GEOTECHNICAL DESKTOP STUDY REPORT
MIDWAY RISING SPORTS ARENA COMPLEX
3220, 3240, 3250 AND 3500 SPORTS ARENA BOULEVARD
SAN DIEGO, CALIFORNIA 92110

Prepared for

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Attention: Ryan Herrell, Executive Vice President

SUBJECT: **GEOTECHNICAL DESKTOP STUDY REPORT**
Midway Rising Sports Arena Complex
3220, 3240, 3250 and 3500 Sports Arena Boulevard
San Diego, California 92110

Mr. Herrell:

Group Delta Consultants (Group Delta) is submitting this Geotechnical Desktop Study Report to support the preliminary development of the project. The purpose of this report is to inform the development and design team about the subsurface conditions, geologic hazards, and geotechnical engineering characteristics of the site and the design and construction aspects of the underground components of the project. Group Delta prepared this report per the referenced proposal (Group Delta, 2022).

We appreciate the opportunity to support this project. Please contact us with questions or comments, or if you need anything else.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY **1**

1.0 INTRODUCTION **2**

1.1 Project Description 2

1.2 Site Description 2

1.3 Prior Geotechnical Studies 2

2.0 SUBSURFACE CONDITIONS **2**

2.1 Landform Evolution 2

2.2 Geology and Soils 3

2.2.1 Artificial Fill 4

2.2.2 Paralic Estuarine Deposits 4

2.2.3 Old Paralic Deposits 4

2.3 Groundwater 4

2.4 Underground Obstructions 5

3.0 GEOLOGIC HAZARDS **5**

3.1 Strong Ground Motion 5

3.2 Earthquake Surface Fault Rupture Hazard 5

3.3 Liquefaction and Secondary Effects 6

3.4 Seismic Compaction 7

3.5 Tsunamis (and Flooding) 7

4.0 GEOTECHNICAL ENGINEERING CHARACTERISTICS **8**

4.1 Compressibility 8

4.2 Soil Shear Strength 8

4.3 Other Geotechnical Engineering Characteristics 9

5.0 DISCUSSION **10**

5.1 Geologic Hazards 10

5.2 Geotechnical Engineering Characteristics 10

6.0 GEOTECHNICAL ENGINEERING DESIGN AND CONSTRUCTION GUIDANCE **11**

6.1 Seismic Ground Motions 11

6.1.1 Site Classification 11

6.1.2 Structure Types and Analysis Requirements 12

6.1.3 Future Changes to Seismic Design 12

6.2 Earthwork 12
6.2.1 Demolition 12
6.2.2 Soils Management 13
6.2.3 Static Settlement from Fill Loads 13
6.3 Ground Improvement 14
6.3.1 Vibro-Replacement Stone Columns 14
6.3.2 Deep Soil Mixing 15
6.4 Deep Foundations 16
6.4.1 Prior Piling Projects 16
6.4.2 Prior Pile Load Testing 16
7.0 ADDITIONAL GEOTECHNICAL ENGINEERING SERVICES 18
8.0 LIMITATIONS 18
9.0 REFERENCES 19

FIGURES

Figure 1 – Site Location Map
Figure 2 – Prior Geologic and Geotechnical Studies
Figure 3 – Site Location on Historic Map
Figure 4 – Geologic Map
Figure 5 – Generalized Geologic Cross Section
Figure 6 – City of San Diego Seismic Safety Element
Figure 7 – Regional Faults and Earthquakes Map
Figure 8 – Earthquake Zones of Required Investigation, La Jolla Quadrangle
Figure 9 – Tsunami Inundation Map
Figure 10 – Proposed Exploration Locations

APPENDIX

Data from Prior Geologic and Geotechnical Studies

EXECUTIVE SUMMARY

Group Delta Consultants (Group Delta) is submitting this Geotechnical Desktop Study Report to support the preliminary redevelopment of the project. Midway Rising is redeveloping a 50-acre site with an Arena, Entertainment Plaza, Hotel, and seven Blocks of residential housing.

Young, loose/soft soils associated with historic development of the coastline and previous deposition within the San Diego River Delta underlie the site. These soils consist of artificial fill from land reclamation, and fine and coarse grained alluvial/estuarine sediments deposited by the San Diego River. Prior subsurface exploration encountered these paralic estuarine deposits to a depth of about 100 feet and identified two distinct units: a) the upper paralic estuarine deposit unit consisting of loose/soft soils to a depth of about 60 feet, and b) consolidated estuarine deposits consisting of sandstone, siltstone and cobble that underlie the upper paralic estuarine deposits at depth. Prior subsurface exploration measured groundwater at depths of 8 to 12 feet within the project limits. Groundwater levels in this area typically coincide with nearby San Diego River flow elevations and are influenced by tidal fluctuations in nearby San Diego Bay.

Liquefaction is the geologic hazard that will influence design and construction. Liquefaction is the sudden loss of soil shear strength within saturated, loose to medium dense, sands that occurs from strong ground motion during an earthquake. Liquefaction-induced settlement should be the most likely effect given the site surface and subsurface conditions. Liquefaction is a common hazard along the shoreline of seismically active regions with older reclaimed ground. Mitigation is typically ground improvement and/or deep foundations. The California Building Code requires mitigation so that collapse does not occur in habitable structures. Civil infrastructure that requires mitigation are "lifeline" structures that must remain serviceable during and after an earthquake.

The high compressibility and the low soil shear strength of the artificial fill and paralic estuarine deposits are the geotechnical engineering characteristics that will influence design and construction. We interpret the soils with these characteristics to extend from the ground surface to a depth of about 60 feet. Structures with relatively high column loads will require ground improvement and/or deep foundations. Settlement of the fill placed to raise the site will influence the design and construction of some of the civil infrastructure, such as underground utilities.

The formation of the site and the design and construction of civil infrastructure and structure foundations will need to economically combine the mitigation of geologic hazards along with the management of the geotechnical engineering characteristics. This report discusses these hazards and conditions, and the methods of design and construction that have been used locally, and could be adopted individually or combined, for this project. Prior methods of ground improvement are Vibro-Replacement Stone Columns and cement Deep Soil Mixing. Prior methods of piling are small diameter Auger-Cast-In-Place (ACIP) or Drilled Displacement (DDP) piles. ACIP piles use a continuous flight auger to advance the hole and remove the soil. DDP piles use a proprietary drill tool to advance the hole and displace the soil into the ground. These methods do not generate significant amounts of spoil. This report provides prior configurations and design capacities.

1.0 INTRODUCTION

Group Delta Consultants (Group Delta) is submitting this Geotechnical Desktop Study Report (Desktop Report) to support the preliminary development of the project. The purpose of this report is to inform the development and design team about the subsurface conditions, geologic hazards, geotechnical engineering characteristics of the site and the design and construction aspects of the underground components of the project.

1.1 Project Description

Midway Rising LLC (Midway Rising) is proposing to redevelop the site with a new Arena, Entertainment Plaza, Hotel, and seven Blocks of residential housing. The housing will have a podium parking structure, or it will surround a reinforced concrete parking structure. The redevelopment will include community, urban and linear parks. Redevelopment will raise the site several feet to mitigate flooding. We have based our understanding of the redevelopment on the Midway Masterplan, Sports Arena Complex prepared by Safdie Rabines Architects dated November 23, 2021.

1.2 Site Description

The 50-acre site is located north of Sports Arena Boulevard and south of Kurtz Street in the Midway District of the City of San Diego. The existing Pechanga Arena and surrounding surface parking occupies most of the site. Low rise retail and commercial buildings occupy the eastern and western portions of the site. Interstate 5 and the channelized San Diego River are north of the site. Figure 1, Site Location Map shows the regional location of the site.

The elevation of the site ranges from about 8 feet to 15 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29) (Project Design Consultants, 2023). The highest elevations surround the existing Pechanga Arena. The lowest elevations are in the northwest area of the site.

1.3 Prior Geotechnical Studies

Several geotechnical engineering investigations have been completed at the site and nearby. Figure 2, Prior Geologic and Geotechnical Studies, shows the locations of these sites. Group Delta has reviewed these studies and incorporated relevant information into the findings presented in this report. Appendix A provides relevant data.

2.0 SUBSURFACE CONDITIONS

2.1 Landform Evolution

The coastal landforms in the site vicinity have evolved significantly throughout the recent geologic past. Within Holocene time (11,700 years to present), Mission Bay and San Diego Bay were connected as a single, large bay (the ancient San Diego Bay) that served as the base level for the

ancient San Diego River. At this time, what is now Point Loma was an island cut off from the mainland, positioned just across the bay from the mouth of the ancient San Diego River. Throughout the centuries, the river deposited large quantities of sediment into the bay as its delta grew and pro-graded seaward. A few thousand years ago, the delta met the ancient Point Loma Island and connected it to the mainland to form what is now the Point Loma Peninsula. This land formation split the bay into Mission Bay (or False Bay) to the north and San Diego Bay to the south. Today, the deltaic land that grew outward into the ancient San Diego Bay is known as the Midway District and includes the entire project site (Abbott, 1999).

In historic time, after the river delta split the bay and connected Point Loma to the mainland, parts of the Midway District were an active wetland environment (similar to that found today at the Tijuana River Estuary to the south) with branching tidal channels and fingers of the San Diego River. The San Diego River would periodically alternate between draining into Mission Bay to the north and San Diego Bay to the south as sediments built up and diverted the flow of water. Reports by Spanish explorers in the 17th century indicate the waters of Mission Bay and San Diego Bay would connect during significant high tides (Wilson, 2012). At the time of the 1904 Geologic Survey of the area, the Midway Rising site sat near the waterfront of Mission Bay) adjacent to the San Diego River Estuary, as shown on Figure 3, Site Location on Historic Map.

The project site vicinity was further transformed during the 1940's as the area was subject to land reclamation. Land reclamation created the current topography around San Diego and Mission Bay that exists today. Land Reclamation activities included dredging the San Diego and Mission Bays, raising grades in the Midway District, extending reclaimed land north into Mission Bay near the project site, creating the islands in Mission Bay, extending reclaimed land to the south into San Diego Bay, creating the San Diego International Airport and Harbor and Shelter Islands, and channelizing the San Diego River using levees that are located just north of the project site.

2.2 Geology and Soils

Young, loose/soft soils associated with the changing coastline and the deposition within the San Diego River Delta underlie the project site. These soils consist of artificial fill from land reclamation, and fine and coarse grained alluvial/estuarine sediments (interpreted to be paralic estuarine deposits at the project site) deposited from the ancient San Diego River. Consolidated estuarine deposits consisting of sandstone, siltstone and cobble underlie the younger, loose soils at depth.

Kennedy and Tan (2008) regionally mapped these soils as Artificial Fill at the surface. They mapped Young Alluvial Deposits followed by Old Paralic Deposits, Unit 6, below the artificial fill. Figure 4, Geologic Map, shows the site relative to the regionally mapped surface geology. Figure 5, Generalized Geologic Cross Section depicts the vertical distribution of these materials in a north-south oriented regional cross section.

Prior subsurface explorations conducted at the site and nearby by Group Delta (Group Delta, 1999, 2019 and 2020) encountered undocumented Artificial Fill[1] over Paralic Estuarine Deposits. Some of these explorations encountered Old Paralic Deposits below these soils. The following paragraphs describe these materials using information obtained from the prior geotechnical investigations. Appendix A provides relevant data from these investigations

2.2.1 Artificial Fill

In prior explorations at the site, Group Delta observed the fill soils to be 2 to 6 feet thick and consist of clayey to silty sand with varying amounts of gravel and gravel sized brick, asphalt, and concrete fragments. Group Delta interpreted fill associated with a historic dump site (the Pueblo Lands Parcel 242, circa 1900) exists in the southwest portion of the site.

2.2.2 Paralic Estuarine Deposits

In prior explorations at the site and nearby, Group Delta observed Paralic Estuarine Deposits below the Artificial Fill. Group Delta encountered these materials to a depth of about 95 to 100 feet in explorations northwest of the site (Group Delta, 2019). Group Delta observed the soils to consist of interbedded layers of silt and sand with occasional clay beds. The relative density/consistency of these soils based on drive sampler resistance was generally loose/soft with an abrupt change to medium dense/firm at a depth of about 60 feet. This significant contrast in relative density is the basis for the interpretation of two distinct geologic units referred to as upper and lower Paralic Estuarine Deposits.

2.2.3 Old Paralic Deposits

Kennedy and Tan (2008) describe the old paralic deposits as sandstone, siltstone, and cobble. In prior explorations northwest of the site, Group Delta observed the Old Paralic Deposits that were disturbed by drive sampling to consist of sandy silt to silty sand with some layers of gravels of cobbles. The relative density based on drive sampler resistance was very dense.

2.3 Groundwater

In prior explorations at the site, Group Delta measured groundwater at depths ranging from 8 to 12 feet. These depths correspond to groundwater elevations that are at or slightly above Mean Sea Level. Group Delta obtained the measurements 30 to 60 minutes following drilling. Groundwater was interpreted from cone penetration test pore water pressure dissipation tests at depths ranging from 6 to 11 feet across the site, consistent with the direct borehole measurements.

1. Undocumented fill is soil that has been placed and compacted with no documentation of observation and compaction testing by a geotechnical engineer.

Groundwater levels at the site should be closely related to the water surface elevation within the San Diego River and subject to tidal influences.

2.4 Underground Obstructions

In addition to known underground utilities, remnant building foundations, and the historic dump site (Group Delta, 1999), there may be other types of underground obstructions. Typical environmental assessments, along with surface geophysical studies, potholing, and research by cultural resources specialists, such as an architectural historian, should help to locate obstructions. We expect that piled foundations support the Pechanga Area that was built in 1966, which should be confirmed by obtaining structural design and/or as-built construction plans.

3.0 GEOLOGIC HAZARDS

The primary geologic hazard at the site requiring mitigation is liquefaction. The City of San Diego Seismic Safety Element map indicates the site lies within the "Liquefaction, High Potential – shallow groundwater, major drainages, hydraulic fills" Geologic Hazard Category. Figure 6 reproduces this map with an outline of the site. Listed below are the primary geologic hazards that could affect the project followed by discussions that elaborate on these hazards.

- Strong Ground Motion
- Earthquake Surface Fault Rupture
- Liquefaction and Secondary Effects
- Seismic Compaction
- Tsunamis

3.1 Strong Ground Motion

The site could be subjected to moderate to strong ground motion from a nearby or more distant, large magnitude earthquake occurring during the expected life span of the project. Numerous regional and local faults can produce large earthquakes with magnitudes (M) 7.0 or greater. Figure 7, Regional Faults and Earthquakes Map, presents the locations of these faults and the historical earthquake epicenters recorded on them. This hazard is managed by structural design using the latest edition of the California Building Code, as discussed later in this report.

3.2 Earthquake Surface Fault Rupture Hazard

The potential for surface fault rupture to occur at the site is very low based on publicly available geologic hazard maps and the findings from prior geotechnical investigation reports. Surface fault rupture is displacement on a fault that occurs at the ground surface because of tectonic forces. The site is not underlain by an active or a potentially active fault, per the City of San Diego

definitions of fault activity[2] in their Guidelines for Geotechnical Reports (City of San Diego, 2018). No active or potentially active faults project towards the site. We have based this assessment on the following information.

- The California Geological Survey (CGS, 2021) maps the trace of the active Rose Canyon Fault Zone (RCFZ) approximately 4,000 feet east of the western perimeter of the site. The RCFZ is a complex system of northwest-trending, right-lateral strike-slip, steeply dipping, parallel to subparallel faults. Figure 8, Earthquake Zones of Required Investigation, La Jolla outlines the site on the CGS map of the same title relative to the RCFZ. Figure 6, San Diego Seismic Element also shows the location of the RCFZ relative to site.

- The City of San Diego Seismic Safety Element maps the trace of the Point Loma Fault approximately 1,800 feet southwest of the southwest corner of the site. This map also indicates the trace of a short unnamed fault is located approximately 1,100 feet southwest of the southwest corner of the site. The City of San Diego Seismic Safety Element map indicates these faults are "Potentially Active, Inactive, Presumed Inactive or Activity Unknown". Figure 6, San Diego Seismic Element shows the locations of these faults.

3.3 Liquefaction and Secondary Effects

Potentially liquefiable soils underlie the site. Liquefaction is the sudden loss of soil shear strength within saturated, loose to medium dense, sands and non-plastic silts that exist at depths of less than 50 feet. Liquefaction is caused by the build-up of pore water pressure from strong ground motion during an earthquake.

The loss of soil shear strength could cause bearing capacity failure and tilting of large, isolated spread or pad footings supporting relatively high structural loads. It could also create high lateral earth pressures against subterranean structures, reduce the lateral geotechnical resistances used against footings, grade beams and pile caps to resist seismic demands, and cause underground utilities to become buoyant. The California Building Code does not allow the portion of piled foundations that are within liquefiable soils to generate geotechnical resistance.

The secondary effects of liquefaction are sand boils, settlement, lateral spreading[3], and instabilities within sloping ground (overall slope instability, and horizontal seismic deformation). Of these, settlement should be the most likely to occur given the site surface and subsurface conditions.

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2. **Active Faults** – this class of fault has had demonstrable surface displacement during Holocene time (past 11,700 years). **Potentially Active Faults** - faults with Quaternary (2.6 million years ago) displacement, but Holocene surface displacement is indeterminate. **Inactive Faults** – pre-Quaternary faults.
3. Lateral spreading is the relatively rapid, fluid-like movement that can cause large horizontal deformations within the gently sloping ground near the shoreline with an unconfined face. An unconfined face does not exist along the San Diego River near the site.

Liquefaction-induced settlement can cause adverse total and differential settlement and it creates large downdrag loads on piles.

Group Delta (Group Delta, 1999, 2015, 2019, 2020) assessed liquefaction triggering and interpreted that potentially liquefiable soils mostly exist as 5- to 20-foot thick layers that are below groundwater and extend to a depth of about 50 feet. Estimated settlements ranged from 2 to 10 inches. Differential settlement over the common 30- to 40-feet column spacing is typically estimated to be one-half to two-thirds of the total settlement.

3.4 Seismic Compaction

The potential for seismic compaction-induced settlement should be low. Soils prone to seismic compaction should be removed by typical site preparation earthwork. Seismic compaction is the densification from strong ground motion of granular soil that exist above groundwater.

3.5 Tsunamis (and Flooding)

The potential for large waves from a tsunami to affect the site should be low. The State of California Tsunami Inundation Map (California Emergency Management Agency, 2009) indicates the site does not lie within a tsunami inundation area. Tsunamis are sea waves created by the sudden uplift of the sea floor during an earthquake. Figure 9, Tsunami Inundation Map reproduces this map with the outline of the site shown.

The California Tsunami Inundation map indicates the existing San Diego River levees north of the site would channel a tsunami up the San Diego River channel beyond the project site. Group Delta completed a geotechnical evaluation of these levees near the West Mission Bay Bridge (Group Delta, 2015). Group Delta made the following conclusions in their evaluation report:

- The overall static stability of the levee should be acceptable per Army Corps of Engineers guidelines (Army Corps of Engineers, 2003, 1995) during a 100-year flood and during the rapid drawdown that could occur following this flood. The elevation of the flood waters was assumed to be 15.5 feet.

- The overall stability of the levee during and following an earthquake should be acceptable using Army Corps of Engineers guidelines. Group Delta also estimated the levee could experience 12-inches of permanent horizontal deformation during the earthquake. These seismic assessments did not consider a flood or tsunami condition.

- Seepage through the levees due to flooding of the San Diego River should not be significant hazard. Group Delta expressed this opinion primarily for the levees that were to be reconfigured for the replacement of the West Mission Bay Bridge.

4.0 GEOTECHNICAL ENGINEERING CHARACTERISTICS

The primary geotechnical engineering characteristics of the soils at the site requiring mitigation are the high compressibility and the low soil shear strength of the artificial fill and paralic estuarine deposits. We interpret these soils to extend from the ground surface to a depth of about 60 feet. The soils below this depth gain shear strength and become less compressible. Sandstones with lesser amounts of siltstones and cobbles, mapped as old paralic deposits, exist at depths greater than about 100 feet. For geotechnical engineering purposes, these materials are typically assumed to behave like dense to very sands.

4.1 Compressibility

Prior monitoring of the settlement of fill placed in the area indicates there could be 0.25 to 0.50 inches of settlement per foot of fill placed. The monitoring data indicated this settlement was substantially complete with one to three months of placement.

Increased stresses from placing new fill, imposing new structural loads, and/or lowering groundwater levels will cause total and differential settlement that may exceed the accepted tolerances of new and/or existing infrastructure. This settlement can also create a downdrag load on piled foundations. The settlement can occur elastically as soon as the stress is applied and continue over time as the excess pore water pressures from the applied stress dissipate. Mitigation is often accomplished by delaying construction of settlement-sensitive infrastructure until the settlement is substantially completed.

Replacement of the West Mission Bay Drive Bridge to the northwest (Group Delta, 2019) and geotechnical engineering conference proceedings (Stamatopoulos, A. and Kotzias, C., 1985) provide information about the compressibility characteristics of the soils in the area that is summarized below.

- Monitoring of the fill placed to form abutments for the West Mission Bay Bridge measured about 1 to 3 inches of settlement from the placement of 5 to 15 feet of fill. The monitoring data indicated settlement was substantially complete within three months of placement.
- A single story bank building on Sports Arena Boulevard was preloaded in 1971 with 10.5 feet of fill. The fill caused a maximum settlement of about 2.5 inches in a "few weeks".
- The Midway USPS Facility at 2701 Midway Drive was preloaded in 1968 by placing a 26-foot high earth embankment on top of a permanent 10-foot thick fill (36-foot high preload fill). The fill remained in place for 10 months and caused 15 to 28 inches of settlement.
- A nine-story hotel on Harbor Drive was preloaded in 1969 with 15 feet of fill. The fill caused settlement ranging from 2 to 3 inches that occurred in "about 30 days".

4.2 Soil Shear Strength

The relatively low soil strength will preclude using shallow foundations, except for lightly loaded

structures that can be economically designed using a low allowable bearing pressure, such as 1,000 pounds per square foot, and it can accommodate the combined total and differential settlement estimated from static loads and liquefaction, and/or repair is acceptable.

4.3 Other Geotechnical Engineering Characteristics

Prior geotechnical investigations at the site and nearby did not encounter expansive soils (Group Delta, 1999, 2019, 2020). Expansive soils are clays that are prone to shrinking or swelling with decreases or increases in moisture content. Construction may encounter some expansive soils in the artificial fill due to the uncontrolled method of placement.

The artificial fill may be corrosive to structural members due to low pH, low electrical resistivity, and high chloride content. Structural elements exposed to groundwater should be designed to resist an environment similar to seawater.

5.0 DISCUSSION

Design and construction of the project will need to address the geologic hazards and the geotechnical engineering characteristics of the site. The formation of the site and the design and construction of civil infrastructure and structure foundations will need to economically combine the mitigation of geologic hazards along with the management of the geotechnical engineering characteristics. The following sections discusses these hazards and conditions, and the methods of design and construction that have been used locally, and could be adopted individually or combined, for this project.

5.1 Geologic Hazards

The mitigation of liquefaction is the geologic hazard that will significantly influence design and construction. Liquefaction is a common hazard along the shoreline of seismically active regions, especially where there is old, reclaimed land. Considering the demand to redevelop these areas, there are numerous methods of mitigation that involve, individually or combined, ground improvement and/or deep foundations. Prior local projects have adopted these types of mitigation, and they have proven to successfully mitigate liquefaction when used in other areas that have been subjected to this hazard.

Mitigation of liquefaction should not be required sitewide. The California Building Code requires mitigation of liquefaction to the extent that collapse does not occur in habitable structures. Civil infrastructure that requires mitigation of liquefaction are "lifeline" structures that must remain serviceable during and after an earthquake. Civil infrastructure meeting the criteria below are typically not designed to resist displacements associated with liquefaction.

- Not required to remain operable after a seismic event.
- Can remain out of service for an extended period while undergoing repair.
- Have a very low hazard to human life in the event of failure.

5.2 Geotechnical Engineering Characteristics

The primary geotechnical engineering characteristics that will influence design and construction are the shallow groundwater level combined with the high compressibility and the low shear strength of the Artificial Fill and Paralic Estuarine Deposits. We expect the buildings proposed for the project to have relatively high structural loads that will require ground improvement and/or deep foundations to provide satisfactory long-term performance. Settlement of the fill placed to raise the site will influence the design and construction of some of the civil infrastructure, such as underground utilities. The design of these utilities may need to select materials and/or connections to accommodate the estimated settlement. Alternatively, the installation of the utilities can occur after the settlement is substantially complete. Loads on existing utilities generated from new fill or structures may require specialty evaluation by geotechnical engineer and structural engineer that specialized in utilities.

6.0 GEOTECHNICAL ENGINEERING DESIGN AND CONSTRUCTION GUIDANCE

6.1 Seismic Ground Motions

There are several considerations that can impact the seismic design for the project, including the potential for variation in site classification, different structure types and corresponding analysis requirements, and potential changes to seismic design in upcoming building codes. Each of these topics are discussed in more detail below.

6.1.1 Site Classification

The site classification for seismic design is governed by the subsurface conditions and the potential for liquefaction or ground failure. In absence of liquefaction, the site classification for seismic design is governed by the stiffness of the soils based on the parameter $V_{S,30}$ (the average shear wave velocity in the upper 100 feet). Nearby sites have reported $V_{S,30}$ values ranging from 575 feet per second (ft/s) to 690 ft/s, which range from Site Class E to Site Class D.

However, when soils are susceptible to liquefaction (such as the paralic estuarine deposits), they are classified as Site Class F. According to the 2022 California Building Code and ASCE 7-16, Site Class F requires site-specific ground motions to be developed by performing site response analyses to capture the impact of liquefaction on the ground shaking, with only one exception: For stiff structures with fundamental periods of 0.5-seconds or less. Structures meeting this exception may be classified as they would in the absence of liquefaction (either Site Class D or E). Site response analyses are relatively common in waterfront and port areas, but they require a more sophisticated evaluation where ground motion time histories are propagated through a soil profile to evaluate the behavior and response at the ground surface.

If ground improvement is completed over the entire building area, then the potential for liquefaction is eliminated. In this case, the site would be classified as either Site Class E or D, depending on the average shear wave velocity in the upper 100 feet after improvement.

Another point of consideration is that even with Site Class D or E ground motions (no liquefaction), there are limitations on the use of commonly available "mapped" seismic design parameters in California due to the high seismic demand. Mapped seismic design parameters are permitted to be used under only limited conservative exceptions, otherwise a seismic hazard analysis must be performed to develop the ground motions for the site (Exceptions 1 and 2 of Section 11.4.8 of Supplement 3 of ASCE 7-16). Seismic hazard analyses are commonly performed in San Diego to avoid those penalties, and if the necessary shear wave velocity data is collected during future geotechnical investigations, the analysis can be performed quickly and for low cost.

6.1.2 Structure Types and Analysis Requirements

The mixed-use redevelopment of Midway Rising will have a variety of different structure types, including small accessory structures, larger mid-rise buildings, and complex structures. The structural analysis requirements will therefore vary depending on the structure type and complexity. The smaller accessory structures will likely meet the exceptions mentioned above such that mapped values may be used based on Site Class D or E. However, mid-rise or complex structures usually utilize analysis methods that would require seismic hazard analyses (or site response) that would require the development of site-specific ground motions.

6.1.3 Future Changes to Seismic Design

The building codes in California are updated every three years (the 2022 CBC just became effective on January 1, 2023), therefore, depending on when the structures are designed and submitted for agency review, it is possible that future codes will be used as the basis of design. The next edition of the CBC is the 2025 CBC, which is anticipated to be effective in about three years, starting January 1, 2026.

More critically for seismic design, the next edition of ASCE 7 (ASCE 7-22) to be adopted by the 2025 CBC has already been released. There will be significant changes to seismic design, in particular to site classification for seismic design. The current site classes are being split and regrouped (i.e., Site Class CD, Site Class D, Site Class DE, Site Class E etc.). Shear wave velocity measurements will also be necessary to classify the site appropriately (unless penalties are adopted). Although this is still a few years away, it may be worthwhile to review these potential changes in advance.

6.2 Earthwork

Earthwork to form the site should consist of demolition and removal of existing infrastructure, removal of soils that are unsuitable for engineering purposes to the depth above groundwater that can be practically excavated (typically about 3 to 5 feet above groundwater), replacement and recompaction of soils that are suitable for reuse, and the placement and compaction of a few feet of new fill to raise the site. Earthwork will also involve the import of soils to raise the site, the installation of new underground utilities, and the excavation and the export of soils generated from construction of ground improvement and piled foundations, most of which occur below groundwater. The following sections discuss aspects of the earthwork that are specific to this site.

6.2.1 Demolition

Demolition removes deleterious materials and remnant debris from asphalt pavements, concrete slabs and pavements, existing structures, and remnant foundations Piles below the existing Pechanga stadium should be cut down at least 5 feet below the lowest planned excavation for utilities or other infrastructure requiring excavation. The cut off portion of the pile should be disposed of offsite. Recent attempts to remove existing steel H-piles to construct an underground

stormwater storage tank at the San Diego International Airport and to construct the Snapdragon Stadium ranged from extremely difficult to economically impossible. To provide information for future development, the as-built documentation for the extraction of piles should provide the information listed below.

- Condition of the disturbed ground.
- Vertical and lateral extent of the disturbed ground.
- Variation in disturbance between removal locations.
- Remedial actions undertaken during or following removal to mitigate disturbance.
- Broken piles left in place that could not be removed.
- Typical construction information such as drilling records, grout volumes, etc.

6.2.2 Soils Management

From a geotechnical perspective most of the soils excavated above groundwater should be suitable for reuse with some processing and handling. The environmental conditions of the soil could limit its reuse onsite or for export to another construction project.

Soil excavated from below groundwater may not be suitable for reuse. Earthwork contractors may not want to use these soils due to the extra handling and processing needed to dry them for placement and compaction. A contractor did not reuse soils removed from the deep excavation needed to recently construct an underground stormwater storage tank at the San Diego International Airport, even though fill was needed to raise the site elevations in other areas of the project. In this instance, the contractor disposed of most of the material off site, and processing of the remainder was difficult.

Our recent and current experience vetting import sources has indicated that the quantity of available export at local construction sites is approximately 10,000 cubic yards. Multiple sites will likely need to be reviewed from geotechnical and environmental standpoints to acquire the necessary amount of import for this project. Some important factors to consider for geotechnical quality include expansion index, proportion of oversize (greater than ¾-inch) material, corrosivity, and soil classification. An environmental consultant should be utilized to review and screen proposed import sites and provide feedback regarding their conformance with applicable residential and/or commercial standards as appropriate for the project.

6.2.3 Static Settlement from Fill Loads

For planning purposes, the static settlement from the placement of fill can be estimated to be 0.25 to 0.50 inches per foot of fill placed. The duration of this settlement to be substantially complete can be estimated using two to four months following placement of the fill to finish grades.

We recommend that a utilities specialist review these estimates relative to the performance and serviceability of new and existing utilities over which fill will be placed. We further recommend settlement monitoring during and following fill placement to confirm these estimates and to plan the timing of the construction of settlement sensitive improvements.

The installation of piles, if adopted, should not occur until this settlement is substantially complete.

6.3 Ground Improvement

Considering prior projects nearby, Vibro-Replacement Stone Columns (VRSC) and Deep Soil Mixing (DSM) should be the most likely types of ground improvement used to mitigate liquefaction and reduce the soil compressibility and increase the soil shear strength to allow for conventional shallow foundations. The purposes of ground improvement are to achieve the performance objectives listed below.

- Increase the allowable bearing pressure and reduce the static settlement.
- Reduce liquefaction-induced settlement.
- Increase the shear strength of the soils to:
    - Mitigate liquefaction-induced secondary effects, such as the downdrag on piles; and
    - Increase the lateral resistance of piled foundations, where used together.
- Improve the Site Class for seismic design to reduce seismic demands on the structures.

Geotechnical and structural engineers will develop performance objectives for the ground improvement. A ground improvement specialty contractor will design the ground improvement to meet the performance objectives. The final design often includes a pilot study as an early construction activity to confirm the contractor's final design.

6.3.1 Vibro-Replacement Stone Columns

Vibro-Replacement Stone Columns (VRSC) are typically 24 to 36 inches in diameter and filled with compacted gravel. They are spaced at 6 to 10 feet (center to center) and installed to depths ranging from 30 to 60 feet. The design uses an area replacement ratio over a treatment area and depth to meet the required performance objectives. VRSCs have been able to achieve allowable bearing pressures of 4,000 pound per square foot with acceptable settlement tolerances.

VRSCs are only placed at support locations when their sole purpose is to increase the allowable bearing pressure and reduce the static settlement. They are placed over the entire building footprint when used to mitigate liquefaction. A down-hole vibrating probe suspended from a crane or an excavator, creates the hole, and then places and compacts the gravel.

VRSCs have been commonly used to support various facilities in the area. Group Delta (legacy firm Geotechnics, 2005) provided geotechnical services during the design and construction of the Continuing Education Building at the West City Campus of the San Diego Community College located at 3249 Fordham Street (about 0.5 miles south of the project site). This project used VRSCs beneath the entire footprint of the building to mitigate liquefaction. The depth of improvement was 60 feet. Condon-Johnson completed the final design of the VRSCs per the performance objectives established by Group Delta and they installed the VRSCs. Condon Johnson noted the subsurface conditions at this site, which are similar to those at the project site, made installation of VRSCs difficult. They indicated numerous instances of the vibrating probe getting stuck in the ground and the ejection of air and soil from the ground in areas away from the location of the probe installing an individual VRSC.

VRSCs are currently being installed for apartment complex developments associated the redevelopment of the Midway USPS facility site. They have also been used to support buildings located along the reclaimed shoreline at local military bases. Group Delta provided geotechnical design and construction services for the installation of over 2,000 VRSCs that were used to improve the ground supporting the recently constructed Snapdragon Stadium. VRSCs were used with driven precast concrete piles to support the 30-story San Diego Hilton Bayfront Hotel (Keller, 2021a), which provides a local case history of their use with piled foundations.

6.3.2 Deep Soil Mixing

Deep Soil Mixing (DSM) mixes a binder (typically cement) with the soils to create a column or panel (an element) with increased shear strength and stiffness and reduced compressibility. Typically, the elements overlap to create a block or cellular structure in the ground that uniformly improves a large volume of soil supporting a foundation or creates cellular structures that confines the soil to mitigate liquefaction. The design uses an area replacement ratio over a treatment area and depth to meet the required performance objectives.

A drill rig advances a tool to mechanically mix the soil with a binder slurry that is pumped out of the bottom of the mixing tool. A separate on-site batch plant produces the binder slurry. DSM can generate relatively large volumes of spoils, which have often been reused for engineered fill.

DSM has recently been used to support three 1.1 million gallon jet fuel storage tanks at the San Diego International Airport and a large mat foundation that supports the Electric Eel coaster at SeaWorld (Keller, 2021b). These projects used 6-foot diameter columns in a lattice grid and in isolated arrangements with treatment depths ranging from 40 to 50 feet. DSM was used to improve bearing capacity and mitigate liquefaction. These projects have subsurface conditions similar to those at the project site.

6.4 Deep Foundations

Deep foundations may be needed to support the proposed structures. Deep foundations would use piles to transmit structure loads through the upper paralic estuarine deposits that are very compressible and have a very low soil shear strength to the lower paralic estuarine deposits and old paralic deposits that have a high enough soil shear strength to provide geotechnical resistance. Previous projects nearby with relatively similar soil conditions have adopted 16-inch, 24-inch and 36-inch diameter Auger-Cast-In-Place (ACIP) or Drilled Displacement (DDP) piles. ACIP piles use a continuous flight auger to advance the hole and remove the soil. DDP piles use a drill tool that is proprietary to the piling contractor to advance the hole and displace the soil into the ground. They do not generate significant amounts of spoil. Driven precast concrete piles are also suitable. We have not considered them further because of the noise associated with driving and the current piling contracting industry's more prevalent use of ACIP and DDP piles.

6.4.1 Prior Piling Projects

The ConRAC parking structure at the San Diego International Airport provides a relevant example of the use of DDP piles to support a structure that could be similar in size and structural loads as the Arena proposed for this project. We understand the Morris-Shea Bridge Company (MSB) installed over 2,000 16-inch diameter DDP piles as a piling subcontractor to Austin-Sundt with typical production of 20 piles per day. MSB conducted ten load tests on 16-inch diameter piles with lengths ranging from 32 to 63 feet. The test capacities ranged from about 560 to 760 kilopounds (kips) (SBE, 2013) for a design compression load of 300 kips.

We understand from KPFF (2021) the IQHQ project is using 16- to 24-inch diameter ACIP piles to support a series of low- to mid-rise structures and a 17-story tower. The piles are arranged in groups within the thickened portions of a reinforced concrete mat foundation at the bottom of two to three levels of subterranean parking. The piles are used to resist tension from hydrostatic uplift and to support compressive loads. They have ultimate capacities ranging from 200 to 700 kips. The pile lengths range from 40 to 60 feet.

6.4.2 Prior Pile Load Testing

Based on the nearby advance pile load testing summarized below, 16-inch diameter ACIP or DDP piles should be capable of supporting an ultimate load of 400 kips[4] in compression and 200 kips in tension with embedment into the old paralic deposits of about 50 and 30 feet for ACIP and DDP piles, respectively. The old paralic deposits occur at a depth of about 100 feet at the project site. We do not expect ACIP and DDP piles to be this long if used to support structures at the project site. This is because the relative density of the soils (as interpreted from drive sampler and cone penetrometer tip resistances) increases abruptly at a depth of about 60 feet within the paralic

4. Ultimate load without an estimated liquefaction-induced downdrag load of 100 kips.

estuarine deposits, and therefore the soil shear strength should be suitable to provide resistance for piles at depths shallower than 100 feet. The test data summarized below could provide precedent for the project site, if the paralic estuarine deposits below a depth of 60 feet provide geotechnical resistances similar to the old paralic deposits at the test sites below.

- Advance pile load testing for the Airline Support Building at the San Diego International Airport indicated a 75-foot long, 16-inch diameter DDP should be capable of supporting an ultimate load of 400 kips in compression and 200 kips in tension (Group Delta, 2019a). This capacity considered that no geotechnical resistance could be used in the potentially liquefiable soils that extend about 45 feet below the pile cutoff level (30 feet of embedment into old paralic deposits). An estimated liquefaction induced downdrag load of 135 kips was added as a vertical load on the pile head under some loading conditions. This project is a two-story high bay type structure. The piles are arranged in groups using pile caps and grade beams. The pile cutoff level is about 4 feet below the finished floor elevation. Condon-Johnson conducted the pile load testing and installed 79, 16-inch diameter, 55-foot long DDP piles from September 20, 2019 through September 30, 2019 (about 12 piles per day).

- Advance pile load testing for the 3.0 Million Gallon Underground Stormwater Storage Tank (Northside Cistern) at the San Diego International Airport indicated a 60-foot long, 16-inch diameter ACIP should be capable of supporting an ultimate load of 400 kips in compression and 280 kips in tension (Group Delta, 2019b). This capacity considered that no geotechnical resistance could be used in the potentially liquefiable soils, which extend about 10 feet below the pile cutoff level (50 feet of embedment into old paralic deposits). There is no liquefaction induced downdrag load since the piles are embedded almost entirely in old paralic deposits and the method of shoring mitigated the potential for increases in pore water pressure that are typically required for liquefaction triggering. The piles are uniformly spaced in the reinforced concrete mat slab that is about 30 feet below the ground surface. Condon-Johnson conducted the pile load testing and installed 123, 16-inch diameter, 51- to 61-foot long ACIP piles from October 16, 2019 through October 30, 2019 (about 12 piles per day). Production was compromised by remnant steel H-piles.

Additional relevant pile load testing and installations are summarized below.

Advance pile load testing for the 3.0 Million Gallon Underground Stormwater Storage Tank (Southside Cistern) at the San Diego International Airport confirmed that a 36-inch diameter, 83-foot long ACIP pile could sustain a 490 kip test load in tension (Malcolm Drilling, 2022). Malcolm Drilling constructed this test pile on June 29, 2022, in about an hour and half (drilling, installation of reinforcing steel and grouting). Production piling has not started as of the date of this report.

- Advance pile load testing for the P-296 Messhall Expansion at the Marine Corp Recruit Depot indicated a 55-foot long, 24-inch diameter ACIP could support an ultimate load of 280 kips (URS, 2010). This capacity considered that no geotechnical resistance could be used in the potentially liquefiable soils that extend about 35 feet below the pile cutoff level (20 feet of embedment into old paralic deposits). An estimated liquefaction induced downdrag load of 80

kips was added as a vertical load on the pile head. This project is a single-story structure with piles arranged in groups using pile caps and grade beams. Keller conducted the pile load testing and installed 55, 24-inch diameter, 50-foot long ACIP piles from October 27, 2010 through November 12, 2010 (about 5 piles per day).

7.0 ADDITIONAL GEOTECHNICAL ENGINEERING SERVICES

The next phase of geotechnical engineering services should include subsurface exploration within the site and the preparation of a geotechnical investigation report for preliminary engineering and CEQA purposes. Figure 10 shows the proposed locations of the subsurface exploration. The geotechnical investigation report would provide more detailed recommendations for design and construction. It would also be included in permit submissions.

The primary focus of this investigation should be to:

- Interpret the vertical and areal distribution of potentially liquefiable soils and develop current, site-specific estimates of liquefaction-induced settlement to inform the assessment of ground improvement and/or piled foundations alternatives,
- Interpret and vertical and areal distribution of thick clay deposits to develop current, site-specific estimates of static settlement and the duration for this settlement to be substantially complete, and
- Obtain better information about the soil strength and compressibility of the lower paralic estuarine deposits to inform the assessment of piled foundations.

8.0 LIMITATIONS

This report has been prepared for the exclusive use of the Midway Rising team and their consultants for specific application to the subject project. The findings, conclusions and recommendations presented in this report were prepared using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in similar localities. No warranty, express or implied, is made as to the conclusions and professional opinions included in this report.

The scope of services for this report did not include subsurface exploration, soil sampling and laboratory testing, environmental assessments, or evaluations regarding the presence or absence of hazardous substances in the soil, surface water, or groundwater at this site.

The findings of this report are valid as of the present date. However, changes in the condition of a property can occur with the passage of time, whether due to natural processes or the work of humans on this or adjacent properties. In addition, changes in applicable or appropriate standards of practice may occur from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review, and it should not be relied upon after a period of three years.

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REFERENCE: GOOGLE EARTH MAP, RETRIEVED ON 01-11-2023

0 1000' 2000'

1"

NOTE: SCALE, DIRECTION, AND LOCATIONS ARE APPROXIMATE

SPORTS ARENA COMPLEX MIDWAY RISING	SITE LOCATION MAP	GROUP DELTA	
		PROJECT NUMBER SD760	FIGURE NUMBER 1

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EXPLANATION:

NEAR-BY SITE DATA

1. SPORTS ARENA RETAIL - GEOTECHNICS 1999
2. PANERA BREAD RESTAURANT - GROUP DELTA 2020
3. MIDWAY USPS THE POST - GROUP DELTA 2019
4. WEST MISSION BAY DRIVE BRIDGE - GROUP DELTA 2019
5. WEST CONNECTOR VIADUCT - CALTRANS 1965
6. BAY CITY BREWING - SCST 2015
7. 3505 HANCOCK - GROUNDWATER TECHNOLOGY 1989
8. 3495 KURTZ - BRYANT GEOENVIROMENTAL 2001
9. DEL TACO AND IN N OUT BURGER RESTAURANTS - GILES ENGINEERING 1996
10. POINT LOMA PLAZA - EEI GEOTECHNICAL 2012
11. SPORTS ARENA BOULEVARD RETAIL CENTER - GEOCON 2008
12. MIDWAY VILLAGE - TETRA TECH 2015
13. MIDWAY DRIVE UNDERPASS - CALTRANS 1968

REFERENCE: GOOGLE EARTH MAP, RETRIEVED ON 01-10-2023

N

0 500' 1000'

SPORTS ARENA COMPLEX
MIDWAY RISING

PRIOR GEOLOGIC AND
GEOTHECNICAL STUDIES

GROUP DELTA

PROJECT NUMBER	FIGURE NUMBER
SD760	2

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REFERENCE: USGS 1904. *TOPOGRAPHY MAP, LA JOLLA AND POINT LOMA QUADRANGLES, SAN DIEGO COUNTY, CALIFORNIA.*

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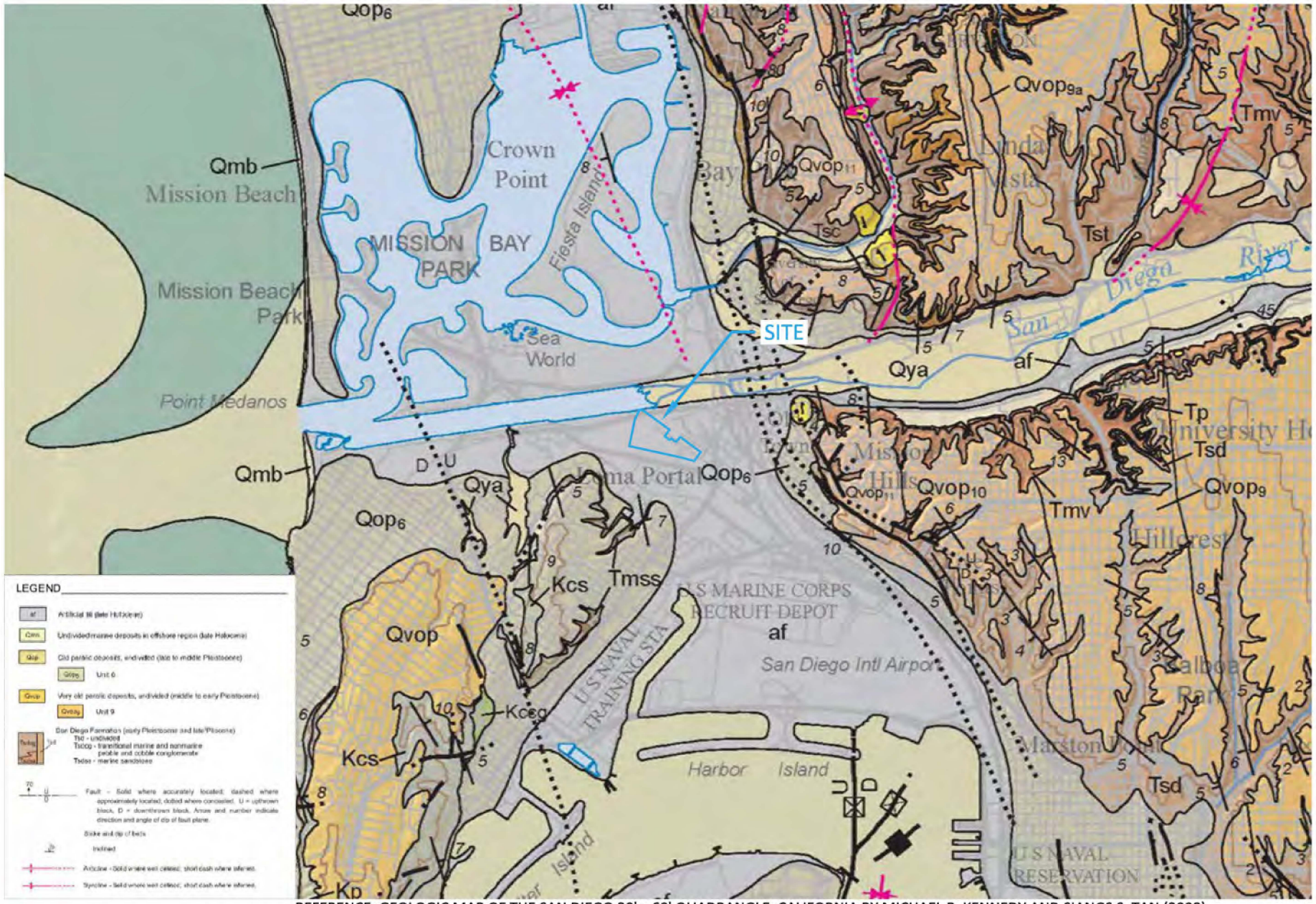
SPORTS ARENA COMPLEX
MIDWAY RISING

SITE LOCATION ON HISTORIC MAP

GROUP DELTA

PROJECT NUMBER	FIGURE NUMBER
SD760	3

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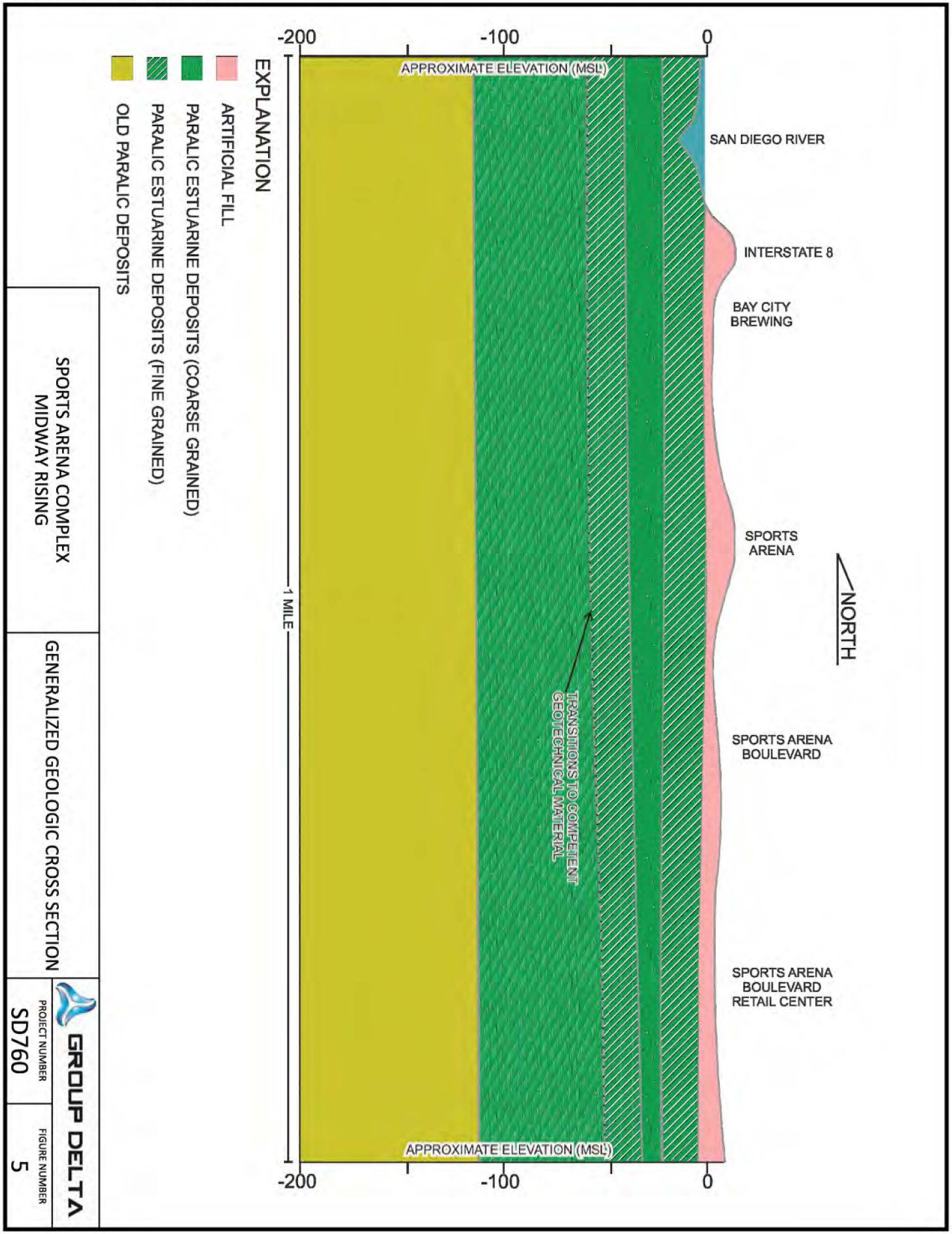


REFERENCE: GEOLOGIC MAP OF THE SAN DIEGO 30' x 60' QUADRANGLE, CALIFORNIA BY MICHAEL P. KENNEDY AND SIANGS S. TAN (2008)

SPORTS ARENA COMPLEX MIDWAY RISING	GEOLOGIC MAP	GROUP DELTA
		PROJECT NUMBER: SD760
		FIGURE NUMBER: 4

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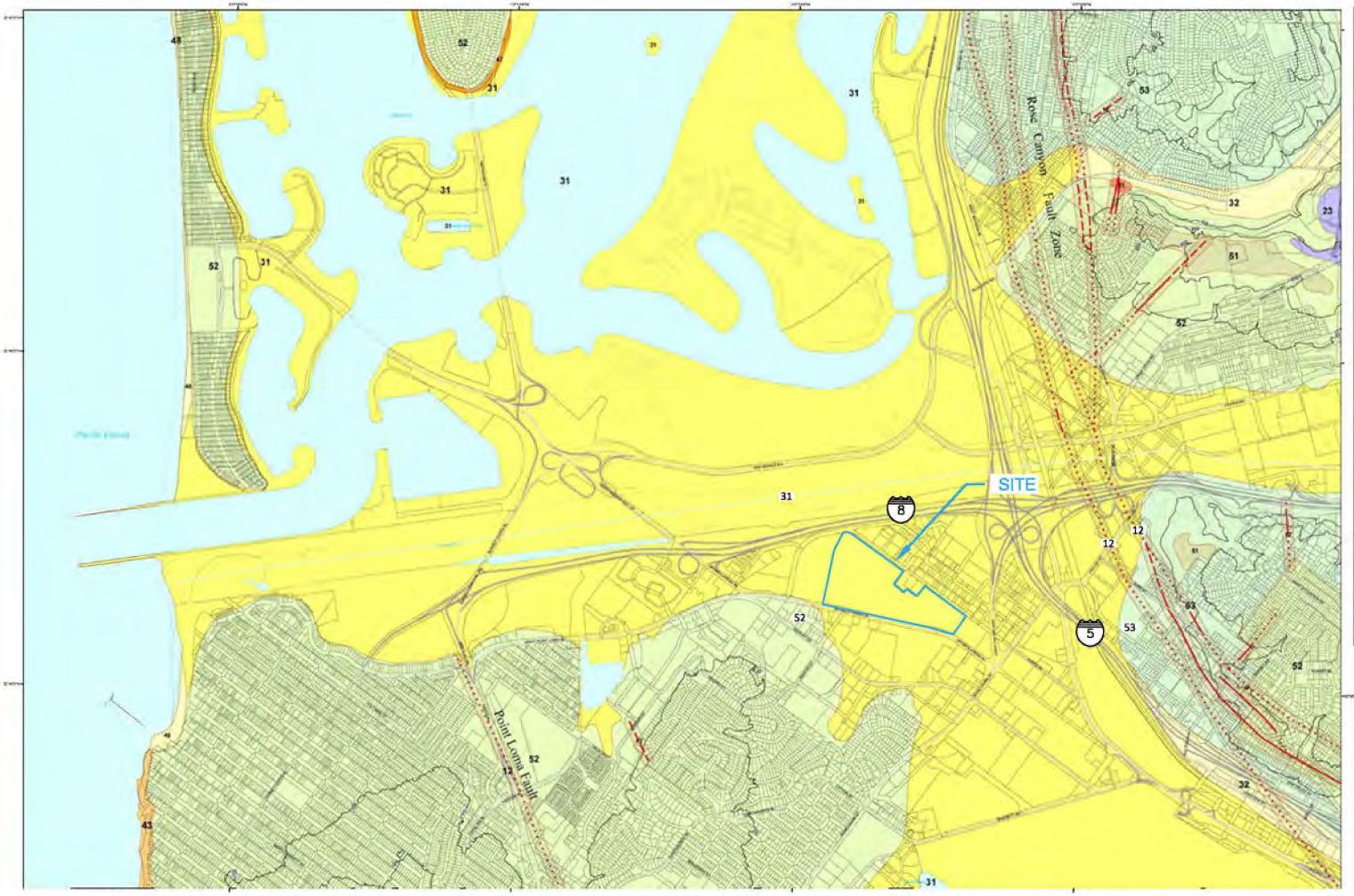
SPORTS ARENA COMPLEX
MIDWAY RISING

GENERALIZED GEOLOGIC CROSS SECTION

GROUP DELTA

PROJECT NUMBER
SD760

FIGURE NUMBER
5



LEGEND

Geologic Hazard Categories

FAULT ZONES
11 Active, Alquist-Priolo Earthquake Fault Zone
12 Potentially Active, Inactive, Presumed Inactive, or Activity Unknown
13 Downtown special fault zone

LANDSLIDES
21 Confirmed, known, or highly suspected
22 Possible or conjectured

SLIDE-PRONE FORMATIONS
23 Friars: neutral or favorable geologic structure
24 Friars: unfavorable geologic structure
25 Ardath: neutral or favorable geologic structure
26 Ardath: unfavorable geologic structure
27 Otay, Sweetwater, and others

LIQUEFACTION
31 High Potential -- shallow groundwater major drainages, hydraulic fills
32 Low Potential -- fluctuating groundwater minor drainages

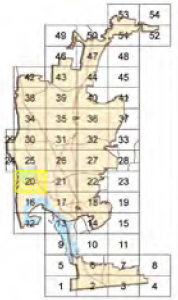
COASTAL BLUFFS
41 Generally unstable Numerous landslides, high steep bluffs, severe erosion, unfavorable geologic structure
42 Generally unstable Unfavorable bedding plane, high erosion
43 Generally unstable Unfavorable jointing, local high erosion
44 Moderately stable Mostly stable formations, local high erosion
45 Moderately stable Some minor landslides, minor erosion
46 Moderately stable Some unfavorable geologic structure, minor or no erosion
47 Generally stable Favorable geologic structure, minor or no erosion, no landslides
48 Generally stable Broad beach areas, developed harbor

OTHER TERRAIN
51 Level mesas -- underlain by terrace deposits and bedrock; nominal risk
52 Other level areas, gently sloping to steep terrain, favorable geologic structure, Low risk
53 Level or sloping terrain, unfavorable geologic structure, Low to moderate risk
54 Steeply sloping terrain, unfavorable or fault controlled geologic structure, Moderate risk
55 Modified terrain (graded sites) Nominal risk

Water (Bays and Lakes)

FAULTS
Fault
Inferred Fault
Concealed Fault
Shear Zone

Index Map



City of San Diego
SEISMIC SAFETY STUDY
Geologic Hazards and Faults

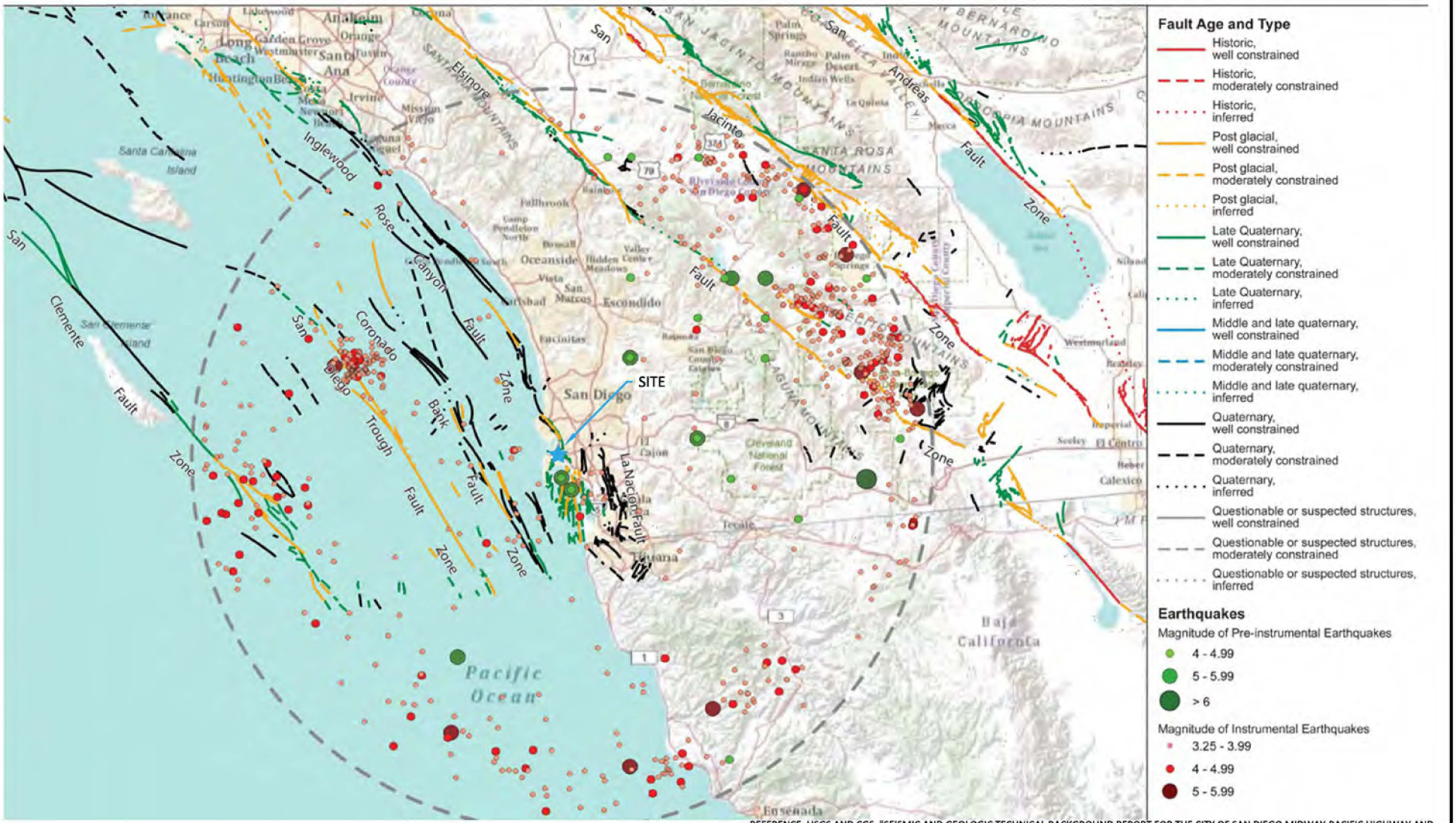
Development Services Department

REFERENCE: CITY OF SAN DIEGO, SEISMIC SAFETY STUDY, GEOLOGIC HAZARDS AND FAULTS

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SPORTS ARENA COMPLEX MIDWAY RISING	CITY OF SAN DIEGO SEISMIC SAFETY ELEMENT	GROUP DELTA	
		PROJECT NUMBER	FIGURE NUMBER
		SD760	6

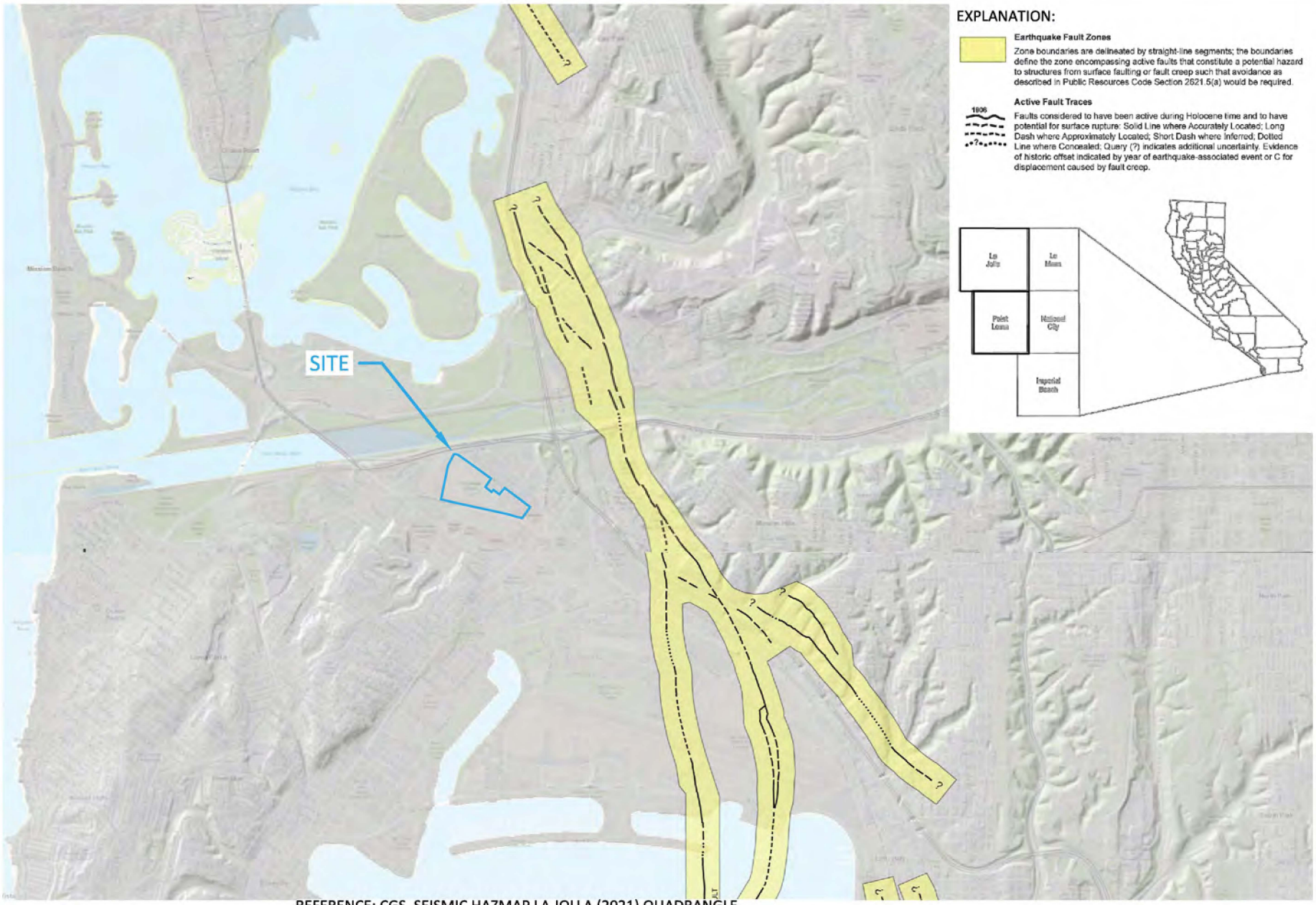
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REFERENCE: USGS AND CGS, "SEISMIC AND GEOLOGIC TECHNICAL BACKGROUND REPORT FOR THE CITY OF SAN DIEGO MIDWAY-PACIFIC HIGHWAY AND OLD TOWN COMMUNITY PLAN UPDATES".

SPORTS ARENA COMPLEX MIDWAY RISING	REGIONAL FAULTS AND EARTHQUAKES MAP	GROUP DELTA
		PROJECT NUMBER: SD760
		FIGURE NUMBER: 7

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REFERENCE: CGS, SEISMIC HAZMAP LA JOLLA (2021) QUADRANGLE

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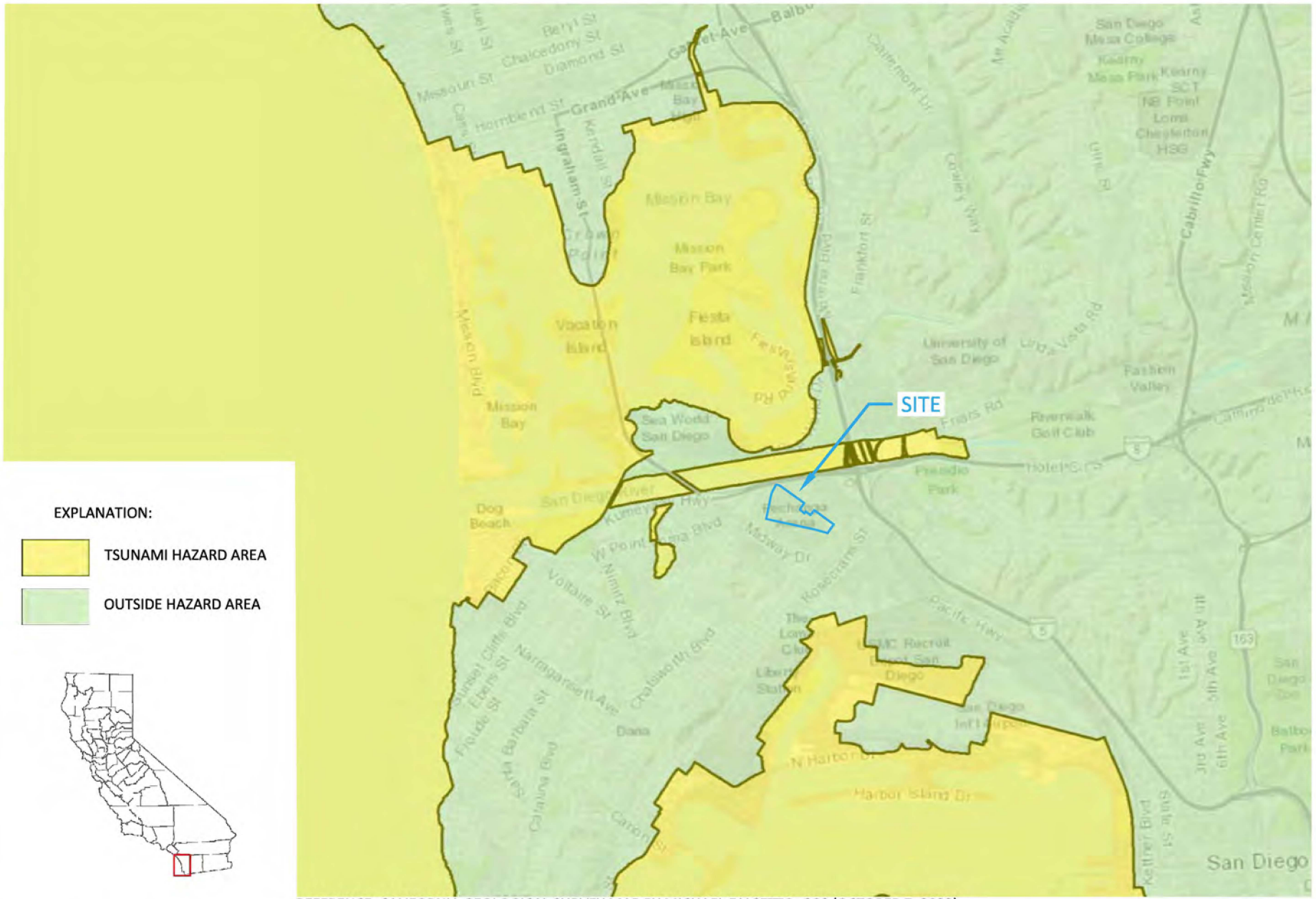
SPORTS ARENA COMPLEX
MIDWAY RISING

EARTHQUAKE ZONE
OF REQUIRED INVESTIGATION
LA JOLLA QUADRANGLE

GROUP DELTA

PROJECT NUMBER	FIGURE NUMBER
SD760	8

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REFERENCE: CALIFORNIA GEOLOGICAL SURVEY MAP BY MICHAEL FALSETTO, CGS (OCTOBER 7, 2022)

SPORTS ARENA COMPLEX MIDWAY RISING	TSUNAMI INUNDATION MAP	GROUP DELTA	
		PROJECT NUMBER SD760	FIGURE NUMBER 9

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EXPLANATION

- APPROXIMATE LIMITS OF SITE DEVELOPMENT
- **A-23-016** APPROXIMATE LOCATION OF HOLLOW-STEM AUGER BORING
- **R-23-002** APPROXIMATE LOCATION OF MUD ROTARY WASH BORING
- **DP-23-004** APPROXIMATE LOCATION OF DIRECT PUSH BORING
- **CPT-23-028** APPROXIMATE LOCATION OF CONE PENETRATION TEST (CPT)

0 200' 400'

REFERENCE: GOOGLE, INC. (2022) GOOGLE EARTH PRO. AERIAL IMAGERY DATED: AUGUST 1, 2021.

NOTE: DIRECTION, SCALE AND LOCATIONS ARE APPROXIMATE

SPORTS ARENA COMPLEX
MIDWAY RISING

PROPOSED EXPLORATION LOCATIONS

GROUP DELTA

PROJECT NUMBER	FIGURE NUMBER
SD760	10

FILE PATH: N:\Projects\SD\SD700\SD760 Zephyr Sports Arena Complex Redevelopment\11. Drafting\SD760 - Figure 6, 10.dwg
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APPENDIX

DATA FROM PRIOR GEOLOGIC AND GEOTECHNICAL STUDIES

PRIOR STUDIES

Subsurface data from the project site and the surrounding area was compiled from publicly and privately available sources. Data was obtained from thirteen different sites within a half-mile radius of the site and was used to inform our conclusions and recommendations herein. Year of data collection ranges from 1968 to 2020. Four sites were investigated by Group Delta or our legacy company Geotechnics, and nine sites were investigated by other consultants or agencies. Each site containing subsurface data is shown in relation to the project site on Figure 2, Existing Subsurface Data.

GROUP DELTA 2020 - PANERA BREAD RESTAURANT



APPROXIMATE SCALE IN FEET

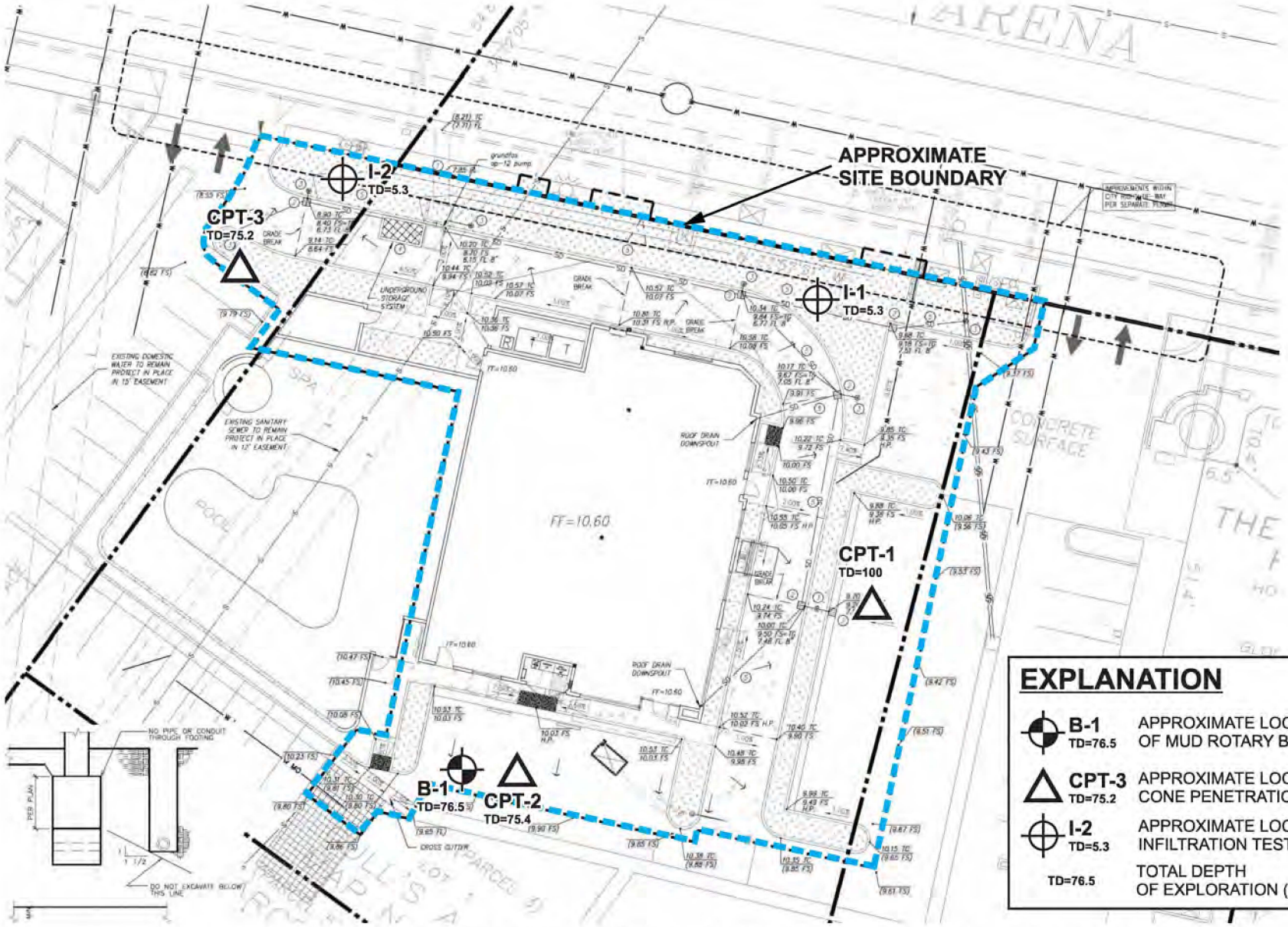
0 500 1,000

N

NOTE: DIRECTION, SCALE AND LOCATIONS ARE APPROXIMATE.

