APPENDIX H

Geotechnical Investigation for Proposed Parking Structure, AET Building, and KCRW Building, 1660 Stewart Street, City of Santa Monica, California.

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October 5, 2009
W.O. 8266

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GEOLABS-WESTLAKE VILLAGE
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October 5, 2009
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Santa Monica College
1900 Pico Boulevard
Santa Monica College, California 90405-1628

SUBJECT: Geotechnical Investigation for Proposed Parking Structure, AET Building and KCRW Building, 1660 Stewart Street, City of Santa Monica, California

Gentlemen:

In accordance with the request of Santa Monica College (SMC), our firm has undertaken a study of the geotechnical conditions at the location of the proposed Parking Structure, AET Building, and KCRW Building within the SMC satellite campus located at 1660 Stewart Street, in the City of Santa Monica. Our purpose was to evaluate the distribution and engineering characteristics of the earth materials which occur at the site so that we might assess their impact upon the proposed construction. Specifically, we present geotechnical recommendations for the design of the future structures within the project area. At this time, we understand the project to consist of the construction of a six-story partially subterranean parking garage, a two-story educational building, a three-story educational building, and associated improvements.

SITE DESCRIPTION

Plans provided to our office by ARUP indicate that the proposed structures will be located at the SMC satellite campus located at 1660 Stewart Street in the City of Santa Monica. This area is currently occupied by a two-story educational building and asphalt parking. The site is relatively level with the exception of minor elevation differences associated with planter areas and landscaping. The surrounding parking lot is in a fair condition in light of its age and minimal maintenance, and generally comprised of a 2 inch thick asphalt section on a three- to twelve-inch base section. Immediately adjacent to the south property line is an existing building.

The existing building at the corner of Stewart Street and Pennsylvania Avenue was constructed on a pile and grade beam foundation with piles extending to depths ranging from 26 to 40 feet below ground surface (bgs).

Some underground utilities are present throughout the area, including electrical, telecommunications, and unknown utilities.

PROPOSED PROJECT

Drawings prepared by ARUP indicate portions of the existing parking lot will be demolished to make way for this project. The project will consist of a six-story parking structure located southwest of the existing building and in the corner of the property. The structure is currently planned to be 2 to 2 ½ levels below ground (21 to 25 feet) and 3½ to 4 levels above grade. East of, and adjacent to the Parking Structure and existing building will be the two-story AET Building. Approximately 40 feet southeast of the existing building will be the three-story KCRW Building.

Preliminary maximum unfactored service design loads have been provided to our office by the project structural engineer, ARUP, and are presented in the following table. The loads for the parking structure are provided for two configures of column spacing, with the higher loads for columns spaced on an approximate 60 ft x 30 ft grid, and the lesser loads for an 18 ft x 19ft grid.

Preliminary Foundation Load Table

Building	Element	Dead Load	Live Load
AET	Interior Columns	200 kips	90 kips
	Exterior Columns	130 kips	45 kips
KCRW	Interior Columns	310 kips	160 kips
	Exterior Columns	190 kips	80 kips
PARKING STRUCTURE	Interior Columns	1400 to 1900 kips	360 to 560 kips
	Exterior Columns	800 to 1100 kips	180 to 220 kips
	Perimeter Basement Wall	2 to 4.5 kips/ft	2 to 2.5 kips/ft

SITE HISTORY

The site was previously used as a clay mine for a brickyard prior to the 1970s. Aerial photos indicate mining began at this location after 1928. As determined by recent exploratory borings, the pit mine was as much as 52.5 feet deep (relative to current ground surface) in the vicinity of the subject site. Backfill of the pit was partially completed by 1971 and fully completed by 1973. Certification and testing of the fill were performed by Western Laboratories and reported in their November 23, 1975 Final Supervised Compacted Fill Report. Our research indicates Western Laboratories used the 3-layer Proctor compaction test for their standard (s standard using less compactive effort than the current standard). The backfill was compacted to at least 90 percent of that standard.

The backfill was subsequently explored by several soils engineering companies from 1973 to 1976 in association with preliminary foundation investigations for the surrounding buildings, including those located at 1660 Stewart Street and 2700 Pennsylvania Avenue. The investigation for 1660 Stewart Street was reported in Donald R. Warren Company/Engineers (September 24, 1973) *Foundation Investigation Report for Lots 6 and 7 of Tract 25003*, and in Leroy Crandall and Associates (July 28, 1975) *Suggested Modifications in Foundation Design Repor*t for the same lots. The investigation for 2700 Pennsylvania Avenue was reported in Irvine Soils Engineering and Testing Lab's (December 12, 1975) *Foundation Investigation, Proposed Office and Warehouse, Lot 9, Tract 25003*. The subsurface conditions and engineering characteristics of the earth materials described in the investigations are very similar to those encountered during the current investigation for the proposed improvements. Swell tests performed during that work indicate the soils had swell potential on the order of 4.5 percent. That equates to a low-expansive material (EI 21 – 50).

FIELD INVESTIGATION

The field investigation for this project was performed during May 2009. The scope of the field investigation for this project included the drilling, logging, and sampling of 11 hollow-stem auger borings (B1-B11) and the advancement of three cone penetrometer tests (CPT1, CPT2, and CPT3). The locations of exploration were performed as requested by the project architect, as existing utilities, access, and parking lot traffic conditions allowed. In addition to coordination with Underground Service Alert, boring B4 was hand-dug to a depth of approximately five feet to check for shallow utilities. CPT1 encountered a utility line or rock at a depth of approximately four feet and was moved approximately 5 feet southwest. Locations of B4 and B6 required modification due to shallow utility lines that were encountered by hand-digging.

Exploratory Borings

The borings (B1 through B11) were advanced with a truck-mounted hollow-stem auger drill rig. Samples were obtained at various depth intervals (typically averaging 5 feet) with a Modified California Sampler and Standard Penetration Tests were performed utilizing an automatic hammer. The borings ranged from 30 to 100 feet in depth.

Cone Penetrometer Tests

The Cone Penetrometer Tests (CPT's) were advanced using reaction against the 25-ton CPT truck. The first CPT was terminated at four feet due to high tip resistance on either an unmarked utility line or a rock. The data was not preserved. CPT1 was relocated approximately five feet southwest of the first and advanced to a depth of 54 feet. A pore-pressure dissipation test was performed indicating a depth to groundwater of 32 feet. CPT2 met refusal on a rock or piece of concrete at 28 feet. CPT3 met refusal in dense sands at 68 feet. The seismic velocities were recorded at approximately five foot intervals for CPT3. The Cone Penetrometer Test data, along with seismic velocity profiles, are provided in Appendix A.

LABORATORY TESTING

Undisturbed and bulk samples of soil materials encountered at the site were collected during the course of our field work. Selected laboratory tests completed on the retrieved samples, along with a summary of the test results are presented in Appendix B.

CHEMICAL TEST RESULTS AND CORROSION RECOMMENDATIONS

Sample of the on-site soils were submitted to M.J. Schiff and Associates for chemical testing for the purpose of evaluating their corrosion potential. The findings indicate some samples have low resistivity and/or significant levels of soluble sulfates, both are indicators of corrosive soil behavior. The results of this testing are provided in Appendix E.

EARTH MATERIALS

The exploratory excavations indicate that the project area is underlain by artificial fill and alluvium. Brief summaries of the materials encountered are provided in the following paragraphs. More detailed descriptions of the materials encountered are provided in the enclosed logs (see Plates B1.1-B11.2). Cross Sections illustrating our interpretation of the distribution of the subsurface materials are presented on Plate 2.1.

Artificial Fill: Artificial fill was encountered in all of the exploratory borings and ranges between 1.5 and 52.5 feet in depth. These materials appear to be a combination of native and imported soils used to backfill the original clay pit. They are comprised of brown, grayish-brown, and black sandy lean CLAY to clayey SAND with abundant gravel. The gravels consist of angular, fractured pieces of Santa Monica Slate, brick, concrete, and asphalt. Trace amounts of wood chips, fabric, and metal can also be found scattered throughout the fill. The sand fraction ranges from fine to coarse grained. These soils are typically in a moist to wet and very stiff to medium dense condition. Unit dry weights average 113 pcf for this artificial fill. The upper 10 to 15 feet generally have a greater range of dry weight, with several samples appearing to be below 90 percent relative compaction using current compaction standards. The distribution of void ratios are illustrated on Plate e.1 in Appendix B. Expansion test results indicate these materials are generally in the middle to low portion of the low-expansion range (EI 21 to 50)

Alluvium: Alluvium was encountered underlying the artificial fill in all borings except Borings B5 & B6 (both of which were pre-assigned to extend 30 feet). These deposits consist of brown, grayish-brown, and orangish-brown lean CLAY with sand interspersed with minor lenses of clayey GRAVEL. Gravels typically consist of subangular to subrounded ¼"- ¾" pieces of Santa Monica Slate. Blow counts and observations of the undisturbed samples obtained from the borings indicate that these materials are generally in a very stiff to hard condition. Laboratory data for the "undisturbed" samples gathered using the Modified California sampler indicates the soils have unit dry weights ranging from 111 to 131 pounds per cubic foot (pcf).

REGIONAL GEOLOGIC SETTING

The site is located at the southerly margin of the Transverse Range geomorphic province, which is comprised of a series of east-west trending mountain ranges and intervening valleys created by north-south compression that began during the Pliocene epoch (roughly 2.5 to 5 million years ago) in response to a bend in the San Andreas fault. The Transverse Ranges are characterized by left-lateral, oblique-reverse faults, which have accommodated the relative westward motion of the Transverse Range block. In the immediate vicinity of the site, the Raymond, Hollywood, Santa Monica fault system bounds the southerly margin of the Santa Monica Mountains, and is responsible for their uplift. A Regional Fault Map is attached as Plate 1.4, and illustrates nearby significant faults such as the Santa Monica fault, Newport-Inglewood fault, and San Andreas fault. Plate 1.4 is a partial reproduction of the CGS Simplified Fault Activity Map of California (Rev. 2000).

In the West Los Angeles and Santa Monica area, researchers have identified two strands of the Santa Monica fault, the northerly branch and the southerly branch. The available data indicates that the northerly branch has experienced displacement during the Pleistocene and Holocene, while the southerly branch is interpreted to not have displaced Quaternary strata (Wright, 1991; Tsutumi et al 2000). A portion of the Seismic Zones Map of the Technical Background Report of the Seismic Safety Element of the General Plan for the City of Santa Monica is attached as Plate 1.5. The northern branch of the Santa Monica fault is approximately 4,000 feet north of the site. The southern branch of the Santa Monica fault is approximately 1,000 feet south of the site.

A Regional Geologic Map is attached as Plate 1.3, and is a partial reproduction of the Geologic Map of the Beverly Hills and Van Nuys (South-Half) Quadrangles as mapped by Dibblee (1991). As indicated, the site is situated in an area mapped as Quaternary-age alluvial deposits. These alluvial deposits are eroded into Pleistocene-age marine terrace deposits and are in excess of one hundred feet in thickness. They are primarily comprised of well sorted, very fine to medium grained sands. At depth, the marine terrace deposits likely overlie marine sandstone deposits of the Pliocene-age Fernando Formation (Dibblee, 1991).

GROUNDWATER

Groundwater was encountered at a depth of 39 feet below ground surface. This corresponds fairly well with the Historic High Groundwater Map from the Seismic Hazard Report for the Beverly Hills 7.5-minute Quadrangle. A portion of the map showing the location of the subject site is attached as Plate 1.7.

FAULTING AND SEISMICITY

The subject site contains no known active or potentially active faults, nor is it within an

Alquist-Priolo Fault Rupture Hazard Zone. Therefore, the potential for ground rupture is considered to be very low. However, the property is situated within the seismically active Southern California region and ground shaking is likely to occur due to earthquakes caused by movement along nearby faults.

Historical Seismicity

The software entitled EQSEARCH v.300 (Blake, 2000) for Windows was utilized to provide a summary of historical earthquakes with epicenters within 100 miles of the site (and magnitudes greater than M=4.0) and their estimated ground shaking intensity (per the Modified Mercalli Intensity, MMI) at the subject site. Output is provided in Appendix C and summarized herein.

The highest ground shaking intensities estimated for the site (MMI=IX) were associated with the January 17, 1994 Northridge Earthquake. A Modified Mercalli Intensity of IX corresponds to *"damage considerable in specially designed structures, well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse; buildings shifted off foundations; ground cracked conspicuously, underground pipes broken."*

Ten historical earthquakes are estimated to have resulted in a ground shaking intensity on the Modified Mercalli Intensity scale of VIII. The balance of the MMI=VIII events correspond to a series of smaller earthquakes (M=4.0 to M=5.0) located within 4.5 to 7.1 kilometers of the site between 1914 and 1930, and two larger, more distant earthquakes in 1905 and 1827. A Modified Mercalli Intensity scale of VIII corresponds to *"damage slight in specially designed structures, considerable in ordinary substantial buildings, with partial collapse, great in poorly built structures."*

The Long Beach earthquake of 1933 and San Fernando Earthquake of 1971 led to estimated Modified Mercalli Intensities of VII at the subject site.

Site Classification for Seismic Design

As part of the Cone Penetrometer Tests, measurements of the seismic velocity of the artificial fill and alluvial deposits were made at approximately five foot depth intervals until refusal was met and advancement ended. The results from CPT3 indicate a seismic velocity ranging from 770 ft/sec to 1690 ft/sec in the upper 69 feet. The average soil shear wave velocity is 1233 ft/sec according to the method prescribed in the 2007 California Building Code (Equation 16-41). Utilizing Equation 16-42 and 16-43 of the 2007 CBC, and blow counts from our boring B7, the average standard penetration resistance of the upper 100 feet of soil is 20.5. Based on the CPT shear wave velocity, the site is at the low end of Site Class C; however, the boring data indicates a Site Class D. Although the seismic velocity data is of superior quality, it is incomplete as CPT3 met refusal prior to achieving the 100 foot depth. Therefore, we have used the SPT blowcounts for selection of the Site Class. Accordingly, the Site Class should be considered D (Table 1613.5.2).

Regional Faults

Regional fault maps indicate that the Santa Monica fault is located approximately 2 kilometers from the site. However, we have relied on a more detailed map to determine the distance to this seismic source. Review of the Seismic Zones Map of the Technical Background Report of the Seismic Safety Element of the General Plan for the City of Santa Monica indicates that the northern branch of the Santa Monica fault is approximately 4,000 feet north of the site. The southern branch of the Santa Monica fault is approximately 1,000 feet south of the site. Significant faults in the vicinity that are capable of Mm of 7.0 or greater and with slip rates exceeding 5mm/year include the San Andreas and Cucamonga faults. Both of these faults are approximately 67 kilometers from the site.

Ground Motion Hazard Analyses

California Building Code section 1614A.1 requires a site-specific ground motion hazard analysis be performed for sites located within 10 kilometers of an active fault, such as this site. We have performed a ground motion hazard analyses in accordance with ASCE Standard 7-05, section 21.2. This section of ASCE 7 describes a methodology for estimating the design Maximum Considered Earthquake (MCE) spectral accelerations for 5 percent damping and 2 percent probability of exceedance within a 50-year period. The following text describes the methodology and estimated peak ground acceleration for the subject site.

Probabilistic methods of estimating ground motion accelerations allow us to evaluate a composite picture of the probability that a ground motion value will be exceeded in a specified exposure period. In theory, this type of analyses has the ability to weigh all possible events by their relative probabilities of occurrence. A worst-case project site acceleration from a nearby, but low probability, seismic event is not allowed to dominate the analysis.

The fault model used includes faults with surface expression and thrust faults (including known blind thrust faults) in the USGS California 2002 fault catalog. The analysis was conducted using the computer program EZ-FRISK (Risk Engineering, Inc., 2001-2009). The NGA attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), and Chiou and Youngs (2008) were used. Following DSA Bulletin 09-01, the NGA relations used the maximum rotated component of the ground motion using the method proposed by Huang, Whittaker, and Luco (2008) as implemented in EZ-FRISK 7.32

Spectral response acceleration levels were determined for a two percent exceedance probability for an exposure period of 50 years (2475 year return period). As allowed in ASCE 7-05, a deterministic cap was applied to the probabilistic response spectrum to construct a site-specific

MCE spectrum. The cap was modified per DSA Bulletin 09-01. The design response spectrum was then developed using the criteria in ASCE 7-05 Section 21.3. Output from the analysis is provided in Appendix C and summarized herein.

Latitude: 34.0186º Longitude: -118.4703º	Factor/Coefficient	Value
Site Profile Type	Site Class	D
Site-Specific MCE Spectral Response Parameters	S_{ms} S_{m1}	2.179 1.234
Design Spectral Acceleration Parameters	S_{DS} S_{D1}	1.453 0.823

The peak ground acceleration (PGA) value was estimated from the final design response spectrum. Based on this study, the peak horizontal ground acceleration has been estimated as 0.65g (see Appendix C). Often the use of the PGA necessitates consideration of an earthquake magnitude. Our analysis for a nearby project indicates the predominant earthquake can be considered an earthquake of magnitude M_W=6.8 (GWV, 2009).

LIQUEFACTION AND RELATED HAZARDS

Liquefaction is a condition where the soil undergoes continued deformation at a constant low residual stress due to the build-up of high porewater pressures. The possibility of liquefaction occurring at a given site is dependent upon the occurrence of a significant earthquake in the vicinity; sufficient groundwater to cause high pore pressures; and on the grain size, relative density, and confining pressures of the soil at the site.

The subject site, like other sites in Southern California, is expected to be subjected to significant shaking from earthquakes. However, the site is underlain by predominantly clayey materials with relatively high blowcounts, and the depth to groundwater is 39 feet. Analyses of these fine-grained soils using procedures proposed by Bray and Sancio (2006) indicate these fine-grained materials are not considered susceptible to liquefaction or cyclic softening (see Plate wLL.1 &2 in

Appendix B). These conditions render the potential for liquefaction to be very low. The site is not within a Seismic Hazard Zone delineated as having potential for liquefaction as mapped by the California Geological Survey (formerly CDMG) for the Beverly Hills 7.5 Minute Quadrangle nor that mapped by Leighton and Associates in the Technical Background Report for the City of Santa Monica.

SEISMICALLY INDUCED SETTLEMENT

During seismic groundshaking, seismically induced settlement can occur. The estimation of the potential seismic settlement is divided into two separate causative mechanisms. The settlement of coarse grained soils above the groundwater table is assumed to be related primarily to groundshaking adjusting the coarse grained soils into a tighter packing configuration. This is often referred to as seismic compression. The seismic settlement below the groundwater is assumed to be related to pore pressure changes during liquefaction or cyclic softening.

The plastic nature of the soil in the upper 50 feet, along with it's in-place density and estimated undrained shear strength are the bases for our opinion that there is a low potential for seismic settlement.

HYDROCONSOLIDATION POTENTIAL

Hydroconsolidation is a condition where dry or moist soils undergo settlement upon being wetted. In many cases no additional surcharge load is necessary to trigger the hydroconsolidation.

The potential for hydroconsolidation has been evaluated based upon the results of consolidation tests performed on samples taken from the excavated borings, our review of the soil textures and density descriptions from the boring logs, review of the dry density-moisture content data, and consideration of the geologic nature of the deposits. Samples were inundated with water at loads similar to their respective overburden pressure. The results are illustrated on Plates C-Hydro in

Appendix B. Based on the lack of significant collapse, the degree of saturation within the earth materials, and the in-place densities of the artificial fill and alluvial deposits, we consider the potential for hydroconsolidation to be low.

LANDSLIDING AND SLOPE STABILITY

The topography of the Santa Monica College campus and immediate vicinity is very flat, with grade differentials typically on the order of a couple of feet. No evidence of landsliding was observed during the course of our investigation. The site is not located within a Seismic Hazard Zone for earthquake-induced landsliding.

The excavation for the underground levels of the parking structure is anticipated to use shoring for support due to limited space for temporary construction slopes.

EXCEPTIONAL GEOLOGIC HAZARDS

The following paragraphs address unusual or "exceptional" geologic hazards present in the State of California and listed in California Geological Survey Note 48.

Phase I and II Environmental Site Assessment Work

Such environmental consulting services are outside of our expertise and scope of work.

Naturally-occurring Hazardous Materials

Review of the available geologic literature does not indicate the presence of any naturally occurring hazards such as methane gas, hydrogen sulfide gas, or tar seeps at the project site.

California Environmental Quality Act

We defer issues with respect to the California Environmental Quality Act to the project architect and owner. No paleontological resources were observed in our exploratory excavations.

Groundwater Quality

To our knowledge, no groundwater resources are extracted by the College or nearby properties.

On-Site Septic Systems

This Santa Monica College campus is provided with sanitary sewer service. No on-site septic systems are anticipated for the proposed project.

Non-Tectonic Faulting and Hydrocollapse of Alluvial Fan Deposits Hazards

Review of the geologic literature does not indicate the historical occurrence of nontectonic faulting in the site vicinity due to subsurface fluid withdrawal.

The low potential for hydroconsolidation of the onsite soils indicates that the potential for non-tectonic faulting is remote.

Regional Subsidence Hazards

Review of the available literature indicates that the project site has not been subject to historical subsidence.

Volcanic Eruption Hazards

The project site is located well outside areas of active volcanism.

Tsunami and Seiche Hazards

Review of the Safety Element of the City of Santa Monica indicates that tsunami run-up heights (16± feet) for the Santa Monica area are in general confined to beach areas below Palisades Park/Ocean Avenue. Seiches are seismically-induced waves or oscillations within semi-enclosed bodies of water such as lakes, reservoirs, and bays. In light of the lack of significant bodies of water adjacent to the site, the potential for a seiche to impact the site is considered low.

Naturally-Occurring Asbestos Hazards

Our review of the geologic literature and exploratory findings indicate that naturally occurring asbestos minerals are not present at the site.

Radon-222 Gas

The project site is not immediately underlain by formations known to emit hazardous levels of Radon gas. Notwithstanding, we defer the evaluation of this environmental and public health hazard to the project environmental consultant.

Flood Inundation Hazards

Plate 3 of the Safety Element of the City of Santa Monica illustrates the limits of potential inundation of flood waters associated with the breach of the Stone Canyon Reservoir located within the City of Los Angeles. The project site is located immediately north of this zone (see Plate 1.6).

Abandoned Clay Pit Hazards

The project site is located within a former clay pit area. These pits were reportedly backfilled with some municipal waste that could create a methane hazard. No mention of such waste was made in the Final Compaction Reports for the clay pit backfill issued by Western Laboratories and reviewed by this office.

DISCUSSION AND RECOMMENDATIONS

The following discussion is based upon our understanding of the proposed project and associated improvements and the site conditions presented herein. Our office should be kept abreast of significant modifications to the proposed project in order to provide geotechnical recommendations when appropriate. The following geotechnical recommendations are provided for your consideration.

GENERAL RECOMMENDATIONS

The AET and KCRW buildings are anticipated to have finish floor elevations near the elevation of the existing ground surface, while the parking structure will have floor elevations 21 to 25 feet below grade. All three structures will be underlain by artificial fill, with fill thickness below the building as great as 50 feet. Groundwater was encountered about 40 feet below grade. The soils above the groundwater were moist.

Research indicates the fill was placed to a compaction standard less than that required by current grading codes. This investigation found the upper 10 to 15 feet of the fill to have significant variability of unit weight and void ratio. It is recommended that conventional shallow building foundations not be supported in this upper 10 to 15 feet of fill. Ancillary structures can be founded on conventional spread foundations in the upper artificial fill and near surface alluvium.

We recommend the buildings be supported on pile foundations deriving support from side friction in the artificial fill and alluvium. Building slabs supported by this upper fill material may experience some movement. Free-floating building slabs should only be considered if movement between the slab and the pile supported building elements can be tolerated. Otherwise, building slabs should be supported by deep foundations. The use of piles for the AET building to adjoin the existing AET building will provide foundations that are of similar type to those supporting the existing building.

Recompaction of Existing Fill for Minor Improvements

Foundations and/or slab improvements for ancillary structures can be supported in the existing soils near the current ground surface. The existing fill soils may need partial removal and recompaction. The condition of the bearing material in the foundation excavations for these features should be observed by a representative of the geotechnical engineer prior to placement of reinforcement steel. Supplemental compaction recommendations may be provided at that time as necessary.

Temporary or Permanent Support Via Cast-in-place Soldier Piles

Due to the proximity of nearby improvements, vertical excavations with temporary or permanent support may be warranted. Temporary or permanent support via cast-in-place or driven friction piles, possibly with tie backs and lagging may be an efficient means of allowing for vertical excavations. A concrete facing to the soldier pile wall may then be constructed to serve as the permanent retaining wall for the subterranean garage.

Temporary Excavations

In general, temporary excavations should conform to CAL-OSHA criteria.

Elevator Pits and Retaining Wall Backdrainage

Subsurface elevator pits and retaining walls should be provided with waterproofing and backdrains as illustrated in Plate RW1 for the alleviation of porewater pressure. Such drains should be connected to a nearby storm drain or be provided gravity-flow outletting to a sump. A detail for such backdrains is attached as Plate RW1.

In lieu of installing such backdrainage measures, retaining walls would need to be designed considering hydrostatic pressure.

SHORING

In areas where sloping of the sidewalls of excavations is not possible, shoring may be used as an alternative. The following geotechnical recommendations are provided for shoring consisting of cantilever soldier piles with lagging. These recommendations are general in nature, additional recommendations may be warranted once construction methods and specific data regarding the shoring design are available.

For braced or restrained walls a lateral pressure with a trapezoidal pressure distribution of 28H psf (from a depth of 0.2H to 0.8H from the top of the restrained soil, returning to 0 psf at the top and bottom of the wall) may be used to model lateral earth pressures for a level retained surface. For unbraced walls, and walls with only one tier of restraints, a triangular pressure distribution equal to an equivalent fluid pressure of 38 pcf may be used.

Additional loading from any adjacent foundations should be incorporated into the design of the shoring. The lateral surcharge load from adjacent foundations should be applied to the depth zone where the pressure exerted by the surcharge is greater than 100 psf. Below this zone the foundation surcharge may be discontinued provided it is below the bottom of the excavation. Nearby traffic loads within a 1:1 projection from the base of the excavation should also be incorporated into the design loading. The lateral load from traffic loads should be continued to a depth of 10 feet or to the bottom depth of the excavation, whichever is less. Typical traffic loads can be incorporated into the design by the use of 100 psf lateral surcharge pressure to the back of the wall.

The cantilever soldier piles are anticipated to resist lateral movement or overturning through transmission of these lateral forces to the soils below the excavation elevation. The passive resistance provided by the soils below the base of the excavation can be assumed to be an allowable pressure of 360 psf/ft to a maximum of 3600 psf (considering a factor of safety of 1.5) for piles spaced at least three pile diameters apart. This passive resistance is applicable for undisturbed soil in direct contact with the soldier pile. The depth of the pile penetration below the base of the excavation must be sufficient to resist the lateral movement and over-turning of the soldier pile system. We recommend that passive resistance be ignored for a depth equal to 1.5 times the effective pile diameter below the base of the excavation. The effective pile diameter is considered the dimension of the soldier pile taken parallel to the line of the wall for driven piles, or the diameter of the drilled hole, whichever is greater.

Soldier pile walls with retaining heights greater than 12 to 15 feet typically become more cost effective if additional restraint is incorporated into the design, such as rackers or tieback anchors. The use of tieback anchors requires the additional property outside the excavation to be available for the placement of anchors. Existing improvements such as utilities, buildings, right-of-ways, or property line constraints may restrict their use. If tieback anchors are a restraining option, the anchors should be designed to obtain their support from earth materials beyond the active wedge behind the wall. The active wedge is considered the soil adjacent to the wall within a line projected up from the base of the excavation to the ground surface at an angle of 55 degrees above the horizontal. Typically, tiebacks are inclined downwards at 30 to 45 degrees below horizontal.

Drilled holes may be backfilled with structural concrete below the excavation line. The remainder of the hole may be backfilled to the ground surface with sand-cement slurry or lean concrete that is strong enough to prevent collapse of the hole, but weak enough to be excavated for installation of lagging.

Wood or steel lagging may be used to support the excavation wall between the soldier piles. If the lagging is to remain in place permanently, then treated lumber should be used for the wood lagging. Much of the lateral force is anticipated to be distributed to the cantilever soldier piles through soil arching. Therefore, the lagging may be designed to resist 60% of the theoretical lateral load on a simple span, but need not exceed a value of 400 psf (without surcharges). For the arching effect to occur, the backside of the soldier pile must bear against the soil. Placement of lagging behind the back flange of the soldier pile is not recommended.

GRADING - ENGINEERED FILLS

Minor grade changes may be incorporated into development plans. The following recommendations pertain to the placement of, and preparation for, engineered fills;

1. The on-site soils are suitable for use as structural fill. Any import materials that are to be used as structural fill should be approved by the geotechnical engineer prior to placement. Import materials should be non-corrosive and have an expansion potential index (EI) of 30 or less.

2. All vegetation, trash debris, asphalt, or other deleterious material should be stripped from the area to be recompacted or to receive the proposed improvements.

3. Compressible soils that lie within any areas to be filled should be removed to relatively incompressible material and replaced as properly compacted fill. Portions of the compressible materials that are sufficiently thin may be scarified, watered or air dried to approximately the material's optimum moisture content, and compacted in-place. A combination of removal and recompaction in-place may be used, providing the recommended compaction is obtained throughout the recommended depth interval. Considering the variability of the near surface soils, for planning purposes, soils considered unsuitable for support of engineered fill should be anticipated to range from two to five feet in depth.

4. Exposed surfaces should be scarified, moistened or air dried as appropriate, and compacted to at least 90% of the material's maximum dry density prior to placement of fill. The maximum dry density and optimum moisture content of the material to be used as compacted fill should be determined in accordance with the standard test method ASTM D1557 ("modified proctor"). The density of earth materials is to be measured using the nuclear gauge (ASTM D2992) or sand cone (ASTM D1556) test methods. The frequency of field density tests should be at least one density test for every 1000 cubic yards of fill or each 18 vertical inches of fill.

5. Areas that are to be paved should be scarified to at least 12 inches below the existing or finished grade (whichever is deeper), brought to near the material's optimum moisture content, and compacted to at least 90% relative compaction.

6. Fill materials should be placed in thin lifts, watered to near the material's optimum moisture content, and compacted to at least 90% relative compaction prior to placing the next lift.

7. The 90% relative compaction standard applies to the face of fill slopes. This may be

achieved by overfilling the constructed slope and trimming to a compacted finished surface, rolling the slope face with a sheepsfoot, or any method that achieves the desired product.

8. All grading should comply with the grading specifications and requirements of the local governing agency.

FOUNDATION SYSTEMS

Deep foundations are recommended to support the proposed buildings. This report provides recommendations for use of cast-in-place piles. Recommendations for other support options, such as driven piles can be provided upon request. Ancillary structures can be supported on shallow conventional spread foundations.

Pile Foundations

Vertical Capacity

Cast-in-place piles can be cast in drilled holes extending into the artificial fill and alluvium. The bearing capacity of these piles was analyzed using the LCPC methodology proposed by Bustamante and Gianeselli, considering side friction only for vertical capacity. The results indicate ultimate skin friction capacity of 1900 psf in both the artificial fill and alluvium. For allowable vertical capacity, a factor of safety of two is recommended to be applied to the aforementioned ultimate side friction values. To achieve the full vertical capacities, piles should be spaced no closer than 2 ½ pile diameters center-to-center. Pile shafts should not extend beyond 100 feet below the existing ground surface.

Uplift resistance can be derived from side friction along the pile and the weight of the pile. The aforementioned side friction values can be used to resist uplift. Capacities may be increased by one-third for short duration loading (i.e., by wind and seismic loading).

Pile Settlement

The pile foundations will be embedded into the artificial fill and alluvium. The settlement for the proposed cast-in-place piles supported via side friction is not anticipated to exceed 0.2 percent of their diameter. This equates to less than ¼ inch of settlement.

Pile Lateral Capacity

The lateral forces transferred to cast-in-place piles can be resisted by the passive resistance in the underlying artificial fill and alluvium. For seismic considerations, individual pile caps, or piles should be interconnected by ties in two directions. We have performed a non-linear analysis of the soil-pile interaction under lateral load using P-Y curves and the computer program LPILE (Ensoft, 2007). This program allows the user to input pertinent soil behavior information and information pertaining to the physical parameters of the pile under consideration. Currently, lateral loads to the pile tops are not known. These analyses were prepared considering a ¼ inch pile top displacement for both a free-head and fixed-head condition. Analyses have been performed for 24-inch and 36-inch diameter piles. Details of the soil, pile, and pile reinforcement assumptions are provided in the computer output sheets provided in Appendix D.

Results of our lateral pile analyses for free and fixed-head conditions are presented in the following table. The data presented are for a single, isolated pile subjected to a short-term lateral load. The resistance for the similar case with a sustained load may be taken as 80 percent of the values provided in the table.

Location	Cast-in-Place Pile Diameter	Pile Top condition	Pile Top Lateral Displacement (inches)	Applied Lateral Load at Pile Top (kips)	Unfactored Maximum Moment (kip-ft)
Santa Monica College	24-inch	Free Head	1/4	62	178
		Fixed Head	1/4	121	455
	36-inch	Free Head	1/4	102	430
Stewart Street		Fixed Head	1/4	200	1098

These analyses consider individual piles. The parking structure may necessitate the use of a group of piles to support each column load. Adjacent piles have a reduced efficiency to resist lateral loads. With consideration of a pile group with center-to-center pile spacing of three pile diameters, the lead piles in the group should experience the ¼ inch displacement under a lateral load and moment that is five percent less than the reported values in the table. For trailing piles, the lateral load is reduced 20 percent and moment value is reduced by 15 percent. For pile spacing of 2 ½ diameters on-center, the inefficiency increases. The leading pile reduction becomes nine percent for the lateral load and six percent for the moment, while the trailing pile lateral load is reduced 25 percent and moment is reduced 17 percent.

The passive resistance of the in-place existing soils against pile caps may be used to resist lateral forces. A passive resistance of 225 psf/ft is considered appropriate. A one-third increase in the quoted passive value may be used when considering wind or seismic loads.

Pile Installation

Concrete must be placed in direct contact with the undisturbed in-place materials in order to achieve the specified capacities. Groundwater was encountered in the exploratory excavations. Water may be encountered within the foundation excavations. Bricks and minor debris should be anticipated in the artificial fill materials. Gravel and cobbles may be present in the alluvium. Casing or drilling fluids may be necessary to maintain the excavation. We recommend the water be pumped from the excavation prior to placing concrete if possible. A tremie may be necessary to place concrete. Adjacent pile excavations should not be open at the same time. We recommend piles be completed and the concrete allowed to set-up prior to excavation of an adjacent pile location.

Our exploration for this report was performed using hollow-stem drilling and CPT testing. The hollow-stem drilling method provides continuous casing of the excavation. We recommend that during preparation of the foundation design and specifications, a trial exploration be performed using an unsupported drilling method, such as a bucket-auger, to evaluate the stability and moisture conditions that may occur during construction of production pile foundations. Supplemental recommendations may be warranted at that time.

Cast-in-place piles are a non-displacement type of pile. Their construction will produce spoil materials. Accommodations should be made for onsite utilization or removal of this volume of materials from the site.

Conventional Foundations

Conventional spread footings may be used to support the minor improvements and appurtenances. In order to achieve the capacities specified below, they should be founded a minimum of 12 inches into native alluvium or artificial fill, with the concrete placed against in-place, undisturbed material. Foundation design criteria are based, in part, upon the expansive properties of the materials anticipated to be present near and below the proposed foundation. Expansion index testing indicates that the proposed foundational soils have a low expansion potential.

Anticipated Expansion Index Range	21-50
Pre-saturation	18"
Footings(1)	
Allowable Bearing Pressure(5)	1500 PSF(2)
Lateral Resistance	225 PSF/Ft(3)
Maximum Lateral Resistance	1500 PSF
Coefficient of Friction	0.35
Minimum Embedment Into Foundation Material	12 inches
Minimum Embedment Below Adjacent Grade(4)	12 inches
Minimum Footing Width	12 inches
Minimum Reinforcement	2 #4 bars, 1 near top, 1 near bottom

(1) The base of all footings should be at least five feet (measured horizontally) from the face of adjacent, descending slopes. All footings should bear at least three feet below an imaginary plane projected upward at 1.5:1 from the toe of locally over-steepened slopes. Pad footings should be at least 24 inches square.

(2) May be increased by 1/3 for short duration loading such as by wind or seismic forces.

(3) Decrease by 1/3 when combined with friction.

(4) Place vapor barrier (10 mil. visqueen) one inch below top of sand layer beneath all areas where moisture penetration of the slab is undesirable.

(5) The allowable soil bearing pressure is based on CBC Table 1804A.2 for Material Class 5.

Building Slab System

The proposed structures are anticipated to incorporate structural slabs supported by the pile foundations. Therefore, support via the pad grade soils is not anticipated. It is recommended the slabs for the AET and KCRW building be underlain by at least four inches of sand with a 15mil vapor retarder positioned two inches below the top of the sand.

The lower parking level slab should be underlain by at least 12 inches of gravel. This will provide a capillary break and a more stable working surface for construction prior to placement of this lower slab. As noted above, a vapor retarder would be appropriate where moisture penetration of the slab is undesirable.

Conventional Foundation Settlement

Static settlement of conventional shallow foundations for minor improvements is anticipated to be order of ½ inch or less. Differential settlement between adjacent footings with similar loads is anticipated to be less than ¼ inch.

Factors of Safety

Vertical bearing pressures are allowable values. The factor of safety for the allowable bearing pressure is greater than three for the loads anticipated. The lateral bearing and sliding friction are ultimate values.

With regard to retaining walls, the California Building Code calls for a 1.5 factor of safety for both sliding and overturning. We defer to the California Building Code and the project structural engineer on this matter, with the following exception.

BASEMENT AND RETAINING WALLS

Retaining walls will be necessary for the underground levels of the parking structure. Foundation design criteria are provided in the preceding section. Lateral loading criteria for wall designs with level backfills are presented in the table below. The loading criteria are in part a function of the type of backfill material. Criteria for various Unified Soil Classification designations are provided. Soil classified as CL predominates at the subject site. Earth materials for backfill and bearing support may be assumed to have a total soil unit weight of 125 pcf.

Lateral Design[(1)]

	Equivalent Fluid Density (PCF)[(1)]
USCS Class:	SC, CL-ML, CL
Active Pressure	60
At-rest Pressure	100

(1) Based on Table 1610A.1 of the 2007 CBC. Special design required for wall height in excess of fifteen feet.

Retaining walls that are free to deflect may be designed for active pressure. Retaining walls that are restrained should be designed for at-rest pressure. The 2007 CBC §1610A allows basement walls which extend not more than 8 feet below grade with supporting flexible floor systems to be designed for active pressure.

All retaining walls should be provided with adequate backdrainage systems. Either weep holes or pipe outlets should be installed. Free draining material should be used behind weep holes or about pipe drains. Care should be exercised to see that weep holes are installed and maintained above the finish grade adjacent to the face of the wall. Alternatively, a vertical drainage composite (such as Miradrain 6000 or equivalent) may be applied between the wall lagging and permanent wall surface. Pipe outlets should be installed to carry any water to a designated sump. Where possible, backdrains should outlet to the ground surface to a nonerosive device or surface.

Backfill for retaining walls should be properly compacted. An impervious cap should be provided at the top of the backfill to retard infiltration of water. A typical backfill detail is provided in the Typical Details appendix of this report.

Additional surcharge, such as that due to proposed structures, traffic, hydrostatic pressure, or other loading, should be included in the wall design. Use of expansive soil as backfill for retaining walls will result in a surcharge to the wall, the magnitude of which is dependent upon the expansion index of the backfill. This may be avoided by using sand or gravel as backfill adjacent to the wall.

Details regarding this type of construction may be provided upon request.

Seismic Increment of Earth Pressure

As required by CBC Section 1806A.1, retaining walls of 12 feet or more in height should be designed for the seismic increment of earth pressure. Currently there is debate in the geotechnical profession as to whether opposed retaining walls, such as for the proposed basement, should be designed considering a seismic increment of lateral load or if the seismic lateral pressure need only act upon any unbalanced wall height (i.e., if opposite walls of a basement have equal heights, these walls can be considered balanced and no seismic increment is needed). CBC Section 1614A.1.6 provides guidance on the use of a seismic increment where buildings provide lateral support for walls retaining earth. We defer the use and implementation of the seismic increment to the structural engineer.

Considering the seismic setting and assuming the retaining walls are not allowed to experience displacement during a design-level seismic event the seismic increment may be taken equal to 26 H^2 applied at a height of 0.6H above the base of the wall.

UTILITY TRENCH EXCAVATIONS

Utility trenches excavated parallel to (or nearly) footings should not be excavated below the plane having a 2:1 (horizontal : vertical) projection for the line nine inches above the base of the footing, and should not be excavated closer than 18 inches from the face of a footing, as outlined in CBC 1805A.4.7.

DRAINAGE

Positive drainage should be established to carry pad waters away from structures and foundations, and to prevent uncontrolled or sheet flow over manufactured slopes. We recommend as steep a gradient as possible be established around the structure, to the street or other non-erosive drainage devices. Fine-grade fills placed to create pad drainage should be compacted in order to retard infiltration of surface water.

Preserving proper surface drainage is also important. Planters, decorative walls, plants, trees or accumulations of organic matter should not be allowed to retard surface drainage. Area drains and roof gutters (if present) should be kept free of obstruction. Roof gutters (if present) and condensation lines from air conditioners should outlet to area drains or paved areas which conduct the water to the street. Positive drainage along the backs of retaining walls should be maintained. Any other measures that will facilitate positive surface drainage should be employed.

UTILITY TRENCH BACKFILL

Backfill for utility trench excavations should be compacted to at least 90% relative compaction. Where installed in sloping areas, the backfill should be properly keyed and benched. A two-sack sand slurry may be utilized as backfill in non-structural areas to expedite backfilling and construction activities.

PRELIMINARY PAVEMENT STRUCTURAL SECTIONS

Improvements to the site may contain asphalt or concrete pavement. Representative samples of the subgrade materials for the proposed roads were submitted to our laboratory for the appropriate testing. An R-value of five was determined for the sample tested.

Based upon the laboratory test results and the procedures in the Caltrans Highway Design Manual (2006) and ACI 330R-08, we enclose the preliminary structural pavement recommendations as follows.

PRELIMINARY RECOMMENDATIONS
Asphalt Sections

Location	TI	AC	Base
Parking Stalls & Access Lanes	5	3"	10"
Entrance & Services Lanes	7	4"	15.5"

Portland Cement Concrete Sections

Location	Concrete*	Aggregate Base
Parking Stalls & Access Lanes	6"	4"
Entrance & Services Lanes	7"	4"

*2500 psi compressive strength. Can be reduced 1 inch for concrete with 4000 psi compressive strength.

Landscape watering should be kept to a minimum. Cutoff walls should be considered in areas that abut landscape planters. This would help prevent irrigation water from infiltrating into the adjacent subgrade. The cutoff walls should extend 6 inches into native subgrade soils.

Prior to placement of base and asphaltic concrete, the upper twelve inches of the subgrade must be scarified, watered, and compacted to ninety-five (95%) percent of the material's maximum dry density. If fills are required to reach the top of the subgrade they must be consistent with the R-values that were used in this report.

Concrete Pavement Discussion

Joints are placed in concrete pavement to control cracking and facilitate construction (ACI, 330R). We defer the design of the joints to the pavement designer. The use of distributed steel reinforcement is in part a function of the joint configuration. Therefore, we also defer this aspect of the design to the designer. However, sufficient steel should be used to control cracks caused by temperature variations. Our analysis indicates this quantity of reinforcement steel should be no less than #4 rebar positioned at 16 inches on-center in each direction. The Manual of Concrete Practice (ACI 330R) provides design information regarding these aspects of the design.

CONSTRUCTION MONITORING

Progress site plans, grading plans, temporary excavation plans, shoring plans, and foundation plans should be submitted to this office. Additional recommendations may be provided at that time, if such are considered warranted. For the design of deep foundations, we recommend a trial pile excavation be performed using a bucket-auger drill rig to examine the stability and moisture conditions in unsupported excavations, similar to those for the cast-in-place pile foundations.

Placement of all fill and backfill should be monitored by representatives of this office. This includes our observation of prepared bottoms prior to filling. All excavated slopes, both temporary and permanent, should be observed by a representative of this office. Supplemental recommendations may prove warranted based upon the materials exposed in the actual excavations.

Foundation excavations should be observed by representatives of this office to see if the recommended penetration of proper supporting strata has been achieved. Such observations should be made prior to placing concrete, steel or forms. This office should be notified at least 24 hours prior to placing concrete.

CLOSURE

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

Thank you for this opportunity to be of service. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted,
GEOLABS-WESTLAKE VILLAGE

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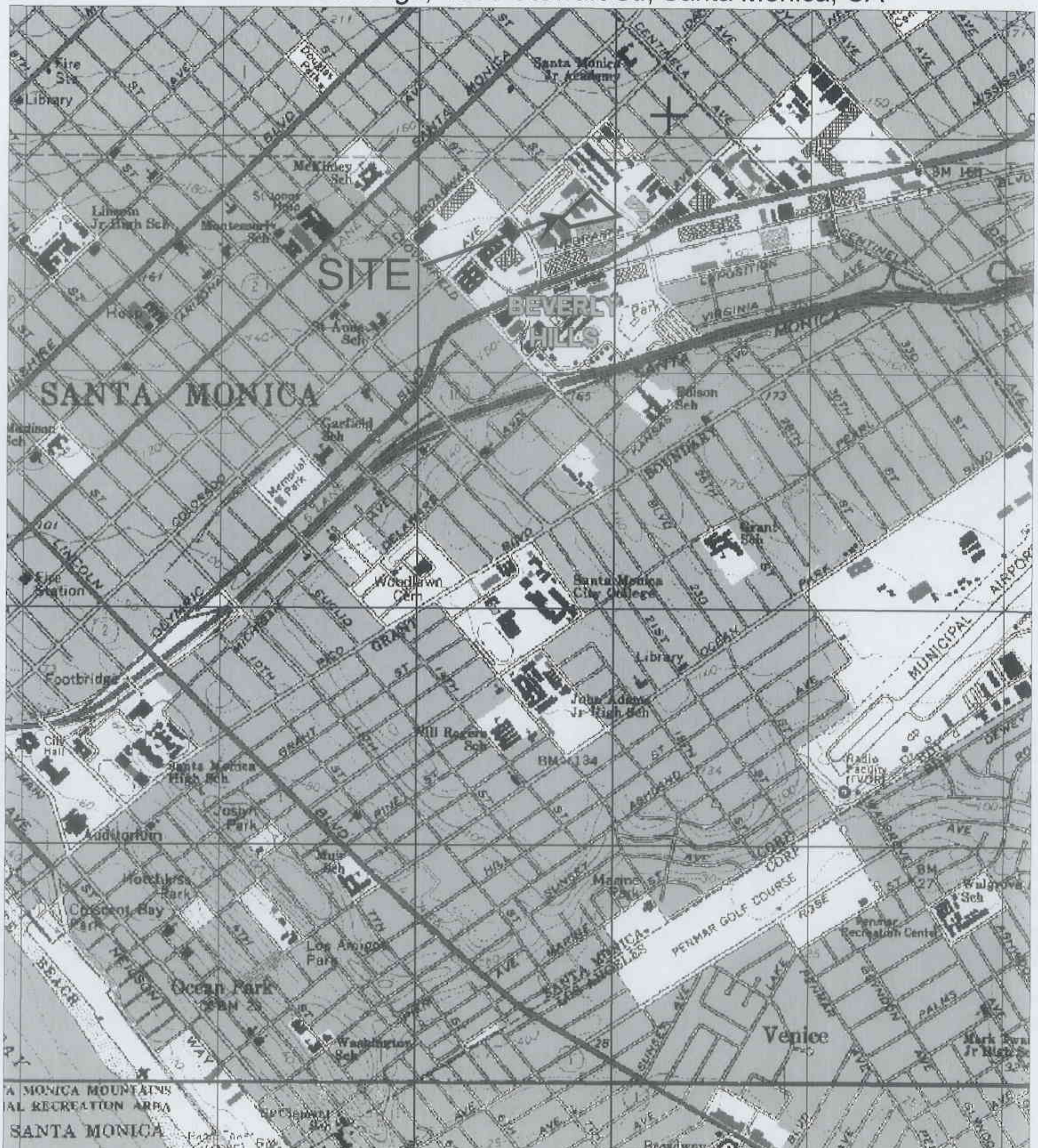
(4) Steinberg Architects
(1) ARUP

SITE LOCATION MAP
AET/KCRW Buildings, 1660 Stewart St., Santa Monica, CA



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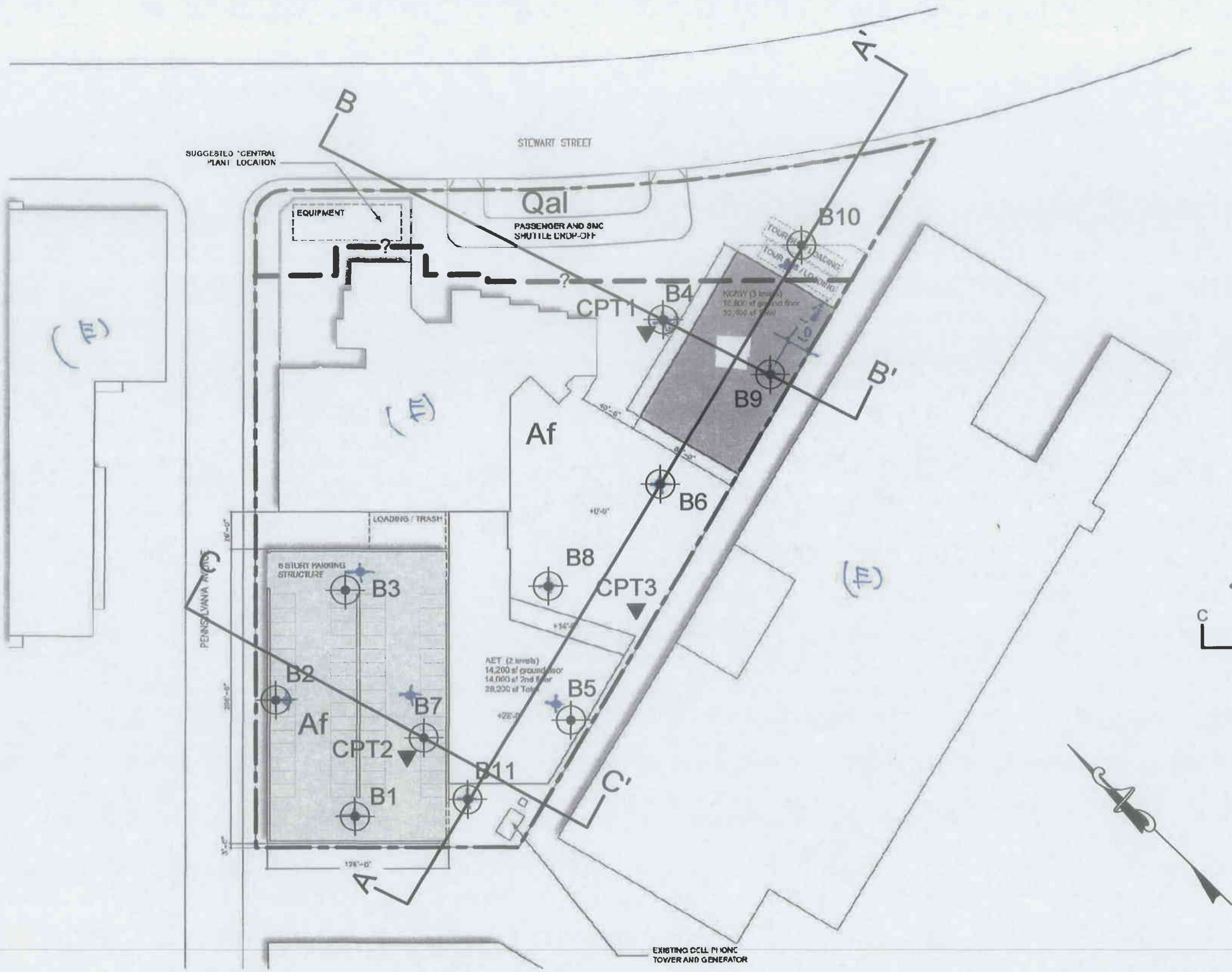
DATE		BY	RMP
SCALE	NTS	W.O.	8266

Base Map: DeLorme 3D Topo Quads (Beverly Hills 7.5-minute Quadrangle)

PLATE 1.1

PLOT MAP



EXPLANATION

Af	Artificial Fill
Qal	Alluvium
B11	Approximate Location of Hollow-Stem Auger Boring by GWV
CPT3	Approximate Location of Cone Penetrometer Test by GWV
— ? —	Geologic Contact (queried where uncertain)
C — C'	Cross Section

80 40 0 80

1"=80'

P:\8266\AET-KCRW Bldg\8266_Plot Map.dwg

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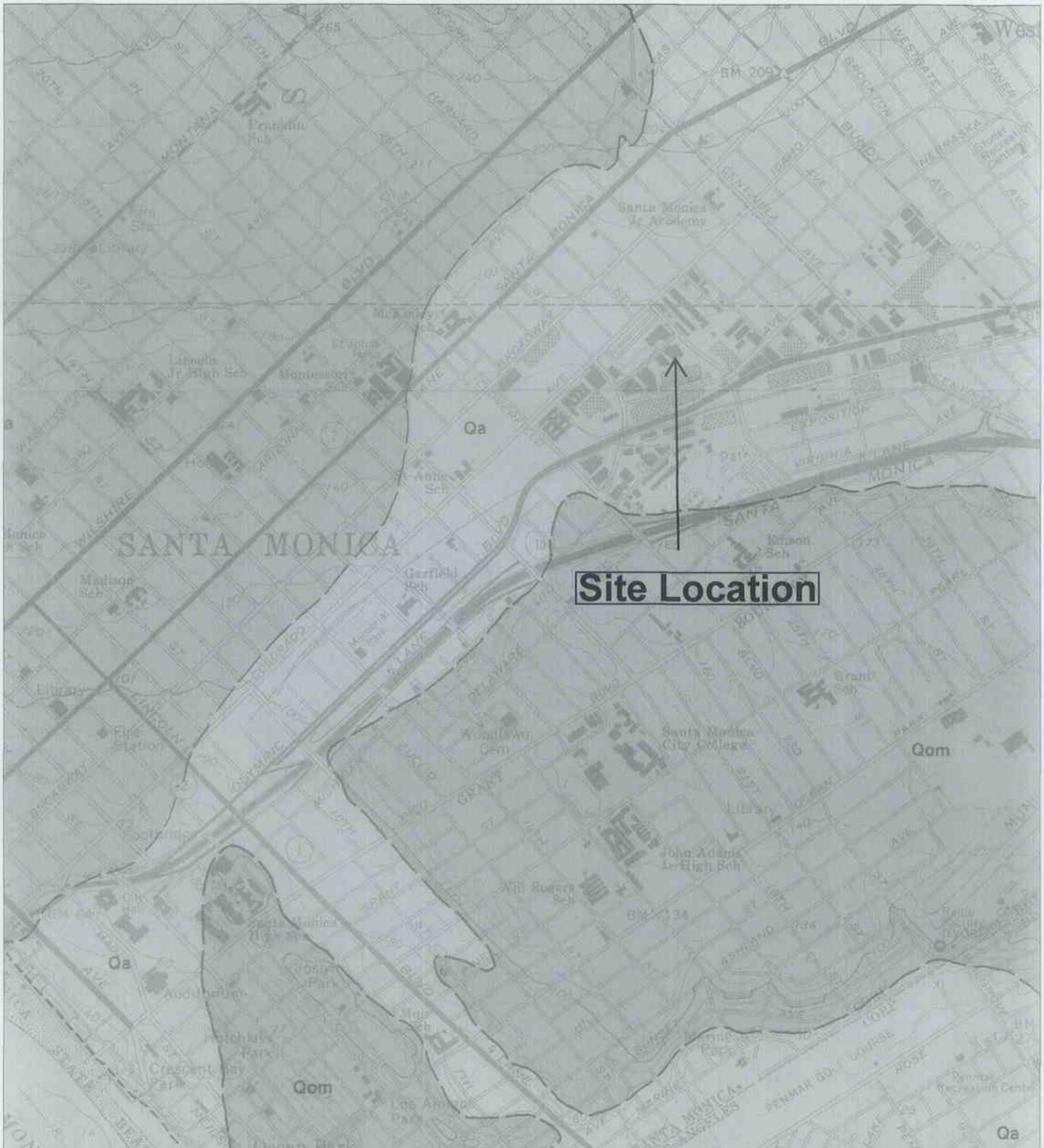
GEOLOGY AND SOIL ENGINEERING

DATE 6/29/2009 BY TC
SCALE 1"=80' W.O. 8266

PLATE 1.2

GEOLOGIC MAP
AET/KCRW Building at 1660 Stewart Street
Santa Monica College, Santa Monica, California



Geologic Map of the Beverley Hills and Van Nuys (South ½) Quadrangles
By: Thomas W. Dibblee, Jr., 1991

Explanation

Qa-Surficial Sediments, alluvial gravel, sand and silt-clay

Qom-Marine deposits of Hoots 1931

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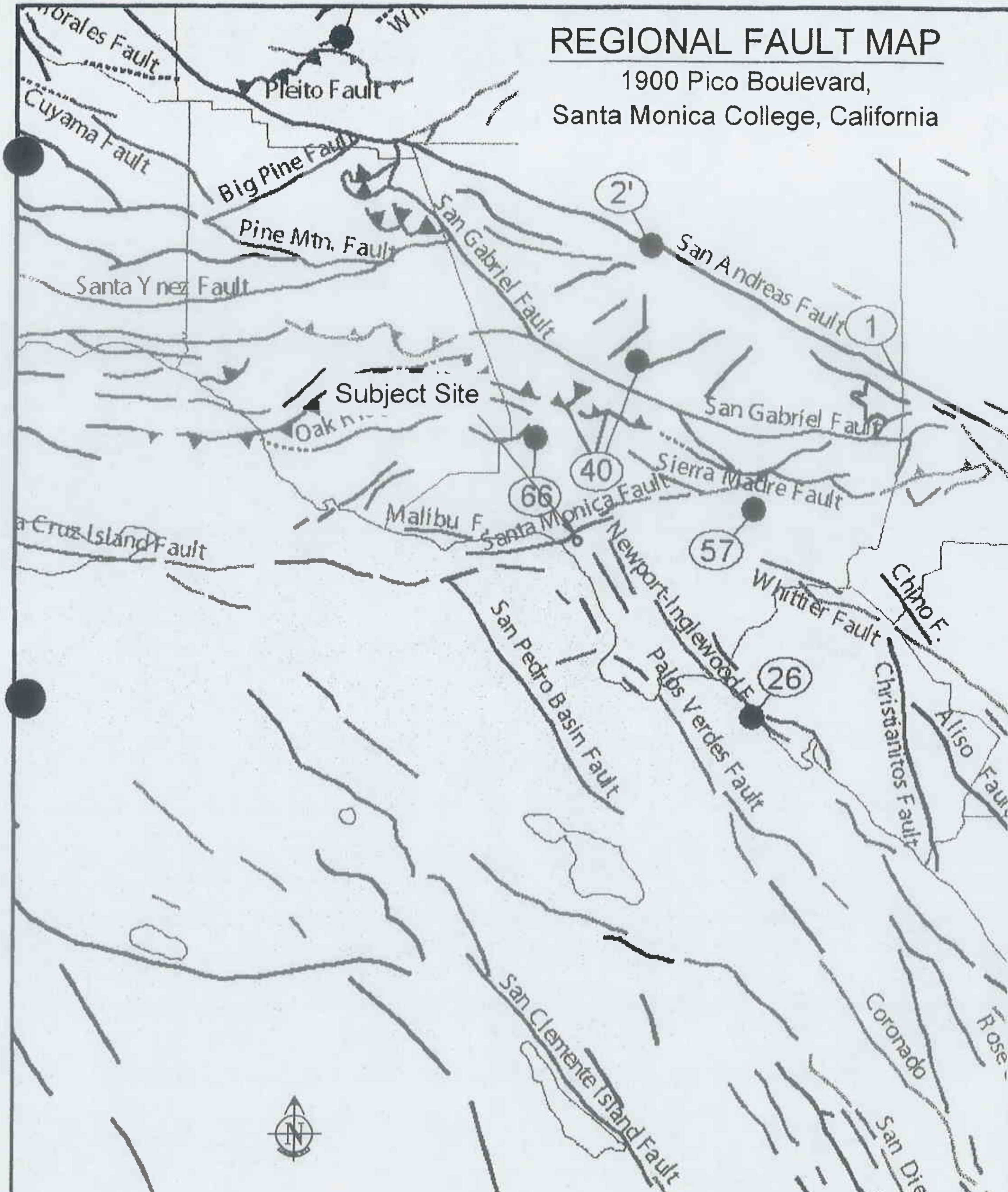
PLATE 1.3



REGIONAL FAULT MAP

1900 Pico Boulevard,
Santa Monica College, California

BASEMAP: CGS, 1999, Simplified Fault Activity Map of California, Compiled by C.W. Jennings and George J. Saucedo (Revised 2002 by Tousson Toppozada and David Branum)

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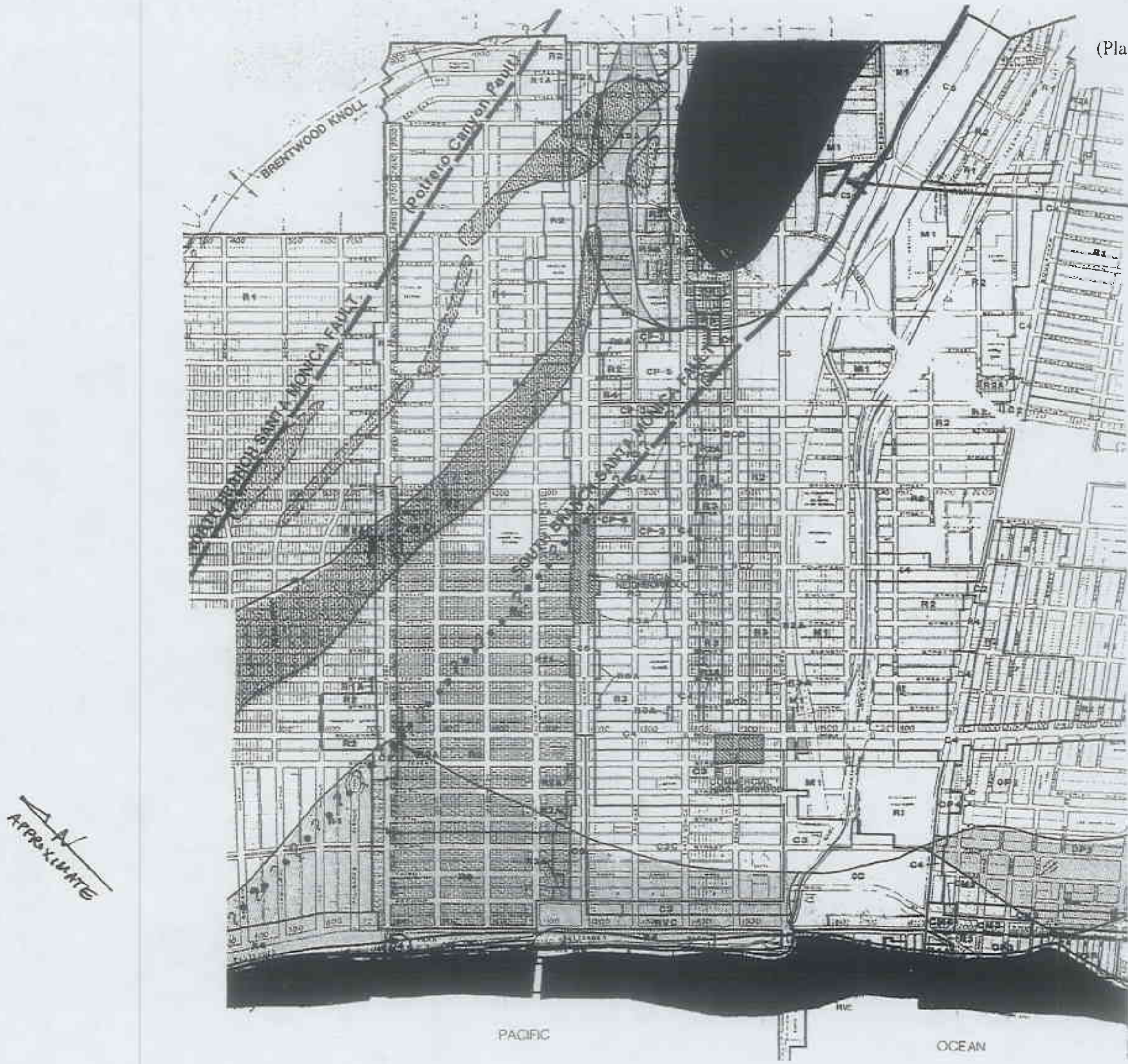
PLATE 1.4

SEISMIC HAZARDS: FAULT HAZARD MANAGEMENT ZONES AND LIQUEFACTION SUSCEPTIBILITY

(Plate 1 from Safety Element of the General Plan – Technical Background Report, City of Santa Monica, California, prepared by Leighton & Associates, January 1995)

SITE LOCATION
SANTA MONICA COLLEGE
1660 Stewart Street



Approximate Fault Location. Where considered well located using ground water barrier data, the faults are shown with a solid line, where moderately well located with dashed line, and where poorly located with a dotted and queried line.

FAULT SCARP. Topographic feature representing recent deformation of earth's surface due to faulting. Dark shading with solid border where features form relatively strong surface expressions, while lighter shading with dashed border represents features that form relatively weaker surface expressions.

