	29.96	0.75	0.93	no	0.3512	0.126	0.17	2.0	2.28	23	0.163	4.58	7	11	no	zero	0.00
234.3	5.7	18.7	92	18	109	0.69	2030	2030	2030	37.51	0.2547	1.03	35.49	0.70	0.92	no	0.3509	0.120	0.16	2.0	2.19	20	0.167	4.61	8	12	no	zero	0.00
234.1	5.7	18.9	92	18	109	0.65	2048	2048	2048	46.25	0.2875	1.02	43.66	0.64	0.92	no	0.3506	0.119	0.16	2.0	2.10	17	0.172	4.65	9	13	no	zero	0.00
234.0	5.8	19.0	92	18	109	0.63	2066	2066	2066	53.17	0.3327	1.02	50.02	0.64	0.92	no	0.3502	0.138	0.19	2.0	2.05	15	0.175	4.67	11	15	no	zero	0.00
233.8	5.8	19.2	92	18	109	0.61	2084	2084	2084	59.64	0.3623	1.01	55.90	0.62	0.92	no	0.3499	0.151	0.20	2.0	2.00	14	0.177	4.69	12	14	no	zero	0.00
233.6	5.9	19.4	92	18	109	0.58	2101	2101	2101	67.83	0.3864	1.00	63.36	0.58	0.92	no	0.3495	0.153	0.21	2.0	1.94	12	0.180	4.70	13	15	no	zero	0.00
233.5	5.9	19.5	92	18	109	0.56	2119	2119	2119	74.76	0.4363	1.00	69.59	0.59	0.92	no	0.3492	0.167	0.22	2.0	1.91	12	0.181	4.71	15	17	no	zero	0.00
233.3	6.0	19.7	92	18	109	0.54	2137	2137	2137	81.59	0.3862	0.99	75.69	0.48	0.92	no	0.3488	0.160	0.22	2.0	1.83	10	0.184	4.73	16	17	no	zero	0.00
233.2	6.0	19.8	92	18	109	0.53	2155	2155	2155	87.68	0.4862	0.99	81.06	0.56	0.92	no	0.3485	0.193	0.26	2.0	1.84	10	0.184	4.73	17	18	no	zero	0.00
233.0	6.1	20.0	92	18	109	0.52	2173	2173	2173	89.22	0.5325	0.99	82.14	0.60	0.92	no	0.3481	0.203	0.27	2.0	1.85	10	0.183	4.73	17	19	no	zero	0.00
232.8	6.1	20.2	92	18	109	0.52	2190	2190	2190	91.88	0.5467	0.98	84.27	0.60	0.92	no	0.3478	0.203	0.27	2.0	1.84	10	0.184	4.73	18	19	no	zero	0.00
232.7	6.2	20.3	92	18	109	0.52	2208	2208	2208	91.76	0.5118	0.98	83.80	0.56	0.92	no	0.3474	0.193	0.26	2.0	1.83	10	0.184	4.73	18	19	no	zero	0.00
232.5	6.2	20.5	92	18	109	0.52	2226	2226	2226	91.92	0.4526	0.97	83.59	0.50	0.91	no	0.3471	0.177	0.24	2.0	1.80	9	0.185	4.74	18	19	no	zero	0.00
232.3	6.3	20.7	92	18	109	0.52	2244	2244	2244	89.69	0.3907	0.97	81.17	0.44	0.91	no	0.3467	0.167	0.23	2.0	1.78	9	0.186	4.75	17	18	no	zero	0.00
232.2	6.3	20.8	92	18	109	0.54	2262	2262	2262	81.45	0.3674	0.96	73.21	0.46	0.91	no	0.3464	0.160	0.22	2.0	1.83	10	0.184	4.73	15	16	no	zero	0.00
232.0	6.4	21.0	92	18	109	0.58	2279	2279	2279	67.91	0.3741	0.96	60.44	0.56	0.91	no	0.3460	0.153	0.21	2.0	1.95	13	0.179	4.70	13	15	no	zero	0.00
231.8	6.4	21.2	92	18	109	0.62	2297	2297	2297	54.43	0.3807	0.95	47.84	0.71	0.91	no	0.3457	0.150	0.20	2.0	2.09	16	0.173	4.65	10	14	no	zero	0.00
231.7	6.5	21.3	92	18	109	0.64	2315	2315	2315	48.31	0.3791	0.94	42.05	0.80	0.91	no	0.3453	0.150	0.20	2.0	2.16	19	0.169	4.63	9	13	no	zero	0.00
231.5	6.5	21.5	92	18	109	0.65	2333	2333	2333	48.05	0.3885	0.94	41.60	0.83	0.91	no	0.3450	0.150	0.20	2.0	2.17	19	0.168	4.62	9	13	no	zero	0.00
231.3	6.6	21.7	92	18	109	0.65	2351	2351	2351	47.37	0.4076	0.93	40.78	0.88	0.91	no	0.3446	0.160	0.22	2.0	2.19	20	0.167	4.61	9	13	no	zero	0.00
231.2	6.6	21.8	92	18	109	0.64	2369	2369	2369	50.81	0.4589	0.93	43.66	0.92	0.91	no	0.3442	0.165	0.22	2.0	2.18	19	0.168	4.62	9	13	no	zero	0.00
231.0	6.7	22.0	92	18	109	0.61	2386	2386	2386	58.25	0.4728	0.93	50.11	0.83	0.91	no	0.3439	0.170	0.23	2.0	2.10	17	0.172	4.65	11	15	no	zero	0.00
230.9	6.7	22.1	92	18	109	0.59	2404	2404	2404	63.55	0.4698	0.93	54.63	0.75	0.90	no	0.3435	0.170	0.23	2.0	2.05	15	0.175	4.67	12	16	no	zero	0.00
230.7	6.8	22.3	92	18	109	0.58	2422	2422	2422	66.2	0.4585	0.92	56.75	0.71	0.90	no	0.3432	0.170	0.23	2.0	2.02	15	0.176	4.68	12	14	no	zero	0.00
230.5	6.8	22.5	92	18	109	0.58	2440	2440	2440	68.96	0.4275	0.92	58.97	0.63	0.90	no	0.3428	0.151	0.20	2.0	1.98	13	0.178	4.69	13	15	no	zero	0.00
230.4	6.9	22.6	92	18	109	0.57	2458	2458	2458	71.41	0.3248	0.92	60.90	0.46	0.90	no	0.3424	0.130	0.18	2.0	1.90	11	0.181	4.71	13	15	no	zero	0.00
230.2	6.9	22.8	92	18	109	0.57	2475	2475	2475	71.23	0.3747	0.91	60.49	0.54	0.90	no	0.3421	0.142	0.19	2.0	1.94	12	0.180	4.70	13	15	no	zero	0.00
230.0	7.0	23.0	92	18	109	0.59	2493	2493	2493	66.01	0.3799	0.91	55.60	0.59	0.90	no	0.3417	0.140	0.19	2.0	1.99	14	0.178	4.69	12	14	no	zero	0.00
229.9	7.0	23.1	92	18	109	0.60	2511	2511	2511	60.49	0.3547	0.90	50.49	0.60	0.90	no	0.3414	0.126	0.17	2.0	2.03	15	0.176	4.68	11	13	no	zero	0.00

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	**w**	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
229.7	7.1	23.3	92	18	109	0.61	2529	2529	2529	57.94	0.3449	0.90	48.04	0.61	0.90	no	0.3410	0.129	0.17	2.0	2.05	15	0.175	4.67	10	14	no	zero	0.00
229.5	7.1	23.5	92	18	109	0.62	2547	2547	2547	54.31	0.3507	0.89	44.66	0.66	0.90	no	0.3406	0.130	0.18	2.0	2.10	17	0.172	4.65	10	14	no	zero	0.00
229.4	7.2	23.6	92	18	109	0.63	2564	2564	2564	51.78	0.3857	0.89	42.26	0.76	0.90	no	0.3403	0.150	0.20	2.0	2.15	18	0.170	4.63	9	13	no	zero	0.00
229.2	7.2	23.8	92	18	109	0.63	2582	2582	2582	52.71	0.3923	0.88	42.87	0.76	0.90	no	0.3399	0.150	0.20	2.0	2.14	18	0.170	4.63	9	13	no	zero	0.00
229.0	7.3	24.0	92	18	109	0.62	2600	2600	2600	54.32	0.3973	0.88	44.07	0.75	0.89	no	0.3395	0.140	0.19	2.0	2.13	18	0.171	4.64	9	13	no	zero	0.00
228.9	7.3	24.1	92	18	109	0.62	2618	2618	2618	54.71	0.3836	0.88	44.21	0.72	0.89	no	0.3392	0.140	0.19	2.0	2.12	17	0.171	4.64	10	14	no	zero	0.00
228.7	7.4	24.3	92	18	109	0.62	2636	2636	2636	54.94	0.3585	0.87	44.22	0.67	0.89	no	0.3388	0.130	0.18	2.0	2.10	17	0.172	4.65	10	14	no	zero	0.00
228.6	7.4	24.4	92	18	109	0.61	2653	2653	2653	57.11	0.3573	0.87	45.88	0.64	0.89	no	0.3384	0.129	0.17	2.0	2.08	16	0.173	4.66	10	14	no	zero	0.00
228.4	7.5	24.6	92	18	109	0.62	2671	2671	2671	56.23	0.3428	0.87	44.93	0.62	0.89	no	0.3381	0.119	0.16	2.0	2.08	16	0.173	4.66	10	14	no	zero	0.00
228.2	7.5	24.8	92	18	109	0.62	2689	2689	2689	55.8	0.3486	0.86	44.38	0.64	0.89	no	0.3377	0.119	0.16	2.0	2.09	17	0.173	4.65	10	14	no	zero	0.00
228.1	7.6	24.9	92	18	109	0.61	2707	2707	2707	57.9	0.3744	0.86	45.97	0.66	0.89	no	0.3373	0.140	0.19	2.0	2.09	16	0.173	4.66	10	14	no	zero	0.00
227.9	7.6	25.1	92	18	109	0.60	2725	2725	2725	60.05	0.4117	0.86	47.61	0.70	0.89	no	0.3370	0.150	0.20	2.0	2.09	16	0.173	4.66	10	14	no	zero	0.00
227.7	7.7	25.3	92	18	109	0.60	2742	2742	2742	62.13	0.4355	0.86	49.18	0.72	0.89	no	0.3366	0.150	0.20	2.0	2.08	16	0.173	4.66	11	15	no	zero	0.00
227.6	7.7	25.4	92	18	109	0.59	2760	2760	2760	64.7	0.4249	0.86	51.16	0.67	0.89	no	0.3362	0.150	0.20	2.0	2.05	15	0.175	4.67	11	15	no	zero	0.00
227.4	7.8	25.6	92	18	109	0.58	2778	2778	2778	66.5	0.4303	0.85	52.49	0.66	0.88	no	0.3358	0.150	0.20	2.0	2.04	15	0.175	4.67	11	13	no	zero	0.00
227.2	7.8	25.8	92	18	109	0.58	2796	2796	2796	67.64	0.347	0.85	53.25	0.52	0.88	no	0.3355	0.113	0.15	2.0	1.98	13	0.178	4.69	11	13	no	zero	0.00
227.1	7.9	25.9	92	18	109	0.58	2814	2814	2814	67.03	0.3705	0.85	52.53	0.56	0.88	no	0.3351	0.126	0.17	2.0	2.00	14	0.177	4.68	11	13	no	zero	0.00
226.9	7.9	26.1	92	18	109	0.58	2832	2832	2832	69.14	0.3786	0.85	54.11	0.56	0.88	no	0.3347	0.126	0.17	2.0	1.99	14	0.178	4.69	12	14	no	zero	0.00
226.8	8.0	26.2	92	18	109	0.57	2849	2849	2849	72.35	0.419	0.84	56.62	0.59	0.88	no	0.3344	0.140	0.19	2.0	1.98	13	0.178	4.69	12	14	no	zero	0.00
226.6	8.0	26.4	92	18	109	0.56	2867	2867	2867	75.49	0.4364	0.84	59.07	0.59	0.88	no	0.3340	0.140	0.19	2.0	1.97	13	0.178	4.70	13	15	no	zero	0.00
226.4	8.1	26.6	92	18	109	0.55	2885	2885	2885	78.65	0.4816	0.84	61.53	0.62	0.88	no	0.3336	0.164	0.22	2.0	1.96	13	0.179	4.70	13	15	no	zero	0.00
226.3	8.1	26.7	92	18	109	0.55	2903	2903	2903	79.29	0.4955	0.84	61.86	0.64	0.88	no	0.3332	0.164	0.22	2.0	1.97	13	0.178	4.70	13	15	no	zero	0.00
226.1	8.2	26.9	92	18	109	0.55	2921	2921	2921	77.64	0.485	0.84	60.25	0.64	0.88	no	0.3328	0.164	0.22	2.0	1.98	13	0.178	4.69	13	15	no	zero	0.00
225.9	8.2	27.1	92	18	109	0.55	2938	2938	2938	76.75	0.474	0.83	59.29	0.63	0.88	no	0.3325	0.151	0.20	2.0	1.98	13	0.178	4.69	13	15	no	zero	0.00
225.8	8.3	27.2	92	18	109	0.55	2956	2956	2956	80.28	0.4936	0.83	62.05	0.63	0.87	no	0.3321	0.164	0.22	2.0	1.96	13	0.179	4.70	13	15	no	zero	0.00
225.6	8.3	27.4	92	18	109	0.55	2974	2974	2974	80.16	0.4933	0.83	61.74	0.63	0.87	no	0.3317	0.164	0.22	2.0	1.96	13	0.179	4.70	13	15	no	zero	0.00
225.4	8.4	27.6	92	18	109	0.56	2992	2992	2992	75.31	0.5087	0.82	57.48	0.69	0.87	no	0.3313	0.160	0.22	2.0	2.01	14	0.176	4.68	12	14	no	zero	0.00
225.3	8.4	27.7	92	18	109	0.57	3010	3010	3010	69.64	0.4937	0.82	52.59	0.72	0.87	no	0.3310	0.160	0.22	2.0	2.06	16	0.174	4.67	11	15	no	zero	0.00
225.1	8.5	27.9	92	18	109	0.57	3027	3027	3027	71.09	0.531	0.82	53.60	0.76	0.87	no	0.3306	0.170	0.23	2.0	2.06	16	0.174	4.66	11	15	no	zero	0.00
224.9	8.5	28.1	92	18	109	0.57	3045	3045	3042	72.29	0.5447	0.81	54.40	0.77	0.87	no	0.3306	0.170	0.23	2.0	2.06	16	0.174	4.67	12	16	no	zero	0.00
224.8	8.6	28.2	92	18	109	0.56	3063	3063	3050	73.56	0.5211	0.81	55.26	0.72	0.87	no	0.3313	0.170	0.23	2.0	2.04	15	0.175	4.67	12	14	no	zero	0.00
224.6	8.6	28.4	92	18	109	0.57	3081	3081	3057	72.67	0.5025	0.81	54.34	0.71	0.87	no	0.3320	0.160	0.22	2.0	2.04	15	0.175	4.67	12	14	no	zero	0.00
224.5	8.7	28.5	92	18	109	0.57	3099	3099	3065	72.13	0.4662	0.81	53.72	0.66	0.87	no	0.3327	0.150	0.20	2.0	2.03	15	0.176	4.68	11	13	no	zero	0.00
224.3	8.7	28.7	92	18	109	0.57	3116	3116	3072	71.94	0.3549	0.80	53.38	0.50	0.87	no	0.3334	0.113	0.15	2.0	1.97	13	0.178	4.69	11	13	no	zero	0.00
224.1	8.8	28.9	92	18	109	0.56	3134	3134	3080	74.76	0.4087	0.80	55.50	0.56	0.86	no	0.3341	0.140	0.19	2.0	1.98	13	0.178	4.69	12	14	no	zero	0.00
224.0	8.8	29.0	92	18	109	0.56	3152	3152	3087	75.45	0.4453	0.80	55.88	0.60	0.86	no	0.3348	0.151	0.20	2.0	1.99	14	0.177	4.69	12	14	no	zero	0.00
223.8	8.9	29.2	92	18	109	0.56	3170	3170	3095	75.72	0.4667	0.80	55.92	0.63	0.86	no	0.3355	0.151	0.20	2.0	2.00	14	0.177	4.68	12	14	no	zero	0.00
223.6	8.9	29.4	92	18	109	0.55	3188	3188	3103	77.19	0.5047	0.80	56.94	0.67	0.86	no	0.3361	0.160	0.22	2.0	2.01	14	0.177	4.68	12	14	no	zero	0.00
223.5	9.0	29.5	92	18	109	0.56	3206	3206	3110	73.71	0.5614	0.79	53.93	0.78	0.86	no	0.3368	0.170	0.23	2.0	2.06	16	0.174	4.66	12	16	no	zero	0.00
223.3	9.0	29.7	92	18	109	0.58	3223	3223	3118	67.06	0.6986	0.78	48.41	1.07	0.86	no	0.3374	0.193	0.26	2.0	2.18	19	0.168	4.62	10	14	no	zero	0.00
223.1	9.1	29.9	92	18	109	0.60	3241	3241	3125	62.25	0.8444	0.78	44.42	1.39	0.86	no	0.3381	0.203	0.27	2.0	2.28	23	0.163	4.58	10	14	no	zero	0.00
223.0	9.1	30.0	92	18	109	0.61	3259	3259	3133	59.49	0.96	0.77	42.09	1.66	0.86	no	0.3387	0.245	0.33	2.0	2.34	25	0.159	4.55	9	14	no	zero	0.00
222.8	9.2	30.2	92	18	109	0.61	3277	3277	3140	59.35	1.0399	0.77	41.84	1.80	0.86	no	0.3394	0.265	0.36	2.0	2.37	26	0.157	4.53	9	14	no	zero	0.00
222.7	9.2	30.3	92	18	109	0.61	3295	3295	3148	57.01	1.0194	0.76	39.87	1.84	0.86	no	0.3400	0.258	0.35	2.0	2.39	27	0.156	4.52	9	14	no	zero	0.00
222.5	9.3	30.5	92	18	109	0.62	3312	3312	3156	56.48	0.9476	0.76	39.32	1.73	0.85	no	0.3406	0.238	0.32	2.0	2.38	26	0.156	4.53	9	14	no	zero	0.00
222.3	9.3	30.7	92	18	109	0.61	3330	3330	3163	57.26	0.9509	0.76	39.79	1.71	0.85	no	0.3412	0.238	0.32	2.0	2.37	26	0.157	4.53	9	14	no	zero	0.00
222.2	9.4	30.8	92	18	109	0.62	3348	3348	3171	55.53	1.1354	0.75	38.31	2.11	0.85	no	0.3418	0.285	0.38	2.0	2.44	29	0.152	4.50	9	14	no	zero	0.00
222.0	9.4	31.0	92	18	109	0.63	3366	3366	3178	53.17	1.2355	0.75	36.37	2.40	0.85	no	0.3424	0.285	0.38	2.0	2.49	31	0.148	4.47	8	14	no	zero	0.00
221.8	9.5	31.2	92	18	109	0.63	3384	3384	3186	51.37	1.3562	0.74	34.87	2.73	0.85	no	0.3430	0.280	0.38	2.0	2.54	34	0.145	4.43	8	13	no	zero	0.00
221.7	9.5	31.3	92	18	109	0.65	3401	3401	3193	45.81	1.3463	0.73	30.55	3.05	0.85	no	0.3435	0.280	0.38	2.0	2.62	37	0.139	4.38	7	13	no	zero	0.00
221.5	9.6	31.5	92	18	109	0.65	3419	3419	3201	46.44	1.2558	0.73	30.91	2.81	0.85	no	0.3441	0.280	0.38	2.0	2.59	36	0.141	4.40	7	13	no	zero	0.00
221.3	9.6	31.7	92	18	109	0.65	3437	3437	3209	47.95	0.9848	0.73	31.93	2.13	0.85	no	0.3447	0.280	0.38	2.0	2.50	32	0.148	4.46	7	12	no	zero	0.00
221.2	9.7	31.8	92	18	109	0.64	3455	3455	3216	49.95	0.8672	0.73	33.32	1.80	0.85	no	0.3452	0.230	0.31	2.0	2.44	29	0.152	4.49	7	11	no	zero	0.00
221.0	9.7	32.0	92	18	109	0.62	3473	3473	3224	56.33	0.7876	0.74	38.02	1.44	0.85	no	0.3458	0.210	0.28	2.0	2.34	25	0.159	4.55	8	13	no	zero	0.00
220.8	9.8	32.2	92	18	109	0.60	3490	3490	3231	61.86	0.7262	0.74	42.11	1.21	0.84	no	0.3463	0.203	0.27	2.0	2.26	22	0.164	4.59	9	13	no	zero	0.00
220.7	9.8	32.3	92	18	109	0.59	3508	3508	3239	64.83	0.6762	0.74	44.26	1.07	0.84	no	0.3468	0.185	0.25	2.0	2.21	20	0.166	4.61	10	14	no	zero	0.00
220.5	9.9	32.5	92	18	109	0.59	3526	3526	3246	64.53	0.7026	0.74	43.89	1.12	0.84	no	0.3474	0.185	0.25	2.0	2.22	21	0.166	4.60	10	14	no	zero	0.00
220.4	9.9	32.6	92	18	109	0.59	3544	3544	3254	63.92	0.7454	0.74	43.29	1.20	0.84	no	0.3479	0.185	0.25	2.0	2.25	22	0.164	4.59	9	13	no	zero	0.00
220.2	10.0	32.8	92	18	109	0.59	3562	3562	3262	64.55	0.7652	0.74	43.63	1.22	0.84	no	0.3484	0.203	0.27	2.0	2.25	22	0.164	4.59	10	14	no	zero	0.00
220.0	10.0	33.0	92	18	109	0.58	3579	3579	3269	66.21	0.7469	0.74	44.77	1.16	0.84	no	0.3489	0.185	0.25	2.0	2.23	21	0.166	4.60	10	14	no	zero	0.00
219.9	10.1	33.1	92	18	109	0.57	3597	3597	3277	70.71	0.6975	0.74	48.08	1.01	0.84	no	0.3494	0.193	0.26	2.0	2.17	19	0.169	4.62	10	14	no	zero	0.00
219.7	10.1	33.3	92	18	109	0.55	3615	3615	3284	79.2	0.6763	0.75	54.53	0.87	0.84	no	0.3499	0.180	0.24	2.0	2.09	16	0.173	4.66	12	16	no	zero	0.00
219.5	10.2	33.5	92	18	109	0.52	3633	3633	3292	88.72	0.6796	0.75	61.86	0.78	0.84	no	0.3504	0.190	0.26	2.0	2.01	14	0.176	4.68	13	15	no	zero	0.00
219.4	10.2	33.6	92	18	109	0.50	3651	3651	3299	97.47	0.7227	0.76	68.67	0.76	0.84	no	0.3509	0.200	0.27	2.0	1.97	13	0.178	4.69	15	17	no	zero	0.00
219.2	10.3	33.8	92	18	109	0.49	3669	3669	3307	104.73	0.7003	0.76	74.34	0.68	0.83	no	0.3513	0.190	0.26	2.0	1.91	12	0.181	4.71	16	18	no	zero	0.00
219.0	10.3	34.0	92	18	109	0.48	3686	3686	3315	110.05	0.8409	0.77	78.48	0.78	0.83	no	0.3518	0.210	0.28	2.0	1.93	12	0.180	4.71	17	19	no	zero	0.00
218.9	10.4	34.1	92	18	109	0.47	3704	3704	3322	114.88	0.9094	0.77	82.24	0.80	0.83	no	0.3523	0.230	0.31	2.0	1.92	12	0.180	4.71	17	19	no	zero	0.00
218.7	10.4	34.3	92	18	109	0.46	3722	3722	3330	120.27	0.8718	0.77	86.48	0.74	0.83	no	0.3527	0.213	0.29	2.0	1.88	11	0.182	4.72	18	20	no	zero	0.00
218.6	10.5	34.4	92	18	109	0.45	3740	3740	3337	121.95	0.9028	0.77	87.67	0.75	0.83	no	0.3532	0.220	0.30	2.0	1.88	11	0.182	4.72	19	21	no	zero	0.00
218.4	10.5	34.6	92	18	109	0.45	3758	3758	3345	121.17	0.6733	0.77	86.83	0.56	0.83	no	0.3536	0.193	0.26	2.0	1.81	9	0.184	4.74	18	19	no	zero	0.00
218.2	10.6	34.8	92	18	109	0.46	3775	3775	3353	120.14	0.6298	0.77	85.79	0.53	0.83	no	0.3540	0.183	0.25	2.0	1.80	9	0.185	4.74	18	19	no	zero	0.00
218.1	10.6	34.9	92	18	109	0.45	3793	3793	3360	121.14	0.6931	0.77	86.42	0.58	0.83	no	0.3545	0.193	0.26	2.0	1.82	10	0.184	4.74	18	19	no	zero	0.00
217.9	10.7	35.1	92	18	109	0.45	3811	3811	3368	122.82	0.7447	0.77	87.62	0.62	0.83	no	0.3549	0.203	0.27	2.0	1.83	10	0.184	4.73	19	20	no	zero	0.00
217.7	10.7	35.3	92	18	109	0.44	3829	3829	3375	126.88	0.7607	0.77	90.77	0.61	0.83	no	0.3553	0.217	0.29	2.0	1.82	9	0.184	4.74	19	20	no	zero	0.00
217.6	10.8	35.4	92	18	109	0.44	3847	3847	3383	129.03	0.7703	0.77	92.36	0.61	0.82	no	0.3557	0.217	0.29	2.0	1.81	9	0.185	4.74	19	20	no	zero	0.00
217.4	10.8	35.6	92	18	109	0.44	3864	3864	3390	130.58	0.7396	0.77	93.44	0.57	0.82	no	0.3561	0.207	0.28	2.0	1.79	9	0.185	4.74	20	21	no	zero	0.00

