GEODESIGN INC

REVISED REPORT OF PRELIMINARY GEOTECHNICAL ENGINEERING SERVICES

The Waterfront
Redondo Beach Pier
Redondo Beach, California

For
CenterCal Properties, LLC
November 12, 2014

GeoDesign Project: CenterCal-17-04

GEODESIGN INC

November 12, 2014

CenterCal Properties, LLC
1600 East Franklin Avenue
El Segundo, CA 90245

Attention: Mr. Jed Bohn, PMP

Revised Report of Preliminary Geotechnical Engineering Services
The Waterfront
Redondo Beach Pier
Redondo Beach, California
GeoDesign Project: CenterCal-17-04

GeoDesign, Inc. is pleased to submit this revised preliminary geotechnical engineering report for the proposed Waterfront development to be constructed at the Redondo Beach Pier in Redondo Beach, California. This revised report incorporates review comments that you provided and supersedes our report dated October 17, 2014. Our services were performed in accordance with our proposal for geotechnical consultation services dated July 24, 2014.

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

Sincerely,

GeoDesign, Inc.

Christopher J. Zadoorian, G.E.
Principal Engineer

CJZ:kt
Attachments
Four copies submitted
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1.0 INTRODUCTION

1.1 GENERAL

This report presents the results of our preliminary geotechnical engineering investigation for the proposed Waterfront development to be constructed at the Redondo Beach Pier in Redondo Beach, California. The site extends from Portofino Way at the north to Torrance Boulevard at the south within the general limits of King Harbor and the Redondo Beach Pier area, as shown Figures 1 and 2.

King Harbor includes a main breakwater and three marina basins; the southern of the three, Basin 3, is located within the project limits.

The site is approximately 29 acres and is currently developed with restaurants, parking structures, commercial structures, a seaside lagoon, and surface parking, as shown on Figures 2, 3, and 4.

The northern approximately one-half of the site includes at-grade restaurants, a municipal parking garage, a seaside lagoon and surface parking lots, as shown on Figure 3. The southern approximately one-half of the site includes a larger municipal parking garage, with restaurants and retail buildings above, as shown on Figure 4. Wharf and pier structures are present at the site, also, primarily within the southern one-half of the site.

The north and south sides of the site are divided by Basin 3. The International Boardwalk borders the small craft harbor on its north, east, and west sides connecting the north and south sides of the site for pedestrian traffic.

A 70-foot-wide utility easement traverses the north half of the site in a roughly northwest-southeast direction.

1.2 PROPOSED DEVELOPMENT

You furnished us with a Concept Package dated August 12, 2014 prepared by Psomas and a Master Plan dated September 24, 2014 prepared by SMS Architects that summarize the proposed development.

It is proposed to demolish the existing structures and construct 15 new buildings and one new parking garage within the north side of the site. The buildings will include retail and office space, a market hall, restaurants, a movie theater, and a beach club and will total approximately 300,000 square feet of new retail and commercial space. Including the parking garage and surface parking, 919 new parking stalls will be constructed.

The lowest finish floor levels of the structures on the north side will range from approximately Elevation 12 to 19.

Development planned at the south side of the site will include a hotel and associated retail and subterranean parking that will encompass a majority of the site. Four additional buildings are also planned as restaurants and retail within the existing pier. A new parking garage is also planned at the south side of the site that will provide approximately 1,009 new parking spaces, including those beneath the hotel and restaurants.

The lowest finish floor level of the new buildings at the south side of site will range from approximately Elevation 10 to 12. The lowest finish floor level of the buildings on the existing pier will be approximately Elevation 20 to 25.

Grading is planned at the north side of the site to raise the ground surface level on the order of 1 foot to 4 feet and on the order of 7 feet in some locations at the south side of the site.

A pedestrian bridge that would provide access along the west side of Basin 3 is also planned. The bridge would have an approximately 105-foot span and would be capable of swinging open to allow nautical passage in and out of the small-craft harbor.

Structural loading information was not available at the time this preliminary report was prepared.

Figure 5 shows the proposed development plan for the entire site. Figures 6 and 7 show the proposed north and south side development plans, respectively.

Our preliminary investigation is summarized below followed by our conclusions and preliminary recommendations for the proposed development.

2.0 PURPOSE AND SCOPE

The purpose of our preliminary investigation was to collect subsurface information at the site for use in developing geotechnical conclusions and recommendations for the proposed development. Our specific scope of services included the following primary tasks:

- General site reconnaissance
- Review available historical documents and plans regarding the initial development of the Redondo Beach pier and marina
- Review existing published and unpublished reports and maps concerning soil and geologic conditions within and adjacent to the site
- Review preliminary development plans and project specifications
- Plan preliminary geotechnical field explorations, including coordination with the City of Redondo Beach and performing geophysical screening of the proposed exploration locations
- Advance 22 CPT soundings at the site ranging in depth up to approximately 50 feet BGS
- Develop geologic cross sections depicting the subsurface conditions encountered
- Perform preliminary geotechnical engineering analysis to develop preliminary foundation design recommendations
- Prepare this preliminary report summarizing our investigation and presenting our conclusions and preliminary recommendations

3.0 SITE HISTORY AND BACKGROUND GEOLOGY

3.1 SITE DEVELOPMENT HISTORY

Redondo Harbor and pier were originally developed in the late 1800s. The site was selected, initially, as a potential harbor location due in part to the presence of the offshore Redondo Trench that could accommodate marine vessels. The Redondo Trench trends roughly to the southwest from the site and ranges to depths of 1,000 feet below mean sea level.

Based on our review of historical aerial photographs, the harbor development included land reclamation for the north side of the site, as shown on Figure 8.

Based on our review of Army Corps of Engineers documentation, the north breakwater was constructed in the late 1930s and the extension was completed in 1958. King Harbor was developed in the early 1960s and dedicated in 1966.

The trapezoidal-shaped pier located adjacent to the south half of the site has reportedly been reconstructed seven times. The most recent reconstruction was completed circa 1995 and occurred after a fire destroyed the majority of the pier in 1988.

3.2 GENERAL GEOLOGIC BACKGROUND CONDITIONS

The site may be characterized generally by four primary geologic materials: artificial fill, recent beach deposits, lagoon-type deposits, and geologically older (Pleistocene) marine terrace deposits.

Artificial fill generally consists of undifferentiated old and new fills associated with the development of the harbor and consists of loose and/or soft to firm and/or dense sand and silty sand.

Recent beach deposits consist of relatively clean, loose sand. Shell fragments are also common within this unit.

Lagoon-type deposits consist of fine-grained silt and clay and appear more prominent within the north side of the site.

Pleistocene age marine deposits generally consist of dense, fine sand with noticeably fewer shell fragments.

4.0 GEOTECHNICAL EXPLORATIONS AND SUBSURFACE CONDITIONS

4.1 GEOTECHNICAL EXPLORATIONS

We explored the site by advancing 22 CPT soundings to depths of up to approximately 50 feet BGS. CPT-1 through CPT-11 were located within the north side of the site, and CPT-12 through CPT-23 were located within the south half of the site. Please note that CPT-14 was omitted due to extensive utility conflicts in that area. Logs of the CPT explorations are presented in the Appendix of this report.

CPT-1 through CPT-10 and CPT-12 were advanced using a truck-mounted rig, CPT-13 and CPT-15 were advanced using a track-mounted CPT rig, and CPT-11 and CPT-16 through CPT-23 were advanced using a limited-access, ram-set rig. The track- and limited-access equipment was required due to access limitations at the site.

Each CPT sounding was backfilled with grout upon completion and the ground surface was restored to the previously existing condition.

Refusal was encountered in several of the CPTs, likely due to the presence of riprap representative of the old shoreline and/or prior marine foundation elements. Multiple efforts were made at to advance CPTs that initially met refusal and in several cases were successful. In some cases, however, we were only able to advance CPTs a few feet below ground surface.

4.2 SUBSURFACE CONDITIONS

4.2.1 General

The data from the preliminary subsurface explorations yielded three general conditions at the locations explored, defined herein as Zones 1, 2, and 3.

The first generalized area, Zone 1, is represented by CPT-1 through CPT-12 and the inner harbor and pier area; the second generalized area, Zone 2, is represented by CPT-13 and CPT-15 through CPT-17; and the third generalized area, Zone 3, is represented by CPT-18 thought CPT-23. Again, please note that CPT-14 was not performed due to utility conflicts.

Generalized delineation of Zones 1, 2, and 3 is shown on Figures 5, 6, and 7. Typical cross sections are presented on Figures 9 and 10. Supplemental explorations will be required to refine our initial site characterizations.

4.2.2 Zone 1 - CPT-1 Through CPT-12

CPT-1 through CPT-12 were located within the northern one-half of the site and with the exception of CPT-11, were each advanced within existing at-grade parking lot areas. CPT-11 was located within a municipal parking garage and was advanced from the lowest level of the parking garage.

In general, the data from the CPT-1 through CPT-12 indicated relatively loose, granular deposits in the upper approximately 8 to 24 feet. These upper deposits are likely representative of the upper fill and recent beach deposits.

At these locations, the relatively loose, granular deposits were typically underlain by a 4- to 5-foot-thick layer of fine-grained deposits, representative of the still-water lagoon deposits. In some locations, this sequence is repeated one or two times prior to encountering very dense granular deposits, as described in the following paragraph.

Below the lowest lagoon deposits encountered in CPT-1 through CPT-12, relatively dense, granular deposits were encountered, representative of the Pleistocene marine deposits.

Refusal was encountered in CPT-1, CPT-3, CPT-6, CPT-9, CPT-10, and CPT-12. Repeated attempts were successful at the CPT-1 and CPT-3 locations; however, they were unsuccessful at the remaining locations.

Refusal may be due to old riprap, particularly for the western CPTs, and/or pre-existing marine foundation elements.

4.2.3 Zone 2 - CPT-13, CPT-15, and CPT-16

CPT-13 and CPT-15 were advanced within the existing International Boardwalk area from the existing ground surface level using a track-mounted CPT rig. CPT-16 was advanced within the larger municipal parking garage that occupies the majority of the southern one-half of the site using a limited-access CPT rig.

CPT-13, CPT-15, and CPT-16 each encountered approximately 9 feet of loose or soft soil underlain by relatively dense soil and encountered subsequent refusal at relatively shallow depths of approximately 22, 16, and 14 feet BGS, respectively. Refusal may be due to old riprap and/or pre-existing marine foundation elements.

In general, these explorations appear to be representative of a transitional zone within the site wherein the thickness of relatively loose and or soft materials may be decreasing, relative to the northerly side of the site.

4.2.4 Zone 3 - CPT-17 Through CPT-23

CPT-17 through CPT-23 were advanced within the larger municipal parking garage that occupies the majority of the southern one-half of the site using a limited-access CPT rig.

In general, very dense granular soil was encountered at each location, apparently representing the Pleistocene age marine terrace deposits.

Refusal was encountered in CPT-18 at a depth of approximately 11 feet BGS. Refusal may be due to old riprap and/or pre-existing marine foundation elements.

4.3 GROUNDWATER

Groundwater levels were not directly obtainable from the CPT explorations; however, the groundwater level at the site will correspond roughly with the tidal level in the harbor and can be expected within 5 to 10 feet of the existing ground surface levels at the site.

Based on the *Seismic Hazard Zone Report for the Redondo Beach 7.5 Minutes Quadrangle, Los Angeles County, California, 1998*, the historical highest groundwater at the site vicinity is less than 10 feet BGS.

For the purposes of this preliminary investigation, we assumed a design groundwater level to be at Elevation 5 to account for periodic tidal fluctuation.

5.0 GEOLOGIC AND SEISMIC HAZARDS

5.1 SURFACE FAULT RUPTURE

The State of California's Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to provide guidelines for the evaluation of surface fault rupture potential as well as mitigation measures where this potential is identified.

In May 2002, CGS released a document titled *Guidelines for Evaluating the Hazard of Surface Fault Rupture, Note 49* (CGS Note 49; CGS, 2002) to clarify and normalize the requirements for evaluation of surface fault rupture hazards. CGS Note 49 defines the current standard of practice for evaluation of surface fault rupture potential at a site and requires site-specific fault investigations be performed at sites within Alquist-Priolo zones prior to approval of development plans.

Based on criteria developed by CGS, an active fault is one that has had surface displacement within Holocene time (approximately the last 11,700 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 Alquist-Priolo 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. Special study fault zones are typically determined by extending 500 feet in each direction away from known traces of active faults, resulting in special study zones on the order of 1,000 feet, or more, in width.

CGS released a Fault Activity Map (CGS, 2010) showing the locations of active faults believed to be capable of causing ground surface rupture. Based on our review of the Fault Activity Map, the site is not located within a zone of active or potentially active faulting. The closest active fault to the site is the Newport-Inglewood Fault that is located several miles inland.

Therefore, the potential for ground surface rupture at the site is considered to be very low.

5.2 LIQUEFACTION

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.

The site is located within a State of California-designated liquefaction hazard zone due to the combination of shallow groundwater and geologically recent deposits.

Earthquake-induced damage to King Harbor Mole B (Basin 2) resulted from strong-ground shaking during the 1994 Northridge earthquake, including liquefaction and lateral spreading. Liquefaction settlement on the order of several feet was observed in conjunction with lateral translation on the order of 20 feet.

The closest ground motion station to the site, located approximately 2.8 miles to the north, recorded a maximum horizontal ground acceleration of 0.16 g (Kerwin and Stone, 1997).

We performed a preliminary liquefaction evaluation utilizing the data obtained from our current preliminary explorations and the procedure outlined in the NCEER document *Proceedings of the NCEER Workshop of Liquefaction Resistance of Soils* (Youd and Idriss, 1997, updated in 2001).

For the purposes of this preliminary liquefaction analysis, we assumed a depth to groundwater of 5.0 feet BGS in our evaluations.

The primary seismic input data for a liquefaction analysis includes the predominant earthquake magnitude and PGA. We performed a ground motion study and determined the predominant earthquake magnitude for this site is 7.19 and a PGA equal to 0.537 g.

Based on the results of our analysis, we estimate liquefaction settlement on the order of 8 inches may occur in the upper granular soil at the site within the northern one-half of the site (Zone 1) and transitional zone (Zone 2) that extends into the south side of the site.

The liquefaction potential of the soil encountered at the south side, in the area we designated as Zone 3, of the site at the areas explored is relatively low.

It should be noted, however, that a comprehensive evaluation that covers the entire site and includes a representative number of borings will be required to confirm our preliminary findings.

5.3 SEISMIC (DRY) SETTLEMENT

Seismic (dry) settlement can occur in loose to medium dense, granular soil as a result of strong ground shaking.

Considering that the groundwater level used in our analysis is within 5 feet of the ground surface, seismically induced settlement within soil above this depth will be negligible.

5.4 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.

Lateral spreading occurred in Mole B during the 1994 Northridge earthquake, resulting in lateral translation on the order of 20 feet.

A detailed lateral spreading evaluation was not performed as part of this preliminary report; however, it will be required as part of a comprehensive geotechnical evaluation. In order to perform a detailed evaluation, bathymetric data will be required, along with detailed plans showing the existing marine slope conditions and wharf details.

This analysis may be required on a case-by-case basis for each specific building or for some locations, a generalized evaluation may be sufficient. Buildings closer to the water will be impacted to a larger degree by lateral spreading.

For the purposes of this preliminary report, lateral spreading is a hazard that may be possible at the site and would require mitigation at one or more locations.

6.0 CONCLUSIONS

6.1 GENERAL

The site is generally free from geologic or seismic hazards that would preclude the proposed development.

The potential for liquefaction and lateral spreading is present at the site; however, these conditions can be mitigated by designing foundations to accommodate the anticipate deformation, by improving the on-site soil, by constructing revetments, and/or a combination of these three primary methods.

The site is also subject to strong ground motion in the event of an earthquake occurring on a nearby source; however, this condition can also be mitigated by following the design seismic design recommendations presented herein.

6.2 FOUNDATIONS

Our preliminary analysis indicates that the potential for soil liquefaction and lateral spreading renders shallow footings infeasible for the proposed buildings within Zones 1 and 2. Spread or mat foundations may be feasible, once structural loading information is available for review.

New structures within Zones 1 and 2 will require deep foundation systems or, alternatively, soil improvement could be performed to mitigate liquefaction and lateral spreading. Deep foundation systems could include conventional drilled shafts or driven piling, or alternative systems such as auger cast piles or micropiles.

In addition to providing axial loading capacity, a key design consideration in the development of a deep foundation system is the development of lateral resistance of the foundation system, as the potential for liquefaction and lateral spreading will greatly diminish lateral resistance.

Of the various deep foundation alternatives, drilled shafts will provide the largest lateral load capacity. In addition, installation of drilled shafts is feasible within areas of existing riprap, whereas driven piling, for instance, would not be practical. Therefore, for this preliminary report, preliminary recommendations for drilled shafts are presented.

Once the development concept is evolved and supplemental geotechnical explorations are performed, alternative deep foundation solutions will be evaluated. We will aid in the development of customized foundation systems for each proposed structure.

As a preliminary alternative to deep foundations, general considerations for soil improvement alternatives are presented in Section 7.3 of this report.

6.3 LATERAL SPREADING

Mitigation of lateral spreading may be required at one or more locations on site, as discussed in Section 5.4 of this report.

Mitigation methods may include soil improvement alternatives that are discussed in Section 7.3 of this report, deep foundation systems, and/or revetments and will be evaluated once a comprehensive lateral spreading analysis is performed.

7.0 PRELIMINARY RECOMMENDATIONS

7.1 FOUNDATIONS

7.1.1 Zone 1 and 2 - Drilled Shaft Preliminary Axial Capacities

Downward axial shaft capacities for 30-, 36-, 42-, 48-, and 60-inch-diameter drilled shafts are presented for Zone 1 on Figure 11 and for Zone 2 on Figure 12.

The capacities presented on Figures 11 and 12 may be increased by one-third to resist short-term wind or seismic loading. These capacities include considerations for downdrag from the liquefiable soil acting against the shafts. Please note also that the capacities presented are based on the strength of the subsurface material; the strength of the shafts should also be checked for adequacy.

For shafts spaced closer than 2.5 times the effective diameter on-center, reductions in allowable capacities should be applied to account for group effects. Please note where adjacent shafts of varying diameters are present, the average diameter of the adjacent shafts may be used to compute the effective diameter for evaluation of potential group effects.

As a preliminary estimate, static settlement for drilled shaft foundations will be on the order of ½ inch or less and differential settlement will be on the order of ¼ inch or less.

7.1.2 Drilled Shaft Preliminary Lateral Capacities

We computed the preliminary lateral capacities of the piles using the computer program L-Pile, by ENSOFT, Inc. The resistance of the soil adjacent to 30-, 36-, 42-, 48-, and 60-inch-diameter drilled shafts with fixed-head conditions for 0.5 inch deflection are summarized in Table 1.

Table 1. Preliminary Lateral Load Design Data

Design Parameter	Shaft Diameter (inches)				
	30	36	42	48	60
Deflection (inches)	0.5	0.5	0.5	0.5	0.5
Lateral Design Load (kips)	28	35	44	54	81

Where the shaft spacing is less than 8 diameters on-center, using the effective diameter relationship described above for axial capacity, the preliminary lateral loads indicated above should be reduced by 50 percent.

7.1.3 Preliminary Construction Considerations

Drilled shaft excavations will encounter shallow groundwater, loose fill material, riprap, and pre-existing foundation elements. Provisions to address these conditions should be included by the drilling contractor.

Concrete for drilled shafts shall be placed using a tremie in accordance with American Concrete Institute standards.

7.2 ZONE 3 – SPREAD OR MAT FOUNDATIONS

7.2.1 Allowable Bearing Pressure

New buildings located entirely within Zone 3 may be supported on a spread footings established in the dense, granular marine deposits anticipated at or near the planned foundation levels. Spread footings established at least 2 feet below the lowest adjacent grade or top of floor slab may be designed using an allowable bearing pressure of 5,000 psf.

The recommended bearing pressures are a net value and apply to the total of dead and long-term live loads and may be increased up to one-third when considering earthquake or wind loads. The weight of the footing and overlying backfill can be neglected when calculating footing loads.

7.2.2 Settlement

Structural loading information for each building will be required to perform settlement analysis for spread footings. However, as a preliminary estimate based on general loading for the Zone 3 structures, we estimate the total settlement of spread footings to be on the order of 1 inch or less and differential settlement across the building footprint to be on the order of ½ inch or less.

7.2.3 Lateral Resistance

For spread footings, lateral loading may be resisted by foundations using a passive pressure of 400 psf for footings where the concrete is placed directly against the undisturbed, stiff or dense alluvial soil. A coefficient of friction equal to 0.4 may be used when calculating resistance to sliding for foundations bearing on undisturbed, stiff or dense alluvial soil.

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

7.3 SOIL IMPROVEMENT ALTERNATIVES

7.3.1 General

Soil improvement alternatives include the following primary methods, presented in order of ascending cost:

- Vibro-replacement (aka stone columns)
- Compaction grouting
- Soil-cement mixing

Each method is briefly discussed below.

7.3.2 Stone Columns

Vibro-replacement (aka stone columns) consists of advancing a cylindrical vibratory probe suspended from a crane into the ground. The probe is initially advanced to the required depth of improvement and then withdrawn incrementally to allow the placement of crushed rock to form the stone columns.

The installation of stone columns would mitigate the liquefaction and lateral spreading potential at the site; however, this methodology would subject the existing buildings and improvements to significant ground vibrations.

A detailed analysis is required to evaluate the potential impacts of the vibration to the existing buildings and improvements.

7.3.3 Compaction Grouting

Compaction grouting is a high-pressure, positive displacement technique that consists of the injection of a very stiff, mortar-like grout into the soil, which results in densification of granular soil and increased stiffness in fine-grained soil.

Compaction grouting will also mitigate the potential for soil liquefaction and allow the use of shallow foundations to support the proposed expansion. The improvement would be accomplished without excessive vibrations at the site.

The use of compaction grouting would mitigate liquefaction and lateral spreading potential and allow the use of a spread or mat foundations for support of the proposed new structures.

7.3.4 Soil-Cement Mixing

Soil-cement mixing consists of the injection of water and cement into the soil matrix, typically using a crane-mounted rig equipped with drill rods with paddles welded at varying depths, essentially like a kitchen-mixer.

The soil cement mixture cures to form relatively stiff columns within the soil matrix, and a grid pattern of soil-cement columns is established to reinforce the soil and mitigate the potential for liquefaction.

Soil-cement mixing could be utilized to entirely mitigate liquefiable zones and/or to construct gravity-type walls that could resist lateral spreading.

Soil-cement mixing will result in spoils that require off-site disposal and may complicate subsequent grading work and utility construction due to the relative hardness of the cured mixture.

7.4 BUILDING FLOOR SLABS

Based on our preliminary analysis, it will be necessary to utilize structurally supported building floor slabs in Zones 1 and 2 to mitigate the potential for differential movement of the building floor slab due liquefaction settlement and/or lateral spreading. A structurally supported floor slab would be established on a grade beam system where the grade beams are supported by the drilled shafts (or alternative deep foundation system). The structurally supported slab and would not derive any support from the liquefaction-susceptible soil.

In Zone 3, the proposed building floor slabs may be established on existing dense native soil or properly compacted fill material. Based on the soil conditions in Zone 3, we do not anticipate special provisions will be required for the floor slab. Based on our review of structural plans for similar projects, as a preliminary design provision, a 5-inch-thick floor slab may be suitable for support of parking garage loading in Zone 3.

The bottom of the planned foundations will be established several feet above the historical high groundwater level. As such, a full waterproofing system does not appear to be required in accordance with the CBC. However, it would be prudent to include a capillary break section and moisture barrier beneath the building floor slab to mitigate the potential for moisture transmission though the slab.

The capillary break may consist of 6 inches of well-rounded gravel underlying a 15-mil HDPE membrane. The building floor slabs may be placed directly on the membrane.

7.5 PRELIMINARY PAVEMENT DESIGN PARAMETERS

7.5.1 General

To provide uniform support for AC, PCC, and interlocking concrete pavement, the upper 1 foot of existing soil should be reworked and replaced as properly compacted fill soil. The preparation of the paving area subgrade should be completed immediately prior to placement of the base course.

Proper drainage of the paved areas should be provided since this will reduce moisture infiltration into the subgrade and increase the life of the paving.

For the design of the various paving materials, the paving thickness is based on our observations of the on-site soil conditions. Due to the likely variation in subgrade material, we assumed an R-value of 40 for compacted fill in our preliminary design. The R-value should be confirmed during a comprehensive geotechnical investigation and again during the grading phase of the project.

The required paving and base thickness will depend on the expected wheel loads and volume of traffic (traffic index). Based on the anticipated traffic loading, we assumed a traffic index of 4 for parking areas and 6 for drive lanes and loading dock areas, including areas where fire access is required.

Preliminary recommendations for AC pavement, PCC pavement, and interlocking brick pavers are presented below based on the above assumptions.

7.5.2 AC Pavement Design

The minimum recommended paving thickness for AC pavement is presented in Table 2 assuming that the paving subgrade will consist of the on-site or comparable soil compacted to at least 95 percent as recommended in Section 7.6 of this report.

Table 2. AC Pavement and Base Thickness

Traffic Index	Traffic Use	AC (inches)	Base Course (inches)
4	Parking	3	4
6	Drive Lanes and Loading Dock Areas	4	6

The asphalt paving sections were determined using the California Department of Transportation (Caltrans) design method. We can determine the recommended paving and base course thickness for other traffic indices if required. Careful inspection is recommended to confirm that the recommended thickness or greater is achieved and that proper construction procedures are followed.

Caltrans Type 2 base, or equivalent, should be used in the required sections. The base should be compacted to at least 95 percent relative compaction.

7.5.3 PCC Pavement

For the design of PCC pavement, we have assumed that the concrete will have a minimum compressive strength 3,000 psi. The required paving and base thickness will depend on the expected wheel loads and volume of traffic (traffic index). Assuming that the paving subgrade will consist of the on-site or comparable soil compacted to at least 95 percent as recommended in Section 7.6 of this report, the minimum recommended paving thickness is presented in the Table 3.

Table 3. PCC Pavement and Base Thickness

Traffic Index	Traffic Use	PCC (inches)	Base Course (inches)
4	Parking	5	4
6	Drive Lanes and Loading Dock Areas	6	4

We recommend that the concrete pavement be properly reinforced. In addition, dowels are recommended at joints to reduce any possible offsets. Careful inspection is recommended to check that the recommended thickness or greater is achieved and that proper construction procedures are followed.

Caltrans Type 2 base, or equivalent, should be used in the required sections. The base should be compacted to at least 95 percent relative compaction.

7.5.4 Interlocking Concrete Pavers

The minimum recommended paving thickness for pavers and base course is presented Table 4 assuming that the paving subgrade will consist of the on-site or comparable soil compacted to at least 95 percent as recommended in Section 7.6 of this report.

Table 4. Interlocking Concrete Paver Design Section

Traffic Index	Traffic Use	Paver Thickness (inches)	Base Course (inches)
4	Parking	3	4
6	Drive Lanes and Loading Dock Areas	3	6

Caltrans Type 2 base, or equivalent, should be used in the required sections. The base should be compacted to at least 95 percent relative compaction.

7.6 PRELIMINARY GRADING CONSIDERATIONS

7.6.1 General

Mass grading is planned as part of the development that will include placement of new fill as discussed in Section 1.2 of this report. In addition, removal and re-compaction of existing unsuitable soil and backfill for utility trenches and other excavations will be required.

Grading should be planned and executed to minimize subgrade disturbance. Soil that has been disturbed during site preparation, or soft or loose zones that are identified during probing, should be removed from beneath proposed foundations or slabs on grade.

7.6.2 Removal and Re-Compaction Considerations

Within Zones 1 and 2, the presence of unsuitable soil within the proposed building footprints will be mitigated by the use of a deep foundation and structural supported slab system. Therefore, we anticipate relatively minor grading in these areas to establish a firm working surface and/or to restore areas where demolition activities result in the disturbance of the upper soil. For preliminary design purposes, we estimate that the upper 12 to 18 inches of soil in Zones 1 and 2 may require removal and re-compaction.

Within Zone 3, where the upper soil will be relied on for foundation and/or floor slab support, all existing undocumented fill material and/or otherwise unsuitable soil shall be removed and replaced with properly compacted fill soil. Based on the data from the CPTs, we do not anticipate significant removal will be required in Zone 3 and it also seems reasonable to assume the upper 12 to 18 inches may require removal and re-compaction to establish a firm working surface and/or to restore areas disturbed due to demolition activities.

7.6.3 Site Preparation

Site preparation includes tasks to be performed prior to placement of new fill material to achieve the planned site grades. All areas to receive new fill should be scarified to a depth of 6 inches and compacted in accordance with the requirements outlined herein.

Exposed excavation bottoms should be carefully probed by our representative to assure that all unsuitable soil is removed.

The exposed excavation bottoms should be scarified to a depth of 6 inches, moisture conditioned, and compacted to at least 95 percent of the maximum dry density as recommended in Section 7.6.4 of this report.

The exposed subgrade should be proof rolled to identify soft or compressible soil. Where soft or compressible soil is encountered, it may be necessary to increase the thickness of the over-excavation to establish a firm working surface.

The firm working surface is necessary to allow compaction of the fill soil to provide improved support of the pavement.

If a firm working surface is not achieved, alternatives such as geotextile fabrics and/or placement of a nominal thickness of crushed rock could be considered.

7.6.4 Compaction

All granular fill material should be compacted to at least 95 percent of the maximum dry density, as determined by ASTM D 1557. Cohesive fill material should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D 1557. Field density testing should be performed by our representative to confirm the compaction of the fill soil.

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.

7.6.5 Materials for Fill

Fill materials should be free of organic matter and other deleterious material and, in general, should consist of particles no larger than 3 inches in largest dimension. For the purposes of this preliminary report, it may be assumed that on-site soil is suitable for re-use in the required fills. However, it will be necessary to confirm this assumption based on data collected from supplemental borings at the site.

Imported material, if needed, should be predominantly granular and approved by our field technician for use prior to importing to the site.

7.6.6 Shrinkage and Subsidence

We estimate the shrinkage of the on-site soil when placed as properly compacted fill and the subsidence of the on-site soil due to the removal and re-compaction operations to be on the order of 15 to 20 percent and that subsidence on the order of 3 to 6 inches may occur within the existing soil due to the placement and compaction of new fill soil.

The range of subsidence will depend on the actual thickness of fill and the condition of the existing soil and will be refined as part of a comprehensive investigation.

7.6.7 Site Drainage

Adequate site drainage should be maintained at all times. Site drainage should be collected and conveyed away from proposed buildings.

8.0 SUPPLEMENTAL EXPLORATIONS AND ANALYSIS

8.1 GENERAL

Our preliminary evaluation included development a generalized description of the subsurface conditions at the site as it relates to the current proposed development concept. We developed preliminary conclusions regarding geologic and seismic hazards at the site and preliminary recommendations for foundation design, seismic design, pavement and flatwork, and grading.

In order to develop final geotechnical design recommendations, supplemental field explorations will be required in conjunction with a robust geotechnical laboratory testing program. The data from the supplemental field investigation and laboratory testing program will be used in performing supplemental geotechnical engineering analysis.

The results the supplemental engineering analysis will be utilized to evolve the preliminary recommendations presented herein to develop customized recommendations for each proposed building. As discussed in Sections 5.4 and 6.3 of this report, evaluation of existing marine slopes, revetments, and wharf structures will be required as part of supplemental engineering evaluation. Preliminary groundwater control provisions and general considerations will also be provided.

Section 8.2 of this report briefly summarizes the supplemental field exploration and laboratory testing program that will be required. Section 8.3 of this report briefly summarizes the supplemental engineering analysis and provides an overview of supplemental geotechnical recommendations that will be required.

8.2 SUPPLEMENTAL FIELD EXPLORATIONS AND LABORATORY TESTING

Based on the current planned development concept and the information collected to date, we estimate that approximately 12 geotechnical borings will be required along with 6 additional CPTs. The borings should be performed using mud rotary drilling methods to assure a high quality of samples.

SPTs will be required in the borings along with collection of relatively undisturbed and bulk samples. The SPT testing will be imperative to evolve the preliminary liquefaction and lateral spreading analysis performed as part of our current evaluation. The relatively undisturbed samples will be useful in developing more precise soil strength and consolidation parameters that will be used in foundation design and settlement analysis for the proposed structures. The bulk samples will be useful in refining the preliminary pavement and grading recommendations. We can provide a detailed plan showing the proposed supplemental exploration locations if requested.

The geotechnical laboratory testing program will include the following primary tests:

- In-place moisture and density
- Atterberg limits
- Grain-size distribution
- Direct shear
- Consolidation
- Corrosion
- R-Value

8.3 SUPPLEMENTAL ENGINEERING ANALYSIS AND RECOMMENDATIONS

Supplemental engineering analysis will be focused on two primary items, including refinement of the preliminary foundation design recommendations and evaluation of the existing marine slopes, revetments, and wharf structures.

Refinement or the preliminary foundation recommendations will include development of design recommendations for the various alternatives discussed in Sections 6.2 and 7.3 of this report, customized for each proposed building.

Evaluation of the existing marine slopes, revetments, and wharf structures will be a critical task and will require review of existing foundation plans as well as any other plans that depict the existing marine slopes and retaining structures. It will also require evaluation of the existing features in accordance with current CBC provisions. The conditions of these existing features will be significant in determining what, if any, strengthening or enhancements to the foundations and/or lateral support systems may be required as part of the proposed development.

Groundwater control provisions will also be developed and discussed for areas where excavations may extend below the groundwater level.

In addition to these two primary items, our supplemental engineering analysis will include refinement of the preliminary pavement and grading recommendations based on the results of the laboratory testing program.

9.0 LIMITATIONS

We have prepared this preliminary report for use by CenterCal Properties, LLC and members of the design and construction teams 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.

Soil 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 preliminary 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.

Christopher J. Zadoorian, G.E.
Principal Engineer

Signed 11/12/2014

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FIGURES

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

SITE LOCATION
LATITUDE: 33.840953°
LONGITUDE: -118.391445°

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CENTERCAL-17-04	VICINITY MAP	
NOVEMBER 2014	THE WATERFRONT REDONDO BEACH, CA	FIGURE 1

Printed By: aday | Print Date: 11/17/2014 4:56:09 PM
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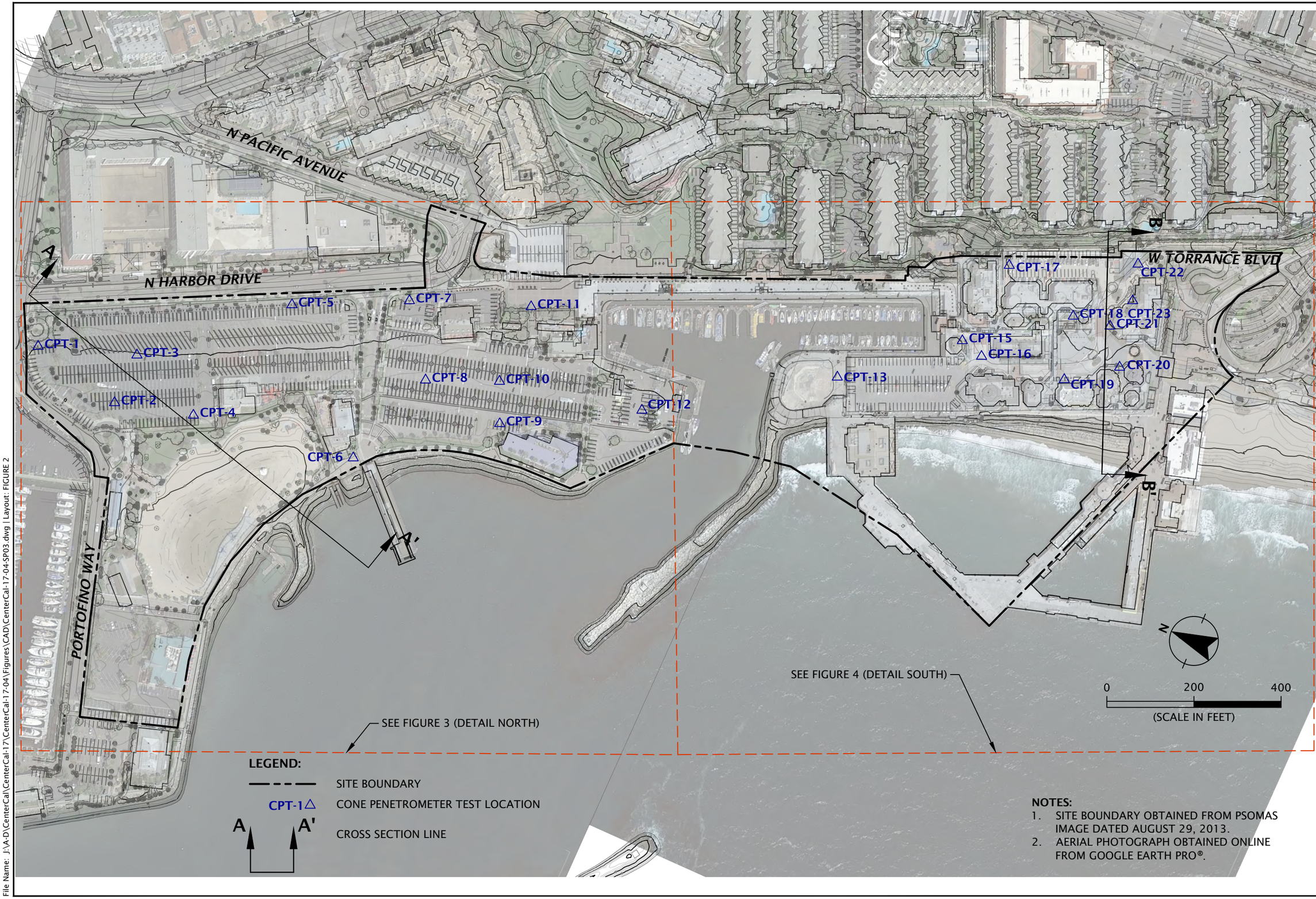

FIGURE 2

SITE PLAN

THE WATERFRONT
REDONDO BEACH, CA

CENTERCAL-17-04

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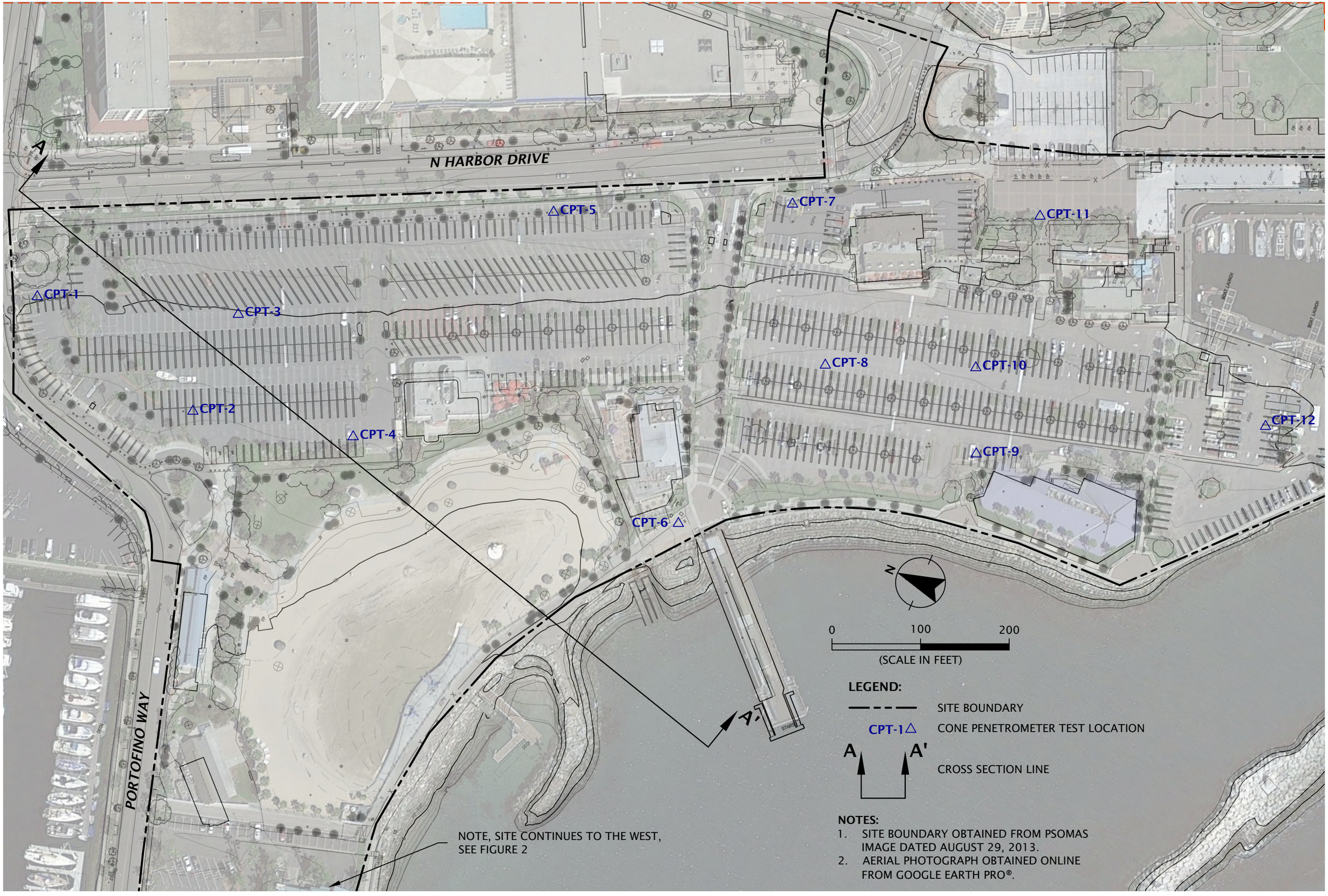

NOTES:
1. SITE BOUNDARY OBTAINED FROM PSOMAS IMAGE DATED AUGUST 29, 2013.
2. AERIAL PHOTOGRAPH OBTAINED ONLINE FROM GOOGLE EARTH PRO®.

