

TYPE OF SERVICES	Preliminary Geotechnical Investigation
PROJECT NAME	University Station Residential Development
LOCATION	451-475 El Camino Real Santa Clara, California
CLIENT	Bixby Land Company
PROJECT NUMBER	285-2-2
DATE	April 15, 2024



GEOTECHNICAL



CORNERSTONE EARTH GROUP

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Client Address	1501 Quail Street, Suite 230 Newport Beach, CA
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FIGURE 1: VICINITY MAP

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APPENDIX B: LABORATORY TEST PROGRAM

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APPENDIX D: PRIOR ENVIRONMENTAL BORINGS

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Project Name	University Station Residential Development
Location	451-475 El Camino Real Santa Clara, California

SECTION 1: INTRODUCTION

This preliminary geotechnical report was prepared for the sole use of Bixby Land Company for the planned residential project at 451-475 El Camino Real in Santa Clara, California. The location of the site is shown on the Vicinity Map, Figure 1. The purpose of this study was to evaluate the existing subsurface conditions and develop an opinion regarding potential geotechnical concerns that could impact the proposed development. The preliminary geotechnical recommendations contained in this report are for your forward planning, cost estimating, and preliminary project design.

1.1 PROJECT DESCRIPTION

The approximately 12¼ acre project site, currently designated as Parcel 3, is located at 451-475 El Camino Real in Santa Clara, California. The site is currently occupied by various office buildings and two parking garages. The buildings are surrounded by at-grade parking and drive aisles.

Based on our review of the conceptual development plan prepared by KTG Y dated December 1, 2023, the planned development will likely include three story townhome buildings and higher density residential building that may include a concrete podium with four to five stories of wood-frame construction above the podium. Appurtenant parking, utilities, retaining walls, landscaping and other improvements necessary for site development are also likely planned. Structural loads are not currently known for the proposed structures; however, structural loads are expected to be typical of similar type structures. We assume future grading will include minor cuts and fills.

1.2 SCOPE OF SERVICES

Our scope of services was presented in our proposal dated November 22, 2023 and consisted of field and laboratory programs to evaluate physical and engineering properties of the subsurface soils, engineering analysis to prepare recommendations for site work and grading,

building foundations, flatwork, and pavements, and preparation of this preliminary report. Brief descriptions of our exploration and laboratory programs are presented below.

1.3 EXPLORATION PROGRAM

Field exploration consisted of two borings drilled on April 2, 2024 with truck-mounted hollow-stem auger drilling equipment and six Cone Penetration Tests (CPTs) advanced on March 26, 2024. The borings were drilled to depths of approximately 30 to 40 feet; the CPTs were advanced to depths of 3 to 45 feet. Refusal was encountered at CPT-1 at a depth of about 3 feet. One of the borings (Boring EB-2) was advanced adjacent to CPT-4 for direct evaluation of physical samples to correlated soil behavior. The borings and CPTs were backfilled with cement grout in accordance with local requirements; exploration permits were obtained as required by local jurisdictions.

The approximate locations of our exploratory borings are shown on the Site Plan, Figure 2. Details regarding our field program are included in Appendix A.

1.4 LABORATORY TESTING PROGRAM

In addition to visual classification of samples, the laboratory program focused on obtaining data for preliminary foundation design and seismic ground deformation estimates. Testing included moisture contents, and Plasticity Index tests. Details regarding our laboratory program are included in Appendix B.

1.5 CORROSION EVALUATION

Three samples from our borings from depths from 2 to 6 feet were tested for saturated resistivity, pH, and soluble sulfates and chlorides. JDH Corrosion Consultants prepared a brief corrosion evaluation based on the laboratory data, which is attached to this report in Appendix C.

1.6 ENVIRONMENTAL SERVICES

Cornerstone Earth Group also provided environmental services for this project, including Phase 1 and 2 site assessments; environmental findings and conclusions are provided under separate covers.

SECTION 2: REGIONAL SETTING

2.1 GEOLOGICAL SETTING

The site is located within the Santa Clara Valley, which is a broad alluvial plane between the Santa Cruz Mountains to the southwest and west, and the Diablo Range to the northeast. The San Andreas Fault system, including the Monte Vista-Shannon Fault, exists within the Santa Cruz Mountains and the Hayward and Calaveras Fault systems exist within the Diablo Range.

Alluvial soil thicknesses in the area of Santa Clara and north San Jose are greater than 500 feet (Rogers & Williams, 1974).

2.2 REGIONAL SEISMICITY

While seismologists cannot predict earthquake events, geologists from the U.S. Geological Survey have recently updated (in 2015) earlier estimates from their 2014 Uniform California Earthquake Rupture Forecast (Version 3; UCERF3) publication. The estimated probability of one or more magnitude 6.7 earthquakes (the size of the destructive 1994 Northridge earthquake) expected to occur somewhere in the San Francisco Bay Area has been revised (increased) to 72 percent for the period 2014 to 2043 (Aagaard et al., 2016). The faults in the region with the highest estimated probability of generating damaging earthquakes between 2014 and 2043 are the Hayward (33%), Calaveras (26%), and San Andreas Faults (22%). In this 30-year period, the probability of an earthquake of magnitude 6.7 or larger occurring is 22 percent along the San Andreas Fault and 33 percent for the Hayward Fault.

The faults considered capable of generating significant earthquakes are generally associated with the well-defined areas of crustal movement, which trend northwesterly. The table below presents the State-considered active faults within 25 kilometers of the site.

Table 1: Approximate Fault Distances

Fault Name	Distance	
	(miles)	(kilometers)
Hayward (Southeast Extension)	6.6	10.6
Monte Vista-Shannon	7.1	11.5
Hayward (Total Length)	9.4	15.1
Calaveras	9.4	15.2
San Andreas (1906)	10.9	17.6
Sargent	14.1	23.2

A regional fault map is presented as Figure 3, illustrating the relative distances of the site to significant fault zones.

SECTION 3: SITE CONDITIONS

3.1 SITE BACKGROUND AND SURFACE DESCRIPTION

We reviewed historical aerial imagery provided on www.historicaerials.com and Google Earth dating back to 1948. A summary of pertinent surface changes at and near the site is as follows.

- 1948: The site has already been developed and appears to be occupied by various warehouses.

- 1956: An additional building was constructed on the west portion of the site.
- 1960 to 1980: The building on the northwest portion of the site has been demolished and remained as a warehouse facility with storage until 1980.
- 1982: Redevelopment began with demolition of the northeast buildings.
- 1987: A new structure was built on the northern portion of the site.
- 1998: The site undergoes another redevelopment with some of the present commercial buildings now present.
- 1999: Construction of the commercial buildings approximately 80% complete.
- 2002 to present: The site has been fully developed with office buildings and parking garages.

The site is bounded by Southern Pacific railroad tracks to the north, residential development to the east, El Camino Real and existing commercial development to the south, and office, hotel, and retail to the west. Existing topographic information indicates the site is relatively level with grades ranging from approximately Elevation 64½ to 67 (datum unknown). The northeastern corner of the site is located with the City of San Jose, as shown on Figure 2.

Surface pavements generally consisted of 2 to 3 inches of asphalt concrete over 0 to 9 inches of aggregate base. Based on visual observations, the existing pavements are in fair condition with minor cracking and trench patching.

3.2 SUBSURFACE CONDITIONS

Below the surface pavements, our explorations generally encountered undocumented fills consisting of dense clayey gravels with sand, medium dense clayey sands, and stiff to very stiff sandy fat clays to a depth ranging between 4½ to 5 feet. The fills are considered undocumented since records of compaction were not available for our review. This fill was likely placed during prior phases of redevelopment. We also reviewed the logs from the environmental phase and undocumented fill was encountered between 1 to 5½ feet thick. The fill consisted of clayey gravels and sands or lean to fat clays that were consistent with those encountered in our geotechnical explorations. Undocumented fills associated with former underground storage tanks (USTs) are also reportedly present at the site, as shown on the Site Plan, Figure 2. The depth of these UST fill areas is not known but assumed to be on the order of 8 to 10 feet deep.

Below the undocumented fill, Boring EB-1 encountered native hard to stiff lean clays, a layer of medium dense clayey sands from 10 to 12½ feet, and stiff fat clays to the maximum depth explored of 30 feet. Below the undocumented fill, Boring EB-2 encountered native stiff to very stiff fat and lean clays to a depth of about 30 feet. The upper clays were underlain by interbedded layers of stiff lean clays and dense to very dense clayey sands to the maximum

depth explored of 40 feet. Below the undocumented fill from the environmental borings, the borings generally encountered lean and fat clays with some interbedded sand layers to the maximum depth advanced of 3 to 15 feet.

Based on interpretation of the Cone Penetration Test (CPT) soundings, our CPTs generally encountered stiff clays with interbedded medium dense to very dense sands to the maximum depth explored of 45 feet.

3.2.1 Plasticity/Expansion Potential

We performed one Plasticity Index (PI) test on a representative sample. The test result was used to evaluate expansion potential of surficial soils. The result of the surficial PI test indicated a PIs of 35, indicating high expansion potential to wetting and drying cycles.

3.2.2 In-Situ Moisture Contents

Laboratory testing indicated that the in-situ moisture contents within the upper 10 range from 5 percent under to 12 percent over the estimated laboratory optimum moisture.

3.3 GROUNDWATER

Groundwater was encountered in our borings and from CPT pore pressure measurements at depths ranging from 2 to 9½ feet below current grades. Additionally, from our environmental explorations, groundwater was encountered between 6 to 14 feet below current grades. All measurements were taken at the time of drilling and may not represent the stabilized levels that can be higher than the initial levels encountered. Based on our review of historic high groundwater maps (CGS 2003), we anticipate that the high groundwater level may be less than 10 feet below current grades.

Based on the above, a design groundwater depth of 5 feet was used for our preliminary analysis. Fluctuations in groundwater levels occur due to many factors including seasonal fluctuation, underground drainage patterns, regional fluctuations, and other factors.

Table 2: Depth to Groundwater

Boring/CPT Number	Date Drilled	Depth to Groundwater (feet)	Depth of Boring/CPT (feet)
CPT-2	3/26/2024	9½	45
CPT-3	3/26/2024	2*	45
CPT-4	3/26/2024	2½*	45
CPT-5	3/26/2024	4½*	45
CPT-6	3/26/2024	9	45
EB-1	4/2/2024	9	30
EB-2	4/2/2024	8	40½

*Interpreted groundwater level may represent a deeper water bearing zone under confined conditions and not a static groundwater level of the upper water bearing soils.

SECTION 4: GEOLOGIC HAZARDS

4.1 FAULT SURFACE RUPTURE

As discussed above several significant faults are located within 25 kilometers of the site. The site is not located within a State-designated Alquist Priolo Earthquake Fault Zone, or a Santa Clara County Fault Hazard Zone, or a City of San Jose Potential Hazard Zone. As shown in Figure 3, no known surface expression of fault traces is thought to cross the site; therefore, fault surface rupture hazard is not a significant geologic hazard at the site.

4.2 ESTIMATED GROUND SHAKING

Moderate to severe (design-level) earthquakes can cause strong ground shaking, which is the case for most sites within the Bay Area. A peak ground acceleration (PGA) was estimated for analysis using a value equal to $F_{PGA} \cdot PGA$, as allowed in the 2022 edition of the California Building Code when an exception has been taken per ASCE 7-16, Section 11.4.8. For our liquefaction analysis we used a PGA_M of 0.565g.

4.3 LIQUEFACTION POTENTIAL

The site is within a State-designated Liquefaction Hazard Zone (CGS, San Jose West Quadrangle, 2002) as well as a Santa Clara County Liquefaction Hazard Zone (Santa Clara County, 2003). Our field and laboratory programs addressed this issue by testing and sampling potentially liquefiable layers to depths of at least 45 feet, performing visual classification on sampled materials, evaluating CPT data, and performing various tests to further classify soil properties.

4.3.1 Background

During strong seismic shaking, cyclically induced stresses can cause increased pore pressures within the soil matrix that can result in liquefaction triggering, soil softening due to shear stress loss, potentially significant ground deformation due to settlement within sandy liquefiable layers as pore pressures dissipate, and/or flow failures in sloping ground or where open faces are present (lateral spreading) (NCEER 1998). Limited field and laboratory data is available regarding ground deformation due to settlement; however, in clean sand layers settlement on the order of 2 to 4 percent of the liquefied layer thickness can occur. Soils most susceptible to liquefaction are loose, non-cohesive soils that are saturated and are bedded with poor drainage, such as sand and silt layers bedded with a cohesive cap.

4.3.2 Analysis

As discussed in the “Subsurface” section above, several sand layers were encountered below the design groundwater depth of 5 feet. Following the liquefaction analysis framework in the 2008 monograph, *Soil Liquefaction During Earthquakes* (Idriss and Boulanger, 2008), incorporating updates in *CPT and SPT Based Liquefaction Triggering Procedures* (Boulanger and Idriss, 2014), and in accordance with CDMG Special Publication 117A guidelines (CDMG, 2008) for quantitative analysis, these layers were analyzed for liquefaction triggering and potential post-liquefaction settlement. These methods compare the ratio of the estimated cyclic shaking (Cyclic Stress Ratio - CSR) to the soil’s estimated resistance to cyclic shaking (Cyclic Resistance Ratio - CRR), providing a factor of safety against liquefaction triggering. Factors of safety less than or equal to 1.3 are considered to be potentially liquefiable and capable of post-liquefaction re-consolidation (i.e. settlement).

The CSR for each layer quantifies the stresses anticipated to be generated due to a design-level seismic event, is based on the peak horizontal acceleration generated at the ground surface discussed in the “Estimated Ground Shaking” section above and is corrected for overburden and stress reduction factors as discussed in the procedure developed by Seed and Idriss (1971) and updated in the 2008 Idriss and Boulanger monograph.

In estimating post-liquefaction settlement at the site, we have implemented a depth weighting factor proposed by Cetin (2009). Following evaluation of 49 high-quality, cyclically induced, ground settlement case histories from seven different earthquakes, Cetin proposed the use of a weighting factor based on the depth of layers. The weighting procedure was used to tune the surface observations at liquefaction sites to produce a better model fit with measured data. Aside from the better model fit it produced, the rationale behind the use of a depth weighting factor is based on the following: 1) upward seepage, triggering void ratio redistribution, and resulting in unfavorably higher void ratios for the shallower sublayers of soil layers; 2) reduced induced shear stresses and number of shear stress cycles transmitted to deeper soil layers due to initial liquefaction of surficial layers; and 3) possible arching effects due to non-liquefied soil layers. All these may significantly reduce the contribution of volumetric settlement of deeper soil layers to the overall ground surface settlement (Cetin, 2009).

The soil's CRR is estimated from the in-situ measurements from CPTs and laboratory testing on samples retrieved from our borings. SPT "N" values obtained from hollow-stem auger borings were not used in our analyses, as the "N" values obtained are less reliable in sands below groundwater. The tip pressures are corrected for effective overburden stresses, taking into consideration both the groundwater level at the time of exploration and the design groundwater level, and stress reduction versus depth factors. The CPT method utilizes the soil behavior type index (I_c) to estimate the plasticity of the layers. Selected soil samples collected from advancing the CPT equipment adjacent to CPT-4 were tested to evaluate grain size, as well as visually observed for confirmation of CPT soil behavior types.

The results of our CPT analyses and calculations (CPT-1 to CPT-6) are presented in Appendix D.

4.3.3 Summary

Our analyses indicate that several layers could potentially experience liquefaction triggering that could result in post-liquefaction total settlement at the ground surface ranging in the order of $\frac{1}{2}$ inch or less based on the Yoshimine (2006) method. As discussed in SP 117A, differential movement for level ground sites over deep soil sites will be up to about two-thirds of the total settlement between independent foundation elements. In our opinion, differential settlements are anticipated to be on the order of $\frac{1}{4}$ -inch or less over a horizontal distance of 30 feet.

4.3.4 Ground Deformation and Surficial Cracking Potential

The methods used to estimate liquefaction settlements assume that there is a sufficient cap of non-liquefiable material to prevent ground deformation or sand boils. For ground deformation to occur, the pore water pressure within the liquefiable soil layer will need to be great enough to break through the overlying non-liquefiable layer, which could cause significant ground deformation and settlement. The work of Youd and Garriss (1995) indicates that the 5- to 9-foot-thick layer of non-liquefiable cap is sufficient to prevent ground deformation and significant surficial cracking; therefore, the above total settlement estimates are reasonable.

4.4 LATERAL SPREADING

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically, lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. As failure tends to propagate as block failures, it is difficult to analyze and estimate where the first tension crack will form.

There are no open faces within a distance considered susceptible to lateral spreading; therefore, in our opinion, the potential for lateral spreading to affect the site is low.

4.5 SEISMIC SETTLEMENT/UNSATURATED SAND SHAKING

Loose unsaturated sandy soils can settle during strong seismic shaking. As the soils encountered at the site above the groundwater level were predominantly stiff to very stiff clays and medium dense to dense clayey sands, in our opinion, the potential for significant differential seismic settlement affecting the proposed improvements is low.

4.6 TSUNAMI/SEICHE

The terms tsunami or seiche are described as ocean waves or similar waves usually created by undersea fault movement or by a coastal or submerged landslide. Tsunamis may be generated at great distance from shore (far field events) or nearby (near field events). Waves are formed, as the displaced water moves to regain equilibrium, and radiates across the open water, similar to ripples from a rock being thrown into a pond. When the waveform reaches the coastline, it quickly raises the water level, with water velocities as high as 15 to 20 knots. The water mass, as well as vessels, vehicles, or other objects in its path create tremendous forces as they impact coastal structures.

Tsunamis have affected the coastline along the Pacific Northwest during historic times. The Fort Point tide gauge in San Francisco recorded approximately 21 tsunamis between 1854 and 1964. The 1964 Alaska earthquake generated a recorded wave height of 7.4 feet and drowned eleven people in Crescent City, California. For the case of a far-field event, the Bay area would have hours of warning; for a near field event, there may be only a few minutes of warning, if any.

A tsunami or seiche originating in the Pacific Ocean would lose much of its energy passing through San Francisco Bay. Based on the mapping of tsunami inundation potential for the San Francisco Bay Area by CGS (conservation.ca.gov/cgs/tsunami/maps), areas most likely to be inundated are marshlands, tidal flats, and former bay margin lands that are now artificially filled, but are still at or below sea level, and are generally within 1½ miles of the shoreline. The site is approximately 5½ miles inland from the San Francisco Bay shoreline and is approximately 66 to 69 feet above mean sea level. Therefore, the potential for inundation due to tsunami or seiche is considered low.

4.7 FLOODING

Based on our internet search of the Federal Emergency Management Agency (FEMA) flood map public database, the site is located within Zone X, an area with reduced flood risk due to levee. We recommend the project civil engineer be retained to confirm this information and verify the base flood elevation, if appropriate.

The Department of Water Resources (DWR), Division of Safety of Dams (DSOD) compiled a database of Dam Failure Inundation Hazard Maps (DSOD, 2015). The generalized hazard maps were prepared by dam owners as required by the State Office of Emergency Services; they are intended for planning purposes only. Based on our review of these maps, the site is not located within a dam failure inundation area.

SECTION 5: CONCLUSIONS

5.1 SUMMARY

From a geotechnical viewpoint, the project is feasible provided the concerns listed below are addressed in the project design. The preliminary recommendations that follow are intended for conceptual planning and preliminary design. A design-level geotechnical investigation should be performed once site development plans are prepared indicating where proposed structures are planned. The design-level investigation findings will be used to confirm the preliminary recommendations and develop detailed recommendations for design and construction. Descriptions of each concern with brief outlines of our recommendations follow the listed concerns.

- Presence of undocumented fill
- Presence of highly expansive soils
- Shallow groundwater
- Redevelopment considerations
- Soil corrosion potential

5.1.1 Undocumented Fill

As discussed, undocumented fills were encountered in our explorations to depths of approximately 4½ to 5 feet. Undocumented fills associated with former underground storage tanks (USTs) are also present at the site. Our experience with similar previously developed sites indicates undocumented fill thickness will likely vary across the site, especially beneath the existing buildings. On a preliminary basis, we recommend that the upper 3 feet of existing undocumented fill be over-excavated and re-compacted beneath any new at-grade structures or prior to placing any new fill. Former UST backfill areas will also likely need to be over-excavated and re-compacted or densified in-situ prior to placement of new fill or foundation construction. The lateral extent and depth of existing fills, as well as the required over-excavation depth, should be further investigated during the design-level investigation.

5.1.2 Presence of Expansive Soils

Highly expansive surficial soils were encountered in our explorations. The depth of this expansive clay may vary across the site and in some areas may currently be covered with 1 to 3 feet of granular undocumented fill. Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wetted. If structures are underlain by expansive soils it is important that foundation systems be capable of tolerating or resisting any potentially damaging soil movements. Conventional slabs-on-grade should have sufficient reinforcement and be supported on a layer of non-expansive fill; footings should extend below the zone of seasonal moisture fluctuation. In addition, it is important to limit moisture changes in the surficial soils by using positive drainage away from buildings as well as limiting landscaping watering. We recommend that a plug of low-

permeability clay soil, sand-cement slurry, or lean concrete be placed within trenches just outside where the trenches pass into building and pavement areas. Preliminary grading and foundation recommendations addressing this concern are presented in the following sections.

5.1.3 Shallow Groundwater

Shallow groundwater was encountered at depths less than 10 feet below the existing ground surface. As discussed above, a design groundwater depth of 5 feet was used for our preliminary liquefaction analyses. Our experience with similar sites in the vicinity indicates that shallow groundwater could significantly impact grading and underground construction. These impacts typically consist of potentially wet and unstable pavement subgrade, difficulty achieving compaction, and difficult underground utility installation. Dewatering and shoring of utility trenches may be required in some isolated areas of the site. Seasonal and high groundwater elevations should be closely reviewed during the design phase of the project.

5.1.4 Redevelopment Considerations

As discussed, the site is currently occupied by parking structures, commercial buildings, underground utilities, appurtenant flatwork, site fixtures, and landscaping. We assume that most if not all of the existing improvements will be demolished. Potential issues that are often associated with redeveloping sites include demolition of existing improvements, disturbance to surficial soils due to foundation removal, abandonment of existing utilities, and discovery of deeper undocumented fills.

5.1.5 Soil Corrosion Potential

A preliminary soil corrosion screening was performed by JDH Corrosion Consultants based on the results of analytical tests on samples of the near-surface soil. In general, the JDH report concludes that the corrosion potential for buried concrete is low and does not warrant the use of sulfate resistant concrete. However, the corrosion potential for buried metallic structures, such as metal pipes, is considered corrosive to moderately corrosive. JDH recommends that special requirements for corrosion control be made to protect metal pipes. A more detailed discussion of the site corrosion evaluation is presented in Appendix C.

5.2 DESIGN-LEVEL GEOTECHNICAL INVESTIGATION

The preliminary recommendations contained in this report were based on limited site development information and limited exploration. As site conditions may vary significantly between the explorations performed during this investigation, we recommend that we be retained to 1) perform a design-level geotechnical investigation, once detailed site development plans are available; 2) to review the geotechnical aspects of the project structural, civil, and landscape plans and specifications, allowing sufficient time to provide the design team with any comments prior to issuing the plans for construction; and 3) be present to provide geotechnical observation and testing during earthwork and foundation construction.

SECTION 6: EARTHWORK

6.1 ANTICIPATED EARTHWORK MEASURES

On a preliminary basis, we recommend that any existing foundations, slabs, and/or abandoned underground utilities be removed entirely and the resulting excavations backfilled with engineered fill. Additionally, native soils that are disturbed during demolition of the existing improvements should also be removed and replaced as engineered fill. Any undocumented fill encountered during grading may need to be fully or partially over-excavated within the proposed building footprints and 5 feet laterally beyond. On a preliminary basis and for conceptual planning and cost estimating, undocumented fill over-excavation on the order of 3 feet below existing site grades should be considered.

On-site soils below the stripped layer appear to be suitable for use as fill at the site, provided they are determined to be suitable for re-use from an environmental viewpoint. Imported fill material for use as general fill should have a Plasticity Index of 20 or less and have at least 10 percent silt or clay fines to prevent sloughing or caving during construction. Existing asphalt and concrete materials can likely be pulverized and re-used as granular base material at the site; however, asphalt grindings should not be re-used beneath building footprints. Concrete can be pulverized on-site and re-used as general fill or possibly as aggregate base beneath streets and flatwork. All fill as well as scarified surface soils in areas to receive fill or slabs-on-grade, and subgrade, and trench backfill, should be compacted to at least 90 percent relative compaction as determined by ASTM Test Designation D-1557, latest edition; and be at least 1 percent above optimum moisture. Expansive clays should be compacted to between 87 to 93 percent at least 3 percent above optimum moisture. The upper 6 inches of subgrade soil and aggregate base materials should be compacted to at least 95 percent in pavement areas, and 90 percent in flatwork areas.

6.2 SURFACE DRAINAGE

Surface water runoff should not be allowed to pond adjacent to building foundations, slabs-on-grade, or pavements. Hardscape surfaces should slope at least 2 percent towards suitable discharge facilities; landscape areas should slope at least 2 to 3 percent away from buildings. Retention, detention, or infiltration facilities should be spaced at least 10 feet from buildings, and preferably at least 5 feet from slabs-on-grade or pavements. The near-surface soils at the site below the undocumented fill consist of clayey soils at varying depths, and would likely be categorized as Hydrologic Soil Group D. These native clay soils are expected to have infiltration rates of 0.2 inches per hour or less.

SECTION 7: 2022 CBC SEISMIC DESIGN CRITERIA

7.1 SEISMIC DESIGN CRITERIA

We understand that the project structural design will be based on the 2022 California Building Code (CBC), which provides criteria for the seismic design of buildings in Chapter 16. The “Seismic Coefficients” used to design buildings are established based on a series of tables and

figures addressing different site factors, including the soil profile in the upper 45 feet below grade and mapped spectral acceleration parameters based on distance to the controlling seismic source/fault system.

Our explorations generally encountered medium dense to dense clayey sands and stiff to hard clays deposits to a depth of 45 feet, the maximum depth explored. Based on our borings and review of local geology, the site is underlain by shallow alluvial soils with typical SPT “N” values above 50 blows per foot. Therefore, we have classified the site as Soil Classification D. Because we used site specific data from our explorations and laboratory testing, the site class should be considered as “determined” for the purposes of estimating the seismic design parameters from the code outlined below. The mapped spectral acceleration parameters S_s and S_1 were calculated using the web-based program ATC Hazards by Locations, located at <https://hazards.atcouncil.org/>, based on the site coordinates presented below and the site classification. Recommended values in Table 3 may only be used for design if in the judgement of the project structural engineer an exception can be taken per ASCE 7-16 Section 11.4.8. The table below lists the various factors used to determine the seismic coefficients and other parameters.

Table 3: CBC Site Categorization and Site Coefficients

Classification/Coefficient	Design Value
Site Class	D
Site Latitude	37.351486°
Site Longitude	-121.935889°
0.2-second Period Mapped Spectral Acceleration ¹ , S_s	1.500g
1-second Period Mapped Spectral Acceleration ¹ , S_1	0.600g
Short-Period Site Coefficient – F_a	1
Long-Period Site Coefficient – F_v	Null
0.2-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects - S_{MS}	1.500g
1-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects – S_{M1}	Null
0.2-second Period, Design Earthquake Spectral Response Acceleration – S_{DS}	1.000g
1-second Period, Design Earthquake Spectral Response Acceleration – S_{D1}	Null
Site Amplification Factor at PGA – F_{PGA}	1.1
Site Modified Peak Ground Acceleration – PGA_M	0.514

SECTION 8: FOUNDATIONS

8.1 SUMMARY OF RECOMMENDATIONS

On a preliminary basis and provided undocumented fills are over-excavated and re-compacted, the proposed residential structures may be supported on shallow foundations consisting of conventional footings or post-tensioned mat foundations.

8.2 SHALLOW FOUNDATIONS

On a preliminary basis, conventional shallow footings should bear on natural, undisturbed soil or engineered fill, be at least 18 inches wide, and extend at least 24 inches below the lowest adjacent grade. Lowest adjacent grade is defined as the deeper of the following: 1) bottom of the adjacent interior slab-on-grade, or 2) finished exterior grade, excluding landscaping topsoil. The deeper footing embedment is due to the presence of moderately to highly expansive soils and is intended to embed the footing below the zone of significant seasonal moisture fluctuation, reducing the potential for differential movement.

On a preliminary basis, footings constructed to the above dimensions and in accordance with the preliminary “Earthwork” recommendations of this report would be capable of supporting maximum allowable bearing pressures of 2,000 psf for dead loads, 3,000 psf for combined dead plus live loads, and 4,000 psf for all loads including wind and seismic. These pressures are based on factors of safety of 3.0, 2.0, and 1.5 applied to the ultimate bearing pressure for dead, dead plus live, and all loads, respectively. These pressures are net values; the weight of the footing may be neglected for the portion of the footing extending below grade (typically, the full footing depth). Top and bottom mats of reinforcing steel should be included in continuous footings to help span irregularities and differential settlement.

Post-construction total and differential settlement due to static loads should be evaluated during the design level geotechnical investigation once building loads are known.

8.3 POST-TENSIONED MAT FOUNDATIONS

As an alternative to shallow footings, the planned at-grade residential structures may be supported on post-tensioned (PT) concrete mat foundations designed in accordance with the procedures developed by the Post-Tensioning Institute (latest edition) and the 2022 edition of the California Building Code.

To reduce potential differential movement, on a preliminary basis, mats should be designed for a maximum average areal bearing pressure of 500 psf for dead plus live loads; at column or wall loading, the maximum localized allowable bearing pressure should be limited to about 3,000 psf. When evaluating wind and seismic conditions, allowable bearing pressure may be increased by one-third. Additional reinforcing steel may be required to help span irregularities and differential settlement.

On a preliminary basis, we estimate that combined static and seismic differential settlements will be on the order of $\frac{1}{2}$ to $\frac{3}{4}$ inch across a typical mat foundation. Final settlement and foundation deflection criteria should be determined during the design-level geotechnical investigation.

SECTION 9: EXTERIOR FLATWORK

On a preliminary basis, exterior concrete flatwork subject to pedestrian and/or occasional light pick up loading should be at least 4 inches thick and supported on at least 12 inches of non-expansive fill or Class 2 aggregate base material overlying expansive subgrade soil. If flatwork is constructed over re-compacted granular fill, flatwork can likely be underlain by 4 inches of Class 2 aggregate base.

SECTION 10: VEHICULAR PAVEMENTS

10.1 ASPHALT CONCRETE

The following asphalt concrete pavement recommendations tabulated below are based on Procedure 608 of the Caltrans Highway Design Manual, estimated traffic indices for various pavement-loading conditions, and on a design R-value of 5. The design R-value was chosen based on engineering judgment considering the native clay soils and variable surface conditions.

Table 4: Asphalt Concrete Pavement Recommendations, Design R-value = 5

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)	Total Pavement Section Thickness (inches)
4.0	2.5	7.5	10.0
4.5	2.5	9.5	12.0
5.0	3.0	10.0	13.0
5.5	3.0	12.0	15.0
6.0	3.5	13.0	16.5
6.5	4.0	13.5	17.5

Note: Caltrans Class 2 aggregate base; minimum R-value of 78
Preliminary subgrade R-value assumed to be 5

SECTION 11: LIMITATIONS

This report, an instrument of professional service, has been prepared for the sole use of Bixby Land Company specifically to support the design of the University Station Residential project in Santa Clara, California. The opinions, conclusions, and recommendations presented in this report have been formulated in accordance with accepted geotechnical engineering practices that exist in Northern California at the time this report was prepared. No warranty, expressed or implied, is made or should be inferred.

Recommendations in this report are based upon the soil and groundwater conditions encountered during our subsurface exploration. If variations or unsuitable conditions are encountered during construction, Cornerstone must be contacted to provide supplemental recommendations, as needed.

Bixby Land Company may have provided Cornerstone with plans, reports and other documents prepared by others. Bixby Land Company understands that Cornerstone reviewed and relied on the information presented in these documents and cannot be responsible for their accuracy.

Cornerstone prepared this report with the understanding that it is the responsibility of the owner or their representatives to see that the recommendations contained in this report are presented to other members of the design team and incorporated into the project plans and specifications, and that appropriate actions are taken to implement the geotechnical recommendations during construction.

Conclusions and recommendations presented in this report are valid as of the present time for the development as currently planned. Changes in the condition of the property or adjacent properties may occur with the passage of time, whether by natural processes or the acts of other persons. In addition, changes in applicable or appropriate standards may occur through legislation or the broadening of knowledge. Therefore, the conclusions and recommendations presented in this report may be invalidated, wholly or in part, by changes beyond Cornerstone's control. This report should be reviewed by Cornerstone after a period of three (3) years has elapsed from the date of this report. In addition, if the current project design is changed, then Cornerstone must review the proposed changes and provide supplemental recommendations, as needed.

An electronic transmission of this report may also have been issued. While Cornerstone has taken precautions to produce a complete and secure electronic transmission, please check the electronic transmission against the hard copy version for conformity.

Recommendations provided in this report are based on the assumption that Cornerstone will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design, and to form an opinion as to whether the work has been performed in accordance with the project plans and specifications. If we are not retained for these services, Cornerstone cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of Cornerstone's report by others. Furthermore, Cornerstone will cease to be the Geotechnical-Engineer-of-Record if we are not retained for these services.