Liquefaction Susceptibility:

- High
- Medium
- Low
- Very Low to None

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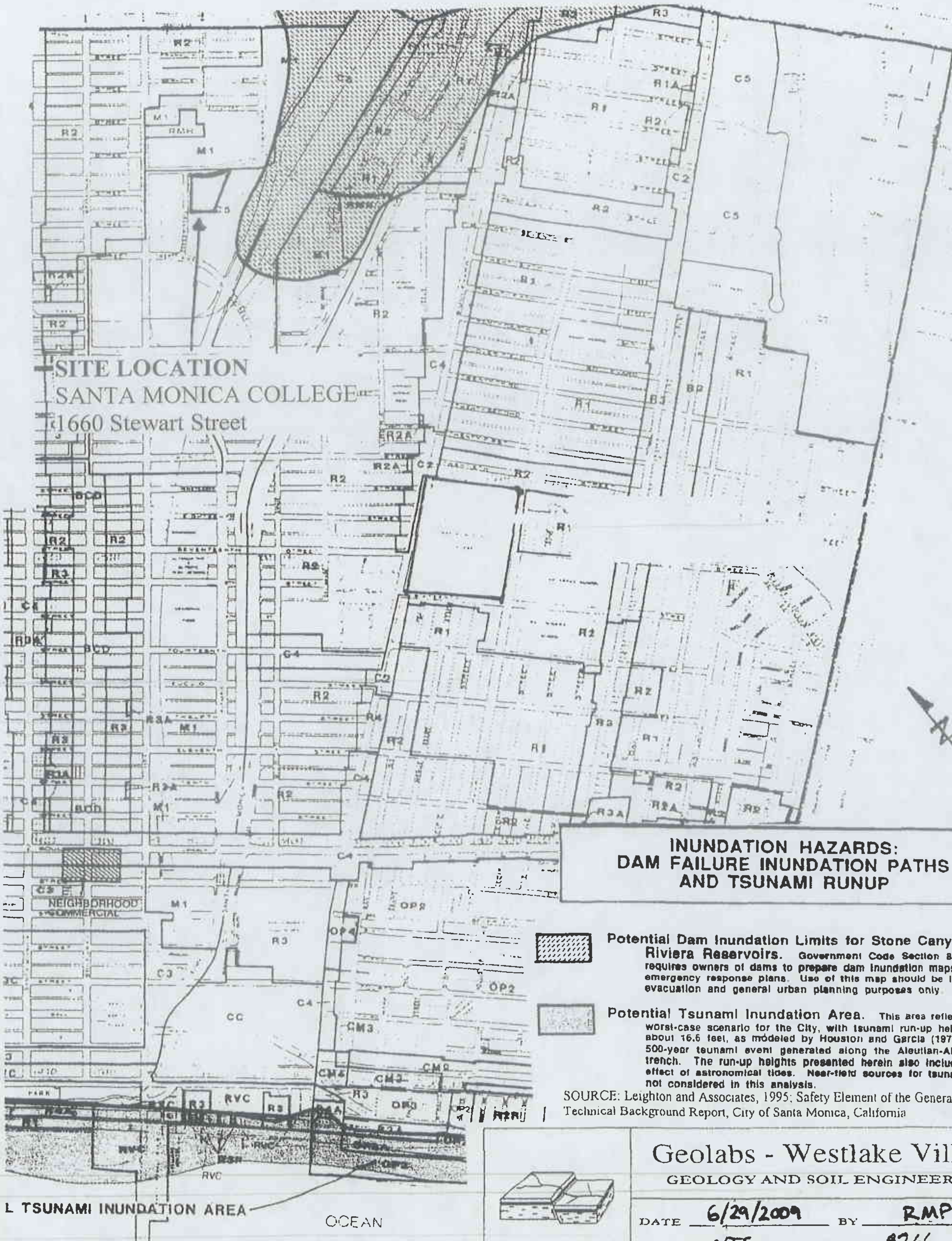
GEOLOGY AND SOIL ENGINEERING

DATE 6/29/2009 BY RMP
SCALE 1" = 1600' W.O. 9266

PLATE 1.5

INUNDATION HAZARD MAP FOR SANTA MONICA COLLEGE
1900 PICO BOULEVARD, SANTA MONICA, CALIFORNIA



INUNDATION HAZARDS: DAM FAILURE INUNDATION PATHS AND TSUNAMI RUNUP

Potential Dam Inundation Limits for Stone Canyon and Riviera Reservoirs. Government Code Section 8589.5 requires owners of dams to prepare dam inundation maps and emergency response plans. Use of this map should be limited to evacuation and general urban planning purposes only.

Potential Tsunami Inundation Area. This area reflects the worst-case scenario for the City, with tsunami run-up heights of about 16.6 feet, as modeled by Houston and Garcia (1974) for a 500-year tsunami event generated along the Aleutian-Alaskan trench. The run-up heights presented herein also include the effect of astronomical tides. Near-field sources for tsunami were not considered in this analysis.

SOURCE: Leighton and Associates, 1995; Safety Element of the General Plan, Technical Background Report, City of Santa Monica, California

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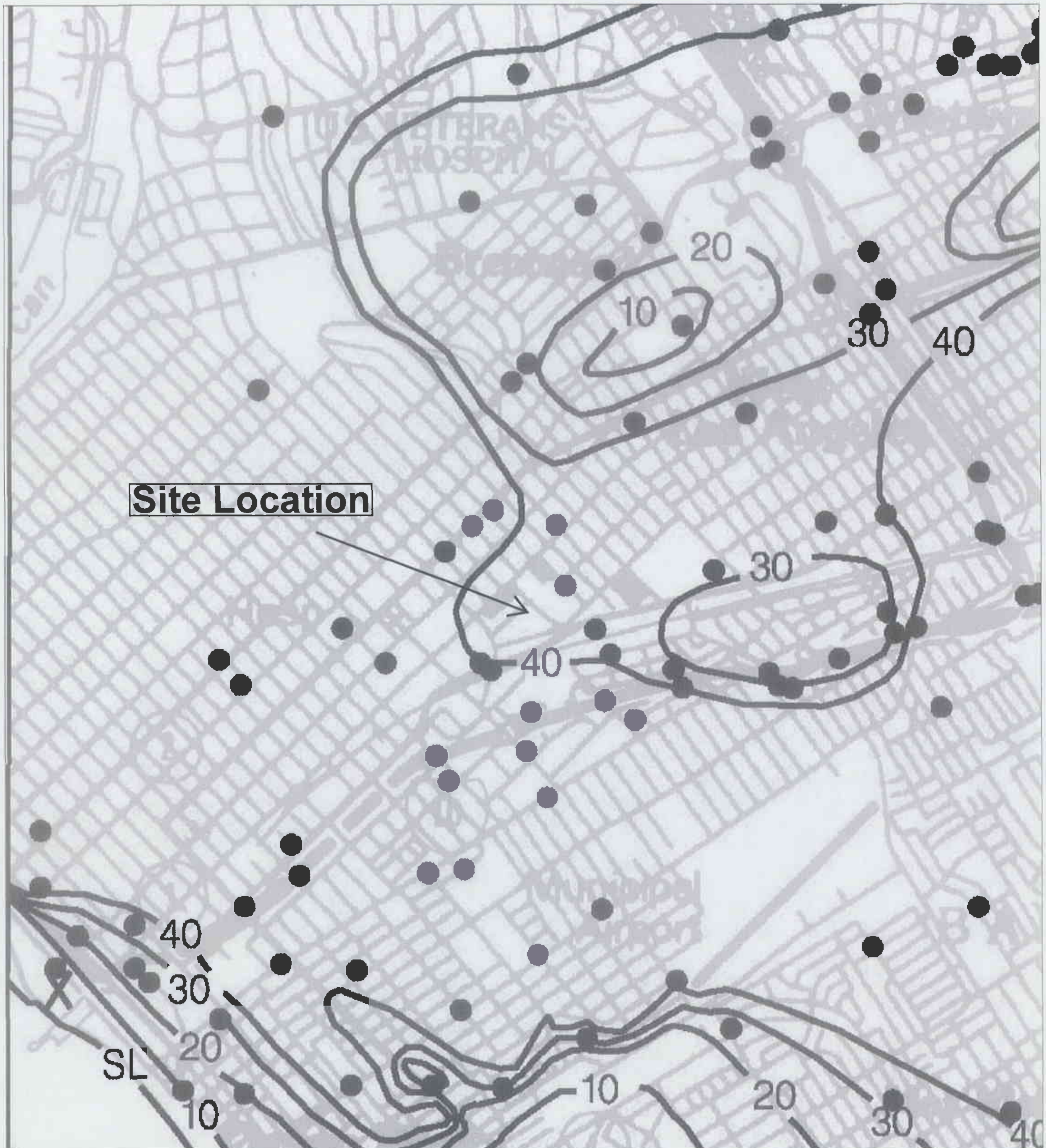
DATE 6/29/2009 BY RMP

SCALE NTS W.O. 8266

PLATE 1.6

HISTORIC HIGH GROUNDWATER MAP
AET/KCRW Building at 1660 Stewart Street
Santa Monica College, Santa Monica, California



Seismic Hazard Zone Report for the Beverly Hills 7.5-minute Quadrangle, Los Angeles County, California, 1998, SHZR 023

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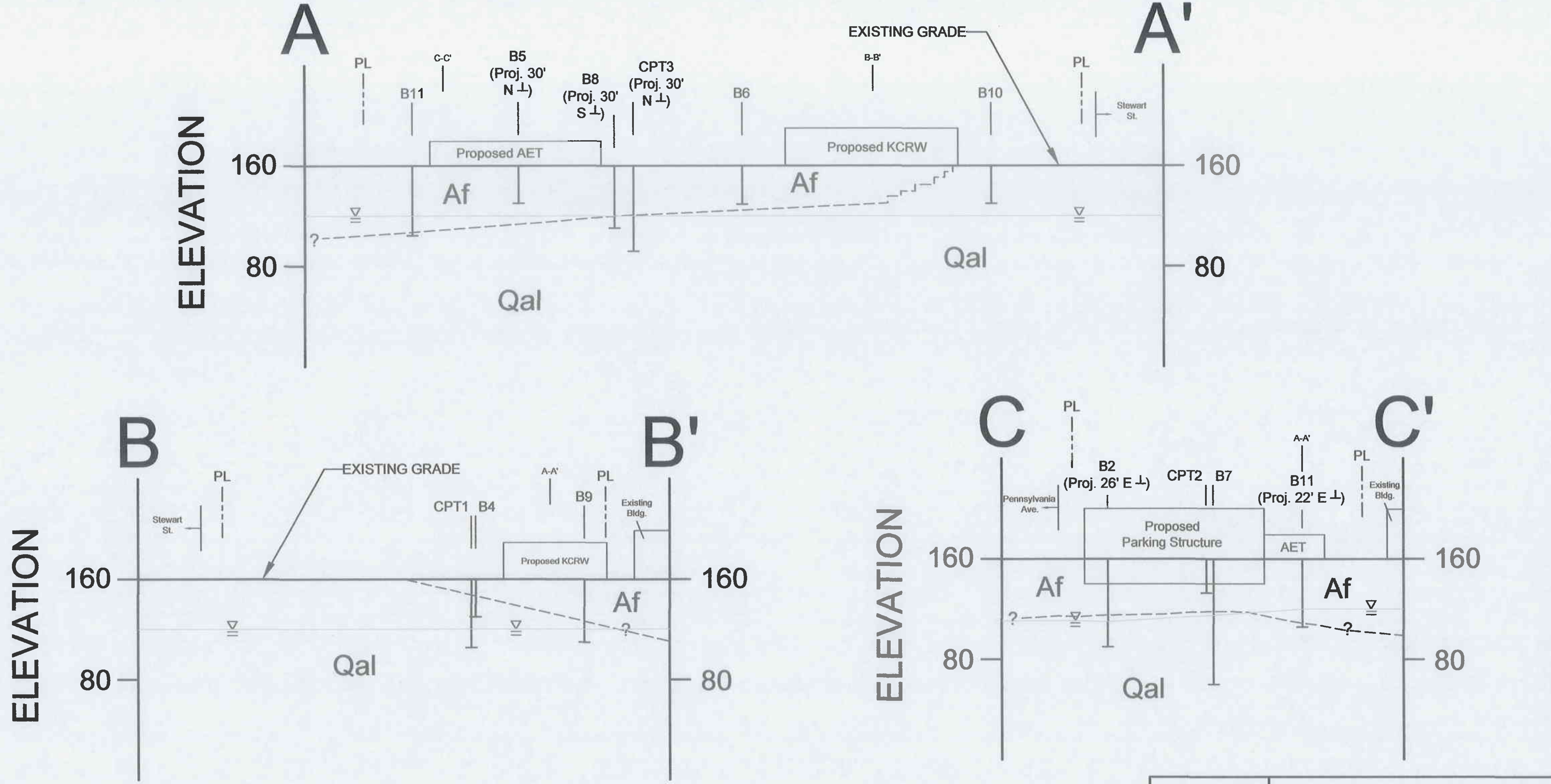
DATE 6/29/2009 BY RMP
SCALE nts W.O. 8266

PLATE 1.7



P:\8266\AET-KCRW Bldg\8266.009 Cross Sections.dwg

Geolabs – Westlake Village

GEOLOGY AND SOIL ENGINEERING

DATE ____ BY TC

SCALE 1"=80' W.O. 8266

PLATE 2.1

SUBSURFACE DATA

LOG OF BORING B1

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/11/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			2" AC, 3" Base.	
			X			Artificial Fill: (CL) Dark gray fine to medium grained sandy lean CLAY, moist, medium plastic.	
	4/7/5		S				
			X			@2.5' - (SM) Brown silty SAND and (CL) sandy lean CLAY, (CL) dark gray lean CLAY, moist, sand wet in places, stiff and medium dense, clay medium plastic.	
			X				
5	3/7/7	C					
	3/5/5		S			@5' - (CL) Brown and dark brown sandy lean CLAY with trace rounded fine gravel, well graded, stiff, moist to very moist, slightly to medium plastic.	
10	8/12/12	C				@7.5' - (CL) Black lean CLAY with sand and trace rounded fine gravel, mottled with (CL) brown lean CLAY with sand, stiff, moist, medium plastic.	
	6/6/10		S	14.4	---	@10' - (CL) Very dark brown gravelly lean CLAY, well graded, stiff, moist, medium plastic.	*(17,32,32,19)
15	6/12/26	C				@12.5' - (CL) Approximately 8" lifts of brown sandy lean CLAY with fine gravel, well graded, very stiff, moist, slightly to medium plastic.	
						@15' - (CL) Dark gray gravelly lean CLAY with sand, well graded, very stiff, moist, slightly plastic.	
			X				
			X				
20	10/15/22		S			@20' - (CL) Black sandy lean CLAY with gravel (brick and cement), well graded, very stiff, moist, medium plastic, piece of fabric.	
25	4/14/26	C				@25' - (CL) Very dark gray to black sandy lean CLAY with trace gravel, very stiff, moist, slightly plastic.	
30	50-3"		S			@30' - (CL) Brown sandy lean CLAY over (SC) clayey SAND, graded, very stiff, moist, sampler bouncing on rock.	
35	16/29/50	C				@35' - No recovery.	
40	4/5/10		S	15.8	---	@40' - (SC) Brown and clayey SAND, well graded, medium dense, moist to wet, medium plastic.	*(6,47,31,16)
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

Logged by: RMP

CLIENT: SMC						PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart						ELEVATION: 160'±	DATE: 5/11/09
RIG TYPE: 8" Hollow Stem						HAMMER WEIGHTS: 140 lbs.	DROP: 30"
	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45	40/50-5"		C			@45' - Alluvium: (GM) Brown silty GRAVEL (50%, angular to rounded slate, 1/4"-2"), well graded, hard, wet.	
	15/20/22	S				@47.5' - (CL) Brown lean CLAY with trace sand and rounded fine gravel, poorly graded, hard, wet, slightly plastic.	
50	26/50	S				@50' - (CL) Brown lean CLAY with trace sand and rounded fine gravel, poorly graded, hard, wet, slightly plastic, interlayered with 1/2" thick lenses of coarse sand approximately 8-12" apart.	
55	40/50-5"		C				
60	13/22/26	S					
65	6/12/17	S				@65' - Very stiff.	
70	14/13/20	S				@70' - (CL) Brown sandy lean CLAY with trace rounded fine gravel, graded, hard, wet.	
75						Total Depth - 70' Groundwater at 40' No caving	
80							
85							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA

LOG OF BORING B2

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/11/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			2" AC, 5" Base.	
			X			Artificial Fill:	
	10/10/12	C	X			@2.5' - (CL) Brown lean CLAY with fine sand, poorly graded, stiff, moist, slightly plastic over (CL) dark brown sandy lean CLAY with gravel, well graded, stiff, moist, slightly plastic.	
5	6/6/7		S			@5' - Brown to grayish brown sandy lean CLAY with gravel, well graded, stiff, moist, medium plastic.	
	11/13/15	C				@7.5' - (GC) Brown clayey GRAVEL, well graded, medium dense, moist.	
10	3/3/7		S	16.2	---	@10' - (CL) Brown to grayish brown sandy lean CLAY, well graded, stiff, moist, brick fragments.	*(11,32,37,20)
	10/14/14	C				@12.5' - (GC) Brown and dark grayish brown clayey GRAVEL (rounded to subrounded slate, 1/2"), well graded, medium dense, moist.	
15	6/8/13		S			@15' - (CL) Brown gravelly (angular to subrounded slate and brick, 1") lean CLAY, well graded, very stiff, moist, slightly plastic.	
20	16/20/32	C				@20' - (GC) Black clayey GRAVEL (angular to subrounded slate and brick, 1"), well graded, dense, moist, organic smell.	
25	12/16/12		S			@25' - (SC) Black clayey SAND with trace gravel (subangular 1/4"), well graded, medium dense, moist, organic smell, 7" brick layer, 1.5" wood chip.	
30	9/20/19	C				@30' - (CL) Black gravelly (subangular to subrounded brick and slate, 1/2" average diameter) lean CLAY, well graded, very stiff, moist, coarse gravel in tip.	
35	23/31/30		S			@35' - 1-6" thick interlayers of (GC) brown clayey GRAVEL (subangular, 1/2"), well graded, very dense, moist, and (SC) grayish brown clayey SAND, graded, medium dense, moist.	
40	20/50	C				@40' - (SC) Dark brown clayey SAND mottled with bluish gray lenses, graded, very dense, moist.	
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA

LOG OF BORING B2

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/11/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45	17/17/23		S			@45' - <u>Alluvium</u>: (CL) Brown lean CLAY with 1" lenses of coarse sand spaced 8" to greater than 1' apart, poorly graded, hard, moist, 6" interlayer of clayey GRAVEL.	
50	30/50	C				@50' - (CL) Brown lean CLAY with fine sand, poorly graded, hard, moist, slightly to medium plastic.	
55	5/6/10		S			@55' - (GW-GC) Upper 6" brown well graded GRAVEL with clay and sand (subangular to subrounded, 1/4"), medium dense, wet, over (CL) brown lean CLAY with fine sand, poorly graded, very stiff, wet, slightly plastic.	
60	6/10/16		S	18.4	---	@60' - (CL) Brown lean CLAY, poorly graded, very stiff, moist, slightly plastic.	*(0,14,57,29)
65	10/15/23		S			@65' - (CL) Brown lean CLAY with gravel (subrounded, 1/4"), well graded, hard, moist, slightly plastic.	
70	7/14/34		S			@70' - (CL) Brown lean CLAY with sand and trace gravel (subrounded, 1/4"), well graded, hard, moist, slightly plastic.	
75						Total Depth - 70' Groundwater at 50' No caving	
80							
85							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA — LOG OF BORING B3

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/12/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						2" AC, 4" Base. Artificial Fill:	
	3/5/5		S			@2.5' - (CL) Mottled brown and dark brown lean CLAY with sand, poorly graded, moist, stiff, medium plastic, with trace angular gravel (crystalline rock, 1/4").	
5	5/11/16	C		16.1	115.3	@5' - (CL) Mottled brown sandy lean CLAY, graded, very stiff, moist, slightly plastic, and (SC) grayish brown clayey SAND with 5-10% subrounded to subangular gravel (1/4"), well graded, medium dense, moist, slightly plastic.	
	5/5/5		S				
10	4/10/16	C		13.8	118.1	@7.5' - (CL) Mottled orange, brown, and gray sandy lean CLAY with gravel (less than 10% subangular to subrounded, 1/4"), well graded, stiff, moist, medium plastic.	
	4/5/5		S	16.5	---	@10' - Mottled and interlayered (1-3" thick) (SC) dark brown clayey SAND with trace gravel (1/4"), (CL) orange and blue sandy lean CLAY, slightly plastic, and (CH) black fat CLAY with sand and trace gravel (subangular, 1/8"), well graded, very stiff/medium dense, moist.	*(3,35,36,26)
15	6/11/15	C		12.7	118.3	@12.5' - (CL) Brown sandy lean CLAY with trace rounded gravel (1/4") and (CL) gray gravelly (angular, 1/2") lean CLAY, well graded, stiff, moist, medium plastic.	
20	3/5/6		S	17.0	---	@15' - (SC) Brown clayey SAND with trace gravel (less than 5% subrounded, 1/4"), well graded, medium dense, moist, medium plastic, contact to (SC) dark grayish brown clayey SAND with trace gravel in sample tip.	*(3,46,32,19)
						@20' - (CL) Orangish brown sandy lean CLAY with trace gravel (subangular to subrounded, 1"), well graded, medium dense, very moist, medium plastic.	
25	33/50	C		11.1	100.6	@25' - (SC) Black mottled with brown clayey SAND with 10% fine gravel (angular, 3/4"), well graded, very dense, moist to wet in pockets, slightly to medium plastic, several 1" asphalt pieces.	
30	8/13/16		S	9.2	---	@30' - (SC) Dark brown clayey SAND with gravel (rounded tabular and flaky slate, subangular andesite, angular bricks, maximum 1/2"), well graded, medium dense, moist, slightly plastic.	*(25,36,24,15)
35	22/31/42	C		9.5	131.6	@35' - (GC) Brown clayey GRAVEL (subrounded to subangular, 1"), with sand, very dense, moist, well graded, slightly plastic.	
40	11/23/26		S			@40' - Alluvium: (SC) Brown clayey SAND with 10-15% gravel (subrounded tabular slate, 1/2"), well graded, hard moist, over (GW-GC) grayish brown well graded GRAVEL with clay and sand (60% subrounded to angular slate, 1"), dense, wet.	
			X				
			X				
			X				
			X				
45			X				

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA LOG OF BORING B3

CLIENT: SMC						PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart						ELEVATION: 160'±	DATE: 5/12/09
RIG TYPE: 8" Hollow Stem						HAMMER WEIGHTS: 140 lbs.	DROP: 30"
	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45	8/15/32	C		20.9	111.6	@45' - (CL) Orangish brown and gray lean CLAY, well graded, very stiff, moist, interlayered with (SC) brown clayey SAND with trace fine gravel (subrounded tabular slate, 1/4"), well graded, medium dense, moist.	
	30/33/31		S			@47.5' - (SC) Brown clayey SAND, graded, very dense, wet, over (GW-GC) grayish brown well graded GRAVEL with clay and sand (50% angular to subrounded slate, 1/2"), very dense, wet.	
50	27/36/22		S			@50' - (GC) Grayish brown clayey GRAVEL (60% angular slate, 1.5"), well graded, very dense, moist to wet.	
55	10/21/35	C		18.6	115.7	@55' - (CL) Brown lean CLAY with sand, poorly graded, very stiff, moist, slightly plastic, trace fine gravel (subrounded slate, 1/8").	
60	9/12/15		S	20.6	---	@60' - (CL) Brown lean CLAY, trace fine gravel (subrounded tabular slate, 1/8"), poorly graded, very stiff, moist, medium plastic.	*(0,14,49,37)
65	8/11/26		S			@65' - (CL) Dark brown mottled with grayish brown lean CLAY with sand and trace fine gravel (subrounded tabular slate, 1/8"), poorly graded, hard, moist, medium plastic.	
70	30/50		S			@70' - (CL) Brown sandy lean CLAY, poorly graded, hard, moist to wet, slightly plastic, trace fine gravel (subrounded slate, 1/8").	
75						Total Depth - 70' Groundwater at 40' No caving	
80							
85							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/12/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			2" AC, 10" Base.	
			X			Artificial Fill: (CL) Mottled dark brown and grayish brown sandy lean	
			X			CLAY with gravel (angular, 3/4"), well graded, moist, slightly plastic.	
			X				
			X				
5	4/8/14		S			@5' - (CL) Mottled grayish brown and gray lean CLAY with sand and	*(6,23,47,24)
						gravel (subangular, 3/4", crystalline rock and brick), well graded, very	
	10/29/39	C		14.9	80.5	stiff, moist, slightly plastic.	
						@7.5' - (CL) Very dark gray to black sandy lean CLAY with gravel	
						(subrounded slate, angular bricks and decayed sandstone, 1/2"), well	
10	10/11/13		S			graded, hard, moist, slightly plastic.	
						@10' - (GC) Mottled gray and black clayey GRAVEL (angular, 3/4"	
	6/13/15	C		13.1	119.5	bricks and slate), well graded, medium dense, moist, medium plastic.	
						@12.5' - Alluvium: (SC) Brown clayey fine grained SAND to (SM) silty	
						fine to medium grained SAND with trace subrounded gravel (1/4"), poorly	
15	4/4/5		S			graded, medium dense, moist, non-plastic.	
20	7/12/14	C		13.3	116.2	@20' - (CL) Brown lean CLAY with sand, somewhat poorly graded, very	
						stiff, moist, non to slightly plastic.	
			X				
25	4/4/7		S	17.0	---	@25' - (CL) Brown lean CLAY with sand, graded, stiff, moist, slightly	*(2,25,52,21)
			X			plastic.	
			X				
30	18/34/45	C		13.5	120.4	@30' - (SC) Mottled brown and pale brown clayey SAND with trace fine	
						gravel (less than 10%, subangular, 1/2"), well graded, dense, moist,	
						slightly plastic, massive.	
35						Total Depth - 30'	
						No groundwater	
						No caving	
40							
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA

LOG OF BORING B5

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/12/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						2" AC, 4" Base.	
						Artificial Fill: (CL) Dark brown sandy lean CLAY with trace gravel (1/4"	
	4/6/8		S			slate and brick pieces), well graded, moist, medium plastic.	
						@2.5' - (CL) Brown mottled with orange sandy lean CLAY with trace gravel (subangular, 1/2"), well graded, stiff, moist, slightly plastic.	
5	13/17/20	C		22.9	102.5	@5' - (CL) Very dark brown lean CLAY with fine sand, graded, very stiff, moist, slightly plastic, trace fine gravel (subangular, 1/4").	
	4/8/9		S			@7.5' - (CL) Dark grayish brown gravelly lean CLAY (subangular bricks and subrounded slate to 3/4"), well graded, very stiff, moist, slightly plastic.	
10	7/12/16	C		17.0	113.1	@10' - (CL) Dark brown gravelly lean CLAY (30% subangular to subrounded slate, bricks, crystalline rock, 1/2"), well graded, very stiff,	
	7/30/9		S			moist, medium plastic.	
						@12.5' - (CL) Dark grayish brown gravelly lean CLAY (30% angular bricks, subrounded slate 1/2"), well graded, hard, moist, medium plastic,	
15	6/26/17	C		17.5	106.7	4" thick layer of white SAND within clay, drove up blowcount.	
						@15' - (GC) Very dark brown to black clayey GRAVEL (30% subangular bricks, andesite, slate, 1.5") with sand, well graded, medium dense, moist, slightly plastic.	
20	11/14/30		S			@20' - (GC) Dark brown to black clayey GRAVEL with sand (40% angular to subangular bricks, slate, crystalline rock, 1.5"), well graded, medium dense, moist, medium plastic.	
25	10/9/13		S	12.0	---	@25' - (SC) Brown clayey SAND with abundant gravel (30% slate, bricks, subrounded to angular, 1/2"), well graded, medium dense, moist, slightly plastic.	
30	12/12/17		S			@30' - (CL) Dark gray to black gravelly lean CLAY with sand (25% subrounded to angular bricks and slate, 1.5"), well graded, very stiff, moist, medium plastic.	
35						Total Depth - 30' No groundwater No caving	
40							
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/13/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			2" AC, 3" Base.	
			X			Artificial Fill: (CL) Grayish brown sandy lean CLAY, graded, moist,	
	4/10/12		S			meidum plastic.	
						@2.5' - (CL) Grayish brown lean CLAY with gravel (angular to subangular bricks and crystalline rock, 1"), well graded, very stiff, moist, slightly to	
5	9/19/19	C		16.0	111.0	medium plastic.	
						@5' - (CL) Gray and black gravelly lean CLAY (10-30% subrounded slate,	
	5/8/11		S			angular bricks, 1/2"), well graded, very stiff, moist, slightly to medium plastic.	
						@7.5' - (CL) Very dark gray to black gravelly lean CLAY with sand	
10	11/17/50	C		14.8	113.2	(20-30%, subrounded slate, angular bricks, 1"), well graded, very stiff, moist, slightly to medium plastic.	
	6/8/12		S	18.4	---	@10' - (CL) Black gravelly lean CLAY with sand (10-20%, subrounded slate, angular bricks, 2"), well graded, very stiff, moist, medium plastic, gravel (crystalline) in tip.	
15	6/20/19	C		11.5	120.6	@12.5' - (CH) Grayish brown and black sandy fat CLAY with gravel (10-15% subrounded slate, angular bricks, subangular crystalline rock, 1"), well graded, very stiff, moist, medium to highly plastic.	
						@15' - (CL) Black lean CLAY with gravel (10-15%, subrounded slate, bricks, angular ceramic tile, 1"), well graded, very stiff, moist, medium	
20	6/9/8		S	23.1	---	plastic.	
						@20' - (CL) Grayish brown and dark gray sandy lean CLAY with gravel (10% subrounded slate, angular bricks, 1/2"), well graded, very stiff, moist, medium plastic, wood chips.	
25	10/17/18		S			@25' - (CL) Black and grayish brown very sandy lean CLAY with gravel (10% angular glass, bricks, and ceramic tile, 3/4"), well graded, hard, moist,	
30	11/20/19		S			@30' - (CL) Black gravelly lean CLAY (20-30%, angular brown glass, bricks, sandstone, 3/4"), well graded, hard, moist, slightly plastic, wood chips.	
35						Total Depth - 30' No groundwater No caving	
40							
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/13/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						2" AC, 5" Base. Artificial Fill: (CH) Brown sandy fat CLAY with gravel (10% 1/2"	
	3/5/6	C		27.6	91.0	subrounded slate), well graded, moist, medium to highly plastic. @2.5' - (CH) Laminated brown and very dark brown fat CLAY with sand, graded, stiff, moist, random wet pockets, highly plastic.	
5	3/3/7		S	15.5	---	@5' - (CL) Brown sandy lean CLAY with gravel (10-20%, angular brick, subrounded slate, 1/2"), well graded, stiff, moist to very moist, medium	
	7/13/12	C		14.8	114.8	plastic. @7.5' - (CL) Mottled brown and gray sandy lean CLAY with gravel (10% subangular crystalline rock, 1/2"), well graded, very stiff, moist, slightly	
10	3/4/5		S			to medium plastic. @10' - (CL) Brown and grayish brown gravelly lean CLAY (20-30%	
	7/8/11	C		13.9	120.1	angular brick, subrounded slate, 1/4"), well graded, stiff, moist (2 wet pockets 1-2" thick), medium plastic. @12.5' - (CL) Dark gray gravelly lean CLAY (20-30% angular brick,	
15	3/3/6		S	14.4	---	subrounded slate, 3/8"), well graded, stiff, moist, medium plastic. @15' - (SC) Dark brown clayey SAND with gravel (15-25% angular bricks, subrounded slate, angular glass, 1/2"), well graded, loose, moist, slightly to medium plastic.	
20	14/40/ 50-4"	C		16.6	113.0	@20' - (GC) Dark grayish brown clayey GRAVEL with sand (25-40% angular bricks, subrounded slate, and concrete, 2") well graded, very dense, moist, medium plastic.	
25	4/5/9		S	19.9	---	@25' - (CL) Grayish brown to black sandy lean CLAY with gravel (15-35% angular brick/tile, subrounded slate, 1/2"), well graded, stiff, moist, medium plastic, one 1" wet pocket, one 4" wet pocket.	
30	18/42/25	C		14.9	115.5	@30' - (GC) Olive brown to black clayey GRAVEL with sand (brick, slate, glass, plastic, angular to subrounded, 1"), well graded, dense, moist, slightly plastic.	
35	50-4"		S			@35' - (CL) Very dark gray gravelly lean CLAY with sand (20-25% slate, brick, angular to subrounded, 1/2"), well graded, moist, wet at tip, slightly plastic, very stiff.	
40	15/13/12	C		18.2	111.0	@40' - (CL) Dark gray gravelly lean CLAY (20% slate, brick, concrete, angular to subrounded, 2"), well graded, very stiff, moist, slightly to medium plastic. @41' - Alluvium: (SC) Dark brown and grayish brown clayey fine to medium grained SAND, graded, medium dense, wet, slightly plastic.	
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA

LOG OF BORING B7

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/13/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45	18/19/30		S			@45' - Grayish brown (SC) clayey SAND to (CL) sandy lean CLAY, graded, dense/hard, wet, over (GW-GC) well graded GRAVEL with clay and sand (subrounded slate, 1/2"), dense, wet.	
	7/24/37		S			@47.5' - (GW-GC) Mottled orange and grayish brown well graded GRAVEL with clay and sand (50% subrounded to angular slate, 1"), very dense, wet.	
50	10/12/14		S			@50' - (CL) Brown sandy lean CLAY with gravel (10% subrounded slate, 1/8"), well graded, very stiff, moist, slightly plastic.	
55	22/33/48	C		18.2	114.6	@55' - (CL) Brown sandy lean CLAY with gravel (10% subrounded tabular slate, 1/4"), well graded, hard, moist, slightly plastic, sandy zones in thin (less than 1") discontinuous lenses.	
60	7/12/19		S	20.7	---	@60' - (CL) Brown lean CLAY with sand and trace of fine gravel (subrounded slate, 1/8"), poorly graded, hard, moist, slightly plastic.	
65	37/50		S			@65' - (CL) Brown lean CLAY.	
70	8/10/17		S			@70' - (CL) Brown sandy lean CLAY with gravel (5010% subrounded slate, 3/8"), well graded, very stiff, wet, slightly plastic.	
75	10/16/25		S			@75' - (SC) Brown clayey SAND with gravel (15% subrounded slate, 1/4"), well graded, dense, moist.	
80	20/21/13		S			@80' - Brown (GC) clayey GRAVEL to (CL) gravelly lean CLAY, well graded, hard/dense, moist to wet, slightly plastic, gravels (30-60% angular to subrounded slate, 1/2"), over (CL) brown lean CLAY with sand and gravel (20% sand, 10% subangular slate, 1/4"), well graded, hard, moist, slightly plastic.	
85							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA

LOG OF BORING B7

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/13/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
80							
85	7/25/ 50-5"		S	14.9	---	@85' - Brown (GC) clayey GRAVEL to (CL) gravelly lean CLAY, well graded, hard/very dense, moist, slightly plastic, gravels (20-60% rounded to angular slate, 1/2"), one 1" clean sand interlayer.	
90	16/24/36		S			@90' - Brown (SC) clayey SAND to (CL) sandy lean CLAY with gravel (10% subrounded slate, 1/4"), well graded, very dense/hard, moist, slightly plastic.	
95	15/22/31		S			@95' - (SC) Brown clayey SAND with gravel (33% angular to subrounded slate, 1/2"), well graded, very dense, moist, slightly plastic.	
100	27/27/35		S			@100' - (SW-SC) Grayish brown well graded SAND with clay, very dense, wet, over (GW-GC) brown well graded GRAVEL with clay and sand (50% angular to subrounded slate, 1/2"), very dense, wet.	
105						Total Depth - 100' Groundwater at 45' No caving	
110							
115							
120							
125							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA

LOG OF BORING B8

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/14/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0			X			2" AC, 3" Base.	
			X			<u>Artificial Fill</u>: (CL) Brown sandy lean CLAY with trace gravel, graded,	
	13/27/18	C	X	13.1	123.3	moist, medium plastic.	
			X			@2.5' - (CL) Mottled brown and pale brown sandy lean CLAY with trace	
						gravel, well graded, very stiff, moist, slightly plastic.	
5	6/4/6		S			@5' - Mottled orangish brown and dark brown (SC) clayey SAND to	
						(CL) sandy lean CLAY with gravel (10-20%, subrounded slate, 1/2"),	
	4/10/16	C		18.6	109.5	well graded, loose/stiff, moist, slightly plastic.	
						@7.5' - (CL) Very dark brown to black gravelly lean CLAY with sand	
						(20-30% angular to subangular bricks, asphalt, slate, 3/4"), well graded,	
10	10/14/9		S			very stiff, moist, slightly to medium plastic.	
						@10' - (CL) Black sandy lean CLAY with gravel (10-20% angular glass,	
	5/8/16	C		14.5	114.8	asbestos, bricks, 1/2"), well graded, very stiff, moist, slightly to medium	
						plastic, wire.	
						@12.5' - (CL) Black and dark brown sandy lean CLAY with gravel	
15	4/8/8		S	16.7	---	(10-20% angular bricks, subrounded slate, 1.5"), well graded, stiff, moist,	
						slightly to medium plastic.	
						@15' - (CL) Grayish brown and black sandy lean CLAY with gravel	
						(10-20% angular bricks, crystalline rock, subrounded slate, 3/8"), well	
						graded, very stiff, moist, medium plastic.	
20	2/15/21	C		14.2	118.6	@20' - (GC) Mottled black and grayish brown clayey GRAVEL with sand	
			X			(40% angular bricks, glass, subrounded slate), well graded, medium	
			X			dense, moist, slightly plastic, wood chips.	
			X				
25	10/14/15		S			@25' - (CL) Mottled black and grayish brown sandy lean CLAY with	
						gravel (10-20% angular bricks, glass, subrounded slate, 1/2"), well	
						graded, very stiff, moist, slightly plastic.	
30	10/25/ 50-5"	C		13.3	117.4	@30' - (CL) Black gravelly lean CLAY (20-30%, angular glass, tile, brick, subrounded slate, 3/4"), well graded, hard, moist, slightly plastic.	
35	5/5/10		S	15.0	---	@35' - (CL) Brown (8") over black gravelly lean CLAY (30% angular	
						bricks, subrounded slate, 1/2"), well graded, stiff, moist (two 1-2" wet	
						zones), medium plastic.	
40	8/13/16	C		18.5	111.0	@40' - <u>Alluvium</u>: (SC) Grayish brown clayey SAND with gravel (10-15%	
						subrounded slate, 3/8"), well graded, medium dense, wet, channeled	
						into (CL) brown lean CLAY with sand, poorly graded, very stiff, moist,	
						medium plastic.	
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/14/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
	10/14/11		S	13.0	---	@42.5' - (SC) Mottled brown and grayish brown clayey SAND with gravel (angular to subrounded slate, 1/2"), well graded, medium dense, wet, slightly plastic.	*(19,50,19,12)
45	12/20/20		S			@45' - Brown to grayish brown (GW-GC) well graded GRAVEL with clay and sand (50-70% angular slate, 1/2"), dense, wet.	
	5/8/15		S	19.4	---	@47.5' - (CL) Brown sandy lean CLAY, poorly graded, very stiff, moist, medium plastic.	*(0,32,41,27)
50	4/26/40	C		13.4	124.4	@50' - (CL) Brown sandy lean CLAY, graded, hard, moist, slightly plastic.	
55						Total Depth - 50' Groundwater at 41' No caving	
60							
65							
70							
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/14/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						1.5" AC, 2" Base.	
	3/4/7		S			Artificial Fill: (CH) Brown fat CLAY with sand and trace fine gravel, somewhat poorly graded, moist, medium to highly plastic. @2.5' - (CH) Greenish brown gravelly fat CLAY (20% angular bricks, asphalt, subrounded slate, 3/4"), well graded, stiff, moist, medium to highly plastic.	
5	2/5/5	C		24.1	96.4	@5' - (CH) Black, dark brown, and greenish brown gravelly fat CLAY with sand (10-15% angular brick and asphalt, 1.5"), well graded, medium stiff, very moist, medium to highly plastic.	
	2/4/6		S			@7.5' - (CL) Black gravelly lean CLAY with sand (15-30% angular brick, subrounded slate, 1/2"), well graded, stiff, moist to very moist, medium plastic, wood chips.	
10	5/16/17	C		12.0	115.4		
	6/20/8		S			@12.5' - (CL) Black and green sandy lean CLAY with gravel (15-30% angular brick, crystalline rock, subrounded slate, up to 3"), well graded, stiff, moist (wet above brick), medium plastic.	
15	12/21/36	C		16.3	110.1	@15' - (SC) Black clayey SAND with gravel (20% angular brick, asphalt, subrounded slate, 3"), well graded, medium dense, moist, slightly plastic, brick in tip.	
20	8/7/9		S	12.8	---	@20' - (SC) Black and green clayey SAND with gravel and (CL) gravelly lean CLAY with sand (15% angular brick, asphalt, subangular slate, 1/2"), well graded, medium dense/very stiff, moist, one 2" thick wet pocket, slightly plastic.	*(17,53,17,13)
25	15/25/23	C		12.4	115.3	@25' - (SC) Black clayey SAND with gravel and (CL) grayish brown gravelly lean CLAY with sand (25% angular brick, subrounded slate, 7/8"), mottled and interlayered (less than 1" thick), well graded, medium dense/very stiff, moist, medium plastic.	
30	3/5/8		S			@30' - (SC) Grayish brown clayey SAND with gravel (33% angular brick, subrounded slate, 1/2"), well graded, medium dense, moist to wet, slightly to medium plastic. @31' - Alluvium: (GC) clayey GRAVEL.	
35	36/50	C		6.2	130.9	@35' - (GW-GC) Orangish brown well graded GRAVEL with clay and sand (50% angular slate, 3/4"), very dense, moist.	
40	10/11/16		S			@40' - (GW-GC) Orangish brown well graded GRAVEL with clay and sand (50-60% angular slate, 1"), medium dense, wet, gravel in tip.	
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA

LOG OF BORING B9

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/14/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
	18/23/23		S			@42.5' - (GP-GC) Grayish to orangish brown poorly graded GRAVEL with clay and sand (50-70% angular slate 3/4"), dense, wet.	
45	4/25/33	C		12.1	123.0	@45' - (GP-GC) Grayish brown poorly graded GRAVEL with clay and sand (60-80% angular to subrounded slate, 1"), dense, wet.	
	10/20/18		S			@47.5' - (CL) Brown lean CLAY with sand, poorly graded, hard, moist, slightly plastic.	
50	14/8/14		S	19.1	---	@50' - (CL) Brown lean CLAY with sand, somewhat poorly graded, very stiff, moist, slightly plastic.	*(0,27,45,28)
55						Total Depth - 50' Groundwater at 39' No caving	
60							
65							
70							
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

SUBSURFACE DATA

LOG OF BORING B10

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/14/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						2" AC, 12" Base.	
						Artificial Fill: (GP-GM) Grayish brown poorly graded GRAVEL with silt	
	8/11/10	C		13.0	118.8	and sand (60% angular, 3/4").	
						@1.5' - Alluvium:	
						@2.5' - (CL) Dark brown sandy lean CLAY, poorly graded, stiff, moist,	
5	1/1/2		S			slighlty plastic.	
						@5' - (CL) Dark brown sandy lean CLAY with trace fine gravel (less than	
	1/2/5	C		16.0	106.7	5% subrounded slate, 1/4"), poorly graded, soft, moist.	
						@7.5' - Dark brown (CL) sandy lean CLAY to (SC) clayey SAND, poorly	
						graded, soft/very loose, moist, slightly plastic.	
10	1/2/3		S	12.4	---	@10' - (CL) Brown sandy lean CLAY, poorly graded, medium stiff, moist,	*(0,33,41,26)
						slightly plastic, trace subrounded slate 1/4".	
	8/11/15	C		11.0	117.6	@12.5' - (SM) Brown silty SAND, poorly graded, medium dense, moist.	
15	6/6/6		S	14.3	---	@15' - (CL) Brown lean CLAY with sand, poorly graded, stiff, moist.	*(0,17,52,31)
20	3/4/7		S			@20' - Brown lean CLAY with sand and trace subrounded slate (1/4"),	
						graded, stiff, moist.	
25	3/4/4		S	19.2	---	@25' - (SM) Brown silty SAND, graded, loose, very moist, over (CL) lean	*(3,20,55,22)
						CLAY with sand and trace gravel (subrounded slate, 3/8"), well graded,	
						medium stiff, moist, slightly plastic.	
30	6/12/14		S			@30' - (CL) Sandy lean CLAY, grading down to (CL) lean CLAY with	
						sand, poorly graded, very stiff, moist, slightly plastic, two 2" thick gravel	
						zones (20% angular to subrounded slate, 1/2").	
35						Total Depth - 30'	
						No groundwater	
						No caving	
40							
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/15/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						2" AC over 1" older decomposed AC.	
						Artificial Fill: (CL) Brown lean CLAY with gravel and sand (less than 10%	
	7/19/17	C		15.6	117.6	subangular to subrounded slate, 1/2"), well graded, very moist, medium plastic.	
						@2.5' - (GC) Mottled black and grayish brown clayey GRAVEL with sand	
5	4/8/8		S			(40% angular brick, subrounded slate, 1/2") and (CL) brown gravelly lean CLAY (30% angular brick, subrounded slate, 1/2"), well graded, medium	
	4/20/20	C		16.1	102.2	dense/very stiff, moist, slightly palstic.	
						@5' - (CL) Brown gravelly lean CLAY (20-30% angular brick, subrounded slate, 1/2"), well graded, very stiff, moist, slightly plastic.	
10	10/7/7		S			@7.5' - (CL) Grayish brown and black gravelly lean CLAY with sand (20% angular brick, subangular to subrounded slate, 1.5"), well graded, very	
	9/14/22	C		16.1	110.9	stiff, moist, slightly plastic.	
						@10' - (CL) Black and greenish brown lean CLAY with gravel and sand (10-20% angular brick, subrounded slate, 1"), well graded, stiff, moist,	
15	6/7/8		S			slightly plastic.	
						@12.5' - (CL) Black gravelly lean CLAY with sand (15-30% angular brick, subangular to subrounded slate, 2"), well graded, very stiff, moist, medium plastic, wood fragments.	
						@15' - (CL) Black and green gravelly lean CLAY with sand (30% angular	
20	3/10/17	C		14.3	119.2	brick, subrounded slate, 1/2"), well graded, stiff, moist, slightly plastic.	
						@20' - (GC) Dark grayish brown clayey GRAVEL with sand (40% subangular to subrounded slate, angular glass, tile, bricks, 3/4"), well graded, moist, medium dense, slightly plastic.	
25	17/17/19		S			@25' - (GC) Greenish brown clayey GRAVEL with sand (40% subangular to subrounded slate, angular bricks, 3/4"), well graded, dense, moist, slightly plastic.	
30	3/28/20	C		14.0	112.1	@30' - (GC) Black clayey GRAVEL with sand (50% subangular to subrounded slate, angular brick, glass, subrounded concrete, 1.5"), well graded, medium dense, moist, medium plastic.	
35	6/4/8		S	13.9	---	@35' - Very little recovery, mostly brick and decayed concrete, (CL) wet lean CLAY with sand in tip.	*(47,38,11,4)
40	5/12/20	C		18.8	110.4	@40' - (GW-GC) Grayish brown well graded GRAVEL with clay and sand (50% angular bricks, angular to subrounded slate, 2"), medium dense, wet.	
45							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
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* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

CLIENT: SMC	PROJECT: AET/KCRW Building	W.O.: 8266.009
LOCATION: 1660 Stewart	ELEVATION: 160'±	DATE: 5/15/09
RIG TYPE: 8" Hollow Stem	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

Depth	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
	13/17/20		S			@42.5' - (GW) Grayish brown well graded GRAVEL with sand (60% angular to subangular crystalline rock, 1/2"), dense, wet, over (SP-SM) bluish gray poorly graded SAND with silt, dense, wet.	
45	10/15/18		S			@45' - (SW) Bluish gray well graded SAND with gravel (30% angular to subangular crystalline rock, 1/2"), dense, wet, over (CL) grayish brown	
	5/6/7		S	38.3	---	gravelly lean CLAY with sand, (20-30% angular brick, subrounded slate, 1"), well graded, hard, wet, slightly plastic, wood chips.	*(32,57,8,3)
						@47.5' - (SW-SC) Grayish brown well graded SAND with clay and gravel	
50	7/15/20	C		12.0	---	(angular brick, slate, 1"), medium dense, wet.	
	5/8/8		S			@52.5' - (GC) Brown clayey GRAVEL with sand (50% angular to subrounded brick and slate, 1/4"), well graded, medium dense, wet, slightly to medium plastic.	
55	2/4/5	C		34.8	89.5	@53' - Alluvium: (SC) Alternating black and grayish brown layers of clayey SAND, poorly graded, very stiff, moist to wet, medium to highly plastic, layers are 1/2" to mm thick.	
						@55' - (CL) Alternating black and grayish brown layers of sandy lean CLAY, poorly graded, medium stiff, wet, slightly to medium plastic, layers	
60						are mm-1.5" thick, black typically mm-1/2" thick.	
65						Total Depth - 55' Groundwater at 40' No caving	
70							
75							
80							
85							

ADDITIONAL COMMENTS:

Blows per 6" unless otherwise noted
S = Standard Penetration Test
C = Modified California Sampler
* = (%gravel, %sand, %silt, %clay)

N = Field Blowcount
U = Undisturbed Sample
B = Disturbed Sample
X = Disturbed Bulk Sample
M = Moisture %
DD = Dry Density (pcf)

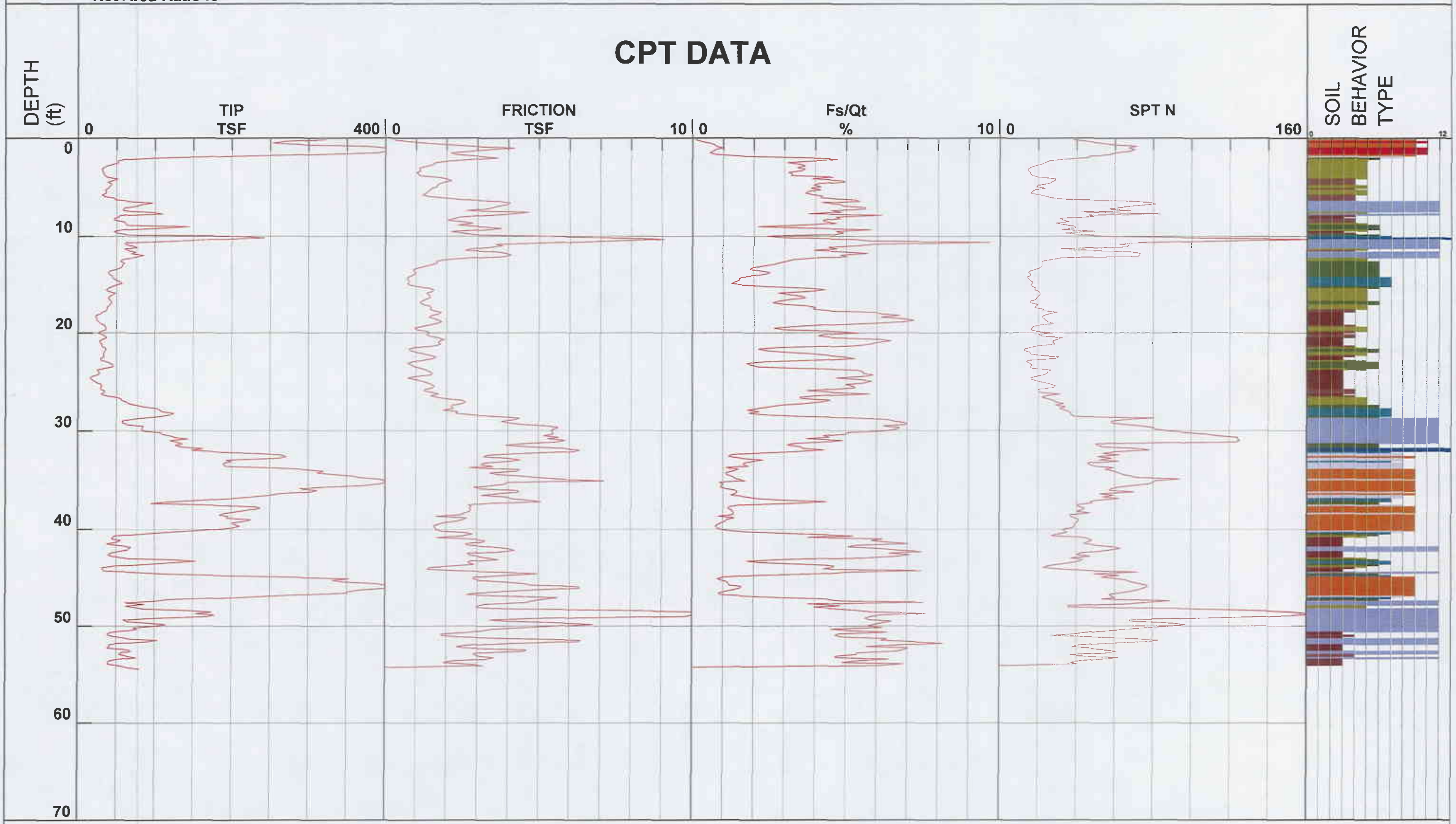
APPENDIX A

CONE PENETROMETER TEST DATA AND ANALYSES

Geolabs Westlake Village

Project	SMC AET/KRET Bldg.	Operator	DK/ML	Filename	SDF(800).cpt
Job Number	8266 009	Cone Number	DSG0786	GPS	
Hole Number	CPT-01A	Date and Time	5/12/2009 8:50:45 AM	Maximum Depth	54.46 ft
Water Table Depth	40.00 ft				

Net Area Ratio .8



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

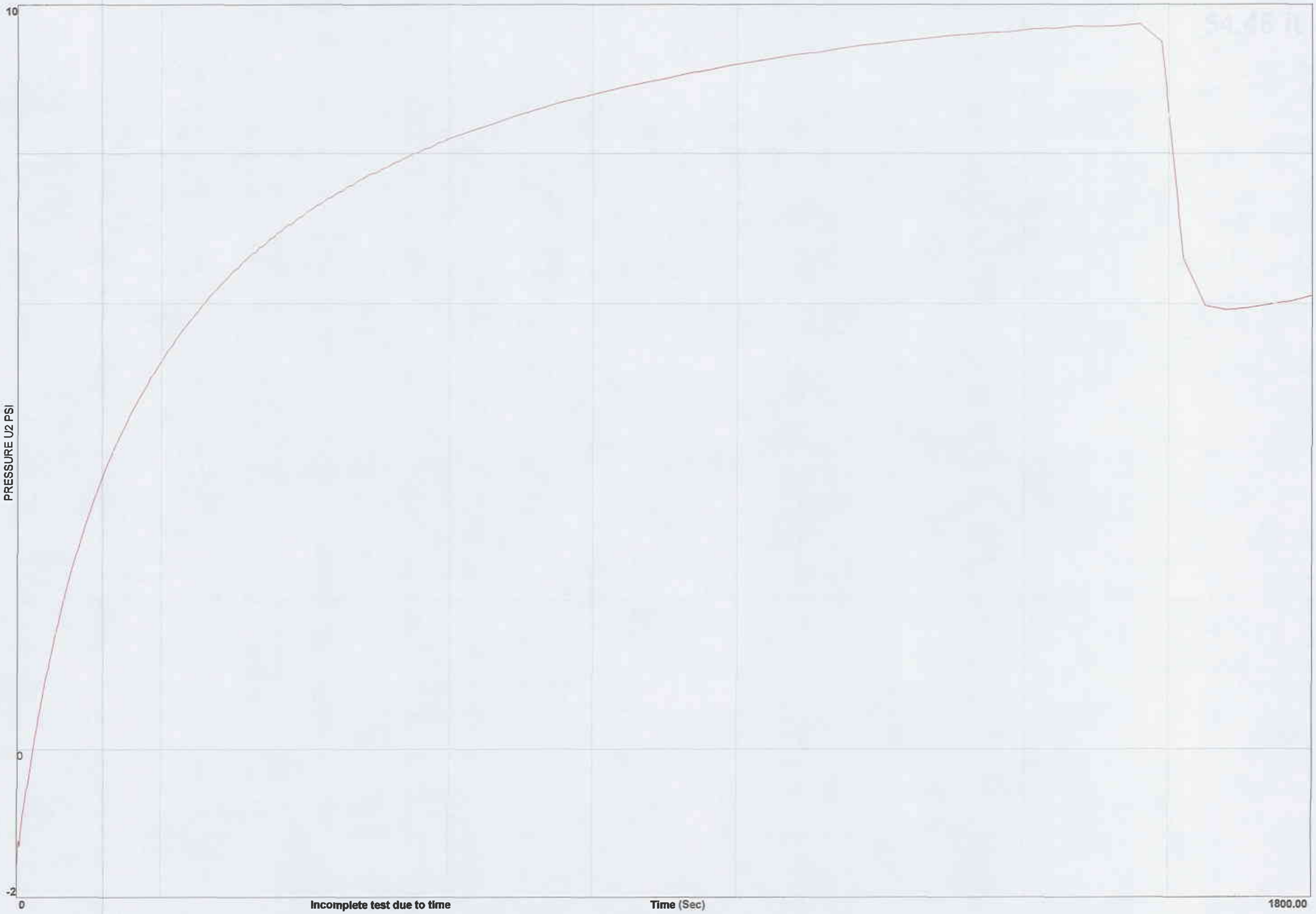
Cone Size 10cm squared

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

Geolabs Westlake Village

Location	SMC AET/KRET Bldg.	Operator	DK/ML
Job Number	8266 009	Cone Number	DSG0786
Hole Number	CPT-01A	Date and Time	5/12/2009 8:50:45 AM
Equilized Pressure	9.74	Estimate GW Depth	32.00

GPS



Incomplete test due to time

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(800).cpt
CPT Date: 5/12/2009 8:50:45 AM
GW During Test: 40 ft

Sounding ID: CPT-01A
Project No: 8266 009
Cone/Rig: DSG0786

Depth ft	qc PS tsf	* qcln PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
0.33	268.8	431.1	431.1	0.7	0.0	0.3	7	grvly SAND to dense SAND	130	6.0	72	45	95	48	-	16
0.49	253.0	405.8	405.8	1.3	0.0	0.5	7	grvly SAND to dense SAND	130	6.0	68	42	95	48	-	16
0.66	292.8	469.6	469.6	2.1	0.0	0.7	6	clean SAND to silty SAND	125	5.0	94	59	95	48	-	16
0.82	376.5	603.7	603.7	2.8	0.1	0.7	7	grvly SAND to dense SAND	130	6.0	100	63	95	48	-	16
0.98	436.0	699.2	699.2	4.2	0.2	1.0	6	clean SAND to silty SAND	125	5.0	100	87	95	48	-	16
1.15	441.9	708.7	708.7	3.3	1.0	0.7	7	grvly SAND to dense SAND	130	6.0	100	74	95	48	-	16
1.31	429.1	688.2	688.2	2.8	1.3	0.6	7	grvly SAND to dense SAND	130	6.0	100	72	95	48	-	16
1.48	389.4	624.6	624.6	2.1	0.9	0.5	7	grvly SAND to dense SAND	130	6.0	100	65	95	48	-	16
1.64	303.7	487.1	487.1	2.3	1.0	0.8	6	clean SAND to silty SAND	125	5.0	97	61	95	48	-	16
1.80	193.6	310.5	325.9	3.0	0.5	1.6	6	clean SAND to silty SAND	125	5.0	62	39	95	48	-	16
1.97	97.6	156.5	262.1	3.7	0.2	3.8	8	stiff SAND to clayy SAND	115	1.0	100	98	-	-	6.5	16
2.13	60.8	97.5	227.6	2.9	1.6	4.7	9	very stiff fine SOIL	120	2.0	49	30	66	48	-	30
2.30	51.5	82.6	189.5	2.1	2.1	4.0	4	clayy SILT to silty CLAY	115	2.0	41	26	-	-	3.6	15
2.46	52.5	84.2	165.6	1.6	1.8	3.1	5	silty SAND to sandy SILT	120	4.0	21	13	61	46	-	16
2.62	44.8	71.8	163.6	1.6	1.8	3.5	4	clayy SILT to silty CLAY	115	2.0	36	22	-	-	3.2	15
2.79	37.9	60.7	155.7	1.4	2.0	3.7	4	clayy SILT to silty CLAY	115	2.0	30	19	-	-	2.7	15
2.95	33.3	53.4	141.2	1.1	2.1	3.4	4	clayy SILT to silty CLAY	115	2.0	27	17	-	-	2.3	15
3.12	30.6	49.0	141.6	1.1	2.2	3.7	4	clayy SILT to silty CLAY	115	2.0	25	15	-	-	2.1	15
3.28	32.1	51.5	142.2	1.1	1.7	3.6	4	clayy SILT to silty CLAY	115	2.0	26	16	-	-	2.3	15
3.45	32.4	52.0	133.1	1.0	2.1	3.1	4	clayy SILT to silty CLAY	115	2.0	26	16	-	-	2.3	15
3.61	33.6	53.9	138.1	1.1	2.6	3.3	4	clayy SILT to silty CLAY	115	2.0	27	17	-	-	2.4	15
3.77	34.4	55.2	138.8	1.1	2.8	3.2	4	clayy SILT to silty CLAY	115	2.0	28	17	-	-	2.4	15
3.94	38.4	61.6	178.3	1.8	3.2	4.6	4	clayy SILT to silty CLAY	115	2.0	31	19	-	-	2.7	15
4.10	51.3	82.3	186.6	2.0	3.6	3.9	4	clayy SILT to silty CLAY	115	2.0	41	26	-	-	3.6	15
4.27	44.4	71.2	198.1	2.1	2.6	4.9	4	clayy SILT to silty CLAY	115	2.0	36	22	-	-	3.1	15
4.43	38.7	62.1	188.4	1.9	-2.7	5.0	4	clayy SILT to silty CLAY	115	2.0	31	19	-	-	2.7	15
4.59	42.7	68.5	176.1	1.7	-2.9	4.1	4	clayy SILT to silty CLAY	115	2.0	34	21	-	-	3.0	15
4.76	42.5	68.2	172.0	1.7	-2.7	4.0	4	clayy SILT to silty CLAY	115	2.0	34	21	-	-	3.0	15
4.92	39.9	64.0	172.6	1.7	-2.5	4.2	4	clayy SILT to silty CLAY	115	2.0	32	20	-	-	2.8	15
5.09	38.9	62.4	162.8	1.5	-2.2	3.9	4	clayy SILT to silty CLAY	115	2.0	31	19	-	-	2.7	15
5.25	34.7	55.7	162.1	1.4	-3.1	4.2	4	clayy SILT to silty CLAY	115	2.0	28	17	-	-	2.4	15
5.41	36.4	58.3	155.9	1.4	-2.8	3.8	4	clayy SILT to silty CLAY	115	2.0	29	18	-	-	2.6	15
5.58	35.6	57.1	152.5	1.3	-3.6	3.7	4	clayy SILT to silty CLAY	115	2.0	29	18	-	-	2.5	15
5.74	30.9	49.5	148.4	1.2	-4.0	3.9	4	clayy SILT to silty CLAY	115	2.0	25	15	-	-	2.2	15
5.91	33.5	53.8	161.1	1.4	-3.6	4.3	4	clayy SILT to silty CLAY	115	2.0	27	17	-	-	2.4	15
6.07	46.8	75.1	186.2	2.0	-3.2	4.2	4	clayy SILT to silty CLAY	115	2.0	38	23	-	-	3.3	15
6.23	48.2	76.8	216.2	2.5	-2.9	5.3	4	clayy SILT to silty CLAY	115	2.0	38	24	-	-	3.4	15
6.40	68.1	107.2	262.0	3.7	-2.3	5.5	9	very stiff fine SOIL	120	2.0	54	34	69	45	-	30
6.56	96.4	149.9	271.6	4.1	-2.2	4.2	9	very stiff fine SOIL	120	2.0	75	48	80	46	-	30
6.73	82.8	127.1	266.9	4.0	-2.8	4.8	9	very stiff fine SOIL	120	2.0	64	41	75	46	-	30
6.89	75.0	113.7	254.1	3.7	-2.8	4.9	9	very stiff fine SOIL	120	2.0	57	37	71	45	-	30
7.05	61.6	92.3	247.8	3.5	-3.1	5.7	9	very stiff fine SOIL	120	2.0	46	31	64	44	-	30
7.22	58.3	86.3	239.2	3.3	-3.0	5.7	9	very stiff fine SOIL	120	2.0	43	29	62	44	-	30
7.38	58.0	85.0	207.7	2.6	-3.0	4.5	4	clayy SILT to silty CLAY	115	2.0	43	29	-	-	4.1	15
7.55	96.5	139.8	282.6	4.7	-3.1	4.8	9	very stiff fine SOIL	120	2.0	70	48	78	46	-	30
7.71	109.5	157.0	263.4	4.1	-4.6	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	7.2	16
7.87	54.5	77.3	239.4	3.3	-5.8	6.2	9	very stiff fine SOIL	120	2.0	39	27	58	43	-	30
8.04	52.6	73.8	197.4	2.4	-6.1	4.7	4	clayy SILT to silty CLAY	115	2.0	37	26	-	-	3.7	15
8.20	46.3	64.4	188.5	2.2	-6.0	4.8	4	clayy SILT to silty CLAY	115	2.0	32	23	-	-	3.3	15
8.37	47.3	65.1	176.1	2.0	-5.8	4.3	4	clayy SILT to silty CLAY	115	2.0	33	24	-	-	3.3	15
8.53	59.4	81.0	197.0	2.5	-4.5	4.3	4	clayy SILT to silty CLAY	115	2.0	41	30	-	-	4.2	15
8.69	60.6	82.0	208.0	2.8	-3.5	4.7	4	clayy SILT to silty CLAY	115	2.0	41	30	-	-	4.3	15
8.86	62.1	83.3	185.6	2.4	-3.3	3.8	4	clayy SILT to silty CLAY	115	2.0	42	31	-	-	4.4	15
9.02	144.3	191.7	238.2	3.1	-2.1	2.1	6	clean SAND to silty SAND	125	5.0	38	29	88	47	-	16
9.19	100.3	131.9	236.2	3.7	-1.6	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	6.6	16
9.35	57.4	74.9	227.5	3.3	-0.8	5.8	9	very stiff fine SOIL	120	2.0	37	29	57	43	-	30
9.51	45.5	58.9	178.3	2.1	-0.3	4.7	4	clayy SILT to silty CLAY	115	2.0	29	23	-	-	3.2	15
9.68	50.7	65.0	191.7	2.5	0.4	4.9	4	clayy SILT to silty CLAY	115	2.0	32	25	-	-	3.6	15
9.84	62.9	80.0	203.6	2.9	0.7	4.6	4	clayy SILT to silty CLAY	115	2.0	40	31	-	-	4.4	15
10.01	207.8	262.2	315.8	5.0	-0.3	2.4	6	clean SAND to silty SAND	125	5.0	52	42	95	48	-	16
10.17	241.2	301.7	378.8	7.2	-0.3	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.0	16
10.34	171.5	212.9	386.1	9.1	-1.4	5.3	9	very stiff fine SOIL	120	2.0	100	86	92	48	-	30
10.50	125.3	154.3	334.3	7.2	0.8	5.8	9	very stiff fine SOIL	120	2.0	77	63	81	46	-	30
10.66	61.4	97.1	-	5.9	0.6	9.8	9	very stiff fine SOIL	120	2.0	49	31	66	43	-	30

