UPDATED GEOTECHNICAL INVESTIGATION

PROPOSED HOTEL DEVELOPMENT
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

GEOCON
WEST, INC.
GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
CARLSBAD, CALIFORNIA

PROJECT NO. A8487-06-03

MAY 20, 2015

GEOCON
WEST, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. A8487-06-03
May 20, 2015

Agoura Hills HHG Hotel Development LP
105 Decker Court, Suite 500
Irving, Texas 75062

Attention: Ms. Patricia Santini

Subject: UPDATED GEOTECHNICAL INVESTIGATION
PROPOSED HOTEL DEVELPOMENT
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

Dear Ms. Santini:

In accordance with your authorization of our proposal dated April 30, 2015, we have prepared an updated geotechnical investigation report for the proposed three-story hotel development located at 29508 Roadside Drive, in Agoura Hills, California. The accompanying report presents the findings of our study, and our conclusions and recommendations pertaining to the geotechnical aspects of proposed design and construction. Based on the results of our investigation, it is our opinion that the site can be developed as proposed, provided the recommendations of this report are followed and implemented during design and construction.

If you have any questions regarding this report, or if we may be of further service, please contact the undersigned.

Very truly yours,

GEOCON WEST, INC.

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GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of an updated geotechnical investigation for the proposed three-story hotel development located at 29508 Roadside Drive in Agoura Hills, California (see Vicinity Map, Figure 1). The purpose of this updated geotechnical investigation report is to provide conclusions and recommendations pertaining to the geotechnical aspects of design and construction of the subject project based on previous boring and laboratory testing data.

Field explorations were previously performed by Geocon Inland Empire, Inc. and by Advanced Geotechnical Services, Inc. (AGS). The previous geotechnical investigation report by Geocon Inland Empire, Inc., as well as relevant exploratory excavations and laboratory test results prepared by AGS are included in Appendix C. The approximate locations of the exploratory borings and test pits conducted by Geocon Inland Empire, Inc and AGS are depicted on the Site Plan (Figure 2).

The recommendations presented herein are based on analysis of the data obtained during the previous site investigations and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the *List of References* section.

If project details vary significantly from those described above, Geocon should be contacted to determine the necessity for review and possible revision of this report.

2. PRIOR INVESTIGATIONS

Advanced Geotechnical Services Inc. (AGS) performed a geotechnical investigation for a proposed Home Depot and restaurant development. The report is entitled Geotechnical Engineering Study, Proposed Home Depot and Restaurant Pad, Ladyface Village Phase I, Agoura Road West of Kanan, Agoura Hills, California, dated September 18, 2001. Within the area of the proposed development, 19 borings were drilled and 6 backhoe test pits were excavated to a maximum depth of 25½ feet beneath the existing ground surface. In addition, six cone penetrometer tests (CPTs) were advanced to a maximum depth of 41 feet below ground surface.

The site was previously explored by Geocon Inland Empire, Inc. on November 27 and 28, 2006, and consisted of excavating four large diameter borings utilizing an eighteen inch diameter bucket auger type drilling machine and seven test pits utilizing a backhoe. The borings were conducted to depths between 16 and 24 feet below the existing ground surface and all borings encountered bedrock. The backhoe test pits were conducted to a depth of six feet below the existing ground surface. Please be aware that our company name has changed from Geocon Inland Empire, Inc. to Geocon West, Inc. We have reviewed the referenced report by Geocon Inland Empire, Inc. and we concur with the conclusions and recommendations presented therein.

3. SITE AND PROJECT DESCRIPTION

The subject property is located at 29508 Roadside Drive, in Agoura Hills, California. The site is an irregular shaped parcel and is currently a vacant lot. The site is bounded by Roadside Drive and the 101 Freeway on the north, a construction equipment rental facility on the east, the Los Angeles County Animal Shelter on the west, and by Agoura Road on the south. The site and surrounding topography is shown on Figure 1, Vicinity Map. Vegetation onsite consists of trees, grass and shrubs located throughout the site.

The subject property is located in a historical stream drainage area. Several natural terraces are located throughout the property. Surface water drainage at the site appears to be by stream flow from the west, along existing channels to the center of the property, where a concrete flood control structure has been constructed. Vegetation on the site consists of oak trees and shrubs located along Agoura Road and the interior of the site. The neighboring developments to the east and west consist primarily of on-grade commercial structures.

Based on the information provided by the Client, it is our understanding that the proposed development will consist of a three-story hotel structure surrounded by appurtenant paved parking to be constructed at or near present grade. The central portion of the hotel development will have a recreation area with an in-ground swimming pool and concrete paving.

Based on the preliminary nature of the design at this time, wall and column loads were not available. It is estimated that column loads for the proposed structure will be up to 600 kips. Wall loads are estimated to be up to 6 kips per linear foot.

Once the design phase and foundation loading configuration proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Any changes in the design, location or elevation of any structure, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

4. GEOLOGIC SETTING

The site is located near the base of the northern flank of the Santa Monica Mountains, within the southern portion of the Transverse Ranges geomorphic province. The Santa Monica Mountains, formed during regional uplift, trend east-west along the southern margin of the San Fernando Valley and extend to the Oxnard Plain on the west. The Transverse Ranges geomorphic province is characterized by east-west trending geologic structures such as the Malibu Coast and the Simi-Santa Rosa faults, located approximately 7.2 miles south and 9.5 miles north of the site, respectively.

5. SOIL AND GEOLOGIC CONDITIONS

Based on our field investigation and published geologic maps of the area, the site is underlain by artificial fill, Holocene age alluvium, and Quaternary age terrace deposits overlying Tertiary age sedimentary bedrock units of the Topanga Formation and the Conejo Volcanics. Topanga Formation bedrock was encountered within 18 feet of the ground surface. Detailed stratigraphic profiles are provided on the Boring Logs in Appendix A (see Figures A-1 through A-11).

5.1 Artificial Fill

Artificial fill materials were encountered in numerous borings and test pits throughout the subject property. Artificial fill was observed in test pits TP-1, TP-3 and TP-4 ranging in depth from 6 to 7 feet below the ground surface. In addition, several of the prior explorations by AGS encountered fill materials to a maximum depth of 15 feet below the ground surface. The encountered fill material generally consists of yellowish brown clayey gravel with sand, and lesser amounts of clayey sand with gravel, some volcanic clasts, and fragments of concrete. Fill may have been placed as a part of a retention basin constructed between 1970 and 1976. The placement of fill has blocked surface flow of water onto the neighboring property to the east.

5.2 Topsoil and Colluvium (Qc)

Topsoil and colluvium were encountered during the site exploration performed by AGS. Topsoil was observed in borings 27, 29 through 32, and test pits 10 and 11, to a maximum depth of 7.5 feet below existing ground surface in boring 32. Topsoil observed by AGS consists of dark brown to dark grayish brown sandy clay or silt to silty or clayey sand. Fine grained materials were found to be stiff to hard, and coarse grained materials were loose to moderately dense.

5.3 Alluvium

Holocene age alluvial soils were observed in several explorations by both Geocon and AGS to a maximum depth of 19½ feet below the existing ground surface. The alluvium generally consists of sandy clay, silty sand, and sandy gravel, and lesser amounts of gravelly clay with sand. The alluvium was observed to be moist, medium dense to dense, and firm to stiff. Alluvial deposits were massive without internal structures or bedding and were associated with the former stream channel area of the site.

5.4 Quaternary Terrace Deposits

Quaternary age terrace deposits were encountered in borings B-1 through B-4 to depths ranging from 13 feet to 18 feet below ground surface. The terrace deposits are typically up to 10 feet thick throughout the site and consist of gray to strong brown gravelly clay, with volcanic clasts that are firm and moist. Borings B-1 through B-4 are located at the highest elevations on the subject site and within an area where stockpiling activities have changed the original topography. Fill thickness is expected to increase to the west and southwest with decreasing thickness of terrace material.

5.5 Topanga Formation

The fill, alluvial soils and terrace deposits are underlain by Tertiary age sedimentary bedrock of the Topanga Formation (Weber, 1984). As observed in the borings, the bedrock is yellowish brown to olive, thinly bedded siltstone and claystone with localized thin interbeds of fine-grained sandstone that contain thin gypsum stringers and iron oxidation staining along bedding planes and joint surfaces. The Topanga Formation bedrock was encountered in all four borings and the majority of the prior AGS explorations with minimum depths below ground surface ranging from 4 feet to 18 feet.

5.6 Conejo Volcanics

Geocon did not encounter bedrock of the Tertiary age Conejo Volcanics during the on-site investigation; however, AGS presents information on this formation where it exists in the southern part of the subject property. According to AGS, the fill and alluvial deposits are underlain by Conejo Volcanics within the southern portion of the Site. Conejo Volcanics were encountered at 19.5 feet below ground surface on the subject property in AGS boring B-4.

6. GROUNDWATER

Based on a review of the Seismic Hazard Zone Report for the Thousand Oaks 7.5 Minute Quadrangle, Los Angeles and Ventura Counties, California (California Division of Mines and Geology [CDMG], 2000), the historically highest groundwater level in the area is approximately 10 feet beneath the ground surface. Groundwater information presented in this document is generated from data collected in the early 1900’s to the late 1990s. Based on current groundwater basin management practices, it is unlikely that groundwater levels will ever exceed the historic high levels.

Groundwater seepage was not encountered during the field investigation performed by Geocon. However, several borings excavated as part of the previous AGS investigation encountered minor groundwater seepage. AGS indicated that these groundwater occurrences were highly variable and subject to local subsurface conditions. AGS encountered groundwater in borings B-10 and B-13 at depths of 8 and 9 feet below the ground surface, respectively. It is our opinion that the groundwater encountered previously at the site does not represent the static groundwater table but exists in the near surface sediments as discontinuous perched zones of groundwater within the sandy alluvial soils. The amount of seepage in these granular zones may fluctuate seasonally or groundwater seepage conditions may develop where none previously existed, especially after seasonal rainfall or in areas where impermeable fine-grained soils are heavily irrigated. In addition, recent requirements for stormwater infiltration could result in shallower seepage conditions in the immediate site vicinity. Proper surface drainage of irrigation and precipitation will be critical for future performance of the project. Recommendations for drainage are provided in the S*urface Drainage* section of this report (see Section 8.19).

7. GEOLOGIC HAZARDS

7.1 Surface Fault Rupture

The numerous faults in Southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as California Division of Mines and Geology [CDMG]) for the Alquist-Priolo Earthquake Fault Zone Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years), but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a currently established Alquist-Priolo Earthquake Fault Zone for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site. Therefore, the potential for surface rupture due to faulting occurring beneath the site during the design life of the proposed development is considered low. However, the site is located in the seismically active Southern California region, and could be subjected to moderate to strong ground shaking in the event of an earthquake on one of the many active Southern California faults. The faults in the vicinity of the site are shown in Figure 3, Regional Fault Map.

The closest surface trace of an active fault to the site is the Malibu Coast Fault located approximately 7.2 miles to the south (Ziony and Jones, 1989). Other nearby active faults are the Simi-Santa Rosa Fault, the Anacapa-Dume Fault, and the Northridge Hills Fault located approximately 9.5 miles north, 11.3 miles south, and 13.5 miles north-northeast of the site, respectively (Ziony and Jones, 1989). The active San Andreas Fault zone is located approximately 41 miles northeast of the site (Ziony and Jones, 1989).

The closest potentially active fault to the site is the Burro Flats Fault located approximately 5.9 miles to the north. Other nearby potentially active faults are the Boney Mountain North Fault and the Chatsworth Reservoir Fault located approximately 6.0 miles west and 8.9 miles northeast of the site, respectively.

Several buried thrust faults, commonly referred to as blind thrusts, underlie the Los Angeles area at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than 3.0 kilometers. The October 1, 1987 M_w 5.9 Whittier Narrows earthquake and the January 17, 1994 M_w 6.7 Northridge earthquake were a result of movement on the Puente Hills Blind Thrust and the Northridge Thrust, respectively. These thrust faults and others in the area are not exposed at the surface and do not present a potential surface fault rupture hazard at the site; however, these deep thrust faults are considered active features capable of generating future earthquakes that could result in moderate to significant ground shaking at the site.

7.2 Seismicity

As with all of Southern California, the site has experienced historic earthquakes from various regional faults. The seismicity of the region surrounding the site was formulated based on research of an electronic database of earthquake data. The epicenters of recorded earthquakes with magnitudes equal to or greater than 5.0 in the site vicinity are depicted on Figure 4, Regional Seismicity Map. A partial list of moderate to major magnitude earthquakes that have occurred in the Southern California area within the last 100 years is included in the following table.

LIST OF HISTORIC EARTHQUAKES

Earthquake (Oldest to Youngest)	**Date of Earthquake**	**Magnitude**	**Distance to Epicenter (Miles)**	**Direction to Epicenter**
San Jacinto-Hemet area	April 21, 1918	6.8	105	ESE
Near Redlands	July 23, 1923	6.3	87	E
Long Beach	March 10, 1933	6.4	59	SE
Tehachapi	July 21, 1952	7.5	61	NNW
San Fernando	February 9, 1971	6.6	28	NE
Whittier Narrows	October 1, 1987	5.9	40	E
Sierra Madre	June 28, 1991	5.8	44	E
Landers	June 28, 1992	7.3	133	E
Big Bear	June 28, 1992	6.4	111	E
Northridge	January 17, 1994	6.7	14	ENE
Hector Mine	October 16, 1999	7.1	146	ENE

The site could be subjected to strong ground shaking in the event of an earthquake. However, this hazard is common in Southern California and the effects of ground shaking can be mitigated if the proposed structures are designed and constructed in conformance with current building codes and engineering practices.

7.3 Seismic Design Criteria

The following table summarizes summarizes site-specific design criteria obtained from the 2013 California Building Code (CBC; Based on the 2012 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The data was calculated using the computer program *U.S. Seismic Design Maps*, provided by the USGS. The short spectral response uses a period of 0.2 second. The values presented below are for the risk-targeted maximum considered earthquake (MCE_R).

2013 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2013 CBC Reference
Site Class	C	Table 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.575g	Figure 1613.3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.600g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.0	Table 1613.3.3(1)
Site Coefficient, F_V	1.3	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.575g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	0.780g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.050g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.520g	Section 1613.3.4 (Eqn 16-40)

The table below presents the mapped maximum considered geometric mean (MCE_G) seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10.

ASCE 7-10 PEAK GROUND ACCELERATION

Parameter	Value	ASCE 7-10 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.584g	Figure 22-7
Site Coefficient, F_{PGA}	1.0	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.584g	Section 11.8.3 (Eqn 11.8-1)

The Maximum Considered Earthquake Ground Motion (MCE) is the level of ground motion that has a 2 percent chance of exceedance in 50 years, with a statistical return period of 2,500 years. According to the 2013 California Building Code and ASCE 7-10, the MCE is to be utilized for the evaluation of liquefaction, lateral spreading, seismic settlements, and it is our understanding that the intent of the Building code is to maintain “Life Safety” during a MCE event. The Design Earthquake Ground Motion (DE) is the level of ground motion that has a 10 percent chance of exceedance in 50 years, with a statistical return period of 475 years.

Deaggregation of the MCE peak ground acceleration was performed using the USGS 2008 Probabilistic Seismic Hazard Analysis (PSHA) Interactive Deaggregation online tool. The result of the deaggregation analysis indicates that the predominant earthquake contributing to the MCE peak ground acceleration is characterized as a 6.80 magnitude event occurring at a hypocentral distance of 14.8 kilometers from the site.

Deaggregation was also performed for the Design Earthquake (DE) peak ground acceleration, and the result of the analysis indicates that the predominant earthquake contributing to the DE peak ground acceleration is characterized as a 6.76 magnitude occurring at a hypocentral distance of 19.1 kilometers from the site.

Conformance to the criteria in the above tables for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

7.4 Liquefaction Potential

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations.

The current standard of practice, as outlined in the “Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California” and “Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California” requires liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

The State of California Seismic Hazard Zone Map for the Thousand Oaks Quadrangle (2000) indicates that the site is not located in an area designated as “liquefiable.” In addition, the site is not identified as being within a potential liquefaction area by the City of Agoura Hills General Plan (2010) and the County of Los Angeles Safety Element (Leighton, 1990). As previously discussed, the site is underlain by shallow bedrock of the Tertiary age Topanga Formation and Conejo Volcanics. Bedrock by its nature is not subject to liquefaction. Based on this consideration, it is our opinion that the potential for liquefaction and associated ground deformations beneath the site is considered to be low. Furthermore, no surface manifestations of liquefaction are expected at the subject site.

7.5 Slope Stability

The site and surrounding vicinity is gently sloping to the south. According to the city of Agoura Hills General Plan (2010) and the Los Angeles County Safety Element (Leighton, 1990), the site is not within an area identified as having a potential for slope instability However, the southeastern corner of the site is identified as having a slope gradient greater than 10% (City of Agoura, 2010).

The State of California Seismic Hazard Zone Map for the Thousand Oaks Quadrangle (2000) indicates that the site is not located within an area identified as having a potential for seismic slope instability (CDMG, 1998). There are no known landslides near the site, nor is the site in the path of any known or potential landslides. Therefore, the potential for slope stability hazards to adversely affect the proposed development is considered low.

7.6 Earthquake-Induced Flooding

Earthquake-induced flooding is inundation caused by failure of dams or other water-retaining structures due to earthquakes. Based on a review of the Los Angeles County Safety Element (Leighton, 1990), the site is not located within a potential inundation area for an earthquake-induced dam failure. The probability of earthquake-induced flooding is considered very low.

7.7 Tsunamis, Seiches, and Flooding

The site is not located within a coastal area. Therefore, tsunamis, seismic sea waves, are not considered a significant hazard at the site.

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. No major water-retaining structures are located immediately up gradient from the project site. Flooding from a seismically induced seiche is considered unlikely.

7.8 Oil Fields & Methane Potential

Based on a review of the California Division of Oil, Gas and Geothermal Resources (DOGGR) Oil and Gas Well Location Map W2-1, the site is not located within the limits of an oilfield and oil wells are not located in the immediate site vicinity. However, due to the voluntary nature of record reporting by the oil well drilling companies, wells may be improperly located or not shown on the location map and undocumented wells could be encountered during construction. Any wells encountered will need to be properly abandoned in accordance with the current requirements of the DOGGR.

Since the site is not located within the boundaries of a known oil field, the potential for the presence of methane or other volatile gases at the site is considered low. However, should it be determined that a methane study is required for the proposed development it is recommended that a qualified methane consultant be retained to perform the study and provide mitigation measures as necessary.

7.9 Subsidence

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soils that are particularly subject to subsidence include those with high silt or clay content. The site is not located within an area of known ground subsidence. No large-scale extraction of groundwater, gas, oil, or geothermal energy is occurring or planned at the site or in the general site vicinity. There appears to be little or no potential for ground subsidence due to withdrawal of fluids or gases at the site.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 General

8.1.1 It is our opinion that neither soil nor geologic conditions were encountered during this investigation that would preclude the construction of the proposed development provided the recommendations presented herein are followed and implemented during design and construction.

8.1.2 Up to fifteen feet of artificial fill materials were encountered during exploration at the site. The existing fill encountered is believed to be the result of past grading and demolition activities at the site. Deeper fill may exist in other areas of the site that were not directly explored. It is our opinion that the existing artificial fill, in its present condition, is not considered suitable for direct support of proposed foundations, floor slabs, or additional fill; however, the existing fill are considered suitable for re-use as an engineered fill provided the recommendation in the *Grading* section of this report are followed (see Section 8.4). The actual limits of removal will have to be determined by the Geotechnical Engineer (a representative of Geocon West, Inc.) during excavation and grading activities. Soils determined to be unsuitable by us in the field during grading should be over excavated, replaced as engineered fill, or not be used within structural areas, as directed.

8.1.3 Based on these considerations, it is recommended that the proposed new structure be supported on a conventional foundation system deriving support on a blanket of newly placed engineered fill. As a minimum, it is recommended that the upper five feet of existing earth materials in the building footprint area be excavated and properly compacted for foundation and slab support. Deeper excavations should be conducted as needed to remove any encountered fill or soft soil as necessary at the direction of the Geotechnical Engineer (a representative of Geocon West, Inc.). All foundations should be underlain by at least 3 feet of newly placed engineered fill. The excavation should extend laterally a minimum of ten feet beyond the proposed building footprint area, including building appurtenances, or a distance equal to the depth of fill below the foundations, whichever is greater. The limits of existing fill and/or soft soil removal will be verified by the Geocon representative during site grading activities. Recommendations for earthwork are provided in the *Grading* section of this report (see Section 8.4).

8.1.4 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.). It is recommended that the exposed excavation bottom be proof-rolled with heavy equipment in the presence of the Geotechnical Engineer (a representative of Geocon West, Inc.) prior to placing fill.

8.1.5 It is anticipated that stable excavations for the recommended grading associated with the proposed structure can be achieved with sloping measures. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 8.18).

8.1.6 Foundations for small outlying structures, such as block walls up to 6 feet in height, planter walls or trash enclosures, which will not be tied-in to the proposed structures, may be supported on conventional foundations deriving support on a minimum of 12 inches of newly placed engineered fill which extend laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed or is undesirable, foundations may derive support directly in the undisturbed alluvial soils found at or below a depth of 24 inches below the existing ground surface, and should be deepened as necessary to maintain a minimum of 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved in writing by a Geocon representative.

8.1.6 The proposed swimming pool should be designed in accordance with Section 8.15 of this report.

8.1.7 Where new paving is to be placed, it is recommended that all existing fill and soft alluvial soils be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing fill and soft alluvial soils in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable alluvial soils may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper twelve inches of subgrade soil should be scarified and moisture conditioned to 2 percent above optimum moisture content, and compacted to at least 95 percent relative compaction for paving support. Paving recommendations are provided in *Preliminary Pavement Recommendations* section of this report (Section 8.11).

8.1.8 Based on the likely impermeable nature of the bedrock which underlies the site, infiltration of stormwater at this site is not considered feasible and would be considered detrimental to the project. It is recommended that stormwater be retained, filtered, and discharged in accordance with the requirements of the local governing agency.

8.1.9 Once the design and foundation loading configuration proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. If the proposed building loads will exceed those presented herein, the potential for settlement should be reevaluated by this office.

8.1.10 Any changes in the design, location or elevation of improvements, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

8.2 Soil and Excavation Characteristics

8.2.1 The in-situ soils can be excavated with moderate effort using conventional excavation equipment. Due to the generally cohesive nature of the site soils, excessive caving is not anticipated during shallow vertical excavations.

8.2.2 It is the responsibility of the contractor to ensure that all excavations and trenches are properly shored and maintained in accordance with applicable OSHA rules and regulations to maintain safety and maintain the stability of adjacent existing improvements.

8.2.3 All onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load. Penetrations below this 1:1 projection will require special excavation measures such as shoring. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 8.18).

8.2.4 The upper five feet of soils encountered during this investigation are considered to have a “low” (EI = 39) expansive potential and are classified as “expansive” in accordance with the 2013 California Building Code (CBC) Section 1803.5.3. The recommendations presented herein assume that the building foundations and slabs will derive support in these materials.

8.3 Minimum Resistivity, pH and Water-Soluble Sulfate

8.3.1 Potential of Hydrogen (pH) and resistivity testing as well as chloride content testing were performed on representative samples of soil to generally evaluate the corrosion potential to surface utilities. The tests were performed in accordance with California Test Method Nos. 643 and 422 and indicate that the soils are considered “moderately corrosive” with respect to corrosion of buried ferrous metals exists on site. The results are presented in Appendix B (Figure B5) and should be considered for design of underground structures.

8.3.2 Laboratory tests were performed on representative samples of the on-site materials to measure the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate tests are presented in Appendix B (Figure B5) and indicate that the on-site materials possess “negligible” sulfate exposure to concrete structures as defined by 2013 CBC Section 1904 and ACI 318-08 Sections 4.2 and 4.3.

8.3.3 Geocon West, Inc. does not practice in the field of corrosion engineering and mitigation. If corrosion sensitive improvements are planned, it is recommended that a corrosion engineer be retained to evaluate corrosion test results and incorporate the necessary precautions to avoid premature corrosion on buried metal pipes and concrete structures in direct contact with the soils.

8.4 Grading

8.4.1 A preconstruction conference should be held at the site prior to the beginning of grading operations with the owner contractor, civil engineer and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

8.4.2 Earthwork should be observed, and compacted fill tested by representatives of Geocon West, Inc. The existing fill and alluvial soils encountered during exploration are suitable for re-use as an engineered fill, provided any encountered oversize material (greater than 6 inches) and any encountered deleterious debris is removed.

8.4.3 Grading should commence with the removal of all existing vegetation and existing improvements from the area to be graded. Deleterious debris such as wood and root structure should be exported from the site and should not be mixed with the fill soils. Asphalt and concrete should not be mixed with the fill soils unless approved in writing by the Geotechnical Engineer. All existing underground improvement planned for removal should be completely excavated and the resulting depressions properly backfilled in accordance with the procedures described herein. Once a clean excavation bottom has been established it must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.).

8.4.4 As a minimum, it is recommended that the upper five feet of existing earth material within the proposed building footprint area be excavated and properly compacted for foundation and slab support. Deeper excavations should be conducted as necessary to remove any encountered fill or soft alluvial soils at the direction of the Geotechnical Engineer (a representative of Geocon West, Inc.). All foundations should be underlain by at least 3 feet of newly placed engineered fill and the grading contractor should verify proposed foundation depths prior to commencement of grading activities to ensure that the minimum 3-foot requirement is maintained. The excavation should extend laterally a minimum of 10 feet beyond the proposed building footprint area, including building appurtenances, or a distance equal to the depth of fill below the foundations, whichever is greater. The required over-excavation limits will be verified by the Geocon representative during site grading activities.

8.4.5 All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to 2 percent above optimum moisture content, and properly compacted to a minimum 90 percent of the maximum dry density in accordance with ASTM D 1557 (latest edition).

8.4.6 Foundations for small outlying structures, such as block walls up to 6 feet high, planter walls or trash enclosures, which will not be tied-in to the proposed structures, may be supported on conventional foundations deriving support on a minimum of 12 inches of newly placed engineered fill which extend laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed or is undesirable, foundations may derive support directly in the undisturbed alluvial soils found at or below a depth of 24 inches below the existing ground surface, and should be deepened as necessary to maintain a minimum of 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved in writing by a Geocon representative.

8.4.7 It is anticipated that stable excavations for the recommended grading associated with the proposed structures can be achieved with sloping measures. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 8.18).

8.4.8 All imported fill shall be observed, tested and approved by Geocon West, Inc. West, Inc. prior to importing soil to the site. Rocks larger than six inches in diameter shall not be used in the fill. If necessary, imported soils used in the building pad area should have an expansion index less than 30 and corrosivity properties that are equally or less detrimental than that of the existing onsite soils (see Figure B5). If imported soils will be utilized in the building pad, the soil must be placed uniformly and at equal thickness at the direction of the Geotechnical Engineer (a representative of Geocon West, Inc.).

8.4.9 Utility trenches should be properly backfilled in accordance with the requirements of the Green Book (latest edition). The pipe should be bedded with clean sands (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe, and the bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.). The use of gravel is not acceptable unless used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. The use of minimum 2-sack slurry is also acceptable. Prior to placing any bedding materials or pipes, the excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.).

8.4.10 Where new paving is to be placed, it is recommended that all existing fill and soft alluvial soils be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing fill and soft alluvial soils in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable alluvial soil may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of subgrade soil should be scarified and moisture conditioned to optimum moisture content, and compacted to at least 95 percent relative compaction for paving support. Paving recommendations are provided in *Preliminary Pavement Recommendations* section of this report (see Section 8.11).

8.4.11 All trench and foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to placing bedding sands, fill, steel, gravel, or concrete.

8.5 Shrinkage

8.5.1 Shrinkage results when a volume of material removed at one density is compacted to a higher density. A shrinkage factor of between 10 and 20 percent should be anticipated when excavating and compacting the upper 5 feet of existing earth materials on the site to an average relative compaction of 92 percent.

8.5.2 If import soils will be utilized in the building pad, the soils must be placed uniformly and at equal thickness at the direction of the Geotechnical Engineer (a representative of Geocon West, Inc.). Soils can be borrowed from non-building pad areas and later replaced with imported soils.

8.6 Foundation Design

8.6.1 Subsequent to the recommended grading, a conventional shallow spread foundation system may be utilized for support of the proposed structure provided foundations derive support in newly placed engineered fill. Foundations should be underlain by a minimum of 3 feet of newly placed engineered fill.

8.6.2 Continuous footings may be designed for an allowable bearing capacity of 2,500 pounds per square foot (psf), and should be a minimum of 12 inches in width and 18 inches in depth below the lowest adjacent grade, and 12 inches into the recommended bearing material.

8.6.3 Isolated spread foundations may be designed for an allowable bearing capacity of 3,000 psf, and should be a minimum of 24 inches in width, 18 inches in depth below the lowest adjacent grade, and 12 inches into the recommended bearing material.

8.6.4 The soil bearing pressure above may be increased by 250 psf and 500 psf for each additional foot of foundation width and depth, respectively, up to a maximum allowable soil bearing pressure of 4,000 psf.

8.6.5 The allowable bearing pressure may be increased by one-third for transient loads due to wind or seismic forces.

8.6.6 Continuous footings should be reinforced with a minimum of four No. 4 steel reinforcing bars, two placed near the top of the footing and two near the bottom. The reinforcement for spread footings should be designed by the project structural engineer.

8.6.7 If depth increases are utilized for the exterior wall footings, this office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary.

8.6.8 The above foundation dimensions and minimum reinforcement recommendations are based on soil conditions and building code requirements only, and are not intended to be used in lieu of those required for structural purposes.

8.6.9 No special subgrade presaturation is required prior to placement of concrete. However, the slab and foundation subgrade should be sprinkled as necessary; to maintain a moist condition as would be expected in any concrete placement.

8.6.10 Foundation excavations should be observed by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the exposed soil conditions are consistent with those anticipated. If unanticipated soil conditions are encountered, foundation modifications may be required.

8.6.11 This office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary.

8.7 Foundation Settlement

8.7.1 The maximum expected total settlement for a structure supported on a conventional foundation system designed with the maximum allowable bearing value of 4,000 psf and deriving support in the recommended bearing material is estimated to be less than ¾-inch and occur below the heaviest loaded structural element. Settlement of the foundation system is expected to occur on initial application of loading. Differential settlement is not expected to exceed ½ inch over a distance of twenty feet.

8.7.2 Once the design and foundation loading configurations for the proposed structure proceeds to a more finalized plan, the estimated settlements presented in this report should be reviewed and revised, if necessary. If the final foundation loading configurations are greater than the assumed loading conditions (column loads of up to 600 kips, wall loads of up to 6 kips per linear foot), the potential for settlement should be reevaluated by this office.

8.8 Miscellaneous Foundations

8.8.1 Foundations for small outlying structures, such as block walls up to 6 feet in height, planter walls or trash enclosures, which will not be tied-in to the proposed structure, may be supported on conventional foundations deriving support on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and compaction cannot be performed or is undesirable, such as adjacent to property lines, foundations may derive support in the undisturbed alluvial soils found at or below a depth of 24 inches, and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials.

8.8.2. If the soils exposed in the excavation bottom are loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative. Miscellaneous foundations may be designed for a bearing value of 1,500 psf, and should be a minimum of 12 inches in width, 24 inches in depth below the lowest adjacent grade and 12 inches into the recommended bearing material. The allowable bearing pressure may be increased by up to one-third for transient loads due to wind or seismic forces.

8.8.3 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated.

8.9 Lateral Design

8.9.1 Resistance to lateral loading may be provided by friction acting at the base of foundations, slabs and by passive earth pressure. An allowable coefficient of friction of 0.37 may be used with the dead load forces in newly placed engineered fill.

8.9.2 Passive earth pressure for the sides of foundations and slabs poured against newly placed engineering fill may be computed as an equivalent fluid having a density of 240 pounds per cubic foot with a maximum earth pressure of 2,400 psf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.

8.10 Concrete Slabs-on-Grade

8.10.1 Concrete slabs-on-grade subject to vehicle loading should be designed in accordance with the recommendations in the *Preliminary Pavement Recommendations* section of this report (Section 8.11).

8.10.2 Subsequent to the recommended grading, concrete slabs-on-grade for structures, not subject to vehicle loading, should be a minimum of 4-inches thick and minimum slab reinforcement should consist of No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Steel reinforcing should be positioned vertically near the slab midpoint.

8.10.3 Slabs-on-grade at the ground surface that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute’s (ACI) *Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials* (ACI 302.2R-06) and should be installed in general conformance with ASTM E 1643-11 and the manufacturer’s recommendations. A minimum thickness of 15 mils and a permeance of less than 0.01 perms is recommended. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of ½ inch clean aggregate and the vapor retarder should be in direct contact with the concrete slab. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the California Green Building Code, it is our opinion that the concrete slab-on-grade may be underlain by a vapor retarder over 4 inches of clean sand (sand equivalent greater than 30), since the sand will serve a capillary break and will minimize the potential for punctures and damage to the vapor barrier.

8.10.4 For seismic design purposes, a coefficient of friction of 0.37 may be utilized between concrete slabs and engineered fill without a moisture barrier, and 0.15 for slabs underlain by a moisture barrier.

8.10.5 Exterior slabs for walkways or flatwork, not subject to traffic loads, should be at least 4 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions, positioned near the slab midpoint. Prior to construction of slabs, the upper 12 inches of the subgrade should be moisture conditioned to 2 percent above optimum moisture content and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

8.10.6 Crack control joints should be spaced at intervals not greater than 10 feet and should be constructed using saw-cuts or other methods 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 the project structural engineer.

8.10.7 The recommendations of this report are intended to reduce the potential for cracking of slabs due to settlement. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade may exhibit some cracking due to minor soil movement and/or concrete shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

8.11 Preliminary Pavement Recommendations

8.11.1 Where new paving is to be placed, it is recommended that all existing fill soils and soft or unsuitable alluvial materials be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing artificial fill and soft alluvium in the area of new paving is not required; however, paving constructed over existing unsuitable material may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper twelve inches of paving subgrade should be scarified, moisture conditioned to 2 percent above optimum moisture content, and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

8.11.2 The following pavement sections are based on an assumed R-Value of 20. Once site grading activities are complete an actual R-Value should be obtained by laboratory testing to confirm the properties of soil serving as paving subgrade, prior to placing pavement.

8.11.3 The Traffic Indices listed below are estimates. Geocon does not practice in the field of traffic engineering. The actual Traffic Index for each area should be determined by the project civil engineer. If pavement sections for Traffic Indices other than those listed below are required, Geocon should be contacted to provide additional recommendations. Pavement thicknesses were determined following procedures outlined in the *California Highway Design Manual* (Caltrans). It is anticipated that the majority of traffic will consist of automobile and large truck traffic.

PRELIMINARY PAVEMENT DESIGN SECTIONS

Location	**Estimated Traffic Index (TI)**	**Asphalt Concrete (inches)**	**Class 2 Aggregate Base (inches)**
Automobile Parking and Driveways	4	3	4
Trash Truck & Fire Lanes	7	4	12

8.11.4 Asphalt concrete should conform to Section 203-6 of the *"Standard Specifications for Public Works Construction"* (Green Book). Class 2 aggregate base materials should conform to Section 26-1.02A of the *Standard Specifications of the State of California, Department of Transportation* (Caltrans). The use of Crushed Miscellaneous Base (CMB) in lieu of Class 2 aggregate base is acceptable. Crushed Miscellaneous Base should conform to Section 200-2.4 of the *"Standard Specifications for Public Works Construction"* (Green Book).

8.11.5 Unless specifically designed and evaluated by the project structural engineer, where exterior concrete paving will be utilized for support of vehicles, it is recommended that the concrete be a minimum of 6 inches of concrete reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Concrete paving supporting vehicular traffic should be underlain by a minimum of 4 inches of aggregate base and a properly compacted subgrade. The subgrade and base material should be compacted to 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

8.11.6 The performance of pavements is highly dependent upon providing positive surface drainage away from the edge of pavements. Ponding of water on or adjacent to the pavement will likely result in saturation of the subgrade materials and subsequent cracking, subsidence and pavement distress. If planters are planned adjacent to paving, it is recommended that the perimeter curb be extended at least 12 inches below the bottom of the aggregate base to minimize the introduction of water beneath the paving.

8.12 Retaining Walls Design

8.12.1 The recommendations presented below are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height than 8 feet. In the event that walls significantly higher than 8 are planned, Geocon should be contacted for additional recommendations.

8.12.2 Retaining wall foundations may be designed in accordance with the recommendations provided in the *Foundation Design* section of this report (see Section 8.6).

8.12.3 Retaining walls with a level backfill surface that are not restrained at the top should be designed utilizing a triangular distribution of pressure (active pressure). Restrained walls are those that are not allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls may be designed utilizing a triangular distribution of pressure (at-rest pressure). The table below presents recommended pressures to be used in retaining wall design, assuming that proper drainage will be maintained.

RETAINING WALL WITH LEVEL BACKFILL SURFACE

HEIGHT OF RETAINING WALL (Feet)	ACTIVE PRESSURE EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot)	AT-REST PRESSURE EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot)
Up to 8	30	50

8.12.4 The wall pressures provided above assume that the retaining wall will be properly drained preventing the buildup of hydrostatic pressure. If retaining wall drainage is not implemented, the equivalent fluid pressure to be used in design of undrained walls is 90 pcf. The value includes hydrostatic pressures plus buoyant lateral earth pressures.

8.12.5 Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures and should be designed for each condition as the project progresses. Once the design becomes more finalized, an addendum letter can be prepared addressing specific surcharge conditions throughout the project, if necessary.

8.13 Dynamic (Seismic) Lateral Forces

8.13.1 The structural engineer should determine the seismic design category for the project in accordance with Section 1613 of the CBC. If the project possesses a seismic design category of D, E, or F, proposed retaining walls in excess of 6 feet in height should be designed with seismic lateral pressure (Section 1803.5.12 of the 2013 CBC).

8.13.2 A seismic load of 24 pcf should be used for design of walls that support more than 6 feet of backfill in accordance with Section 1803.5.12 of the 2013 CBC. The seismic load is applied as an equivalent fluid pressure along the height of the wall and the calculated loads result in a maximum load exerted at the base of the wall and zero at the top of the wall. This seismic load should be applied in addition to the active earth pressure. The earth pressure is based on half of two-thirds of PGA_M calculated from ASCE 7-10 Section 11.8.3.

8.14 Retaining Wall Drainage

8.14.1 Retaining walls should be provided with a drainage system extended at least two-thirds the height of the wall. At the base of the drain system, a subdrain covered with a minimum of 12 inches of gravel should be installed, and a compacted fill blanket or other seal placed at the surface (see Figure 5). The clean bottom and subdrain pipe, behind a retaining wall, should be observed by the Geotechnical Engineer, (a representative of Geocon West, Inc.), prior to placement of gravel or compacting backfill.

8.14.2 As an alternative, a plastic drainage composite such as Miradrain or equivalent may be installed in continuous, 4-foot wide columns along the entire back face of the wall, at 8 feet on center. The top of these drainage composite columns should terminate approximately 18 inches below the ground surface, where either hardscape or a minimum of 18 inches of relatively cohesive material should be placed as a cap (see Figure 6).

8.14.3 Subdrainage pipes at the base of the retaining wall drainage system should outlet to an acceptable location via controlled drainage structure. Drainage should not be allowed to flow uncontrolled over descending slope.

8.14.4 Moisture affecting below grade walls is one of the most common post-construction complaints. Poorly applied or omitted waterproofing can lead to efflorescence or standing water. Particular care should be taken in the design and installation of waterproofing to avoid moisture problems, or actual water seepage into the structure through any normal shrinkage cracks which may develop in the concrete walls, floor slab, foundations and/or construction joints. The design and inspection of the waterproofing is not the responsibility of the geotechnical engineer. A waterproofing consultant should be retained in order to recommend a product or method, which would provide protection to subterranean walls, floor slabs and foundations.

8.15 Swimming Pool

8.15.1 The proposed swimming pool should be designed as a free-standing structure, deriving support from newly placed engineered fill, and foundations may be designed in accordance with the *Foundation Design* section of this report (see Section 8.6). If bedrock is encountered at the bottom of the swimming pool excavation, it should be over-excavated to a minimum depth of 3 feet. Foundations should be underlain by a minimum of 3 feet of newly placed engineered fill.

8.15.2 The pool walls should be designed in accordance with the *Retaining Walls* section of this report. A hydrostatic relief valve should be considered as part of the swimming pool design unless a gravity drain system can be placed beneath the pool shell.

8.15.3 If a spa is proposed it should be constructed independent of the swimming pool and must not be cantilevered from the swimming pool shell.

8.16 Elevator Pit Design

8.16.1 The elevator pit slab and retaining wall should be designed by the project structural engineer. As a minimum the slab-on-grade for the elevator pit bottom should be at least 4 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions, positioned near the slab midpoint. Elevator pit walls may be designed in accordance with the recommendations in the *Foundation Design* and *Retaining Wall Design* sections of this report (see Sections 8.6 and 8.12).

8.16.2 Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent foundations and should be designed for each condition as the project progresses.

8.16.3 If retaining wall drainage is to be provided, the drainage system should be designed in accordance with the *Retaining Wall Drainage* section of this report (see Section 8.14).

8.16.4 It is suggested that the exterior walls and slab be waterproofed to prevent excessive moisture inside of the elevator pit. Waterproofing design and installation is not the responsibility of the geotechnical engineer.

8.17 Elevator Piston

8.17.1 If a plunger-type elevator piston is installed for this project, a deep drilled excavation will be required. It is important to verify that the drilled excavation is not situated immediately adjacent to a foundation, or the drilled excavation could compromise the existing foundation or pile support, especially if the drilling is performed subsequent to the foundation construction.

8.17.2 Some caving is expected, especially where granular soils are encountered, and the contractor should be prepared to use casing and should have it readily available at the commencement of drilling activities. Continuous observation of the drilling and installation of the elevator piston by the Geotechnical Engineer (a representative of Geocon West, Inc.) is required.

8.17.3 The annular space between the piston casing and drilled excavation wall should be filled with a minimum of 1½-sack slurry pumped from the bottom up. As an alternative, pea gravel may be utilized. The use of soil to backfill the annular space is not acceptable.

8.18 Temporary Excavations

8.18.1 Excavations on the order of 8 feet in vertical height may be required during grading operation and foundation construction. The excavations are expected to expose artificial fill and alluvial soils, which are suitable for vertical excavations up to 5 feet in height where loose fill or caving sand are not present, and where not surcharged by adjacent traffic or structures or slopes.

8.18.2 Vertical excavations greater than five feet will require sloping, shoring, or other special excavation measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankment could be sloped back at a uniform 1:1 slope gradient or flatter. A uniform slope does not have a vertical portion.

8.18.3 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. Our personnel should inspect the soils exposed in the cut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

8.19 Surface Drainage

8.19.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of irrigation excess and storm runoff into the soils can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the original designed engineering properties. Proper drainage should be maintained at all times.

8.19.2 All site drainage should be collected 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. The site should be graded and maintained such that surface draining is directed away from structures in accordance with 2013 CBC 1804.3 or other applicable stands. In addition, drainage should not be allowed to flow uncontrolled over any descending slope. Discharge from downspouts, roof drains and scuppers are not recommended onto unprotected soils within five feet of the building perimeter. Planters, which are located adjacent to foundations, be sealed to prevent moisture intrusion into the soils providing foundation support. Landscape irrigation is not recommended within 5 feet of the building perimeter footings except when enclosed in protected planters.

8.19.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures. The building pad and pavement areas should be fine graded such that water is not allowed to pond.

8.19.4 Landscaping planter immediately adjacent to paved area are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Either a subdrain, which collects excess irrigation water and transmits it to drainage structures, or an impervious above-grade planter boxes should be used. In addition, where landscaping is planned adjacent to the pavement, it is recommended that consideration be given to providing a cutoff wall along the edge of the pavement that extends at least 12 inches below the base material.

8.20 Plan Review

8.20.1 Grading and foundation plans should be reviewed by the Geotechnical Engineer (a representative of Geocon West, Inc.) prior to finalization to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon West, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon West, Inc.

2. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

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

4. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

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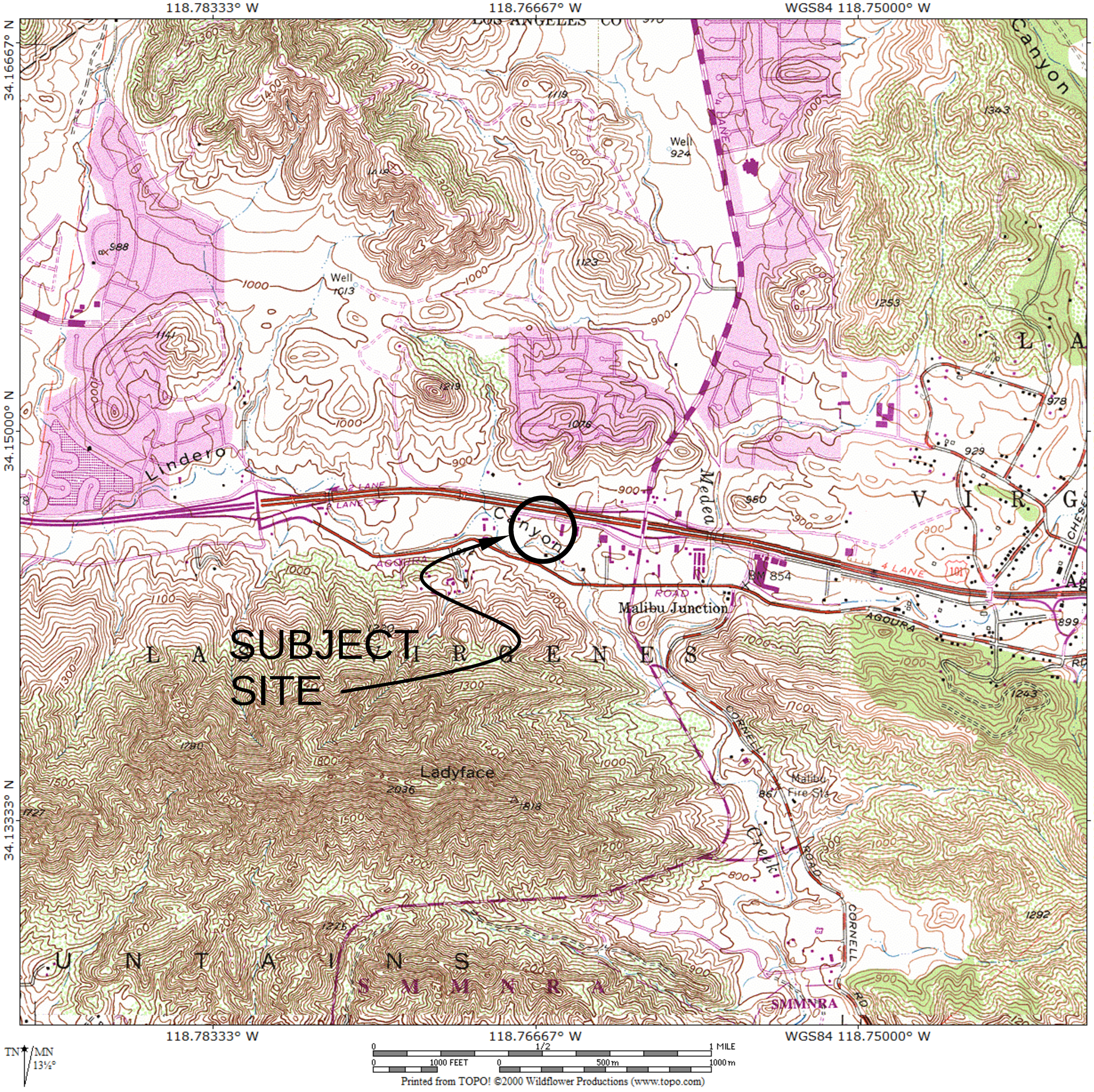

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REFERENCE:U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, THOUSAND OAKS, CA QUADRANGLE

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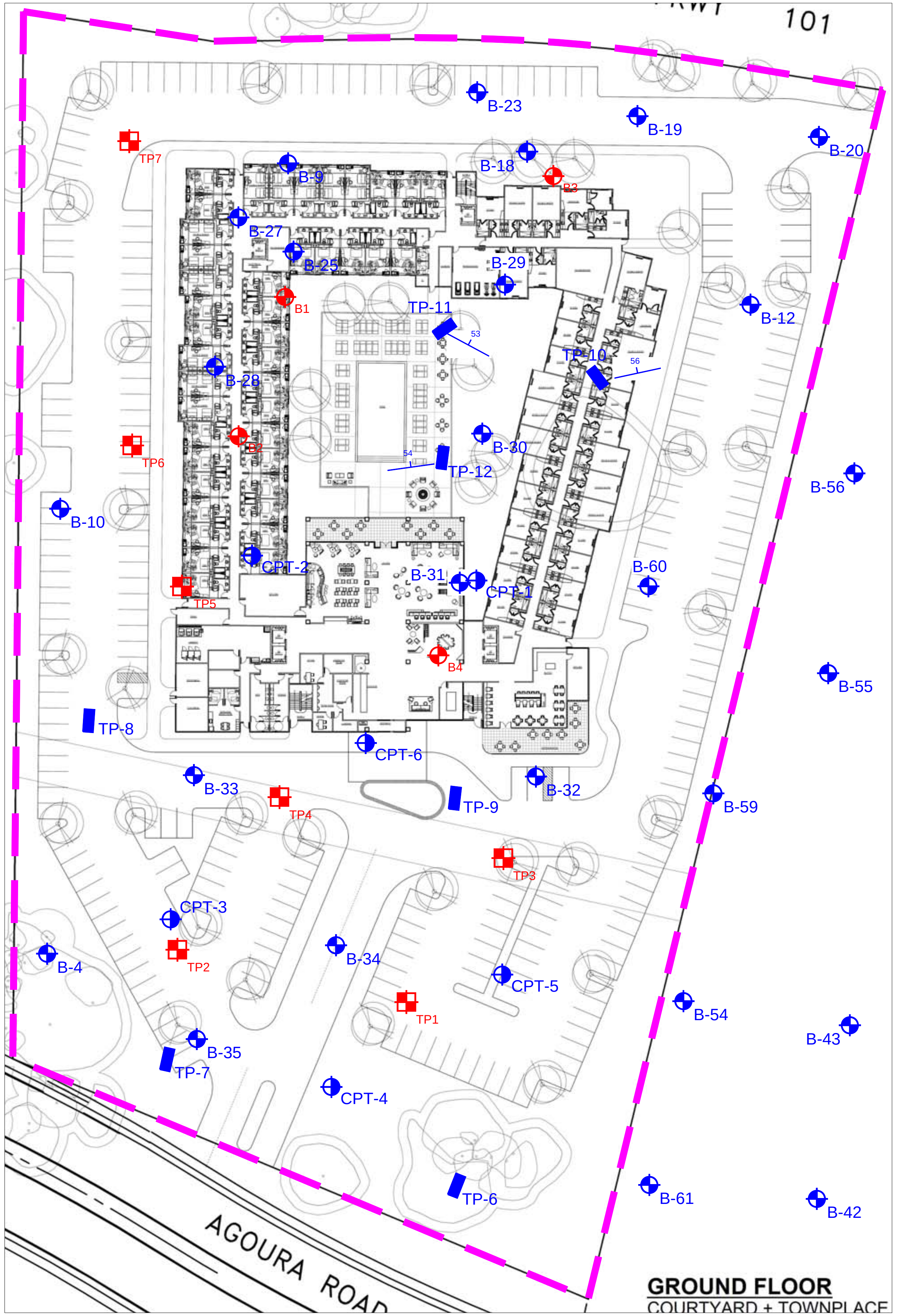
DRAFTED BY: RA	CHECKED BY: SFK

VICINITY MAP

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

MAY 2015	PROJECT NO. A8487-06-03	FIG. 1



LEGEND

B4	Approximate Location of Borings (Geocon Inland Empire, Inc.)
TP7	Approximate Location of Test Pits (Geocon Inland Empire, Inc.)
B-61	Approximate Location of Borings (AGS)
CPT-6	Approximate Location of CPT (AGS)
TP-11	Approximate Location of Borings (AGS)
54	Strike & Dip of Bedding
— —	Approximate Location of Proposed Development

0 100' 200'

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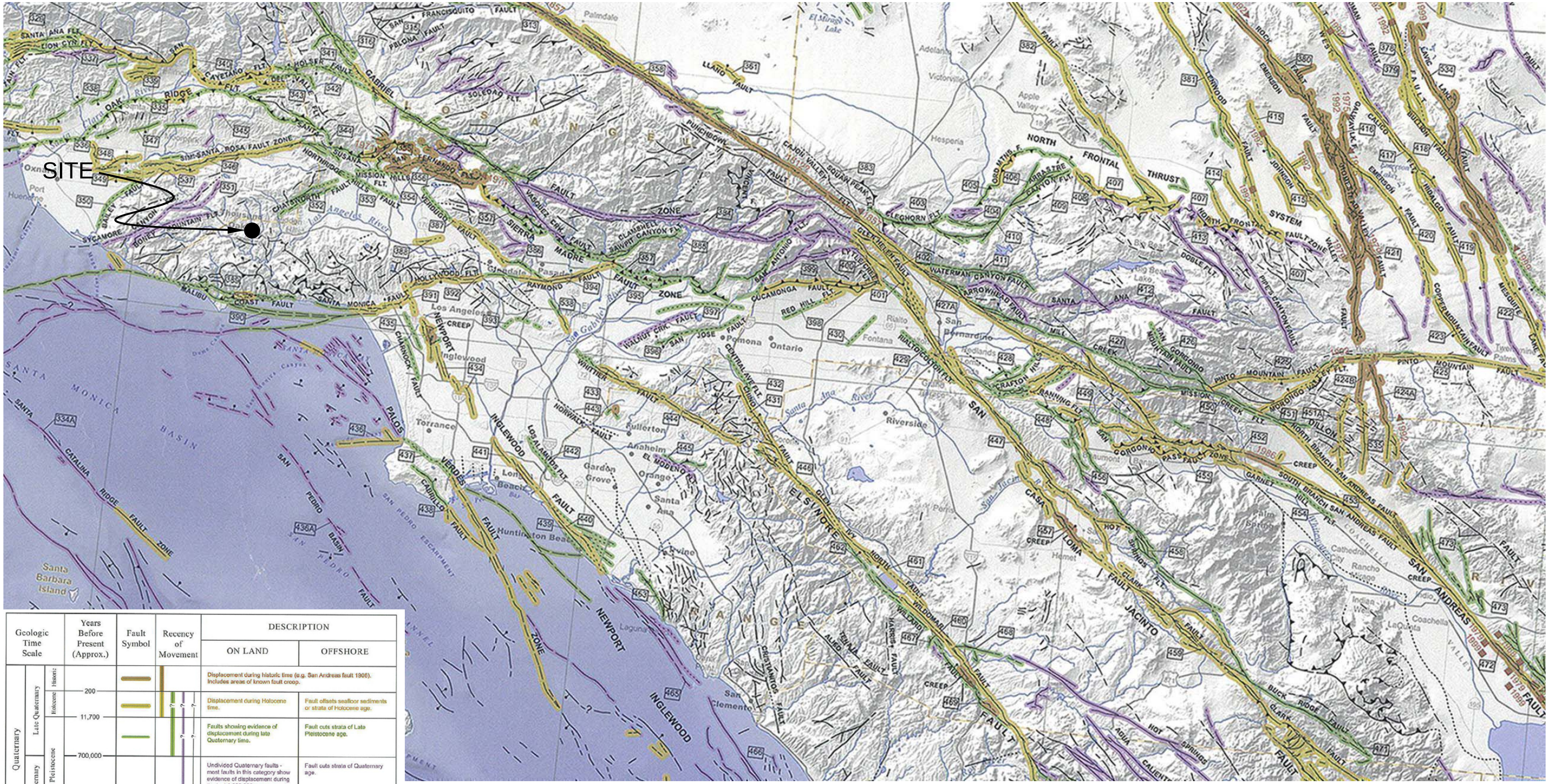
SITE PLAN

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

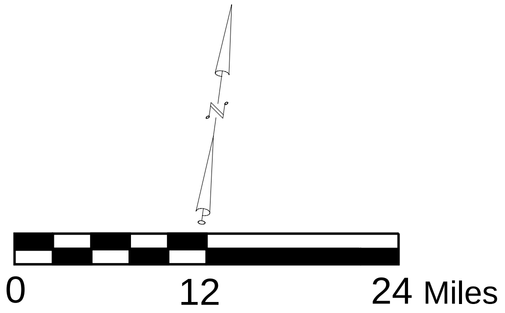
MAY 2015 PROJECT NO. A8487-06-03 FIG. 2

Reference: Jennings, C.W. and Bryant, W. A., 2010, Fault Activity Map of California, California Geological Survey Geologic Data Map No. 6.