SECTION 12: REFERENCES

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**CORNERSTONE
EARTH GROUP**

Vicinity Map

**University Station Residential Development
451-475 El Camino Real
Santa Clara, CA**

Project Number

285-2-2

Figure Number

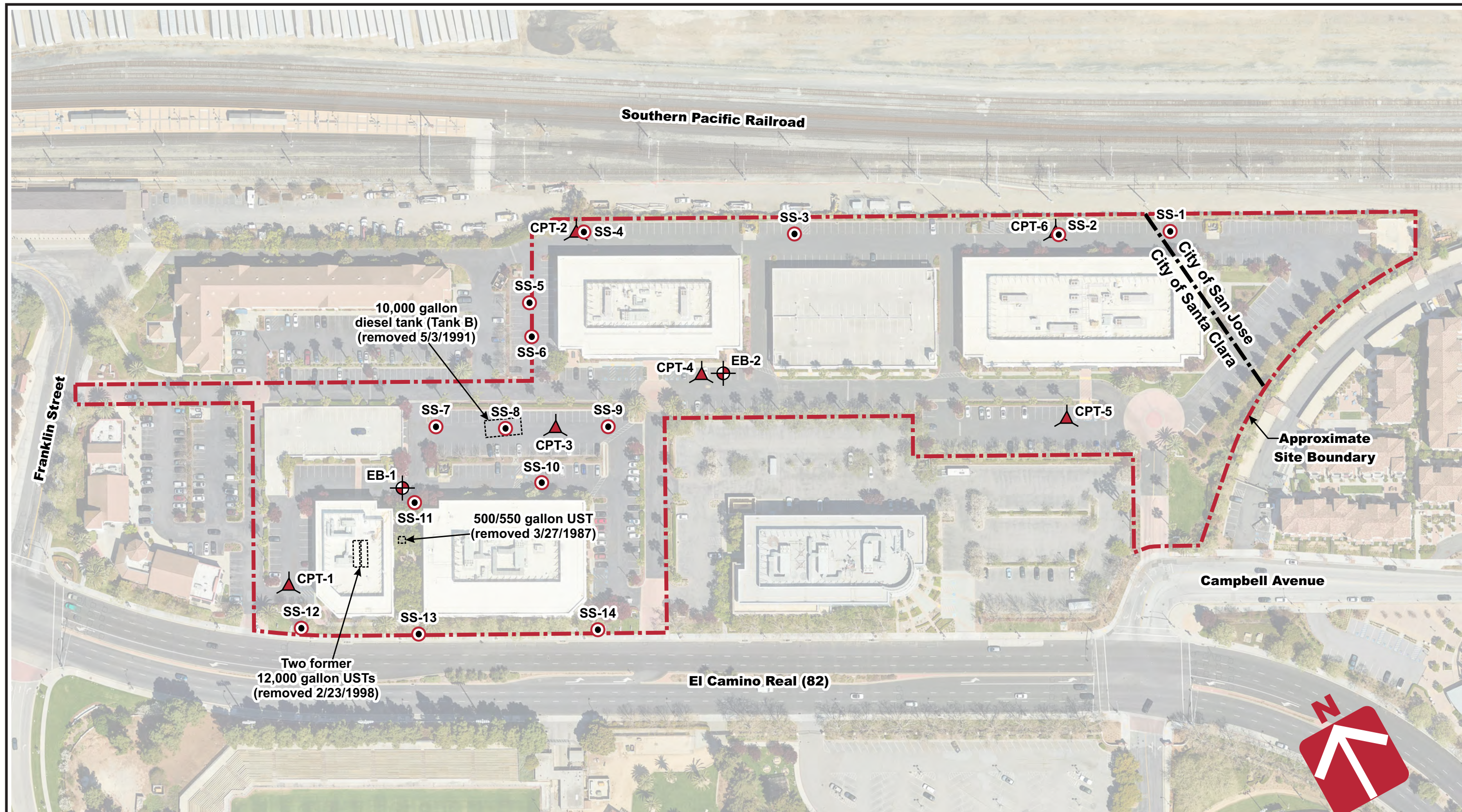
Figure 1

Date

April 2024

Drawn By

RRN



Legend

-  Approximate location of exploratory boring (EB) (Cornerstone, April 2024)
-  Approximate location of cone penetration test (CPT) (Cornerstone, April 2024)
-  Approximate location of exploratory boring, soil sample collection (SS) (Cornerstone, March 2024)

0 120 240
APPROXIMATE SCALE (FEET)



Site Plan

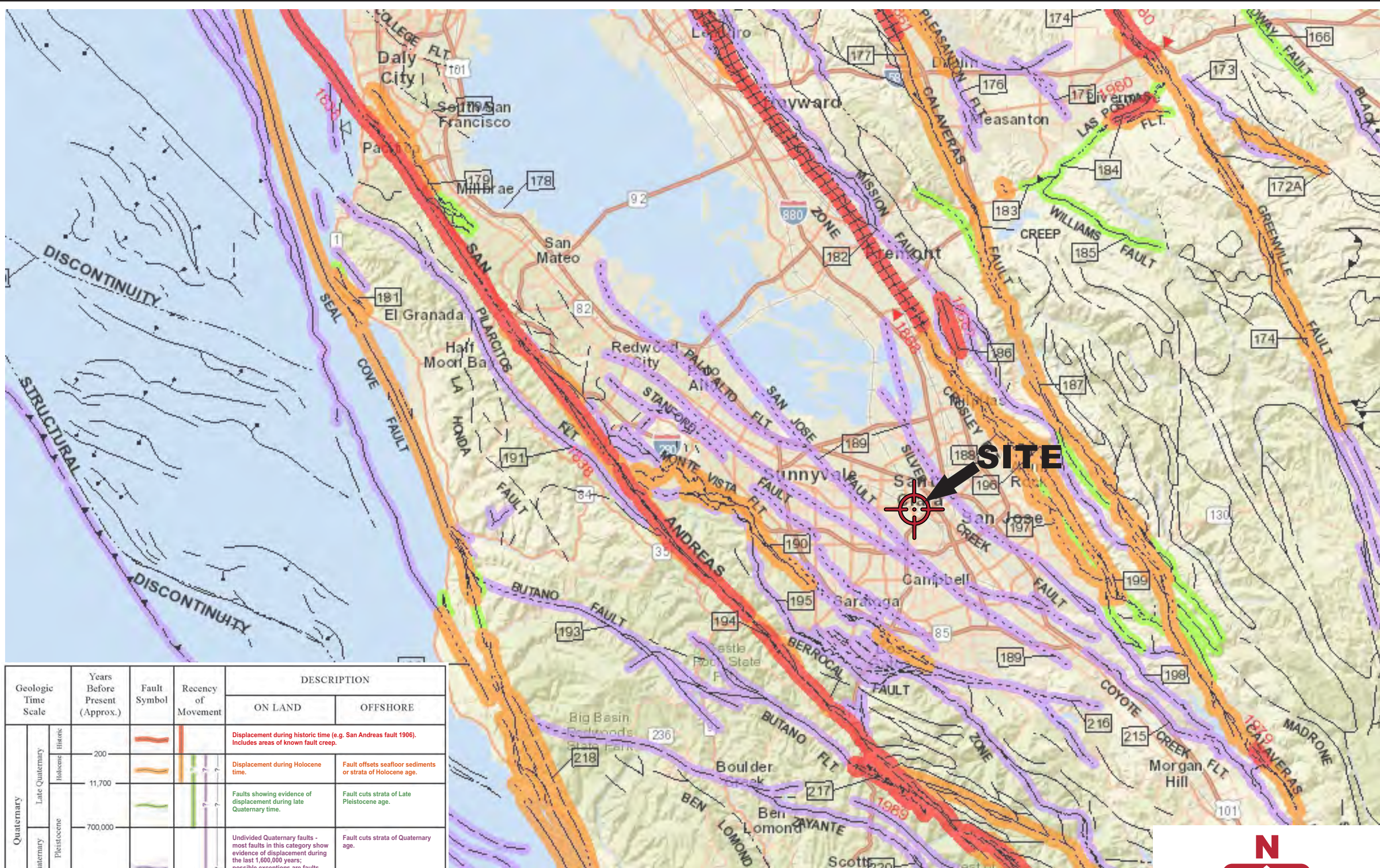
University Station Residential Development
451-475 El Camino Real
Santa Clara, CA

Project Number
285-2-2

Figure Number
Figure 2

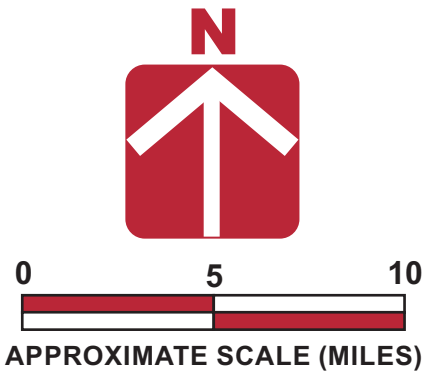
Date
April 2024

Drawn By
RRN



Geologic Time Scale		Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION	
					ON LAND	OFFSHORE
Quaternary	Late Quaternary	Holocene			Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
		200			Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
	Pleistocene	11,700			Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
		700,000			Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
		1,600,000				
Pre-Quaternary		4.5 billion (Age of Earth)			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.

Base by California Geological Survey - 2010 Fault Activity Map of California (Jennings and Bryant, 2010)



Project Number

285-2-2

Figure Number

Figure 3

Date

April 2024

Drawn By

RRN

Regional Fault Map

University Station Residential Development

451-475 El Camino Real

Santa Clara, CA

APPENDIX A: FIELD INVESTIGATION

The field investigation consisted of a surface reconnaissance and a subsurface exploration program using truck-mounted, hollow-stem auger drilling equipment and 20-ton truck-mounted Cone Penetration Test equipment. Two 8-inch-diameter exploratory borings were drilled on April 2, 2024 to depths of 30 to 45 feet. Six CPT soundings were also performed in accordance with ASTM D 5778-95 (revised, 2002) on March 26, 2024, to depths of approximately 45 feet each. The approximate locations of exploratory borings and CPTs are shown on the Site Plan, Figure 2. The soils encountered were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Boring logs, as well as a key to the classification of the soil, are included as part of this appendix.

Boring locations were approximated using existing site boundaries, a hand held GPS unit, and other site features as references. Boring elevations were based on interpolation of plan contours. The locations and elevations of the borings and CPTs should be considered accurate only to the degree implied by the method used.

Representative soil samples were obtained from the borings at selected depths. All samples were returned to our laboratory for evaluation and appropriate testing. The standard penetration resistance blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The 2-inch O.D. split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration (ASTM D1586). 2.5-inch I.D. samples were obtained using a Modified California Sampler driven into the soil with the 140-pound hammer previously described. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows required to drive the last 12 inches. The various samplers are denoted at the appropriate depth on the boring logs.

The CPT involved advancing an instrumented cone-tipped probe into the ground while simultaneously recording the resistance at the cone tip (q_c) and along the friction sleeve (f_s) at approximately 5-centimeter intervals. Based on the tip resistance and tip to sleeve ratio (R_f), the CPT classified the soil behavior type and estimated engineering properties of the soil, such as equivalent Standard Penetration Test (SPT) blow count, internal friction angle within sand layers, and undrained shear strength in silts and clays. A pressure transducer behind the tip of the CPT cone measured pore water pressure (u_2). Graphical logs of the CPT data is included as part of this appendix.

Field tests included an evaluation of the unconfined compressive strength of the soil samples using a pocket penetrometer device. The results of these tests are presented on the individual boring logs at the appropriate sample depths.

Attached boring and CPT logs and related information depict subsurface conditions at the locations indicated and on the date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these boring and CPT locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition,

any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

UNIFIED SOIL CLASSIFICATION (ASTM D-2487-10)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND	
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	$Cu > 4$ AND $1 < Cc < 3$	GW	WELL-GRADED GRAVEL	
			$Cu > 4$ AND $1 > Cc > 3$	GP	POORLY-GRADED GRAVEL	
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL	
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL	
	SANDS >50% OF COARSE FRACTION PASSES ON NO 4. SIEVE	CLEAN SANDS <5% FINES	$Cu > 6$ AND $1 < Cc < 3$	SW	WELL-GRADED SAND	
			$Cu > 6$ AND $1 > Cc > 3$	SP	POORLY-GRADED SAND	
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR CL	SM	SILTY SAND	
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND	
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT <50	INORGANIC	$PI > 7$ AND PLOTS >"A" LINE	CL	LEAN CLAY	
			$PI > 4$ AND PLOTS <"A" LINE	ML	SILT	
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT	
	SILTS AND CLAYS LIQUID LIMIT >50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY	
			PI PLOTS <"A" LINE	MH	ELASTIC SILT	
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT	
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT	

OTHER MATERIAL SYMBOLS	
	Poorly-Graded Sand with Clay
	Clayey Sand
	Sandy Silt
	Artificial/Undocumented Fill
	Poorly-Graded Gravelly Sand
	Topsoil
	Well-Graded Gravel with Clay
	Well-Graded Gravel with Silt
	Sand
	Silt
	Well Graded Gravelly Sand
	Gravelly Silt
	Asphalt
	Boulders and Cobble

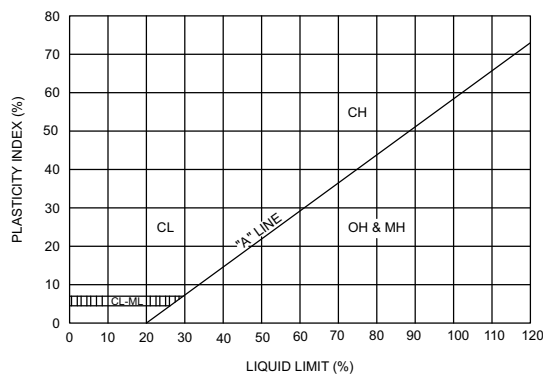
SAMPLER TYPES

	SPT		Shelby Tube
	Modified California (2.5" I.D.)		No Recovery
	Rock Core		Grab Sample

ADDITIONAL TESTS

CA - CHEMICAL ANALYSIS (CORROSIVITY)	PI - PLASTICITY INDEX
CD - CONSOLIDATED DRAINED TRIAXIAL	SW - SWELL TEST
CN - CONSOLIDATION	TC - CYCLIC TRIAXIAL
CU - CONSOLIDATED UNDRAINED TRIAXIAL	TV - TORVANE SHEAR
DS - DIRECT SHEAR	UC - UNCONFINED COMPRESSION
PP - POCKET PENETROMETER (TSF)	(1.5) - (WITH SHEAR STRENGTH IN KSF)
(3.0) - (WITH SHEAR STRENGTH IN KSF)	-
RV - R-VALUE	UU - UNCONSOLIDATED UNDRAINED TRIAXIAL
SA - SIEVE ANALYSIS: % PASSING #200 SIEVE	-
- WATER LEVEL	-

PLASTICITY CHART



PENETRATION RESISTANCE (RECORDED AS BLOWS / FOOT)

SAND & GRAVEL		SILT & CLAY		
RELATIVE DENSITY	BLOWS/FOOT*	CONSISTENCY	BLOWS/FOOT*	STRENGTH** (KSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 4	0.25 - 0.5
MEDIUM DENSE	10 - 30	MEDIUM STIFF	4 - 8	0.5 - 1.0
DENSE	30 - 50	STIFF	8 - 15	1.0 - 2.0
VERY DENSE	OVER 50	VERY STIFF	15 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

* NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

** UNDRAINED SHEAR STRENGTH IN KIPS/SQ. FT. AS DETERMINED BY LABORATORY TESTING OR APPROXIMATED BY THE STANDARD PENETRATION TEST, POCKET PENETROMETER, TORVANE, OR VISUAL OBSERVATION.



CORNERSTONE EARTH GROUP

BORING NUMBER EB-1

PAGE 1 OF 2

PROJECT NAME 451-475 El Camino

PROJECT NUMBER 285-2-2

PROJECT LOCATION Santa Clara, CA

GROUND ELEVATION 68 FT +/-

BORING DEPTH 30 ft.

LATITUDE 37.351609°

LONGITUDE -121.935558°

GROUND WATER LEVELS:

▽ AT TIME OF DRILLING 9 ft.

▼ AT END OF DRILLING 9 ft.

DATE STARTED 4/2/24

DATE COMPLETED 4/2/24

DRILLING CONTRACTOR Exploration Geoservices, Inc.

DRILLING METHOD Mobile B-53B, 8 inch Hollow-Stem Auger

LOGGED BY BTM

NOTES

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf				
68.0	0		3 inches asphalt concrete over 9 inches aggregate base											
67.0			Clayey Gravel with Sand (GC) [Fill] dense, moist, dark brown and gray mottled, fine to coarse subangular gravel fine to coarse sand, some concrete fragments	63	MC-1B	120	5							
64.3			Fat Clay with Sand (CH) [Fill] stiff, moist, dark gray, fine to coarse sand, high plasticity Liquid Limit = 54, Plastic Limit = 19	20	MC-2B	105	16	35						
63.5	5		Lean Clay with Sand (CL) hard, moist, grayish brown, fine to coarse sand, low to moderate plasticity	32	MC-3B	108	18							
60.5			Lean Clay (CL) stiff, moist, gray with brown mottles, some fine sand, moderate plasticity	12	MC-4B	94	27							
58.3	10		Clayey Sand (SC) medium dense, moist, grayish brown, fine to medium sand											
55.5			Fat Clay (CH) stiff, moist, gray with dark gray mottles, some fine sand, moderate to high plasticity	13	MC									
	15													
	20													
	25													
42.0														

Continued Next Page



CORNERSTONE EARTH GROUP

BORING NUMBER EB-2

PAGE 1 OF 2

DATE STARTED 4/2/24 DATE COMPLETED 4/2/24

DRILLING CONTRACTOR Exploration Geoservices, Inc.

DRILLING METHOD Mobile B-53B, 8 inch Hollow-Stem Auger

LOGGED BY BTM

NOTES

PROJECT NAME 451-475 El Camino Real

PROJECT NUMBER 285-2-2

PROJECT LOCATION Santa Clara, CA

GROUND ELEVATION 67 FT +/- BORING DEPTH 40 ft.

LATITUDE 37.351359° LONGITUDE -121.934139°

GROUND WATER LEVELS:

▽ AT TIME OF DRILLING 12 ft.

▼ AT END OF DRILLING 8 ft.

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
67.0	0		3 inches asphalt concrete over 9 inches aggregate base							
66.8			Clayey Gravel with Sand (GC) [Fill]	34	MC-1B	121	10			
66.0			medium dense, moist, gray and brown mottled, fine to coarse subangular gravel fine to coarse sand, some concrete fragments	43	MC-2B	108	14			
63.5			Sandy Fat Clay (CH) [Fill]							
62.0	5		very stiff, moist, dark gray, fine to coarse sand, high plasticity	40	MC-3A	84	30			
60.0			Fat Clay (CH)							
			very stiff, moist, dark gray, some fine sand, high plasticity	19	MC-4B	98	23			
55.0			Lean Clay with Sand (CL)							
			stiff, moist, gray with brown mottles, fine to medium sand, moderate plasticity							
53.5			Sandy Lean Clay (CL)							
			stiff, moist, grayish brown, fine to coarse sand, low plasticity	13	MC-5B	80	40			
			Fat Clay (CH)							
			stiff, moist, gray with dark gray mottles, some fine sand, moderate to high plasticity	15	MC					
				14	MC-7B	71	50			

Continued Next Page



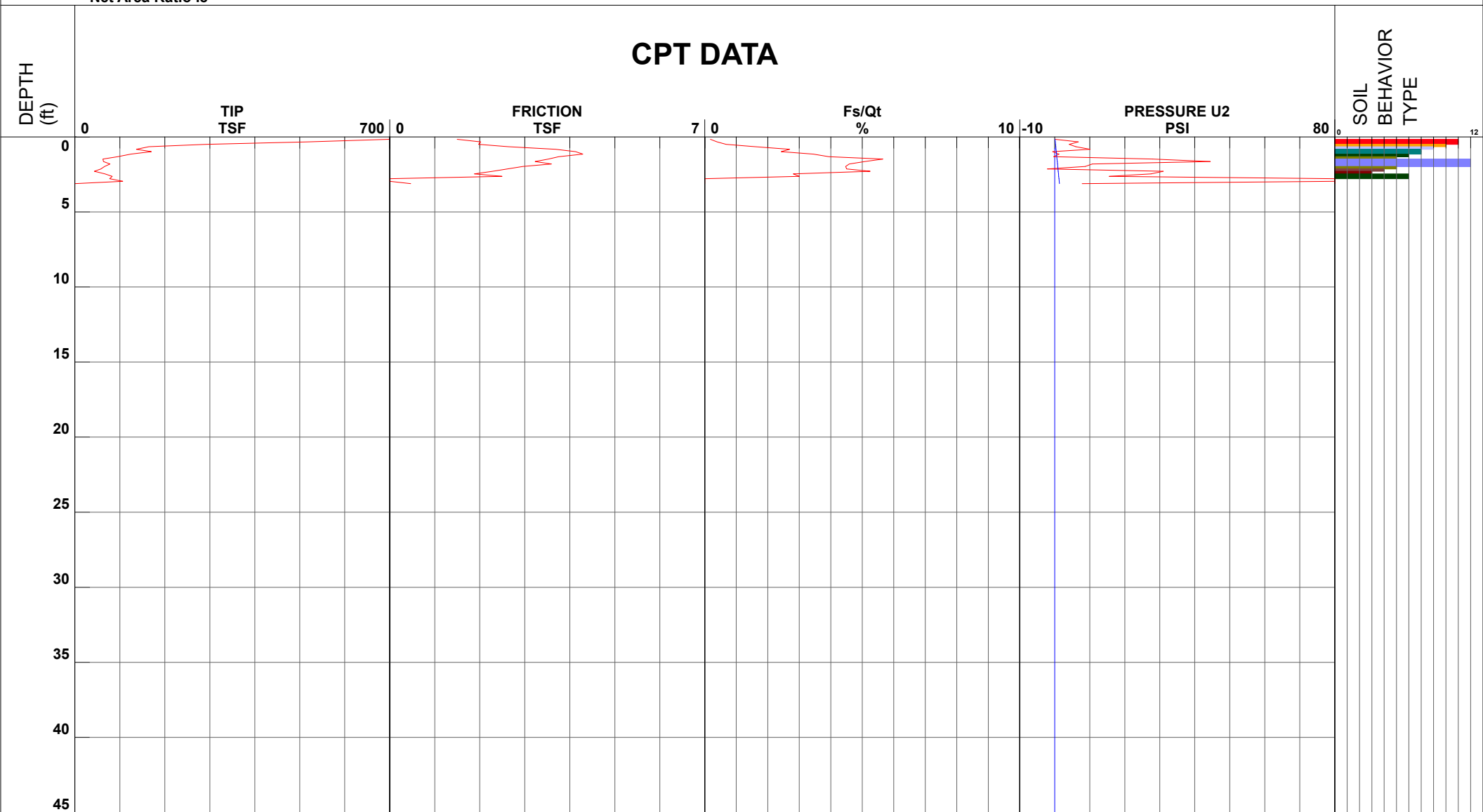
Cornerstone Earth Group

Project University Station Res
Job Number 285-2-2
Hole Number CPT-01
EST GW Depth During Test

Operator JM-FA
Cone Number DDG1627
Date and Time 152-6-1
0.00 ft

Filename SDF(786).cpt
GPS
Maximum Depth 3.12 ft

Net Area Ratio .8



- | | | | |
|----------------------------|-------------------------------|------------------------------|----------------------------------|
| 1 - sensitive fine grained | 4 - silty clay to clay | 7 - silty sand to sandy silt | 10 - gravelly sand to sand |
| 2 - organic material | 5 - clayey silt to silty clay | 8 - sand to silty sand | 11 - very stiff fine grained (*) |
| 3 - clay | 6 - sandy silt to clayey silt | 9 - sand | 12 - sand to clayey sand (*) |

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983



Cornerstone Earth Group

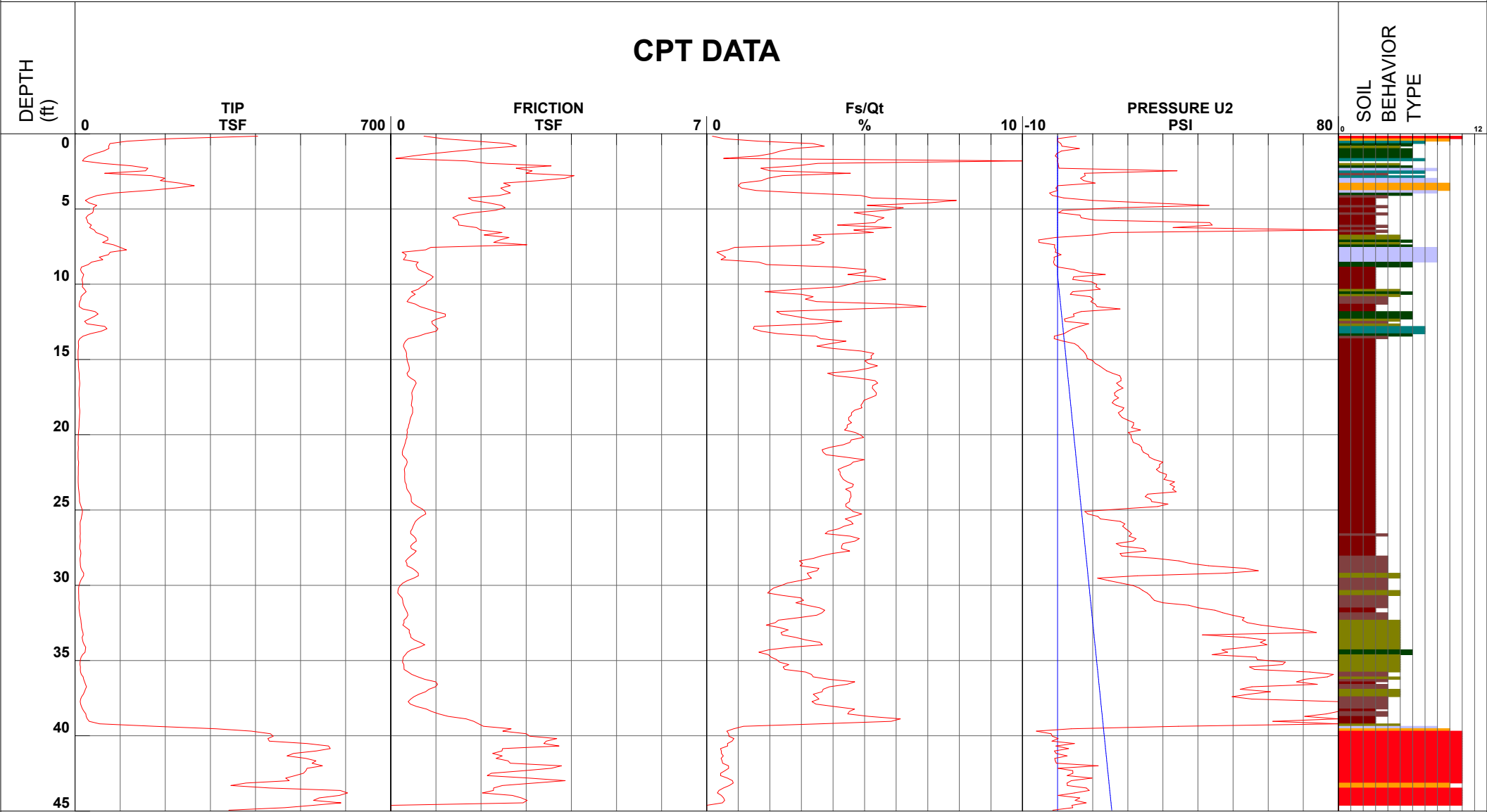
Project University Station Res
Job Number 285-2-2
Hole Number CPT-02
EST GW Depth During Test

Operator JM-FA
Cone Number DDG1627
Date and Time 152-6-1

Filename SDF(788).cpt
GPS
Maximum Depth 44.95 ft

Net Area Ratio .8

CPT DATA



- | | | | |
|----------------------------|-------------------------------|------------------------------|----------------------------------|
| 1 - sensitive fine grained | 4 - silty clay to clay | 7 - silty sand to sandy silt | 10 - gravelly sand to sand |
| 2 - organic material | 5 - clayey silt to silty clay | 8 - sand to silty sand | 11 - very stiff fine grained (*) |
| 3 - clay | 6 - sandy silt to clayey silt | 9 - sand | 12 - sand to clayey sand (*) |

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983



Cornerstone Earth Group

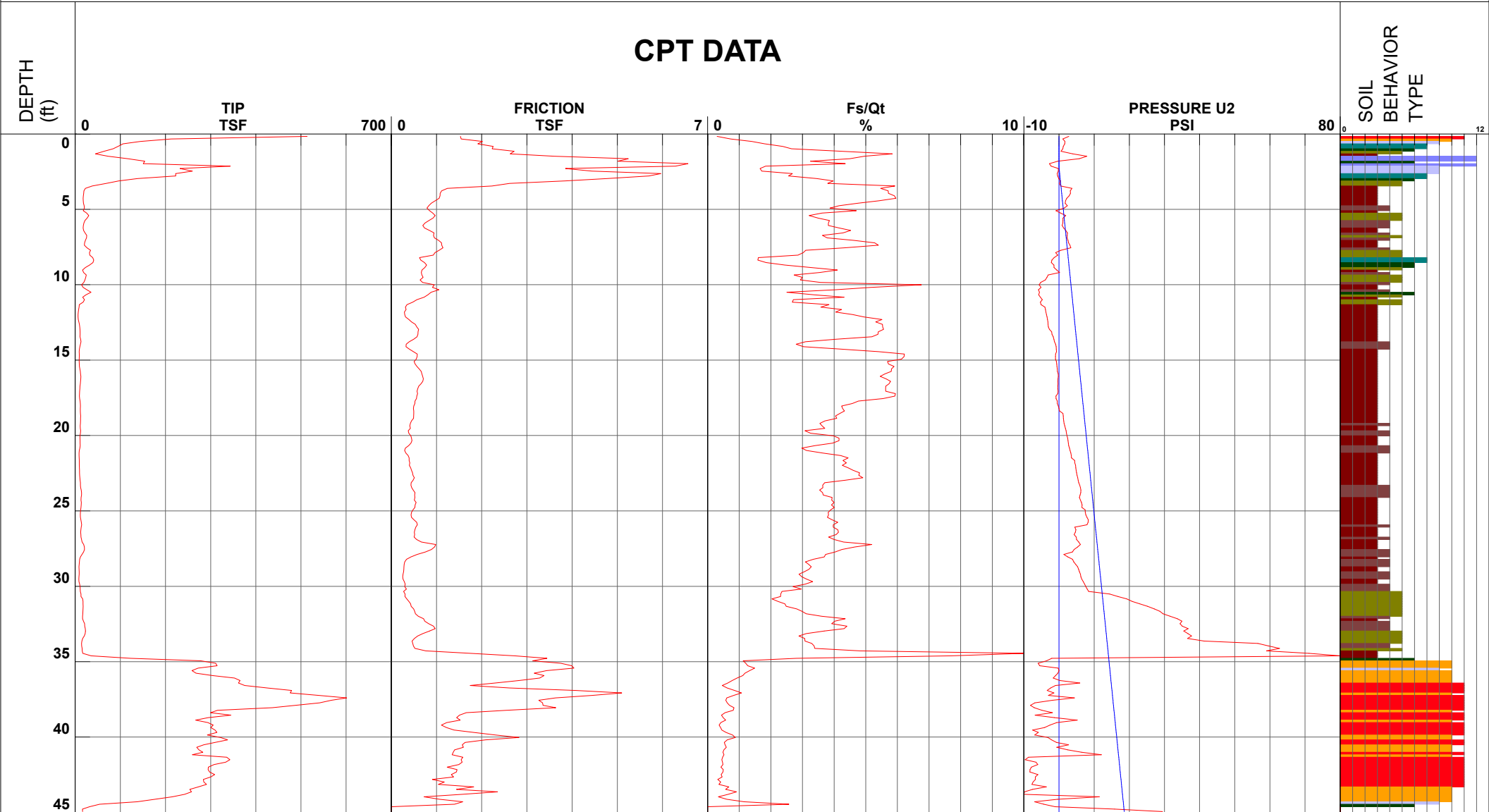
Project University Station Res
Job Number 285-2-2
Hole Number CPT-03
EST GW Depth During Test

Operator JM-FA
Cone Number DDG1627
Date and Time 152-6-1

Filename SDF(785).cpt
GPS
Maximum Depth 44.95 ft

Net Area Ratio .8

CPT DATA



- | | | | |
|----------------------------|-------------------------------|------------------------------|----------------------------------|
| 1 - sensitive fine grained | 4 - silty clay to clay | 7 - silty sand to sandy silt | 10 - gravelly sand to sand |
| 2 - organic material | 5 - clayey silt to silty clay | 8 - sand to silty sand | 11 - very stiff fine grained (*) |
| 3 - clay | 6 - sandy silt to clayey silt | 9 - sand | 12 - sand to clayey sand (*) |

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983



Cornerstone Earth Group

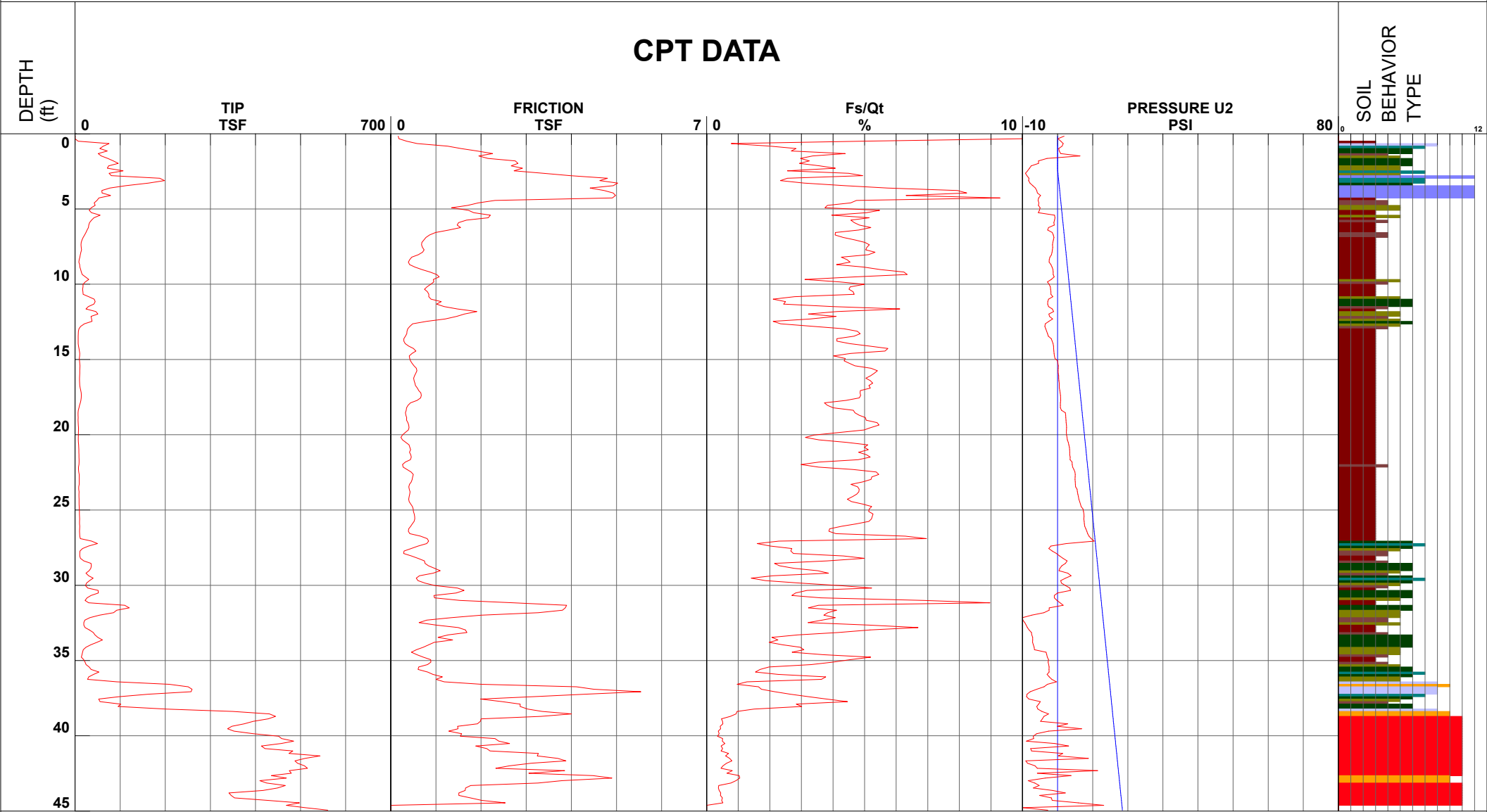
Project 451-477 El Camino Real
Job Number 285-2-2
Hole Number CPT-04
EST GW Depth During Test

Operator JM-FA
Cone Number DDG1627
Date and Time 152-6-1
2.40 ft

Filename SDF(783).cpt
GPS
Maximum Depth 44.95 ft

Net Area Ratio .8

CPT DATA



- | | | | |
|----------------------------|-------------------------------|------------------------------|----------------------------------|
| 1 - sensitive fine grained | 4 - silty clay to clay | 7 - silty sand to sandy silt | 10 - gravelly sand to sand |
| 2 - organic material | 5 - clayey silt to silty clay | 8 - sand to silty sand | 11 - very stiff fine grained (*) |
| 3 - clay | 6 - sandy silt to clayey silt | 9 - sand | 12 - sand to clayey sand (*) |

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983



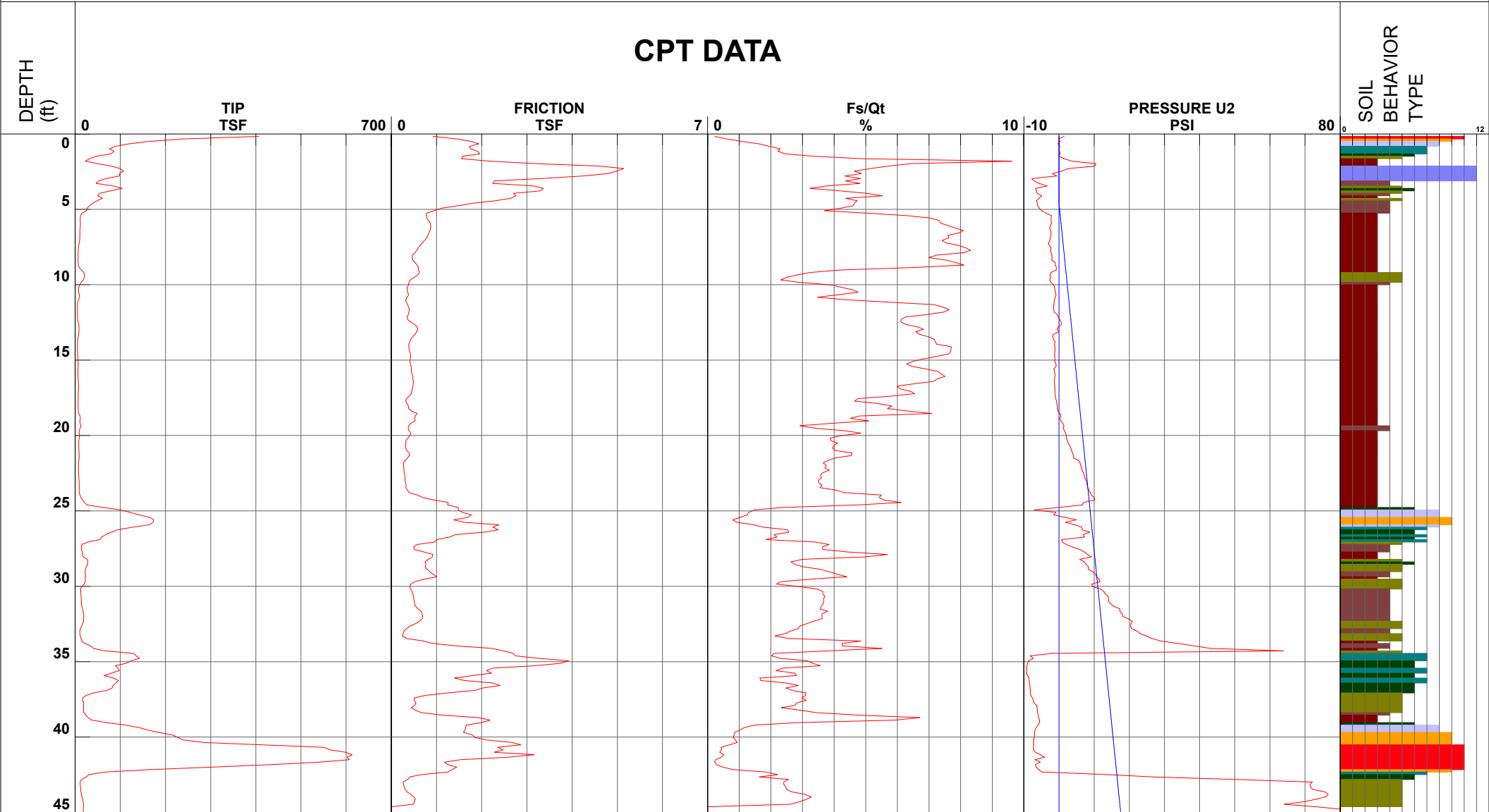
Cornerstone Earth Group

Project University Station Res
Job Number 285-2-2
Hole Number CPT-05
EST GW Depth During Test