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
217.2	10.9	35.8	92	18	109	0.44	3882	3882	3398	129.69	0.7321	0.77	92.51	0.57	0.82	no	0.3565	0.207	0.28	2.0	1.79	9	0.185	4.74	20	21	no	zero	0.00
217.1	10.9	35.9	92	18	109	0.44	3900	3900	3406	127.49	0.7104	0.76	90.51	0.57	0.82	no	0.3569	0.207	0.28	2.0	1.80	9	0.185	4.74	19	20	no	zero	0.00
216.9	11.0	36.1	92	18	109	0.44	3918	3918	3413	127.33	0.7258	0.76	90.19	0.58	0.82	no	0.3573	0.207	0.28	2.0	1.81	9	0.185	4.74	19	20	no	zero	0.00
216.7	11.0	36.3	92	18	109	0.44	3936	3936	3421	130.03	0.7804	0.76	92.22	0.61	0.82	no	0.3577	0.217	0.29	2.0	1.81	9	0.185	4.74	19	20	no	zero	0.00
216.6	11.1	36.4	92	18	109	0.42	3953	3953	3428	137.58	0.8406	0.77	98.29	0.62	0.82	no	0.3580	0.217	0.29	2.0	1.79	9	0.185	4.74	21	22	no	zero	0.00
216.4	11.1	36.6	92	18	109	0.40	3971	3971	3436	149.07	0.9167	0.78	107.72	0.62	0.82	no	0.3584	0.230	0.31	2.0	1.76	8	0.186	4.75	23	24	no	zero	0.00
216.3	11.2	36.7	92	18	109	0.39	3989	3989	3443	161.12	0.9496	0.78	117.76	0.60	0.82	no	0.3588	0.225	0.30	2.0	1.72	7	0.188	4.76	25	26	no	zero	0.00
216.1	11.2	36.9	92	18	109	0.37	4007	4007	3451	170.68	1.0268	0.79	125.79	0.61	0.81	no	0.3591	0.237	0.32	2.0	1.70	7	0.188	4.76	26	27	no	zero	0.00
215.9	11.3	37.1	92	18	109	0.36	4025	4025	3459	175.04	1.0787	0.79	129.35	0.62	0.81	no	0.3595	0.237	0.32	2.0	1.70	7	0.188	4.77	27	28	no	zero	0.00
215.8	11.3	37.2	92	18	109	0.36	4043	4043	3466	179.17	1.1435	0.79	132.74	0.65	0.81	no	0.3598	0.240	0.32	2.0	1.70	7	0.188	4.77	28	29	no	zero	0.00
215.6	11.4	37.4	92	18	109	0.35	4060	4060	3474	184.31	1.1548	0.80	137.02	0.63	0.81	no	0.3602	0.240	0.32	2.0	1.68	7	0.189	4.77	29	30	no	zero	0.00
215.4	11.4	37.6	92	18	109	0.35	4078	4078	3481	183.04	0.8735	0.79	135.69	0.48	0.81	no	0.3605	0.230	0.31	2.0	1.61	6	0.191	4.78	28	29	no	zero	0.00
215.3	11.5	37.7	92	18	109	0.37	4096	4096	3489	172.3	0.7466	0.78	126.13	0.44	0.81	no	0.3608	0.213	0.29	2.0	1.62	6	0.191	4.78	26	27	no	zero	0.00
215.1	11.5	37.9	92	18	109	0.39	4114	4114	3496	155.13	0.7156	0.77	111.25	0.47	0.81	no	0.3612	0.217	0.29	2.0	1.68	7	0.189	4.77	23	24	no	zero	0.00
214.9	11.6	38.1	92	18	109	0.42	4132	4132	3504	141.35	0.7605	0.76	99.52	0.55	0.81	no	0.3615	0.197	0.27	2.0	1.76	8	0.186	4.75	21	22	no	zero	0.00
214.8	11.6	38.2	92	18	109	0.42	4149	4149	3512	138.9	0.8866	0.75	97.31	0.65	0.81	no	0.3618	0.217	0.29	2.0	1.81	9	0.185	4.74	21	22	no	zero	0.00
214.6	11.7	38.4	92	18	109	0.42	4167	4167	3519	140.02	0.9384	0.75	98.05	0.68	0.81	no	0.3621	0.217	0.29	2.0	1.82	9	0.184	4.74	21	22	no	zero	0.00
214.5	11.7	38.5	92	18	109	0.43	4185	4185	3527	131.71	0.9887	0.74	91.06	0.76	0.80	no	0.3624	0.230	0.31	2.0	1.87	11	0.182	4.72	19	21	no	zero	0.00
214.3	11.8	38.7	92	18	109	0.45	4203	4203	3534	125.79	1.2355	0.74	86.08	1.00	0.80	no	0.3627	0.257	0.35	2.0	1.96	13	0.179	4.70	18	20	no	zero	0.00
214.1	11.8	38.9	92	18	109	0.43	4221	4221	3542	136.04	1.3884	0.74	94.24	1.04	0.80	no	0.3630	0.273	0.37	2.0	1.94	12	0.180	4.70	20	22	no	zero	0.00
214.0	11.9	39.0	92	18	109	0.40	4238	4238	3549	152.15	1.3027	0.76	107.40	0.87	0.80	no	0.3633	0.260	0.35	2.0	1.85	10	0.183	4.73	23	25	no	zero	0.00
213.8	11.9	39.2	92	18	109	0.39	4256	4256	3557	155.57	0.9016	0.76	110.08	0.59	0.80	no	0.3636	0.225	0.30	2.0	1.74	8	0.187	4.76	23	24	no	zero	0.00
213.6	12.0	39.4	92	18	109	0.40	4274	4274	3565	150.86	0.7148	0.75	105.95	0.48	0.80	no	0.3638	0.210	0.28	2.0	1.70	7	0.188	4.76	22	23	no	zero	0.00
213.5	12.0	39.5	92	18	109	0.41	4292	4292	3572	145.37	0.6961	0.75	101.21	0.49	0.80	no	0.3641	0.210	0.28	2.0	1.72	8	0.188	4.76	21	22	no	zero	0.00
213.3	12.1	39.7	92	18	109	0.40	4310	4310	3580	151.19	0.8317	0.75	105.86	0.56	0.80	no	0.3644	0.220	0.30	2.0	1.74	8	0.187	4.76	22	23	no	zero	0.00
213.1	12.1	39.9	92	18	109	0.37	4327	4327	3587	173.84	1.0261	0.77	124.84	0.60	0.80	no	0.3646	0.230	0.31	2.0	1.70	7	0.188	4.76	26	27	no	zero	0.00
213.0	12.2	40.0	92	18	109	0.34	4345	4345	3595	192.19	1.1227	0.78	140.58	0.59	0.80	no	0.3649	0.240	0.32	2.0	1.65	6	0.190	4.77	29	30	no	zero	0.00
212.8	12.2	40.2	92	18	109	0.36	4363	4363	3602	180.92	1.0948	0.77	130.55	0.61	0.79	no	0.3651	0.240	0.32	2.0	1.69	7	0.189	4.77	27	28	no	zero	0.00
212.6	12.3	40.4	92	18	109	0.37	4381	4381	3610	172.47	1.0748	0.77	123.09	0.63	0.79	no	0.3654	0.237	0.32	2.0	1.72	7	0.188	4.76	26	27	no	zero	0.00
212.5	12.3	40.5	92	18	109	0.35	4399	4399	3618	186.73	1.2122	0.78	135.21	0.66	0.79	no	0.3656	0.245	0.33	2.0	1.69	7	0.188	4.77	28	29	no	zero	0.00
212.3	12.4	40.7	92	18	109	0.33	4416	4416	3625	200.25	0.8687	0.78	146.88	0.44	0.79	no	0.3659	0.227	0.31	2.0	1.56	5	0.192	4.79	31	31	no	zero	0.00
212.2	12.4	40.8	92	18	109	0.35	4434	4434	3633	187.2	0.9521	0.77	135.22	0.51	0.79	no	0.3661	0.230	0.31	2.0	1.63	6	0.190	4.78	28	29	no	zero	0.00
212.0	12.5	41.0	92	18	109	0.34	4452	4452	3640	193.51	0.9963	0.78	140.54	0.52	0.79	no	0.3663	0.237	0.32	2.0	1.62	6	0.191	4.78	29	30	no	zero	0.00
211.8	12.5	41.2	92	18	109	0.35	4470	4470	3648	187.6	1.0639	0.77	135.18	0.57	0.79	no	0.3666	0.235	0.32	2.0	1.66	6	0.190	4.77	28	29	no	zero	0.00
211.7	12.6	41.3	92	18	109	0.33	4488	4488	3655	200.82	1.0184	0.78	146.59	0.51	0.79	no	0.3668	0.237	0.32	2.0	1.60	5	0.191	4.78	31	32	no	zero	0.00
211.5	12.6	41.5	92	18	109	0.34	4506	4506	3663	195.1	0.8778	0.78	141.35	0.46	0.79	no	0.3670	0.237	0.32	2.0	1.59	5	0.192	4.79	30	31	no	zero	0.00
211.3	12.7	41.7	92	18	109	0.40	4523	4523	3671	151.38	0.7072	0.74	103.91	0.47	0.78	no	0.3672	0.210	0.28	2.0	1.71	7	0.188	4.76	22	23	no	zero	0.00
211.2	12.7	41.8	92	18	109	0.46	4541	4541	3678	117.21	0.5607	0.70	76.31	0.49	0.78	no	0.3674	0.160	0.22	2.0	1.83	10	0.184	4.73	16	17	no	zero	0.00
211.0	12.8	42.0	92	18	109	0.53	4559	4559	3686	85.83	0.6202	0.67	52.51	0.74	0.78	no	0.3676	0.160	0.22	2.0	2.06	16	0.174	4.66	11	15	no	zero	0.00
210.8	12.8	42.2	92	18	109	0.57	4577	4577	3693	71.31	0.9227	0.64	42.02	1.34	0.78	no	0.3678	0.203	0.27	2.0	2.29	23	0.162	4.57	9	13	no	zero	0.00
210.7	12.9	42.3	92	18	109	0.57	4595	4595	3701	71.22	1.2301	0.64	41.86	1.78	0.78	no	0.3680	0.245	0.33	2.0	2.36	26	0.157	4.54	9	14	no	zero	0.00
210.5	12.9	42.5	92	18	109	0.55	4612	4612	3708	80.23	1.3268	0.65	48.14	1.70	0.78	no	0.3682	0.253	0.34	2.0	2.30	24	0.161	4.57	11	15	no	zero	0.00
210.3	13.0	42.7	92	18	109	0.52	4630	4630	3716	92.51	1.0323	0.67	56.94	1.14	0.78	no	0.3684	0.215	0.29	2.0	2.14	18	0.170	4.64	12	16	no	zero	0.00
210.2	13.0	42.8	92	18	109	0.56	4648	4648	3724	73.73	1.2871	0.64	43.33	1.80	0.78	no	0.3686	0.265	0.36	2.0	2.35	26	0.158	4.54	10	15	no	zero	0.00
210.0	13.1	43.0	92	18	109	0.60	4666	4666	3731	60.56	1.3638	0.62	34.18	2.34	0.78	no	0.3687	0.280	0.38	2.0	2.51	32	0.147	4.46	8	13	no	zero	0.00
209.9	13.1	43.1	92	18	109	0.57	4684	4684	3739	69.56	1.4921	0.63	40.23	2.22	0.78	no	0.3689	0.290	0.39	2.0	2.44	29	0.152	4.50	9	14	no	zero	0.00
209.7	13.2	43.3	92	18	109	0.40	4701	4701	3746	150.64	1.5521	0.73	101.64	1.05	0.77	no	0.3691	0.280	0.38	2.0	1.92	12	0.180	4.71	22	24	no	zero	0.00
209.5	13.2	43.5	92	18	109	0.32	4719	4719	3754	203.76	1.2658	0.77	146.69	0.63	0.77	no	0.3692	0.243	0.33	2.0	1.65	6	0.190	4.77	31	32	no	zero	0.00
209.4	13.3	43.6	92	18	109	0.30	4737	4737	3761	219.08	0.9575	0.78	160.16	0.44	0.77	no	0.3694	0.240	0.32	2.0	1.53	4	0.193	4.80	33	33	no	zero	0.00
209.2	13.3	43.8	92	18	109	0.36	4755	4755	3769	181.5	1.0447	0.75	126.98	0.58	0.77	no	0.3696	0.230	0.31	2.0	1.68	7	0.189	4.77	27	28	no	zero	0.00
209.0	13.4	44.0	92	18	109	0.37	4773	4773	3777	169.76	0.9404	0.74	116.85	0.56	0.77	no	0.3697	0.225	0.30	2.0	1.70	7	0.188	4.76	25	26	no	zero	0.00
208.9	13.4	44.1	92	18	109	0.43	4790	4790	3784	135.01	0.8967	0.70	88.27	0.68	0.77	no	0.3699	0.203	0.27	2.0	1.85	10	0.183	4.73	19	21	no	zero	0.00
208.7	13.5	44.3	92	18	109	0.48	4808	4808	3792	109.22	0.8333	0.68	68.16	0.78	0.77	no	0.3700	0.200	0.27	2.0	1.98	13	0.178	4.69	15	17	no	zero	0.00
208.5	13.5	44.5	92	18	109	0.50	4826	4826	3799	100.62	0.8157	0.66	61.62	0.83	0.77	no	0.3701	0.195	0.26	2.0	2.03	15	0.176	4.67	13	15	no	zero	0.00
208.4	13.6	44.6	92	18	109	0.49	4844	4844	3807	103.81	0.8639	0.67	63.86	0.85	0.77	no	0.3703	0.205	0.28	2.0	2.02	15	0.176	4.68	14	16	no	zero	0.00
208.2	13.6	44.8	92	18	109	0.45	4862	4862	3814	121.16	0.8979	0.69	76.87	0.76	0.77	no	0.3704	0.210	0.28	2.0	1.93	12	0.180	4.71	16	18	no	zero	0.00
208.1	13.7	44.9	92	18	109	0.43	4880	4880	3822	132.87	0.8472	0.70	85.86	0.65	0.76	no	0.3705	0.203	0.27	2.0	1.85	10	0.183	4.73	18	20	no	zero	0.00
207.9	13.7	45.1	92	18	109	0.43	4897	4897	3830	132.25	0.7829	0.69	85.23	0.60	0.76	no	0.3707	0.203	0.27	2.0	1.84	10	0.184	4.73	18	19	no	zero	0.00
207.7	13.8	45.3	92	18	109	0.44	4915	4915	3837	131.42	0.7353	0.69	84.44	0.57	0.76	no	0.3708	0.193	0.26	2.0	1.83	10	0.184	4.73	18	19	no	zero	0.00
207.6	13.8	45.4	92	18	109	0.44	4933	4933	3845	130.36	0.7473	0.69	83.47	0.58	0.76	no	0.3709	0.193	0.26	2.0	1.84	10	0.184	4.73	18	19	no	zero	0.00
207.4	13.9	45.6	92	18	109	0.45	4951	4951	3852	125.03	0.7747	0.68	79.19	0.63	0.76	no	0.3710	0.190	0.26	2.0	1.87	11	0.182	4.72	17	19	no	zero	0.00
207.2	13.9	45.8	92	18	109	0.44	4969	4969	3860	127.05	0.8984	0.69	80.62	0.72	0.76	no	0.3711	0.213	0.29	2.0	1.90	11	0.181	4.72	17	19	no	zero	0.00
207.1	14.0	45.9	92	18	109	0.39	4986	4986	3867	158.98	1.0693	0.72	105.96	0.68	0.76	no	0.3712	0.230	0.31	2.0	1.79	9	0.185	4.74	22	23	no	zero	0.00
206.9	14.0	46.1	92	18	109	0.33	5004	5004	3875	201.11	1.2134	0.75	141.51	0.61	0.76	no	0.3713	0.243	0.33	2.0	1.66	6	0.189	4.77	30	31	no	zero	0.00
206.7	14.1	46.3	92	18	109	0.30	5022	5022	3883	221.79	1.6091	0.77	159.66	0.73	0.76	no	0.3714	0.257	0.35	2.0	1.67	7	0.189	4.77	33	34	no	zero	0.00
206.6	14.1	46.4	92	18	109	0.37	5040	5040	3890	172.91	2.4189	0.73	117.04	1.42	0.76	no	0.3715	0.295	0.40	2.0	1.96	13	0.179	4.70	25	27	no	zero	0.00
206.4	14.2	46.6	92	18	109	0.46	5058	5058	3898	116.57	2.1931	0.67	71.96	1.92	0.75	no	0.3716	0.290	0.39	2.0	2.21	20	0.167	4.61	16	21	no	zero	0.00
206.2	14.2	46.8	92	18	109	0.46	5075	5075	3905	116.05	2.1683	0.67	71.45	1.91	0.75	no	0.3717	0.290	0.39	2.0	2.21	20	0.167	4.61	16	21	no	zero	0.00
206.1	14.3	46.9	92	18	109	0.44	5093	5093	3913	128.59	2.0015	0.68	80.89	1.59	0.75	no	0.3718	0.277	0.37	2.0	2.11	17	0.172	4.65	17	22	no	zero	0.00
205.9	14.3	47.1	92	18	109	0.43	5111	5106	3920	133.95	1.1793	0.68	84.96	0.90	0.75	yes	0.3719	0.240	0.32	0.9	1.94	12	0.180	4.70	18	20	0.015	0.03	0.03
205.8	14.4	47.2	92	18	109	0.43	5129	5114	3928	134.39	0.8312	0.68	85.24	0.63	0.75	yes	0.3720	0.203	0.27	0.7	1.85	10	0.183	4.73	18	20	0.015	0.03	0.06
205.6	14.4	47.4	92	18	109	0.44	5147	5121	3936	131.01	0.8089	0.68	82.55	0.63	0.75	yes	0.3721	0.203	0.27	0.7	1.86	10	0.183	4.73	17	19	0.015	0.03	0.09
205.4	14.5	47.6	92	18	109	0.43	5164	5129	3943	132.9	0.8529	0.68	83.96	0.65	0.75	yes	0.3721	0.203	0.27	0.7	1.86	10	0.183	4.73	18	20	0.015	0.03	0.12
205.3	14.5	47.7	92	18	109	0.42	5182	5136	3951	139.09	0.8841	0.69	88.74	0.65	0.75	yes	0.3722	0.203	0.27	0.7	1.84	10	0.184	4.73	19	20	0.015	0.03	0.15
205.1	14.6	47.9	92	18	109	0.42	5200	5144	3958	142.6	0.8511	0.69	91.45	0.61	0.75	yes	0.3723	0.217	0.29	0.8	1.81	9	0.185	4.74	19	20	0.015	0.03	0.18
204.9	14.6	48.1	92	18	109	0.41	5218	5151	3966	143.5	0.754	0.69	92.10	0.54	0.75	yes	0.3723	0.197	0.27	0.7	1.78	9	0.186	4.75	19	20	0.015	0.03	0.21