SITE PLAN - DETAIL - NORTH

THE WATERFRONT
REDONDO BEACH, CA

FIGURE 3

CENTERCAL-17-04

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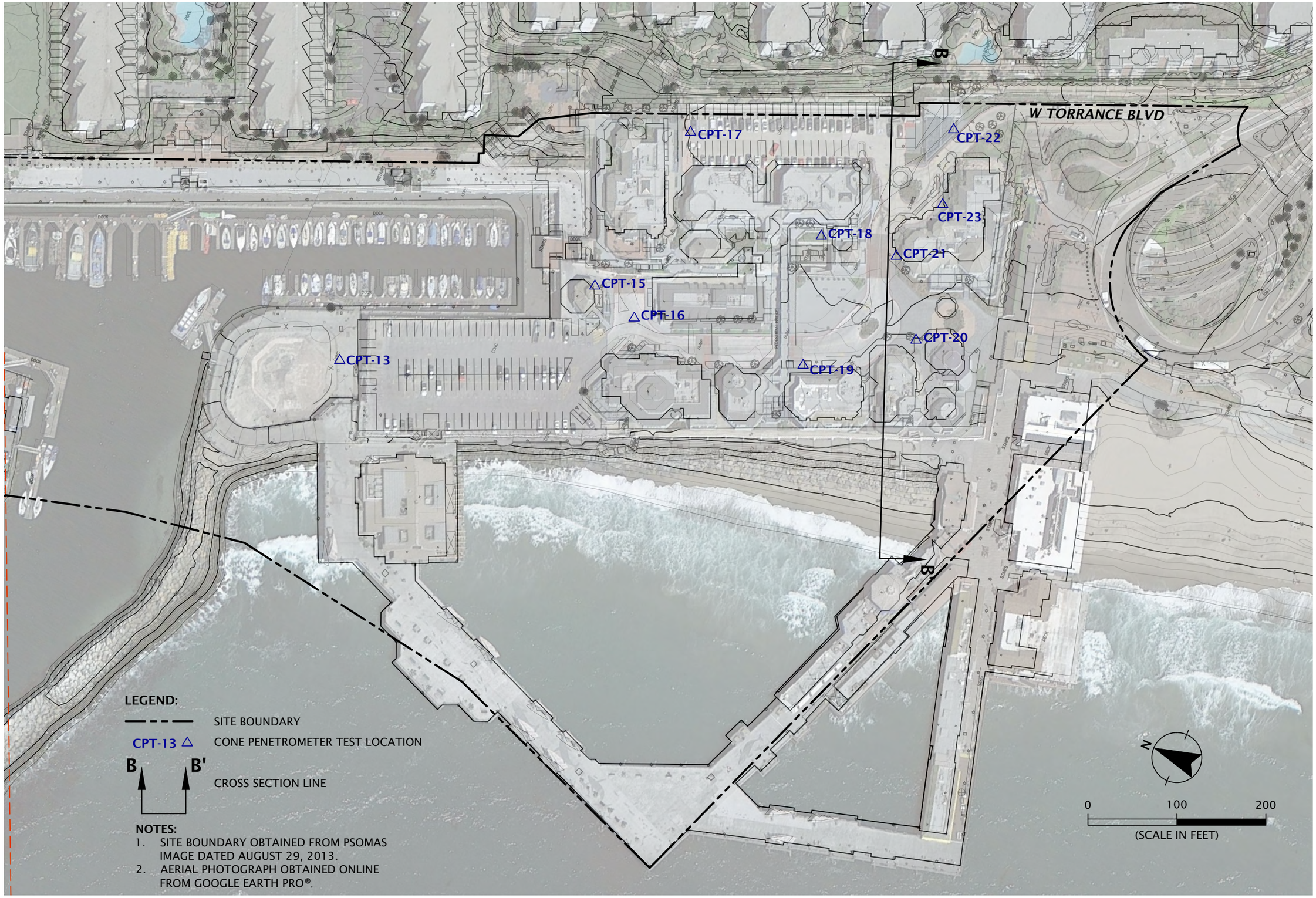

SITE PLAN - DETAIL - SOUTH

THE WATERFRONT
REDONDO BEACH, CA

FIGURE 4

CENTERCAL-17-04

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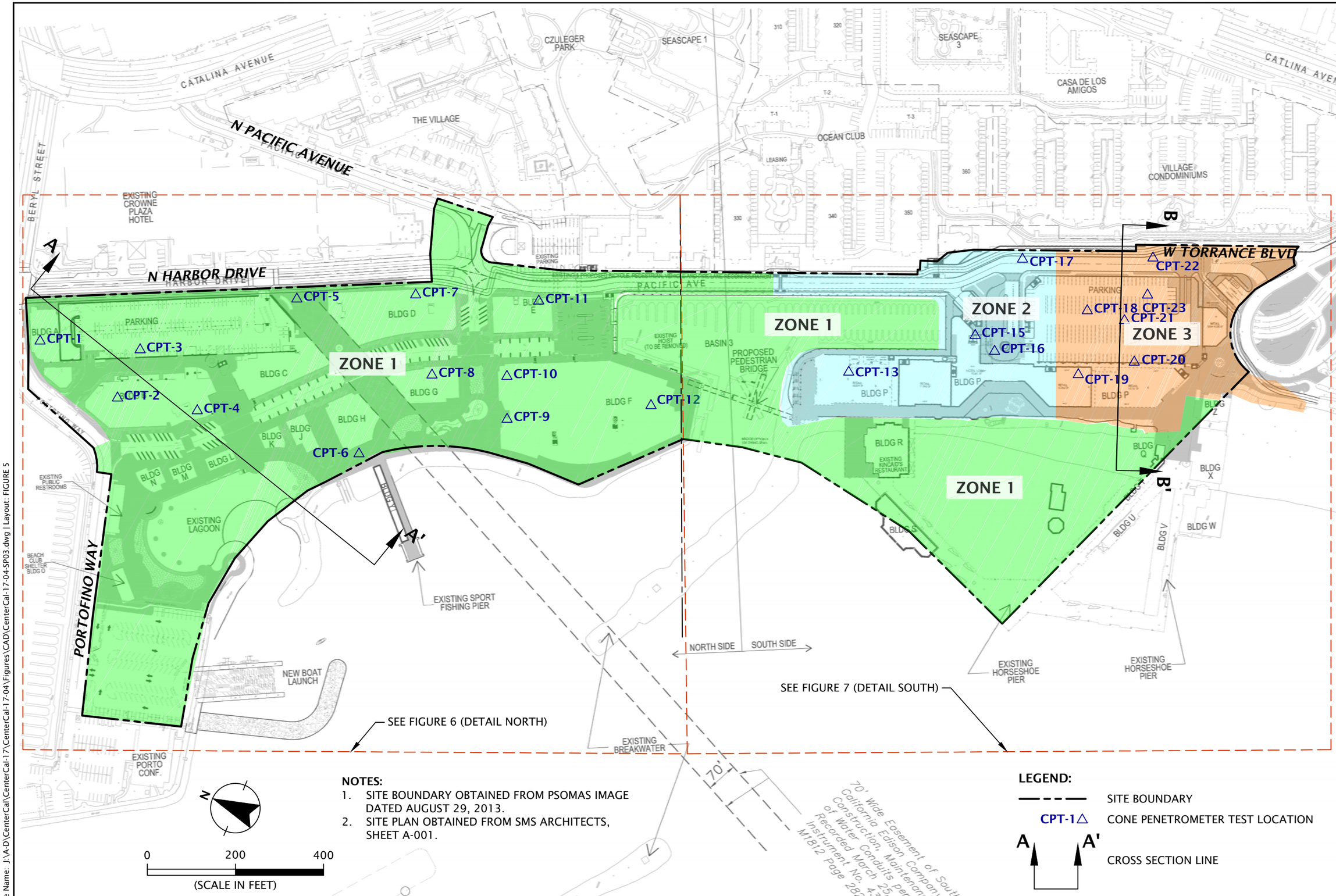

NOTES:

1. SITE BOUNDARY OBTAINED FROM PSOMAS IMAGE DATED AUGUST 29, 2013.
2. SITE PLAN OBTAINED FROM SMS ARCHITECTS, SHEET A-001.

LEGEND:

— — — —	SITE BOUNDARY
CPT-1△	CONE PENETROMETER TEST LOCATION
A ↑ A'	CROSS SECTION LINE

PROPOSED DEVELOPMENT PLAN

THE WATERFRONT
REDONDO BEACH, CA

FIGURE 5

CENTERCAL-17-04

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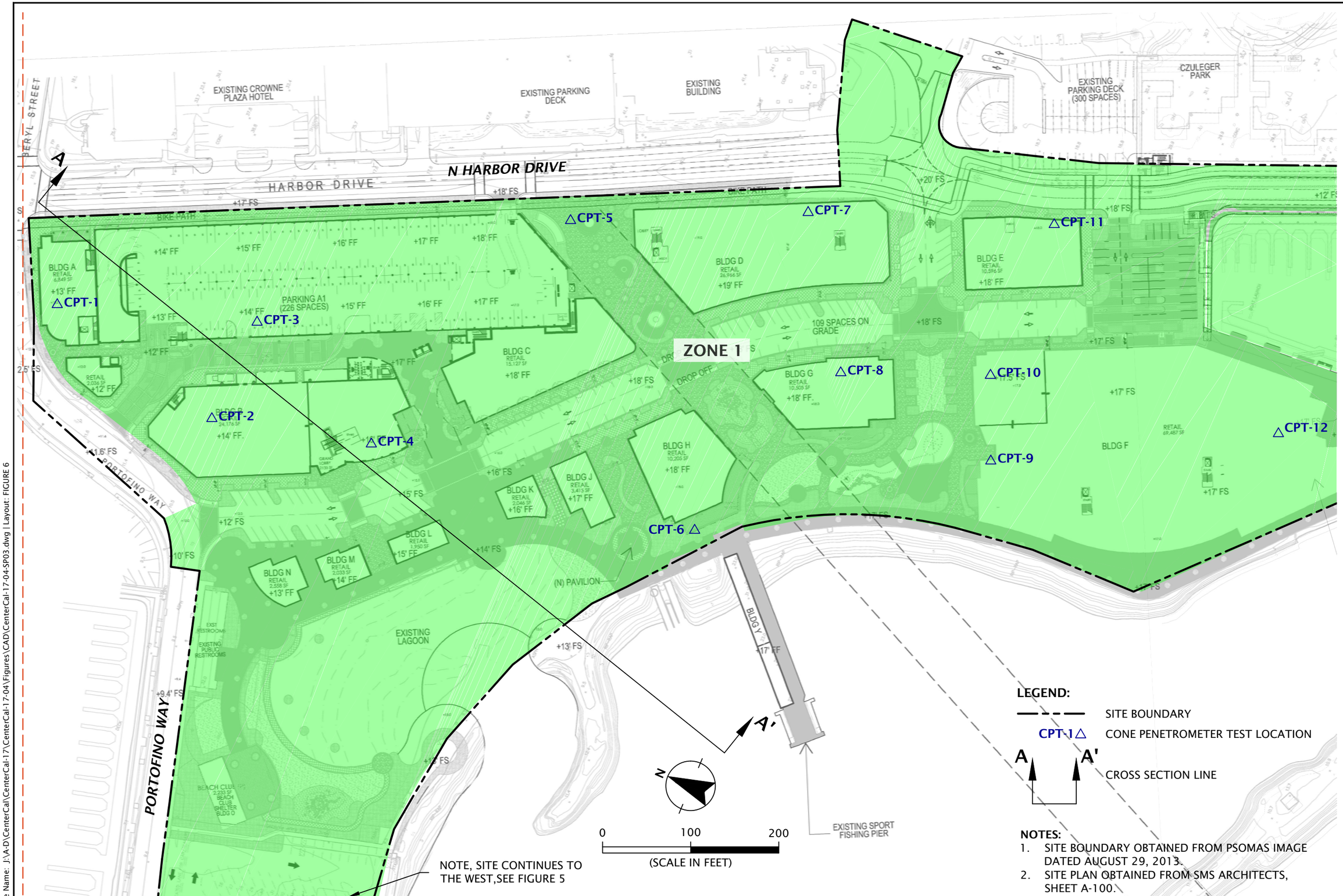

PROPOSED DEVELOPMENT PLAN - DETAIL - NORTH

THE WATERFRONT
REDONDO BEACH, CA

FIGURE 6

CENTERCAL-17-04

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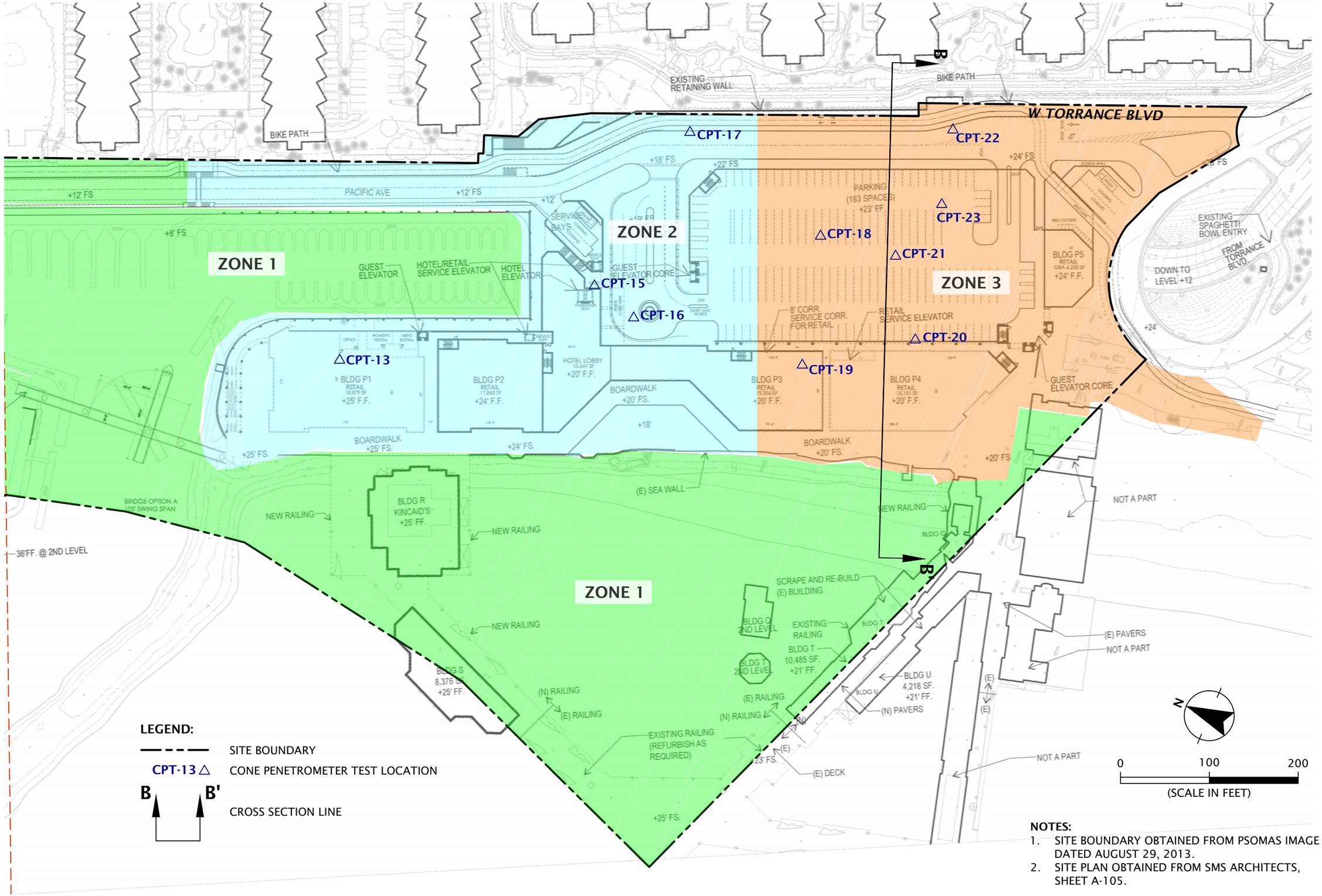

NOTES:

1. SITE BOUNDARY OBTAINED FROM PSOMAS IMAGE DATED AUGUST 29, 2013.
2. SITE PLAN OBTAINED FROM SMS ARCHITECTS, SHEET A-105.

PROPOSED DEVELOPMENT PLAN - DETAIL - SOUTH

FIGURE 7

THE WATERFRONT
REDONDO BEACH, CA

CENTERCAL-17-04

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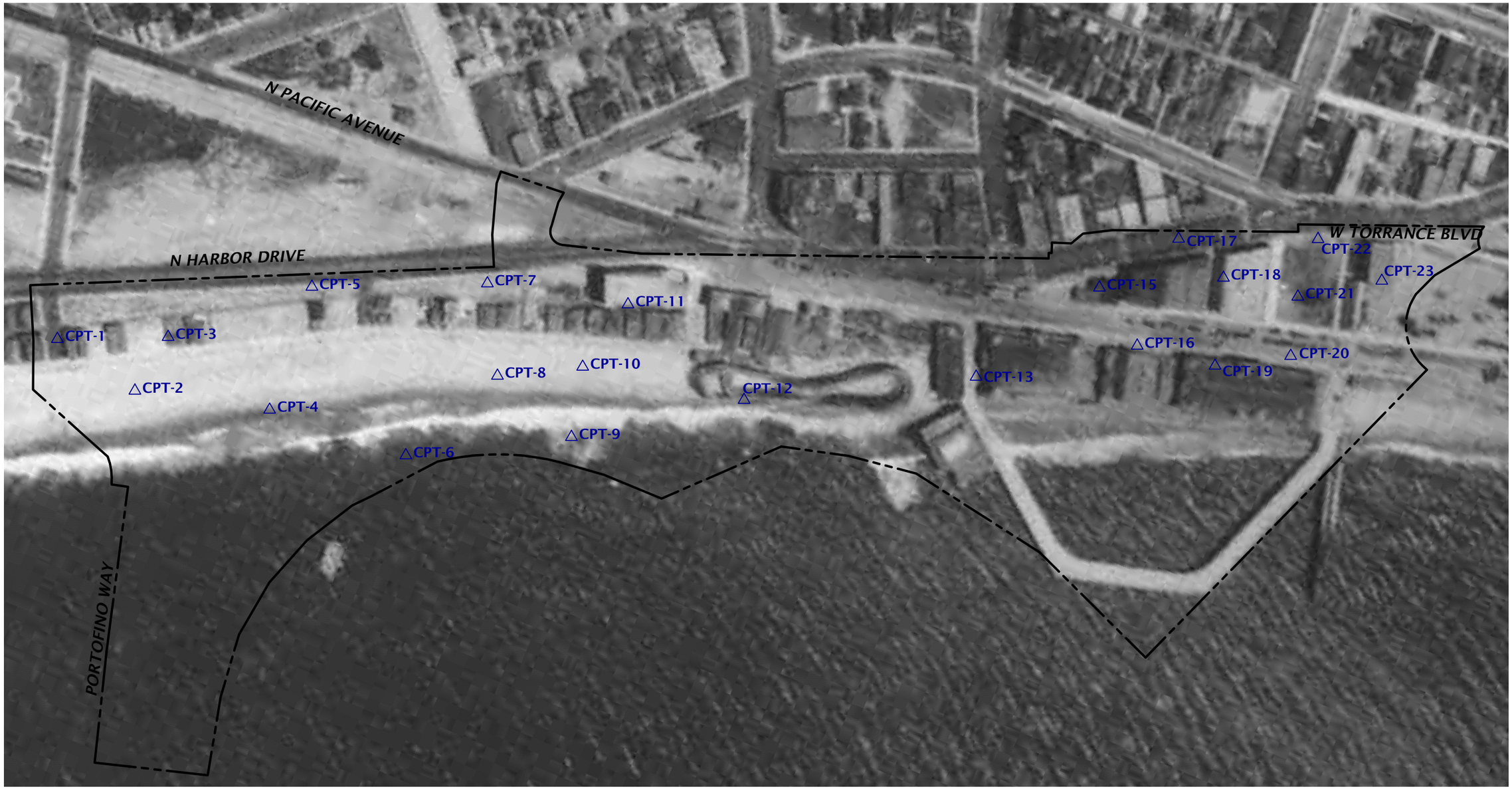

LEGEND:

SITE BOUNDARY

CPT-1△ CONE PENETROMETER TEST LOCATION

N

0 200 400

(SCALE IN FEET)

NOTES:

1. SITE BOUNDARY OBTAINED FROM PSOMAS IMAGE DATED AUGUST 29, 2013.
2. AERIAL PHOTOGRAPH OBTAINED ONLINE FROM GOOGLE EARTH PRO®.

SITE BOUNARY SUPERIMPOSED ON 1928 HISTORICAL AERIAL PHOTOGRAPH

FIGURE 8

THE WATERFRONT
REDONDO BEACH, CA

CENTERCAL-17-04

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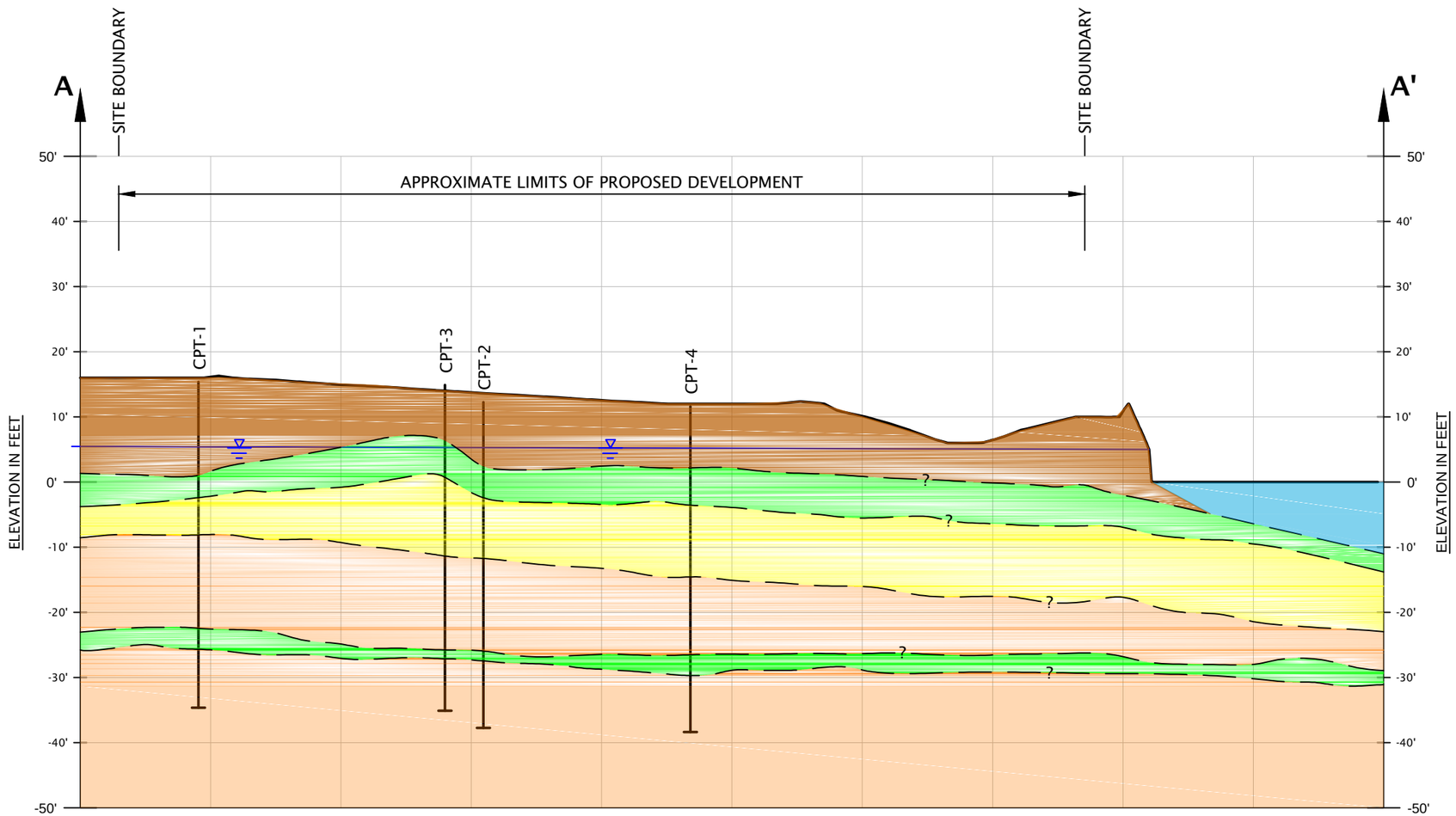

LEGEND:

- EXISTING TOPOGRAPHY
- CONE PENETROMETER TEST
- INTERPRETED CONTACT
- ASSUMED GROUNDWATER LEVEL
- UPPER FILL
- FINE-GRAINED LAGOON DEPOSITS
- LOOSE GRANULAR BEACH DEPOSITS
- DENSE GRANULAR MARINE DEPOSITS

HORIZONTAL 0 100 200 (SCALE IN FEET)

VERTICAL 0 20 40 (SCALE IN FEET)

CROSS SECTION A-A'

THE WATERFRONT
REDONDO BEACH, CA

FIGURE 9

CENTERCAL-17-04

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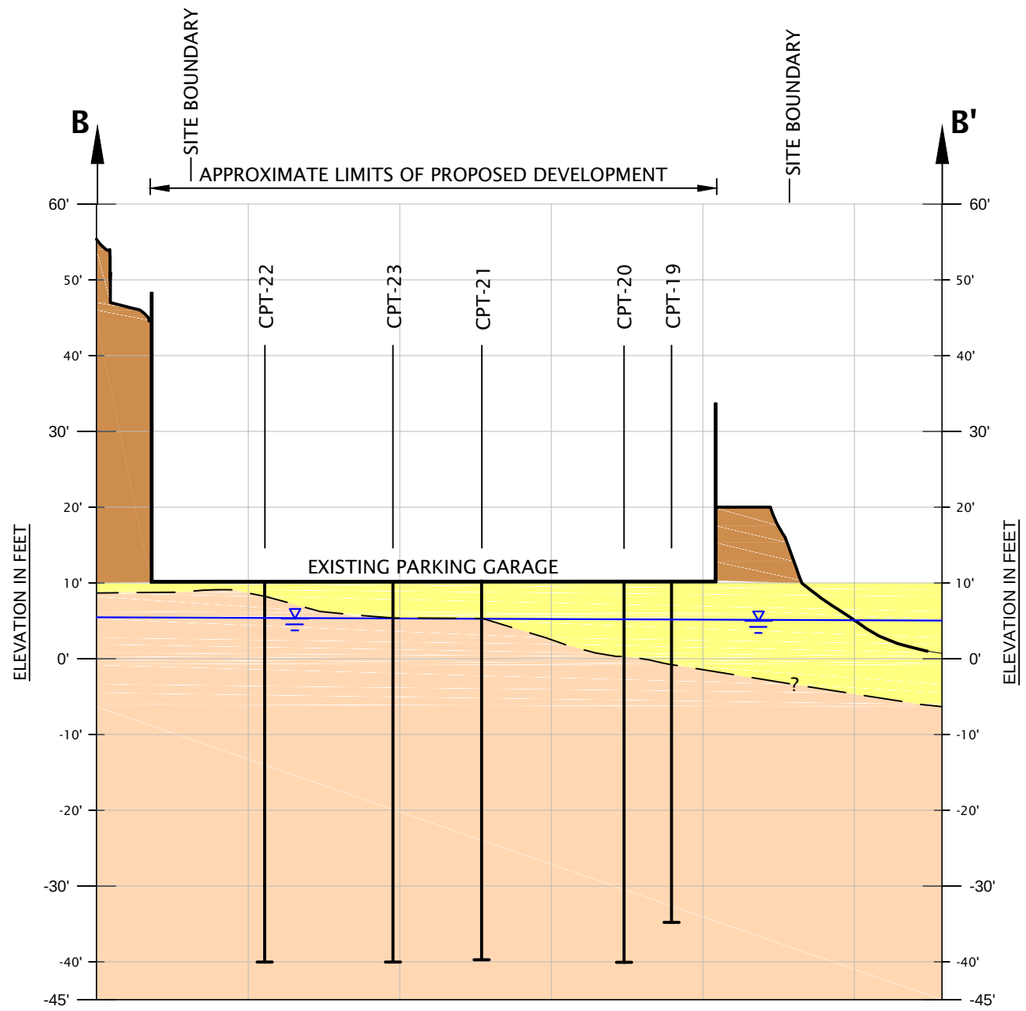

LEGEND:

- EXISTING TOPOGRAPHY
- CONE PENETROMETER TEST
- INTERPRETED CONTACT
- ASSUMED GROUNDWATER LEVEL
- UPPER FILL
- LOOSE GRANULAR BEACH DEPOSITS
- DENSE GRANULAR MARINE DEPOSITS

HORIZONTAL 0 100 200 (SCALE IN FEET)

VERTICAL 0 20 40 (SCALE IN FEET)

CROSS SECTION B-B'

THE WATERFRONT
REDONDO BEACH, CA

FIGURE 10

CENTERCAL-17-04

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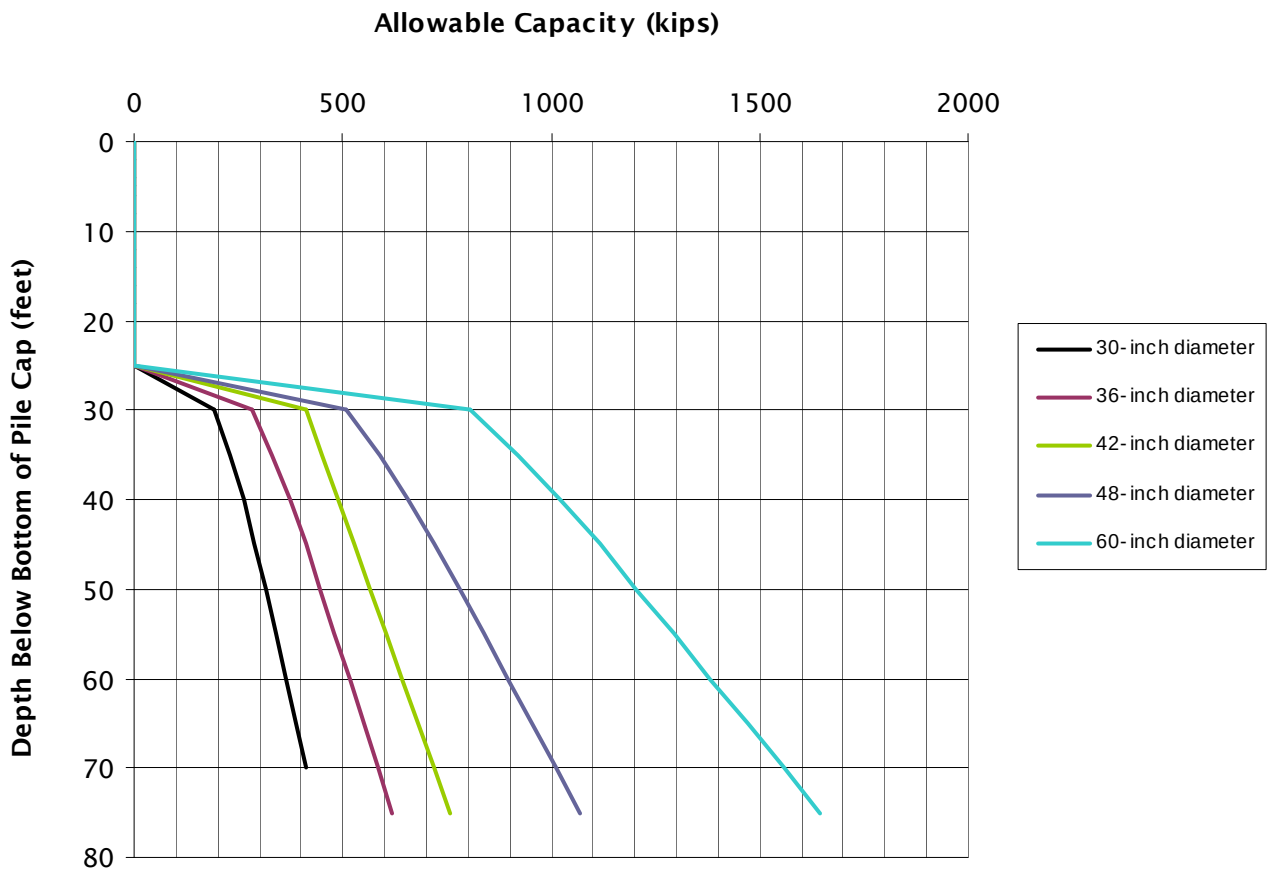

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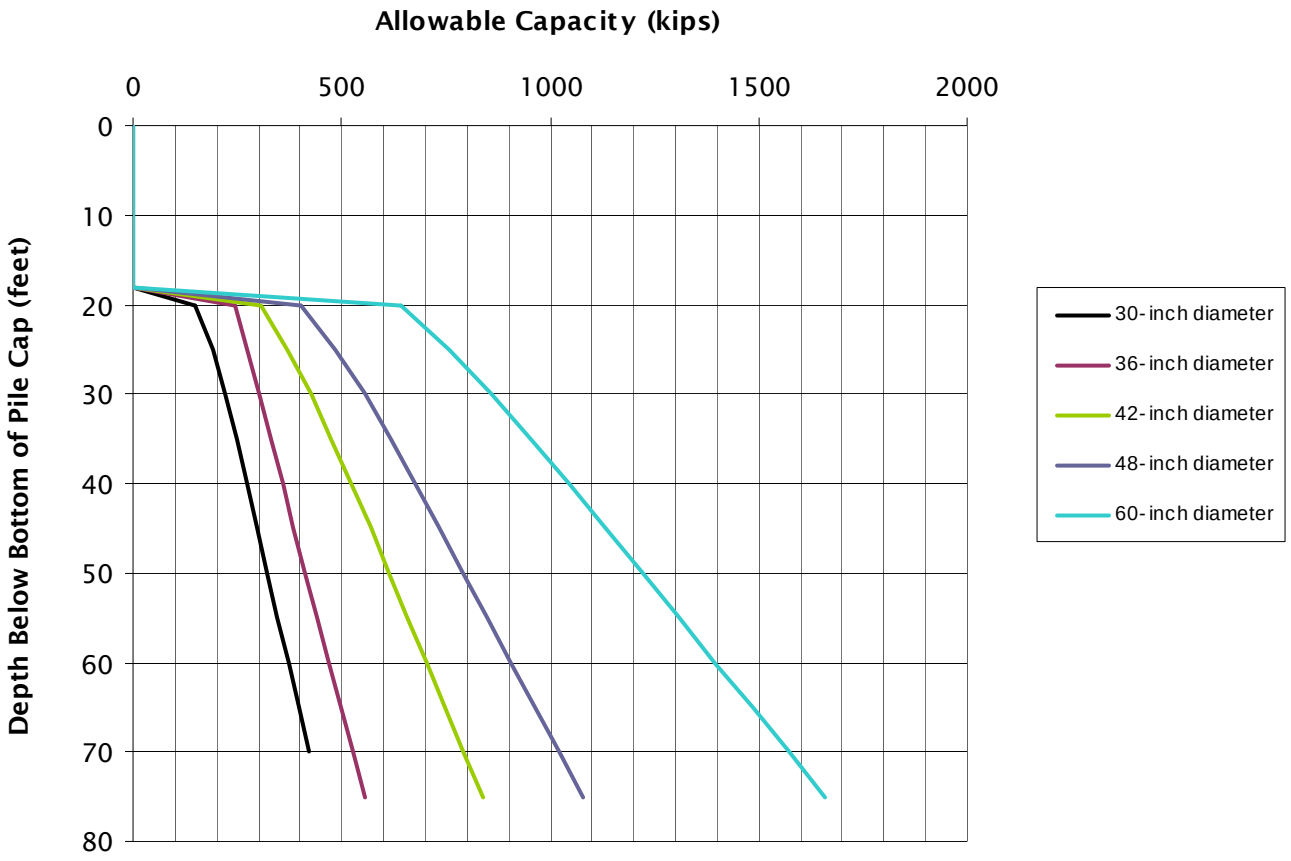
CENTERCAL-17-04	PRELIMINARY ALLOWABLE DOWNWARD DRILLED SHAFT CAPACITY ZONE 1	
NOVEMBER 2014	THE WATERFRONT REDONDO BEACH, CA	FIGURE 11



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CENTERCAL-17-04	PRELIMINARY ALLOWABLE DOWNWARD DRILLED SHAFT CAPACITY ZONE 2	
NOVEMBER 2014	THE WATERFRONT REDONDO BEACH, CA	FIGURE 12

APPENDIX

APPENDIX

FIELD EXPLORATIONS

We explored the site by advancing 22 CPT soundings to depths of up to approximately 50 feet BGS. CPT-1 through CPT-11 were located within the north side of the site, and CPT-12 through CPT-23 were located within the south half of the site. Please note that CPT-14 was omitted due to extensive utility conflicts in that area. The explorations were drilled on September 2 through 4 and September 17, 2014 by Kehoe Testing & Engineering of Huntington Beach, California.

CPT-1 through CPT-10 and CPT-12 were advanced using a truck-mounted rig, CPT-13 and CPT-15 were advanced using a track-mounted CPT rig, and CPT-11 and CPT-16 through CPT-23 were advanced using a limited-access, ram-set rig. The track- and limited access equipment was required due to access limitations at the site.

Each CPT sounding was backfilled with grout upon completion, and the ground surface was restored to the previously existing condition.

Refusal was encountered in several of the CPTs, likely due to the presence of riprap representative of the old shoreline and/or prior marine foundation elements. Multiple efforts were made at to advance CPTs that initially met refusal and in several cases were successful. In some cases, however, we were only able to advance CPTs a few feet BGS.

Members of our geotechnical staff observed the CPT explorations. Logs of the CPTs are presented in this appendix.

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

N. Harbor Drive
Redondo Beach, CA
September 2-4 & 17, 2014

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:

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

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1. **INTRODUCTION**

2. **SUMMARY OF FIELD WORK**

3. **FIELD EQUIPMENT & PROCEDURES**

4. **CONE PENETRATION TEST DATA & INTERPRETATION**

APPENDIX

- CPT Plots
- CPT Classification/Soil Behavior Chart
- Interpretation Output (CPeT-IT)
- CPeT-IT Calculation Formulas

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 N. Harbor Drive in Redondo Beach, California. The work was performed by Kehoe Testing & Engineering (KTE) on September 2-4 & 17, 2014. 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 27 locations to determine the soil lithology. Groundwater measurements and hole collapse depths provided in **TABLE 2.1** are for information only. The readings indicate the apparent depth to which the hole is open and the apparent water level (if encountered) in the CPT probe hole at the time of measurement upon completion of the CPT. KTE does not warranty the accuracy of the measurements and the reported water levels may not represent the true or stabilized groundwater levels.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	1	Refusal, hole open to 1.0 ft (dry)
CPT-1B	50	Groundwater @ 8.5 ft
CPT-2	50	Hole open to 7.0 ft (dry)
CPT-3	7	Refusal, hole open to 4.5 ft (dry)
CPT-3B	6	Refusal, hole open to 5.0 ft (dry)
CPT-3C	50	Groundwater @ 8.5 ft
CPT-4	50	Groundwater @ 8.5 ft
CPT-5	50	Groundwater @ 9.0 ft
CPT-6	2	Refusal, hole open to 1.0 ft (dry)
CPT-7	50	Groundwater @ 12.0 ft
CPT-8	50	No cave depth taken
CPT-9	5	Refusal, hole open to 4.5 ft (dry)
CPT-9B	11	Refusal, hole open to 4.5 ft (dry)

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-9C	11	Refusal, hole open to 6.0 ft (dry)
CPT-10	21	Refusal, groundwater @ 8.5 ft
CPT-11	42	Refusal, hole open to 2.5 ft (dry)
CPT-12	7	Refusal, hole open to 6.5 ft (dry)
CPT-13	22	Refusal, groundwater @ 5.0 ft
CPT-15	16	Refusal, groundwater @ 3.0 ft
CPT-16	14	Refusal, hole open to 3.3 ft (dry)
CPT-17	35	Refusal, groundwater @ 11.0 ft
CPT-18	11	Refusal, groundwater @ 6.9 ft
CPT-19	45	Refusal, groundwater @ 5.0 ft
CPT-20	50	Hole open to 3.4 ft (dry)
CPT-21	50	Groundwater @ 3.6 ft
CPT-22	50	Groundwater @ 4.0 ft
CPT-23	50	Hole open to 5.0 ft (dry)

ABLE 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 and a Direct Push rig anchored with 3/4" concrete anchors & 8" anchor. The cones used during the program were a 15 cm^2 cone and a 10 cm^2 cone. The cones recorded the following parameters at approximately 2.5 cm depth intervals:

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

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office 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. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the attached CPT Classification Chart (Robertson) 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 along with cone resistance 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.

Tables of basic CPT output from the interpretation program CPeT-IT are provided for CPT data averaged over one foot intervals in the Appendix. Spreadsheet files of the averaged basic CPT output and averaged estimated geotechnical parameters are also included for use in further geotechnical analysis. We recommend a geotechnical engineer review the assumed input parameters and the calculated output from the CPeT-IT program. A summary of the equations used for the tabulated parameters is provided in the Appendix.

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, judgement 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

09/22/14-kk-5067-2-rev

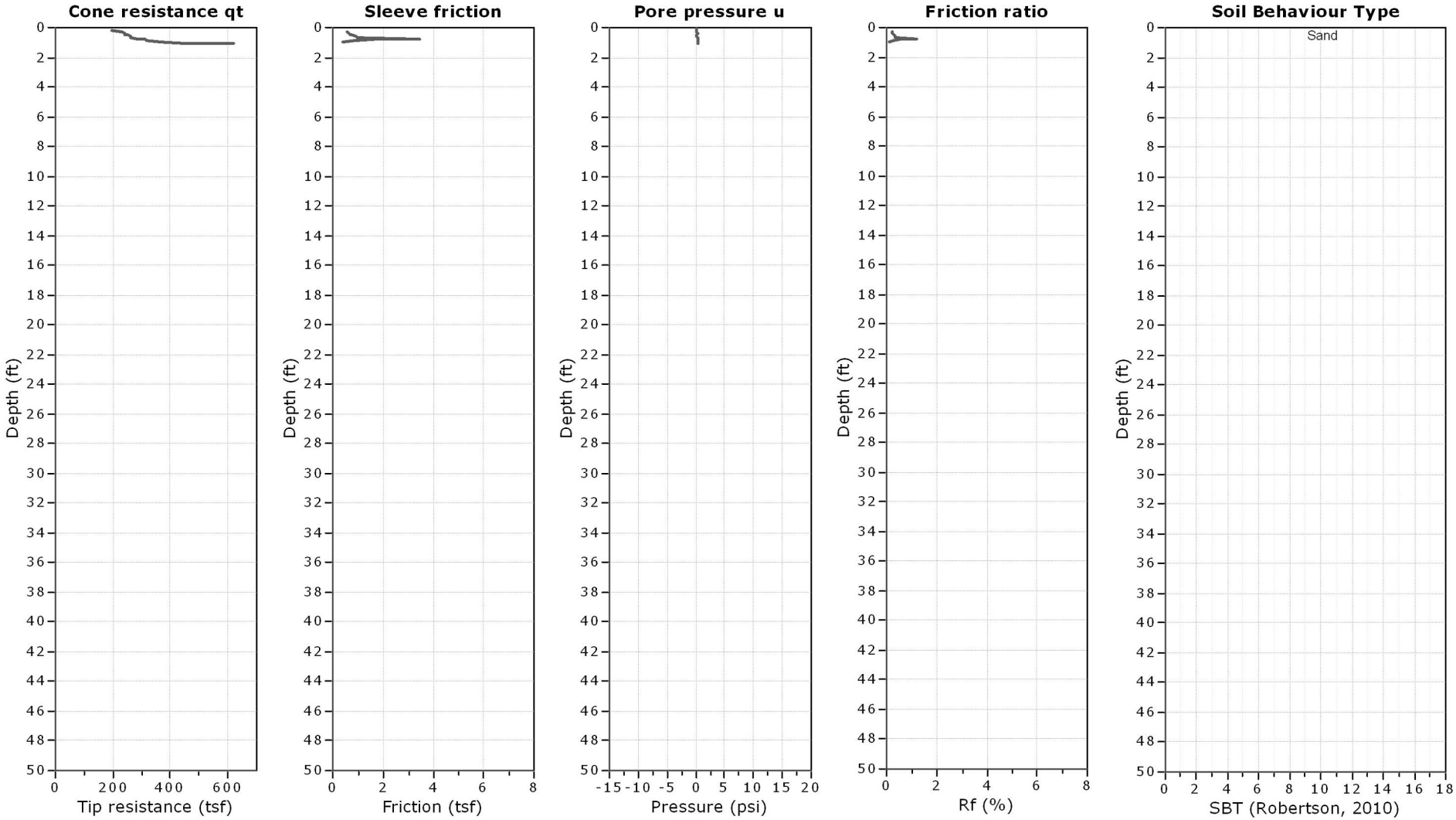
APPENDIX

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

CPT: CPT-1

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 1.10 ft, Date: 9/2/2014
Cone Type: Vertek



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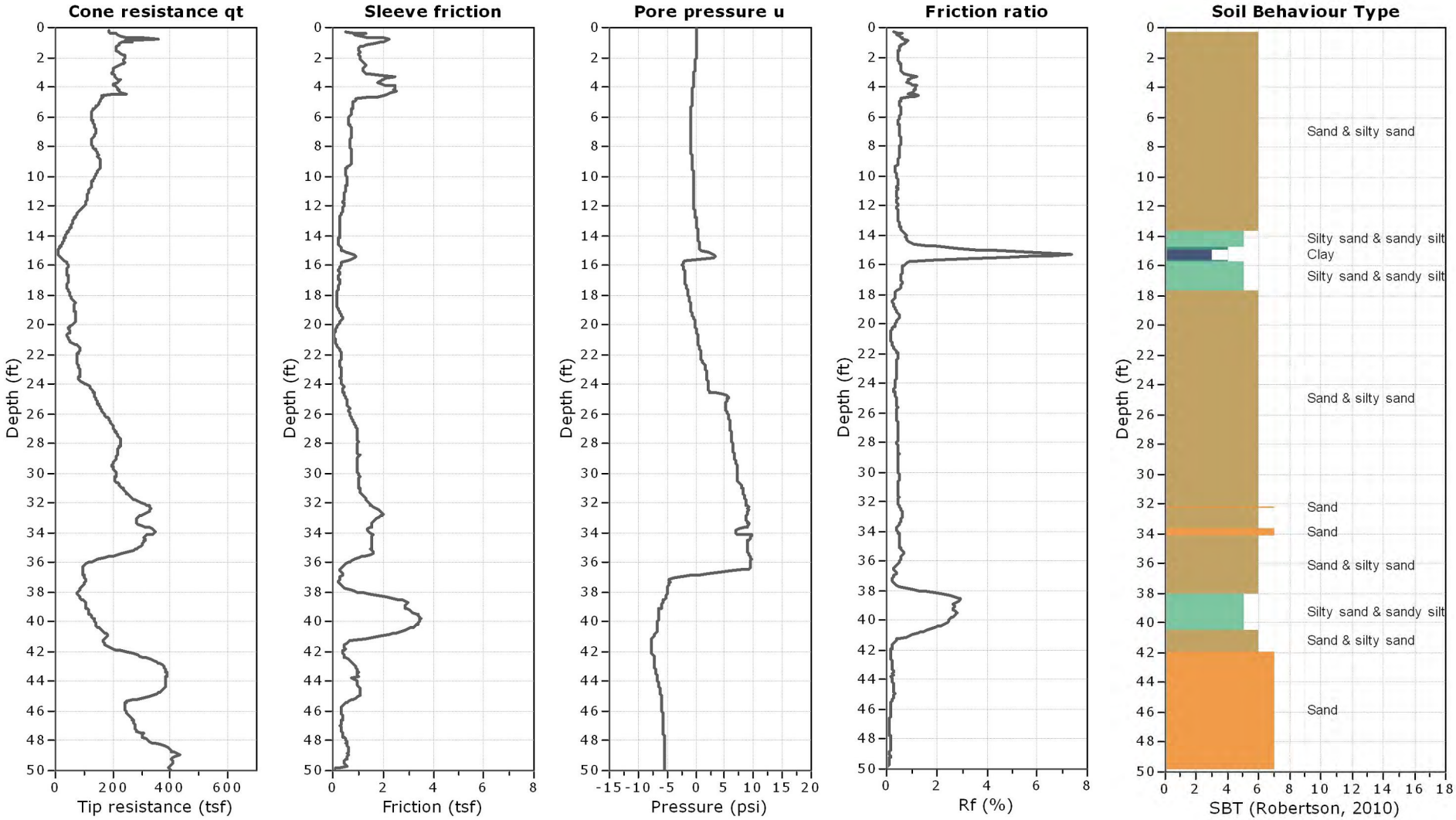
CPT: CPT-1B

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.10 ft, Date: 9/2/2014
Cone Type: Vertek