Operator JM-FA
Cone Number DDG1627
Date and Time 152-6-1
4.60 ft

Filename SDF(784).cpt
GPS
Maximum Depth 44.95 ft

Net Area Ratio .8



- | | | | |
|----------------------------|-------------------------------|------------------------------|----------------------------------|
| 1 - sensitive fine grained | 4 - silty clay to clay | 7 - silty sand to sandy silt | 10 - gravelly sand to sand |
| 2 - organic material | 5 - clayey silt to silty clay | 8 - sand to silty sand | 11 - very stiff fine grained (*) |
| 3 - clay | 6 - sandy silt to clayey silt | 9 - sand | 12 - sand to clayey sand (*) |

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983



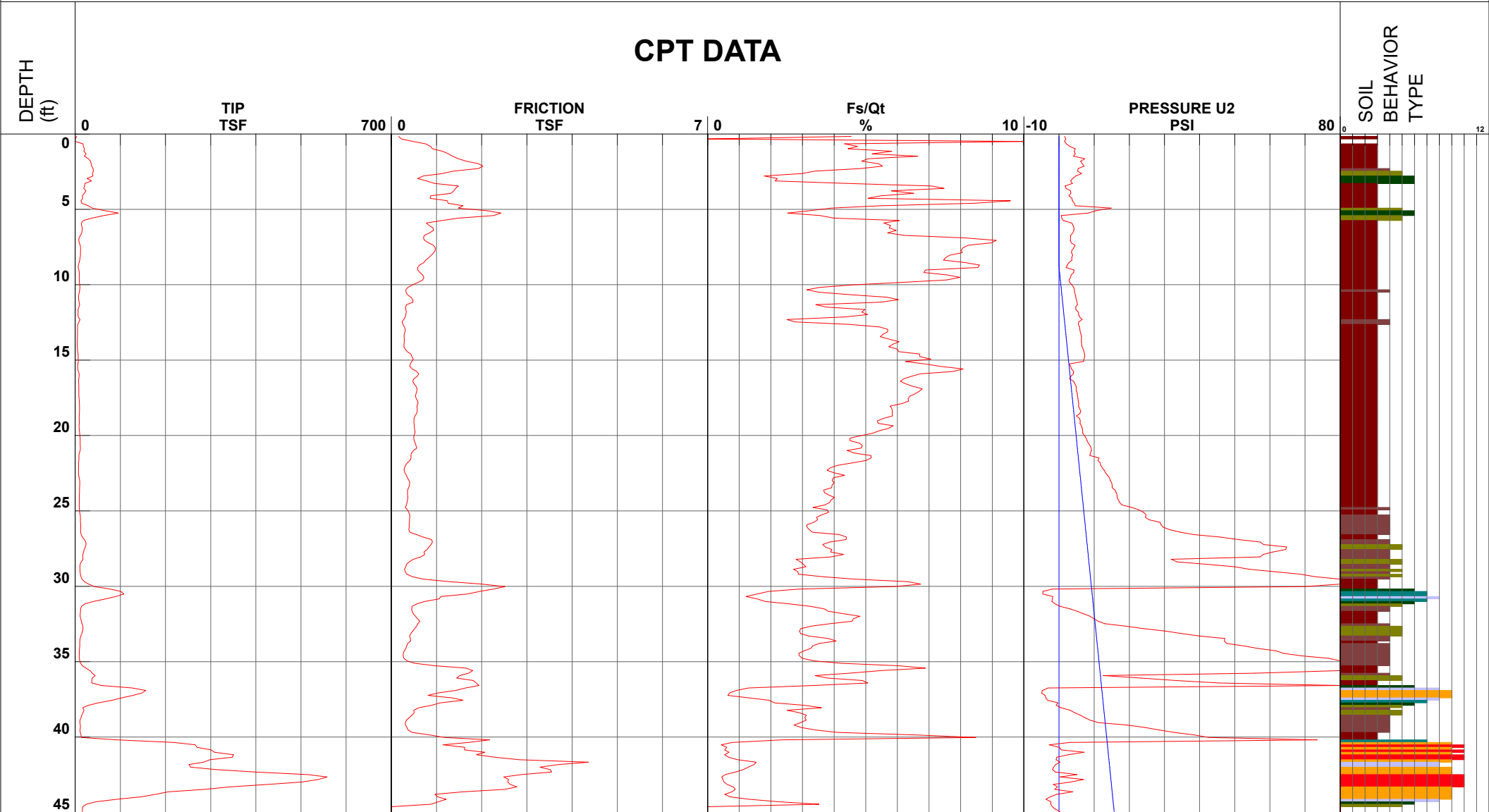
Cornerstone Earth Group

Project University Station Res
Job Number 285-2-2
Hole Number CPT-06
EST GW Depth During Test

Operator JM-FA
Cone Number DDG1627
Date and Time 152-6-1
8.80 ft

Filename SDF(789).cpt
GPS
Maximum Depth 44.95 ft

Net Area Ratio .8



- | | | | |
|----------------------------|-------------------------------|------------------------------|----------------------------------|
| 1 - sensitive fine grained | 4 - silty clay to clay | 7 - silty sand to sandy silt | 10 - gravelly sand to sand |
| 2 - organic material | 5 - clayey silt to silty clay | 8 - sand to silty sand | 11 - very stiff fine grained (*) |
| 3 - clay | 6 - sandy silt to clayey silt | 9 - sand | 12 - sand to clayey sand (*) |

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

APPENDIX B: LABORATORY TEST PROGRAM

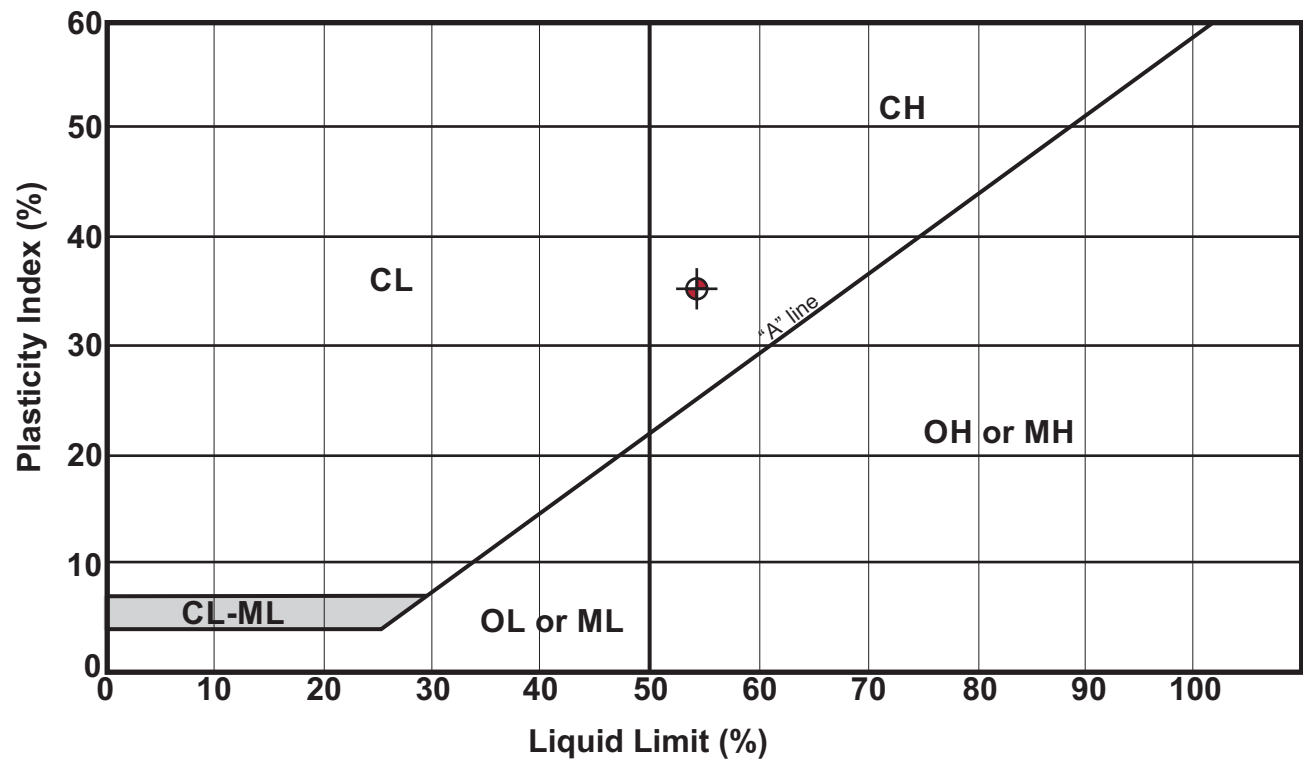
The laboratory testing program was performed to evaluate the physical and mechanical properties of the soils retrieved from the site to aid in verifying soil classification.

Moisture Content: The natural water content was determined (ASTM D2216) on 16 samples of the materials recovered from the borings. These water contents are recorded on the boring logs at the appropriate sample depths.

Dry Densities: In place dry density determinations (ASTM D2937) were performed on 12 samples to measure the unit weight of the subsurface soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

Plasticity Index: One Plasticity Index determination (ASTM D4318) was performed on a sample of the subsurface soil to measure the range of water contents over which this material exhibits plasticity. The Plasticity Index was used to classify the soil in accordance with the Unified Soil Classification System and to evaluate the soil expansion potential. Results of this test are shown on the boring log at the appropriate sample depth.

Plasticity Index (ASTM D4318) Testing Summary



Symbol	Boring No.	Depth (ft)	Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Passing No. 200 (%)	Group Name (USCS - ASTM D2487)
	EB-1	4.0	16	54	19	35	—	Fat Clay with Sand (CH)

Sample prepared in accordance with ASTM D421



Plasticity Index Testing Summary
University Station Residential Development
451-475 El Camino Real
Santa Clara, CA

Project Number	285-2-2
Figure Number	Figure B1
Date	April 2024
Drawn By	FLL

APPENDIX C: SITE CORROSIVITY EVALUATION

JDH CORROSION CONSULTANTS REPORT DATED APRIL 9, 2024

April 9, 2024

Cornerstone Earth Group, Inc.
3697 Mt. Diablo Boulevard, Suite 310
Lafayette, CA 94549

Attention: **Diana Lin, P.E.**
Project Engineer

Subject: **Site Corrosivity Evaluation**
Bixby Residence
Santa Clara, CA
Project: 285-2-2

Dear Diana,

In accordance with your request, we have reviewed the laboratory soils data for the above referenced project site. Our evaluation of these results and our corresponding recommendations for corrosion control for the above referenced project foundations and buried site utilities are presented herein for your consideration.

Soil Testing & Analysis

Soil Chemical Analysis

Three (2) soil samples from the project site were chemically analyzed for corrosivity by **Cornerstone Earth Group**. The samples were analyzed for chloride and sulfate concentration, pH and resistivity at 100% saturation. The test results are presented in Cornerstone Earth Group Corrosivity Test Summary dated 4/5/2024. The results of the chemical analysis were as follows:

Soil Laboratory Analysis

Chemical Analysis	Range of Results	Corrosion Classification*
Chlorides	7 - 68 mg/kg	Non-corrosive*
Sulfates	75 - 447 mg/kg	Non-corrosive to Mildly Corrosive**
pH	7.6 – 8.0	Non-corrosive*
Resistivity at 100% Saturation	940 – 2,128 ohm-cm	Corrosive to Moderately Corrosive*

* With respect to bare steel or ductile iron.

** With respect to mortar coated steel

Discussion

Shallow Reinforced Concrete Foundations

Due to the low levels of water-soluble sulfates found in these soils, there is no special requirement for sulfate resistant concrete to be used at this site. The type of cement used should be in accordance with California Building Code (CBC) for soils which have less than 0.10 percent by weight of water soluble sulfate (SO_4) in soil and the minimum depth of cover for the reinforcing steel should be as specified in CBC as well.

Underground Metallic Pipelines

The soils at the project site are generally considered to be “corrosive to moderately corrosive” to ductile/cast iron, steel and dielectric coated steel based on the saturated resistivity measurements. Therefore, special requirements for corrosion control are required for buried metallic utilities at this site depending upon the critical nature of the piping. Pressure piping systems such as domestic and fire water should be provided with appropriate coating systems and cathodic protection, where warranted. In addition, all underground pipelines should be electrically isolated from above grade structures, reinforced concrete structures and copper lines in order to avoid potential galvanic corrosion problems.

LIMITATIONS

The conclusions and recommendations contained in this report are based on the information and assumptions referenced herein. All services provided herein were performed by persons who are experienced and skilled in providing these types of services and in accordance with the standards of workmanship in this profession. No other warranties or guarantees, expressed or implied, is provided.

We thank you for the opportunity to be of service to **Cornerstone Earth Group** on this project and trust that you find the enclosed information satisfactory. If you have any questions, or if we can be of any additional assistance, please feel free to contact us at (925) 927-6630.

Respectfully submitted,



Brendon Hurley
JDH CORROSION CONSULTANTS, INC.
Field Technician

Site Corrosivity Evaluation
Bixby Residence, Santa Clara, CA

Mohammed Ali

Mohammed Ali., P.E.
JDH Corrosion Consultants, Inc.
Senior Corrosion Engineer



CC: File 2024119

CORNERSTONE
EARTH GROUP

Date Tested	4/5/2024
Tested By	BBA, FL

[illegible]

APPENDIX D: PRIOR ENVIRONMENTAL BORINGS



CORNERSTONE EARTH GROUP

BORING NUMBER SS-1

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 68 FT +/- BORING DEPTH 3 ft.LATITUDE 37.350955° LONGITUDE -121.932158°**GROUND WATER LEVELS:**▼ AT TIME OF DRILLING Not Encountered▼ AT END OF DRILLING Not EncounteredDATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Hand AugerLOGGED BY BTM

NOTES _____

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)

DEPTH (ft)

SYMBOL

DESCRIPTION68.0
67.8
67.50.0
2.5

3 inches asphalt concrete over 3 inches aggregate base

Clay with Sand (CL-CH) [Fill]
moist, dark gray, fine to medium sand, fine gravel

65.0

2.5

Practical refusal of Hand Auger at 3 feet.
Bottom of Boring at 3.0 feet.N-Value (uncorrected)
blows per foot

Sample Type and Interval

Sample Submitted for
Laboratory AnalysisPercent Recovery
(%)OVM Reading
(ppm)

Odors or Discoloration

Notes

x

100

x



CORNERSTONE EARTH GROUP

BORING NUMBER SS-2

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 68 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351166° LONGITUDE -121.932584°**GROUND WATER LEVELS:**▼ **AT TIME OF DRILLING** Not Encountered▼ **AT END OF DRILLING** Not EncounteredDATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OVN Reading (ppm)	Odors or Discoloration	Notes
68.0	0.0		3 inches asphalt concrete over 3 inches aggregate base			x		0.0		
67.5			Clay (CL-CH) [Fill] moist, dark brown, trace fine gravel							
66.2	2.5		Clayey Sand (SC) [Fill] moist, brown, fine to medium sand				90	0.0		
64.5			Clayey Gravel with Sand (GC) [Fill] moist, grayish brown, fine gravel, fine to coarse sand			x		4.2		
63.7			Clayey Sand (SC) moist, brown, fine to coarse sand, trace fine gravel					0.0		
63.0	5.0		Bottom of Boring at 5.0 feet.							
	7.5									
	10.0									
	12.5									
	15.0									
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-3

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351660° LONGITUDE -121.933557°**GROUND WATER LEVELS:**▼ **AT TIME OF DRILLING** Not Encountered▼ **AT END OF DRILLING** Not Encountered

DATE STARTED _____ DATE COMPLETED _____

DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OVN Reading (ppm)	Odors or Discoloration	Notes
67.0	0.0		3 inches asphalt concrete over 3 inches aggregate base			x		0.0		
66.8			Clay with Sand (CL) [Fill]							
66.5			moist, brown, fine sand, trace fine gravel					0.0		
65.5			Clayey Gravel with Sand (GC) [Fill]			x	70	0.0		
	2.5		moist, grayish brown, fine gravel, fine to coarse sand					0.0		
62.0	5.0		Bottom of Boring at 5.0 feet.					0.0		
	7.5									
	10.0									
	12.5									
	15.0									
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-4

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 68 FT +/- BORING DEPTH 5 ft.LATITUDE 37.352046° LONGITUDE -121.934314°**GROUND WATER LEVELS:**▼ **AT TIME OF DRILLING** Not Encountered▼ **AT END OF DRILLING** Not EncounteredDATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)

DEPTH (ft)

SYMBOL

DESCRIPTION

68.0

67.8

67.3

66.0

2.5

63.0

5.0

7.5

10.0

12.5

15.0

17.5

3 inches asphalt concrete over 3 inches
aggregate base**Clay (CL-CH)**

moist, dark gray

Clayey Sand (SC)moist, grayish brown, fine to coarse sand,
some fine gravel

Bottom of Boring at 5.0 feet.

N-Value (uncorrected)
blows per foot

Sample Type and Interval

Sample Submitted for
Laboratory AnalysisPercent Recovery
(%)OMV Reading
(ppm)

Odors or Discoloration

Notes

x

0.0

0.0

60

0.0

x



CORNERSTONE EARTH GROUP

BORING NUMBER SS-5

PAGE 1 OF 1

DATE STARTED 3/19/24 DATE COMPLETED 3/19/24

DRILLING CONTRACTOR Penecore

DRILLING METHOD Geoprobe 7728DT

LOGGED BY BTM

NOTES

PROJECT NAME 451-475 El Camino Real

PROJECT NUMBER 285-2-1

PROJECT LOCATION Santa Clara, CA

GROUND ELEVATION 67 FT +/- BORING DEPTH 15 ft.

LATITUDE 37.351956° LONGITUDE -121.934663°

GROUND WATER LEVELS:

▽ AT TIME OF DRILLING 9 ft.

▼ AT END OF DRILLING 14 ft.

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OMV Reading (ppm)	Odors or Discoloration	Notes
67.0	0.0		3 inches asphalt concrete over 3 inches aggregate base					0.0		
66.8			Clay with Sand (CL-CH) [Fill]					0.0		
66.3			moist, dark brown, fine to coarse sand, trace fine gravel							
	2.5		Clayey Gravel with Sand (GC) [Fill]			x	90	4.2		
64.0			moist, grayish brown, fine gravel, fine to coarse sand					0.0		
62.5			Clay (CL-CH)					0.0		
	5.0		moist, dark gray					0.0		
								0.0		
59.5			Sandy Clay (CL)				60	0.0		
	7.5		moist, brown, fine sand					0.0		
			becomes wet at 9 feet							
57.0			Sandy Clay (CL)					0.0		
	10.0		wet, greenish gray					0.0		
							50	0.0		
	12.5							0.0		
53.0			Clay (CL)							
	15.0		moist, gray							
52.0			Bottom of Boring at 15.0 feet.							
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-6

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 15 ft.LATITUDE 37.351841° LONGITUDE -121.934752°**GROUND WATER LEVELS:**▽ **AT TIME OF DRILLING** 9 ft.▼ **AT END OF DRILLING** 14 ft.DATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OMV Reading (ppm)	Odors or Discoloration	Notes
67.0	0.0		3 inches asphalt concrete							
66.8			Clayey Gravel with Sand (GC) [Fill] moist, grayish brown, fine gravel, fine to coarse sand			x		0.9		
	2.5						80	0.0		
								0.0		
	5.0							0.0		
61.5			Clay (CL-CH) moist, dark gray					0.0		
60.5			Sandy Clay (CL) moist, brown to grayish brown, fine to coarse sand				70	0.0		
	7.5							0.0		
			becomes wet at 9 feet					0.0		
	10.0							0.0		
	12.5						60	0.0		
								0.0		
53.0			Clay (CL) moist, gray							
52.0	15.0		Bottom of Boring at 15.0 feet.							
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-7

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 15 ft.LATITUDE 37.351768° LONGITUDE -121.935310°**GROUND WATER LEVELS:**▽ AT TIME OF DRILLING Not Encountered▼ AT END OF DRILLING Not EncounteredDATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OMV Reading (ppm)	Odors or Discoloration	Notes
67.0	0.0		3 inches asphalt concrete over 3 inches aggregate base							
66.8								0.0		
66.5			Sandy Clay (CL-CH) [Fill]							
66.0			moist, dark brown							
			Clay (CL-CH)					0.7		
	2.5		moist, dark gray				80	0.1		
								0.3		
63.0			Clay with Sand (CL)							
	5.0		moist, grayish brown, fine sand					0.0		
								0.0		
	7.5						60	0.0		
58.0			Sandy Clay (CL)							
	10.0		moist, brown with dark gray mottles, fine sand					0.0		
								0.0		
56.0			Clay (CL)							
	12.5		moist, grayish brown, some fine sand				60	0.0		
52.0	15.0		Bottom of Boring at 15.0 feet.							
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-8

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 15 ft.LATITUDE 37.351639° LONGITUDE -121.935044°**GROUND WATER LEVELS:**▽ **AT TIME OF DRILLING** 8 ft.▼ **AT END OF DRILLING** 9 ft.DATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OMV Reading (ppm)	Odors or Discoloration	Notes
67.0	0.0		3 inches asphalt concrete over 6 inches aggregate base							
66.8								0.0		
66.3			Clayey Gravel with Sand (GC) [Fill] moist, grayish brown, fine gravel, fine to coarse sand					0.0		
	2.5						80	0.0		
								0.0		
63.0								0.0		
			Clay (CL-CH) moist, dark gray					0.0		
62.0	5.0		Clay (CL) moist, brown					0.0		
61.0			Sandy Clay (CL) moist, brown, fine sand					0.0		
	7.5						60	0.0		
			becomes wet at 8 feet					0.0		
	10.0							0.0		
								0.0		
	12.5						60	0.0		
54.0			Clay (CL) moist, gray					0.0		
52.0	15.0		Bottom of Boring at 15.0 feet.							
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-9

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 15 ft.LATITUDE 37.351449° LONGITUDE -121.934664°**GROUND WATER LEVELS:**▼ **AT TIME OF DRILLING** 8 ft.▼ **AT END OF DRILLING** 9 ft.DATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OMV Reading (ppm)	Odors or Discoloration	Notes
67.0	0.0		3 inches asphalt concrete over 6 inches aggregate base					0.0		
66.8			Clayey Gravel with Sand (GC) [Fill]					0.0		
66.3			moist, grayish brown, fine gravel, fine to coarse sand					0.0		
	2.5					x	90	0.0		
								0.0		
63.0			Clay (CL-CH)					0.0		
	5.0		moist, dark gray					0.0		
								0.0		
	7.5						70	0.0		
59.0			Sandy Clay (CL)					0.0		
			moist to wet, grayish brown, fine to coarse sand					0.0		
	10.0							0.0		
								0.0		
	12.5						80	0.0		
								0.0		
53.0			Clay (CL)					0.0		
			moist, dark gray							
52.0	15.0		Bottom of Boring at 15.0 feet.							
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-10

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CADATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

GROUND ELEVATION 67 FT +/- BORING DEPTH 15 ft.LATITUDE 37.351408° LONGITUDE -121.935054°

GROUND WATER LEVELS:

▽ AT TIME OF DRILLING 6 ft.▼ AT END OF DRILLING 12 ft.

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OMV Reading (ppm)	Odors or Discoloration	Notes
67.0	0.0		3 inches asphalt concrete over 6 inches aggregate base							
66.8								0.0		
66.3			Clayey Gravel with Sand (GC) [Fill] moist, grayish brown, fine gravel, fine to coarse sand					0.0		
	2.5						80	0.4		
								0.0		
62.5			Clay (CL-CH) moist, dark gray							
	5.0									
61.0			Sandy Clay (CL) moist to wet, grayish brown, fine to coarse sand					0.0		
	7.5						60	0.0		
	10.0							0.0		
	12.5		Clay (CL) moist, gray				70	0.0		
54.5										
	15.0		Bottom of Boring at 15.0 feet.							
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-11

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 68 FT +/- BORING DEPTH 15 ft.LATITUDE 37.351607° LONGITUDE -121.935571°**GROUND WATER LEVELS:**▽ **AT TIME OF DRILLING** 8 ft.▼ **AT END OF DRILLING** 12 ft.

DATE STARTED _____ DATE COMPLETED _____

DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

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ELEVATION (ft)

DEPTH (ft)

SYMBOL

DESCRIPTION

68.0

67.8

67.3

2.5

64.0

63.0

5.0

7.5

10.0

12.5

55.0

53.0

15.0

17.5

3 inches asphalt concrete over 6 inches aggregate base

Clayey Gravel with Sand (GC) [Fill]
moist, grayish brown, fine gravel, fine to coarse sand

Clay (CL-CH)
moist, dark gray

Sandy Clay (CL)
moist to wet, grayish brown, fine to coarse sand

Clay (CL)
moist, gray

Bottom of Boring at 15.0 feet.

N-Value (uncorrected)
blows per foot

Sample Type and Interval

Sample Submitted for
Laboratory AnalysisPercent Recovery
(%)OMV Reading
(ppm)

Odors or Discoloration

Notes

x

70

0.4

0.3

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

70

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0



CORNERSTONE EARTH GROUP

BORING NUMBER SS-12

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 69 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351412° LONGITUDE -121.936284°**GROUND WATER LEVELS:**▽ **AT TIME OF DRILLING** Not Encountered▼ **AT END OF DRILLING** Not EncounteredDATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OVN Reading (ppm)	Odors or Discoloration	Notes
69.0	0.0		Sandy Clay (CL) [Fill] moist, brown, fine to coarse sand			x		1.9		
67.0	2.5		Clayey Sand (SC) [Fill] moist, greenish gray, fine to coarse sand, fine gravel				80	0.0		
66.0			Clay (CL-CH) moist, dark gray					0.6		
65.0			Clay (CL) moist, gray, fine sand			x		5.2		
64.0	5.0		Bottom of Boring at 5.0 feet.							
	7.5									
	10.0									
	12.5									
	15.0									
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-13

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CADATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

GROUND ELEVATION 69 FT +/- BORING DEPTH 15 ft.LATITUDE 37.351202° LONGITUDE -121.935872°

GROUND WATER LEVELS:

▼ AT TIME OF DRILLING 14 ft.▼ AT END OF DRILLING 14 ft.

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OMV Reading (ppm)	Odors or Discoloration	Notes
69.0	0.0		Clay with Sand (CL-CH) [Fill] moist, brown, fine to coarse sand, some fine gravel					0.0		
67.5			Clayey Gravel with Sand (GC) [Fill] moist, grayish brown, fine gravel, fine to coarse sand				90	0.0		
66.0	2.5		Clay (CL-CH) moist, dark gray			x		0.0		
64.0			Clay (CL-CH) moist, gray					0.0		
63.5	5.0		Sandy Clay (CL) moist, brown to grayish brown, fine sand					0.0		
							80	0.0		
	7.5							0.0		
								0.0		
	10.0							0.0		
								0.0		
	12.5						60	0.0		
55.8			Poorly Graded Sand (SP) wet, brown, fine to coarse sand					0.0		
55.0			Clay (CL) moist, gray					0.0		
54.0	15.0		Bottom of Boring at 15.0 feet.							
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SS-14

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 5 ft.LATITUDE 37.350859° LONGITUDE -121.935199°**GROUND WATER LEVELS:**▼ **AT TIME OF DRILLING** Not Encountered▼ **AT END OF DRILLING** Not Encountered

DATE STARTED _____ DATE COMPLETED _____

DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OVN Reading (ppm)	Odors or Discoloration	Notes
67.0	0.0		Clay with Sand (CL-CH) [Fill] moist, brown, fine to coarse sand, some fine gravel			x		0.0		
65.5			Clayey Gravel with Sand (GC) [Fill] moist, grayish brown, fine gravel, fine to coarse sand				70	0.0		
65.0	2.5		Clay (CL-CH) moist, dark gray			x		0.0		
62.0	5.0		Bottom of Boring at 5.0 feet.					0.0		
	7.5									
	10.0									
	12.5									
	15.0									
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SV-1

PAGE 1 OF 1

DATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351966° LONGITUDE -121.934654°**GROUND WATER LEVELS:**▼ AT TIME OF DRILLING Not Encountered▼ AT END OF DRILLING Not Encountered

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ELEVATION (ft)

DEPTH (ft)

SYMBOL

DESCRIPTION67.0
66.8
66.3
64.5
62.5
62.00.0
2.5
5.0

3 inches asphalt concrete over 6 inches aggregate base

Sandy Clay (CL-CH) [Fill]
moist, dark brown, fine to coarse sand, some fine gravel

Clayey Gravel with Sand (GC) [Fill]
moist, grayish brown, fine gravel, fine to coarse sand

Clay (CL-CH)
moist, dark gray

Bottom of Boring at 5.0 feet.

N-Value (uncorrected)
blows per foot

Sample Type and Interval

Sample Submitted for
Laboratory AnalysisPercent Recovery
(%)OVM Reading
(ppm)

Odors or Discoloration

Notes



CORNERSTONE EARTH GROUP

BORING NUMBER SV-2

PAGE 1 OF 1

DATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

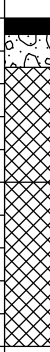
PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351809° LONGITUDE -121.934780°**GROUND WATER LEVELS:**▼ AT TIME OF DRILLING Not Encountered▼ AT END OF DRILLING Not Encountered

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ELEVATION (ft)

DEPTH (ft)

SYMBOL

DESCRIPTION67.0
66.8
66.3
64.5
62.00.0
2.5
5.0

3 inches asphalt concrete over 6 inches aggregate base

Sandy Clay (CL-CH) [Fill]
moist, dark brown, fine to coarse sand, some fine gravel

Clayey Gravel with Sand (GC) [Fill]
moist, grayish brown, fine gravel, fine to coarse sand

Bottom of Boring at 5.0 feet.

N-Value (uncorrected)
blows per foot

Sample Type and Interval

Sample Submitted for
Laboratory AnalysisPercent Recovery
(%)OVM Reading
(ppm)

Odors or Discoloration

Notes



CORNERSTONE EARTH GROUP

BORING NUMBER SV-3

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 65 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351766° LONGITUDE -121.935292°**GROUND WATER LEVELS:**▼ **AT TIME OF DRILLING** Not Encountered▼ **AT END OF DRILLING** Not Encountered

DATE STARTED _____ DATE COMPLETED _____

DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

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ELEVATION (ft)

DEPTH (ft)

SYMBOL

DESCRIPTION65.0
64.8
64.5

0.0

3 inches asphalt concrete over 3 inches aggregate base

Clayey Gravel with Sand (GC) [Fill]
moist, grayish brown, fine gravel, fine to coarse sand

63.0

2.5

Clay (CL-CH)
moist, dark gray

60.0

5.0

Bottom of Boring at 5.0 feet.

N-Value (uncorrected)
blows per foot

Sample Type and Interval

Sample Submitted for
Laboratory AnalysisPercent Recovery
(%)OVM Reading
(ppm)

Odors or Discoloration

Notes



CORNERSTONE EARTH GROUP

BORING NUMBER SV-4

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351632° LONGITUDE -121.935025°**GROUND WATER LEVELS:**▼ **AT TIME OF DRILLING** Not Encountered▼ **AT END OF DRILLING** Not EncounteredDATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

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ELEVATION (ft)

DEPTH (ft)

SYMBOL

DESCRIPTION

67.0

66.8

66.3

2 inches asphalt concrete over 6 inches aggregate base

Clayey Gravel with Sand (GC) [Fill]

moist, grayish brown, fine gravel, fine to coarse sand

Clay (CL-CH)

moist, dark gray

Bottom of Boring at 5.0 feet.

N-Value (uncorrected)
blows per foot

Sample Type and Interval

Sample Submitted for
Laboratory AnalysisPercent Recovery
(%)OMV Reading
(ppm)

Odors or Discoloration

Notes



CORNERSTONE EARTH GROUP

BORING NUMBER SV-5

PAGE 1 OF 1

DATE STARTED 3/19/24 DATE COMPLETED 3/19/24DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 67 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351445° LONGITUDE -121.934649°**GROUND WATER LEVELS:**▼ AT TIME OF DRILLING Not Encountered▼ AT END OF DRILLING Not Encountered

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ELEVATION (ft)

DEPTH (ft)

SYMBOL

DESCRIPTION67.0
66.8
66.30.0
2.5

3 inches aggregate base over 6 inches aggregate base

Clayey Gravel with Sand (GC) [Fill]
moist, grayish brown, fine gravel, fine to coarse sand

62.5
62.0

5.0

Clay (CL-CH)
moist, dark gray

Bottom of Boring at 5.0 feet.