REFERENCE: GOOGLE, INC. (2019) *GOOGLE EARTH PRO* TOOL, IMAGERY DATED DECEMBER 7, 2017.

PROJECT NAME	FIGURE NAME	GROUP DELTA
PROPOSED PANERA BREAD RESTAURANT **3711 SPORTS ARENA BOULEVARD** **MANNA DEVELOPMENT GROUP, LLC**	**SITE LOCATION**	PROJECT NUMBER: SD642 FIGURE NUMBER: 1



EXPLANATION

B-1 TD=76.5	APPROXIMATE LOCATION OF MUD ROTARY BORING
CPT-3 TD=75.2	APPROXIMATE LOCATION OF CONE PENETRATION TEST
I-2 TD=5.3	APPROXIMATE LOCATION OF INFILTRATION TEST
TD=76.5	TOTAL DEPTH OF EXPLORATION (IN FEET)

APPROXIMATE SCALE IN FEET

0 15 30

N

NOTE: DIRECTION, SCALE AND LOCATIONS ARE APPROXIMATE.

REFERENCE: MOUR GROUP (2020) *GRADING & DRAINAGE PLAN, PANERA BREAD, 3711 SPORTS ARENA BLVD., SAN DIEGO, CA 92110*, MARCH 6.

PROJECT NAME	FIGURE NAME	GROUP DELTA	
PROPOSED PANERA BREAD RESTAURANT 3711 SPORTS ARENA BOULEVARD MANNA DEVELOPMENT GROUP, LLC	**EXPLORATION LOCATIONS**	PROJECT NUMBER SD642	FIGURE NUMBER **2**

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
Proposed Panera Bread Restaurant	SD642	**B-1**

SITE LOCATION	START	FINISH	SHEET NO.
3711 Sports Arena Boulevard, San Diego, California	11/22/2019	11/22/2019	1 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger/Rotary Wash	S. Narveson	C. Vonk

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUNDWATER (ft)
Marl M10	8/4	76.5	10	▼ 10.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR ~ 95%, N_{60} = 1.58N_{SPT}

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												PAVEMENT: ASPHALT CONCRETE (3") over AGGREGATE BASE (4").
			B1				13.7	--	PA CP DS			**FILL:** CLAYEY SAND (SC); dark yellowish brown; moist; mostly fine to medium SAND; some fines; few to little fine to coarse GRAVEL; low plasticity. (11% Gravel; 55% Sand; 34% Fines) @3': No GRAVEL.
5	5		S2	3 2 2	4	6				5		**ESTUARINE DEPOSITS:** SILTY SAND (SM); loose; yellowish gray; moist; mostly fine SAND; little fines; nonplastic; micaceous; thinly bedded.
10	0		S3	1 2 2	4	6	30.6	--	-200	10		▼ Brownish gray; wet. (17% Fines) @14': Switch to rotary wash (4-inch diameter drag bit).
15	-5		S4	2 1 2	3	5	59.8	--	-200	15		Lean CLAY (CL); very soft; dark gray; wet; mostly fines; few fine SAND; medium to high plasticity; micaceous; strong organic odor; PP<0.25 tsf. (93% Fines) Sample SH5: Poor recovery with Shelby tube.
			SH5									
20	-10		SH6				38.7	81	-200 PI C	20		SILTY SAND (SM); dark gray; wet; mostly fine SAND; little to some fines; nonplastic; micaceous. (26% Fines) (LL: NP; PL: NP; PI: NP)

GDC_LOG_BORING_MMX_SOIL_SD SD642 LOGS.GPJ GDCLOG.GDT 12/16/19

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San Diego, California 92126

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE
A-1 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
Proposed Panera Bread Restaurant	SD642	**B-1**

SITE LOCATION	START	FINISH	SHEET NO.
3711 Sports Arena Boulevard, San Diego, California	11/22/2019	11/22/2019	2 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger/Rotary Wash	S. Narveson	C. Vonk

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUNDWATER (ft)
Marl M10	8/4	76.5	10	▼ 10.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR ~ 95%, N_{60} = 1.58N_{SPT}

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S7	1 3 2	5	8	46.4	--	PA			**ESTUARINE DEPOSITS (continued):** CLAYEY SAND (SC); loose; dark gray; wet; mostly fine SAND; some fines; low plasticity; thin lean CLAY lenses in bottom 6 inches of sampler; micaceous; strong organic odor. (54% Sand; 46% Fines)
30	-20		S8	2 6 9	15	24				30		SILTY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; some fines; nonplastic to low plasticity; micaceous; trace shell fragments; poor sampler recovery.
35	-25		S9	1 1 3	4	6	44.9	--	-200 PI	35		SILT with SAND (ML); soft to very soft; dark gray; wet; mostly fines; little fine SAND; trace shell fragments; low plasticity; micaceous; PP=0.25 tsf. (85% Fines) (LL: 42; PL: 28; PI: 14)
40	-30		S10	3 6 4	10	16	38.6	--	PA	40		SILTY SAND (SM); medium dense; dark gray to gray; wet; mostly fine SAND; some fines; trace sand sized shell fragments; nonplastic; micaceous. (61% Sand; 39% Fines)
45	-35		S11	4 3 4	7	11				45		CLAYEY SAND (SC); medium dense; dark gray to gray; wet; mostly fine SAND; littel to some fines; low plasticity; micaceous.

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FIGURE
A-1 b

GDC_LOG_BORING_MMX_SOIL_SD SD642 LOGS.GPJ GDCLOG.GDT 12/16/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
Proposed Panera Bread Restaurant	SD642	**B-1**

SITE LOCATION	START	FINISH	SHEET NO.
3711 Sports Arena Boulevard, San Diego, California	11/22/2019	11/22/2019	3 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger/Rotary Wash	S. Narveson	C. Vonk

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUNDWATER (ft)
Marl M10	8/4	76.5	10	▼ 10.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR ~ 95%, N_{60} = 1.58N_{SPT}

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S12	4 3 2	5	8	48.9	--	-200 PI			**ESTUARINE DEPOSITS (continued):** Fat CLAY with SAND (CH); soft to very soft; dark gray; wet; mostly fines; little fine SAND; trace fine GRAVEL; high plasticity; trace mica; PP=0.25 tsf. (85% Fines) (LL: 59; PL: 29; PI: 30)
55	-45		S13-1 S13-2	5 6 4	10	16				55		@55': No GRAVEL. SILTY SAND (SM); medium dense; very dark gray; wet; mostly fine to medium SAND; little fines; nonplastic; little shell fragments.
60	-50		S14	9 12 13	25	40				60		Dense.
65	-55		S15	3 5 6	11	17				65		SILTY SAND (SM) very thinly bedded with very thin interbeds of lean CLAY (CL). SILTY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; little fines; nonplastic; micaceous. CLAY (CL); stiff; dark gray; wet; mostly fines; little fine SAND; low to medium plasticity; micaceous.
70	-60		S16	2 3 6	9	14				70		SANDY lean CLAY (CL); medium stiff; dark gray; wet; mostly fines; some fine SAND; low to medium plasticity; micaceous; PP=0.75 tsf.

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FIGURE
A-1 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
Proposed Panera Bread Restaurant	SD642	**B-1**

SITE LOCATION	START	FINISH	SHEET NO.
3711 Sports Arena Boulevard, San Diego, California	11/22/2019	11/22/2019	4 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger/Rotary Wash	S. Narveson	C. Vonk

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUNDWATER (ft)
Marl M10	8/4	76.5	10	▼ 10.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR ~ 95%, N_{60} = 1.58N_{SPT}

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S17	8 11 11	22	35						**ESTUARINE DEPOSITS (continued):** SILTY SAND (SM); dense; dark gray; wet; mostly fine to medium SAND; little fines; nonplastic; micaceous; trace shell fragments.
80	-70									80		
85	-75									85		
90	-80									90		
95	-85									95		

Total Depth = 76.5 feet (Target depth reached).

Drilling methods: 8-inch diameter Hollow Stem Auger from 0 to 14 feet; 4-inch diameter rotary wash (drag bit) from 14 to 75 feet.

Groundwater measured during drilling at a depth of 10 feet.

Boring backfilled on 11/22/2019 shortly after drilling with portland cement and bentonite grout and capped with black-dyed rapid set concrete.

This Boring Record is part of a geotechnical report which must be considered in its entirety.

The exploration elevations were estimated by interpolation using the referenced plans provided by Mour Group Engineering + Design, which utilizes the North American Vertical Datum of 1988 (NAVD 88) as the vertical datum (see Figure 2).

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FIGURE
A-1 d

GDC_LOG_BORING_MMX_SOIL_SD SD642 LOGS.GPJ GDCLOG.GDT 12/16/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
Proposed Panera Bread Restaurant	SD642	I-1

SITE LOCATION	START	FINISH	SHEET NO.
3711 Sports Arena Boulevard, San Diego, California	11/14/2019	11/14/2019	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
N/A	Manual	S. Narveson	C. Vonk

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUNDWATER (ft)
Hand Auger	6	5.3	9	▼ NE / *na*

SAMPLING METHOD	NOTES
N/A	N/A

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
0	9									0		
5	4		B1				17.3	--	PA EI	5		**FILL:** CLAYEY SAND (SC); loose to medium dense; brownish gray; moist; mostly fine SAND; some fines; trace to few fine to coarse GRAVEL; low to medium plasticity (increasing plasticity with depth). Upper 6 inches consist of grass, roots and organic soils. (6% Gravel; 52% Sand; 42% Fines) @4': Iron oxide staining.
10	-1									10		Total Depth = 5.3 feet (Target depth reached). Groundwater not encountered during drilling. Boring backfilled on 11/15/2019 shortly after completion of infiltration testing. This Boring Record is part of a geotechnical report which must be considered in its entirety. The exploration elevations were estimated by interpolation using the referenced plans provided by Mour Group Engineering + Design, which utilizes the North American Vertical Datum of 1988 (NAVD 88) as the vertical datum (see Figure 2).
15	-6									15		
20	-11									20		

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San Diego, California 92126

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FIGURE
A-2

GDC_LOG_BORING_MMX_SOIL_SD SD642 LOGS.GPJ GDCLOG.GDT 12/16/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
Proposed Panera Bread Restaurant	SD642	**I-2**

SITE LOCATION	START	FINISH	SHEET NO.
3711 Sports Arena Boulevard, San Diego, California	11/14/2019	11/14/2019	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
N/A	Manual	S. Narveson	C. Vonk

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUNDWATER (ft)
Hand Auger	6	5.3	9	▼ NE / *na*

SAMPLING METHOD	NOTES
N/A	N/A

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
0	9									0		
5	5		B1				14.3	--		5		**FILL:** SILTY SAND (SM); medium dense; gray; moist; mostly fine SAND; little to some fines; few fine to coarse GRAVEL-sized rubble fragments (e.g., asphalt, clay brick, glass); nonplastic to low plasticity; difficult excavation. Upper 6 inches consist of grass, roots and organic soils.
10	0									10		Total Depth = 5.3 feet (Target depth reached). Groundwater not encountered during drilling. Boring backfilled on 11/15/2019 shortly after completion of infiltration testing. This Boring Record is part of a geotechnical report which must be considered in its entirety. The exploration elevations were estimated by interpolation using the referenced plans provided by Mour Group Engineering + Design, which utilizes the North American Vertical Datum of 1988 (NAVD 88) as the vertical datum (see Figure 2).
15	-5									15		
20	-10									20		
	-15											

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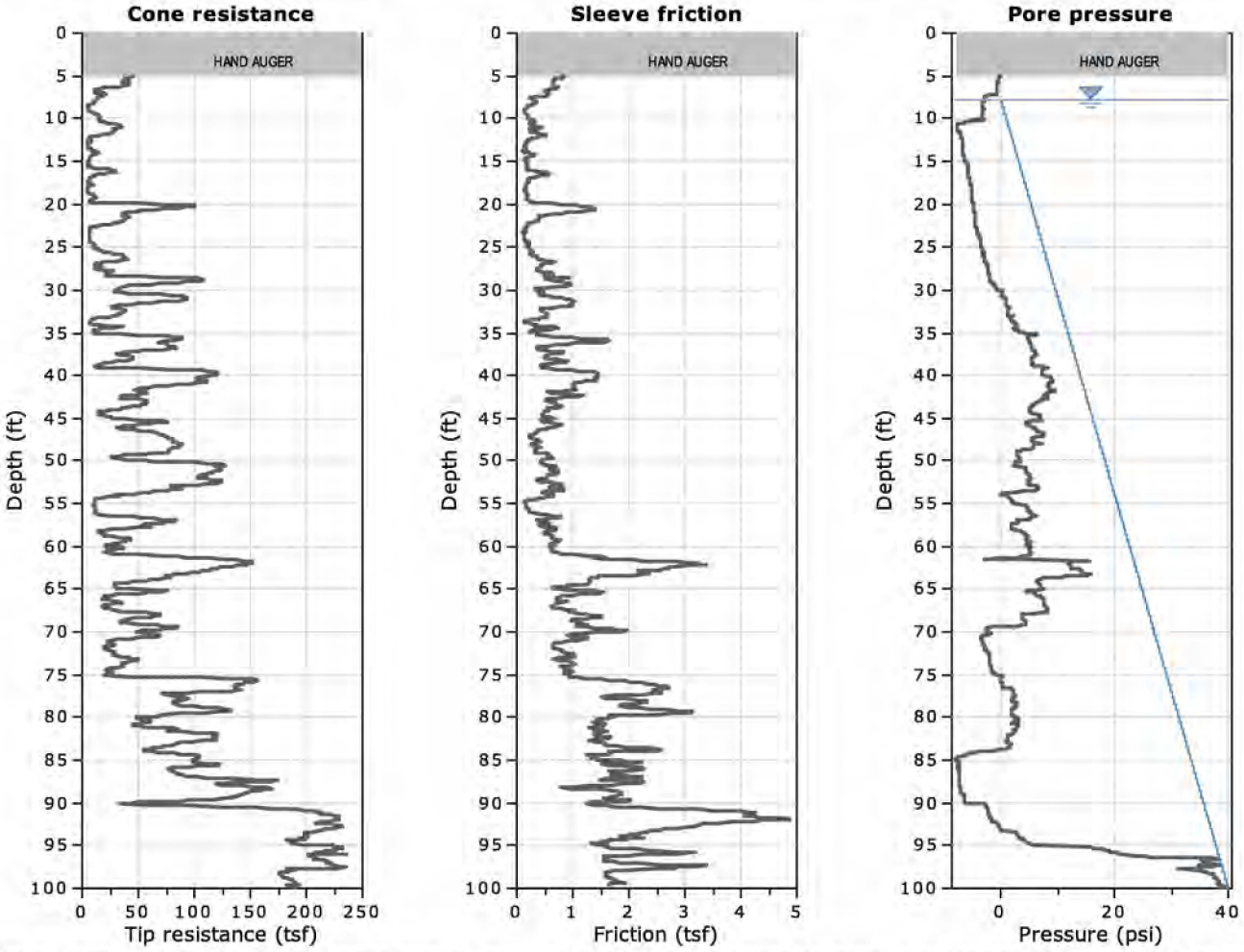
FIGURE
A-3

GDC_LOG_BORING_MMX_SOIL_SD SD642 LOGS.GPJ GDCLOG.GDT 12/16/19

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www.groupdelta.com

CPT: CPT-1
Total depth: 100.01 ft, Date: 11/15/2019
Surface Elevation: 9.50 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertek
Cone Operator: Kehoe Testing & Engineering

Project: **Proposed Panera Bread Restaurant**
Location: **3711 Sports Arena Boulevard, San Diego, California**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).

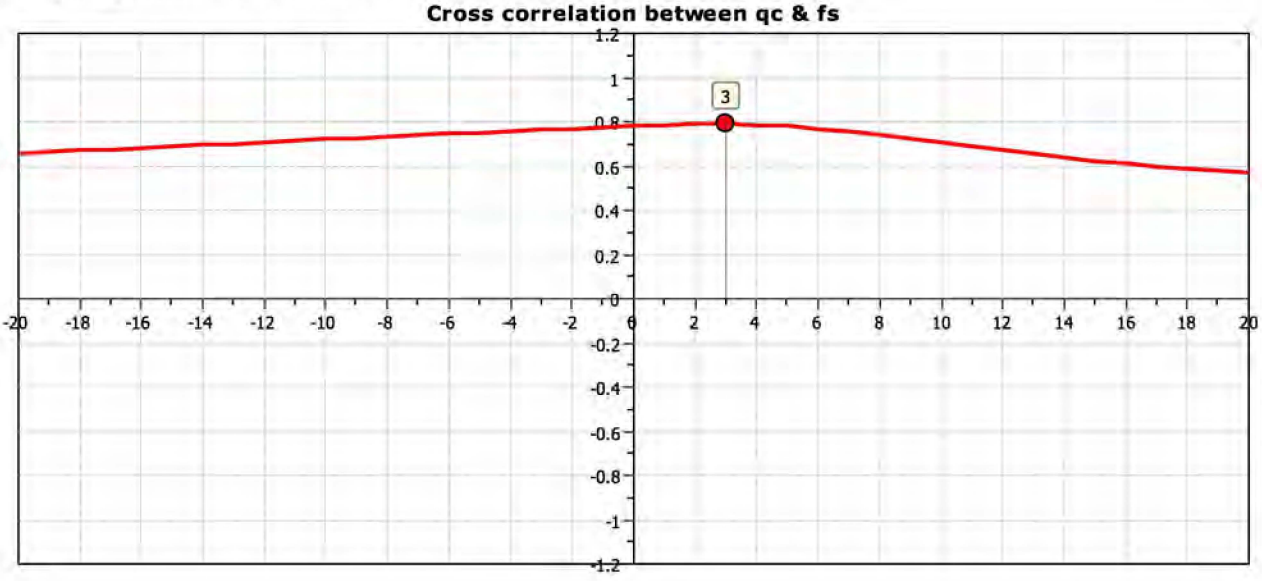
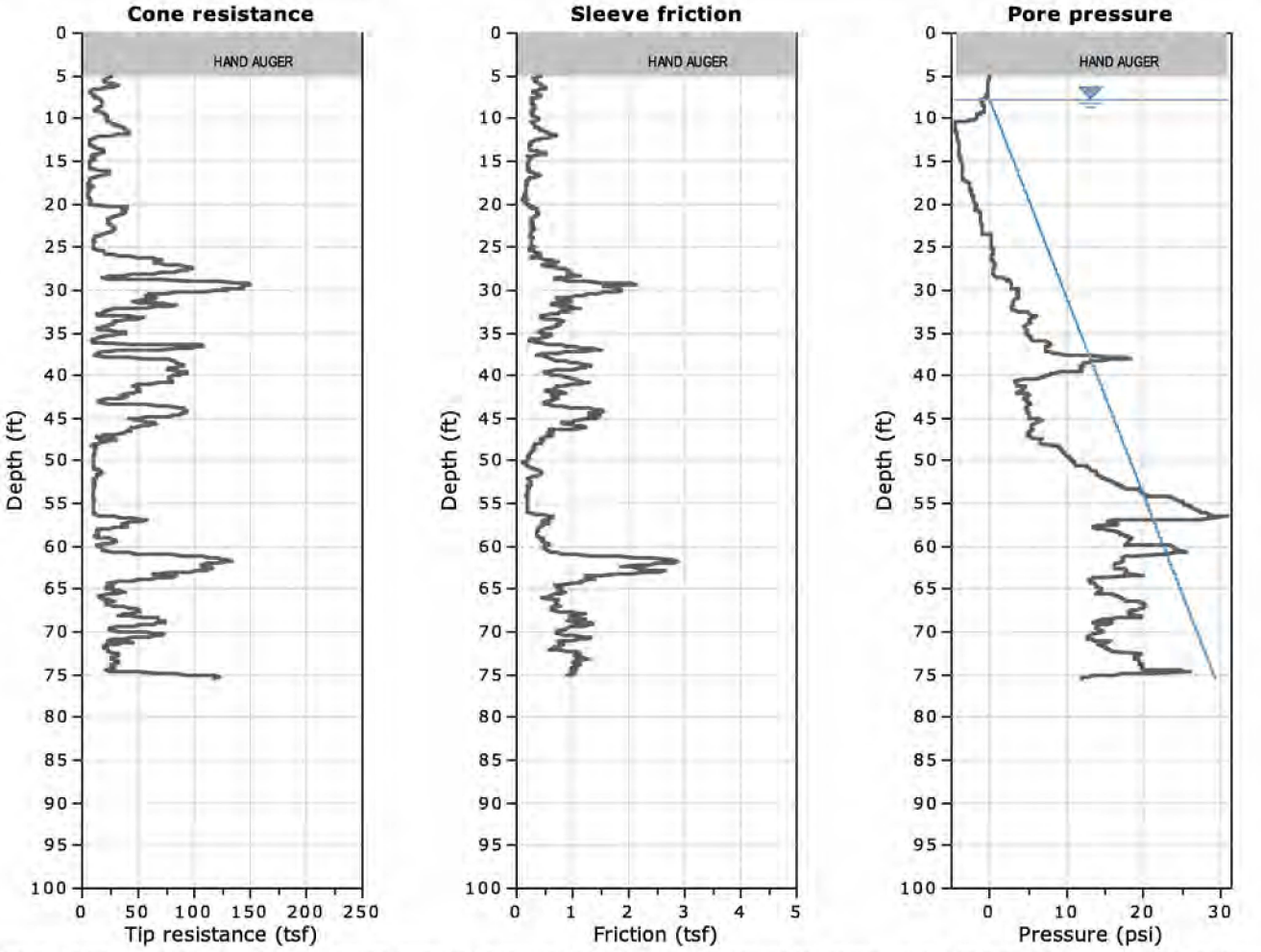


FIGURE A-4

Group Delta Consultants, Inc.
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San Diego, California 92126
www.groupdelta.com

CPT: CPT-2
Total depth: 75.41 ft, Date: 11/15/2019
Surface Elevation: 10.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertek
Cone Operator: Kehoe Drilling & Testing

Project: **Proposed Panera Bread Restaurant**
Location: **3711 Sports Arena Boulevard, San Diego, California**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).

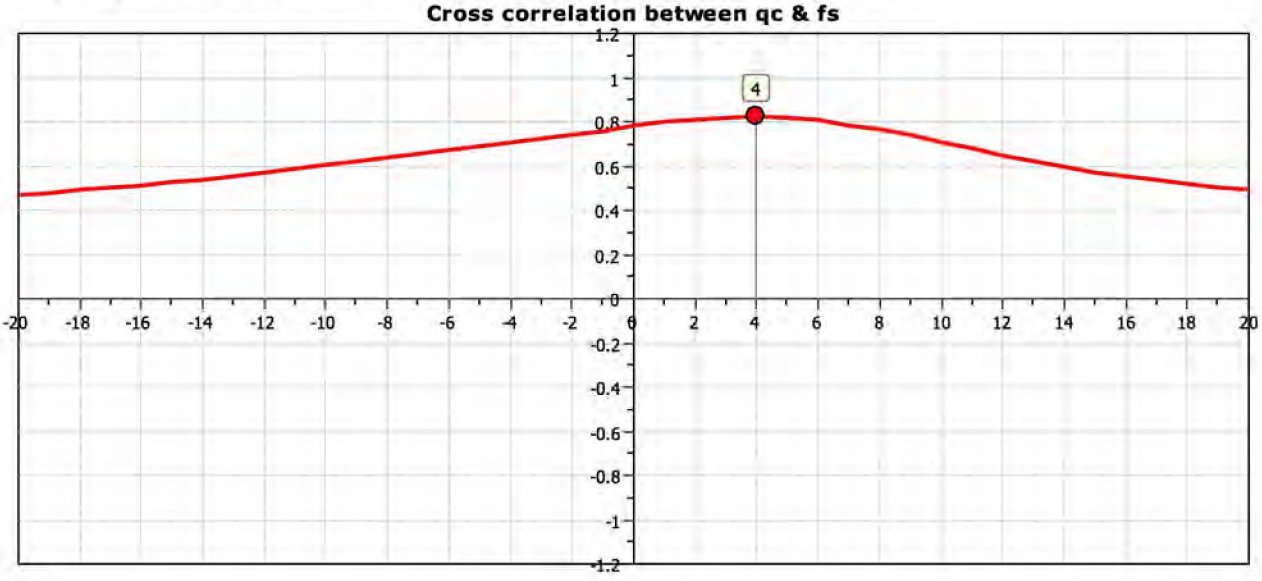
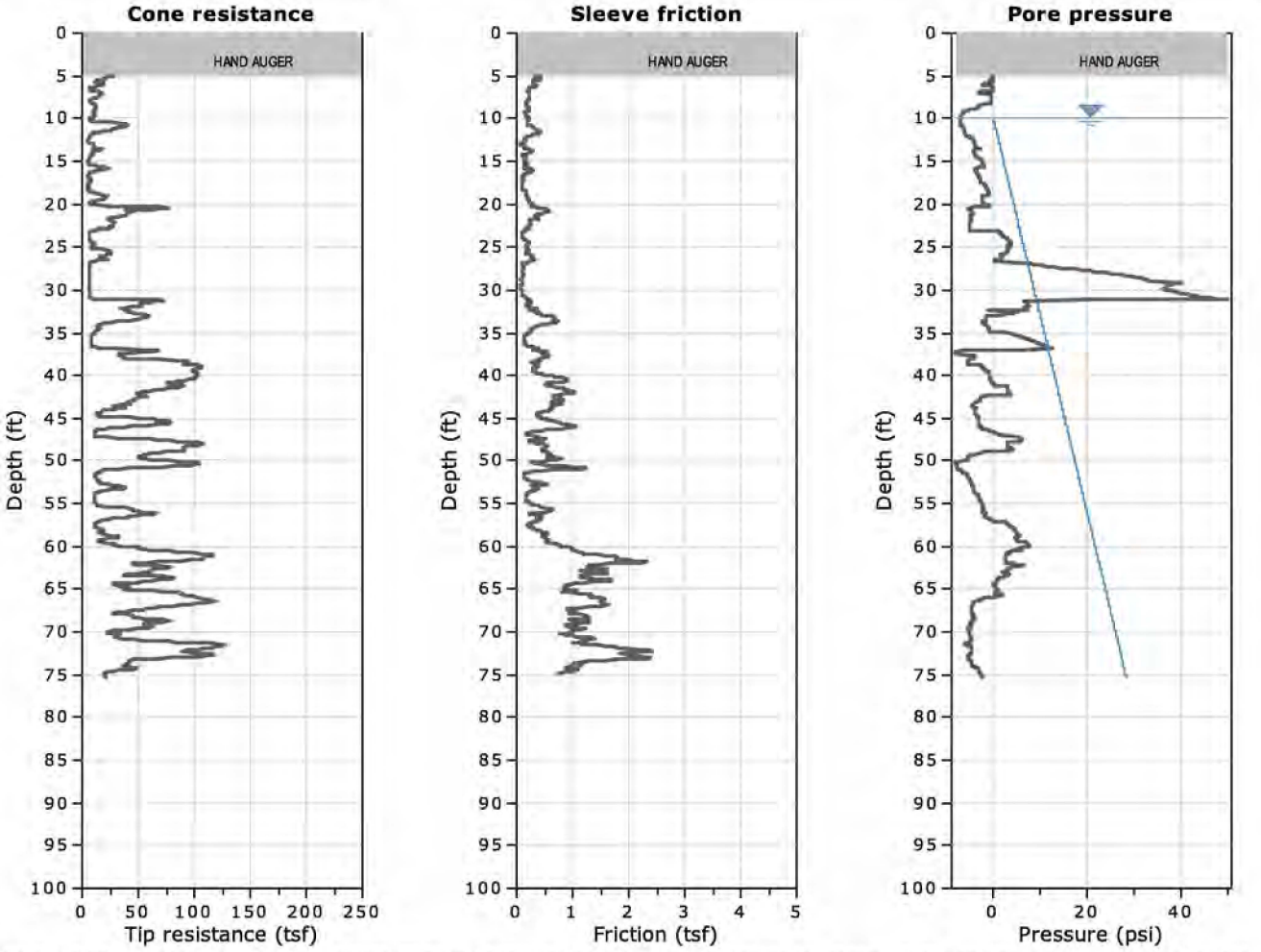


FIGURE A-5

Group Delta Consultants, Inc.
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CPT: CPT-3
Total depth: 75.22 ft, Date: 11/15/2019
Surface Elevation: 9.00 ft
Coords: X:0.00, Y:0.00
Cone Type: Vertek
Cone Operator: Kehoe Drilling & Testing

Project: **Proposed Panera Bread Restaurant**
Location: **3711 Sports Arena Boulevard, San Diego, California**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).

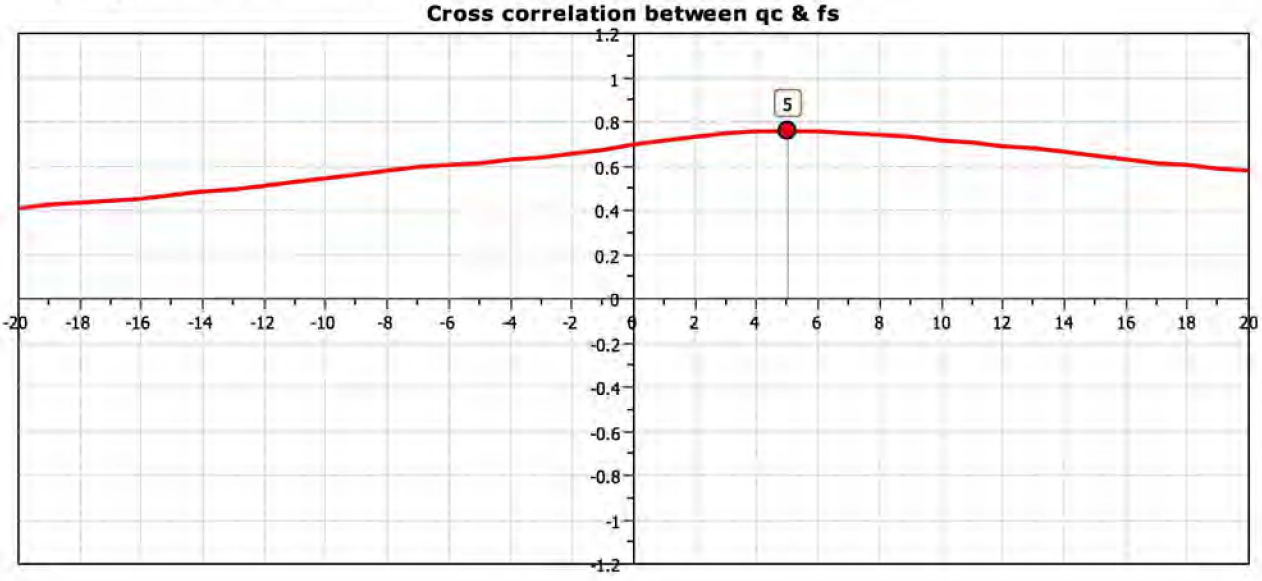


FIGURE A-6

Group Delta Consultants
Panera Bread Sports Arena
San Diego, CA

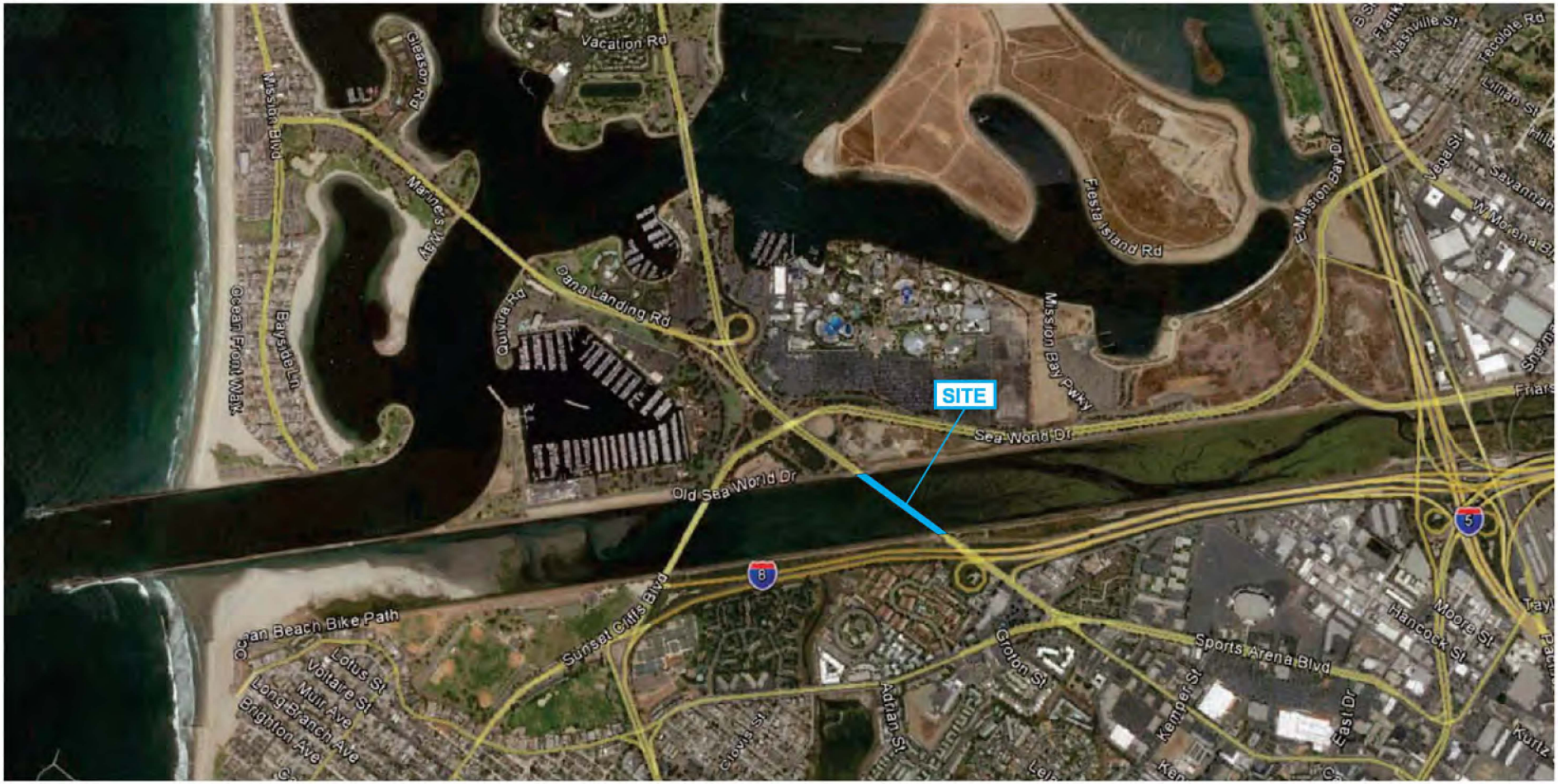
CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-1	10.04	9.04	9.89	13.16	751.17	
	15.03	14.03	14.59	24.72	590.17	406.89
	19.98	18.98	19.40	36.16	536.42	420.27
	25.07	24.07	24.40	48.04	507.91	421.14
	30.02	29.02	29.29	57.78	507.00	502.49
	35.07	34.07	34.30	65.96	520.07	612.42
	40.06	39.06	39.26	74.40	527.75	587.71
	45.08	44.08	44.26	82.32	537.67	630.91
	50.07	49.07	49.23	89.92	547.52	654.16
	55.09	54.09	54.24	97.00	559.15	706.91
	60.07	59.07	59.21	104.48	566.67	664.11
	65.03	64.03	64.15	111.36	576.10	719.41
	70.01	69.01	69.13	117.76	587.01	776.72
	75.07	74.07	74.18	123.42	601.02	892.60
	80.02	79.02	79.12	130.40	606.76	708.20
	85.07	84.07	84.17	137.48	612.20	712.42
	90.09	89.09	89.18	144.02	619.22	766.77
	95.05	94.05	94.14	150.32	626.23	786.55
	100.03	99.03	99.11	156.93	631.56	752.76

Shear Wave Source Offset - 4 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

FIGURE A-7



EXPLANATION:

- Approximate location of the West Mission Bay Drive Bridge over the San Diego River (Latitude 32.7585 °N, -117.2257 °W)

N

NO SCALE

GROUP DELTA

GROUP DELTA CONSULTANTS, INC. ENGINEERS AND GEOLOGISTS 9245 ACTIVITY ROAD, SUITE 103 SAN DIEGO, CA 92126 (858) 536-1000	PROJECT NUMBER SD130C DOCUMENT NUMBER 15-0014
PROJECT NAME West Mission Bay Drive Bridge T. Y. Lin International	FIGURE NUMBER 1

SITE LOCATION MAP



EXPLANATION:

R-19-003 Approximate location of exploratory boring with year drilled (R~Rotary Wash, S~Sonic Core)

CPT-09-002 Approximate location of cone penetrometer test (CPT) sounding (Vs_{30} ~ average shear wave velocity, where indicated)

NO SCALE

GROUP DELTA

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PROJECT NUMBER: SD130E

DOCUMENT NUMBER: 15-0014R

PROJECT NAME: West Mission Bay Drive Bridge
T. L. Lin International

FIGURE NUMBER: 2A

SITE VICINITY PLAN

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	R-19-001

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/25/2019	3/28/2019	1 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: Right Bridge, Pier 5, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	-5									5		**ALLUVIUM:** SILTY SAND (SM); loose; grayish brown; wet; mostly fine to medium SAND; some fines; nonplastic. Auger sank to -11 feet MSL under self-weight.
10	-10									10		**PARALIC ESTUARINE DEPOSITS:** SANDY SILT (ML); very loose; greenish black; wet; mostly fines; some fine SAND; nonplastic; micaceous.
		X	S-1	1	1	1			PA			
15	-15									15		SILTY SAND (SM); medium dense; dark gray; wet; mostly fine to medium SAND; some fines; nonplastic; micaceous. Contains few small shells and shell fragments less than ½-inch in dimension. 78% Sand; 22% FIne
20	-20									20		Rig chatter due to gravel between -20 and -22 feet MSL.
		X	S-2	2 4 7	11	12			PA			84% Sand; 16% Fines
25	-25									25		Rig chatter due to gravel bed at -25½ feet MSL.

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 4/3/19

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FIGURE
A-01 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/25/2019	3/28/2019	2 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 5, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
35	-35		S-3	6 7 12	19	21				35		**PARALIC ESTUARINE DEPOSITS:** SANDY SILT (ML); medium dense; very dark gray; wet; mostly fines; some fine SAND; nonplastic.
40	-40		S-4	1 1	2	2			PA PI	40		Lean CLAY (CL); soft; very dark gray; wet; mostly fines; few fine SAND; medium plasticity; trace shells. 89% Fines; 11% Sand LL=49; PL=27; PI=22 PP = ¼ TSF.
45	-45									45		
50	-50									50		SILTY SAND (SM); medium dense to dense; dark gray; wet; mostly fine to medium SAND; some fines; nonplastic; micaceous. Thinly interbedded with SANDY SILT (ML) layers less than ¾-inch thick. Rig chatter due to gravel between -49 and -50 feet MSL.
55	-55		R-5	6 12 24	36	27	32.7	91	PA	55		77% Sand; 23% Fines SILTY SAND WITH GRAVEL (SM); dense; dark gray; wet; mostly fine to medium SAND; some fines; little GRAVEL; nonplastic. Rig chatter due to gravel between -56 and -60 feet MSL.

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 4/3/19

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FIGURE
A-01 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/25/2019	3/28/2019	3 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 5, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
65	-65	☒	S-6	4 6 12	18	20				65		**PARALIC ESTUARINE DEPOSITS:** SILT WITH SAND (ML); medium dense; dark olive gray; wet; mostly fines; little fine SAND; few GRAVEL; low plasticity; micaceous. Rig chatter to -62 feet MSL.
												Rig chatter due to gravel between -67 and -69 feet MSL.
70	-70									70		
		☒	S-7	4 4 6	10	11			PA PI			Thinly interbedded with SILTY SAND (SM); dark gray; wet; mostly fine SAND; some fines; nonplastic. 64% Sand; 36% Fines LL=NP; PL=NP; PI=NP
75	-75									75		
80	-80									80		Grades to Poorly-graded SAND with SILT (SP-SM); medium dense to dense; gray; wet; mostly fine to medium SAND; few fines; nonplastic. 91% Sand; 9% Fines
		☒	S-8	6 8 17	25	28			PA			
85	-85									85		

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FIGURE
A-01 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/25/2019	3/28/2019	4 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 5, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
95	-95	☒	S-9	10 15 17	32	36			PA	95		**PARALIC ESTUARINE DEPOSITS:** Poorly-graded SAND with SILT (SP-SM); very dense; light gray; wet; mostly fine to medium SAND; few fines; nonplastic; micaceous. 95% Sand; 5% Fines
100	-100									100		**OLD PARALIC DEPOSITS:** Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL and COBBLES.
105	-105									105		
110	-110	☒	S-10	11 20 29	49	55			PA	110		SILTY SAND (SM); very dense; dark gray; wet; mostly fine to medium SAND; some fines; little GRAVEL; nonplastic. 70% Sand; 30% Fines
115	-115									115		Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 4/3/19

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FIGURE
A-01 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/25/2019	3/28/2019	5 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 5, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: SILTY SAND with GRAVEL (SM); very dense; gray; wet; mostly fine to medium SAND; little GRAVEL and COBBLES.
												SILT with SAND (ML); very dense; very dark gray; wet; mostly fines; little fine SAND; few COBBLES; low plasticity.
125	-125		S-11	18 42 60	102	115				125		Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
130	-130		S-12	27 42 75	117	132			PA	130		Poorly-graded SAND (SP); very dense; olive gray; wet; mostly fine to medium SAND; trace fines; nonplastic. 96% Sand; 4% Fines
135	-135									135		FAT CLAY (CH); hard; dark gray; wet; mostly fines; trace fine SAND; high plasticity. PP > 4 TSF.
140	-140									140		SILTY SAND with GRAVEL (SM); very dense; light gray; wet; mostly fine SAND; little fines; nonplastic; little GRAVEL. Rig chatter from gravel at -140 to -142 feet MSL.
145	-145		S-13	15 26 41	67	76				145		SILT WITH SAND (ML); very dense; dark gray; wet; mostly fines; little fine SAND; low plasticity.

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FIGURE
A-01 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/25/2019	3/28/2019	6 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 5, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: SILT WITH SAND (ML); very dense; dark gray; wet; mostly fines; little fine SAND; low plasticity.
												SILTY SAND with GRAVEL (SM); very dense; light gray; wet; mostly fine SAND; little fines; little GRAVEL; nonplastic.
155	-155									155		
												SILT WITH SAND (ML); very dense; dark gray; wet; mostly fines; little fine SAND; low plasticity.
		X	S-14	28 37 37	74	84			PA			77% Fines; 23% Sand
160	-160									160		
165	-165									165		
		X	S-15	12 20 60	80	90						
170	-170									170		
												Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL; nonplastic.
175	-175									175		
		X	S-16	16 29 44	73	82						

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FIGURE
A-01 f

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 4/3/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/25/2019	3/28/2019	7 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 5, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
185	-185									185		Bottom of borehole at 179½ feet. Groundwater encountered at 0 feet. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010). **NOTE:** The boring was drilled from the construction trestle bridge deck, which was located about 12 feet above the mudline. The boring was initially cased using hollow-stem auger from the bridge deck down to about 88 feet below the mudline. Auger was again used to case the boring between 133 and 180 feet. A total of about 190 feet of auger was used.
190	-190									190		
195	-195									195		
200	-200									200		
205	-205									205		

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 4/3/19

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FIGURE
A-01 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/1/2019	4/19/2019	1 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 6, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	-5									5		**ALLUVIUM:** SILTY SAND (SM); loose; grayish brown; wet; mostly fine to medium SAND; some fines; nonplastic. Auger sank to -9 feet MSL under self-weight.
10	-10									10		**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); very loose; dark gray; wet; mostly fine SAND; little fines; nonplastic. 77% Sand; 23% Fines
15	-15	⊠	S-1	P P 3	3	3			PA	15		
20	-20									20		
25	-25	⊠	S-2	3 7 10	17	19				25		Poorly-Graded SAND with Silt (SP-SM); medium dense; dark gray; wet; mostly fine SAND; few fines; nonplastic.

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/21/19

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FIGURE
A-02 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/1/2019	4/19/2019	2 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 6, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
35	-35	☒	S-3	5 5 6	11	12			PA	35		**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; little fines; nonplastic. 2-inch thick lean clay lense at ~33¼' 86% Sand; 14% Fines
		☒	S-4	2 4 7	11	12						CLAYEY SAND (SC); medium dense; dark gray; wet; mostly fine SAND; little to some fines; low plasticity.
40	-40	☒	S-5-1 S-5-2	P P P	1	1			PA PI	40		Fat CLAY (CH); soft; very dark gray; wet; mostly fines; few fine SAND; high plasticity. 91% Fines; 9% Sand LL=58; PL=29; PI=29 PP = ¼ TSF
45	-45									45		
		■	R-6	6 8 11	19	14						
50	-50									50		SILTY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; some fines; trace GRAVEL; trace shell fragments; nonplastic; laminated; micaceous.
		☒	S-7	6 9 13	22	25			PA			66% Sand; 33% Fines; 1% Gravel
55	-55									55		

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/21/19

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FIGURE
A-02 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/1/2019	4/19/2019	3 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 6, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												PARALIC ESTUARINE DEPOSITS: SILTY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; some fines; nonplastic.
												CLAYEY SAND (SC); medium dense; dark gray; wet; mostly SAND; some fines; low plasticity; trace mica.
65	-65	X	S-8-1 S-8-2	5 7 12	19	21				65		SILTY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; some fines; nonplastic; laminated.
70	-70									70		
		X	S-9	5 9 17	26	29			PA			Trace mica; no laminations; little fines. 77% Sand; 23% Fines
75	-75									75		
80	-80									80		
		X	S-10	8 9 9	18	20			PA			78% Sand; 22% Fines
85	-85									85		Poorly-graded SAND with SILT (SP-SM); medium dense; gray to dark gray; wet; mostly fine to medium SAND; few fines; nonplastic; trace mica.

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 5/21/19

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FIGURE
A-02 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/1/2019	4/19/2019	4 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 6, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
95	-95		S-11	12 16 17	33	37			PA	95		**PARALIC ESTUARINE DEPOSITS:** Poorly-graded SAND with SILT (SP-SM); dense; gray; wet; mostly fine to medium SAND; few fines. 91% sand; 9% Fines
100	-100									100		**OLD PARALIC DEPOSITS:** Poorly-graded SAND with SILT (SP-SM); very dense; gray; wet; mostly fine to medium SAND; few fines.
105	-105									105		
			R-12	38 60	98	74						
110	-110		S-13	50 (3")	200	200+				110		CLAYEY GRAVEL with SAND (GC); very dense; yellowish brown; wet; mostly GRAVEL; some fine SAND; some fines. No recovery; sampler refusal on COBBLE.
115	-115									115		

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/21/19

GROUP DELTA CONSULTANTS, INC.
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FIGURE
A-02 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/1/2019	4/19/2019	5 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 6, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-14	50 (4")	150	170			PA			**OLD PARALIC DEPOSITS:** Poorly-graded GRAVEL with SAND (GP); very dense; dark grayish brown; wet; mostly fine to coarse GRAVEL and COBBLES; some fine SAND; trace fines; nonplastic. 55% Gravel; 42% Sand; 3% Fines
125	-125		S-15	12 20 27	47	53				125		Start of sampling for relocated Boring R-19-002 at Elevation -124 feet MSL. Poorly-graded GRAVEL with SAND (GP); very dense; dark grayish brown; wet; mostly fine to coarse GRAVEL and COBBLES; little fine SAND; few fines; nonplastic.
130	-130									130		
			S-16	41 46 75	121	137						
135	-135									135		
			S-17	10 39 60	99	112			PA PI			SILT (ML); very dense; gray; wet; mostly fines; few fine SAND; low plasticity. 90% Fines; 10% Sand LL=36; PL=26; PI=10
140	-140									140		
145	-145									145		Poorly-graded GRAVEL with SAND (GP); very dense; dark grayish brown; wet; mostly fine to coarse GRAVEL and COBBLES; little fine SAND; few fines; nonplastic.
			S-18	50 (2")	200+	200+						

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/21/19

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FIGURE
A-02 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/1/2019	4/19/2019	6 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 6, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
155	-155									155		**OLD PARALIC DEPOSITS:** Poorly-graded GRAVEL with SAND (GP); very dense; dark grayish brown; wet; mostly fine to coarse GRAVEL and COBBLES; little fine SAND; few fines; nonplastic.
			S-19	50 (6")	100	113						
160	-160									160		
165	-165		S-20	30 37 50	87	98			PA	165		SILTY GRAVEL with SAND (GM); very dense; olive; wet; mostly fine to coarse GRAVEL and COBBLES; some fine SAND; little fines; nonplastic. 57% Gravel; 28% Sand; 15% Fines
170	-170									170		Poorly-graded GRAVEL (GP); very dense; olive; wet; mostly fine to coarse GRAVEL; trace fine SAND; few fines; nonplastic.
			S-21	50 (4")	150	170						
175	-175									175		Bottom of borehole at 173½ feet. Groundwater encountered at 0 feet. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010).

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FIGURE
A-02 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/1/2019	4/19/2019	7 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	ARB	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 6, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
185	-185									185		**NOTE:** The boring was drilled from the construction trestle bridge deck, which was located about 12 feet above the mudline. The boring was initially cased using hollow-stem auger from the bridge deck down to about 123 feet below the mudline. However, the auger sheared off at that elevation. Boring R-19-002 was later relocated approximately 10-feet north of the centerline of Pier 6R (outside of the casing), and drilled to the planned depth. The first sample at the new boring location was collected at a depth of 125 feet below the mudline (Sample No. S-15). Thie relocated boring was grouted full depth.
190	-190									190		
195	-195									195		
200	-200									200		
205	-205									205		

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FIGURE
A-02 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/22/2019	4/25/2019	1 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	SRN	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 7, 3' NE of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												ALLUVIUM: SILTY SAND (SM); loose; grayish brown; wet; mostly fine to medium SAND; some fines; nonplastic.
5	-5									5		Auger sank to -8 feet MSL under self-weight.
10	-10	☒	S-1	2 2 4	6	7			PA	10		**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); loose to medium dense; dark gray; wet; mostly fine SAND; some fines; nonplastic; micaceous. Sample contains a trace of shell fragments. 0% Gravel; 64% Sand; 36% Fines
15	-15									15		Poorly-Graded SAND with SILT (SP-SM); medium dense; very dark gray; wet; mostly fine SAND; few fines; nonplastic.
20	-20	☒	S-2	4 7 3	10	11				20		
25	-25									25		SILTY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; little fines; trace GRAVEL; nonplastic; micaceous.
		☒	S-3	4 9 5	14	16			PA			1% Gravel; 82% Sand; 17% Fines

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 5/3/19

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FIGURE
A-03 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/22/2019	4/25/2019	2 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	SRN	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 7, 3' NE of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												PARALIC ESTUARINE DEPOSITS: Poorly-Graded SAND with SILT (SP-SM); medium dense; dark gray; wet; mostly fine SAND; few fines; nonplastic.
35	-35		S-4	4 7 10	17	19				35		
												SILTY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; little fines; trace GRAVEL; nonplastic; micaceous.
			S-5-1	2 2 3	5	6			PA			1% Gravel; 83% Sand; 16% Fines
40	-40		S-5-2						PA	40		
												Fat CLAY with SAND (CH); soft; black; wet; mostly fines; little fine SAND; high plasticity. 0% Gravel; 15% Sand; 85% Fines PP=¼ TSF.
45	-45									45		
												SILTY SAND (SM); loose; very dark gray; wet; mostly fine SAND; some fines; nonplastic.
50	-50		R-6	2 3 4	7	5	35.5	87		50		
55	-55									55		
												SILTY SAND (SM); dense; dark gray; wet; mostly fine to medium SAND; some fines; nonplastic; micaceous.
			S-7	7 12 15	27	31			PA			0% Gravel; 61% Sand; 39% Fines

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 5/3/19

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FIGURE
A-03 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/22/2019	4/25/2019	3 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	SRN	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 7, 3' NE of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
65	-65									65		**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); medium dense; dark gray; wet; mostly fine to medium SAND; some fines; nonplastic; micaceous.
70	-70	☒	S-8	5 7 10	17	19				70		SITLY SAND (SM); medium dense; dark gray; wet; mostly fine SAND; some fines; nonplastic; laminated.
75	-75									75		
80	-80	☒	S-9	4 6 6	12	14			PA	80		Poorly-graded SAND with SILT (SP-SM); medium dense; gray to dark gray; wet; mostly fine to medium SAND; few fines; nonplastic; trace mica. 0% Gravel; 90% Sand; 10% Fines
85	-85									85		

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/3/19

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FIGURE
A-03 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/22/2019	4/25/2019	4 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	SRN	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 7, 3' NE of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-10	4 4 7	11	12			PA			**PARALIC ESTUARINE DEPOSITS**:Poorly-graded SAND with SILT (SP-SM); medium dense; dark gray; wet; mostly fine to medium SAND; few fines; nonplastic. 0% Gravel; 90% Sand; 10% Fines
95	-95									95		**OLD PARALIC DEPOSITS**: Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL and COBBLES; few fines.
100	-100									100		
105	-105									105		
110	-110		R-11	50 (3")	200	200+				110		
115	-115									115		

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/3/19

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FIGURE
A-03 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/22/2019	4/25/2019	5 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	SRN	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 7, 3' NE of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: SILTY GRAVEL with SAND (GM); very dense; dark grayish brown; wet; mostly fine to coarse GRAVEL and COBBLES; some fine SAND; some fines; nonplastic. 44% Gravel; 27% Sand; 29% Fines
125	-125		S-12	19 50 (5")	79	89			PA	125		SILTY SAND with GRAVEL (SM); very dense; gray brown; wet; mostly fine SAND; little fines; little GRAVEL; nonplastic.
130	-130									130		CLAYEY SAND (SC); very dense; dark olive gray; wet; mostly fine SAND; some fines; trace fine GRAVEL; low plasticity.
135	-135		S-13	19 35 36	71	80				135		SILT with SAND (ML); very dense; dark olive gray; wet; mostly fines; little fine SAND; few GRAVEL; low plasticity.
140	-140									140		
145	-145		S-14	20 26 28	54	61			PA	145		5% Gravel; 20% Sand; 75% Fines

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/3/19

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FIGURE
A-03 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/22/2019	4/25/2019	6 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	SRN	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 7, 3' NE of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
155	-155									155		**OLD PARALIC DEPOSITS:** SILTY SAND with GRAVEL (SM); very dense; gray brown; wet; mostly fine SAND; little fines; little GRAVEL; nonplastic.
160	-160		S-15	28 49 150	199	200+				160		
165	-165									165		GRAVELLY SILT (ML); very dense; olive; wet; mostly fines; few fine SAND; some GRAVEL and COBBLES; nonplastic.
170	-170		S-16	43 50 (3")	143	162			PA	170		35% Gravel; 8% Sand; 57% Fines
175	-175									175		Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; dark gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL and COBBLES; few fines.
			S-17	50 (4")	150	170						

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/3/19

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FIGURE
A-03 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-19-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	4/22/2019	4/25/2019	7 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Rotary Wash	SRN	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	179.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 7, 3' NE of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
185	-185									185		Bottom of borehole at 179½ feet. Groundwater encountered at 0 feet. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010). **NOTE:** The boring was drilled from the construction trestle bridge deck, which was located about 11 feet above the mudline. The boring was cased from the bridge deck down to about 90 feet below the mudline.
190	-190									190		
195	-195									195		
200	-200									200		
205	-205									205		

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 5/3/19

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THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE
A-03 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/27/2018	12/7/2018	1 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 2, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												ALLUVIUM: SILTY SAND (SM); loose; gray; wet; mostly fine to medium grained SAND; little fines; nonplastic; few sea shells.
5	-5	☒	S-1-1 S-1-2	P P P	0	0				5		Fat CLAY (CH) interbedded with CLAYEY SAND (SC). CH: very soft; dark gray; wet; high plasticity; PP < ¼ TSF. SC: Very loose; dark gray; mostly fine SAND; some fines; nonplastic; micaceous.
10	-10	☒	S-2-1 S-2-2	P 4 4	8	9				10		**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM) interbedded with Fat CLAY with SAND (CH). SM: loose; gray; wet; mostly fine SAND; some fines; nonplastic; micaceous. CH: very soft; dark gray; wet; few fine SAND; high plasticity; PP < ¼ TSF.
15	-15	☒	S-3-1 S-3-2	2 4 4	8	9				15		CH: Trace SAND; micaceous.
20	-20	☒	S-4-1 S-4-2	3 4 6	10	11			PA	20		SM: Medium dense. 62% Sand; 38% Fines.
25	-25	☒	S-5-1 S-5-2	P 3 4	7	8				25		
		☒	S-6-1	4								Fat CLAY (CH) interbedded with SILTY SAND (SM).

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-04 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/27/2018	12/7/2018	2 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 2, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-6-2	8 9	17	19			PA			**PARALIC ESTUARINE DEPOSITS:** Fat CLAY (CH) interbedded with SILTY SAND (SM). CH: soft; dark grey; wet; little SAND; high plasticity; micaceous; PP = ¼ TSF. SM: medium dense; gray; wet; some fines; nonplastic; micaceous (58% Fines; 42% Sand)
			S-7-1 S-7-2 S-7-3	5 4 4	8	9			PA			SILTY SAND (SM); loose; gray; wet; mostly fine SAND; some fines; nonplastic (67% Sand; 33% Fines).
35	-35									35		SANDY SILT (ML) interbedded with fat CLAY (CH). ML: loose; dark brown-gray; wet; some fine SAND; low plasticity. CH: soft; dark gray; wet; trace to few fine SAND; high plasticity; micaceous; PP = ¼ - ½ TSF.
			R-8-1 R-8-2	9 17 24	41	31	26.5	98				SILTY SAND (SM); dense; gray; wet; mostly fine to medium SAND; some fines; nonplastic; trace shells. Mostly fine SAND.
40	-40									40		
			R-9-1 R-9-2	4 5 5	10	8	53.9	66	PA PI			Fat CLAY (CH); soft; dark gray; wet; few fine SAND; high plasticity; trace shells; PP = ¼ - ½ TSF. 94% Fines; 6% Sand. LL=69, PL=27, PI=42
45	-45									45		
			S-10-1 S-10-2	8 11 23	34	38			PA			SILTY SAND (SM) interbedded with thin lenses of Fat CLAY (CH). SM: dense; dark gray; wet; mostly fine SAND; some fines; nonplastic; micaceous; few shells. CH: soft; dark gray; wet; high plasticity; little shells. PP = ½ TSF. SM: 63% Sand; 37% Fines
50	-50									50		
			S-11-1 S-11-2	13 19 20	39	44						SANDY SILT (ML); dense; dark gray; wet; mostly fines; some fine SAND; low plasticity; micaceous.
55	-55									55		Poorly-graded SAND with SILT (SP-SM); dense; brown-gray; wet; mostly fine to medium SAND; few fines; nonplastic; micaceous.
			S-12	7 12 12	24	27						SILTY SAND (SM); medium dense; gray; wet; mostly fine SAND; some fines; nonplastic; micaceous.

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FIGURE
A-04 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/27/2018	12/7/2018	3 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 2, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
65	-65									65		**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); medium dense; gray; wet; mostly fine SAND; some fines; nonplastic; micaceous.
			S-13	3 7 9	16	18						
70	-70									70		
			R-14	26 42 50 (4")	102	77	24.3	103	PA			SILTY SAND (SM); dense to very dense; dark gray; wet; mostly fine to medium SAND; little fines; nonplastic; micaceous. 85% Sand; 15% Fines. Dark gray; mostly fine SAND.
75	-75									75		
80	-80									80		
			S-15	15 15 15	30	34						Blue-gray; mostly fine to medium SAND.
85	-85									85		

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FIGURE
A-04 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/27/2018	12/7/2018	4 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 2, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												PARALIC ESTUARINE DEPOSITS: SILTY SAND (SM); dense; blue-gray; wet; mostly fine to medium SAND; little fines; nonplastic; micaceous.
			S-16	20 24 25	49	55						Poorly-graded SAND (SP); very dense; light gray; wet; mostly fine to medium SAND; nonplastic.
95	-95									95		
100	-100									100		**OLD PARALIC DEPOSITS:** SILTY SAND with GRAVEL (SM); very dense; light gray; wet; mostly fine to coarse SAND; little fines; little fine GRAVEL, sub-rounded. 64% Sand; 19% Fines; 17% Gravel.
			S-17	24 25 27	52	59			PA			
105	-105									105		
110	-110									110		
			S-18	32 50 (6")	100	113						Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
115	-115									115		Poorly-graded SAND with SILT (SP-SM); very dense; gray; wet; mostly fine to medium SAND.

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-04 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	R-18-001

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/27/2018	12/7/2018	5 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: Right Bridge, Pier 2, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little GRAVEL.
			S-19	50 (3")	200	226						Poorly-graded SAND with SILT (SP-SM); very dense; gray; wet; mostly fine to medium SAND.
125	-125									125		
130	-130									130		Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
135	-135									135		SANDY SILT (ML); very dense; brown-gray; mostly fines; some fine SAND; low plasticity. PP = 1¾ - 2¼ TSF
			S-20	13 20 28	48	54			PA			56% Fines, 44% Sand
140	-140									140		Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
												Poorly-graded SAND with SILT (SP-SM); very dense; gray; wet; mostly fine to medium SAND.
145	-145									145		
												Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-04 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/27/2018	12/7/2018	6 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	173	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 2, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
155	-155	☒	S-21	30 38 50	88	100				155		**<u>OLD PARALIC DEPOSITS</u>:** CLAYEY SAND (SC); very dense; brown-gray; wet; mostly fine SAND; some fines; nonplastic; micaceous.
												Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
160	-160									160		Poorly-graded SAND with SILT (SP-SM); very dense; gray; wet; mostly fine to medium SAND; few fines; nonplastic.
165	-165	☒	S-22	13 31 39	70	79				165		
170	-170									170		Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
175	-175									175		Bottom of borehole at 173 feet. Groundwater encountered at 0 feet. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010). **NOTE:** The boring was drilled from the construction trestle deck, which was located about 11 feet above the mudline. The boring was cased using hollow-stem auger from the bridge deck down to about 74 feet below the mudline. A total of 85 feet of auger was used.

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FIGURE
A-04 f

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/13/2018	12/15/2018	1 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	172	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 3, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												ALLUVIUM: SILTY SAND (SM); loose to medium dense; gray; wet; mostly fine to medium SAND; some fines; nonplastic.
5	-5									5		
												PARALIC ESTUARINE DEPOSITS: SANDY SILT (ML); loose; very dark gray; wet; mostly fines; some fine SAND; low plasticity (66% Fines, 34% Sand). PL=43, LL=27, PI=16
10	-10	X	S-1-1 S-1-2	5 12 13	25	28			PA PI	10		SILTY SAND (SM); loose to medium dense; very dark gray; wet; mostly fine SAND; some fines; nonplastic.
15	-15	X	S-2	5 7 12	19	22				15		
20	-20	X	S-3	2 1 3	4	5			PA	20		Loose; trace shells. 54% Sand; 46% Fines
25	-25	X	S-4	2 3 4	7	8				25		
		X	S-5	3					PA			Medium dense; little fines. 75% Sand; 25% Fines

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-05 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/13/2018	12/15/2018	2 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	172	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 3, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-5	4 5	9	10						**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); medium dense; very dark gray; wet; mostly fine SAND; some fines; nonplastic.
35	-35		S-6	8 11 12	23	26			PA PI	35		Sandy Lean CLAY (CL); soft; dark gray; wet; little fine SAND; medium plasticity (87% Fines; 13% Sand). PL=46, LL=25, PI=21 SILTY SAND (SM); medium dense; very dark gray; wet; mostly fine SAND; some fines; nonplastic.
40	-40		SH-7							40		SANDY Fat CLAY (CH); very soft; very dark gray; wet; little fine SAND; high plasticity.
45	-45		S-8	P P P	0	0				45		Fat CLAY (CH); soft; very dark gray; wet; trace to few fine SAND; high plasticity. PP = ¼ TSF
50	-50		S-9	6 7 10	17	19				50		SILTY SAND (SM); medium dense; very dark gray; wet; mostly fine SAND; some fines; nonplastic; trace shells.
55	-55		R-10-1 R-10-2	10 15 21	36	27	32.4	91		55		
			S-11	15								Dense; gray; no shells.

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FIGURE
A-05 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/13/2018	12/15/2018	3 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	172	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 3, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-11	20 22	42	48						**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); medium dense to dense; gray; wet; mostly fine SAND; some fines; nonplastic.
65	-65									65		
70	-70		S-12	7 13 15	28	32				70		
75	-75									75		
80	-80		S-13	10 12 15	27	31			PA	80		60% Sand, 40% Fines
85	-85									85		
			S-14	7								Light gray; mostly fine to medium SAND; little fines.

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-05 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/13/2018	12/15/2018	4 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	172	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 3, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-14	8 18	26	29						**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); medium dense to dense; light gray; wet; mostly fine to medium SAND; little to some fines; nonplastic.
95	-95									95		
			S-15	18 24 24	48	54			PA			Poorly-graded SAND with SILT (SP-SM); very dense; blue-gray; wet; mostly fine to coarse SAND; nonplastic. 93% Sand; 7% Fines
100	-100									100		
												OLD PARALIC DEPOSITS: Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
105	-105									105		
110	-110									110		
115	-115									115		

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-05 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/13/2018	12/15/2018	5 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	172	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 3, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
125	-125									125		**OLD PARALIC DEPOSITS:** Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
			S-16	37 50 (6")	100	113			PA			CLAYEY SAND (SC); very dense; light gray; wet; mostly fine to medium SAND; little fines; nonplastic. 86% Sand, 14% Fines
130	-130									130		CLAYEY SAND (SC) with GRAVEL; very dense; light gray; wet; mostly fine SAND; some fines; nonplastic; few fine GRAVEL, sub-angular.
135	-135									135		
140	-140									140		CLAYEY SAND (SC); dense; light brown-gray; wet; mostly fine SAND; little fines; nonplastic.
			S-17	7 17 19	36	41						
145	-145									145		CLAYEY SAND (SC) with GRAVEL; very dense; light brown-gray; wet; mostly fine SAND; some fines; nonplastic; few fine GRAVEL, sub-angular.

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-05 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/13/2018	12/15/2018	6 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	172	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: Right Bridge, Pier 3, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
155	-155									155		**OLD PARALIC DEPOSITS:** CLAYEY SAND (SC) with GRAVEL; very dense; light brown-gray; wet; mostly fine SAND; some fines; nonplastic; few fine GRAVEL, sub-angular.
												CLAYEY SAND (SC); very dense; light brown-gray; wet; mostly fine SAND; little fines; nonplastic.
160	-160									160		CLAYEY SAND (SC) with GRAVEL; very dense; light brown-gray; wet; mostly fine SAND; some fines; nonplastic; few fine GRAVEL, sub-angular.
												CLAYEY SAND (SC); very dense; light brown-gray; wet; mostly fine SAND; little fines; nonplastic.
165	-165									165		CLAYEY SAND (SC) with GRAVEL; very dense; light brown-gray; wet; mostly fine to coarse SAND; some fines; nonplastic; few fine GRAVEL, sub-angular.
			S-18	50 (3")	200	226						
170	-170									170		
175	-175									175		Bottom of borehole at 172 feet. Groundwater encountered at 0 feet. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010). **NOTE:** The boring was drilled from the construction trestle bridge deck, which was located about 11 feet above the mudline. The boring was cased using hollow-stem auger from the bridge deck down to about 89 feet below the mudline. A total of 100 feet of auger was used.

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FIGURE
A-05 f

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/18/2018	12/20/2018	1 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	189	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 4, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	-5	☒	S-1	P P P	0	0				5		**ALLUVIUM:** SILTY SAND (SM); very loose; dark gray; wet; mostly fine SAND; some fines; low plasticity; micaceous.
10	-10	☒	S-2	4 4 3	7	8				10		**PARALIC ESTUARINE DEPOSITS:** SILTY SAND (SM); loose; dark gray; wet; mostly fine SAND; some fines; nonplastic; micaceous.
15	-15	◪	R-3-1 R-3-2	11 22 23	45	34	26.2	100		15		Poorly-graded SAND with SILT (SP-SM) interbedded with CLAYEY SAND (SC). SP-SM: dense; gray; wet; mostly fine to medium SAND; few fines; nonplastic; micaceous. SC: dense; gray; wet; mostly fine SAND; some fines; nonplastic.
20	-20	☒	S-4-1 S-4-2	2 3 2	5	6			PA	20		CLAYEY SAND (SC); loose; gray; wet; mostly fine SAND; some fines; low plasticity; micaceous. 73% Sand; 27% Fines SILT with SAND (ML) interbedded with Fat CLAY with SAND (CH); loose; gray; wet; few to little fine SAND; low to high plasticity; micaceous.
25	-25	☒	S-5	15 21 23	44	50			%200	25		Poorly-graded SAND with SILT (SP-SM); very dense; light blue-gray; wet; mostly fine to medium SAND; few fines; nonplastic; trace shells. 11% Fines
		◪	R-6-1	14			21.5	71				CLAYEY SAND (SC); dense; dark gray; wet; mostly fine SAND; some fines; nonplastic.

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-06 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/18/2018	12/20/2018	2 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	189	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 4, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-6-2	21 24	45	34						**PARALIC ESTUARINE DEPOSITS:** Poorly-graded SAND with SILT (SP-SM); dense; gray; wet; mostly fine to medium SAND; few fines; nonplastic. Grades to light blue-gray in color.
												Fat CLAY (CH); medium stiff; dark gray; wet; high plasticity. PP = ¼ - ½ TSF
35	-35		S-7	P 3 5	8	9				35		Lean CLAY with SAND (CL); stiff; dark gray; wet; little fine SAND; medium plasticity; highly micaceous. PP = ½ TSF
40	-40		SH-8							40		Fat CLAY (CH); medium stiff; dark gray; wet; trace fine SAND; high plasticity; trace shells. PP = ½ TSF.
45	-45		R-9-1 R-9-2	5 5 5	10	8	57.8	66		45		Soft. PP = ¼ TSF.
50	-50		S-10-1 S-10-2	7 11 8	19	22			PA	50		SILTY SAND (SM); medium dense; gray; wet; mostly fine SAND; some fines; nonplastic; micaceous. 53% Sand, 47% Fines
55	-55		S-11	8 11 16	27	31				55		Poorly-graded SAND with SILT (SP-SM); dense; light gray; wet; mostly fine to medium SAND; nonplastic.
			S-12-1	6								SANDY Lean CLAY (CL); hard; gray; wet; mostly fines; some fine SAND; medium plasticity; micaceous.

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FIGURE
A-06 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/18/2018	12/20/2018	3 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	189	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 4, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-12-2	14 16	30	34						**PARALIC ESTUARINE DEPOSITS:** Poorly-graded SAND with SILT (SP-SM); dense; light gray; wet; mostly fine SAND; nonplastic; micaceous.
65	-65									65		
												Fat CLAY with SAND (CH); medium stiff; dark gray; wet; few to little fine SAND; high plasticity; micaceous.
70	-70		R-13-1 R-13-2	11 17 45	62	47	23.0	107	PA PI	70		Silty SAND (SM); medium dense to dense; gray; wet; mostly fine to medium SAND; some SAND; nonplastic. 51% Sand; 49% Fines
												Grades to Poorly-graded SAND with SILT (SP-SM); dense; light gray; wet; mostly fine to medium SAND; few fines.
75	-75									75		
80	-80		S-14		---	---				80		Sample disturbed (sampler packed).
85	-85									85		
			S-15									

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-06 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/18/2018	12/20/2018	4 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	189	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 4, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-15	18 29 50 (2")	179	202						**PARALIC ESTUARINE DEPOSITS:** Poorly-graded SAND with SILT (SP-SM); very dense; light gray; wet; mostly fine to medium SAND; few fines; nonplastic; micaceous.
95	-95									95		
												Dense.
100	-100		S-16	6 16 26	42	48				100		Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
												Poorly-graded SAND with SILT (SP-SM); very dense; light gray; wet; mostly fine to medium SAND; few fines; nonplastic; micaceous.
105	-105									105		
												OLD PARALIC DEPOSITS: Poorly-graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to medium SAND; little fine to coarse GRAVEL.
110	-110									110		
115	-115									115		Fat CLAY (CH); hard; gray; wet; high plasticity; strongly indurated. PP = 4½+ TSF
			S-17-1 S-17-2	22 50 (6")	100	113						SANDY SILT (ML); very dense; gray; wet; mostly fines;.

GDC_LOG_BORING_MMX_SOIL_SD_SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-06 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	R-18-003

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/18/2018	12/20/2018	5 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	189	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: Right Bridge, Pier 4, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: SANDY SILT (ML); very dense; gray; wet; mostly fines; some fine SAND; low plasticity.
125	-125									125		Fat CLAY (CH); hard; dark gray; wet; trace to few fine SAND; high plasticity. PP = 4½+ TSF
		⊠	S-18-1 S-18-2	40 50 (3")	200	226			PA			
130	-130									130		SANDY SILT (ML); very dense; gray; wet; mostly fines; some fine SAND; nonplastic. 66% Fines, 34% Sand
135	-135									135		Lean CLAY (CL); hard; gray; wet; few to trace fine SAND; medium plasticity.
		⊠	S-19	45 50 (3")	200	226						
140	-140									140		SILTY SAND with GRAVEL (SM); very dense; light gray; wet; mostly fine SAND; little fines; nonplastic; little GRAVEL.
145	-145									145		SILTY SAND (SM); very dense; gray; wet; mostly fine SAND; some fines; nonplastic.
		⊠	S-20	50 (3")	200	226						SILTY SAND with GRAVEL (SM); very dense; gray; wet; mostly SAND; some fines; nonplastic; little GRAVEL.

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-06 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/18/2018	12/20/2018	6 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	189	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 4, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
155	-155									155		**OLD PARALIC DEPOSITS:** SILTY SAND (SM); very dense; gray; wet; mostly fine SAND; some fines; nonplastic.
			S-21	50 (5")	120	136						
160	-160									160		
165	-165									165		
			S-22	50 (3")	200	226						Light gray; little to some fines.
170	-170									170		
175	-175									175		
			S-23	50 (3")	200	226						Little fines.