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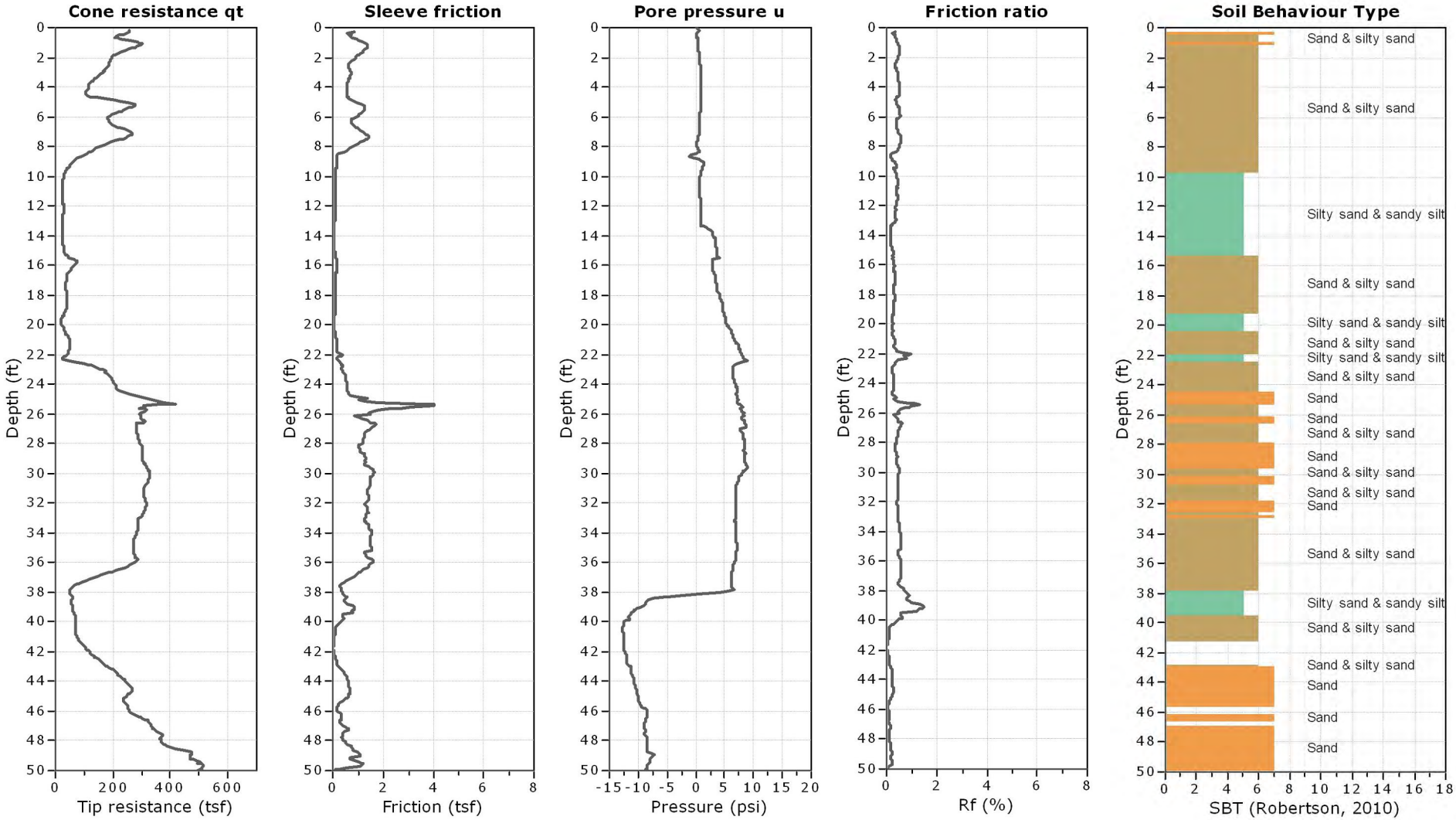
CPT: CPT-2

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.07 ft, Date: 9/2/2014
Cone Type: Vertek



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rich@kehoetesting.com
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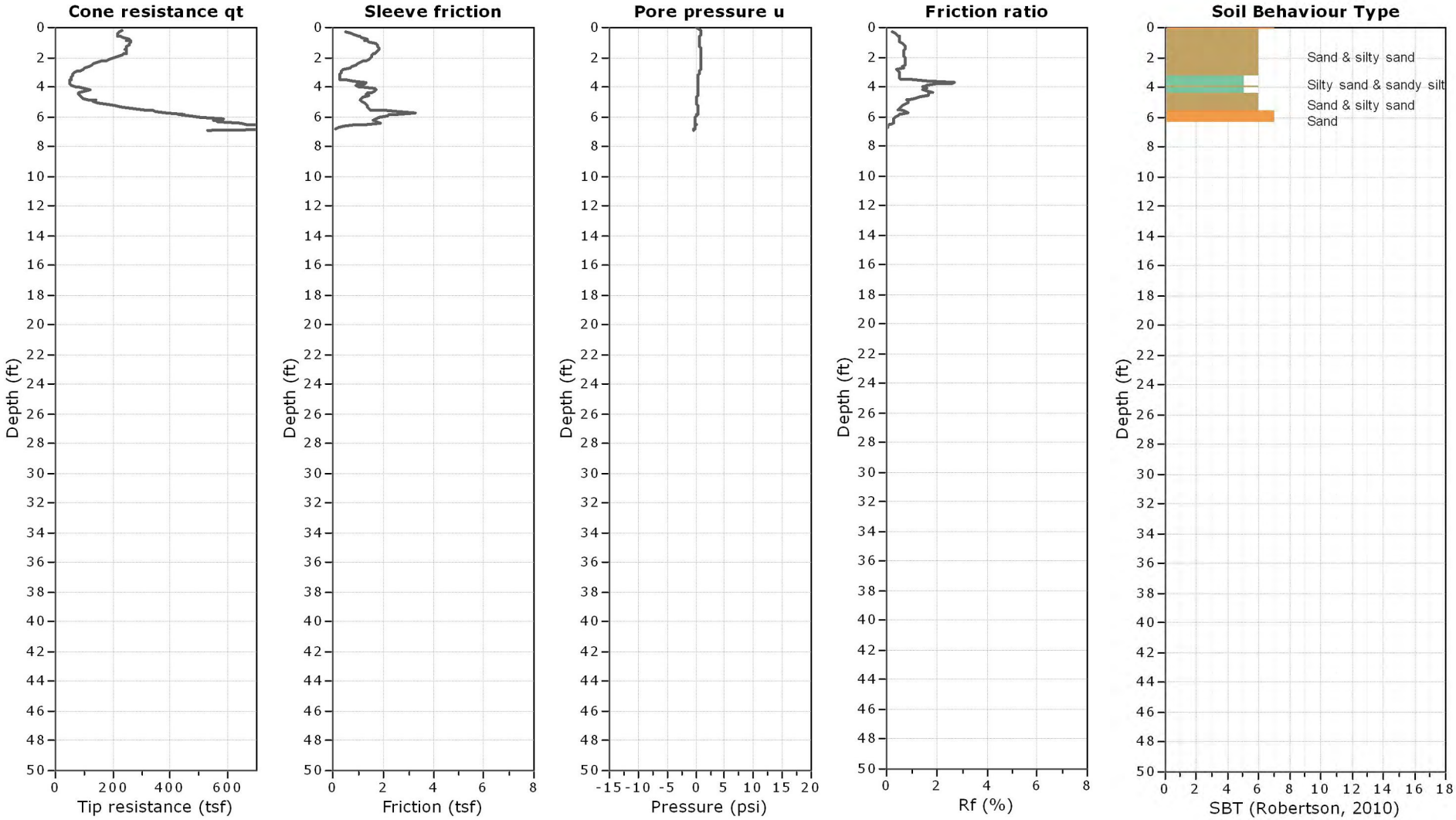
CPT: CPT-3

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 6.94 ft, Date: 9/2/2014
Cone Type: Vertek



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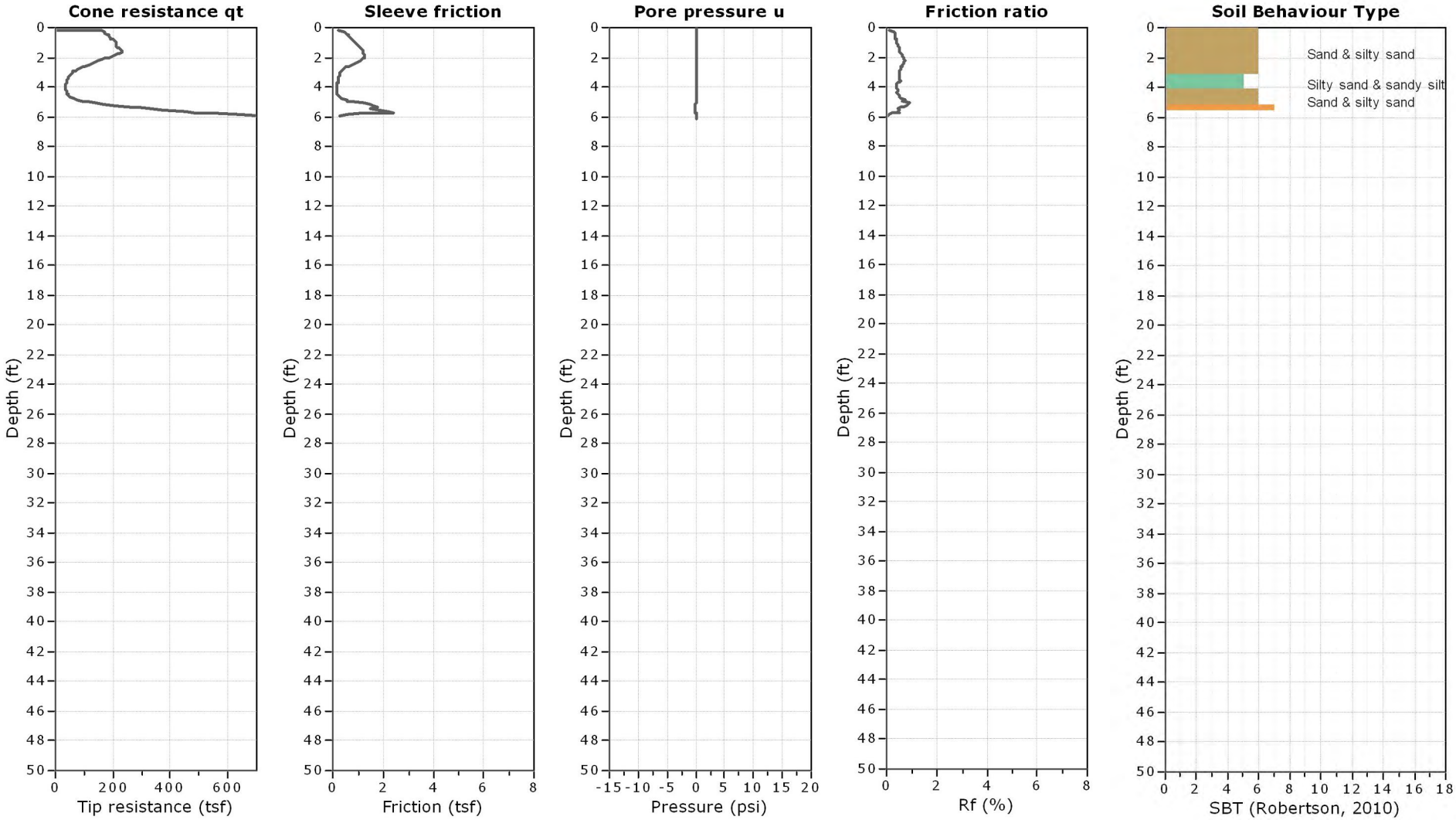
CPT: CPT-3B

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 6.12 ft, Date: 9/2/2014
Cone Type: Vertek



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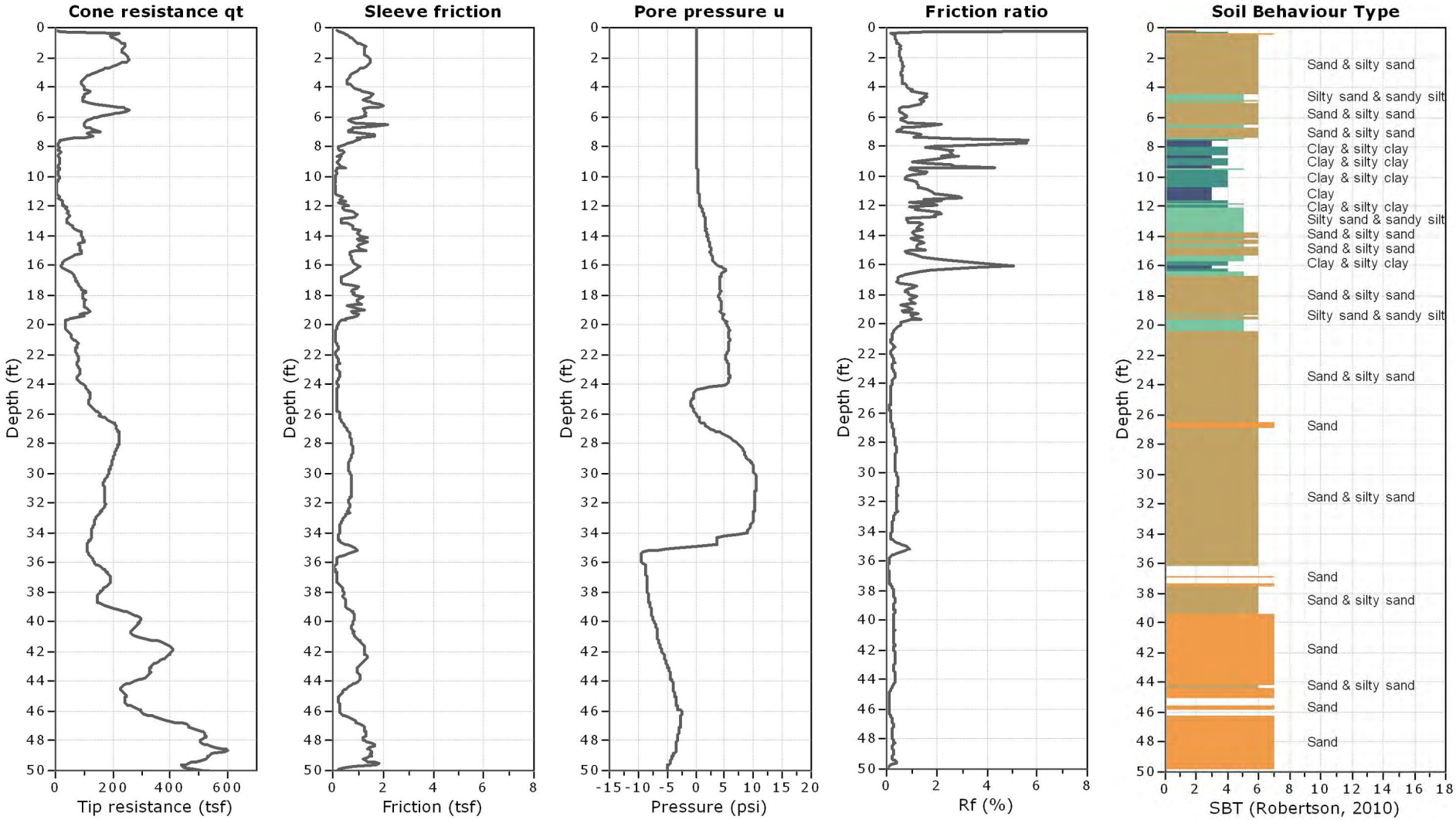
CPT: CPT-3C

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.03 ft, Date: 9/2/2014
Cone Type: Vertek



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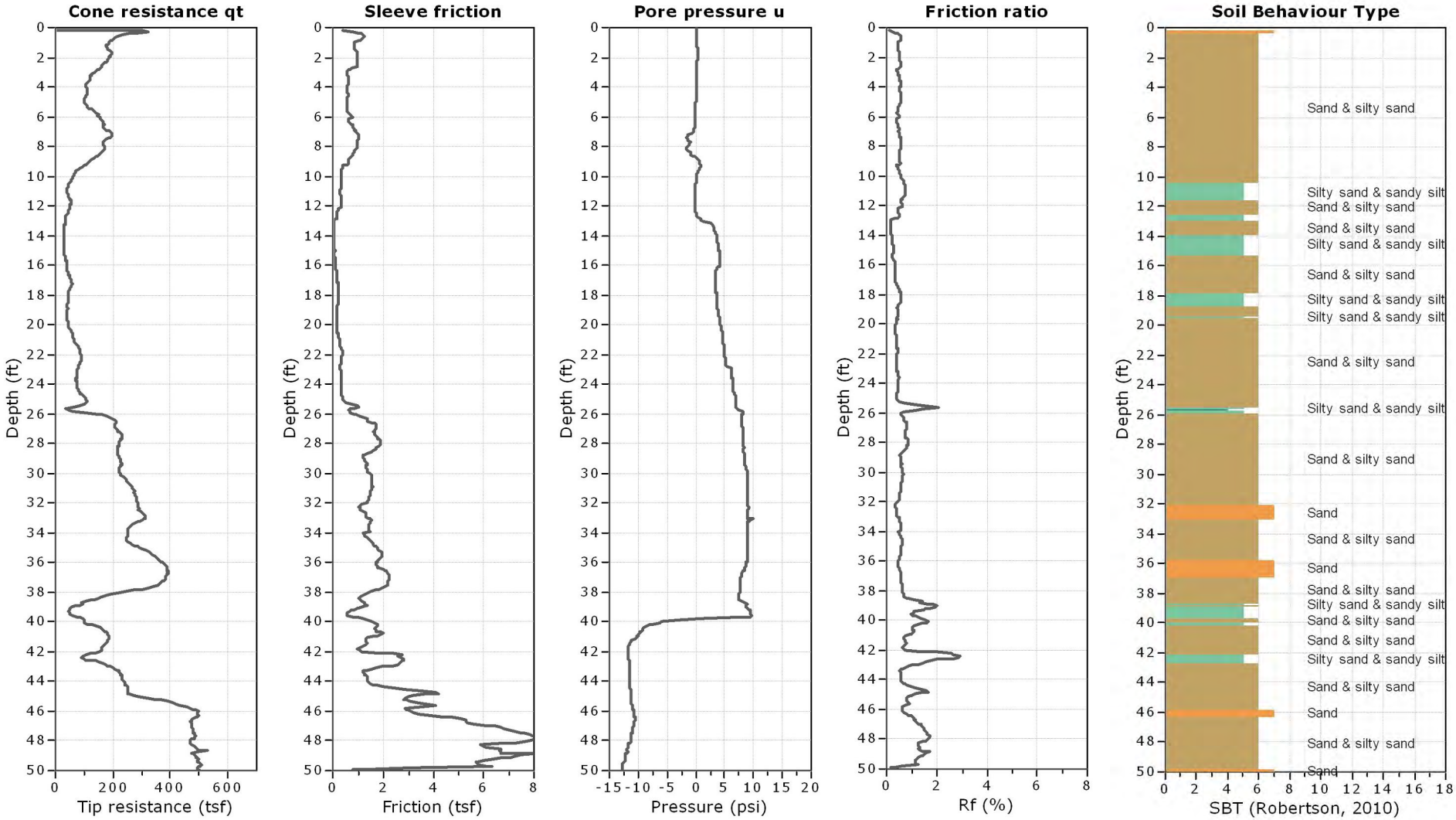
CPT: CPT-4

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.10 ft, Date: 9/2/2014
Cone Type: Vertek



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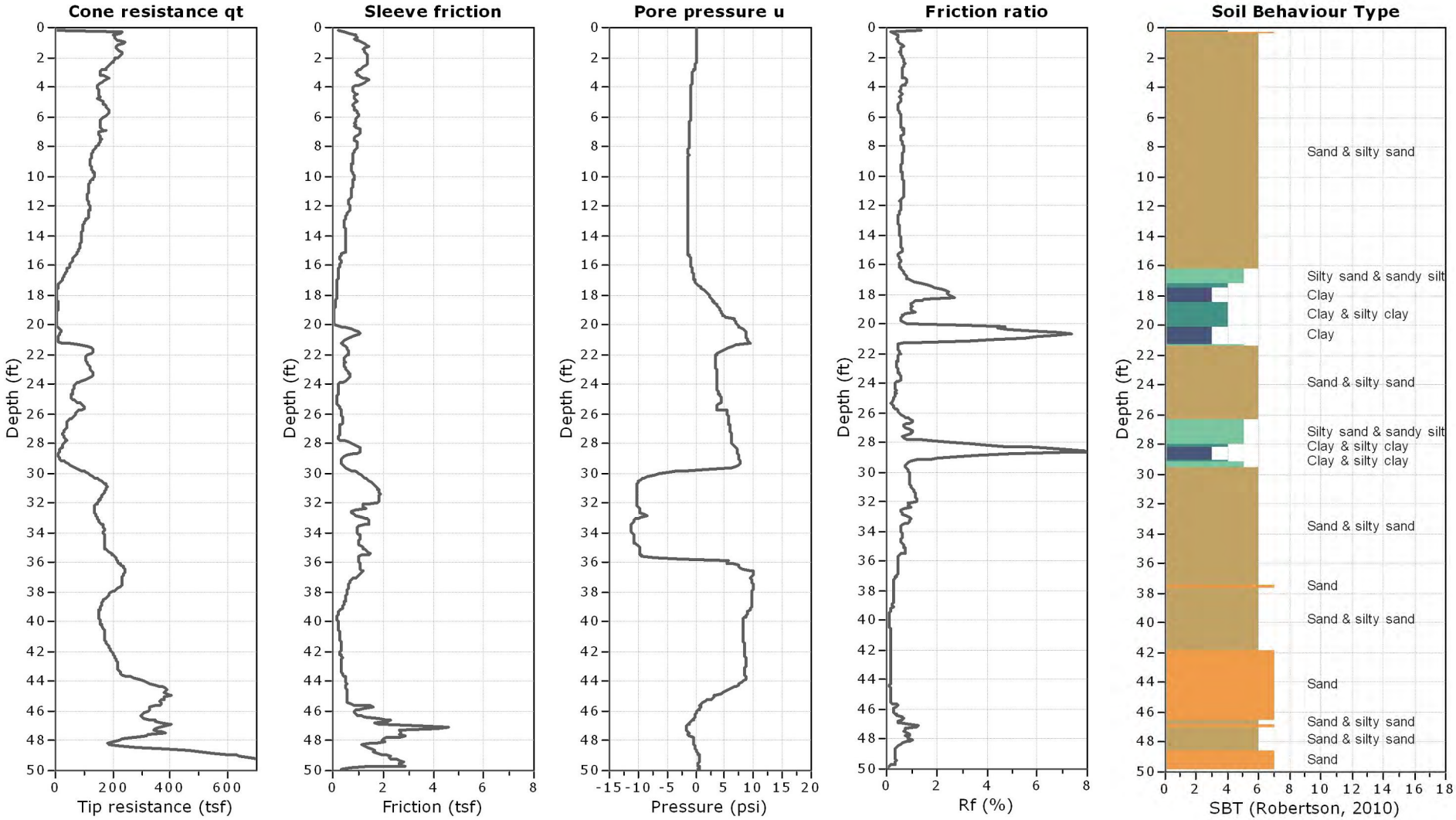
CPT: CPT-5

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.03 ft, Date: 9/2/2014
Cone Type: Vertek



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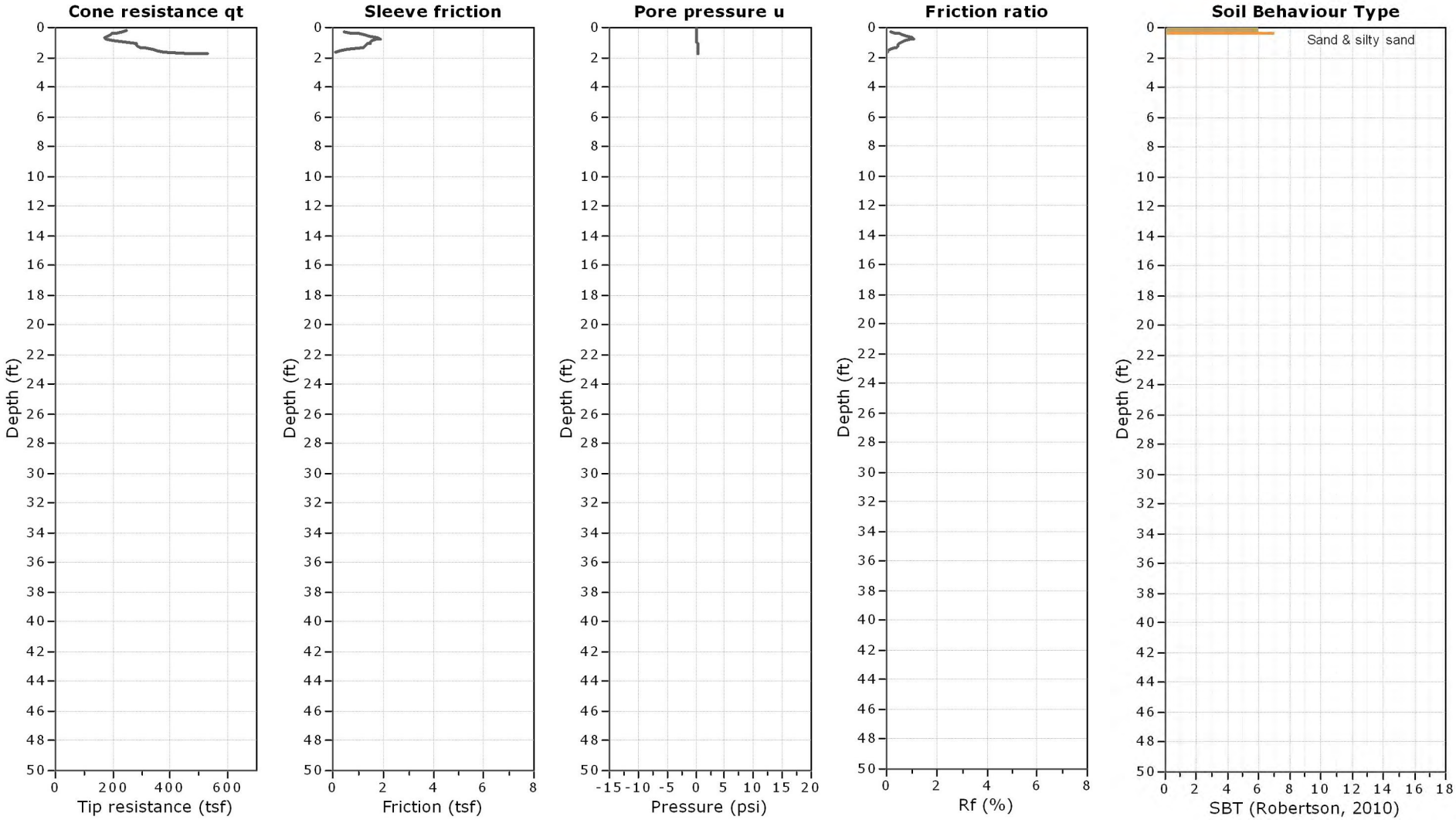
CPT: CPT-6

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 1.78 ft, Date: 9/2/2014
Cone Type: Vertek



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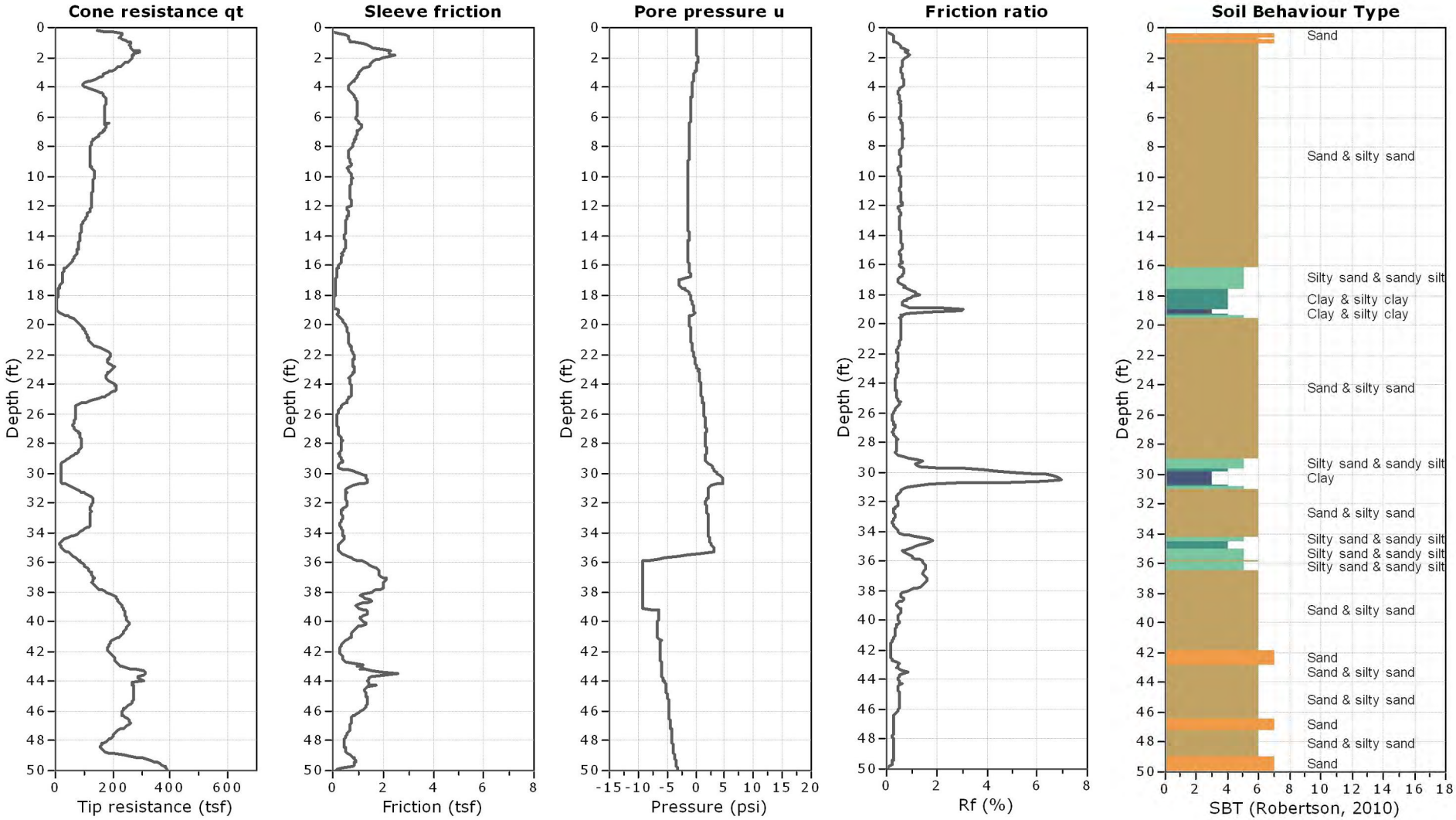
CPT: CPT-7

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.13 ft, Date: 9/2/2014
Cone Type: Vertek



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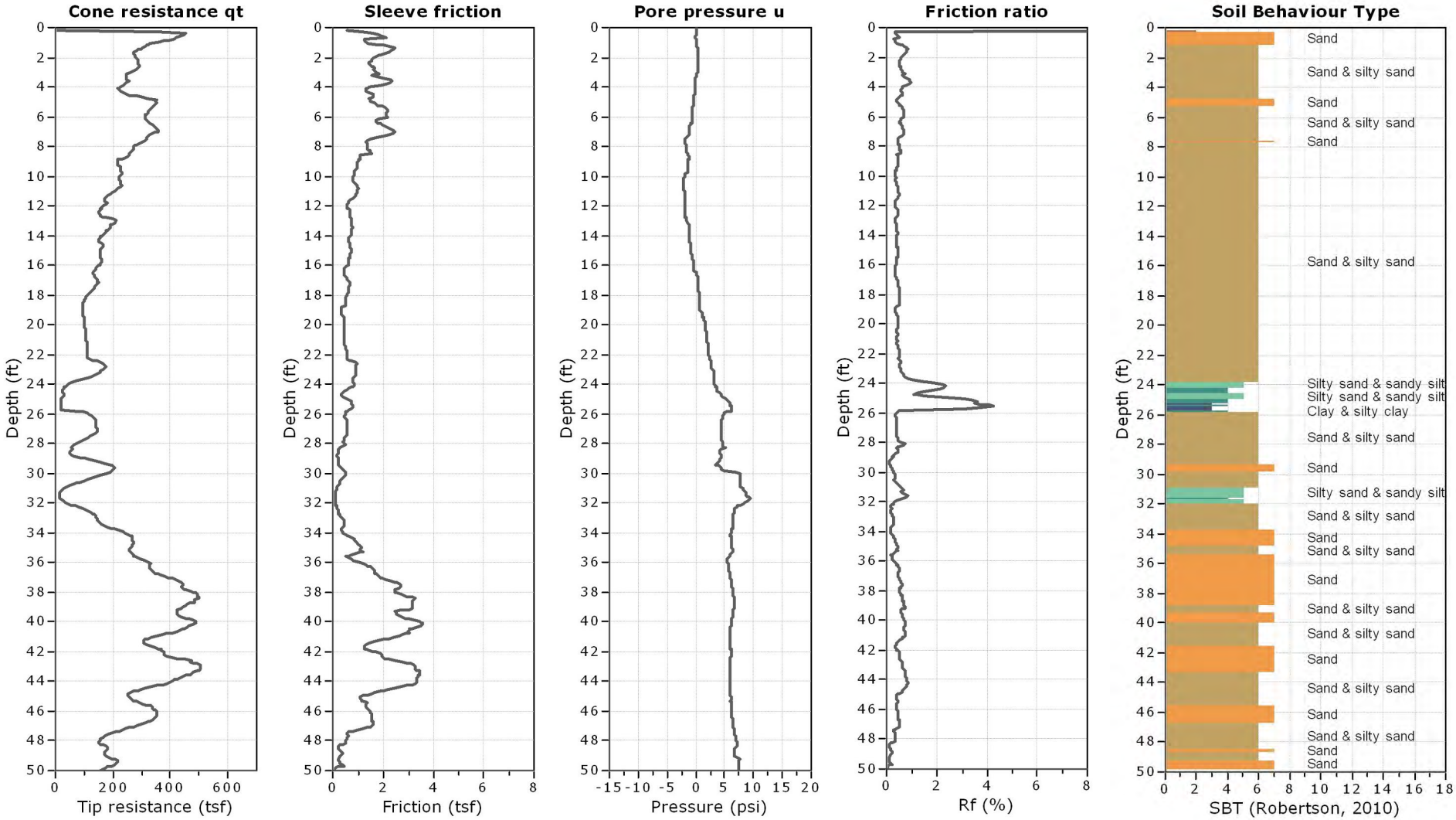
CPT: CPT-8

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.08 ft, Date: 9/2/2014
Cone Type: Vertek



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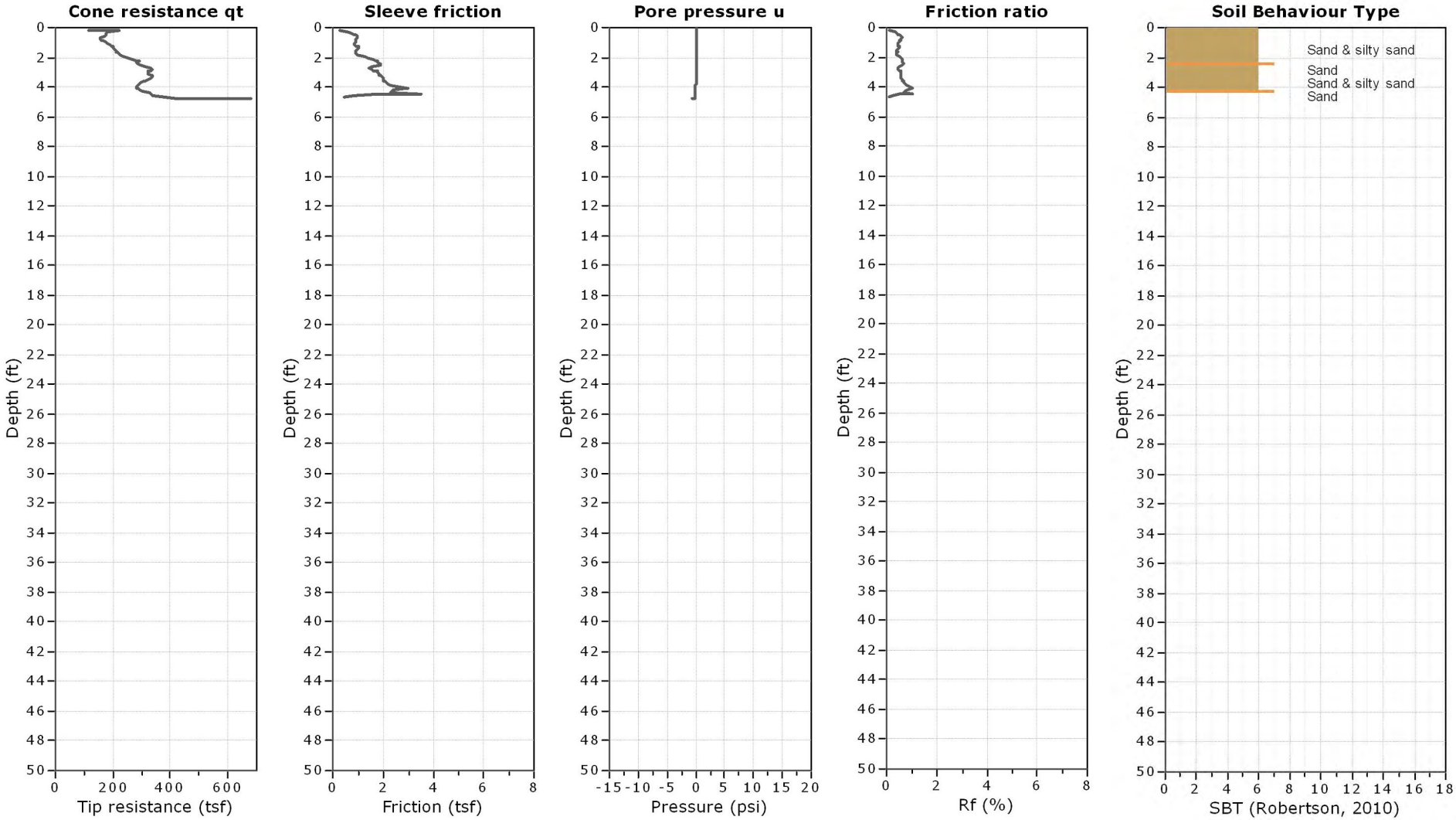
CPT: CPT-9

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 4.82 ft, Date: 9/2/2014
Cone Type: Vertek



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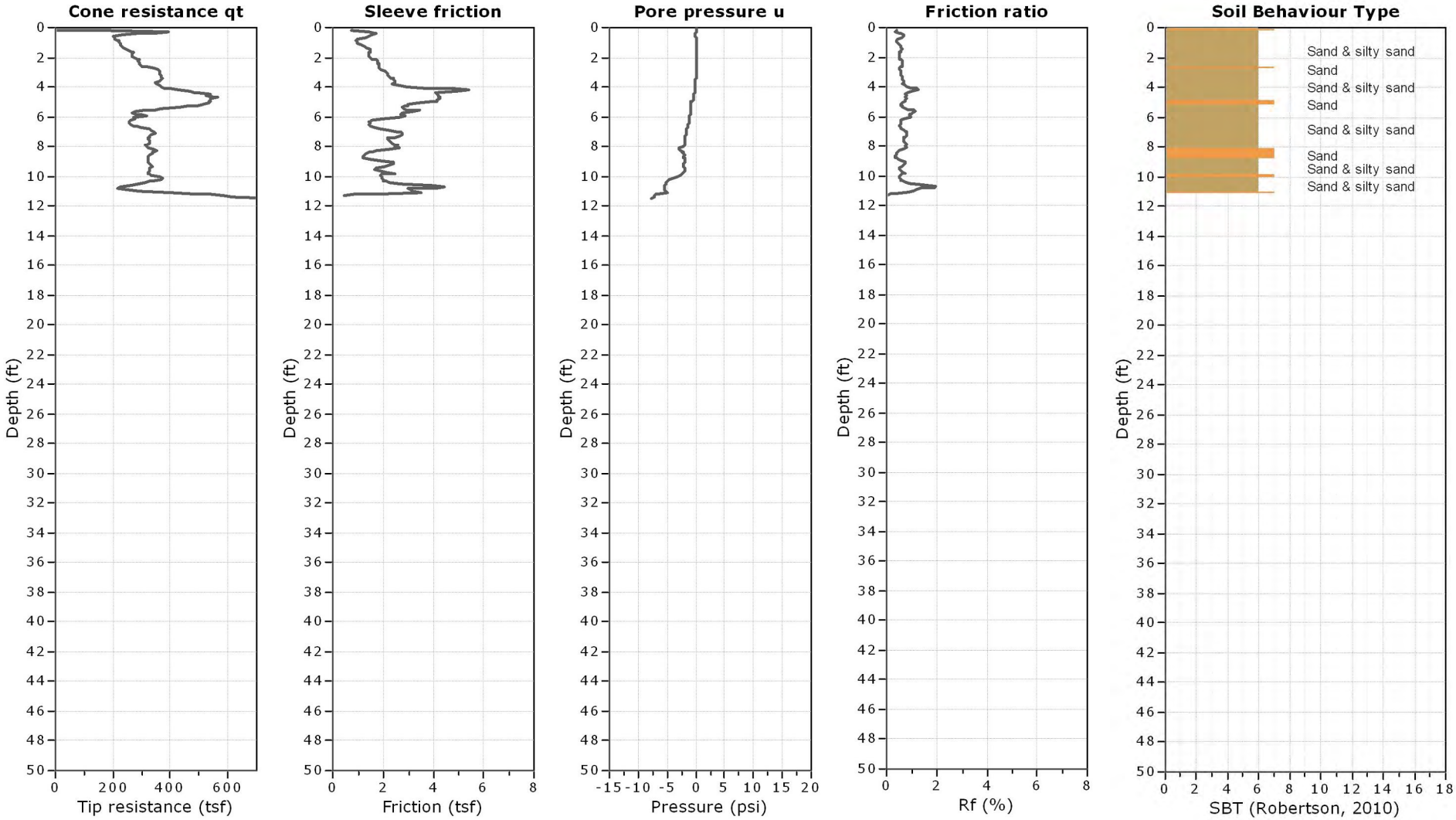
CPT: CPT-9B

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 11.46 ft, Date: 9/2/2014
Cone Type: Vertek



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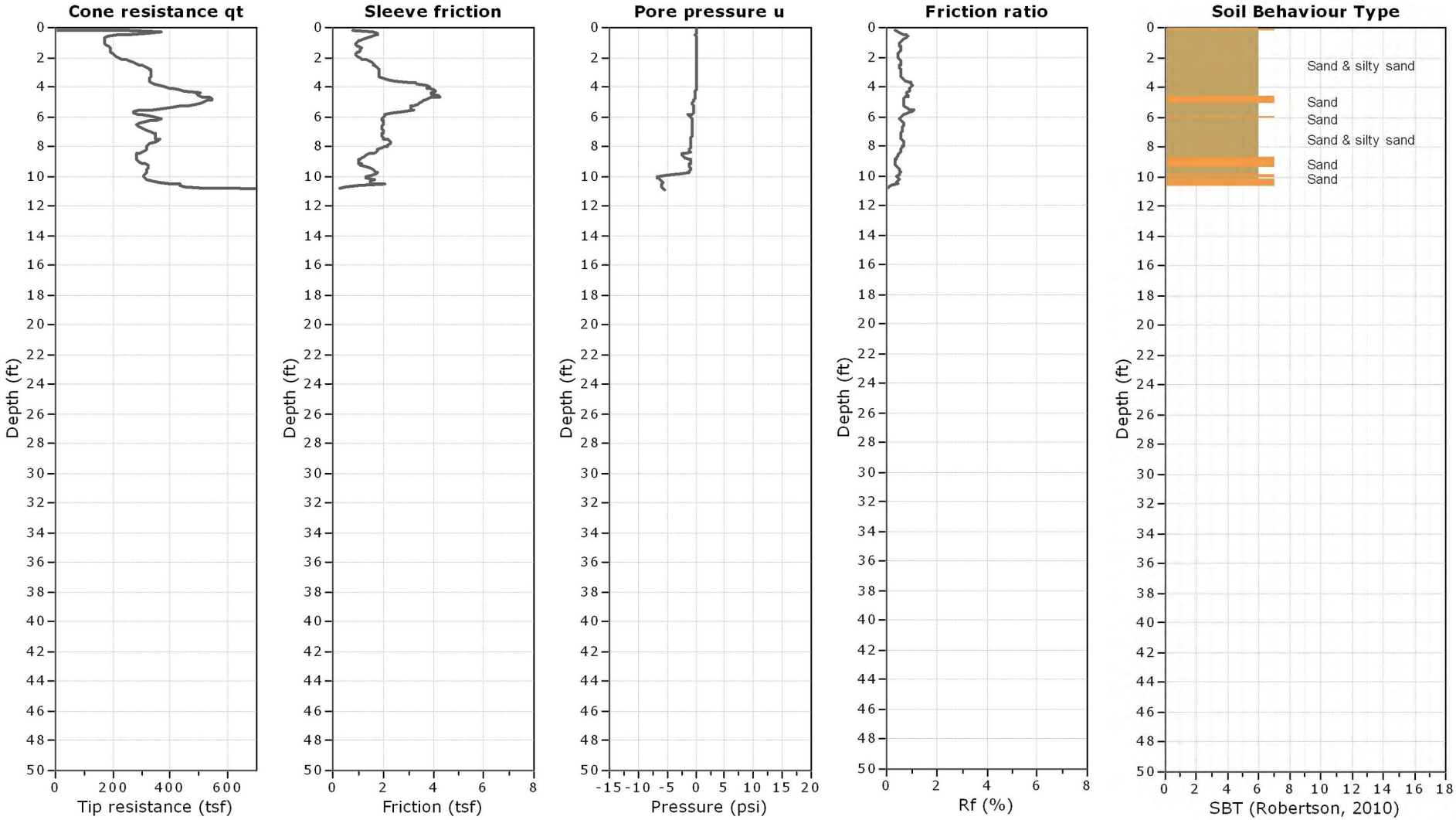
CPT: CPT-9C

