APPENDIX C

GEOTECHNICAL INVESTIGATION

CORNERSTONE
EARTH GROUP

TYPE OF SERVICES	Geotechnical Investigation
PROJECT NAME	Sharks Ice Expansion Report Update
LOCATION	1500 South Tenth Street San Jose, California
CLIENT	Starbird Consulting, LLC
PROJECT NUMBER	1117-1-2
DATE	April 8, 2019

CORNERSTONE
EARTH GROUP

Type of Services Geotechnical Investigation

Project Name Sharks Ice Expansion Report Update

Location 1500 South Tenth Street
San Jose, California

Client Starbird Consulting, LLC

Client Address 1500 South Tenth Street
San Jose, California

Project Number 1117-1-1

Date April 8, 2019

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SECTION 1: INTRODUCTION

This geotechnical report was prepared for the sole use of Starbird Consulting, LLC for the Sharks Ice Expansion project in San Jose, California. The location of the site is shown on the Vicinity Map, Figure 1. For our use, we were provided with the following documents:

- An architectural site plan titled, "Rinks 5 & 6 Addition," prepared by Devcon Construction Incorporated, dated February 28, 2019.

- A set of plans titled, "New Rink 5 & 6 Combined Presentation," prepared by Perkins and Will, dated September 18, 2018.

1.1 PROJECT DESCRIPTION

The project will consist of constructing two new ice rinks (Rinks 5 and 6) and medical office space at the existing Solar4America Ice facility located at 1500 South 10th Street in San Jose. The proposed rinks will be adjacent to the existing Rinks 1 through 4. The structures housing the rinks will be of two- to three-story, high-bay, steel frame construction. The project will add approximately 200,800 square feet of new space to the existing facility. Rink 5 will include a new Community/Practice Rink and Rink 6 will include a Competition Rink for the San Jose Barracudas. Associated ancillary uses including locker rooms, restrooms, spectator seating, ticket lobby, concessions/merchandise sales, bar/restaurant/lounge concepts, security/event offices, team training areas, and loading dock and utility areas are also planned for the project. Approximately 20,000 square feet of the expansion project will include medical offices available for lease and include a reception/lobby area, restrooms, offices, exam rooms, and support services. A 650 kW emergency generator with a 660-gallon fuel tank and sound-attenuating enclosure are also planned. Additional parking will be provided in a future parking structure to be constructed by San Jose State University at the northeast corner of South 10th Street and Alma Street. Appurtenant utilities, landscaping, and other improvements necessary for site development are also planned.

Site grading is anticipated to be minor, with cuts and fills on the order of 3 to 4 feet to match the finished floor of the expansion structures with the existing facilities. Structural loads are not known at this time, but are expected to be representative of similar structures.

1.2 SCOPE OF SERVICES

Our scope of services was presented in our proposal dated December 13, 2018 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, retaining walls, pavements, and preparation of this report. Brief descriptions of our exploration and laboratory programs are presented below.

1.3 EXPLORATION PROGRAM

Field exploration consisted of one boring drilled on March 15, 2013 with truck-mounted, hollow-stem auger drilling equipment and three Cone Penetration Tests (CPTs) advanced on March 13, 2013. The boring was drilled to a depth of 40 feet; the CPTs were advanced to depths of about 50 to 60 feet. Boring EB-1 was advanced adjacent to CPT-2 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 foundation design and seismic ground deformation estimates. Testing included moisture contents, dry densities, washed sieve analyses, a Plasticity Index test, an R-value test, and a triaxial compression test. Details regarding our laboratory program are included in Appendix B.

1.5 ENVIRONMENTAL SERVICES

Cornerstone Earth Group also provided environmental services for the portion of the project that will be constructed at the former San Jose Municipal Firing Range area only, which included Phase 1 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 site area range from 500 to more than 600 feet (Rogers & Williams, 1974).

2.2 REGIONAL SEISMICITY

The San Francisco Bay area region is one of the most seismically active areas in the Country. While seismologists cannot predict earthquake events, geologists from the U.S. Geological Survey have recently updated earlier estimates from their 2014 Uniform California Earthquake Rupture Forecast (Version 3) 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%), Rodgers Creek (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 or Rodgers Creek Faults.

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)	3.8	6.1
Monte Vista-Shannon	5.8	9.3
Calaveras	6.5	10.5
Hayward (Total Length)	7.9	12.8
San Andreas	11.2	18.0
Sargent	12.0	19.3

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 SURFACE DESCRIPTION

The site is generally located in an area of industrial development, and is bounded by Senter Road and the San Jose Giants facility to the east, East Alma Avenue to the north, South 10th Street to the west, and the former Union Pacific Railroad right-of-way and City of San Jose's

Central Service Yard to the south. The portion of the site where the proposed Rinks 5 and 6 are to be constructed is currently occupied by at-grade, asphalt concrete parking and a small, single-story structure that was previously used as an indoor gun range.

Boring EB-1 was the only boring drilled in the existing parking lot; surface pavement at that location consisted of 3 inches of asphalt concrete over 5 inches of aggregate base. Based on visual observations, the existing pavements are in good condition.

3.2 SUBSURFACE CONDITIONS

Below the surface pavements, our Exploratory Boring EB-1 encountered about 2½ feet of undocumented fill consisting of hard sandy lean clay. Below the fill, Boring EB-1 encountered hard sandy lean clay to a depth of about 4½ feet underlain by medium stiff sandy silt to a depth of about 9 feet. Beneath the silt, Boring EB-1 encountered medium dense silty sand to a depth of about 12 feet underlain by medium stiff sandy silt to a depth of about 16½ feet. Beneath the silt, Boring EB-1 encountered loose silty sand to a depth of about 17½ feet underlain by interbedded layers of soft to medium stiff lean clays with variable amounts of sand and medium stiff sandy silt to the terminal boring depth of 40 feet. Beneath the terminal boring depth of 40 feet, our CPTs generally encountered stiff lean clays and silts with varying amounts of clay, sand, and silt to the maximum depth explored of about 60 feet.

3.2.1 Plasticity/Expansion Potential

We performed one Plasticity Index (PI) test on a representative sample. Test results were used to evaluate expansion potential of the surficial soils. The results of the surficial PI test indicated a PI of 9, indicating low 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 feet range from 0 to 5 percent over the estimated laboratory optimum moisture at the time of exploration.

3.3 GROUNDWATER

Groundwater was encountered in Boring EB-1 at 15½ feet and pore pressure measurements taken at CPT-2 indicated groundwater at an estimated depth of 18 feet below current grades. Additionally, maps prepared by the California Geologic Survey (CGS) indicated the historical high groundwater level was estimated at about 13 feet below existing 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.

Fluctuations in groundwater levels occur due to many factors including seasonal fluctuation, underground drainage patterns, regional fluctuations, and other factors.

3.4 CORROSION SCREENING

We tested four samples collected at depths of 3½ and 9 feet for resistivity, pH, soluble sulfates, and chlorides. The laboratory test results are summarized in Table 2A.

Table 2A: Summary of Corrosion Test Results

Boring/Sample	Depth (feet)	Soil pH[1]	Resistivity[2] (ohm-cm)	Chloride[3,5] (mg/kg)	Sulfate[4,5] (mg/kg)
EB-1/2A	3½	8.3	1,525	50	0.0159
EB-1/4A	9	8.8	5,620	20	0.0051
EB-3/2A	3½	8.4	1,811	24	0.0061
EB-4/2A	3½	8.0	1,708	26	0.0070

Notes: [1] ASTM G51
[2] ASTM G57 - 100% saturation
[3] ASTM D4327/Cal 422 Modified
[4] ASTM D4327/Cal 417 Modified
[5] 1 mg/kg = 0.0001% by dry weight

Many factors can affect the corrosion potential of soil and bedrock including moisture content, resistivity, permeability, and pH, as well as chloride and sulfate concentration. Typically, soil resistivity, which is a measurement of how easily electrical current flows through a medium (soil and/or water), is the most influential factor. In addition to soil resistivity, chloride and sulfate ion concentrations, and pH also contribute in affecting corrosion potential. Based on the laboratory test results summarized in Table 2A and published correlations between resistivity and corrosion potential, the near surface materials may be considered mildly to severely corrosive to buried metallic improvements (Chaker and Palmer, 1989).

In accordance with the 2016 CBC Section 1904A.1, alternative cementitious materials shall be determined in accordance with ACI 318-14 Table 19.3.1.1, Table R19.3.1, and Table 19.3.2.1. Based on the laboratory sulfate test results, no cement type restriction is required, although, in our opinion, it is generally a good idea to include some sulfate resistance and to maintain a relatively low water-cement ratio. We have summarized applicable design values and parameters from ACI 318-14, Chapter 19 below in Table 2B.

We recommend the structural engineer and a corrosion engineer be retained to confirm the information provided and for additional recommendations, as required.

Table 2B: ACI Sulfate Soil Corrosion Design Values and Parameters

Category	Water-Soluble Sulfate (SO4) in Soil (% by weight)	Sulfate (S) Class	Cementitious Materials (2)
S, Sulfate	< 0.10	S0	no type restriction

Notes: (1) above values and parameters are from on ACI 318-14, Table 19.3.1.1, Table R19.3.1, and Table 19.3.2.1
(2) cementitious materials are in accordance with ASTM C150, ASTM C595, and ASTM C1157

SECTION 4: GEOLOGIC HAZARDS

4.1 FAULT 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 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 $(PGA)_M$ was estimated for analysis using a value equal to F_{PGA} x PGA, as allowed in the 2016 edition of the California Building Code. For our liquefaction analysis we used a PGA_M of 0.500g.

4.3 LIQUEFACTION POTENTIAL

The site is within a State-designated Liquefaction Hazard Zone (CGS, San Jose East Quadrangle, 2001) 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 50 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 ground water depth of 13 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.

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 ground water. The tip pressures are corrected for effective overburden stresses, taking into consideration both the ground water level at the time of exploration and the design ground water 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.

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 nonliquefied 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 results of our CPT analyses (CPT-1 through CPT-3) are presented on Figures 4A through 4C of this report. Calculations for these CPTs are attached as Appendix C.

4.3.3 Summary

Our analyses indicate that several layers could potentially experience liquefaction triggering that could result in soil softening and post-liquefaction total settlement ranging from ¼ to ⅔-inch 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. In our opinion, differential settlements are anticipated to be on the order of up to ½-inch between independent foundation elements, estimated on the order of 30 feet.

4.3.4 Ground Rupture Potential

The methods used to estimate liquefaction settlements assume that there is a sufficient cap of non-liquefiable material to prevent ground rupture or sand boils. For ground rupture 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 Garris (1995) indicates that the 13-foot thick layer of non-liquefiable cap is sufficient to prevent ground rupture; 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 reasonable distance of the site where lateral spreading could occur; therefore, in our opinion, the potential for lateral spreading to affect the site is low.

4.5 SEISMIC SETTLEMENT/UNSATURATED SAND SHAKING

Loose to medium dense unsaturated sandy soils can settle during strong seismic shaking. We evaluated the potential for seismic compaction of the loose to medium dense sands above the design ground water depth of 8 feet based on the work by Robertson and Shao (2010). Our analyses indicate that the unsaturated sands could experience up to 1¼ inches of movement after strong seismic shaking.

4.6 FLOODING

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

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. Descriptions of each concern with brief outlines of our recommendations follow the listed concerns.

- Potential for seismic settlement
- Presence of undocumented fill

- Soil Corrosion Potential
- Slab damage due to frozen soil heave

5.1.1 Potential for Seismic Settlement

As discussed, our liquefaction and dry sand settlement analysis indicates that there is a potential for liquefaction of localized sand layers during a significant seismic event. Our analysis indicates that liquefaction-induced settlement on the order of up to ⅔-inch and dry sand settlement on the order of up to 1 inch could occur, resulting in total differential seismic settlement up to 1 inch. Foundations should be designed to tolerate the anticipated total and differential settlements. Detailed foundation recommendations are presented in the "Foundations" section.

5.1.2 Presence of Undocumented Fill

As stated in Section 3.2, up to 2½ feet of undocumented fill was encountered in our exploratory boring. If the undocumented fill is not removed during grading, it should be removed from within the new building pad areas and be replaced with engineered fill. Refer to Section 6.2 for more information.

5.1.3 Soil Corrosion Potential

We performed a preliminary soil corrosion screening based on the results of analytical tests on samples of the near-surface soil. In general, we conclude that the corrosion potential for buried concrete does not warrant the use of sulfate resistant concrete; however, the corrosion potential for buried metallic structures, such as metal pipes, is considered mildly to severely corrosive. A corrosion engineer should be consulted to confirm the classifications.

5.1.4 Slab Damage Due to Frozen Soil Heave

The cooling system used to create the ice layer for the proposed rinks may also freeze the underlying soil. In turn, the existing fine-grained surficial soils may expand and heave as they freeze if special precautions are not implemented, which may cause differential movement, cracking of the sub-slabs beneath the ice layer, or other effects. Further discussion and recommendations are available in Section 8.1.

5.2 PLANS AND SPECIFICATIONS REVIEW

We recommend that we be retained 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.

5.3 CONSTRUCTION OBSERVATION AND TESTING

As site conditions may vary significantly between the small-diameter borings performed during this investigation, we also recommend that a Cornerstone representative be present to provide geotechnical observation and testing during earthwork and foundation construction. This will allow us to form an opinion and prepare a letter at the end of construction regarding contractor compliance with project plans and specifications, and with the recommendations in our report. We will also be allowed to evaluate any conditions differing from those encountered during our investigation, and provide supplemental recommendations as necessary. For these reasons, the recommendations in this report are contingent of Cornerstone providing observation and testing during construction. Contractors should provide at least a 48-hour notice when scheduling our field personnel.

SECTION 6: EARTHWORK

6.1 SITE DEMOLITION

All existing improvements not to be reused for the current development, including all foundations, flatwork, pavements, utilities, and other improvements should be demolished and removed from the site. Recommendations in this section apply to the removal of these improvements, which may be present on the site, prior to the start of mass grading or the construction of new improvements for the project.

Cornerstone should be notified prior to the start of demolition, and should be present on at least a part-time basis during all backfill and mass grading as a result of demolition. Occasionally, other types of buried structures (wells, cisterns, debris pits, etc.) can be found on sites with prior development. If encountered, Cornerstone should be contacted to address these types of structures on a case-by-case basis.

6.1.1 Demolition of Existing Slabs, Foundations and Pavements

All slabs, foundations, and pavements should be completely removed from within planned building areas.

As an owner value-engineered option, existing slabs, foundations, and pavements that extend into planned flatwork, pavement, or landscape areas may be left in place provided there is at least 3 feet of engineered fill overlying the remaining materials, they are shown not to conflict with new utilities, and that asphalt and concrete more than 10 feet square is broken up to allow subsurface drainage. Future distress and/or higher maintenance may result from leaving these prior improvements in place. A discussion of recycling existing improvements is provided later in this report.

Special care should be taken during the demolition and removal of existing floor slabs, foundations, utilities and pavements to minimize disturbance of the subgrade. Excessive disturbance of the subgrade, which includes either native or previously placed engineered fill, resulting from demolition activities can have serious detrimental effects on planned foundation and paving elements.

Existing foundations are typically mat-slabs, shallow footings, or piers/piles. If slab or shallow footings are encountered, they should be completely removed. If drilled piers are encountered, they should be cut off at an elevation at least 60-inches below proposed footings or the final subgrade elevation, whichever is deeper. The remainder of the drilled pier could remain in place. Foundation elements to remain in place should be surveyed and superimposed on the proposed development plans to determine the potential for conflicts or detrimental impacts to the planned construction. Following review, additional mitigation or planned foundation elements may need to be modified.

6.1.2 Abandonment of Existing Utilities

All utilities should be completely removed from within planned building areas. For any utility line to be considered acceptable to remain within building areas, the utility line must be completely backfilled with grout or sand-cement slurry (sand slurry is not acceptable), the ends outside the building area capped with concrete, and the trench fills either removed and replaced as engineered fill with the trench side slopes flattened to at least 1:1, or the trench fills are determined not to be a risk to the structure. The assessment of the level of risk posed by the particular utility line will determine whether the utility may be abandoned in place or needs to be completely removed. The contractor should assume that all utilities will be removed from within building areas unless provided written confirmation from both the owner and the geotechnical engineer.

Utilities extending beyond the building area may be abandoned in place provided the ends are plugged with concrete, they do not conflict with planned improvements, and that the trench fills do not pose significant risk to the planned surface improvements.

The risk for owners associated with abandoning utilities in place include the potential for future differential settlement of existing trench fills, and/or partial collapse and potential ground loss into utility lines that are not completely filled with grout.

6.2 SITE CLEARING AND PREPARATION

6.2.1 Site Stripping

The site should be stripped of all surface vegetation, and surface and subsurface improvements to be removed within the proposed development area. Demolition of existing improvements is discussed in the prior paragraphs. A detailed discussion of removal of existing fills is provided later in this report. Surface vegetation and topsoil should be stripped to a sufficient depth to remove all material greater than 3 percent organic content by weight. Based on our site observations, surficial stripping should extend about 3 to 6 inches below existing grade in vegetated areas.

6.2.2 Tree and Shrub Removal

Trees and shrubs designated for removal should have the root balls and any roots greater than ½-inch diameter removed completely. Mature trees are estimated to have root balls extending to depths of 2 to 4 feet, depending on the tree size. Significant root zones are anticipated to extend to the diameter of the tree canopy. Grade depressions resulting from root ball removal should be cleaned of loose material and backfilled in accordance with the recommendations in the “Compaction” section of this report.

6.3 REMOVAL OF EXISTING FILLS

As discussed earlier, up to 2½ feet of undocumented fill was present in our borings. All fills should be completely removed from within building areas and to a lateral distance of at least 5 feet beyond the building footprint or to a lateral distance equal to fill depth below the perimeter footing, whichever is greater. Provided the fills meet the “Material for Fill” requirements below, the fills may be reused when backfilling the excavations. Based on review of the samples collected from our borings, it appears that the fill may be reused. If materials are encountered that do not meet the requirements, such as debris, wood, trash, those materials should be screened out of the remaining material and be removed from the site. Backfill of excavations should be placed in lifts and compacted in accordance with the “Compaction” section below.

Fills extending into planned pavement and flatwork areas may be left in place provided they are determined to be a low risk for future differential settlement and that the upper 12 inches of fill below pavement subgrade is re-worked and compacted as discussed in the “Compaction” section below.

6.4 TEMPORARY CUT AND FILL SLOPES

The contractor is responsible for maintaining all temporary slopes and providing temporary shoring where required. Temporary shoring, bracing, and cuts/fills should be performed in accordance with the strictest government safety standards. On a preliminary basis, the upper 10 feet at the site may be classified as OSHA Soil Type C materials. A Cornerstone representative should be retained to confirm the preliminary site classification.

Excavations performed during site demolition and fill removal should be sloped at 3:1 (horizontal:vertical) within the upper 5 feet below building subgrade. Excavations extending more than 5 feet below building subgrade and excavations in pavement and flatwork areas should be sloped in accordance with the OSHA soil classification.

6.5 SUBGRADE PREPARATION

After site clearing and demolition is complete, and prior to backfilling any excavations resulting from fill removal or demolition, the excavation subgrade and subgrade within areas to receive additional site fills, slabs-on-grade and/or pavements should be scarified to a depth of 6 inches, moisture conditioned, and compacted in accordance with the “Compaction” section below.

6.6 SUBGRADE STABILIZATION MEASURES

Soil subgrade and fill materials, especially soils with high fines contents such as clays and silty soils, can become unstable due to high moisture content, whether from high in-situ moisture contents or from winter rains. As the moisture content increases over the laboratory optimum, it becomes more likely the materials will be subject to softening and yielding (pumping) from construction loading or become unworkable during placement and compaction.

As discussed in the “Subsurface” section in this report, the in-situ moisture contents range up to 5 percent over the estimated laboratory optimum in the upper 10 feet of the soil profile. The contractor should anticipate drying the soils prior to reusing them as fill. In addition, repetitive rubber-tire loading will likely de-stabilize the soils.

There are several methods to address potential unstable soil conditions and facilitate fill placement and trench backfill. Some of the methods are briefly discussed below. Implementation of the appropriate stabilization measures should be evaluated on a case-by-case basis according to the project construction goals and the particular site conditions.

6.6.1 Scarification and Drying

The subgrade may be scarified to a depth of 6 to 12 inches and allowed to dry to near optimum conditions, if sufficient dry weather is anticipated to allow sufficient drying. More than one round of scarification may be needed to break up the soil clods.

6.6.2 Removal and Replacement

As an alternative to scarification, the contractor may choose to over-excavate the unstable soils and replace them with dry on-site or import materials. A Cornerstone representative should be present to provide recommendations regarding the appropriate depth of over-excavation, whether a geosynthethic (stabilization fabric or geogrid) is recommended, and what materials are recommended for backfill.

6.7 MATERIAL FOR FILL

6.7.1 Re-Use of On-site Soils

On-site soils with an organic content less than 3 percent by weight may be reused as general fill. General fill should not have lumps, clods or cobble pieces larger than 6 inches in diameter; 85 percent of the fill should be smaller than 2½ inches in diameter. Minor amounts of oversize material (smaller than 12 inches in diameter) may be allowed provided the oversized pieces are not allowed to nest together and the compaction method will allow for loosely placed lifts not exceeding 12 inches.

6.7.2 Re-Use of On-Site Site Improvements

We anticipate that significant quantities of asphalt concrete (AC) grindings and aggregate base (AB) will be generated during site demolition. If the AC grindings are mixed with the underlying AB to meet Class 2 AB specifications, they may be reused within the new pavement and flatwork structural sections. AC/AB grindings may not be reused within the habitable building areas. Laboratory testing will be required to confirm the grindings meet project specifications.

6.7.3 Potential Import Sources

Imported and non-expansive material should be inorganic with a Plasticity Index (PI) of 15 or less, and not contain recycled asphalt concrete where it will be used within the habitable building areas. To prevent significant caving during trenching or foundation construction, imported material should have sufficient fines. Samples of potential import sources should be delivered to our office at least 10 days prior to the desired import start date. Information regarding the import source should be provided, such as any site geotechnical reports. If the material will be derived from an excavation rather than a stockpile, potholes will likely be required to collect samples from throughout the depth of the planned cut that will be imported. At a minimum, laboratory testing will include PI tests. Material data sheets for select fill materials (Class 2 aggregate base, ¾-inch crushed rock, quarry fines, etc.) listing current laboratory testing data (not older than 6 months from the import date) may be provided for our review without providing a sample. If current data is not available, specification testing will need to be completed prior to approval.

Environmental and soil corrosion characterization should also be considered by the project team prior to acceptance. Suitable environmental laboratory data to the planned import quantity should be provided to the project environmental consultant; additional laboratory testing may be required based on the project environmental consultant's review. The potential import source should also not be more corrosive than the on-site soils, based on pH, saturated resistivity, and soluble sulfate and chloride testing.

6.8 COMPACTION REQUIREMENTS

All fills, and subgrade areas where fill, slabs-on-grade, and pavements are planned, should be placed in loose lifts 8 inches thick or less and compacted in accordance with ASTM D1557 (latest version) requirements as shown in the table below. In general, clayey soils should be compacted with sheepsfoot equipment and sandy/gravelly soils with vibratory equipment; open-graded materials such as crushed rock should be placed in lifts no thicker than 18 inches consolidated in place with vibratory equipment. Each lift of fill and all subgrade should be firm and unyielding under construction equipment loading in addition to meeting the compaction requirements to be approved. The contractor (with input from a Cornerstone representative) should evaluate the in-situ moisture conditions, as the use of vibratory equipment on soils with high moistures can cause unstable conditions. General recommendations for soil stabilization are provided in the "Subgrade Stabilization Measures" section of this report.

Table 4: Compaction Requirements

Description	Material Description	Minimum Relative[1] Compaction (percent)	Moisture[2] Content (percent)
General Fill (within upper 5 feet)	On-Site Soils	90	>1
General Fill (below a depth of 5 feet)	On-Site Soils	95	>1
Retaining Wall Backfill	Without Surface Improvements	90	>1
Retaining Wall Backfill	With Surface Improvements	95[4]	>1
Trench Backfill	On-Site Soils	90	>1
Trench Backfill (upper 6 inches of subgrade)	On-Site Soils	95	>1
Crushed Rock Fill	¾-inch Clean Crushed Rock	Consolidate In-Place	NA
Non-Expansive Fill	Imported Non-Expansive Fill	90	Optimum
Flatwork Subgrade	On-Site Soils	90	>1
Flatwork Aggregate Base	Class 2 Aggregate Base[3]	90	Optimum
Pavement Subgrade	On-Site Soils	95	>1
Pavement Aggregate Base	Class 2 Aggregate Base[3]	95	Optimum
Asphalt Concrete	Asphalt Concrete	95	NA

1 – Relative compaction based on maximum density determined by ASTM D1557 (latest version)
2 – Moisture content based on optimum moisture content determined by ASTM D1557 (latest version)
3 – Class 2 aggregate base shall conform to Caltrans Standard Specifications, latest edition, except that the relative compaction should be determined by ASTM D1557 (latest version)
4 – Using light-weight compaction or walls should be braced

6.9 TRENCH BACKFILL

Utility lines constructed within public right-of-way should be trenched, bedded and shaded, and backfilled in accordance with the local or governing jurisdictional requirements. Utility lines in private improvement areas should be constructed in accordance with the following requirements unless superseded by other governing requirements.

All utility lines should be bedded and shaded to at least 6 inches over the top of the lines with crushed rock (⅜-inch-diameter or greater) or well-graded sand and gravel materials conforming to the pipe manufacturer's requirements. Open-graded shading materials should be consolidated in place with vibratory equipment and well-graded materials should be compacted to at least 90 percent relative compaction with vibratory equipment prior to placing subsequent backfill materials.

General backfill over shading materials may consist of on-site native materials provided they meet the requirements in the "Material for Fill" section, and are moisture conditioned and compacted in accordance with the requirements in the "Compaction" section.

Where utility lines will cross perpendicular to strip footings, the footing should be deepened to encase the utility line, providing sleeves or flexible cushions to protect the pipes from anticipated foundation settlement, or the utility lines should be backfilled to the bottom of footing with sand-cement slurry or lean concrete. Where utility lines will parallel footings and will extend below the "foundation plane of influence," an imaginary 1:1 plane projected down from the bottom edge of the footing, either the footing will need to be deepened so that the pipe is above the foundation plane of influence or the utility trench will need to be backfilled with sand-cement slurry or lean concrete within the influence zone. Sand-cement slurry used within foundation influence zones should have a minimum compressive strength of 75 psi.

6.10 SITE DRAINAGE

6.10.1 Surface Drainage

Ponding should not be allowed 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 3 percent towards suitable discharge facilities. Roof runoff should be directed away from building areas in closed conduits, to approved infiltration facilities, or on to hardscaped surfaces that drain to suitable facilities. 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. However, if retention, detention or infiltration facilities are located within these zones, we recommend that these treatment facilities meet the requirements in the Storm Water Treatment Design Considerations section of this report.

6.11 LOW-IMPACT DEVELOPMENT (LID) IMPROVEMENTS

The Municipal Regional Permit (MRP) requires regulated projects to treat 100 percent of the amount of runoff identified in Provision C.3.d from a regulated project's drainage area with low impact development (LID) treatment measures onsite or at a joint stormwater treatment facility. LID treatment measures are defined as rainwater harvesting and use, infiltration, evapotranspiration, or biotreatment. A biotreatment system may only be used if it is infeasible to implement harvesting and use, infiltration, or evapotranspiration at a project site.

Technical infeasibility of infiltration may result from site conditions that restrict the operability of infiltration measures and devices. Various factors affecting the feasibility of infiltration treatment may create an environmental risk, structural stability risk, or physically restrict infiltration. The presence of any of these limiting factors may render infiltration technically infeasible for a proposed project. To aid in determining if infiltration may be feasible at the site, we provide the following site information regarding factors that may aid in determining the feasibility of infiltration facilities at the site.

- The near-surface soils at the site are clayey, and categorized as Hydrologic Soil Group D, and is expected to have infiltration rates of less than 0.2 inches per hour. In our opinion, these clayey soils will significantly limit the infiltration of stormwater. Layers with higher infiltration rates were encountered below 5 feet; however, this would mean the base of the infiltration measure would be within 10 feet of seasonal high groundwater, and would likely not be approved by the Santa Clara Valley Water District.

- Locally, seasonal high groundwater is mapped at a depth of 13 feet, and therefore is expected to be at least 10 feet below the base of shallow infiltration measures.
- No known groundwater production wells are within 100 feet of potential locations for infiltration facilities.
- In our opinion, infiltration locations within 10 feet of the buildings would create a severe geotechnical hazard due to freezing of slabs for the rinks.
- Infiltration measures, devices, or facilities may conflict with the location of existing or proposed underground utilities or easements. Infiltration measures, devices, or facilities should not be placed on top of or very near to underground utilities such that they discharge to the utility trench, restrict access, or cause stability concerns.

6.11.1 Storm Water Treatment Design Considerations

If storm water treatment improvements, such as shallow bio-retention swales, basins or pervious pavements, are required as part of the site improvements to satisfy Storm Water Quality (C.3) requirements, we recommend the following items be considered for design and construction.

6.11.1.1 General Bioswale Design Guidelines

- If possible, avoid placing bioswales or basins within 10 feet of the building perimeter or within 5 feet of exterior flatwork or pavements. If bioswales must be constructed within these setbacks, the side(s) and bottom of the trench excavation should be lined with 10-mil visqueen to reduce water infiltration into the surrounding expansive clay.
- Bioswales constructed within 3 feet of proposed buildings may be within the foundation zone of influence for perimeter wall loads. Therefore, where bioswales will parallel foundations and will extend below the “foundation plane of influence,” an imaginary 1:1 plane projected down from the bottom edge of the foundation, the foundation will need to be deepened so that the bottom edge of the bioswale filter material is above the foundation plane of influence.
- The bottom of bioswale or detention areas should include a perforated drain placed at a low point, such as a shallow trench or sloped bottom, to reduce water infiltration into the surrounding soils near structural improvements, and to address the low infiltration capacity of the on-site clay soils.

6.11.1.2 Bioswale Infiltration Material

- Gradation specifications for bioswale filter material, if required, should be specified on the grading and improvement plans.

- Compaction requirements for bioswale filter material in non-landscaped areas or in pervious pavement areas, if any, should be indicated on the plans and specifications to satisfy the anticipated use of the infiltration area.

- If required, infiltration (percolation) testing should be performed on representative samples of potential bioswale materials prior to construction to check for general conformance with the specified infiltration rates.

- It should be noted that multiple laboratory tests may be required to evaluate the properties of the bioswale materials, including percolation, landscape suitability and possibly environmental analytical testing depending on the source of the material. We recommend that the landscape architect provide input on the required landscape suitability tests if bioswales are to be planted.

- If bioswales are to be vegetated, the landscape architect should select planting materials that do not reduce or inhibit the water infiltration rate, such as covering the bioswale with grass sod containing a clayey soil base.

- If required by governing agencies, field infiltration testing should be specified on the grading and improvement plans. The appropriate infiltration test method, duration and frequency of testing should be specified in accordance with local requirements.

- Due to the relatively loose consistency and/or high organic content of many bioswale filter materials, long-term settlement of the bioswale medium should be anticipated. To reduce initial volume loss, bioswale filter material should be wetted in 12 inch lifts during placement to pre-consolidate the material. Mechanical compaction should not be allowed, unless specified on the grading and improvement plans, since this could significantly decrease the infiltration rate of the bioswale materials.

- It should be noted that the volume of bioswale filter material may decrease over time depending on the organic content of the material. Additional filter material may need to be added to bioswales after the initial exposure to winter rains and periodically over the life of the bioswale areas, as needed.

6.11.1.3 Bioswale Construction Adjacent to Pavements

If bio-infiltration swales or basins are considered adjacent to proposed parking lots or exterior flatwork, we recommend that mitigative measures be considered in the design and construction of these facilities to reduce potential impacts to flatwork or pavements. Exterior flatwork, concrete curbs, and pavements located directly adjacent to bio-swales may be susceptible to settlement or lateral movement, depending on the configuration of the bioswale and the setback between the improvements and edge of the swale. To reduce the potential for distress to these improvements due to vertical or lateral movement, the following options should be considered by the project civil engineer:

- Improvements should be setback from the vertical edge of a bioswale such that there is at least 1 foot of horizontal distance between the edge of improvements and the top edge of the bioswale excavation for every 1 foot of vertical bioswale depth, or

- Concrete curbs for pavements, or lateral restraint for exterior flatwork, located directly adjacent to a vertical bioswale cut should be designed to resist lateral earth pressures in accordance with the recommendations in the "Retaining Walls" section of this report, or concrete curbs or edge restraint should be adequately keyed into the native soil or engineered to reduce the potential for rotation or lateral movement of the curbs.

SECTION 7: FOUNDATIONS

7.1 SUMMARY OF RECOMMENDATIONS

In our opinion, the proposed structures may be supported on shallow foundations provided the recommendations in the "Earthwork" section and the sections below are followed.

7.2 SEISMIC DESIGN CRITERIA

We understand that the project structural design will be based on the 2016 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 100 feet below grade and mapped spectral acceleration parameters based on distance to the controlling seismic source/fault system. Based on our borings and review of local geology, the site is underlain by deep alluvial soils with typical SPT "N" values between 15 and 50 blows per foot. Therefore, we have classified the site as Soil Classification D. The mapped spectral acceleration parameters S_S and S_1 were calculated using the ASCE 7 web-based program *ASCE 7 Hazard Tool*, located at http://asce7hazardtool.online, 2017-2018, based on the site coordinates presented below and the site classification. The table below lists the various factors used to determine the seismic coefficients and other parameters.

Table 5: CBC Site Categorization and Site Coefficients

Classification/Coefficient	**Design Value**
Site Class	D
Site Latitude	37.318940°
Site Longitude	-121.86299°
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 – Fa	1.0
Long-Period Site Coefficient – Fv	1.5
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}	0.900g
0.2-second Period, Design Earthquake Spectral Response Acceleration – S_{DS}	1.000g
1-second Period, Design Earthquake Spectral Response Acceleration – S_{D1}	0.600g

[1] For Site Class B, 5 percent damped.

