APPENDIX D

GEOTECHNICAL & SOILS REPORT

Geotechnologies, Inc.
Consulting Geotechnical Engineers

Celebrating 40 Years of Service 1971-2011

December 14, 2011
File No. 20255

Planning Associates, Inc.
4040 Vineland Avenue
Studio City, California 91604

Attention: Allen Concepcion

Subject: Geotechnical Engineering Investigation
Proposed Studio City Senior Living Center
4141 Whitsett Avenue, Studio City, California

Ladies and Gentlemen:

This letter transmits the Geotechnical Engineering Investigation for the subject property prepared by Geotechnologies, Inc. This report provides geotechnical recommendations for the development of the site, including earthwork, seismic design, retaining walls, excavations, shoring and foundation design. Engineering for the proposed project should not begin until approval of the geotechnical investigation is granted by the local building official. Significant changes in the geotechnical recommendations may result due to the building department review process.

The validity of the recommendations presented herein is dependant upon review of the geotechnical aspects of the project during construction by this firm. The subsurface conditions described herein have been projected from limited subsurface exploration and laboratory testing. The exploration and testing presented in this report should in no way be construed to reflect any variations which may occur between the exploration locations or which may result from changes in subsurface conditions.

Should you have any questions please contact this office.

Respectfully submitted,
GEOTECHNOLOGIES, INC.

REGISTERED PROFESSIONAL ENGINEER
EDWARD F. HILL
No. 2126
Exp. 6/30/12
GEOTECHNICAL
STATE OF CALIFORNIA

EDWARD F. HILL
G.E. 2126/E.G. 1403

EFH:aa

Distribution: (5) Addressee
(2) Ray Franco

Email: Allen Concepcion [ajc@pai-la.com]
Ray Franco [rayfranco@aol.com]

TABLE OF CONTENTS

SECTION **PAGE**

TABLE OF CONTENTS -continued

SECTION **PAGE**

TABLE OF CONTENTS -continued

SECTION **PAGE**

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED SENIOR LIVING CENTER
4141 WHITSETT AVENUE
NORTH HOLLYWOOD, CALIFORNIA

INTRODUCTION

This report presents the results of the geotechnical engineering investigation performed on the subject property. The purpose of this investigation was to identify the distribution and engineering properties of the earth materials underlying the site, and to provide geotechnical recommendations for the design of the proposed development.

This investigation included fifteen exploratory excavations and six cone penetration soundings(CPT), collection of representative samples, laboratory testing, engineering analysis, review of published geologic data, review of available geotechnical engineering information and the preparation of this report. The exploratory excavation locations are shown on the enclosed Plot Plan. The results of the exploration and the laboratory testing are presented in the Appendix of this report.

PROPOSED DEVELOPMENT

Information concerning the proposed development was furnished by Planning Associates. The site is proposed to be developed with a senior living center. The center is to be four stories over subterranean parking. The easterly portion of the site will be serviced by two subterranean levels of parking. The westerly portions of the site will be serviced by one subterranean level of parking.

Column loads are estimated to be between 400 and 800 kips. Wall loads are estimated to be between 3 and 6 kips per lineal foot. These loads reflect the dead plus live load, of which the dead load is approximately 75 percent. Grading will consist of excavations to depths between 10 and 20 feet for the proposed subterranean parking levels. A portion of the southwesterly part of the structure will not be serviced by subterranean parking. This portion of the structure will be constructed at- or near existing grades.

Any changes in the design of the project or location of any structure, as outlined in this report, should be reviewed by this office. The recommendations contained in this report should not be considered valid until reviewed and modified or reaffirmed, in writing, subsequent to such review.

SITE CONDITIONS

The subject property consists of a golf course, driving range and tennis center located at the southwest corner of Whitsett Avenue and Valleyspring Drive, in the Studio City area of the City of Los Angeles, California. The proposed development will be located at the southeast corner of the subject site, in an area currently occupied by a maintenance facility, tennis courts and parking lots. The golf course and driving range will remain, although the configuration will be slightly changed in some areas. The area of the proposed development will be bounded by the existing driving range to the north, the existing golf course to the west, the Los Angeles River flood control channel to the southwest, and Whitsett Avenue to the east.

The majority of the subject area is roughly level, with total relief of approximately 5 to 6 feet. South of the site, a 10 to 15 foot high, 2:1 slope descends towards the Los Angeles River channel. There is an existing level area approximately 25 feet wide adjacent to the vertical channel walls.

Vegetation on the site consists of grasses, shrubs and trees in landscaped areas. Drainage is by sheetflow along the existing contours generally southward, or towards area drains.

GEOTECHNICAL EXPLORATION

FIELD EXPLORATION

The site was explored on March 30 and 31, 2000, and June 4, 6, and 12, 2007 by drilling 15 exploratory borings, performing five Cone Penetrometer Test (CPT) soundings and excavating one test pit. The borings varied in depth from 30 to 60 feet below the existing site grade, and the CPT soundings were all pushed to refusal, which occurred at depths between 45 and 72 feet below the site grade. The borings were excavated with the aid of a truck mounted, hollow stem auger drilling rig, and were approximately 8 inches in diameter. The boring locations are shown on the Site Survey, and the earth materials encountered are logged on Plates A-1 through A-16.

The location of exploratory excavations was determined by information furnished by the client. Elevations of the exploratory excavations were determined by hand level or interpolation from data provided. The location and elevation of the exploratory excavations should be considered accurate only to the degree implied by the method used.

GEOLOGIC MATERIALS

Fill Material

Fill materials were encountered during exploration to depths between 1 and 7 feet below the existing ground surface. The fill consists of sandy silt and silty sand, which range from light brown to black, and are slightly moist to moist, medium dense to dense, and fine to coarse grained.

Native Soils

The native soils underlying the site consist of silty sand, clayey silt, silty clay, clayey sand, sandy silt and sand, which range from light brown to grey to dark brown, and are slightly moist to wet, soft to very dense, and fine to coarse grained. The native earth materials consist of alluvial sediments deposited by river and stream action typical to this area of the San Fernando Valley.

Bedrock

Bedrock was encountered below the native soils in some of the exploratory borings at depths ranging from approximately 42.5 to 55 feet below the existing site grade. The bedrock consists of shale, siltstone and mudstone of the Miocene Monterey formation. The bedrock is light brown to greyish-green to black, moist to very moist, and hard to very hard. More detailed profiles of the earth materials may be obtained from the individual boring logs.

GROUNDWATER AND CAVING

Groundwater was encountered during exploration at depths of 23 to 39 feet below the existing site grade, with the highest encountered level of 23 feet below grade encountered in CPT-4. This corresponds to an elevation of approximately 595.5 feet. Historic high groundwater levels are reported to be about 30 feet below grade, according to Ziony (1985). However the historic high groundwater level based on California Geological Survey Seismic Hazard Evaluation Report 08 Plate 1.2 entitled "Historically Highest Ground Water Contours" is 0 feet below grade. For purposes of this report, this historically high groundwater level will be utilized.

The borings were excavated utilizing hollow stem auger drilling equipment, in which the borings are cased by the augers, and caving is not possible.

Fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors not evident at the time of the measurements reported herein. Fluctuations also may occur across the site. High groundwater levels can result in changed conditions.

SEISMIC EVALUATION

REGIONAL GEOLOGIC SETTING

The subject property is located in the Transverse Ranges Geomorphic Province. The Transverse Ranges are characterized by roughly east-west trending mountains and the northern and southern boundaries are formed by reverse fault scarps. The convergent deformational features of the Transverse Ranges are a result of north-south shortening due to plate tectonics. This has resulted in local folding and uplift of the mountains along with the propagation of thrust faults (including blind thrusts). The intervening valleys have been filled with sediments derived from the bordering mountains.

The site is underlain by unconsolidated alluvial sediments deposited by river and stream action, that are deeper than 200 feet.

REGIONAL FAULTING

Based on criteria established by the California Division of Mines and Geology (CDMG) now called California Geologic Survey(CGS), faults may be categorized as active, potentially active, or inactive. Active faults are those which show evidence of surface displacement within the last 11,000 years (Holocene-age). Potentially-active faults are those that show evidence of most recent surface displacement within the last 1.6 million years (Quaternary-age). Faults showing no evidence of surface displacement within the last 1.6 million years are considered inactive for most purposes, with the exception of design of some critical structures.

Buried thrust faults are faults without a surface expression but are a significant source of seismic activity. They are typically broadly defined based on the analysis of seismic wave recordings of hundreds of small and large earthquakes in the southern California area. Due to the buried nature of these thrust faults, their existence is usually not known until they produce an earthquake. The risk for surface rupture potential of these buried thrust faults is inferred to be low (Leighton, 1990). However, the seismic risk of these buried structures in terms of recurrence and maximum potential magnitude, is not well established. Therefore, the potential for surface rupture on these surface-verging splays at magnitudes higher than 6.0 cannot be precluded.

SEISMIC HAZARDS AND DESIGN CONSIDERATIONS

The primary geologic hazard at the site is moderate to strong ground motion (acceleration) caused by an earthquake on any of the local or regional faults. The potential for other earthquake-induced hazards was also evaluated including surface rupture, liquefaction, dynamic settlement, inundation and landsliding.

Surface Rupture

In 1972, the Alquist-Priolo Special Studies Zones Act (now known as the Alquist-Priolo Earthquake Fault Zoning Act) was passed into law. The Act defines "active" and "potentially active" faults utilizing the same aging criteria as that used by California Geological Survey (CGS). However, established state policy has been to zone only those faults which have direct evidence of movement within the last 11,000 years. It is this recency of fault movement that the CGS considers as a characteristic for faults that have a relatively high potential for ground rupture in the future.

CGS policy is to delineate a boundary from 200 to 500 feet wide on each side of the known fault trace based on the location precision, the complexity, or the regional significance of the fault. If a site lies within an Earthquake Fault Zone, a geologic fault rupture investigation must be performed that demonstrates that the proposed building site is not threatened by surface displacement from the fault before development permits may be issued.

Ground rupture is defined as surface displacement which occurs along the surface trace of the causative fault during an earthquake. Based on research of available literature and results of site reconnaissance, no known active or potentially active faults underlie the subject site. In addition, the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on these considerations, the potential for surface ground rupture at the subject site is considered low.

2010 California Building Code Seismic Parameters

According to Table 1613.5.2 of the 2010 California Building Code, the subject site is classified as Site Class F due to the liquefiable nature of the underlying soils. Section 1613 of the 2007 California Building Code is developed based on the standards presented in ASCE 7. According to Section 20.3.1 (site class definition for Site Class F) found in Chapter 20, titled "Site Classification Procedure for Seismic Design", ASCE 7-05, Minimum Design Loads for Buildings and Other Structures, an exception is provided under Site Classification F.

The proposed structure is four stories in height. It is recommended that the project structural engineer design the structure with a the fundamental period of vibration of the structure less than 0.5 second. The average field standard penetration resistance (SPT) blowcounts recorded from the exploratory excavations were determined to vary between 11 and 100 blows for the native soils above the bedrock. The average blow count in the native soils was found to be 33. The soils underlying the subject site does not fall under any other characteristics of Site Class E, but falls within the characteristics of Site Class D. Therefore, the subject site may be classified as Site Class D, which corresponds to a "Stiff Soil" Profile, in accordance with the ASCE 7 standard.

Based on information derived from the subsurface investigation, the subject site is classified as Site Class D, which corresponds to a "Stiff Soil" Profile, according to Table 1613.5.2 of the 2010 California Building Code. This information and the site coordinates were input into the USGS Ground Motion Parameter Calculator (Version 5.1.0)to calculate the Maximum Considered Earthquake (MCE) Ground Motions for the site. The Maximum Considered Earthquake Ground motions are equivalent to the 2475-year recurrence interval ground motions adjusted by a deterministic limit. These values are consistent with the 2009 International Building Code requirements.

2010 CALIFORNIA BUILDING CODE SEISMIC PARAMETERS	
Site Class	D
Mapped Spectral Acceleration at Short Periods (S_S)	1.500g
Site Coefficient (F_a)	1.0
Maximum Considered Earthquake Spectral Response for Short Periods (S_{MS})	1.500g
Five-Percent Damped Design Spectral Response Acceleration at Short Periods (S_{DS})	1.000g
Mapped Spectral Acceleration at One-Second Period (S_1)	0.600g
Site Coefficient (F_v)	1.5
Maximum Considered Earthquake Spectral Response for One-Second Period (S_{M1})	0.900g
Five-Percent Damped Design Spectral Response Acceleration for One-Second Period (S_{D1})	0.600g

According to Section 1802.2.7, of the California Building Code, a peak ground acceleration, equivalent to Five-Percent Damped Design Spectral Response Acceleration at Short Periods (S_{DS}) divided by 2.5, shall be utilized for liquefaction analysis. Based on the site coordinates and Site Class, Five-Percent Damped Design Spectral Response Acceleration at Short Periods (S_{DS}) divided by 2.5 is equal to 0.40g.

Seismic Hazard Zone Report

The CDMG has published Seismic Hazard Zone Report 007, Seismic Hazard Zone Report for the Canoga Park 7.5-Minute Quadrangle, Los Angeles County, California (1997, revised 2005). Figure 3.3 (Alluvium Conditions) indicates the PGA_{DBE} for this area of Los Angeles to be 0.52g. Figure 3.4 (Predominant Earthquake) indicates an earthquake with a moment magnitude of 6.4 (M_W) as the Design-Basis Earthquake (DBE) ground motion for this area of Los Angeles.

Liquefaction

Liquefaction is a phenomenon in which saturated silty to cohesionless soils below the groundwater table are subject to a temporary loss of strength due to the buildup of excess pore pressure during cyclic loading conditions such as those induced by an earthquake. Liquefaction-related effects include loss of bearing strength, amplified ground oscillations, lateral spreading, and flow failures.

The historic high groundwater level was obtained from review of California Geological Survey Seismic Hazard Evaluation Report 98-08. Review of this report indicates that the historically highest groundwater level is 0 feet below grade. A copy of this map is included in the Appendix.

Liquefaction analysis of the soils underlying the site was performed using the spreadsheet template LIQ2_30.WQ1 developed by Thomas F. Blake (1996). This program utilizes the 1996 NCEER method of analysis. The liquefaction potential evaluation was performed by assuming a magnitude 6.4 earthquake and a peak horizontal acceleration of 0.67g. This semi-empirical method is based on a correlation between measured values of Standard Penetration Test (SPT) resistance and field performance data. The enclosed liquefaction analysis included in the Appendix, indicates that site soils could be subject to liquefaction during the ground motion expected during the design based earthquake.

Surface Manifestation

It has been shown in recent studies by O'Rourke and Pease (1997) and Youd and Garris (1995), building upon work by Ishihara (1985), that the visible effects of liquefaction on the ground surface are only manifested if the relative and absolute thicknesses of liquefiable soils to overlying non-liquefiable surface material fall within a certain range. On the subject site, given the relatively deep groundwater level, the relative thicknesses of liquefiable soils to overlying non-liquefiable surface material fall well outside the bounds within which surface effects of liquefaction have been observed during past earthquakes. As a result, the likelihood that surface effects of liquefaction would occur on the subject site would be considered very low to non-existent. Therefore, it is the opinion of this firm that, should liquefaction occur within the potentially liquefiable zones, there would be a negligible effect on the proposed structures.

The study by Ishihara (1985) presents data from three separate earthquakes where subsurface information was available regarding the absolute and relative thicknesses of liquefiable earth materials and overlying non-liquefiable materials. Information was obtained from sites where the surface effects of liquefaction were observed, and from sites where there were no visible surface effects. From this data, Ishihara (1985) graphs the liquefiable soil thickness vs. the overlying non-liquefiable thickness, and presents bounds identifying a zone within which surface effects of liquefaction were observed.

Youd and Garris (1995) build upon the work by Ishihara (1985), compiling data from 308 borings taken at sites shaken by 15 different earthquakes, ranging in magnitude from 5.3 to 8.0. They find that the boundaries presented by Ishihara relating the thicknesses of non-liquefiable surface layers to underlying potentially liquefiable layers remain valid for this extensive set of data, with very few exceptions. The particular site conditions which contributed to the few exceptional cases are not present on the subject site.

O'Rourke and Pease (1997) also compare the liquefiable vs. non-liquefiable thickness bounds initially proposed by Ishihara (1985) with data obtained from areas of San Francisco where the surface effects of liquefaction were observed during the 1989 Loma Prieta earthquake. They find general agreement with the previous findings of Ishihara (1985) and Youd and Garris (1995).

Lateral Spreading

Lateral spreading is the most pervasive type of liquefaction-induced ground failure. During lateral spread, blocks of mostly intact, surficial soil displace downslope or towards a free face along a shear zone that has formed within the liquefied sediment. According to the procedure provided by Bartlett, Hansen, and Youd, "Revised Multilinear Regression Equations for Prediction of Lateral Spread Displacement", ASCE, Journal of Geotechnical Engineering, Vol. 128, No. 12, December 2002, when the saturated cohesionless sediments with $(N_1)_{60} > 15$, significant displacement is not likely for $M < 8$ earthquakes.

The enclosed liquefaction analysis included in the Appendix, indicates that site soils could be subject prone to liquefaction during 475 year return period ground motion. The saturated cohesionless sediments underlying the subject site have corrected $(N_1)_{60}$ value greater than 15. Therefore, the potential for lateral spread is considered to be remote for the subject site.

Dynamic Dry Settlement

Seismically-induced settlement or compaction of dry or moist, cohesionless soils can be an effect related to earthquake ground motion. Such settlements are typically most damaging when the settlements are differential in nature across the length of structures.

Some seismically-induced settlement of the proposed structures should be expected as a result of strong ground-shaking, however, due to the uniform nature of the underlying earth materials, excessive differential settlements are not expected to occur.

Tsunamis, Seiches and Flooding

Tsunamis are large ocean waves generated by sudden water displacement caused by a submarine earthquake, landslide, or volcanic eruption. Review of the County of Los Angeles Flood and Inundation Hazards Map, Leighton (1990), indicates the site does not lie within the mapped tsunami inundation boundaries.

Seiches are oscillations generated in enclosed bodies of water which can be caused by ground shaking associated with an earthquake. Review of the County of Los Angeles Flood and Inundation Hazards Map, Leighton (1990), indicates the site lies within mapped inundation boundaries due to a seiche or a breached upgradient reservoir. A determination of whether a higher site elevation would remove the site from the potential inundation zones is beyond the scope of this investigation.

Landsliding

The probability of seismically-induced landslides occurring on the site is considered to be low due to the general lack of elevation difference slope geometry across or adjacent to the site.

CONCLUSIONS AND RECOMMENDATIONS

Based upon the exploration, laboratory testing, and research, it is the finding of this firm that construction of the proposed senior living center is considered feasible from a geotechnical engineering standpoint provided the advice and recommendations presented herein are followed and implemented during construction.

The soils underlying the site are subject to liquefaction during a major seismic event. It is estimated that settlement as a result of liquefaction could be just under two inches. Therefore, in order to mitigate against the effects of liquefaction, it is recommended that the proposed structure should be supported on a mat foundation. The mat foundation should be designed to resist the possible one inch of differential settlement which could result due to seismic shaking. Support of the proposed structure in this manner would serve to greatly reduce the potential for damage should liquefaction occur, but would not completely eliminate the potential for damage.

The existing fill materials and upper native soils are not suitable for support of the proposed foundations, floor slabs or additional fill. Excavation of the proposed subterranean level will remove the unsuitable materials in the building area. Proposed foundations may bear in native earth materials found at the level of the proposed excavation.

Where not removed by the proposed excavations, the existing fill materials and upper native soils are not suitable for support of the proposed foundations, floor slabs or additional fill. In the area of the shallow foundations all existing fill materials should be removed and recompacted. Where the existing fill materials are shallower than 4 feet in depth, all soils should be removed to a minimum depth of three feet below proposed foundations and recompacted as controlled fill prior to foundation excavation. This compacted fill blanket will also reduce differential settlement between the shallow and deep foundations.

Foundations for small outlying structures, such as property line walls, which will not be tied-in to the proposed mixed use structure may be supported on conventional foundations bearing in native earth materials.

FILL SOILS

The maximum depth of fill encountered on the site was 7 feet. This material and any fill generated during demolition should be removed during the excavation of the subterranean level and wasted from the site. Where not removed by the proposed excavations, this material and any fill generated during demolition should be removed and recompacted as controlled fill prior to foundation excavation.

EXPANSIVE SOILS

The onsite earth materials are in the low to moderate expansion range. The Expansion Index was found to be between 32 and 80 for remolded bulk samples. Reinforcing beyond the minimum required by the City of Los Angeles Department of Building and Safety is not required.

WATER-SOLUBLE SULFATES

The portland cement portion of concrete is subject to attack when exposed to water-soluble sulfates. Usually the two most common sources of exposure are from soil and marine environments.

The source of natural sulfate minerals in soils include the sulfates of calcium, magnesium, sodium, and potassium. When these minerals interact and dissolve in subsurface water, a sulfate concentration is created, which will react with exposed concrete. Over time sulfate attack will destroy improperly proportioned concrete well before the end of its intended service life.

The water-soluble sulfate content of the onsite earth materials was tested by California Test 417. The water-soluble sulfate content was determined to be less than 0.2% percentage by weight for the soils tested. Based on the 1997 Uniform Building Code, Table 19-A-4, the sulfate exposure is considered to be moderate for earth materials with less than 0.1% and Type II cement may be utilized for concrete foundations in contact with the site soils. In addition a water-cement ratio of 0.5 should be maintained in the poured concrete. Minimum concrete strength for moderate sulfate exposure should be a minimum of 4,000psi.

GRADING GUIDELINES

Site Preparation

All vegetation, existing fill, and soft or disturbed geologic materials should be removed from the areas to receive controlled fill. The excavated areas shall be carefully observed by the geotechnical engineer prior to placing compacted fill.

Any vegetation or associated root system located within the footprint of the proposed structures should be removed during grading. Any existing or abandoned utilities located within the footprint of the proposed structures should be removed or relocated as appropriate. All existing fill materials and any disturbed geologic materials resulting from grading operations should be removed and properly recompacted prior to foundation excavation.

The at-grade portions of the proposed building areas shall be excavated to a minimum depth of 3 feet below the bottom of all foundations. The excavation shall extend at least five feet beyond the edge of foundations or for a distance equal to the depth of fill below the foundations, whichever is greater. It is very important that the positions of the proposed structures is accurately located so that the limits of the graded area are accurate and the grading operation proceeds efficiently.

Subsequent to the indicated removals, the exposed grade shall be scarified to a depth of six inches, moistened to optimum moisture content, and recompacted in excess of the minimum required comparative density.

Compaction

The City of Los Angles Department of Building and Safety requires a minimum comparative compaction of 95 percent of the laboratory maximum density where the soils to be utilized in the fill have less than 15 percent finer than 0.005 millimeters. The soils tested by this firm would require the 95 percent compaction requirement.

All fill should be mechanically compacted in layers not more than 8 inches thick. All fill shall be compacted to at least 90 or 95 percent of the maximum laboratory density for the materials used.

The maximum density shall be determined by the laboratory operated by Geotechnologies, Inc. using test method ASTM D 1557-07 or equivalent.

Field observation and testing shall be performed by a representative of the geotechnical engineer during grading to assist the contractor in obtaining the required degree of compaction and the proper moisture content. Where compaction is less than required, additional compactive effort shall be made with adjustment of the moisture content, as necessary, until a minimum of 90 or 95 percent compaction is obtained.

Acceptable Materials

The excavated onsite materials are considered satisfactory for reuse in the controlled fills as long as any debris and/or organic matter is removed.

Any imported materials shall be observed and tested by the representative of the geotechnical engineer prior to use in fill areas. Imported materials should contain sufficient fines so as to be relatively impermeable and result in a stable subgrade when compacted. Any required import materials should consist of geologic materials with an expansion index of less than 50. The water-soluble sulfate content of the import materials should be less than 0.1% percentage by weight.

Imported materials should be free from chemical or organic substances which could effect the proposed development. A competent professional should be retained in order to test imported materials and address environmental issues and organic substances which might effect the proposed development.

Utility Trench Backfill

Utility trenches should be backfilled with controlled fill. The utility should be bedded with clean sands at least one foot over the crown. The remainder of the backfill may be onsite soil compacted to 90 or 95 percent of the laboratory maximum density. Utility trench backfill should be tested by representatives of this firm in accordance with ASTM D-1557-07.

Wet Soils

At the time of exploration the soils which will be exposed at the bottom of the excavation were locally well above optimum moisture content. It is anticipated that the excavated material to be placed as compacted fill, and the materials exposed at the bottom of excavated plane will most likely require significant drying and aeration prior to recompaction.

Pumping (yielding or vertical deflection) of the high-moisture content soils at the bottom of the excavation may occur during operation of heavy equipment. Where pumping is encountered, angular minimum ¾-inch gravel should be placed and worked into the subgrade. The exact thickness of the gravel would be a trial and error procedure, and would be determined in the field. It would likely be on the order of 1 to 2 feet thick.

The gravel will help to densify the subgrade as well as function as a stabilization material upon which heavy equipment may operate. It is not recommended that rubber tire construction equipment attempt to operate directly on the pumping subgrade soils prior to placing the gravel. Direct operation of rubber tire equipment on the soft subgrade soils will likely result in excessive disturbance to the soils, which in turn will result in a delay to the construction schedule since those disturbed soils would then have to be removed and properly recompacted. Extreme care should be utilized to place gravel as the subgrade becomes exposed.

Shrinkage

Shrinkage results when a volume of soil removed at one density is compacted to a higher density. A shrinkage factor between 5 and 15 percent should be anticipated when excavating and recompacting the existing fill and underlying native geologic materials on the site to an average comparative compaction of 92 percent.

Weather Related Grading Considerations

When rain is forecast all fill that has been spread and awaits compaction shall be properly compacted prior to stopping work for the day or prior to stopping due to inclement weather. These fills, once compacted, shall have the surface sloped to drain to an area where water can be removed.

Temporary drainage devices should be installed to collect and transfer excess water to the street in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. Drainage should not be allowed to flow uncontrolled over any descending slope.

Work may start again, after a period of rainfall, once the site has been reviewed by a representative of this office. Any soils saturated by the rain shall be removed and aerated so that the moisture content will fall within three percent of the optimum moisture content.

Surface materials previously compacted before the rain shall be scarified, brought to the proper moisture content and recompacted prior to placing additional fill, if considered necessary by a representative of this firm.

Abandoned Seepage Pits

No abandoned seepage pits were encountered during exploration and none are known to exist on the site. However, should such a structure be encountered during grading, options to permanently abandon seepage pits include complete removal and backfill of the excavation with compacted fill, or drilling out the loose materials and backfilling to within a few feet of grade with slurry, followed by a compacted fill cap.

If the subsurface structures are to be removed by grading, the entire structure should be demolished. The resulting void may be refilled with compacted soil. Concrete and brick generated during the seepage pit removal may be reused in the fill as long as all fragments are less than 6 inches in longest dimension and the debris comprises less than 15 percent of the fill by volume. All grading should comply with the recommendations of this report.

Where the seepage pit structure is to be left in place, the seepage pits should cleaned of all soil and debris. This may be accomplished by drilling. The pits should be filled with minimum 1-1/2 sack concrete slurry to within 5 feet of the bottom of the proposed foundations. In order to provide a more uniform foundation condition, the remainder of the void should be filled with controlled fill.

Geotechnical Observations and Testing During Grading

Geotechncial observations and testing during grading are considered to be a continuation of the geotechnical investigation. It is critical that the geotechnical aspects of the project be reviewed by representatives of Geotechnologies, Inc. during the construction process. Compliance with the design concepts, specifications or recommendations during construction requires review by this firm during the course of construction. Any fill which is placed should be observed, tested, and verified if used for engineered purposes. Please advise this office at least twenty-four hours prior to any required site visit.

LEED Considerations

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System encourages adoption of sustainable green building and development practices. Credit for LEED Certification can be assigned for reuse of construction waste and diversion of materials from landfills in new construction.

In an effort to provide the design team with a viable option in this regard, demolition debris could be crushed onsite in order to use it in the ongoing grading operations. The environmental ramifications of this option, if any, should be considered by the team.

The demolition debris should be limited to concrete, asphalt and other non-deleterious materials. All deleterious materials should be removed including, but not limited to, paper, garbage, ceramic materials and wood.

For structural fill applications, the materials should be crushed to 2 inches in maximum dimension or smaller. The crushed materials should be throughly blended and mixed with onsite soils prior to placement as compacted fill. The amount of crushed material should not exceed 20 percent. The blended and mixed materials should be tested by this office prior to placement to insure it is suitable for compaction purposes. The blended and mixed materials should be tested by Geotechnologies, Inc. during placement to insure that it has been compacted in a suitable manner.

FOUNDATION DESIGN

Conventional

Conventional foundations for structures such as privacy walls or trash enclosures which will not be rigidly connected to the proposed facility may bear in native soils. Continuous footings may be designed for a bearing capacity of 1,000 pounds per square foot, and should be a minimum of 12 inches in width, 18 inches in depth below the lowest adjacent grade and 18 inches into the recommended bearing material. No bearing capacity increases are recommended.

Since the recommended bearing capacity is a net value, the weight of concrete in the foundations may be taken as 50 pounds per cubic foot and the weight of the soil backfill may be neglected when determining the downward load on the foundations.

Foundation Reinforcement

Due to a moderate expansion potential for the onsite earth materials, all foundations should be reinforced with a minimum of four #4 steel bars. Two should be placed near the top of the foundation, and two should be placed near the bottom.

Lateral Design

Resistance to lateral loading may be provided by friction acting at the base of foundations and by passive earth pressure. An allowable coefficient of friction of 0.2 may be used with the dead load forces.

Passive earth pressure for the sides of foundations poured against undisturbed or recompacted soil may be computed as an equivalent fluid having a density of 300 pounds per cubic foot with a maximum earth pressure of 3,000 pounds per square foot.

When combining passive and friction for lateral resistance, the passive component should be reduced by one third. A one-third increase in the passive value may be used for wind or seismic loads.

Foundation Settlement

Settlement of the foundation system is expected to occur on initial application of loading. The maximum settlement is expected to be 3/4 inch and occur below the heaviest loaded columns. Differential settlement is not expected to exceed 1/4 inch.

Foundation Observations

It is critical that all foundation excavations are observed by a representative of this firm to verify penetration into the recommended bearing materials. The observation should be performed prior to the placement of reinforcement. Foundations should be deepened to extend into satisfactory earth materials, if necessary.

Foundation excavations should be cleaned of all loose soils prior to placing steel and concrete. Any required foundation backfill should be mechanically compacted, flooding is not permitted.

FOUNDATION DESIGN - MAT FOUNDATION

Mat Foundation

The mat should be founded exclusively in native soils found 10 feet below existing site grades. For the at-grade portion of the structure, the mat should bear in a minimum of newly placed compacted fill, subsequent to the recommended grading. The bottom of the mat foundation should be a minimum of 18 inches in depth below the lowest adjacent grade at the perimeter of the structure. An allowable bearing pressure of 850 pounds per square foot may be utilized in the design of the proposed mat foundation. The mat foundation may be designed utilizing a modulus of subgrade reaction of 100 pounds per cubic inch.

Lateral Design for Mat Foundation

Resistance to lateral loading may be provided by soil friction, and by the passive resistance of the soils. A coefficient of friction of 0.2 may be used with the dead load forces between footings and the underlying supporting soils.

Passive earth pressure for the sides of footings poured against undisturbed soil may be computed as an equivalent fluid having a density of 300 pounds per cubic foot, with a maximum earth pressure of 3,000 pounds per square foot. When combining passive and friction for lateral resistance, the passive component should be reduced by one third. A one-third increase in the passive value may be used for wind or seismic loads. A minimum safety factor of 2 has been utilized in determining the allowable passive pressure.

Foundation Settlement

The majority of the foundation settlement is expected to occur on initial application of loading. The maximum settlement is not expected to exceed approximately 1 inch, and will occur below the most heavily loaded area of the mat foundation. Differential settlement is not expected to exceed ½ inch.

DEWATERING

The historic high groundwater level was established by review of California Division of Mines and Geology Open File Report 98-20 Plate 1.2 entitled "Historically Highest Ground Water Contours". Review of this plate indicates that the historically highest groundwater level is between 0 feet below grade. Exploration indicated groundwater could be encountered between 23 and 39 feet below site grades. The proposed basement of the structure will be on the order of 20 feet below grade. Therefore the Building Official requires that the building should be designed for potential hydrostatic and buoyancy pressures or a drainage system should be installed which would operate in the unlikely event that the reported historic high groundwater level is attained again. This report has been prepared assuming that the walls will not be drained.

RETAINING WALL DESIGN

Cantilever Retaining Walls

Retaining walls supporting a level backslope may be designed utilizing a triangular distribution of pressure. Cantilever retaining walls may be designed for 31.5 pounds per cubic foot for walls retaining up to 6 feet of earth.

For this equivalent fluid pressure to be valid, walls which are to be restrained at the top should be backfilled prior to the upper connection being made. Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures.

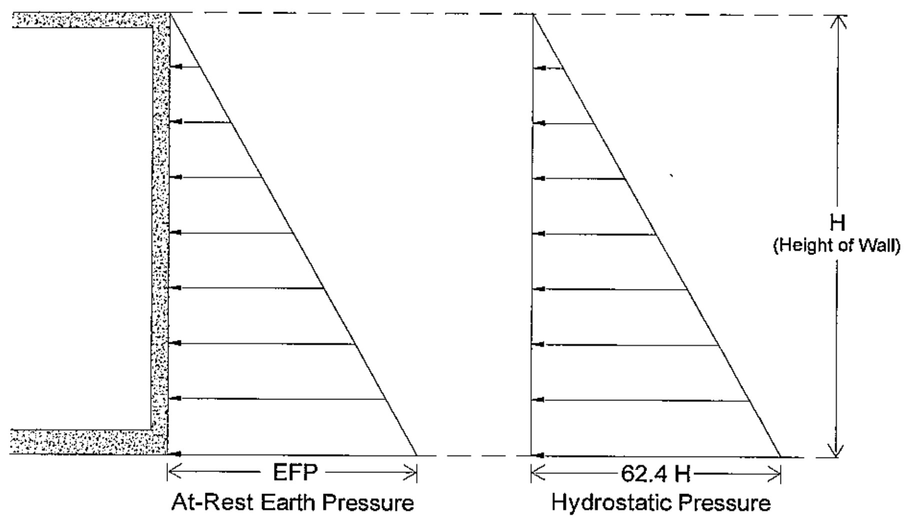
Retaining Wall Drainage

Retaining walls should be provided with a subdrain covered with a minimum of 12 inches of gravel, and a compacted fill blanket or other seal at the surface. The onsite geologic materials are acceptable for use as retaining wall backfill as long as they are compacted to a minimum of 90 or 95 percent of the maximum density as determined by ASTM D 1557-07 or equivalent.

Certain types of subdrain pipe are not acceptable to the various municipal agencies, it is recommended that prior to purchasing subdrainage pipe, the type and brand is cleared with the proper municipal agencies. Subdrainage pipes should outlet to an acceptable location.

Restrained Undrained Retaining Walls

Restrained retaining walls may be designed to resist a triangular pressure distribution of at-rest earth pressure and hydrostatic pressure as indicated in the diagram below. The at-rest soils pressure for design purposes would be 41 pounds per cubic foot. Additional earth pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures.

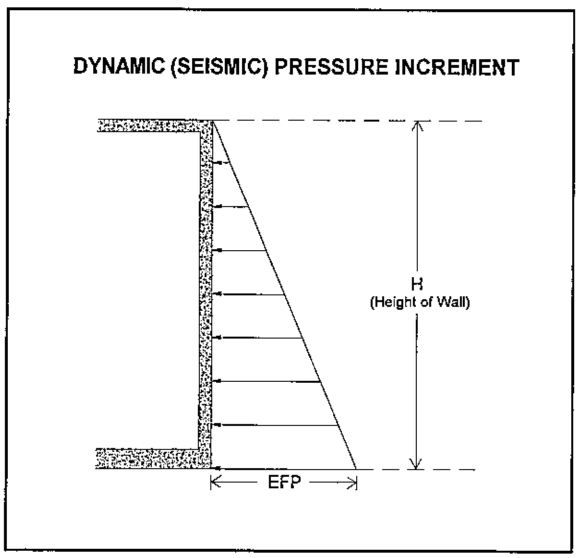


In addition to the recommended earth pressure, the upper ten feet of the retaining wall adjacent to streets, driveways or parking areas should be designed to resist a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot surcharge behind the walls due to normal street traffic. If the traffic is kept back at least ten feet from the retaining walls, the traffic surcharge may be neglected.

The lateral earth pressures recommended above for undrained retaining walls assume that permanent drainage system will not be provided. Where necessary, the retaining walls should be designed to accommodate any surcharge pressures that may be imposed by existing buildings on the adjacent property.

Dynamic (Seismic) Lateral Forces

The maximum dynamic active pressure is equal to the sum of the initial static pressure and the dynamic (seismic) pressure increment. Under the most recent building code, as interpreted by most building departments, seismic earth pressure is required in the design of restraining walls which support over 12 feet of earth. The pressure may be designed utilizing a triangular distribution as indicated below. The recommended dynamic active pressure is 21.1ounds per cubic foot.



Based on "Dynamic Earth Pressures on Deep Building Basements" by Lew and Sitar, et. al. Published in 2010 Structural Engineers of California Convention Proceedings, use of the indicated seismic earth pressure and the active pressure for calculation of the lateral earth pressure with a load factor of 1.6. However, a reduced load factor would be appropriate when considering the transitory nature of the seismic component and the low likelihood that the maximum loads occurring simultaneously. Based on these considerations, a load factor of 1.0 is proposed to be applied to the seismic increment component of the earth pressure while the 1.6 load factor is applied to the at-rest pressure component.

Surcharge from Adjacent Structures

As indicated herein, additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures for retaining walls and shoring design.

The following surcharge equation provided in the LADBS Information Bulletin Document No. P/BC 2008-83, may be utilized to determine the surcharge loads on basement walls and shoring system for existing structures located within the 1:1 (h:v) surcharge influence zone of the excavation and basement.

Resultant lateral force: $R = (0.3*P*h^2)/(x^2+h^2)$

Location of lateral resultant: $d = x*[(x^2/h^2+1)*\tan^{-1}(h/x)-(x/h)]$

where:

R	=	resultant lateral force measured in pounds per foot of wall width.
P	=	resultant surcharge loads of continuous or isolated footings measured in pounds per foot of length parallel to the wall.
x	=	distance of resultant load from back face of wall measured in feet.
h	=	depth below point of application of surcharge loading to top of wall footing measured in feet.

d	=	depth of lateral resultant below point of application of surcharge loading measure in feet.
$\tan^{-1}(h/x)$	=	the angle in radians whose tangent is equal to h/x.

The structural engineer and shoring engineer may use this equation to determine the surcharge loads based on the loading of the adjacent structures located within the surcharge influence zone.

Waterproofing

Moisture effecting retaining walls is one of the most common post construction complaints. Poorly applied or omitted waterproofing can lead to efflorescense or standing water inside the building. Efflorescence is a process in which a powdery substance is produced on the surface of the concrete by the evaporation of water. The white powder usually consists of soluble salts such as gypsum, calcite, or common salt. Efflorescence is common to retaining walls and does not effect their strength or integrity.

It is recommended that retaining walls be waterproofed. Waterproofing design and inspection of its installation is not the responsibility of the geotechnical engineer. A qualified waterproofing consultant should be retained in order to recommend a product or method which would provide protection to below grade walls.

Retaining Wall Backfill

Any required backfill should be mechanically compacted in layers not more than 8 inches thick, to at least 90 or 95 percent of the maximum density obtainable by the ASTM Designation D 1557-07 method of compaction. Flooding should not be permitted. Proper compaction of the backfill will be necessary to reduce settlement of overlying walks and paving. Some settlement of required backfill should be anticipated, and any utilities supported therein should be designed to accept differential settlement, particularly at the points of entry to the structure.

TEMPORARY EXCAVATIONS

Excavations on the order of 10 to 25 feet in vertical height will be required for the subterranean levels considering the proposed foundation and the recommended recompaction. The excavations are expected to expose fill and dense native soils, which are suitable for vertical excavations up to 5 feet where not surcharged by adjacent traffic or structures. Excavations which will be surcharged by adjacent traffic or structures should be shored.

Where sufficient space is available, temporary unsurcharged embankments could be cut at a uniform 1:1 slope gradient. A uniform sloped excavation does not have a vertical component.

Where sloped embankments are utilized, the tops of the slopes should be barricaded to prevent vehicles and storage loads near the top of slope within a horizontal distance equal to the depth of the excavation. If the temporary construction embankments are to be maintained during the rainy season, berms are strongly recommended along the tops of the slopes to prevent runoff water from entering the excavation and eroding the slope faces. Water should not be allowed to pond on top of the excavation nor to flow towards it.

Temporary Dewatering

Currently it is proposed that the structure will extend to a maximum depth of 20 feet below existing site grades. Continuous groundwater could be encountered locally in the deeper portions of the excavation.

Temporary dewatering should be installed as necessary. Temporary dewatering should consist of gravel-filled drainage trenches leading to a sump area. The collected water should be pumped to an acceptable disposal area.

Where the exposed subgrade is wet pumping may be encountered. Under these conditions please refer to the "Wet Soils" section of this report.

Excavation Observations

It is critical that the soils exposed in the cut slopes are observed by a representative of this office during excavation so that modifications of the slopes can be made if variations in the earth material conditions occur. Many building officials require that temporary excavations should be made during the continuous observations of the geotechnical engineer. All excavations should be stabilized within 30 days of initial excavation.

SHORING DESIGN

The following information on the design and installation of the shoring is as complete as possible at this time. It is suggested that this office review the final shoring plans and specifications prior to bidding or negotiating with a shoring contractor.

One method of shoring would consist of steel soldier piles, placed in drilled holes and backfilled with concrete. The soldier piles may be designed as cantilevers or laterally braced utilizing drilled tied-back anchors or raker braces.

Soldier Piles

Drilled cast-in-place soldier piles should be placed no closer than 2 diameters on center. The minimum diameter of the piles is 18 inches. Structural concrete should be used for the soldier piles below the excavation; lean-mix concrete may be employed above that level. As an alternative, lean-mix concrete may be used throughout the pile where the reinforcing consists of a wideflange section. The slurry must be of sufficient strength to impart the lateral bearing pressure developed by the wideflange section to the earth materials. For design purposes, an allowable passive value for the earth materials below the bottom plane of excavation, may be assumed to be 600 pounds per square foot per foot. To develop the full lateral value, provisions should be implemented to assure firm contact between the soldier piles and the undisturbed earth materials.