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-06 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130E	**R-18-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/18/2018	12/20/2018	7 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Baja Exploration	Hollow Stem Auger / Mud Rotary	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 95	6 / 4	189	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
Right Bridge, Pier 4, Ctr of East Pile. ETR ~ 68%, N_{60} ~ 68/60 * N ~ 1.13 * N

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
185	-185	⊠	S-24	50 (5")	120	136				185		**OLD PARALIC DEPOSITS:** SILTY SAND (SM); very dense; light gray; wet; mostly fine SAND; little fines; nonplastic.
190	-190									190		Bottom of borehole at 189 feet. Groundwater encountered at 0 feet. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010). **NOTE:** The boring was drilled from the construction trestle bridge deck, which was located about 11 feet above the mudline. The boring was cased using hollow-stem auger from the bridge deck down to about 99 feet below the mudline. A total of 110 feet of auger was used.
195	-195									195		
200	-200									200		
205	-205									205		

GDC_LOG_BORING_MMX_SOIL_SD SD130E BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-06 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-001

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/8/2015	3/13/2015	1 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	223.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	-5									5		**FILL:** Silty SAND (SM); loose; gray; wet; mostly fine to medium grained SAND; little fines; nonplastic; few sea shells. **NOTE:** The boring was drilled from the existing West Mission Bay Drive Bridge deck. The bridge deck was located about 27 feet above the mudline. The boring was cased from the bridge deck down to about 22 feet below the mudline. A total of about 49 feet of casing was used.
10	-10	X	S-1	2 3 3	6	8			PA	10		2% Gravel; 81% Sand; 17% Fines Plastic liner observed within sampler.
15	-15									15		**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML); loose to medium dense; gray; wet; mostly fines; some fine grained SAND; low plasticity; micaceous.
20	-20	X	S-2	2 3 5	8	11			PA	20		Sandy fat CLAY (CH); soft; dark gray; wet; mostly fines; some fine grained SAND; trace shells; high plasticity. 1% Gravel; 33% Sand; 66% Fines; PP<¼ TSF.
25	-25									25		Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; low plasticity; micaceous; trace shells.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-07 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-001

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/8/2015	3/13/2015	2 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	223.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-3	7 2 2	4	6			PA			**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; low plasticity; trace shells. 0% Gravel; 57% Sand; 43% Fines
35	-35									35		Sandy SILT (ML); loose; gray; wet; mostly fines; little fine grained SAND; low plasticity.
40	-40		S-4	-- -- 1	1	1			PA PI	40		Fat CLAY (CH); very soft; gray; wet; mostly fines; trace fine SAND; high plasticity. 0% Gravel; 5% Sand; 95% Fines LL=61, PL=25, PI=36
45	-45									45		Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; little fines; nonplastic; micaceous; trace shells.
50	-50		S-5	8 9 10	19	27			PA	50		1% Gravel; 81% Sand; 18% Fines
55	-55									55		

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FIGURE
A-07 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/8/2015	3/13/2015	3 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	223.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
65	-65		S-6	7 8 10	18	25				65		**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); medium dense; grayish brown; wet; mostly fine grained SAND; some fines; low plasticity.
70	-70		S-7	17 19 15	34	48				70		Fat CLAY (CH); soft; gray; wet; mostly fines; trace fine SAND; high plasticity; few shells. PP~¼ TSF
75	-75									75		Poorly graded SAND with silt (SP-SM); dense; gray; wet; mostly fine grained SAND; few fines; nonplastic.
80	-80		S-8	10 14 16	30	42			PA	80		0% Gravel; 92% Sand; 8% Fines Fine to medium grained sands.
85	-85									85		

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FIGURE
A-07 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/8/2015	3/13/2015	4 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	223.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
95	-95		S-9	11 13 14	27	38			PA	95		**PARALIC ESTUARINE DEPOSITS:** Well graded SAND with silt (SW-SM); dense; gray; wet; mostly fine to coarse grained SAND; few fines; nonplastic. 1% Gravel; 91% Sand; 8% Fines
100	-100		R-10	24 35 40	75	70	22.1	101	PA DS	100		Poorly graded SAND with silt (SP-SM); very dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic. 0% Gravel; 94% Sand; 6% Fines
105	-105									105		
110	-110		S-11	60	120	168				110		**OLD PARALIC DEPOSITS:** Poorly graded SAND with silt (SP-SM) and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; few fines; nonplastic.
115	-115									115		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-07 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/8/2015	3/13/2015	5 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	223.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: Poorly graded SAND with silt (SP-SM) and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; few fines; nonplastic.
125	-125									125		Poorly graded SAND with silt (SP-SM); very dense; brown; wet; mostly fine grained SAND; few fines; nonplastic. Thinly interbedded with well graded SAND with silt (SW-SM).
130	-130									130		
			R-12	26 60	120	112	29.5	92	PA DS			0% Gravel; 90% Sand; 10% Fines
135	-135									135		
140	-140									140		Silty SAND (SM) with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; little fines; nonplastic.
			S-13	35 50	100	140			PA			Silty SAND (SM); very dense; gray; wet; mostly fine to medium grained grained SAND; few fines; nonplastic; trace gravel. 2% Gravel; 84% Sand; 14% Fines
145	-145									145		

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FIGURE
A-07 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-001

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/8/2015	3/13/2015	6 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	223.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
155	-155									155		**OLD PARALIC DEPOSITS:** Poorly graded SAND with silt (SP-SM) and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; few fines; nonplastic.
												Poorly graded SAND with silt (SP-SM); very dense; gray; wet; mostly fine to medium grained grained SAND; few fines; nonplastic.
160	-160									160		
												Poorly graded SAND with silt (SP-SM) and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; few fines; nonplastic.
165	-165									165		
												Poorly graded SAND with silt (SP-SM); very dense; gray; wet; mostly fine to medium grained SAND; few fines; trace gravel; nonplastic.
		⧓	R-14	33 60	120	112	20.4	107	PA DS			1% Gravel; 91% Sand; 8% Fines
170	-170									170		Poorly graded SAND with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; trace fines; nonplastic.
175	-175									175		Sandy SILT (ML); very dense; gray; wet; mostly fines; some fine grained SAND; few gravel; low plasticity.

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-07 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/8/2015	3/13/2015	7 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	223.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
185	-185		S-15	13 28 32	60	84			PA	185		**OLD PARALIC DEPOSITS:** SILT with sand (ML); very dense; gray; wet; mostly fines; some fine gradind SAND; low plasticity. 0% Gravel; 19% Sand; 81% Fines
190	-190									190		
			R-16	50	100	93	25.4	98	PA DS			Silty SAND (SM); very dense; gray; wet; mostly fine grained SAND; little fines; nonplastic; trace shells. 1% Gravel; 80% Sand; 19% Fines
195	-195									195		
200	-200									200		Sandy SILT (ML); very dense; gray; wet; mostly fines; some fine grained SAND; low plasticity; few shells; trace gravel. Interbedded with silty SAND (SM); very dense, gray; wet; mostly fine grained SAND; some fines; nonplastic.
			S-17	24 36	60	84			PA			3% Gravel; 66% Sand; 31% Fines
205	-205									205		Sandy SILT (ML); very dense; gray; wet; mostly fines; some fine grained SAND; low plasticity; few gravel and cobble.
												SILT with sand (ML); very dense; gray; wet; mostly fines; some fine grained SAND; low plasticity.

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FIGURE
A-07 g

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/8/2015	3/13/2015	8 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	223.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
215	-215									215		**OLD PARALIC DEPOSITS:** SILT with sand (ML); very dense; gray; moist; mostly fine grained SAND; some fines; nonplastic.
220	-220									220		
		X	S-18	100	200	280			PA			Gravelly lean CLAY with sand (CL); hard; gray; wet; mostly fines; some gravel and cobble; little fine sand; medium plasticity. Cobble fragment in sampler inflated blow counts. 30% Gravel; 20% Sand; 50% Fines
225	-225									225		Bottom of borehole at 223½ ft. Groundwater encountered at 0 ft. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).
230	-230									230		
235	-235									235		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-07 h

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	8/2/2015	8/7/2015	1 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	193.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	-5									5		**ALLUVIUM:** Silty SAND (SM); loose to medium dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic. **NOTE:** The boring was drilled from the existing West Mission Bay Drive Bridge deck. The bridge deck was located about 28 feet above the mudline. The boring was ultimately cased from the bridge deck down to about 52 feet below the mudline. A total of about 80 feet of casing was used.
10	-10									10		**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); loose to medium dense; dark gray; wet; mostly fine grained SAND; some fines; nonplastic; micaceous; contains shells.
15	-15									15		
20	-20	☒	S-1	14 13 10	23	32			PA	20		Poorly graded SAND with silt (SP-SM); medium dense to dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic. 0% Gravel; 92% Sand; 8% Fines
25	-25									25		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-08 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	8/2/2015	8/7/2015	2 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	193.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
35	-35	X	S-2	6 10 5	15	21				35		**PARALIC ESTUARINE DEPOSITS:** Poorly graded SAND with silt (SP-SM); medium dense; gray; wet; mostly fine grained SAND; few fines; nonplastic.
40	-40	X	S-3	-- -- --	1	1			PA PI	40		Fat CLAY (CH); very soft; dark gray; wet; mostly fines; high plasticity; PP<¼ TSF. 0% Gravel; 4% Sand; 96% Fines LL=61, PL=28, PI=33
45	-45									45		Silty SAND (SM); medium dense; gray; wet; mostly fine graded SAND; little fines; low plasticity.
50	-50	X	S-4	10 9 9	18	25			PA	50		0% Gravel; 82% Sand; 18% Fines
55	-55									55		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-08 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	8/2/2015	8/7/2015	3 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	193.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
65	-65	⊠	S-5	6 8 9	17	24			PA	65		**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); medium dense; gray; wet; mostly fine graded SAND; some fines; low plasticity. 0% Gravel; 52% Sand; 48% Fines
70	-70	⊠	S-6	14 14 16	30	42				70		Poorly graded SAND with silt (SP-SM); dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic.
75	-75									75		
80	-80	⊠	S-7	16 16 20	36	50			PA	80		0% Gravel; 92% Sand; 8% Fines
85	-85									85		

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FIGURE
A-08 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	8/2/2015	8/7/2015	4 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	193.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
95	-95	☒	S-8	12 20 20	40	56			PA	95		**OLD PARALIC DEPOSITS:** Poorly graded SAND with silt (SP-SM); very dense; gray; wet; mostly fine to coarse grained SAND; few fines; nonplastic. 0% Gravel; 92% Sand; 8% Fines
100	-100	☒	S-9	17 30 31	61	85			PA	100		12% Gravel; 77% Sand; 11% Fines
105	-105									105		Poorly graded SAND (SP-SM) with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobbles; little fines; nonplastic.
110	-110									110		
115	-115									115		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-08 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	8/2/2015	8/7/2015	5 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	193.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: Poorly graded SAND with silt (SP-SM) and cobbles; very dense; gray; wet; mostly fine to coarse grained SAND; some gravel and cobble; few fines; nonplastic.
125	-125									125		Silty SAND (SM); very dense; gray; moist; mostly fine grained SAND; little fines; nonplastic; moderately indurated.
130	-130									130		Poorly graded SAND (SP-SM) with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobbles; little fines; nonplastic.
												Silty SAND (SM); very dense; gray; moist; mostly fine grained SAND; little fines; few gravel; nonplastic; moderately indurated.
135	-135									135		Poorly graded SAND (SP-SM) with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobbles; little fines; nonplastic.
140	-140									140		
145	-145									145		Silty SAND (SM); very dense; gray; moist; mostly fine grained SAND; little fines; few gravel; nonplastic; moderately indurated.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-08 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	8/2/2015	8/7/2015	6 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	193.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-10	50 -- --	100	140						**OLD PARALIC DEPOSITS:** Poorly graded SAND with silt (SP-SM) and cobbles; very dense; gray; wet; mostly fine to coarse grained SAND; some gravel and cobble; few fines; nonplastic.
155	-155									155		
												Silty SAND (SM); very dense; gray; wet; mostly fine to medium grained SAND; little fines; few gravel; nonplastic.
160	-160									160		
			S-11	38 39 49	88	123			PA			9% Gravel; 77% Sand; 14% Fines
165	-165									165		Poorly graded SAND (SP-SM) with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobbles; little fines; nonplastic.
170	-170									170		
			S-12	50 -- --	100	140						Silty SAND (SM); very dense; gray; wet; mostly fine to medium grained SAND; little fines; few gravel; nonplastic.
175	-175									175		One-foot thick bed of gravel and cobble encountered.
												Six inch thick bed of gravel and cobble encountered.

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FIGURE
A-08 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	8/2/2015	8/7/2015	7 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	193.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-13	8 13 22	35	49			PA			**OLD PARALIC DEPOSITS:** Silty SAND (SM); very dense; gray; wet; mostly fine to coarse grained SAND; little fines; few gravel; nonplastic; trace shells. 12% Gravel; 72% Sand; 16% Fines
185	-185									185		
190	-190		S-14	11 21 27	48	67			PA PI	190		5% Gravel; 68% Sand; 27% Fines LL~25 PL~19, PI~6
195	-195									195		Bottom of borehole at 193½ ft. Groundwater encountered at 0 ft. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).
200	-200									200		
205	-205									205		

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FIGURE
A-08 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/18/2015	3/23/2015	1 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	-5									5		**ALLUVIUM:** Silty SAND (SM); loose to medium dense; gray; wet; mostly fine grained SAND; some fines; nonplastic; few shells. **NOTE:** The boring was drilled from the existing West Mission Bay Drive Bridge deck. The bridge deck was located about 30 feet above the mudline. The boring was cased from the bridge deck down to about 13 feet below the mudline. A total of about 43 feet feet of casing was used.
10	-10									10		
15	-15									15		
20	-20	☒	S-1	2 7 8	15	21			PA	20		**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; nonplastic; few shells. Interbedded with sandy SILT (ML), medium dense; gray; wet; mostly fines; some fine grained SAND; low plasticity; few shells. 4% Gravel; 58% Sand; 38% Fines
25	-25									25		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-09 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/18/2015	3/23/2015	2 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-2	6 9 9	18	25						**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML); loose; gray; wet; mostly fines; some fine grained SAND; few GRAVEL layers; small shell fragments; nonplastic to low plasticity; micaceous. Interbedded with silty SAND (SM); trace shell fragments, micaceous.
35	-35									35		
												Fat CLAY (CH); soft to medium stiff; gray; wet; mostly fines; trace fine SAND; high plasticity. PP~½ TSF. 0% Gravel; 4% Sand; 96% Fines LL=51, PL=24, PI=27 Su~600 PSF.
40	-40		R-3	3 3 4	7	7	49.3	72	PA PI UC	40		
45	-45									45		Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; little fines; nonplastic; micaceous.
50	-50		S-4	5 5 3	8	11			PA	50		0% Gravel; 86% Sand; 14% Fines
55	-55									55		Sandy SILT (ML); loose; gray; wet; mostly fines; some fine grained SAND; few GRAVEL layers; small shell fragments; nonplastic to low plasticity; micaceous. Interbedded with Silty SAND (SM); trace shell fragments, micaceous.

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-09 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/18/2015	3/23/2015	3 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-5	6 8 9	17	24			PA			**PARALIC ESTUARINE DEPOSITS**:Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; little fines; nonplastic. 0% Gravel; 77% Sand; 23% Fines
65	-65									65		
70	-70		S-6	12 14 16	30	42			PA	70		Poorly graded SAND with silt (SP-SM); dense; light gray; wet; mostly fine to medium grained SAND; few fines; nonplastic. 0% Gravel; 91% Sand; 9% Fines
75	-75									75		
80	-80		S-7	12 14 16	30	42			PA	80		Silty SAND (SM); dense; gray; wet; mostly fine grained SAND; little fines; nonplastic. 0% Gravel; 85% Sand; 15% Fines
85	-85									85		Sandy SILT (ML); dense; gray; wet; mostly fines; some fine grained SAND; nonplastic to low plasticity.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-09 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-003

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/18/2015	3/23/2015	4 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		☒	S-8	4 10 12	22	31			PA			**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML); dense; gray; wet; mostly fines; some SAND; trace gravel; low plasticity. 2% Gravel; 30% Sand; 68% Fines
												0% Gravel; 70% Sand; 30% Fines
95	-95									95		Silty SAND (SM); dense; gray; wet; mostly fine grained SAND; some fines; nonplastic; micaceous. Interbedded with sandy SILT (ML); dense; gray; wet; mostly fines; some fine grained SAND; nonplastic.
100	-100	☒	S-9	4 1 6	7	10			PA PI	100		0% Gravel; 53% Sand; 47% Fines (LL=30, PL=23, PI=7)
												Fat CLAY (CH); stiff; gray; wet; high plasticity.
105	-105									105		Silty sand (SM); very dense; gray; moist; mostly fine to medium grained SAND; little fines; nonplastic.
												OLD PARALIC DEPOSITS: Silty sand with gravel (SM); very dense; gray; moist; mostly fine to medium grained SAND; some gravel; little fines; nonplastic.
110	-110									110		Poorly graded SAND with silt (SP-SM); dense; gray; wet; mostly fine grained SAND; few fines; trace gravel; nonplastic.
115	-115									115		Poorly graded SAND with silt (SP-SM) and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; few fines; nonplastic.

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FIGURE
A-09 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/18/2015	3/23/2015	5 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
125	-125									125		**OLD PARALIC DEPOSITS:** Poorly graded SAND with silt (SP-SM) and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; few fines; nonplastic.
130	-130		S-10	5 38 42	80	112			PA PI	130		Sandy lean CLAY (CL); very hard; brownish gray; moist; mostly fines; some fine grained SAND; trace gravel; low plasticity; weakly indurated. 3% Gravel; 41% Sand; 56% Fines LL=31, PL=22, PI=9
135	-135									135		Silty SAND (SM); very dense; gray; moist; mostly fine grained SAND; little fines; nonplastic.
140	-140		R-11	50	100	93	32.2	88	PA	140		0% Gravel; 78% Sand; 22% Fines
145	-145									145		Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine grained SAND; nonplastic.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-09 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-003

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/18/2015	3/23/2015	6 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-12	30 50	100	140			PA			**OLD PARALIC DEPOSITS:** Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine grained SAND; nonplastic. 0% Gravel; 36% Sand; 64% Fines
155	-155									155		
160	-160									160		Silty sand with gravel (SM); very dense; gray; moist; mostly fine to medium grained SAND; some gravel; little fines; nonplastic.
165	-165		S-13	23 60	120	168			PA	165		SILT with sand (ML); very dense; brownish gray; moist; mostly fines; little fine grained SAND; low plasticity; micaceous; weakly indurated. 0% Gravel; 16% Sand; 84% Fines
170	-170									170		
175	-175		R-14	60	120	112	19.4	107	PA PI DS	175		Thinly interbedded with lean clay (CL); very hard; gray; moist; mostly fines; trace fine SAND; low plasticity. 0% Gravel; 3% Sand; 97% Fines LL=44, PL=26; PI=18

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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San Diego, CA 92126

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE
A-09 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/18/2015	3/23/2015	7 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
185	-185		S-15	39 38 60	98	137			PA PI	185		**OLD PARALIC DEPOSITS:** SILT with sand (ML); dense; gray; moist; mostly fines; little fine grained SAND; nonplastic. Thinly interbedded with silty sand (SM); very dense; gray; moist; moistly fine grained SAND; some fines; nonplastic; micaceous. 0% Gravel; 25% Sand; 75% Fines LL=NP, PL=NP, PI=NP
190	-190									190		Silty SAND (SM); very dense; gray; moist; mostly fine grained SAND; some fines; nonplastic.
195	-195		R-16	150	300	280				195		Poorly graded SAND with silt (SP-SM); very dense; gray; moist; mostly fine to medium grained SAND; few fines; nonplastic. Very difficult drilling.
200	-200									200		
205	-205									205		Silty SAND (SM); very dense; gray; moist; mostly fine to medium grained SAND; little fines; nonplastic. Very difficult drilling.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-09 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/18/2015	3/23/2015	8 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		⊠	S-17	75	150	210			PA			**OLD PARALIC DEPOSITS:** Silty SAND (SM); very dense; light gray; moist; mostly fine grained SAND; little fines; nonplastic; weakly indurated. 0% Gravel; 81% Sand; 19% Fines
215	-215									215		
												LEAN CLAY (CL); very hard; gray; moist; mostly fines; few fine grained SAND; low plasticity; weakly indurated. 0% Gravel; 7% Sand; 93% Fines LL=36, PL=23, PI=13
220	-220	⊠	S-18	75	150	210			PA PI	220		
												Bottom of borehole at 221½ ft. Groundwater encountered at 0 ft. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).
225	-225									225		
230	-230									230		
235	-235									235		

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-09 h

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-004**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/1/2015	3/5/2015	1 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	-5									5		**ALLUVIUM:** Silty SAND (SM); loose to medium dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic. **NOTE:** The boring was drilled from the existing West Mission Bay Drive Bridge deck. The bridge deck was located about 30 feet above the mudline. The boring was cased from the bridge deck down to about 13 feet below the mudline. A total of about 43 feet feet of casing was used.
10	-10									10		
15	-15									15		**PARALIC ESTUARINE DEPOSITS:** SILT with sand (ML); loose to medium dense; dark gray; wet; mostly fines; few fine grained SAND; small shell fragments; low plasticity; micaceous.
20	-20	☒	S-1	4 8 11	19	23			PA	20		Poorly graded SAND with silt (SP-SM); medium dense; gray; wet; mostly fine grained SAND; few fines; some small shells; nonplastic. 0% Gravel; 91% Sand; 9% Fines
25	-25									25		

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FIGURE
A-10 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-004**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/1/2015	3/5/2015	2 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-2	6 8 10	18	22			PA			**PARALIC ESTUARINE DEPOSITS:** Poorly graded SAND with silt (SP-SM); medium dense; gray; wet; mostly fine grained SAND; few fines; some small shells; nonplastic. 0% Gravel; 93% Sand; 7% Fines
35	-35									35		
												Fat CLAY (CH); very soft; gray; wet; mostly fines; few fine SAND; high plasticity; trace shells; PP~¼ TSF. 0% Gravel; 7% Sand; 93% Fines LL=55, PL=26, PI=29
40	-40		S-3	-- -- --	1	1			PA PI	40		
45	-45									45		Silty SAND (SM); medium dense; grayish brown; wet; mostly fine to medium grained SAND; little fines; low plasticity; micaceous. Thinly interbedded with sandy silt (ML) layers, approximately 1-inch thick.
50	-50		S-4	5 5 8	13	16			PA	50		0% Gravel; 68% Sand; 32% Fines
55	-55									55		

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FIGURE
A-10 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-004**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/1/2015	3/5/2015	3 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-5	11 10 8	18	22			PA			**PARALIC ESTUARINE DEPOSITS:** Poorly graded SAND with silt (SP-SM); medium dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic. 0% Gravel; 85% Sand; 15% Fines Thinly interbedded with Silty SAND (SM), medium dense; gray; wet; mostly fine to medium grained SAND; some fines; low plasticity.
65	-65									65		
70	-70		S-6	6 14 20	34	42			PA	70		Silty SAND (SM); dense; light gray; wet; mostly fine to medium grained SAND; little fines; nonplastic; micaceous. 0% Gravel; 75% Sand; 25% Fines Thinly interbedded with silt (ML) layers, approximately ½ to 1-inch thick.
75	-75									75		
80	-80		S-7	9 17 17	34	42			PA	80		4% Gravel; 77% Sand; 19% Fines
85	-85									85		Poorly graded SAND with silt (SP-SM); dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic.

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FIGURE
A-10 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-004**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/1/2015	3/5/2015	4 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-8	8 17 20	37	46						**PARALIC ESTUARINE DEPOSITS:** Poorly graded SAND with silt (SP-SM); dense to very dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic.
95	-95									95		
100	-100		R-9	22 31 40	71	58	21.0	104	PA DS	100		0% Gravel; 91% Sand; 9% Fines
105	-105									105		**OLD PARALIC DEPOSITS:** Silty SAND (SM) with gravel; very dense; gray; wet; mostly fine to medium grained SAND; some subrounded gravel with trace cobbles; little fines; nonplastic.
110	-110		S-10	10 12 15	27	33			PA	110		Silty SAND (SM); dense; gray; wet; mostly fine to medium grained SAND; little fines; trace gravel; nonplastic. 0% Gravel; 87% Sand; 13% Fines
115	-115									115		Silty SAND (SM) with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some subrounded gravel and cobbles; little fines; nonplastic.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-10 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-004**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/1/2015	3/5/2015	5 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
125	-125									125		**OLD PARALIC DEPOSITS:** Silty SAND (SM) with cobbles; very dense; gray; wet; mostly fine SAND; some gravel and cobbles; little fines; nonplastic. **NOTE:** The boring was abandoned at a depth of 122 feet after refusal on cobbles with C&L Drilling's Mayhew 1000 rig. The boring was later moved 10 feet to the north, and then redrilled through the cobble bed using Cascade Drilling's CME 85 rig prior to continuing with sampling.
130	-130		R-11	31 75	106	99	19.2	108	PA DS	130		SILT with sand (ML); very dense; gray; moist; mostly fines; little fine SAND; low plasticity. 1% Gravel; 27% Sand; 72% Fines
135	-135									135		
140	-140		S-12	30 36 42	78	109			PA	140		Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine SAND; low plasticity. 0% Gravel; 33% Sand; 67% Fines
145	-145									145		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-10 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-004

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/1/2015	3/5/2015	6 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: SILT (ML); very dense; gray; moist; mostly fines; few fine grained SAND; low plasticity.
155	-155		R-13	50	100	93			PA PI DS	155		0% Gravel; 5% Sand; 95% Fines LL=38, PL=24, PI=12
160	-160									160		
165	-165									165		Silty SAND (SM) with cobbles; very dense; gray; moist; mostly fine grained SAND; some gravel and cobble; little fines; nonplastic.
170	-170		S-14	38 75	113	158			PA	170		Silty SAND (SM); very dense; gray; moist; mostly fine grained SAND; some fines; nonplastic; micaceous; weakly indurated. 1% Gravel; 54% Sand; 45% Fines
175	-175									175		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-10 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-004**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/1/2015	3/5/2015	7 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-15	100	200	187	21.4	106	PA			**OLD PARALIC DEPOSITS:** Silty SAND (SM); very dense; light gray; moist; mostly fine grained SAND; little fines; nonplastic. 0% Gravel; 83% Sand; 17% Fines
185	-185									185		
190	-190		S-16	36 60	96	134			PA PI	190		LEAN CLAY (CL); very hard; gray; moist; mostly fines; few fine grained SAND; low plasticity; moderately indurated. 0% Gravel; 8% Sand; 92% Fines LL=45, PL=22, PI=23
195	-195									195		
200	-200									200		Silty SAND (SM) with gravel; very dense; gray; wet; mostly fine to medium grained SAND; some subrounded gravel with trace cobbles; little fines; nonplastic.
205	-205		S-17	41 75	116	162			PA PI	205		LEAN CLAY (CL); very hard; gray; moist; mostly fines; little fine grained SAND; trace gravel; low plasticity. 2% Gravel; 13% Sand; 85% Fines LL=37, PL=23, PI=14

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-10 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-004**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/1/2015	3/5/2015	8 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	221.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
215	-215									215		**OLD PARALIC DEPOSITS:** SILT with sand (ML); very dense; gray; moist; mostly fines; little fine grained SAND; low plasticity.
220	-220		R-18	150	300	280	---	---		220		
225	-225									225		Bottom of borehole at 221½ ft. Groundwater encountered at 0 ft. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).
230	-230									230		
235	-235									235		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-10 h

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-005

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	7/26/2015	7/31/2015	1 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	194.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	-5									5		**ALLUVIUM:** Silty SAND (SM); loose to medium dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic. **NOTE:** The boring was drilled from the existing West Mission Bay Drive Bridge deck. The bridge deck was located about 29 feet above the mudline. The boring was cased from the bridge deck down to about 26 feet below the mudline. A total of about 55 feet feet of casing was used.
10	-10									10		**PARALIC ESTUARINE DEPOSITS:** SILT with sand (ML); loose to medium dense; dark gray; wet; mostly fines; few fine grained SAND; small shell fragments; low plasticity; micaceous.
15	-15									15		
20	-20	X	S-1	9 10 8	18	25			PA	20		Silty SAND (SM); medium dense; dark gray; wet; mostly fine grained SAND; little fines; nonplastic. 0% Gravel; 85% Sand; 15% Fines
25	-25	X	S-2	13 16 16	32	45				25		Poorly graded SAND with silt (SP-SM); dense; light gray; wet; mostly fine to medium grained SAND; few fines; nonplastic.

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-11 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-005

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	7/26/2015	7/31/2015	2 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	194.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-3	9 7 7	14	20			PA			**PARALIC ESTUARINE DEPOSITS:** Poorly graded SAND with silt (SP-SM); medium dense; light gray; wet; mostly fine grained SAND; few fines; nonplastic. 0% Gravel; 92% Sand; 8% Fines
35	-35									35		
												Fat CLAY (CH); soft; dark gray; wet; mostly fines; few fine grained SAND; high plasticity; PP~¼ TSF. 0% Gravel; 5% Sand; 95% Fines LL=62, PL=25, PI=37
40	-40		S-4	7 12 10	22	31			PA PI	40		
												Silty SAND (SM); medium dense to dense; grayish brown; wet; mostly fine grained SAND; little fines; low plasticity; micaceous. Thinly interbedded with sandy lean clay (CL) layers, approximately ¼-inch thick.
45	-45									45		
50	-50		S-5	6 10 15	25	35				50		
55	-55									55		SILT with sand (ML); medium dense; gray; wet; mostly fines; few fine graded SAND; low plasticity.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-11 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-005**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	7/26/2015	7/31/2015	3 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	194.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		☒	S-6	3 10 11	21	29			PA			**PARALIC ESTUARINE DEPOSITS:** SILT with sand (ML); medium dense; gray; wet; mostly fines; few SAND; low plasticity. 0% Gravel; 23% Sand; 77% Fines
												Poorly graded SAND with silt (SP-SM); dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic.
65	-65									65		
70	-70	☒	S-7	7 13 14	27	38				70		
75	-75									75		
80	-80	☒	S-8	15 16 20	36	50			PA	80		0% Gravel; 91% Sand; 9% Fines
85	-85									85		

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-11 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-005**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	7/26/2015	7/31/2015	4 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	194.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		⊠	S-9	14 17 20	37	52						**OLD PARALIC DEPOSITS:** Poorly graded SAND with silt (SP-SM); very dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic.
95	-95									95		Poorly graded SAND (SP-SM) with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobbles; little fines; nonplastic.
												Poorly graded SAND with silt (SP-SM); dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic.
100	-100	⊠	S-10	39 37 42	79	111			PA	100		Well graded GRAVEL with silt and sand (GW-SM) and cobbles; very dense; gray; wet; mostly GRAVEL; some fine to coarse grained SAND; few fines; nonplastic. 48% Gravel; 45% Sand; 7% Fines
105	-105									105		
110	-110									110		Silty SAND (SM); very dense; grayish brown; wet; mostly fine grained SAND; some fines; few gravel and cobbles; low plasticity. Very difficult drilling conditions. Drill rod stuck in borehole for 1½ hours. Hydraulic pressure used to advance slowly.
115	-115									115		
												Silt with sand (ML); very dense; gray; wet; mostly fines; some SAND; low plasticity.

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FIGURE
A-11 d

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-005**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	7/26/2015	7/31/2015	5 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	194.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-11	46 60	106	148						**OLD PARALIC DEPOSITS:** SILT with sand (ML); very dense; gray; wet; mostly fines; some fine to medium SAND; low plasticity.
125	-125									125		
130	-130									130		
												Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine to coarse grained SAND; nonplastic; moderately indurated.
135	-135		R-12	60 100	160	149	16.4	119	PA DS	135		0% Gravel; 31% Sand; 69% Fines
140	-140									140		
145	-145		S-13	60	120	168				145		SILT with sand (ML); very dense; gray; moist; mostly fines; little fine graded SAND; low plasticity. Very hard drilling.

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-11 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-005**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	7/26/2015	7/31/2015	6 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	194.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
155	-155									155		**OLD PARALIC DEPOSITS:** SILT with sand (ML); very dense; gray; moist; mostly fines; little fine grained SAND; low plasticity.
160	-160	X	S-14	24 24 43	67	94			PA	160		Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine grained SAND; low plasticity. 0% Gravel; 34% Sand; 66% Fines
165	-165									165		
170	-170	X	S-15	24 25 36	61	85			PA PI	170		Lean CLAY (CL); very hard; gray; moist; mostly fines; little fine SAND; medium plasticity. 1% Gravel; 11% Sand; 88% Fines LL=40, PL=21, PI=19
175	-175									175		Poorly graded SAND (SP-SM) with cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobbles; little fines; nonplastic. SILT with sand (ML); very dense; gray; moist; mostly fines; little fine graded SAND; low plasticity.

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FIGURE
A-11 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-005**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	7/26/2015	7/31/2015	7 of 7

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	194.5	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
185	-185		R-16	16 20 37	57	53				185		**OLD PARALIC DEPOSITS:** SILT with sand (ML); very dense; gray; moist; mostly fines; some fine grained SAND; low plasticity. Interbedded with Lean CLAY (CL); very hard; gray; moist; mostly fines; little fine SAND; medium plasticity.
190	-190									190		
			S-17	37 27 37	64	90			PA			0% Gravel; 11% Sand; 89% Fines
195	-195									195		Bottom of borehole at 194½ ft. Groundwater encountered at 0 ft. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).
200	-200									200		
205	-205									205		

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FIGURE
A-11 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**S-15-006**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	2/11/2015	2/17/2015	1 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Sonic Core	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
SC500	6	221	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 80%, N_{60}= 80/60 * N =1.33Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												ALLUVIUM: Silty SAND (SM); loose; dark gray; wet; mostly fine to medium grained SAND; some fines; nonplastic.
5	-5									5		**PARALIC ESTUARINE DEPOSITS:** Fat CLAY (CH); soft; dark gray; wet; mostly fines; little fine SAND; high plasticity; contains small shell fragments; micaceous.
10	-10									10		Silty SAND (SM); loose; dark gray; wet; mostly fine to medium grained SAND; some fines; nonplastic; some shell fragments.
15	-15	X	S-1	2 3 5	8	11				15		SILT with sand (ML); medium dense; dark gray; wet; mostly fines; few fine grained SAND; low plasticity; trace shells.
20	-20									20		Poorly graded SAND with silt (SP-SM); medium dense; dark gray; wet; mostly fine to medium grained SAND; few fines; nonplastic; trace shells.
25	-25	X	S-2	5 12 ---	17	23			PA	25		0% Gravel; 94% Sand; 6% Fines

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FIGURE
A-12 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	S-15-006

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	2/11/2015	2/17/2015	2 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Sonic Core	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
SC500	6	221	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 80%, N_{60}= 80/60 * N =1.33Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												PARALIC ESTUARINE DEPOSITS: Poorly graded SAND with silt (SP-SM); medium dense; dark gray; wet; mostly fine SAND; few fines; nonplastic.
												Sandy SILT (ML); medium dense; dark gray; wet; mostly fines; some fine grained SAND; low plasticity.
35	-35									35		
			S-3	6 8 8	16	21			PA PI			Fat CLAY (CH); soft; dark gray; wet; mostly fines; few fine SAND; high plasticity; PP<¼ TSF. 0% Gravel; 11% Sand; 89% Fines LL=58, PL=24, PI=34
40	-40									40		
												Sandy SILT (ML); medium dense; dak gray; wet; mostly fines; some fine grained SAND; low plasticity; few shells.
												Silty SAND (SM); medium dense; dark gray; wet; mostly fine SAND; some fines; nonplastic; trace shells.
45	-45									45		
			S-4	4 9 8	17	23			PA			Sandy SILT (ML); medium dense; dark gray; wet; mostly fines; little fine grained SAND; low plasticity. 0% Gravel; 39% Sand; 61% Fines
50	-50									50		
												Silty SAND (SM); loose to medium dense; dark gray; wet; mostly fine SAND; some fines; nonplastic; micaceous.
55	-55									55		
			S-5	2 2 3	5	7			PA			0% Gravel; 86% Sand; 14% Fines

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FIGURE
A-12 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	S-15-006

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	2/11/2015	2/17/2015	3 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Sonic Core	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
SC500	6	221	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 80%, N_{60}= 80/60 * N =1.33Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
65	-65		S-6	2 4 4	8	11				65		**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); medium dense; dark gray; wet; mostly fine grained SAND; little fines; micaceous.
70	-70									70		Poorly graded SAND (SP); medium dense; gray; wet; mostly fine to medium grained SAND; trace fines; nonplastic; micaceous.
75	-75									75		Sandy SILT (ML); medium dense; dark gray; wet; mostly fines; little fine grained SAND; low plasticity; micaceous.
80	-80		S-7	3 6 8	14	19			PA	80		Silty SAND (SM); medium dense; dark gray; wet; mostly fine SAND; little fines; nonplastic; micaceous. 0% Gravel; 79% Sand; 21% Fines
85	-85									85		Poorly graded SAND (SP); medium dense; gray; wet; mostly fine to medium grained SAND; trace fines; nonplastic.
												Silty SAND (SM) with cobbles; dense; gray; wet; mostly fine to medium grained SAND; some gravel and cobble; little fines; nonplastic.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-12 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**S-15-006**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	2/11/2015	2/17/2015	4 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Sonic Core	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
SC500	6	221	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 80%, N_{60}= 80/60 * N =1.33Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												OLD PARALIC DEPOSITS: Silty SAND (SM); dense; grayish brown; moist; mostly fine grained SAND; some fines; low plasticity.
95	-95									95		SILT (ML); medium dense; brown; wet; mostly fines; trace fine grained SAND; low plasticity.
												Sandy SILT (ML); dense; orange brown; moist; mostly fines; some fine grained SAND; low plasticity. PP>4½ TSF
100	-100									100		
												Silty SAND (SM); dense; dark gray; wet; mostly fine SAND; some fines; nonplastic.
105	-105									105		Sandy SILT (ML); dense; dark gray; moist; mostly fines; some fine grained SAND; low plasticity.
110	-110									110		
												Silty SAND (SM) with cobbles; very dense; brown; wet; mostly fine to coarse grained SAND; some subrounded gravel and cobble; little fines; nonplastic.
115	-115									115		Sandy SILT (ML); dense; dark gray; wet; mostly fines; some fine grained SAND; low plasticity.

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-12 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**S-15-006**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	2/11/2015	2/17/2015	5 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Sonic Core	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
SC500	6	221	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 80%, N_{60}= 80/60 * N =1.33Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
125	-125		C-8						PA PI	125		**OLD PARALIC DEPOSITS:** SILT with sand (ML); dense; gray; wet; mostly fines; some fine grained SAND; low plasticity; PP>4½ TSF. 0% Gravel; 23% Sand; 77% Fines LL=26, PL=21, PI=5
130	-130									130		
135	-135									135		Silty SAND (SM); very dense; dark gray; moist; mostly fine SAND; some fines; nonplastic.
												Sandy SILT (ML); dense; gray; moist; mostly fines; some fine grained SAND; low plasticity.
140	-140									140		Silty SAND (SM); very dense; gray brown; moist; mostly fine SAND; some fines; nonplastic; weakly cemented.
145	-145									145		Sandy SILT (ML); dense; gray; moist; mostly fines; little fine grained SAND; low plasticity; moderately indurated; PP~4½ TSF.

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FIGURE
A-12 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**S-15-006**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	2/11/2015	2/17/2015	6 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Sonic Core	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
SC500	6	221	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 80%, N_{60}= 80/60 * N =1.33Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
155	-155									155		**OLD PARALIC DEPOSITS:** Sandy SILT (ML); dense; brownish gray; moist; mostly fines; some fine grained SAND; low plasticity.
												Silty SAND (SM); very dense; brownish gray; moist; mostly fine SAND; some fines; nonplastic.
160	-160									160		Sandy SILT (ML); dense; brownish gray; moist; mostly fines; some fine grained SAND; low plasticity; moderately indurated.
												Silty SAND (SM); very dense; gray; moist; mostly fine SAND; little fines; nonplastic.
165	-165		C-9						PA PI	165		CLAY (CL); hard; gray; moist; mostly fines; little fine grained SAND; low plasticity; indurated. 0% Gravel; 11% Sand; 89% Fines LL=36, PL=20, PI=16
170	-170									170		Silty SAND (SM); very dense; gray; moist; mostly fine SAND; some fines; nonplastic.
175	-175									175		

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FIGURE
A-12 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**S-15-006**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	2/11/2015	2/17/2015	7 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Sonic Core	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
SC500	6	221	0	▼ 0.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 80%, N_{60}= 80/60 * N =1.33Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			C-10						PA PI			**<u>OLD PARALIC DEPOSITS</u>:** SILT with sand (ML); dense; gray; moist; mostly fines; some SAND; nonplastic. 0% Gravel; 25% Sand; 75% Fines LL=29, PL=23, PI=6
185	-185									185		Sandy SILT (ML); dense; grayish brown; moist; mostly fines; some fine grained SAND; low plasticity.
190	-190									190		Silty SAND (SM); very dense; gray; moist; mostly fine SAND; some fines; nonplastic.
195	-195									195		
200	-200									200		Sandy SILT (ML); dense; gray; moist; mostly fines; some fine grained SAND; low plasticity; lightly indurated.
205	-205									205		

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FIGURE
A-12 g

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**S-15-006**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	2/11/2015	2/17/2015	8 of 8

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Sonic Core	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
SC500	6	221	0	▼ 0.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 80%, N_{60}= 80/60 * N =1.33Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
215	-215									215		**OLD PARALIC DEPOSITS:** Silty SAND (SM); very dense; gray; moist; mostly fine grained SAND; some fines; nonplastic.
220	-220	▌▌	C-11						PA PI	220		SILT with sand (ML); dense; gray; moist; mostly fines; some fine grained SAND; low plasticity; lightly indurated. 0% Gravel; 19% Sand; 81% Fines LL=30, PL=24, PI=6
225	-225									225		Bottom of borehole at 221 ft. Groundwater encountered at 0 ft. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).
230	-230									230		
235	-235									235		

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FIGURE
A-12 h

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-007**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	1 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			B-1						PA CR EI R			**FILL:** Silty SAND (SM); medium dense; light orangish brown; moist; mostly fine to medium grained SAND; some fines; trace gravel and cobble; low plasticity. 2% Gravel; 56% Sand; 42% Fines
												Poorly graded sand with silt (SP-SM); medium dense; light yellowish brown; moist; mostly fine grained SAND; few fines; nonplastic; trace shells.
5	15									5		
			R-2	5 11 13	23	21	17.1	106	PA PI C			Sandy Lean CLAY (CL); very stiff; brown; moist; mostly fines; some SAND; low to medium plasticity. 0% Gravel; 31% Sand; 69% Fines LL=36, PL=15, PI=21
10	10									10		
	5											
15			S-3	2 3 4	7	10			PA	15		**PARALIC ESTUARINE DEPOSITS:** Sandy lean CLAY (CL); medium stiff; dark gray; moist; mostly fines; some fine grained SAND; medium plasticity; micaceous. 0% Gravel; 40% Sand; 60% Fines
	0											
20										20		Lean CLAY with sand (CL); medium stiff; dark gray; wet; mostly fines; few fine grained SAND; medium plasticity; micaceous.
	-5											
25			R-4	17 6 5	11	10	58.1	65	PA PI C	25		0% Gravel; 25% Sand; 75% Fines LL=45, PL=21, PI=24
	-10											

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FIGURE
A-13 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-007

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	2 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												PARALIC ESTUARINE DEPOSITS: Sandy Lean CLAY (CL); stiff; gray; wet; mostly fines; some fine grained SAND; low plasticity.
35	-15		R-5	3 13 26	39	55	20.5	104	PA DS	35		Poorly graded SAND with silt (SP-SM); dense; gray; wet; mostly fine grained SAND; few fines; nonplastic; trace shells. 3% Gravel; 89% Sand; 8% Fines
40	-20									40		
45	-25		S-6	9 13 15	28	39				45		
50	-30		SH-7				31.3	92	PA C	50		0% Gravel; 92% Sand; 8% Fines
55	-35		SH-8				68.0	61	PA PI C	55		Fat CLAY (CH); medium stiff; dark gray; wet; mostly fines; trace SAND; high plasticity. 0% Gravel; 8% Sand; 92% Fines LL=62, PL=28, PI=34
	-40											Sandy SILT (ML); medium dense; gray; wet; mostly fines; some fine grained SAND; low plasticity.

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FIGURE
A-13 b

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-007

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	3 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												PARALIC ESTUARINE DEPOSITS: Sandy SILT (ML); medium dense; gray; wet; mostly fines; some fine grained SAND; low plasticity; few shells. Interbedded with Silty SAND (SM); trace shell fragments, micaceous.
65	-45		S-9	3 4 5	9	13			PA	65		Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; nonplastic; few shells. 1% Gravel; 53% Sand; 46% Fines
70	-50									70		
75	-55		S-10	7 5 6	11	15			PA	75		Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; low plasticity; trace shells. Thinly interbedded with Fat CLAY (CH); medium stiff; dark gray; mostly fines; trace fine SAND; high plasticity. 0% Gravel; 61% Sand; 39% Fines
80	-60									80		Sandy SILT (ML); medium dense; gray; wet; mostly fines; some fine grained SAND; low plasticity; micaceous. Thinly interbedded with Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; low plasticity.
85	-65		S-11	5 7 14	21	29			PA	85		0% Gravel; 46% Sand; 54% Fines
	-70											

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FIGURE
A-13 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-007

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	4 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
95	-75		S-12	3 7 11	18	25			PA	95		**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; nonplastic; micaceous. Thinly interbedded with Fat CLAY (CH); stiff; gray; wet; mostly fines; trace fine grained SAND; high plasticity. 0% Gravel; 71% Sand; 29% Fines
100	-80									100		Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; nonplastic; micaceous.
105	-85		R-13	6 8 13	21	20	34.2	87	PA PI DS	105		SILT with sand (ML); medium dense; gray; wet; mostly fines; little fine grained SAND; low plasticity; micaceous. 0% Gravel; 18% Sand; 82% Fines LL=38, PL=32, PL=6
110	-90									110		
115	-95		S-14	75	150	210				115		**OLD PARALIC DEPOSITS:** Poorly graded SAND (SP) with gravel and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some subrounded gravel and cobbles; few fines; nonplastic.
	-100											

GDC_LOG_BORING_MMX_SOIL_SD_SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-13 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	R-15-007

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	5 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
125	-105									125		**OLD PARALIC DEPOSITS:** Poorly graded SAND (SP) with gravel and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some subrounded gravel and cobbles; few fines; nonplastic.
												Poorly graded SAND with silt (SP-SM); very dense; gray; wet; mostly fine grained SAND; few fines; few gravel; nonplastic.
130	-110									130		Poorly graded SAND (SP) with gravel and cobbles; very dense; gray; wet; mostly fine to medium grained SAND; some subrounded gravel and cobbles; few fines; nonplastic.
135	-115									135		
140	-120									140		
145	-125									145		Lean CLAY (CL); very hard; gray; moist; mostly fines; few fine grained SAND; low plasticity; strongly indurated.
	-130											

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FIGURE
A-13 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-007**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	6 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-15	60	120	168			PA			**OLD PARALIC DEPOSITS:** Lean CLAY (CL); very hrad; gray; moist; mostly fines; few fine grained SAND; low plasticity; strongly indurated. 0% Gravel; 9% Sand; 91% Fines LL=39, PL=22, PI=17
	-135											
155										155		
	-140											
160			S-16	75	150	210			PA	160		Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine grained SAND; low plasticity; strongly indurated. Thinly interbedded with Silty SAND (SM); very dense; gray; wet; mostly fine grained SAND; little fines; nonplastic; weakly cemented. 0% Gravel; 40% Sand; 60% Fines
	-145											
165										165		
	-150											
170			S-17	75	150	210			PA	170		0% Gravel; 45% Sand; 55% Fines
	-155											Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine grained SAND; trace subrounded gravel; low plasticity; strongly indurated.
175										175		
	-160											

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-13 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-007**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	7 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		X	S-18	100	200	280			PA			**OLD PARALIC DEPOSITS:** Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine grained SAND; low plasticity; weakly cemented. 0% Gravel; 43% Sand; 57% Fines
	-165											
185										185		
	-170											
190		X	S-19	75	150	210				190		Silty SAND (SM); very dense; gray; wet; mostly fine grained SAND; some fines; nonplastic; weakly cemented.
	-175											
195										195		
	-180											
200		X	S-20	50	100	140			PA PI	200		Lean CLAY (CL); very hard; gray; moist; mostly fines; trace fine grained SAND; low plasticity; moderately cemented. 0% Gravel; 4% Sand; 96% Fines LL=46, PL=22, PI=24
	-185											
205										205		
	-190											

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FIGURE
A-13 g

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-007**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	8 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-21	60	120	168			PA			**OLD PARALIC DEPOSITS:** SILT with sand (ML); very dense; gray; moist; mostly fines; little fine grained SAND; low plasticity; weakly cemented. 0% Gravel; 26% Sand; 74% Fines
215	-195									215		
	-200											SILT (ML); very dense; gray; moist; mostly fines; trace fine grained SAND; low plasticity; strongly cemented.
220			S-22	25 50	75	70				220		
	-205											
225										225		
	-210											Sandy SILT (ML); very dense; gray; moist; mostly fines; some fine grained SAND; nonplastic; strongly indurated. Thinly interbedded with Silty SAND (SM); very dense; gray; moist; mostly fine grained SAND; little fines; nonplastic; weakly cemented. 0% Gravel; 44% Sand; 56% Fines LL=NP, PL=NP, PI=NP
230			S-23	60	120	112	21.5	109	PA PI	230		
	-215											
235										235		
	-220											

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-13 h

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130D	**R-15-007**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	3/29/2015	4/2/2015	9 of 9

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Cascade	Rotary Wash	TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 85	8	240.5	19	▼ 19.0 / *0.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 84%, N_{60}= 84/60 * N =1.40Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		⊠	S-24	75	150	210						**OLD PARALIC DEPOSITS:** Silty SAND (SM); very dense; mostly SAND; some fines; nonplastic.
												Bottom of borehole at 240½ ft. Groundwater encountered at 19 ft. Boring terminated at planned depth.
												This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).
	-225											
245										245		
	-230											
250										250		
	-235											
255										255		
	-240											
260										260		
	-245											
265										265		
	-250											

GDC_LOG_BORING_MMX_SOIL_SD SD130D BORING LOGS.GPJ GDCLOG.GDT 1/24/19

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FIGURE

A-13 i

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-13-001**

SITE LOCATION	START	FINISH	SHEET NO.
Intersection of West Mission Bay Drive and Interstate I-8, San Diego, CA	7/18/2013	7/19/2013	1 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Rotary Wash	MSL/TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Unimog	8	160.8	19	▼ 18.0 / *1.0*

SAMPLING METHOD
CAL (2.4"), SPT (1.4")

NOTES
ETR = 87%, N_{60}= 87/60 * N =1.45*Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	15											**FILL:** Silty SAND (SM); medium dense to dense; brown; moist; mostly fine SAND; little fines; nonplastic. 69% SAND; 24% Fines; 7% GRAVEL
		☒	S-1	8 6 6	12	17			PA			Medium dense.
5		■	R-2	12 20 24	44	43	9.4	106.8	DS	5		Dense.
	10											
10		☒	S-3	8 14 16	30	44			PA	10		66% SAND; 34% Fines; 0% GRAVEL
	5											
15		■	R-4	7 10 17	27	26	22.2	95.8	DS	15		**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); medium dense; dark gray; moist; mostly fine SAND; some fines; low plasticity; micaceous.
	0											▼ Switched to Rotary Wash Drilling.
20		☒	S-5	--- --- ---	1	1			PA	20		Lean CLAY (CL); medium stiff to stiff; dark gray; moist; mostly fines; trace fine SAND; medium plasticity; micaceous; PP=¾ to 1 TSF. 99% Fines; 1% SAND; 0% GRAVEL
	-5											Note: Sampler advanced under the weight of the rod.
25		■	R-6	2 3 4	7	7	35.4	87.0	C	25		Sandy SILT (ML); stiff; dark gray; wet; mostly fines; some fine SAND; low plasticity; micaceous; PP=1¼ TSF.
	-10											

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FIGURE
A-14 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-13-001**

SITE LOCATION	START	FINISH	SHEET NO.
Intersection of West Mission Bay Drive and Interstate I-8, San Diego, CA	7/18/2013	7/19/2013	2 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Rotary Wash	MSL/TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Unimog	8	160.8	19	▼ 18.0 / *1.0*

SAMPLING METHOD
CAL (2.4"), SPT (1.4")

NOTES
ETR = 87%, N_{60}= 87/60 * N =1.45*Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-7	2 3 3	6	9						**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML); loose; dark gray; wet; mostly fines; some fine SAND; low plasticity; micaceous.
35	-15		R-8-0	4 5 6	11	11	---	---		35		No recovery. Sandcatcher inserted into modified Cal sampler.
			R-8-1	--- --- ---	1	1	31.2	93.0	C			Silty SAND (SM); very loose; dark gray; wet; mostly fine SAND; some fines; few shells; low plasticity.
40	-20		S-9	2 3 4	7	10			PA	40		Medium dense. 73% SAND; 27% Fines; 0% GRAVEL
45	-25		R-10	2 3 3	6	6	36.5	83.4	C	45		Loose; PP=1¼ TSF.
50	-30		S-11	5 5 3	8	12			PA	50		Medium dense; low plasticity, some clay; PP=1 TSF. 71% SAND; 29% Fines; 0% GRAVEL
55	-35		R-12	9 14 22	36	35	23.6	102.8		55		Silty SAND (SM); dense; gray; wet; mostly fine SAND; little fines; nonplastic.
	-40											

GDC_LOG_BORING_MMX_SOIL_SD_SD130C BORING LOGS 2013.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-14 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-13-001**

SITE LOCATION	START	FINISH	SHEET NO.
Intersection of West Mission Bay Drive and Interstate I-8, San Diego, CA	7/18/2013	7/19/2013	3 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Rotary Wash	MSL/TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Unimog	8	160.8	19	▼ 18.0 / *1.0*

SAMPLING METHOD: CAL (2.4"), SPT (1.4")

NOTES: ETR = 87%, N_{60}= 87/60 * N =1.45*Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-13	3 2 4	6	6	47.8	73.2				**PARALIC ESTUARINE DEPOSITS:** Lean CLAY (CL); medium stiff; dark gray; stiff; wet; mostly fines; trace fine SAND; medium plasticity; PP=1 TSF.
	-45											
65			S-14	--- 1 3	4	6			PA	65		87% Fines; 13% SAND; 0% GRAVEL PP=¾ to 1 TSF
	-50											
70			R-15	4 8 8	16	16	30.6	93.0		70		Sandy SILT (ML); medium dense; dark gray; wet; mostly fine SAND; little fines; trace shells; nonplastic to low plasticity; micaceous.
	-55											
75			S-16	9 10 12	22	32			PA	75		Poorly graded SAND with silt (SP-SM); dense; gray-brown; wet; mostly fine to medium SAND; few fines; nonplastic; micaceous. 88% SAND; 12% Fines; 0% GRAVEL
	-60											
80			S-17	7 5 4	9	13			PA	80		Sandy SILT (ML); medium dense; dark gray; wet; mostly fines; some fine SAND; nonplastic to low plasticity; micaceous; PP=1½ TSF. 50% Fines; 50% SAND; 0% GRAVEL
	-65											
85			S-18	11 13 15	28	41				85		Silty SAND (SM); dense; gray-brown; wet; mostly fine to medium SAND; little fines; nonplastic; micaceous.
	-70											

GDC_LOG_BORING_MMX_SOIL_SD_SD130C BORING LOGS 2013.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-14 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-13-001**

SITE LOCATION	START	FINISH	SHEET NO.
Intersection of West Mission Bay Drive and Interstate I-8, San Diego, CA	7/18/2013	7/19/2013	4 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Rotary Wash	MSL/TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Unimog	8	160.8	19	▼ 18.0 / *1.0*

SAMPLING METHOD
CAL (2.4"), SPT (1.4")

NOTES
ETR = 87%, N_{60}= 87/60 * N =1.45*Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-19	11 12 13	25	36			PA			**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); dense; gray-brown; wet; some fines; nonplastic. 74% SAND; 26% Fines; 0% GRAVEL
	-75											
95			S-20	8 16 23	39	57				95		Very dense; trace shells.
	-80											Well graded SAND with SILT (SW-SM); very dense; gray-brown; wet; mostly fine to medium SAND; few fines; nonplastic; micaceous; trace GRAVEL up to 1½-inch in diameter. 87% SAND; 11% Fines; 1% GRAVEL
100			S-21	12 19 18	37	54			PA	100		
	-85											
105										105		Silty SAND (SM); dense; dark gray; wet; mostly fine to medium SAND; little fines; nonplastic; micaceous. 80% SAND; 20% Fines; 0% GRAVEL
	-90											
110			S-22	9 16 19	35	51			PA	110		
	-95											
115										115		**OLD PARALIC DEPOSITS:** Well-Graded SAND with SILT and GRAVEL (SW-SM); very dense; gray; wet; mostly fine to coarse SAND; little GRAVEL up to 1¼-inch in diameter; few fines; nonplastic.
	-100											

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FIGURE
A-14 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-13-001**

SITE LOCATION	START	FINISH	SHEET NO.
Intersection of West Mission Bay Drive and Interstate I-8, San Diego, CA	7/18/2013	7/19/2013	5 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Rotary Wash	MSL/TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Unimog	8	160.8	19	▼ 18.0 / *1.0*

SAMPLING METHOD
CAL (2.4"), SPT (1.4")

NOTES
ETR = 87%, N_{60}= 87/60 * N =1.45*Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-23	43 100	143	207						**OLD PARALIC DEPOSITS:** Well-Graded SAND with SILT and GRAVEL (SW-SM); very dense; gray; wet; mostly fine to coarse SAND; little GRAVEL up to 1¼-inch in diameter; few fines; nonplastic.
125	-105									125		
	-110											
130			S-24	14 15 30	45	65			PA	130		73% SAND; 16% GRAVEL; 11% Fines Gravel up to ¾-inch in diameter.
	-115											
135										135		
	-120											
140			S-25	22 60	82	119				140		Sandy SILT to Silty SAND (ML/SM); very dense; dark gray; wet; mostly fine SAND; some fines; nonplastic to low plasticity.
	-125											
145										145		
	-130											

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FIGURE
A-14 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-13-001**

SITE LOCATION	START	FINISH	SHEET NO.
Intersection of West Mission Bay Drive and Interstate I-8, San Diego, CA	7/18/2013	7/19/2013	6 of 6

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Rotary Wash	MSL/TSL	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Unimog	8	160.8	19	▼ 18.0 / *1.0*

SAMPLING METHOD: CAL (2.4"), SPT (1.4")

NOTES: ETR = 87%, N_{60}= 87/60 * N =1.45*Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-26	31 75	106	154			PA			**OLD PARALIC DEPOSITS:** Silty SAND (SM); very dense; dark gray; wet; mostly fine SAND; some fines; nonplastic. 66% SAND; 34% Fines; 0% GRAVEL Hard drilling, slow progress.
155	-135									155		
	-140											
160			S-27	30 75	105	152				160		Sandy SILT (ML); hard; dark gray; wet; mostly fines; little fine SAND; low plasticity; PP>4½ TSF.
	-145											Bottom of borehole at 161 ft. Groundwater encountered at 18 ft. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010).
165										165		
	-150											
170										170		
	-155											
175										175		
	-160											

GDC_LOG_BORING_MMX_SOIL_SD SD130C BORING LOGS 2013.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-14 f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	R-09-001

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/1/2009	12/1/2009	1 of 5

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	136	16.5	▼ 16.0 / *0.5*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	15											**FILL:** Silty SAND (SM); medium dense; grayish-brown; moist; mostly fine to medium grained SAND; some fines; nonplastic.
5			R-1	7 10	17		14	97	DS	5		
	10											
10			S-2	7 11 13	24	30			PA	10		77% SAND; 23% Fines; 0% GRAVEL Dense.
	5											Wood fragments in cuttings at 13 ft.
15										15		GRAVEL layer at 15 ft.
	0											**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML); loose; gray; wet; mostly fines; some fine grained SAND; few GRAVEL layers; small shell fragments; nonplastic to low plasticity; micaceous.
20										20		
	-5		SH-3									
25										25		
	-10		SH-4				33	90	PA PI CR UC C SG			68% Fines; 32% SAND LL=37; PL=26; PI=11 Su=390 PSF

GDC_LOG_BORING_MMX_SOIL_SD_SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-15 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	R-09-001

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/1/2009	12/1/2009	2 of 5

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	136	16.5	▼ 16.0 / *0.5*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-15		S-5	2 2 3	5	6			PA			**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML); loose; gray; wet; mostly fines; some fine grained SAND; few GRAVEL layers; small shell fragments; nonplastic to low plasticity; micaceous. Interbedded with Silty SAND (SM); trace shell fragments, micaceous. 55% Fines; 45% SAND; 0% GRAVEL
35			SH-6							35		
	-20											
40			S-7	2 3 4	7	9			PA	40		Trace shell fragments. 64% Fines; 35% SAND; 1% GRAVEL
	-25		SH-8				33	88	PA PI UC C			Nonplastic. 64% Fines; 36% SAND; 0% GRAVEL Su=520 PSF
45			S-9	1 3 3	6	7			PA	45		SILT (ML); loose; gray; wet; mostly fines; trace SAND; nonplastic. 98% Fines; 2% SAND; 0% GRAVEL
	-30		SH-10				28	97	PA PI UC			Poorly-Graded SAND with SILT (SP-SM); dense; gray; wet; mostly SAND; few fines; nonplastic. 89% SAND; 11% Fines; 0% GRAVEL Su=250 PSF.
50										50		
	-35		SH-11									
55			S-12	6 16 16	32	39			PA	55		90% SAND; 10% Fines; 0% GRAVEL
	-40		SH-13				48	71	PA PI UC			Fat CLAY (CH); stiff; dark gray; wet; mostly fines; trace SAND; high plasticity. 96% Fines; 4% SAND; 0% GRAVEL LL=62; PL=31; PI=31; Su=1120 PSF

GDC_LOG_BORING_MMX_SOIL_SD_SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-15 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/1/2009	12/1/2009	3 of 5

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	136	16.5	▼ 16.0 / *0.5*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-45		SH-14									**PARALIC ESTUARINE DEPOSITS:** Fat CLAY (CH); stiff; dark gray; wet; mostly fines; trace SAND; high plasticity. Interbedded with Silty SAND (SM). Trace small shell fragments, micaceous. No sample recovery.
65			S-15	7 7 10	17	21			PA	65		Silty SAND (SM); medium dense; gray; wet; mostly fine grained SAND; some fines; nonplastic. 71% SAND: 29% Fines; 0% GRAVEL
	-50											
70			S-16	10 16 20	36	44			PA	70		Poorly-Graded SAND with SILT (SP-SM); dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic. 93% SAND; 7% Fines; 0% GRAVEL
	-55											
75			R-17	11 23	34		30	91	DS	75		Sandy SILT (ML); medium dense; gray; wet; mostly fines; some fine grained SAND; low plasticity; contains thin interbeds of Silty SAND (SM).
	-60											
80			S-18	11 12 17	29	36				80		Dense. No sample recovery.
	-65											
85										85		
	-70											Silty SAND (SM); very dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic.

GDC_LOG_BORING_MMX_SOIL_SD SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-15 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/1/2009	12/1/2009	4 of 5

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	136	16.5	▼ 16.0 / *0.5*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-75		S-19	15 23 24	47	58			PA			**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM); very dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic. Interbedded with Poorly-Graded SAND with SILT (SP-SM). 86% SAND; 14% Fines; 0% GRAVEL
95	-80									95		
100	-85		R-20	20 40	60		22	100	DS	100		GRAVEL layer about 2 feet thick at 103 ft.
105	-90									105		
110	-95		S-21	23 28 28	56	69			PA	110		91% SAND; 9% Fines; 0% GRAVEL
115	-100									115		**OLD PARALIC DEPOSITS:** Poorly graded SAND with silt (SP-SM); very dense; gray; wet; mostly fine to medium grained SAND; little gravel; few fines; nonplastic. Interbedded with Silty SAND (SM). Becomes very gravelly at 117 ft.

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FIGURE
A-15 d

GDC_LOG_BORING_MMX_SOIL_SD SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-001**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/1/2009	12/1/2009	5 of 5

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	136	16.5	▼ 16.0 / *0.5*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR = 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-105		S-22	15 27 33	60	74			PA			**OLD PARALIC DEPOSITS:** Silty SAND (SM); very dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic. Interbedded with Poorly-Graded SAND with SILT (SP-SM). 85% SAND; 15% Fines; 0% GRAVEL.
125	-110									125		Poorly graded gravel and cobble; gray; very dense; cemented; very difficult drilling (about 10 feet per hour). No samples recovered.
130	-115									130		
135	-120									135		Bottom of borehole at 136 ft. Groundwater encountered at 16 ft. Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).
140	-125									140		
145	-130									145		

GDC_LOG_BORING_MMX_SOIL_SD SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-15 e

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/2/2009	12/3/2009	1 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	113	1	▼ 0.0 / *1.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR= 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
0	0									0		**(Mudline)**
												ALLUVIUM: SILT (ML); loose; dark gray; wet; mostly fines.
												NOTE: The boring was drilled from the existing West Mission Bay Drive Bridge deck. The bridge deck was located about 29 feet above the mudline. The boring was cased from the bridge deck down to about 13 feet below the mudline. A total of approximately 42 feet of casing was used. The San Diego River water surface elevation was about 3 feet MSL at the time of drilling.
5	-5									5		
10	-10									10		Bottom of Casing (Elevation -13 Feet MSL)
15	-15									15		**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML) thinly interbdded with 1 to 2 ft beds of Silty SAND (SM); SILT (ML); loose; dark gray; wet; mostly fines; some fine grained SAND; nonplastic, saturated, loose. SAND (SM); loose; wet; dark gray; mostly fine to medium grained SAND; some fines; nonplastic. Contains shell fragments, micaceous. 67% SAND; 33% Fines; 0% GRAVEL
		☒	S-1	2 2 2	4	5			PA			
20	-20									20		
		▮	SH-2				27	94	PA PI CR UC SG			68% Fines; 32% SAND; 0% GRAVEL Non-Plastic (NP) Su=210 PSF
25	-25									25		
		☒	S-3	3 6 10	16	20			PA			Poorly-Graded SAND with SILT (SP-SM) at 27 ft. 93% Sand; 7% Fines; 0% GRAVEL

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FIGURE
A-16 a

GDC_LOG_BORING_MMX_SOIL_SD SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/2/2009	12/3/2009	2 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	113	1	▼ 0.0 / *1.0*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES: ETR= 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-30											**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML) interbdedded with Silty SAND (SM). Trace shell fragments; micaceous.
			SH-4									No sample recovery.
35										35		
	-35											
			S-5	2 1 4	5	6			PA			59% SAND; 41% Fines; 0% GRAVEL
40										40		
	-40											
			SH-6				55	69	PA PI UC			Fat CLAY (CH); medium stiff; dark brown; wet; mostly fines; trace SAND; high plasticity. 98% Fines; 2% SAND; 0% GRAVEL LL=63, PL=31, PI=32 Su=770 PSF
45										45		
	-45											
			S-7	4 4 8	12	15			PA			Silty SAND (SM) interbedded with Sandy SILT (ML); SAND (SM); medium dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic; SILT (ML); medium dense; gray; wet; mostly fines; some fine grained SAND; nonplastic. 69% SAND; 31% Fines; 0% GRAVEL
50										50		
	-50											
			SH-8				23	95	PA PI UC			70% SAND; 30% Fines; 0% GRAVEL Nonplastic. Su=230 PSF
55										55		
	-55											
			S-9	5 5 11	16	20			PA			58% SAND; 42% Fines; 0% GRAVEL

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FIGURE
A-16 b

GDC_LOG_BORING_MMX_SOIL_SD SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/2/2009	12/3/2009	3 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	113	1	▼ 0.0 / *1.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR= 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-60											**PARALIC ESTUARINE DEPOSITS:** Silty SAND (SM) interbedded with Sandy SILT (ML).
			SH-10									
65	-65									65		58% Fines; 42% SAND; 0% GRAVEL No sample recovery.
			S-11	6 9 14	23	28			PA			
70	-70									70		Poorly-Graded SAND with SILT (SP-SM); very dense; gray; wet; mostly fine to medium grained SAND; few fines; nonplastic.
			S-12	14 21 23	44	54			PA			92% SAND; 8% Fines; 0% GRAVEL
75	-75									75		
80	-80									80		
			S-13	19 20 25	45	55			PA			89% SAND; 7% Fines; 4% GRAVEL Trace GRAVEL.
85	-85									85		

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FIGURE
A-16 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-002**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	12/2/2009	12/3/2009	4 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	113	1	▼ 0.0 / *1.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR= 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-90											**PARALIC ESTUARINE DEPOSITS:** Poorly-Graded SAND with SILT (SP-SM), very dense. 95% SAND; 5% Fines; 0% GRAVEL
			S-14	19 24 26	50	62			PA			
95	-95									95		
100	-100		S-15	34 34 25	59	73			PA	100		**OLD PARALIC DEPOSITS:** Poorly-Graded SAND with SILT and GRAVEL (SP-SM); very dense; gray; wet; mostly fine to coarse grained SAND; little subangular GRAVEL up to 1½" in diameter; few fines; nonplastic. 63% SAND; 25% GRAVEL; 12% Fines
105	-105									105		
110	-110		S-16	50/2"	REF	REF				110		Poorly graded gravel and cobble; gray; very dense; cemented; very difficult drilling (about 4 feet per hour). No samples recovered.
115	-115									115		Bottom of borehole at 113 ft. Groundwater encountered at 0 ft - (Water surface 2 feet above mudline) Boring terminated at planned depth. This Boring Record was prepared in accordance with the Caltans Soil & Rock Logging, Classifiation, and Presentation Manual (2010).

GDC_LOG_BORING_MMX_SOIL_SD_SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-16 d

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/30/2009	11/30/2009	1 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	118	16	▼ 16.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR= 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	15											**FILL:** Silty SAND (SM); very dense; dark grayish brown; moist; mostly fine to medium grained SAND; some fines; trace shell fragments; nonplastic.
		☒	S-1	24 25 17	42	52						
5										5		
	10	☒	S-2	4 6 6	12	15			PA			70% SAND; 30% Fines; 0% GRAVEL Medium dense.
												Sandy SILT (ML); loose; moist; dark grayish brown; mostly fines; some fine grained SAND; low plasticity.
10										10		
	5	☒	S-3	2 2 3	5	6						
15										15		
	0	▮	SH-4									
												PARALIC ESTUARINE DEPOSITS: Sandy SILT (ML) interbedded with 1 to 2-ft thick beds of Silty SAND (SM); SILT (ML); medium dense; gray; wet; mostly fines; some fine grained SAND; nonplastic; SAND (SM); medium dense; gray; wet; mostly fine to medium grained SAND; some fines; trace shell fragments; nonplastic; micaceous. 57% Fines; 43% SAND; 0% GRAVEL Non-Plastic (NP) Su=440 PSF
20		▮	SH-5				29	92	PA PI CR UC C SG	20		
	-5											
		▮	SH-6									
												Thinly bedded with a 3-ft thick layer of Silty SAND (SM) at 24 ft.
25										25		
	-10	☒	S-7	4 5 6	11	14			PA			68% SAND; 32% Fines; 0% GRAVEL

GDC_LOG_BORING_MMX_SOIL_SD_SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

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FIGURE
A-17 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/30/2009	11/30/2009	2 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	118	16	▼ 16.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR= 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-15		SH-8				32	82	PA PI UC C			**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML); medium dense; gray; wet; mostly fines; some fine grained SAND; trace shells; nonplastic; micaceous. 61% Fines; 39% SAND; 0% GRAVEL,Su=210 PSF
35										35		Poorly-Graded SAND with SILT (SP-SM); dense; light gray; wet; mostly fine to medium grained SAND; few fines; trace GRAVEL; nonplastic.
	-20		S-9	13 15 16	31	38			PA			89% SAND; 10% Fines; 1% GRAVEL
40										40		
	-25		R-10	17 46	63		20	106	DS			
45										45		
	-30		S-11	19 21 25	46	57			PA			90% SAND; 10% Fines; 0% GRAVEL Very dense.
50										50		Silty SAND (SM) thinly bedded with Sandy SILT (ML); SAND (SM); medium dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic; SILT (ML); medium dense; wet; gray; mostly fines; some fine SAND.
	-35		R-12	6 9	15		32	88	DS			
55										55		Sandy SILT (ML) interbedded with Silty SAND (SM); SILT (ML); loose; gray; wet; mostly fines; some fine grained SAND; low plasticity. SAND (SM); loose; gray; wet; mostly SAND; some fines; trace shell fragments; micaceous. 87% Fines; 13% SAND; 0% GRAVEL
	-40		S-13	2 3 4	7	9			PA			
												Fat CLAY (CH) interbedded with Silty SAND (SM); CLAY (CH); stiff; gray; wet; mostly fines; few fine grained SAND; high plasticity.

GDC_LOG_BORING_MMX_SOIL_SD_SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

GROUP DELTA CONSULTANTS, INC.
9245 Activity Road, Suite 103
San Diego, CA 92126

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE
A-17 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/30/2009	11/30/2009	3 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	118	16	▼ 16.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR= 74%, N_{60}= 74/60 * N =1.23Nspt

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-45		SH-14				41	82	PA UC			**PARALIC ESTUARINE DEPOSITS:** Fat CLAY (CH) thinly interbedded with Silty SAND (SM). Thinly interbedded with shell fragments. 94% Fines; 6% SAND; 0% GRAVEL LL=55, PL=29, PI=26, Su=1200 PSF
65	-50		S-15	3 5 11	16	20			PA	65		Sandy Lean CLAY (CL); stiff; gray; wet; mostly fines; some fine grained SAND; low plasticity. Interbedded with Silty SAND (SM). 67% SAND; 33% Fines; 0% GRAVEL
70	-55		SH-16				30	92	PA PI UC	70		68% Fines; 32% SAND; 0% GRAVEL LL=44, PL=25, PI=19 Su=290 PSF
75	-60		R-17	8 24	32		31	94	DS	75		Silty SAND (SM) thinly bedded with Sandy SILT (ML); SAND (SM); medium dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic; SILT (ML); medium dense; gray; wet; mostly fines; some fine SAND.
80	-65		S-18	12 13 15	28	34			PA	80		76% SAND; 24% Fines; 0% GRAVEL Dense.
85	-70		S-19	9 10 11	21	26			PA	85		71% Fines; 29% SAND; 0% GRAVEL Medium dense.
												Sandy SILT (ML) interbedded w/ 1-3 ft beds of Silty SAND (SM); SILT (ML); medium dense to dense; gray; wet; mostly fines; some fine grained SAND; nonplastic; SAND (SM); medium dense to dense; gray; wet; mostly fine to medium grained SAND; some fines; nonplastic.