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(800).cpt
CPT Date: 5/12/2009 8:50:45 AM
GW During Test: 40 ft

Sounding ID: CPT-01A
Project No: 8266 009
Cone/Rig: DSG0786

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
10.83	61.0	73.9	228.0	3.6	1.1	5.9	9	very stiff fine SOIL	120	2.0	37	30	57	43	-	30
10.99	70.4	84.7	232.1	3.8	1.5	5.5	9	very stiff fine SOIL	120	2.0	42	35	62	43	-	30
11.16	77.1	92.0	214.1	3.4	1.7	4.5	4	clayy SILT to silty CLAY	115	2.0	46	39	-	-	5.4	15
11.32	60.0	71.2	195.6	2.8	2.0	4.8	4	clayy SILT to silty CLAY	115	2.0	36	30	-	-	4.2	15
11.48	65.7	77.4	183.9	2.6	2.6	4.0	4	clayy SILT to silty CLAY	115	2.0	39	33	-	-	4.6	15
11.65	75.0	87.7	222.2	3.7	3.1	4.9	9	very stiff fine SOIL	120	2.0	44	37	63	43	-	30
11.81	69.3	80.4	233.8	4.0	2.5	5.8	9	very stiff fine SOIL	120	2.0	40	35	60	43	-	30
11.98	84.9	97.9	232.5	4.1	3.1	4.9	9	very stiff fine SOIL	120	2.0	49	42	66	44	-	30
12.14	75.2	86.1	223.4	3.8	2.4	5.1	9	very stiff fine SOIL	120	2.0	43	38	62	43	-	30
12.30	66.3	75.4	182.3	2.6	1.5	4.0	4	clayy SILT to silty CLAY	115	2.0	38	33	-	-	4.7	15
12.47	57.4	64.9	151.6	1.9	-0.1	3.3	4	clayy SILT to silty CLAY	115	2.0	32	29	-	-	4.0	15
12.63	54.6	61.4	142.6	1.7	-0.2	3.1	4	clayy SILT to silty CLAY	115	2.0	31	27	-	-	3.8	15
12.80	59.9	66.8	141.5	1.7	-0.5	2.8	5	silty SAND to sandy SILT	120	4.0	17	15	54	42	-	16
12.96	58.1	64.4	134.5	1.5	-0.5	2.7	5	silty SAND to sandy SILT	120	4.0	16	15	52	42	-	16
13.12	56.9	62.7	123.4	1.3	-0.7	2.3	5	silty SAND to sandy SILT	120	4.0	16	14	52	42	-	16
13.29	55.3	60.6	112.6	1.1	-0.8	2.0	5	silty SAND to sandy SILT	120	4.0	15	14	50	41	-	16
13.45	48.9	53.2	104.3	0.9	-1.0	1.9	5	silty SAND to sandy SILT	120	4.0	13	12	46	41	-	16
13.62	41.2	44.5	106.3	0.9	-1.1	2.3	5	silty SAND to sandy SILT	120	4.0	11	10	40	40	-	16
13.78	39.0	41.9	109.6	1.0	-1.0	2.6	4	clayy SILT to silty CLAY	115	2.0	21	19	-	-	2.7	15
13.94	40.2	42.9	108.1	1.0	-0.9	2.4	5	silty SAND to sandy SILT	120	4.0	11	10	39	39	-	16
14.11	43.8	46.5	99.8	0.8	-0.9	1.9	5	silty SAND to sandy SILT	120	4.0	12	11	42	40	-	16
14.27	44.8	47.3	92.9	0.7	-1.0	1.6	5	silty SAND to sandy SILT	120	4.0	12	11	42	40	-	16
14.44	46.1	48.4	91.5	0.7	-0.8	1.6	5	silty SAND to sandy SILT	120	4.0	12	12	43	40	-	16
14.60	50.0	52.2	94.5	0.8	-0.8	1.5	5	silty SAND to sandy SILT	120	4.0	13	13	46	40	-	16
14.76	54.5	56.5	94.6	0.8	-0.8	1.4	5	silty SAND to sandy SILT	120	4.0	14	14	48	41	-	16
14.93	56.7	58.6	92.7	0.7	-0.8	1.3	5	silty SAND to sandy SILT	120	4.0	15	14	49	41	-	16
15.09	49.0	50.3	96.1	0.8	-0.2	1.7	5	silty SAND to sandy SILT	120	4.0	13	12	44	40	-	16
15.26	43.9	44.8	111.5	1.1	-0.3	2.5	5	silty SAND to sandy SILT	120	4.0	11	11	41	40	-	16
15.42	38.7	40.5	-	1.5	-0.6	3.8	4	clayy SILT to silty CLAY	115	2.0	20	19	-	-	2.7	15
15.58	36.4	39.4	-	1.6	-0.7	4.4	4	clayy SILT to silty CLAY	115	2.0	20	18	-	-	2.5	15
15.75	39.1	41.8	-	1.5	-0.5	4.0	4	clayy SILT to silty CLAY	115	2.0	21	20	-	-	2.7	15
15.91	48.0	48.0	122.7	1.3	-1.4	2.8	4	clayy SILT to silty CLAY	115	2.0	24	24	-	-	3.4	15
16.08	44.8	44.6	126.8	1.4	-0.6	3.2	4	clayy SILT to silty CLAY	115	2.0	22	22	-	-	3.1	15
16.24	40.7	40.3	130.6	1.4	-0.9	3.6	4	clayy SILT to silty CLAY	115	2.0	20	20	-	-	2.8	15
16.40	39.0	39.1	-	1.4	-1.2	3.8	4	clayy SILT to silty CLAY	115	2.0	20	19	-	-	2.7	15
16.57	40.3	39.5	122.0	1.3	-1.3	3.3	4	clayy SILT to silty CLAY	115	2.0	20	20	-	-	2.8	15
16.73	42.4	41.4	116.3	1.2	-1.0	2.9	4	clayy SILT to silty CLAY	115	2.0	21	21	-	-	3.0	15
16.90	42.8	41.6	112.1	1.1	-1.2	2.7	4	clayy SILT to silty CLAY	115	2.0	21	21	-	-	3.0	15
17.06	41.1	39.8	118.2	1.2	-1.2	3.1	4	clayy SILT to silty CLAY	115	2.0	20	21	-	-	2.9	15
17.23	38.5	37.8	-	1.4	-1.2	3.8	4	clayy SILT to silty CLAY	115	2.0	19	19	-	-	2.7	15
17.39	37.0	36.0	-	1.5	-0.5	4.1	4	clayy SILT to silty CLAY	115	2.0	18	18	-	-	2.6	15
17.55	37.1	35.7	-	1.4	0.1	4.0	4	clayy SILT to silty CLAY	115	2.0	18	19	-	-	2.6	15
17.72	35.3	33.7	-	1.6	-1.3	4.6	3	silty CLAY to CLAY	115	1.5	22	24	-	-	2.5	15
17.88	30.5	28.9	-	1.8	0.0	6.1	3	silty CLAY to CLAY	115	1.5	19	20	-	-	2.1	15
18.05	28.1	26.3	-	1.7	0.5	6.4	3	silty CLAY to CLAY	115	1.5	18	19	-	-	1.9	15
18.21	22.1	20.5	-	1.5	-0.1	7.1	3	silty CLAY to CLAY	115	1.5	14	15	-	-	1.5	15
18.37	23.2	21.4	-	1.4	0.5	6.4	3	silty CLAY to CLAY	115	1.5	14	15	-	-	1.6	15
18.54	23.3	21.3	-	1.6	0.9	7.1	3	silty CLAY to CLAY	115	1.5	14	16	-	-	1.6	15
18.70	24.2	22.0	-	1.7	1.0	7.5	3	silty CLAY to CLAY	115	1.5	15	16	-	-	1.7	15
18.87	26.4	23.7	-	1.8	1.0	7.2	3	silty CLAY to CLAY	115	1.5	16	18	-	-	1.8	15
19.03	28.7	25.5	-	1.7	0.9	6.0	3	silty CLAY to CLAY	115	1.5	17	19	-	-	2.0	15
19.19	33.4	29.5	-	1.4	0.6	4.3	3	silty CLAY to CLAY	115	1.5	20	22	-	-	2.3	15
19.36	35.0	30.6	-	1.1	0.7	3.4	4	clayy SILT to silty CLAY	115	2.0	15	17	-	-	2.4	15
19.52	35.6	32.3	103.0	0.9	-0.7	2.7	4	clayy SILT to silty CLAY	115	2.0	16	18	-	-	2.5	15
19.69	35.1	30.2	-	1.0	-1.1	3.0	4	clayy SILT to silty CLAY	115	2.0	15	18	-	-	2.4	15
19.85	29.3	25.1	-	1.4	-0.8	4.9	3	silty CLAY to CLAY	115	1.5	17	20	-	-	2.0	15
20.01	26.3	22.3	-	1.4	0.0	5.6	3	silty CLAY to CLAY	115	1.5	15	18	-	-	1.8	15
20.18	31.2	26.3	-	1.3	0.1	4.5	3	silty CLAY to CLAY	115	1.5	18	21	-	-	2.2	15
20.34	35.7	29.8	-	1.5	-0.3	4.2	3	silty CLAY to CLAY	115	1.5	20	24	-	-	2.5	15
20.51	36.6	30.3	-	1.7	0.1	4.9	3	silty CLAY to CLAY	115	1.5	20	24	-	-	2.5	15
20.67	31.1	25.6	-	1.9	-0.5	6.4	3	silty CLAY to CLAY	115	1.5	17	21	-	-	2.2	15
20.83	27.7	22.6	-	1.8	0.0	6.7	3	silty CLAY to CLAY	115	1.5	15	18	-	-	1.9	15
21.00	28.8	23.3	-	1.7	0.2	6.2	3	silty CLAY to CLAY	115	1.5	16	19	-	-	2.0	15
21.16	31.1	25.0	-	1.8	0.1	6.0	3	silty CLAY to CLAY	115	1.5	17	21	-	-	2.1	15
21.33	30.4	24.2	-	1.6	0.3	5.5	3	silty CLAY to CLAY	115	1.5	16	20	-	-	2.1	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(800).cpt
CPT Date: 5/12/2009 8:50:45 AM
GW During Test: 40 ft

Page: 3
Sounding ID: CPT-01A
Project No: 8266 009
Cone/Rig: DSG0786

. Depth ft	. qc PS tsf	* qc1n PS -	. q1ncs PS -	. Slv Stss tsf	. pore prss (psi)	. Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	. Unit Wght pcf	. Qc to N	* SPT R-N1 60%	. SPT R-N 60%	* Rel Den %	* Ftn Ang deg	. Und Shr tsf	* Nk -
21.49	33.9	26.8	-	1.0	0.4	2.9	4	clayy SILT to silty CLAY	115	2.0	13	17	-	-	2.3	15
21.65	36.1	31.1	91.7	0.8	-1.0	2.2	4	clayy SILT to silty CLAY	115	2.0	16	18	-	-	2.5	15
21.82	35.0	27.3	-	0.8	-1.3	2.5	4	clayy SILT to silty CLAY	115	2.0	14	17	-	-	2.4	15
21.98	33.3	25.8	-	1.0	-1.0	3.1	4	clayy SILT to silty CLAY	115	2.0	13	17	-	-	2.3	15
22.15	32.7	25.1	-	1.3	-0.5	4.0	3	silty CLAY to CLAY	115	1.5	17	22	-	-	2.3	15
22.31	33.4	25.5	-	1.5	-0.3	4.5	3	silty CLAY to CLAY	115	1.5	17	22	-	-	2.3	15
22.47	33.3	25.2	-	1.6	-0.1	5.1	3	silty CLAY to CLAY	115	1.5	17	22	-	-	2.3	15
22.64	29.4	22.1	-	1.6	0.1	5.5	3	silty CLAY to CLAY	115	1.5	15	20	-	-	2.0	15
22.80	29.4	21.9	-	1.2	0.5	4.4	3	silty CLAY to CLAY	115	1.5	15	20	-	-	2.0	15
22.97	37.1	27.5	-	0.9	-0.2	2.5	4	clayy SILT to silty CLAY	115	2.0	14	19	-	-	2.6	15
23.13	41.5	34.6	86.7	0.7	-0.4	1.8	5	silty SAND to sandy SILT	120	4.0	9	10	32	37	-	16
23.30	45.1	37.5	92.3	0.9	-0.6	2.0	5	silty SAND to sandy SILT	120	4.0	9	11	35	38	-	16
23.46	45.1	37.3	97.7	1.0	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	9	11	34	38	-	16
23.62	35.1	25.3	-	1.2	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	13	18	-	-	2.4	15
23.79	24.8	17.7	-	1.3	0.0	5.7	3	silty CLAY to CLAY	115	1.5	12	17	-	-	1.7	15
23.95	25.8	18.4	-	1.4	0.0	5.9	3	silty CLAY to CLAY	115	1.5	12	17	-	-	1.8	15
24.12	27.6	19.5	-	1.5	-0.2	5.8	3	silty CLAY to CLAY	115	1.5	13	18	-	-	1.9	15
24.28	25.2	17.7	-	1.5	-2.3	6.2	3	silty CLAY to CLAY	115	1.5	12	17	-	-	1.7	15
24.44	18.3	12.8	-	1.0	-1.9	6.1	3	silty CLAY to CLAY	115	1.5	9	12	-	-	1.2	15
24.61	15.4	10.6	-	0.7	-1.7	5.2	3	silty CLAY to CLAY	115	1.5	7	10	-	-	1.0	15
24.77	17.8	12.3	-	1.0	-1.6	5.9	3	silty CLAY to CLAY	115	1.5	8	12	-	-	1.2	15
24.94	20.9	14.3	-	1.2	-1.3	6.3	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	15
25.10	24.3	16.5	-	1.4	-1.0	5.9	3	silty CLAY to CLAY	115	1.5	11	16	-	-	1.7	15
25.26	29.9	20.2	-	1.5	-1.0	5.2	3	silty CLAY to CLAY	115	1.5	13	20	-	-	2.1	15
25.43	30.4	20.4	-	1.6	-0.6	5.5	3	silty CLAY to CLAY	115	1.5	14	20	-	-	2.1	15
25.59	29.1	19.4	-	1.5	-0.9	5.6	3	silty CLAY to CLAY	115	1.5	13	19	-	-	2.0	15
25.76	28.9	19.1	-	1.3	-0.4	4.8	3	silty CLAY to CLAY	115	1.5	13	19	-	-	2.0	15
25.92	33.8	22.2	-	1.3	-0.8	3.9	3	silty CLAY to CLAY	115	1.5	15	23	-	-	2.3	15
26.08	33.4	21.9	-	1.5	-1.0	4.8	3	silty CLAY to CLAY	115	1.5	15	22	-	-	2.3	15
26.25	29.7	19.3	-	1.7	-0.1	6.1	3	silty CLAY to CLAY	115	1.5	13	20	-	-	2.0	15
26.41	34.9	22.6	-	1.5	0.1	4.4	3	silty CLAY to CLAY	115	1.5	15	23	-	-	2.4	15
26.58	48.4	31.1	-	1.7	-1.7	3.6	4	clayy SILT to silty CLAY	115	2.0	16	24	-	-	3.4	15
26.74	55.5	35.4	-	2.0	-0.4	3.6	4	clayy SILT to silty CLAY	115	2.0	18	28	-	-	3.9	15
26.90	55.8	35.4	-	2.5	0.1	4.6	3	silty CLAY to CLAY	115	1.5	24	37	-	-	3.9	15
27.07	61.6	38.9	-	2.6	-0.2	4.3	4	clayy SILT to silty CLAY	115	2.0	19	31	-	-	4.3	15
27.23	67.3	51.7	148.5	2.5	-0.6	3.8	4	clayy SILT to silty CLAY	115	2.0	26	34	-	-	4.7	15
27.40	75.3	57.7	136.0	2.2	-0.9	3.0	4	clayy SILT to silty CLAY	115	2.0	29	38	-	-	5.3	15
27.56	85.5	65.3	133.0	2.1	-0.3	2.5	5	silty SAND to sandy SILT	120	4.0	16	21	53	41	-	16
27.72	102.9	78.5	134.6	2.2	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	20	26	59	41	-	16
27.89	106.1	80.6	126.0	1.9	0.1	1.8	5	silty SAND to sandy SILT	120	4.0	20	27	60	42	-	16
28.05	109.0	82.6	138.6	2.3	0.1	2.2	5	silty SAND to sandy SILT	120	4.0	21	27	61	42	-	16
28.22	124.0	93.7	139.2	2.3	0.1	1.9	5	silty SAND to sandy SILT	120	4.0	23	31	65	42	-	16
28.38	118.5	89.2	151.3	2.8	0.2	2.4	5	silty SAND to sandy SILT	120	4.0	22	30	63	42	-	16
28.54	104.3	78.3	175.5	3.7	0.1	3.6	4	clayy SILT to silty CLAY	115	2.0	39	52	-	-	7.3	15
28.71	80.8	48.0	-	4.3	-0.3	5.5	3	silty CLAY to CLAY	115	1.5	32	54	-	-	5.6	15
28.87	65.8	38.9	-	4.2	-0.1	6.5	3	silty CLAY to CLAY	115	1.5	26	44	-	-	4.6	15
29.04	57.5	33.8	-	3.8	0.1	6.8	3	silty CLAY to CLAY	115	1.5	23	38	-	-	4.0	15
29.20	58.0	33.9	-	4.0	0.1	7.1	3	silty CLAY to CLAY	115	1.5	23	39	-	-	4.0	15
29.36	64.8	37.7	-	4.5	0.2	7.2	3	silty CLAY to CLAY	115	1.5	25	43	-	-	4.5	15
29.53	85.0	49.1	-	5.3	0.3	6.3	3	silty CLAY to CLAY	115	1.5	33	57	-	-	5.9	15
29.69	83.4	48.0	-	5.6	-1.0	6.9	3	silty CLAY to CLAY	115	1.5	32	56	-	-	5.8	15
29.86	82.8	47.4	-	5.5	-1.6	6.8	3	silty CLAY to CLAY	115	1.5	32	55	-	-	5.8	15
30.02	86.3	49.1	-	5.4	-1.7	6.4	3	silty CLAY to CLAY	115	1.5	33	58	-	-	6.0	15
30.19	107.6	78.6	216.4	5.5	-1.7	5.2	4	clayy SILT to silty CLAY	115	2.0	39	54	-	-	7.5	15
30.35	109.7	79.9	215.7	5.5	-0.6	5.1	4	clayy SILT to silty CLAY	115	2.0	40	55	-	-	7.7	15
30.51	120.8	87.8	205.8	5.2	-0.8	4.3	4	clayy SILT to silty CLAY	115	2.0	44	60	-	-	8.5	15
30.68	126.5	91.7	215.8	5.6	-1.5	4.5	4	clayy SILT to silty CLAY	115	2.0	46	63	-	-	8.9	15
30.84	142.6	103.1	206.1	5.3	-0.9	3.8	5	silty SAND to sandy SILT	120	4.0	26	36	68	43	-	16
31.01	119.8	86.4	221.3	5.8	-0.2	5.0	9	very stiff fine SOIL	120	2.0	43	60	62	42	-	30
31.17	128.7	92.5	214.0	5.6	-0.1	4.4	4	clayy SILT to silty CLAY	115	2.0	46	64	-	-	9.0	15
31.33	136.0	97.5	186.9	4.5	0.3	3.3	5	silty SAND to sandy SILT	120	4.0	24	34	66	42	-	16
31.50	126.7	90.6	174.4	3.9	0.0	3.1	5	silty SAND to sandy SILT	120	4.0	23	32	64	42	-	16
31.66	135.0	96.3	193.5	4.8	-0.2	3.6	5	silty SAND to sandy SILT	120	4.0	24	34	66	42	-	16
31.83	162.1	115.3	214.1	5.8	-0.2	3.6	5	silty SAND to sandy SILT	120	4.0	29	41	72	43	-	16
31.99	147.9	104.9	225.7	6.3	0.2	4.3	9	very stiff fine SOIL	120	2.0	52	74	69	43	-	30

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(800).cpt
CPT Date: 5/12/2009 8:50:45 AM
GW During Test: 40 ft

Sounding ID: CPT-01A
Project No: 8266 009
Cone/Rig: DSG0786

. . Depth ft	. qc PS tsf	* qc1n PS -	. q1ncs PS -	. Slv Stss tsf	. pore prss (psi)	. Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	. Unit Wght pcf	. Qc to N	* SPT R-N1 60%	. SPT R-N 60%	* Rel Den %	* Ftn Ang deg	. Und Shr tsf	* Nk -
32.15	181.6	128.5	220.9	6.1	0.1	3.4	5	silty SAND to sandy SILT	120	4.0	32	45	75	44	-	16
32.32	235.7	166.4	206.3	4.4	-0.2	1.9	6	clean SAND to silty SAND	125	5.0	33	47	84	45	-	16
32.48	264.3	186.1	204.8	3.4	-0.1	1.3	6	clean SAND to silty SAND	125	5.0	37	53	87	45	-	16
32.65	271.0	190.3	205.3	3.2	-0.1	1.2	6	clean SAND to silty SAND	125	5.0	38	54	88	45	-	16
32.81	260.6	182.5	210.5	4.0	0.2	1.6	6	clean SAND to silty SAND	125	5.0	37	52	87	45	-	16
32.97	192.5	134.5	190.3	4.4	0.3	2.3	5	silty SAND to sandy SILT	120	4.0	34	48	77	44	-	16
33.14	199.2	138.8	184.8	4.0	-0.1	2.0	5	silty SAND to sandy SILT	120	4.0	35	50	78	44	-	16
33.30	189.4	131.6	168.5	3.2	0.2	1.7	6	clean SAND to silty SAND	125	5.0	26	38	76	44	-	16
33.47	189.2	131.1	167.2	3.1	0.3	1.7	6	clean SAND to silty SAND	125	5.0	26	38	76	44	-	16
33.63	192.9	133.4	174.3	3.5	0.4	1.8	5	silty SAND to sandy SILT	120	4.0	33	48	77	44	-	16
33.79	250.1	172.4	186.7	2.7	0.4	1.1	6	clean SAND to silty SAND	125	5.0	34	50	85	45	-	16
33.96	293.5	201.8	226.3	4.4	0.3	1.5	6	clean SAND to silty SAND	125	5.0	40	59	90	46	-	16
34.12	319.4	219.1	236.6	4.3	0.4	1.4	6	clean SAND to silty SAND	125	5.0	44	64	93	46	-	16
34.29	311.0	212.8	221.4	3.4	0.4	1.1	6	clean SAND to silty SAND	125	5.0	43	62	92	46	-	16
34.45	333.8	227.8	234.0	3.7	0.4	1.1	6	clean SAND to silty SAND	125	5.0	46	67	94	46	-	16
34.61	357.1	243.1	253.2	4.4	0.4	1.2	6	clean SAND to silty SAND	125	5.0	49	71	95	46	-	16
34.78	366.6	249.0	263.0	4.9	0.3	1.4	6	clean SAND to silty SAND	125	5.0	50	73	95	47	-	16
34.94	393.2	266.4	282.8	5.7	0.2	1.5	6	clean SAND to silty SAND	125	5.0	53	79	95	47	-	16
35.11	417.0	281.8	307.3	7.1	0.1	1.7	6	clean SAND to silty SAND	125	5.0	56	83	95	47	-	16
35.27	451.0	304.0	304.0	3.9	0.3	0.9	6	clean SAND to silty SAND	125	5.0	61	90	95	47	-	16
35.43	392.6	264.0	264.0	3.9	0.5	1.0	6	clean SAND to silty SAND	125	5.0	53	79	95	47	-	16
35.60	371.4	249.1	249.1	3.4	0.2	0.9	6	clean SAND to silty SAND	125	5.0	50	74	95	47	-	16
35.76	314.6	210.5	211.3	2.9	0.3	0.9	6	clean SAND to silty SAND	125	5.0	42	63	92	46	-	16
35.93	288.6	192.6	203.1	3.1	0.3	1.1	6	clean SAND to silty SAND	125	5.0	39	58	89	45	-	16
36.09	310.6	206.8	227.2	4.3	0.3	1.4	6	clean SAND to silty SAND	125	5.0	41	62	91	46	-	16
36.26	300.9	199.9	223.1	4.3	0.3	1.5	6	clean SAND to silty SAND	125	5.0	40	60	90	45	-	16
36.42	260.7	172.7	197.2	3.7	0.3	1.4	6	clean SAND to silty SAND	125	5.0	35	52	85	45	-	16
36.58	249.8	165.2	185.5	3.1	0.2	1.3	6	clean SAND to silty SAND	125	5.0	33	50	84	45	-	16
36.75	225.0	148.4	185.8	3.9	0.2	1.8	6	clean SAND to silty SAND	125	5.0	30	45	80	44	-	16
36.91	196.6	129.4	179.3	4.1	0.2	2.1	5	silty SAND to sandy SILT	120	4.0	32	49	75	43	-	16
37.08	160.8	105.6	183.2	4.7	-0.1	2.9	5	silty SAND to sandy SILT	120	4.0	26	40	69	42	-	16
37.24	115.9	76.0	194.7	5.1	-0.1	4.4	4	clayy SILT to silty CLAY	115	2.0	38	58	-	-	8.1	15
37.40	94.8	61.9	155.6	3.3	-0.2	3.6	4	clayy SILT to silty CLAY	115	2.0	31	47	-	-	6.6	15
37.57	168.5	109.9	146.7	2.7	-0.5	1.6	5	silty SAND to sandy SILT	120	4.0	27	42	70	43	-	16
37.73	231.7	150.8	171.5	2.8	0.1	1.2	6	clean SAND to silty SAND	125	5.0	30	46	81	44	-	16
37.90	237.5	154.2	172.6	2.7	0.1	1.2	6	clean SAND to silty SAND	125	5.0	31	47	81	44	-	16
38.06	222.4	144.1	166.8	2.8	0.0	1.3	6	clean SAND to silty SAND	125	5.0	29	44	79	44	-	16
38.22	207.4	134.0	159.8	2.7	0.0	1.3	6	clean SAND to silty SAND	125	5.0	27	41	77	43	-	16
38.39	191.3	123.3	151.1	2.6	0.0	1.4	6	clean SAND to silty SAND	125	5.0	25	38	74	43	-	16
38.55	184.6	118.8	146.4	2.4	0.0	1.3	6	clean SAND to silty SAND	125	5.0	24	37	73	43	-	16
38.72	195.9	125.8	138.8	1.7	0.0	0.9	6	clean SAND to silty SAND	125	5.0	25	39	75	43	-	16
38.88	193.4	123.9	152.3	2.6	0.0	1.4	6	clean SAND to silty SAND	125	5.0	25	39	74	43	-	16
39.04	225.3	144.0	162.7	2.5	0.0	1.1	6	clean SAND to silty SAND	125	5.0	29	45	79	44	-	16
39.21	216.5	138.1	155.8	2.3	0.0	1.1	6	clean SAND to silty SAND	125	5.0	28	43	78	44	-	16
39.37	200.9	127.8	143.4	1.9	-0.1	1.0	6	clean SAND to silty SAND	125	5.0	26	40	75	43	-	16
39.54	204.5	129.9	141.5	1.7	-0.1	0.8	6	clean SAND to silty SAND	125	5.0	26	41	76	43	-	16
39.70	210.4	133.3	142.1	1.6	0.0	0.8	6	clean SAND to silty SAND	125	5.0	27	42	76	43	-	16
39.86	201.5	127.4	139.0	1.6	-0.1	0.8	6	clean SAND to silty SAND	125	5.0	25	40	75	43	-	16
40.03	179.2	113.2	129.8	1.6	-0.2	0.9	6	clean SAND to silty SAND	125	5.0	23	36	71	43	-	16
40.19	141.6	89.3	120.3	1.9	-0.5	1.3	5	silty SAND to sandy SILT	120	4.0	22	35	63	41	-	16
40.36	108.5	68.4	133.5	2.6	-0.8	2.5	5	silty SAND to sandy SILT	120	4.0	17	27	54	40	-	16
40.52	76.3	32.0	-	2.8	-1.1	3.8	4	clayy SILT to silty CLAY	115	2.0	16	38	-	-	5.3	15
40.68	47.9	20.1	-	2.5	-0.2	5.5	3	silty CLAY to CLAY	115	1.5	13	32	-	-	3.3	15
40.85	44.7	18.7	-	1.7	-0.3	4.0	3	silty CLAY to CLAY	115	1.5	12	30	-	-	3.1	15
41.01	44.1	18.4	-	2.7	-0.1	6.5	3	silty CLAY to CLAY	115	1.5	12	29	-	-	3.0	15
41.18	55.6	23.2	-	3.2	-0.1	6.1	3	silty CLAY to CLAY	115	1.5	15	37	-	-	3.8	15
41.34	49.9	20.8	-	3.2	-0.1	6.7	3	silty CLAY to CLAY	115	1.5	14	33	-	-	3.4	15
41.50	37.3	15.5	-	2.6	-0.1	7.5	3	silty CLAY to CLAY	115	1.5	10	25	-	-	2.6	15
41.67	49.9	20.7	-	2.7	0.2	5.6	3	silty CLAY to CLAY	115	1.5	14	33	-	-	3.4	15
41.83	69.0	28.6	-	3.5	0.3	5.3	3	silty CLAY to CLAY	115	1.5	19	46	-	-	4.8	15
42.00	65.8	27.2	-	4.0	-1.1	6.3	3	silty CLAY to CLAY	115	1.5	18	44	-	-	4.6	15
42.16	63.4	26.2	-	4.2	-1.6	6.9	3	silty CLAY to CLAY	115	1.5	17	42	-	-	4.4	15
42.32	50.6	20.8	-	3.8	-1.4	7.9	3	silty CLAY to CLAY	115	1.5	14	34	-	-	3.5	15
42.49	41.7	17.2	-	2.7	-1.4	6.8	3	silty CLAY to CLAY	115	1.5	11	28	-	-	2.9	15
42.65	38.8	15.9	-	2.7	-1.2	7.6	3	silty CLAY to CLAY	115	1.5	11	26	-	-	2.7	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(800).cpt
CPT Date: 5/12/2009 8:50:45 AM
GW During Test: 40 ft

Sounding ID: CPT-01A
Project No: 8266 009
Cone/Rig: DSG0786

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
42.82	46.1	18.9	-	3.0	-1.0	7.0	3	silty CLAY to CLAY	115	1.5	13	31	-	-	3.2	15
42.98	61.4	25.1	-	3.4	-0.6	5.7	3	silty CLAY to CLAY	115	1.5	17	41	-	-	4.3	15
43.15	123.6	76.7	157.8	3.7	-1.5	3.0	5	silty SAND to sandy SILT	120	4.0	19	31	58	40	-	16
43.31	153.1	94.9	138.7	2.7	-3.1	1.8	5	silty SAND to sandy SILT	120	4.0	24	38	65	41	-	16
43.47	116.3	72.0	134.9	2.7	-3.9	2.4	5	silty SAND to sandy SILT	120	4.0	18	29	56	40	-	16
43.64	79.5	32.3	-	2.9	-5.9	3.8	4	clayy SILT to silty CLAY	115	2.0	16	40	-	-	5.5	15
43.80	47.2	19.1	-	2.2	-6.1	4.9	3	silty CLAY to CLAY	115	1.5	13	31	-	-	3.2	15
43.97	31.3	12.6	-	1.4	-6.3	5.0	3	silty CLAY to CLAY	115	1.5	8	21	-	-	2.1	15
44.13	31.9	12.9	-	1.4	-6.4	4.7	3	silty CLAY to CLAY	115	1.5	9	21	-	-	2.2	15
44.29	33.3	13.4	-	2.5	-6.5	8.1	3	silty CLAY to CLAY	115	1.5	9	22	-	-	2.3	15
44.46	78.2	31.5	-	3.9	-7.3	5.2	3	silty CLAY to CLAY	115	1.5	21	52	-	-	5.4	15
44.62	113.5	45.6	-	4.9	-7.3	4.5	4	clayy SILT to silty CLAY	115	2.0	23	57	-	-	7.9	15
44.79	191.5	117.8	165.9	3.8	-7.4	2.0	5	silty SAND to sandy SILT	120	4.0	29	48	72	42	-	16
44.95	279.0	171.4	183.9	2.9	-7.4	1.0	6	clean SAND to silty SAND	125	5.0	34	56	85	44	-	16
45.11	352.8	216.6	216.6	2.9	-7.4	0.8	6	clean SAND to silty SAND	125	5.0	43	71	93	45	-	16
45.28	331.4	203.2	205.9	3.1	-7.5	0.9	6	clean SAND to silty SAND	125	5.0	41	66	90	45	-	16
45.44	345.1	211.4	221.6	3.9	-7.5	1.1	6	clean SAND to silty SAND	125	5.0	42	69	92	45	-	16
45.61	387.5	237.1	245.0	4.5	-7.5	1.2	6	clean SAND to silty SAND	125	5.0	47	77	95	46	-	16
45.77	400.5	244.9	252.6	4.8	-7.6	1.2	6	clean SAND to silty SAND	125	5.0	49	80	95	46	-	16
45.93	400.1	244.4	268.2	6.3	-7.6	1.6	6	clean SAND to silty SAND	125	5.0	49	80	95	46	-	16
46.10	409.6	249.9	271.9	6.3	-7.6	1.6	6	clean SAND to silty SAND	125	5.0	50	82	95	46	-	16
46.26	367.6	224.0	240.4	4.9	-7.6	1.3	6	clean SAND to silty SAND	125	5.0	45	74	94	45	-	16
46.43	351.3	213.9	220.7	3.7	-7.7	1.1	6	clean SAND to silty SAND	125	5.0	43	70	92	45	-	16
46.59	349.7	212.7	212.7	3.0	-7.7	0.9	6	clean SAND to silty SAND	125	5.0	43	70	92	45	-	16
46.75	292.1	177.5	184.5	2.7	-7.7	0.9	6	clean SAND to silty SAND	125	5.0	36	58	86	44	-	16
46.92	244.0	148.1	184.4	4.1	-7.8	1.7	6	clean SAND to silty SAND	125	5.0	30	49	80	43	-	16
47.08	195.7	118.7	195.4	5.6	-7.8	2.9	5	silty SAND to sandy SILT	120	4.0	30	49	73	42	-	16
47.25	120.6	73.1	190.8	5.2	-7.9	4.4	4	clayy SILT to silty CLAY	115	2.0	37	60	-	-	8.4	15
47.41	97.7	37.9	-	4.7	-7.9	5.0	3	silty CLAY to CLAY	115	1.5	25	65	-	-	6.8	15
47.57	61.5	23.8	-	4.6	-8.2	7.9	3	silty CLAY to CLAY	115	1.5	16	41	-	-	4.2	15
47.74	86.5	33.5	-	3.2	-8.2	3.9	4	clayy SILT to silty CLAY	115	2.0	17	43	-	-	6.0	15
47.90	62.6	24.2	-	3.0	-8.2	5.1	3	silty CLAY to CLAY	115	1.5	16	42	-	-	4.3	15
48.07	75.2	29.0	-	3.0	-8.3	4.1	4	clayy SILT to silty CLAY	115	2.0	15	38	-	-	5.2	15
48.23	85.8	33.1	-	4.0	-8.3	4.8	3	silty CLAY to CLAY	115	1.5	22	57	-	-	6.0	15
48.39	141.8	54.6	-	7.6	-8.3	5.4	4	clayy SILT to silty CLAY	115	2.0	27	71	-	-	9.9	15
48.56	173.6	104.5	274.0	10.1	-8.3	5.9	9	very stiff fine SOIL	120	2.0	52	87	68	41	-	30
48.72	153.7	58.9	-	11.7	-8.3	7.8	3	silty CLAY to CLAY	115	1.5	39	100	-	-	10.8	15
48.89	177.7	68.0	-	10.9	-8.4	6.3	9	very stiff fine SOIL	120	2.0	34	89	54	42	-	30
49.05	168.6	101.2	268.3	9.8	-8.4	5.9	9	very stiff fine SOIL	120	2.0	51	84	67	41	-	30
49.22	92.9	35.4	-	5.2	-8.4	5.8	3	silty CLAY to CLAY	115	1.5	24	62	-	-	6.5	15
49.38	58.9	22.4	-	3.4	-8.5	6.0	3	silty CLAY to CLAY	115	1.5	15	39	-	-	4.1	15
49.54	62.5	23.8	-	4.1	-8.5	6.8	3	silty CLAY to CLAY	115	1.5	16	42	-	-	4.3	15
49.71	91.4	34.7	-	5.6	-8.4	6.4	3	silty CLAY to CLAY	115	1.5	23	61	-	-	6.4	15
49.87	114.4	43.3	-	6.8	-8.4	6.1	3	silty CLAY to CLAY	115	1.5	29	76	-	-	8.0	15
50.04	98.0	37.1	-	5.6	-8.4	5.9	3	silty CLAY to CLAY	115	1.5	25	65	-	-	6.8	15
50.20	71.8	27.1	-	4.4	-8.5	6.4	3	silty CLAY to CLAY	115	1.5	18	48	-	-	5.0	15
50.36	76.8	29.0	-	3.5	-8.4	4.7	3	silty CLAY to CLAY	115	1.5	19	51	-	-	5.3	15
50.53	61.6	23.3	-	3.2	-8.5	5.4	3	silty CLAY to CLAY	115	1.5	16	41	-	-	4.2	15
50.69	43.0	16.2	-	2.7	-8.5	6.8	3	silty CLAY to CLAY	115	1.5	11	29	-	-	2.9	15
50.86	38.3	14.5	-	1.8	-8.4	5.1	3	silty CLAY to CLAY	115	1.5	10	26	-	-	2.6	15
51.02	39.7	15.0	-	1.9	-7.2	5.0	3	silty CLAY to CLAY	115	1.5	10	26	-	-	2.7	15
51.18	49.9	18.8	-	2.4	-7.0	5.2	3	silty CLAY to CLAY	115	1.5	13	33	-	-	3.4	15
51.35	67.1	25.3	-	4.3	-6.9	6.6	3	silty CLAY to CLAY	115	1.5	17	45	-	-	4.6	15
51.51	103.4	39.0	-	6.4	-6.7	6.3	3	silty CLAY to CLAY	115	1.5	26	69	-	-	7.2	15
51.68	88.6	33.4	-	6.3	-6.1	7.4	3	silty CLAY to CLAY	115	1.5	22	59	-	-	6.1	15
51.84	51.1	19.3	-	4.2	-6.3	8.7	3	silty CLAY to CLAY	115	1.5	13	34	-	-	3.5	15
52.00	40.1	15.1	-	2.7	-6.2	7.3	3	silty CLAY to CLAY	115	1.5	10	27	-	-	2.7	15
52.17	41.0	15.5	-	2.3	-6.1	6.1	3	silty CLAY to CLAY	115	1.5	10	27	-	-	2.8	15
52.33	38.0	14.3	-	2.7	-5.9	7.6	3	silty CLAY to CLAY	115	1.5	10	25	-	-	2.6	15
52.50	66.8	25.2	-	4.6	-5.5	7.2	3	silty CLAY to CLAY	115	1.5	17	45	-	-	4.6	15
52.66	68.2	25.7	-	4.5	-5.4	7.0	3	silty CLAY to CLAY	115	1.5	17	45	-	-	4.7	15
52.82	55.3	20.9	-	3.0	-5.2	5.7	3	silty CLAY to CLAY	115	1.5	14	37	-	-	3.8	15
52.99	53.8	20.3	-	2.9	-5.0	5.7	3	silty CLAY to CLAY	115	1.5	14	36	-	-	3.7	15
53.15	65.9	24.9	-	3.1	-4.8	4.9	3	silty CLAY to CLAY	115	1.5	17	44	-	-	4.5	15
53.32	75.8	28.6	-	3.5	-4.7	4.9	3	silty CLAY to CLAY	115	1.5	19	51	-	-	5.2	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(800).cpt
CPT Date: 5/12/2009 8:50:45 AM
GW During Test: 40 ft

Sounding ID: CPT-01A
Project No: 8266 009
Cone/Rig: DSG0786

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
53.48	51.3	19.3	-	3.3	-4.7	6.8	3	silty CLAY to CLAY	115	1.5	13	34	-	-	3.5	15
53.64	40.3	15.2	-	2.2	-4.5	5.8	3	silty CLAY to CLAY	115	1.5	10	27	-	-	2.7	15
53.81	38.8	14.6	-	1.9	-4.3	5.3	3	silty CLAY to CLAY	115	1.5	10	26	-	-	2.6	15
53.97	38.3	14.5	-	2.6	-4.1	7.5	3	silty CLAY to CLAY	115	1.5	10	26	-	-	2.6	15
54.14	52.1	19.7	-	3.2	-3.8	6.5	3	silty CLAY to CLAY	115	1.5	13	35	-	-	3.6	15

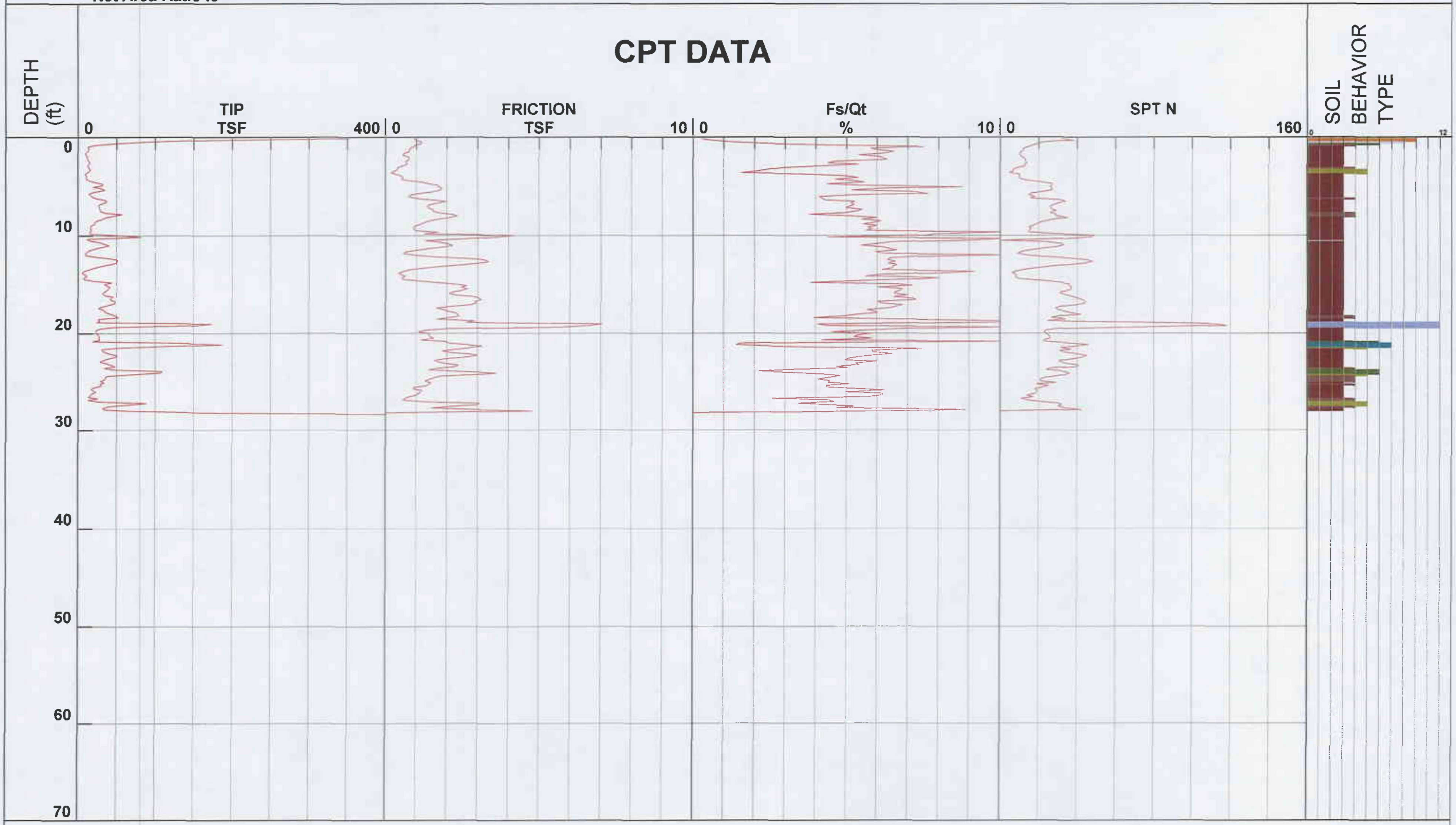
* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Geolabs Westlake Village

Project	SMC AET/KRET Bldg.	Operator	DK/ML	Filename	SDF(802).cpt
Job Number	8266 009	Cone Number	DSG0906	GPS	
Hole Number	CPT-02A	Date and Time	5/12/2009 10:52:45 AM	Maximum Depth	28.38 ft
Water Table Depth	40.00 ft				

Net Area Ratio .8



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

Cone Size 10cm squared

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

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(802).cpt
CPT Date: 5/12/2009 10:52:45 AM
GW During Test: 40 ft

Page: 1
Sounding ID: CPT-02A
Project No: 8266 009
Cone/Rig: DSG0906

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
0.33	154.6	248.0	248.0	1.0	0.9	0.6	6	clean SAND to silty SAND	125	5.0	50	31	95	48	-	16
0.49	88.6	142.1	165.5	1.1	0.2	1.3	6	clean SAND to silty SAND	125	5.0	28	18	79	48	-	16
0.66	46.3	74.3	139.1	1.2	0.1	2.5	5	silty SAND to sandy SILT	120	4.0	19	12	57	48	-	16
0.82	21.3	34.2	-	1.0	0.1	4.5	4	clayy SILT to silty CLAY	115	2.0	17	11	-	-	1.5	15
0.98	11.9	19.1	-	0.9	0.1	7.5	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	15
1.15	13.6	21.8	-	0.8	0.6	5.8	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	15
1.31	12.7	20.3	-	0.8	0.8	6.1	3	silty CLAY to CLAY	115	1.5	14	8	-	-	0.9	15
1.48	11.7	18.8	-	0.8	0.9	6.6	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	15
1.64	9.7	15.6	-	0.6	0.9	6.3	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.7	15
1.80	10.1	16.2	-	0.5	1.3	5.4	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	15
1.97	12.1	19.4	-	0.7	1.6	6.1	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	15
2.13	12.4	20.0	-	0.8	1.7	6.2	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.9	15
2.30	12.2	19.6	-	0.8	1.7	6.4	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.9	15
2.46	14.5	23.3	-	0.7	1.7	4.7	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	15
2.62	15.3	24.6	-	0.7	1.8	4.5	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	15
2.79	13.1	21.0	-	0.7	1.9	5.5	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	15
2.95	13.0	20.9	-	0.5	2.1	4.0	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	15
3.12	13.8	22.1	-	0.4	2.2	3.0	4	clayy SILT to silty CLAY	115	2.0	11	7	-	-	1.0	15
3.28	15.8	25.3	-	0.4	1.8	2.5	4	clayy SILT to silty CLAY	115	2.0	13	8	-	-	1.1	15
3.45	14.5	23.2	-	0.3	-0.8	2.1	4	clayy SILT to silty CLAY	115	2.0	12	7	-	-	1.0	15
3.61	11.0	17.7	-	0.2	-1.0	1.6	4	clayy SILT to silty CLAY	115	2.0	9	6	-	-	0.8	15
3.77	8.9	14.3	-	0.3	-0.8	3.9	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.6	15
3.94	10.5	16.8	-	0.5	-0.4	5.1	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	15
4.10	10.5	16.9	-	0.6	-0.5	5.5	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	15
4.27	11.1	17.9	-	0.5	-0.7	4.7	3	silty CLAY to CLAY	115	1.5	12	7	-	-	0.8	15
4.43	14.2	22.8	-	0.7	-0.6	5.3	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	15
4.59	21.9	35.1	-	1.2	-0.4	5.6	3	silty CLAY to CLAY	115	1.5	23	15	-	-	1.5	15
4.76	31.9	51.2	160.5	1.4	-0.4	4.4	4	clayy SILT to silty CLAY	115	2.0	26	16	-	-	2.2	15
4.92	31.6	50.7	-	1.7	-1.4	5.5	3	silty CLAY to CLAY	115	1.5	34	21	-	-	2.2	15
5.09	19.8	31.7	-	1.7	-7.0	8.9	3	silty CLAY to CLAY	115	1.5	21	13	-	-	1.4	15
5.25	30.0	48.2	-	1.8	-7.1	6.2	3	silty CLAY to CLAY	115	1.5	32	20	-	-	2.1	15
5.41	34.4	55.2	183.3	1.8	-7.1	5.2	4	clayy SILT to silty CLAY	115	2.0	28	17	-	-	2.4	15
5.58	21.0	33.6	-	1.5	-7.1	7.4	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.5	15
5.74	14.0	22.4	-	1.1	-5.4	7.8	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	15
5.91	16.1	25.8	-	0.8	-4.8	5.3	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	15
6.07	18.2	29.2	-	0.8	-4.6	4.2	4	clayy SILT to silty CLAY	115	2.0	15	9	-	-	1.3	15
6.23	23.2	37.3	-	1.0	-3.9	4.3	4	clayy SILT to silty CLAY	115	2.0	19	12	-	-	1.6	15
6.40	35.4	56.5	166.6	1.5	-3.6	4.4	4	clayy SILT to silty CLAY	115	2.0	28	18	-	-	2.5	15
6.56	37.4	58.9	191.1	2.0	-3.5	5.3	4	clayy SILT to silty CLAY	115	2.0	29	19	-	-	2.6	15
6.73	32.9	52.7	-	1.7	-3.5	5.2	4	clayy SILT to silty CLAY	115	2.0	26	16	-	-	2.3	15
6.89	27.2	43.6	-	1.4	-3.4	5.3	3	silty CLAY to CLAY	115	1.5	29	18	-	-	1.9	15
7.05	26.6	42.7	-	1.4	-3.3	5.2	3	silty CLAY to CLAY	115	1.5	28	18	-	-	1.9	15
7.22	27.7	44.5	-	1.4	-3.3	5.1	4	clayy SILT to silty CLAY	115	2.0	22	14	-	-	1.9	15
7.38	28.0	44.9	-	1.5	-3.3	5.6	3	silty CLAY to CLAY	115	1.5	30	19	-	-	2.0	15
7.55	29.0	46.4	-	1.5	-3.2	5.4	3	silty CLAY to CLAY	115	1.5	31	19	-	-	2.0	15
7.71	34.9	55.9	180.9	1.7	-3.1	5.0	4	clayy SILT to silty CLAY	115	2.0	28	17	-	-	2.4	15
7.87	56.8	81.7	184.1	2.2	-3.0	3.8	4	clayy SILT to silty CLAY	115	2.0	41	28	-	-	4.0	15
8.04	45.3	64.6	196.8	2.3	-3.1	5.2	4	clayy SILT to silty CLAY	115	2.0	32	23	-	-	3.2	15
8.20	34.2	54.9	-	2.0	-2.6	6.1	3	silty CLAY to CLAY	115	1.5	37	23	-	-	2.4	15
8.37	30.3	48.5	-	1.7	-2.3	5.6	3	silty CLAY to CLAY	115	1.5	32	20	-	-	2.1	15
8.53	23.2	37.2	-	1.4	-2.3	6.2	3	silty CLAY to CLAY	115	1.5	25	15	-	-	1.6	15
8.69	21.5	34.5	-	1.3	-2.7	6.1	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	15
8.86	20.7	33.1	-	1.1	-3.1	5.7	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.4	15
9.02	16.5	26.5	-	1.0	-3.0	6.2	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.1	15
9.19	15.8	25.4	-	0.9	-2.9	5.9	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	15
9.35	16.0	25.7	-	0.9	-2.6	6.0	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	15
9.51	16.8	27.0	-	0.9	-2.6	5.8	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	15
9.68	14.9	23.9	-	1.7	-2.7	9.9	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	15
9.84	15.7	25.3	-	1.2	-1.0	8.2	3	silty CLAY to CLAY	115	1.5	17	10	-	-	1.1	15
10.01	55.2	79.6	-	4.2	-0.4	7.6	9	very stiff fine SOIL	120	2.0	40	28	59	43	-	30
10.17	81.4	103.1	226.0	3.6	0.8	4.4	9	very stiff fine SOIL	120	2.0	52	41	68	45	-	30
10.34	11.0	17.7	-	2.5	0.9	9.9	3	silty CLAY to CLAY	115	1.5	12	7	-	-	0.8	15
10.50	14.4	23.1	-	1.3	0.5	9.4	3	silty CLAY to CLAY	115	1.5	15	10	-	-	1.0	15
10.66	26.7	42.9	-	1.7	0.6	6.6	3	silty CLAY to CLAY	115	1.5	29	18	-	-	1.9	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(802).cpt
CPT Date: 5/12/2009 10:52:45 AM
GW During Test: 40 ft

Sounding ID: CPT-02A
Project No: 8266 009
Cone/Rig: DSG0906

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
10.83	34.3	54.8	-	2.0	0.2	6.1	3	silty CLAY to CLAY	115	1.5	37	23	-	-	2.4	15
10.99	39.7	53.6	-	2.2	-0.8	5.6	3	silty CLAY to CLAY	115	1.5	36	26	-	-	2.8	15
11.16	30.3	47.0	-	1.9	-0.8	6.3	3	silty CLAY to CLAY	115	1.5	31	20	-	-	2.1	15
11.32	21.1	32.3	-	1.3	-1.0	6.6	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.5	15
11.48	14.3	21.5	-	0.9	-1.0	6.9	3	silty CLAY to CLAY	115	1.5	14	10	-	-	1.0	15
11.65	11.1	16.5	-	0.7	-1.0	6.3	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.8	15
11.81	9.2	13.5	-	0.6	-1.0	6.7	3	silty CLAY to CLAY	115	1.5	9	6	-	-	0.6	15
11.98	9.1	13.1	-	1.0	-0.8	9.9	3	silty CLAY to CLAY	115	1.5	9	6	-	-	0.6	15
12.14	21.7	31.0	-	1.5	-0.6	7.4	3	silty CLAY to CLAY	115	1.5	21	14	-	-	1.5	15
12.30	38.8	54.6	-	2.5	-0.2	6.5	3	silty CLAY to CLAY	115	1.5	36	26	-	-	2.7	15
12.47	51.1	63.2	-	3.2	-0.2	6.4	9	very stiff fine SOIL	120	2.0	32	26	52	41	-	30
12.63	50.8	69.5	-	3.3	-2.1	6.7	9	very stiff fine SOIL	120	2.0	35	25	55	41	-	30
12.80	47.8	64.6	-	3.0	-2.3	6.5	9	very stiff fine SOIL	120	2.0	32	24	53	41	-	30
12.96	38.3	51.1	-	2.5	-3.0	6.8	3	silty CLAY to CLAY	115	1.5	34	26	-	-	2.7	15
13.12	27.7	36.5	-	1.8	-4.9	6.7	3	silty CLAY to CLAY	115	1.5	24	18	-	-	1.9	15
13.29	19.0	24.8	-	1.2	-4.9	6.8	3	silty CLAY to CLAY	115	1.5	17	13	-	-	1.3	15
13.45	12.5	16.0	-	0.8	-5.0	6.6	3	silty CLAY to CLAY	115	1.5	11	8	-	-	0.8	15
13.62	6.3	8.0	-	0.6	-5.1	9.9	2	Organic SOILS - Peats	100	1.0	8	6	-	-	0.6	10
13.78	5.0	6.3	-	0.4	-5.1	9.8	2	Organic SOILS - Peats	100	1.0	6	5	-	-	0.5	10
13.94	8.3	10.4	-	0.5	-4.4	6.8	3	silty CLAY to CLAY	115	1.5	7	6	-	-	0.6	15
14.11	11.2	13.8	-	0.6	-3.5	6.1	3	silty CLAY to CLAY	115	1.5	9	7	-	-	0.8	15
14.27	6.4	7.8	-	0.5	-3.2	9.2	3	silty CLAY to CLAY	115	1.5	5	4	-	-	0.4	15
14.44	7.6	9.2	-	0.6	-2.8	8.2	3	silty CLAY to CLAY	115	1.5	6	5	-	-	0.5	15
14.60	19.8	23.6	-	1.1	-2.6	5.5	3	silty CLAY to CLAY	115	1.5	16	13	-	-	1.4	15
14.76	43.4	45.7	143.2	1.7	-2.7	3.9	4	clayy SILT to silty CLAY	115	2.0	23	22	-	-	3.0	15
14.93	33.8	39.3	-	2.2	-2.6	6.8	3	silty CLAY to CLAY	115	1.5	26	23	-	-	2.4	15
15.09	36.8	42.3	-	2.6	-1.7	7.3	3	silty CLAY to CLAY	115	1.5	28	25	-	-	2.6	15
15.26	40.9	46.5	-	2.5	-1.8	6.2	3	silty CLAY to CLAY	115	1.5	31	27	-	-	2.9	15
15.42	38.8	43.6	-	2.6	-1.9	7.0	3	silty CLAY to CLAY	115	1.5	29	26	-	-	2.7	15
15.58	36.4	40.5	-	2.5	-1.7	6.9	3	silty CLAY to CLAY	115	1.5	27	24	-	-	2.5	15
15.75	33.3	36.6	-	2.2	-1.6	6.8	3	silty CLAY to CLAY	115	1.5	24	22	-	-	2.3	15
15.91	31.4	34.2	-	2.1	-1.4	6.7	3	silty CLAY to CLAY	115	1.5	23	21	-	-	2.2	15
16.08	33.2	35.8	-	2.3	-1.2	7.2	3	silty CLAY to CLAY	115	1.5	24	22	-	-	2.3	15
16.24	44.7	47.8	-	2.9	-0.9	6.7	3	silty CLAY to CLAY	115	1.5	32	30	-	-	3.1	15
16.40	42.4	44.9	-	3.0	-0.8	7.3	3	silty CLAY to CLAY	115	1.5	30	28	-	-	3.0	15
16.57	42.8	44.8	-	3.1	-0.9	7.4	3	silty CLAY to CLAY	115	1.5	30	29	-	-	3.0	15
16.73	48.3	50.1	-	2.9	-0.7	6.1	3	silty CLAY to CLAY	115	1.5	33	32	-	-	3.4	15
16.90	48.2	49.5	-	3.0	-0.6	6.2	3	silty CLAY to CLAY	115	1.5	33	32	-	-	3.4	15
17.06	40.2	40.9	-	2.7	-1.3	7.0	3	silty CLAY to CLAY	115	1.5	27	27	-	-	2.8	15
17.23	32.3	32.5	-	2.1	-1.8	6.9	3	silty CLAY to CLAY	115	1.5	22	22	-	-	2.2	15
17.39	26.2	26.2	-	1.7	1.4	6.6	3	silty CLAY to CLAY	115	1.5	17	17	-	-	1.8	15
17.55	33.4	33.0	-	1.9	1.6	5.9	3	silty CLAY to CLAY	115	1.5	22	22	-	-	2.3	15
17.72	34.4	33.7	-	2.0	1.6	6.1	3	silty CLAY to CLAY	115	1.5	22	23	-	-	2.4	15
17.88	38.0	36.9	-	2.3	2.2	6.2	3	silty CLAY to CLAY	115	1.5	25	25	-	-	2.6	15
18.05	43.9	42.2	-	2.4	2.3	5.5	3	silty CLAY to CLAY	115	1.5	28	29	-	-	3.1	15
18.21	48.6	46.3	-	2.4	2.2	5.0	4	clayy SILT to silty CLAY	115	2.0	23	24	-	-	3.4	15
18.37	52.4	49.5	150.6	2.1	-0.1	4.0	4	clayy SILT to silty CLAY	115	2.0	25	26	-	-	3.7	15
18.54	25.9	24.3	-	1.7	-2.0	6.7	3	silty CLAY to CLAY	115	1.5	16	17	-	-	1.8	15
18.70	28.4	26.3	-	2.9	-1.8	9.9	3	silty CLAY to CLAY	115	1.5	18	19	-	-	2.0	15
18.87	24.4	22.5	-	2.6	-1.7	9.9	3	silty CLAY to CLAY	115	1.5	15	16	-	-	1.7	15
19.03	173.0	160.5	279.0	7.0	-5.8	4.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.4	16
19.19	152.0	140.4	268.0	6.6	-5.7	4.4	9	very stiff fine SOIL	120	2.0	70	76	78	45	-	30
19.36	46.1	41.4	-	5.7	-5.2	9.9	3	silty CLAY to CLAY	115	1.5	28	31	-	-	3.2	15
19.52	29.4	26.1	-	2.0	-5.0	7.2	3	silty CLAY to CLAY	115	1.5	17	20	-	-	2.0	15
19.69	22.8	20.1	-	1.3	-2.7	6.0	3	silty CLAY to CLAY	115	1.5	13	15	-	-	1.6	15
19.85	23.6	20.6	-	1.1	-2.6	4.8	3	silty CLAY to CLAY	115	1.5	14	16	-	-	1.6	15
20.01	24.4	21.2	-	1.4	-2.2	6.1	3	silty CLAY to CLAY	115	1.5	14	16	-	-	1.7	15
20.18	26.1	22.4	-	1.4	-0.5	5.6	3	silty CLAY to CLAY	115	1.5	15	17	-	-	1.8	15
20.34	27.5	23.5	-	1.4	-0.3	5.5	3	silty CLAY to CLAY	115	1.5	16	18	-	-	1.9	15
20.51	26.9	22.7	-	1.6	-0.1	6.1	3	silty CLAY to CLAY	115	1.5	15	18	-	-	1.9	15
20.67	27.7	23.3	-	1.2	-0.4	4.4	3	silty CLAY to CLAY	115	1.5	16	18	-	-	1.9	15
20.83	18.8	15.7	-	2.0	-0.3	9.9	3	silty CLAY to CLAY	115	1.5	10	13	-	-	1.3	15
21.00	130.9	115.5	150.3	2.0	0.1	1.6	6	clean SAND to silty SAND	125	5.0	23	26	72	44	-	16
21.16	188.0	165.3	190.7	2.7	0.1	1.4	6	clean SAND to silty SAND	125	5.0	33	38	84	46	-	16
21.33	115.1	100.8	172.7	3.1	-0.2	2.8	5	silty SAND to sandy SILT	120	4.0	25	29	67	43	-	16

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(802).cpt
CPT Date: 5/12/2009 10:52:45 AM
GW During Test: 40 ft

Page: 3
Sounding ID: CPT-02A
Project No: 8266 009
Cone/Rig: DSG0906

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
21.49	52.7	42.5	-	2.7	-0.9	5.3	3	silty CLAY to CLAY	115	1.5	28	35	-	-	3.7	15
21.65	30.8	24.6	-	2.3	-1.3	7.8	3	silty CLAY to CLAY	115	1.5	16	21	-	-	2.1	15
21.82	31.5	25.0	-	1.8	-1.0	6.1	3	silty CLAY to CLAY	115	1.5	17	21	-	-	2.2	15
21.98	35.4	27.9	-	2.1	0.4	6.1	3	silty CLAY to CLAY	115	1.5	19	24	-	-	2.5	15
22.15	42.6	33.3	-	2.8	0.6	6.7	3	silty CLAY to CLAY	115	1.5	22	28	-	-	3.0	15
22.31	50.3	39.1	-	3.0	0.6	6.1	3	silty CLAY to CLAY	115	1.5	26	34	-	-	3.5	15
22.47	47.7	36.8	-	2.6	0.0	5.5	3	silty CLAY to CLAY	115	1.5	25	32	-	-	3.3	15
22.64	37.7	28.9	-	1.9	0.7	5.2	3	silty CLAY to CLAY	115	1.5	19	25	-	-	2.6	15
22.80	32.2	24.4	-	1.6	0.7	5.2	3	silty CLAY to CLAY	115	1.5	16	21	-	-	2.2	15
22.97	28.4	21.4	-	1.7	0.8	6.3	3	silty CLAY to CLAY	115	1.5	14	19	-	-	2.0	15
23.13	36.9	27.7	-	2.0	1.0	5.5	3	silty CLAY to CLAY	115	1.5	18	25	-	-	2.6	15
23.30	43.5	32.3	-	2.4	1.1	5.6	3	silty CLAY to CLAY	115	1.5	22	29	-	-	3.0	15
23.46	48.0	35.5	-	2.2	1.2	4.8	3	silty CLAY to CLAY	115	1.5	24	32	-	-	3.3	15
23.62	34.0	25.0	-	1.7	1.2	5.3	3	silty CLAY to CLAY	115	1.5	17	23	-	-	2.4	15
23.79	44.4	32.3	-	1.4	1.3	3.3	4	clayy SILT to silty CLAY	115	2.0	16	22	-	-	3.1	15
23.95	108.5	89.7	145.1	2.3	1.4	2.2	5	silty SAND to sandy SILT	120	4.0	22	27	63	43	-	16
24.12	107.1	88.2	179.4	3.6	1.1	3.4	5	silty SAND to sandy SILT	120	4.0	22	27	63	42	-	16
24.28	67.9	55.7	168.6	3.0	1.2	4.5	4	clayy SILT to silty CLAY	115	2.0	28	34	-	-	4.7	15
24.44	37.0	26.3	-	1.8	1.3	5.0	3	silty CLAY to CLAY	115	1.5	18	25	-	-	2.6	15
24.61	35.2	24.8	-	1.6	1.4	4.6	3	silty CLAY to CLAY	115	1.5	17	23	-	-	2.4	15
24.77	34.6	24.2	-	1.4	1.2	4.3	3	silty CLAY to CLAY	115	1.5	16	23	-	-	2.4	15
24.94	28.6	19.8	-	1.3	1.5	4.7	3	silty CLAY to CLAY	115	1.5	13	19	-	-	2.0	15
25.10	33.2	22.9	-	1.5	1.2	4.6	3	silty CLAY to CLAY	115	1.5	15	22	-	-	2.3	15
25.26	27.7	19.0	-	1.4	0.9	5.4	3	silty CLAY to CLAY	115	1.5	13	18	-	-	1.9	15
25.43	30.2	20.5	-	1.3	1.1	4.6	3	silty CLAY to CLAY	115	1.5	14	20	-	-	2.1	15
25.59	20.8	14.1	-	0.9	2.6	4.7	3	silty CLAY to CLAY	115	1.5	9	14	-	-	1.4	15
25.76	16.8	11.3	-	0.9	2.9	5.9	3	silty CLAY to CLAY	115	1.5	8	11	-	-	1.1	15
25.92	18.9	12.7	-	1.2	3.5	6.8	3	silty CLAY to CLAY	115	1.5	8	13	-	-	1.3	15
26.08	22.7	15.0	-	1.1	2.0	5.3	3	silty CLAY to CLAY	115	1.5	10	15	-	-	1.5	15
26.25	17.1	11.3	-	1.1	0.9	6.8	3	silty CLAY to CLAY	115	1.5	8	11	-	-	1.1	15
26.41	15.3	10.1	-	0.9	1.0	6.8	3	silty CLAY to CLAY	115	1.5	7	10	-	-	1.0	15
26.58	12.8	8.3	-	0.7	2.3	6.5	3	silty CLAY to CLAY	115	1.5	6	9	-	-	0.8	15
26.74	24.5	15.9	-	0.6	2.1	2.8	4	clayy SILT to silty CLAY	115	2.0	8	12	-	-	1.7	15
26.90	12.6	8.1	-	0.6	2.2	5.0	3	silty CLAY to CLAY	115	1.5	5	8	-	-	0.8	15
27.07	28.2	18.1	-	1.3	2.7	4.9	3	silty CLAY to CLAY	115	1.5	12	19	-	-	1.9	15
27.23	88.3	68.4	161.3	3.0	0.1	3.5	4	clayy SILT to silty CLAY	115	2.0	34	44	-	-	6.2	15
27.40	69.3	43.8	-	3.0	-5.8	4.5	4	clayy SILT to silty CLAY	115	2.0	22	35	-	-	4.8	15
27.56	40.6	25.5	-	2.1	-5.5	5.5	3	silty CLAY to CLAY	115	1.5	17	27	-	-	2.8	15
27.72	31.7	19.8	-	1.5	-5.3	4.9	3	silty CLAY to CLAY	115	1.5	13	21	-	-	2.2	15
27.89	33.2	20.6	-	2.9	-5.2	9.3	3	silty CLAY to CLAY	115	1.5	14	22	-	-	2.3	15
28.05	66.8	41.3	-	4.8	-4.9	7.3	3	silty CLAY to CLAY	115	1.5	28	45	-	-	4.7	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