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
204.8	14.7	48.2	92	18	109	0.43	5236	5159	3973	134.44	1.0778	0.68	84.92	0.82	0.74	yes	0.3724	0.230	0.31	0.8	1.91	12	0.181	4.71	18	20	0.015	0.03	0.24
204.6	14.7	48.4	92	18	109	0.50	5253	5167	3981	100.23	1.7438	0.64	59.15	1.79	0.74	yes	0.3724	0.265	0.36	1.0	2.25	22	0.164	4.59	13	18	0.020	0.04	0.28
204.4	14.8	48.6	92	18	109	0.57	5271	5174	3989	70.25	1.9552	0.60	38.28	2.89	0.74	no	0.3725	0.285	0.38	2.0	2.53	33	0.146	4.44	9	15	no	zero	0.28
204.3	14.8	48.7	92	18	109	0.58	5289	5182	3996	66.29	2.622	0.59	35.63	4.12	0.74	no	0.3726	0.285	0.38	2.0	2.65	39	0.136	4.36	8	15	no	zero	0.28
204.1	14.9	48.9	92	18	109	0.61	5307	5189	4004	58.72	2.6871	0.58	30.70	4.79	0.74	no	0.3726	0.280	0.38	2.0	2.75	44	0.127	4.28	7	13	no	zero	0.28
204.0	14.9	49.0	92	18	109	0.69	5325	5197	4011	38.45	1.9508	0.54	18.27	5.45	0.74	no	0.3726	0.263	0.35	2.0	2.95	56	0.107	4.09	4	9	no	zero	0.28
203.8	15.0	49.2	92	18	109	0.72	5343	5204	4019	32.15	1.7633	0.53	14.63	5.98	0.74	no	0.3727	0.251	0.34	2.0	3.05	63	0.096	3.97	4	9	no	zero	0.28
203.6	15.0	49.4	92	18	109	0.64	5360	5212	4026	49.03	2.2543	0.56	24.55	4.86	0.74	no	0.3727	0.269	0.36	2.0	2.82	48	0.120	4.22	6	12	no	zero	0.28
203.5	15.1	49.5	92	18	109	0.62	5378	5220	4034	56.32	2.276	0.57	29.05	4.24	0.74	no	0.3728	0.274	0.37	2.0	2.73	43	0.129	4.30	7	13	no	zero	0.28
203.3	15.1	49.7	92	18	109	0.68	5396	5227	4042	39.58	1.4272	0.54	18.84	3.87	0.74	no	0.3728	0.263	0.35	2.0	2.84	50	0.118	4.20	4	9	no	zero	0.28
203.1	15.2	49.9	92	18	109	0.63	5414	5235	4049	51.37	0.955	0.56	25.91	1.96	0.73	yes	0.3728	0.243	0.33	0.9	2.55	34	0.144	4.43	6	11	0.025	0.05	0.32
203.0	15.2	50.0	92	18	109	0.48	5432	5242	4057	106.16	1.0782	0.64	62.97	1.04	0.73	yes	0.3729	0.230	0.31	0.8	2.08	16	0.173	4.66	14	19	0.015	0.03	0.35
202.8	15.3	50.2	92	18	109	0.46	5449	5250	4064	120.14	1.1206	0.66	73.28	0.95	0.73	yes	0.3729	0.250	0.34	0.9	2.00	14	0.177	4.68	16	18	0.020	0.04	0.39
202.6	15.3	50.4	92	18	109	0.47	5467	5257	4072	114.62	1.3464	0.65	69.10	1.20	0.73	yes	0.3729	0.258	0.35	0.9	2.09	16	0.173	4.66	15	20	0.015	0.03	0.42
202.5	15.4	50.5	92	18	109	0.48	5485	5265	4079	108.88	1.4195	0.65	64.81	1.34	0.73	yes	0.3729	0.245	0.33	0.9	2.14	18	0.170	4.64	14	19	0.015	0.03	0.45
202.3	15.4	50.7	92	18	109	0.47	5503	5273	4087	113.52	1.3211	0.65	68.18	1.19	0.73	yes	0.3729	0.245	0.33	0.9	2.09	16	0.173	4.65	15	20	0.015	0.03	0.48
202.1	15.5	50.9	92	18	109	0.45	5521	5280	4095	122.18	1.0727	0.66	74.61	0.90	0.73	yes	0.3730	0.230	0.31	0.8	1.98	13	0.178	4.69	16	18	0.020	0.04	0.52
202.0	15.5	51.0	92	18	109	0.44	5538	5288	4102	131.06	0.9378	0.67	81.32	0.73	0.73	yes	0.3730	0.213	0.29	0.8	1.90	11	0.181	4.72	17	19	0.015	0.03	0.55
201.8	15.6	51.2	92	18	109	0.43	5556	5295	4110	136.3	0.8981	0.68	85.31	0.67	0.73	yes	0.3730	0.203	0.27	0.7	1.86	10	0.183	4.73	18	20	0.015	0.03	0.58
201.7	15.6	51.3	92	18	109	0.42	5574	5303	4117	138.42	0.8336	0.68	86.91	0.61	0.73	yes	0.3730	0.203	0.27	0.7	1.83	10	0.184	4.73	18	19	0.015	0.03	0.61
201.5	15.7	51.5	92	18	109	0.44	5592	5310	4125	130.34	0.9917	0.67	80.60	0.78	0.72	yes	0.3730	0.220	0.30	0.8	1.92	12	0.180	4.71	17	19	0.015	0.03	0.64
201.3	15.7	51.7	92	18	109	0.47	5610	5318	4132	112.14	1.3854	0.65	66.85	1.27	0.72	yes	0.3730	0.258	0.35	0.9	2.11	17	0.172	4.65	14	19	0.015	0.03	0.67
201.2	15.8	51.8	92	18	109	0.50	5627	5326	4140	96.98	1.8653	0.63	55.84	1.98	0.72	yes	0.3730	0.283	0.38	1.0	2.30	23	0.161	4.57	12	17	0.020	0.04	0.71
201.0	15.8	52.0	92	18	109	0.51	5645	5333	4148	96.29	2.4621	0.63	55.30	2.63	0.72	no	0.3730	0.300	0.41	2.0	2.38	27	0.156	4.53	12	18	no	zero	0.71
200.8	15.9	52.2	92	18	109	0.57	5663	5341	4155	72.5	2.8458	0.59	38.97	4.08	0.72	no	0.3730	0.285	0.38	2.0	2.62	38	0.138	4.38	9	16	no	zero	0.71
200.7	15.9	52.3	92	18	109	0.66	5681	5348	4163	44.23	1.7102	0.54	21.19	4.13	0.72	no	0.3730	0.269	0.36	2.0	2.82	48	0.120	4.22	5	11	no	zero	0.71
200.5	16.0	52.5	92	18	109	0.75	5699	5356	4170	25.71	1.1738	0.50	10.75	5.13	0.72	no	0.3730	0.240	0.32	2.0	3.11	67	0.089	3.89	3	8	no	zero	0.71
200.3	16.0	52.7	92	18	109	0.77	5716	5363	4178	22.33	0.6842	0.49	8.97	3.51	0.72	no	0.3730	0.236	0.32	2.0	3.07	65	0.093	3.93	2	7	no	zero	0.71
200.2	16.1	52.8	92	18	109	0.78	5734	5371	4185	21.94	0.5086	0.49	8.75	2.67	0.72	no	0.3729	0.236	0.32	2.0	3.02	61	0.100	4.01	2	7	no	zero	0.71
200.0	16.1	53.0	92	18	109	0.77	5752	5379	4193	22.52	0.4469	0.49	9.04	2.28	0.72	no	0.3729	0.238	0.32	2.0	2.97	57	0.105	4.07	2	7	no	zero	0.71
199.9	16.2	53.1	92	18	109	0.77	5770	5386	4201	22.42	0.6052	0.49	8.97	3.10	0.72	no	0.3729	0.236	0.32	2.0	3.04	62	0.097	3.98	2	7	no	zero	0.71
199.7	16.2	53.3	92	18	109	0.77	5788	5394	4208	22.52	0.5867	0.49	9.01	2.99	0.71	no	0.3729	0.238	0.32	2.0	3.03	62	0.098	3.99	2	7	no	zero	0.71
199.5	16.3	53.5	92	18	109	0.78	5806	5401	4216	21.56	0.4872	0.48	8.51	2.61	0.71	no	0.3729	0.236	0.32	2.0	3.02	61	0.099	4.00	2	7	no	zero	0.71
199.4	16.3	53.6	92	18	109	0.79	5823	5409	4223	19.52	0.4759	0.48	7.46	2.87	0.71	no	0.3728	0.233	0.32	2.0	3.09	66	0.091	3.91	2	6	no	zero	0.71
199.2	16.4	53.8	92	18	109	0.79	5841	5416	4231	19.95	0.486	0.48	7.66	2.85	0.71	no	0.3728	0.233	0.32	2.0	3.08	65	0.093	3.93	2	6	no	zero	0.71
199.0	16.4	54.0	92	18	109	0.78	5859	5424	4238	21.67	0.6425	0.48	8.52	3.43	0.71	no	0.3728	0.236	0.32	2.0	3.09	66	0.092	3.92	2	7	no	zero	0.71
198.9	16.5	54.1	92	18	109	0.77	5877	5432	4246	23.19	0.8242	0.49	9.29	4.07	0.71	no	0.3727	0.238	0.32	2.0	3.10	66	0.090	3.90	2	7	no	zero	0.71
198.7	16.5	54.3	92	18	109	0.75	5895	5439	4254	25.67	0.7977	0.49	10.56	3.51	0.71	no	0.3727	0.240	0.32	2.0	3.02	61	0.100	4.01	3	8	no	zero	0.71
198.5	16.6	54.5	92	18	109	0.76	5912	5447	4261	24.71	0.6622	0.49	10.05	3.04	0.71	no	0.3727	0.240	0.32	2.0	3.00	59	0.102	4.03	2	7	no	zero	0.71
198.4	16.6	54.6	92	18	109	0.77	5930	5454	4269	23.21	0.78	0.48	9.26	3.85	0.71	no	0.3726	0.238	0.32	2.0	3.09	66	0.092	3.92	2	7	no	zero	0.71
198.2	16.7	54.8	92	18	109	0.76	5948	5462	4276	24.81	1.0621	0.49	10.07	4.86	0.71	no	0.3726	0.240	0.32	2.0	3.12	68	0.088	3.87	3	8	no	zero	0.71
198.0	16.7	55.0	92	18	109	0.72	5966	5469	4284	30.59	1.64	0.50	13.12	5.94	0.70	no	0.3725	0.246	0.33	2.0	3.08	65	0.092	3.92	3	8	no	zero	0.71
197.9	16.8	55.1	92	18	109	0.67	5984	5477	4291	41.29	1.9082	0.53	19.08	4.98	0.70	no	0.3725	0.263	0.35	2.0	2.91	54	0.111	4.13	5	10	no	zero	0.71
197.7	16.8	55.3	92	18	109	0.59	6001	5485	4299	64.59	2.6979	0.57	33.19	4.38	0.70	no	0.3725	0.280	0.38	2.0	2.70	41	0.132	4.33	8	14	no	zero	0.71
197.6	16.9	55.4	92	18	109	0.59	6019	5492	4307	64.14	2.8207	0.57	32.88	4.61	0.70	no	0.3724	0.280	0.38	2.0	2.71	42	0.130	4.31	8	14	no	zero	0.71
197.4	16.9	55.6	92	18	109	0.64	6037	5500	4314	48.87	2.4213	0.54	23.45	5.28	0.70	no	0.3724	0.269	0.36	2.0	2.86	51	0.117	4.18	6	12	no	zero	0.71
197.2	17.0	55.8	92	18	109	0.65	6055	5507	4322	46.07	2.5598	0.54	21.77	5.95	0.70	no	0.3723	0.269	0.36	2.0	2.92	54	0.111	4.12	5	11	no	zero	0.71
197.1	17.0	55.9	92	18	109	0.65	6073	5515	4329	46.32	1.9046	0.54	21.89	4.40	0.70	no	0.3722	0.269	0.36	2.0	2.83	49	0.120	4.21	5	11	no	zero	0.71
196.9	17.1	56.1	92	18	109	0.71	6090	5522	4337	34.12	1.4632	0.51	14.92	4.71	0.70	no	0.3722	0.251	0.34	2.0	2.98	58	0.105	4.06	4	9	no	zero	0.71
196.7	17.1	56.3	92	18	109	0.74	6108	5530	4344	27.35	1.8924	0.49	11.26	7.79	0.70	no	0.3721	0.240	0.32	2.0	3.21	75	0.077	3.73	3	8	no	zero	0.71
196.6	17.2	56.4	92	18	109	0.68	6126	5538	4352	40.22	2.3148	0.52	18.30	6.23	0.70	no	0.3721	0.263	0.35	2.0	2.99	59	0.103	4.04	5	10	no	zero	0.71
196.4	17.2	56.6	92	18	109	0.67	6144	5545	4360	42.49	2.3563	0.53	19.57	5.98	0.70	no	0.3720	0.263	0.35	2.0	2.95	56	0.107	4.08	5	10	no	zero	0.71
196.2	17.3	56.8	92	18	109	0.70	6162	5553	4367	34.77	1.9356	0.51	15.21	6.11	0.69	no	0.3719	0.251	0.34	2.0	3.04	62	0.097	3.98	4	9	no	zero	0.71
196.1	17.3	56.9	92	18	109	0.72	6180	5560	4375	30.87	1.8277	0.50	13.07	6.58	0.69	no	0.3719	0.246	0.33	2.0	3.11	67	0.089	3.88	3	8	no	zero	0.71
195.9	17.4	57.1	92	18	109	0.66	6197	5568	4382	43.8	2.1795	0.53	20.26	5.35	0.69	no	0.3718	0.269	0.36	2.0	2.91	54	0.111	4.13	5	10	no	zero	0.71
195.7	17.4	57.3	92	18	109	0.62	6215	5575	4390	54.02	2.8035	0.55	26.28	5.51	0.69	no	0.3717	0.274	0.37	2.0	2.84	49	0.119	4.20	6	12	no	zero	0.71
195.6	17.5	57.4	92	18	109	0.68	6233	5583	4397	39.65	1.5305	0.52	17.85	4.19	0.69	no	0.3717	0.257	0.35	2.0	2.88	52	0.114	4.16	4	9	no	zero	0.71
195.4	17.5	57.6	92	18	109	0.74	6251	5591	4405	27.8	1.5641	0.49	11.37	6.34	0.69	no	0.3716	0.240	0.32	2.0	3.15	70	0.084	3.83	3	8	no	zero	0.71
195.3	17.6	57.7	92	18	109	0.71	6269	5598	4413	32.32	1.742	0.50	13.76	5.97	0.69	no	0.3715	0.246	0.33	2.0	3.07	64	0.094	3.94	3	8	no	zero	0.71
195.1	17.6	57.9	92	18	109	0.56	6286	5606	4420	74.15	2.0286	0.58	38.81	2.86	0.69	no	0.3715	0.285	0.38	2.0	2.52	33	0.146	4.45	9	15	no	zero	0.71
194.9	17.7	58.1	92	18	109	0.45	6304	5613	4428	123.03	2.5343	0.64	72.96	2.11	0.69	no	0.3714	0.300	0.41	2.0	2.23	21	0.165	4.60	16	21	no	zero	0.71
194.8	17.7	58.2	92	18	109	0.42	6322	5621	4435	138.76	2.757	0.66	84.82	2.03	0.69	no	0.3713	0.310	0.42	2.0	2.17	19	0.169	4.62	18	23	no	zero	0.71
194.6	17.8	58.4	92	18	109	0.41	6340	5628	4443	148.56	2.8697	0.67	92.39	1.97	0.69	yes	0.3712	0.307	0.41	1.1	2.14	18	0.170	4.64	20	26	0.010	0.02	0.73
194.4	17.8	58.6	92	18	109	0.38	6358	5636	4450	166.31	2.5923	0.69	106.50	1.59	0.68	yes	0.3711	0.290	0.39	1.1	2.03	15	0.176	4.68	23	25	0.015	0.03	0.76
194.3	17.9	58.7	92	18	109	0.35	6375	5644	4458	187.08	2.0914	0.71	123.62	1.14	0.68	yes	0.3711	0.287	0.39	1.0	1.88	11	0.182	4.72	26	28	0.010	0.02	0.78
194.1	17.9	58.9	92	18	109	0.33	6393	5651	4466	200.81	1.8641	0.72	135.24	0.94	0.68	yes	0.3710	0.270	0.36	1.0	1.79	9	0.185	4.74	29	30	0.010	0.02	0.80
193.9	18.0	59.1	92	18	109	0.32	6411	5659	4473	205.6	1.7847	0.73	139.31	0.88	0.68	yes	0.3709	0.265	0.36	1.0	1.77	8	0.186	4.75	29	30	0.001	0.00	0.80
193.8	18.0	59.2	92	18	109	0.33	6429	5666	4481	200.56	0.7445	0.72	134.89	0.38	0.68	yes	0.3708	0.215	0.29	0.8	1.56	5	0.192	4.79	28	28	0.010	0.02	0.82
193.6	18.1	59.4	92	18	109	0.36	6447	5674	4488	176.18	1.0392	0.70	114.28	0.60	0.68	yes	0.3707	0.233	0.32	0.8	1.73	8	0.187	4.76	24	25	0.010	0.02	0.84
193.5	18.1	59.5	92	18	109	0.47	6464	5682	4496	115.32	2.0057	0.63	66.85	1.79	0.68	yes	0.3706	0.275	0.37	1.0	2.21	20	0.167	4.61	15	20	0.015	0.03	0.87
193.3	18.2	59.7	92	18	109	0.58	6482	5689	4503	68.93	2.1702	0.57	35.09	3.30	0.68	no	0.3705	0.285	0.38	2.0	2.59	36	0.140	4.40	8	14	no	zero	0.87
193.1	18.2	59.9	92	18	109	0.64	6500	5697	4511	49.69	2.406	0.53	23.29	5.18	0.68	no	0.3704	0.269	0.36	2.0	2.86	50	0.117	4.18	6	12	no	zero	0.87
193.0	18.3	60.0	92	18	109	0.61	6518	5704	4519	58.09	2.9639	0.55	28.29	5.41	0.68	no	0.3703	0.274	0.37	2.0	2.81	47	0.122	4.23	7	13	no	zero	0.87
192.8	18.3	60.2	92	18	109	0.61	6536	5712	4526	58.19	2.8424	0.55	28.32	5.18	0.68	no	0.3702	0.274	0.37	2.0	2.79	47	0.123	4.24	7	13	no	zero	0.87
192.6	18.4	60.4	92	18	109	0.67	6553	5719	4534	43.19	1.7309	0.52	19.47	4.34	0.67	no	0.3701	0.263	0.35	2.0	2.86	51	0.116	4.18	5	10	no	zero	0.87
192.5	18.4	60.5	92	18	109	0.73	6571	5727	4541	29.75	1.4011	0.48	12.11	5.29	0.67	no	0.3700	0.246	0.33	2.0	3.08	65	0.093	3.93	3	8	no	zero	0.87