GROUP DELTA CONSULTANTS, INC.
9245 Activity Road, Suite 103
San Diego, CA 92126

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FIGURE
A-17 c

GDC_LOG_BORING_MMX_SOIL_SD_SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

BORING RECORD

PROJECT NAME	PROJECT NUMBER	BORING
West Mission Bay Drive Bridge Replacement	SD130C	**R-09-003**

SITE LOCATION	START	FINISH	SHEET NO.
West Mission Bay Drive Bridge over the San Diego River	11/30/2009	11/30/2009	4 of 4

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
C & L Drilling	Rotary Wash	JCS	MAF

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mayhew 1000	5	118	16	▼ 16.0 / *0.0*

SAMPLING METHOD
Hammer: 140 lbs., Drop: 30 in. (Automatic)

NOTES
ETR= 74%, N_{60}= 74/60 * N =1.23Nspt

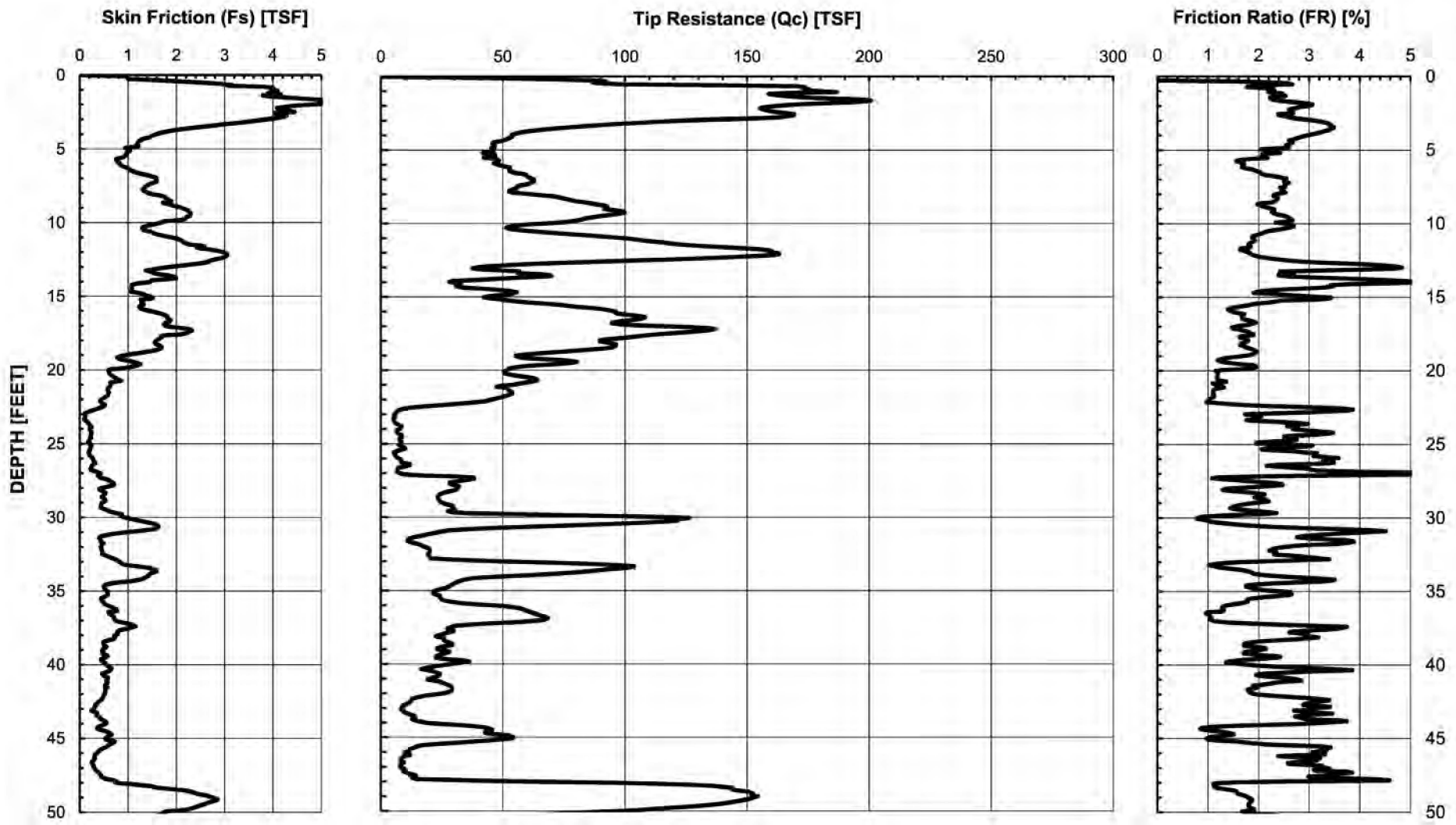
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	N_{60}	MOISTURE (%)	DRY DENSITY (pcf)	OTHER TESTS	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	-75		R-20	13 17	30		29	92	DS			**PARALIC ESTUARINE DEPOSITS:** Sandy SILT (ML) interbedded with 1 to 3 ft thick beds of Silty SAND (SM).
95	-80									95		
100	-85		S-21	8 10 13	23	28			PA	100		66% Fines; 34% SAND; 0% GRAVEL
105	-90									105		
110	-95									110		**OLD PARALIC DEPOSITS:** Poorly graded gravel and cobble; gray; very dense; cemented; very difficult drilling (about 7 feet per hour). No samples recovered.
115	-100									115		Bottom of borehole at 118 ft. Groundwater encountered at 16 ft. Boring terminated at planned depth.

GDC_LOG_BORING_MMX_SOIL_SD SD130C BORING LOGS 2009.GPJ GDCLOG.GDT 1/24/19

GROUP DELTA CONSULTANTS, INC.
9245 Activity Road, Suite 103
San Diego, CA 92126

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

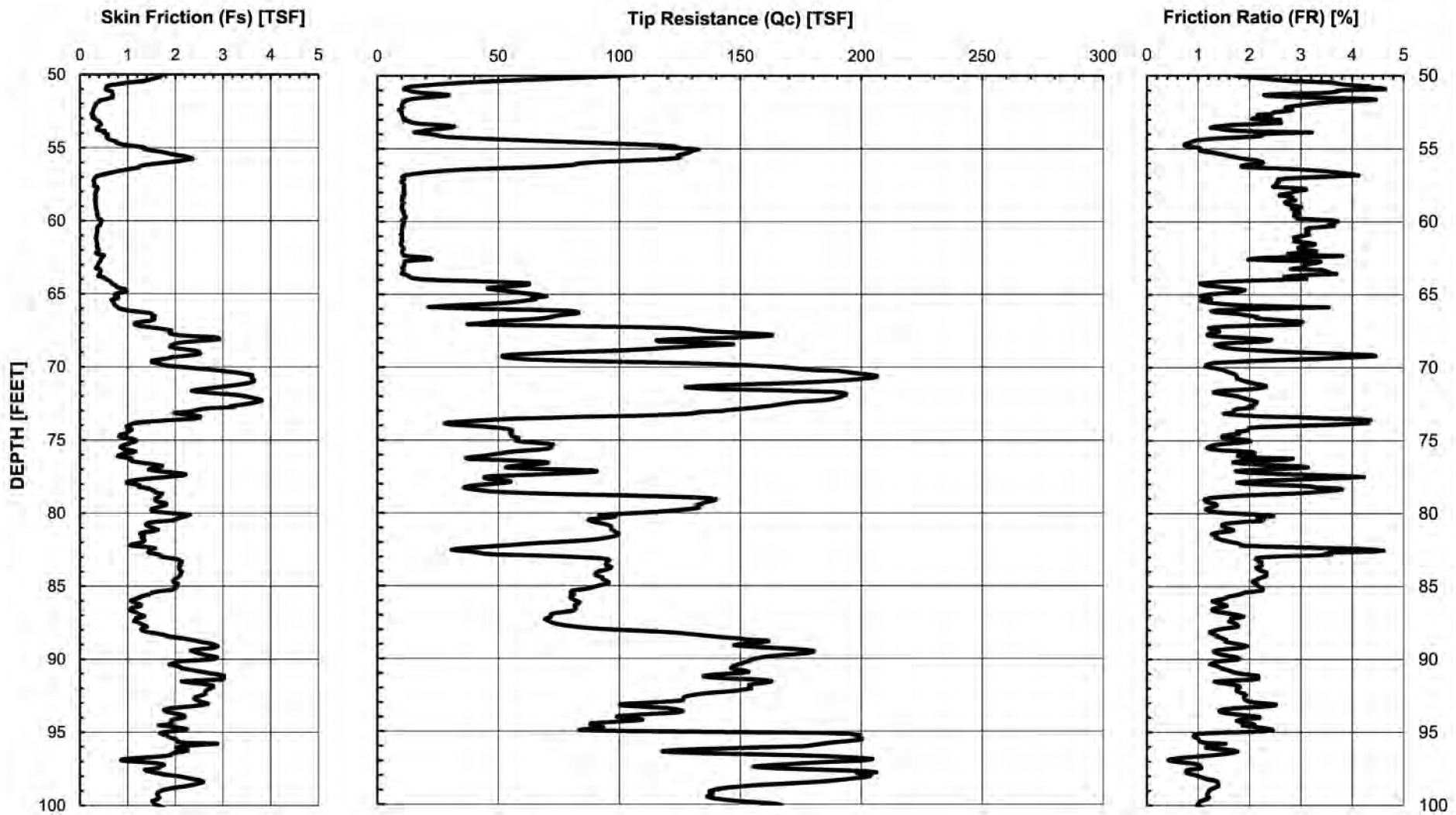
FIGURE
A-17 d



GROUP DELTA

CONE PENETOMETER DATA (CPT-09-001)

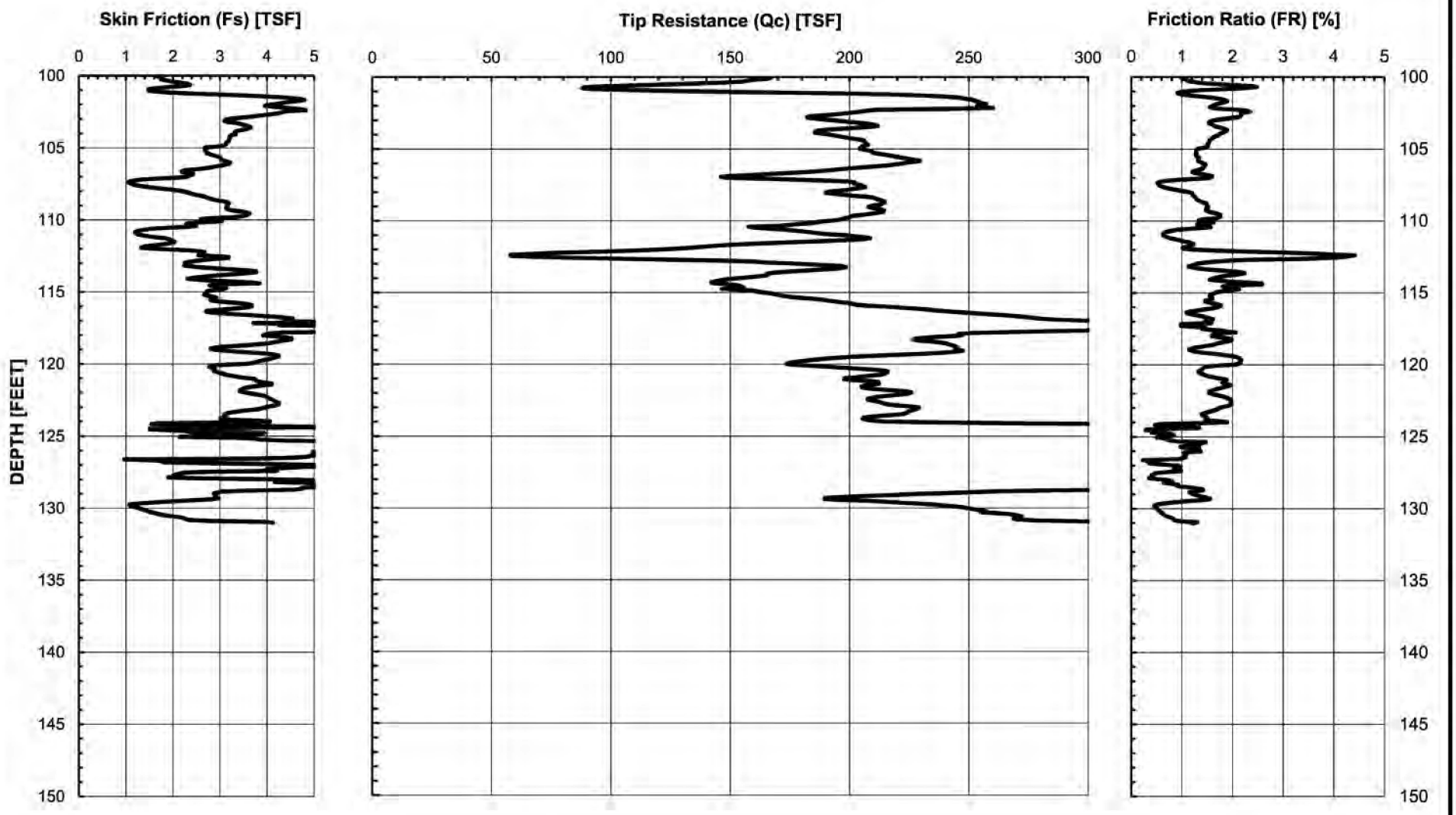
Document No. 15-0014
Project No. SD130E
FIGURE A-18.1a



GROUP DELTA

CONE PENETOMETER DATA (CPT-09-001)

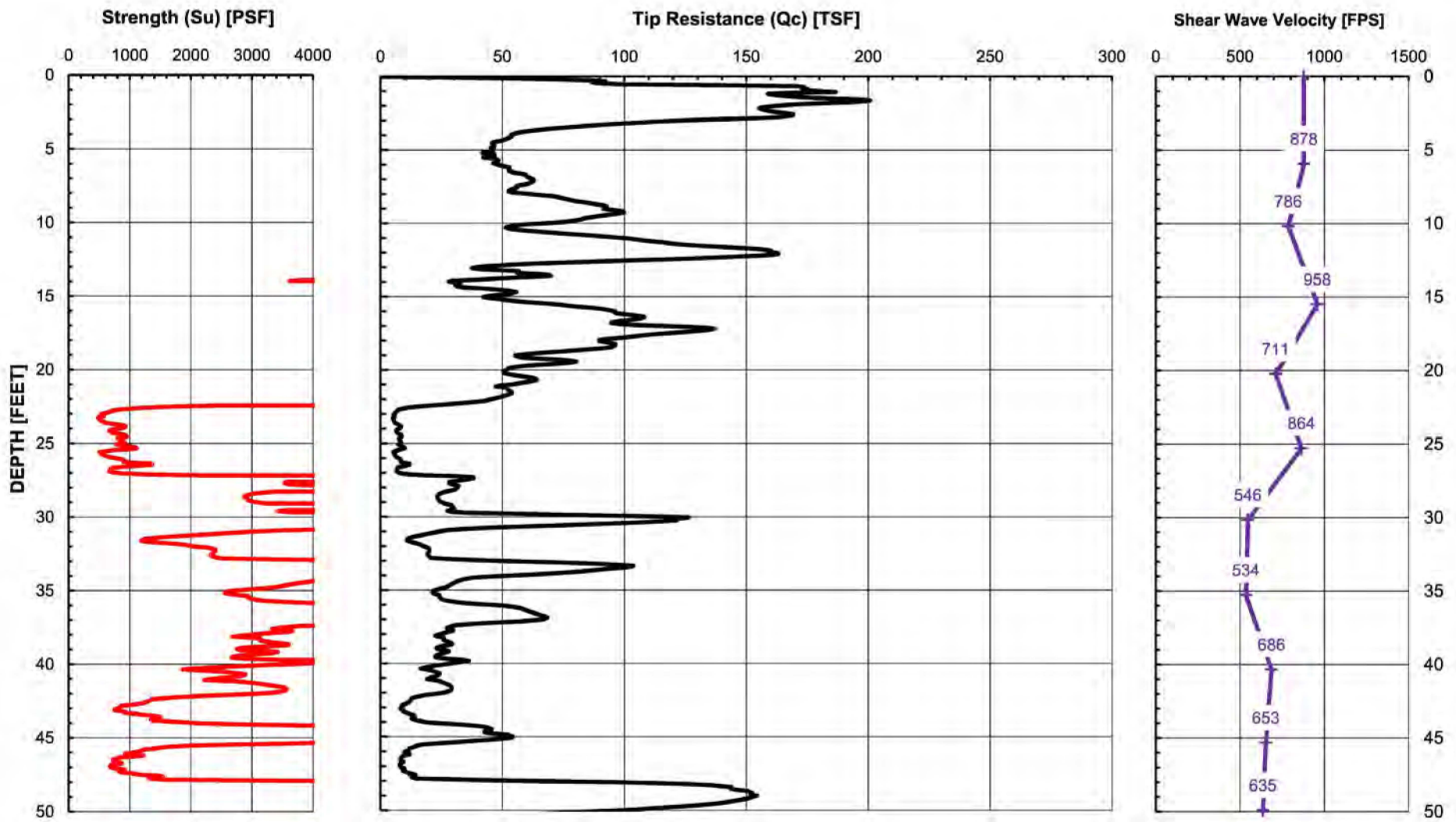
Document No. 15-0014
Project No. SD130E
FIGURE A-18.1b



GROUP DELTA

CONE PENETOMETER DATA (CPT-09-001)

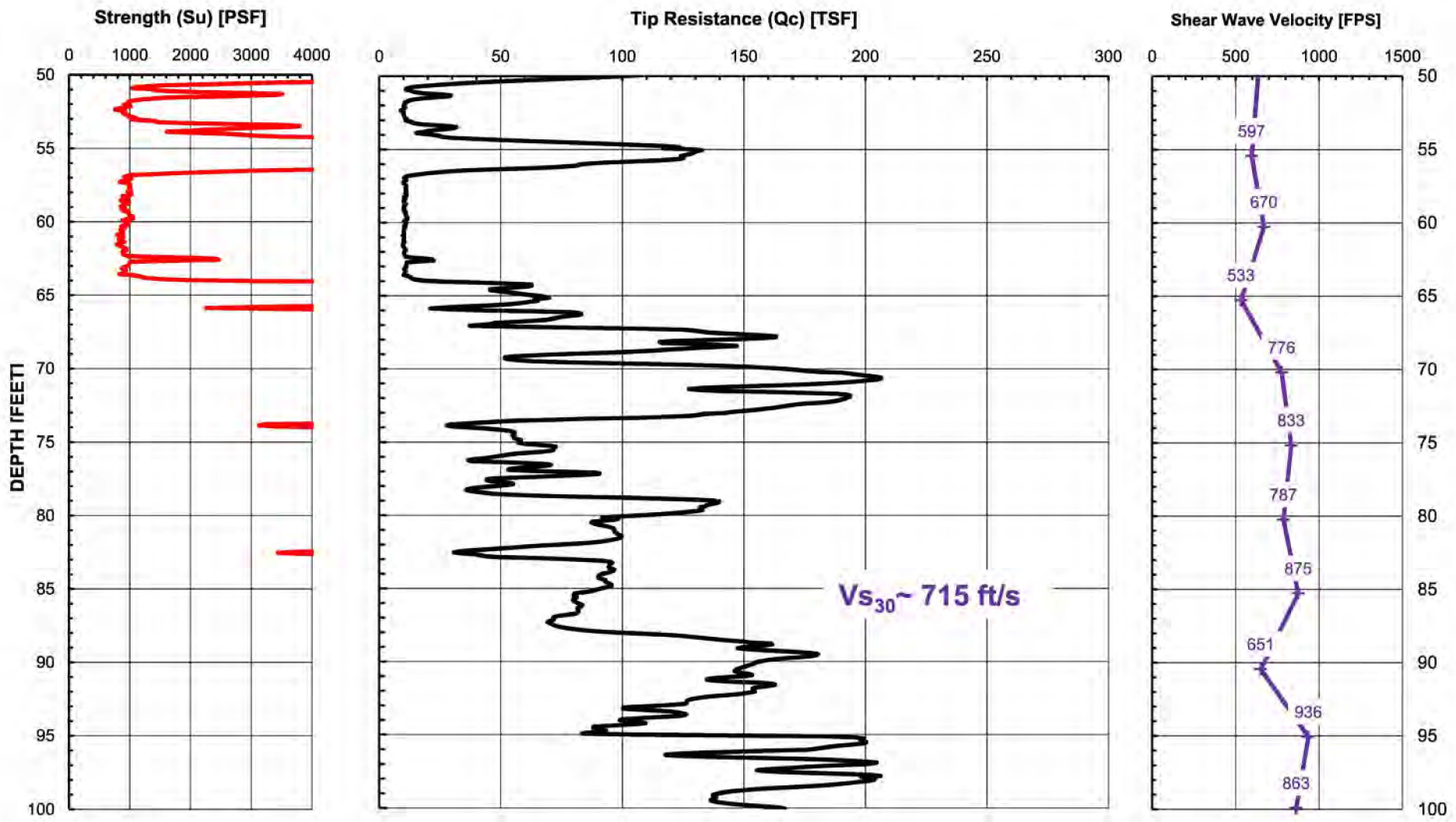
Document No. 15-0014
Project No. SD130E
FIGURE A-18.1c



GROUP DELTA

SHEAR WAVE VELOCITY DATA (CPT-09-001)

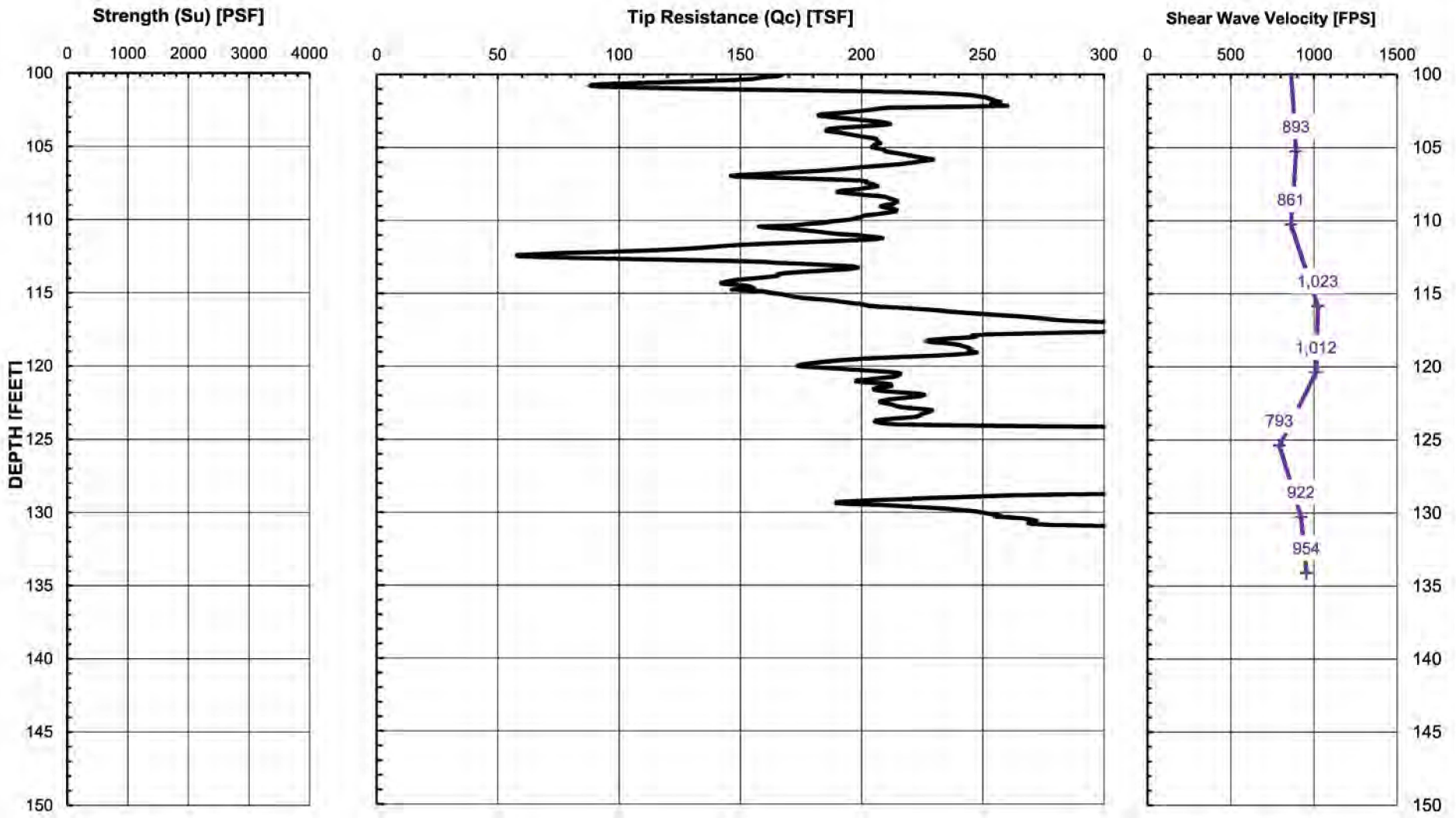
Document No. 15-0014
Project No. SD130E
FIGURE A-18.3a



GROUP DELTA

SHEAR WAVE VELOCITY DATA (CPT-09-001)

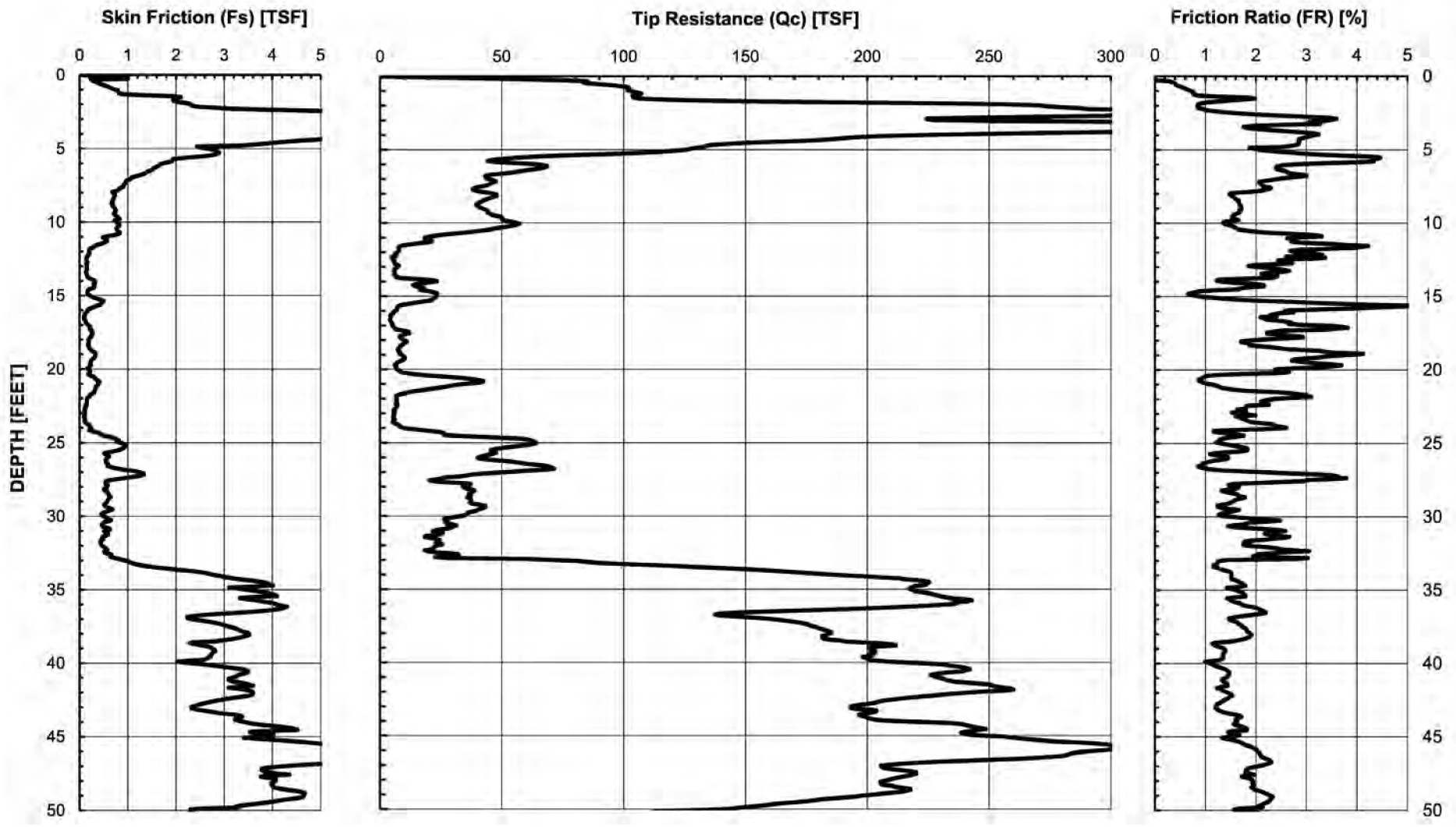
Document No. 15-0014
Project No. SD130E
FIGURE A-18.3b



GROUP DELTA

SHEAR WAVE VELOCITY DATA (CPT-09-001)

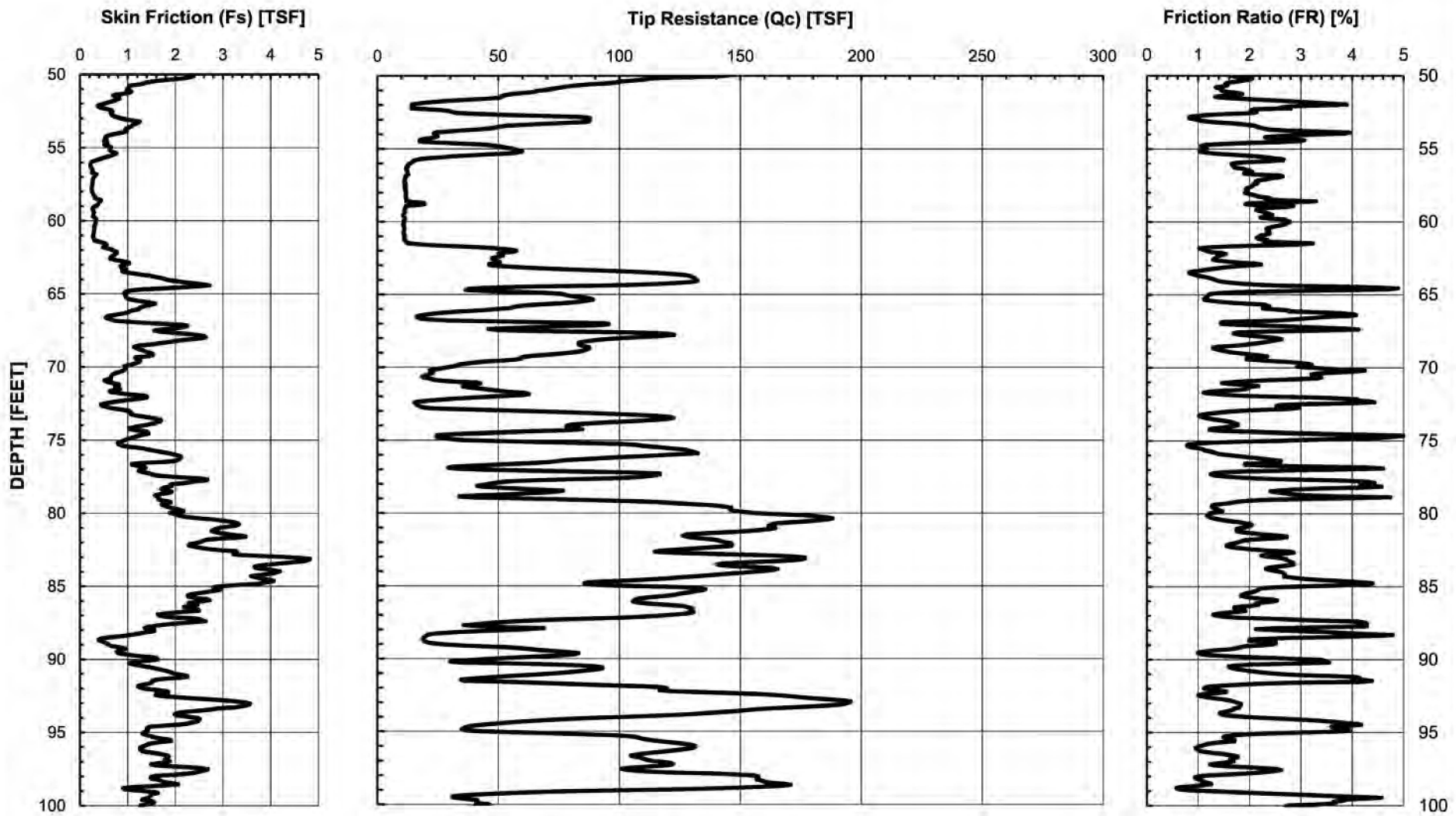
Document No. 15-0014
Project No. SD130E
FIGURE A-18.3c



GROUP DELTA

CONE PENETOMETER DATA (CPT-09-002)

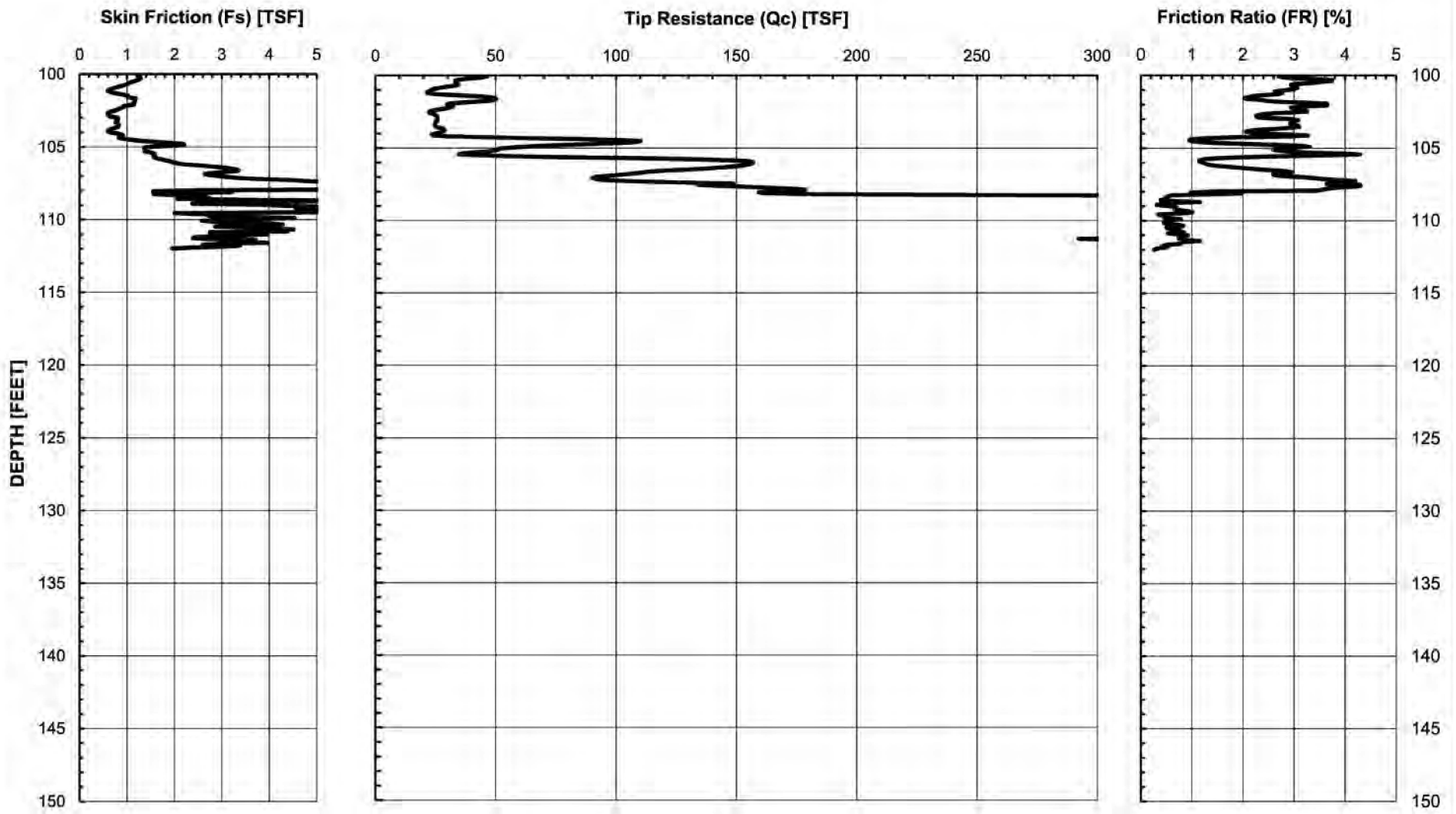
Document No. 15-0014
Project No. SD130E
FIGURE A-19.1a



GROUP DELTA

CONE PENETOMETER DATA (CPT-09-002)

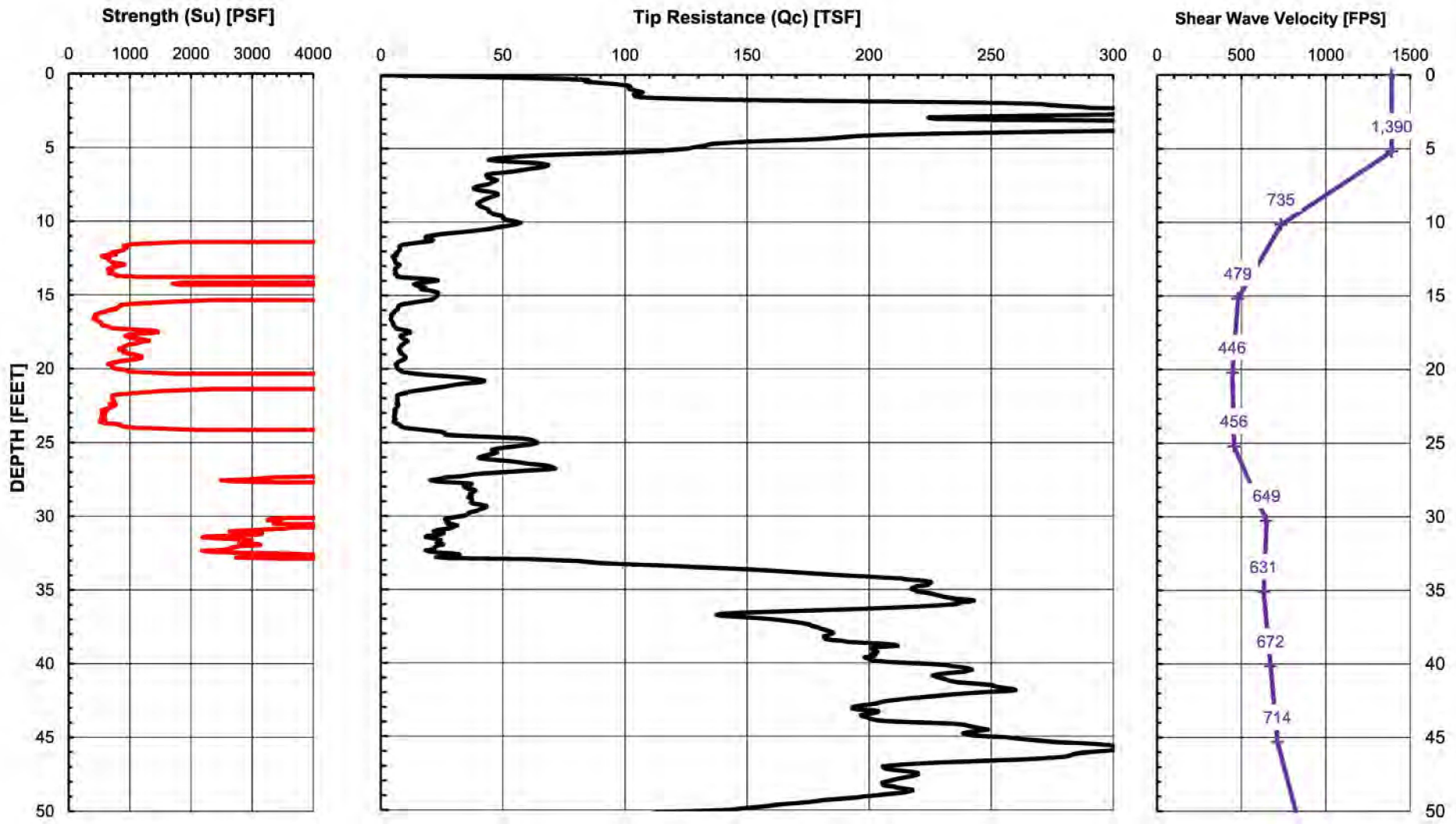
Document No. 15-0014
Project No. SD130E
FIGURE A-19.1b



GROUP DELTA

CONE PENETOMETER DATA (CPT-09-002)

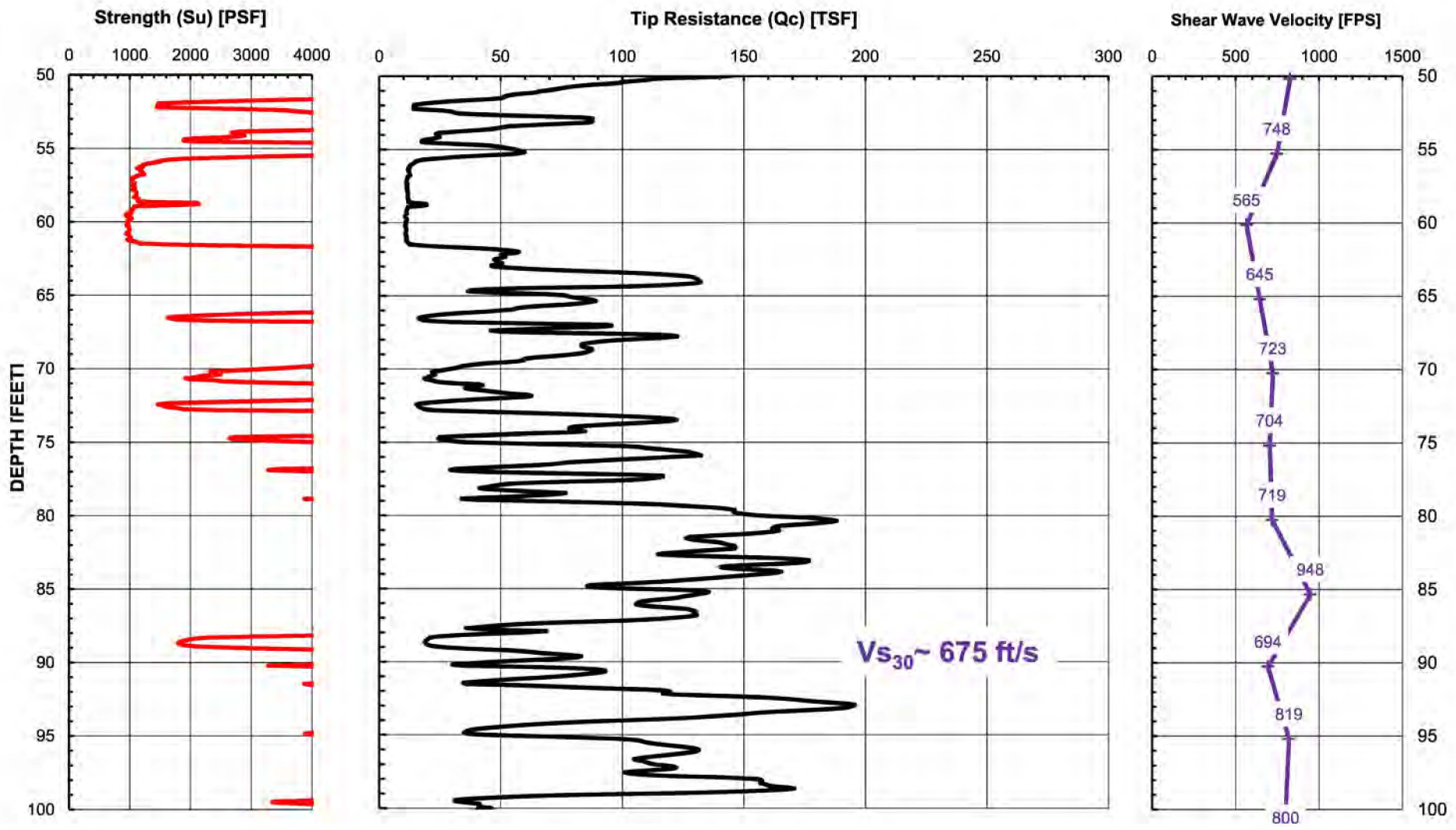
Document No. 15-0014
Project No. SD130E
FIGURE A-19.1c



GROUP DELTA

SHEAR WAVE VELOCITY DATA (CPT-09-002)

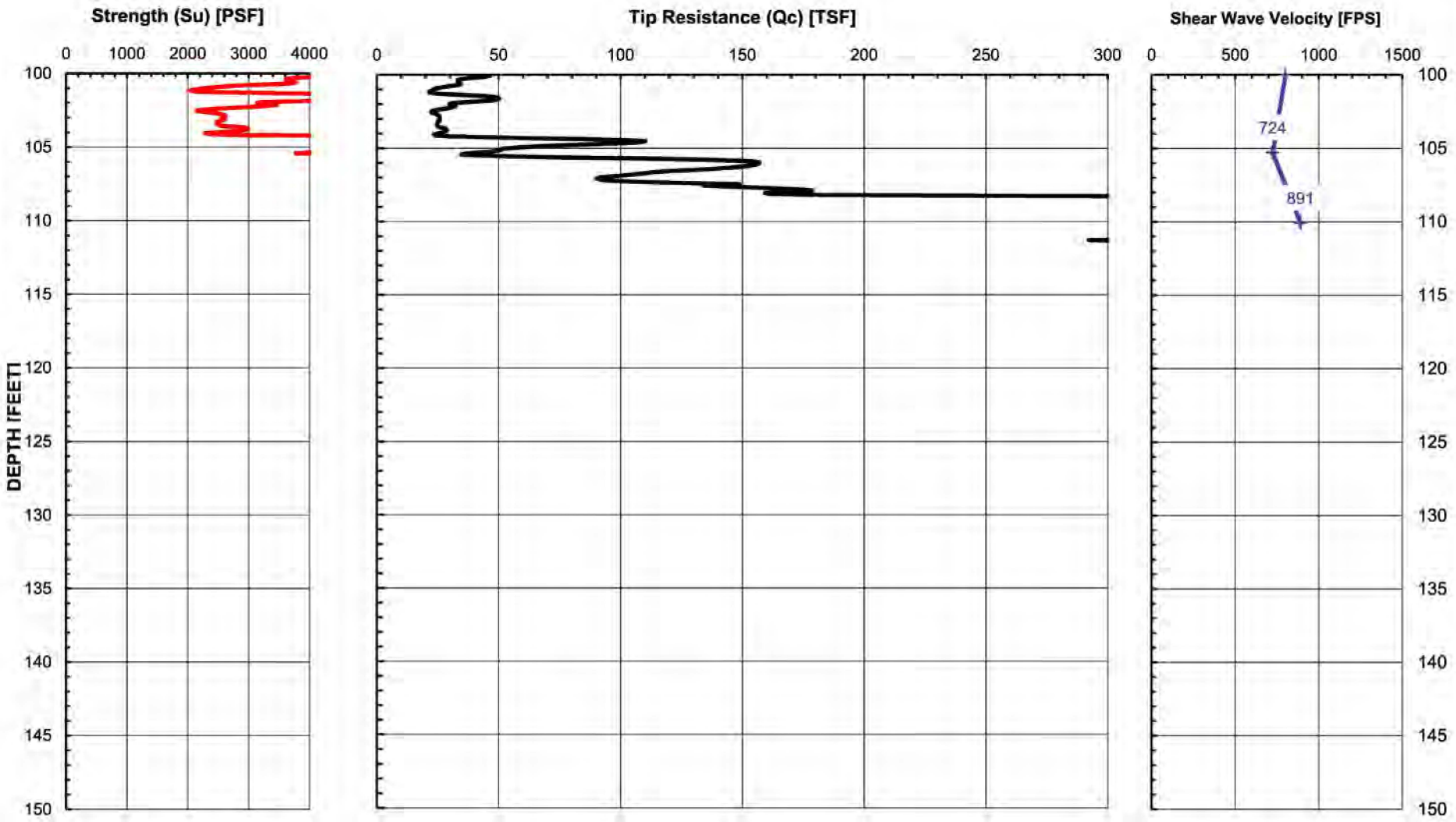
Document No. 15-0014
Project No. SD130E
FIGURE A-19.3a



GROUP DELTA

SHEAR WAVE VELOCITY DATA (CPT-09-002)

Document No. 15-0014
Project No. SD130E
FIGURE A-19.3b



GROUP DELTA

SHEAR WAVE VELOCITY DATA (CPT-09-002)

Document No. 15-0014
Project No. SD130E
FIGURE A-19.3c



N

NO SCALE

GROUP DELTA

GROUP DELTA CONSULTANTS, INC.
ENGINEERS AND GEOLOGISTS
9245 ACTIVITY ROAD, SUITE 103
SAN DIEGO, CA 92126 (858) 536-1000

PROJECT NUMBER: SD609

DOCUMENT NUMBER: 19-0111

PROJECT NAME: HARBOR ASSOCIATES REPORT OF LIQUEFACTION EVALUATION MIDWAY USPS - THE POST

FIGURE NUMBER: 1

SITE LOCATION MAP

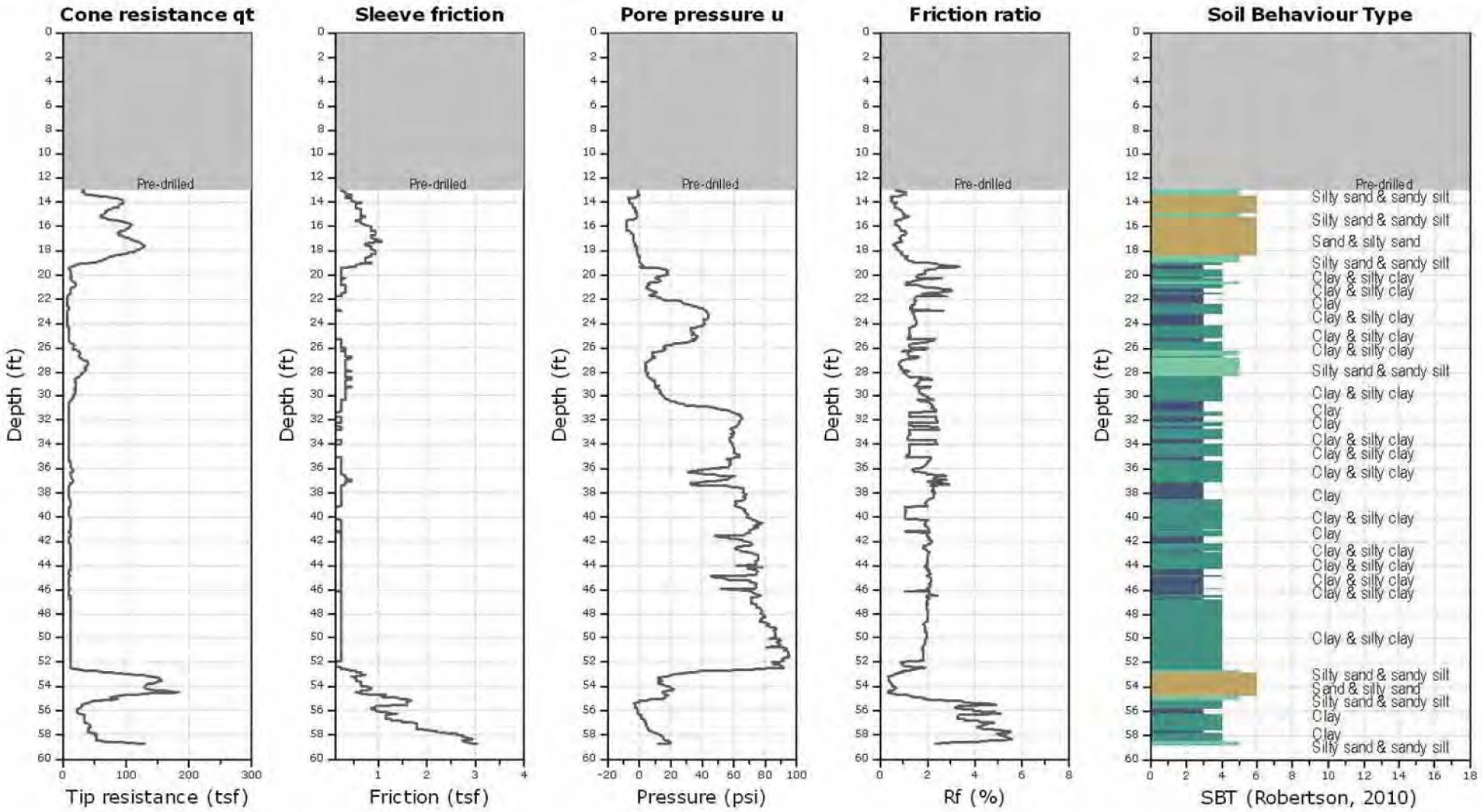
REFERENCE: Google Earth (2019).

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

C-1

Project: **CTE (Construction Testing & Eng.)/Midway Post Office Renovations**
Location: **2535 Midway Dr San Diego, CA**

Total depth: 58.71 ft, Date: 1/20/2017
Cone Type: Vertek

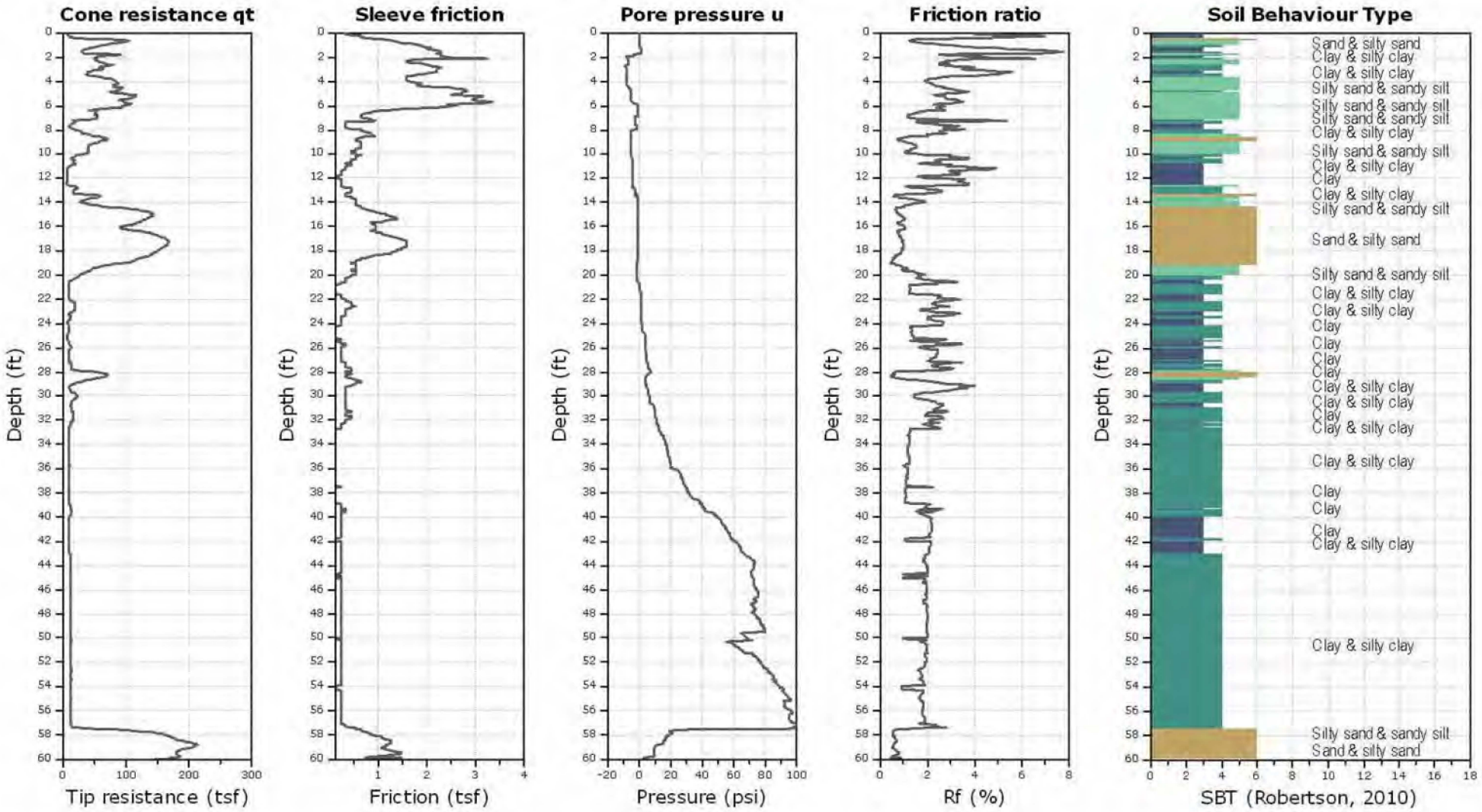


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C-2

Project: **CTE (Construction Testing & Eng.)/Midway Post Office Renovations**
Location: **2535 Midway Dr San Diego, CA**

Total depth: 60.26 ft, Date: 1/20/2017
Cone Type: Vertek

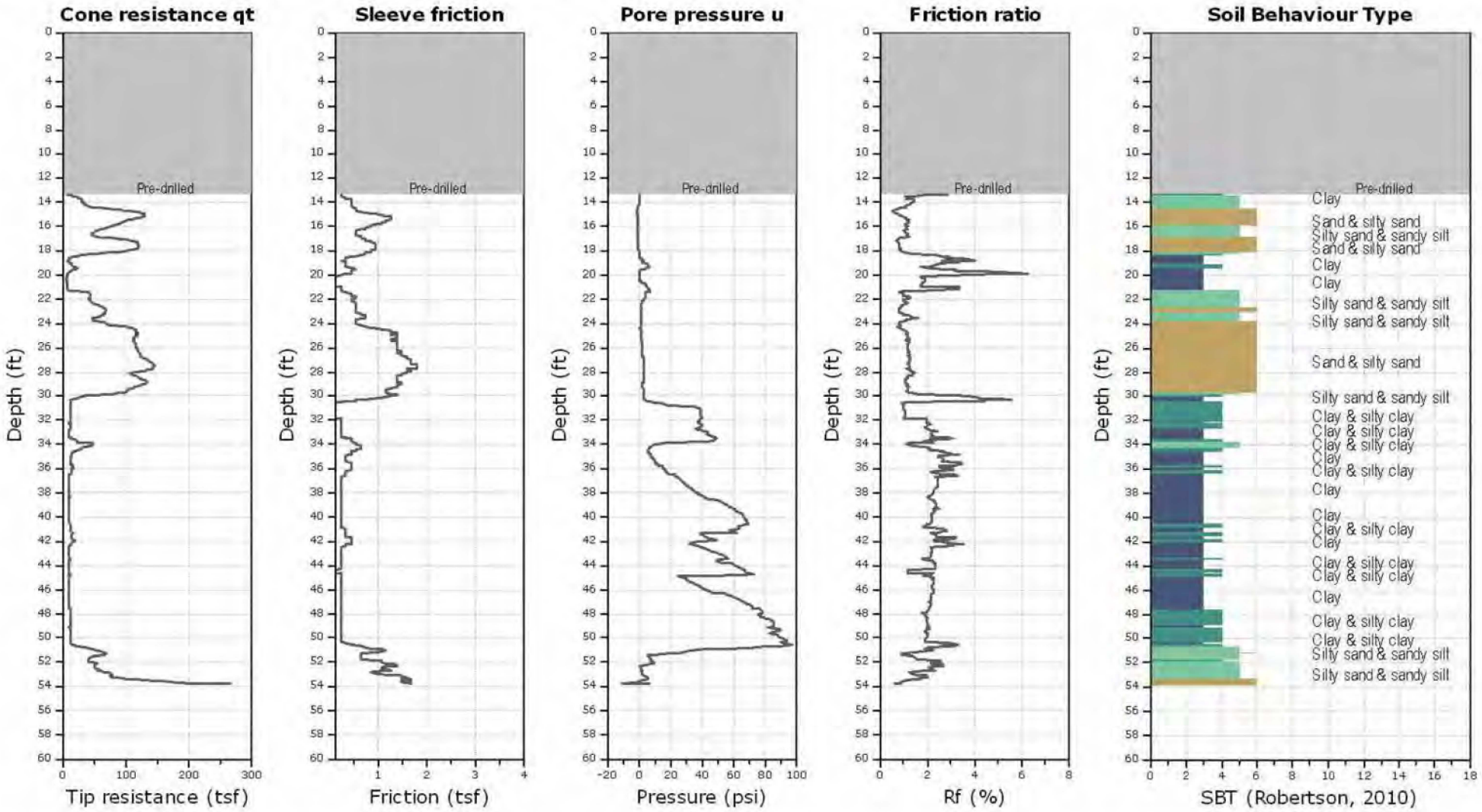


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C-3

Project: **CTE (Construction Testing & Eng.)/Midway Post Office Renovations**
Location: **2535 Midway Dr San Diego, CA**

Total depth: 53.78 ft, Date: 1/20/2017
Cone Type: Vertek

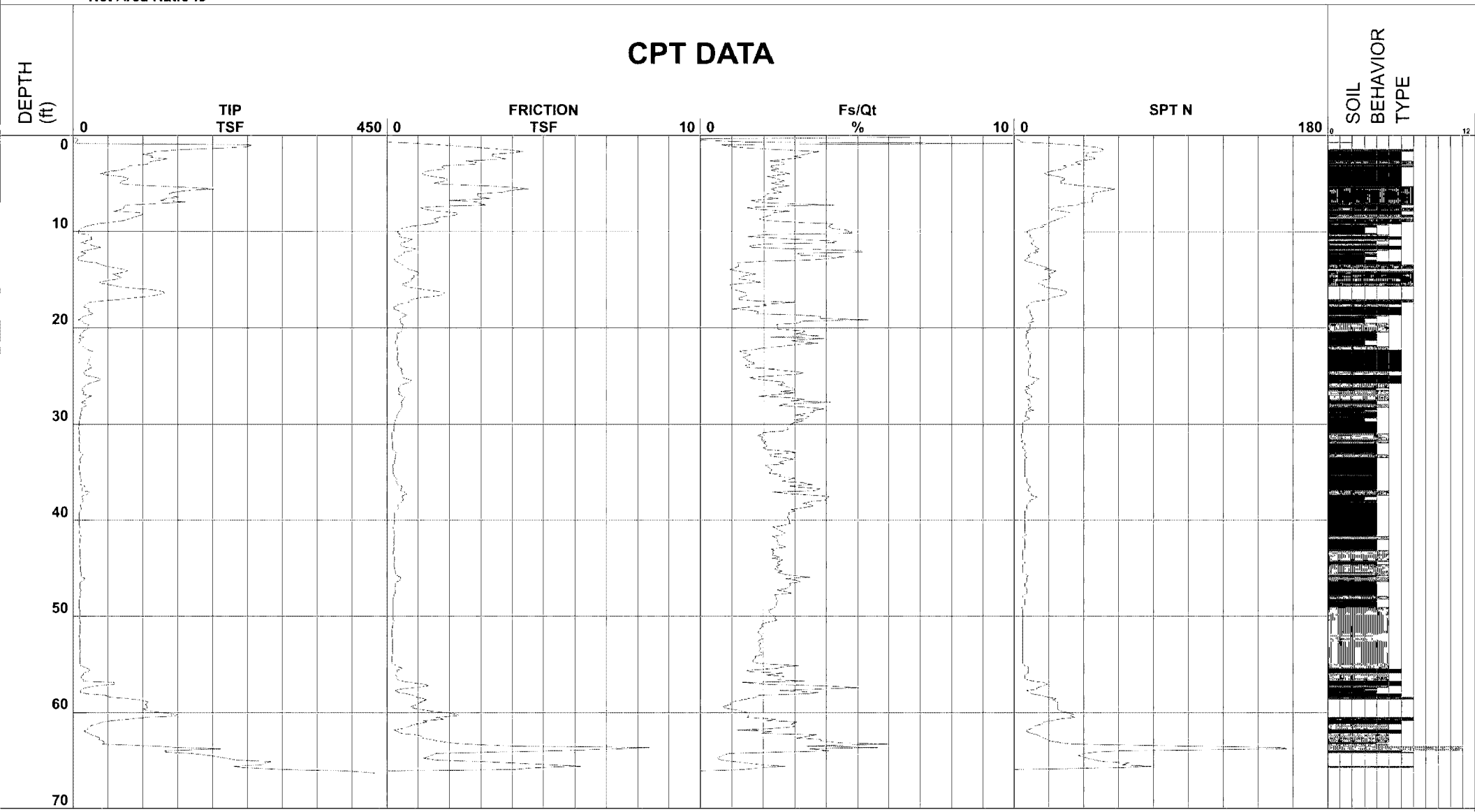


Geocon Inc

Project	The Post	Operator	RC-DG	Filename	SDF(235).cpt
Job Number	G1970-52-01	Cone Number	DDG1333	GPS	
Hole Number	CPT-01	Date and Time	3/16/2016 9:21:56 AM	Maximum Depth	66.27 ft
EST GW Depth During Test		7.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

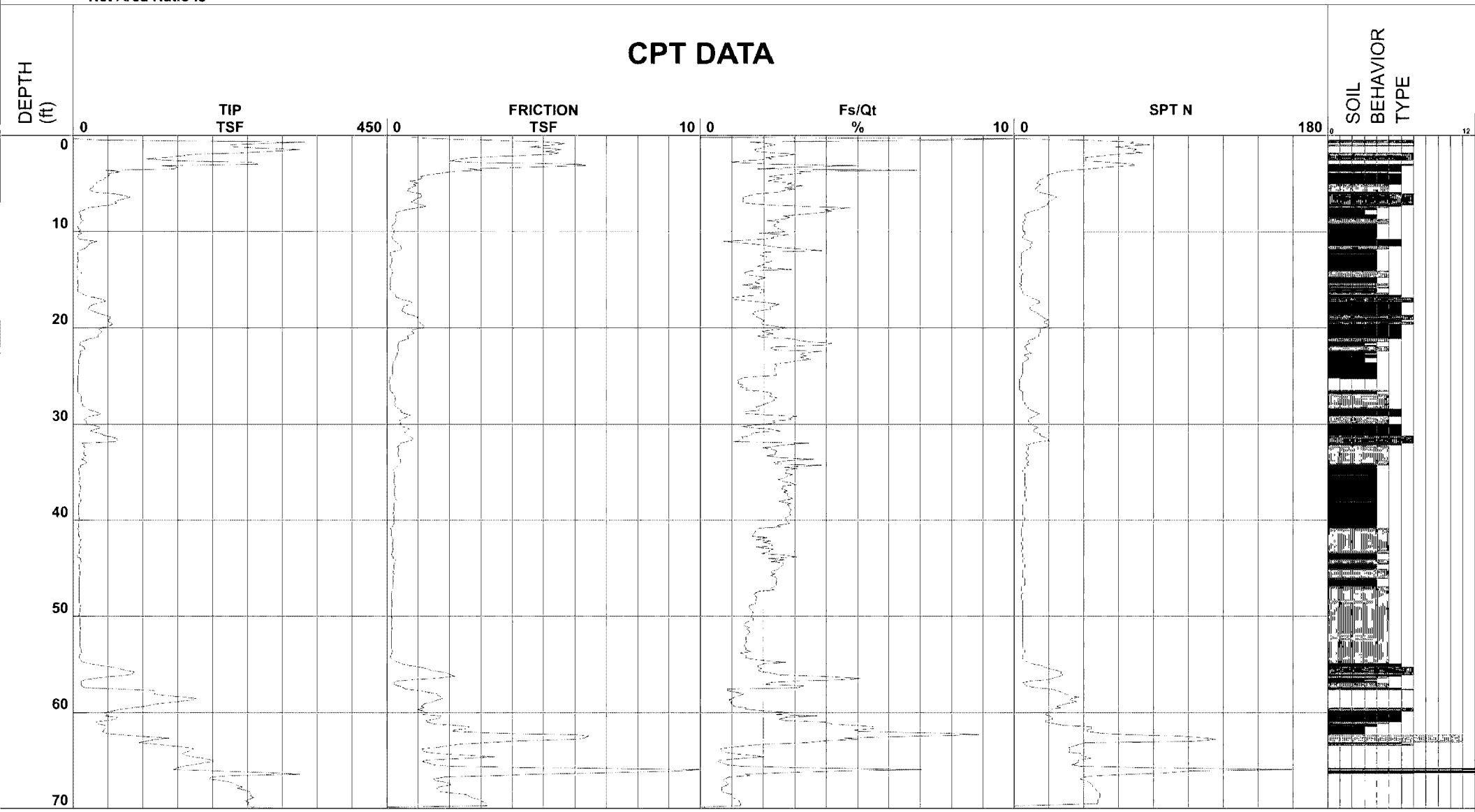
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	RC-DG	Filename	SDF(234)C.cpt
Job Number	G1970-52-01	Cone Number	DDG1333	GPS	
Hole Number	CPT-02	Date and Time	3/16/2016 8:14:05 AM	Maximum Depth	70.05 ft
EST GW Depth During Test		7.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

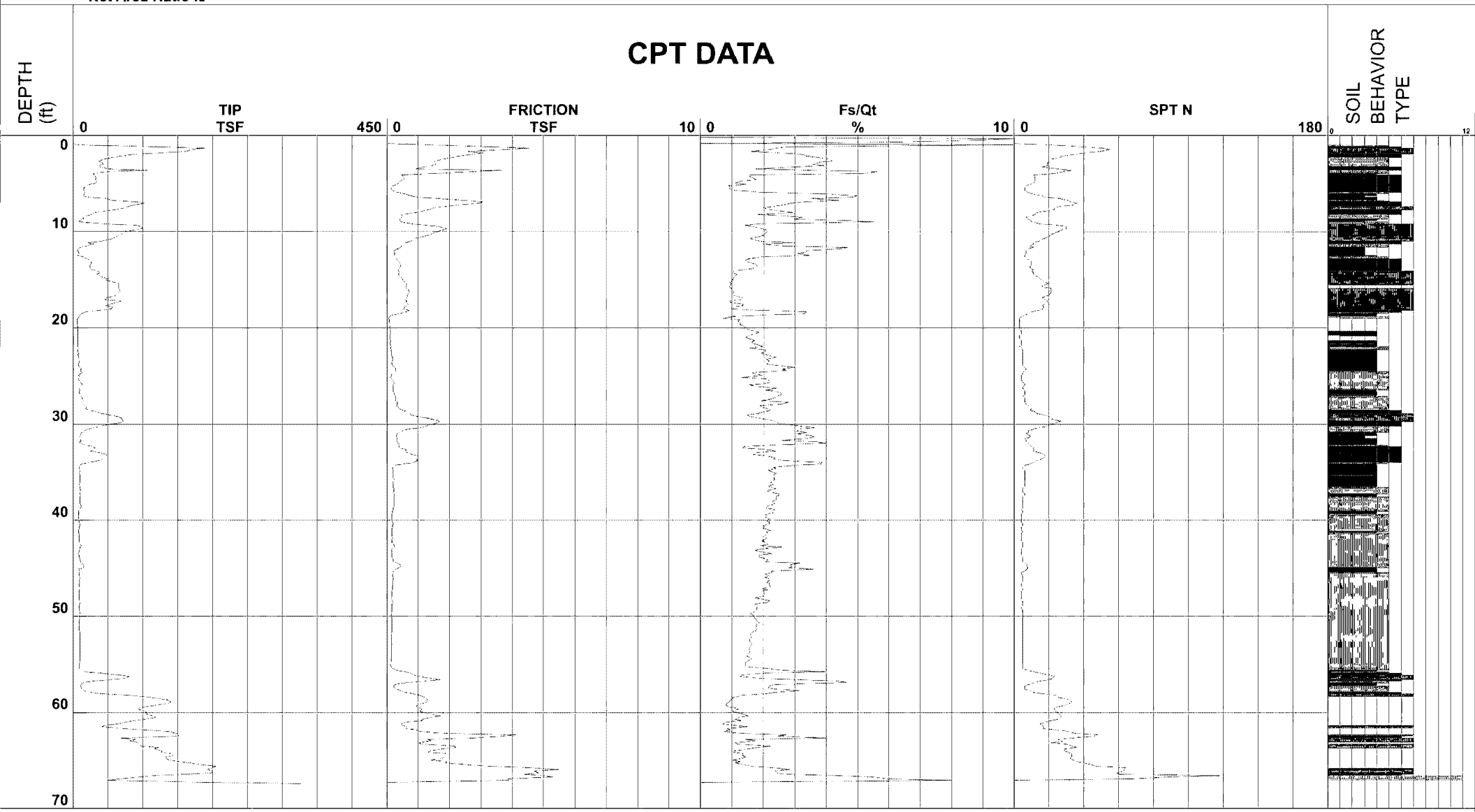
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	RC-DG	Filename	SDF(237).cpt
Job Number	G1970-52-01	Cone Number	DDG1333	GPS	
Hole Number	CPT-03	Date and Time	3/16/2016 11:20:43 AM	Maximum Depth	67.42 ft
EST GW Depth During Test		14.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

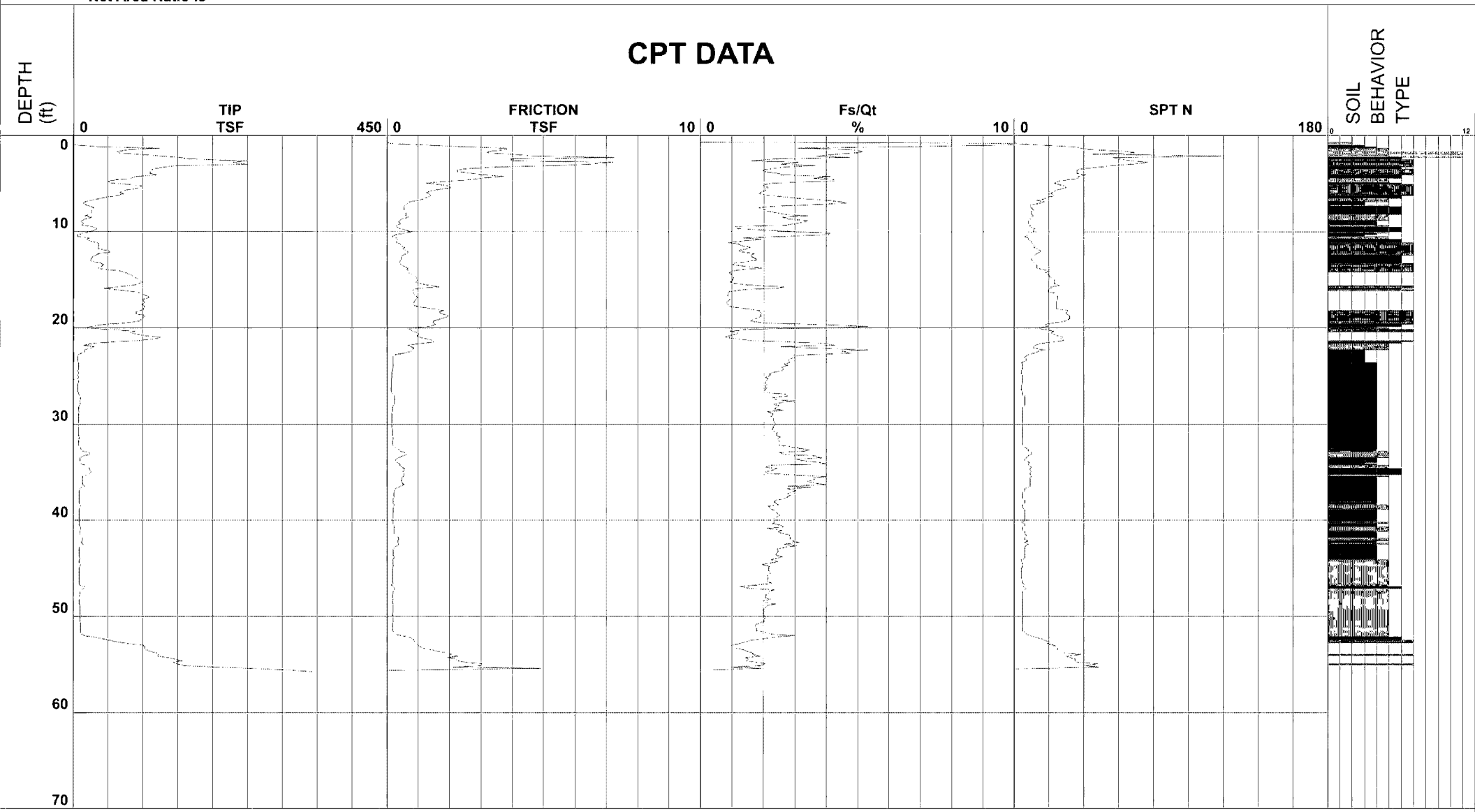
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	RC-DG	Filename	SDF(239).cpt
Job Number	G1970-52-01	Cone Number	DDG1333	GPS	
Hole Number	CPT-04	Date and Time	3/16/2016 1:43:36 PM	Maximum Depth	55.77 ft
EST GW Depth During Test		7.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