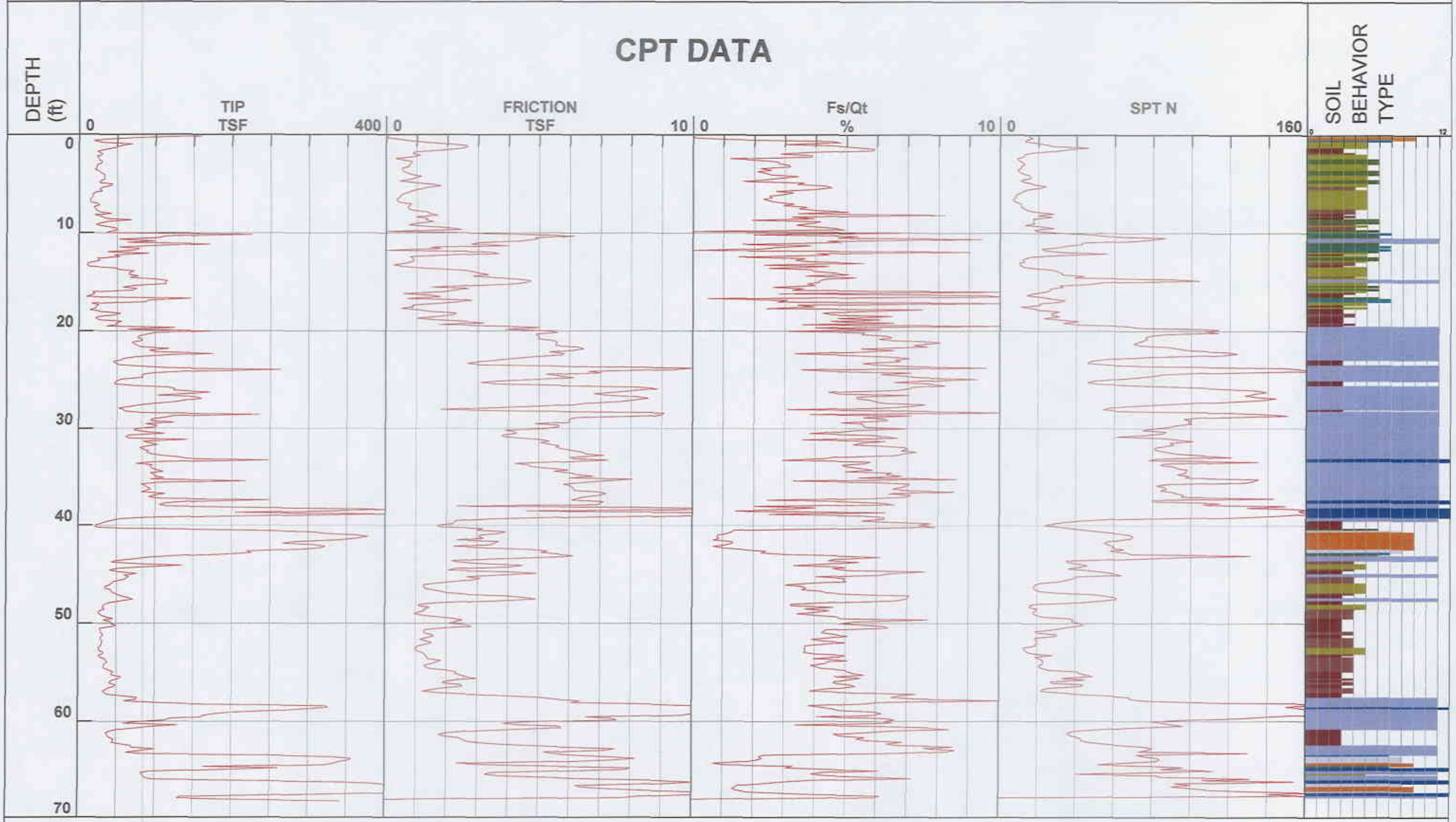
Middle Earth Geo Testing

Geolabs Westlake Village

Project	SMC AET/KRET Bldg.	Operator	DK/ML	Filename	SDF(803).cpt
Job Number	8266 009	Cone Number	DSG0906	GPS	
Hole Number	CPT-03	Date and Time	5/12/2009 11:41:30 AM	Maximum Depth	68.24 ft
Water Table Depth		40.00 ft			

Net Area Ratio .8

CPT DATA



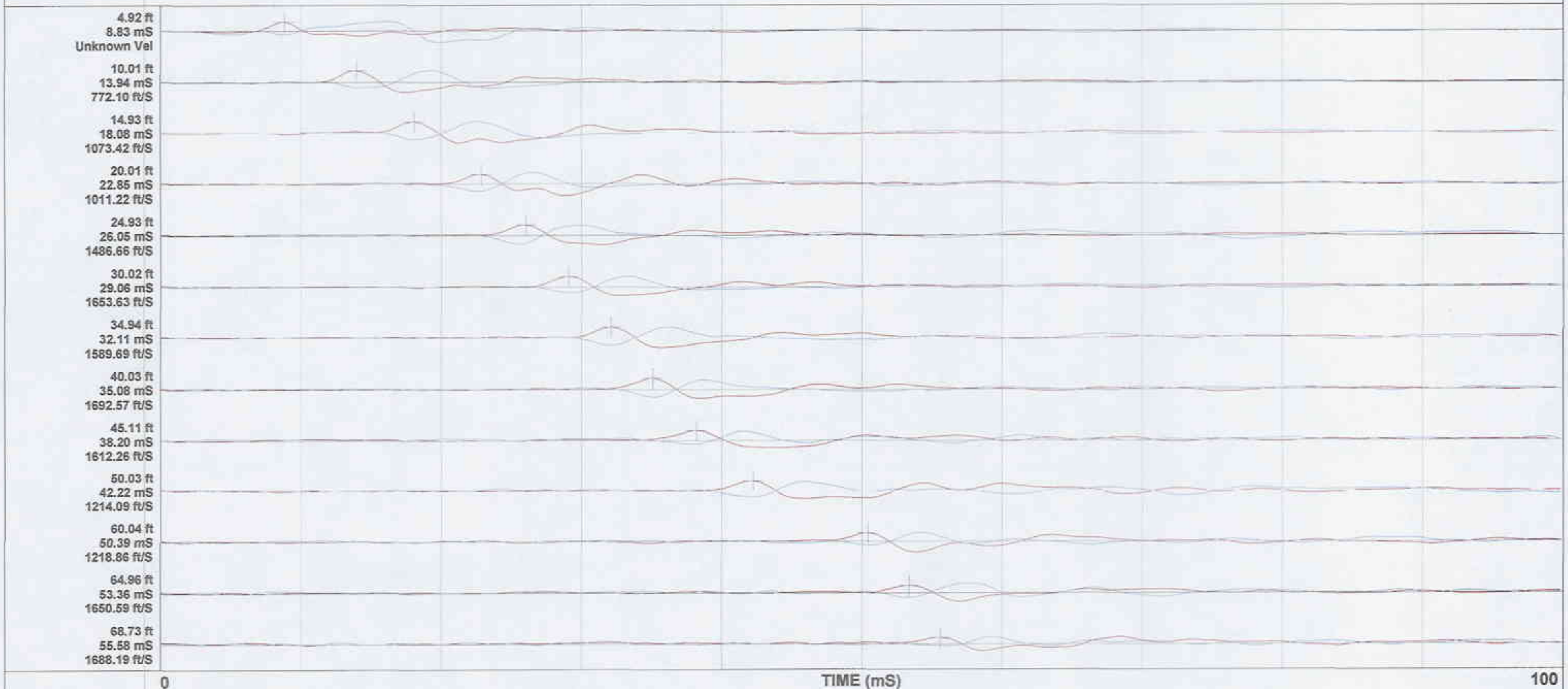
■ 1 - sensitive fine grained
■ 2 - *organic material*
■ 3 - clay
■ 4 - silty clay to clay
■ 5 - clayey silt to silty clay
■ 6 - sandy silt to clayey silt
■ 7 - silty sand to sandy silt
■ 8 - sand to silty sand
■ 9 - sand
■ 10 - gravelly sand to sand
■ 11 - very stiff fine grained (*)
■ 12 - sand to clayey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

Cone Size 10cm squared

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

Geolabs Westlake Village

Location	SMC AET/KRET Bldg.	Operator	DK/ML	GPS
Job Number	8266 009	Cone Number	DSG0906	
Hole Number	CPT-03	Date and Time	5/12/2009 11:41:30 AM	



SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(803).cpt
CPT Date: 5/12/2009 11:41:30 AM
GW During Test: 40 ft

Page: 1
Sounding ID: CPT-03
Project No: 8266 009
Cone/Rig: DSG0906

Depth ft	qc PS tsf	* qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
0.33	77.2	123.7	123.7	0.1	0.0	0.1	6	clean SAND to silty SAND	125	5.0	25	15	74	48	-	16
0.49	33.6	54.0	89.9	0.5	0.0	1.3	5	silty SAND to sandy SILT	120	4.0	13	8	47	48	-	16
0.66	19.2	30.9	-	0.8	0.0	4.4	3	silty CLAY to CLAY	115	1.5	21	13	-	-	1.4	15
0.82	28.0	44.9	-	1.3	0.2	4.8	4	clayy SILT to silty CLAY	115	2.0	22	14	-	-	2.0	15
0.98	69.4	111.3	190.0	2.1	-1.7	3.0	5	silty SAND to sandy SILT	120	4.0	28	17	71	48	-	16
1.15	55.7	89.4	217.9	2.6	-8.3	4.7	9	very stiff fine SOIL	120	2.0	45	28	63	48	-	30
1.31	48.9	78.5	220.9	2.6	-9.0	5.4	9	very stiff fine SOIL	120	2.0	39	24	59	48	-	30
1.48	39.9	64.0	211.8	2.4	-9.2	5.9	4	clayy SILT to silty CLAY	115	2.0	32	20	-	-	2.8	15
1.64	28.9	46.3	-	1.7	-9.0	5.9	3	silty CLAY to CLAY	115	1.5	31	19	-	-	2.0	15
1.80	24.1	38.6	-	0.9	-9.0	3.8	4	clayy SILT to silty CLAY	115	2.0	19	12	-	-	1.7	15
1.97	30.9	49.5	123.7	0.9	-8.9	2.9	4	clayy SILT to silty CLAY	115	2.0	25	15	-	-	2.2	15
2.13	28.6	45.9	141.5	1.1	-8.8	3.9	4	clayy SILT to silty CLAY	115	2.0	23	14	-	-	2.0	15
2.30	23.1	37.0	-	0.9	-8.8	3.9	4	clayy SILT to silty CLAY	115	2.0	19	12	-	-	1.6	15
2.46	25.6	41.0	76.6	0.3	-8.7	1.2	5	silty SAND to sandy SILT	120	4.0	10	6	38	43	-	16
2.62	26.1	41.8	101.3	0.6	-8.6	2.2	5	silty SAND to sandy SILT	120	4.0	10	7	38	43	-	16
2.79	30.3	48.6	121.2	0.8	-8.2	2.8	4	clayy SILT to silty CLAY	115	2.0	24	15	-	-	2.1	15
2.95	29.0	46.5	119.3	0.8	-8.2	2.8	4	clayy SILT to silty CLAY	115	2.0	23	15	-	-	2.0	15
3.12	24.4	39.1	118.0	0.8	-8.2	3.1	4	clayy SILT to silty CLAY	115	2.0	20	12	-	-	1.7	15
3.28	23.0	36.9	116.4	0.7	-8.2	3.2	4	clayy SILT to silty CLAY	115	2.0	18	11	-	-	1.6	15
3.45	23.3	37.4	96.9	0.5	-8.2	2.2	5	silty SAND to sandy SILT	120	4.0	9	6	35	42	-	16
3.61	20.8	33.4	100.0	0.5	-8.2	2.6	4	clayy SILT to silty CLAY	115	2.0	17	10	-	-	1.5	15
3.77	26.6	42.7	99.9	0.6	-8.1	2.1	5	silty SAND to sandy SILT	120	4.0	11	7	39	42	-	16
3.94	28.6	45.9	109.5	0.7	-8.1	2.4	5	silty SAND to sandy SILT	120	4.0	11	7	41	42	-	16
4.10	32.9	52.8	120.2	0.8	-8.1	2.6	5	silty SAND to sandy SILT	120	4.0	13	8	46	43	-	16
4.27	33.1	53.1	141.8	1.1	-8.0	3.5	4	clayy SILT to silty CLAY	115	2.0	27	17	-	-	2.3	15
4.43	32.9	52.7	130.2	1.0	-8.0	3.0	4	clayy SILT to silty CLAY	115	2.0	26	16	-	-	2.3	15
4.59	33.2	53.2	116.8	0.8	-8.0	2.4	5	silty SAND to sandy SILT	120	4.0	13	8	46	43	-	16
4.76	27.8	44.5	90.2	0.5	-7.9	1.6	5	silty SAND to sandy SILT	120	4.0	11	7	40	42	-	16
4.92	26.8	42.9	133.7	1.0	-7.9	3.7	4	clayy SILT to silty CLAY	115	2.0	21	13	-	-	1.9	15
5.09	43.5	69.8	159.6	1.5	-7.5	3.4	4	clayy SILT to silty CLAY	115	2.0	35	22	-	-	3.1	15
5.25	41.0	65.7	178.8	1.8	-7.5	4.4	4	clayy SILT to silty CLAY	115	2.0	33	20	-	-	2.9	15
5.41	29.7	47.7	158.5	1.3	-7.5	4.6	4	clayy SILT to silty CLAY	115	2.0	24	15	-	-	2.1	15
5.58	26.8	43.0	141.0	1.1	-7.5	4.0	4	clayy SILT to silty CLAY	115	2.0	21	13	-	-	1.9	15
5.74	30.0	48.1	119.8	0.8	-7.5	2.7	4	clayy SILT to silty CLAY	115	2.0	24	15	-	-	2.1	15
5.91	21.4	34.4	-	0.7	-7.5	3.3	4	clayy SILT to silty CLAY	115	2.0	17	11	-	-	1.5	15
6.07	17.5	28.0	-	0.5	-7.4	3.0	4	clayy SILT to silty CLAY	115	2.0	14	9	-	-	1.2	15
6.23	18.3	29.3	94.9	0.5	-7.4	2.5	4	clayy SILT to silty CLAY	115	2.0	15	9	-	-	1.3	15
6.40	16.9	27.1	-	0.4	-7.2	2.6	4	clayy SILT to silty CLAY	115	2.0	14	8	-	-	1.2	15
6.56	15.0	24.0	-	0.3	-7.2	2.4	4	clayy SILT to silty CLAY	115	2.0	12	7	-	-	1.0	15
6.73	14.2	22.8	-	0.4	-7.2	2.6	4	clayy SILT to silty CLAY	115	2.0	11	7	-	-	1.0	15
6.89	15.4	24.7	-	0.4	-6.9	2.9	4	clayy SILT to silty CLAY	115	2.0	12	8	-	-	1.1	15
7.05	24.7	37.4	120.7	0.8	-6.9	3.4	4	clayy SILT to silty CLAY	115	2.0	19	12	-	-	1.7	15
7.22	26.2	39.1	115.5	0.8	-6.8	3.0	4	clayy SILT to silty CLAY	115	2.0	20	13	-	-	1.8	15
7.38	19.1	30.6	-	0.7	-6.6	3.8	4	clayy SILT to silty CLAY	115	2.0	15	10	-	-	1.3	15
7.55	20.8	33.4	-	0.7	-6.6	3.5	4	clayy SILT to silty CLAY	115	2.0	17	10	-	-	1.4	15
7.71	22.1	35.5	-	0.9	-6.6	4.1	4	clayy SILT to silty CLAY	115	2.0	18	11	-	-	1.5	15
7.87	26.0	41.7	-	1.3	-6.5	5.1	3	silty CLAY to CLAY	115	1.5	28	17	-	-	1.8	15
8.04	41.7	59.2	148.9	1.4	-6.4	3.4	4	clayy SILT to silty CLAY	115	2.0	30	21	-	-	2.9	15
8.20	20.3	32.6	-	1.7	-6.3	8.4	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.4	15
8.37	30.5	42.4	125.4	1.0	-6.3	3.3	4	clayy SILT to silty CLAY	115	2.0	21	15	-	-	2.1	15
8.53	34.0	46.9	145.9	1.3	-6.3	4.0	4	clayy SILT to silty CLAY	115	2.0	23	17	-	-	2.4	15
8.69	68.1	93.0	139.9	1.3	-6.8	1.9	5	silty SAND to sandy SILT	120	4.0	23	17	65	44	-	16
8.86	37.1	50.1	154.7	1.5	-7.5	4.2	4	clayy SILT to silty CLAY	115	2.0	25	19	-	-	2.6	15
9.02	26.3	40.5	-	1.0	-7.8	3.9	4	clayy SILT to silty CLAY	115	2.0	20	13	-	-	1.8	15
9.19	21.9	35.2	-	0.7	-7.8	3.4	4	clayy SILT to silty CLAY	115	2.0	18	11	-	-	1.5	15
9.35	34.7	45.6	141.4	1.3	-7.7	3.8	4	clayy SILT to silty CLAY	115	2.0	23	17	-	-	2.4	15
9.51	46.9	61.2	177.7	2.1	-7.6	4.6	4	clayy SILT to silty CLAY	115	2.0	31	23	-	-	3.3	15
9.68	49.7	64.4	191.4	2.4	-7.6	5.0	4	clayy SILT to silty CLAY	115	2.0	32	25	-	-	3.5	15
9.84	40.7	52.2	56.9	0.0	-7.5	0.1	6	clean SAND to silty SAND	125	5.0	10	8	46	41	-	16
10.01	35.0	56.2	-	2.5	-7.4	7.2	3	silty CLAY to CLAY	115	1.5	37	23	-	-	2.5	15
10.17	224.2	282.9	318.9	4.4	-7.3	2.0	6	clean SAND to silty SAND	125	5.0	57	45	95	48	-	16
10.34	114.3	143.0	305.5	6.1	-7.1	5.4	9	very stiff fine SOIL	120	2.0	71	57	79	46	-	30
10.50	103.2	128.1	265.1	4.9	-6.3	4.7	9	very stiff fine SOIL	120	2.0	64	52	75	45	-	30
10.66	52.5	84.2	-	4.9	-5.4	9.5	9	very stiff fine SOIL	120	2.0	42	26	61	42	-	30

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(803).cpt
CPT Date: 5/12/2009 11:41:30 AM
GW During Test: 40 ft

Page: 2
Sounding ID: CPT-03
Project No: 8266 009
Cone/Rig: DSG0906

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
10.83	99.7	121.8	246.7	4.4	-1.4	4.4	9	very stiff fine SOIL	120	2.0	61	50	73	45	-	30
10.99	63.2	76.6	206.1	3.1	0.1	4.9	4	clayy SILT to silty CLAY	115	2.0	38	32	-	-	4.4	15
11.16	170.5	205.1	234.0	2.8	0.0	1.6	6	clean SAND to silty SAND	125	5.0	41	34	91	47	-	16
11.32	103.1	123.0	230.6	4.0	0.0	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	6.8	16
11.48	53.0	62.9	136.2	1.5	0.1	2.8	5	silty SAND to sandy SILT	120	4.0	16	13	52	42	-	16
11.65	78.6	92.5	150.6	1.8	-0.3	2.3	5	silty SAND to sandy SILT	120	4.0	23	20	64	44	-	16
11.81	72.7	84.9	84.9	0.0	1.1	0.1	6	clean SAND to silty SAND	125	5.0	17	15	62	43	-	16
11.98	37.4	53.3	-	3.4	0.9	9.2	3	silty CLAY to CLAY	115	1.5	36	25	-	-	2.6	15
12.14	90.6	104.4	217.3	3.7	0.2	4.1	9	very stiff fine SOIL	120	2.0	52	45	68	44	-	30
12.30	46.3	53.0	165.4	2.1	-2.3	4.5	4	clayy SILT to silty CLAY	115	2.0	26	23	-	-	3.2	15
12.47	53.2	60.5	100.5	0.8	-7.1	1.5	5	silty SAND to sandy SILT	120	4.0	15	13	50	42	-	16
12.63	24.1	32.5	-	0.9	-7.1	3.8	4	clayy SILT to silty CLAY	115	2.0	16	12	-	-	1.7	15
12.80	27.4	36.5	-	0.9	-6.8	3.4	4	clayy SILT to silty CLAY	115	2.0	18	14	-	-	1.9	15
12.96	22.7	29.9	-	0.9	-5.7	3.9	4	clayy SILT to silty CLAY	115	2.0	15	11	-	-	1.6	15
13.12	11.6	15.1	-	0.6	-5.2	6.0	3	silty CLAY to CLAY	115	1.5	10	8	-	-	0.8	15
13.29	11.1	14.2	-	0.3	-5.3	2.5	4	clayy SILT to silty CLAY	115	2.0	7	6	-	-	0.7	15
13.45	12.1	15.4	-	0.5	-4.5	4.7	3	silty CLAY to CLAY	115	1.5	10	8	-	-	0.8	15
13.62	48.0	52.2	119.2	1.2	-4.5	2.5	5	silty SAND to sandy SILT	120	4.0	13	12	46	41	-	16
13.78	52.4	56.7	158.0	2.0	-4.5	3.9	4	clayy SILT to silty CLAY	115	2.0	28	26	-	-	3.7	15
13.94	71.6	77.0	182.8	2.8	-4.3	4.0	4	clayy SILT to silty CLAY	115	2.0	39	36	-	-	5.0	15
14.11	65.6	70.2	191.2	3.0	-4.4	4.6	4	clayy SILT to silty CLAY	115	2.0	35	33	-	-	4.6	15
14.27	65.6	69.7	203.3	3.3	-4.1	5.1	4	clayy SILT to silty CLAY	115	2.0	35	33	-	-	4.6	15
14.44	76.7	81.1	180.9	2.8	-4.0	3.7	4	clayy SILT to silty CLAY	115	2.0	41	38	-	-	5.4	15
14.60	66.8	70.2	209.4	3.5	-3.7	5.4	4	clayy SILT to silty CLAY	115	2.0	35	33	-	-	4.7	15
14.76	99.8	104.3	224.8	4.3	-2.7	4.3	9	very stiff fine SOIL	120	2.0	52	50	68	44	-	30
14.93	115.0	119.6	235.6	4.7	-2.3	4.1	9	very stiff fine SOIL	120	2.0	60	58	73	45	-	30
15.09	112.6	116.4	232.7	4.6	-2.2	4.2	9	very stiff fine SOIL	120	2.0	58	56	72	45	-	30
15.26	113.5	116.7	220.5	4.2	-2.1	3.8	5	silty SAND to sandy SILT	120	4.0	29	28	72	45	-	16
15.42	72.7	74.4	181.3	2.9	-2.1	4.0	4	clayy SILT to silty CLAY	115	2.0	37	36	-	-	5.1	15
15.58	57.4	58.3	128.7	1.5	-2.0	2.7	5	silty SAND to sandy SILT	120	4.0	15	14	49	41	-	16
15.75	74.8	75.7	172.2	2.7	-3.4	3.6	4	clayy SILT to silty CLAY	115	2.0	38	37	-	-	5.2	15
15.91	70.5	71.0	157.8	2.3	-5.5	3.3	4	clayy SILT to silty CLAY	115	2.0	35	35	-	-	4.9	15
16.08	18.2	19.3	-	1.8	-8.4	9.9	3	silty CLAY to CLAY	115	1.5	13	12	-	-	1.2	15
16.24	20.5	21.6	-	0.6	-9.0	2.9	4	clayy SILT to silty CLAY	115	2.0	11	10	-	-	1.4	15
16.40	15.4	16.0	-	1.5	-9.0	9.9	3	silty CLAY to CLAY	115	1.5	11	10	-	-	1.0	15
16.57	9.5	9.8	-	1.8	-9.1	9.9	3	silty CLAY to CLAY	115	1.5	7	6	-	-	0.6	15
16.73	145.5	142.9	142.9	0.7	-9.0	0.5	6	clean SAND to silty SAND	125	5.0	29	29	79	45	-	16
16.90	90.4	88.4	171.1	2.8	-8.9	3.1	5	silty SAND to sandy SILT	120	4.0	22	23	63	43	-	16
17.06	87.0	84.6	157.7	2.4	-8.9	2.8	5	silty SAND to sandy SILT	120	4.0	21	22	61	43	-	16
17.23	16.7	16.6	-	1.8	-9.0	9.9	3	silty CLAY to CLAY	115	1.5	11	11	-	-	1.1	15
17.39	25.3	24.9	-	0.9	-9.0	3.6	4	clayy SILT to silty CLAY	115	2.0	12	13	-	-	1.8	15
17.55	22.6	22.0	-	0.9	-8.9	4.1	3	silty CLAY to CLAY	115	1.5	15	15	-	-	1.6	15
17.72	21.1	20.3	-	0.5	-8.9	2.5	4	clayy SILT to silty CLAY	115	2.0	10	11	-	-	1.4	15
17.88	14.1	13.5	-	1.1	-8.8	8.1	3	silty CLAY to CLAY	115	1.5	9	9	-	-	1.0	15
18.05	28.0	26.5	-	1.4	-8.7	5.4	3	silty CLAY to CLAY	115	1.5	18	19	-	-	1.9	15
18.21	53.8	50.7	158.6	2.3	-8.6	4.3	4	clayy SILT to silty CLAY	115	2.0	25	27	-	-	3.8	15
18.37	47.7	44.4	-	2.2	-8.6	4.7	4	clayy SILT to silty CLAY	115	2.0	22	24	-	-	3.3	15
18.54	27.3	25.2	-	1.8	-8.6	6.8	3	silty CLAY to CLAY	115	1.5	17	18	-	-	1.9	15
18.70	21.6	19.7	-	1.0	-8.5	5.0	3	silty CLAY to CLAY	115	1.5	13	14	-	-	1.5	15
18.87	25.1	22.7	-	1.5	-8.4	6.4	3	silty CLAY to CLAY	115	1.5	15	17	-	-	1.7	15
19.03	55.5	51.2	164.9	2.5	-8.5	4.6	4	clayy SILT to silty CLAY	115	2.0	26	28	-	-	3.9	15
19.19	48.4	43.2	-	3.2	-8.4	6.7	3	silty CLAY to CLAY	115	1.5	29	32	-	-	3.4	15
19.36	49.2	44.9	136.8	1.8	-8.3	3.6	4	clayy SILT to silty CLAY	115	2.0	22	25	-	-	3.4	15
19.52	35.4	31.1	-	3.7	-8.3	9.9	3	silty CLAY to CLAY	115	1.5	21	24	-	-	2.5	15
19.69	125.0	113.3	224.9	5.0	-8.3	4.0	9	very stiff fine SOIL	120	2.0	57	63	71	44	-	30
19.85	64.0	55.2	-	3.9	-8.8	6.2	3	silty CLAY to CLAY	115	1.5	37	43	-	-	4.5	15
20.01	169.9	152.6	236.7	5.3	-8.7	3.2	5	silty SAND to sandy SILT	120	4.0	38	42	81	45	-	16
20.18	100.2	89.6	244.8	5.6	-8.7	5.7	9	very stiff fine SOIL	120	2.0	45	50	63	43	-	30
20.34	88.9	79.2	227.9	4.9	-8.6	5.6	9	very stiff fine SOIL	120	2.0	40	44	59	42	-	30
20.51	78.7	65.7	-	5.0	-8.5	6.4	9	very stiff fine SOIL	120	2.0	33	39	53	41	-	30
20.67	77.2	63.9	-	5.0	-8.5	6.6	9	very stiff fine SOIL	120	2.0	32	39	52	41	-	30
20.83	81.8	72.0	231.3	5.0	-8.5	6.2	9	very stiff fine SOIL	120	2.0	36	41	56	42	-	30
21.00	82.9	67.5	-	5.4	-8.4	6.7	9	very stiff fine SOIL	120	2.0	34	41	54	42	-	30
21.16	69.3	56.0	-	5.6	-8.4	8.2	3	silty CLAY to CLAY	115	1.5	37	46	-	-	4.9	15
21.33	72.2	57.9	-	5.6	-8.4	7.8	3	silty CLAY to CLAY	115	1.5	39	48	-	-	5.1	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(803).cpt
CPT Date: 5/12/2009 11:41:30 AM
GW During Test: 40 ft

Sounding ID: CPT-03
Project No: 8266 009
Cone/Rig: DSG0906

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
21.49	77.0	61.3	-	5.5	-8.4	7.3	9	very stiff fine SOIL	120	2.0	31	39	51	41	-	30
21.65	81.9	64.7	-	6.3	-8.4	7.8	9	very stiff fine SOIL	120	2.0	32	41	53	41	-	30
21.82	117.4	100.9	257.0	6.4	-8.4	5.6	9	very stiff fine SOIL	120	2.0	50	59	67	43	-	30
21.98	92.5	72.0	-	6.1	-8.4	6.7	9	very stiff fine SOIL	120	2.0	36	46	56	42	-	30
22.15	101.1	86.3	231.7	5.3	-8.3	5.3	9	very stiff fine SOIL	120	2.0	43	51	62	42	-	30
22.31	174.8	148.6	239.7	5.8	-8.3	3.4	5	silty SAND to sandy SILT	120	4.0	37	44	80	45	-	16
22.47	112.7	95.4	237.7	5.7	-8.3	5.1	9	very stiff fine SOIL	120	2.0	48	56	65	43	-	30
22.64	74.9	56.5	-	4.8	-8.3	6.5	3	silty CLAY to CLAY	115	1.5	38	50	-	-	5.2	15
22.80	59.0	44.2	-	4.2	-8.3	7.2	3	silty CLAY to CLAY	115	1.5	29	39	-	-	4.1	15
22.97	55.3	41.2	-	3.6	-8.3	6.8	3	silty CLAY to CLAY	115	1.5	27	37	-	-	3.9	15
23.13	45.3	33.4	-	3.1	-8.3	7.0	3	silty CLAY to CLAY	115	1.5	22	30	-	-	3.1	15
23.30	48.1	35.3	-	2.7	-8.3	5.7	3	silty CLAY to CLAY	115	1.5	24	32	-	-	3.3	15
23.46	52.3	38.1	-	3.1	-8.2	6.1	3	silty CLAY to CLAY	115	1.5	25	35	-	-	3.6	15
23.62	80.9	58.5	-	5.6	-8.2	7.1	3	silty CLAY to CLAY	115	1.5	39	54	-	-	5.7	15
23.79	118.3	85.0	-	11.3	-8.1	9.7	9	very stiff fine SOIL	120	2.0	43	59	62	43	-	30
23.95	262.9	215.7	316.4	9.3	-7.9	3.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.4	16
24.12	144.7	118.3	250.0	6.6	-6.3	4.6	9	very stiff fine SOIL	120	2.0	59	72	73	44	-	30
24.28	98.8	69.6	-	7.0	-0.6	7.2	9	very stiff fine SOIL	120	2.0	35	49	55	42	-	30
24.44	85.1	59.5	-	5.2	-0.8	6.2	3	silty CLAY to CLAY	115	1.5	40	57	-	-	6.0	15
24.61	82.3	57.2	-	5.7	-1.0	7.0	3	silty CLAY to CLAY	115	1.5	38	55	-	-	5.8	15
24.77	83.6	57.7	-	6.1	-1.0	7.5	3	silty CLAY to CLAY	115	1.5	38	56	-	-	5.9	15
24.94	55.4	38.0	-	5.1	-3.0	9.5	3	silty CLAY to CLAY	115	1.5	25	37	-	-	3.9	15
25.10	49.9	34.0	-	3.8	-3.0	7.8	3	silty CLAY to CLAY	115	1.5	23	33	-	-	3.5	15
25.26	47.2	32.0	-	3.1	-3.0	6.8	3	silty CLAY to CLAY	115	1.5	21	31	-	-	3.3	15
25.43	46.2	31.1	-	3.6	-3.0	8.0	3	silty CLAY to CLAY	115	1.5	21	31	-	-	3.2	15
25.59	70.4	47.1	-	5.8	-2.9	8.4	3	silty CLAY to CLAY	115	1.5	31	47	-	-	4.9	15
25.76	115.9	77.0	-	8.3	-2.8	7.2	9	very stiff fine SOIL	120	2.0	38	58	58	42	-	30
25.92	125.1	98.7	299.2	8.9	-2.8	7.2	9	very stiff fine SOIL	120	2.0	49	63	67	43	-	30
26.08	123.0	96.7	283.1	8.1	-3.0	6.7	9	very stiff fine SOIL	120	2.0	48	61	66	43	-	30
26.25	170.4	133.6	262.5	7.5	-3.4	4.5	9	very stiff fine SOIL	120	2.0	67	85	77	44	-	30
26.41	143.4	112.0	248.2	6.8	-3.5	4.8	9	very stiff fine SOIL	120	2.0	56	72	71	43	-	30
26.58	102.9	66.2	-	7.3	-3.8	7.2	9	very stiff fine SOIL	120	2.0	33	51	53	42	-	30
26.74	153.4	119.1	276.4	8.2	-3.7	5.4	9	very stiff fine SOIL	120	2.0	60	77	73	44	-	30
26.90	159.8	123.7	282.2	8.6	-3.7	5.4	9	very stiff fine SOIL	120	2.0	62	80	74	44	-	30
27.07	139.4	107.5	275.4	8.1	-5.8	5.9	9	very stiff fine SOIL	120	2.0	54	70	69	43	-	30
27.23	126.7	97.5	266.7	7.6	-6.0	6.1	9	very stiff fine SOIL	120	2.0	49	63	66	43	-	30
27.40	104.6	65.2	-	6.5	-6.8	6.3	9	very stiff fine SOIL	120	2.0	33	52	53	42	-	30
27.56	80.5	49.9	-	6.1	-6.9	7.7	3	silty CLAY to CLAY	115	1.5	33	54	-	-	5.6	15
27.72	67.8	41.8	-	4.8	-6.9	7.3	3	silty CLAY to CLAY	115	1.5	28	45	-	-	4.7	15
27.89	52.2	32.0	-	3.2	-6.9	6.3	3	silty CLAY to CLAY	115	1.5	21	35	-	-	3.6	15
28.05	57.7	43.7	125.9	1.8	1.8	3.2	4	clayy SILT to silty CLAY	115	2.0	22	29	-	-	4.0	15
28.22	60.4	36.5	-	4.5	1.8	7.6	3	silty CLAY to CLAY	115	1.5	24	40	-	-	4.2	15
28.38	83.8	50.4	-	9.1	1.9	9.9	3	silty CLAY to CLAY	115	1.5	34	56	-	-	5.9	15
28.54	235.1	176.7	287.4	9.0	-2.9	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.5	16
28.71	123.1	73.3	-	8.8	-5.6	7.2	9	very stiff fine SOIL	120	2.0	37	62	57	42	-	30
28.87	111.8	83.5	235.9	6.2	-5.7	5.6	9	very stiff fine SOIL	120	2.0	42	56	61	42	-	30
29.04	94.7	55.7	-	6.0	-5.7	6.4	3	silty CLAY to CLAY	115	1.5	37	63	-	-	6.6	15
29.20	94.2	55.1	-	6.0	-5.5	6.5	3	silty CLAY to CLAY	115	1.5	37	63	-	-	6.6	15
29.36	124.0	91.8	227.1	6.0	-5.5	4.9	9	very stiff fine SOIL	120	2.0	46	62	64	42	-	30
29.53	87.8	50.8	-	4.9	-5.5	5.7	3	silty CLAY to CLAY	115	1.5	34	59	-	-	6.1	15
29.69	101.7	58.5	-	5.6	-5.3	5.7	4	clayy SILT to silty CLAY	115	2.0	29	51	-	-	7.1	15
29.86	100.1	57.3	-	5.6	-3.1	5.7	4	clayy SILT to silty CLAY	115	2.0	29	50	-	-	7.0	15
30.02	74.7	42.5	-	5.2	-3.1	7.1	3	silty CLAY to CLAY	115	1.5	28	50	-	-	5.2	15
30.19	72.4	41.0	-	3.9	-3.2	5.5	3	silty CLAY to CLAY	115	1.5	27	48	-	-	5.0	15
30.35	88.3	49.7	-	4.2	-3.1	4.9	4	clayy SILT to silty CLAY	115	2.0	25	44	-	-	6.2	15
30.51	111.8	81.3	185.7	4.3	-3.1	3.9	4	clayy SILT to silty CLAY	115	2.0	41	56	-	-	7.8	15
30.68	65.3	36.4	-	3.8	-2.3	6.0	3	silty CLAY to CLAY	115	1.5	24	44	-	-	4.5	15
30.84	61.7	34.2	-	3.8	-2.2	6.4	3	silty CLAY to CLAY	115	1.5	23	41	-	-	4.3	15
31.01	65.5	36.1	-	4.4	-2.1	6.9	3	silty CLAY to CLAY	115	1.5	24	44	-	-	4.6	15
31.17	141.2	101.6	200.5	5.1	-2.0	3.6	5	silty SAND to sandy SILT	120	4.0	25	35	68	43	-	16
31.33	85.0	46.4	-	5.3	-1.7	6.4	3	silty CLAY to CLAY	115	1.5	31	57	-	-	5.9	15
31.50	91.3	49.5	-	5.1	-1.3	5.7	3	silty CLAY to CLAY	115	1.5	33	61	-	-	6.4	15
31.66	102.7	55.5	-	5.4	-1.2	5.3	4	clayy SILT to silty CLAY	115	2.0	28	51	-	-	7.2	15
31.83	91.3	49.1	-	5.6	-1.2	6.3	3	silty CLAY to CLAY	115	1.5	33	61	-	-	6.4	15
31.99	80.0	42.8	-	5.5	-1.2	7.1	3	silty CLAY to CLAY	115	1.5	29	53	-	-	5.6	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(803).cpt
CPT Date: 5/12/2009 11:41:30 AM
GW During Test: 40 ft

Sounding ID: CPT-03
Project No: 8266 009
Cone/Rig: DSG0906

. Depth ft	. qc PS tsf	* qc1n PS -	. q1ncs PS -	. Slv Stss tsf	. pore prss (psi)	. Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	. Unit Wght pcf	. Qc to N	* SPT R-N1 60%	. SPT R-N 60%	* Rel Den %	* Ftn Ang deg	. Und Shr tsf	* Nk -
32.15	83.8	44.6	-	5.9	-1.2	7.2	3	silty CLAY to CLAY	115	1.5	30	56	-	-	5.9	15
32.32	91.2	48.2	-	6.2	-1.2	6.9	3	silty CLAY to CLAY	115	1.5	32	61	-	-	6.4	15
32.48	88.5	46.6	-	6.4	-1.2	7.4	3	silty CLAY to CLAY	115	1.5	31	59	-	-	6.2	15
32.65	95.1	49.8	-	6.5	-1.3	7.0	3	silty CLAY to CLAY	115	1.5	33	63	-	-	6.6	15
32.81	107.0	55.8	-	7.1	-1.3	6.8	3	silty CLAY to CLAY	115	1.5	37	71	-	-	7.5	15
32.97	130.3	91.1	220.1	6.0	-1.2	4.7	9	very stiff fine SOIL	120	2.0	46	65	64	42	-	30
33.14	140.3	97.9	220.1	6.1	-1.1	4.4	9	very stiff fine SOIL	120	2.0	49	70	66	42	-	30
33.30	247.6	172.3	249.0	7.3	-1.6	3.0	5	silty SAND to sandy SILT	120	4.0	43	62	85	45	-	16
33.47	99.6	50.9	-	5.8	-2.0	5.9	3	silty CLAY to CLAY	115	1.5	34	66	-	-	7.0	15
33.63	75.3	38.3	-	4.2	-3.2	5.8	3	silty CLAY to CLAY	115	1.5	26	50	-	-	5.3	15
33.79	95.6	48.4	-	4.7	-3.1	5.0	4	clayy SILT to silty CLAY	115	2.0	24	48	-	-	6.7	15
33.96	93.1	46.9	-	4.7	-3.1	5.2	4	clayy SILT to silty CLAY	115	2.0	23	47	-	-	6.5	15
34.12	95.5	47.9	-	5.2	-3.1	5.6	3	silty CLAY to CLAY	115	1.5	32	64	-	-	6.7	15
34.29	101.5	50.7	-	6.0	-3.3	6.0	3	silty CLAY to CLAY	115	1.5	34	68	-	-	7.1	15
34.45	110.2	75.4	210.4	5.5	-3.6	5.1	4	clayy SILT to silty CLAY	115	2.0	38	55	-	-	7.7	15
34.61	93.5	46.2	-	6.1	-4.4	6.6	3	silty CLAY to CLAY	115	1.5	31	62	-	-	6.5	15
34.78	98.9	48.7	-	6.2	-4.7	6.4	3	silty CLAY to CLAY	115	1.5	32	66	-	-	6.9	15
34.94	99.2	48.6	-	6.8	-5.4	7.0	3	silty CLAY to CLAY	115	1.5	32	66	-	-	6.9	15
35.11	111.0	54.1	-	6.0	-5.5	5.5	4	clayy SILT to silty CLAY	115	2.0	27	55	-	-	7.8	15
35.27	93.7	45.5	-	8.0	-6.1	8.8	3	silty CLAY to CLAY	115	1.5	30	62	-	-	6.5	15
35.43	218.2	147.3	237.2	7.2	-6.3	3.3	5	silty SAND to sandy SILT	120	4.0	37	55	80	44	-	16
35.60	105.4	50.7	-	6.4	-6.5	6.2	3	silty CLAY to CLAY	115	1.5	34	70	-	-	7.4	15
35.76	81.9	39.2	-	5.8	-6.3	7.3	3	silty CLAY to CLAY	115	1.5	26	55	-	-	5.7	15
35.93	86.0	41.0	-	6.0	-6.3	7.2	3	silty CLAY to CLAY	115	1.5	27	57	-	-	6.0	15
36.09	89.2	42.3	-	6.1	-6.3	7.0	3	silty CLAY to CLAY	115	1.5	28	59	-	-	6.2	15
36.26	93.6	44.2	-	6.1	-6.3	6.7	3	silty CLAY to CLAY	115	1.5	29	62	-	-	6.5	15
36.42	89.3	42.0	-	6.2	-6.1	7.1	3	silty CLAY to CLAY	115	1.5	28	60	-	-	6.2	15
36.58	81.7	38.3	-	7.0	-5.8	8.7	3	silty CLAY to CLAY	115	1.5	26	54	-	-	5.7	15
36.75	112.3	52.3	-	7.2	-5.0	6.5	3	silty CLAY to CLAY	115	1.5	35	75	-	-	7.9	15
36.91	98.3	45.6	-	7.0	-4.2	7.3	3	silty CLAY to CLAY	115	1.5	30	66	-	-	6.9	15
37.08	91.5	42.3	-	6.4	-4.0	7.2	3	silty CLAY to CLAY	115	1.5	28	61	-	-	6.4	15
37.24	108.2	49.8	-	6.2	-3.9	5.9	3	silty CLAY to CLAY	115	1.5	33	72	-	-	7.6	15
37.40	248.2	163.2	222.9	6.1	-4.2	2.5	5	silty SAND to sandy SILT	120	4.0	41	62	83	45	-	16
37.57	142.5	93.5	233.4	7.1	-2.7	5.1	9	very stiff fine SOIL	120	2.0	47	71	65	42	-	30
37.73	113.3	51.4	-	7.0	-2.6	6.3	3	silty CLAY to CLAY	115	1.5	34	76	-	-	7.9	15
37.90	105.3	47.6	-	6.9	-2.5	6.7	3	silty CLAY to CLAY	115	1.5	32	70	-	-	7.4	15
38.06	114.4	74.5	128.6	2.3	-2.6	2.1	5	silty SAND to sandy SILT	120	4.0	19	29	57	41	-	16
38.22	247.2	160.7	278.0	9.9	-3.4	4.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.3	16
38.39	444.5	288.4	352.2	11.8	-4.7	2.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	29.4	16
38.55	326.2	211.2	231.9	4.6	-4.4	1.4	6	clean SAND to silty SAND	125	5.0	42	65	92	46	-	16
38.72	204.4	132.0	324.6	12.8	-4.4	6.4	9	very stiff fine SOIL	120	2.0	66	100	76	43	-	30
38.88	579.8	373.7	428.4	14.5	-4.1	2.5	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	38.3	16
39.04	235.4	151.4	324.2	13.1	-3.8	5.6	9	very stiff fine SOIL	120	2.0	76	100	81	44	-	30
39.21	91.2	39.8	-	5.7	-5.8	6.4	3	silty CLAY to CLAY	115	1.5	27	61	-	-	6.4	15
39.37	55.0	23.9	-	3.4	-5.9	6.5	3	silty CLAY to CLAY	115	1.5	16	37	-	-	3.8	15
39.54	41.7	18.0	-	2.3	-6.3	5.8	3	silty CLAY to CLAY	115	1.5	12	28	-	-	2.9	15
39.70	35.2	15.2	-	2.3	-6.2	6.9	3	silty CLAY to CLAY	115	1.5	10	23	-	-	2.4	15
39.86	28.4	12.2	-	2.2	-6.3	8.5	3	silty CLAY to CLAY	115	1.5	8	19	-	-	1.9	15
40.03	23.3	10.0	-	1.7	-6.3	8.2	3	silty CLAY to CLAY	115	1.5	7	16	-	-	1.6	15
40.19	22.4	9.6	-	1.8	-6.2	8.8	3	silty CLAY to CLAY	115	1.5	6	15	-	-	1.5	15
40.36	58.3	24.9	-	3.2	-6.2	5.7	3	silty CLAY to CLAY	115	1.5	17	39	-	-	4.0	15
40.52	214.0	135.7	163.7	3.0	-5.6	1.4	6	clean SAND to silty SAND	125	5.0	27	43	77	43	-	16
40.68	304.1	192.7	211.4	3.9	-3.1	1.3	6	clean SAND to silty SAND	125	5.0	39	61	89	45	-	16
40.85	323.0	204.4	216.6	3.7	0.4	1.2	6	clean SAND to silty SAND	125	5.0	41	65	91	45	-	16
41.01	359.7	227.4	227.4	3.1	-0.3	0.9	6	clean SAND to silty SAND	125	5.0	45	72	94	46	-	16
41.18	377.6	238.4	238.4	3.1	-1.2	0.8	6	clean SAND to silty SAND	125	5.0	48	76	95	46	-	16
41.34	363.4	229.2	229.2	3.2	-1.3	0.9	6	clean SAND to silty SAND	125	5.0	46	73	94	46	-	16
41.50	337.8	212.8	212.8	2.3	-1.2	0.7	6	clean SAND to silty SAND	125	5.0	43	68	92	46	-	16
41.67	284.7	179.2	199.8	3.7	-0.6	1.3	6	clean SAND to silty SAND	125	5.0	36	57	86	45	-	16
41.83	266.2	167.3	190.2	3.6	-1.1	1.3	6	clean SAND to silty SAND	125	5.0	33	53	84	44	-	16
42.00	307.8	193.3	205.9	3.4	-2.0	1.1	6	clean SAND to silty SAND	125	5.0	39	62	89	45	-	16
42.16	321.6	201.8	201.8	2.2	-3.1	0.7	6	clean SAND to silty SAND	125	5.0	40	64	90	45	-	16
42.32	315.0	197.4	207.0	3.3	-4.5	1.1	6	clean SAND to silty SAND	125	5.0	39	63	89	45	-	16
42.49	284.0	177.8	208.5	4.6	-5.6	1.6	6	clean SAND to silty SAND	125	5.0	36	57	86	45	-	16
42.65	219.6	137.4	197.3	5.3	-6.9	2.4	5	silty SAND to sandy SILT	120	4.0	34	55	77	43	-	16

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(803).cpt
CPT Date: 5/12/2009 11:41:30 AM
GW During Test: 40 ft

Sounding ID: CPT-03
Project No: 8266 009
Cone/Rig: DSG0906

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
42.82	225.7	141.0	195.4	5.1	-6.9	2.3	5	silty SAND to sandy SILT	120	4.0	35	56	78	43	-	16
42.98	188.8	117.9	198.4	5.7	-6.8	3.0	5	silty SAND to sandy SILT	120	4.0	29	47	72	43	-	16
43.15	130.0	81.1	210.8	6.1	-6.8	4.8	4	clayy SILT to silty CLAY	115	2.0	41	65	-	-	9.1	15
43.31	90.6	37.3	-	5.5	-6.8	6.3	3	silty CLAY to CLAY	115	1.5	25	60	-	-	6.3	15
43.47	72.7	29.9	-	3.4	-6.7	4.9	3	silty CLAY to CLAY	115	1.5	20	48	-	-	5.0	15
43.64	48.8	20.0	-	2.2	-6.7	4.7	3	silty CLAY to CLAY	115	1.5	13	33	-	-	3.4	15
43.80	43.5	17.8	-	2.4	-6.6	5.8	3	silty CLAY to CLAY	115	1.5	12	29	-	-	3.0	15
43.97	76.0	31.0	-	3.4	-6.6	4.6	3	silty CLAY to CLAY	115	1.5	21	51	-	-	5.3	15
44.13	135.2	83.8	174.7	4.5	-6.7	3.4	5	silty SAND to sandy SILT	120	4.0	21	34	61	41	-	16
44.29	80.2	32.6	-	4.0	-6.7	5.2	3	silty CLAY to CLAY	115	1.5	22	53	-	-	5.6	15
44.46	49.8	20.2	-	2.3	-6.8	4.8	3	silty CLAY to CLAY	115	1.5	13	33	-	-	3.4	15
44.62	40.7	16.5	-	2.1	-6.8	5.4	3	silty CLAY to CLAY	115	1.5	11	27	-	-	2.8	15
44.79	52.9	21.4	-	4.0	-6.8	8.0	3	silty CLAY to CLAY	115	1.5	14	35	-	-	3.6	15
44.95	76.2	30.8	-	4.9	-6.8	6.7	3	silty CLAY to CLAY	115	1.5	21	51	-	-	5.3	15
45.11	59.9	24.2	-	3.6	-6.8	6.4	3	silty CLAY to CLAY	115	1.5	16	40	-	-	4.1	15
45.28	65.8	26.5	-	2.7	-6.7	4.2	3	silty CLAY to CLAY	115	1.5	18	44	-	-	4.6	15
45.44	62.1	25.0	-	3.1	-6.6	5.2	3	silty CLAY to CLAY	115	1.5	17	41	-	-	4.3	15
45.61	57.3	23.0	-	2.8	-6.6	5.1	3	silty CLAY to CLAY	115	1.5	15	38	-	-	4.0	15
45.77	45.0	18.1	-	2.3	-6.6	5.3	3	silty CLAY to CLAY	115	1.5	12	30	-	-	3.1	15
45.93	44.0	17.6	-	1.7	-6.5	4.2	3	silty CLAY to CLAY	115	1.5	12	29	-	-	3.0	15
46.10	41.2	16.5	-	1.3	-6.5	3.3	3	silty CLAY to CLAY	115	1.5	11	27	-	-	2.8	15
46.26	34.6	13.8	-	1.2	-6.4	3.9	3	silty CLAY to CLAY	115	1.5	9	23	-	-	2.3	15
46.43	34.5	13.7	-	1.3	-6.4	4.0	3	silty CLAY to CLAY	115	1.5	9	23	-	-	2.3	15
46.59	42.1	16.7	-	1.5	-6.3	3.8	3	silty CLAY to CLAY	115	1.5	11	28	-	-	2.9	15
46.75	42.7	16.9	-	1.8	-6.2	4.5	3	silty CLAY to CLAY	115	1.5	11	28	-	-	2.9	15
46.92	45.8	18.1	-	2.0	-6.2	4.7	3	silty CLAY to CLAY	115	1.5	12	31	-	-	3.1	15
47.08	51.0	20.2	-	2.7	-6.1	5.6	3	silty CLAY to CLAY	115	1.5	13	34	-	-	3.5	15
47.25	55.3	21.8	-	3.9	-6.1	7.4	3	silty CLAY to CLAY	115	1.5	15	37	-	-	3.8	15
47.41	65.3	25.7	-	4.6	-6.0	7.3	3	silty CLAY to CLAY	115	1.5	17	44	-	-	4.5	15
47.57	70.5	27.7	-	4.9	-5.7	7.2	3	silty CLAY to CLAY	115	1.5	18	47	-	-	4.9	15
47.74	56.2	22.1	-	3.7	-5.7	7.0	3	silty CLAY to CLAY	115	1.5	15	37	-	-	3.9	15
47.90	41.8	16.4	-	1.9	-5.6	4.8	3	silty CLAY to CLAY	115	1.5	11	28	-	-	2.9	15
48.07	34.6	13.5	-	1.1	-5.6	3.5	3	silty CLAY to CLAY	115	1.5	9	23	-	-	2.3	15
48.23	33.5	13.1	-	1.1	-5.5	3.5	3	silty CLAY to CLAY	115	1.5	9	22	-	-	2.3	15
48.39	31.7	12.3	-	1.5	-5.4	5.0	3	silty CLAY to CLAY	115	1.5	8	21	-	-	2.1	15
48.56	34.6	13.5	-	1.3	-5.3	4.0	3	silty CLAY to CLAY	115	1.5	9	23	-	-	2.3	15
48.72	28.8	11.2	-	1.3	-5.3	5.0	3	silty CLAY to CLAY	115	1.5	7	19	-	-	1.9	15
48.89	26.6	10.3	-	1.1	-5.2	4.6	3	silty CLAY to CLAY	115	1.5	7	18	-	-	1.8	15
49.05	27.7	10.7	-	1.0	-5.0	3.8	3	silty CLAY to CLAY	115	1.5	7	18	-	-	1.9	15
49.22	30.8	11.9	-	1.3	-4.9	4.5	3	silty CLAY to CLAY	115	1.5	8	21	-	-	2.1	15
49.38	36.6	14.1	-	1.7	-4.8	5.2	3	silty CLAY to CLAY	115	1.5	9	24	-	-	2.5	15
49.54	45.5	17.5	-	2.2	-4.8	5.2	3	silty CLAY to CLAY	115	1.5	12	30	-	-	3.1	15
49.71	32.9	12.6	-	2.5	-4.7	8.4	3	silty CLAY to CLAY	115	1.5	8	22	-	-	2.2	15
49.87	43.3	16.6	-	2.3	-3.4	5.7	3	silty CLAY to CLAY	115	1.5	11	29	-	-	3.0	15
50.04	43.0	16.5	-	2.1	-3.2	5.2	3	silty CLAY to CLAY	115	1.5	11	29	-	-	2.9	15
50.20	49.0	18.7	-	2.8	-3.1	6.0	3	silty CLAY to CLAY	115	1.5	12	33	-	-	3.4	15
50.36	44.7	17.1	-	2.8	-2.9	6.7	3	silty CLAY to CLAY	115	1.5	11	30	-	-	3.1	15
50.53	28.5	10.9	-	1.8	-3.0	7.1	3	silty CLAY to CLAY	115	1.5	7	19	-	-	1.9	15
50.69	29.2	11.1	-	1.3	-1.6	4.9	3	silty CLAY to CLAY	115	1.5	7	19	-	-	2.0	15
50.86	29.9	11.4	-	1.3	-1.3	4.8	3	silty CLAY to CLAY	115	1.5	8	20	-	-	2.0	15
51.02	30.0	11.4	-	1.3	-1.1	4.7	3	silty CLAY to CLAY	115	1.5	8	20	-	-	2.0	15
51.18	32.7	12.4	-	1.5	-0.9	5.1	3	silty CLAY to CLAY	115	1.5	8	22	-	-	2.2	15
51.35	31.3	11.8	-	1.6	-0.8	5.6	3	silty CLAY to CLAY	115	1.5	8	21	-	-	2.1	15
51.51	29.5	11.1	-	1.3	-0.6	5.0	3	silty CLAY to CLAY	115	1.5	7	20	-	-	2.0	15
51.68	29.3	11.0	-	1.1	-0.4	4.4	3	silty CLAY to CLAY	115	1.5	7	20	-	-	2.0	15
51.84	31.9	12.0	-	1.4	-0.2	4.7	3	silty CLAY to CLAY	115	1.5	8	21	-	-	2.1	15
52.00	30.6	11.5	-	1.5	0.0	5.5	3	silty CLAY to CLAY	115	1.5	8	20	-	-	2.1	15
52.17	30.9	11.7	-	1.3	0.2	4.8	3	silty CLAY to CLAY	115	1.5	8	21	-	-	2.1	15
52.33	29.7	11.2	-	1.1	0.3	4.1	3	silty CLAY to CLAY	115	1.5	7	20	-	-	2.0	15
52.50	27.1	10.2	-	1.0	0.6	4.2	3	silty CLAY to CLAY	115	1.5	7	18	-	-	1.8	15
52.66	26.6	10.0	-	1.0	0.8	4.1	3	silty CLAY to CLAY	115	1.5	7	18	-	-	1.8	15
52.82	28.1	10.6	-	1.0	1.1	4.1	3	silty CLAY to CLAY	115	1.5	7	19	-	-	1.9	15
52.99	33.1	12.5	-	1.2	1.5	4.0	3	silty CLAY to CLAY	115	1.5	8	22	-	-	2.2	15
53.15	31.8	12.0	-	1.3	1.7	4.5	3	silty CLAY to CLAY	115	1.5	8	21	-	-	2.1	15
53.32	26.3	9.9	-	1.3	1.9	5.7	3	silty CLAY to CLAY	115	1.5	7	18	-	-	1.8	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(803).cpt
CPT Date: 5/12/2009 11:41:30 AM
GW During Test: 40 ft

Sounding ID: CPT-03
Project No: 8266 009
Cone/Rig: DSG0906

Depth ft	qc PS tsf	* qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	* Nk -
53.48	28.8	10.9	-	1.4	2.2	5.4	3	silty CLAY to CLAY	115	1.5	7	19	-	-	1.9	15
53.64	34.9	13.2	-	1.4	2.5	4.3	3	silty CLAY to CLAY	115	1.5	9	23	-	-	2.4	15
53.81	35.9	13.5	-	1.8	2.9	5.6	3	silty CLAY to CLAY	115	1.5	9	24	-	-	2.4	15
53.97	38.0	14.3	-	1.7	4.8	4.8	3	silty CLAY to CLAY	115	1.5	10	25	-	-	2.6	15
54.14	34.8	13.1	-	1.5	5.1	4.8	3	silty CLAY to CLAY	115	1.5	9	23	-	-	2.3	15
54.30	33.1	12.5	-	1.3	5.5	4.3	3	silty CLAY to CLAY	115	1.5	8	22	-	-	2.2	15
54.46	32.6	12.3	-	1.3	5.7	4.5	3	silty CLAY to CLAY	115	1.5	8	22	-	-	2.2	15
54.63	34.4	13.0	-	1.4	6.0	4.6	3	silty CLAY to CLAY	115	1.5	9	23	-	-	2.3	15
54.79	39.9	15.1	-	2.0	6.6	5.4	3	silty CLAY to CLAY	115	1.5	10	27	-	-	2.7	15
54.96	45.5	17.2	-	2.3	7.2	5.5	3	silty CLAY to CLAY	115	1.5	11	30	-	-	3.1	15
55.12	43.1	16.3	-	2.3	8.1	5.7	3	silty CLAY to CLAY	115	1.5	11	29	-	-	2.9	15
55.28	44.0	16.6	-	2.5	8.7	6.1	3	silty CLAY to CLAY	115	1.5	11	29	-	-	3.0	15
55.45	55.2	20.8	-	2.6	9.3	4.9	3	silty CLAY to CLAY	115	1.5	14	37	-	-	3.8	15
55.61	54.1	20.4	-	3.0	9.7	5.8	3	silty CLAY to CLAY	115	1.5	14	36	-	-	3.7	15
55.78	45.7	17.2	-	2.3	10.3	5.4	3	silty CLAY to CLAY	115	1.5	11	30	-	-	3.1	15
55.94	41.3	15.6	-	1.9	11.3	5.0	3	silty CLAY to CLAY	115	1.5	10	28	-	-	2.8	15
56.11	40.7	15.4	-	1.9	12.3	5.0	3	silty CLAY to CLAY	115	1.5	10	27	-	-	2.8	15
56.27	48.2	18.2	-	2.5	13.4	5.5	3	silty CLAY to CLAY	115	1.5	12	32	-	-	3.3	15
56.43	47.0	17.7	-	2.5	14.3	5.7	3	silty CLAY to CLAY	115	1.5	12	31	-	-	3.2	15
56.60	38.9	14.7	-	1.9	14.7	5.3	3	silty CLAY to CLAY	115	1.5	10	26	-	-	2.6	15
56.76	36.6	13.8	-	1.5	16.1	4.6	3	silty CLAY to CLAY	115	1.5	9	24	-	-	2.5	15
56.93	31.7	12.0	-	1.2	17.1	4.3	3	silty CLAY to CLAY	115	1.5	8	21	-	-	2.1	15
57.09	33.5	12.6	-	1.8	18.5	5.8	3	silty CLAY to CLAY	115	1.5	8	22	-	-	2.3	15
57.25	38.8	14.6	-	2.8	20.2	8.0	3	silty CLAY to CLAY	115	1.5	10	26	-	-	2.6	15
57.42	58.0	21.9	-	3.9	30.9	7.2	3	silty CLAY to CLAY	115	1.5	15	39	-	-	4.0	15
57.58	77.2	29.1	-	5.0	27.8	6.8	3	silty CLAY to CLAY	115	1.5	19	51	-	-	5.3	15
57.75	75.8	28.6	-	5.5	24.8	7.6	3	silty CLAY to CLAY	115	1.5	19	51	-	-	5.2	15
57.91	60.1	22.7	-	6.4	22.0	9.9	3	silty CLAY to CLAY	115	1.5	15	40	-	-	4.1	15
58.07	99.5	37.5	-	6.1	25.6	6.3	3	silty CLAY to CLAY	115	1.5	25	66	-	-	6.9	15
58.24	151.2	57.1	-	8.5	25.2	5.7	4	clayy SILT to silty CLAY	115	2.0	29	76	-	-	10.6	15
58.40	322.0	186.0	297.2	12.3	19.1	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	21.2	16
58.57	325.9	188.1	316.2	13.8	6.0	4.3	9	very stiff fine SOIL	120	2.0	94	100	88	44	-	30
58.73	288.7	166.5	306.1	13.2	5.2	4.6	9	very stiff fine SOIL	120	2.0	83	100	84	43	-	30
58.89	263.6	151.9	300.7	12.8	3.8	4.9	9	very stiff fine SOIL	120	2.0	76	100	81	43	-	30
59.06	200.0	115.1	292.2	11.9	2.5	6.0	9	very stiff fine SOIL	120	2.0	58	100	72	41	-	30
59.22	176.7	66.7	-	10.9	2.0	6.3	9	very stiff fine SOIL	120	2.0	33	88	54	41	-	30
59.39	162.6	61.4	-	9.6	1.6	6.1	3	silty CLAY to CLAY	115	1.5	41	100	-	-	11.4	15
59.55	161.0	92.5	207.4	6.6	0.8	4.2	4	clayy SILT to silty CLAY	115	2.0	46	81	-	-	11.3	15
59.71	118.5	44.7	-	7.4	0.3	6.4	3	silty CLAY to CLAY	115	1.5	30	79	-	-	8.3	15
59.88	114.4	43.2	-	7.6	-0.1	6.8	3	silty CLAY to CLAY	115	1.5	29	76	-	-	8.0	15
60.04	76.4	28.8	-	4.8	-0.3	6.6	3	silty CLAY to CLAY	115	1.5	19	51	-	-	5.3	15
60.21	59.2	22.3	-	3.9	-0.1	6.9	3	silty CLAY to CLAY	115	1.5	15	39	-	-	4.1	15
60.37	129.8	74.3	167.6	4.4	0.5	3.5	4	clayy SILT to silty CLAY	115	2.0	37	65	-	-	9.0	15
60.53	95.7	36.1	-	5.7	-0.2	6.2	3	silty CLAY to CLAY	115	1.5	24	64	-	-	6.6	15
60.70	74.9	28.3	-	5.7	-0.2	8.1	3	silty CLAY to CLAY	115	1.5	19	50	-	-	5.2	15
60.86	49.4	18.6	-	4.1	-0.3	9.0	3	silty CLAY to CLAY	115	1.5	12	33	-	-	3.4	15
61.03	40.8	15.4	-	2.6	0.0	7.1	3	silty CLAY to CLAY	115	1.5	10	27	-	-	2.8	15
61.19	36.5	13.8	-	2.1	0.4	6.3	3	silty CLAY to CLAY	115	1.5	9	24	-	-	2.5	15
61.35	38.3	14.4	-	1.8	0.8	5.1	3	silty CLAY to CLAY	115	1.5	10	26	-	-	2.6	15
61.52	38.6	14.6	-	1.9	1.2	5.4	3	silty CLAY to CLAY	115	1.5	10	26	-	-	2.6	15
61.68	42.3	16.0	-	2.4	1.5	6.2	3	silty CLAY to CLAY	115	1.5	11	28	-	-	2.9	15
61.85	46.5	17.6	-	2.5	1.8	5.8	3	silty CLAY to CLAY	115	1.5	12	31	-	-	3.2	15
62.01	45.3	17.1	-	2.6	2.1	6.2	3	silty CLAY to CLAY	115	1.5	11	30	-	-	3.1	15
62.17	44.0	16.6	-	3.0	2.4	7.5	3	silty CLAY to CLAY	115	1.5	11	29	-	-	3.0	15
62.34	57.6	21.8	-	3.7	2.7	6.8	3	silty CLAY to CLAY	115	1.5	15	38	-	-	3.9	15
62.50	69.3	26.2	-	4.6	3.1	7.0	3	silty CLAY to CLAY	115	1.5	17	46	-	-	4.8	15
62.67	69.0	26.1	-	5.9	3.4	9.0	3	silty CLAY to CLAY	115	1.5	17	46	-	-	4.8	15
62.83	99.1	37.4	-	7.5	4.1	7.9	3	silty CLAY to CLAY	115	1.5	25	66	-	-	6.9	15
63.00	83.4	31.5	-	7.2	3.9	9.0	3	silty CLAY to CLAY	115	1.5	21	56	-	-	5.8	15
63.16	62.8	23.7	-	5.2	4.2	8.8	3	silty CLAY to CLAY	115	1.5	16	42	-	-	4.3	15
63.32	81.6	30.8	-	5.5	5.0	7.0	3	silty CLAY to CLAY	115	1.5	21	54	-	-	5.6	15
63.49	262.7	148.2	205.9	6.2	5.7	2.4	5	silty SAND to sandy SILT	120	4.0	37	66	80	42	-	16
63.65	332.6	187.5	237.6	7.3	3.6	2.2	5	silty SAND to sandy SILT	120	4.0	47	83	88	44	-	16
63.82	355.9	200.5	253.5	8.2	0.8	2.3	5	silty SAND to sandy SILT	120	4.0	50	89	90	44	-	16
63.98	354.1	199.3	246.4	7.5	0.3	2.1	6	clean SAND to silty SAND	125	5.0	40	71	90	44	-	16

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

SMC AET/KRET Bldg.