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
192.3	18.5	60.7	92	18	109	0.73	6589	5735	4549	28.72	1.6585	0.48	11.56	6.52	0.67	no	0.3699	0.240	0.32	2.0	3.15	70	0.084	3.82	3	8	no	zero	0.87
192.1	18.5	60.9	92	18	109	0.65	6607	5742	4556	46.01	2.1754	0.52	21.01	5.09	0.67	no	0.3698	0.269	0.36	2.0	2.89	52	0.114	4.16	5	11	no	zero	0.87
192.0	18.6	61.0	92	18	109	0.64	6625	5750	4564	50.95	2.3797	0.53	23.86	5.00	0.67	no	0.3697	0.269	0.36	2.0	2.84	49	0.119	4.20	6	12	no	zero	0.87
191.8	18.6	61.2	92	18	109	0.67	6643	5757	4572	42.04	1.848	0.51	18.71	4.77	0.67	no	0.3696	0.263	0.35	2.0	2.90	53	0.112	4.14	5	10	no	zero	0.87
191.6	18.7	61.4	92	18	109	0.71	6660	5765	4579	33.5	1.5699	0.49	14.01	5.20	0.67	no	0.3695	0.251	0.34	2.0	3.02	61	0.099	4.00	4	9	no	zero	0.87
191.5	18.7	61.5	92	18	109	0.72	6678	5772	4587	30.43	1.5199	0.48	12.37	5.61	0.67	no	0.3694	0.246	0.33	2.0	3.09	66	0.092	3.92	3	8	no	zero	0.87
191.3	18.8	61.7	92	18	109	0.70	6696	5780	4594	35.89	1.817	0.50	15.26	5.58	0.67	no	0.3693	0.251	0.34	2.0	3.02	61	0.100	4.01	4	9	no	zero	0.87
191.2	18.8	61.8	92	18	109	0.64	6714	5788	4602	50.6	2.6126	0.53	23.53	5.53	0.67	no	0.3692	0.269	0.36	2.0	2.87	51	0.115	4.17	6	12	no	zero	0.87
191.0	18.9	62.0	92	18	109	0.54	6732	5795	4609	82.98	3.3284	0.58	43.73	4.18	0.67	no	0.3691	0.290	0.39	2.0	2.60	36	0.140	4.40	10	17	no	zero	0.87
190.8	18.9	62.2	92	18	109	0.41	6749	5803	4617	143.49	3.985	0.66	87.19	2.84	0.66	no	0.3690	0.310	0.42	2.0	2.27	22	0.163	4.58	19	25	no	zero	0.87
190.7	19.0	62.3	92	18	109	0.34	6767	5810	4625	195.42	3.8683	0.71	129.28	2.01	0.66	no	0.3689	0.333	0.45	2.0	2.04	15	0.175	4.67	28	34	no	zero	0.87
190.5	19.0	62.5	92	18	109	0.33	6785	5818	4632	202	3.6052	0.72	134.84	1.82	0.66	yes	0.3688	0.328	0.44	1.2	2.00	14	0.177	4.69	29	31	0.001	0.00	0.87
190.3	19.1	62.7	92	18	109	0.32	6803	5825	4640	205.64	3.5482	0.72	137.92	1.75	0.66	yes	0.3687	0.315	0.43	1.2	1.98	13	0.178	4.69	29	31	0.001	0.00	0.87
190.2	19.1	62.8	92	18	109	0.31	6821	5833	4647	213.6	1.8834	0.73	144.77	0.90	0.66	yes	0.3685	0.267	0.36	1.0	1.76	8	0.186	4.75	30	31	0.001	0.00	0.87
190.0	19.2	63.0	92	18	109	0.32	6838	5841	4655	206.09	1.4902	0.72	138.18	0.74	0.66	yes	0.3684	0.250	0.34	0.9	1.72	7	0.188	4.76	29	30	0.001	0.00	0.88
189.8	19.2	63.2	92	18	109	0.33	6856	5848	4662	201.8	1.4632	0.72	134.42	0.74	0.66	yes	0.3683	0.250	0.34	0.9	1.73	8	0.187	4.76	28	29	0.010	0.02	0.90
189.7	19.3	63.3	92	18	109	0.41	6874	5856	4670	146.17	2.4168	0.66	88.89	1.69	0.66	yes	0.3682	0.287	0.39	1.1	2.10	17	0.172	4.65	19	25	0.010	0.02	0.92
189.5	19.3	63.5	92	18	109	0.56	6892	5863	4678	76.03	2.9566	0.57	38.89	4.07	0.66	no	0.3681	0.285	0.38	2.0	2.62	38	0.138	4.38	9	16	no	zero	0.92
189.4	19.4	63.6	92	18	109	0.64	6910	5871	4685	50.52	2.7845	0.52	23.23	5.92	0.66	no	0.3679	0.269	0.36	2.0	2.90	53	0.113	4.14	6	12	no	zero	0.92
189.2	19.4	63.8	92	18	109	0.69	6927	5878	4693	37.91	1.9968	0.50	16.12	5.80	0.66	no	0.3678	0.257	0.35	2.0	3.01	60	0.101	4.02	4	9	no	zero	0.92
189.0	19.5	64.0	92	18	109	0.71	6945	5886	4700	33.51	1.4301	0.48	13.75	4.76	0.66	no	0.3677	0.246	0.33	2.0	3.01	60	0.101	4.02	3	8	no	zero	0.92
188.9	19.5	64.1	92	18	109	0.70	6963	5894	4708	34.82	1.8161	0.49	14.42	5.80	0.65	no	0.3676	0.251	0.34	2.0	3.05	63	0.097	3.97	4	9	no	zero	0.92
188.7	19.6	64.3	92	18	109	0.67	6981	5901	4715	42.69	2.0624	0.50	18.69	5.26	0.65	no	0.3675	0.263	0.35	2.0	2.93	55	0.109	4.11	5	10	no	zero	0.92
188.5	19.6	64.5	92	18	109	0.65	6999	5909	4723	48.18	2.6607	0.52	21.76	5.95	0.65	no	0.3673	0.269	0.36	2.0	2.92	54	0.110	4.12	5	11	no	zero	0.92
188.4	19.7	64.6	92	18	109	0.61	7017	5916	4731	58.46	3.562	0.53	27.76	6.48	0.65	no	0.3672	0.274	0.37	2.0	2.87	51	0.116	4.17	7	13	no	zero	0.92
188.2	19.7	64.8	92	18	109	0.57	7034	5924	4738	69.88	4.5714	0.55	34.73	6.89	0.65	no	0.3671	0.280	0.38	2.0	2.82	48	0.120	4.22	8	15	no	zero	0.92
188.0	19.8	65.0	92	18	109	0.51	7052	5931	4746	93.75	5.6458	0.59	50.28	6.26	0.65	no	0.3670	0.300	0.41	2.0	2.68	41	0.133	4.34	12	19	no	zero	0.92
187.9	19.8	65.1	92	18	109	0.48	7070	5939	4753	110.64	6.5544	0.61	61.97	6.12	0.65	no	0.3668	0.300	0.41	2.0	2.62	37	0.139	4.38	14	22	no	zero	0.92
187.7	19.9	65.3	92	18	109	0.48	7088	5947	4761	108.76	6.8604	0.61	60.59	6.52	0.65	no	0.3667	0.300	0.41	2.0	2.64	39	0.136	4.36	14	21	no	zero	0.92
187.5	19.9	65.5	92	18	109	0.51	7106	5954	4768	96.19	6.4788	0.59	51.83	6.99	0.65	no	0.3666	0.300	0.41	2.0	2.71	42	0.131	4.31	12	19	no	zero	0.92
187.4	20.0	65.6	92	18	109	0.50	7123	5962	4776	99.04	5.5675	0.60	53.74	5.83	0.65	no	0.3664	0.300	0.41	2.0	2.64	38	0.137	4.37	12	19	no	zero	0.92
187.2	20.0	65.8	92	18	109	0.43	7141	5969	4784	137.15	2.4938	0.64	81.22	1.87	0.65	yes	0.3663	0.298	0.40	1.1	2.16	19	0.169	4.63	18	23	0.015	0.03	0.94
187.1	20.1	65.9	92	18	109	0.42	7159	5977	4791	140.57	2.0492	0.65	83.77	1.50	0.65	yes	0.3662	0.277	0.37	1.0	2.08	16	0.173	4.66	18	23	0.015	0.03	0.97
186.9	20.1	66.1	92	18	109	0.52	7177	5984	4799	88.73	2.5234	0.58	46.65	2.96	0.64	no	0.3661	0.295	0.40	2.0	2.47	30	0.150	4.48	10	16	no	zero	0.97
186.7	20.2	66.3	92	18	109	0.61	7195	5992	4806	58.9	2.5457	0.53	27.76	4.60	0.64	no	0.3659	0.274	0.37	2.0	2.77	45	0.126	4.27	7	13	no	zero	0.97
186.6	20.2	66.4	92	18	109	0.67	7212	6000	4814	42.67	2.2178	0.50	18.42	5.68	0.64	no	0.3658	0.263	0.35	2.0	2.96	57	0.106	4.08	5	10	no	zero	0.97
186.4	20.3	66.6	92	18	109	0.68	7230	6007	4822	40.83	1.3633	0.49	17.39	3.66	0.64	no	0.3657	0.257	0.35	2.0	2.86	50	0.117	4.19	4	9	no	zero	0.97
186.2	20.3	66.8	92	18	109	0.66	7248	6015	4829	44.76	2.2391	0.50	19.53	5.44	0.64	no	0.3655	0.263	0.35	2.0	2.93	55	0.110	4.11	5	10	no	zero	0.97
186.1	20.4	66.9	92	18	109	0.59	7266	6022	4837	65.52	2.7702	0.54	31.66	4.48	0.64	no	0.3654	0.280	0.38	2.0	2.72	42	0.130	4.31	7	13	no	zero	0.97
185.9	20.4	67.1	92	18	109	0.42	7284	6030	4844	142.83	4.0152	0.65	85.14	2.88	0.64	no	0.3653	0.310	0.42	2.0	2.28	23	0.162	4.58	19	25	no	zero	0.97
185.7	20.5	67.3	92	18	109	0.37	7301	6037	4852	173.95	4.6155	0.68	109.64	2.71	0.64	no	0.3651	0.330	0.45	2.0	2.19	20	0.168	4.62	24	30	no	zero	0.97
185.6	20.5	67.4	92	18	109	0.32	7319	6045	4859	208.15	4.3435	0.72	138.27	2.12	0.64	no	0.3650	0.335	0.45	2.0	2.04	15	0.175	4.67	30	36	no	zero	0.97
185.4	20.6	67.6	92	18	109	0.26	7337	6053	4867	256.64	3.4108	0.76	181.71	1.35	0.64	no	0.3648	0.310	0.42	2.0	1.81	9	0.184	4.74	38	39	no	zero	0.97
185.3	20.6	67.7	92	18	109	0.24	7355	6060	4875	272.61	3.1926	0.77	196.66	1.19	0.64	no	0.3647	0.300	0.41	2.0	1.75	8	0.187	4.75	41	42	no	zero	0.97
185.1	20.7	67.9	92	18	109	0.25	7373	6068	4882	270.65	3.3746	0.77	194.74	1.26	0.64	no	0.3646	0.310	0.42	2.0	1.77	9	0.186	4.75	41	42	no	zero	0.97
184.9	20.7	68.1	92	18	109	0.25	7390	6075	4890	267.84	3.7867	0.77	192.01	1.43	0.64	no	0.3644	0.320	0.43	2.0	1.82	9	0.184	4.74	41	42	no	zero	0.97
184.8	20.8	68.2	92	18	109	0.24	7408	6083	4897	278.07	3.6943	0.78	201.67	1.35	0.63	no	0.3643	0.310	0.42	2.0	1.78	9	0.186	4.75	42	43	no	zero	0.97
184.6	20.8	68.4	92	18	109	0.23	7426	6090	4905	282.54	3.1431	0.78	205.90	1.13	0.63	no	0.3642	0.300	0.41	2.0	1.72	7	0.188	4.76	43	44	no	zero	0.97
184.4	20.9	68.6	92	18	109	0.23	7444	6098	4912	288.75	2.1525	0.79	211.84	0.76	0.63	no	0.3640	0.260	0.35	2.0	1.59	5	0.192	4.79	44	45	no	zero	0.97
184.3	20.9	68.7	92	18	109	0.23	7462	6106	4920	287.67	0.9343	0.79	210.72	0.33	0.63	no	0.3639	0.230	0.31	2.0	1.36	2	0.197	4.82	44	44	no	zero	0.97
184.1	21.0	68.9	92	18	109	0.24	7480	6113	4928	273.42	0.9802	0.77	196.97	0.36	0.63	no	0.3637	0.240	0.32	2.0	1.41	3	0.196	4.81	41	41	no	zero	0.97
183.9	21.0	69.1	92	18	109	0.24	7497	6121	4935	272.33	0.9103	0.77	195.87	0.34	0.63	no	0.3636	0.230	0.31	2.0	1.40	2	0.196	4.82	41	41	no	zero	0.97
183.8	21.1	69.2	92	18	109	0.23	7515	6128	4943	281.47	1.5033	0.78	204.54	0.54	0.63	no	0.3634	0.250	0.34	2.0	1.50	4	0.194	4.80	43	43	no	zero	0.97
183.6	21.1	69.4	92	18	109	0.24	7533	6136	4950	274.33	2.0606	0.77	197.64	0.76	0.63	no	0.3633	0.260	0.35	2.0	1.61	6	0.191	4.78	41	42	no	zero	0.97
183.4	21.2	69.6	92	18	109	0.24	7551	6143	4958	274.96	2.2868	0.77	198.18	0.84	0.63	no	0.3632	0.270	0.36	2.0	1.64	6	0.190	4.78	41	42	no	zero	0.97
183.3	21.2	69.7	92	18	109	0.24	7569	6151	4965	274.85	2.2774	0.77	198.01	0.84	0.63	no	0.3630	0.270	0.36	2.0	1.64	6	0.190	4.78	41	42	no	zero	0.97
183.1	21.3	69.9	92	18	109	0.24	7586	6159	4973	273.64	1.9373	0.77	196.79	0.72	0.63	no	0.3629	0.260	0.35	2.0	1.59	5	0.191	4.79	41	42	no	zero	0.97
183.0	21.3	70.0	92	18	109	0.26	7604	6166	4981	259.34	1.5221	0.76	183.25	0.60	0.63	no	0.3627	0.250	0.34	2.0	1.56	5	0.192	4.79	38	38	no	zero	0.97
182.8	21.4	70.2	92	18	109	0.30	7622	6174	4988	224.82	1.8705	0.73	151.81	0.85	0.63	yes	0.3626	0.267	0.36	1.0	1.73	8	0.187	4.76	32	33	0.001	0.00	0.98
182.6	21.4	70.4	92	18	109	0.41	7640	6181	4996	144.81	3.0519	0.64	85.67	2.16	0.62	no	0.3624	0.310	0.42	2.0	2.19	20	0.168	4.62	19	24	no	zero	0.98
182.5	21.5	70.5	92	18	109	0.52	7658	6189	5003	90.76	4.0176	0.57	47.05	4.62	0.62	no	0.3623	0.295	0.40	2.0	2.60	37	0.140	4.39	11	18	no	zero	0.98
182.3	21.5	70.7	92	18	109	0.55	7675	6196	5011	79.71	4.6636	0.56	39.84	6.15	0.62	no	0.3622	0.285	0.38	2.0	2.74	44	0.128	4.29	9	16	no	zero	0.98
182.1	21.6	70.9	92	18	109	0.53	7693	6204	5018	85.84	5.1201	0.56	43.75	6.24	0.62	no	0.3620	0.290	0.39	2.0	2.72	43	0.130	4.30	10	17	no	zero	0.98
182.0	21.6	71.0	92	18	109	0.51	7711	6212	5026	96.39	5.5917	0.58	50.69	6.04	0.62	no	0.3619	0.300	0.41	2.0	2.67	40	0.134	4.35	12	19	no	zero	0.98
181.8	21.7	71.2	92	18	109	0.42	7729	6219	5034	139.19	5.9813	0.63	81.18	4.42	0.62	no	0.3617	0.310	0.42	2.0	2.43	29	0.153	4.50	18	25	no	zero	0.98
181.6	21.7	71.4	92	18	109	0.34	7747	6227	5041	194.9	6.3845	0.70	125.55	3.34	0.62	no	0.3616	0.333	0.45	2.0	2.22	21	0.166	4.60	27	33	no	zero	0.98
181.5	21.8	71.5	92	18	109	0.29	7764	6234	5049	232.2	5.8888	0.73	157.88	2.58	0.62	no	0.3614	0.338	0.46	2.0	2.07	16	0.174	4.66	34	40	no	zero	0.98
181.3	21.8	71.7	92	18	109	0.27	7782	6242	5056	247.51	5.0274	0.75	171.68	2.06	0.62	no	0.3613	0.340	0.46	2.0	1.97	13	0.178	4.69	37	39	no	zero	0.98
181.1	21.9	71.9	92	18	109	0.29	7800	6249	5064	233.25	4.5989	0.73	158.70	2.01	0.62	no	0.3611	0.338	0.46	2.0	1.98	13	0.178	4.69	34	36	no	zero	0.98
181.0	21.9	72.0	92	18	109	0.36	7818	6257	5071	174.92	4.7072	0.67	108.84	2.75	0.62	no	0.3610	0.330	0.45	2.0	2.19	20	0.167	4.61	24	30	no	zero	0.98
180.8	22.0	72.2	92	18	109	0.43	7836	6265	5079	133.5	4.3476	0.63	76.65	3.36	0.62	no	0.3608	0.300	0.41	2.0	2.36	26	0.158	4.54	17	23	no	zero	0.98
180.7	22.0	72.3	92	18	109	0.45	7854	6272	5087	121.7	5.5692	0.61	68.00	4.73	0.62	no	0.3607	0.300	0.41	2.0	2.50	32	0.147	4.46	15	22	no	zero	0.98
180.5	22.1	72.5	92	18	109	0.37	7871	6280	5094	173.81	5.8458	0.67	107.78	3.44	0.61	no	0.3606	0.330	0.45	2.0	2.27	22	0.163	4.58	24	30	no	zero	0.98
180.3	22.1	72.7	92	18	109	0.30	7889	6287	5102	222	4.7924	0.72	148.41	2.20	0.61	no	0.3604	0.337	0.45	2.0	2.03	15	0.176	4.67	32	34	no	zero	0.98
180.2	22.2	72.8	92	18	109	0.30	7907	6295	5109	224.59	4.1322	0.72	150.63	1.87	0.61	yes	0.3603	0.336	0.45	1.3	1.97	13	0.178	4.69	32	34	0.001	0.00	0.98
180.0	22.2	73.0	92	18	109	0.36	7925	6302	5117	181.3	4.6298	0.68	113.71	2.61	0.61	no	0.3601	0.332	0.45	2.0	2.16	19	0.169	4.63	25	31	no	zero	0.98

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	**w**	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
179.8	22.3	73.2	92	18	109	0.44	7943	6310	5124	128.87	5.5671	0.62	72.98	4.46	0.61	no	0.3600	0.300	0.41	2.0	2.46	30	0.150	4.48	16	23	no	zero	0.98
179.7	22.3	73.3	92	18	109	0.54	7960	6318	5132	81.53	5.1535	0.55	40.50	6.65	0.61	no	0.3598	0.290	0.39	2.0	2.76	45	0.126	4.27	9	16	no	zero	0.98
179.5	22.4	73.5	92	18	109	0.63	7978	6325	5140	52.38	3.0835	0.50	22.94	6.37	0.61	no	0.3597	0.269	0.36	2.0	2.92	54	0.110	4.12	6	12	no	zero	0.98
179.3	22.4	73.7	92	18	109	0.69	7996	6333	5147	37.11	2.6994	0.47	14.66	8.15	0.61	no	0.3595	0.251	0.34	2.0	3.14	69	0.086	3.84	4	9	no	zero	0.98
179.2	22.5	73.8	92	18	109	0.65	8014	6340	5155	48.12	2.8987	0.49	20.53	6.57	0.61	no	0.3594	0.269	0.36	2.0	2.97	57	0.105	4.07	5	11	no	zero	0.98
179.0	22.5	74.0	92	18	109	0.57	8032	6348	5162	72.69	3.8982	0.54	34.85	5.68	0.61	no	0.3592	0.280	0.38	2.0	2.76	45	0.126	4.27	8	15	no	zero	0.98
178.9	22.6	74.1	92	18	109	0.52	8049	6355	5170	92.16	5.1265	0.57	47.22	5.82	0.61	no	0.3591	0.295	0.40	2.0	2.68	40	0.134	4.34	11	18	no	zero	0.98
178.7	22.6	74.3	92	18	109	0.53	8067	6363	5177	86.13	4.7281	0.56	43.26	5.76	0.61	no	0.3589	0.290	0.39	2.0	2.70	41	0.132	4.32	10	17	no	zero	0.98
178.5	22.7	74.5	92	18	109	0.55	8085	6371	5185	76.95	4.2398	0.54	37.40	5.82	0.61	no	0.3588	0.285	0.38	2.0	2.75	44	0.128	4.28	9	16	no	zero	0.98
178.4	22.7	74.6	92	18	109	0.39	8103	6378	5193	159.34	3.335	0.65	95.61	2.15	0.61	no	0.3586	0.320	0.43	2.0	2.15	18	0.170	4.63	21	27	no	zero	0.98

Project: Proposed Mixed Use Development
Probe ID: CPT-3
Date: 2/3/2011

Design Earthquake Magnitude	6.66	MW
Magnitude Scaling Factor (MSF)	1.35	%
pga	0.584	g
Groundwater Depth:	32	ft
Elevation at GS	237.0	ft
HHGWL	12.0	ft