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 10.93 ft, Date: 9/2/2014
Cone Type: Vertek



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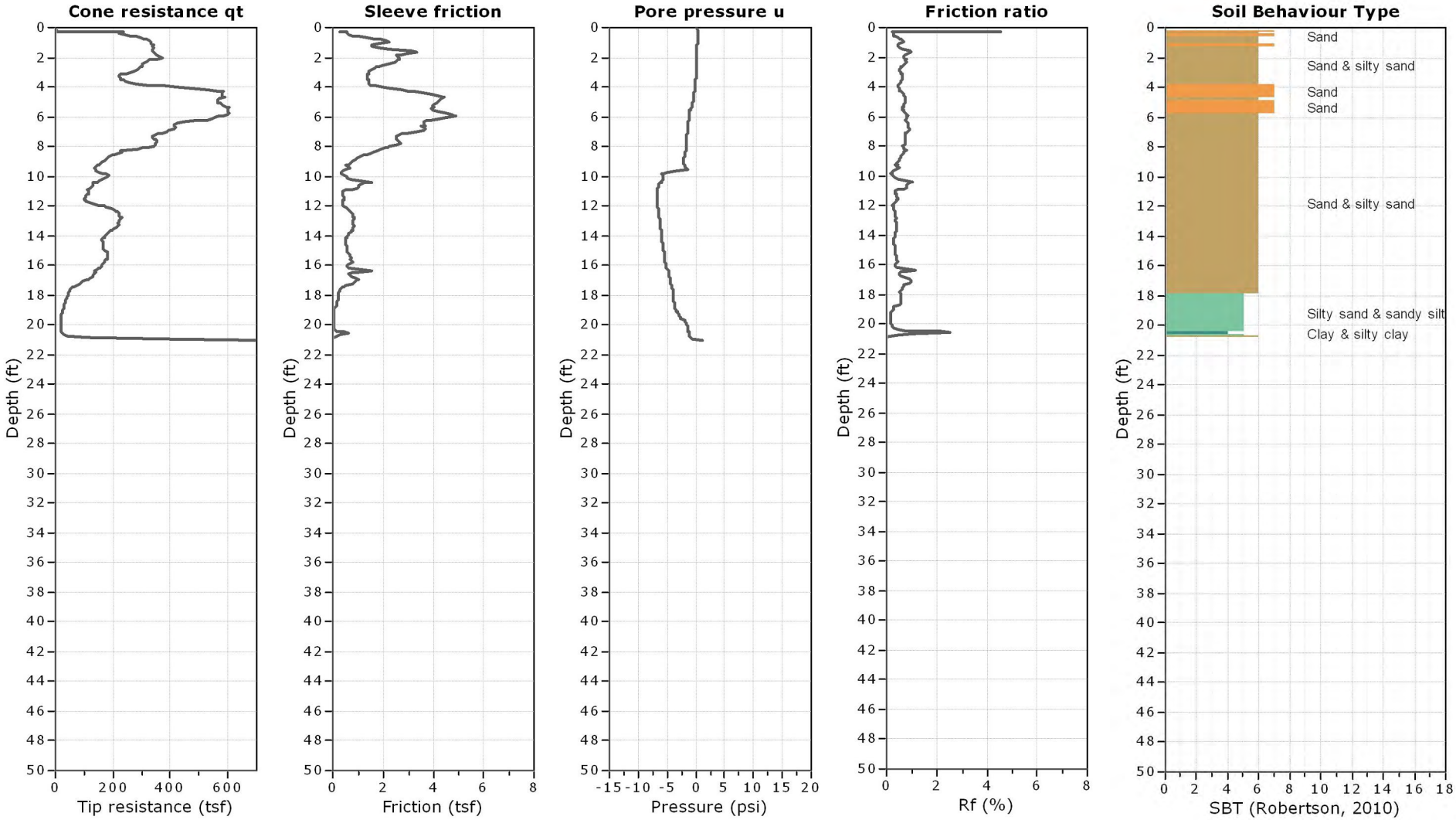
CPT: CPT-10

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 21.02 ft, Date: 9/2/2014
Cone Type: Vertek



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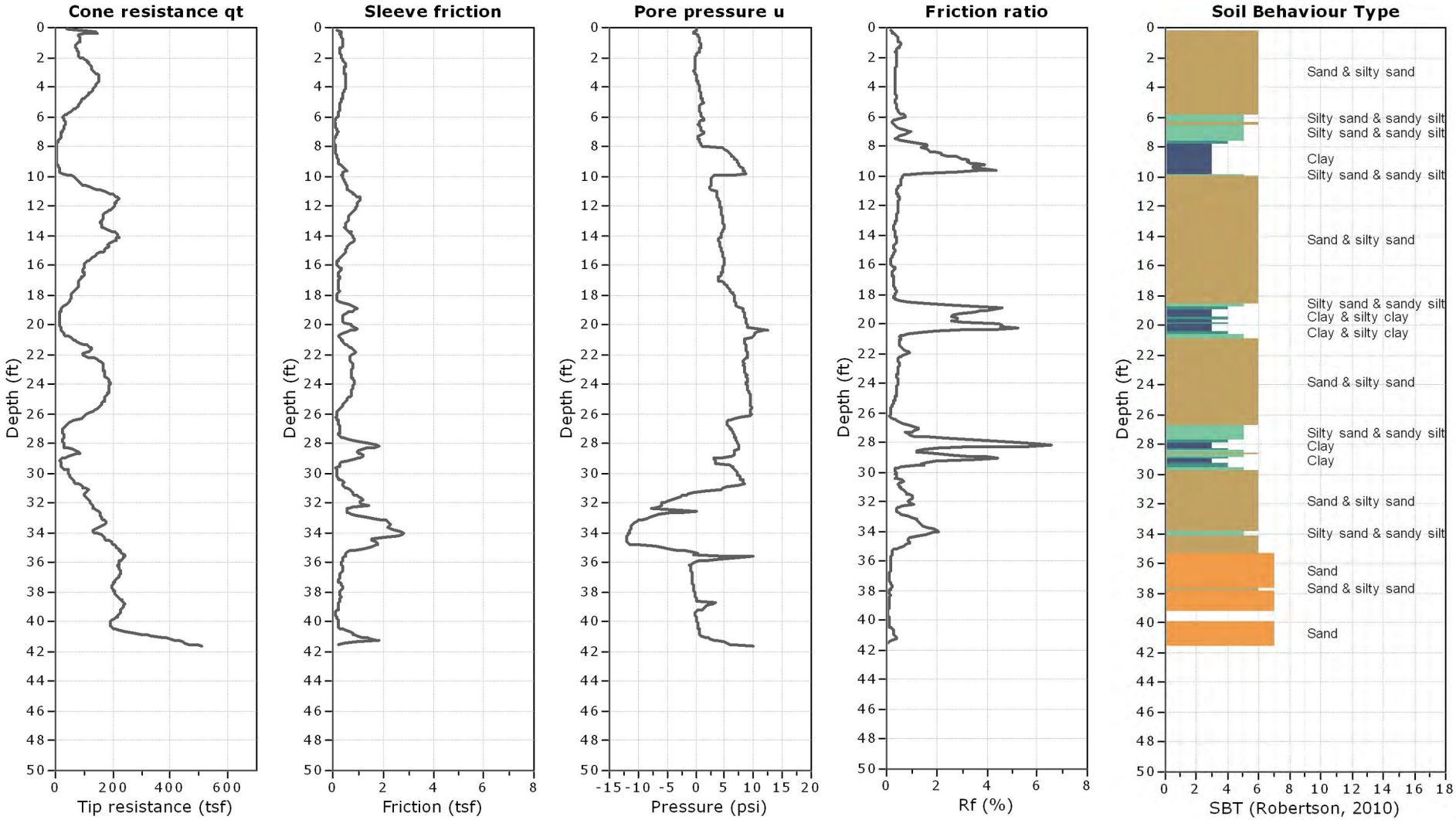
CPT: CPT-11

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 41.61 ft, Date: 9/3/2014
Cone Type: Vertek



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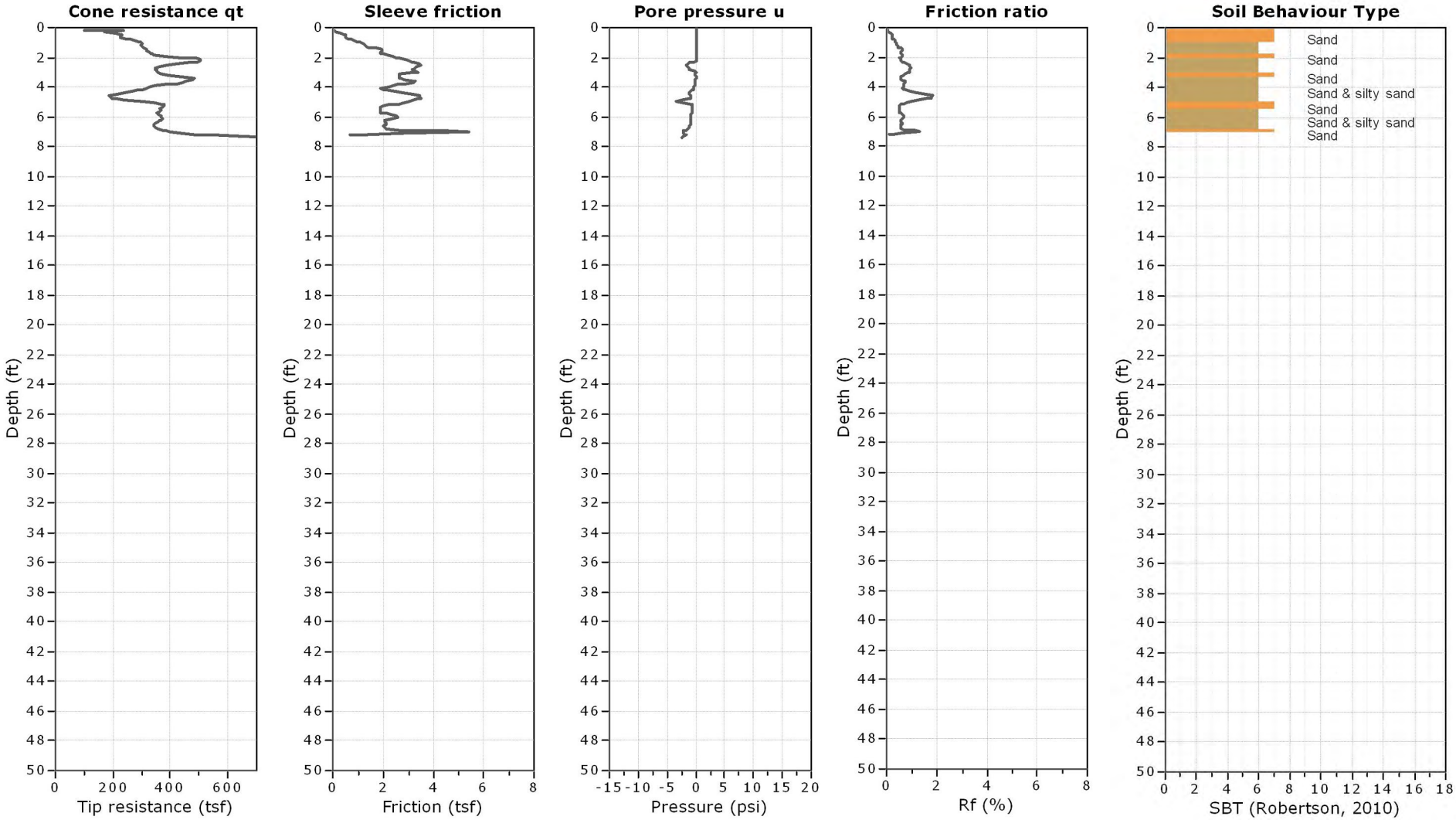
CPT: CPT-12

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 7.40 ft, Date: 9/2/2014
Cone Type: Vertek



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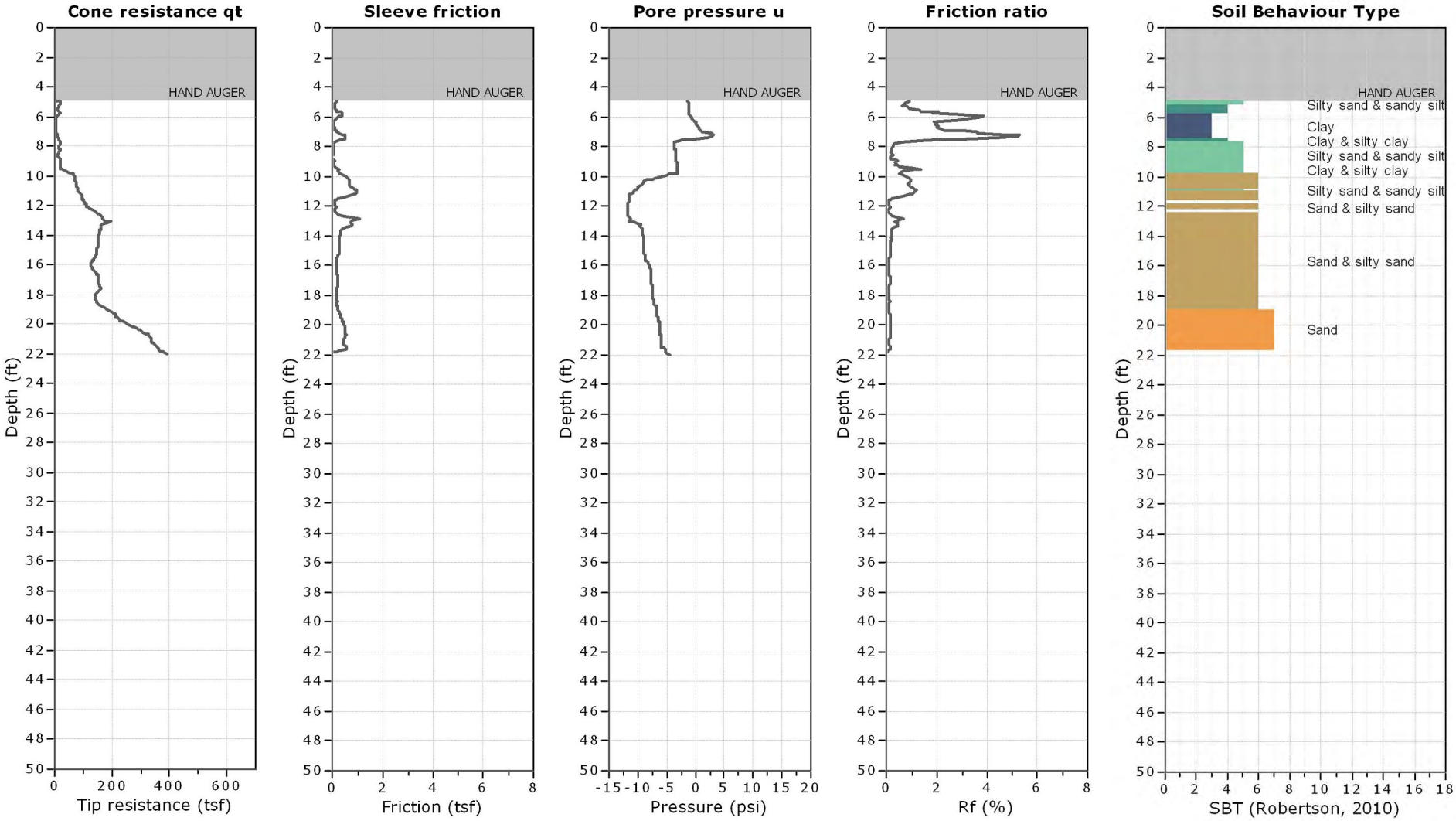
CPT: CPT-13

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 22.01 ft, Date: 9/17/2014
Cone Type: Vertek



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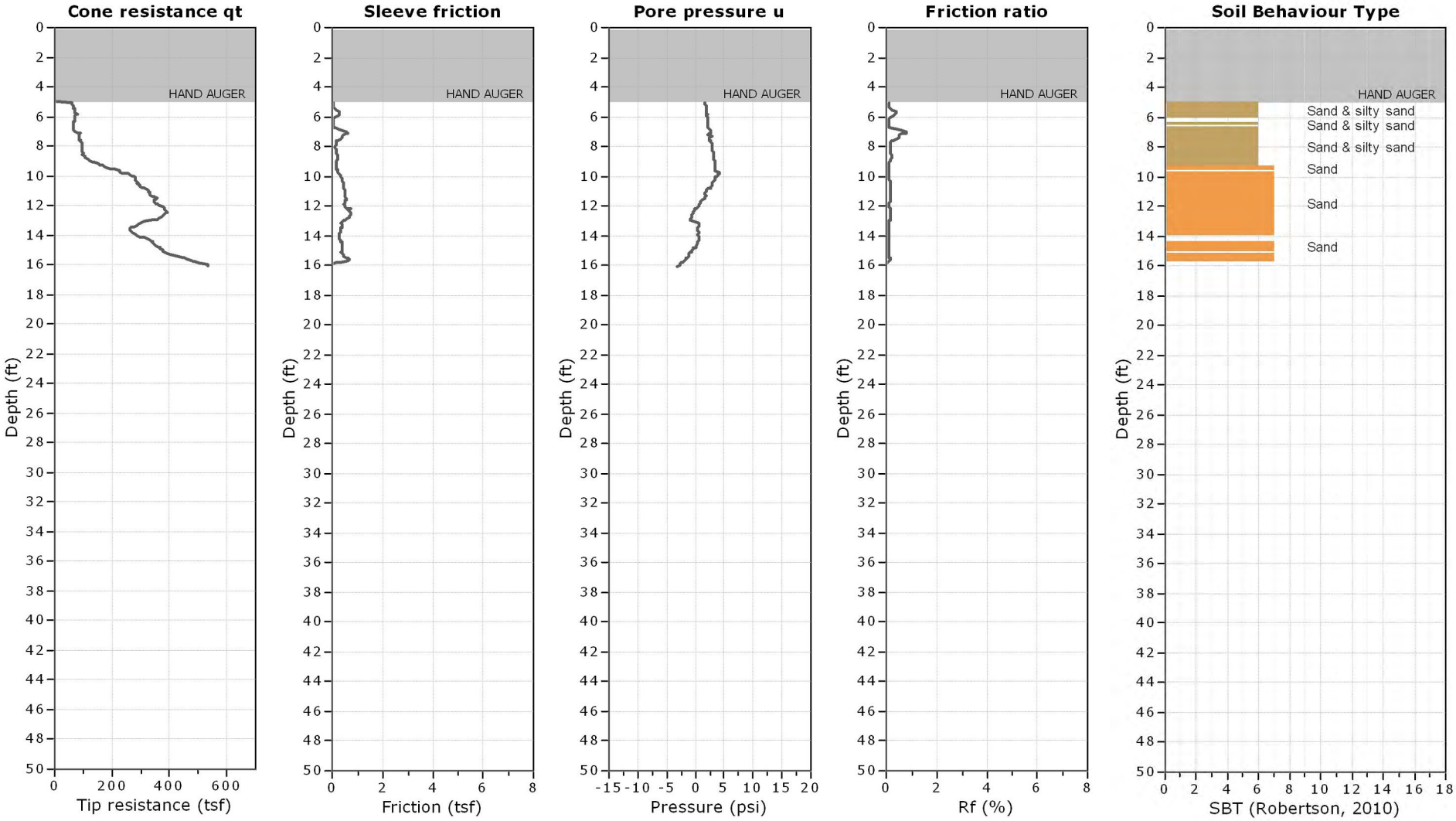
CPT: CPT-15

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 16.04 ft, Date: 9/17/2014
Cone Type: Vertek



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rich@kehoetesting.com
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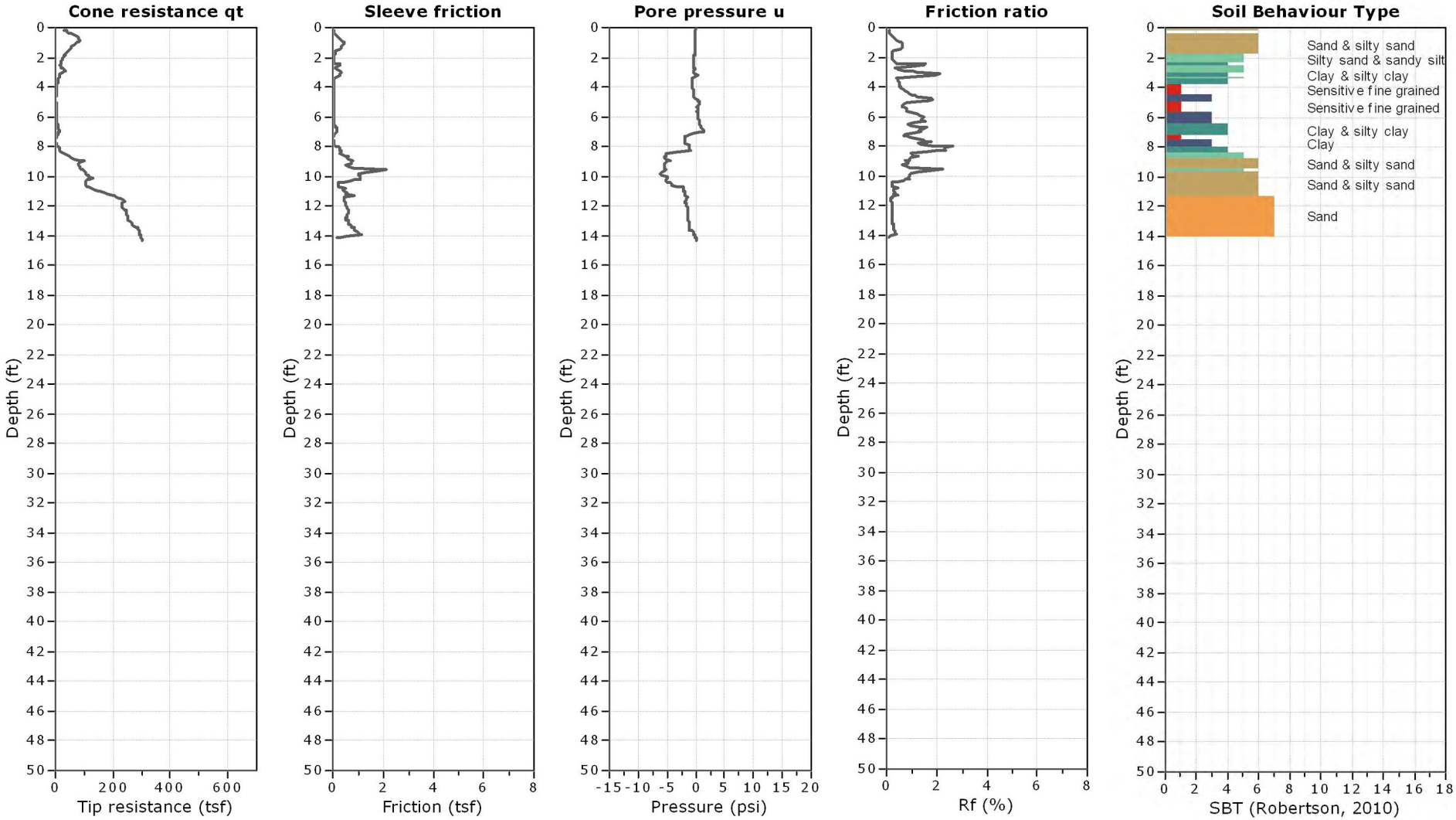
CPT: CPT-16

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 14.30 ft, Date: 9/3/2014
Cone Type: Vertek



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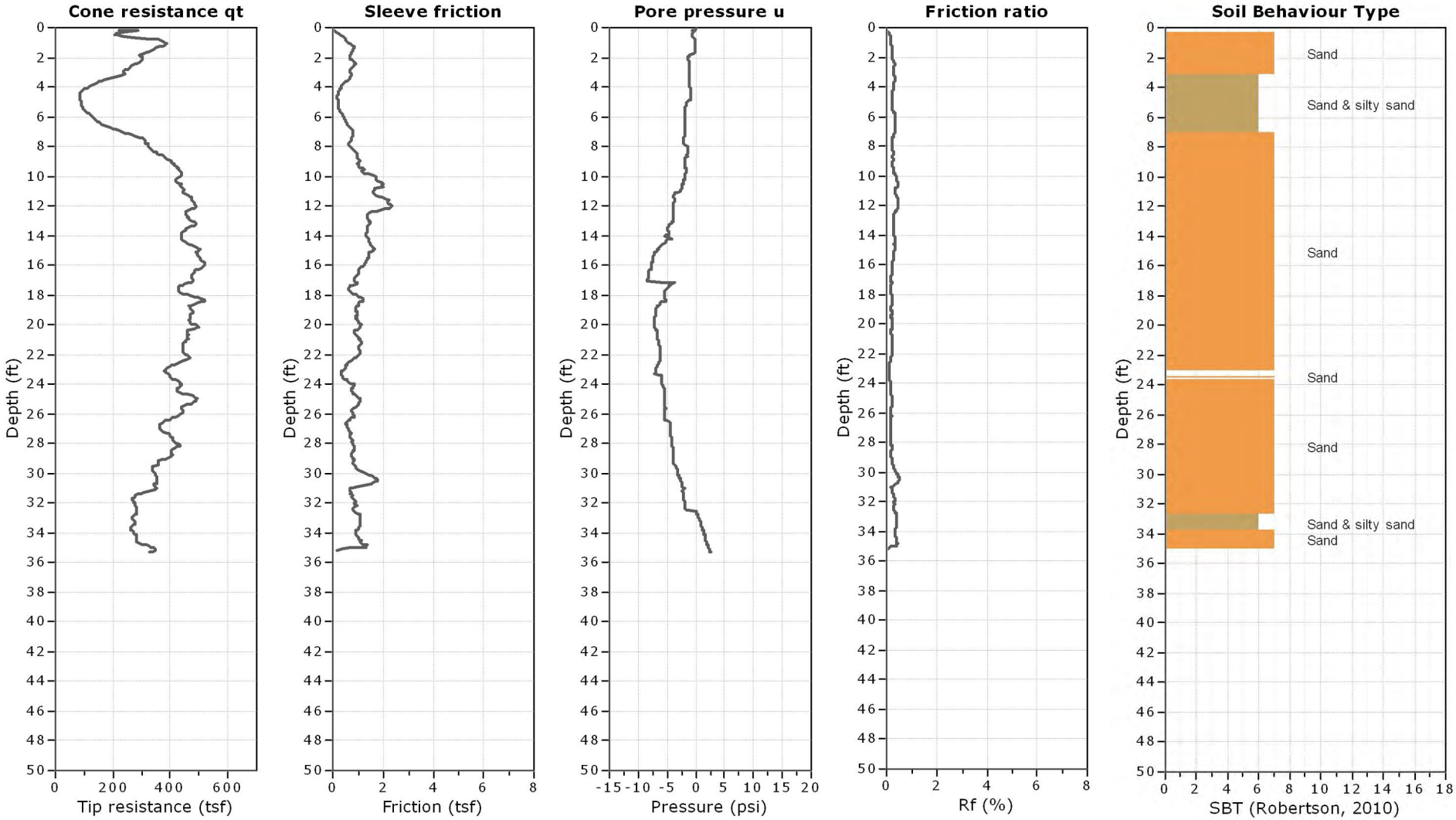
CPT: CPT-17

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 35.31 ft, Date: 9/4/2014
Cone Type: Vertek



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rich@kehoetesting.com
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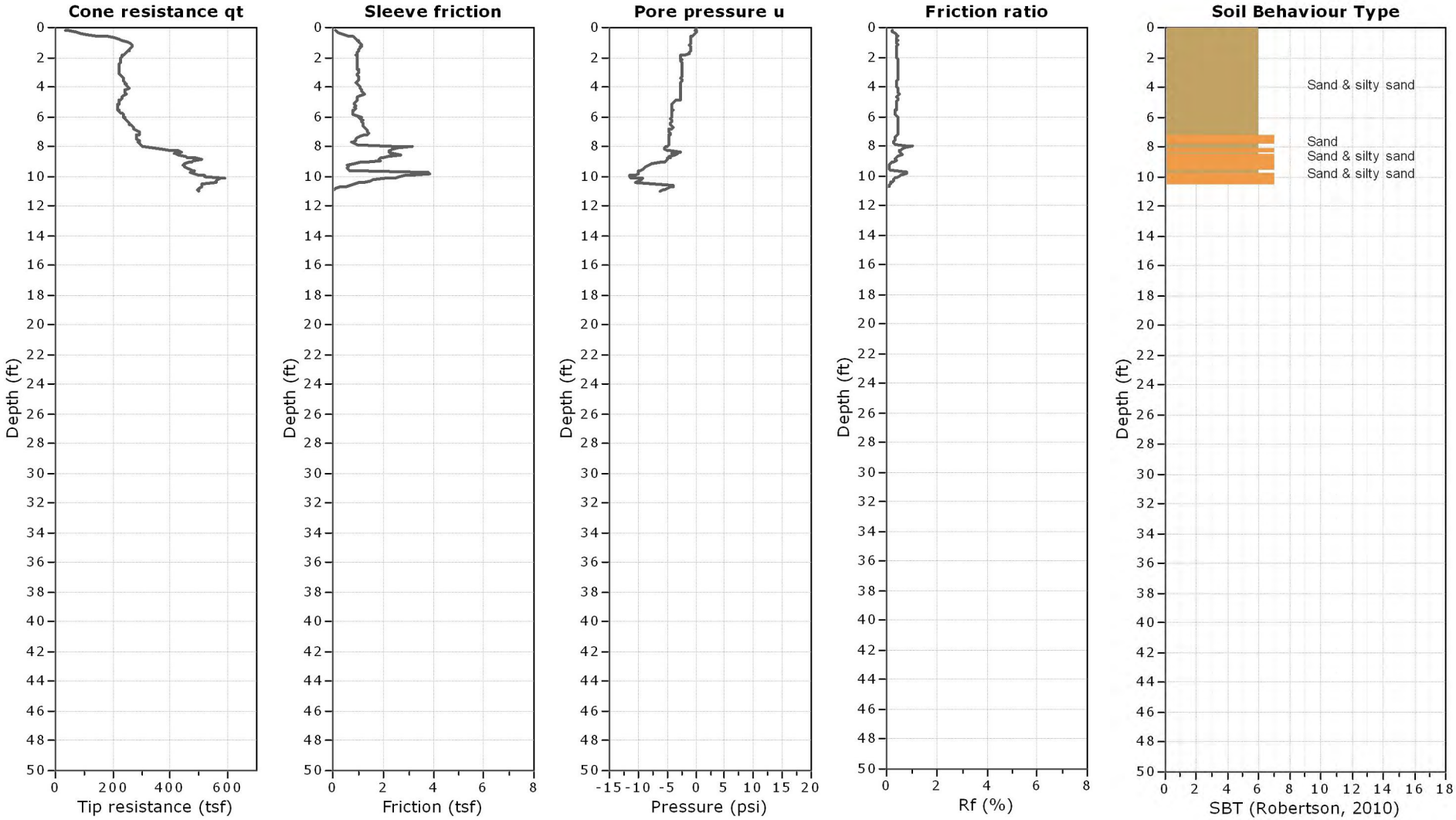
CPT: CPT-18

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 11.03 ft, Date: 9/4/2014
Cone Type: Vertek



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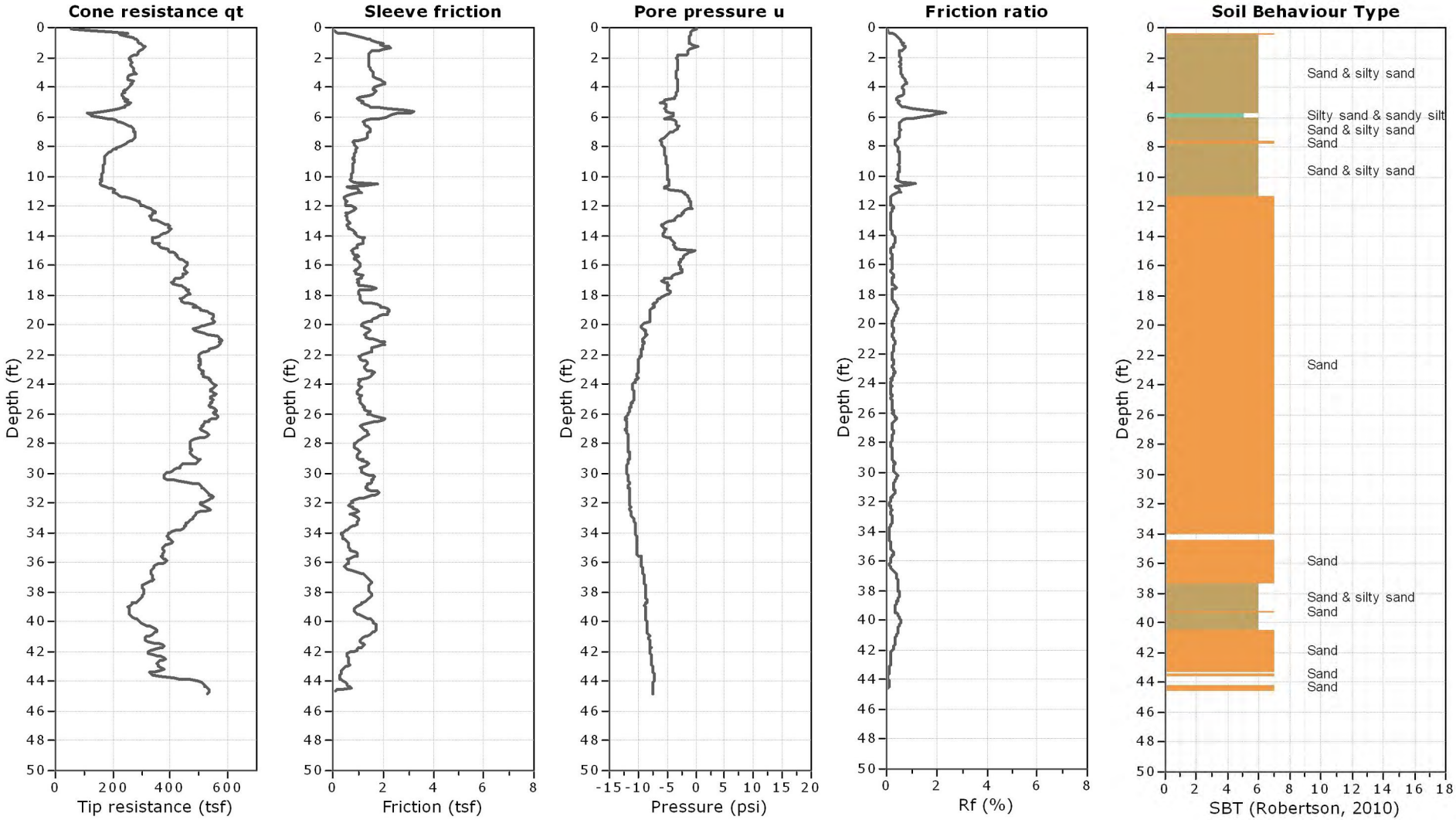
rich@kehoetesting.com
www.kehoetesting.com

CPT: CPT-19

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 44.80 ft, Date: 9/3/2014
Cone Type: Vertek



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rich@kehoetesting.com
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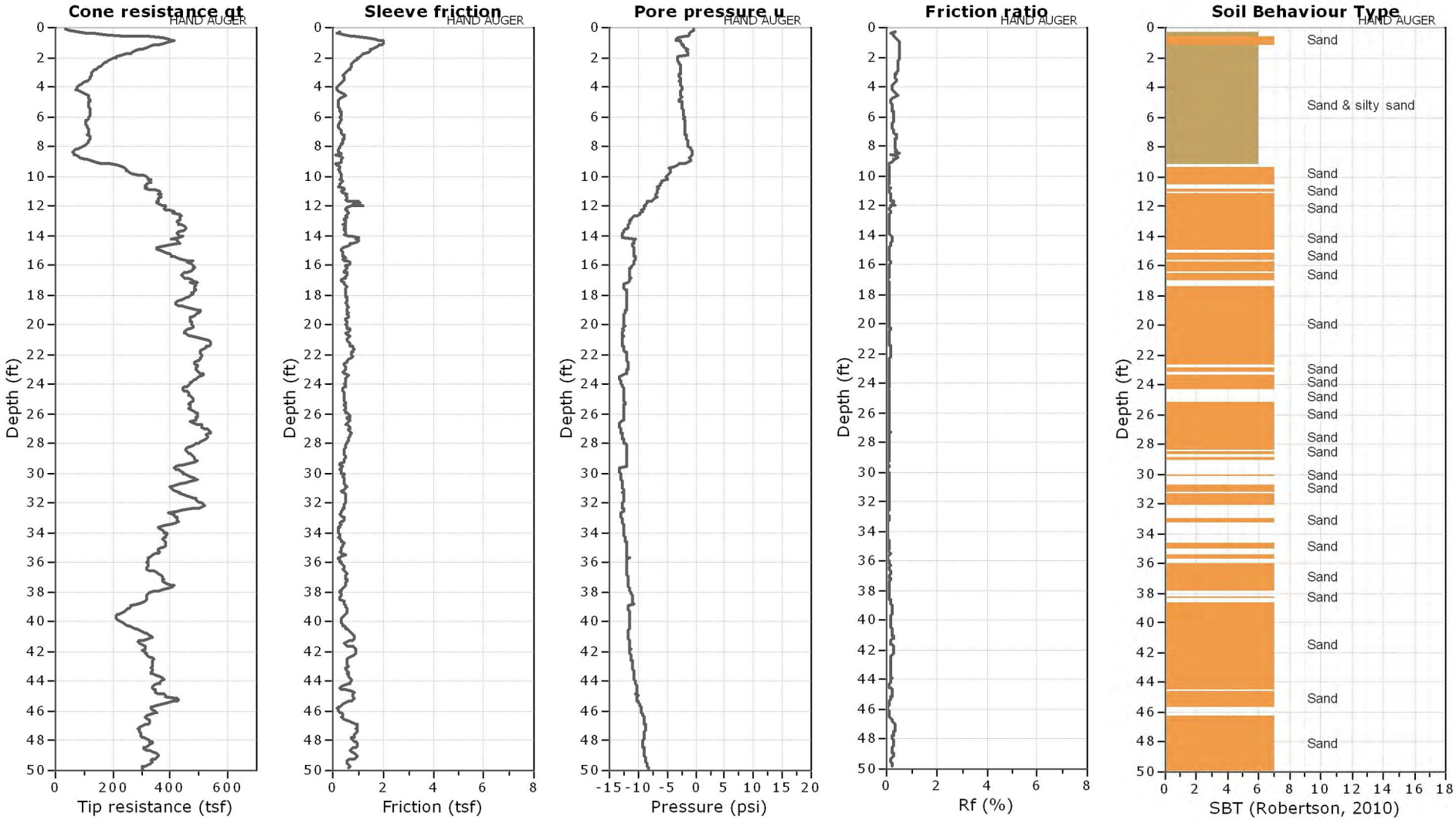
CPT: CPT-20

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.13 ft, Date: 9/3/2014
Cone Type: Vertek



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rich@kehoetesting.com
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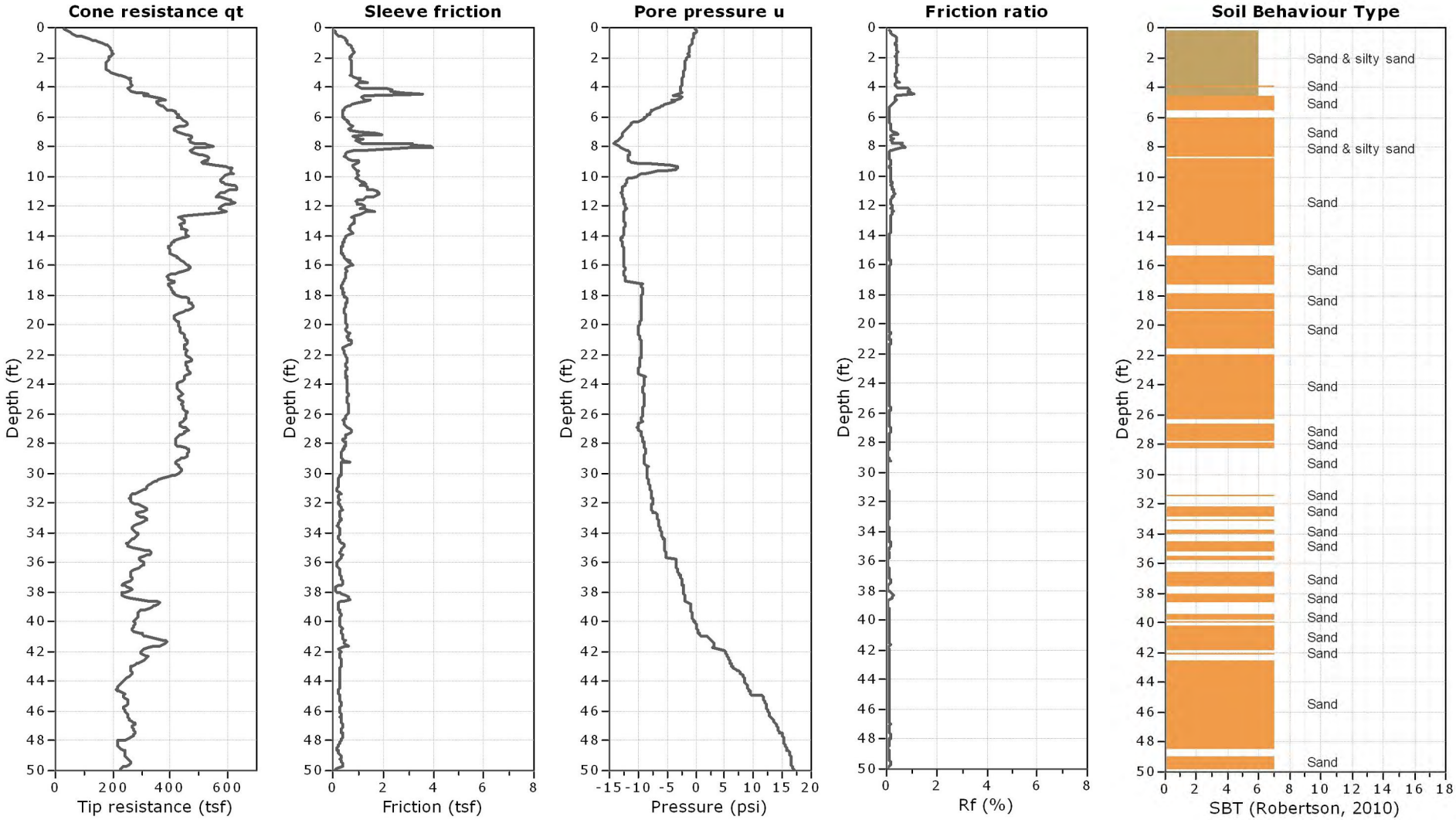
CPT: CPT-21

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.07 ft, Date: 9/3/2014
Cone Type: Vertek



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rich@kehoetesting.com
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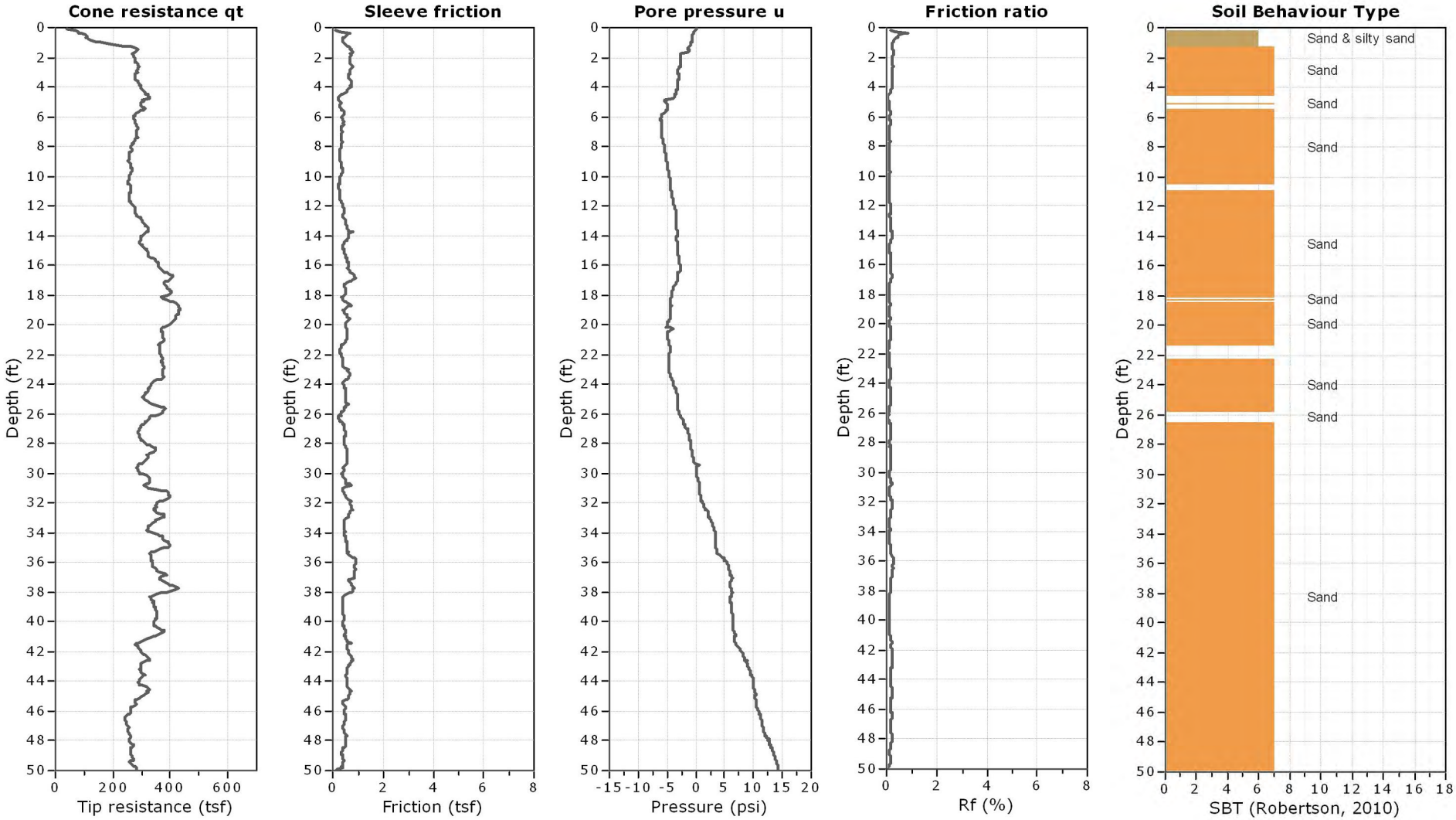
CPT: CPT-22