Project ID: Geolabs Westlake Village
Data File: SDF(803).cpt
CPT Date: 5/12/2009 11:41:30 AM
GW During Test: 40 ft

Sounding ID: CPT-03
Project No: 8266 009
Cone/Rig: DSG0906

. Depth ft	. qc PS tsf	* qc1n PS -	. q1ncs PS -	. Slv Stss tsf	. pore prss (psi)	. Frct Rato %	* Mat Typ Zon	* Material Behavior Description	. Unit Wght pcf	. Qc to N	* SPT R-N1 60%	. SPT R-N 60%	* Rel Den %	* Ftn Ang deg	. Und Shr tsf	* Nk -
64.14	339.9	191.1	225.9	6.0	-0.5	1.8	6	clean SAND to silty SAND	125	5.0	38	68	88	44	-	16
64.31	333.5	187.4	187.4	2.3	-1.0	0.7	6	clean SAND to silty SAND	125	5.0	37	67	88	44	-	16
64.47	319.6	179.4	192.5	3.4	-1.3	1.1	6	clean SAND to silty SAND	125	5.0	36	64	86	43	-	16
64.64	163.7	91.8	183.4	5.4	9.0	3.4	5	silty SAND to sandy SILT	120	4.0	23	41	64	40	-	16
64.80	260.9	146.2	229.1	8.0	8.0	3.1	5	silty SAND to sandy SILT	120	4.0	37	65	80	42	-	16
64.96	177.1	99.2	226.0	7.9	4.5	4.5	9	very stiff fine SOIL	120	2.0	50	89	67	40	-	30
65.13	93.1	35.1	-	5.7	3.6	6.3	3	silty CLAY to CLAY	115	1.5	23	62	-	-	6.4	15
65.29	81.5	30.7	-	3.5	3.8	4.5	3	silty CLAY to CLAY	115	1.5	20	54	-	-	5.6	15
65.46	84.0	31.7	-	3.3	4.1	4.1	4	clayy SILT to silty CLAY	115	2.0	16	42	-	-	5.8	15
65.62	84.2	31.8	-	3.7	4.3	4.6	3	silty CLAY to CLAY	115	1.5	21	56	-	-	5.8	15
65.78	87.1	32.9	-	5.1	4.6	6.1	3	silty CLAY to CLAY	115	1.5	22	58	-	-	6.0	15
65.95	95.3	36.0	-	6.8	4.8	7.5	3	silty CLAY to CLAY	115	1.5	24	64	-	-	6.6	15
66.11	227.1	126.5	238.1	8.8	5.4	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.9	16
66.28	344.4	191.8	268.2	10.0	4.1	2.9	5	silty SAND to sandy SILT	120	4.0	48	86	88	44	-	16
66.44	395.7	220.2	271.4	9.0	3.3	2.3	6	clean SAND to silty SAND	125	5.0	44	79	93	44	-	16
66.60	415.8	231.2	253.4	6.2	1.7	1.5	6	clean SAND to silty SAND	125	5.0	46	83	95	44	-	16
66.77	444.8	247.1	265.2	6.4	-0.3	1.4	6	clean SAND to silty SAND	125	5.0	49	89	95	45	-	16
66.93	542.0	300.8	306.2	7.1	-2.9	1.3	6	clean SAND to silty SAND	125	5.0	60	100	95	46	-	16
67.10	570.6	316.4	326.9	8.3	-3.4	1.5	6	clean SAND to silty SAND	125	5.0	63	100	95	46	-	16
67.26	592.4	328.2	352.7	10.5	-3.6	1.8	6	clean SAND to silty SAND	125	5.0	66	100	95	46	-	16
67.42	476.1	263.6	333.6	13.2	-3.8	2.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	31.4	16
67.59	264.3	146.2	263.3	10.6	-3.8	4.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.4	16
67.75	134.7	50.8	-	8.3	-3.7	6.3	3	silty CLAY to CLAY	115	1.5	34	90	-	-	9.4	15
67.92	129.4	48.8	-	7.7	-3.7	6.1	3	silty CLAY to CLAY	115	1.5	33	86	-	-	9.0	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

APPENDIX B

LABORATORY DATA

Moisture-Density

The field moisture content and dry unit weight were determined for each undisturbed sample. Dry unit weight is expressed in pounds per cubic foot and the moisture content represents a percentage of the dry unit weight. This test data is presented on the boring logs and Plates LS.1 to LS.5. Correlations between void ratio and depth are presented on Plate e.1.

Atterberg Limits and Particle Size Analyses

Particle size analyses, hydrometer analyses, and Atterberg Limit testing were performed on selected samples from the borings in general conformance with ASTM D 422 and ASTM D 4318, respectively. The results of this testing are presented on Plates PS.1 to PS.4 and AL.1 & AL.2. Correlations between plasticity index and the moisture/liquid limit relationship is presented on Plates wLL.1 and wLL.2

Compaction and Expansion Tests

To determine the compaction characteristics of the onsite materials, compaction tests are performed in general accordance with the current ASTM D 1557 standard. The maximum dry density is reported in pounds per cubic foot and the optimum moisture content as a percentage of the maximum dry density. Expansion index tests were performed in accordance with the criteria in ASTM D4829. The results of these tests are included in Plates LS.1 to LS.5.

Consolidation Test

Consolidation characteristics of a soil sample under load are established using consolidation tests. A one inch high sample is loaded in a geometric progression and the resulting deformation is recorded at selected time intervals. Porous stones are placed in contact with the sample (top and bottom) to permit addition and release of pore fluid. The sample is inundated at a selected load during the progression. Results are plotted on the enclosed Consolidation-Pressure Curves (Plates C-B01.5 through C-B11.12.5). Various correlations regarding the results of these tests under a variety of normal loads and moisture conditions are presented on plates C-Hydro.Af.1 & 2, and C-Hydro.B.Af.1 &2.

Shear Test

Shear tests were performed in a Direct Shear Machine of the strain control type in accordance with ASTM 3080. The rate of deformation is approximately 0.01 inches per minute. Selected samples, as noted in the shear test diagram, were sheared at reduced rates of deformation. Shearing occurred under a variety of confining loads in order to determine the Coulomb shear strength parameters. The test was performed on undisturbed and remolded (@ 90% relative compaction) samples in an artificially saturated condition. The test results are presented graphically on Plates S-B1.0-4, S-B10.7.5, S-B11.12.5, and S-B11.20.

Laboratory Test Summary

W.O. 8266.009

Excavation: B01 (TD= 70 ft, GW @ 40 ft)

Depth	Geology	Sample Description	ST	w	DD	S	Max	Opt	EI	LL	PI	e	n	WD	SD	R-Value
1	Artificial Fill	sandy fat CLAY	(B)				122	11								
5	Artificial Fill	sandy lean CLAY	(U)	18.2	106.1	85						0.57	37	125	129	
10	Artificial Fill	gravelly fat CLAY	(U)	13.1	116.8	81						0.43	30	132	136	
12.5	Artificial Fill	sandy lean CLAY with gravel	(S)	14.4						35	18					
15	Artificial Fill	gravelly lean CLAY with sand	(U)	11.2	125	89						0.34	25	139	141	
18	Artificial Fill	gravelly lean CLAY with sand	(B)				127	10	20							
25	Artificial Fill	sandy lean CLAY	(U)	11.7	117.1	73						0.43	30	131	136	
40	Artificial Fill	clayey SAND	(S)	15.8						24	10					
45	Alluvium	silty GRAVEL	(U)	10	130.7	96				NP	NP	0.28	22	144	144	
55	Alluvium	lean CLAY with sand	(U)	19.9	111.6	100						0.5	33	134	132	

Excavation: B02 (TD= 70 ft, GW @ 50 ft)

Depth	Geology	Sample Description	ST	w	DD	S	Max	Opt	EI	LL	PI	e	n	WD	SD	R-Value
2.5	Artificial Fill	lean CLAY with sand	(U)	15.2	115.5	91						0.45	31	133	135	5
7.5	Artificial Fill	clayey GRAVEL	(U)	10.1	127.3	86						0.31	24	140	142	
10	Artificial Fill	sandy lean CLAY	(S)	16.2						34	19					
12.5	Artificial Fill	clayey GRAVEL	(U)	15.5	117.3	98						0.42	30	136	136	
20	Artificial Fill	clayey GRAVEL	(U)	13.1	118.3	85						0.41	29	134	137	
30	Artificial Fill	gravelly lean CLAY	(U)	17.1	113.7	97						0.47	32	133	134	
40	Artificial Fill	clayey SAND	(U)	8.7	125.2	70						0.33	25	136	141	
50	Alluvium	lean CLAY with sand	(U)	17.5	114.6	100						0.46	31	135	134	
60	Alluvium	lean CLAY	(S)	18.4						32	18					

For abbreviation explanation see Legend on PLATE LS 5

Depth	Geology	Sample Description	ST	w	DD	S	Max	Opt	EI	LL	PI	e	n	WD	SD	R-Value
Excavation: B03 (TD= 70 ft, GW @ 40 ft)																
5	Artificial Fill	sandy lean CLAY	(U)	16.1	115.3	96						0.45	31	134	135	
10	Artificial Fill	sandy lean CLAY	(U)	13.8	118.1	89						0.42	29	134	136	
12.5	Artificial Fill	sandy lean CLAY	(S)	16.5						34	22					
15	Artificial Fill	clayey SAND	(U)	12.7	118.3	82						0.41	29	133	137	
20	Artificial Fill	sandy lean CLAY	(S)	17						32	18					
25	Artificial Fill	clayey SAND	(U)	11.1	100.6	45						0.66	40	112	126	
30	Artificial Fill	clayey SAND with gravel	(S)	9.2						34	18					
35	Artificial Fill	clayey GRAVEL with sand	(U)	9.5	131.6	94						0.27	21	144	145	
45	Alluvium	sandy lean CLAY	(U)	20.9	111.6	100						0.5	33	135	132	
55	Alluvium	lean CLAY with sand	(U)	18.6	115.7	100						0.44	31	137	135	
60	Alluvium	lean CLAY	(S)	20.6						30	13					
Excavation: B04 (TD= 30 ft, No GW)																
2	Artificial Fill	Sandy lean CLAY	(B)						31							0
5	Artificial Fill	lean CLAY with sand	(S)	23.8						47	26					
7.5	Artificial Fill	sandy lean CLAY with gravel	(U)	14.9	80.5	37						1.08	52	92.5	113	
12.5	Alluvium	clayey SAND	(U)	13.1	119.5	88						0.4	28	135	137	
20	Alluvium	lean CLAY with sand	(U)	13.3	116.2	81						0.44	31	132	135	
25	Alluvium	lean CLAY with sand	(S)	17						28	12					
30	Alluvium	clayey SAND	(U)	13.5	120.4	93						0.39	28	137	138	
Excavation: B05 (TD= 30 ft, No GW)																
5	Artificial Fill	lean CLAY with sand	(U)	22.9	102.5	97						0.63	39	126	127	
10	Artificial Fill	gravelly lean CLAY	(U)	17	113.1	95						0.48	32	132	133	
15	Artificial Fill	gravelly lean CLAY with sand	(U)	17.5	106.7	83						0.56	36	125	129	
25	Artificial Fill	clayey SAND with gravel	(S)	12						28	12					
Excavation: B06 (TD= 30 ft, No GW)																
5	Artificial Fill	gravelly lean CLAY	(U)	16	111	85						0.50	34	129	132	
10	Artificial Fill	gravelly lean CLAY	(U)	14.8	113.2	83						0.48	32	130	133	
12.5	Artificial Fill	sandy fat CLAY with gravel	(S)	18.4						35	18					
15	Artificial Fill	sandy CLAY with gravel	(U)	11.5	120.6	80						0.38	28	135	138	
20	Artificial Fill	sandy fat CLAY	(S)	23.1						38	18					

For abbreviation explanation see Legend on PLATE LS 5

Depth	Geology	Sample Description	ST	w	DD	S	Max	Opt	EI	LL	PI	e	n	WD	SD	R-Value
Excavation: B07 (TD= 100 ft, GW @ 45 ft)																
2.5	Artificial Fill	sandy CLAY with gravel	(U)	27.6	91	88						0.84	46	116	119	
5	Artificial Fill	sandy lean CLAYwith gravel	(S)	15.5						30	15					
7.5	Artificial Fill	sandy lean CLAY	(U)	14.8	114.8	87						0.46	31	132	134	
12.5	Artificial Fill	gravelly lean CLAY	(U)	13.9	120.1	95						0.39	28	137	138	
15	Artificial Fill	clayey SAND with gravel	(S)	14.4						30	14					
20	Artificial Fill	clayey GRAVEL with sand	(U)	16.6	113	93						0.48	32	132	133	
25	Artificial Fill	sandy lean CLAY with gravel	(S)	19.9						34	18					
30	Artificial Fill	clayey GRAVEL with sand	(U)	14.9	115.5	89						0.45	31	133	135	
40	Alluvium	clayey SAND	(U)	18.2	111	96						0.51	34	131	132	
55	Alluvium	sandy lean CLAY	(U)	18.2	114.6	100						0.46	31	136	134	
60	Alluvium	lean CLAY with sand	(S)	20.7												
85	Alluvium	gravelly lean CLAY	(S)	14.9												
Excavation: B08 (TD= 50 ft, GW @ 41 ft)																
2.5	Artificial Fill	sandy CLAY with a trace of gravel	(U)	13.1	123.3	98						0.36	26	140	140	
7.5	Artificial Fill	grvelly CLAY	(U)	18.6	109.5	94						0.53	35	130	131	
12.5	Artificial Fill	sandy CLAY with gravel	(U)	14.5	114.8	85						0.46	31	131	134	
15	Artificial Fill	sandy lean CLAY with gravel	(S)	16.7						34	17					
20	Artificial Fill	clayey GRAVEL with sand	(U)	14.2	118.6	93						0.41	29	135	137	
30	Artificial Fill	gravelly CLAY	(U)	13.3	117.4	84						0.42	30	133	136	
35	Artificial Fill	gravelly lean CLAY	(S)	15						27	11					
40	Alluvium	clayey SAND with gravel	(U)	18.5	111	98						0.51	34	132	132	
42.5	Alluvium	gravelly SAND with clay	(S)	13						24	9					
47.5	Alluvium	lean CLAY	(S)	19.4						30	14					
50	Alluvium	sandy CLAY	(U)	13.4	124.4	100						0.34	26	141	140	

For abbreviation explanation see Legend on PLATE LS 5

Depth	Geology	Sample Description	ST	w	DD	S	Max	Opt	EI	LL	PI	e	n	WD	SD	R-Value
Excavation: B09 (TD= 50 ft, GW @ 39 ft)																
5	Artificial Fill	gravelly CLAY	(U)	24.1	96.4	88						0.73	42	120	123	
10	Artificial Fill	gravelly CLAY	(U)	12	115.4	72						0.45	31	129	135	
15	Artificial Fill	clayey SAND with gravel	(U)	16.3	110.1	84						0.52	34	128	131	
20	Artificial Fill	clayey SAND with gravel	(S)	12.8						24	10					
25	Artificial Fill	clayey SAND with gravel	(U)	12.4	115.3	74						0.45	31	130	135	
35	Alluvium	sandy GRAVEL with clay	(U)	6.2	130.9	60						0.28	22	139	145	
45	Alluvium	sandy GRAVEL	(U)	12.1	123	90						0.36	26	138	140	
50	Alluvium	sandy lean CLAY	(S)	19.1						28	13					
Excavation: B10 (TD= 30 ft, No GW)																
2.5	Artificial Fill	sandy CLAY	(U)	13	118.8	86						0.41	29	134	137	
7.5	Artificial Fill	sandy CLAY	(U)	16	106.7	76			21			0.56	36	124	129	
10	Alluvium	sandy lean CLAY	(S)	12.4						24	9					
12.5	Artificial Fill	silty SAND	(U)	11	117.6	70						0.42	30	131	136	
15	Alluvium	silty SAND	(S)	14.3						31	15					
25	Alluvium	clayey SAND	(S)	19.2						26	7					
Excavation: B11 (TD= 55 ft, GW @ 40 ft)																
2.5	Artificial Fill	CLAY with gravel	(U)	15.6	117.6	99						0.42	30	136	136	
7.5	Artificial Fill	gravelly CLAY with sand	(U)	16.1	102.2	68						0.63	39	119	127	
12.5	Artificial Fill	CLAY with sand	(U)	16.1	110.9	85						0.51	34	129	132	
20	Artificial Fill	clayey GRAVEL with sand	(U)	14.3	119.2	95						0.40	29	136	137	
30	Artificial Fill	clayey GRAVEL	(U)	14	112.1	76						0.49	33	128	133	
35	Artificial Fill	lean CLAY with sand	(S)	13.9						NP	NP					
40	Artificial Fill	sandy GRAVEL with clay	(U)	18.8	110.4	98						0.51	34	131	132	
47.5	Artificial Fill	sandy GRAVEL	(S)	38.3												
50	Artificial Fill	sandy GRAVEL	(U)	12												
55	Alluvium	clayey SAND	(U)	34.8	89.5	100						0.87	47	121	118	

Depth	Geology	Sample Description	ST	w	DD	S	Max	Opt	EI	LL	PI	e	n	WD	SD	R-Value

LEGEND

Depth = Sample Depth (ft) below ground surface
ST = Sample Type*
w = Initial Moisture Content (%)
DD = Initial Dry Unit Weight (pcf)
Max = Maximum Dry Unit Weight (pcf)
Opt = Optimum Moisture Content (%)
EI = Expansion Index
S = Degree of Saturation (%)

LL = Liquid Limit
PI = Plasticity Index
e = Void Ratio
n = Porosity (%)
WD = Initial Wet Unit Weight (pcf)
SD = Saturated Unit Weight (pcf)
BD = Bouyant (Submerged) Unit Weight (pcf) - Assuming water unit weight of 62.4 pcf

* Sample Types: (U) = relatively Undisturbed; (S) = SPT; (B) = Bulk

GEOLABS-WESTLAKE VILLAGE

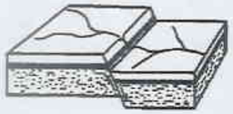
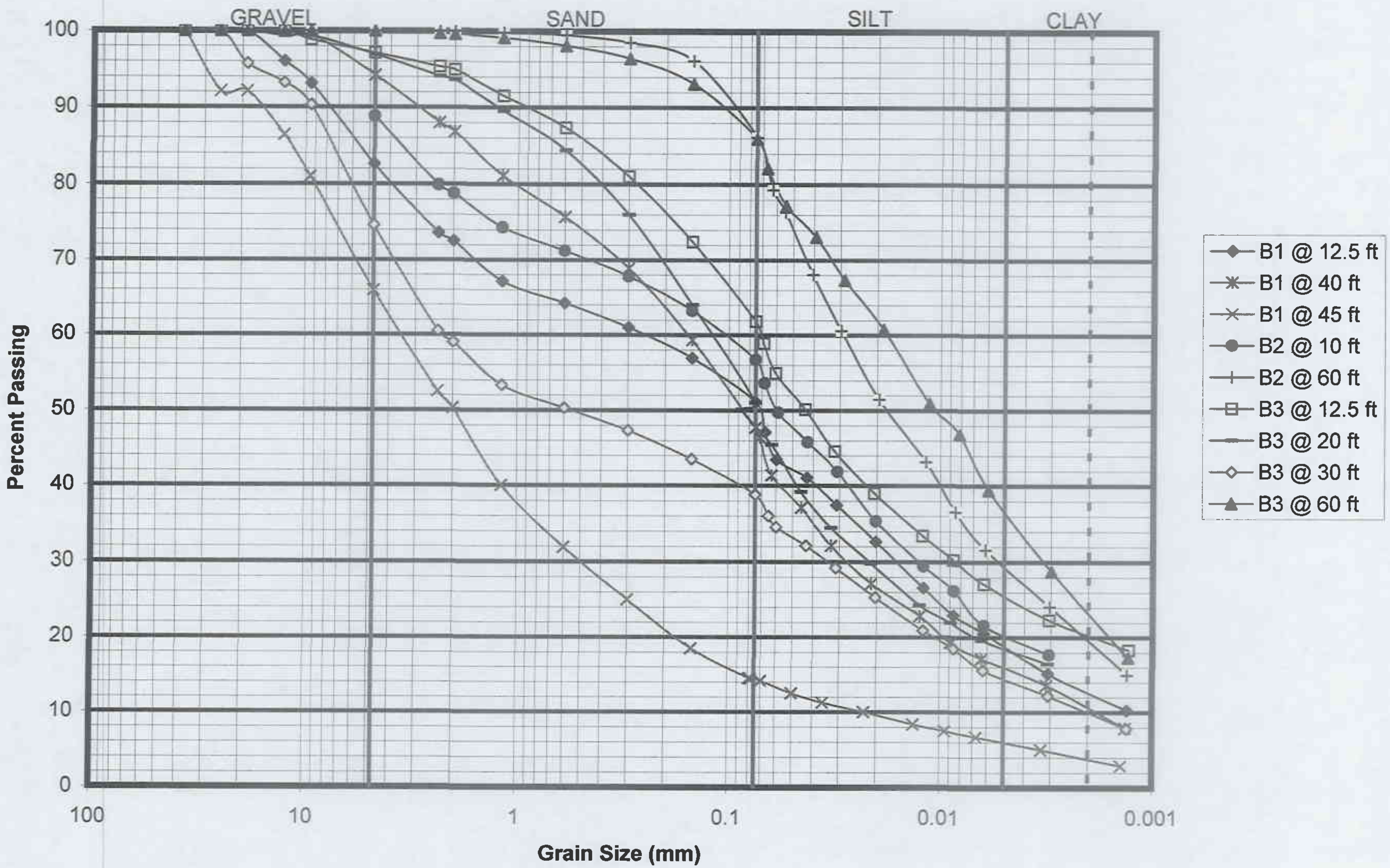
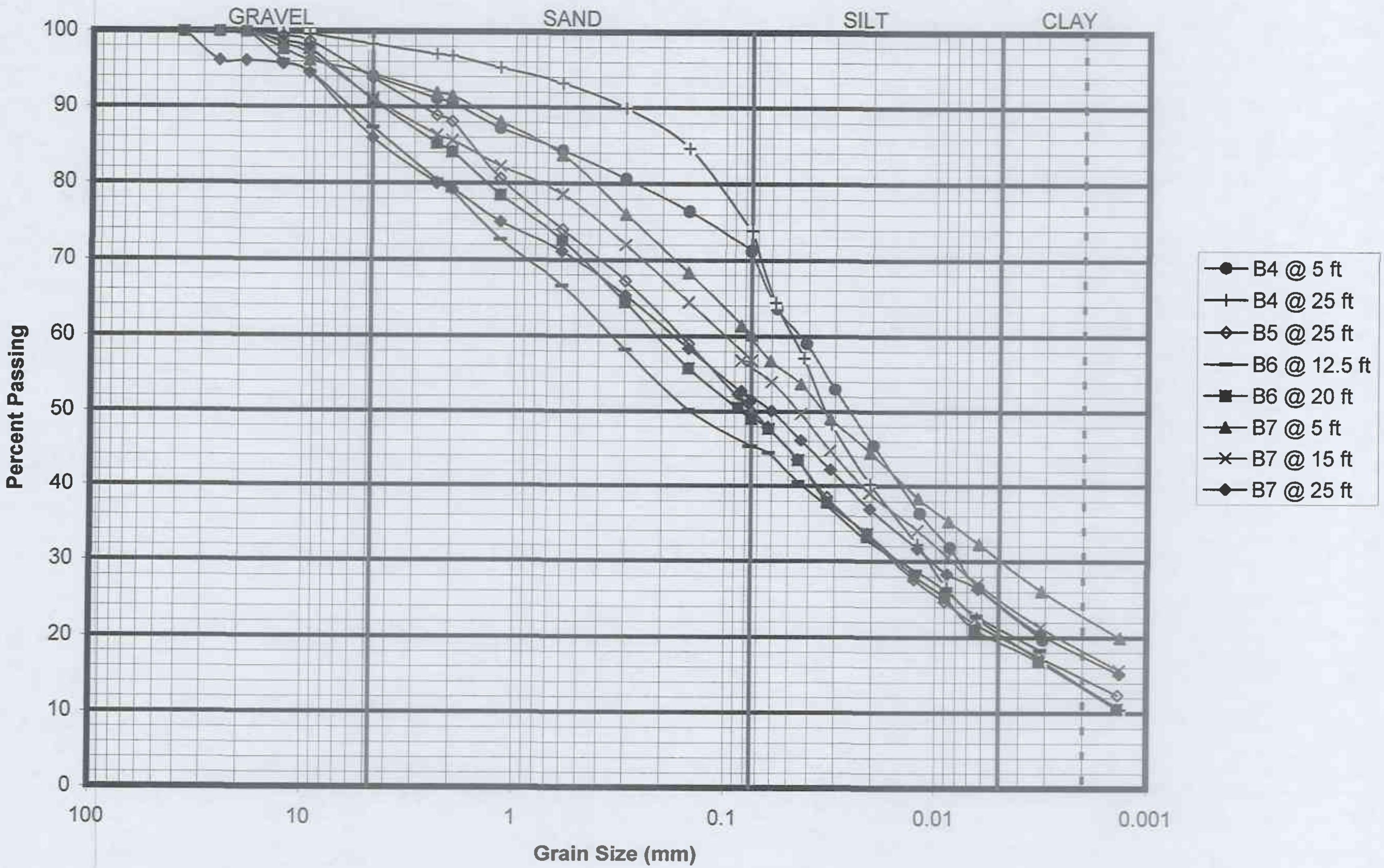


PLATE LS. 5

PARTICLE SIZE ANALYSIS



PARTICLE SIZE ANALYSIS



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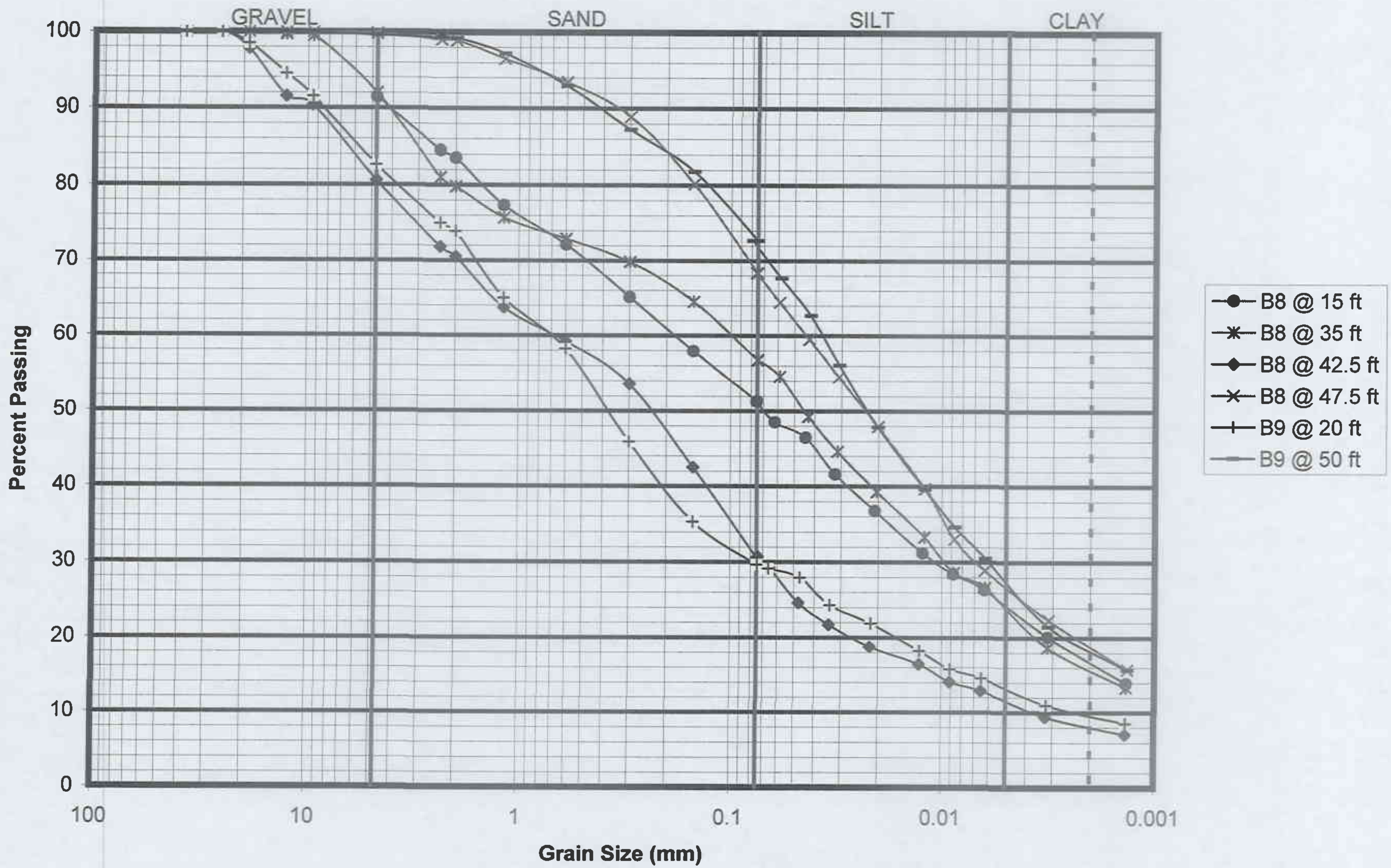
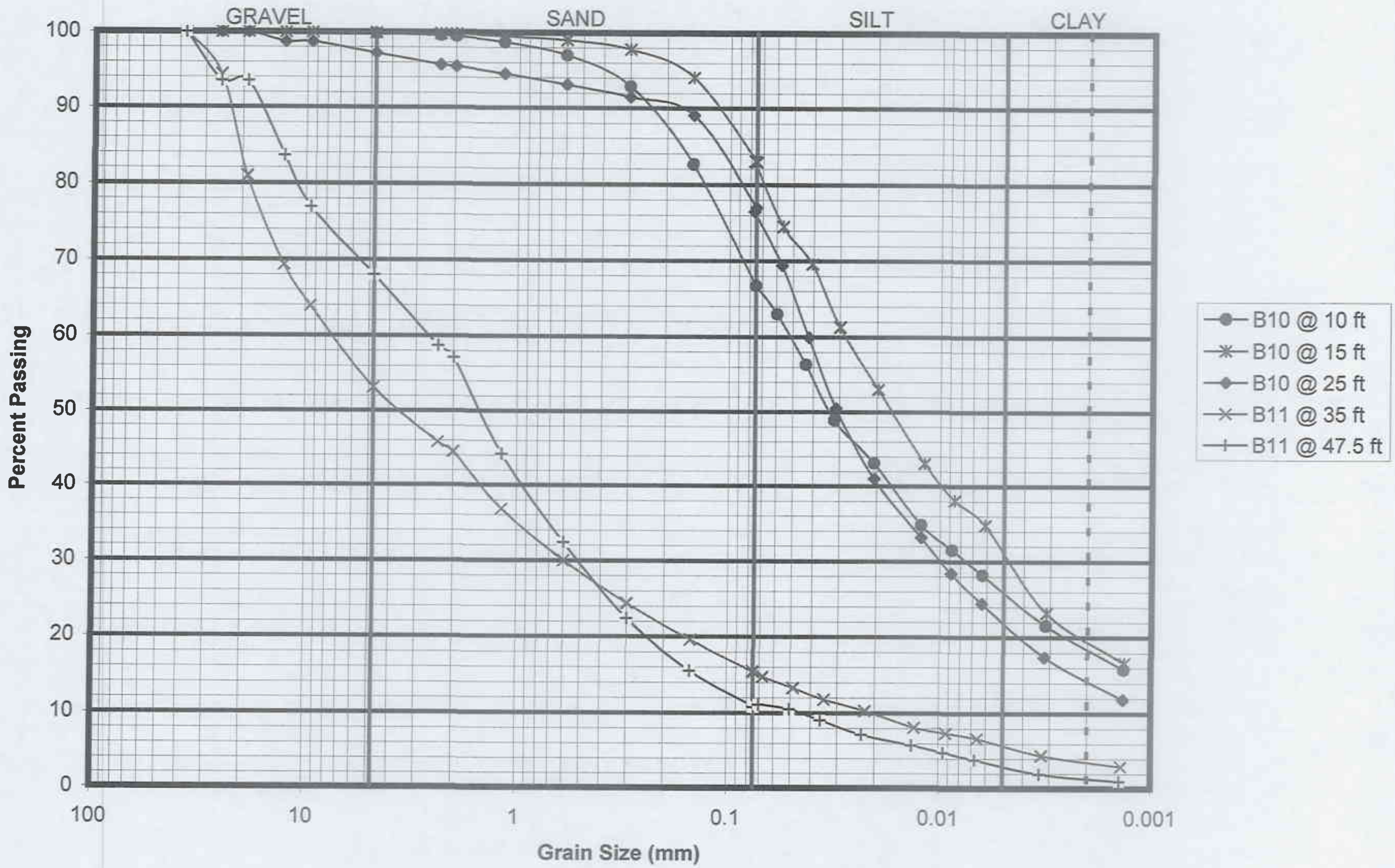
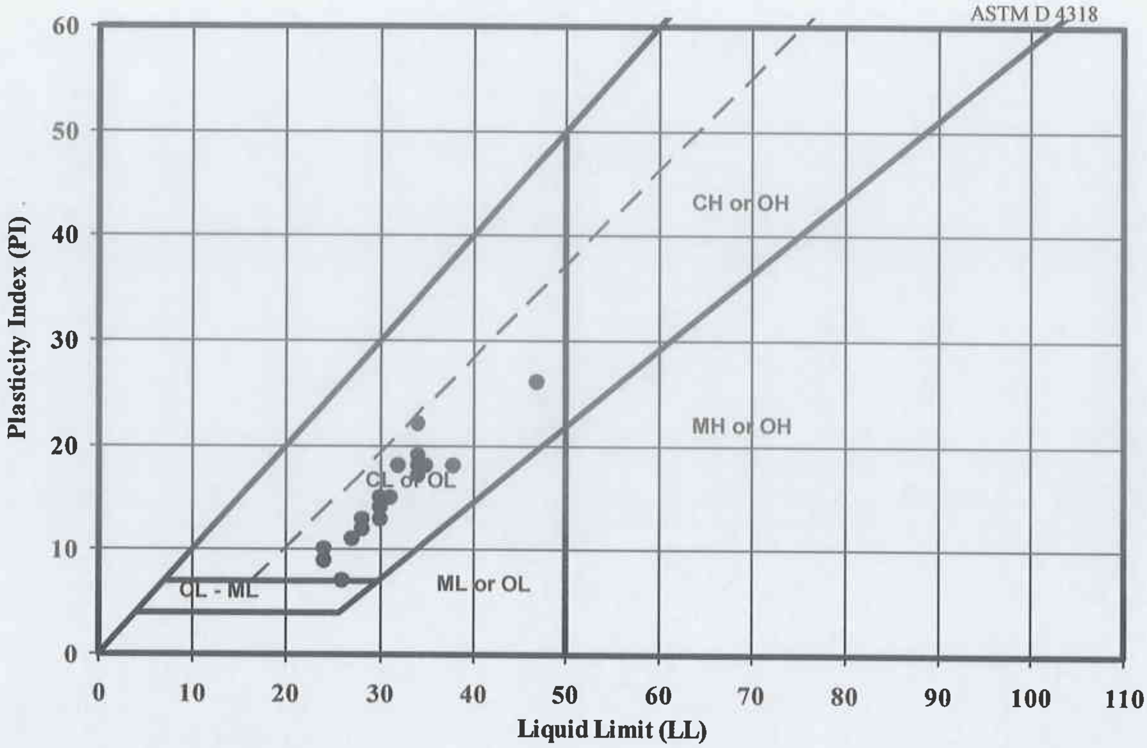


PARTICLE SIZE ANALYSIS



ATTERBERG LIMITS

PLASTICITY CHART



Excavation	Depth (ft)	Geology	Soil Description	LL	PI	Fines Class	w	w/LL
B01	12.5	Af	sandy lean CLAY with gra	35	18	CL	14.4	0.41
B01	40	Af	clayey SAND	24	10	CL	15.8	0.66
B01	45	Qal	silty GRAVEL	NP	NP		10	
B02	10	Af	sandy lean CLAY	34	19	CL	16.2	0.48
B02	60	Qal	lean CLAY	32	18	CL	18.4	0.57
B03	12.5	Af	sandy lean CLAY	34	22	CL	16.5	0.49
B03	20	Af	sandy lean CLAY	32	18	CL	17	0.53
B03	30	Af	clayey SAND with gravel	34	18	CL	9.2	0.27
B03	60	Qal	lean CLAY	30	13	CL	20.6	0.69
B04	5	Af	lean CLAY with sand	47	26	CL	23.8	0.51
B04	25	Qal	lean CLAY with sand	28	12	CL	17	0.61
B05	25	Af	clayey SAND with gravel	28	12	CL	12	0.43
B06	12.5	Af	sandy fat CLAY with grave	35	18	CL	18.4	0.53
B06	20	Af	sandy fat CLAY	38	18	CL	23.1	0.61
B07	5	Af	sandy lean CLAYwith grav	30	15	CL	15.5	0.52
B07	15	Af	clayey SAND with gravel	30	14	CL	14.4	0.48
B07	25	Af	sandy lean CLAY with gra	34	18	CL	19.9	0.59
B08	15	Af	sandy lean CLAY with gra	34	17	CL	16.7	0.49
B08	35	Af	gravelly lean CLAY	27	11	CL	15	0.56

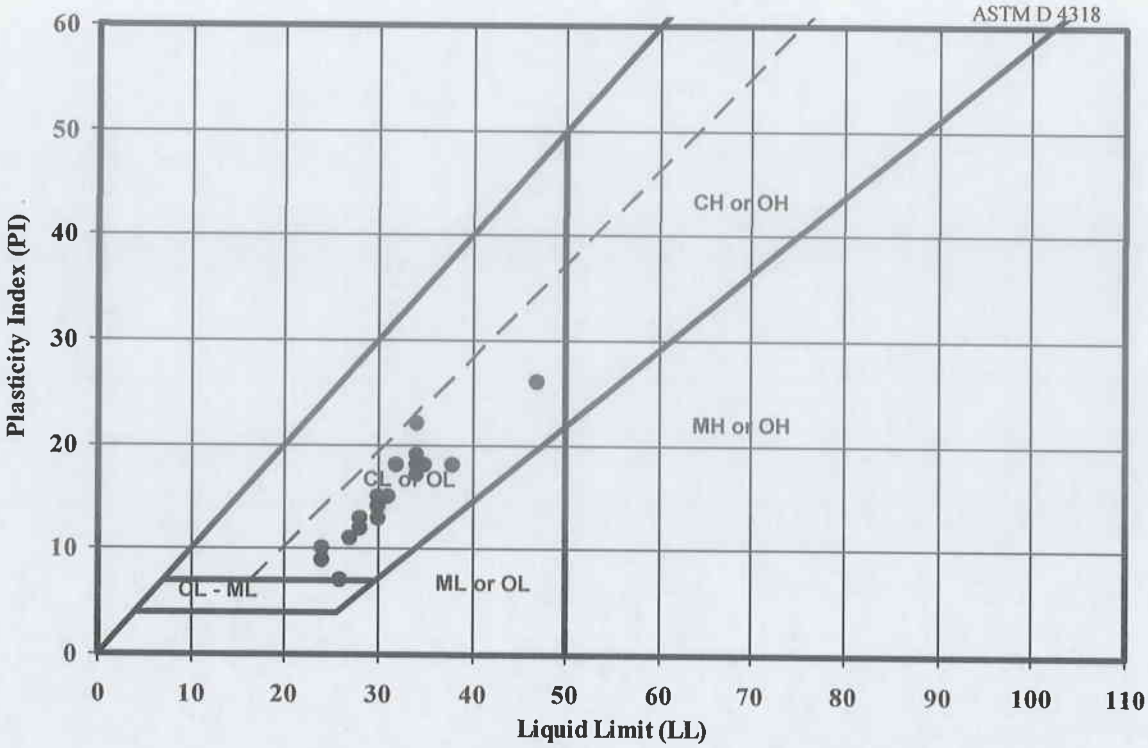
LL = Liquid Limit, PI = Plasticity Index, NP = Non-Plastic , w = Field Moisture

GEOLABS-WESTLAKE VILLAGE

PLATE AL.1

ATTERBERG LIMITS

PLASTICITY CHART

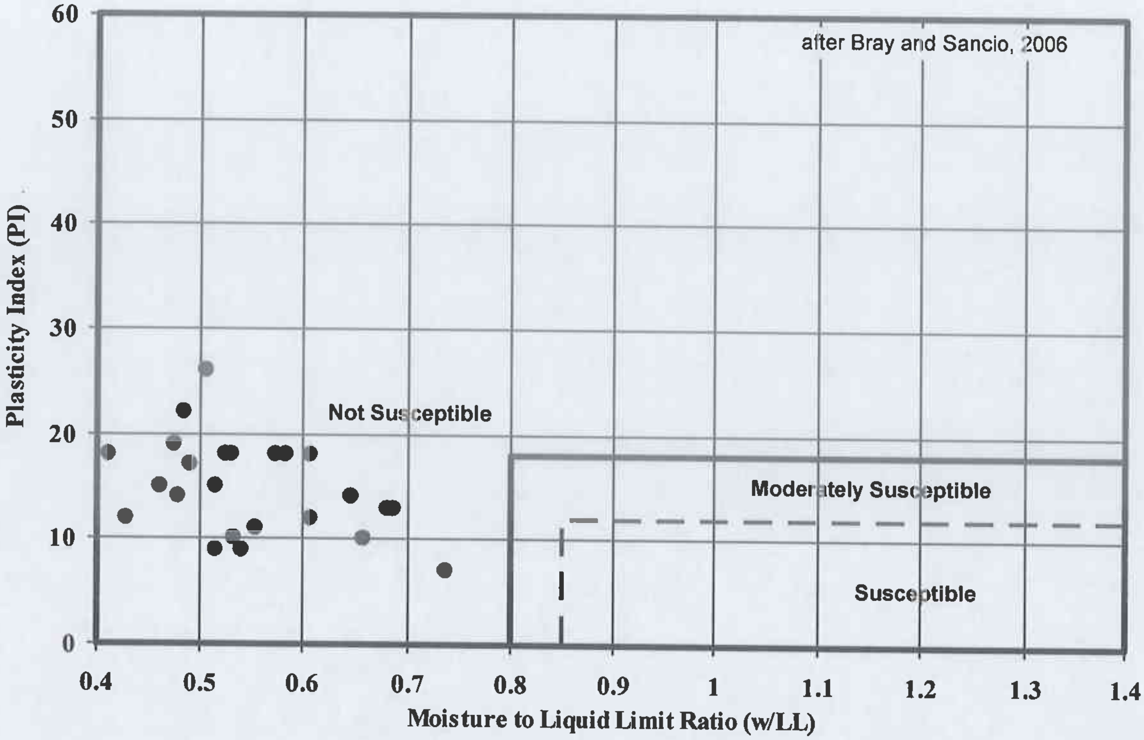


Excavation	Depth (ft)	Geology	Soil Description	LL	PI	Fines Class	w	w/LL
B08	42.5	Qal	gravelly SAND with clay	24	9	CL	13	0.54
B08	47.5	Qal	lean CLAY	30	14	CL	19.4	0.65
B09	20	Af	clayey SAND with gravel	24	10	CL	12.8	0.53
B09	50	Qal	sandy lean CLAY	28	13	CL	19.1	0.68
B10	10	Qal	sandy lean CLAY	24	9	CL	12.4	0.52
B10	15	Qal	silty SAND	31	15	CL	14.3	0.46
B10	25	Qal	clayey SAND	26	7	CL-ML	19.2	0.74
B11	35	Af	lean CLAY with sand	NP	NP		13.9	

LL = Liquid Limit, PI = Plasticity Index, NP = Non-Plastic , w = Field Moisture

LIQUEFACTION SUSCEPTIBILITY OF FINE-GRAINED SOILS

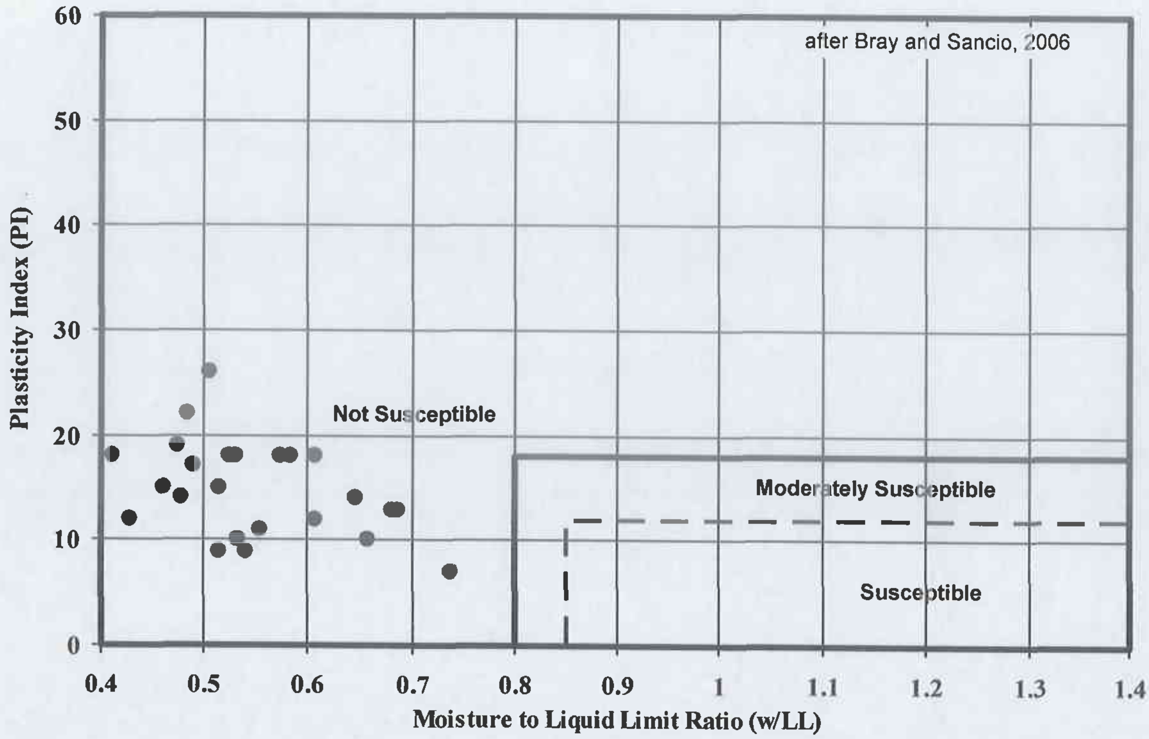
LIQUEFACTION SUSCEPTIBILITY CHART



Excavation	Depth (ft)	Geology	Soil Description	LL	PI	Fines Class	w	w/LL	Est. Liq Catagory*
B01	12.5	Af	sandy lean CLAY with gra	35	18	CL	14.4	0.41	Not Susceptible
B01	40	Af	clayey SAND	24	10	CL	15.8	0.66	Not Susceptible
B01	45	Qal	silty GRAVEL	NP	NP		10		
B02	10	Af	sandy lean CLAY	34	19	CL	16.2	0.48	Not Susceptible
B02	60	Qal	lean CLAY	32	18	CL	18.4	0.58	Not Susceptible
B03	12.5	Af	sandy lean CLAY	34	22	CL	16.5	0.49	Not Susceptible
B03	20	Af	sandy lean CLAY	32	18	CL	17	0.53	Not Susceptible
B03	30	Af	clayey SAND with gravel	34	18	CL	9.2	0.27	Not Susceptible
B03	60	Qal	lean CLAY	30	13	CL	20.6	0.69	Not Susceptible
B04	5	Af	lean CLAY with sand	47	26	CL	23.8	0.51	Not Susceptible
B04	25	Qal	lean CLAY with sand	28	12	CL	17	0.61	Not Susceptible
B05	25	Af	clayey SAND with gravel	28	12	CL	12	0.43	Not Susceptible
B06	12.5	Af	sandy fat CLAY with grave	35	18	CL	18.4	0.53	Not Susceptible
B06	20	Af	sandy fat CLAY	38	18	CL	23.1	0.61	Not Susceptible
B07	5	Af	sandy lean CLAYwith grav	30	15	CL	15.5	0.52	Not Susceptible
B07	15	Af	clayey SAND with gravel	30	14	CL	14.4	0.48	Not Susceptible
B07	25	Af	sandy lean CLAY with gra	34	18	CL	19.9	0.59	Not Susceptible
B08	15	Af	sandy lean CLAY with gra	34	17	CL	16.7	0.49	Not Susceptible
B08	35	Af	gravelly lean CLAY	27	11	CL	15	0.56	Not Susceptible
B08	42.5	Qal	gravelly SAND with clay	24	9	CL	13	0.54	Not Susceptible

LIQUEFACTION SUSCEPTIBILITY OF FINE-GRAINED SOILS

LIQUEFACTION SUSCEPTIBILITY CHART



Excavation	Depth (ft)	Geology	Soil Description	LL	PI	Fines Class	w	w/LL	Est. Liq Catagory*
B08	47.5	Qal	lean CLAY	30	14	CL	19.4	0.65	Not Susceptible
B09	20	Af	clayey SAND with gravel	24	10	CL	12.8	0.53	Not Susceptible
B09	50	Qal	sandy lean CLAY	28	13	CL	19.1	0.68	Not Susceptible
B10	10	Qal	sandy lean CLAY	24	9	CL	12.4	0.52	Not Susceptible
B10	15	Qal	silty SAND	31	15	CL	14.3	0.46	Not Susceptible
B10	25	Qal	clayey SAND	26	7	CL-ML	19.2	0.74	Not Susceptible
B11	35	Af	lean CLAY with sand	NP	NP		13.9		

LL = Liquid Limit, PI = Plasticity Index, NP = Non-Plastic , w = Field Moisture

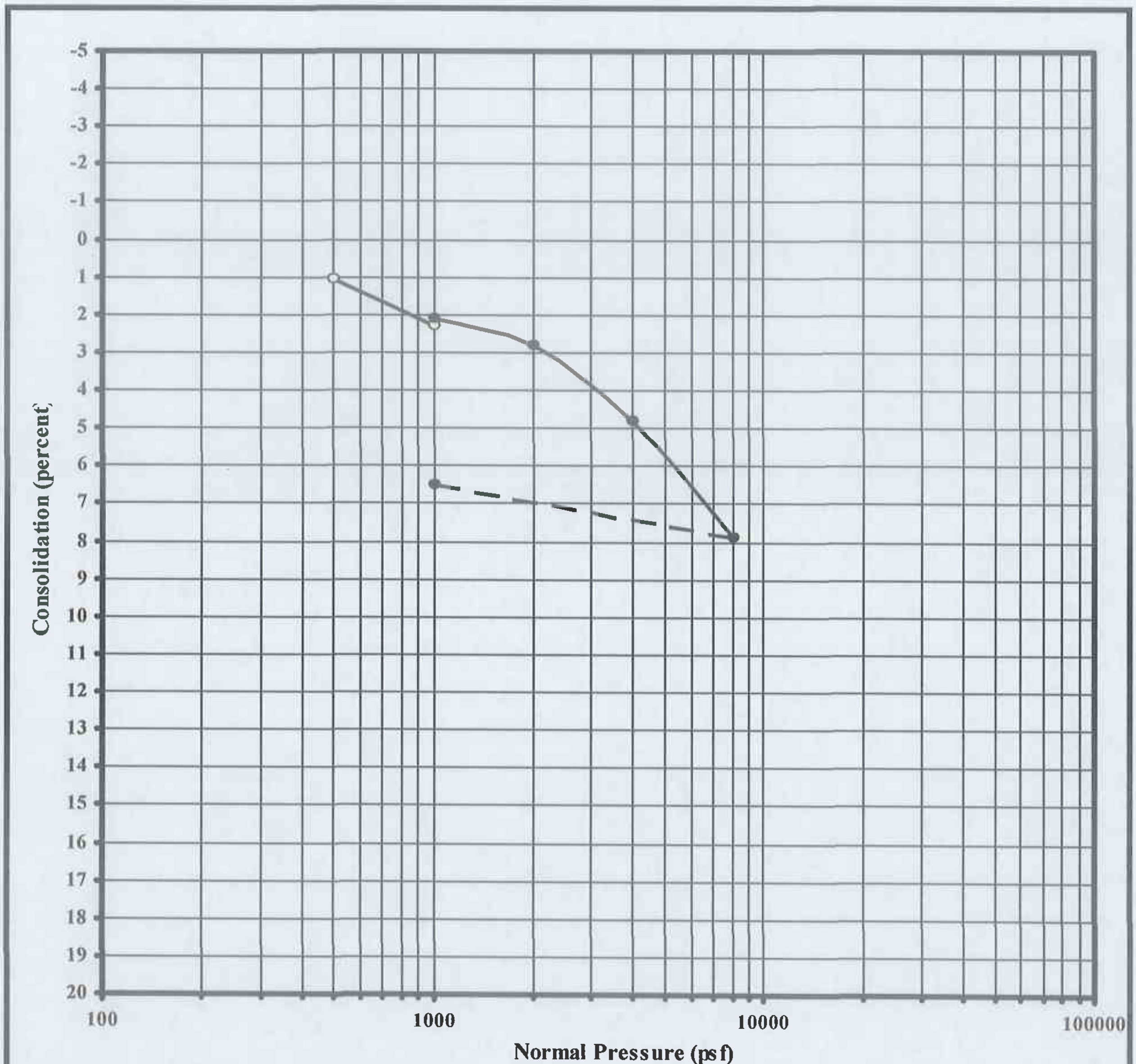
* Considers Methodology Proposed by Bray and Sancio (2006) for fine-grained soils:

Loose soils with PI < 12 and w/LL > 0.85 are considered susceptible to liquefaction
Loose soils with 12 < PI < 18 and w/LL > 0.8 are considered more resistant
Soils with PI > 18 at low effective confining stresses are considered not susceptible

Santa Monica College - AET/KCRW W.O. 8266.009

CONSOLIDATION RESULTS

Undisturbed Sample



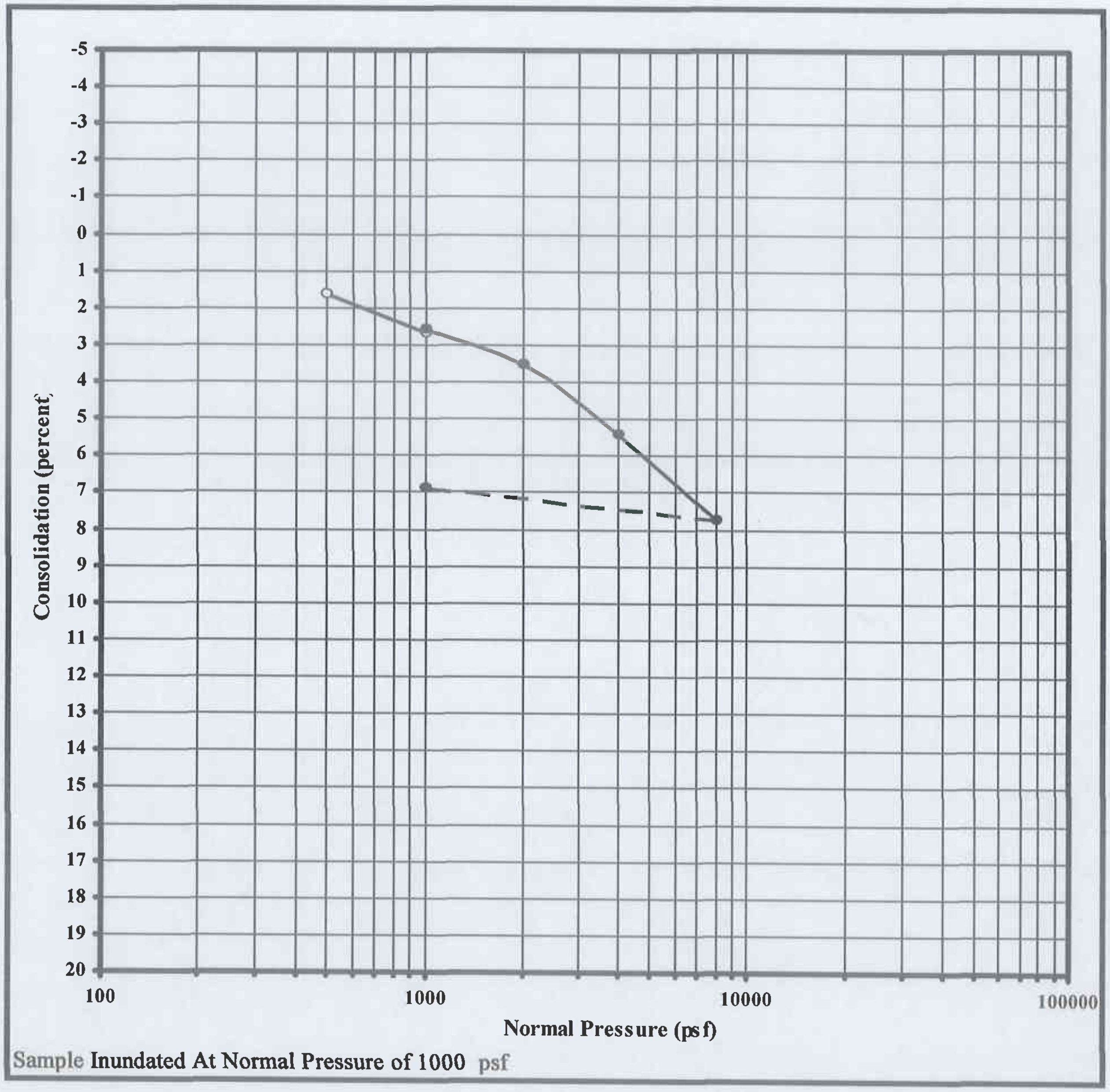
Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B01
Sample Depth: 5 ft.
Initial Moisture: 18.2 %
Init. Dry Density: 106.1 pcf

Geologic Unit: Artificial Fill
Material: sandy lean CLAY

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Location: B01

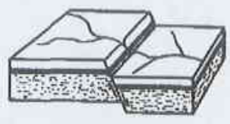
Sample Depth: 10 ft.

Initial Moisture: 13.1 %

Init. Dry Density: 116.8 pcf

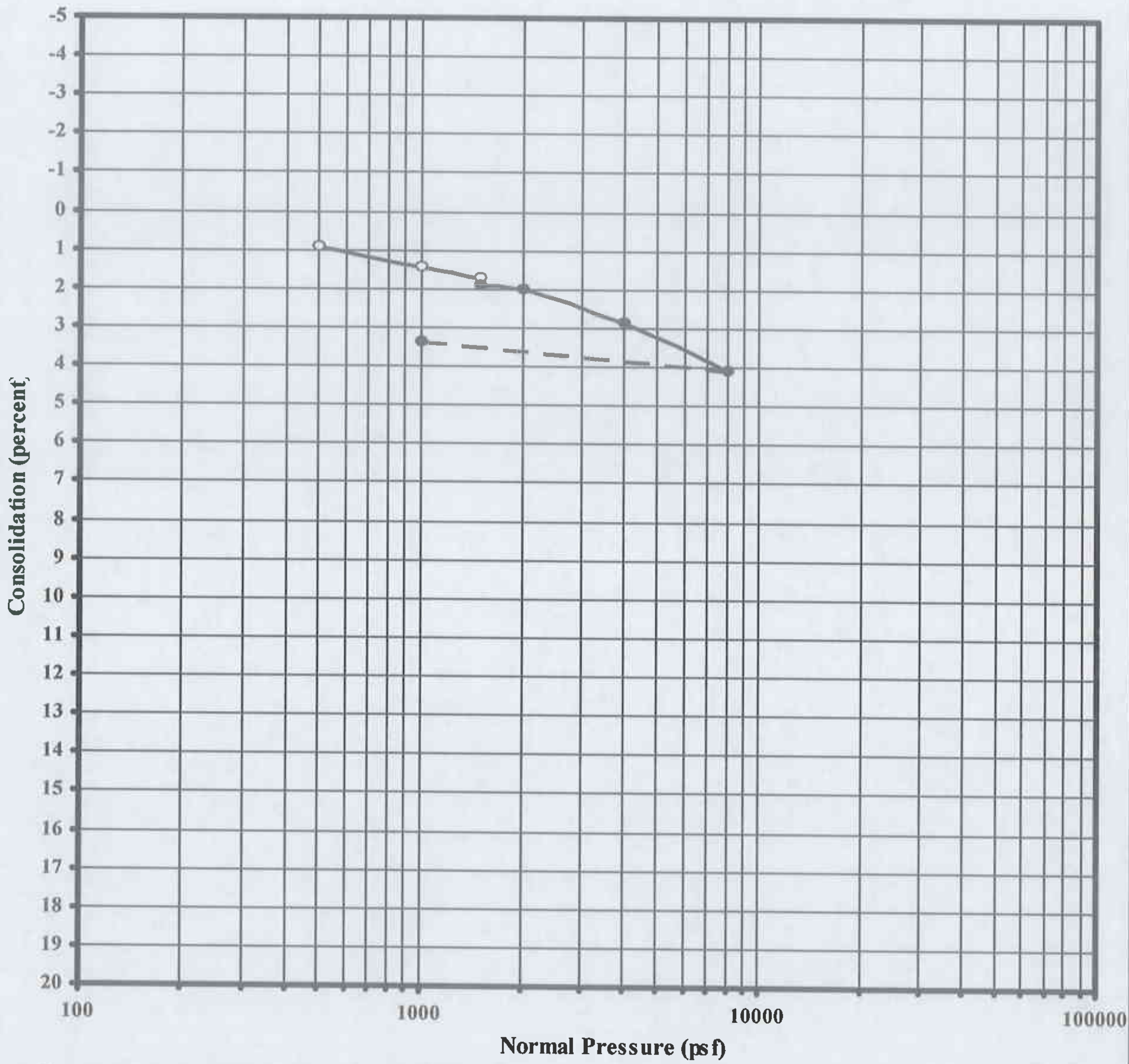
Geologic Unit: Artificial Fill

Material: gravelly fat CLAY



CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1500 psf

Sample Location: B01

Sample Depth: 15 ft.