N-Value (uncorrected)
blows per foot

Sample Type and Interval

Sample Submitted for
Laboratory AnalysisPercent Recovery
(%)OVM Reading
(ppm)

Odors or Discoloration

Notes



CORNERSTONE EARTH GROUP

BORING NUMBER SV-7

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 68 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351607° LONGITUDE -121.935571°**GROUND WATER LEVELS:**▼ AT TIME OF DRILLING Not Encountered▼ AT END OF DRILLING Not Encountered

DATE STARTED _____ DATE COMPLETED _____

DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OVN Reading (ppm)	Odors or Discoloration	Notes
68.0	0.0		3 inches aggregate base over 6 inches aggregate base							
67.8								0.0		
67.3			Clayey Gravel with Sand (GC) [Fill] moist, grayish brown, fine gravel, fine to coarse sand					0.0		
	2.5						80	0.0		
64.5			Clay (CL-CH) moist, dark gray					0.0		
63.5								0.8		
63.0	5.0		Clay (CL) moist, grayish brown, fine sand			x				
			Bottom of Boring at 5.0 feet.							
	7.5									
	10.0									
	12.5									
	15.0									
	17.5									



CORNERSTONE EARTH GROUP

BORING NUMBER SV-8

PAGE 1 OF 1

PROJECT NAME 451-475 El Camino RealPROJECT NUMBER 285-2-1PROJECT LOCATION Santa Clara, CAGROUND ELEVATION 68 FT +/- BORING DEPTH 5 ft.LATITUDE 37.351198° LONGITUDE -121.935874°**GROUND WATER LEVELS:**▼ **AT TIME OF DRILLING** Not Encountered▼ **AT END OF DRILLING** Not Encountered

DATE STARTED _____ DATE COMPLETED _____

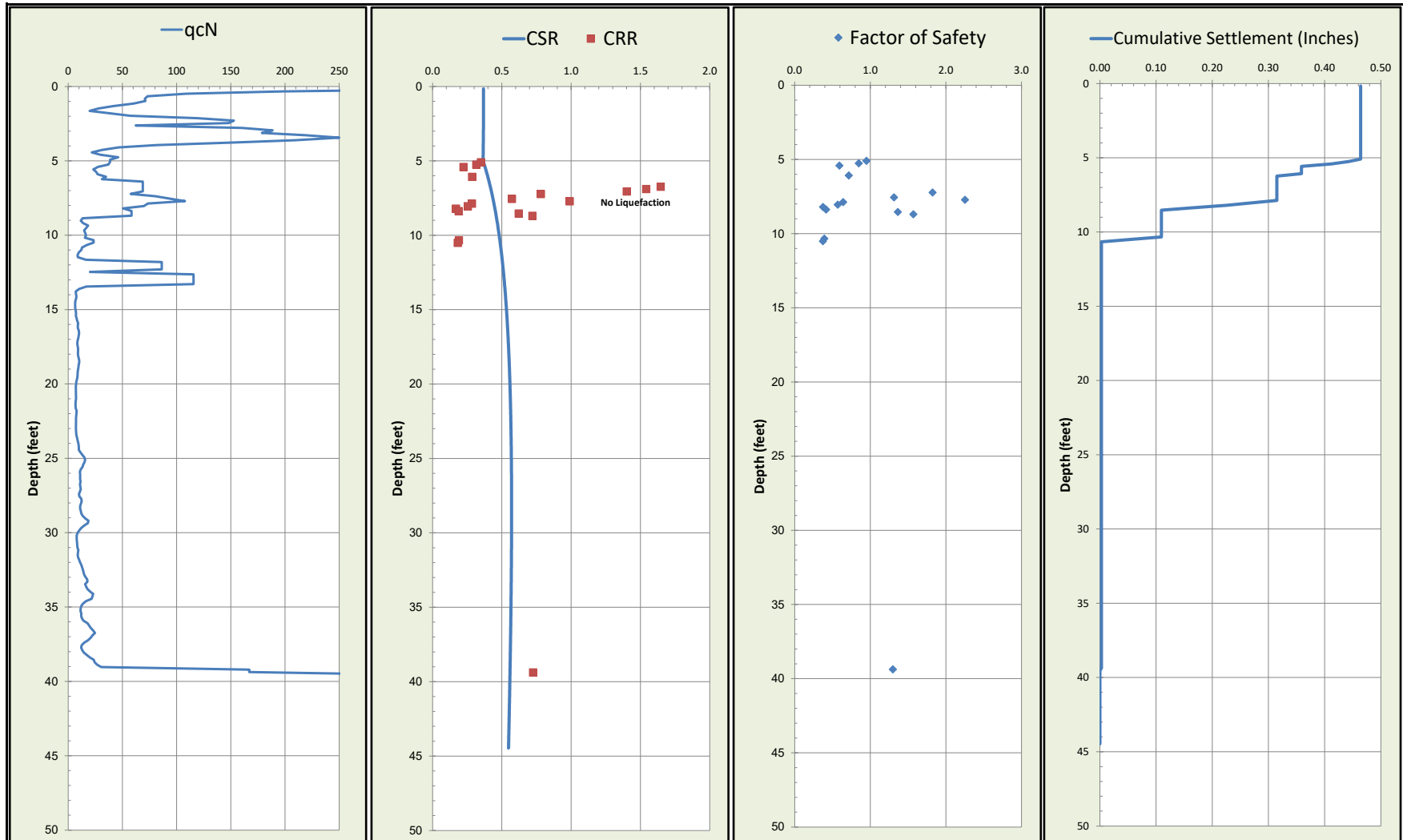
DRILLING CONTRACTOR PenecoreDRILLING METHOD Geoprobe 7728DTLOGGED BY BTM

NOTES _____

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OVN Reading (ppm)	Odors or Discoloration	Notes
68.0	0.0		Clay with Sand (CL) [Fill] moist, brown, fine sand					0.0		
66.5	2.5		Clayey Gravel with Sand (GC) [Fill] moist, grayish brown, fine gravel, fine to coarse sand				90	0.0		
65.0			Clay (CL-CH) moist, dark gray					0.0		
63.0	5.0		Bottom of Boring at 5.0 feet.					0.0		
	7.5									
	10.0									
	12.5									
	15.0									
	17.5									

APPENDIX E: LIQUEFACTION ANALYSES CALCULATIONS



Liquefaction Analysis Summary

University Station Residential
Santa Clara, California

Project Number

285-2-2

Figure Number

Figure E2

5/24/2024

CPT No. 2

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Depth (ft)	Q _c (tsf)	f _s (tsf)	σ _{vc} (psf)	In situ σ' _{vc} (psf)	Q	F (%)	I _c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	Q _{cN} near interfaces (soft layer)	Thin Layer Factor (K _{L1})	Interpreted q _{cN}	C _N	Q _{c1N}	Q _{c1N-CS}	Stress Reduction Coeff. r _d	CSR	K _s for Sand	CRR _{M=7.5} , σ'vc = 1 atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε _v	Settlement (Inches)
0.160	404.940	0.735	20.0	20.0	3936.744	0.182	0.50		Unsaturated	0.0			382.74	1.70	650.66	650.66	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	208.790	1.165	41.3	41.3	1413.276	0.558	1.02		Unsaturated	0.0			197.34	1.70	335.48	335.48	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	115.070	1.899	61.3	61.3	639.095	1.650	1.58		Unsaturated	0.0			108.76	1.70	184.90	184.90	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	77.340	2.598	82.5	82.5	370.014	3.361	1.97		Unsaturated	20.2			73.10	1.70	124.27	165.20	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	74.780	2.783	102.5	102.5	320.921	3.725	2.03		Unsaturated	25.7			70.68	1.70	120.16	172.67	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	75.300	2.076	122.5	122.5	295.560	2.759	1.94		Unsaturated	18.1			71.17	1.70	120.99	155.42	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	63.690	1.490	143.8	143.8	230.701	2.342	1.94		Unsaturated	18.0			60.20	1.70	102.34	134.33	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	44.580	0.919	163.8	163.8	151.190	2.065	2.01		Unsaturated	23.4			42.14	1.70	71.63	111.62	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	29.650	0.482	185.0	185.0	94.483	1.631	2.07		Unsaturated	28.6			28.02	1.70	47.64	90.99	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	20.890	0.111	205.0	205.0	63.124	0.534	1.92		Unsaturated	16.6			19.74	1.70	33.57	54.68	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	60.620	2.135	246.3	246.3	167.617	3.528	2.16		Unsaturated	36.0			57.30	1.70	97.40	159.31	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	126.180	3.555	266.3	266.3	335.861	2.821	1.92		Unsaturated	16.5			119.26	1.70	202.75	240.60	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	161.780	2.774	287.5	287.5	414.469	1.716	1.69		Unsaturated	0.0			152.91	1.69	258.91	258.91	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	156.670	3.134	307.5	307.5	388.069	2.002	1.76		Unsaturated	3.7			148.08	1.68	249.00	249.01	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	65.910	2.996	327.5	327.5	157.956	4.558	2.27		Unsaturated	44.5			62.30	1.70	105.90	176.70	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	169.500	4.060	348.8	348.8	394.219	2.398	1.82		Unsaturated	8.8			160.21	1.61	257.79	265.38	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	199.520	3.862	368.8	368.8	451.327	1.937	1.71		Unsaturated	0.1			188.58	1.59	299.01	299.01	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	189.060	3.283	389.4	381.9	420.187	1.738	1.69		Unsaturated	0.0			178.70	1.57	280.72	280.72	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	231.820	2.500	408.6	391.1	509.191	1.080	1.47		Unsaturated	0.0			219.11	1.56	342.06	342.06	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	264.470	2.646	427.8	400.3	574.223	1.001	1.41		Unsaturated	0.0			249.97	1.55	387.84	387.84	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	221.370	2.435	448.2	410.1	474.774	1.101	1.49		Unsaturated	0.0			209.23	1.54	322.58	322.58	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	160.980	2.520	467.4	419.4	341.290	1.568	1.70		Unsaturated	0.0			152.16	1.57	239.52	239.52	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	86.120	2.650	487.8	429.1	180.237	3.085	2.10		Unsaturated	30.7			81.40	1.69	137.27	201.49	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	49.210	2.401	507.0	438.4	101.664	4.905	2.41		Unsaturated	55.5			46.51	1.70	79.07	148.37	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	32.880	1.717	527.4	448.2	66.988	5.264	2.54		Unsaturated	66.5			31.08	1.70	52.83	118.06	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	23.020	1.809	546.6	457.4	62.821	7.953	2.70		Unsaturated	79.0			21.76	1.70	36.99	99.94	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	31.330	2.172	565.8	466.6	84.556	6.996	2.58		Unsaturated	69.2			29.61	1.70	50.34	115.46	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	48.840	2.450	586.2	476.4	96.707	5.046	2.43		Unsaturated	57.3			46.16	1.70	78.48	148.29	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	40.940	2.534	605.4	485.6	80.179	6.235	2.55		Unsaturated	67.1			38.70	1.70	65.78	134.90	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	40.810	2.320	625.8	495.4	79.109	5.729	2.53		Sand	65.1			38.57	1.70	65.57	134.12	0.99	0.368	1.100	0.211	0.349	0.95	0.01	0.02
5.250	39.220	1.830	645.0	504.6	75.287	4.704	2.47		Sand	60.9			37.07	1.70	63.02	129.68	0.99	0.373	1.100	0.196	0.316	0.85	0.02	0.03
5.410	29.040	1.494	664.2	513.8	55.064	5.206	2.60		Sand	70.7			27.45	1.70	46.66	111.01	0.99	0.378	1.100	0.154	0.224	0.59	0.03	0.05
5.580	24.530	1.373	684.6	523.6	60.767	5.677	2.60		plastic Clay	70.7			23.19	1.45	n.a.	n.a.	0.99	0.384	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	27.280	1.470	703.8	532.8	66.830	5.459	2.56		plastic Clay	67.5			25.78	1.44	n.a.	n.a.	0.99	0.389	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	28.830	1.502	724.2	542.6	69.757	5.278	2.53		plastic Clay	65.7			27.25	1.43	n.a.	n.a.	0.99	0.394	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	36.940	1.503	743.4	551.8	67.682	4.111	2.46		Sand	59.8			34.91	1.70	59.36	124.65	0.99	0.399	1.100	0.182	0.285	0.72	0.03	0.04
6.230	32.950	1.899	762.6	561.0	77.961	5.831	2.54		plastic Clay	65.9			31.14	1.42	n.a.	n.a.	0.99	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	43.820	1.986	783.0	570.8	79.030	4.573	2.45		Sand	59.1	68.8		68.80	1.58	108.40	187.17	0.99	0.408	1.100	0.986	2.386	5.85	0.00	0.00
6.560	46.910	2.464	802.2	580.1	83.960	5.299	2.48		Sand	61.7	68.8		68.80	1.57	107.77	187.31	0.99	0.412	1.100	0.992	2.401	5.83	0.00	0.00
6.730	61.420	2.067	822.6	589.8	109.218	3.388	2.26		Sand	43.9	68.8		68.80	1.58	108.64	179.71	0.99	0.416	1.100	0.718	1.646	3.95	0.00	0.00
6.890	72.320	2.622	841.8	599.1	127.720	3.646	2.24		Sand	42.5	68.8		68.80	1.57	108.31	178.32	0.99	0.420	1.100	0.680	1.542	3.67	0.00	0.00
7.050	72.790	2.419	861.0	608.3	127.560	3.342	2.21		Sand	40.1			68.80	1.57	108.12	176.25	0.99	0.424	1.100	0.628	1.402	3.30	0.00	0.00
7.220	61.130	2.277	881.4	618.1	106.136	3.753	2.30		Sand	47.3			57.78	1.60	92.72	161.84	0.99	0.428	1.100	0.391	0.781	1.82	0.00	0.00
7.380	85.120	3.015	900.6	627.3	146.983	3.561	2.20		Sand	38.9			80.45	1.51	121.69	192.01	0.98	0.432	1.100	1.240	3.000	6.94	0.00	0.00
7.550	99.990	0.887	921.0	637.1	171.446	0.891	1.70		Sand	0.0			94.51	1.61	152.58	152.58	0.98	0.436	1.100	0.307	0.573	1.31	0.00	0.00
7.710	114.010	0.769	940.2	646.3	194.180	0.677	1.58																	

CPT No.

2

PGA (A_{max})

0.57

Total Settlement:

0.46 (Inches)

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Depth (ft)	Q _c (tsf)	f _s (tsf)	σ _{vc} (psf)	In situ σ' _{vc} (psf)	Q	F (%)	I _c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	Q _c N near interfaces (soft layer)	Thin Layer Factor (K _{ts})	Interpreted q _{cN}	C _N	Q _{c1N}	Q _{c1N-CS}	Stress Reduction Coeff, r _d	CSR	K _σ for Sand	CRR _{M=7.5} , σ' _{vc} = 1 atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε _v	Settlement (Inches)
11.480	9.480	0.648	1392.6	863.4	20.346	7.373	3.01		Clay	100.0			8.96	1.27	n.a.	n.a.	0.97	0.500	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	17.350	0.815	1413.0	873.2	38.119	4.897	2.69		Clay	77.9			16.40	1.26	n.a.	n.a.	0.97	0.502	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	44.440	0.983	1432.2	882.5	63.995	2.248	2.29		Sand	46.1	48.49	1.78	86.31	1.35	116.39	190.91	0.97	0.504	1.100	1.175	2.843	5.64	0.00	0.00
11.980	51.300	1.208	1452.6	892.2	73.613	2.389	2.26		Sand	44.1		1.78	86.31	1.35	116.17	189.28	0.97	0.506	1.100	1.087	2.631	5.20	0.00	0.00
12.140	42.990	1.209	1471.8	901.5	61.188	2.861	2.38		Sand	53.1	48.49	1.78	86.31	1.33	115.22	193.31	0.97	0.508	1.100	1.322	3.200	6.30	0.00	0.00
12.300	31.150	1.020	1491.0	910.7	43.805	3.354	2.53		Sand	65.2	48.49	1.78	86.31	1.32	114.35	196.91	0.97	0.510	1.100	1.594	3.858	7.57	0.00	0.00
12.470	21.300	0.910	1511.4	920.5	44.639	4.428	2.61		Clay	71.6			20.13	1.25	n.a.	n.a.	0.97	0.511	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	26.650	0.922	1530.6	929.7	36.910	3.560	2.60		Sand	71.0	67.21	1.72	115.60	1.26	145.65	238.99	0.97	0.513	1.100	38.780	93.847	182.96	0.00	0.00
12.800	66.110	0.993	1551.0	939.5	92.677	1.520	2.06		Sand	27.4	67.21	1.72	115.60	1.29	149.39	210.49	0.96	0.515	1.100	3.599	8.710	16.92	0.00	0.00
12.960	71.110	1.047	1570.2	948.7	99.270	1.489	2.03		Sand	25.2		1.72	115.60	1.29	149.59	206.28	0.96	0.516	1.100	2.743	6.638	12.86	0.00	0.00
13.120	58.030	1.005	1589.4	957.9	80.403	1.756	2.14		Sand	34.5	67.21	1.72	115.60	1.27	147.26	218.70	0.96	0.518	1.100	6.457	15.625	30.18	0.00	0.00
13.290	33.960	0.768	1609.8	967.7	46.339	2.317	2.40		Sand	55.1	67.21	1.72	115.60	1.25	144.94	232.10	0.96	0.519	1.100	19.871	48.088	92.60	0.00	0.00
13.450	17.620	0.610	1629.0	976.9	34.405	3.632	2.63		Clay	73.2			16.65	1.23	n.a.	n.a.	0.96	0.521	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	10.690	0.387	1649.4	986.7	19.996	3.922	2.83		Clay	89.2			10.10	1.22	n.a.	n.a.	0.96	0.522	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	7.440	0.327	1668.6	995.9	13.265	4.955	3.03		Clay	100.0			7.03	1.22	n.a.	n.a.	0.96	0.524	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	7.580	0.294	1687.8	1005.1	13.403	4.368	2.99		Clay	100.0			7.16	1.22	n.a.	n.a.	0.96	0.525	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	8.080	0.279	1708.2	1014.9	14.239	3.862	2.94		Clay	98.0			7.64	1.21	n.a.	n.a.	0.96	0.526	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	7.680	0.303	1727.4	1024.2	13.311	4.441	3.00		Clay	100.0			7.26	1.21	n.a.	n.a.	0.96	0.528	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	6.940	0.335	1747.8	1033.9	11.734	5.519	3.10		Clay	100.0			6.56	1.21	n.a.	n.a.	0.96	0.529	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	6.730	0.350	1767.0	1043.2	11.209	5.992	3.14		Clay	100.0			6.36	1.21	n.a.	n.a.	0.96	0.530	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	6.810	0.348	1786.2	1052.4	11.245	5.881	3.13		Clay	100.0			6.44	1.20	n.a.	n.a.	0.96	0.531	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	6.970	0.357	1806.6	1062.2	11.423	5.885	3.13		Clay	100.0			6.59	1.20	n.a.	n.a.	0.96	0.533	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	7.400	0.363	1825.8	1071.4	12.110	5.600	3.09		Clay	100.0			6.99	1.20	n.a.	n.a.	0.95	0.534	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	7.700	0.386	1846.2	1081.2	12.536	5.693	3.09		Clay	100.0			7.28	1.19	n.a.	n.a.	0.95	0.535	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	7.580	0.401	1865.4	1090.4	12.192	6.027	3.11		Clay	100.0			7.16	1.19	n.a.	n.a.	0.95	0.536	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	8.210	0.411	1884.6	1099.6	13.219	5.658	3.07		Clay	100.0			7.76	1.19	n.a.	n.a.	0.95	0.537	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	8.810	0.405	1905.0	1109.4	14.165	5.148	3.02		Clay	100.0			8.33	1.19	n.a.	n.a.	0.95	0.538	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	9.640	0.360	1924.2	1118.6	15.515	4.152	2.93		Clay	97.3			9.11	1.18	n.a.	n.a.	0.95	0.539	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	9.480	0.376	1944.6	1128.4	15.079	4.416	2.95		Clay	99.4			8.96	1.18	n.a.	n.a.	0.95	0.540	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	9.470	0.443	1963.8	1137.6	14.923	5.220	3.00		Clay	100.0			8.95	1.18	n.a.	n.a.	0.95	0.541	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	10.250	0.533	1983.0	1146.8	16.146	5.754	3.01		Clay	100.0			9.69	1.18	n.a.	n.a.	0.95	0.542	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	10.630	0.563	2003.4	1156.6	16.649	5.846	3.00		Clay	100.0			10.05	1.17	n.a.	n.a.	0.95	0.543	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	10.360	0.532	2022.6	1165.8	16.038	5.690	3.01		Clay	100.0			9.79	1.17	n.a.	n.a.	0.95	0.544	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	9.900	0.505	2043.0	1175.6	15.104	5.686	3.02		Clay	100.0			9.36	1.17	n.a.	n.a.	0.95	0.545	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	9.300	0.481	2062.2	1184.9	13.958	5.812	3.06		Clay	100.0			8.79	1.17	n.a.	n.a.	0.95	0.546	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	8.880	0.465	2081.4	1194.1	13.130	5.928	3.08		Clay	100.0			8.39	1.16	n.a.	n.a.	0.95	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	9.030	0.471	2101.8	1203.9	13.256	5.908	3.08		Clay	100.0			8.53	1.16	n.a.	n.a.	0.94	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	9.510	0.478	2121.0	1213.1	13.931	5.662	3.05		Clay	100.0			8.99	1.16	n.a.	n.a.	0.94	0.548	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	9.640	0.469	2141.4	1222.9	14.015	5.468	3.04		Clay	100.0			9.11	1.16	n.a.	n.a.	0.94	0.549	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	9.560	0.461	2160.6	1232.1	13.765	5.438	3.04		Clay	100.0			9.04	1.15	n.a.	n.a.	0.94	0.550	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	9.510	0.453	2179.8	1241.3	13.567	5.375	3.04		Clay	100.0			8.99	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	10.070	0.482	2200.2	1251.1	14.339	5.370	3.03		Clay	100.0			9.52	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	10.630	0.485	2219.4	1260.3	15.108	5.095	2.99		Clay	100.0			10.05	1.15	n.a.	n.a.	0.94	0.552	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	10.750	0.482	2239.8	1270.1	15.164	5.001	2.99		Clay	100.0			10.16	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	10.320	0.461	2259.0	1279.3	14.368	5.018	3.01		Clay	100.0			9.75	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	10.050	0.440	2278.2	1288.5	13.831	4.936	3.01		Clay	100.0			9.50	1.14	n.a.	n.a.	0.94	0.554	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	9.710	0.424	2298.6	1298.3	13.187	4.953	3.03		Clay	100.0			9.18	1.14										

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	q-N near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q-N	C _N	q _{c1N}	q _{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_{cs} for Sand	CRR=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
22.640	7.730	0.307	2731.8	1506.3	8.450	4.829	3.18		Clay	100.0			7.31	1.09	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	7.610	0.306	2751.0	1515.5	8.228	4.908	3.19		Clay	100.0			7.19	1.09	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	7.560	0.308	2771.4	1525.3	8.096	4.990	3.20		Clay	100.0			7.15	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	7.550	0.314	2790.6	1534.5	8.022	5.108	3.21		Clay	100.0			7.14	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	7.800	0.341	2809.8	1543.7	8.285	5.335	3.21		Clay	100.0			7.37	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	8.030	0.348	2830.2	1553.5	8.516	5.267	3.20		Clay	100.0			7.59	1.08	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	8.620	0.358	2849.4	1562.7	9.209	4.977	3.15		Clay	100.0			8.15	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	9.220	0.397	2869.8	1572.5	9.902	5.094	3.14		Clay	100.0			8.71	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	9.800	0.430	2889.0	1581.7	10.565	5.146	3.12		Clay	100.0			9.26	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	10.200	0.450	2908.2	1590.9	10.995	5.144	3.10		Clay	100.0			9.64	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	10.390	0.453	2928.6	1600.7	11.152	5.075	3.09		Clay	100.0			9.82	1.08	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	10.420	0.454	2947.8	1609.9	11.114	5.074	3.10		Clay	100.0			9.85	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	12.000	0.509	2968.2	1619.7	12.985	4.836	3.03		Clay	100.0			11.34	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	13.860	0.593	2987.4	1629.0	15.183	4.793	2.97		Clay	100.0			13.10	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	15.640	0.699	3006.6	1638.2	17.259	4.945	2.94		Clay	98.3			14.78	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	16.520	0.760	3027.0	1648.0	18.212	5.064	2.93		Clay	97.4			15.61	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	15.930	0.776	3046.2	1657.2	17.387	5.385	2.96		Clay	100.0			15.06	1.07	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	14.690	0.676	3066.6	1667.0	15.785	5.139	2.98		Clay	100.0			13.88	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	13.940	0.604	3085.8	1676.2	14.792	4.872	2.99		Clay	100.0			13.18	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	12.190	0.545	3105.0	1685.4	12.623	5.121	3.06		Clay	100.0			11.52	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	11.450	0.518	3125.4	1695.2	11.665	5.241	3.09		Clay	100.0			10.82	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	11.620	0.494	3144.6	1704.4	11.790	4.912	3.07		Clay	100.0			10.98	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	11.660	0.475	3165.0	1714.2	11.758	4.712	3.06		Clay	100.0			11.02	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	11.720	0.439	3184.2	1723.4	11.753	4.339	3.03		Clay	100.0			11.08	1.06	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	12.070	0.441	3203.4	1732.6	12.084	4.217	3.02		Clay	100.0			11.41	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	11.510	0.509	3223.8	1742.4	11.361	5.145	3.09		Clay	100.0			10.88	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	11.830	0.556	3243.0	1751.6	11.656	5.447	3.10		Clay	100.0			11.18	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	12.350	0.566	3263.4	1761.4	12.170	5.276	3.08		Clay	100.0			11.67	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	11.580	0.489	3282.6	1770.6	11.226	4.923	3.08		Clay	100.0			10.95	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	10.560	0.440	3303.0	1780.4	10.007	4.938	3.12		Clay	100.0			9.98	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	10.980	0.454	3322.2	1789.7	10.414	4.869	3.11		Clay	100.0			10.38	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	12.820	0.564	3341.4	1798.9	12.396	5.060	3.06		Clay	100.0			12.12	1.04	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	13.180	0.515	3361.8	1808.7	12.716	4.475	3.02		Clay	100.0			12.46	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	12.450	0.442	3381.0	1817.9	11.837	4.106	3.02		Clay	100.0			11.77	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	11.650	0.380	3401.4	1827.7	10.887	3.823	3.03		Clay	100.0			11.01	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	11.680	0.328	3420.6	1836.9	10.855	3.291	2.99		Clay	100.0			11.04	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	12.260	0.356	3439.8	1846.1	11.419	3.375	2.98		Clay	100.0			11.59	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	12.780	0.360	3460.2	1855.9	11.908	3.261	2.96		Clay	99.5			12.08	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	14.150	0.476	3479.4	1865.1	13.308	3.836	2.96		Clay	99.7			13.37	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	16.580	0.550	3499.8	1874.9	15.820	3.709	2.89		Clay	94.3			15.67	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	19.800	0.608	3519.0	1884.1	19.150	3.372	2.80		Clay	87.0			18.71	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	19.220	0.612	3538.2	1893.3	18.434	3.509	2.82		Clay	88.9			18.17	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	15.550	0.510	3558.6	1903.1	14.472	3.706	2.92		Clay	96.7			14.70	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	12.650	0.366	3577.8	1912.3	11.359	3.374	2.98		Clay	100.0			11.96	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	10.690	0.266	3598.2	1922.1	9.251	2.988	3.02		Clay	100.0			10.10	1.03	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	9.120	0.207	3617.4	1931.4	7.571	2.834	3.08		Clay	100.0			8.62	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	8.360	0.170	3636.6	1940.6	6.742	2.597	3.11		Clay	100.0			7.90	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	8.270	0.160	3657.0	1950.4	6.605	2.478	3.10		Clay	100.0			7.82	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	8.380	0.155	3676.2	1959.6	6.677	2.365	3.09		Clay	100.0			7.92	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	8.690	0.200	3696.6	1969.4	6.948	2.925	3.12		Clay	100.0			8.21	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	8.750	0.249	3715.8	1978.6	6.967	3.611	3.17		Clay	100.0			8.27	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	8.990	0.264	3735.0	1987.8	7.166	3.704	3.17		Clay	100.0			8.50	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	9.960	0.269	3755.4	1997.6	8.092	3.329	3.10		Clay	100.0			9.41	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	9.570	0.287	3774.6	2006.8	7.657	3.740	3.15		Clay	100.0			9.05	1.01	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	9.280	0.311	3795.0	2016.6	7.322	4.218	3.19		Clay	100.0			8.77	1.01	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	9.730	0.339	3814.2	2025.8	7.723	4.337	3.18		Clay	100.0			9.20	1.01	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	10.700	0.367	3833.4	2035.0	8.632	4.174	3.13		Clay	100.0														

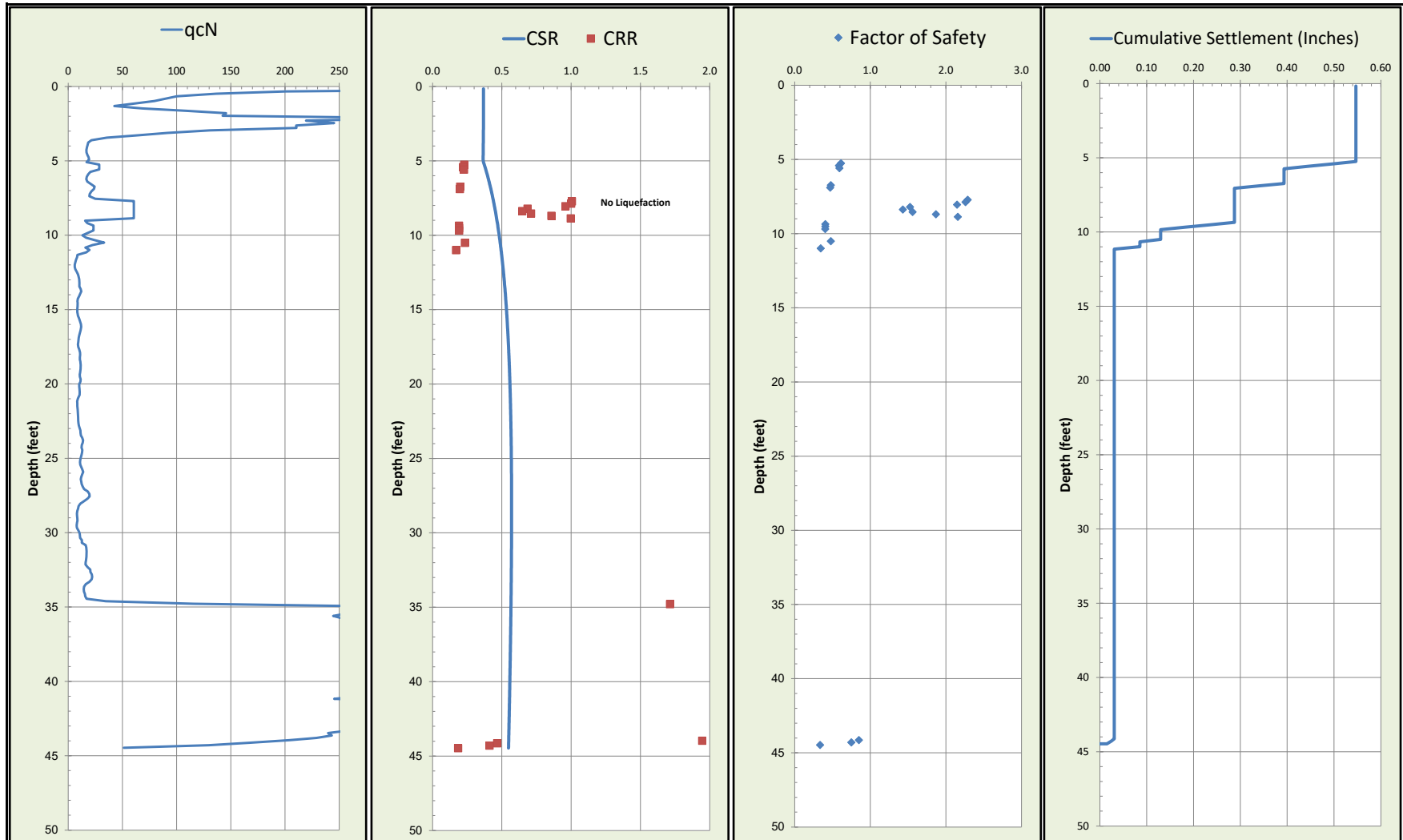
CPT No. 2

PGA (A_{max}) 0.57

Total Settlement: 0.46 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q_{N \text{ near interfaces (soft layer)}}$	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRRm=7.5, $\sigma'_{vc} = 1 \text{ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
33.790	18.860	0.646	4069.8	2148.5	15.662	3.842	2.90		Clay	95.3			17.83	1.00	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	21.420	0.754	4090.2	2158.3	17.954	3.890	2.86		Clay	91.9			20.25	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	24.400	0.626	4109.4	2167.5	20.618	2.803	2.73		Clay	81.0			23.06	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	23.680	0.455	4128.6	2176.7	19.861	2.106	2.66		Clay	76.2			22.38	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	22.930	0.367	4149.0	2186.5	19.076	1.758	2.63		Clay	73.8			21.67	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	17.300	0.325	4168.2	2195.7	13.859	2.138	2.80		Clay	86.8			16.35	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	14.340	0.276	4188.6	2205.5	11.105	2.252	2.89		Clay	94.2			13.55	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	12.850	0.267	4207.8	2214.7	9.704	2.482	2.96		Clay	100.0			12.15	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	12.170	0.259	4227.0	2224.0	9.044	2.574	3.00		Clay	100.0			11.50	0.99	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	12.020	0.288	4247.4	2233.8	8.861	2.914	3.03		Clay	100.0			11.36	0.99	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	12.790	0.290	4266.6	2243.0	9.502	2.725	2.99		Clay	100.0			12.09	0.98	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	12.670	0.293	4287.0	2252.8	9.345	2.785	3.00		Clay	100.0			11.98	0.98	n.a.	n.a.	0.85	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	13.390	0.386	4306.2	2262.0	9.935	3.439	3.03		Clay	100.0			12.66	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	15.100	0.463	4326.6	2271.8	11.389	3.581	3.00		Clay	100.0			14.27	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	18.930	0.602	4345.8	2281.0	14.693	3.591	2.91		Clay	95.6			17.89	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	20.400	0.752	4365.0	2290.2	15.909	4.128	2.92		Clay	96.5			19.28	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	22.210	0.995	4385.4	2300.0	17.406	4.972	2.94		Clay	98.2			20.99	0.98	n.a.	n.a.	0.85	0.563	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	24.380	1.037	4404.6	2309.2	19.208	4.675	2.89		Clay	94.2			23.04	0.98	n.a.	n.a.	0.85	0.563	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	26.240	0.990	4425.0	2319.0	20.722	4.118	2.83		Clay	89.3			24.80	0.98	n.a.	n.a.	0.85	0.563	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	23.670	0.845	4444.2	2328.2	18.424	3.939	2.86		Clay	91.5			22.37	0.98	n.a.	n.a.	0.85	0.563	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	21.940	0.770	4463.4	2337.4	16.863	3.904	2.88		Clay	93.7			20.74	0.97	n.a.	n.a.	0.85	0.562	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	19.290	0.624	4483.8	2347.2	14.526	3.661	2.92		Clay	96.3			18.23	0.97	n.a.	n.a.	0.85	0.562	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	15.540	0.514	4503.0	2356.4	11.278	3.870	3.02		Clay	100.0			14.69	0.97	n.a.	n.a.	0.84	0.562	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	13.190	0.441	4523.4	2366.2	9.237	4.034	3.10		Clay	100.0			12.47	0.97	n.a.	n.a.	0.84	0.562	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	12.660	0.383	4542.6	2375.4	8.747	3.682	3.10		Clay	100.0			11.97	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	13.680	0.432	4561.8	2384.7	9.560	3.792	3.07		Clay	100.0			12.93	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	15.350	0.570	4582.2	2394.5	10.908	4.363	3.06		Clay	100.0			14.51	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	18.070	0.790	4601.4	2403.7	13.121	5.010	3.04		Clay	100.0			17.08	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	21.160	0.902	4621.8	2413.5	15.620	4.786	2.97		Clay	100.0			20.00	0.97	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	24.960	1.065	4641.0	2422.7	18.690	4.705	2.90		Clay	95.1			23.59	0.96	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	25.800	1.273	4660.2	2431.9	19.302	5.423	2.93		Clay	97.5			24.39	0.96	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	28.340	1.667	4680.6	2441.7	21.296	6.413	2.95		Clay	98.9			26.79	0.96	n.a.	n.a.	0.84	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	32.360	1.839	4699.8	2450.9	24.489	6.127	2.89		Clay	94.3			30.59	0.96	n.a.	n.a.	0.84	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	55.290	1.944	4720.2	2460.7	46.392	3.673	2.54		Sand	66.0	167.06		167.06	0.96	160.54	256.60	0.83	0.559	0.955	294.892	619.390	1108.35	0.00	0.00
39.370	176.750	2.053	4739.4	2469.9	152.556	1.177	1.82		Sand	8.8			167.06	0.94	157.47	163.18	0.83	0.559	0.972	0.407	0.725	1.30	0.00	0.00
39.530	312.640	2.668	4758.6	2479.1	270.925	0.860	1.55		Sand	0.0			295.50	0.96	283.41	283.41	0.83	0.558	0.952	18141.590	38015.150	68097.14	0.00	0.00
39.700	390.840	2.482	4779.0	2488.9	338.534	0.639	1.39		Sand	0.0			369.41	0.96	353.93	353.93	0.83	0.558	0.951	#####	#####	#####	0.00	0.00
39.860	433.100	3.001	4798.2	2498.1	374.662	0.697	1.39		Sand	0.0			409.36	0.96	391.81	391.81	0.83	0.558	0.950	#####	#####	#####	0.00	0.00
40.030	439.480	3.079	4818.6	2507.9	379.460	0.704	1.39		Sand	0.0			415.39	0.96	397.18	397.18	0.83	0.557	0.949	#####	#####	#####	0.00	0.00
40.190	427.500	3.680	4837.8	2517.1	368.375	0.866	1.47		Sand	0.0			404.06	0.96	385.98	385.98	0.83	0.557	0.948	#####	#####	#####	0.00	0.00
40.350	430.750	3.445	4857.0	2526.4	370.505	0.804	1.44		Sand	0.0			407.14	0.95	388.54	388.54	0.83	0.557	0.947	#####	#####	#####	0.00	0.00
40.520	514.230	3.392	4877.4	2536.2	441.853	0.663	1.33		Sand	0.0			486.04	0.95	463.36	463.36	0.83	0.556	0.946	#####	#####	#####	0.00	0.00
40.680	561.940	3.731	4896.6	2545.4	482.159	0.667	1.31		Sand	0.0			531.13	0.95	505.87	505.87	0.83	0.556	0.945	#####	#####	#####	0.00	0.00
40.850	565.760	2.476	4917.0	2555.2	484.511	0.439	1.17		Sand	0.0			534.74	0.95	508.79	508.79	0.83	0.556	0.943	#####	#####	#####	0.00	0.00
41.010	534.840	2.463	4936.2	2564.4	457.084	0.463	1.20		Sand	0.0			505.52	0.95	480.53	480.53	0.83	0.555	0.942	#####	#####	#####	0.00	0.00
41.170	484.360	2.255	4955.4	2573.6	412.994	0.468	1.23		Sand	0.0			457.81	0.95	434.76	434.76	0.82	0.555	0.941	#####	#####	#####	0.00	0.00
41.340	469.980	2.467	4975.8	2583.4	399.901	0.528	1.28		Sand	0.0			444.22	0.95	421.43	421.43	0.82	0.555	0.940	#####	#####	#####	0.00	0.00
41.500	511.620	2.333	4995.0	2592.6	434.737	0.458	1.21		Sand	0.0			483.57	0.95	458.34	458.34	0.82	0.554	0.939	#####	#####	#####	0.00	0.00
41.670	534.230	2.599	5015.4	2602.4	453.180	0.489	1.22		Sand	0.0			504.94	0.95	478.12	478.12	0.82	0.554	0.938	#####	#####	#####	0.00	0.00
41.830	525.370	2.649	5034.6	2611.6	444.834	0.507	1.24		Sand	0.0			496.57	0.95	469.75	469.75	0.82	0.554	0.937	#####	#####	#####	0.00	0.00
41.990	548.960	3.783	5053.8	2620.8	464.077	0.692	1.33		Sand	0.0			518.87	0.95	490.39	490.39	0.82	0.553	0.936	#####	#####	#####	0.00	0.00
42.160	514.360	3.555	5074.2	2630.6	433.874	0.695	1.35		Sand	0.0			486.16	0.94	459.03	459.03	0.82	0.553	0.935	#####	#####	#####	0.00	0.00
42.320	511.910	2.961	5093.4	2639.8	431.034	0.581	1.29		Sand	0.0			483.85	0.94	456.42	456.42	0.82	0.553	0.934	#####	#####	#####	0.00	0.00
42.490	506.540	2.227	5113.8	2649.6	425.693	0.442	1.21		Sand	0.0			478.77	0.94	451.19	451.19	0.82	0.552	0.933	#####	#####	#####	0.00	0.00
42.650	488.030	2.137	5133.0	2658.8	409.339	0.440	1.22		Sand	0.														