7.3 SHALLOW FOUNDATIONS

7.3.1 Spread Footings

Spread footings should bear on natural, undisturbed soil or engineered fill, be at least 18 inches wide, and extend at least 18 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.

Footings constructed to the above dimensions and in accordance with the “Earthwork” recommendations of this report are 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.

7.3.2 Footing Settlement

Structural loads were not provided to us at the time this report was prepared; therefore, we assumed the typical loading in the following table.

Table 6: Assumed Structural Loading

Foundation Area	Range of Assumed Loads
Interior Isolated Column Footing	250 to 350 kips
Exterior Isolated Column Footing	100 to 200 kips
Perimeter Strip Footing	6 to 8 kips per lineal foot

Based on the above loading and the allowable bearing pressures presented above, we estimate that the total static footing settlement will be on the order of ½-inch, with about ¼-inch of differential settlement between adjacent foundation elements. In addition we estimate that differential seismic movement will be on the order of 1 inch between foundation elements, resulting in a total estimated differential footing movement of 1¼ inches between foundation elements.

7.3.3 Lateral Loading

Lateral loads may be resisted by friction between the bottom of footing and the supporting subgrade, and also by passive pressures generated against footing sidewalls. An ultimate frictional resistance of 0.45 applied to the footing dead load, and an ultimate passive pressure based on an equivalent fluid pressure of 450 pcf may be used in design. The structural engineer should apply an appropriate factor of safety (such as 1.5) to the ultimate values above. Where footings are adjacent to landscape areas without hardscape, the upper 12 inches of soil should be neglected when determining passive pressure capacity.

7.3.4 Spread Footing Construction Considerations

Where utility lines will cross perpendicular to strip footings, the footing should be deepened to encase the utility line, providing sleeves or flexible cushions to protect the pipes from anticipated foundation settlement, or the utility lines should be backfilled to the bottom of footing with sand-cement slurry or lean concrete. Where utility lines will parallel footings and will extend below the “foundation plane of influence,” an imaginary 1:1 plane projected down from the bottom edge of the footing, either the footing will need to be deepened so that the pipe is above the foundation plane of influence or the utility trench will need to be backfilled with sand-cement slurry or lean concrete within the influence zone. Sand-cement slurry used within foundation influence zones should have a minimum compressive strength of 75 psi.

Footing excavations should be filled as soon as possible or be kept moist until concrete placement by regular sprinkling to prevent desiccation. A Cornerstone representative should observe all footing excavations prior to placing reinforcing steel and concrete. If there is a significant schedule delay between our initial observation and concrete placement, we may need to re-observe the excavations.

SECTION 8: CONCRETE SLABS AND PEDESTRIAN PAVEMENTS

8.1 RINK SLAB CONSIDERATIONS

As mentioned previously, the cooling system used to create the ice layer for the proposed rinks could also freeze the underlying soils if mitigation measures are not implemented. The existing fine-grained surficial soils may expand and heave as they freeze, which could cause differential movement, heave and cracking of the sub-slabs beneath the ice layer, and other effects. We understand that the rink slab will be underlain by two layers of insulation and a layer of granular material with warming pipes recommended by the manufacturer of the ice system.

Due to the possibility of heave of the surficial, fine-grained soils, we recommend removing an additional 6 inches of the fine-grained soils from within and to a lateral distance of at least 5 feet beyond the ice rink footprints and replacing them with 6 inches of capillary break material, such as clean, crushed gravel generally sized from ¼ to ¾-inches. The granular soil should be compacted to the requirements stated in the “Compaction Requirements” section of this report.

8.2 INTERIOR SLABS-ON-GRADE

As the Plasticity Index (PI) of the surficial soils is low to moderate, the proposed slabs-on-grade not including the rink areas should be supported on at least 6 inches of non-expansive fill (NEF) overlying subgrade prepared in accordance with the recommendations in the “Earthwork” section of this report. If moisture-sensitive floor coverings are planned, the recommendations in the “Interior Slabs Moisture Protection Considerations” section below may be incorporated in the project design if desired. If significant time elapses between initial subgrade preparation and slab-on-grade construction, the subgrade should be proof-rolled to confirm subgrade stability, and if the soil has been allowed to dry out, the subgrade should be re-moisture conditioned to near optimum moisture content.

The structural engineer should determine the appropriate slab reinforcement for the loading requirements and considering the expansion potential of the underlying soils. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness.

8.3 INTERIOR SLABS MOISTURE PROTECTION CONSIDERATIONS

The following general guidelines for concrete slab-on-grade (non-rink areas) construction where floor coverings are planned are presented for the consideration by the developer, design team, and contractor. These guidelines are based on information obtained from a variety of sources, including the American Concrete Institute (ACI) and are intended to reduce the potential for moisture-related problems causing floor covering failures, and may be supplemented as necessary based on project-specific requirements. The application of these guidelines or not will not affect the geotechnical aspects of the slab-on-grade performance.

- Place a minimum 10-mil vapor retarder conforming to ASTM E 1745, Class C requirements or better directly below the concrete slab; the vapor retarder should extend to the slab edges and be sealed at all seams and penetrations in accordance with manufacturer's recommendations and ASTM E 1643 requirements. A 4-inch-thick capillary break, consisting of crushed rock should be placed below the vapor retarder and consolidated in place with vibratory equipment. The mineral aggregate shall be of such size that the percentage composition by dry weight as determined by laboratory sieves will conform to the following gradation:

Sieve Size	Percentage Passing Sieve
1"	100
¾"	90 – 100
No. 4	0 - 10

- The concrete water:cement ratio should be 0.45 or less. Mid-range plasticizers may be used to increase concrete workability and facilitate pumping and placement.

- Water should not be added after initial batching unless the slump is less than specified and/or the resulting water:cement ratio will not exceed 0.45.

- Polishing the concrete surface with metal trowels is not recommended.

- Where floor coverings are planned, all concrete surfaces should be properly cured.

- Water vapor emission levels and concrete pH should be determined in accordance with ASTM F1869-98 and F710-98 requirements and evaluated against the floor covering manufacturer's requirements prior to installation.

8.4 EXTERIOR FLATWORK

8.4.1 Pedestrian Concrete Flatwork

Exterior concrete flatwork subject to pedestrian traffic only should be at least 4 inches thick and supported on at least 4 inches of Class 2 aggregate base overlying subgrade prepared in accordance with the "Earthwork" recommendations of this report. Flatwork that will be subject to heavier or frequent vehicular loading should be designed in accordance with the recommendations in the "Vehicular Pavements" section below. To help reduce the potential for uncontrolled shrinkage cracking, adequate expansion and control joints should be included. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness. Flatwork should be isolated from adjacent foundations or retaining walls except where limited sections of structural slabs are included to help span irregularities in retaining wall backfill at the transitions between at-grade and on-structure flatwork.

8.4.2 Pervious Pavers (Plaza Area)

Concrete unit pavers subject to pedestrian and/or occasional light truck loading should be at least 60 mm thick and supported on at least 6 inches of clean crushed rock with gradation ranging from ¼-inch to a maximum of 1-inch. A maximum 1-inch-thick layer of bedding sand may be used as a leveling/setting bed over the crushed rock. The crushed rock should be rolled with a smooth drum roller and a layer of filter fabric (Mirafi 140N or equivalent) placed over the crushed rock prior to placement of the bedding sand. Pavers that will be subject to heavier or frequent vehicular loading should be designed in accordance with the recommendations in the “Vehicular Pavements” section below.

SECTION 9: VEHICULAR PAVEMENTS

9.1 ASPHALT CONCRETE

The following asphalt concrete pavement recommendations tabulated below are based on the Procedure 608 of the Caltrans Highway Design Manual, estimated traffic indices for various pavement-loading conditions, and on a design R-value of 10. The design R-value was chosen based on the results of the laboratory testing performed on a surficial sample collected from the proposed pavement areas and engineering judgment considering the variable surface conditions.

Table 7: Asphalt Concrete Pavement Recommendations, Design R-value = 10

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base* (inches)	Total Pavement Section Thickness (inches)
4.0	2.5	7.0	9.5
4.5	2.5	8.5	11.0
5.0	3.0	9.0	12.0
5.5	3.0	10.5	13.5
6.0	3.5	11.0	14.5
6.5	4.0	11.5	15.5

*Caltrans Class 2 aggregate base; minimum R-value of 78

Frequently, the full asphalt concrete section is not constructed prior to construction traffic loading. This can result in significant loss of asphalt concrete layer life, rutting, or other pavement failures. To improve the pavement life and reduce the potential for pavement distress through construction, we recommend the full design asphalt concrete section be constructed prior to construction traffic loading. Alternatively, a higher traffic index may be chosen for the areas where construction traffic will be use the pavements.

9.1.1 Pervious Asphalt Cement Concrete

We understand that pervious pavements may be desired. For pervious asphalt pavements, we assume that pervious pavements would be used in auto parking or drive aisles, and that pervious pavement areas would not be constructed in truck traffic or truck parking areas. Pervious pavements generally consist of an Open Graded Friction Course (OGFC) asphalt layer and a uniform-size, crushed rock reservoir over subgrade. In some instances, subgrade of the section is left unprepared to encourage infiltration; however, the permeability of the subgrade at the subject site is low, and little infiltration is expected, therefore subgrade can be prepared normally. If drainage of the reservoir layer is desired, subdrains would be required. Water allowed to flow into conventional pavements could be detrimental to their performance; therefore, subgrade in pervious areas should be sloped away from conventional pavement areas, and to subdrains, if used. Additionally, subdrains should be considered where ponding or horizontal migration would be a concern, such as within 20 feet of structures.

We recommend that the pervious asphalt concrete auto traffic/parking area consist of 5 inches of OGFC over at least 8½ inches of a uniform size, open-graded crushed rock (¾ inch minimum). The subgrade should be prepared in accordance with the recommendations in Section 7.4.

In order for pervious pavements to maintain their effectiveness, they require occasional maintenance consisting of brooming or vacuuming to remove the fines from the surface. Pervious pavements should not have surface treatments, such as slurry or fogs seals applied, as this will seal off the pavement and prevent surface water infiltration.

9.2 PORTLAND CEMENT CONCRETE

The exterior Portland Cement Concrete (PCC) pavement recommendations tabulated below are based on methods presented in the Portland Cement Association (PCA) design manual (PCA, 1984). Recommendations for garage slabs-on-grade were provided in the “Concrete Slabs and Pedestrian Pavements” section above. We have provided a few pavement alternatives as an anticipated Average Daily Truck Traffic (ADTT) was not provided. An allowable ADTT should be chosen that is greater than what is expected for the development.

Table 8: PCC Pavement Recommendations, Design R-value = 10

Allowable ADTT	Minimum PCC Thickness (inches)
13	5½
130	6

The PCC thicknesses above are based on a concrete compressive strength of at least 3,500 psi, supporting the PCC on at least 6 inches of Class 2 aggregate base compacted as recommended in the “Earthwork” section, and laterally restraining the PCC with curbs or concrete shoulders. Adequate expansion and control joints should be included. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness.

9.2.1 Pervious Portland Cement Concrete

Pervious Portland cement concrete (PCC) should be designed at the time of construction depending on the modulus of rupture of the mix design. In general, the pervious concrete section would be similar to the recommendations given above, but would generally be about an inch thicker due to a somewhat lower modulus of rupture (tensile) for pervious PCC mix designs. The Class 2 aggregate base section would typically be switched to a ¾-inch clean, crushed aggregate to act as a reservoir.

Pervious PCC pavements would also require periodic maintenance, such as sweeping or vacuuming, to mitigate surface blockage and maintain the pervious characteristics.

9.2.2 Stress Pads for Trash Enclosures

Pads where trash containers will be stored, and where garbage trucks will park while emptying trash containers, should be constructed on Portland Cement Concrete. We recommend that the trash enclosure pads and stress (landing) pads where garbage trucks will store, pick up, and empty trash be increased to a minimum PCC thickness of 7 inches. The compressive strength, underlayment, and construction details should be consistent with the above recommendations for PCC pavements.

9.3 PERVIOUS CONCRETE PAVERS

Where vehicular concrete unit pavers are desired in driveways and drive aisles, we recommend that the pavers be underlain by at least 14 inches of crushed rock with gradation ranging from ¼-inch to a maximum of 1-inch. A maximum 1-inch-thick layer of bedding sand may be used as a leveling/setting bed over the crushed rock. The crushed rock should be rolled with a smooth drum roller and a layer of filter fabric (Mirafi 140N or equivalent) placed over the crushed rock prior to placement of the bedding sand. Pavers that will be subject to heavier or frequent vehicular loading should be designed in accordance with the recommendations in the “Vehicular Pavements” section below. Where pervious concrete pavers are used in auto parking areas (i.e. no heavy vehicular loading), the thickness of crushed rock could be reduced to 8 inches.

9.4 DRAINAGE IN PERVIOUS PAVEMENT AREAS

When storms exceed the design storm for storage volume, runoff from pervious areas can occur. For these events subdrains or surface drains should be used in areas where overland release could cause flooding or ponding of surface water.

SECTION 10: RETAINING WALLS

10.1 STATIC LATERAL EARTH PRESSURES

The structural design of any site retaining wall should include resistance to lateral earth pressures that develop from the soil behind the wall, any undrained water pressure, and surcharge loads acting behind the wall. Provided a drainage system is constructed behind the wall to prevent the build-up of hydrostatic pressures as discussed in the section below, we recommend that the walls with level backfill be designed for the following pressures:

Table 9: Recommended Lateral Earth Pressures

Wall Condition	Lateral Earth Pressure*	Additional Surcharge Loads
Unrestrained – Cantilever Wall	45 pcf	⅓ of vertical loads at top of wall
Restrained – Braced Wall	45 pcf + 8H** psf	½ of vertical loads at top of wall

* Lateral earth pressures are based on an equivalent fluid pressure for level backfill conditions
** H is the distance in feet between the bottom of footing and top of retained soil

If adequate drainage cannot be provided behind the wall, an additional equivalent fluid pressure of 40 pcf should be added to the values above for both restrained and unrestrained walls for the portion of the wall that will not have drainage. Damp proofing or waterproofing of the walls may be considered where moisture penetration and/or efflorescence are not desired.

10.2 SEISMIC LATERAL EARTH PRESSURES

The 2016 CBC states that lateral pressures from earthquakes should be considered in the design of basements and retaining walls. At this time, we are not aware of any retaining walls for the project. However, minor landscaping walls (i.e. walls 4 feet or less in height) may be proposed. In our opinion, design of these walls for seismic lateral earth pressures in addition to static earth pressures is not warranted.

10.3 WALL DRAINAGE

Adequate drainage should be provided by a subdrain system behind all walls. This system should consist of a 4-inch minimum diameter perforated pipe placed near the base of the wall (perforations placed downward). The pipe should be bedded and backfilled with Class 2 Permeable Material per Caltrans Standard Specifications, latest edition. The permeable backfill should extend at least 12 inches out from the wall and to within 2 feet of outside finished grade. Alternatively, ½-inch to ¾-inch crushed rock may be used in place of the Class 2 Permeable Material provided the crushed rock and pipe are enclosed in filter fabric, such as Mirafi 140N or approved equivalent. The upper 2 feet of wall backfill should consist of compacted on-site soil. The subdrain outlet should be connected to a free-draining outlet or sump.

Miradrain, Geotech Drainage Panels, or equivalent drainage matting can be used for wall drainage as an alternative to the Class 2 Permeable Material or drain rock backfill. Horizontal strip drains connecting to the vertical drainage matting may be used in lieu of the perforated pipe and crushed rock section. The vertical drainage panel should be connected to the perforated pipe or horizontal drainage strip at the base of the wall, or to some other closed or through-wall system such as the TotalDrain system from AmerDrain. Sections of horizontal drainage strips should be connected with either the manufacturer's connector pieces or by pulling back the filter fabric, overlapping the panel dimples, and replacing the filter fabric over the connection. At corners, a corner guard, corner connection insert, or a section of crushed rock covered with filter fabric must be used to maintain the drainage path.

Drainage panels should terminate 18 to 24 inches from final exterior grade. The Miradrain panel filter fabric should be extended over the top of and behind the panel to protect it from intrusion of the adjacent soil.

10.4 BACKFILL

Where surface improvements will be located over the retaining wall backfill, backfill placed behind the walls should be compacted to at least 95 percent relative compaction using light compaction equipment. Where no surface improvements are planned, backfill should be compacted to at least 90 percent. If heavy compaction equipment is used, the walls should be temporarily braced.

10.5 FOUNDATIONS

Retaining walls may be supported on a continuous spread footing designed in accordance with the recommendations presented in the “Foundations” section of this report.

SECTION 11: LIMITATIONS

This report, an instrument of professional service, has been prepared for the sole use of Starbird Consulting, LLC specifically to support the design of the Sharks Ice Expansion project in San Jose, 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 ground water 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.

Starbird Consulting, LLC may have provided Cornerstone with plans, reports and other documents prepared by others. Starbird Consulting, LLC 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 his 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.

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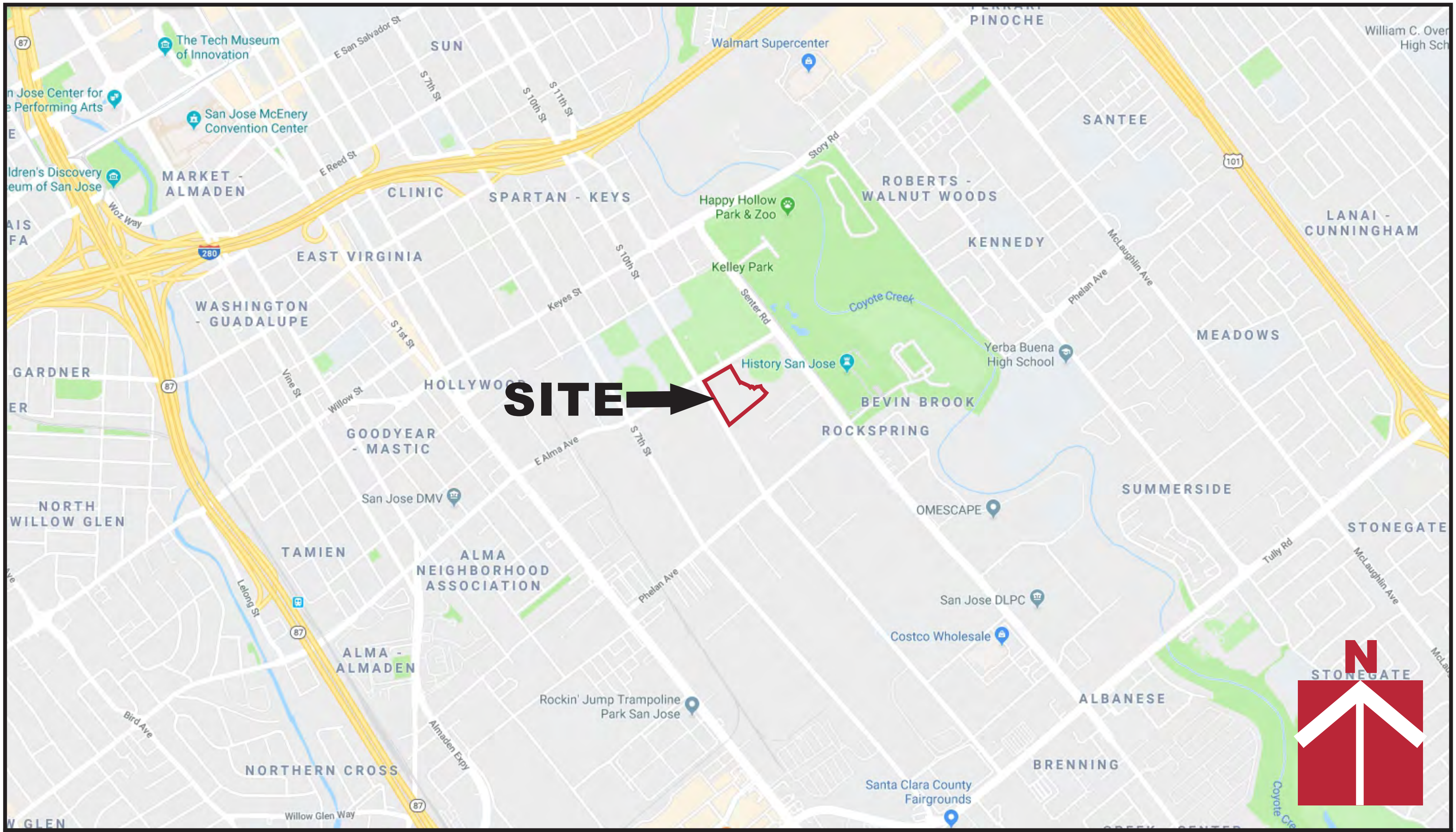

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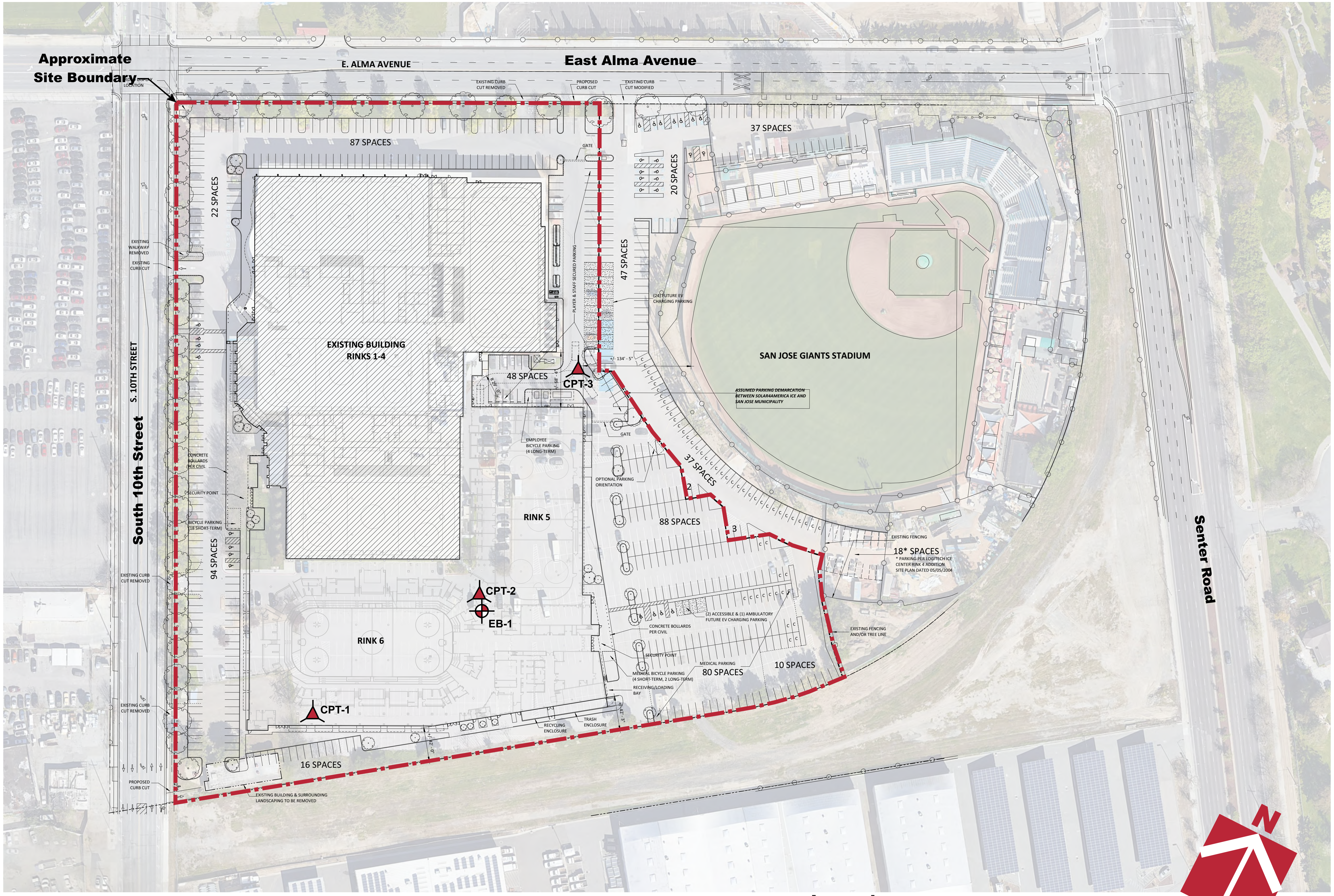
Vicinity Map

Sharks Ice Expansion
San Jose, CA

Project Number	1117-1-2
Figure Number	Figure 1
Date	March 2019
Drawn By	RRN



Legend

⌖ Approximate location of previous exploratory boring (EB) (Cornerstone, 2013)

▲ Approximate location of previous cone penetration test (CPT) (Cornerstone, 2013)

0 120 240
APPROXIMATE SCALE (FEET)

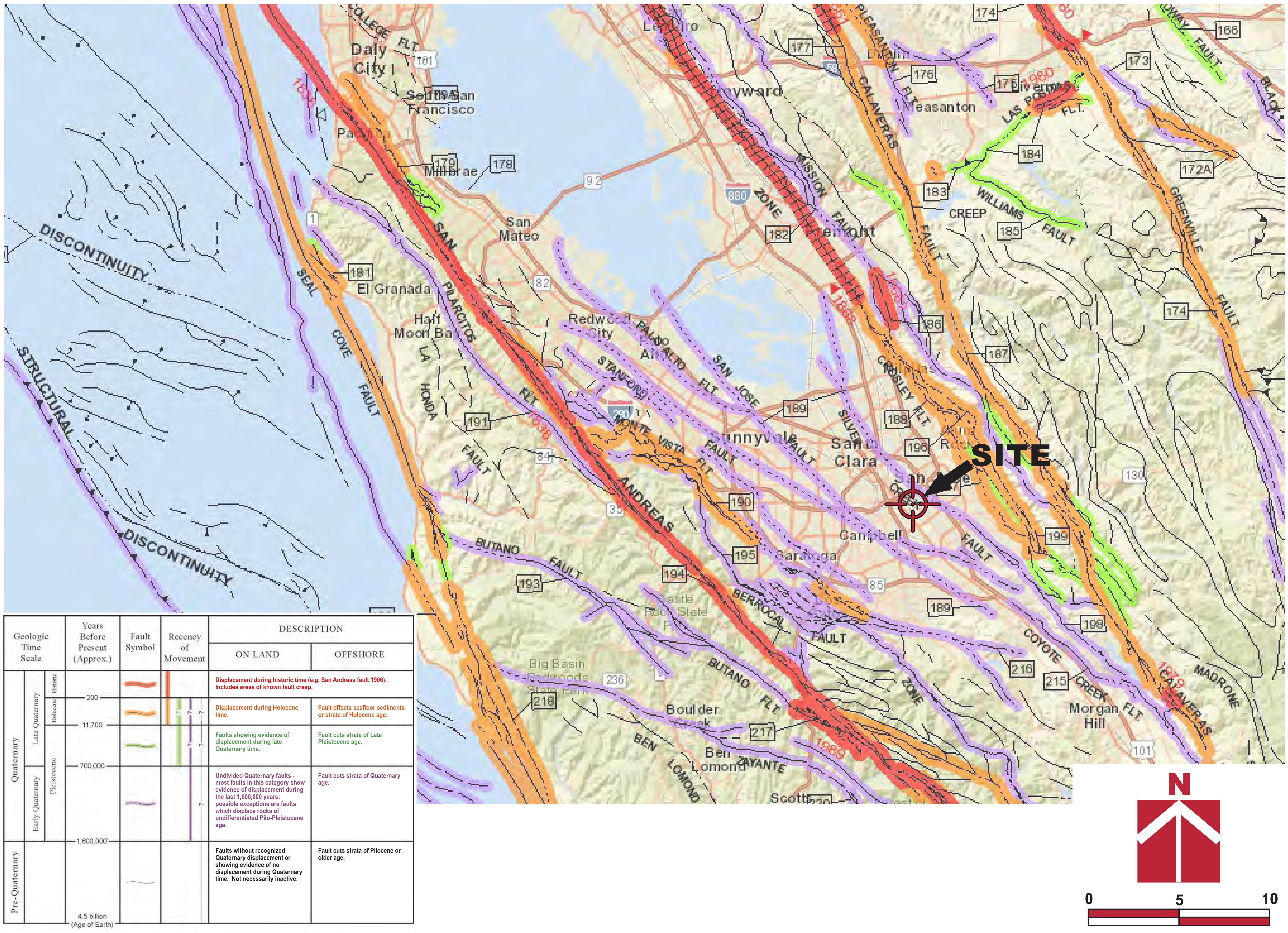
Base by Google Earth, dated 8/9/2018
Overlay by DEVCON, Architectural Site Plan - A1.1, dated 2/28/2019

CORNERSTONE EARTH GROUP

Site Plan

Sharks Ice Expansion
San Jose, CA

Project Number	1117-1-2
Figure Number	Figure 2
Date	March 2019
Drawn By	RRN



Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION ON LAND	DESCRIPTION OFFSHORE
Quaternary	Late Quaternary	Historic		🟥		Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
		Holocene	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.
	Early Quaternary		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 Pilo-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary			1,600,000 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
1117-1-2

Figure Number
Figure 3

Drawn By
RRN

Date
March 2019

Regional Fault Map

Sharks Ice Expansion
San Jose, CA

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FIGURE 4A

CPT NO. **1**

PROJECT/CPT DATA

Project Title **Sharks Expansion Rpt Update**

Project No. **1117-1-2**

Project Manager **MFR**

SEISMIC PARAMETERS

Controlling Fault **San Andreas**

Earthquake Magnitude (Mw) **7.9**

PGA (Amax) **0.5** (g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet) **18**

Design Water Depth (feet) **13**

Ave. Unit Weight Above GW (pcf) **122**

Ave. Unit Weight Below GW (pcf) **120**

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM 13 **FEET**

0.02 **(Inches)**

LIQUEFACTION SETTLEMENT FROM 50 **FEET**

0.20 **(Inches)**

TOTAL SEISMIC SETTLEMENT 0.2 **INCHES**

POTENTIAL LATERAL DISPLACEMENT

LDI^2 0.03 **L/H** 100.0

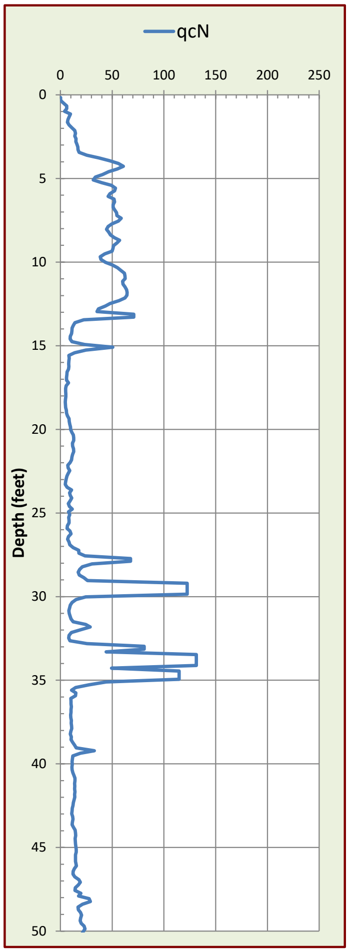
LDI$^1_{\text{Corrected for Distance}}$ 0.01 (4 < L/H < 40)

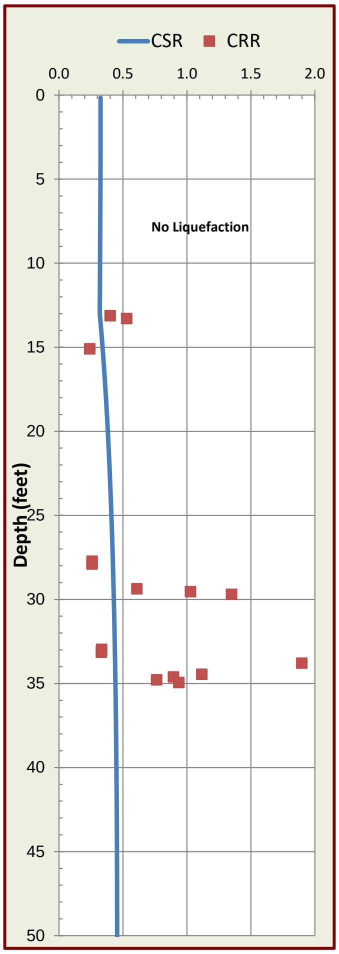
EXPECTED RANGE OF DISPLACEMENT

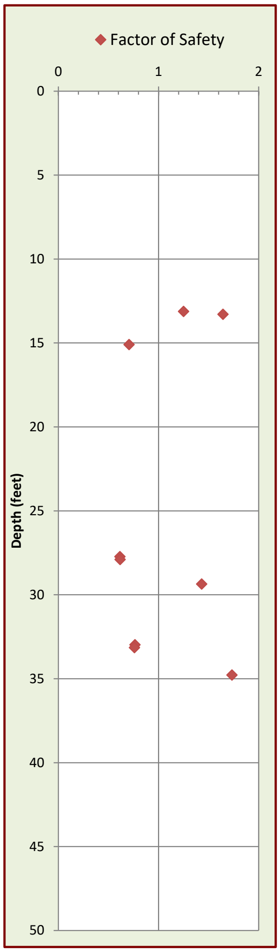
0.0 **to** **0.0** **feet**

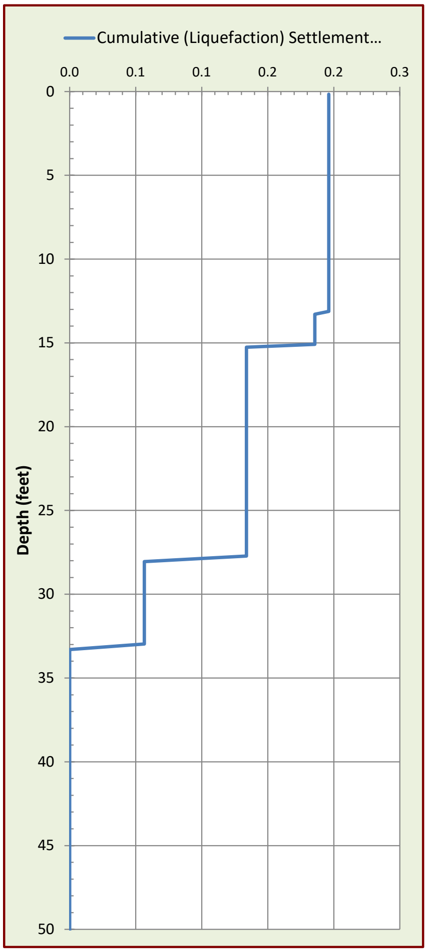
[1] Not Valid for L/H Values < 4 and > 40.