Initial Moisture: 11.2 %

Init. Dry Density: 125 pcf

Geologic Unit: Artificial Fill

Material: gravelly lean CLAY with sand

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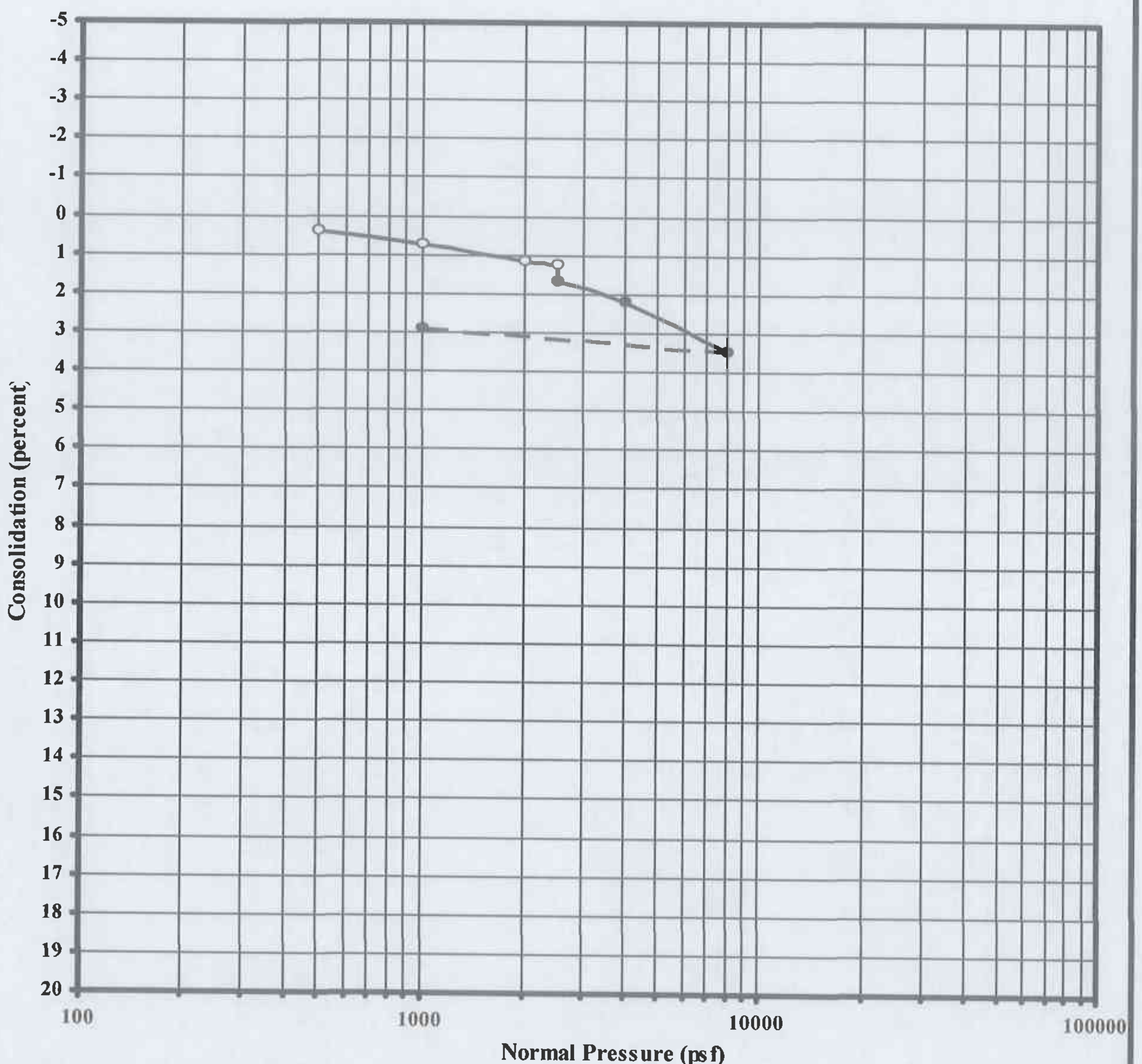
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 2500 psf

Sample Location: B01

Sample Depth: 25 ft.

Initial Moisture: 11.7 %

Init. Dry Density: 117.1 pcf

Geologic Unit: Artificial Fill

Material: sandy lean CLAY

GEOLABS-WESTLAKE VILLAGE

PLATE C-B01.25

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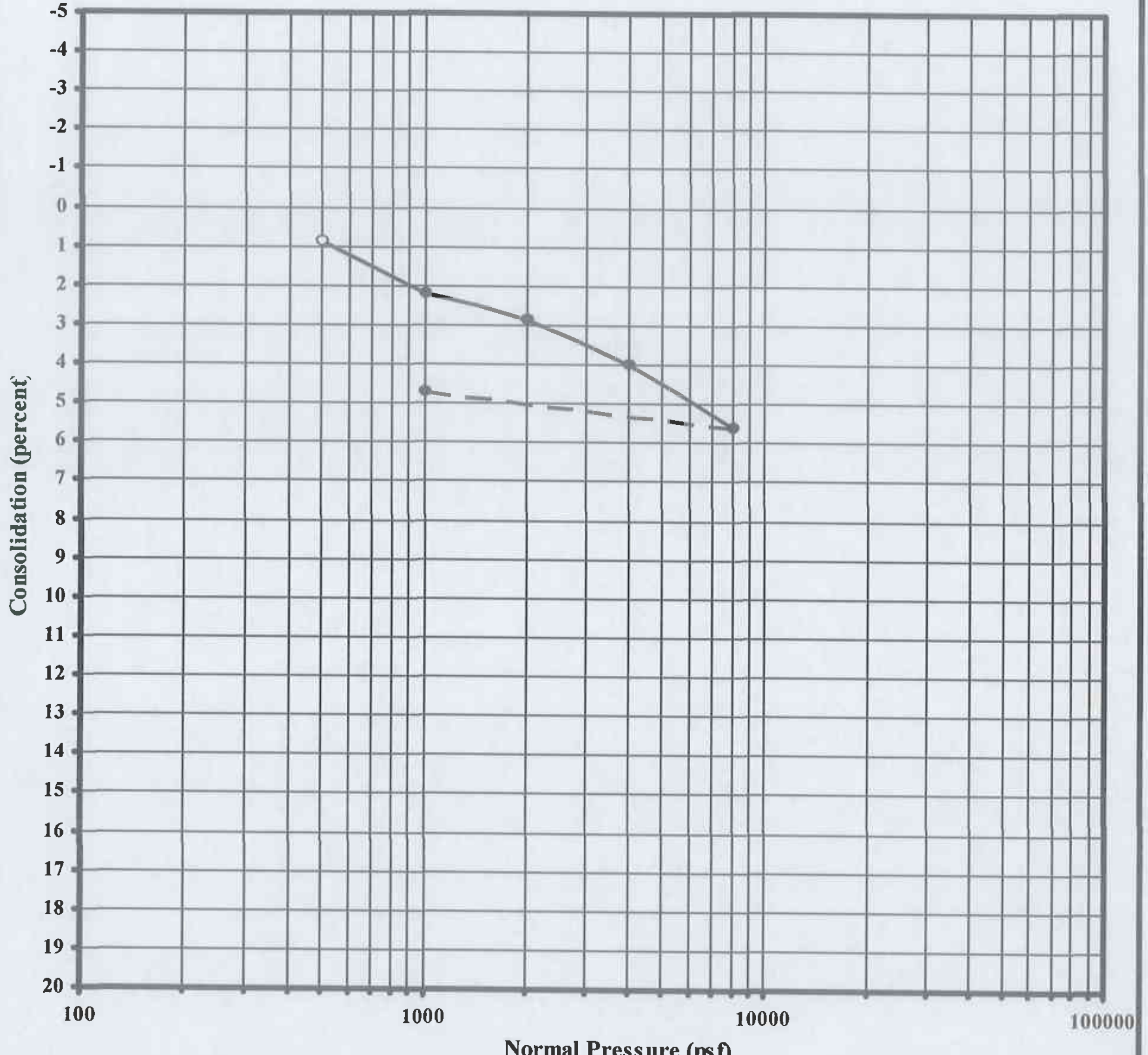
CONSOLIDATION RESULTS

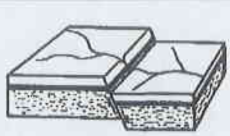
Undisturbed Sample



Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B02
Sample Depth: 7.5 ft.
Initial Moisture: 10.1 %
Init. Dry Density: 127.3 pcf

Geologic Unit: Artificial Fill
Material: clayey GRAVEL

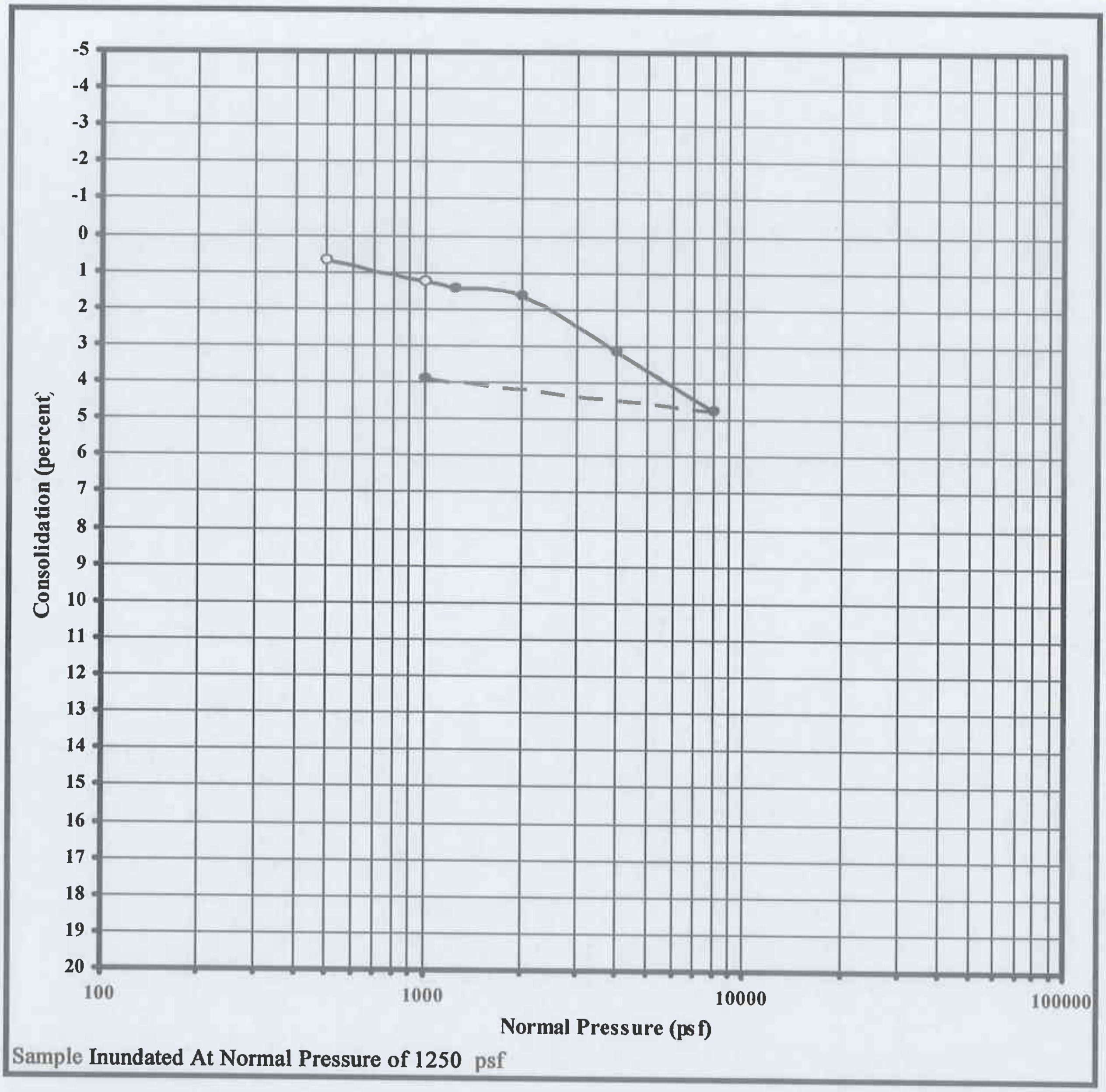


GEOLABS-WESTLAKE VILLAGE

PLATE C-B02.7.5

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Location: B02

Sample Depth: 12.5 ft.

Initial Moisture: 15.5 %

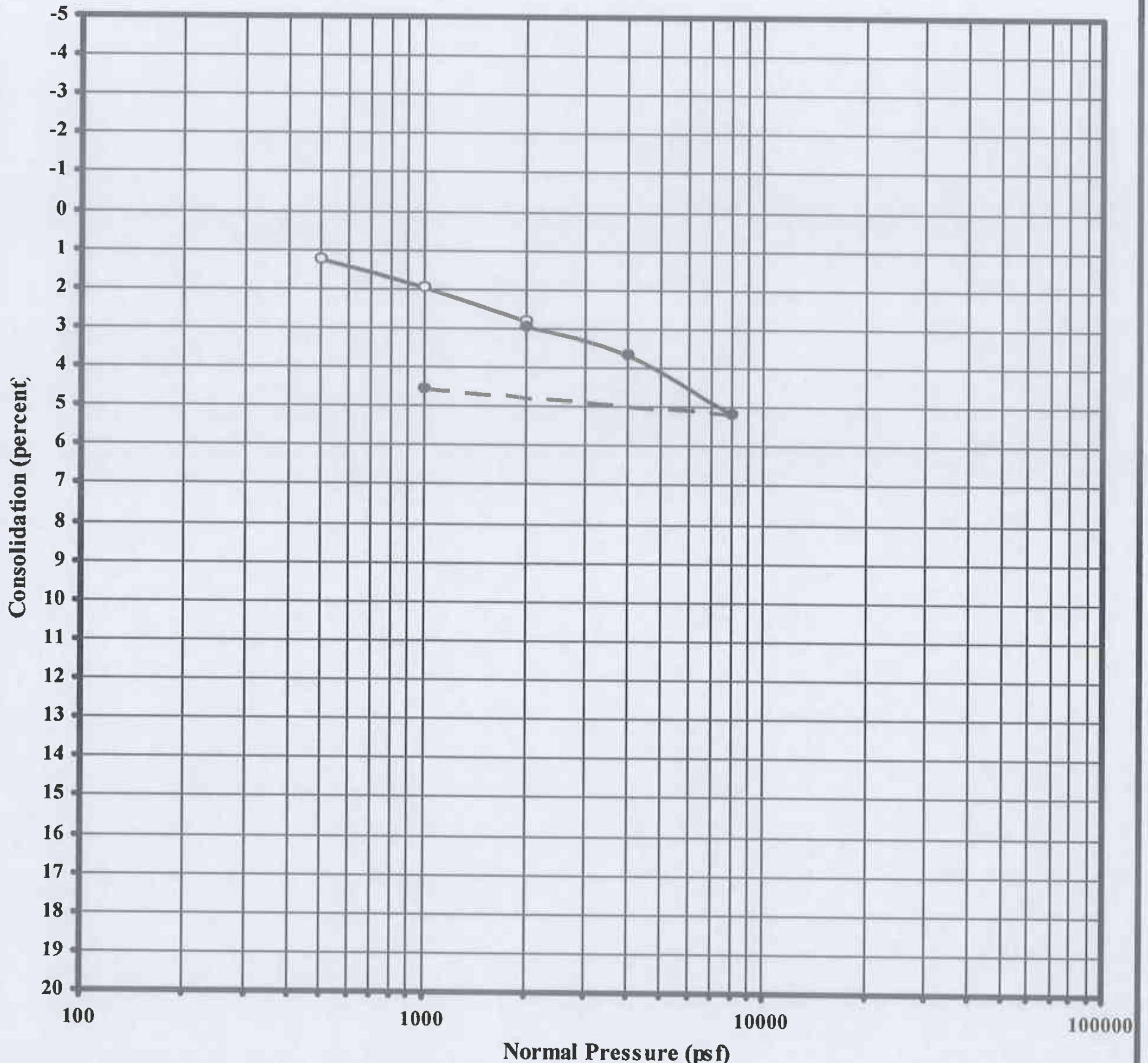
Init. Dry Density: 117.3 pcf

Geologic Unit: Artificial Fill

Material: clayey GRAVEL

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 2000 psf

Sample Location: B02

Sample Depth: 20 ft.

Initial Moisture: 13.1 %

Init. Dry Density: 118.3 pcf

Geologic Unit: Artificial Fill

Material: clayey GRAVEL

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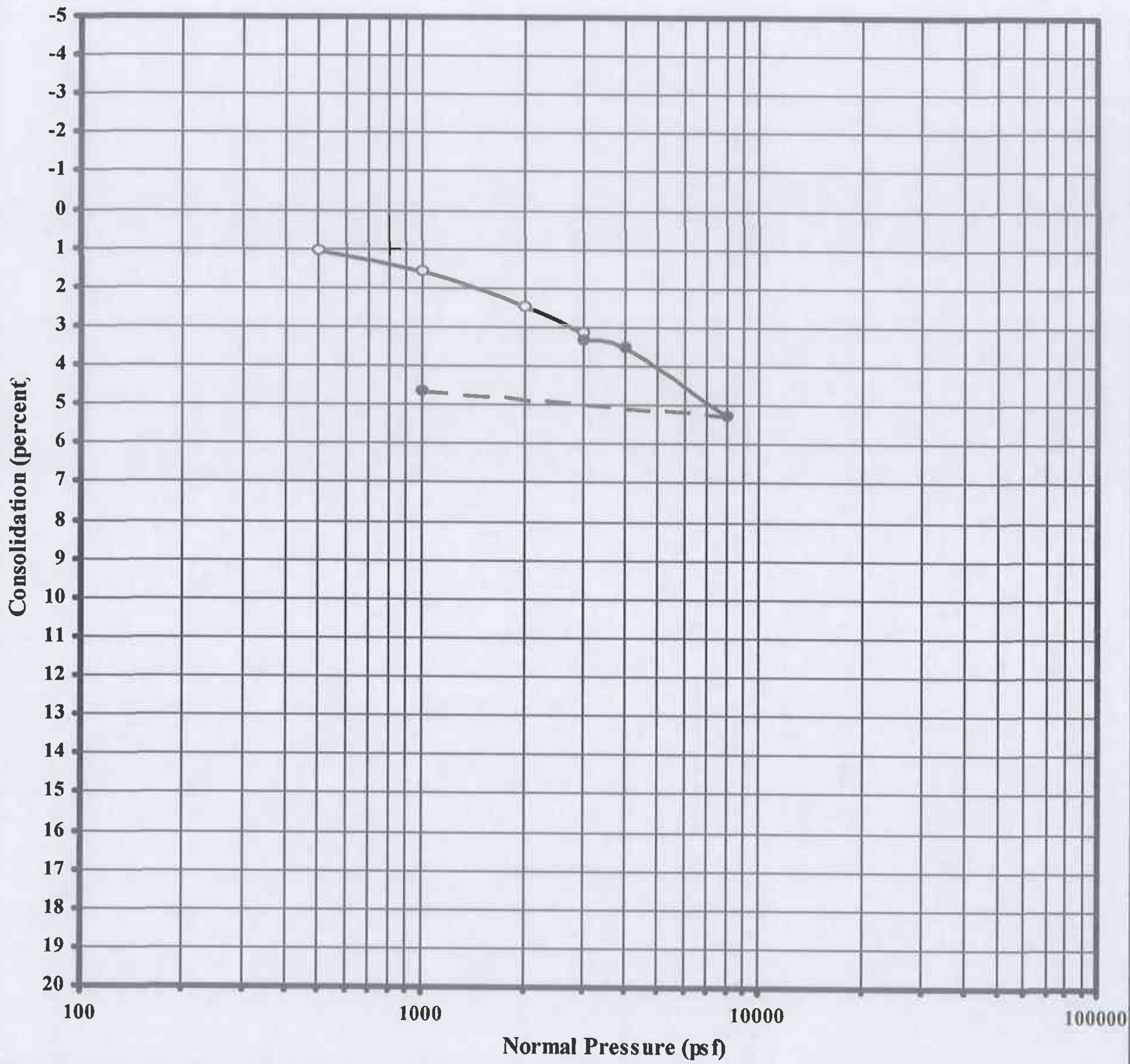
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 3000 psf

Sample Location: B02

Sample Depth: 30 ft.

Initial Moisture: 17.1 %

Init. Dry Density: 113.7 pcf

Geologic Unit: Artificial Fill

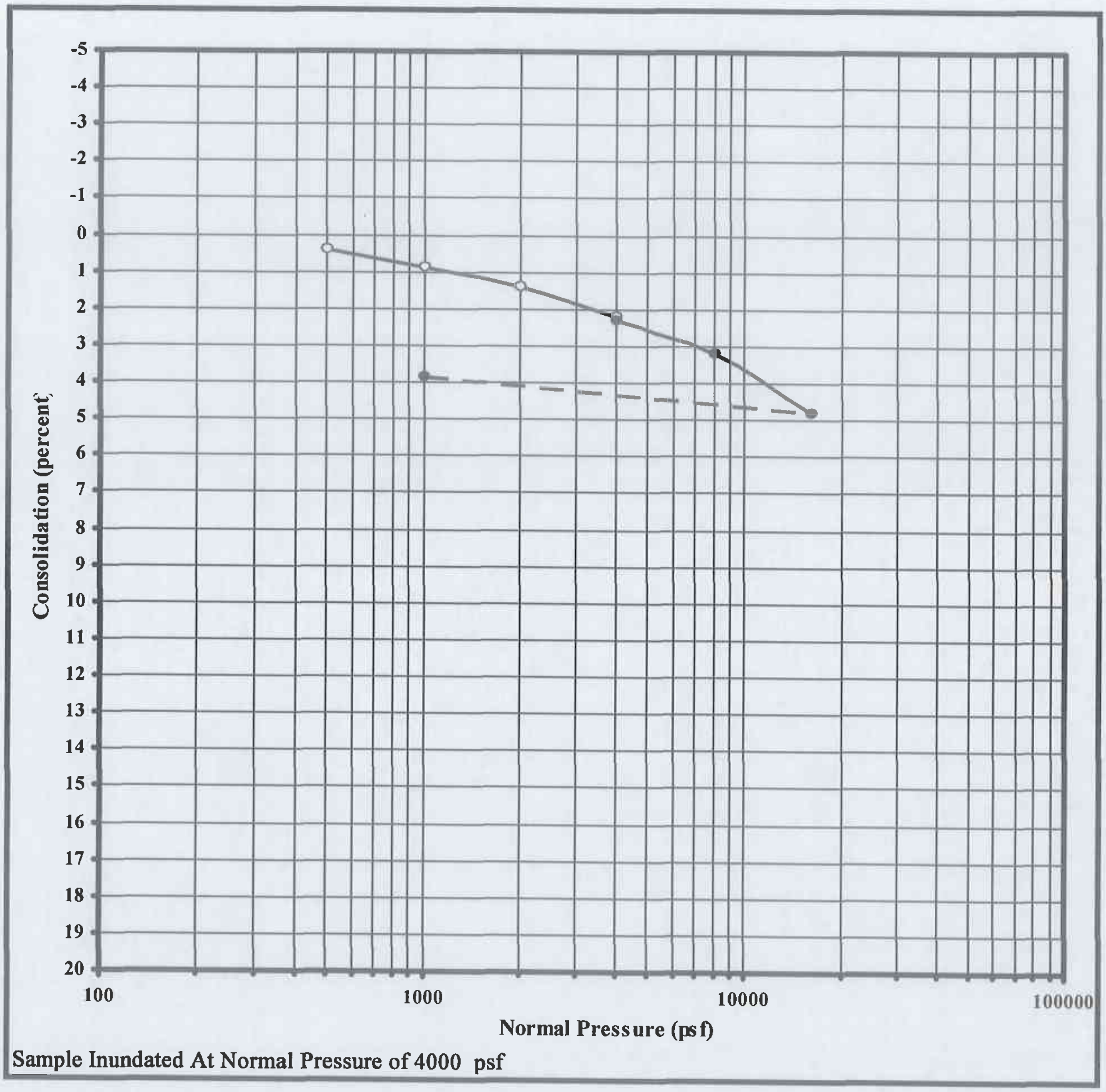
Material: gravelly lean CLAY

GEOLABS-WESTLAKE VILLAGE

PLATE C-B02.30

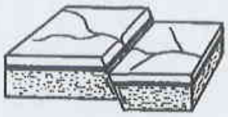
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Location: B02
Sample Depth: 40 ft.
Initial Moisture: 8.7 %
Init. Dry Density: 125.2 pcf

Geologic Unit: Artificial Fill
Material: clayey SAND



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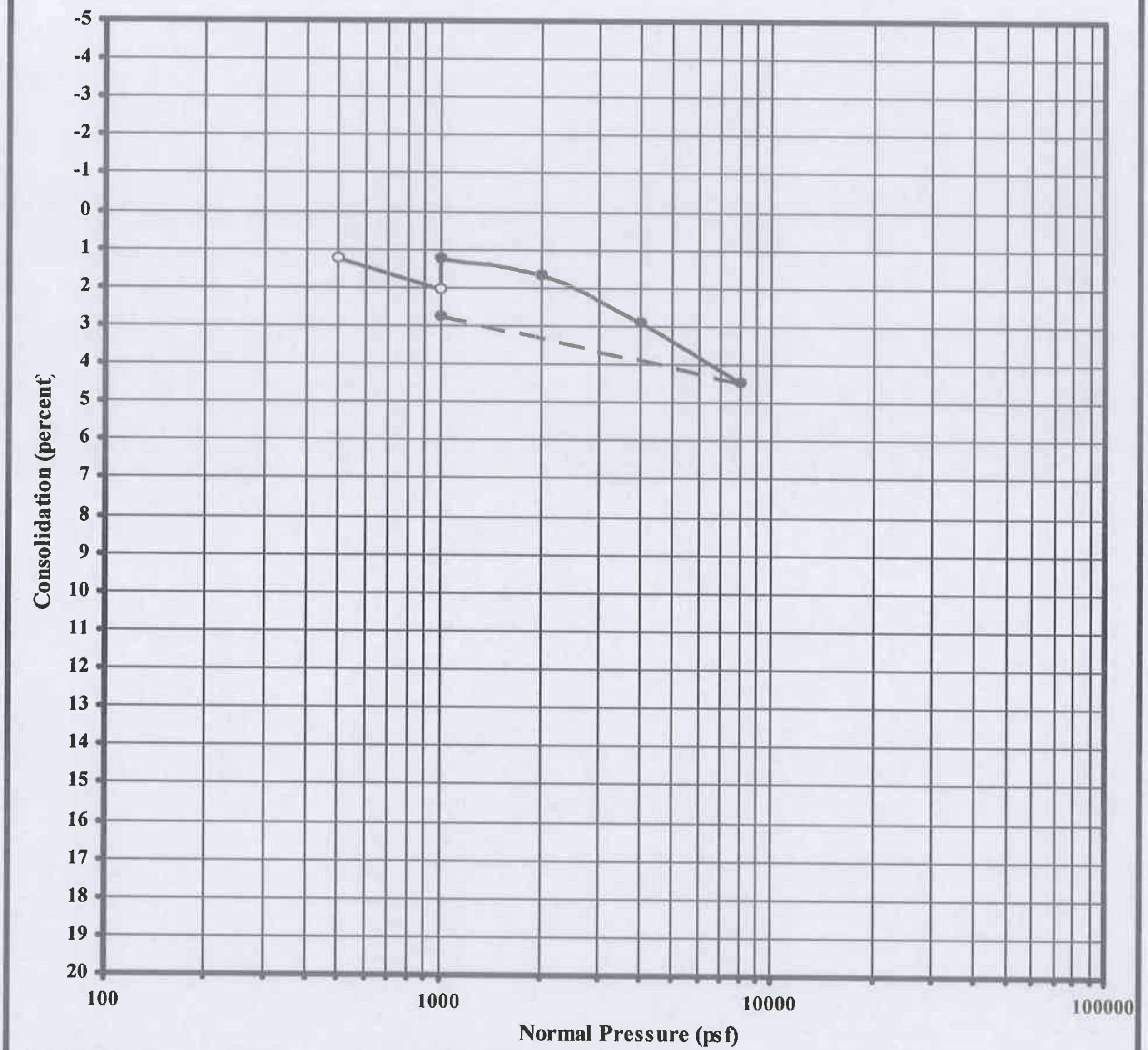
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B03

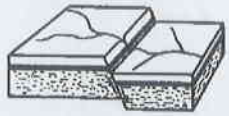
Sample Depth: 10 ft.

Initial Moisture: 13.8 %

Init. Dry Density: 118.1 pcf

Geologic Unit: Artificial Fill

Material: sandy lean CLAY



GEOLABS-WESTLAKE VILLAGE

PLATE C-B03.10

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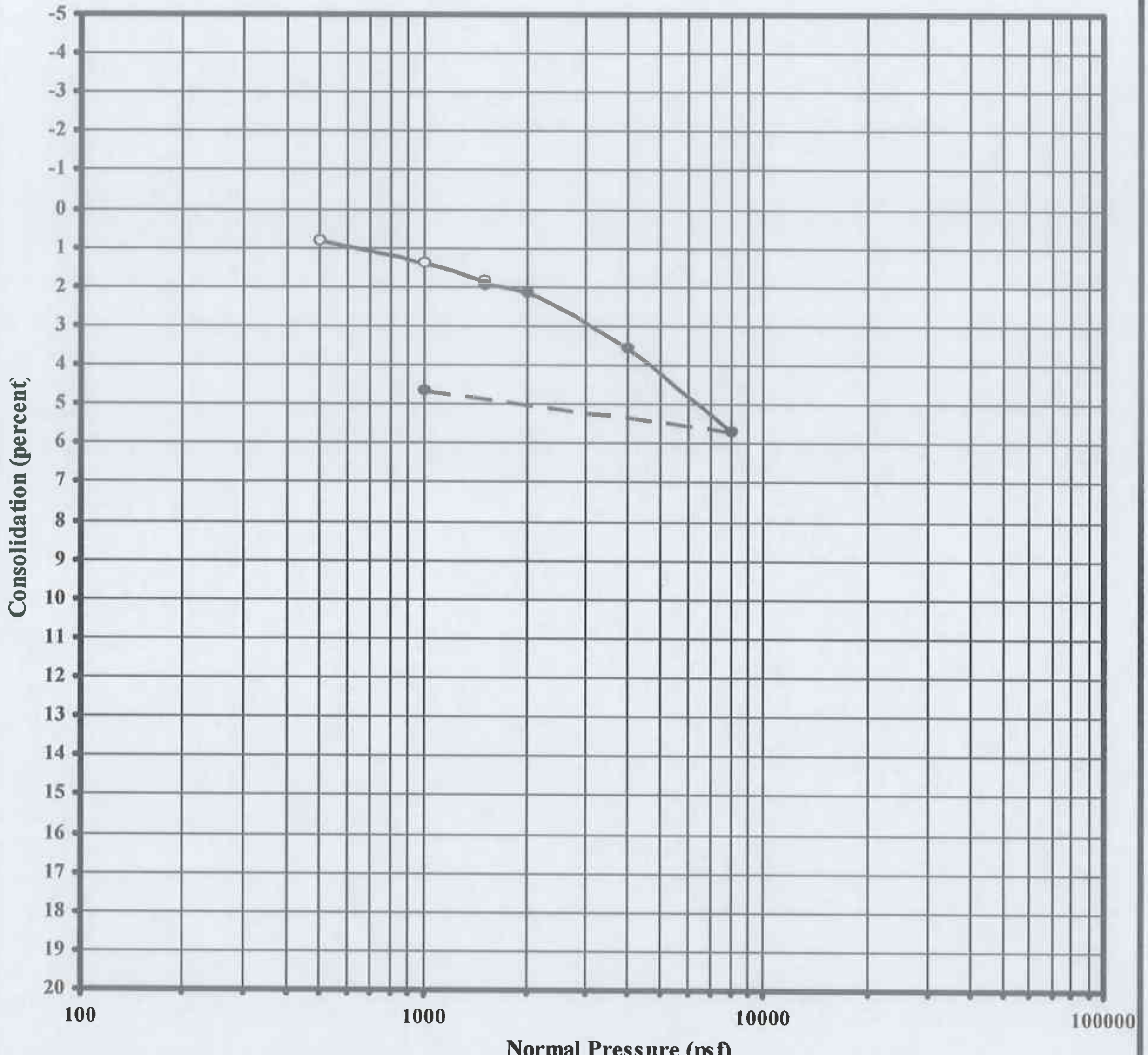
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1500 psf

Sample Location: B03

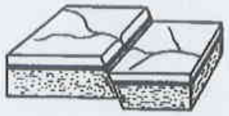
Sample Depth: 15 ft.

Initial Moisture: 12.7 %

Init. Dry Density: 118.3 pcf

Geologic Unit: Artificial Fill

Material: clayey SAND

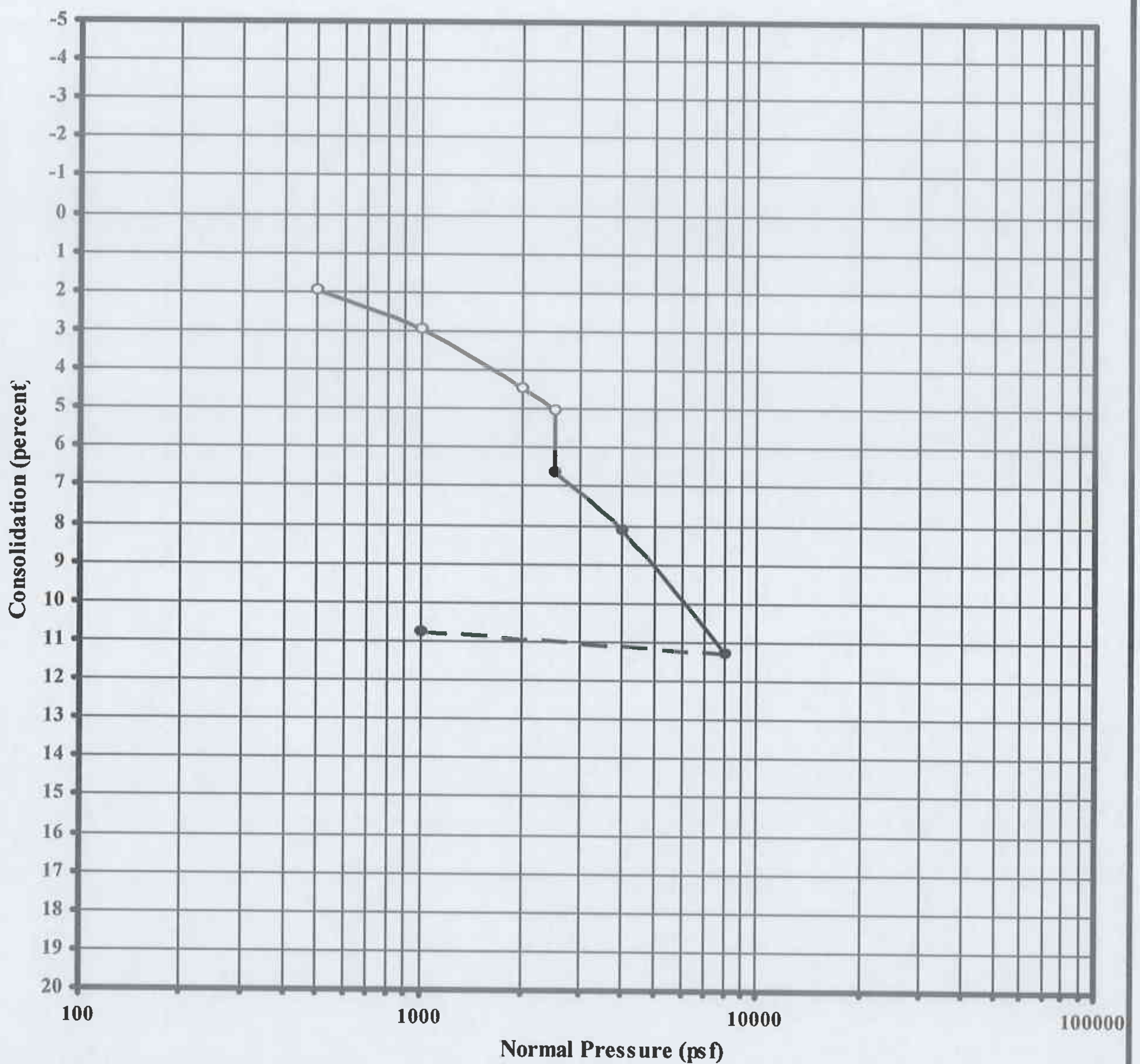


GEOLABS-WESTLAKE VILLAGE

PLATE C-B03.15

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 2500 psf

Sample Location: B03

Sample Depth: 25 ft.

Initial Moisture: 11.1 %

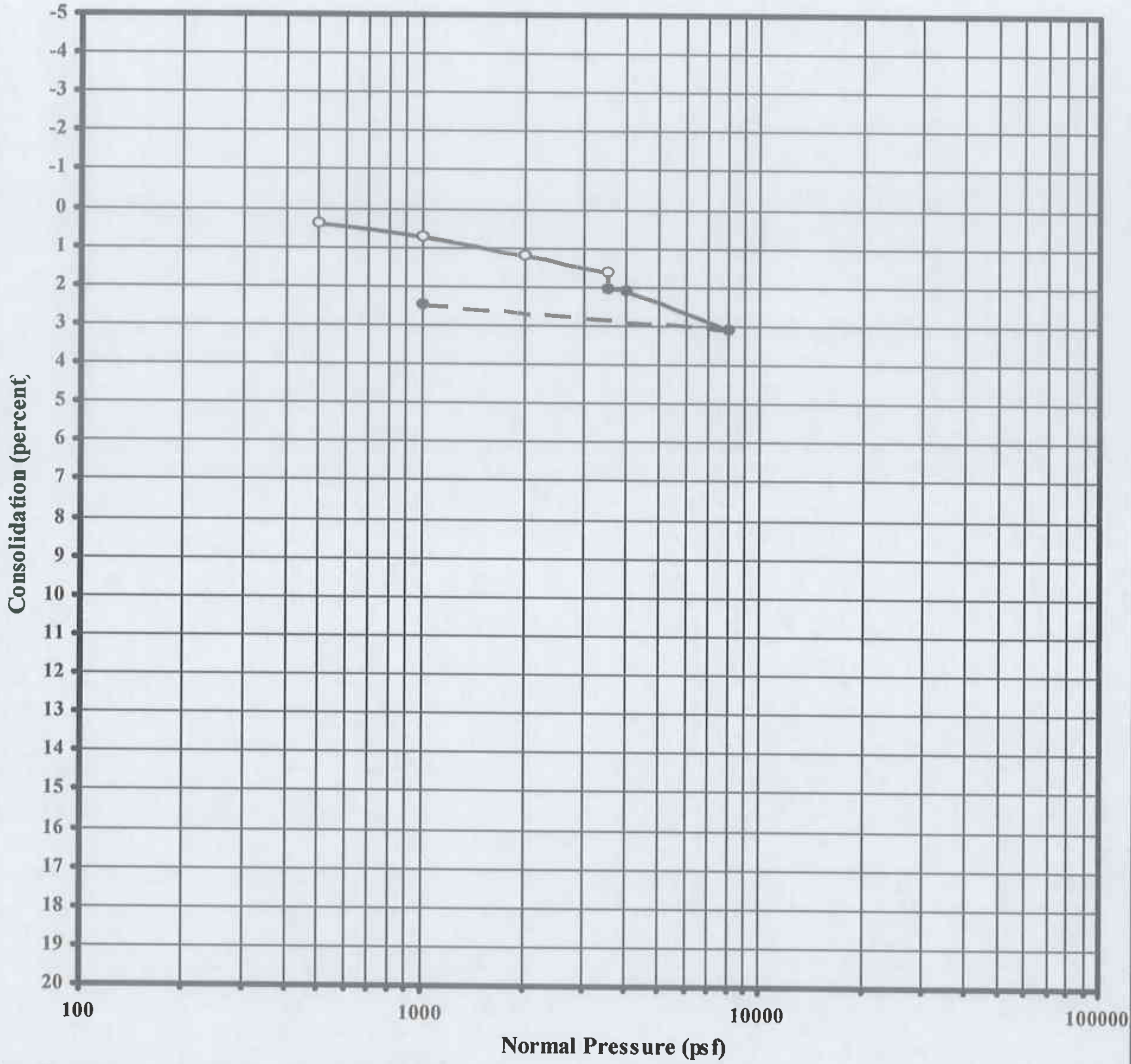
Init. Dry Density: 100.6 pcf

Geologic Unit: Artificial Fill

Material: clayey SAND

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 3500 psf

Sample Location: B03

Sample Depth: 35 ft.

Initial Moisture: 9.5 %

Init. Dry Density: 131.6 pcf

Geologic Unit: Artificial Fill

Material: clayey GRAVEL with sand

GEOLABS-WESTLAKE VILLAGE

PLATE C-B03.35

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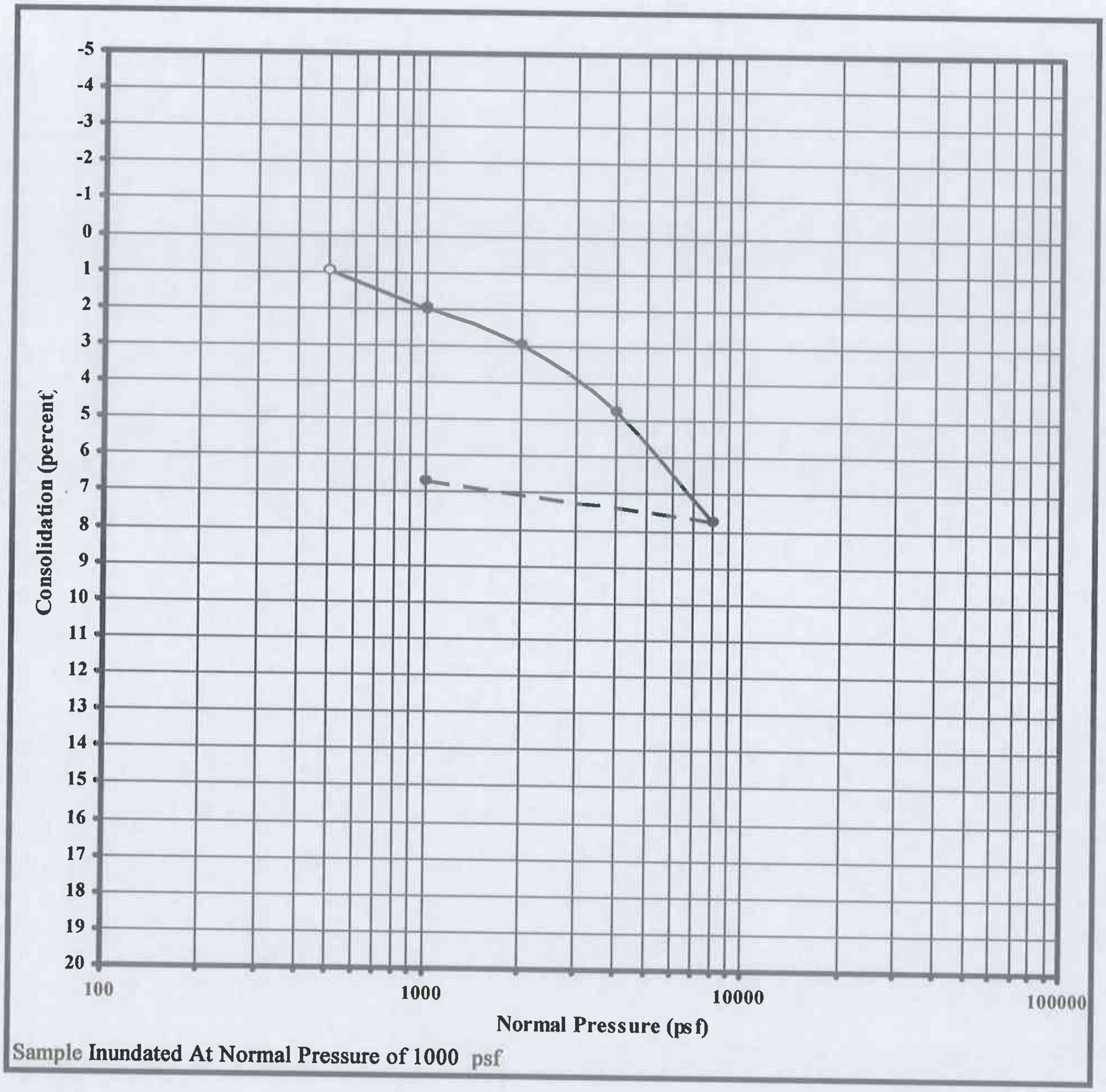
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Location: B05

Sample Depth: 5 ft.

Initial Moisture: 22.9 %

Init. Dry Density: 102.5 pcf

Geologic Unit: Artificial Fill

Material: lean CLAY with sand

GEOLABS-WESTLAKE VILLAGE

PLATE C-B05.5

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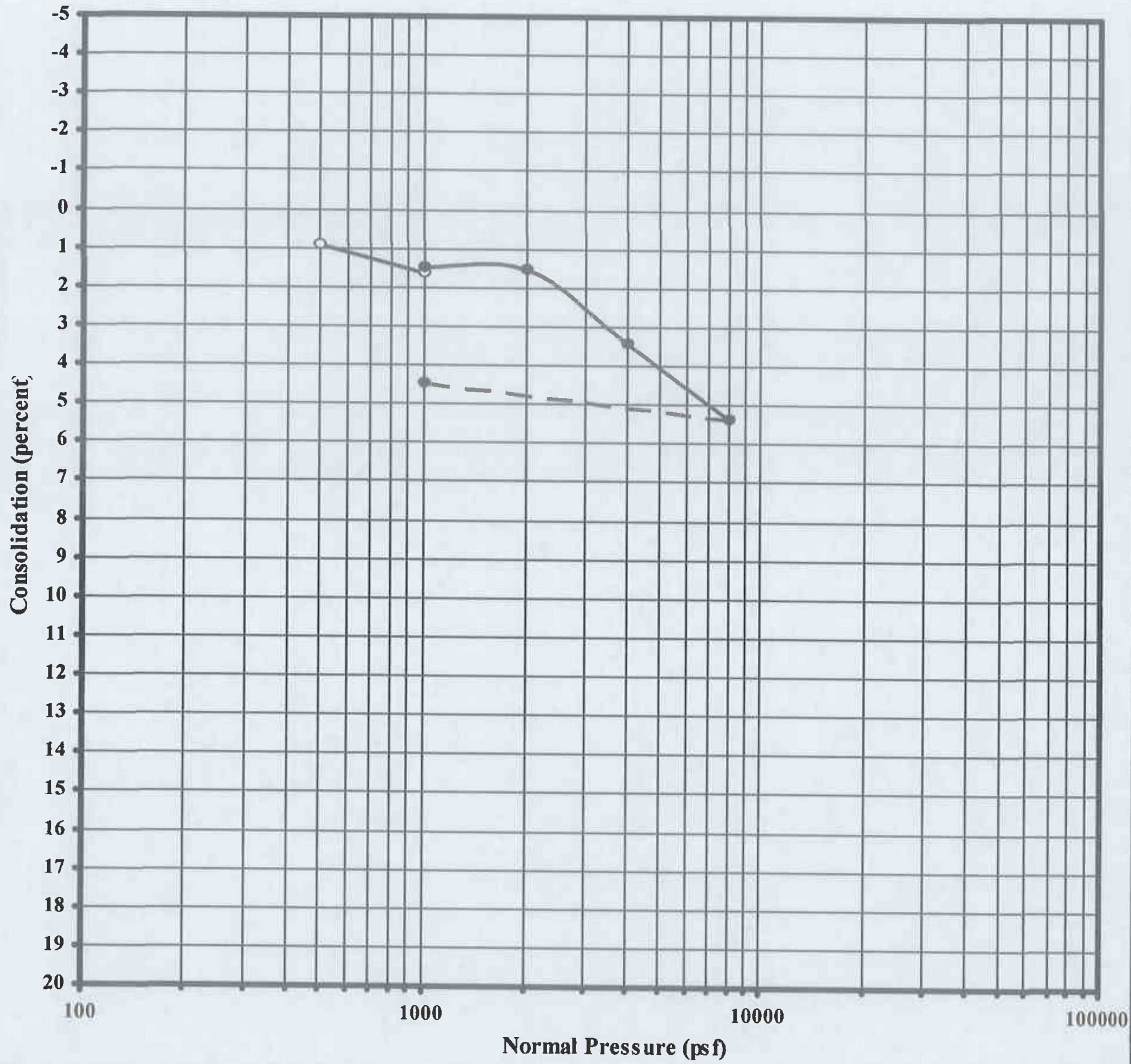
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B05

Sample Depth: 10 ft.

Initial Moisture: 17 %

Init. Dry Density: 113.1 pcf

Geologic Unit: Artificial Fill

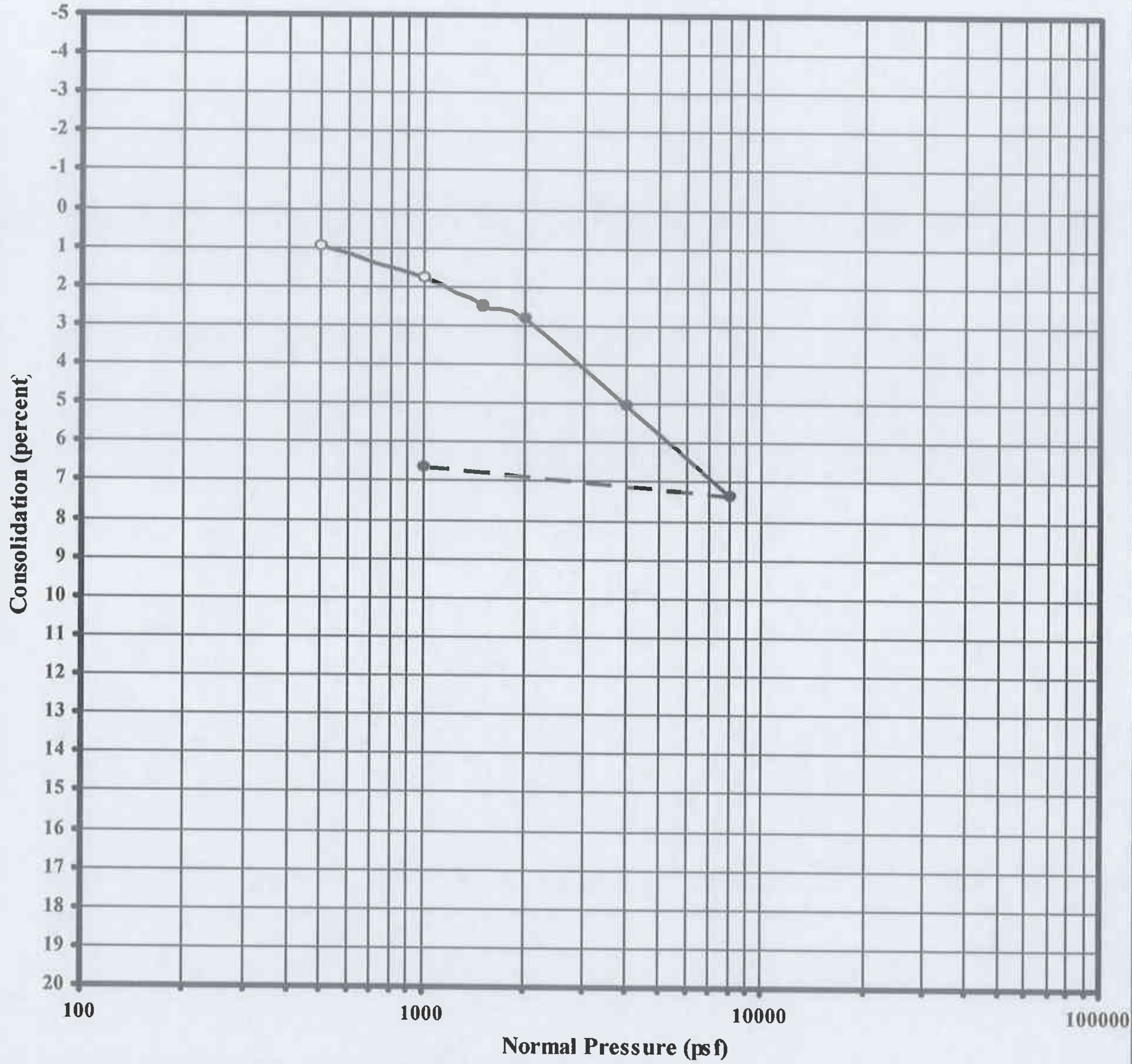
Material: gravelly lean CLAY

GEOLABS-WESTLAKE VILLAGE

PLATE C-B05.10

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1500 psf

Sample Location: B05
Sample Depth: 15 ft.
Initial Moisture: 17.5 %
Init. Dry Density: 106.7 pcf

Geologic Unit: Artificial Fill
Material: gravelly lean CLAY with sand

GEOLABS-WESTLAKE VILLAGE

PLATE C-B05.15

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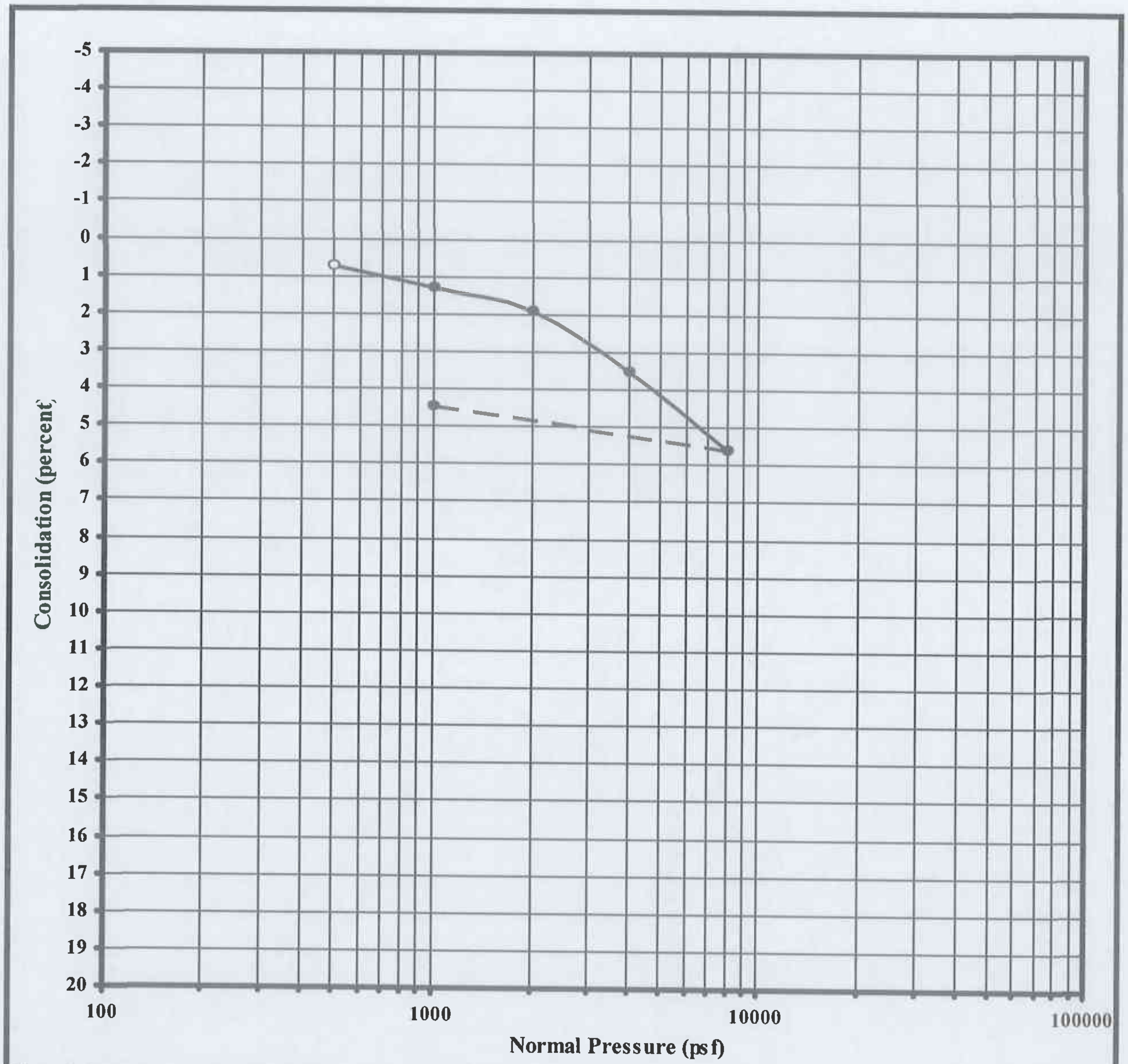
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B07

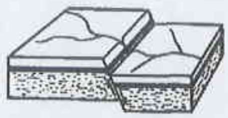
Sample Depth: 7.5 ft.

Initial Moisture: 14.8 %

Init. Dry Density: 114.8 pcf

Geologic Unit: Artificial Fill

Material: sandy lean CLAY



GEOLABS-WESTLAKE VILLAGE

PLATE C-B07.7.5

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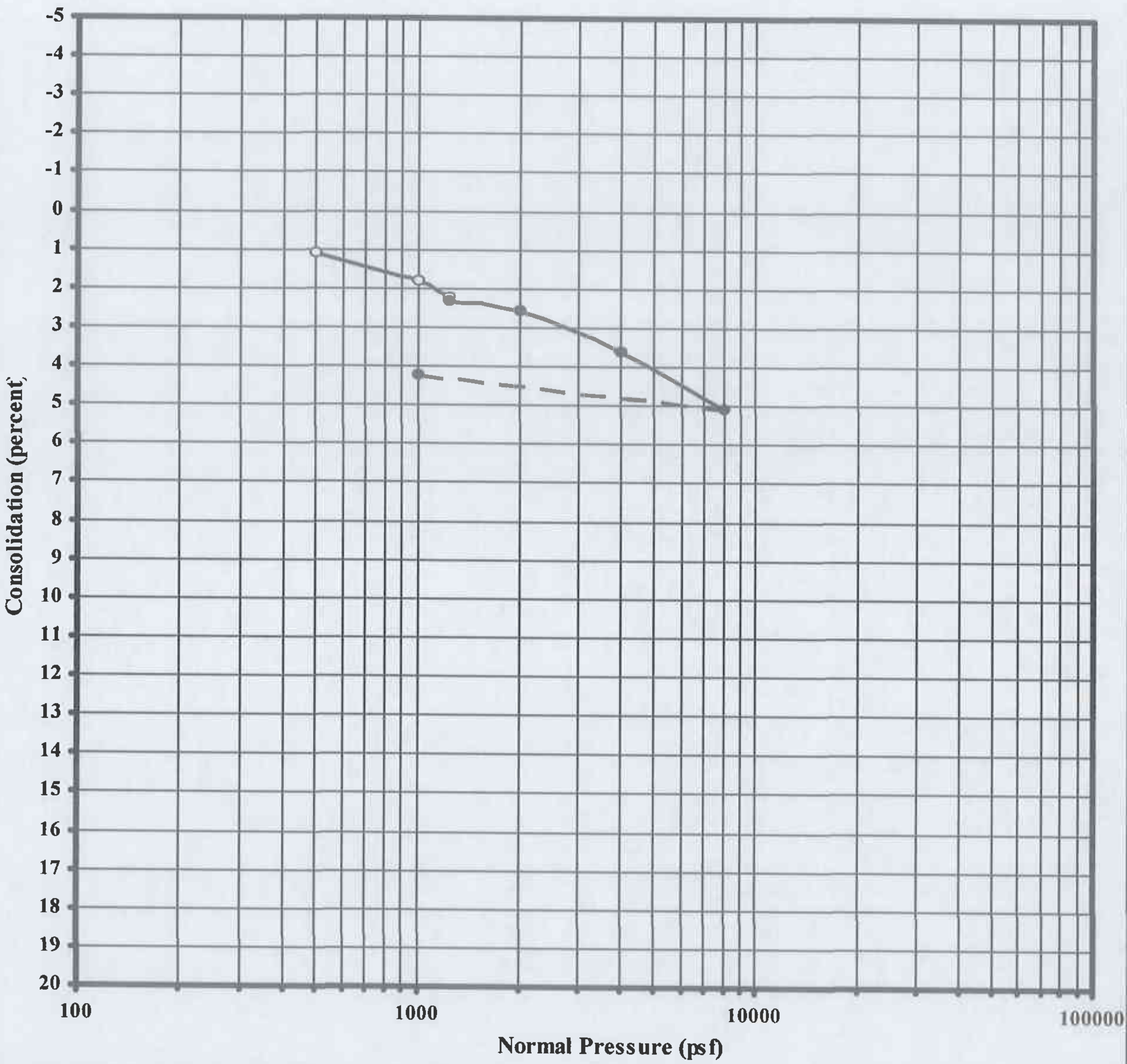
CONSOLIDATION RESULTS

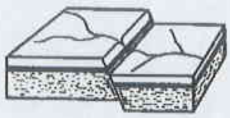
Undisturbed Sample



Sample Inundated At Normal Pressure of 1250 psf

Sample Location: B07
Sample Depth: 12.5 ft.
Initial Moisture: 13.9 %
Init. Dry Density: 120.1 pcf

Geologic Unit: Artificial Fill
Material: gravelly lean CLAY

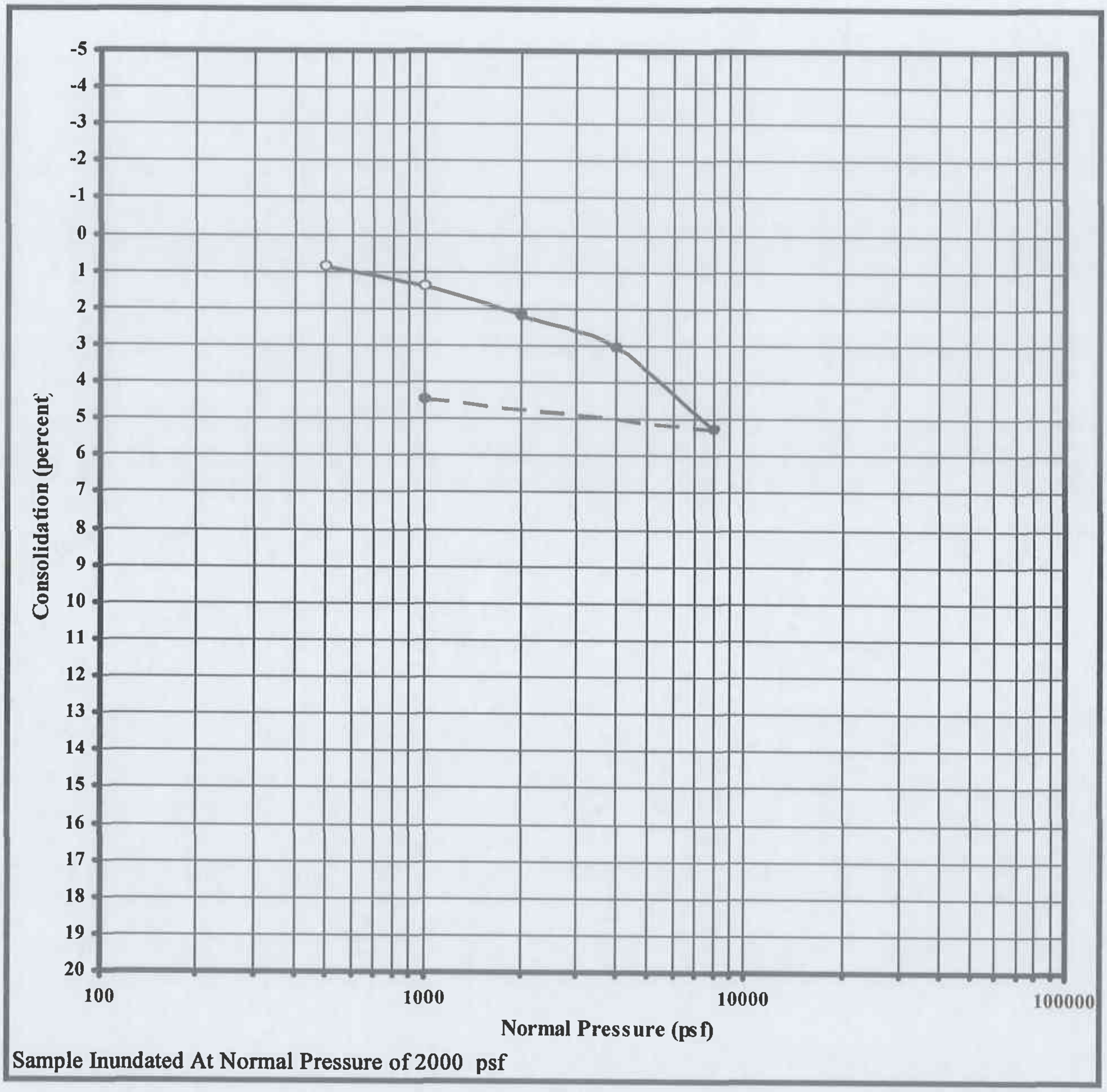


GEOLABS-WESTLAKE VILLAGE

PLATE C-B07.12.5

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Location: B07
Sample Depth: 20 ft.
Initial Moisture: 16.6 %
Init. Dry Density: 113 pcf

Geologic Unit: Artificial Fill
Material: clayey GRAVEL with sand

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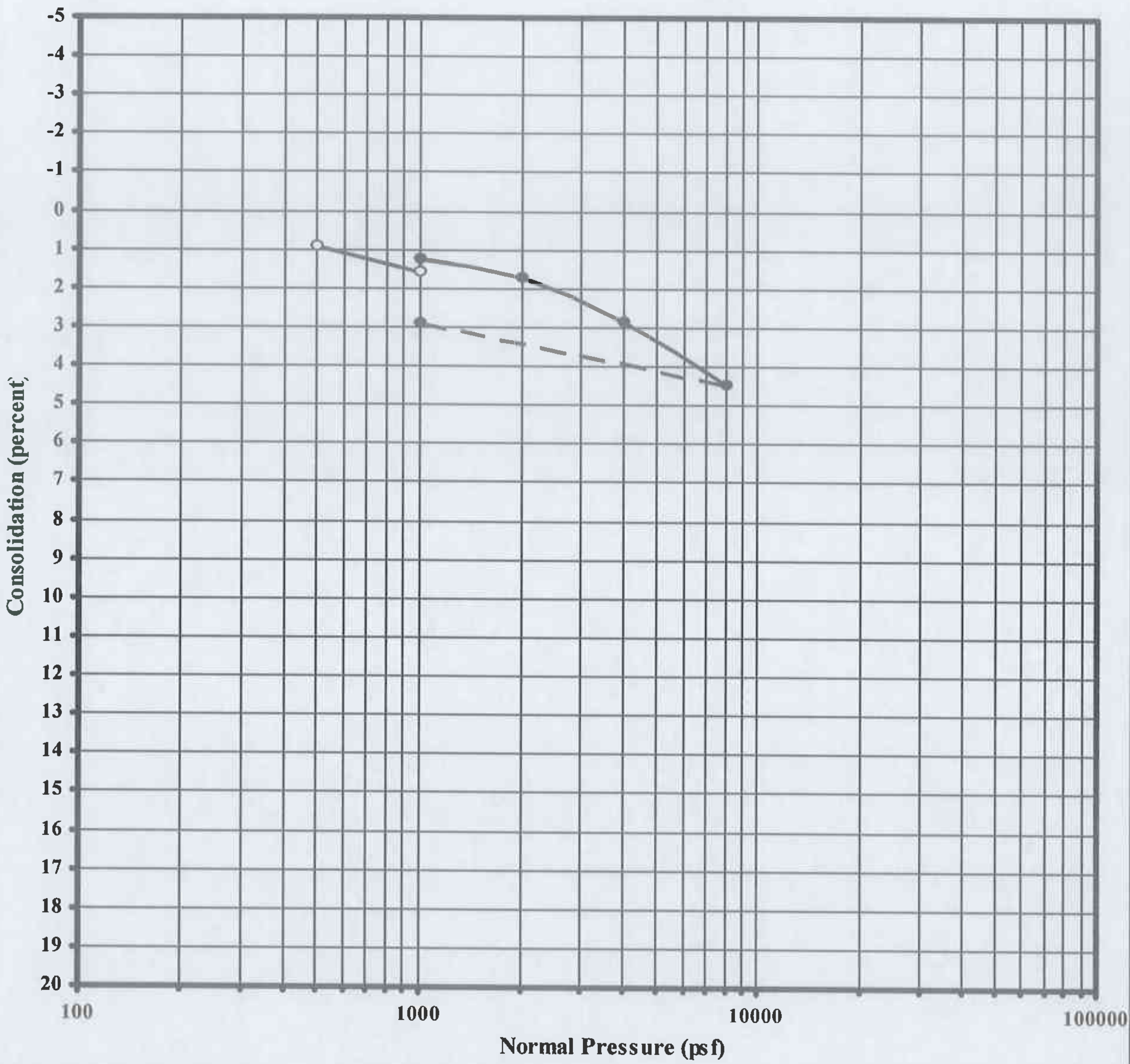
CONSOLIDATION RESULTS

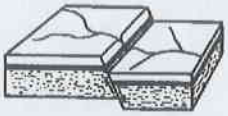
Undisturbed Sample



Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B08
Sample Depth: 7.5 ft.
Initial Moisture: 18.6 %
Init. Dry Density: 109.5 pcf

Geologic Unit: Artificial Fill
Material: grvelly CLAY

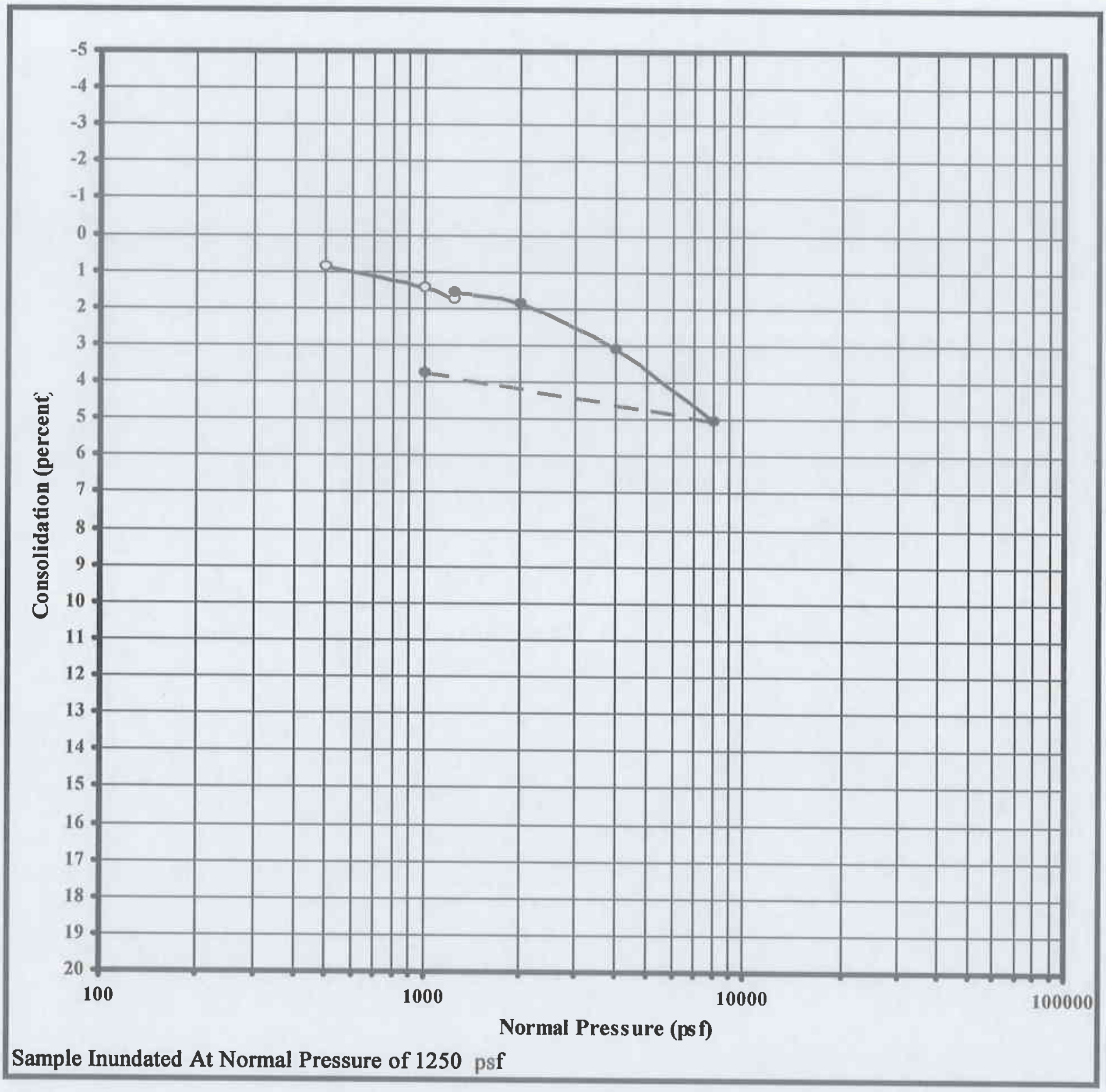


GEOLABS-WESTLAKE VILLAGE

PLATE C-B08.7.5

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Location: B08

Sample Depth: 12.5 ft.