note: eff overburden set to depth increments of 0.1 meter

total settlement (inch)	total settlement below BOF (inch)
1.06	1.06

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	***w***	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
236.8	0.0	0.2	92	18	109	0.54	18	18	18	80.82	0	1.70	129.80	0.01	1.000	no	0.3796	0.165	0.22	2.0	1.56	5	0.192	4.79	27	27	no	zero	0.00
236.7	0.1	0.3	92	18	109	0.50	36	36	36	98.85	0.8173	1.70	158.74	0.83	1.00	no	0.3796	0.267	0.36	2.0	1.70	7	0.188	4.76	33	34	no	zero	0.00
236.5	0.1	0.5	92	18	109	0.45	53	53	53	122.43	0.8461	1.70	196.60	0.69	1.00	no	0.3796	0.260	0.35	2.0	1.58	5	0.192	4.79	41	42	no	zero	0.00
236.3	0.2	0.7	92	18	109	0.36	71	71	71	178.63	0.9649	1.70	286.86	0.54	1.00	no	0.3796	0.250	0.34	2.0	1.39	2	0.196	4.82	60	60	no	zero	0.00
236.2	0.2	0.8	92	18	109	0.37	89	89	89	173.67	0.8587	1.70	278.88	0.49	1.00	no	0.3796	0.250	0.34	2.0	1.37	2	0.196	4.82	58	58	no	zero	0.00
236.0	0.3	1.0	92	18	109	0.41	107	107	107	145.07	0.5519	1.70	232.93	0.38	1.00	no	0.3796	0.240	0.32	2.0	1.36	2	0.197	4.82	48	48	no	zero	0.00
235.9	0.3	1.1	92	18	109	0.45	125	125	125	123.28	0.282	1.70	197.91	0.23	1.00	no	0.3796	0.230	0.31	2.0	1.31	1	0.198	4.83	41	41	no	zero	0.00
235.7	0.4	1.3	92	18	109	0.49	142	142	142	105.54	0.1907	1.70	169.40	0.18	1.00	no	0.3796	0.230	0.31	2.0	1.33	2	0.197	4.82	35	35	no	zero	0.00
235.5	0.4	1.5	92	18	109	0.52	160	160	160	90.19	0.1734	1.70	144.73	0.19	1.00	no	0.3796	0.210	0.28	2.0	1.40	3	0.196	4.82	30	30	no	zero	0.00
235.4	0.5	1.6	92	18	109	0.55	178	178	178	77.92	0.1479	1.70	125.01	0.19	1.00	no	0.3796	0.190	0.26	2.0	1.46	3	0.195	4.81	26	26	no	zero	0.00
235.2	0.5	1.8	92	18	109	0.57	196	196	196	70.16	0.1223	1.70	112.53	0.17	1.00	no	0.3796	0.180	0.24	2.0	1.49	4	0.194	4.80	23	23	no	zero	0.00
235.0	0.6	2.0	92	18	109	0.60	214	214	214	62	0.109	1.70	99.41	0.18	1.00	no	0.3796	0.142	0.19	2.0	1.54	4	0.193	4.79	21	21	no	zero	0.00
234.9	0.6	2.1	92	18	109	0.61	232	232	232	57.27	0.1061	1.70	91.80	0.19	1.00	no	0.3796	0.142	0.19	2.0	1.58	5	0.192	4.79	19	20	no	zero	0.00
234.7	0.7	2.3	92	18	109	0.62	249	249	249	54.09	0.101	1.70	86.68	0.19	1.00	no	0.3795	0.113	0.15	2.0	1.61	6	0.191	4.78	18	19	no	zero	0.00
234.5	0.7	2.5	92	18	109	0.64	267	267	267	48.38	0.1024	1.70	77.49	0.21	1.00	no	0.3793	0.100	0.14	2.0	1.67	7	0.189	4.77	16	17	no	zero	0.00
234.4	0.8	2.6	92	18	109	0.66	285	285	285	44.9	0.078	1.70	71.89	0.17	1.00	no	0.3791	0.085	0.11	2.0	1.68	7	0.189	4.77	15	16	no	zero	0.00
234.2	0.8	2.8	92	18	109	0.66	303	303	303	43.3	0.0857	1.70	69.31	0.20	1.00	no	0.3789	0.071	0.10	2.0	1.71	7	0.188	4.76	15	16	no	zero	0.00
234.0	0.9	3.0	92	18	109	0.66	321	321	321	43.78	0.0698	1.70	70.06	0.16	1.00	no	0.3786	0.085	0.11	2.0	1.68	7	0.189	4.77	15	16	no	zero	0.00
233.9	0.9	3.1	92	18	109	0.64	338	338	338	48.55	0.0761	1.70	77.71	0.16	1.00	no	0.3784	0.085	0.11	2.0	1.63	6	0.190	4.78	16	17	no	zero	0.00
233.7	1.0	3.3	92	18	109	0.63	356	356	356	51.24	0.0981	1.70	82.02	0.19	1.00	no	0.3782	0.113	0.15	2.0	1.64	6	0.190	4.78	17	18	no	zero	0.00
233.6	1.0	3.4	92	18	109	0.63	374	374	374	51.41	0.1001	1.70	82.27	0.20	1.00	no	0.3780	0.113	0.15	2.0	1.64	6	0.190	4.78	17	18	no	zero	0.00
233.4	1.1	3.6	92	18	109	0.63	392	392	392	51.4	0.1125	1.70	82.24	0.22	1.00	no	0.3777	0.123	0.17	2.0	1.65	6	0.190	4.77	17	18	no	zero	0.00
233.2	1.1	3.8	92	18	109	0.64	410	410	410	50.62	0.0874	1.70	80.98	0.17	0.99	no	0.3775	0.113	0.15	2.0	1.63	6	0.190	4.78	17	18	no	zero	0.00
233.1	1.2	3.9	92	18	109	0.63	427	427	427	53.55	0.1039	1.70	85.67	0.19	0.99	no	0.3773	0.113	0.15	2.0	1.62	6	0.191	4.78	18	19	no	zero	0.00
232.9	1.2	4.1	92	18	109	0.62	445	445	445	56.45	0.108	1.70	90.31	0.19	0.99	no	0.3770	0.142	0.19	2.0	1.60	5	0.191	4.78	19	20	no	zero	0.00
232.7	1.3	4.3	92	18	109	0.60	463	463	463	62.51	0.1177	1.70	100.03	0.19	0.99	no	0.3768	0.170	0.23	2.0	1.55	5	0.192	4.79	21	21	no	zero	0.00
232.6	1.3	4.4	92	18	109	0.58	481	481	481	67.38	0.122	1.70	107.84	0.18	0.99	no	0.3766	0.170	0.23	2.0	1.52	4	0.193	4.80	22	22	no	zero	0.00
232.4	1.4	4.6	92	18	109	0.57	499	499	499	72.01	0.1341	1.70	115.26	0.19	0.99	no	0.3763	0.180	0.24	2.0	1.49	4	0.194	4.80	24	24	no	zero	0.00
232.2	1.4	4.8	92	18	109	0.56	516	516	516	76.1	0.1577	1.70	121.82	0.21	0.99	no	0.3761	0.190	0.26	2.0	1.49	4	0.194	4.80	25	25	no	zero	0.00
232.1	1.5	4.9	92	18	109	0.55	534	534	534	78.28	0.1535	1.70	125.30	0.20	0.99	no	0.3758	0.190	0.26	2.0	1.47	3	0.194	4.81	26	26	no	zero	0.00
231.9	1.5	5.1	92	18	109	0.54	552	552	552	80.94	0.143	1.70	129.56	0.18	0.99	no	0.3756	0.190	0.26	2.0	1.44	3	0.195	4.81	27	27	no	zero	0.00
231.8	1.6	5.2	92	18	109	0.55	570	570	570	78.34	0.1558	1.70	125.37	0.20	0.99	no	0.3753	0.190	0.26	2.0	1.47	3	0.194	4.81	26	26	no	zero	0.00
231.6	1.6	5.4	92	18	109	0.55	588	588	588	78.19	0.1544	1.70	125.12	0.20	0.99	no	0.3751	0.190	0.26	2.0	1.47	3	0.194	4.81	26	26	no	zero	0.00
231.4	1.7	5.6	92	18	109	0.54	605	605	605	83.18	0.1776	1.70	133.12	0.21	0.99	no	0.3749	0.200	0.27	2.0	1.45	3	0.195	4.81	28	28	no	zero	0.00
231.3	1.7	5.7	92	18	109	0.52	623	623	623	89.74	0.2071	1.70	143.64	0.23	0.99	no	0.3746	0.210	0.28	2.0	1.44	3	0.195	4.81	30	30	no	zero	0.00
231.1	1.8	5.9	92	18	109	0.52	641	641	641	90.97	0.2095	1.70	145.60	0.23	0.99	no	0.3744	0.210	0.28	2.0	1.43	3	0.195	4.81	30	30	no	zero	0.00
230.9	1.8	6.1	92	18	109	0.52	659	659	659	91.87	0.2213	1.70	147.03	0.24	0.99	no	0.3741	0.210	0.28	2.0	1.44	3	0.195	4.81	31	31	no	zero	0.00
230.8	1.9	6.2	92	18	109	0.51	677	677	677	93.27	0.1988	1.70	149.27	0.21	0.98	no	0.3739	0.210	0.28	2.0	1.41	3	0.196	4.81	31	31	no	zero	0.00
230.6	1.9	6.4	92	18	109	0.51	695	695	695	94.95	0.1923	1.70	151.95	0.20	0.98	no	0.3736	0.220	0.30	2.0	1.39	2	0.196	4.82	32	32	no	zero	0.00
230.4	2.0	6.6	92	18	109	0.51	712	712	712	96.28	0.1742	1.70	154.07	0.18	0.98	no	0.3733	0.220	0.30	2.0	1.37	2	0.196	4.82	32	32	no	zero	0.00
230.3	2.0	6.7	92	18	109	0.50	730	730	730	99.71	0.1806	1.70	159.57	0.18	0.98	no	0.3731	0.220	0.30	2.0	1.35	2	0.197	4.82	33	33	no	zero	0.00
230.1	2.1	6.9	92	18	109	0.49	748	748	748	102.65	0.1975	1.67	161.27	0.19	0.98	no	0.3728	0.230	0.31	2.0	1.36	2	0.197	4.82	33	33	no	zero	0.00
229.9	2.1	7.1	92	18	109	0.49	766	766	766	105.49	0.2287	1.64	162.81	0.22	0.98	no	0.3726	0.230	0.31	2.0	1.38	2	0.196	4.82	34	34	no	zero	0.00
229.8	2.2	7.2	92	18	109	0.49	784	784	784	105.57	0.2534	1.62	161.09	0.24	0.98	no	0.3723	0.230	0.31	2.0	1.40	3	0.196	4.82	33	33	no	zero	0.00
229.6	2.2	7.4	92	18	109	0.48	801	801	801	106.68	0.2504	1.60	160.64	0.24	0.98	no	0.3720	0.230	0.31	2.0	1.40	2	0.196	4.82	33	33	no	zero	0.00
229.5	2.3	7.5	92	18	109	0.47	819	819	819	111.86	0.2618	1.57	164.98	0.23	0.98	no	0.3718	0.230	0.31	2.0	1.38	2	0.196	4.82	34	34	no	zero	0.00
229.3	2.3	7.7	92	18	109	0.48	837	837	837	110.5	0.2666	1.55	161.72	0.24	0.98	no	0.3715	0.230	0.31	2.0	1.40	3	0.196	4.82	34	34	no	zero	0.00
229.1	2.4	7.9	92	18	109	0.49	855	855	855	101.66	0.2563	1.57	149.76	0.25	0.98	no	0.3712	0.213	0.29	2.0	1.44	3	0.195	4.81	31	31	no	zero	0.00
229.0	2.4	8.0	92	18	109	0.51	873	873	873	92.89	0.2191	1.58	137.79	0.24	0.98	no	0.3710	0.200	0.27	2.0	1.46	3	0.195	4.81	29	29	no	zero	0.00
228.8	2.5	8.2	92	18	109	0.52	890	890	890	90.95	0.2006	1.57	134.02	0.22	0.98	no	0.3707	0.200	0.27	2.0	1.46	3	0.195	4.81	28	28	no	zero	0.00
228.6	2.5	8.4	92	18	109	0.52	908	908	908	91.19	0.1838	1.55	132.93	0.20	0.98	no	0.3704	0.200	0.27	2.0	1.45	3	0.195	4.81	28	28	no	zero	0.00
228.5	2.6	8.5	92	18	109	0.51	926	926	926	95.26	0.1862	1.52	136.41	0.20	0.98	no	0.3702	0.200	0.27	2.0	1.43	3	0.195	4.81	28	28	no	zero	0.00
228.3	2.6	8.7	92	18	109	0.51	944	944	944	94.62	0.1941	1.51	134.33	0.21	0.97	no	0.3699	0.200	0.27	2.0	1.44	3	0.195	4.81	28	28	no	zero	0.00
228.1	2.7	8.9	92	18	109	0.52	962	962	962	90.12	0.2005	1.51	127.74	0.22	0.97	no	0.3696	0.190	0.26	2.0	1.48	4	0.194	4.80	27	27	no	zero	0.00
228.0	2.7	9.0	92	18	109	0.54	979	979	979	80.84	0.2107	1.52	115.46	0.26	0.97	no	0.3693	0.188	0.25	2.0	1.55	5	0.193	4.79	24	24	no	zero	0.00
227.8	2.8	9.2	92	18	109	0.59	997	997	997	65.44	0.18	1.56	95.45	0.28	0.97	no	0.3691	0.158	0.21	2.0	1.63	6	0.190	4.78	20	21	no	zero	0.00
227.6	2.8	9.4	92	18	109	0.63	1015	1015	1015	52.45	0.1542	1.59	77.96	0.30	0.97	no	0.3688	0.115	0.16	2.0	1.72	8	0.188	4.76	16	17	no	zero	0.00
227.5	2.9	9.5	92	18	109	0.66	1033	1033	1033	45.12	0.1331	1.60	67.54	0.30	0.97	no	0.3685	0.097	0.13	2.0	1.78	9	0.186	4.75	14	15	no	zero	0.00
227.3	2.9	9.7	92	18	109	0.67	1051	1051	1051	43.09	0.1515	1.59	64.10	0.36	0.97	no	0.3682	0.104	0.14	2.0	1.83	10	0.184	4.73	14	15	no	zero	0.00
227.2	3.0	9.8	92	18	109	0.66	1069	1069	1069	43.66	0.1462	1.57	64.12	0.34	0.97	no	0.3679	0.090	0.12	2.0	1.82	10	0.184	4.74	14	15	no	zero	0.00
227.0	3.0	10.0	92	18	109	0.65	1086	1086	1086	48.02	0.1492	1.54	69.02	0.31	0.97	no	0.3676	0.110	0.15	2.0	1.78	9	0.186	4.75	15	16	no	zero	0.00
226.8	3.1	10.2	92	18	109	0.64	1104	1104	1104	50.91	0.1402	1.51	71.94	0.28	0.97	no	0.3674	0.115	0.16	2.0	1.74	8	0.187	4.75	15	16	no	zero	0.00
226.7	3.1	10.3	92	18	109	0.63	1122	1122	1122	53.19	0.1327	1.49	74.04	0.25	0.97	no	0.3671	0.115	0.16	2.0	1.72	7	0.188	4.76	16	17	no	zero	0.00
226.5	3.2	10.5	92	18	109	0.62	1140	1140	1140	56.11	0.1311	1.47	76.89	0.24	0.97	no	0.3668	0.100	0.14	2.0	1.69	7	0.189	4.77	16	17	no	zero	0.00
226.3	3.2	10.7	92	18	109	0.61	1158	1158	1158	56.91	0.138	1.45	77.11	0.24	0.97	no	0.3665	0.100	0.14	2.0	1.70	7	0.188	4.77	16	17	no	zero	0.00

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	w	γ_M	n	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	F	r_d	Liquefiable	CSR	CRR_1	CRR	FS_{liq}	I_c	AFC	D_{50}	q_c/N	N	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
226.2	3.3	10.8	92	18	109	0.61	1175	1175	1175	58.29	0.1306	1.43	78.04	0.23	0.96	no	0.3662	0.100	0.14	2.0	1.68	7	0.189	4.77	16	17	no	zero	0.00
226.0	3.3	11.0	92	18	109	0.60	1193	1193	1193	59.96	0.183	1.41	79.31	0.31	0.96	no	0.3659	0.130	0.18	2.0	1.72	8	0.188	4.76	17	18	no	zero	0.00
225.8	3.4	11.2	92	18	109	0.60	1211	1211	1211	59.94	0.1589	1.40	78.56	0.27	0.96	no	0.3656	0.115	0.16	2.0	1.70	7	0.188	4.76	16	17	no	zero	0.00
225.7	3.4	11.3	92	18	109	0.61	1229	1229	1229	57.77	0.1615	1.39	75.31	0.28	0.96	no	0.3653	0.115	0.16	2.0	1.73	8	0.187	4.76	16	17	no	zero	0.00
225.5	3.5	11.5	92	18	109	0.60	1247	1247	1247	60.35	0.1989	1.38	77.66	0.33	0.96	no	0.3650	0.130	0.18	2.0	1.75	8	0.187	4.75	16	17	no	zero	0.00
225.4	3.5	11.6	92	18	109	0.62	1264	1264	1264	54.1	0.3222	1.38	69.67	0.60	0.96	no	0.3647	0.177	0.24	2.0	1.91	12	0.181	4.71	15	17	no	zero	0.00
225.2	3.6	11.8	92	18	109	0.65	1282	1282	1282	47.51	0.508	1.38	61.28	1.08	0.96	no	0.3644	0.230	0.31	2.0	2.10	17	0.172	4.65	13	18	no	zero	0.00
225.0	3.6	12.0	92	18	109	0.65	1300	1300	1300	47.91	0.5911	1.37	61.19	1.25	0.96	no	0.3641	0.245	0.33	2.0	2.14	18	0.170	4.64	13	18	no	zero	0.00
224.9	3.7	12.1	92	18	109	0.64	1318	1318	1309	50.98	0.5356	1.35	64.24	1.06	0.96	no	0.3662	0.230	0.31	2.0	2.08	16	0.173	4.66	14	19	no	zero	0.00
224.7	3.7	12.3	92	18	109	0.62	1336	1336	1317	55.53	0.381	1.33	68.93	0.69	0.96	no	0.3687	0.180	0.24	2.0	1.95	13	0.179	4.70	15	17	no	zero	0.00
224.5	3.8	12.5	92	18	109	0.61	1353	1353	1324	59.65	0.299	1.31	73.04	0.51	0.96	no	0.3712	0.170	0.23	2.0	1.85	10	0.183	4.73	15	17	no	zero	0.00
224.4	3.8	12.6	92	18	109	0.61	1371	1371	1332	59.57	0.2585	1.30	72.36	0.44	0.96	no	0.3737	0.150	0.20	2.0	1.83	10	0.184	4.73	15	16	no	zero	0.00
224.2	3.9	12.8	92	18	109	0.60	1389	1389	1339	60.16	0.226	1.29	72.45	0.38	0.96	no	0.3760	0.140	0.19	2.0	1.80	9	0.185	4.74	15	16	no	zero	0.00
224.0	3.9	13.0	92	18	109	0.60	1407	1407	1347	60.58	0.2191	1.28	72.35	0.37	0.95	no	0.3784	0.140	0.19	2.0	1.79	9	0.185	4.74	15	16	no	zero	0.00
223.9	4.0	13.1	92	18	109	0.60	1425	1425	1355	59.84	0.3946	1.27	70.98	0.67	0.95	no	0.3807	0.190	0.26	2.0	1.93	12	0.180	4.71	15	17	no	zero	0.00
223.7	4.0	13.3	92	18	109	0.63	1442	1442	1362	53.56	0.5764	1.27	63.47	1.09	0.95	no	0.3830	0.230	0.31	2.0	2.09	16	0.173	4.65	14	19	no	zero	0.00
223.5	4.1	13.5	92	18	109	0.63	1460	1460	1370	51.05	0.7201	1.27	60.18	1.43	0.95	no	0.3853	0.255	0.34	2.0	2.18	19	0.168	4.62	13	18	no	zero	0.00
223.4	4.1	13.6	92	18	109	0.62	1478	1478	1377	56.39	0.6876	1.25	65.60	1.24	0.95	no	0.3875	0.258	0.35	2.0	2.11	17	0.172	4.65	14	19	no	zero	0.00
223.2	4.2	13.8	92	18	109	0.57	1496	1496	1385	69.69	0.5154	1.22	79.52	0.75	0.95	no	0.3897	0.200	0.27	2.0	1.91	12	0.181	4.71	17	19	no	zero	0.00
223.1	4.2	13.9	92	18	109	0.55	1514	1514	1392	78.52	0.407	1.20	88.36	0.52	0.95	no	0.3918	0.183	0.25	2.0	1.79	9	0.185	4.74	19	20	no	zero	0.00
222.9	4.3	14.1	92	18	109	0.53	1532	1532	1400	84.61	0.3002	1.19	94.18	0.36	0.95	no	0.3940	0.173	0.23	2.0	1.68	7	0.189	4.77	20	21	no	zero	0.00
222.7	4.3	14.3	92	18	109	0.53	1549	1549	1408	86.25	0.2878	1.18	95.29	0.34	0.95	no	0.3960	0.163	0.22	2.0	1.67	7	0.189	4.77	20	21	no	zero	0.00
222.6	4.4	14.4	92	18	109	0.55	1567	1567	1415	80.31	0.2412	1.18	88.53	0.30	0.95	no	0.3981	0.147	0.20	2.0	1.68	7	0.189	4.77	19	20	no	zero	0.00
222.4	4.4	14.6	92	18	109	0.55	1585	1585	1423	79.4	0.2186	1.17	87.03	0.28	0.95	no	0.4001	0.137	0.18	2.0	1.67	7	0.189	4.77	18	19	no	zero	0.00
222.2	4.5	14.8	92	18	109	0.55	1603	1603	1430	78.36	0.2324	1.17	85.41	0.30	0.95	no	0.4021	0.137	0.18	2.0	1.69	7	0.189	4.77	18	19	no	zero	0.00
222.1	4.5	14.9	92	18	109	0.55	1621	1621	1438	78.73	0.2242	1.16	85.26	0.29	0.94	no	0.4041	0.137	0.18	2.0	1.68	7	0.189	4.77	18	19	no	zero	0.00
221.9	4.6	15.1	92	18	109	0.55	1638	1638	1445	79.21	0.2349	1.15	85.24	0.30	0.94	no	0.4060	0.137	0.18	2.0	1.69	7	0.189	4.77	18	19	no	zero	0.00
221.7	4.6	15.3	92	18	109	0.54	1656	1656	1453	82.07	0.2627	1.14	87.65	0.32	0.94	no	0.4079	0.147	0.20	2.0	1.69	7	0.188	4.77	18	19	no	zero	0.00
221.6	4.7	15.4	92	18	109	0.53	1674	1674	1461	85.61	0.2711	1.13	90.75	0.32	0.94	no	0.4098	0.163	0.22	2.0	1.68	7	0.189	4.77	19	20	no	zero	0.00
221.4	4.7	15.6	92	18	109	0.52	1692	1692	1468	89.45	0.2755	1.12	94.12	0.31	0.94	no	0.4117	0.163	0.22	2.0	1.66	6	0.190	4.77	20	21	no	zero	0.00
221.3	4.8	15.7	92	18	109	0.52	1710	1710	1476	90.96	0.2797	1.12	95.11	0.31	0.94	no	0.4135	0.163	0.22	2.0	1.65	6	0.190	4.77	20	21	no	zero	0.00
221.1	4.8	15.9	92	18	109	0.52	1727	1727	1483	88.72	0.2665	1.11	92.34	0.30	0.94	no	0.4153	0.163	0.22	2.0	1.66	6	0.189	4.77	19	20	no	zero	0.00
220.9	4.9	16.1	92	18	109	0.53	1745	1745	1491	88.16	0.2336	1.11	91.28	0.27	0.94	no	0.4171	0.158	0.21	2.0	1.64	6	0.190	4.78	19	20	no	zero	0.00
220.8	4.9	16.2	92	18	109	0.53	1763	1763	1498	86.55	0.237	1.10	89.17	0.28	0.94	no	0.4188	0.137	0.18	2.0	1.66	6	0.190	4.77	19	20	no	zero	0.00
220.6	5.0	16.4	92	18	109	0.53	1781	1781	1506	86.98	0.2736	1.10	89.12	0.32	0.94	no	0.4205	0.147	0.20	2.0	1.68	7	0.189	4.77	19	20	no	zero	0.00
220.4	5.0	16.6	92	18	109	0.53	1799	1799	1514	87.48	0.2954	1.09	89.14	0.34	0.94	no	0.4222	0.147	0.20	2.0	1.70	7	0.188	4.77	19	20	no	zero	0.00
220.3	5.1	16.7	92	18	109	0.53	1816	1816	1521	88.24	0.3482	1.08	89.42	0.40	0.94	no	0.4239	0.157	0.21	2.0	1.73	8	0.187	4.76	19	20	no	zero	0.00
220.1	5.1	16.9	92	18	109	0.52	1834	1834	1529	90.23	0.3315	1.08	90.92	0.37	0.93	no	0.4255	0.173	0.23	2.0	1.71	7	0.188	4.76	19	20	no	zero	0.00
219.9	5.2	17.1	92	18	109	0.52	1852	1852	1536	91.09	0.3435	1.07	91.30	0.38	0.93	no	0.4271	0.173	0.23	2.0	1.71	7	0.188	4.76	19	20	no	zero	0.00
219.8	5.2	17.2	92	18	109	0.52	1870	1870	1544	89	0.3398	1.07	88.79	0.39	0.93	no	0.4287	0.157	0.21	2.0	1.72	8	0.188	4.76	19	20	no	zero	0.00
219.6	5.3	17.4	92	18	109	0.55	1888	1888	1551	79.21	0.4395	1.06	78.74	0.56	0.93	no	0.4303	0.180	0.24	2.0	1.85	10	0.183	4.73	17	19	no	zero	0.00
219.4	5.3	17.6	92	18	109	0.60	1905	1905	1559	62.56	0.8477	1.06	61.97	1.38	0.93	no	0.4318	0.245	0.33	2.0	2.16	19	0.169	4.63	13	18	no	zero	0.00
219.3	5.4	17.7	92	18	109	0.65	1923	1923	1567	46.7	1.267	1.06	46.00	2.77	0.93	no	0.4333	0.295	0.40	2.0	2.46	30	0.151	4.49	10	15	no	zero	0.00
219.1	5.4	17.9	92	18	109	0.68	1941	1941	1574	38.79	1.5387	1.06	37.91	4.07	0.93	no	0.4348	0.285	0.38	2.0	2.63	38	0.137	4.37	9	16	no	zero	0.00
219.0	5.5	18.0	92	18	109	0.73	1959	1959	1582	28.99	1.4742	1.06	28.01	5.26	0.93	no	0.4363	0.274	0.37	2.0	2.80	47	0.122	4.23	7	13	no	zero	0.00
218.8	5.5	18.2	92	18	109	0.74	1977	1977	1589	27.95	1.1698	1.05	26.79	4.34	0.93	no	0.4377	0.274	0.37	2.0	2.76	45	0.126	4.27	6	12	no	zero	0.00
218.6	5.6	18.4	92	18	109	0.66	1995	1995	1597	44.62	1.3452	1.04	42.86	3.08	0.93	no	0.4391	0.290	0.39	2.0	2.51	32	0.147	4.45	10	16	no	zero	0.00
218.5	5.6	18.5	92	18	109	0.62	2012	2012	1604	54.66	1.4214	1.03	52.31	2.65	0.93	no	0.4405	0.300	0.41	2.0	2.40	27	0.155	4.52	12	18	no	zero	0.00
218.3	5.7	18.7	92	18	109	0.61	2030	2030	1612	59.72	1.1877	1.03	56.89	2.02	0.92	no	0.4419	0.300	0.41	2.0	2.30	23	0.161	4.57	12	17	no	zero	0.00
218.1	5.7	18.9	92	18	109	0.60	2048	2048	1620	62.02	0.8946	1.02	58.78	1.47	0.92	no	0.4433	0.248	0.33	2.0	2.19	20	0.167	4.61	13	17	no	zero	0.00
218.0	5.8	19.0	92	18	109	0.59	2066	2066	1627	65.1	0.6809	1.01	61.41	1.06	0.92	no	0.4446	0.230	0.31	2.0	2.09	17	0.173	4.65	13	18	no	zero	0.00
217.8	5.8	19.2	92	18	109	0.59	2084	2084	1635	65	0.6755	1.01	60.99	1.06	0.92	no	0.4459	0.230	0.31	2.0	2.09	17	0.173	4.65	13	18	no	zero	0.00
217.6	5.9	19.4	92	18	109	0.60	2101	2101	1642	60.21	0.8825	1.00	56.14	1.49	0.92	no	0.4472	0.248	0.33	2.0	2.21	20	0.166	4.61	12	17	no	zero	0.00
217.5	5.9	19.5	92	18	109	0.64	2119	2119	1650	50.33	1.1735	1.00	46.52	2.38	0.92	no	0.4485	0.295	0.40	2.0	2.41	28	0.154	4.51	10	15	no	zero	0.00
217.3	6.0	19.7	92	18	109	0.63	2137	2137	1657	52.95	1.3203	0.99	48.73	2.54	0.92	no	0.4498	0.295	0.40	2.0	2.41	28	0.154	4.51	11	16	no	zero	0.00
217.2	6.0	19.8	92	18	109	0.61	2155	2155	1665	59.24	1.1904	0.99	54.36	2.05	0.92	no	0.4510	0.300	0.41	2.0	2.31	24	0.160	4.56	12	17	no	zero	0.00
217.0	6.1	20.0	92	18	109	0.58	2173	2173	1673	68.5	0.6779	0.99	62.74	1.01	0.92	no	0.4522	0.230	0.31	2.0	2.07	16	0.174	4.66	13	18	no	zero	0.00
216.8	6.1	20.2	92	18	109	0.56	2190	2190	1680	74.94	0.6247	0.98	68.45	0.85	0.92	no	0.4534	0.208	0.28	2.0	2.00	14	0.177	4.69	15	17	no	zero	0.00
216.7	6.2	20.3	92	18	109	0.58	2208	2208	1688	68.83	0.978	0.98	62.45	1.44	0.92	no	0.4546	0.255	0.34	2.0	2.17	19	0.169	4.62	14	19	no	zero	0.00
216.5	6.2	20.5	92	18	109	0.60	2226	2226	1695	61.92	1.5313	0.97	55.75	2.52	0.91	no	0.4557	0.300	0.41	2.0	2.37	26	0.157	4.53	12	18	no	zero	0.00
216.3	6.3	20.7	92	18	109	0.58	2244	2244	1703	67.82	1.8281	0.97	60.92	2.74	0.91	no	0.4569	0.300	0.41	2.0	2.36	26	0.157	4.54	13	19	no	zero	0.00
216.2	6.3	20.8	92	18	109	0.56	2262	2262	1710	73.95	1.5123	0.96	66.29	2.08	0.91	no	0.4580	0.300	0.41	2.0	2.25	22	0.164	4.59	14	19	no	zero	0.00
216.0	6.4	21.0	92	18	109	0.55	2279	2279	1718	80.12	0.7952	0.96	71.67	1.01	0.91	no	0.4591	0.260	0.35	2.0	2.03	15	0.176	4.68	15	17	no	zero	0.00
215.8	6.4	21.2	92	18	109	0.54	2297	2297	1726	83.71	0.407	0.96	74.65	0.49	0.91	no	0.4602	0.160	0.22	2.0	1.84	10	0.184	4.73	16	17	no	zero	0.00
215.7	6.5	21.3	92	18	109	0.52	2315	2315	1733	89.83	0.3251	0.95	79.96	0.37	0.91	no	0.4613	0.140	0.19	2.0	1.75	8	0.187	4.75	17	18	no	zero	0.00
215.5	6.5	21.5	92	18	109	0.51	2333	2333	1741	93.22	0.3152	0.95	82.74	0.34	0.91	no	0.4623	0.147	0.20	2.0	1.73	8	0.187	4.76	17	18	no	zero	0.00
215.3	6.6	21.7	92	18	109	0.51	2351	2351	1748	95.52	0.362	0.95	84.51	0.38	0.91	no	0.4633	0.157	0.21	2.0	1.74	8	0.187	4.76	18	19	no	zero	0.00
215.2	6.6	21.8	92	18	109	0.50	2369	2369	1756	98.92	0.4098	0.95	87.29	0.42	0.91	no	0.4644	0.167	0.23	2.0	1.75	8	0.187	4.75	18	19	no	zero	0.00
215.0	6.7	22.0	92	18	109	0.49	2386	2386	1763	104.99	0.4385	0.94	92.51	0.42	0.91	no	0.4653	0.183	0.25	2.0	1.73	8	0.187	4.76	19	20	no	zero	0.00
214.9	6.7	22.1	92	18	109	0.48	2404	2404	1771	109.65	0.4513	0.94	96.42	0.42	0.90	no	0.4663	0.183	0.25	2.0	1.71	7	0.188	4.76	20	21	no	zero	0.00
214.7	6.8	22.3	92	18	109	0.46	2422	2422	1779	117.6	0.4514	0.94	103.34	0.39	0.90	no	0.4673	0.190	0.26	2.0	1.67	6	0.189	4.77	22	23	no	zero	0.00
214.5	6.8	22.5	92	18	109	0.45	2440	2440	1786	122.72	0.4586	0.94	107.67	0.38	0.90	no	0.4682	0.190	0.26	2.0	1.64	6	0.190	4.78	23	24	no	zero	0.00
214.4	6.9	22.6	92	18	109	0.45	2458	2458	1794	124.68	0.4695	0.94	109.10	0.38	0.90	no	0.4692	0.190	0.26	2.0	1.64	6	0.190	4.78	23	24	no	zero	0.00
214.2	6.9	22.8	92	18	109	0.45	2475	2475	1801	124.03	0.4964	0.93	108.14	0.40	0.90	no	0.4701	0.200	0.27	2.0	1.66	6	0.190	4.77	23	24	no	zero	0.00
214.0	7.0	23.0	92	18	109	0.45	2493	2493	1809	121.54	0.4291	0.93	105.52	0.36	0.90	no	0.4710	0.190	0.26	2.0	1.64	6	0.190	4.78	22	23	no	zero	0.00
213.9	7.0	23.1	92	18	109	0.47	2511	2511	1816	115.38	0.4057	0.92	99.58	0.36	0.90	no	0.4719	0.173	0.23	2.0	1.66	6	0.189	4.77	21	22	no	zero	0.00