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.13 ft, Date: 9/4/2014
Cone Type: Vertek



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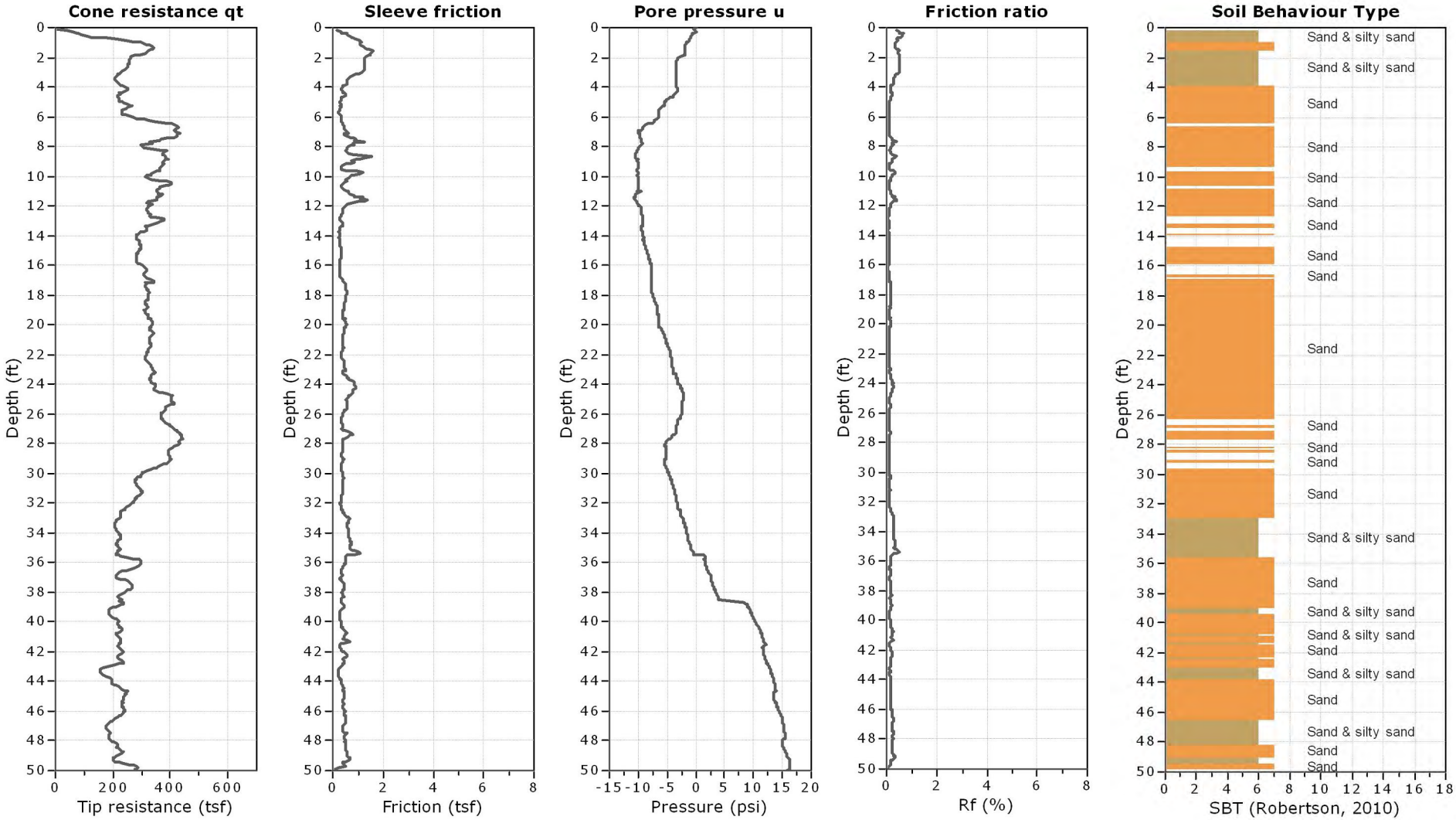
CPT: CPT-23

Project: **GeoDesign, Inc.**
Location: **N. Harbor Dr. Redondo Beach, CA**

Total depth: 50.07 ft, Date: 9/4/2014
Cone Type: Vertek



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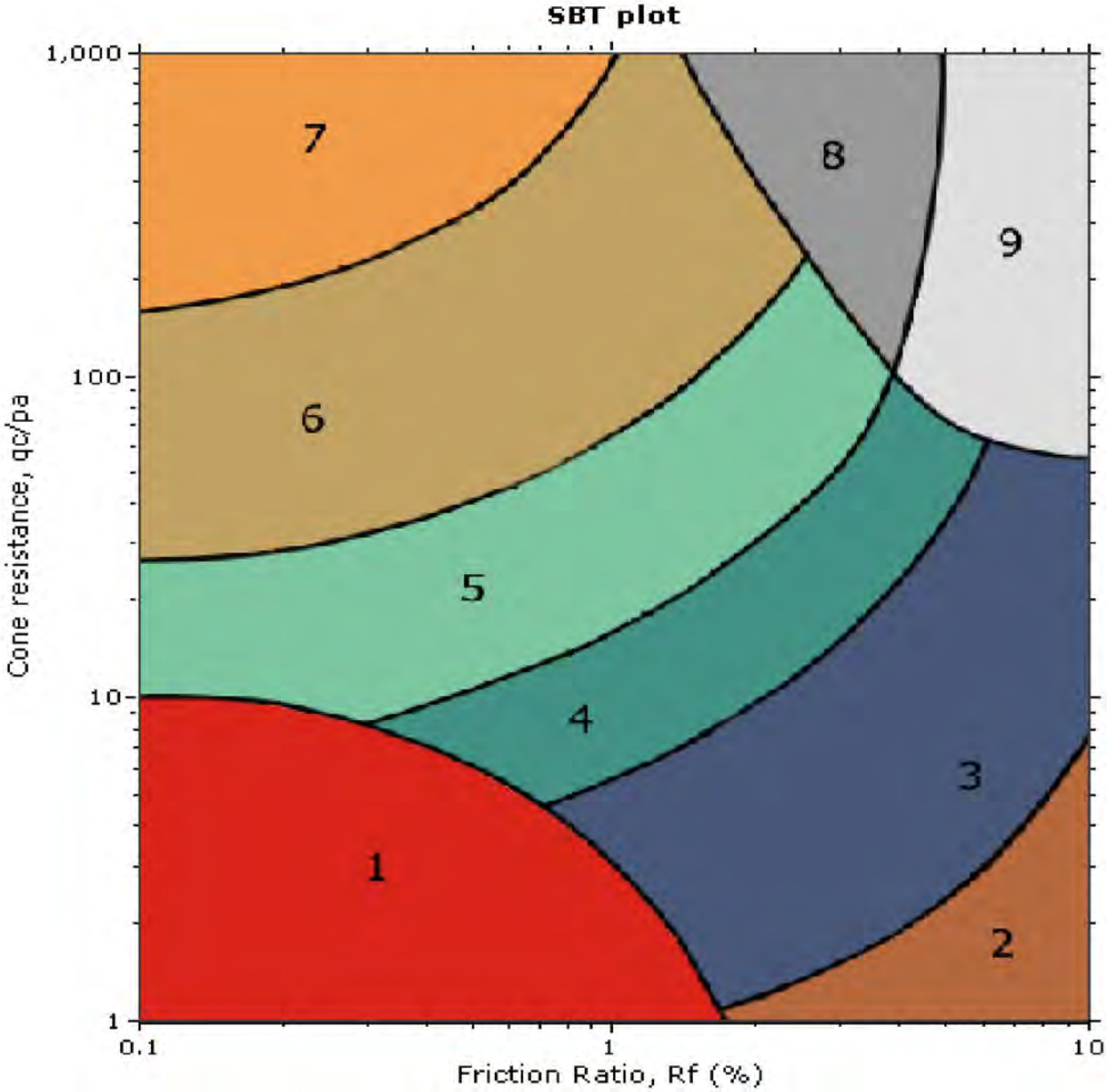

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

	CPT-1	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	422.6	0	0.27	-1.32	422.603	0	0	0	769.6	0.3848	0	0.3848	1097.2	0	5E-05	0	1	2.7498	0	0

	CPT-1B	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	243.5	1.94	0.08	-3.09	243.501	0.7967	6	1.5764	128.5228	0.06426	0	0.0643	3788.2	0.7969	2E-05	7	0.3536	2.6924	1.3104	619.4349
2	241	1.08	0	-3.37	241	0.4481	6	1.41316	124.2119	0.12637	0	0.1264	1906.1	0.4484	0	7	0.3146	1.9516	1.1983	444.2625
3	191.6	1.17	-0.31	-3.51	191.596	0.6107	6	1.57509	124.238	0.18849	0	0.1885	1015.5	0.6113	-1E-04	6	0.3811	1.9298	1.3682	349.0909
4	210.5	2.46	-0.55	-3.97	210.493	1.1687	6	1.74071	129.9051	0.25344	0	0.2534	829.55	1.1701	-2E-04	6	0.4569	1.9211	1.5648	381.7189
5	154.3	0.79	-0.71	-4.67	154.291	0.512	6	1.60303	120.8363	0.31386	0	0.3139	490.6	0.5131	-3E-04	6	0.4112	1.6482	1.433	239.8451
6	125.6	0.56	-0.87	-4.83	125.589	0.4459	6	1.64414	117.8166	0.37277	0	0.3728	335.91	0.4472	-5E-04	6	0.4329	1.5709	1.4831	185.9002
7	139.9	0.75	-0.87	-4.94	139.889	0.5361	6	1.64932	120.2171	0.43287	0	0.4329	322.16	0.5378	-5E-04	6	0.446	1.4898	1.5129	196.3464
8	130.9	0.7	-0.86	-5.02	130.889	0.5348	6	1.6724	119.5501	0.49265	0	0.4927	264.69	0.5368	-5E-04	6	0.4634	1.4251	1.5504	175.6258
9	155.6	0.75	-0.71	-5.12	155.591	0.482	6	1.58498	120.4766	0.55289	0.0156	0.5373	288.56	0.4838	-4E-04	6	0.4398	1.3473	1.4826	197.4085
10	137.6	0.55	-0.44	-5.22	137.595	0.3997	6	1.58551	117.9074	0.61184	0.0468	0.565	242.43	0.4015	-6E-04	6	0.4426	1.3201	1.4864	170.8951
11	117.2	0.51	-0.4	-5.28	117.195	0.4352	6	1.66424	116.9635	0.67032	0.078	0.5923	196.73	0.4377	-9E-04	6	0.4745	1.317	1.5665	145.0296
12	101.7	0.44	-0.25	-5.38	101.697	0.4327	6	1.71605	115.5373	0.72809	0.1092	0.6189	163.14	0.4358	-0.001	6	0.4967	1.3052	1.6211	124.5484
13	61.3	0.28	0.08	-5.48	61.301	0.4568	6	1.9204	110.9955	0.78359	0.1404	0.6432	94.09	0.4627	-0.002	6	0.5732	1.3302	1.8187	76.07869
14	35.4	0.27	0.37	-5.58	35.4045	0.7626	5	2.23605	109.3905	0.83828	0.1716	0.6667	51.848	0.7811	-0.004	5	0.6931	1.3774	2.1305	44.9957
15	9.4	0.35	0.93	-5.66	9.41138	3.7189	3	3.09199	108.0579	0.89231	0.2028	0.6895	12.355	4.1084	-0.016	3	1	1.5346	3.003	12.35519
16	43.7	0.31	-2.3	-5.82	43.6719	0.7098	5	2.14148	110.9132	0.94777	0.234	0.7138	59.857	0.7256	-0.009	6	0.6672	1.3004	2.0566	52.50746
17	45.5	0.26	-1.82	-5.93	45.4777	0.5717	5	2.08049	109.725	1.00263	0.2652	0.7374	60.311	0.5846	-0.009	6	0.6485	1.2638	2.0045	53.12232
18	51.5	0.16	-1.47	-6.05	51.482	0.3108	6	1.91996	106.475	1.05587	0.2964	0.7595	66.396	0.3173	-0.008	6	0.5918	1.2168	1.8529	57.99004
19	66.6	0.25	-0.87	-6.19	66.5894	0.3754	6	1.85039	110.3681	1.11105	0.3276	0.7835	83.576	0.3818	-0.006	6	0.5702	1.1869	1.7933	73.4497
20	58.6	0.21	-0.15	-6.27	58.5982	0.3584	6	1.89233	108.7805	1.16544	0.3588	0.8066	71.2	0.3657	-0.006	6	0.5894	1.1734	1.8408	63.69298
21	47.1	0.09	0.36	-6.32	47.1044	0.1911	6	1.88916	102.0484	1.21647	0.39	0.8265	55.523	0.1961	-0.008	6	0.5909	1.1572	1.8422	50.18496
22	75	0.34	0.9	-6.59	75.011	0.4533	6	1.84132	112.9084	1.27292	0.4212	0.8517	86.575	0.4611	-0.005	6	0.5775	1.1335	1.8038	78.99108
23	84.8	0.34	1.66	-6.75	84.8203	0.4009	6	1.76911	113.2082	1.32953	0.4524	0.8771	95.187	0.4072	-0.004	6	0.5538	1.1095	1.7386	87.54452
24	105.6	0.36	2.12	-6.81	105.626	0.3408	6	1.6521	114.1614	1.38661	0.4836	0.903	115.44	0.3454	-0.003	6	0.5131	1.0847	1.6285	106.8622
25	141	0.54	5.45	-6.87	141.067	0.3828	6	1.56655	117.8339	1.44552	0.5148	0.9307	150.01	0.3868	-9E-04	6	0.4845	1.0641	1.5496	140.4154
26	162.3	0.68	5.49	-7	162.367	0.4188	6	1.53549	119.8636	1.50546	0.546	0.9595	167.66	0.4227	-9E-04	6	0.4762	1.0477	1.5242	159.2802
27	203.6	0.95	5.96	-7.12	203.673	0.4664	6	1.48175	122.863	1.56689	0.5772	0.9897	204.21	0.4701	-7E-04	6	0.4591	1.0312	1.4758	196.9598
28	227.1	0.9	6.34	-7.2	227.178	0.3962	6	1.40155	122.7338	1.62825	0.6084	1.0199	221.16	0.399	-7E-04	6	0.4317	1.016	1.4003	216.5786
29	211.5	0.99	6.73	-7.28	211.582	0.4679	6	1.46937	123.2577	1.68988	0.6396	1.0503	199.84	0.4717	-7E-04	6	0.4609	1.0034	1.4731	199.0456
30	212.2	1.02	7.2	-7.37	212.288	0.4805	6	1.47523	123.4843	1.75163	0.6708	1.0808	194.79	0.4845	-7E-04	6	0.4664	0.9901	1.4837	197.013
31	233.2	1.1	7.96	-7.46	233.297	0.4715	6	1.43791	124.2669	1.81376	0.702	1.1118	208.21	0.4752	-6E-04	6	0.4551	0.9777	1.4503	213.9014
32	302.4	1.47	8.74	-7.58	302.507	0.4859	6	1.36003	127.0221	1.87727	0.7332	1.1441	262.77	0.489	-4E-04	6	0.4279	0.9671	1.3747	274.7814
33	284.7	1.77	8.7	-7.62	284.806	0.6215	6	1.4521	128.234	1.94139	0.7644	1.177	240.33	0.6257	-5E-04	6	0.4665	0.9516	1.4718	254.3778
34	342.4	1.52	6.87	-7.71	342.484	0.4438	7	1.29361	127.5696	2.00517	0.7956	1.2096	281.49	0.4464	-9E-04	7	0.4083	0.9468	1.3149	304.6754
35	285.5	1.52	8.79	-7.78	285.608	0.5322	6	1.40502	127.1267	2.06874	0.8268	1.2419	228.3	0.5361	-7E-04	6	0.4547	0.9298	1.433	249.1447
36	115.2	0.61	9.5	-7.82	115.316	0.529	6	1.71538	118.2342	2.12785	0.858	1.2699	89.135	0.5389	-0.002	6	0.5826	0.8992	1.7653	96.18731
37	102.4	0.2	-3.52	-7.86	102.357	0.1954	6	1.56988	109.7839	2.18274	0.8892	1.2935	77.442	0.1997	-0.011	6	0.5305	0.8989	1.6256	85.10217
38	74.4	1.09	-5.07	-7.95	74.3379	1.4663	5	2.13466	121.4106	2.24345	0.9204	1.3231	54.491	1.5119	-0.018	5	0.7546	0.8448	2.2096	57.5631
39	105.7	2.79	-5.98	-8.14	105.627	2.6414	5	2.20425	129.1444	2.30802	0.9516	1.3564	76.17	2.7004	-0.013	5	0.781	0.8237	2.2749	80.42787
40	138.5	3.42	-6.65	-8.3	138.419	2.4708	5	2.10541	131.2936	2.37367	0.9828	1.3909	97.813	2.5139	-0.011	5	0.7442	0.8159	2.1739	104.8996
41	178.2	1.79	-7.3	-8.34	178.111	1.005	6	1.7438	127.1713	2.43725	1.014	1.4233	123.43	1.0189	-0.009	6	0.6064	0.8355	1.8088	138.707
42	236	0.34	-7.68	-8.38	235.906	0.1441	7	1.184	115.703	2.49511	1.0452	1.4499	160.98	0.1457	-0.007	7	0.3913	0.884	1.2407	195.0119
43	378.1	0.93	-7.13	-8.48	378.013	0.246	7	1.10192	124.2156	2.55721	1.0764	1.4808	253.55	0.2477	-0.004	7	0.3581	0.8866	1.1499	314.5948
44	382.5	0.98	-6.62	-8.56	382.419	0.2563	7	1.10769	124.6271	2.61953	1.1076	1.5119	251.2	0.258	-0.004	7	0.3629	0.8785	1.1586	315.3325
45	328	1.02	-6.04	-8.64	327.926	0.3111	7	1.21082	124.5449	2.6818	1.1388	1.543	210.79	0.3136	-0.005	7	0.407	0.8577	1.2703	263.6355
46	245.6	0.36	-5.78	-8.68	245.529	0.1466	7	1.17	116.2188	2.73991	1.17	1.5699	154.65	0.1483	-0.007	7	0.397	0.855	1.2406	196.1913
47	278.6	0.3	-5.7	-8.78	278.53	0.1077	7	1.07954	115.1923	2.7975	1.2012	1.5963	172.73	0.1088	-0.006	7	0.363	0.8614	1.1479	224.4597
48	327.2	0.55	-5.62	-8.92	327.131	0.1681	7	1.07639	120.0197	2.85751	1.2324	1.6251	199.54	0.1696	-0.005	7	0.3625	0.8559	1.1432	262.3145
49	422.7	0.59	-5.46	-9.14	422.633	0.1396	7	0.9421	121.1581	2.91809	1.2636	1.6545	253.68	0.1406	-0.004	7	0.3101	0.8706	1.0018	345.3262
50	399.7	0	-5.39	-9.24	399.634	0	0	0	769.6	3.30289	1.2948	2.0081	197.37	0	-0.004	0	1	0.5269	0	0

	CPT-2	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	291.3	1.27	0.32	-1.15	291.304	0.436	6	1.34162	125.86	0.06293	0	0.0629	4628	0.4361	8E-05	7	0.2762	2.1805	1.1033	600.1629
2	196.8	0.93	0.56	-1.38	196.807	0.4725	6	1.49707	122.6237	0.12424	0	0.1242	1583.1	0.4728	0.0002	7	0.3381	2.0633	1.2593	383.5283
3	167.3	0.72	0.9	-1.49	167.311	0.4303	6	1.53116	120.355	0.18442	0	0.1844	906.23	0.4308	0.0004	7	0.3608	1.8781	1.3135	296.6406
4	117.1	0.6	0.95	-1.64	117.112	0.5123	6	1.70216	118.1509	0.24349	0	0.2435	479.96	0.5134	0.0006	6	0.4272	1.8731	1.4826	206.8858
5	246.9	0.95	0.87	-1.88	246.911	0.3848	6	1.36481	123.3326	0.30516	0	0.3052	808.12	0.3852	0.0003	7	0.3317	1.5106	1.2255	352.0548
6	185.3	1.01	0.72	-2	185.309	0.545	6	1.55544	123.0807	0.3667	0	0.3667	504.34	0.5461	0.0003	6	0.4062	1.538	1.4139	268.8112
7	260	1.17	0.56	-2.15	260.007	0.45	6	1.38849	124.9827	0.42919	0	0.4292	604.8	0.4507	0.0002	7	0.3584	1.3818	1.2834	338.9813
8	153.8	0.78	0.11	-2.25	153.801	0.5072	6	1.60175	120.7353	0.48956	0	0.4896	313.16	0.5088	5E-05	6	0.4388	1.4024	1.4862	203.1984
9	64.1	0.17	1.03	-2.35	64.1126	0.2652	6	1.80611	107.4538	0.54329	0	0.5433	117.01	0.2674	0.0012	6	0.5126	1.4073	1.6731	84.54905
10	28.8	0.12	0.72	-2.43	28.8088	0.4165	5	2.20142	102.9541	0.59476	0	0.5948	47.437	0.4253	0.0018	6	0.6631	1.4652	2.061	39.06943
11	22.7	0.09	0.72	-2.57	22.7088	0.3963	5	2.28947	100.2688	0.6449	0	0.6449	34.213	0.4079	0.0024	5	0.7052	1.4179	2.1649	29.56568
12	29	0.11	0.87	-2.74	29.0107	0.3792	5	2.18336	102.3345	0.69607	0	0.6961	40.678	0.3885	0.0022	6	0.6765	1.3275	2.0832	35.52372
13	23.8	0.09	0.74	-2.88	23.8091	0.378	5	2.26297	100.3842	0.74626	0	0.7463	30.905	0.3902	0.0023	5	0.7157	1.2839	2.1797	27.98399
14	25.7	0.04	2.97	-3	25.7364	0.1554	5	2.12422	94.64049	0.79358	0	0.7936	31.431	0.1604	0.0086	6	0.6716	1.2131	2.0581	28.59716
15	29.8	0.07	3.58	-3.14	29.8438	0.2346	5	2.10416	99.09635	0.84313	0	0.8431	34.397	0.2414	0.0089	6	0.6732	1.1652	2.056	31.93586
16	64	0.2	2.86	-3.3	64.035	0.3123	6	1.83314	108.64	0.89745	0	0.8975	70.352	0.3168	0.0033	6	0.5794	1.1001	1.8031	65.64422
17	38.1	0.13	3.42	-3.42	38.1419	0.3408	6	2.05582	104.2242	0.94956	0	0.9496	39.168	0.3495	0.0066	6	0.6725	1.0755	2.0407	37.80369
18	38.7	0.13	4.13	-3.54	38.7506	0.3355	6	2.0469	104.2628	1.00169	0	1.0017	37.685	0.3444	0.0079	6	0.6771	1.0378	2.0467	37.02435
19	37.7	0.11	4.66	-3.7	37.757	0.2913	6	2.03601	102.9772	1.05318	0	1.0532	34.851	0.2997	0.0091	6	0.681	1.0032	2.0504	34.79868
20	21.8	0.06	5.3	-3.83	21.8649	0.2744	5	2.25313	97.20967	1.10178	0	1.1018	18.845	0.289	0.0184	5	0.7762	0.9691	2.2942	19.01636
21	49.1	0.16	6.64	-4.01	49.1813	0.3253	6	1.9458	106.3635	1.15497	0	1.155	41.582	0.3332	0.01	6	0.66	0.9438	1.9825	42.83952
22	40.5	0.35	7.93	-4.18	40.5971	0.8621	5	2.2119	111.6231	1.21078	0	1.2108	32.53	0.8886	0.0145	5	0.7716	0.9012	2.2686	33.54663
23	159.8	0.35	6.44	-4.33	159.879	0.2189	6	1.4071	114.9663	1.26826	0	1.2683	125.06	0.2207	0.0029	6	0.4605	0.92	1.4449	137.903
24	210.3	0.57	6.76	-4.46	210.383	0.2709	6	1.34115	119.2044	1.32786	0	1.3279	157.44	0.2727	0.0023	6	0.4397	0.905	1.3829	178.801
25	326.7	1.08	7.39	-4.6	326.79	0.3305	7	1.22771	124.9546	1.39034	0	1.3903	234.04	0.3319	0.0016	7	0.399	0.8968	1.2684	275.7857
26	286.1	1.4	8.07	-4.65	286.199	0.4892	6	1.37996	126.53	1.4536	0	1.4536	195.89	0.4917	0.002	6	0.4643	0.8629	1.4319	232.219
27	280.8	1.5	7.6	-4.35	280.893	0.534	6	1.41136	126.9892	1.5171	0	1.5171	184.15	0.5369	0.002	6	0.4824	0.8405	1.4715	221.909
28	294.1	1.2	8.33	-4.35	294.202	0.4079	7	1.31994	125.4693	1.57983	0	1.5798	185.22	0.4101	0.0021	6	0.4525	0.8341	1.3853	230.6737
29	301.5	1.31	8.22	-4.42	301.601	0.4344	7	1.32903	126.1716	1.64292	0	1.6429	182.58	0.4367	0.002	6	0.4615	0.8163	1.4009	231.3934
30	326.5	1.64	7.95	-4.47	326.597	0.5022	6	1.34512	128.0097	1.70692	0	1.7069	190.34	0.5048	0.0018	6	0.4723	0.7978	1.4214	244.9688
31	308.4	1.43	6.88	-4.48	308.484	0.4636	6	1.34008	126.868	1.77036	0	1.7704	173.25	0.4662	0.0016	6	0.4768	0.7824	1.4253	226.785
32	317.3	1.17	6.81	-4.49	317.383	0.3686	7	1.26676	125.4691	1.83309	0	1.8331	172.14	0.3708	0.0016	6	0.4538	0.7793	1.3568	232.4028
33	286.8	1.28	6.75	-4.51	286.883	0.4462	6	1.35316	125.8801	1.89603	0	1.896	150.31	0.4491	0.0017	6	0.4943	0.7495	1.4554	201.8727
34	283.2	1.53	6.84	-4.59	283.284	0.5401	6	1.41195	127.1547	1.95961	0	1.9596	143.56	0.5439	0.0018	6	0.5229	0.7245	1.5224	192.6353
35	272.6	1.55	7.03	-4.62	272.686	0.5684	6	1.43916	127.1568	2.02319	0	2.0232	133.78	0.5727	0.0019	6	0.5398	0.7048	1.5589	180.277
36	275.4	1.61	6.66	-4.66	275.482	0.5844	6	1.44412	127.4595	2.08692	0	2.0869	131	0.5889	0.0018	6	0.5473	0.6896	1.5705	178.1681
37	136.8	0.8	6.12	-4.68	136.875	0.5845	6	1.67882	120.6362	2.14724	0	2.1472	62.745	0.5938	0.0033	6	0.6589	0.6273	1.856	79.87608
38	51	0.38	3	-4.67	51.0367	0.7446	5	2.09389	112.783	2.20363	0	2.2036	22.16	0.7782	0.0044	5	0.8518	0.5353	2.3557	24.70529
39	60	0.87	-9.55	-4.79	59.8831	1.4528	5	2.2044	119.2337	2.26324	0	2.2632	25.459	1.5099	-0.012	5	0.8973	0.5055	2.4656	27.526
40	70.8	0.33	-12.34	-4.98	70.649	0.4671	6	1.87042	112.5439	2.31952	0	2.3195	29.458	0.483	-0.013	5	0.7692	0.5468	2.1241	35.30871
41	75.7	0.08	-12.56	-5.11	75.5463	0.1059	6	1.63476	102.3387	2.37069	0	2.3707	30.867	0.1093	-0.012	6	0.6815	0.5771	1.8868	39.90895
42	118.4	0.04	-12.33	-5.33	118.249	0.0338	0	1.44367	98.35969	2.41987	0	2.4199	47.866	0.0345	-0.008	0	0.599	0.6092	1.6636	66.69249
43	181.2	0.23	-11.3	-5.56	181.062	0.127	7	1.27842	112.1977	2.47596	0	2.476	72.128	0.1288	-0.005	6	0.5303	0.6371	1.4758	107.5243
44	244.9	0.61	-10.72	-5.64	244.769	0.2492	7	1.26606	120.0699	2.536	0	2.536	95.518	0.2518	-0.003	6	0.5227	0.6332	1.4486	144.9688
45	243.9	0.62	-10.09	-5.68	243.777	0.2543	7	1.27191	120.1789	2.59609	0	2.5961	92.901	0.2571	-0.003	6	0.5306	0.6211	1.4618	141.5758
46	255.9	0.19	-8.51	-5.72	255.796	0.0743	0	1.09043	111.6425	2.65191	0	2.6519	95.457	0.0751	-0.002	0	0.463	0.6535	1.2795	156.3404
47	335.2	0.46	-8.91	-5.77	335.091	0.1373	7	1.03322	118.7708	2.7113	0	2.7113	122.59	0.1384	-0.002	7	0.4383	0.662	1.2073	207.9603
48	366.7	0.47	-8.43	-5.92	366.597	0.1282	7	0.98644	119.1473	2.77087	0	2.7709	131.3	0.1292	-0.002	7	0.4227	0.6657	1.1587	228.9041
49	466.8	1.07	-7.49	-6.11	466.708	0.2293	7	1.00907	125.7558	2.83375	0	2.8338	163.7	0.2307	-0.001	7	0.429	0.6554	1.1676	287.3062
50	495.1	0	-8.66	-6.23	494.994	0	0	0	769.6	3.21855	0	3.2186	152.79	0	-0.001	0	1	0.3288	0	0

	CPT-3	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	263.5	1.37	0.64	-1.35	263.508	0.5199	6	1.42438	126.17	0.06309	0	0.0631	4176	0.52	0.0002	7	0.3018	2.342	1.1714	583.0975
2	208.2	1.52	0.8	-1.11	208.21	0.73	6	1.59896	126.3558	0.12626	0	0.1263	1648	0.7305	0.0003	6	0.3768	2.2279	1.364	438.1272
3	72.3	0.34	0.72	-1.13	72.3088	0.4702	6	1.86293	112.8189	0.18267	0	0.1827	394.84	0.4714	0.0007	6	0.4577	2.2344	1.5669	152.3064
4	73.5	0.88	0.32	-1.1	73.5039	1.1972	5	2.08239	119.8172	0.24258	0	0.2426	302.01	1.2012	0.0003	6	0.5554	2.266	1.8202	156.8919
5	132.5	1.15	0.16	-0.87	132.502	0.8679	6	1.79591	123.2124	0.30419	0	0.3042	434.59	0.8699	9E-05	6	0.4774	1.8133	1.6085	226.5553
6	484.4	2.21	-0.08	-0.83	484.399	0.4562	7	1.19498	131.1538	0.36976	0	0.3698	1309	0.4566	-1E-05	7	0.2897	1.356	1.1102	620.3001

	CPT-3B	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	208.9	0.86	0.08	-0.75	208.901	0.4117	6	1.44088	122.1966	0.0611	0	0.0611	3418.1	0.4118	3E-05	7	0.2942	2.3138	1.1634	456.6729
2	185.8	1.27	0.08	-0.93	185.801	0.6835	6	1.61688	124.7632	0.12348	0	0.1235	1503.7	0.684	3E-05	6	0.3789	2.2569	1.3689	396.0443
3	60.6	0.32	0.08	-1	60.601	0.528	6	1.95442	111.9445	0.17945	0	0.1795	336.7	0.5296	0.0001	6	0.4849	2.364	1.6389	134.9937
4	35.3	0.15	0	-1.11	35.3	0.4249	5	2.12356	105.0824	0.23199	0	0.232	151.16	0.4277	0	6	0.5487	2.2995	1.8017	76.2106
5	111.8	0.7	0	-1.03	111.8	0.6261	6	1.7677	119.1656	0.29158	0	0.2916	382.43	0.6278	0	6	0.4606	1.8107	1.5654	190.817
6	783.1	0	0.08	-3.78	783.101	0	0	0	769.6	0.67638	0	0.6764	1156.8	0	1E-05	0	1	1.5644	0	0

	CPT-3C	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	228.9	0.95	0.12	-0.64	228.901	0.415	6	1.41079	123.1478	0.06157	0	0.0616	3716.5	0.4151	4E-05	7	0.2875	2.2651	1.1449	489.8774
2	254.2	1.43	0.12	-0.63	254.201	0.5626	6	1.45873	126.3959	0.12477	0	0.1248	2036.3	0.5628	3E-05	7	0.332	2.0332	1.2459	488.2233
3	140.9	0.84	0.12	-0.69	140.901	0.5962	6	1.67375	121.0639	0.1853	0	0.1853	759.38	0.597	6E-05	6	0.4079	2.0353	1.4382	270.6725
4	99.2	0.69	0.12	-0.77	99.2015	0.6956	6	1.83646	118.7687	0.24469	0	0.2447	404.42	0.6973	9E-05	6	0.4727	1.9979	1.6023	186.8468
5	99.3	1.49	0.12	-0.54	99.3015	1.5005	5	2.04748	124.4041	0.30689	0	0.3069	322.57	1.5051	9E-05	6	0.5642	2.0103	1.8392	188.0796
6	147.3	1.12	0.12	0.23	147.301	0.7604	6	1.72376	123.2772	0.36853	0	0.3685	398.7	0.7623	6E-05	6	0.4637	1.6307	1.5678	226.4479
7	153.1	0.58	0.12	-0.07	153.101	0.3788	6	1.53377	118.5564	0.42781	0	0.4278	356.88	0.3799	6E-05	6	0.4034	1.4409	1.4025	207.9043
8	12.2	0.25	0.12	-0.23	12.2015	2.0489	4	2.85388	106.2291	0.48092	0	0.4809	24.371	2.133	0.0007	4	0.8748	1.9933	2.6305	22.0794
9	4.8	0.23	0.2	1.24	4.80245	4.7892	3	3.39475	103.3448	0.53259	0.0156	0.517	8.259	5.3866	-3E-04	3	1	2.0467	3.2134	8.259
10	11.3	0.06	0.28	0.55	11.3034	0.5308	4	2.61782	95.60048	0.58039	0.0468	0.5336	20.096	0.5595	-0.002	5	0.7999	1.7291	2.4277	17.52322
11	6.8	0.12	0.44	0.89	6.80539	1.7633	3	3.03886	99.4347	0.63011	0.078	0.5521	11.185	1.9432	-0.008	4	0.9664	1.875	2.8609	10.94303
12	27.4	0.55	0.73	1.04	27.4089	2.0066	4	2.55884	113.9722	0.6871	0.1092	0.5779	46.24	2.0582	-0.002	5	0.7953	1.6177	2.4097	40.85491
13	39	0.29	1.63	1.13	39.02	0.7432	5	2.19382	110.1505	0.74217	0.1404	0.6018	63.608	0.7576	-6E-04	6	0.6652	1.4556	2.0655	52.65709
14	91.3	1.02	1.98	0.01	91.3242	1.1169	6	1.99019	121.4269	0.80289	0.1716	0.6313	143.39	1.1268	-3E-04	6	0.6012	1.3641	1.8936	116.7001
15	88.2	1.21	2.5	-0.2	88.2306	1.3714	5	2.05937	122.5927	0.86418	0.2028	0.6614	132.1	1.385	-3E-04	6	0.6319	1.3457	1.9703	111.1124
16	20.9	1	3.86	-0.43	20.9473	4.7739	3	2.88607	117.6908	0.92303	0.234	0.689	29.062	4.994	0.0022	3	0.9434	1.4988	2.7838	28.36388
17	71.9	0.32	4.09	-0.45	71.9501	0.4448	6	1.85338	112.3632	0.97921	0.2652	0.714	99.398	0.4509	0.0004	6	0.5609	1.2468	1.7774	83.62915
18	93.3	0.87	3.97	-0.43	93.3486	0.932	6	1.93354	120.3165	1.03937	0.2964	0.743	124.24	0.9425	-1E-04	6	0.5971	1.2351	1.8689	107.7486
19	95.9	1.14	4.17	-0.49	95.951	1.1881	6	1.99104	122.3613	1.10055	0.3276	0.773	122.71	1.2019	-3E-04	6	0.6235	1.2163	1.9343	109.0283
20	37	0.22	5.32	-0.11	37.0651	0.5936	5	2.16674	108.0038	1.15455	0.3588	0.7958	45.128	0.6126	0.0007	5	0.6914	1.2178	2.1097	41.32873
21	63.6	0.13	5.83	-0.27	63.6714	0.2042	6	1.77172	105.474	1.20729	0.39	0.8173	76.429	0.2081	0.0005	6	0.5454	1.1513	1.7239	67.96266
22	74.9	0.13	5.19	-0.43	74.9635	0.1734	6	1.68349	105.8722	1.26022	0.4212	0.839	87.844	0.1764	-6E-04	6	0.5155	1.127	1.6427	78.50484
23	86.5	0.18	5.75	-0.55	86.5704	0.2079	6	1.64745	108.6045	1.31453	0.4524	0.8621	98.89	0.2111	-5E-04	6	0.5055	1.1091	1.6135	89.36354
24	95.6	0.2	5.25	-0.59	95.6643	0.2091	6	1.60731	109.619	1.36934	0.4836	0.8857	106.46	0.2121	-0.001	6	0.4936	1.0917	1.5795	97.29251
25	118.5	0.18	-0.53	-0.69	118.494	0.1519	6	1.4765	109.3701	1.42402	0.5148	0.9092	128.76	0.1538	-0.005	6	0.4472	1.0702	1.4547	118.4039
26	155.9	0.26	-0.16	-0.8	155.898	0.1668	6	1.37473	112.7298	1.48039	0.546	0.9344	165.26	0.1684	-0.004	6	0.4119	1.0526	1.359	153.6073
27	213.8	0.55	2.61	-0.9	213.832	0.2572	6	1.32409	118.9827	1.53988	0.5772	0.9627	220.52	0.2591	-0.002	7	0.3963	1.0382	1.3141	208.2909
28	219.8	0.76	7.35	-0.94	219.89	0.3456	6	1.37962	121.4171	1.60059	0.6084	0.9922	220.01	0.3482	-4E-04	6	0.4205	1.0274	1.3742	211.9583
29	200.1	0.72	8.89	-0.98	200.209	0.3596	6	1.42313	120.7928	1.66098	0.6396	1.0214	194.39	0.3626	0	6	0.4402	1.0157	1.4225	190.5853
30	185.3	0.7	10.08	-1	185.423	0.3775	6	1.46256	120.3996	1.72118	0.6708	1.0504	174.89	0.3811	0.0003	6	0.4585	1.0034	1.4669	174.1983
31	170.4	0.73	10.34	-1.04	170.527	0.4281	6	1.52303	120.5024	1.78143	0.702	1.0794	156.33	0.4326	0.0003	6	0.485	0.9904	1.5328	157.9422
32	172	0.65	10.12	-1.1	172.124	0.3776	6	1.48984	119.6758	1.84127	0.7332	1.1081	153.67	0.3817	-3E-05	6	0.4755	0.9783	1.5043	157.4388
33	129	0.44	10.04	-1.15	129.123	0.3408	6	1.57491	116.1196	1.89933	0.7644	1.1349	112.1	0.3459	-3E-04	6	0.5123	0.9647	1.5973	115.9964
34	125.6	0.28	8.78	-1.23	125.707	0.2227	6	1.50628	112.7471	1.9557	0.7956	1.1601	106.67	0.2263	-0.001	6	0.4891	0.956	1.5333	111.8082
35	108.9	0.87	-3.08	-1.27	108.862	0.7992	6	1.83986	120.6915	2.01605	0.8268	1.1893	89.843	0.8143	-0.01	6	0.6212	0.93	1.8763	93.90959
36	135.9	0.19	-9.32	-1.37	135.786	0.1399	6	1.40998	110.0979	2.0711	0.858	1.2131	110.23	0.1421	-0.011	6	0.4577	0.9394	1.4444	118.7083
37	192.2	0.19	-8.53	-1.51	192.096	0.0989	0	1.22999	110.944	2.12657	0.8892	1.2374	153.53	0.1	-0.008	7	0.3892	0.9409	1.2616	168.9279
38	155.5	0.44	-8.29	-1.62	155.399	0.2831	6	1.46616	116.5714	2.18486	0.9204	1.2645	121.17	0.2872	-0.01	6	0.4842	0.9174	1.5078	132.8313
39	191.1	0.54	-7.93	-1.78	191.003	0.2827	6	1.38682	118.5731	2.24414	0.9516	1.2925	146.04	0.2861	-0.008	6	0.4554	0.9129	1.4285	162.8544
40	291	0.81	-7.1	-2	290.913	0.2784	7	1.22651	122.566	2.30543	0.9828	1.3226	218.21	0.2807	-0.005	7	0.3939	0.9159	1.2635	249.8068
41	288.8	0.89	-6.64	-2.09	288.719	0.3083	7	1.25373	123.2367	2.36704	1.014	1.353	211.64	0.3108	-0.005	7	0.4073	0.9047	1.2948	244.8389
42	403.3	1.26	-5.94	-2.17	403.227	0.3125	7	1.14073	126.5952	2.43034	1.0452	1.3851	289.35	0.3144	-0.004	7	0.3643	0.9066	1.1779	343.3905
43	332.3	1.02	-4.8	-2.25	332.241	0.307	7	1.20289	124.5767	2.49263	1.0764	1.4162	232.84	0.3093	-0.004	7	0.3924	0.8919	1.248	277.9515
44	271.6	0.99	-4.13	-2.27	271.549	0.3646	7	1.31766	123.8663	2.55456	1.1076	1.447	185.9	0.368	-0.005	6	0.4412	0.871	1.3721	221.4338
45	247.6	0.25	-3.66	-2.31	247.555	0.101	7	1.12347	113.5707	2.61135	1.1388	1.4726	166.34	0.1021	-0.006	7	0.3696	0.885	1.1809	204.8727
46	295.6	0.28	-2.6	-2.36	295.568	0.0947	0	1.04256	114.8323	2.66876	1.17	1.4988	195.43	0.0956	-0.005	0	0.3391	0.8886	1.0975	245.9888
47	461.1	1.24	-2.77	-2.46	461.066	0.2689	7	1.05462	126.805	2.73217	1.2012	1.531	299.38	0.2706	-0.003	7	0.3423	0.8812	1.102	381.7129
48	497.2	1.19	-3.29	-2.51	497.16	0.2394	7	0.99786	126.6877	2.79551	1.2324	1.5631	316.27	0.2407	-0.003	7	0.3223	0.8818	1.0455	412.0057
49	533.5	1.53	-4.09	-2.53	533.45	0.2868	7	1.02377	128.6984	2.85986	1.2636	1.5963	332.4	0.2884	-0.003	7	0.3342	0.8716	1.0725	437.0775
50	526.8	0	-4.91	-2.86	526.74	0	0	0	769.6	3.24466	1.2948	1.9499	268.48	0	-0.003	0	1	0.5427	0	0