Groundwater was encountered during exploration at a depth of 23 feet below grade. Proposed piles may be in excess of 23 feet in depth and will, therefore, encounter water. Piles placed below the water level require the use of a tremie to place the concrete into the bottom of the hole. A tremie shall consist of a water-tight tube having a diameter of not less than 10 inches with a hopper at the top. The tube shall be equipped with a device that will close the discharge end and prevent water from entering the tube while it is being charged with concrete. The tremie shall be supported so as to permit free movement of the discharge end over the entire top surface of the work and to permit rapid lowering when necessary to retard or stop the flow of concrete. The discharge end shall be closed at the start of the work to prevent water entering the tube and shall be entirely sealed at all times, except when the concrete is being placed. The tremie tube shall be kept full of concrete. The flow shall be continuous until the work is completed and the resulting concrete seal shall be monolithic and homogeneous. The tip of the tremie tube shall always be kept about five feet below the surface of the concrete and definite steps and safeguards should be taken to insure that the tip of the tremie tube is never raised above the surface of the concrete.

A special concrete mix should be used for concrete to be placed below water. The design shall provide for concrete with a strength p.s.i. of 1,000 over the initial job specification. An admixture that reduces the problem of segregation of paste/aggregates and dilution of paste shall be included. The slump shall be commensurate to any research report for the admixture, provided that it shall also be the minimum for a reasonable consistency for placing when water is present.

Casing may be required should caving be experienced in the saturated earth materials. If casing is used, extreme care should be employed so that the pile is not pulled apart as the casing is withdrawn. At no time should the distance between the surface of the concrete and the bottom of the casing be less than 5 feet.

The frictional resistance between the soldier piles and retained earth material may be used to resist the vertical component of the anchor load. The coefficient of friction may be taken as 0.2 based on uniform contact between the steel beam and lean-mix concrete and retained earth. The portion of soldier piles below the plane of excavation may also be employed to resist the downward loads. The downward capacity may be determined using a frictional resistance of 400 pounds per square foot. The minimum depth of embedment for shoring piles is 5 feet below the bottom of the footing excavation or 7 feet below the bottom of excavated plane whichever is deeper.

Lagging

It is possible that lagging between soldier piles could be omitted within more cohesive earth materials where the clear spacing between soldier piles does not exceed four feet. In less cohesive earth materials, such as sands and gravels, lagging would be necessary. It is recommended that a representative of this firm observe the exposed earth materials to verify their nature and establish areas where lagging could be omitted, if any. At this time, it is expected that most of the excavation will require continuous lagging.

Soldier piles and anchors should be designed for the full anticipated pressures. Due to arching in the earth materials, the pressure on the lagging will be less. It is recommended that the lagging be designed for the full design pressure but be limited to a maximum of 400 pounds per square foot.

Lateral Pressures

Cantilevered shoring supporting a level backslope may be designed utilizing a triangular distribution of pressure as indicated in the following table:

HEIGHT OF SHORING "H" (feet)	EQUIVALENT FLUID PRESSURE (pounds per cubic foot)
Up to 25	58.5

A trapezoidal distribution of lateral earth pressure would be appropriate where shoring is to be restrained at the top by bracing or tie backs, with the trapezoidal distribution as shown in the diagram in the 'Restrained Retaining Walls' section of this report. Restrained shoring supporting a level backslope may be designed utilizing a trapezoidal distribution of pressure as indicated in the following table:

HEIGHT OF SHORING "H" (feet)	DESIGN SHORING FOR (Where H is the height of the wall)
Up to 25	36.6H

Where a combination of sloped embankment and shoring is utilized, the pressure will be greater and must be determined for each combination. Additional active pressure should be applied where the shoring will be surcharged by adjacent traffic or structures. Where a combination of sloped embankment and shoring is utilized, the pressure will be greater and must be determined for each combination.

Deflection

It is difficult to accurately predict the amount of deflection of a shored embankment. It should be realized that some deflection will occur. It is estimated that the deflection could be on the order of one inch at the top of the shored embankment. If greater deflection occurs during construction, additional bracing may be necessary to minimize settlement of adjacent buildings and utilities in adjacent street and alleys. If desired to reduce the deflection, a greater active pressure could be used in the shoring design. Where internal bracing is used, the rakers should be tightly wedged to minimize deflection. The proper installation of the raker braces and the wedging will be critical to the performance of the shoring.

Monitoring

Because of the depth of the excavation, some mean of monitoring the performance of the shoring system is suggested. The monitoring should consist of periodic surveying of the lateral and vertical locations of the tops of all soldier piles and the lateral movement along the entire lengths of selected soldier piles. Also, some means of periodically checking the load on selected anchors will be necessary, where applicable.

Some movement of the shored embankments should be anticipated as a result of the relatively deep excavation. It is recommended that photographs of the existing buildings on the adjacent properties be made during construction to record any movements for use in the event of a dispute.

Shoring Observations

It is critical that the installation of shoring is observed by a representative of this office. Many building officials require that shoring installation should be performed under continuous observation of a representative of the geotechnical engineer. The observations insure that the recommendations of the geotechnical report are implemented and so that modifications of the recommendations can be made if variations in the earth material or groundwater conditions warrant. The observations will allow for a report to be prepared on the installation of shoring for the use of the local building official, where necessary.

SLABS ON GRADE

Concrete Slabs-on Grade

Concrete floor slabs should be a minimum of 5 inches in thickness. Slabs-on-grade should be cast over undisturbed natural earth materials or properly controlled fill materials. Any earth materials loosened or over-excavated should be wasted from the site or properly compacted to 90 or 95 percent of the maximum dry density.

Outdoor concrete flatwork should be a minimum of 4 inches in thickness. Outdoor concrete flatwork should be cast over undisturbed natural earth materials or properly controlled fill materials. Any earth materials loosened or over-excavated should be wasted from the site or properly compacted to 90 or 95 percent of the maximum dry density.

Design Of Slabs That Receive Moisture-Sensitive Floor Coverings

Geotechnologies, Inc. does not practice in the field of moisture vapor transmission evaluation and mitigation. Therefore it is recommended that a qualified consultant be engaged to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. The qualified consultant should provide recommendations for mitigation of potential adverse impacts of moisture vapor transmission on various components of the structure.

Where dampness would be objectionable, it is recommended that the floor slabs should be waterproofed. A qualified waterproofing consultant should be retained in order to recommend a product or method which would provide protection for concrete slabs-on-grade.

All concrete slabs-on-grade should be supported on vapor retarder. The design of the slab and the installation of the vapor retarder should comply with ASTM E 1643-98 and ASTM E 1745-97 (Reapproved 2004). Where a vapor retarder is used, a low-slump concrete should be used to minimize possible curling of the slabs. The barrier can be covered with a layer of trimmable, compactible, granular fill, where it is thought to be beneficial. See ACI 302.2R-32, Chapter 7 for information on the placement of vapor retarders and the use of a fill layer.

Concrete Crack Control

The recommendations presented in this report are intended to reduce the potential for cracking of concrete slabs-on-grade due to settlement. However even where these recommendations have been implemented, foundations, stucco walls and concrete slabs-on-grade may display some cracking due to minor soil movement and/or concrete shrinkage. The occurrence of concrete cracking may be reduced and/or controlled by limiting the slump of the concrete used, proper concrete placement and curing, and by placement of crack control joints at reasonable intervals, in particular, where re-entrant slab corners occur.

For standard crack control maximum expansion joint spacing of 8 feet should not be exceeded. Lesser spacings would provide greater crack control. Joints at curves and angle points are recommended. The crack control joints should be installed as soon as practical following concrete placement. Crack control joints should extend a minimum depth of one-fourth the slab thickness. Construction joints should be designed by a structural engineer.

Complete removal of the existing fill soils beneath outdoor flatwork such as walkways or patio areas, is not required, however, due to the rigid nature of concrete, some cracking, a shorter design life and increased maintenance costs should be anticipated. In order to provide uniform support beneath the flatwork it is recommended that a minimum of 12 inches of the exposed subgrade beneath the flatwork be scarified and recompacted to 90 percent relative compaction.

Slab Reinforcing

Concrete slabs-on-grade should be reinforced with a minimum of #4 steel bars on 16-inch centers each way.

Outdoor flatwork should be reinforced with a minimum of #3 steel bars on 18-inch centers each way.

PAVEMENTS

Prior to placing paving, the existing grade should be scarified to a depth of 12 inches, moistened as required to obtain optimum moisture content, and recompacted to 90 percent of the maximum density as determined by ASTM D 1557-02. The client should be aware that removal of all existing fill in the area of new paving is not required, however, pavement constructed in this manner will most likely have a shorter design life and increased maintenance costs. An assumed r-value of 13 has been used for this analysis. The following pavement sections are recommended:

Service	Asphalt Pavement Thickness Inches	Base Course Inches
Passenger Cars (TI=4)	3	6
Moderate Truck (TI=6)	4	9

Aggregate base should be compacted to a minimum of 95 percent of the ASTM D 1557-02 laboratory maximum dry density. Base materials should conform with Sections 200-2.2 or 200-2.4 of the "Standard Specifications for Public Works Construction", (Green Book), 1991 Edition.

The performance of pavement is highly dependant upon providing positive surface drainage away from the edges. Ponding of water on or adjacent to pavement can result in saturation of the subgrade materials and subsequent pavement distress. If planter islands are planned, the perimeter curb should extend a minimum of 12 inches below the bottom of the aggregate base.

SITE DRAINAGE

Proper surface drainage is critical to the future performance of the project. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. Proper site drainage should be maintained at all times.

All site drainage should be collected and transferred to the street in non-erosive drainage devices. The proposed structure should be provided with roof drainage. Discharge from downspouts, roof drains and scuppers should not be permitted on unprotected soils within five feet of the building perimeter. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. Drainage should not be allowed to flow uncontrolled over any descending slope. Planters which are located within retaining wall backfill should be sealed to prevent moisture intrusion into the backfill.

STORMWATER DISPOSAL

Recently regulatory agencies have been requiring the disposal of a certain amount of stormwater generated on a site by infiltration into the site soils. This requirement is not prudent engineering practice. Increasing the moisture content of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. This means that any overlying structure, including buildings, pavements and concrete flatwork, could sustain damage due to saturation of the subgrade soils. Structures serviced by subterranean levels could be adversely impacted by stormwater disposal by increasing the design fluid pressures on retaining walls and causing leaks in the walls. Proper site drainage is critical to the performance of any structure in the built environment.

This site would not be considered a candidate for stormwater infiltration. It is the understanding of this firm that infiltration must be effected a minimum of 10 feet above the historic high groundwater level. As indicated elsewhere in this report the historic high is at the ground surface.

Where percolation of stormwater into the subgrade soils is not advisable, some Building Officials have allowed the stormwater to be filtered through soils in planter areas. Once the water has been filtered through a planter it may be released into the storm drain system. It is recommended that overflow pipes are incorporated into the design of the discharge system in the planters to prevent flooding. In addition, the planters shall be sealed and waterproofed to prevent leakage. Please be advised that adverse impact to landscaping and periodic maintenance may result due to excessive water and contaminates discharged into the planters.

It is recommended that the design team (including the structural engineer, waterproofing consultant, plumbing engineer, and landscape architect) be consulted in regards to the design and construction of filtration systems.

Please be advised that stormwater infiltration and treatment is a relatively new requirement by the various regulatory agencies and has been subject to change without notice.

DESIGN REVIEW

Engineering of the proposed project should not begin until approval of the geotechnical report by the Building Official is obtained in writing. Significant changes in the geotechnical recommendations may result during the building department review process.

It is recommended that the geotechnical aspects of the project be reviewed by this firm during the design process. This review provides assistance to the design team by providing specific recommendations for particular cases, as well as review of the proposed construction to evaluate whether the intent of the recommendations presented herein are satisfied.

CONSTRUCTION MONITORING

Geotechncial observations and testing during construction are considered to be a continuation of the geotechnical investigation. It is critical that this firm review the geotechnical aspects of the project during the construction process. Compliance with the design concepts, specifications or recommendations during construction requires review by this firm during the course of construction.

All foundations should be observed by a representative of this firm prior to placing concrete or steel. Any fill which is placed should be observed, tested, and verified if used for engineered purposes. Please advise this office at least twenty-four hours prior to any required site visit.

If conditions encountered during construction appear to differ from those disclosed herein, notify this office immediately so the need for modifications may be considered in a timely manner.

It is the responsibility of the contractor to ensure that all excavations and trenches are properly sloped or shored. All temporary excavations should be cut and maintained in accordance with applicable OSHA rules and regulations.

EXCAVATION CHARACTERISTICS

The exploration performed for this investigation is limited to the geotechnical excavations described. Direct exploration of the entire site would not be economically feasible. The owner, design team and contractor must understand that differing excavation and drilling conditions may be encountered based on boulders, gravel, oversize materials, groundwater and many other conditions. Fill materials, especially when they were placed without benefit of modern grading codes, regularly contain materials which could impede efficient grading and drilling. Southern California sedimentary bedrock is known to contain variable layers which reflect differences in depositional environment. Such layers may include abundant gravel, cobbles and boulders. Similarly bedrock can contain concretions. Concretions are typically lenticular and follow the bedding. They are formed by mineral deposits. Concretions can be very hard. Excavation and drilling in these areas may require full size equipment and coring capability. The contractor should be familiar with the site and the geologic materials in the vicinity.

CLOSURE AND LIMITATIONS

The purpose of this report is to aid in the design and completion of the described project. Implementation of the advice presented in this report is intended to reduce certain risks associated with construction projects. The professional opinions and geotechnical advice contained in this report are sought because of special skill in engineering and geology and were prepared in accordance with generally accepted geotechnical engineering practice. Geotechnologies, Inc. has a duty to exercise the ordinary skill and competence of members of the engineering profession. Those who hire Geotechnologies, Inc. are not justified in expecting infallibility, but can expect reasonable professional care and competence.

The scope of the geotechnical services provided did not include any environmental site assessment for the presence or absence of organic substances, hazardous/toxic materials in the soil, surface water, groundwater, or atmosphere, or the presence of wetlands.

Proper compaction is necessary to reduce settlement of overlying improvements. Some settlement of compacted fill should be anticipated. Any utilities supported therein should be designed to accept differential settlement. Differential settlement should also be considered at the points of entry to the structure.

The City of Los Angeles does not require corrosion testing. However, if corrosion sensitive improvements are planned, it is recommended that a comprehensive corrosion study should be commissioned. The study will develop recommendations to avoid premature corrosion of buried pipes and concrete structures in direct contact with the soils.

GEOTECHNICAL TESTING

Classification and Sampling

The soil is continuously logged by a representative of this firm and classified by visual examination in accordance with the Unified Soil Classification system. The field classification is verified in the laboratory, also in accordance with the Unified Soil Classification System. Laboratory classification may include visual examination, Atterberg Limit Tests and grain size distribution. The final classification is shown on the excavation logs.

Samples of the geologic materials encountered in the exploratory excavations were collected and transported to the laboratory. Undisturbed samples of soil are obtained at frequent intervals. Unless noted on the excavation logs as an SPT sample, samples acquired while utilizing a hollow-stem auger drill rig are obtained by driving a thin-walled, California Modified Sampler with successive 30-inch drops of a 140-pound hammer. Samples from bucket-auger drilling are obtained utilizing a California Modified Sampler with successive 12-inch drops of a kelly bar, whose weight is noted on the excavation logs. The soil is retained in brass rings of 2.50 inches outside diameter and 1.00 inch in height. The central portion of the samples are stored in close fitting, waterproof containers for transportation to the laboratory. Samples noted on the excavation logs as SPT samples are obtained in accordance with ASTM D 1586-08. Samples are retained for 30 days after the date of the geotechnical report.

Grain Size Distribution

These tests cover the quantitative determination of the distribution of particle sizes in soils. Sieve analysis is used to determine the grain size distribution of the soil larger than the Number 200 sieve.

ASTM D 422-63 (Reapproved 2007) is used to determine particle sizes smaller than the Number 200 sieve. A hydrometer is used to determine the distribution of particle sizes by a sedimentation process.

The grain size distributions are plotted on the E-Plates presented in the Appendix of this report.

Moisture and Density Relationships

The field moisture content and dry unit weight are determined for each of the undisturbed soil samples, and the moisture content is determined for SPT samples by ASTM D 4959-07 or ASTM D 4643-08. This information is useful in providing a gross picture of the soil consistency between exploration locations and any local variations. The dry unit weight is determined in pounds per cubic foot and shown on the "Excavation Logs", A-Plates. The field moisture content is determined as a percentage of the dry unit weight.

Direct Shear Testing

Shear tests are performed by ASTM D 3080-04 with a strain controlled, direct shear machine manufactured by Soil Test, Inc. or a Direct Shear Apparatus manufactured by GeoMatic, Inc. The rate of deformation is approximately 0.025 inches per minute. Each sample is sheared under varying confining pressures in order to determine the Mohr-Coulomb shear strength parameters of the cohesion intercept and the angle of internal friction. Samples are generally tested in an artificially saturated condition. Depending upon the sample location and future site conditions, samples may be tested at field moisture content. The results are plotted on the "Shear Test Diagram," B-Plates.

ASTM 3080-04 limits the particle size to 10 percent of the diameter of the direct shear test specimen. The sheared sample is inspected by the laboratory technician running the test. The inspection is performed by splitting the sample along the sheared plane and observing the soils exposed on both sides. Where oversize particles are observed in the shear plane, the results are discarded and the test run again with a fresh sample.

Consolidation Testing

Settlement predictions of the soil's behavior under load are made on the basis of the consolidation tests ASTM D 2435-04. The consolidation apparatus is designed to receive a single one-inch high ring. Loads are applied in several increments in a geometric progression, and the resulting deformations are recorded at selected time intervals. Porous stones are placed in contact with the top and bottom of each specimen to permit addition and release of pore fluid. Samples are generally tested at increased moisture content to determine the effects of water on the bearing soil. The normal pressure at which the water is added is noted on the drawing. Results are plotted on the "Consolidation Test," C-Plates.

Expansion Index Testing

The expansion tests performed on the remolded samples are in accordance with the Expansion Index testing procedures, as described in the ASTM D4829-08. The soil sample is compacted into a metal ring at a saturation degree of 50 percent. The ring sample is then placed in a consolidometer, under a vertical confining pressure of 1 lbf/square inch and inundated with distilled water. The deformation of the specimen is recorded for a period of 24 hour or until the rate of deformation becomes less than 0.0002 inches/hour, whichever occurs first. The expansion index, EI, is determined by dividing the difference between final and initial height of the ring sample by the initial height, and multiplied by 1,000.

Laboratory Compaction Characteristics

The maximum dry unit weight and optimum moisture content of a soil are determined by use of ASTM D 1557-07. A soil at a selected moisture content is placed in five layers into as mold of given dimensions, with each layer compacted by 25 blows of a 10 pound hammer dropped from a distance of 18 inches subjecting the soil to a total compactive effort of about 56,000 pounds per cubic foot. The resulting dry unit weight is determined. The procedure is repeated for a sufficient number of moisture contents to establish a relationship between the dry unit weight and the water content of the soil. The data when plotted, represent a curvilinear relationship know as the compaction curve. The values of optimum moisture content and modified maximum dry unit weight are determined from the compaction curve.

REFERENCES

Applied Technology Council (1978), Tentative Provisions for Development of Seismic Regulations for Buildings: ATC Publication ATC 3-06, NBS Special Publication 510, NSF Publication 78-8.

Blake, T.F. (1996), Spreadsheet Template LIQ2_30.WQ1 - A Computer Program for the Determination of Liquefaction Potential.

Blake, T.F. (1996), EQFAULT - A Computer Program for the Deterministic Prediction of Peak Horizontal Acceleration from Digitized California Faults.

Blake, T.F. (1996), EQSEARCH - A Computer Program for the Estimation of Peak Horizontal Acceleration from Digitized California Faults.

Blake, T.F. (1995), FRISKSP - A Computer Program for the Probabilistic Estimation of Peak Acceleration and Uniform Hazard Spectra Using 3-D Faults as Earthquake Sources.

Boore, D.M., Joyner, W.B., and Fumal, T.E. (1993), Estimation of Response Spectra and Peak Accelerations From Western North American Earthquakes: An interim Report, U.S. Geological Survey Open-File Report 93-509, 15 pp.

Dibblee, T.W. Jr. 1991, Geologic Map of the Hollywood and Burbank (South ½) quadrangles, DMG Map #Df-30, map scale 1: 24,000.

Greensfelder, Roger W. (1974), Maximum Credible Rock Acceleration from Earthquakes in California, California Division of Mines and Geology.

Hauksson, E. (1992), Seismicity, Faults, and Earthquake Potential in Los Angeles, Southern California: Engineering Geology Practice in Southern California, Special Publication No. 4, Association of Engineering Geologists.

Ishihara, K. (1985), Stability of Natural Soil Deposits During Earthquakes, Eleventh International Conference on Soil Mechanics and Foundation Engineering, Volume 1, A.A. Balkema, Rotterdam, The Netherlands, 321-376.

REFERENCES - continued

Jennings, Charles W. (1994), Fault Activity Map of California and Adjacent Areas, California Division of Mines and Geology.

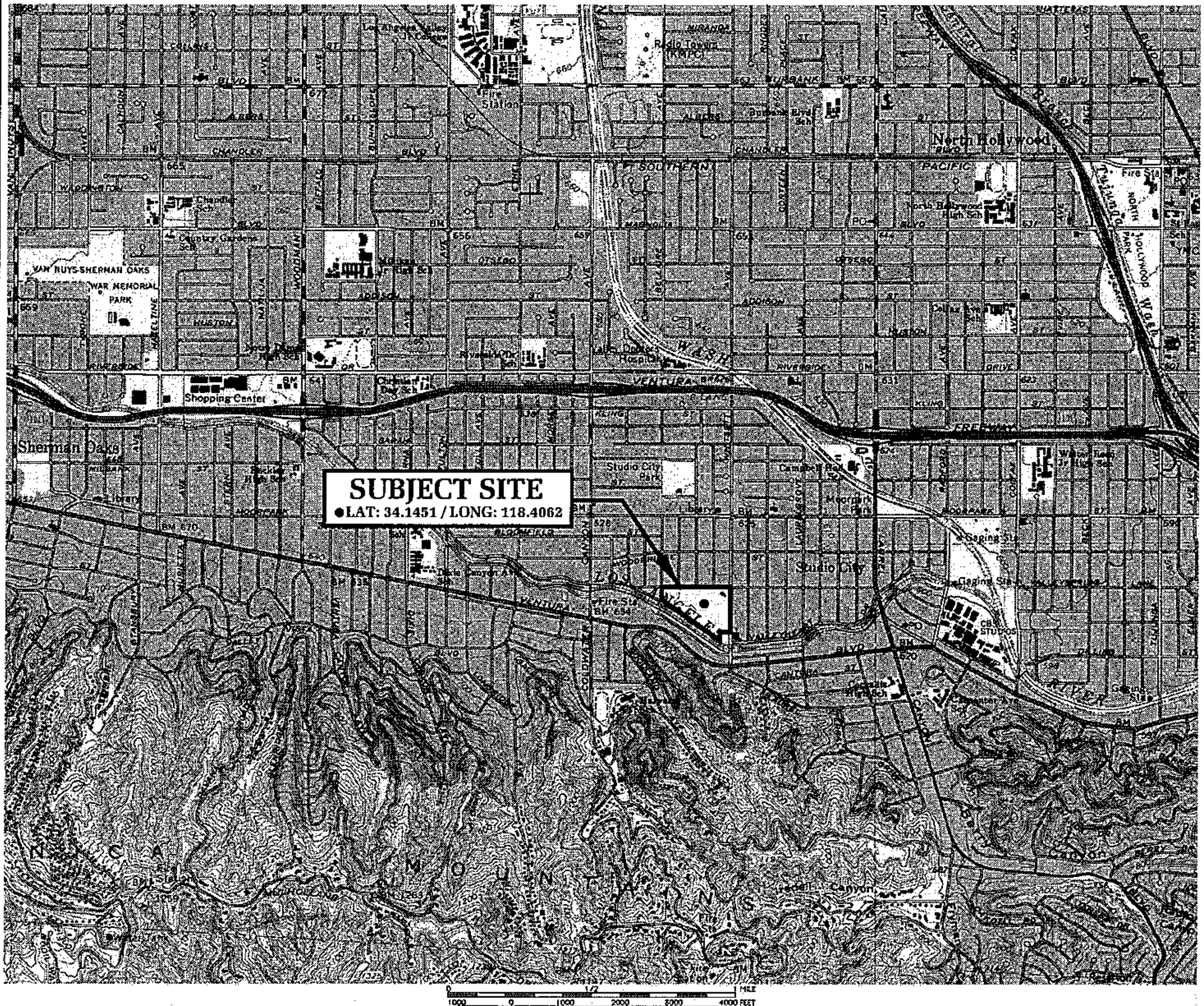
Lamar, D.L., 1970, Geology of the Elysian Park-Repetto Hills Area, Los Angeles County, California, California Division of Mines and Geology Special Report 101, 45 pp, map scale 1:24,000.

Leighton and Associates, Inc. (1990), Technical Appendix to the Safety Element of the Los Angeles County General Plan: Hazard Reduction in Los Angeles County.

O'Rourke, T.D., Pease, J.W. (1997), Mapping Liquefiable Layer Thickness for Seismic Hazard Assessment, Journal of the Geotechnical Engineering Division, American Society of Civil Engineers, vol. 123, no. 1, pp. 46-56.

Seed, H.B. , Idriss, I.M., and Arango, I. (1983), Evaluation of Liquefaction Potential Using Field Performance Data, Journal of the Geotechnical Engineering Division, American Society of Civil Engineers, vol. 109, no. 3, pp. 458-482.

Tokimatsu, K., and Yoshimi, Y. (1983), Empirical Correlation of Soil Liquefaction Based on SPT N-Value and Fines Content, Soils and Foundations, Japanese Society of Soil Mechanics and Foundation Engineering, vol. 23, no. 4, pp. 56-74.



Printed from TOPO! ©1997 Wildflower Productions (www.topo.com)

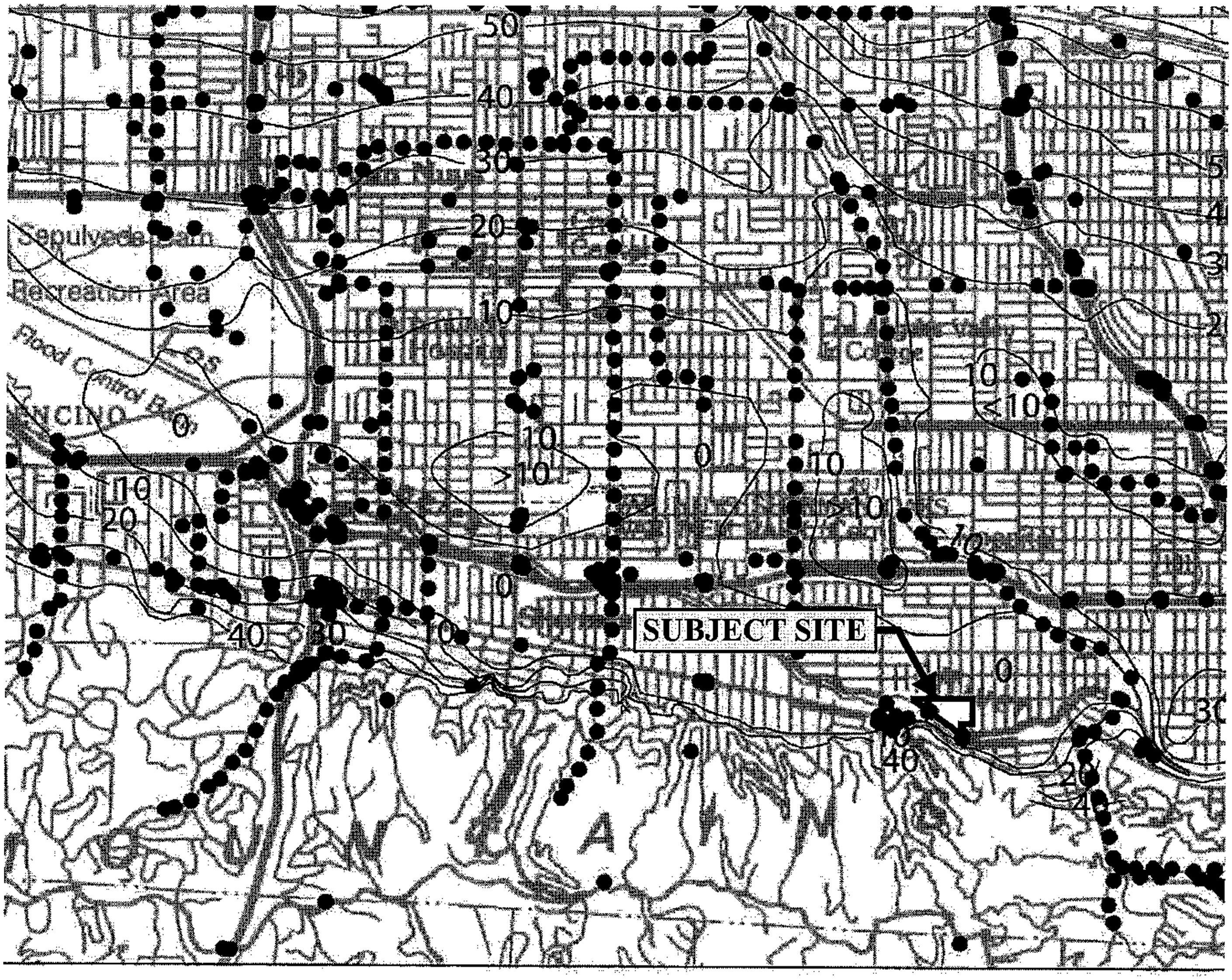
REFERENCE: U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, VUN NUYS, CA QUADRANGLE

VICINITY MAP

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255



VAN NUYS QUADRANGLE

SCALE

20 Depth to groundwater in feet

REFERENCE: **PLATE 1.2, GROUNDWATER MAP, SEISMIC HAZARD EVALUATION REPORT, SHZR08 7.5 MINUTE QUADRANGLES, VUN NUYS, CA QUADRANGLE**

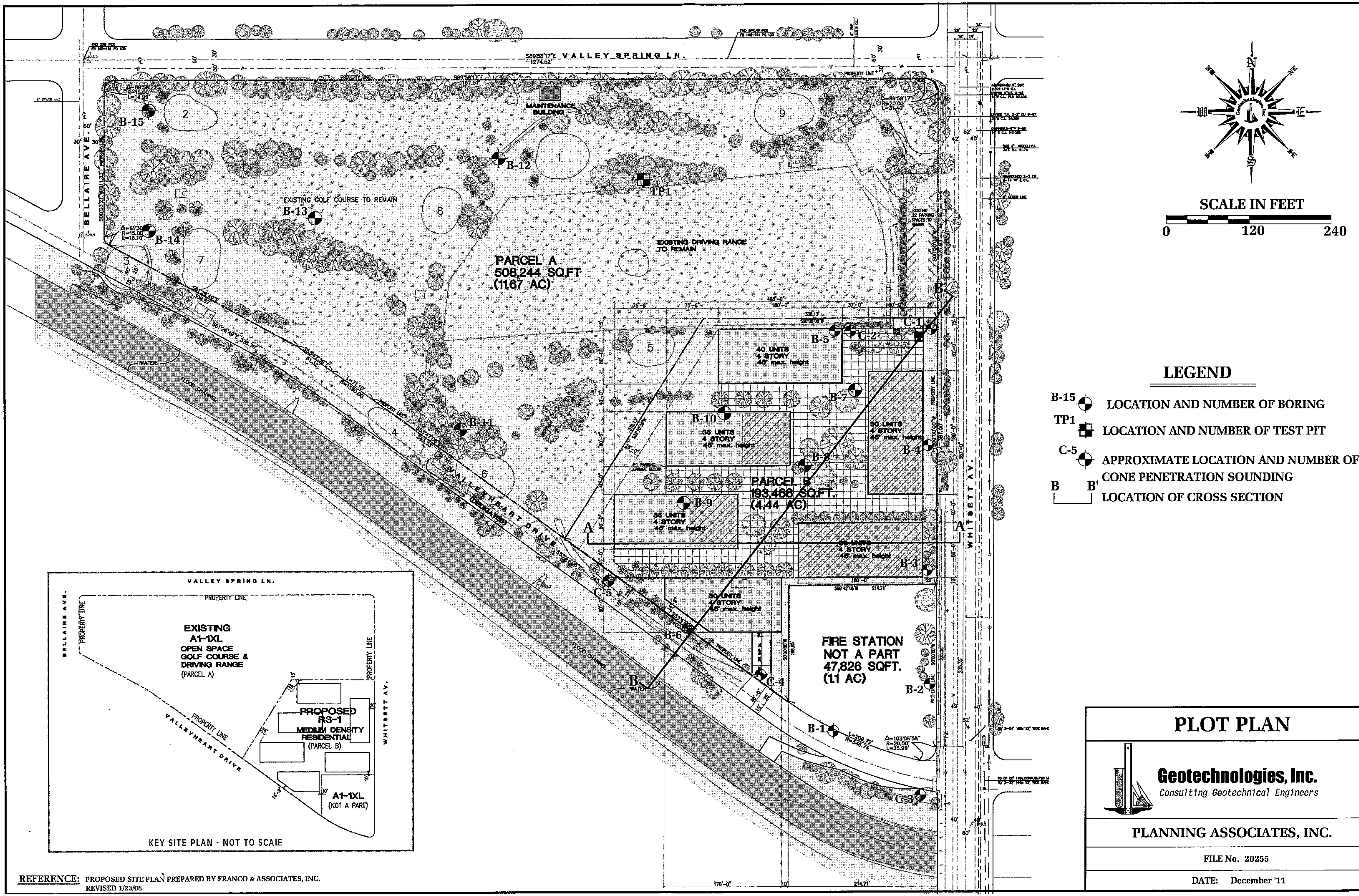
N

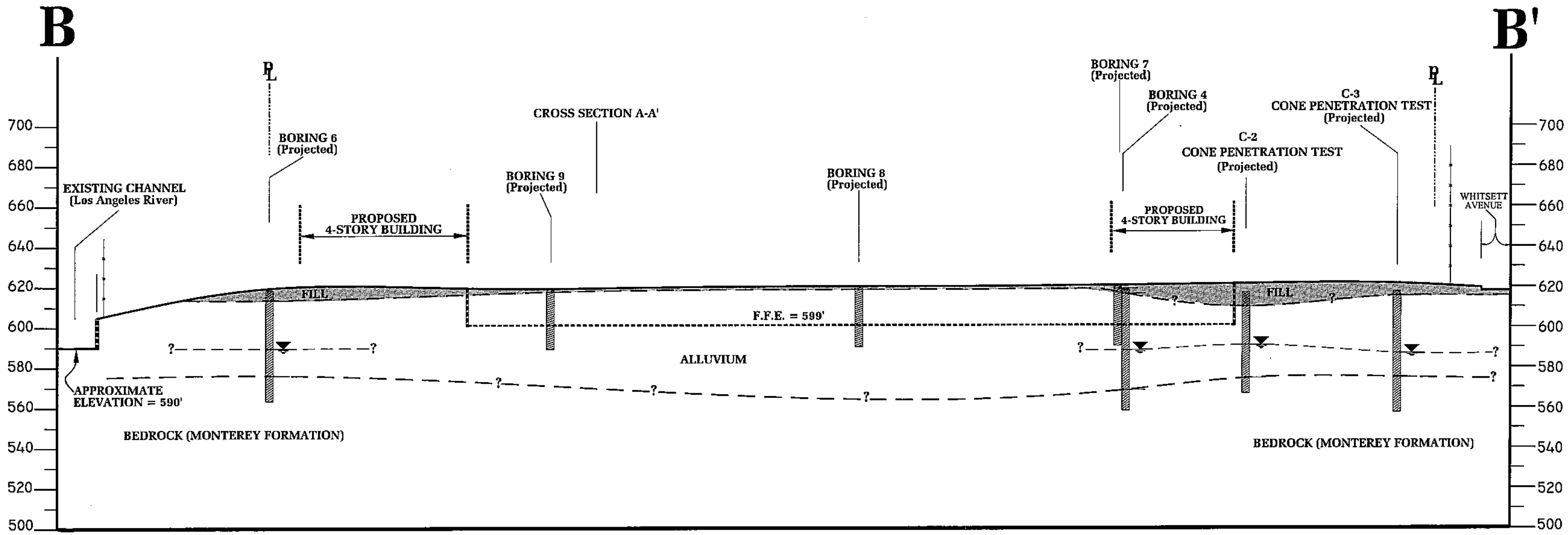
HISTORICALLY HIGHEST GROUNDWATER LEVELS

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE No. 20255

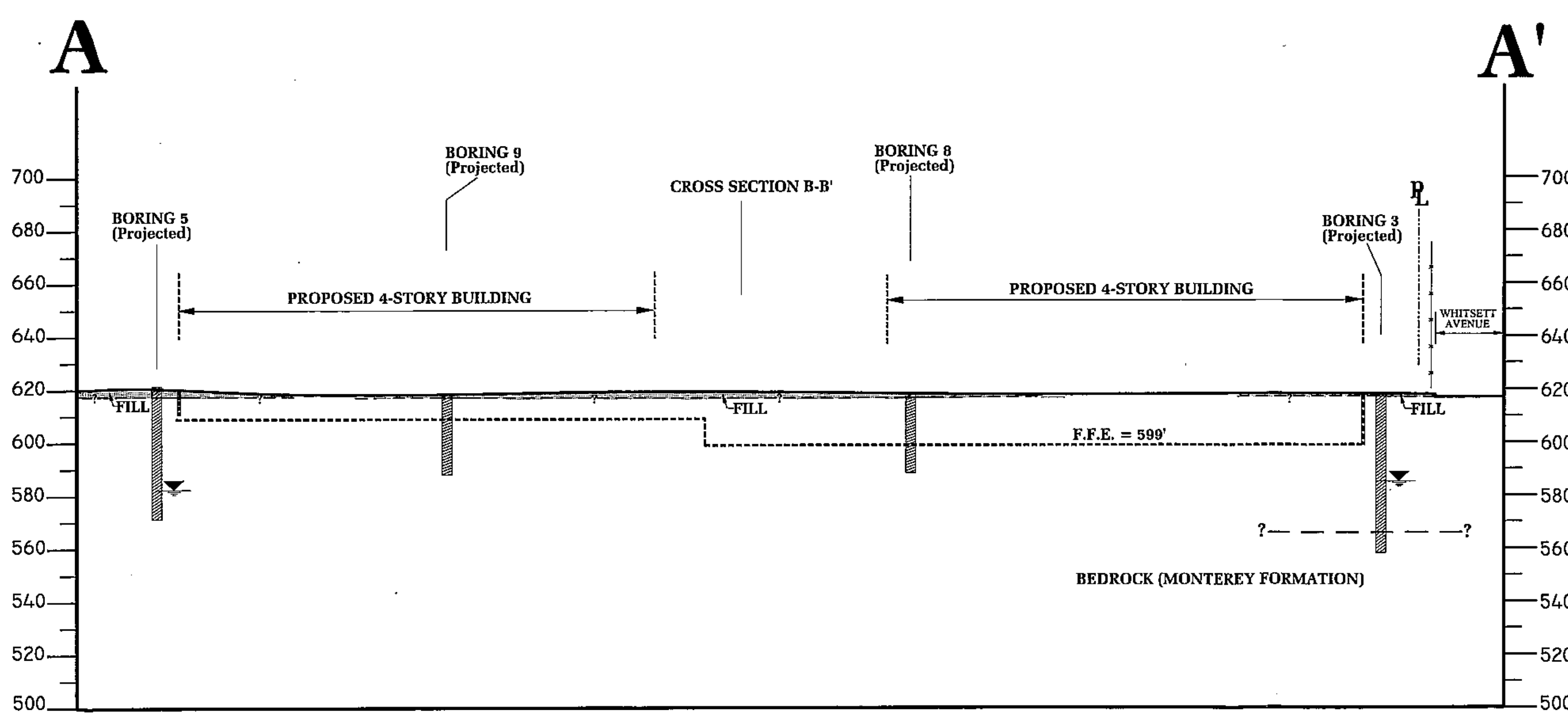

VALLEY SPRING LN.
BELLAIRE AVE.
WHITSETT AV.
VALLEYHEART DRIVE
FLOOD CHANNEL
WATER
MAINTENANCE BUILDING
EXISTING GOLF COURSE TO REMAIN
EXISTING DRIVING RANGE TO REMAIN
PARCEL A
508,244 SQ.FT.
(11.67 AC)
PARCEL B
193,466 SQ.FT.
(4.44 AC)
40 UNITS
4 STORY
45' max. height
35 UNITS
4 STORY
45' max. height
30 UNITS
4 STORY
45' max. height
FIRE STATION
NOT A PART
47,826 SQFT.
(1.1 AC)
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
B-14
B-15
TP1
C-1
C-2
C-3
C-4
C-5
A
B
B'
SCALE IN FEET
0
120
240
LEGEND
B-15 LOCATION AND NUMBER OF BORING
TP1 LOCATION AND NUMBER OF TEST PIT
C-5 APPROXIMATE LOCATION AND NUMBER OF CONE PENETRATION SOUNDING
B B' LOCATION OF CROSS SECTION
VALLEY SPRING LN.
BELLAIRE AVE.
PROPERTY LINE
EXISTING
A1-1XL
OPEN SPACE
GOLF COURSE &
DRIVING RANGE
(PARCEL A)
PROPOSED
R3-1
MEDIUM DENSITY
RESIDENTIAL
(PARCEL B)
A1-1XL
(NOT A PART)
VALLEYHEART DRIVE
WHITSETT AV.
KEY SITE PLAN - NOT TO SCALE
REFERENCE: PROPOSED SITE PLAN PREPARED BY FRANCO & ASSOCIATES, INC.
REVISED 1/23/08
PLOT PLAN
Geotechnologies, Inc.
Consulting Geotechnical Engineers
PLANNING ASSOCIATES, INC.
FILE No. 20255
DATE: December '11



SCALE IN FEET

0 20 40 60 120

NOTE: Not Same Scale as Plot Plan



CROSS SECTIONS A-A' AND B-B'