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	w	γ_M	n	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	F	r_d	Liquefiable	CSR	CRR_1	CRR	FS_{liq}	I_c	AFC	D_{50}	q_c/N	N	N_{clean}	☮		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
213.7	7.1	23.3	92	18	109	0.46	2529	2529	1824	116.85	0.4122	0.92	100.58	0.36	0.90	no	0.4727	0.190	0.26	2.0	1.66	6	0.190	4.77	21	22	no	zero	0.00
213.5	7.1	23.5	92	18	109	0.46	2547	2547	1832	118.29	0.466	0.92	101.55	0.40	0.90	no	0.4736	0.190	0.26	2.0	1.68	7	0.189	4.77	21	22	no	zero	0.00
213.4	7.2	23.6	92	18	109	0.46	2564	2564	1839	120.6	0.5842	0.92	103.30	0.49	0.90	no	0.4744	0.210	0.28	2.0	1.72	7	0.188	4.76	22	23	no	zero	0.00
213.2	7.2	23.8	92	18	109	0.46	2582	2582	1847	119.79	0.7512	0.91	102.24	0.63	0.90	no	0.4753	0.230	0.31	2.0	1.78	9	0.186	4.75	22	23	no	zero	0.00
213.0	7.3	24.0	92	18	109	0.46	2600	2600	1854	119.32	0.9459	0.91	101.48	0.80	0.89	no	0.4761	0.250	0.34	2.0	1.85	10	0.183	4.73	21	23	no	zero	0.00
212.9	7.3	24.1	92	18	109	0.45	2618	2618	1862	121.61	0.9921	0.91	103.22	0.82	0.89	no	0.4769	0.250	0.34	2.0	1.85	10	0.183	4.73	22	24	no	zero	0.00
212.7	7.4	24.3	92	18	109	0.44	2636	2636	1869	128.97	0.9029	0.91	109.52	0.71	0.89	no	0.4777	0.240	0.32	2.0	1.79	9	0.185	4.74	23	24	no	zero	0.00
212.6	7.4	24.4	92	18	109	0.43	2653	2653	1877	134.48	0.7834	0.91	114.16	0.59	0.89	no	0.4784	0.225	0.30	2.0	1.72	8	0.187	4.76	24	25	no	zero	0.00
212.4	7.5	24.6	92	18	109	0.42	2671	2671	1885	139.65	0.7379	0.91	118.50	0.53	0.89	no	0.4792	0.217	0.29	2.0	1.69	7	0.189	4.77	25	26	no	zero	0.00
212.2	7.5	24.8	92	18	109	0.42	2689	2689	1892	142.97	0.7692	0.91	121.16	0.54	0.89	no	0.4799	0.223	0.30	2.0	1.68	7	0.189	4.77	25	26	no	zero	0.00
212.1	7.6	24.9	92	18	109	0.40	2707	2707	1900	149.04	0.7433	0.91	126.32	0.50	0.89	no	0.4806	0.223	0.30	2.0	1.65	6	0.190	4.77	26	27	no	zero	0.00
211.9	7.6	25.1	92	18	109	0.40	2725	2725	1907	152.44	0.7379	0.90	129.06	0.49	0.89	no	0.4814	0.223	0.30	2.0	1.64	6	0.190	4.78	27	28	no	zero	0.00
211.7	7.7	25.3	92	18	109	0.40	2742	2742	1915	153.09	0.6877	0.90	129.30	0.45	0.89	no	0.4821	0.223	0.30	2.0	1.62	6	0.191	4.78	27	28	no	zero	0.00
211.6	7.7	25.4	92	18	109	0.41	2760	2760	1922	146.74	0.6633	0.90	123.22	0.46	0.89	no	0.4827	0.223	0.30	2.0	1.64	6	0.190	4.78	26	27	no	zero	0.00
211.4	7.8	25.6	92	18	109	0.42	2778	2778	1930	140.86	0.6537	0.89	117.60	0.47	0.88	no	0.4834	0.217	0.29	2.0	1.66	6	0.189	4.77	25	26	no	zero	0.00
211.2	7.8	25.8	92	18	109	0.42	2796	2796	1938	138.7	0.691	0.89	115.34	0.50	0.88	no	0.4841	0.217	0.29	2.0	1.68	7	0.189	4.77	24	25	no	zero	0.00
211.1	7.9	25.9	92	18	109	0.41	2814	2814	1945	145.22	0.6767	0.89	120.87	0.47	0.88	no	0.4847	0.223	0.30	2.0	1.65	6	0.190	4.77	25	26	no	zero	0.00
210.9	7.9	26.1	92	18	109	0.40	2832	2832	1953	153.1	0.7251	0.89	127.64	0.48	0.88	no	0.4854	0.223	0.30	2.0	1.63	6	0.190	4.78	27	28	no	zero	0.00
210.8	8.0	26.2	92	18	109	0.38	2849	2849	1960	164.65	0.8116	0.89	137.75	0.50	0.88	no	0.4860	0.230	0.31	2.0	1.62	6	0.191	4.78	29	30	no	zero	0.00
210.6	8.0	26.4	92	18	109	0.37	2867	2867	1968	173.67	0.8382	0.89	145.61	0.49	0.88	no	0.4866	0.237	0.32	2.0	1.59	5	0.191	4.79	30	31	no	zero	0.00
210.4	8.1	26.6	92	18	109	0.36	2885	2885	1975	175.42	0.8145	0.89	146.87	0.47	0.88	no	0.4872	0.237	0.32	2.0	1.58	5	0.192	4.79	31	32	no	zero	0.00
210.3	8.1	26.7	92	18	109	0.37	2903	2903	1983	169.53	0.7642	0.89	141.18	0.45	0.88	no	0.4878	0.237	0.32	2.0	1.59	5	0.192	4.79	29	30	no	zero	0.00
210.1	8.2	26.9	92	18	109	0.38	2921	2921	1991	161.59	0.6899	0.88	133.67	0.43	0.88	no	0.4883	0.220	0.30	2.0	1.59	5	0.191	4.79	28	29	no	zero	0.00
209.9	8.2	27.1	92	18	109	0.39	2938	2938	1998	156.19	0.6698	0.88	128.50	0.43	0.88	no	0.4889	0.213	0.29	2.0	1.61	5	0.191	4.78	27	28	no	zero	0.00
209.8	8.3	27.2	92	18	109	0.40	2956	2956	2006	152.67	0.647	0.88	125.03	0.43	0.87	no	0.4895	0.213	0.29	2.0	1.62	6	0.191	4.78	26	27	no	zero	0.00
209.6	8.3	27.4	92	18	109	0.40	2974	2974	2013	150.47	0.649	0.87	122.76	0.44	0.87	no	0.4900	0.213	0.29	2.0	1.63	6	0.190	4.78	26	27	no	zero	0.00
209.4	8.4	27.6	92	18	109	0.40	2992	2992	2021	153.54	0.5837	0.87	125.20	0.38	0.87	no	0.4905	0.207	0.28	2.0	1.59	5	0.191	4.79	26	27	no	zero	0.00
209.3	8.4	27.7	92	18	109	0.39	3010	3010	2028	157.59	0.6069	0.87	128.51	0.39	0.87	no	0.4910	0.207	0.28	2.0	1.58	5	0.192	4.79	27	28	no	zero	0.00
209.1	8.5	27.9	92	18	109	0.39	3027	3027	2036	157.76	0.6637	0.87	128.36	0.42	0.87	no	0.4915	0.213	0.29	2.0	1.60	5	0.191	4.78	27	28	no	zero	0.00
208.9	8.5	28.1	92	18	109	0.39	3045	3045	2044	155.75	0.8328	0.87	126.27	0.54	0.87	no	0.4920	0.223	0.30	2.0	1.67	7	0.189	4.77	26	27	no	zero	0.00
208.8	8.6	28.2	92	18	109	0.40	3063	3063	2051	150.57	0.9344	0.86	121.36	0.63	0.87	no	0.4925	0.237	0.32	2.0	1.72	7	0.188	4.76	25	26	no	zero	0.00
208.6	8.6	28.4	92	18	109	0.40	3081	3081	2059	149.35	1.0096	0.86	119.99	0.68	0.87	no	0.4930	0.235	0.32	2.0	1.75	8	0.187	4.75	25	26	no	zero	0.00
208.5	8.7	28.5	92	18	109	0.41	3099	3099	2066	143.92	1.0214	0.85	114.91	0.72	0.87	no	0.4935	0.243	0.33	2.0	1.77	9	0.186	4.75	24	25	no	zero	0.00
208.3	8.7	28.7	92	18	109	0.42	3116	3116	2074	139.9	0.9934	0.85	111.10	0.72	0.87	no	0.4939	0.243	0.33	2.0	1.79	9	0.185	4.75	23	24	no	zero	0.00
208.1	8.8	28.9	92	18	109	0.41	3134	3134	2082	143.16	0.8878	0.85	113.68	0.63	0.86	no	0.4943	0.233	0.32	2.0	1.74	8	0.187	4.76	24	25	no	zero	0.00
208.0	8.8	29.0	92	18	109	0.40	3152	3152	2089	149.67	0.8183	0.85	119.14	0.55	0.86	no	0.4948	0.225	0.30	2.0	1.69	7	0.188	4.77	25	26	no	zero	0.00
207.8	8.9	29.2	92	18	109	0.40	3170	3170	2097	151.71	0.8368	0.85	120.66	0.56	0.86	no	0.4952	0.230	0.31	2.0	1.69	7	0.189	4.77	25	26	no	zero	0.00
207.6	8.9	29.4	92	18	109	0.40	3188	3188	2104	149.74	0.9623	0.85	118.65	0.65	0.86	no	0.4956	0.233	0.32	2.0	1.74	8	0.187	4.76	25	26	no	zero	0.00
207.5	9.0	29.5	92	18	109	0.41	3206	3206	2112	147.69	1.0808	0.84	116.57	0.74	0.86	no	0.4960	0.243	0.33	2.0	1.78	9	0.186	4.75	25	26	no	zero	0.00
207.3	9.0	29.7	92	18	109	0.41	3223	3223	2119	145.55	1.1153	0.84	114.43	0.77	0.86	no	0.4964	0.243	0.33	2.0	1.80	9	0.185	4.74	24	25	no	zero	0.00
207.1	9.1	29.9	92	18	109	0.42	3241	3241	2127	141.27	1.2829	0.84	110.42	0.92	0.86	no	0.4968	0.263	0.36	2.0	1.85	10	0.183	4.73	23	25	no	zero	0.00
207.0	9.1	30.0	92	18	109	0.45	3259	3259	2135	125.4	1.9414	0.82	96.45	1.57	0.86	no	0.4972	0.283	0.38	2.0	2.05	15	0.175	4.67	21	27	no	zero	0.00
206.8	9.2	30.2	92	18	109	0.55	3277	3277	2142	78.24	2.5789	0.79	56.89	3.37	0.86	no	0.4975	0.300	0.41	2.0	2.45	29	0.151	4.49	13	19	no	zero	0.00
206.7	9.2	30.3	92	18	109	0.60	3295	3295	2150	62.6	2.8391	0.77	44.25	4.66	0.86	no	0.4979	0.290	0.39	2.0	2.63	38	0.138	4.38	10	17	no	zero	0.00
206.5	9.3	30.5	92	18	109	0.61	3312	3312	2157	58.08	2.5838	0.76	40.56	4.58	0.85	no	0.4982	0.290	0.39	2.0	2.65	39	0.136	4.36	9	16	no	zero	0.00
206.3	9.3	30.7	92	18	109	0.55	3330	3330	2165	78.41	2.4681	0.78	56.51	3.22	0.85	no	0.4985	0.300	0.41	2.0	2.44	29	0.152	4.50	13	19	no	zero	0.00
206.2	9.4	30.8	92	18	109	0.55	3348	3348	2172	79.28	2.3731	0.78	57.03	3.06	0.85	no	0.4989	0.300	0.41	2.0	2.42	28	0.154	4.51	13	19	no	zero	0.00
206.0	9.4	31.0	92	18	109	0.62	3366	3366	2180	55.92	2.2969	0.75	38.48	4.23	0.85	no	0.4992	0.285	0.38	2.0	2.64	38	0.137	4.37	9	16	no	zero	0.00
205.8	9.5	31.2	92	18	109	0.66	3384	3384	2188	43.59	1.9543	0.73	29.00	4.66	0.85	no	0.4995	0.274	0.37	2.0	2.76	45	0.127	4.28	7	13	no	zero	0.00
205.7	9.5	31.3	92	18	109	0.68	3401	3401	2195	39.37	1.4702	0.72	25.76	3.90	0.85	no	0.4998	0.274	0.37	2.0	2.74	44	0.128	4.29	6	12	no	zero	0.00
205.5	9.6	31.5	92	18	109	0.68	3419	3419	2203	39.77	1.2951	0.72	25.96	3.40	0.85	no	0.5001	0.274	0.37	2.0	2.70	42	0.132	4.32	6	12	no	zero	0.00
205.3	9.6	31.7	92	18	109	0.68	3437	3437	2210	40.41	1.4496	0.72	26.33	3.75	0.85	no	0.5004	0.274	0.37	2.0	2.72	43	0.130	4.30	6	12	no	zero	0.00
205.2	9.7	31.8	92	18	109	0.67	3455	3455	2218	40.97	1.5585	0.72	26.65	3.97	0.85	no	0.5006	0.274	0.37	2.0	2.74	43	0.128	4.29	6	12	no	zero	0.00
205.0	9.7	32.0	92	18	109	0.63	3473	3473	2225	53.7	1.4838	0.73	36.03	2.86	0.85	no	0.5009	0.285	0.38	2.0	2.54	34	0.144	4.43	8	14	no	zero	0.00
204.8	9.8	32.2	92	18	109	0.63	3490	3481	2233	51.01	1.5996	0.73	33.94	3.25	0.84	no	0.5012	0.280	0.38	2.0	2.60	36	0.140	4.40	8	14	no	zero	0.00
204.7	9.8	32.3	92	18	109	0.67	3508	3489	2241	41.13	1.3583	0.71	26.57	3.45	0.84	no	0.5014	0.274	0.37	2.0	2.70	41	0.132	4.32	6	12	no	zero	0.00
204.5	9.9	32.5	92	18	109	0.68	3526	3496	2248	39.62	1.2446	0.71	25.43	3.29	0.84	no	0.5016	0.274	0.37	2.0	2.70	41	0.132	4.32	6	12	no	zero	0.00
204.4	9.9	32.6	92	18	109	0.58	3544	3504	2256	66.51	1.1038	0.75	45.58	1.71	0.84	yes	0.5019	0.253	0.34	0.7	2.32	24	0.160	4.56	10	14	0.020	0.04	0.04
204.2	10.0	32.8	92	18	109	0.46	3562	3511	2263	117.58	1.0856	0.79	86.62	0.94	0.84	yes	0.5021	0.247	0.33	0.7	1.94	12	0.180	4.70	18	20	0.015	0.03	0.07
204.0	10.0	33.0	92	18	109	0.43	3579	3519	2271	135.12	0.8263	0.80	101.31	0.62	0.84	yes	0.5023	0.230	0.31	0.6	1.78	9	0.186	4.75	21	22	0.015	0.03	0.10
203.9	10.1	33.1	92	18	109	0.42	3597	3526	2278	141.72	0.7246	0.81	106.85	0.52	0.84	yes	0.5025	0.210	0.28	0.6	1.72	7	0.188	4.76	22	23	0.015	0.03	0.13
203.7	10.1	33.3	92	18	109	0.42	3615	3534	2286	141.85	0.8222	0.81	106.86	0.59	0.84	yes	0.5027	0.220	0.30	0.6	1.75	8	0.187	4.75	22	23	0.015	0.03	0.16
203.5	10.2	33.5	92	18	109	0.42	3633	3542	2294	138.73	0.9512	0.80	104.09	0.69	0.84	yes	0.5029	0.230	0.31	0.6	1.80	9	0.185	4.74	22	23	0.015	0.03	0.19
203.4	10.2	33.6	92	18	109	0.42	3651	3549	2301	142.01	1.0175	0.81	106.79	0.73	0.84	yes	0.5031	0.240	0.32	0.6	1.80	9	0.185	4.74	23	24	0.015	0.03	0.22
203.2	10.3	33.8	92	18	109	0.43	3669	3557	2309	133.65	1.3468	0.80	99.57	1.02	0.83	yes	0.5033	0.273	0.37	0.7	1.92	12	0.180	4.71	21	23	0.015	0.03	0.25
203.0	10.3	34.0	92	18	109	0.45	3686	3564	2316	120.93	1.6597	0.79	88.77	1.39	0.83	yes	0.5034	0.273	0.37	0.7	2.04	15	0.175	4.67	19	25	0.010	0.02	0.27
202.9	10.4	34.1	92	18	109	0.46	3704	3572	2324	119.69	1.7537	0.79	87.64	1.49	0.83	yes	0.5036	0.277	0.37	0.7	2.07	16	0.174	4.66	19	24	0.015	0.03	0.30
202.7	10.4	34.3	92	18	109	0.44	3722	3579	2331	131.33	1.47	0.80	97.31	1.14	0.83	yes	0.5038	0.273	0.37	0.7	1.95	13	0.179	4.70	21	23	0.015	0.03	0.32
202.6	10.5	34.4	92	18	109	0.42	3740	3587	2339	141.97	0.8703	0.80	106.25	0.62	0.83	yes	0.5039	0.230	0.31	0.6	1.76	8	0.186	4.75	22	23	0.015	0.03	0.35
202.4	10.5	34.6	92	18	109	0.40	3758	3595	2347	150.82	0.5405	0.81	113.75	0.36	0.83	yes	0.5041	0.198	0.27	0.5	1.61	6	0.191	4.78	24	25	0.015	0.03	0.38
202.2	10.6	34.8	92	18	109	0.40	3775	3602	2354	150.02	0.5802	0.81	112.95	0.39	0.83	yes	0.5042	0.198	0.27	0.5	1.63	6	0.190	4.78	24	25	0.015	0.03	0.41
202.1	10.6	34.9	92	18	109	0.40	3793	3610	2362	150.22	0.4344	0.81	113.02	0.29	0.83	yes	0.5043	0.188	0.25	0.5	1.57	5	0.192	4.79	24	24	0.015	0.03	0.44
201.9	10.7	35.1	92	18	109	0.39	3811	3617	2369	155.53	0.8307	0.81	117.51	0.54	0.83	yes	0.5044	0.217	0.29	0.6	1.69	7	0.188	4.77	25	26	0.010	0.02	0.46
201.7	10.7	35.3	92	18	109	0.38	3829	3625	2377	164.06	1.2957	0.81	124.82	0.80	0.83	yes	0.5045	0.247	0.33	0.7	1.77	9	0.186	4.75	26	27	0.010	0.02	0.48
201.6	10.8	35.4	92	18	109	0.39	3847	3632	2384	160.83	2.3559	0.81	121.90	1.48	0.82	yes	0.5047	0.300	0.41	0.8	1.96	13	0.179	4.70	26	28	0.010	0.02	0.50
201.4	10.8	35.6	92	18	109	0.50	3864	3640	2392	97.35	3.4388	0.76	68.60	3.60	0.82	no	0.5048	0.300	0.41	2.0	2.41	28	0.154	4.51	15	21	no	zero	0.50