	CPT-4	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	188.1	0.85	0.16	-1.28	188.102	0.4519	6	1.50147	121.8552	0.06093	0	0.0609	3086.3	0.452	6E-05	7	0.3116	2.4335	1.209	432.4652
2	187	0.99	0.24	-1.38	187.003	0.5294	6	1.54457	122.9565	0.12241	0	0.1224	1526.7	0.5298	9E-05	7	0.353	2.1411	1.299	378.1586
3	136.3	0.58	0.16	-1.5	136.302	0.4255	6	1.60323	118.273	0.18154	0	0.1815	749.8	0.4261	8E-05	6	0.3807	1.9564	1.3656	251.6817
4	107	0.59	0.08	-1.58	107.001	0.5514	6	1.75244	117.8077	0.24045	0	0.2405	444.01	0.5526	5E-05	6	0.4427	1.927	1.5237	194.4292
5	101.4	0.56	-0.03	-1.69	101.4	0.5523	6	1.77239	117.2947	0.29909	0	0.2991	338.02	0.5539	-2E-05	6	0.4618	1.7922	1.5674	171.241
6	155.5	0.77	-0.16	-1.84	155.498	0.4952	6	1.59189	120.6677	0.35943	0	0.3594	431.63	0.4963	-7E-05	6	0.4152	1.5657	1.4383	229.5568
7	188.5	0.92	-0.35	-1.99	188.496	0.4881	6	1.52048	122.4394	0.42065	0	0.4207	447.11	0.4892	-1E-04	6	0.4009	1.4475	1.3964	257.2825
8	170.5	0.96	-1.67	-2.03	170.48	0.5631	6	1.59276	122.5057	0.4819	0	0.4819	352.77	0.5647	-7E-04	6	0.4358	1.4088	1.4793	226.3456
9	120.5	0.64	0.59	-2.12	120.507	0.5311	6	1.7004	118.6928	0.54125	0.0156	0.5257	228.23	0.5335	0.0002	6	0.4781	1.3972	1.5845	158.4102
10	63.2	0.36	0.08	-2.21	63.201	0.5696	6	1.95467	112.9088	0.5977	0.0468	0.5509	113.64	0.5751	-7E-04	6	0.5699	1.4506	1.8222	85.82563
11	42	0.31	-0.08	-2.3	41.999	0.7381	5	2.16466	110.8179	0.65311	0.078	0.5751	71.892	0.7498	-0.002	6	0.6493	1.4857	2.0273	58.05429
12	51.8	0.33	-0.13	-2.41	51.7984	0.6371	6	2.05381	111.7869	0.709	0.1092	0.5998	85.177	0.6459	-0.002	6	0.6143	1.4173	1.9323	68.43009
13	34	0.05	1.09	-2.52	34.0133	0.147	6	2.00073	96.95334	0.75748	0.1404	0.6171	53.892	0.1504	-0.002	6	0.5937	1.3773	1.8761	43.28827
14	29.3	0.06	3.66	-2.63	29.3448	0.2045	5	2.0953	97.9273	0.80644	0.1716	0.6348	44.953	0.2102	0.0032	6	0.6322	1.3812	1.9749	37.25322
15	29.4	0.09	3.93	-2.76	29.4481	0.3056	5	2.14472	100.9027	0.85689	0.2028	0.6541	43.711	0.3148	0.0028	6	0.6551	1.3704	2.0325	37.02999
16	40.2	0.13	3.97	-2.86	40.2486	0.323	6	2.02558	104.3554	0.90907	0.234	0.6751	58.275	0.3305	0.0013	6	0.6159	1.3189	1.9269	49.03565
17	53.7	0.19	3.42	-3	53.7419	0.3535	6	1.92431	107.8372	0.96299	0.2652	0.6978	75.637	0.36	-4E-04	6	0.5834	1.2749	1.8385	63.59186
18	44	0.25	3.58	-3.1	44.0438	0.5676	5	2.09133	109.3599	1.01767	0.2964	0.7213	59.653	0.581	-9E-04	6	0.6499	1.2828	2.0101	52.16266
19	41.8	0.18	3.8	-3.19	41.8465	0.4301	6	2.05823	106.8314	1.07109	0.3276	0.7435	54.844	0.4414	-0.001	6	0.6411	1.2539	1.9843	48.31921
20	44.9	0.17	4.15	-3.28	44.9508	0.3782	6	2.00712	106.5877	1.12438	0.3588	0.7656	57.246	0.3879	-0.001	6	0.6258	1.2245	1.9413	50.71676
21	63.7	0.26	4.69	-3.38	63.7574	0.4078	6	1.88301	110.5491	1.17966	0.39	0.7897	79.247	0.4155	-8E-04	6	0.5836	1.1862	1.8277	70.15579
22	87.8	0.38	5.01	-3.49	87.8613	0.4325	6	1.77129	114.1079	1.23671	0.4212	0.8155	106.22	0.4387	-7E-04	6	0.5461	1.1528	1.7259	94.37851
23	76.2	0.31	6.12	-3.56	76.2749	0.4064	6	1.8128	112.2733	1.29285	0.4524	0.8405	89.217	0.4134	-2E-04	6	0.5651	1.139	1.7728	80.71439
24	74.3	0.35	6.43	-3.64	74.3787	0.4706	6	1.85234	113.0999	1.3494	0.4836	0.8658	84.349	0.4793	-3E-04	6	0.5839	1.1243	1.8188	77.59428
25	106.1	0.41	6.84	-3.74	106.184	0.3861	6	1.67548	115.1259	1.40696	0.5148	0.8922	117.44	0.3913	-2E-04	6	0.5207	1.0929	1.6497	108.2208
26	147.7	0.86	7.87	-3.85	147.796	0.5819	6	1.65081	121.3526	1.46763	0.546	0.9216	158.77	0.5877	0.0001	6	0.5156	1.0738	1.6322	148.4974
27	211.8	1.72	8.03	-4.02	211.898	0.8117	6	1.62503	127.3031	1.53129	0.5772	0.9541	220.49	0.8176	0	6	0.5097	1.0542	1.6131	209.5833
28	221.2	1.91	8.19	-4.04	221.3	0.8631	6	1.63031	128.1756	1.59537	0.6084	0.987	222.6	0.8694	-9E-05	6	0.5153	1.0365	1.6238	215.2214
29	219.7	1.22	8.42	-4.08	219.803	0.555	6	1.50272	124.8792	1.65781	0.6396	1.0182	214.24	0.5593	-2E-04	6	0.4701	1.0182	1.5013	209.9244
30	226	1.5	8.89	-4.15	226.109	0.6634	6	1.54447	126.46	1.72104	0.6708	1.0502	213.65	0.6685	-1E-04	6	0.4894	1.0037	1.548	212.8408
31	268.5	1.56	8.9	-4.24	268.609	0.5808	6	1.4503	127.1671	1.78463	0.702	1.0826	246.46	0.5847	-2E-04	6	0.4566	0.9896	1.4577	249.5474
32	285.7	1.36	9.06	-4.27	285.811	0.4758	6	1.37252	126.3146	1.84778	0.7332	1.1146	254.77	0.4789	-3E-04	6	0.4299	0.9779	1.3839	262.4355
33	314.1	1.45	9.01	-4.35	314.21	0.4615	7	1.3328	127.0145	1.91129	0.7644	1.1469	272.3	0.4643	-4E-04	6	0.4177	0.9669	1.3475	285.3815
34	251.6	1.27	8.89	-4.41	251.709	0.5046	6	1.43101	125.5037	1.97404	0.7956	1.1784	211.92	0.5085	-6E-04	6	0.4591	0.9518	1.4523	224.6323
35	291.9	1.76	8.98	-4.45	292.01	0.6027	6	1.43504	128.2534	2.03817	0.8268	1.2114	239.37	0.607	-6E-04	6	0.4633	0.9393	1.459	257.4014
36	373	1.72	8.74	-4.51	373.107	0.461	7	1.27761	128.683	2.10251	0.858	1.2445	298.11	0.4636	-6E-04	7	0.4048	0.9364	1.3018	328.3391
37	380.8	2.27	7.79	-4.57	380.895	0.596	6	1.35106	130.7635	2.16789	0.8892	1.2787	296.18	0.5994	-9E-04	6	0.4359	0.9208	1.3791	329.5748
38	236.7	1.48	7.58	-4.59	236.793	0.625	6	1.51222	126.4744	2.23113	0.9204	1.3107	178.95	0.631	-0.002	6	0.5037	0.8978	1.553	199.0196
39	58.8	1.17	8.58	-4.69	58.905	1.9863	5	2.29737	121.3613	2.29181	0.9516	1.3402	42.242	2.0667	-0.006	5	0.8224	0.8234	2.3857	44.05256
40	101.6	1.66	-6.12	-4.77	101.525	1.6351	5	2.06616	125.2487	2.35444	0.9828	1.3716	72.301	1.6739	-0.014	5	0.7307	0.8273	2.1406	77.53561
41	186.9	1.56	-10.2	-4.87	186.775	0.8352	6	1.67331	126.2809	2.41758	1.014	1.4036	131.35	0.8462	-0.009	6	0.5769	0.8496	1.7337	148.0278
42	148.2	1.33	-11.79	-4.91	148.056	0.8983	6	1.76923	124.5471	2.47985	1.0452	1.4347	101.47	0.9136	-0.013	6	0.6195	0.8281	1.8417	113.9338
43	189.9	2.11	-11.52	-5.15	189.759	1.1119	6	1.75568	128.5293	2.54411	1.0764	1.4677	127.56	1.1271	-0.01	6	0.6149	0.8177	1.8256	144.6843
44	240.9	1.41	-11.38	-5.26	240.761	0.5856	6	1.48797	126.1604	2.60719	1.1076	1.4996	158.81	0.5921	-0.008	6	0.5128	0.8363	1.5536	188.2192
45	285.5	3.06	-11.29	-5.39	285.362	1.0723	6	1.62577	132.2443	2.67332	1.1388	1.5345	184.22	1.0825	-0.007	6	0.567	0.81	1.6915	216.3909
46	494.2	3.09	-10.89	-5.56	494.067	0.6254	7	1.29375	133.6545	2.74014	1.17	1.5701	312.92	0.6289	-0.004	6	0.4366	0.8417	1.3448	390.8442
47	473.9	6.37	-10.77	-5.62	473.768	1.3445	6	1.57777	137.28	2.80878	1.2012	1.6076	292.96	1.3526	-0.004	6	0.5491	0.7948	1.6354	353.7692
48	466.9	7.8	-11.17	-5.7	466.763	1.6711	6	1.6624	137.28	2.87742	1.2324	1.645	281.99	1.6815	-0.004	6	0.5848	0.7726	1.7245	338.6948
49	485.4	7.23	-12.16	-5.81	485.251	1.49	6	1.61081	137.28	2.94606	1.2636	1.6825	286.67	1.4991	-0.004	6	0.5676	0.7686	1.6748	350.3176
50	501.1	0	-12.77	-6.01	500.944	0	0	0	769.6	3.33086	1.2948	2.0361	244.4	0	-0.004	0	1	0.5197	0	0

	CPT-5	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	237.6	1.14	0.02	-1.35	237.6	0.4798	6	1.43644	124.5728	0.06229	0	0.0623	3813.6	0.4799	1E-05	7	0.2988	2.3314	1.1732	523.3766
2	215.6	1.38	0	-1.36	215.6	0.6401	6	1.54945	125.7338	0.12515	0	0.1252	1721.7	0.6405	0	7	0.3597	2.1551	1.3186	438.8654
3	153.8	0.96	-0.42	-1.46	153.795	0.6242	6	1.6555	122.2545	0.18628	0	0.1863	824.61	0.625	-2E-04	6	0.4039	2.0168	1.4279	292.7858
4	143.3	0.85	-0.8	-1.64	143.29	0.5932	6	1.66659	121.1915	0.24688	0	0.2469	579.41	0.5942	-4E-04	6	0.4198	1.8421	1.4632	249.0229
5	166.1	0.98	-0.87	-1.7	166.089	0.59	6	1.61413	122.593	0.30817	0	0.3082	537.95	0.5911	-4E-04	6	0.4158	1.6701	1.4459	261.6638
6	169.7	0.91	-1.03	-1.73	169.687	0.5363	6	1.58154	122.103	0.36922	0	0.3692	458.58	0.5375	-4E-04	6	0.4147	1.5474	1.4358	247.611
7	165.4	1.08	-1.27	-1.85	165.384	0.653	6	1.64297	123.2935	0.43087	0	0.4309	382.84	0.6547	-6E-04	6	0.4462	1.4931	1.5133	232.772
8	143.2	0.99	-1.34	-2.09	143.184	0.6914	6	1.70734	122.3053	0.49202	0	0.492	290.01	0.6938	-7E-04	6	0.4778	1.4417	1.5879	194.4267
9	121.1	0.79	-1.35	-2.13	121.083	0.6524	6	1.74999	120.2452	0.55215	0	0.5522	218.3	0.6554	-8E-04	6	0.5009	1.3852	1.6408	157.7863
10	135	0.87	-1.35	-2.17	134.983	0.6445	6	1.70895	121.216	0.61275	0.0312	0.5816	231.05	0.6475	-1E-03	6	0.4913	1.3418	1.6116	170.4027
11	114.3	0.77	-1.43	-2.19	114.283	0.6738	6	1.7785	119.9166	0.67271	0.0624	0.6103	186.15	0.6778	-0.001	6	0.52	1.3313	1.6833	142.9404
12	119.4	0.67	-1.43	-2.25	119.383	0.5612	6	1.7172	119.0052	0.73222	0.0936	0.6386	185.79	0.5647	-0.002	6	0.5016	1.2882	1.6313	144.4525
13	104.1	0.48	-1.59	-2.32	104.081	0.4612	6	1.7214	116.2305	0.79033	0.1248	0.6655	155.2	0.4647	-0.002	6	0.5059	1.2644	1.6394	123.4247
14	91.1	0.49	-1.51	-2.37	91.0815	0.538	6	1.80568	116.0559	0.84836	0.156	0.6924	130.33	0.543	-0.003	6	0.5408	1.2578	1.7274	107.262
15	77.9	0.49	-1.35	-2.43	77.8835	0.6292	6	1.8994	115.6741	0.9062	0.1872	0.719	107.06	0.6366	-0.004	6	0.5793	1.2509	1.8252	90.99994
16	49.1	0.26	-0.87	-2.48	49.0894	0.5297	6	2.03565	109.9114	0.96115	0.2184	0.7428	64.797	0.5402	-0.006	6	0.6325	1.2508	1.9617	56.8946
17	22.6	0.19	-0.23	-2.55	22.5972	0.8408	5	2.42734	105.7242	1.01401	0.2496	0.7644	28.235	0.8803	-0.012	5	0.7843	1.2905	2.3574	26.32253
18	6.3	0.15	2.23	-2.63	6.3273	2.3707	3	3.1301	100.8898	1.06446	0.2808	0.7837	6.7157	2.8502	-0.023	3	1	1.3502	3.1289	6.71573
19	8.2	0.08	4.13	-2.73	8.25055	0.9696	4	2.84644	96.93758	1.11293	0.312	0.8009	8.9117	1.1208	-0.002	4	0.9645	1.3081	2.8256	8.82395
20	7.1	0.09	7.23	-2.84	7.1885	1.252	4	2.94865	97.46331	1.16166	0.3432	0.8185	7.3636	1.4933	0.0294	3	1	1.2928	2.9528	7.36364
21	10.2	0.5	8.96	-2.98	10.3097	4.8498	3	3.12867	110.89	1.2171	0.3744	0.8427	10.79	5.499	0.0298	3	1	1.2556	3.1276	10.78976
22	112	0.61	3.34	-3.08	112.041	0.5444	6	1.73272	118.1639	1.27619	0.4056	0.8706	127.23	0.5507	-0.001	6	0.5395	1.111	1.7017	116.2988
23	122.1	0.53	3.42	-3.18	122.142	0.4339	6	1.64823	117.3458	1.33486	0.4368	0.8981	134.52	0.4387	-0.002	6	0.5111	1.0874	1.6238	124.1556
24	70	0.24	3.66	-3.24	70.0448	0.3426	6	1.81369	110.1928	1.38995	0.468	0.922	74.467	0.3496	-0.003	6	0.5772	1.0828	1.7939	70.25411
25	59.8	0.18	4.37	-3.32	59.8535	0.3007	6	1.85393	107.7043	1.44381	0.4992	0.9446	61.835	0.3082	-0.003	6	0.596	1.07	1.8406	59.06453
26	69.8	0.33	5.46	-3.42	69.8668	0.4723	6	1.87697	112.5167	1.50007	0.5304	0.9697	70.506	0.4827	-0.002	6	0.6082	1.0545	1.8695	68.13495
27	35.4	0.27	5.88	-3.5	35.472	0.7612	5	2.23493	109.3951	1.55476	0.5616	0.9932	34.151	0.7961	-0.004	5	0.7517	1.0488	2.2435	33.61786
28	29.4	0.78	6.16	-3.58	29.4754	2.6463	4	2.60752	116.7059	1.61312	0.5928	1.0203	27.308	2.7995	-0.005	4	0.9006	1.0333	2.6309	27.20895
29	15.7	0.31	7.39	-3.64	15.7905	1.9632	4	2.74978	108.432	1.66733	0.624	1.0433	13.537	2.195	-0.007	4	0.9707	1.0137	2.812	13.53098
30	114	1.03	-6.03	-3.73	113.926	0.9041	6	1.8577	122.0376	1.72835	0.6552	1.0732	104.55	0.918	-0.01	6	0.6132	0.9914	1.87	105.1224
31	177.8	1.79	-10.28	-3.79	177.674	1.0075	6	1.7453	127.1653	1.79193	0.6864	1.1055	159.09	1.0177	-0.008	6	0.5726	0.9752	1.7593	162.1024
32	145.8	1.31	-10.18	-3.85	145.675	0.8993	6	1.77481	124.3967	1.85413	0.7176	1.1365	126.54	0.9109	-0.01	6	0.5882	0.9588	1.7964	130.3256
33	145.6	1.3	-9.93	-3.89	145.478	0.8936	6	1.77344	124.3374	1.9163	0.7488	1.1675	122.97	0.9055	-0.01	6	0.5913	0.9435	1.8006	128.0109
34	168.4	0.97	-10.98	-3.95	168.266	0.5765	6	1.60347	122.5497	1.97758	0.78	1.1976	138.85	0.5833	-0.009	6	0.529	0.9366	1.6333	147.1926
35	171.6	1.21	-9.74	-4.03	171.481	0.7056	6	1.65234	124.2135	2.03968	0.8112	1.2285	137.93	0.7141	-0.009	6	0.551	0.921	1.6871	147.4904
36	219.9	1.07	5.42	-4.17	219.966	0.4864	6	1.46636	123.9211	2.10164	0.8424	1.2592	173.01	0.4911	-0.002	6	0.4814	0.9196	1.501	189.3542
37	231.5	0.91	9.47	-4.25	231.616	0.3929	6	1.39262	122.8618	2.16307	0.8736	1.2895	177.94	0.3966	-8E-04	6	0.4559	0.9138	1.4302	198.1585
38	195.6	0.6	9.7	-4.31	195.719	0.3066	6	1.39504	119.4035	2.22278	0.9048	1.318	146.81	0.3101	-0.001	6	0.4609	0.9037	1.4399	165.266
39	156.6	0.4	9.5	-4.37	156.716	0.2552	6	1.44276	115.8946	2.28072	0.936	1.3447	114.85	0.259	-0.002	6	0.4838	0.8905	1.4967	129.972
40	155.1	0.21	8.07	-4.46	155.199	0.1353	6	1.35015	111.1561	2.3363	0.9672	1.3691	111.65	0.1374	-0.003	6	0.4508	0.8903	1.407	128.6251
41	170.4	0.28	8.11	-4.56	170.499	0.1642	6	1.33577	113.4904	2.39305	0.9984	1.3947	120.54	0.1666	-0.002	6	0.4472	0.8838	1.3944	140.4172
42	197.3	0.29	8.36	-4.64	197.402	0.1469	7	1.26009	114.1045	2.4501	1.0296	1.4205	137.24	0.1488	-0.002	6	0.4194	0.8838	1.318	162.8392
43	215.9	0.33	8.52	-4.76	216.004	0.1528	7	1.22842	115.2696	2.50773	1.0608	1.4469	147.55	0.1546	-0.002	7	0.409	0.8799	1.2875	177.5315
44	309.8	0.54	8.05	-4.82	309.899	0.1743	7	1.10423	119.7534	2.56761	1.092	1.4756	208.27	0.1757	-0.002	7	0.3604	0.887	1.1565	257.6411
45	392.4	0.6	3.08	-4.88	392.438	0.1529	7	0.98737	121.1003	2.62816	1.1232	1.505	259.02	0.1539	-0.002	7	0.3157	0.8947	1.0355	329.6237
46	323	0.9	0.18	-5.07	323.002	0.2786	7	1.18876	123.5921	2.68996	1.1544	1.5356	208.6	0.281	-0.004	7	0.398	0.8622	1.2476	261.0199
47	386.5	3.04	-1.7	-5.69	386.479	0.7866	6	1.43815	132.9361	2.75642	1.1856	1.5708	244.28	0.7922	-0.003	6	0.4948	0.8224	1.4976	298.2455
48	209	2.01	-0.35	-5.04	208.996	0.9617	6	1.68123	128.4095	2.82063	1.2168	1.6038	128.55	0.9749	-0.006	6	0.599	0.7795	1.7669	151.8827
49	634	2.21	0.44	-4.87	634.005	0.3486	7	1.02984	131.8102	2.88653	1.248	1.6385	385.17	0.3502	-0.002	7	0.3378	0.8627	1.0768	514.5494
50	815.3	0	0.42	-4.88	815.305	0	0	0	769.6	3.27133	1.2792	1.9921	407.62	0	-0.002	0	1	0.5311	0	0

	CPT-6	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	257.1	1.48	0.17	-0.46	257.102	0.5757	6	1.46174	126.6751	0.06334	0	0.0633	4058.2	0.5758	5E-05	7	0.3142	2.422	1.2047	588.3677

	CPT-7	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	260.1	0.78	0.08	-1.12	260.101	0.2999	7	1.28484	122.0168	0.06101	0	0.061	4262.4	0.3	2E-05	7	0.247	2.0233	1.0412	497.2518
2	268.6	2.11	0.24	-0.89	268.603	0.7856	6	1.54231	129.3768	0.1257	0	0.1257	2135.9	0.7859	6E-05	6	0.3642	2.1727	1.3323	551.2782
3	185.1	1.06	-0.08	-0.98	185.099	0.5727	6	1.56912	123.4315	0.18741	0	0.1874	986.66	0.5733	-3E-05	6	0.3777	1.9229	1.3593	336.0328
4	101.2	0.62	-0.64	-1.04	101.192	0.6127	6	1.798	118.0345	0.24643	0	0.2464	409.63	0.6142	-5E-04	6	0.4594	1.9532	1.5672	186.3374
5	176	0.96	-0.79	-1.2	175.99	0.5455	6	1.57338	122.5833	0.30772	0	0.3077	570.91	0.5464	-3E-04	6	0.4019	1.6427	1.4095	272.7394
6	172.8	0.91	-1.03	-1.32	172.787	0.5267	6	1.57053	122.1472	0.36879	0	0.3688	467.52	0.5278	-4E-04	6	0.4108	1.5419	1.4258	251.2541
7	165.2	1	-1.11	-1.34	165.186	0.6054	6	1.62285	122.7275	0.43016	0	0.4302	383.01	0.607	-5E-04	6	0.4385	1.4839	1.4934	231.0598
8	122.5	0.77	-1.19	-1.39	122.485	0.6287	6	1.73644	120.0856	0.4902	0	0.4902	248.87	0.6312	-7E-04	6	0.4861	1.4536	1.6102	167.5903
9	122	0.69	-1.35	-1.48	121.983	0.5657	6	1.71142	119.273	0.54984	0	0.5498	220.85	0.5682	-8E-04	6	0.4861	1.3747	1.6024	157.7671
10	137.2	0.77	-1.43	-1.58	137.183	0.5613	6	1.66776	120.362	0.61002	0	0.61	223.88	0.5638	-8E-04	6	0.48	1.3026	1.5785	168.1303
11	129.8	0.7	-1.43	-1.64	129.783	0.5394	6	1.67753	119.5294	0.66978	0	0.6698	192.77	0.5422	-8E-04	6	0.4916	1.2521	1.6012	152.781
12	125.2	0.76	-1.43	-1.74	125.183	0.6071	6	1.71992	120.0431	0.72981	0	0.7298	170.53	0.6107	-8E-04	6	0.5156	1.2111	1.6566	142.4469
13	90.6	0.52	-1.43	-1.82	90.5825	0.5741	6	1.8227	116.4773	0.78804	0.0312	0.7568	118.64	0.5791	-0.001	6	0.5564	1.2049	1.7602	102.2546
14	86.8	0.48	-1.27	-1.88	86.7845	0.5531	6	1.82986	115.7872	0.84594	0.0624	0.7835	109.68	0.5585	-0.002	6	0.5628	1.1842	1.7737	96.17989
15	76.7	0.47	-1.35	-1.99	76.6835	0.6129	6	1.89905	115.3314	0.9036	0.0936	0.81	93.555	0.6202	-0.003	6	0.5924	1.1715	1.8483	83.90208
16	44.3	0.24	-1.27	-2.06	44.2845	0.542	5	2.07995	109.0745	0.95814	0.1248	0.8333	51.991	0.5539	-0.005	6	0.6635	1.1717	2.0319	47.97709
17	25.9	0.11	-3.18	-2.18	25.8611	0.4254	5	2.24825	102.0542	1.00917	0.156	0.8532	29.129	0.4426	-0.015	5	0.7318	1.1706	2.2077	27.49446
18	8.9	0.13	-1.03	-2.26	8.88739	1.4628	4	2.8982	100.6714	1.0595	0.1872	0.8723	8.9738	1.6607	-0.033	4	0.9961	1.2121	2.9003	8.96708
19	7	0.2	-0.32	-2.36	6.99608	2.8587	3	3.13534	103.2398	1.11112	0.2184	0.8927	6.5921	3.3985	-0.041	3	1	1.1853	3.1772	6.59214
20	85.9	0.51	-1.11	-2.46	85.8864	0.5938	6	1.85009	116.2054	1.16923	0.2496	0.9196	92.121	0.602	-0.004	6	0.5901	1.0863	1.8281	86.97431
21	116	0.65	-0.86	-2.59	115.989	0.5604	6	1.72719	118.7131	1.22858	0.2808	0.9478	121.08	0.5664	-0.003	6	0.5472	1.0621	1.712	115.1941
22	191.1	0.83	-0.28	-2.69	191.097	0.4343	6	1.4859	121.7195	1.28944	0.312	0.9774	194.19	0.4373	-0.002	6	0.459	1.0371	1.4771	186.0335
23	196.5	0.88	0.63	-2.79	196.508	0.4478	6	1.48377	122.2156	1.35055	0.3432	1.0074	193.73	0.4509	-0.002	6	0.4615	1.023	1.48	188.672
24	207.1	0.71	0.79	-2.9	207.11	0.3428	6	1.39949	120.7731	1.41094	0.3744	1.0365	198.45	0.3452	-0.002	6	0.4325	1.009	1.4003	196.142
25	142.1	0.6	1.11	-2.98	142.114	0.4222	6	1.58606	118.6229	1.47025	0.4056	1.0647	132.1	0.4266	-0.002	6	0.5074	0.9969	1.5934	132.5047
26	69.3	0.21	1.35	-3.09	69.3165	0.303	6	1.79628	109.1903	1.52484	0.4368	1.088	62.306	0.3098	-0.005	6	0.5932	0.9836	1.8156	63.01729
27	65.4	0.23	1.74	-3.23	65.4213	0.3516	6	1.84531	109.7148	1.5797	0.468	1.1117	57.427	0.3603	-0.005	6	0.6156	0.97	1.8714	58.52822
28	92.5	0.34	1.62	-3.29	92.5198	0.3675	6	1.71822	113.4201	1.63641	0.4992	1.1372	79.918	0.3741	-0.004	6	0.5684	0.9599	1.7445	82.44348
29	43.3	0.36	1.51	-3.39	43.3185	0.8311	5	2.17954	111.9875	1.6924	0.5304	1.162	35.823	0.8648	-0.01	5	0.7544	0.9318	2.2295	36.65626
30	21.8	1.11	3.82	-3.47	21.8468	5.0809	3	2.89031	118.557	1.75168	0.5616	1.1901	16.885	5.5237	-0.014	3	1	0.8891	2.9798	16.88544
31	68	0.43	2.06	-3.6	68.0252	0.6321	6	1.95034	114.3883	1.80888	0.5928	1.2161	54.451	0.6494	-0.007	6	0.67	0.911	2.001	57.00958
32	128.5	0.58	1.67	-3.68	128.52	0.4513	6	1.63843	118.1296	1.86794	0.624	1.2439	101.82	0.458	-0.004	6	0.5488	0.915	1.6799	109.526
33	119.2	0.4	2.06	-3.75	119.225	0.3355	6	1.60226	115.2278	1.92556	0.6552	1.2704	92.336	0.341	-0.004	6	0.5386	0.9062	1.6498	100.4628
34	80.5	0.39	2.22	-3.84	80.5272	0.4843	6	1.82835	114.0854	1.9826	0.6864	1.2962	60.596	0.4965	-0.007	6	0.632	0.8796	1.8917	65.29537
35	22	0.24	3.18	-3.92	22.0389	1.089	5	2.49166	107.3725	2.03628	0.7176	1.3187	15.169	1.1998	-0.024	4	0.9124	0.818	2.6247	15.46393
36	87.4	1.24	-9.36	-4.04	87.2854	1.4206	5	2.073	122.7457	2.09766	0.7488	1.3489	63.156	1.4556	-0.017	5	0.7317	0.8372	2.1463	67.40563
37	133.2	2.04	-9.21	-4.12	133.087	1.5328	6	1.96301	127.4172	2.16137	0.78	1.3814	94.78	1.5581	-0.011	5	0.6888	0.8322	2.0295	102.9777
38	174.6	1.61	-9.29	-4.18	174.486	0.9227	6	1.72447	126.3457	2.22454	0.8112	1.4133	121.88	0.9346	-0.009	6	0.5979	0.8411	1.7877	136.9276
39	234	0.84	-9.21	-4.24	233.887	0.3592	6	1.36669	122.3	2.28569	0.8424	1.4433	160.47	0.3627	-0.007	6	0.4609	0.8667	1.4242	189.7039
40	255.4	1.28	-6.67	-4.34	255.318	0.5013	6	1.42449	125.5958	2.34849	0.8736	1.4749	171.52	0.506	-0.005	6	0.4852	0.8512	1.4843	203.4953
41	221.7	0.73	-6.75	-4.4	221.617	0.3294	6	1.36538	121.1415	2.40906	0.9048	1.5043	145.73	0.333	-0.006	6	0.4669	0.8485	1.4325	175.7871
42	187.2	0.27	-6.27	-4.5	187.123	0.1443	7	1.27988	113.4512	2.46578	0.936	1.5298	120.71	0.1462	-0.008	6	0.4384	0.8508	1.3542	148.4761
43	233.3	1.07	-6.04	-4.62	233.226	0.4588	6	1.43067	124.0639	2.52781	0.9672	1.5606	147.83	0.4638	-0.006	6	0.4969	0.8244	1.5042	179.7427
44	302.5	1.38	-5.72	-4.62	302.43	0.4563	6	1.34205	126.5592	2.59109	0.9984	1.5927	188.26	0.4603	-0.005	6	0.4627	0.8276	1.4104	234.5201
45	271.9	1.35	-5	-4.12	271.839	0.4966	6	1.40113	126.1383	2.65416	1.0296	1.6246	165.7	0.5015	-0.005	6	0.4897	0.8106	1.4773	206.2209
46	232.4	1.11	-4.69	-4.16	232.343	0.4777	6	1.44286	124.3231	2.71633	1.0608	1.6555	138.7	0.4834	-0.006	6	0.5109	0.7956	1.5289	172.6551
47	246.8	0.64	-4.37	-4.16	246.747	0.2594	7	1.27157	120.4408	2.77655	1.092	1.6846	144.83	0.2623	-0.006	6	0.4469	0.8124	1.3572	187.3107
48	177.5	0.47	-4.13	-4.22	177.449	0.2649	6	1.40166	117.3777	2.83523	1.1232	1.712	101.99	0.2692	-0.008	6	0.5047	0.7844	1.5055	129.4449
49	255.9	0.74	-3.73	-4.26	255.854	0.2892	7	1.28244	121.5915	2.89603	1.1544	1.7416	145.24	0.2925	-0.006	6	0.4559	0.7968	1.3738	190.4804
50	389	0	-3.26	-4.31	388.96	0	0	0	769.6	3.28083	1.1856	2.0952	184.07	0	-0.004	0	1	0.505	0	0

	CPT-8	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	359.4	1.33	0.07	-0.51	359.401	0.3701	7	1.22597	126.7101	0.06336	0	0.0634	5671.8	0.3701	1E-05	7	0.2428	1.9807	1.0168	672.6532
2	279.5	1.64	0.29	-0.47	279.504	0.5868	6	1.44071	127.63	0.12717	0	0.1272	2196.9	0.587	7E-05	7	0.3289	2.0074	1.2384	530.0267
3	261	1.73	0.28	-0.61	261.003	0.6628	6	1.49878	127.8538	0.1911	0	0.1911	1364.8	0.6633	8E-05	7	0.3621	1.8584	1.319	458.0815
4	224	1.34	-0.19	-0.78	223.998	0.5982	6	1.5176	125.6118	0.2539	0	0.2539	881.22	0.5989	-6E-05	6	0.3771	1.7129	1.3508	362.2018
5	352	1.59	-0.35	-0.8	351.996	0.4517	7	1.28999	127.9659	0.31789	0	0.3179	1106.3	0.4521	-7E-05	7	0.3131	1.4573	1.1756	484.3424
6	308.6	2.17	-0.59	-0.86	308.593	0.7032	6	1.46593	129.9204	0.38285	0	0.3829	805.05	0.7041	-1E-04	6	0.3841	1.4776	1.3561	430.414
7	354.2	2.45	-1.22	-0.87	354.185	0.6917	6	1.42023	131.1445	0.44842	0	0.4484	788.85	0.6926	-3E-04	6	0.3781	1.3834	1.3314	462.4914
8	273.9	1.38	-1.62	-0.84	273.88	0.5039	6	1.4028	126.3174	0.51158	0	0.5116	534.36	0.5048	-4E-04	7	0.3755	1.3138	1.317	339.4244
9	215.9	1.02	-1.46	-0.78	215.882	0.4725	6	1.46501	123.5252	0.57334	0	0.5733	375.53	0.4737	-5E-04	6	0.4038	1.2807	1.3831	260.6038
10	222.3	0.82	-2.1	-0.77	222.274	0.3689	6	1.39152	121.9994	0.63434	0	0.6343	349.4	0.37	-7E-04	7	0.3841	1.2172	1.3237	254.9603
11	208.9	0.99	-2.02	-0.8	208.875	0.474	6	1.47721	123.2263	0.69595	0	0.696	299.13	0.4756	-7E-04	6	0.4234	1.1941	1.4188	234.9284
12	157	0.59	-1.93	-0.82	156.976	0.3759	6	1.52272	118.7425	0.75532	0	0.7553	206.83	0.3777	-9E-04	6	0.4458	1.1622	1.4703	171.5845
13	210	0.75	-1.7	-0.84	209.979	0.3572	6	1.4042	121.2077	0.81593	0	0.8159	256.35	0.3586	-6E-04	6	0.4098	1.1124	1.3682	219.8938
14	161.3	0.7	-1.15	-0.9	161.286	0.434	6	1.54645	120.0594	0.87596	0	0.876	183.13	0.4364	-5E-04	6	0.4697	1.0928	1.5178	165.6673
15	154.2	0.73	-0.91	-0.91	154.189	0.4735	6	1.58379	120.2567	0.93609	0	0.9361	163.72	0.4763	-4E-04	6	0.491	1.062	1.566	153.8182
16	153.6	0.63	-0.43	-0.97	153.595	0.4102	6	1.55084	119.1693	0.99567	0	0.9957	153.26	0.4129	-2E-04	6	0.4853	1.03	1.5439	148.5394
17	147.7	0.64	0.29	-1	147.704	0.4333	6	1.578	119.1892	1.05526	0	1.0553	138.97	0.4364	0.0001	6	0.5025	1.0014	1.5818	138.7823
18	112.4	0.57	0.52	-1.04	112.406	0.5071	6	1.71469	117.6756	1.1141	0	1.1141	99.894	0.5122	0.0003	6	0.5623	0.9714	1.7313	102.1745
19	94	0.33	0.76	-1.06	94.0093	0.351	6	1.70302	113.2406	1.17072	0	1.1707	79.3	0.3555	0.0006	6	0.5655	0.9444	1.7325	82.86262
20	101	0.42	1.72	-1.06	101.021	0.4158	6	1.71	115.1806	1.22831	0	1.2283	81.244	0.4209	0.0012	6	0.5749	0.9178	1.7498	86.56205
21	106.2	0.45	1.95	-1.08	106.224	0.4236	6	1.69509	115.8079	1.28622	0	1.2862	81.586	0.4288	0.0013	6	0.5755	0.8937	1.7447	88.63505
22	110.2	0.54	2.19	-1.12	110.227	0.4899	6	1.71386	117.2322	1.34483	0	1.3448	80.963	0.496	0.0015	6	0.5893	0.8682	1.7735	89.34323
23	164.1	0.92	2.75	-1.2	164.134	0.5605	6	1.60464	122.1018	1.40588	0	1.4059	115.75	0.5654	0.0012	6	0.5507	0.8551	1.6645	131.5137
24	42.6	0.87	3.18	-1.23	42.6389	2.0404	5	2.41189	118.4054	1.46509	0	1.4651	28.103	2.113	0.0056	4	0.8838	0.7501	2.531	29.18693
25	20.7	0.58	5.26	-1.26	20.7644	2.7932	4	2.74156	113.6837	1.52193	0	1.5219	12.643	3.0142	0.0197	3	1	0.6952	2.9147	12.64347
26	116	0.49	4.76	-1.34	116.058	0.4222	6	1.66114	116.647	1.58025	0	1.5803	72.443	0.428	0.003	6	0.595	0.7877	1.7592	85.22001
27	145.2	0.56	4.34	-1.42	145.253	0.3855	6	1.55725	118.1713	1.63934	0	1.6393	87.605	0.3899	0.0022	6	0.5584	0.7831	1.6557	106.29
28	74	0.27	4.6	-1.47	74.0563	0.3646	6	1.80326	111.1904	1.69493	0	1.6949	42.693	0.3731	0.0046	6	0.6697	0.7294	1.9409	49.88168
29	103.3	0.25	4.22	-1.58	103.352	0.2419	6	1.59856	111.4403	1.75065	0	1.7507	58.036	0.2461	0.003	6	0.5915	0.7424	1.7286	71.28962
30	177.9	0.51	7.44	-1.72	177.991	0.2865	6	1.41648	117.9827	1.80964	0	1.8096	97.357	0.2895	0.003	6	0.5185	0.7571	1.5297	126.0597
31	30	0.17	7.98	-1.79	30.0977	0.5648	5	2.23805	105.6094	1.86245	0	1.8625	15.16	0.6021	0.0204	5	0.8803	0.6079	2.4711	16.22167
32	41.3	0.12	8.25	-1.82	41.401	0.2899	6	1.99761	103.8385	1.91437	0	1.9144	20.626	0.3039	0.015	5	0.7844	0.6281	2.2145	23.43983
33	143.6	0.38	6.48	-1.84	143.679	0.2645	6	1.48344	115.3075	1.97202	0	1.972	71.859	0.2682	0.0033	6	0.5647	0.7036	1.6303	94.22956
34	242.8	0.43	6.01	-1.91	242.874	0.1771	7	1.20388	117.4923	2.03077	0	2.0308	118.6	0.1785	0.0018	6	0.4522	0.7447	1.3275	169.4961
35	259.4	1.06	6.28	-1.95	259.477	0.4085	6	1.36317	124.2553	2.0929	0	2.0929	122.98	0.4118	0.0018	6	0.5179	0.7024	1.4926	170.8549
36	326.3	1.08	5.34	-1.93	326.365	0.3309	7	1.2285	124.9514	2.15537	0	2.1554	150.42	0.3331	0.0012	6	0.4668	0.7174	1.3505	219.8092
37	393.7	1.9	5.94	-1.97	393.773	0.4825	7	1.27477	129.5427	2.22014	0	2.2201	176.36	0.4853	0.0011	6	0.486	0.6975	1.393	258.1234
38	479.6	2.48	6.48	-2.01	479.679	0.517	7	1.23828	131.9733	2.28613	0	2.2861	208.82	0.5195	0.001	6	0.473	0.6947	1.3505	313.4098
39	440.5	3.15	6.6	-2.09	440.581	0.715	6	1.3702	133.5157	2.35289	0	2.3529	186.25	0.7188	0.0011	6	0.5311	0.6541	1.4949	270.9216
40	485.3	3.5	6.25	-2.21	485.377	0.7211	6	1.34746	134.5228	2.42015	0	2.4202	199.56	0.7247	0.0009	6	0.5254	0.6475	1.4716	295.5263
41	337	2.47	5.85	-2.25	337.072	0.7328	6	1.45323	131.0832	2.48569	0	2.4857	134.6	0.7382	0.0013	6	0.581	0.6088	1.6092	192.517
42	376.1	1.66	6.09	-2.33	376.175	0.4413	7	1.26197	128.4431	2.54991	0	2.5499	146.52	0.4443	0.0012	6	0.51	0.6385	1.4144	225.4613
43	505.7	3.28	5.77	-2.41	505.771	0.6485	7	1.29995	134.1482	2.61699	0	2.617	192.26	0.6519	0.0008	6	0.5218	0.6235	1.4372	296.4716
44	403.7	3.32	5.85	-2.37	403.772	0.8223	6	1.44134	133.6876	2.68383	0	2.6838	149.45	0.8278	0.0011	6	0.588	0.5785	1.6029	219.2868
45	252.2	1.17	6.01	-2.35	252.274	0.4638	6	1.40693	124.9091	2.74628	0	2.7463	90.86	0.4689	0.0017	6	0.5949	0.567	1.6124	133.7091
46	349.4	1.49	6.17	-2.35	349.476	0.4264	7	1.27543	127.473	2.81002	0	2.81	123.37	0.4298	0.0013	6	0.5396	0.5904	1.459	193.4152
47	277.4	1.51	6.52	-2.37	277.48	0.5442	6	1.4208	127.008	2.87353	0	2.8735	95.564	0.5499	0.0017	6	0.6085	0.5445	1.6322	141.3085
48	148.3	0.52	7.02	-2.37	148.386	0.3504	6	1.52818	117.6811	2.93237	0	2.9324	49.603	0.3575	0.0035	6	0.6775	0.5013	1.8057	68.90759
49	174.3	0.33	6.64	-2.39	174.381	0.1892	6	1.348	114.7475	2.98974	0	2.9897	57.327	0.1925	0.0028	6	0.6083	0.5316	1.6157	86.10832
50	159.1	0	7.52	-2.41	159.192	0	0	0	769.6	3.37454	0	3.3745	46.174	0	0.0035	0	1	0.3136	0	0

	CPT-9	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	177.4	0.91	0.08	-0.87	177.401	0.513	6	1.55451	122.2114	0.06111	0	0.0611	2902.2	0.5131	3E-05	7	0.3285	2.5516	1.2526	427.6569
2	247.5	1.36	0.16	-1.11	247.502	0.5495	6	1.46069	125.9636	0.12409	0	0.1241	1993.6	0.5498	5E-05	7	0.3317	2.0358	1.245	475.9534
3	310.4	1.83	0.1	-1.38	310.401	0.5896	6	1.40938	128.6878	0.18843	0	0.1884	1646.3	0.5899	2E-05	7	0.3336	1.7781	1.2444	521.2929
4	281.8	2.69	-0.08	-1.54	281.799	0.9546	6	1.59082	131.2707	0.25407	0	0.2541	1108.2	0.9554	-2E-05	6	0.4086	1.7913	1.4379	476.6421

	CPT-9B	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	222	0.9	0.08	-1.16	222.001	0.4054	6	1.41552	122.6776	0.06134	0	0.0613	3618.3	0.4055	3E-05	7	0.2877	2.2692	1.1461	475.9676
2	274.3	1.5	0.16	-1.22	274.302	0.5468	6	1.42593	126.9312	0.1248	0	0.1248	2196.9	0.5471	4E-05	7	0.3224	1.9922	1.2211	516.2075
3	363.5	2.13	0.14	-1.33	363.502	0.586	6	1.35952	130.1837	0.1899	0	0.1899	1913.2	0.5863	3E-05	7	0.3198	1.7321	1.2084	594.7267
4	368.7	3.08	-0.16	-1.48	368.698	0.8354	6	1.47133	132.9169	0.25635	0	0.2564	1437.2	0.836	-3E-05	6	0.3714	1.693	1.3394	589.5286
5	540.6	3.97	-0.95	-1.36	540.588	0.7344	6	1.32641	135.7076	0.32421	0	0.3242	1666.4	0.7348	-1E-04	7	0.3357	1.4875	1.2358	759.5187
6	292.1	2.72	-1.11	-1.38	292.086	0.9312	6	1.57249	131.4393	0.38993	0	0.3899	748.08	0.9325	-3E-04	6	0.4241	1.527	1.4596	420.9654
7	343.6	2.59	-1.67	-1.64	343.58	0.7538	6	1.45696	131.477	0.45567	0	0.4557	753.02	0.7548	-4E-04	6	0.3923	1.3916	1.3676	451.2742
8	308.4	2.43	-2.1	-1.7	308.374	0.788	6	1.50252	130.7467	0.52104	0	0.521	590.84	0.7893	-5E-04	6	0.4159	1.3426	1.4211	390.6185
9	316.4	2	-1.79	-1.6	316.378	0.6322	6	1.42505	129.3843	0.58573	0	0.5857	539.14	0.6333	-4E-04	6	0.3947	1.2629	1.3574	376.9109
10	345.4	1.67	-2.89	-1.47	345.365	0.4836	7	1.31622	128.2787	0.64987	0	0.6499	530.44	0.4845	-6E-04	7	0.3617	1.1928	1.2628	388.6064
11	268.3	3.03	-5.31	-1.16	268.235	1.1296	6	1.66034	132.0212	0.71588	0	0.7159	373.69	1.1326	-0.001	6	0.4969	1.2143	1.6091	307.0006