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE No. 20255

DATE: December '11

BORING LOG NUMBER 1

Drilling Date: 03/31/00 | **Elevation: 617'**

Project: File No.20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: 3-inch Asphalt, No Base
				0 --		FILL: Sandy Silt, light brown, slightly moist, stiff
				-		
1	15	8.9	87.9	1 --		- - - - - - - - - - - - - -
				-		Silty Sand, medium brown, moist, medium dense, fine grained
				2 --		
				-		
3	38	4.0	103.3	3 --		- - - - - - - - - - - - - -
				-		trace medium coarse grained sand
				4 --		
				-		
5	30	5.0	97.5	5 --		
				-		
				6 --		
				-		
7	32	11.5	92.2	7 --		
				-	SM	Silty Sand, brown, slightly moist, medium dense, fine grained, few decayed roots
				8 --		
				-		
				9 --		
				-		
10	32	15.2	81.3	10 --		
				-	ML	Clayey Silt, light brown with mottled dark brown, slightly moist, medium firm, few decayed roots
				11 --		
				-		
				12 --		
				-		
				13 --		
				-		
				14 --		
				-		
15	35	13.0	105.0	15 --		- - - - - - - - - - - - - -
				-		firm, dark brown
				16 --		
				-		
				17 --		
				-		
				18 --		
				-		
				19 --		
				-		
20	49	18.7	108.3	20 --		- - - - - - - - - - - - - -
				-		caliche, grades more clayey
				21 --		
				-		
				22 --		
				-		
				23 --		
				-		
				24 --		
				-	CL	Silty Clay, gray-brown, moist, firm
25	40	26.2	94.2	25 --		
				-		

BORING LOG NUMBER 1

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				-		
				26 --		
				-		Water
				27 --		
				-		
				28 --		
				-		
				29 --		
				-		
30	17	23.3	102.3	30 --		
				-		very moist to wet
				31 --		
				-		
				32 --		
				-		
				33 --		
				-		
				34 --		
				-		
35	22	22.8	104.7	35 --		
				-	SC	Clayey Sand, brown, wet, medium dense, fine grained
				36 --		
				-		
				37 --		
37.5	41	10.7	Disturbed	-		Sandy lenses, occasional small gravel
				38 --		
				-		
				39 --		
				-		
40	21	22.7	SPT	40 --		
				-		light brown to reddish-brown, interbedded clayey silt lenses
				41 --		
				-		
				42 --		
42.5	24 50/5"	47.4	72.8	-		
				43 --		BEDROCK: Shale bedded, light brown to black, very moist, hard, slightly weathered
				-		
				44 --		
				-		
45	50 50/3"	18.5	93.1	45 --		
				-		very hard
				46 --		NOTE: The stratification lines represent the approximate boundary between earth types; the transition may be gradual
				-		
				47 --		
				-		Used 8-inch diameter Hollow-Stem Auger
				48 --		140-lb. Slide Hammer, 30-inch drop
				-		Modified California Sampler used unless otherwise noted
				49 --		
				-		SPT=Standard Penetration Test
50	44 50/2"	50.9	71.4	50 --		
				-		Total depth: 50 feet; Water at 26 feet; Fill to 7 feet

BORING LOG NUMBER 2

Drilling Date: 03/30/00 **Elevation: 617.5'**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Grass Lawn
				0 --		FILL: Silty Sand, medium brown, slightly moist to moist, dense, fine grained
				-		
				1 --		
				-		
2	22	19.2	79.4	2 --		
				-	ML	Sandy Silt, medium brown, moist, medium firm, slightly porous, caliche
				3 --		
				-		
4	31	17.9	100.2	4 --		
				-	ML	Clayey Silt, dark brown, slightly moist, medium firm, porous, caliche
				5 --		
				-		
				6 --		
				-		
7	40	17.7	96.9	7 --		
				-		firm
				8 --		
				-		
				9 --		
				-		
10	65	15.9	89.4	10 --	SM	Silty Sand, light gray, slightly moist, medium dense, fine grained
				-		
				11 --	SC	Clayey Sand, medium brown, moist, dense, fine grained
				-		
12	67	20.1	99.9	12 --		
				-		medium to dark brown, porous
				13 --		
				-		
				14 --		
				-		
15	64	27.6	91.5	15 --		
				-	ML	Clayey Silt, medium brown, moist, firm, slightly porous, caliche
				16 --		
				-		
				17 --		
				-		
				18 --		
				-		
				19 --		
				-		
20	46	17.4	101.2	20 --		
				-	SM	Silty Sand, orange-brown and medium brown, medium dense, fine grained, slightly porous
				21 --		
				-		
				22 --		
				-		
				23 --		
				-		
				24 --		
				-		
25	38	29.0	93.6	25 --		Clayey Silt, mottled medium brown and gray, moist to very moist, medium firm, fine grained
				-	ML	

BORING LOG NUMBER 2

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	26	23.7	102.5	30		medium brown, wet to saturated
				31		
				32		
				33		
				34		
35	66	16.6	116.6	35	SC	Clayey Sand, medium brown, very moist, dense, fine to medium grained
				36		
				37		
				38		
				39		
40	45	23.4	105.3	40		tan to brown, saturated, medium dense
				41		
				42		
42.5	60/6"	No Recovery				
				43		BEDROCK: Shale, black, moist, hard, weakly bedded, slightly weathered
				44		
				45		
				46		
				47		
47.5	12 50/3"	38.6	79.6			
				48		
				49		
				50		

BORING LOG NUMBER 2

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
52.5	150/6"	44.8	69.5			- - - - - - - - - - - - -
				53		gray to black
				54		
				55		
				56		
				57		
57.5	30/6" 200/5"	43.7	73.1			- - - - - - - - - - - - -
				58		less weathered
				59		
				60		
				61		Total depth: 60 feet Water at 30½ feet Fill to 2 feet
				62		
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 3

Drilling Date: 03/30/00 | **Elevation: 617.5'**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Grass Lawn
				0		FILL: Silty Sand, medium brown, slightly moist, dense, fine grained
1	18	16.0	94.9	1		
					SM	Silty Sand, dark brown, moist, medium dense, fine grained
				2		
3	19	12.4	82.9	3		
					ML	Sandy Silt, brown, slightly moist, firm, slightly porous
				4		
5	45	15.5	85.1	5		
						slight clay binder, slightly sandier
				6		
7	55	19.6	91.1	7		
						brown and light gray, moist, some rootlets, slightly porous
				8		
				9		
10	55	14.6	87.8	10	SM	Silty Sand, tan, slightly moist, dense, fine grained
				11	ML	Sandy Silt, mottled tan and light gray, slightly moist, firm, few decayed roots
				12		
				13		
				14		
15	40	22.5	93.0	15		
					SC	Clayey Sand, brown, moist, medium dense, fine grained, caliche
				16		
				17		
18	40	22.1	90.7	18		mottled brown and light gray, porous, few decayed roots
				19		
20	36	16.5	96.3	20		
					SM	Clay binder, medium brown, tract rootlets, Silty Sand, brown, slightly moist, medium dense, fine grained, few decayed roots
				21		
				22		
				23		
				24		
25	36	26.7	93.4	25		
					ML	Clayey Silt, brown, moist, medium firm

BORING LOG NUMBER 3

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	26	33.9	91.6	30		very moist to wet
				31		
				32		
				33		water
				34		
35	36	15.8	119.4	35	SC	Clayey Sand, dark brown, very moist to wet, medium dense, fine to coarse grained, some gravel
				36		
				37		
				38		
				39		
40	42	25.9	Disturbed	40		
				41		
				42		
42.5	46	33.9	89.2	43	ML	Clayey Silt, medium to dark brown, very moist, medium firm
				44		
				45		
				46		
				47		
47.5	58	33.6	86.8	48	ML	Sandy to Clayey Silt, gray and orange-brown, saturated, firm, fine grained
				49		
				50		

BORING LOG NUMBER 3

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
52.5	1508	35.4	87.0			
				53		BEDROCK: (MONTEREY FORMATION): Shale, black, moist, hard, Weakley bedded, bedding is sub horizontal
				54		
				55		
				56		
				57		
57.5	1503	16.7	110.0			
				58		interbeds of greenish-gray mudstone, moist, hard, massive
				59		
				60		
				61		Total depth: 60 feet Water at 33 feet Fill to 1 foot
				62		
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 4

Drilling Date: 03/31/00 | **Elevation: 618.5'**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: 3-inch Asphalt, No Base
				0		FILL: Silty Sand, black, slightly moist to moist, dense, fine grained
				1		
2	20	19.5	104.8	2		
					ML	Clayey Silt, dark brown, moist, medium firm
				3		
				4		
5	25	16.3	97.0	5		
					ML	Sandy Silt, light brown, moist, medium firm
				6		
7	33	17.0	98.8	7		
						caliche
				8		
				9		
10	27	14.2	98.2	10		
						grades less sandy
				11		
				12		
				13		
				14		
15	18	23.4	100.7	15		
					ML	Clayey Silt, dark brown, very moist, firm
				16		
				17		
				18		
				19		
20	18	29.1	92.6	20		
						grades more clayey
				21		
				22		
				23		
				24		
25	18	29.9	93.7	25		
						very moist to wet

BORING LOG NUMBER 4

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	15	28.7	95.5	30		water
				31		
				32		
				33		
				34		
35	16	21.1	SPT	35		
				-	SC	Clayey Sand, medium brown, wet, medium dense, fine to coarse grained sand
				36		
				37		
37.5	31	7.7	112.7	-		
				38	SW	Sand, light to medium brown, wet, medium dense, fine to coarse grained, some gravel
				39		
40	54	16.6	SPT	40		
				-		dense, fine grained
				41		
				42		
42.5	62	16.3	110.9	-		
				43		
				44		
45	56	No Recovery		45		
				46		
				47		
47.5	58	12.9	123.0	-		
				48		fine to coarse grained, some gravel
				49		
50	93/3"	41.9	SPT	50		
				-		BEDROCK: Siltstone, gray-green, very moist, hard, trace carbonate

BORING LOG NUMBER 4

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
				53		
				54		
55	88/4"	61.6	68.7	55		
				56		
				57		
				58		
				59		
60	90/5"	45.3	75.0	60		
				61		Total depth: 60 feet Water at 30 feet Fill to 2 feet
				62		
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 5

Drilling Date: 03/31/00 | **Elevation: 621.5'**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: 3-inch Asphalt, No Base
				0		FILL: Silty Sand, black to dark brown, moist, dense, fine grained
				1		
2	11	17.9	93.8	2		
				3		
4	17	15.3	104.2	4		
				-	SM	Silty Sand, brown, slightly moist, medium dense, fine grained
				5		
				6		
7	18	20.8	100.5	7		
				-	ML	Sandy to Clayey Silt, brown to dark brown, slightly moist, medium firm, porous
				8		
				9		
10	19	21.3	103.5	10		
				-		grades sandier, light brown, moist
				11		
				12		
				13		
				14		
15	22	21.3	106.6	15		
				-		abundant caliche
				16		
				17		
				18		
				19		
20	17	34.3	89.7	20		
				-	ML	Clayey Silt, dark brown, very moist, medium firm
				21		
				22		
				23		
				24		
25	21	24.3	102.4	25		
				-	ML	Sandy to Clayey Silt, medium to dark brown, very moist, medium firm

BORING LOG NUMBER 5

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		Franco and Associates
				29		
30	19	29.5	93.2	30		
				31	ML	Clayey Silt, olive-brown, very moist, medium firm
				32		
				33		
				34		
35	31	25.0	103.4	35		
				36		some fine sand
				37		
				38		
				39		
40	18	30.7	SPT	40		
				41		water
42.5	29	28.3	96.6	42		
				43		
				44		
45	13	38.7	SPT	45		
				46	CL	Silty Clay, olive-brown, very moist, soft, caliche
47.5	32	36.3	88.6	47		
				48		
				49		
50	11	34.0	SPT	50		slightly sandy
						Total depth: 50 feet; Water at 30 feet; Fill to 4 feet

BORING LOG NUMBER 6

Drilling Date: 03/31/00 | **Elevation: 618.5'**

Project: File No.20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: 3-inch Asphalt, No Base
				-		FILL: Sandy Silt, medium brown, moist, firm, fine sand
1	11	21.7	96.5	1 --		
				-		
				2 --		
				-		
3	10	18.5	98.9	3 --		- - - - - - - - - - - -
				-		medium brown
				4 --		
				-		
5	11	24.6	98.2	5 --		
				-	ML	Clayey Silt, black, moist, soft, very porous, caliche
				6 --		
				-		
7	19	23.8	99.2	7 --		- - - - - - - - - - - -
				-		olive-brown, very moist
				8 --		
				-		
				9 --		
				-		
10	16	23.2	95.6	10 --		
				-	SM	Silty Sand, medium brown, moist, medium dense, very fine grained
				11 --		
				-		
				12 --		
				-		
				13 --		
				-		
				14 --		
				-		
15	15	29.1	93.6	15 --		
				-	ML	Clayey Silt, brown, very moist, soft
				16 --		
				-		
				17 --		
				-		
				18 --		
				-		
				19 --		
				-		
20	27	29.1	92.1	20 --		- - - - - - - - - - - -
				-		dark brown, trace fine sand, medium firm
				21 --		
				-		
				22 --		
				-		
				23 --		
				-		
				24 --		
				-		
25	25	29.7	91.7	25 --		- - - - - - - - - - - -
				-		dark brown to black
				-		

BORING LOG NUMBER 6

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	17	26.3	99.7	30		wet
				31		
				32		
				33		
				34		
35	14	24.2	SPT	35		wet, soft, some fine grained sand
				36		
				37		
37.5	82	22.9	106.9			
				38	SW	Sand, medium brown, wet, dense, fine to coarse grained, some silt, some clayey sand
				39		
40	63	28.2	SPT	40	SC	Clayey Sand, brown, wet, dense, fine to medium grained
				41		
				42		
42.5	50/5"	47.5	72.9			
				43		BEDROCK (MONTEREY FORMATION): Siltstone, gray-green to black, moist, hard
				44		
45	76	43.6	SPT	45		
				46		
				47		
				48		
				49		
50	90/3"	40.6	78.8	50		

BORING LOG NUMBER 6

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
				53		
				54		
55	83/2"	No Recovery		55		
				56		Total depth: 55 feet Water at 29 feet Fill to 5 feet
				57		
				58		
				59		
				60		
				61		
				62		
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 7

Drilling Date: 06/04/07 | **Elevation:**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, medium brown to yellowish-brown, slightly moist to moist, medium dense, fine grained
1	19	5.7	85.2	1		
				2	SM	Silty Sand, yellowish-brown, moist, medium dense, fine grained
3	20	8.4	86.0	3		moist
				4		slight porous, moist
5	32	9.6	93.2	5		moist
				6	SC	Clayey Sand, medium brown, moist, medium dense, fine grained, medium stiff
7	22	13.9	97.1	7		
				8	SM	Silty Sand, yellowish-brown with dark brown and light gray mottling to yellowish-brown with medium brown mottling, moist, medium dense, fine grained, slight Clay
				9		
10	29	15.9	101.2	10	SM/ML	Silty Sand to Sandy Silt, yellowish-brown with light gray mottling, moist, medium dense, fine grained
				11		
				12		
				13		
				14		
15	26	25.6	96.9	15	SC	Clayey Sand, yellowish-brown with light gray and brown mottling to medium brown with yellowish-brown mottling, moist, medium dense, fine grained, medium stiff
				16		
				17		
				18		
				19		
20	25	23.1	92.3	20	CL	Sandy Clay, medium brown with yellowish-brown mottling, moist, medium stiff
				21		
				22		
				23		
				24		
25	20	23.0	96.7	25	CL/SC	Sandy Clay to Clayey Sand, medium brown with yellowish-brown mottling, moist, medium dense, fine grained, medium stiff

BORING LOG NUMBER 7

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	38	27.3	93.1	30	CL	Sandy Clay, medium brown with yellowish-brown and light gray mottling, moist, medium stiff
				31		
				32		Total depth: 30 feet No Water Fill to 1½ feet
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 8

Drilling Date: 06/04/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, dark brown to yellowish-brown, moist, medium dense, fine grained
				1		
2	12	15.7	98.0	2	SM	Silty Sand, medium brown, slightly porous, moist, medium dense, fine grained
				3		moist
4	16	14.7	102.9	4		
				5	SM/SC	Silty to Clayey Sand, medium brown to brown, moist, medium dense, fine grained, medium stiff
				6		
7	27	25.8	93.8	7		
				8	SC/SM	Clayey to Silty Sand, dark brown with medium brown mottling to yellowish-brown with light gray mottling, moist, medium dense, fine grained, medium stiff
				9		
10	35	6.1	101.3	10		
				11	SM/SP	Silty Sand to Sand, yellowish-brown with light gray mottling, moist, medium dense, fine grained
				12		
				13		
				14		
15	25	22.3	95.7	15		
				16	CL	Sandy Clay, medium brown with dark brown and light gray mottling, moist, medium stiff
				17		
				18		
				19		
20	27	29.9	89.4	20		
				21		yellowish-brown with medium brown and light gray mottling, moist, medium stiff
				22		
				23		
				24		
25	32	24.0	97.2	25		yellowish-brown with light gray mottling, moist, medium stiff

BORING LOG NUMBER 8

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	27	22.5	99.7	30		moist
				31		Total depth: 30 feet No Water Fill to 1½ feet
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 9

Drilling Date: 06/04/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, medium brown, moist, medium dense, fine grained
1	30	7.9	90.0	1 --		yellowish-brown, moist
				2 --		medium brown, slightly porous, moist, medium dense, fine grained
3	24	7.4	81.1	3 --	SM	Silty Sand, yellowish-brown, moist, medium dense, fine grained
				4 --		yellowish-brown to yellowish-brown with medium brown mottling, slightly porous, moist, medium dense, fine grained
5	28	12.3	84.8	5 --		
				6 --	SM/SC	Silty Sand to Clayey Sand, light gray with yellowish-brown mottling, slight caliche, slightly porous, moist, medium dense, fine grained, medium stiff
7	37	15.3	103.0	7 --		
				8 --	SC	Clayey Sand, medium brown with gray mottling, slightly porous, moist, medium dense, fine grained, medium stiff
				9 --		
10	45	16.3	105.1	10 --		
				11 --	ML/SM	Clayey Silt to Silty Sand, medium brown with gray mottling to medium brown, slightly porous, moist, medium dense, fine grained, medium stiff
				12 --		
				13 --		
				14 --		
15	43	18.3	106.7	15 --		
				16 --	SC	Clayey Sand, dark brown to medium brown, moist, medium dense, fine grained, medium stiff
				17 --		
				18 --		
				19 --		
20	50	24.0	98.9	20 --		
				21 --	CL	Sandy Clay, medium brown, moist, medium stiff
				22 --		
				23 --		
				24 --		
25	55	25.5	95.2	25 --		medium brown with gray mottling to medium brown with gray and yellowish-brown mottling, moist, stiff

BORING LOG NUMBER 9

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
						medium brown with gray mottling, moist, medium stiff
30	29	22.9	97.2	30		
						Total depth: 30 feet No Water Fill to 1½ feet
				31		
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 10

Drilling Date: 06/12/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, yellowish-brown, moist, medium dense, fine grained
				1		
2	65	5.0	104.7	2		moist
				3	SM	Silty Sand, yellowish-brown, porous, moist, dense, fine grained
4	34	7.1	100.3	4		moist
				5		
				6		
7	46	10.3	96.9	7		slightly Clayey, yellowish-brown with light gray mottling, slightly porous, moist, medium dense, fine grained
				8		
				9		
10	60	7.6	109.5	10		yellowish-brown with light gray mottling, slight caliche, moist, dense, fine grained
				11		
				12		
				13		
				14		
15	41	17.3	104.9	15	CL/SC	Sandy Clay to Clayey Sand, medium brown to yellowish-brown, moist, medium dense, fine grained, medium stiff
				16		
				17		
				18		
				19		
20	38	21.3	100.8	20	CL	Sandy Clay, yellowish-brown, caliche, moist, medium stiff
				21		
				22		
				23		
				24		
25	36	18.8	107.4	25	CL/SC	Sandy Clay to Clayey Sand, medium brown with light gray mottling to yellowish-brown with light gray mottling, moist, medium dense, fine grained, medium stiff

GEOTECHNOLOGIES, INC.

BORING LOG NUMBER 10

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	33	23.1	98.7	30	CL	Sandy Clay, yellowish-brown with light gray mottling, moist, medium stiff
				31		Total depth: 30 feet No Water Fill to 2½ feet
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 11

Drilling Date: 06/12/07 | **Elevation:**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0		FILL: Silty Sand, yellowish-brown, moist, medium dense, fine grained
				1		
2	33	6.5	97.6	2	SM	Silty Sand, yellowish-brown, moist, medium dense, fine grained
				3		medium brown with yellowish-brown mottling, moist, medium dense, fine grained
4	36	10.8	100.2	4		yellowish-brown with white and light gray mottling, moist, medium dense, fine grained
				5		
				6		
7	28	13.1	103.6	7		slightly Clayey, yellowish-brown to medium brown with gray mottling, moist, medium dense, fine grained
				8	SC	Clayey Sand, medium brown with light gray, gray and white mottling, moist, medium dense, fine grained, medium stiff
				9		
10	29	13.7	100.3	10	SM	Silty Sand, yellowish-brown with light gray and medium brown mottling, moist, medium dense, fine grained
				11		
				12		
				13		
				14		
15	32	11.0	109.8	15	SP/SM	Sand to Silty Sand with slight Clayey, yellowish-brown with light gray mottling to medium brown with slight caliche, moist, medium dense, fine grained
				16		
				17		
				18		
				19		
20	50	18.1	104.1	20	SM/CL	Silty Sand to Sandy Clay, medium brown to medium brown with light gray and white mottling, moist, medium dense, fine grained, medium stiff
				21		
				22		
				23		
				24		
25	50	22.3	98.1	25	CL	Sandy Clay, medium brown with gray and yellowish-brown mottling, slight caliche, moist, medium stiff

BORING LOG NUMBER 11

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26 --		
				27 --		
				28 --		
				29 --		
30	57	27.2	90.9	30 --		medium brown with yellowish-brown and light gray mottling, moist, stiff
				31 --		
				32 --		Total depth: 30 feet No Water Fill to 1½ feet
				33 --		
				34 --		
				35 --		
				36 --		
				37 --		
				38 --		
				39 --		
				40 --		
				41 --		
				42 --		
				43 --		
				44 --		
				45 --		
				46 --		
				47 --		
				48 --		
				49 --		
				50 --		

BORING LOG NUMBER 12

Drilling Date: 06/04/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, yellowish-brown, moist, medium dense, fine grained
				-		
				1 --		
				-		
2	15	5.9	88.9	2 --	SM	Silty Sand, medium brown, moist, medium dense, fine grained
				-		
				3 --		light olive-brown, moist
				-		
4	20	9.2	87.7	4 --		
				-		yellowish-brown, slightly porous, moist, medium dense, fine grained
				5 --		
				-		
				6 --		
				-		
7	40	8.5	107.2	7 --		
				-		yellowish-brown to medium brown with light gray mottling, moist, medium dense, fine grained, slightly Clayey
				8 --		
				-		
				9 --		
				-		
10	50	19.2	101.8	10 --		
				-	ML	Sandy to Clayey Silt, yellowish-brown with brown and light gray mottling, moist, medium dense, fine grained, medium stiff
				11 --		
				-		
				12 --		
				-		
				13 --		
				-		
				14 --		
				-		
15	44	9.8	93.4	15 --		
				-	SP/SM	Sand to Silty Sand, yellowish-brown, moist, medium dense, fine grained
				16 --		
				-		
				17 --		
				-		
				18 --		
				-		
				19 --		
				-		
20	36	21.5	95.1	20 --		
				-	CL	Sandy Clay, medium brown with yellowish-brown mottling, moist, medium stiff
				21 --		
				-		
				22 --		
				-		
				23 --		
				-		
				24 --		
				-		
25	36	23.6	99.5	25 --		
				-		moist

BORING LOG NUMBER 12

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	57	27.2	90.9	30		medium brown with yellowish-brown and light gray mottling, moist, stiff
				31		
				32		Total depth: 30 feet No Water Fill to 1½ feet
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 13

Drilling Date: 06/12/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, medium brown, moist, medium dense, fine grained
1	22	8.6	98.4	1 --	SC/SM	Clayey to Silty Sand, yellowish-brown to olive-brown, moist, medium dense, fine grained, medium stiff
				2 --		
3	24	8.3	106.9	3 --	SM/SC	Silty to Clayey Sand, olive-brown with yellowish-brown mottling, moist, medium dense, fine grained, medium stiff
				4 --		
5	30	15.0	SPT	5 --	SC/SM	Clayey to Silty Sand, olive-brown with light gray mottling to yellowish-brown, moist, medium dense, fine grained, medium stiff
				6 --	SC	Clayey Sand, olive-brown with light gray and white mottling, slight caliche, moist, medium dense, fine grained, medium stiff
7.5	32	18.2	102.8	7 --		
				8 --	SM/SC	Silty to Clayey Sand, medium brown with light gray and yellowish-brown mottling, slightly porous, moist, medium dense, fine grained, medium stiff
				9 --		
10	15	17.8	SPT	10 --	CL	Sandy Clay, yellowish-brown, moist, firm
				11 --		
				12 --		
12.5	52	18.7	99.7	13 --		olive-brown with light gray mottling, moist, stiff
				14 --		
15	18	13.3	SPT	15 --	SC	Clayey Sand, medium brown, moist, medium dense, fine grained
				16 --		
				17 --		
17.5	29	27.4	92.6	18 --		slight caliche, moist, medium dense, fine grained
				19 --		
20	33	25.8	SPT	20 --	CL/SC	Sandy Clay to Clayey Sand, yellowish-brown with light gray mottling, slight caliche, moist, medium dense, fine grained, medium stiff
				21 --		
				22 --		
22.5	58 50/6"	26.4	94.0	23 --	CL	Sandy Clay, medium brown with gray and light gray mottling, caliche, moist, very stiff
				24 --		
25	31	24.7	SPT	25 --		yellowish-brown with gray mottling, caliche, moist, medium stiff, slight gravel

BORING LOG NUMBER 13

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
27.5	43	27.9	92.9			
				28		yellowish-brown with light gray mottling, moist, medium stiff
				29		
30	13	26.3	SPT	30		medium brown with light gray mottling to yellowish-brown with light gray mottling, slight caliche, moist, medium stiff
				31		
				32		
32.5	47	18.5	108.0			
				33		yellowish-brown with light gray mottling, moist, medium stiff
				34		
35	19	22.4	SPT	35		moist
				36		
				37		
37.5	33	19.7	106.6			
				38		yellowish-brown with olive-brown mottling to yellowish-brown, moist, medium stiff
				39		
40	14	26.3	SPT	40	CL	Sandy Clay, yellowish-brown with light gray mottling, very moist, medium dense, fine grained, medium stiff
				41		
				42		
42.5	36	24.8	99.5			
				43	SM	Silty Sand, yellowish-brown with light gray mottling, wet, medium dense, fine grained
				44		
45	25	22.2	SPT	45		yellowish-brown with reddish-brown, wet, medium dense, fine to medium grained
				46		
				47		
47.5	58 50/6"	6.3	125.6			
				48		yellowish-brown, wet, very dense, fine to coarse grained, abundant gravel
				49		
50	30	12.2	SPT	50		yellowish-brown, wet, medium dense, fine to coarse grained, abundant gravel

BORING LOG NUMBER 13

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
52.5	35 50/6"	10.1	122.2			
				53		wet, very dense, fine to coarse grained, more gravel
				54		
55	50/6"	45.4	SPT	55		
				56	SM	Silty Sand, gray with white and greenish-gray layered, moist, dense, fine grained
				57		
57.5	75/7"	No Recovery				
				58		
				59		
60	28 50/5"	55.1	SPT	60	SM/ML	Silty Sand to Sandy Silt, gray with light and white layers, moist, very dense, fine grained
				61		
				62		Total depth: 60 feet Water at 34 feet Fill to 1 foot
				63		
				64		
				65		
				66		
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 14

Drilling Date: 06/12/07 | **Elevation:**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, yellowish-brown, moist, medium dense, fine grained
				1 --	SM	Silty Sand, medium brown, moist, medium dense, fine grained
				2 --		slightly porous, moist, medium dense, fine grained
				3 --		
4	16	9.5	99.3	4 --		medium brown with yellowish-brown mottling to yellowish-brown, moist, medium dense, fine grained
				5 --		
				6 --		
7	23	11.7	106.9	7 --	SC	Clayey Sand, medium brown with gray mottling, moist, medium dense, fine grained, medium stiff
				8 --		
				9 --		
10	40	18.3	106.8	10 --	SM	Silty Sand, yellowish-brown with gray mottling to yellowish-brown with light gray mottling, moist, medium dense, fine grained
				11 --		
				12 --		
				13 --		
				14 --		
15	43	16.7	102.8	15 --	CL	Sandy Clay, olive-brown with gray and yellowish-brown mottling to medium brown with gray and yellowish-brown mottling, moist, medium stiff
				16 --		
				17 --		
				18 --		
				19 --		
20	36	28.5	87.0	20 --		medium brown with gray mottling to yellowish-brown, moist, medium stiff
				21 --		
				22 --		
				23 --		
				24 --		
25	47	22.7	94.9	25 --		medium brown with light gray and yellowish-brown mottling, moist, medium stiff

BORING LOG NUMBER 14

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	35	27.4	92.6	30		yellowish-brown with light gray mottling to medium brown with light gray mottling, moist, medium stiff
				31		Total depth: 30 feet No Water Fill to 1 foot
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

BORING LOG NUMBER 15

Drilling Date: 06/04/07 | **Elevation:**

Project: File No. 20255 | **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
				0 --		FILL: Silty Sand, medium brown to yellowish-brown, moist, medium dense, fine grained with minor bedrock fragments
				-		
				1 --		
				-		
2	19	6.1	93.2	2 --	SM	Silty Sand, yellowish-brown, moist, medium dense, fine grained
				-		
				3 --		medium brown to yellowish-brown, moist, medium dense, fine grained
				-		
4	20 50/6"	8.8	100.8	4 --		
				-		medium brown with yellowish-brown mottling, moist, dense, fine grained, slightly Clayey
				5 --		
				-		
				6 --		
				-		
7	42	12.5	100.4	7 --		
				-		yellowish-brown with gray mottling, slightly porous, moist, medium dense, fine grained
				8 --		
				-		
				9 --		
				-		
10	50	14.4	82.5	10 --		
				-	ML	Sandy Silt, yellowish-brown with light gray mottling, moist, medium dense, fine grained
				11 --		
				-		
				12 --		
				-		
				13 --		
				-		
				14 --		
				-		
15	30	25.5	90.8	15 --		
				-	CL	Sandy Clay, medium brown with yellowish-brown mottling, moist, medium stiff
				16 --		
				-		
				17 --		
				-		
				18 --		
				-		
				19 --		
				-		
20	30 50/5"	18.3	96.7	20 --		
				-	SC/CL	Clayey Sand to Sandy Clay, yellowish-brown, caliche, moist, very dense, fine grained, very stiff
				21 --		
				-		
				22 --		
				-		
				23 --		
				-		
				24 --		
				-		
25	20 50/5"	24.1	95.8	25 --		Sandy Clay, yellowish-brown with gray mottling, caliche, moist, very stiff
				-	CL	

BORING LOG NUMBER 15

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	46	23.8	94.8	30		moist
				31		Total depth: 30 feet No Water Fill to 1½ feet
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		
				46		
				47		
				48		
				49		
				50		

LOG OF TEST PIT NUMBER 1

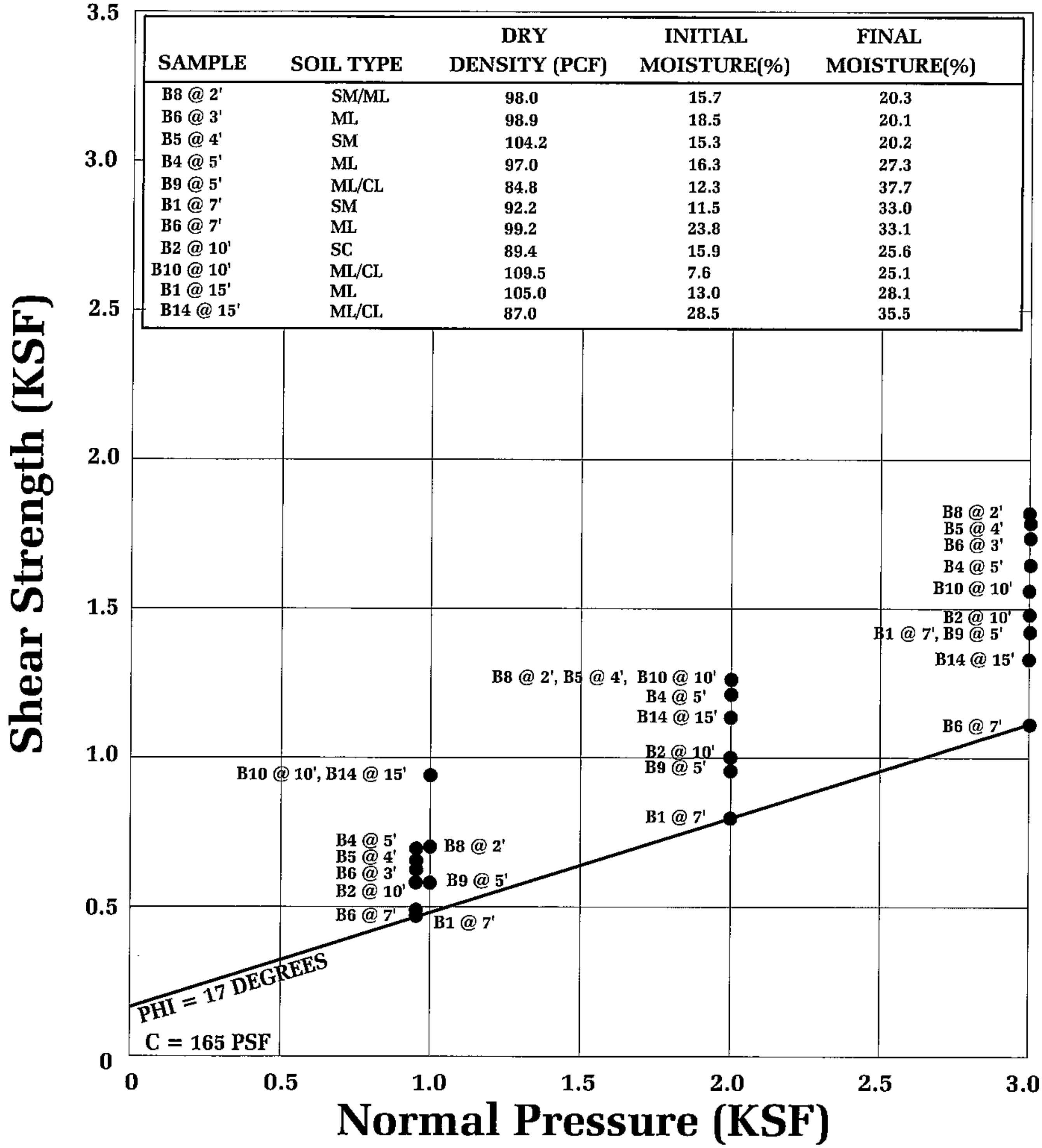
Drilling Date: 06/06/07 **Elevation:**

Project: File No. 20255 **Planning Associates, Inc.**

km

Sample Depth ft.	Moisture Content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Lawn Area
			0		NO FILL Silty Sand, yellowish-brown, slightly porous, moist, medium dense, fine grained
			1		
			2		
			3		
			4		yellowish-brown with medium brown mottling, porous, moist, medium dense, fine grained
			5		
			6		
			7		Total depth: 6 feet No Water No Fill
			8		
			9		
			10		
			11		
			12		
			13		
			14		
			15		
			16		
			17		
			18		
			19		
			20		
			21		
			22		
			23		
			24		
			25		

SAMPLE	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE(%)	FINAL MOISTURE(%)
B8 @ 2'	SM/ML	98.0	15.7	20.3
B6 @ 3'	ML	98.9	18.5	20.1
B5 @ 4'	SM	104.2	15.3	20.2
B4 @ 5'	ML	97.0	16.3	27.3
B9 @ 5'	ML/CL	84.8	12.3	37.7
B1 @ 7'	SM	92.2	11.5	33.0
B6 @ 7'	ML	99.2	23.8	33.1
B2 @ 10'	SC	89.4	15.9	25.6
B10 @ 10'	ML/CL	109.5	7.6	25.1
B1 @ 15'	ML	105.0	13.0	28.1
B14 @ 15'	ML/CL	87.0	28.5	35.5



● Direct Shear, Saturated

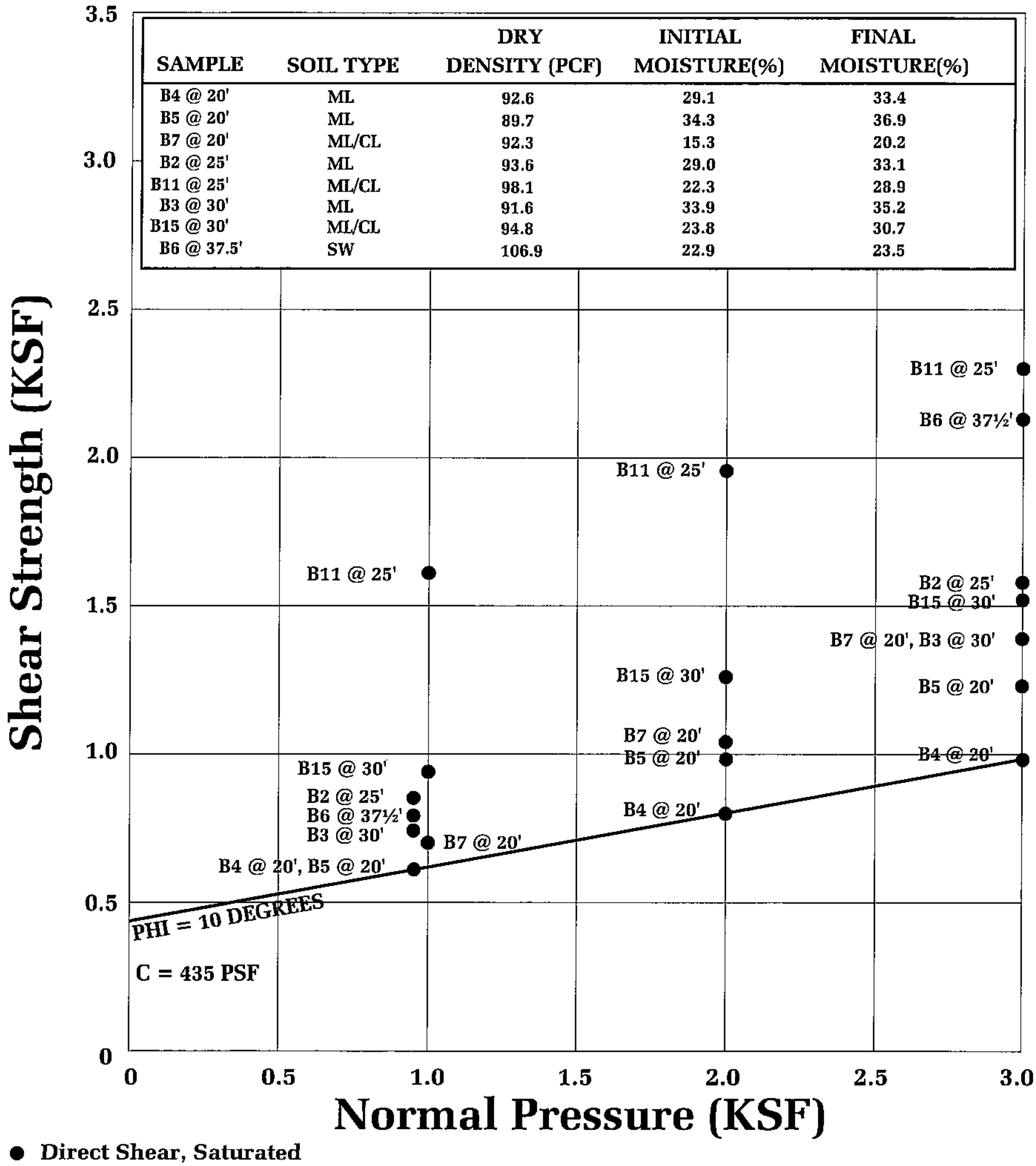
SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: B-1

SAMPLE	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE(%)	FINAL MOISTURE(%)
B4 @ 20'	ML	92.6	29.1	33.4
B5 @ 20'	ML	89.7	34.3	36.9
B7 @ 20'	ML/CL	92.3	15.3	20.2
B2 @ 25'	ML	93.6	29.0	33.1
B11 @ 25'	ML/CL	98.1	22.3	28.9
B3 @ 30'	ML	91.6	33.9	35.2
B15 @ 30'	ML/CL	94.8	23.8	30.7
B6 @ 37.5'	SW	106.9	22.9	23.5