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

* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.



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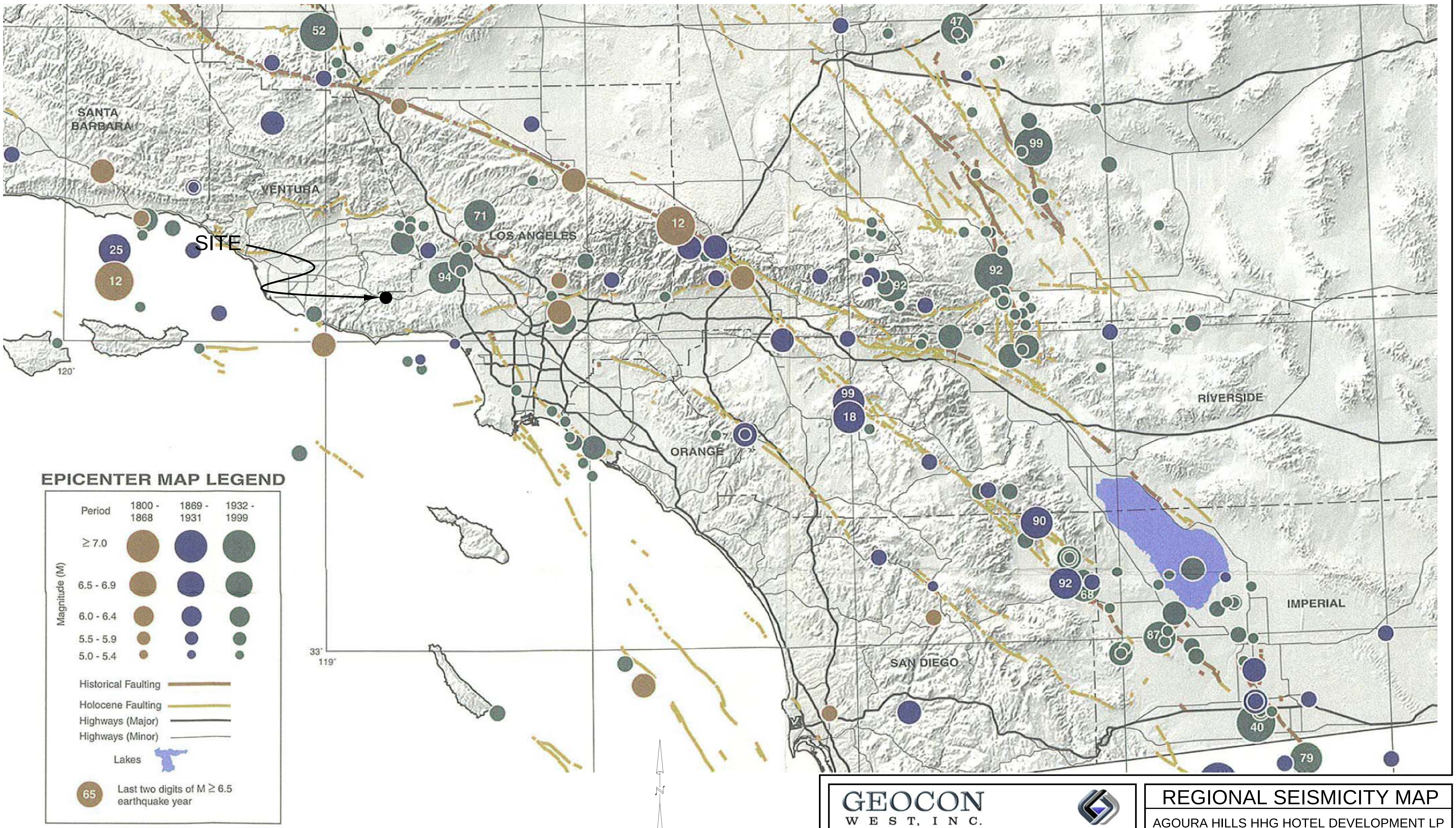
REGIONAL FAULT MAP

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

MAY 2015	PROJECT NO. A8487-06-03	FIG. 3



Reference: Toppozada, T., Branum, D., Petersen, M., Hallstrom, C., Cramer, C., and Reichle, M., 2000, Epicenters and Areas Damaged by M≥5 California Earthquakes, 1800 - 1999, California Geological Survey, Map Sheet 49.

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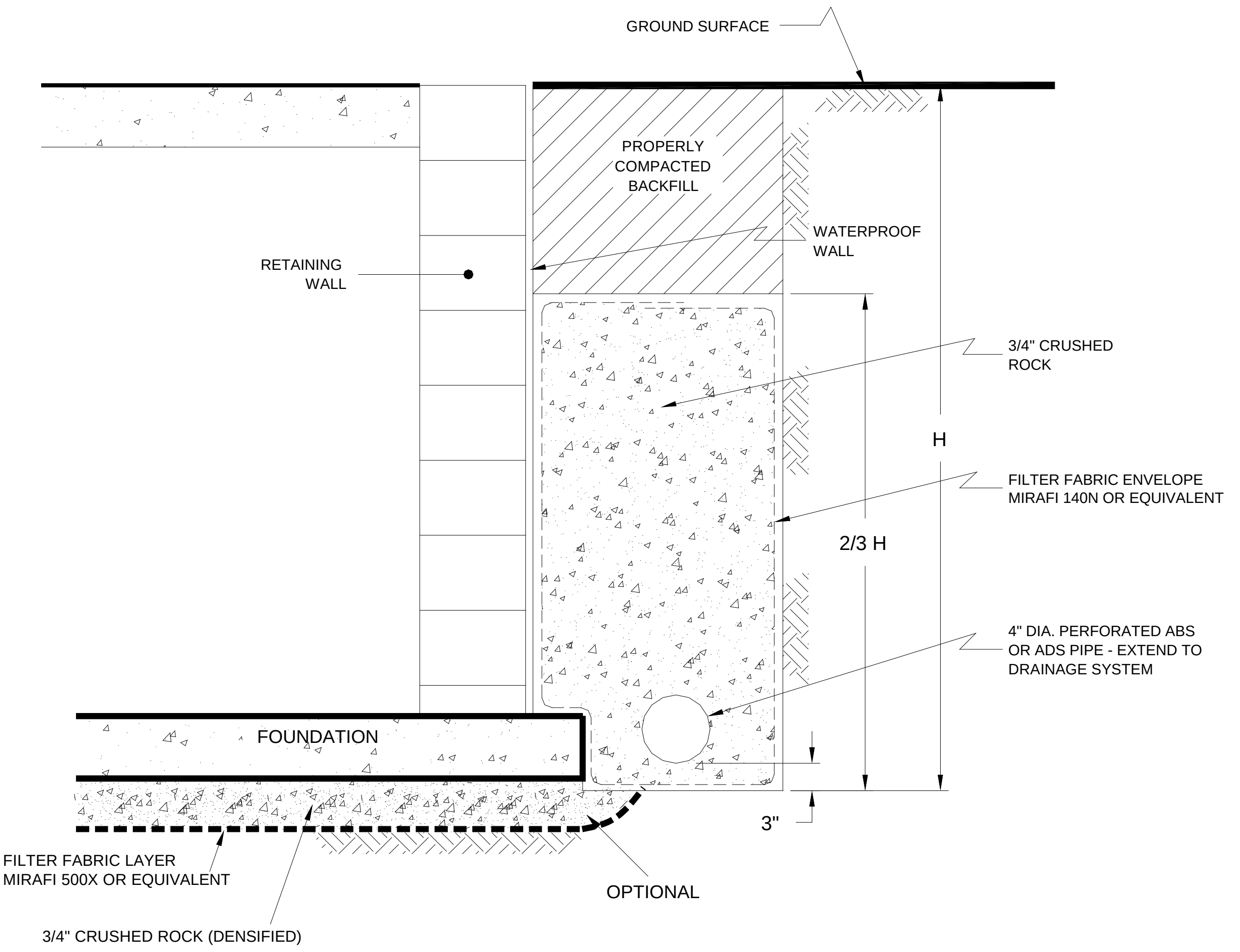
REGIONAL SEISMICITY MAP

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

MAY 2015 | PROJECT NO. A8487-06-03 | FIG.4



NO SCALE

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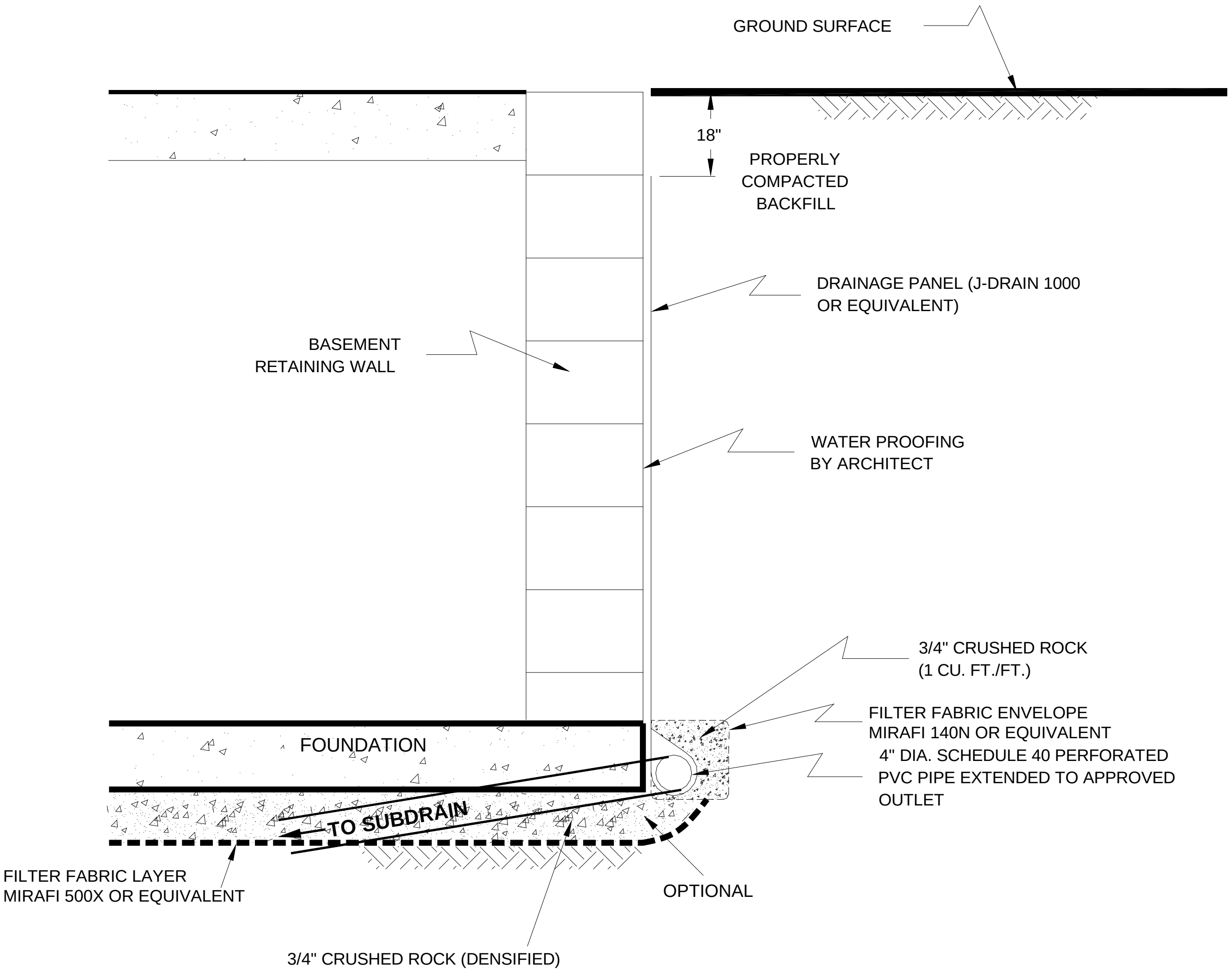
RETAINING WALL DRAIN DETAIL

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

MAY 2015 | PROJECT NO. A8487-06-03 | FIG. 5



NOTE: TOP OF DRAINAGE PANEL NOT MORE THAN
18 INCHES FROM GROUND SURFACE

NO SCALE

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RETAINING WALL DRAIN DETAIL

AGOURA HILLS HHG HOTEL DEVELOPMENT LP
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

MAY 2015 | PROJECT NO. A8487-06-03 | FIG. 6

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

The scope of the field investigation, performed on November 27 and 28, 2006, consisted of excavating four large diameter borings utilizing an eighteen inch diameter bucket auger type drilling machine and seven test pits utilizing a backhoe. The borings were conducted to depths between 16 and 24 feet below the existing ground surface and all borings encountered bedrock. The backhoe test pits were conducted to a depth of six feet below the existing ground surface. Representative and relatively undisturbed samples were obtained by driving a 3-inch, O.D., sampler into the “undisturbed” soil mass. The California Modified Sampler was equipped with 1-inch by $2^{3}/_{8}$-inch brass sampler rings to facilitate removal and testing. Bulk samples were also obtained.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the borings and test pits are presented on Figures A-1 through A-11. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The approximate locations of the borings are shown on the Site Plan, Figure 2.

GEOCON
INLAND EMPIRE, INC

BORING 1

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
Bulk	0-3				**0**		**Fill:** Sandy Clay with Gravel, firm, moist, brown to olive brown, medium-grained, some coarse-grained, gravel to 1" in size
⛁	1	6	15.8	96.4	**1**		
					2		
					3		concrete fragments to 6" in size
⛁	4	10	14.8	89.3	**4**		
						CL	**Terrace Deposits:** Sandy Clay, firm, moist, grey, some basaltic/andesitic rock fragments,
					5		
					6		
⛁	7	3	4.5	109.4	**7**		Clay with Sand, soft, moist, greenish grey to grey, plastic, some andesite fragments,
					8		
					9		
⛁	10	2	26.3	92.8	**10**		Clay, soft, moist, reddish brown to strong brown, plastic, some volcanic fragments to 6" in diameter
					11		
					12		
⛁	13	8	8.5	141.5	**13**		
							Sandy Clay with Gravel, firm, moist, brown to strong brown, some volcanic fragments to 6" in diameter
					14		
					15		
⛁	16	8	26.1	94.0	**16**		
							Topanga Formation: Interbedded brown to strong brown Sandy Claystone with olive Sandy Siltstone, hard, moist, laminated
					17		
					18		
⛁	19	7	29.4	91.0	**19**		
							End boring at 19 feet. Fill to 4 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-1

GEOCON
INLAND EMPIRE, INC

BORING 2

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
					0		**Fill:** Sandy Clay with Gravel, firm, moist to wet, brown, medium-grained, some coarse-grained, gravel to 1" in size
⛁	1	12	NO RECOVERY		**1**		
					2		
					3		
⛁	4	5	16.1	96.7	**4**		
					5	**CL**	**Terrace Deposts:** Clay with Sand, firm, moist, grey to dark grey, some volcanic fragments to 8" in size
					6		
⛁	7	10	19.7	110.1	**7**		
					8		
					9		
⛁	10	4	18.5	99.1	**10**		
					11		
					12		
⛁	13	5	21.7	101.8	**13**		
					14		Clay with Gravel, firm, moist, grey to dark grey, some volcanic fragments to 8" in size,
					15		
⛁	16	10 for 9"	6.7	127.8	**16**		
					17		Sandy Clay with Gravel, firm, moist, yellowish brown, coarse-grained, some medium-grained, gravel to 1" in size
					18		
⛁	19	10 for 9"	NO RECOVERY		**19**		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-2a

GEOCON
INLAND EMPIRE, INC

BORING 2 (continued)

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Description**
					20		
					21		
⛁	22	5	29.6	90.5	**22**		**Topanga Formation:** Olive and yellowish brown Sandy Claystone, hard, moist, fine-grained, interbedded, laminated
					23		
					24		End boring at 22 feet. Fill to 4 feet.
					25		No groundwater encountered. No caving.
					26		Backfilled and tamped with soil cuttings.
					27		
					28		
					29		
					30		
					31		
					32		
					33		
					34		
					35		
					36		
					37		
					38		
					39		
					40		

⛁ - Ring Sample from California Modified Sampler

Figure A-2b

GEOCON
INLAND EMPIRE, INC

BORING 3

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
					0		**Fill:** Clayey Sand with Gravel, loose, moist, brown to yellowish brown, medium-grained with some coarse-grained, gravel to 1" in size
					1		
					2		
▤	3	9	18.4	103.9	**3**		
					4		
					5		
▤	6	12	17.3	106.5	**6**	**SC**	**Terrace Deposits:** Clayey Sand with Gravel, loose to dense, moist, yellowish brown, medium- to fine-grained, some coarse-grained, gravel to 1" in size, some volcanic fragments
					7		
					8		
▤ Bulk	9 9-12	5	14.9	111.4	**9**	**CL**	Sandy Clay with Gravel, firm, moist, dark grey, medium-grained, some coarse-grained, gravel to 1" in size
					10		
					11		
▤	12	5	24.4	98.4	**12**		
					13		
					14		
▤	15	8	19.8	107.7	**15**		
					16		
					17		
▤ Bulk	18 18-21	6	20.5	100.3	**18**	**SC**	Clayey Sand with Gravel, dense, moist, yellowish brown, coarse- to medium-grained, some fine-grained, gravel to 1" in size, some volcanic fragments to 12" in diameter
					19		
					20		

▤ - Ring Sample from California Modified Sampler

Figure A-3a

GEOCON
INLAND EMPIRE, INC

BORING 3 (continued)

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Description**
					20		
⛁	21	8	27.4	93.5	**21**		**Topanga Formation:** Olive Claystone to yellowish brown Siltstone, hard, moist thinly bedded to laminated, interbedded
					22		
					23		
⛁	24	7	28.0	91.3	**24**		End boring at 24 feet. Fill to 5 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					25		
					26		
					27		
					28		
					29		
					30		
					31		
					32		
					33		
					34		
					35		
					36		
					37		
					38		
					39		
					40		

⛁ - Ring Sample from California Modified Sampler

Figure A-3b

GEOCON
INLAND EMPIRE, INC

BORING 4

Project No.:	**A8487-06-01A**	**Excavation Date:**	**November 27, 2006**
Client:	Venture Corporation	**Excavation Method:**	Bucket Auger
Location:	Agoura Hills, California	**Boring Diameter:**	18 inches
		Sampling Method:	Cal-Mod
Elevation:	863	**Hammer Drop:**	30 inches
		Hammer Weight:	0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
					0		**Fill:** Sandy Clay, firm, moist, grey to olive, fine- to medium-grained with some coarse-grained
⛁	1	4	17.1	108.4	**1**		
					2		
					3		
⛁	4	5	24.0	98.3	**4**		**Terrace Deposits:** Sandy Clay with Gravel, firm, moist, olive to yellowish brown, medium-grained, some coarse-grained, gravel up to 1" in size, some volcanic fragments up to 12" in diameter, few Sandstone fragments
					5		
					6		
⛁	7	6	22.1	95.7	**7**		
					8		
					9		
⛁	10	10 for 4"	15.3	89.3	**10**		
					11		
					12		
⛁	13	4	35.6	83.4	**13**		**Topanga Formation:** Olive to yellowish brown Claystone, hard, moist, thinly bedded
					14		
					15		
⛁	16	4	31.2	88.4	**16**		End boring at 16 feet. Fill to 4 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-4

GEOCON
INLAND EMPIRE, INC

TEST PIT 1

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 859

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
					0		**Fill:** Clayey Sand with Gravel, loose, dry, brown to light yellowish brown, medium- to coarse-grained, some fine-grained, gravel up to 2" in size, rootlets, burrows
	1				**1**		Clayey Gravel with Sand, loose, dry, yellowish brown, medium- to coarse-grained, some fine-grained, gravel to 2" in size, rootlets, burrows
					2		
	3.5				**3**		
					4		Sandy Clay with Gravel, firm, moist, dark reddish brown to dark grey, fine- to medium-grained, gravel to 2" in size
					5		
					6		
					7		End Test Pit at 7 feet. Fill to 7 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-5

GEOCON
INLAND EMPIRE, INC

TEST PIT 2

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 852

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
	0				**0**	**SC**	**Alluvium:** Clayey Sand with Gravel, loose, dry, light yellowish brown, fine- to medium-grained, some coarse-grained, gravel to 2" in size, roots, voids to 1/4", burrows
	1				**1**	**CL**	Gravelly Clay with Sand, firm, moist, dark brown to grey, gravel to 2" in size, roots, rootlets, caliche filled fractures to 1/4" in thickness
					2		
					3		
					4		
					5		
					6		End Test Pit at 6 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-6

GEOCON
INLAND EMPIRE, INC

TEST PIT 3

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 856

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
	0				**0**		**Fill:** Sandy Clay with Gravel, soft to firm, moist, yellowish brown to brown to grey, fine- to medium-grained, some coarse-grained, gravel to 2" in size, few plastic fragments, pvc pipe, few volcanic fragments, few fragments of laminated Siltstone
					1		
					2		
					3		
					4		
					5		
					6		
					7		End Test Pit at 7 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-7

GEOCON
INLAND EMPIRE, INC

TEST PIT 4

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 853

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
	0				**0**		**Fill:** Clayey Sand with Gravel, loose, dry, light yellowish brown, medium- to coarse-grained, some fine-grained, gravel to 2" in size, rootlets, voids to 1/4", burrows
	1				**1**		Clayey Gravel with Sand, loose to dense, dry to slightly moist, coarse-grained, some medium-grained, gravel to 2" in size, some volcanic fragments, rootlets, voids to 1/8" in size
					2		
					3		
	4				**4**		brown to olive, few laminated Siltstone Fragments
					5		
	6				**6**	**CL**	**Alluvium:** Clay, soft to firm, slightly moist, dark brown to grey, rootlets
					7		
	8				**8**		caliche filled fractures, few volcanic cobbles
					9		End Test Pit at 9 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-8

GEOCON
INLAND EMPIRE, INC

TEST PIT 5

Project No.: A8487-06-01A
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 852

Excavation Date: November 28, 2006
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: undeveloped land** **Description**
	0				**0**	**SC**	**Alluvium:** Clayey Sand with Gravel, loose, dry, yellowish brown, fine- to medium-grained, some coarse-grained, gravel to 1" in size, voids to 1/4", rootlets, burrows
	1				**1**	**SM**	Silty Sand with Gravel, dense, slightly moist, brown, fine-grained, some medium- to coarse-grained, gravel to 2" in size, voids to 1/8", rootlets, few volcanic fragments
					2		
					3		
	4				**4**	**SC**	Sandy Clay, firm, moist, brown to grey, fine-grained, caliche filled fractures, some volcanic fragments
					5		
					6		End Test Pit at 6 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-9

GEOCON
INLAND EMPIRE, INC

TEST PIT 6

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 853

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: undeveloped land** **Description**
	0				**0**	**SC**	**Alluvium:** Clayey Sand with Gravel, loose, dry, yellowish brown, medium-grained, some coarse-grained, gravel to 2" in size, voids to ¼", rootlets
	1				**1**	**GP**	Sandy Gravel, loose to dense, dry to slightly moist, yellowish brown to brown, medium- to coarse-grained, some fine-grained, gravel to 2" in size
	2.5				**2**		
					3	**ML**	Sandy Silt with Gravel, firm, moist, brown, fine-grained, some medium-grained, gravel to 2" in size, some volcanic fragments
					4		
					5		
					6		
					7		End Test Pit at 7 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

🛢 - Ring Sample from California Modified Sampler

Figure A-10

GEOCON
INLAND EMPIRE, INC

TEST PIT 7

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 855

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: undeveloped land** **Description**
	0				**0**	**SC**	**Alluvium:** Clayey Sand with Gravel, loose, dry, light yellowish brown, medium-grained, some coarse-grained, gravel to 2" in size, voids to 1/8", rootlets
					1		
					2		
					3	**GC**	Clayey Gravel with Sand, loose to dense, slightly moist, yellowish brown to brown, coarse-grained, some medium-grained, gravel to 2" in size, voids to 1/8", rootlets
					4		
					5	**CL**	Sandy Clay with Gravel, firm, moist, brown to grey, fine-grained, some medium-grained, gravel to 1/2" in size, some volcanic fragments, rootlets
					6		
					7		End Test Pit at 7 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

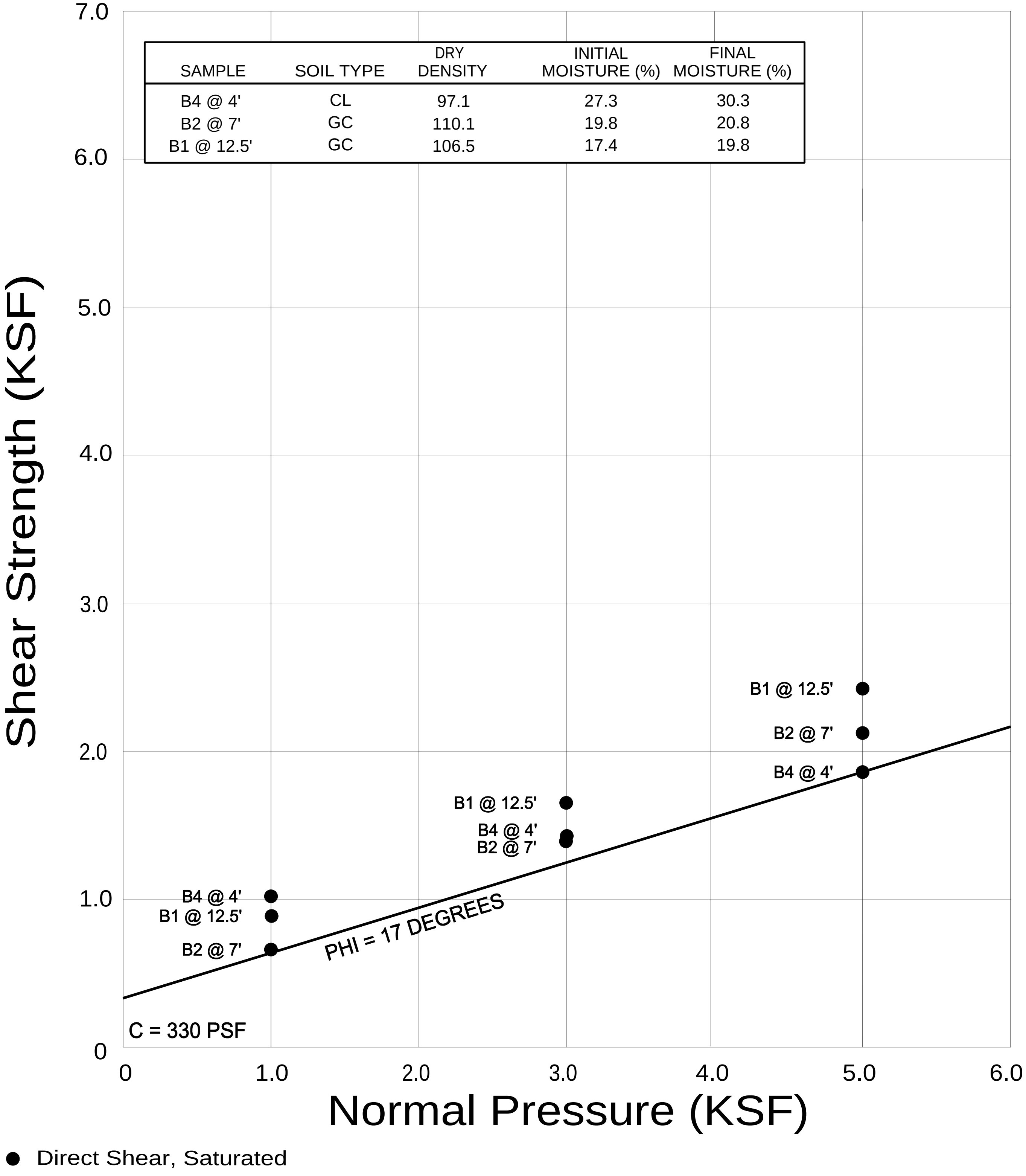
Figure A-11

APPENDIX B

APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. Selected samples were tested for compaction characteristics, direct shear strength, consolidation and expansion characteristics, in-place dry density and moisture content. The results of the laboratory tests are summarized in Figures B1 through B6. The in-place dry density and moisture content of the samples tested are presented on the boring logs in Appendix A.



SAMPLE	SOIL TYPE	DRY DENSITY	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4 @ 4'	CL	97.1	27.3	30.3
B2 @ 7'	GC	110.1	19.8	20.8
B1 @ 12.5'	GC	106.5	17.4	19.8

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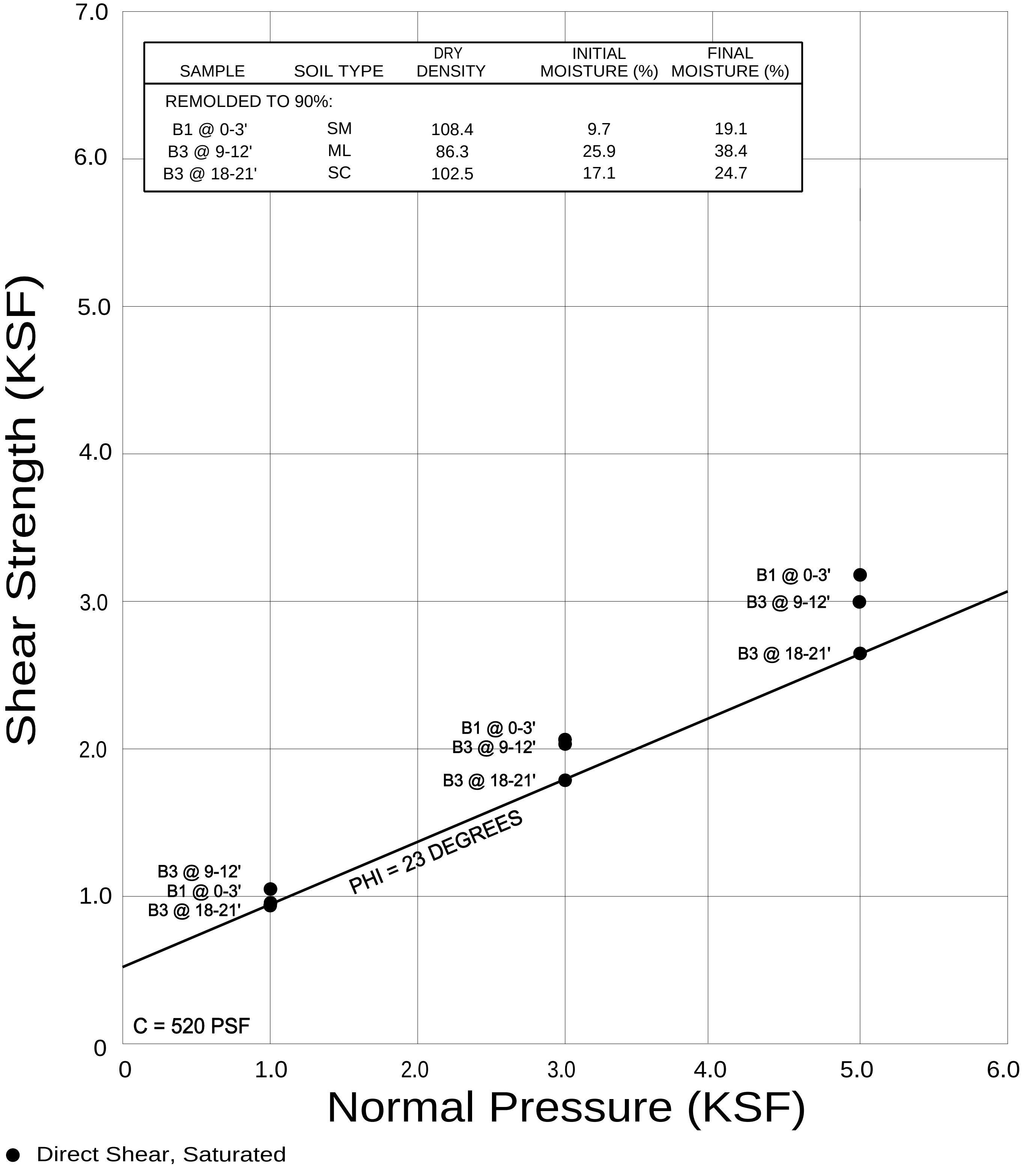
PHONE (818) 841-8388 - FAX (818) 841-1704

BRG		8000

DIRECT SHEAR TEST RESULTS

VENTURE PROFESSIONAL CENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B1



SAMPLE	SOIL TYPE	DRY DENSITY	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
REMOLDED TO 90%:				
B1 @ 0-3'	SM	108.4	9.7	19.1
B3 @ 9-12'	ML	86.3	25.9	38.4
B3 @ 18-21'	SC	102.5	17.1	24.7

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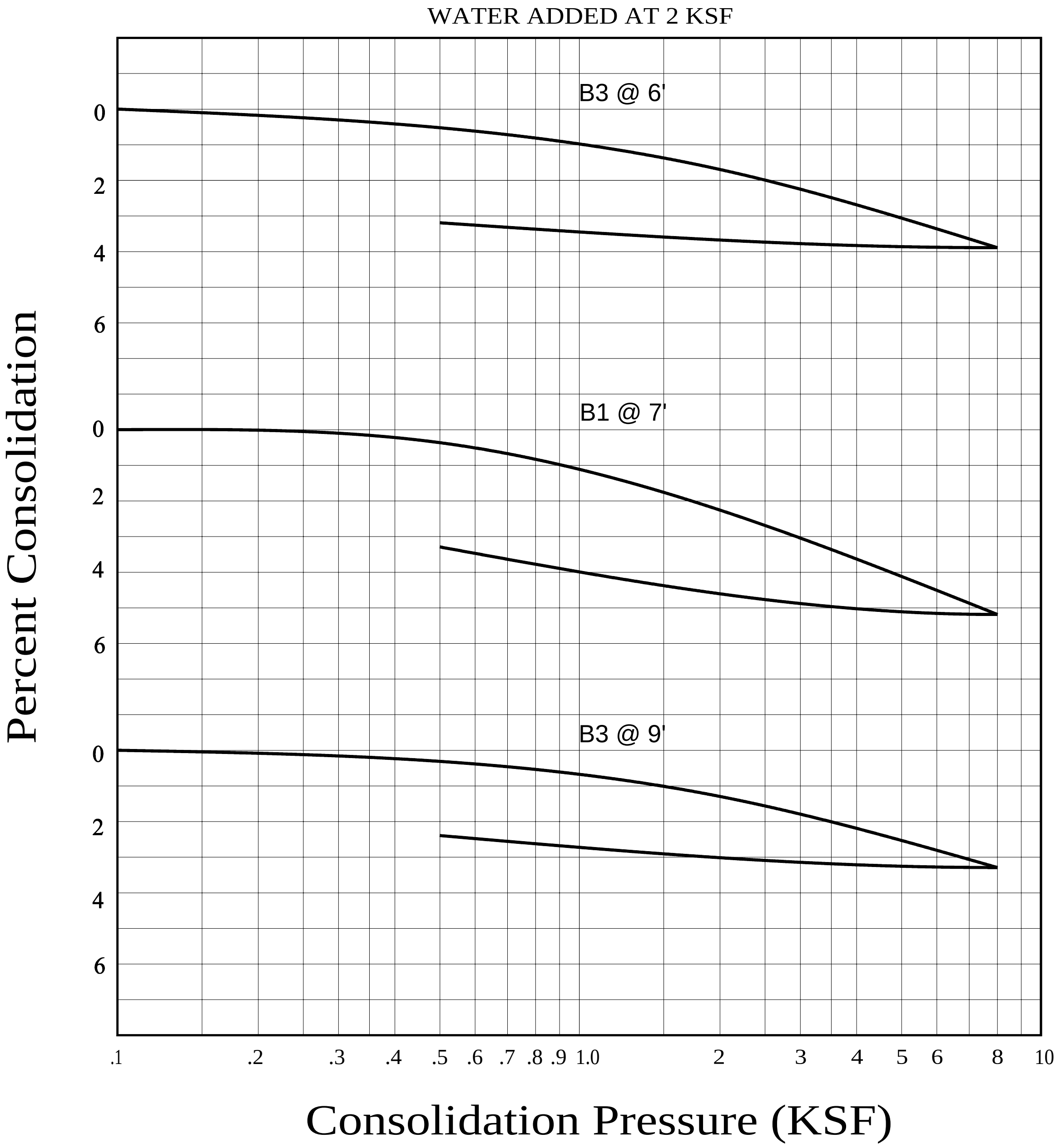
PHONE (818) 841-8388 - FAX (818) 841-1704

BRG		8000

DIRECT SHEAR TEST RESULTS

VENTURE PROFESSIONAL CENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B2



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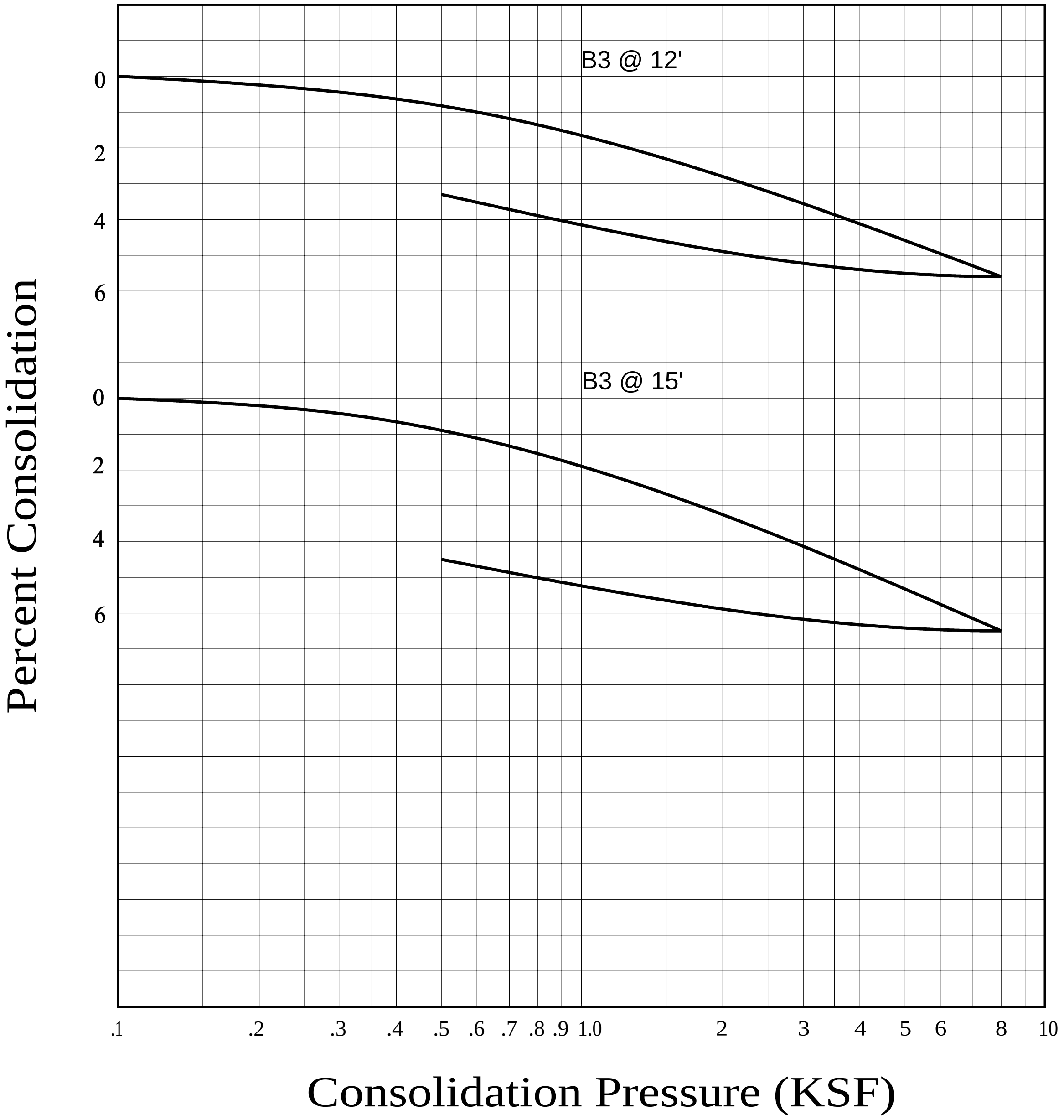
CONSOLIDATION TEST RESULTS

VENTURE PROFESSIONAL CENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

BRG		8000	DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B3

WATER ADDED AT 2 KSF



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CONSOLIDATION TEST RESULTS

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AGOURA HILLS, CALIFORNIA

DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B4

SUMMARY OF LABORATORY POTENTIAL OF HYDROGEN (pH) AND RESISTIVITY TEST RESULTS
CALIFORNIA TEST NO. 643

Sample No.	**pH**	**Resistivity (ohm centimeters)**
B1 @ 0-3'	7.4	2400 (Moderately Corrosive)

SUMMARY OF LABORATORY CHLORIDE CONTENT TEST RESULTS
CALIFORNIA TEST NO. 422

Sample No.	Chloride Ion Content (%)
B1 @ 0-3'	0.003

SUMMARY OF LABORATORY WATER SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water Soluble Sulfate (% SO_4)	Sulfate Exposure*
B1 @ 0-3'	0.005	Negligible

* Reference: 1997 Uniform Building Code, Table 19-A-4.

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CORROSIVITY TEST RESULTS

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VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

BRG		8000

DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B5

SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
ASTM D 4829-95

Sample No.	Moisture Content (%)		Dry Density (pcf)	Expansion Index	*UBC Classification
	Before	After			
B1 @ 0-3'	8.6	20.7	107.1	39	Low
B3 @ 9-12'	9.1	18.5	113.8	74	Medium
B3 @ 18-21'	13.2	24.1	101.2	89	Medium

* Reference: 1997 Uniform Building Code, Table 18-I-B.

SUMMARY OF LABORATORY MAXIMUM DENSITY AND AND OPTIMUM MOISTURE CONTENT TEST RESULTS
ASTM D 1557-02

Sample No.	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture (%)
B1 @ 0-3'	Olive Brown Silty Sand	121.5	9.0
B3 @ 9-12'	Grey Clayey Sand	115.0	16.0
B3 @ 18-21'	Brown Sandy Silt	96.0	26.0

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LABORATORY TEST RESULTS

VENTURE PROFESSIONAL CENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

BRG		8000	DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B6

APPENDIX C

APPENDIX C

PRIOR BORINGS AND LABORATORY TEST RESULTS BY AGS

GEOCON
INLAND EMPIRE, INC.
GEOTECHNICAL
CONSULTANTS

GEOTECHNICAL INVESTIGATION

PROPOSED COMMERCIAL DEVELOPMENT
VENTURE PROFESSIONAL CENTER
AGOURA HILLS
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA

PREPARED FOR

VENTURE CORPORATION
LARKSPUR, CALIFORNIA

DECEMBER 19, 2006
PROJECT NO. A8487-06-01A

GEOCON
INLAND EMPIRE, INC.

GEOTECHNICAL CONSULTANTS

Project No. A8487-06-01A
December 19, 2006

VIA OVERNIGHT COURIER

Venture Corporation
123 East Sir Francis Drake Blvd., 3rd Floor
Larkspur, California 94939

Attention: Mr. Walter S. Hallanan, III

Subject: PROPOSED COMMERCIAL DEVELOPMENT
VENTURE PROFESSIONAL CENTER AGOURA HILLS
29508 ROADSIDE DRIVE
AGOURA HILLS, CALIFORNIA
GEOTECHNICAL INVESTIGATION

Dear Mr. Hallanan:

In accordance with your authorization of our proposal dated November 13, 2006, we have performed a geotechnical investigation for the proposed commercial development at 29508 Roadside Drive, in Agoura Hills, California. The accompanying report presents the findings of our study, and our conclusions and recommendations pertaining to the geotechnical aspects of design and construction.

If you have any questions regarding this report, or if we may be of further service, please contact the undersigned.

Very truly yours,

GEOCON INLAND EMPIRE, INC.

Danh T. Tran
P.E. 59705

DANH T. TRAN
C 59705
EXP. 12/31/2007
CIVIL

Gerald A. Kasman
CEG 2251

GERALD KASMAN
No. 2251
CERTIFIED ENGINEERING GEOLOGIST

DTT:NDB:GAK:am

(7) Addressee

3303 N. San Fernando Boulevard, Suite 100 ▪ Burbank, CA 91504 ▪ Telephone (818) 841-8388 ▪ Fax (818) 841-1704

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GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical investigation for a proposed commercial development located at 29508 Roadside Drive in Agoura Hills, California. The purpose of the investigation was to evaluate subsurface soil and geologic conditions underlying the property and based on conditions encountered, provide conclusions and recommendations pertaining to the geotechnical aspects of design and construction.

The scope of our investigation included a site reconnaissance, field explorations, laboratory testing, engineering analysis, review of existing available reports for the site, and the preparation of this report. Two reports by Advanced Geotechnical Services, Inc. (AGS), dated January 17, 2001 and September 18, 2001, as well as a topographic survey map prepared by Development Resource Consultants, were also reviewed. The field explorations were performed on November 27 and 28, 2006, and consisted of excavating four large diameter borings utilizing an eighteen inch diameter bucket auger type drilling machine and seven test pits utilizing a backhoe. The borings were conducted to depths between 16 and 24 feet below the existing ground surface and all borings encountered bedrock. The backhoe test pits were conducted to a depth of six feet below the existing ground surface. The approximate locations of the exploratory borings and test pits are depicted on the Site Plan (Figure 2). A detailed discussion of the field investigation, including boring logs, is presented in Appendix A.

Laboratory tests were performed on selected soil samples obtained during the investigation to determine pertinent physical soil properties. Appendix B presents a summary of the laboratory test results.

Relevant exploratory excavations and laboratory test results prepared by AGS are included in Appendix C.

The recommendations presented herein are based on analysis of the data obtained during this investigation and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the *List of References* section.

2. SITE AND PROJECT DESCRIPTION

The subject property is bounded by Roadside Drive and the 101 Freeway on the north, a construction equipment rental facility on the east, the Los Angeles County Animal Shelter on the west, and by Agoura Road on the south. The subject property is located at 29508 Roadside Drive, in Agoura Hills, California. The site and surrounding topography is shown on Figure 1, Vicinity Map. The property is undeveloped, vacant land (see Site Plan, Figure 2).

The subject property is located in a historical stream drainage area. Several natural terraces are located throughout the property. Surface water drainage at the site appears to be by stream flow from the west, along existing channels to the center of the property, where an east-west trending concrete flood control structure has been constructed. Vegetation on the site consists of oak trees and shrubs located along Agoura Road and the interior of the site. The neighboring developments to the east and to the west consist primarily of on-grade commercial structures.

Information concerning the proposed project is conceptual at this time. It is our understanding that the project will consist of a new commercial center consisting of three, two-story buildings constructed at or near present grade. The buildings will range from 22,000 to 27,600 square feet in plan area.

Due to the preliminary nature of the design at this time, wall and column loads were not made available. It is estimated that column loads for the proposed structure will be up to 600 kips. Wall loads are estimated to be up to 3 kips per linear foot.

Once the design phase proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Any changes in the design, location or elevation of any structure, as outlined in this report, should be reviewed by this office. Geocon Inland Empire, Inc. should be contacted to determine the necessity for review and possible revision of this report.

2.1 Previous Work

Advanced Geotechnical Services Inc. (AGS) performed a geotechnical investigation for a proposed Home Depot and restaurant development. The report is entitled Geotechnical Engineering Study, Proposed Home Depot and Restaurant Pad, Ladyface Village Phase I, Agoura Road West of Kanan, Agoura Hills, California, dated September 18, 2001. Within the area of the proposed development, 19 borings were drilled and 6 backhoe test pits were excavated to a maximum depth of 25½ feet beneath the existing ground surface. In addition, 6 Cone Penetrometer Tests (CPTs) were advanced to a maximum depth of 41 feet below ground surface. The prior AGS borings have been reviewed as part of this investigation and logs of the prior explorations are depicted on Figure 2 and included in Appendix C.

3. SOIL AND GEOLOGIC CONDITIONS

Based on our field investigation and published geologic maps of the area, the soils underlying the site consist of artificial fill, alluvium and Quaternary Age terrace deposits, overlying sedimentary bedrock units of the Tertiary Age Topanga Formation and Conejo Volcanics. Topanga Formation bedrock was encountered within 18 feet of the ground surface. Detailed stratigraphic profiles are provided on the Boring Logs in Appendix A (see Figures A-1 through A-11).

3.1 Artificial Fill

Artificial fill materials were encountered in numerous borings and test pits throughout the subject property. Artificial fill was observed in Test Pits 1, 3 and 4, ranging in depth from six to seven feet below ground surface. In addition, several of the prior explorations by AGS encountered fill materials to a maximum depth of 15 feet below the ground surface. The encountered fill material generally consists of yellowish brown clayey gravel with sand, and lesser amounts of clayey sand with gravel, some volcanic clasts, and fragments of concrete. Fill may have been placed as a part of a retention basin constructed between 1970 and 1976. The placement of fill has blocked surface flow of water onto the neighboring property to the east.

3.2 Native Topsoil and Colluvium (Qc)

Topsoil and colluvium were encountered during the site exploration performed by AGS. Topsoil was observed in Boring 27, 29 through 32, and Test Pits 10 and 11, to maximum depth of 7.5 feet below existing ground surface in Boring 32. Topsoil observed by AGS consisted of dark brown to dark grayish brown sandy clay or silt to silty or clayey sand. Fine grained materials were found to be stiff to hard, and coarse grained materials were loose to moderately dense.

3.3 Alluvium

Natural alluvial soils were observed in several explorations by both Geocon as well as AGS to a maximum depth of 19½ feet below the existing ground surface. The alluvium generally consists of sandy clay, silty sand, and sandy gravel, and lesser amounts of gravelly clay with sand. The alluvium was observed to be moist, medium dense to dense, and firm to stiff. Alluvial deposits were massive without internal structures or bedding and were associated with the stream channel area of the site.

3.4 Quaternary Terrace Deposits

Quaternary Age terrace deposits were encountered in Borings 1 through 4 to depths ranging from 13 feet to 18 feet below ground surface. The terrace deposits are typically up to 10 feet thick throughout the site and consist of gray to strong brown gravelly clay, with volcanic clasts that are firm and moist. Borings 1 through 4 are located at the highest elevations on the subject site and within an area where stockpiling activities have changed the original topography. Fill thickness is expected to increase to the west and southwest with decreasing thickness of terrace material. Approximate depths of terrace are indicated on Cross-Section A-A' on the Site Plan (Figure 2).

3.5 Topanga Formation

The fill, alluvial soils and terrace are underlain by sedimentary units of the Tertiary Age Topanga Formation (Weber, 1984). As observed in the borings, the bedrock is yellowish brown to olive, thinly bedded siltstone and claystone with isolated thin interbeds of fine-grained sandstone that contain thin gypsum stringers and iron oxidation staining along bedding planes and joint surfaces. Topanga Formation was encountered in all four borings and the majority of the prior AGS explorations with minimum depths below ground surface ranging from 4 feet to 18 feet. Approximate depths to bedrock are indicated on Cross-Section A-A' on the Site Plan (Figure 2).

3.6 Conejo Volcanics

Geocon did not encounter Tertiary Age Conejo Volcanics during the Site investigation; however, AGS presents information on this formation where it exists in the southern part of the subject property. According to AGS, the fill and alluvial deposits are underlain by Conejo Volcanics within the southern portion of the Site. Conejo Volcanics were encountered at 19.5 feet below ground surface on the subject property in AGS Boring B-4.

4. GROUNDWATER

Based on a review of the Seismic Hazard Evaluation of the Thousand Oaks 7.5 Minute Quadrangle (California Division of Mines & Geology, 1998), the historically highest groundwater in the area is 10 feet beneath the ground surface and depicts the subject property as being located in an alluviated valley. Groundwater information presented in this document is generated from data collected in the early 1900's to present.

Groundwater seepage was not encountered during the field investigation performed by Geocon. Several borings excavated for the study performed by AGS encountered minor groundwater seepage. AGS indicated that these groundwater occurrences were highly variable and subject to local subsurface conditions. AGS encountered groundwater in Borings B-10 and B-13, at depths of 8 and 9 feet below the ground surface, respectively. It is our opinion that the groundwater encountered does not represent the static groundwater table, but rather exists in near surface discontinuous perched zones associated with sandy alluvium or structures built for flood control. The amount of seepage in these granular zones may fluctuate seasonally.

It is not uncommon for more shallow seepage conditions to develop where none previously existed, especially in heavily irrigated areas or after seasonal rainfall. Proper surface drainage of irrigation and precipitation should be maintained. Recommendations for drainage are provided in the *Surface Drainage* section of this report (see Section 6.13).

5. GEOLOGIC HAZARDS

5.1 Faulting

The numerous faults in Southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (formerly known as California Division of Mines and Geology (CDMG)) for the Alquist-Priolo Earthquake Fault Zone Program (Hart, 1999). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years), but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a currently established Alquist-Priolo Earthquake Fault Zone for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site. Therefore, the potential for surface rupture due to faulting occurring beneath the site during the design life of the proposed development is considered low. The site, however, is located in the seismically active southern California region, and could be subjected to moderate to strong ground shaking in the event of an earthquake on one of the many active southern California faults. The faults in the vicinity of the site are shown in Figure 3, California Fault Map.

According to the "Maps of Known Active Fault Near Source Zones in California and Adjacent Portions of Nevada" (Feb. 1998), the nearest known active surface fault is the Malibu Coast Fault which is located approximately 5.4 miles, 8.7 kilometers, from the site.

The closest surface trace of an active fault to the site is the Malibu Coast Fault located approximately 7.4 miles south of the site (California Division of Mines & Geology, 1984). Other nearby active faults are the Simi fault, and the Northridge Hills fault located 9.3 miles north-northwest, and 13.8 miles north-northeast of the site, respectively (Ziony and Jones, 1989). The active San Andreas Fault zone is located approximately 41 miles northeast of the site.

The closest potentially active fault to the site is the Burro Flats fault located approximately 5.9 miles to the north. Other nearby potentially active faults are the Boney Mountain North fault, and the Chatsworth Reservoir fault located 6.0 miles west, and 8.9 miles northeast of the site, respectively.

Several buried thrust faults, commonly referred to as blind thrusts, underlie the Los Angeles Basin at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than 3.0 kilometers. The October 1, 1987 M_w 5.9 Whittier Narrows earthquake, and the January 17, 1994 M_w 6.7 Northridge earthquake were a result of movement on the buried thrust faults. These thrust faults are not exposed at the surface and do not present a potential surface fault rupture hazard; however, these active features are capable of generating future earthquakes.

5.2 Seismicity

As with all of Southern California, the site has experienced historic earthquakes from various regional faults. The epicenters of recorded earthquakes with magnitudes equal to or greater than 4.0 within a radius of 60 miles of the site are depicted on Figure 4, California Seismicity Map.

The seismic exposure of the site may be investigated in two ways. The deterministic approach recognizes the Maximum Earthquake, which is the theoretical maximum event that could occur along a fault. The deterministic method assigns a maximum earthquake to a fault derived from formulas that correlate the length and other characteristics of the fault trace to the theoretical maximum magnitude earthquake. The probabilistic method considers the probability of exceedance of various levels of ground motion and is calculated by consideration of risk contributions from regional faults.

5.3 Deterministic Analysis

Table 1 shows known faults within a 60-mile radius of the site. The maximum earthquake magnitude is indicated for each fault. In order to measure the distance of known faults to the site, the computer program *EQFAULT*, (Blake, 2000), was utilized. Principal references used within *EQFAULT* in selecting faults to be included are Jennings (1994), Anderson (1984) and Wesnousky (1986). For this investigation, the ground motion generated by maximum earthquakes on each of the faults is assumed to attenuate to the site per the attenuation relation by Campbell and Bozorgnia (1997 revised), modeling the soil underlying the site as a Building Code Soil Profile Type S_c. The resulting calculated peak horizontal accelerations at the site are shown on Table 1. These values are one standard deviation above the mean.

Using this methodology, the maximum earthquake resulting in the highest peak horizontal accelerations at the site would be a magnitude 7.3 event on the Anacapa-Dume Fault. Such an event would be expected to generate peak horizontal accelerations at the site of 0.63g.

While listing of peak accelerations is useful for comparison of potential effects of fault activity in a region, other considerations are important in seismic design, including the frequency and duration of motion and the soil conditions underlying the site.

The site could be subjected to moderate to severe ground shaking in the event of a major earthquake on any of the faults referenced above or other faults in Southern California. With respect to seismic shaking, the site is considered comparable to the surrounding developed area.