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	**w**	γ_M	**n**	σ_o	σ'_o	σ'_o	**q_c**	**f_s**	**C_Q**	**q_{c1}**	**F**	**r_d**	**Liquefiable**	**CSR**	**CRR_1**	**CRR**	**FS_{liq}**	I_c	AFC	D_{50}	**q_c/N**	**N**	**N_{clean}**	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
201.2	10.9	35.8	92	18	109	0.57	3882	3648	2400	72.13	2.8862	0.73	48.70	4.11	0.82	no	0.5048	0.295	0.40	2.0	2.56	34	0.143	4.42	11	17	no	zero	0.50
201.1	10.9	35.9	92	18	109	0.62	3900	3655	2407	53.96	2.7626	0.71	34.94	5.31	0.82	no	0.5049	0.280	0.38	2.0	2.74	43	0.128	4.29	8	15	no	zero	0.50
200.9	11.0	36.1	92	18	109	0.55	3918	3663	2415	79.91	2.3244	0.74	54.58	2.98	0.82	no	0.5050	0.300	0.41	2.0	2.42	28	0.153	4.50	12	18	no	zero	0.50
200.7	11.0	36.3	92	18	109	0.51	3936	3670	2422	96.78	2.2052	0.76	67.83	2.33	0.82	no	0.5051	0.300	0.41	2.0	2.28	23	0.162	4.58	15	20	no	zero	0.50
200.6	11.1	36.4	92	18	109	0.46	3953	3678	2430	117.08	2.096	0.77	84.23	1.82	0.82	yes	0.5052	0.298	0.40	0.8	2.14	18	0.170	4.64	18	23	0.015	0.03	0.53
200.4	11.1	36.6	92	18	109	0.43	3971	3685	2437	137.17	1.8612	0.79	100.91	1.38	0.82	yes	0.5052	0.280	0.38	0.7	2.00	14	0.177	4.69	22	24	0.015	0.03	0.56
200.3	11.2	36.7	92	18	109	0.40	3989	3693	2445	152.93	1.5319	0.80	114.24	1.01	0.82	yes	0.5053	0.283	0.38	0.8	1.87	11	0.182	4.72	24	26	0.010	0.02	0.58
200.1	11.2	36.9	92	18	109	0.38	4007	3701	2453	166.1	1.4132	0.81	125.55	0.86	0.81	yes	0.5053	0.263	0.36	0.7	1.79	9	0.185	4.74	26	27	0.010	0.02	0.60
199.9	11.3	37.1	92	18	109	0.41	4025	3708	2460	145.12	1.8178	0.79	107.36	1.27	0.81	yes	0.5054	0.280	0.38	0.7	1.96	13	0.179	4.70	23	25	0.015	0.03	0.63
199.8	11.3	37.2	92	18	109	0.53	4043	3716	2468	86.45	2.6433	0.74	59.21	3.13	0.81	no	0.5054	0.300	0.41	2.0	2.41	28	0.154	4.51	13	19	no	zero	0.63
199.6	11.4	37.4	92	18	109	0.61	4060	3723	2475	59.31	2.2701	0.71	38.43	3.96	0.81	no	0.5054	0.285	0.38	2.0	2.62	37	0.138	4.38	9	16	no	zero	0.63
199.4	11.4	37.6	92	18	109	0.66	4078	3731	2483	43.42	1.0462	0.69	26.83	2.53	0.81	no	0.5055	0.274	0.37	2.0	2.61	37	0.139	4.39	6	12	no	zero	0.63
199.3	11.5	37.7	92	18	109	0.73	4096	3738	2490	29.82	1.0139	0.66	17.35	3.65	0.81	no	0.5055	0.257	0.35	2.0	2.86	50	0.117	4.19	4	9	no	zero	0.63
199.1	11.5	37.9	92	18	109	0.69	4114	3746	2498	37.08	0.9114	0.67	22.30	2.60	0.81	no	0.5055	0.269	0.36	2.0	2.68	40	0.133	4.34	5	11	no	zero	0.63
198.9	11.6	38.1	92	18	109	0.67	4132	3754	2506	42.01	0.5685	0.68	25.71	1.42	0.81	yes	0.5055	0.196	0.26	0.5	2.48	31	0.149	4.47	6	11	0.025	0.05	0.68
198.8	11.6	38.2	92	18	109	0.74	4149	3761	2513	28.37	0.5306	0.66	16.28	2.02	0.81	no	0.5055	0.257	0.35	2.0	2.73	43	0.129	4.30	4	9	no	zero	0.68
198.6	11.7	38.4	92	18	109	0.74	4167	3769	2521	28.16	0.6061	0.65	16.11	2.32	0.81	no	0.5055	0.257	0.35	2.0	2.76	45	0.126	4.27	4	9	no	zero	0.68
198.5	11.7	38.5	92	18	109	0.73	4185	3776	2528	29.03	0.876	0.65	16.66	3.25	0.80	no	0.5055	0.257	0.35	2.0	2.84	49	0.119	4.20	4	9	no	zero	0.68
198.3	11.8	38.7	92	18	109	0.71	4203	3784	2536	32.93	1.0051	0.66	19.27	3.26	0.80	no	0.5055	0.263	0.35	2.0	2.79	46	0.123	4.25	5	10	no	zero	0.68
198.1	11.8	38.9	92	18	109	0.70	4221	3791	2543	34.28	1.1045	0.66	20.15	3.43	0.80	no	0.5055	0.269	0.36	2.0	2.79	46	0.124	4.25	5	10	no	zero	0.68
198.0	11.9	39.0	92	18	109	0.71	4238	3799	2551	33.15	1.2186	0.66	19.35	3.93	0.80	no	0.5054	0.263	0.35	2.0	2.84	49	0.119	4.20	5	10	no	zero	0.68
197.8	11.9	39.2	92	18	109	0.71	4256	3807	2559	33.18	1.3868	0.66	19.34	4.47	0.80	no	0.5054	0.263	0.35	2.0	2.87	51	0.115	4.17	5	10	no	zero	0.68
197.6	12.0	39.4	92	18	109	0.69	4274	3814	2566	36.83	1.7031	0.67	21.80	4.91	0.80	no	0.5054	0.269	0.36	2.0	2.86	51	0.116	4.18	5	11	no	zero	0.68
197.5	12.0	39.5	92	18	109	0.67	4292	3822	2574	41.54	1.9983	0.67	25.02	5.07	0.80	no	0.5053	0.274	0.37	2.0	2.83	49	0.120	4.21	6	12	no	zero	0.68
197.3	12.1	39.7	92	18	109	0.65	4310	3829	2581	47.71	2.2095	0.68	29.33	4.85	0.80	no	0.5053	0.274	0.37	2.0	2.76	45	0.126	4.27	7	13	no	zero	0.68
197.1	12.1	39.9	92	18	109	0.62	4327	3837	2589	56.26	2.4261	0.69	35.42	4.48	0.80	no	0.5053	0.285	0.38	2.0	2.68	40	0.133	4.34	8	15	no	zero	0.68
197.0	12.2	40.0	92	18	109	0.59	4345	3844	2596	66.09	2.6118	0.71	42.59	4.09	0.80	no	0.5052	0.290	0.39	2.0	2.60	36	0.140	4.40	10	17	no	zero	0.68
196.8	12.2	40.2	92	18	109	0.57	4363	3852	2604	69.72	2.8298	0.71	45.24	4.19	0.79	no	0.5051	0.295	0.40	2.0	2.59	36	0.141	4.40	10	17	no	zero	0.68
196.6	12.3	40.4	92	18	109	0.60	4381	3860	2612	61.87	2.731	0.70	39.37	4.58	0.79	no	0.5051	0.285	0.38	2.0	2.66	39	0.135	4.36	9	16	no	zero	0.68
196.5	12.3	40.5	92	18	109	0.62	4399	3867	2619	55.97	2.7128	0.69	35.02	5.05	0.79	no	0.5050	0.285	0.38	2.0	2.72	43	0.130	4.30	8	15	no	zero	0.68
196.3	12.4	40.7	92	18	109	0.58	4416	3875	2627	69.01	2.8031	0.71	44.54	4.20	0.79	no	0.5049	0.290	0.39	2.0	2.59	36	0.141	4.40	10	17	no	zero	0.68
196.2	12.4	40.8	92	18	109	0.53	4434	3882	2634	86.11	2.5054	0.72	57.45	2.99	0.79	no	0.5049	0.300	0.41	2.0	2.41	28	0.154	4.51	13	19	no	zero	0.68
196.0	12.5	41.0	92	18	109	0.46	4452	3890	2642	117.55	1.3731	0.76	82.28	1.19	0.79	yes	0.5048	0.267	0.36	0.7	2.02	15	0.176	4.68	18	20	0.015	0.03	0.71
195.8	12.5	41.2	92	18	109	0.43	4470	3897	2649	133.95	1.1971	0.77	95.67	0.91	0.79	yes	0.5047	0.253	0.34	0.7	1.90	11	0.181	4.72	20	22	0.015	0.03	0.74
195.7	12.6	41.3	92	18	109	0.41	4488	3905	2657	144.52	1.2956	0.78	104.43	0.91	0.79	yes	0.5046	0.260	0.35	0.7	1.87	11	0.182	4.72	22	24	0.015	0.03	0.77
195.5	12.6	41.5	92	18	109	0.39	4506	3913	2665	157.23	1.5351	0.79	115.12	0.99	0.79	yes	0.5045	0.273	0.37	0.7	1.86	10	0.183	4.73	24	26	0.010	0.02	0.79
195.3	12.7	41.7	92	18	109	0.39	4523	3920	2672	157.63	1.6984	0.79	115.37	1.09	0.78	yes	0.5044	0.283	0.38	0.8	1.89	11	0.182	4.72	24	26	0.010	0.02	0.81
195.2	12.7	41.8	92	18	109	0.40	4541	3928	2680	154.96	2.0557	0.78	113.00	1.35	0.78	yes	0.5043	0.285	0.38	0.8	1.96	13	0.179	4.70	24	26	0.010	0.02	0.83
195.0	12.8	42.0	92	18	109	0.40	4559	3935	2687	154.46	2.3527	0.78	112.48	1.55	0.78	yes	0.5042	0.295	0.40	0.8	2.00	14	0.177	4.68	24	26	0.010	0.02	0.85
194.8	12.8	42.2	92	18	109	0.38	4577	3943	2695	166.87	2.2991	0.79	123.03	1.40	0.78	yes	0.5041	0.290	0.39	0.8	1.94	12	0.180	4.70	26	28	0.010	0.02	0.87
194.7	12.9	42.3	92	18	109	0.35	4595	3950	2702	183.41	1.9796	0.80	137.35	1.09	0.78	yes	0.5040	0.290	0.39	0.8	1.83	10	0.184	4.73	29	30	0.005	0.01	0.88
194.5	12.9	42.5	92	18	109	0.33	4612	3958	2710	199.27	1.7059	0.81	151.33	0.87	0.78	yes	0.5038	0.268	0.36	0.7	1.73	8	0.187	4.76	32	33	0.005	0.01	0.89
194.3	13.0	42.7	92	18	109	0.32	4630	3966	2718	210.06	1.7014	0.82	160.93	0.82	0.78	no	0.5037	0.270	0.36	2.0	1.70	7	0.188	4.76	34	35	no	zero	0.89
194.2	13.0	42.8	92	18	109	0.31	4648	3973	2725	213.68	1.7028	0.82	164.10	0.81	0.78	no	0.5036	0.270	0.36	2.0	1.69	7	0.189	4.77	34	35	no	zero	0.89
194.0	13.1	43.0	92	18	109	0.31	4666	3981	2733	214.08	1.5349	0.82	164.36	0.72	0.78	no	0.5035	0.260	0.35	2.0	1.66	6	0.190	4.77	34	35	no	zero	0.89
193.9	13.1	43.1	92	18	109	0.31	4684	3988	2740	214.55	1.2742	0.82	164.68	0.60	0.78	no	0.5033	0.250	0.34	2.0	1.60	5	0.191	4.78	34	35	no	zero	0.89
193.7	13.2	43.3	92	18	109	0.31	4701	3996	2748	218.62	1.3709	0.82	168.28	0.63	0.77	no	0.5032	0.250	0.34	2.0	1.61	6	0.191	4.78	35	36	no	zero	0.89
193.5	13.2	43.5	92	18	109	0.31	4719	4003	2755	218.52	1.5852	0.82	168.09	0.73	0.77	no	0.5030	0.260	0.35	2.0	1.65	6	0.190	4.77	35	36	no	zero	0.89
193.4	13.3	43.6	92	18	109	0.32	4737	4011	2763	209.21	0.9731	0.82	159.54	0.47	0.77	yes	0.5029	0.243	0.33	0.7	1.55	5	0.192	4.79	33	33	0.005	0.01	0.90
193.2	13.3	43.8	92	18	109	0.34	4755	4019	2771	191.95	1.1671	0.80	144.00	0.62	0.77	yes	0.5027	0.243	0.33	0.7	1.66	6	0.190	4.77	30	31	0.005	0.01	0.91
193.0	13.4	44.0	92	18	109	0.35	4773	4026	2778	181.84	1.6954	0.80	134.99	0.94	0.77	yes	0.5026	0.270	0.36	0.7	1.80	9	0.185	4.74	28	29	0.010	0.02	0.93
192.9	13.4	44.1	92	18	109	0.39	4790	4034	2786	158.43	2.3211	0.78	114.67	1.49	0.77	yes	0.5024	0.295	0.40	0.8	1.98	13	0.178	4.69	24	26	0.010	0.02	0.94
192.7	13.5	44.3	92	18	109	0.52	4808	4041	2793	91.97	2.975	0.72	60.59	3.32	0.77	no	0.5023	0.300	0.41	2.0	2.42	28	0.153	4.50	13	19	no	zero	0.94
192.5	13.5	44.5	92	18	109	0.61	4826	4049	2801	57.93	2.5645	0.67	35.30	4.62	0.77	no	0.5021	0.285	0.38	2.0	2.69	41	0.132	4.33	8	15	no	zero	0.94
192.4	13.6	44.6	92	18	109	0.68	4844	4056	2808	40.69	2.1617	0.64	23.30	5.65	0.77	no	0.5019	0.269	0.36	2.0	2.88	52	0.114	4.16	6	12	no	zero	0.94
192.2	13.6	44.8	92	18	109	0.66	4862	4064	2816	44.11	1.8599	0.65	25.58	4.46	0.77	no	0.5017	0.274	0.37	2.0	2.78	46	0.124	4.25	6	12	no	zero	0.94
192.1	13.7	44.9	92	18	109	0.66	4880	4072	2824	43.54	1.0931	0.65	25.16	2.66	0.76	no	0.5016	0.274	0.37	2.0	2.64	39	0.136	4.36	6	12	no	zero	0.94
191.9	13.7	45.1	92	18	109	0.72	4897	4079	2831	31.83	1.5421	0.62	17.34	5.25	0.76	no	0.5014	0.257	0.35	2.0	2.96	57	0.107	4.08	4	9	no	zero	0.94
191.7	13.8	45.3	92	18	109	0.68	4915	4087	2839	40.21	1.8931	0.64	22.84	5.01	0.76	no	0.5012	0.269	0.36	2.0	2.85	50	0.117	4.19	5	11	no	zero	0.94
191.6	13.8	45.4	92	18	109	0.52	4933	4094	2846	88.65	2.5371	0.71	57.61	2.94	0.76	no	0.5010	0.300	0.41	2.0	2.40	28	0.155	4.52	13	19	no	zero	0.94
191.4	13.9	45.6	92	18	109	0.39	4951	4102	2854	160.67	3.0094	0.77	115.77	1.90	0.76	yes	0.5008	0.319	0.43	0.9	2.06	16	0.174	4.67	25	31	0.005	0.01	0.95
191.2	13.9	45.8	92	18	109	0.31	4969	4109	2861	216.83	2.8806	0.82	165.12	1.34	0.76	no	0.5006	0.310	0.42	2.0	1.84	10	0.184	4.73	35	36	no	zero	0.95
191.1	14.0	45.9	92	18	109	0.27	4986	4117	2869	245.91	2.514	0.83	191.80	1.03	0.76	no	0.5004	0.300	0.41	2.0	1.71	7	0.188	4.76	40	41	no	zero	0.95
190.9	14.0	46.1	92	18	109	0.26	5004	4125	2877	256.68	2.3722	0.84	201.80	0.93	0.76	no	0.5002	0.280	0.38	2.0	1.67	6	0.189	4.77	42	43	no	zero	0.95
190.7	14.1	46.3	92	18	109	0.26	5022	4132	2884	253.45	2.2452	0.84	198.66	0.89	0.76	no	0.5000	0.270	0.36	2.0	1.66	6	0.190	4.77	42	43	no	zero	0.95
190.6	14.1	46.4	92	18	109	0.28	5040	4140	2892	242.88	2.5426	0.83	188.66	1.06	0.76	no	0.4998	0.300	0.41	2.0	1.72	8	0.187	4.76	40	41	no	zero	0.95
190.4	14.2	46.6	92	18	109	0.31	5058	4147	2899	214.48	3.2332	0.81	162.49	1.53	0.75	no	0.4996	0.320	0.43	2.0	1.89	11	0.182	4.72	34	36	no	zero	0.95
190.2	14.2	46.8	92	18	109	0.32	5075	4155	2907	203.56	4.0682	0.80	152.57	2.02	0.75	no	0.4994	0.338	0.46	2.0	2.00	14	0.177	4.69	33	35	no	zero	0.95
190.1	14.3	46.9	92	18	109	0.32	5093	4162	2914	210.66	5.2637	0.81	158.84	2.53	0.75	no	0.4992	0.338	0.46	2.0	2.06	16	0.174	4.66	34	40	no	zero	0.95
189.9	14.3	47.1	92	18	109	0.30	5111	4170	2922	223.52	4.8103	0.82	170.41	2.18	0.75	no	0.4990	0.340	0.46	2.0	1.99	14	0.177	4.69	36	38	no	zero	0.95
189.8	14.4	47.2	92	18	109	0.30	5129	4178	2930	225.15	2.6605	0.82	171.80	1.20	0.75	no	0.4987	0.300	0.41	2.0	1.79	9	0.185	4.74	36	37	no	zero	0.95
189.6	14.4	47.4	92	18	109	0.44	5147	4185	2937	129.88	2.3218	0.74	89.23	1.82	0.75	yes	0.4985	0.298	0.40	0.8	2.12	17	0.171	4.64	19	25	0.010	0.02	0.97
189.4	14.5	47.6	92	18	109	0.57	5164	4193	2945	71.01	2.9162	0.68	43.77	4.26	0.75	no	0.4983	0.290	0.39	2.0	2.60	36	0.140	4.39	10	17	no	zero	0.97
189.3	14.5	47.7	92	18	109	0.60	5182	4200	2952	60.3	3.081	0.66	36.07	5.34	0.75	no	0.4981	0.285	0.38	2.0	2.73	43	0.129	4.30	8	15	no	zero	0.97
189.1	14.6	47.9	92	18	109	0.65	5200	4208	2960	46.02	2.7728	0.64	26.18	6.39	0.75	no	0.4978	0.274	0.37	2.0	2.88	52	0.114	4.16	6	12	no	zero	0.97
188.9	14.6	48.1	92	18	109	0.68	5218	4215	2967	40.41	2.2853	0.63	22.41	6.05	0.75	no	0.4976	0.269	0.36	2.0	2.92	54	0.111	4.13	5	11	no	zero	0.97