SHEAR TEST DIAGRAM

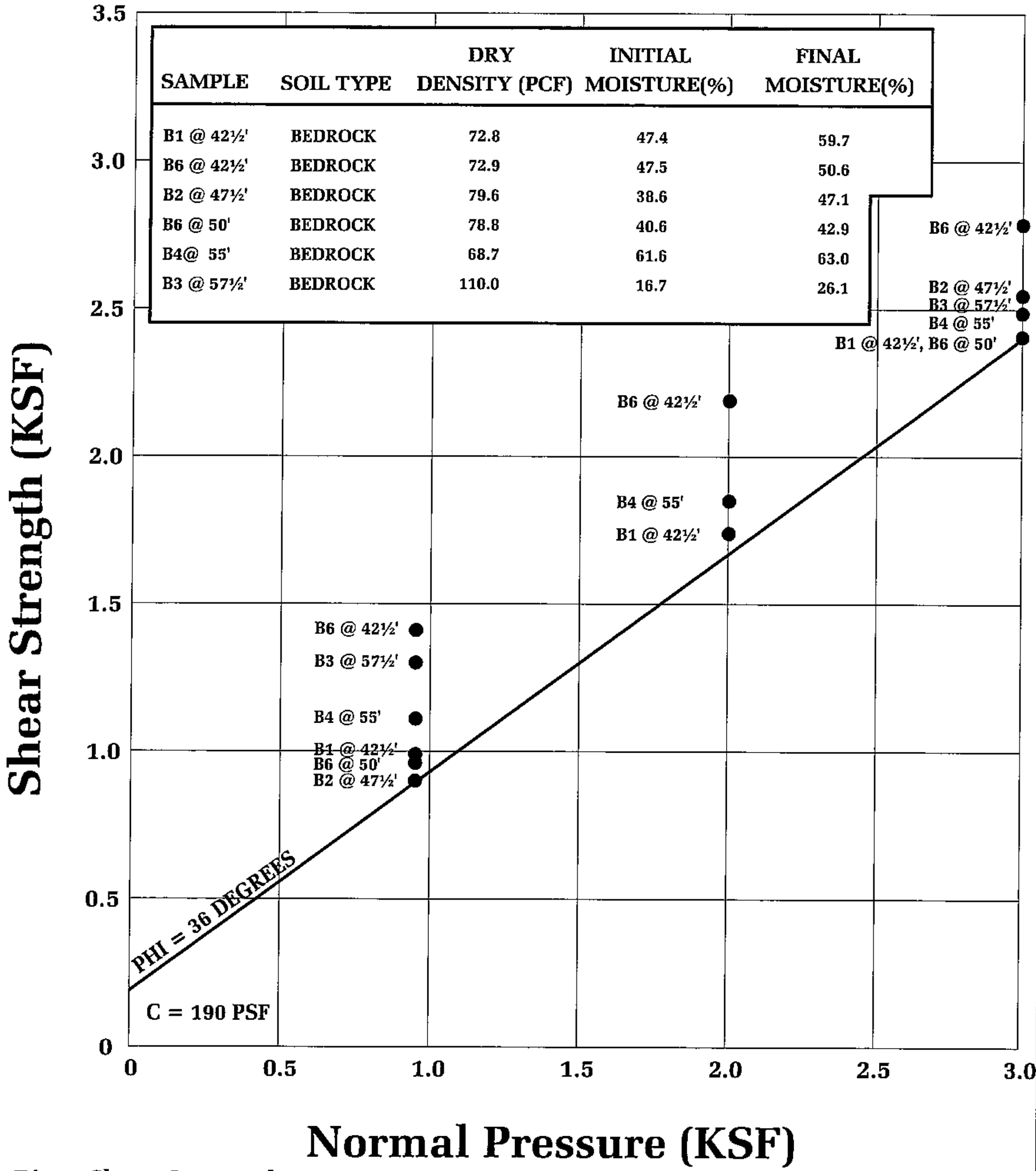
Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: B-2

BEDROCK

SAMPLE	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE(%)	FINAL MOISTURE(%)
B1 @ 42½'	BEDROCK	72.8	47.4	59.7
B6 @ 42½'	BEDROCK	72.9	47.5	50.6
B2 @ 47½'	BEDROCK	79.6	38.6	47.1
B6 @ 50'	BEDROCK	78.8	40.6	42.9
B4@ 55'	BEDROCK	68.7	61.6	63.0
B3 @ 57½'	BEDROCK	110.0	16.7	26.1



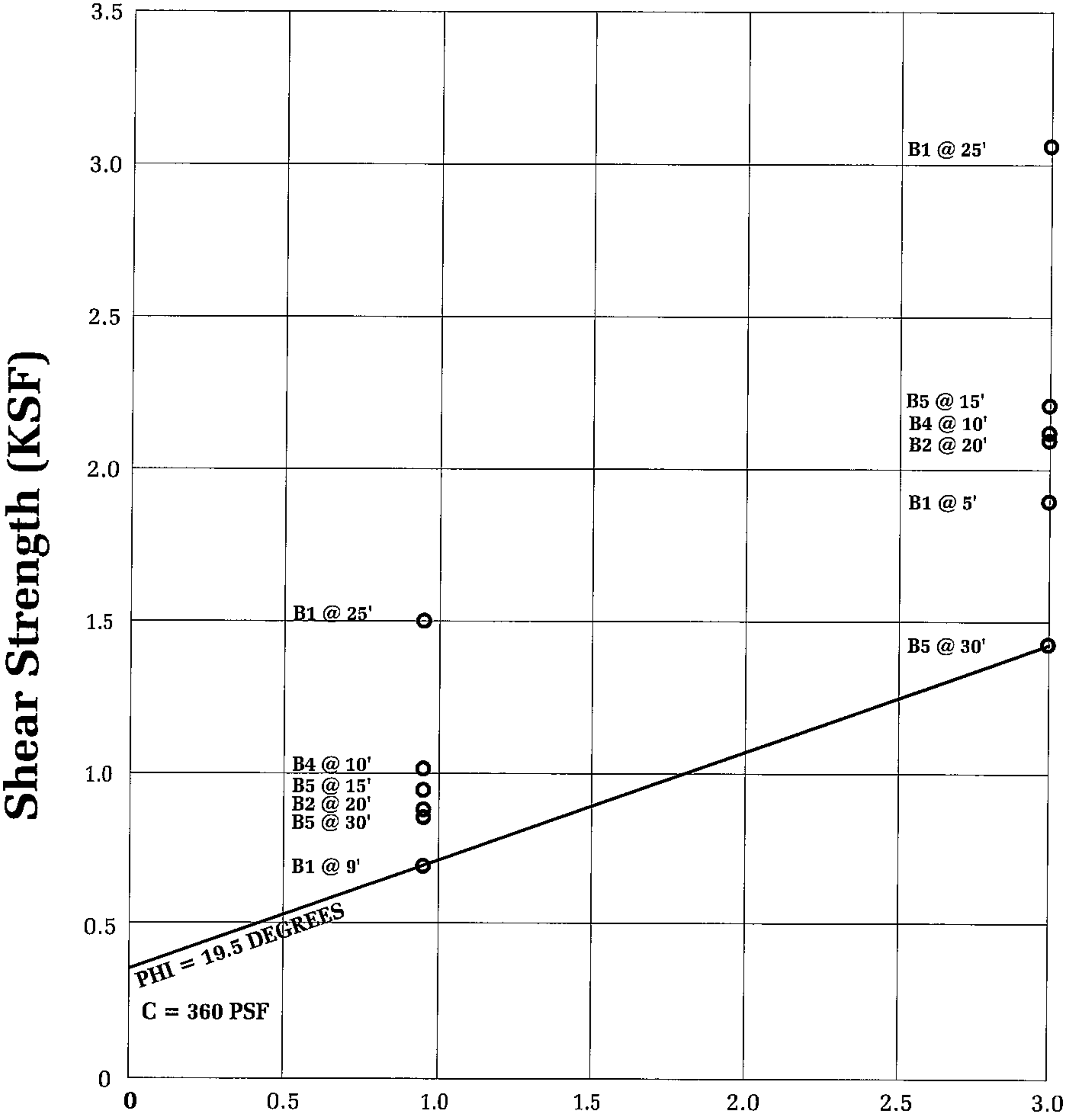
● Direct Shear, Saturated

SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: B-3



● **Direct Shear, Field Moisture**

SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

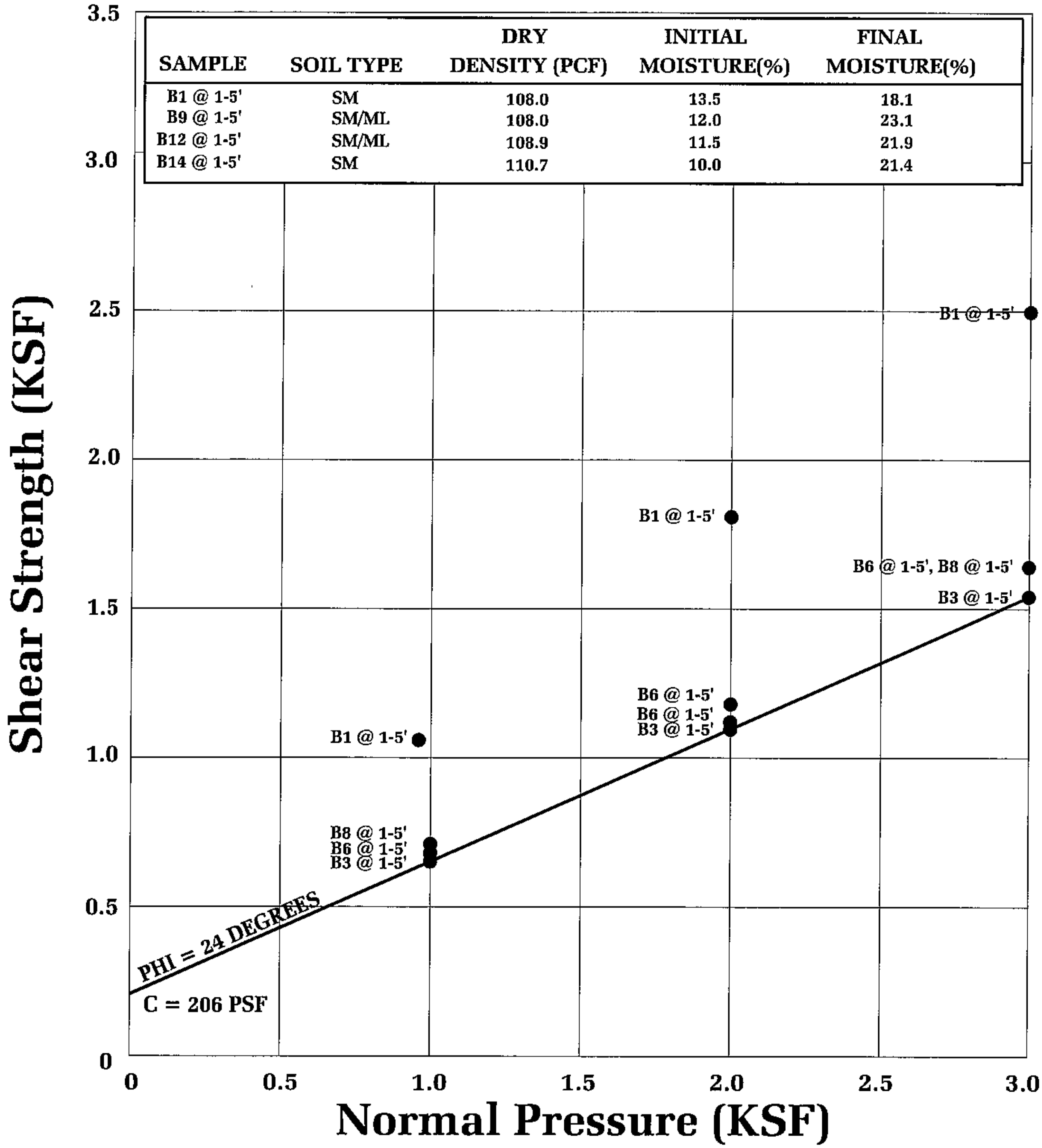
PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: B-4

BULK SAMPLE REMOLDED TO 90 PERCENT OF THE MAXIMUM LABORATORY DENSITY

SAMPLE	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE(%)	FINAL MOISTURE(%)
B1 @ 1-5'	SM	108.0	13.5	18.1
B9 @ 1-5'	SM/ML	108.0	12.0	23.1
B12 @ 1-5'	SM/ML	108.9	11.5	21.9
B14 @ 1-5'	SM	110.7	10.0	21.4



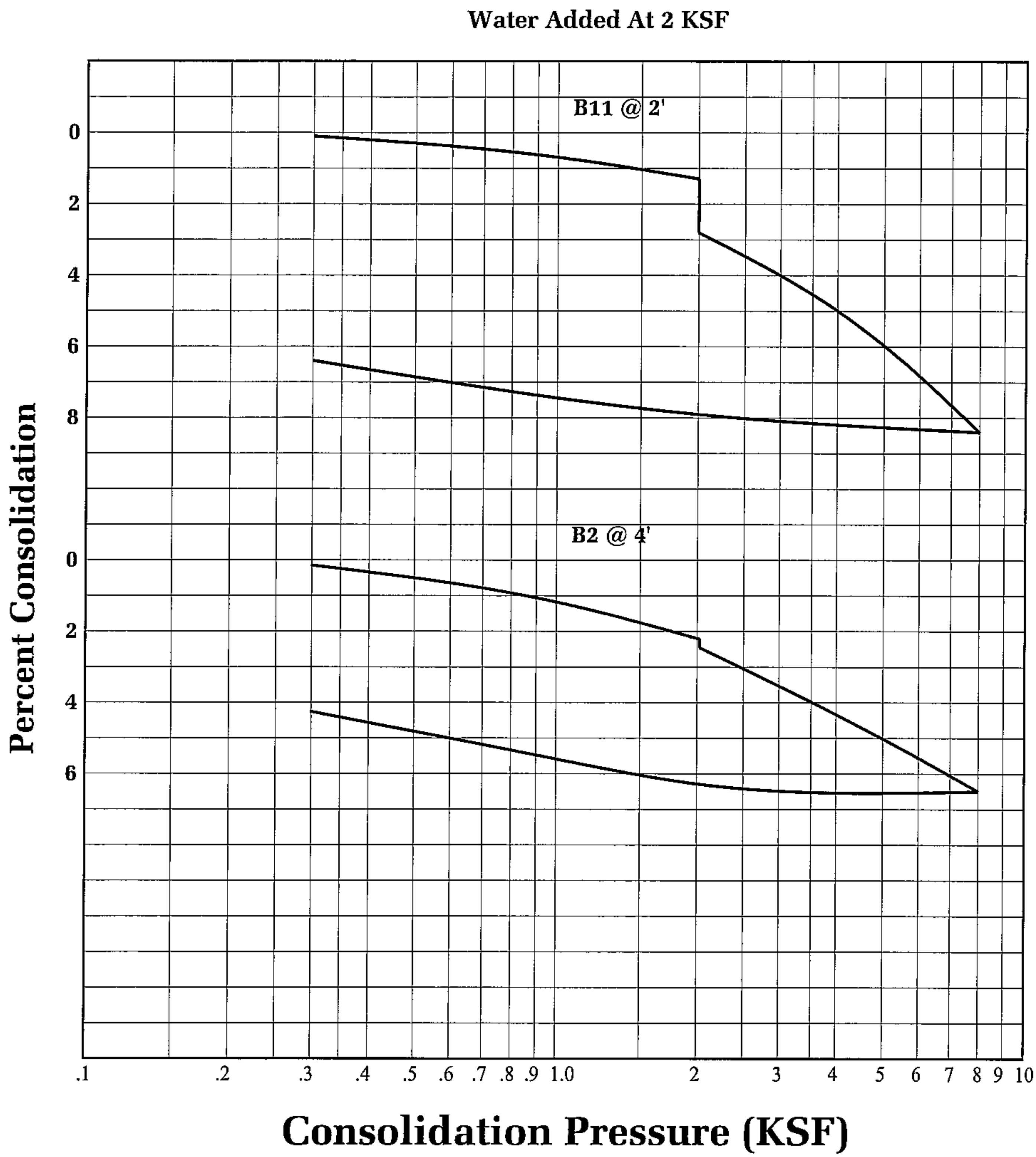
● Direct Shear, Saturated

SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: B-5

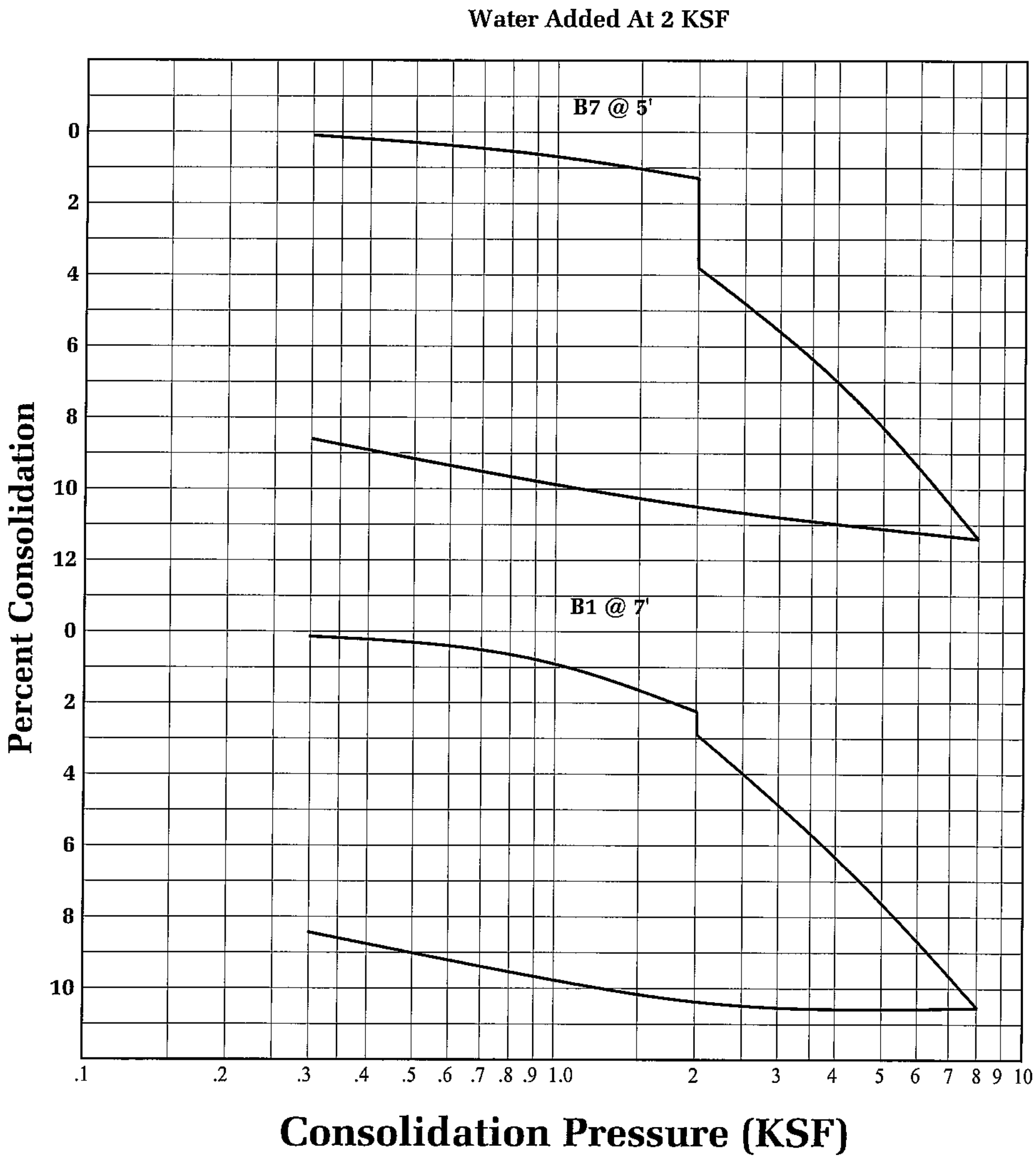


CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255	PLATE: C-1

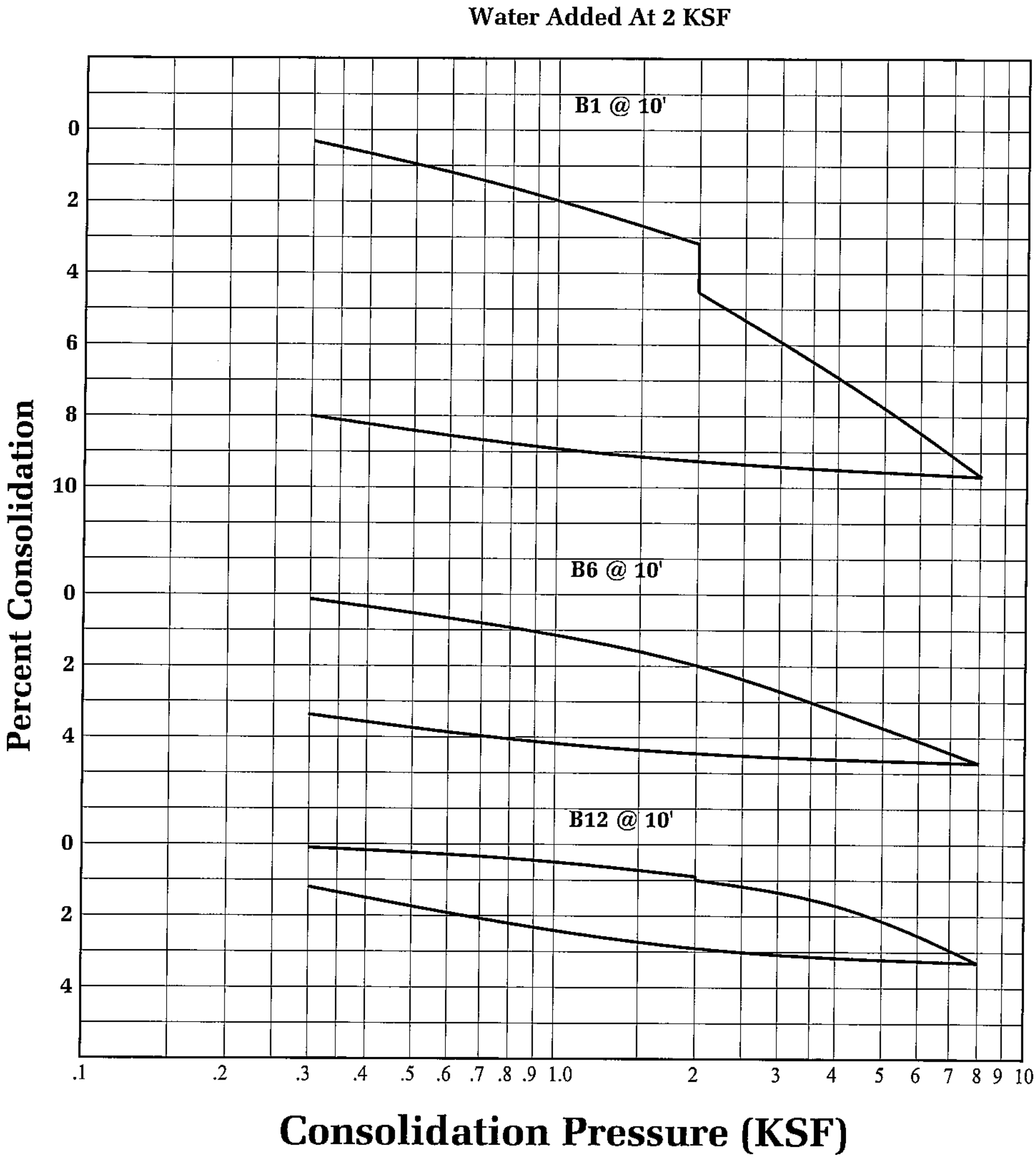


CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: C-2



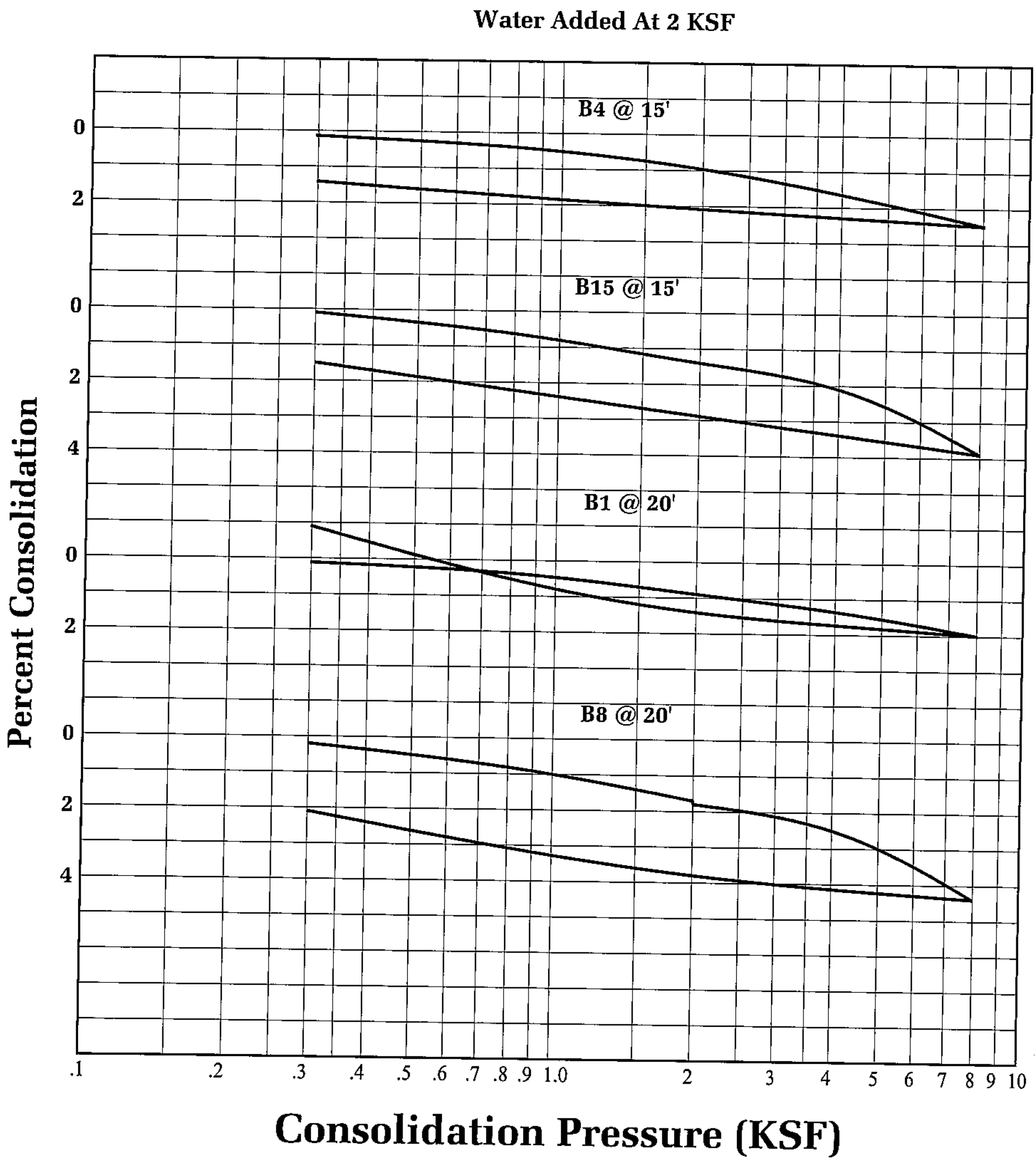
CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: C-3



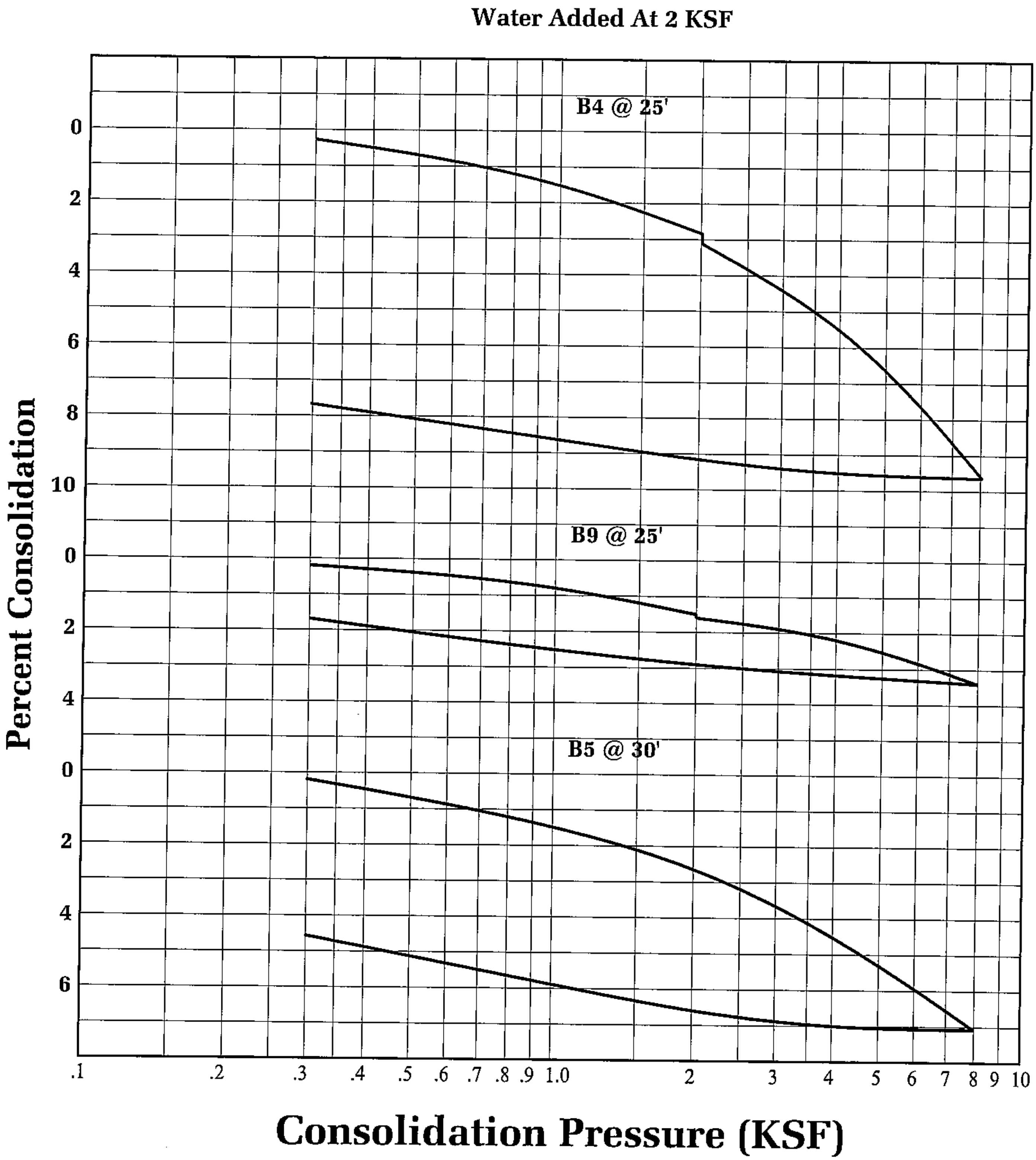
CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: C-4



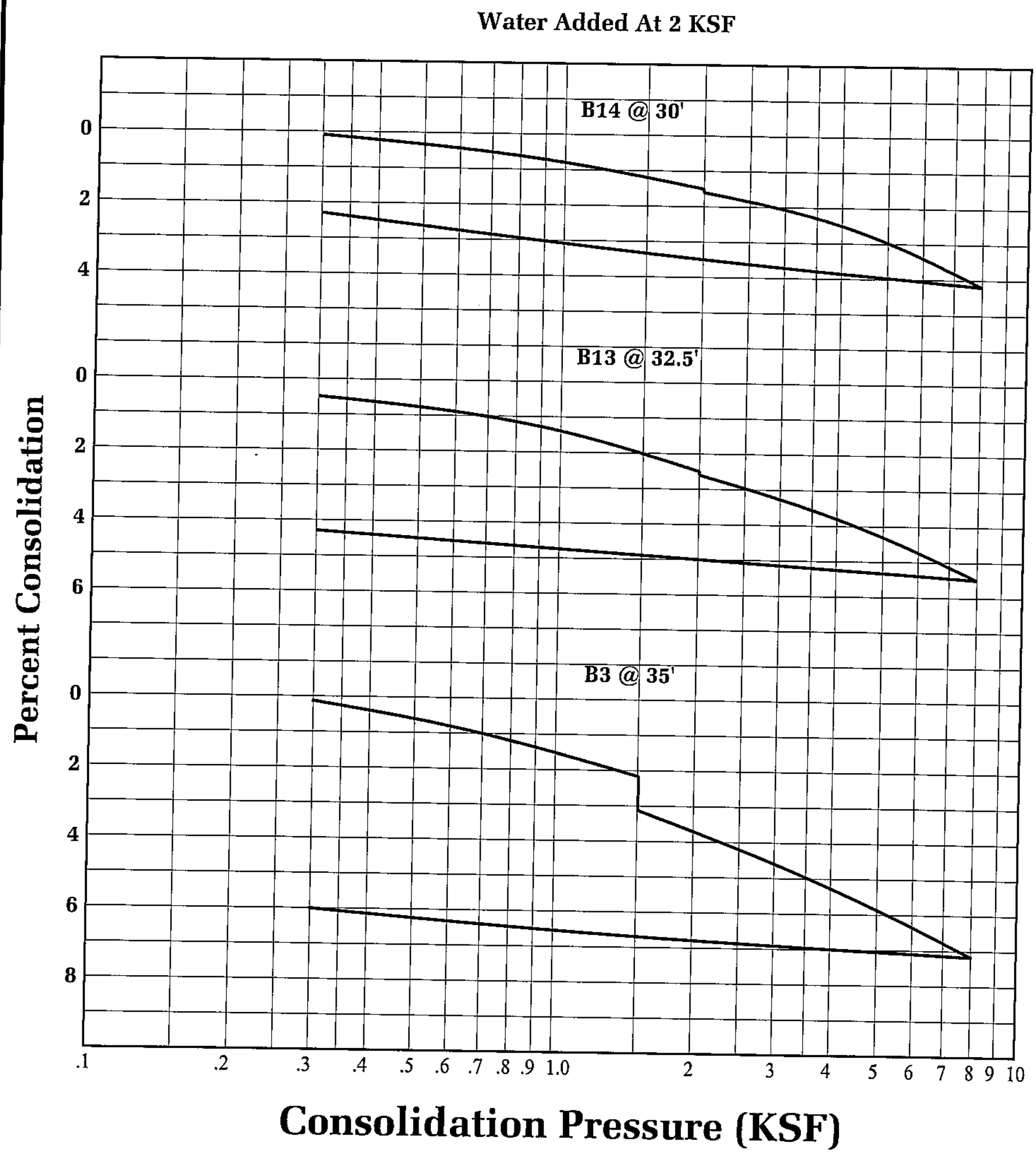
CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: C-5



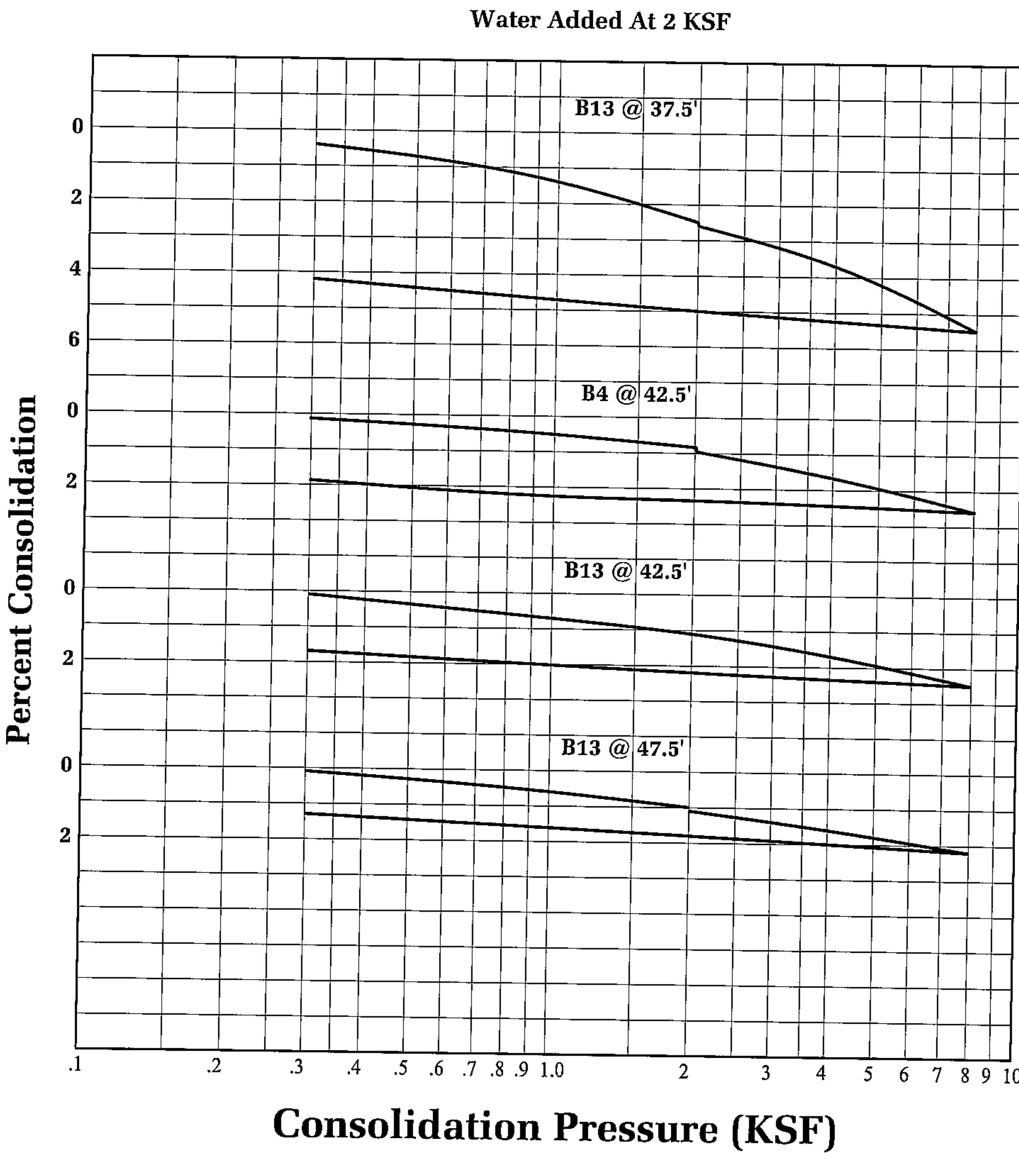
CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: C-6

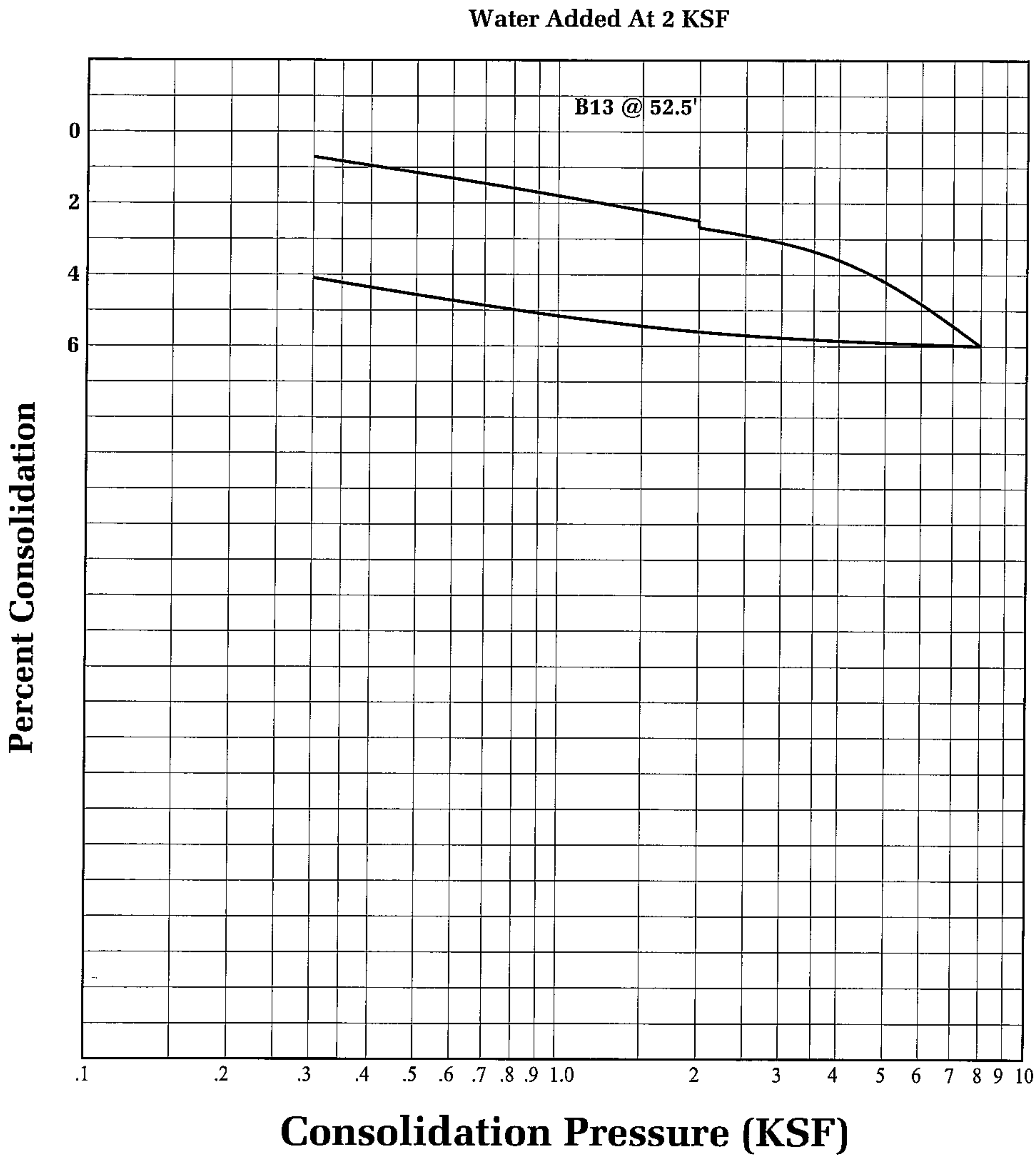


CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255	PLATE: C-7



CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: C-8

ASTM D-1557

SAMPLE	B1 @ 1- 5'	B9 @ 1- 5'	B12 @ 1-5'	B14 @ 1-5'
SOIL TYPE:	SM	SM/ML	SM/ML	SM
MAXIMUM DENSITY pcf.	120.0	120.0	121.0	123.0
OPTIMUM MOISTURE %	13.5	12.0	11.5	10.0

ASTM D 4829-03

SAMPLE	B1 @ 1- 5'	B9 @ 1- 5'	B12 @ 1-5'	B14 @ 1-5'
SOIL TYPE:	SM	SM/ML	SM/ML	SM
EXPANSION INDEX UBC STANDARD 18-2	32	80	70	63
EXPANSION CHARACTER	LOW	MODERATE	MODERATE	MODERATE