	CPT-9C	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	170.6	0.99	-0.07	-1.47	170.599	0.5803	6	1.60051	122.7326	0.06137	0	0.0614	2779	0.5805	-3E-05	7	0.3438	2.6616	1.2921	428.982
2	219.5	1.06	0.15	-1.65	219.502	0.4829	6	1.46513	123.8472	0.12329	0	0.1233	1779.4	0.4832	5E-05	7	0.3296	2.0312	1.2379	421.1215
3	332.8	1.82	0.09	-1.79	332.801	0.5469	6	1.36492	128.8176	0.1877	0	0.1877	1772.1	0.5472	2E-05	7	0.319	1.7362	1.2064	545.7824
4	388.3	3.78	0.01	-1.98	388.3	0.9735	6	1.50988	134.5417	0.25497	0	0.255	1521.9	0.9741	0	6	0.3871	1.7348	1.3802	636.2213
5	518	3.53	-0.61	-2.46	517.993	0.6815	7	1.31091	134.7439	0.32234	0	0.3223	1606	0.6819	-8E-05	7	0.3287	1.4781	1.2179	723.1294
6	336.6	2.08	-1.82	-2.57	336.578	0.618	6	1.39929	129.8222	0.38725	0	0.3873	868.14	0.6187	-4E-04	7	0.3614	1.438	1.296	456.8786
7	332.7	2.01	-0.71	-2.62	332.691	0.6042	6	1.39572	129.5434	0.45202	0	0.452	735	0.605	-2E-04	7	0.3683	1.3678	1.3054	429.4843
8	315.2	2.22	-0.78	-2.68	315.19	0.7043	6	1.46017	130.1387	0.51709	0	0.5171	608.54	0.7055	-2E-04	6	0.3997	1.3314	1.3794	395.9402
9	287.3	1	-0.84	-2.62	287.29	0.3481	7	1.28604	124.0773	0.57913	0	0.5791	495.07	0.3488	-2E-04	7	0.3406	1.2279	1.2166	332.7037
10	306.4	1.38	-6.49	-2.62	306.321	0.4505	6	1.33422	126.5904	0.64243	0	0.6424	475.82	0.4515	-0.002	7	0.3666	1.2007	1.2765	346.8752

	CPT-10	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	329.8	329.8	0.15	-2.18	329.802	99.999	9	3.36474	137.28	0.06864	0	0.0686	4803.8	100.02	3E-05	9	1	15.415	3.227	>1,000
2	363.1	363.1	0.13	-2.32	363.102	100	9	3.35286	137.28	0.13728	0	0.1373	2644	100.04	3E-05	9	1	7.7077	3.2205	>1,000
3	258.4	258.4	0.06	-2.73	258.401	100	9	3.397	137.28	0.20592	0	0.2059	1253.9	100.08	2E-05	9	1	5.1384	3.2417	>1,000
4	405.1	405.1	-0.18	-2.75	405.098	100	9	3.33993	137.28	0.27456	0	0.2746	1474.4	100.07	-3E-05	9	1	3.8538	3.2344	>1,000
5	562.7	562.7	-0.5	-2.74	562.694	100	9	3.3049	137.28	0.3432	0	0.3432	1638.6	100.06	-6E-05	9	1	3.0831	3.2304	>1,000
6	564.9	564.9	-1.21	-2.81	564.885	100	9	3.30452	137.28	0.41184	0	0.4118	1370.6	100.08	-2E-04	9	1	2.5692	3.2375	>1,000
7	386.6	386.6	-1.53	-2.99	386.581	100	9	3.3454	137.28	0.48048	0	0.4805	803.57	100.13	-3E-04	9	1	2.2022	3.2697	803.5731
8	330.7	330.7	-1.73	-3.17	330.679	100.01	9	3.36444	137.28	0.54912	0	0.5491	601.2	100.17	-4E-04	9	1	1.9269	3.294	601.1977
9	166.3	166.3	-2.16	-3.11	166.274	100.02	9	3.46283	137.28	0.61776	0.0156	0.6022	275.1	100.39	-0.001	9	1	1.7572	3.3825	275.1026
10	183.3	183.3	-5.87	-3.14	183.228	100.04	9	3.44763	137.28	0.6864	0.0468	0.6396	285.4	100.42	-0.003	9	1	1.6543	3.3778	285.3999
11	112.9	112.9	-6.83	-3.31	112.816	100.07	9	3.5285	137.28	0.75504	0.078	0.677	165.52	100.75	-0.005	9	1	1.5628	3.4576	165.5166
12	163.9	163.9	-6.68	-3.21	163.818	100.05	9	3.46535	137.28	0.82368	0.1092	0.7145	228.13	100.56	-0.004	9	1	1.481	3.4088	228.1303
13	223.6	223.6	-6.12	-3.3	223.525	100.03	9	3.41772	137.28	0.89232	0.1404	0.7519	296.09	100.43	-0.003	9	1	1.4072	3.3731	296.0857
14	173	173	-5.9	-3.35	172.928	100.04	9	3.4567	137.28	0.96096	0.1716	0.7894	217.86	100.6	-0.003	9	1	1.3405	3.4156	217.856
15	170.5	170.5	-5.65	-3.37	170.431	100.04	9	3.459	137.28	1.0296	0.2028	0.8268	204.89	100.65	-0.004	9	1	1.2798	3.4247	204.8878
16	162.5	162.5	-5.17	-3.43	162.437	100.04	9	3.46666	137.28	1.09824	0.234	0.8642	186.68	100.72	-0.004	9	1	1.2243	3.4389	186.6825
17	107.9	107.9	-4.45	-3.25	107.846	100.05	9	3.53645	137.28	1.16688	0.2652	0.9017	118.31	101.14	-0.005	9	1	1.1735	3.5145	118.311
18	43.6	43.6	-3.92	-3.25	43.552	100.11	3	3.71678	137.28	1.23552	0.2964	0.9391	45.06	103.03	-0.014	3	1	1.1267	3.7082	45.05974
19	26.5	26.5	-3.56	-3.3	26.4564	100.16	3	3.82965	137.28	1.30416	0.3276	0.9766	25.756	105.36	-0.023	3	1	1.0835	3.8412	25.75599
20	18.2	18.2	-1.57	-3.38	18.1808	100.11	3	3.91998	137.28	1.3728	0.3588	1.014	16.576	108.28	-0.028	3	1	1.0435	3.9569	16.57592
21	663	663	0.71	-4.52	663.009	99.999	9	3.28958	137.28	1.44144	0.39	1.0514	629.2	100.22	-5E-04	9	1	1.0063	3.2901	629.2011

	CPT-11	In situ data										Basic output data									
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	82.6	0.41	0.65	-3.35	82.6197	0.4963	6	1.82396	114.5139	0.05726	0	0.0573	1442	0.4966	0.0006	6	0.3936	3.1522	1.4155	245.9583
2	84.8	0.34	-0.14	-1.1	84.7958	0.401	6	1.76928	113.2075	0.11386	0	0.1139	743.73	0.4015	-1E-04	6	0.4013	2.4466	1.4376	195.8015
3	134.8	0.46	-0.22	-2.15	134.793	0.3413	6	1.55884	116.5497	0.17214	0	0.1721	782.07	0.3417	-1E-04	7	0.3598	1.9219	1.3183	244.5213
4	135.7	0.5	0.55	-2.26	135.717	0.3684	6	1.57261	117.1765	0.23072	0	0.2307	587.22	0.369	0.0003	6	0.3808	1.786	1.3613	228.6914
5	87.4	0.31	1.17	-2.36	87.4354	0.3546	6	1.73312	112.6063	0.28703	0	0.287	303.62	0.3557	0.001	6	0.4415	1.779	1.515	146.525
6	29	0.21	1.06	-3.13	29.0321	0.7233	5	2.30056	107.0676	0.34056	0	0.3406	84.248	0.7319	0.0027	6	0.6414	2.0691	2.0342	56.10435
7	22.8	0.21	1.26	-3.31	22.8381	0.9195	5	2.44188	106.4823	0.3938	0	0.3938	56.994	0.9357	0.004	5	0.7033	2.0041	2.1932	42.50943
8	5.8	0.09	1.26	-2.88	5.8381	1.5416	3	3.07014	96.95582	0.44228	0	0.4423	12.2	1.668	0.0168	4	0.9407	2.2718	2.8052	11.5852
9	6.8	0.23	7.03	-2.79	7.01259	3.2798	3	3.16679	104.2682	0.49441	0	0.4944	13.184	3.5286	0.0777	3	0.9937	2.1299	2.9422	13.12066
10	59.2	0.37	3.01	-2.76	59.291	0.624	6	1.99859	112.9535	0.55089	0	0.5509	106.63	0.6299	0.0037	6	0.5856	1.4655	1.8631	81.35605
11	135.4	0.69	3.54	-2.52	135.507	0.5092	6	1.64794	119.5294	0.61066	0	0.6107	220.9	0.5115	0.0019	6	0.4725	1.2966	1.5587	165.3004
12	204	0.94	4.12	-2.08	204.125	0.4605	6	1.47765	122.791	0.67205	0	0.6721	302.73	0.462	0.0015	6	0.4204	1.2103	1.4141	232.7057
13	159.3	0.61	4.77	-1.9	159.444	0.3826	6	1.52099	119.0244	0.73156	0	0.7316	216.95	0.3843	0.0022	6	0.4423	1.1773	1.464	176.5918
14	218.1	0.79	4.47	-1.85	218.235	0.362	6	1.39349	121.682	0.7924	0	0.7924	274.41	0.3633	0.0015	6	0.4033	1.1237	1.354	230.919
15	168.6	0.54	4.48	-2.38	168.735	0.32	6	1.46014	118.2707	0.85154	0	0.8515	197.15	0.3217	0.0019	6	0.4342	1.0989	1.4278	174.3551
16	99.9	0.2	4.67	-2.26	100.041	0.1999	6	1.58252	109.7281	0.9064	0	0.9064	109.37	0.2018	0.0034	6	0.486	1.0781	1.5568	101.0081
17	83	0.25	3.88	-2.09	83.1173	0.3008	6	1.72269	110.9088	0.96186	0	0.9619	85.413	0.3043	0.0034	6	0.5466	1.0535	1.7087	81.79838
18	56.8	0.19	6.58	-1.98	56.999	0.3333	6	1.89072	107.9808	1.01585	0	1.0159	55.11	0.3394	0.0085	6	0.6185	1.0255	1.8909	54.25936
19	19.9	0.9	8.14	-1.68	20.1462	4.4674	3	2.88005	116.8248	1.07426	0	1.0743	17.754	4.719	0.0307	3	1	0.985	2.9186	17.75351
20	15.1	0.67	8.79	-1.44	15.3658	4.3603	3	2.96388	114.0048	1.13126	0	1.1313	12.583	4.7069	0.0445	3	1	0.9353	3.0332	12.58288
21	63.1	0.35	8.49	-1.57	63.3567	0.5524	6	1.94713	112.7087	1.18762	0	1.1876	52.348	0.563	0.0098	6	0.6634	0.9263	1.9873	54.42253
22	88.1	0.8	8.95	-0.85	88.3707	0.9053	6	1.94469	119.5691	1.2474	0	1.2474	69.844	0.9182	0.0074	6	0.6679	0.8959	1.9915	73.76777
23	167.4	0.77	8.48	-1.26	167.656	0.4593	6	1.54636	120.8513	1.30783	0	1.3078	127.19	0.4629	0.0037	6	0.5178	0.8961	1.5904	140.8781
24	188.7	0.84	8.79	-0.63	188.966	0.4445	6	1.4957	121.7798	1.36872	0	1.3687	137.06	0.4478	0.0034	6	0.5038	0.8784	1.5463	155.7309
25	170.7	0.58	9.41	-0.11	170.985	0.3392	6	1.46791	118.8259	1.42813	0	1.4281	118.73	0.3421	0.004	6	0.5002	0.8607	1.5292	137.9255
26	106	0.16	9.57	0.34	106.289	0.1505	6	1.52094	108.2431	1.48225	0	1.4823	70.708	0.1527	0.0066	6	0.5311	0.8361	1.6035	82.81669
27	24.6	0.29	6.08	-0.22	24.7839	1.1701	5	2.46395	109.0435	1.53677	0	1.5368	15.127	1.2475	0.0188	4	0.9252	0.708	2.6309	15.55541
28	28.7	1.62	7.33	-0.38	28.9217	5.6013	3	2.82993	122.0075	1.59778	0	1.5978	17.101	5.9289	0.0193	3	1	0.6622	2.996	17.10118
29	24.2	0.99	3.18	0.04	24.2962	4.0747	3	2.79233	117.979	1.65677	0	1.6568	13.665	4.3729	0.0101	3	1	0.6387	2.9853	13.6648
30	46.5	0.18	7.12	-0.16	46.7153	0.3853	6	1.99505	107.0999	1.71032	0	1.7103	26.314	0.4	0.0114	5	0.7543	0.6962	2.161	29.60965
31	102.7	0.55	4.67	-1.01	102.841	0.5348	6	1.75968	117.1973	1.76892	0	1.7689	57.138	0.5442	0.0033	6	0.6557	0.714	1.8949	68.19783
32	120.7	1	-5.78	-1.49	120.525	0.8297	6	1.81521	121.9587	1.82989	0	1.8299	64.865	0.8425	-0.004	6	0.6808	0.6887	1.9533	77.25898
33	162.9	1.63	-8.34	-1.28	162.648	1.0022	6	1.7713	126.2647	1.89303	0	1.893	84.919	1.014	-0.004	6	0.6649	0.6793	1.9037	103.1967
34	136.9	2.81	-11.53	-1.8	136.551	2.0578	5	2.04911	129.823	1.95794	0	1.9579	68.742	2.0878	-0.006	5	0.7816	0.6182	2.2021	78.63089
35	215.6	1.39	-5.41	-1.88	215.436	0.6452	6	1.55199	125.7848	2.02083	0	2.0208	105.61	0.6513	-0.002	6	0.5877	0.6837	1.6849	137.8999
36	221.6	0.36	-0.35	-2.24	221.589	0.1625	7	1.22707	115.9685	2.07882	0	2.0788	105.59	0.164	-1E-04	6	0.4675	0.7293	1.3615	151.2878
37	218.7	0.25	-0.73	-1.52	218.678	0.1143	7	1.18775	113.2682	2.13545	0	2.1355	101.4	0.1155	-2E-04	6	0.458	0.725	1.329	148.3724
38	205.1	0.27	-0.24	-1.64	205.093	0.1317	7	1.23032	113.6749	2.19229	0	2.1923	92.552	0.1331	-9E-05	6	0.4812	0.7043	1.383	135.0526
39	236	0.24	1.72	-1.44	236.052	0.1017	7	1.14431	113.156	2.24886	0	2.2489	103.96	0.1027	0.0005	7	0.4502	0.7122	1.2939	157.3716
40	190.3	0.22	0.23	-1.25	190.307	0.1156	7	1.24759	111.9939	2.30486	0	2.3049	81.568	0.117	9E-05	6	0.5005	0.6773	1.4192	120.3388
41	365.6	1.16	1.73	-1.93	365.652	0.3172	7	1.17814	125.7515	2.36774	0	2.3677	153.43	0.3193	0.0003	7	0.4632	0.6886	1.3139	236.43

	CPT-12	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	295.2	295.2	0.09	-1.04	295.201	100	9	3.37902	137.28	0.06864	0	0.0686	4299.7	100.02	2E-05	9	1	15.415	3.2242	>1,000
2	429.8	429.8	0.19	-1.28	429.802	99.999	9	3.33319	137.28	0.13728	0	0.1373	3129.8	100.03	3E-05	9	1	7.7077	3.2202	>1,000
3	357.2	357.2	-0.12	-1.51	357.199	100	9	3.35486	137.28	0.20592	0	0.2059	1733.6	100.06	-2E-05	9	1	5.1384	3.2285	>1,000
4	326.2	326.2	-0.28	-1.24	326.197	100	9	3.36614	137.28	0.27456	0	0.2746	1187.1	100.09	-6E-05	9	1	3.8538	3.2446	>1,000
5	307.1	307.1	-4.75	-1.26	307.042	100.02	9	3.37397	137.28	0.3432	0	0.3432	893.64	100.13	-0.001	9	1	3.0831	3.2621	893.6441
6	367.8	367.8	-1	-1.34	367.788	100	9	3.35133	137.28	0.41184	0	0.4118	892.04	100.12	-2E-04	9	1	2.5692	3.2622	892.0356
7	389.9	389.9	-2.2	-1.25	389.873	100.01	9	3.34441	137.28	0.48048	0	0.4805	810.42	100.13	-4E-04	9	1	2.2022	3.2691	810.4241

	CPT-13	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	89.3	0.28	-0.2	-5.44	89.294	0.3136	6	1.70181	111.9129	0.05596	0	0.056	1594.8	0.3138	-2E-04	7	0.3537	2.8287	1.3065	238.5686
2	85.8	0.34	-0.41	9.05	85.7876	0.3963	6	1.76246	113.2358	0.11257	0	0.1126	761.05	0.3969	-3E-04	6	0.3987	2.4433	1.431	197.8357
3	199.8	2.55	-0.01	-0.22	199.8	1.2763	6	1.78427	130.0409	0.17759	0	0.1776	1124	1.2774	0	6	0.4569	2.2602	1.5701	426.4037
4	18.7	0.04	-2.55	-8.82	18.6229	0.2148	5	2.29195	93.85145	0.22452	0	0.2245	81.945	0.2174	-0.01	6	0.5918	2.5028	1.9142	43.51865
5	20	0.2	-1.37	-5.81	19.9586	1.0021	5	2.51117	105.7966	0.27742	0	0.2774	70.944	1.0162	-0.005	5	0.6928	2.528	2.1765	47.0208
6	7.6	0.29	-0.78	-5.92	7.57641	3.8277	3	3.17634	106.1529	0.3305	0.0312	0.2993	24.21	4.0023	-0.012	3	0.9302	3.237	2.7988	22.16666
7	5.3	0.18	1.03	-6.27	5.33115	3.3764	3	3.27373	101.806	0.3814	0.0624	0.319	15.517	3.6366	0.0024	3	0.9722	3.2083	2.9038	15.00808
8	17.4	0.05	-3.72	-5.61	17.2875	0.2892	5	2.35738	95.30271	0.42905	0.0936	0.3355	50.256	0.2966	-0.021	6	0.6519	2.1147	2.0621	33.69282
9	20.8	0.1	-3.33	-5.46	20.6993	0.4831	5	2.3587	100.8138	0.47946	0.1248	0.3547	57.012	0.4946	-0.018	5	0.6617	2.0612	2.0857	39.38769
10	68.4	0.51	-5.18	-5.4	68.2434	0.7473	6	1.9882	115.6446	0.53728	0.156	0.3813	177.58	0.7533	-0.008	6	0.5505	1.7539	1.7943	112.229
11	82.1	0.96	-10.56	-4.57	81.7807	1.1739	6	2.04095	120.7141	0.59764	0.1872	0.4104	197.8	1.1825	-0.012	6	0.58	1.7319	1.8667	132.8799
12	109.6	0.13	-11.67	-4.06	109.247	0.119	6	1.48581	106.7908	0.65103	0.2184	0.4326	251.01	0.1197	-0.01	6	0.3827	1.4081	1.3436	144.5145
13	175.5	0.78	-11.49	-3.44	175.153	0.4453	6	1.52312	121.0524	0.71156	0.2496	0.462	377.61	0.4471	-0.006	6	0.4074	1.4016	1.4077	231.0669
14	153.9	0.31	-9.09	-1.52	153.625	0.2018	6	1.40945	113.981	0.76855	0.2808	0.4878	313.39	0.2028	-0.006	7	0.3667	1.3284	1.2987	191.9096
15	147.8	0.28	-8.82	-1.3	147.533	0.1898	6	1.41619	113.1376	0.82512	0.312	0.5131	285.92	0.1909	-0.006	6	0.3726	1.3095	1.3104	181.5645
16	128.2	0.15	-8.04	-1.33	127.957	0.1172	6	1.41725	108.2234	0.87923	0.3432	0.536	237.07	0.118	-0.007	6	0.3746	1.2901	1.3127	154.9404
17	152.8	0.22	-7.74	-0.62	152.566	0.1442	6	1.36474	111.4548	0.93496	0.3744	0.5606	270.5	0.1451	-0.006	7	0.3607	1.2576	1.2728	180.2117
18	143	0.18	-7.36	-0.27	142.777	0.1261	6	1.3777	109.8248	0.98987	0.4056	0.5843	242.68	0.127	-0.007	7	0.3682	1.2444	1.2892	166.7534
19	186	0.26	-6.76	-0.22	185.796	0.1399	7	1.27896	113.1577	1.04645	0.4368	0.6097	303.04	0.1407	-0.005	7	0.3374	1.2045	1.2049	210.301
20	254.7	0.47	-6.27	0.52	254.51	0.1847	7	1.19253	118.2573	1.10558	0.468	0.6376	397.45	0.1855	-0.004	7	0.3114	1.1709	1.1328	280.4125
21	337.4	0.48	-6.05	0.99	337.217	0.1423	7	1.03621	119.0977	1.16512	0.4992	0.6659	504.64	0.1428	-0.003	7	0.2583	1.1271	0.9899	357.9552
22	391.4	0	-4.56	1.83	391.262	0	0	0	769.6	1.54992	0.5304	1.0195	382.25	0	-0.002	0	1	1.0378	0	0

	CPT-15	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	33.4	0.01	0	3.08	33.4	0.0299	0	1.99405	87.36	0.04368	0	0.0437	763.65	0.03	0	0	0.4058	3.6454	1.4418	114.9189
2	1.9	0.02	0.1	3.82	1.90302	1.051	1	3.44649	87.36	0.08736	0	0.0874	20.784	1.1015	0.004	4	0.8588	8.516	2.6281	14.61314
3	1.7	0.04	0.1	3.81	1.70302	2.3488	3	3.63042	88.0174	0.13137	0	0.1314	11.964	2.5451	0.0046	3	0.9667	7.514	2.9173	11.16085
4	3.7	0.04	0.2	5.85	3.70605	1.0793	3	3.18271	89.91387	0.17633	0.0312	0.1451	24.322	1.1332	-0.005	4	0.8355	5.2583	2.5649	17.54107
5	55.8	0.04	1.67	-9.01	55.8505	0.0716	0	1.74911	96.53017	0.22459	0.0624	0.1622	342.97	0.0719	0.001	0	0.3989	2.113	1.4264	111.0822
6	72.3	0.19	1.96	-9.09	72.3593	0.2626	6	1.75556	108.5627	0.27887	0.0936	0.1853	389.05	0.2636	0.0007	6	0.4173	2.0691	1.4682	140.954
7	71.5	0.57	2.55	-8.11	71.5771	0.7963	6	1.98637	116.5748	0.33716	0.1248	0.2124	335.47	0.8001	0.0008	6	0.5112	2.2728	1.7069	153.0225
8	95.6	0.14	2.85	-6.34	95.6862	0.1463	6	1.56194	107.0098	0.39066	0.156	0.2347	406.09	0.1469	0.0005	6	0.3681	1.7408	1.3322	156.7773
9	128.7	0.17	3.31	-5.19	128.8	0.132	6	1.42587	109.1553	0.44524	0.1872	0.258	497.42	0.1325	0.0004	7	0.3331	1.6	1.2305	194.0839
10	270.8	0.36	3.74	-4.75	270.913	0.1329	7	1.11588	116.4587	0.50347	0.2184	0.2851	948.57	0.1331	0.0002	7	0.2411	1.3719	0.9872	350.5957
11	325	0.47	1.79	-3.96	325.054	0.1446	7	1.05355	118.854	0.5629	0.2496	0.3133	1035.7	0.1448	-4E-04	7	0.2256	1.316	0.9443	403.5632
12	362.8	0.5	0.47	-3.75	362.814	0.1378	7	1.00151	119.5748	0.62269	0.2808	0.3419	1059.4	0.1381	-7E-04	7	0.2121	1.2708	0.9061	435.0043
13	338.1	0.45	-1.08	-3.57	338.067	0.1331	7	1.02505	118.6316	0.682	0.312	0.37	911.85	0.1334	-0.001	7	0.2228	1.2638	0.9311	402.9647
14	286.9	0.27	0.39	-2.94	286.912	0.0941	0	1.05471	114.4937	0.73925	0.3432	0.3961	722.57	0.0944	-0.001	0	0.2343	1.2589	0.9579	340.4648
15	375.4	0.43	-0.51	-3.26	375.385	0.1146	7	0.96142	118.5543	0.79853	0.3744	0.4241	883.2	0.1148	-0.001	7	0.2073	1.2086	0.8842	427.8776
16	534.9	0	-2.96	-3.48	534.81	0	0	0	769.6	1.18333	0.4056	0.7777	686.14	0	-0.001	0	1	1.3605	0	0

	CPT-16	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	77.5	0.44	-0.16	1.27	77.4952	0.5678	6	1.87773	114.8744	0.05744	0	0.0574	1348.2	0.5682	-2E-04	6	0.4102	3.3037	1.4596	241.7785
2	27.1	0.06	-0.62	-1.74	27.0813	0.2216	5	2.138	97.73152	0.1063	0	0.1063	253.76	0.2224	-0.002	6	0.493	3.1046	1.6708	79.14804
3	28.8	0.31	-0.5	0.77	28.7849	1.077	5	2.38971	109.8965	0.16125	0	0.1613	177.51	1.083	-0.001	6	0.6147	3.1785	1.983	85.98257
4	5.7	0.03	-0.58	2.35	5.68246	0.5279	1	2.89759	88.85137	0.20568	0	0.2057	26.628	0.5478	-0.008	5	0.7764	3.5669	2.4032	18.46207
5	2	0.03	0.48	2.86	2.01452	1.4892	3	3.48119	87.36	0.24936	0	0.2494	7.0788	1.6996	0.0196	3	1	4.2434	2.9947	7.07884
6	2.8	0.03	0.3	4.07	2.80907	1.068	1	3.29193	87.36	0.29304	0	0.293	8.5861	1.1924	0.0086	4	0.9587	3.4244	2.8689	8.14273
7	12.8	0.17	1.1	4.53	12.8333	1.3247	4	2.73773	103.5304	0.3448	0	0.3448	36.219	1.3613	0.0063	5	0.7898	2.4245	2.4263	28.61534
8	7.1	0.17	-1.07	4.51	7.06764	2.4053	3	3.09211	102.0755	0.39584	0	0.3958	16.855	2.548	-0.012	4	0.9343	2.5059	2.7935	15.80099
9	96.8	0.75	-4.91	5.04	96.6515	0.776	6	1.87345	119.3153	0.4555	0	0.4555	211.19	0.7797	-0.004	6	0.5279	1.5604	1.7245	141.8644
10	115.9	1.06	-5.33	6.94	115.739	0.9159	6	1.85597	122.2862	0.51664	0	0.5166	223.02	0.92	-0.003	6	0.5346	1.4671	1.7336	159.7536
11	151.6	0.42	-2.15	11.82	151.535	0.2772	6	1.47169	116.1696	0.57473	0	0.5747	262.67	0.2782	-0.001	6	0.4023	1.2783	1.3796	182.3795
12	229.5	0.54	-1.61	13.89	229.451	0.2353	7	1.27895	119.0204	0.63424	0	0.6342	360.78	0.236	-5E-04	7	0.3421	1.1914	1.2137	257.6325
13	254	0.61	-1.36	14.45	253.959	0.2402	7	1.2443	120.1597	0.69432	0	0.6943	364.77	0.2409	-4E-04	7	0.3369	1.1525	1.1923	275.8625
14	297.7	1.23	-0.19	15.66	297.694	0.4132	7	1.3195	125.6788	0.75715	0	0.7572	392.17	0.4142	-5E-05	7	0.3732	1.1331	1.2796	317.9679

	CPT-17	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	379.7	0.6	-0.24	-0.92	379.693	0.158	7	1.00634	121.0197	0.06051	0	0.0605	6273.9	0.1581	-5E-05	7	0.1677	1.6157	0.8216	579.6715
2	300.5	0.7	-1.37	-0.34	300.459	0.233	7	1.17418	121.5768	0.1213	0	0.1213	2476	0.2331	-3E-04	7	0.2321	1.6532	0.9914	469.2367
3	238.9	0.67	-1.27	0.28	238.862	0.2805	7	1.30094	120.6967	0.18165	0	0.1817	1314	0.2807	-4E-04	7	0.287	1.6582	1.1186	374.0522
4	114.1	0.35	-1.03	-0.59	114.069	0.3068	6	1.60179	114.1429	0.23872	0	0.2387	476.84	0.3075	-7E-04	6	0.3891	1.785	1.3817	192.0226
5	88.3	0.21	-1.76	-1.09	88.2468	0.238	6	1.65973	109.7792	0.29361	0	0.2936	299.56	0.2388	-0.001	6	0.4164	1.7054	1.4477	141.7612
6	127.7	0.45	-1.76	-0.88	127.647	0.3525	6	1.58638	116.256	0.35174	0	0.3517	361.91	0.3535	-0.001	6	0.4081	1.5675	1.4203	188.5785
7	228.1	0.82	-1.94	-1.04	228.041	0.3596	6	1.37606	122.0619	0.41277	0	0.4128	551.47	0.3602	-6E-04	7	0.3503	1.3906	1.2615	299.1586
8	306.5	0.7	-1.57	-0.28	306.453	0.2284	7	1.16247	121.625	0.47358	0	0.4736	646.1	0.2288	-4E-04	7	0.2824	1.2549	1.079	362.8771
9	401.4	1.09	-2.03	-0.6	401.339	0.2716	7	1.10522	125.5232	0.53634	0	0.5363	747.29	0.272	-4E-04	7	0.272	1.203	1.0424	455.6863
10	433.7	1.65	-1.91	-0.51	433.642	0.3805	7	1.1729	128.7457	0.60071	0	0.6007	720.88	0.381	-3E-04	7	0.305	1.1884	1.1201	486.3807
11	420.2	1.63	-2.65	-0.93	420.12	0.388	7	1.18874	128.5792	0.665	0	0.665	630.76	0.3886	-5E-04	7	0.3171	1.1587	1.1437	459.311
12	490.1	2.33	-3.82	-0.23	489.984	0.4755	7	1.20495	131.5686	0.73079	0	0.7308	669.49	0.4762	-6E-04	7	0.3307	1.1302	1.1711	522.5819
13	476.2	1.45	-4.07	0.78	476.077	0.3046	7	1.07816	128.0279	0.7948	0	0.7948	597.99	0.3051	-6E-04	7	0.2885	1.086	1.0523	487.8287
14	438.9	1.28	-5.37	0.21	438.738	0.2918	7	1.09348	126.9163	0.85826	0	0.8583	510.19	0.2923	-9E-04	7	0.2996	1.0647	1.0736	440.6152
15	498	1.6	-6.83	1.48	497.793	0.3214	7	1.07917	128.857	0.92269	0	0.9227	538.5	0.322	-1E-03	7	0.3002	1.042	1.0672	489.2914
16	518	1.21	-7.65	2.24	517.769	0.2337	7	0.97751	126.9087	0.98614	0	0.9861	524.04	0.2341	-0.001	7	0.2671	1.019	0.9722	497.6765
17	479.1	0.86	-8.38	2.81	478.847	0.1796	7	0.94239	124.2198	1.04825	0	1.0483	455.8	0.18	-0.001	7	0.2587	1.0024	0.9428	452.6538
18	463.3	0.93	-5.64	3.77	463.129	0.2008	7	0.97993	124.7109	1.11061	0	1.1106	416.01	0.2013	-9E-04	7	0.2783	0.9866	0.9863	430.8011
19	475.1	0.9	-7.06	4.42	474.887	0.1895	7	0.95744	124.5322	1.17287	0	1.1729	403.89	0.19	-0.001	7	0.2748	0.9721	0.9694	435.2086
20	487.1	1.17	-7.06	5.41	486.887	0.2403	7	1.00614	126.5127	1.23613	0	1.2361	392.88	0.2409	-0.001	7	0.2985	0.9546	1.0239	438.1596
21	457.6	1.08	-6.64	5.32	457.399	0.2361	7	1.0236	125.7747	1.29902	0	1.299	351.11	0.2368	-0.001	7	0.3107	0.9383	1.048	404.4389
22	456.4	1.05	-6.18	6.98	456.213	0.2302	7	1.01813	125.5622	1.3618	0	1.3618	334.01	0.2308	-1E-03	7	0.3138	0.9239	1.0483	397.1489
23	379.8	0.43	-6.99	7.77	379.589	0.1133	7	0.9554	118.5815	1.42109	0	1.4211	266.11	0.1137	-0.001	7	0.2959	0.9164	0.9938	327.5355
24	439.8	0.83	-5.8	9.62	439.625	0.1888	7	0.98538	123.7515	1.48297	0	1.483	295.45	0.1894	-1E-03	7	0.3115	0.9002	1.0271	372.7538
25	491.6	1.08	-5.49	11.01	491.434	0.2198	7	0.98016	125.9498	1.54594	0	1.5459	316.89	0.2205	-8E-04	7	0.3136	0.8879	1.0248	411.0834
26	437.7	0.81	-5.49	13.87	437.534	0.1851	7	0.98292	123.5614	1.60772	0	1.6077	271.15	0.1858	-9E-04	7	0.3209	0.8744	1.0361	360.2353
27	363.2	0.61	-4.41	15.3	363.067	0.168	7	1.03523	121.0315	1.66824	0	1.6682	216.64	0.1688	-9E-04	7	0.3483	0.8534	1.1004	291.466
28	425.6	0.81	-4.12	16.44	425.475	0.1904	7	0.99949	123.4933	1.72998	0	1.73	244.94	0.1912	-7E-04	7	0.3377	0.847	1.0649	339.2088
29	385	0.81	-3.94	16.86	384.881	0.2105	7	1.05909	123.2487	1.79161	0	1.7916	213.82	0.2114	-7E-04	7	0.3673	0.8241	1.1348	298.3799
30	345.8	1.33	-3.04	18.22	345.708	0.3847	7	1.24974	126.6154	1.85492	0	1.8549	185.37	0.3868	-6E-04	6	0.4478	0.7777	1.3384	252.7418
31	349.3	0.72	-1.96	18.37	349.241	0.2062	7	1.09112	122.1499	1.91599	0	1.916	181.28	0.2073	-4E-04	7	0.3918	0.7924	1.1835	260.1177
32	275.4	0.86	-1.96	19.68	275.341	0.3123	7	1.27397	122.8701	1.97743	0	1.9774	138.24	0.3146	-5E-04	6	0.4719	0.7445	1.3862	192.3294
33	265.4	1.09	0.48	20.01	265.415	0.4107	6	1.35681	124.5147	2.03968	0	2.0397	129.13	0.4139	0.0001	6	0.5102	0.7155	1.4789	178.085
34	274.2	0.92	1.37	20.81	274.241	0.3355	7	1.29305	123.3538	2.10136	0	2.1014	129.51	0.3381	0.0004	6	0.4906	0.7142	1.4196	183.6893
35	338.1	1.38	2	22.01	338.16	0.4081	7	1.27364	126.8316	2.16478	0	2.1648	155.21	0.4107	0.0004	6	0.4843	0.7071	1.3951	224.5221

	CPT-18	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	253.9	1.06	-0.95	-4.13	253.871	0.4175	6	1.37647	124.202	0.0621	0	0.0621	4087	0.4176	-3E-04	7	0.2798	2.2106	1.1237	530.2619
2	229.4	0.95	-2.66	-2.03	229.32	0.4143	6	1.40968	123.1523	0.12368	0	0.1237	1853.2	0.4145	-8E-04	7	0.3089	1.9406	1.1907	420.3448
3	220.5	1.01	-2.52	-1.96	220.424	0.4582	6	1.44972	123.5039	0.18543	0	0.1854	1187.7	0.4586	-8E-04	7	0.3387	1.8037	1.2565	375.4199
4	254.1	1.09	-2.69	-1.31	254.019	0.4291	6	1.38356	124.4076	0.24763	0	0.2476	1024.8	0.4295	-8E-04	7	0.3298	1.6144	1.227	387.1947
5	220	0.92	-4.19	-1.48	219.873	0.4184	6	1.42697	122.8149	0.30904	0	0.309	710.47	0.419	-0.001	7	0.3528	1.5438	1.2804	320.341
6	238.8	1.15	-4.28	-0.85	238.671	0.4818	6	1.43608	124.6477	0.37136	0	0.3714	641.69	0.4826	-0.001	7	0.3673	1.4691	1.3114	330.8506
7	288.1	1.37	-4.65	-0.91	287.959	0.4758	6	1.37002	126.3864	0.43456	0	0.4346	661.65	0.4765	-0.001	7	0.3539	1.3702	1.2708	372.339
8	294.9	2.81	-5.31	-1.19	294.739	0.9534	6	1.57767	131.6995	0.50041	0	0.5004	588	0.955	-0.001	6	0.4409	1.3912	1.4895	386.8706
9	473.8	1.4	-5.76	1.31	473.626	0.2956	7	1.07143	127.7586	0.56429	0	0.5643	838.34	0.2959	-9E-04	7	0.2642	1.1807	1.0181	527.8724
10	518.7	2.54	-12.69	329.68	518.316	0.4901	7	1.19868	132.3372	0.63046	0	0.6305	821.13	0.4907	-0.002	7	0.3194	1.1798	1.154	577.2356
11	495.8	0	-5.96	3.81	495.62	0	0	0	769.6	1.01526	0	1.0153	487.17	0	-9E-04	0	1	1.0422	0	0

	CPT-19	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	292.3	2.03	-1.08	-6.69	292.267	0.6946	6	1.47837	129.2999	0.06465	0	0.0647	4519.8	0.6947	-3E-04	7	0.3253	2.4824	1.2367	685.5159
2	260.5	1.42	-3.33	-7.72	260.399	0.5453	6	1.44194	126.4033	0.12785	0	0.1279	2035.7	0.5456	-9E-04	7	0.3274	1.9976	1.2336	491.359
3	277	1.59	-3.42	-7.56	276.897	0.5742	6	1.43727	127.3806	0.19154	0	0.1915	1444.6	0.5746	-9E-04	7	0.3413	1.7919	1.2641	468.6101
4	257.5	1.7	-3.13	-7.9	257.405	0.6604	6	1.50204	127.692	0.25539	0	0.2554	1006.9	0.6611	-9E-04	6	0.3749	1.7039	1.3452	414.0867
5	254.6	1.19	-5.91	-7.26	254.421	0.4677	6	1.4064	125.0538	0.31791	0	0.3179	799.28	0.4683	-0.002	7	0.3496	1.5225	1.2711	365.6242
6	147.6	2.16	-4.5	-7.28	147.464	1.4648	6	1.91787	128.0856	0.38196	0.0312	0.3508	419.33	1.4686	-0.002	6	0.5336	1.8024	1.7524	250.5414
7	274.6	1.48	-4.1	-7.14	274.476	0.5392	6	1.42163	126.8346	0.44537	0.0624	0.383	715.53	0.5401	-0.001	7	0.3652	1.4494	1.3074	375.3712
8	221	0.95	-5.86	-6.75	220.823	0.4302	6	1.43262	123.0602	0.5069	0.0936	0.4133	533.06	0.4312	-0.002	7	0.3698	1.4157	1.3159	294.7693
9	170.2	0.84	-5.1	-6.89	170.046	0.494	6	1.55964	121.5225	0.56767	0.1248	0.4429	382.68	0.4956	-0.003	6	0.4175	1.4385	1.4367	230.4047
10	161.4	0.72	-4.8	-6.48	161.255	0.4465	6	1.55338	120.2651	0.6278	0.156	0.4718	340.46	0.4482	-0.003	6	0.4188	1.4025	1.4364	212.9116
11	202.1	1.01	-2.77	-7.16	202.016	0.5	6	1.50283	123.2912	0.68944	0.1872	0.5022	400.85	0.5017	-0.002	6	0.4077	1.355	1.4029	257.8193
12	304.7	0.72	-0.96	-4.15	304.671	0.2363	7	1.17207	121.8169	0.75035	0.2184	0.532	571.33	0.2369	-1E-03	7	0.2932	1.2234	1.0989	351.3913
13	351.5	0.55	-3.73	-2.21	351.387	0.1565	7	1.03537	120.1941	0.81045	0.2496	0.5609	625.08	0.1569	-0.001	7	0.2472	1.1699	0.9747	387.6053
14	363.4	0.95	-5.79	-1.29	363.225	0.2616	7	1.13114	124.274	0.87259	0.2808	0.5918	612.3	0.2622	-0.002	7	0.2867	1.1813	1.0736	404.5268
15	392.5	0.7	-0.31	0.47	392.491	0.1784	7	1.01654	122.2285	0.9337	0.312	0.6217	629.82	0.1788	-9E-04	7	0.2477	1.1408	0.9676	422.1512
16	458.1	1.09	-2.86	1.01	458.014	0.238	7	1.02511	125.8454	0.99662	0.3432	0.6534	699.42	0.2385	-0.001	7	0.2554	1.131	0.9835	488.4971
17	413.9	1.01	-5.79	2.98	413.725	0.2441	7	1.06759	125.0396	1.05914	0.3744	0.6847	602.66	0.2448	-0.002	7	0.2735	1.1264	1.0271	439.3037
18	457.8	1.07	-5.25	3.55	457.641	0.2338	7	1.02094	125.7079	1.122	0.4056	0.7164	637.24	0.2344	-0.002	7	0.2597	1.1066	0.9868	477.442
19	506.2	2.24	-7.97	3.59	505.959	0.4427	7	1.17258	131.3587	1.18768	0.4368	0.7509	672.24	0.4438	-0.002	7	0.3207	1.1163	1.1424	532.5186
20	525.3	1.07	-9.82	4.07	525.003	0.2038	7	0.93794	126.0428	1.2507	0.468	0.7827	669.16	0.2043	-0.002	7	0.2352	1.0735	0.9141	531.3659
21	577.6	1.69	-9.38	4.44	577.316	0.2927	7	1.00434	129.6189	1.31551	0.4992	0.8163	705.62	0.2934	-0.002	7	0.2636	1.0708	0.9843	582.8949
22	501.2	1.18	-9.48	5.09	500.913	0.2356	7	0.99109	126.6443	1.37883	0.5304	0.8484	588.78	0.2362	-0.002	7	0.2607	1.0593	0.9728	500.0834
23	504.8	1.28	-9.8	5.94	504.504	0.2537	7	1.00824	127.2569	1.44246	0.5616	0.8809	571.1	0.2544	-0.003	7	0.27	1.0508	0.9932	499.5638
24	552	0.99	-11	6.07	551.667	0.1795	7	0.88962	125.5951	1.50526	0.5928	0.9125	602.95	0.18	-0.003	7	0.228	1.0343	0.8789	537.8028
25	544.9	1.03	-10.86	5.71	544.572	0.1891	7	0.90668	125.8533	1.56818	0.624	0.9442	575.1	0.1897	-0.003	7	0.237	1.0274	0.8986	527.227
26	549.1	1.4	-11.77	6.55	548.744	0.2551	7	0.98137	128.1176	1.63224	0.6552	0.977	559.97	0.2559	-0.003	7	0.2681	1.0216	0.9761	528.2359
27	503.1	1.24	-12.16	6.17	502.732	0.2467	7	1.0019	127.016	1.69575	0.6864	1.0094	496.4	0.2475	-0.003	7	0.2785	1.0132	0.9995	479.7839
28	467.4	0.88	-11.77	5.29	467.044	0.1884	7	0.96232	124.3271	1.75791	0.7176	1.0403	447.26	0.1891	-0.003	7	0.266	1.0045	0.9629	441.7227
29	495.3	1.01	-11.67	5.42	494.947	0.2041	7	0.95948	125.4768	1.82065	0.7488	1.0719	460.07	0.2048	-0.003	7	0.2675	0.9966	0.963	464.4392
30	385.1	1.25	-12.06	4.81	384.735	0.3249	7	1.16722	126.4224	1.88386	0.78	1.1039	346.83	0.3265	-0.004	7	0.35	0.9853	1.1752	356.5057
31	505.1	1.31	-11.67	5.15	504.747	0.2595	7	1.0142	127.4276	1.94758	0.8112	1.1364	442.46	0.2605	-0.003	7	0.2938	0.9793	1.0237	465.3288
32	503.2	0.73	-11.56	4.48	502.85	0.1452	7	0.88024	123.1399	2.00915	0.8424	1.1668	429.26	0.1458	-0.003	7	0.245	0.9763	0.8919	462.1386
33	476.4	1.06	-10.89	3.97	476.071	0.2227	7	0.99472	125.7355	2.07201	0.8736	1.1984	395.52	0.2236	-0.004	7	0.2916	0.9644	1.0103	431.996
34	397.7	0.39	-10.49	3.46	397.383	0.0981	0	0.92004	117.9788	2.131	0.9048	1.2262	322.34	0.0987	-0.004	0	0.2659	0.9616	0.9394	359.1859
35	374	0.65	-10.2	2.66	373.692	0.1739	7	1.03057	121.5666	2.19179	0.936	1.2558	295.83	0.175	-0.005	7	0.3112	0.9481	1.0548	332.8731
36	375.8	0.65	-9.51	2.76	375.512	0.1731	7	1.02774	121.5784	2.25258	0.9672	1.2854	290.39	0.1741	-0.004	7	0.3127	0.941	1.055	331.9394
37	339.4	1.36	-9.02	2.34	339.127	0.401	7	1.26777	126.7317	2.31594	0.9984	1.3175	255.64	0.4038	-0.005	7	0.4083	0.9144	1.3018	291.0566
38	306.7	1.48	-8.73	1.45	306.436	0.483	6	1.35408	127.1032	2.37949	1.0296	1.3499	225.24	0.4868	-0.005	6	0.445	0.8973	1.3943	257.8431
39	253.5	0.9	-8.8	0.5	253.234	0.3554	6	1.33578	122.9986	2.44099	1.0608	1.3802	181.71	0.3589	-0.007	6	0.4424	0.8891	1.3836	210.7301
40	291.5	1.59	-8.61	0.65	291.24	0.5459	6	1.40627	127.5037	2.50474	1.092	1.4127	204.38	0.5507	-0.006	6	0.4713	0.8726	1.4555	238.1239
41	314.9	1.3	-8.06	0.45	314.656	0.4132	7	1.30095	126.2189	2.56785	1.1232	1.4447	216.03	0.4166	-0.005	6	0.4332	0.8738	1.3514	257.7321
42	318.1	0.77	-8.1	1.79	317.855	0.2423	7	1.16181	122.4115	2.62906	1.1544	1.4747	213.76	0.2443	-0.006	7	0.3823	0.8808	1.2142	262.4057
43	359.1	0.54	-7.58	1.24	358.871	0.1505	7	1.0202	120.1113	2.68912	1.1856	1.5035	236.9	0.1516	-0.005	7	0.3292	0.8908	1.0709	299.8611
44	502.1	0.44	-7.35	1.59	501.878	0.0877	0	0.81046	119.4308	2.74883	1.2168	1.532	325.8	0.0882	-0.004	0	0.2473	0.9126	0.8522	430.4677