5.4 Probabilistic Analysis

The computer program *FRISKSP* (Blake, 2000) was used to perform a site-specific probabilistic seismic hazard analysis. The program is a modified version of FRISK (McGuire, 1978) that models faults as lines to evaluate site-specific probabilities of exceedance of given horizontal accelerations for each line source. Geologic parameters not included in the deterministic analysis are included in this analysis. The program operates under the assumption that the occurrence rate of earthquakes on each mapped Quaternary fault is proportional to the fault's slip rate. The program accounts for fault rupture length as a function of earthquake magnitude, and site acceleration estimates are made using the earthquake magnitude and closest distance from the site to the rupture zone. Uncertainty in each of following are accounted for: (1) earthquake magnitude, (2) rupture length for a given magnitude, (3) location of the rupture zone, (4) maximum magnitude of a given earthquake, and (5) acceleration at the site from a given earthquake along each fault. After calculating the expected accelerations from all earthquake sources, the program then calculates the total average annual expected number of occurrences of the site acceleration greater than a specified value. Attenuation relationships suggested by Campbell and Bozorgnia (1997 revised) were utilized in the analysis.

The Upper-Bound Earthquake Ground Motion (UBE) is the level of ground motion that has a 10 percent chance of exceedance in 100 years, with a statistical return period of 949 years. The UBE is typically utilized for the design of critical structures such as schools and hospitals. The Design-Basis Earthquake Ground Motion (DBE) is the level of ground motion that has a 10 percent chance of exceedance in 50 years, with a statistical return period of 475 years. The DBE is typically used for the design of non-critical structures.

Based on the computer program *FRISKSP* (Blake, 2000), the UBE and DBE are expected to generate motions at the site of approximately 0.47g and 0.39g, respectively. Graphical representations of the analyses are presented on Figures 5 and 6.

5.5 Seismic Design Criteria

The following table summarizes site-specific seismic design criteria obtained from the 1997 Uniform Building Code (UBC). The values listed in the following table are for the Malibu Coast Fault, identified as a Type B Fault.

SEISMIC DESIGN PARAMETERS

Parameter	Value	UBC Reference
Seismic Zone Factor, Z	0.40	Table 16-I
Soil Profile Type	S_C	Table 16-J
Seismic Coefficient, C_a	0.40	Table 16-Q
Seismic Coefficient, C_v	0.59	Table 16-R
Near-Source Factor, N_a	1.0	Table 16-S
Near-Source Factor, N_v	1.1	Table 16-T
Control Period, Ts	0.59	---
Control Period, To	0.12	---
Seismic Source	B	Table 16-U

5.6 Liquefaction Potential

Liquefaction involves a sudden loss in strength of saturated, cohesionless soils that are subject to ground vibration and results in temporary transformation of the soil to a fluid mass. If the liquefying layer is near the surface, the effects are much like that of quicksand for any structure located on it. If the layer is deeper in the subsurface, it may provide a sliding surface for the material above it.

The current standard of practice, as outlined in the “Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California” requires liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

According to the County of Los Angeles Seismic Safety Element (Leighton, 1990) and the State of California Seismic Hazard Zone, Thousand Oaks Quadrangle Map (2000), the site is not within an area identified as having a potential for liquefaction. The site is underlain by bedrock of the Tertiary Age Topanga Formation and Tertiary Age Conejo Volcanics; and bedrock by its nature is not subject to liquefaction. Based on these considerations, it is our opinion that the potential for liquefaction and associated ground deformations beneath the site is considered to be nil. Further, no surface manifestations of liquefaction are expected at the subject site.

5.7 Landslides

According to the Los Angeles County Seismic Safety Element (Leighton, 1990), the site is not within an area identified as having a potential for slope instability. Additionally, according to the California Geological Survey (2000), the site is not located within an area identified as having a potential for seismic slope instability. The site and surrounding vicinity is gently sloping to the south. There are no known landslides near the site, nor is the site in the path of any known or potential landslides. We do not consider the potential for a landslide to be a hazard to this project.

5.8 Earthquake-Induced Flooding

Earthquake-induced flooding is inundation caused by failure of dams or other water-retaining structures due to earthquakes. Based on a review of the Los Angeles County Seismic Safety Element (Leighton, 1990), the site is not located within an inundation boundary. The probability of earthquake-induced inundation is considered very low.

5.9 Tsunamis and Seiches

The site is not located within a coastal area. Therefore, tsunamis, seismic sea waves, are not considered a significant hazard at the site.

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. No major water-retaining structures are located immediately up gradient from the project site. Flooding from a seismically-induced seiche is considered unlikely.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

6.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude the construction of the proposed development provided the recommendations presented herein are followed and implemented during construction.

6.1.2 Up to fifteen feet of artificial fill materials were encountered during exploration at the site. The fill is likely the result of past grading activities at the site and in its present condition is not suitable for support of proposed foundations, floor slabs, or additional fill. The results of laboratory testing indicate that the existing fill materials and some alluvial and colluvial soils, in their present condition, are not suitable for support of proposed foundations, floor slabs or additional fill. The existing fill and unsuitable soils are considered suitable for re-use as an engineered fill provided the procedures outlined in the *Grading* section of this report are followed (see Section 6.4). The actual limits of removal will have to be determined by the Geotechnical Engineer (a representative of Geocon) during excavation and grading activities. Soft soils should be overexcavated as necessary.

6.1.3 Based on these considerations, it is recommended that the proposed structures and improvements be supported on a conventional foundation system bearing on a blanket of newly placed engineered fill. As a minimum, it is recommended that the upper five feet of existing site soils in the building footprint area be removed and properly recompacted for foundation and slab support. The removal should extend a minimum of ten feet beyond the proposed building footprint area, or a distance equal to the depth of fill below the foundations, whichever is greater. A minimum three-foot thick blanket of newly placed, properly compacted engineered fill should underlie all foundations and building slabs. The site soils should be well blended prior to placement as engineered fill. Any encountered fill or soft soils in the building footprint area must be completely removed at the direction of the Geotechnical Engineer (a representative of Geocon).

6.1.4 Foundations for small outlying structures such as property line walls or trash enclosures, which will not be tied-in to the proposed structures, may be supported on conventional foundations bearing in newly placed engineered fill or native soils at or below a depth of two feet. Existing uncertified fill is not recommended for foundation support. It is essential that proper drainage be maintained in order to minimize settlements in the soils and any foundations supported therein.

6.1.5 Where new flatwork or paving is to be placed, it is recommended that all existing fill soils and weak native soils be removed and properly recompacted for paving support. As a minimum, the upper twelve inches of soil should be scarified and recompacted. The client should be aware that removal and recompaction of all existing fill and weak native soils in the area of new paving is not required; however, paving constructed over existing uncertified fill or weak native soils may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. Paving recommendations are provided in *Preliminary Pavement Recommendations* section of this report (Section 6.10).

6.1.6 Based on the depth of existing fill and required grading sloping measures will be required during grading activities. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 6.12).

6.1.7 The suitability of the existing buried east-west trending concrete flood control structure should be evaluated by the project civil engineer. If a new drainage structure is required, geotechnical recommendations for the new drainage structure will be provided under separate cover.

6.2 Soil and Excavation Characteristics

6.2.1 The in-situ soils can be excavated with moderate effort using conventional excavation equipment. Due to the generally cohesive nature of the site soils, excessive caving is not anticipated during shallow vertical excavations.

6.2.2 It is the responsibility of the contractor to ensure that all excavations and trenches are properly shored and maintained in accordance with applicable OSHA rules and regulations to maintain safety and maintain the stability of adjacent existing improvements.

6.2.3 All onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load. Penetrations below this 1:1 projection will require special excavation measures such as shoring. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 6.12).

6.2.4 The soils encountered during this investigation have a “low” to “medium” expansion potential as defined by the Uniform Building Code (UBC) Table No.18-I-B. Recommendations presented herein assume that the building foundations will derive support in these materials.

6.3 Minimum Resistivity, pH and Water-Soluble Sulfate

6.3.1 Potential of Hydrogen (pH) and resistivity testing as well as chloride content testing were performed on representative samples of soil to generally evaluate the corrosion potential to surface and deep subterranean utilities. The tests were performed in accordance with California Test Method Nos. 643 and 422 and indicate that a potential for corrosion of buried ferrous metals exists on site. The results are presented in Appendix B (Figure B5) and should be considered for design of underground structures. Due to the corrosive potential of the soils, it is suggested that ABS pipes be considered, in lieu of cast-iron, for any retaining wall drains or subdrains required beneath the structures.

6.3.2 Laboratory tests were performed on representative samples of the site materials to measure the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate tests are presented in Appendix B (Figure B5) and indicate that the soils at the proposed foundation level possess “negligible” sulfate exposure to concrete structures as defined by UBC Table 19-A-4.

6.3.3 Geocon Inland Empire, Inc. does not practice in the field of corrosion engineering. If corrosion sensitive improvements are planned, it is recommended that a corrosion engineer be retained to evaluate corrosion test results and incorporate the necessary precautions to avoid premature corrosion on buried metal pipes and concrete structures in direct contact with the soils.

6.4 Grading

6.4.1 Earthwork should be observed, and compacted fill tested by representatives of Geocon Inland Empire, Inc.

6.4.2 A preconstruction conference should be held at the site prior to the beginning of grading operations with the owner contractor, civil engineer and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

6.4.3 Grading should commence with the removal of all existing improvements from the area to be graded. The areas to receive compacted fill shall be stripped of all vegetation, existing fill, and soft, weak or disturbed soils. As a minimum, it is recommended that the upper five feet of existing site soils in the building area be removed and properly recompacted for foundation support. The removal should extend a minimum of ten feet beyond the proposed building footprint area, or a distance equal to the depth of fill below the foundations, whichever is greater. A minimum three-foot thick blanket of newly placed, properly compacted engineered fill should underlie all foundations.

6.4.4 Deleterious debris such as wood and tree roots should be excavated and removed from the site. Deleterious debris must not be mixed with the fill soils. Asphalt and concrete should not be mixed with the fill soils unless approved by the Geotechnical Engineer. Rocks larger than six inches in diameter shall not be used in the fill. All existing underground improvements planned for removal should be completely excavated and the resulting depressions properly backfilled in accordance with the procedures described herein.

6.4.5 All imported fill shall be observed, tested and approved by Geocon Inland Empire, Inc. prior to use in the building pad area. Imported soils used in the building pad areas should have an expansion index less than 30. If imported soils are to be placed in the building area they must be placed uniformly and evenly at the direction of the Geotechnical Engineer (a representative of Geocon Inland Empire, Inc.).

6.4.6 All excavated site soils should be thoroughly blended and moisture conditioned prior to placement and compaction. All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to 2 percent above optimum moisture content, and compacted to at least 90 percent relative compaction, as determined by ASTM Test Method D 1557-02.

6.4.7 Utility trenches should be properly backfilled in accordance with the requirements of the Green Book (latest edition). The pipe should be bedded with clean sands (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained.

6.5 Shrinkage

Shrinkage results when a volume of material removed at one density is compacted to a higher density. A shrinkage factor of between 10 and 20 percent should be anticipated when excavating and compacting the existing earth materials on the site to an average relative compaction of 92 percent. Import soils may be required to attain finish grade elevations and maintain proper site drainage.

6.6 Foundation Design

6.6.1 Subsequent to the recommended grading, a conventional foundation system may be utilized for support of the proposed structures and improvements.

6.6.2 Continuous footings supported in engineered fill may be designed for an allowable bearing capacity of 2,300 pounds per square foot, and should be a minimum of 12 inches in width and 24 inches in depth below the lowest adjacent grade.

6.6.3 Isolated spread foundations supported in engineered fill may be designed for an allowable bearing capacity of 2,700 pounds per square foot, and should be a minimum of 24 inches square and 24 inches in depth below the lowest adjacent grade.

6.6.4 The soil bearing pressure above may be increased by 100 psf and 300 psf for each additional foot of foundation width and depth, respectively, up to a maximum allowable soil bearing pressure of 4,000 psf.

6.6.5 If depth increases are utilized for the exterior wall footings, this office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary. Further, additional grading may be necessary in order to maintain the required three-foot-thick engineered fill blanket beneath proposed foundations.

6.6.6 Small outlying structures, such as property line walls, planter walls and trash enclosures, which will not be rigidly connected to the proposed structure may be supported on conventional foundations bearing in properly compacted fill and/or undisturbed native soils at or below a depth of two feet. Existing uncertified fill is not suitable for foundation support. Miscellaneous foundations bearing in native soils may be designed for a bearing value of 1,000 pounds per square foot, and should be a minimum of 12 inches in width, 24 inches in depth below the lowest adjacent grade, and 12 inches into the recommended bearing materials. Excavations should be deepened as necessary to extend into satisfactory soils. Due to the weak nature of the upper native soils, it is essential that proper drainage be maintained in order to minimize settlements in the soils and any foundations supported therein.

6.6.7 The allowable bearing pressure may be increased by one-third for transient loads due to wind or seismic forces.

6.6.8 Unless specifically design by the project structural engineer, continuous footings should be reinforced with a minimum of four No. 4 steel reinforcing bars, two placed near the top of the footing and two near the bottom. Reinforcement for spread footings should be designed by the project structural engineer.

6.6.9 The above foundation dimensions and minimum reinforcement recommendations are based on soil conditions and building code requirements only, and are not intended to be used in lieu of those required for structural purposes.

6.6.10 Provided the building moisture content in the engineered building pad is maintained, no special subgrade presaturation is required prior to placement of concrete. However, the slab and foundation subgrade should be sprinkled as necessary to maintain a moist condition as would be expected in any concrete placement.

6.6.11 Foundation excavations should be observed by the Geotechnical Engineer (a representative of Geocon Inland Empire, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated. If unanticipated soil conditions are encountered, foundation modifications may be required.

6.6.12 This office should be provided a copy of the final construction plans so that the excavation recommendations presented herein could be properly reviewed and revised if necessary.

6.7 Conventional Foundation Settlement

6.7.1 The maximum expected settlement for a structure supported on a conventional foundation system in engineered fill is estimated to be less than ¾ inch and occur below the heaviest loaded structural element. Settlement of the foundation system is expected to occur on initial application of loading. Differential settlement is not expected to exceed ½ inch over a distance of twenty feet.

6.8 Lateral Design

6.8.1 Resistance to lateral loading may be provided by friction acting at the base of foundations, slabs and by passive earth pressure. An allowable coefficient of friction of 0.30 may be used with the dead load forces in the engineered fill and undisturbed native soils.

6.8.2 Passive earth pressure for the sides of foundations and slabs poured against properly compacted fill and undisturbed native soils may be computed as an equivalent fluid having a density of 200 pounds per cubic foot with a maximum earth pressure of 2,000 pounds per square foot. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.

6.9 Concrete Slabs-on-Grade

6.9.1 Conventional concrete slabs-on-grade may be utilized subsequent to the recommended grading.

6.9.2 Concrete slabs-on-grade subject to vehicle loading should be designed in accordance with the recommendations in the *Preliminary Pavement Recommendations* section of this report (Section 6.10). Building slabs-on-grade, not subject to vehicle loading, should be a minimum of 4 inches thick and should be reinforced with a minimum of No. 4 steel reinforcing bars placed 18 inches on center in both horizontal directions. Steel reinforcing should be positioned vertically near the slab midpoint. Wire mesh is not recommended.

6.9.3 Where moisture sensitive floor coverings are planned, the concrete slab-on-grade should be underlain by at least 4 inches of clean, dry sand (Sand Equivalent greater than 30), and a moisture barrier should be placed at the midpoint of the sand cushion. The moisture barrier may consist of a polyethylene sheet (visqueen) having a minimum thickness of 15 mils.

6.9.4 For seismic design purposes, a coefficient of friction of 0.30 may be utilized between concrete slabs and subgrade soils without a moisture barrier, and 0.15 for slabs underlain by a moisture barrier.

6.9.5 Exterior slabs, not subject to traffic loads, should be at least 4 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions, positioned near the slab midpoint. Wire mesh is not recommended. Prior to construction of slabs, the upper 12 inches of the subgrade should be moisture conditioned to at least 2 percent above optimum moisture content and properly compacted. Crack control joints should be spaced at intervals not greater than 10 feet and should be constructed using saw-cuts or other methods 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 the project structural engineer.

6.9.6 The recommendations of this report are intended to reduce the potential for cracking of slabs due to settlement. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade may exhibit some cracking due to minor soil movement and/or concrete shrinkage.

The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

6.10 Preliminary Pavement Recommendations

6.10.1 Where new flatwork or paving is to be placed, it is recommended that all existing fill soils and weak native soils be removed and properly recompacted for paving support. As a minimum, the upper twelve inches of soil should be scarified and recompacted. The client should be aware that removal and recompaction of all existing fill and weak native soils in the area of new paving is not required; however, paving constructed over existing uncertified fill or weak native soils may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs

6.10.2 The following pavement sections are based on an assumed R-Value of 20. Once site grading activities are complete an actual R-Value should be obtained by laboratory testing prior to placing pavement. Pavement thickness was determined following procedures outlined in the *California Highway Design Manual* (Caltrans). It is anticipated that the majority of traffic will consist of automobile traffic.

PRELIMINARY PAVEMENT DESIGN SECTIONS

Location	Estimated Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Automobile Parking	3.5	3	4½
Driveways	5	3	6
Trash Truck & Fire Lanes	7	4	12

6.10.3 Asphalt concrete should conform to Section 203-6 of the *Standard Specifications for Public Works Construction* (Green Book). Class 2 aggregate base materials should conform to Section 26-1.02A of the *Standard Specifications of the State of California, Department of Transportation* (Caltrans).

6.10.4 Where concrete paving will be utilized for support of heavy vehicles, it is recommended that the concrete be a minimum of 6 inches in thickness and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Concrete paving supporting vehicular traffic should be underlain by a minimum of 4 inches of aggregate base and a properly compacted subgrade.

6.10.5 Prior to placing base material, the subgrade should be scarified; moisture conditioned and recompacted to a minimum of 95 percent relative compaction. The depth of compaction should be at least 12 inches. All base material should also be compacted to a minimum of 95 percent relative compaction.

6.10.6 The performance of pavements is highly dependent upon providing positive surface drainage away from the edge of pavements. Ponding of water, on or adjacent to the pavement, will likely result in saturation of the subgrade materials and subsequent cracking, subsidence and pavement distress. If planters are planned adjacent to paving, it is recommended that the perimeter curb be extended at least 12 inches below the bottom of the aggregate base to minimize the introduction of water beneath the paving.

6.11 Retaining Walls

6.11.1 The recommendations presented below are generally applicable to the design of rigid concrete or masonry retaining walls supporting a level backcut of fill and/or native soil, having a maximum height of seven feet. In the event that walls higher than seven feet or other types of walls are planned, Geocon Inland Empire should be contacted for additional recommendations.

6.11.2 Retaining wall foundations may be designed in accordance with the recommendations provided in the *Foundation Design* section of this report (Section 6.6).

6.11.3 Retaining walls not restrained at the top and having a level backfill surface should be designed utilizing a triangular distribution of pressure as indicated in the table below:

HEIGHT OF WALL (Feet)	EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot)
Up to 7	35

6.11.4 Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent structures and should be designed for each condition.

6.11.5 Retaining walls should be provided with a drainage system extended at least two-thirds the height of the wall. At the base of the drain system, a subdrain or weepholes should be provided to prevent the buildup of hydrostatic pressure. If a subdrain is utilized it should be covered with a minimum of 12 inches of gravel should be installed, and a compacted fill blanket or other seal placed at the surface (see Figure 7). The clean bottom and subdrain pipe, behind a retaining wall, should be observed by the Geotechnical Engineer, (a representative of Geocon Inland Empire, Inc.), prior to placement of gravel or compacting backfill.

6.11.6 Subdrainage pipes at the base of the retaining wall drainage system should outlet to a location acceptable to the building official.

6.11.7 The wall pressures provided above assume that the retaining wall will be properly drained preventing the buildup of hydrostatic pressure. If retaining wall drainage is not implemented, it is recommended that the entire below grade portion of the retaining wall be designed for full hydrostatic pressure based on a water level at the ground surface. The equivalent fluid pressure to be used in design of the walls if groundwater is at the ground surface would be 80 pounds per cubic foot. The value includes hydrostatic pressures plus buoyant lateral earth pressures.

6.12 Temporary Excavations

6.12.1 Excavations on the order of 5 to 20 feet in vertical height will be required for the proposed grading of the site. The excavations are expected to expose fill and medium dense to firm soils, which are suitable for vertical excavations up to five feet in height where not surcharged by adjacent traffic or structures.

6.12.2 Excavations greater than five feet in height or those that are surcharged by adjacent traffic or structures will require sloping measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments may be sloped back at a uniform 1:1 slope gradient or flatter. A uniform slope does not have a vertical portion. Should excavations be required adjacent to an existing structure, the bottom of any unshored excavation should be restricted so as not to extend below a plane drawn at 1:1 downward from the foundation of the existing structure.

6.12.3 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. Our personnel should inspect the soils exposed in the cut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

6.13 Surface Drainage

6.13.1 Proper surface drainage is critical to the future performance of the project. Infiltration of irrigation excess and storm runoff into the supporting soils can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the original designed engineering properties. Proper drainage should be maintained at all times.

6.13.2 All site drainage should be collected and transferred 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. The proposed structure should be provided with roof gutters. Discharge from downspouts, roof drains and scuppers is not recommended onto unprotected soils within five feet of the building perimeter. It is recommended that planters, which are located adjacent to foundations, be sealed to prevent moisture intrusion into the engineered fill providing foundation support. Landscape irrigation is not recommended within five feet of the building perimeter footings except when enclosed in protected planters.

6.13.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures. The building pad and pavement areas should be fine graded such that water is not allowed to pond.

6.13.4 Where landscaping is planned adjacent to the pavement, it is recommended that consideration be given to providing a cutoff wall along the edge of the pavement that extends at least 12 inches below the base material. A subdrain, which collects excess irrigation water and transmits it to drainage structures, should also be considered.

6.14 Plan Review

6.14.1 Grading, foundation and shoring plans should be reviewed by the Geotechnical Engineer (a representative of Geocon Inland Empire, Inc.) prior to finalization to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Inland Empire, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Inland Empire, Inc.

2. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

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

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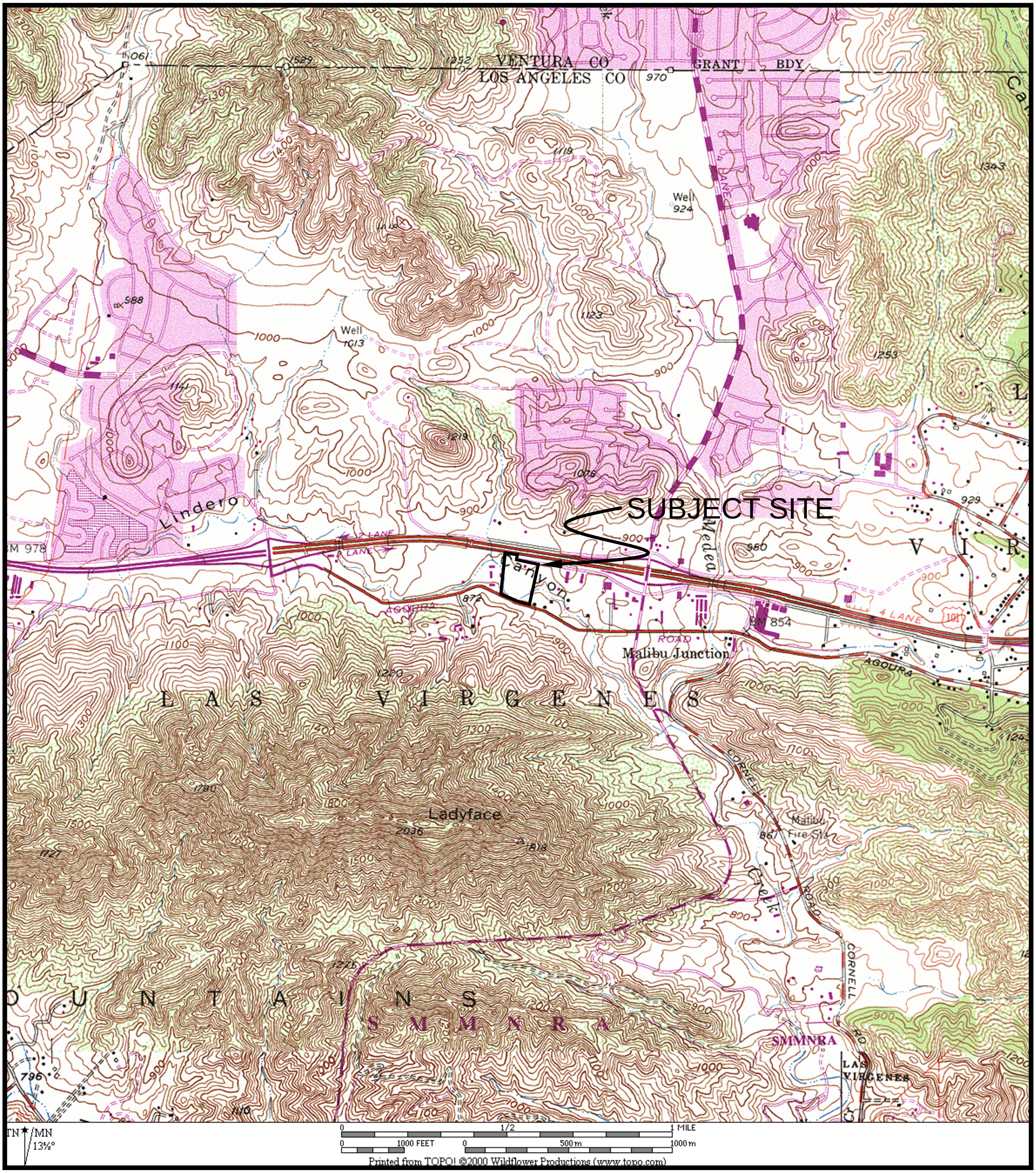

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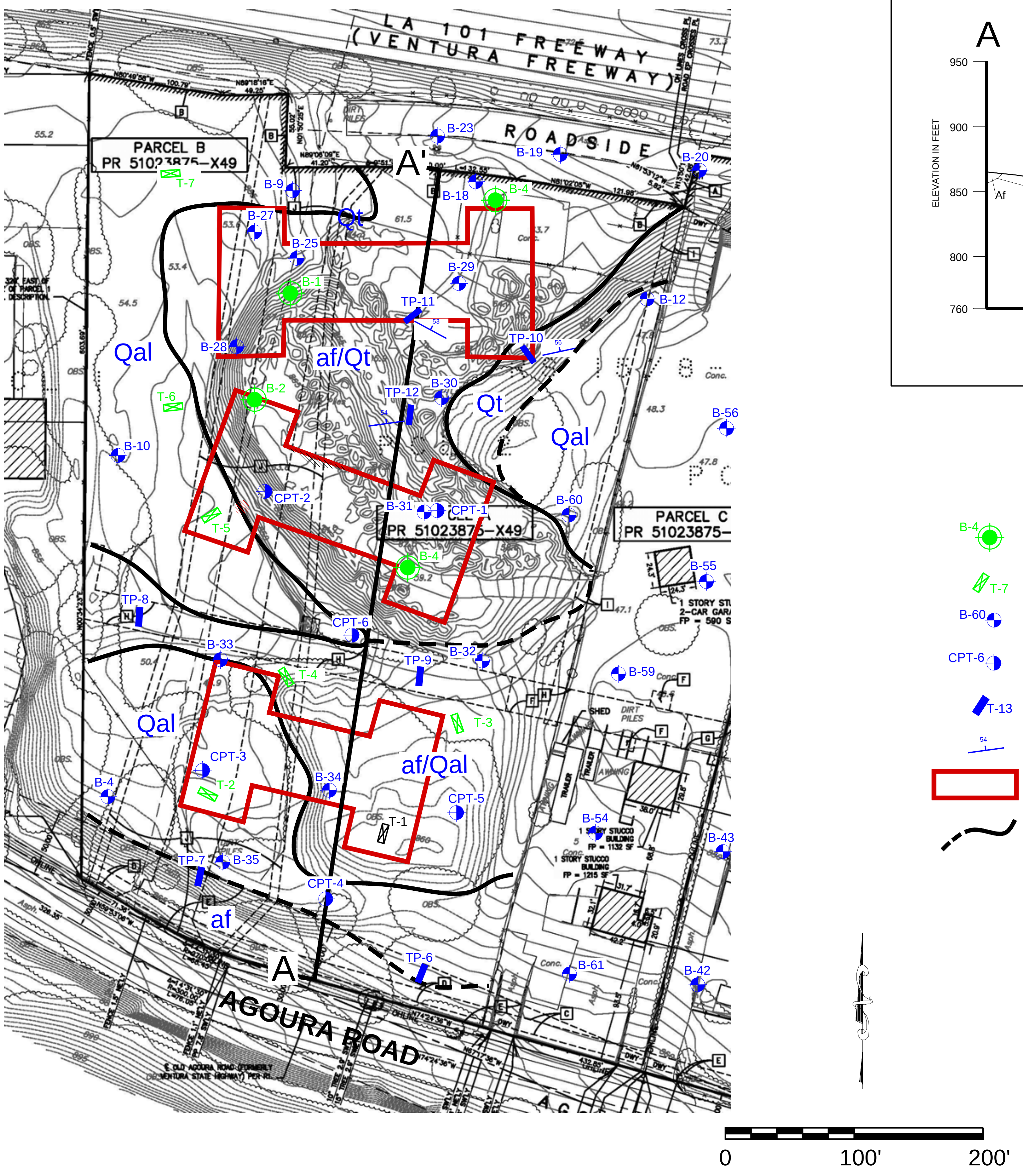
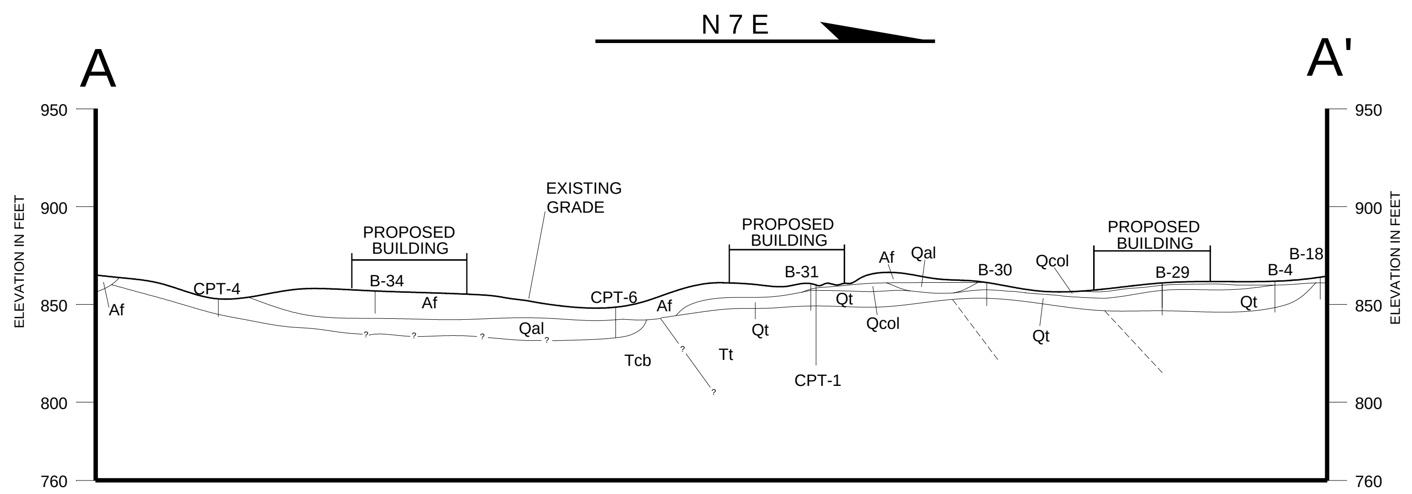
DEC. 19, 2006
PROJECT NO. A8487-06-01A
FIG. 1





LEGEND

B-4 ⊕	Approximate Boring Location (Geocon)		af	Artificial Fill
T-7	Approximate Test Pit Location (Geocon)		Qcol	Topsoil/Colluvium
B-60 ◐	Approximate Boring Location (AGS)		Qal	Alluvium (Holocene)
CPT-6 ◐	Approximate CPT Location (AGS)		Qt	Terrace Deposits (Quaternary)
T-13	Approximate Test Pit Location AGS)		Tt	Topanga Formation (Tertiary)
54	Strike & Dip of Bedding		Tcb	Conejo Volcanics (Tertiary)
🟥	Approximate Location of Proposed Structures			Cross Section Location
	Geologic Contact (Dashed where Approx.)			

GEOCON
INLAND EMPIRE, INC.

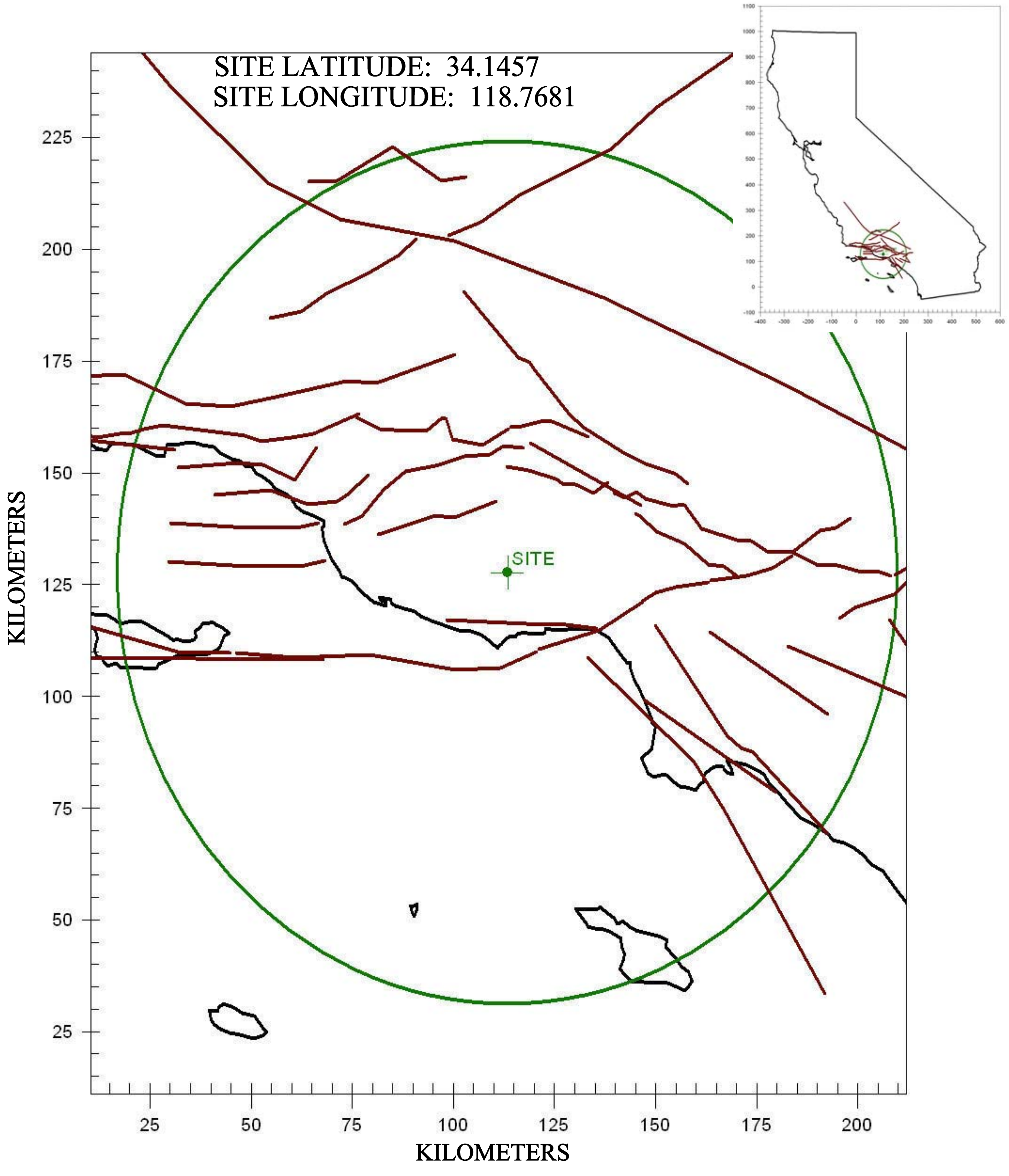
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

MAS		8000

SITE PLAN

VENTURE PROFESSIONAL CENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. 2



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MAS		8000

CALIFORNIA FAULT MAP

VENTURE PROFESSIONAL CENTER
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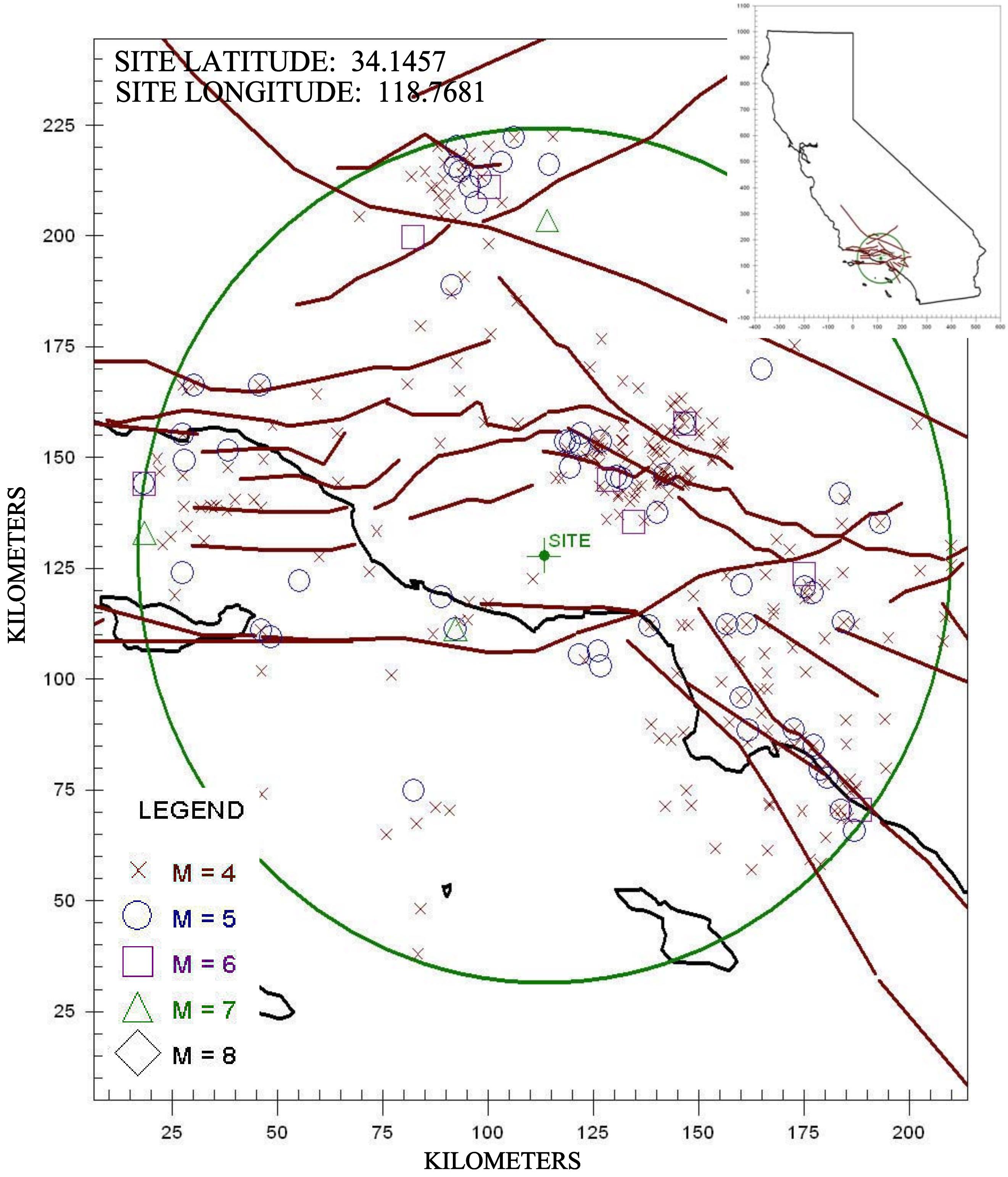
AGOURA HILLS, CALIFORNIA

DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. 3



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MAS		8000

CALIFORNIA SEISMICITY MAP

VENTURE PROFESSIONAL CENTER
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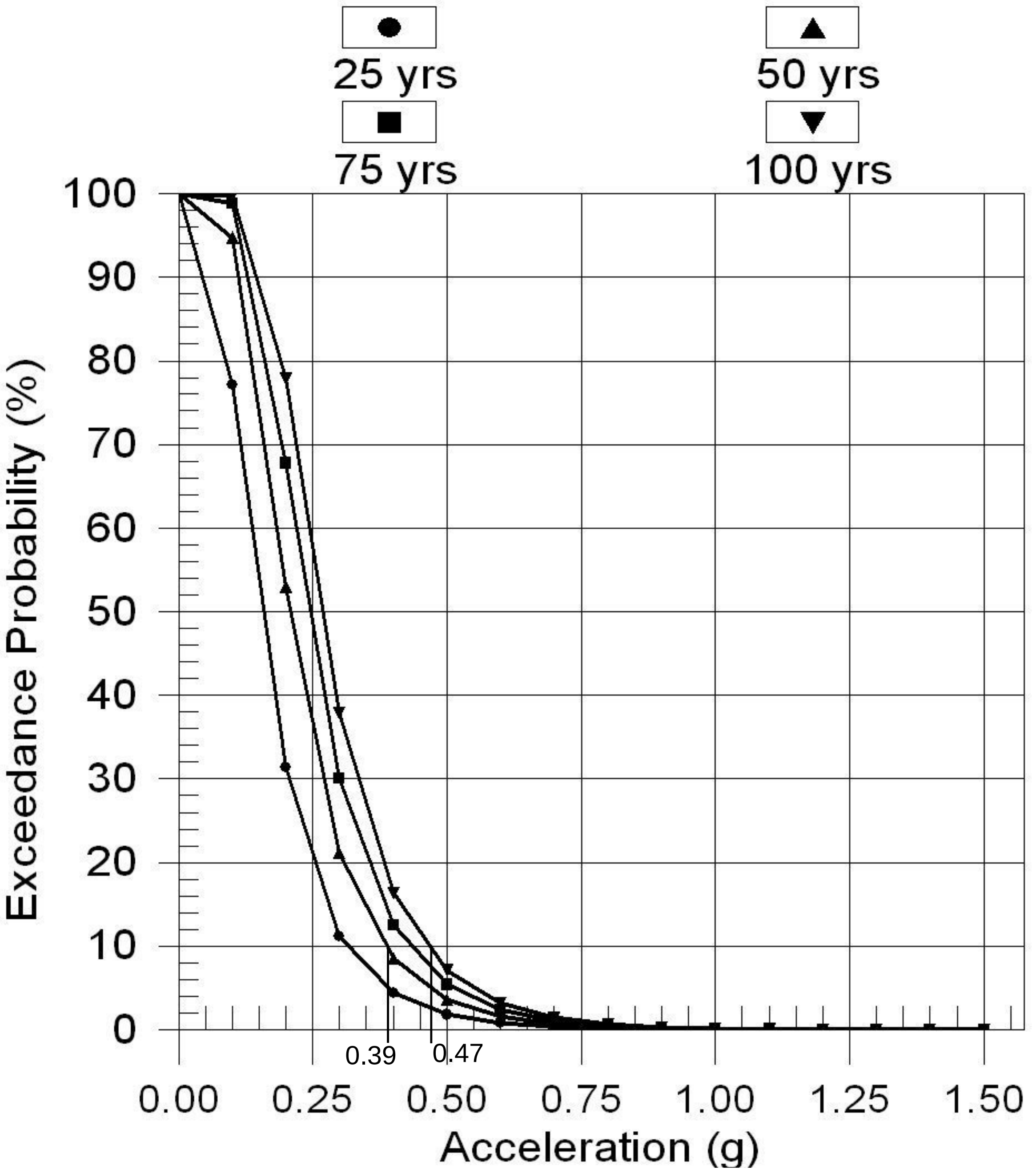
AGOURA HILLS, CALIFORNIA

DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. 4

PROBABILITY OF EXCEEDANCE

CAMP. & BOZ. (1997 Rev.) SR 1



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PROBABILITY OF EXCEEDANCE

VENTURE PROFESSIONAL CENTER
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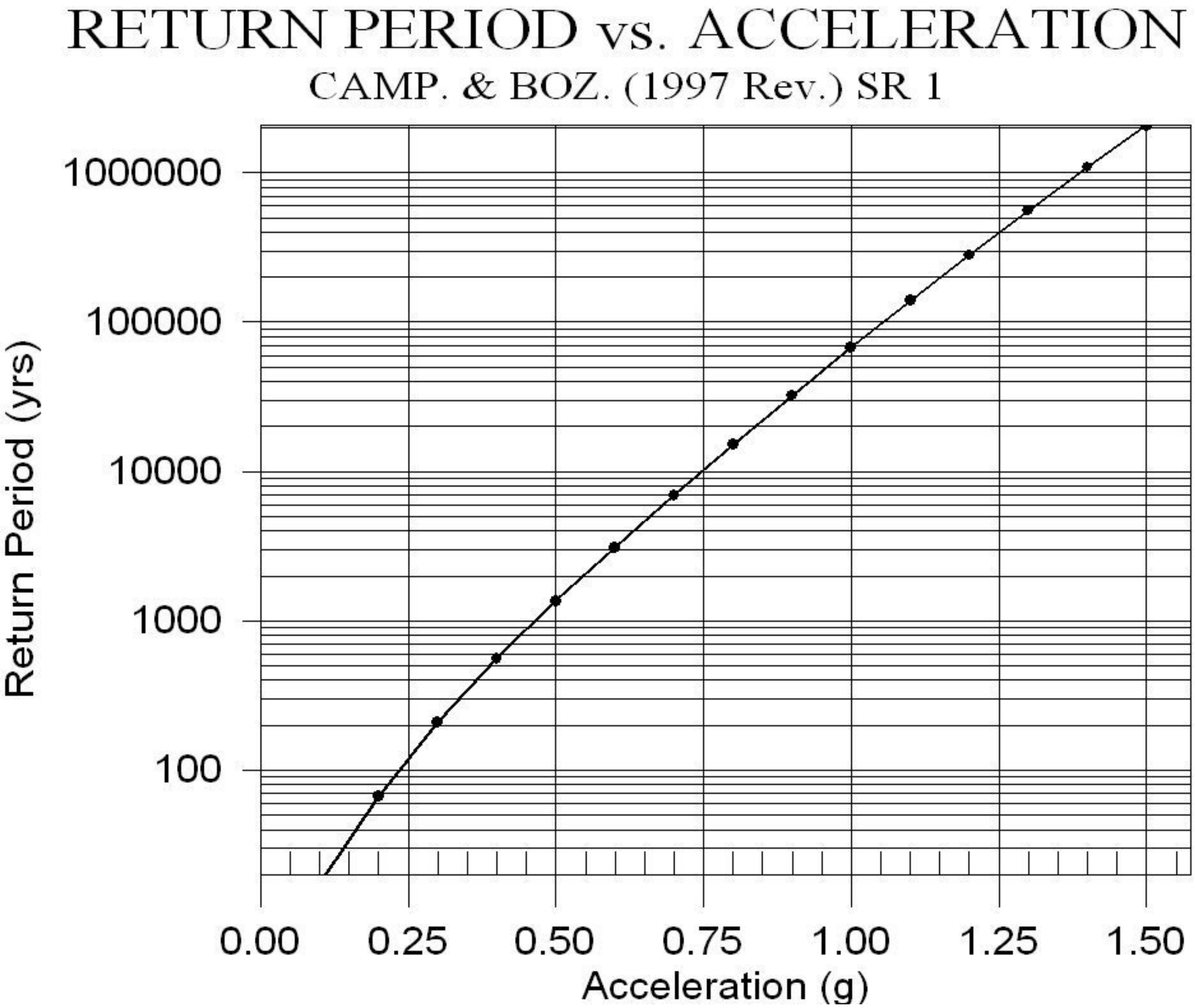
AGOURA HILLS, CALIFORNIA

MAS		8000	DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. 5



RETURN PERIOD vs. ACCELERATION

CAMP. & BOZ. (1997 Rev.) SR 1

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INLAND EMPIRE, INC.

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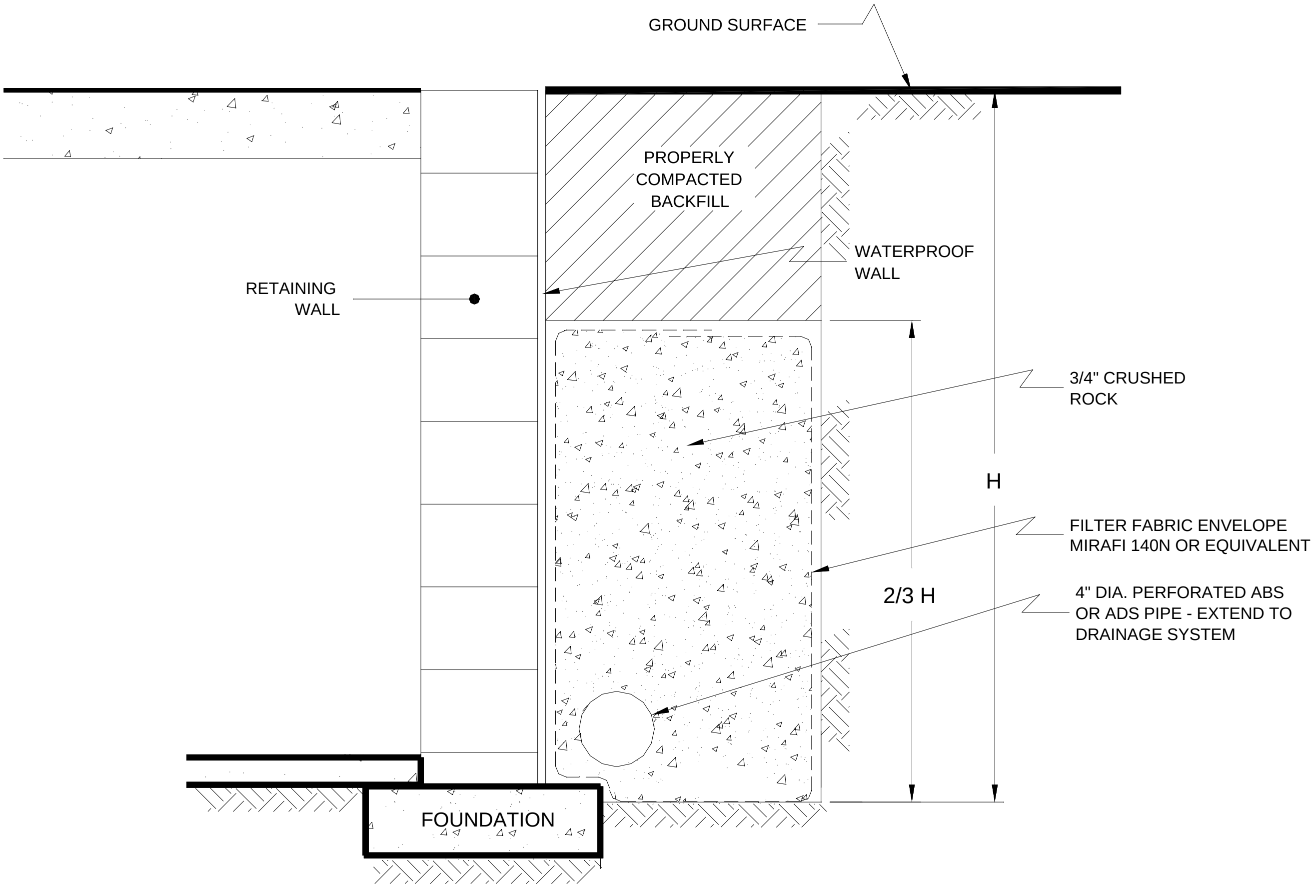
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

NDB		8000

RETURN PERIOD vs ACCELERATION

VENTURE PROFESSIONAL CENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. 6



NO SCALE

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3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
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RETAINING WALL DRAIN DETAIL

VENTURE PROFESSIONAL ENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

MAS		8000	DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. 7

GEOCON

TABLE 1

FAULTS WITHIN 60 MILES OF THE SITE

DETERMINISTIC SITE PARAMETERS

```
-------------------------------------------------------------------------------
                                |              |ESTIMATED MAX. EARTHQUAKE EVENT
                                | APPROXIMATE  |-------------------------------
         ABBREVIATED            |  DISTANCE    | MAXIMUM  |   PEAK   |EST. SITE
         FAULT  NAME            |  mi   (km)   |EARTHQUAKE|   SITE   |INTENSITY
                                |              | MAG.(Mw) | ACCEL. g |MOD.MERC.
================================|==============|==========|==========|=========
MALIBU COAST                    |  6.8  (11.0)|   6.7    |   0.614  |    X
ANACAPA-DUME                    |  8.4  (13.5)|   7.3    |   0.626  |    X
SIMI-SANTA ROSA                 | 10.8  (17.4)|   6.7    |   0.376  |   IX
SANTA MONICA                    | 11.4  (18.3)|   6.6    |   0.333  |   IX
NORTHRIDGE (E. Oak Ridge)       | 14.1  (22.7)|   6.9    |   0.304  |   IX
OAK RIDGE (Onshore)             | 15.4  (24.8)|   6.9    |   0.275  |   IX
SANTA SUSANA                    | 16.0  (25.7)|   6.6    |   0.223  |   IX
PALOS VERDES                    | 17.1  (27.6)|   7.1    |   0.254  |   IX
HOLSER                          | 18.4  (29.6)|   6.5    |   0.176  |  VIII
SAN CAYETANO                    | 19.5  (31.4)|   6.8    |   0.196  |  VIII
HOLLYWOOD                       | 20.6  (33.1)|   6.4    |   0.143  |  VIII
SIERRA MADRE (San Fernando)     | 20.9  (33.7)|   6.7    |   0.169  |  VIII
VERDUGO                         | 23.1  (37.1)|   6.7    |   0.149  |  VIII
SAN GABRIEL                     | 23.4  (37.7)|   7.0    |   0.169  |  VIII
NEWPORT-INGLEWOOD (L.A.Basin)   | 24.0  (38.6)|   6.9    |   0.153  |  VIII
VENTURA - PITAS POINT           | 25.8  (41.5)|   6.8    |   0.138  |  VIII
COMPTON THRUST                  | 27.6  (44.4)|   6.8    |   0.126  |  VIII
OAK RIDGE(Blind Thrust Offshore)| 27.9  (44.9)|   6.9    |   0.132  |  VIII
CHANNEL IS. THRUST (Eastern)    | 29.1  (46.8)|   7.4    |   0.171  |  VIII
SIERRA MADRE                    | 29.1  (46.9)|   7.0    |   0.133  |  VIII
MONTALVO-OAK RIDGE TREND        | 30.1  (48.4)|   6.6    |   0.096  |   VII
SANTA YNEZ (East)               | 30.9  (49.8)|   7.0    |   0.122  |   VII
RAYMOND                         | 31.2  (50.2)|   6.5    |   0.084  |   VII
ELYSIAN PARK THRUST             | 32.7  (52.7)|   6.7    |   0.091  |   VII
M.RIDGE-ARROYO PARIDA-SANTA ANA | 33.0  (53.1)|   6.7    |   0.090  |   VII
RED MOUNTAIN                    | 35.4  (56.9)|   6.8    |   0.087  |   VII
SAN ANDREAS - Carrizo           | 41.1  (66.2)|   7.2    |   0.097  |   VII
SAN ANDREAS - 1857 Rupture      | 41.1  (66.2)|   7.8    |   0.153  |  VIII
SAN ANDREAS - Mojave            | 41.1  (66.2)|   7.1    |   0.089  |   VII
CLAMSHELL-SAWPIT                | 41.2  (66.3)|   6.5    |   0.054  |   VI
SANTA CRUZ ISLAND               | 44.1  (71.0)|   6.8    |   0.062  |   VI
WHITTIER                        | 44.3  (71.3)|   6.8    |   0.061  |   VI
BIG PINE                        | 47.0  (75.7)|   6.7    |   0.052  |   VI
GARLOCK (West)                  | 48.0  (77.3)|   7.1    |   0.071  |   VI
PLEITO THRUST                   | 49.3  (79.3)|   7.2    |   0.071  |   VI
SAN JOSE                        | 50.6  (81.5)|   6.5    |   0.039  |    V
NORTH CHANNEL SLOPE             | 54.4  (87.6)|   7.1    |   0.056  |   VI
SANTA YNEZ (West)               | 54.9  (88.3)|   6.9    |   0.049  |   VI
CHINO-CENTRAL AVE. (Elsinore)   | 56.6  (91.1)|   6.7    |   0.038  |    V
CUCAMONGA                       | 56.9  (91.6)|   7.0    |   0.048  |   VI
================================|==============|==========|==========|=========
40 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.
THE MALIBU COAST FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 6.8 MILES (11.0 km) AWAY.
LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.6257 g
```

APPENDIX A

FIELD INVESTIGATION

The scope of the field investigation, performed on November 27 and 28, 2006, consisted of excavating four large diameter borings utilizing an eighteen inch diameter bucket auger type drilling machine and seven test pits utilizing a backhoe. The borings were conducted to depths between 16 and 24 feet below the existing ground surface and all borings encountered bedrock. The backhoe test pits were conducted to a depth of six feet below the existing ground surface. Representative and relatively undisturbed samples were obtained by driving a 3-inch, O.D., sampler into the "undisturbed" soil mass. The California Modified Sampler was equipped with 1-inch by $2^{3}/_{8}$-inch brass sampler rings to facilitate removal and testing. Bulk samples were also obtained.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the borings are presented on Figures A-1 through A-11. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The approximate locations of the borings are shown on the Site Plan, Figure 2.