SULFATE CONTENT

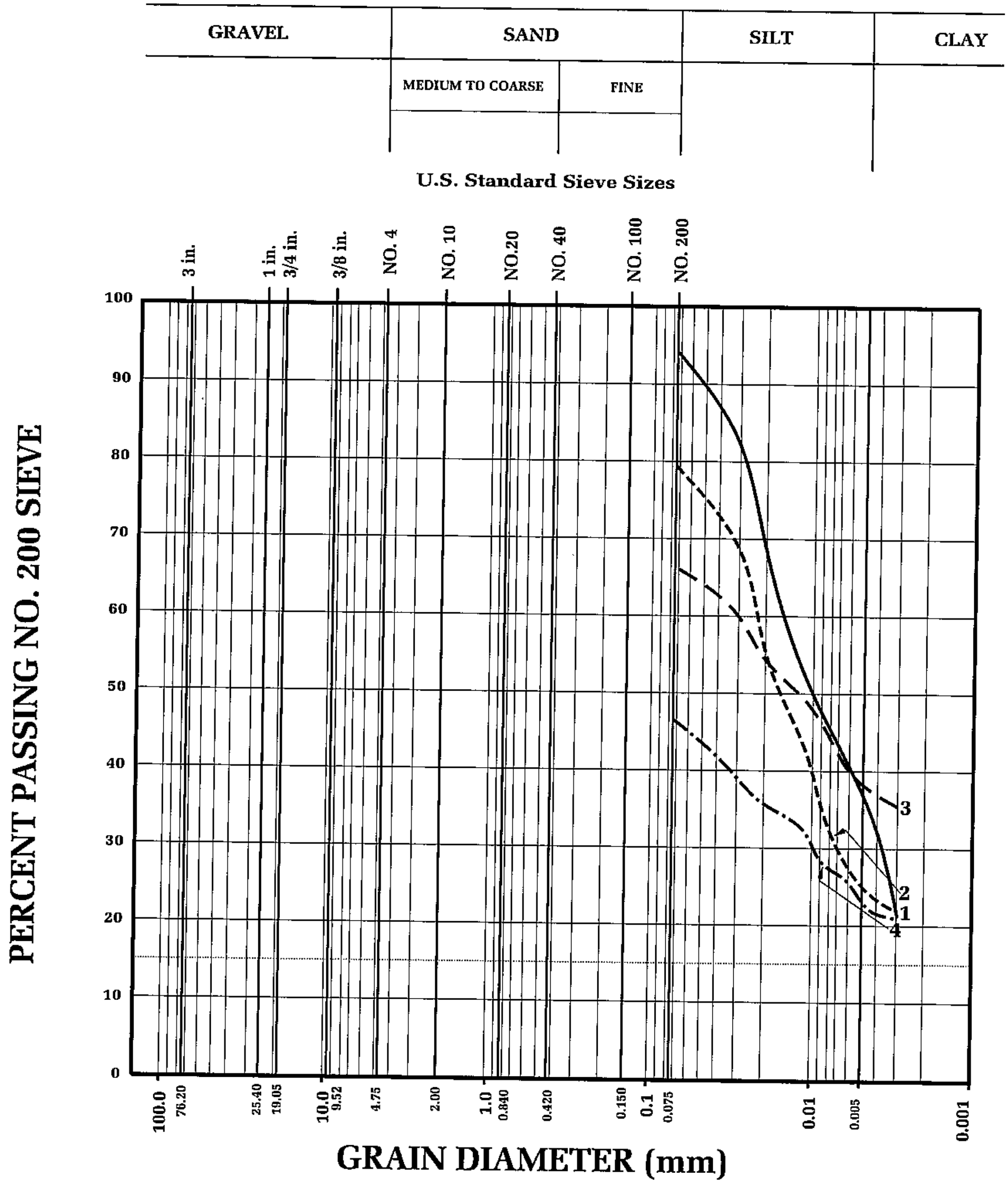
SAMPLE	B9 @ 1- 5'	B12 @ 1-5'	B14 @ 1-5'
SULFATE CONTENT: (percentage by weight)	< 0.2 %	< 0.2 %	< 0.2 %

COMPACTION/EXPANSION/SULFATE DATA SHEET

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: D



SAMPLE		UNIFIED SOIL CLASSIFICATION
1- B5 @ 10'	———	MC
2- B13 @ 10'	- - - -	CL
3- B4 @ 15'	— — —	CL
4- B13 @ 15'	—·—	SC

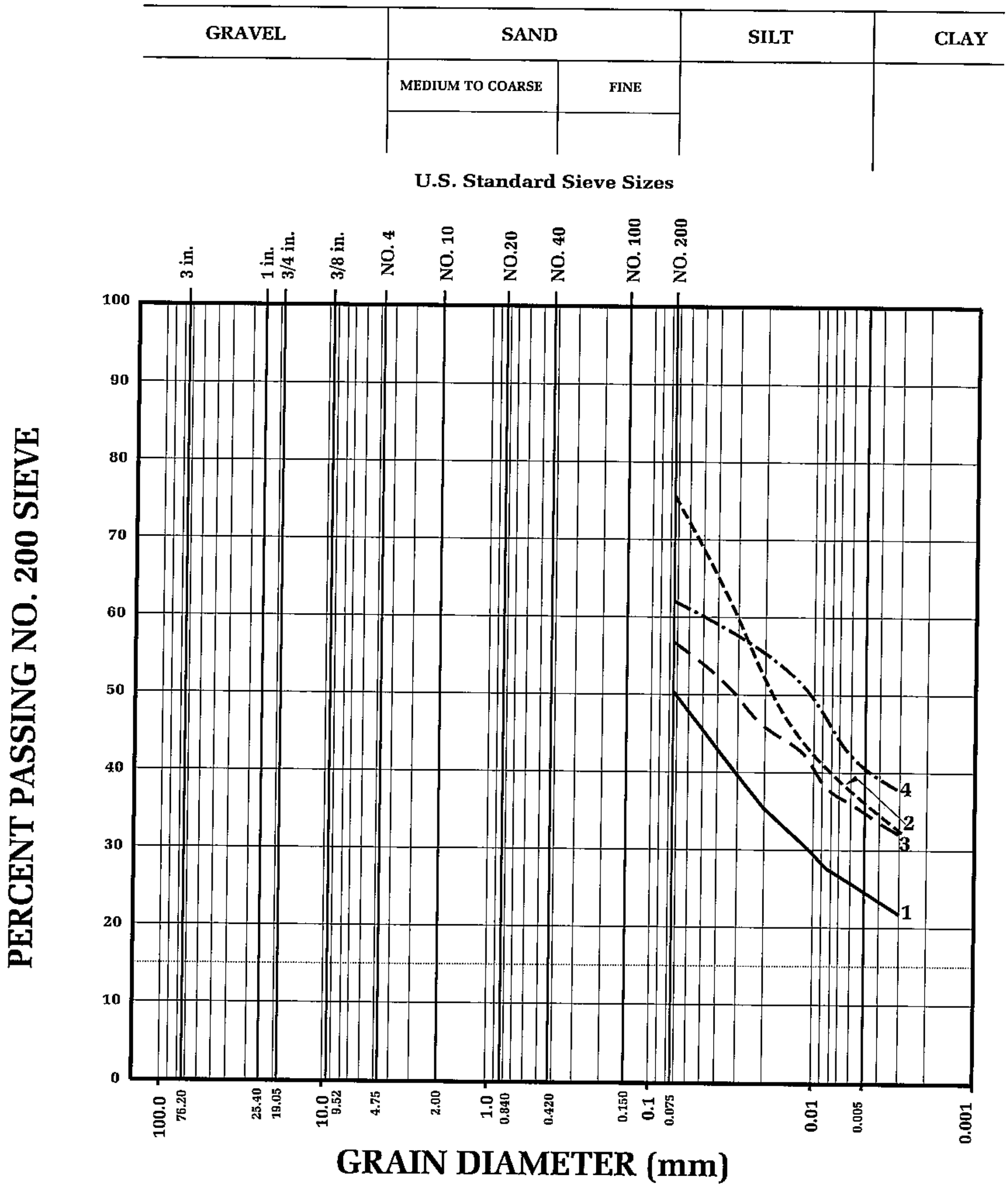
GRAIN SIZE DISTRIBUTION

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: E-1



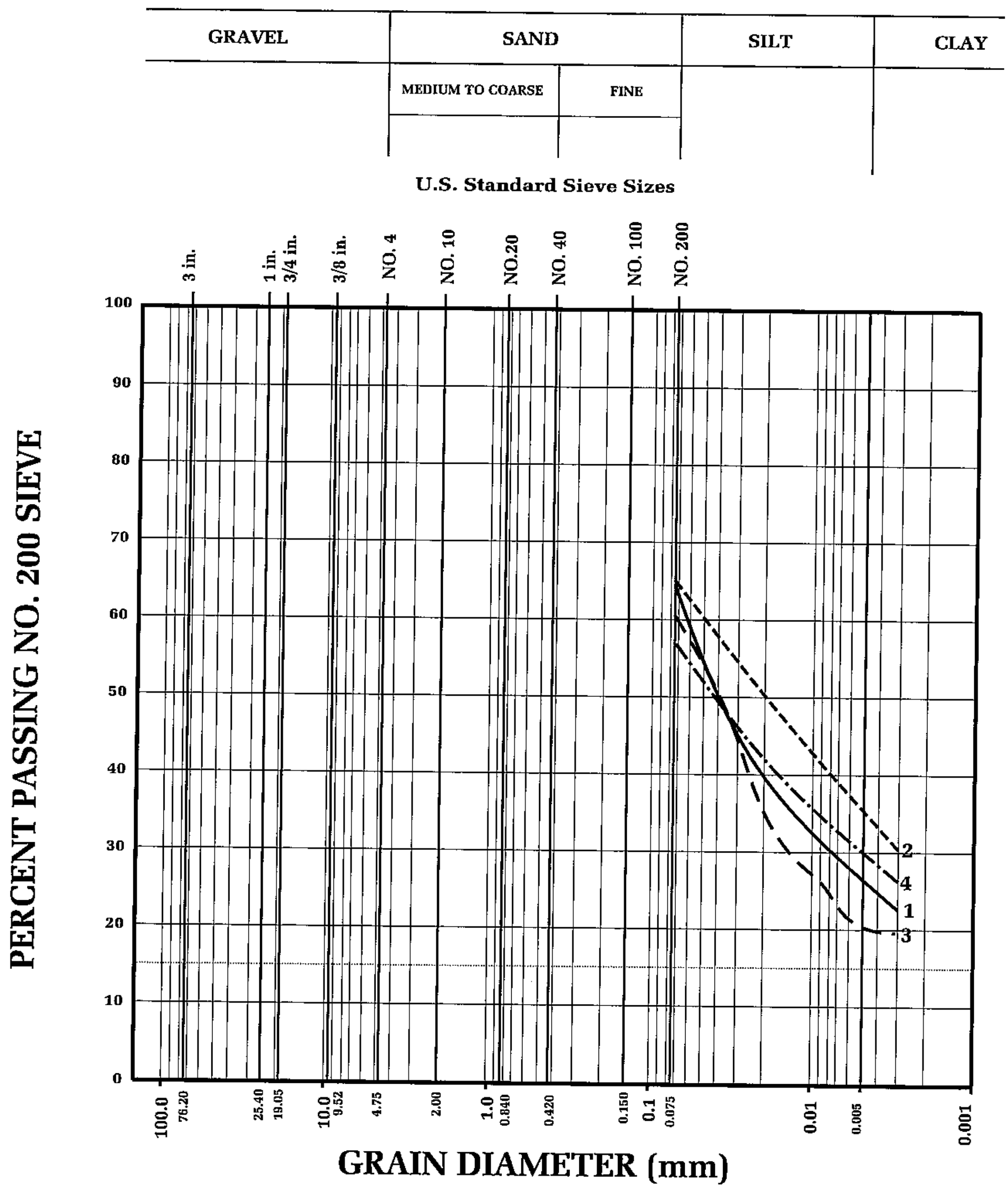
SAMPLE		UNIFIED SOIL CLASSIFICATION
1- B3 @ 20'	——	SM
2- B1 @ 30'	- - - -	CL
3- B13 @ 30'	— —	CL
4- B4 @ 35'	—·—	CL

GRAIN SIZE DISTRIBUTION

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: E-2



SAMPLE		UNIFIED SOIL CLASSIFICATION
1- B5 @ 35'	———	SM/MC
2- B6 @ 35'	- - - -	MC
3- B13 @ 40'	— —	CL
4- B5 @ 50'	—·—	CL

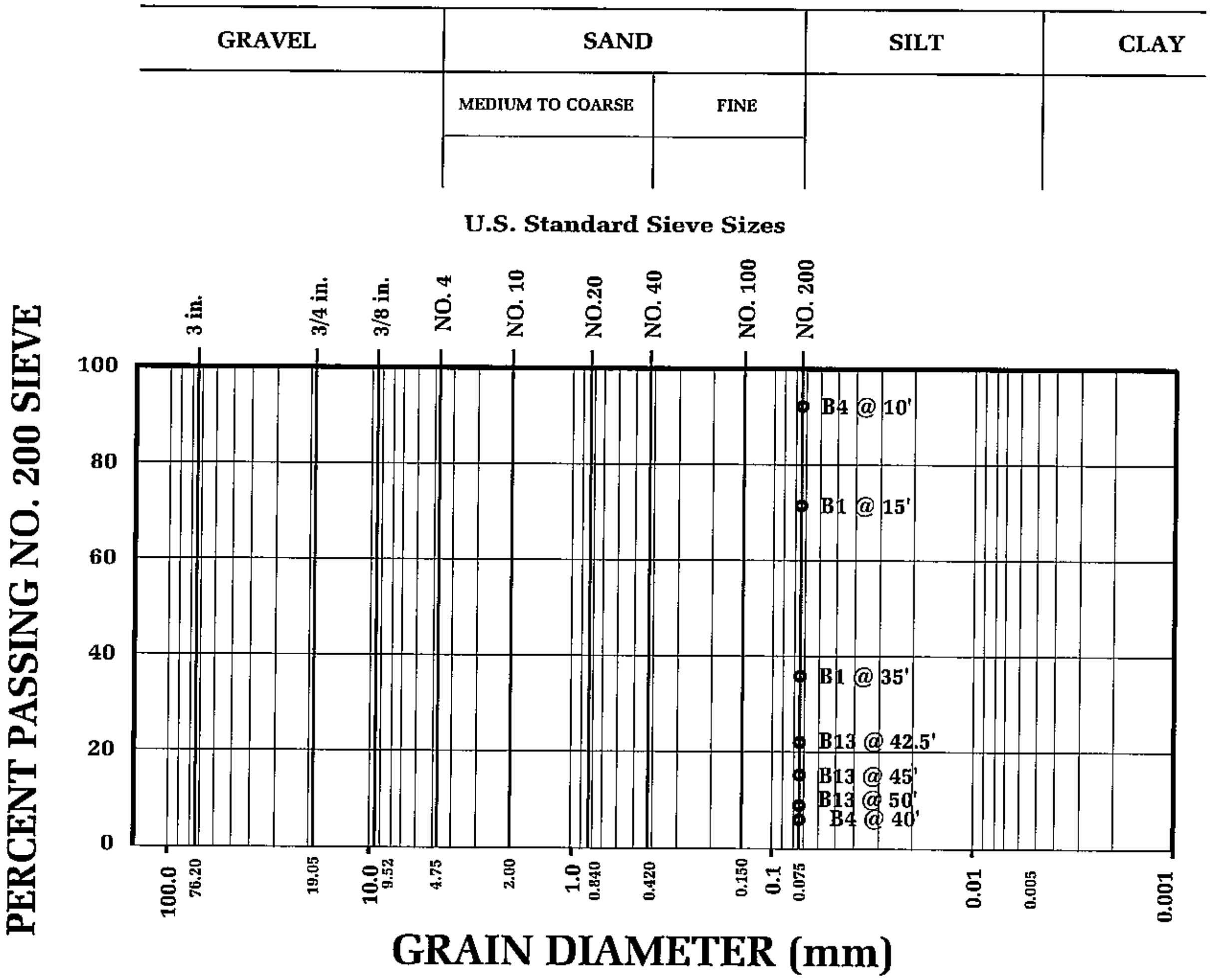
GRAIN SIZE DISTRIBUTION

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255

PLATE: E-3



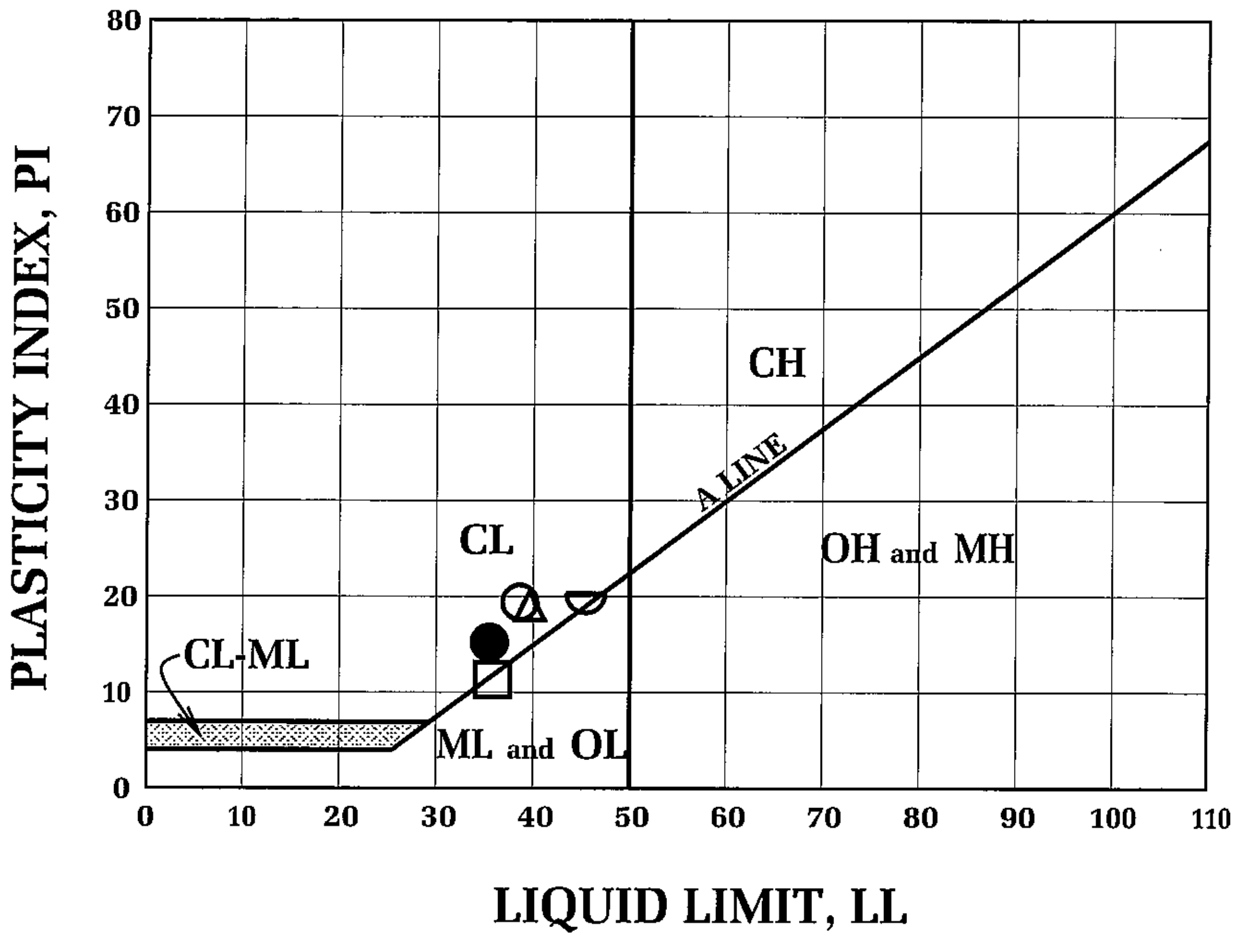
SAMPLE	PERCENT PASSING NO. 200 SIEVE
B1 @ 15'	71.5
B1 @ 35'	35.9
B4 @ 10'	92.2
B4 @ 40'	6.1
B13 @ 42.5'	25.6
B13 @ 45'	15.3
B13 @ 50'	8.8

GRAIN SIZE ANALYSIS

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: E-4



BORING NUMBER	DEPTH (FEET)	TEST SYMBOL	LL	PL	PI	UNIFIED SOIL CLASSIFICATION SYSTEM
B1	30	○	38	19.2	18.8	CL
B4	15	●	35.4	19.9	15.5	CL
B4	35	△	39.1	21	18.1	CL
B5	10	□	36.5	24.8	11.7	ML
B5	50	◡	46	26.6	19.4	CL

ATTERBERG LIMITS DETERMINATION

Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLANNING ASSOCIATES, INC.

FILE NO. 20255 | PLATE: F

Geotechnologies, Inc.

Project:	Planning Associates, Inc.
File No.:	20255
Description:	Liquefaction Analysis
Boring Number:	13

EMPIRICAL ESTIMATION OF LIQUEFACTION POTENTIAL

NCEER (1996) METHOD | By Thomas F. Blake (1994-1996) | LIQ2_30.WQ1

EARTHQUAKE INFORMATION:

Earthquake Magnitude:	6.4
Peak Horiz. Acceleration (g):	0.52
Calculated Mag.Wtg.Factor:	0.670

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	34.0
Historic Highest Groundwater Level* (ft):	0.0
Unit Wt. Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

ENERGY & ROD CORRECTIONS:

Energy Correction (CE) for N60:	1.00
Rod Len.Corr.(CR)(0-no or 1-yes):	1.0
Bore Dia. Corr. (CB):	1.00
Sampler Corr. (CS):	1.20
Use Ksigma (0 or 1):	1.0

LIQUEFACTION CALCULATIONS:

Depth to Base (ft)	Total Unit Wt. (pcf)	Current Water Level (0 or 1)	FIELD SPT (N)	Depth of SPT (ft)	Liq.Sus. (0 or 1)	-200 (%)	Est. Dr (%)	CN Factor	Corrected $(N_1)_{60}$	Resist. CRR	rd Factor	Induced CSR	Liquefac. Safe.Fact.
1.0	106.2	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.998	0.226	Non-Liq.
2.0	106.2	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.993	0.225	Non-Liq.
3.0	106.2	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.989	0.224	Non-Liq.
4.0	115.8	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.984	0.223	Non-Liq.
5.0	115.8	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.979	0.222	Non-Liq.
6.0	115.8	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.975	0.221	Non-Liq.
7.0	115.8	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.970	0.220	Non-Liq.
8.0	121.5	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.966	0.219	Non-Liq.
9.0	121.5	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.961	0.218	Non-Liq.
10.0	121.5	0	30.0	5.0	1	0.0	108	2.000	54.0	Infin.	0.957	0.216	Non-Liq.
11.0	121.5	0	15.0	10.0	0	79.4		1.396	25.8	~	0.952	0.215	~
12.0	121.5	0	15.0	10.0	0	79.4		1.396	25.8	~	0.947	0.214	~
13.0	118.4	0	15.0	10.0	0	79.4		1.396	25.8	~	0.943	0.213	~
14.0	118.4	0	15.0	10.0	0	79.4		1.396	25.8	~	0.938	0.212	~
15.0	118.4	0	15.0	10.0	0	79.4		1.396	25.8	~	0.934	0.211	~
16.0	118.4	0	18.0	15.0	0	46.6		1.121	26.5	~	0.929	0.210	~
17.0	118.4	0	18.0	15.0	0	46.6		1.121	26.5	~	0.925	0.209	~
18.0	117.9	0	18.0	15.0	0	46.6		1.121	26.5	~	0.920	0.208	~
19.0	117.9	0	18.0	15.0	0	46.6		1.121	26.5	~	0.915	0.207	~
20.0	117.9	0	18.0	15.0	0	46.6		1.121	26.5	~	0.911	0.206	~
21.0	117.9	0	33.0	20.0	1	0.0	86	0.964	34.2	Infin.	0.906	0.205	Non-Liq.
22.0	117.9	0	33.0	20.0	1	0.0	86	0.964	34.2	Infin.	0.902	0.204	Non-Liq.
23.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.897	0.203	Non-Liq.
24.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.893	0.202	Non-Liq.
25.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.888	0.201	Non-Liq.
26.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.883	0.200	Non-Liq.
27.0	118.8	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.879	0.199	Non-Liq.
28.0	118.9	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.874	0.198	Non-Liq.
29.0	118.9	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.870	0.197	Non-Liq.
30.0	118.9	0	31.0	25.0	1	0.0	78	0.859	30.5	Infin.	0.865	0.196	Non-Liq.
31.0	118.9	0	13.0	30.0	0	56.8		0.782	19.2	~	0.861	0.195	~
32.0	118.9	0	13.0	30.0	0	56.8		0.782	19.2	~	0.856	0.194	~
33.0	128.0	0	13.0	30.0	0	56.8		0.782	19.2	~	0.851	0.193	~
34.0	128.0	0	13.0	30.0	0	56.8		0.782	19.2	~	0.847	0.192	~
35.0	128.0	1	13.0	30.0	0	56.8		0.782	19.2	~	0.842	0.192	~
36.0	128.0	1	19.0	35.0	0	56.8		0.723	23.5	~	0.838	0.194	~
37.0	128.0	1	19.0	35.0	0	56.8		0.723	23.5	~	0.833	0.196	~
38.0	127.6	1	19.0	35.0	0	56.8		0.723	23.5	~	0.829	0.197	~
39.0	127.6	1	19.0	35.0	0	56.8		0.723	23.5	~	0.824	0.199	~
40.0	127.6	1	19.0	35.0	0	56.8		0.723	23.5	~	0.819	0.200	~
41.0	127.6	1	14.0	40.0	0	60.6		0.695	18.7	~	0.815	0.201	~
42.0	127.6	1	14.0	40.0	0	60.6		0.695	18.7	~	0.810	0.202	~
43.0	124.1	1	25.0	45.0	1	25.6	60	0.672	25.0	0.248	0.806	0.203	1.22
44.0	124.1	1	25.0	45.0	1	25.6	60	0.672	25.0	0.248	0.801	0.205	1.21
45.0	124.1	1	25.0	45.0	1	25.6	60	0.672	25.0	0.248	0.797	0.205	1.21
46.0	124.1	1	25.0	45.0	1	15.3	60	0.672	22.5	0.217	0.792	0.206	1.05
47.0	124.1	1	25.0	45.0	1	15.3	60	0.672	22.5	0.217	0.787	0.207	1.05
48.0	133.5	1	25.0	45.0	1	15.3	60	0.672	22.5	0.217	0.783	0.208	1.04
49.0	133.5	1	25.0	45.0	1	15.3	60	0.672	22.5	0.217	0.778	0.208	1.04
50.0	133.5	1	30.0	45.0	1	15.3	66	0.672	26.6	0.274	0.774	0.209	1.31
51.0	133.5	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.769	0.208	1.13
52.0	133.5	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.765	0.206	1.14
53.0	134.6	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.760	0.204	1.15
54.0	134.6	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.755	0.202	1.16
55.0	134.6	0	30.0	50.0	1	8.8	64	0.649	24.2	0.234	0.751	0.200	1.17
56.0	134.6	0	100.0	55.0	1	0.0	112	0.611	73.4	Infin.	0.746	0.198	Non-Liq.
57.0	134.6	0	100.0	55.0	1	0.0	112	0.611	73.4	Infin.	0.742	0.196	Non-Liq.
58.0	134.6	1	100.0	55.0	1	0.0	112	0.611	73.4	Infin.	0.737	0.195	Non-Liq.
59.0	134.6	1	100.0	55.0	1	0.0	112	0.611	73.4	Infin.	0.733	0.195	Non-Liq.
60.0	134.6	1	88.0	60.0	1	0.0	102	0.600	63.4	Infin.	0.728	0.196	Non-Liq.

Geotechnologies, Inc.

Project: Planning Associates, Inc.
File No.: 20255
Description: Liquefaction Analysis
Boring Number: 13

LIQUEFACTION SETTLEMENT ANALYSIS

REF: TOKIMATSU & SEED (1987)

EARTHQUAKE INFORMATION:

Earthquake Magnitude:	6.4
Peak Horiz. Acceleration (g):	0.5
Calculated Mag.Wtg.Factor:	0.670

GROUNDWATER INFORMATION:

Current Groundwater Level (ft):	34.0
Historic Highest Groundwater Level* (ft):	0.0
Unit Wt. Water (pcf):	62.4

* Based on California Geological Survey Seismic Hazard Evaluation Report

Table 4-3

SETTLEMENT CALCULATIONS:

Depth to Base (feet)	Field Blowcount N	Wet Density (pcf)	Total Stress σ (tsf)	Effective Stress σ' (tsf)	Relative Density D_r (%)	Corrected Blowcount $(N_1)_{60}$	τ_{av}/σ'	Factor of Safety Against Liquefaction	Volumetric Strain E_c (%)	Liquefaction Settlement S (inches)
1.0	30.0	106.2	0.027	0.027	108	54.0	0.338	Non-Liq.		0.00
2.0	30.0	106.2	0.080	0.080	108	54.0	0.338	Non-Liq.		0.00
3.0	30.0	106.2	0.133	0.133	108	54.0	0.338	Non-Liq.		0.00
4.0	30.0	115.8	0.188	0.188	108	54.0	0.338	Non-Liq.		0.00
5.0	30.0	115.8	0.246	0.246	108	54.0	0.338	Non-Liq.		0.00
6.0	30.0	115.8	0.304	0.304	108	54.0	0.338	Non-Liq.		0.00
7.0	30.0	115.8	0.362	0.362	108	54.0	0.338	Non-Liq.		0.00
8.0	30.0	121.5	0.421	0.421	108	54.0	0.338	Non-Liq.		0.00
9.0	30.0	121.5	0.482	0.482	108	54.0	0.338	Non-Liq.		0.00
10.0	30.0	121.5	0.543	0.543	108	54.0	0.338	Non-Liq.		0.00
11.0	15.0	121.5	0.604	0.604		25.8	0.338	~		0.00
12.0	15.0	121.5	0.664	0.664		25.8	0.338	~		0.00
13.0	15.0	118.4	0.724	0.724		25.8	0.338	~		0.00
14.0	15.0	118.4	0.783	0.783		25.8	0.338	~		0.00
15.0	15.0	118.4	0.843	0.843		25.8	0.338	~		0.00
16.0	18.0	118.4	0.902	0.902		26.5	0.338	~		0.00
17.0	18.0	118.4	0.961	0.961		26.5	0.338	~		0.00
18.0	18.0	117.9	1.020	1.020		26.5	0.338	~		0.00
19.0	18.0	117.9	1.079	1.079		26.5	0.338	~		0.00
20.0	18.0	117.9	1.138	1.138		26.5	0.338	~		0.00
21.0	33.0	117.9	1.197	1.197	86	34.2	0.338	Non-Liq.		0.00
22.0	33.0	117.9	1.256	1.256	86	34.2	0.338	Non-Liq.		0.00
23.0	31.0	118.8	1.315	1.315	78	30.5	0.338	Non-Liq.		0.00
24.0	31.0	118.8	1.375	1.375	78	30.5	0.338	Non-Liq.		0.00
25.0	31.0	118.8	1.434	1.434	78	30.5	0.338	Non-Liq.		0.00
26.0	31.0	118.8	1.493	1.493	78	30.5	0.338	Non-Liq.		0.00
27.0	31.0	118.8	1.553	1.553	78	30.5	0.338	Non-Liq.		0.00
28.0	31.0	118.9	1.612	1.612	78	30.5	0.338	Non-Liq.		0.00
29.0	31.0	118.9	1.672	1.672	78	30.5	0.338	Non-Liq.		0.00
30.0	31.0	118.9	1.731	1.731	78	30.5	0.338	Non-Liq.		0.00
31.0	13.0	118.9	1.790	1.790		19.2	0.338	~		0.00
32.0	13.0	118.9	1.850	1.850		19.2	0.338	~		0.00
33.0	13.0	128.0	1.912	1.912		19.2	0.338	~		0.00
34.0	13.0	128.0	1.976	1.976		19.2	0.338	~		0.00
35.0	13.0	128.0	2.040	2.024		19.2	0.341	~		0.00
36.0	19.0	128.0	2.104	2.057		23.5	0.346	~		0.00
37.0	19.0	128.0	2.168	2.090		23.5	0.351	~		0.00
38.0	19.0	127.6	2.232	2.122		23.5	0.355	~		0.00
39.0	19.0	127.6	2.295	2.155		23.5	0.360	~		0.00
40.0	19.0	127.6	2.359	2.188		23.5	0.365	~		0.00
41.0	14.0	127.6	2.423	2.220		18.7	0.369	~		0.00
42.0	14.0	127.6	2.487	2.253		18.7	0.373	~		0.00
43.0	25.0	124.1	2.550	2.284	60	25.0	0.377	1.22	1.12	0.134
44.0	25.0	124.1	2.612	2.315	60	25.0	0.381	1.21	1.15	0.138
45.0	25.0	124.1	2.674	2.346	60	25.0	0.385	1.21	1.15	0.138
46.0	25.0	124.1	2.736	2.377	60	22.5	0.389	1.05	1.38	0.166
47.0	25.0	124.1	2.798	2.408	60	22.5	0.393	1.05	1.40	0.168
48.0	25.0	133.5	2.862	2.441	60	22.5	0.396	1.04	1.40	0.168
49.0	25.0	133.5	2.929	2.477	60	22.5	0.400	1.04	1.40	0.168
50.0	30.0	133.5	2.996	2.512	66	26.6	0.403	1.31	1.05	0.126
51.0	30.0	133.5	3.063	2.563	64	24.2	0.404	1.13	1.23	0.148
52.0	30.0	133.5	3.129	2.630	64	24.2	0.402	1.14	1.23	0.148
53.0	30.0	134.6	3.196	2.697	64	24.2	0.401	1.15	1.23	0.148
54.0	30.0	134.6	3.264	2.764	64	24.2	0.399	1.16	1.23	0.148
55.0	30.0	134.6	3.331	2.832	64	24.2	0.398	1.17	1.23	0.148
56.0	100.0	134.6	3.398	2.899	112	73.4	0.396	Non-Liq.		0.00
57.0	100.0	134.6	3.466	2.966	112	73.4	0.395	Non-Liq.		0.00
58.0	100.0	134.6	3.533	3.018	112	73.4	0.396	Non-Liq.		0.00
59.0	100.0	134.6	3.600	3.054	112	73.4	0.398	Non-Liq.		0.00
60.0	88.0	134.6	3.667	3.090	102	63.4	0.401	Non-Liq.		0.00
							Total Liquefaction Settlement (inches):			**1.94**

PRESENTATION OF CONE PENETRATION TEST DATA

HOMEPLACE

LOS ANGELES, CALIFORNIA

Prepared for:

JERRY KOVACS & ASSOCIATES
Glendale, California

Prepared by:

GREGG IN SITU, INC.
Signal Hill, California

Prepared on:

April 4, 2000

TABLE OF CONTENTS

PRESENTATION OF CONE PENETRATION TEST DATA

1.0 INTRODUCTION

This report presents the results of a Cone Penetration Testing (CPT) program carried out at Homeplace site located in Los Angeles, CA. The work was performed on March 31, 2000. The scope of work was performed as directed by JERRY KOVACS & ASSOCIATES personnel.

2.0 FIELD EQUIPMENT & PROCEDURES

The Cone Penetration Tests (CPT) were carried out by GREGG IN SITU, INC. of Signal Hill, CA using an integrated electronic cone system. The CPT soundings were performed in accordance with ASTM standards (D3441). A 10 ton capacity cone was used for all of the soundings. This cone has a tip area of 10 sq.cm. and friction sleeve area of 150 sq.cm. The cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.85.

The cones used during the program recorded the following parameters at 5 cm depth intervals:

- Tip Resistance (Qc)
- Sleeve Friction (Fs)
- Dynamic Pore Pressure (Ut)

The above parameters were printed simultaneously on a printer and stored on a computer diskette for future analysis and reference.

The pore water pressure element was located directly behind the cone tip. The pore water pressure element was 5.0 mm thick and consisted of porous plastic. Each of the elements were saturated in glycerin under vacuum pressure prior to penetration. Pore pressure dissipations were recorded at 5 second intervals when appropriate during pauses in the penetration.

A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

The cones were pushed using GREGG IN SITU's CPT rig, having a down pressure capacity of approximately 25 tons. Five CPT soundings were performed. The penetration tests were carried to depths of approximately 45 to 72 feet below ground surface. Test locations and depths were determined in the field by JERRY KOVACS & ASSOCIATES personnel.

3.0 CONE PENETRATION TEST DATA & INTERPRETATION

The cone penetration test data is presented in graphical form in the attached Appendix. Penetration depths are referenced to existing ground surface. This data includes CPT logs of measured soil parameters and a computer tabulation of interpreted soil types along with additional geotechnical parameters and pore pressure dissipation data.

The stratigraphic interpretation is based on relationships between cone bearing (Qt), sleeve friction (Fs), and penetration pore pressure (Ut). The friction ratio (Rf), which is sleeve friction divided by cone bearing, is a calculated parameter which is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone bearing and generate large excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little in the way of excess pore water pressures.

Pore Pressure Dissipation Tests (PPDT's) were taken at various intervals in order to measure hydrostatic water pressures and approximate depth to groundwater table. In addition, the PPDT data can be used to estimate the horizontal permeability (k_h) of the soil. The correlation to permeability is based on the time required for 50 percent of the measured dynamic pore pressure to dissipate (t_{50}). A summary of the PPDT data is provided in Table 2. The PPDT plots and correlation figure are provided in the Appendix.

The interpretation of soils encountered on this project was carried out using recent correlations developed by Robertson et al, 1998. It should be noted that it is not always possible to clearly identify a soil type based on Qt, Fs and Ut. In these situations, experience and judgement and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type. The soil classification chart used to interpret soil types based on Qt and Rf is provided in the Appendix.

We hope the information presented is sufficient for your purposes. If you have any questions, please do not hesitate to contact our office at (562) 427-6899.

Sincerely,
GREGG IN SITU, INC.

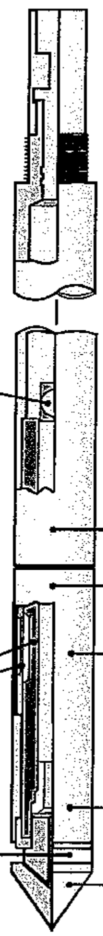
Brian Savela
Operations Manager

APPENDIX

GREGG IN SITU, INC.

Geotechnical and Environmental In Situ Testing Contractors

THE PIEZO CONE PENETROMETER



The electrical piezocone (CPTU) is the premier soil logging tool. The CPTU provides a rapid, reliable and economic means of determining soil stratigraphy, relative density, strength and equilibrium groundwater pressures.

Gregg In Situ offers a choice of 2.5, 5, 10 and 15 ton tip (Qc) capacity cones. Our cones also have variable capacity friction sleeves (Fs) and pore pressure (U). The pore pressure can be measured at one of 2 locations, either on the face of the cone tip or behind the cone tip. Pore pressure dissipation data is recorded automatically.

All data is displayed in real time at the ground surface, facilitating the on site decision making process. Field data reduction, plotting and CPT interpretation can be carried out upon request.

GREGG

Geotechnical and Environmental In Situ Testing Contractors

Los Angeles • San Francisco • Houston • Aiken
Vancouver • Edmonton • Salt Lake City • New Jersey

Tel: (562)427-6899 • Fax: (562)427-3314 • E-mail: jgregg@greggdrilling.com

Gregg In Situ CPT Interpretations as of January 7, 1999 (Release 1.00.19)

Gregg In Situ's interpretation routine should be considered a calculator of current published CPT correlations and is subject to change to reflect the current state of practice. The interpreted values are not considered valid for all soil types. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design. Reference to current literature is strongly recommended.

The CPT interpretations are based on values of tip, sleeve friction and pore pressure averaged over a user specified interval (typically 0.25m). Note that Qt is the recorded tip value, Qc, corrected for pore pressure effects. Since all Gregg In Situ cones have equal end area friction sleeves, pore pressure corrections to sleeve friction, Fs, are not required.

The tip correction is: $Qt = Qc + (1\text{-}a) \bullet Ud$

where: *Qt* is the corrected tip load
Qc is the recorded tip load
Ud is the recorded dynamic pore pressure
a is the Net Area Ratio for the cone (typically 0.85 for Gregg In Situ cones)

Effective vertical overburden stresses are calculated based on a hydrostatic distribution of equilibrium pore pressures below the water table or from a user defined equilibrium pore pressure profile (this can be obtained from CPT dissipation tests). The stress calculations use unit weights assigned to the Soil Behavior Type zones or from a user defined unit weight profile.

Details regarding the interpretation methods for all of the interpreted parameters is given in table 1. The appropriate references referred to in table 1 are listed in table 2.

The estimated Soil Behavior Type is based on the charts developed by Robertson and Campanella shown in figure 1.