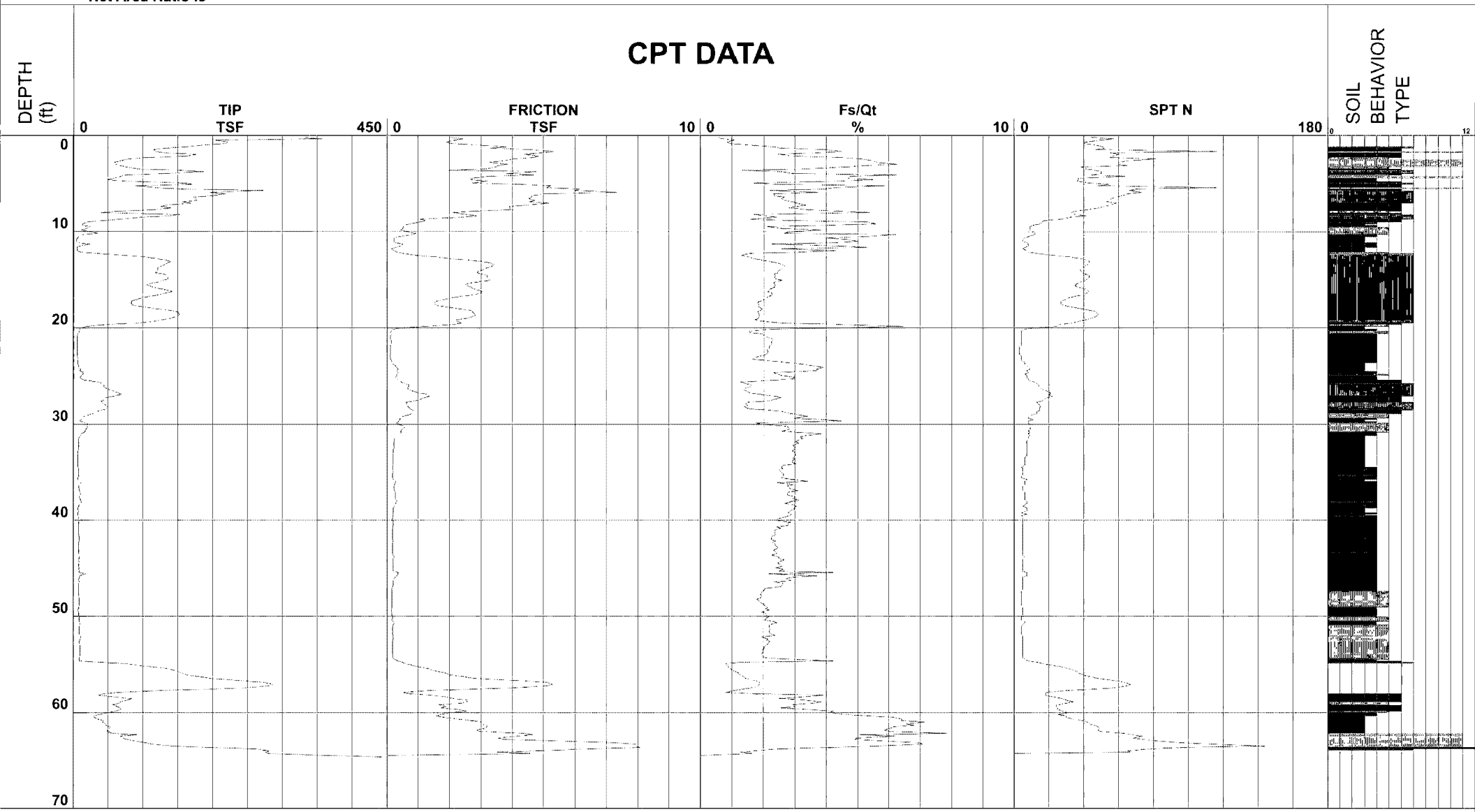
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	RC-DG	Filename	SDF(242).cpt
Job Number	G1970-52-01	Cone Number	DDG1333	GPS	
Hole Number	CPT-05	Date and Time	3/16/2016 4:12:54 PM	Maximum Depth	64.63 ft
EST GW Depth During Test		7.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

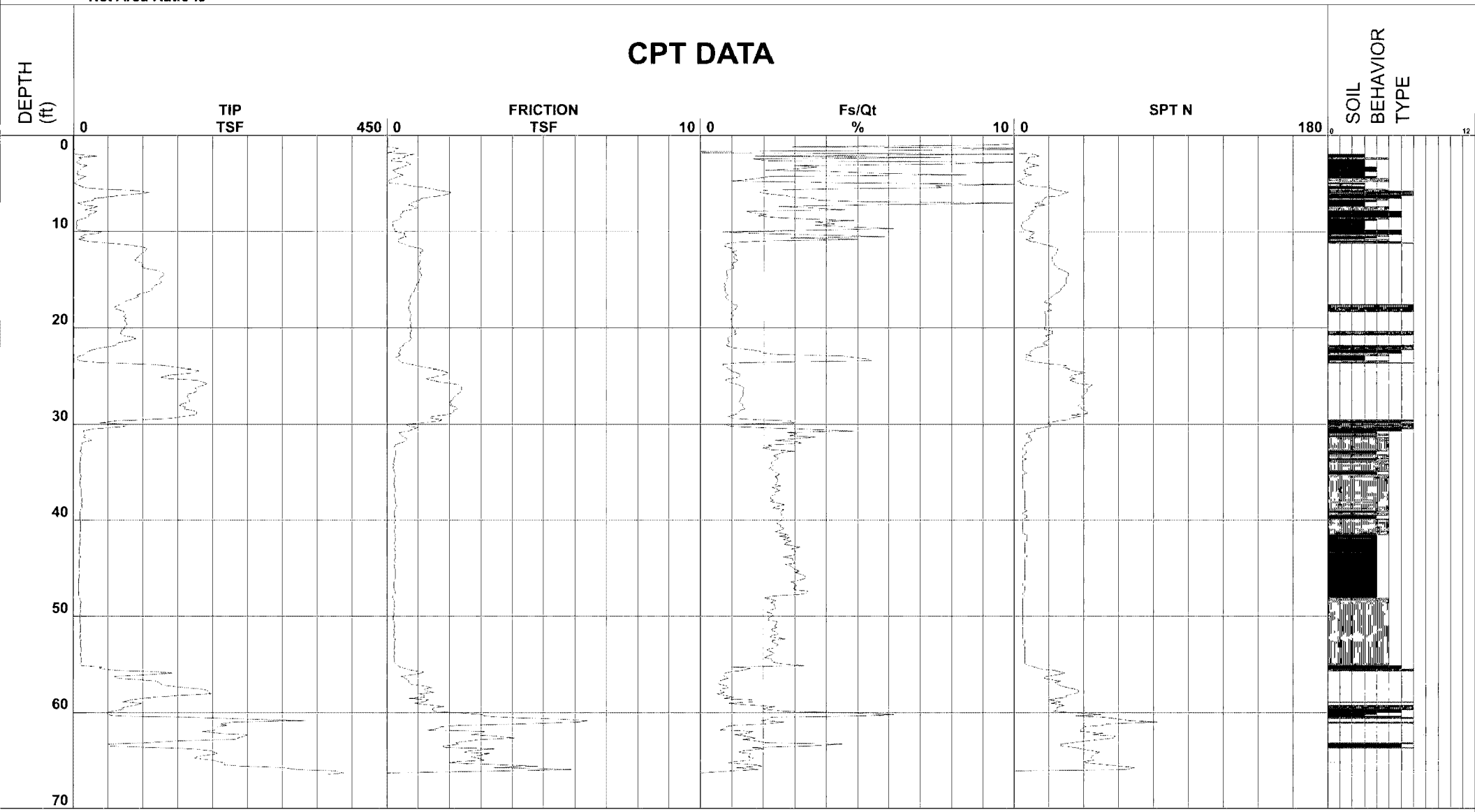
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	BH-AH	Filename	SDF(260).cpt
Job Number	G1970-52-01	Cone Number	DDG1268	GPS	
Hole Number	CPT-06	Date and Time	3/19/2016 3:40:18 PM	Maximum Depth	66.44 ft
EST GW Depth During Test		7.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

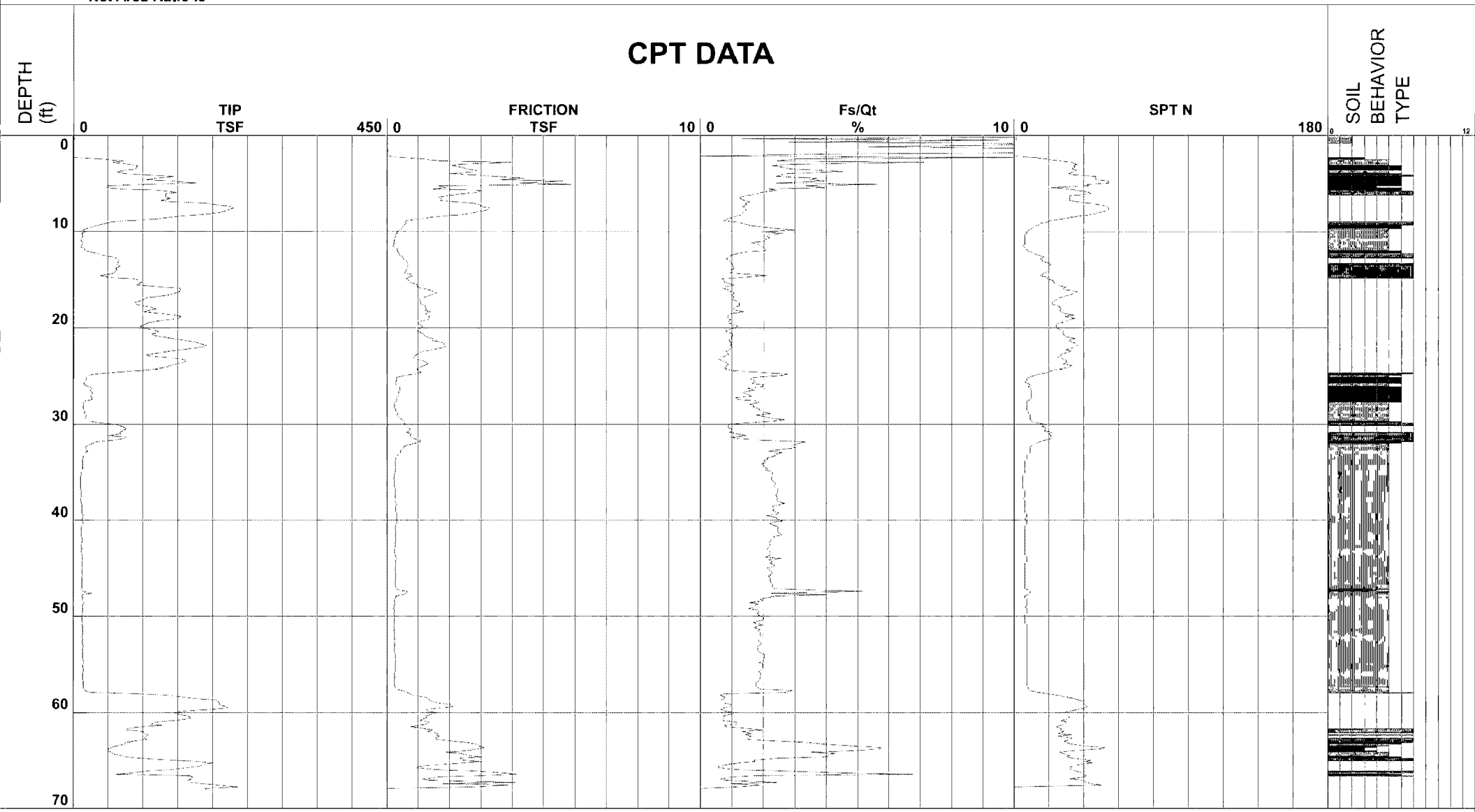
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	BH-AH	Filename	SDF(259).cpt
Job Number	G1970-52-01	Cone Number	DDG1268	GPS	
Hole Number	CPT-07	Date and Time	3/19/2016 2:07:13 PM	Maximum Depth	68.08 ft
EST GW Depth During Test		7.80 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

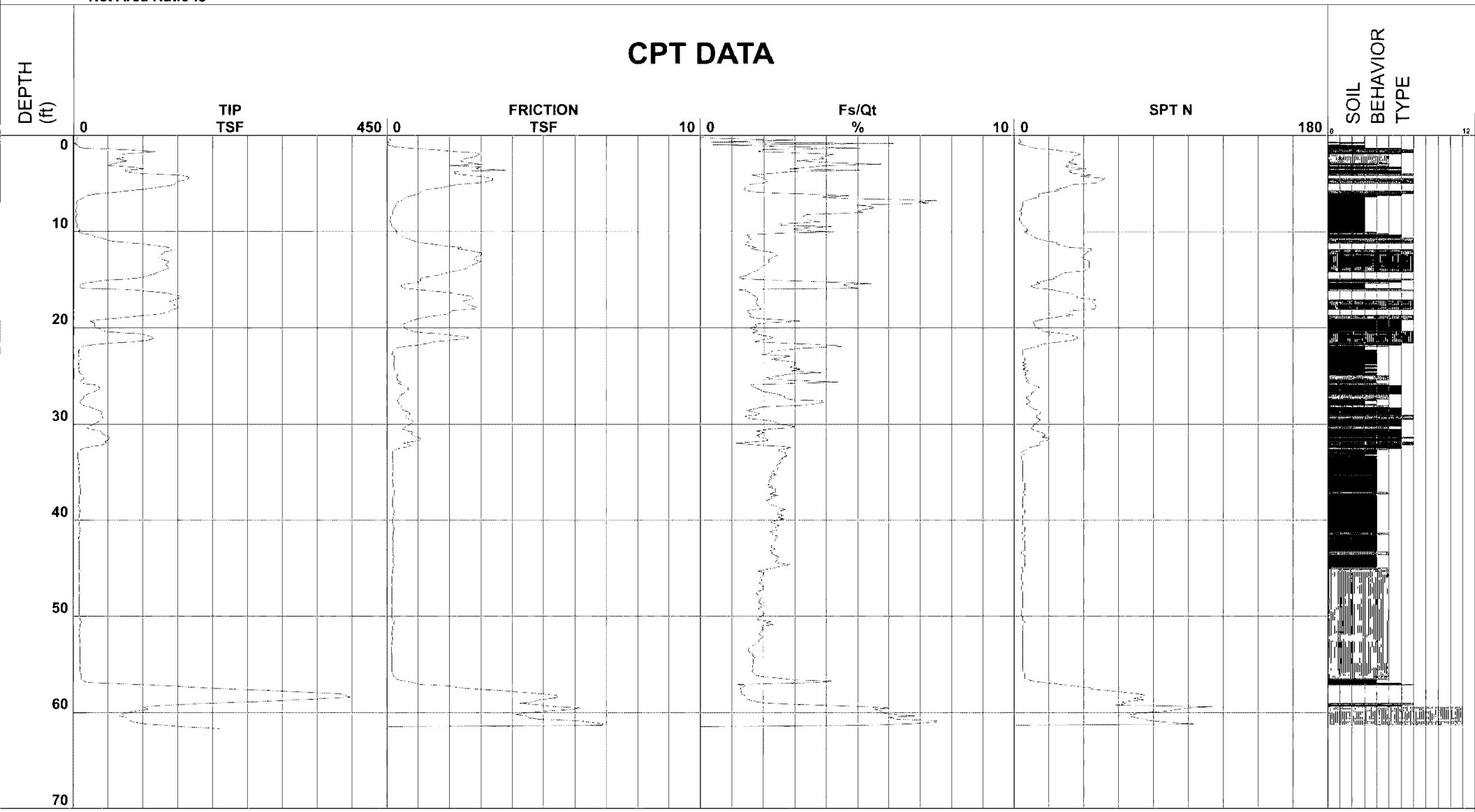
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	RC-DG	Filename	SDF(240).cpt
Job Number	G1970-52-01	Cone Number	DDG1333	GPS	
Hole Number	CPT-08	Date and Time	3/16/2016 2:54:26 PM	Maximum Depth	61.68 ft
EST GW Depth During Test		7.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

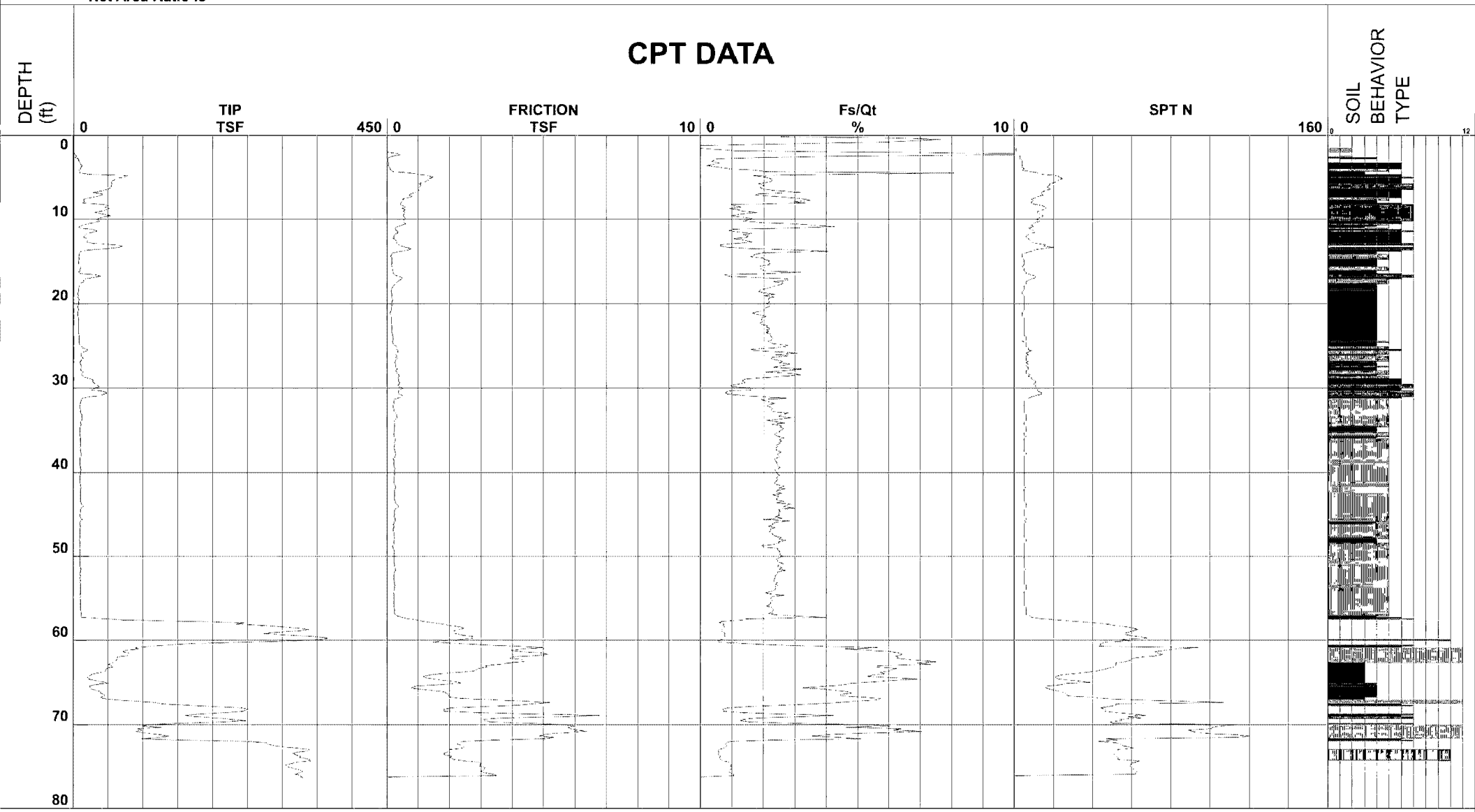
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	BH-AH	Filename	SDF(258).cpt
Job Number	G1970-52-01	Cone Number	DDG1268	GPS	
Hole Number	CPT-09	Date and Time	3/19/2016 12:43:20 PM	Maximum Depth	76.44 ft
EST GW Depth During Test		6.40 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

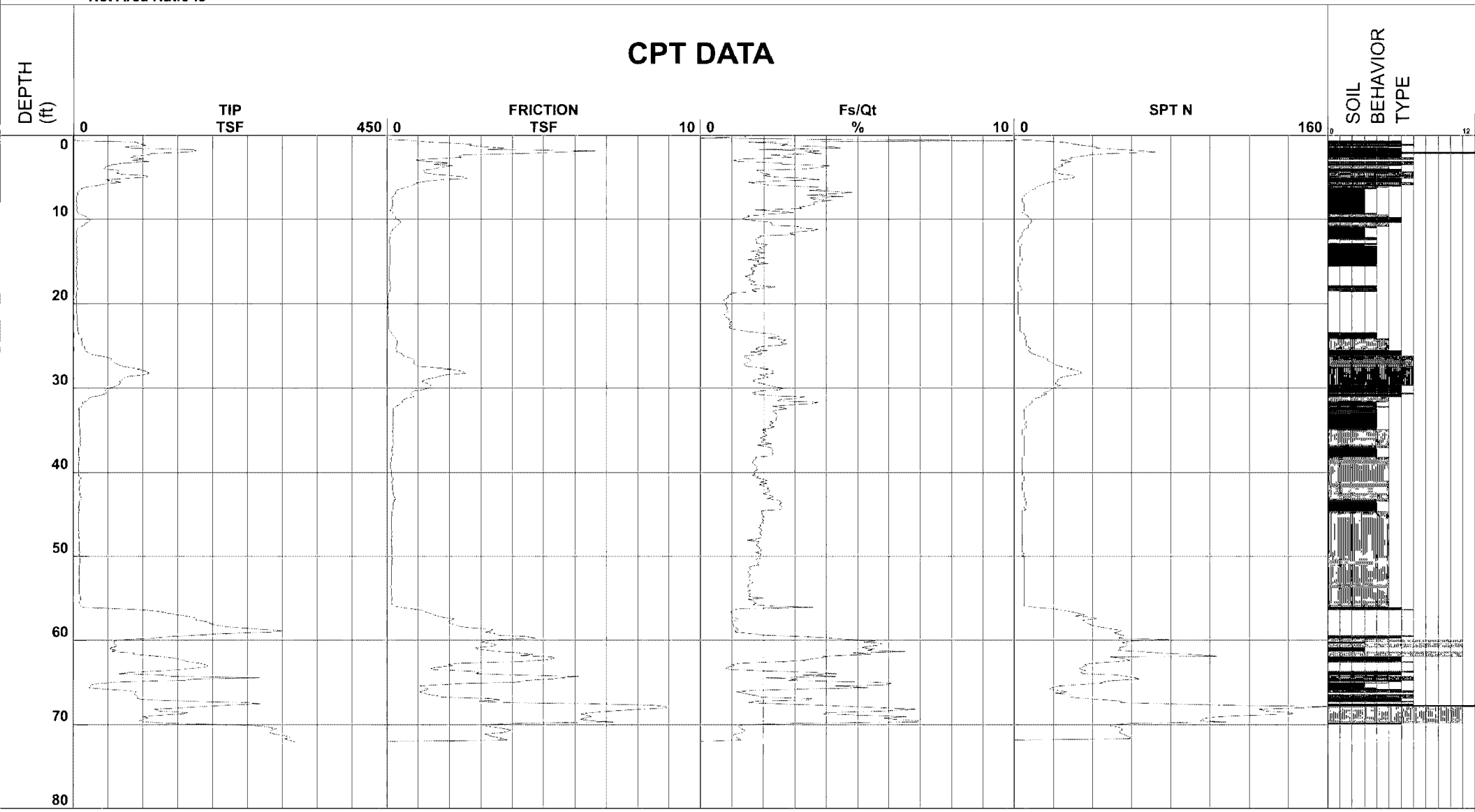
S*Soil behavior type and SPT based on data from UBC-1983

Geocon Inc

Project	The Post	Operator	RC-DG	Filename	SDF(236).cpt
Job Number	G1970-52-01	Cone Number	DDG1333	GPS	
Hole Number	CPT-10	Date and Time	3/16/2016 10:19:21 AM	Maximum Depth	72.18 ft
EST GW Depth During Test		7.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

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DEFINITION OF TERMS

PRIMARY DIVISIONS			SYMBOLS	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS < 5% FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS OR GRAVEL SAND MIXTURES, LITTLE OF NO FINES
		GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS < 5% FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, SLIGHTLY PLASTIC CLAYEY SILTS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, SILTS OR LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTY CLAYS
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

GRAIN SIZES

BOULDERS	COBBLES	GRAVEL		SAND			SILTS AND CLAYS
		COARSE	FINE	COARSE	MEDIUM	FINE	

12" 3" 3/4" 4 10 40 200

CLEAR SQUARE SIEVE OPENING U.S. STANDARD SIEVE SIZE

ADDITIONAL TESTS

(OTHER THAN TEST PIT AND BORING LOG COLUMN HEADINGS)

MAX- Maximum Dry Density
GS- Grain Size Distribution
SE- Sand Equivalent
EI- Expansion Index
CHM- Sulfate and Chloride Content , pH, Resistivity
COR - Corrosivity
SD- Sample Disturbed
PM- Permeability
SG- Specific Gravity
HA- Hydrometer Analysis
AL- Atterberg Limits
RV- R-Value
CN- Consolidation
CP- Collapse Potential
HC- Hydrocollapse
REM- Remolded
PP- Pocket Penetrometer
WA- Wash Analysis
DS- Direct Shear
UC- Unconfined Compression
MD- Moisture/Density
M- Moisture
SC- Swell Compression
OI- Organic Impurities

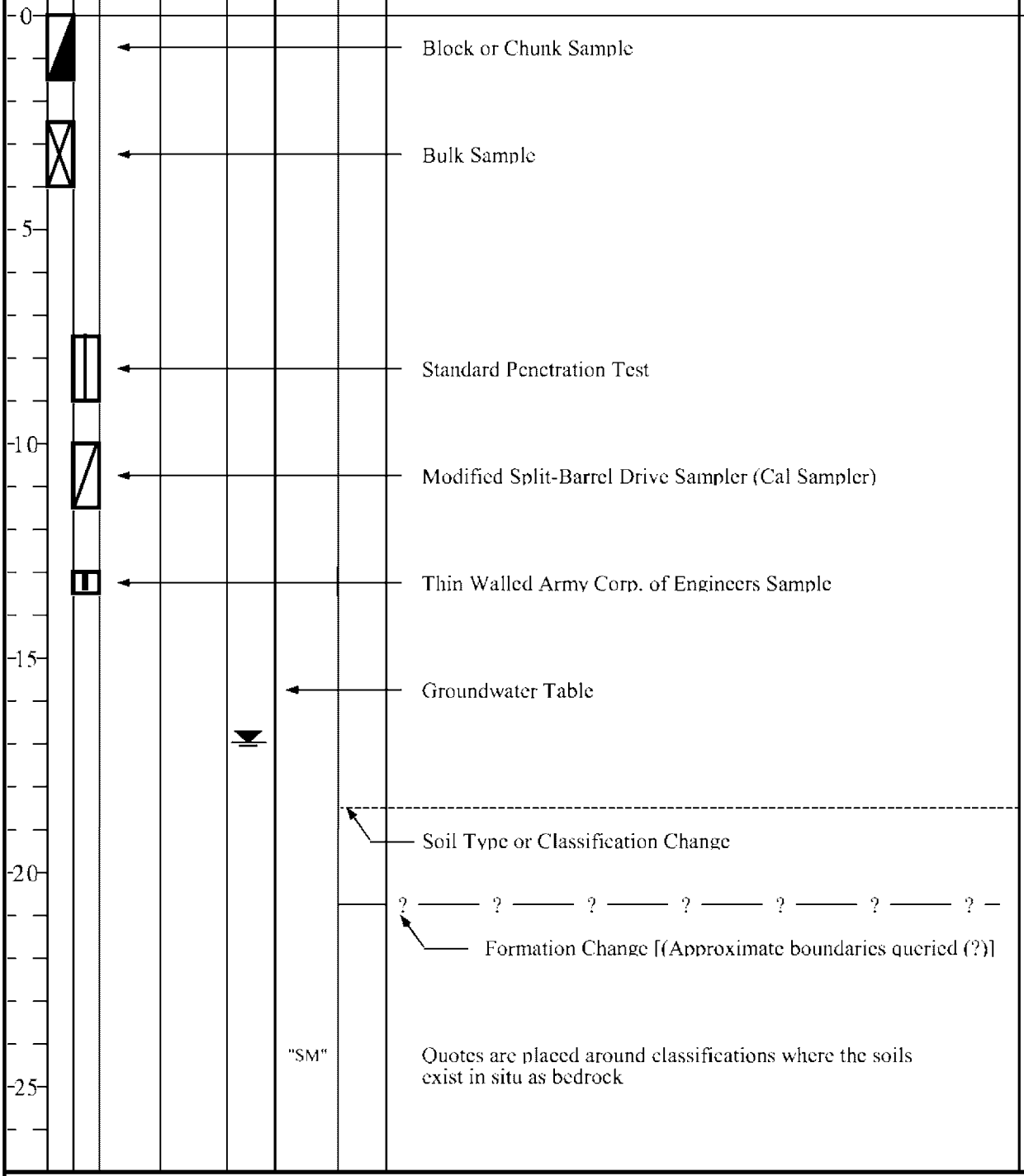
FIGURE: BL1

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PROJECT:	DRILLER:	SHEET: of
CTE JOB NO:	DRILL METHOD:	DRILLING DATE:
LOGGED BY:	SAMPLE METHOD:	ELEVATION:

BORING LEGEND

Depth (Feet) | Bulk Sample | Driven Type | Blows/Foot | Dry Density (pcf) | Moisture (%) | U.S.C.S. Symbol | Graphic Log | DESCRIPTION | Laboratory Tests



- Block or Chunk Sample
- Bulk Sample
- Standard Penetration Test
- Modified Split-Barrel Drive Sampler (Cal Sampler)
- Thin Walled Army Corp. of Engineers Sample
- Groundwater Table
- Soil Type or Classification Change
- ? — ? — ? — ? — ? — ? — ? — Formation Change [(Approximate boundaries queried (?)]
- "SM" — Quotes are placed around classifications where the soils exist in situ as bedrock

FIGURE: BL2

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PROJECT:	MIDWAY POST OFFICE	DRILLER:	BAJA EXPLORATION	SHEET:	1 of 1
CTE JOB NO:	10-12790G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	11/22/2016
LOGGED BY:	DK	SAMPLE METHOD:	RING, SPT and BULK	ELEVATION:	~ 12'

BORING: B-1

Depth (Feet)	Sample: Bulk	Sample: Driven	Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0							SC		0 to 3": Asphalt. **QUATERNARY ARTIFICIAL FILL**: Medium dense, slightly moist, light brown, clayey SAND with gravel.	
							SC/CL			
5				6 11 12					Gravel, Mix Fill: Medium dense, slightly moist, red brown to Medium dense, slightly moist, red brown to gray brown, mottled, clayey SAND with silt.	
							SC		**QUATERNARY BAY DEPOSITS**: Medium dense, slightly moist to moist, clayey fine SAND with silt	
							MH/CH		Soft, slightly moist to moist, dark gray, highly plastic SILT with clay, trace organics, micaceous	
10				1 2 2						EI
						▼	SM			
15				4 6 10					Medium dense, wet, dark gray, silty fine SAND wit clay, micaceous	
20				4 6 8						
25									Total Depth: 21.5'. Groundwater: 12.5' Backfilled with Bentonite chips.	

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PROJECT:	MIDWAY POST OFFICE	DRILLER:	BAJA EXPLORATION	SHEET:	1 of 1
CTE JOB NO:	10-12790G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	11/22/2016
LOGGED BY:	DK	SAMPLE METHOD:	RING, SPT and BULK	ELEVATION:	~ 12'

BORING: B-2

Depth (Feet)	Sample: Bulk	Sample: Driven Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0	X					SM/SC		**QUATERNARY ARTIFICIAL FILL**: Medium dense, slightly moist, yellow brown, silty SAND to clayey SAND.	
	X			124.0	11.6				MAX, DS, CHM
5	X								
10		▯	5 4 4					Gravel, Mix Fill: Medium dense, slightly moist, red brown to Medium dense, slightly moist, red brown to gray brown, mottled, clayey SAND with silt.	EI
						MH/CH		**QUATERNARY BAY DEPOSITS**:	
					▼			Soft, wet, dark gray, highly plastic SILT to CLAY.	
15									
20		▯	4 8 12					Medium dense, wet, dark gray, silty fine SAND with clay, micaceous.	
								Total Depth: 21.5'. Groundwater: 13' Backfilled with Bentonite chips.	
25									

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PROJECT:	MIDWAY POST OFFICE	DRILLER:	BAJA EXPLORATION	SHEET:	1 of 3
CTE JOB NO:	10-12790G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	11/22/2016
LOGGED BY:	DK	SAMPLE METHOD:	RING, SPT and BULK	ELEVATION:	~ 13'

BORING: B-3

Depth (Feet)	Sample: Bulk	Sample: Driven Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0						SC		0 to 7": Concrete. 7 to 12": Gravel. **QUATERNARY ARTIFICIAL FILL**: Medium dense, slightly moist, orange brown to red brown, clayey fine SAND with gravel.	
5		▨	10 12 16						MD, CS
						SM			
10		▭	18 50/4"					Dense, slightly moist, light brown to gray brown, silty fine SAND.	WA
						ML		**QUATERNARY BAY DEPOSITS**:	
					▼				
15		▨	10 10 12					Stiff, moist, dark gray, fine sandy SILT.	MD, WA, CS
						SM		Medium dense, moist, dark gray, silty fine SAND, micaceous.	
20		▭	2 2 3					Becomes loose, moist to wet.	WA
25						CH			

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PROJECT:	MIDWAY POST OFFICE		DRILLER:	BAJA EXPLORATION	SHEET:	2 of 3	
CTE JOB NO:	10-12790G		DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	11/22/2016	
LOGGED BY:	DK		SAMPLE METHOD:	RING, SPT and BULK	ELEVATION:	~ 13'	

BORING: B-3

Depth (Feet)	Sample Bulk	Sample Driven Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
25			2 4 8			CH		Stiff to very stiff, moist, dark gray, highly plastic CLAY with silt, some interbedded sands, micaceous.	WA
						SM			
30			2 4 7					Medium dense, moist, dark gray, silty fine SAND, micaceous.	WA
						CL/CH			
35			1 2 3					Firm, moist, dark gray, CLAY to highly plastic CLAY with silt, micaceous.	WA, AL
						SM/ML			
40			3 2 3					Loose, moist to wet, dark gray, silty fine SAND to fine sandy SILT, micaceous.	WA
						CL/CH			
45			2 2 4					Firm to stiff, moist, dark gray, CLAY to highly plastic CLAY with silt, trace shell fragments.	WA, AL
50									

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PROJECT:	MIDWAY POST OFFICE	DRILLER:	BAJA EXPLORATION	SHEET:	3 of 3
CTE JOB NO:	10-12790G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	11/22/2016
LOGGED BY:	DK	SAMPLE METHOD:	RING, SPT and BULK	ELEVATION:	~ 13'

BORING: B-3

Depth (Feet)	Sample Bulk	Sample Driven	Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
50				4 4 4					Becomes stiff.	WA
									Total Depth: 51.5'. Groundwater: 14.5' Backfilled with Bentonite chips.	
55										
60										
65										
70										
75										

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PROJECT:	MIDWAY POST OFFICE	DRILLER:	BAJA EXPLORATION	SHEET:	1 of 3
CTE JOB NO:	10-12790G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	11/22/2016
LOGGED BY:	DK	SAMPLE METHOD:	RING, SPT and BULK	ELEVATION:	~ 12'

BORING: B-4

Depth (Feet)	Sample: Bulk	Sample: Driven Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0						SC		**QUATERNARY ARTIFICIAL FILL:** Medium dense, slightly moist, red brown to gray brown, clayey SAND.	
						SC/CL			RV
5			12 14 16					Gravel and cobble. Dense, slightly moist, dark gray, mottled, clayey SAND to sandy CLAY.	CHM
10			38 28 30			CL		Becomes hard.	MD, AL
								QUATERNARY BAY DEPOSITS:	
15			2 3 4			CH		Firm, moist, dark gray, CLAY to highly plastic CLAY with silt, micaceous.	MD, AL
					▼	SM			
20			18 20 24					Medium dense, moist to wet, dark gray, silty fine SAND.	WA
25						CH			

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PROJECT:	MIDWAY POST OFFICE	DRILLER:	BAJA EXPLORATION	SHEET:	2 of 3
CTE JOB NO:	10-12790G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	11/22/2016
LOGGED BY:	DK	SAMPLE METHOD:	RING, SPT and BULK	ELEVATION:	~ 12'

BORING: B-4

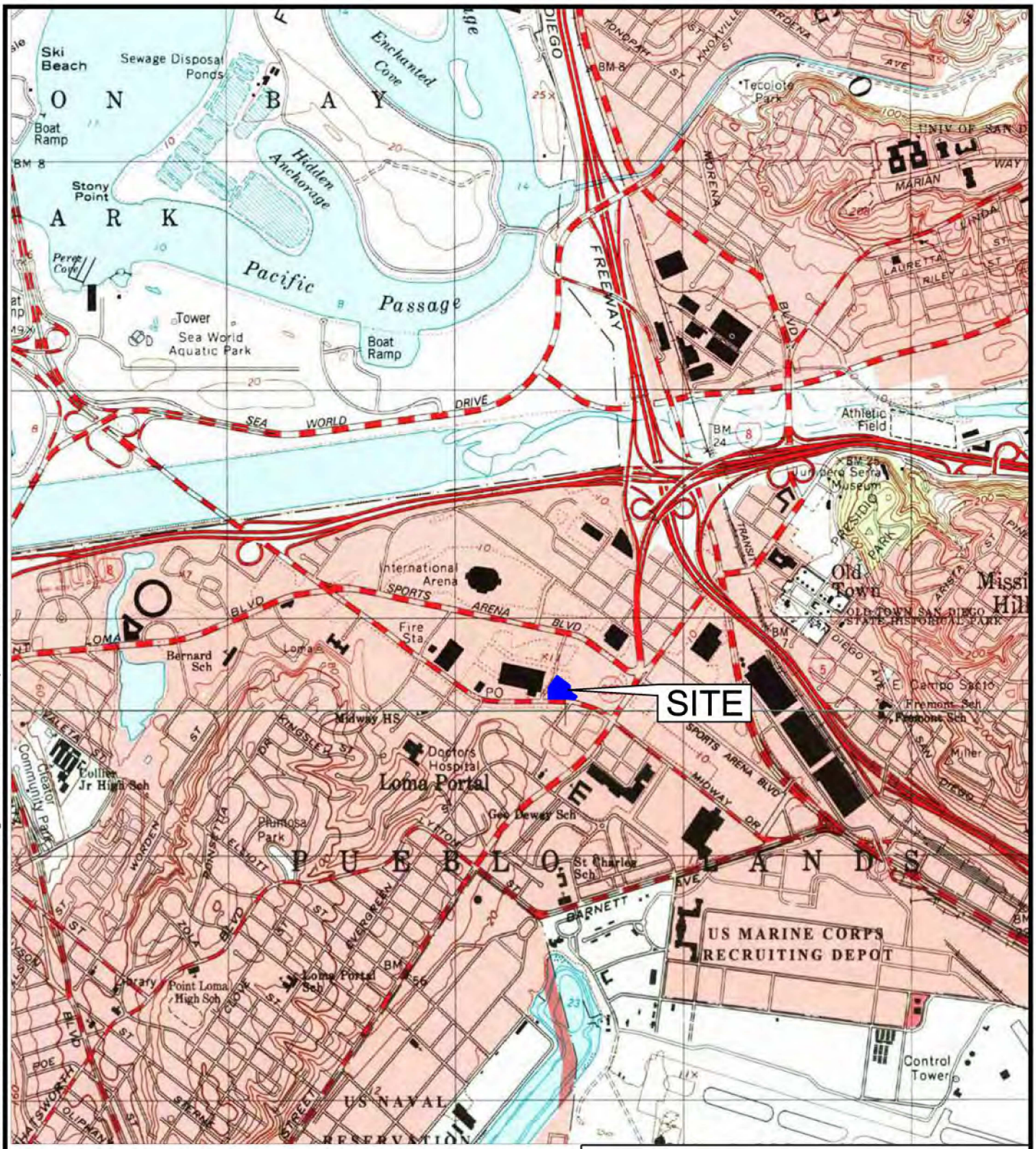
Depth (Feet)	Sample: Bulk	Sample: Driven Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
25			2 3 3			CH		Firm, moist, dark gray, highly plastic CLAY with organic odor, micaceous.	MD, AL
						CL			
30			3 4 5					Stiff, moist, dark gray, CLAY with silt, micaceous.	MD, AL
35			4 6 8					Becomes silty.	MD, AL
						CL/CH			
40			1 2 3					Firm, moist, dark gray, CLAY to highly plastic CLAY, micaceous.	
45			2 2 2			CH			MD, AL
50									

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PROJECT:	MIDWAY POST OFFICE	DRILLER:	BAJA EXPLORATION	SHEET:	3 of 3
CTE JOB NO:	10-12790G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	11/22/2016
LOGGED BY:	DK	SAMPLE METHOD:	RING, SPT and BULK	ELEVATION:	~ 13'

BORING: B-4

Depth (Feet)	Sample: Bulk	Sample: Driven	Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
50				2 3 2			CH			MD, AL
									Total Depth: 51.5'. Groundwater: 19' Backfilled with Bentonite chips.	
55										
60										
65										
70										
75										



SOURCE: STORE.USGS.GOV, LA JOLLA, AND POINT LOMA CA., QUADRANGLE

SITE LOCATION MAP

MIDWAY VILLAGE | 3144-3166 MIDWAY DRIVE | SAN DIEGO, CA

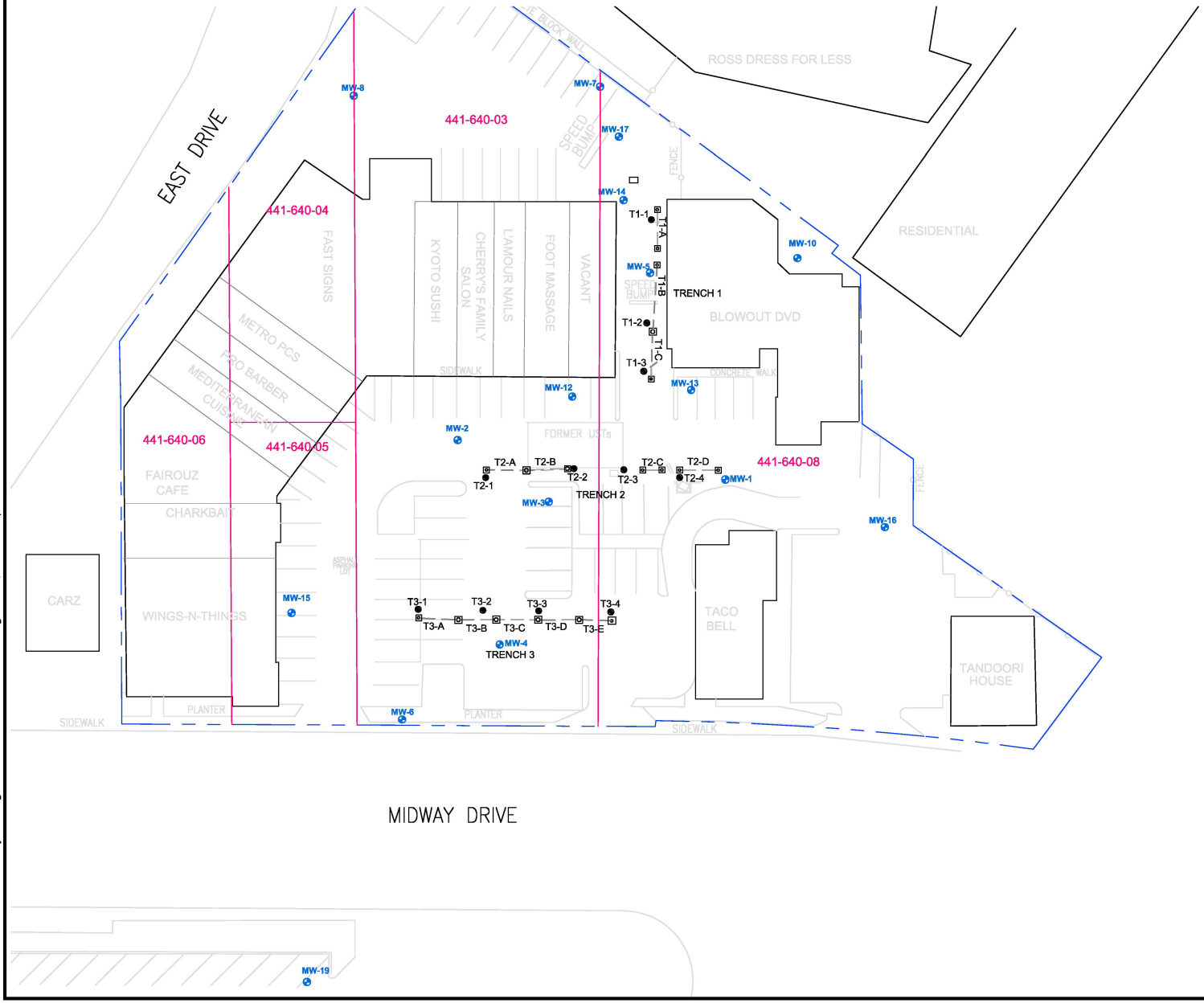
PREPARED BY:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE, 500
IRVINE, CA 92614-6213
Phone (949) 809-5000 Fax (949) 809-5004

PROJECT NUMBER	APPROVED BY	DRAWN BY	DATE	FIGURE
194-5057	CL	WRI	DEC 2014	1

P:\5057-Pacifica-MidwayWorking\CAD\TT FIGURE 1 - SITE LOCATION MAP.dwg Dec 09, 2014 - 3:01pm rick.ikemoto



LEGEND

MW-4	GROUNDWATER MONITORING WELL
T2-A	HORIZONTAL INJECTION WELL
T2-3	VERTICAL INJECTION WELL
441-640-08	PARCEL BOUNDARY AND NUMBER

N

APPROXIMATE SCALE IN FEET

0 40 80

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INJECTION WELL LAYOUT

MIDWAY VILLAGE 3144-3166 MIDWAY DRIVE SAN DIEGO, CA

PREPARED BY:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE, 500
IRVINE, CA 92614-6213
Phone (949) 809-5000 Fax (949) 809-5004

PROJECT NUMBER	APPROVED BY	DRAWN BY	DATE	FIGURE
194-5057	CL	WRI	JUN 2015	2

P:\5057-Pacifica-Midway\Working\CAD\SITE BASE 20MAR2014.dwg Jun 10, 2015 - 4:59pm rick.ikemoto

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
ADDRESS: 3144-3166 MIDWAY DRIVE	DATE: FEB 23, 2015	T1-1
SAN DIEGO, CALIFORNIA	DRILLER: ABC LIOVIN DRILLING INC.	
	LOGGED BY: M. CREWS, H. ZHANG	
	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 23, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 10.5' (FIRST) - 7.92' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		3" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
									Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND, brown (10 YR 4/3), medium dense, moist, some fine gravel, subangular, very fine sand, from 5.5'-6.0' trace clay. SAND some silt 6.0'-6.5', (10 YR 4/3), moist, medium dense, trace clay, trace gravel, very fine to fine grained sand.		T1-1-5	100%	7/7/9	0.2		
10	ML	Sandy SILT, very dark gray (5 Y 3/1), very moist to wet @ 10.5', medium dense, trace clay, some clay from 11.0'-11.5', low plasticity, very fine grained sand, abundant mica. Hydrocarbon odor.		T1-1-10	100%	7/9/12	4.3		#3 sand 9.75'-16'.
15		Same as above, saturated, trace gravel.		T1-1-15	25%	7/7/9	22.6		
		Borehole terminated @ 16'.							
20									
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION

DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7510571
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2084009
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 10.51
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
ADDRESS: 3144-3166 MIDWAY DRIVE	DATE: FEB 23, 2015	T1-2
SAN DIEGO, CALIFORNIA	DRILLER: ABC LIOVIN DRILLING INC.	
	LOGGED BY: M. CREWS, H. ZHANG	
	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 23, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 8.67' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		3" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
									Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND 5.0'-5.83', dark grayish brown (10 YR 4/2), moist, medium dense, very fine grained sand, trace fine sub-angular gravel.		T1-2-5	90%	7/9/10	245		
		SILTY SAND 5.83'-6.5', very dark gray (10 YR 3/1), hydrocarbon odor.							
10	ML	SANDY SILT 9.0'-10.5', black (2.5 Y 2.5/1), no to low plasticity, wet, very stiff, very fine sand, abundant mica, hydrocarbon odor, trace fine sub-angular gravel.		T1-2-10	53%	11/13/14	356		#3 sand 9.75'-16'.
		SANDY SILT with gravel, black (2.5 Y 2.5/1), saturated, very stiff, no plastic to low plasticity, very fine sand sub-angular fine to coarse sand.							
15				T1-2-15	33%	9/17/21	631		
		Borehole terminated @ 16'.							
20									
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION

DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7509438
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2084047
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 11.29
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
	DATE: FEB 23, 2015	
ADDRESS: 3144-3166 MIDWAY DRIVE	DRILLER: ABC LIOVIN DRILLING INC.	T1-3
	LOGGED BY: M. CREWS, H. ZHANG	
SAN DIEGO, CALIFORNIA	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 23, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 8.08' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		2" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
									Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND 5.0'-5.5', brown (10 YR 4/3), moist, medium dense, very fine grained sand, trace sub-angular gravel.		T1-3-5	100%	7/7/9	5.7		
		SILTY SAND 5.5'-6.5', dark gray (10 YR 4/1), no gravel, sand contents decrease with depth.							
10	ML	SANDY SILT, dark gray (10 YR 4/1), very stiff, very low plasticity, very fine grained sand, abundant mica, trace clay.		T1-3-10	100%	10/10/12	446		#3 sand 9.75'-16'.
		SANDY SILT 14'-15', very dark gray (10 YR 3/1), saturated, very stiff, very fine grained sand, low plasticity, abundant mica, trace clay, trace subangular/rounded gravel.							
15	CL ML	CLAYEY SILT (15'-15'3"), medium plasticity, soft, trace very fine sand, wet.		T1-3-15	NA	7/11/13	22.3		
		SANDY SILT, same as above @ 14'.							
		Borehole terminated @ 16'.							
20									
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION

DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7508905
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2084084
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 10.71
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.	SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
		DATE: FEB 24, 2015	
	ADDRESS: 3144-3166 MIDWAY DRIVE	DRILLER: ABC LIOVIN DRILLING INC.	T2-1
		LOGGED BY: M. CREWS, H. ZHANG	
	SAN DIEGO, CALIFORNIA	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 24, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 7.66' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		2" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
2.5									Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND, very dark grayish brown (2.5 Y 3/2), medium dense, moist, very fine to fine grained sand, some mica, slight hydrocarbon odor.		T2-1-5	100%	7/9/11	45.8		
7.5 ▼									
▽	ML	SANDY SILT 9.0'-10', very dark gray (10 YR 3/1) wet, very stiff, non plastic, very fine to fine grained sand, trace clay, trace fine sub-angular gravel, strong hydrocarbon odor, some mica.							#3 sand 9.75'-16'.
10	CL ML	CLAYEY SILT 10'-10.4', brown (10 YR 4/3), wet, soft, medium plasticity, trace very fine sand. SANDY SILT 10.4'-10.5', same as 9', brown (10 YR 4/3).		T2-1-10	100%	10/11/13	16.1		
12.5									
	CL	SILTY CLAY 14'-14.5', dark gray (2.5 Y 4/1), wet, very stiff, medium plasticity, some mica.							
	ML CL	SILT with clay 14.5'-14.83', very dark grayish brown (2.5 Y 3/2), wet, very stiff, non-to-low plasticity, some very fine grained sand.							
15									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7507709
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2086134
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 10.27
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.	SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
		DATE: FEB 24, 2015	
	ADDRESS: 3144-3166 MIDWAY DRIVE	DRILLER: ABC LIOVIN DRILLING INC.	T2-1
		LOGGED BY: M. CREWS, H. ZHANG	
	SAN DIEGO, CALIFORNIA	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 24, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 7.66' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
15	CL	SILTY CLAY 14.83'-15.16', same as 14'-14.5', black (2.5 Y 2.5/1), wet, very stiff.		T2-1-15	100%	7/11/13	6.3		
	ML	SANDY SILT 15.16'-15.5', very dark gray (2.5 Y 3/1, wet, very stiff, non plastic, very fine to fine grained sand, abundant mica, trace clay.							
		Borehole terminated @ 16'.							
17.5									
20									
22.5									
25									
27.5									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7507709
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2086134
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 10.27
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
ADDRESS: 3144-3166 MIDWAY DRIVE	DATE: FEB 24, 2015	T2-2
SAN DIEGO, CALIFORNIA	DRILLER: ABC LIOVIN DRILLING INC.	
	LOGGED BY: M. CREWS, H. ZHANG	
	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 24, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 7.0' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		3" asphalt. Pea gravel material with SILTY SAND to 5'. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
									Hydrated bentonite chips 3.0'-9.75'.
5	SM-SP	SAND with silt 5.0'-6.5', very dark gray (2.5 Y 3/1), wet @ 5.75', dense, very fine to fine grained sand, trace sub-angular gravel, some mica, hydrocarbon odor.		T2-2-5	90%	11/13/19	963		
10	SW-SM	SAND, some silt 9.0'-10.5', very dark gray (2.5 Y 3/1), wet & saturated, medium dense, very fine to fine grained sand, trace medium to coarse sand, trace fine sub-angular gravel, strong hydrocarbon odor, some mica. Gravelly sand @ 9.0'.		T2-2-10	NA	7/8/10	990		#3 sand 9.75'-16'.
15	ML CL-CH	SILT with clay 14'-14.3', black (2.5 Y 2.5/1), wet, very low plasticity, very stiff, some mica.		T2-2-15	NA	10/13/15	86.1		
	ML	CLAY 14.3'-15', black (2.5 Y 2.5/1), wet, very stiff, medium to high plasticity, some silt, some mica, silt contents increase with depth.							
		SILT 15'-15.5', black (2.5 Y 2.5/1), wet, very stiff, non plastic, some very fine sand, trace clay, abundant mica, hydrocarbon odor.							
20		**Borehole terminated @ 16'.**							
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7507825
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2084986
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 9.76
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
ADDRESS: 3144-3166 MIDWAY DRIVE	DATE: FEB 24, 2015	T2-3
SAN DIEGO, CALIFORNIA	DRILLER: ABC LIOVIN DRILLING INC.	
	LOGGED BY: M. CREWS, H. ZHANG	
	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 24, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 6.99' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		4" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
		SILTY SAND, dark grayish brown (10 YR 4/2), moist, medium dense, very fine.					762		Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND 5.0'-6.5', very dark grayish brown (10 YR 3/2), moist, medium dense, very fine to fine sand, trace sub-round gravel, some mica.		T2-3-5	NA	5/7/9	395		
10	ML	SANDY SILT 9.0'-10', black (10 YR 2/1), wet to saturated, very stiff, very low plasticity, very fine grained sand, hydrocarbon odor, trace sub-angular gravel, abundant mica, some clay. SILT with sand 10'-10.5', very dark gray (10 YR 3/1), wet, very stiff, non plastic, very fine grained sand, hydrocarbon odor, trace sub-rounded coarse & sub-angular fine gravel, abundant mica. SILT some clay 14'-14.5', very dark gray (10 YR 3/1), wet, very stiff, very low plasticity, trace very fine grained sand, hydrocarbon odor, abundant mica.		T2-3-10	NA	8/8/10	679		#3 sand 9.75'-16'.
15	CL / ML	CLAY some silt 14.5'-15', very dark gray (2.5 Y 3/1), wet, very stiff, medium to high plasticity, hydrocarbon odor, some mica. SILT with sand 15'-15.5', very dark gray (2.5 Y 3/1), wet, very stiff, non plastic, abundant mica, very fine to fine sand. **Borehole terminated @ 16'.**		T2-3-15	NA	8/11/13	81.2		
20									
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7507816
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2084328
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 9.62
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
ADDRESS: 3144-3166 MIDWAY DRIVE	DATE: FEB 24, 2015	T2-4
SAN DIEGO, CALIFORNIA	DRILLER: ABC LIOVIN DRILLING INC.	
	LOGGED BY: M. CREWS, H. ZHANG	
	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 24, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 6.52' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		4" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
									Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND 5.0'-6.5', very dark gray (2.5 Y 3/1), moist, medium dense, very fine to fine grained sand, trace sub-angular fine gravel, some mica, very moist @ 6.5'.		T2-4-5	100%	7/9/10	292		
10	ML	SILT some clay 9.0'-9.75', very dark gray (10 YR 3/1), saturated, very stiff, very fine grained sand, trace fine sub-angular gravel, non plastic to slightly plastic, slight hydrocarbon odor. SILT some clay 9.75'-10.25', black (10 YR 2/1), strong hydrocarbon odor, trace to some fine gravel-some coarse gravel, sub-angular becomes gravelly silt @ 10.5'. SILT with clay 14'-14.5', very dark gray (2.5 Y 3/1), saturated, very stiff, non plastic, trace to some very fine grained sand, some fine to coarse sub-angular gravel, very low plasticity, with nodules of clay.		T2-4-10	90%	9/9/16	330		#3 sand 9.75'-16'.
15		SANDY SILT 14.5'-15.5', very dark gray (2.5 Y 3/1), saturated, very stiff, non-plastic, very fine grained sand, abundant mica, some clay @ 15.25'-15.5'. **Borehole terminated @ 16'.**		T2-4-15	NA	8/9/12	19.9		
20									
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7507737
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2083605
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 9.13
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
	DATE: FEB 25, 2015	
ADDRESS: 3144-3166 MIDWAY DRIVE	DRILLER: ABC LIOVIN DRILLING INC.	T3-1
	LOGGED BY: M. CREWS, H. ZHANG	
SAN DIEGO, CALIFORNIA	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 25, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 7.46' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		3.5" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
									Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND, dark grayish brown (10 YR 4/2), moist, medium dense, very fine grained sand, some mica, slight hydrocarbon odor, silt contents increase @ 6.25'.		T3-1-5	100%	6/9/11	151		
	ML	SANDY SILT 9.0'-9.7', very dark gray (10 YR 3/1), saturated,							
10	CL	very stiff, non-plastic, very fine grained sand, trace clay, hydrocarbon, some mica, trace fine sub-angular gravel, sub-rounded trace-coarse grained sand.		T3-1-10	100%	9/9/12	421		#3 sand 9.75'-16'.
	ML	SILTY CLAY 9.7'-10.2', very dark gray (10 YR 3/1), wet, very stiff, medium plasticity, trace very fine grained sand, some mica, slight hydrocarbon odor.			100%	7/11/12	62		
	CL	SANDY SILT 10.2'-11.75', very dark grayish brown, (10 YR 3/2), wet, very stiff, slight plasticity, very fine grained sand, trace clay, siliter than above, abundant mica.							
15	ML	SILTY CLAY 11.75'-12', very dark gray (2.5 Y 3/1), wet, very stiff, medium plasticity, some mica. CLAY with silt 14'-15', dark gray (10 YR 4/1), wet, very stiff, medium plasticity, trace very fine grained sand, some mica.		T3-1-15	100%	9/15/13	14		
		SANDY SILT 15'-15.5', very dark gray (10 YR 3/1), wet, very stiff, non-plastic, trace clay, very fine grained sand, abundant mica.							
20		**Borehole terminated @ 16'.**							
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7506262
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2087003
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 9.76
CASING MATERIAL: SCH 40 PVC	

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
ADDRESS: 3144-3166 MIDWAY DRIVE	DATE: FEB 25, 2015	T3-2
SAN DIEGO, CALIFORNIA	DRILLER: ABC LIOVIN DRILLING INC.	
	LOGGED BY: M. CREWS, H. ZHANG	
	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 25, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 7.97' (STATIC)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		3.0" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
									Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND 5.0'-6.5', very dark grayish brown (10 YR 3/2), moist, medium dense, very fine to fine grained sand, some mica, slight hydrocarbon odor.		T3-2-5	NA	7/7/9	192		
	ML	SANDY SILT 9.0'-9.9', very dark gray (10 YR 3/1), wet, very stiff, non-plastic, trace fine sub-angular gravel, trace clay, very fine grained sand, hydrocarbon odor.							
10	CL			T3-2-10	NA	10/14/16	782		#3 sand 9.75'-16'.
	ML-CL	SILTY CLAY 9.9'-10.4', dark gray (10 YR 4/1), wet, very stiff, medium plasticity, trace very fine grained sand, some mica, silt and sand contents increase with depth. SANDY SILT 10.4'-10.5', same as 9.0'-9.9', except gravel. SANDY SILT with clay nodules 14'-14.75', same as 10.4'-10.5', very dark gray (10 YR 3/1), wet, very stiff, medium to high plasticity.							
15	CL			T3-2-15	NA	9/14/18	10.4		
	ML	SANDY CLAY 14.75'-15.2', very dark gray (10 YR 3/1), wet, very stiff, medium to high plasticity, very fine grained sand, clay nodules. SANDY SILT 15.2'-15.5', very dark gray (2.5 Y 3/1), wet, very stiff, non-plastic, very fine grained sand, abundant mica, hydrocarbon odor. **Borehole terminated @ 16'.**							
20									
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7506256
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2086156
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 9.68
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
ADDRESS: 3144-3166 MIDWAY DRIVE	DATE: FEB 25, 2015	T3-3
SAN DIEGO, CALIFORNIA	DRILLER: ABC LIOVIN DRILLING INC.	
	LOGGED BY: M. CREWS, H. ZHANG	
	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 25, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 9.35' (STATIC-UNDER PRESSURE)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		3" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
2.5	SM	SILTY SAND, very dark grayish (10 YR 3/1), medium dense, moist, strong hydrocarbon odor, some fine sub-angular gravel, fine sand.					618		Hydrated bentonite chips 3.0'-9.75'.
5		SILTY SAND 5.0'-5.6', very dark gray (10 YR 3/1), moist, medium dense, very fine to fine grained sand, some medium grained sand, some fine sub-angular gravel, hydrocarbon odor, some mica.		T3-3-5	100%	6/7/11	650		
7.5	ML	SILT with clay 5.6'-6.25', very dark gray (10 YR 3/1), very stiff, slightly plastic, very fine grained sand, hydrocarbon odor, contents increase with depth, moist, some mica. SILT 6.25'-6.5', same as above, very moist, some very fine grained sand, some clay, very siff, non-plastic, abundant mica, strong hydrocarbon odor.					564		
		SANDY SILT 9.0'-9.75, dark gray (10 YR 4/1), wet, very stiff, non-plastic to slightly plastic, race clay, very fine grained sand, hydrocarbon odor, trace fine sub-angular gravel.							
10	CL	SILTY CLAY 9.75'-10.2', very dark gray (10 YR 3/1), wet, very stiff, medium plasticity, trace very fine grained sand, some mica, hydrocarbon odor.		T3-3-10	100%	8/10/14	228		#3 sand 9.75'-16'.
12.5	ML	SANDY SILT 10.2'-10.5', very dark gray (10 YR 3/1), wet, very stiff, non-plastic, very fine grained sand, abundant mica, trace fine sub-angular gravel, hydrocarbon odor.							
		SILT with clay 14'-14.6', very dark grayish brown (10 YR 3/2), wet, very stiff, low plasticity, trace very fine grained sand, abundant mica, hydrocarbon odor.							
15	CL	(Description on next page)							

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7506260
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2085431
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 9.43
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.	SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
		DATE: FEB 25, 2015	
	ADDRESS: 3144-3166 MIDWAY DRIVE	DRILLER: ABC LIOVIN DRILLING INC.	T3-3
		LOGGED BY: M. CREWS, H. ZHANG	
	SAN DIEGO, CALIFORNIA	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 25, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - 9.35' (STATIC-UNDER PRESSURE)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
15	ML	CLAY with silt 14.6'-15', dark gray (10 YR 4/1), wet, very stiff, medium to high plasticity, some mica, trace very fine grained sand, hydrocarbon odor.		T3-3-15	100%	11/14/16	13.8		
		SILT with sand 15'-15.5', black (2.5 Y 2.5/1), wet, very stiff, non-plastic to slightly plastic, trace clay, abundant mica, hydrocarbon odor.							
		Borehole terminated @ 16'.							
17.5									
20									
22.5									
25									
27.5									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7506260
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2085431
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 9.43
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER

Tetra Tech, Inc.

SITE NAME: PACIFICA MIDWAY	PROJECT NO.: 194-5057	BORING
ADDRESS: 3144-3166 MIDWAY DRIVE	DATE: FEB 25, 2015	T3-4
SAN DIEGO, CALIFORNIA	DRILLER: ABC LIOVIN DRILLING INC.	
	LOGGED BY: M. CREWS, H. ZHANG	
	BORING DEPTH (ft.): 16	

DRILLING/SAMPLING EQUIPMENT	GROUNDWATER DEPTH MEASUREMENTS
DRILLING METHOD: HOLLOW STEM AUGER	DATE: FEB 25, 2015
DRILL BIT SIZE: 8.0 INCHES	TIME: N/A
SAMPLING METHOD: SPLIT SPOON	DEPTH (ft.): 9.0' (FIRST) - AROUND 9.0' (STATIC-UNDER PRESSURE)
SAMPLER TYPE: SPLIT SPOON	

DEPTH (ft.)	USCS	DESCRIPTION	SOIL TYPE	SAMPLE NO.	RECOVERY (%)	BLOWS / 6 inches	PID (ppm)	WELL CONSTR.	NOTES
0		3.5" asphalt. Hand auger to 5' to clear for utilities.							Concrete 0.0'-3.0'.
		SILTY SAND with gravel, very dark gray (10 YR 3/1), moist, medium dense, very fine-fine grained sand, fine sub-angular gravel, hydrocarbon odor.					831		Hydrated bentonite chips 3.0'-9.75'.
5	SM	SILTY SAND 5.0'-5.5', very dark gray (10 YR 3/1), moist, medium dense, very fine grained sand, trace fine to coarse sub-angular gravel, slight hydrocarbon odor. SILTY SAND 5.5'-6.0', black (10 YR 2/1), very moist, medium dense, very fine to fine grained sand, strong hydrocarbon odor, some mica.		T3-4-5	NA	6/9/13	737		
10	ML	SANDY SILT 9.0'-9.3', black (10 YR 2/1), wet, very stiff, non-plastic, trace clay, very fine grained sand, hydrocarbon odor. SILT with sand 9.3'-10', black (10 YR 2/1), wet, very soft, saturated, trace clay, slightly plastic, hydrocarbon odor, trace clay nodules. SANDY SILT 10'-10.5', black (10 YR 2/1), saturated (free products), very stiff, non-plastic, very fine grained sand, very strong hydrocarbon odor, abundant mica. SILT with clay 14'-14.6', very dark grayish brown (10 YR 3/2), wet, very stiff, low plasticity, trace very fine grained sand, abundant mica, hydrocarbon odor.		T3-4-10	NA	9/15/17	436 548		#3 sand 9.75'-16'.
15	CL ML	CLAY with silt 14.6'-15', dark gray (10 YR 4/1), wet, very stiff, medium to high plasticity, some mica, trace very fine grained sand, hydrocarbon odor.		T3-4-15	NA	11/14/10	246		
		SILT with sand 15'-15.5', black (2.5 Y 2.5/1), wet, very stiff, non-plastic to slightly plastic, trace clay, abundant mica, hydrocarbon odor. **Borehole terminated @ 16'.**							
20									
25									
30									

SITE MAP



SEE FIGURE 2

WELL CONSTRUCTION	
DEPTH (ft.): 15.5	SEAL: 12" TRAFFIC RATED WELL BOX
DIAMETER (in.): 4.0	LATITUDE: 32.7506256
SLOT SIZE (in.): 0.030	LONGITUDE: -117.2084482
SCREEN INTERVAL (ft.): 10-15	TOC ELEVATION (FT ASML): 9.32
CASING MATERIAL: SCH 40 PVC	

▼ STATIC GROUNDWATER LEVEL

▽ FIRST ENCOUNTERED GROUNDWATER



SOUTHERN CALIFORNIA SOIL & TESTING, INC.	SITE VICINITY NEW GRAIN SILO Bay City Brewing Company San Diego, California	Date: December 2014 By: JGA Job No.: 140546N-1 Scale: Not To Scale	Figure: 1

Figure: 2

SOUTHERN CALIFORNIA SOIL & TESTING, INC.