[2] LDI Values Only Summed to 2H Below Grade.









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FIGUR **4B**

CPT NO. **2**

PROJECT/CPT DATA

Project Title	**Sharks Expansion Rpt Update**
Project No.	**1117-1-2**
Project Manager	**MFR**

SEISMIC PARAMETERS

Controlling Fault	**San Andreas**	
Earthquake Magnitude (Mw)	**7.9**	
PGA (Amax)	**0.5**	(g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet)	**18**
Design Water Depth (feet)	**13**
Ave. Unit Weight Above GW (pcf)	**122**
Ave. Unit Weight Below GW (pcf)	**120**

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM 13 **FEET**

1.29 **(Inches)**

LIQUEFACTION SETTLEMENT FROM 50 **FEET**

0.62 **(Inches)**

TOTAL SEISMIC SETTLEMENT 1.9 **INCHES**

POTENTIAL LATERAL DISPLACEMENT

LDI[2] 0.30 **L/H** 100.0

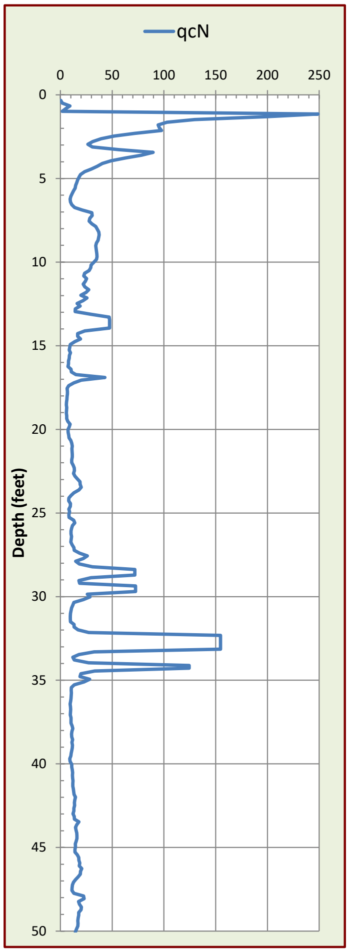
LDI[1]**Corrected for Distance** 0.05 (4 < L/H < 40)

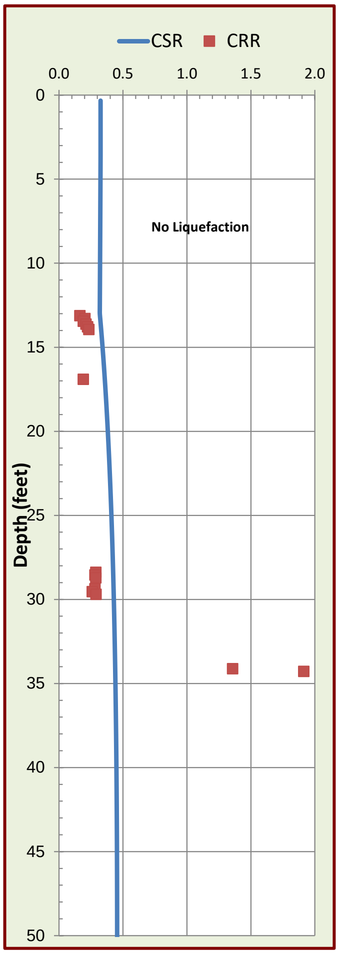
EXPECTED RANGE OF DISPLACEMENT

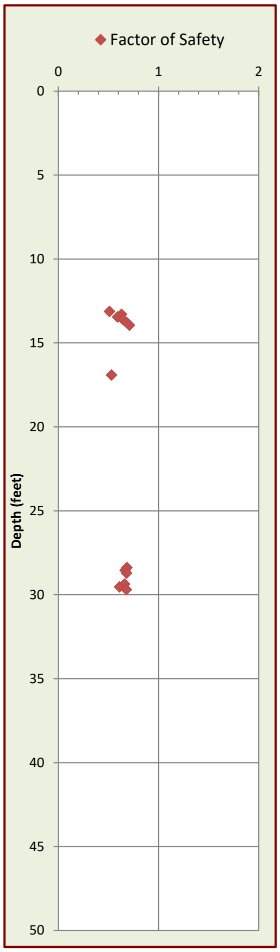
0.0 **to** **0.1** **feet**

[1] Not Valid for L/H Values < 4 and > 40.

[2] LDI Values Only Summed to 2H Below Grade.







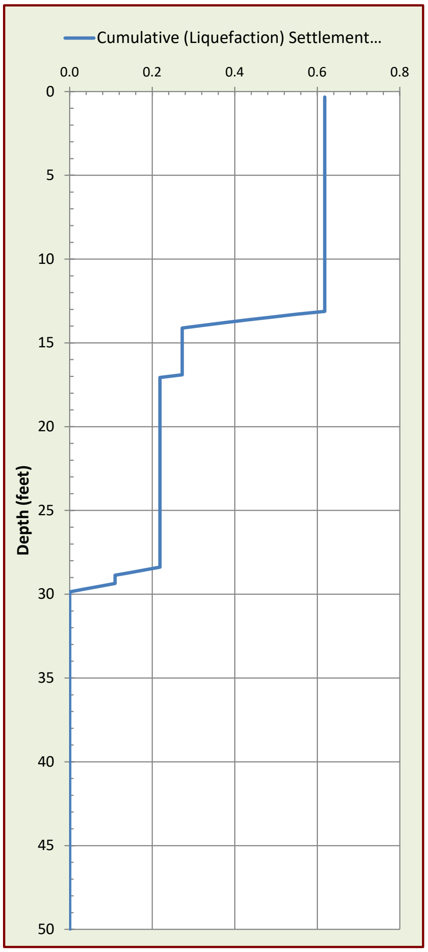


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FIGURE 4C

CPT NO. 3

PROJECT/CPT DATA

Project Title **Sharks Expansion Rpt Update**
Project No. **1117-1-2**
Project Manager **MFR**

SEISMIC PARAMETERS

Controlling Fault **San Andreas**
Earthquake Magnitude (Mw) **7.9**
PGA (Amax) **0.5** (g)

SITE SPECIFIC PARAMETERS

Ground Water Depth at Time of Drilling (feet) **18**
Design Water Depth (feet) **13**
Ave. Unit Weight Above GW (pcf) **122**
Ave. Unit Weight Below GW (pcf) **120**

CPT ANALYSIS RESULTS

DRY SAND SETTLEMENT FROM 13 **FEET**
0.01 **(Inches)**
LIQUEFACTION SETTLEMENT FROM 50 **FEET**
0.09 **(Inches)**

TOTAL SEISMIC SETTLEMENT 0.1 **INCHES**

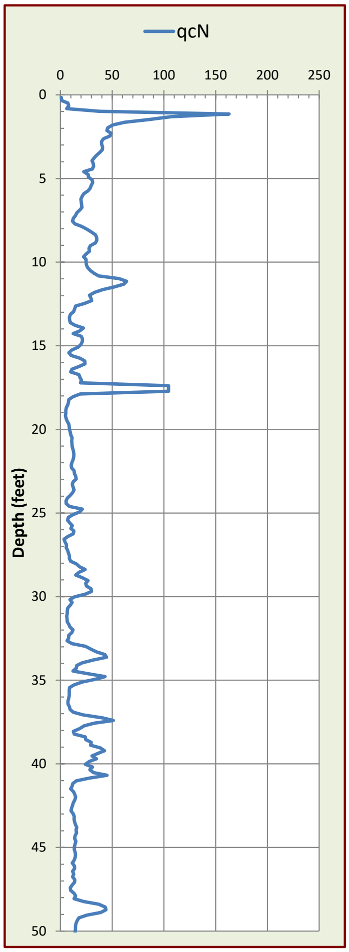
POTENTIAL LATERAL DISPLACEMENT

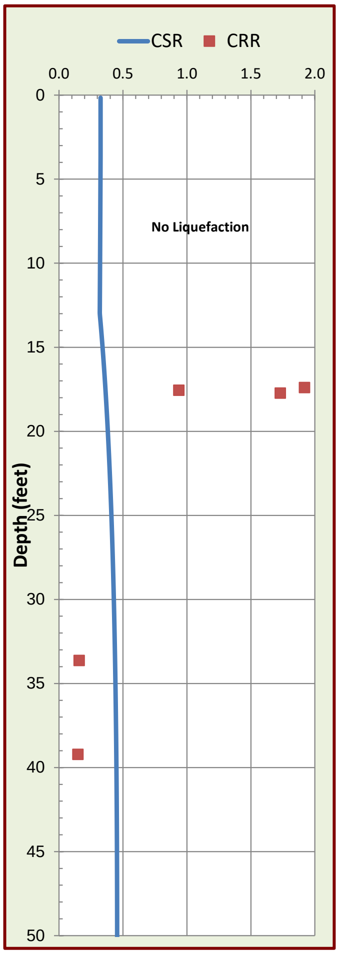
LDI[2] 0.00 **L/H** 100.0
LDI[1] Corrected for Distance 0.00 (4 < L/H < 40)

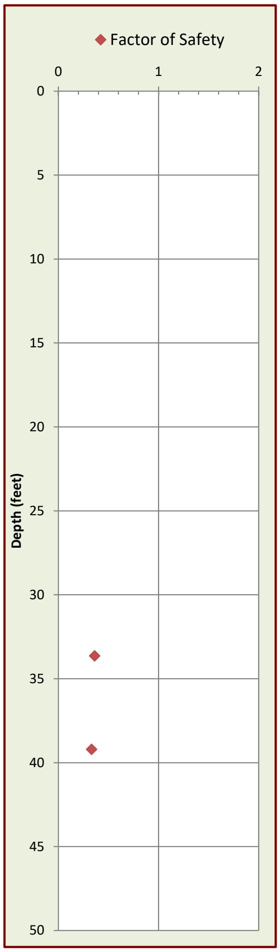
EXPECTED RANGE OF DISPLACEMENT
0.0 **to** **0.0** **feet**

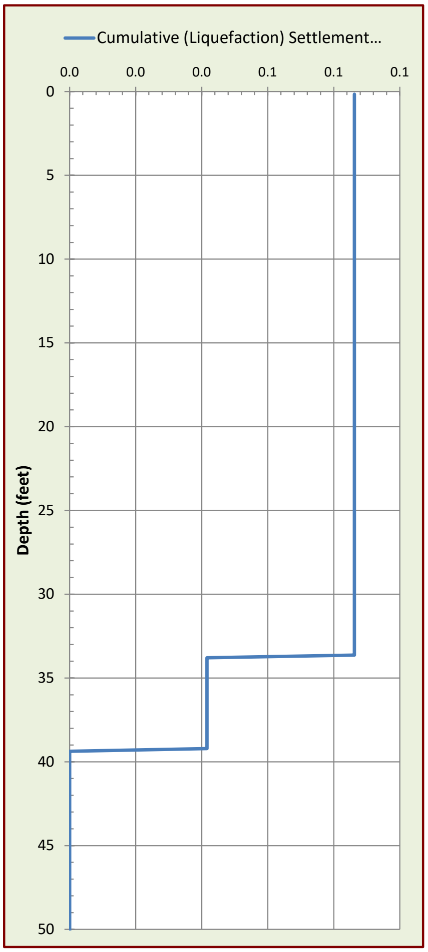
---

[1] Not Valid for L/H Values < 4 and > 40.
[2] LDI Values Only Summed to 2H Below Grade.









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. One 8-inch-diameter exploratory boring was drilled on March 15, 2013 to a depth of 40 feet. Three CPT soundings were also performed in accordance with ASTM D 5778-95 (revised, 2002) on March 13, 2013, to depths ranging from about 50 to 60 feet. 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 and CPT locations were approximated using existing site boundaries and other site features as references. Boring and CPT elevations were not determined. The locations 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. A relatively undisturbed sample was also obtained with 2.875-inch I.D. Shelby Tube sampler which was hydraulically pushed. 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-2487-98)

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

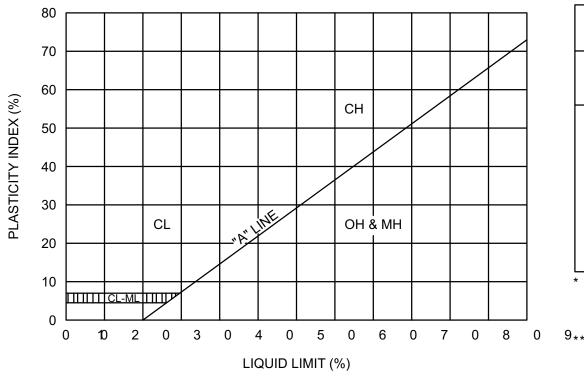
SAMPLER TYPES

- ☒ SPT
- Modified California (2.5" I.D.)
- Rock Core
- ■ Shelby Tube
- ○ No Recovery
- 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)	UU	UNCONSOLIDATED UNDRAINED TRIAXIAL
RV	R-VALUE		
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

LEGEND TO SOIL DESCRIPTIONS

Figure Number A-1

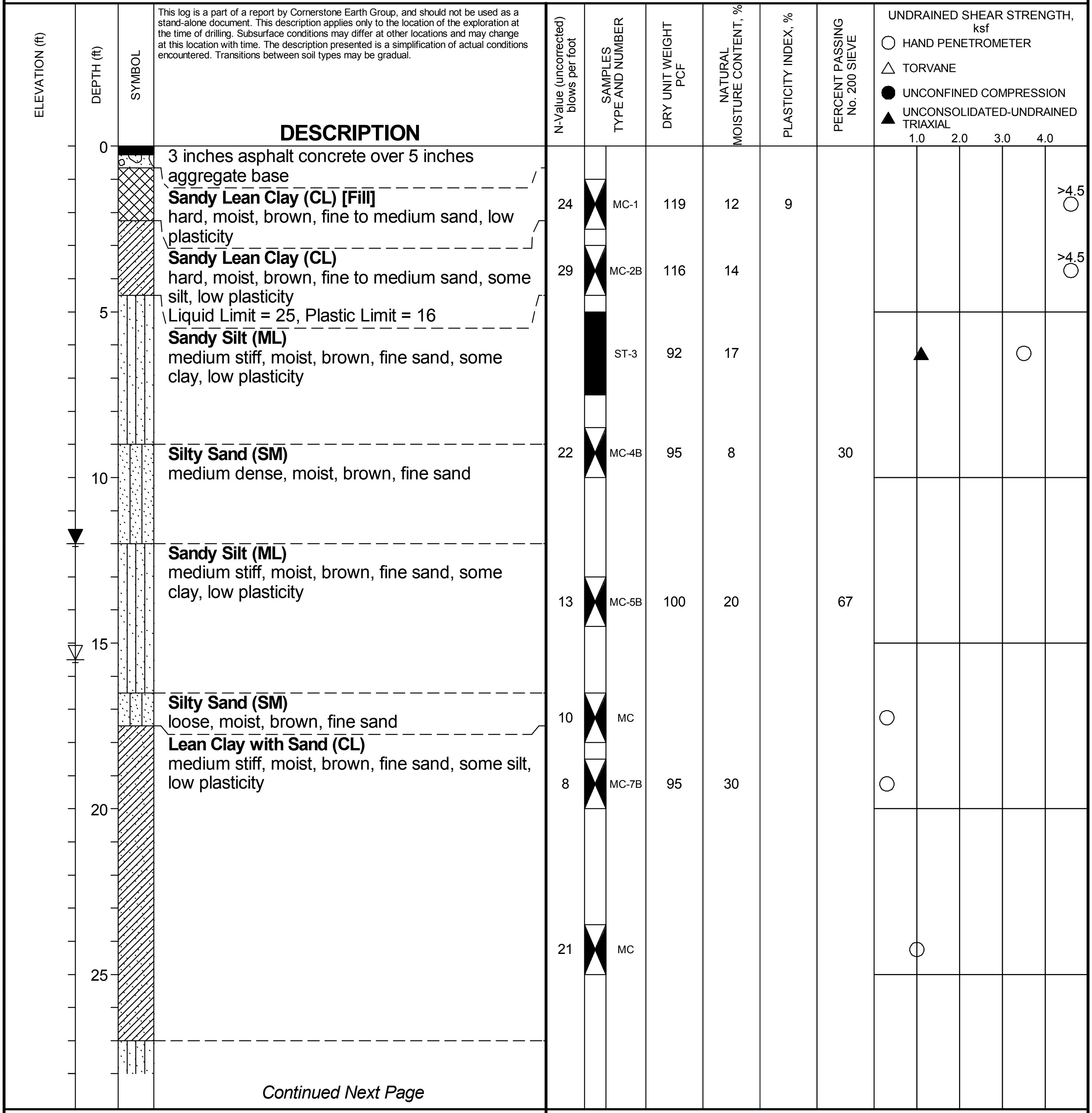
CORNERSTONE
EARTH GROUP

BORING NUMBER EB-1

PROJECT NAME Sharks Ice Expansion
PROJECT NUMBER 629-1-1
PROJECT LOCATION San Jose, CA

DATE STARTED 3/15/13 **DATE COMPLETED** 3/15/13
GROUND ELEVATION **BORING DEPTH** 40 ft.
DRILLING CONTRACTOR Exploration Geoservices, Inc.
LATITUDE **LONGITUDE**
DRILLING METHOD Mobile B-40, 8 inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY NBZ
▽ **AT TIME OF DRILLING** 15.5 ft.
NOTES
▼ **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.



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
3 inches asphalt concrete over 5 inches aggregate base						
Sandy Lean Clay (CL) [Fill] hard, moist, brown, fine to medium sand, low plasticity	24	MC-1	119	12	9	
Sandy Lean Clay (CL) hard, moist, brown, fine to medium sand, some silt, low plasticity Liquid Limit = 25, Plastic Limit = 16	29	MC-2B	116	14		
Sandy Silt (ML) medium stiff, moist, brown, fine sand, some clay, low plasticity		ST-3	92	17		
Silty Sand (SM) medium dense, moist, brown, fine sand	22	MC-4B	95	8		30
Sandy Silt (ML) medium stiff, moist, brown, fine sand, some clay, low plasticity	13	MC-5B	100	20		67
Silty Sand (SM) loose, moist, brown, fine sand	10	MC				
Lean Clay with Sand (CL) medium stiff, moist, brown, fine sand, some silt, low plasticity	8	MC-7B	95	30		
	21	MC				

Continued Next Page

CORNERSTONE EARTH GROUP

BORING NUMBER EB-1

PAGE 2 OF 2

PROJECT NAME Sharks Ice Expansion
PROJECT NUMBER 629-1-1
PROJECT LOCATION San Jose, CA

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.

UNDRAINED SHEAR STRENGTH, ksf
- ○ HAND PENETROMETER
- △ TORVANE
- ● UNCONFINED COMPRESSION
- ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL

1.0 2.0 3.0 4.0

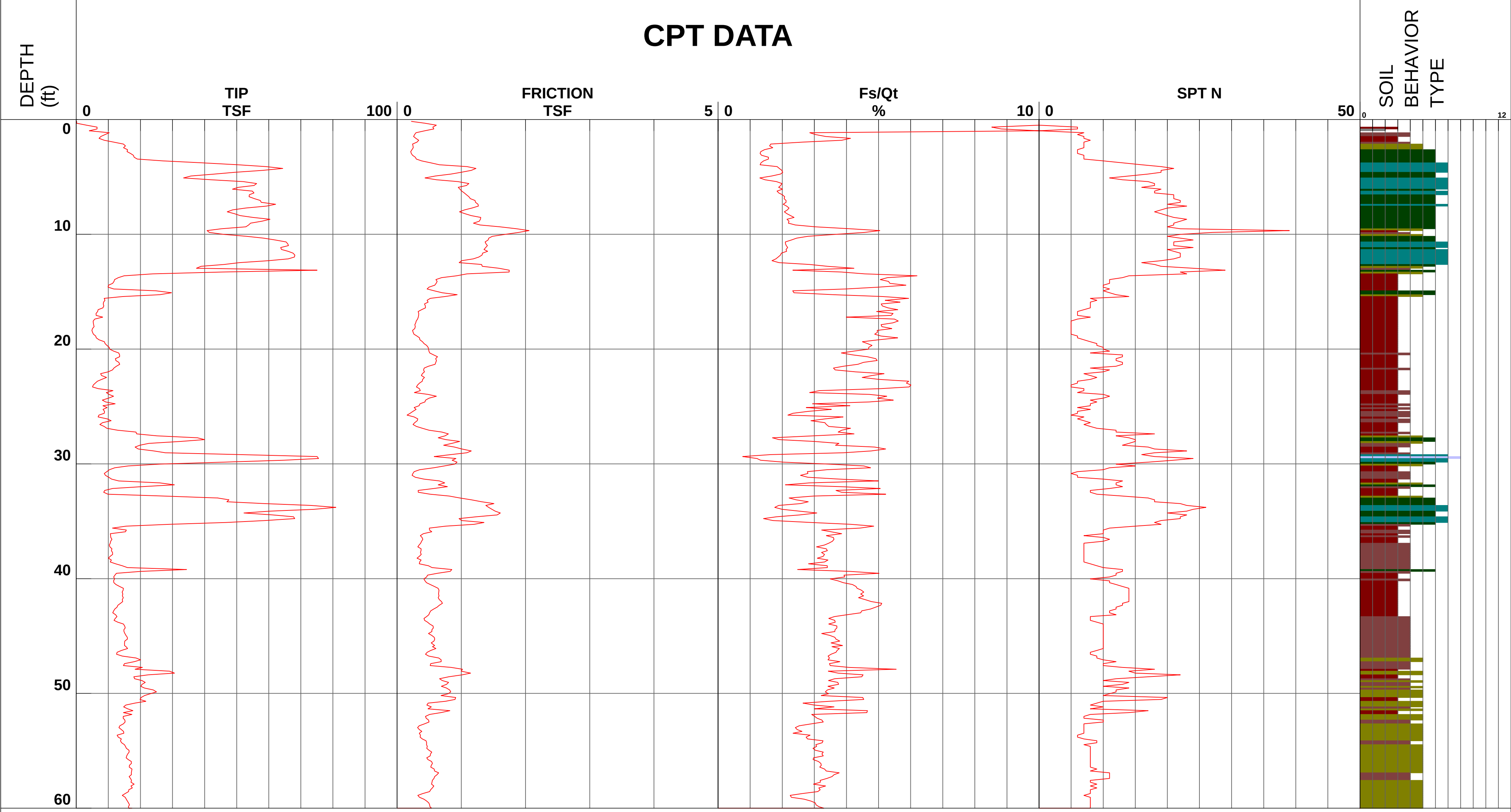
ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
		Sandy Silt (ML) medium stiff, moist, brown, fine sand, some clay, low plasticity	13	MC-9A	99	26		55	○
	30	**Lean Clay with Sand (CL)** medium stiff, moist, gray brown, fine to medium sand, moderate plasticity	12	MC-10B	96	28			○
		Sandy Lean Clay (CL) medium stiff, moist, gray brown, fine to medium sand, some silt, low plasticity	11	MC-11B	88	33			○
	35	**Lean Clay with Sand (CL)** soft, moist, gray, fine sand, some silt, moderate plasticity							
		Sandy Silt (ML) medium stiff, moist, gray, fine sand, some clay, low plasticity	24	MC					○
	40	Bottom of Boring at 40.0 feet.							
	45								
	50								
	55								
	60								

Cornerstone Earth Group

Project Sharks Ice Expansion
Job Number 629-1-1
Hole Number CPT 01
Water Table Depth 17.00 ft
Operator RB-KF
Cone Number DSG1104
Date and Time 3/13/2013 6:51:09 AM
Filename SDF (513).cpt
GPS
Maximum Depth 60.53 ft

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

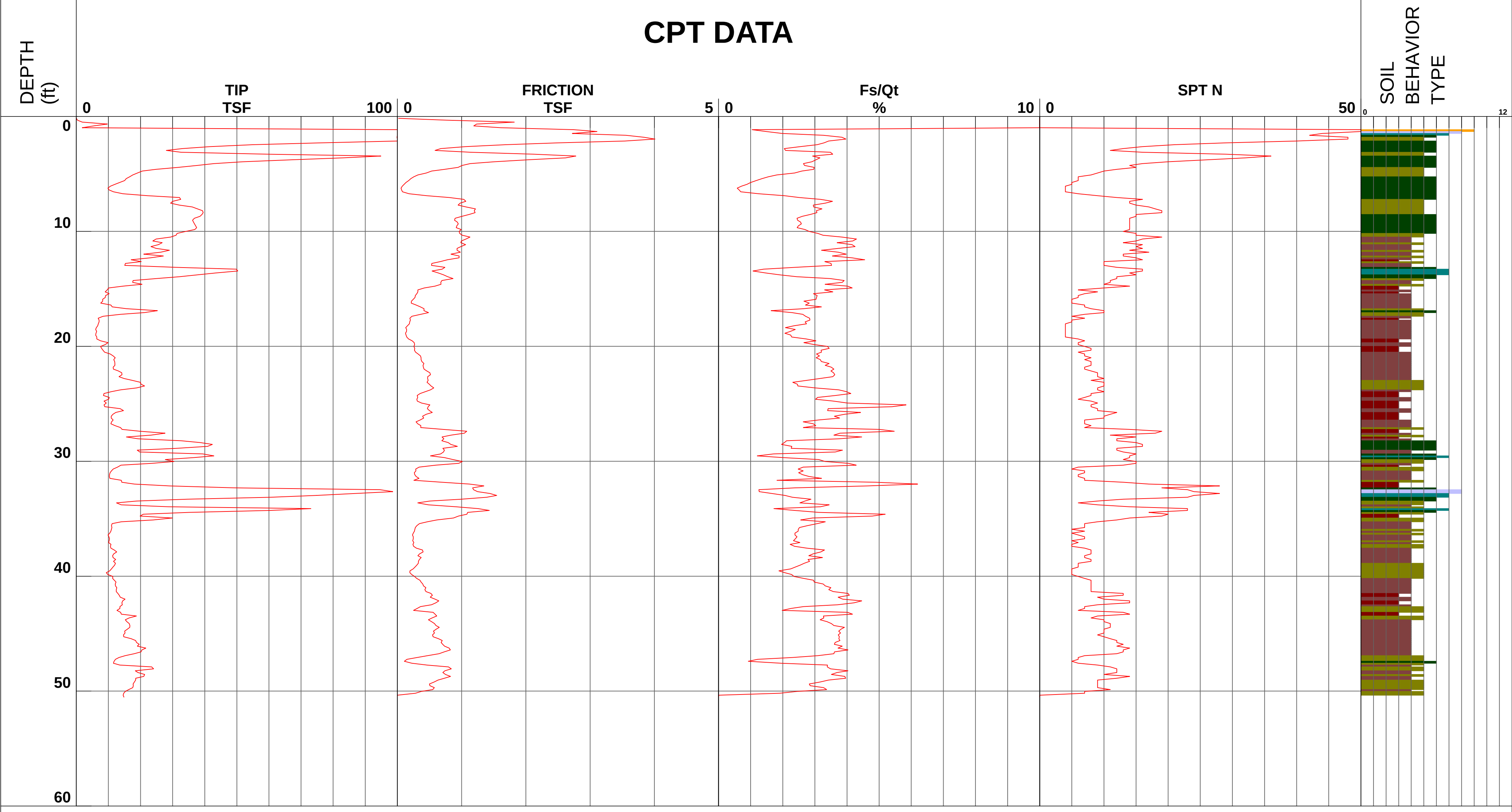
S*Soil behavior type and SPT based on data from UBC-1983

Cornerstone Earth Group

Project	Sharks Ice Expansion	**Operator**	RB-KF	**Filename**	SDF (515).cpt
Job Number	629-1-1	**Cone Number**	DSG1104	**GPS**	
Hole Number	CPT 02	**Date and Time**	3/13/2013 8:27:43 AM	**Maximum Depth**	50.52 ft
Water Table Depth		17.00 ft			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

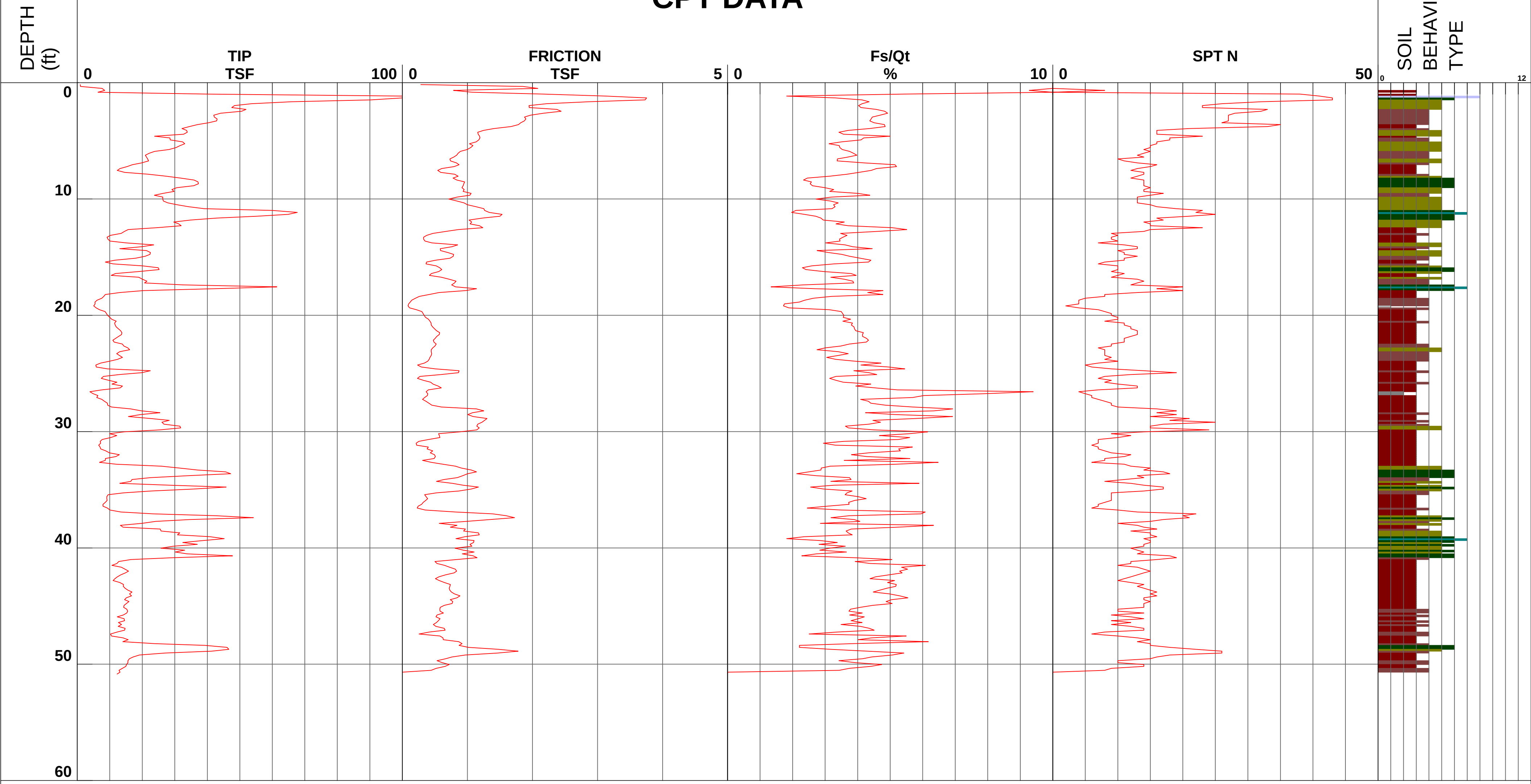
Middle Earth
Geo Testing Inc.

Cornerstone Earth Group

Project: Sharks Ice Expansion
Job Number: 629-1-1
Hole Number: CPT 03
Water Table Depth: 17.00 ft
Operator: RB-KF
Cone Number: DSG1104
Date and Time: 3/13/2013 9:50:45 AM
Filename: SDF (516).cpt
GPS:
Maximum Depth: 50.85 ft

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

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 six 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 six 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.