GEOCON
INLAND EMPIRE, INC

BORING 1

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
Bulk	0-3				**0**		**Fill:** Sandy Clay with Gravel, firm, moist, brown to olive brown, medium-grained, some coarse-grained, gravel to 1" in size
⛁	1	6	15.8	96.4	**1**		
					2		
					3		concrete fragments to 6" in size
⛁	4	10	14.8	89.3	**4**	**CL**	**Terrace Deposits:** Sandy Clay, firm, moist, grey, some basaltic/andesitic rock fragments,
					5		
					6		
⛁	7	3	4.5	109.4	**7**		Clay with Sand, soft, moist, greenish grey to grey, plastic, some andesite fragments,
					8		
					9		
⛁	10	2	26.3	92.8	**10**		Clay, soft, moist, reddish brown to strong brown, plastic, some volcanic fragments to 6" in diameter
					11		
					12		
⛁	13	8	8.5	141.5	**13**		Sandy Clay with Gravel, firm, moist, brown to strong brown, some volcanic fragments to 6" in diameter
					14		
					15		
⛁	16	8	26.1	94.0	**16**		**Topanga Formation:** Interbedded brown to strong brown Sandy Claystone with olive Sandy Siltstone, hard, moist, laminated
					17		
					18		
⛁	19	7	29.4	91.0	**19**		End boring at 19 feet. Fill to 4 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-1

GEOCON
INLAND EMPIRE, INC

BORING 2

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
					0		**Fill:** Sandy Clay with Gravel, firm, moist to wet, brown, medium-grained, some coarse-grained, gravel to 1" in size
⛁	1	12	NO RECOVERY		**1**		
					2		
					3		
⛁	4	5	16.1	96.7	**4**		
					5	**CL**	**Terrace Deposts:** Clay with Sand, firm, moist, grey to dark grey, some volcanic fragments to 8" in size
					6		
⛁	7	10	19.7	110.1	**7**		
					8		
					9		
⛁	10	4	18.5	99.1	**10**		
					11		
					12		
⛁	13	5	21.7	101.8	**13**		
					14		Clay with Gravel, firm, moist, grey to dark grey, some volcanic fragments to 8" in size,
					15		
⛁	16	10 for 9"	6.7	127.8	**16**		
					17		Sandy Clay with Gravel, firm, moist, yellowish brown, coarse-grained, some medium-grained, gravel to 1" in size
					18		
⛁	19	10 for 9"	NO RECOVERY		**19**		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-2a

GEOCON
INLAND EMPIRE, INC

BORING 2 (continued)

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Description**
					20		
					21		
▤	22	5	29.6	90.5	**22**		**Topanga Formation:** Olive and yellowish brown Sandy Claystone, hard, moist, fine-grained, interbedded, laminated
					23		
					24		End boring at 22 feet. Fill to 4 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					25		
					26		
					27		
					28		
					29		
					30		
					31		
					32		
					33		
					34		
					35		
					36		
					37		
					38		
					39		
					40		

▤ - Ring Sample from California Modified Sampler

Figure A-2b

GEOCON
INLAND EMPIRE, INC

BORING 3

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
					0		**Fill:** Clayey Sand with Gravel, loose, moist, brown to yellowish brown, medium-grained with some coarse-grained, gravel to 1" in size
					1		
					2		
⛁	3	9	18.4	103.9	**3**		
					4		
					5		
⛁	6	12	17.3	106.5	**6**	**SC**	**Terrace Deposits:** Clayey Sand with Gravel, loose to dense, moist, yellowish brown, medium- to fine-grained, some coarse-grained, gravel to 1" in size, some volcanic fragments
					7		
					8		
⛁ Bulk	9 9-12	5	14.9	111.4	**9**	**CL**	Sandy Clay with Gravel, firm, moist, dark grey, medium-grained, some coarse-grained, gravel to 1" in size
					10		
					11		
⛁	12	5	24.4	98.4	**12**		
					13		
					14		
⛁	15	8	19.8	107.7	**15**		
					16		
					17		
⛁ Bulk	18 18-21	6	20.5	100.3	**18**		
					19	**SC**	Clayey Sand with Gravel, dense, moist, yellowish brown, coarse- to medium-grained, some fine-grained, gravel to 1" in size, some volcanic fragments to 12" in diameter
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-3a

GEOCON
INLAND EMPIRE, INC

BORING 3 (continued)

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 862

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Description**
					20		
⛁	21	8	27.4	93.5	**21**		
					22		**Topanga Formation:** Olive Claystone to yellowish brown Siltstone, hard, moist thinly bedded to laminated, interbedded
					23		
⛁	24	7	28.0	91.3	**24**		
					25		End boring at 24 feet. Fill to 5 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					26		
					27		
					28		
					29		
					30		
					31		
					32		
					33		
					34		
					35		
					36		
					37		
					38		
					39		
					40		

⛁ - Ring Sample from California Modified Sampler

Figure A-3b

GEOCON
INLAND EMPIRE, INC

BORING 4

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 863

Excavation Date: **November 27, 2006**
Excavation Method: Bucket Auger
Boring Diameter: 18 inches
Sampling Method: Cal-Mod
Hammer Drop: 30 inches
Hammer Weight: 0-24': 2150 lbs

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
					0		**Fill:** Sandy Clay, firm, moist, grey to olive, fine- to medium-grained with some coarse-grained
⛁	1	4	17.1	108.4	**1**		
					2		
					3		
⛁	4	5	24.0	98.3	**4**		**Terrace Deposits:** Sandy Clay with Gravel, firm, moist, olive to yellowish brown, medium-grained, some coarse-grained, gravel up to 1" in size, some volcanic fragments up to 12" in diameter, few Sandstone fragments
					5		
					6		
⛁	7	6	22.1	95.7	**7**		
					8		
					9		
⛁	10	10 for 4"	15.3	89.3	**10**		
					11		
					12		
⛁	13	4	35.6	83.4	**13**		**Topanga Formation:** Olive to yellowish brown Claystone, hard, moist, thinly bedded
					14		
					15		
⛁	16	4	31.2	88.4	**16**		End boring at 16 feet. Fill to 4 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-4

GEOCON

INLAND EMPIRE, INC

TEST PIT 1

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California
Elevation: 859

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
					0		**Fill:** Clayey Sand with Gravel, loose, dry, brown to light yellowish brown, medium- to coarse-grained, some fine-grained, gravel up to 2" in size, rootlets, burrows
	1				**1**		Clayey Gravel with Sand, loose, dry, yellowish brown, medium- to coarse-grained, some fine-grained, gravel to 2" in size, rootlets, burrows
					2		
					3		
	3.5						
					4		Sandy Clay with Gravel, firm, moist, dark reddish brown to dark grey, fine- to medium-grained, gravel to 2" in size
					5		
					6		
					7		
					8		End Test Pit at 7 feet. Fill to 7 feet. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-5

GEOCON
INLAND EMPIRE, INC

TEST PIT 2

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 852

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
	0				**0**	**SC**	**Alluvium:** Clayey Sand with Gravel, loose, dry, light yellowish brown, fine- to medium-grained, some coarse-grained, gravel to 2" in size, roots, voids to 1/4", burrows
	1				**1**	**CL**	Gravelly Clay with Sand, firm, moist, dark brown to grey, gravel to 2" in size, roots, rootlets, caliche filled fractures to 1/4" in thickness
					2		
					3		
					4		
					5		
					6		End Test Pit at 6 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-6

GEOCON
INLAND EMPIRE, INC

TEST PIT 3

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 856

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
	0				**0**		**Fill:** Sandy Clay with Gravel, soft to firm, moist, yellowish brown to brown to grey, fine- to medium-grained, some coarse-grained, gravel to 2" in size, few plastic fragments, pvc pipe, few volcanic fragments, few fragments of laminated Siltstone
					1		
					2		
					3		
					4		
					5		
					6		
					7		End Test Pit at 7 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-7

GEOCON
INLAND EMPIRE, INC

TEST PIT 4

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 853

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: Improved Dirt Lot** **Description**
	0				**0**		**Fill:** Clayey Sand with Gravel, loose, dry, light yellowish brown, medium- to coarse-grained, some fine-grained, gravel to 2" in size, rootlets, voids to 1/4", burrows
	1				**1**		Clayey Gravel with Sand, loose to dense, dry to slightly moist, coarse-grained, some medium-grained, gravel to 2" in size, some volcanic fragments, rootlets, voids to 1/8" in size
					2		
					3		
	4				**4**		brown to olive, few laminated Siltstone Fragments
					5		
	6				**6**	**CL**	**Alluvium:** Clay, soft to firm, slightly moist, dark brown to grey, rootlets
					7		
	8				**8**		caliche filled fractures, few volcanic cobbles
					9		End Test Pit at 9 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-8

GEOCON
INLAND EMPIRE, INC

TEST PIT 5

Project No.: A8487-06-01A
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 852

Excavation Date: November 28, 2006
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: undeveloped land** **Description**
	0				**0**	**SC**	**Alluvium:** Clayey Sand with Gravel, loose, dry, yellowish brown, fine- to medium-grained, some coarse-grained, gravel to 1" in size, voids to 1/4", rootlets, burrows
	1				**1**	**SM**	Silty Sand with Gravel, dense, slightly moist, brown, fine-grained, some medium- to coarse-grained, gravel to 2" in size, voids to 1/8", rootlets, few volcanic fragments
					2		
					3		
	4				**4**	**SC**	Sandy Clay, firm, moist, brown to grey, fine-grained, caliche filled fractures, some volcanic fragments
					5		
					6		End Test Pit at 6 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-9

GEOCON
INLAND EMPIRE, INC

TEST PIT 6

Project No.: A8487-06-01A
Client: Venture Corporation
Location: Agoura Hills, California
Elevation: 853

Excavation Date: November 28, 2006
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: undeveloped land** **Description**
	0				**0**	**SC**	**Alluvium:** Clayey Sand with Gravel, loose, dry, yellowish brown, medium-grained, some coarse-grained, gravel to 2" in size, voids to ¼", rootlets
	1				**1**	**GP**	Sandy Gravel, loose to dense, dry to slightly moist, yellowish brown to brown, medium- to coarse-grained, some fine-grained, gravel to 2" in size
	2.5				**2**		
					3	**ML**	Sandy Silt with Gravel, firm, moist, brown, fine-grained, some medium-grained, gravel to 2" in size, some volcanic fragments
					4		
					5		
					6		
					7		End Test Pit at 7 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		

⛁ - Ring Sample from California Modified Sampler

Figure A-10

GEOCON
INLAND EMPIRE, INC

TEST PIT 7

Project No.: **A8487-06-01A**
Client: Venture Corporation
Location: Agoura Hills, California

Elevation: 855

Excavation Date: **November 28, 2006**
Excavation Method: Backhoe
Boring Diameter:
Sampling Method:

Sample Type	Depth (feet)	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Depth (feet)	USCS Class.	**Surface Condition: undeveloped land** **Description**
	0				**0** **1** **2**	**SC**	**Alluvium:** Clayey Sand with Gravel, loose, dry, light yellowish brown, medium-grained, some coarse-grained, gravel to 2" in size, voids to 1/8", rootlets
					3 **4** **5**	**GC**	Clayey Gravel with Sand, loose to dense, slightly moist, yellowish brown to brown, coarse-grained, some medium-grained, gravel to 2" in size, voids to 1/8", rootlets
					6 **7**	**CL**	Sandy Clay with Gravel, firm, moist, brown to grey, fine-grained, some medium-grained, gravel to 1/2" in size, some volcanic fragments, rootlets
					8 **9** **10** **11** **12** **13** **14** **15** **16** **17** **18** **19** **20**		End Test Pit at 7 feet. No Fill encountered. No groundwater encountered. No caving. Backfilled and tamped with soil cuttings.

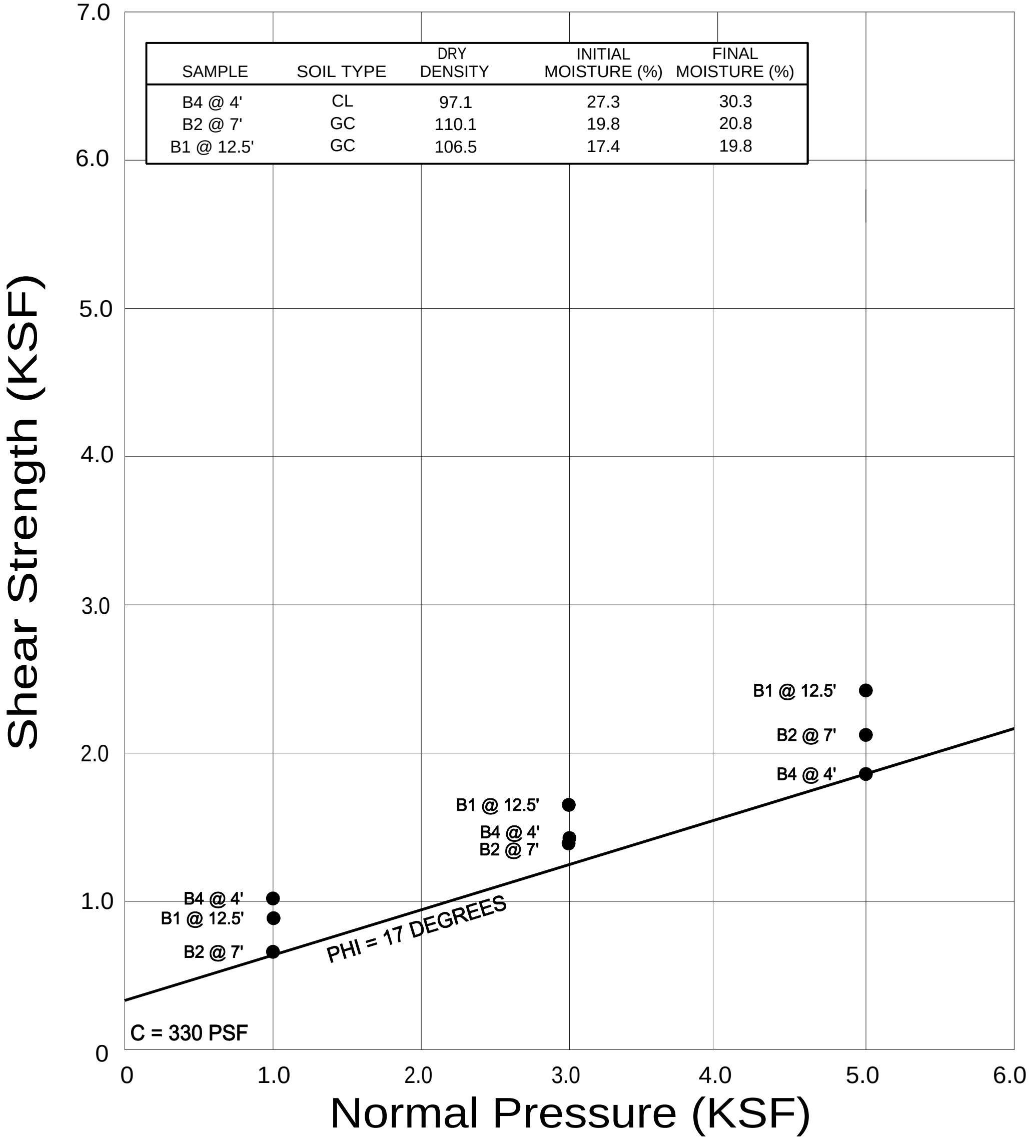
⛁ - Ring Sample from California Modified Sampler

Figure A-11

APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. Selected samples were tested for compaction characteristics, direct shear strength, consolidation and expansion characteristics, in-place dry density and moisture content, pH, resistivity, chloride and water soluble sulfate content. The results of the laboratory tests are summarized in Figures B1 through B6. The in-place dry density and moisture content of the samples tested are presented on the boring logs in Appendix A.



SAMPLE	SOIL TYPE	DRY DENSITY	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B4 @ 4'	CL	97.1	27.3	30.3
B2 @ 7'	GC	110.1	19.8	20.8
B1 @ 12.5'	GC	106.5	17.4	19.8

● Direct Shear, Saturated

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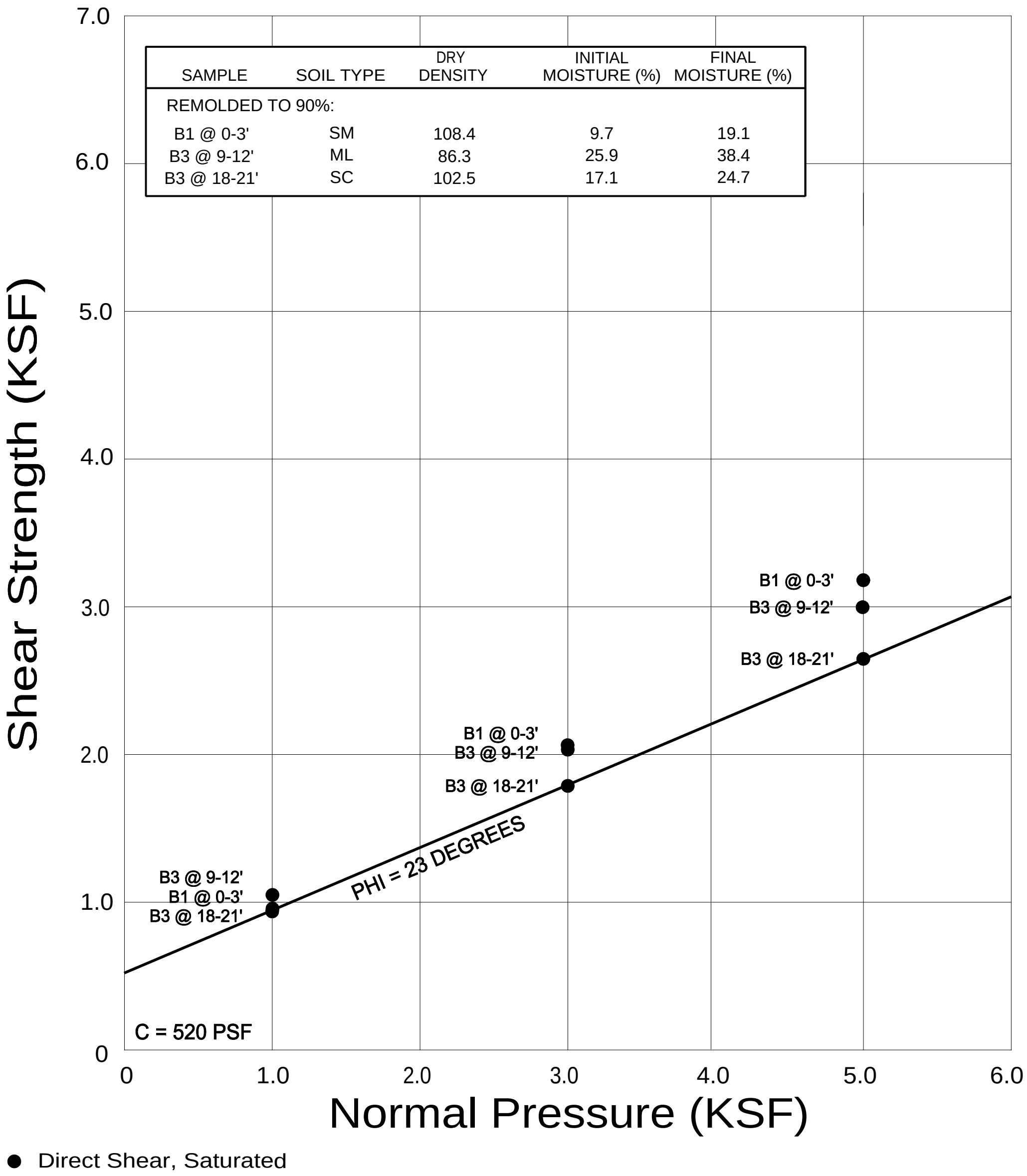
DIRECT SHEAR TEST RESULTS

VENTURE PROFESSIONAL CENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

BRG		8000	DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B1



SAMPLE	SOIL TYPE	DRY DENSITY	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
REMOLDED TO 90%:				
B1 @ 0-3'	SM	108.4	9.7	19.1
B3 @ 9-12'	ML	86.3	25.9	38.4
B3 @ 18-21'	SC	102.5	17.1	24.7

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DIRECT SHEAR TEST RESULTS

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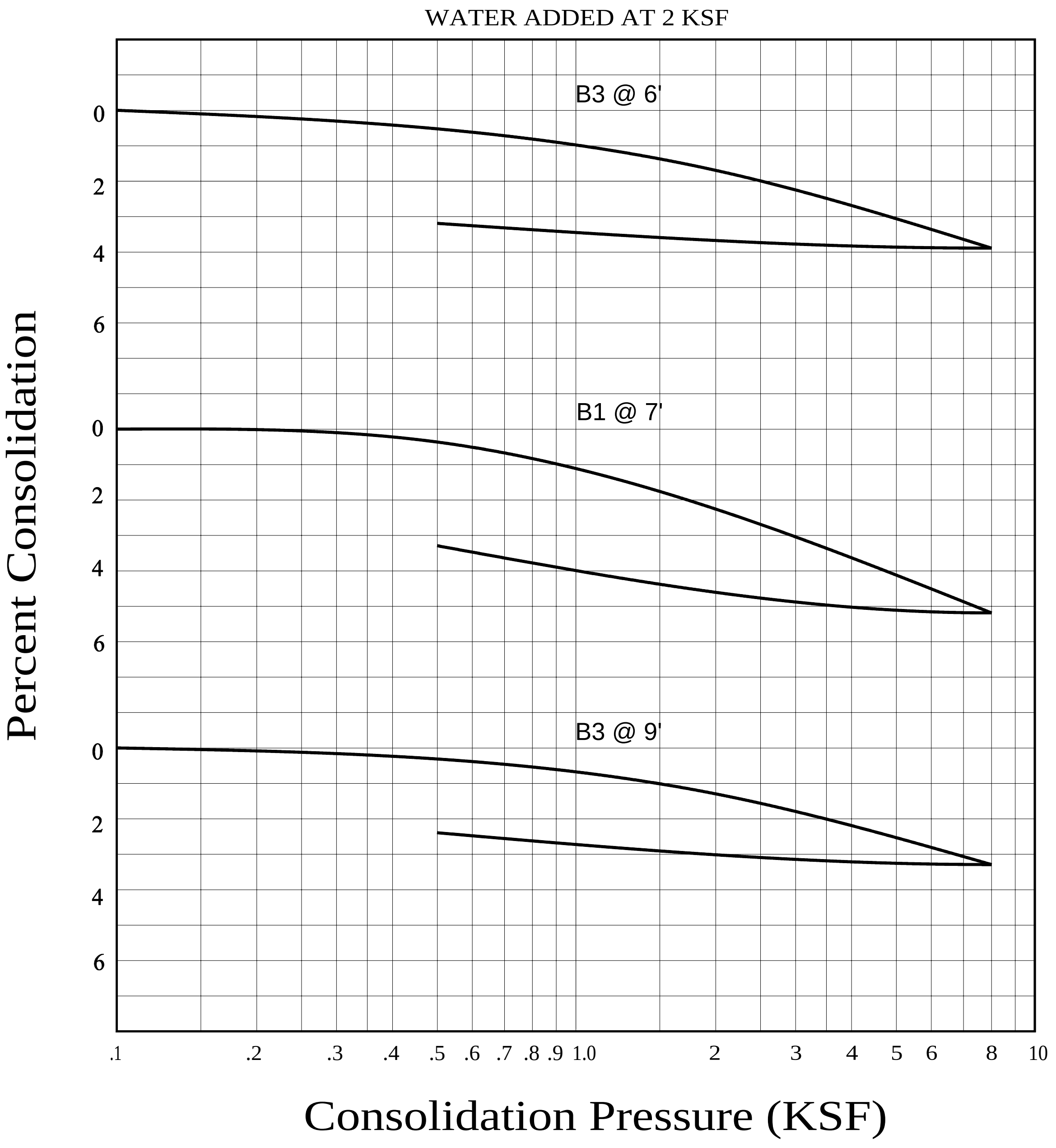
DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B2



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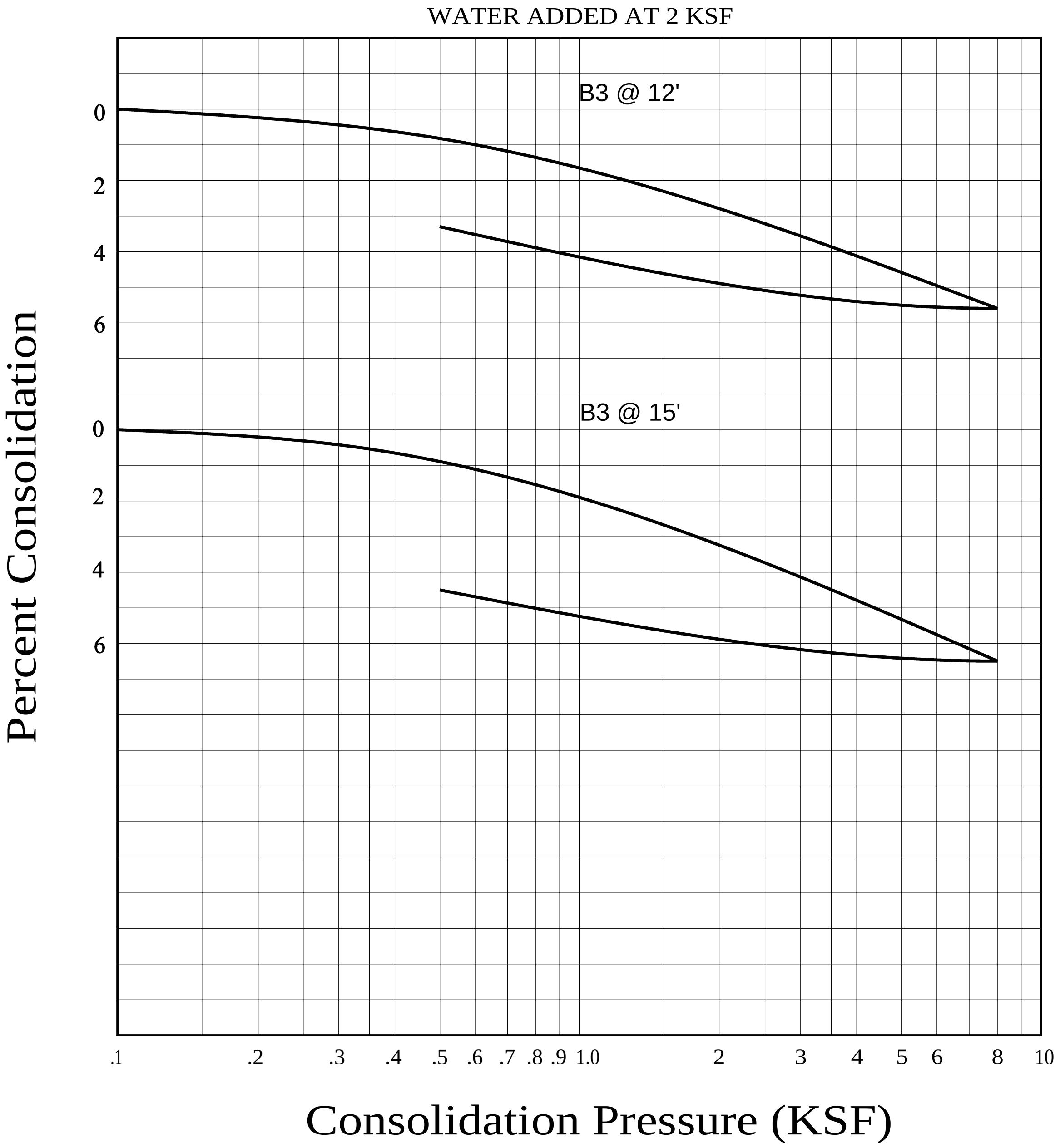
CONSOLIDATION TEST RESULTS

VENTURE PROFESSIONAL CENTER
VENTURE CORPORATION
AGOURA HILLS, CALIFORNIA

BRG		8000	DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B3



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CONSOLIDATION TEST RESULTS

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DEC. 19, 2006	PROJECT NO. A8487-06-01A	FIG. B4

SUMMARY OF LABORATORY POTENTIAL OF HYDROGEN (pH) AND RESISTIVITY TEST RESULTS
CALIFORNIA TEST NO. 643

Sample No.	**pH**	**Resistivity (ohm centimeters)**
B1 @ 0-3'	7.4	2400 (Moderately Corrosive)

SUMMARY OF LABORATORY CHLORIDE CONTENT TEST RESULTS
CALIFORNIA TEST NO. 422

Sample No.	Chloride Ion Content (%)
B1 @ 0-3'	0.003

SUMMARY OF LABORATORY WATER SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water Soluble Sulfate (% SO_4)	Sulfate Exposure*
B1 @ 0-3'	0.005	Negligible

* Reference: 1997 Uniform Building Code, Table 19-A-4.

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CORROSIVITY TEST RESULTS

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AGOURA HILLS, CALIFORNIA

BRG | | 8000

DEC. 19, 2006 | PROJECT NO. A8487-06-01A | FIG. B5

SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
ASTM D 4829-95

Sample No.	Moisture Content (%)		Dry Density (pcf)	Expansion Index	*UBC Classification
	Before	After			
B1 @ 0-3'	8.6	20.7	107.1	39	Low
B3 @ 9-12'	9.1	18.5	113.8	74	Medium
B3 @ 18-21'	13.2	24.1	101.2	89	Medium

* Reference: 1997 Uniform Building Code, Table 18-I-B.

SUMMARY OF LABORATORY MAXIMUM DENSITY AND AND OPTIMUM MOISTURE CONTENT TEST RESULTS
ASTM D 1557-02

Sample No.	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture (%)
B1 @ 0-3'	Olive Brown Silty Sand	121.5	9.0
B3 @ 9-12'	Grey Clayey Sand	115.0	16.0
B3 @ 18-21'	Brown Sandy Silt	96.0	26.0

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LABORATORY TEST RESULTS

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AGOURA HILLS, CALIFORNIA

DEC. 19, 2006
PROJECT NO. A8487-06-01A
FIG. B6

APPENDIX C

GEOTECHNICAL INVESTIGATION BY GEOCON INLAND EMPIRE, INC.

and PRIOR BORINGS AND LABORATORY TEST RESULTS BY AGS

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Boring Log B-4

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **5/18/00**

Comment **Phase I - Agoura Road Improvements**

Drilling Company/Driller **Valley Well Drilling** Equipment **Bucket Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **24"**

Elevation **856.0** ft Depth to Water ____ ft After ____ hrs on ____ Logged By **CS/NA**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0 - 9.25' Artificial Fill (af) Dark gray brown sandy CLAY with gravel; common gravel-sized rock fragments; slightly moist; hard; locally jumbled and mixed with clayey SAND; clasts composed of siltstone and volcanic fragments; local asphalt and roots.					
		10 14				99.5 95.2	15.8 19.7		
		22 36				99.2	13.3		
5									
		20 40		@ 6' No recovery due to large rounded cobble in sampler.					
		20 35				109.5	11.7		
				9.25 - 19.5' Quaternary Alluvium - Stream Deposits (Qal) Brown to yellowish brown gravelly SAND with silt; common subrounded to subangular cobbles; firm; dry; sand grains fine to coarse; 18" diameter boulders in hole @ 12'; abundant caving in loose sand 9.25 - 14'; carbonate stringers in stream deposits; abundant cross-bedding.					
10		12 18				88.7 87.7	9.8 5.7	6.9	
				@ 14' Brown silty SAND with gravel; fine to coarse-grained; dense and slightly moist; common subrounded gravel and cobbles.					
15		20 50 100/4"				116.1 103.4	4.4 12.8		
				@ 19' Minor seepage from walls of hole.					
				19.5 - 25.5' Bedrock - Conejo Volcanics (Tcv) Very dark gray andesitic VOLCANIC rock; poorly to moderately weathered to clayey sand; aphanitic texture; hard; slightly moist; hard drilling using crowds.					
20		85/6"				109.7	9.0		
								23.8	
									R = 6
25		100/2"				95.7	7.6		
				Total Depth = 25.5' Minor Seepage @ 19' Major Caving 9.25' - 14'					

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Boring Log B-9

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/11/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **861.0** ft Depth to Water ______ ft After ______ hrs on ______ Logged By **NA**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0 - 0.5' Artificial Fill Grayish brown sandy CLAY; hard; moist; common thin grass roots.					
				0.5 - 6.5' Quaternary Terrace Deposits (Qt) Brown clayey SAND; very dense; slightly moist; moderately weathered basaltic rock fragments.					
		27 50/3"					7.9		
5		23 50/6"				101.8	7.6	10.2	
				6.5 - 11' Bedrock - Topanga Formation (Tt) Olive brown to dark gray silty CLAYSTONE; medium strong; very moist; moderately to well-developed thin bedding; common FeOx staining along bedding; dip in samples ~40 - 50 degrees.					
		12 16 19				83.7	36.5		
10		6 24 27				83.7	35.0		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-10

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/11/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **857.5** ft Depth to Water **8.0** ft After **4** hrs on **10/11** Logged By **NA**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0 - 11' Quaternary Alluvium (Qal) Dark grayish brown sandy CLAY; stiff; moist; local gravel and cobbles.					
		14 29 14					11.1		
5		4 8 10		Very dark grayish brown sandy CLAY; soft to very stiff; wet; isolated gravels; local thin roots.		88.0	24.3	66.9	
		1 2 3		▼		88.9	32.4		
10		4 8 12				94.7	30.1		
				Brown SAND with silt; medium dense; very moist to wet; fine- to coarse-grained; local pockets of subangular gravel.					
		P 4 12					19.3		
15		2 11 9				114.6	17.1	12.2	
		2 6 5				100.1	23.2		
				16.75 - 21' Bedrock - Topanga Formation (Tt) Very dark gray to dark olive gray clayey SILTSTONE; medium strong; moist; very thin-bedded and fissile; abundant mica flakes; beds appear to dip ~50 degrees.					
20		13 26 28				100.5	21.5	96.4	
				Total Depth = 21' Groundwater @ 8' No Caving					
25									

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Boring Log B-12

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/11/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **853.5** ft Depth to Water ______ ft After ______ hrs on ______ Logged By **NA**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
			▨	**0 - 5.5' Quaternary Alluvium (Qal)** Dark brown CLAY with sand; very stiff; moist; minor gravel.					
	⧗	3 5 6	▨			85.7	21.7		
			▨	Grayish brown clayey SAND; medium dense; wet; subangular volcanic rock fragments					
5	⧗	7 5 8	▨			86.9 87.0	31.7 28.7		
			▤	**5.5 - 8' Bedrock - Topanga Formation (Tt)** Olive to yellowish brown interbedded clayey SILTSTONE and silty SANDSTONE; medium strong; moist; sandstone fine-grained; common gypsum and carbonate stringers.					
	⧗	4 9 16	▤			95.1	23.4		
				Total Depth = 8' No Groundwater No Caving					
10									
15									
20									
25									

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Boring Log B-13

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/11/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **852.0** ft Depth to Water **9.0** ft After ______ hrs on ______ Logged By **NA**

Description of Material

This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0 - 3" Concrete					
			▨	**3" - 12' Artificial Fill (af)** Very dark grayish brown clayey SAND; hard and moist; moist; minor gravels; mild petroleum odor.					
	▨ ⧗	3 5 7				94.6	19.2	35.9	E.I. = 38
5	⧗	4 4 4				90.2	22.0		
			▨	Dark gray to bluish gray clayey and silty SAND with gravel; dense and slightly moist; fine to coarse grains; isolated pockets of sandy clay; becomes wet and coarser grained @ 9'.					
	⧗	4 7 14				115.6	12.4		
				▼ Sand grades coarser grained.					
10	⧗	11 12 29				116.8	14.5		
	⧗	6 23 26	░	**12 - 15' Quaternary Alluvium - Stream Deposits (Qal)** Gray to dark-gray, fine to coarse grained, poorly graded SAND; locally gravelly; dense and saturated; subangular grains.		127.4	15.9		
15	⧖	10 11 16	☰	**15 - 18.5' Bedrock - Topanga Formation (Tt)** Reddish and olive brown to dark gray clayey SILTSTONE to silty CLAYSTONE; medium strong and moist; thin, well-defined bedded.		96.1	21.7		
	⧗	18 27 40				112.5	16.8		
				Total Depth = 18.5' Groundwater @ 9' Caving of Hole to 8'					
20									
25									

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Boring Log B-18

Sheet 1 of 1

Project Selleck Development Group Client No. 2738 Date Drilled 10/23/00

Comment CME-75 with Automatic Hammer

Drilling Company/Driller JET Drilling Equipment Hollow Stem Auger

Driving Weight (lbs) 140 Average Drop (in.) 30 Hole Diameter (in.) 6

Elevation 867.0 ft Depth to Water ft After hrs on Logged By NA

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
			▨	**0' - 4' Artificial Fill (af)** Dark yellowish brown sandy CLAY; very stiff; moist to very moist; common siltstone rock fragments; mottled.					
	⧗	6 9 14	▨			94.4	23.3		
5	⧗	5 8 10	▤	**4' - 11' Bedrock - Topanga Formation (Tt)** Dark yellow brown silty CLAYSTONE to clayey SILTSTONE; medium strong; very moist to wet; local FeOx and MnO staining; local carbonate stringers; thin-bedded.		82.1	26.9		
10	⧗	8 18 21	▤			87.4	32.7		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-19

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/23/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **870.5** ft Depth to Water ____ ft After ____ hrs on ____ Logged By **NA**

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
			▨	**0' - 3.5' Artificial Fill (af)** Dark yellowish brown sandy CLAY; very stiff; very moist; minor rock fragments.					
	⧗	5 8 12	▨			89.0	25.7		
			▤	**3.5' - 6' Bedrock - Topanga Formation (Tt)** Dark yellowish brown clayey SILTSTONE with silty CLAYSTONE; medium strong; very moist; local gypsum mineralization.					
5	⧗	8 9 15	▤			93.4	26.9		
				Total Depth = 6' No Groundwater No Caving					
10									
15									
20									
25									

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Boring Log B-22

Sheet 1 of 1

Project Selleck Development Group
Client No. 2738
Date Drilled 10/23/00
Comment CME-75 with Automatic Hammer
Drilling Company/Driller JET Drilling
Equipment Hollow Stem Auger
Driving Weight (lbs) 140
Average Drop (in.) 30
Hole Diameter (in.) 6
Elevation 875.0 ft
Depth to Water ____ ft After ____ hrs on ____
Logged By NA

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0' - 5" Asphalt					
				5" - 12" Base					
				12" - 17' Artificial Fill (af) Yellowish to olive brown clayey to silty SAND with gravel; dense; moist; fine- to coarse-grained; isolated pieces of asphalt; local pockets of sandy clay with gravel.					
	⧗	8 12 13				89.8	21.5		
5	⧗	10 11 11				114.8	11.1		
				Light olive brown CLAY with SAND; very stiff; very moist; isolated cobble-sized clasts.					
10	⧗	8 11 12				95.0 89.4 87.7	18.5 26.3 25.5	76.0	
				Yellowish brown clayey SAND to sandy CLAY; medium dense; very moist; fine- to coarse-grained; local gravel.					
15	⧗	5 6 10				86.1	29.5		
				17' - 21' Bedrock - Topanga Formation (Tt) Dark brown clayey SILTSTONE; medium strong; moist; thin bedded; fissile; minor carbonate mineralization along bedding.					
20	⧗	12 21 29				98.4 87.2 90.2	20.2 30.2 26.6	82.9	
				Total Depth = 21' No Groundwater No Caving					
25									

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Boring Log B-25

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/23/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **860.0** ft Depth to Water ____ ft After ____ hrs on ____ Logged By **NA**

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
	⧗	14 20 19	▨	**0' - 3' Artificial Fill (af)** Dark grayish brown sandy CLAY; stiff; slightly moist; common thin roots; minor gravels; isolated pieces of concrete. Light olive brown clayey SAND; medium dense; very moist; fine- to coarse-grained; subrounded clasts.		108.1	7.8		
5	⧗	50 50/6"	░	**3' - 8' Quaternary Terrace Deposits(Qts)** Olive brown clayey silty SAND; very dense; moist; subrounded grains; fine- to coarse-grained; local gravel and cobbles; well consolidated.		115.1	10.7		
10	⧗	10 19 22	☰	**8' - 11' Bedrock-Topanga Formation (Tt)** Dark yellowish brown CLAYSTONE; medium strong; moist; thin interbeds of fine-grained sandstone.		99.7	19.3		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-27

Sheet 1 of 1

Project: **Selleck Development Group** Client No. **2738** Date Drilled **10/23/00**

Comment: **CME-75 with Automatic Hammer**

Drilling Company/Driller: **JET Drilling** Equipment: **Hollow Stem Auger**

Driving Weight (lbs): **140** Average Drop (in.): **30** Hole Diameter (in.): **6**

Elevation **858.0** ft Depth to Water ______ ft After ______ hrs on ______ Logged By **NA**

Description of Material

This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0' - 1' Topsoil Dark grayish brown sandy CLAY; stiff; dry.					
		17 26 32		**1' - 9' Quaternary Terrace Deposits (Qt)** Brown silty clayey SAND with gravel; dense; slighlty moist to moist; fine- to coarse- grained; clasts primarily volcanic.			7.8		
5		22 24 14				105.3 94.3	7.7 14.9	29.4	
				9' - 11' Bedrock-Topanga Formation (Tt) Dark yellowish brown clayey SILTSTONE to silty CLAYSTONE; medium strong; moist; thin-bedded.					
10		10 22 26				96.5	23.0		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-28

Sheet 1 of 1

Project Selleck Development Group Client No. 2738 Date Drilled 10/23/00

Comment CME-75 with Automatic Hammer

Drilling Company/Driller JET Drilling Equipment Hollow Stem Auger

Driving Weight (lbs) 140 Average Drop (in.) 30 Hole Diameter (in.) 6

Elevation 858.0 ft Depth to Water ____ ft After ____ hrs on ____ Logged By NA

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
			▨	**0' - 10' Quaternary Alluvium (Qal)** Dark grayish brown sandy CLAY to clayey SAND; very stiff; moist; slightly porous; local carbonate nodules.					
	⧗	17 24 21	▨			103.8	10.2		
5	⧗	10 12 15	▨			112.8	11.5		
10	⧗	9 10 12	┄	**10' - 11' Bedrock - Topanga Formation (Tt)** Dark yellowish brown silty CLAYSTONE; weak to medium strong; moist; mottled colors; highly weathered.		99.1	17.6		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-29

Sheet 1 of 1

Project Selleck Development Group Client No. 2738 Date Drilled 10/24/00

Comment CME-75 with Automatic Hammer

Drilling Company/Driller JET Drilling Equipment Hollow Stem Auger

Driving Weight (lbs) 140 Average Drop (in.) 30 Hole Diameter (in.) 6

Elevation 866.0 ft Depth to Water ____ ft After ____ hrs on ____ Logged By NA

Description of Material

This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0' - 1.5' Artificial Fill Yellowish brown silty SAND; dense; dry; local gravel.					
		12 18 17		**1.5' - 3' Native Topsoil** Dark grayish brown sandy CLAY; very hard; slightly moist; local gravels; slightly porous.		117.6	8.8		
				3' - 14' Quaternary Terrace Deposits (Qt) Olive to yellowish brown sandy clayey GRAVEL; hard; slightly moist; porous; isolated thin roots; minor thin carbonate stringers; gravel to cobble-sized volcanic clasts.					
5		13 14 19				105.6	11.7		
10		20 40 40		Olive brown GRAVEL with silt and sand; very dense; slightly moist; well graded; sand fraction fine- to coarse-grained; subangular, scattered cobbles.		122.6 101.8	7.7 9.8	8.9	
				14' - 16' Bedrock-Topanga Formation(Tt) Yellow brown clayey SILTSTONE to silty CLAYSTONE; medium strong; moist; thin-bedded; local gypsum mineralization.					
15		8 14 20				97.3	22.6		
				Total Depth = 16' No Groundwater No Caving					
20									
25									

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Boring Log B-30

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/24/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **861.0** ft Depth to Water ____ ft After ____ hrs on ____ Logged By **NA**

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
	⧗	14 20 23	▨	**0' - 3.5' Native Topsoil** Dark grayish brown CLAY with sand; very stiff; moist; common carbonate stringers; isolated subrounded gravels.		109.8	16.5		
5	⧗	8 12 20	●	**3.5' - 8' Quaternary Terrace Deposits (Qt)** Olive brown sandy clayey GRAVEL; medium dense; moist to very moist; fine- to coarse-grained; subrounded to subangular volcanic clasts; minor carbonate mineralization; local cobbles.		103.3	16.5		
10	⧗	7 14 20	☰	**8' - 11' Bedrock-Topanga Formation(Tt)** Light olive brown clayey SILTSTONE to silty CLAYSTONE; medium strong; moist; thin-bedded.		93.9	26.3		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-31

Sheet 1 of 1

Project: **Selleck Development Group** Client No. **2738** Date Drilled **10/24/00**

Comment: **CME-75 with Automatic Hammer**

Drilling Company/Driller: **JET Drilling** Equipment: **Hollow Stem Auger**

Driving Weight (lbs): **140** Average Drop (in.): **30** Hole Diameter (in.): **6**

Elevation **856.0** ft Depth to Water ______ ft After ______ hrs on ______ Logged By **NA**

Description of Material

This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
			▨	**0' - 2.5' Artificial Fill** Light olive brown to yellowish brown mottled sandy CLAY with gravel; very stiff; moist.					
	⧗	7 10 14				98.6 99.0	16.4 16.5		
			▨	**2.5' - 3.5' Native Topsoil** Dark grayish brown CLAY with sand; very stiff; moist; sand fraction fine- to coarse-grained; isolated carbonate stringers.					
			●	**3' - 14' Quaternary Terrace Deposits (Qt)** Olive brown sandy clayey GRAVEL; medium dense; moist to wet; sand fraction fine- to coarse-grained; subangular to angular volcanic clasts.					
5	⧗	21 22 24					8.3		
10	⧗	25 21 29				89.2	26.4		
			☰	**11' - 13.5' Bedrock-Topanga Formation (Tt)** Very dark grayish brown clayey SILTSTONE; medium strong; very moist; thin-bedded; fissile.					
	⧗	16 32 33				99.5	21.1		
				Total Depth = 13.5' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-32

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/24/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **857.0** ft Depth to Water ____ ft After ____ hrs on ____ Logged By **NA**

Description of Material

This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
			▨	**0' - 5.5' Artificial Fill (af)** Yellowish brown clayey SAND; medium dense; moist; locally mottled; angular siltstone fragments;.					
	⧓	6 9 12	▨			78.4	17.2		
5	⧓	7 9 20	▨	**5.5' - 7.5' Native Topsoil** Very dark grayish brown sandy CLAY; very stiff; moist; fine- to coarse-grained; isolated carbonate.		99.7 95.2	12.2 16.5	65.3	
			▨	**7.5' - 11' Quaternary Alluvium (Qal)** Olive brown clayey SAND; medium dense; moist; fine- to coarse-grained; local gravel.					
10	⧓	6 7 9	▨			101.9	16.1		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-33

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/24/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **855.0** ft Depth to Water ______ ft After ______ hrs on ______ Logged By **NA**

Description of Material

This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0' - 11' Artificial Fill (af) Light olive silty clayey SAND; medium dense; moist; local pockets of sandy clay; fine- to coarse-grained; local subangular gravel and cobbles.					
	⧗	9 12 17				107.3	11.6		
5	⧗	7 10 9				94.2	11.6		
10	⧗	7 13 15				113.7	13.0		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-34

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/24/00**

Comment **CME-75 with Automatic Hammer**

Drilling Company/Driller **JET Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **861.0** ft Depth to Water ____ ft After ____ hrs on ____ Logged By **NA**

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0' - 11' Artificial Fill (af) Brown silty gravelly SAND with cobbles; medium dense; dry to damp; locally clayey sand to sandy clay matrix; isolated cobbles; subangular clasts.					
	⧗	6 6 10				101.9	5.6		
5	⧗	14 15 15				88.7	19.6		
			▨	Dark olive to gray brown clayey SAND and sandy CLAY with gravel; medium dense; moist; local pockets of gravelly silty SAND; fine to coarse grains.					
10	⧗	9 15 12				106.3	17.7		
				Total Depth = 11' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-35

Sheet 1 of 1

Project Selleck Development Group Client No. 2738 Date Drilled 10/24/00

Comment CME-75 with Automatic Hammer

Drilling Company/Driller JET Drilling Equipment Hollow Stem Auger

Driving Weight (lbs) 140 Average Drop (in.) 30 Hole Diameter (in.) 6

Elevation 856.0 ft Depth to Water ft After hrs on Logged By NA

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0' - 6' Artificial Fill (af) Light brown silty SAND with gravel cobbles; medium dense; dry; thin lifts of hard damp sandy CLAY; mottled colors and textures; becomes abundant subrounded cobbles in matrix of sandy clay.					
	⧗	20 20 24				97.2	8.9		
5	⧗	9 14 15				100.9	8.0		
				6' - 10.5' Quaternary Alluvium - Stream Deposits (Qal) Moderate yellow brown sandy GRAVEL; medium dense; damp; pebble to cobble-sized; subrounded clasts in medium to coarse SANDmatrix.					
10	⧗	50/5"		Large piece of cobble in sampler tip.		108.1 99.3	3.3 15.8	21.5	
				Total Depth = 10.4' No Groundwater No Caving					
15									
20									
25									

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Boring Log B-60

Sheet 1 of 1

Project: **Selleck Development Group** Client No. **2738** Date Drilled **12/14/00**

Comment:

Drilling Company/Driller **Discovery Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **6**

Elevation **853.0** ft Depth to Water ft After hrs on Logged By **CS**

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
			▨	**0" - 2' Artificial Fill (af)** Yellowish brown silty to clayey SAND; medium dense; moist; fine- to medium-grained.					
			▒	**2' - 10' Quaternary Alluvium (Qal)** Yellowish brown to dark brown, silty SAND; moist; fine-grained.					
5			▒	Difficult drilling due to gravel.					
10	⧗	6 12 16	☰	**10' - 21' Bedrock - Topanga Formation (Tt)** Reddish yellow SILTSTONE; medium strong; moist; grades to dark brown and gray with depth.		93.4	24.5		
15	⧗	19 50/6"	☰						
20			☰			109.1	15.1		
				Total Depth = 21' No Groundwater No Caving					
25									

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Boring/Test Pit Log TP-7

Sheet 1 of 1

Project Selleck Development Group Client No. 2738 Date Drilled 5/9/00

Comment Phase I - Agoura Road Improvements

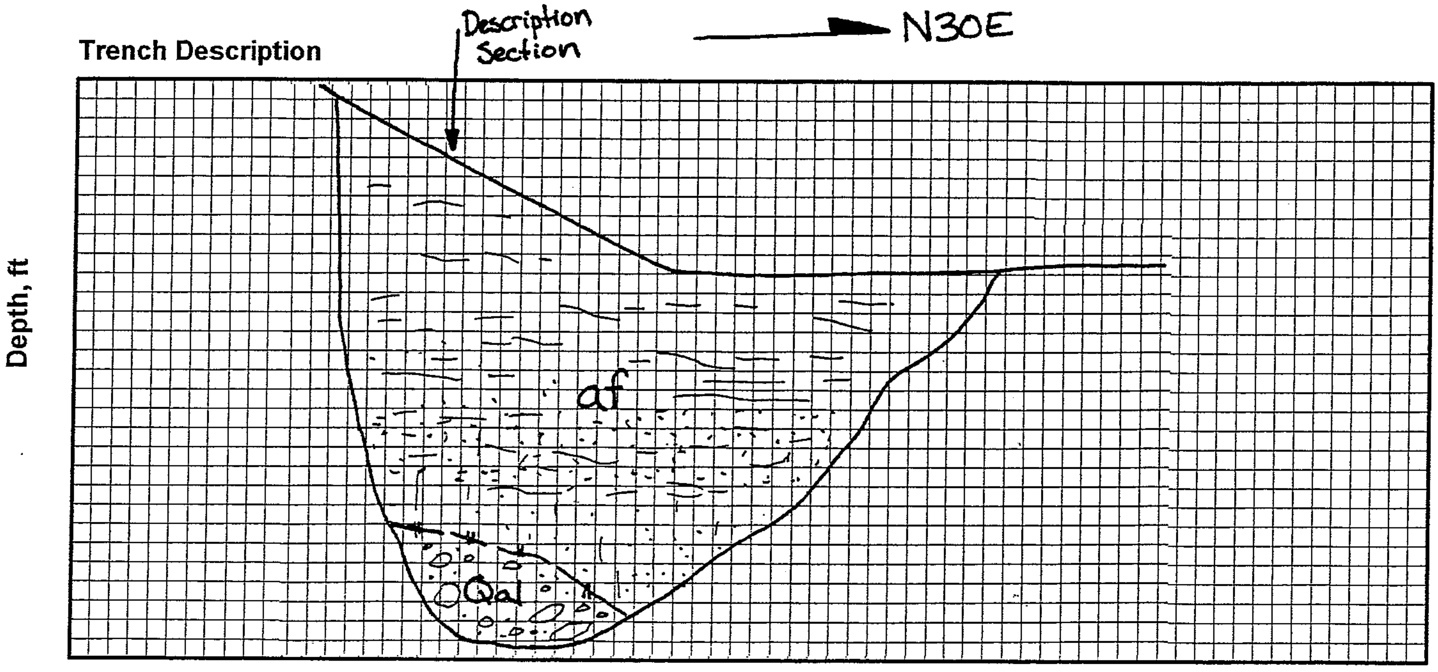
Drilling Company/Driller Platt Construction Equipment Backhoe

Driving Weight (lbs) Push Average Drop (in.) Backhoe Sampler Hole Diameter (in.) 24"

Elevation 863.0 ft Depth to Water ___ ft After ___ hrs on ___ Logged By CS/NA

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
5				**0 - 12.5' Artificial Fill (af)** Dark brown silty CLAY; mottling of moderate yellow from fragments of siltstone and sandstone; <10% rounded pebble to cobble-sized clasts of volcanic rock and angular fragments of siltstone and sandstone; very stiff; moist.		88.8 92.6	27.9 27.5		
				@ 6.5' Less mottling; dark gray brown; slightly moist..		98.0	24.3		
10				@ 8.5' 18" thick layer with strong concentration of siltstone fragments; dark gray brown silty clayey SAND; dense; slightly moist.		91.5	15.2		
				Grades to moderate brown sandy SILT with siltstone fragments; cobbles and boulders along basal contact; hard; slightly moist.		85.8	10.9		
15				**12.5 - 15' Quaternary Alluvium - Stream Deposits (Qal)** Moderate yellow brown sandy GRAVEL; pebble to cobble-sized, rounded clasts of volcanic rock in a matrix of medium to coarse-grained SAND; poorly cemented; damp.					
				Total Depth = 15' No Groundwater No Caving					