SUBSURFACE EXPLORATION MAP
PROPOSED GRAIN SILO
Bay City Brewing Company
3760 Hancock Street
San Diego, California

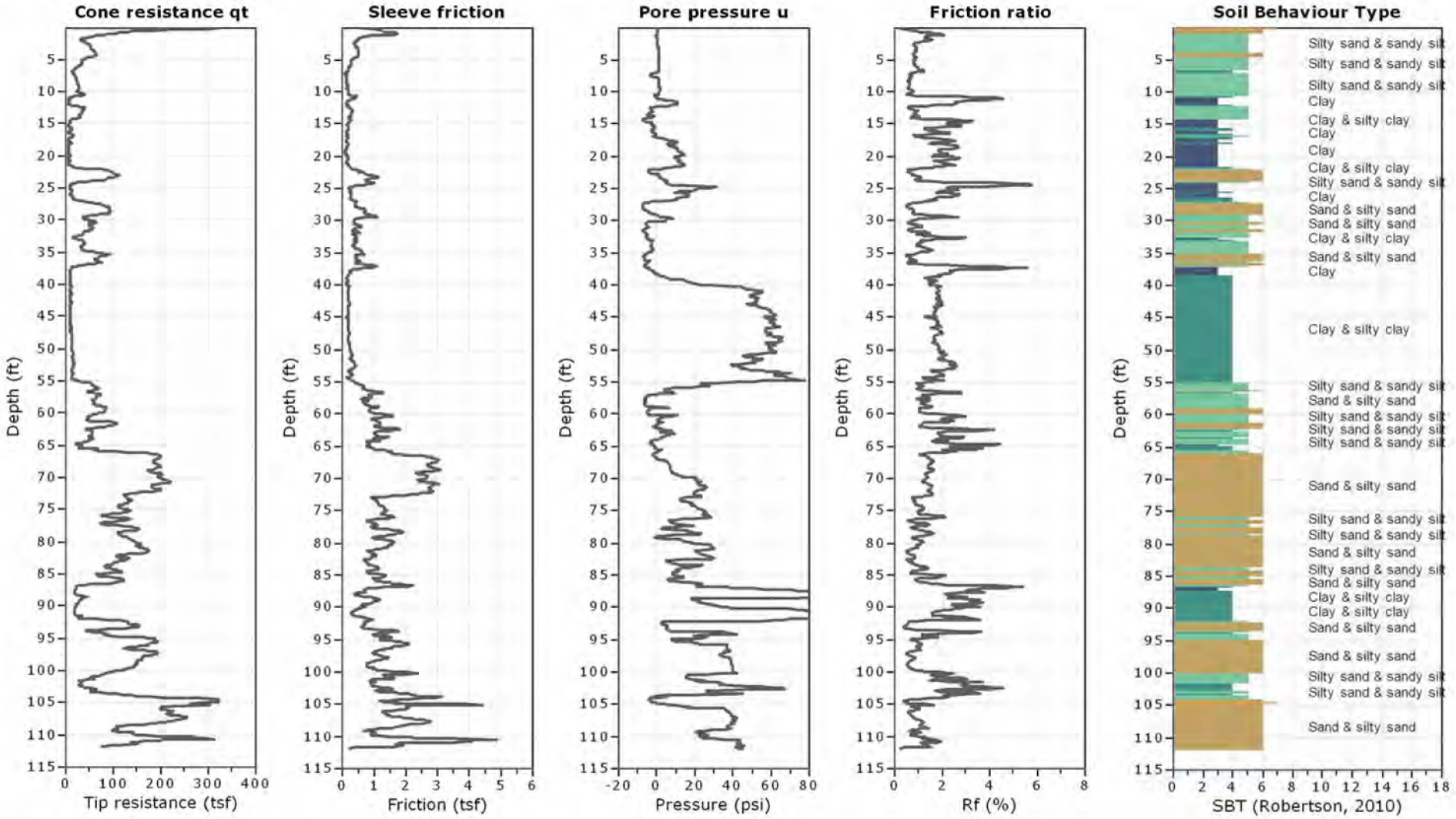
Date: December 2014
By: JGA
Job No.: 140546N-1

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

CPT: CPT-1

Project: **Southern California Soil & Testing, Inc.**
Location: **3760 Hancock St. San Diego, CA**

Total depth: 111.94 ft, Date: 11/17/2014
Cone Type: Vertek



	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	106.7	1.75	0.3	-81.45	106.704	1.6401	5	2.05159	125.7563	0.06288	0	0.0629	1696	1.641	0.0002	6	0.4925	4.0159	1.6745	404.7394
2	30.6	0.45	0.3	-81.45	30.6037	1.4704	5	2.44133	112.7728	0.11926	0	0.1193	255.6	1.4762	0.0007	6	0.6162	3.8389	1.991	110.5987
3	51.5	0.44	0.79	-81.45	51.5097	0.8542	5	2.12224	113.8782	0.1762	0	0.1762	291.33	0.8571	0.0011	6	0.5401	2.6332	1.7858	127.75
4	61.2	0.48	0.91	-81.45	61.2111	0.7842	6	2.03915	114.9358	0.23367	0	0.2337	260.95	0.7872	0.0011	6	0.5322	2.2339	1.7596	128.7376
5	38.2	0.29	0.91	-81.45	38.2111	0.7589	5	2.20624	110.0994	0.28872	0	0.2887	131.35	0.7647	0.0017	6	0.5979	2.1738	1.9259	77.90911
6	28	0.24	0.99	-81.45	28.0121	0.8568	5	2.34948	107.9575	0.3427	0	0.3427	80.739	0.8674	0.0026	5	0.6581	2.0999	2.0822	54.91208
7	13.3	0.12	0.28	-81.45	13.3034	0.902	4	2.64589	101.0696	0.39323	0	0.3932	32.831	0.9295	0.0016	5	0.7713	2.1457	2.3712	26.17958
8	21.8	0.14	1.29	-81.45	21.8158	0.6417	5	2.38805	103.4039	0.44494	0	0.4449	48.031	0.6551	0.0044	5	0.6959	1.8273	2.1668	36.90693
9	25.3	0.16	1.52	-81.44	25.3186	0.632	5	2.3269	104.7441	0.49731	0	0.4973	49.911	0.6446	0.0044	5	0.6877	1.6808	2.1382	39.42756
10	20.6	0.18	1.14	-81.44	20.614	0.8732	5	2.47026	105.1045	0.54986	0	0.5499	36.489	0.8971	0.0041	5	0.752	1.636	2.2999	31.02199
11	8.8	0.38	0.26	-81.43	8.80318	4.3166	3	3.15333	108.4967	0.60411	0	0.6041	13.572	4.6347	0.0023	3	1	1.7515	3.0034	13.57217
12	7.2	0.17	11.09	-81.43	7.33574	2.3174	3	3.06991	102.1663	0.65519	0	0.6552	10.196	2.5447	0.1195	3	1	1.615	2.9499	10.19632
13	33.7	0.32	-2.16	-81.43	33.6736	0.9503	5	2.30324	110.5114	0.71045	0	0.7105	46.398	0.9708	-0.005	5	0.7255	1.3351	2.2098	41.59128
14	30.7	0.18	-2.56	-81.43	30.6687	0.5869	5	2.23801	106.0735	0.76348	0	0.7635	39.169	0.6019	-0.006	5	0.7101	1.2608	2.1629	35.63379
15	7.5	0.16	-2.61	-81.41	7.46805	2.1425	3	3.04576	101.7663	0.81437	0	0.8144	8.1704	2.4047	-0.028	3	1	1.2993	3.0175	8.17037
16	10.9	0.15	-2.74	-81.43	10.8665	1.3804	4	2.80955	102.2088	0.86547	0	0.8655	11.556	1.4999	-0.02	4	0.9525	1.211	2.7863	11.4458
17	15.5	0.15	-1.85	-81.43	15.4774	0.9692	4	2.60147	103.0715	0.91701	0	0.917	15.878	1.0302	-0.009	4	0.8798	1.1342	2.5891	15.60734
18	10.5	0.16	8.36	-81.43	10.6023	1.5091	4	2.83778	102.621	0.96832	0	0.9683	9.9492	1.6608	0.0625	4	0.986	1.0914	2.8616	9.93691
19	6.2	0.13	11.36	-81.42	6.33905	2.0508	3	3.0978	99.84724	1.01824	0	1.0182	5.2255	2.4432	0.1537	3	1	1.0392	3.1872	5.22548
20	9.1	0.15	12.41	-81.43	9.2519	1.6213	4	2.90462	101.8165	1.06915	0	1.0692	7.6535	1.8331	0.1092	3	1	0.9897	2.9813	7.6535
21	6.2	0.13	11.51	-81.41	6.34088	2.0502	3	3.09763	99.84795	1.11907	0	1.1191	4.6662	2.4896	0.1587	3	1	0.9455	3.2338	4.66618
22	41.8	0.32	2.14	-81.41	41.8262	0.7651	5	2.17407	111.0402	1.17459	0	1.1746	34.609	0.7872	0.0038	5	0.7515	0.9245	2.2204	35.51889
23	110.5	0.87	0.23	-81.41	110.503	0.7873	6	1.83075	120.728	1.23496	0	1.235	88.479	0.7962	0.0002	6	0.6213	0.9084	1.8708	93.81232
24	51.9	0.83	4.71	-81.41	51.9577	1.5975	5	2.27828	118.5431	1.29423	0	1.2942	39.146	1.6383	0.0067	5	0.8063	0.8501	2.3491	40.70308
25	9.1	0.19	26.97	-81.41	9.43011	2.0148	3	2.94513	103.5927	1.34603	0	1.346	6.0059	2.3503	0.2402	3	1	0.7861	3.1266	6.00589
26	9.9	0.28	16.74	-81.41	10.1049	2.7709	3	2.99406	106.5985	1.39933	0	1.3993	6.2213	3.2163	0.1385	3	1	0.7562	3.1852	6.22126
27	30	0.44	-0.82	-81.41	29.99	1.4672	5	2.44803	112.5589	1.45561	0	1.4556	19.603	1.542	-0.002	4	0.9027	0.7498	2.582	20.22105
28	91.7	0.51	-7.2	-81.41	91.6119	0.5567	6	1.81141	116.3628	1.51379	0	1.5138	59.518	0.5661	-0.006	6	0.6483	0.7928	1.9074	67.50766
29	88.8	0.72	-1.64	-81.41	88.7799	0.811	6	1.91454	118.8094	1.57319	0	1.5732	55.433	0.8256	-0.001	6	0.6953	0.759	2.0233	62.55484
30	45.5	0.34	5.03	-81.41	45.5616	0.7462	5	2.13659	111.6924	1.62904	0	1.629	26.968	0.7739	0.0082	5	0.7988	0.7085	2.288	29.41503
31	51.2	0.53	-4.54	-81.41	51.1444	1.0363	5	2.17146	115.2226	1.68665	0	1.6867	29.323	1.0716	-0.007	5	0.8173	0.6831	2.3296	31.9302
32	36.6	0.5	-5.22	-81.41	36.5361	1.3685	5	2.36036	113.9759	1.74364	0	1.7436	19.954	1.4371	-0.011	4	0.9055	0.6362	2.553	20.91834
33	24.3	0.35	-4.05	-81.41	24.2504	1.4433	5	2.5207	110.3664	1.79882	0	1.7988	12.481	1.5589	-0.013	4	0.9865	0.5925	2.7597	12.5709
34	34	0.34	-3.07	-81.41	33.9624	1.0011	5	2.31193	110.9758	1.85431	0	1.8543	17.315	1.0589	-0.007	5	0.904	0.6022	2.5349	18.27354
35	63.5	0.63	-4.89	-81.41	63.4402	0.9931	5	2.08434	117.0127	1.91281	0	1.9128	32.166	1.0239	-0.006	5	0.8071	0.6201	2.2744	36.05875
36	63.1	0.4	-6.23	-81.41	63.0237	0.6347	6	1.97958	113.6729	1.96965	0	1.9697	30.997	0.6552	-0.007	5	0.7737	0.6183	2.1797	35.67742
37	32.9	1.08	-6.06	-81.41	32.8258	3.2901	4	2.6328	119.3496	2.02933	0	2.0293	15.176	3.5069	-0.014	3	1	0.5214	2.8903	15.17573
38	10.1	0.24	-1.28	-81.41	10.0843	2.3799	3	2.95863	105.4656	2.08206	0	2.0821	3.8434	2.9992	-0.012	3	1	0.5082	3.3473	3.84344
39	9.4	0.12	6.2	-81.41	9.47589	1.2664	4	2.84412	100.2421	2.13218	0	2.1322	3.4442	1.6341	0.0608	3	1	0.4963	3.2644	3.44423
40	9.6	0.15	24.28	-81.41	9.89719	1.5156	4	2.86474	101.9809	2.18317	0	2.1832	3.5334	1.9445	0.2266	3	1	0.4847	3.2884	3.5334
41	8.9	0.18	55.29	-81.41	9.57675	1.8796	3	2.92386	103.2347	2.23479	0	2.2348	3.2853	2.4517	0.5422	3	1	0.4735	3.3635	3.28531
42	9.5	0.19	53.16	-81.41	10.1507	1.8718	4	2.90123	103.7723	2.28667	0	2.2867	3.4391	2.4161	0.4867	3	1	0.4627	3.343	3.43906
43	10.1	0.21	46.97	-81.41	10.6749	1.9672	4	2.89374	104.6274	2.33899	0	2.339	3.5639	2.5192	0.4057	3	1	0.4524	3.3382	3.5639
44	8.9	0.16	59.47	-81.41	9.62791	1.6618	4	2.89489	102.3859	2.39018	0	2.3902	3.0281	2.2106	0.5916	3	1	0.4427	3.3736	3.02811
45	9.5	0.14	57.05	-81.41	10.1983	1.3728	4	2.83254	101.5492	2.44095	0	2.441	3.178	1.8047	0.5295	3	1	0.4335	3.3148	3.17799
46	9.4	0.18	61.86	-81.41	10.1572	1.7722	4	2.88885	103.3782	2.49264	0	2.4926	3.0749	2.3485	0.5811	3	1	0.4245	3.3799	3.07486
47	9.6	0.18	56.93	-81.41	10.2968	1.7481	4	2.88072	103.4115	2.54435	0	2.5444	3.0469	2.3218	0.5287	3	1	0.4159	3.3811	3.04694
48	10	0.18	60.81	-81.41	10.7443	1.6753	4	2.85543	103.5153	2.59611	0	2.5961	3.1386	2.2091	0.5373	3	1	0.4076	3.3596	3.13863
49	11.8	0.2	59.01	-81.41	12.5223	1.5972	4	2.78761	104.6597	2.64844	0	2.6484	3.7282	2.0256	0.4303	3	1	0.3995	3.2759	3.72818
50	11.8	0.23	60.46	-81.41	12.54	1.8341	4	2.81824	105.6858	2.70128	0	2.7013	3.6423	2.3377	0.4425	3	1	0.3917	3.3143	3.64226
51	14.1	0.3	45.01	-81.41	14.6509	2.0477	4	2.78701	108.0094	2.75528	0	2.7553	4.3174	2.5219	0.2724	3	1	0.384	3.2659	4.31739
52	13.7	0.37	51.98	-81.41	14.3362	2.5809	4	2.8512	109.491	2.81003	0	2.81	4.1018	3.2101	0.3247	3	1	0.3766	3.3382	4.10181
53	12.7	0.31	45.64	-81.41	13.2586	2.3381	4	2.855	108.0058	2.86403	0	2.864	3.6294	2.9823	0.3161	3	1	0.3695	3.3676	3.62936
54	12.3	0.26	60.84	-81.41	13.0447	1.9932	4	2.82296	106.6791	2.91737	0	2.9174	3.4714	2.5673	0.4325	3	1	0.3627	3.3522	3.47138
55	23	0.36	48.2	-81.41	23.59	1.5261	4	2.54403	110.5052	2.97262	0	2.9726	6.9357	1.7461	0.1683	3	1	0.356	3.0081	6.93574
56	63	0.6	8.97	-81.41	63.1098	0.9507	5	2.0752	116.643	3.03095	0	3.031	19.822	0.9987	0.0108	5	0.9338	0.3743	2.4653	21.25132
57	66.5	0.79	-1.33	-81.41	66.4837	1.1883	5	2.11465	118.783	3.09034	0	3.0903	20.513	1.2462	-0.002	5	0.9528	0.3602	2.5086	21.57905
58	53.9	0.81	-6.1	-81.41	53.8253	1.5049	5	2.25013	118.4507	3.14956	0	3.1496	16.09	1.5984	-0.009	4	1	0.336	2.674	16.08978
59	81.2	1	0.08	-81.41	81.201	1.2315	5	2.05654	120.9955	3.21006	0	3.2101	24.296	1.2822	7E-05	5	0.9346	0.3544	2.445	26.1252
60	69	1.27	-4.18	-81.41	68.9488	1.842	5	2.2245	122.3454	3.27123	0	3.2712	20.077	1.9337	-0.005	4	1	0.3235	2.6394	20.07732
61	41.4	1.08	0.38	-81.41	41.4047	2.6084	4	2.49051	119.9158	3.33119	0	3.3312	11.429	2.8366	0.0007	3	1	0.3176	2.9353	11.42938
62	88.9	1.04	-2.15	-81.41	88.8737	1.1702	6	2.01221	121.5026	3.39194	0	3.3919	25.201	1.2166	-0.002	5	0.9328	0.3374	2.4172	27.25463
63	55.4	1	6.09	-81.41	55.4745	1.8026	5	2.28961	120.0662	3.45198	0	3.452	15.07	1.9222	0.0084	4	1	0.3065	2.7412	15.07037
64	56.8	0.99	-0.82	-81.41	56.79	1.7433	5	2.27246	120.0498	3.512	0	3.512	15.17	1.8582	-0.001	4	1	0.3013	2.7307	15.17026
65	33.7	0.76	-1.2	-81.41	33.6853	2.2562	4	2.51892	116.8414	3.57042	0	3.5704	8.4346	2.5237	-0.003	3	1	0.2964	3.0171	8.43455

66	103.6	1.49	-0.08	-81.41	103.599	1.4382	6	2.02148	124.5074	3.63268	0	3.6327	27.519	1.4905	-6E-05	5	0.9531	0.3086	2.4418	29.15688
67	196.9	2.99	0.46	-81.41	196.906	1.5185	6	1.84516	131.17	3.69826	0	3.6983	52.243	1.5476	0.0002	5	0.8595	0.3411	2.1897	62.28387
68	192	2.66	7.04	-81.41	192.086	1.3848	6	1.82208	130.2539	3.76339	0	3.7634	50.041	1.4125	0.0027	5	0.858	0.3367	2.1774	59.92411
69	173.8	2.57	7.96	-81.41	173.897	1.4779	6	1.87195	129.7594	3.82827	0	3.8283	44.425	1.5112	0.0034	5	0.888	0.3192	2.2483	51.30982
70	195.3	2.65	20.59	-81.41	195.552	1.3551	6	1.80989	130.2699	3.8934	0	3.8934	49.227	1.3827	0.0077	5	0.8645	0.3242	2.1784	58.73119
71	203	2.87	22.1	-81.41	203.271	1.4119	6	1.81219	130.9479	3.95888	0	3.9589	50.346	1.44	0.008	5	0.8695	0.3175	2.1833	59.80955
72	199.6	2.86	20.48	-81.41	199.851	1.4311	6	1.82144	130.881	4.02432	0	4.0243	48.661	1.4605	0.0075	5	0.8799	0.3087	2.2027	57.12993
73	125.6	0.93	16.02	-81.41	125.796	0.7393	6	1.76951	121.5321	4.08508	0	4.0851	29.794	0.7641	0.0095	5	0.8914	0.3	2.2249	34.50337
74	127.9	1.14	17.94	-81.4	128.12	0.8898	6	1.81405	123.0665	4.14662	0	4.1466	29.897	0.9196	0.0104	5	0.9132	0.2873	2.275	33.65872
75	127.1	1.27	24.59	-81.41	127.401	0.9969	6	1.84807	123.8429	4.20854	0	4.2085	29.272	1.0309	0.0144	5	0.9326	0.276	2.3183	32.12897
76	75.6	1.59	27.64	-81.4	75.9383	2.0938	5	2.23152	124.2252	4.27065	0	4.2707	16.781	2.2186	0.0278	4	1	0.2478	2.7374	16.78144
77	80	1.04	9.31	-81.39	80.114	1.2982	5	2.07569	121.2496	4.33127	0	4.3313	17.497	1.3724	0.0089	4	1	0.2443	2.6082	17.49662
78	153.2	1.65	15.71	-81.39	153.392	1.0757	6	1.81093	126.211	4.39438	0	4.3944	33.906	1.1074	0.0076	5	0.9256	0.2677	2.277	37.69316
79	116.6	1.13	0.59	-81.39	116.607	0.9691	6	1.8692	122.7724	4.45577	0	4.4558	25.17	1.0076	0.0004	5	0.9715	0.2474	2.3884	26.22215
80	144.7	1.6	18.45	-81.39	144.926	1.104	6	1.83658	125.8474	4.51869	0	4.5187	31.073	1.1395	0.0095	5	0.9524	0.2509	2.3288	33.2958
81	162.5	1.08	28.46	-81.39	162.848	0.6632	6	1.65241	123.2559	4.58032	0	4.5803	34.554	0.6824	0.013	5	0.8803	0.2753	2.1339	41.17648
82	125.8	1.03	26.92	-81.39	126.13	0.8166	6	1.79552	122.2858	4.64146	0	4.6415	26.175	0.8478	0.016	5	0.9579	0.2426	2.328	27.85703
83	118.3	0.75	6.2	-81.39	118.376	0.6336	6	1.75045	119.8098	4.70137	0	4.7014	24.179	0.6598	0.0039	5	0.9516	0.2419	2.3031	25.99052
84	84.7	1.11	11.53	-81.39	84.8411	1.3083	5	2.05887	121.866	4.7623	0	4.7623	16.815	1.3861	0.0104	4	1	0.2222	2.6252	16.81516
85	65.7	1.35	9.3	-81.39	65.8138	2.0512	5	2.27085	122.6789	4.82364	0	4.8236	12.644	2.2135	0.011	4	1	0.2194	2.8386	12.64402
86	121.1	1.29	13.15	-81.39	121.261	1.0638	6	1.88283	123.8368	4.88556	0	4.8856	23.82	1.1085	0.0081	5	1	0.2166	2.4455	23.8203
87	21.7	1.02	40.66	-81.39	22.1977	4.5951	3	2.8562	117.9771	4.94454	0	4.9445	3.4893	5.912	0.1697	3	1	0.214	3.5406	3.48933
88	16.9	0.35	118.84	-81.39	18.3546	1.9069	4	2.68838	109.687	4.99939	0	4.9994	2.6714	2.6207	0.6407	3	1	0.2117	3.4563	2.67137
89	31.7	1.1	22.19	-81.39	31.9716	3.4406	4	2.65422	119.4195	5.0591	0	5.0591	5.3196	4.0873	0.0594	3	1	0.2092	3.2991	5.31963
90	20.5	0.62	37.74	-81.39	20.9619	2.9577	4	2.75349	114.1947	5.1162	0	5.1162	3.0972	3.9127	0.1715	3	1	0.2068	3.4871	3.09717
91	17.5	0.29	101.85	-81.39	18.7466	1.5469	4	2.631	108.3626	5.17038	0	5.1704	2.6258	2.1361	0.5402	3	1	0.2047	3.4218	2.62578
92	50.2	0.82	63.88	-81.39	50.9819	1.6084	5	2.28657	118.4081	5.22958	0	5.2296	8.7488	1.7923	0.1005	4	1	0.2023	2.9261	8.74875
93	153.9	0.61	5.59	-81.39	153.968	0.3962	6	1.5419	118.9392	5.28905	0	5.2891	28.111	0.4103	0.0027	5	0.9123	0.2304	2.1295	32.37279
94	45.7	1.26	37	-81.39	46.1529	2.7301	4	2.4684	121.3085	5.3497	0	5.3497	7.6272	3.088	0.0653	3	1	0.1978	3.1014	7.62718
95	173.4	1.16	7.59	-81.4	173.493	0.6686	6	1.63341	123.9332	5.41167	0	5.4117	31.059	0.6901	0.0033	5	0.9511	0.2118	2.213	33.64012
96	173.6	1.73	36.87	-81.39	174.051	0.994	6	1.74761	126.8656	5.4751	0	5.4751	30.79	1.0262	0.0158	5	0.9976	0.194	2.3315	30.91236
97	174.9	0.99	34.38	-81.39	175.321	0.5647	6	1.58387	122.7992	5.5365	0	5.5365	30.666	0.5831	0.0146	5	0.9419	0.2104	2.1775	33.76179
98	161	1.34	38.15	-81.39	161.467	0.8299	6	1.71823	124.8134	5.59891	0	5.5989	27.839	0.8597	0.0176	5	1	0.189	2.3312	27.839
99	149.3	0.78	39.48	-81.4	149.783	0.5208	6	1.61778	120.6708	5.65925	0	5.6593	25.467	0.5412	0.0197	5	0.9795	0.1935	2.26	26.35616
100	111.8	1.96	40.01	-81.39	112.29	1.7455	5	2.05497	126.71	5.7226	0	5.7226	18.622	1.8392	0.027	4	1	0.1849	2.6541	18.62215
101	56.1	1.72	16	-81.39	56.2958	3.0553	4	2.43904	124.0702	5.78464	0	5.7846	8.732	3.4052	0.0228	3	1	0.1829	3.0766	8.73196
102	32.7	0.96	33.82	-81.39	33.114	2.8991	4	2.59398	118.509	5.84389	0	5.8439	4.6664	3.5203	0.0893	3	1	0.1811	3.3116	4.66642
103	61.7	1.01	25.04	-81.39	62.0065	1.6289	5	2.22428	120.4105	5.9041	0	5.9041	9.5023	1.8003	0.0321	4	1	0.1792	2.8961	9.50228
104	156.2	2.75	-1.2	-81.39	156.185	1.7607	6	1.95974	129.9927	5.96909	0	5.9691	25.166	1.8307	-6E-04	4	1	0.1773	2.5455	25.16567
105	296.2	4.01	4.4	-81.39	296.254	1.3536	6	1.69492	134.314	6.03625	0	6.0363	48.079	1.3817	0.0011	5	0.9913	0.178	2.2415	48.81763
106	200.4	1.43	36.93	-81.39	200.852	0.712	6	1.60319	125.8214	6.09916	0	6.0992	31.931	0.7343	0.0137	5	0.9938	0.1754	2.2417	32.27744
107	237.1	1.85	41.5	-81.39	237.608	0.7786	6	1.57684	128.1155	6.16322	0	6.1632	37.553	0.7993	0.0129	5	0.9757	0.1792	2.1869	39.19682
108	208.4	2.46	39.29	-81.39	208.881	1.1777	6	1.74543	129.8864	6.22816	0	6.2282	32.538	1.2139	0.014	5	1	0.1699	2.3523	32.53814
109	108.2	0.78	29.49	-81.39	108.561	0.7185	6	1.81299	119.8857	6.2881	0	6.2881	16.265	0.7627	0.0208	5	1	0.1683	2.5134	16.2645
110	145.1	1.35	22.16	-81.39	145.371	0.9287	6	1.78476	124.6117	6.35041	0	6.3504	21.892	0.9711	0.0115	5	1	0.1666	2.4481	21.89163
111	175	2.23	41.7	24.85	175.51	1.2706	6	1.821	128.7436	6.41478	0	6.4148	26.36	1.3188	0.0178	5	1	0.165	2.4484	26.36031

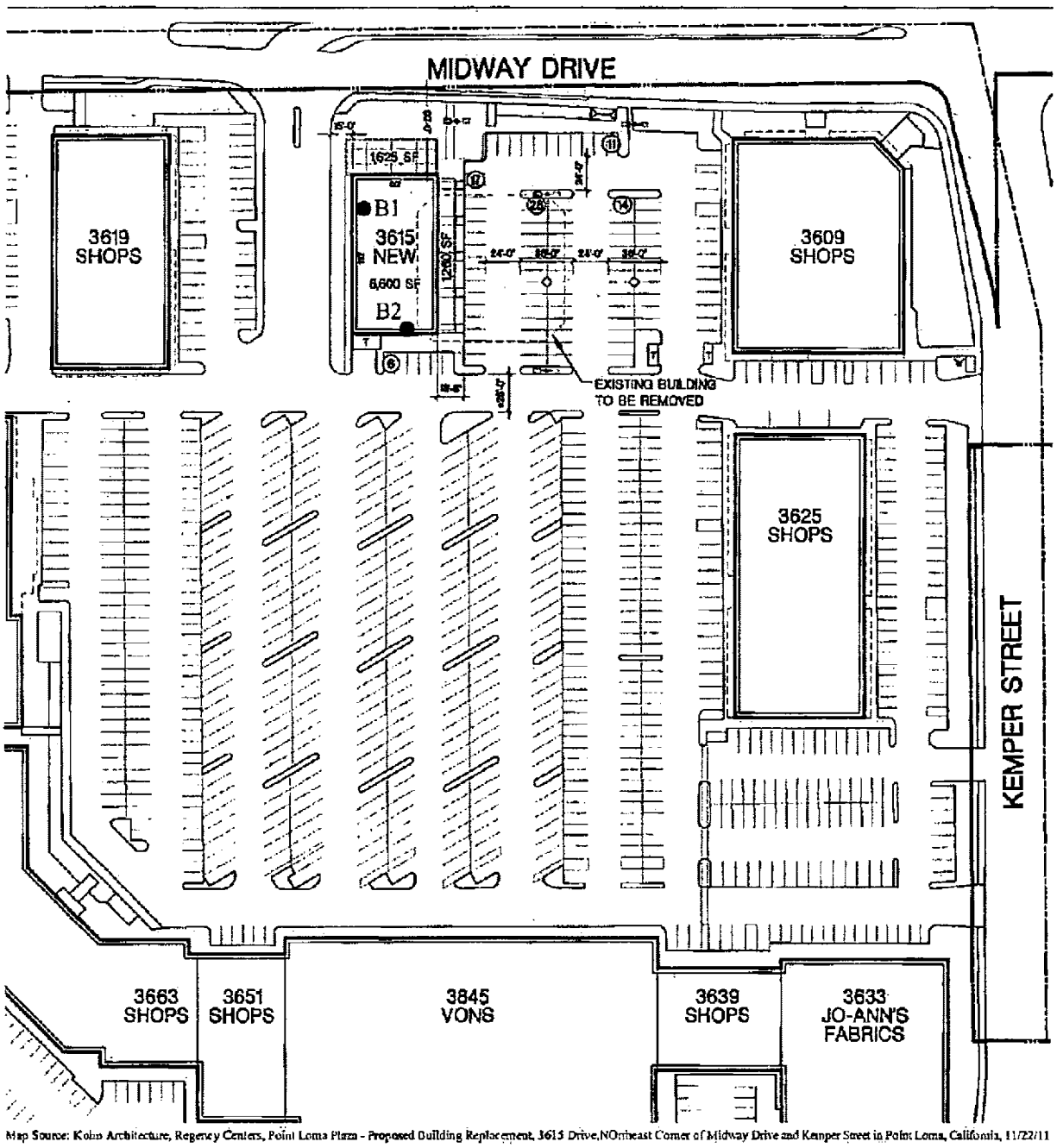
3760 Hancock St
San Diego, CA

CPT Shear Wave Measurements

CPT-1	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
	10.02	9.02	10.31	15.77	653.97	
	20.11	19.11	19.75	39.11	505.07	404.46
	30.16	29.16	29.59	57.41	515.34	537.28
	40.14	39.14	39.46	73.81	534.59	601.98
	50.12	49.12	49.37	91.90	537.26	548.13
	60.14	59.14	59.35	106.62	556.66	677.80
	70.52	69.52	69.70	120.50	578.42	745.58
	80.16	79.16	79.32	133.12	595.84	762.14
	90.12	89.12	89.26	146.16	610.70	762.45
	101.24	100.24	100.36	159.83	627.95	812.32
	110.38	109.38	109.49	171.00	640.32	817.33
	111.94	110.94	111.05	172.49	643.82	1045.90

Shear Wave Source Offset = 5 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)



Map Source: Kohn Architecture, Regency Centers, Point Loma Plaza - Proposed Building Replacement, 3615 Drive, NOrtheast Corner of Midway Drive and Kemper Sreet in Point Loma, California, 11/22/11

B2 ● Approximate Location of Boring

Scale: 1" = 50'

0 FT 30 FT 50 FT 100 FT

Note: All locations are approximate

BORING LOCATION MAP

PROPOSED RESTAURANT BUILDING
3615 Midway Drive
San Diego, California 92110
EEI Project No. AAA-71413.4
Created July 2012

EEI

CREATED BY:	JAB
REVISION DATE:	
REVISION NO.:	

FIGURE 3

BOREHOLE LOG

Number:	B1
Client:	Regency Centers
Sheet:	1 of 1
Location:	3615 Midway Drive San Diego, California 92110
Date Started:	6/26/2012
Date Finished:	6/26/2012
EEI Rep:	EL
Project No.:	AAA-71413.4
Drill Rig/Sampling Method:	8" Hollow Stem Auger
Borehole Diameter:	8"

SAMPLE LOG								BOREHOLE LOG
Bulk	Sample Type	Blows Per 6"	Dry Unit Wt. (pcf)	Moisture (%)	Depth In Feet	USCS Symbol	Graphic Log	Geologic Description (SoilType, Color, Grain, Minor Soil Component, Moisture, Density, Odor, Etc.)
1					1	Asphalt		ASPHALT CONCRETE 2.5", BASE 6"
					2			HYDRAULIC FILL
					3	ML		@ 0-5' SANDY-SILT, dark gray-brown, some clay, moist, medium stiff
					4			
	MC	5 6 7	92	18	5			
					6	SM		@ 5' SILTY-SAND, dark gray, fine grained, moist, loose
					7			
	MC	1 2 3	76	40	8			
					9	ML		@ 7.5' CLAYEY-SILT, dark gray, with fine grained sand, moist, medium stiff
	MC	2 2 3	75	47	10			
					11			
					12	SM		@ 10' SILTY-SAND, dark gray, fine grained with clay, moist to very moist, very loose
					13			
					14			
	SPT	1 1 1		41	15			
					16			@ 15' CLAYEY-SILT, dark gray, trace fine grained sand, wet, soft
					17	ML		
					18			
					19			
	SPT	1 1 3		41	20			
					21	SM		@ 20' SILTY-SAND, dark gray, fine grained, wet, loose
					22			
					23			
					24			Total boring depth = 21.5'
					25			Groundwater encountered at 16'
					26			MC=Modified California Sampler
					27			SPT=Standard Penetration Test
					28			
					29			Hole backfilled with 7.5 cf of bentonite chips and grout, patched with asphalt concrete coldpatch. Drummed cuttings. 6/26/12
					30			
					31			
					32			
					33			
					34			

BOREHOLE LOG

Number:	B2
Client:	Regency Centers
Sheet:	1 of 2
Location:	3615 Midway Drive, San Diego, California 92110
Date Started:	6/26/2012
Date Finished:	6/26/2012
EEI Rep:	EL
Project No.:	AAA-71413.4
Drill Rig/Sampling Method:	8" Hollow Stem Auger
Borehole Diameter:	8"

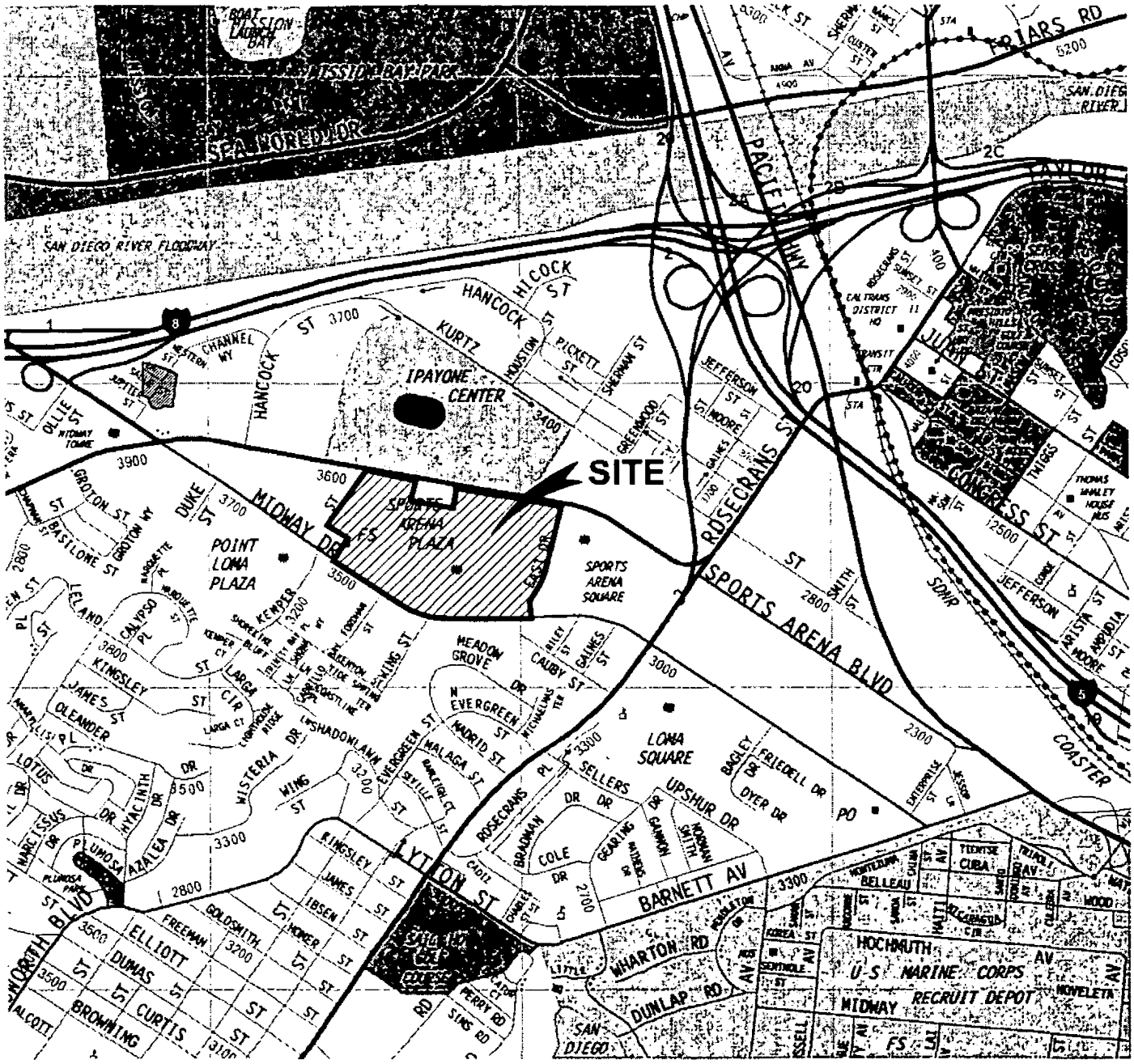
SAMPLE LOG								BOREHOLE LOG
Bulk	Sample Type	Blows Per 6"	Dry Unit Wt. (pcf)	Moisture (%)	Depth In Feet	USCS Symbol	Graphic Log	Geologic Description (SoilType, Color, Grain, Minor Soil Component, Moisture, Density, Odor, Etc.)
2					1	Asphalt		ASPHALT CONCRETE 5", BASE 6"
					2			HYDRAULIC FILL
					3	ML		@ 0-5' SANDY-SILT, gray-brown, damp, medium stiff
					4			
	MC	3 7 9	101	16	5			@ 5' SILTY-SAND, dark gray, fine grained, damp, loose
					6			
					7	SM		
	MC	3 7 9	85	25	8			@ 7.5' SILTY-SAND, dark gray-brown, fine grained, moist, loose
					9			@ 10' SILTY-SAND, dark gray-brown, fine grained, moist, loose
	MC	1 2 2	73	44	10			@ 10.5' SILT, dark gray-brown, with fine grained sand, very moist, soft
					11			
					12			
					13			
					14			
	SPT	1 1 2		48	15			@ 15' CLAYEY-SILT, dark gray-brown, with fine grained sand, wet, soft
					16		▽	
					17	ML		
					18			
					19			
	SPT	1 1 1		47	20			@ 20' CLAYEY-SILT, dark gray-brown, with fine grained sand, wet, soft
					21			
					22			
					23			
					24			
	SPT	3 5 6		38	25			@ 25' SILTY-SAND, dark gray, fine grained, very moist, medium dense
					26			
					27			
					28			
					29			
	SPT	2 3 3		33	30	SM		@ 30' SILTY-SAND, dark gray, fine grained, very moist, loose
					31			
					32			
					33			
					34			

BOREHOLE LOG

Number:	B2
Client:	Regency Centers
Sheet:	2 of 2
Location:	3615 Midway Drive San Diego, California 92110
Date Started:	6/26/2012
Date Finished:	6/26/2012
EEI Rep:	EL
Project No.:	AAA-71413.4
Drill Rig/Sampling Method:	8" Hollow Stem Auger
Borehole Diameter:	8"

SAMPLE LOG								BOREHOLE LOG
Bulk	Sample Type	Blows Per 6"	Dry Unit Wt. (pcf)	Moisture (%)	Depth In Feet	USCS Symbol	Graphic Log	Geologic Description (SoilType, Color, Grain, Minor Soil Component, Moisture, Density, Odor, Etc.)
	SPT	2 3 8		39	36	SM		@ 35' SILTY-SAND, dark gray, fine grained, very moist, medium dense
					37			
					38			
					39			
	SPT	8 14 16		32	40			@ 40' SILTY-SAND, dark gray, medium to fine grained, occasional shell fragments, wet, dense
					41			
					42			
					43			
					44			
	SPT	4 3 2		30	45			@ 45' SILTY-SAND, dark gray, fine to coarse grained, trace clay, some shell fragments, very moist, loose
					46			
					47			
					48			
					49			
	SPT	2 2 5		43	50	ML		@ 50' SANDY-SILT, dark gray, with clay, trace clay, moist, medium stiff
					51			
					52			Total boring depth = 51.5' Groundwater encountered at 16.6' MC=Modified California Sampler SPT=Standard Penetration Test Hole backfilled with 18.0 cf of bentonite chips and grout, patched with asphalt concrete coldpatch. Drummed cuttings. 6/26/12
					53			
					54			
					55			
					56			
					57			
					58			
					59			
					60			
					61			
					62			
					63			
					64			
					65			
					66			
					67			
					68			
					69			

GEOCON 2008 - SPORTS ARENA BOULEVARD RETAIL CENTER



SOURCE: 2007 THOMAS BROTHERS MAP
SAN DIEGO COUNTY, CALIFORNIA

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N

NO SCALE

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GEOTECHNICAL CONSULTANTS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

CL / RA		DSK/GTYPD

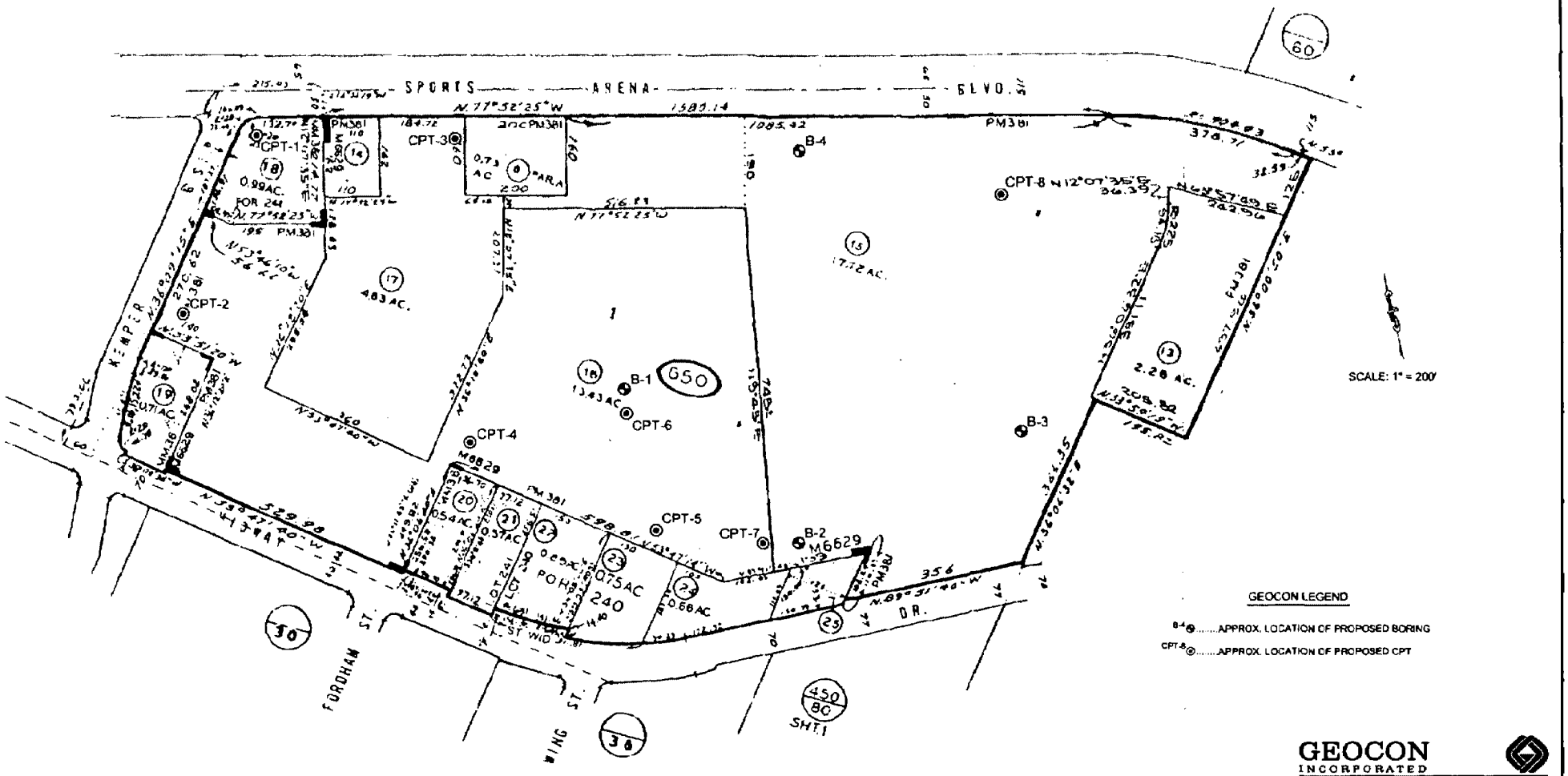
VICINITY MAP

SPORTS ARENA BOULEVARD RETAIL CENTER
SAN DIEGO, CALIFORNIA

DATE 11-20-2008	PROJECT NO. G1035 - 52 - 01	FIG. 1

Vicinity Map

SPORTS ARENA BOULEVARD RETAIL CENTER
SAN DIEGO, CALIFORNIA

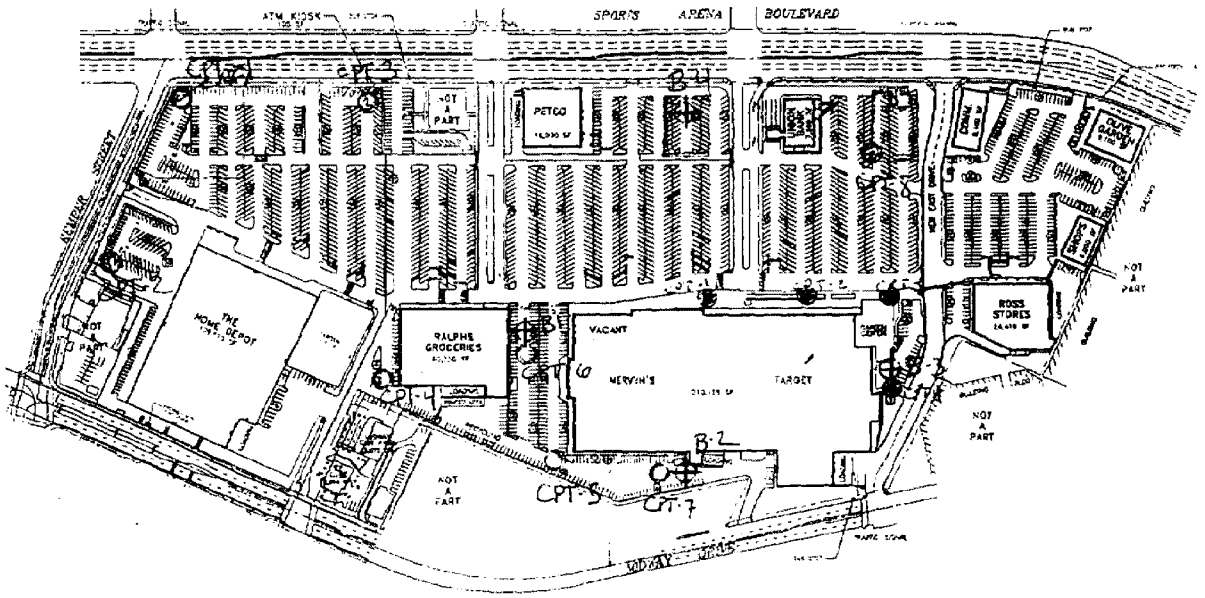


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PROJECT NO. G1035-52-01
FIGURE 2
DATE 11-20-2008

Parcel Map

LADRILLOND

Sports Arena Blvd Retail Cen
G1035-52-01



CPT-8 ○ recent CPT
B-4 ⊕ recent boring
© previous CPT

Site Plan

PROJECT NO. G1035-52-01

BORING B 1

ELEV. (MSL.) 13' DATE COMPLETED 10-27-2008

EQUIPMENT CME 75 WITH 8" HALLOW STEM BY: T. MALLEY

DEPTH IN FEET	SAMPLE NO.	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0			**ASPHALT** 5 inches			
			BASE 6 inches			
2	B1-1	CL	**UNDOCUMENTED FILL (Qudf)** Stiff, moist, brown, Sandy to Silty CLAY; trace gravel			
4	B1-2			15	103.3	18.7
6	B1-3	ML	Medium dense, moist, light brown to brown, fine Sandy SILT; trace gravel	14		11.4
8	B1-4	CL	Very stiff, damp, reddish brown, Silty CLAY; trace gravel	30	106.3	20.0
10	B1-5	ML	Medium dense, moist, brown, fine Sandy SILT; micaceous, brick fragments	18		29.0
12		ML	**ALLUVIUM (Qal)** Loose, saturated, brown, fine Sandy SILT; micaceous			
14						
16	B1-6		-Started using mud	5		
18						
20	B1-7			14		41.4
22		SM	Medium dense, saturated, gray, Silty, fine to medium SAND			
24						
26	B1-8		-Becomes micaceous	20	88.2	32.8
28						

G1035-52-01.GPJ

Figure A-1,
Log of Boring B 1, Page 1 of 2

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▨ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1035-52-01

BORING B 1

ELEV. (MSL.) 13' DATE COMPLETED 10-27-2008

EQUIPMENT CME 75 WITH 8" HALLOW STEM BY: T. MALLEY

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B1-9					13		35.2
32								
34								
36	B1-10				-Shells	19	97.5	29.1
38								
40	B1-11					14		30.7
42				CL	Soft, saturated, dark gray, Silty CLAY			
44								
46	B1-12			SM+ML	Very loose, saturated, dark gray, Silty, fine SAND to Sandy SILT; trace shells	4	90.8	33.1
48								
50	B1-13				-Becomes medium dense to stiff	11		36.9
					BORING TERMINATED AT 51½ FEET Groundwater encountered at 12½ feet Backfilled with 4.5 ft³ bentonite grout			

G1035-52-01.GPJ

Figure A-1,
Log of Boring B 1, Page 2 of 2

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1035-52-01

BORING B 2

ELEV. (MSL.) 13' DATE COMPLETED 10-27-2008

EQUIPMENT CME 75 WITH 8" HALLOW STEM BY: T. MALLEY

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					**ASPHALT** 5 inches			
	B2-1			CL+SC	**BASE** 6 inches			
2					**UNDOCUMENTED FILL (Qudf)**			
	B2-2				Soft to loose, moist, brown, Sandy CLAY to Clayey, fine to coarse SAND	4		13.7
4								
6	B2-3			SM	**ALLUVIUM (Qal)**	10	91.0	20.7
					Loose, moist, brown, Silty, fine SAND; micaceous			
8	B2-4				-No recovery	PUSH		
10					-Becomes very moist, dark grayish brown			
	B2-5		▼			PUSH	74.0	50.3
12								
14								
	B2-6				-Becomes saturated; started using mud	6		36.1
16								
18								
20					-Becomes medium dense, gray			
	B2-7					14		
22								
24								
	B2-8				-Becomes loose	6		32.0
26								
28								

Figure A-2,
Log of Boring B 2, Page 1 of 2

G1035-52-01.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▨ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1035-52-01

BORING B 2

ELEV. (MSL.) 13' DATE COMPLETED 10-27-2008

EQUIPMENT CME 75 WITH 8" HALLOW STEM BY: T. MALLEY

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B2-9					4	82.9	41.5
32								
34								
36	B2-10				-Becomes medium dense, fine- to medium-grained; trace shells	15		29.2
38								
40	B2-11					29	96.6	30.6
42								
44								
46	B2-12			SM+CL	Loose to soft, saturated, gray, Silty, fine SAND to Silty CLAY	4		41.5
48								
50	B2-13			CL	Soft, saturated, dark gray, Silty CLAY	3	80.0	44.0
					BORING TERMINATED AT 51 FEET Groundwater encountered at 11 feet Backfilled with 4.5 ft³ bentonite grout			

Figure A-2,
Log of Boring B 2, Page 2 of 2

G1035-52-01.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▨ ... DISTURBED OR BAG SAMPLE
- ◥ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1035-52-01

BORING B 3

ELEV. (MSL.) 13' DATE COMPLETED 10-28-2008

EQUIPMENT CME 75 WITH 8" HALLOW STEM BY: T. MALLEY

DEPTH IN FEET	SAMPLE NO.	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0			**ASPHALT** 5 inches			
			BASE 20 inches			
2	B3-1	SC	**UNDOCUMENTED FILL (Qudf)**			
	B3-2		Medium dense, moist, brown, Clayey, fine to medium SAND	25	112.2	12.4
4		CL	Stiff, moist, brown, Silty to Sandy CLAY; trace gravel			
	B3-3			10		14.9
6						
8	B3-4	SM	**ALLUVIUM (Qal)**			
			Medium dense, moist, Silty, fine SAND; micaceous	23	94.3	26.8
10	B3-5			5		19.3
12						
			-Becomes saturated at 13 feet			
14						
			-No recovery at 15 feet	3		
16						
18	B3-6			6	77.8	47.0
20		ML	Very soft, saturated, gray, Clayey SILT; trace fine sand; micaceous			
	B3-7			PUSH		44.9
22						
24		SM	Loose, saturated, dark gray, Silty, fine SAND; micaceous			
	B3-8			8	95.2	32.2
26						
28						

Figure A-3,
Log of Boring B 3, Page 1 of 2

G1035-52-01.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▨ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1035-52-01

BORING B 3

ELEV. (MSL.) 13' DATE COMPLETED 10-28-2008

EQUIPMENT CME 75 WITH 8" HALLOW STEM BY: T. MALLEY

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B3-9					5		33.6
32								
34								
36	B3-10				-Becomes medium dense, fine- to medium-grained, abundant shells	20	104.4	25.1
38								
40	B3-11				-Becomes fine- to coarse-grained, fewer shells	12		22.1
42								
44								
46	B3-12				-Becomes fine- to medium-grained; trace shells	10	84.2	40.1
48								
50	B3-13				-Becomes fine-grained	4		40.6
				SC	Soft, saturated, dark gray, Clayey, fine SAND; micaceous			
					BORING TERMINATED AT 51½ FEET Groundwater encountered at 13 feet Backfilled with 4.5 ft³ bentonite grout			

Figure A-3,
Log of Boring B 3, Page 2 of 2

G1035-52-01.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. G1035-52-01

BORING B 4

ELEV. (MSL.) 13' DATE COMPLETED 10-28-2008

EQUIPMENT CME 75 WITH 8" HALLOW STEM BY: T. MALLEY

DEPTH IN FEET	SAMPLE NO.	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0			**ASPHALT** 5 inches			
			BASE 6 inches			
2	B4-1	SM	**ALLUVIUM (Qal)**			
	B4-2		Loose, moist, Silty, fine SAND; micaceous	4		19.4
4						
6	B4-3			5	82.1	43.4
8						
	B4-4			1		16.8
10	B4-5		-Becomes very moist	6	102.6	25.8
12						
14						
			-No recovery at 15 feet	1		
16						
18		ML	Very soft, saturated, dark gray, Clayey SILT; micaceous			
	B4-6			PUSH		36.4
20						
	B4-7			PUSH	82.6	41.5
22						
24		SC+SM	Loose, saturated, dark gray, Clayey to Silty, fine SAND; micaceous			
	B4-8			PUSH		39.9
26						
28						

Figure A-4,
Log of Boring B 4, Page 1 of 2

G1035-52-01.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. G1035-52-01

BORING B 4

ELEV. (MSL.) 13' DATE COMPLETED 10-28-2008

EQUIPMENT CME 75 WITH 8" HALLOW STEM BY: T. MALLEY

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B4-9			SM	Medium dense, saturated, brown, Silty, fine to medium SAND; micaceous	16	99.3	29.3
32								
34				ML	Very soft, saturated, dark gray, Clayey SILT; micaceous, abundant shells			
36	B4-10					PUSH		36.6
38								
40				SM	Medium dense, saturated, grayish brown, Silty, fine to medium SAND; micaceous			
42	B4-11					25	93.3	30.7
44								
46	B4-12			CL	Very soft, saturated, gray, Silty CLAY; trace shells	PUSH		46.0
48								
50	B4-13				-Becomes dark gray	4	69.3	57.2
					BORING TERMINATED AT 51 FEET Groundwater encountered at 10½ feet Backfilled with 4.5 ft³ bentonite grout			

Figure A-4,
Log of Boring B 4, Page 2 of 2

G1035-52-01.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

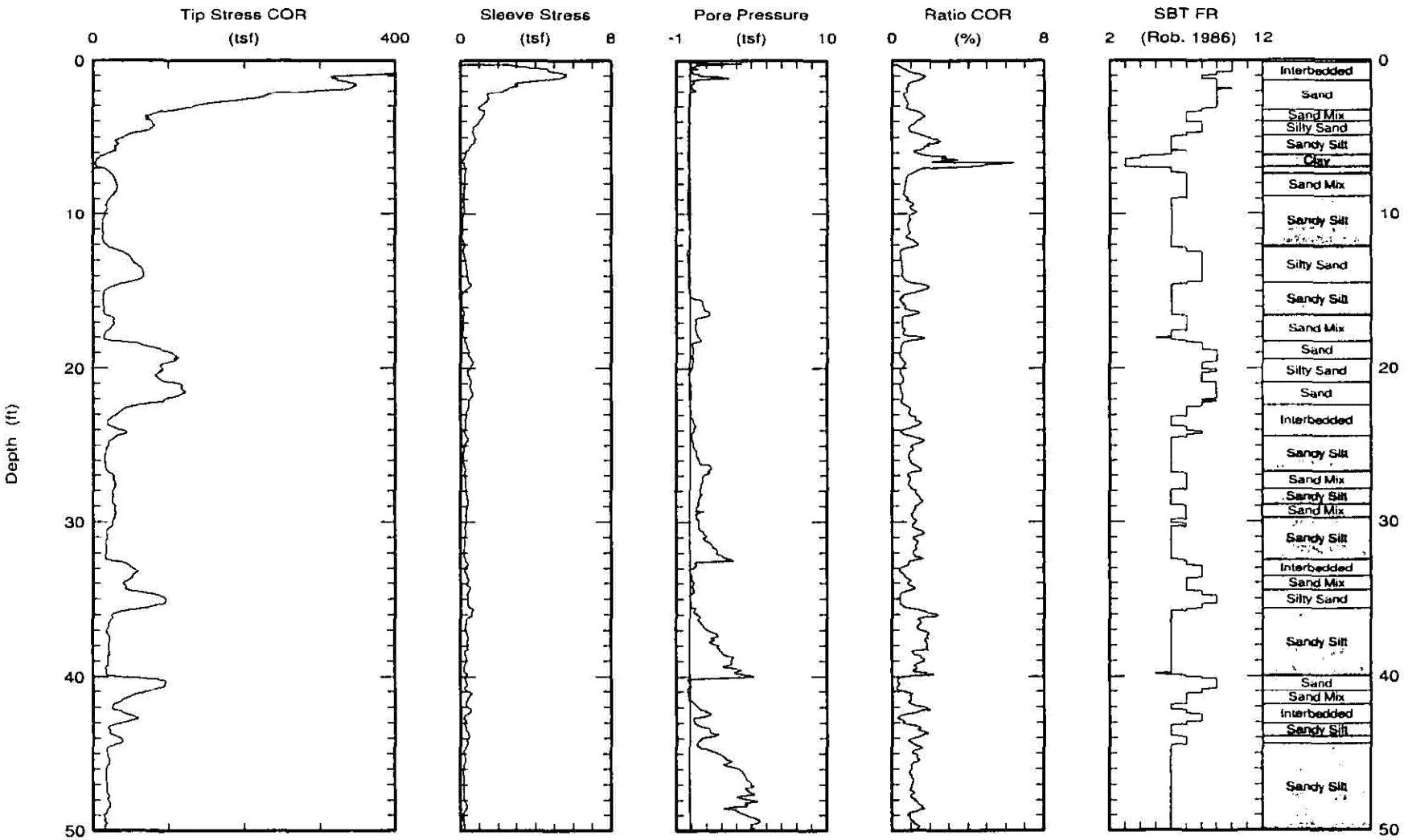
GEOCON

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

CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-1
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



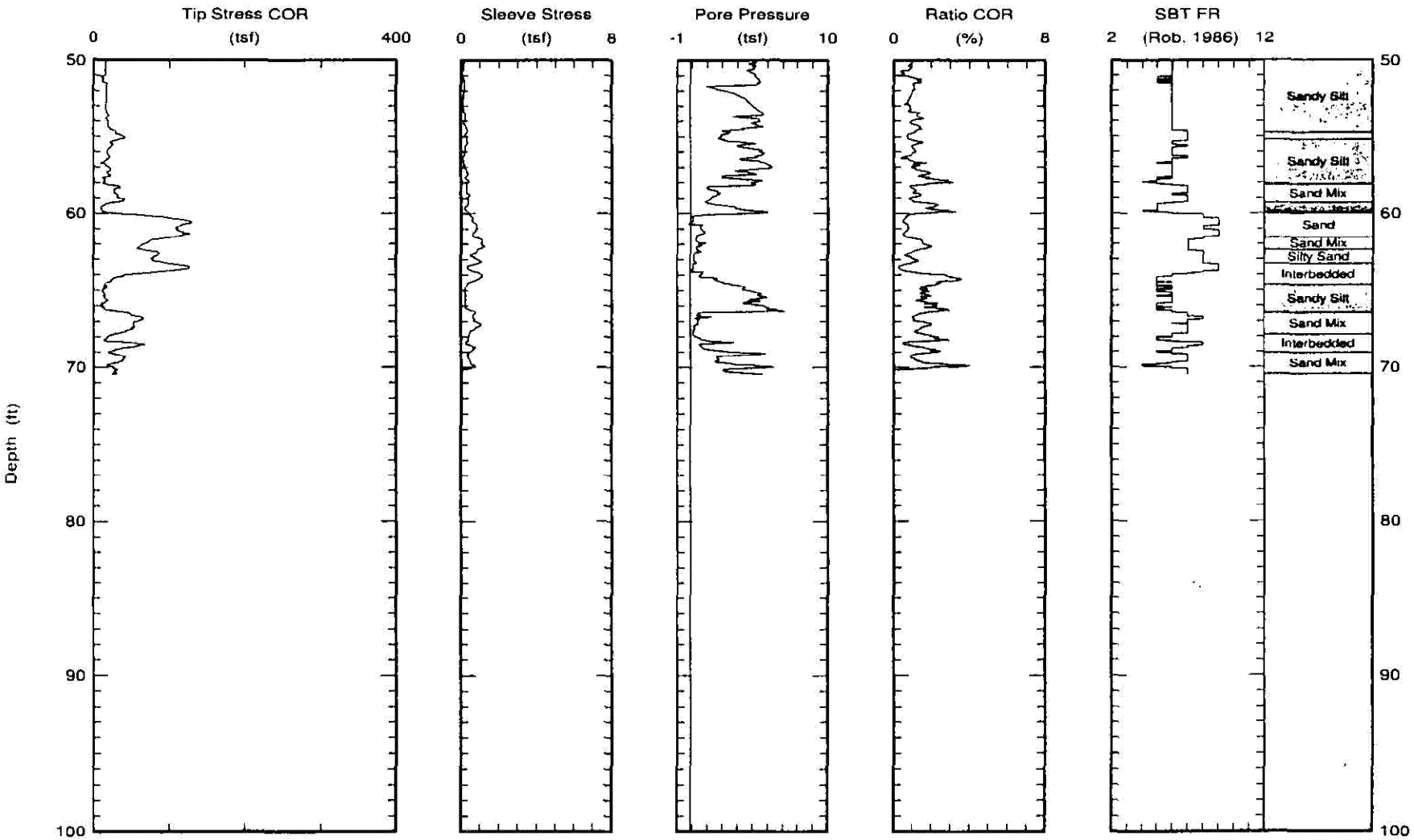
Maximum depth: 70.48 (ft)

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
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skehoe@msn.com

CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-1
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



Maximum depth: 70.48 (ft)

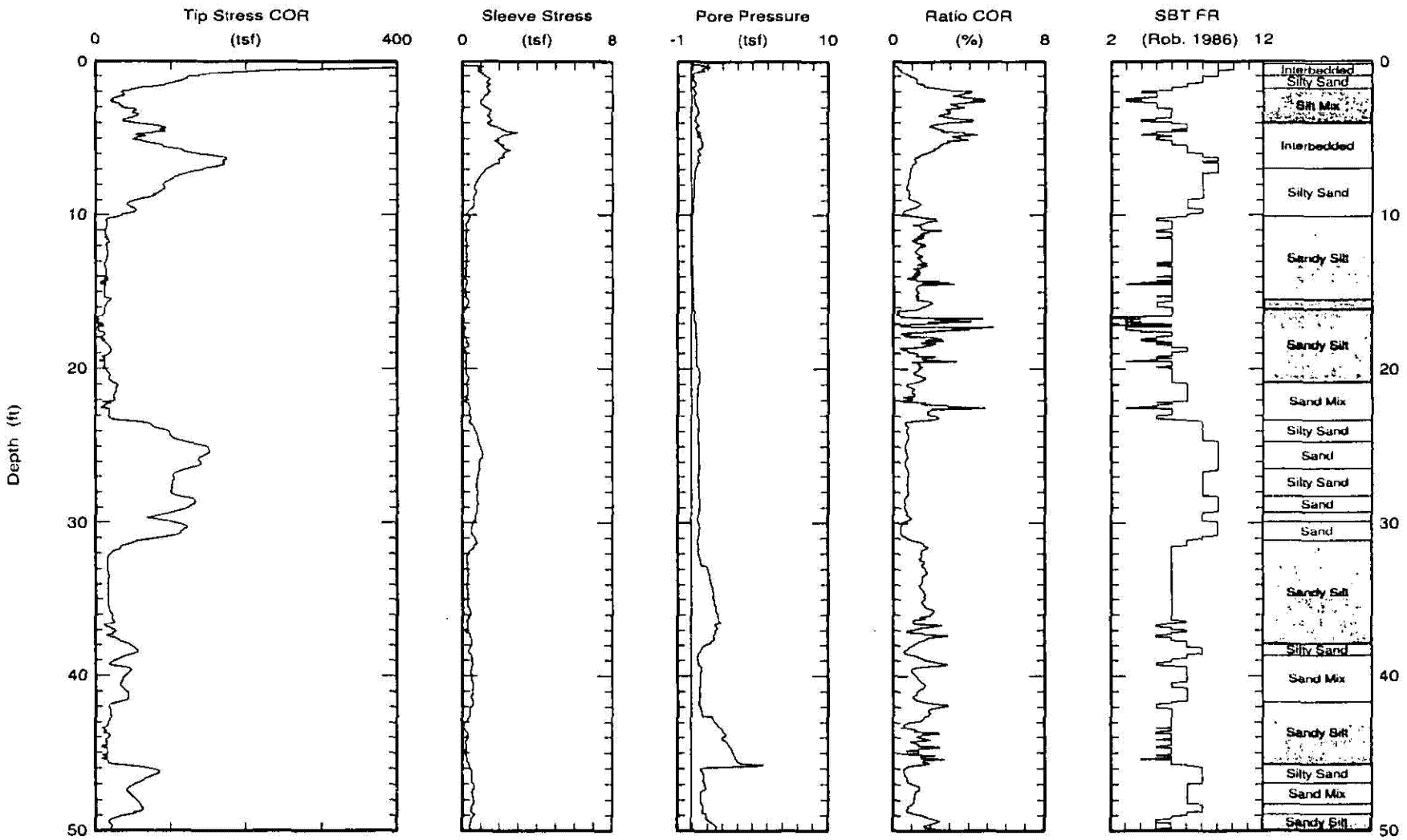
BACKFILLED WITH 0.2 CU. FT. OF BENTONITE GROUT

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Fax: (714) 901-7289
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skehoe@msn.com

CPT Data
30 ton rig

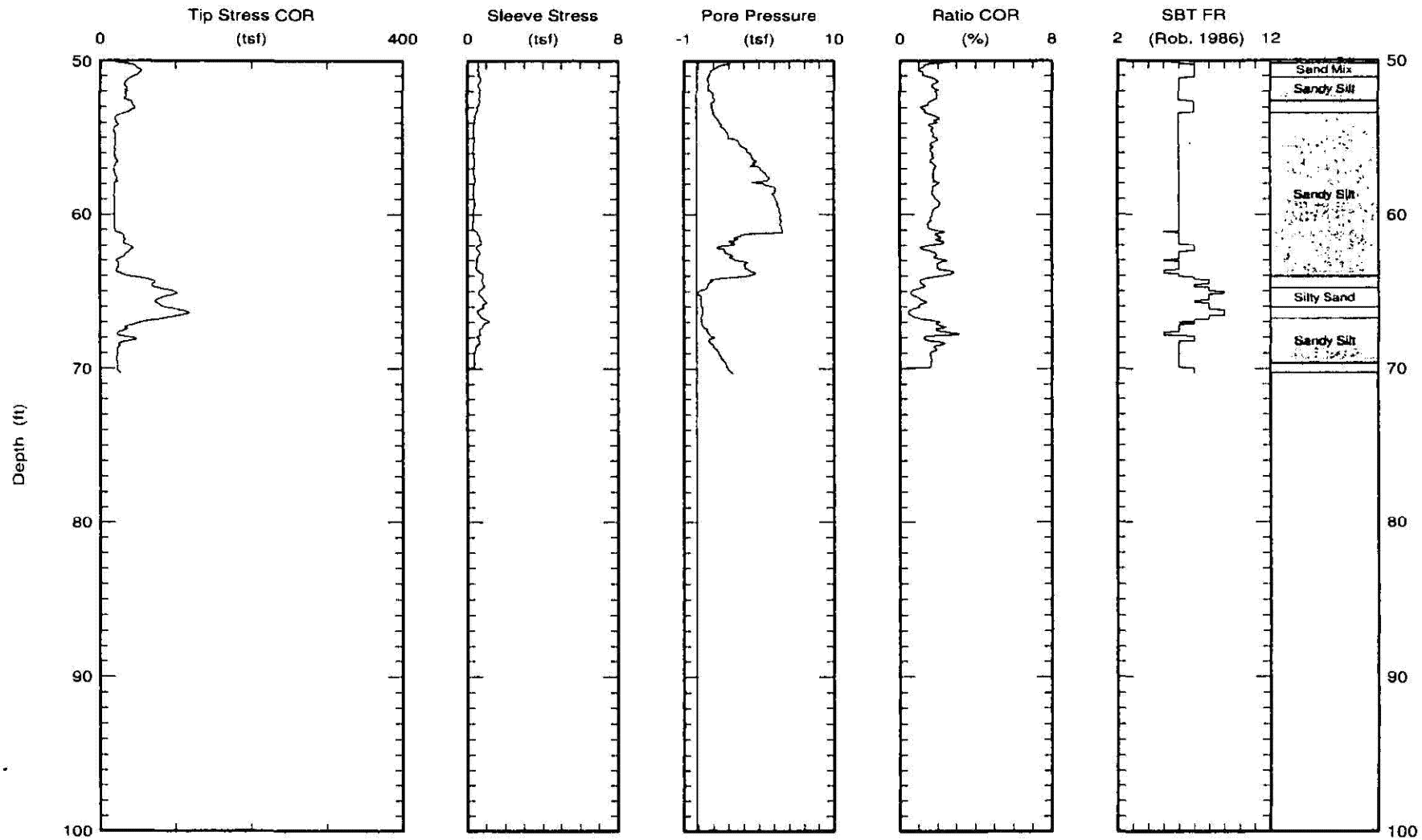
Date: 28/Oct/2008
Test ID: CPT-2
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



Maximum depth: 70.27 (ft)

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	Client: Geocon Consultants Inc. Job Site: Sports Arena Blvd Retail Site	



Maximum depth: 70.27 (ft)

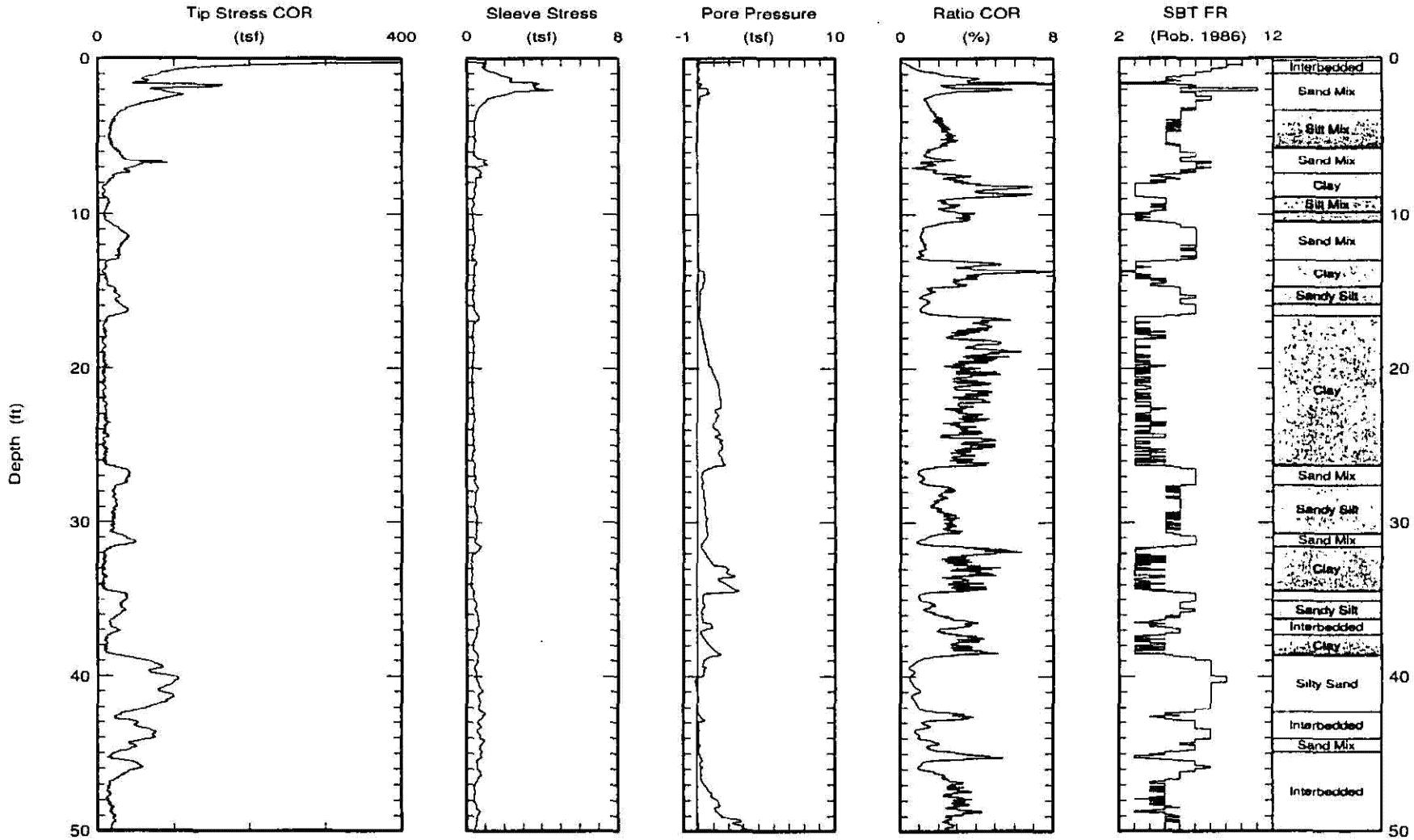
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skehoe@msn.com

CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-3
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



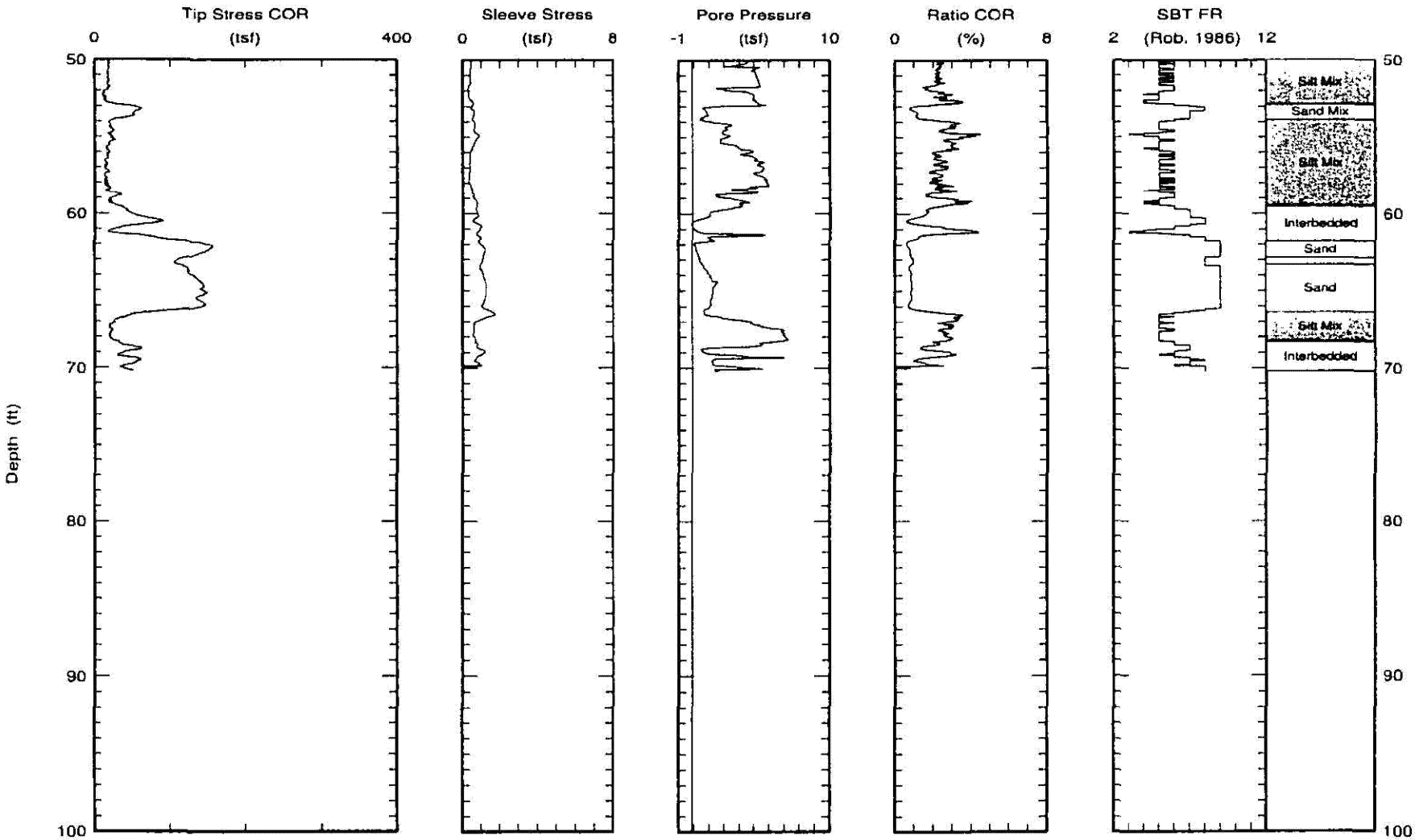
Maximum depth: 70.20 (ft)

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CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-3
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



Maximum depth: 70.20 (ft)

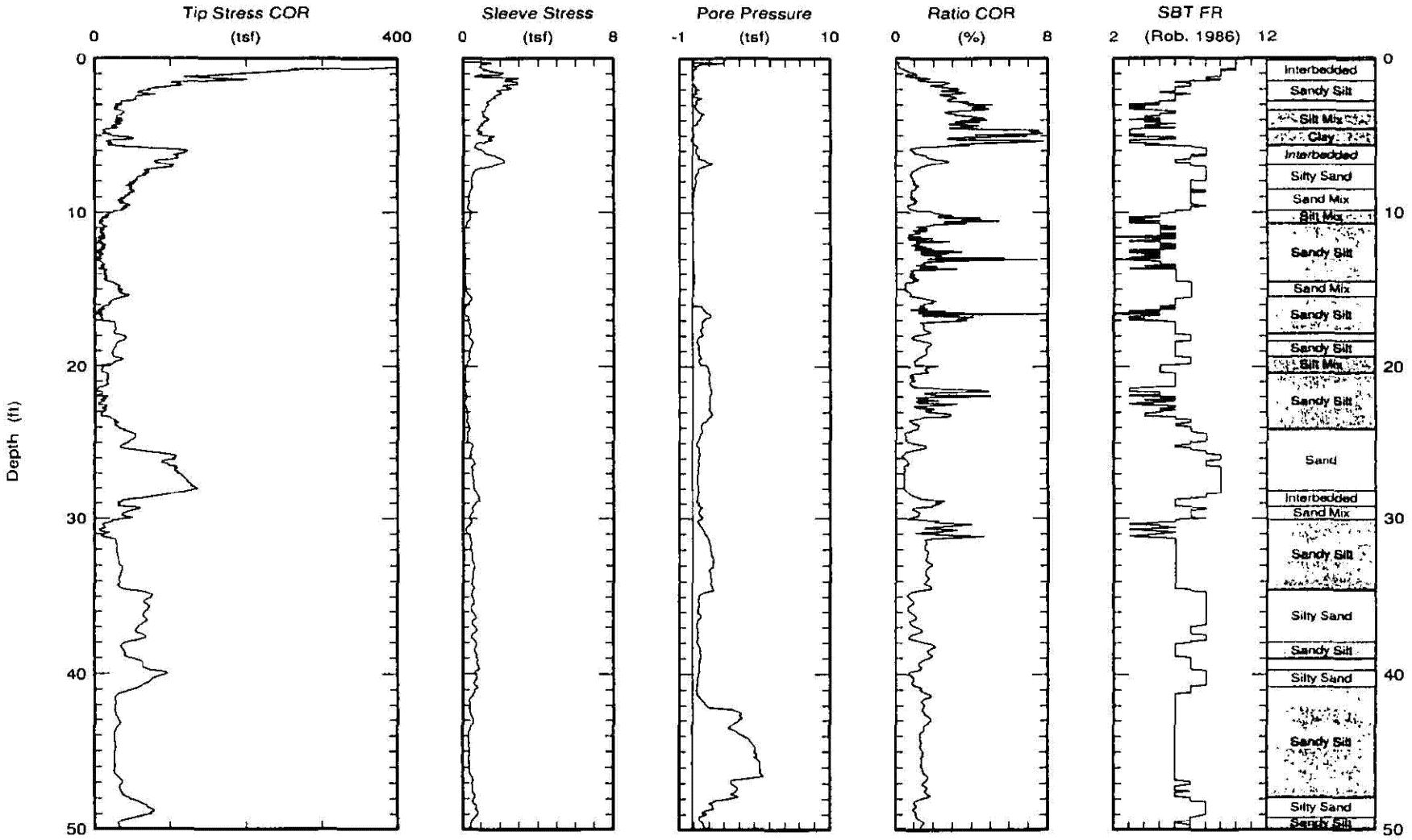
BACKFILLED WITH 0.1 CU. FT. OF BENTONITE GROUT