Initial Moisture: 14.5 %

Init. Dry Density: 114.8 pcf

Geologic Unit: Artificial Fill

Material: sandy CLAY with gravel

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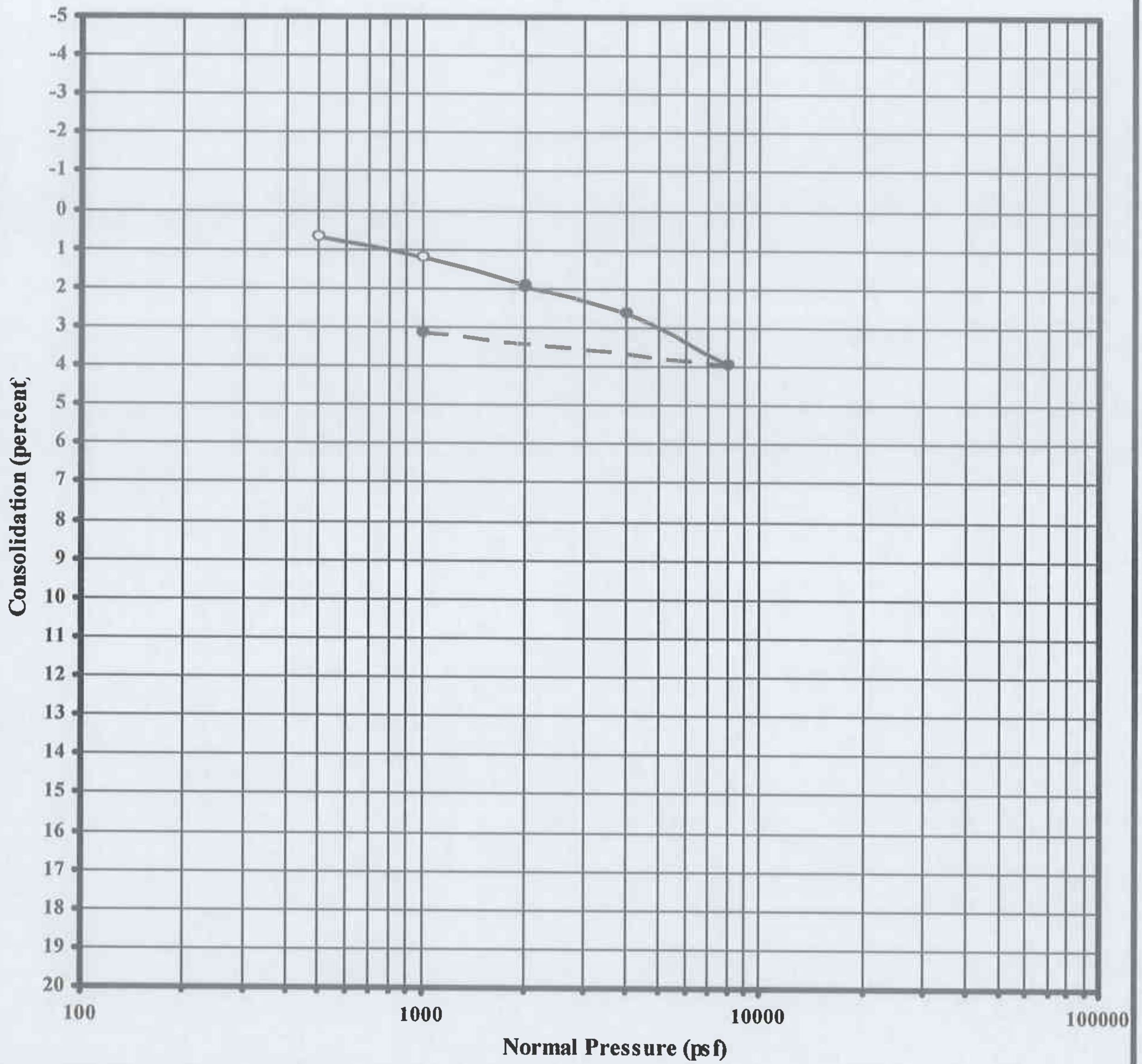
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 2000 psf

Sample Location: B08

Sample Depth: 20 ft.

Initial Moisture: 14.2 %

Init. Dry Density: 118.6 pcf

Geologic Unit: Artificial Fill

Material: clayey GRAVEL with sand

GEOLABS-WESTLAKE VILLAGE

PLATE C-B08.20

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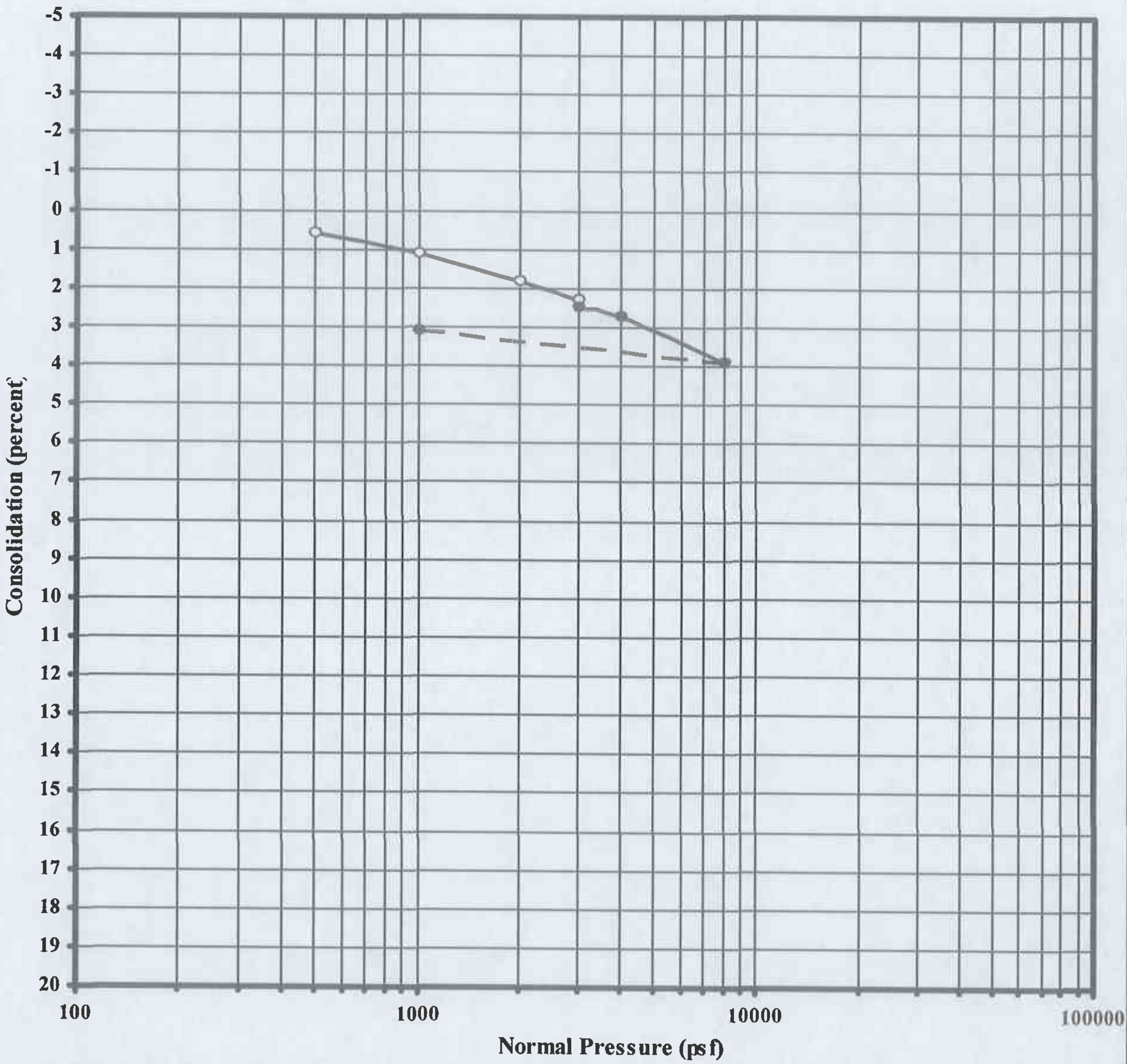
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 3000 psf

Sample Location: B08

Sample Depth: 30 ft.

Initial Moisture: 13.3 %

Init. Dry Density: 117.4 pcf

Geologic Unit: Artificial Fill

Material: gravelly CLAY

GEOLABS-WESTLAKE VILLAGE

PLATE C-B08.30

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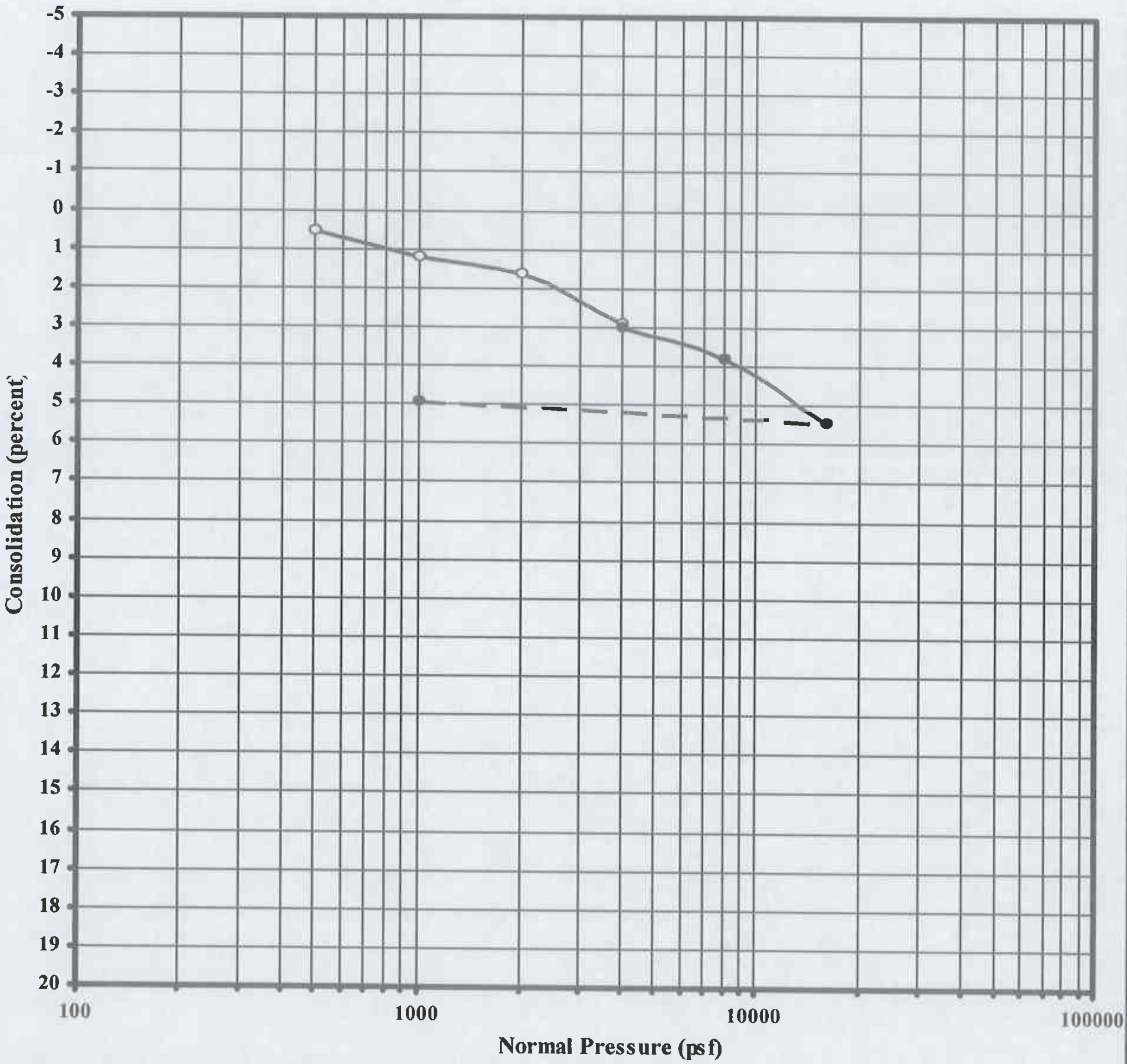
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 4000 psf

Sample Location: B08

Sample Depth: 40 ft.

Initial Moisture: 18.5 %

Init. Dry Density: 111 pcf

Geologic Unit: Alluvium

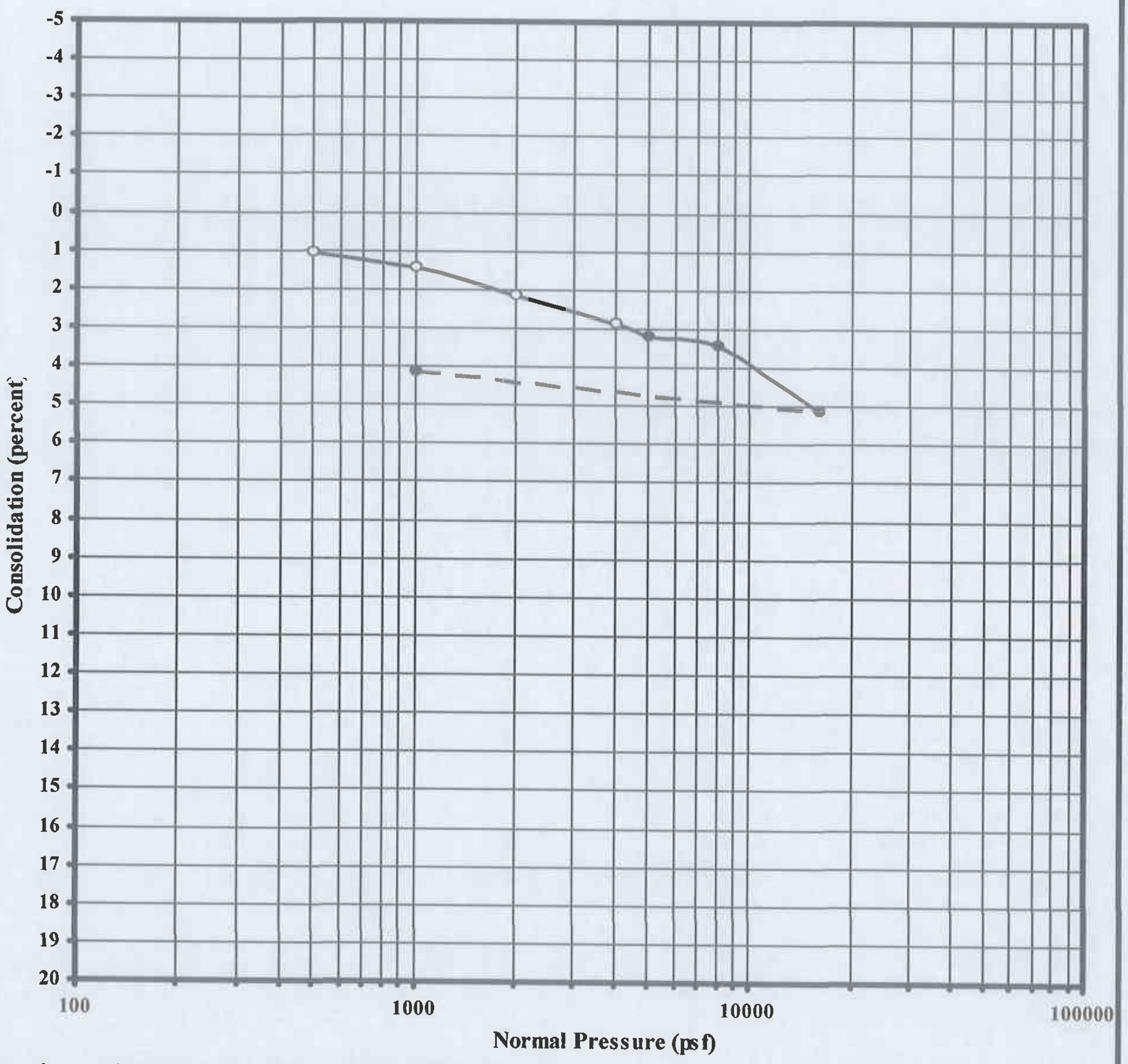
Material: clayey SAND with gravel

GEOLABS-WESTLAKE VILLAGE

PLATE C-B08.40

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 5000 psf

Sample Location: B08

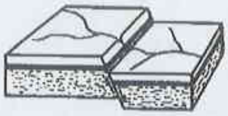
Sample Depth: 50 ft.

Initial Moisture: 13.4 %

Init. Dry Density: 124.4 pcf

Geologic Unit: Alluvium

Material: sandy CLAY



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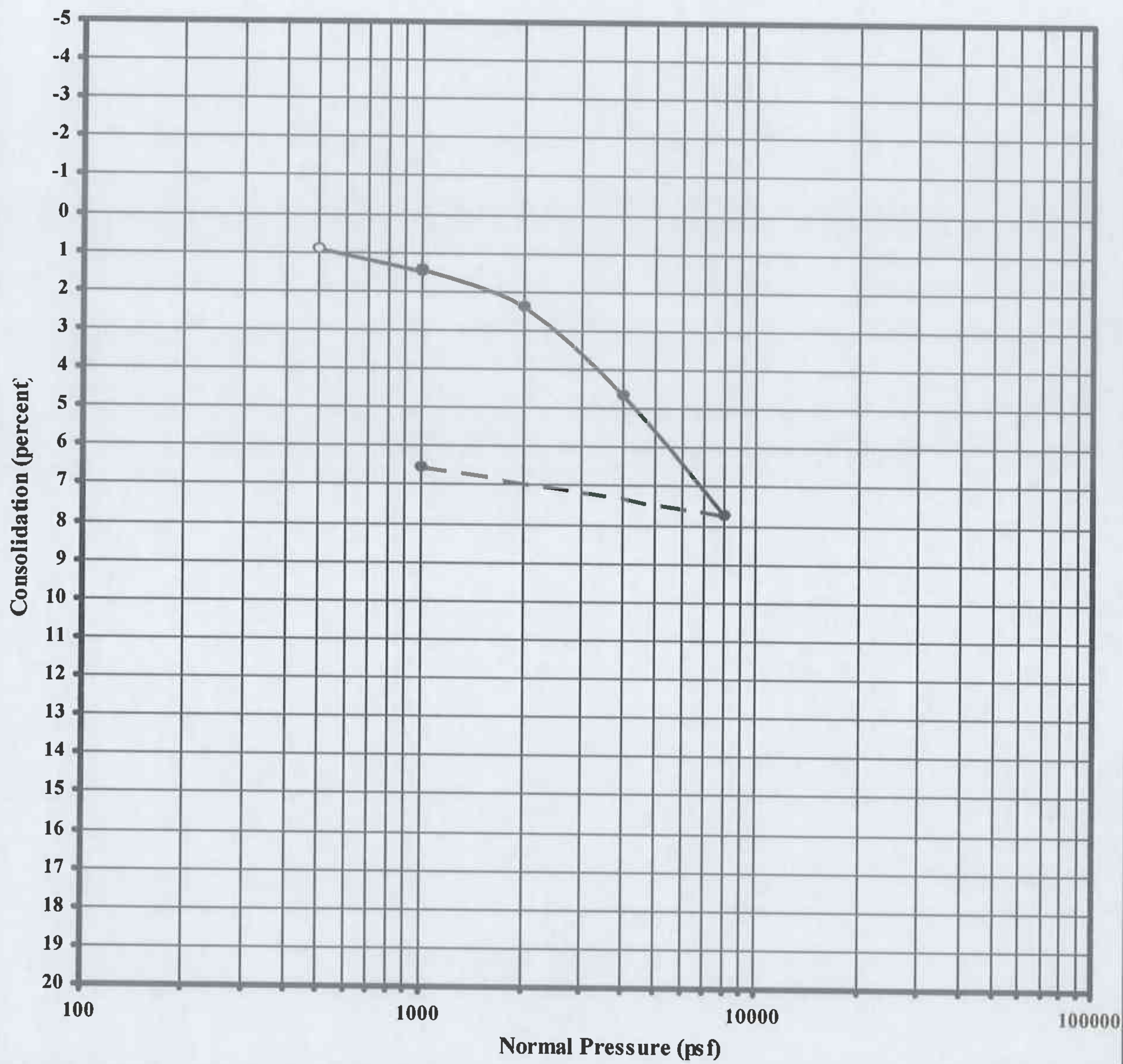
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B09

Sample Depth: 5 ft.

Initial Moisture: 24.1 %

Init. Dry Density: 96.4 pcf

Geologic Unit: Artificial Fill

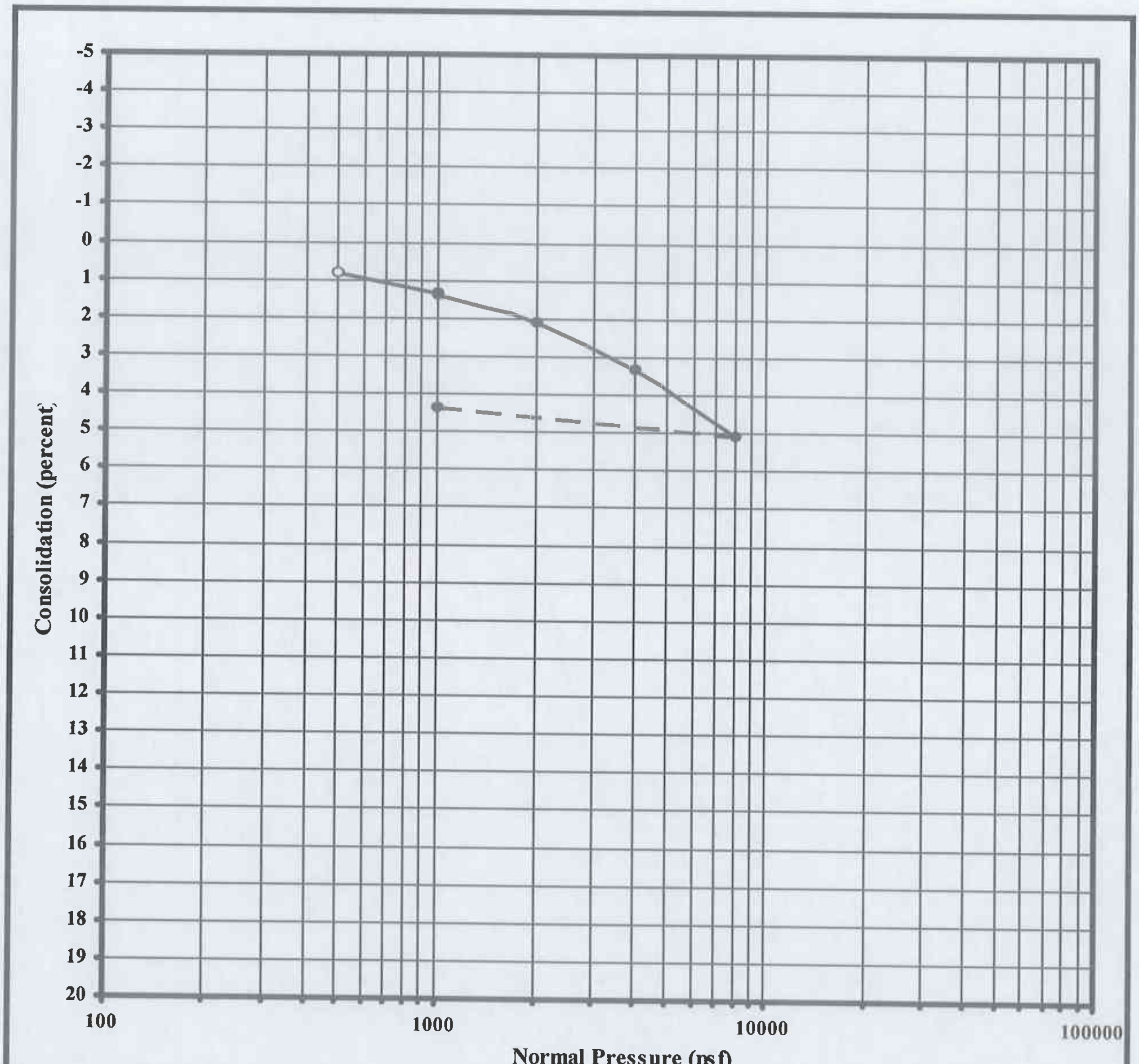
Material: gravelly CLAY

GEOLABS-WESTLAKE VILLAGE

PLATE C-B09.5

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B09

Sample Depth: 10 ft.

Initial Moisture: 12 %

Init. Dry Density: 115.4 pcf

Geologic Unit: Artificial Fill

Material: gravelly CLAY

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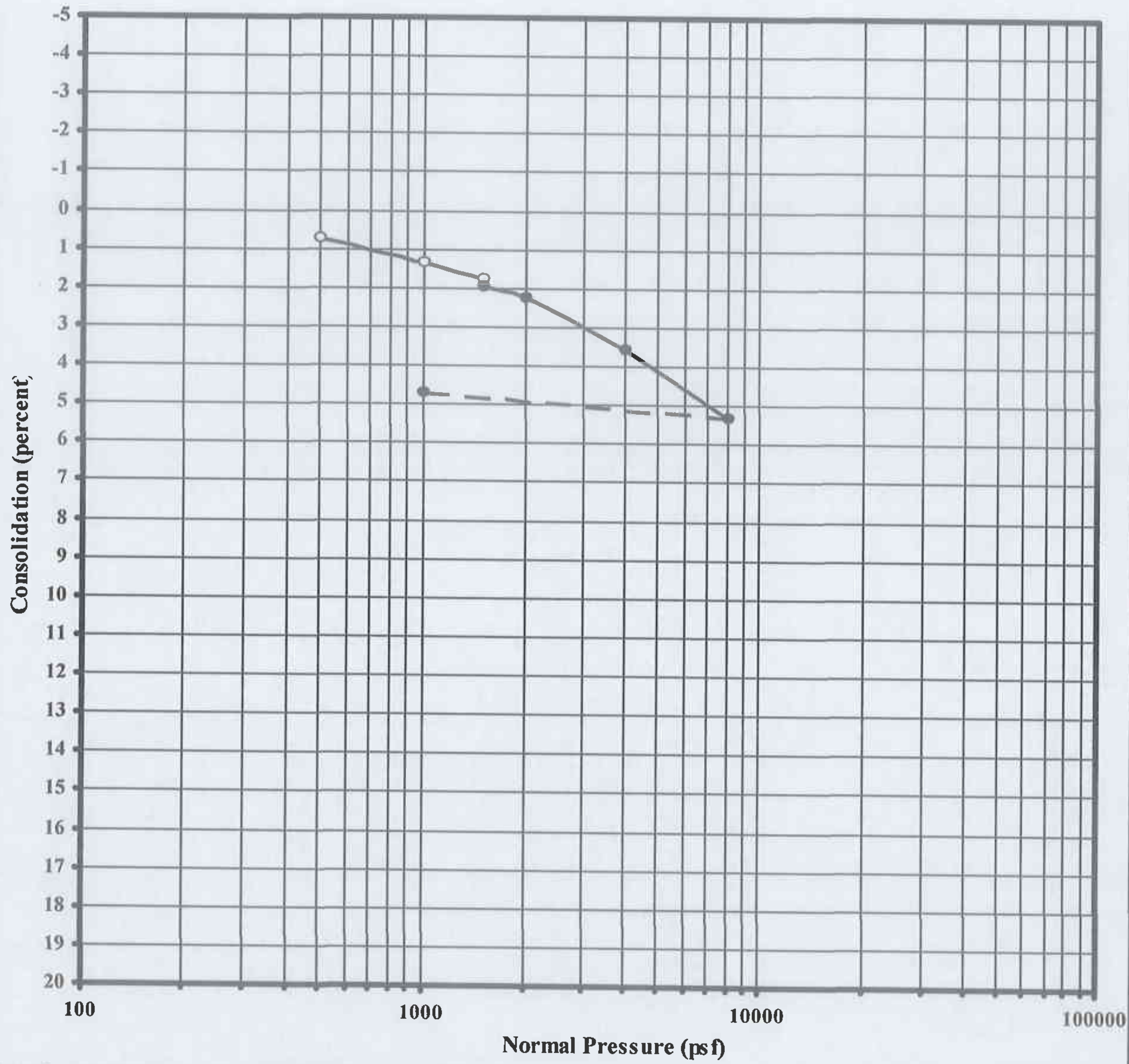
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1500 psf

Sample Location: B09

Sample Depth: 15 ft.

Initial Moisture: 16.3 %

Init. Dry Density: 110.1 pcf

Geologic Unit: Artificial Fill

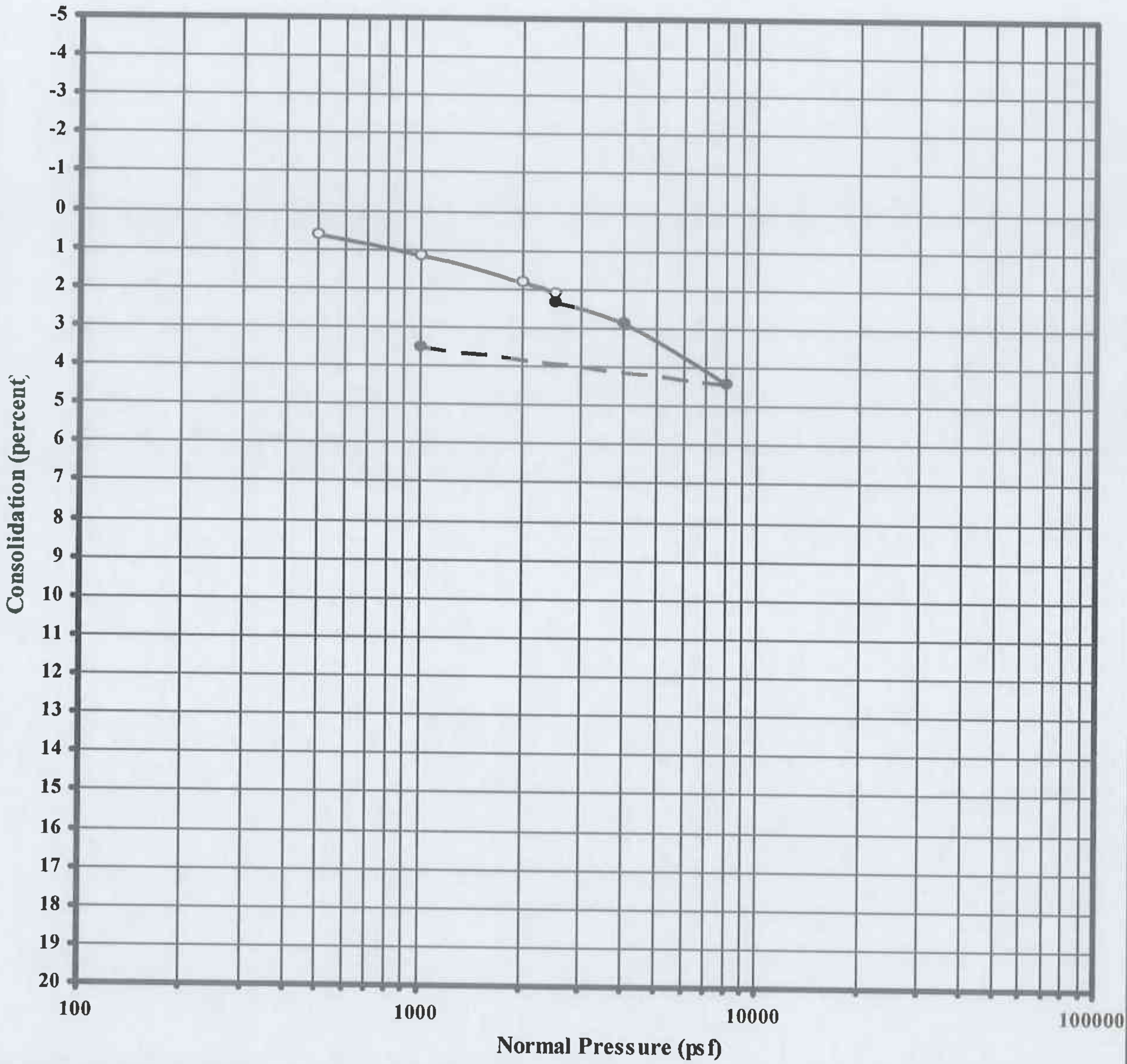
Material: clayey SAND with gravel

GEOLABS-WESTLAKE VILLAGE

PLATE C-B09.15

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 2500 psf

Sample Location: B09

Sample Depth: 25 ft.

Initial Moisture: 12.4 %

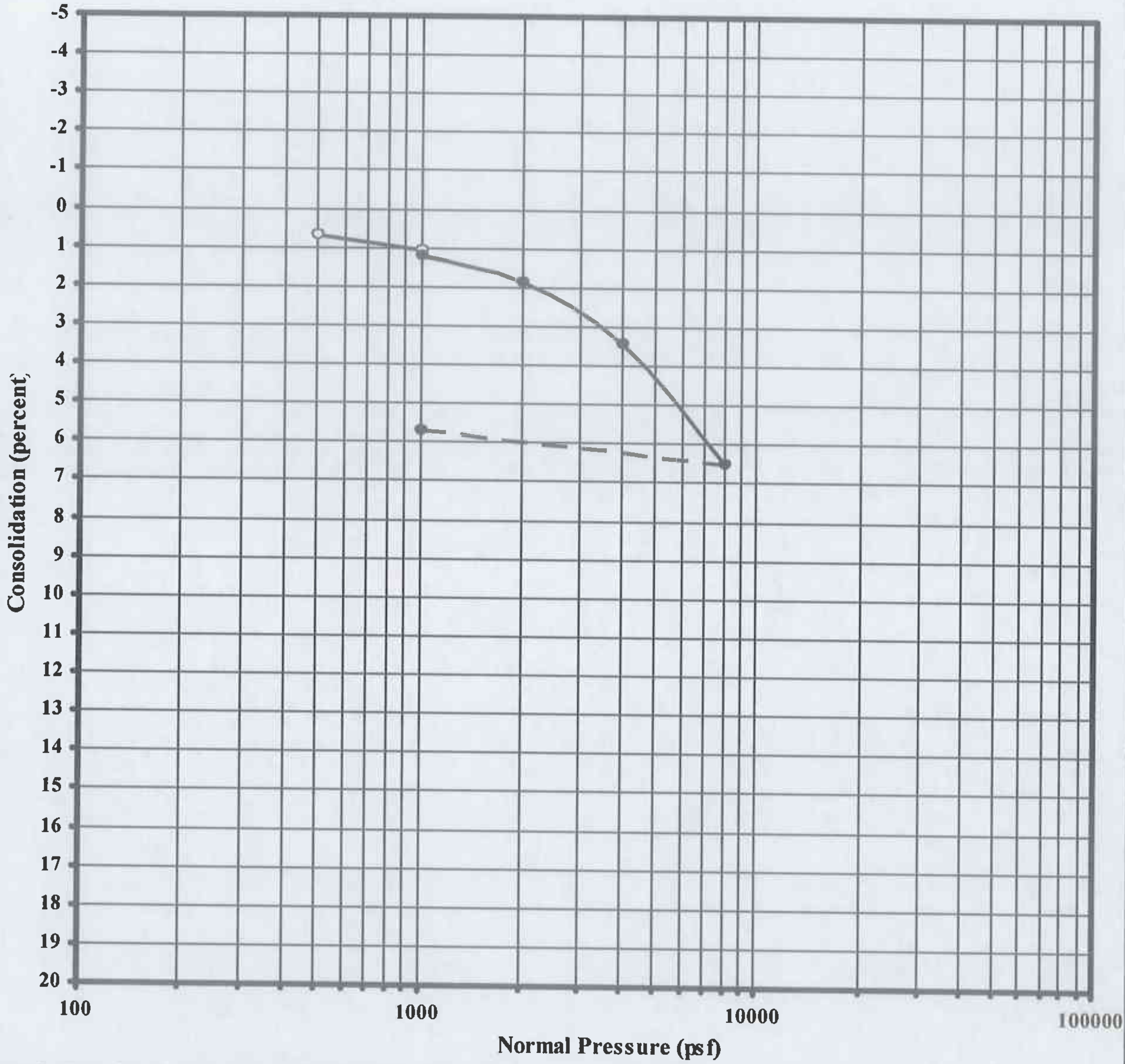
Init. Dry Density: 115.3 pcf

Geologic Unit: Artificial Fill

Material: clayey SAND with gravel

CONSOLIDATION RESULTS

Undisturbed Sample



Sample Inundated At Normal Pressure of 1000 psf

Sample Location: B10

Sample Depth: 7.5 ft.

Initial Moisture: 16 %

Init. Dry Density: 106.7 pcf

Geologic Unit: Artificial Fill

Material: sandy CLAY

GEOLABS-WESTLAKE VILLAGE

PLATE C-B10.7.5

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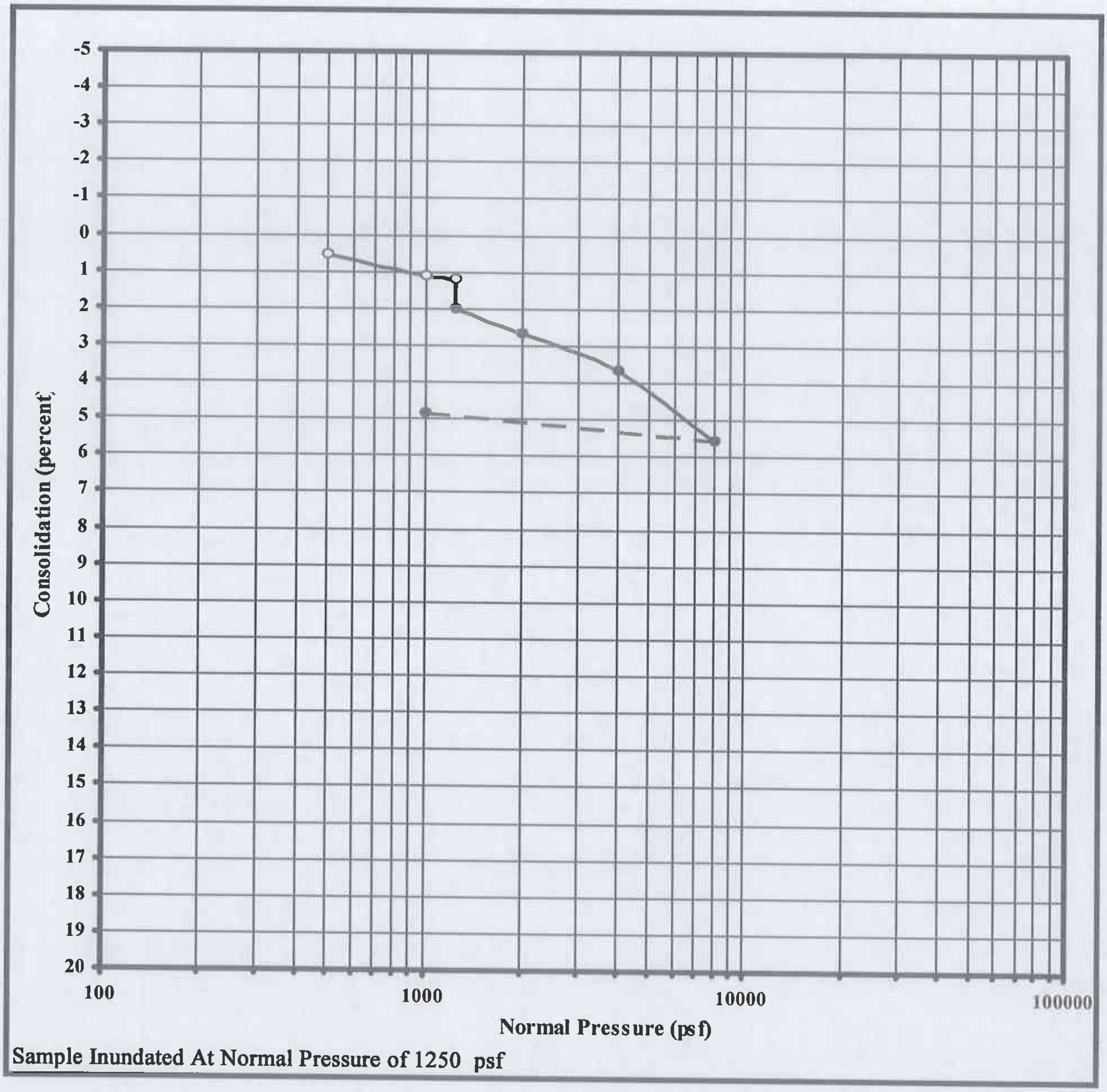
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Location: B10

Sample Depth: 12.5 ft.

Initial Moisture: 11 %

Init. Dry Density: 117.6 pcf

Geologic Unit: Artificial Fill

Material: silty SAND

GEOLABS-WESTLAKE VILLAGE

PLATE C-B10.12.5

Santa Monica College - AET/KCRW

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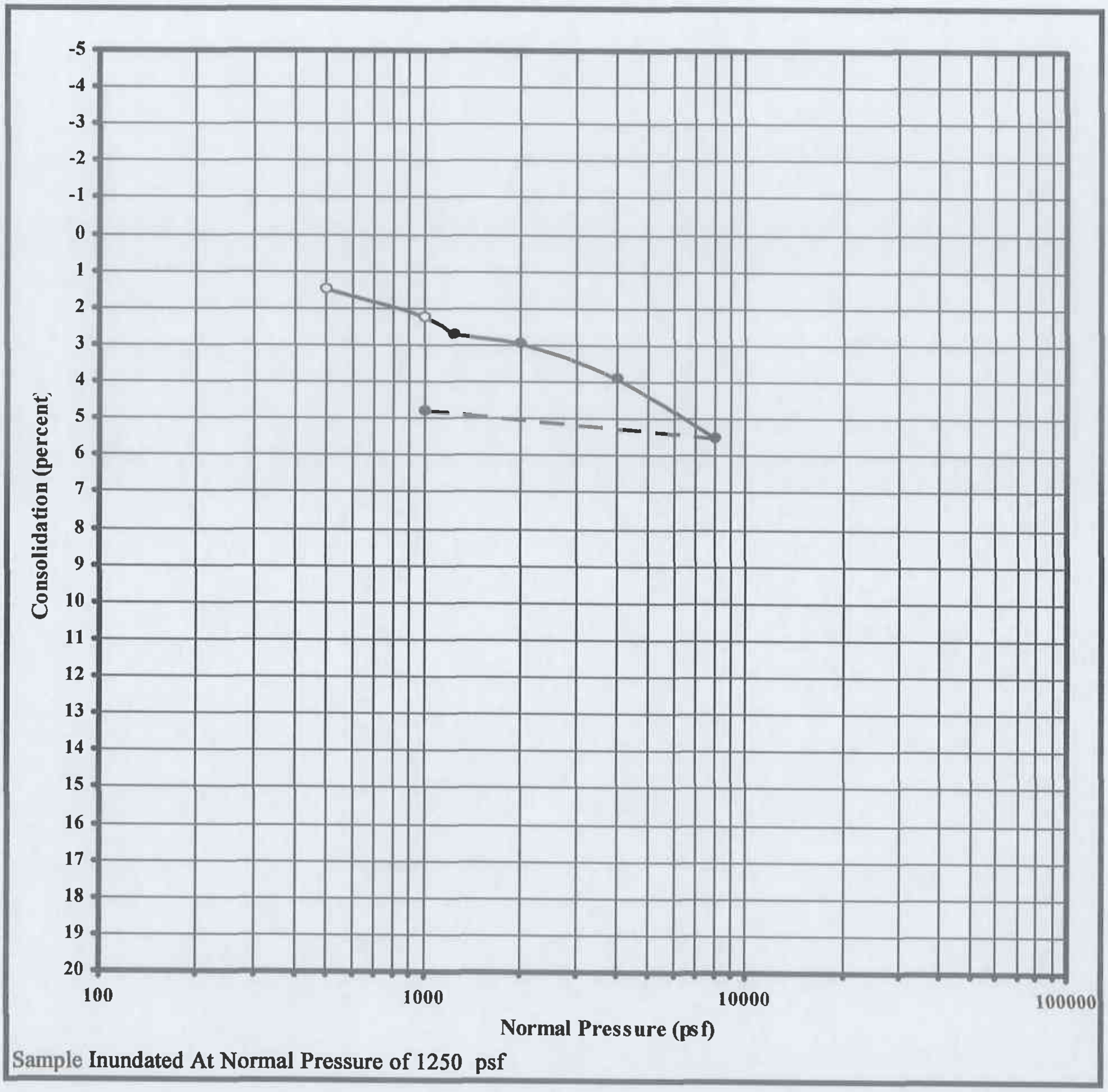
CONSOLIDATION RESULTS

Undisturbed Sample



Sample Location: B11

Sample Depth: 12.5 ft.

Initial Moisture: 16.1 %

Init. Dry Density: 110.9 pcf

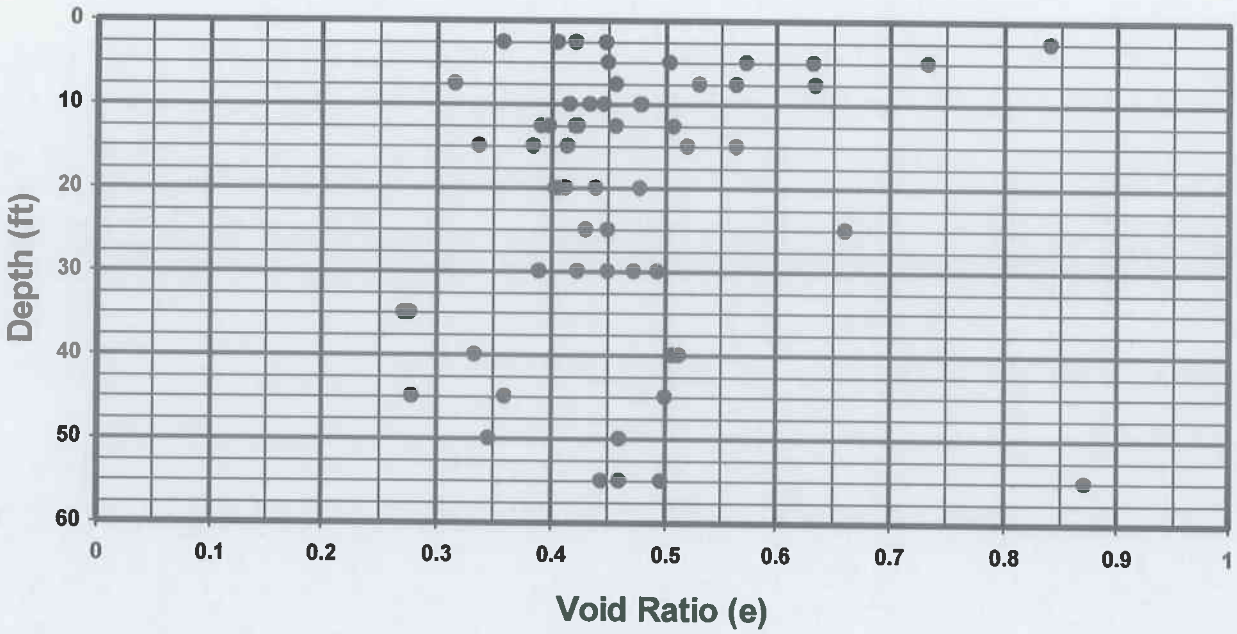
Geologic Unit: Artificial Fill

Material: CLAY with sand

GEOLABS-WESTLAKE VILLAGE

PLATE C-B11.12.5

Initial Void Ratio vs. Depth

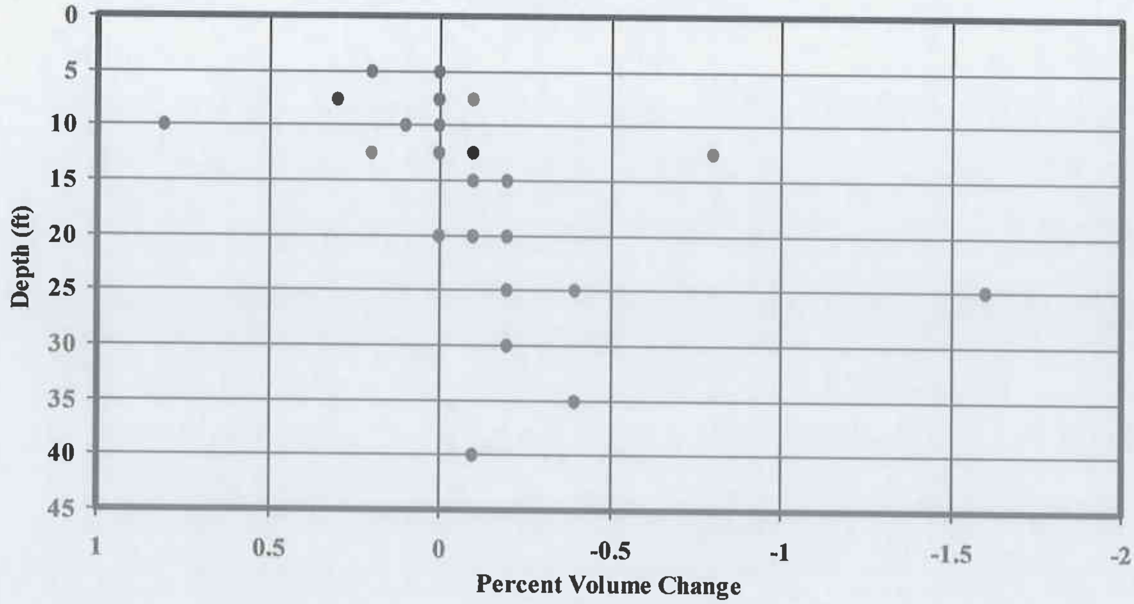


Excav.	Depth	e	S
B01	5	0.57	85
	10	0.43	81
	15	0.34	89
	25	0.43	73
	45	0.28	96
	55	0.50	100
B02	2.5	0.45	91
	7.5	0.31	86
	12.5	0.42	98
	20	0.41	85
	30	0.47	97
	40	0.33	70
	50	0.46	100
B03	5	0.45	96
	10	0.42	89
	15	0.41	82
	25	0.66	45
	35	0.27	94
	45	0.50	100
	55	0.44	100
B04	7.5	1.08	37
	12.5	0.40	88
	20	0.44	81
	30	0.39	93

Excav.	Depth	e	S
B05	5	0.63	97
	10	0.48	95
	15	0.56	83
B06	5	0.50	85
	10	0.48	83
	15	0.38	80
B07	2.5	0.84	88
	7.5	0.46	87
	12.5	0.39	95
	20	0.48	93
	30	0.45	89
	40	0.51	96
	55	0.46	100
B08	2.5	0.36	98
	7.5	0.53	94
	12.5	0.46	85
	20	0.41	93
	30	0.42	84
	40	0.51	98
	50	0.34	100

Excav.	Depth	e	S
B09	5	0.73	88
	10	0.45	72
	15	0.52	84
	25	0.45	74
	35	0.28	60
	45	0.36	90
B10	2.5	0.41	86
	7.5	0.56	76
	12.5	0.42	70
B11	2.5	0.42	99
	7.5	0.63	68
	12.5	0.51	85
	20	0.40	95
	30	0.49	76
	40	0.51	98
	55	0.87	100

HYDROCONSOLIDATION/EXPANSION VS. DEPTH
Artificial Fill

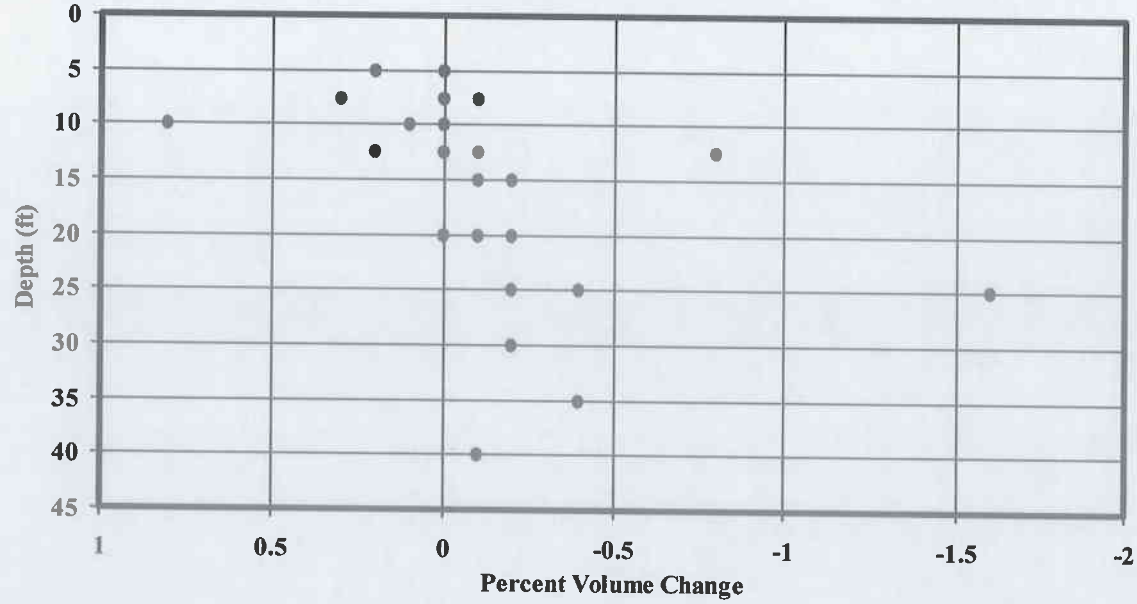


Note: Expansion (+), Collapse (-)

Excavation	Depth (ft)	Field DD (pcf)	M (%)	e	S (%)	Volume Change (%)	Artificial Fill Material
B01	5	106.1	18.2	0.57	85	0.2	sandy lean CLAY
B01	10	116.8	13.1	0.43	80.9	0.1	gravelly fat CLAY
B01	15	125.0	11.2	0.34	88.9	-0.2	gravelly lean CLAY with sand
B01	25	117.1	11.7	0.43	73.1	-0.4	sandy lean CLAY
B02	7.5	127.3	10.1	0.31	85.6	0.0	clayey GRAVEL
B02	12.5	117.3	15.5	0.42	98.1	0.0	clayey GRAVEL
B02	20	118.3	13.1	0.41	85.1	-0.2	clayey GRAVEL
B02	30	113.7	17.1	0.47	97.2	-0.2	gravelly lean CLAY
B02	40	125.2	8.7	0.33	70.2	-0.1	clayey SAND
B03	10	118.1	13.8	0.42	89	0.8	sandy lean CLAY
B03	15	118.3	12.7	0.41	81.9	-0.1	clayey SAND
B03	25	100.6	11.1	0.66	44.9	-1.6	clayey SAND
B03	35	131.6	9.5	0.27	94.1	-0.4	clayey GRAVEL with sand
B05	5	102.5	22.9	0.63	97	0.0	lean CLAY with sand
B05	10	113.1	17.0	0.48	95	0.1	gravelly lean CLAY
B05	15	106.7	17.5	0.56	82.9	-0.1	gravelly lean CLAY with sand
B07	7.5	114.8	14.8	0.46	87.1	0.0	sandy lean CLAY
B07	12.5	120.1	13.9	0.39	95.2	-0.1	gravelly lean CLAY
B07	20	113.0	16.6	0.48	93.3	-0.1	clayey GRAVEL with sand
B08	7.5	109.5	18.6	0.53	93.9	0.3	grvelly CLAY
B08	12.5	114.8	14.5	0.46	84.8	0.2	sandy CLAY with gravel
B08	20	118.6	14.2	0.41	92.8	0.0	clayey GRAVEL with sand
B08	30	117.4	13.3	0.42	84.2	-0.2	gravelly CLAY
B09	5	96.4	24.1	0.73	88	0.0	gravelly CLAY
B09	10	115.4	12.0	0.45	71.9	0.0	gravelly CLAY
B09	15	110.1	16.3	0.52	84	-0.2	clayey SAND with gravel

HYDROCONSOLIDATION/EXPANSION VS. DEPTH

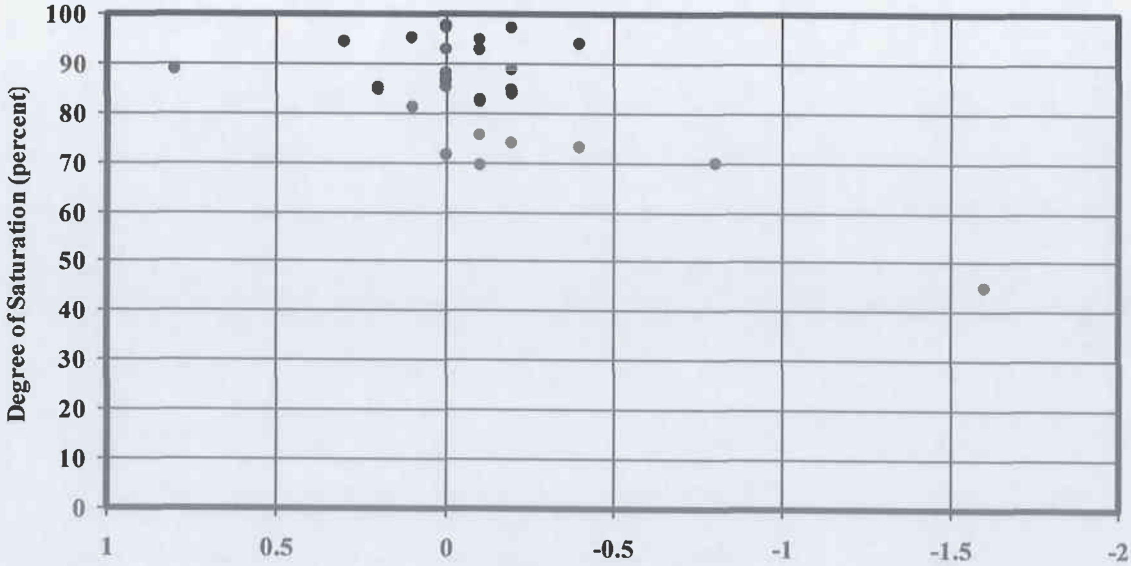
Artificial Fill



Note: Expansion (+), Collapse (-)

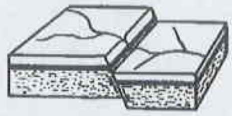
Excavation	Depth (ft)	Field DD (pcf)	M (%)	e	S (%)	Volume Change (%)	Artificial Fill Material
B09	25	115.3	12.4	0.45	73.8	-0.2	clayey SAND with gravel
B10	7.5	106.7	16.0	0.56	76.2	-0.1	sandy CLAY
B10	12.5	117.6	11.0	0.42	70.1	-0.8	silty SAND
B11	12.5	110.9	16.1	0.51	84.7	0.0	CLAY with sand

HYDROCONSOLIDATION/EXPANSION VS. SATURATION
Artificial Fill



Note: Expansion (+), Collapse (-)