Trench Description



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Boring/Test Pit Log TP-8

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/11/00**

Comment **Depth to Top of Box= 9" - 12"; Depth to Bottom of Box= 16'**

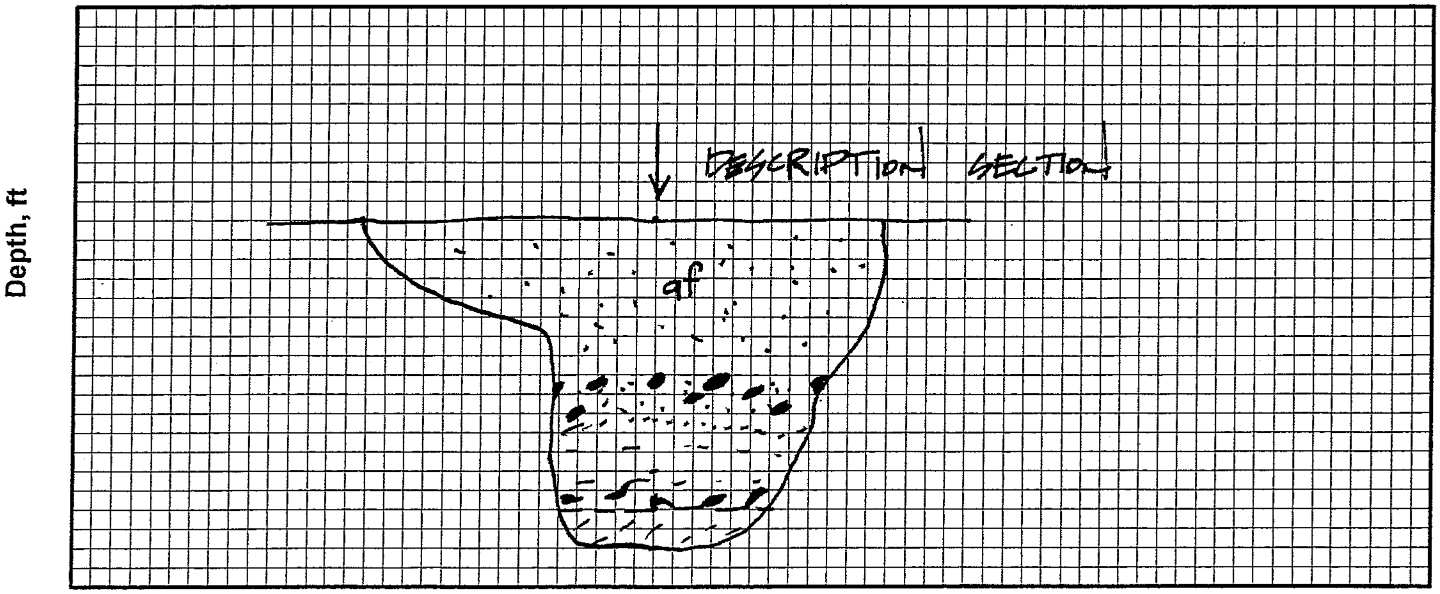
Drilling Company/Driller **Platt Construction** Equipment **Backhoe**

Driving Weight (lbs) **Push** Average Drop (in.) **Backhoe Sampler** Hole Diameter (in.) **24"**

Elevation **857.0** ft Depth to Water **16.0** ft After ______ hrs on ______ Logged By **CS**

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	#200, %	Other Tests
				0 - 15' Artificial Fill Dark yellowish brown silty clayey SAND; overall loose to medium dense; moist; fine- to coarse-grained; 5 - 10% rounded volcanic clasts; clasts range 1/2" to 10" with 1" - 2" most common.		94.6	11.8	35.5	
5						91.0	13.6		
						103.2	19.0		
				@ 8' Numerous large rocks.					
10				Mottled dark yellowish brown to olive, silty to sandy CLAY; stiff; moist; scattered gravel-sized volcanic clasts.		98.5	18.9		
15				Pieces of lumber along lower fill contact.					
				15 - 17' Quaternary Alluvium (Qal) Reddish brown silty SAND to sandy CLAY; dense; very moist to wet; sand fraction fine- to medium-grained; scattered gravel; dark greenish gray to black organic-rich layer between 15' - 16'; bottom of box rests on sand and gravel; free water flowing from beneath box @ 16'.					
20				Total Depth = 17' Groundwater @ 16' No Caving					

Trench Description



Boring/Test Pit Log TP-9

Sheet 1 of 1

Project **Selleck Development Group** Client No. **2738** Date Drilled **10/11/00**

Comment **Depth to Top of Box= 7.5'**

Drilling Company/Driller **Platt Construction** Equipment **Backhoe**

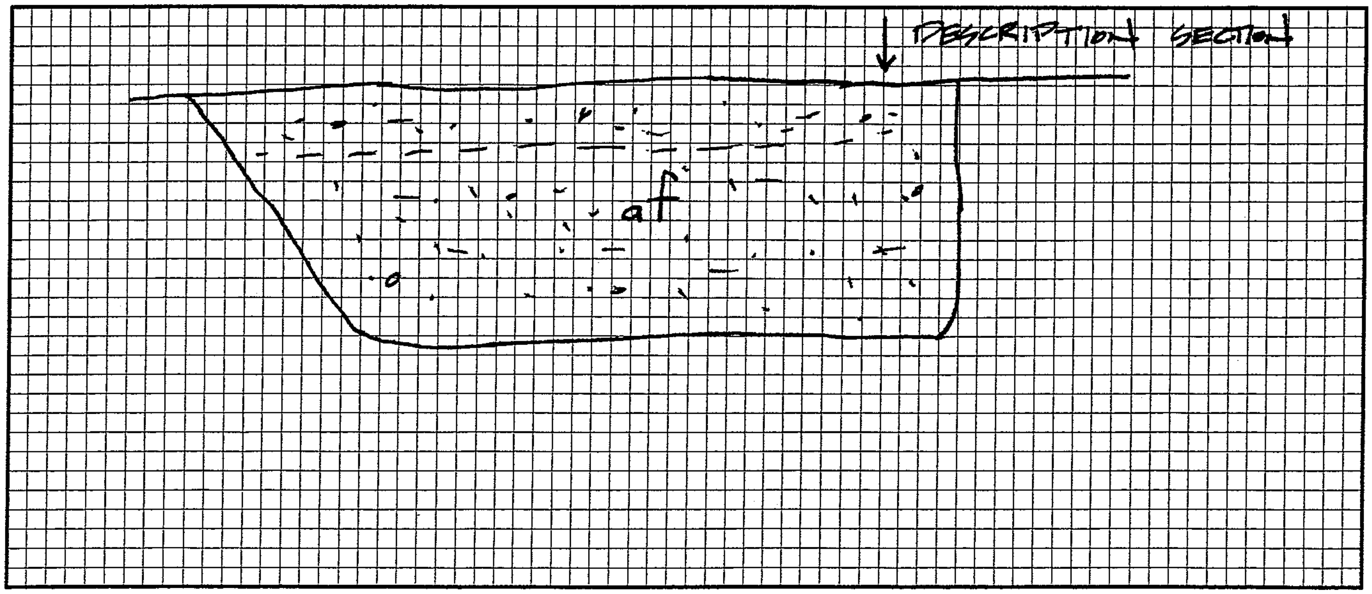
Driving Weight (lbs) **Push** Average Drop (in.) **Backhoe Sampler** Hole Diameter (in.) **24"**

Elevation **858.0** ft Depth to Water ____ ft After ____ hrs on ____ Logged By **CS**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
			▨	**0 - 7.5' Artificial Fill** Mottled yellowish brown and dark brown silty clayey SAND and sandy CLAY; medium dense to dense; moist; sand fraction fine-grained; scattered angular fragments of siltstone and rounded volcanic clasts ranging up to 3"; poorly defined 10" - 12" lifts; roots common in upper 12".					
	⧗					94.0	12.0		
5	⧗					116.4	9.5		
				Total Depth = 7.5' No Groundwater No Caving					
10									
15									

Trench Description

Depth, ft



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Boring/Test Pit Log TP-10

Sheet 1 of 1

Project Selleck Development Group Client No. 2738 Date Drilled 10/11/00

Comment

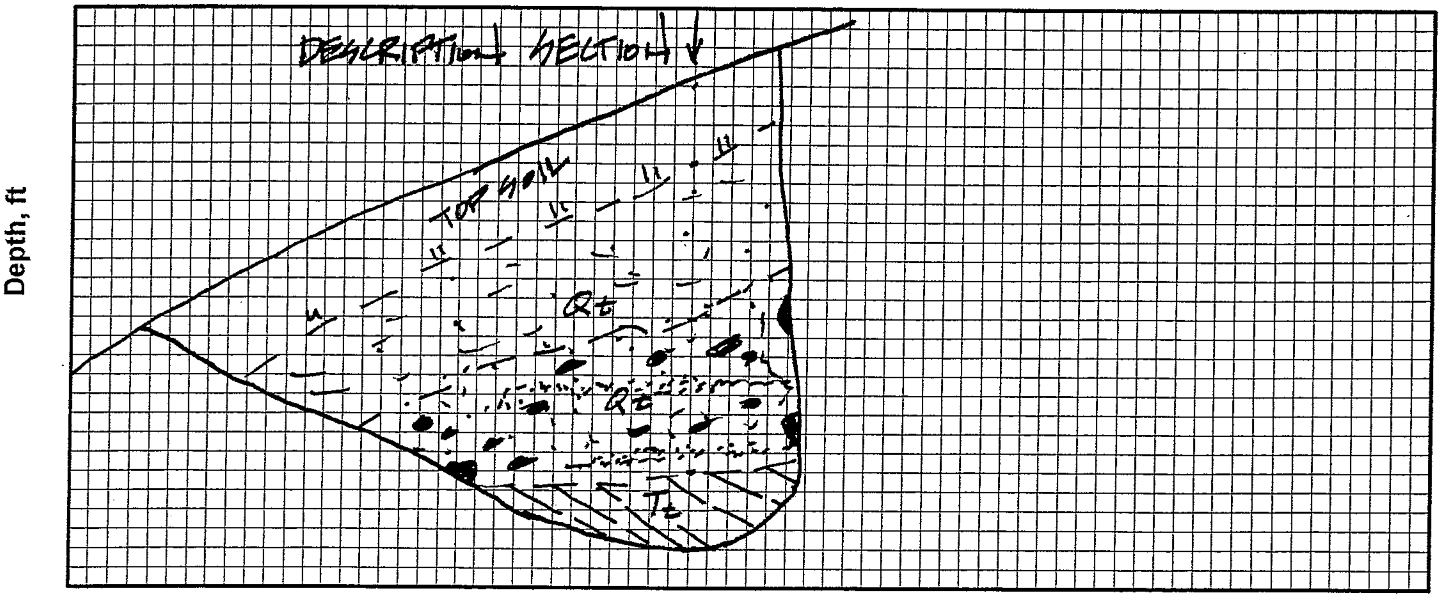
Drilling Company/Driller Platt Construction Equipment Backhoe

Driving Weight (lbs) N/A Average Drop (in.) N/A Hole Diameter (in.) 24"

Elevation 860.0 ft Depth to Water ft After hrs on Logged By CS

Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0 - 2' Topsoil Dark yellowish brown silty CLAY; stiff; moist; scattered rounded gravels of shale and volcanic rock.					
5				**2 - 10' Quaternary Terrace Deposits (Qt)** Yellowish brown CLAY; stiff to very stiff; moist; minor carbonate mineralization.					
10				Yellowish brown clayey SAND and GRAVEL; dense; moist; rounded gravel to boulder-sized clasts of volcanic rock in a matrix of clayey sand to sandy clay; clasts comprise 70% - 80%; unit is clast-supported to matrix-supported; sand fraction ranges medium- to very coarse-grained and locally is concentrated into thin beds and lenses; lower contact approximately planar and horizontal.	B - N75E/56NW				
				10 - 12' Bedrock - Topanga Formation (Tt) Yellowish brown to olive SILTSTONE; moderately hard and damp; thinly bedded; seepage from rock at bottom of trench.					
15				Total Depth = 12' Seepage @ 12' No Caving					

Trench Description



Boring/Test Pit Log TP-11

Sheet 1 of 1

Project Selleck Development Group Client No. 2738 Date Drilled 10/11/00

Comment

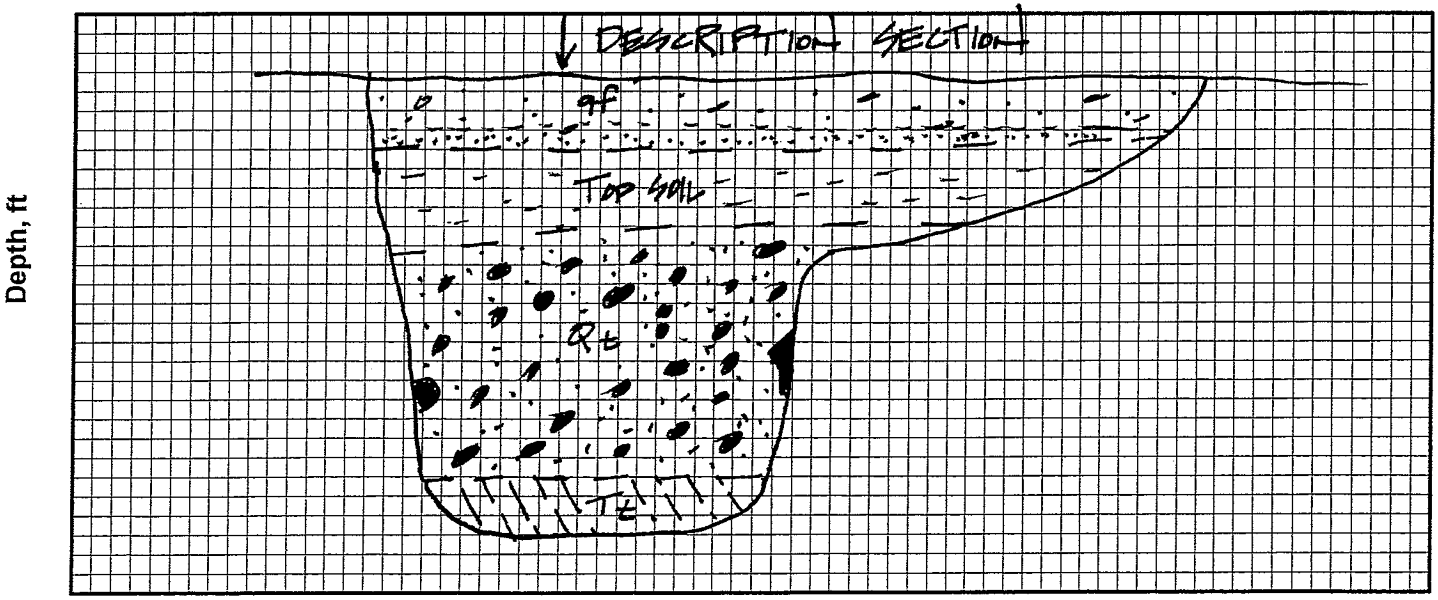
Drilling Company/Driller Platt Construction Equipment Backhoe

Driving Weight (lbs) N/A Average Drop (in.) N/A Hole Diameter (in.) 24"

Elevation 863.5 ft Depth to Water ft After hrs on Logged By CS

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				0 - 2' Artificial Fill Yellowish brown clayey SAND to sandy CLAY; loose to medium-dense; moist; sand fraction fine- to medium-grained with 10% angular clasts of siltstone.					
5				Pale gray SAND; loose; dry; fine- to coarse-grained; consistency of fine road base.					
				2 - 4' Topsoil Dark yellowish brown silty CLAY; very stiff and damp.					
10				**4 - 11.5' Quaternary Terrace Deposits (Qt)** Yellowish brown sandy GRAVEL with clay; dense; moist; rounded pebble to boulder-sized clasts of volcanic rock supported in a matrix of clayey SAND.					
				11.5 - 13' Bedrock - Topanga Formation (Tt) Dark yellowish brown to olive SILTSTONE; strong; moist; thin-bedded	B- N62W/53NE				
15				Total Depth = 13' No Groundwater No Caving					

Trench Description



Boring/Test Pit Log TP-12

Sheet 1 of 1

Project Selleck Development Group Client No. 2738 Date Drilled 10/11/00

Comment

Drilling Company/Driller Platt Construction Equipment Backhoe

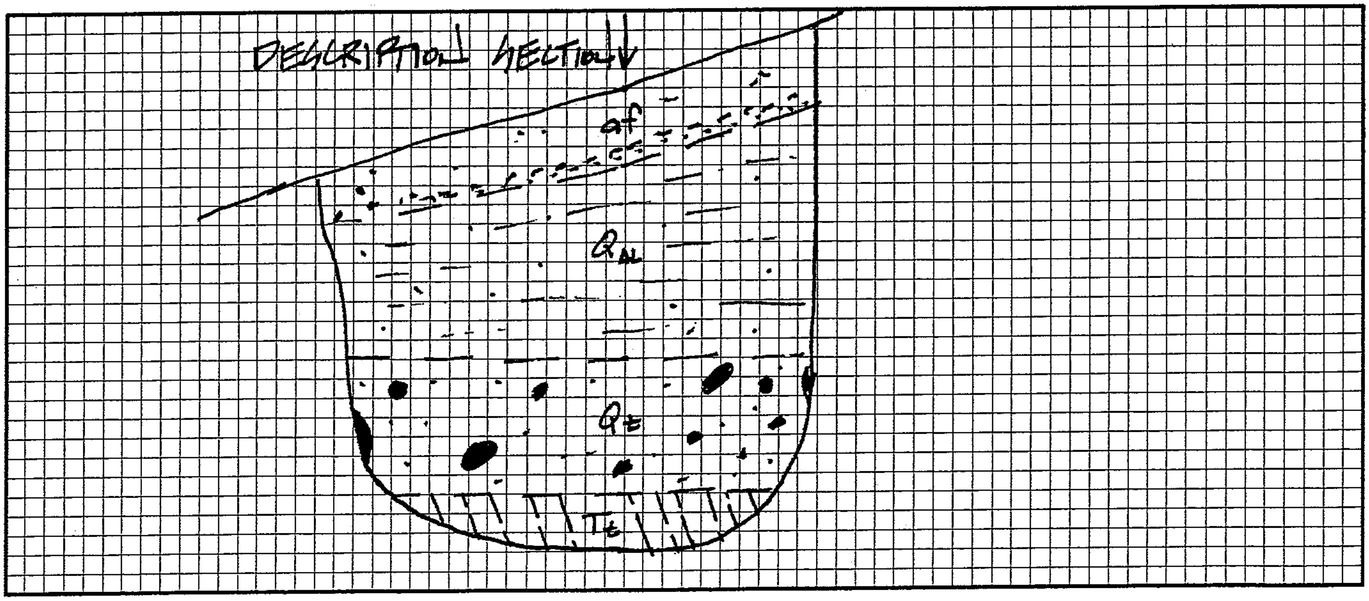
Driving Weight (lbs) N/A Average Drop (in.) N/A Hole Diameter (in.) 24"

Elevation 860.0 ft Depth to Water ft After hrs on Logged By CS

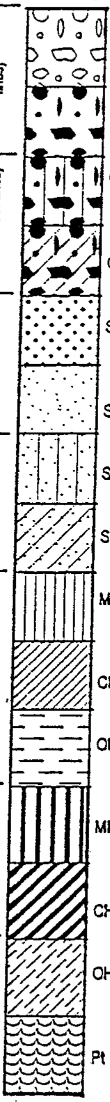
Depth, ft	Sample	Blows/6"	Graphic Symbol	**Description of Material** This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
5				**0 - 2' Artificial Fill** Yellow brown sandy GRAVEL; loose; dry to slightly moist; 1/2" to 2" angular fragments of volcanic rock in a matrix of medium-to coarse-grained sand. Pale gray sandy GRAVEL; loose; dry; rounded gravel-sized clasts of granitic rock in a matrix of fine-to coarse-grained sand.					
				2 - 7' Quaternary Alluvium (Qal) Dark brown to dark yellowish brown CLAY; stiff; moist; minor carbonate mineralization.					
10				**7 - 10.5' Quaternary Terrace Deposits (Qt)** Yellowish brown sandy GRAVEL with clay; dense; moist; rounded cobble- to boulder-sized clasts of volcanic rock supported in a matrix of medium- to coarse-grained clayey sand.	B- N80E/54NW				
				10.5 - 12' Bedrock - Topanga Formation (Tt) Dark yellowish brown to olive clayey SILTSTONE to silty CLAYSTONE; strong; moist.					
15				Total Depth = 12' No Groundwater No Caving					

Trench Description

Depth, ft



Key to Soil Symbols and Terms



Major Divisions			USCS Group Symbols	Typical Names
Coarse Grained Soils (More than half of material is larger than No. 200 sieve)	Gravels (More than half of coarse fraction is larger than No. 4 sieve)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravels with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand, clay mixtures
	Sands (More than half of coarse fraction is smaller than No. 4 sieve)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sand, little or no fines
			SP	Poorly graded sands, gravelly sands little or no fines
		Sands and fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils (More than half of material is smaller than No. 200 sieve)	Silts and Clays Liquid Limit < 50		ML	Silts and very fine sands, rock-flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low or medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid Limit > 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
	Highly Organic Soils		OH	Organic clays of medium to high plasticity, organic silts
			Pt	Peat and other highly organic soils

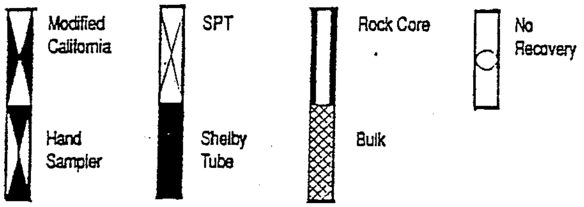
Legend of Laboratory Tests

G - Grain Size
A - Atterberg Limits
P - Compaction
S - Swell/Expansion

C - Consolidation
DS - Direct Shear
U - Unconfined
T - Triaxial

PP - Pocket Penetrometer
CH - Chemical

Sampler Type



Terms used in this report for describing soils according to their texture or grain size distributions are generally in accordance with the Unified Soil Classification System.

Terms Describing Density and Consistency

Coarse Grained soils (major portion retained on No. 200 sieve) include (1) clean gravels, (2) silty or clayey gravels, and (3) silty, clayey, or gravelly sands. Relative density is related to SPT blow count corrected for overburden pressure or drive energy.

Density		SPT *N* Value Blows/Ft	Relative Density %
Very Loose	vl	0 to 4	0 to 15
Loose	l	4 to 10	15 to 35
Medium Dense	md	10 to 30	35 to 65
Dense	d	30 to 50	65 to 85
Very Dense	vd	> 50	85 to 100

Fine Grained soils (major portions passing No. 200 sieve) inlcude (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shear strength as indicated by penetrometer readings, direct shear, or SPT blow count.

Consistency	Shear Strength, ksf	SPT *N* Value
Very Soft	< 0.25	0 to 2
Soft	0.25 to 0.50	2 to 4
Firm	0.50 to 1.00	4 to 8
Stiff	1.00 to 2.00	8 to 16
Very Stiff	2.00 to 4.00	16 to 32
Hard	> 4.00	> 32

Terms Characterizing Soil Structure

Slickensided	Having inclined planes of weakness that are slick and glossy in appearance.
Fissured	Containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	Composed of thin layers of varying color and texture.
Interbedded	Composed of alternate layers of different soil types.
Calcareous	Containing appreciable quantities of calcium carbonate.
Well Graded	Having wide range in grain sizes and substantial amounts of intermediate particle sizes.
Poorly Graded	Predominately one grain size, or having a range of grain sizes with some intermediate sizes missing.
Porous	Having visibly apparent void spaces through which water, air, or light may pass.

Soil Moisture

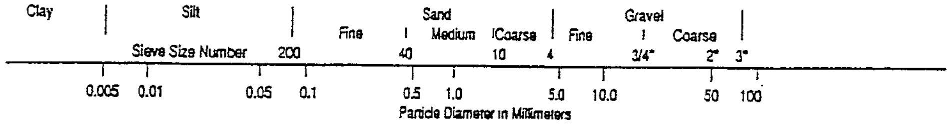
From low to high, the moisture content is indicated by:

Dry	D
Slightly Moist	Sl M
Moist (near optimum for compaction)	M
Very Moist	V M
Wet	W

Size Proportions

Designation	Percent by Weight
Trace	< 5
Few	5 to 10
Little	15 to 25
Some	30 to 45

Grain Size Distribution



Key to Bedrock Symbols and Terms

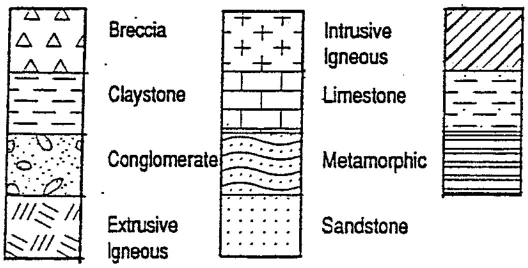
Degree of Weathering
Diagnostic Feature

Descriptive Term	Discoloration Extent	Fracture Condition	Surface Characteristics	Original Texture	Grain Boundary Condition
Unweathered	None	Closed or discolored	Unchanged	Preserved	Tight
Slightly Weathered	Less 20% of fracture spacing on both sides of fracture	Discolored, may contain thin filling	Partial discoloration	Preserved	Tight
Moderately Weathered	Greater than 20% of fracture spacing on both sides of fracture	Discolored, may contain thick filling, cemented rock	Partial to complete discoloration, not friable except poorly cemented rocks	Preserved	Partial Opening
Highly Weathered	Throughout		Friable and possibly pitted	Mainly Preserved	Partial Separation
Completely Weathered	Throughout		Resembles a soil	Partly Preserved	Complete Separation

Discontinuity Spacing

Description for Structural Feature: Bedding, Foliation, or Flow Banding	Spacing		Description for Joints, Faults, or Other Fractures
Very Thickly (Bedded, Foliated, or Banded)	More than 2 m	More than 6 ft	Very Widely (Fractured or Jointed)
Thickly	60 cm to 2 m	2 to 6 ft	Widely
Moderately	20 to 60 cm	8 to 24 in.	Medium
Thinly	60 to 200 mm	2.5 to 8 in.	Closely
Very Thinly'	20 to 60 mm	0.75 to 2.5 in.	Very Closely
Description for Microstructural Features: Bedding, Foliation, or Cleavage			
Intensely (Laminated, Foliated, or Cleaved)	6 to 20 mm	0.25 to 0.75 in.	Extremely Close
Very Intensely	< 6 mm	< 0.25 in.	

Graphic Symbols - Bedrock



Rock Hardness

Classification	Field Test
Very Weak	Can be dug by hand and crushed with fingers.
Weak	Friable, can be gouged deeply with a knife and will crumble readily under light hammer blows.
Moderately Strong	Can be peeled with a knife. Material crumbles under firm blows with the sharp end of a geologic pick.
Strong	Cannot be scaped or peeled with a knife point. Hand held specimen breaks with firm blows of the pick.
Very Strong	Difficult to scratch with knife point. Cannot break hand held specimen.

Separation of Fracture Walls

Description	Separation of Walls, mm
Closed	0
Very Narrow	0 to 0.1
Narrow	0.1 to 1.0
Wide	1.0 to 5.0
Very Wide	> 5.0

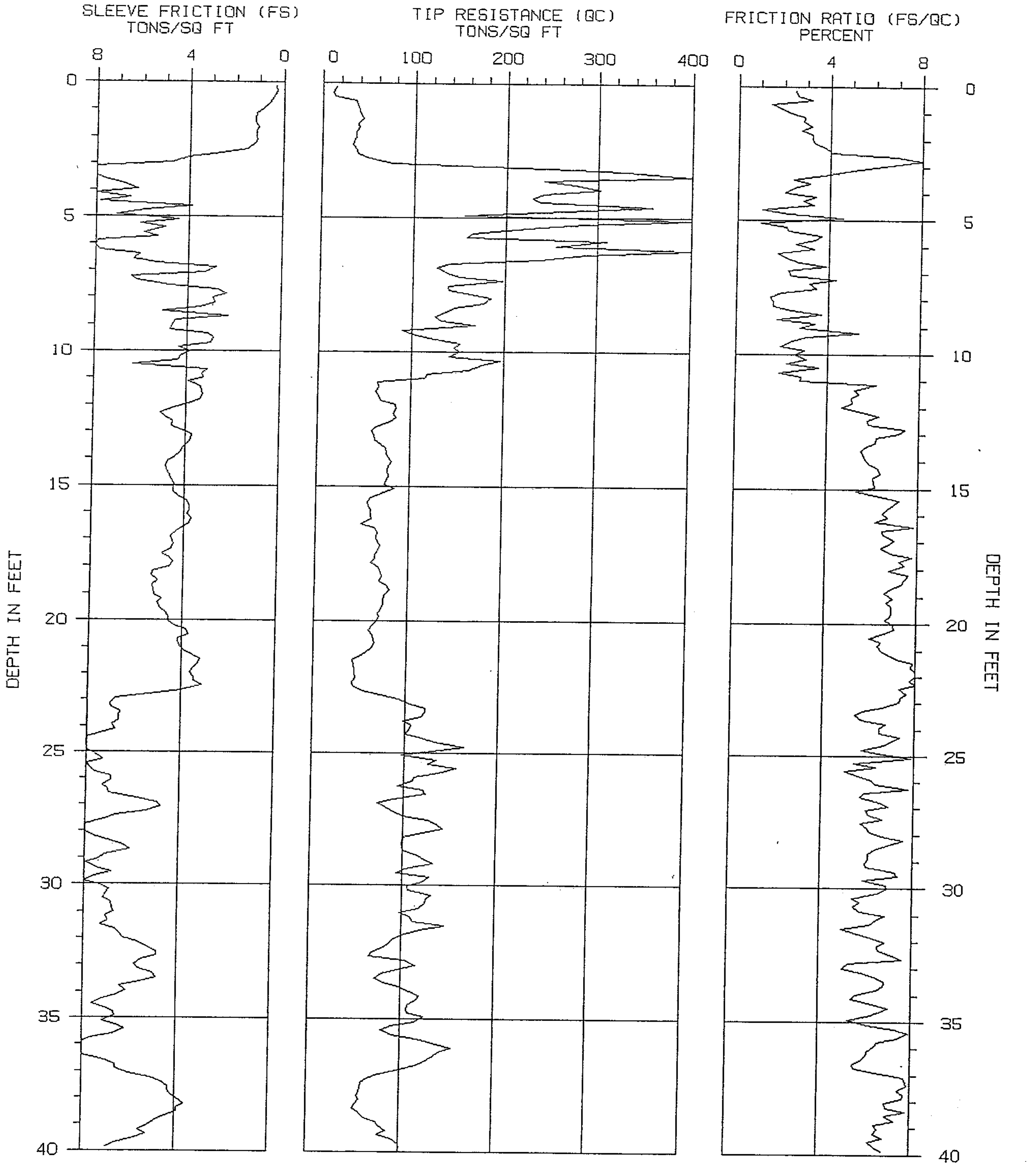
Fracture Filling

Description	Definition
Clean	No fracture filling material
Stained	Discoloration of rock only. No recognizable filling material.
Filled	Fracture filled with recognizable filling material.

Surface Roughness

Description	Classification
Smooth	Appears smooth and is essentially smooth to the touch. May be slickensided.
Slightly Rough	Asperities on the fracture surfaces are visible and can be distinctly felt.
Medium Rough	Asperites are clearly visible and fracture surface feels abrasive to the touch.
Rough	Large angular asperites can be seen. Some ridge and high-side angle steps evident.
Very Rough	Near vertical steps and ridges occur on the fracture surface.

Where slickensides are observed, the direction of the slickensides should be recorded after the standard discontinuity surface description.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-01 (1 OF 2)

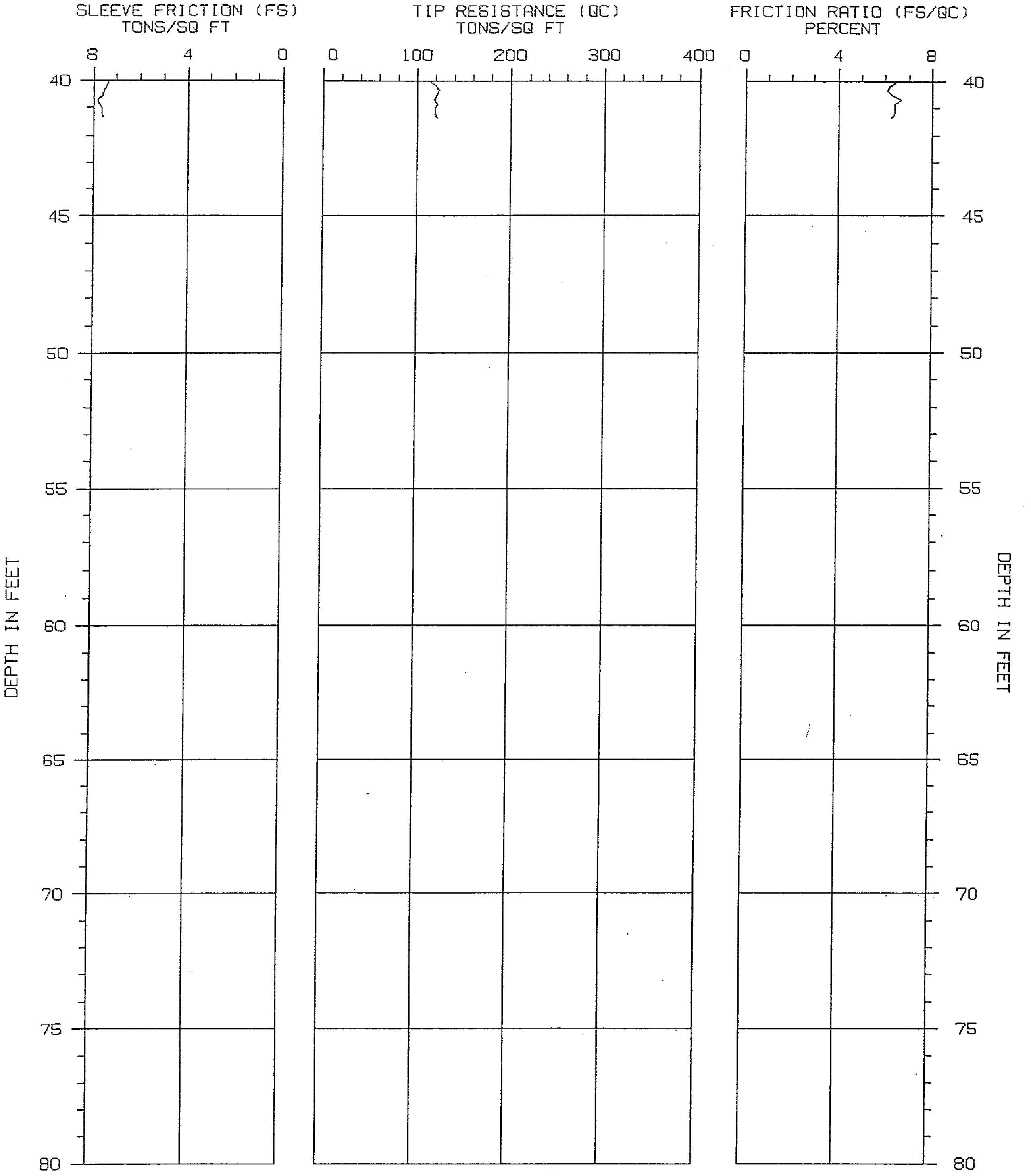
PROJECT NAME : AGS-HOME DEPOT

PROJECT NUMBER : 2738

CONE/RIG : 491\#1 JH

DATE/TIME: 11-03-00 10:01

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-01 (2 OF 2)

PROJECT NAME : AGS-HOME DEPOT

CONE/RIG : 491\#1 JH

PROJECT NUMBER : 2738

DATE/TIME: 11-03-00 10:01

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-01
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 10:01

PROJECT No.: 2738
CONE/RIG : 491\#1 JH

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	15.13	2.45	CLAYEY SILT to SILTY CLAY	8	12		1.2	
.100	.33	11.79	2.54	CLAYEY SILT to SILTY CLAY	6	9		.9	
.150	.49	13.32	3.15	CLAY to SILTY CLAY	9	14		.9	
.200	.66	36.20	1.44	SILTY SAND to SANDY SILT	12	19	47		
.250	.82	37.05	1.81	SANDY SILT to CLAYEY SILT	15	24		3.0	
.300	.98	39.24	2.29	SANDY SILT to CLAYEY SILT	16	25		2.6	
.350	1.15	40.83	2.87	SANDY SILT to CLAYEY SILT	16	26		2.7	
.400	1.31	43.23	2.80	SANDY SILT to CLAYEY SILT	17	28		2.9	
.450	1.48	38.05	3.15	CLAYEY SILT to SILTY CLAY	19	30		2.5	
.500	1.64	39.15	2.71	SANDY SILT to CLAYEY SILT	16	25		2.6	
.550	1.80	36.29	3.20	CLAYEY SILT to SILTY CLAY	18	29		2.4	
.600	1.97	35.59	3.20	CLAYEY SILT to SILTY CLAY	18	28		2.4	
.650	2.13	33.48	3.35	CLAYEY SILT to SILTY CLAY	17	27		2.2	
.700	2.30	32.14	3.80	CLAYEY SILT to SILTY CLAY	16	26		2.1	
.750	2.46	37.20	4.06	CLAY to SILTY CLAY	25	40		2.2	
.800	2.62	38.39	6.88	CLAY	38	61		2.2	
.850	2.79	49.78	8.12	CLAY	50	80		2.9	
.900	2.95	75.65	6.29	*VERY STIFF FINE GRAINED	76	100			
.950	3.12	213.60	4.97	*VERY STIFF FINE GRAINED	100	100			
1.000	3.28	329.80	4.00	*SAND to CLAYEY SAND	100	100			
1.050	3.44	439.85	2.41	*SAND to CLAYEY SAND	100	100			
1.100	3.61	240.53	3.11	SILTY SAND to SANDY SILT	80	100	100		
1.150	3.77	273.99	2.47	SILTY SAND to SANDY SILT	91	100	100		
1.200	3.94	301.55	2.06	SAND to SILTY SAND	75	100	100		
1.250	4.10	240.75	3.38	*SAND to CLAYEY SAND	100	100			
1.300	4.27	228.57	2.86	SILTY SAND to SANDY SILT	76	100	100		
1.350	4.43	236.54	3.29	*SAND to CLAYEY SAND	100	100			
1.400	4.59	358.65	1.07	SAND	72	100	100		
1.450	4.76	263.95	2.24	SILTY SAND to SANDY SILT	88	100	100		
1.500	4.92	154.13	4.59	*VERY STIFF FINE GRAINED	100	100			
1.550	5.09	430.42	1.03	SAND	86	100	100		
1.600	5.25	285.40	2.13	SAND to SILTY SAND	71	100	100		
1.650	5.41	224.30	2.23	SILTY SAND to SANDY SILT	75	100	99		49.0
1.700	5.58	163.52	3.64	*SAND to CLAYEY SAND	82	100			
1.750	5.74	156.40	3.40	SANDY SILT to CLAYEY SILT	63	100		9.2	
1.800	5.91	310.15	2.55	SILTY SAND to SANDY SILT	100	100	100		
1.850	6.07	253.98	3.33	*SAND to CLAYEY SAND	100	100			
1.900	6.23	437.92	1.78	SAND to SILTY SAND	100	100	100		
1.950	6.40	287.99	2.11	SAND to SILTY SAND	72	100	100		49.0
2.000	6.56	238.11	2.66	SILTY SAND to SANDY SILT	79	100	100		48.0
2.050	6.73	139.17	3.86	*SAND to CLAYEY SAND	70	100			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 45.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
2.100	6.89	125.96	2.22	SILTY SAND to SANDY SILT	42	67	83		45.5
2.150	7.05	136.54	2.37	SILTY SAND to SANDY SILT	46	71	85		46.0
2.200	7.22	149.73	4.30	*VERY STIFF FINE GRAINED	100	100			
2.250	7.38	196.54	3.15	SANDY SILT to CLAYEY SILT	79	100		11.5	
2.300	7.55	137.37	3.47	SANDY SILT to CLAYEY SILT	55	83		8.1	
2.350	7.71	139.30	1.97	SILTY SAND to SANDY SILT	46	70	86		45.5
2.400	7.87	162.18	1.46	SAND to SILTY SAND	41	60	90		46.0
2.450	8.04	184.72	1.59	SAND to SILTY SAND	46	68	94		46.5
2.500	8.20	176.86	1.59	SAND to SILTY SAND	44	64	93		46.0
2.550	8.37	144.36	2.40	SILTY SAND to SANDY SILT	48	69	87		45.5
2.600	8.53	136.69	3.72	SANDY SILT to CLAYEY SILT	55	78		8.0	
2.650	8.69	124.47	1.81	SILTY SAND to SANDY SILT	41	59	83		44.5
2.700	8.86	131.51	3.44	SANDY SILT to CLAYEY SILT	53	74		7.7	
2.750	9.02	167.60	2.78	SILTY SAND to SANDY SILT	56	78	91		46.0
2.800	9.19	88.85	5.35	*VERY STIFF FINE GRAINED	89	100			
2.850	9.35	101.04	3.06	SANDY SILT to CLAYEY SILT	40	55		5.9	
2.900	9.51	117.55	2.45	SILTY SAND to SANDY SILT	39	53	80		44.0
2.950	9.68	151.31	1.97	SILTY SAND to SANDY SILT	50	68	87		45.0
3.000	9.84	145.78	2.97	SANDY SILT to CLAYEY SILT	58	78		8.5	
3.050	10.01	151.60	2.55	SILTY SAND to SANDY SILT	51	67	87		45.0
3.100	10.17	139.83	3.05	SANDY SILT to CLAYEY SILT	56	73		8.2	
3.150	10.33	195.28	2.25	SILTY SAND to SANDY SILT	65	84	94		46.0
3.200	10.50	175.65	3.59	*SAND to CLAYEY SAND	88	100			
3.250	10.66	161.29	1.93	SILTY SAND to SANDY SILT	54	69	88		45.0
3.300	10.83	116.38	2.87	SANDY SILT to CLAYEY SILT	47	59		6.8	
3.350	10.99	114.72	2.81	SANDY SILT to CLAYEY SILT	46	58		6.7	
3.400	11.15	63.84	6.12	CLAY	64	80		3.7	
3.450	11.32	64.41	5.22	*VERY STIFF FINE GRAINED	64	80			
3.500	11.48	61.61	5.39	CLAY	62	76		3.6	
3.550	11.65	64.22	5.08	*VERY STIFF FINE GRAINED	64	78			
3.600	11.81	66.62	5.12	*VERY STIFF FINE GRAINED	67	81			
3.650	11.98	83.66	4.69	*VERY STIFF FINE GRAINED	84	100			
3.700	12.14	84.49	5.34	*VERY STIFF FINE GRAINED	84	100			
3.750	12.30	81.13	6.26	*VERY STIFF FINE GRAINED	81	96			
3.800	12.47	84.26	5.77	*VERY STIFF FINE GRAINED	84	100			
3.850	12.63	78.24	5.83	*VERY STIFF FINE GRAINED	78	92			
3.900	12.80	62.01	7.40	CLAY	62	72		3.6	
3.950	12.96	58.47	7.13	CLAY	58	68		3.4	
4.000	13.12	60.55	6.16	CLAY	61	70		3.5	
4.050	13.29	61.86	6.11	CLAY	62	71		3.6	
4.100	13.45	68.22	5.70	*VERY STIFF FINE GRAINED	68	78			
4.150	13.62	73.89	5.52	*VERY STIFF FINE GRAINED	74	84			
4.200	13.78	74.65	5.63	*VERY STIFF FINE GRAINED	75	84			
4.250	13.94	77.31	5.72	*VERY STIFF FINE GRAINED	77	86			
4.300	14.11	79.88	5.91	*VERY STIFF FINE GRAINED	80	89			
4.350	14.27	77.35	6.24	*VERY STIFF FINE GRAINED	77	85			
4.400	14.44	75.46	6.36	*VERY STIFF FINE GRAINED	75	83			
4.450	14.60	76.86	6.04	*VERY STIFF FINE GRAINED	77	84			
4.500	14.76	75.57	6.10	*VERY STIFF FINE GRAINED	76	82			
4.550	14.93	72.38	6.12	*VERY STIFF FINE GRAINED	72	78			

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*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 45.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

SOUNDING : CPT-01

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
4.600	15.09	83.60	5.35	*VERY STIFF FINE GRAINED	84	90			
4.650	15.26	72.57	6.16	*VERY STIFF FINE GRAINED	73	77			
4.700	15.42	58.21	7.22	CLAY	58	62		3.4	
4.750	15.58	55.17	7.00	CLAY	55	58		3.2	
4.800	15.75	56.26	6.70	CLAY	56	59		3.3	
4.850	15.91	57.96	6.49	CLAY	58	61		3.4	
4.900	16.08	57.51	6.69	CLAY	58	60		3.3	
4.950	16.24	59.55	6.20	CLAY	60	62		3.4	
5.000	16.40	48.23	7.80	CLAY	48	50		2.8	
5.050	16.57	62.42	6.47	CLAY	62	64		3.6	
5.100	16.73	65.80	6.52	*VERY STIFF FINE GRAINED	66	67			
5.150	16.90	64.84	7.03	*VERY STIFF FINE GRAINED	65	66			
5.200	17.06	66.16	6.79	*VERY STIFF FINE GRAINED	66	67			
5.250	17.22	68.83	6.42	*VERY STIFF FINE GRAINED	69	69			
5.300	17.39	66.81	6.83	*VERY STIFF FINE GRAINED	67	67			
5.350	17.55	63.71	7.75	CLAY	64	63		3.7	
5.400	17.72	63.65	7.26	CLAY	64	63		3.7	
5.450	17.88	59.55	7.46	CLAY	60	59		3.4	
5.500	18.04	68.11	6.78	*VERY STIFF FINE GRAINED	68	67			
5.550	18.21	69.85	7.63	*VERY STIFF FINE GRAINED	70	68			
5.600	18.37	71.51	7.50	*VERY STIFF FINE GRAINED	72	70			
5.650	18.54	69.41	7.33	*VERY STIFF FINE GRAINED	69	67			
5.700	18.70	77.31	6.88	*VERY STIFF FINE GRAINED	77	75			
5.750	18.86	79.67	6.64	*VERY STIFF FINE GRAINED	80	76			
5.800	19.03	75.14	6.96	*VERY STIFF FINE GRAINED	75	72			
5.850	19.19	73.85	6.69	*VERY STIFF FINE GRAINED	74	70			
5.900	19.36	73.66	6.92	*VERY STIFF FINE GRAINED	74	70			
5.950	19.52	71.74	6.93	*VERY STIFF FINE GRAINED	72	68			
6.000	19.69	68.39	6.90	*VERY STIFF FINE GRAINED	68	64			
6.050	19.85	69.36	6.66	*VERY STIFF FINE GRAINED	69	65			
6.100	20.01	65.92	7.01	*VERY STIFF FINE GRAINED	66	61			
6.150	20.18	61.27	7.07	CLAY	61	57		3.5	
6.200	20.34	57.53	6.64	CLAY	58	53		3.3	
6.250	20.51	62.29	5.99	CLAY	62	57		3.6	
6.300	20.67	63.88	6.50	CLAY	64	59		3.7	
6.350	20.83	65.18	6.37	*VERY STIFF FINE GRAINED	65	60			
6.400	21.00	61.78	6.52	CLAY	62	56		3.6	
6.450	21.16	56.26	6.83	CLAY	56	51		3.2	
6.500	21.33	48.82	7.19	CLAY	49	44		2.8	
6.550	21.49	40.94	7.84	CLAY	41	37		2.3	
6.600	21.65	42.38	7.81	CLAY	42	38		2.4	
6.650	21.82	43.70	8.03	CLAY	44	39		2.5	
6.700	21.98	43.38	8.41	CLAY	43	39		2.5	
6.750	22.15	44.34	7.78	CLAY	44	39		2.5	
6.800	22.31	40.96	8.45	CLAY	41	36		2.3	
6.850	22.47	42.55	7.33	CLAY	43	37		2.4	
6.900	22.64	52.24	7.66	CLAY	52	46		3.0	
6.950	22.80	72.61	7.40	*VERY STIFF FINE GRAINED	73	63			
7.000	22.97	92.73	7.32	*VERY STIFF FINE GRAINED	93	81			
7.050	23.13	106.01	6.62	*VERY STIFF FINE GRAINED	100	92			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 45.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

SOUNDING : CPT-01

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
7.100	23.29	121.24	5.74	*VERY STIFF FINE GRAINED	100	100			
7.150	23.46	121.35	5.44	*VERY STIFF FINE GRAINED	100	100			
7.200	23.62	116.74	5.71	*VERY STIFF FINE GRAINED	100	100			
7.250	23.79	98.21	6.75	*VERY STIFF FINE GRAINED	98	84			
7.300	23.95	106.52	6.49	*VERY STIFF FINE GRAINED	100	91			
7.350	24.11	104.67	6.48	*VERY STIFF FINE GRAINED	100	89			
7.400	24.28	100.45	7.39	*VERY STIFF FINE GRAINED	100	85			
7.450	24.44	117.84	7.05	*VERY STIFF FINE GRAINED	100	99			
7.500	24.61	131.93	6.72	*VERY STIFF FINE GRAINED	100	100			
7.550	24.77	163.08	5.74	*VERY STIFF FINE GRAINED	100	100			
7.600	24.93	129.95	6.68	*VERY STIFF FINE GRAINED	100	100			
7.650	25.10	97.11	7.87	*VERY STIFF FINE GRAINED	97	81			
7.700	25.26	134.35	5.42	*VERY STIFF FINE GRAINED	100	100			
7.750	25.43	125.20	6.34	*VERY STIFF FINE GRAINED	100	100			
7.800	25.59	155.92	5.04	*VERY STIFF FINE GRAINED	100	100			
7.850	25.75	136.35	5.59	*VERY STIFF FINE GRAINED	100	100			
7.900	25.92	111.60	6.19	*VERY STIFF FINE GRAINED	100	91			
7.950	26.08	109.28	6.33	*VERY STIFF FINE GRAINED	100	89			
8.000	26.25	94.05	7.75	*VERY STIFF FINE GRAINED	94	77			
8.050	26.41	120.14	5.86	*VERY STIFF FINE GRAINED	100	97			
8.100	26.57	123.73	5.67	*VERY STIFF FINE GRAINED	100	100			
8.150	26.74	89.10	6.52	*VERY STIFF FINE GRAINED	89	72			
8.200	26.90	71.81	6.92	*VERY STIFF FINE GRAINED	72	58			
8.250	27.07	80.03	5.96	*VERY STIFF FINE GRAINED	80	64			
8.300	27.23	89.06	6.07	*VERY STIFF FINE GRAINED	89	71			
8.350	27.40	100.00	6.68	*VERY STIFF FINE GRAINED	100	80			
8.400	27.56	125.34	5.74	*VERY STIFF FINE GRAINED	100	100			
8.450	27.72	136.58	6.06	*VERY STIFF FINE GRAINED	100	100			
8.500	27.89	142.34	6.13	*VERY STIFF FINE GRAINED	100	100			
8.550	28.05	120.97	6.67	*VERY STIFF FINE GRAINED	100	95			
8.600	28.22	100.08	7.60	*VERY STIFF FINE GRAINED	100	79			
8.650	28.38	99.30	6.91	*VERY STIFF FINE GRAINED	99	78			
8.700	28.54	99.34	6.36	*VERY STIFF FINE GRAINED	99	78			
8.750	28.71	99.77	6.08	*VERY STIFF FINE GRAINED	100	78			
8.800	28.87	117.06	6.11	*VERY STIFF FINE GRAINED	100	91			
8.850	29.04	123.50	5.98	*VERY STIFF FINE GRAINED	100	96			
8.900	29.20	132.31	5.99	*VERY STIFF FINE GRAINED	100	100			
8.950	29.36	103.59	7.22	*VERY STIFF FINE GRAINED	100	80			
9.000	29.53	93.03	7.35	*VERY STIFF FINE GRAINED	93	71			
9.050	29.69	129.30	5.87	*VERY STIFF FINE GRAINED	100	99			
9.100	29.86	121.41	6.89	*VERY STIFF FINE GRAINED	100	93			
9.150	30.02	106.10	6.91	*VERY STIFF FINE GRAINED	100	81			
9.200	30.18	106.37	6.50	*VERY STIFF FINE GRAINED	100	81			
9.250	30.35	130.95	5.43	*VERY STIFF FINE GRAINED	100	99			
9.300	30.51	125.45	5.72	*VERY STIFF FINE GRAINED	100	95			
9.350	30.68	124.92	5.48	*VERY STIFF FINE GRAINED	100	94			
9.400	30.84	118.40	5.72	*VERY STIFF FINE GRAINED	100	89			
9.450	31.00	98.09	6.83	*VERY STIFF FINE GRAINED	98	73			
9.500	31.17	108.65	6.50	*VERY STIFF FINE GRAINED	100	81			
9.550	31.33	112.13	6.19	*VERY STIFF FINE GRAINED	100	84			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 45.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

SOUNDING : CPT-01

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
9.600	31.50	146.02	4.97	*VERY STIFF FINE GRAINED	100	100			
9.650	31.66	119.99	5.56	*VERY STIFF FINE GRAINED	100	89			
9.700	31.82	104.50	6.18	*VERY STIFF FINE GRAINED	100	77			
9.750	31.99	91.86	6.84	*VERY STIFF FINE GRAINED	92	68			
9.800	32.15	86.91	6.55	*VERY STIFF FINE GRAINED	87	64			
9.850	32.32	81.39	6.57	*VERY STIFF FINE GRAINED	81	60			
9.900	32.48	67.79	7.18	*VERY STIFF FINE GRAINED	68	50			
9.950	32.64	64.44	7.59	*VERY STIFF FINE GRAINED	64	47			
10.000	32.81	103.93	5.28	*VERY STIFF FINE GRAINED	100	76			
10.050	32.97	115.55	5.03	*VERY STIFF FINE GRAINED	100	84			
10.100	33.14	95.64	5.87	*VERY STIFF FINE GRAINED	96	69			
10.150	33.30	78.95	6.38	*VERY STIFF FINE GRAINED	79	57			
10.200	33.46	71.09	6.85	*VERY STIFF FINE GRAINED	71	51			
10.250	33.63	81.24	6.79	*VERY STIFF FINE GRAINED	81	58			
10.300	33.79	98.34	6.53	*VERY STIFF FINE GRAINED	98	71			
10.350	33.96	109.90	5.61	*VERY STIFF FINE GRAINED	100	79			
10.400	34.12	119.76	5.44	*VERY STIFF FINE GRAINED	100	86			
10.450	34.28	116.29	6.15	*VERY STIFF FINE GRAINED	100	83			
10.500	34.45	108.24	7.00	*VERY STIFF FINE GRAINED	100	77			
10.550	34.61	106.56	6.63	*VERY STIFF FINE GRAINED	100	76			
10.600	34.78	108.35	6.13	*VERY STIFF FINE GRAINED	100	77			
10.650	34.94	124.56	5.29	*VERY STIFF FINE GRAINED	100	88			
10.700	35.10	115.98	6.15	*VERY STIFF FINE GRAINED	100	82			
10.750	35.27	89.82	7.31	*VERY STIFF FINE GRAINED	90	63			
10.800	35.43	78.67	7.91	*VERY STIFF FINE GRAINED	79	55			
10.850	35.60	90.01	7.44	*VERY STIFF FINE GRAINED	90	63			
10.900	35.76	116.32	6.57	*VERY STIFF FINE GRAINED	100	81			
10.950	35.93	134.46	6.44	*VERY STIFF FINE GRAINED	100	94			
11.000	36.09	154.36	6.12	*VERY STIFF FINE GRAINED	100	100			
11.050	36.25	141.19	6.08	*VERY STIFF FINE GRAINED	100	98			
11.100	36.42	135.16	5.90	*VERY STIFF FINE GRAINED	100	93			
11.150	36.58	126.98	5.52	*VERY STIFF FINE GRAINED	100	88			
11.200	36.75	116.53	5.61	*VERY STIFF FINE GRAINED	100	80			
11.250	36.91	101.32	6.47	*VERY STIFF FINE GRAINED	100	70			
11.300	37.07	77.37	7.74	*VERY STIFF FINE GRAINED	77	53			
11.350	37.24	65.22	7.80	*VERY STIFF FINE GRAINED	65	45			
11.400	37.40	58.57	7.85	CLAY	59	40		3.3	
11.450	37.57	57.45	7.45	CLAY	57	39		3.3	
11.500	37.73	55.51	7.73	CLAY	56	38		3.1	
11.550	37.89	54.13	7.67	CLAY	54	37		3.1	
11.600	38.06	56.09	6.94	CLAY	56	38		3.2	
11.650	38.22	51.79	6.97	CLAY	52	35		2.9	
11.700	38.39	49.65	7.81	CLAY	50	33		2.8	
11.750	38.55	55.90	6.94	CLAY	56	38		3.2	
11.800	38.71	61.63	7.35	CLAY	62	41		3.5	
11.850	38.88	74.80	6.50	*VERY STIFF FINE GRAINED	75	50			
11.900	39.04	77.73	6.64	*VERY STIFF FINE GRAINED	78	52			
11.950	39.21	85.89	6.43	*VERY STIFF FINE GRAINED	86	57			
12.000	39.37	76.50	6.85	*VERY STIFF FINE GRAINED	77	51			
12.050	39.53	92.03	6.22	*VERY STIFF FINE GRAINED	92	61			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 45.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-01