Washed Sieve Analyses: The percent soil fraction passing the No. 200 sieve (ASTM D1140) was determined on two samples of the subsurface soils to aid in the classification of these soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

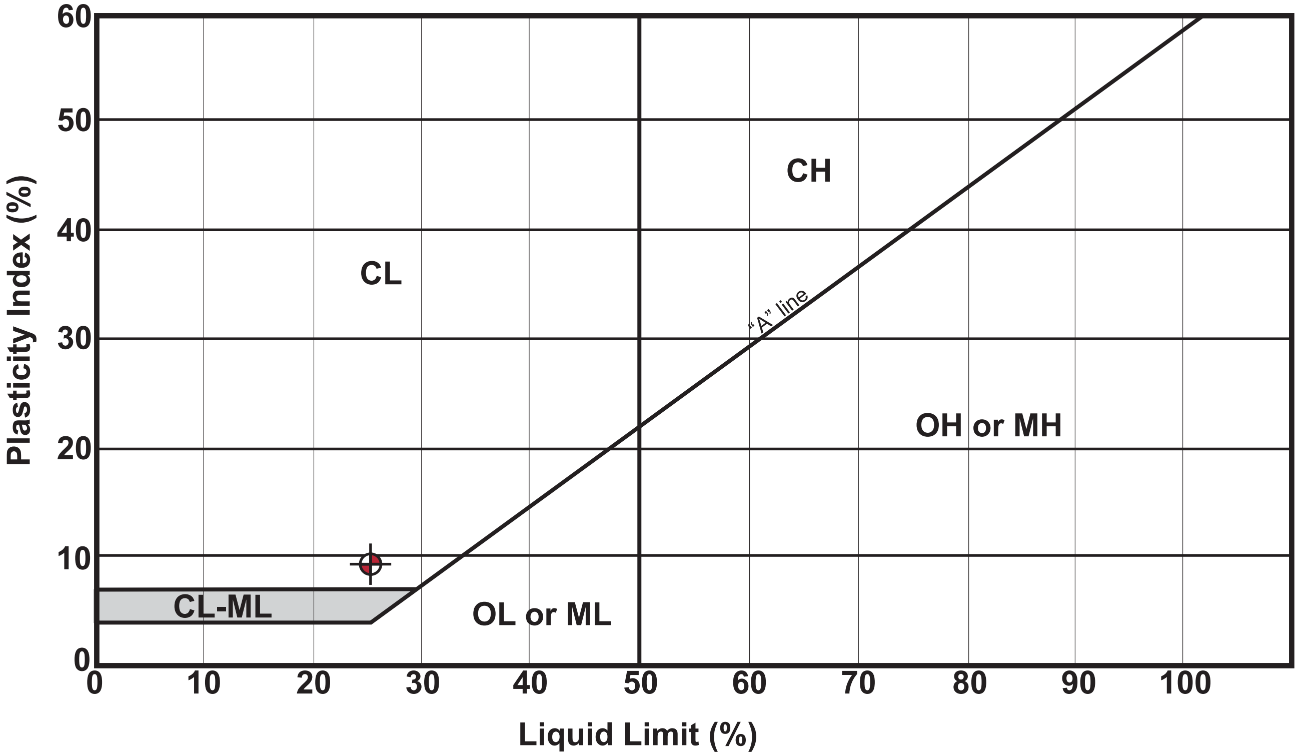
Plasticity Index: One Plasticity Index determination (ASTM D4318) was performed on a sample of the subsurface soil to measure the range of water contents over which this material exhibits plasticity. The Plasticity Index was used to classify the soil in accordance with the Unified Soil Classification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

Undrained-Unconsolidated Triaxial Shear Strength: The undrained shear strength was determined on one relatively undisturbed sample by unconsolidated-undrained triaxial shear strength testing (ASTM D2850). The results of this test are included as part of this appendix.

R-value: An R-value resistance test (California Test Method No. 301) was performed on a representative sample of the surface soils at the site to provide data for the pavement design. Results of this test is attached in this appendix.

Soluble Sulfate: Four soluble sulfate determinations (California Test Method No. 417-Modified) were performed on samples of the subsurface soils to measure the water soluble sulfate contents. Results of these tests are attached in this appendix.

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	2.0	12	25	16	9	—	Sandy Lean Clay (CL)

CORNERSTONE
EARTH GROUP

Plasticity Index Testing Summary

Shark's Ice Expansion
San Jose, CA

Project Number
629-1-1

Figure Number
Figure B1

Date
April 2013

Drawn By
FLL

COOPER TESTING LABORATORY

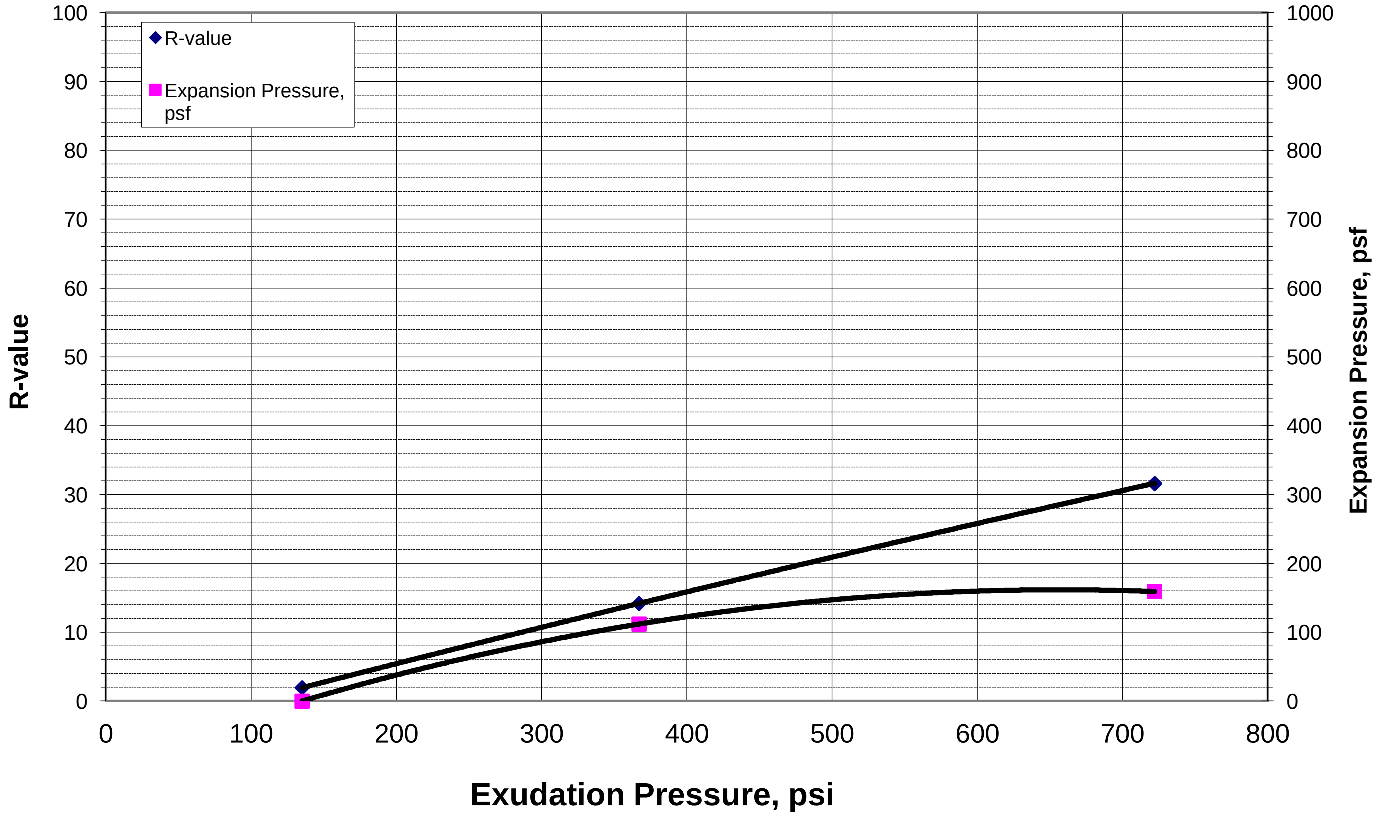
R-value Test Report (Caltrans 301)

Job No.: 640-516
Date: 03/27/13
Client: Cornerstone Earth Group
Tested MD
Project: Sharks Ice - 629-1-1
Reduced RU
Sample EB-3;Bulk
Checked DC
Soil Type: Dark Olive Brown Clayey SAND

Initial Moisture, 7.6%
R-value by Stabilometer 11
Expansion Pressure 85 psf

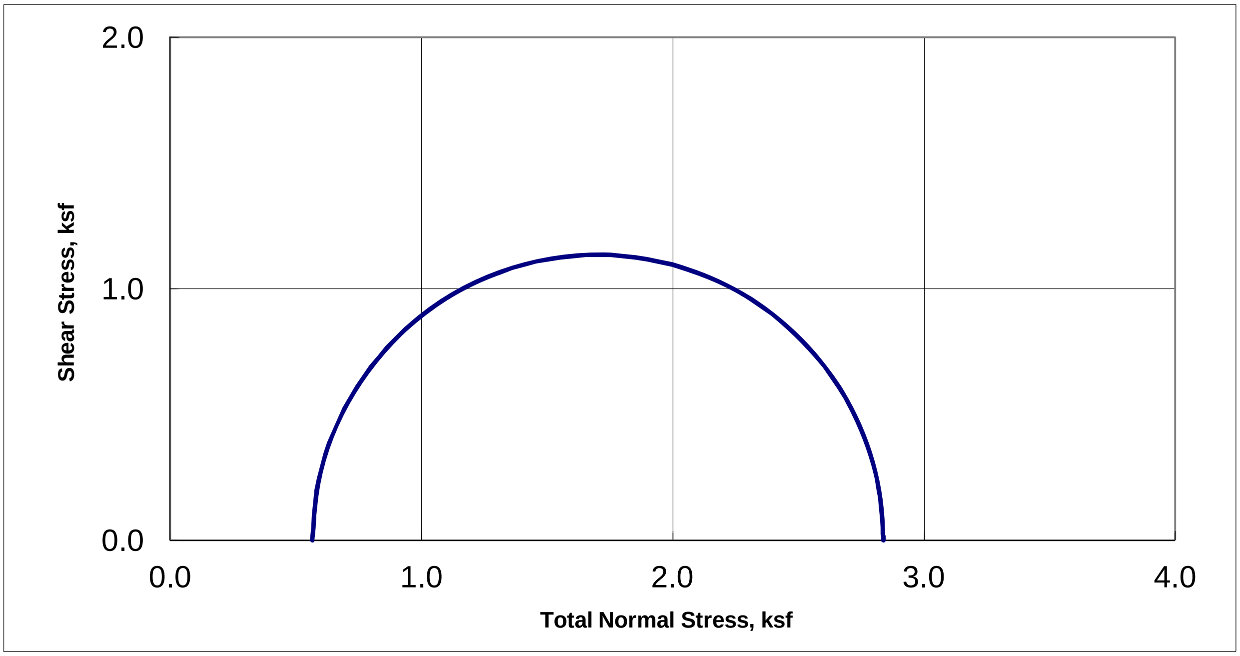
Specimen Number	A	B	C	D
Exudation Pressure, psi	135	367	722	
Prepared Weight, grams	1200	1200	1200	
Final Water Added, grams/cc	119	42	30	
Weight of Soil & Mold, grams	3149	3125	3136	
Weight of Mold, grams	2102	2095	2099	
Height After Compaction, in.	2.53	2.3	2.3	
Moisture Content, %	18.3	11.4	10.3	
Dry Density, pcf	106.0	121.8	123.8	
Expansion Pressure, psf	0.0	111.8	159.1	
Stabilometer @ 1000				
Stabilometer @ 2000	155	130	94	
Turns Displacement	4.09	3.12	3.08	
R-value	2	14	32	

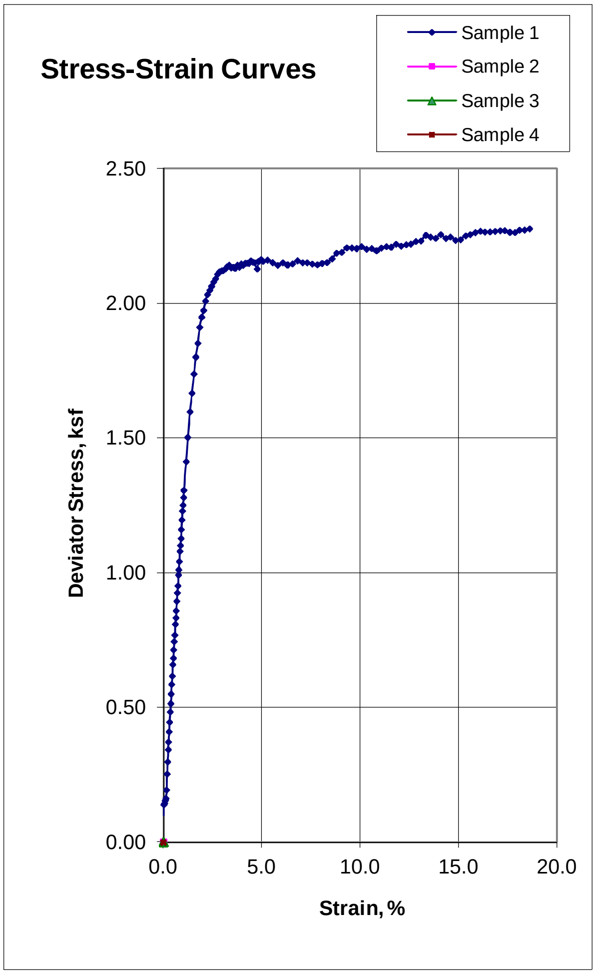
Remarks:



Unconsolidated-Undrained Triaxial Test

ASTM D-2850





Sample Data

	1	2	3	4
Moisture %	16.7			
Dry Den,pcf	92.4			
Void Ratio	0.825			
Saturation %	54.5			
Height in	5.98			
Diameter in	2.87			
Cell psi	3.9			
Strain %	18.60			
Deviator, ksf	2.276			
Rate %/min	1.00			
in/min	0.060			
Job No.:	**640-516**			
Client:	**Cornerstone Earth Group**			
Project:	**Sharks Ice - 629-1-1**			
Boring:	EB-1			
Sample:	3			
Depth ft:	5.0			

Visual Soil Description

Sample #	
1	Dark Olive Brown Silty SAND (slightly plastic)
2	
3	
4	

Remarks:

Corrosivity Tests Summary

CTL # 640-518 **Date:** 4/1/2013 **Tested By:** PJ **Checked:** PJ
Client: Cornerstone Earth Group **Project:** Sharks Ice Expansion **Proj. No:** 629-1-1
Remarks:

Sample Location or ID			Resistivity @ 15.5 oC (Ohm-cm)			Chloride	Sulfate		pH	ORP		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%		(Redox)		Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
EB-1	2A	3.5	-	-	1,525	50	159	0.0159	8.3	-	-	-	14.5	Dark Olive Brown Sandy SILT
EB-1	4A	9	-	-	5,620	20	51	0.0051	8.8	-	-	-	10.1	Olive Brown Silty SAND/ Sandy SILT
EB-3	2A	3.5	-	-	1,811	24	61	0.0061	8.4	-	-	-	11.6	Dark Olive Brown CLAY w/ Sand
EB-4	2A	3.5	-	-	1,708	26	70	0.0070	8.0	-	-	-	16.2	Very Dark Grayish Brown CLAY w/ Sand

APPENDIX C: LIQUEFACTION ANALYSES CALCULATIONS

CORNERSTONE
EARTH GROUP

CPT No. 1

PGA (A_{max}) 0.50

Total Settlement: 0.20 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5,\ s'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	0.160	0.223	19.5	19.5	15.393	148.496	4.09		Unsaturated	100.0			0.15	1.70	0.26	54.27	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	0.120	0.432	40.3	40.3	4.961	432.763	4.75		Unsaturated	100.0			0.11	1.70	0.19	54.19	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	3.180	0.611	59.8	59.8	105.390	19.406	2.90		Unsaturated	94.6			3.01	1.70	5.11	60.19	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	6.520	0.556	80.5	80.5	60.367	8.581	2.74		Unsaturated	82.0			6.16	1.70	10.48	65.88	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	6.460	0.572	100.0	100.0	51.299	8.920	2.79		Unsaturated	86.5			6.11	1.70	10.38	66.28	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	4.240	0.432	119.6	119.6	69.927	10.325	2.76		Unsaturated	84.0			4.01	1.70	6.81	61.35	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	10.340	0.294	140.3	140.3	37.697	2.863	2.53		Unsaturated	65.3			9.77	1.70	16.61	71.19	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	8.980	0.273	159.8	159.8	51.313	3.062	2.45		Unsaturated	59.1			8.49	1.70	14.43	66.96	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	7.660	0.257	180.6	180.6	40.070	3.399	2.56		Unsaturated	67.8			7.24	1.70	12.31	66.12	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	7.110	0.293	200.1	200.1	34.534	4.183	2.67		Unsaturated	76.5			6.72	1.70	11.42	66.39	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	8.740	0.337	219.6	219.6	39.834	3.900	2.60		Unsaturated	71.2			8.26	1.70	14.04	68.96	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	11.690	0.309	240.3	240.3	32.448	2.666	2.56		Unsaturated	67.7			11.05	1.70	18.78	74.44	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	14.690	0.240	259.9	259.9	39.270	1.651	2.36		Unsaturated	52.1			13.88	1.70	23.60	76.60	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	15.350	0.247	280.6	280.6	39.477	1.621	2.36		Unsaturated	51.5			14.51	1.70	24.66	77.76	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	14.740	0.251	300.1	300.1	36.617	1.720	2.40		Unsaturated	54.9			13.93	1.70	23.68	77.61	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	16.000	0.232	319.6	319.6	38.521	1.463	2.34		Unsaturated	50.1			15.12	1.70	25.71	78.56	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	15.840	0.211	340.4	340.4	36.928	1.345	2.33		Unsaturated	49.6			14.97	1.70	25.45	78.04	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	16.910	0.221	359.9	359.9	38.342	1.323	2.31		Unsaturated	48.2			15.98	1.70	27.17	79.66	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	17.800	0.241	380.6	380.6	39.243	1.367	2.31		Unsaturated	48.2			16.82	1.70	28.60	81.47	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	18.050	0.283	400.2	400.2	38.796	1.586	2.36		Unsaturated	51.6			17.06	1.70	29.00	83.27	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	19.030	0.298	419.7	419.7	39.943	1.586	2.35		Unsaturated	50.8			17.99	1.70	30.58	84.97	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	26.990	0.383	440.4	440.4	55.460	1.429	2.21		Unsaturated	39.5			25.51	1.70	43.37	95.46	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	39.230	0.525	459.9	459.9	79.065	1.345	2.07		Unsaturated	28.7			37.08	1.70	63.03	109.51	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	50.440	0.659	480.7	480.7	99.551	1.313	1.99		Unsaturated	22.2			47.67	1.70	81.05	120.12	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	59.170	1.089	500.2	500.2	114.541	1.849	2.05		Unsaturated	27.0			55.93	1.70	95.07	145.22	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	64.370	1.228	520.9	520.9	122.124	1.915	2.04		Unsaturated	26.4			60.84	1.70	103.43	154.10	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	58.090	1.154	540.5	540.5	108.135	1.996	2.09		Unsaturated	30.3			54.91	1.70	93.34	147.93	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	49.290	0.993	560.0	560.0	90.047	2.027	2.15		Unsaturated	35.1			46.59	1.70	79.20	136.12	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	43.180	0.841	580.7	580.7	77.382	1.961	2.19		Unsaturated	38.1			40.81	1.70	69.38	126.60	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	35.770	0.597	600.2	600.2	62.946	1.684	2.21		Unsaturated	39.8			33.81	1.70	57.48	113.14	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	33.480	0.435	621.0	621.0	57.873	1.312	2.17		Unsaturated	36.5			31.64	1.70	53.80	106.18	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.250	42.050	0.615	640.5	640.5	71.690	1.474	2.13		Unsaturated	33.4			39.74	1.70	67.57	120.21	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.410	52.050	0.946	660.0	660.0	87.529	1.830	2.13		Unsaturated	33.3			49.20	1.64	80.86	136.35	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.580	56.200	1.117	680.8	680.8	93.084	1.999	2.14		Unsaturated	34.0			53.12	1.60	85.16	142.27	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.740	55.400	1.080	700.3	700.3	90.447	1.963	2.14		Unsaturated	34.2			52.36	1.59	83.29	140.24	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.910	50.530	0.952	721.0	721.0	81.234	1.898	2.16		Unsaturated	36.1			47.76	1.59	76.06	133.15	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.070	48.700	0.977	740.5	740.5	77.217	2.022	2.20		Unsaturated	38.8			46.03	1.58	72.71	131.33	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.230	54.860	1.008	760.1	760.1	85.918	1.849	2.14		Unsaturated	34.0			51.85	1.55	80.25	136.34	1.00	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.400	55.410	1.047	780.8	780.8	85.609	1.902	2.15		Unsaturated	34.8			52.37	1.53	80.05	136.87	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.560	53.960	1.081	800.3	800.3	82.315	2.017	2.18		Unsaturated	37.2			51.00	1.52	77.30	135.67	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.730	53.880	1.118	821.1	821.1	81.132	2.091	2.19		Unsaturated	38.4			50.93	1.50	76.37	135.52	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.890	55.520	1.142	840.6	840.6	82.629	2.072	2.18		Unsaturated	37.8			52.48	1.48	77.75	136.69	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.050	57.390	1.214	860.1	860.1	84.444	2.131	2.19		Unsaturated	37.9			54.24	1.46	79.33	138.77	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.220	57.660	1.221	880.8	880.8	83.824	2.134	2.19		Unsaturated	38.1			54.50	1.45	78.94	138.46	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.380	62.140	1.261	900.4	900.4	89.388	2.043	2.16		Unsaturated	35.5			58.73	1.43	83.83	142.16	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.550	59.300	1.266	921.1	921.1	84.292	2.152	2.19		Unsaturated	38.2			56.05	1.42	79.57	139.30	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.710	52.800	1.165	940.6	940.6	74.185	2.227	2.24		Unsaturated	42.2			49.91	1.42	71.01	131.56	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.870	48.730	1.053	960.1	960.1	67.702	2.182	2.26		Unsaturated	44.0			46.06	1.42	65.51	125.78	0.99	0.322	1.100	n.a.	n.a.	n.a.	0.00	0.00
8.040	47.060	0.971	980.9	980.9	64.650	2.086	2.26		Unsaturated	44.1			44.48	1.42	62.95	122.63	0.99	0.322	1.098	n.a.	n.a.	n.a.	0.00	0.00
8.200	49.250	1.055	1000.4	1000.4	67.013	2.165	2.26		Unsaturated	44.0			46.55	1.40	65.05	125.25	0.99	0.322	1.097	n.a.	n.a.	n.a.	0.00	0.00
8.370	51.090	1.153	1021.1	1021.1	68.818	2.279	2.27		Unsaturated	44.6			48.29	1.38	66.65	127.58	0.99	0.322	1.096	n.a.	n.a.	n.a.	0.00	0.00
8.530	55.080	1.303	1040.7	1040.7	73.534	2.388	2.26		Unsaturated	44.1			52.06	1.36	70.81	132.50	0.99	0.322	1.098	n.a.	n.a.	n.a.	0.00	0.00
8.690	60.410	1.297	1060.2	1060.2	79.958	2.166	2.21		Unsaturated	39.6			57.10	1.34	76.63	136.79	0.99	0.322	1.099	n.a.	n.a.	n.a.	0.00	0.00
8.860	57.840	1.280	1080.9	1080.9	75.775	2.234	2.23		Unsaturated	41.7			54.67	1.34	73.03	133.78	0.99	0.322	1.094	n.a.	n.a.	n.a.	0.00	0.00
9.020	54.330	1.189	1100.4	1100.4	70.487	2.212	2.25		Unsaturated	43.3			51.35	1.33	68.45	129.06	0.99	0.322	1.088	n.a.	n.a.	n.a.	0.00	0.00
9.190	53.710	1.293	1121.2	1121.2	69.013	2.433	2.29		Unsaturated	46.1			50.77	1.32	67.12	129.01	0.99	0.322	1.085	n.a.	n.a.	n.a.	0.00	0.00
9.350	52.880	1.600	1140.7	1140.7	67.339	3.059	2.37		Unsaturated	52.4			49.98	1.31	65.52	129.90	0.99	0.321	1.083	n.a.	n.a.	n.a.	0.00	0.00
9.510	45.250	1.861	1160.2	1160.2	57.019	4.166	2.51		Unsaturated	64.2			42.77	1.31	56.16	121.77	0.99	0.321	1.076	n.a.	n.a.	n.a.	0.00	0.00
9.680	40.780	2.054	1181.0	1181.0	57.138	5.112	2.58		Unsaturated	69.4			38.54	1.31	50.55	115.76	0.99	0.321	1.070	n.a.	n.a.	n.a.	0.00	0.00
9.840	41.510	1.893	1200.5	1200.5	51.336	4.628	2.58		Unsaturated	69.3			39.23	1.30	51.03	116.37	0.99	0.321	1.069	n.a.	n.a.	n.a.	0.00	0.00
10.010	45.950	1.681	1221.2	1221.2	56.409	3.708	2.48		Unsaturated	61.5			43.43	1.28	55.79	120.57	0.99	0.321	1.069	n.a.	n.a.	n.a.	0.00	0.00
10.170	53.080	1.483	1240.7	1240.7	64.753	2.827	2.35		Unsaturated	51.4			50.17	1.27	63.57	127.01	0.99	0.321	1.070	n.a.	n.a.	n.a.	0.00	0.00
10.330	58.380	1.428	1260.3	1260.3	70.728	2.473	2.29		Unsaturated	45.9			55.18	1.25	69.14	131.43	0.99	0.321	1.071	n.a.	n.a.	n.a.	0.00	0.00
10.500	62.000	1.418	1281.0	1281.0	74.538	2.311	2.25		Unsaturated	43.0			58.60	1.24	72.73	134.20	0.99	0.321	1.070	n.a.	n.a.	n.a.	0.00	0.00
10.660	65.400	1.371	1300.5	1300.5	78.064	2.117	2.21		Unsaturated	39.7			61.81	1.23	76.09	136.15	0.99	0.321	1.069	n.a.	n.a.	n.a.	0.00	0.00
10.830	65.940	1.384	1321.3	1321.3	78.083	2.121	2.21		Unsaturated	39.7			62.33	1.22	76.19	136.30	0.99	0.320	1.067	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No. 1

PGA (A_{max}) 0.50

Total Settlement: 0.20 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5,\ s'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
10.990	66.130	1.406	1340.8	1340.8	77.726	2.148	2.21		Unsaturated	40.1			62.50	1.21	75.94	136.29	0.99	0.320	1.065	n.a.	n.a.	n.a.	0.00	0.00
11.150	63.700	1.381	1360.3	1360.3	74.290	2.191	2.23		Unsaturated	41.8			60.21	1.21	72.85	133.57	0.99	0.320	1.061	n.a.	n.a.	n.a.	0.00	0.00
11.320	63.960	1.354	1381.0	1381.0	74.022	2.140	2.23		Unsaturated	41.3			60.45	1.20	72.70	133.06	0.98	0.320	1.059	n.a.	n.a.	n.a.	0.00	0.00
11.480	66.030	1.410	1400.6	1400.6	75.898	2.158	2.22		Unsaturated	40.9			62.41	1.19	74.49	135.00	0.98	0.320	1.058	n.a.	n.a.	n.a.	0.00	0.00
11.650	67.580	1.331	1421.3	1421.3	77.118	1.991	2.19		Unsaturated	38.5			63.88	1.19	75.77	134.85	0.98	0.320	1.056	n.a.	n.a.	n.a.	0.00	0.00
11.810	68.130	1.323	1440.8	1440.8	77.213	1.963	2.19		Unsaturated	38.1			64.40	1.18	75.95	134.77	0.98	0.320	1.054	n.a.	n.a.	n.a.	0.00	0.00
11.980	67.990	1.271	1461.6	1461.6	76.492	1.890	2.18		Unsaturated	37.5			64.26	1.17	75.39	133.53	0.98	0.320	1.051	n.a.	n.a.	n.a.	0.00	0.00
12.140	66.070	1.188	1481.1	1481.1	73.806	1.818	2.18		Unsaturated	37.5			62.45	1.17	72.98	130.56	0.98	0.319	1.048	n.a.	n.a.	n.a.	0.00	0.00
12.300	59.900	1.006	1500.6	1500.6	66.388	1.700	2.20		Unsaturated	38.6			56.62	1.17	66.11	122.99	0.98	0.319	1.044	n.a.	n.a.	n.a.	0.00	0.00
12.470	50.830	0.966	1521.3	1521.3	55.812	1.929	2.29		Unsaturated	46.0			48.04	1.17	56.04	115.03	0.98	0.319	1.039	n.a.	n.a.	n.a.	0.00	0.00
12.630	46.070	1.315	1540.9	1540.9	50.175	2.903	2.44		Unsaturated	58.4			43.54	1.16	50.56	112.96	0.98	0.319	1.037	n.a.	n.a.	n.a.	0.00	0.00
12.800	38.900	1.327	1561.6	1561.6	41.940	3.480	2.55		Unsaturated	67.2			36.77	1.16	42.63	105.08	0.98	0.319	1.034	n.a.	n.a.	n.a.	0.00	0.00
12.960	37.460	1.586	1581.1	1581.1	42.501	4.325	2.61		Unsaturated	72.2			35.41	1.15	40.84	103.77	0.98	0.319	1.032	n.a.	n.a.	n.a.	0.00	0.00
13.120	75.060	1.747	1600.6	1600.6	80.701	2.352	2.23		Sand	41.5			70.95	1.12	79.70	141.90	0.98	0.320	1.042	0.243	0.400	1.25	0.01	0.01
13.290	45.370	1.745	1621.4	1621.4	48.114	3.915	2.55		Sand	66.7	70.95		70.95	1.11	78.93	151.72	0.98	0.322	1.043	0.300	0.529	1.64	0.00	0.00
13.450	23.840	1.089	1640.9	1640.9	28.057	4.732	2.77		Clay	84.7			22.53	1.07	n.a.	n.a.	0.98	0.324	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	14.920	0.925	1661.6	1661.6	16.958	6.562	3.03		Clay	100.0			14.10	1.07	n.a.	n.a.	0.98	0.326	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	13.140	0.692	1681.2	1681.2	14.632	5.630	3.03		Clay	100.0			12.42	1.06	n.a.	n.a.	0.98	0.328	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	11.960	0.604	1700.7	1700.7	13.065	5.433	3.06		Clay	100.0			11.30	1.06	n.a.	n.a.	0.98	0.329	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	11.780	0.625	1721.4	1721.4	12.686	5.720	3.08		Clay	100.0			11.13	1.06	n.a.	n.a.	0.98	0.331	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	11.340	0.608	1740.9	1740.9	12.027	5.804	3.11		Clay	100.0			10.72	1.05	n.a.	n.a.	0.98	0.333	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	10.040	0.588	1761.7	1761.7	10.398	6.414	3.18		Clay	100.0			9.49	1.05	n.a.	n.a.	0.98	0.335	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	9.940	0.497	1781.2	1781.2	10.161	5.493	3.15		Clay	100.0			9.40	1.05	n.a.	n.a.	0.98	0.336	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	11.710	0.466	1800.7	1800.7	12.006	4.311	3.03		Clay	100.0			11.07	1.04	n.a.	n.a.	0.98	0.338	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	24.820	0.577	1821.5	1821.5	26.253	2.413	2.60		Clay	71.2			23.46	1.04	n.a.	n.a.	0.98	0.340	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	29.700	0.702	1841.0	1841.0	29.163	2.439	2.57		Sand	68.6		1.8	50.53	1.07	53.85	119.85	0.98	0.341	1.017	0.171	0.241	0.71	0.03	0.05
15.260	26.050	0.937	1861.7	1861.7	26.985	3.729	2.71		Clay	80.1			24.62	1.03	n.a.	n.a.	0.98	0.343	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	14.550	0.746	1881.2	1881.2	14.469	5.481	3.03		Clay	100.0			13.75	1.03	n.a.	n.a.	0.97	0.345	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	8.710	0.517	1900.8	1900.8	8.165	6.660	3.27		Clay	100.0			8.23	1.03	n.a.	n.a.	0.97	0.346	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	8.990	0.467	1921.5	1921.5	8.357	5.811	3.23		Clay	100.0			8.50	1.03	n.a.	n.a.	0.97	0.348	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	8.550	0.483	1941.0	1941.0	7.810	6.375	3.28		Clay	100.0			8.08	1.02	n.a.	n.a.	0.97	0.349	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	8.440	0.427	1961.8	1961.8	7.605	5.722	3.26		Clay	100.0			7.98	1.02	n.a.	n.a.	0.97	0.351	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	8.620	0.439	1981.3	1981.3	7.701	5.757	3.26		Clay	100.0			8.15	1.02	n.a.	n.a.	0.97	0.352	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	8.360	0.441	2000.8	2000.8	7.357	5.989	3.28		Clay	100.0			7.90	1.01	n.a.	n.a.	0.97	0.354	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	6.860	0.382	2021.5	2021.5	5.787	6.524	3.39		Clay	100.0			6.48	1.01	n.a.	n.a.	0.97	0.355	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	6.690	0.328	2041.1	2041.1	5.555	5.789	3.37		Clay	100.0			6.32	1.01	n.a.	n.a.	0.97	0.357	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	6.220	0.337	2061.8	2061.8	5.034	6.487	3.43		Clay	100.0			5.88	1.01	n.a.	n.a.	0.97	0.358	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	6.250	0.334	2081.3	2081.3	5.006	6.419	3.43		Clay	100.0			5.91	1.00	n.a.	n.a.	0.97	0.359	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	8.290	0.329	2100.8	2100.8	6.892	4.547	3.23		Clay	100.0			7.84	1.00	n.a.	n.a.	0.97	0.361	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	5.820	0.318	2121.6	2121.6	4.486	6.678	3.48		Clay	100.0			5.50	1.00	n.a.	n.a.	0.97	0.362	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	5.350	0.297	2141.1	2141.1	3.997	6.947	3.53		Clay	100.0			5.06	1.00	n.a.	n.a.	0.97	0.364	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	5.390	0.291	2161.8	2161.8	3.986	6.742	3.53		Clay	100.0			5.09	0.99	n.a.	n.a.	0.97	0.365	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	5.500	0.277	2181.4	2181.4	4.043	6.273	3.50		Clay	100.0			5.20	0.99	n.a.	n.a.	0.97	0.366	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	5.610	0.283	2200.8	2198.3	4.103	6.284	3.50		Clay	100.0			5.30	0.99	n.a.	n.a.	0.97	0.367	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	5.140	0.275	2221.2	2208.1	3.650	6.832	3.56		Clay	100.0			4.86	0.99	n.a.	n.a.	0.97	0.369	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	4.920	0.241	2240.4	2217.3	3.427	6.340	3.56		Clay	100.0			4.65	0.99	n.a.	n.a.	0.97	0.370	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	5.090	0.250	2260.8	2227.1	3.556	6.321	3.55		Clay	100.0			4.81	0.99	n.a.	n.a.	0.97	0.371	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	5.430	0.262	2280.0	2236.3	3.837	6.098	3.51		Clay	100.0			5.13	0.99	n.a.	n.a.	0.97	0.372	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	6.130	0.308	2299.2	2245.5	4.436	6.174	3.47		Clay	100.0			5.79	0.98	n.a.	n.a.	0.97	0.374	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	6.310	0.349	2319.6	2255.3	4.567	6.780	3.48		Clay	100.0			5.96	0.98	n.a.	n.a.	0.97	0.375	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	7.180	0.355	2338.8	2264.5	5.308	5.910	3.39		Clay	100.0			6.79	0.98	n.a.	n.a.	0.97	0.376	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	8.850	0.395	2359.2	2274.3	6.745	5.146	3.27		Clay	100.0			8.36	0.98	n.a.	n.a.	0.96	0.377	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	9.060	0.419	2378.4	2283.6	6.893	5.317	3.27		Clay	100.0			8.56	0.98	n.a.	n.a.	0.96	0.378	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	9.630	0.459	2398.8	2293.3	7.352	5.442	3.26		Clay	100.0			9.10	0.98	n.a.	n.a.	0.96	0.380	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	10.340	0.483	2418.0	2302.6	7.931	5.285	3.22		Clay	100.0			9.77	0.98	n.a.	n.a.	0.96	0.381	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	10.520	0.490	2437.2	2311.8	8.047	5.269	3.22		Clay	100.0			9.94	0.98	n.a.	n.a.	0.96	0.382	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	11.760	0.494	2457.6	2321.6	9.072	4.694	3.14		Clay	100.0			11.12	0.98	n.a.	n.a.	0.96	0.383	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	13.290	0.508	2476.8	2330.8	10.341	4.215	3.07		Clay	100.0			12.56	0.97	n.a.	n.a.	0.96	0.384	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	13.590	0.568	2497.2	2340.6	10.546	4.602	3.09		Clay	100.0			12.84	0.97	n.a.	n.a.	0.96	0.385	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	13.580	0.629	2516.4	2349.8	10.488	5.106	3.12		Clay	100.0			12.84	0.97	n.a.	n.a.	0.96	0.386	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	12.250	0.600	2535.6	2359.0	9.311	5.461	3.18		Clay	100.0			11.58	0.97	n.a.	n.a.	0.96	0.387	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	12.400	0.612	2556.0	2368.8	9.390	5.504	3.18		Clay	100.0			11.72	0.97	n.a.	n.a.	0.96	0.388	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	13.330	0.602	2575.2	2378.0	10.128	5.001	3.12		Clay	100.0			12.60	0.97	n.a.	n.a.	0.96	0.389	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	13.610	0.591	2595.6	2387.8	10.313	4.802	3.11		Clay	100.0			12.86	0.97	n.a.	n.a.	0.96	0.390	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	12.550	0.489	2614.8	2397.0	9.380	4.350	3.11		Clay	100.0			11.86	0.97	n.a.	n.a.	0.96	0.391	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	11.780	0.422	2634.0	2406.2	8.697	4.037	3.12		Clay	100.0			11.13	0.97	n.a.	n.a.	0.96	0.392	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No. 1