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skehoe@msn.com

CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-4
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



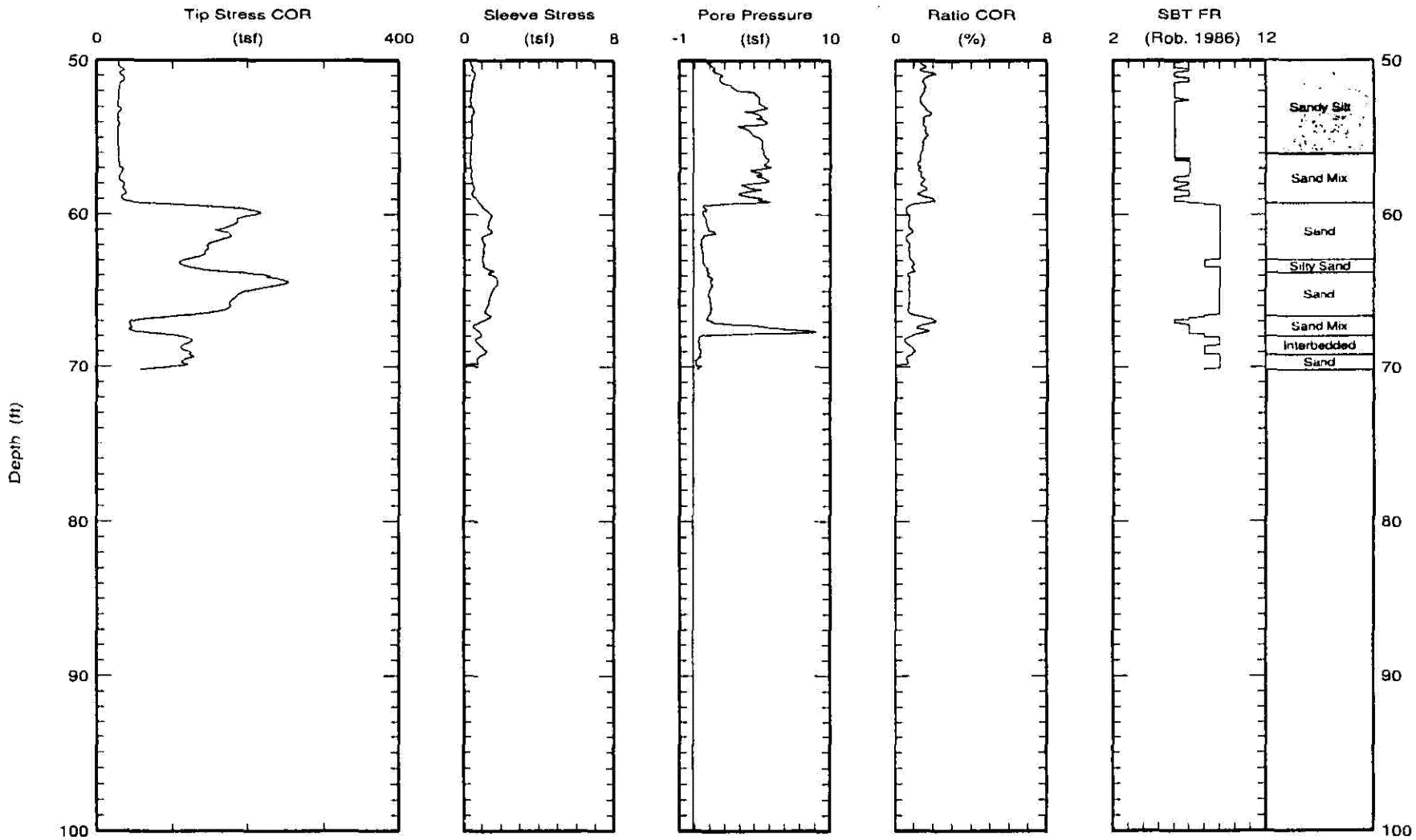
Maximum depth: 70.22 (ft)

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Fax: (714) 901-7289
rich@kehoetesting.com
skehoe@msn.com

CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-4
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



Maximum depth: 70.22 (ft)

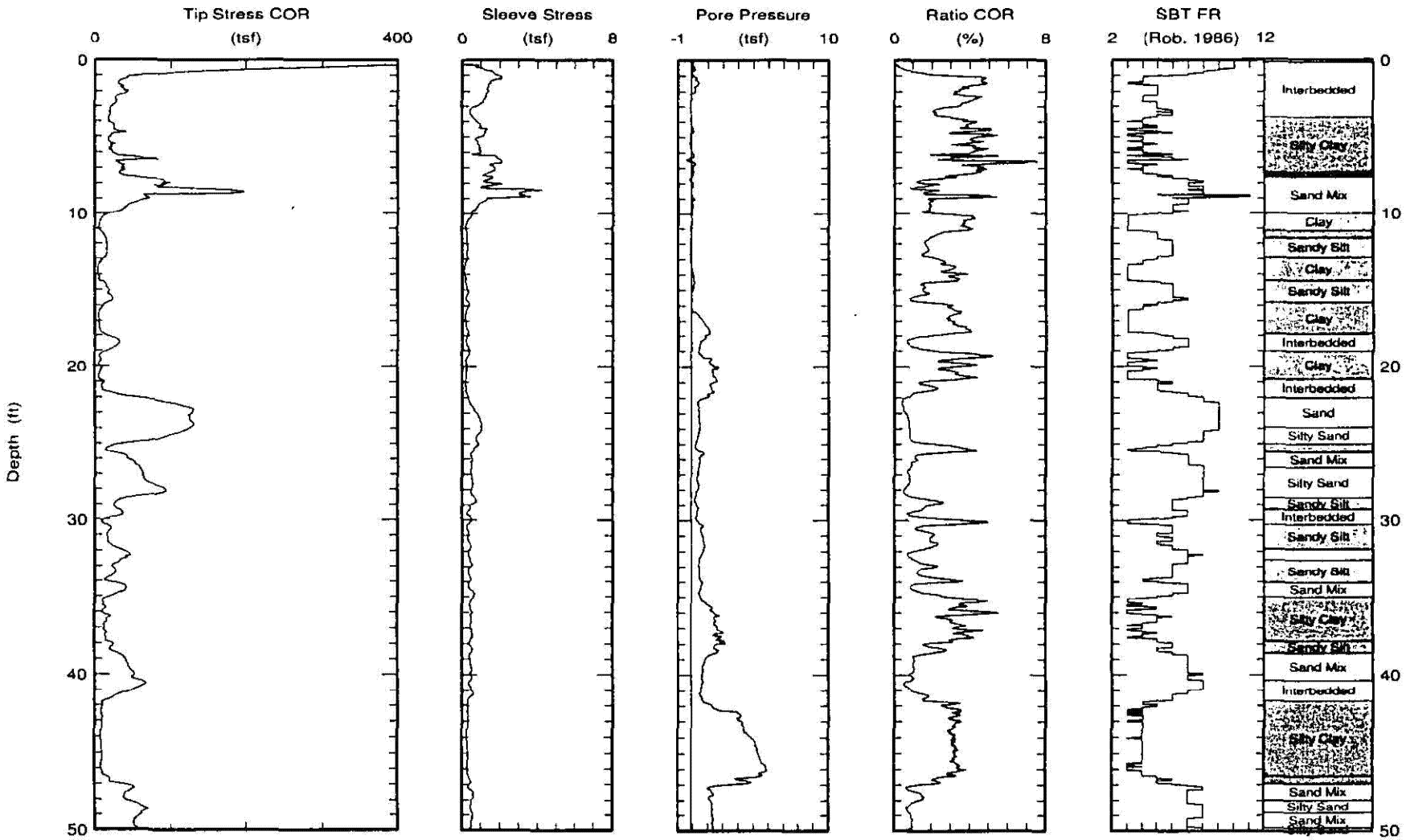
BACKFILLED WITH 0.2 CU. FT. OF BENTONITE GROUT

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CPT Data
30 ton rig

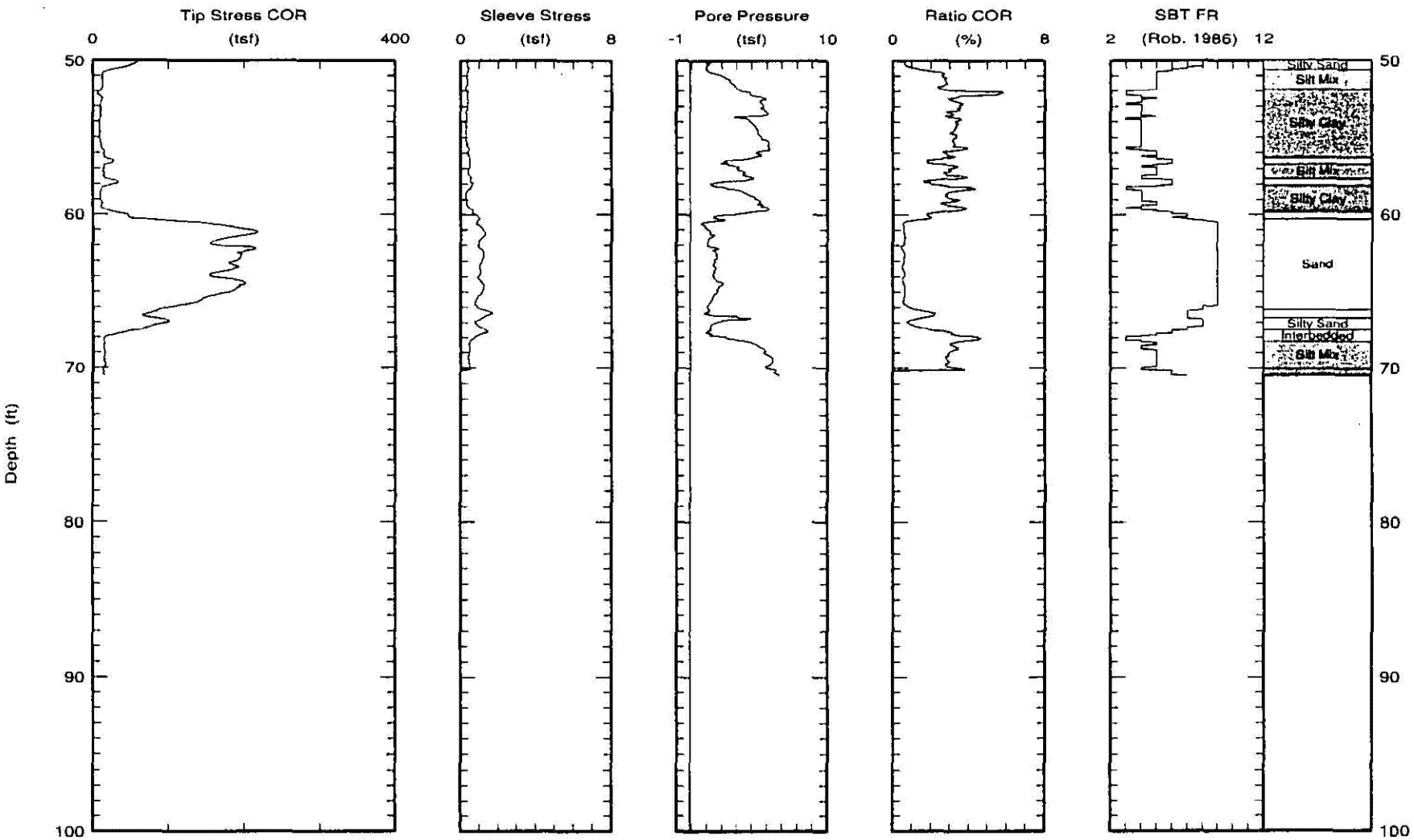
Date: 28/Oct/2008
Test ID: CPT-5
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



Maximum depth: 70.46 (ft)

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	Client: Geocon Consultants Inc. Job Site: Sports Arena Blvd Retail Site	



Maximum depth: 70.48 (ft)

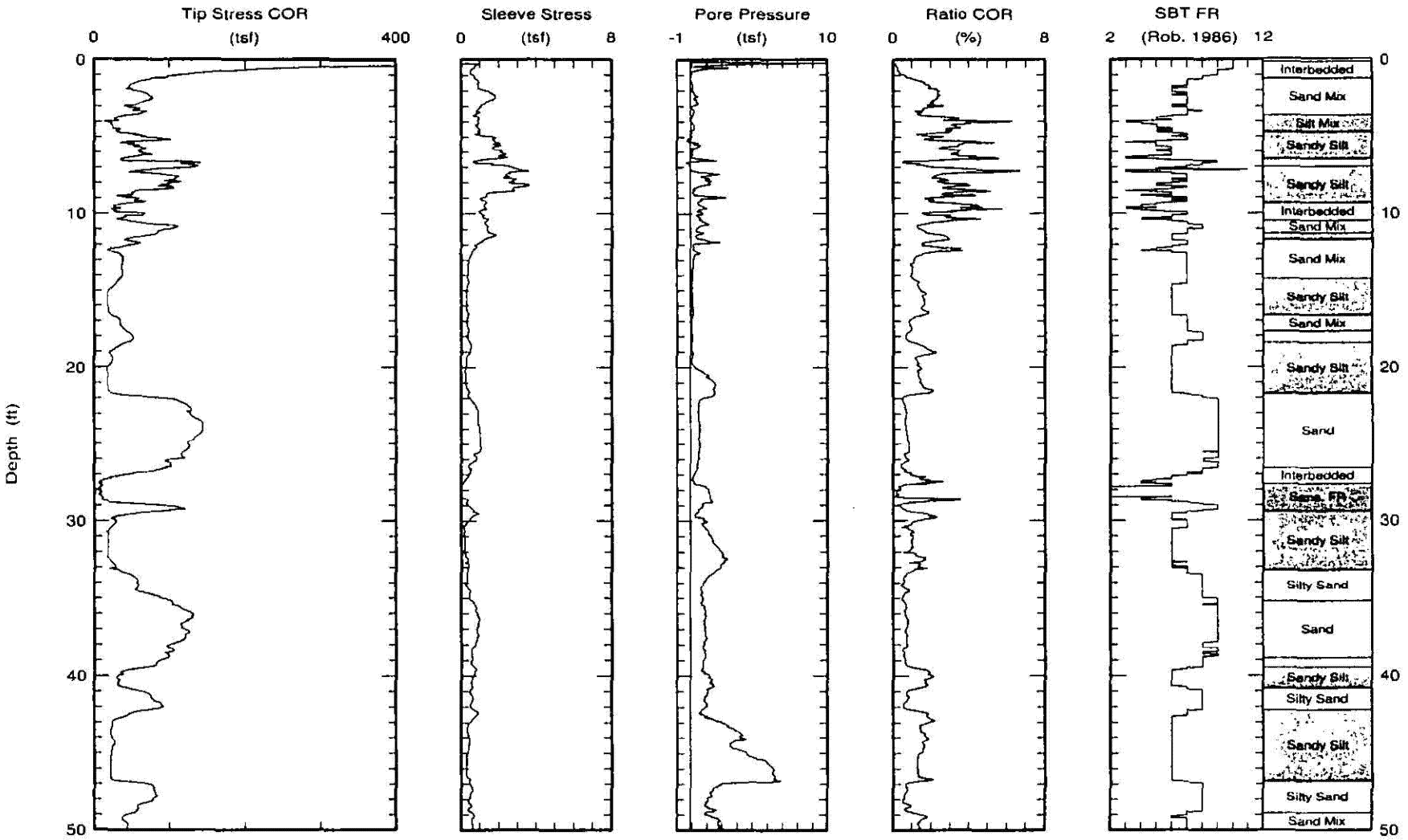
BACKFILLED WITH 0.2 CU. FT. OF BENTONITE GROUT

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CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-6
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



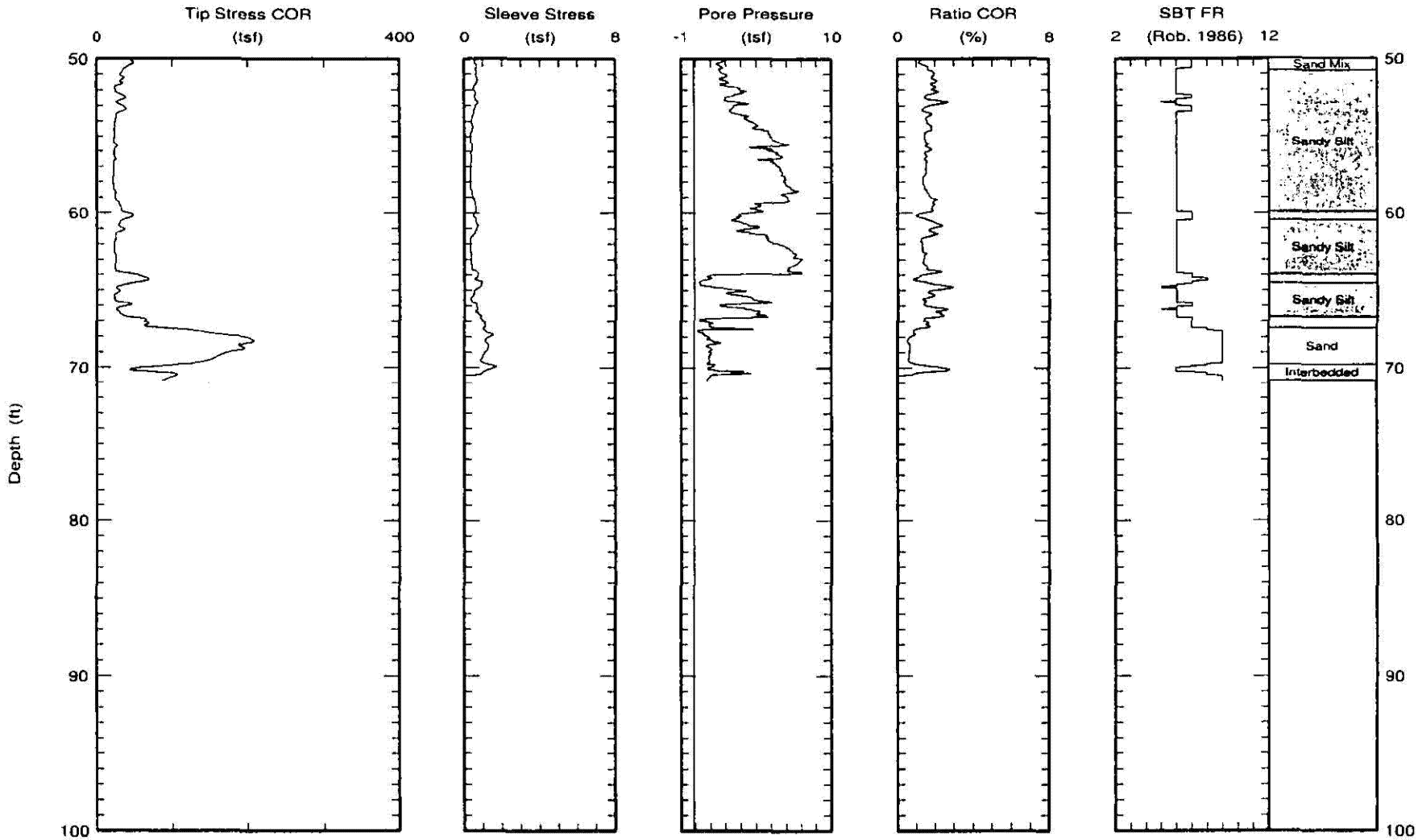
Maximum depth: 70.85 (ft)

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CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-6
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



Maximum depth: 70.85 (ft)
Page 2 of 2

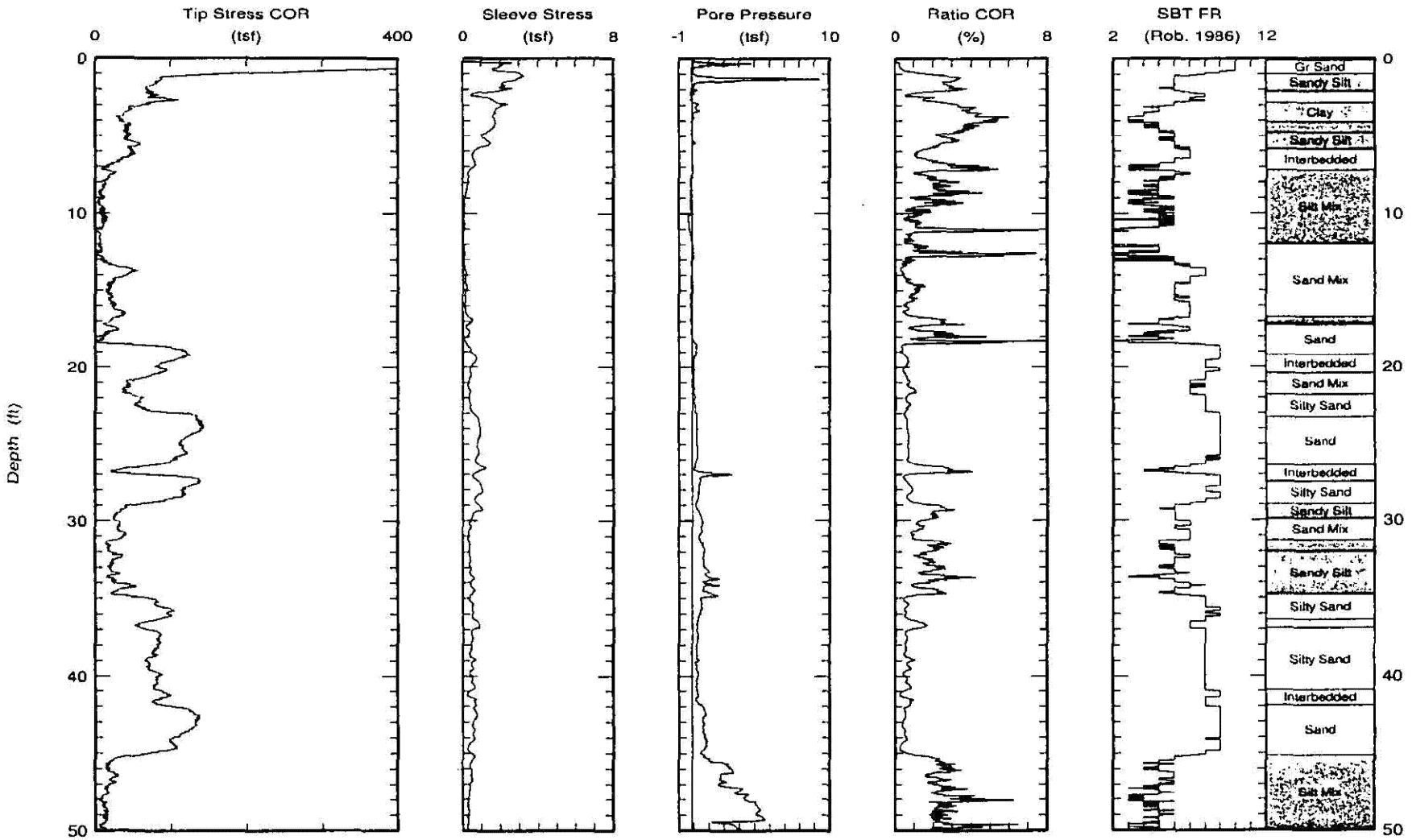
BACKFILLED WITH 0.1 CU. FT. OF BENTONITE GROUT

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CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-7
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



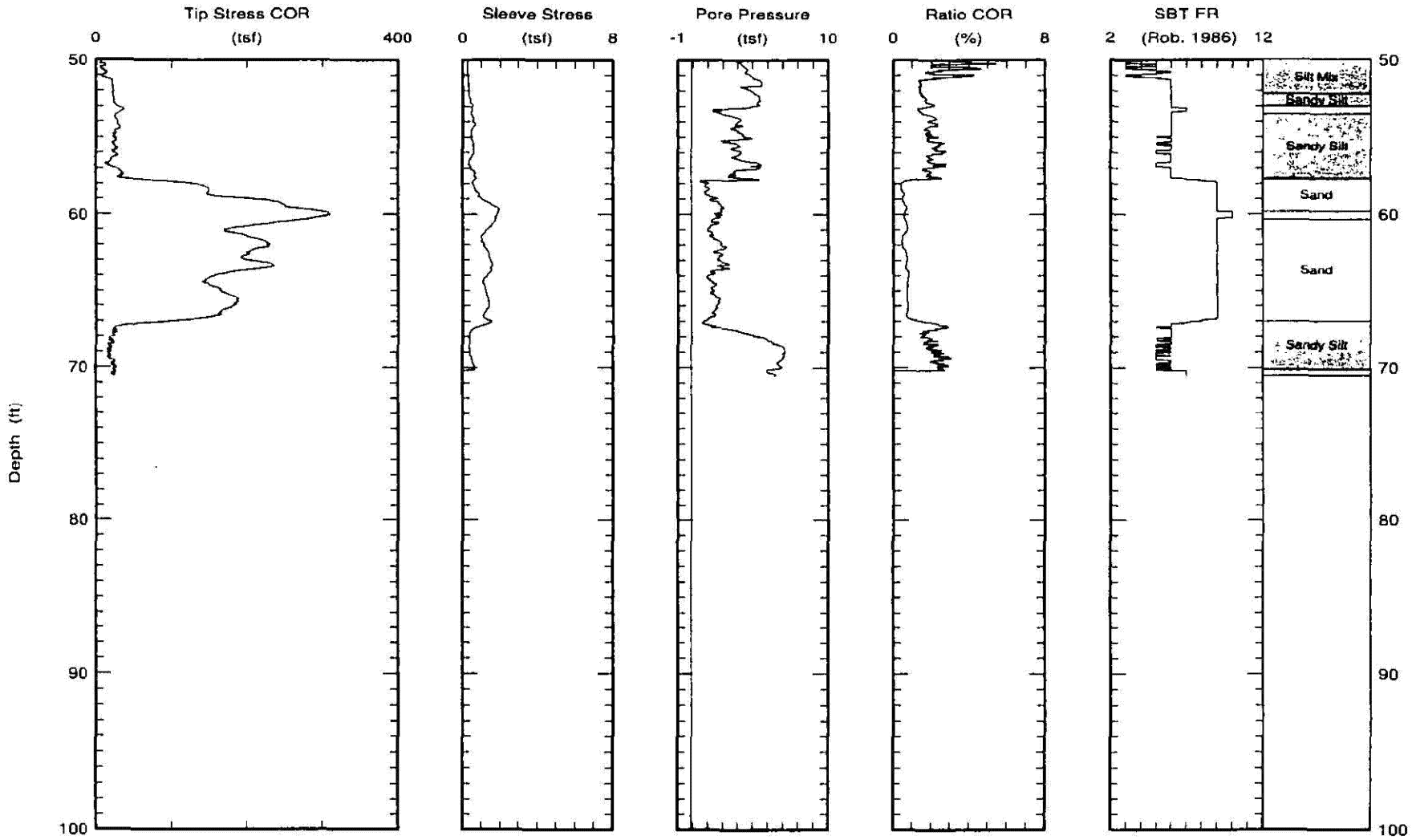
Maximum depth: 70.54 (ft)

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Fax: (714) 901-7289
rich@kehoetesting.com
skehoe@msn.com

CPT Data
30 ton rig

Date: 28/Oct/2008
Test ID: CPT-7
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



Maximum depth: 70.54 (ft)

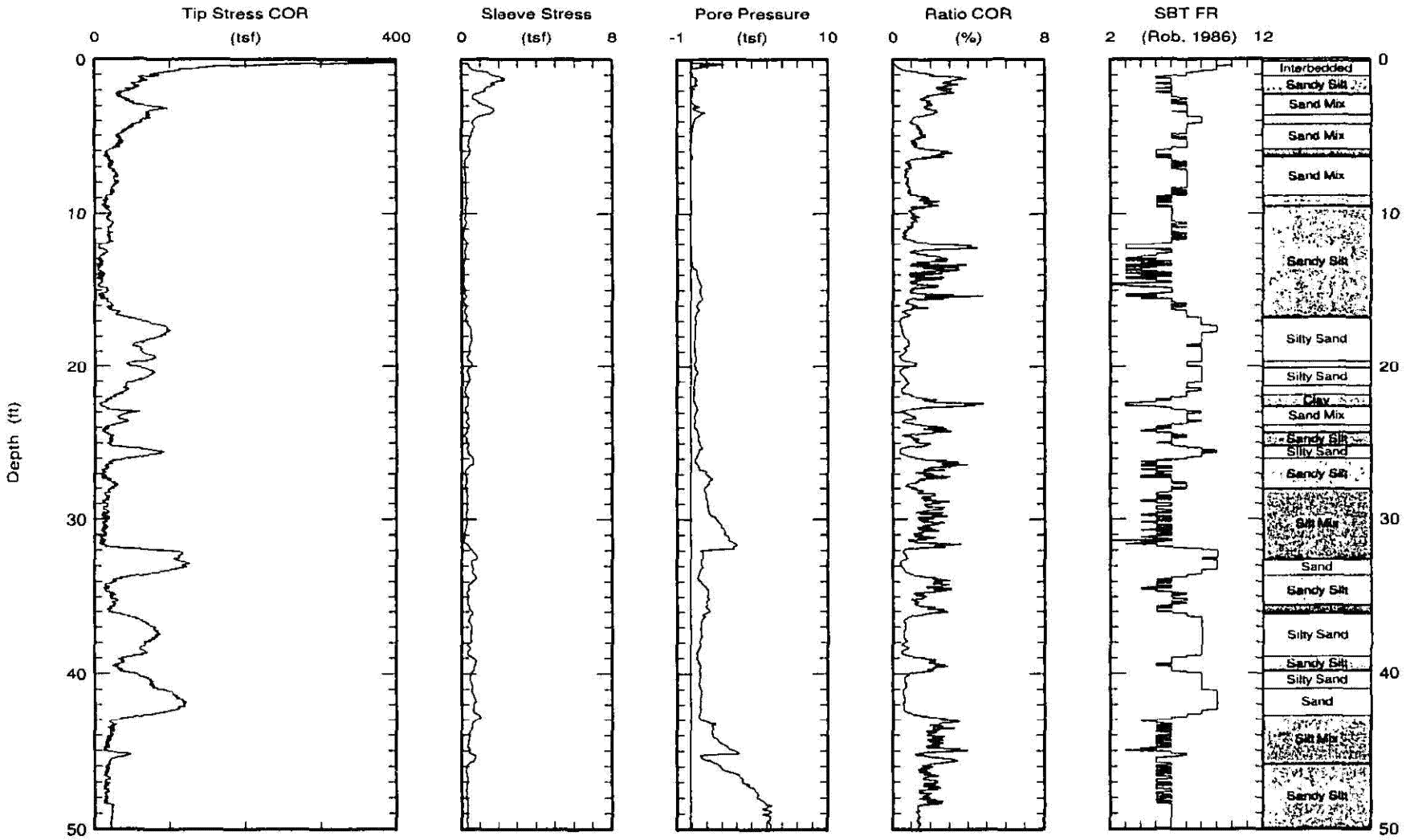
BACKFILLED WITH 0.2 CU. FT. OF BENTONITE GROUT

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CPT Data
30 ton rig

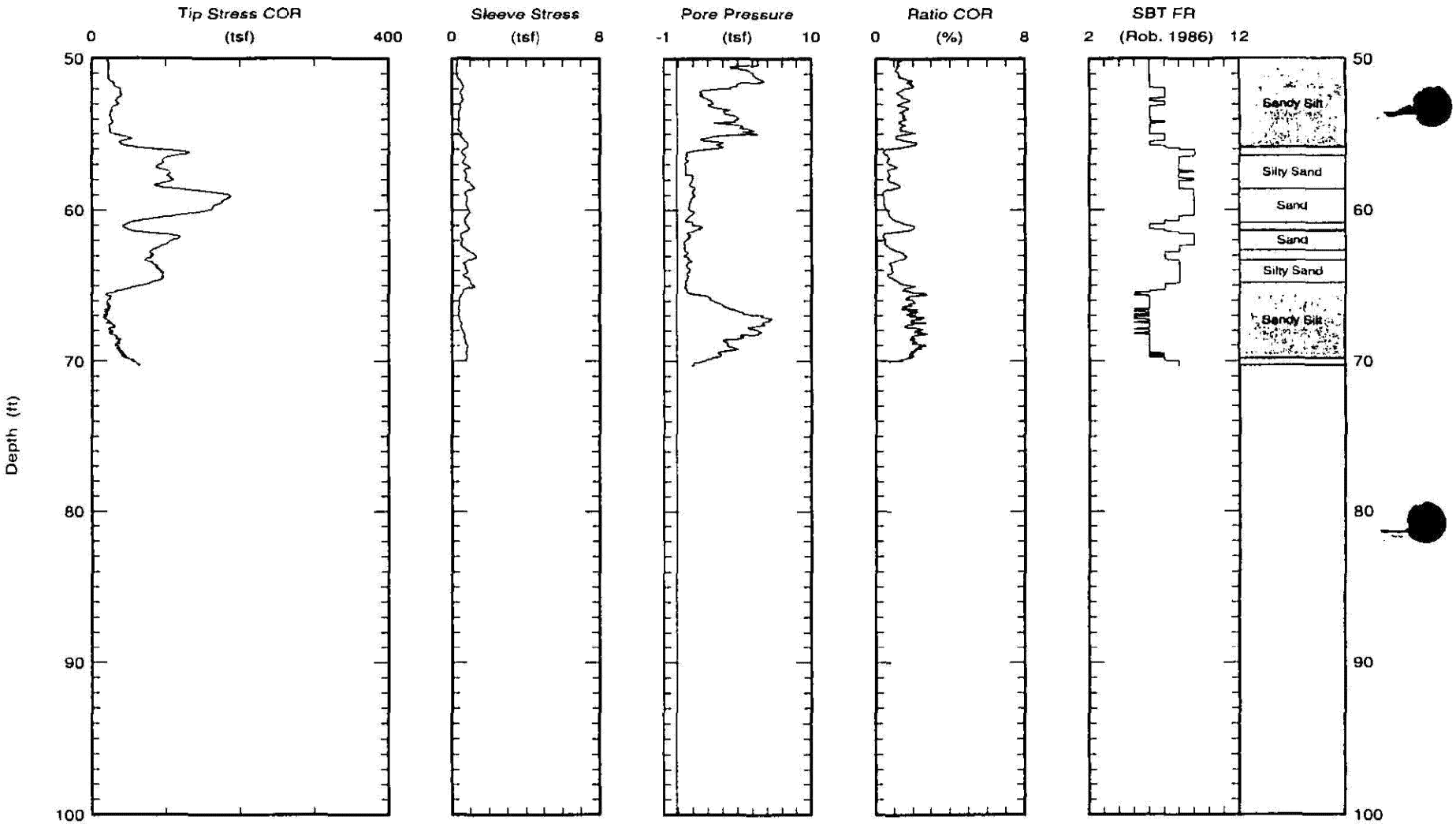
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Test ID: CPT-8
Project: SanDiego

Client: Geocon Consultants Inc.
Job Site: Sports Arena Blvd Retail Site



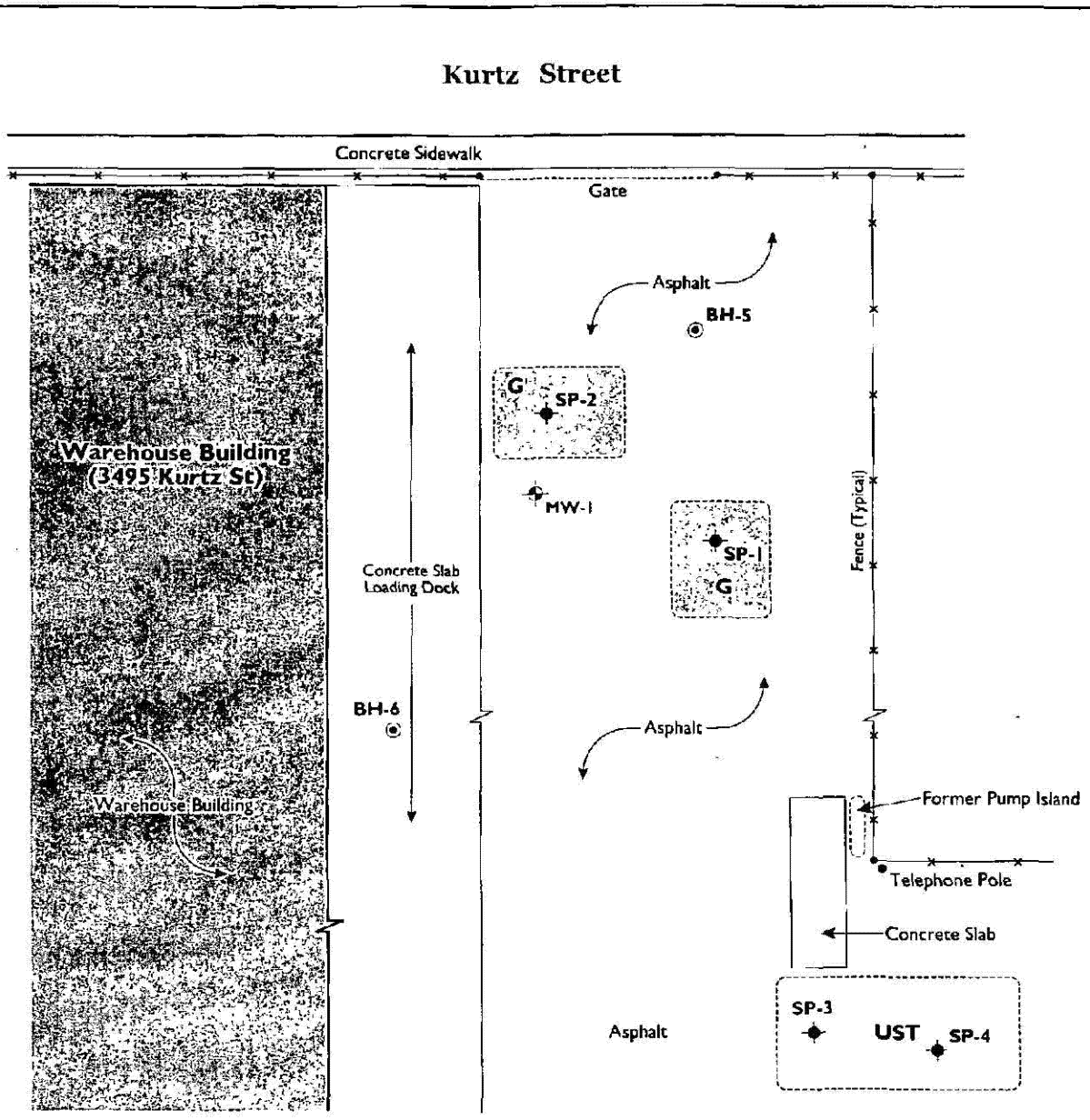
Maximum depth: 70.32 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com skehoe@msn.com	CPT Data 30 ton rig	Date: 28/Oct/2008 Test ID: CPT-8 Project: SanDiego
	Client: Geocon Consultants Inc. Job Site: Sports Arena Blvd Retail Site	



Maximum depth: 70.32 (ft)

BACKFILLED WITH 0.1 CU. FT. OF BENTONITE GROUT



EXPLANATION

- SP-4 — Strataprobe (Direct-Push) Boring
- BH-6 — Hollow-Stem Auger Boring
- G — Geophysical Anomaly
- MW-1 — Groundwater Monitoring Well
- UST — Former Underground Storage Tank

0 15 30 45

Approximate Graphic Scale:
One Inch Equals 30 Feet

North

Note:
All locations are approximate.

BRYANT GEOENVIRONMENTAL INC.

Geoscience Services • Project Management • Environmental Assessment

Project Name: WFB/Kenton

Project No.: 00-783A | Date: May 3, 2001

BORING/WELL LOCATION MAP

Figure 1

BRYANT GEOENVIRONMENTAL INC.
Geoscience Services • Project Management • Environmental Assessment

BORING/WELL COMPLETION LOG
IDENTIFICATION: BH-5

Client: Kenton	Date: May 3, 2001
Project Name: Kurtz Street	Location: Near Entrance, North End
Project Number: 00-783A	Logged By: Mark Bryant
Drilled By: West Hazmat	Method: Hollow-Stem Auger
Surface Elevation: 10 Feet ±	Total Depth: 15.0 Feet

Sample Number	PID/FID Reading (ppm)	Test Data	Blow Count	Depth (Feet)	Graphic Log	Soil Type	Geologic Description: Formation, grain size, texture, color, moisture, sorting/grading, density, other lithologic features, staining odor, etc.	Backfill
							3 Inches Asphalt	
						ML	**HYDRAULIC FILL:** **Sand,** very fine- to medium-grained, trace silt, very micaceous, medium dense, moist to 5 feet, well sorted, no stains or odors, olive brown (2.5Y 4/3).	
BH-5-5		ND		5				
				10		ML/ SP	**Silty Sand,** some silt, fine sand interbedded with fine- to medium-grained sand, wet at 10 feet, dark grayish brown (2.5Y 3/2-4/2).	
BH-5-W		ND						
				15			**TOTAL DEPTH 15 FEET** Installed 2-inch PVC, 0.020 slot, screened 5-15 feet into auger, used disposable bailer to collect groundwater samples. Groundwater level at about 10 feet below grade; backfilled borehole with bentonite/grout (Grout Well) to near surface, finished upper 4 inches with concrete.	
				20				
				25				
				30				

SYMBOLS

Groundwater First Encountered

Static Groundwater Level

Note:
ND= Not Detected (TPH or BTEX)

Drafted By: Harvey Lee

Reviewed By: Mark Bryant

Date: May 8, 2001

BRYANT GEOENVIRONMENTAL INC.
Geoscience Services • Project Management • Environmental Assessment

BORING/WELL COMPLETION LOG
IDENTIFICATION: BH-6

Client: Kenton	Date: May 3, 2001
Project Name: Kurtz Street	Location: Southwest of MW-1 (UST Area)
Project Number: 00-783A	Logged By: Mark Bryant
Drilled By: West Hazmat	Method: Hollow-Stem Auger
Surface Elevation: 10.5 Feet ±	Total Depth: 15.0 Feet

Sample Number	PID/FID Reading (ppm)	Test Data	Blow Count	Depth (Feet)	Graphic Log	Soil Type	Geologic Description: Formation, grain size, texture, color, moisture, sorting/grading, density, other lithologic features, staining odor, etc.	Backfill
							4 Inches Concrete	
						ML	**HYDRAULIC FILL:** **Sand,** fine- to medium-grained, mostly fine sand, very micaceous, well sorted, medium dense, no odors or stains, occasional thin layers of sandy silt with coarse sand, dark gray brown to dark yellow brown (10YR 4/2-4/3), wet a 8 feet.	
BH-6-5		ND		5				
				10				
BH-6-W		ND				SM	**Silty Sand,** smostly fine sand and silt, moderately well sorted, no odors or stains.	
				15			**TOTAL DEPTH 15 FEET** Installed 2-inch PVC, 0.020 slot, screened 5-15 feet into auger, used disposable bailer to collect groundwater samples. Groundwater level at about 12 feet below grade; backfilled borehole with bentonite/grout (Grout Well) to near surface, finished upper 6 inches with concrete.	
				20				
				25				
				30				

SYMBOLS

▼ Groundwater First Encountered

▽ Static Groundwater Level

Note:
ND= Not Detected (TPH or BTEX)

Drafted By: Harvey Lee

Reviewed By: Mark Bryant

Date: May 8, 2001

BRYANT GEOENVIRONMENTAL INC.
Geoscience Services • Project Management • Environmental Assessment

BORING/WELL COMPLETION LOG
IDENTIFICATION: MW-1

Client: Kenton	Date: May 3, 2001
Project Name: Kurtz Street	Location: UST Anomaly (Southwest Side)
Project Number: 00-783A	Logged By: Mark Bryant
Drilled By: West Hazmat	Method: Hollow-Stem Auger
Surface Elevation: 10 Feet ±	Total Depth: 15.0 Feet

Sample Number	PID/FID Reading (ppm)	Test Data	Blow Count	Depth (Feet)	Graphic Log	Soil Type	Geologic Description: Formation, grain size, texture, color, moisture, sorting/grading, density, other lithologic features, staining odor, etc.	Backfill
MW-1-5		ND		5		ML	**4 Inches Asphalt** **HYDRAULIC FILL:** **Sand,** very fine- to fine-grained, very micaceous, well sorted, occasional layers of silty sand with coarse sand, no odors or stains, medium dense, dark grayish brown (10YR 4/2) to grayish brown (10YR 5/2).	
				10		SM	**Silty Sand,** silt >30%, very fine sand, very micaceous, well sorted, medium dense, no odors or stains, dark olive gray (5Y 3/2).	
				15			**TOTAL DEPTH 15 FEET** Groundwater first encountered at approximately 4 feet (wet), Dryer at 5-6 feet, wet again below 6-7 feet. 4-inch diameter PVC well screen installed to 15 feet, 0.020 slot screen from 5-15 feet, Monterey No.3 sand filter to 4 feet, surged and bailed for 15 minutes. Groundwater 7.9 feet before bailing well. Grout to 1 foot, concrete around well cover.	
				20				
				25				
				30				

SYMBOLS

Groundwater First Encountered

Static Groundwater Level

Note:
ND= Not Detected (TPH or BTEX)

Drafted By: Harvey Lee

Reviewed By: Mark Bryant

Date: May 8, 2001

BRYANT GEOENVIRONMENTAL INC.
Geoscience Services • Project Management • Environmental Assessment

BORING/WELL COMPLETION LOG
IDENTIFICATION: SP-1

Client: Wells Fargo	Date: February 6, 2001
Project Name: WFB/Kenton	Location: Southeast Geophysical Anomaly
Project Number: 00-783A	Logged By: Mark Bryant
Drilled By: TEG	Method: Strataprobe (Direct-Push)
Surface Elevation: 10.0± Feet	Total Depth: 16.0 Feet

Sample Number	PID/FID Reading (ppm)	Test Data	Blow Count	Depth (Feet)	Graphic Log	Soil Type	Geologic Description: Formation, grain size, texture, color, moisture, sorting/grading, density, other lithologic features, staining odor, etc.	Backfill
							3 Inches Asphalt	
						ML	**HYDRAULIC FILL:** **Sand,** very fine- to medium-grained sand, trace silt, very micaceous, medium dense, moist, no stains or odors, olive brown (2.5Y 4/3)	
SP-1-5		ND		5				
SP-1-10		ND		10		ML/ SP	Fine- to medium-grained, micaceous sand at 10 feet, wet, medium dense, well sorted, dark grayish brown (2.5Y 3/2-4/2)	
SP-1-W		ND		15				
							TOTAL DEPTH 16 FEET Pushed probe screen to 16 feet; Pulled up to 14 feet, collected groundwater sample with 1/2 inch diameter stainless steel bailer. Groundwater measured at 8.6 feet below grade. Backfilled with bentonite pellets, finished upper 3 inches with asphalt patch.	
				20				
				25				
				30				

SYMBOLS

Groundwater First Encountered

Static Groundwater Level

Note:
ND= Not Detected (TPH as Gasoline or Diesel)

Drafted By: Harvey Lee

Reviewed By: Mark Bryant

Date: February 10, 2001

BRYANT GEOENVIRONMENTAL INC.
Geoscience Services • Project Management • Environmental Assessment

BORING/WELL COMPLETION LOG
IDENTIFICATION: SP-2

Client: Wells Fargo	Date: February 6, 2001
Project Name: WFB/Kenton	Location: Northwest Geophysical Anomaly
Project Number: 00-783A	Logged By: Mark Bryant
Drilled By: TEG	Method: Strataprobe (Direct-Push)
Surface Elevation: 10.0± Feet	Total Depth: 10.5 Feet

Sample Number	PID/FID Reading (ppm)	Test Data	Blow Count	Depth (Feet)	Graphic Log	Soil Type	Geologic Description: Formation, grain size, texture, color, moisture, sorting/grading, density, other lithologic features, staining odor, etc.	Backfill
							3 Inches Asphalt	
						SP/ SW	**HYDRAULIC FILL:** **Sand,** fine- to coarse-grained sand, medium dense, moderately well sorted, wet at 5 feet, moderate to strong hydrocarbon odor (diesel?, degraded), dark gray (2.5Y 3/1-4/1) (tank backfill?), dark gray (2.5Y 3/1-4/1), moderate hydrocarbon odor at 10 feet, hard object encountered at ~10.5 feet.	
SP-2-5		ND		5				
SP-2-W		5,200						
SP-2-10		ND		10				
							TOTAL DEPTH 10.5 FEET Refusal at 10.5 feet. Installed 1-inch temporary PVC well screen (0.10 slot) to 10.5 feet, sampled with bailer. Backfilled with bentonite pellets, finished upper 3 inches with asphalt patch.	
				15				
				20				
				25				
				30				

SYMBOLS

▼ Groundwater First Encountered

▽ Static Groundwater Level

5,200 Benzene Concentration Expressed in Micrograms Per Liter (µg/l)

Note:
ND= Not Detected (TPH as Gasoline or Diesel)

Drafted By: Harvey Lee

Reviewed By: Mark Bryant

Date: February 10, 2001

BRYANT GEOENVIRONMENTAL INC.
Geoscience Services • Project Management • Environmental Assessment

BORING/WELL COMPLETION LOG
IDENTIFICATION: SP-3

Client: Wells Fargo	Date: February 6, 2001
Project Name: WFB/Kenton	Location: West End of Former Diesel UST
Project Number: 00-783A	Logged By: Mark Bryant
Drilled By: TEG	Method: Strataprobe (Direct-Push)
Surface Elevation: 10.5± Feet	Total Depth: 15 Feet

Sample Number	PID/FID Reading (ppm)	Test Data	Blow Count	Depth (Feet)	Graphic Log	Soil Type	Geologic Description: Formation, grain size, texture, color, moisture, sorting/grading, density, other lithologic features, staining odor, etc.	Backfill
							3 Inches Asphalt	
						SP	**TANK BACKFILL:** **Sand,** fine- to medium-grained sand, mostly fine sand, well sorted, slightly moist at 5 feet, medium dense, gray brown to olive brown (2.5Y 5/2-5/3), no odors or stains	
SP-3-5		ND		5				
SP-3-10		ND		10		SP	Fine- to medium-grained sand, very micaceous, wet at 10 feet, no odors, or staining, dark grayish brown (2.5Y 3/2).	
SP-3-W		ND						
				15			**TOTAL DEPTH 15 FEET** Groundwater encountered at 11.5 feet, installed temporary 1-inch diameter PVC well screen (0.10 slot) to 15 feet, sampled groundwater at 13-15 feet with stainless steel bailer. Backfilled with bentonite pellets, finished upper 3 inches with asphalt patch.	
				20				
				25				
				30				

SYMBOLS

▼ Groundwater First Encountered

▽ Static Groundwater Level

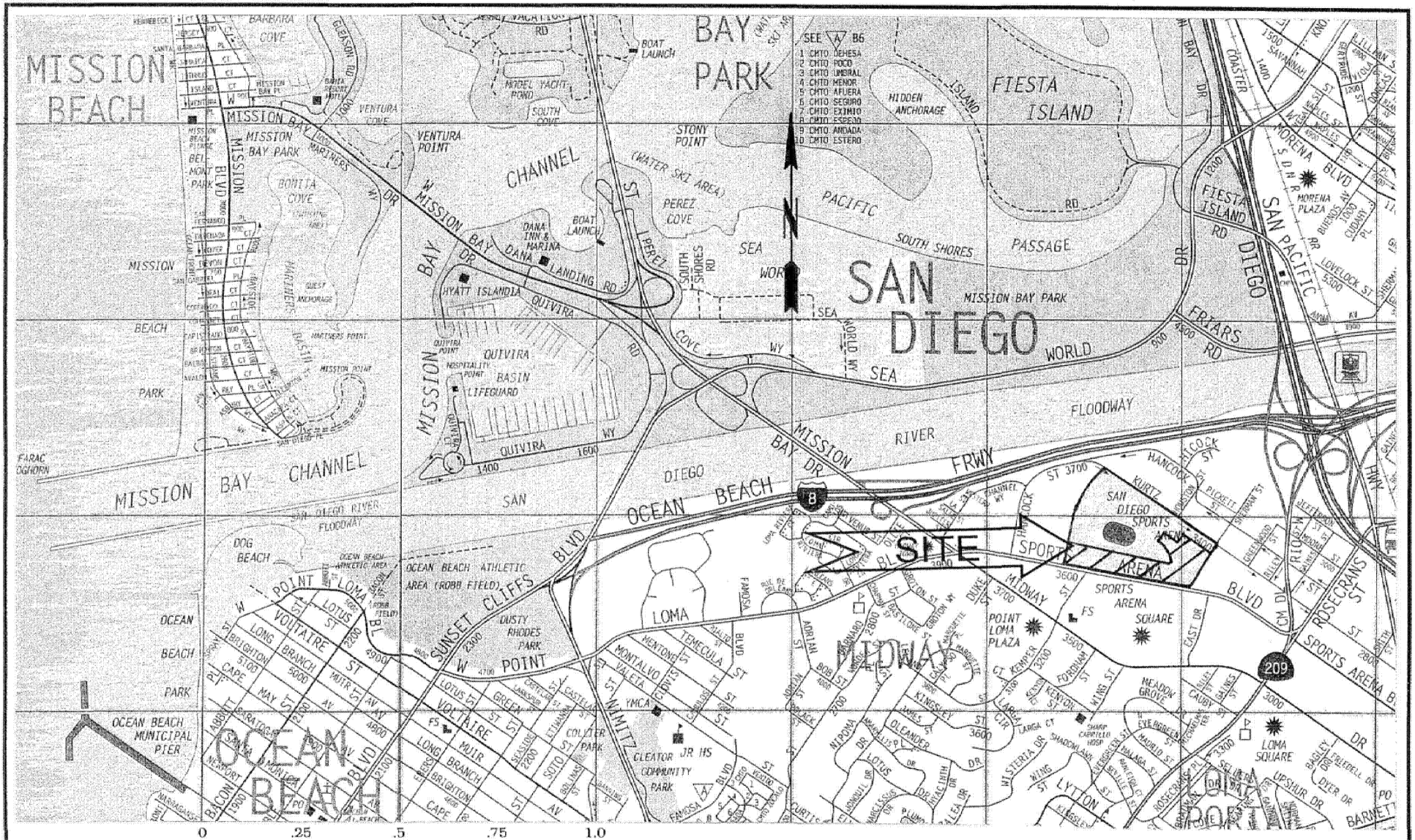
Note:
ND= Not Detected (TPH as Gasoline or Diesel)

Drafted By: Harvey Lee

Reviewed By: Mark Bryant

Date: February 10, 2001

GEOTECHNICS 1999 - SPORTS ARENA RETAIL

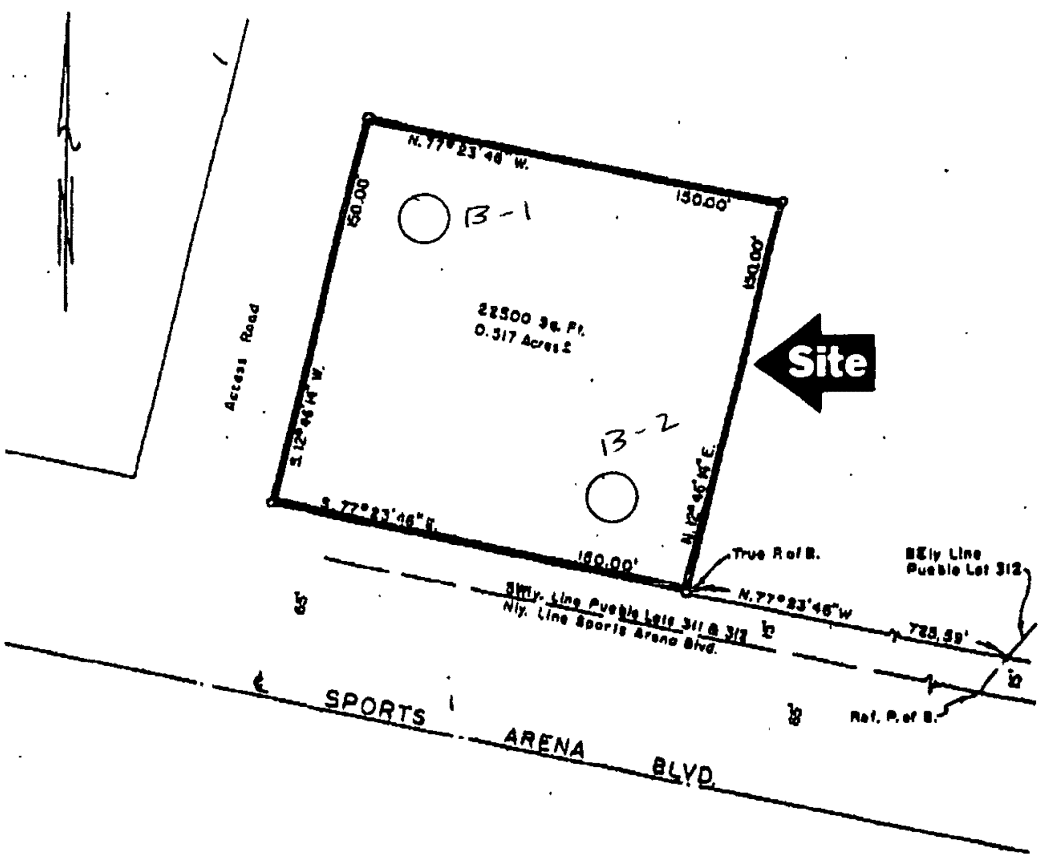


ADAPTED FROM THE 1997
THOMAS BROTHERS GUIDE

Geotechnics Incorporated

SITE LOCATION MAP
Sports Arena Retail Development
Sports Arena 2000

Project No. 0548-001-00
Document No. 9-0885
FIGURE 1

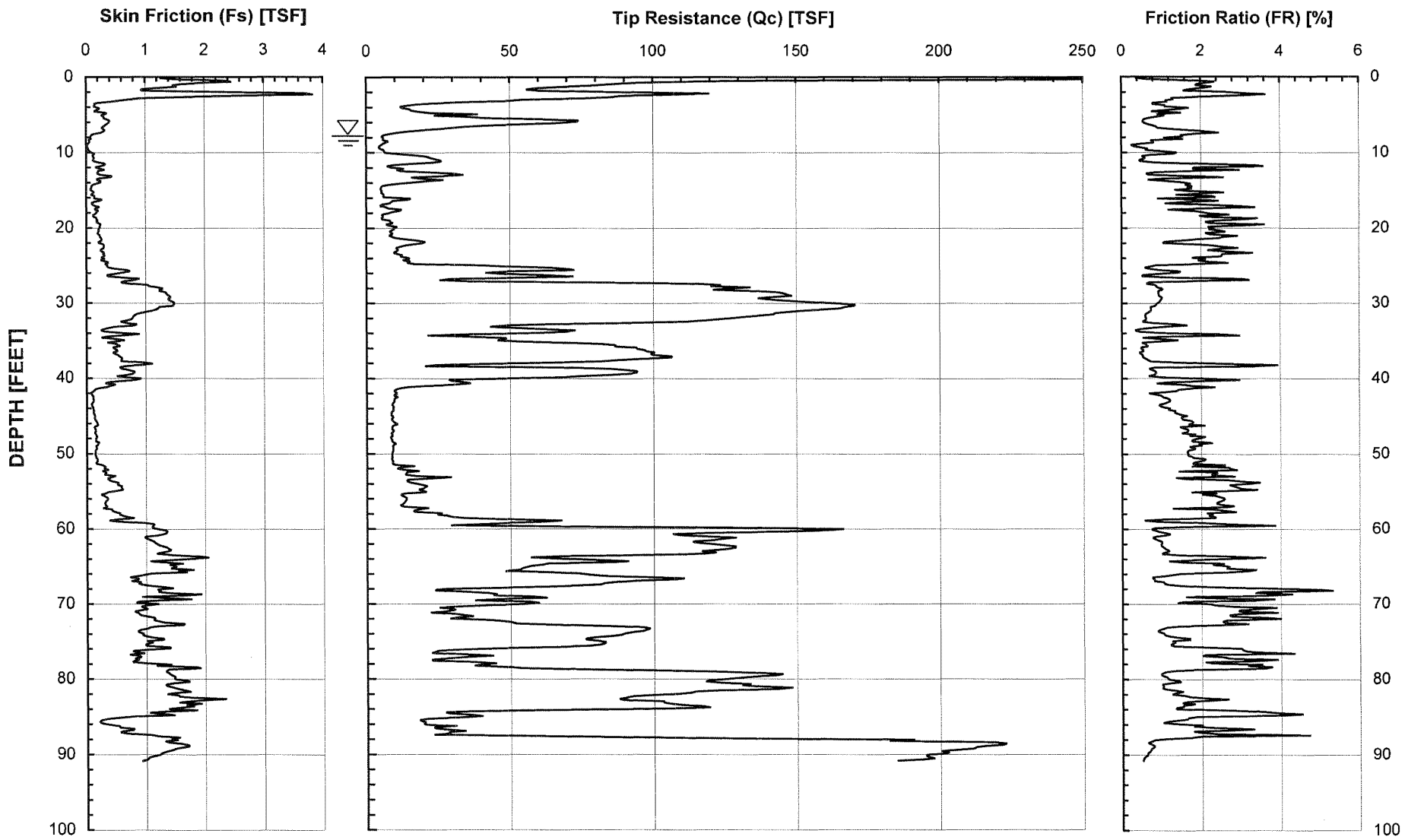


Portions of Pueblo Lots 241, 242 and 311 of the Pueblo Lands of San Diego, Per map by James Pascoe known as Misc. Map No. 36.

NOTE: This is not a survey map it is a map compiled from data found in U. S. Co. files.

EXHIBIT 'B'

REV.	DATE	UNION-SAN DIEGO ARENA LEASE	DRAWN O. A. CKD. APP'D SCALE 1" = 50' DATE April 28, 1978
		Union Oil Company of California Los Angeles, California union	25-490-6
			SHEETS SHEET



Geotechnics Incorporated

CONE PENETROMETER DATA (C-1)

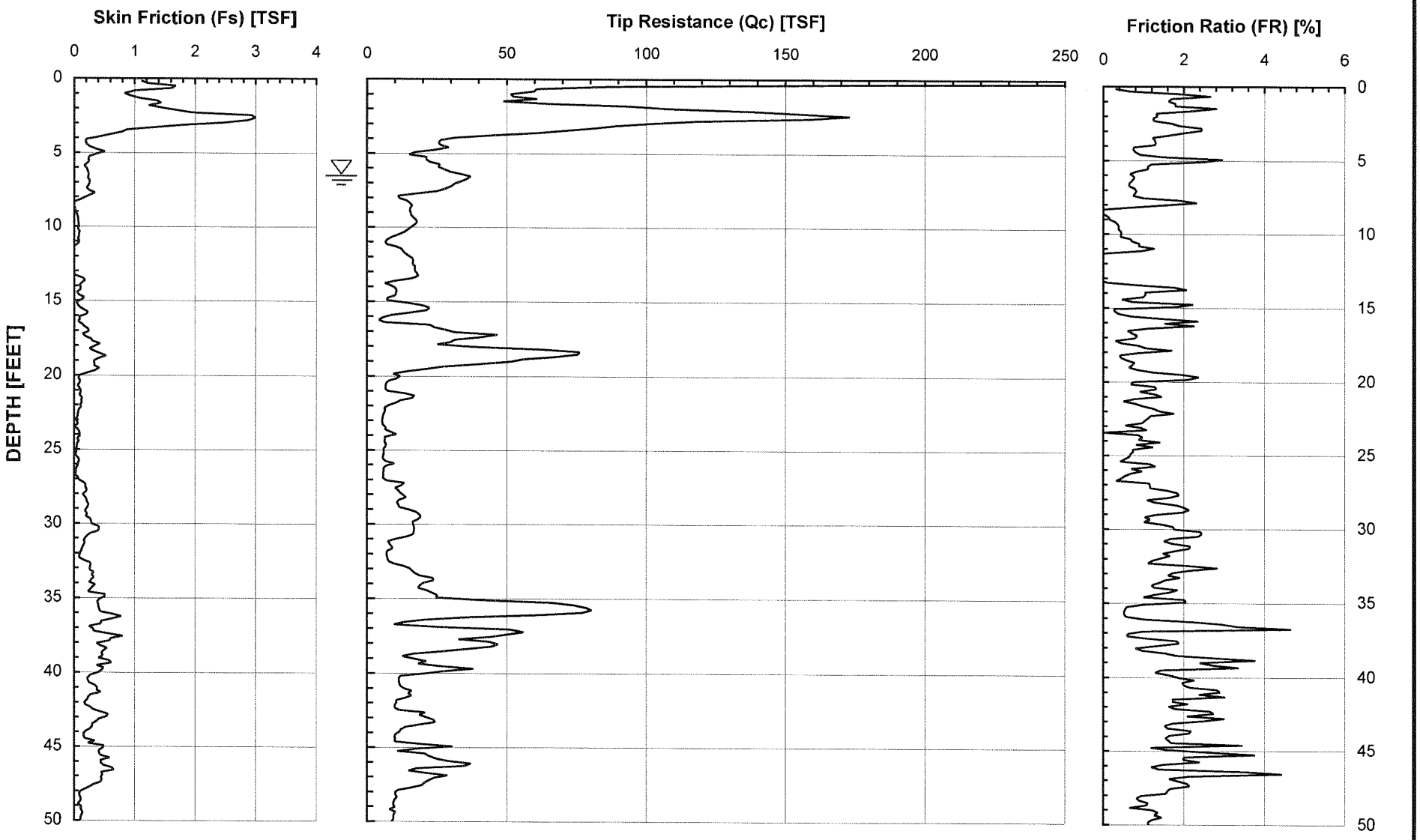
Sports Arena Retail Development

Sports Arena 2000

Project No. 0548-001-00

Document No. 9-0885

FIGURE B-1



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CONE PENETROMETER DATA (C-2)

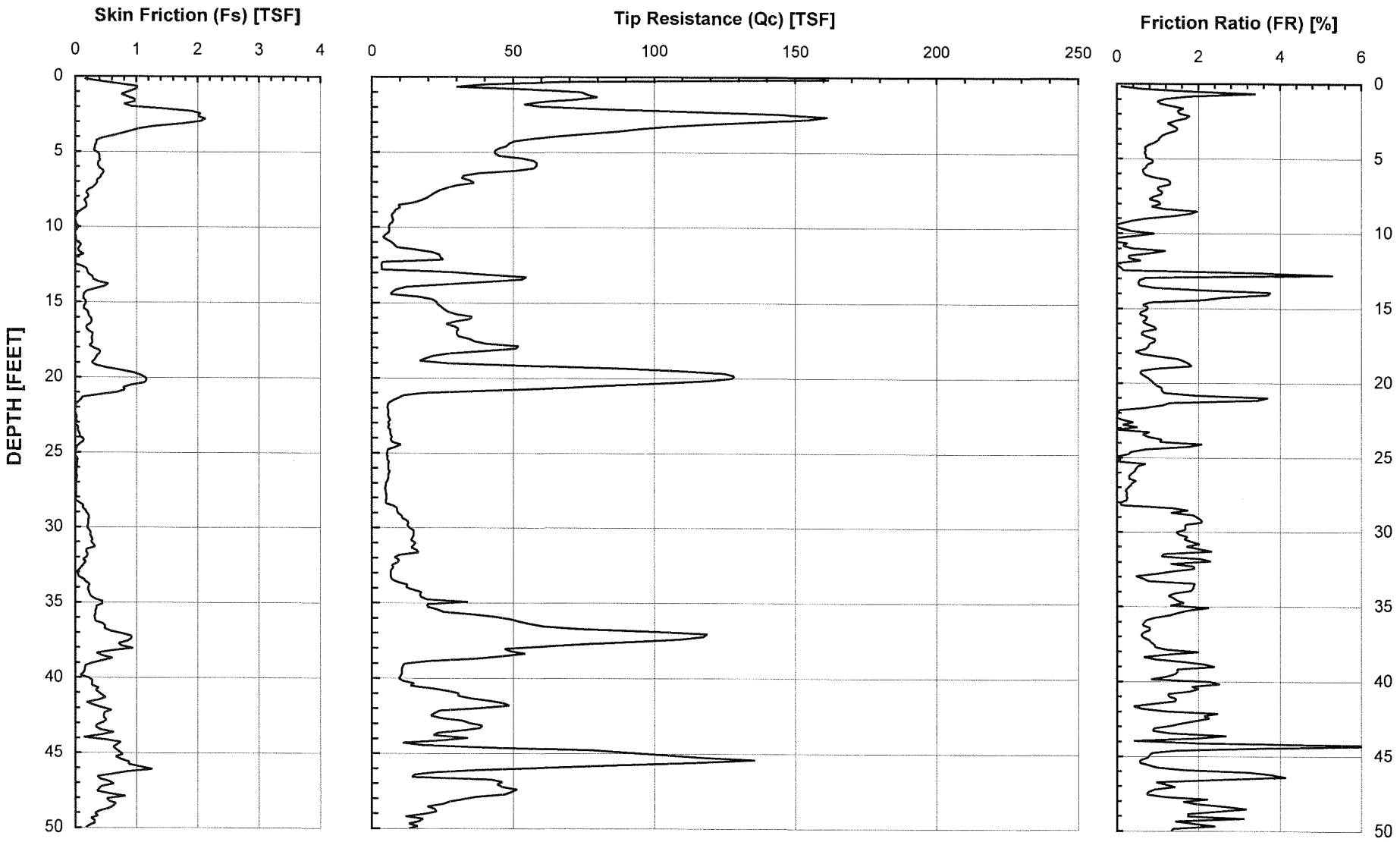
Sports Arena Retail Development

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FIGURE B-2



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CONE PENETROMETER DATA (C-3)

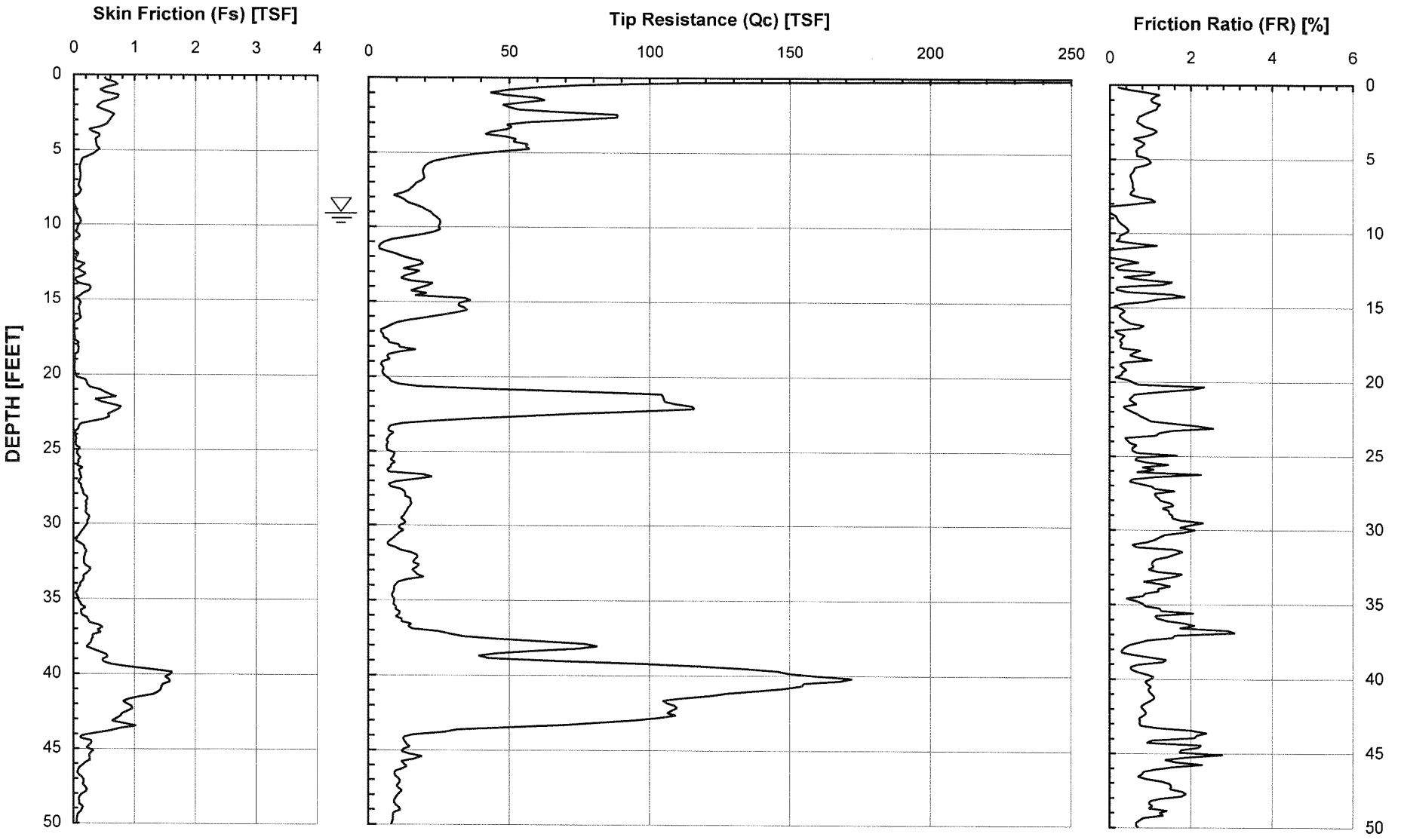
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Project No. 0548-001-00

Document No. 9-0885

FIGURE B-3



Geotechnics Incorporated

CONE PENETROMETER DATA (C-4)