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
12.100	39.70	100.45	6.48	*VERY STIFF FINE GRAINED	100	66			
12.150	39.86	101.38	6.81	*VERY STIFF FINE GRAINED	100	67			
12.200	40.03	114.57	6.44	*VERY STIFF FINE GRAINED	100	76			
12.250	40.19	119.82	6.18	*VERY STIFF FINE GRAINED	100	79			
12.300	40.35	123.90	6.07	*VERY STIFF FINE GRAINED	100	81			
12.350	40.52	120.46	6.30	*VERY STIFF FINE GRAINED	100	79			
12.400	40.68	117.40	6.64	*VERY STIFF FINE GRAINED	100	77			
12.450	40.85	120.99	6.41	*VERY STIFF FINE GRAINED	100	79			
12.500	41.01	119.20	6.40	*VERY STIFF FINE GRAINED	100	78			
12.550	41.17	118.93	6.41	*VERY STIFF FINE GRAINED	100	77			
12.600	41.34	121.22	6.27	*VERY STIFF FINE GRAINED	100	79			
12.650	41.50	130.38	*****		0	0			.0

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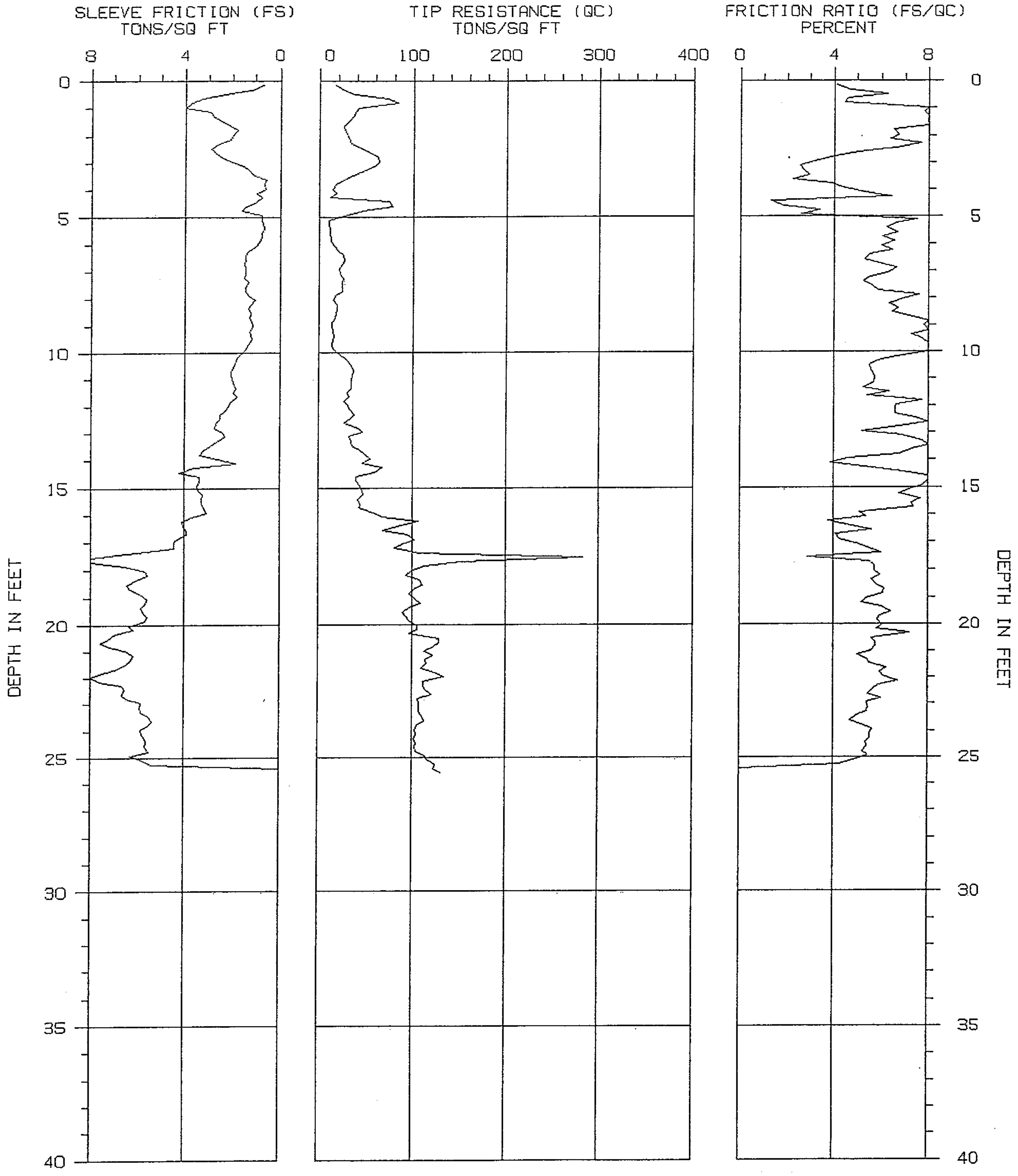
*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 45.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-02

PROJECT NAME : AGS-HOME DEPOT

PROJECT NUMBER : 2738

CONE/RIG : 491\#1 JH

DATE/TIME: 11-03-00 11:22

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-02
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 11:22
PROJECT No.: 2738
CONE/RIG : 491\#1 JH

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	17.10	4.10	CLAY	17	27		1.1	
.100	.33	25.94	4.68	CLAY	26	41		1.5	
.150	.49	37.52	6.22	CLAY	38	60		2.2	
.200	.66	71.98	4.58	CLAY to SILTY CLAY	48	77		4.2	
.250	.82	83.19	4.45	CLAYEY SILT to SILTY CLAY	42	67		4.9	
.300	.98	41.72	9.59	CLAY	42	67		2.5	
.350	1.15	38.30	7.80	CLAY	38	61		2.2	
.400	1.31	35.42	8.02	CLAY	35	57		2.1	
.450	1.48	29.98	7.95	CLAY	30	48		1.8	
.500	1.64	26.26	8.01	CLAY	26	42		1.7	
.550	1.80	27.47	6.49	CLAY	27	44		1.6	
.600	1.97	29.89	6.73	CLAY	30	48		1.8	
.650	2.13	32.44	6.37	CLAY	32	52		1.9	
.700	2.30	33.78	7.69	CLAY	34	54		2.0	
.750	2.46	44.25	6.63	CLAY	44	71		2.6	
.800	2.62	54.90	5.03	CLAY to SILTY CLAY	37	59		3.2	
.850	2.79	62.20	4.06	CLAYEY SILT to SILTY CLAY	31	50		3.6	
.900	2.95	64.05	3.11	SANDY SILT to CLAYEY SILT	26	41		3.8	
.950	3.12	59.66	2.56	SANDY SILT to CLAYEY SILT	24	38		4.0	
1.000	3.28	48.69	2.66	SANDY SILT to CLAYEY SILT	19	31		3.2	
1.050	3.44	35.90	2.94	CLAYEY SILT to SILTY CLAY	18	29		2.4	
1.100	3.61	25.58	2.22	SANDY SILT to CLAYEY SILT	10	16		1.7	
1.150	3.77	17.80	3.85	CLAY to SILTY CLAY	12	19		1.2	
1.200	3.94	13.92	4.50	CLAY	14	22		.9	
1.250	4.10	18.31	5.35	CLAY	18	29		1.2	
1.300	4.27	11.47	6.41	CLAY	11	18		.7	
1.350	4.43	74.74	1.30	SILTY SAND to SANDY SILT	25	40	68		45.5
1.400	4.59	77.90	1.82	SILTY SAND to SANDY SILT	26	42	69		45.5
1.450	4.76	46.99	3.37	CLAYEY SILT to SILTY CLAY	23	38		3.1	
1.500	4.92	29.87	2.57	CLAYEY SILT to SILTY CLAY	15	24		2.0	
1.550	5.09	10.07	7.49	CLAY	10	16		.7	
1.600	5.25	10.75	6.58	CLAY	11	17		.7	
1.650	5.41	11.00	6.23	CLAY	11	18		.7	
1.700	5.58	11.45	6.64	CLAY	11	18		.7	
1.750	5.74	12.62	6.06	CLAY	13	20		.8	
1.800	5.91	13.02	6.51	CLAY	13	21		.8	
1.850	6.07	16.87	6.01	CLAY	17	27		1.1	
1.900	6.23	19.93	6.46	CLAY	20	32		1.2	
1.950	6.40	25.64	5.50	CLAY	26	41		1.5	
2.000	6.56	26.77	5.29	CLAY	27	43		1.6	
2.050	6.73	24.67	5.93	CLAY	25	39		1.4	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 6.5 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-02

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
2.100	6.89	21.67	6.63	CLAY	22	35		1.3	
2.150	7.05	22.65	6.27	CLAY	23	36		1.3	
2.200	7.22	26.36	5.50	CLAY	26	42		1.5	
2.250	7.38	24.84	5.23	CLAY	25	39		1.4	
2.300	7.55	25.09	5.66	CLAY	25	40		1.5	
2.350	7.71	24.47	5.86	CLAY	24	38		1.4	
2.400	7.87	16.78	7.61	CLAY	17	26		1.1	
2.450	8.04	15.00	6.94	CLAY	15	23		1.0	
2.500	8.20	18.93	6.31	CLAY	19	29		1.1	
2.550	8.37	19.23	6.70	CLAY	19	30		1.2	
2.600	8.53	18.63	6.44	CLAY	19	29		1.2	
2.650	8.69	16.70	7.37	CLAY	17	25		1.1	
2.700	8.86	14.09	8.16	CLAY	14	21		.9	
2.750	9.02	14.23	7.80	CLAY	14	21		.9	
2.800	9.19	15.34	8.08	CLAY	15	23		1.0	
2.850	9.35	16.42	7.28	CLAY	16	25		1.1	
2.900	9.51	14.62	7.75	CLAY	15	22		.9	
2.950	9.68	13.77	9.22	CLAY	14	20		.9	
3.000	9.84	15.06	9.19	CLAY	15	22		1.0	
3.050	10.01	19.18	8.19	CLAY	19	28		1.2	
3.100	10.17	26.94	6.62	CLAY	27	39		1.6	
3.150	10.33	31.34	5.82	CLAY	31	45		1.8	
3.200	10.50	34.46	5.51	CLAY	34	50		2.0	
3.250	10.66	37.18	5.53	CLAY	37	53		2.2	
3.300	10.83	35.50	5.70	CLAY	36	51		2.1	
3.350	10.99	34.57	5.73	CLAY	35	49		2.0	
3.400	11.15	34.76	5.67	CLAY	35	49		2.0	
3.450	11.32	35.03	5.24	CLAY	35	50		2.0	
3.500	11.48	30.70	6.31	CLAY	31	43		1.8	
3.550	11.65	32.67	5.43	CLAY	33	46		1.9	
3.600	11.81	26.62	7.72	CLAY	27	37		1.5	
3.650	11.98	31.87	6.64	CLAY	32	44		1.8	
3.700	12.14	34.03	6.59	CLAY	34	47		2.0	
3.750	12.30	38.69	6.58	CLAY	39	53		2.2	
3.800	12.47	33.63	7.45	CLAY	34	46		1.9	
3.850	12.63	27.13	9.89	CLAY	27	37		1.8	
3.900	12.80	42.70	6.46	CLAY	43	58		2.5	
3.950	12.96	46.93	5.20	CLAY	47	64		2.7	
4.000	13.12	33.12	6.90	CLAY	33	45		1.9	
4.050	13.29	34.35	7.75	CLAY	34	46		2.0	
4.100	13.45	35.52	8.24	CLAY	36	48		2.0	
4.150	13.62	43.40	7.32	CLAY	43	58		2.5	
4.200	13.78	49.95	6.75	CLAY	50	66		2.9	
4.250	13.94	56.34	4.61	CLAY to SILTY CLAY	38	50		3.3	
4.300	14.11	46.84	3.88	CLAYEY SILT to SILTY CLAY	23	31		2.7	
4.350	14.27	68.22	5.28	*VERY STIFF FINE GRAINED	68	90			
4.400	14.44	60.42	6.95	CLAY	60	79		3.5	
4.450	14.60	40.03	8.37	CLAY	40	52		2.3	
4.500	14.76	39.96	8.48	CLAY	40	52		2.3	
4.550	14.93	44.74	7.78	CLAY	45	58		2.6	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 6.5 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

SOUNDING : CPT-02

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
4.600	15.09	47.40	7.20	CLAY	47	61		2.7	
4.650	15.26	47.76	6.75	CLAY	48	61		2.8	
4.700	15.42	42.49	7.68	CLAY	42	54		2.4	
4.750	15.58	44.87	7.28	CLAY	45	57		2.6	
4.800	15.75	43.40	7.37	CLAY	43	55		2.5	
4.850	15.91	59.21	5.13	CLAY to SILTY CLAY	39	50		3.4	
4.900	16.08	68.15	5.37	*VERY STIFF FINE GRAINED	68	86			
4.950	16.24	107.14	3.80	CLAYEY SILT to SILTY CLAY	54	67		6.2	
5.000	16.40	84.96	4.77	*VERY STIFF FINE GRAINED	85	100			
5.050	16.57	69.56	5.58	*VERY STIFF FINE GRAINED	70	87			
5.100	16.73	94.99	4.09	CLAYEY SILT to SILTY CLAY	47	59		5.5	
5.150	16.90	102.85	4.27	*VERY STIFF FINE GRAINED	100	100			
5.200	17.06	89.42	4.96	*VERY STIFF FINE GRAINED	89	100			
5.250	17.22	81.73	5.44	*VERY STIFF FINE GRAINED	82	100			
5.300	17.39	107.50	5.98	*VERY STIFF FINE GRAINED	100	100			
5.350	17.55	282.58	2.92	*SAND to CLAYEY SAND	100	100			
5.400	17.72	152.24	5.51	*VERY STIFF FINE GRAINED	100	100			
5.450	17.88	113.13	5.75	*VERY STIFF FINE GRAINED	100	100			
5.500	18.04	98.70	5.74	*VERY STIFF FINE GRAINED	99	100			
5.550	18.21	93.65	5.97	*VERY STIFF FINE GRAINED	94	100			
5.600	18.37	108.43	5.61	*VERY STIFF FINE GRAINED	100	100			
5.650	18.54	110.90	5.81	*VERY STIFF FINE GRAINED	100	100			
5.700	18.70	102.29	6.14	*VERY STIFF FINE GRAINED	100	100			
5.750	18.86	96.60	6.11	*VERY STIFF FINE GRAINED	97	100			
5.800	19.03	104.01	5.39	*VERY STIFF FINE GRAINED	100	100			
5.850	19.19	109.30	5.20	*VERY STIFF FINE GRAINED	100	100			
5.900	19.36	96.60	6.06	*VERY STIFF FINE GRAINED	97	100			
5.950	19.52	90.16	6.41	*VERY STIFF FINE GRAINED	90	100			
6.000	19.69	93.63	5.95	*VERY STIFF FINE GRAINED	94	100			
6.050	19.85	96.39	5.89	*VERY STIFF FINE GRAINED	96	100			
6.100	20.01	105.23	6.04	*VERY STIFF FINE GRAINED	100	100			
6.150	20.18	105.84	5.83	*VERY STIFF FINE GRAINED	100	100			
6.200	20.34	96.30	7.18	*VERY STIFF FINE GRAINED	96	100			
6.250	20.51	128.96	5.59	*VERY STIFF FINE GRAINED	100	100			
6.300	20.67	129.57	5.80	*VERY STIFF FINE GRAINED	100	100			
6.350	20.83	123.60	5.77	*VERY STIFF FINE GRAINED	100	100			
6.400	21.00	113.91	5.60	*VERY STIFF FINE GRAINED	100	100			
6.450	21.16	122.14	5.03	*VERY STIFF FINE GRAINED	100	100			
6.500	21.33	114.98	5.43	*VERY STIFF FINE GRAINED	100	100			
6.550	21.49	116.04	5.53	*VERY STIFF FINE GRAINED	100	100			
6.600	21.65	109.62	6.22	*VERY STIFF FINE GRAINED	100	100			
6.650	21.82	124.88	5.95	*VERY STIFF FINE GRAINED	100	100			
6.700	21.98	134.61	6.10	*VERY STIFF FINE GRAINED	100	100			
6.750	22.15	112.81	6.72	*VERY STIFF FINE GRAINED	100	100			
6.800	22.31	112.51	5.91	*VERY STIFF FINE GRAINED	100	100			
6.850	22.47	114.36	5.69	*VERY STIFF FINE GRAINED	100	100			
6.900	22.64	121.37	5.48	*VERY STIFF FINE GRAINED	100	100			
6.950	22.80	107.10	5.99	*VERY STIFF FINE GRAINED	100	100			
7.000	22.97	108.37	5.42	*VERY STIFF FINE GRAINED	100	100			
7.050	23.13	108.09	5.45	*VERY STIFF FINE GRAINED	100	100			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 6.5 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

SOUNDING : CPT-02

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
7.100	23.29	107.97	5.43	*VERY STIFF FINE GRAINED	100	100			
7.150	23.46	111.30	4.99	*VERY STIFF FINE GRAINED	100	100			
7.200	23.62	113.74	4.73	*VERY STIFF FINE GRAINED	100	100			
7.250	23.79	105.82	5.22	*VERY STIFF FINE GRAINED	100	100			
7.300	23.95	103.84	5.63	*VERY STIFF FINE GRAINED	100	100			
7.350	24.11	104.91	5.54	*VERY STIFF FINE GRAINED	100	100			
7.400	24.28	102.57	5.55	*VERY STIFF FINE GRAINED	100	100			
7.450	24.44	104.80	5.38	*VERY STIFF FINE GRAINED	100	100			
7.500	24.61	103.93	5.44	*VERY STIFF FINE GRAINED	100	100			
7.550	24.77	104.61	5.26	*VERY STIFF FINE GRAINED	100	100			
7.600	24.93	114.93	5.46	*VERY STIFF FINE GRAINED	100	100			
7.650	25.10	116.46	4.98	*VERY STIFF FINE GRAINED	100	100			
7.700	25.26	125.62	4.26	*VERY STIFF FINE GRAINED	100	100			
7.750	25.43	123.69	*****		0	0			.0

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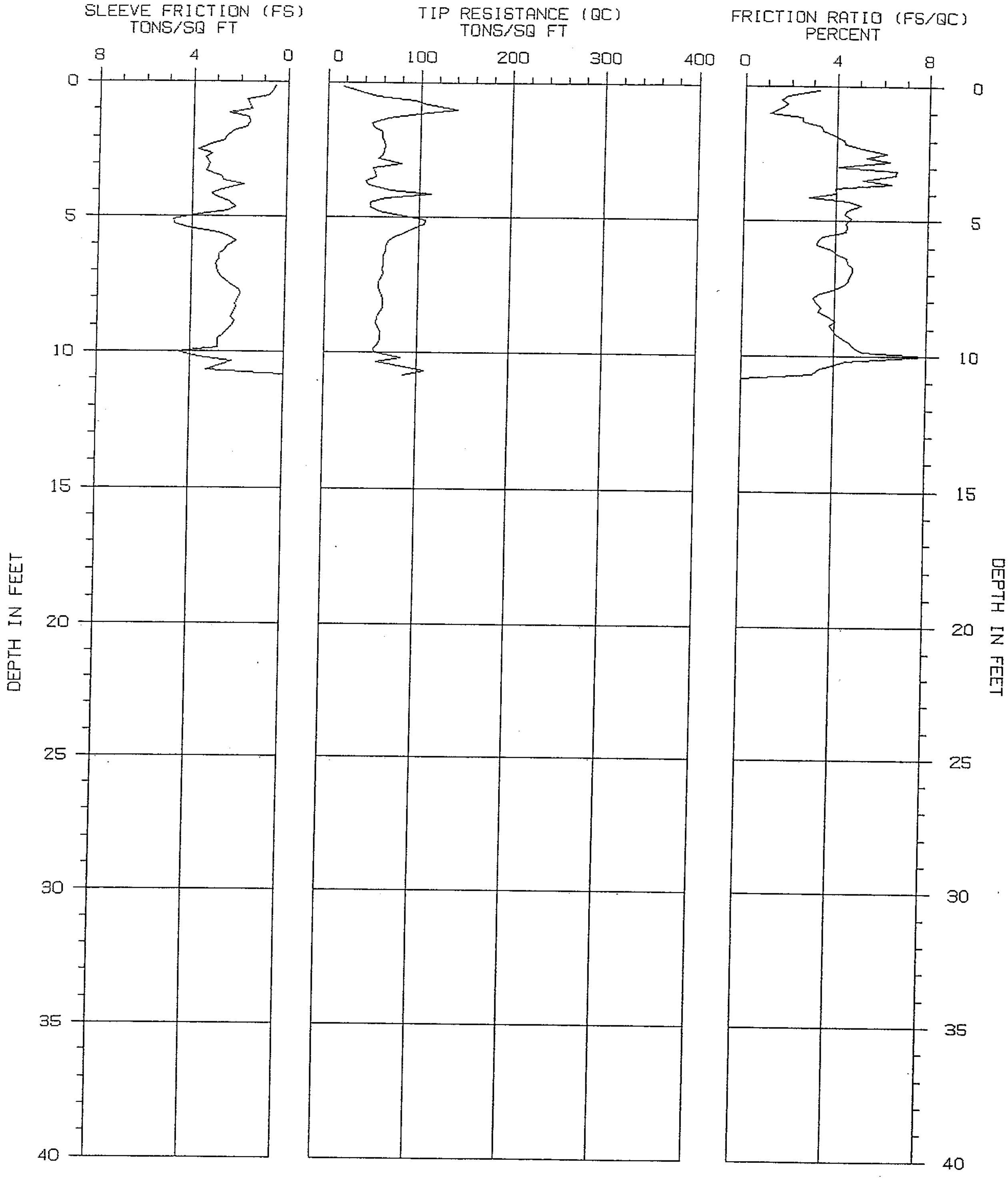
*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 6.5 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-03

PROJECT NAME : AGS-HOME DEPOT

CONE/RIG : 491\#1 JH

PROJECT NUMBER : 2738

DATE/TIME: 11-03-00 13:01

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-03
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 13:01

PROJECT No.: 2738
CONE/RIG : 491\#1 JH

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	16.95	3.22	CLAY to SILTY CLAY	11	18		1.1	
.100	.33	37.26	1.84	SANDY SILT to CLAYEY SILT	15	24		3.0	
.150	.49	53.09	1.55	SILTY SAND to SANDY SILT	18	28	58		
.200	.66	93.37	1.85	SILTY SAND to SANDY SILT	31	50	74		
.250	.82	106.80	1.56	SILTY SAND to SANDY SILT	36	57	78		
.300	.98	139.90	1.07	SAND to SILTY SAND	35	56	86		
.350	1.15	97.90	2.52	SILTY SAND to SANDY SILT	33	52	76		
.400	1.31	65.86	2.51	SANDY SILT to CLAYEY SILT	26	42		4.4	
.450	1.48	48.27	3.32	CLAYEY SILT to SILTY CLAY	24	39		3.2	
.500	1.64	51.35	3.38	CLAYEY SILT to SILTY CLAY	26	41		3.0	
.550	1.80	59.15	3.88	CLAYEY SILT to SILTY CLAY	30	47		3.5	
.600	1.97	59.53	4.29	CLAYEY SILT to SILTY CLAY	30	48		3.5	
.650	2.13	61.44	4.34	CLAYEY SILT to SILTY CLAY	31	49		3.6	
.700	2.30	62.93	5.13	CLAY to SILTY CLAY	42	67		3.7	
.750	2.46	61.25	6.15	CLAY	61	98		3.6	
.800	2.62	60.10	5.31	CLAY	60	96		3.5	
.850	2.79	55.32	6.27	CLAY	55	88		3.2	
.900	2.95	80.16	4.09	CLAYEY SILT to SILTY CLAY	40	64		4.7	
.950	3.12	50.50	6.56	CLAY	51	81		3.0	
1.000	3.28	52.56	6.52	CLAY	53	84		3.1	
1.050	3.44	53.92	5.15	CLAY	54	86		3.2	
1.100	3.61	42.51	6.37	CLAY	43	68		2.5	
1.150	3.77	45.87	3.95	CLAYEY SILT to SILTY CLAY	23	37		2.7	
1.200	3.94	68.75	3.99	CLAYEY SILT to SILTY CLAY	34	55		4.0	
1.250	4.10	112.36	2.83	SANDY SILT to CLAYEY SILT	45	72		6.6	
1.300	4.27	64.03	4.54	CLAY to SILTY CLAY	43	68		3.8	
1.350	4.43	48.42	5.06	CLAY	48	77		2.8	
1.400	4.59	48.03	4.50	CLAY to SILTY CLAY	32	51		2.8	
1.450	4.76	56.55	4.39	CLAY to SILTY CLAY	38	60		3.3	
1.500	4.92	78.97	4.68	*VERY STIFF FINE GRAINED	79	100			
1.550	5.09	107.20	4.45	*VERY STIFF FINE GRAINED	100	100			
1.600	5.25	105.46	4.48	*VERY STIFF FINE GRAINED	100	100			
1.650	5.41	93.65	4.45	*VERY STIFF FINE GRAINED	94	100			
1.700	5.58	84.11	3.44	SANDY SILT to CLAYEY SILT	34	54		4.9	
1.750	5.74	72.89	3.26	SANDY SILT to CLAYEY SILT	29	47		4.3	
1.800	5.91	66.60	3.19	SANDY SILT to CLAYEY SILT	27	43		3.9	
1.850	6.07	64.24	3.87	CLAYEY SILT to SILTY CLAY	32	51		3.8	
1.900	6.23	64.82	4.05	CLAYEY SILT to SILTY CLAY	32	52		3.8	
1.950	6.40	62.76	4.49	CLAY to SILTY CLAY	42	67		3.7	
2.000	6.56	62.27	4.54	CLAY to SILTY CLAY	42	66		3.6	
2.050	6.73	62.29	4.74	CLAY to SILTY CLAY	42	66		3.6	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-03

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
2.100	6.89	61.04	4.78	CLAY to SILTY CLAY	41	65		3.6	
2.150	7.05	62.01	4.65	CLAY to SILTY CLAY	41	65		3.6	
2.200	7.22	60.19	4.59	CLAY to SILTY CLAY	40	62		3.5	
2.250	7.38	57.70	4.38	CLAYEY SILT to SILTY CLAY	29	44		3.4	
2.300	7.55	57.53	3.85	CLAYEY SILT to SILTY CLAY	29	44		3.4	
2.350	7.71	58.81	3.29	CLAYEY SILT to SILTY CLAY	29	44		3.4	
2.400	7.87	61.29	3.09	SANDY SILT to CLAYEY SILT	25	36		3.6	
2.450	8.04	62.65	3.21	SANDY SILT to CLAYEY SILT	25	37		3.7	
2.500	8.20	62.93	3.41	CLAYEY SILT to SILTY CLAY	31	46		3.7	
2.550	8.37	62.18	3.32	SANDY SILT to CLAYEY SILT	25	36		3.6	
2.600	8.53	58.68	3.69	CLAYEY SILT to SILTY CLAY	29	42		3.4	
2.650	8.69	56.96	4.06	CLAYEY SILT to SILTY CLAY	28	40		3.3	
2.700	8.86	56.00	3.79	CLAYEY SILT to SILTY CLAY	28	39		3.3	
2.750	9.02	56.79	3.94	CLAYEY SILT to SILTY CLAY	28	39		3.3	
2.800	9.19	59.87	4.07	CLAYEY SILT to SILTY CLAY	30	41		3.5	
2.850	9.35	60.59	4.34	CLAYEY SILT to SILTY CLAY	30	41		3.5	
2.900	9.51	60.82	4.65	CLAY to SILTY CLAY	41	55		3.5	
2.950	9.68	57.72	4.89	CLAY to SILTY CLAY	38	52		3.4	
3.000	9.84	54.13	5.22	CLAY	54	72		3.2	
3.050	10.01	54.24	8.33	CLAY	54	72		3.2	
3.100	10.17	82.28	4.50	CLAYEY SILT to SILTY CLAY	41	54		4.8	
3.150	10.33	56.57	3.93	CLAYEY SILT to SILTY CLAY	28	37		3.3	
3.200	10.50	80.77	3.33	SANDY SILT to CLAYEY SILT	32	42		4.7	
3.250	10.66	107.82	3.09	SANDY SILT to CLAYEY SILT	43	55		6.3	
3.300	10.83	85.32	*****		0	0			

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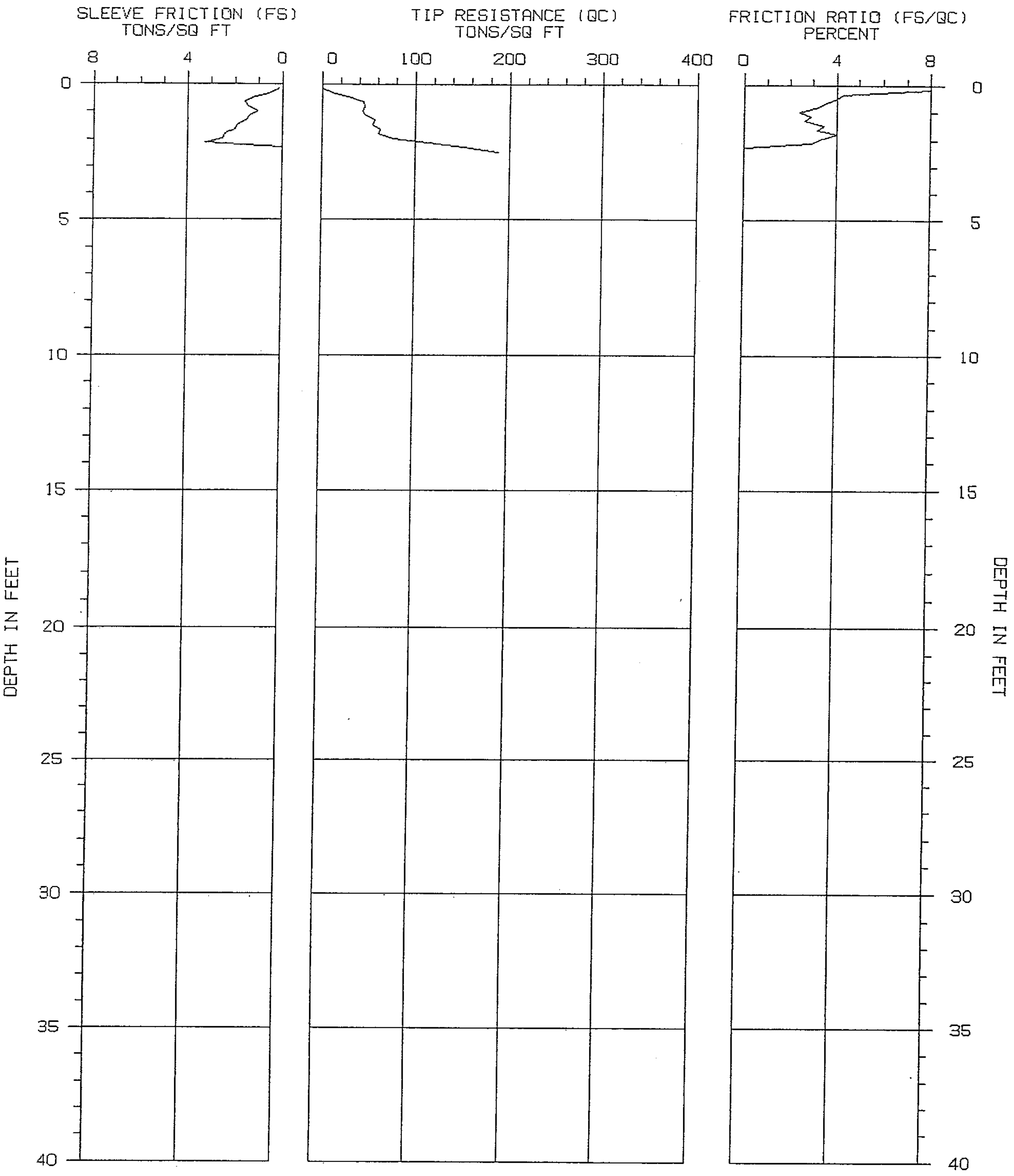
*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-04

PROJECT NAME : AGS-HOME DEPOT

PROJECT NUMBER : 2738

CONE/RIG : 491\#1 JH

DATE/TIME: 11-03-00 13:22

HFA

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*                                                                    *
*                      CPT INTERPRETATIONS                           *
*                                                                    *
*  SOUNDING : CPT-04                      PROJECT No.: 2738          *
*  PROJECT  : AGS-HOME DEPOT              CONE/RIG : 491\#1 JH       *
*  DATE/TIME: 11-03-00 13:22                                         *
*                                                                    *
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DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	.13	*****	ORGANIC MATERIAL	0	0		.0	
.100	.33	14.28	4.25	CLAY	14	23		1.0	
.150	.49	32.02	4.01	CLAY to SILTY CLAY	21	34		1.9	
.200	.66	45.29	3.53	CLAYEY SILT to SILTY CLAY	23	36		2.7	
.250	.82	45.72	3.20	CLAYEY SILT to SILTY CLAY	23	37		3.0	
.300	.98	44.21	2.41	SANDY SILT to CLAYEY SILT	18	28		2.9	
.350	1.15	47.27	2.90	SANDY SILT to CLAYEY SILT	19	30		3.1	
.400	1.31	57.40	2.65	SANDY SILT to CLAYEY SILT	23	37		3.8	
.450	1.48	55.05	3.45	CLAYEY SILT to SILTY CLAY	28	44		3.2	
.500	1.64	62.91	3.16	SANDY SILT to CLAYEY SILT	25	40		3.7	
.550	1.80	60.36	4.02	CLAYEY SILT to SILTY CLAY	30	48		3.5	
.600	1.97	77.08	3.25	SANDY SILT to CLAYEY SILT	31	49		4.5	
.650	2.13	113.38	2.88	SANDY SILT to CLAYEY SILT	45	73		6.7	
.700	2.30	151.05	*****		0	0			
.750	2.46	187.29	*****		0	0			

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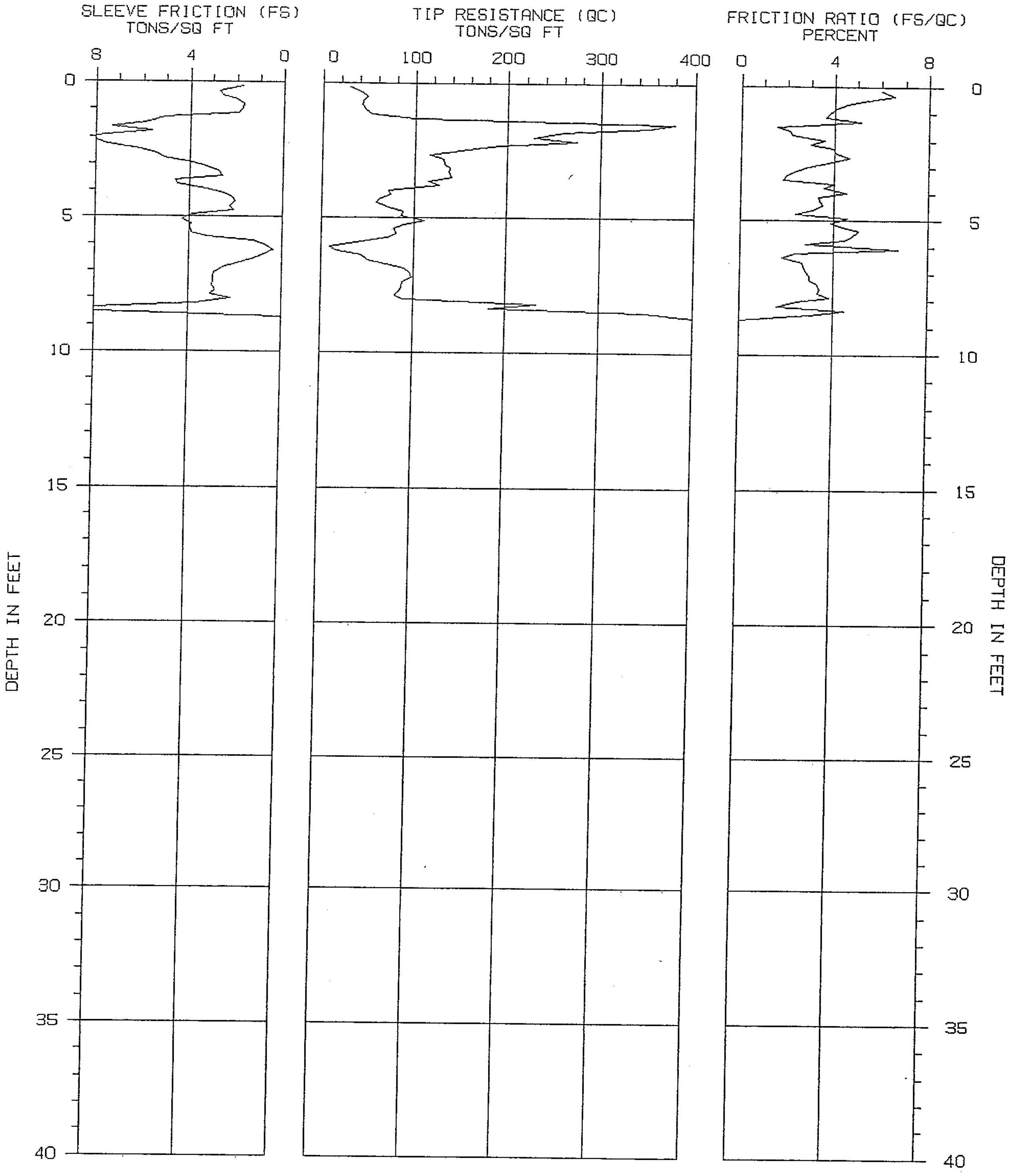
*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-04A

PROJECT NAME : AGS-HOME DEPOT

PROJECT NUMBER : 2738

CONE/RIG : 491\#1 JH

DATE/TIME: 11-03-00 13:32

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-04A
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 13:32

PROJECT No.: 2738
CONE/RIG : 491\#1 JH

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	29.47	6.01	CLAY	29	47		1.7	
.100	.33	42.28	6.53	CLAY	42	68		2.5	
.150	.49	48.10	5.42	CLAY	48	77		2.8	
.200	.66	44.02	4.55	CLAY to SILTY CLAY	29	47		2.6	
.250	.82	42.17	4.08	CLAYEY SILT to SILTY CLAY	21	34		2.5	
.300	.98	46.76	3.77	CLAYEY SILT to SILTY CLAY	23	37		2.7	
.350	1.15	54.00	3.59	CLAYEY SILT to SILTY CLAY	27	43		3.2	
.400	1.31	100.06	5.11	*VERY STIFF FINE GRAINED	100	100			
.450	1.48	378.54	1.56	SAND to SILTY SAND	95	100	100		
.500	1.64	352.13	2.08	SAND to SILTY SAND	88	100	100		
.550	1.80	258.89	2.18	SILTY SAND to SANDY SILT	86	100	100		
.600	1.97	227.68	3.58	*SAND to CLAYEY SAND	100	100			
.650	2.13	273.61	3.01	*SAND to CLAYEY SAND	100	100			
.700	2.30	191.56	3.90	*SAND to CLAYEY SAND	96	100			
.750	2.46	149.10	4.08	*VERY STIFF FINE GRAINED	100	100			
.800	2.62	117.23	4.62	*VERY STIFF FINE GRAINED	100	100			
.850	2.79	130.93	3.91	CLAYEY SILT to SILTY CLAY	65	100		7.7	
.900	2.95	132.27	2.92	SANDY SILT to CLAYEY SILT	53	85		7.8	
.950	3.12	137.67	2.40	SILTY SAND to SANDY SILT	46	73	85		49.0
1.000	3.28	136.39	2.02	SILTY SAND to SANDY SILT	45	73	85		49.0
1.050	3.44	139.92	1.82	SILTY SAND to SANDY SILT	47	75	86		48.5
1.100	3.61	115.47	3.99	CLAYEY SILT to SILTY CLAY	58	92		6.8	
1.150	3.77	126.92	3.56	SANDY SILT to CLAYEY SILT	51	81		7.5	
1.200	3.94	72.25	4.56	CLAY to SILTY CLAY	48	77		4.2	
1.250	4.10	74.23	3.34	SANDY SILT to CLAYEY SILT	30	47		4.4	
1.300	4.27	63.35	3.40	CLAYEY SILT to SILTY CLAY	32	51		3.7	
1.350	4.43	58.66	3.51	CLAYEY SILT to SILTY CLAY	29	47		3.4	
1.400	4.59	73.02	3.12	SANDY SILT to CLAYEY SILT	29	47		4.3	
1.450	4.76	87.53	2.36	SILTY SAND to SANDY SILT	29	47	73		45.5
1.500	4.92	85.49	4.58	*VERY STIFF FINE GRAINED	85	100			
1.550	5.09	111.20	3.87	CLAYEY SILT to SILTY CLAY	56	89		6.5	
1.600	5.25	89.16	4.38	CLAYEY SILT to SILTY CLAY	45	71		5.2	
1.650	5.41	77.97	5.07	*VERY STIFF FINE GRAINED	78	100			
1.700	5.58	81.18	4.81	*VERY STIFF FINE GRAINED	81	100			
1.750	5.74	71.91	4.44	CLAYEY SILT to SILTY CLAY	36	58		4.2	
1.800	5.91	44.55	2.80	SANDY SILT to CLAYEY SILT	18	28		2.9	
1.850	6.07	9.86	6.76	CLAY	10	16		.6	
1.900	6.23	17.57	2.37	CLAYEY SILT to SILTY CLAY	9	14		1.4	
1.950	6.40	44.15	1.84	SANDY SILT to CLAYEY SILT	18	28		2.9	
2.000	6.56	50.22	2.68	SANDY SILT to CLAYEY SILT	20	32		3.3	
2.050	6.73	70.62	2.73	SANDY SILT to CLAYEY SILT	28	45		4.7	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-04A

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
2.100	6.89	90.35	2.79	SANDY SILT to CLAYEY SILT	36	57		5.3	
2.150	7.05	96.64	2.98	SANDY SILT to CLAYEY SILT	39	61		5.7	
2.200	7.22	97.51	3.00	SANDY SILT to CLAYEY SILT	39	61		5.7	
2.250	7.38	88.27	3.30	SANDY SILT to CLAYEY SILT	35	54		5.2	
2.300	7.55	86.96	3.42	SANDY SILT to CLAYEY SILT	35	53		5.1	
2.350	7.71	84.49	3.35	SANDY SILT to CLAYEY SILT	34	51		4.9	
2.400	7.87	79.84	3.82	CLAYEY SILT to SILTY CLAY	40	59		4.7	
2.450	8.04	88.40	2.44	SILTY SAND to SANDY SILT	29	43	73		43.5
2.500	8.20	232.29	1.59	SAND to SILTY SAND	58	85	100		47.5
2.550	8.37	182.64	4.49	*VERY STIFF FINE GRAINED	100	100			
2.600	8.53	348.80	2.97	*SAND to CLAYEY SAND	100	100			
2.650	8.69	406.60	*****		0	0			
2.700	8.86	532.67	*****		0	0			

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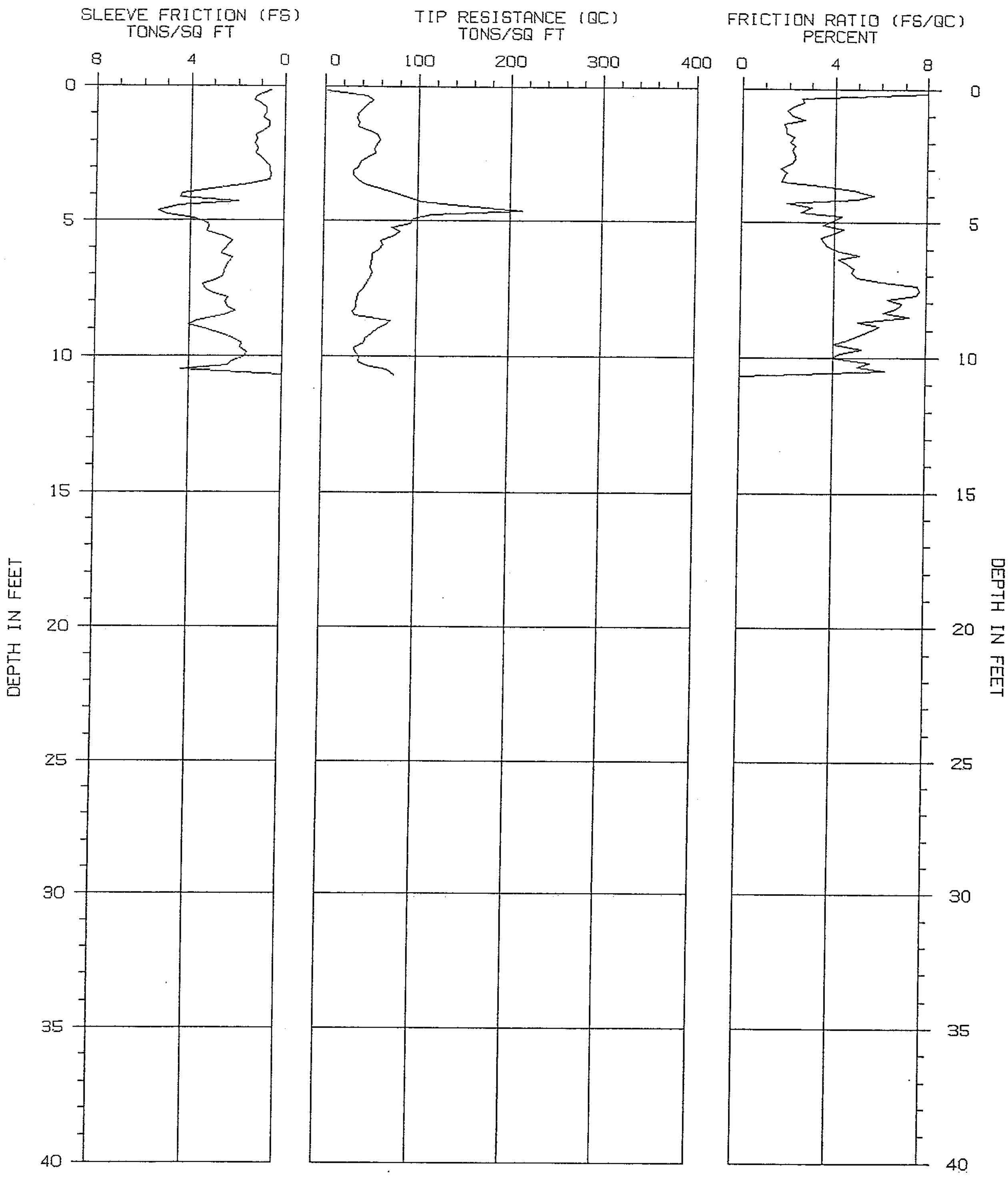
*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST SOUNDING NUMBER: CPT-05

PROJECT NAME : AGS-HOME DEPOT
PROJECT NUMBER : 2738
CONE/RIG : 491\#1 JH
DATE/TIME: 11-03-00 12:30

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-05
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 12:30

PROJECT No.: 2738
CONE/RIG : 491\#1 JH

PAGE 1 of 2

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	2.91	21.98	ORGANIC MATERIAL	3	5		.3	
.100	.33	46.08	2.55	SANDY SILT to CLAYEY SILT	18	29		3.1	
.150	.49	51.45	2.62	SANDY SILT to CLAYEY SILT	21	33		3.4	
.200	.66	45.68	2.18	SANDY SILT to CLAYEY SILT	18	29		3.0	
.250	.82	41.15	1.91	SANDY SILT to CLAYEY SILT	16	26		2.7	
.300	.98	35.99	2.16	SANDY SILT to CLAYEY SILT	14	23		2.4	
.350	1.15	35.05	2.68	SANDY SILT to CLAYEY SILT	14	22		2.3	
.400	1.31	37.22	1.78	SANDY SILT to CLAYEY SILT	15	24		3.0	
.450	1.48	35.97	1.86	SANDY SILT to CLAYEY SILT	14	23		2.9	
.500	1.64	48.44	1.88	SANDY SILT to CLAYEY SILT	19	31		3.2	
.550	1.80	56.40	2.22	SANDY SILT to CLAYEY SILT	23	36		3.8	
.600	1.97	59.06	2.04	SILTY SAND to SANDY SILT	20	31	61		47.5
.650	2.13	55.43	2.29	SANDY SILT to CLAYEY SILT	22	35		3.7	
.700	2.30	53.94	2.15	SANDY SILT to CLAYEY SILT	22	35		3.6	
.750	2.46	54.81	2.26	SANDY SILT to CLAYEY SILT	22	35		3.6	
.800	2.62	45.76	2.28	SANDY SILT to CLAYEY SILT	18	29		3.0	
.850	2.79	39.24	2.16	SANDY SILT to CLAYEY SILT	16	25		2.6	
.900	2.95	37.39	1.68	SANDY SILT to CLAYEY SILT	15	24		3.0	
.950	3.12	31.08	1.93	SANDY SILT to CLAYEY SILT	12	20		2.5	
1.000	3.28	31.51	1.80	SANDY SILT to CLAYEY SILT	13	20		2.5	
1.050	3.44	37.01	1.72	SANDY SILT to CLAYEY SILT	15	24		2.9	
1.100	3.61	43.42	3.46	CLAYEY SILT to SILTY CLAY	22	35		2.9	
1.150	3.77	58.70	4.76	CLAY to SILTY CLAY	39	63		3.4	
1.200	3.94	76.72	5.68	*VERY STIFF FINE GRAINED	77	100			
1.250	4.10	89.95	4.94	*VERY STIFF FINE GRAINED	90	100			
1.300	4.27	103.40	1.90	SILTY SAND to SANDY SILT	34	55	77		46.5
1.350	4.43	148.63	3.03	SANDY SILT to CLAYEY SILT	59	95		8.7	
1.400	4.59	212.83	2.53	SILTY SAND to SANDY SILT	71	100	98		49.5
1.450	4.76	115.32	4.30	*VERY STIFF FINE GRAINED	100	100			
1.500	4.92	96.20	3.96	CLAYEY SILT to SILTY CLAY	48	77		5.6	
1.550	5.09	92.03	3.50	SANDY SILT to CLAYEY SILT	37	59		5.4	
1.600	5.25	72.95	4.39	CLAYEY SILT to SILTY CLAY	36	58		4.3	
1.650	5.41	81.20	4.03	CLAYEY SILT to SILTY CLAY	41	65		4.8	
1.700	5.58	73.93	3.42	SANDY SILT to CLAYEY SILT	30	47		4.3	
1.750	5.74	61.10	3.54	CLAYEY SILT to SILTY CLAY	31	49		3.6	
1.800	5.91	63.27	3.71	CLAYEY SILT to SILTY CLAY	32	51		3.7	
1.850	6.07	59.49	4.24	CLAYEY SILT to SILTY CLAY	30	48		3.5	
1.900	6.23	52.45	5.07	CLAY to SILTY CLAY	35	56		3.1	
1.950	6.40	52.16	4.19	CLAYEY SILT to SILTY CLAY	26	42		3.0	
2.000	6.56	51.26	4.56	CLAY to SILTY CLAY	34	55		3.0	
2.050	6.73	49.95	4.85	CLAY to SILTY CLAY	33	53		2.9	

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N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-05

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
2.100	6.89	53.01	4.75	CLAY to SILTY CLAY	35	56		3.1	
2.150	7.05	51.75	4.99	CLAY to SILTY CLAY	35	54		3.0	
2.200	7.22	48.06	6.02	CLAY	48	75		2.8	
2.250	7.38	45.66	7.58	CLAY	46	70		2.7	
2.300	7.55	43.02	7.68	CLAY	43	65		2.5	
2.350	7.71	38.64	7.53	CLAY	39	58		2.2	
2.400	7.87	37.05	6.32	CLAY	37	55		2.2	
2.450	8.04	35.73	6.95	CLAY	36	53		2.1	
2.500	8.20	35.65	6.65	CLAY	36	52		2.1	
2.550	8.37	33.01	6.12	CLAY	33	48		1.9	
2.600	8.53	35.05	7.23	CLAY	35	50		2.0	
2.650	8.69	72.47	5.04	*VERY STIFF FINE GRAINED	72	100			
2.700	8.86	67.54	5.96	*VERY STIFF FINE GRAINED	68	95			
2.750	9.02	59.10	5.59	CLAY	59	82		3.4	
2.800	9.19	52.05	5.05	CLAY to SILTY CLAY	35	48		3.0	
2.850	9.35	45.91	4.65	CLAY to SILTY CLAY	31	42		2.7	
2.900	9.51	44.83	3.98	CLAYEY SILT to SILTY CLAY	22	30		2.6	
2.950	9.68	34.99	5.19	CLAY	35	47		2.0	
3.000	9.84	35.95	4.34	CLAY to SILTY CLAY	24	32		2.1	
3.050	10.01	40.66	3.93	CLAYEY SILT to SILTY CLAY	20	27		2.4	
3.100	10.17	39.32	5.56	CLAY	39	51		2.3	
3.150	10.33	46.87	5.01	CLAY	47	61		2.7	
3.200	10.50	69.60	6.24	*VERY STIFF FINE GRAINED	70	90			

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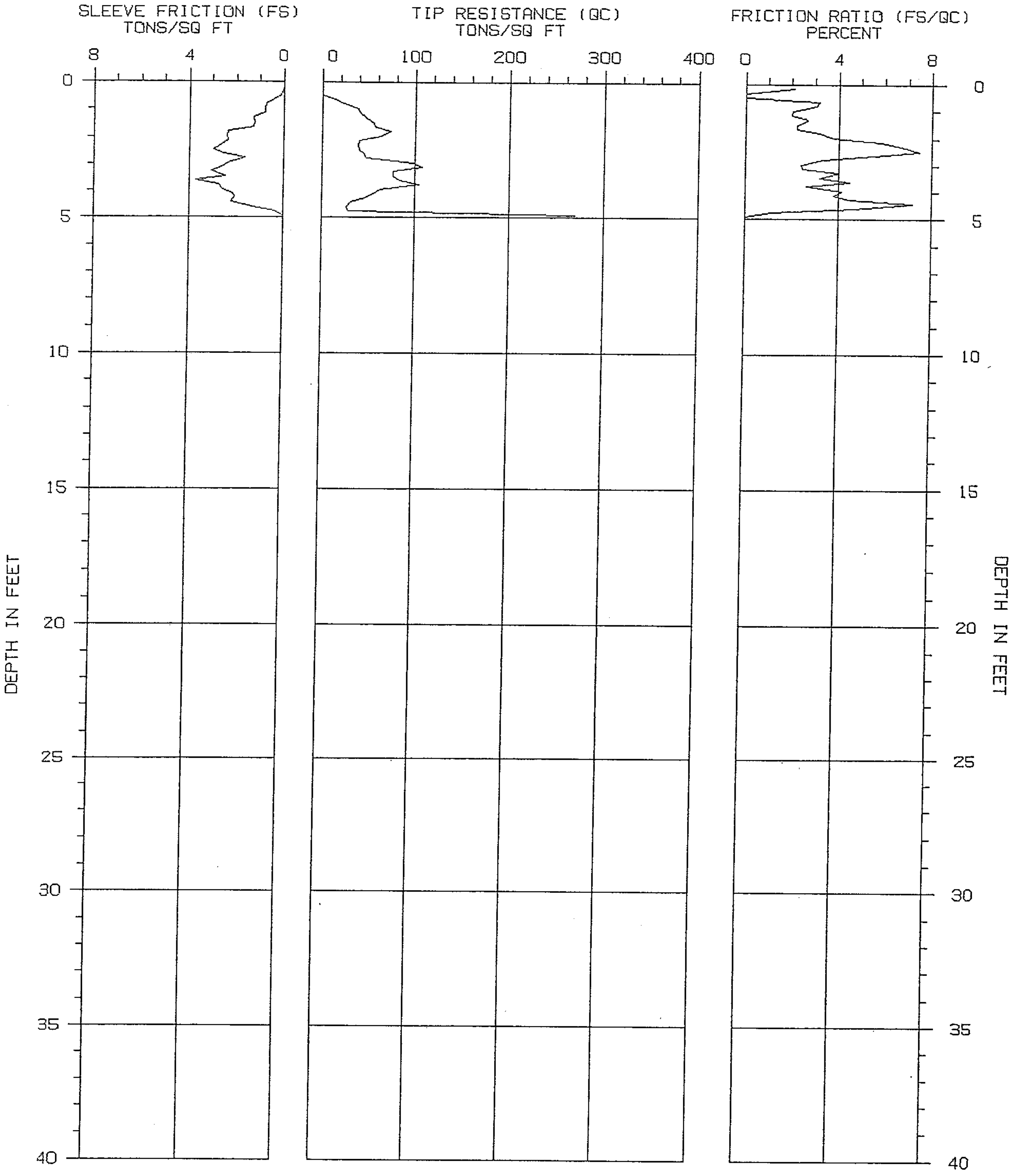
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-06