PGA (A_{max}) 0.50

Total Settlement: 0.20 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5, S'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
21.820	11.310	0.411	2654.4	2416.0	8.264	4.120	3.14		Clay	100.0			10.69	0.97	n.a.	n.a.	0.96	0.393	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	9.960	0.425	2673.6	2425.2	7.111	4.932	3.24		Clay	100.0			9.41	0.96	n.a.	n.a.	0.96	0.394	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.150	7.620	0.394	2694.0	2435.0	5.152	6.273	3.42		Clay	100.0			7.20	0.96	n.a.	n.a.	0.96	0.395	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	7.890	0.378	2713.2	2444.3	5.346	5.781	3.38		Clay	100.0			7.46	0.96	n.a.	n.a.	0.96	0.396	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	9.480	0.425	2732.4	2453.5	6.614	5.238	3.28		Clay	100.0			8.96	0.96	n.a.	n.a.	0.96	0.397	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	7.920	0.397	2752.8	2463.3	5.313	6.072	3.40		Clay	100.0			7.49	0.96	n.a.	n.a.	0.96	0.398	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	6.600	0.392	2772.0	2472.5	4.218	7.520	3.53		Clay	100.0			6.24	0.96	n.a.	n.a.	0.96	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	5.940	0.349	2792.4	2482.3	3.661	7.674	3.59		Clay	100.0			5.61	0.96	n.a.	n.a.	0.95	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	5.320	0.320	2811.6	2491.5	3.142	8.178	3.66		Clay	100.0			5.03	0.96	n.a.	n.a.	0.95	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	5.040	0.301	2830.8	2500.7	2.899	8.293	3.69		Clay	100.0			4.76	0.96	n.a.	n.a.	0.95	0.401	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	6.900	0.348	2851.2	2510.5	4.361	6.353	3.48		Clay	100.0			6.52	0.96	n.a.	n.a.	0.95	0.402	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	11.450	0.362	2870.4	2519.7	7.949	3.612	3.12		Clay	100.0			10.82	0.95	n.a.	n.a.	0.95	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	9.380	0.268	2890.8	2529.5	6.274	3.381	3.19		Clay	100.0			8.87	0.95	n.a.	n.a.	0.95	0.404	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	10.180	0.481	2910.0	2538.7	6.874	5.517	3.28		Clay	100.0			9.62	0.95	n.a.	n.a.	0.95	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	11.590	0.611	2929.2	2547.9	7.948	6.035	3.26		Clay	100.0			10.95	0.95	n.a.	n.a.	0.95	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	9.980	0.498	2949.6	2557.7	6.651	5.854	3.31		Clay	100.0			9.43	0.95	n.a.	n.a.	0.95	0.406	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	8.090	0.444	2968.8	2566.9	5.147	6.728	3.44		Clay	100.0			7.65	0.95	n.a.	n.a.	0.95	0.407	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	9.130	0.432	2989.2	2576.7	5.926	5.662	3.34		Clay	100.0			8.63	0.95	n.a.	n.a.	0.95	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	12.080	0.357	3008.4	2586.0	8.179	3.374	3.10		Clay	100.0			11.42	0.95	n.a.	n.a.	0.95	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	8.300	0.342	3027.6	2595.2	5.230	5.041	3.36		Clay	100.0			7.84	0.95	n.a.	n.a.	0.95	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	9.630	0.264	3048.0	2605.0	6.224	3.262	3.19		Clay	100.0			9.10	0.95	n.a.	n.a.	0.95	0.410	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	8.370	0.295	3067.2	2614.2	5.230	4.315	3.32		Clay	100.0			7.91	0.95	n.a.	n.a.	0.95	0.411	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	8.840	0.248	3087.6	2624.0	5.561	3.403	3.24		Clay	100.0			8.36	0.94	n.a.	n.a.	0.95	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	8.770	0.204	3106.8	2633.2	5.481	2.823	3.20		Clay	100.0			8.29	0.94	n.a.	n.a.	0.95	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	7.100	0.154	3126.0	2642.4	4.191	2.778	3.30		Clay	100.0			6.71	0.94	n.a.	n.a.	0.95	0.413	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	6.840	0.265	3146.4	2652.2	3.972	5.024	3.45		Clay	100.0			6.47	0.94	n.a.	n.a.	0.95	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	9.710	0.322	3165.6	2661.4	6.107	3.961	3.24		Clay	100.0			9.18	0.94	n.a.	n.a.	0.95	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	10.910	0.314	3186.0	2671.2	6.976	3.373	3.15		Clay	100.0			10.31	0.94	n.a.	n.a.	0.94	0.415	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	8.240	0.273	3205.2	2680.4	4.953	4.109	3.33		Clay	100.0			7.79	0.94	n.a.	n.a.	0.94	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	7.410	0.248	3224.4	2689.6	4.311	4.277	3.39		Clay	100.0			7.00	0.94	n.a.	n.a.	0.94	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	8.780	0.300	3244.8	2699.4	5.303	4.194	3.31		Clay	100.0			8.30	0.94	n.a.	n.a.	0.94	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	9.630	0.393	3264.0	2708.6	5.906	4.919	3.31		Clay	100.0			9.10	0.94	n.a.	n.a.	0.94	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	12.990	0.496	3284.4	2718.4	8.349	4.370	3.16		Clay	100.0			12.28	0.94	n.a.	n.a.	0.94	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	18.720	0.697	3303.6	2727.6	12.515	4.082	3.00		Clay	100.0			17.69	0.94	n.a.	n.a.	0.94	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	18.880	0.798	3324.0	2737.4	12.580	4.633	3.03		Clay	100.0			17.84	0.93	n.a.	n.a.	0.94	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	25.150	0.747	3343.2	2746.7	17.096	3.180	2.82		Clay	88.9			23.77	0.93	n.a.	n.a.	0.94	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	37.670	0.639	3362.4	2755.9	29.806	1.775	2.48		Sand	61.3	37.67	1.8	67.81	0.89	60.29	126.28	0.94	0.421	0.965	0.187	0.259	0.61	0.03	0.04
27.890	39.860	0.758	3382.8	2765.7	31.556	1.986	2.49		Sand	62.0		1.8	67.81	0.89	60.20	126.39	0.94	0.422	0.965	0.187	0.259	0.61	0.03	0.04
28.050	32.340	0.974	3402.0	2774.9	22.083	3.179	2.74		Clay	81.9			30.57	0.93	n.a.	n.a.	0.94	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	22.460	0.852	3422.4	2784.7	14.902	4.104	2.94		Clay	98.1			21.23	0.93	n.a.	n.a.	0.94	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	19.660	0.725	3441.6	2793.9	12.842	4.044	2.99		Clay	100.0			18.58	0.93	n.a.	n.a.	0.94	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	18.180	0.894	3460.8	2803.1	11.737	5.432	3.10		Clay	100.0			17.18	0.93	n.a.	n.a.	0.94	0.424	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	19.180	1.009	3481.2	2812.9	12.400	5.785	3.09		Clay	100.0			18.13	0.93	n.a.	n.a.	0.94	0.424	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	24.030	1.154	3500.4	2822.1	15.789	5.180	2.98		Clay	100.0			22.71	0.93	n.a.	n.a.	0.94	0.425	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	27.650	1.085	3520.8	2831.9	18.284	4.192	2.88		Clay	93.1			26.13	0.93	n.a.	n.a.	0.94	0.426	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	50.990	0.836	3540.0	2841.1	40.148	1.699	2.36		Sand	52.1	71.21	1.72	122.48	0.90	110.56	186.92	0.94	0.426	0.933	0.975	2.001	4.70	0.00	0.00
29.360	74.900	0.576	3559.2	2850.3	59.547	0.788	2.03		Sand	25.4	71.21	1.72	122.48	0.89	109.09	159.02	0.94	0.427	0.948	0.361	0.610	1.43	0.00	0.00
29.530	75.340	0.916	3579.6	2860.1	59.795	1.245	2.14		Sand	34.5		1.72	122.48	0.90	109.63	172.78	0.93	0.427	0.941	0.554	1.028	2.41	0.00	0.00
29.690	64.630	0.857	3598.8	2869.3	50.998	1.364	2.22		Sand	40.8	71.21	1.72	122.48	0.90	109.80	178.91	0.93	0.428	0.936	0.695	1.349	3.15	0.00	0.00
29.860	45.640	0.935	3619.2	2879.1	35.515	2.133	2.47		Sand	60.3	71.21	1.72	122.48	0.90	110.20	189.93	0.93	0.428	0.928	1.121	2.287	5.34	0.00	0.00
30.020	25.890	0.897	3638.4	2888.4	16.667	3.726	2.87		Clay	93.0			24.47	0.92	n.a.	n.a.	0.93	0.429	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	16.040	0.736	3657.6	2897.6	9.809	5.178	3.14		Clay	100.0			15.16	0.92	n.a.	n.a.	0.93	0.429	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	11.870	0.572	3678.0	2907.4	6.900	5.705	3.29		Clay	100.0			11.22	0.92	n.a.	n.a.	0.93	0.430	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	10.170	0.350	3697.2	2916.6	5.706	4.208	3.28		Clay	100.0			9.61	0.92	n.a.	n.a.	0.93	0.430	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	9.350	0.265	3717.6	2926.4	5.120	3.535	3.28		Clay	100.0			8.84	0.92	n.a.	n.a.	0.93	0.431	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	8.580	0.245	3736.8	2935.6	4.573	3.646	3.33		Clay	100.0			8.11	0.92	n.a.	n.a.	0.93	0.431	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	8.940	0.234	3756.0	2944.8	4.796	3.306	3.29		Clay	100.0			8.45	0.92	n.a.	n.a.	0.93	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	9.960	0.283	3776.4	2954.6	5.464	3.506	3.25		Clay	100.0			9.41	0.92	n.a.	n.a.	0.93	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	10.850	0.416	3795.6	2963.8	6.041	4.646	3.28		Clay	100.0			10.26	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	13.050	0.660	3816.0	2973.6	7.494	5.921	3.27		Clay	100.0			12.33	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	25.830	0.741	3835.2	2982.8	16.033	3.098	2.84		Clay	90.1			24.41	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	30.440	0.641	3854.4	2992.0	19.059	2.247	2.70		Clay	78.6			28.77	0.91	n.a.	n.a.	0.93	0.434	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	20.350	0.781	3874.8	3001.8	12.268	4.244	3.01		Clay	100.0			19.23	0.91	n.a.	n.a.	0.93	0.434	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	11.220	0.574	3894.0	3011.0	6.159	6.188	3.35		Clay	100.0			10.60	0.91	n.a.	n.a.	0.93	0.435	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	8.790	0.327	3914.4	3020.8	4.524	4.783	3.40		Clay	100.0			8.31	0.91	n.a.	n.a.	0.93	0.435	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	8.470	0.330	3933.6	3030.0	4.292	5.071	3.43		Clay	100.0			8.01	0.91	n.a.	n.a.	0.92	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CPT No. 1

PGA (A_{max}) 0.50

Total Settlement: 0.20 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5,\ s'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
32.640	9.770	0.516	3952.8	3039.3	5.129	6.616	3.43		Clay	100.0			9.23	0.91	n.a.	n.a.	0.92	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	27.140	0.811	3973.2	3049.1	16.499	3.225	2.84		Clay	90.1			25.65	0.91	n.a.	n.a.	0.92	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	44.040	0.977	3992.4	3058.3	33.055	2.323	2.51		Sand	64.1	44.91	1.8	80.84	0.86	69.18	138.50	0.92	0.437	0.947	0.228	0.333	0.76	0.02	0.03
33.140	47.510	1.157	4012.8	3068.1	35.718	2.542	2.51		Sand	64.1		1.8	80.83	0.85	69.07	138.34	0.92	0.437	0.946	0.227	0.332	0.76	0.02	0.03
33.300	46.830	1.318	4032.0	3077.3	29.126	2.941	2.62		Clay	72.7			44.26	0.91	n.a.	n.a.	0.92	0.438	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	58.560	1.508	4051.2	3086.5	44.244	2.668	2.46		Sand	59.6	76.36	1.72	131.34	0.88	115.79	196.81	0.92	0.438	0.904	1.586	3.155	7.21	0.00	0.00
33.630	73.050	1.382	4071.6	3096.3	55.488	1.946	2.29		Sand	46.4	76.36	1.72	131.34	0.88	115.24	189.66	0.92	0.438	0.911	1.106	2.217	5.06	0.00	0.00
33.790	80.790	1.426	4090.8	3105.5	61.437	1.811	2.24		Sand	42.1		1.72	131.34	0.87	114.91	186.25	0.92	0.439	0.913	0.946	1.899	4.33	0.00	0.00
33.960	74.020	1.479	4111.2	3115.3	56.058	2.055	2.30		Sand	47.4	76.36	1.72	131.34	0.88	115.02	189.99	0.92	0.439	0.909	1.124	2.248	5.12	0.00	0.00
34.120	60.360	1.527	4130.4	3124.5	45.343	2.620	2.44		Sand	58.5	76.36	1.72	131.34	0.88	115.25	195.71	0.92	0.439	0.902	1.496	2.971	6.76	0.00	0.00
34.280	52.180	1.607	4149.6	3133.7	31.978	3.208	2.62		Clay	72.3			49.32	0.90	n.a.	n.a.	0.92	0.440	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	61.240	1.558	4170.0	3143.5	45.873	2.633	2.44		Sand	58.3	64.39	1.78	114.61	0.87	99.23	175.16	0.92	0.440	0.920	0.603	1.116	2.54	0.00	0.00
34.610	67.740	1.236	4189.2	3152.7	50.831	1.883	2.31		Sand	48.0	64.39	1.78	114.61	0.86	98.81	169.91	0.92	0.440	0.924	0.502	0.895	2.03	0.00	0.00
34.780	68.120	0.964	4209.6	3162.5	51.039	1.460	2.24		Sand	42.3		1.78	114.61	0.86	98.45	165.85	0.92	0.441	0.926	0.441	0.764	1.73	0.00	0.00
34.940	58.920	1.004	4228.8	3171.7	43.855	1.767	2.34		Sand	50.5	64.39	1.78	114.61	0.86	98.66	171.06	0.92	0.441	0.922	0.522	0.937	2.12	0.00	0.00
35.100	46.760	1.353	4248.0	3181.0	28.064	3.032	2.64		Clay	74.4			44.20	0.90	n.a.	n.a.	0.92	0.441	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	29.130	1.203	4268.4	3190.8	16.921	4.456	2.92		Clay	96.5			27.53	0.90	n.a.	n.a.	0.92	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	15.640	0.754	4287.6	3200.0	8.435	5.587	3.22		Clay	100.0			14.78	0.90	n.a.	n.a.	0.92	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	11.430	0.502	4308.0	3209.8	5.780	5.409	3.34		Clay	100.0			10.80	0.90	n.a.	n.a.	0.91	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	15.730	0.504	4327.2	3219.0	8.429	3.717	3.11		Clay	100.0			14.87	0.90	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	15.440	0.540	4347.6	3228.8	8.217	4.070	3.14		Clay	100.0			14.59	0.89	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	10.740	0.409	4366.8	3238.0	5.285	4.783	3.34		Clay	100.0			10.15	0.89	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	10.800	0.361	4386.0	3247.2	5.301	4.190	3.31		Clay	100.0			10.21	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	10.900	0.387	4406.4	3257.0	5.340	4.455	3.32		Clay	100.0			10.30	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	11.240	0.402	4425.6	3266.2	5.528	4.448	3.31		Clay	100.0			10.62	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	10.850	0.382	4446.0	3276.0	5.267	4.427	3.32		Clay	100.0			10.26	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	10.750	0.366	4465.2	3285.2	5.185	4.301	3.32		Clay	100.0			10.16	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	10.450	0.341	4484.4	3294.4	4.983	4.159	3.33		Clay	100.0			9.88	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	10.650	0.322	4504.8	3304.2	5.083	3.836	3.30		Clay	100.0			10.07	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	11.270	0.375	4524.0	3313.4	5.437	4.161	3.30		Clay	100.0			10.65	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	11.090	0.372	4544.4	3323.2	5.307	4.221	3.31		Clay	100.0			10.48	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	11.480	0.365	4563.6	3332.4	5.520	3.966	3.28		Clay	100.0			10.85	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	11.520	0.376	4582.8	3341.7	5.523	4.076	3.28		Clay	100.0			10.89	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	10.720	0.345	4603.2	3351.5	5.024	4.098	3.32		Clay	100.0			10.13	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	10.190	0.310	4622.4	3360.7	4.689	3.931	3.34		Clay	100.0			9.63	0.89	n.a.	n.a.	0.91	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	11.190	0.375	4642.8	3370.5	5.263	4.230	3.31		Clay	100.0			10.58	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	10.840	0.351	4662.0	3379.7	5.035	4.130	3.32		Clay	100.0			10.25	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	12.520	0.345	4681.2	3388.9	6.008	3.391	3.21		Clay	100.0			11.83	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	14.590	0.487	4701.6	3398.7	7.202	3.982	3.18		Clay	100.0			13.79	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	16.220	0.544	4720.8	3407.9	8.134	3.922	3.14		Clay	100.0			15.33	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	34.580	0.851	4741.2	3417.7	18.849	2.642	2.74		Clay	82.3			32.68	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	20.410	0.828	4760.4	3426.9	10.522	4.592	3.09		Clay	100.0			19.29	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	12.710	0.628	4779.6	3436.1	6.007	6.083	3.36		Clay	100.0			12.01	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	12.280	0.474	4800.0	3445.9	5.734	4.796	3.31		Clay	100.0			11.61	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	11.850	0.459	4819.2	3455.1	5.465	4.865	3.33		Clay	100.0			11.20	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	12.180	0.418	4839.6	3464.9	5.634	4.284	3.29		Clay	100.0			11.51	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	11.840	0.434	4858.8	3474.1	5.418	4.615	3.32		Clay	100.0			11.19	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.350	11.980	0.458	4878.0	3483.4	5.478	4.800	3.33		Clay	100.0			11.32	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	12.610	0.518	4898.4	3493.2	5.818	5.094	3.32		Clay	100.0			11.92	0.88	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	13.760	0.580	4917.6	3502.4	6.453	5.135	3.29		Clay	100.0			13.01	0.88	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	14.960	0.637	4938.0	3512.2	7.113	5.101	3.25		Clay	100.0			14.14	0.87	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	14.860	0.653	4957.2	3521.4	7.032	5.271	3.26		Clay	100.0			14.05	0.87	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.170	14.520	0.649	4976.4	3530.6	6.816	5.393	3.28		Clay	100.0			13.72	0.87	n.a.	n.a.	0.89	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	14.730	0.645	4996.8	3540.4	6.910	5.276	3.27		Clay	100.0			13.92	0.87	n.a.	n.a.	0.89	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	14.580	0.652	5016.0	3549.6	6.802	5.398	3.28		Clay	100.0			13.78	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	14.840	0.641	5036.4	3559.4	6.924	5.203	3.27		Clay	100.0			14.03	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	14.560	0.659	5055.6	3568.6	6.743	5.475	3.29		Clay	100.0			13.76	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	14.650	0.690	5074.8	3577.8	6.771	5.700	3.30		Clay	100.0			13.85	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	14.000	0.705	5095.2	3587.6	6.384	6.159	3.34		Clay	100.0			13.23	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	13.170	0.659	5114.4	3596.8	5.901	6.209	3.37		Clay	100.0			12.45	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	12.850	0.622	5134.8	3606.6	5.702	6.053	3.37		Clay	100.0			12.15	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	12.170	0.570	5154.0	3615.8	5.306	5.943	3.39		Clay	100.0			11.50	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	11.850	0.523	5173.2	3625.1	5.111	5.642	3.39		Clay	100.0			11.20	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	11.560	0.507	5193.6	3634.8	4.932	5.653	3.41		Clay	100.0			10.93	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	12.450	0.493	5212.8	3644.1	5.403	5.012	3.34		Clay	100.0			11.77	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	12.860	0.460	5233.2	3653.9	5.607	4.490	3.30		Clay	100.0			12.16	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No. 1

PGA (A_{max}) 0.50

Total Settlement: 0.20 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu 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_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	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)
43.470	12.340	0.419	5252.4	3663.1	5.304	4.316	3.31		Clay	100.0			11.66	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	11.960	0.428	5272.8	3672.9	5.077	4.587	3.34		Clay	100.0			11.30	0.86	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	13.320	0.474	5292.0	3682.1	5.798	4.436	3.29		Clay	100.0			12.59	0.86	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	15.100	0.508	5311.2	3691.3	6.743	4.082	3.21		Clay	100.0			14.27	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.130	15.460	0.559	5331.6	3701.1	6.914	4.372	3.22		Clay	100.0			14.61	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	15.600	0.565	5350.8	3710.3	6.967	4.372	3.22		Clay	100.0			14.74	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	15.130	0.540	5371.2	3720.1	6.690	4.341	3.23		Clay	100.0			14.30	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	15.160	0.540	5390.4	3729.3	6.685	4.335	3.23		Clay	100.0			14.33	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	15.450	0.489	5409.6	3738.5	6.818	3.838	3.19		Clay	100.0			14.60	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	15.790	0.538	5430.0	3748.3	6.976	4.116	3.20		Clay	100.0			14.92	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	16.240	0.579	5449.2	3757.5	7.194	4.283	3.20		Clay	100.0			15.35	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	16.240	0.585	5469.6	3767.3	7.170	4.332	3.21		Clay	100.0			15.35	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	15.420	0.573	5488.8	3776.5	6.713	4.522	3.24		Clay	100.0			14.57	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	15.350	0.530	5508.0	3785.8	6.654	4.209	3.23		Clay	100.0			14.51	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.830	15.350	0.584	5535.6	3799.0	6.624	4.643	3.25		Clay	100.0			14.51	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	15.800	0.551	5547.6	3804.8	6.847	4.230	3.22		Clay	100.0			14.93	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	16.290	0.605	5568.0	3814.6	7.081	4.479	3.22		Clay	100.0			15.40	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	14.350	0.523	5587.2	3823.8	6.044	4.522	3.28		Clay	100.0			13.56	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	13.010	0.468	5606.4	3833.0	5.326	4.588	3.33		Clay	100.0			12.30	0.85	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	12.810	0.441	5626.8	3842.8	5.203	4.414	3.33		Clay	100.0			12.11	0.85	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	14.640	0.492	5646.0	3852.0	6.136	4.163	3.25		Clay	100.0			13.84	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	18.920	0.647	5666.4	3861.8	8.331	4.023	3.13		Clay	100.0			17.88	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	20.320	0.687	5685.6	3871.0	9.030	3.930	3.10		Clay	100.0			19.21	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	18.310	0.686	5704.8	3880.2	7.967	4.437	3.18		Clay	100.0			17.31	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	15.300	0.523	5725.2	3890.0	6.395	4.205	3.24		Clay	100.0			14.46	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	14.950	0.515	5744.4	3899.2	6.195	4.260	3.25		Clay	100.0			14.13	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	20.860	0.841	5764.8	3909.0	9.198	4.675	3.14		Clay	100.0			19.72	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	18.570	1.018	5784.0	3918.2	8.003	6.492	3.27		Clay	100.0			17.55	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	29.280	0.998	5803.2	3927.5	13.433	3.783	2.95		Clay	99.2			27.67	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	30.700	1.144	5823.6	3937.2	14.116	4.116	2.96		Clay	99.6			29.02	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	22.500	1.013	5842.8	3946.5	9.922	5.173	3.14		Clay	100.0			21.27	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	18.060	0.803	5863.2	3956.3	7.648	5.311	3.24		Clay	100.0			17.07	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	18.290	0.661	5882.4	3965.5	7.741	4.303	3.18		Clay	100.0			17.29	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	20.600	0.705	5901.6	3974.7	8.881	3.993	3.11		Clay	100.0			19.47	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	21.660	0.803	5922.0	3984.5	9.386	4.294	3.11		Clay	100.0			20.47	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	20.660	0.770	5941.2	3993.7	8.859	4.355	3.13		Clay	100.0			19.53	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	20.260	0.690	5961.6	4003.5	8.632	3.992	3.12		Clay	100.0			19.15	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	21.370	0.769	5980.8	4012.7	9.161	4.182	3.11		Clay	100.0			20.20	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	24.170	0.819	6000.0	4021.9	10.527	3.867	3.04		Clay	100.0			22.84	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	25.130	0.835	6020.4	4031.7	10.973	3.776	3.02		Clay	100.0			23.75	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	23.220	0.794	6039.6	4040.9	9.998	3.933	3.07		Clay	100.0			21.95	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	21.440	0.685	6060.0	4050.7	9.090	3.721	3.08		Clay	100.0			20.26	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.360	20.370	0.913	6079.2	4059.9	8.537	5.265	3.20		Clay	100.0			19.25	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.520	20.000	0.902	6098.4	4069.2	8.331	5.321	3.21		Clay	100.0			18.90	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.690	21.910	0.754	6118.8	4078.9	9.243	3.998	3.10		Clay	100.0			20.71	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.850	18.470	0.484	6138.0	4088.2	7.534	3.139	3.11		Clay	100.0			17.46	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.020	15.660	0.463	6158.4	4098.0	6.140	3.679	3.22		Clay	100.0			14.80	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.180	14.980	0.533	6177.6	4107.2	5.790	4.484	3.29		Clay	100.0			14.16	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.350	16.280	0.481	6198.0	4117.0	6.403	3.652	3.21		Clay	100.0			15.39	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.510	17.900	0.822	6217.2	4126.2	7.170	5.554	3.27		Clay	100.0			16.92	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.670	15.010	0.682	6236.4	4135.4	5.751	5.738	3.36		Clay	100.0			14.19	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
51.840	17.560	0.505	6256.8	4145.2	6.963	3.500	3.16		Clay	100.0			16.60	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.000	14.920	0.441	6276.0	4154.4	5.672	3.740	3.25		Clay	100.0			14.10	0.84	n.a.	n.a.	0.86	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.170	14.920	0.451	6296.4	4164.2	5.654	3.834	3.26		Clay	100.0			14.10	0.84	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.330	15.460	0.490	6315.6	4173.4	5.896	3.985	3.26		Clay	100.0			14.61	0.84	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.490	15.520	0.498	6334.8	4182.6	5.907	4.033	3.26		Clay	100.0			14.67	0.84	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.660	15.020	0.428	6355.2	4192.4	5.649	3.615	3.25		Clay	100.0			14.20	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.820	13.900	0.343	6374.4	4201.6	5.099	3.204	3.26		Clay	100.0			13.14	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
52.990	13.650	0.320	6394.8	4211.4	4.964	3.063	3.26		Clay	100.0			12.90	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.150	14.410	0.347	6414.0	4220.6	5.309	3.093	3.23		Clay	100.0			13.62	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.310	15.110	0.385	6433.2	4229.9	5.624	3.240	3.22		Clay	100.0			14.28	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.480	15.200	0.346	6453.6	4239.6	5.648	2.891	3.20		Clay	100.0			14.37	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.640	13.100	0.364	6472.8	4248.9	4.643	3.691	3.32		Clay	100.0			12.38	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.810	13.500	0.358	6493.2	4258.7	4.815	3.495	3.30		Clay	100.0			12.76	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
53.970	14.480	0.392	6512.4	4267.9	5.260	3.491	3.27		Clay	100.0			13.69	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.130	14.210	0.450	6531.6	4277.1	5.118	4.109	3.31		Clay	100.0			13.43	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No. 1

PGA (A_{max}) 0.50

Total Settlement: 0.20 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5, s'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
54.300	14.600	0.459	6552.0	4286.9	5.283	4.051	3.30		Clay	100.0			13.80	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.460	15.550	0.457	6571.2	4296.1	5.710	3.728	3.25		Clay	100.0			14.70	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.630	15.850	0.471	6591.6	4305.9	5.831	3.749	3.25		Clay	100.0			14.98	0.83	n.a.	n.a.	0.85	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.790	16.160	0.462	6610.8	4315.1	5.958	3.594	3.23		Clay	100.0			15.27	0.83	n.a.	n.a.	0.84	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
54.950	16.960	0.498	6630.0	4324.3	6.311	3.650	3.21		Clay	100.0			16.03	0.83	n.a.	n.a.	0.84	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.120	16.980	0.539	6650.4	4334.1	6.301	3.950	3.23		Clay	100.0			16.05	0.83	n.a.	n.a.	0.84	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.280	16.560	0.519	6669.6	4343.3	6.090	3.927	3.24		Clay	100.0			15.65	0.83	n.a.	n.a.	0.84	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.450	16.200	0.515	6690.0	4353.1	5.906	4.003	3.26		Clay	100.0			15.31	0.83	n.a.	n.a.	0.84	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.610	16.040	0.462	6709.2	4362.3	5.816	3.644	3.24		Clay	100.0			15.16	0.83	n.a.	n.a.	0.84	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.770	16.680	0.479	6728.4	4371.6	6.092	3.596	3.22		Clay	100.0			15.77	0.83	n.a.	n.a.	0.84	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
55.940	17.600	0.536	6748.8	4381.3	6.494	3.769	3.21		Clay	100.0			16.64	0.83	n.a.	n.a.	0.84	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.100	17.610	0.550	6768.0	4390.6	6.480	3.866	3.21		Clay	100.0			16.64	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.270	16.990	0.534	6788.4	4400.4	6.179	3.924	3.24		Clay	100.0			16.06	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.430	16.930	0.523	6807.6	4409.6	6.135	3.866	3.23		Clay	100.0			16.00	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.590	17.770	0.576	6826.8	4418.8	6.498	4.014	3.22		Clay	100.0			16.80	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.760	17.650	0.582	6847.2	4428.6	6.425	4.092	3.23		Clay	100.0			16.68	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
56.920	17.510	0.647	6866.4	4437.8	6.344	4.596	3.26		Clay	100.0			16.55	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.090	17.540	0.622	6886.8	4447.6	6.339	4.410	3.25		Clay	100.0			16.58	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.250	16.820	0.584	6906.0	4456.8	5.998	4.372	3.27		Clay	100.0			15.90	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.410	17.250	0.574	6925.2	4466.0	6.174	4.163	3.25		Clay	100.0			16.30	0.82	n.a.	n.a.	0.84	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.580	17.570	0.548	6945.6	4475.8	6.299	3.889	3.23		Clay	100.0			16.61	0.82	n.a.	n.a.	0.83	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.740	17.400	0.544	6964.8	4485.0	6.206	3.905	3.23		Clay	100.0			16.45	0.82	n.a.	n.a.	0.83	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
57.910	18.380	0.536	6985.2	4494.8	6.624	3.601	3.19		Clay	100.0			17.37	0.82	n.a.	n.a.	0.83	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.070	17.540	0.572	7004.4	4504.0	6.233	4.071	3.24		Clay	100.0			16.58	0.82	n.a.	n.a.	0.83	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.230	17.950	0.549	7023.6	4513.2	6.398	3.799	3.21		Clay	100.0			16.97	0.82	n.a.	n.a.	0.83	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.400	16.830	0.521	7044.0	4523.0	5.885	3.915	3.25		Clay	100.0			15.91	0.82	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.560	16.740	0.506	7063.2	4532.3	5.829	3.828	3.25		Clay	100.0			15.82	0.82	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.730	15.740	0.401	7083.6	4542.0	5.371	3.290	3.24		Clay	100.0			14.88	0.82	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
58.890	14.830	0.322	7102.8	4551.3	4.956	2.855	3.24		Clay	100.0			14.02	0.82	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.060	15.790	0.350	7123.2	4561.1	5.362	2.860	3.21		Clay	100.0			14.92	0.82	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.220	16.090	0.417	7142.4	4570.3	5.478	3.330	3.24		Clay	100.0			15.21	0.82	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.380	16.460	0.461	7161.6	4579.5	5.625	3.583	3.25		Clay	100.0			15.56	0.82	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.550	16.840	0.494	7182.0	4589.3	5.774	3.726	3.25		Clay	100.0			15.92	0.82	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.710	17.130	0.506	7201.2	4598.5	5.884	3.736	3.24		Clay	100.0			16.19	0.81	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
59.880	16.810	0.511	7221.6	4608.3	5.728	3.868	3.26		Clay	100.0			15.89	0.81	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.040	16.870	0.537	7240.8	4617.5	5.739	4.053	3.27		Clay	100.0			15.95	0.81	n.a.	n.a.	0.83	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
60.200	17.270	0.518	7260.0	4626.7	5.896	3.796	3.24		Clay	100.0			16.32	0.81	n.a.	n.a.	0.82	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No. 2