CORNERSTONE
EARTH GROUP

Liquefaction Analysis Summary

University Station Residential
Santa Clara, California

Project Number

285-2-2

Figure Number

Figure E3

5/24/2024

CPT No. 3

CPT No. 3

PGA (A_{max}) 0.57

Total Settlement: 0.55 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted $q-N$	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRRM=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
0.160	513.790	1.530	20.0	20.0	4994.987	0.298	0.73		Unsaturated	0.0			485.62	1.70	825.56	825.56	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	212.540	1.543	41.3	41.3	1438.662	0.726	1.13		Unsaturated	0.0			200.89	1.70	341.51	341.51	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	144.370	2.016	61.3	61.3	801.870	1.397	1.48		Unsaturated	0.0			136.46	1.70	231.97	231.97	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	106.130	1.915	82.5	82.5	507.826	1.805	1.66		Unsaturated	0.0			100.31	1.70	170.53	170.53	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	94.860	2.253	102.5	102.5	407.154	2.377	1.81		Unsaturated	8.0			89.66	1.70	152.42	156.19	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	84.160	2.231	122.5	122.5	330.365	2.652	1.90		Unsaturated	14.9			79.55	1.70	135.23	160.95	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	64.310	2.719	143.8	143.8	232.949	4.233	2.15		Unsaturated	35.1			60.78	1.70	103.33	165.65	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	45.080	5.243	163.8	163.8	152.889	5.842	2.37		Unsaturated	52.3			42.61	1.70	72.43	138.64	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	72.660	3.598	185.0	185.0	231.968	4.958	2.21		Unsaturated	39.9			68.68	1.70	116.75	186.75	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	116.670	5.243	205.0	205.0	353.975	4.498	2.09		Unsaturated	30.0			110.27	1.70	187.47	260.73	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	154.050	5.012	225.0	225.0	446.196	3.256	1.92		Unsaturated	16.4			145.60	1.70	247.53	289.36	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	150.720	6.565	246.3	246.3	417.254	4.359	2.04		Unsaturated	26.5			142.46	1.70	242.18	318.67	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	343.310	6.289	266.3	266.3	914.419	1.833	1.57		Unsaturated	0.0			324.49	1.70	551.63	551.63	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	232.190	3.853	287.5	287.5	595.015	1.661	1.60		Unsaturated	0.0			219.46	1.69	371.59	371.59	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	259.530	4.442	307.5	307.5	643.102	1.712	1.60		Unsaturated	0.0			245.30	1.66	408.04	408.04	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	222.450	5.965	327.5	327.5	534.047	2.683	1.81		Unsaturated	7.6			210.26	1.64	343.97	348.67	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	222.780	5.703	348.8	348.8	518.264	2.562	1.80		Unsaturated	6.6			210.57	1.61	338.82	340.92	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	138.440	4.774	368.8	368.8	313.032	3.453	2.01		Unsaturated	23.8			130.85	1.59	207.47	270.69	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	96.730	3.840	389.4	381.9	214.772	3.978	2.15		Unsaturated	34.7			91.43	1.66	152.19	225.03	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	68.910	2.617	408.6	391.1	151.045	3.810	2.22		Unsaturated	40.3			65.13	1.70	110.72	179.58	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	37.630	2.228	427.8	400.3	81.304	5.955	2.53		Unsaturated	65.6			35.57	1.70	60.46	127.67	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	22.700	1.239	448.2	410.1	66.995	5.513	2.56		Unsaturated	67.7			21.46	1.70	36.47	97.26	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	19.540	1.113	467.4	419.4	56.659	5.767	2.62		Unsaturated	72.7			18.47	1.70	31.40	91.66	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	18.930	1.079	487.8	429.1	53.960	5.775	2.64		Unsaturated	73.9			17.89	1.70	30.42	90.59	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	18.290	1.078	507.0	438.4	51.315	5.977	2.66		Unsaturated	75.9			17.29	1.70	29.39	89.59	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	17.790	1.057	527.4	448.2	49.098	6.030	2.68		Unsaturated	77.2			16.81	1.70	28.59	88.74	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	17.930	0.970	546.6	457.4	48.764	5.491	2.65		Unsaturated	74.9			16.95	1.70	28.81	88.68	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	18.640	0.883	565.8	466.6	49.995	4.810	2.60		Unsaturated	70.9			17.62	1.70	29.95	89.46	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	19.960	0.828	586.2	476.4	52.789	4.209	2.54		Unsaturated	66.2			18.87	1.70	32.07	91.27	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	20.440	0.789	605.4	485.6	53.332	3.920	2.52		Unsaturated	64.2			19.32	1.70	32.84	91.81	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	17.990	0.846	625.8	495.4	46.166	4.787	2.62	plastic	Clay	72.7			17.00	1.47	n.a.	n.a.	0.99	0.368	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.250	25.340	0.916	645.0	504.6	48.422	3.661	2.52		Sand	64.9	28.63		28.63	1.70	48.67	112.32	0.99	0.373	1.100	0.156	0.229	0.61	0.03	0.05
5.410	30.290	0.972	664.2	513.8	57.462	3.245	2.43		Sand	57.7			28.63	1.70	48.67	110.34	0.99	0.378	1.100	0.153	0.222	0.59	0.03	0.05
5.580	26.350	0.921	684.6	523.6	49.416	3.542	2.51		Sand	63.6	28.63		28.63	1.70	48.67	111.99	0.99	0.384	1.100	0.155	0.227	0.59	0.03	0.05
5.740	21.690	0.835	703.8	532.8	52.957	3.911	2.52	plastic	Clay	64.3			20.50	1.44	n.a.	n.a.	0.99	0.389	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	19.580	0.747	724.2	542.6	47.091	3.888	2.55	plastic	Clay	67.0			18.51	1.43	n.a.	n.a.	0.99	0.394	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	18.240	0.695	743.4	551.8	43.271	3.890	2.58	plastic	Clay	69.1			17.24	1.43	n.a.	n.a.	0.99	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	17.700	0.735	762.6	561.0	41.456	4.241	2.62	plastic	Clay	72.3			16.73	1.42	n.a.	n.a.	0.99	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	18.670	0.843	783.0	570.8	43.227	4.609	2.63	plastic	Clay	73.3			17.65	1.41	n.a.	n.a.	0.99	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	22.170	0.947	802.2	580.1	50.908	4.350	2.56	plastic	Clay	67.9			20.95	1.41	n.a.	n.a.	0.99	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	25.770	0.934	822.6	589.8	45.397	3.684	2.55		Sand	66.6			24.36	1.70	41.41	103.37	0.99	0.416	1.100	0.142	0.200	0.48	0.03	0.05
6.890	25.240	0.953	841.8	599.1	44.088	3.839	2.57		Sand	68.3			23.86	1.70	40.56	102.65	0.99	0.420	1.100	0.141	0.198	0.47	0.03	0.05
7.050	22.680	1.046	861.0	608.3	50.330	4.702	2.59	plastic	Clay	70.2			21.44	1.39	n.a.	n.a.	0.99	0.424	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	21.060	1.110	881.4	618.1	46.123	5.385	2.66	plastic	Clay	75.7			19.91	1.38	n.a.	n.a.	0.99	0.428	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	20.710	1.115	900.6	627.3	44.852	5.505	2.67	plastic	Clay	76.9			19.57	1.38	n.a.	n.a.	0.98	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	26.370	1.141	921.0	637.1	56.741	4.405	2.53	plastic	Clay	65.7			24.92	1.37	n.a.	n.a.	0.98	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	34.130	1.059	940.2	646.3	57.566	3.145	2.42		Sand	56.9	38.83	1.56	60.57	1.56	94.41	168.46	0.98	0.439	1.100	0.479	1.005	2.29	0.00	0.00
7.870	31.910	0.965	959.4	655.5	53.374	3.071	2.44		Sand	58.2	38.83	1.56	60.57	1.55	93.93	168.33	0.98	0.443	1.100	0.477	1.000	2.26	0.00	0.00
8.040	32.490	0.928	979.8	665.3	53.940	2.900	2.42		Sand	56.5	38.83	1.56	60.57	1.55	93.59	167.27	0.98	0.446	1.100	0.461	0.959	2.15	0.00	0.00
8.200	38.890	0.624	999.0	674.5	64.269	1.626	2.19		Sand	38.5	38.83	1.56	60.57	1.56	94.63	158.12	0.98	0.450	1.100	0.353	0.686	1.53	0.00	0.00
8.370	41.080	0.651	1019.4	684.3	67.430	1.604	2.17		Sand	36.9		1.56	60.57	1.56	94.38	156.43	0.98	0.453	1.100	0.337	0.648	1.43	0.00	0.00
8.530	39.540	0.732	1038.6	693.5	64.422	1.875	2.23		Sand	41.7	38.83	1.56	60.57	1.54	93.44	159.16	0.98	0.456	1.100	0.363	0.711	1.56	0.00	0.00
8.690	31.990	0.781	1057.8	702.7	51.600	2.483	2.39		Sand	53.9	38.83	1.56	60.57	1.52	92.13	164.36	0.98	0.459	1.100	0.421	0.857	1.87	0.00	0.00
8.860	22.640	0.741																						

CPT No. 3

PGA (A_{max}) 0.57

Total Settlement: 0.55 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRR=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
11.320	8.990	0.348	1373.4	854.2	19.440	4.189	2.86		Clay	91.4			8.50	1.27	n.a.	n.a.	0.97	0.498	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	8.670	0.313	1392.6	863.4	18.469	3.919	2.85		Clay	91.3			8.19	1.27	n.a.	n.a.	0.97	0.500	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	7.650	0.326	1413.0	873.2	15.903	4.695	2.95		Clay	99.3			7.23	1.26	n.a.	n.a.	0.97	0.502	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	7.110	0.290	1432.2	882.5	14.491	4.534	2.98		Clay	100.0			6.72	1.26	n.a.	n.a.	0.97	0.504	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	6.380	0.295	1452.6	892.2	12.673	5.216	3.06		Clay	100.0			6.03	1.26	n.a.	n.a.	0.97	0.506	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	6.310	0.314	1471.8	901.5	12.367	5.633	3.09		Clay	100.0			5.96	1.25	n.a.	n.a.	0.97	0.508	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	7.020	0.390	1491.0	910.7	13.780	6.212	3.08		Clay	100.0			6.64	1.25	n.a.	n.a.	0.97	0.510	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	8.370	0.447	1511.4	920.5	16.544	5.871	3.00		Clay	100.0			7.91	1.25	n.a.	n.a.	0.97	0.511	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	9.550	0.530	1530.6	929.7	18.898	6.038	2.97		Clay	100.0			9.03	1.24	n.a.	n.a.	0.97	0.513	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	10.150	0.564	1551.0	939.5	19.957	6.018	2.95		Clay	99.1			9.59	1.24	n.a.	n.a.	0.96	0.515	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	10.810	0.604	1570.2	948.7	21.134	6.020	2.93		Clay	97.6			10.22	1.24	n.a.	n.a.	0.96	0.516	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	10.920	0.591	1589.4	957.9	21.140	5.836	2.92		Clay	96.9			10.32	1.23	n.a.	n.a.	0.96	0.518	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	10.920	0.590	1609.8	967.7	20.905	5.830	2.93		Clay	97.1			10.32	1.23	n.a.	n.a.	0.96	0.519	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	10.890	0.567	1629.0	976.9	20.627	5.629	2.92		Clay	96.6			10.29	1.23	n.a.	n.a.	0.96	0.521	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	12.160	0.493	1649.4	986.7	22.976	4.350	2.81		Clay	87.9			11.49	1.22	n.a.	n.a.	0.96	0.522	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	12.800	0.397	1668.6	995.9	24.029	3.314	2.72		Clay	80.5			12.10	1.22	n.a.	n.a.	0.96	0.524	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	11.730	0.329	1687.8	1005.1	21.661	3.021	2.73		Clay	81.3			11.09	1.22	n.a.	n.a.	0.96	0.525	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	10.670	0.324	1708.2	1014.9	19.343	3.303	2.79		Clay	86.3			10.09	1.21	n.a.	n.a.	0.96	0.526	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	9.470	0.398	1727.4	1024.2	16.807	4.620	2.93		Clay	97.5			8.95	1.21	n.a.	n.a.	0.96	0.528	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	9.030	0.489	1747.8	1033.9	15.777	5.997	3.03		Clay	100.0			8.53	1.21	n.a.	n.a.	0.96	0.529	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	9.220	0.574	1767.0	1043.2	15.983	6.885	3.06		Clay	100.0			8.71	1.21	n.a.	n.a.	0.96	0.530	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	9.150	0.570	1786.2	1052.4	15.692	6.900	3.07		Clay	100.0			8.65	1.20	n.a.	n.a.	0.96	0.531	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	8.990	0.552	1806.6	1062.2	15.227	6.825	3.07		Clay	100.0			8.50	1.20	n.a.	n.a.	0.96	0.533	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	8.840	0.503	1825.8	1071.4	14.798	6.348	3.06		Clay	100.0			8.36	1.20	n.a.	n.a.	0.95	0.534	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	9.180	0.526	1846.2	1081.2	15.274	6.364	3.05		Clay	100.0			8.68	1.19	n.a.	n.a.	0.95	0.535	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	9.590	0.566	1865.4	1090.4	15.879	6.537	3.05		Clay	100.0			9.06	1.19	n.a.	n.a.	0.95	0.536	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	10.570	0.615	1884.6	1099.6	17.511	6.388	3.01		Clay	100.0			9.99	1.19	n.a.	n.a.	0.95	0.537	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	11.380	0.661	1905.0	1109.4	18.798	6.339	2.99		Clay	100.0			10.76	1.19	n.a.	n.a.	0.95	0.538	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	12.050	0.676	1924.2	1118.6	19.824	6.097	2.96		Clay	99.5			11.39	1.18	n.a.	n.a.	0.95	0.539	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	12.690	0.693	1944.6	1128.4	20.769	5.915	2.93		Clay	97.6			11.99	1.18	n.a.	n.a.	0.95	0.540	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	12.560	0.709	1963.8	1137.6	20.355	6.122	2.95		Clay	99.0			11.87	1.18	n.a.	n.a.	0.95	0.541	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	12.040	0.697	1983.0	1146.8	19.268	6.309	2.98		Clay	100.0			11.38	1.18	n.a.	n.a.	0.95	0.542	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	11.420	0.655	2003.4	1156.6	18.015	6.288	3.00		Clay	100.0			10.79	1.17	n.a.	n.a.	0.95	0.543	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	10.760	0.606	2022.6	1165.8	16.724	6.215	3.02		Clay	100.0			10.17	1.17	n.a.	n.a.	0.95	0.544	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	10.350	0.583	2043.0	1175.6	15.870	6.249	3.04		Clay	100.0			9.78	1.17	n.a.	n.a.	0.95	0.545	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	10.070	0.567	2062.2	1184.9	15.257	6.272	3.05		Clay	100.0			9.52	1.17	n.a.	n.a.	0.95	0.546	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	9.760	0.580	2081.4	1194.1	14.604	6.650	3.08		Clay	100.0			9.22	1.16	n.a.	n.a.	0.95	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	9.510	0.563	2101.8	1203.9	14.053	6.660	3.09		Clay	100.0			8.99	1.16	n.a.	n.a.	0.94	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	10.000	0.555	2121.0	1213.1	14.739	6.211	3.06		Clay	100.0			9.45	1.16	n.a.	n.a.	0.94	0.548	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	11.010	0.525	2141.4	1222.9	16.256	5.284	2.98		Clay	100.0			10.41	1.16	n.a.	n.a.	0.94	0.549	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	11.390	0.521	2160.6	1232.1	16.735	5.054	2.96		Clay	99.6			10.77	1.15	n.a.	n.a.	0.94	0.550	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	11.700	0.495	2179.8	1241.3	17.095	4.669	2.93		Clay	97.3			11.06	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	11.440	0.489	2200.2	1251.1	16.529	4.725	2.94		Clay	98.4			10.81	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	11.450	0.495	2219.4	1260.3	16.409	4.790	2.95		Clay	98.9			10.82	1.15	n.a.	n.a.	0.94	0.552	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	11.900	0.497	2239.8	1270.1	16.975	4.608	2.93		Clay	97.1			11.25	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	12.240	0.494	2259.0	1279.3	17.369	4.445	2.91		Clay	95.7			11.57	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	12.030	0.491	2278.2	1288.5	16.904	4.508	2.92		Clay	96.8			11.37	1.14	n.a.	n.a.	0.94	0.554	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	12.030	0.445	2298.6	1298.3	16.761	4.093	2.90		Clay	94.9			11.37	1.14	n.a.	n.a.	0.94	0.555	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	11.830	0.419	2317.8	1307.5	16.322	3.928	2.90		Clay	94.7			11.18	1.14	n.a.	n.a.	0.94	0.555	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	11.330	0.409	2338.2	1317.3	15.426	4.021	2.92		Clay	96.7			10.71	1.13	n.a.	n.a.	0.94	0.556	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	11.430	0.423	2357.4	1326.6	15.456	4.123	2.93		Clay	97.2			10.80	1.13	n.a.	n.a.	0.94	0.556	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	12.230	0.375	2377.8	1336.3	16.524	3.400	2.85		Clay	91.2			11.56	1.13	n.a.	n.a.	0.93	0.557	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	11.950	0.388	2397.0	1345.6	15.981	3.605	2.88		Clay	93.4			11.29	1.13	n.a.	n.a.	0.93	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	10.860	0.431	2416.2	1354.8	14.249	4.461	2.98		Clay	100.0			10.26	1.12	n.a.	n.a.	0.93	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	10.780	0.446	2436.6	1364.6	14.014	4.667	2.99		Clay	100.0			10.19	1.12	n.a.	n.a.	0.93	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	10.990	0.455	2455.8	1373.8	14.212	4.665	2.99		Clay	100.0			10.39	1.12	n.a.	n.a.	0.93	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	11.060	0.435	2476.2	1383.6	14.198	4.432	2.98		Clay	10														

CPT No. 3

PGA (A_{max}) 0.57

Total Settlement: 0.55 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRRM=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
22.470	9.800	0.468	2711.4	1496.5	11.286	5.536	3.11		Clay	100.0			9.26	1.10	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	10.100	0.479	2731.8	1506.3	11.597	5.488	3.10		Clay	100.0			9.55	1.09	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	10.410	0.507	2751.0	1515.5	11.923	5.615	3.10		Clay	100.0			9.84	1.09	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	11.140	0.481	2771.4	1525.3	12.790	4.934	3.04		Clay	100.0			10.53	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	11.950	0.439	2790.6	1534.5	13.757	4.163	2.97		Clay	100.0			11.29	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	11.990	0.433	2809.8	1543.7	13.714	4.091	2.97		Clay	100.0			11.33	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	12.460	0.451	2830.2	1553.5	14.219	4.081	2.95		Clay	99.2			11.78	1.08	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	13.720	0.483	2849.4	1562.7	15.736	3.926	2.91		Clay	95.7			12.97	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	14.510	0.524	2869.8	1572.5	16.630	4.008	2.90		Clay	94.6			13.71	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	14.210	0.516	2889.0	1581.7	16.141	4.044	2.91		Clay	95.6			13.43	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	13.320	0.521	2908.2	1590.9	14.917	4.388	2.96		Clay	99.5			12.59	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	13.010	0.507	2928.6	1600.7	14.426	4.392	2.97		Clay	100.0			12.30	1.08	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	13.850	0.550	2947.8	1609.9	15.375	4.444	2.95		Clay	99.0			13.09	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	13.550	0.527	2968.2	1619.7	14.899	4.368	2.96		Clay	99.5			12.81	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	13.110	0.521	2987.4	1629.0	14.262	4.487	2.98		Clay	100.0			12.39	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	12.430	0.479	3006.6	1638.2	13.340	4.387	2.99		Clay	100.0			11.75	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	11.780	0.445	3027.0	1648.0	12.460	4.333	3.01		Clay	100.0			11.13	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	11.530	0.437	3046.2	1657.2	12.077	4.362	3.03		Clay	100.0			10.90	1.07	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	11.860	0.445	3066.6	1667.0	12.390	4.305	3.01		Clay	100.0			11.21	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	12.850	0.501	3085.8	1676.2	13.491	4.433	2.99		Clay	100.0			12.15	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	13.750	0.561	3105.0	1685.4	14.474	4.599	2.98		Clay	100.0			13.00	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	14.640	0.577	3125.4	1695.2	15.429	4.411	2.95		Clay	98.7			13.84	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	13.660	0.540	3144.6	1704.4	14.184	4.467	2.98		Clay	100.0			12.91	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	12.750	0.522	3165.0	1714.2	13.029	4.672	3.02		Clay	100.0			12.05	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	12.340	0.508	3184.2	1723.4	12.473	4.725	3.04		Clay	100.0			11.66	1.06	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	12.770	0.516	3203.4	1732.6	12.892	4.623	3.02		Clay	100.0			12.07	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	13.220	0.503	3223.8	1742.4	13.324	4.336	2.99		Clay	100.0			12.50	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	14.120	0.562	3243.0	1751.6	14.271	4.500	2.98		Clay	100.0			13.35	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	15.580	0.666	3263.4	1761.4	15.837	4.773	2.96		Clay	99.8			14.73	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	19.060	0.984	3282.6	1770.6	19.675	5.650	2.94		Clay	97.9			18.02	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	20.630	0.955	3303.0	1780.4	21.319	5.034	2.88		Clay	93.2			19.50	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	20.960	0.888	3322.2	1789.7	21.567	4.600	2.85		Clay	90.8			19.81	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	18.770	0.755	3341.4	1798.9	19.011	4.413	2.88		Clay	93.2			17.74	1.04	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	15.280	0.570	3361.8	1808.7	15.038	4.189	2.94		Clay	98.3			14.44	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	11.790	0.434	3381.0	1817.9	11.111	4.292	3.05		Clay	100.0			11.14	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	10.120	0.337	3401.4	1827.7	9.213	3.997	3.10		Clay	100.0			9.57	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	9.650	0.296	3420.6	1836.9	8.645	3.733	3.10		Clay	100.0			9.12	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	8.940	0.284	3439.8	1846.1	7.822	3.927	3.15		Clay	100.0			8.45	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	8.590	0.279	3460.2	1855.9	7.393	4.064	3.18		Clay	100.0			8.12	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	8.730	0.277	3479.4	1865.1	7.496	3.963	3.17		Clay	100.0			8.25	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	8.970	0.272	3499.8	1874.9	7.702	3.762	3.15		Clay	100.0			8.48	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	9.040	0.258	3519.0	1884.1	7.728	3.549	3.13		Clay	100.0			8.54	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	8.530	0.251	3538.2	1893.3	7.142	3.718	3.17		Clay	100.0			8.06	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	8.340	0.258	3558.6	1903.1	6.895	3.936	3.20		Clay	100.0			7.88	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	8.730	0.287	3577.8	1912.3	7.259	4.128	3.19		Clay	100.0			8.25	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	9.990	0.306	3598.2	1922.1	8.523	3.732	3.11		Clay	100.0			9.44	1.03	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	11.100	0.297	3617.4	1931.4	9.622	3.194	3.03		Clay	100.0			10.49	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	11.390	0.333	3636.6	1940.6	9.865	3.483	3.04		Clay	100.0			10.77	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	11.640	0.271	3657.0	1950.4	10.061	2.757	2.97		Clay	100.0			11.00	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	13.400	0.305	3676.2	1959.6	11.800	2.635	2.91		Clay	95.5			12.67	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	13.350	0.303	3696.6	1969.4	11.681	2.630	2.91		Clay	95.7			12.62	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	17.050	0.340	3715.8	1978.6	15.357	2.241	2.77		Clay	84.7			16.12	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	17.730	0.388	3735.0	1987.8	15.960	2.447	2.80		Clay	85.4			16.76	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	17.830	0.427	3755.4	1997.6	15.972	2.677	2.78		Clay	87.2			16.85	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	18.040	0.439	3774.6	2006.8	16.098	2.719	2.80		Clay	87.3			17.05	1.01	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	17.950	0.494	3795.0	2016.6	15.920	3.077	2.84		Clay	90.1			16.97	1.01	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	17.730	0.516	3814.2	2025.8	15.621	3.264																		

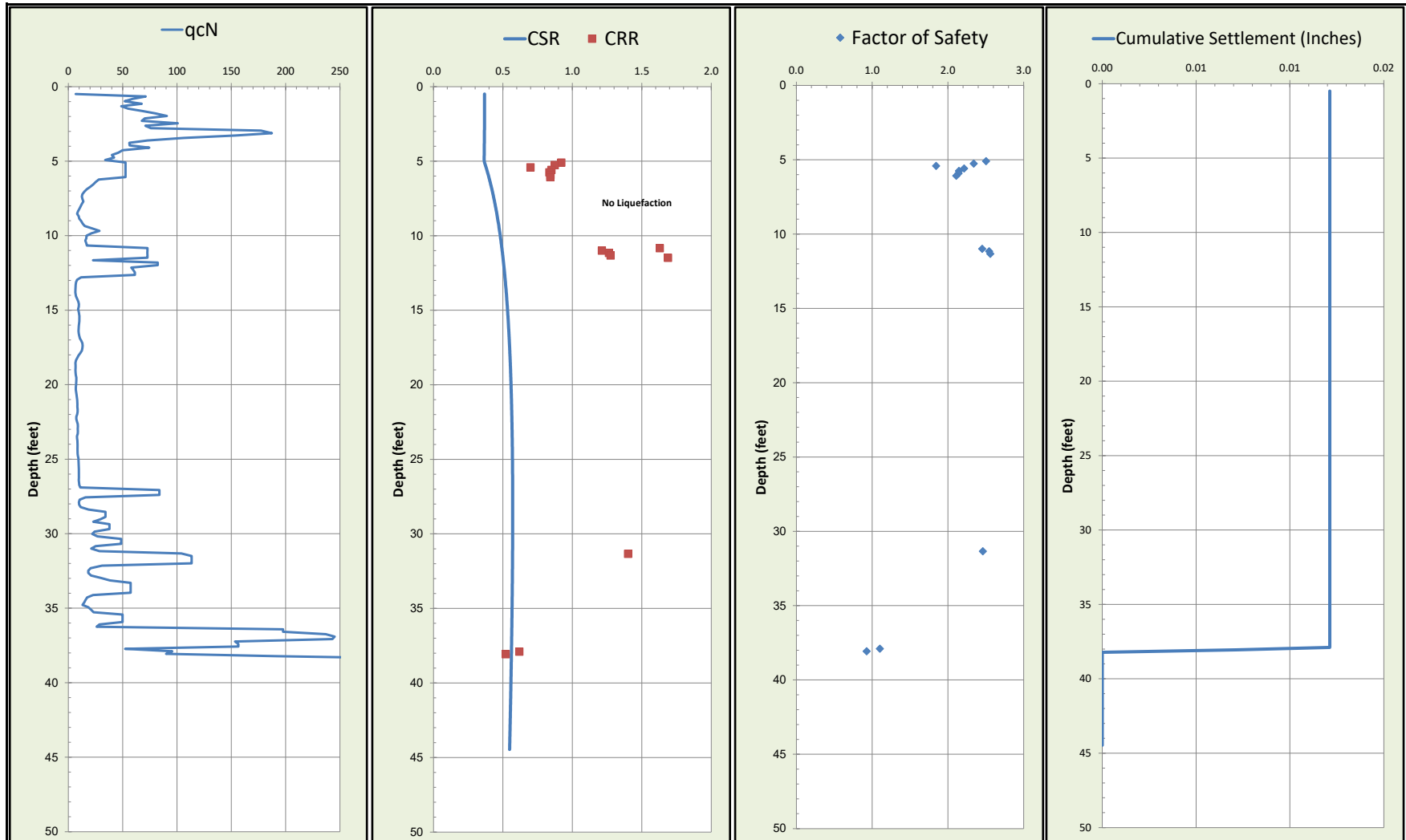
CPT No. 3

PGA (A_{max}) 0.57

Total Settlement: 0.55 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q-N near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q-N	C _N	q _{c1N}	q _{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_{cs} for Sand	CRRm=7.5, $r'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
33.630	15.530	0.460	4050.6	2139.3	12.625	3.403	2.95		Clay	98.7			14.68	1.00	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	15.220	0.474	4069.8	2148.5	12.274	3.595	2.97		Clay	100.0			14.39	1.00	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	15.400	0.489	4090.2	2158.3	12.375	3.663	2.97		Clay	100.0			14.56	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	16.330	0.523	4109.4	2167.5	13.172	3.661	2.95		Clay	99.0			15.43	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	16.650	0.762	4128.6	2176.7	13.401	5.221	3.04		Clay	100.0			15.74	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	17.990	1.757	4149.0	2186.5	14.558	11.042	3.23		Clay	100.0			17.00	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	36.700	2.729	4168.2	2195.7	31.530	7.884	2.89		Clay	94.4			34.69	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	122.560	3.445	4188.6	2205.5	111.527	2.859	2.20		Sand	38.9			115.84	0.99	114.16	182.66	0.86	0.566	0.991	0.810	1.713	3.03	0.00	0.00
34.940	278.100	3.129	4207.8	2214.7	254.984	1.134	1.66		Sand	0.0			262.85	0.99	259.71	259.71	0.86	0.566	0.986	444.231	963.935	1704.43	0.00	0.00
35.100	311.040	3.750	4227.0	2224.0	284.816	1.214	1.65		Sand	0.0			293.99	0.99	290.15	290.15	0.86	0.565	0.985	64207.722	#####	246131.58	0.00	0.00
35.270	314.370	3.993	4247.4	2233.8	287.245	1.279	1.67		Sand	0.0			297.14	0.99	292.92	292.92	0.86	0.565	0.984	#####	#####	425123.87	0.00	0.00
35.430	272.130	4.042	4266.6	2243.0	247.667	1.497	1.76		Sand	3.9			257.21	0.98	253.28	253.30	0.86	0.565	0.983	194.268	419.917	743.35	0.00	0.00
35.600	258.660	3.437	4287.0	2252.8	234.980	1.340	1.74		Sand	2.1			244.48	0.98	240.24	240.24	0.85	0.565	0.981	44.092	95.181	168.56	0.00	0.00
35.760	267.730	3.162	4306.2	2262.0	242.783	1.191	1.69		Sand	0.0			253.05	0.98	248.54	248.54	0.85	0.564	0.980	109.683	236.473	418.95	0.00	0.00
35.930	304.140	3.379	4326.6	2271.8	275.463	1.119	1.63		Sand	0.0			287.47	0.98	282.13	282.13	0.85	0.564	0.979	14436.993	31084.572	55094.45	0.00	0.00
36.090	352.940	3.283	4345.8	2281.0	319.323	0.936	1.53		Sand	0.0			333.59	0.98	327.05	327.05	0.85	0.564	0.977	#####	#####	#####	0.00	0.00
36.250	364.890	2.826	4365.0	2290.2	329.528	0.779	1.46		Sand	0.0			344.89	0.98	337.76	337.76	0.85	0.564	0.976	#####	#####	#####	0.00	0.00
36.420	361.760	2.300	4385.4	2300.0	325.979	0.640	1.40		Sand	0.0			341.93	0.98	334.49	334.49	0.85	0.563	0.975	#####	#####	#####	0.00	0.00
36.580	375.290	1.744	4404.6	2309.2	337.560	0.468	1.30		Sand	0.0			354.72	0.98	346.63	346.63	0.85	0.563	0.974	#####	#####	#####	0.00	0.00
36.750	425.290	2.616	4425.0	2319.0	381.981	0.618	1.35		Sand	0.0			401.98	0.98	392.38	392.38	0.85	0.563	0.973	#####	#####	#####	0.00	0.00
36.910	479.210	4.078	4444.2	2328.2	429.801	0.855	1.42		Sand	0.0			452.94	0.98	441.66	441.66	0.85	0.563	0.971	#####	#####	#####	0.00	0.00
37.070	476.260	5.099	4463.4	2337.4	426.292	1.076	1.51		Sand	0.0			450.15	0.97	438.49	438.49	0.85	0.562	0.970	#####	#####	#####	0.00	0.00
37.240	539.610	4.443	4483.8	2347.2	482.244	0.827	1.38		Sand	0.0			510.03	0.97	496.26	496.26	0.85	0.562	0.969	#####	#####	#####	0.00	0.00
37.400	601.050	3.634	4503.0	2356.4	536.321	0.607	1.25		Sand	0.0			568.10	0.97	552.20	552.20	0.84	0.562	0.968	#####	#####	#####	0.00	0.00
37.570	567.390	3.261	4523.4	2366.2	505.115	0.577	1.25		Sand	0.0			536.29	0.97	520.70	520.70	0.84	0.562	0.966	#####	#####	#####	0.00	0.00
37.730	540.990	3.346	4542.6	2375.4	480.575	0.621	1.28		Sand	0.0			511.33	0.97	495.97	495.97	0.84	0.561	0.965	#####	#####	#####	0.00	0.00
37.890	487.570	3.357	4561.8	2384.7	432.075	0.692	1.35		Sand	0.0			460.84	0.97	446.54	446.54	0.84	0.561	0.964	#####	#####	#####	0.00	0.00
38.060	436.290	3.638	4582.2	2394.5	385.618	0.838	1.45		Sand	0.0			412.37	0.97	399.14	399.14	0.84	0.561	0.963	#####	#####	#####	0.00	0.00
38.220	315.230	2.549	4601.4	2403.7	277.511	0.815	1.53		Sand	0.0			297.95	0.97	288.10	288.10	0.84	0.561	0.962	43202.382	91410.614	163060.24	0.00	0.00
38.390	299.910	1.660	4621.8	2413.5	263.380	0.558	1.43		Sand	0.0			283.47	0.97	273.80	273.80	0.84	0.560	0.961	3537.392	7475.168	13341.36	0.00	0.00
38.550	344.420	1.507	4641.0	2422.7	302.188	0.440	1.31		Sand	0.0			325.54	0.96	314.12	314.12	0.84	0.560	0.959	#####	#####	#####	0.00	0.00
38.710	294.690	1.443	4660.2	2431.9	257.761	0.494	1.40		Sand	0.0			278.53	0.96	268.50	268.50	0.84	0.560	0.958	1551.226	3270.241	5842.44	0.00	0.00
38.880	267.080	1.525	4680.6	2441.7	232.941	0.576	1.48		Sand	0.0			252.44	0.96	242.63	242.63	0.84	0.559	0.957	56.757	119.503	213.61	0.00	0.00
39.040	293.970	1.225	4699.8	2450.9	256.110	0.420	1.36		Sand	0.0			277.85	0.96	267.29	267.29	0.84	0.559	0.956	1295.812	2725.127	4873.71	0.00	0.00
39.210	305.690	1.108	4720.2	2460.7	265.863	0.365	1.31		Sand	0.0			288.93	0.96	277.65	277.65	0.83	0.559	0.955	6663.009	13994.951	25042.91	0.00	0.00
39.370	300.460	1.220	4739.4	2469.9	260.783	0.409	1.34		Sand	0.0			283.99	0.96	272.63	272.63	0.83	0.559	0.954	2937.580	6162.830	11033.72	0.00	0.00
39.530	309.550	1.387	4758.6	2479.1	268.227	0.451	1.36		Sand	0.0			292.58	0.96	280.61	280.61	0.83	0.558	0.952	11045.784	23146.106	41461.99	0.00	0.00
39.700	313.710	1.819	4779.0	2488.9	271.315	0.584	1.43		Sand	0.0			296.51	0.96	284.08	284.08	0.83	0.558	0.951	20493.847	42890.915	76874.94	0.00	0.00
39.860	292.600	2.302	4798.2	2498.1	252.443	0.793	1.55		Sand	0.0			276.56	0.96	264.71	264.71	0.83	0.558	0.950	889.443	1859.317	3334.32	0.00	0.00
40.030	321.780	2.825	4818.6	2507.9	277.274	0.885	1.55		Sand	0.0			304.14	0.96	290.81	290.81	0.83	0.557	0.949	72931.539	#####	273224.99	0.00	0.00
40.190	337.540	2.087	4837.8	2517.1	290.416	0.623	1.43		Sand	0.0			319.04	0.96	304.75	304.75	0.83	0.557	0.948	#####	#####	5287918.87	0.00	0.00
40.350	309.610	1.632	4857.0	2526.4	265.717	0.531	1.41		Sand	0.0			292.64	0.95	279.27	279.27	0.83	0.557	0.947	8762.981	18253.409	32789.23	0.00	0.00
40.520	284.800	1.568	4877.4	2536.2	243.775	0.555	1.45		Sand	0.0			269.19	0.95	256.63	256.63	0.83	0.556	0.946	295.789	615.377	1106.08	0.00	0.00
40.680	269.300	1.597	4896.6	2545.4	229.968	0.598	1.49		Sand	0.0			254.54	0.95	241.81	241.81	0.83	0.556	0.945	51.980	108.018	194.26	0.00	0.00
40.850	274.370	1.399	4917.0	2555.2	233.879	0.515	1.44		Sand	0.0			259.33	0.95	246.34	246.34	0.83	0.556	0.943	85.309	177.061	318.62	0.00	0.00
41.010	282.610	1.372	4936.2	2564.4	240.525	0.490	1.42		Sand	0.0			267.12	0.95	253.91	253.91	0.83	0.555	0.942	209.371	434.058	781.54	0.00	0.00
41.170	259.660	1.344	4955.4	2573.6	220.416	0.522	1.47		Sand	0.0			245.43	0.94	231.91	231.91	0.82	0.555	0.941	19.525	40.432	72.84	0.00	0.00
41.340	335.500	1.583	4975.8	2583.4	284.864	0.475	1.35		Sand	0.0			317.11	0.95	300.84	300.84	0.82	0.555	0.940	#####	#####	2189084.57	0.00	0.00
41.500	342.640	1.543	4995.0	2592.6	290.446	0.454	1.34		Sand	0.0			323.86	0.95	306.96	306.96	0.82	0.554	0.939	#####	#####	8776337.83	0.00	0.00
41.670	333.160	1.566	5015.4	2602.4	281.811	0.474	1.36		Sand	0.0			314.90	0.95	298.17	298.17	0.82	0.554	0.938	#####	#####	1225385.36	0.00	0.00
41.830	307.760	1.496	5034.6	2611.6	259.695	0.490	1.39		Sand	0.0			290.89	0.95	275.18	275.18	0.82	0.554						