PROJECT NAME : AGS-HOME DEPOT

PROJECT NUMBER : 2738

CONE/RIG : 491\#1 JH

DATE/TIME: 11-03-00 10:49

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-06
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 10:49

PROJECT No.: 2738
CONE/RIG : 491\#1 JH

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	.00	2.09		0	0			.0
.100	.33	.00	.00		0	0			.0
.150	.49	.00	*****		0	0			.0
.200	.66	13.49	3.16	CLAY to SILTY CLAY	9	14		.9	
.250	.82	23.99	3.05	CLAYEY SILT to SILTY CLAY	12	19		1.6	
.300	.98	38.94	2.04	SANDY SILT to CLAYEY SILT	16	25		2.6	
.350	1.15	40.98	2.00	SANDY SILT to CLAYEY SILT	16	26		2.7	
.400	1.31	47.33	2.68	SANDY SILT to CLAYEY SILT	19	30		3.2	
.450	1.48	55.90	2.22	SANDY SILT to CLAYEY SILT	22	36		3.7	
.500	1.64	57.59	2.22	SANDY SILT to CLAYEY SILT	23	37		3.8	
.550	1.80	73.63	3.16	SANDY SILT to CLAYEY SILT	29	47		4.3	
.600	1.97	63.73	3.77	CLAYEY SILT to SILTY CLAY	32	51		3.7	
.650	2.13	40.47	5.81	CLAY	40	65		2.4	
.700	2.30	39.03	6.69	CLAY	39	62		2.3	
.750	2.46	39.94	7.45	CLAY	40	64		2.3	
.800	2.62	45.61	5.52	CLAY	46	73		2.7	
.850	2.79	48.27	3.36	CLAYEY SILT to SILTY CLAY	24	39		2.8	
.900	2.95	97.87	2.40	SILTY SAND to SANDY SILT	33	52	76		48.0
.950	3.12	107.90	2.43	SILTY SAND to SANDY SILT	36	58	79		48.0
1.000	3.28	76.52	3.99	CLAYEY SILT to SILTY CLAY	38	61		4.5	
1.050	3.44	76.65	3.20	SANDY SILT to CLAYEY SILT	31	49		4.5	
1.100	3.61	83.24	4.49	CLAYEY SILT to SILTY CLAY	42	67		4.9	
1.150	3.77	105.03	2.61	SILTY SAND to SANDY SILT	35	56	78		47.0
1.200	3.94	62.40	4.13	CLAYEY SILT to SILTY CLAY	31	50		3.7	
1.250	4.10	55.90	3.80	CLAYEY SILT to SILTY CLAY	28	45		3.3	
1.300	4.27	46.80	4.43	CLAY to SILTY CLAY	31	50		2.7	
1.350	4.43	30.93	7.20	CLAY	31	49		1.8	
1.400	4.59	27.26	4.68	CLAY	27	44		1.6	
1.450	4.76	28.89	1.18	SILTY SAND to SANDY SILT	10	15	41		40.5
1.500	4.92	270.19	*****		0	0			.0

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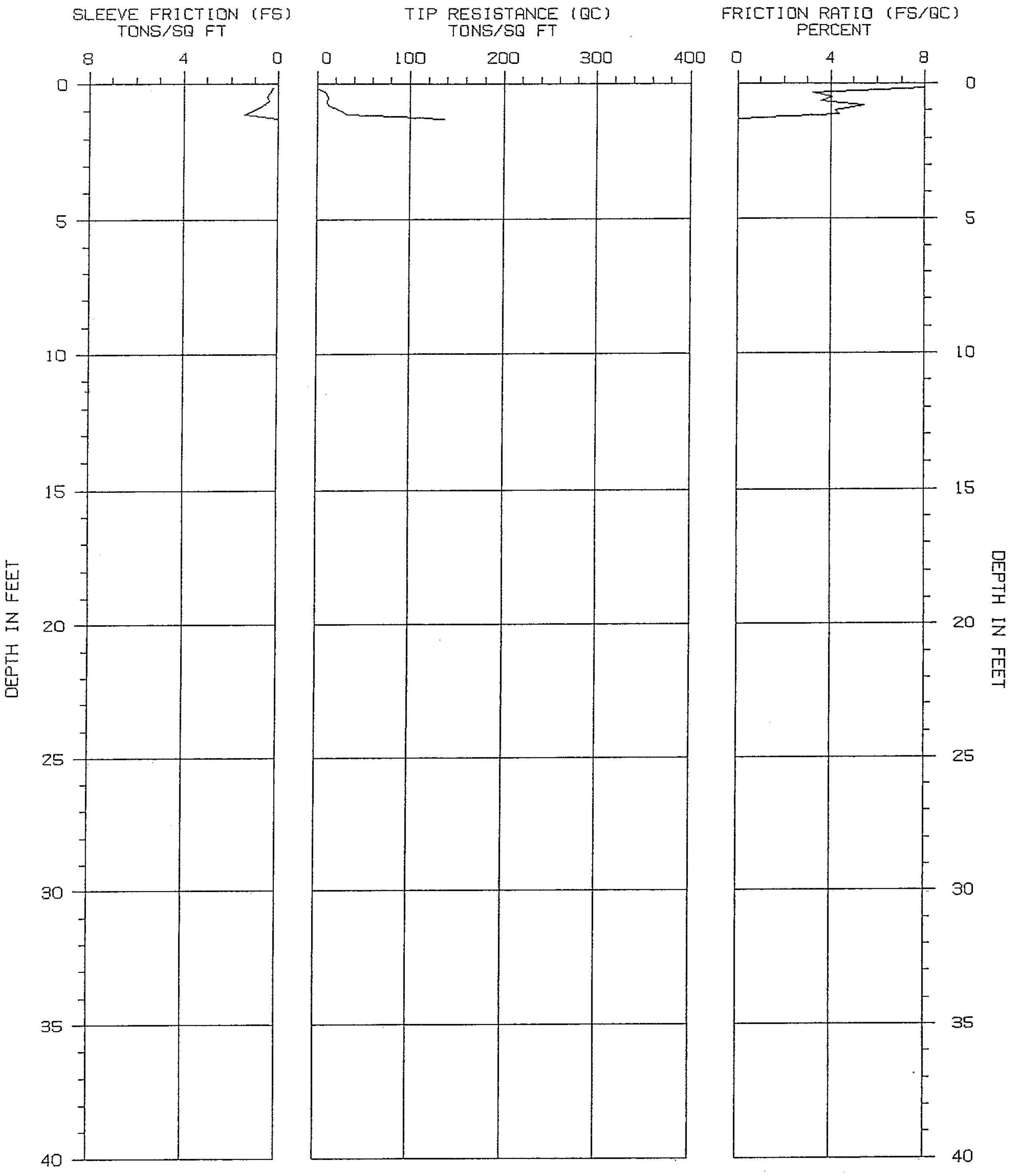
*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-06A

PROJECT NAME : AGS-HOME DEPOT

PROJECT NUMBER : 2738

CONE/RIG : 491\#1 JH

DATE/TIME: 11-03-00 11:00

H
F
A

CPT INTERPRETATIONS

SOUNDING : CPT-06A
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 11:00

PROJECT No.: 2738
CONE/RIG : 491\#1 JH

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	.21	*****	ORGANIC MATERIAL	0	0		.0	
.100	.33	10.81	3.22	CLAY to SILTY CLAY	7	12		.7	
.150	.49	12.53	4.06	CLAY	13	20		.8	
.200	.66	11.17	3.54	CLAY	11	18		.7	
.250	.82	12.32	5.44	CLAY	12	20		.8	
.300	.98	25.71	4.17	CLAY to SILTY CLAY	17	27		1.7	
.350	1.15	33.10	4.36	CLAY to SILTY CLAY	22	35		1.9	
.400	1.31	136.88	*****		0	0			

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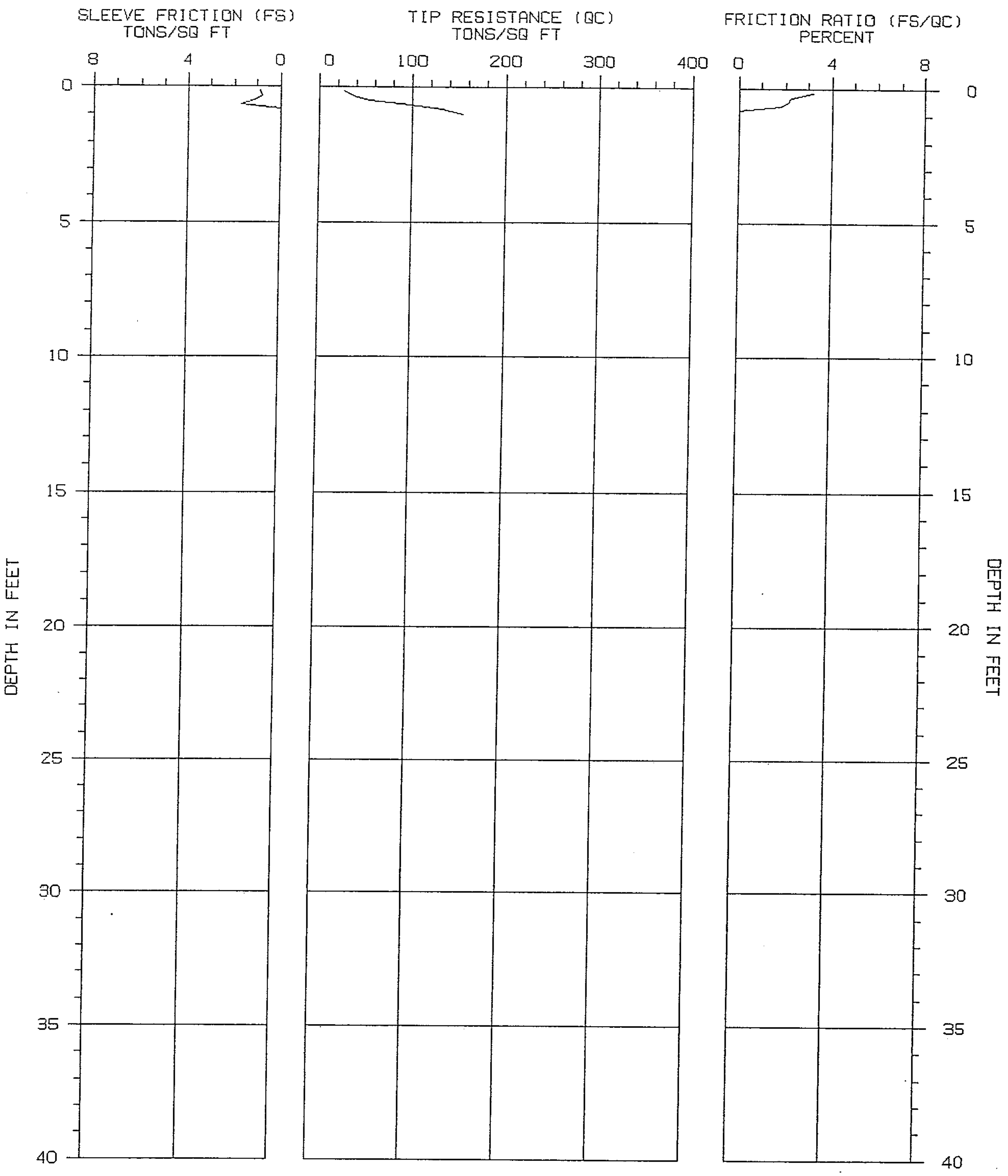
*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-06B

PROJECT NAME : AGS-HOME DEPOT
PROJECT NUMBER : 2738

CONE/RIG : 491\#1 JH
DATE/TIME: 11-03-00 11:08

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-06B
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 11:08

PROJECT No.: 2738
CONE/RIG : 491\#1 JH

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	27.30	3.17	CLAYEY SILT to SILTY CLAY	14	22		1.8	
.100	.33	36.65	2.23	SANDY SILT to CLAYEY SILT	15	23		2.4	
.150	.49	53.83	2.12	SANDY SILT to CLAYEY SILT	22	34		3.6	
.200	.66	98.24	1.76	SILTY SAND to SANDY SILT	33	52	76		
.250	.82	131.10	*****		0	0			

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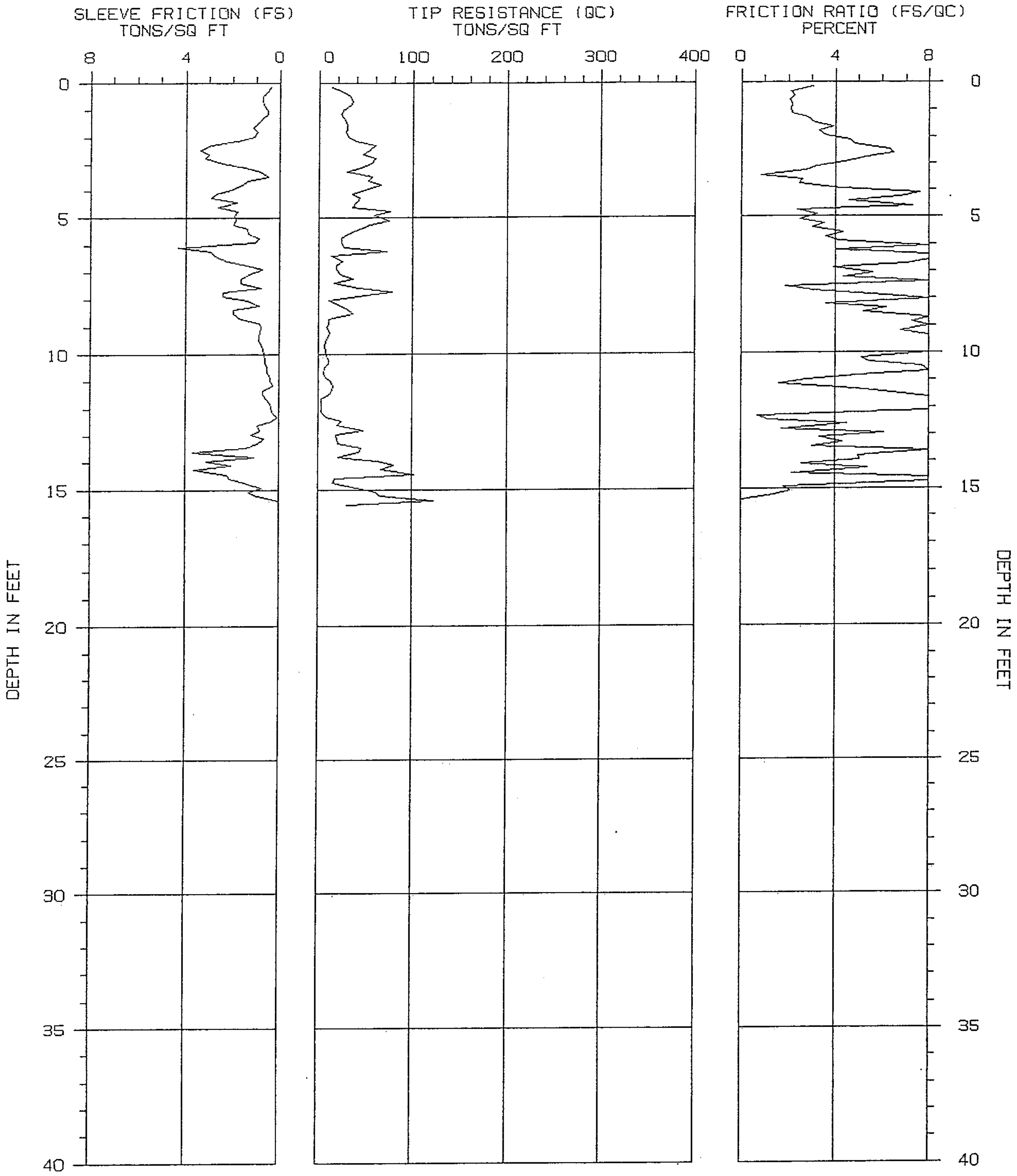
*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

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CONE PENETRATION TEST

SOUNDING NUMBER: CPT-06C

PROJECT NAME : AGS-HOME DEPOT

PROJECT NUMBER : 2738

CONE/RIG : 491\#1 JH

DATE/TIME: 11-03-00 12:01

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-06C
PROJECT : AGS-HOME DEPOT
DATE/TIME: 11-03-00 12:01

PROJECT No.: 2738
CONE/RIG : 491\#1 JH

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.050	.16	13.81	3.01	CLAY to SILTY CLAY	9	15		.9	
.100	.33	27.36	2.12	SANDY SILT to CLAYEY SILT	11	18		1.8	
.150	.49	33.97	2.21	SANDY SILT to CLAYEY SILT	14	22		2.3	
.200	.66	36.35	2.06	SANDY SILT to CLAYEY SILT	15	23		2.4	
.250	.82	33.42	2.15	SANDY SILT to CLAYEY SILT	13	21		2.2	
.300	.98	25.79	2.11	SANDY SILT to CLAYEY SILT	10	16		2.1	
.350	1.15	23.99	2.14	SANDY SILT to CLAYEY SILT	10	15		1.9	
.400	1.31	26.92	2.81	CLAYEY SILT to SILTY CLAY	13	22		1.8	
.450	1.48	30.59	3.13	CLAYEY SILT to SILTY CLAY	15	24		2.0	
.500	1.64	29.83	3.90	CLAY to SILTY CLAY	20	32		2.0	
.550	1.80	29.23	3.30	CLAYEY SILT to SILTY CLAY	15	23		1.9	
.600	1.97	31.31	3.59	CLAYEY SILT to SILTY CLAY	16	25		2.1	
.650	2.13	39.03	4.65	CLAY to SILTY CLAY	26	42		2.3	
.700	2.30	60.78	4.81	CLAY to SILTY CLAY	41	65		3.6	
.750	2.46	53.58	6.33	CLAY	54	86		3.1	
.800	2.62	46.48	6.48	CLAY	46	74		2.7	
.850	2.79	60.06	5.35	CLAY	60	96		3.5	
.900	2.95	55.56	4.36	CLAYEY SILT to SILTY CLAY	28	44		3.3	
.950	3.12	45.21	3.20	CLAYEY SILT to SILTY CLAY	23	36		3.0	
1.000	3.28	30.83	2.73	CLAYEY SILT to SILTY CLAY	15	25		2.0	
1.050	3.44	57.38	.85	SILTY SAND to SANDY SILT	19	31	60		45.0
1.100	3.61	52.69	2.58	SANDY SILT to CLAYEY SILT	21	34		3.5	
1.150	3.77	65.54	2.46	SANDY SILT to CLAYEY SILT	26	42		4.4	
1.200	3.94	49.42	4.25	CLAYEY SILT to SILTY CLAY	25	40		2.9	
1.250	4.10	35.48	7.58	CLAY	35	57		2.1	
1.300	4.27	43.13	6.77	CLAY	43	69		2.5	
1.350	4.43	39.77	4.58	CLAY to SILTY CLAY	27	42		2.3	
1.400	4.59	36.18	7.27	CLAY	36	58		2.1	
1.450	4.76	75.48	2.36	SANDY SILT to CLAYEY SILT	30	48		5.0	
1.500	4.92	58.91	3.21	SANDY SILT to CLAYEY SILT	24	38		3.4	
1.550	5.09	74.65	2.48	SANDY SILT to CLAYEY SILT	30	48		5.0	
1.600	5.25	54.98	3.51	CLAYEY SILT to SILTY CLAY	27	44		3.2	
1.650	5.41	44.85	3.02	SANDY SILT to CLAYEY SILT	18	29		3.0	
1.700	5.58	31.00	4.30	CLAY to SILTY CLAY	21	33		1.8	
1.750	5.74	25.05	3.61	CLAYEY SILT to SILTY CLAY	13	20		1.6	
1.800	5.91	25.15	4.15	CLAY to SILTY CLAY	17	27		1.7	
1.850	6.07	26.90	15.93	CLAY	27	43		1.8	
1.900	6.23	72.66	4.04	CLAYEY SILT to SILTY CLAY	36	58		4.3	
1.950	6.40	14.26	19.31	CLAY	14	23		.9	
2.000	6.56	26.11	8.51	CLAY	26	42		1.7	
2.050	6.73	19.57	7.03	CLAY	20	31		1.3	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

SOUNDING : CPT-06C

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
2.100	6.89	19.72	3.90	CLAY to SILTY CLAY	13	21		1.3	
2.150	7.05	23.43	5.61	CLAY	23	37		1.4	
2.200	7.22	37.43	4.36	CLAY to SILTY CLAY	25	39		2.2	
2.250	7.38	17.53	9.41	CLAY	18	27		1.1	
2.300	7.55	42.38	1.87	SANDY SILT to CLAYEY SILT	17	26		2.8	
2.350	7.71	77.63	3.08	SANDY SILT to CLAYEY SILT	31	47		4.5	
2.400	7.87	43.06	5.54	CLAY	43	64		2.5	
2.450	8.04	11.05	12.42	CLAY	11	16		.7	
2.500	8.20	23.92	3.61	CLAY to SILTY CLAY	16	23		1.6	
2.550	8.37	31.36	6.16	CLAY	31	45		1.8	
2.600	8.53	37.56	5.20	CLAY	38	54		2.2	
2.650	8.69	11.43	14.43	CLAY	11	16		.7	
2.700	8.86	11.83	7.31	CLAY	12	17		.8	
2.750	9.02	8.86	8.92	CLAY	9	12		.6	
2.800	9.19	12.58	6.81	CLAY	13	17		.8	
2.850	9.35	10.73	8.41	CLAY	11	15		.7	
2.900	9.51	8.52	10.44	CLAY	9	12		.5	
2.950	9.68	7.33	10.19	CLAY	7	10		.5	
3.000	9.84	8.37	8.26	CLAY	8	11		.5	
3.050	10.01	7.80	8.79	CLAY	8	10		.5	
3.100	10.17	11.77	5.13	CLAY	12	15		.7	
3.150	10.33	11.32	5.43	CLAY	11	15		.7	
3.200	10.50	7.18	7.69	CLAY	7	9		.4	
3.250	10.66	6.42	8.40	CLAY	6	8		.4	
3.300	10.83	7.99	4.98	CLAY	8	10		.5	
3.350	10.99	13.94	2.75	CLAYEY SILT to SILTY CLAY	7	9		.9	
3.400	11.15	15.51	1.61	CLAYEY SILT to SILTY CLAY	8	10		1.2	
3.450	11.32	14.68	4.84	CLAY	15	18		.9	
3.500	11.48	10.96	6.46	CLAY	11	13		.7	
3.550	11.65	3.74	15.45	ORGANIC MATERIAL	4	5		.3	
3.600	11.81	3.46	11.36	ORGANIC MATERIAL	3	4		.3	
3.650	11.98	3.29	11.43	ORGANIC MATERIAL	3	4		.3	
3.700	12.14	3.31	9.46	ORGANIC MATERIAL	3	4		.3	
3.750	12.30	9.84	.71	SENSITIVE FINE GRAINED	5	6		.9	
3.800	12.47	25.37	1.15	SANDY SILT to CLAYEY SILT	10	12		2.0	
3.850	12.63	20.90	4.48	CLAY	21	25		1.3	
3.900	12.80	48.52	1.72	SILTY SAND to SANDY SILT	16	19	51		38.5
3.950	12.96	19.33	6.10	CLAY	19	22		1.1	
4.000	13.12	20.03	3.33	CLAYEY SILT to SILTY CLAY	10	12		1.3	
4.050	13.29	21.65	4.33	CLAY to SILTY CLAY	14	17		1.4	
4.100	13.45	46.21	3.03	SANDY SILT to CLAYEY SILT	18	21		3.0	
4.150	13.62	43.96	8.37	CLAY	44	50		2.5	
4.200	13.78	21.67	4.99	CLAY	22	24		1.2	
4.250	13.94	62.03	5.04	CLAY to SILTY CLAY	41	46		3.6	
4.300	14.11	79.97	2.57	SANDY SILT to CLAYEY SILT	32	36		5.3	
4.350	14.27	67.15	5.39	*VERY STIFF FINE GRAINED	67	74			
4.400	14.44	102.06	2.19	SILTY SAND to SANDY SILT	34	37	70		41.5
4.450	14.60	18.04	11.63	CLAY	18	20		1.1	
4.500	14.76	16.19	9.08	CLAY	16	18		1.0	
4.550	14.93	41.34	1.85	SANDY SILT to CLAYEY SILT	17	18		2.7	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

SOUNDING : CPT-06C

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
4.600	15.09	61.29	2.08	SILTY SAND to SANDY SILT	20	22	55		38.5
4.650	15.26	66.39	1.42	SILTY SAND to SANDY SILT	22	24	57		38.5
4.700	15.42	122.14	*****		0	0			.0
4.750	15.58	31.46	*****		0	0			.0

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*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 115 pcf
ASSUMED DEPTH OF WATER TABLE = 20.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
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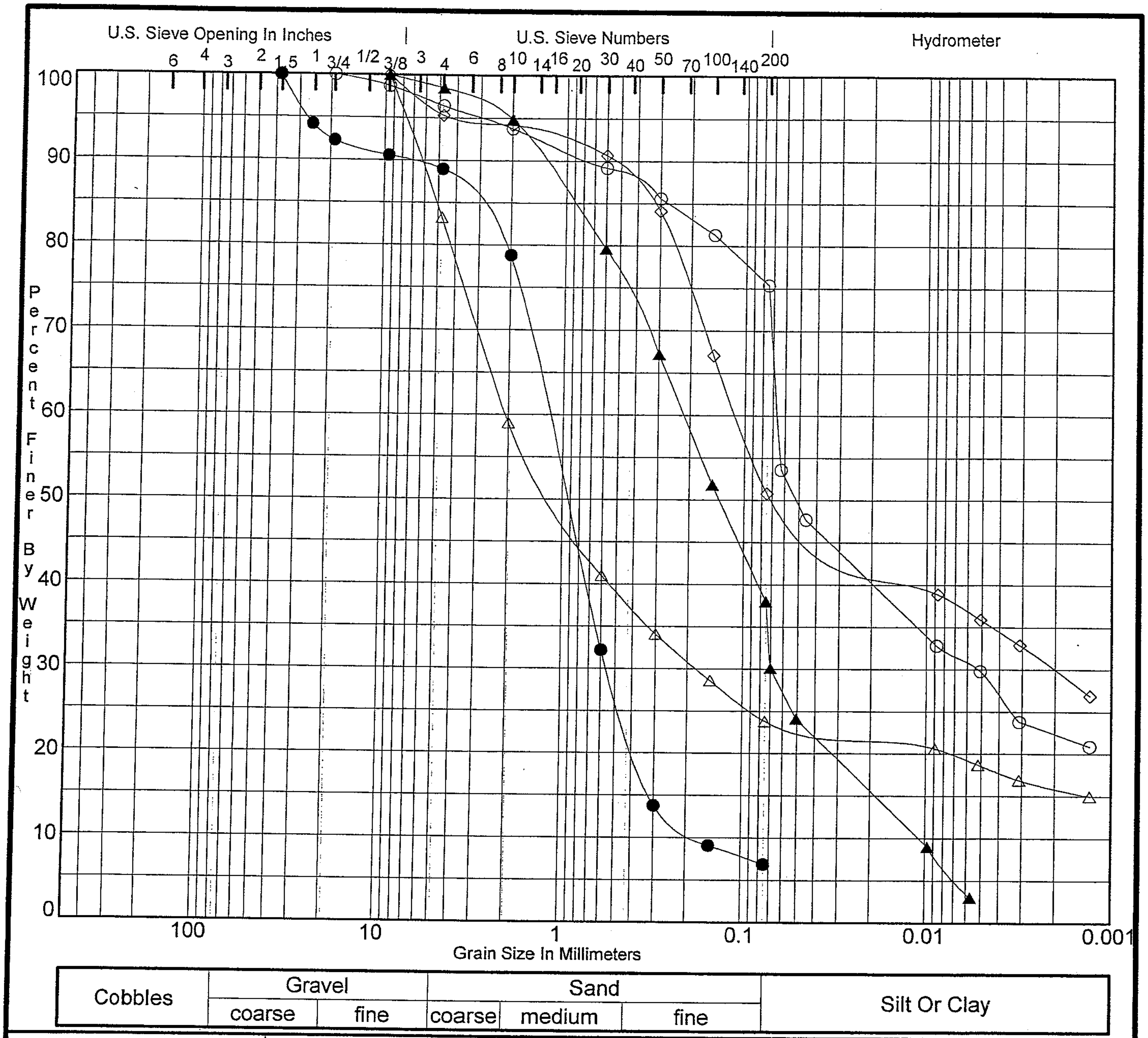
Interpretations based on: Robertson and Campanella, 1989.



Specimen Identification			Classification	MC%	LL	PL	PI	Cc	Cu
○	B-3	16.0	Very Dark Grayish Brown CLAY with Sand						
●	B-4	10.5	Brown SAND with Silt					1.45	7.2
△	B-4	22.5	Very Dark Gray Clayey SAND						
▲	B-5	6.0	Light Yellowish Brown Clayey SAND					2.09	20.0
◇	B-5	7.0	Light Brown Sandy CLAY						

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	B-3	16.0	19.00	0.07	0.005		3.6	21.0	45.8	29.6
●	B-4	10.5	38.10	1.23	0.552	0.1713	11.0	82.1	6.9	
△	B-4	22.5	9.50	2.07	0.179		16.8	59.4	5.2	18.6
▲	B-5	6.0	9.50	0.22	0.070	0.0108	1.5	60.5	38.0	
◇	B-5	7.0	9.50	0.11	0.002		4.7	44.5	15.0	35.8

Project Selleck Development Group - Agoura Road, Agoura Hills
Client No. 2738
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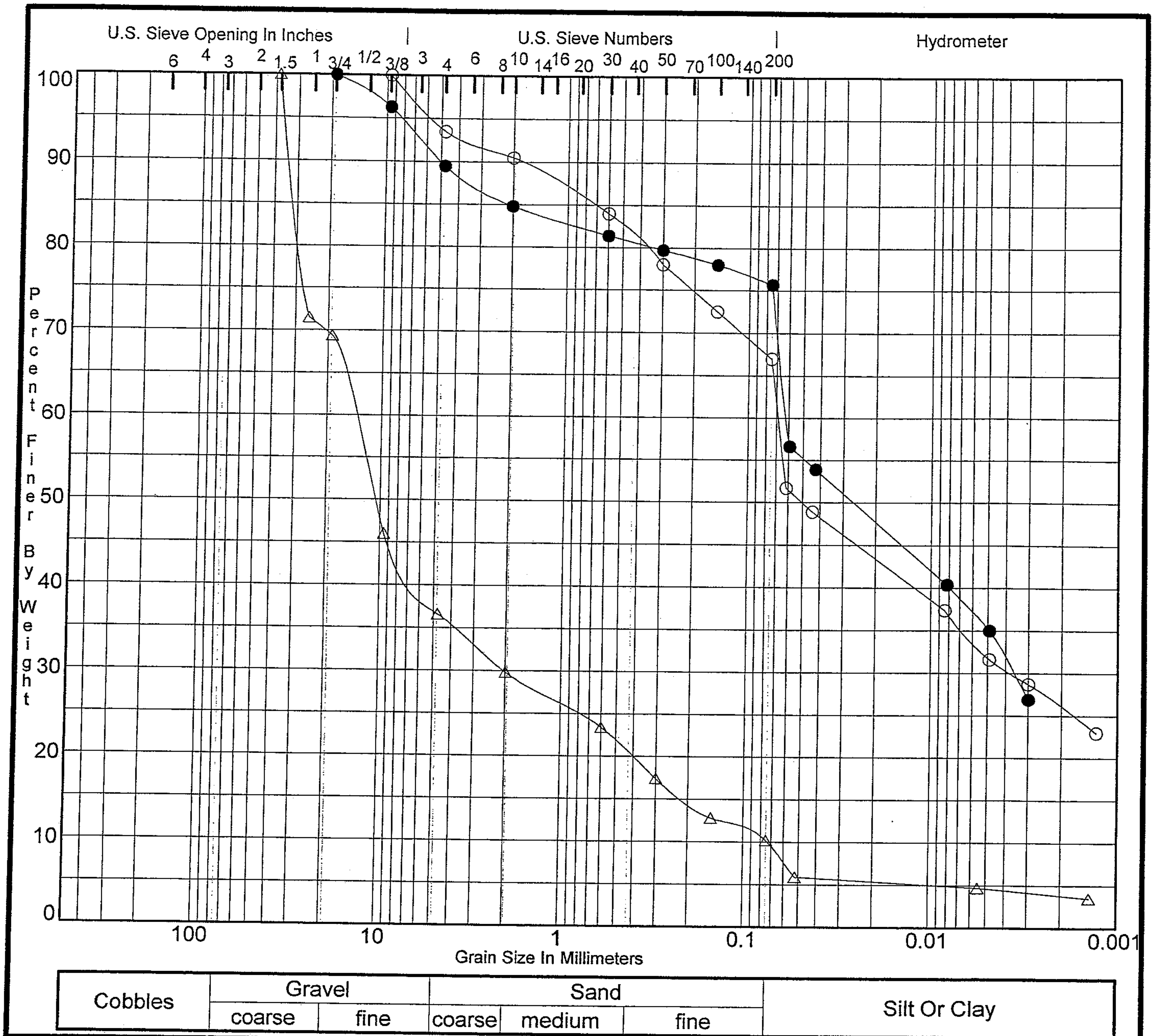
Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 2



Specimen Identification			Classification	MC%	LL	PL	PI	Cc	Cu
○	B-7	4.0	**Light Olive Brown Sandy CLAY**						
●	B-8	2.5	**Light Olive Brown CLAY with Sand**						
△	B-9	5.0	**Brown SAND with Silt**					3.97	195.0

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	B-7	4.0	9.50	0.07	0.004		6.5	26.5	35.2	31.8
●	B-8	2.5	19.00	0.06	0.004		10.5	13.8	40.5	35.2
△	B-9	5.0	38.10	14.38	2.052	0.0737	63.4	26.4	5.6	4.6

Project **Selleck Development Group - Agoura Road,**
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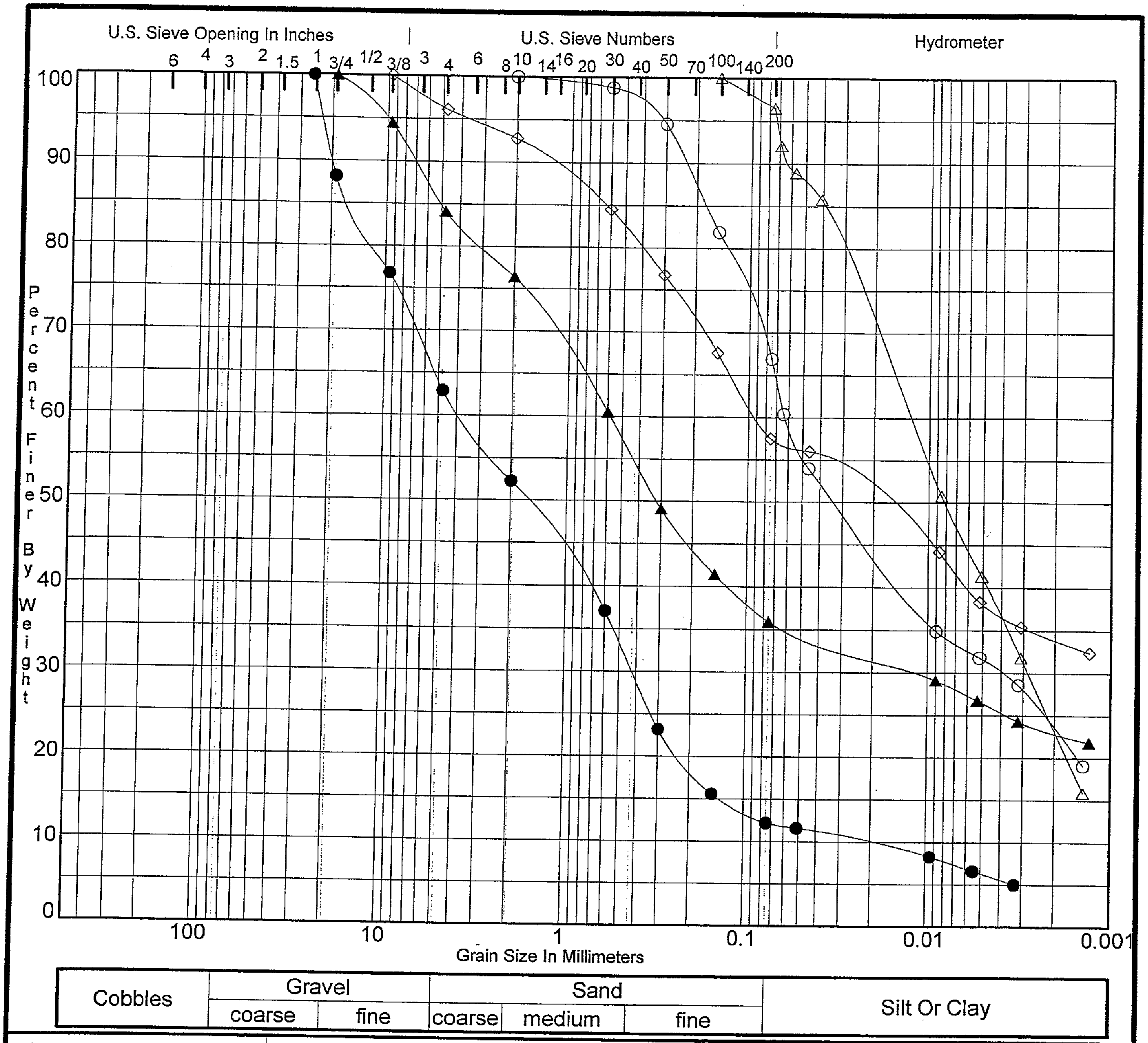
Client No. **2738**
Date **1/17/01**

Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 4



Specimen Identification			Classification	MC%	LL	PL	PI	Cc	Cu
○	B-10	5.0	Very Dark Grayish Brown Sandy CLAY						
●	B-10	14.5	Brown SAND with Silt					2.09	166.0
△	B-10	20.5	Very Dark Gray CLAY						
▲	B-13	3.0	Very Dark Grayish Brown Clayey SAND						
◇	B-16	2.0	Yellowish Brown Sandy CLAY						

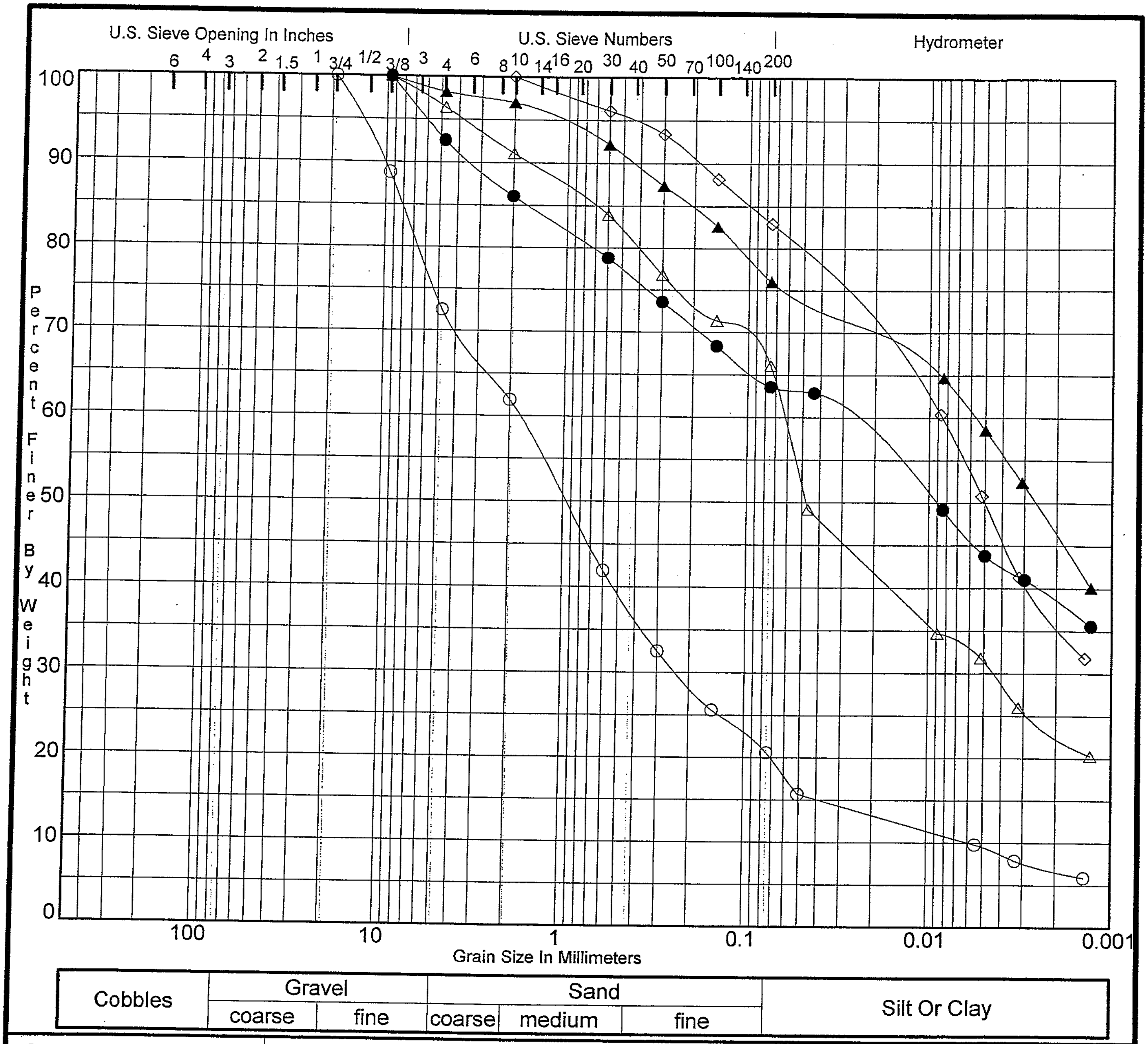
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	B-10	5.0	2.00	0.06	0.004		0.0	33.1	35.4	31.5
●	B-10	14.5	25.40	3.75	0.421	0.0226	37.1	50.7	5.9	6.3
△	B-10	20.5	0.15	0.01	0.003		0.0	3.5	55.6	40.9
▲	B-13	3.0	19.00	0.58	0.012		15.9	48.2	9.5	26.4
◇	B-16	2.0	9.50	0.09			3.9	38.6	19.4	38.1

Project	Selleck Development Group - Agoura Road, Agoura Hills	Client No. Date	2738 1/17/01

Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 5



Specimen Identification			Classification	MC%	LL	PL	PI	Cc	Cu
○	B-16	7.5	**Dark Yellowish Brown Silty SAND**					**5.15**	**300.8**
●	B-17	2.0	**Light Olive Brown Sandy CLAY**						
△	B-17	7.0	**Dark Yellowish Brown Sandy CLAY**						
▲	B-22	10.5	**Light Olive Brown CLAY with Sand**						
◇	B-22	20.5	**Dark Brown CLAY with Sand**						

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	B-16	7.5	19.00	1.78	0.233	0.0059	27.5	51.9	11.2	9.4
●	B-17	2.0	9.50	0.03			7.4	29.0	19.8	43.8
△	B-17	7.0	9.50	0.06	0.004		3.6	30.3	34.8	31.3
▲	B-22	10.5	9.50	0.01			1.8	22.2	17.5	58.5
◇	B-22	20.5	2.00	0.01			0.0	17.1	32.9	50.0

Project **Selleck Development Group - Agoura Road, Agoura Hills**

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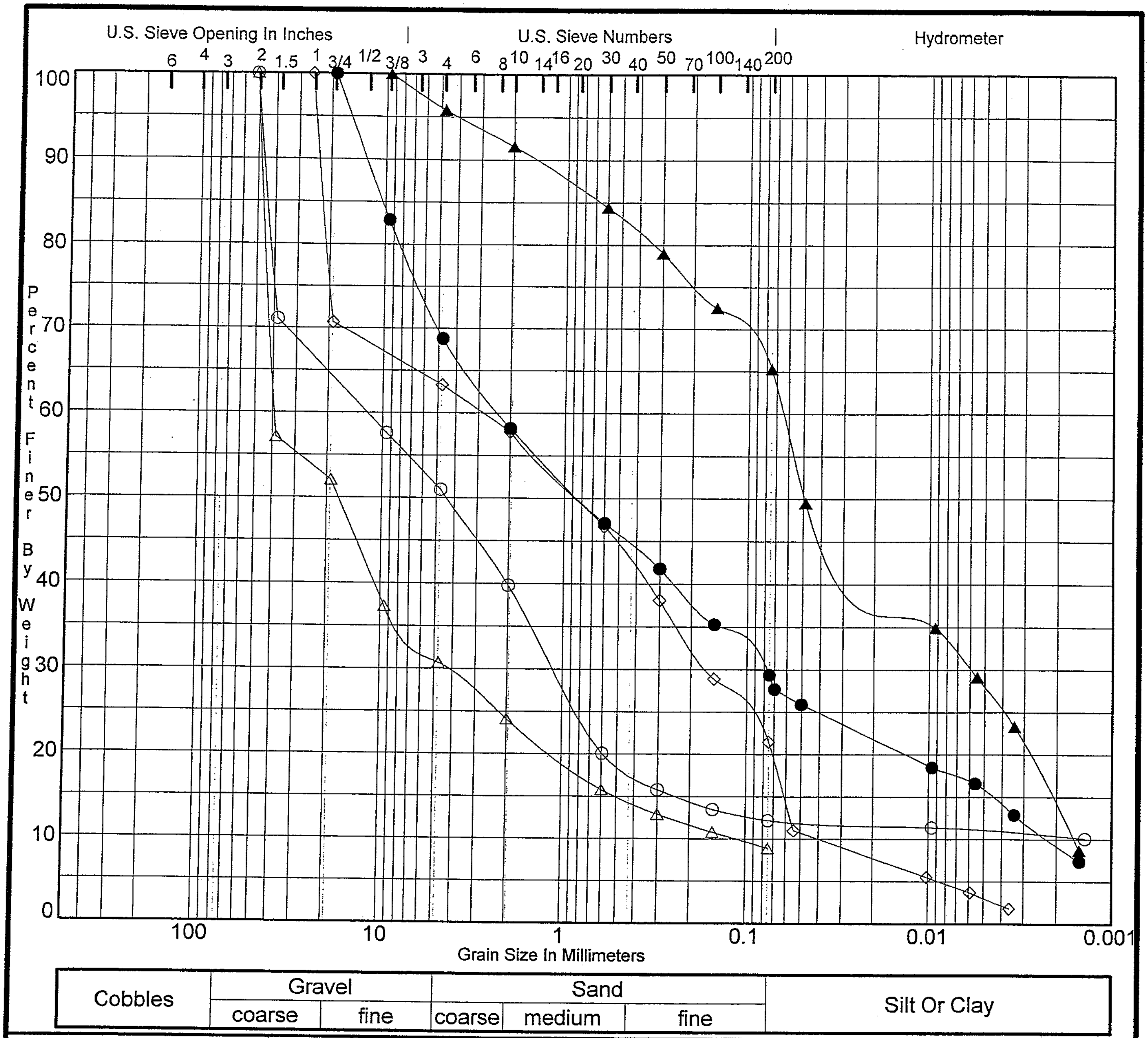
Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 6



	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
○	**B-26**	**5.5**	**Olive Brown Clayey GRAVEL with Sand**						
●	**B-27**	**5.0**	**Brown Silty Clayey SAND with Gravel**					**1.27**	**1048.9**
△	**B-29**	**10.5**	**Dark Grayish Brown GRAVEL with Silt and Sand**					**4.32**	**346.8**
▲	**B-32**	**5.3**	**Very Dark Grayish Brown Sandy CLAY**					**0.34**	**40.2**
◇	**B-35**	**10.0**	**Grayish Brown Silty SAND with Gravel**					**0.23**	**70.7**

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	**B-26**	**5.5**	**50.80**	**12.16**	**1.099**		**49.0**	**38.8**	**1.2**	**11.0**
●	**B-27**	**5.0**	**19.00**	**2.32**	**0.080**	**0.0022**	**31.2**	**39.4**	**13.6**	**15.8**
△	**B-29**	**10.5**	**50.80**	**38.85**	**4.334**	**0.1120**	**69.3**	**21.8**	**8.9**	
▲	**B-32**	**5.3**	**9.50**	**0.06**	**0.006**	**0.0016**	**4.2**	**30.5**	**37.3**	**28.0**
◇	**B-35**	**10.0**	**25.40**	**2.83**	**0.163**	**0.0400**	**36.7**	**41.8**	**18.4**	**3.1**

Project **Selleck Development Group - Agoura Road,**
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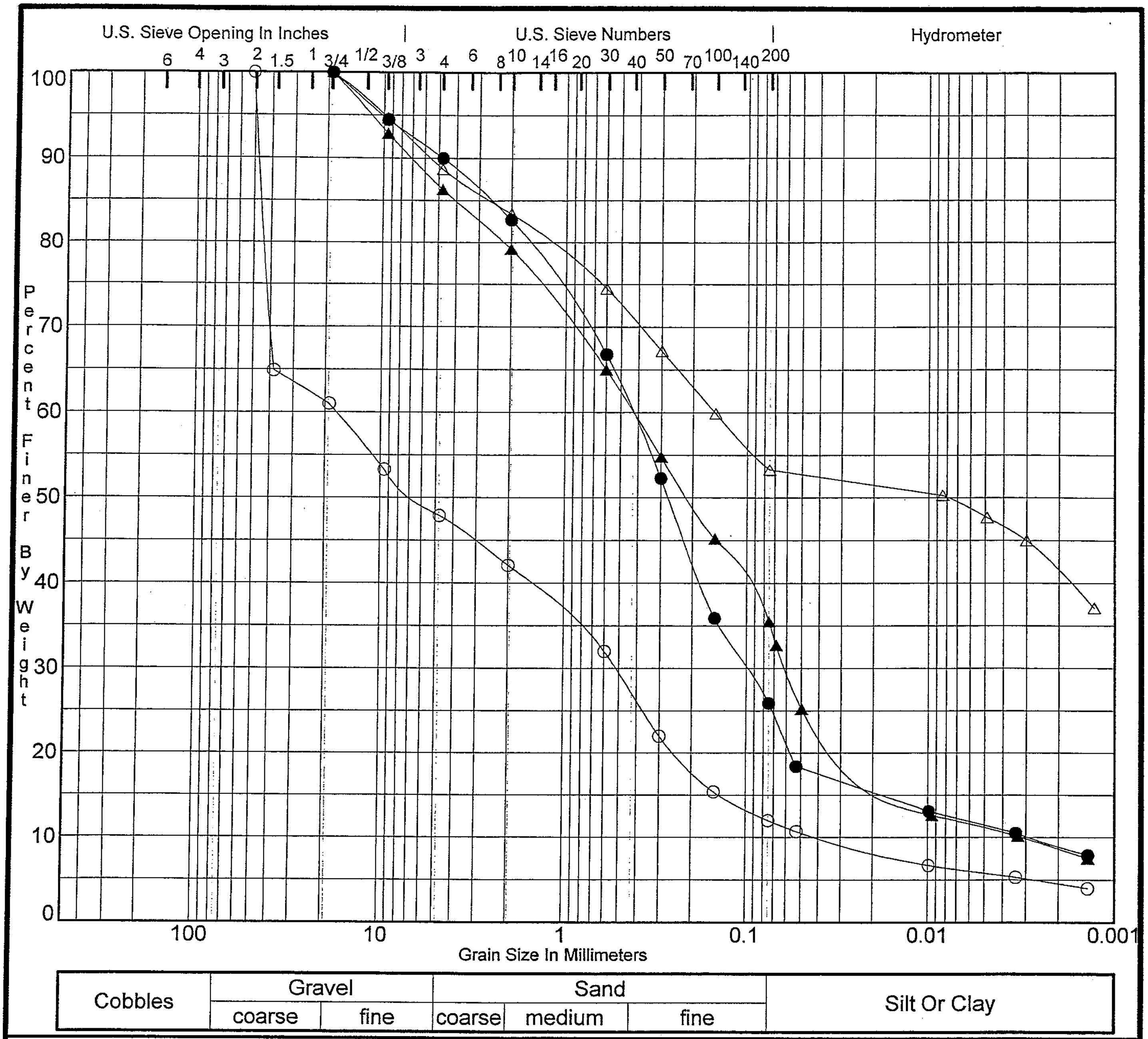
Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 7



Specimen Identification			Classification	MC%	LL	PL	PI	Cc	Cu
○	B-58	6.0	**Yellowish Brown GRAVEL with Silt and Sand**					0.40	442.2
●	B-61	10.0	**Yellowish Brown Silty Clayey SAND**					7.99	151.2
△	TP-2	3.0	**Dark Yellowish Brown Sandy CLAY**						
▲	TP-8	3.0	**Dark Yellowish Brown Silty Clayey SAND**					2.72	133.8

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	B-58	6.0	50.80	17.36	0.522	0.0393	52.1	35.9	6.2	5.8
●	B-61	10.0	19.00	0.43	0.100	0.0029	10.0	64.1	14.5	11.4
△	TP-2	3.0	19.00	0.15			11.3	35.4	5.5	47.8
▲	TP-8	3.0	19.00	0.43	0.061	0.0032	13.7	50.8	24.4	11.1

Project **Selleck Development Group - Agoura Road,**
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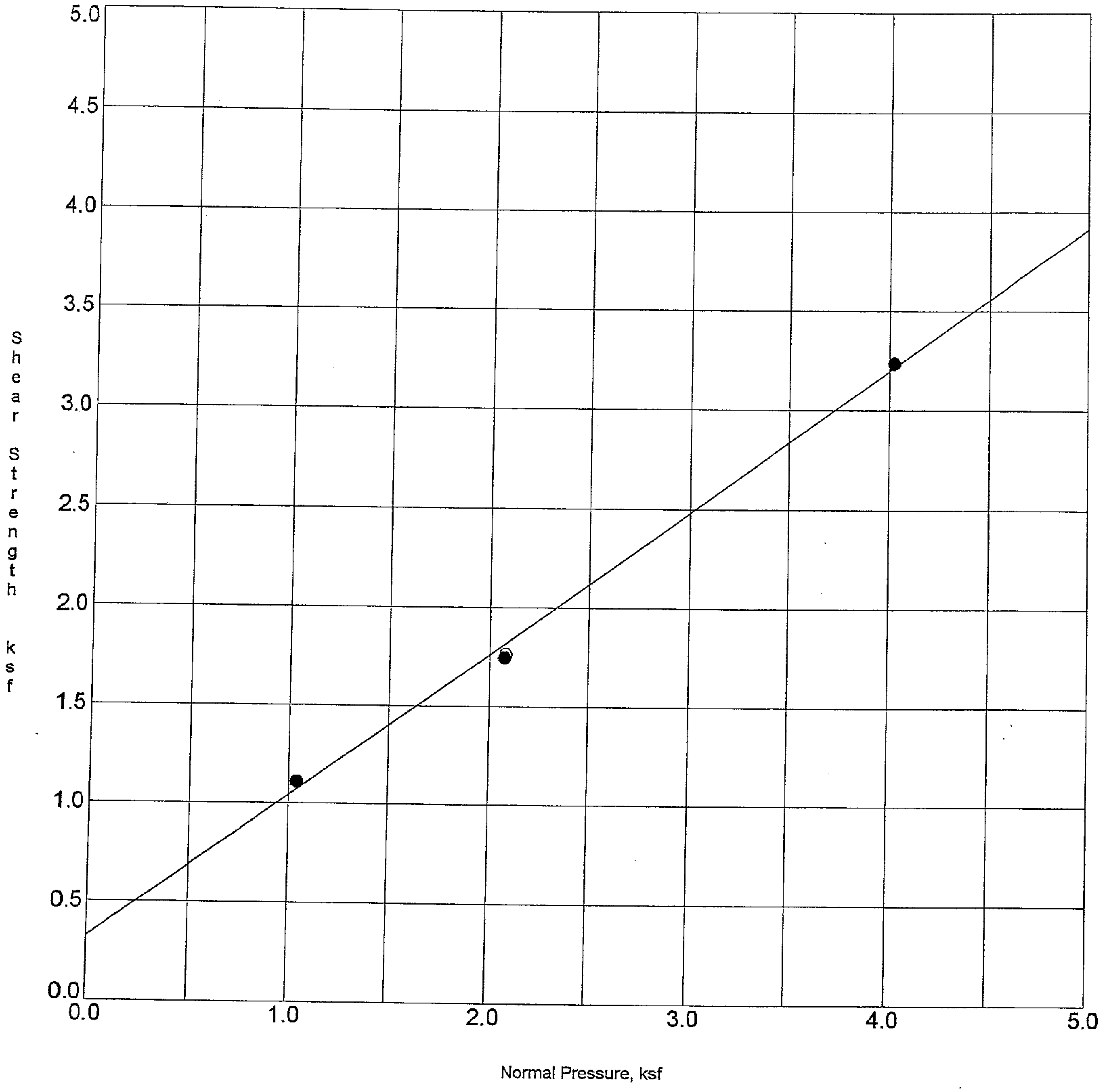
Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 9