PGA (A_{max}) 0.50

Total Settlement: 0.62 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5,\ s'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.330	0.360	0.761	40.3	40.3	16.884	224.027	4.22		Unsaturated	100.0			0.34	1.70	0.58	54.69	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	1.840	1.821	59.8	59.8	60.559	100.580	3.64		Unsaturated	100.0			1.74	1.70	2.96	57.81	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	9.660	1.233	80.5	80.5	89.620	12.813	2.78		Unsaturated	85.3			9.13	1.70	15.52	72.84	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	5.440	1.189	100.0	100.0	107.756	22.067	2.94		Unsaturated	98.1			5.14	1.70	8.74	65.24	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	1.860	1.611	119.6	119.6	30.114	89.489	3.75		Unsaturated	100.0			1.76	1.70	2.99	57.85	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	263.410	2.745	140.3	140.3	966.629	1.042	1.33		Unsaturated	0.0			248.97	1.70	423.25	423.25	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	210.440	3.107	159.8	159.8	723.469	1.477	1.52		Unsaturated	0.0			198.90	1.70	338.14	338.14	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	137.200	2.723	180.6	180.6	443.639	1.986	1.73		Unsaturated	1.1			129.68	1.70	220.45	220.45	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	108.850	3.558	200.1	200.1	334.272	3.272	1.98		Unsaturated	21.1			102.88	1.70	174.90	225.29	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	99.870	3.835	219.6	219.6	292.694	3.845	2.07		Unsaturated	28.2			94.40	1.70	160.47	225.16	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	101.140	4.010	240.3	240.3	283.313	3.970	2.08		Unsaturated	29.7			95.60	1.70	162.51	230.30	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	103.330	3.543	259.9	259.9	278.344	3.433	2.03		Unsaturated	25.7			97.67	1.70	166.03	226.63	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	76.120	2.503	280.6	280.6	197.209	3.294	2.10		Unsaturated	30.8			71.95	1.70	122.31	183.56	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	54.940	1.687	300.1	300.1	137.507	3.079	2.17		Unsaturated	36.3			51.93	1.70	88.28	148.37	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	41.640	1.058	319.6	319.6	100.875	2.551	2.19		Unsaturated	38.2			39.36	1.70	66.91	123.65	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	33.020	0.675	340.4	340.4	77.415	2.055	2.20		Unsaturated	39.2			31.21	1.70	53.06	107.22	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	28.030	0.585	359.9	359.9	63.827	2.099	2.27		Unsaturated	44.6			26.49	1.70	45.04	100.46	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	32.640	1.138	380.6	380.6	72.314	3.505	2.39		Unsaturated	54.1			30.85	1.70	52.45	113.97	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	59.750	2.125	400.2	400.2	129.430	3.569	2.23		Unsaturated	41.6			56.47	1.70	96.01	162.34	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	94.800	2.777	419.7	419.7	200.752	2.935	2.05		Unsaturated	27.2			89.60	1.67	149.47	210.10	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	82.870	2.620	440.4	440.4	171.230	3.169	2.12		Unsaturated	32.5			78.33	1.69	132.03	197.66	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	66.880	2.026	459.9	459.9	135.121	3.040	2.17		Unsaturated	36.3			63.21	1.70	107.46	171.98	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	51.870	1.508	480.7	480.7	102.387	2.920	2.23		Unsaturated	41.4			49.03	1.70	83.34	146.38	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	42.890	1.133	500.2	500.2	82.893	2.658	2.26		Unsaturated	43.9			40.54	1.70	68.92	129.99	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	37.670	1.009	520.9	520.9	71.262	2.697	2.31		Unsaturated	47.9			35.60	1.70	60.53	121.59	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	31.700	0.945	540.5	540.5	58.780	3.006	2.40		Unsaturated	55.3			29.96	1.70	50.94	112.44	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	24.830	0.736	560.0	560.0	45.106	2.997	2.49		Unsaturated	61.8			23.47	1.70	39.90	100.28	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	20.530	0.532	580.7	580.7	36.517	2.628	2.52		Unsaturated	64.2			19.40	1.70	32.99	92.00	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	19.060	0.451	600.2	600.2	33.292	2.404	2.52		Unsaturated	64.7			18.02	1.70	30.63	89.07	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	17.590	0.318	621.0	621.0	30.148	1.843	2.48		Unsaturated	61.7			16.63	1.70	28.26	85.33	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.250	16.620	0.258	640.5	640.5	28.002	1.580	2.47		Unsaturated	60.7			15.71	1.70	26.71	83.07	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.410	15.550	0.210	660.0	660.0	25.758	1.381	2.47		Unsaturated	60.4			14.70	1.70	24.99	80.81	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.580	15.030	0.176	680.8	680.8	24.479	1.199	2.45		Unsaturated	59.3			14.21	1.70	24.15	79.44	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.740	13.490	0.134	700.3	700.3	21.589	1.023	2.46		Unsaturated	60.2			12.75	1.70	21.68	76.51	1.00	0.324	1.098	n.a.	n.a.	n.a.	0.00	0.00
5.910	12.000	0.106	721.0	721.0	18.847	0.910	2.49		Unsaturated	62.3			11.34	1.70	19.28	73.95	1.00	0.324	1.093	n.a.	n.a.	n.a.	0.00	0.00
6.070	10.650	0.076	740.5	740.5	16.424	0.740	2.50		Unsaturated	63.3			10.07	1.70	17.11	71.39	1.00	0.324	1.089	n.a.	n.a.	n.a.	0.00	0.00
6.230	9.840	0.057	760.1	760.1	14.919	0.603	2.50		Unsaturated	63.4			9.30	1.70	15.81	69.73	1.00	0.323	1.086	n.a.	n.a.	n.a.	0.00	0.00
6.400	10.260	0.066	780.8	780.8	15.357	0.667	2.51		Unsaturated	63.9			9.70	1.70	16.49	70.71	0.99	0.323	1.084	n.a.	n.a.	n.a.	0.00	0.00
6.560	11.590	0.080	800.3	800.3	17.197	0.714	2.48		Unsaturated	61.3			10.95	1.70	18.62	72.88	0.99	0.323	1.084	n.a.	n.a.	n.a.	0.00	0.00
6.730	14.530	0.181	821.1	821.1	21.424	1.284	2.52		Unsaturated	64.4			13.73	1.68	23.07	79.30	0.99	0.323	1.086	n.a.	n.a.	n.a.	0.00	0.00
6.890	22.210	0.456	840.6	840.6	32.676	2.092	2.49		Unsaturated	62.2			20.99	1.61	33.78	92.52	0.99	0.323	1.093	n.a.	n.a.	n.a.	0.00	0.00
7.050	32.150	0.808	860.1	860.1	47.025	2.548	2.42		Unsaturated	56.9			30.39	1.54	46.87	107.80	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.220	32.550	1.034	880.8	880.8	47.039	3.220	2.49		Unsaturated	62.5			30.77	1.52	46.78	109.29	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
7.380	30.050	1.066	900.4	900.4	42.890	3.601	2.56		Unsaturated	67.5			28.40	1.51	43.02	105.64	0.99	0.323	1.095	n.a.	n.a.	n.a.	0.00	0.00
7.550	29.380	0.976	921.1	921.1	41.429	3.376	2.55		Unsaturated	66.8			27.77	1.50	41.73	103.83	0.99	0.323	1.091	n.a.	n.a.	n.a.	0.00	0.00
7.710	32.060	0.946	940.6	940.6	44.783	2.993	2.49		Unsaturated	62.0			30.30	1.48	44.85	106.68	0.99	0.323	1.091	n.a.	n.a.	n.a.	0.00	0.00
7.870	36.080	1.067	960.1	960.1	49.952	2.998	2.45		Unsaturated	59.2			34.10	1.45	49.55	111.93	0.99	0.322	1.092	n.a.	n.a.	n.a.	0.00	0.00
8.040	37.760	1.216	980.9	980.9	51.739	3.261	2.47		Unsaturated	60.4			35.69	1.43	51.14	114.31	0.99	0.322	1.091	n.a.	n.a.	n.a.	0.00	0.00
8.200	39.330	1.197	1000.4	1000.4	53.377	3.082	2.44		Unsaturated	58.3			37.17	1.42	52.68	115.64	0.99	0.322	1.090	n.a.	n.a.	n.a.	0.00	0.00
8.370	39.530	1.210	1021.1	1021.1	53.090	3.102	2.44		Unsaturated	58.5			37.36	1.40	52.46	115.44	0.99	0.322	1.087	n.a.	n.a.	n.a.	0.00	0.00
8.530	39.140	1.117	1040.7	1040.7	52.051	2.891	2.43		Unsaturated	57.3			36.99	1.39	51.59	113.96	0.99	0.322	1.084	n.a.	n.a.	n.a.	0.00	0.00
8.690	38.540	1.004	1060.2	1060.2	50.755	2.642	2.41		Unsaturated	55.8			36.43	1.39	50.49	112.07	0.99	0.322	1.081	n.a.	n.a.	n.a.	0.00	0.00
8.860	36.770	0.898	1080.9	1080.9	47.911	2.478	2.41		Unsaturated	55.8			34.75	1.38	47.95	108.82	0.99	0.322	1.077	n.a.	n.a.	n.a.	0.00	0.00
9.020	36.190	0.889	1100.4	1100.4	46.712	2.496	2.42		Unsaturated	56.6			34.21	1.37	46.86	107.70	0.99	0.322	1.074	n.a.	n.a.	n.a.	0.00	0.00
9.190	36.510	0.932	1121.2	1121.2	46.680	2.593	2.43		Unsaturated	57.5			34.51	1.36	46.84	107.95	0.99	0.322	1.072	n.a.	n.a.	n.a.	0.00	0.00
9.350	36.830	0.949	1140.7	1140.7	46.678	2.616	2.43		Unsaturated	57.7			34.81	1.35	46.85	108.04	0.99	0.321	1.070	n.a.	n.a.	n.a.	0.00	0.00
9.510	37.160	0.924	1160.2	1160.2	46.692	2.526	2.42		Unsaturated	56.9			35.12	1.34	46.90	107.84	0.99	0.321	1.068	n.a.	n.a.	n.a.	0.00	0.00
9.680	37.480	0.917	1181.0	1181.0	46.672	2.485	2.42		Unsaturated	56.5			35.43	1.32	46.91	107.73	0.99	0.321	1.066	n.a.	n.a.	n.a.	0.00	0.00
9.840	36.910	0.992	1200.5	1200.5	45.564	2.732	2.45		Unsaturated	59.4			34.89	1.31	45.86	107.25	0.99	0.321	1.064	n.a.	n.a.	n.a.	0.00	0.00
10.010	34.040	0.962	1221.2	1221.2	41.591	2.877	2.50		Unsaturated	62.9			32.17	1.31	42.13	103.43	0.99	0.321	1.060	n.a.	n.a.	n.a.	0.00	0.00
10.170	31.380	0.970	1240.7	1240.7	37.968	3.154	2.56		Unsaturated	67.4			29.66	1.30	38.69	100.05	0.99	0.321	1.057	n.a.	n.a.	n.a.	0.00	0.00
10.330	31.070	1.011	1260.3	1260.3	37.281	3.320	2.58		Unsaturated	69.1			29.37	1.30	38.04	99.55	0.99	0.321	1.055	n.a.	n.a.	n.a.	0.00	0.00
10.500	29.390	1.130	1281.0	1281.0	38.612	3.929	2.62		Unsaturated	72.2			27.78	1.29	35.78	97.24	0.99	0.321	1.052	n.a.	n.a.	n.a.	0.00	0.00
10.660	24.840	1.067	1300.5	1300.5	37.200	4.410	2.66		Unsaturated	75.9			23.48	1.29	30.23	90.69	0.99	0.321	1.048	n.a.	n.a.	n.a.	0.00	0.00
10.830	23.830	0.997	1321.3	1321.3	35.072	4.301	2.67		Unsaturated	76.8			22.52	1.28	28.82	88.99	0.99	0.320	1.046	n.a.	n.a.	n.a.	0.00	0.00
10.990	26.740	0.987	1340.8	1340.8	38.887	3.784	2.60		Unsaturated	71.1			25.27	1.27	31.99	92.13	0.99	0.320	1.046	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No. 2

PGA (A_{max}) 0.50

Total Settlement: 0.62 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5,\ s'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
11.150	25.570	1.063	1360.3	1360.3	36.595	4.270	2.66		Unsaturated	75.6			24.17	1.26	30.40	90.84	0.99	0.320	1.044	n.a.	n.a.	n.a.	0.00	0.00
11.320	23.270	0.989	1381.0	1381.0	32.699	4.380	2.70		Unsaturated	79.0			21.99	1.25	27.54	87.66	0.98	0.320	1.041	n.a.	n.a.	n.a.	0.00	0.00
11.480	24.920	0.928	1400.6	1400.6	34.586	3.832	2.64		Unsaturated	74.4			23.55	1.24	29.23	89.14	0.98	0.320	1.040	n.a.	n.a.	n.a.	0.00	0.00
11.650	29.000	0.929	1421.3	1421.3	35.328	3.284	2.59		Unsaturated	70.2			27.41	1.23	33.60	94.05	0.98	0.320	1.040	n.a.	n.a.	n.a.	0.00	0.00
11.810	26.320	0.980	1440.8	1440.8	35.535	3.829	2.63		Unsaturated	73.7			24.88	1.22	30.38	90.51	0.98	0.320	1.038	n.a.	n.a.	n.a.	0.00	0.00
11.980	21.010	0.834	1461.6	1461.6	27.750	4.113	2.73		Unsaturated	81.7			19.86	1.22	24.22	83.72	0.98	0.320	1.035	n.a.	n.a.	n.a.	0.00	0.00
12.140	27.090	0.960	1481.1	1481.1	35.581	3.643	2.62		Unsaturated	72.5			25.60	1.20	30.81	90.86	0.98	0.319	1.035	n.a.	n.a.	n.a.	0.00	0.00
12.300	23.100	0.961	1500.6	1500.6	29.788	4.298	2.72		Unsaturated	80.9			21.83	1.20	26.20	86.19	0.98	0.319	1.033	n.a.	n.a.	n.a.	0.00	0.00
12.470	17.090	0.778	1521.3	1521.3	21.467	4.766	2.86		Unsaturated	91.7			16.15	1.20	19.37	78.55	0.98	0.319	1.030	n.a.	n.a.	n.a.	0.00	0.00
12.630	20.210	0.668	1540.9	1540.9	25.232	3.438	2.71		Unsaturated	80.1			19.10	1.19	22.69	81.51	0.98	0.319	1.029	n.a.	n.a.	n.a.	0.00	0.00
12.800	15.300	0.536	1561.6	1561.6	18.595	3.690	2.83		Unsaturated	89.8			14.46	1.18	17.13	75.44	0.98	0.319	1.027	n.a.	n.a.	n.a.	0.00	0.00
12.960	15.100	0.531	1581.1	1581.1	18.100	3.711	2.85		Unsaturated	90.6			14.27	1.18	16.80	75.09	0.98	0.319	1.025	n.a.	n.a.	n.a.	0.00	0.00
13.120	31.030	0.740	1600.6	1600.6	32.852	2.449	2.53		Sand	65.5			29.33	1.15	33.85	93.38	0.98	0.320	1.028	0.129	0.163	0.51	0.03	0.07
13.290	49.850	0.697	1621.4	1621.4	52.951	1.422	2.22		Sand	40.7			47.12	1.14	53.53	108.83	0.98	0.322	1.030	0.150	0.203	0.63	0.03	0.06
13.450	50.290	0.540	1640.9	1640.9	53.097	1.092	2.15		Sand	35.1			47.53	1.13	53.80	105.00	0.98	0.324	1.028	0.144	0.191	0.59	0.03	0.06
13.620	43.500	0.636	1661.6	1661.6	45.511	1.491	2.29		Sand	45.9	47.53		47.53	1.12	53.30	111.49	0.98	0.326	1.028	0.155	0.211	0.65	0.03	0.05
13.780	37.930	0.716	1681.2	1681.2	39.329	1.930	2.40		Sand	55.4	47.53		47.53	1.11	52.92	115.00	0.98	0.328	1.028	0.161	0.223	0.68	0.03	0.05
13.940	32.110	0.785	1700.7	1700.7	32.957	2.511	2.54		Sand	65.9	47.53		47.53	1.11	52.57	117.59	0.98	0.329	1.027	0.166	0.233	0.71	0.03	0.05
14.110	24.920	0.866	1721.4	1721.4	27.953	3.601	2.69		Clay	78.4			23.55	1.06	n.a.	n.a.	0.98	0.331	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	17.680	0.692	1740.9	1740.9	19.311	4.116	2.85		Clay	91.2			16.71	1.05	n.a.	n.a.	0.98	0.333	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	17.550	0.676	1761.7	1761.7	18.924	4.054	2.85		Clay	91.4			16.59	1.05	n.a.	n.a.	0.98	0.335	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	20.470	0.679	1781.2	1781.2	21.985	3.466	2.76		Clay	83.9			19.35	1.05	n.a.	n.a.	0.98	0.336	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	14.600	0.587	1800.7	1800.7	15.216	4.284	2.94		Clay	98.5			13.80	1.04	n.a.	n.a.	0.98	0.338	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	10.070	0.419	1821.5	1821.5	10.057	4.571	3.10		Clay	100.0			9.52	1.04	n.a.	n.a.	0.98	0.340	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	9.640	0.318	1841.0	1841.0	9.473	3.641	3.06		Clay	100.0			9.11	1.04	n.a.	n.a.	0.98	0.341	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	9.000	0.319	1861.7	1861.7	8.668	3.958	3.12		Clay	100.0			8.51	1.03	n.a.	n.a.	0.98	0.343	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	10.300	0.303	1881.2	1881.2	9.950	3.236	3.02		Clay	100.0			9.74	1.03	n.a.	n.a.	0.97	0.345	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	9.150	0.280	1900.8	1900.8	8.628	3.416	3.08		Clay	100.0			8.65	1.03	n.a.	n.a.	0.97	0.346	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	9.070	0.275	1921.5	1921.5	8.441	3.394	3.09		Clay	100.0			8.57	1.03	n.a.	n.a.	0.97	0.348	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	8.230	0.249	1941.0	1941.0	7.480	3.427	3.13		Clay	100.0			7.78	1.02	n.a.	n.a.	0.97	0.349	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	8.260	0.218	1961.8	1961.8	7.421	2.999	3.10		Clay	100.0			7.81	1.02	n.a.	n.a.	0.97	0.351	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	7.640	0.215	1981.3	1981.3	6.712	3.230	3.16		Clay	100.0			7.22	1.02	n.a.	n.a.	0.97	0.352	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	10.790	0.291	2000.8	2000.8	9.786	2.969	3.00		Clay	100.0			10.20	1.01	n.a.	n.a.	0.97	0.354	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	11.240	0.359	2021.5	2021.5	10.120	3.507	3.03		Clay	100.0			10.62	1.01	n.a.	n.a.	0.97	0.355	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	15.740	0.415	2041.1	2041.1	14.423	2.820	2.85		Clay	91.1			14.88	1.01	n.a.	n.a.	0.97	0.357	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	25.250	0.413	2061.8	2061.8	23.190	1.704	2.56		Sand	67.5		1.8	42.96	1.01	43.50	106.27	0.97	0.358	1.003	0.146	0.190	0.53	0.03	0.05
17.060	21.200	0.485	2081.3	2081.3	19.372	2.403	2.71		Clay	79.6			20.04	1.00	n.a.	n.a.	0.97	0.359	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	13.810	0.362	2100.8	2100.8	12.147	2.836	2.91		Clay	96.1			13.05	1.00	n.a.	n.a.	0.97	0.361	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	8.370	0.226	2121.6	2121.6	6.890	3.093	3.14		Clay	100.0			7.91	1.00	n.a.	n.a.	0.97	0.362	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.550	6.830	0.193	2141.1	2141.1	5.380	3.344	3.25		Clay	100.0			6.46	1.00	n.a.	n.a.	0.97	0.364	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.720	7.150	0.203	2161.8	2161.8	5.615	3.338	3.23		Clay	100.0			6.76	0.99	n.a.	n.a.	0.97	0.365	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.880	7.150	0.192	2181.4	2181.4	5.556	3.164	3.22		Clay	100.0			6.76	0.99	n.a.	n.a.	0.97	0.366	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	6.870	0.187	2200.8	2198.3	5.249	3.241	3.25		Clay	100.0			6.49	0.99	n.a.	n.a.	0.97	0.367	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	6.690	0.156	2221.2	2208.1	5.054	2.798	3.23		Clay	100.0			6.32	0.99	n.a.	n.a.	0.97	0.369	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	6.270	0.130	2240.4	2217.3	4.645	2.517	3.24		Clay	100.0			5.93	0.99	n.a.	n.a.	0.97	0.370	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	6.090	0.145	2260.8	2227.1	4.454	2.914	3.29		Clay	100.0			5.76	0.99	n.a.	n.a.	0.97	0.371	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	6.420	0.142	2280.0	2236.3	4.722	2.695	3.25		Clay	100.0			6.07	0.99	n.a.	n.a.	0.97	0.372	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	6.210	0.127	2299.2	2245.5	4.507	2.510	3.25		Clay	100.0			5.87	0.98	n.a.	n.a.	0.97	0.374	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	6.080	0.135	2319.6	2255.3	4.363	2.752	3.28		Clay	100.0			5.75	0.98	n.a.	n.a.	0.97	0.375	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	6.460	0.146	2338.8	2264.5	4.673	2.756	3.26		Clay	100.0			6.11	0.98	n.a.	n.a.	0.97	0.376	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	6.460	0.175	2359.2	2274.3	4.643	3.307	3.30		Clay	100.0			6.11	0.98	n.a.	n.a.	0.96	0.377	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	7.620	0.229	2378.4	2283.6	5.632	3.556	3.25		Clay	100.0			7.20	0.98	n.a.	n.a.	0.96	0.378	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	9.920	0.262	2398.8	2293.3	7.605	3.003	3.10		Clay	100.0			9.38	0.98	n.a.	n.a.	0.96	0.380	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	9.080	0.269	2418.0	2302.6	6.837	3.416	3.17		Clay	100.0			8.58	0.98	n.a.	n.a.	0.96	0.381	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	7.640	0.257	2437.2	2311.8	5.555	4.002	3.28		Clay	100.0			7.22	0.98	n.a.	n.a.	0.96	0.382	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	7.930	0.271	2457.6	2321.6	5.773	4.044	3.27		Clay	100.0			7.50	0.98	n.a.	n.a.	0.96	0.383	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	8.370	0.265	2476.8	2330.8	6.119	3.721	3.23		Clay	100.0			7.91	0.97	n.a.	n.a.	0.96	0.384	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	8.870	0.282	2497.2	2340.6	6.512	3.704	3.20		Clay	100.0			8.38	0.97	n.a.	n.a.	0.96	0.385	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	10.620	0.322	2516.4	2349.8	7.968	3.441	3.11		Clay	100.0			10.04	0.97	n.a.	n.a.	0.96	0.386	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	11.520	0.360	2535.6	2359.0	8.692	3.513	3.09		Clay	100.0			10.89	0.97	n.a.	n.a.	0.96	0.387	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	12.180	0.368	2556.0	2368.8	9.205	3.379	3.06		Clay	100.0			11.51	0.97	n.a.	n.a.	0.96	0.388	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	11.710	0.369	2575.2	2378.0	8.766	3.540	3.08		Clay	100.0			11.07	0.97	n.a.	n.a.	0.96	0.389	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	11.990	0.382	2595.6	2387.8	8.956	3.576	3.08		Clay	100.0			11.33	0.97	n.a.	n.a.	0.96	0.390	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	12.060	0.413	2614.8	2397.0	8.972	3.842	3.10		Clay	100.0			11.40	0.97	n.a.	n.a.	0.96	0.391	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	12.090	0.400	2634.0	2406.2	8.954	3.715	3.09		Clay	100.0			11.43	0.97	n.a.	n.a.	0.96	0.392	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.820	11.560	0.404	2654.4	2416.0	8.471	3.947	3.12		Clay	100.0			10.93	0.97	n.a.	n.a.	0.96	0.393	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE
EARTH GROUP

CPT No. 2

PGA (A_{max}) 0.50

Total Settlement: 0.62 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	σ_{vc} (psf)	Insitu 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_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_σ for Sand	$CRR_{M=7.5,\ \sigma'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
21.980	11.600	0.415	2673.6	2425.2	8.464	4.046	3.13		Clay	100.0			10.96	0.96	n.a.	n.a.	0.96	0.394	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.150	13.120	0.458	2694.0	2435.0	9.670	3.886	3.07		Clay	100.0			12.40	0.96	n.a.	n.a.	0.96	0.395	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	14.190	0.507	2713.2	2444.3	10.501	3.947	3.05		Clay	100.0			13.41	0.96	n.a.	n.a.	0.96	0.396	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	14.270	0.515	2732.4	2453.5	10.519	3.989	3.05		Clay	100.0			13.49	0.96	n.a.	n.a.	0.96	0.397	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	13.340	0.473	2752.8	2463.3	9.714	3.954	3.08		Clay	100.0			12.61	0.96	n.a.	n.a.	0.96	0.398	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	14.920	0.470	2772.0	2472.5	10.948	3.470	3.00		Clay	100.0			14.10	0.96	n.a.	n.a.	0.96	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	17.440	0.479	2792.4	2482.3	12.927	2.985	2.90		Clay	95.3			16.48	0.96	n.a.	n.a.	0.95	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	19.990	0.461	2811.6	2491.5	14.918	2.480	2.81		Clay	87.6			18.89	0.96	n.a.	n.a.	0.95	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	20.210	0.496	2830.8	2500.7	15.031	2.637	2.82		Clay	88.6			19.10	0.96	n.a.	n.a.	0.95	0.401	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	21.290	0.524	2851.2	2510.5	15.825	2.639	2.80		Clay	87.1			20.12	0.96	n.a.	n.a.	0.95	0.402	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	18.840	0.566	2870.4	2519.7	13.815	3.250	2.90		Clay	95.2			17.81	0.95	n.a.	n.a.	0.95	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	13.770	0.515	2890.8	2529.5	9.745	4.180	3.09		Clay	100.0			13.02	0.95	n.a.	n.a.	0.95	0.404	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	10.890	0.434	2910.0	2538.7	7.433	4.600	3.21		Clay	100.0			10.29	0.95	n.a.	n.a.	0.95	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	8.600	0.355	2929.2	2547.9	5.601	4.974	3.33		Clay	100.0			8.13	0.95	n.a.	n.a.	0.95	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	8.450	0.308	2949.6	2557.7	5.454	4.416	3.31		Clay	100.0			7.99	0.95	n.a.	n.a.	0.95	0.406	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	10.280	0.317	2968.8	2566.9	6.853	3.606	3.18		Clay	100.0			9.72	0.95	n.a.	n.a.	0.95	0.407	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	10.040	0.304	2989.2	2576.7	6.633	3.553	3.19		Clay	100.0			9.49	0.95	n.a.	n.a.	0.95	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	8.610	0.308	3008.4	2586.0	5.496	4.340	3.30		Clay	100.0			8.14	0.95	n.a.	n.a.	0.95	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	9.370	0.376	3027.6	2595.2	6.054	4.789	3.29		Clay	100.0			8.86	0.95	n.a.	n.a.	0.95	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	8.610	0.505	3048.0	2605.0	5.440	7.121	3.43		Clay	100.0			8.14	0.95	n.a.	n.a.	0.95	0.410	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	8.820	0.480	3067.2	2614.2	5.575	6.590	3.40		Clay	100.0			8.34	0.95	n.a.	n.a.	0.95	0.411	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	13.590	0.466	3087.6	2624.0	9.182	3.872	3.09		Clay	100.0			12.84	0.94	n.a.	n.a.	0.95	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	14.620	0.499	3106.8	2633.2	9.925	3.816	3.06		Clay	100.0			13.82	0.94	n.a.	n.a.	0.95	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	12.250	0.544	3126.0	2642.4	8.089	5.091	3.21		Clay	100.0			11.58	0.94	n.a.	n.a.	0.95	0.413	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	11.360	0.448	3146.4	2652.2	7.380	4.582	3.21		Clay	100.0			10.74	0.94	n.a.	n.a.	0.95	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	10.830	0.393	3165.6	2661.4	6.949	4.248	3.21		Clay	100.0			10.24	0.94	n.a.	n.a.	0.95	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	10.830	0.410	3186.0	2671.2	6.916	4.442	3.23		Clay	100.0			10.24	0.94	n.a.	n.a.	0.94	0.415	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	11.410	0.356	3205.2	2680.4	7.318	3.628	3.16		Clay	100.0			10.78	0.94	n.a.	n.a.	0.94	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	10.950	0.290	3224.4	2689.6	6.944	3.104	3.14		Clay	100.0			10.35	0.94	n.a.	n.a.	0.94	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	10.690	0.317	3244.8	2699.4	6.718	3.494	3.18		Clay	100.0			10.10	0.94	n.a.	n.a.	0.94	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	12.030	0.366	3264.0	2708.6	7.678	3.516	3.13		Clay	100.0			11.37	0.94	n.a.	n.a.	0.94	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	13.710	0.363	3284.4	2718.4	8.879	3.007	3.04		Clay	100.0			12.96	0.94	n.a.	n.a.	0.94	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	14.220	0.714	3303.6	2727.6	9.215	5.682	3.19		Clay	100.0			13.44	0.94	n.a.	n.a.	0.94	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	19.710	1.081	3324.0	2737.4	13.186	5.987	3.08		Clay	100.0			18.63	0.93	n.a.	n.a.	0.94	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	27.580	1.044	3343.2	2746.7	18.865	4.028	2.85		Clay	91.3			26.07	0.93	n.a.	n.a.	0.94	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	23.230	0.837	3362.4	2755.9	15.638	3.883	2.91		Clay	95.6			21.96	0.93	n.a.	n.a.	0.94	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	15.550	0.696	3382.8	2765.7	10.022	5.023	3.13		Clay	100.0			14.70	0.93	n.a.	n.a.	0.94	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	19.200	0.723	3402.0	2774.9	12.612	4.132	3.00		Clay	100.0			18.15	0.93	n.a.	n.a.	0.94	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	32.560	0.690	3422.4	2784.7	22.156	2.238	2.64		Clay	74.3			30.78	0.93	n.a.	n.a.	0.94	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	38.560	0.792	3441.6	2793.9	30.302	2.151	2.52		Sand	64.8	39.97	1.8	71.95	0.89	63.76	131.71	0.94	0.423	0.962	0.203	0.289	0.68	0.02	0.04
28.540	42.290	0.832	3460.8	2803.1	33.308	2.051	2.48		Sand	61.2		1.8	71.95	0.88	63.63	130.55	0.94	0.424	0.962	0.199	0.282	0.66	0.02	0.04
28.710	40.740	0.934	3481.2	2812.9	31.971	2.394	2.53		Sand	65.7	39.97	1.8	71.95	0.88	63.57	131.69	0.94	0.424	0.961	0.203	0.289	0.68	0.02	0.04
28.870	31.180	0.708	3500.4	2822.1	20.857	2.404	2.68		Clay	77.5			29.47	0.93	n.a.	n.a.	0.94	0.425	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	18.830	0.732	3520.8	2831.9	12.055	4.291	3.02		Clay	100.0			17.80	0.93	n.a.	n.a.	0.94	0.426	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	19.620	0.718	3540.0	2841.1	12.565	4.024	2.99		Clay	100.0			18.54	0.93	n.a.	n.a.	0.94	0.426	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	39.310	0.674	3559.2	2850.3	30.564	1.795	2.47		Sand	60.8	40.35	1.8	72.63	0.88	63.77	130.60	0.94	0.427	0.960	0.199	0.281	0.66	0.02	0.04
29.530	42.690	0.516	3579.6	2860.1	33.251	1.261	2.35		Sand	51.3		1.8	72.63	0.87	63.54	126.94	0.93	0.427	0.960	0.188	0.261	0.61	0.02	0.04
29.690	36.410	0.733	3598.8	2869.3	28.092	2.119	2.54		Sand	66.6	40.35	1.8	72.63	0.88	63.63	131.99	0.93	0.428	0.958	0.204	0.290	0.68	0.02	0.04
29.860	27.570	0.864	3619.2	2879.1	17.895	3.355	2.82		Clay	88.8			26.06	0.92	n.a.	n.a.	0.93	0.428	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	30.280	1.010	3638.4	2888.4	19.707	3.550	2.80		Clay	87.4			28.62	0.92	n.a.	n.a.	0.93	0.429	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	23.470	0.956	3657.6	2897.6	14.937	4.416	2.96		Clay	99.6			22.18	0.92	n.a.	n.a.	0.93	0.429	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	13.770	0.597	3678.0	2907.4	8.207	5.003	3.20		Clay	100.0			13.02	0.92	n.a.	n.a.	0.93	0.430	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	12.690	0.338	3697.2	2916.6	7.434	3.121	3.11		Clay	100.0			11.99	0.92	n.a.	n.a.	0.93	0.430	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	11.340	0.285	3717.6	2926.4	6.480	3.003	3.15		Clay	100.0			10.72	0.92	n.a.	n.a.	0.93	0.431	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	10.790	0.289	3736.8	2935.6	6.078	3.234	3.19		Clay	100.0			10.20	0.92	n.a.	n.a.	0.93	0.431	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	10.370	0.263	3756.0	2944.8	5.767	3.091	3.20		Clay	100.0			9.80	0.92	n.a.	n.a.	0.93	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	10.170	0.270	3776.4	2954.6	5.606	3.263	3.23		Clay	100.0			9.61	0.92	n.a.	n.a.	0.93	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	10.150	0.291	3795.6	2963.8	5.569	3.524	3.25		Clay	100.0			9.59	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	10.310	0.335	3816.0	2973.6	5.651	3.990	3.27		Clay	100.0			9.74	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	13.890	0.255	3835.2	2982.8	8.028	2.132	3.00		Clay	100.0			13.13	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	14.030	0.694	3854.4	2992.0	8.090	5.732	3.24		Clay	100.0			13.26	0.91	n.a.	n.a.	0.93	0.434	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	17.980	1.123	3874.8	3001.8	10.689	6.999	3.20		Clay	100.0			16.99	0.91	n.a.	n.a.	0.93	0.434	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	28.940	1.346	3894.0	3011.0	17.929	4.987	2.93		Clay	97.5			27.35	0.91	n.a.	n.a.	0.93	0.435	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	49.250	1.171	3914.4	3020.8	37.411	2.476	2.49		Sand	62.2	93.17	1.66	154.66	0.90	139.29	227.93	0.93	0.435	0.893	13.666	26.854	61.72	0.00	0.00
32.480	94.490	1.186	3933.6	3030.0	73.080	1.281	2.08		Sand	29.7	93.17	1.66	154.66	0.89	137.41	200.10	0.92	0.436	0.906	1.901	3.786	8.69	0.00	0.00
32.640	98.570	1.248	3952.8	3039.3	76.179	1.292	2.07		Sand	28.8		1.66	154.66	0.89	137.15	198.29	0.92	0.436	0.907	1.718	3.427	7.86	0.00	0.00