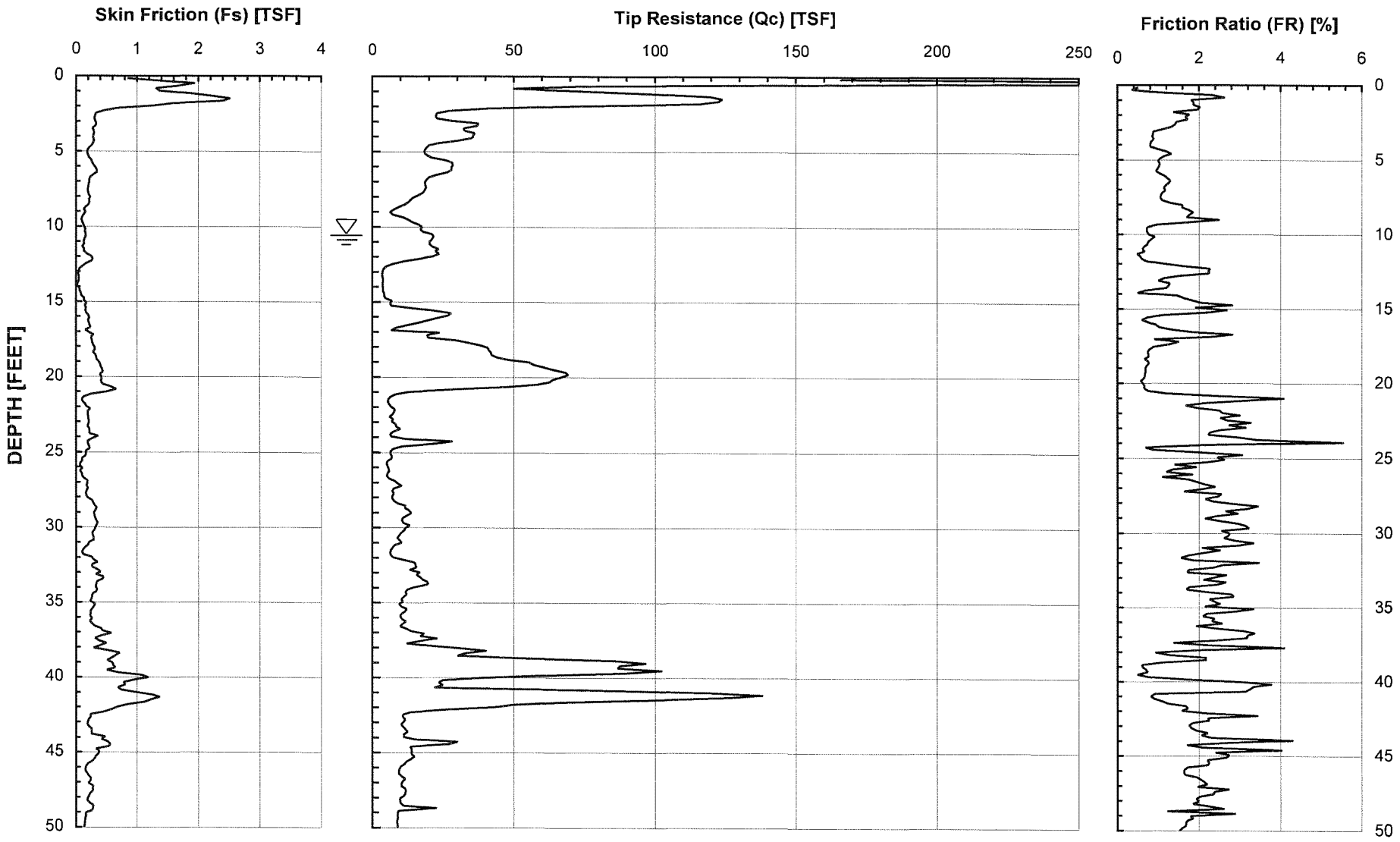
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Project No. 0548-001-00

Document No. 9-0885

FIGURE B-4



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CONE PENETROMETER DATA (C-5)

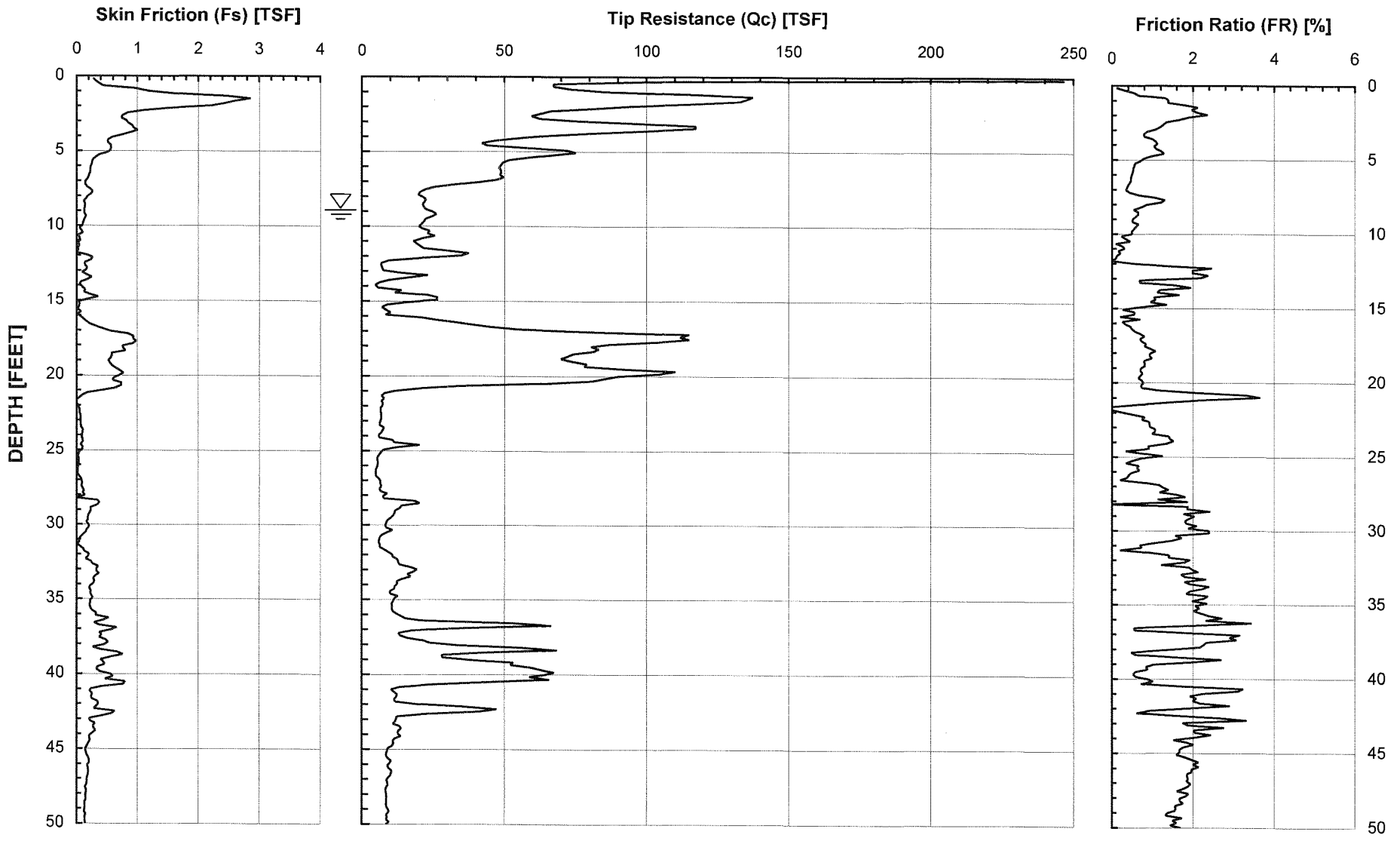
Sports Arena Retail Development

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FIGURE B-5



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CONE PENETROMETER DATA (C-6)

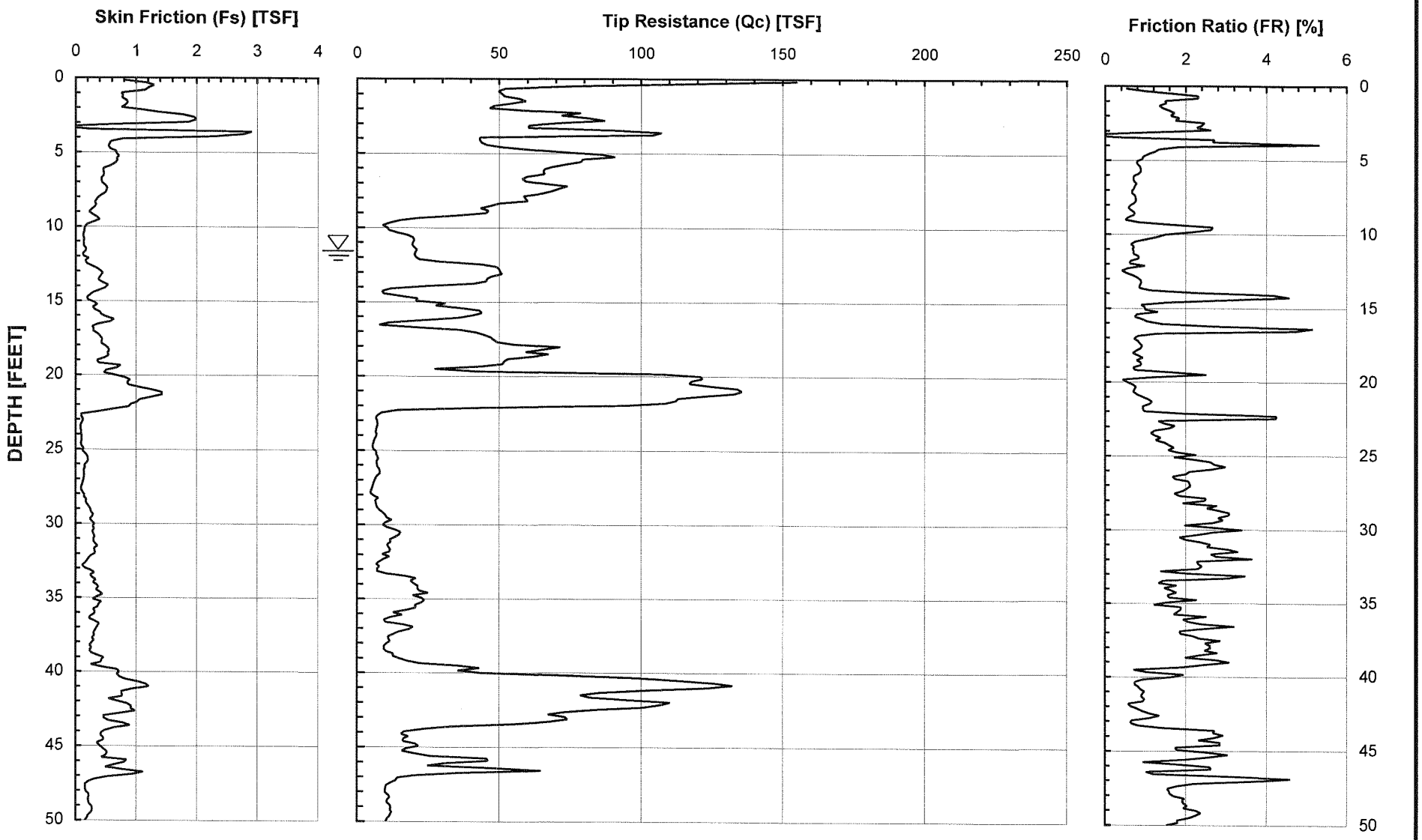
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FIGURE B-6



Geotechnics Incorporated

CONE PENETROMETER DATA (C-7)

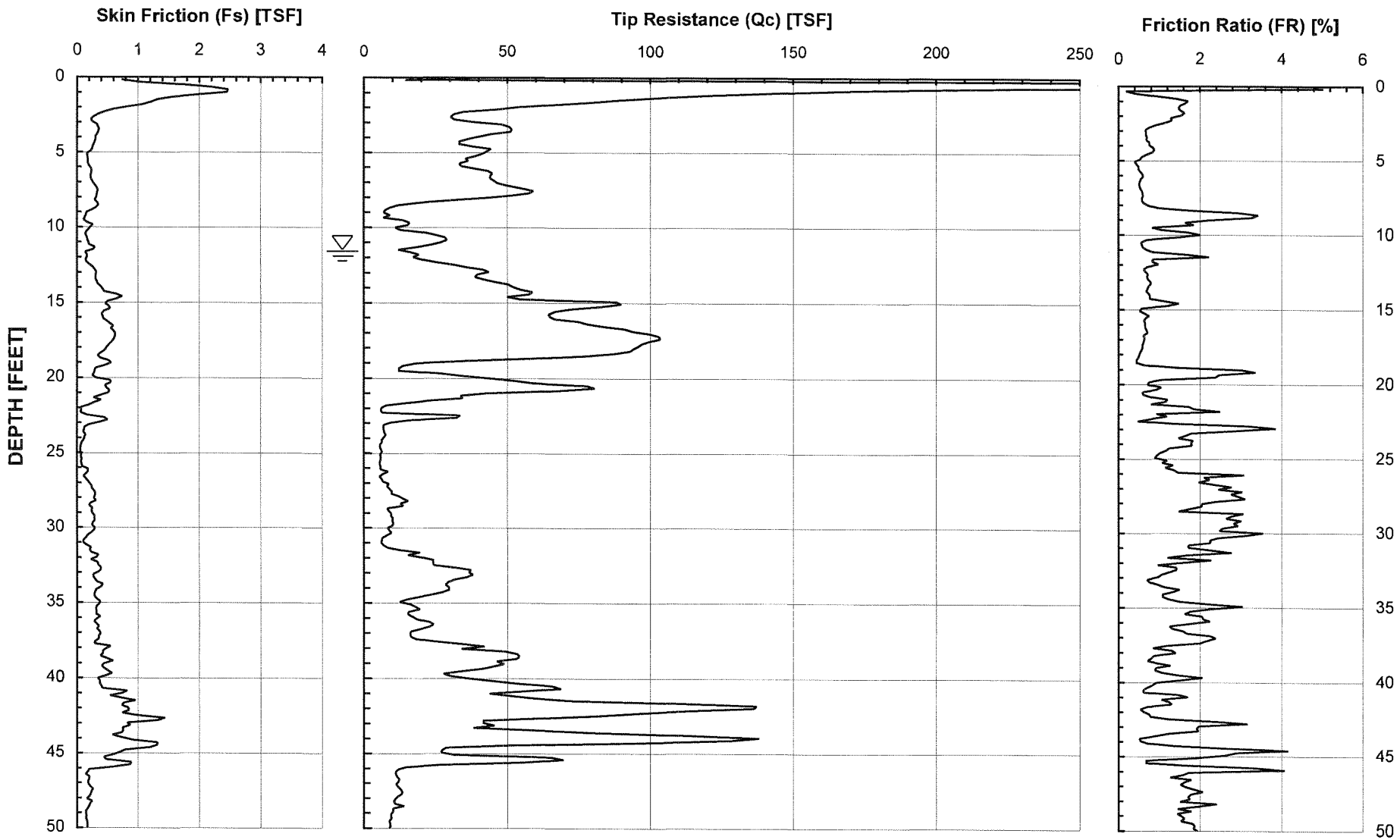
Sports Arena Retail Development

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Project No. 0548-001-00

Document No. 9-0885

FIGURE B-7



Geotechnics Incorporated

CONE PENETROMETER DATA (C-8)

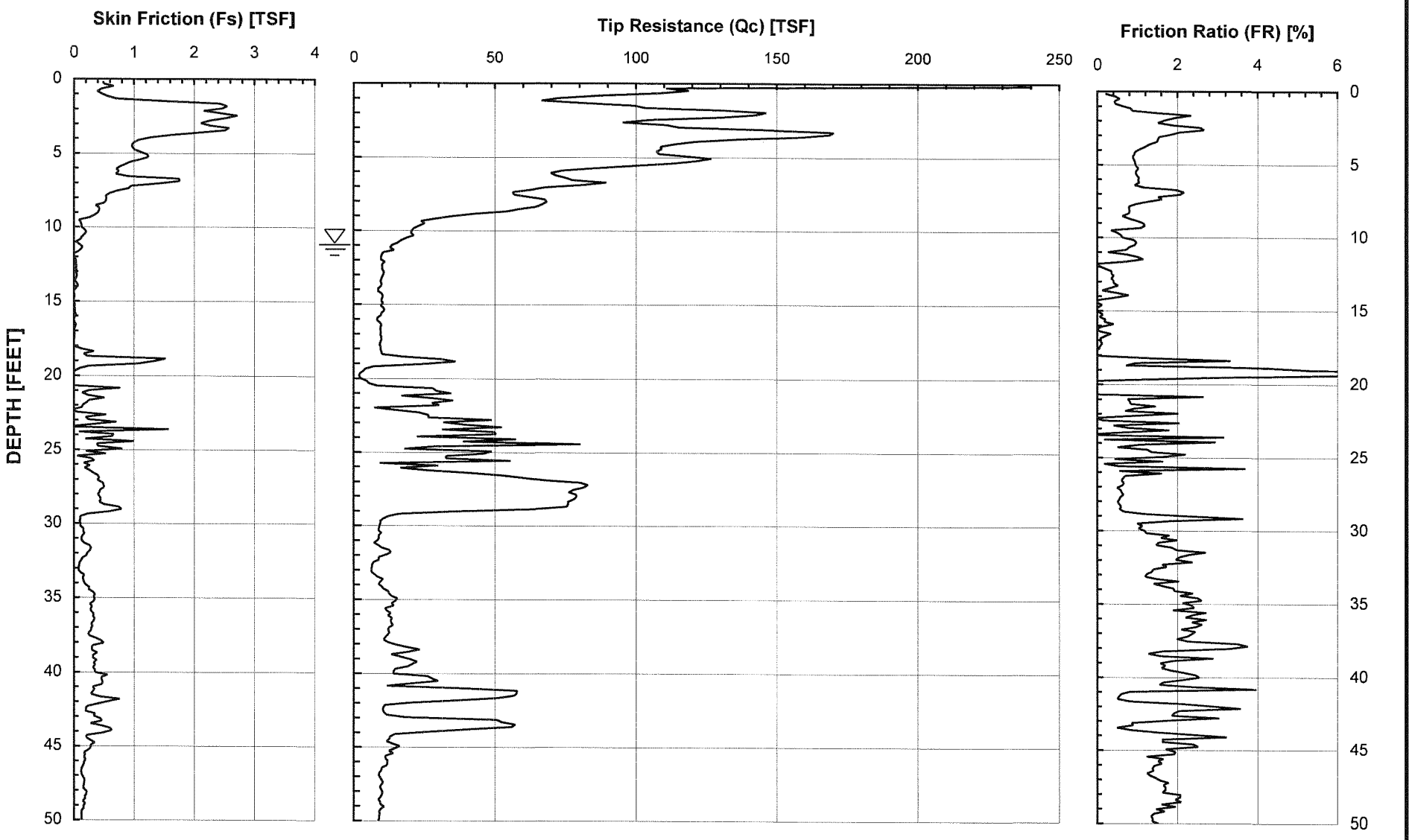
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Document No. 9-0885

FIGURE B-8



Geotechnics Incorporated

CONE PENETROMETER DATA (C-9)

Sports Arena Retail Development

Sports Arena 2000

Project No. 0548-001-00

Document No. 9-0885

FIGURE B-9

BORING LOG NO. 1

Date: 8/24/99

Equipment: 5 Inch Rotary Wash

Logged: MAF

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
						PAVEMENT: Asphalt Concrete, 2½ Inches. No Aggregate Base.	
1						FILL: Mixture of clayey and silty sand (SC and SM), fine to medium grained, nonplastic and low plasticity, light red brown and olive gray, moist, loose to medium dense.	
2		SPT					
3	10						Gradation pH & Resistivity
4						Clayey sand (SC), fine to medium grained, low plasticity, dark brown, moist, loose. Contains glass and ceramic fragments. Historic dump site (circa 1900).	Sulfate
5							
6		CAL					
7	4			87	7	ESTUARINE DEPOSITS: Poorly graded sand with silt (SP-SM), fine grained, nonplastic, dark gray, moist, very loose, micaceous.	Unit Weight Moisture Content
8							
9						Same. Saturated.	
10		SPT					
11	3						No. 200 Wash (15% Fines)
12							
13							
14							
15		SPT				Clayey sand (SC), fine grained, low plasticity, dark gray, saturated, very loose. Highly micaceous.	
16	2						No. 200 Wash (33% Fines)
17							
18							
19							
20		SHE					
21				80	45	Same.	Gradation Hydrometer Atterberg Consolidation
22							
23							
24						Silty sand (SM), fine to medium grained, low plasticity, gray, saturated, medium dense.	
25		SPT					
26	20						No. 200 Wash (14% Fines)
27							
28							
29							
30							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-10

BORING LOG NO. 1

Date: 8/24/99

Equipment: 5 Inch Rotary Wash — Logged: MAF

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod — Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
31	16					ESTUARINE DEPOSITS: Silty sand (SM), fine grained, low plasticity, gray, saturated, medium dense.	No. 200 Wash (16% Fines)
32							
33						Silty sand (SM), fine grained, low plasticity, dark gray, saturated, very loose to loose, micaceous. Contains numerous small shells. Slightly odoriferous.	
34							
35		SPT					
36	6					Same.	No. 200 Wash (26% Fines)
37							
38							
39						Clayey sand (SC), fine grained, low plasticity, dark gray, saturated, very loose to loose, micaceous. Contains numerous small shells. Slightly odoriferous.	
40		SPT					
41	1						No. 200 Wash (21% Fines)
42							
43						Sandy clay (CL), low to medium plasticity, dark gray, saturated, very soft. Contains numerous small shells. Slightly odoriferous.	
44							
45		SPT					
46	1					Same.	No. 200 Wash (61% Fines)
47							
48							
49						Lean clay (CL), medium plasticity, dark gray, saturated, very soft. Contains many shell fragments. Slightly odoriferous.	
50		SPT					
51	2						No. 200 Wash (95% Fines)
52							
53							
54							
55							
56							
57							
58						Interbedded silty sand (SM) and sandy silt (ML), fine to medium grained, low plasticity, dark gray, saturated, medium dense or hard. Contains no shells. No odor.	
59							
60							

PROJECT NO. 0548-001-00 — GEOTECHNICS INCORPORATED — FIGURE: B-11

BORING LOG NO. 1

Date: 8/24/99

Equipment: 5 Inch Rotary Wash

Logged: MAF

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
61	16					ESTUARINE DEPOSITS: Interbedded silty sand (SM) and sandy silt (ML), fine to medium grained, low plasticity, dark gray, saturated, medium dense. Contains no shells. No odor.	No. 200 Wash (22% Fines)
62							
63							
64							
65							
66							
67							
68							
69							
70		SPT					
71	16					Same.	No. 200 Wash (46% Fines)
72							
73							
74							
75							
76							
77							
78						Silty sand (SM), fine to medium grained, nonplastic, medium gray, saturated, dense. Micaceous.	
79							
80		SPT					
81	34						No. 200 Wash (22% Fines)
82							
83							
84							
85							
86							
87						Poorly graded sand with silt (SP-SM), fine to medium grained, nonplastic, medium gray, saturated, dense. Micaceous.	
88							
89							
90							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-12

BORING LOG NO. 1

Date: 8/24/99

Equipment: 5 Inch Rotary Wash

Logged: MAF

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
91	42					ESTUARINE DEPOSITS: Poorly graded sand with silt (SP-SM), fine to medium grained, nonplastic, medium gray, saturated, dense, micaceous.	No. 200 Wash (10% Fines)
92							
93						TOTAL DEPTH = 91½ FEET GROUNDWATER @ 8½ FEET CAVING BELOW GROUNDWATER BACKFILLED 8/25/99	
94							
95							
96							
97							
98							
99							
100							
101							
102							
103							
104							
105							
106							
107							
108							
109							
110							
111							
112							
113							
114							
115							
116							
117							
118							
119							
120							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-13

BORING LOG NO. 2

Date: 8/24/99

Equipment: 5 Inch Rotary Wash

Logged: MAF

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
						PAVEMENT: Asphalt Concrete, 3 Inches, No Aggregate Base.	
1						FILL: Clayey sand (SC), fine grained, low plasticity, red brown, moist, loose to medium dense.	Gradation Atterberg Expansion R-Value Unit Weight Moisture Content
2	8	CAL		94	11		
3						ESTUARINE DEPOSITS: Poorly graded sand with silt (SP-SM), fine to medium grained, nonplastic, gray brown, moist, loose, micaceous.	
4							
5	9	SPT				Same. Dry to moist.	
6							
7							
8							
9							
10	5	SPT			▽	Same. Saturated.	
11							
12							
13							
14							
15	2	SPT				Sandy silt (ML), low plasticity, dark olive gray, saturated, very soft. Contains some mica.	
16							
17							
18							
19							
20	1	SPT				Same.	
21							
22							
23							
24							
25	4	SPT				Silty sand (SM), fine to medium grained, low plasticity, dark gray, saturated, medium dense. Micaceous. Some odor.	
26							
27							
28							
29							
30							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-14

BORING LOG NO. 2

Date: 8/24/99

Equipment: 5 Inch Rotary Wash

Logged: MAF

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
31				79	43	ESTUARINE DEPOSITS: Silty sand (SM), fine to medium grained, low plasticity, dark gray, saturated, medium dense.	Unit Weight Moisture Content
32						Sandy clay (CL), medium plasticity, dark gray, saturated, soft. Contains many shells and shell fragments, few reeds. Odoriferous.	
33							
34							
35		SPT					
36	3						
37							
38							
39							
40		SPT				Silty sand (SM), fine to medium grained, low plasticity, dark gray, saturated, medium dense. Contains shells and fragments of shells.	
41	15						
42							
43							
44							
45		SPT				Fat clay (CH), high plasticity, dark gray, saturated, firm. Contains many shells and shell fragments. Odoriferous.	
46	5						
47							
48							
49							
50		SHE					
51				67	58	Same.	Gradation Hydrometer Atterberg Consolidation
52							
53						TOTAL DEPTH = 52 FEET GROUNDWATER @ 10 FEET CAVING BELOW GROUNDWATER BACKFILLED 8/25/99	
54							
55							
56							
57							
58							
59							
60							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-15

BORING LOG NO. 3

Date: 8/25/99

Equipment: 5 Inch Rotary Wash

Logged: SEV

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
						PAVEMENT: Asphalt Concrete, 3 Inches, No Aggregate Base.	Gradation
1						FILL: Silty sand (SM), fine grained, low plasticity, red brown, moist, medium dense.	Expansion
2		CAL					
3	5			89	14	ESTUARINE DEPOSITS: Poorly graded sand with silt (SP-SM), fine grained, nonplastic, gray brown, moist, loose.	Direct Shear
4							
5		SPT					
6	4						
7							
8						Sandy silt (ML), low plasticity, brown, moist, very soft.	
9							
10		SPT			▽		
11	1					Same. Saturated.	
12							
13							
14							
15		SPT					
16	6					Same. Firm.	
17							
18							
19						Poorly graded sand with silt (SP-SM), fine grained, nonplastic, dark gray, saturated, loose.	
20		SPT					
21	6						
22							
23							
24						Sandy silt (ML), low plasticity, dark gray, saturated, very soft. Contains few shells.	
25		SPT					
26	2						
27							
28							
29							
30							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-16

BORING LOG NO. 3

Date: 8/25/99

Equipment: 5 Inch Rotary Wash

Logged: SEV

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
31	2					ESTUARINE DEPOSITS: Sandy silt (ML), fine grained, low plasticity, dark gray, saturated, loose to medium dense. Contains shells.	
32		SHE					
33				83	40		Gradation Hydrometer Atterberg Consolidation
34							
35		SPT					
36	11					Same.	
37							
38							
39							
40		SPT					
41	3					Same.	
42							
43							
44						Sandy clay (CL), low plasticity, dark gray, saturated, soft, micaceous. Contains some shell fragments.	
45		SPT					
46	4						
47							
48							
49						Silty sand (SM), fine grained, low plasticity, brown, saturated, medium dense.	
50		SHE					
51				89	29		Unit Weight Moisture Content
52							
53						TOTAL DEPTH = 52 FEET GROUNDWATER @ 10 FEET CAVING BELOW GROUNDWATER BACKFILLED 8/26/99	
54							
55							
56							
57							
58							
59							
60							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-17

BORING LOG NO. 4

Date: 8/25/99

Equipment: 5 Inch Rotary Wash

Logged: SEV

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
						PAVEMENT: Asphalt Concrete, 3 Inches, No Aggregate Base.	
1						FILL: Silty sand (SM), fine grained, low plasticity, red brown, moist, medium dense.	
2	14	SPT					Gradation Hydrometer Atterberg pH & Resistivity Sulfate Expansion
3							
4							
5		CAL				ESTUARINE DEPOSITS: Sandy silt (ML), low plasticity, dark gray, moist, very soft.	
6	4			82	25		Direct Shear
7							
8							
9							
10		SPT					
11	1					Same.	No. 200 Wash (67% Fines)
12					▽		
13						Clayey sand (SC), fine grained, low plasticity, dark gray, saturated, loose.	
14							
15		SPT					
16	9					Same.	No. 200 Wash (27% Fines)
17							
18							
19							
20		SPT					
21	5					Same.	No. 200 Wash (27% Fines)
22							
23							
24						Poorly graded sand with silt (SP-SM), fine grained, nonplastic, dark gray, saturated, loose.	
25		SHE					No Sample
26							
27							
28							
29							
30							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-18

BORING LOG NO. 4

Date: 8/25/99

Equipment: 5 Inch Rotary Wash

Logged: SEV

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
31	2					ESTUARINE DEPOSITS: Poorly graded sand with silt (SP-SM), fine grained, nonplastic, dark gray, saturated, very loose.	No. 200 Wash (7% Fines)
32							
33							
34							
35		SHE					
36				94	30		Unit Weight Moisture Content
37							
38							
39						Grades to poorly graded sand (SP).	
40		SPT					
41	9						No. 200 Wash (3% Fines)
42							
43							
44						Clayey sand (SC), fine grained, low plasticity, dark gray, saturated, loose. Contains some shells.	
45		SPT					
46	2						No. 200 Wash (21% Fines)
47							
48							
49							
50		SPT					
51	1					Same.	No. 200 Wash (21% Fines)
52							
53							
54							
55							
56							
57							
58						Poorly graded sand (SP), fine grained, nonplastic, dark gray, saturated, loose.	
59							
60							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-19

BORING LOG NO. 4

Date: 8/25/99

Equipment: 5 Inch Rotary Wash

Logged: SEV

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
61	7					ESTUARINE DEPOSITS: Poorly graded sand (SP), fine grained, nonplastic, dark gray, saturated, loose.	No. 200 Wash (2% Fines)
62							
63							
64							
65							
66							
67						Interbedded sandy silt (ML) and silty sand (SM), low plasticity, dark gray, saturated, firm or medium dense.	
68							
69							
70		SPT					
71	9					Same.	No. 200 Wash (52% Fines)
72							
73							
74							
75							
76						Poorly graded sand with silt (SP-SM), fine to medium grained, nonplastic, dark gray, saturated, dense. Contains no shells.	
77							
78							
79							
80		SPT					
81	45						No. 200 Wash (12% Fines)
82							
83							
84							
85							
86						Grades to poorly graded sand (SP).	
87							
88							
89							
90							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-20

BORING LOG NO. 4

Date: 8/25/99

Equipment: 5 Inch Rotary Wash

Logged: SEV

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
91	49					ESTUARINE DEPOSITS: Poorly graded sand (SP), fine grained, nonplastic, dark gray, saturated, dense.	No. 200 Wash (1% Fines)
92							
93						TOTAL DEPTH = 91½ FEET GROUNDWATER @ 12 FEET CAVING BELOW GROUNDWATER BACKFILLED 8/26/99	
94							
95							
96							
97							
98							
99							
100							
101							
102							
103							
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117							
118							
119							
120							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-21

BORING LOG NO. 5

Date: 8/24/99

Equipment: 5 Inch Rotary Wash

Logged: MAF

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
						PAVEMENT: Asphalt Concrete, 3 Inches, No Aggregate Base.	
1						FILL: Silty sand (SM), fine grained, low plasticity, red brown, moist, medium dense.	Gradation Hydrometer Atterberg Expansion Unit Weight Moisture Content
2	7	CAL		104	15		
3							
4							
5	7	SPT				ESTUARINE DEPOSITS: Poorly graded sand (SP), fine to medium grained, nonplastic, dark gray, moist, loose.	
6							
7							
8							
9							
10	11	SPT			▽		
11						Same. Saturated.	
12							
13							
14	7	SPT				Silty sand (SM), fine to medium grained, low plasticity, dark gray, saturated, loose to medium dense. Micaeous.	
15							
16							
17							
18							
19							
20	15	SPT				Same.	
21							
22							
23							
24	1	SPT				Sandy clay (CL), medium plasticity, dark gray, saturated, very soft, micaceous. Contains some shells and shell fragments.	
25							
26							
27							
28							
29							
30							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-22

BORING LOG NO. 5

Date: 8/24/99

Equipment: 5 Inch Rotary Wash

Logged: MAF

Hammer Type: Safety Hammer/Cathead, 140 Lbs, 30 Inch Drop, AW Rod

Elevation: F.S.G.

DEPTH (FEET)	BLOWS PER FT.	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE %	DESCRIPTION	LAB TESTS
31	1					**ESTUARINE DEPOSITS**: Sandy clay (CL), fine grained, medium plasticity, dark gray, saturated, very soft, micaceous. Contains few shells.	
32							
33							
34						Sandy silt (ML), fine sands, nonplastic, dark gray, saturated, very soft to soft, micaceous. Contains many shells.	
35		SPT					
36	4						
37							
38							
39							
40		SHE					
41				86	34	Same.	Gradation Hydrometer Atterberg Consolidated
42							
43							
44						Sandy clay (CH), high plasticity, dark gray, saturated, soft to very soft, micaceous. Contains few shells.	
45		SPT					
46	3						
47							
48							
49							
50		SPT					
51	2					Same.	
52							
53						TOTAL DEPTH = 51½ FEET GROUNDWATER @ 10½ FEET CAVING BELOW GROUNDWATER BACKFILLED 8/25/99	
54							
55							
56							
57							
58							
59							
60							

PROJECT NO. 0548-001-00

GEOTECHNICS INCORPORATED

FIGURE: B-23

GILES ENGINEERING 1996 - DEL TACO AND IN-N-OUT RESTURANTS

NOTE: Dimensions indicate approximate method of locating test borings in the field with respect to existing site features and curbs of adjacent roadways. Boring plan adapted from site plan provided by client.

● - Benchmark: Top of Curb; assumed El. 100.0

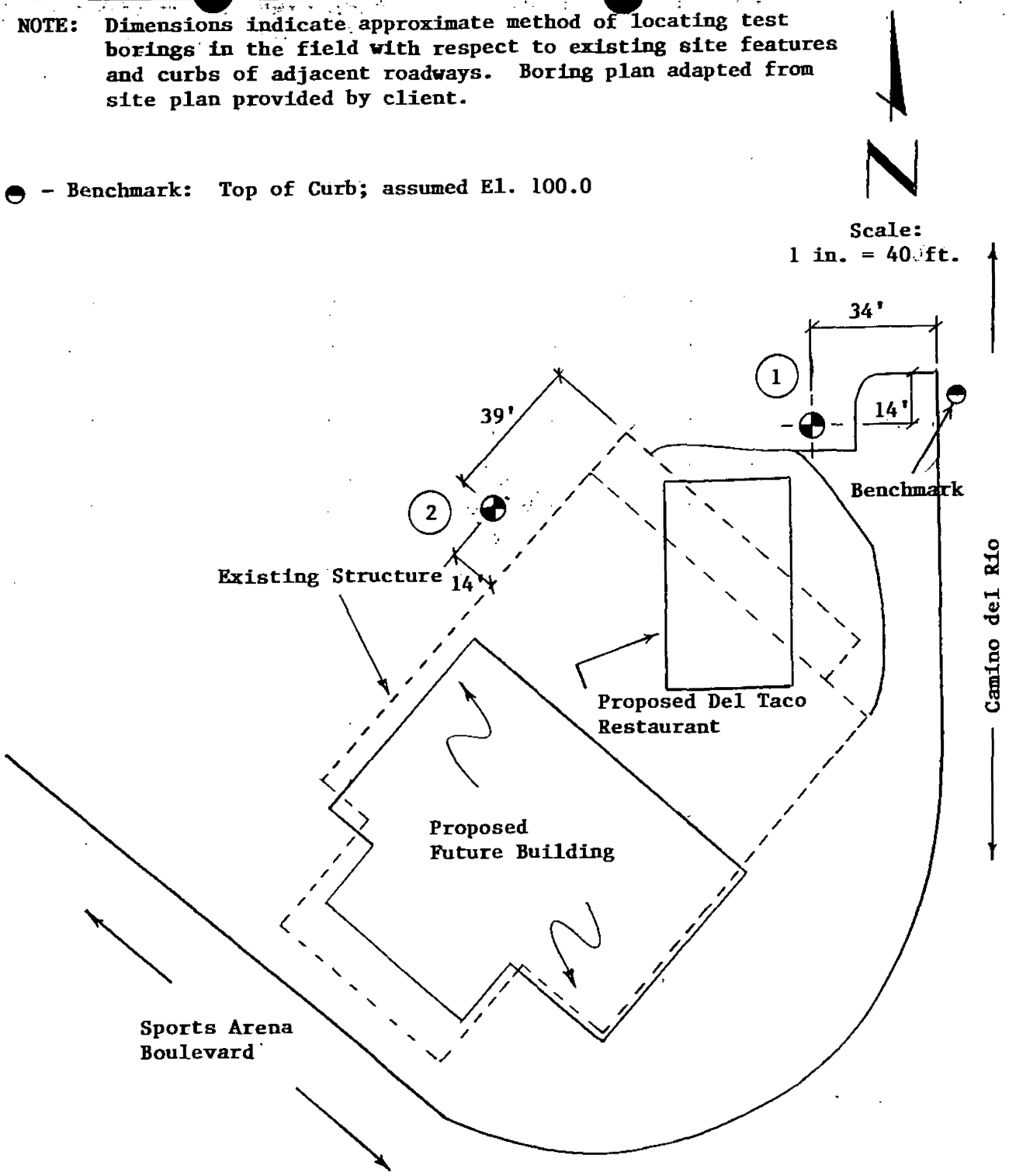


Figure 1
BORING LOCATION PLAN
Proposed Del Taco Restaurant
San Diego, California
Project No. 2G-9606001

GILES ENGINEERING ASSOCIATES, INC.
GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS

RECORD OF SUBSURFACE EXPLORATION

BORING NO. & LOCATION:	PROJECT:
1 (North of Proposed Building)	Proposed Del Taco Restaurant
SURFACE ELEVATION:	PROJECT LOCATION:
99.5	3106 Sports Arena Boulevard
COMPLETION DATE:	
7/2/96	San Diego, California
FIELD REPRESENTATIVE:	
Rich Koester	PROJECT NUMBER: 2G-9606001

GILES ENGINEERING ASSOCIATES, INC.
Dallas
Milwaukee Los Angeles
Washington, D.C.

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N (per 12")	q_u (tsf)	q_p (tsf)	q_s (tsf)	w (%)	PID	NOTES
5-1/2 inches Asphaltic Concrete		1-AU	---						
2-1/2 inches Base Course		2-CS	13				10	BDL	Dd=94
Light Grayish Brown fine Sandy Silt - Damp		3-CS	10				12	BDL	Dd=104
Brown to Grayish Brown Silty fine Sand, some Silt - Damp	5	4-CS	4		0.6	0.4	48	20	P200 12% Dd=74
Dark Grayish Brown Silty Clay, trace fine Sand - Very Moist (Moderate Volatile Odor)	▽	5-CS	7				37	110	Dd=78
LL=46 PL=28 (CL)	10	6-CS	5				31	300	Dd=90 P200 13%
Dark Gray fine Sand, trace to little Silt, little Mica - Very Moist (Strong Volatile Odor at 10 feet)		7-CS	WH+1				50	140	P200 6%
	15								
		8-CS	4		0.6	0.2	40	5	P200 8%
Dark Gray Clayey Silt, some fine Sand - Wet	20						37		Dd=83 Dd=74
Dark Grayish Brown to Black Silty Clay - Very Moist		9-CS	WH		0.4	0.2	55	5	
	25								
Dark Gray fine Sandy Silt, trace to little Clay - Very Moist to Wet		10-CS	12				33	BDL	Dd=90 P200 50%
	30								
		11-SS	4				39	BDL	P200 56%
	35								
		12-SS	7				36	BDL	P200 45%
Shells at 40 feet	40								
Dark Grayish Brown to Black Silty Clay - Very Moist		13-SS	WH		0.3	0.4	47	BDL	
	45								
Dark Gray Clayey Silt, little fine Sand, trace Shell fragments - Wet		14-SS	4				36	BDL	
	50								
Boring Terminated at 50'									

	WATER OBSERVATION DATA	REMARKS
▽	WATER ENCOUNTERED DURING DRILLING: 8	WH - Weight of Hammer: Hammer weight for 12- or 18-inch drive.
▼	WATER LEVEL AFTER REMOVAL:	
	CAVE DEPTH AFTER REMOVAL:	Borehole backfilled with grout during auger withdrawal.
▼	WATER LEVEL AFTER HOURS:	
	CAVE DEPTH AFTER HOURS:	P200: Percent passing No. 200 sieve.

Changes in strata indicated by the lines are approximate boundaries between soil types. The actual transition may be gradual and may vary considerably between borings. *Location of Test Boring is shown on the Boring Location Plan.*

RECORD OF SUBSURFACE EXPLORATION

BORING NO. & LOCATION: 2 (West of Proposed Building)	PROJECT: Proposed Del Taco Restaurant
SURFACE ELEVATION: 99.9	PROJECT LOCATION: 3106 Sports Arena Boulevard
COMPLETION DATE: 7/3/96	San Diego, California
FIELD REPRESENTATIVE: Rich Koester	PROJECT NUMBER: 2G-9606001

GILES ENGINEERING ASSOCIATES, INC.
Dallas
Milwaukee Los Angeles
Washington, D.C.

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N (per 12")	q_u (tsf)	q_p (tsf)	q_s (tsf)	w (%)	PID	NOTES
5 inches Asphaltic Concrete 2 inches Base Course: Brown Silty fine to medium Sand, little coarse sand, trace Clay - Damp		1-AU	---						
		2-SS	7				23	BDL	
		3-SS	7				12	6	
Gray, slightly Orangish Brown mottled fine Sandy Silt - Damp	5								
Grayish Brown fine Sand, little Silt, trace Mica - Damp		4-CS	8				32	BDL	Dd = 77
		5-SS	5				29	50	P200 25%
Grayish Brown and Black laminated Silty fine Sand, little Mica - Moist - trace Organic Material (Roots) at 10 feet; slight volatile odor	10 ▽	6-CS	7				31	1	Dd = 95 P200 19%
Dark Grayish Brown Silty fine Sand, little Mica, trace Clay seams - Very Moist		7-CS	WH + 1		< 0.2		40	BDL	Dd = 82
Dark Brown Clayey Silt, little fine Sand, trace Mica - Very Moist	15								
Dark Grayish Brown Silty Clay, little fine Sand and Mica - Very Moist LL = 55 PL = 25 (CH)		8-SS	2		< 0.2	0.2	42	BDL	
	20								
		9-CS	WH + 3		0.2 0.6	0.3 0.4	51 55	BDL	Dd = 71 Dd = 67
	25								
Dark Gray Silty fine Sand, little Mica - Very Moist		10-SS	7				32	BDL	P200 28%
	30								
Dark Gray and Black Silty fine Sand, little to some Mica - Wet		11-CS	14				33	BDL	Dd = 90 P200 18%
	35								
- few Dark Gray Silt lenses - Wet		12-SS	5				28	BDL	P200 31%
	40								
Dark Grayish Brown to Black Clayey Silt, little Mica - Very Moist		13-SS	WH	0.4	0.5		43	BDL	
	45								
Dark Grayish Brown to Black Silty Clay - Very Moist		14-SS	5	0.5			47	BDL	
	50								
Boring Terminated at 50'									

WATER OBSERVATION DATA	
▽	WATER ENCOUNTERED DURING DRILLING: 11
▽	WATER LEVEL AFTER REMOVAL:
	CAVE DEPTH AFTER REMOVAL:
▼	WATER LEVEL AFTER HOURS:
	CAVE DEPTH AFTER HOURS:

REMARKS

WH - Weight of Hammer: Hammer weight for 12- or 18-inch drive.

Borehole backfilled with grout during auger withdrawal.

P200: Percent passing No. 200 sieve.

Changes in strata indicated by the lines are approximate boundaries between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.

NOTE: Dimensions indicate approximate method of locating test borings in the field with respect to curbs of adjacent roadways and existing structure. Boring plan adapted from site plan provided by client.

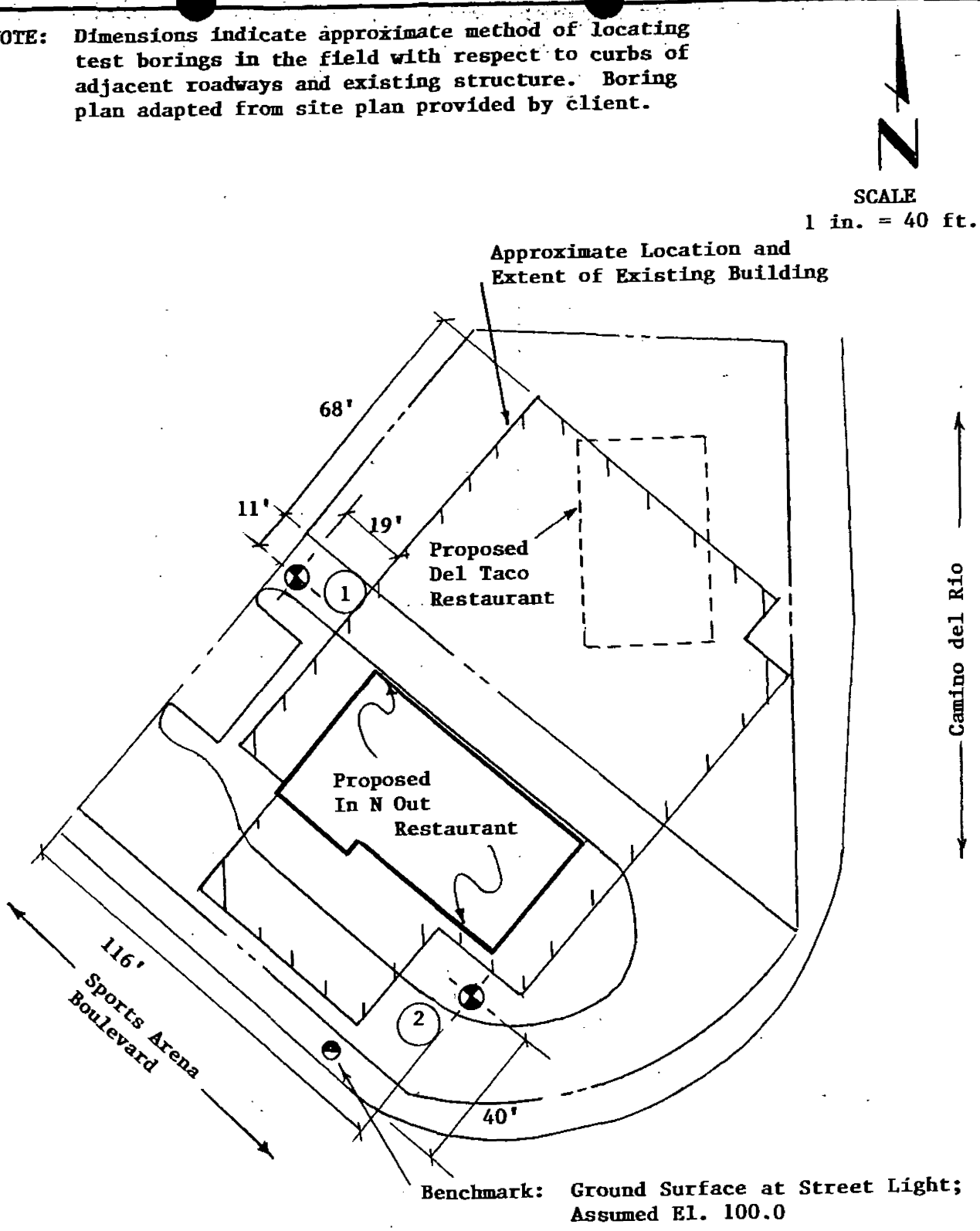


Figure 1
BORING LOCATION PLAN

Proposed In N Out Restaurant
San Diego, California
Project No. 2G-9608014

GILES ENGINEERING ASSOCIATES, INC.
GEOTECHNICAL, ENVIRONMENTAL
AND CONSTRUCTION MATERIALS CONSULTANTS

RECORD OF SUBSURFACE EXPLORATION

BORING NO. & LOCATION: 1 (NW Parking Area)	PROJECT: Proposed In N Out Burger
SURFACE ELEVATION: 100.0	PROJECT LOCATION: NWC Sports Arena Blvd. & El Camino Rio
COMPLETION DATE: 9/10/96	San Diego, California
FIELD REPRESENTATIVE: Rich Koester	PROJECT NUMBER: 2G-9608014

GILES ENGINEERING ASSOCIATES, INC.
Dallas Madison Seattle
Milwaukee Los Angeles
Washington, D.C.

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N (per 12")	q_u (tsf)	q_p (tsf)	q_s (tsf)	w (%)	PID	NOTES
6 inches Asphaltic Concrete; 6 inches Base Course; 4 inches Portland Cement		1-AU	---						
Light Grayish Brown Silty fine Sand to fine Sandy Silt, little Clay - Damp (Slight Volatile Odor)		2-SS	10				19	10	
Interbedded layers of Grayish Brown Silty fine Sand, Brown fine Sand and Dark Brown Silt with Clay, trace Mica - Damp to Very Moist at 7 feet (Slight to Moderate Volatile Odor)	5	3-SS	8				12	10	
		4-SS	5				24	7	
		5-SS	9				22	40	
	▽ 10								
Dark Grayish Brown Silty fine Sand, few Silty Clay lenses, trace Mica - Very Moist (Moderate Volatile Odor)		6-CS	11				26	70	Dd = 92 P200 27%
Dark Grayish Brown Silty Clay to Clayey Silt, little fine Sand, trace Mica - Very Moist		7-CS	WH + 3				49	3	Dd = 77 LL = 44, PI = 11 (ML)
	15								
Dark Grayish Brown to Black Silty Clay, trace Organic Material (Roots) at 20 feet; trace Shell fragments - Very Moist		8-SS	WH + 1				63	BDL	
	20								
		9-CS	3				51	BDL	Dd = 71
- little fine Sand at 25 feet	25								
Dark Grayish Brown Clayey Silt, some fine Sand, little Mica - Very Moist		10-SS	WH + 3				38	BDL	P200: 59%

	WATER OBSERVATION DATA	
▽	WATER ENCOUNTERED DURING DRILLING:	10
▽	WATER LEVEL AFTER REMOVAL:	N/A
	CAVE DEPTH AFTER REMOVAL:	N/A
▼	WATER LEVEL AFTER HOURS:	
	CAVE DEPTH AFTER HOURS:	

REMARKS

WH-Weight of Hammer: Weight of Hammer resulting in 6- or 12-inch drive.

N/A - Delayed groundwater readings not possible since borehole backfilled with cement grout during auger withdrawal.

P200: Percent passing No. 200 sieve.

Changes in strata indicated by the lines are approximate boundaries between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.

RECORD OF SUBSURFACE EXPLORATION

BORING NO. & LOCATION: 1 (NW Parking Area)	PROJECT: Proposed In N Out Burger
SURFACE ELEVATION: 100.0	PROJECT LOCATION: NWC Sports Arena Blvd. & El Camino Rio
COMPLETION DATE: 9/10/96	San Diego, California
FIELD REPRESENTATIVE: Rich Koester	PROJECT NUMBER: 2G-9608014

GILES ENGINEERING ASSOCIATES, INC.
Dallas Madison Seattle
Milwaukee Los Angeles
Washington, D.C.

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N (per 12")	q_u (tsf)	q_p (tsf)	q_s (tsf)	w (%)	PID	NOTES
Dark Gray Silty fine Sand, little Mica - Very Moist	35	11-CS	14				28	BDL	Dd = 90 P200: 22%
Dark Grayish Brown to Black Silty Clay to Clayey Silt - Very Moist	40	12-SS	4				43	BDL	
- occasional seams of Clayey Silt with fine Sand, trace medium to coarse Sand and Shell fragments - Very Moist							50	BDL	
	45	13-SS	8				34	BDL	
Dark Grayish Brown to Black Silty Clay, little Mica and Shell fragments - Moist		14-SS	WH + 1				43	BDL	
Boring Terminated at 50'	50								

WATER OBSERVATION DATA	
▽	WATER ENCOUNTERED DURING DRILLING: 10
▽	WATER LEVEL AFTER REMOVAL: N/A
	CAVE DEPTH AFTER REMOVAL: N/A
▼	WATER LEVEL AFTER HOURS:
	CAVE DEPTH AFTER HOURS:

REMARKS

WH-Weight of Hammer: Weight of Hammer resulting in 6- or 12-inch drive.

N/A - Delayed groundwater readings not possible since borehole backfilled with cement grout during auger withdrawal.

P200: Percent passing No. 200 sieve.

Changes in strata indicated by the lines are approximate boundaries between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.

RECORD OF SUBSURFACE EXPLORATION

BORING NO. & LOCATION: 2 (SE Drive-Thru Lane)	PROJECT: Proposed In N Out Burger
SURFACE ELEVATION: 100.9	PROJECT LOCATION: NWC Sports Arena Blvd. & El Camino Rio
COMPLETION DATE: 9/10/96	San Diego, California
FIELD REPRESENTATIVE: Rich Koester	PROJECT NUMBER: 2G-9608014

GILES ENGINEERING ASSOCIATES, INC.
Dallas Madison Seattle
Milwaukee Los Angeles
Washington, D.C.

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N (per 12")	q_u (tsf)	q_p (tsf)	q_s (tsf)	w (%)	PID	NOTES
6 inches Brown fine to medium Sand, little Clay, trace coarse Sand and Organic Material (Roots) - Moist (Topsoil)		1-AU	---						
		2-CS	12				19	BDL	Dd=108
Light Brown fine to coarse Sand, little Clay, trace fine Gravel - Moist (Fill)									
		3-CS	18				19	BDL	Dd=109
Grayish Brown Clayey fine Sand, little medium to coarse Sand - Moist (Possible Fill)	5								
		4-CS	18				15	BDL	Dd=104
Grayish Brown fine Sandy Silt, little Clay, trace coarse Sand and Mica - Damp									
		5-CS	13				20	BDL	P200: 17% Dd=92
Interbedded Grayish Brown fine Sand, trace to little Silt and Dark Brown Silt with Clay, trace mica - Damp to Wet at 12 feet									
	▽ 10	6-CS	7				36	BDL	P200: 6% Dd=85
		7-SS	7				36	BDL	P200: 7%
		8-SS	2				44	BDL	
Grayish Brown Silty Clay to Clayey Silt, little fine Sand, trace Mica - Very Moist	15								
Dark Grayish Brown to Black laminated Clayey Silt to Silty fine Sand, trace Mica - Very Moist		9-CS	3+10				38	BDL	Dd=85 LL=39, PI=14 (ML)
	20								
Dark Grayish Brown Silty fine Sand, little Mica - Very Moist									
		10-SS	8				35	BDL	P200: 23%
	25								
		11-CS	5				35	BDL	P200: 23% Dd=86

	WATER OBSERVATION DATA
▽	WATER ENCOUNTERED DURING DRILLING: 10
▽	WATER LEVEL AFTER REMOVAL: N/A
	CAVE DEPTH AFTER REMOVAL: N/A
▼	WATER LEVEL AFTER HOURS:
	CAVE DEPTH AFTER HOURS:

REMARKS

WH-Weight of Hammer: Weight of Hammer resulting in 6- to 12-inch drive.

N/A - Delayed groundwater readings not possible since borehole backfilled with cement grout during auger withdrawal.

P200: Percent passing No. 200 sieve.

Changes in strata indicated by the lines are approximate boundaries between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.

RECORD OF SUBSURFACE EXPLORATION

BORING NO. & LOCATION: 2 (SE Drive-Thru Lane)	PROJECT: Proposed In N Out Burger
SURFACE ELEVATION: 100.9	PROJECT LOCATION: NWC Sports Arena Blvd. & El Camino Rio
COMPLETION DATE: 9/10/96	San Diego, California
FIELD REPRESENTATIVE: Rich Koester	PROJECT NUMBER: 2G-9608014

GILES ENGINEERING ASSOCIATES, INC.
Dallas Madison Seattle
Milwaukee Los Angeles
Washington, D.C.

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N (per 12")	q_u (tsf)	q_p (tsf)	q_s (tsf)	w (%)	PID	NOTES
Dark Grayish Brown to Black Silty Clay to Clayey Silt - Very Moist		12-SS	WH+3	0.6	0.5	0.2	65	BDL	
	35								
		13-CS	8				64	BDL	
	40								
		14-SS	WH+1				41	BDL	Dd=66 LL=70, PI=36 (MH)
	45								
- trace Shell fragments at 50 feet - Very Moist		15-SS	5				42	BDL	
	50								
Boring Terminated at 50'									

	WATER OBSERVATION DATA	REMARKS
▽	WATER ENCOUNTERED DURING DRILLING: 10	WH-Weight of Hammer: Weight of Hammer resulting in 6- to 12-inch drive.
▼	WATER LEVEL AFTER REMOVAL: N/A	
	CAVE DEPTH AFTER REMOVAL: N/A	N/A - Delayed groundwater readings not possible since borehole backfilled with cement grout during euger withdrawal.
▼	WATER LEVEL AFTER HOURS:	P200: Percent passing No. 200 sieve.
	CAVE DEPTH AFTER HOURS:	

Changes in strata indicated by the lines are approximate boundaries between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.

GROUNDWATER TECHNOLOGY 1989 - 3505 HANCOCK

CLIENT NAME BUSCH/SEA WORLD

JOB # 212-799-5088

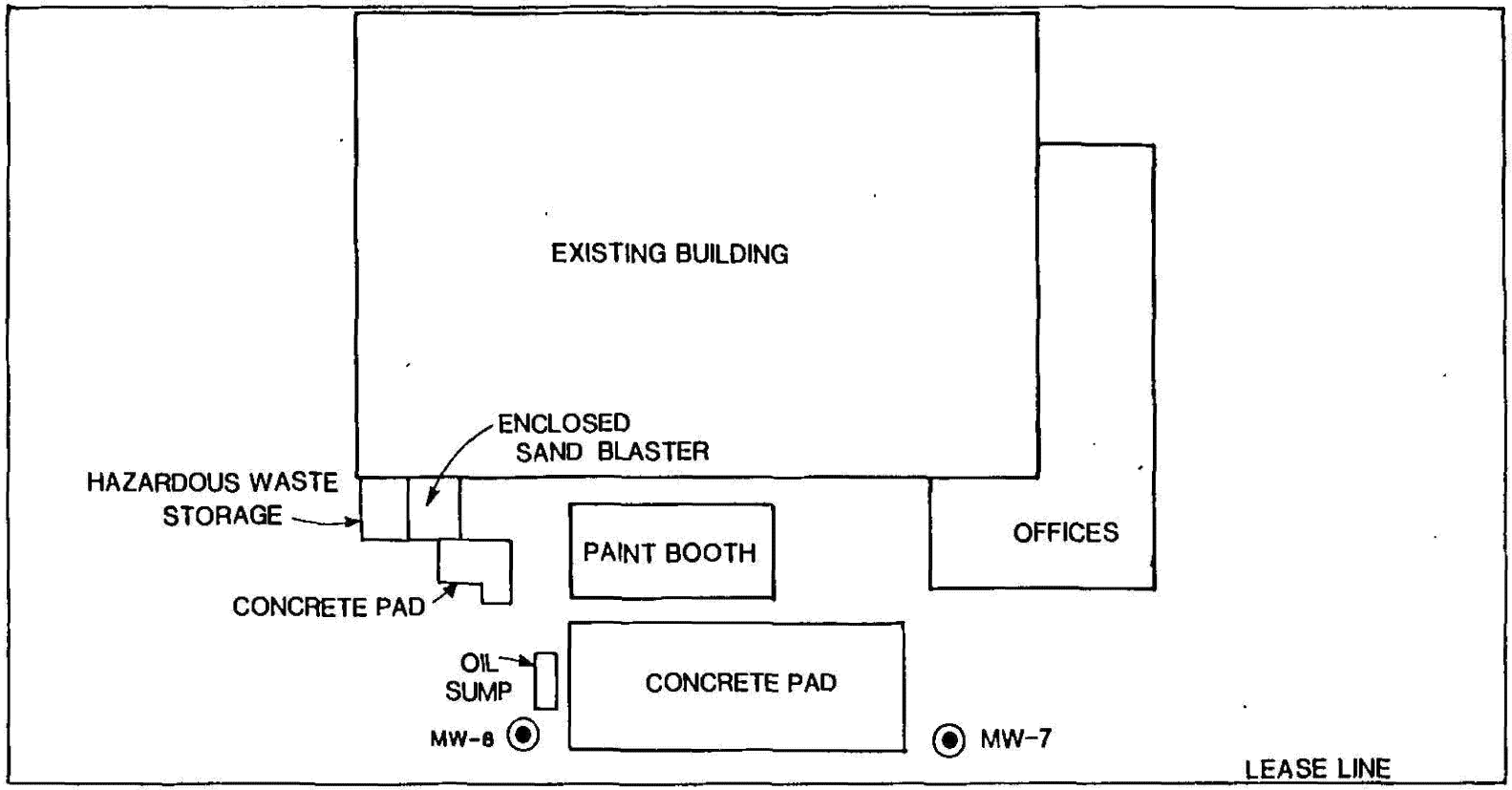
SITE LOCATION SEA WORLD DR. SAN DIEGO, CA

REPORT DATE

DRAWN BY MARTY DATE 10-23-89

APPROVED BY DATE

REVISIONS



0 40 80

APPROX SCALE IN FEET

MW-6 EXPLANATION

MONITORING WELL LOCATION

SAN DIEGO GROUNDWATER TECHNOLOGY

DRAWING ADAPTED FROM SEA WORLD SET AND SIGN CONSTRUCTION SHOP PLAN

LOCATION F

SITE MAP

FIGURE

DATE DRILLED 10/18/89 T.O.C ELEV. _____ LOGGED BY GP

DRILLING CO. Acorn DRILLING METHOD 8" Hollow-stem auger

SCREEN DIA. 2" LENGTH 10' SLOT SIZE .020"

CASING DIA. 2" LENGTH 5' TYPE PVC 40 HOLE DIA. 8"

MW-6

PROJECT NAME Busch/Sea World PROJECT NUMBER 212-799-5088

DEPTH (FEET)	WELL CONST. PIPE	WELL CONST. FILL	PID (PPM)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/FT.	SOIL CLASS (USCS)	DESCRIPTION
								PAVEMENT: 2" Asphalt
0							SM	FILL Brown SILTY SAND, fine grained, micaceous, slightly dense, moist.
			0	MW-6-4		15	SM	QUATERNARY Fluvial/bay? Sediment. Brown, SILTY SAND, fine grained, micaceous, slightly dense, moist, brick fragments at 3½'.
5								
			0	MW-6-8		4	ML	Bay muds. Dark grey brown SANDY SILT, micaceous, wet, slightly dense, no odor, red brown stain below groundwater.
10								
15								Well terminated at 15'. Groundwater encountered at 7'. Well installed 10/18/89. Well 4½ feet from oil sump. Free oil and oil in sand in sump.
20								
25								

SAN DIEGO GROUNDWATER TECHNOLOGY, INC.

WELL LOGS

Busch/Sea World

Hancock

FIGURE

DATE DRILLED 10/18/89 T.O.C ELEV. _____ LOGGED BY GP

DRILLING CO. Acorn DRILLING METHOD 8" Hollow-stem auger

SCREEN DIA. 2" LENGTH 10' SLOT SIZE .020"

CASING DIA. 2" LENGTH 3' TYPE PVC 40 HOLE DIA. 8"

MW-7

PROJECT NAME Busch/Sea World PROJECT NUMBER 212-799-5088

DEPTH (FEET)	WELL CONST. PIPE	WELL CONST. FILL	PID (PPM)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/FT.	SOIL CLASS (USCS)	DESCRIPTION
								PAVEMENT: 3" Asphalt
0							SM	FILL Brown SILTY SAND, micaceous, moderately moist, slightly dense.
			0	MW-7-4		14		
5			0	MW-7-7		5	ML	QUATERNARY Bay mud. Dark brown SILT, micaceous (trace roots), slightly dense, wet, no odor, no stain.
10								
								Well terminated at 13'. Groundwater encountered at 7'. Well installed 10/18/89.
15								
20								
25								

SAN DIEGO GROUNDWATER TECHNOLOGY, INC.

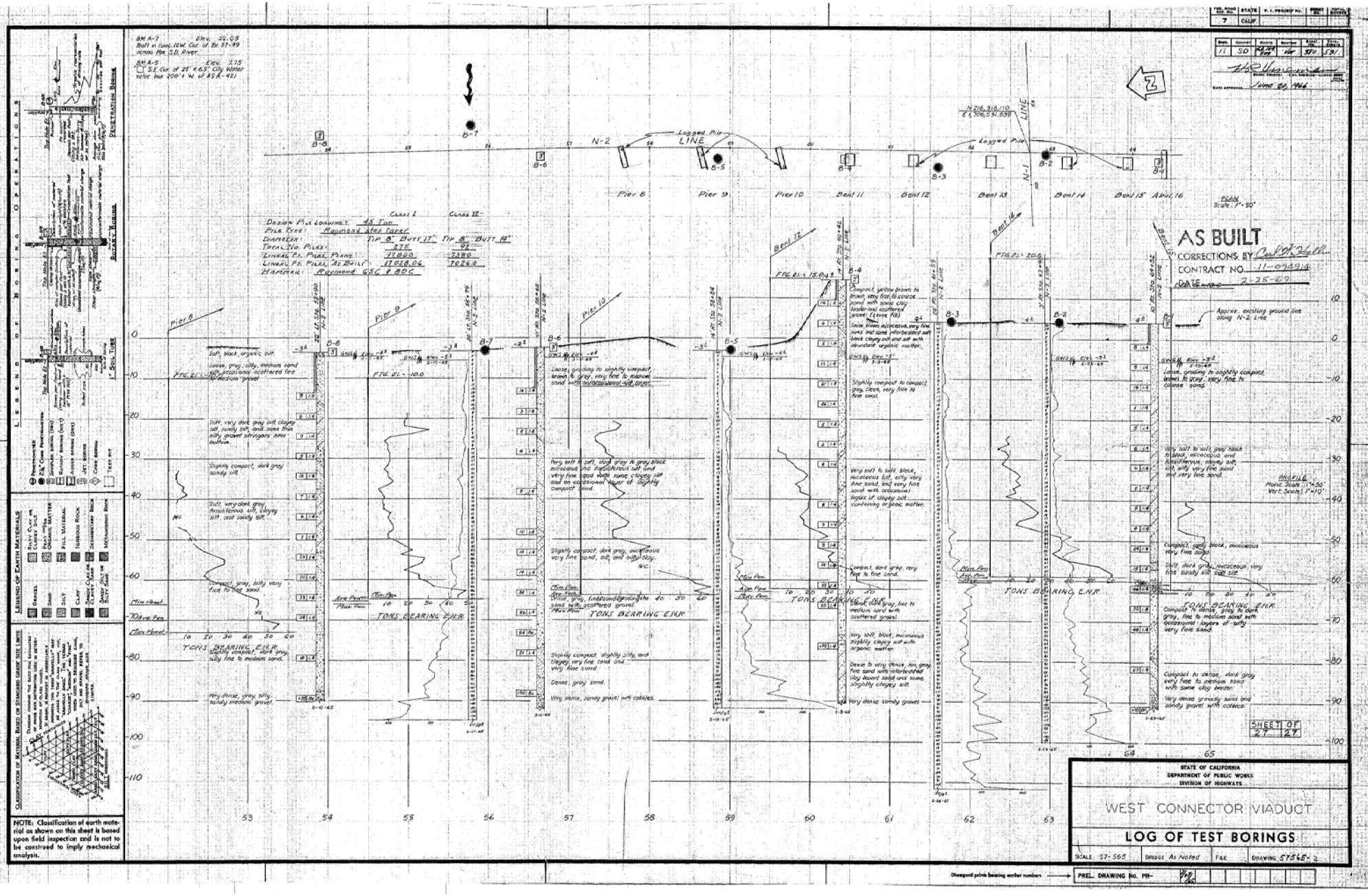
WELL LOGS

Busch/Sea World

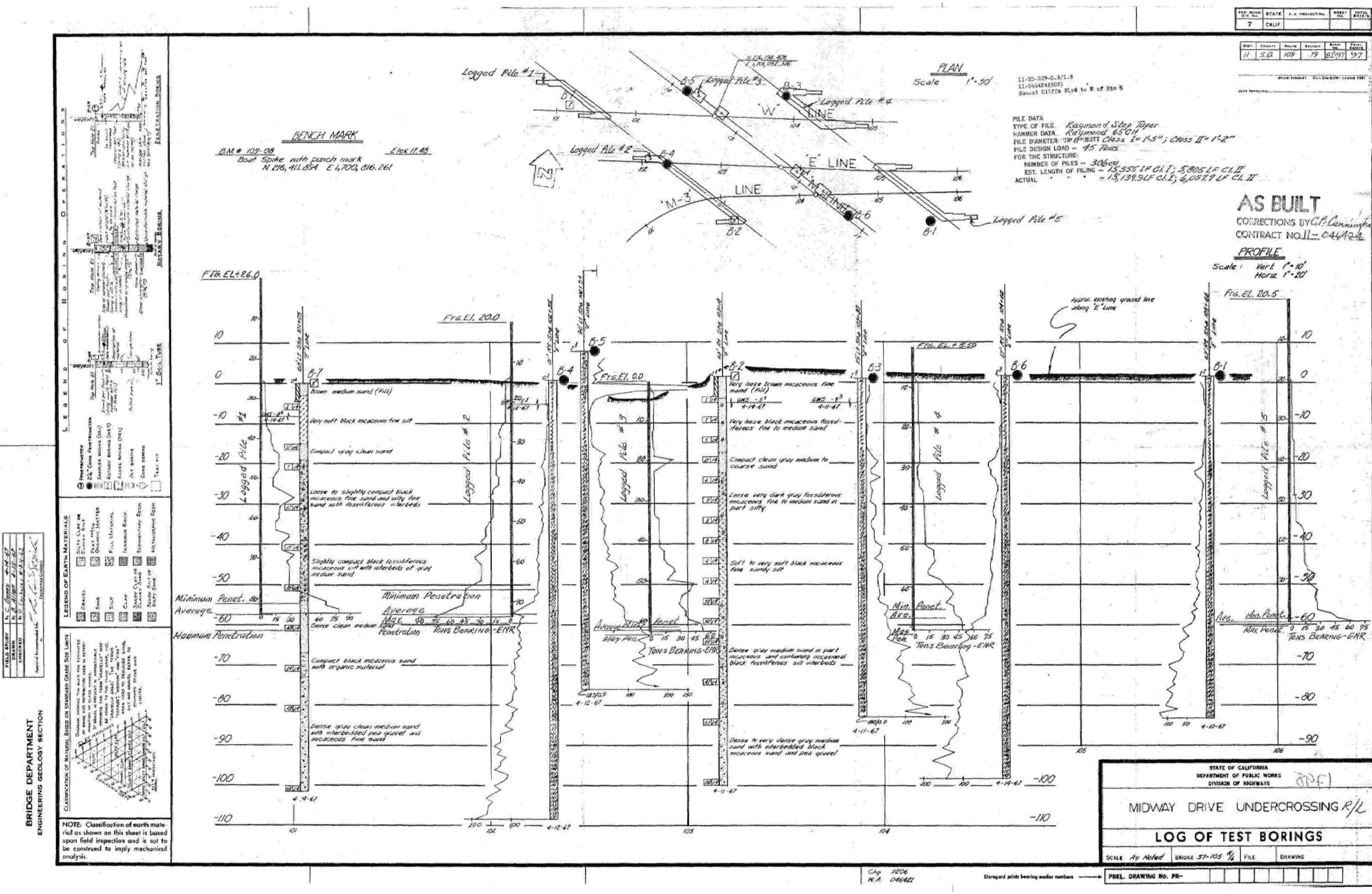
Hancock

FIGURE

CALTRANS 1969 - WEST CONNECTOR VIADUCT


BM A-7 Elev. 22.05
Bolt in conc. NEW. Cut. of Br. 57-99 across the S.D. River.
BM A-5 Elev. 7.75
S.E. Cor. of 25' x 6.5' City Water Valve box 200'± W. of RS.R.-421
LEGEND OF BORING OPERATIONS
LEGEND OF EARTH MATERIALS
CLASSIFICATION OF MATERIAL BASED ON STANDARD GRAIN SIZE LIMITS
NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.
Design Pile Loadings: 55 Ton Class I Class II
Pile Type: Raymond step taper
Diameter: Tip 8" Butt 17" Tip 8" Butt 12"
Total No. Piles: 275 92
Lineal Ft. Piles, Plans: 12800 7380
Lineal Ft. Piles, As Built: 11928.04 7024.0
Hammer: Raymond GSC # 80C
Logged Pier LINE
N-2 LINE
N-1 LINE
Pier 8
Pier 9
Pier 10
Bent 11
Bent 12
Bent 13
Bent 14
Bent 15
Abut. 16
PLAN
Scale: 1"=50'
AS BUILT
CORRECTIONS BY
CONTRACT NO. 11-094914
2-25-69
Approx. existing ground line along N-2 Line
PROFILE
Horiz. Scale 1"=50'
Vert. Scale 1"=10'
TONS BEARING E.N.R.
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
WEST CONNECTOR VIADUCT
LOG OF TEST BORINGS
SCALE: 57-565 BRIDGE As Noted FILE DRAWING 57565-2
PREL. DRAWING No. PR-
SHEET OF 27 27
BRIDGE DEPARTMENT
ENGINEERING GEOLOGY SECTION

CALTRANS 1968 - MIDWAY DRIVE UNDERPASS


PLAN
Scale 1"=50'
BENCH MARK
B.M.# 105-08 Elev. 17.48
Boat Spike with punch mark
N 216,411.894 E 4,700,816.261
Logged Pile #1
Logged Pile #2
Logged Pile #3
Logged Pile #4
Logged Pile #5
'W' LINE
'E' LINE
'M-3' LINE
11-SD-5.0
11-046424(SOE)
Sunset Cliffs Blvd to W of Rte 5
PILE DATA
TYPE OF PILE Raymond Step Taper
HAMMER DATA Raymond 65CH
PILE DIAMETER: TIP 8" BUTT Class I = 1'-5"; Class II = 1'-2"
PILE DESIGN LOAD = 45 Tons
FOR THE STRUCTURE:
NUMBER OF PILES = 306 ea
EST. LENGTH OF PILING = 15,555 LF Cl. I; 5,805 LF Cl. II
ACTUAL = 15,139.9 LF Cl. I; 6,057.7 LF Cl. II
AS BUILT
CORRECTIONS BY C.F. Cunningham
CONTRACT NO. 11-046424
PROFILE
Scale: Vert. 1"=10' Horiz. 1"=20'
Ftg. El. +26.0
Ftg. El. 20.0
Ftg. El. 0.0
Ftg. El. + 8.50
Ftg. El. 20.5
Appr. existing ground line along 'E' Line
Brown medium sand (Fill)
Very soft black micaceous fine silt
Compact gray clean sand
Loose to slightly compact black micaceous fine sand and silty fine sand with fossiliferous interbeds
Slightly compact black fossiliferous micaceous silt with interbeds of gray medium sand
Dense clean medium sand
Compact black micaceous sand with organic material
Dense gray clean medium sand with interbedded pea gravel and micaceous fine sand
Very loose brown micaceous fine sand (Fill)
Very loose black micaceous fossiliferous fine to medium sand
Compact clean gray medium to coarse sand
Loose very dark gray fossiliferous micaceous fine to medium sand in part silty
Soft to very soft black micaceous fine sandy silt
Dense gray medium sand in part micaceous and containing occasional black fossiliferous silt interbeds
Dense to very dense gray medium sand with interbedded black micaceous sand and pea gravel
Minimum Penetration
Average
Max. Penetration
Tons Bearing - ENR
4-14-67
4-12-67
4-11-67
4-10-67
LEGEND OF EARTH MATERIALS
LEGEND OF BORING OPERATIONS
Penetration Boring
Rotary Boring
1" Soil Tube
CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS
NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.
BRIDGE DEPARTMENT
ENGINEERING GEOLOGY SECTION
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
MIDWAY DRIVE UNDERCROSSING R/L
LOG OF TEST BORINGS
SCALE As Noted BRIDGE 57-705 R/L
PREL. DRAWING No. PR-
Disregard prints bearing earlier numbers
Chg. 11206
W.A. 046421