Liquefaction Analysis Summary

University Station Residential
Santa Clara, California

Project Number

285-2-2

Figure Number

Figure E4

5/24/2024

CPT No. 4

CPT No. 4

PGA (A_{max}) 0.57

Total Settlement: 0.01 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRRM=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
0.490	7.160	0.352	61.3	61.3	80.436	4.936	2.47		Unsaturated	60.7			6.77	1.70	11.50	63.62	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	75.300	0.585	82.5	82.5	360.249	0.777	1.44		Unsaturated	0.0			71.17	1.70	120.99	120.99	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	62.610	1.260	102.5	102.5	268.657	2.014	1.85		Unsaturated	10.6			59.18	1.70	100.60	110.15	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	54.880	1.552	122.5	122.5	215.344	2.831	2.02		Unsaturated	24.7			51.87	1.70	88.18	133.32	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	71.450	1.914	143.8	143.8	258.841	2.682	1.96		Unsaturated	19.7			67.53	1.70	114.81	152.91	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	51.510	2.257	163.8	163.8	174.736	4.389	2.23		Unsaturated	41.4			48.69	1.70	82.77	145.71	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	58.260	1.950	185.0	185.0	185.937	3.352	2.12		Unsaturated	32.5			55.07	1.70	93.61	150.94	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	72.510	2.154	205.0	205.0	219.876	2.975	2.03		Unsaturated	25.8			68.53	1.70	116.51	168.49	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	84.790	2.758	225.0	225.0	245.442	3.257	2.04		Unsaturated	26.3			80.14	1.70	136.24	192.88	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	95.910	2.818	246.3	246.3	265.393	2.942	1.99		Unsaturated	21.9			90.65	1.70	154.11	203.76	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	74.430	2.668	266.3	266.3	197.969	3.590	2.13		Unsaturated	33.2			70.35	1.70	119.59	183.44	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	71.510	2.918	287.5	287.5	182.998	4.088	2.19		Unsaturated	38.5			67.59	1.70	114.90	183.24	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	106.590	2.729	307.5	307.5	263.900	2.564	1.94		Unsaturated	18.0			100.75	1.70	171.27	211.31	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	75.100	3.382	327.5	327.5	180.036	4.513	2.23		Unsaturated	41.7			70.98	1.70	120.67	193.11	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	80.320	3.976	348.8	348.8	186.593	4.960	2.26		Unsaturated	43.8			75.92	1.70	129.06	205.20	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	187.670	4.803	368.8	368.8	424.497	2.562	1.83		Unsaturated	9.7			177.38	1.59	281.25	292.59	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	198.190	4.631	389.4	381.9	440.499	2.339	1.79		Unsaturated	6.3			187.33	1.57	294.28	295.66	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	163.010	5.029	408.6	391.1	357.917	3.089	1.94		Unsaturated	18.2			154.07	1.56	240.53	289.43	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	112.510	4.930	427.8	400.3	244.017	4.390	2.15		Unsaturated	35.3			106.34	1.58	167.82	244.98	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	77.010	4.414	448.2	410.1	164.850	5.748	2.34		Unsaturated	50.4			72.79	1.70	123.74	202.75	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	59.440	4.728	467.4	419.4	125.704	7.985	2.53		Unsaturated	65.1			56.18	1.70	95.51	172.63	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	59.750	4.927	487.8	429.1	124.891	8.280	2.54		Unsaturated	66.3			56.47	1.70	96.01	173.61	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	78.860	4.981	507.0	438.4	163.236	6.336	2.38		Unsaturated	53.5			74.54	1.66	124.01	204.66	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	52.790	4.910	527.4	448.2	147.148	9.348	2.55		Unsaturated	66.9			49.90	1.70	84.82	159.36	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	48.630	2.310	546.6	457.4	98.310	4.776	2.41		Unsaturated	55.5			45.96	1.70	78.14	147.17	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	42.440	1.938	565.8	466.6	84.855	4.596	2.43		Unsaturated	57.6			40.11	1.70	68.19	135.26	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	44.560	1.706	586.2	476.4	88.181	3.854	2.36		Unsaturated	52.1			42.12	1.70	71.60	137.49	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	35.970	1.349	605.4	485.6	70.373	3.782	2.42		Unsaturated	56.7			34.00	1.70	57.80	121.68	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	31.400	1.723	625.8	495.4	60.727	5.542	2.59		Sand	70.1	52.65		52.65	1.70	89.51	166.22	0.99	0.368	1.100	0.446	0.920	2.50	0.00	0.00
5.250	36.260	1.837	645.0	504.6	69.558	5.112	2.52		Sand	64.9	52.65		52.65	1.70	89.51	164.84	0.99	0.373	1.100	0.427	0.873	2.34	0.00	0.00
5.410	55.700	2.205	664.2	513.8	106.200	3.983	2.32		Sand	48.9			52.65	1.70	89.50	158.64	0.99	0.378	1.100	0.358	0.698	1.85	0.00	0.00
5.580	41.950	2.159	684.6	523.6	79.057	5.190	2.49		Sand	62.5	52.65		52.65	1.70	89.51	164.11	0.99	0.384	1.100	0.418	0.850	2.21	0.00	0.00
5.740	36.730	1.678	703.8	532.8	68.520	4.612	2.49		Sand	62.5	52.65		52.65	1.69	89.11	163.62	0.99	0.389	1.100	0.412	0.834	2.15	0.00	0.00
5.910	32.160	1.503	724.2	542.6	59.350	4.726	2.54		Sand	66.5	52.65		52.65	1.68	88.44	163.91	0.99	0.394	1.100	0.415	0.843	2.14	0.00	0.00
6.070	30.350	1.468	743.4	551.8	55.485	4.898	2.57		Sand	68.9	52.65		52.65	1.67	87.89	163.84	0.99	0.399	1.100	0.415	0.841	2.11	0.00	0.00
6.230	29.730	1.548	762.6	561.0	70.253	5.273	2.53	plastic	Clay	65.5			28.10	1.42	n.a.	n.a.	0.99	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	26.700	1.286	783.0	570.8	62.217	4.888	2.54	plastic	Clay	66.2			25.24	1.41	n.a.	n.a.	0.99	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	24.260	0.989	802.2	580.1	43.071	4.146	2.60	plastic	Clay	70.8			22.93	1.41	n.a.	n.a.	0.99	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	21.120	0.859	822.6	589.8	47.864	4.148	2.57	plastic	Clay	68.2			19.96	1.40	n.a.	n.a.	0.99	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	17.980	0.778	841.8	599.1	40.146	4.432	2.64	plastic	Clay	74.2			16.99	1.40	n.a.	n.a.	0.99	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	15.580	0.732	861.0	608.3	49.811	4.834	2.60		Clay	71.1			14.73	1.39	n.a.	n.a.	0.99	0.424	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	13.710	0.688	881.4	618.1	42.938	5.187	2.67		Clay	76.5			12.96	1.38	n.a.	n.a.	0.99	0.428	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	13.200	0.681	900.6	627.3	40.650	5.338	2.69		Clay	78.5			12.48	1.38	n.a.	n.a.	0.98	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	13.810	0.701	921.0	637.1	41.908	5.251	2.68		Clay	77.3			13.05	1.37	n.a.	n.a.	0.98	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	14.640	0.738	940.2	646.3	43.850	5.211	2.66		Clay	76.1			13.84	1.37	n.a.	n.a.	0.98	0.439	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	13.180	0.704	959.4	655.5	38.749	5.543	2.72		Clay	80.6			12.46	1.36	n.a.	n.a.	0.98	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	11.910	0.611	979.8	665.3	34.330	5.353	2.75		Clay	82.7			11.26	1.36	n.a.	n.a.	0.98	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	10.850	0.464	999.0	674.5	30.690	4.484	2.73		Clay	81.1			10.26	1.35	n.a.	n.a.	0.98	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	9.400	0.419	1019.4	684.3	25.983	4.713	2.79		Clay	86.6			8.88	1.35	n.a.	n.a.	0.98	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	8.510	0.388	1038.6	693.5	23.044	4.856	2.84		Clay	90.3			8.04	1.34	n.a.	n.a.	0.98	0.456	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	10.110	0.417	1057.8	702.7	27.268	4.350	2.76		Clay	83.4			9.56	1.34	n.a.	n.a.	0.98	0.459	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	10.730	0.534	1078.2	712.5	28.605	5.244	2.80		Clay	86.7			10.14	1.33	n.a.	n.a.	0.98	0.462	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	12.530	0.689	1097.4	721.8	33.201	5.752	2.78		Clay	85.2			11.84	1.33	n.a.	n.a.	0.98	0.465	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	13.880	0.868	1117.8	731.5	36.419	6.515	2.79		Clay	86.1			13.12	1.32	n.a.	n.a.	0.98	0.468	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	15.960	1.014</																						

CPT No. 4

PGA (A_{max}) 0.57

Total Settlement: 0.01 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRR=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
11.650	24.080	1.475	1413.0	873.2	53.533	6.308	2.67		Clay	76.4			22.76	1.26	n.a.	n.a.	0.97	0.502	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	46.140	1.906	1432.2	882.5	66.483	4.196	2.47	plastic	Clay	60.7	47.88	1.72	82.35	1.26	n.a.	n.a.	0.97	0.504	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	50.660	1.632	1452.6	892.2	72.681	3.268	2.37	plastic	Clay	52.2		1.72	82.36	1.26	n.a.	n.a.	0.97	0.506	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	35.640	1.461	1471.8	901.5	50.545	4.186	2.55	plastic	Clay	67.2		1.72	57.94	1.25	n.a.	n.a.	0.97	0.508	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	36.750	1.205	1491.0	910.7	51.874	3.347	2.47	plastic	Clay	61.0		1.72	59.74	1.25	n.a.	n.a.	0.97	0.510	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	37.690	0.794	1511.4	920.5	52.929	2.150	2.34	plastic	Clay	49.9		1.72	61.27	1.25	n.a.	n.a.	0.97	0.511	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	20.690	0.486	1530.6	929.7	28.412	2.438	2.58	plastic	Clay	69.3	35.62	1.72	61.27	1.24	n.a.	n.a.	0.97	0.513	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	12.370	0.421	1551.0	939.5	24.683	3.633	2.74		Clay	81.9			11.69	1.24	n.a.	n.a.	0.96	0.515	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	8.600	0.376	1570.2	948.7	16.475	4.806	2.95		Clay	98.9			8.13	1.24	n.a.	n.a.	0.96	0.516	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	7.510	0.360	1589.4	957.9	14.021	5.365	3.03		Clay	100.0			7.10	1.23	n.a.	n.a.	0.96	0.518	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	7.230	0.353	1609.8	967.7	13.279	5.500	3.06		Clay	100.0			6.83	1.23	n.a.	n.a.	0.96	0.519	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	6.940	0.326	1629.0	976.9	12.540	5.314	3.07		Clay	100.0			6.56	1.23	n.a.	n.a.	0.96	0.521	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	6.970	0.289	1649.4	986.7	12.456	4.695	3.04		Clay	100.0			6.59	1.22	n.a.	n.a.	0.96	0.522	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	6.980	0.289	1668.6	995.9	12.342	4.701	3.04		Clay	100.0			6.60	1.22	n.a.	n.a.	0.96	0.524	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	6.990	0.318	1687.8	1005.1	12.229	5.171	3.07		Clay	100.0			6.61	1.22	n.a.	n.a.	0.96	0.525	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	7.650	0.395	1708.2	1014.9	13.392	5.817	3.07		Clay	100.0			7.23	1.21	n.a.	n.a.	0.96	0.526	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	8.740	0.502	1727.4	1024.2	15.381	6.376	3.05		Clay	100.0			8.26	1.21	n.a.	n.a.	0.96	0.528	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	9.830	0.556	1747.8	1033.9	17.324	6.208	3.01		Clay	100.0			9.29	1.21	n.a.	n.a.	0.96	0.529	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	10.310	0.472	1767.0	1043.2	18.073	5.002	2.93		Clay	97.3			9.74	1.21	n.a.	n.a.	0.96	0.530	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	10.150	0.408	1786.2	1052.4	17.592	4.411	2.90		Clay	95.2			9.59	1.20	n.a.	n.a.	0.96	0.531	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	9.530	0.419	1806.6	1062.2	16.244	4.858	2.96		Clay	99.5			9.01	1.20	n.a.	n.a.	0.96	0.533	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	10.020	0.436	1825.8	1071.4	17.001	4.786	2.94		Clay	98.0			9.47	1.20	n.a.	n.a.	0.95	0.534	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	10.400	0.470	1846.2	1081.2	17.531	4.957	2.94		Clay	97.9			9.83	1.19	n.a.	n.a.	0.95	0.535	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	10.940	0.513	1865.4	1090.4	18.355	5.127	2.93		Clay	97.5			10.34	1.19	n.a.	n.a.	0.95	0.536	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	10.860	0.565	1884.6	1099.6	18.039	5.701	2.97		Clay	100.0			10.26	1.19	n.a.	n.a.	0.95	0.537	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	10.690	0.578	1905.0	1109.4	17.555	5.934	2.99		Clay	100.0			10.10	1.19	n.a.	n.a.	0.95	0.538	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	10.420	0.553	1924.2	1118.6	16.910	5.847	3.00		Clay	100.0			9.85	1.18	n.a.	n.a.	0.95	0.539	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	10.140	0.527	1944.6	1128.4	16.249	5.743	3.00		Clay	100.0			9.58	1.18	n.a.	n.a.	0.95	0.540	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	10.030	0.505	1963.8	1137.6	15.907	5.583	3.00		Clay	100.0			9.48	1.18	n.a.	n.a.	0.95	0.541	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	9.960	0.516	1983.0	1146.8	15.640	5.752	3.02		Clay	100.0			9.41	1.18	n.a.	n.a.	0.95	0.542	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	10.120	0.532	2003.4	1156.6	15.767	5.829	3.02		Clay	100.0			9.57	1.17	n.a.	n.a.	0.95	0.543	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	10.650	0.547	2022.6	1165.8	16.535	5.675	2.99		Clay	100.0			10.07	1.17	n.a.	n.a.	0.95	0.544	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	11.360	0.588	2043.0	1175.6	17.588	5.687	2.97		Clay	100.0			10.74	1.17	n.a.	n.a.	0.95	0.545	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	12.720	0.618	2062.2	1184.9	19.730	5.289	2.92		Clay	96.3			12.02	1.17	n.a.	n.a.	0.95	0.546	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	13.720	0.666	2081.4	1194.1	21.237	5.253	2.89		Clay	94.3			12.97	1.16	n.a.	n.a.	0.95	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	13.880	0.676	2101.8	1203.9	21.313	5.270	2.89		Clay	94.3			13.12	1.16	n.a.	n.a.	0.94	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	13.720	0.662	2121.0	1213.1	20.872	5.230	2.90		Clay	94.6			12.97	1.16	n.a.	n.a.	0.94	0.548	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	13.180	0.582	2141.4	1222.9	19.805	4.802	2.89		Clay	94.0			12.46	1.16	n.a.	n.a.	0.94	0.549	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	11.720	0.436	2160.6	1232.1	17.271	4.101	2.89		Clay	94.1			11.08	1.15	n.a.	n.a.	0.94	0.550	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	9.970	0.381	2179.8	1241.3	14.308	4.286	2.96		Clay	100.0			9.42	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	8.710	0.348	2200.2	1251.1	12.165	4.578	3.04		Clay	100.0			8.23	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	7.370	0.342	2219.4	1260.3	9.935	5.455	3.15		Clay	100.0			6.97	1.15	n.a.	n.a.	0.94	0.552	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	6.960	0.325	2239.8	1270.1	9.196	5.570	3.19		Clay	100.0			6.58	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	6.990	0.336	2259.0	1279.3	9.162	5.728	3.19		Clay	100.0			6.61	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	7.010	0.351	2278.2	1288.5	9.113	5.974	3.21		Clay	100.0			6.63	1.14	n.a.	n.a.	0.94	0.554	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	6.950	0.349	2298.6	1298.3	8.936	6.022	3.22		Clay	100.0			6.57	1.14	n.a.	n.a.	0.94	0.555	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	7.060	0.379	2317.8	1307.5	9.026	6.426	3.23		Clay	100.0			6.67	1.14	n.a.	n.a.	0.94	0.555	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	7.340	0.398	2338.2	1317.3	9.369	6.454	3.22		Clay	100.0			6.94	1.13	n.a.	n.a.	0.94	0.556	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	7.790	0.403	2357.4	1326.6	9.968	6.088	3.18		Clay	100.0			7.36	1.13	n.a.	n.a.	0.94	0.556	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	7.830	0.388	2377.8	1336.3	9.939	5.845	3.17		Clay	100.0			7.40	1.13	n.a.	n.a.	0.93	0.557	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	7.630	0.320	2397.0	1345.6	9.560	4.971	3.14		Clay	100.0			7.21	1.13	n.a.	n.a.	0.93	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	7.540	0.255	2416.2	1354.8	9.348	4.027	3.09		Clay	100.0			7.13	1.12	n.a.	n.a.	0.93	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	7.260	0.226	2436.6	1364.6	8.855	3.732	3.09		Clay	100.0			6.86	1.12	n.a.	n.a.	0.93	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	7.310	0.259	2455.8	1373.8	8.855	4.250	3.13		Clay	100.0			6.91	1.12	n.a.	n.a.	0.93	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	7.530	0.332	2476.2	1383.6	9.095	5.270	3.17		Clay	100.0			7.12	1.12	n.a.	n.a.	0.93	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	7.950	0.403	2495.4	1392.8	9.624	6.014	3.19		Clay	100.0			7.51	1.12	n.a.	n.a.	0.93	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	8.460	0.420	2514.6	1402.0	10.275	5																		

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	q-N near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q-N	C _N	q _{c1N}	q _{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_{cs} for Sand	CRRM=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
22.800	9.330	0.484	2751.0	1515.5	10.498	6.085	3.16		Clay	100.0			8.82	1.09	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	9.200	0.475	2771.4	1525.3	10.246	6.080	3.17		Clay	100.0			8.70	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	9.240	0.453	2790.6	1534.5	10.225	5.778	3.16		Clay	100.0			8.73	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	9.130	0.414	2809.8	1543.7	10.009	5.359	3.15		Clay	100.0			8.63	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	8.430	0.400	2830.2	1553.5	9.031	5.696	3.20		Clay	100.0			7.97	1.08	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	8.510	0.407	2849.4	1562.7	9.068	5.744	3.20		Clay	100.0			8.04	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	8.940	0.427	2869.8	1572.5	9.545	5.689	3.18		Clay	100.0			8.45	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	8.880	0.418	2889.0	1581.7	9.402	5.618	3.18		Clay	100.0			8.39	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	8.870	0.406	2908.2	1590.9	9.323	5.468	3.18		Clay	100.0			8.38	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	8.990	0.396	2928.6	1600.7	9.403	5.267	3.16		Clay	100.0			8.50	1.08	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	8.940	0.405	2947.8	1609.9	9.275	5.429	3.18		Clay	100.0			8.45	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	9.020	0.441	2968.2	1619.7	9.305	5.847	3.19		Clay	100.0			8.53	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	9.240	0.478	2987.4	1629.0	9.511	6.164	3.20		Clay	100.0			8.73	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	9.760	0.497	3006.6	1638.2	10.080	6.015	3.17		Clay	100.0			9.22	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	9.900	0.502	3027.0	1648.0	10.178	5.989	3.17		Clay	100.0			9.36	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	9.930	0.517	3046.2	1657.2	10.146	6.153	3.18		Clay	100.0			9.39	1.07	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	10.200	0.529	3066.6	1667.0	10.398	6.103	3.17		Clay	100.0			9.64	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	10.260	0.530	3085.8	1676.2	10.401	6.074	3.17		Clay	100.0			9.70	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	10.170	0.517	3105.0	1685.4	10.226	5.995	3.17		Clay	100.0			9.61	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	10.170	0.476	3125.4	1695.2	10.155	5.535	3.15		Clay	100.0			9.61	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	10.420	0.442	3144.6	1704.4	10.382	4.990	3.11		Clay	100.0			9.85	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	10.320	0.397	3165.0	1714.2	10.194	4.545	3.10		Clay	100.0			9.75	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	10.150	0.388	3184.2	1723.4	9.931	4.537	3.10		Clay	100.0			9.59	1.06	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	10.420	0.421	3203.4	1732.6	10.179	4.778	3.11		Clay	100.0			9.85	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	10.620	0.659	3223.8	1742.4	10.340	7.320	3.22		Clay	100.0			10.04	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	11.710	0.806	3243.0	1751.6	11.519	7.986	3.21		Clay	100.0			11.07	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	36.800	0.839	3263.4	1761.4	36.433	2.385	2.49	plastic	Clay	62.1	47.1	1.78	83.84	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	49.830	0.797	3282.6	1770.6	49.791	1.653	2.28	plastic	Clay	45.6		1.78	83.83	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	29.930	0.605	3303.0	1780.4	29.138	2.140	2.53	plastic	Clay	65.8	47.1	1.78	83.84	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	16.690	0.451	3322.2	1789.7	16.795	3.001	2.81	plastic	Clay	88.1			15.78	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	10.990	0.293	3341.4	1798.9	10.361	3.146	3.00	plastic	Clay	100.0			10.39	1.04	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	10.300	0.283	3361.8	1808.7	9.531	3.279	3.04	plastic	Clay	100.0			9.74	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	10.500	0.455	3381.0	1817.9	9.692	5.161	3.15	plastic	Clay	100.0			9.92	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	12.070	0.601	3401.4	1827.7	11.347	5.798	3.13	plastic	Clay	100.0			11.41	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	19.690	0.748	3420.6	1836.9	19.576	4.159	2.85	plastic	Clay	91.1			18.61	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	35.430	0.759	3439.8	1846.1	34.112	2.252	2.50	plastic	Clay	62.6	34.23		34.23	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	36.220	0.835	3460.2	1855.9	34.809	2.420	2.51	plastic	Clay	63.6			34.23	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	35.000	0.969	3479.4	1865.1	33.485	2.914	2.57	plastic	Clay	68.9	34.23		34.23	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	31.210	1.095	3499.8	1874.9	31.426	3.718	2.66	plastic	Clay	76.1			29.50	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	24.340	0.938	3519.0	1884.1	23.969	4.152	2.78	plastic	Clay	85.7			23.01	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	30.280	0.631	3538.2	1893.3	28.488	2.215	2.55	plastic	Clay	67.1	37.92		37.92	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	40.120	0.565	3558.6	1903.1	38.212	1.473	2.34	plastic	Clay	50.5			37.92	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	32.350	0.600	3577.8	1912.3	30.385	1.965	2.50	plastic	Clay	62.8	37.92		37.92	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	25.590	0.756	3598.2	1922.1	24.755	3.176	2.70	plastic	Clay	78.8			24.19	1.03	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	23.280	0.980	3617.4	1931.4	22.234	4.566	2.84	plastic	Clay	89.8			22.00	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	28.310	1.476	3636.6	1940.6	27.303	5.573	2.83	plastic	Clay	89.3			26.76	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	51.190	1.626	3657.0	1950.4	48.596	3.293	2.49	plastic	Clay	62.2	48.68		48.68	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	51.500	1.449	3676.2	1959.6	48.777	2.917	2.45	plastic	Clay	59.2			48.68	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	35.390	0.955	3696.6	1969.4	32.862	2.847	2.57	plastic	Clay	68.8	48.68		48.68	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	26.740	0.966	3715.8	1978.6	25.151	3.884	2.75		Clay	82.9			25.27	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	22.310	1.535	3735.0	1987.8	20.568	7.510	3.01		Clay	100.0			21.09	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	30.260	2.714	3755.4	1997.6	28.417	9.561	2.98		Clay	100.0			28.60	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	110.070	3.896	3774.6	2006.8	104.997	3.601	2.29		Sand	46.4			104.04	1.02	106.04	178.08	0.88	0.569	1.011	0.673	1.401	2.46	0.00	0.00
31.500	120.070	3.867	3795.0	2016.6	114.414	3.272	2.24		Sand	41.9			113.49	1.02	115.40	186.73	0.88	0.569	1.011	0.966	2.149	3.78	0.00	0.00
31.660	92.380	3.802	3814.2	2025.8	87.396	4.203	2.39		Sand	54.6	113.49		113.49	1.01	115.17	193.95	0.88	0.569	1.011	1.366	3.038	5.34	0.00	0.00
31.820	85.290	3.270	3833.4	2035.0	80.355	3.922	2.40		Sand	54.6														

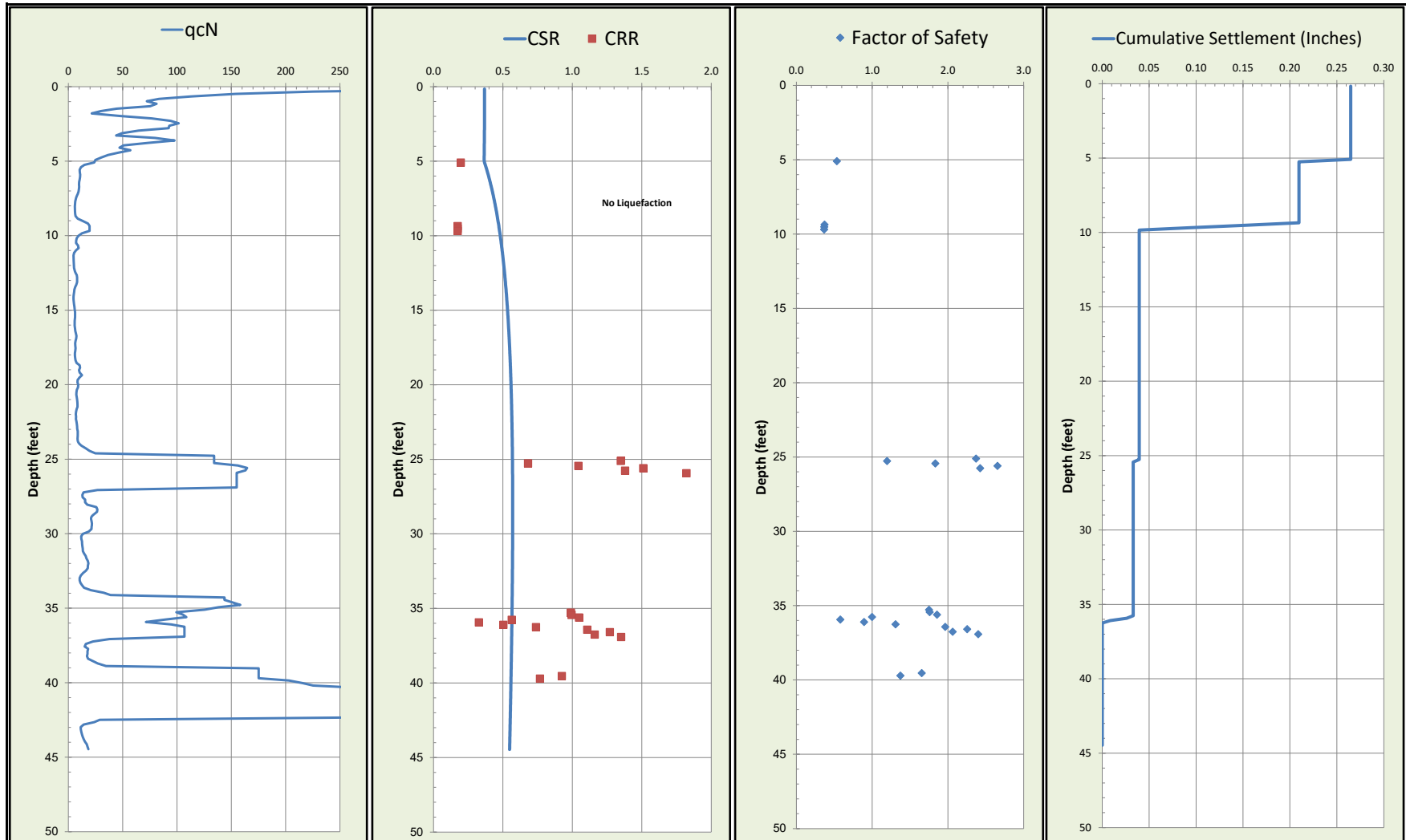
CPT No. 4

PGA (A_{max}) 0.57

Total Settlement: 0.01 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	q-N near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q-N	C _N	q _{c1N}	q _{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K _s for Sand	CRRm=7.5, $r'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
33.960	34.940	0.841	4090.2	2158.3	30.785	2.557	2.56	plastic	Clay	68.2	57.39		57.39	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	24.100	0.717	4109.4	2167.5	20.342	3.251	2.77	plastic	Clay	84.6			22.78	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	18.310	0.566	4128.6	2176.7	14.927	3.484	2.89	plastic	Clay	94.5			17.31	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	16.850	0.457	4149.0	2186.5	13.515	3.090	2.90	plastic	Clay	94.8			15.93	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	15.610	0.578	4168.2	2195.7	12.320	4.271	3.01	plastic	Clay	100.0			14.75	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	13.840	0.721	4188.6	2205.5	10.651	6.140	3.16	plastic	Clay	100.0			13.08	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	19.390	0.883	4207.8	2214.7	15.610	5.106	2.98	plastic	Clay	100.0			18.33	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	22.200	0.888	4227.0	2224.0	18.064	4.421	2.89	plastic	Clay	94.6			20.98	0.99	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	24.580	0.814	4247.4	2233.8	20.106	3.623	2.80	plastic	Clay	87.3			23.23	0.99	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	31.230	0.618	4266.6	2243.0	26.712	2.122	2.56	plastic	Clay	68.0	49.87		49.87	0.98	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	35.680	0.603	4287.0	2252.8	30.721	1.798	2.47	plastic	Clay	60.7	49.87		49.87	0.98	n.a.	n.a.	0.85	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	52.760	0.815	4306.2	2262.0	46.263	1.610	2.30	plastic	Clay	47.1			49.87	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	41.080	0.932	4326.6	2271.8	35.500	2.394	2.50	plastic	Clay	62.9	49.87		49.87	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	30.280	1.143	4345.8	2281.0	24.645	4.067	2.77		Clay	84.5			28.62	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	27.600	1.004	4365.0	2290.2	22.197	3.948	2.79		Clay	86.6			26.09	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	92.840	1.183	4385.4	2300.0	82.180	1.305	2.05		Sand	27.0	197.66		197.66	0.98	193.36	261.88	0.85	0.563	0.975	597.278	1281.144	2273.59	0.00	0.00
36.580	209.120	2.013	4404.6	2309.2	187.214	0.973	1.70		Sand	0.0			197.66	0.97	191.86	191.86	0.85	0.563	0.979	1.230	2.650	4.71	0.00	0.00
36.750	250.700	4.113	4425.0	2319.0	224.350	1.655	1.82		Sand	8.8			236.96	0.97	230.91	237.95	0.85	0.563	0.973	34.920	74.713	132.71	0.00	0.00
36.910	259.350	4.499	4444.2	2328.2	231.691	1.750	1.83		Sand	9.7			245.13	0.97	238.91	249.21	0.85	0.563	0.971	118.593	253.424	450.34	0.00	0.00
37.070	257.100	5.543	4463.4	2337.4	229.020	2.175	1.91		Sand	16.0			243.01	0.97	236.71	275.77	0.85	0.562	0.970	4873.951	10402.539	18493.71	0.00	0.00
37.240	162.390	4.306	4483.8	2347.2	143.720	2.689	2.11		Sand	31.6			153.49	0.97	148.66	216.60	0.85	0.562	0.969	5.523	11.772	20.94	0.00	0.00
37.400	97.660	3.151	4503.0	2356.4	85.454	3.302	2.32		Sand	48.7	156.49		156.49	0.97	151.79	237.20	0.84	0.562	0.968	32.402	68.982	122.75	0.00	0.00
37.570	52.320	1.989	4523.4	2366.2	44.742	3.974	2.57		Sand	68.8	156.49		156.49	0.97	151.79	246.27	0.84	0.562	0.966	84.646	179.978	320.42	0.00	0.00
37.730	55.340	2.469	4542.6	2375.4	44.681	4.652	2.62		Clay	72.8			52.31	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	101.180	2.867	4561.8	2384.7	88.054	2.899	2.27		Sand	44.7			95.63	0.95	91.28	158.49	0.84	0.561	0.979	0.356	0.618	1.10	0.01	0.00
38.060	95.200	2.865	4582.2	2394.5	82.552	3.084	2.31		Sand	47.8			89.98	0.95	85.66	153.21	0.84	0.561	0.980	0.311	0.520	0.93	0.01	0.01
38.220	201.810	3.033	4601.4	2403.7	176.928	1.520	1.86		Sand	11.8			190.75	0.96	182.89	199.76	0.84	0.561	0.967	1.864	3.964	7.07	0.00	0.00
38.390	349.770	3.356	4621.8	2413.5	307.507	0.966	1.55		Sand	0.0			330.60	0.97	319.32	319.32	0.84	0.560	0.961	#####	#####	#####	0.00	0.00
38.550	430.910	4.003	4641.0	2422.7	378.587	0.934	1.49		Sand	0.0			407.29	0.96	393.00	393.00	0.84	0.560	0.959	#####	#####	#####	0.00	0.00
38.710	444.320	3.322	4660.2	2431.9	389.683	0.752	1.41		Sand	0.0			419.96	0.96	404.83	404.83	0.84	0.560	0.958	#####	#####	#####	0.00	0.00
38.880	428.050	2.002	4680.6	2441.7	374.577	0.470	1.26		Sand	0.0			404.58	0.96	389.59	389.59	0.84	0.559	0.957	#####	#####	#####	0.00	0.00
39.040	395.080	1.985	4699.8	2450.9	344.908	0.505	1.31		Sand	0.0			373.42	0.96	359.22	359.22	0.84	0.559	0.956	#####	#####	#####	0.00	0.00
39.210	375.110	1.917	4720.2	2460.7	326.709	0.514	1.33		Sand	0.0			354.55	0.96	340.71	340.71	0.83	0.559	0.955	#####	#####	#####	0.00	0.00
39.370	347.530	1.479	4739.4	2469.9	301.962	0.428	1.31		Sand	0.0			328.48	0.96	315.35	315.35	0.83	0.559	0.954	#####	#####	#####	0.00	0.00
39.530	338.260	1.490	4758.6	2479.1	293.297	0.444	1.33		Sand	0.0			319.72	0.96	306.63	306.63	0.83	0.558	0.952	#####	#####	8192432.06	0.00	0.00
39.700	352.240	1.287	4779.0	2488.9	304.894	0.368	1.26		Sand	0.0			332.93	0.96	318.97	318.97	0.83	0.558	0.951	#####	#####	#####	0.00	0.00
39.860	395.480	1.568	4798.2	2498.1	341.937	0.399	1.25		Sand	0.0			373.80	0.96	357.78	357.78	0.83	0.558	0.950	#####	#####	#####	0.00	0.00
40.030	450.980	1.540	4818.6	2507.9	389.444	0.343	1.16		Sand	0.0			426.26	0.96	407.57	407.57	0.83	0.557	0.949	#####	#####	#####	0.00	0.00
40.190	457.950	2.309	4837.8	2517.1	394.763	0.507	1.27		Sand	0.0			432.84	0.96	413.47	413.47	0.83	0.557	0.948	#####	#####	#####	0.00	0.00
40.350	484.590	2.395	4857.0	2526.4	417.078	0.497	1.25		Sand	0.0			458.02	0.95	437.10	437.10	0.83	0.557	0.947	#####	#####	#####	0.00	0.00
40.520	456.680	2.633	4877.4	2536.2	392.167	0.580	1.32		Sand	0.0			431.64	0.95	411.50	411.50	0.83	0.556	0.946	#####	#####	#####	0.00	0.00
40.680	413.170	1.883	4896.6	2545.4	353.952	0.459	1.27		Sand	0.0			390.52	0.95	371.94	371.94	0.83	0.556	0.945	#####	#####	#####	0.00	0.00
40.850	420.760	2.126	4917.0	2555.2	359.793	0.508	1.30		Sand	0.0			397.69	0.95	378.39	378.39	0.83	0.556	0.943	#####	#####	#####	0.00	0.00
41.010	482.900	2.199	4936.2	2564.4	412.490	0.458	1.23		Sand	0.0			456.43	0.95	433.86	433.86	0.83	0.555	0.942	#####	#####	#####	0.00	0.00
41.170	474.350	3.271	4955.4	2573.6	404.415	0.693	1.37		Sand	0.0			448.35	0.95	425.78	425.78	0.82	0.555	0.941	#####	#####	#####	0.00	0.00
41.340	542.800	3.246	4975.8	2583.4	462.192	0.601	1.28		Sand	0.0			513.04	0.95	486.73	486.73	0.82	0.555	0.940	#####	#####	#####	0.00	0.00
41.500	509.980	3.699	4995.0	2592.6	433.337	0.729	1.37		Sand	0.0			482.02	0.95	456.87	456.87	0.82	0.554	0.939	#####	#####	#####	0.00	0.00
41.670	487.430	3.881	5015.4	2602.4	413.293	0.800	1.41		Sand	0.0			460.71	0.95	436.23	436.23	0.82	0.554	0.938	#####	#####	#####	0.00	0.00
41.830	493.020	3.111	5034.6	2611.6	417.311	0.634	1.33		Sand	0.0			465.99	0.95	440.83	440.83	0.82	0.554	0.937	#####	#####	#####	0.00	0.00
41.990	508.380	2.631	5053.8	2620.8	429.613	0.520	1.26		Sand	0.0			480.51	0.95	454.14	454.14	0.82	0.553	0.936	#####	#####	#####	0.00	0.00
42.160	515.160	2.326	5074.2	2630.6	434.552	0.454	1.21		Sand	0.0			486.92	0.94	459.74	459.74	0.82	0.553	0.935	#####	#####	#####	0.00	0.00
42.320	475.130	3.852	5093.4	2639.8	399.910	0.815	1.43		Sand	0.0			449.08	0.94	423.63	423.63	0.82	0.553	0.934	#####	#####	#####	0.00	0.00
42.490	479.260	3.057	5113.8	2649.6	402.650	0.641	1.34		Sand	0.0			452.99	0										