CORNERSTONE
EARTH GROUP

CPT No. 2

PGA (A_{max}) 0.50

Total Settlement: 0.62 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5, s'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
32.810	86.840	1.439	3973.2	3049.1	66.813	1.696	2.19		Sand	38.4	93.17	1.66	154.66	0.89	137.88	211.56	0.92	0.436	0.890	3.868	7.578	17.37	0.00	0.00
32.970	74.730	1.545	3992.4	3058.3	57.183	2.124	2.31		Sand	47.6	93.17	1.66	154.66	0.89	138.25	219.43	0.92	0.437	0.890	6.824	13.354	30.58	0.00	0.00
33.140	60.460	1.390	4012.8	3068.1	45.883	2.378	2.41		Sand	56.0	93.17	1.66	154.66	0.89	138.42	224.20	0.92	0.437	0.889	9.973	19.494	44.60	0.00	0.00
33.300	34.560	0.994	4032.0	3077.3	21.151	3.054	2.74		Clay	82.2			32.67	0.91	n.a.	n.a.	0.92	0.438	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	18.890	0.506	4051.2	3086.5	10.928	2.999	2.97		Clay	100.0			17.85	0.91	n.a.	n.a.	0.92	0.438	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	12.620	0.317	4071.6	3096.3	6.837	2.993	3.13		Clay	100.0			11.93	0.90	n.a.	n.a.	0.92	0.438	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.790	14.080	0.482	4090.8	3105.5	7.750	4.001	3.16		Clay	100.0			13.31	0.90	n.a.	n.a.	0.92	0.439	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	28.850	0.911	4111.2	3115.3	17.202	3.400	2.84		Clay	90.1			27.27	0.90	n.a.	n.a.	0.92	0.439	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	73.110	1.257	4130.4	3124.5	55.260	1.769	2.27		Sand	44.4		1.8	124.38	0.87	108.19	179.47	0.92	0.439	0.918	0.711	1.358	3.09	0.00	0.00
34.280	60.430	1.431	4149.6	3133.7	45.323	2.451	2.42		Sand	57.0	69.1	1.8	124.38	0.87	108.49	186.47	0.92	0.440	0.911	0.955	1.915	4.35	0.00	0.00
34.450	35.090	1.095	4170.0	3143.5	20.999	3.319	2.76		Clay	84.2			33.17	0.90	n.a.	n.a.	0.92	0.440	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	20.890	1.082	4189.2	3152.7	11.923	5.758	3.11		Clay	100.0			19.74	0.90	n.a.	n.a.	0.92	0.440	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	19.920	0.951	4209.6	3162.5	11.266	5.339	3.10		Clay	100.0			18.83	0.90	n.a.	n.a.	0.92	0.441	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	29.960	0.873	4228.8	3171.7	17.559	3.137	2.81		Clay	87.8			28.32	0.90	n.a.	n.a.	0.92	0.441	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	24.030	0.613	4248.0	3181.0	13.773	2.800	2.87		Clay	92.3			22.71	0.90	n.a.	n.a.	0.92	0.441	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	14.070	0.466	4268.4	3190.8	7.481	3.905	3.17		Clay	100.0			13.30	0.90	n.a.	n.a.	0.92	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	11.220	0.343	4287.6	3200.0	5.673	3.784	3.26		Clay	100.0			10.60	0.90	n.a.	n.a.	0.92	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	11.030	0.305	4308.0	3209.8	5.531	3.432	3.24		Clay	100.0			10.43	0.90	n.a.	n.a.	0.91	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	11.150	0.280	4327.2	3219.0	5.583	3.110	3.22		Clay	100.0			10.54	0.90	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	11.010	0.272	4347.6	3228.8	5.473	3.074	3.22		Clay	100.0			10.41	0.89	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	10.840	0.267	4366.8	3238.0	5.347	3.081	3.23		Clay	100.0			10.25	0.89	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	10.500	0.248	4386.0	3247.2	5.116	2.988	3.24		Clay	100.0			9.92	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	9.970	0.236	4406.4	3257.0	4.769	3.032	3.27		Clay	100.0			9.42	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	10.230	0.248	4425.6	3266.2	4.909	3.097	3.26		Clay	100.0			9.67	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	10.420	0.248	4446.0	3276.0	5.004	3.019	3.25		Clay	100.0			9.85	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	10.300	0.238	4465.2	3285.2	4.911	2.950	3.25		Clay	100.0			9.74	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	10.160	0.255	4484.4	3294.4	4.807	3.222	3.28		Clay	100.0			9.60	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	10.920	0.242	4504.8	3304.2	5.246	2.786	3.21		Clay	100.0			10.32	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	10.750	0.252	4524.0	3313.4	5.123	2.970	3.24		Clay	100.0			10.16	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	10.850	0.295	4544.4	3323.2	5.162	3.441	3.27		Clay	100.0			10.26	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	11.900	0.389	4563.6	3332.4	5.772	4.044	3.27		Clay	100.0			11.25	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	12.720	0.402	4582.8	3341.7	6.242	3.850	3.23		Clay	100.0			12.02	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	11.790	0.344	4603.2	3351.5	5.662	3.628	3.25		Clay	100.0			11.14	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	11.440	0.319	4622.4	3360.7	5.433	3.489	3.25		Clay	100.0			10.81	0.89	n.a.	n.a.	0.91	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	11.550	0.370	4642.8	3370.5	5.476	4.009	3.28		Clay	100.0			10.92	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	12.430	0.342	4662.0	3379.7	5.976	3.387	3.21		Clay	100.0			11.75	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	11.750	0.329	4681.2	3388.9	5.553	3.493	3.25		Clay	100.0			11.11	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	12.370	0.326	4701.6	3398.7	5.896	3.253	3.21		Clay	100.0			11.69	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	12.090	0.303	4720.8	3407.9	5.710	3.117	3.21		Clay	100.0			11.43	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	11.590	0.273	4741.2	3417.7	5.395	2.963	3.22		Clay	100.0			10.95	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.370	11.090	0.245	4760.4	3426.9	5.083	2.816	3.23		Clay	100.0			10.48	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	10.610	0.196	4779.6	3436.1	4.785	2.388	3.22		Clay	100.0			10.03	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	9.550	0.193	4800.0	3445.9	4.150	2.699	3.30		Clay	100.0			9.03	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	9.990	0.223	4819.2	3455.1	4.388	2.943	3.29		Clay	100.0			9.44	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	11.570	0.267	4839.6	3464.9	5.282	2.921	3.22		Clay	100.0			10.94	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	11.530	0.300	4858.8	3474.1	5.239	3.300	3.25		Clay	100.0			10.90	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.350	12.040	0.351	4878.0	3483.4	5.512	3.651	3.26		Clay	100.0			11.38	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	12.580	0.369	4898.4	3493.2	5.800	3.638	3.24		Clay	100.0			11.89	0.88	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	12.330	0.395	4917.6	3502.4	5.637	4.004	3.27		Clay	100.0			11.65	0.88	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	12.440	0.406	4938.0	3512.2	5.678	4.074	3.27		Clay	100.0			11.76	0.87	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	12.860	0.442	4957.2	3521.4	5.896	4.261	3.27		Clay	100.0			12.16	0.87	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.170	12.680	0.428	4976.4	3530.6	5.773	4.197	3.28		Clay	100.0			11.98	0.87	n.a.	n.a.	0.89	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	12.680	0.445	4996.8	3540.4	5.752	4.373	3.29		Clay	100.0			11.98	0.87	n.a.	n.a.	0.89	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	13.160	0.522	5016.0	3549.6	6.002	4.896	3.30		Clay	100.0			12.44	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	13.620	0.545	5036.4	3559.4	6.238	4.910	3.29		Clay	100.0			12.87	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	13.940	0.511	5055.6	3568.6	6.396	4.474	3.26		Clay	100.0			13.18	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	15.410	0.587	5074.8	3577.8	7.196	4.558	3.22		Clay	100.0			14.57	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	14.660	0.644	5095.2	3587.6	6.752	5.318	3.28		Clay	100.0			13.86	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	14.400	0.599	5114.4	3596.8	6.585	5.058	3.28		Clay	100.0			13.61	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	14.520	0.531	5134.8	3606.6	6.628	4.442	3.24		Clay	100.0			13.72	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	13.800	0.360	5154.0	3615.8	6.208	3.206	3.19		Clay	100.0			13.04	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	13.800	0.307	5173.2	3625.1	6.187	2.737	3.15		Clay	100.0			13.04	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	12.890	0.250	5193.6	3634.8	5.664	2.433	3.16		Clay	100.0			12.18	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	14.050	0.556	5212.8	3644.1	6.281	4.854	3.28		Clay	100.0			13.28	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	14.270	0.585	5233.2	3653.9	6.379	5.020	3.29		Clay	100.0			13.49	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.470	18.930	0.612	5252.4	3663.1	8.902	3.756	3.09		Clay	100.0			17.89	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE
EARTH GROUP

CPT No. 2

PGA (A_{max}) 0.50

Total Settlement: 0.62 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5, s'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
43.640	16.650	0.539	5272.8	3672.9	7.631	3.846	3.15		Clay	100.0			15.74	0.86	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	15.470	0.483	5292.0	3682.1	6.966	3.765	3.18		Clay	100.0			14.62	0.86	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	15.930	0.531	5311.2	3691.3	7.192	3.999	3.19		Clay	100.0			15.06	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.130	16.660	0.579	5331.6	3701.1	7.562	4.134	3.18		Clay	100.0			15.75	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	16.910	0.601	5350.8	3710.3	7.673	4.219	3.18		Clay	100.0			15.98	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	16.850	0.653	5371.2	3720.1	7.615	4.608	3.20		Clay	100.0			15.93	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	16.070	0.606	5390.4	3729.3	7.173	4.527	3.22		Clay	100.0			15.19	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	15.210	0.562	5409.6	3738.5	6.690	4.497	3.24		Clay	100.0			14.38	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	15.370	0.577	5430.0	3748.3	6.752	4.559	3.24		Clay	100.0			14.53	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	14.860	0.546	5449.2	3757.5	6.459	4.503	3.25		Clay	100.0			14.05	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	14.940	0.556	5469.6	3767.3	6.479	4.551	3.25		Clay	100.0			14.12	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	17.260	0.640	5488.8	3776.5	7.687	4.406	3.19		Clay	100.0			16.31	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	18.650	0.699	5508.0	3785.8	8.398	4.396	3.15		Clay	100.0			17.63	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	18.910	0.681	5528.4	3795.6	8.508	4.215	3.14		Clay	100.0			17.87	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	19.750	0.706	5547.6	3804.8	8.924	4.161	3.12		Clay	100.0			18.67	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	19.190	0.734	5568.0	3814.6	8.602	4.472	3.15		Clay	100.0			18.14	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	21.780	0.805	5587.2	3823.8	9.931	4.239	3.09		Clay	100.0			20.59	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	20.600	0.825	5606.4	3833.0	9.286	4.634	3.13		Clay	100.0			19.47	0.85	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	20.310	0.728	5626.8	3842.8	9.106	4.159	3.11		Clay	100.0			19.20	0.85	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	18.170	0.648	5646.0	3852.0	7.968	4.220	3.16		Clay	100.0			17.17	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	15.390	0.472	5666.4	3861.8	6.503	3.755	3.21		Clay	100.0			14.55	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	13.460	0.307	5685.6	3871.0	5.485	2.893	3.21		Clay	100.0			12.72	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	12.310	0.148	5704.8	3880.2	4.875	1.565	3.12		Clay	100.0			11.64	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	11.910	0.109	5725.2	3890.0	4.652	1.201	3.09		Clay	100.0			11.26	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	11.710	0.224	5744.4	3899.2	4.533	2.536	3.25		Clay	100.0			11.07	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	13.700	0.459	5764.8	3909.0	5.535	4.246	3.29		Clay	100.0			12.95	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	23.640	0.795	5784.0	3918.2	10.590	3.830	3.04		Clay	100.0			22.34	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	24.200	0.839	5803.2	3927.5	10.846	3.941	3.04		Clay	100.0			22.87	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	18.530	0.740	5823.6	3937.2	7.934	4.737	3.19		Clay	100.0			17.51	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	19.370	0.708	5842.8	3946.5	8.336	4.304	3.15		Clay	100.0			18.31	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	21.470	0.749	5863.2	3956.3	9.372	4.038	3.09		Clay	100.0			20.29	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	21.180	0.826	5882.4	3965.5	9.199	4.527	3.13		Clay	100.0			20.02	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	18.680	0.733	5901.6	3974.7	7.915	4.659	3.19		Clay	100.0			17.66	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	18.650	0.633	5922.0	3984.5	7.875	4.037	3.16		Clay	100.0			17.63	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	18.260	0.572	5941.2	3993.7	7.657	3.739	3.15		Clay	100.0			17.26	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	17.860	0.500	5961.6	4003.5	7.433	3.357	3.13		Clay	100.0			16.88	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	17.950	0.507	5980.8	4012.7	7.456	3.386	3.13		Clay	100.0			16.97	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	17.790	0.576	6000.0	4021.9	7.355	3.892	3.17		Clay	100.0			16.81	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	16.530	0.550	6020.4	4031.7	6.707	4.065	3.21		Clay	100.0			15.62	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	15.460	0.373	6039.6	4040.9	6.157	3.000	3.17		Clay	100.0			14.61	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	14.970	0.281	6060.0	4050.7	5.895	2.355	3.13		Clay	100.0			14.15	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE
EARTH GROUP

CPT No. 3

PGA (A_{max}) 0.50

Total Settlement: 0.09 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5,\ s'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
0.160	0.930	0.282	19.5	19.5	94.287	30.633	3.09		Unsaturated	100.0			0.88	1.70	1.49	55.89	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.330	1.030	1.851	40.3	40.3	50.167	183.251	3.91		Unsaturated	100.0			0.97	1.70	1.66	56.10	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.490	7.650	2.082	59.8	59.8	254.938	27.321	2.86		Unsaturated	91.9			7.23	1.70	12.29	69.33	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.660	8.470	0.786	80.5	80.5	78.534	9.323	2.70		Unsaturated	78.8			8.01	1.70	13.61	69.54	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.820	6.390	1.073	100.0	100.0	126.749	16.929	2.80		Unsaturated	87.4			6.04	1.70	10.27	66.22	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
0.980	40.180	2.170	119.6	119.6	159.530	5.409	2.33		Unsaturated	49.3			37.98	1.70	64.56	127.33	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.150	172.410	3.128	140.3	140.3	632.600	1.815	1.62		Unsaturated	0.0			162.96	1.70	277.03	277.03	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.310	113.290	3.754	159.8	159.8	389.351	3.316	1.95		Unsaturated	19.0			107.08	1.70	182.03	226.92	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.480	90.300	3.731	180.6	180.6	291.887	4.136	2.09		Unsaturated	30.5			85.35	1.70	145.09	210.55	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.640	65.850	2.864	200.1	200.1	202.100	4.356	2.19		Unsaturated	38.5			62.24	1.70	105.81	171.98	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.800	53.590	2.216	219.6	219.6	156.909	4.144	2.24		Unsaturated	41.9			50.65	1.70	86.11	150.18	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
1.970	48.370	1.947	240.3	240.3	135.318	4.035	2.26		Unsaturated	44.1			45.72	1.70	77.72	141.16	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.130	47.540	1.951	259.9	259.9	127.871	4.115	2.29		Unsaturated	45.8			44.93	1.70	76.39	140.49	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.300	51.900	2.374	280.6	280.6	134.345	4.586	2.31		Unsaturated	47.9			49.05	1.70	83.39	150.41	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.460	50.530	2.441	300.1	300.1	126.439	4.845	2.35		Unsaturated	50.7			47.76	1.70	81.19	149.01	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.620	44.080	2.169	319.6	319.6	106.808	4.938	2.40		Unsaturated	54.7			41.66	1.70	70.83	137.55	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.790	42.000	1.967	340.4	340.4	98.577	4.703	2.40		Unsaturated	55.0			39.70	1.70	67.49	133.42	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
2.950	42.160	1.877	359.9	359.9	96.211	4.470	2.39		Unsaturated	54.1			39.85	1.70	67.74	133.42	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.120	43.000	1.899	380.6	380.6	95.402	4.436	2.39		Unsaturated	54.1			40.64	1.70	69.09	135.13	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.280	42.840	1.875	400.2	400.2	92.677	4.397	2.39		Unsaturated	54.5			40.49	1.70	68.84	134.95	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.440	40.410	1.821	419.7	419.7	85.318	4.529	2.43		Unsaturated	57.1			38.19	1.70	64.93	130.92	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.610	37.000	1.785	440.4	440.4	76.199	4.852	2.48		Unsaturated	61.5			34.97	1.70	59.45	125.26	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.770	34.460	1.670	459.9	459.9	69.395	4.880	2.51		Unsaturated	63.7			32.57	1.70	55.37	120.64	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
3.940	32.220	1.408	480.7	480.7	63.419	4.404	2.50		Unsaturated	63.1			30.45	1.70	51.77	115.85	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.100	33.640	1.248	500.2	500.2	64.911	3.739	2.44		Unsaturated	58.3			31.80	1.70	54.05	117.42	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.270	33.840	1.159	520.9	520.9	63.967	3.451	2.42		Unsaturated	56.7			31.98	1.70	54.37	117.29	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.430	32.730	1.167	540.5	540.5	60.707	3.595	2.45		Unsaturated	58.9			30.94	1.70	52.59	115.73	1.00	0.325	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.590	23.790	1.187	560.0	560.0	56.352	5.050	2.58		Unsaturated	69.4			22.49	1.70	38.23	99.85	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.760	28.500	1.193	580.7	580.7	50.896	4.229	2.55		Unsaturated	67.2			26.94	1.70	45.79	109.16	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
4.920	28.590	1.174	600.2	600.2	50.204	4.148	2.55		Unsaturated	67.1			27.02	1.70	45.94	109.32	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.090	32.420	1.134	621.0	621.0	56.023	3.532	2.47		Unsaturated	60.4			30.64	1.70	52.09	115.53	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.250	33.070	1.033	640.5	640.5	56.263	3.153	2.43		Unsaturated	57.5			31.26	1.70	53.14	115.99	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.410	31.620	1.086	660.0	660.0	52.954	3.470	2.48		Unsaturated	61.4			29.89	1.70	50.81	114.15	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.580	30.420	1.050	680.8	680.8	50.124	3.491	2.50		Unsaturated	62.8			28.75	1.70	48.88	112.08	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.740	28.210	0.995	700.3	700.3	45.774	3.571	2.53		Unsaturated	65.6			26.66	1.70	45.33	108.20	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
5.910	23.770	0.892	721.0	721.0	47.012	3.808	2.54		Unsaturated	66.6			22.47	1.70	38.19	99.22	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.070	22.150	0.858	740.5	740.5	42.928	3.937	2.58		Unsaturated	69.6			20.94	1.70	35.59	96.50	1.00	0.324	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.230	20.970	0.833	760.1	760.1	39.851	4.046	2.61		Unsaturated	72.1			19.82	1.69	33.45	94.21	1.00	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.400	21.320	0.789	780.8	780.8	39.752	3.769	2.59		Unsaturated	70.5			20.15	1.67	33.56	94.05	0.99	0.323	1.100	n.a.	n.a.	n.a.	0.00	0.00
6.560	21.630	0.731	800.3	800.3	39.631	3.442	2.57		Unsaturated	68.4			20.44	1.65	33.64	93.74	0.99	0.323	1.098	n.a.	n.a.	n.a.	0.00	0.00
6.730	21.940	0.740	821.1	821.1	39.477	3.435	2.57		Unsaturated	68.4			20.74	1.62	33.68	93.80	0.99	0.323	1.096	n.a.	n.a.	n.a.	0.00	0.00
6.890	19.820	0.831	840.6	840.6	34.992	4.281	2.67		Unsaturated	76.7			18.73	1.61	30.25	90.84	0.99	0.323	1.091	n.a.	n.a.	n.a.	0.00	0.00
7.050	16.930	0.871	860.1	860.1	38.368	5.281	2.71		Unsaturated	79.6			16.00	1.61	25.83	85.53	0.99	0.323	1.085	n.a.	n.a.	n.a.	0.00	0.00
7.220	15.330	0.797	880.8	880.8	33.808	5.349	2.75		Unsaturated	83.0			14.49	1.60	23.25	82.62	0.99	0.323	1.081	n.a.	n.a.	n.a.	0.00	0.00
7.380	13.170	0.603	900.4	900.4	28.255	4.744	2.77		Unsaturated	84.6			12.45	1.60	19.92	78.49	0.99	0.323	1.077	n.a.	n.a.	n.a.	0.00	0.00
7.550	12.310	0.543	921.1	921.1	25.729	4.586	2.79		Unsaturated	86.2			11.64	1.59	18.46	76.77	0.99	0.323	1.074	n.a.	n.a.	n.a.	0.00	0.00
7.710	14.600	0.590	940.6	940.6	30.043	4.172	2.71		Unsaturated	80.0			13.80	1.56	21.49	79.94	0.99	0.323	1.074	n.a.	n.a.	n.a.	0.00	0.00
7.870	21.890	0.803	960.1	960.1	35.185	3.752	2.63		Unsaturated	73.4			20.69	1.51	31.15	91.46	0.99	0.322	1.079	n.a.	n.a.	n.a.	0.00	0.00
8.040	27.380	0.858	980.9	980.9	37.329	3.191	2.56		Unsaturated	68.1			25.88	1.47	38.00	99.31	0.99	0.322	1.081	n.a.	n.a.	n.a.	0.00	0.00
8.200	31.740	0.779	1000.4	1000.4	42.943	2.493	2.45		Unsaturated	58.8			30.00	1.44	43.30	103.81	0.99	0.322	1.082	n.a.	n.a.	n.a.	0.00	0.00
8.370	35.940	0.839	1021.1	1021.1	48.205	2.367	2.39		Unsaturated	54.6			33.97	1.42	48.17	108.68	0.99	0.322	1.083	n.a.	n.a.	n.a.	0.00	0.00
8.530	37.130	0.957	1040.7	1040.7	49.342	2.615	2.42		Unsaturated	56.3			35.09	1.40	49.18	110.55	0.99	0.322	1.082	n.a.	n.a.	n.a.	0.00	0.00
8.690	37.270	0.946	1060.2	1060.2	49.059	2.574	2.41		Unsaturated	56.1			35.23	1.39	48.96	110.19	0.99	0.322	1.080	n.a.	n.a.	n.a.	0.00	0.00
8.860	35.810	0.935	1080.9	1080.9	46.642	2.650	2.44		Unsaturated	58.1			33.85	1.38	46.75	108.00	0.99	0.322	1.076	n.a.	n.a.	n.a.	0.00	0.00
9.020	30.630	0.916	1100.4	1100.4	39.424	3.046	2.53		Unsaturated	65.6			28.95	1.38	40.02	101.36	0.99	0.322	1.070	n.a.	n.a.	n.a.	0.00	0.00
9.190	29.110	0.949	1121.2	1121.2	37.071	3.325	2.58		Unsaturated	69.3			27.51	1.37	37.79	99.27	0.99	0.322	1.067	n.a.	n.a.	n.a.	0.00	0.00
9.350	29.770	0.934	1140.7	1140.7	37.589	3.199	2.56		Unsaturated	68.0			28.14	1.36	38.30	99.66	0.99	0.321	1.066	n.a.	n.a.	n.a.	0.00	0.00
9.510	26.400	1.057	1160.2	1160.2	37.166	4.094	2.64		Unsaturated	74.1			24.95	1.36	33.88	95.13	0.99	0.321	1.061	n.a.	n.a.	n.a.	0.00	0.00
9.680	23.720	1.038	1181.0	1181.0	39.171	4.487	2.65		Unsaturated	75.1			22.42	1.35	30.35	90.71	0.99	0.321	1.058	n.a.	n.a.	n.a.	0.00	0.00
9.840	26.320	0.841	1200.5	1200.5	36.149	3.269	2.58		Unsaturated	69.5			24.88	1.34	33.27	93.49	0.99	0.321	1.057	n.a.	n.a.	n.a.	0.00	0.00
10.010	26.270	0.714	1221.2	1221.2	31.924	2.781	2.58		Unsaturated	69.1			24.83	1.33	32.94	92.97	0.99	0.321	1.055	n.a.	n.a.	n.a.	0.00	0.00
10.170	26.530	0.840	1240.7	1240.7	35.584	3.242	2.58		Unsaturated	69.7			25.08	1.32	32.99	93.16	0.99	0.321	1.054	n.a.	n.a.	n.a.	0.00	0.00
10.330	27.880	0.948	1260.3	1260.3	37.018	3.479	2.59		Unsaturated	70.4			26.35	1.30	34.31	95.00	0.99	0.321	1.053	n.a.	n.a.	n.a.	0.00	0.00
10.500	30.710	1.001	1281.0	1281.0	36.528	3.327	2.58		Unsaturated	69.7			29.03	1.29	37.32	98.75	0.99	0.321	1.053	n.a.	n.a.	n.a.	0.00	0.00
10.660	34.260	1.132	1300.5	1300.5	40.521	3.368	2.55		Unsaturated	67.3			32.38	1.27	41.13	103.16	0.99	0.321	1.053	n.a.	n.a.	n.a.	0.00	0.00
10.830	39.050	1.253	1321.3	1321.3	45.919	3.263	2.50		Unsaturated	63.4			36.91	1.25	46.25	108.84	0.99	0.320	1.054	n.a.	n.a.	n.a.	0.00	0.00