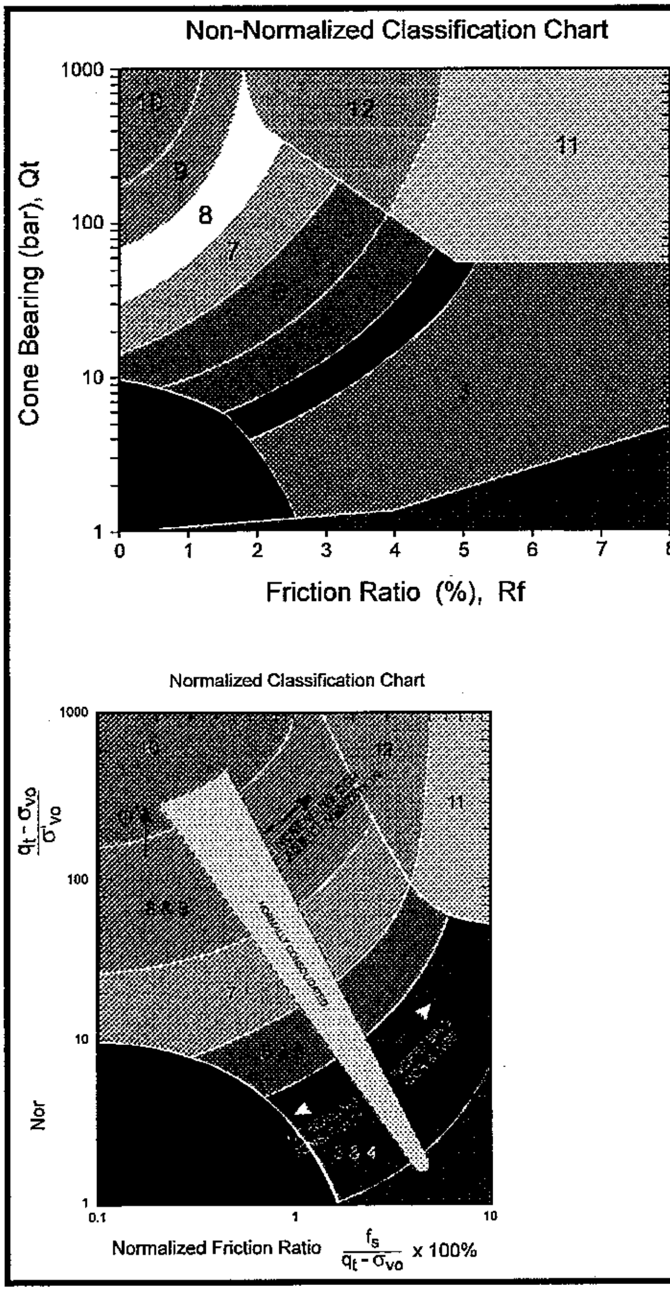
Table 1 CPT Interpretation Methods

Interpreted Parameter	Description	Equation	Ref
Depth	mid layer depth		
AvgQt	Averaged corrected tip (Qt)	$AvgQt = \frac{1}{n}\sum_{i=1}^{n} Qt_i$	
AvgFs	Averaged sleeve friction (Fs)	$AvgFs = \frac{1}{n}\sum_{i=1}^{n} Fs_i$	
AvgRf	Averaged friction ratio (Rf)	$AvgRf = 100\% \bullet \frac{AvgFs}{AvgQt}$	
AvgUd	Averaged dynamic pore pressure (Ud)	$AvgUd = \frac{1}{n}\sum_{i=1}^{n} Ud_i$	
SBT	Soil Behavior Type as defined by Robertson and Campanella		1

U.Wt.	Unit Weight of soil determined from: 1) uniform value or 2) value assigned to each SBT zone 3) user supplied unit weight profile		
TStress	Total vertical overburden stress at mid layer depth	$TStress = \sum_{i=1}^{n} \gamma_i h_i$ where γ_i is layer unit weight h_i is layer thickness	
EStress	Effective vertical overburden stress at mid layer depth	$EStress = TStress - Ueq$	
Ueq	Equilibrium pore pressure determined from: 1) hydrostatic from water table depth 2) user supplied profile		
Cn	SPT N_{60} overburden correction factor	$Cn=(\sigma_v')^{-0.5}$ where σ_v' is in tsf $0.5 < C_n < 2.0$	
N_{60}	SPT N value at 60% energy calculated from Qt/N ratios assigned to each SBT zone		3
$(N1)_{60}$	SPT N_{60} value corrected for overburden pressure	$N1_{60} = Cn \bullet N_{60}$	3
$\Delta(N1)_{60}$	Equivalent Clean Sand Correction to $(N1)_{60}$	$\Delta(N1)_{60} = \frac{K_{SPT}}{1-K_{SPT}} \bullet (N1)_{60}$ Where: K_{SPT} is defined as: 0.0 for FC < 5% 0.0167 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	7
$(N1)_{60cs}$	Equivalent Clean Sand $(N1)_{60}$	$(N1)_{60cs} = (N1)_{60} + \Delta(N1)_{60}$	7
Su	Undrained shear strength - Nkt is use selectable	$Su = \frac{Qt - \sigma_v}{N_{kt}}$	2
k	Coefficient of permeability (assigned to each SBT zone)		6
Bq	Pore pressure parameter	$Bq = \frac{\Delta u}{Qt - \sigma_v}$	2
Qtn	Normalized Qt for Soil Behavior Type classification as defined by Robertson, 1990	$Qtn = \frac{Qt - \sigma_v}{\sigma'_v}$	4
Rfn	Normalized Rf for Soil Behavior Type classification as defined by Robertson, 1990	$Rfn = 100\% \bullet \frac{f_s}{Qt - \sigma_v}$	4
SBTn	Normalized Soil Behavior Type (slightly modified from that published by Robertson, 1990. This version includes all the soil zones of the original non-normalized SBT chart - see figure 1)		4
Qc1	Normalized Qt for seismic analysis	$qc1 = qc \bullet (Pa/\sigma_v')^{0.5}$ where: Pa = atm. pressure	5
Qc1N	Dimensionless Normalized Qt1	qc1N = qc1 / Pa where: Pa = atm. pressure	

CPT Interpretations

ΔQc1N1	Equivalent clean sand correction	$\Delta qc1N = \frac{K_{CPT}}{1-K_{CPT}} \bullet qc1N$ Where: K_{CPT} is defined as: 0.0 for FC < 5% 0.0267 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	5
Qc1Ncs	Clean Sand equivalent Qc1N	$qc1Ncs = qc1N + \Delta qc1N$	5
Ic	Soil index for estimating grain characteristics	$Ic = [(3.47 - \log Q)^2 + (\log F + 1.22)^2]^{0.5}$	5
FC	Fines content (%)	$FC=1.75(Ic^{3.25}) - 3.7$ $FC=100$ for $Ic > 3.5$ $FC=0$ for $Ic < 1.26$ $FC = 5\%$ if $1.64 < Ic < 2.6$ AND $Rfn<0.5$	8
PHI	Friction Angle	Campanella and Robertson Durunoglu and Mitchel Janbu	1
Dr	Relative Density	Ticino Sand Hokksund Sand Schmertmann 1976 Jamiolkowski - All Sands	1
OCR	Over Consolidation Ratio		1
State Parameter			9
CRR	Cyclic Resistance Ratio		7



Zone		Q_t / N	Soil Behaviour Type
1	■	2	sensitive fine grained
2	■	1	organic material
3		1	clay
4	■	1.5	silty clay to clay
5		2	clayey silt to silty clay
6		2.5	sandy silt to clayey silt
7		3	
8	□	4	and to silty sand
9		5	sand
10		6	gravelly sand to sand
11		1	very stiff fine grained *
12		2	sand to clayey sand *

Figure 1 Non-Normalized and Normalized Soil Behavior Type Classification Charts

Table 2 References

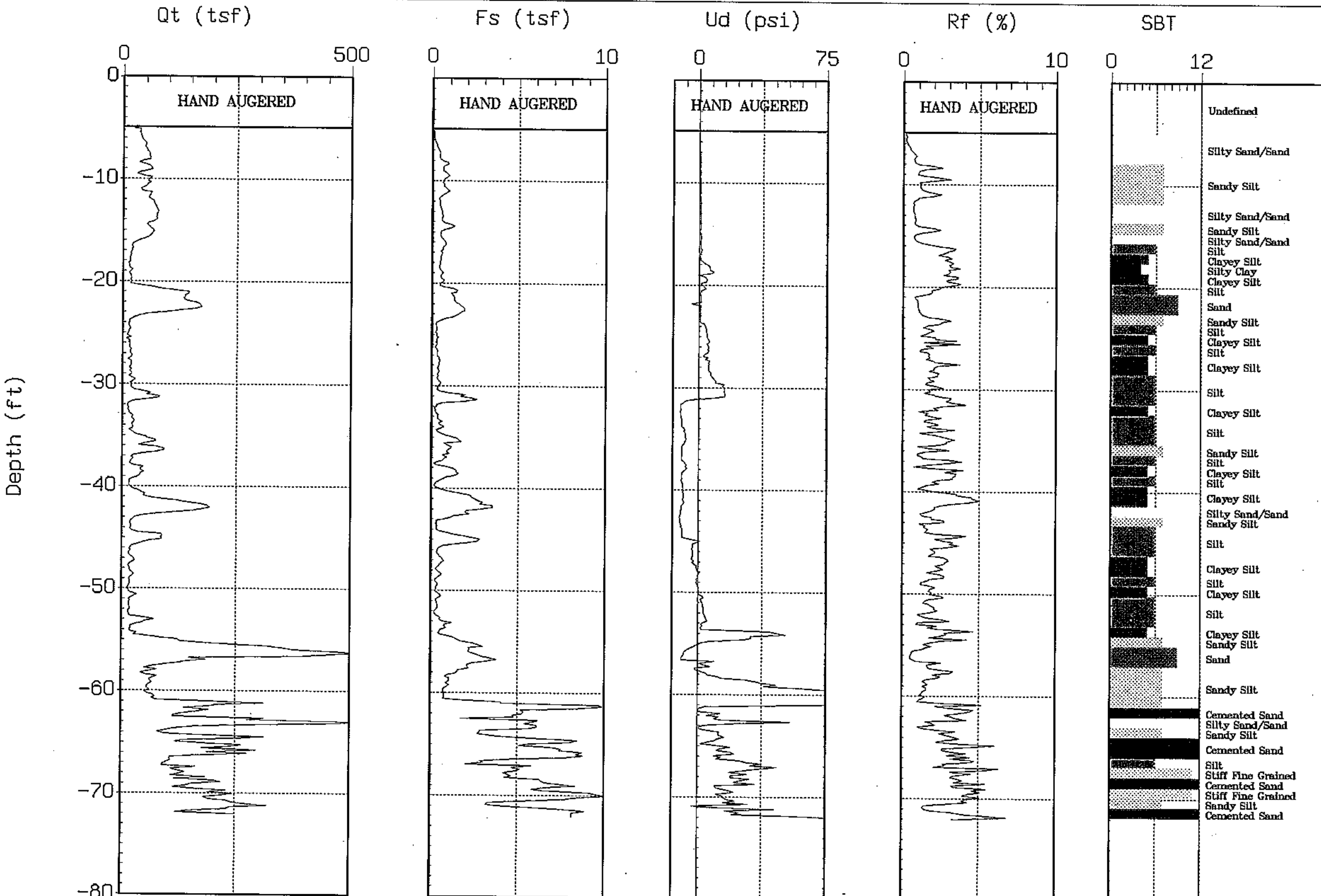
No.	Reference
1	Robertson, P.K. and Campanella, R.G., 1986, "Guidelines for Use, Interpretation and Application of the CPT and CPTU", UBC, Soil Mechanics Series No. 105, Civil Eng. Dept., Vancouver, B.C., Canada
2	Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
3	Robertson, P.K. and Campanella, R.G., 1989, "Guidelines for Geotechnical Design Using CPT and CPTU", UBC, Soil Mechanics Series No. 120, Civil Eng. Dept., Vancouver, B.C., Canada
4	Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27.
5	Robertson, P.K. and Fear, C.E., 1995, "Liquefaction of Sands and its Evaluation", Keynote Lecture, First International Conference on Earthquake Geotechnical Engineering, Tokyo, Japan.
6	Gregg In Situ Internal Report
7	Robertson, P.K and Wride, C.E., 1997, "Cyclic Liquefaction and its Evaluation Based on SPT and CPT", NCEER Workshop Paper, January 22, 1997
8	Wride, C.E. and Robertson, P.K., 1997, "Phase II Data Review Report (Massey and Kidd Sites, Fraser River Delta)", Volume 1 - Data Report (June 1997), University of Alberta.
9	Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1992, "CPT Based Screening Procedure for Evaluating Liquefaction Susceptibility", 45th Canadian Geotechnical Conference, Toronto, Ontario, October 1992.

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-1

Engineer : S. MOORE
Date : 03:31:00 07:54



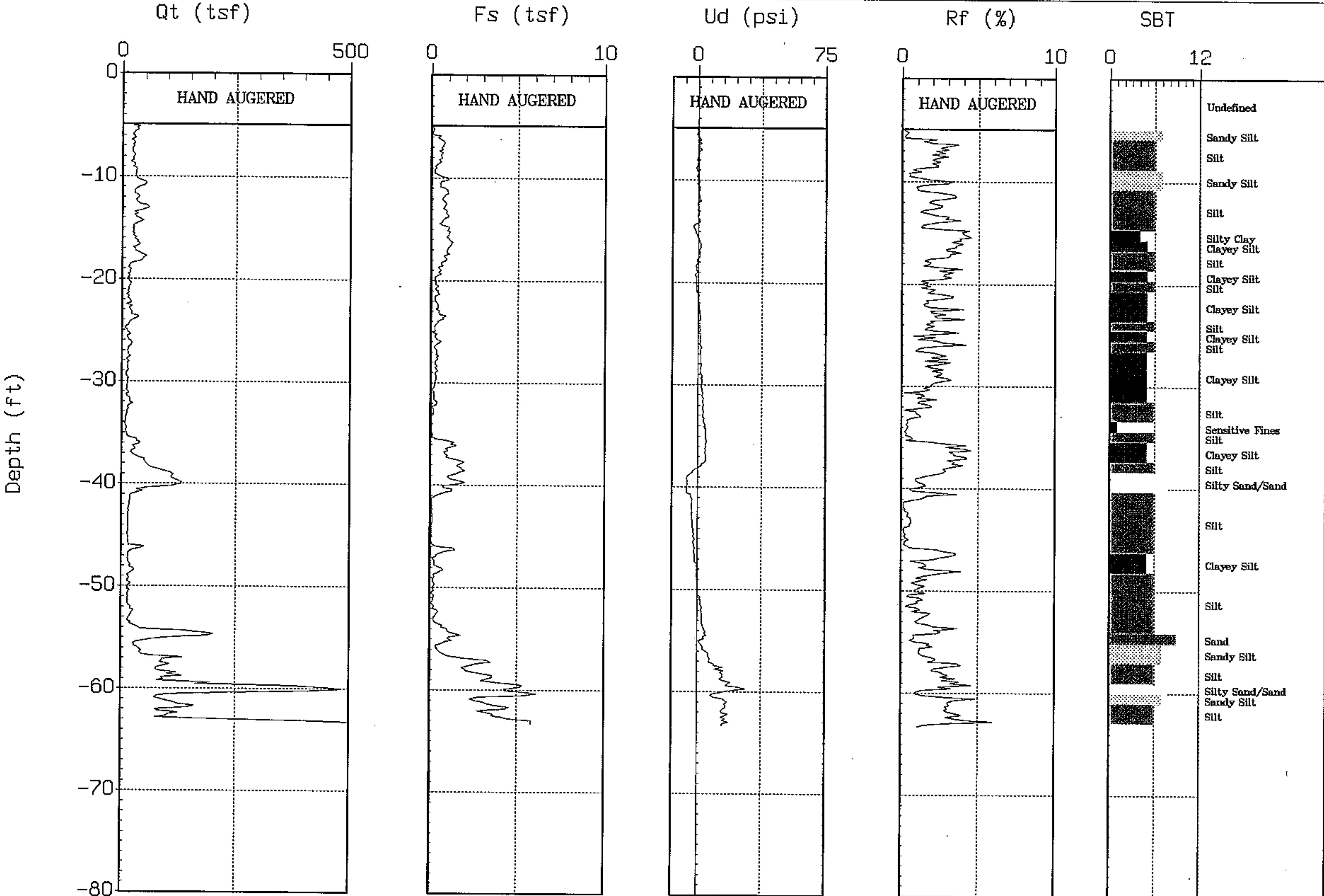
Max. Depth: 72.01 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

JERRY KOVACS

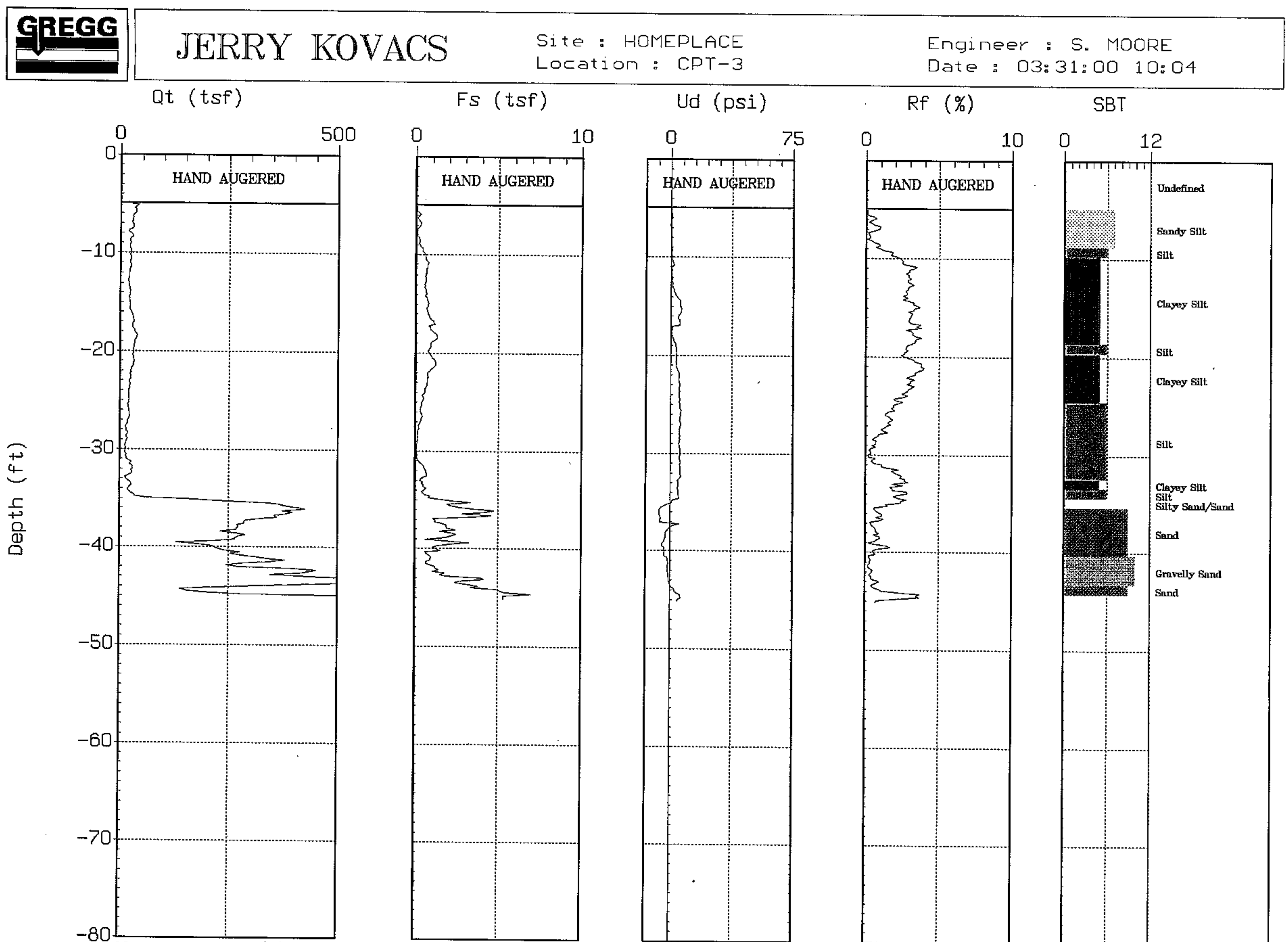
Site : HOMEPLACE
Location : CPT-2

Engineer : S. MOORE
Date : 03:31:00 09:02



Max. Depth: 63.32 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)



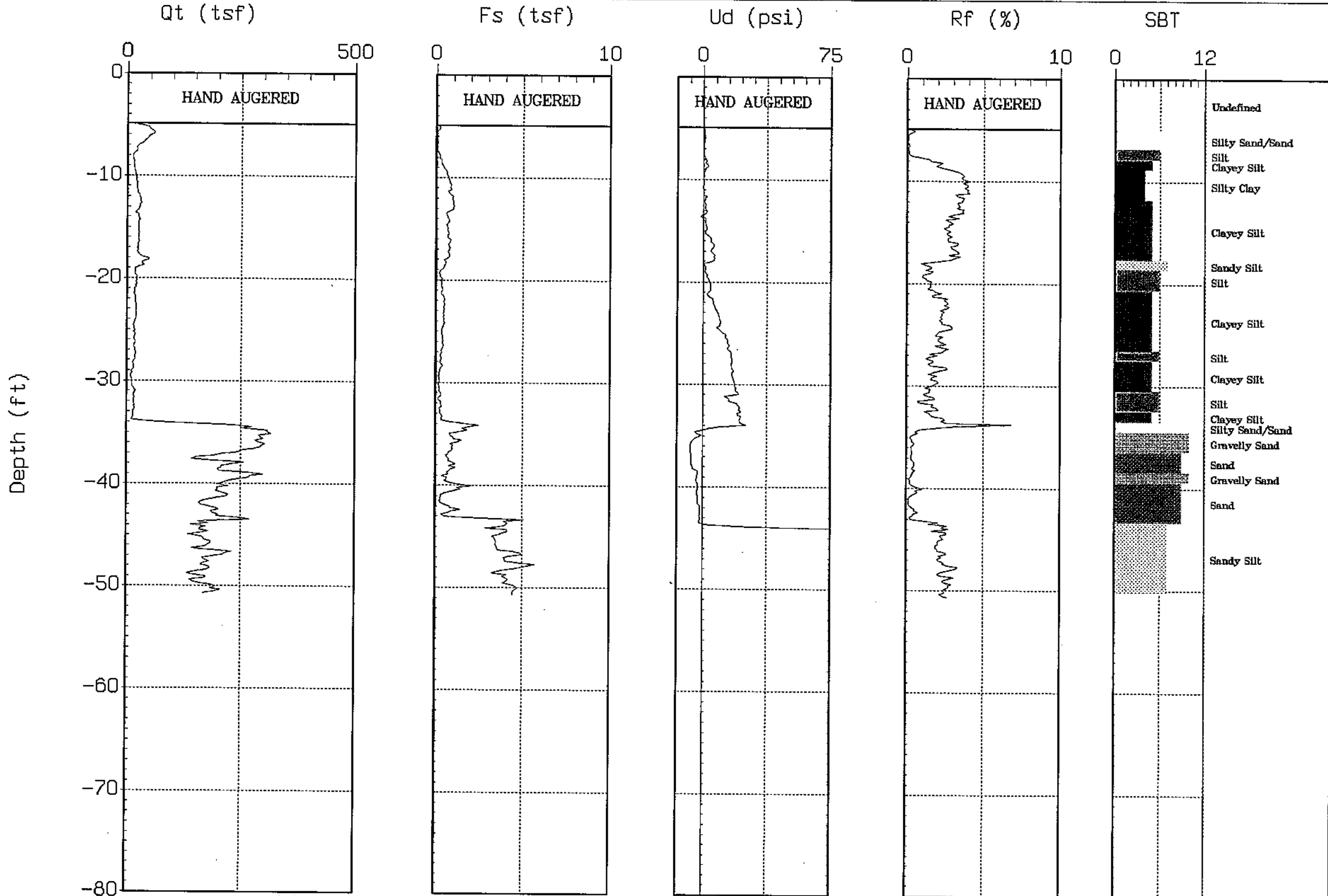
Max. Depth: 45.11 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-4

Engineer : S. MOORE
Date : 03:31:00 11:11



Max. Depth: 50.69 (ft)

Depth Inc.: 0.164 (ft)

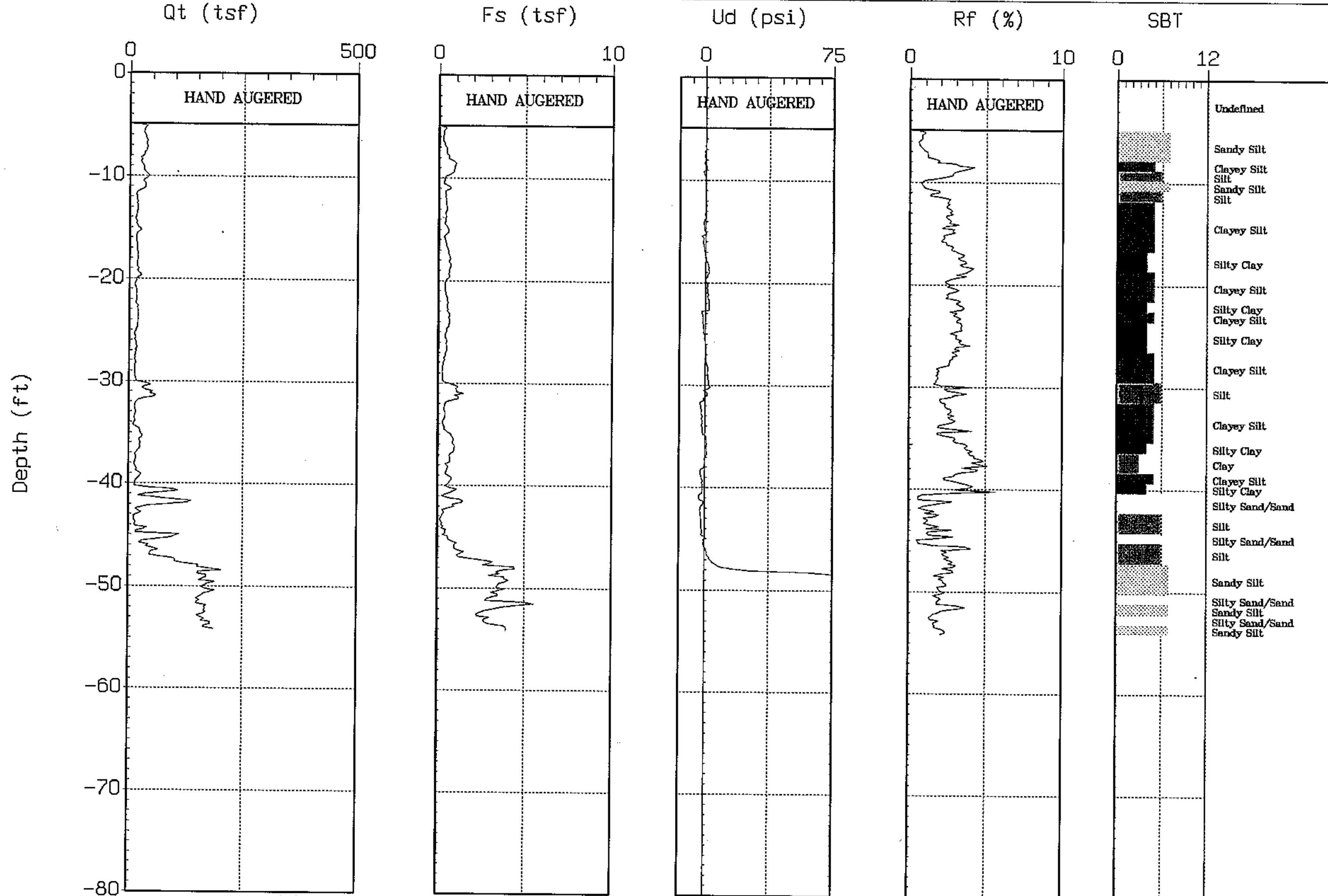
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-5

Engineer : S. MOORE
Date : 03:31:00 12:47



Max. Depth: 54.13 (ft)

Depth Inc.: 0.164 (ft)

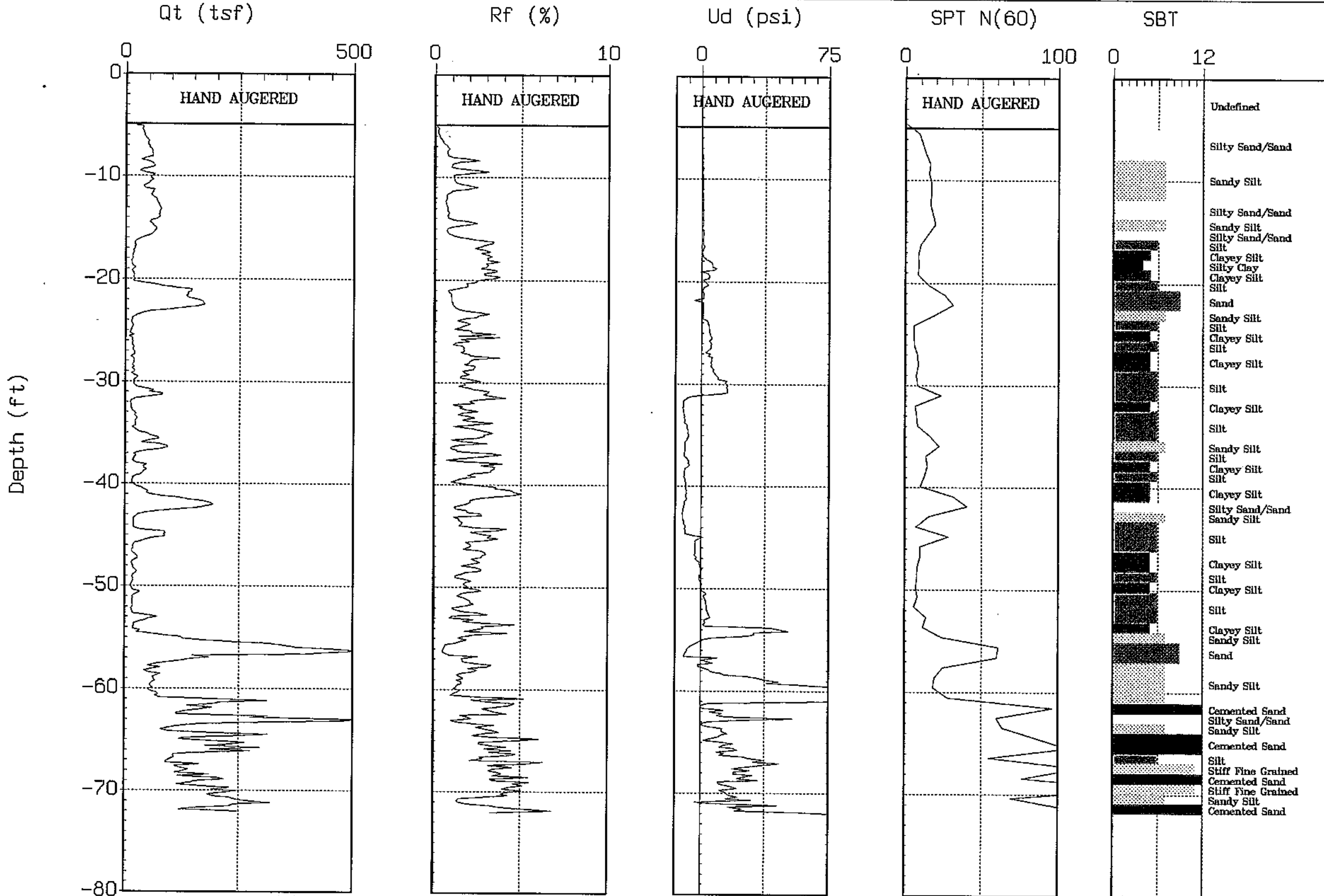
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-1

Engineer : S. MOORE
Date : 03:31:00 07:54



Max. Depth: 72.01 (ft)

Depth Inc.: 0.164 (ft)

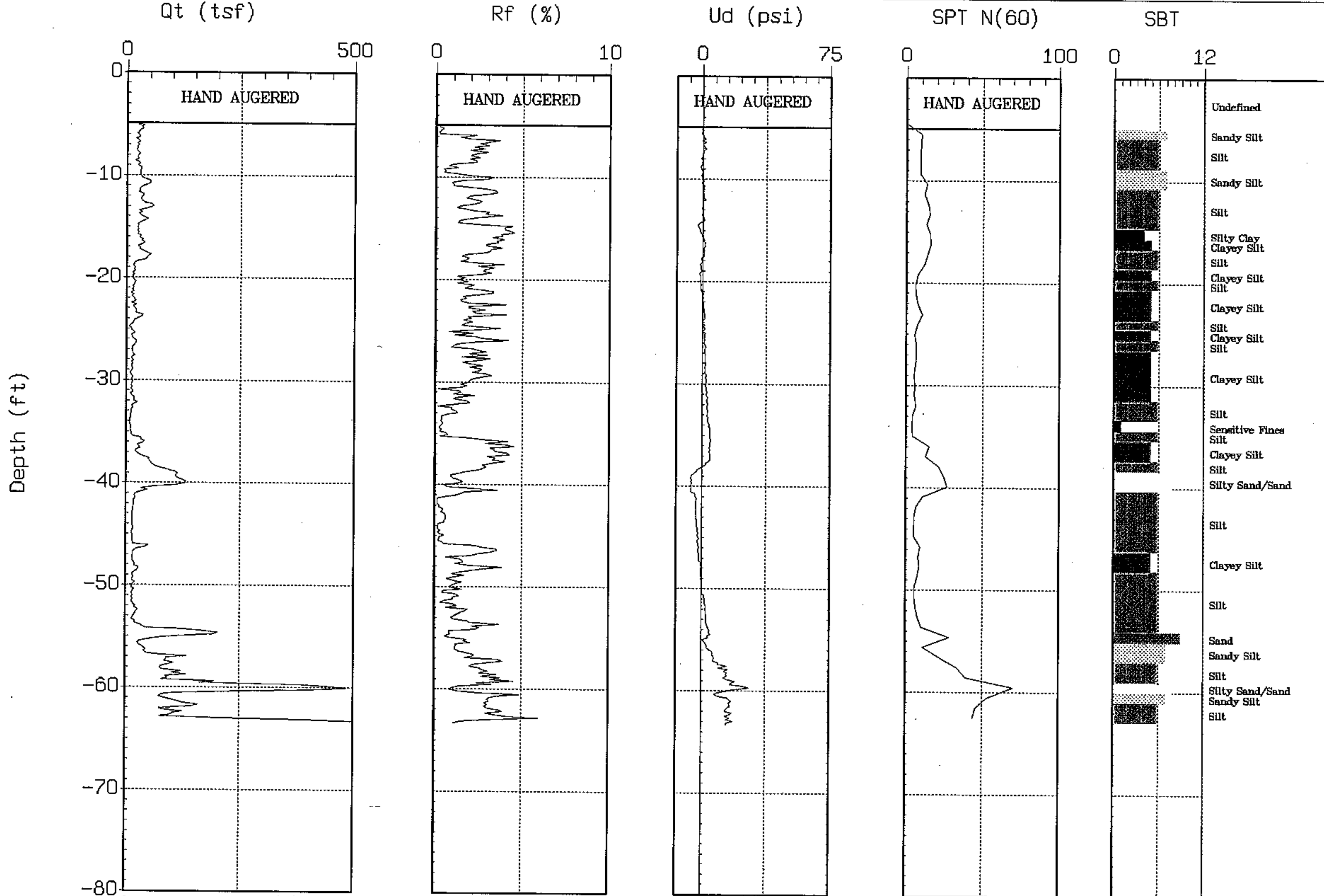
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-2

Engineer : S. MOORE
Date : 03:31:00 09:02



Max. Depth: 63.32 (ft)

Depth Inc.: 0.164 (ft)

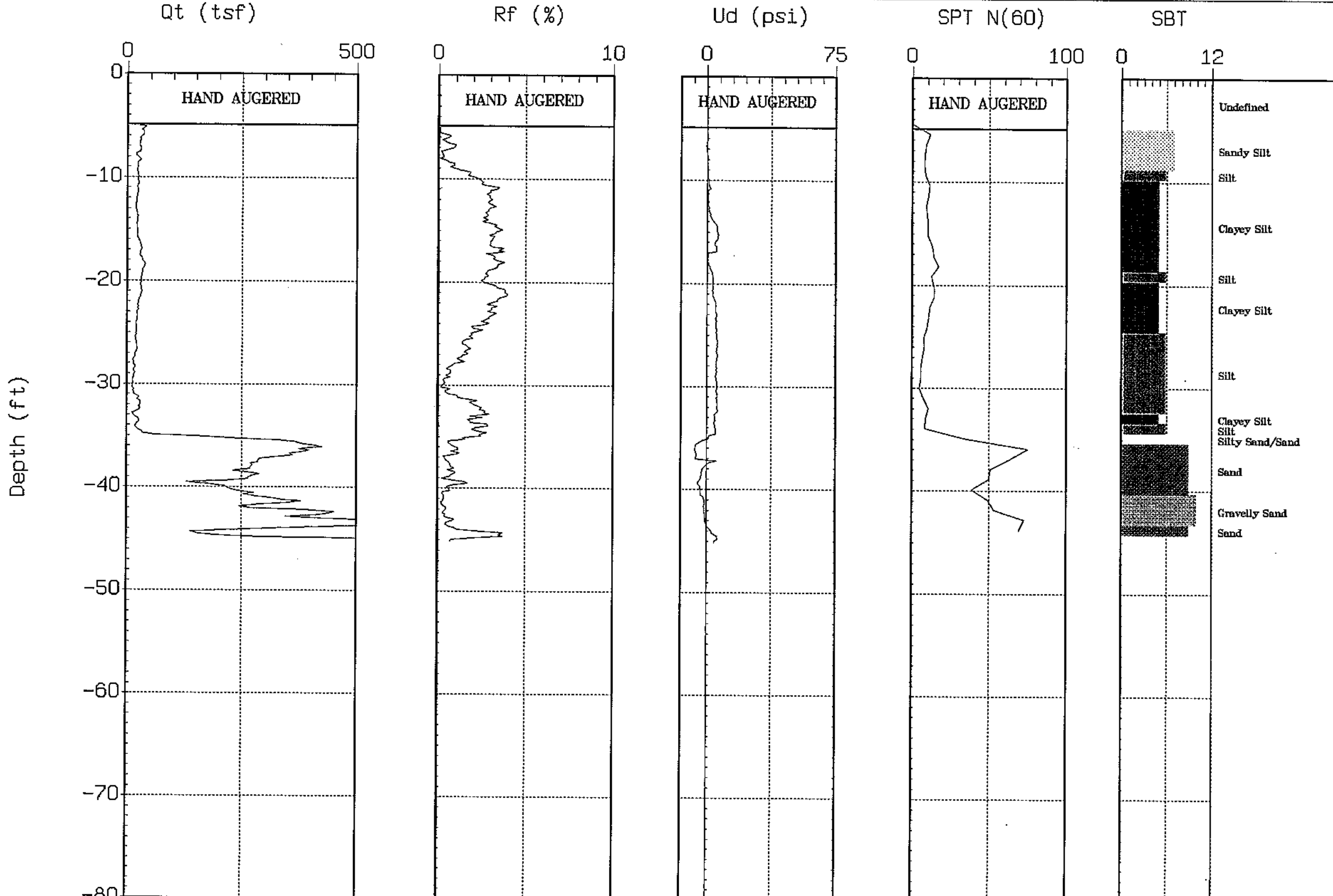
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-3

Engineer : S. MOORE
Date : 03:31:00 10:04



Max. Depth: 45.11 (ft)

Depth Inc.: 0.164 (ft)

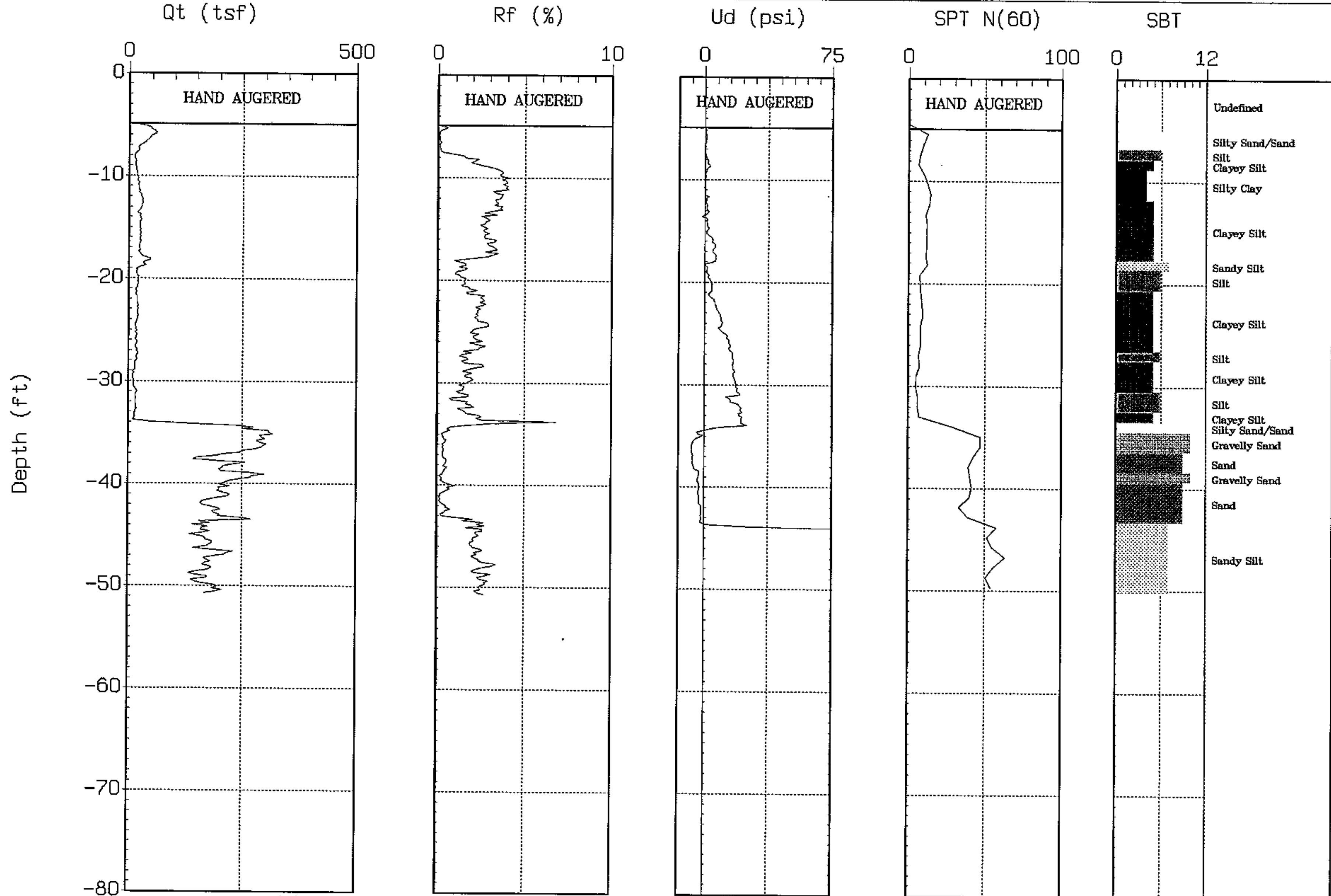
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-4

Engineer : S. MOORE
Date : 03:31:00 11:11



Max. Depth: 50.69 (ft)

Depth Inc.: 0.164 (ft)

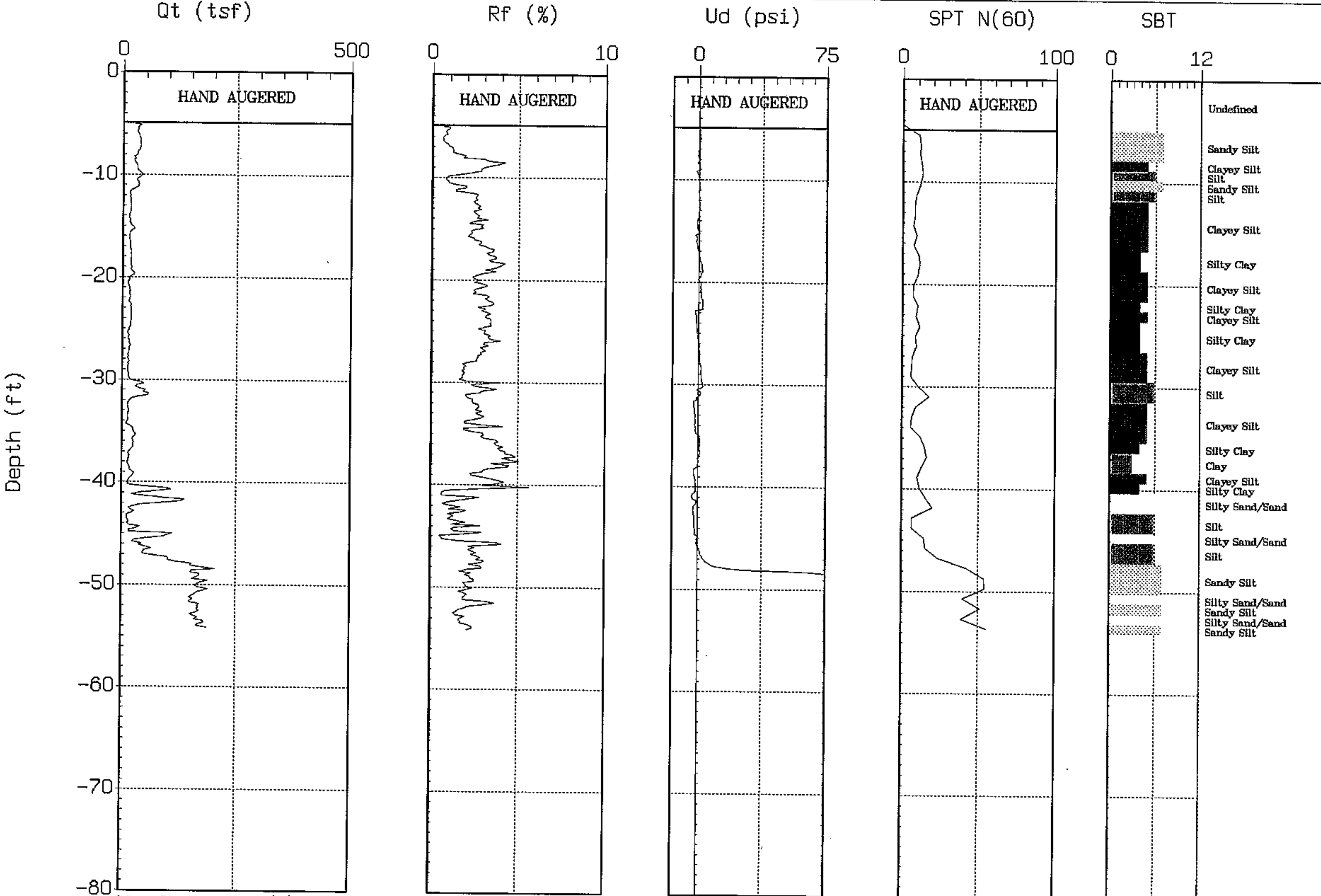
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

JERRY KOVACS

Site : HOMEPLACE
Location : CPT-5

Engineer : S. MOORE
Date : 03:31:00 12:47

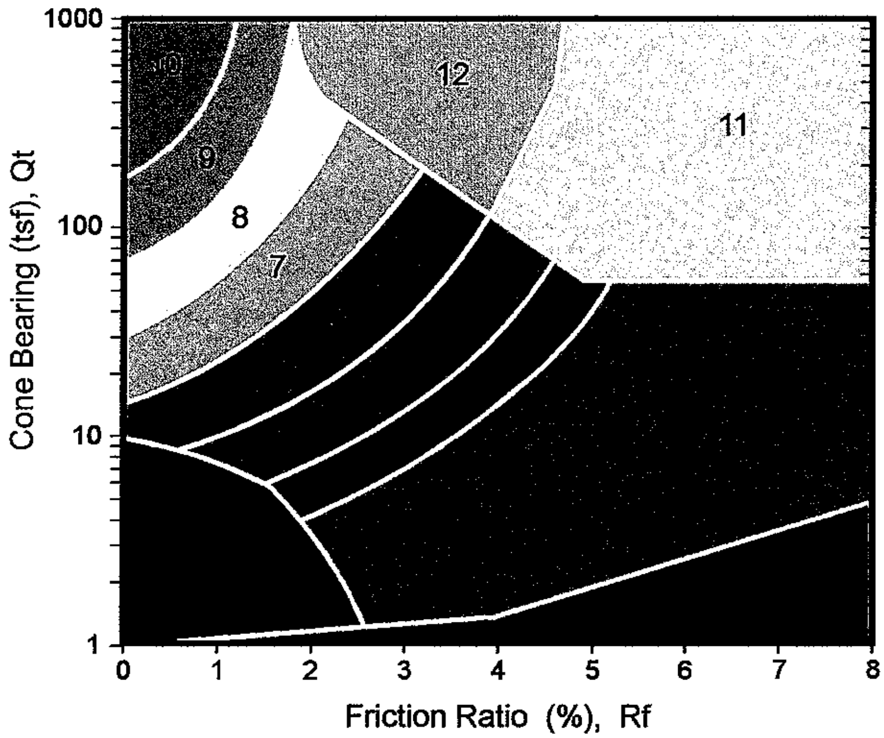


Max. Depth: 54.13 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CPT Classification Chart
(after Robertson and Campanella, 1988)



Zone	Q_t / N	Soil Behaviour Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	silty sand to sandy silt
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

* overconsolidated or cemented

GREGG

Gregg In Situ, Inc.