Liquefaction Analysis Summary

University Station Residential
Santa Clara, California

Project Number

285-2-2

Figure Number

Figure E5

5/24/2024

CPT No. 5

CPT No. 5

PGA (A_{max}) 0.57

Total Settlement: 0.26 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted $q-N$	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	$CRR_{m=7.5}$ $\sigma'_{vc} = 1 \text{ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
0.160	406.180	0.923	20.0	20.0	3948.799	0.227	0.59		Unsaturated	0.0			383.91	1.70	652.65	652.65	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	238.450	1.457	41.3	41.3	1614.061	0.611	1.04		Unsaturated	0.0			225.38	1.70	383.14	383.14	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	162.990	1.769	61.3	61.3	905.312	1.086	1.36		Unsaturated	0.0			154.05	1.70	261.89	261.89	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	119.380	1.935	82.5	82.5	571.251	1.621	1.60		Unsaturated	0.0			112.84	1.70	191.82	191.82	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	88.170	1.733	102.5	102.5	378.424	1.967	1.76		Unsaturated	3.6			83.34	1.70	141.67	141.68	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	76.390	1.751	122.5	122.5	299.842	2.293	1.87		Unsaturated	12.3			72.20	1.70	122.74	138.59	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	85.910	1.909	143.8	143.8	311.278	2.224	1.85		Unsaturated	10.7			81.20	1.70	138.04	149.16	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	79.690	1.956	163.8	163.8	270.482	2.457	1.92		Unsaturated	16.3			75.32	1.70	128.05	157.70	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	47.220	1.584	185.0	185.0	150.647	3.361	2.17		Unsaturated	36.8			44.63	1.70	75.87	133.56	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	31.710	1.554	205.0	205.0	95.981	4.916	2.42		Unsaturated	56.8			29.97	1.70	50.95	112.97	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	22.790	2.187	225.0	225.0	102.906	9.645	2.64		Unsaturated	74.4			21.54	1.70	36.62	98.71	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	50.330	3.217	246.3	246.3	139.106	6.408	2.42		Unsaturated	56.8			47.57	1.70	80.87	151.14	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	81.260	4.628	266.3	266.3	216.168	5.704	2.28		Unsaturated	45.3			76.81	1.70	130.57	208.20	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	99.590	5.139	287.5	287.5	255.001	5.167	2.21		Unsaturated	39.5			94.13	1.70	160.02	240.08	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	107.470	4.988	307.5	307.5	266.082	4.648	2.16		Unsaturated	35.6			101.58	1.68	170.82	248.97	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	98.370	4.786	327.5	327.5	235.942	4.873	2.20		Unsaturated	39.1			92.98	1.70	157.79	236.85	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	97.750	4.246	348.8	348.8	227.173	4.351	2.17		Unsaturated	36.3			92.99	1.69	155.81	231.45	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	68.500	3.312	368.8	368.8	154.677	4.849	2.30		Unsaturated	46.7			64.74	1.70	110.07	183.32	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	52.300	2.287	389.4	381.9	115.924	4.388	2.33		Unsaturated	49.7			49.43	1.70	84.04	152.14	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	46.530	2.243	408.6	391.1	101.844	4.841	2.40		Unsaturated	55.1			43.98	1.70	74.76	142.73	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	84.500	3.169	427.8	400.3	183.152	3.760	2.16		Unsaturated	36.1			79.87	1.70	135.78	206.52	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	103.510	3.364	448.2	410.1	221.743	3.257	2.07		Unsaturated	28.2			97.84	1.63	159.68	224.27	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	78.540	3.299	467.4	419.4	166.257	4.213	2.23		Unsaturated	41.2			74.23	1.70	126.20	199.62	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	53.810	2.707	487.8	429.1	112.424	5.054	2.39		Unsaturated	54.2			50.86	1.70	86.46	157.27	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	49.840	2.756	507.0	438.4	102.972	5.558	2.45		Unsaturated	58.7			47.11	1.70	80.08	150.82	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	60.500	2.645	527.4	448.2	123.714	4.391	2.32		Unsaturated	48.3			57.18	1.70	97.21	168.09	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	48.640	2.304	546.6	457.4	98.330	4.763	2.41		Unsaturated	55.4			45.97	1.70	78.16	147.16	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	38.680	1.800	565.8	466.6	77.287	4.687	2.47		Unsaturated	60.2			36.56	1.70	62.15	128.36	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	31.980	1.476	586.2	476.4	63.121	4.656	2.52		Unsaturated	64.6			30.23	1.70	51.39	115.75	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	26.320	1.116	605.4	485.6	51.333	4.290	2.55		Unsaturated	67.4			24.88	1.70	42.29	104.68	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	25.360	0.941	625.8	495.4	48.928	3.756	2.53		Sand	65.2			23.97	1.70	40.75	102.21	0.99	0.368	1.100	0.140	0.196	0.53	0.03	0.06
5.250	15.680	0.785	645.0	504.6	39.594	5.113	2.69	plastic	Clay	78.0			14.82	1.46	n.a.	n.a.	0.99	0.373	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.410	12.250	0.770	664.2	513.8	46.390	6.463	2.72		Clay	80.3			11.58	1.45	n.a.	n.a.	0.99	0.378	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.580	11.100	0.787	684.6	523.6	41.091	7.312	2.79		Clay	86.3			10.49	1.45	n.a.	n.a.	0.99	0.384	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.740	11.170	0.820	703.8	532.8	40.607	7.583	2.81		Clay	87.5			10.56	1.44	n.a.	n.a.	0.99	0.389	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	11.600	0.857	724.2	542.6	41.421	7.624	2.80		Clay	87.2			10.96	1.43	n.a.	n.a.	0.99	0.394	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	11.420	0.869	743.4	551.8	40.042	7.863	2.82		Clay	88.8			10.79	1.43	n.a.	n.a.	0.99	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	11.100	0.872	762.6	561.0	38.210	8.135	2.85		Clay	90.7			10.49	1.42	n.a.	n.a.	0.99	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	10.500	0.852	783.0	570.8	35.416	8.428	2.88		Clay	93.4			9.92	1.41	n.a.	n.a.	0.99	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	10.440	0.832	802.2	580.1	34.614	8.292	2.88		Clay	93.5			9.87	1.41	n.a.	n.a.	0.99	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	10.570	0.805	822.6	589.8	34.445	7.927	2.87		Clay	92.5			9.99	1.40	n.a.	n.a.	0.99	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	10.280	0.787	841.8	599.1	32.915	7.980	2.88		Clay	93.7			9.72	1.40	n.a.	n.a.	0.99	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	9.900	0.737	861.0	608.3	31.135	7.780	2.89		Clay	94.4			9.36	1.39	n.a.	n.a.	0.99	0.424	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	9.050	0.686	881.4	618.1	27.859	7.962	2.93		Clay	97.6			8.55	1.38	n.a.	n.a.	0.99	0.428	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	8.070	0.640	900.6	627.3	24.294	8.403	2.99		Clay	100.0			7.63	1.38	n.a.	n.a.	0.98	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	7.220	0.592	921.0	637.1	21.220	8.761	3.04		Clay	100.0			6.82	1.37	n.a.	n.a.	0.98	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	6.760	0.565	940.2	646.3	19.464	8.976	3.08		Clay	100.0			6.39	1.37	n.a.	n.a.	0.98	0.439	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	6.430	0.524	959.4	655.5	18.155	8.803	3.09		Clay	100.0			6.08	1.36	n.a.	n.a.	0.98	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	6.370	0.464	979.8	665.3	17.676	7.886	3.07		Clay	100.0			6.02	1.36	n.a.	n.a.	0.98	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	6.550	0.460	999.0	674.5	17.940	7.594	3.05		Clay	100.0			6.19	1.35	n.a.	n.a.	0.98	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	6.250	0.474	1019.4	684.3	16.777	8.250	3.10		Clay	100.0			5.91	1.35	n.a.	n.a.	0.98	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	6.700	0.527	1038.6	693.5	17.824	8.527	3.09		Clay	100.0			6.33	1.34	n.a.	n.a.	0.98	0.456	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	7.040	0.571	1057.8	702.7	18.531	8.774	3.09		Clay	100.0			6.65	1.34	n.a.	n.a.	0.98	0.459	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	9.200	0.599	1078.2	712.5	24.310	6.910	2.93		Clay	97.4			8.70	1.33	n.a.	n.a.	0.98	0.462	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	14.340	0.601	1097.4	721.8	38.216	4.360	2.65		Clay	75.0			13.55	1.33	n.a.	n.a.	0.98	0.465	n.a.	n.a.	n.a.	n.a.	0.00	0.

CPT No. 5

PGA (A_{max}) 0.57

Total Settlement: 0.26 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRR=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
11.320	5.040	0.363	1373.4	854.2	10.192	8.329	3.26		Clay	100.0			4.76	1.27	n.a.	n.a.	0.97	0.498	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.480	5.120	0.383	1392.6	863.4	10.247	8.656	3.27		Clay	100.0			4.84	1.27	n.a.	n.a.	0.97	0.500	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.650	5.170	0.397	1413.0	873.2	10.223	8.892	3.28		Clay	100.0			4.89	1.26	n.a.	n.a.	0.97	0.502	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	5.180	0.388	1432.2	882.5	10.117	8.696	3.28		Clay	100.0			4.90	1.26	n.a.	n.a.	0.97	0.504	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	5.420	0.376	1452.6	892.2	10.521	8.015	3.24		Clay	100.0			5.12	1.26	n.a.	n.a.	0.97	0.506	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	5.560	0.348	1471.8	901.5	10.703	7.214	3.21		Clay	100.0			5.26	1.25	n.a.	n.a.	0.97	0.508	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	5.930	0.363	1491.0	910.7	11.386	6.994	3.18		Clay	100.0			5.60	1.25	n.a.	n.a.	0.97	0.510	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	6.960	0.425	1511.4	920.5	13.481	6.845	3.11		Clay	100.0			6.58	1.25	n.a.	n.a.	0.97	0.511	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	8.230	0.514	1530.6	929.7	16.059	6.886	3.06		Clay	100.0			7.78	1.24	n.a.	n.a.	0.97	0.513	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	8.610	0.572	1551.0	939.5	16.678	7.306	3.07		Clay	100.0			8.14	1.24	n.a.	n.a.	0.96	0.515	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	8.520	0.582	1570.2	948.7	16.306	7.518	3.08		Clay	100.0			8.05	1.24	n.a.	n.a.	0.96	0.516	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	8.490	0.559	1589.4	957.9	16.067	7.260	3.08		Clay	100.0			8.02	1.23	n.a.	n.a.	0.96	0.518	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	7.840	0.527	1609.8	967.7	14.540	7.484	3.12		Clay	100.0			7.41	1.23	n.a.	n.a.	0.96	0.519	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	6.700	0.469	1629.0	976.9	12.049	7.976	3.20		Clay	100.0			6.33	1.23	n.a.	n.a.	0.96	0.521	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	5.980	0.430	1649.4	986.7	10.449	8.343	3.25		Clay	100.0			5.65	1.22	n.a.	n.a.	0.96	0.522	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	5.730	0.413	1668.6	995.9	9.831	8.444	3.28		Clay	100.0			5.42	1.22	n.a.	n.a.	0.96	0.524	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	5.290	0.385	1687.8	1005.1	8.847	8.650	3.32		Clay	100.0			5.00	1.22	n.a.	n.a.	0.96	0.525	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	5.000	0.387	1708.2	1014.9	8.170	9.327	3.37		Clay	100.0			4.73	1.21	n.a.	n.a.	0.96	0.526	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	5.090	0.393	1727.4	1024.2	8.253	9.294	3.36		Clay	100.0			4.81	1.21	n.a.	n.a.	0.96	0.528	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	5.320	0.410	1747.8	1033.9	8.600	9.231	3.35		Clay	100.0			5.03	1.21	n.a.	n.a.	0.96	0.529	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	5.550	0.424	1767.0	1043.2	8.947	9.092	3.33		Clay	100.0			5.25	1.21	n.a.	n.a.	0.96	0.530	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	5.880	0.426	1786.2	1052.4	9.477	8.550	3.29		Clay	100.0			5.56	1.20	n.a.	n.a.	0.96	0.531	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	6.150	0.419	1806.6	1062.2	9.879	7.980	3.26		Clay	100.0			5.81	1.20	n.a.	n.a.	0.96	0.533	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	6.330	0.412	1825.8	1071.4	10.112	7.606	3.24		Clay	100.0			5.98	1.20	n.a.	n.a.	0.95	0.534	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	6.710	0.423	1846.2	1081.2	10.705	7.313	3.21		Clay	100.0			6.34	1.19	n.a.	n.a.	0.95	0.535	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	6.730	0.436	1865.4	1090.4	10.633	7.524	3.22		Clay	100.0			6.36	1.19	n.a.	n.a.	0.95	0.536	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	6.400	0.443	1884.6	1099.6	9.927	8.111	3.26		Clay	100.0			6.05	1.19	n.a.	n.a.	0.95	0.537	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	6.100	0.445	1905.0	1109.4	9.280	8.653	3.30		Clay	100.0			5.77	1.19	n.a.	n.a.	0.95	0.538	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	6.210	0.460	1924.2	1118.6	9.383	8.769	3.30		Clay	100.0			5.87	1.18	n.a.	n.a.	0.95	0.539	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	6.320	0.476	1944.6	1128.4	9.478	8.892	3.30		Clay	100.0			5.97	1.18	n.a.	n.a.	0.95	0.540	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	6.550	0.477	1963.8	1137.6	9.789	8.563	3.28		Clay	100.0			6.19	1.18	n.a.	n.a.	0.95	0.541	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	6.850	0.492	1983.0	1146.8	10.217	8.391	3.26		Clay	100.0			6.47	1.18	n.a.	n.a.	0.95	0.542	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	7.420	0.486	2003.4	1156.6	11.098	7.567	3.21		Clay	100.0			7.01	1.17	n.a.	n.a.	0.95	0.543	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	7.920	0.476	2022.6	1165.8	11.852	6.883	3.16		Clay	100.0			7.49	1.17	n.a.	n.a.	0.95	0.544	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	7.690	0.468	2043.0	1175.6	11.344	7.024	3.18		Clay	100.0			7.27	1.17	n.a.	n.a.	0.95	0.545	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	7.020	0.451	2062.2	1184.9	10.109	7.526	3.24		Clay	100.0			6.64	1.17	n.a.	n.a.	0.95	0.546	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	6.730	0.441	2081.4	1194.1	9.529	7.758	3.26		Clay	100.0			6.36	1.16	n.a.	n.a.	0.95	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	6.790	0.396	2101.8	1203.9	9.534	6.895	3.23		Clay	100.0			6.42	1.16	n.a.	n.a.	0.94	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	7.050	0.336	2121.0	1213.1	9.875	5.613	3.16		Clay	100.0			6.66	1.16	n.a.	n.a.	0.94	0.548	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	6.860	0.319	2141.4	1222.9	9.468	5.512	3.17		Clay	100.0			6.48	1.16	n.a.	n.a.	0.94	0.549	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	6.390	0.345	2160.6	1232.1	8.619	6.492	3.25		Clay	100.0			6.04	1.15	n.a.	n.a.	0.94	0.550	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	6.480	0.378	2179.8	1241.3	8.685	7.005	3.27		Clay	100.0			6.12	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	6.700	0.381	2200.2	1251.1	8.952	6.811	3.25		Clay	100.0			6.33	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	7.020	0.443	2219.4	1260.3	9.379	7.487	3.26		Clay	100.0			6.64	1.15	n.a.	n.a.	0.94	0.552	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	8.050	0.571	2239.8	1270.1	10.913	8.232	3.24		Clay	100.0			7.61	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	11.000	0.528	2259.0	1279.3	15.431	5.349	3.00		Clay	100.0			10.40	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	11.460	0.517	2278.2	1288.5	16.020	5.008	2.97		Clay	100.0			10.83	1.14	n.a.	n.a.	0.94	0.554	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	10.380	0.527	2298.6	1298.3	14.219	5.706	3.05		Clay	100.0			9.81	1.14	n.a.	n.a.	0.94	0.555	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	11.090	0.432	2317.8	1307.5	15.190	4.346	2.95		Clay	98.8			10.48	1.14	n.a.	n.a.	0.94	0.555	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	13.250	0.386	2338.2	1317.3	18.341	3.198	2.80		Clay	87.1			12.52	1.13	n.a.	n.a.	0.94	0.556	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	10.890	0.373	2357.4	1326.6	14.641	3.839	2.93		Clay	97.1			10.29	1.13	n.a.	n.a.	0.94	0.556	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	9.040	0.392	2377.8	1336.3	11.750	4.988	3.07		Clay	100.0			8.54	1.13	n.a.	n.a.	0.93	0.557	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	8.910	0.431	2397.0	1345.6	11.462	5.586	3.11		Clay	100.0			8.42	1.13	n.a.	n.a.	0.93	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	9.700	0.405	2416.2	1354.8	12.536	4.763	3.04		Clay	100.0			9.17	1.12	n.a.	n.a.	0.93	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	9.460	0.365	2436.6	1364.6	12.080	4.431	3.03		Clay	100.0			8.94	1.12	n.a.	n.a.	0.93	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	8.240	0.321	2455.8	1373.8	10.208	4.572	3.10		Clay	100.0			7.79	1.12	n.a.	n.a.	0.93	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	7.940	0.325	2476.2	1383.6	9.688	4.846	3.13		Clay	100.0			7.50	1.12	n.a.	n.a.	0.93	0.560						

CPT No. 5

PGA (A_{max}) 0.57

Total Settlement: 0.26 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	q-N near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q-N	C _N	q _{c1N}	q _{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRR _{m=7.5} , $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
22.470	7.890	0.283	2711.4	1496.5	8.733	4.325	3.14		Clay	100.0			7.46	1.10	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	8.290	0.293	2731.8	1506.3	9.194	4.224	3.11		Clay	100.0			7.84	1.09	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	8.490	0.302	2751.0	1515.5	9.389	4.241	3.11		Clay	100.0			8.02	1.09	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	8.670	0.300	2771.4	1525.3	9.551	4.117	3.09		Clay	100.0			8.19	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	9.170	0.318	2790.6	1534.5	10.133	4.090	3.07		Clay	100.0			8.67	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	9.120	0.326	2809.8	1543.7	9.996	4.225	3.08		Clay	100.0			8.62	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	9.230	0.324	2830.2	1553.5	10.061	4.141	3.08		Clay	100.0			8.72	1.08	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	8.890	0.356	2849.4	1562.7	9.554	4.767	3.13		Clay	100.0			8.40	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	9.240	0.394	2869.8	1572.5	9.927	5.042	3.13		Clay	100.0			8.73	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	10.600	0.575	2889.0	1581.7	11.577	6.283	3.14		Clay	100.0			10.02	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	13.010	0.698	2908.2	1590.9	14.527	6.039	3.05		Clay	100.0			12.30	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	17.140	0.949	2928.6	1600.7	19.586	6.054	2.96		Clay	99.7			16.20	1.08	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	20.710	1.259	2947.8	1609.9	23.897	6.545	2.92		Clay	96.5			19.57	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	26.270	1.244	2968.2	1619.7	30.605	5.017	2.76		Clay	83.9			24.83	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	61.790	1.483	2987.4	1629.0	64.954	2.460	2.31		Sand	47.9	134.13		134.13	1.08	144.86	227.91	0.91	0.568	1.078	13.653	32.393	57.02	0.00	0.00
24.930	99.940	1.483	3006.6	1638.2	105.743	1.507	2.01		Sand	23.9	134.13		134.13	1.09	145.97	199.17	0.91	0.568	1.067	1.804	4.233	7.45	0.00	0.00
25.100	121.340	1.572	3027.0	1648.0	128.337	1.312	1.91		Sand	15.7	134.13		134.13	1.09	146.85	176.40	0.91	0.568	1.051	0.631	1.348	2.37	0.00	0.00
25.260	141.910	1.768	3046.2	1657.2	149.939	1.259	1.85		Sand	10.9			134.13	1.10	147.47	159.47	0.91	0.569	1.043	0.366	0.681	1.20	0.01	0.01
25.430	165.220	1.698	3066.6	1667.0	174.310	1.038	1.74		Sand	2.4			156.16	1.09	170.61	170.61	0.91	0.569	1.046	0.514	1.044	1.83	0.00	0.00
25.590	174.100	1.381	3085.8	1676.2	183.250	0.800	1.65		Sand	0.0			164.56	1.09	178.90	178.90	0.91	0.569	1.049	0.695	1.511	2.66	0.00	0.00
25.750	172.480	1.605	3105.0	1685.4	181.023	0.939	1.70		Sand	0.0			163.02	1.09	177.00	177.00	0.91	0.569	1.047	0.646	1.380	2.43	0.00	0.00
25.920	163.940	2.378	3125.4	1695.2	171.470	1.465	1.86		Sand	11.5			154.95	1.08	167.58	182.76	0.90	0.569	1.048	0.813	1.821	3.20	0.00	0.00
26.080	128.120	2.248	3144.6	1704.4	133.272	1.776	1.99		Sand	22.4	154.95		154.95	1.07	165.56	218.20	0.90	0.569	1.065	6.216	14.563	25.58	0.00	0.00
26.250	94.020	2.369	3165.0	1714.2	97.071	2.562	2.20		Sand	39.2	154.95		154.95	1.06	164.16	244.90	0.90	0.569	1.063	72.602	169.815	298.22	0.00	0.00
26.410	79.780	2.045	3184.2	1723.4	81.887	2.615	2.26		Sand	43.8	154.95		154.95	1.06	163.77	248.62	0.90	0.570	1.062	110.782	258.725	454.29	0.00	0.00
26.570	67.710	1.419	3203.4	1732.6	69.052	2.146	2.25		Sand	43.1	154.95		154.95	1.06	163.57	247.80	0.90	0.570	1.060	100.747	234.933	412.45	0.00	0.00
26.740	58.900	1.286	3223.8	1742.4	59.670	2.245	2.31		Sand	47.9	154.95		154.95	1.05	163.20	251.01	0.90	0.570	1.058	146.959	342.151	600.60	0.00	0.00
26.900	54.900	1.005	3243.0	1751.6	55.348	1.887	2.28		Sand	45.8	154.95		154.95	1.05	163.03	249.29	0.90	0.570	1.057	119.709	278.291	488.44	0.00	0.00
27.070	28.270	0.962	3263.4	1761.4	30.246	3.611	2.67		Clay	76.4			26.72	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	14.760	0.566	3282.6	1770.6	14.818	4.313	2.95		Clay	99.3			13.95	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	13.680	0.494	3303.0	1780.4	13.512	4.107	2.97		Clay	100.0			12.93	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	13.980	0.507	3322.2	1789.7	13.767	4.114	2.97		Clay	100.0			13.21	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	16.390	0.721	3341.4	1798.9	16.365	4.898	2.96		Clay	99.5			15.49	1.04	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	16.260	0.917	3361.8	1808.7	16.121	6.292	3.03		Clay	100.0			15.37	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	18.440	0.909	3381.0	1817.9	18.428	5.425	2.95		Clay	98.7			17.43	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	27.330	0.818	3401.4	1827.7	28.046	3.193	2.66		Clay	75.6			25.83	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	28.320	0.742	3420.6	1836.9	28.973	2.790	2.61		Clay	71.7			26.77	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	27.890	0.767	3439.8	1846.1	28.352	2.930	2.63		Clay	73.4			26.36	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	24.840	0.746	3460.2	1855.9	24.904	3.230	2.70		Clay	79.0			23.48	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	22.520	0.797	3479.4	1865.1	22.283	3.837	2.79		Clay	85.8			21.29	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	22.210	0.848	3499.8	1874.9	21.825	4.144	2.81		Clay	88.1			20.99	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	22.760	0.925	3519.0	1884.1	22.292	4.406	2.82		Clay	88.9			21.51	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	22.920	1.002	3538.2	1893.3	22.342	4.736	2.84		Clay	90.6			21.66	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	22.630	0.736	3558.6	1903.1	21.912	3.528	2.77		Clay	84.4			21.39	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	22.580	0.521	3577.8	1912.3	21.744	2.507	2.68		Clay	77.2			21.34	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	19.850	0.430	3598.2	1922.1	18.782	2.381	2.72		Clay	80.2			18.76	1.03	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	14.110	0.405	3617.4	1931.4	12.739	3.292	2.93		Clay	97.8			13.34	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	12.500	0.427	3636.6	1940.6	11.009	3.994	3.04		Clay	100.0			11.81	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	12.730	0.457	3657.0	1950.4	11.179	4.193	3.04		Clay	100.0			12.03	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	13.320	0.479	3676.2	1959.6	11.719	4.168	3.03		Clay	100.0			12.59	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	13.390	0.489	3696.6	1969.4	11.721	4.233	3.03		Clay	100.0			12.66	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	13.690	0.494	3715.8	1978.6	11.960	4.176	3.02		Clay	100.0			12.94	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	14.020	0.507	3735.0	1987.8	12.227	4.172	3.01		Clay	100.0			13.25	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	14.200	0.511	3755.4	1997.6	12.337	4.145	3.01		Clay	100.0			13.42	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	15.240	0.539	377																					

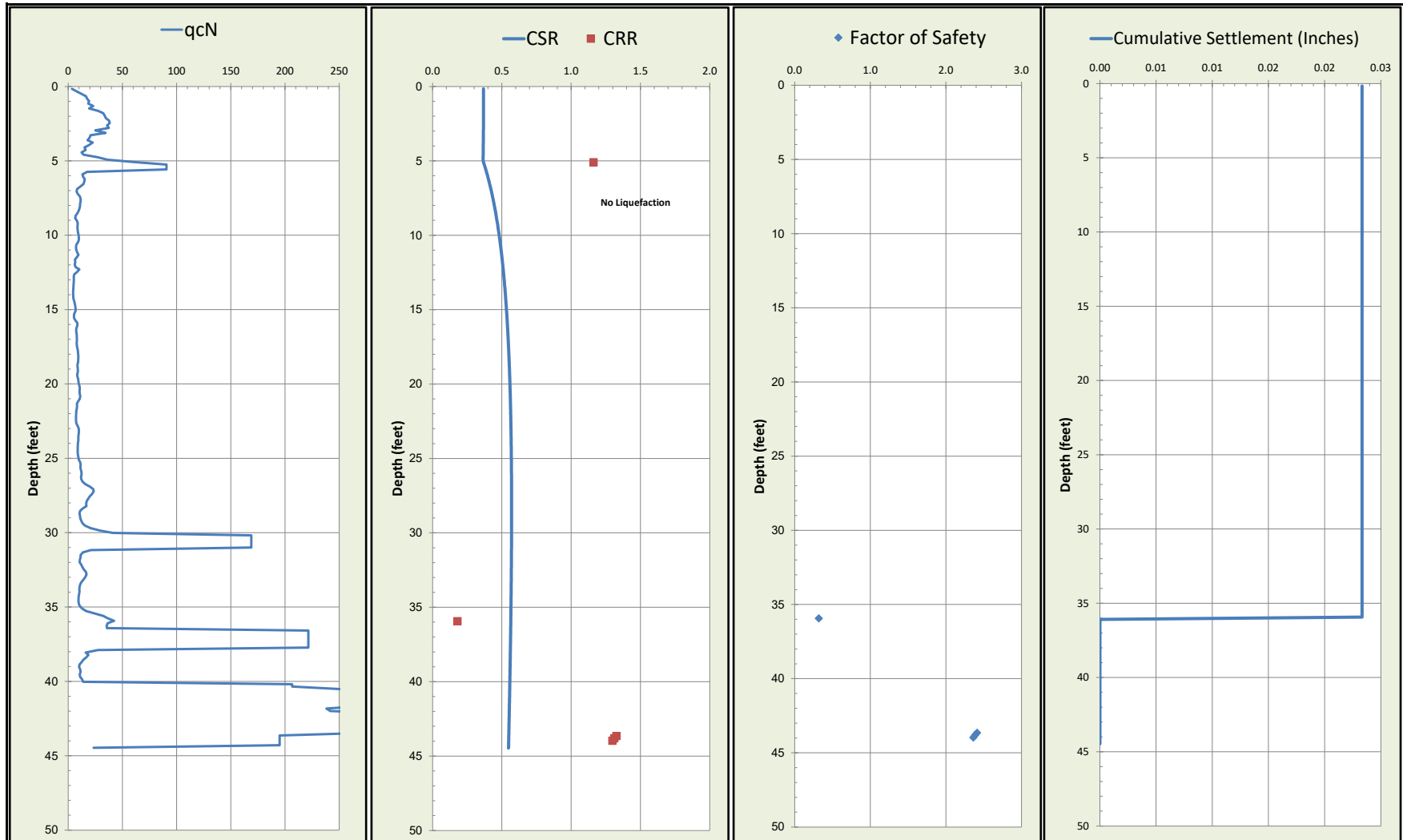
CPT No. 5

PGA (A_{max}) 0.57

Total Settlement: 0.26 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	q-N near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q-N	C _N	q _{c1N}	q _{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_{cs} for Sand	CRR _{m=7.5} $\sigma'_{vc} = 1 \text{ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
33.630	15.330	0.723	4050.6	2139.3	12.438	5.430	3.08		Clay	100.0			14.49	1.00	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	21.970	0.913	4069.8	2148.5	18.557	4.579	2.90		Clay	94.6			20.77	1.00	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	34.410	1.442	4090.2	2158.3	29.991	4.456	2.73		Clay	81.6			32.52	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	41.020	2.226	4109.4	2167.5	35.954	5.713	2.75		Clay	83.1			38.77	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	65.590	2.483	4128.6	2176.7	59.200	3.908	2.48		Sand	61.6	121.84	1.18	143.77	0.99	142.60	231.94	0.86	0.566	0.992	19.587	42.725	75.44	0.00	0.00
34.450	128.910	2.699	4149.0	2186.5	117.933	2.128	2.09		Sand	29.9		1.18	143.77	0.99	142.27	206.21	0.86	0.566	0.991	2.732	5.954	10.52	0.00	0.00
34.610	135.380	2.744	4168.2	2195.7	123.680	2.058	2.06		Sand	27.9		1.18	150.99	0.99	149.24	211.24	0.86	0.566	0.989	3.784	8.233	14.55	0.00	0.00
34.780	141.930	3.252	4188.6	2205.5	129.460	2.326	2.09		Sand	30.1		1.18	158.30	0.99	156.34	223.43	0.86	0.566	0.988	9.364	20.344	35.96	0.00	0.00
34.940	123.920	3.922	4207.8	2214.7	112.542	3.220	2.24		Sand	41.8		1.18	138.21	0.99	136.25	212.66	0.86	0.566	0.986	4.171	9.050	16.00	0.00	0.00
35.100	112.580	3.746	4227.0	2224.0	101.845	3.391	2.28		Sand	45.5		1.18	125.56	0.98	123.52	199.44	0.86	0.565	0.987	1.831	3.975	7.03	0.00	0.00
35.270	89.170	3.183	4247.4	2233.8	80.076	3.656	2.37		Sand	52.9		1.18	99.45	0.98	97.47	170.68	0.86	0.565	0.990	0.515	0.990	1.75	0.00	0.00
35.430	94.480	2.246	4266.6	2243.0	84.778	2.432	2.23		Sand	41.1		1.18	105.37	0.98	103.12	170.80	0.86	0.565	0.989	0.517	0.994	1.76	0.00	0.00
35.600	97.460	2.110	4287.0	2252.8	87.314	2.213	2.19		Sand	38.0		1.18	108.70	0.98	106.22	172.07	0.85	0.565	0.988	0.540	1.048	1.86	0.00	0.00
35.760	79.900	2.210	4306.2	2262.0	71.074	2.843	2.33		Sand	49.3		1.18	89.11	0.97	86.80	155.42	0.85	0.564	0.989	0.329	0.564	1.00	0.01	0.01
35.930	64.010	1.800	4326.6	2271.8	56.417	2.911	2.41		Sand	55.5		1.18	71.39	0.97	69.26	135.86	0.85	0.564	0.990	0.217	0.327	0.58	0.02	0.02
36.090	84.960	1.403	4345.8	2281.0	75.366	1.695	2.15		Sand	35.3		1.18	94.76	0.97	91.95	151.91	0.85	0.564	0.988	0.302	0.504	0.89	0.01	0.01
36.250	95.810	1.613	4365.0	2290.2	85.063	1.723	2.12		Sand	32.6		1.18	106.86	0.97	103.68	163.29	0.85	0.564	0.986	0.408	0.738	1.31	0.00	0.00
36.420	89.970	2.245	4385.4	2300.9	79.578	2.558	2.26		Sand	43.9	90.56	1.18	106.86	0.97	103.64	173.46	0.85	0.563	0.983	0.567	1.107	1.97	0.00	0.00
36.580	83.780	2.407	4404.6	2309.2	73.809	2.950	2.33		Sand	49.3	90.56	1.18	106.86	0.97	103.53	176.58	0.85	0.563	0.982	0.636	1.270	2.25	0.00	0.00
36.750	81.980	2.033	4425.0	2319.0	72.019	2.548	2.29		Sand	46.2	90.56	1.18	106.86	0.97	103.35	174.59	0.85	0.563	0.982	0.591	1.161	2.06	0.00	0.00
36.910	68.670	1.839	4444.2	2328.2	59.874	2.767	2.37		Sand	52.8	90.56	1.18	106.86	0.97	103.25	177.97	0.85	0.563	0.980	0.670	1.351	2.40	0.00	0.00
37.070	40.030	1.249	4463.4	2337.4	32.342	3.304	2.62		Clay	72.6			37.84	0.97	n.a.	n.a.	0.85	0.562	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	23.980	0.746	4483.8	2347.2	18.522	3.430	2.82		Clay	88.3			22.67	0.97	n.a.	n.a.	0.85	0.562	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	17.030	0.510	4503.0	2356.4	12.543	3.454	2.95		Clay	99.2			16.10	0.97	n.a.	n.a.	0.84	0.562	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	15.930	0.501	4523.4	2366.2	11.553	3.662	3.00		Clay	100.0			15.06	0.97	n.a.	n.a.	0.84	0.562	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	19.290	0.547	4542.6	2375.4	14.329	3.214	2.89		Clay	94.0			18.23	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	18.620	0.518	4561.8	2384.7	13.703	3.168	2.90		Clay	94.9			17.60	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	18.700	0.438	4582.2	2394.5	13.706	2.669	2.86		Clay	91.4			17.67	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	18.220	0.540	4601.4	2403.7	13.246	3.394	2.93		Clay	97.3			17.22	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	19.140	0.662	4621.8	2413.5	13.946	3.935	2.95		Clay	99.0			18.09	0.97	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	23.750	1.145	4641.0	2422.7	17.691	5.344	2.96		Clay	99.4			22.45	0.96	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	28.670	1.929	4660.2	2431.9	21.662	7.323	2.98		Clay	100.0			27.10	0.96	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	36.740	2.184	4680.6	2441.7	28.177	6.349	2.86		Clay	91.7			34.73	0.96	n.a.	n.a.	0.84	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	69.780	1.997	4699.8	2450.9	59.219	2.962	2.40		Sand	54.7	175.2		175.20	0.96	168.54	261.94	0.84	0.559	0.956	602.472	1267.014	2265.97	0.00	0.00
39.210	111.100	1.657	4720.2	2460.7	95.309	1.524	2.05		Sand	26.8	175.2		175.20	0.96	167.69	230.94	0.83	0.559	0.955	17.873	37.539	67.17	0.00	0.00
39.370	141.430	1.646	4739.4	2469.9	121.656	1.183	1.89		Sand	14.6	175.2		175.20	0.95	166.26	193.27	0.83	0.559	0.962	1.320	2.795	5.00	0.00	0.00
39.530	160.120	1.630	4758.6	2479.1	137.742	1.034	1.82		Sand	8.2	175.2		175.20	0.94	165.16	169.48	0.83	0.558	0.970	0.495	0.924	1.65	0.00	0.00
39.700	185.360	1.595	4779.0	2488.9	159.459	0.872	1.72		Sand	0.5			175.20	0.94	164.72	164.72	0.83	0.558	0.970	0.426	0.767	1.37	0.00	0.00
39.860	214.980	1.798	4798.2	2498.1	184.922	0.846	1.66		Sand	0.0			203.19	0.95	192.03	192.03	0.83	0.558	0.960	1.241	2.621	4.70	0.00	0.00
40.030	228.120	1.851	4818.6	2507.9	195.960	0.820	1.63		Sand	0.0			215.61	0.95	204.06	204.06	0.83	0.557	0.953	2.394	5.020	9.01	0.00	0.00
40.190	238.360	2.087	4837.8	2517.1	204.466	0.885	1.64		Sand	0.0			225.29	0.95	213.41	213.41	0.83	0.557	0.948	4.394	9.164	16.45	0.00	0.00
40.350	283.740	2.667	4857.0	2526.4	243.339	0.948	1.61		Sand	0.0			268.19	0.95	255.93	255.93	0.83	0.557	0.947	270.516	563.488	1012.21	0.00	0.00
40.520	411.660	2.863	4877.4	2536.2	353.299	0.700	1.41		Sand	0.0			389.09	0.95	370.94	370.94	0.83	0.556	0.946	#####	#####	#####	0.00	0.00
40.680	551.410	2.355	4896.6	2545.4	473.085	0.429	1.17		Sand	0.0			521.18	0.95	496.39	496.39	0.83	0.556	0.945	#####	#####	#####	0.00	0.00
40.850	564.500	2.472	4917.0	2555.2	483.428	0.440	1.17		Sand	0.0			533.55	0.95	507.66	507.66	0.83	0.556	0.943	#####	#####	#####	0.00	0.00
41.010	598.610	2.283	4936.2	2564.4	511.836	0.383	1.11		Sand	0.0			565.79	0.95	537.82	537.82	0.83	0.555	0.942	#####	#####	#####	0.00	0.00
41.170	612.840	3.158	4955.4	2573.6	523.106	0.517	1.20		Sand	0.0			579.24	0.95	550.09	550.09	0.82	0.555	0.941	#####	#####	#####	0.00	0.00
41.340	601.970	2.575	4975.8	2583.4	512.807	0.430	1.14		Sand	0.0			568.97	0.95	539.79	539.79	0.82	0.555	0.940	#####	#####	#####	0.00	0.00
41.500	606.860	1.529	4995.0	2592.6	516.062	0.253	0.98		Sand	0.0			573.59	0.95	543.66	543.66	0.82	0.554	0.939	#####	#####	#####	0.00	0.00
41.670	539.230	1.174	5015.4	2602.4	457.441	0.219	0.98		Sand	0.0			509.67	0.95	482.59	482.59	0.82	0.554	0.938	#####	#####	#####	0.00	0.00
41.830	436.980	1.248	5034.6	2611.6	369.633	0.287	1.13		Sand	0.0			413.02	0.95	390.72	390.72	0.82	0.554	0.937	#####	#####	#####	0.00	0.00
41.990	301.340	1.449	5053.8	2620.8	253.777	0.485	1.40		Sand	0.0			284.82	0.95	269.19	269.1								