CPT No. 3

PGA (A_{max}) 0.50

Total Settlement: 0.09 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	Ic	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5, s'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
10.990	60.030	1.263	1340.8	1340.8	70.483	2.128	2.24		Unsaturated	42.4			56.74	1.22	69.31	129.56	0.99	0.320	1.061	n.a.	n.a.	n.a.	0.00	0.00
11.150	67.700	1.332	1360.3	1360.3	79.006	1.988	2.19		Unsaturated	37.9			63.99	1.21	77.27	136.18	0.99	0.320	1.063	n.a.	n.a.	n.a.	0.00	0.00
11.320	64.850	1.534	1381.0	1381.0	75.064	2.390	2.26		Unsaturated	43.6			61.29	1.20	73.57	135.66	0.98	0.320	1.060	n.a.	n.a.	n.a.	0.00	0.00
11.480	55.280	1.499	1400.6	1400.6	63.409	2.746	2.35		Unsaturated	51.2			52.25	1.20	62.79	125.94	0.98	0.320	1.054	n.a.	n.a.	n.a.	0.00	0.00
11.650	42.840	1.230	1421.3	1421.3	48.586	2.921	2.45		Unsaturated	59.3			40.49	1.21	48.91	111.13	0.98	0.320	1.046	n.a.	n.a.	n.a.	0.00	0.00
11.810	34.820	1.025	1440.8	1440.8	39.059	3.005	2.53		Unsaturated	65.6			32.91	1.21	39.82	101.09	0.98	0.320	1.041	n.a.	n.a.	n.a.	0.00	0.00
11.980	29.710	1.066	1461.6	1461.6	35.489	3.678	2.62		Unsaturated	72.8			28.08	1.21	33.91	94.91	0.98	0.320	1.038	n.a.	n.a.	n.a.	0.00	0.00
12.140	31.220	1.041	1481.1	1481.1	36.981	3.416	2.59		Unsaturated	70.0			29.51	1.20	35.35	96.26	0.98	0.319	1.037	n.a.	n.a.	n.a.	0.00	0.00
12.300	31.970	1.186	1500.6	1500.6	37.533	3.798	2.61		Unsaturated	72.1			30.22	1.19	35.93	97.41	0.98	0.319	1.036	n.a.	n.a.	n.a.	0.00	0.00
12.470	24.410	1.236	1521.3	1521.3	31.090	5.227	2.77		Unsaturated	84.5			23.07	1.19	27.44	88.27	0.98	0.319	1.032	n.a.	n.a.	n.a.	0.00	0.00
12.630	15.660	0.863	1540.9	1540.9	19.326	5.795	2.95		Unsaturated	99.0			14.80	1.19	17.65	76.97	0.98	0.319	1.028	n.a.	n.a.	n.a.	0.00	0.00
12.800	14.510	0.668	1561.6	1561.6	17.584	4.866	2.93		Unsaturated	97.4			13.71	1.19	16.26	75.02	0.98	0.319	1.027	n.a.	n.a.	n.a.	0.00	0.00
12.960	13.540	0.470	1581.1	1581.1	16.127	3.688	2.88		Unsaturated	93.6			12.80	1.18	15.09	73.14	0.98	0.319	1.025	n.a.	n.a.	n.a.	0.00	0.00
13.120	10.210	0.375	1600.6	1600.6	11.757	3.982	3.01		Clay	100.0			9.65	1.08	n.a.	n.a.	0.98	0.320	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.290	9.170	0.325	1621.4	1621.4	10.311	3.885	3.05		Clay	100.0			8.67	1.07	n.a.	n.a.	0.98	0.322	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.450	9.440	0.325	1640.9	1640.9	10.506	3.768	3.04		Clay	100.0			8.92	1.07	n.a.	n.a.	0.98	0.324	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.620	10.080	0.348	1661.6	1661.6	11.133	3.767	3.02		Clay	100.0			9.53	1.07	n.a.	n.a.	0.98	0.326	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.780	15.080	0.455	1681.2	1681.2	16.940	3.195	2.83		Clay	89.2			14.25	1.06	n.a.	n.a.	0.98	0.328	n.a.	n.a.	n.a.	n.a.	0.00	0.00
13.940	23.520	0.849	1700.7	1700.7	26.660	3.746	2.72		Clay	80.6			22.23	1.06	n.a.	n.a.	0.98	0.329	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.110	19.790	0.761	1721.4	1721.4	21.993	4.022	2.80		Clay	87.2			18.71	1.06	n.a.	n.a.	0.98	0.331	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.270	13.090	0.582	1740.9	1740.9	14.038	4.763	3.00		Clay	100.0			12.37	1.05	n.a.	n.a.	0.98	0.333	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.440	21.320	0.587	1761.7	1761.7	23.204	2.872	2.69		Clay	78.3			20.15	1.05	n.a.	n.a.	0.98	0.335	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.600	22.510	0.698	1781.2	1781.2	24.275	3.228	2.71		Clay	79.7			21.28	1.05	n.a.	n.a.	0.98	0.336	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.760	22.390	0.788	1800.7	1800.7	23.868	3.665	2.75		Clay	83.0			21.16	1.04	n.a.	n.a.	0.98	0.338	n.a.	n.a.	n.a.	n.a.	0.00	0.00
14.930	20.910	0.784	1821.5	1821.5	21.960	3.918	2.80		Clay	86.7			19.76	1.04	n.a.	n.a.	0.98	0.340	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.090	17.970	0.733	1841.0	1841.0	18.522	4.297	2.88		Clay	93.3			16.98	1.04	n.a.	n.a.	0.98	0.341	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.260	11.620	0.512	1861.7	1861.7	11.483	4.793	3.07		Clay	100.0			10.98	1.03	n.a.	n.a.	0.98	0.343	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.420	8.630	0.374	1881.2	1881.2	8.175	4.859	3.19		Clay	100.0			8.16	1.03	n.a.	n.a.	0.97	0.345	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.580	11.070	0.362	1900.8	1900.8	10.648	3.576	3.02		Clay	100.0			10.46	1.03	n.a.	n.a.	0.97	0.346	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.750	20.100	0.520	1921.5	1921.5	19.921	2.714	2.73		Clay	81.3			19.00	1.03	n.a.	n.a.	0.97	0.348	n.a.	n.a.	n.a.	n.a.	0.00	0.00
15.910	24.900	0.573	1941.0	1941.0	24.657	2.395	2.62		Clay	72.8			23.53	1.02	n.a.	n.a.	0.97	0.349	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.080	25.180	0.607	1961.8	1961.8	24.671	2.508	2.63		Clay	73.7			23.80	1.02	n.a.	n.a.	0.97	0.351	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.240	18.920	0.559	1981.3	1981.3	18.099	3.116	2.80		Clay	86.9			17.88	1.02	n.a.	n.a.	0.97	0.352	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.400	11.770	0.447	2000.8	2000.8	10.765	4.147	3.05		Clay	100.0			11.12	1.01	n.a.	n.a.	0.97	0.354	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.570	10.480	0.414	2021.5	2021.5	9.368	4.371	3.12		Clay	100.0			9.91	1.01	n.a.	n.a.	0.97	0.355	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.730	18.880	0.599	2041.1	2041.1	17.500	3.355	2.83		Clay	89.4			17.84	1.01	n.a.	n.a.	0.97	0.357	n.a.	n.a.	n.a.	n.a.	0.00	0.00
16.900	20.060	0.721	2061.8	2061.8	18.459	3.786	2.84		Clay	90.5			18.96	1.01	n.a.	n.a.	0.97	0.358	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.060	21.400	0.825	2081.3	2081.3	19.564	4.054	2.84		Clay	90.5			20.23	1.00	n.a.	n.a.	0.97	0.359	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.220	20.640	0.802	2100.8	2100.8	18.649	4.094	2.86		Clay	92.0			19.51	1.00	n.a.	n.a.	0.97	0.361	n.a.	n.a.	n.a.	n.a.	0.00	0.00
17.390	32.560	0.758	2121.6	2121.6	29.733	2.408	2.56		Sand	67.8	58.01	1.8	104.42	1.00	104.32	184.74	0.97	0.362	0.999	0.885	1.920	5.30	0.00	0.00
17.550	61.370	0.819	2141.1	2141.1	56.659	1.358	2.19		Sand	37.9		1.8	104.41	1.00	103.95	169.12	0.97	0.364	0.998	0.489	0.937	2.58	0.00	0.00
17.720	42.200	1.140	2161.8	2161.8	38.451	2.773	2.51		Sand	64.1	58.01	1.8	104.42	0.99	103.63	182.77	0.97	0.365	0.995	0.813	1.730	4.74	0.00	0.00
17.880	20.390	0.975	2181.4	2181.4	17.695	5.051	2.94		Clay	98.1			19.27	0.99	n.a.	n.a.	0.97	0.366	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.040	13.100	0.564	2200.8	2198.3	10.917	4.697	3.08		Clay	100.0			12.38	0.99	n.a.	n.a.	0.97	0.367	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.210	8.650	0.412	2221.2	2208.1	6.829	5.463	3.28		Clay	100.0			8.18	0.99	n.a.	n.a.	0.97	0.369	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.370	8.220	0.262	2240.4	2217.3	6.404	3.689	3.21		Clay	100.0			7.77	0.99	n.a.	n.a.	0.97	0.370	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.540	7.610	0.200	2260.8	2227.1	5.819	3.085	3.20		Clay	100.0			7.19	0.99	n.a.	n.a.	0.97	0.371	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.700	6.140	0.145	2280.0	2236.3	4.472	2.892	3.28		Clay	100.0			5.80	0.99	n.a.	n.a.	0.97	0.372	n.a.	n.a.	n.a.	n.a.	0.00	0.00
18.860	5.520	0.121	2299.2	2245.5	3.893	2.766	3.32		Clay	100.0			5.22	0.98	n.a.	n.a.	0.97	0.374	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.030	5.540	0.096	2319.6	2255.3	3.884	2.199	3.28		Clay	100.0			5.24	0.98	n.a.	n.a.	0.97	0.375	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.190	5.120	0.087	2338.8	2264.5	3.489	2.212	3.32		Clay	100.0			4.84	0.98	n.a.	n.a.	0.97	0.376	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.360	5.860	0.109	2359.2	2274.3	4.116	2.337	3.27		Clay	100.0			5.54	0.98	n.a.	n.a.	0.96	0.377	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.520	6.910	0.215	2378.4	2283.6	5.010	3.756	3.30		Clay	100.0			6.53	0.98	n.a.	n.a.	0.96	0.378	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.690	8.610	0.299	2398.8	2293.3	6.463	4.036	3.23		Clay	100.0			8.14	0.98	n.a.	n.a.	0.96	0.380	n.a.	n.a.	n.a.	n.a.	0.00	0.00
19.850	9.040	0.318	2418.0	2302.6	6.802	4.065	3.21		Clay	100.0			8.54	0.98	n.a.	n.a.	0.96	0.381	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.010	9.400	0.334	2437.2	2311.8	7.078	4.087	3.20		Clay	100.0			8.88	0.98	n.a.	n.a.	0.96	0.382	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.180	10.050	0.356	2457.6	2321.6	7.599	4.035	3.17		Clay	100.0			9.50	0.98	n.a.	n.a.	0.96	0.383	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.340	10.640	0.401	2476.8	2330.8	8.067	4.266	3.16		Clay	100.0			10.06	0.97	n.a.	n.a.	0.96	0.384	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.510	12.010	0.424	2497.2	2340.6	9.196	3.941	3.09		Clay	100.0			11.35	0.97	n.a.	n.a.	0.96	0.385	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.670	11.520	0.441	2516.4	2349.8	8.734	4.296	3.14		Clay	100.0			10.89	0.97	n.a.	n.a.	0.96	0.386	n.a.	n.a.	n.a.	n.a.	0.00	0.00
20.830	11.730	0.445	2535.6	2359.0	8.870	4.253	3.13		Clay	100.0			11.09	0.97	n.a.	n.a.	0.96	0.387	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.000	12.020	0.466	2556.0	2368.8	9.070	4.335	3.12		Clay	100.0			11.36	0.97	n.a.	n.a.	0.96	0.388	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.160	12.680	0.493	2575.2	2378.0	9.581	4.331	3.10		Clay	100.0			11.98	0.97	n.a.	n.a.	0.96	0.389	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.330	13.390	0.526	2595.6	2387.8	10.128	4.353	3.09		Clay	100.0			12.66	0.97	n.a.	n.a.	0.96	0.390	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.490	13.780	0.574	2614.8	2397.0	10.407	4.600	3.09		Clay	100.0			13.02	0.97	n.a.	n.a.	0.96	0.391	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.650	13.670	0.566	2634.0	2406.2	10.267	4.578	3.10		Clay	100.0			12.92	0.97	n.a.	n.a.	0.96	0.392	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE
EARTH GROUP

CPT No. 3

PGA (A_{max}) 0.50

Total Settlement: 0.09 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5,\ s'vc = 1\ atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
21.820	12.770	0.528	2654.4	2416.0	9.472	4.617	3.13		Clay	100.0			12.07	0.97	n.a.	n.a.	0.96	0.393	n.a.	n.a.	n.a.	n.a.	0.00	0.00
21.980	11.840	0.504	2673.6	2425.2	8.662	4.801	3.17		Clay	100.0			11.19	0.96	n.a.	n.a.	0.96	0.394	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.150	11.000	0.476	2694.0	2435.0	7.928	4.926	3.20		Clay	100.0			10.40	0.96	n.a.	n.a.	0.96	0.395	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.310	11.390	0.485	2713.2	2444.3	8.210	4.829	3.19		Clay	100.0			10.77	0.96	n.a.	n.a.	0.96	0.396	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.470	13.900	0.520	2732.4	2453.5	10.217	4.147	3.07		Clay	100.0			13.14	0.96	n.a.	n.a.	0.96	0.397	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.640	14.380	0.500	2752.8	2463.3	10.558	3.846	3.04		Clay	100.0			13.59	0.96	n.a.	n.a.	0.96	0.398	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.800	15.560	0.466	2772.0	2472.5	11.465	3.289	2.97		Clay	100.0			14.71	0.96	n.a.	n.a.	0.96	0.399	n.a.	n.a.	n.a.	n.a.	0.00	0.00
22.970	16.160	0.444	2792.4	2482.3	11.895	3.005	2.94		Clay	97.8			15.27	0.96	n.a.	n.a.	0.95	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.130	13.080	0.444	2811.6	2491.5	9.371	3.804	3.08		Clay	100.0			12.36	0.96	n.a.	n.a.	0.95	0.400	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.290	12.160	0.450	2830.8	2500.7	8.593	4.185	3.13		Clay	100.0			11.49	0.96	n.a.	n.a.	0.95	0.401	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.460	12.980	0.442	2851.2	2510.5	9.205	3.826	3.09		Clay	100.0			12.27	0.96	n.a.	n.a.	0.95	0.402	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.620	13.940	0.424	2870.4	2519.7	9.926	3.388	3.03		Clay	100.0			13.18	0.95	n.a.	n.a.	0.95	0.403	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.790	12.390	0.411	2890.8	2529.5	8.654	3.755	3.10		Clay	100.0			11.71	0.95	n.a.	n.a.	0.95	0.404	n.a.	n.a.	n.a.	n.a.	0.00	0.00
23.950	9.970	0.390	2910.0	2538.7	6.708	4.583	3.24		Clay	100.0			9.42	0.95	n.a.	n.a.	0.95	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.110	7.150	0.339	2929.2	2547.9	4.463	5.959	3.45		Clay	100.0			6.76	0.95	n.a.	n.a.	0.95	0.405	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.280	5.680	0.234	2949.6	2557.7	3.288	5.562	3.55		Clay	100.0			5.37	0.95	n.a.	n.a.	0.95	0.406	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.440	5.840	0.291	2968.8	2566.9	3.394	6.674	3.58		Clay	100.0			5.52	0.95	n.a.	n.a.	0.95	0.407	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.610	9.270	0.506	2989.2	2576.7	6.035	6.513	3.37		Clay	100.0			8.76	0.95	n.a.	n.a.	0.95	0.408	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.770	22.440	0.872	3008.4	2586.0	16.192	4.166	2.91		Clay	96.2			21.21	0.95	n.a.	n.a.	0.95	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
24.930	19.770	0.862	3027.6	2595.2	14.069	4.724	3.00		Clay	100.0			18.69	0.95	n.a.	n.a.	0.95	0.409	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.100	12.880	0.595	3048.0	2605.0	8.719	5.239	3.19		Clay	100.0			12.17	0.95	n.a.	n.a.	0.95	0.410	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.260	8.030	0.271	3067.2	2614.2	4.970	4.167	3.33		Clay	100.0			7.59	0.95	n.a.	n.a.	0.95	0.411	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.430	7.290	0.231	3087.6	2624.0	4.380	4.025	3.37		Clay	100.0			6.89	0.94	n.a.	n.a.	0.95	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.590	9.610	0.324	3106.8	2633.2	6.119	4.019	3.24		Clay	100.0			9.08	0.94	n.a.	n.a.	0.95	0.412	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.750	12.140	0.435	3126.0	2642.4	8.006	4.113	3.15		Clay	100.0			11.47	0.94	n.a.	n.a.	0.95	0.413	n.a.	n.a.	n.a.	n.a.	0.00	0.00
25.920	10.600	0.471	3146.4	2652.2	6.807	5.218	3.27		Clay	100.0			10.02	0.94	n.a.	n.a.	0.95	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.080	13.820	0.549	3165.6	2661.4	9.196	4.483	3.13		Clay	100.0			13.06	0.94	n.a.	n.a.	0.95	0.414	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.250	13.100	0.599	3186.0	2671.2	8.616	5.206	3.19		Clay	100.0			12.38	0.94	n.a.	n.a.	0.94	0.415	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.410	7.500	0.398	3205.2	2680.4	4.400	6.740	3.49		Clay	100.0			7.09	0.94	n.a.	n.a.	0.94	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.570	3.740	0.365	3224.4	2689.6	1.582	17.149	4.09		Clay	100.0			3.53	0.94	n.a.	n.a.	0.94	0.416	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.740	4.780	0.390	3244.8	2699.4	2.339	12.345	3.87		Clay	100.0			4.52	0.94	n.a.	n.a.	0.94	0.417	n.a.	n.a.	n.a.	n.a.	0.00	0.00
26.900	6.230	0.384	3264.0	2708.6	3.395	8.358	3.64		Clay	100.0			5.89	0.94	n.a.	n.a.	0.94	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.070	5.850	0.342	3284.4	2718.4	3.096	8.121	3.66		Clay	100.0			5.53	0.94	n.a.	n.a.	0.94	0.418	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.230	7.410	0.309	3303.6	2727.6	4.222	5.366	3.45		Clay	100.0			7.00	0.94	n.a.	n.a.	0.94	0.419	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.400	8.200	0.361	3324.0	2737.4	4.777	5.525	3.41		Clay	100.0			7.75	0.93	n.a.	n.a.	0.94	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.560	9.130	0.408	3343.2	2746.7	5.431	5.472	3.36		Clay	100.0			8.63	0.93	n.a.	n.a.	0.94	0.420	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.720	9.220	0.454	3362.4	2755.9	5.471	6.018	3.39		Clay	100.0			8.71	0.93	n.a.	n.a.	0.94	0.421	n.a.	n.a.	n.a.	n.a.	0.00	0.00
27.890	10.400	0.601	3382.8	2765.7	6.298	6.905	3.37		Clay	100.0			9.83	0.93	n.a.	n.a.	0.94	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.050	16.270	1.137	3402.0	2774.9	10.501	7.801	3.23		Clay	100.0			15.38	0.93	n.a.	n.a.	0.94	0.422	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.220	19.590	1.251	3422.4	2784.7	12.841	6.999	3.14		Clay	100.0			18.52	0.93	n.a.	n.a.	0.94	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.380	25.310	1.079	3441.6	2793.9	16.886	4.574	2.93		Clay	97.1			23.92	0.93	n.a.	n.a.	0.94	0.423	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.540	19.320	1.004	3460.8	2803.1	12.550	5.710	3.09		Clay	100.0			18.26	0.93	n.a.	n.a.	0.94	0.424	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.710	15.580	1.088	3481.2	2812.9	9.840	7.859	3.26		Clay	100.0			14.73	0.93	n.a.	n.a.	0.94	0.424	n.a.	n.a.	n.a.	n.a.	0.00	0.00
28.870	22.390	1.302	3500.4	2822.1	14.627	6.307	3.06		Clay	100.0			21.16	0.93	n.a.	n.a.	0.94	0.425	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.040	28.160	1.264	3520.8	2831.9	18.644	4.787	2.91		Clay	95.5			26.62	0.93	n.a.	n.a.	0.94	0.426	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.200	25.910	1.225	3540.0	2841.1	16.993	5.074	2.95		Clay	99.3			24.49	0.93	n.a.	n.a.	0.94	0.426	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.360	26.560	1.159	3559.2	2850.3	17.388	4.676	2.92		Clay	96.8			25.10	0.92	n.a.	n.a.	0.94	0.427	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.530	31.440	1.145	3579.6	2860.1	20.733	3.860	2.81		Clay	87.9			29.72	0.92	n.a.	n.a.	0.93	0.427	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.690	31.650	1.181	3598.8	2869.3	20.807	3.957	2.82		Clay	88.3			29.91	0.92	n.a.	n.a.	0.93	0.428	n.a.	n.a.	n.a.	n.a.	0.00	0.00
29.860	25.240	1.145	3619.2	2879.1	16.276	4.886	2.96		Clay	99.6			23.86	0.92	n.a.	n.a.	0.93	0.428	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.020	14.250	0.886	3638.4	2888.4	8.608	7.127	3.27		Clay	100.0			13.47	0.92	n.a.	n.a.	0.93	0.429	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.180	9.800	0.556	3657.6	2897.6	5.502	6.978	3.42		Clay	100.0			9.26	0.92	n.a.	n.a.	0.93	0.429	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.350	12.020	0.568	3678.0	2907.4	7.004	5.579	3.28		Clay	100.0			11.36	0.92	n.a.	n.a.	0.93	0.430	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.510	10.160	0.578	3697.2	2916.6	5.699	6.948	3.41		Clay	100.0			9.60	0.92	n.a.	n.a.	0.93	0.430	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.680	7.530	0.403	3717.6	2926.4	3.876	7.111	3.55		Clay	100.0			7.12	0.92	n.a.	n.a.	0.93	0.431	n.a.	n.a.	n.a.	n.a.	0.00	0.00
30.840	6.930	0.253	3736.8	2935.6	3.448	4.994	3.50		Clay	100.0			6.55	0.92	n.a.	n.a.	0.93	0.431	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.000	7.070	0.213	3756.0	2944.8	3.526	4.093	3.45		Clay	100.0			6.68	0.92	n.a.	n.a.	0.93	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.170	6.450	0.219	3776.4	2954.6	3.088	4.801	3.54		Clay	100.0			6.10	0.92	n.a.	n.a.	0.93	0.432	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.330	6.870	0.399	3795.6	2963.8	3.355	8.019	3.63		Clay	100.0			6.49	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.500	7.070	0.380	3816.0	2973.6	3.472	7.354	3.60		Clay	100.0			6.68	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.660	8.630	0.466	3835.2	2982.8	4.501	6.945	3.49		Clay	100.0			8.16	0.91	n.a.	n.a.	0.93	0.433	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.820	9.750	0.429	3854.4	2992.0	5.229	5.480	3.38		Clay	100.0			9.22	0.91	n.a.	n.a.	0.93	0.434	n.a.	n.a.	n.a.	n.a.	0.00	0.00
31.990	12.810	0.493	3874.8	3001.8	7.244	4.534	3.21		Clay	100.0			12.11	0.91	n.a.	n.a.	0.93	0.434	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.150	11.750	0.509	3894.0	3011.0	6.511	5.187	3.29		Clay	100.0			11.11	0.91	n.a.	n.a.	0.93	0.435	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.320	8.540	0.487	3914.4	3020.8	4.358	7.394	3.52		Clay	100.0			8.07	0.91	n.a.	n.a.	0.93	0.435	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.480	8.490	0.309	3933.6	3030.0	4.306	4.743	3.41		Clay	100.0			8.02	0.91	n.a.	n.a.	0.92	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE
EARTH GROUP

CPT No. 3

PGA (A_{max}) 0.50

Total Settlement: 0.09 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	$q_{c1N\text{-}CS}$	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5, s'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
32.640	6.730	0.445	3952.8	3039.3	3.128	9.368	3.69		Clay	100.0			6.36	0.91	n.a.	n.a.	0.92	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.810	11.820	0.621	3973.2	3049.1	6.450	6.314	3.34		Clay	100.0			11.17	0.91	n.a.	n.a.	0.92	0.436	n.a.	n.a.	n.a.	n.a.	0.00	0.00
32.970	25.720	0.816	3992.4	3058.3	15.515	3.441	2.88		Clay	93.2			24.31	0.91	n.a.	n.a.	0.92	0.437	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.140	31.250	0.905	4012.8	3068.1	19.063	3.093	2.78		Clay	85.3			29.54	0.91	n.a.	n.a.	0.92	0.437	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.300	36.800	1.060	4032.0	3077.3	22.607	3.047	2.72		Clay	80.3			34.78	0.91	n.a.	n.a.	0.92	0.438	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.460	45.480	1.138	4051.2	3086.5	28.158	2.620	2.60		Clay	71.1			42.99	0.91	n.a.	n.a.	0.92	0.438	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.630	47.060	1.003	4071.6	3096.3	35.180	2.227	2.48		Sand	61.5			44.48	0.82	36.67	96.07	0.92	0.438	0.961	0.132	0.158	0.36	0.03	0.04
33.790	33.940	0.928	4090.8	3105.5	20.541	2.911	2.74		Clay	81.9			32.08	0.90	n.a.	n.a.	0.92	0.439	n.a.	n.a.	n.a.	n.a.	0.00	0.00
33.960	22.310	0.842	4111.2	3115.3	13.003	4.157	2.99		Clay	100.0			21.09	0.90	n.a.	n.a.	0.92	0.439	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.120	16.700	0.640	4130.4	3124.5	9.368	4.375	3.12		Clay	100.0			15.78	0.90	n.a.	n.a.	0.92	0.439	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.280	16.330	0.523	4149.6	3133.7	9.098	3.667	3.08		Clay	100.0			15.43	0.90	n.a.	n.a.	0.92	0.440	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.450	12.930	0.770	4170.0	3143.5	6.900	7.103	3.35		Clay	100.0			12.22	0.90	n.a.	n.a.	0.92	0.440	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.610	28.300	0.931	4189.2	3152.7	16.624	3.553	2.86		Clay	92.0			26.75	0.90	n.a.	n.a.	0.92	0.440	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.780	45.660	1.169	4209.6	3162.5	27.545	2.684	2.62		Clay	72.2			43.16	0.90	n.a.	n.a.	0.92	0.441	n.a.	n.a.	n.a.	n.a.	0.00	0.00
34.940	35.730	1.060	4228.8	3171.7	21.197	3.152	2.75		Clay	82.8			33.77	0.90	n.a.	n.a.	0.92	0.441	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.100	22.560	0.869	4248.0	3181.0	12.849	4.251	3.00		Clay	100.0			21.32	0.90	n.a.	n.a.	0.92	0.441	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.270	14.150	0.524	4268.4	3190.8	7.532	4.363	3.19		Clay	100.0			13.37	0.90	n.a.	n.a.	0.92	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.430	9.350	0.342	4287.6	3200.0	4.504	4.746	3.40		Clay	100.0			8.84	0.90	n.a.	n.a.	0.92	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.600	8.950	0.365	4308.0	3209.8	4.235	5.371	3.45		Clay	100.0			8.46	0.90	n.a.	n.a.	0.91	0.442	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.760	8.960	0.387	4327.2	3219.0	4.223	5.697	3.46		Clay	100.0			8.47	0.90	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
35.930	9.080	0.360	4347.6	3228.8	4.278	5.213	3.44		Clay	100.0			8.58	0.89	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.090	8.510	0.321	4366.8	3238.0	3.908	5.077	3.46		Clay	100.0			8.04	0.89	n.a.	n.a.	0.91	0.443	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.250	7.790	0.296	4386.0	3247.2	3.447	5.289	3.52		Clay	100.0			7.36	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.420	7.800	0.242	4406.4	3257.0	3.437	4.327	3.47		Clay	100.0			7.37	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.580	9.140	0.227	4425.6	3266.2	4.242	3.278	3.33		Clay	100.0			8.64	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.750	9.940	0.351	4446.0	3276.0	4.711	4.545	3.37		Clay	100.0			9.40	0.89	n.a.	n.a.	0.91	0.444	n.a.	n.a.	n.a.	n.a.	0.00	0.00
36.910	13.270	0.814	4465.2	3285.2	6.719	7.374	3.37		Clay	100.0			12.54	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.070	23.220	1.389	4484.4	3294.4	12.735	6.619	3.12		Clay	100.0			21.95	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.240	42.490	1.595	4504.8	3304.2	24.355	3.964	2.77		Clay	84.2			40.16	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.400	54.060	1.724	4524.0	3313.4	31.265	3.329	2.63		Clay	73.7			51.10	0.89	n.a.	n.a.	0.91	0.445	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.570	34.710	1.350	4544.4	3323.2	19.522	4.162	2.85		Clay	91.2			32.81	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.730	24.190	0.984	4563.6	3332.4	13.148	4.490	3.01		Clay	100.0			22.86	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
37.890	19.870	0.566	4582.8	3341.7	10.521	3.222	3.00		Clay	100.0			18.78	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.060	13.290	0.840	4603.2	3351.5	6.557	7.645	3.39		Clay	100.0			12.56	0.89	n.a.	n.a.	0.91	0.446	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.220	14.110	0.737	4622.4	3360.7	7.022	6.244	3.31		Clay	100.0			13.34	0.89	n.a.	n.a.	0.91	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.390	25.540	0.970	4642.8	3370.5	13.778	4.179	2.97		Clay	100.0			24.14	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.550	25.820	0.940	4662.0	3379.7	13.900	4.004	2.96		Clay	99.5			24.40	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.710	31.520	1.170	4681.2	3388.9	17.221	4.010	2.88		Clay	93.7			29.79	0.88	n.a.	n.a.	0.90	0.447	n.a.	n.a.	n.a.	n.a.	0.00	0.00
38.880	30.790	1.181	4701.6	3398.7	16.735	4.154	2.90		Clay	95.2			29.10	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.040	40.770	0.964	4720.8	3407.9	22.541	2.510	2.67		Clay	76.2			38.53	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.210	45.120	0.823	4741.2	3417.7	31.793	1.924	2.48		Sand	61.1			42.65	0.78	33.28	91.62	0.90	0.448	0.952	0.127	0.148	0.33	0.04	0.04
39.370	38.670	1.100	4760.4	3426.9	21.179	3.032	2.74		Clay	82.0			36.55	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.530	32.340	1.095	4779.6	3436.1	17.433	3.657	2.85		Clay	91.3			30.57	0.88	n.a.	n.a.	0.90	0.448	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.700	36.800	1.038	4800.0	3445.9	19.966	3.018	2.76		Clay	83.5			34.78	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
39.860	29.440	1.070	4819.2	3455.1	15.647	3.959	2.91		Clay	96.0			27.83	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.030	25.580	0.808	4839.6	3464.9	13.368	3.489	2.93		Clay	97.6			24.18	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.190	32.910	0.936	4858.8	3474.1	17.547	3.071	2.81		Clay	87.4			31.11	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.350	30.010	1.103	4878.0	3483.4	15.830	3.999	2.91		Clay	95.9			28.36	0.88	n.a.	n.a.	0.90	0.449	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.520	33.690	0.922	4898.4	3493.2	17.887	2.951	2.79		Clay	86.0			31.84	0.88	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.680	47.610	1.089	4917.6	3502.4	25.783	2.413	2.61		Clay	71.7			45.00	0.88	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
40.850	29.360	1.147	4938.0	3512.2	15.313	4.265	2.94		Clay	98.2			27.75	0.87	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.010	16.320	0.832	4957.2	3521.4	7.861	6.010	3.26		Clay	100.0			15.43	0.87	n.a.	n.a.	0.90	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.170	12.630	0.501	4976.4	3530.6	5.745	4.943	3.32		Clay	100.0			11.94	0.87	n.a.	n.a.	0.89	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.340	12.030	0.534	4996.8	3540.4	5.385	5.602	3.37		Clay	100.0			11.37	0.87	n.a.	n.a.	0.89	0.450	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.500	10.540	0.649	5016.0	3549.6	4.526	8.074	3.53		Clay	100.0			9.96	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.670	13.440	0.725	5036.4	3559.4	6.137	6.639	3.37		Clay	100.0			12.70	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.830	14.600	0.815	5055.6	3568.6	6.766	6.749	3.34		Clay	100.0			13.80	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
41.990	15.650	0.834	5074.8	3577.8	7.330	6.361	3.30		Clay	100.0			14.79	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.160	14.690	0.795	5095.2	3587.6	6.769	6.545	3.33		Clay	100.0			13.88	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.320	13.260	0.663	5114.4	3596.8	5.951	6.198	3.36		Clay	100.0			12.53	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.490	12.220	0.562	5134.8	3606.6	5.353	5.820	3.38		Clay	100.0			11.55	0.87	n.a.	n.a.	0.89	0.451	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.650	11.480	0.508	5154.0	3615.8	4.924	5.704	3.41		Clay	100.0			10.85	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.810	10.900	0.566	5173.2	3625.1	4.587	6.802	3.48		Clay	100.0			10.30	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
42.980	12.980	0.644	5193.6	3634.8	5.713	6.204	3.38		Clay	100.0			12.27	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.140	14.120	0.739	5212.8	3644.1	6.319	6.415	3.35		Clay	100.0			13.35	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.310	14.030	0.731	5233.2	3653.9	6.247	6.408	3.36		Clay	100.0			13.26	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00

CORNERSTONE EARTH GROUP

CPT No. 3

PGA (A_{max}) 0.50

Total Settlement: 0.09 (Inches)

Depth (ft)	q_c (tsf)	f_s (tsf)	S_{vc} (psf)	Insitu S'_{vc} (psf)	Q	F (%)	I_c	Layer "Plastic" PI > 7	Flag Soil Type	Fines (%)	q_{cN} near interfaces (soft layer)	Thin Layer Factor (K_H)	Interpreted q_{cN}	C_N	q_{c1N}	q_{c1N-CS}	Stress Reduction Coeff, r_d	CSR	K_s for Sand	$CRR_{M=7.5, s'vc = 1 atm}$	CRR	Factor of Safety (CRR/CSR)	Vertical Strain ε_v	Settlement (Inches)
43.470	14.560	0.719	5252.4	3663.1	6.516	6.027	3.32		Clay	100.0			13.76	0.87	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.640	15.450	0.728	5272.8	3672.9	6.977	5.683	3.29		Clay	100.0			14.60	0.86	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.800	16.700	0.753	5292.0	3682.1	7.634	5.359	3.24		Clay	100.0			15.78	0.86	n.a.	n.a.	0.89	0.452	n.a.	n.a.	n.a.	n.a.	0.00	0.00
43.960	15.950	0.799	5311.2	3691.3	7.203	6.011	3.29		Clay	100.0			15.08	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.130	16.600	0.886	5331.6	3701.1	7.530	6.355	3.29		Clay	100.0			15.69	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.290	14.990	0.838	5350.8	3710.3	6.638	6.806	3.35		Clay	100.0			14.17	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.460	14.460	0.735	5371.2	3720.1	6.330	6.241	3.34		Clay	100.0			13.67	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.620	15.780	0.775	5390.4	3729.3	7.017	5.924	3.29		Clay	100.0			14.91	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.780	15.010	0.765	5409.6	3738.5	6.583	6.217	3.33		Clay	100.0			14.19	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
44.950	14.290	0.643	5430.0	3748.3	6.176	5.555	3.32		Clay	100.0			13.51	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.110	14.160	0.582	5449.2	3757.5	6.087	5.092	3.31		Clay	100.0			13.38	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.280	15.110	0.575	5469.6	3767.3	6.570	4.649	3.26		Clay	100.0			14.28	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.440	15.410	0.579	5488.8	3776.5	6.708	4.571	3.24		Clay	100.0			14.57	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.600	15.120	0.631	5508.0	3785.8	6.533	5.099	3.28		Clay	100.0			14.29	0.86	n.a.	n.a.	0.88	0.453	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.770	14.040	0.531	5528.4	3795.6	5.942	4.713	3.29		Clay	100.0			13.27	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
45.930	12.200	0.518	5547.6	3804.8	4.955	5.492	3.40		Clay	100.0			11.53	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.100	14.290	0.579	5568.0	3814.6	6.033	5.032	3.31		Clay	100.0			13.51	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.260	14.460	0.554	5587.2	3823.8	6.102	4.749	3.29		Clay	100.0			13.67	0.86	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.420	12.560	0.524	5606.4	3833.0	5.091	5.373	3.38		Clay	100.0			11.87	0.85	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.590	13.520	0.475	5626.8	3842.8	5.572	4.437	3.30		Clay	100.0			12.78	0.85	n.a.	n.a.	0.88	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.750	12.490	0.515	5646.0	3852.0	5.019	5.325	3.38		Clay	100.0			11.81	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
46.920	14.630	0.643	5666.4	3861.8	6.109	5.449	3.32		Clay	100.0			13.83	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.080	14.460	0.657	5685.6	3871.0	6.002	5.651	3.34		Clay	100.0			13.67	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.240	12.160	0.413	5704.8	3880.2	4.797	4.442	3.36		Clay	100.0			11.49	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.410	10.150	0.257	5725.2	3890.0	3.747	3.525	3.39		Clay	100.0			9.59	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.570	10.420	0.578	5744.4	3899.2	3.871	7.659	3.57		Clay	100.0			9.85	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.740	13.950	0.624	5764.8	3909.0	5.663	5.634	3.36		Clay	100.0			13.19	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
47.900	15.560	0.628	5784.0	3918.2	6.466	4.959	3.28		Clay	100.0			14.71	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.060	13.940	0.867	5803.2	3927.5	5.621	7.853	3.45		Clay	100.0			13.18	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.230	23.780	0.918	5823.6	3937.2	10.600	4.397	3.07		Clay	100.0			22.48	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.390	39.220	0.870	5842.8	3946.5	18.396	2.397	2.72		Clay	81.0			37.07	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.560	45.930	1.015	5863.2	3956.3	21.737	2.361	2.66		Clay	76.0			43.41	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.720	46.500	1.477	5882.4	3965.5	21.969	3.391	2.76		Clay	83.4			43.95	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
48.880	41.190	1.779	5901.6	3974.7	19.241	4.651	2.89		Clay	94.0			38.93	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.050	26.900	1.465	5922.0	3984.5	12.016	6.118	3.12		Clay	100.0			25.43	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.210	18.970	0.967	5941.2	3993.7	8.012	6.046	3.25		Clay	100.0			17.93	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.380	17.090	0.763	5961.6	4003.5	7.048	5.406	3.27		Clay	100.0			16.15	0.85	n.a.	n.a.	0.87	0.454	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.540	15.920	0.667	5980.8	4012.7	6.444	5.156	3.29		Clay	100.0			15.05	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.700	15.460	0.534	6000.0	4021.9	6.196	4.283	3.26		Clay	100.0			14.61	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
49.870	15.440	0.612	6020.4	4031.7	6.166	4.920	3.29		Clay	100.0			14.59	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.030	15.050	0.719	6039.6	4040.9	5.954	5.977	3.35		Clay	100.0			14.22	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.200	14.820	0.657	6060.0	4050.7	5.821	5.574	3.34		Clay	100.0			14.01	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.360	13.760	0.519	6079.2	4059.9	5.281	4.845	3.34		Clay	100.0			13.01	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00
50.520	12.710	0.441	6098.4	4069.2	4.748	4.563	3.37		Clay	100.0			12.01	0.84	n.a.	n.a.	0.86	0.455	n.a.	n.a.	n.a.	n.a.	0.00	0.00