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3247
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-1
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 07:54
CPT File: 597C1.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.69 (ft): 31.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	37.4	0.06	0.17	-0.3	8	120.9	0.34	0.34	0.00	1.73	8.9	15.4	UnDef	0.10
6.40	45.8	0.20	0.43	-0.4	8	120.9	0.39	0.39	0.00	1.59	11.0	17.5	UnDef	0.11
7.30	54.1	0.39	0.73	0.4	8	120.9	0.45	0.45	0.00	1.49	12.9	19.3	UnDef	0.14
8.20	50.1	0.67	1.33	0.7	7	117.8	0.50	0.50	0.00	1.41	16.0	22.5	UnDef	0.14
9.19	47.8	0.75	1.56	0.8	7	117.8	0.56	0.56	0.00	1.34	15.3	20.4	UnDef	0.14
10.17	55.8	0.64	1.15	1.1	7	117.8	0.62	0.62	0.00	1.27	17.8	22.7	UnDef	0.14
11.15	50.2	0.68	1.37	0.9	7	117.8	0.68	0.68	0.00	1.22	16.0	19.5	UnDef	0.14
12.14	64.8	0.41	0.64	1.5	8	120.9	0.74	0.74	0.00	1.17	15.5	18.1	UnDef	0.13
13.21	73.8	0.54	0.73	1.5	8	120.9	0.80	0.80	0.00	1.12	17.7	19.8	UnDef	0.15
14.27	60.8	0.88	1.44	1.3	7	117.8	0.86	0.86	0.00	1.08	19.4	20.9	UnDef	0.16
15.26	61.0	0.49	0.81	1.9	8	120.9	0.92	0.92	0.00	1.04	14.6	15.2	UnDef	0.13
16.24	25.6	0.66	2.56	2.0	6	114.6	0.98	0.98	0.00	1.01	9.8	9.9	1.97	0.27
17.22	17.0	0.48	2.85	1.6	5	114.6	1.04	1.04	0.00	0.98	8.1	8.0	1.28	0.13
18.21	13.4	0.42	3.10	13.6	4	114.6	1.09	1.09	0.00	0.96	8.6	8.2	0.99	0.10
19.19	16.9	0.53	3.16	8.7	5	114.6	1.15	1.15	0.00	0.93	8.1	7.5	1.26	0.12
20.18	39.1	0.80	2.04	4.5	6	114.6	1.21	1.21	0.00	0.91	15.0	13.6	3.03	0.21
21.16	135.1	1.23	0.91	2.0	9	124.1	1.26	1.26	0.00	0.89	25.9	23.0	UnDef	0.31
22.15	161.4	1.65	1.02	-0.1	9	124.1	1.33	1.33	0.00	0.87	30.9	26.8	UnDef	0.43
23.13	59.7	1.14	1.91	1.8	7	117.8	1.39	1.39	0.00	0.85	19.1	16.2	UnDef	0.21
24.11	14.3	0.23	1.64	8.8	6	114.6	1.44	1.44	0.00	0.83	5.5	4.6	1.03	0.10
25.10	11.6	0.24	2.09	11.9	5	114.6	1.50	1.50	0.00	0.82	5.6	4.5	0.81	0.09
26.08	15.2	0.23	1.51	12.1	6	114.6	1.56	1.56	0.00	0.80	5.8	4.7	1.09	0.10
27.07	16.5	0.33	2.02	10.3	5	114.6	1.61	1.61	0.00	0.79	7.9	6.2	1.19	0.10
28.05	17.2	0.36	2.10	13.6	5	114.6	1.67	1.67	0.00	0.77	8.2	6.4	1.24	0.11
29.04	18.7	0.32	1.71	19.4	6	114.6	1.72	1.72	0.00	0.76	7.2	5.4	1.36	0.11
30.02	20.5	0.39	1.91	33.8	6	114.6	1.78	1.78	0.00	0.75	7.8	5.9	1.49	0.12
31.00	60.8	1.87	3.08	6.8	6	114.6	1.84	1.84	0.00	0.74	23.3	17.2	4.72	0.00
31.99	13.7	0.27	1.96	-24.3	5	114.6	1.89	1.89	0.01	0.73	6.5	4.8	0.94	0.09
32.97	19.1	0.36	1.91	-23.3	6	114.6	1.95	1.91	0.04	0.72	7.3	5.3	1.37	0.11
33.96	20.8	0.42	2.02	-20.3	6	114.6	2.01	1.94	0.07	0.72	8.0	5.7	1.50	0.12
34.94	42.0	1.16	2.76	-18.1	6	114.6	2.06	1.96	0.10	0.71	16.1	11.5	3.20	0.37
35.92	69.0	0.91	1.32	-22.4	7	117.8	2.12	1.99	0.13	0.71	22.0	15.6	UnDef	0.18
36.91	35.3	0.69	1.95	-21.4	6	114.6	2.18	2.02	0.16	0.70	13.5	9.5	2.65	0.25
37.89	30.1	0.88	2.92	-18.9	5	114.6	2.23	2.04	0.19	0.70	14.4	10.1	2.23	0.18
38.88	32.4	0.84	2.60	-22.7	6	114.6	2.29	2.07	0.22	0.70	12.4	8.6	2.41	0.21
39.86	20.4	0.52	2.54	-20.9	5	114.6	2.35	2.09	0.25	0.69	9.8	6.8	1.45	0.11
40.85	65.1	2.41	3.71	-20.5	5	114.6	2.40	2.12	0.28	0.69	31.2	21.4	5.02	0.00

Gregg In Situ, Inc.
Run No: 00-0403-0737-3247
CPT File: 597C1.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	169.5	2.75	1.62	-23.5	8	120.9	2.46	2.15	0.31	0.68	40.6	27.7	UnDef	0.00
42.81	49.0	0.96	1.97	-24.9	7	117.8	2.52	2.18	0.34	0.68	15.6	10.6	UnDef	0.00
43.80	18.4	0.39	2.11	-22.4	6	114.6	2.58	2.20	0.37	0.67	7.1	4.8	1.27	0.10
44.78	73.3	2.17	2.96	-10.7	6	114.6	2.63	2.23	0.41	0.67	28.1	18.8	5.66	0.00
45.77	25.5	0.55	2.17	-7.9	6	114.6	2.69	2.25	0.44	0.67	9.8	6.5	1.83	0.13
46.75	20.5	0.54	2.65	-7.5	5	114.6	2.75	2.28	0.47	0.66	9.8	6.5	1.42	0.11
47.74	16.6	0.39	2.33	-1.2	5	114.6	2.80	2.30	0.50	0.66	8.0	5.3	1.11	0.09
48.72	19.9	0.34	1.73	-1.5	6	114.6	2.86	2.33	0.53	0.66	7.6	5.0	1.37	0.10
49.70	14.6	0.29	1.97	0.3	5	114.6	2.91	2.36	0.56	0.65	7.0	4.6	0.93	0.09
50.69	21.1	0.37	1.76	5.1	6	114.6	2.97	2.38	0.59	0.65	8.1	5.2	1.45	0.11
51.67	15.6	0.27	1.73	7.3	6	114.6	3.03	2.41	0.62	0.64	6.0	3.8	1.00	0.09
52.66	35.7	0.56	1.57	8.8	6	114.6	3.08	2.43	0.65	0.64	13.7	8.8	2.61	0.21
53.64	24.4	0.62	2.55	55.1	5	114.6	3.14	2.46	0.68	0.64	11.7	7.5	1.70	0.12
54.63	74.7	1.43	1.91	37.1	7	117.8	3.20	2.48	0.71	0.63	23.8	15.1	UnDef	0.00
55.61	318.5	2.41	0.76	-14.2	9	124.1	3.26	2.51	0.74	0.63	61.0	38.5	UnDef	0.00
56.59	311.7	3.03	0.97	-5.7	9	124.1	3.32	2.54	0.77	0.63	59.7	37.4	UnDef	0.00
57.58	77.7	1.79	2.30	6.2	7	117.8	3.38	2.57	0.80	0.62	24.8	15.5	UnDef	0.00
58.56	60.9	0.95	1.56	64.5	7	117.8	3.44	2.60	0.84	0.62	19.4	12.0	UnDef	0.45
59.55	58.0	0.81	1.40	158.0	7	117.8	3.49	2.63	0.87	0.62	18.5	11.4	UnDef	0.39
60.53	88.2	1.97	2.24	261.8	7	117.8	3.55	2.65	0.90	0.61	28.2	17.3	UnDef	0.00
61.52	201.3	7.29	3.62	9.2	12	120.9	3.61	2.68	0.93	0.61	96.4	58.9	UnDef	0.00
62.42	190.8	4.68	2.45	52.4	7	117.8	3.66	2.71	0.96	0.61	60.9	37.0	UnDef	0.00
63.32	276.8	4.82	1.74	13.1	8	120.9	3.72	2.73	0.98	0.60	66.3	40.1	UnDef	0.00
64.30	172.7	5.70	3.30	22.2	6	114.6	3.78	2.76	1.01	0.60	66.1	39.8	13.51	0.00
65.29	214.1	6.89	3.22	36.0	12	120.9	3.83	2.79	1.05	0.60	102.5	61.4	UnDef	0.00
66.27	158.6	5.94	3.75	47.4	12	120.9	3.89	2.82	1.08	0.60	75.9	45.2	UnDef	0.00
67.26	113.1	4.47	3.95	71.8	5	114.6	3.95	2.84	1.11	0.59	54.2	32.1	8.73	0.00
68.24	146.9	5.44	3.71	56.8	12	120.9	4.01	2.87	1.14	0.59	70.3	41.5	UnDef	0.00
69.22	168.6	7.32	4.34	33.0	11	130.5	4.07	2.90	1.17	0.59	161.5	94.8	UnDef	0.00
70.21	208.8	7.38	3.53	43.4	12	120.9	4.13	2.93	1.20	0.58	100.0	58.4	UnDef	0.00
71.19	241.2	6.27	2.60	41.8	7	117.8	4.19	2.96	1.23	0.58	77.0	44.7	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3247
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-1
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 07:54
CPT File: 597C1.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.69 (ft): 31.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-03	0.00	110.4	0.17	9	63.1	0.0	63.1	2.8	42	54.1	1.0	-0.05	0.0	15.4
6.40	5.0E-03	0.00	115.1	0.44	9	71.4	0.0	71.4	5.0	42	57.6	1.0	-0.13	0.0	17.5
7.30	5.0E-03	0.00	119.3	0.73	9	78.9	5.4	84.3	7.4	42	60.5	1.0	-0.18	0.8	20.1
8.20	5.0E-04	0.00	98.6	1.34	9	69.1	18.6	87.7	12.9	42	56.7	1.0	-0.22	3.4	26.0
9.19	5.0E-04	0.00	84.2	1.58	7	62.5	25.1	87.6	15.7	42	53.8	1.0	-0.22	4.4	24.8
10.17	5.0E-04	0.00	89.2	1.16	9	69.5	17.9	87.4	12.7	42	56.8	1.0	-0.19	3.3	26.0
11.15	5.0E-04	0.00	73.1	1.38	7	59.7	24.7	84.4	16.0	40	52.5	1.0	-0.19	4.4	23.8
12.14	5.0E-03	0.00	87.1	0.64	9	74.0	9.0	83.0	9.1	42	58.6	1.0	-0.14	1.3	19.4
13.21	5.0E-03	0.00	91.3	0.73	9	80.8	10.8	91.6	9.4	42	61.2	1.0	-0.15	1.6	21.3
14.27	5.0E-04	0.00	69.4	1.46	7	64.0	30.1	94.2	17.0	40	54.5	1.0	-0.19	5.2	26.1
15.26	5.0E-03	0.00	65.1	0.82	9	62.1	17.3	79.4	13.2	40	53.6	1.0	-0.13	2.4	17.6
16.24	5.0E-05	0.00	25.1	2.66	6	25.3	101.3	126.6	37.6	34	30.0	6.0	-0.15	9.9	19.8
17.22	5.0E-06	0.00	15.4	3.03	6	16.4	65.4	81.8	48.7	UnDef	UnDef	6.0	UnDef	8.0	16.0
18.21	5.0E-07	0.03	11.3	3.37	4	12.6	50.3	62.8	57.4	UnDef	UnDef	3.0	UnDef	8.2	16.4
19.19	5.0E-06	0.02	13.7	3.39	4	15.4	61.5	76.9	53.1	UnDef	UnDef	6.0	UnDef	7.5	15.1
20.18	5.0E-05	0.00	31.4	2.10	7	34.8	77.9	112.7	30.9	36	37.0	6.0	-0.14	10.4	24.0
21.16	5.0E-02	0.00	105.8	0.92	9	117.6	16.7	134.2	9.6	42	71.9	1.0	-0.19	1.9	25.0
22.15	5.0E-02	0.00	120.7	1.03	9	137.2	18.2	155.3	9.4	42	76.3	1.0	-0.21	2.1	29.0
23.13	5.0E-04	0.00	42.1	1.95	7	49.6	62.1	111.7	25.8	38	47.2	1.0	-0.17	8.6	24.8
24.11	5.0E-05	0.02	8.9	1.82	6	11.6	46.5	58.1	53.5	30	30.0	3.0	0.01	4.6	9.1
25.10	5.0E-06	0.04	6.7	2.40	4	9.3	37.1	46.3	64.6	UnDef	UnDef	3.0	UnDef	4.5	9.1
26.08	5.0E-05	0.03	8.8	1.68	6	11.9	47.6	59.6	52.7	30	30.0	3.0	0.01	4.7	9.3
27.07	5.0E-06	0.02	9.2	2.24	4	12.7	50.8	63.5	55.6	UnDef	UnDef	3.0	UnDef	6.2	12.4
28.05	5.0E-06	0.03	9.3	2.32	4	13.0	52.2	65.2	55.9	UnDef	UnDef	3.0	UnDef	6.4	12.8
29.04	5.0E-05	0.04	9.8	1.88	6	13.9	55.7	69.6	51.6	30	30.0	3.0	-0.01	5.4	10.9
30.02	5.0E-05	0.06	10.5	2.09	6	15.0	60.0	75.0	51.6	30	30.0	3.0	-0.02	5.9	11.8
31.00	5.0E-05	0.00	32.1	3.18	6	43.9	175.5	219.4	36.0	36	43.7	6.0	-0.20	17.2	34.4
31.99	5.0E-06	-0.06	6.2	2.27	4	9.7	38.9	48.7	65.8	UnDef	UnDef	1.5	UnDef	4.8	9.5
32.97	5.0E-05	-0.04	9.0	2.13	4	13.5	54.0	67.5	55.6	30	30.0	3.0	-0.01	5.3	10.6
33.96	5.0E-05	-0.04	9.7	2.24	4	14.6	58.4	72.9	54.5	30	30.0	3.0	-0.02	5.7	11.4
34.94	5.0E-05	-0.02	20.3	2.90	6	29.3	117.4	146.7	42.6	34	32.1	6.0	-0.13	11.5	23.0
35.92	5.0E-04	-0.01	33.6	1.36	7	47.8	55.8	103.7	25.2	36	46.1	1.0	-0.11	7.9	23.5
36.91	5.0E-05	-0.03	16.4	2.07	6	24.3	97.2	121.6	42.0	32	30.0	6.0	-0.07	9.5	19.0
37.89	5.0E-06	-0.03	13.7	3.15	4	20.6	82.5	103.2	51.9	UnDef	UnDef	6.0	UnDef	10.1	20.2
38.88	5.0E-05	-0.03	14.6	2.79	6	22.1	88.3	110.4	48.6	32	30.0	6.0	-0.09	8.6	17.3
39.86	5.0E-06	-0.05	8.6	2.87	4	13.8	55.2	69.0	61.2	UnDef	UnDef	3.0	UnDef	6.8	13.5
40.85	5.0E-06	-0.01	29.6	3.85	6	43.8	175.0	218.8	40.1	UnDef	UnDef	6.0	UnDef	21.4	42.8

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-03	-0.01	77.8	1.65	7	113.2	52.6	165.8	16.9	40	70.8	1.0	-0.21	6.9	34.6
42.81	5.0E-04	-0.02	21.3	2.08	6	32.5	130.0	162.4	37.1	34	35.0	1.0	-0.10	10.6	21.2
43.80	5.0E-05	-0.07	7.2	2.45	4	12.2	48.6	60.8	63.2	30	30.0	3.0	0.00	4.8	9.5
44.78	5.0E-05	-0.01	31.7	3.07	6	48.1	192.3	240.4	35.6	36	46.3	6.0	-0.20	18.8	37.6
45.77	5.0E-05	-0.03	10.1	2.43	4	16.6	66.6	83.2	54.6	30	30.0	3.0	-0.03	6.5	13.0
46.75	5.0E-06	-0.04	7.8	3.06	4	13.3	53.1	66.3	64.9	UnDef	UnDef	3.0	UnDef	6.5	13.0
47.74	5.0E-06	-0.04	6.0	2.80	4	10.7	42.9	53.7	70.4	UnDef	UnDef	1.5	UnDef	5.3	10.5
48.72	5.0E-05	-0.03	7.3	2.02	4	12.8	51.1	63.9	59.7	30	30.0	3.0	0.01	5.0	10.0
49.70	5.0E-06	-0.05	5.0	2.46	4	9.3	37.2	46.5	73.6	UnDef	UnDef	1.5	UnDef	4.6	9.1
50.69	5.0E-05	-0.02	7.6	2.05	4	13.4	53.6	67.0	59.0	30	30.0	3.0	0.01	5.2	10.5
51.67	5.0E-05	-0.03	5.2	2.15	4	9.8	39.3	49.1	70.0	30	30.0	1.5	0.05	3.8	7.7
52.66	5.0E-05	-0.01	13.4	1.72	6	22.4	89.5	111.9	43.7	32	30.0	6.0	-0.04	8.8	17.5
53.64	5.0E-06	0.05	8.7	2.93	4	15.2	60.9	76.2	61.4	UnDef	UnDef	3.0	UnDef	7.5	14.9
54.63	5.0E-04	0.01	28.8	2.00	7	46.4	114.5	160.8	31.7	36	45.2	1.0	-0.13	12.1	27.3
55.61	5.0E-02	0.00	125.4	0.76	9	196.6	12.9	209.4	7.3	44	86.7	1.0	-0.18	1.5	40.0
56.59	5.0E-02	0.00	121.2	0.98	9	191.2	23.1	214.3	9.0	42	85.9	1.0	-0.20	2.7	40.1
57.58	5.0E-04	-0.01	28.9	2.41	6	47.4	159.9	207.3	33.9	36	45.9	1.0	-0.15	14.4	29.9
58.56	5.0E-04	0.02	22.1	1.65	6	36.9	121.7	158.7	33.7	34	38.7	1.0	-0.08	11.1	23.2
59.55	5.0E-04	0.07	20.7	1.49	6	35.0	114.0	149.0	33.7	34	37.2	1.0	-0.06	10.5	21.9
60.53	5.0E-04	0.09	31.9	2.33	6	53.0	135.2	188.2	31.9	36	49.1	1.0	-0.15	14.1	31.4
61.52	1.0E-15	0.00	73.7	3.69	6	120.3	160.7	281.0	26.4	40	72.6	1.0	-0.35	32.8	91.7
62.42	5.0E-04	0.00	69.1	2.50	7	113.5	98.6	212.0	22.4	40	70.9	1.0	-0.26	15.2	52.2
63.32	5.0E-03	0.00	99.9	1.76	7	163.8	60.6	224.5	15.1	42	81.4	1.0	-0.25	8.2	48.2
64.30	5.0E-05	0.00	61.2	3.38	6	101.7	153.6	255.3	27.5	40	67.8	10.0	-0.30	24.0	63.8
65.29	1.0E-15	0.00	75.4	3.28	7	125.5	138.3	263.7	24.6	40	73.8	1.0	-0.32	30.0	91.4
66.27	1.0E-15	0.00	54.9	3.84	6	92.5	201.8	294.3	30.7	40	65.0	1.0	-0.32	34.0	79.2
67.26	5.0E-06	0.01	38.4	4.09	6	65.6	262.6	328.2	36.8	UnDef	UnDef	6.0	UnDef	32.1	64.2
68.24	1.0E-15	0.00	49.8	3.81	6	84.8	216.9	301.7	31.9	38	62.6	1.0	-0.30	33.9	75.4
69.22	1.0E-15	0.00	56.7	4.45	6	96.8	262.9	359.8	32.4	40	66.4	1.0	-0.38	79.8	174.6
70.21	1.0E-15	0.00	69.8	3.60	6	119.3	165.6	284.9	26.8	40	72.3	1.0	-0.34	33.3	91.7
71.19	5.0E-04	0.00	80.0	2.64	7	137.2	107.1	244.2	21.4	42	76.3	1.0	-0.28	16.9	61.7

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3275
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-2
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 09:02
CPT File: 597C2.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 10.64 (ft): 34.9
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	29.3	0.14	0.49	-0.5	7	117.8	0.33	0.33	0.00	1.73	9.4	16.2	UnDef	0.09
6.40	24.0	0.60	2.52	1.3	6	114.6	0.39	0.39	0.00	1.60	9.2	14.7	1.89	0.12
7.30	22.4	0.55	2.43	0.7	6	114.6	0.44	0.44	0.00	1.50	8.6	12.9	1.76	0.12
8.20	23.4	0.46	1.96	-1.5	6	114.6	0.49	0.49	0.00	1.42	9.0	12.7	1.83	0.11
9.19	27.7	0.21	0.75	-1.7	7	117.8	0.55	0.55	0.00	1.35	8.8	11.9	UnDef	0.09
10.17	38.1	0.65	1.71	0.0	6	114.6	0.61	0.61	0.00	1.28	14.6	18.7	3.00	0.13
11.15	32.8	0.80	2.43	0.6	6	114.6	0.67	0.67	0.00	1.23	12.6	15.4	2.57	0.16
12.14	33.7	0.72	2.14	0.5	6	114.6	0.72	0.72	0.00	1.18	12.9	15.2	2.64	0.14
13.21	41.1	0.84	2.04	-0.6	6	114.6	0.78	0.78	0.00	1.13	15.7	17.8	3.23	0.15
14.27	33.9	0.68	2.02	-3.4	6	114.6	0.84	0.84	0.00	1.09	13.0	14.1	2.64	0.15
15.26	24.0	0.97	4.02	-1.9	4	114.6	0.90	0.90	0.00	1.05	15.3	16.2	1.85	0.26
16.24	32.6	1.08	3.30	2.2	5	114.6	0.96	0.96	0.00	1.02	15.6	16.0	2.53	0.00
17.22	35.2	0.86	2.45	0.9	6	114.6	1.01	1.01	0.00	0.99	13.5	13.4	2.73	0.25
18.21	30.7	0.63	2.04	-2.1	6	114.6	1.07	1.07	0.00	0.97	11.7	11.4	2.37	0.22
19.19	15.5	0.41	2.65	-2.8	5	114.6	1.13	1.13	0.00	0.94	7.4	7.0	1.15	0.11
20.18	15.4	0.26	1.68	-2.7	6	114.6	1.18	1.18	0.00	0.92	5.9	5.4	1.14	0.11
21.16	12.8	0.31	2.43	-0.5	5	114.6	1.24	1.24	0.00	0.90	6.2	5.5	0.93	0.10
22.15	15.5	0.30	1.92	0.3	5	114.6	1.30	1.30	0.00	0.88	7.4	6.5	1.13	0.11
23.13	21.0	0.51	2.45	2.3	5	114.6	1.35	1.35	0.00	0.86	10.1	8.7	1.57	0.14
24.11	18.6	0.34	1.84	1.2	6	114.6	1.41	1.41	0.00	0.84	7.1	6.0	1.38	0.12
25.10	11.1	0.20	1.83	2.4	5	114.6	1.46	1.46	0.00	0.83	5.3	4.4	0.77	0.09
26.08	16.7	0.32	1.91	3.2	6	114.6	1.52	1.52	0.00	0.81	6.4	5.2	1.22	0.11
27.07	13.6	0.30	2.23	3.3	5	114.6	1.58	1.58	0.00	0.80	6.5	5.2	0.96	0.09
28.05	11.9	0.27	2.27	3.6	5	114.6	1.63	1.63	0.00	0.78	5.7	4.5	0.82	0.09
29.04	10.4	0.27	2.63	4.1	5	114.6	1.69	1.69	0.00	0.77	5.0	3.8	0.69	0.00
30.02	11.7	0.21	1.76	5.0	5	114.6	1.75	1.75	0.00	0.76	5.6	4.2	0.80	0.09
31.00	11.1	0.13	1.18	6.0	5	114.6	1.80	1.80	0.00	0.74	5.3	4.0	0.74	0.09
31.99	16.3	0.20	1.20	6.3	6	114.6	1.86	1.86	0.00	0.73	6.3	4.6	1.16	0.10
32.97	10.6	0.09	0.82	7.0	6	114.6	1.92	1.92	0.00	0.72	4.0	2.9	0.69	0.08
33.96	7.5	0.02	0.31	8.8	1	79.6	1.96	1.96	0.00	0.71	3.6	2.6	0.44	0.00
34.94	10.2	0.08	0.78	10.5	6	114.6	2.01	2.01	0.00	0.71	3.9	2.8	0.66	0.08
35.92	31.6	1.11	3.52	10.4	5	114.6	2.07	2.04	0.03	0.70	15.1	10.6	2.36	0.00
36.91	26.3	0.93	3.55	10.2	5	114.6	2.12	2.06	0.06	0.70	12.6	8.8	1.93	0.00
37.89	54.9	1.70	3.10	1.3	6	114.6	2.18	2.09	0.09	0.69	21.0	14.6	4.22	0.00
38.88	102.0	1.36	1.33	-12.8	8	120.9	2.24	2.11	0.12	0.69	24.4	16.8	UnDef	0.23
39.86	110.9	1.28	1.15	-14.7	8	120.9	2.30	2.14	0.15	0.68	26.5	18.1	UnDef	0.23
40.85	28.1	0.47	1.67	-9.9	6	114.6	2.36	2.17	0.19	0.68	10.8	7.3	2.06	0.16

Gregg In Situ, Inc.
Run No: 00-0403-0737-3275
CPT File: 597C2.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	16.7	0.03	0.20	-8.2	6	114.6	2.41	2.20	0.22	0.67	6.4	4.3	1.15	0.00
42.81	13.9	0.07	0.50	-7.8	6	114.6	2.47	2.22	0.25	0.67	5.3	3.6	0.91	0.00
43.80	13.5	0.04	0.27	-6.8	6	114.6	2.52	2.25	0.28	0.67	5.2	3.5	0.88	0.00
44.78	13.5	0.04	0.26	-5.4	6	114.6	2.58	2.27	0.31	0.66	5.2	3.4	0.87	0.00
45.77	24.3	0.53	2.18	-5.0	6	114.6	2.64	2.30	0.34	0.66	9.3	6.1	1.73	0.12
46.75	16.4	0.39	2.37	-4.2	5	114.6	2.69	2.32	0.37	0.66	7.8	5.1	1.09	0.09
47.74	17.8	0.40	2.24	-1.3	5	114.6	2.75	2.35	0.40	0.65	8.5	5.6	1.21	0.10
48.72	19.0	0.26	1.37	-0.9	6	114.6	2.81	2.38	0.43	0.65	7.3	4.7	1.29	0.10
49.70	14.2	0.17	1.16	0.0	6	114.6	2.86	2.40	0.46	0.65	5.4	3.5	0.91	0.09
50.69	14.4	0.13	0.88	2.5	6	114.6	2.92	2.43	0.49	0.64	5.5	3.5	0.92	0.09
51.67	16.2	0.16	0.97	4.9	6	114.6	2.98	2.45	0.52	0.64	6.2	4.0	1.06	0.09
52.66	20.1	0.26	1.30	5.9	6	114.6	3.03	2.48	0.55	0.64	7.7	4.9	1.37	0.10
53.64	26.7	0.64	2.41	8.1	6	114.6	3.09	2.50	0.59	0.63	10.2	6.5	1.89	0.13
54.63	147.1	1.25	0.85	7.2	9	124.1	3.15	2.53	0.62	0.63	28.2	17.7	UnDef	0.25
55.61	34.7	0.48	1.40	7.9	7	117.8	3.21	2.56	0.65	0.63	11.1	6.9	UnDef	0.19
56.59	68.8	1.53	2.23	15.7	7	117.8	3.26	2.59	0.68	0.62	22.0	13.7	UnDef	0.00
57.58	87.4	2.38	2.72	27.9	6	114.6	3.32	2.61	0.71	0.62	33.5	20.7	6.73	0.00
58.56	102.7	3.15	3.07	35.2	6	114.6	3.38	2.64	0.74	0.62	39.3	24.2	7.94	0.00
59.55	292.9	4.56	1.56	45.8	8	120.9	3.44	2.67	0.77	0.61	70.1	43.0	UnDef	0.00
60.53	166.4	4.09	2.46	28.9	7	117.8	3.50	2.69	0.80	0.61	53.1	32.4	UnDef	0.00
61.52	119.4	3.62	3.03	35.6	6	114.6	3.55	2.72	0.83	0.61	45.7	27.7	9.27	0.00
62.42	96.7	3.79	3.92	36.3	5	114.6	3.60	2.74	0.86	0.60	46.3	27.9	7.45	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3275
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-2
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 09:02
CPT File: 597C2.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 10.64 (ft): 34.9
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-04	0.00	86.7	0.50	9	49.6	0.0	49.6	5.0	42	47.2	1.0	-0.11	0.0	16.2
6.40	5.0E-05	0.00	60.2	2.56	7	37.5	39.8	77.3	24.3	40	39.1	10.0	-0.24	7.0	21.6
7.30	5.0E-05	0.00	49.6	2.48	7	33.0	43.8	76.8	26.4	38	35.5	6.0	-0.22	7.2	20.1
8.20	5.0E-05	0.00	46.2	2.00	7	32.5	36.6	69.1	24.8	38	35.1	6.0	-0.18	6.3	19.0
9.19	5.0E-04	0.00	49.2	0.77	7	36.5	14.5	51.0	15.6	38	38.4	1.0	-0.10	2.6	14.5
10.17	5.0E-05	0.00	61.5	1.74	7	47.8	31.6	79.4	19.9	40	46.1	10.0	-0.20	6.2	24.9
11.15	5.0E-05	0.00	48.2	2.48	7	39.3	54.4	93.7	26.7	38	40.5	6.0	-0.21	8.8	24.2
12.14	5.0E-05	0.00	45.6	2.19	7	38.8	49.6	88.4	26.0	38	40.1	6.0	-0.19	8.2	23.4
13.21	5.0E-05	0.00	51.5	2.07	7	45.4	46.1	91.5	23.9	38	44.7	10.0	-0.20	8.2	26.0
14.27	5.0E-05	0.00	39.1	2.07	7	36.1	54.1	90.2	27.5	38	38.0	6.0	-0.17	8.5	22.6
15.26	5.0E-07	0.00	25.7	4.18	6	24.8	99.0	123.8	43.9	UnDef	UnDef	6.0	UnDef	16.2	32.3
16.24	5.0E-06	0.00	33.1	3.40	6	32.6	130.5	163.1	36.4	UnDef	UnDef	6.0	UnDef	16.0	31.9
17.22	5.0E-05	0.00	33.7	2.52	6	34.2	89.1	123.3	32.1	36	36.5	6.0	-0.17	11.0	24.4
18.21	5.0E-05	0.00	27.7	2.12	6	29.0	85.5	114.5	33.0	36	31.8	6.0	-0.13	10.0	21.3
19.19	5.0E-06	-0.01	12.7	2.85	4	14.3	57.1	71.3	51.9	UnDef	UnDef	6.0	UnDef	7.0	14.0
20.18	5.0E-05	-0.01	12.0	1.82	6	13.9	55.4	69.3	46.7	30	30.0	3.0	-0.03	5.4	10.8
21.16	5.0E-06	0.00	9.4	2.69	4	11.3	45.2	56.5	58.1	UnDef	UnDef	3.0	UnDef	5.5	11.1
22.15	5.0E-06	0.00	10.9	2.10	6	13.3	53.2	66.5	50.7	UnDef	UnDef	3.0	UnDef	6.5	13.0
23.13	5.0E-06	0.00	14.6	2.62	6	17.7	70.8	88.5	47.7	UnDef	UnDef	6.0	UnDef	8.7	17.3
24.11	5.0E-05	0.00	12.2	1.99	6	15.4	61.5	76.8	47.5	30	30.0	3.0	-0.04	6.0	12.0
25.10	5.0E-06	0.01	6.6	2.11	4	9.0	36.0	45.0	63.1	UnDef	UnDef	3.0	UnDef	4.4	8.8
26.08	5.0E-05	0.01	10.0	2.10	6	13.3	53.1	66.4	52.7	30	30.0	3.0	-0.02	5.2	10.4
27.07	5.0E-06	0.01	7.6	2.53	4	10.6	42.4	53.0	62.2	UnDef	UnDef	3.0	UnDef	5.2	10.4
28.05	5.0E-06	0.01	6.3	2.63	4	9.1	36.6	45.7	67.9	UnDef	UnDef	3.0	UnDef	4.5	8.9
29.04	5.0E-06	0.01	5.1	3.14	1	7.8	UnDef	UnDef	100.0	UnDef	UnDef	1.5	UnDef	UnDef	UnDef
30.02	5.0E-06	0.02	5.7	2.06	4	8.7	34.7	43.3	66.8	UnDef	UnDef	1.5	UnDef	4.2	8.5
31.00	5.0E-06	0.02	5.1	1.40	4	8.1	32.3	40.4	63.9	UnDef	UnDef	1.5	UnDef	4.0	7.9
31.99	5.0E-05	0.01	7.8	1.35	6	11.7	46.9	58.6	52.7	30	30.0	3.0	0.04	4.6	9.2
32.97	5.0E-05	0.03	4.5	1.00	4	7.5	29.9	37.4	63.3	30	30.0	1.5	0.11	2.9	5.8
33.96	1.0E-07	0.05	2.8	0.42	1	5.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
34.94	5.0E-05	0.04	4.1	0.98	4	7.1	28.2	35.3	65.7	30	30.0	1.5	0.12	2.8	5.5
35.92	5.0E-06	0.01	14.5	3.76	1	21.7	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
36.91	5.0E-06	0.01	11.7	3.87	1	17.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
37.89	5.0E-05	0.00	25.3	3.23	6	37.2	148.9	186.1	40.2	34	38.9	6.0	-0.17	14.6	29.1
38.88	5.0E-03	-0.01	47.2	1.36	7	68.7	49.4	118.1	20.7	38	56.5	1.0	-0.14	6.0	22.8
39.86	5.0E-03	-0.01	50.7	1.18	7	74.1	42.1	116.2	18.6	38	58.7	1.0	-0.14	5.3	23.4
40.85	5.0E-05	-0.02	11.9	1.82	6	18.7	74.6	93.3	46.9	30	30.0	3.0	-0.03	7.3	14.6

Gregg In Situ, Inc.
Run No: 00-0403-0737-3275
CPT File: 597C2.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-05	-0.03	6.5	0.23	1	11.1	UnDef	UnDef	100.0	30	30.0	3.0	0.17	UnDef	UnDef
42.81	5.0E-05	-0.04	5.1	0.61	1	9.1	UnDef	UnDef	100.0	30	30.0	1.5	0.12	UnDef	UnDef
43.80	5.0E-05	-0.04	4.9	0.33	1	8.8	UnDef	UnDef	100.0	30	30.0	1.5	0.17	UnDef	UnDef
44.78	5.0E-05	-0.04	4.8	0.32	1	8.8	UnDef	UnDef	100.0	30	30.0	1.5	0.17	UnDef	UnDef
45.77	5.0E-05	-0.02	9.4	2.45	4	15.7	62.7	78.4	56.4	30	30.0	3.0	-0.02	6.1	12.3
46.75	5.0E-06	-0.04	5.9	2.84	4	10.5	42.0	52.5	71.2	UnDef	UnDef	1.5	UnDef	5.1	10.3
47.74	5.0E-06	-0.03	6.4	2.65	4	11.4	45.6	56.9	67.6	UnDef	UnDef	3.0	UnDef	5.6	11.1
48.72	5.0E-05	-0.03	6.8	1.61	4	12.0	48.1	60.2	58.4	30	30.0	3.0	0.04	4.7	9.4
49.70	5.0E-05	-0.04	4.7	1.46	4	9.0	35.9	44.9	66.9	30	30.0	1.5	0.08	3.5	7.0
50.69	5.0E-05	-0.04	4.7	1.11	4	9.0	36.1	45.2	63.2	30	30.0	1.5	0.09	3.5	7.1
51.67	5.0E-05	-0.03	5.4	1.19	4	10.1	40.5	50.7	60.4	30	30.0	1.5	0.08	4.0	7.9
52.66	5.0E-05	-0.02	6.9	1.53	4	12.5	50.0	62.5	57.4	30	30.0	3.0	0.04	4.9	9.8
53.64	5.0E-05	-0.01	9.4	2.73	4	16.5	66.2	82.7	58.1	30	30.0	3.0	-0.03	6.5	12.9
54.63	5.0E-02	0.00	56.9	0.87	9	90.5	32.5	123.0	14.9	40	64.4	1.0	-0.12	3.5	21.2
55.61	5.0E-04	-0.01	12.3	1.54	6	21.2	84.8	106.0	44.0	30	30.0	1.0	-0.02	6.9	13.8
56.59	5.0E-04	0.00	25.3	2.34	6	41.9	167.4	209.3	35.7	34	42.3	1.0	-0.13	13.7	27.3
57.58	5.0E-05	0.00	32.2	2.83	6	52.9	189.6	242.5	34.3	36	49.0	6.0	-0.18	19.8	40.5
58.56	5.0E-05	0.00	37.6	3.17	6	61.8	194.7	256.6	33.4	38	53.5	6.0	-0.22	21.9	46.1
59.55	5.0E-03	0.00	108.6	1.58	9	175.5	50.8	226.3	13.4	42	83.4	1.0	-0.24	7.0	50.0
60.53	5.0E-04	0.00	60.4	2.51	7	99.2	102.5	201.6	24.0	40	67.0	1.0	-0.24	15.1	47.4
61.52	5.0E-05	0.00	42.6	3.12	6	70.8	168.9	239.8	31.4	38	57.4	6.0	-0.24	21.8	49.6
62.42	5.0E-06	0.00	33.9	4.07	6	57.1	228.4	285.5	38.7	UnDef	UnDef	6.0	UnDef	27.9	55.9