	CPT-20	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	390.3	2.04	-2.58	18.39	390.222	0.5228	7	1.3024	130.0408	0.06502	0	0.065	6000.5	0.5229	-5E-04	7	0.2727	2.1399	1.0995	789.0509
2	210.6	1.03	-3.18	17.96	210.504	0.4893	6	1.48297	123.5351	0.12679	0	0.1268	1659.3	0.4896	-0.001	7	0.3357	2.0386	1.2535	405.3172
3	128.8	0.53	-2.79	17.91	128.716	0.4118	6	1.61697	117.4736	0.18552	0	0.1855	692.79	0.4124	-0.002	6	0.3852	1.9554	1.3767	237.5227
4	76.3	0.18	-2.5	17.78	76.2244	0.2361	6	1.71808	108.294	0.23967	0	0.2397	317.04	0.2369	-0.002	6	0.4222	1.8718	1.4674	134.4169
5	117	0.22	-2.5	17.61	116.924	0.1882	6	1.5099	110.8059	0.29507	0	0.2951	395.25	0.1886	-0.002	6	0.368	1.5999	1.3202	176.3522
6	118.8	0.32	-2.08	17.35	118.737	0.2695	6	1.56188	113.585	0.35187	0	0.3519	336.45	0.2703	-0.001	6	0.3978	1.5496	1.393	173.371
7	113.6	0.33	-1.81	17.88	113.545	0.2906	6	1.59334	113.7011	0.40872	0	0.4087	276.81	0.2917	-0.001	6	0.4186	1.4892	1.4412	159.2249
8	95.4	0.32	-1.34	18.04	95.3595	0.3356	6	1.68876	113.0502	0.46524	0	0.4652	203.97	0.3372	-0.001	6	0.46	1.4594	1.5461	130.8803
9	127.4	0.35	-0.99	19.09	127.37	0.2748	6	1.53782	114.4119	0.52245	0	0.5225	242.79	0.2759	-6E-04	6	0.4172	1.3424	1.4258	160.923
10	311	0.35	-5.07	18.29	310.847	0.1126	7	1.03812	116.588	0.58074	0	0.5807	534.26	0.1128	-0.001	7	0.2489	1.161	0.9767	340.4418
11	356.6	0.38	-6.68	18.63	356.398	0.1066	7	0.97464	117.5232	0.6395	0	0.6395	556.3	0.1068	-0.001	7	0.2328	1.1244	0.9265	378.033
12	376.4	0.94	-8.93	18.6	376.13	0.2499	7	1.10751	124.2817	0.70165	0	0.7017	535.07	0.2504	-0.002	7	0.2893	1.1262	1.0662	399.5797
13	428.2	0.49	-11.32	17.8	427.858	0.1145	7	0.90717	119.8292	0.76156	0	0.7616	560.82	0.1147	-0.002	7	0.2205	1.0752	0.8782	433.9965
14	436	0.63	-12.7	17.14	435.616	0.1446	7	0.93613	121.7119	0.82242	0	0.8224	528.68	0.1449	-0.002	7	0.2369	1.0615	0.9136	436.1929
15	363.5	0.34	-10.83	15.81	363.173	0.0936	0	0.95381	116.7553	0.88079	0	0.8808	411.32	0.0939	-0.002	0	0.2481	1.0466	0.9357	358.3368
16	479.4	0.55	-11.02	15.02	479.067	0.1148	7	0.86093	120.9501	0.94127	0	0.9413	507.96	0.115	-0.002	7	0.2189	1.0259	0.8515	463.5915
17	474.9	0.33	-11.39	14.16	474.556	0.0695	0	0.82061	117.1893	0.99986	0	0.9999	473.62	0.0697	-0.002	0	0.2084	1.0119	0.8165	452.8615
18	470.3	0.52	-12.01	13.9	469.937	0.1107	7	0.86381	120.4928	1.06011	0	1.0601	442.29	0.1109	-0.002	7	0.2297	0.9996	0.8652	442.9351
19	498.5	0.57	-12.15	12.77	498.133	0.1144	7	0.84444	121.3066	1.12076	0	1.1208	443.46	0.1147	-0.002	7	0.2273	0.987	0.8511	463.6162
20	475.9	0.55	-12.26	13.18	475.529	0.1157	7	0.86502	120.932	1.18123	0	1.1812	401.57	0.116	-0.002	7	0.2401	0.9739	0.8772	436.608
21	525.5	0.56	-12.65	12.58	525.117	0.1066	7	0.813	121.3058	1.24188	0	1.2419	421.84	0.1069	-0.002	7	0.2246	0.9647	0.8292	477.613
22	507.1	0.77	-12.02	12.95	506.737	0.152	7	0.88604	123.549	1.30366	0	1.3037	387.7	0.1523	-0.002	7	0.2577	0.9476	0.9084	452.6622
23	487.2	0.52	-11.84	13.19	486.842	0.1068	7	0.84456	120.579	1.36395	0	1.364	355.94	0.1071	-0.002	7	0.2468	0.9393	0.8721	430.9512
24	467.2	0.47	-12.88	12.84	466.811	0.1007	7	0.85497	119.7368	1.42381	0	1.4238	326.86	0.101	-0.002	7	0.2559	0.9269	0.8885	407.6587
25	479.3	0.45	-12.3	13.07	478.928	0.094	0	0.83681	119.4811	1.48355	0	1.4836	321.82	0.0943	-0.002	0	0.2535	0.9179	0.8747	414.1818
26	494.6	0.6	-12.4	13.74	494.225	0.1214	7	0.85646	121.6627	1.54439	0	1.5444	319.01	0.1218	-0.002	7	0.2657	0.9044	0.8991	421.1173
27	522.8	0.67	-13.09	13.81	522.404	0.1283	7	0.84298	122.6054	1.60569	0	1.6057	324.35	0.1287	-0.002	7	0.2648	0.8954	0.8891	440.7327
28	492.2	0.55	-12.22	14.43	491.83	0.1118	7	0.84644	121.0142	1.6662	0	1.6662	294.18	0.1122	-0.002	7	0.2716	0.884	0.8992	409.4998
29	483.6	0.46	-11.94	14.64	483.239	0.0952	0	0.83435	119.6638	1.72603	0	1.726	278.97	0.0955	-0.002	0	0.2719	0.8754	0.8924	398.3745
30	445.4	0.34	-13.09	15.99	445.004	0.0764	0	0.85243	117.2509	1.78465	0	1.7847	248.35	0.0767	-0.002	0	0.2847	0.8617	0.9186	360.9536
31	402.5	0.53	-12.6	16.35	402.119	0.1318	7	0.95287	120.252	1.84478	0	1.8448	216.98	0.1324	-0.002	7	0.3301	0.8324	1.0303	314.8731
32	507.7	0.52	-12.6	16.33	507.319	0.1025	7	0.82228	120.6794	1.90512	0	1.9051	265.29	0.1029	-0.002	7	0.281	0.8477	0.8934	404.9165
33	422.2	0.46	-12.87	17.37	421.811	0.1091	7	0.90678	119.3322	1.96478	0	1.9648	213.69	0.1096	-0.002	7	0.3216	0.8195	0.9924	325.1844
34	383.1	0.24	-12.4	17.54	382.725	0.0627	0	0.91181	114.3347	2.02195	0	2.022	188.28	0.063	-0.002	0	0.3299	0.8076	1.0069	290.5826
35	370.7	0.34	-12.11	18.03	370.334	0.0918	0	0.94383	116.8029	2.08035	0	2.0804	177.01	0.0923	-0.002	0	0.348	0.7903	1.0471	275.0638
36	319.6	0.34	-12.11	18.6	319.234	0.1065	7	1.02085	116.4408	2.13857	0	2.1386	148.27	0.1072	-0.003	7	0.3859	0.7622	1.1391	228.4259
37	375	0.49	-11.81	18.87	374.643	0.1308	7	0.98049	119.5052	2.19833	0	2.1983	169.42	0.1316	-0.002	7	0.3721	0.7618	1.0955	268.1428
38	334.3	0.31	-11.27	19.01	333.959	0.0928	0	0.98881	115.8749	2.25626	0	2.2563	147.01	0.0935	-0.002	0	0.3829	0.7483	1.1161	234.5896
39	258.5	0.56	-11.71	19.12	258.146	0.2169	7	1.21723	119.5739	2.31605	0	2.3161	110.46	0.2189	-0.003	6	0.4823	0.6853	1.3704	165.6991
40	230.4	0.36	-11.42	19.09	230.055	0.1565	7	1.20615	116.06	2.37408	0	2.3741	95.903	0.1581	-0.004	6	0.4864	0.675	1.3734	145.2431
41	337	0.86	-11.71	19.11	336.646	0.2555	7	1.15296	123.3604	2.43576	0	2.4358	137.21	0.2573	-0.003	7	0.4615	0.6806	1.3007	214.9707
42	310.7	0.9	-11.51	20.08	310.352	0.29	7	1.21285	123.4947	2.49751	0	2.4975	123.26	0.2924	-0.003	6	0.4921	0.6553	1.3733	190.6684
43	333.8	0.61	-10.93	20.87	333.469	0.1829	7	1.0846	120.8241	2.55792	0	2.5579	129.37	0.1843	-0.002	7	0.4462	0.6744	1.2445	210.9202
44	367.1	0.71	-10.54	21.17	366.781	0.1936	7	1.05926	122.1671	2.619	0	2.619	139.05	0.195	-0.002	7	0.4391	0.6717	1.218	231.1818
45	381.8	0.81	-10.24	21.72	381.49	0.2123	7	1.06436	123.2271	2.68062	0	2.6806	141.31	0.2138	-0.002	7	0.4451	0.6612	1.2261	236.7046
46	347.1	0.25	-9.56	22.37	346.811	0.0721	0	0.95761	114.393	2.73781	0	2.7378	125.67	0.0727	-0.002	0	0.4103	0.677	1.1302	220.1538
47	300	0.99	-8.68	22.98	299.738	0.3303	7	1.25772	124.1072	2.79987	0	2.7999	106.05	0.3334	-0.002	6	0.537	0.593	1.4531	166.412
48	327.1	0.83	-9.31	23.36	326.818	0.254	7	1.1624	123.0283	2.86138	0	2.8614	113.22	0.2562	-0.002	6	0.5032	0.6062	1.3559	185.594
49	358.7	0.94	-8.87	23.63	358.432	0.2623	7	1.13657	124.1642	2.92346	0	2.9235	121.61	0.2644	-0.002	6	0.4955	0.6044	1.328	203.0516
50	309.5	0	-8.19	23.86	309.252	0	0	0	769.6	3.30826	0	3.3083	92.479	0	-0.002	0	1	0.3198	0	0

	CPT-21	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	154.4	0.6	-0.61	-15.51	154.382	0.3887	6	1.5365	118.8248	0.05941	0	0.0594	2597.5	0.3888	-3E-04	7	0.3143	2.4722	1.2204	360.5613
2	184.2	0.69	-1.96	-16.28	184.141	0.3747	6	1.46333	120.2774	0.11955	0	0.1196	1539.3	0.375	-8E-04	7	0.3196	2.0076	1.2205	349.1501
3	193.5	0.73	-2.06	-16.38	193.438	0.3774	6	1.4471	120.8098	0.17996	0	0.18	1073.9	0.3777	-8E-04	7	0.3334	1.805	1.2416	329.6706
4	256.8	0.95	-2.68	-16.42	256.719	0.3701	6	1.34117	123.4276	0.24167	0.0156	0.2261	1134.5	0.3704	-8E-04	7	0.311	1.616	1.1795	391.7095
5	322.1	1.23	-3.66	-15.88	321.989	0.382	7	1.27156	125.8701	0.3046	0.0468	0.2578	1247.8	0.3824	-1E-03	7	0.2959	1.5187	1.1371	461.7189
6	422.6	0.43	-8.72	-16.85	422.336	0.1018	7	0.89824	118.8417	0.36403	0.078	0.286	1475.3	0.1019	-0.002	7	0.1719	1.2521	0.8047	499.3296
7	421.5	0.89	-12.42	-16.6	421.124	0.2113	7	1.0267	124.1574	0.4261	0.1092	0.3169	1327.5	0.2116	-0.002	7	0.2204	1.3044	0.9315	518.6267
8	515.8	4.18	-13.83	-16.11	515.382	0.8111	6	1.37364	135.9683	0.49409	0.1404	0.3537	1455.8	0.8118	-0.002	7	0.356	1.4772	1.2853	718.829
9	517.4	1.02	-11.75	-17.63	517.045	0.1973	7	0.93556	125.6554	0.55692	0.1716	0.3853	1340.4	0.1975	-0.002	7	0.198	1.2215	0.865	596.2253
10	588.7	1	-10.04	-17.56	588.396	0.17	7	0.85336	125.8258	0.61983	0.2028	0.417	1409.4	0.1701	-0.002	7	0.173	1.1748	0.7954	652.5742
11	597.3	1.77	-12.73	-19.21	596.915	0.2965	7	0.99768	130.0387	0.68485	0.234	0.4509	1322.5	0.2969	-0.002	7	0.2285	1.2153	0.9392	684.7828
12	578.6	1.28	-12.24	-20.14	578.23	0.2214	7	0.9251	127.5896	0.74864	0.2652	0.4834	1194.5	0.2217	-0.002	7	0.2043	1.1735	0.8719	640.4775
13	450.4	0.85	-12.41	-20.45	450.025	0.1889	7	0.97672	123.9828	0.81063	0.2964	0.5142	873.56	0.1892	-0.003	7	0.2233	1.1749	0.9182	498.7755
14	464.3	0.51	-12.73	-20.28	463.915	0.1099	7	0.86829	120.3192	0.87079	0.3276	0.5432	852.45	0.1101	-0.003	7	0.1863	1.1323	0.818	495.5065
15	396.2	0.33	-12.55	-20.63	395.82	0.0834	0	0.90805	116.7468	0.92917	0.3588	0.5704	692.35	0.0836	-0.003	0	0.2021	1.133	0.8557	422.8433
16	464.4	0.75	-12.45	-21.26	464.024	0.1616	7	0.93231	123.1417	0.99074	0.39	0.6007	770.77	0.162	-0.003	7	0.2158	1.1299	0.8868	494.4651
17	403.8	0.48	-12.23	-21.74	403.43	0.119	7	0.93659	119.5349	1.05051	0.4212	0.6293	639.4	0.1193	-0.003	7	0.2189	1.1205	0.8913	426.0886
18	421.1	0.41	-9.38	-21.07	420.816	0.0974	0	0.89511	118.4844	1.10975	0.4524	0.6574	638.48	0.0977	-0.003	0	0.2065	1.1033	0.8551	437.6209
19	460	0.45	-9.61	-21.23	459.709	0.0979	0	0.85832	119.3812	1.16944	0.4836	0.6858	668.58	0.0981	-0.003	0	0.196	1.0887	0.8239	471.8062
20	430.2	0.6	-9.8	-21.84	429.904	0.1396	7	0.93523	121.3227	1.2301	0.5148	0.7153	599.29	0.14	-0.003	7	0.2271	1.093	0.9015	442.8029
21	454.1	0.63	-9.63	-22.68	453.809	0.1388	7	0.91272	121.8116	1.29101	0.546	0.745	607.4	0.1392	-0.003	7	0.2217	1.0809	0.8835	462.2568
22	453.2	0.47	-9.56	-23.17	452.911	0.1038	7	0.87112	119.663	1.35084	0.5772	0.7736	583.68	0.1041	-0.003	7	0.2086	1.0675	0.8455	455.5649
23	455.3	0.58	-9.9	-23.24	455.001	0.1275	7	0.89758	121.213	1.41144	0.6084	0.803	564.84	0.1279	-0.003	7	0.2212	1.0629	0.8747	455.6425
24	419.9	0.58	-8.99	-23.13	419.628	0.1382	7	0.9433	121.0156	1.47195	0.6396	0.8324	502.38	0.1387	-0.003	7	0.2406	1.0595	0.9222	418.6865
25	429.3	0.58	-9.02	-23.81	429.027	0.1352	7	0.93074	121.0696	1.53249	0.6708	0.8617	496.11	0.1357	-0.003	7	0.2386	1.0502	0.9131	424.305
26	456.3	0.63	-9.31	-23.95	456.018	0.1382	7	0.90994	121.8235	1.5934	0.702	0.8914	509.79	0.1386	-0.003	7	0.2335	1.0408	0.896	447.0102
27	459.4	0.67	-10.1	-24.44	459.095	0.1459	7	0.91698	122.2903	1.65454	0.7332	0.9213	496.49	0.1465	-0.003	7	0.2387	1.0336	0.9061	446.8424
28	414.8	0.5	-9	-24.85	414.528	0.1206	7	0.92733	119.8998	1.71449	0.7644	0.9501	434.5	0.1211	-0.003	7	0.245	1.0267	0.9188	400.5702
29	437.6	0.37	-8.92	-24.36	437.33	0.0846	0	0.86635	117.8272	1.77341	0.7956	0.9778	445.44	0.085	-0.003	0	0.2242	1.0179	0.8608	418.9854
30	426.7	0.35	-8.52	-24.32	426.442	0.0821	0	0.87502	117.3591	1.83209	0.8268	1.0053	422.38	0.0824	-0.003	0	0.2298	1.0118	0.8721	406.043
31	314.8	0.17	-7.99	-23.99	314.558	0.054	0	0.99795	111.3331	1.88775	0.858	1.0298	303.64	0.0544	-0.005	0	0.2786	1.0076	0.9972	297.7444
32	276.4	0.24	-7.62	-23.78	276.17	0.0869	0	1.06529	113.5388	1.94452	0.8892	1.0553	259.85	0.0875	-0.005	0	0.3069	1.0008	1.0684	259.3752
33	309.8	0.3	-6.74	-23.33	309.596	0.0969	0	1.02472	115.4502	2.00225	0.9204	1.0819	284.32	0.0975	-0.005	0	0.2939	0.9935	1.0308	288.8125
34	284.5	0.28	-5.98	-23.22	284.319	0.0985	0	1.06237	114.7377	2.05962	0.9516	1.108	254.74	0.0992	-0.005	0	0.3109	0.9858	1.0722	262.9636
35	271.3	0.41	-5.39	-24.18	271.137	0.1512	7	1.13407	117.4123	2.11832	0.9828	1.1355	236.91	0.1524	-0.005	7	0.3412	0.9762	1.1483	248.1925
36	305.5	0.19	-3.53	-24.15	305.393	0.0622	0	1.00977	112.0748	2.17436	1.014	1.1604	261.31	0.0627	-0.004	0	0.2953	0.9731	1.0247	278.8671
37	263.4	0.33	-2.72	-24.67	263.318	0.1253	7	1.12015	115.7527	2.23224	1.0452	1.187	219.95	0.1264	-0.005	7	0.3408	0.9616	1.1411	237.2647
38	238.8	0.22	-2.13	-24.49	238.736	0.0922	0	1.13175	112.5469	2.28851	1.0764	1.2121	195.07	0.093	-0.005	0	0.348	0.9538	1.1568	213.1404
39	336.5	0.2	-0.98	-24.96	336.47	0.0594	0	0.9676	112.6864	2.34485	1.1076	1.2373	270.05	0.0599	-0.004	0	0.2857	0.9563	0.99	301.977
40	271.5	0.24	-0.2	-24.8	271.494	0.0884	0	1.07375	113.4972	2.4016	1.1388	1.2628	213.09	0.0892	-0.004	0	0.33	0.9433	1.1032	239.8972
41	317	0.41	2.01	-24.22	317.061	0.1293	7	1.04728	117.794	2.4605	1.17	1.2905	243.78	0.1303	-0.003	7	0.3217	0.9381	1.0779	278.9276
42	293.8	0.35	5.1	-24.63	293.954	0.1191	7	1.06803	116.4517	2.51872	1.2012	1.3175	221.2	0.1201	-0.003	7	0.3326	0.9297	1.1031	256.0605
43	265.7	0.33	6.34	-24.09	265.892	0.1241	7	1.1149	115.7764	2.57661	1.2324	1.3442	195.89	0.1253	-0.003	7	0.3538	0.9188	1.1555	228.6516
44	233.8	0.29	8.48	-23.93	234.056	0.1239	7	1.16795	114.5199	2.63387	1.2636	1.3703	168.89	0.1253	-0.003	7	0.3777	0.907	1.2149	198.3686
45	235.5	0.28	11.6	-23.27	235.851	0.1187	7	1.15991	114.2818	2.69101	1.2948	1.3962	166.99	0.1201	-0.002	7	0.377	0.9007	1.2099	198.4828
46	242.1	0.29	12.54	-23.82	242.479	0.1196	7	1.14909	114.6062	2.74832	1.326	1.4223	168.55	0.121	-0.002	7	0.3751	0.895	1.2017	202.769
47	268.4	0.39	13.95	-23.48	268.822	0.1451	7	1.13136	117.0255	2.80683	1.3572	1.4496	183.51	0.1466	-0.001	7	0.37	0.89	1.1849	223.7609
48	216.8	0.33	15.19	-23.66	217.259	0.1519	7	1.22522	115.2838	2.86447	1.3884	1.4761	145.25	0.1539	-0.001	7	0.4109	0.8722	1.2888	176.7196
49	243.7	0.32	16.33	-22.73	244.194	0.131	7	1.15708	115.3436	2.92214	1.4196	1.5025	160.58	0.1326	-0.001	7	0.3859	0.8734	1.2199	199.1624
50	224.5	0	16.98	-21.69	225.013	0	0	0	769.6	3.30694	1.4508	1.8561	119.44	0	-0.001	0	1	0.5701	0	0

	CPT-22	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	158.5	0.41	-0.79	5.52	158.476	0.2587	6	1.44096	116.1025	0.05805	0	0.0581	2728.9	0.2588	-4E-04	7	0.2856	2.2908	1.1289	342.9807
2	276.4	0.7	-2.81	7.66	276.315	0.2533	7	1.22396	121.3725	0.11874	0	0.1187	2326.1	0.2534	-7E-04	7	0.2465	1.7148	1.0296	447.5996
3	285	0.66	-3.37	7.67	284.898	0.2317	7	1.19303	121.0166	0.17925	0	0.1793	1588.4	0.2318	-9E-04	7	0.2501	1.5591	1.0297	419.5289
4	295.3	0.75	-3.14	7.77	295.205	0.2541	7	1.19998	122.0386	0.24027	0	0.2403	1227.7	0.2543	-8E-04	7	0.2657	1.4827	1.0582	413.3391
5	301.3	0.26	-5.44	7.69	301.135	0.0863	0	1.02771	114.3356	0.29743	0.0312	0.2662	1130	0.0864	-0.001	0	0.2071	1.3308	0.9057	378.3723
6	272.5	0.36	-6.02	7.72	272.318	0.1322	7	1.11305	116.4713	0.35567	0.0624	0.2933	927.35	0.1324	-0.002	7	0.2412	1.3627	0.9867	350.2475
7	282.2	0.37	-5.88	7.7	282.022	0.1312	7	1.09756	116.7572	0.41405	0.0936	0.3205	878.8	0.1314	-0.002	7	0.2398	1.3318	0.9808	354.4351
8	258.1	0.33	-5.49	7.02	257.934	0.1279	7	1.13131	115.7023	0.4719	0.1248	0.3471	741.76	0.1282	-0.002	7	0.254	1.3273	1.0152	322.9527
9	254	0.32	-5.03	7.93	253.848	0.1261	7	1.13612	115.4382	0.52962	0.156	0.3736	678.02	0.1263	-0.002	7	0.259	1.3094	1.0255	313.4844
10	256.3	0.32	-4.61	7.48	256.161	0.1249	7	1.13124	115.4603	0.58735	0.1872	0.4002	638.7	0.1252	-0.002	7	0.2608	1.2886	1.0272	311.2439
11	261.9	0.27	-4.31	7.32	261.77	0.1031	7	1.10163	114.27	0.64448	0.2184	0.4261	612.85	0.1034	-0.002	7	0.2535	1.2594	1.0053	310.7935
12	273	0.4	-3.73	6.99	272.887	0.1466	7	1.12676	117.2473	0.70311	0.2496	0.4535	600.18	0.147	-0.002	7	0.2666	1.2534	1.0366	322.4257
13	302.8	0.51	-3.43	6.96	302.696	0.1685	7	1.10754	119.2778	0.76275	0.2808	0.482	626.49	0.1689	-0.002	7	0.2642	1.231	1.0271	351.2582
14	301.8	0.62	-3.14	6.26	301.705	0.2055	7	1.1463	120.6989	0.82309	0.312	0.5111	588.7	0.2061	-0.002	7	0.281	1.2269	1.0701	348.872
15	317	0.45	-3.07	6.95	316.907	0.142	7	1.06105	118.4739	0.88233	0.3432	0.5391	586.17	0.1424	-0.002	7	0.2531	1.1861	0.9936	354.2553
16	354.1	0.62	-2.84	7.04	354.014	0.1751	7	1.05295	121.0889	0.94288	0.3744	0.5685	621.08	0.1756	-0.002	7	0.2547	1.1715	0.9933	390.8914
17	392.3	0.76	-3.04	6.85	392.208	0.1938	7	1.03401	122.8285	1.00429	0.4056	0.5987	653.43	0.1943	-0.002	7	0.2519	1.1543	0.9817	426.7557
18	387.4	0.48	-4.12	6.49	387.275	0.1239	7	0.9591	119.4352	1.06401	0.4368	0.6272	615.76	0.1243	-0.002	7	0.2267	1.1259	0.9121	410.9472
19	429.8	0.45	-4.41	7.44	429.667	0.1047	7	0.89423	119.2164	1.12362	0.468	0.6556	653.65	0.105	-0.002	7	0.2062	1.1037	0.8544	447.0118
20	395	0.51	-5	6.57	394.849	0.1292	7	0.9572	119.9261	1.18358	0.4992	0.6844	575.22	0.1296	-0.002	7	0.2318	1.1063	0.9179	411.5864
21	376.2	0.56	-4.8	4.91	376.055	0.1489	7	0.99974	120.4914	1.24382	0.5304	0.7134	525.37	0.1494	-0.002	7	0.2502	1.1037	0.9624	390.9451
22	365.9	0.31	-4.61	4.52	365.761	0.0848	0	0.94305	116.0967	1.30187	0.5616	0.7403	492.33	0.0851	-0.002	0	0.2313	1.0861	0.9094	374.1126
23	375	0.62	-4.7	4.54	374.858	0.1654	7	1.01977	121.2284	1.36249	0.5928	0.7697	485.26	0.166	-0.002	7	0.2632	1.0874	0.9892	383.8211
24	335.4	0.42	-3.84	-5.4	335.284	0.1253	7	1.01991	118.1066	1.42154	0.624	0.7975	418.61	0.1258	-0.003	7	0.2653	1.0779	0.9914	340.1051
25	309.8	0.5	-3.09	-3.73	309.707	0.1614	7	1.09104	119.1888	1.48114	0.6552	0.8259	373.18	0.1622	-0.003	7	0.2946	1.0757	1.0647	313.3555
26	363.1	0.31	-2.94	-2.32	363.011	0.0854	0	0.9468	116.0783	1.53917	0.6864	0.8528	423.88	0.0858	-0.002	0	0.2432	1.0539	0.9264	360.0267
27	293.9	0.44	-1.63	-1.24	293.851	0.1497	7	1.0999	118.1253	1.59824	0.7176	0.8806	331.86	0.1506	-0.003	7	0.3033	1.0573	1.0805	292.0163
28	317.1	0.44	-0.92	-0.83	317.072	0.1388	7	1.05738	118.3108	1.65739	0.7488	0.9086	347.15	0.1395	-0.003	7	0.29	1.0452	1.0423	311.5598
29	320.4	0.54	-0.45	0.57	320.386	0.1686	7	1.08508	119.8346	1.71731	0.78	0.9373	339.98	0.1695	-0.003	7	0.3033	1.0375	1.0736	312.4497
30	295.7	0.36	0.18	6.68	295.705	0.1217	7	1.06827	116.6723	1.77565	0.8112	0.9645	304.77	0.1225	-0.003	7	0.2994	1.0281	1.06	285.6053
31	322.8	0.43	0.69	7.12	322.821	0.1332	7	1.04405	118.1864	1.83474	0.8424	0.9923	323.46	0.134	-0.002	7	0.293	1.019	1.0395	309.1167
32	350.1	0.71	1.24	7.24	350.138	0.2028	7	1.08665	122.0538	1.89577	0.8736	1.0222	340.69	0.2039	-0.002	7	0.312	1.0108	1.0858	332.6852
33	369.1	0.59	2.27	7.42	369.169	0.1598	7	1.01949	120.8282	1.95618	0.9048	1.0514	349.27	0.1607	-0.002	7	0.289	1.0019	1.0218	347.6867
34	336.2	0.43	3.33	7	336.301	0.1279	7	1.02147	118.2861	2.01532	0.936	1.0793	309.72	0.1286	-0.002	7	0.2924	0.9942	1.0272	314.0992
35	381.7	0.58	3.49	6.73	381.806	0.1519	7	0.99713	120.7852	2.07572	0.9672	1.1085	342.56	0.1527	-0.002	7	0.2855	0.9868	1.0055	354.139
36	335.6	0.93	5.3	542.53	335.76	0.277	7	1.17339	123.9265	2.13768	0.9984	1.1393	292.84	0.2788	-0.002	7	0.356	0.974	1.1867	307.1121
37	365.3	0.87	6.32	542.65	365.491	0.238	7	1.10633	123.6455	2.1995	1.0296	1.1699	310.53	0.2395	-0.002	7	0.333	0.9671	1.1222	332.0484
38	379.6	0.71	6.37	541.57	379.793	0.1869	7	1.03874	122.2521	2.26063	1.0608	1.1998	314.66	0.1881	-0.002	7	0.3095	0.9619	1.0572	343.1862
39	344.7	0.38	6.27	8.52	344.89	0.1102	7	0.9921	117.4432	2.31935	1.092	1.2274	279.11	0.1109	-0.002	7	0.2943	0.9573	1.014	309.9224
40	343.6	0.39	6.47	8.74	343.796	0.1134	7	0.99684	117.6255	2.37816	1.1232	1.255	272.05	0.1142	-0.002	7	0.2986	0.9503	1.0219	306.6382
41	340.3	0.48	6.57	8.74	340.499	0.141	7	1.03077	119.1213	2.43772	1.1544	1.2833	263.43	0.142	-0.002	7	0.3143	0.9412	1.0594	300.694
42	297.1	0.63	7.94	8.89	297.34	0.2119	7	1.15811	120.7804	2.49811	1.1856	1.3125	224.64	0.2137	-0.002	7	0.3667	0.924	1.1934	257.4795
43	294	0.59	9.03	8.87	294.273	0.2005	7	1.15101	120.2752	2.55825	1.2168	1.3415	217.46	0.2023	-0.002	7	0.3668	0.9167	1.1899	252.7176
44	290.4	0.56	9.9	9.14	290.699	0.1926	7	1.148	119.8635	2.61818	1.248	1.3702	210.25	0.1944	-0.002	7	0.3684	0.9092	1.1905	247.535
45	301.6	0.61	10.19	9.96	301.908	0.2021	7	1.14264	120.5816	2.67847	1.2792	1.3993	213.85	0.2039	-0.002	7	0.3687	0.9021	1.1878	255.1087
46	262.7	0.44	10.79	9.56	263.026	0.1673	7	1.16244	117.855	2.7374	1.3104	1.427	182.4	0.169	-0.002	7	0.3801	0.8926	1.2141	219.5619
47	252.6	0.41	11.57	10.04	252.95	0.1621	7	1.17305	117.243	2.79602	1.3416	1.4544	172	0.1639	-0.002	7	0.3871	0.8841	1.2292	209.0223
48	253.7	0.54	12.67	10.07	254.083	0.2125	7	1.21934	119.2691	2.85566	1.3728	1.4829	169.42	0.2149	-0.002	7	0.4077	0.8715	1.2796	206.9129
49	264.8	0.37	13.58	10.54	265.211	0.1395	7	1.13131	116.6073	2.91396	1.404	1.51	173.71	0.1411	-0.002	7	0.3758	0.8749	1.1924	216.8854
50	282	0	14.33	10.95	282.433	0	0	0	769.6	3.29876	1.4352	1.8636	149.79	0	-0.001	0	1	0.5678	0	0

	CPT-23	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	296	1.12	-1.76	14.42	295.947	0.3785	7	1.29769	124.9789	0.06249	0	0.0625	4734.9	0.3785	-4E-04	7	0.2579	2.0744	1.0659	580.0858
2	262.4	1.32	-3.52	15.72	262.294	0.5033	6	1.41666	125.8867	0.12543	0	0.1254	2090.1	0.5035	-1E-03	7	0.318	1.9701	1.2086	488.1373
3	226.7	1.14	-3.41	14.78	226.597	0.5031	6	1.4654	124.4572	0.18766	0	0.1877	1206.5	0.5035	-0.001	7	0.3455	1.8177	1.2746	388.9395
4	240.5	0.36	-3.41	15.44	240.397	0.1498	7	1.18171	116.1672	0.24575	0	0.2458	977.24	0.1499	-0.001	7	0.2564	1.454	1.0305	329.9964
5	230.6	0.29	-5.38	13.94	230.437	0.1259	7	1.1763	114.4819	0.30299	0	0.303	759.55	0.126	-0.002	7	0.2621	1.3879	1.0407	301.8675
6	263.8	0.33	-6.51	14.09	263.603	0.1252	7	1.11956	115.7553	0.36086	0	0.3609	729.48	0.1254	-0.002	7	0.2518	1.3111	1.0081	326.19
7	414.6	0.47	-9.85	14.28	414.302	0.1134	7	0.91924	119.4457	0.42059	0	0.4206	984.06	0.1136	-0.002	7	0.1928	1.1946	0.8464	467.2786
8	294.2	0.66	-9.92	15.29	293.9	0.2246	7	1.17464	121.0924	0.48113	0	0.4811	609.85	0.2249	-0.002	7	0.2873	1.2541	1.0908	347.7631
9	369.9	0.79	-10.09	16.65	369.595	0.2138	7	1.07766	122.9669	0.54262	0	0.5426	680.13	0.2141	-0.002	7	0.2614	1.1907	1.0141	415.3082
10	317.6	0.72	-10.21	14.85	317.291	0.2269	7	1.14796	121.9159	0.60357	0	0.6036	524.69	0.2274	-0.002	7	0.2927	1.1786	1.088	352.7404
11	353.6	0.64	-9.74	16.52	353.305	0.1812	7	1.06026	121.3163	0.66423	0	0.6642	530.9	0.1815	-0.002	7	0.2673	1.1325	1.0134	377.4382
12	317.3	0.54	-9.71	18.17	317.006	0.1703	7	1.09117	119.8087	0.72414	0	0.7241	436.77	0.1707	-0.002	7	0.2842	1.1138	1.0501	332.9264
13	375.8	0.31	-9.22	20	375.521	0.0826	0	0.93	116.161	0.78222	0	0.7822	479.07	0.0827	-0.002	0	0.2302	1.072	0.9012	379.6673
14	282.7	0.25	-9.11	20.14	282.425	0.0885	0	1.05691	113.8921	0.83916	0	0.8392	335.55	0.0888	-0.002	0	0.2822	1.0676	1.0304	284.1128
15	291.8	0.37	-8.55	21.34	291.541	0.1269	7	1.07945	116.8382	0.89758	0	0.8976	323.81	0.1273	-0.002	7	0.2966	1.05	1.0609	288.4205
16	299.1	0.27	-7.83	21.54	298.863	0.0903	0	1.03413	114.5932	0.95488	0	0.9549	311.99	0.0906	-0.002	0	0.285	1.0297	1.0232	289.9058
17	334.6	0.39	-7.83	21.86	334.363	0.1166	7	1.01182	117.5576	1.01366	0	1.0137	328.86	0.117	-0.002	7	0.2821	1.0122	1.0084	318.881
18	322.8	0.52	-7.46	22.49	322.574	0.1612	7	1.07455	119.5751	1.07345	0	1.0735	299.5	0.1617	-0.002	7	0.3115	0.9955	1.0782	302.486
19	308.8	0.42	-6.66	23.02	308.599	0.1361	7	1.0656	117.9043	1.1324	0	1.1324	271.52	0.1366	-0.002	7	0.3137	0.9789	1.0764	284.4616
20	334.7	0.58	-6.45	22.73	334.505	0.1734	7	1.07324	120.4626	1.19263	0	1.1926	279.48	0.174	-0.001	7	0.3218	0.9622	1.0905	303.1061
21	325.3	0.41	-5.26	23.54	325.141	0.1261	7	1.03348	117.8553	1.25156	0	1.2516	258.79	0.1266	-0.001	7	0.312	0.949	1.0572	290.4815
22	316.7	0.35	-4.3	23.02	316.57	0.1106	7	1.02842	116.6325	1.30987	0	1.3099	240.68	0.111	-1E-03	7	0.3154	0.9349	1.0589	278.5513
23	339.7	0.51	-4.01	23.55	339.579	0.1502	7	1.04203	119.5583	1.36965	0	1.3697	246.93	0.1508	-9E-04	7	0.3255	0.9194	1.0781	293.8797
24	344.9	0.89	-2.95	23.86	344.811	0.2581	7	1.14671	123.6697	1.43149	0	1.4315	239.88	0.2592	-6E-04	7	0.3711	0.8939	1.1902	290.0878
25	402.2	0.52	-2.25	23.11	402.132	0.1293	7	0.94993	120.1127	1.49154	0	1.4915	268.61	0.1298	-4E-04	7	0.2993	0.9024	0.9939	341.666
26	368.2	0.35	-2.48	23.47	368.125	0.0951	0	0.94943	117.0004	1.55004	0	1.55	236.49	0.0955	-5E-04	0	0.3048	0.8901	1.0011	308.3836
27	414.4	0.36	-3.36	23.6	414.298	0.0869	0	0.89151	117.4948	1.60879	0	1.6088	256.52	0.0872	-6E-04	0	0.2862	0.887	0.9448	345.9528
28	430.7	0.39	-5.31	24.22	430.539	0.0906	0	0.87854	118.1742	1.66788	0	1.6679	257.14	0.0909	-9E-04	0	0.2857	0.8781	0.9359	355.9117
29	399.9	0.38	-5.3	24.21	399.74	0.0951	0	0.91445	117.8031	1.72678	0	1.7268	230.49	0.0955	-1E-03	0	0.3054	0.8611	0.9802	323.9018
30	302.7	0.42	-4.73	23.89	302.557	0.1388	7	1.07657	117.8561	1.78571	0	1.7857	168.43	0.1396	-0.001	7	0.377	0.821	1.1609	233.359
31	293.1	0.42	-3.89	23.14	292.982	0.1434	7	1.09445	117.7776	1.8446	0	1.8446	157.83	0.1443	-1E-03	7	0.3897	0.8053	1.1867	221.5721
32	268.4	0.31	-3.24	23.36	268.302	0.1155	7	1.10277	115.341	1.90227	0	1.9023	140.04	0.1164	-9E-04	7	0.3995	0.7911	1.2052	199.1736
33	223.5	0.65	-2.33	24.29	223.43	0.2909	6	1.33396	120.3121	1.96242	0	1.9624	112.85	0.2935	-8E-04	6	0.4976	0.7354	1.4554	153.9218
34	221.8	0.65	-1.63	24.36	221.751	0.2931	6	1.33846	120.2937	2.02257	0	2.0226	108.64	0.2958	-5E-04	6	0.5051	0.7209	1.4676	149.7014
35	222.2	0.71	-0.88	24.8	222.173	0.3196	6	1.3574	120.9444	2.08304	0	2.083	105.66	0.3226	-3E-04	6	0.5181	0.704	1.4941	146.4426
36	297.5	0.49	1.43	24.87	297.543	0.1647	7	1.11043	118.9432	2.14251	0	2.1425	137.88	0.1659	0.0004	7	0.4223	0.7424	1.2345	207.2547
37	211.3	0.3	2.46	24.29	211.374	0.1419	7	1.22724	114.5194	2.19977	0	2.1998	95.089	0.1434	0.0009	6	0.4801	0.7037	1.379	139.1177
38	242.3	0.37	3.5	24.36	242.406	0.1526	7	1.18111	116.388	2.25797	0	2.258	106.36	0.1541	0.0011	6	0.4646	0.7032	1.331	159.5895
39	205.8	0.46	9.08	25.11	206.075	0.2232	6	1.31036	117.5851	2.31676	0	2.3168	87.949	0.2258	0.0032	6	0.5239	0.6633	1.4795	127.7273
40	218.7	0.34	10.32	25.29	219.012	0.1552	7	1.22507	115.5218	2.37452	0	2.3745	91.234	0.1569	0.0034	6	0.495	0.6703	1.3959	137.2293
41	219.1	0.48	11.49	25.07	219.447	0.2187	7	1.28194	118.0498	2.43355	0	2.4336	89.176	0.2212	0.0038	6	0.5223	0.6472	1.4606	132.7459
42	234.7	0.42	11.61	25.66	235.051	0.1787	7	1.21853	117.2403	2.49217	0	2.4922	93.316	0.1806	0.0036	6	0.5016	0.6507	1.3984	143.0184
43	180.3	0.34	12.68	25.94	180.683	0.1882	6	1.33277	115.0526	2.54969	0	2.5497	69.865	0.1909	0.0051	6	0.5585	0.6119	1.5408	103.0123
44	195.7	0.37	13.54	26.13	196.109	0.1887	7	1.30023	115.8711	2.60763	0	2.6076	74.206	0.1912	0.005	6	0.5491	0.6094	1.5088	111.4414
45	240.9	0.46	13.37	27.88	241.304	0.1906	7	1.21929	117.97	2.66661	0	2.6666	89.491	0.1928	0.004	6	0.5173	0.6199	1.4175	139.8157
46	238	0.48	14.46	28.37	238.437	0.2013	7	1.23389	118.2522	2.72574	0	2.7257	86.476	0.2036	0.0044	6	0.5287	0.6063	1.4401	135.0732
47	174.1	0.4	15.11	28.42	174.557	0.2292	6	1.38041	116.1576	2.78382	0	2.7838	61.704	0.2329	0.0063	6	0.6006	0.5593	1.6219	90.8016
48	194	0.48	14.79	28.12	194.447	0.2469	6	1.35235	117.7548	2.84269	0	2.8427	67.402	0.2505	0.0056	6	0.5919	0.5572	1.5914	100.8911
49	213	0.57	15.89	27.73	213.481	0.267	6	1.33252	119.24	2.90231	0	2.9023	72.555	0.2707	0.0054	6	0.5866	0.5533	1.5702	110.1071
50	275.6	0	15.91	28.67	276.081	0	0	0	769.6	3.28711	0	3.2871	82.989	0	0.0042	0	1	0.3219	0	0

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log(\frac{q_t}{p_a}) + 1.236\right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$I_c < 3.27$ and $I_c > 1.00$ then $k = 10^{0.952-3.04 \cdot I_c}$

$I_c \le 4.00$ and $I_c > 3.27$ then $k = 10^{-4.52-1.37 \cdot I_c}$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a}\right) \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

:: Young's Modulus, Es (MPa) ::

$$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 \cdot I_c + 1.68}$$

(applicable only to $I_c < I_{c_cutoff}$)

:: Relative Density, Dr (%) ::

$$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$$

(applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c_cutoff}$)

:: State Parameter, ψ ::

$$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$$

:: Peak drained friction angle, φ (°) ::

$$\varphi = 17.60 + 11 \cdot \log(Q_{tn})$$

(applicable only to SBT_n: 5, 6, 7 and 8)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$

$\alpha = 14$ for $Q_{tn} > 14$

$\alpha = Q_{tn}$ for $Q_{tn} \le 14$

$M_{CPT} = \alpha \cdot (q_t - \sigma_v)$

If $I_c \le 2.20$

$M_{CPT} = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Small strain shear Modulus, Go (MPa) ::

$$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$$

:: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho}\right)^{0.50}$$

:: Undrained peak shear strength, Su (kPa) ::

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ or user defined

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Remolded undrained shear strength, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot +7 \cdot \log(F_r))}\right]^{1.25}$$ or user defined

$OCR = k_{OCR} \cdot Q_{tn}$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: In situ Stress Ratio, Ko ::

$$K_O = (1 - \sin\varphi') \cdot OCR^{\sin\varphi'}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Effective Stress Friction Angle, φ' (°) ::

$$\varphi' = 29.5° \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$$

(applicable for $0.10 < B_q < 1.00$)

References

• Robertson, P.K., Cabal K.L., Guide to Cone Penetration Testing for Geotechnical Engineering, Gregg Drilling & Testing, Inc., 5th Edition, November 2012

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ACRONYMS

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AC	asphalt concrete
BGS	below ground surface
CBC	California Building Code
CGS	California Geological Survey
CPT	cone penetrometer test
g	gravitational acceleration (32.2 feet/second^2)
HDPE	high-density polyethylene
NCEER	National Center for Earthquake Engineering Research
PGA	peak ground acceleration
psf	pounds per square foot
psi	pounds per square inch
SPT	standard penetration test