○ - Peak Shear ● - Ultimate Shear - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-4	2.0	Dark Grayish Brown Sandy CLAY with Gravel (Fill)	95.2	19.7	0.33	36
●	B-4	2.0		95.2	25.2	0.32	36

Project **Selleck Development Group - Agoura Road,**
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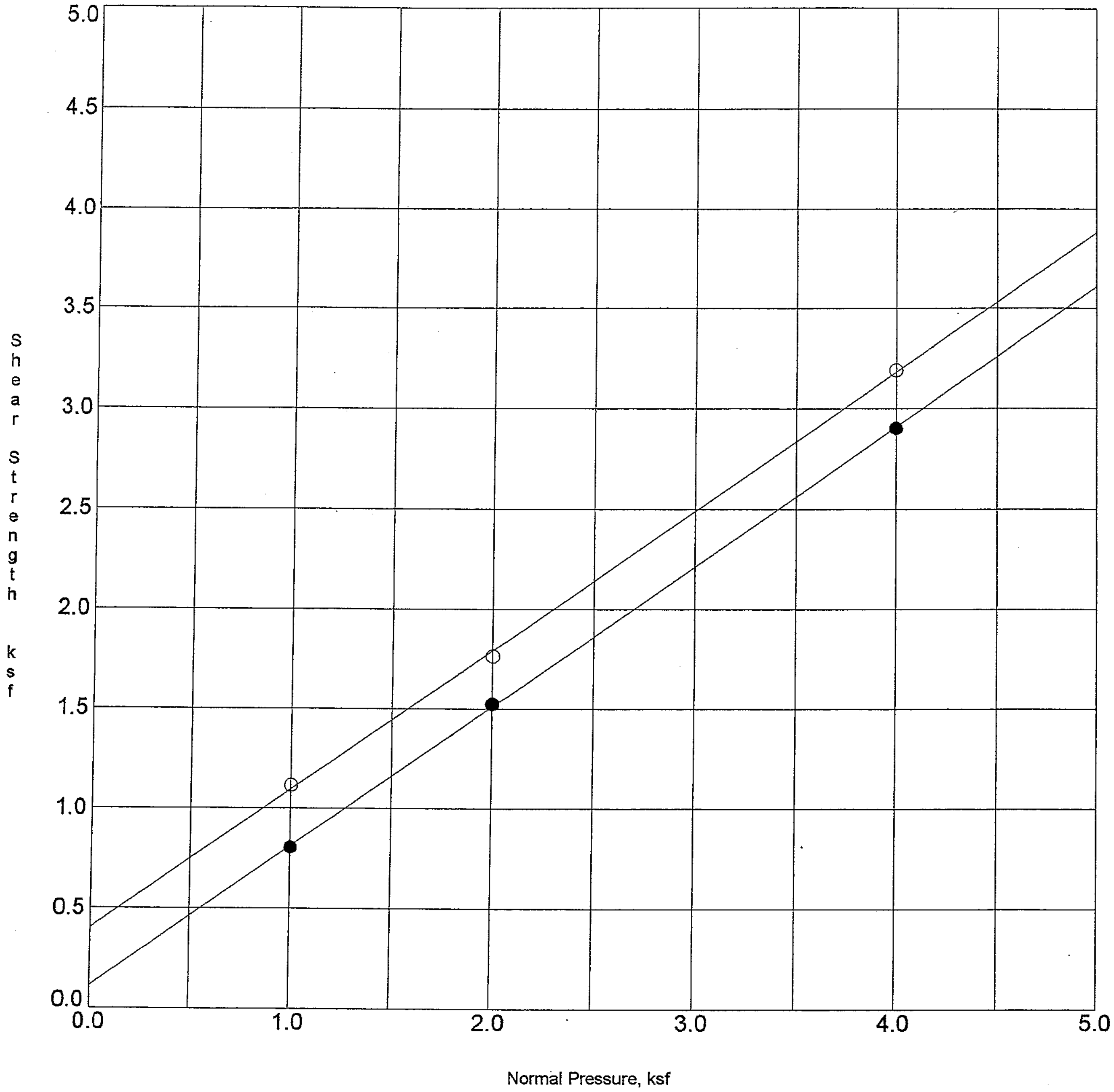
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 16



○ - Peak Shear ● - Ultimate Shear - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-13	3.0	Very Dark Grayish Brown Clayey SAND	110.6	12.2	0.40	35
●	B-13	3.0	(Remolded)	110.6	17.2	0.11	35

Project **Selleck Development Group - Agoura Road, Agoura Hills**

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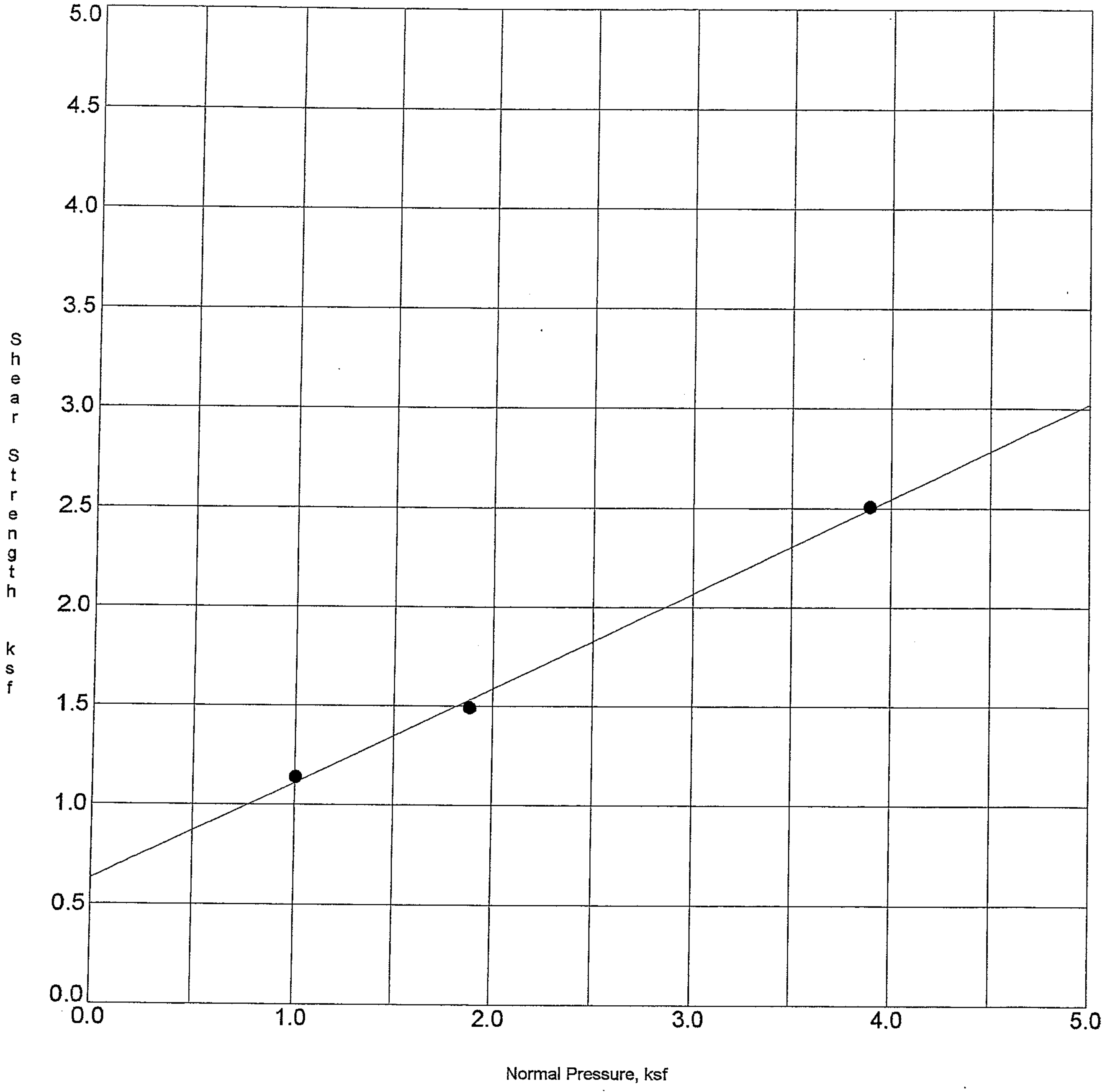
Date **1/17/01**

Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 22



○ - Peak Shear ● - Ultimate Shear - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-22	10.5	Light Olive Brown CLAY with Sand	89.4	26.3	0.63	26
●	B-22	10.5		89.4	30.0	0.63	26

Project **Selleck Development Group - Agoura Road,**
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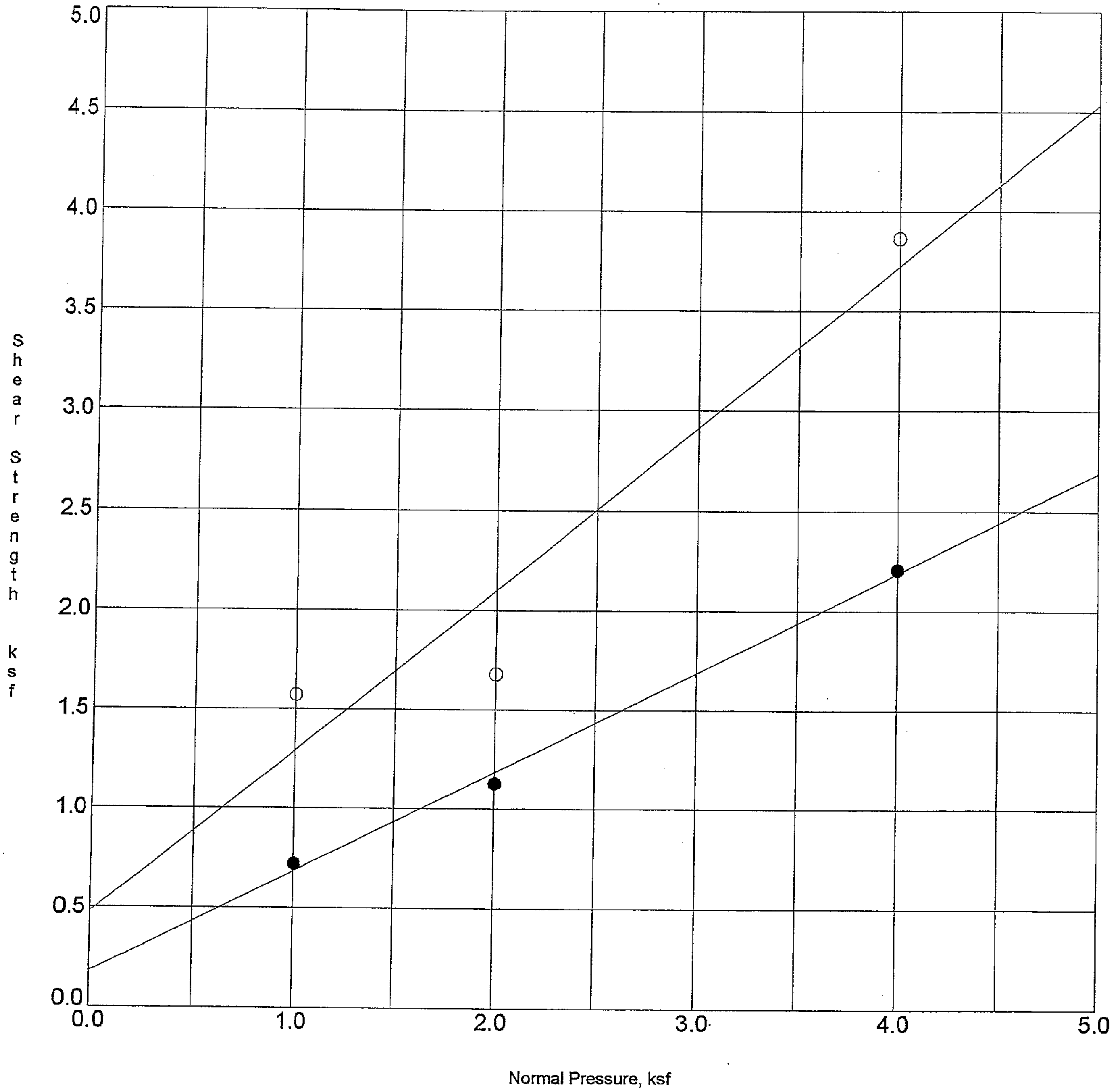
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 27



○ - Peak Shear ● - Ultimate Shear - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-22	20.5	Dark Brown CLAY with Sand	87.2	30.2	0.48	39
●	B-22	20.5	Topanga Formation	87.2	30.4	0.18	27

Project **Selleck Development Group - Agoura Road,**
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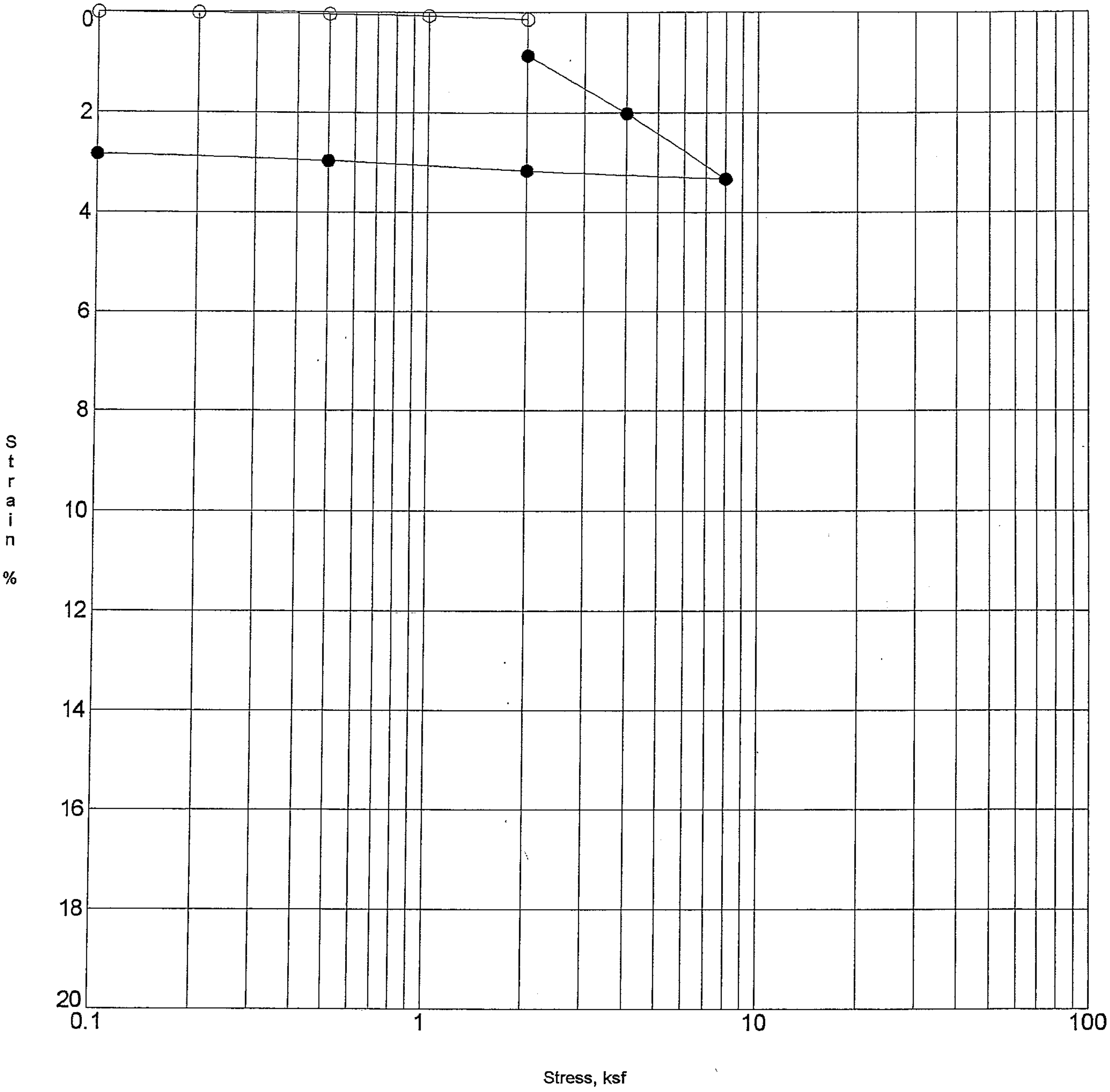
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 28



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-4	10.5	Brown SAND with Silt	87.7	5.7
●	B-4	10.5		90.3	25.5

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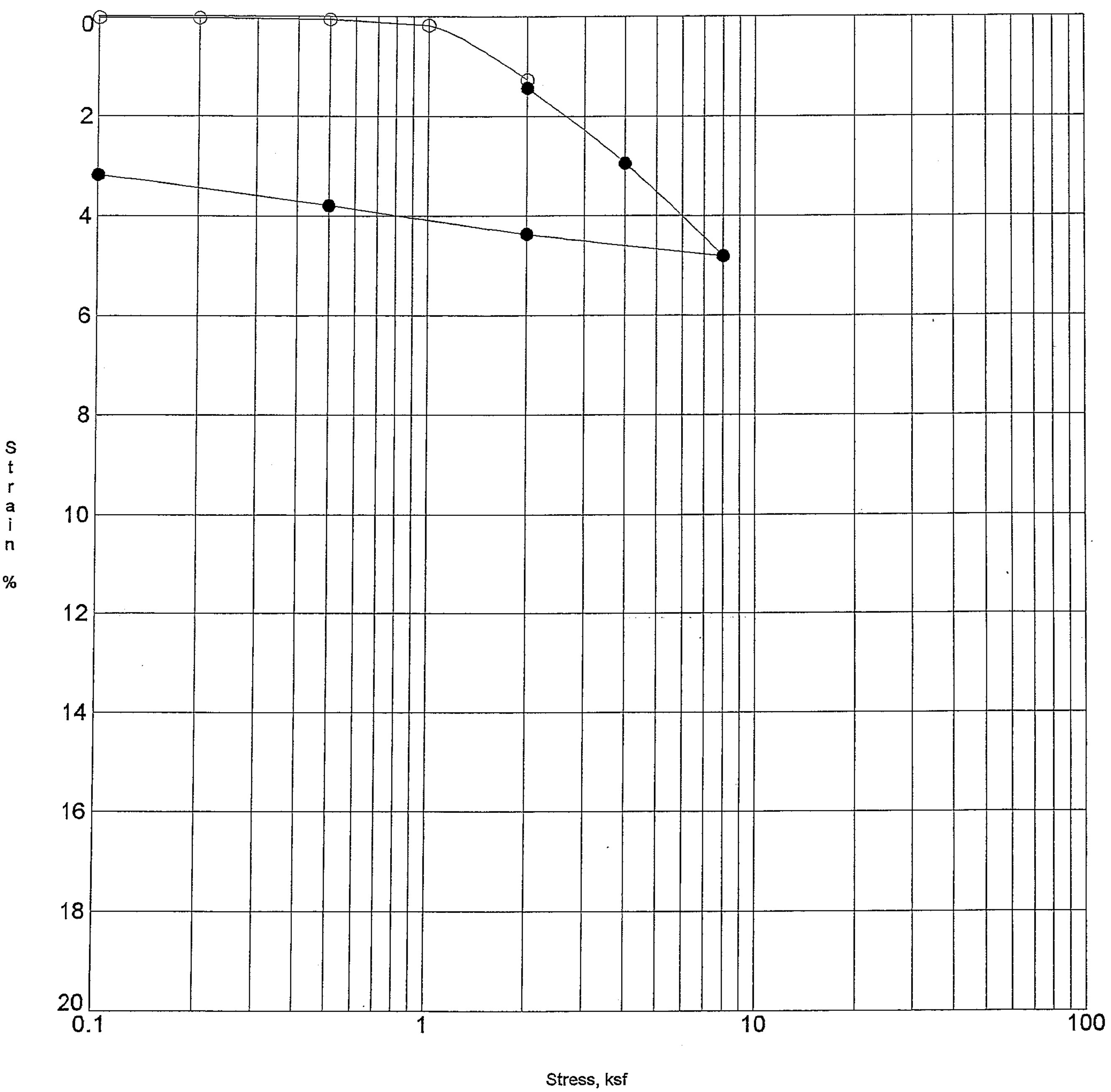
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 30



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

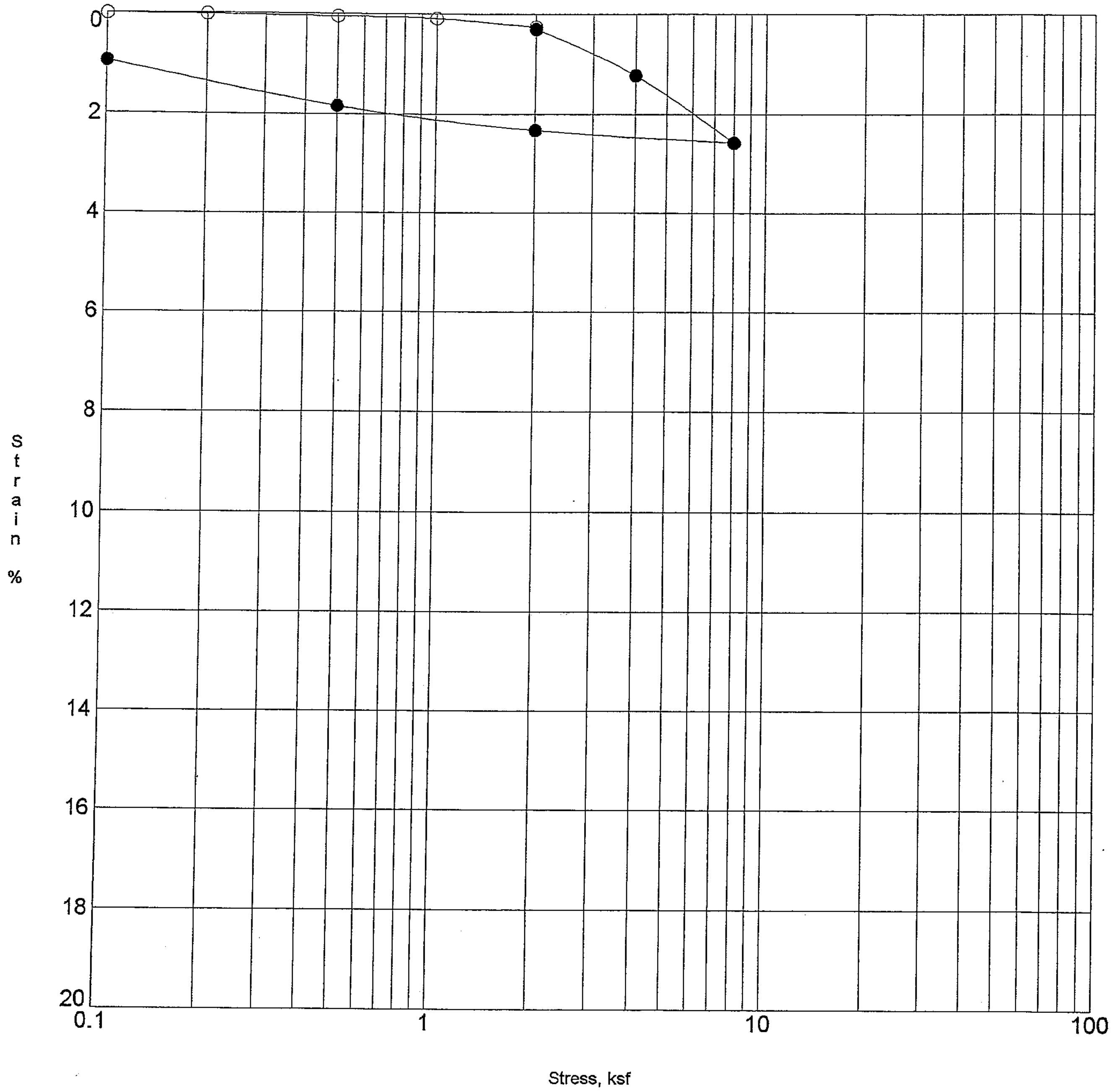
	Specimen Identification		Classification	DD	MC%
○	B-4	15.0	**Brown Silty SAND with Gravel**	103.4	12.8
●	B-4	15.0		106.8	20.0

Project	**Selleck Development Group - Agoura Road, Agoura Hills**	Client No. Date	2738 1/17/01

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 31



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	**B-13**	**3.0**	**Very Dark Grayish Brown Clayey SAND**	**112.5**	**10.3**
●	**B-13**	**3.0**	**(Remolded)**	**113.6**	**16.2**

Project **Selleck Development Group - Agoura Road,**
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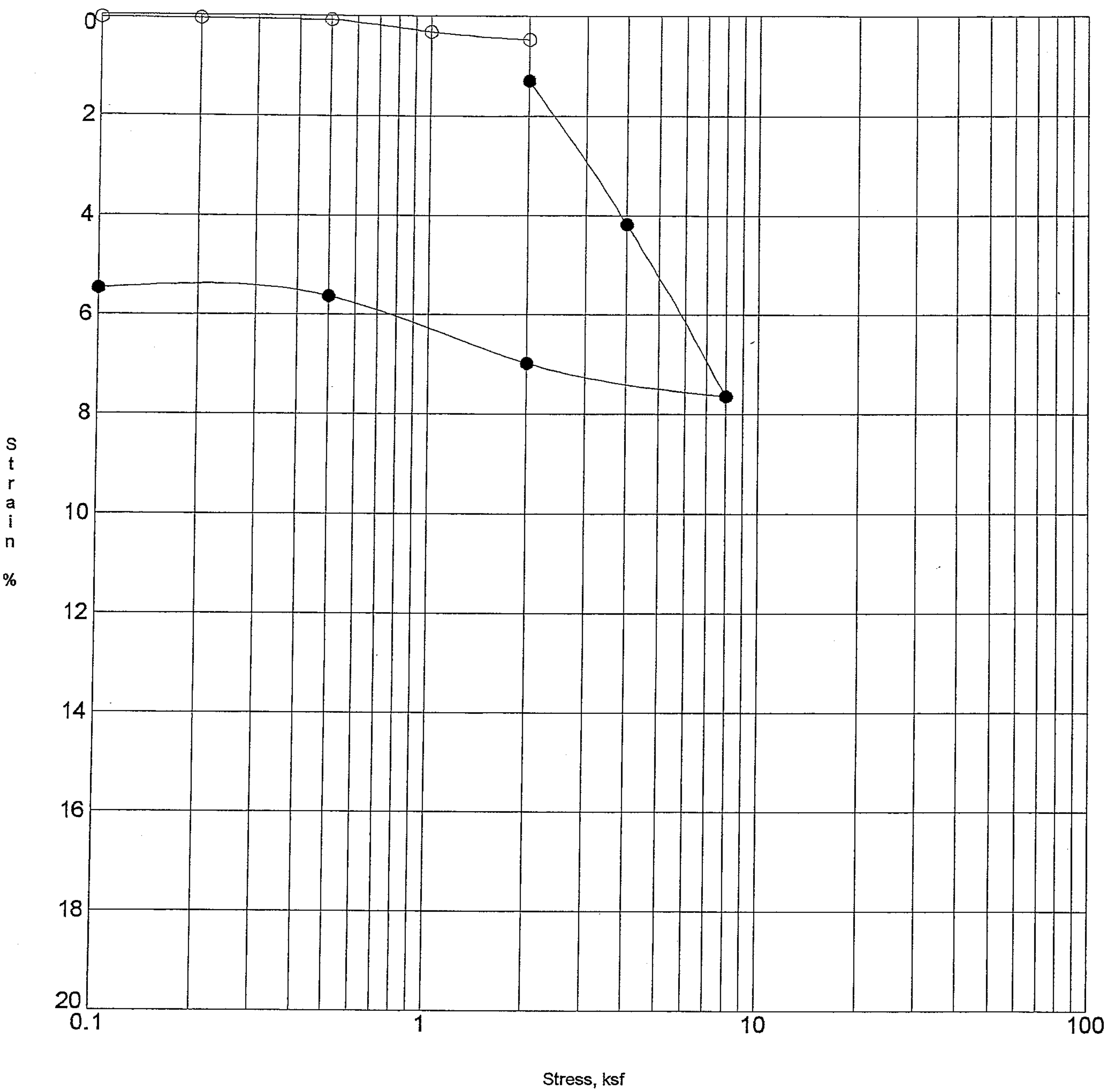
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 37



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

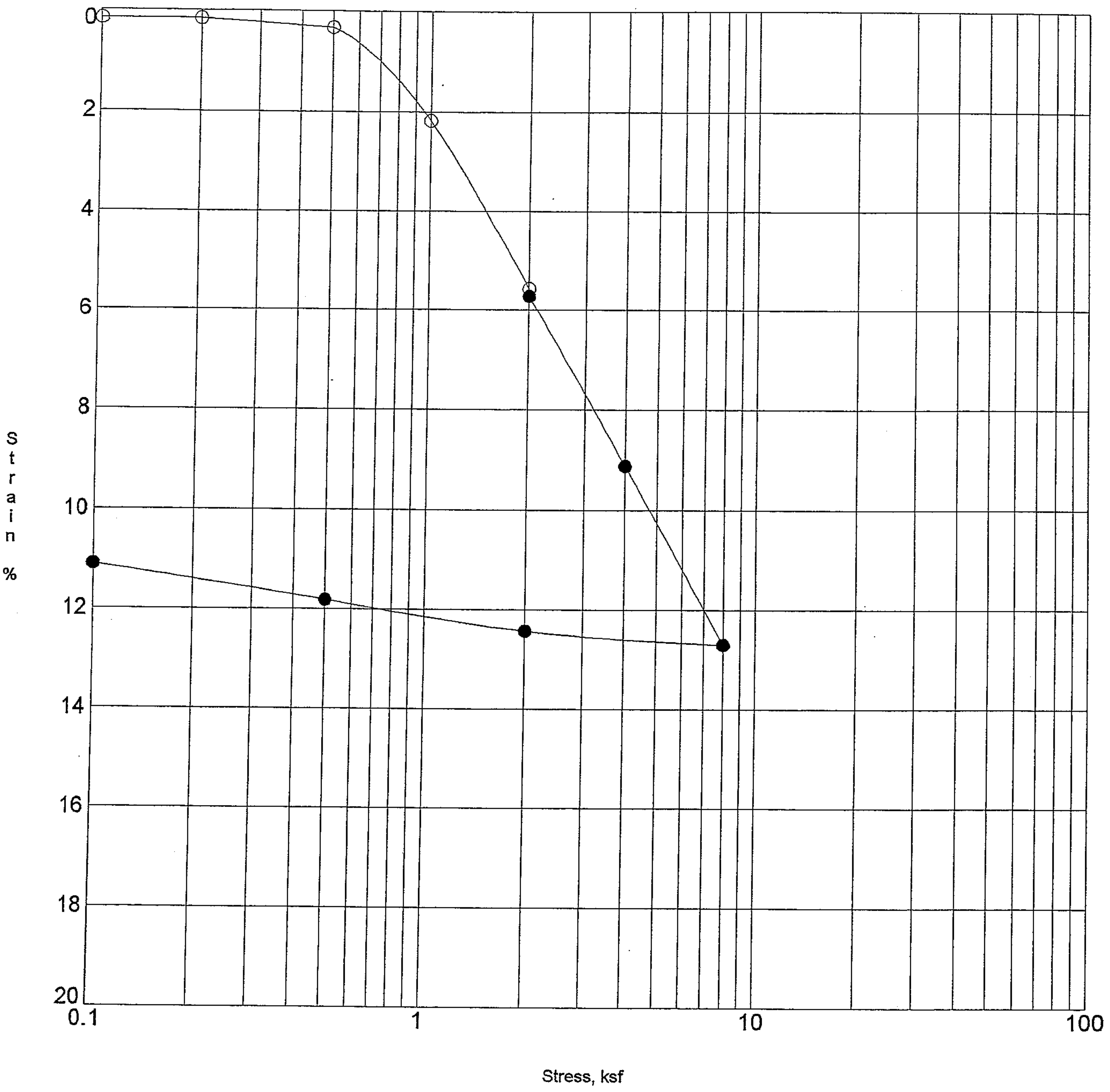
Specimen Identification			Classification	DD	MC%
○	B-22	10.5	Light Olive Brown CLAY with Sand	87.7	25.5
●	B-22	10.5		92.8	28.3

Project	**Selleck Development Group - Agoura Road,** **Agoura Hills**	Client No. Date	2738 1/17/01

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 42



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-27	5.0	Brown Silty Clayey SAND with Gravel	94.3	14.9
●	B-27	5.0		106.1	19.3

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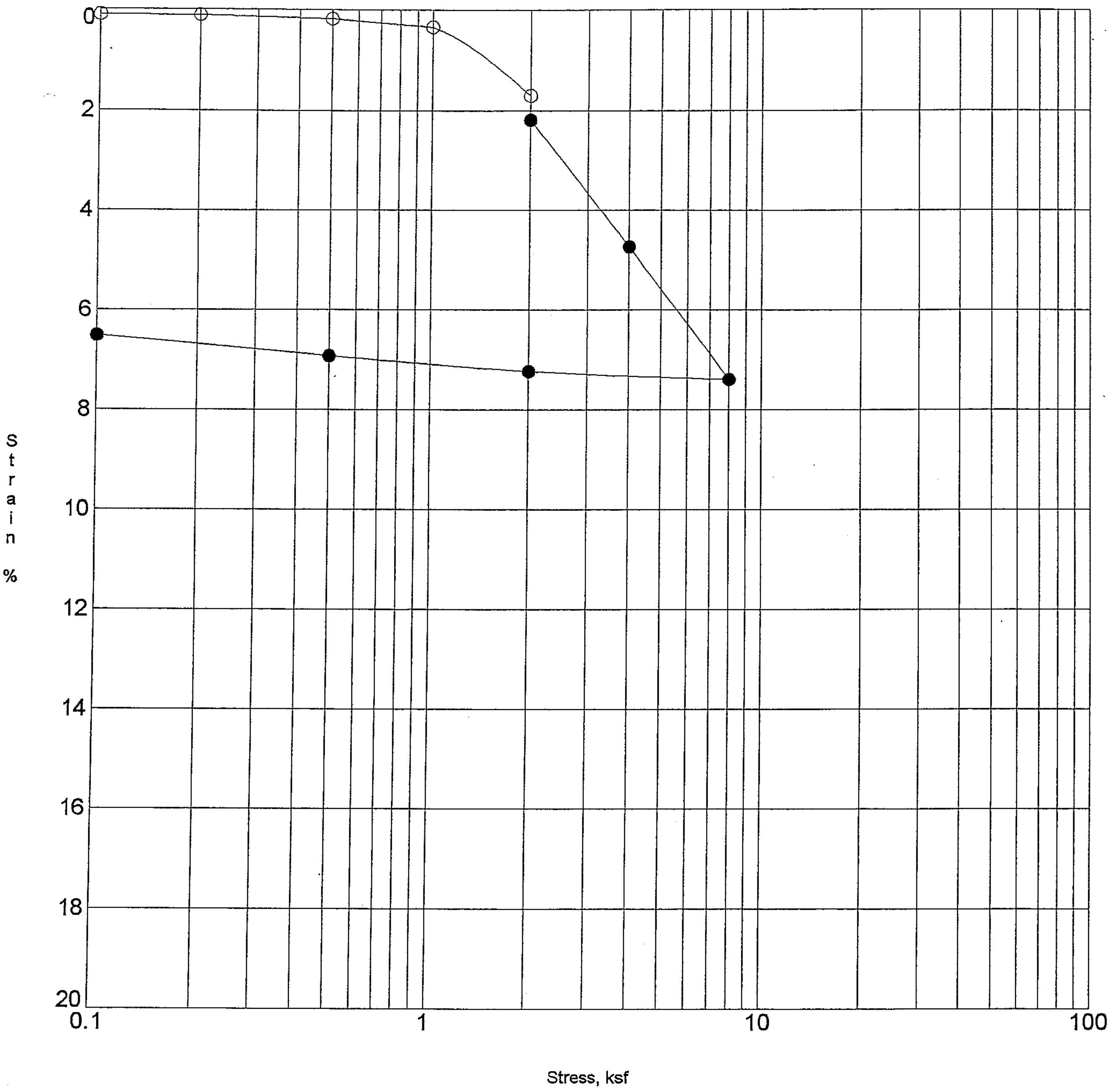
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 45



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-29	10.5	Dark Grayish Brown GRAVEL with Silt and Sand	101.8	9.8
●	B-29	10.5		108.9	19.5

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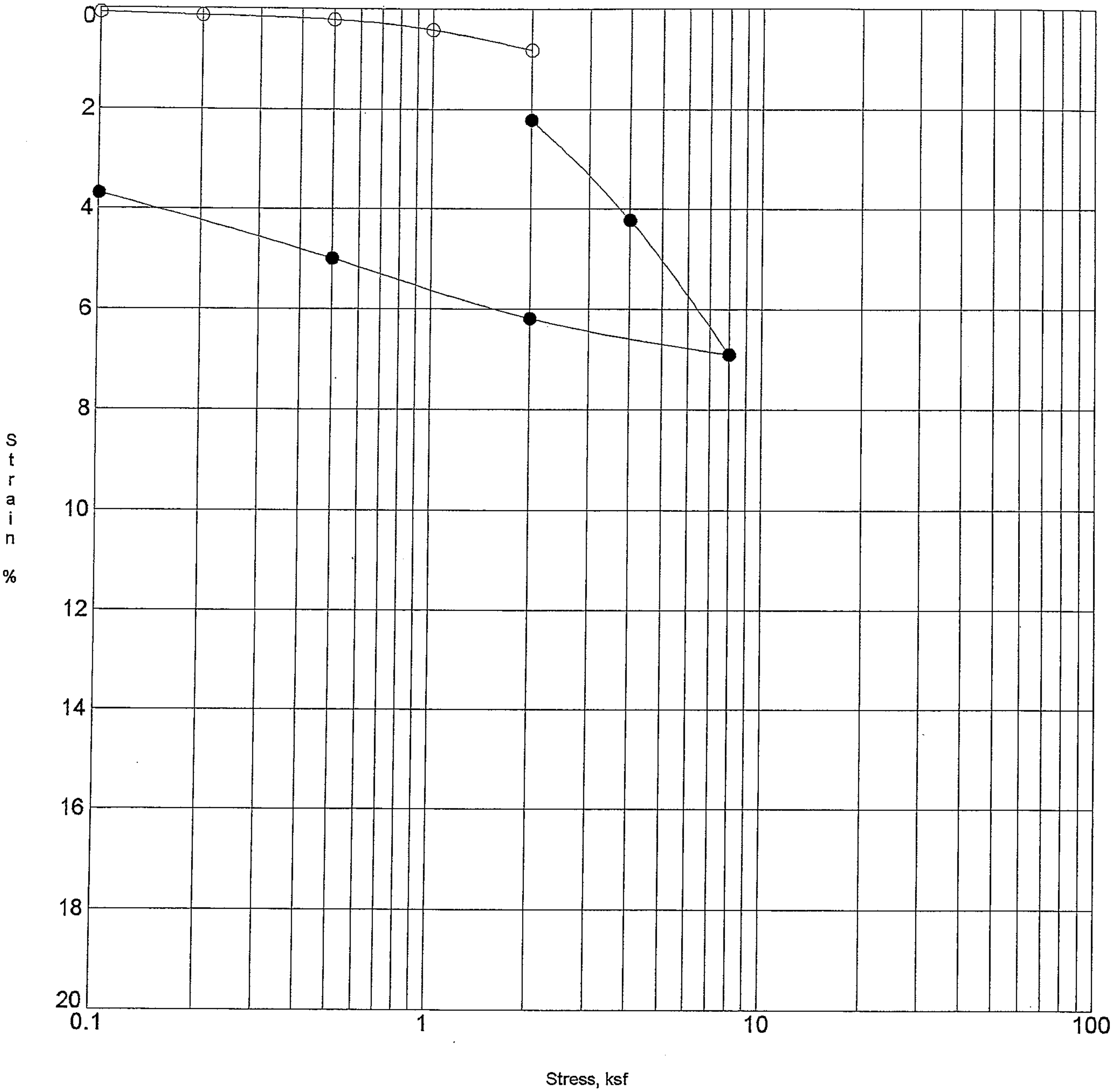
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 46



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-32	5.3	Very Dark Grayish Brown Sandy CLAY	95.2	16.5
●	B-32	5.3		98.8	23.5

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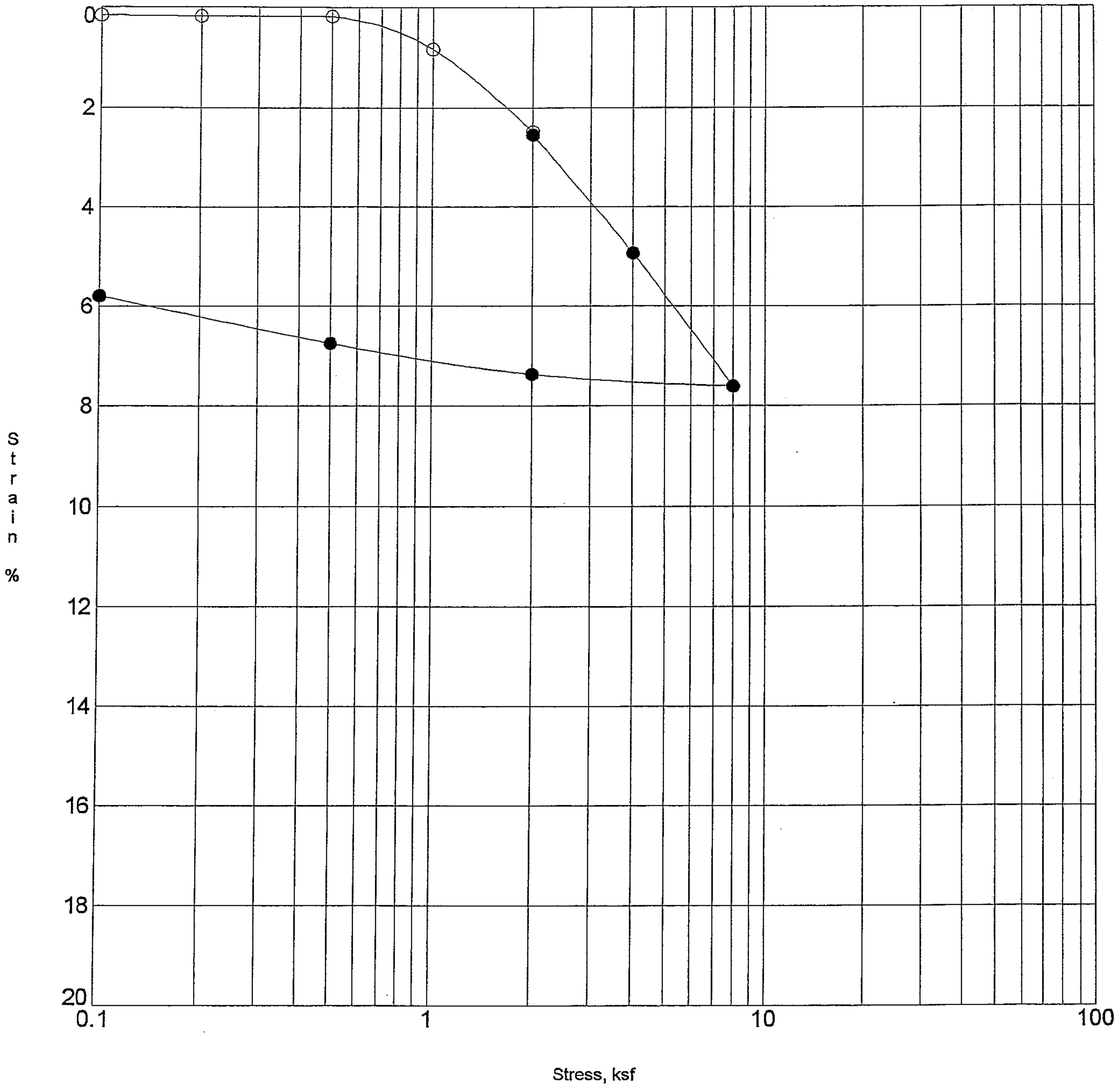
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 47



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	**B-35**	**10.0**	**Grayish Brown Silty SAND with Gravel**	**99.3**	**15.8**
●	**B-35**	**10.0**		**105.4**	**20.8**

Project **Selleck Development Group - Agoura Road, Agoura Hills**

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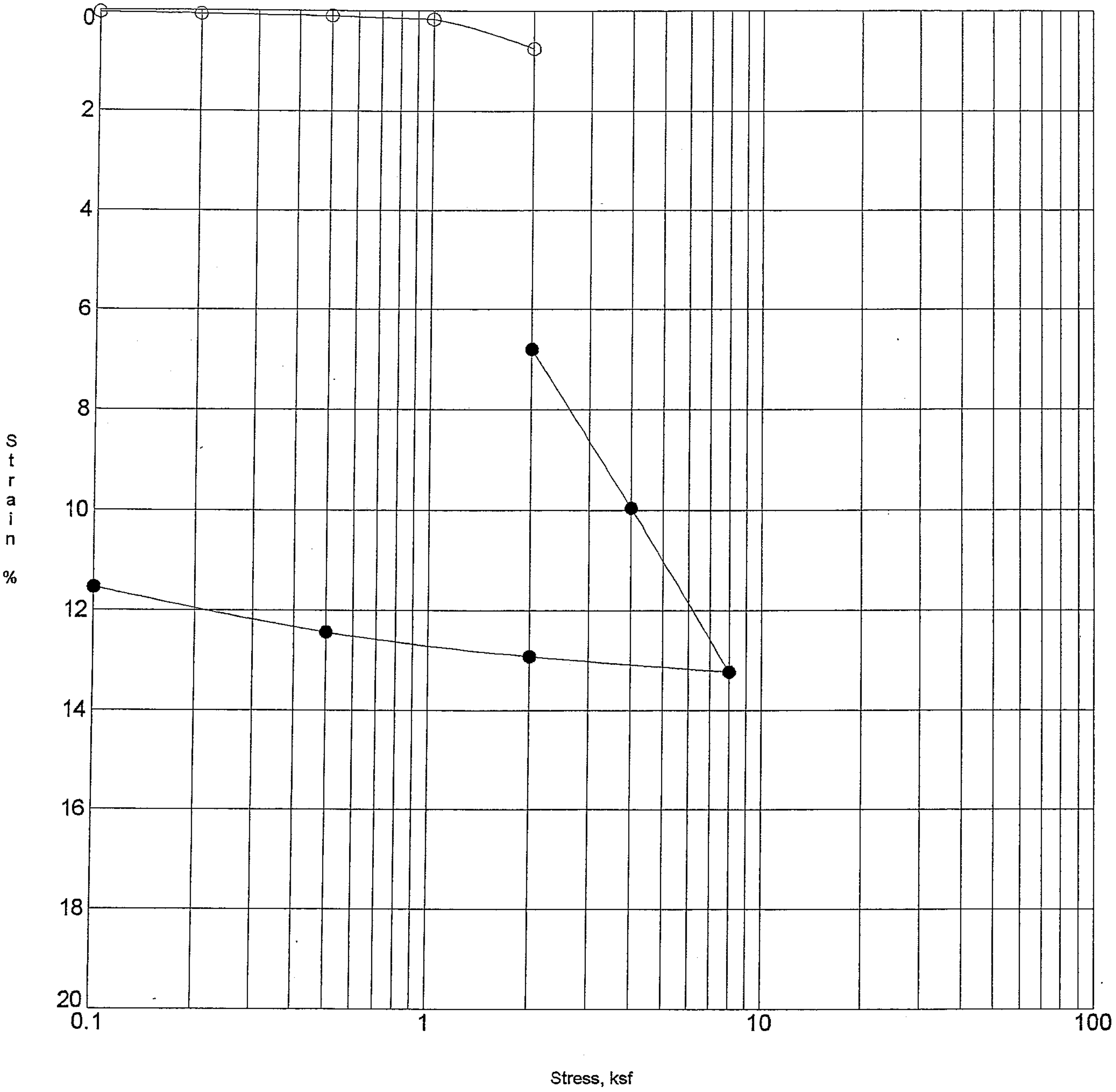
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 48



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

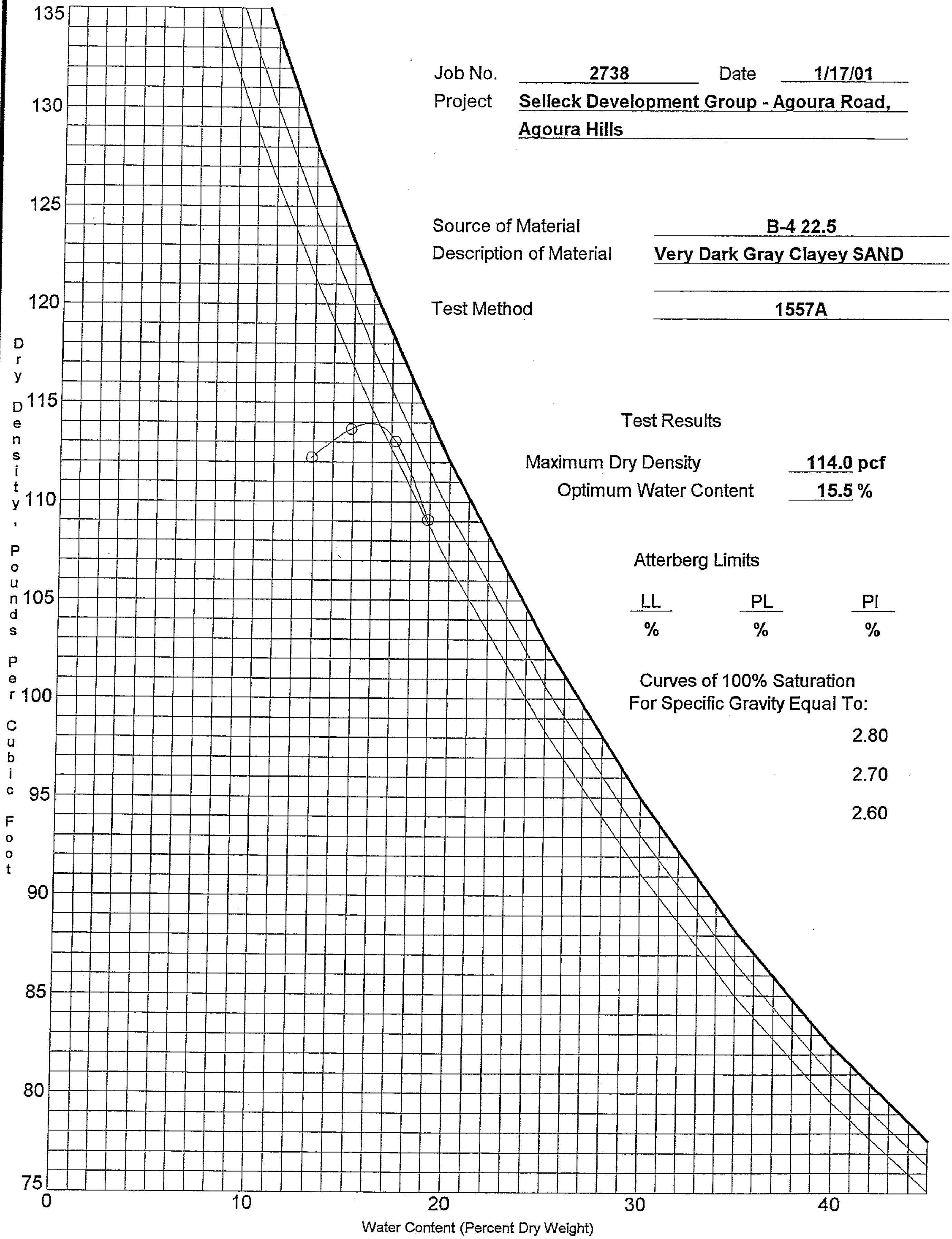
Specimen Identification			Classification	DD	MC%
○	**TP-8**	**3.0**	**Dark Yellowish Brown Silty Clayey SAND**	**91.0**	**13.6**
●	**TP-8**	**3.0**		**102.9**	**20.0**

Project	**Selleck Development Group - Agoura Road,** **Agoura Hills**	Client No. Date	**2738** **1/17/01**

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 56



Job No. **2738** Date **1/17/01**

Project **Selleck Development Group - Agoura Road, Agoura Hills**

Source of Material **B-4 22.5**

Description of Material **Very Dark Gray Clayey SAND**

Test Method **1557A**

Test Results

Maximum Dry Density **114.0** pcf

Optimum Water Content **15.5** %

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation
For Specific Gravity Equal To:

2.80

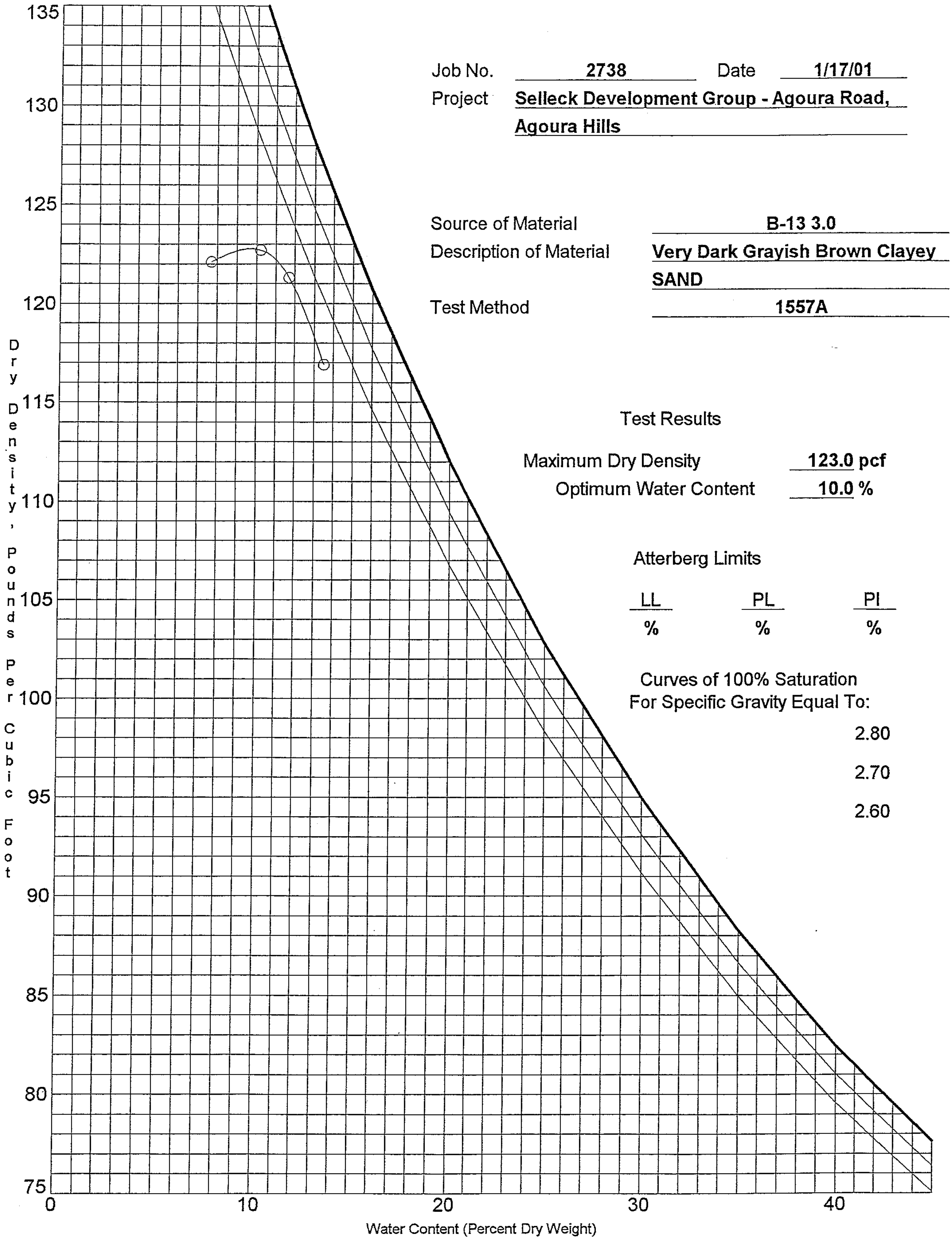
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 60



Job No. 2738 Date 1/17/01

Project Selleck Development Group - Agoura Road, Agoura Hills

Source of Material B-13 3.0

Description of Material Very Dark Grayish Brown Clayey SAND

Test Method 1557A

Test Results

Maximum Dry Density 123.0 pcf

Optimum Water Content 10.0 %

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation
For Specific Gravity Equal To:

2.80

2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.