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	**w**	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)
188.8	14.7	48.2	92	18	109	0.69	5236	4223	2975	37.8	1.5085	0.62	20.66	4.29	0.74	no	0.4974	0.269	0.36	2.0	2.84	49	0.118	4.20	5	10	no	zero	0.97
188.6	14.7	48.4	92	18	109	0.70	5253	4231	2983	34.89	1.211	0.62	18.75	3.75	0.74	no	0.4971	0.263	0.35	2.0	2.84	49	0.119	4.20	4	9	no	zero	0.97
188.4	14.8	48.6	92	18	109	0.70	5271	4238	2990	35.07	1.1754	0.61	18.84	3.62	0.74	no	0.4969	0.263	0.35	2.0	2.83	48	0.120	4.21	4	9	no	zero	0.97
188.3	14.8	48.7	92	18	109	0.70	5289	4246	2998	35.79	1.0079	0.62	19.27	3.04	0.74	no	0.4966	0.263	0.35	2.0	2.77	45	0.125	4.26	5	10	no	zero	0.97
188.1	14.9	48.9	92	18	109	0.70	5307	4253	3005	34.5	0.9646	0.61	18.41	3.03	0.74	no	0.4964	0.263	0.35	2.0	2.78	46	0.124	4.25	4	9	no	zero	0.97
188.0	14.9	49.0	92	18	109	0.72	5325	4261	3013	32.05	0.9947	0.61	16.83	3.38	0.74	no	0.4961	0.257	0.35	2.0	2.85	50	0.118	4.20	4	9	no	zero	0.97
187.8	15.0	49.2	92	18	109	0.71	5343	4268	3020	33.84	1.1224	0.61	17.93	3.60	0.74	no	0.4959	0.257	0.35	2.0	2.84	49	0.119	4.20	4	9	no	zero	0.97
187.6	15.0	49.4	92	18	109	0.70	5360	4276	3028	35.07	1.4062	0.61	18.69	4.34	0.74	no	0.4956	0.263	0.35	2.0	2.88	52	0.115	4.16	4	9	no	zero	0.97
187.5	15.1	49.5	92	18	109	0.69	5378	4284	3036	38.3	1.7931	0.62	20.74	5.04	0.74	no	0.4954	0.269	0.36	2.0	2.89	52	0.114	4.16	5	10	no	zero	0.97
187.3	15.1	49.7	92	18	109	0.67	5396	4291	3043	41.2	1.9071	0.62	22.60	4.95	0.74	no	0.4951	0.269	0.36	2.0	2.85	50	0.117	4.19	5	11	no	zero	0.97
187.1	15.2	49.9	92	18	109	0.69	5414	4299	3051	37.1	1.5934	0.61	19.91	4.63	0.73	no	0.4948	0.263	0.35	2.0	2.88	51	0.115	4.17	5	10	no	zero	0.97
187.0	15.2	50.0	92	18	109	0.72	5432	4306	3058	31.83	1.0553	0.60	16.53	3.62	0.73	no	0.4946	0.257	0.35	2.0	2.87	51	0.116	4.17	4	9	no	zero	0.97
186.8	15.3	50.2	92	18	109	0.73	5449	4314	3066	28.58	0.5542	0.59	14.48	2.14	0.73	no	0.4943	0.251	0.34	2.0	2.78	46	0.124	4.25	3	8	no	zero	0.97
186.6	15.3	50.4	92	18	109	0.74	5467	4321	3073	28.04	0.8204	0.59	14.12	3.24	0.73	no	0.4940	0.251	0.34	2.0	2.89	53	0.113	4.15	3	8	no	zero	0.97
186.5	15.4	50.5	92	18	109	0.70	5485	4329	3081	35.57	1.7337	0.61	18.81	5.28	0.73	no	0.4938	0.263	0.35	2.0	2.93	55	0.109	4.11	5	10	no	zero	0.97
186.3	15.4	50.7	92	18	109	0.60	5503	4337	3089	60.58	2.6257	0.65	35.47	4.54	0.73	no	0.4935	0.285	0.38	2.0	2.69	41	0.133	4.33	8	15	no	zero	0.97
186.1	15.5	50.9	92	18	109	0.51	5521	4344	3096	96.67	3.4678	0.70	61.69	3.69	0.73	no	0.4932	0.300	0.41	2.0	2.45	30	0.151	4.49	14	20	no	zero	0.97
186.0	15.5	51.0	92	18	109	0.42	5538	4352	3104	139.46	4.629	0.74	95.35	3.39	0.73	no	0.4930	0.320	0.43	2.0	2.30	23	0.161	4.57	21	27	no	zero	0.97
185.8	15.6	51.2	92	18	109	0.44	5556	4359	3111	131.27	4.6851	0.73	88.63	3.65	0.73	no	0.4927	0.310	0.42	2.0	2.34	25	0.158	4.55	19	26	no	zero	0.97
185.7	15.6	51.3	92	18	109	0.41	5574	4367	3119	148.78	4.8429	0.75	102.85	3.32	0.73	no	0.4924	0.330	0.45	2.0	2.27	22	0.163	4.58	22	28	no	zero	0.97
185.5	15.7	51.5	92	18	109	0.38	5592	4374	3126	162.69	4.5623	0.76	114.40	2.85	0.72	no	0.4921	0.332	0.45	2.0	2.19	20	0.168	4.62	25	31	no	zero	0.97
185.3	15.7	51.7	92	18	109	0.44	5610	4382	3134	126.35	4.0605	0.72	84.46	3.29	0.72	no	0.4918	0.310	0.42	2.0	2.32	24	0.160	4.56	19	25	no	zero	0.97
185.2	15.8	51.8	92	18	109	0.52	5627	4390	3142	91.64	4.0579	0.69	57.55	4.57	0.72	no	0.4915	0.300	0.41	2.0	2.54	34	0.145	4.43	13	20	no	zero	0.97
185.0	15.8	52.0	92	18	109	0.53	5645	4397	3149	84.65	4.0978	0.68	52.31	5.01	0.72	no	0.4912	0.300	0.41	2.0	2.60	36	0.140	4.40	12	19	no	zero	0.97
184.8	15.9	52.2	92	18	109	0.35	5663	4405	3157	181.82	3.6704	0.77	130.42	2.05	0.72	no	0.4910	0.335	0.45	2.0	2.04	15	0.175	4.67	28	34	no	zero	0.97
184.7	15.9	52.3	92	18	109	0.25	5681	4412	3164	270.79	3.1454	0.83	211.39	1.17	0.72	no	0.4907	0.300	0.41	2.0	1.72	8	0.187	4.76	44	45	no	zero	0.97
184.5	16.0	52.5	92	18	109	0.23	5699	4420	3172	282.56	2.7055	0.84	222.59	0.97	0.72	no	0.4904	0.290	0.39	2.0	1.65	6	0.190	4.78	47	48	no	zero	0.97
184.3	16.0	52.7	92	18	109	0.31	5716	4427	3179	216.61	3.8025	0.80	160.89	1.78	0.72	no	0.4901	0.330	0.45	2.0	1.94	12	0.180	4.70	34	36	no	zero	0.97
184.2	16.1	52.8	92	18	109	0.41	5734	4435	3187	144.68	4.1621	0.74	98.78	2.93	0.72	no	0.4898	0.320	0.43	2.0	2.24	21	0.165	4.59	22	28	no	zero	0.97
184.0	16.1	53.0	92	18	109	0.47	5752	4443	3195	112.95	4.799	0.71	73.36	4.36	0.72	no	0.4895	0.300	0.41	2.0	2.46	30	0.151	4.49	16	22	no	zero	0.97
183.9	16.2	53.1	92	18	109	0.44	5770	4450	3202	129.51	5.8669	0.72	86.35	4.63	0.72	no	0.4892	0.310	0.42	2.0	2.43	29	0.153	4.50	19	26	no	zero	0.97
183.7	16.2	53.3	92	18	109	0.42	5788	4458	3210	140.61	5.5698	0.73	95.23	4.04	0.71	no	0.4889	0.320	0.43	2.0	2.36	26	0.158	4.54	21	28	no	zero	0.97
183.5	16.3	53.5	92	18	109	0.41	5806	4465	3217	145.42	3.8429	0.74	99.09	2.70	0.71	no	0.4886	0.320	0.43	2.0	2.21	20	0.166	4.61	22	28	no	zero	0.97
183.4	16.3	53.6	92	18	109	0.43	5823	4473	3225	135.8	4.4241	0.73	91.19	3.33	0.71	no	0.4883	0.320	0.43	2.0	2.31	24	0.161	4.56	20	26	no	zero	0.97
183.2	16.4	53.8	92	18	109	0.40	5841	4480	3232	149.73	5.2818	0.74	102.48	3.60	0.71	no	0.4880	0.330	0.45	2.0	2.30	23	0.161	4.57	22	28	no	zero	0.97
183.0	16.4	54.0	92	18	109	0.35	5859	4488	3240	184.5	5.4006	0.77	131.80	2.97	0.71	no	0.4876	0.335	0.45	2.0	2.17	19	0.169	4.63	28	34	no	zero	0.97
182.9	16.5	54.1	92	18	109	0.26	5877	4496	3248	255.34	4.6225	0.82	195.72	1.83	0.71	no	0.4873	0.340	0.46	2.0	1.89	11	0.181	4.72	41	43	no	zero	0.97
182.7	16.5	54.3	92	18	109	0.22	5895	4503	3255	290.98	3.4854	0.84	229.70	1.21	0.71	no	0.4870	0.310	0.42	2.0	1.71	7	0.188	4.76	48	49	no	zero	0.97
182.5	16.6	54.5	92	18	109	0.22	5912	4511	3263	297.22	3.3716	0.85	235.70	1.15	0.71	no	0.4867	0.300	0.41	2.0	1.69	7	0.189	4.77	49	50	no	zero	0.97
182.4	16.6	54.6	92	18	109	0.21	5930	4518	3270	306.91	3.5547	0.85	245.12	1.17	0.71	no	0.4864	0.300	0.41	2.0	1.68	7	0.189	4.77	51	52	no	zero	0.97
182.2	16.7	54.8	92	18	109	0.20	5948	4526	3278	311.79	3.1193	0.86	249.86	1.01	0.71	no	0.4861	0.300	0.41	2.0	1.63	6	0.190	4.78	52	53	no	zero	0.97
182.0	16.7	55.0	92	18	109	0.20	5966	4533	3285	316.29	2.1281	0.86	254.24	0.68	0.70	no	0.4858	0.260	0.35	2.0	1.50	4	0.194	4.80	53	53	no	zero	0.97
181.9	16.8	55.1	92	18	109	0.20	5984	4541	3293	317.75	1.3735	0.86	255.60	0.44	0.70	no	0.4854	0.240	0.32	2.0	1.37	2	0.196	4.82	53	53	no	zero	0.97
181.7	16.8	55.3	92	18	109	0.20	6001	4549	3301	314.56	1.3665	0.86	252.33	0.44	0.70	no	0.4851	0.240	0.32	2.0	1.37	2	0.196	4.82	52	52	no	zero	0.97
181.6	16.9	55.4	92	18	109	0.21	6019	4556	3308	301.45	1.3043	0.85	239.29	0.44	0.70	no	0.4848	0.240	0.32	2.0	1.39	2	0.196	4.82	50	50	no	zero	0.97
181.4	16.9	55.6	92	18	109	0.23	6037	4564	3316	285.67	1.3805	0.84	223.81	0.49	0.70	no	0.4845	0.250	0.34	2.0	1.44	3	0.195	4.81	47	47	no	zero	0.97
181.2	17.0	55.8	92	18	109	0.24	6055	4571	3323	271.72	1.3452	0.83	210.30	0.50	0.70	no	0.4842	0.250	0.34	2.0	1.47	3	0.194	4.81	44	44	no	zero	0.97
181.1	17.0	55.9	92	18	109	0.26	6073	4579	3331	260.44	1.5568	0.82	199.50	0.60	0.70	no	0.4838	0.250	0.34	2.0	1.54	4	0.193	4.79	42	42	no	zero	0.97
180.9	17.1	56.1	92	18	109	0.30	6090	4586	3338	226.71	2.4499	0.80	168.15	1.10	0.70	no	0.4835	0.300	0.41	2.0	1.77	9	0.186	4.75	35	36	no	zero	0.97
180.7	17.1	56.3	92	18	109	0.41	6108	4594	3346	143.75	3.4846	0.73	96.47	2.48	0.70	no	0.4832	0.320	0.43	2.0	2.19	20	0.167	4.61	21	27	no	zero	0.97
180.6	17.2	56.4	92	18	109	0.52	6126	4602	3354	90.88	4.0382	0.67	55.45	4.60	0.70	no	0.4828	0.300	0.41	2.0	2.55	34	0.144	4.43	13	20	no	zero	0.97
180.4	17.2	56.6	92	18	109	0.56	6144	4609	3361	75.59	3.5289	0.65	44.38	4.87	0.70	no	0.4825	0.290	0.39	2.0	2.64	38	0.137	4.37	10	17	no	zero	0.97
180.2	17.3	56.8	92	18	109	0.56	6162	4617	3369	74.39	4.5748	0.65	43.49	6.42	0.69	no	0.4822	0.290	0.39	2.0	2.73	43	0.129	4.30	10	17	no	zero	0.97
180.1	17.3	56.9	92	18	109	0.55	6180	4624	3376	80.07	5.069	0.65	47.47	6.58	0.69	no	0.4818	0.295	0.40	2.0	2.72	42	0.130	4.31	11	18	no	zero	0.97
179.9	17.4	57.1	92	18	109	0.53	6197	4632	3384	88.27	4.6661	0.66	53.33	5.48	0.69	no	0.4815	0.300	0.41	2.0	2.62	37	0.138	4.38	12	19	no	zero	0.97
179.7	17.4	57.3	92	18	109	0.45	6215	4639	3391	120.94	3.5472	0.70	77.91	3.01	0.69	no	0.4812	0.300	0.41	2.0	2.32	24	0.160	4.56	17	23	no	zero	0.97
179.6	17.5	57.4	92	18	109	0.40	6233	4647	3399	153.63	3.2944	0.73	104.05	2.19	0.69	no	0.4808	0.330	0.45	2.0	2.13	18	0.171	4.64	22	28	no	zero	0.97
179.4	17.5	57.6	92	18	109	0.51	6251	4655	3407	96.61	3.6169	0.67	59.29	3.87	0.69	no	0.4805	0.300	0.41	2.0	2.48	31	0.149	4.47	13	20	no	zero	0.97
179.3	17.6	57.7	92	18	109	0.56	6269	4662	3414	73.7	3.533	0.64	42.74	5.01	0.69	no	0.4802	0.290	0.39	2.0	2.66	39	0.135	4.35	10	17	no	zero	0.97
179.1	17.6	57.9	92	18	109	0.56	6286	4670	3422	76.23	3.7753	0.64	44.47	5.17	0.69	no	0.4798	0.290	0.39	2.0	2.66	39	0.135	4.35	10	17	no	zero	0.97
178.9	17.7	58.1	92	18	109	0.54	6304	4677	3429	82.67	3.7675	0.65	48.99	4.74	0.69	no	0.4795	0.295	0.40	2.0	2.60	36	0.140	4.39	11	18	no	zero	0.97
178.8	17.7	58.2	92	18	109	0.50	6322	4685	3437	101.06	4.5419	0.67	62.38	4.64	0.69	no	0.4792	0.300	0.41	2.0	2.52	33	0.146	4.45	14	21	no	zero	0.97
178.6	17.8	58.4	92	18	109	0.53	6340	4692	3444	86.3	3.6258	0.66	51.50	4.36	0.69	no	0.4788	0.300	0.41	2.0	2.56	34	0.143	4.42	12	18	no	zero	0.97
178.4	17.8	58.6	92	18	109	0.46	6358	4700	3452	116.85	2.3413	0.69	74.24	2.06	0.68	no	0.4785	0.300	0.41	2.0	2.22	21	0.166	4.60	16	21	no	zero	0.97
178.3	17.9	58.7	92	18	109	0.34	6375	4708	3460	194.94	1.3192	0.76	138.47	0.69	0.68	yes	0.4781	0.245	0.33	0.7	1.70	7	0.188	4.76	29	30	0.001	0.00	0.98
178.1	17.9	58.9	92	18	109	0.31	6393	4715	3467	214.34	1.0133	0.78	155.52	0.48	0.68	yes	0.4778	0.243	0.33	0.7	1.56	5	0.192	4.79	32	32	0.001	0.00	0.98
177.9	18.0	59.1	92	18	109	0.40	6411	4723	3475	154.86	2.0912	0.73	104.33	1.38	0.68	yes	0.4774	0.280	0.38	0.8	1.99	14	0.177	4.69	22	24	0.015	0.03	1.01
177.8	18.0	59.2	92	18	109	0.54	6429	4730	3482	84.26	2.6145	0.65	49.79	3.23	0.68	no	0.4771	0.295	0.40	2.0	2.48	31	0.149	4.47	11	17	no	zero	1.01
177.6	18.1	59.4	92	18	109	0.61	6447	4738	3490	58.58	3.0726	0.61	32.03	5.55	0.68	no	0.4768	0.280	0.38	2.0	2.78	46	0.125	4.26	8	14	no	zero	1.01
177.5	18.1	59.5	92	18	109	0.61	6464	4746	3498	56.85	2.71	0.61	30.85	5.05	0.68	no	0.4764	0.280	0.38	2.0	2.76	45	0.126	4.27	7	13	no	zero	1.01
177.3	18.2	59.7	92	18	109	0.63	6482	4753	3505	53.38	1.3983	0.60	28.54	2.79	0.68	no	0.4761	0.274	0.37	2.0	2.61	37	0.139	4.39	7	13	no	zero	1.01
177.1	18.2	59.9	92	18	109	0.66	6500	4761	3513	45.66	0.7783	0.59	23.56	1.84	0.68	yes	0.4757	0.236	0.32	0.7	2.57	35	0.142	4.42	5	10	0.025	0.05	1.06

Elevation	Depth		In-Situ Soil Condition				Overburden Stress			CPT Input		Overburden Resistance Correction	Normalized Tip Resistance	Normalized Friction Ratio	Depth Reduction Factor	Robertson's ECPT Chart Check	Cyclic Stress Ratio	Cyclic Resistance Ratio	Magnitude Adjusted CRR	Liquefaction Factor of Safety	Soil-Type Behavior Index	Fines Content	Mean Grain Size	CPT/SPT Correlation Factor	Equivalent SPT	Corrected SPT (Clean Sand)	Vertical Strain	Liquefaction Induced Settlement	Cumulative Settlement
			Dry Density	Percent Moisture	Moist Density	Stress Exponent	Total	Effective		Tip Resistance	Sleeve Friction																		
								Current GW	HHGWL																				
			γ_D	**w**	γ_M	**n**	σ_o	σ'_o	σ'_o	q_c	f_s	C_Q	q_{c1}	**F**	r_d	**Liquefiable**	**CSR**	CRR_1	**CRR**	FS_{liq}	I_c	AFC	D_{50}	q_c/N	**N**	N_{clean}	✇		
ft	m	ft	pcf	%	pcf		psf	psf	psf	tsf	tsf					yes/no						0						(in)	(in)

www.geodesigninc.com