Liquefaction Analysis Summary

University Station Residential
Santa Clara, California

Project Number

285-2-2

Figure Number

Figure E6

5/24/2024

CPT No. 6

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_s for Sand	CRR=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
0.160	3.580	0.162	20.0	20.0	88.170	4.527	2.42		Unsaturated	56.4			3.38	1.70	5.75	55.19	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	17.480	0.755	82.5	82.5	83.476	4.330	2.42		Unsaturated	56.4			16.52	1.70	28.09	83.68	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	18.450	0.872	102.5	102.5	79.013	4.739	2.46		Unsaturated	60.0			17.44	1.70	29.65	86.68	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	20.480	0.906	122.5	122.5	80.211	4.438	2.44		Unsaturated	57.9			19.36	1.70	32.91	90.28	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	19.580	1.137	143.8	143.8	70.743	5.826	2.56		Unsaturated	68.0			18.51	1.70	31.46	90.85	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	24.380	1.264	163.8	163.8	82.557	5.203	2.48		Unsaturated	61.6			23.04	1.70	39.17	99.29	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	20.440	1.356	185.0	185.0	105.893	6.662	2.50		Unsaturated	63.2			19.32	1.70	32.84	91.58	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	29.310	1.484	205.0	205.0	88.693	5.079	2.45		Unsaturated	59.4			27.70	1.70	47.10	108.83	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	34.160	1.659	225.0	225.0	98.688	4.871	2.41		Unsaturated	55.9			32.29	1.70	54.89	117.71	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	35.710	1.924	246.3	246.3	98.599	5.406	2.45		Unsaturated	58.8			33.75	1.70	57.38	121.83	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	36.760	2.027	266.3	266.3	97.595	5.534	2.46		Unsaturated	59.7			34.74	1.70	59.07	124.25	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	39.900	1.931	287.5	287.5	101.943	4.858	2.40		Unsaturated	55.2			37.71	1.70	64.11	129.19	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	40.550	1.375	307.5	307.5	100.159	3.405	2.29		Unsaturated	45.9			38.33	1.70	65.16	126.43	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	37.880	1.123	327.5	327.5	90.614	2.977	2.27		Unsaturated	44.7			35.80	1.70	60.87	120.37	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	39.670	0.710	348.8	348.8	91.953	1.798	2.11		Unsaturated	31.6			37.50	1.70	63.74	113.80	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	26.460	0.583	368.8	368.8	59.492	2.218	2.31		Unsaturated	47.6			25.01	1.70	42.52	98.78	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	36.420	0.775	389.4	381.9	80.594	2.139	2.20		Unsaturated	39.2			34.42	1.70	58.52	113.98	1.00	0.367	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	21.800	0.952	408.6	391.1	47.477	4.410	2.59		Unsaturated	70.0			20.60	1.70	35.03	95.84	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	20.990	1.486	427.8	400.3	62.985	7.153	2.66		Unsaturated	76.1			19.84	1.70	33.73	95.24	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	18.990	1.419	448.2	410.1	55.936	7.560	2.71		Unsaturated	80.2			17.95	1.70	30.51	91.69	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	23.880	1.384	467.4	419.4	69.396	5.854	2.57		Unsaturated	68.6			22.57	1.70	38.37	99.88	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	20.290	1.320	487.8	429.1	57.887	6.583	2.66		Unsaturated	75.7			19.18	1.70	32.60	93.73	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	15.970	0.872	507.0	438.4	44.715	5.546	2.68		Unsaturated	77.2			15.09	1.70	25.66	84.95	1.00	0.366	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	16.990	0.859	527.4	448.2	46.857	5.133	2.64		Unsaturated	74.1			16.06	1.70	27.30	86.59	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	13.000	1.240	546.6	457.4	55.652	9.740	2.80		Unsaturated	87.2			12.29	1.70	20.89	80.05	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	14.920	1.255	565.8	466.6	62.742	8.571	2.73		Unsaturated	81.1			14.10	1.70	23.97	83.32	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	28.990	1.585	586.2	476.4	77.027	5.524	2.52		Unsaturated	64.7			27.40	1.70	46.58	109.59	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	38.170	1.484	605.4	485.6	74.714	3.919	2.42		Unsaturated	56.3			36.08	1.70	61.33	126.04	0.99	0.365	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	65.480	2.111	625.8	495.4	127.300	3.240	2.20		Sand	39.3			61.89	1.70	105.21	171.97	0.99	0.368	1.100	0.538	1.162	3.16	0.00	0.00
5.250	96.010	2.425	645.0	504.6	185.205	2.535	2.02		Sand	24.6			90.75	1.60	145.46	200.26	0.99	0.373	1.100	1.918	4.641	12.44	0.00	0.00
5.410	63.640	2.265	664.2	513.8	121.430	3.577	2.25		Sand	43.1	90.75		90.75	1.54	139.94	218.25	0.99	0.378	1.100	6.240	15.100	39.91	0.00	0.00
5.580	37.120	1.482	684.6	523.6	69.880	4.029	2.44		Sand	58.5	90.75		90.75	1.52	137.67	224.38	0.99	0.384	1.100	10.121	24.492	63.81	0.00	0.00
5.740	18.440	1.116	703.8	532.8	44.891	6.170	2.71	plastic	Clay	79.8			17.43	1.44	n.a.	n.a.	0.99	0.389	n.a.	n.a.	n.a.	n.a.	0.00	0.00
5.910	13.970	0.776	724.2	542.6	50.157	5.699	2.65		Clay	75.2			13.20	1.43	n.a.	n.a.	0.99	0.394	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.070	14.520	0.836	743.4	551.8	51.278	5.909	2.66		Clay	75.6			13.72	1.43	n.a.	n.a.	0.99	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.230	16.140	0.923	762.6	561.0	56.176	5.860	2.63		Clay	73.3			15.26	1.42	n.a.	n.a.	0.99	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.400	15.730	0.934	783.0	570.8	53.740	6.091	2.65		Clay	75.3			14.87	1.41	n.a.	n.a.	0.99	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.560	14.870	0.843	802.2	580.1	49.888	5.824	2.66		Clay	75.9			14.05	1.41	n.a.	n.a.	0.99	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.730	11.750	0.728	822.6	589.8	38.446	6.421	2.77		Clay	84.5			11.11	1.40	n.a.	n.a.	0.99	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
6.890	8.820	0.712	841.8	599.1	28.041	8.471	2.95		Clay	99.0			8.34	1.40	n.a.	n.a.	0.99	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.050	8.120	0.737	861.0	608.3	25.283	9.584	3.02		Clay	100.0			7.67	1.39	n.a.	n.a.	0.99	0.424	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.220	9.260	0.827	881.4	618.1	28.538	9.371	2.98		Clay	100.0			8.75	1.38	n.a.	n.a.	0.99	0.428	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.380	11.310	0.928	900.6	627.3	34.624	8.543	2.89		Clay	94.3			10.69	1.38	n.a.	n.a.	0.98	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.550	12.120	0.973	921.0	637.1	36.603	8.348	2.87		Clay	92.4			11.46	1.37	n.a.	n.a.	0.98	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.710	12.170	0.972	940.2	646.3	36.206	8.310	2.87		Clay	92.5			11.50	1.37	n.a.	n.a.	0.98	0.439	n.a.	n.a.	n.a.	n.a.	0.00	0.00
7.870	11.720	0.939	959.4	655.5	34.295	8.357	2.89		Clay	93.9			11.08	1.36	n.a.	n.a.	0.98	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.040	11.610	0.885	979.8	665.3	33.429	7.960	2.88		Clay	93.3			10.97	1.36	n.a.	n.a.	0.98	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.200	11.090	0.830	999.0	674.5	31.402	7.841	2.89		Clay	94.4			10.48	1.35	n.a.	n.a.	0.98	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.370	10.230	0.759	1019.4	684.3	28.409	7.807	2.92		Clay	96.6			9.67	1.35	n.a.	n.a.	0.98	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.530	8.880	0.720	1038.6	693.5	24.111	8.615	3.00		Clay	100.0			8.39	1.34	n.a.	n.a.	0.98	0.456	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.690	7.330	0.627	1057.8	702.7	19.356	9.219	3.09		Clay	100.0			6.93	1.34	n.a.	n.a.	0.98	0.459	n.a.	n.a.	n.a.	n.a.	0.00	0.00
8.860	6.860	0.584	1078.2	712.5	17.742	9.239	3.12		Clay	100.0			6.48	1.33	n.a.	n.a.	0.98	0.462	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.020	8.540	0.584	1097.4	721.8	22.144	7.304	2.98		Clay	100.0			8.07	1.33	n.a.	n.a.	0.98	0.465	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.190	9.340	0.635	1117.8	731.5	24.007	7.228	2.95		Clay	98.8			8.83	1.32	n.a.	n.a.	0.98	0.468	n.a.	n.a.	n.a.	n.a.	0.00	0.00
9.350	9.190	0.693	1137.0	740.8	23.277	8.039	2.99		Clay	100.0			8.69	1.32	n.a.	n.a.	0.98	0.470	n.a.	n.a.	n.a.	n.a.	0.00	0.00

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRR=7.5, $\sigma'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
11.650	6.520	0.321	1413.0	873.2	13.315	5.516	3.06		Clay	100.0			6.16	1.26	n.a.	n.a.	0.97	0.502	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.810	6.880	0.332	1432.2	882.5	13.970	5.381	3.03		Clay	100.0			6.50	1.26	n.a.	n.a.	0.97	0.504	n.a.	n.a.	n.a.	n.a.	0.00	0.00
11.980	6.380	0.319	1452.6	892.2	12.673	5.633	3.08		Clay	100.0			6.03	1.26	n.a.	n.a.	0.97	0.506	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.140	7.160	0.307	1471.8	901.5	14.253	4.780	3.00		Clay	100.0			6.77	1.25	n.a.	n.a.	0.97	0.508	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.300	10.930	0.272	1491.0	910.7	22.367	2.668	2.68		Clay	77.8			10.33	1.25	n.a.	n.a.	0.97	0.510	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.470	8.660	0.237	1511.4	920.5	17.174	3.003	2.81		Clay	87.5			8.19	1.25	n.a.	n.a.	0.97	0.511	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.630	5.870	0.259	1530.6	929.7	10.982	5.068	3.10		Clay	100.0			5.55	1.24	n.a.	n.a.	0.97	0.513	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.800	5.370	0.288	1551.0	939.5	9.781	6.260	3.20		Clay	100.0			5.08	1.24	n.a.	n.a.	0.96	0.515	n.a.	n.a.	n.a.	n.a.	0.00	0.00
12.960	5.560	0.312	1570.2	948.7	10.066	6.536	3.20		Clay	100.0			5.26	1.24	n.a.	n.a.	0.96	0.516	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.120	5.380	0.301	1589.4	957.9	9.574	6.567	3.22		Clay	100.0			5.09	1.23	n.a.	n.a.	0.96	0.518	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	5.210	0.284	1609.8	967.7	9.104	6.447	3.23		Clay	100.0			4.92	1.23	n.a.	n.a.	0.96	0.519	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	5.240	0.281	1629.0	976.9	9.060	6.347	3.23		Clay	100.0			4.95	1.23	n.a.	n.a.	0.96	0.521	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	5.080	0.287	1649.4	986.7	8.625	6.740	3.26		Clay	100.0			4.80	1.22	n.a.	n.a.	0.96	0.522	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	4.830	0.287	1668.6	995.9	8.024	7.170	3.30		Clay	100.0			4.57	1.22	n.a.	n.a.	0.96	0.524	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	4.850	0.279	1687.8	1005.1	7.971	6.954	3.29		Clay	100.0			4.58	1.22	n.a.	n.a.	0.96	0.525	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	4.960	0.279	1708.2	1014.9	8.091	6.783	3.28		Clay	100.0			4.69	1.21	n.a.	n.a.	0.96	0.526	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	5.220	0.307	1727.4	1024.2	8.507	7.038	3.28		Clay	100.0			4.93	1.21	n.a.	n.a.	0.96	0.528	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	5.920	0.351	1747.8	1033.9	9.761	6.962	3.23		Clay	100.0			5.60	1.21	n.a.	n.a.	0.96	0.529	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	6.520	0.430	1767.0	1043.2	10.807	7.625	3.22		Clay	100.0			6.16	1.21	n.a.	n.a.	0.96	0.530	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	6.860	0.453	1786.2	1052.4	11.340	7.592	3.20		Clay	100.0			6.48	1.20	n.a.	n.a.	0.96	0.531	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	6.990	0.487	1806.6	1062.2	11.461	7.993	3.21		Clay	100.0			6.61	1.20	n.a.	n.a.	0.96	0.533	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	7.340	0.453	1825.8	1071.4	11.998	7.044	3.16		Clay	100.0			6.94	1.20	n.a.	n.a.	0.95	0.534	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	6.110	0.417	1846.2	1081.2	9.595	8.045	3.27		Clay	100.0			5.78	1.19	n.a.	n.a.	0.95	0.535	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	5.590	0.409	1865.4	1090.4	8.542	8.780	3.34		Clay	100.0			5.28	1.19	n.a.	n.a.	0.95	0.536	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	5.790	0.464	1884.6	1099.6	8.817	9.561	3.35		Clay	100.0			5.47	1.19	n.a.	n.a.	0.95	0.537	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	7.250	0.559	1905.0	1109.4	11.353	8.872	3.25		Clay	100.0			6.85	1.19	n.a.	n.a.	0.95	0.538	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	9.080	0.606	1924.2	1118.6	14.514	7.466	3.12		Clay	100.0			8.58	1.18	n.a.	n.a.	0.95	0.539	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	8.890	0.569	1944.6	1128.4	14.033	7.190	3.12		Clay	100.0			8.40	1.18	n.a.	n.a.	0.95	0.540	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	8.030	0.495	1963.8	1137.6	12.391	7.020	3.15		Clay	100.0			7.59	1.18	n.a.	n.a.	0.95	0.541	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	7.840	0.474	1983.0	1146.8	11.943	6.923	3.16		Clay	100.0			7.41	1.18	n.a.	n.a.	0.95	0.542	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	8.090	0.503	2003.4	1156.6	12.257	7.095	3.16		Clay	100.0			7.65	1.17	n.a.	n.a.	0.95	0.543	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	8.460	0.542	2022.6	1165.8	12.778	7.282	3.15		Clay	100.0			8.00	1.17	n.a.	n.a.	0.95	0.544	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	8.430	0.567	2043.0	1175.6	12.603	7.655	3.17		Clay	100.0			7.97	1.17	n.a.	n.a.	0.95	0.545	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	8.500	0.564	2062.2	1184.9	12.607	7.550	3.16		Clay	100.0			8.03	1.17	n.a.	n.a.	0.95	0.546	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	8.350	0.544	2081.4	1194.1	12.243	7.443	3.17		Clay	100.0			7.89	1.16	n.a.	n.a.	0.95	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	8.430	0.535	2101.8	1203.9	12.259	7.246	3.16		Clay	100.0			7.97	1.16	n.a.	n.a.	0.94	0.547	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	8.770	0.551	2121.0	1213.1	12.711	7.146	3.15		Clay	100.0			8.29	1.16	n.a.	n.a.	0.94	0.548	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	9.270	0.584	2141.4	1222.9	13.410	7.124	3.13		Clay	100.0			8.76	1.16	n.a.	n.a.	0.94	0.549	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	9.700	0.592	2160.6	1232.1	13.992	6.866	3.10		Clay	100.0			9.17	1.15	n.a.	n.a.	0.94	0.550	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	9.840	0.563	2179.8	1241.3	14.098	6.438	3.08		Clay	100.0			9.30	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	9.930	0.574	2200.2	1251.1	14.115	6.497	3.08		Clay	100.0			9.39	1.15	n.a.	n.a.	0.94	0.551	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	9.850	0.570	2219.4	1260.3	13.870	6.525	3.09		Clay	100.0			9.31	1.15	n.a.	n.a.	0.94	0.552	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	9.640	0.557	2239.8	1270.1	13.416	6.542	3.10		Clay	100.0			9.11	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	9.040	0.524	2259.0	1279.3	12.367	6.628	3.13		Clay	100.0			8.54	1.14	n.a.	n.a.	0.94	0.553	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	9.120	0.503	2278.2	1288.5	12.388	6.304	3.12		Clay	100.0			8.62	1.14	n.a.	n.a.	0.94	0.554	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	9.420	0.501	2298.6	1298.3	12.741	6.055	3.10		Clay	100.0			8.90	1.14	n.a.	n.a.	0.94	0.555	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	9.390	0.502	2317.8	1307.5	12.590	6.101	3.10		Clay	100.0			8.88	1.14	n.a.	n.a.	0.94	0.555	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	8.780	0.510	2338.2	1317.3	11.555	6.700	3.16		Clay	100.0			8.30	1.13	n.a.	n.a.	0.94	0.556	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	9.010	0.510	2357.4	1326.6	11.807	6.510	3.14		Clay	100.0			8.52	1.13	n.a.	n.a.	0.94	0.556	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	9.750	0.524	2377.8	1336.3	12.813	6.120	3.10		Clay	100.0			9.22	1.13	n.a.	n.a.	0.93	0.557	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	10.070	0.521	2397.0	1345.6	13.186	5.868	3.08		Clay	100.0			9.52	1.13	n.a.	n.a.	0.93	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	10.460	0.499	2416.2	1354.8	13.658	5.393	3.04		Clay	100.0			9.89	1.12	n.a.	n.a.	0.93	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	11.150	0.497	2436.6	1364.6	14.557	5.005	3.00		Clay	100.0			10.54	1.12	n.a.	n.a.	0.93	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	11.360	0.506	2455.8	1373.8	14.751	4.989	3.00		Clay	100.0			10.74	1.12	n.a.	n.a.	0.93	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	11.110	0.528	2476.2	1383.6	14.270	5.351	3.03		Clay	100.0			10.50	1.12	n.a.	n.a.	0.93	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	11.310	0.547	2495.4	1392.8	14.449	5.438	3.03		Clay	100.0			10.69	1.12	n.a.	n.a.	0.93	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	11.750	0.564	2514.6	1402.0	14.968	5.379	3.01		Clay	100.0			11.11	1.11	n.a.	n.a.	0.93							

CPT No. 6

PGA (A_{max}) 0.57

Total Settlement: 0.02 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	$q-N$ near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q_N	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_s for Sand	CRR=7.5, $e'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
22.800	9.100	0.354	2751.0	1515.5	10.194	4.584	3.10		Clay	100.0			8.60	1.09	n.a.	n.a.	0.92	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	10.120	0.390	2771.4	1525.3	11.453	4.463	3.05		Clay	100.0			9.57	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	10.450	0.409	2790.6	1534.5	11.802	4.518	3.04		Clay	100.0			9.88	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	10.390	0.400	2809.8	1543.7	11.641	4.453	3.04		Clay	100.0			9.82	1.09	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	9.960	0.382	2830.2	1553.5	11.001	4.471	3.07		Clay	100.0			9.41	1.08	n.a.	n.a.	0.92	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	10.020	0.359	2849.4	1562.7	11.000	4.180	3.05		Clay	100.0			9.47	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	9.940	0.359	2869.8	1572.5	10.817	4.216	3.06		Clay	100.0			9.40	1.08	n.a.	n.a.	0.92	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	9.580	0.358	2889.0	1581.7	10.287	4.402	3.08		Clay	100.0			9.05	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	9.370	0.366	2908.2	1590.9	9.951	4.626	3.11		Clay	100.0			8.86	1.08	n.a.	n.a.	0.91	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	9.350	0.355	2928.6	1600.7	9.853	4.504	3.11		Clay	100.0			8.84	1.08	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	9.330	0.350	2947.8	1609.9	9.759	4.460	3.11		Clay	100.0			8.82	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	9.300	0.335	2968.2	1619.7	9.651	4.289	3.10		Clay	100.0			8.79	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	9.590	0.309	2987.4	1629.0	9.941	3.821	3.06		Clay	100.0			9.06	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	9.870	0.360	3006.6	1638.2	10.215	4.306	3.08		Clay	100.0			9.33	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	10.430	0.386	3027.0	1648.0	10.821	4.325	3.06		Clay	100.0			9.86	1.07	n.a.	n.a.	0.91	0.568	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	11.660	0.408	3046.2	1657.2	12.234	4.022	3.00		Clay	100.0			11.02	1.07	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	12.140	0.406	3066.6	1667.0	12.726	3.828	2.97		Clay	100.0			11.47	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	11.940	0.402	3085.8	1676.2	12.406	3.869	2.99		Clay	100.0			11.29	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	12.360	0.401	3105.0	1685.4	12.825	3.711	2.96		Clay	100.0			11.68	1.06	n.a.	n.a.	0.91	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	12.960	0.394	3125.4	1695.2	13.447	3.454	2.93		Clay	97.3			12.25	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	13.000	0.395	3144.6	1704.4	13.410	3.457	2.93		Clay	97.3			12.29	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	12.510	0.388	3165.0	1714.2	12.749	3.548	2.95		Clay	99.3			11.82	1.06	n.a.	n.a.	0.90	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	12.850	0.410	3184.2	1723.4	13.065	3.637	2.95		Clay	99.1			12.15	1.06	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	14.000	0.561	3203.4	1732.6	14.312	4.522	2.98		Clay	100.0			13.23	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	16.670	0.703	3223.8	1742.4	17.284	4.668	2.92		Clay	97.0			15.76	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	21.070	0.890	3243.0	1751.6	22.206	4.576	2.84		Clay	89.9			19.91	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	24.430	0.910	3263.4	1761.4	25.886	3.992	2.75		Clay	82.8			23.09	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	24.960	0.878	3282.6	1770.6	26.339	3.764	2.72		Clay	81.0			23.59	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	23.350	0.834	3303.0	1780.4	24.374	3.845	2.76		Clay	83.5			22.07	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	21.080	0.792	3322.2	1789.7	21.701	4.080	2.81		Clay	87.9			19.92	1.05	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	19.510	0.724	3341.4	1798.9	19.834	4.058	2.84		Clay	90.2			18.44	1.04	n.a.	n.a.	0.90	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	18.050	0.739	3361.8	1808.7	18.101	4.517	2.90		Clay	95.0			17.06	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	17.600	0.654	3381.0	1817.9	17.503	4.110	2.88		Clay	93.8			16.64	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	17.840	0.486	3401.4	1827.7	17.661	3.009	2.80		Clay	86.8			16.86	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	14.060	0.398	3420.6	1836.9	13.446	3.225	2.91		Clay	95.8			13.29	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	11.670	0.335	3439.8	1846.1	10.780	3.369	3.00		Clay	100.0			11.03	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	11.060	0.321	3460.2	1855.9	10.054	3.445	3.03		Clay	100.0			10.45	1.04	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	11.520	0.292	3479.4	1865.1	10.488	2.984	2.98		Clay	100.0			10.89	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	11.790	0.311	3499.8	1874.9	10.710	3.097	2.98		Clay	100.0			11.14	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	12.840	0.341	3519.0	1884.1	11.762	3.073	2.95		Clay	98.6			12.14	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	13.970	0.471	3538.2	1893.3	12.888	3.864	2.97		Clay	100.0			13.20	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	16.410	0.708	3558.6	1903.1	15.375	4.836	2.97		Clay	100.0			15.51	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	21.670	1.282	3577.8	1912.3	20.792	6.448	2.96		Clay	99.6			20.48	1.03	n.a.	n.a.	0.89	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	31.170	2.008	3598.2	1922.1	30.561	6.838	2.86		Clay	91.6			29.46	1.03	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	43.680	2.515	3617.4	1931.4	43.360	6.007	2.71		Clay	79.9			41.29	1.02	n.a.	n.a.	0.88	0.570	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	77.570	2.255	3636.6	1940.6	74.765	2.977	2.33		Sand	49.2	101.75	1.66	168.91	1.02	172.81	264.04	0.88	0.570	1.026	808.978	1825.961	3205.04	0.00	0.00
30.350	101.230	1.955	3657.0	1950.4	97.861	1.967	2.12		Sand	32.3	101.75	1.66	168.91	1.02	172.69	246.76	0.88	0.570	1.024	89.446	201.594	353.89	0.00	0.00
30.510	107.650	1.680	3676.2	1959.6	103.926	1.588	2.03		Sand	25.6		1.66	168.90	1.02	172.66	234.29	0.88	0.570	1.023	24.414	54.949	96.47	0.00	0.00
30.680	90.010	1.096	3696.6	1969.4	86.375	1.243	2.02		Sand	24.6	101.75	1.66	168.91	1.02	172.45	231.73	0.88	0.569	1.022	19.201	43.152	75.77	0.00	0.00
30.840	67.620	1.057	3715.8	1978.6	64.279	1.608	2.19		Sand	38.2	101.75	1.66	168.91	1.02	171.93	253.43	0.88	0.569	1.020	197.404	443.037	778.08	0.00	0.00
31.000	40.420	0.736	3735.0	1987.8	37.596	1.910	2.42		Sand	56.4	101.75	1.66	168.91	1.02	171.71	266.86	0.88	0.569	1.019	1215.389	2723.990	4784.75	0.00	0.00
31.170	22.040	0.566	3755.4	1997.6	20.187	2.806	2.73		Clay	81.6			20.83	1.02	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	14.240	0.463	3774.6	2006.8	12.311	3.745	2.98		Clay	100.0			13.46	1.01	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	12.200	0.449	3795.0	2016.6	10.218	4.356	3.08		Clay	100.0			11.53	1.01	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	12.110	0.459	3814.2	2025.8	10.073	4.502	3.10		Clay	100.0			11.45	1.01	n.a.	n.a.	0.88	0.569	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	11.390	0.																						

CPT No. 6

PGA (A_{max}) 0.57

Total Settlement: 0.02 (Inches)

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Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	In situ σ'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" $PI > 7$	Flag Soil Type	Fines (%)	q-N near interfaces (soft layer)	Thin Layer Factor (K_{L1})	Interpreted q-N	C _N	q _{c1N}	q _{c1N-CS}	Stress Reduction Coeff. r_d	CSR	K_{cs} for Sand	CRRm=7.5, $r'_{vc} = 1$ atm	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ϵ_v	Settlement (Inches)
33.960	11.010	0.340	4090.2	2158.3	8.307	3.797	3.12		Clay	100.0			10.41	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	10.640	0.321	4109.4	2167.5	7.922	3.738	3.13		Clay	100.0			10.06	0.99	n.a.	n.a.	0.86	0.567	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	10.330	0.288	4128.6	2176.7	7.595	3.484	3.13		Clay	100.0			9.76	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	10.080	0.264	4149.0	2186.5	7.323	3.299	3.13		Clay	100.0			9.53	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	10.030	0.262	4168.2	2195.7	7.238	3.297	3.14		Clay	100.0			9.48	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	10.430	0.279	4188.6	2205.5	7.559	3.346	3.12		Clay	100.0			9.86	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	11.430	0.343	4207.8	2214.7	8.422	3.681	3.11		Clay	100.0			10.80	0.99	n.a.	n.a.	0.86	0.566	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	13.530	0.515	4227.0	2224.0	10.267	4.513	3.09		Clay	100.0			12.79	0.99	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	17.520	0.970	4247.4	2233.8	13.785	6.301	3.08		Clay	100.0			16.56	0.99	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	25.540	1.651	4266.6	2243.0	20.871	7.053	2.98		Clay	100.0			24.14	0.98	n.a.	n.a.	0.86	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	34.270	1.801	4287.0	2252.8	28.522	5.605	2.82		Clay	88.4			32.39	0.98	n.a.	n.a.	0.85	0.565	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	38.860	1.708	4306.2	2262.0	32.456	4.652	2.72		Clay	80.6			36.73	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	44.780	1.514	4326.6	2271.8	38.875	3.552	2.58		Sand	69.6			42.33	0.97	40.87	103.32	0.85	0.564	0.992	0.142	0.180	0.32	0.03	0.02
36.090	38.510	1.446	4345.8	2281.0	31.861	3.980	2.68		Clay	77.4			36.40	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	37.520	1.814	4365.0	2290.2	30.860	5.132	2.77		Clay	84.3			35.46	0.98	n.a.	n.a.	0.85	0.564	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	37.760	1.878	4385.4	2300.0	30.928	5.280	2.77		Clay	84.9			35.69	0.98	n.a.	n.a.	0.85	0.563	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	59.150	1.939	4404.6	2309.2	51.525	3.405	2.48		Sand	61.6	147.66	1.5	221.49	0.98	216.44	326.61	0.85	0.563	0.974	#####	#####	#####	0.00	0.00
36.750	126.510	1.642	4425.0	2319.0	112.224	1.321	1.95		Sand	19.2	147.66	1.5	221.49	0.98	216.20	266.18	0.85	0.563	0.973	1101.370	2356.423	4185.56	0.00	0.00
36.910	156.220	1.425	4444.2	2328.2	138.764	0.925	1.78		Sand	5.4		1.5	221.48	0.97	215.03	215.46	0.85	0.563	0.971	5.081	10.858	19.30	0.00	0.00
37.070	148.360	1.031	4463.4	2337.4	131.413	0.706	1.72		Sand	0.8	147.66	1.5	221.49	0.97	214.75	214.75	0.85	0.562	0.970	4.830	10.309	18.33	0.00	0.00
37.240	127.670	0.812	4483.8	2347.2	112.561	0.648	1.75		Sand	3.3	147.66	1.5	221.49	0.97	214.47	214.47	0.85	0.562	0.969	4.734	10.091	17.95	0.00	0.00
37.400	102.820	1.351	4503.0	2356.4	90.075	1.343	2.03		Sand	25.3	147.66	1.5	221.49	0.97	215.29	283.67	0.84	0.562	0.968	19034.498	40523.834	72111.24	0.00	0.00
37.570	81.970	1.589	4523.4	2366.2	71.244	1.993	2.22		Sand	40.5	147.66	1.5	221.49	0.97	215.05	309.46	0.84	0.562	0.966	#####	#####	#####	0.00	0.00
37.730	51.130	1.080	4542.6	2375.4	43.585	2.210	2.41		Sand	55.6	147.66	1.5	221.49	0.97	214.83	321.43	0.84	0.561	0.965	#####	#####	#####	0.00	0.00
37.890	29.040	0.889	4561.8	2384.7	22.443	3.323	2.74		Clay	82.4			27.45	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	17.020	0.612	4582.2	2394.5	12.303	4.152	3.01		Clay	100.0			16.09	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	19.860	0.498	4601.4	2403.7	14.610	2.836	2.85		Clay	90.9			18.77	0.97	n.a.	n.a.	0.84	0.561	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	17.500	0.505	4621.8	2413.5	12.587	3.326	2.94		Clay	98.3			16.54	0.97	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	14.790	0.459	4641.0	2422.7	10.294	3.682	3.04		Clay	100.0			13.98	0.96	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	13.050	0.397	4660.2	2431.9	8.816	3.707	3.09		Clay	100.0			12.33	0.96	n.a.	n.a.	0.84	0.560	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	10.930	0.337	4680.6	2441.7	7.036	3.923	3.19		Clay	100.0			10.33	0.96	n.a.	n.a.	0.84	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	10.620	0.307	4699.8	2450.9	6.749	3.717	3.19		Clay	100.0			10.04	0.96	n.a.	n.a.	0.84	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	11.780	0.314	4720.2	2460.7	7.656	3.334	3.12		Clay	100.0			11.13	0.96	n.a.	n.a.	0.83	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	12.020	0.346	4739.4	2469.9	7.814	3.585	3.13		Clay	100.0			11.36	0.96	n.a.	n.a.	0.83	0.559	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	11.310	0.372	4758.6	2479.1	7.205	4.167	3.20		Clay	100.0			10.69	0.96	n.a.	n.a.	0.83	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	11.650	0.460	4779.0	2488.9	7.441	4.963	3.23		Clay	100.0			11.01	0.96	n.a.	n.a.	0.83	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	13.490	0.856	4798.2	2498.1	8.879	7.718	3.29		Clay	100.0			12.75	0.96	n.a.	n.a.	0.83	0.558	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	14.560	1.182	4818.6	2507.9	9.690	9.731	3.32		Clay	100.0			13.76	0.96	n.a.	n.a.	0.83	0.557	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	93.150	2.174	4837.8	2517.1	78.627	2.396	2.24		Sand	42.6	206.6		206.60	0.96	197.35	289.51	0.83	0.557	0.948	56662.227	#####	212145.67	0.00	0.00
40.350	218.580	1.703	4857.0	2526.4	186.975	0.788	1.64		Sand	0.0			206.60	0.94	194.63	194.63	0.83	0.557	0.956	1.414	2.975	5.34	0.00	0.00
40.520	265.950	1.149	4877.4	2536.2	227.501	0.436	1.41		Sand	0.0			251.37	0.95	238.89	238.89	0.83	0.556	0.946	38.409	79.908	143.63	0.00	0.00
40.680	269.520	1.623	4896.6	2545.4	230.157	0.608	1.49		Sand	0.0			242.02	0.95	242.02	242.02	0.83	0.556	0.945	53.142	110.433	198.60	0.00	0.00
40.850	300.840	1.621	4917.0	2555.2	256.646	0.543	1.43		Sand	0.0			284.35	0.95	270.55	270.55	0.83	0.556	0.943	2119.942	4400.009	7917.87	0.00	0.00
41.010	308.750	2.069	4936.2	2564.4	262.968	0.676	1.48		Sand	0.0			291.82	0.95	277.40	277.40	0.83	0.555	0.942	6381.051	13228.915	23819.30	0.00	0.00
41.170	350.720	1.885	4955.4	2573.6	298.458	0.541	1.38		Sand	0.0			331.49	0.95	314.81	314.81	0.82	0.555	0.941	#####	#####	#####	0.00	0.00
41.340	348.170	2.288	4975.8	2583.4	295.702	0.662	1.44		Sand	0.0			329.08	0.95	312.20	312.20	0.82	0.555	0.940	#####	#####	#####	0.00	0.00
41.500	298.540	2.826	4995.0	2592.6	252.789	0.954	1.61		Sand	0.0			282.17	0.95	267.45	267.45	0.82	0.554	0.939	1326.904	2741.292	4944.67	0.00	0.00
41.670	284.280	4.367	5015.4	2602.4	240.151	1.550	1.78		Sand	5.6			268.70	0.95	254.42	254.98	0.82	0.554	0.938	239.739	494.689	892.87	0.00	0.00
41.830	251.970	3.697	5034.6	2611.6	212.230	1.482	1.80		Sand	7.0			238.16	0.94	223.76	226.07	0.82	0.554	0.937	11.651	24.015	43.37	0.00	0.00
41.990	255.720	3.290	5053.8	2620.8	215.033	1.299	1.75		Sand	3.2			241.70	0.94	226.90	226.90	0.82	0.553	0.936	12.512	25.759	46.55	0.00	0.00
42.160	313.180	3.517	5074.2	2630.6	263.333	1.132	1.65		Sand	0.0			296.01	0.94	279.49	279.49	0.82	0.553	0.935	9104.015	18720.806	33851.76	0.00	0.00
42.320	397.730	3.548	5093.4	2639.8	334.413	0.898	1.51		Sand	0.0			375.93	0.94	354.62	354.62	0.82	0.553	0.934	#####	#####	#####	0.00	0.00
42.490	515.300	2.878	5113.8	2649.6	433.092	0.561	1.28		Sand	0.0			487.05	0.94	458.99	458.99	0.82	0.552	0.933	#####	#####	#####	0.00	