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3302
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-3
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 10:04
CPT File: 597C3.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 7.44 (ft): 24.4
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	35.5	0.08	0.23	0.2	7	117.8	0.33	0.33	0.00	1.73	11.3	19.6	UnDef	0.10
6.40	27.8	0.16	0.57	-0.6	7	117.8	0.39	0.39	0.00	1.60	8.9	14.2	UnDef	0.09
7.30	26.3	0.09	0.36	-0.3	7	117.8	0.45	0.45	0.00	1.50	8.4	12.6	UnDef	0.09
8.20	23.6	0.12	0.50	0.2	7	117.8	0.50	0.50	0.00	1.42	7.5	10.7	UnDef	0.09
9.19	21.4	0.29	1.35	0.7	6	114.6	0.56	0.56	0.00	1.34	8.2	11.0	1.67	0.10
10.17	23.2	0.56	2.42	1.9	6	114.6	0.61	0.61	0.00	1.28	8.9	11.4	1.81	0.15
11.15	22.0	0.67	3.05	1.2	5	114.6	0.67	0.67	0.00	1.22	10.5	12.9	1.71	0.29
12.14	19.4	0.58	2.99	1.4	5	114.6	0.72	0.72	0.00	1.17	9.3	10.9	1.49	0.21
13.21	19.7	0.55	2.78	3.7	5	114.6	0.79	0.79	0.00	1.13	9.5	10.7	1.52	0.20
14.27	21.3	0.65	3.03	11.6	5	114.6	0.85	0.85	0.00	1.09	10.2	11.1	1.64	0.22
15.26	21.3	0.69	3.23	13.8	5	114.6	0.90	0.90	0.00	1.05	10.2	10.7	1.63	0.20
16.24	26.8	0.84	3.12	11.5	5	114.6	0.96	0.96	0.00	1.02	12.8	13.1	2.07	0.30
17.22	28.9	0.94	3.25	3.0	5	114.6	1.02	1.02	0.00	0.99	13.8	13.7	2.23	0.34
18.21	35.5	1.20	3.39	2.7	5	114.6	1.07	1.07	0.00	0.97	17.0	16.4	2.75	0.00
19.19	31.8	0.87	2.73	7.1	6	114.6	1.13	1.13	0.00	0.94	12.2	11.5	2.46	0.37
20.18	29.2	0.90	3.09	7.6	5	114.6	1.19	1.19	0.00	0.92	14.0	12.9	2.24	0.29
21.16	29.6	1.10	3.73	8.6	5	114.6	1.24	1.24	0.00	0.90	14.2	12.7	2.27	0.28
22.15	23.5	0.73	3.09	11.3	5	114.6	1.30	1.30	0.00	0.88	11.3	9.9	1.78	0.18
23.13	21.7	0.64	2.94	12.0	5	114.6	1.35	1.35	0.00	0.86	10.4	8.9	1.63	0.15
24.11	19.8	0.47	2.38	12.2	5	114.6	1.41	1.41	0.00	0.84	9.5	8.0	1.47	0.13
25.10	18.9	0.35	1.86	13.0	6	114.6	1.47	1.45	0.02	0.83	7.3	6.0	1.40	0.12
26.08	20.1	0.32	1.57	13.4	6	114.6	1.52	1.47	0.05	0.82	7.7	6.4	1.49	0.13
27.07	17.1	0.24	1.38	13.4	6	114.6	1.58	1.50	0.08	0.82	6.6	5.4	1.24	0.11
28.05	14.7	0.12	0.80	12.6	6	114.6	1.64	1.52	0.11	0.81	5.6	4.6	1.05	0.10
29.04	14.1	0.07	0.51	12.1	6	114.6	1.69	1.55	0.14	0.80	5.4	4.3	0.99	0.10
30.02	11.9	0.04	0.35	12.8	6	114.6	1.75	1.57	0.18	0.80	4.6	3.6	0.82	0.00
31.00	18.7	0.23	1.25	13.4	6	114.6	1.81	1.60	0.21	0.79	7.2	5.7	1.35	0.12
31.99	26.9	0.60	2.24	13.7	6	114.6	1.86	1.63	0.24	0.78	10.3	8.1	2.01	0.18
32.97	18.0	0.39	2.14	10.4	5	114.6	1.92	1.65	0.27	0.78	8.6	6.7	1.29	0.11
33.96	21.8	0.50	2.29	10.7	6	114.6	1.97	1.68	0.30	0.77	8.4	6.5	1.59	0.13
34.94	141.3	1.78	1.26	0.3	8	120.9	2.03	1.70	0.33	0.77	33.8	25.9	UnDef	0.34
35.92	392.4	3.35	0.85	-15.0	9	124.1	2.09	1.73	0.36	0.76	75.2	57.1	UnDef	0.00
36.91	333.1	2.17	0.65	-7.0	9	124.1	2.15	1.76	0.39	0.75	63.8	48.0	UnDef	0.00
37.89	266.4	1.95	0.73	-4.4	9	124.1	2.22	1.79	0.42	0.75	51.0	38.1	UnDef	0.00
38.88	261.2	1.98	0.76	-9.1	9	124.1	2.28	1.82	0.45	0.74	50.0	37.0	UnDef	0.00
39.86	201.9	1.32	0.66	-9.1	9	124.1	2.34	1.85	0.48	0.73	38.7	28.4	UnDef	0.43
40.85	307.1	0.82	0.27	-4.4	10	127.3	2.40	1.89	0.51	0.73	49.0	35.7	UnDef	0.00

Gregg In Situ, Inc.
Run No: 00-0403-0737-3302
CPT File: 597C3.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	332.2	1.04	0.31	-3.3	10	127.3	2.46	1.92	0.54	0.72	53.0	38.3	UnDef	0.00
42.81	456.3	2.65	0.58	-2.0	10	127.3	2.52	1.95	0.57	0.72	72.8	52.2	UnDef	0.00
43.80	362.1	3.80	1.05	4.0	9	124.1	2.59	1.98	0.61	0.71	69.4	49.3	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3302
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-3
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 10:04
CPT File: 597C3.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 7.44 (ft): 24.4
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-04	0.00	105.2	0.23	9	60.1	0.0	60.1	3.8	42	52.7	1.0	-0.07	0.0	19.6
6.40	5.0E-04	0.00	69.8	0.58	9	43.4	7.3	50.7	10.4	40	43.3	1.0	-0.11	1.4	15.6
7.30	5.0E-04	0.00	57.9	0.37	9	38.5	0.0	38.5	5.0	40	39.9	1.0	-0.05	0.0	12.6
8.20	5.0E-04	0.00	46.3	0.51	9	32.7	10.0	42.7	13.8	38	35.3	1.0	-0.06	1.8	12.5
9.19	5.0E-05	0.00	37.6	1.38	7	28.2	28.3	56.4	23.8	38	30.9	6.0	-0.12	5.0	16.1
10.17	5.0E-05	0.00	37.0	2.48	6	29.1	61.8	90.8	30.5	38	31.9	6.0	-0.18	8.4	19.8
11.15	5.0E-06	0.00	31.9	3.15	6	26.3	105.3	131.6	35.9	UnDef	UnDef	6.0	UnDef	12.9	25.8
12.14	5.0E-06	0.00	25.8	3.10	6	22.3	89.2	111.5	39.3	UnDef	UnDef	6.0	UnDef	10.9	21.8
13.21	5.0E-06	0.01	24.1	2.89	6	21.8	87.2	109.0	39.4	UnDef	UnDef	6.0	UnDef	10.7	21.3
14.27	5.0E-06	0.02	24.2	3.16	6	22.7	90.7	113.4	40.6	UnDef	UnDef	6.0	UnDef	11.1	22.2
15.26	5.0E-06	0.02	22.5	3.37	6	21.9	87.5	109.4	42.9	UnDef	UnDef	6.0	UnDef	10.7	21.4
16.24	5.0E-06	0.01	26.9	3.24	6	26.8	107.0	133.8	39.2	UnDef	UnDef	6.0	UnDef	13.1	26.2
17.22	5.0E-06	0.00	27.4	3.37	6	28.1	112.2	140.3	39.4	UnDef	UnDef	6.0	UnDef	13.7	27.5
18.21	5.0E-06	0.00	32.1	3.49	6	33.5	134.0	167.5	37.3	UnDef	UnDef	6.0	UnDef	16.4	32.8
19.19	5.0E-05	0.01	27.2	2.83	6	29.3	117.3	146.6	37.1	36	32.1	6.0	-0.16	11.5	23.0
20.18	5.0E-06	0.01	23.7	3.22	6	26.3	105.1	131.4	41.3	UnDef	UnDef	6.0	UnDef	12.9	25.7
21.16	5.0E-06	0.01	22.8	3.89	6	26.0	103.9	129.9	44.9	UnDef	UnDef	6.0	UnDef	12.7	25.4
22.15	5.0E-06	0.02	17.1	3.27	6	20.2	80.8	101.0	47.8	UnDef	UnDef	6.0	UnDef	9.9	19.8
23.13	5.0E-06	0.02	15.0	3.14	4	18.3	73.1	91.4	49.8	UnDef	UnDef	6.0	UnDef	8.9	17.9
24.11	5.0E-06	0.02	13.0	2.56	6	16.3	65.1	81.4	49.8	UnDef	UnDef	6.0	UnDef	8.0	15.9
25.10	5.0E-05	0.02	12.1	2.02	6	15.4	61.6	77.1	47.9	30	30.0	3.0	-0.03	6.0	12.1
26.08	5.0E-05	0.02	12.6	1.70	6	16.2	64.9	81.2	44.7	30	30.0	6.0	-0.03	6.4	12.7
27.07	5.0E-05	0.02	10.4	1.52	6	13.7	54.8	68.4	47.5	30	30.0	3.0	0.00	5.4	10.7
28.05	5.0E-05	0.02	8.6	0.89	6	11.7	46.7	58.3	45.6	30	30.0	3.0	0.05	4.6	9.1
29.04	5.0E-05	0.02	8.0	0.58	6	11.1	44.3	55.4	43.1	30	30.0	3.0	0.09	4.3	8.7
30.02	5.0E-05	0.02	6.5	0.41	1	9.3	UnDef	UnDef	100.0	30	30.0	3.0	0.13	UnDef	UnDef
31.00	5.0E-05	0.01	10.6	1.38	6	14.5	57.9	72.4	46.0	30	30.0	3.0	0.00	5.7	11.3
31.99	5.0E-05	0.01	15.4	2.41	6	20.7	82.7	103.4	45.3	32	30.0	6.0	-0.08	8.1	16.2
32.97	5.0E-06	0.00	9.8	2.40	4	13.7	54.9	68.6	55.3	UnDef	UnDef	3.0	UnDef	6.7	13.4
33.96	5.0E-05	0.00	11.8	2.52	6	16.5	65.9	82.4	51.6	30	30.0	3.0	-0.05	6.5	12.9
34.94	5.0E-03	0.00	81.8	1.28	9	106.0	34.7	140.7	14.2	42	68.9	1.0	-0.19	4.7	30.7
35.92	5.0E-02	0.00	225.2	0.86	9	291.7	0.0	291.7	4.5	46	95.0	1.0	-0.25	0.0	57.1
36.91	5.0E-02	0.00	187.6	0.65	9	245.4	0.0	245.4	4.1	44	93.0	1.0	-0.21	0.0	48.0
37.89	5.0E-02	0.00	147.3	0.74	9	194.6	5.7	200.4	6.1	44	86.4	1.0	-0.20	0.7	38.8
38.88	5.0E-02	0.00	141.9	0.76	9	189.3	7.8	197.0	6.5	44	85.6	1.0	-0.20	0.9	38.0
39.86	5.0E-02	0.00	107.6	0.66	9	145.1	10.9	156.0	7.6	42	77.9	1.0	-0.16	1.3	29.7
40.85	5.0E+00	0.00	161.6	0.27	9	218.9	0.0	218.9	1.7	44	89.7	1.0	-0.12	0.0	35.7

Gregg In Situ, Inc.
Run No: 00-0403-0737-3302
CPT File: 597C3.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E+00	0.00	171.9	0.32	9	234.8	0.0	234.8	1.9	44	91.7	1.0	-0.14	0.0	38.3
42.81	5.0E+00	0.00	232.8	0.58	9	319.8	0.0	319.8	2.5	46	95.0	1.0	-0.22	0.0	52.2
43.80	5.0E-02	0.00	181.5	1.06	9	251.8	12.8	264.6	6.8	44	93.7	1.0	-0.25	1.5	50.8

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 00-0403-0737-3324
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-4
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 11:11
CPT File: 597C4.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 6.95 (ft): 22.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	50.6	0.08	0.16	1.4	8	120.9	0.34	0.34	0.00	1.73	12.1	20.9	UnDef	0.14
6.40	39.4	0.03	0.07	0.6	8	120.9	0.39	0.39	0.00	1.59	9.4	15.0	UnDef	0.10
7.30	20.1	0.05	0.27	0.3	7	117.8	0.45	0.45	0.00	1.49	6.4	9.6	UnDef	0.00
8.20	12.6	0.24	1.93	4.0	5	114.6	0.50	0.50	0.00	1.41	6.0	8.5	0.97	0.13
9.19	14.7	0.50	3.38	1.6	4	114.6	0.56	0.56	0.00	1.34	9.4	12.6	1.13	0.16
10.17	18.7	0.72	3.81	0.1	4	114.6	0.61	0.61	0.00	1.28	12.0	15.3	1.45	0.23
11.15	21.1	0.78	3.68	0.8	4	114.6	0.67	0.67	0.00	1.22	13.4	16.4	1.63	0.27
12.14	27.7	0.94	3.41	2.0	5	114.6	0.73	0.73	0.00	1.17	13.2	15.5	2.15	0.45
13.21	23.7	0.77	3.24	1.8	5	114.6	0.79	0.79	0.00	1.13	11.4	12.8	1.83	0.29
14.27	24.4	0.66	2.71	3.4	5	114.6	0.85	0.85	0.00	1.09	11.7	12.7	1.88	0.28
15.26	24.4	0.66	2.72	5.3	5	114.6	0.91	0.91	0.00	1.05	11.7	12.3	1.88	0.26
16.24	24.2	0.73	3.02	12.3	5	114.6	0.96	0.96	0.00	1.02	11.6	11.8	1.86	0.24
17.22	23.1	0.72	3.11	13.3	5	114.6	1.02	1.02	0.00	0.99	11.1	11.0	1.77	0.21
18.21	37.3	0.50	1.35	5.2	7	117.8	1.08	1.08	0.00	0.96	11.9	11.5	UnDef	0.12
19.19	18.6	0.24	1.30	4.2	6	114.6	1.13	1.13	0.00	0.94	7.1	6.7	1.40	0.14
20.18	19.6	0.30	1.54	8.9	6	114.6	1.19	1.19	0.00	0.92	7.5	6.9	1.47	0.14
21.16	16.4	0.34	2.07	8.1	5	114.6	1.24	1.24	0.00	0.90	7.8	7.0	1.21	0.11
22.15	18.1	0.45	2.51	14.6	5	114.6	1.30	1.30	0.00	0.88	8.7	7.6	1.34	0.12
23.13	19.1	0.43	2.26	20.4	5	114.6	1.36	1.35	0.01	0.86	9.1	7.9	1.42	0.13
24.11	16.2	0.42	2.59	21.8	5	114.6	1.41	1.37	0.04	0.85	7.7	6.6	1.18	0.11
25.10	15.9	0.32	2.04	28.5	5	114.6	1.47	1.40	0.07	0.85	7.6	6.4	1.15	0.11
26.08	16.0	0.37	2.31	33.4	5	114.6	1.53	1.42	0.10	0.84	7.7	6.4	1.16	0.11
27.07	17.2	0.28	1.65	37.8	6	114.6	1.58	1.45	0.13	0.83	6.6	5.5	1.25	0.11
28.05	14.5	0.28	1.95	38.9	5	114.6	1.64	1.48	0.16	0.82	6.9	5.7	1.03	0.10
29.04	10.4	0.17	1.67	39.9	5	114.6	1.70	1.50	0.19	0.82	5.0	4.1	0.70	0.09
30.02	9.8	0.16	1.59	43.1	5	114.6	1.75	1.53	0.23	0.81	4.7	3.8	0.64	0.09
31.00	15.3	0.21	1.34	39.4	6	114.6	1.81	1.55	0.26	0.80	5.9	4.7	1.08	0.10
31.99	14.9	0.23	1.52	45.4	6	114.6	1.87	1.58	0.29	0.80	5.7	4.5	1.04	0.10
32.97	13.9	0.27	1.92	48.9	5	114.6	1.92	1.60	0.32	0.79	6.7	5.3	0.96	0.09
33.96	119.4	1.38	1.16	30.9	8	120.9	1.98	1.63	0.35	0.78	28.6	22.4	UnDef	0.26
34.94	294.8	1.11	0.38	-9.0	10	127.3	2.04	1.66	0.38	0.78	47.1	36.5	UnDef	0.00
35.92	294.6	1.05	0.36	-16.5	10	127.3	2.10	1.69	0.41	0.77	47.0	36.1	UnDef	0.00
36.91	221.4	0.71	0.32	-16.0	9	124.1	2.17	1.72	0.44	0.76	42.4	32.3	UnDef	0.00
37.89	205.0	0.91	0.44	-13.4	9	124.1	2.23	1.75	0.47	0.75	39.3	29.6	UnDef	0.40
38.88	250.9	0.61	0.24	-8.0	10	127.3	2.29	1.79	0.50	0.75	40.1	30.0	UnDef	0.00
39.86	216.3	1.20	0.56	-7.6	9	124.1	2.35	1.82	0.53	0.74	41.4	30.7	UnDef	0.00
40.85	208.1	0.44	0.21	-7.5	9	124.1	2.41	1.85	0.56	0.74	39.9	29.3	UnDef	0.39

Gregg In Situ, Inc.
Run No: 00-0403-0737-3324
CPT File: 597C4.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	172.4	0.66	0.38	-5.1	9	124.1	2.47	1.88	0.59	0.73	33.0	24.1	UnDef	0.25
42.81	203.8	1.55	0.76	-4.2	9	124.1	2.53	1.91	0.62	0.72	39.0	28.3	UnDef	0.46
43.80	180.4	3.82	2.12	197.5	7	117.8	2.59	1.94	0.66	0.72	57.6	41.4	UnDef	0.00
44.78	161.0	3.62	2.25	786.1	7	117.8	2.65	1.96	0.69	0.71	51.4	36.7	UnDef	0.00
45.77	172.1	3.51	2.04	1162.5	7	117.8	2.71	1.99	0.72	0.71	54.9	38.9	UnDef	0.00
46.75	197.8	4.40	2.23	777.7	7	117.8	2.77	2.02	0.75	0.70	63.1	44.4	UnDef	0.00
47.74	175.1	4.75	2.71	780.1	7	117.8	2.82	2.05	0.78	0.70	55.9	39.1	UnDef	0.00
48.72	158.3	3.81	2.41	698.0	7	117.8	2.88	2.07	0.81	0.69	50.5	35.1	UnDef	0.00
49.70	168.8	4.36	2.59	947.7	7	117.8	2.94	2.10	0.84	0.69	53.9	37.2	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3324
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-4
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 11:11
CPT File: 597C4.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 6.95 (ft): 22.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-03	0.00	150.0	0.16	9	85.6	0.0	85.6	1.1	44	62.8	1.0	-0.07	0.0	20.9
6.40	5.0E-03	0.00	98.9	0.07	9	61.4	0.0	61.4	2.5	42	53.3	1.0	0.03	0.0	15.0
7.30	5.0E-04	0.00	43.9	0.27	9	29.4	0.0	29.4	5.0	38	32.2	1.0	-0.01	0.0	9.6
8.20	5.0E-06	0.01	24.1	2.01	6	17.4	65.3	82.7	34.6	UnDef	UnDef	6.0	UnDef	8.3	16.8
9.19	5.0E-07	0.00	25.4	3.52	6	19.3	77.1	96.4	41.4	UnDef	UnDef	6.0	UnDef	12.6	25.2
10.17	5.0E-07	0.00	29.5	3.94	6	23.4	93.7	117.1	40.5	UnDef	UnDef	6.0	UnDef	15.3	30.6
11.15	5.0E-07	0.00	30.4	3.80	6	25.2	100.7	125.9	39.4	UnDef	UnDef	6.0	UnDef	16.4	32.9
12.14	5.0E-06	0.00	37.1	3.51	6	31.8	127.0	158.8	35.1	UnDef	UnDef	6.0	UnDef	15.5	31.1
13.21	5.0E-06	0.00	29.1	3.35	6	26.1	104.6	130.7	38.3	UnDef	UnDef	6.0	UnDef	12.8	25.6
14.27	5.0E-06	0.00	27.7	2.81	6	25.9	103.5	129.4	36.6	UnDef	UnDef	6.0	UnDef	12.7	25.3
15.26	5.0E-06	0.01	25.9	2.82	6	25.1	100.2	125.3	37.8	UnDef	UnDef	6.0	UnDef	12.3	24.5
16.24	5.0E-06	0.02	24.2	3.14	6	24.2	96.8	121.0	40.6	UnDef	UnDef	6.0	UnDef	11.8	23.7
17.22	5.0E-06	0.02	21.7	3.26	6	22.4	89.6	111.9	43.1	UnDef	UnDef	6.0	UnDef	11.0	21.9
18.21	5.0E-04	0.00	33.7	1.39	7	35.2	41.9	77.1	25.3	36	37.3	1.0	-0.11	5.9	17.4
19.19	5.0E-05	0.01	15.4	1.39	6	17.1	68.3	85.4	38.3	32	30.0	6.0	-0.03	6.7	13.4
20.18	5.0E-05	0.02	15.5	1.64	6	17.6	70.3	87.9	40.1	32	30.0	6.0	-0.04	6.9	13.8
21.16	5.0E-06	0.02	12.1	2.24	6	14.3	57.4	71.7	49.3	UnDef	UnDef	3.0	UnDef	7.0	14.0
22.15	5.0E-06	0.03	12.9	2.70	6	15.5	62.1	77.7	50.7	UnDef	UnDef	6.0	UnDef	7.6	15.2
23.13	5.0E-06	0.04	13.1	2.43	6	16.1	64.3	80.4	48.8	UnDef	UnDef	6.0	UnDef	7.9	15.7
24.11	5.0E-06	0.04	10.7	2.84	4	13.5	54.0	67.5	55.7	UnDef	UnDef	3.0	UnDef	6.6	13.2
25.10	5.0E-06	0.06	10.3	2.25	6	13.1	52.6	65.7	53.1	UnDef	UnDef	3.0	UnDef	6.4	12.9
26.08	5.0E-06	0.06	10.2	2.55	4	13.1	52.5	65.7	55.2	UnDef	UnDef	3.0	UnDef	6.4	12.9
27.07	5.0E-05	0.07	10.8	1.82	6	14.0	55.8	69.8	49.1	30	30.0	3.0	-0.01	5.5	10.9
28.05	5.0E-06	0.08	8.7	2.19	4	11.7	46.8	58.5	56.6	UnDef	UnDef	3.0	UnDef	5.7	11.4
29.04	5.0E-06	0.12	5.8	1.99	4	8.3	33.2	41.6	65.8	UnDef	UnDef	1.5	UnDef	4.1	8.1
30.02	5.0E-06	0.14	5.2	1.94	4	7.7	30.9	38.6	68.2	UnDef	UnDef	1.5	UnDef	3.8	7.6
31.00	5.0E-05	0.07	8.7	1.52	6	12.0	48.2	60.2	51.5	30	30.0	3.0	0.02	4.7	9.4
31.99	5.0E-05	0.09	8.2	1.73	6	11.6	46.3	57.9	54.6	30	30.0	3.0	0.02	4.5	9.1
32.97	5.0E-06	0.10	7.5	2.22	4	10.8	43.1	53.9	60.6	UnDef	UnDef	3.0	UnDef	5.3	10.5
33.96	5.0E-03	0.01	72.0	1.18	7	91.5	32.4	123.9	14.8	40	64.7	1.0	-0.17	4.4	26.8
34.94	5.0E+00	0.00	176.2	0.38	9	223.8	0.0	223.8	2.3	44	90.4	1.0	-0.15	0.0	36.5
35.92	5.0E+00	0.00	172.7	0.36	9	221.5	0.0	221.5	2.2	44	90.1	1.0	-0.15	0.0	36.1
36.91	5.0E-02	0.00	127.1	0.32	9	165.0	0.0	165.0	3.6	44	81.6	1.0	-0.11	0.0	32.3
37.89	5.0E-02	0.00	115.6	0.45	9	151.4	0.0	151.4	5.0	42	79.2	1.0	-0.13	0.0	29.6
38.88	5.0E+00	0.00	139.2	0.24	9	183.8	0.0	183.8	2.3	44	84.7	1.0	-0.10	0.0	30.0
39.86	5.0E-02	0.00	117.8	0.56	9	157.0	5.1	162.1	6.2	42	80.2	1.0	-0.15	0.6	31.4
40.85	5.0E-02	0.00	111.3	0.22	9	149.9	0.0	149.9	3.2	42	78.9	1.0	-0.07	0.0	29.3

Gregg In Situ, Inc.
Run No: 00-0403-0737-3324
CPT File: 597C4.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	0.00	90.5	0.39	9	123.1	0.0	123.1	5.0	42	73.2	1.0	-0.10	0.0	24.1
42.81	5.0E-02	0.00	105.5	0.77	9	144.4	15.3	159.7	8.6	42	77.8	1.0	-0.17	1.8	30.1
43.80	5.0E-04	0.03	91.8	2.15	7	126.9	65.8	192.6	17.8	42	74.1	1.0	-0.26	11.2	52.6
44.78	5.0E-04	0.15	80.6	2.28	7	112.4	72.9	185.3	19.7	42	70.6	1.0	-0.24	12.0	48.6
45.77	5.0E-04	0.21	85.1	2.07	7	119.4	64.8	184.2	18.2	42	72.3	1.0	-0.23	11.0	49.9
46.75	5.0E-04	0.12	96.6	2.26	7	136.2	70.7	206.9	17.8	42	76.1	1.0	-0.26	12.1	56.5
47.74	5.0E-04	0.14	84.2	2.76	7	119.8	92.8	212.6	21.3	42	72.4	1.0	-0.28	14.7	53.7
48.72	5.0E-04	0.14	74.9	2.45	7	107.6	82.9	190.4	21.3	40	69.4	1.0	-0.25	13.1	48.2
49.70	5.0E-04	0.17	79.0	2.63	7	114.0	89.8	203.8	21.5	42	71.0	1.0	-0.26	14.2	51.3

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 00-0403-0737-3351
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-5
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 12:47
CPT File: 597C5.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 8.41 (ft): 27.6
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	32.8	0.27	0.82	0.5	7	117.8	0.33	0.33	0.00	1.73	10.5	18.1	UnDef	0.10
6.40	35.6	0.25	0.70	-0.1	7	117.8	0.39	0.39	0.00	1.60	11.4	18.1	UnDef	0.10
7.30	35.5	0.43	1.20	-1.4	7	117.8	0.45	0.45	0.00	1.50	11.3	17.0	UnDef	0.11
8.20	26.2	0.75	2.88	-0.8	5	114.6	0.50	0.50	0.00	1.42	12.5	17.8	2.06	0.16
9.19	30.5	0.79	2.60	-1.3	6	114.6	0.55	0.55	0.00	1.34	11.7	15.7	2.39	0.15
10.17	35.1	0.32	0.91	0.0	7	117.8	0.61	0.61	0.00	1.28	11.2	14.3	UnDef	0.10
11.15	25.8	0.46	1.80	-0.2	6	114.6	0.67	0.67	0.00	1.22	9.9	12.1	2.01	0.12
12.14	15.3	0.38	2.50	0.3	5	114.6	0.72	0.72	0.00	1.17	7.3	8.6	1.16	0.14
13.21	15.9	0.41	2.59	-0.2	5	114.6	0.79	0.79	0.00	1.13	7.6	8.6	1.21	0.14
14.27	14.3	0.38	2.64	-2.4	5	114.6	0.85	0.85	0.00	1.09	6.9	7.5	1.08	0.12
15.26	18.9	0.44	2.33	-2.3	5	114.6	0.90	0.90	0.00	1.05	9.0	9.5	1.44	0.17
16.24	14.6	0.39	2.68	-2.7	5	114.6	0.96	0.96	0.00	1.02	7.0	7.1	1.09	0.12
17.22	16.3	0.55	3.39	-0.4	4	114.6	1.02	1.02	0.00	0.99	10.4	10.3	1.23	0.13
18.21	17.0	0.63	3.73	2.9	4	114.6	1.07	1.07	0.00	0.97	10.8	10.5	1.27	0.00
19.19	19.6	0.58	2.97	2.6	5	114.6	1.13	1.13	0.00	0.94	9.4	8.8	1.48	0.15
20.18	13.9	0.38	2.71	1.9	5	114.6	1.19	1.19	0.00	0.92	6.6	6.1	1.01	0.10
21.16	14.3	0.39	2.70	3.3	5	114.6	1.24	1.24	0.00	0.90	6.9	6.2	1.05	0.10
22.15	15.6	0.50	3.19	4.7	4	114.6	1.30	1.30	0.00	0.88	9.9	8.7	1.14	0.00
23.13	18.1	0.56	3.10	-3.9	5	114.6	1.35	1.35	0.00	0.86	8.7	7.5	1.34	0.12
24.11	17.3	0.57	3.32	-2.9	4	114.6	1.41	1.41	0.00	0.84	11.1	9.3	1.27	0.00
25.10	13.2	0.40	3.03	-1.5	4	114.6	1.47	1.47	0.00	0.83	8.4	6.9	0.94	0.00
26.08	13.8	0.44	3.17	0.3	4	114.6	1.52	1.52	0.00	0.81	8.8	7.2	0.99	0.00
27.07	13.6	0.39	2.83	1.1	5	114.6	1.58	1.58	0.00	0.80	6.5	5.2	0.96	0.00
28.05	12.4	0.26	2.10	2.4	5	114.6	1.64	1.62	0.01	0.79	5.9	4.7	0.86	0.09
29.04	11.8	0.21	1.80	3.5	5	114.6	1.69	1.65	0.04	0.78	5.6	4.4	0.81	0.09
30.02	27.1	0.70	2.58	3.8	6	114.6	1.75	1.67	0.08	0.77	10.4	8.0	2.03	0.18
31.00	45.7	1.12	2.45	0.7	6	114.6	1.81	1.70	0.11	0.77	17.5	13.4	3.51	0.00
31.99	17.9	0.44	2.48	-5.7	5	114.6	1.86	1.73	0.14	0.76	8.6	6.5	1.28	0.11
32.97	12.9	0.35	2.74	-4.5	5	114.6	1.92	1.75	0.17	0.76	6.2	4.7	0.88	0.00
33.96	11.6	0.28	2.38	-4.0	5	114.6	1.97	1.78	0.20	0.75	5.6	4.2	0.77	0.09
34.94	25.0	0.67	2.70	-0.2	5	114.6	2.03	1.80	0.23	0.75	12.0	8.9	1.84	0.15
35.92	23.2	0.88	3.79	1.7	4	114.6	2.09	1.83	0.26	0.74	14.8	11.0	1.69	0.00
36.91	16.8	0.72	4.29	0.9	3	111.4	2.14	1.85	0.29	0.73	16.1	11.8	1.17	0.00
37.89	13.1	0.55	4.21	-2.2	3	111.4	2.20	1.88	0.32	0.73	12.6	9.2	0.88	0.00
38.88	20.7	0.57	2.77	-4.8	5	114.6	2.25	1.90	0.35	0.73	9.9	7.2	1.48	0.12
39.86	18.0	0.66	3.67	-3.5	4	114.6	2.31	1.93	0.38	0.72	11.5	8.3	1.26	0.00
40.85	64.6	0.66	1.02	-6.0	8	120.9	2.37	1.95	0.41	0.72	15.5	11.1	UnDef	0.15

Gregg In Situ, Inc.
Run No: 00-0403-0737-3351
CPT File: 597C5.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	83.8	0.90	1.07	-4.8	8	120.9	2.43	1.98	0.44	0.71	20.1	14.2	UnDef	0.17
42.81	16.7	0.22	1.31	-5.4	6	114.6	2.49	2.01	0.48	0.71	6.4	4.5	1.14	0.10
43.80	17.2	0.25	1.48	-4.5	6	114.6	2.54	2.04	0.51	0.70	6.6	4.6	1.17	0.10
44.78	60.4	0.47	0.78	-2.0	8	120.9	2.60	2.06	0.54	0.70	14.5	10.1	UnDef	0.13
45.77	40.3	0.98	2.43	0.1	6	114.6	2.66	2.09	0.57	0.69	15.4	10.7	3.01	0.32
46.75	61.7	1.58	2.56	6.0	6	114.6	2.71	2.12	0.60	0.69	23.6	16.2	4.72	0.00
47.74	133.7	3.53	2.64	46.9	7	117.8	2.77	2.14	0.63	0.68	42.7	29.2	UnDef	0.00
48.72	169.6	3.60	2.12	245.0	7	117.8	2.83	2.17	0.66	0.68	54.1	36.8	UnDef	0.00
49.70	169.8	3.58	2.11	424.8	7	117.8	2.89	2.20	0.69	0.67	54.2	36.6	UnDef	0.00
50.69	166.2	3.11	1.87	967.4	8	120.9	2.95	2.23	0.72	0.67	39.8	26.7	UnDef	0.00
51.67	160.1	4.08	2.55	965.8	7	117.8	3.00	2.25	0.75	0.67	51.1	34.1	UnDef	0.00
52.66	162.3	2.53	1.56	1443.1	8	120.9	3.06	2.28	0.78	0.66	38.9	25.7	UnDef	0.45

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 00-0403-0737-3351
Job No: 00-597SH
Client: JERRY KOVACS
Project: CPT Site Investigation
Site: HOMEPLACE
Location: CPT-5
Engineer: S. MOORE
CPT Date: 00/31/03
CPT Time: 12:47
CPT File: 597C5.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 8.41 (ft): 27.6
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-04	0.00	97.2	0.83	9	55.6	7.9	63.5	9.7	42	50.4	1.0	-0.17	1.5	19.7
6.40	5.0E-04	0.00	89.7	0.71	9	55.6	7.4	63.0	9.4	42	50.5	1.0	-0.15	1.4	19.6
7.30	5.0E-04	0.00	78.6	1.21	9	52.0	16.9	68.9	14.2	42	48.5	1.0	-0.18	3.1	20.0
8.20	5.0E-06	0.00	51.6	2.93	7	36.3	57.2	93.5	27.9	UnDef	UnDef	10.0	UnDef	11.0	28.8
9.19	5.0E-05	0.00	54.0	2.65	7	40.1	51.4	91.5	26.1	40	41.1	10.0	-0.24	8.5	24.2
10.17	5.0E-04	0.00	56.4	0.92	7	44.0	17.0	61.0	15.4	40	43.7	1.0	-0.13	3.0	17.4
11.15	5.0E-05	0.00	37.6	1.85	7	30.9	42.8	73.7	26.8	38	33.6	6.0	-0.15	6.9	19.0
12.14	5.0E-06	0.00	20.1	2.63	6	17.6	70.3	87.8	41.4	UnDef	UnDef	6.0	UnDef	8.6	17.2
13.21	5.0E-06	0.00	19.2	2.73	6	17.5	70.2	87.7	42.8	UnDef	UnDef	6.0	UnDef	8.6	17.2
14.27	5.0E-06	-0.01	15.9	2.81	6	15.3	61.0	76.3	46.9	UnDef	UnDef	6.0	UnDef	7.5	14.9
15.26	5.0E-06	0.00	19.9	2.45	6	19.5	77.8	97.3	40.6	UnDef	UnDef	6.0	UnDef	9.5	19.0
16.24	5.0E-06	-0.01	14.2	2.86	6	14.6	58.4	73.0	49.5	UnDef	UnDef	6.0	UnDef	7.1	14.3
17.22	5.0E-07	0.00	15.1	3.61	4	15.9	63.4	79.3	52.0	UnDef	UnDef	6.0	UnDef	10.3	20.7
18.21	5.0E-07	0.01	14.8	3.98	1	16.0	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
19.19	5.0E-06	0.00	16.4	3.15	6	18.0	72.2	90.2	48.1	UnDef	UnDef	6.0	UnDef	8.8	17.7
20.18	5.0E-06	0.00	10.7	2.96	4	12.5	49.8	62.3	56.5	UnDef	UnDef	3.0	UnDef	6.1	12.2
21.16	5.0E-06	0.01	10.5	2.96	4	12.6	50.3	62.9	56.8	UnDef	UnDef	3.0	UnDef	6.2	12.3
22.15	5.0E-07	0.01	11.0	3.48	1	13.4	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
23.13	5.0E-06	-0.01	12.4	3.35	4	15.2	61.0	76.2	55.1	UnDef	UnDef	3.0	UnDef	7.5	14.9
24.11	5.0E-07	-0.01	11.3	3.61	1	14.3	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
25.10	5.0E-07	0.00	8.0	3.41	1	10.6	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
26.08	5.0E-07	0.00	8.1	3.57	1	11.0	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
27.07	5.0E-06	0.00	7.6	3.20	1	10.6	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
28.05	5.0E-06	0.01	6.6	2.42	4	9.5	38.1	47.6	65.2	UnDef	UnDef	3.0	UnDef	4.7	9.3
29.04	5.0E-06	0.01	6.1	2.10	4	9.0	36.0	44.9	65.1	UnDef	UnDef	1.5	UnDef	4.4	8.8
30.02	5.0E-05	0.00	15.2	2.76	6	20.5	82.1	102.6	47.6	32	30.0	6.0	-0.09	8.0	16.1
31.00	5.0E-05	0.00	25.8	2.55	6	34.3	137.3	171.6	36.5	34	36.6	6.0	-0.14	13.4	26.9
31.99	5.0E-06	-0.02	9.3	2.76	4	13.3	53.3	66.6	58.7	UnDef	UnDef	3.0	UnDef	6.5	13.0
32.97	5.0E-06	-0.03	6.3	3.22	1	9.6	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
33.96	5.0E-06	-0.03	5.4	2.87	4	8.5	34.2	42.7	73.7	UnDef	UnDef	1.5	UnDef	4.2	8.4
34.94	5.0E-06	-0.01	12.7	2.93	4	18.2	72.8	91.0	52.3	UnDef	UnDef	6.0	UnDef	8.9	17.8
35.92	5.0E-07	-0.01	11.6	4.17	1	16.8	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
36.91	5.0E-08	-0.02	7.9	4.92	1	12.1	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
37.89	5.0E-08	-0.04	5.8	5.05	1	9.4	UnDef	UnDef	100.0	UnDef	UnDef	1.5	UnDef	UnDef	UnDef
38.88	5.0E-06	-0.03	9.7	3.11	4	14.7	58.9	73.6	59.5	UnDef	UnDef	3.0	UnDef	7.2	14.4
9.86	5.0E-07	-0.03	8.1	4.21	1	12.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
0.85	5.0E-03	-0.01	31.8	1.06	7	45.2	44.4	89.6	23.6	36	44.5	1.0	-0.08	5.0	16.0

Gregg In Situ, Inc.
Run No: 00-0403-0737-3351
CPT File: 597C5.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-03	-0.01	41.0	1.11	7	58.2	41.5	99.7	20.6	38	51.8	1.0	-0.11	5.0	19.3
42.81	5.0E-05	-0.05	7.1	1.54	4	11.5	46.1	57.6	56.8	30	30.0	3.0	0.03	4.5	9.0
43.80	5.0E-05	-0.04	7.2	1.73	4	11.8	47.1	58.9	58.0	30	30.0	3.0	0.02	4.6	9.2
44.78	5.0E-03	-0.01	28.0	0.81	7	41.1	38.7	79.8	23.2	36	41.8	1.0	-0.05	4.4	14.4
45.77	5.0E-05	-0.01	18.0	2.60	6	27.3	109.2	136.4	43.3	32	30.1	6.0	-0.11	10.7	21.4
46.75	5.0E-05	-0.01	27.9	2.68	6	41.5	166.0	207.5	35.9	36	42.1	6.0	-0.16	16.2	32.5
47.74	5.0E-04	0.01	61.1	2.70	7	89.4	99.6	189.0	24.7	40	64.1	1.0	-0.25	14.3	43.5
48.72	5.0E-04	0.04	76.9	2.16	7	112.7	72.4	185.1	19.7	40	70.7	1.0	-0.24	11.9	48.7
49.70	5.0E-04	0.08	76.0	2.14	7	112.1	72.4	184.5	19.7	40	70.5	1.0	-0.24	11.9	48.5
50.69	5.0E-03	0.18	73.4	1.91	7	109.1	64.2	173.3	18.9	40	69.8	1.0	-0.20	8.1	34.7
51.67	5.0E-04	0.19	69.7	2.60	7	104.4	93.9	198.3	22.7	40	68.5	1.0	-0.24	14.3	48.4
52.66	5.0E-03	0.28	69.8	1.59	7	105.2	53.7	158.8	17.7	40	68.7	1.0	-0.16	6.9	32.6