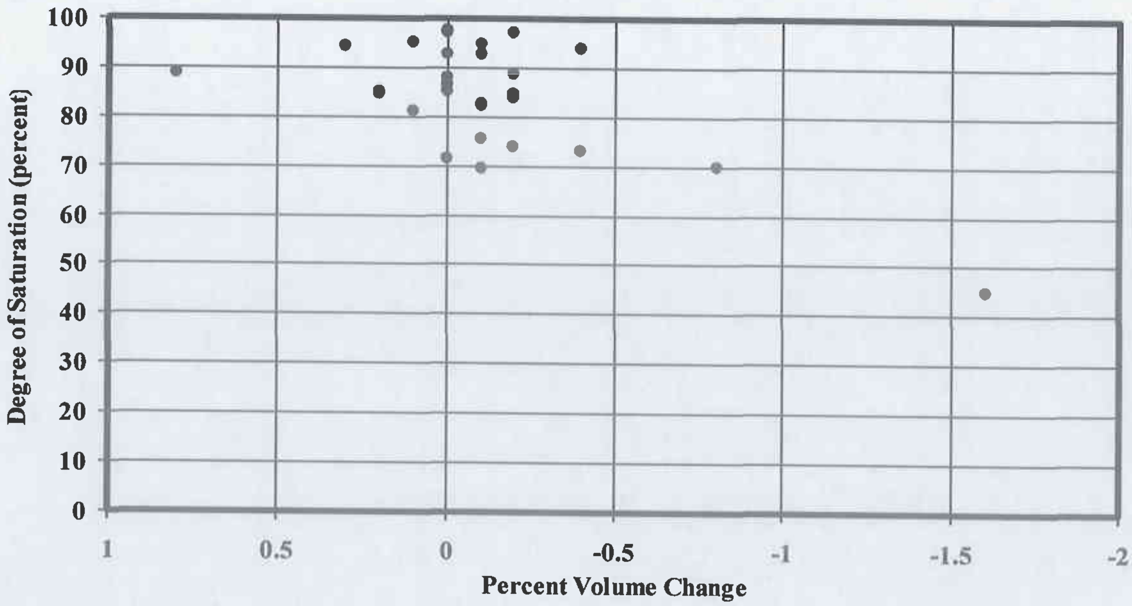
Excavation	Depth (ft)	Field DD (pcf)	M (%)	e	S (%)	Volume Change (%)	Artificial Fill Material
B01	5	106.1	18.2	0.57	85	0.2	sandy lean CLAY
B01	10	116.8	13.1	0.43	80.9	0.1	gravelly fat CLAY
B01	15	125.0	11.2	0.34	88.9	-0.2	gravelly lean CLAY with sand
B01	25	117.1	11.7	0.43	73.1	-0.4	sandy lean CLAY
B02	7.5	127.3	10.1	0.31	85.6	0.0	clayey GRAVEL
B02	12.5	117.3	15.5	0.42	98.1	0.0	clayey GRAVEL
B02	20	118.3	13.1	0.41	85.1	-0.2	clayey GRAVEL
B02	30	113.7	17.1	0.47	97.2	-0.2	gravelly lean CLAY
B02	40	125.2	8.7	0.33	70.2	-0.1	clayey SAND
B03	10	118.1	13.8	0.42	89	0.8	sandy lean CLAY
B03	15	118.3	12.7	0.41	81.9	-0.1	clayey SAND
B03	25	100.6	11.1	0.66	44.9	-1.6	clayey SAND
B03	35	131.6	9.5	0.27	94.1	-0.4	clayey GRAVEL with sand
B05	5	102.5	22.9	0.63	97	0.0	lean CLAY with sand
B05	10	113.1	17.0	0.48	95	0.1	gravelly lean CLAY
B05	15	106.7	17.5	0.56	82.9	-0.1	gravelly lean CLAY with sand
B07	7.5	114.8	14.8	0.46	87.1	0.0	sandy lean CLAY
B07	12.5	120.1	13.9	0.39	95.2	-0.1	gravelly lean CLAY
B07	20	113.0	16.6	0.48	93.3	-0.1	clayey GRAVEL with sand
B08	7.5	109.5	18.6	0.53	93.9	0.3	grvelly CLAY
B08	12.5	114.8	14.5	0.46	84.8	0.2	sandy CLAY with gravel
B08	20	118.6	14.2	0.41	92.8	0.0	clayey GRAVEL with sand
B08	30	117.4	13.3	0.42	84.2	-0.2	gravelly CLAY
B09	5	96.4	24.1	0.73	88	0.0	gravelly CLAY
B09	10	115.4	12.0	0.45	71.9	0.0	gravelly CLAY
B09	15	110.1	16.3	0.52	84	-0.2	clayey SAND with gravel



GEOLABS-WESTLAKE VILLAGE

PLATE C-Hydro.B.Af.1

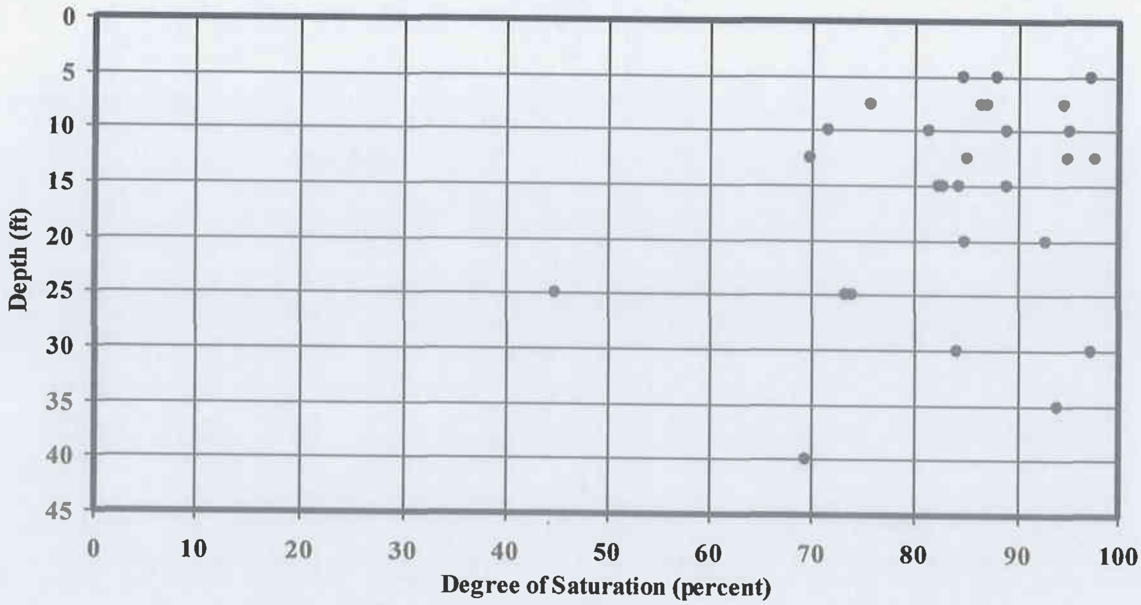
HYDROCONSOLIDATION/EXPANSION VS. SATURATION
Artificial Fill



Note: Expansion (+), Collapse (-)

Excavation	Depth (ft)	Field DD (pcf)	M (%)	e	S (%)	Volume Change (%)	Artificial Fill Material
B09	25	115.3	12.4	0.45	73.8	-0.2	clayey SAND with gravel
B10	7.5	106.7	16.0	0.56	76.2	-0.1	sandy CLAY
B10	12.5	117.6	11.0	0.42	70.1	-0.8	silty SAND
B11	12.5	110.9	16.1	0.51	84.7	0.0	CLAY with sand

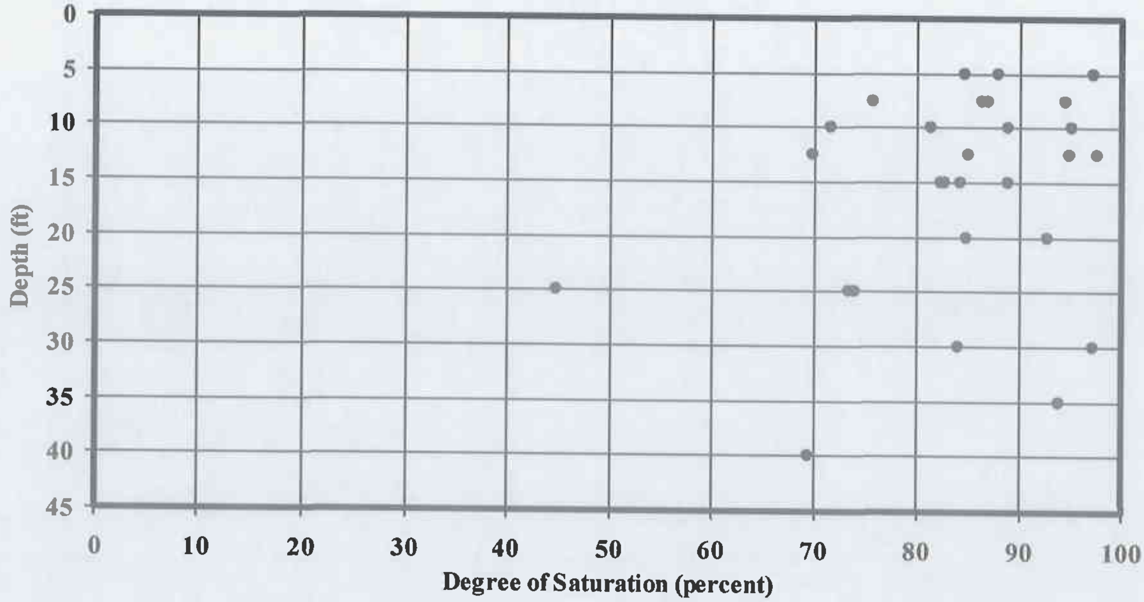
DEGREE OF SATURATION VS. DEPTH
Artificial Fill



Excavation	Depth (ft)	Field DD (pcf)	M (%)	e	S (%)	Volume Change (%)	Artificial Fill Material
B01	5	106.1	18.2	0.57	85	0.2	sandy lean CLAY
B01	10	116.8	13.1	0.43	80.9	0.1	gravelly fat CLAY
B01	15	125.0	11.2	0.34	88.9	-0.2	gravelly lean CLAY with sand
B01	25	117.1	11.7	0.43	73.1	-0.4	sandy lean CLAY
B02	7.5	127.3	10.1	0.31	85.6	0.0	clayey GRAVEL
B02	12.5	117.3	15.5	0.42	98.1	0.0	clayey GRAVEL
B02	20	118.3	13.1	0.41	85.1	-0.2	clayey GRAVEL
B02	30	113.7	17.1	0.47	97.2	-0.2	gravelly lean CLAY
B02	40	125.2	8.7	0.33	70.2	-0.1	clayey SAND
B03	10	118.1	13.8	0.42	89	0.8	sandy lean CLAY
B03	15	118.3	12.7	0.41	81.9	-0.1	clayey SAND
B03	25	100.6	11.1	0.66	44.9	-1.6	clayey SAND
B03	35	131.6	9.5	0.27	94.1	-0.4	clayey GRAVEL with sand
B05	5	102.5	22.9	0.63	97	0.0	lean CLAY with sand
B05	10	113.1	17.0	0.48	95	0.1	gravelly lean CLAY
B05	15	106.7	17.5	0.56	82.9	-0.1	gravelly lean CLAY with sand
B07	7.5	114.8	14.8	0.46	87.1	0.0	sandy lean CLAY
B07	12.5	120.1	13.9	0.39	95.2	-0.1	gravelly lean CLAY
B07	20	113.0	16.6	0.48	93.3	-0.1	clayey GRAVEL with sand
B08	7.5	109.5	18.6	0.53	93.9	0.3	grvelly CLAY
B08	12.5	114.8	14.5	0.46	84.8	0.2	sandy CLAY with gravel
B08	20	118.6	14.2	0.41	92.8	0.0	clayey GRAVEL with sand
B08	30	117.4	13.3	0.42	84.2	-0.2	gravelly CLAY
B09	5	96.4	24.1	0.73	88	0.0	gravelly CLAY

LL = Liquid Limit, PI = Plasticity Index, NP = Non-Plastic

DEGREE OF SATURATION VS. DEPTH
Artificial Fill

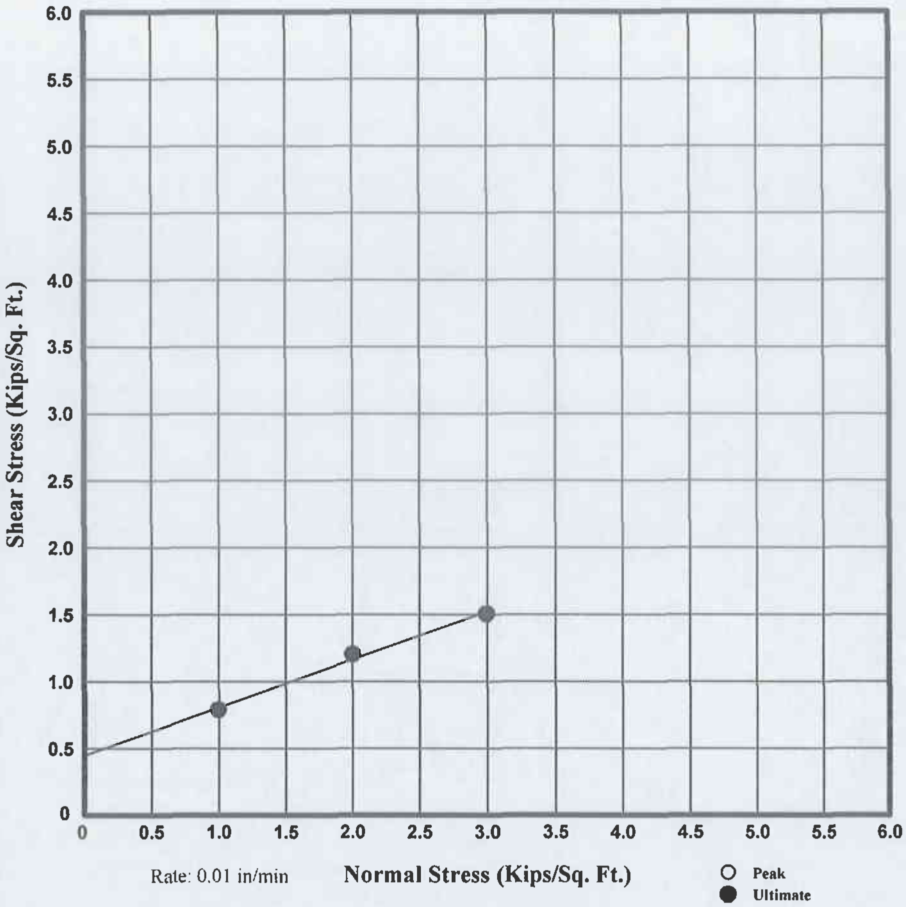


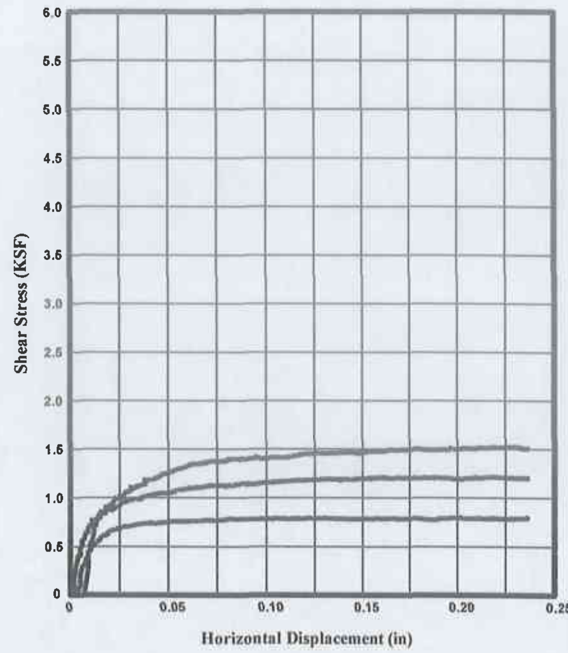
Excavation	Depth (ft)	Field DD (pcf)	M (%)	e	S (%)	Volume Change (%)	Artificial Fill Material
B09	10	115.4	12.0	0.45	71.9	0.0	gravelly CLAY
B09	15	110.1	16.3	0.52	84	-0.2	clayey SAND with gravel
B09	25	115.3	12.4	0.45	73.8	-0.2	clayey SAND with gravel
B10	7.5	106.7	16.0	0.56	76.2	-0.1	sandy CLAY
B10	12.5	117.6	11.0	0.42	70.1	-0.8	silty SAND
B11	12.5	110.9	16.1	0.51	84.7	0.0	CLAY with sand

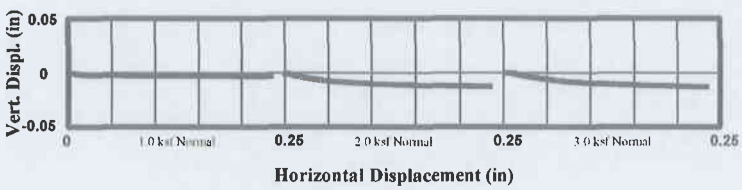
LL = Liquid Limit, PI = Plasticity Index, NP = Non-Plastic

DIRECT SHEAR TEST RESULTS

SAMPLE REMOLDED TO 90% RELATIVE COMPACTION







	Peak	Ultimate	Residual
Cohesion (ksf)		0.45	
Phi (deg)		20	

Project	AET/KCRW Bldg		
W.O.	8266.009		
Excavation	B1		
Depth	0-4 ft		
Test Data	**#1**	**#2**	**#3**
Norm. Pres.(ksf)	1.0	2.0	3.0
Shear stress (Peak/Ult. ksf)	--/0.8	--/1.2	--/1.5
H. Displ. (in)	--/0.24	--/0.24	--/0.24
V. Displ. (in)	--/0.00	--/-0.01	--/-0.01
e (preshear)	0.51	0.49	0.42
Dry Density (pcf)	109.8		
Moisture (%)	22.9		

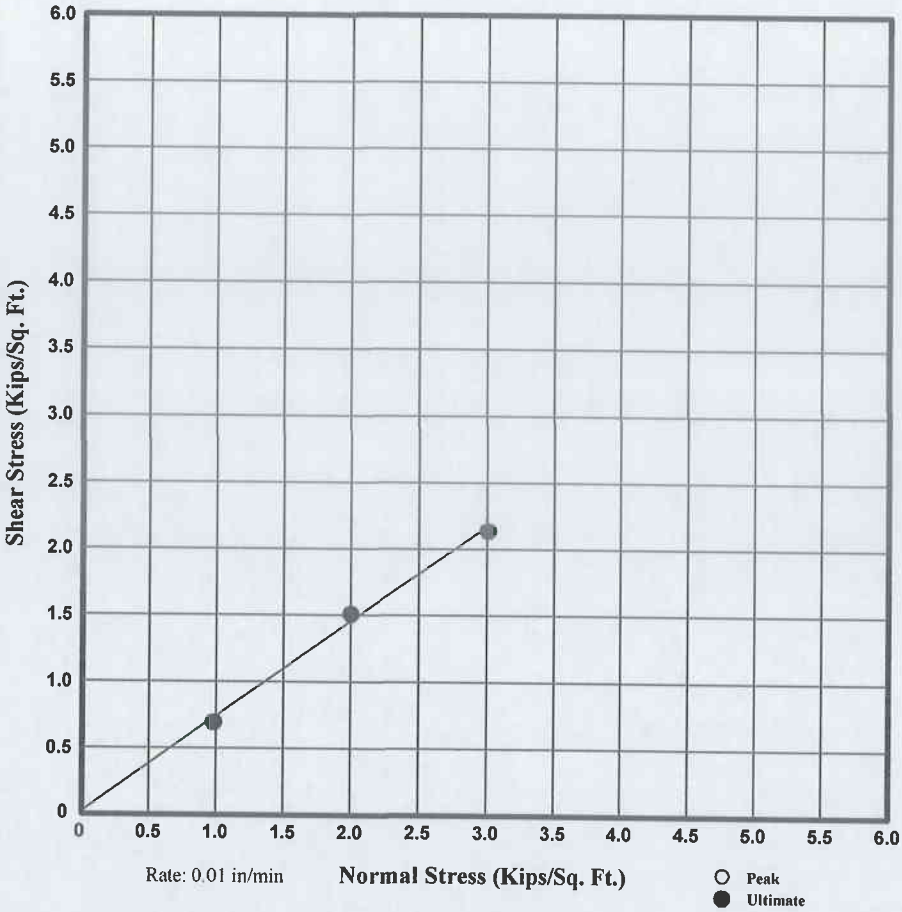
S:\GEOTEST\shears\8266.009\B1@0-4A.lst
S:\GEOTEST\shears\8266.009\B1@0-4B.lst
S:\GEOTEST\shears\8266.009\B1@0-4C.lst

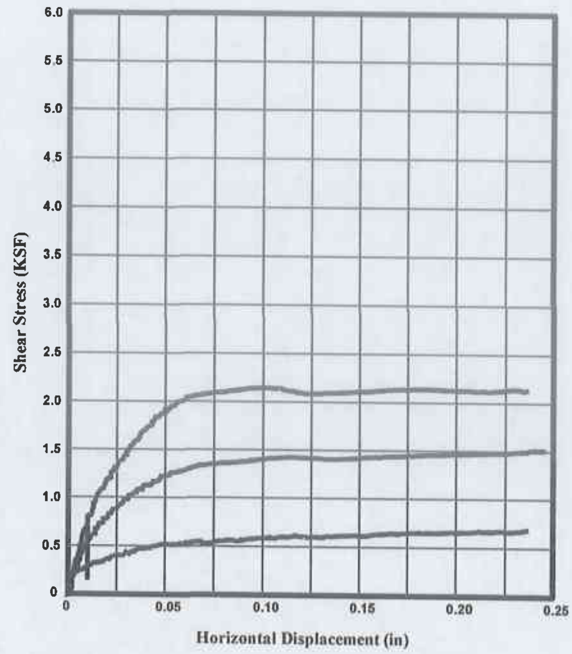
GEOLABS-WESTLAKE VILLAGE

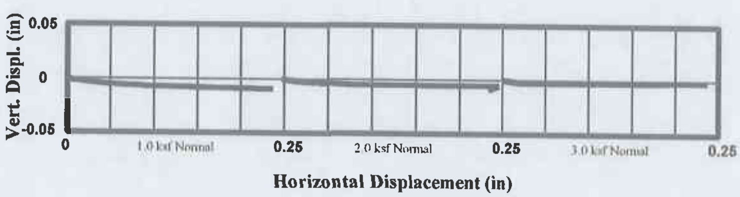
PLATE S-B1.0-4

DIRECT SHEAR TEST RESULTS

UNDISTURBED SAMPLE







Project	AET/KCRW Bldg		
W.O.	8266.009		
Excavation	B10		
Depth	7.5 ft		
Test Data	**#1**	**#2**	**#3**
Norm. Pres.(ksf)	1.0	2.0	3.0
Shear stress (Peak/Ult. ksf)	--/0.7	--/1.5	--/2.1
H. Displ. (in)	--/0.24	--/0.24	--/0.24
V. Displ. (in)	--/-0.01	--/-0.01	--/0.00
e (preshear)	0.54	0.54	0.54
Dry Density (pcf)	106.7		
Moisture (%)	20.8		

	Peak	Ultimate	Residual
Cohesion (ksf)		0.025	
Phi (deg)		36	

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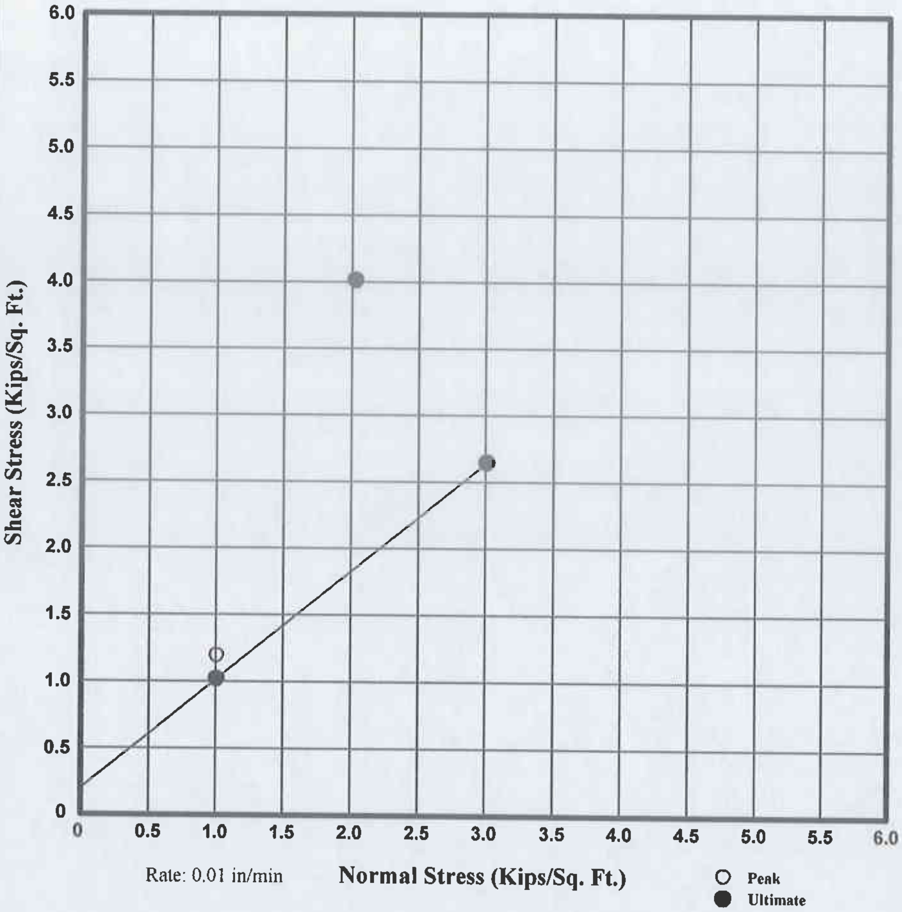
S:\GEOTEST\shears\8266.009\B10@7B.lst
S:\GEOTEST\shears\8266.009\B10@7C.lst

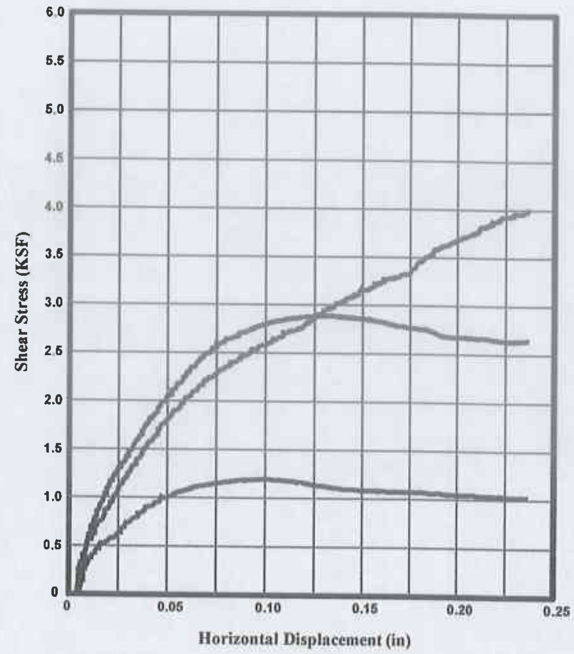
GEOLABS-WESTLAKE VILLAGE

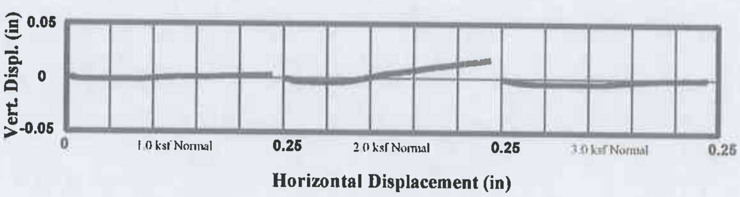
PLATE S-B10.7.5

DIRECT SHEAR TEST RESULTS

UNDISTURBED SAMPLE







	Peak	Ultimate	Residual
Cohesion (ksf)		0.2	
Phi (deg)		39	

Project	AET/KCRW Bldg		
W.O.	8266.009		
Excavation	B11		
Depth	12.5 ft		
Test Data	**#1**	**#2**	**#3**
Norm. Pres.(ksf)	1.0	2.0	3.0
Shear stress (Peak/Ult. ksf)	1.2/1.0	--/4.0	--/2.6
H. Displ. (in)	0.10/0.24	--/0.24	--/0.24
V. Displ. (in)	0.00/0.00	--/0.02	--/0.00
e (preshear)	0.50	0.48	0.48
Dry Density (pcf)	110.9		
Moisture (%)	30.9		

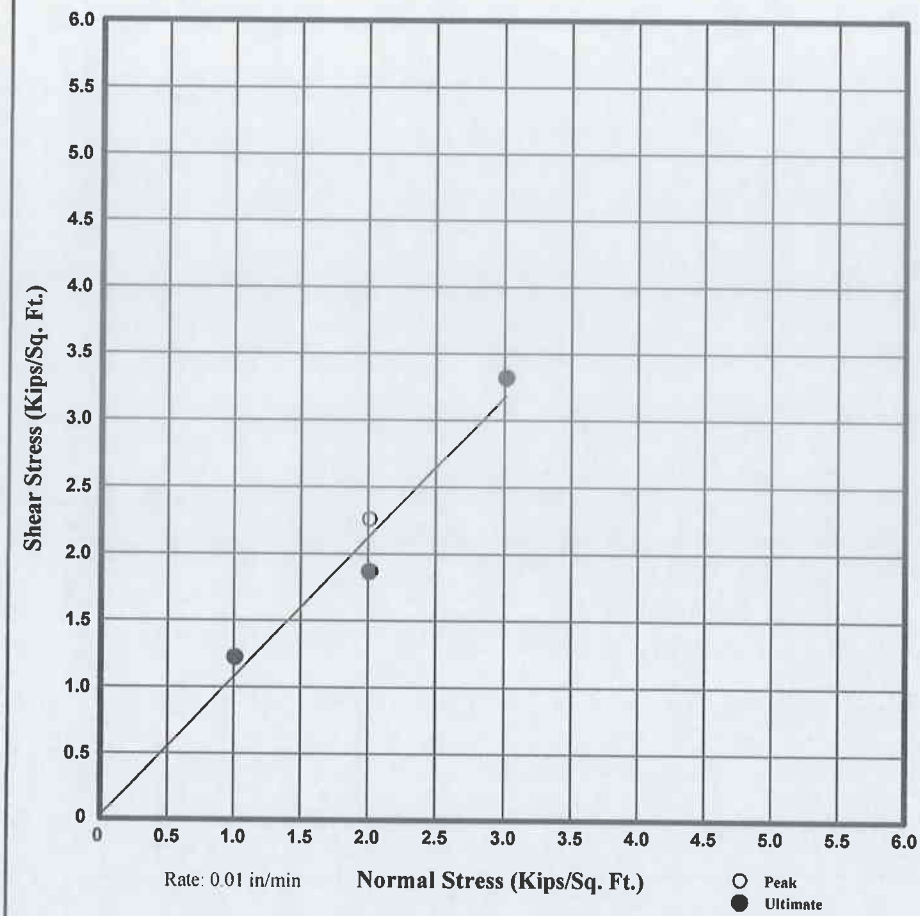
S:\GEOTEST\shears\8266.009\B11@12A.lst
S:\GEOTEST\shears\8266.009\B11@12B.lst
S:\GEOTEST\shears\8266.009\B11@12C.lst

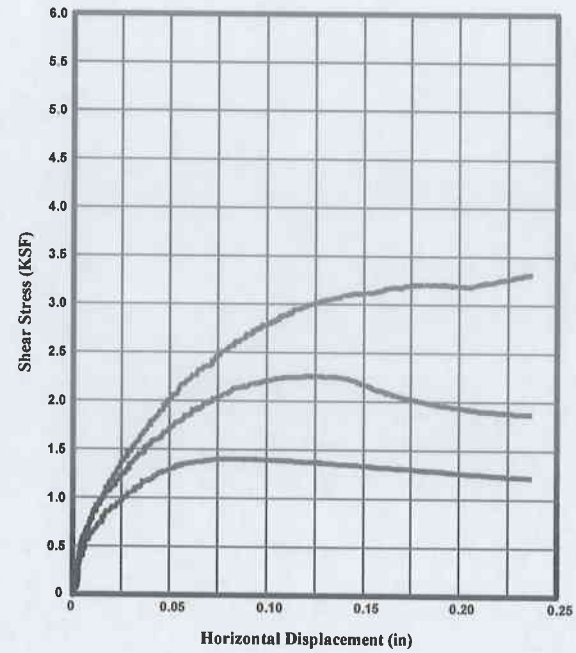
GEOLABS-WESTLAKE VILLAGE

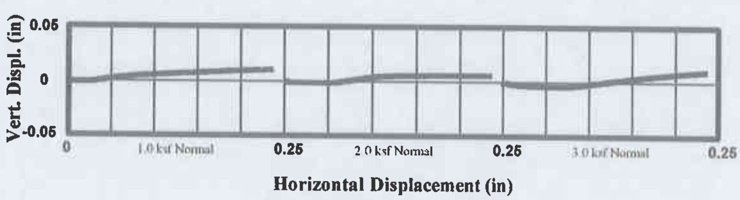
PLATE S-B11.12.5

DIRECT SHEAR TEST RESULTS

UNDISTURBED SAMPLE







	Peak	Ultimate	Residual
Cohesion (ksf)		0.025	
Phi (deg)		46	

Project	AET/KCRW Bldg		
W.O.	8266.009		
Excavation	B11		
Depth	20 ft		
Test Data	**#1**	**#2**	**#3**
Norm. Pres.(ksf)	1.0	2.0	3.0
Shear stress (Peak/Ult. ksf)	--/1.2	2.3/1.9	--/3.3
H. Displ. (in)	--/0.24	0.12/0.24	--/0.24
V. Displ. (in)	--/0.01	0.01/0.01	--/0.01
e (preshear)	0.39	0.39	0.37
Dry Density (pcf)	119.2		
Moisture (%)	18.2		

S:\GEOTEST\shears\8266.009\B11@20A.lst
S:\GEOTEST\shears\8266.009\B11@20B.lst
S:\GEOTEST\shears\8266.009\B11@20C.lst

GEOLABS-WESTLAKE VILLAGE

PLATE S-B11.20

APPENDIX C

SEISMICITY ANALYSES

ASCE 7/05 - Section 21.2 Ground Motion Hazard Analysis

21.2.1 Probabilistic MCE

Probabilistic Spectra Results using EZ-FRISK 7.26
PROBABILITY OF EXCEEDENCE 2.00% IN 50 YEARS

T	Sa
PGA	0.968
0.05	1.212
0.1	1.724
0.2	2.179
0.3	2.318
0.4	2.203
0.5	2.045
0.75	1.539
1	1.195
2	0.617
3	0.404
4	0.305

21.2.2 Deterministic MCE

Deterministic Spectra Results using EZ-FRISK 7.26

Source: Santa Monica
Closest Distance: 0.94 km
Magnitude: 6.73 Mw

Fractile: 0.84

T	Sa
PGA	1.081
0.05	1.373
0.1	1.843
0.2	2.347
0.3	2.592
0.4	2.575
0.5	2.421
0.75	1.905
1	1.49
2	0.814
3	0.546
4	0.424

For Deterministic MCE response acceleration conforming with DSA Bulletin 09-01, the value at each period shall use the 84th percentile of the maximum rotated component of ground motion in lieu of using 150% of the median value

T	Sa
0.00	1.081
0.05	1.373
0.10	1.843
0.20	2.347
0.30	2.592
0.40	2.575
0.50	2.421
0.75	1.905
1.00	1.490
2.00	0.814
3.00	0.546
4.00	0.424

```
The ordinates of the deterministic MCE ground motion
response spectrum shall not be taken lower than the
corresponding ordinates of the response spectrum determined
in accordance with  Fig. 21.2-1 where Fa and Fv are determined
using Tables 11.4-1 and 11.4-2, respectively, with the value
of Ss taken as 1.5 and value of S1 taken as 0.6.
```

TABLE 11.4-1 SITE COEFFICIENT, F_a

Site Class	Mapped Maximum Considered Earthquake Spectral Response Acceleration Parameter at Short Period				
	$S_S \le 0.25$	$S_S = 0.5$	$S_S = 0.75$	$S_S = 1.0$	$S_S \ge 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7				

NOTE: Use straight-line interpolation for intermediate values of S_S.

TABLE 11.4-2 SITE COEFFICIENT, F_v

Site Class	Mapped Maximum Considered Earthquake Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \le 0.1$	$S_1 = 0.2$	$S_1 = 0.3$	$S_1 = 0.4$	$S_1 \ge 0.5$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7				

NOTE: Use straight-line interpolation for intermediate values of S_1.

Deterministic Lower Limit on MCE Response Spectrum Using: Site Class: D

Ss:	1.5	SMs:	1.5	SDs:	1
S1:	0.6	SM1:	0.9	SD1:	0.6

Fa: 1
Fv: 1.5
Ts: 0.600 $T_S = S_{D1}/S_{DS}$

where: $S_{MS} = F_a S_s$, $S_{M1} = F_v S_1$

$$S_{DS} = \frac{2}{3} S_{MS}$$

$$S_{D1} = \frac{2}{3} S_{M1}$$

T	Sa
0.00	1.500
0.05	1.500
0.10	1.500
0.20	1.500
0.30	1.500
0.40	1.500
0.50	1.500
0.75	1.200
1.00	0.900
2.00	0.450
3.00	0.300
4.00	0.225

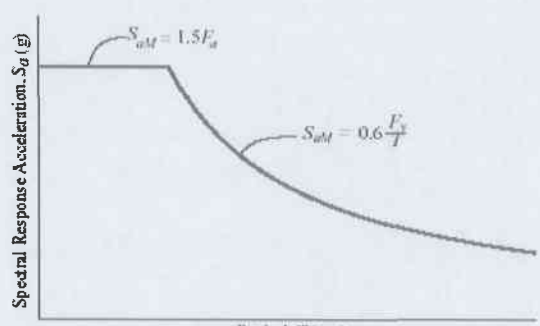


FIGURE 21.2-1 DETERMINISTIC LOWER LIMIT ON MCE RESPONSE SPECTRUM

Final Deterministic MCE Response Spectrum

T	Sa
0.00	1.500
0.05	1.500
0.10	1.843
0.20	2.347
0.30	2.592
0.40	2.575
0.50	2.421
0.75	1.905
1.00	1.490
2.00	0.814
3.00	0.546
4.00	0.424

21.2.3 Site - Specific MCE

The Site - Specific MCE spectral response acceleration at any period, SaM, shall be taken as the lesser of the spectral response accelerations from the probabilistic MCE and the determinisitic MCE.

Probabilistic MCE		Deterministic MCE		Site - Specific MCE	
T	Sa	T	Sa	T	Sa
PGA	0.968	PGA	1.5	PGA	0.968
0.05	1.212	0.05	1.5	0.05	1.212
0.1	1.724	0.1	1.843	0.1	1.724
0.2	2.179	0.2	2.347	0.2	2.179
0.3	2.318	0.3	2.592	0.3	2.318
0.4	2.203	0.4	2.575	0.4	2.203
0.5	2.045	0.5	2.421	0.5	2.045
0.75	1.539	0.75	1.905	0.75	1.539
1	1.195	1	1.49	1	1.195
2	0.617	2	0.814	2	0.617
3	0.404	3	0.546	3	0.404
4	0.305	4	0.424	4	0.305

21.3 Design Response Spectrum

The initial design spectral response acceleration at any period shall be determined from:

$$S_a = \frac{2}{3} S_{aM}$$

where SaM is the MCE spectral response acceleration obtained from Section 21.1 or 21.2.

Initial Design Response Spectrum

T	Sa
PGA	0.6453
0.05	0.8080
0.1	1.1493
0.2	1.4527
0.3	1.5453
0.4	1.4687
0.5	1.3633
0.75	1.0260
1	0.7967
2	0.4113
3	0.2693
4	0.2033

The design spectral response acceleration at any period shall not be taken less than 80 percent of Sa determined in accordance with Section 11.4.5.

1. For periods less than T_0, the design spectral response acceleration, S_a, shall be taken as given by Eq. 11.4-5:

$$S_a = S_{DS}\left(0.4 + 0.6\frac{T}{T_0}\right) \tag{11.4-5}$$

SDs:	1	SMs:	1.5
SD1:	0.6	SM1:	0.9
To:	0.12		
Ts:	0.6		
TL:	8	(Fig 22-15 in ASCE 7)	

Sa for T < To

T	Sa:
PGA	0.4
0.05	0.6500
0.1	0.9000

where

S_{DS} = the design spectral response acceleration parameter at short periods

S_{D1} = the design spectral response acceleration parameter at 1-s period

T = the fundamental period of the structure, s

$T_0 = 0.2\frac{S_{D1}}{S_{DS}}$

$T_S = \frac{S_{D1}}{S_{DS}}$ and

T_L = long-period transition period (s) shown in Fig. 22-15 (Conterminous United States), Fig. 22-16 (Region 1), Fig. 22-17 (Alaska), Fig. 22-18 (Hawaii), Fig. 22-19 (Puerto Rico, Culebra, Vieques, St. Thomas, St. John, and St. Croix), and Fig. 22-20 (Guam and Tutuila).

2. For periods greater than or equal to T_0 and less than or equal to T_S, the design spectral response acceleration, S_a, shall be taken equal to S_{DS}.

Sa for To ≤ T ≤Ts

T	Sa:
0.2	1
0.3	1
0.4	1
0.5	1

3. For periods greater than T_S, and less than or equal to T_L, the design spectral response acceleration, S_a, shall be taken as given by Eq. 11.4-6:

$$S_a = \frac{S_{D1}}{T} \tag{11.4-6}$$

Sa for Ts < T ≤ TL

T	Sa:
0.75	0.8
1	0.6
2	0.3
3	0.2
4	0.15

Per Section 11.4.5: T	Sa:
PGA	0.4000
0.05	0.6500
0.1	0.9000
0.2	1.0000
0.3	1.0000
0.4	1.0000
0.5	1.0000
0.75	0.8000
1	0.6000
2	0.3000
3	0.2000
4	0.1500

Lower Limit as 80% of Section 11.4.5: T	Sa:
PGA	0.3200
0.05	0.5200
0.1	0.7200
0.2	0.8000
0.3	0.8000
0.4	0.8000
0.5	0.8000
0.75	0.6400
1	0.4800
2	0.2400
3	0.1600
4	0.1200

Initial Design Response Spectrum T	Sa
PGA	0.6453
0.05	0.8080
0.1	1.1493
0.2	1.4527
0.3	1.5453
0.4	1.4687
0.5	1.3633
0.75	1.0260
1	0.7967
2	0.4113
3	0.2693
4	0.2033

Final Design Response Spectrum:

T	Sa:
PGA	0.6453
0.05	0.8080
0.1	1.1493
0.2	1.4527
0.3	1.5453
0.4	1.4687
0.5	1.3633
0.75	1.0260
1	0.7967
2	0.4113
3	0.2693
4	0.2033

Final MCE Response Spectrum:

T	Sa:
PGA	0.9680
0.05	1.2120
0.1	1.7240
0.2	2.1790
0.3	2.3180
0.4	2.2030
0.5	2.0450
0.75	1.5390
1	1.1950
2	0.6170
3	0.4040
4	0.3050

per ASCE 7-05 Section 11.4.6

21.4 Design Acceleration Parameters

Where the site - specific procedure is used to determine the design ground motion in accordance with Section 21.3, the parameter SDs shall be taken as the spectral acceleration, Sa, obtained from the site - specific spectra at a period of 0.2s, except that is shall not be taken less than 90 percent of the peak spectral acceleration, Sa, at any period larger than 0.2s.

Sa at T = 0.2s:

T	Sa:
0.2	1.4527

Sa as 90% of maximum Sa at T > 0.2s:

Sa:
1.3908

SDs: 1.4527

The parameter SD1 shall be taken as the greater of the spectral acceleration, Sa, at a period 1s or two times the spectral acceleration , Sa, at a period of 2 sec.

Sa at T = 1s:

T	Sa:
1	0.7967

2 x Sa at T = 2s:

T	Sa:
2	0.8227

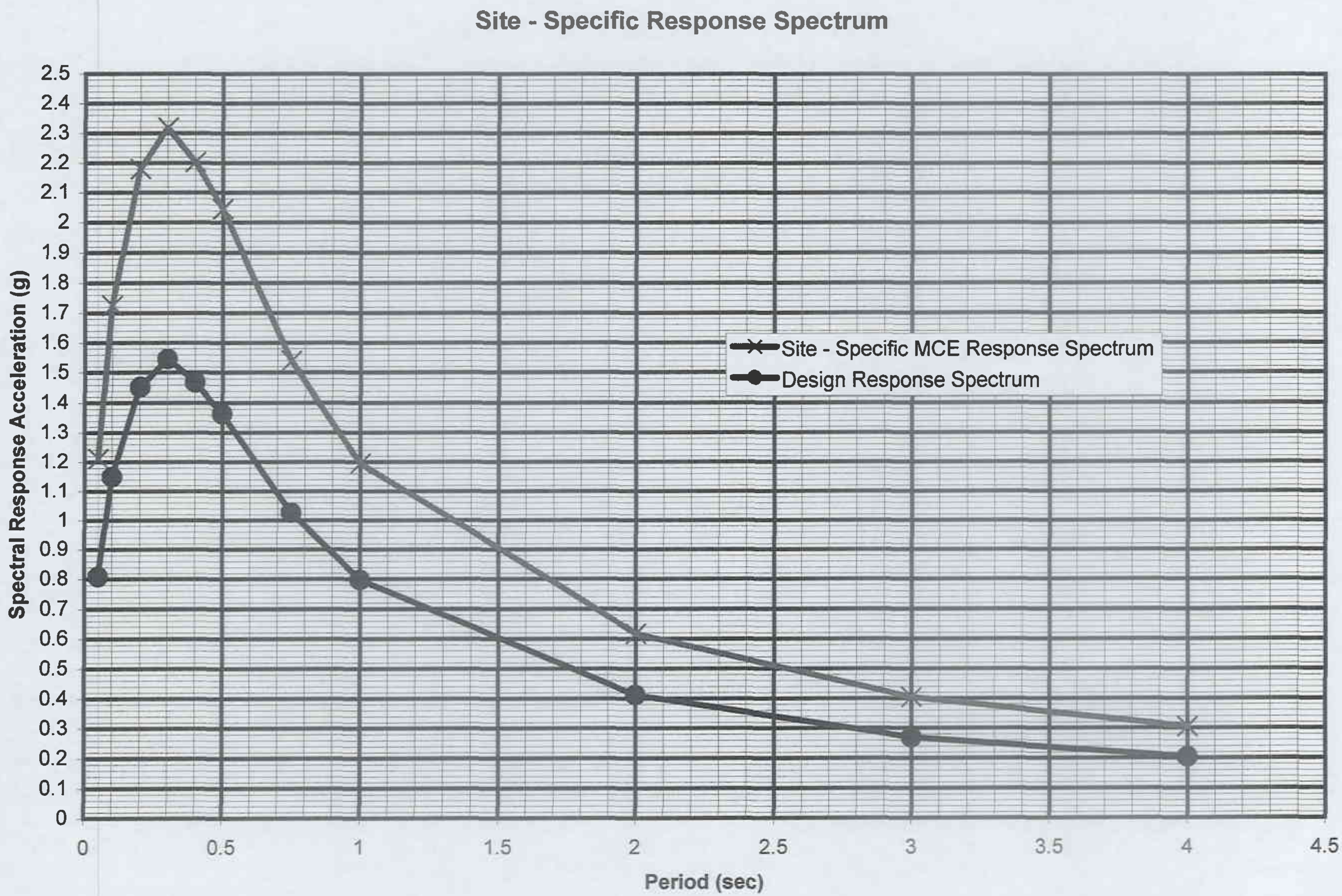
SD1: 0.8227

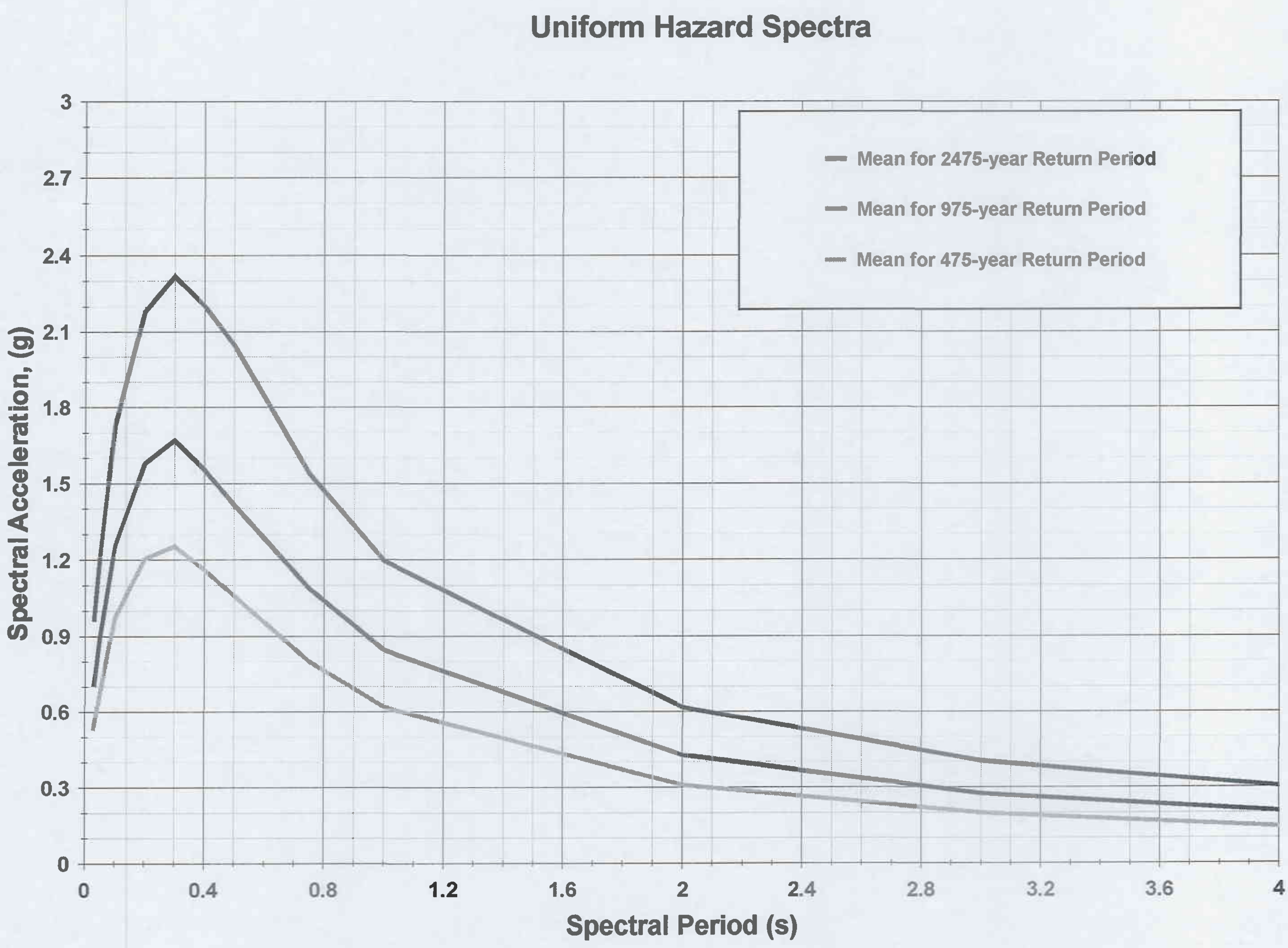
The parameters SMs and SM1 shall be taken as 1.5 times SDs and SD1 respectively. The values so obtained shall not be less than 80 percent of the values determined in accordance with Section 11.4.3 for SMs and SM1 and Section 11.4.4 for SDs and SD1.

SMs: 2.1790
SM1: 1.2340

Site Specific Design Acceleration Parameters:

SMs:	2.179
SM1:	1.234
SDs:	1.453
SD1:	0.823
PGA:	0.65g


Site - Specific Response Spectrum
Spectral Response Acceleration (g)
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Period (sec)
Site - Specific MCE Response Spectrum
Design Response Spectrum

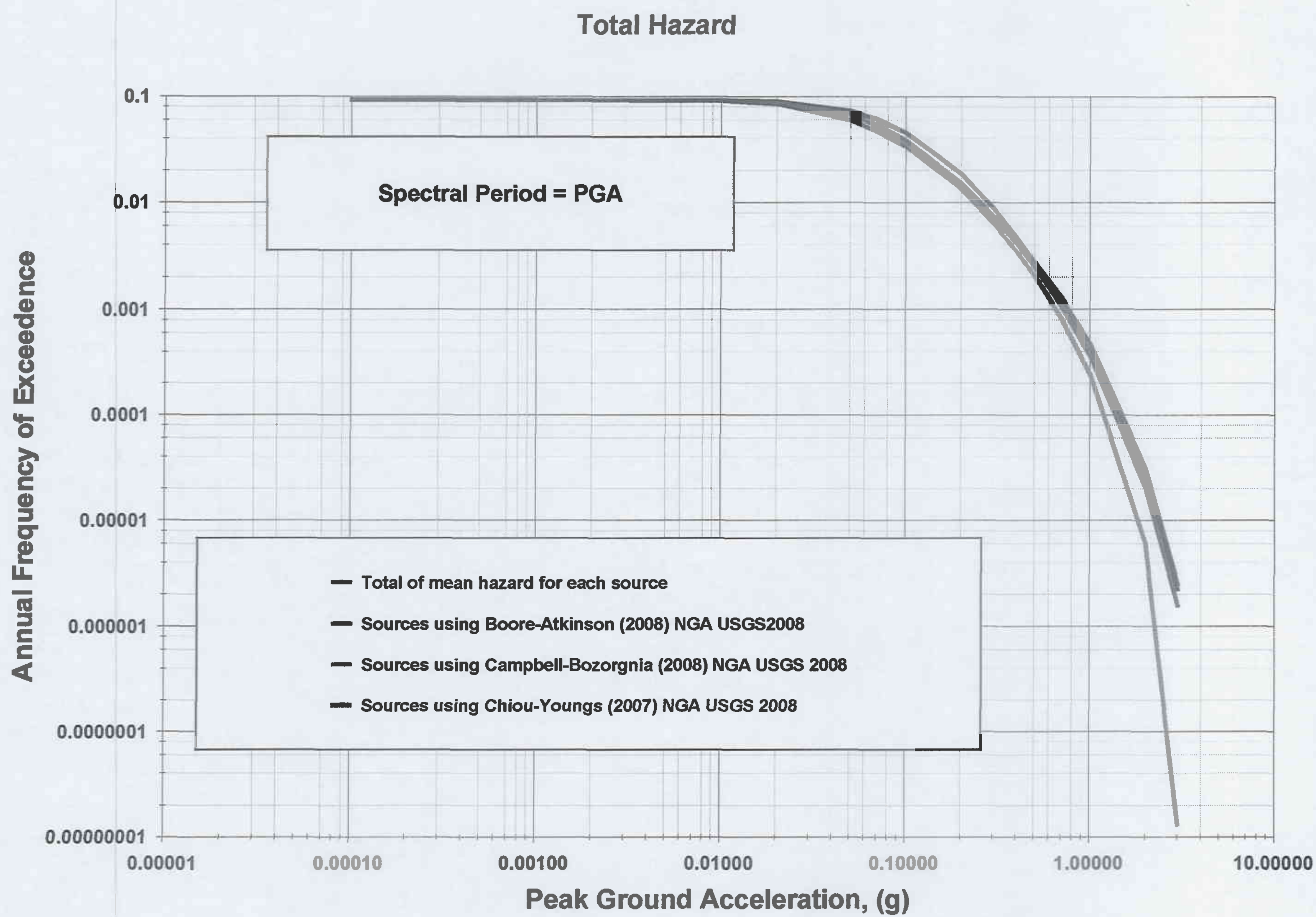


Uniform Hazard Spectra
Mean for 2475-year Return Period
Mean for 975-year Return Period
Mean for 475-year Return Period
Spectral Acceleration, (g)
3
2.7
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0
0
0.4
0.8
1.2
1.6
2
2.4
2.8
3.2
3.6
4
Spectral Period (s)

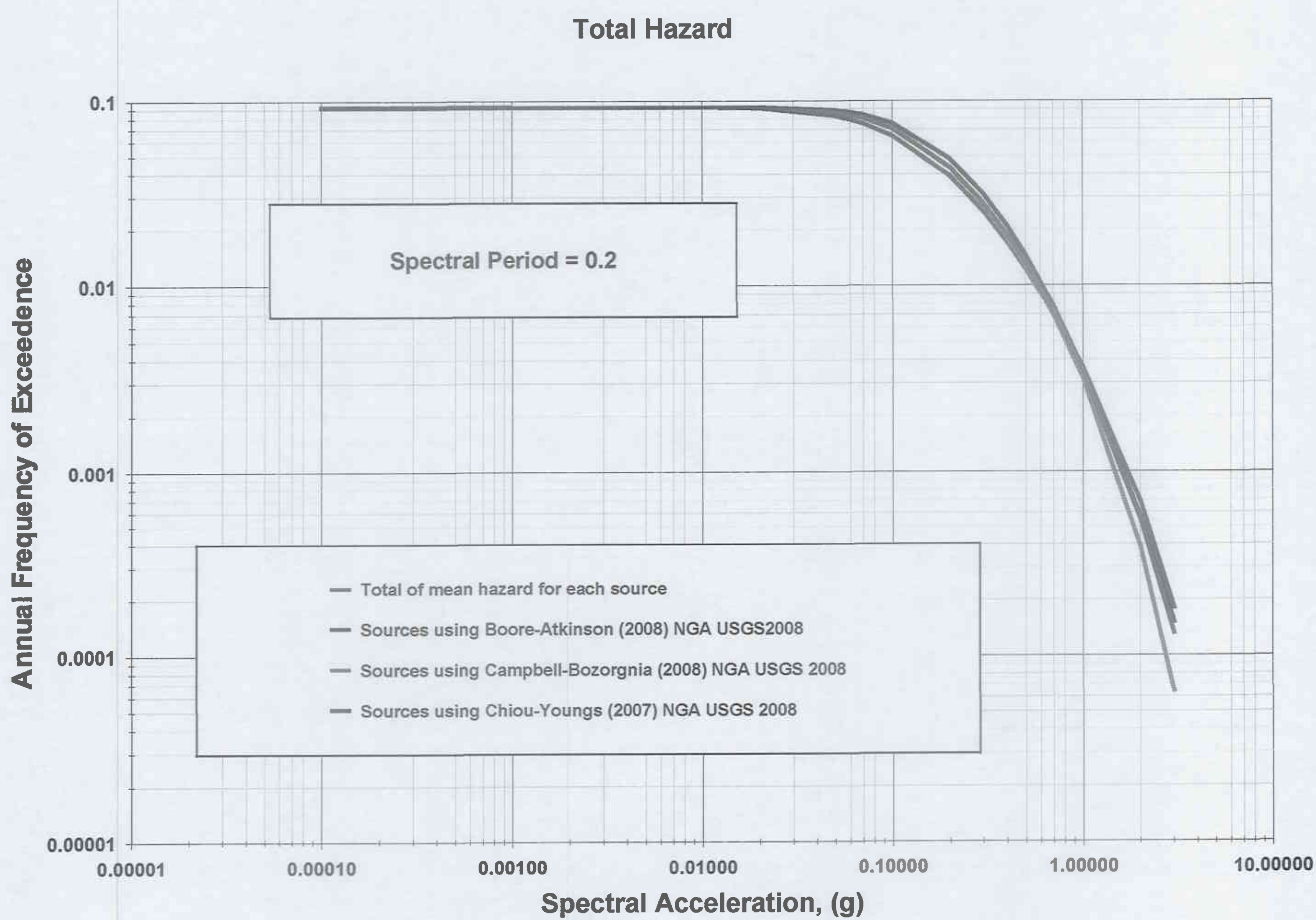
```
Probabilistic Spectra results for EZ-FRISK 7.32 Build 001

ANNUAL FREQUENCY OF EXCEEDANCE: 4.041e-004
RETURN PERIOD: 2474.9
PROBABILITY OF EXCEEDENCE: 2.0% IN 50.0 YEARS
  Column 1: Spectral Period
  Column 2: Acceleration (g) for: Mean
  Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
  Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
  Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008
```

1	2	3	4	5
PGA	9.679e-001	9.823e-001	8.603e-001	1.042e+000
5.e-002	1.212e+000	1.232e+000	1.090e+000	1.309e+000
0.1	1.724e+000	1.809e+000	1.512e+000	1.854e+000
0.2	2.179e+000	2.218e+000	1.970e+000	2.348e+000
0.3	2.318e+000	2.312e+000	2.118e+000	2.524e+000
0.4	2.203e+000	2.180e+000	2.103e+000	2.326e+000
0.5	2.045e+000	1.981e+000	2.042e+000	2.107e+000
0.75	1.539e+000	1.485e+000	1.548e+000	1.586e+000
1.	1.195e+000	1.135e+000	1.191e+000	1.260e+000
2.	6.165e-001	6.169e-001	6.011e-001	6.327e-001
3.	4.041e-001	4.002e-001	4.005e-001	4.130e-001
4.	3.049e-001	2.946e-001	3.146e-001	3.047e-001



Total Hazard
Spectral Period = PGA
Total of mean hazard for each source
Sources using Boore-Atkinson (2008) NGA USGS2008
Sources using Campbell-Bozorgnia (2008) NGA USGS 2008
Sources using Chiou-Youngs (2007) NGA USGS 2008
Annual Frequency of Exceedence
0.1
0.01
0.001
0.0001
0.00001
0.000001
0.0000001
0.00000001
0.00001
0.00010
0.00100
0.01000
0.10000
1.00000
10.00000
Peak Ground Acceleration, (g)



Total Hazard
Spectral Period = 0.2
Total of mean hazard for each source
Sources using Boore-Atkinson (2008) NGA USGS2008
Sources using Campbell-Bozorgnia (2008) NGA USGS 2008
Sources using Chiou-Youngs (2007) NGA USGS 2008
Annual Frequency of Exceedence
0.1
0.01
0.001
0.0001
0.00001
0.00001
0.00010
0.00100
0.01000
0.10000
1.00000
10.00000
Spectral Acceleration, (g)

Probabilistic Hazard Results for EZ-FRISK 7.32 Build 001

SPECTRAL PERIOD: PGA
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.245e-002	9.245e-002	9.245e-002	9.244e-002
0.010	9.183e-002	9.200e-002	9.230e-002	9.119e-002
0.020	8.829e-002	8.989e-002	8.993e-002	8.506e-002
0.050	6.696e-002	7.309e-002	6.789e-002	5.991e-002
0.070	5.365e-002	6.073e-002	5.304e-002	4.717e-002
0.100	3.866e-002	4.551e-002	3.678e-002	3.367e-002
0.200	1.514e-002	1.856e-002	1.331e-002	1.354e-002
0.300	7.359e-003	8.752e-003	6.280e-003	7.046e-003
0.400	4.109e-003	4.668e-003	3.443e-003	4.215e-003
0.500	2.497e-003	2.729e-003	2.047e-003	2.715e-003
0.700	1.069e-003	1.118e-003	8.203e-004	1.269e-003
1.000	3.663e-004	3.829e-004	2.409e-004	4.751e-004
2.000	2.090e-005	2.551e-005	6.115e-006	3.106e-005
3.000	1.584e-006	2.242e-006	1.321e-008	2.497e-006

SPECTRAL PERIOD: 5.e-002
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.244e-002	9.245e-002	9.245e-002	9.244e-002
0.010	9.192e-002	9.204e-002	9.232e-002	9.141e-002
0.020	8.918e-002	9.019e-002	9.062e-002	8.673e-002
0.050	7.153e-002	7.537e-002	7.357e-002	6.566e-002
0.070	5.958e-002	6.408e-002	6.065e-002	5.401e-002
0.100	4.528e-002	4.976e-002	4.513e-002	4.094e-002
0.200	2.023e-002	2.273e-002	1.917e-002	1.880e-002
0.300	1.069e-002	1.175e-002	9.869e-003	1.044e-002
0.400	6.354e-003	6.757e-003	5.763e-003	6.543e-003
0.500	4.085e-003	4.215e-003	3.632e-003	4.410e-003
0.700	1.946e-003	1.941e-003	1.638e-003	2.259e-003
1.000	7.783e-004	7.799e-004	5.822e-004	9.727e-004
2.000	7.333e-005	8.797e-005	3.052e-005	1.015e-004
3.000	1.094e-005	1.578e-005	1.657e-006	1.539e-005

SPECTRAL PERIOD: 0.1
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.245e-002	9.245e-002	9.245e-002	9.245e-002
0.010	9.220e-002	9.221e-002	9.240e-002	9.198e-002
0.020	9.097e-002	9.133e-002	9.170e-002	8.987e-002
0.050	8.030e-002	8.249e-002	8.216e-002	7.626e-002
0.070	7.121e-002	7.404e-002	7.286e-002	6.673e-002
0.100	5.871e-002	6.175e-002	5.968e-002	5.471e-002
0.200	3.197e-002	3.394e-002	3.189e-002	3.009e-002
0.300	1.910e-002	2.004e-002	1.898e-002	1.828e-002
0.400	1.232e-002	1.268e-002	1.222e-002	1.206e-002
0.500	8.417e-003	8.492e-003	8.300e-003	8.458e-003
0.700	4.409e-003	4.334e-003	4.223e-003	4.670e-003
1.000	1.981e-003	1.953e-003	1.749e-003	2.240e-003
2.000	2.622e-004	3.095e-004	1.497e-004	3.274e-004
3.000	5.342e-005	7.850e-005	1.631e-005	6.545e-005

SPECTRAL PERIOD: 0.2
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.245e-002	9.245e-002	9.245e-002	9.245e-002
0.010	9.238e-002	9.240e-002	9.244e-002	9.230e-002
0.020	9.192e-002	9.214e-002	9.226e-002	9.137e-002
0.050	8.651e-002	8.880e-002	8.789e-002	8.284e-002
0.070	8.047e-002	8.417e-002	8.195e-002	7.528e-002
0.100	7.048e-002	7.543e-002	7.155e-002	6.447e-002
0.200	4.355e-002	4.834e-002	4.324e-002	3.908e-002
0.300	2.790e-002	3.122e-002	2.734e-002	2.514e-002
0.400	1.880e-002	2.094e-002	1.831e-002	1.716e-002
0.500	1.324e-002	1.458e-002	1.283e-002	1.231e-002
0.700	7.250e-003	7.740e-003	6.939e-003	7.071e-003
1.000	3.454e-003	3.554e-003	3.180e-003	3.627e-003
2.000	5.464e-004	5.667e-004	3.862e-004	6.862e-004
3.000	1.316e-004	1.507e-004	6.403e-005	1.800e-004

SPECTRAL PERIOD: 0.3
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.245e-002	9.245e-002	9.245e-002	9.245e-002
0.010	9.241e-002	9.243e-002	9.244e-002	9.235e-002
0.020	9.204e-002	9.224e-002	9.232e-002	9.157e-002
0.050	8.714e-002	8.927e-002	8.866e-002	8.348e-002
0.070	8.145e-002	8.502e-002	8.331e-002	7.601e-002
0.100	7.182e-002	7.681e-002	7.346e-002	6.518e-002
0.200	4.495e-002	5.034e-002	4.501e-002	3.951e-002
0.300	2.896e-002	3.303e-002	2.840e-002	2.547e-002
0.400	1.959e-002	2.243e-002	1.890e-002	1.744e-002
0.500	1.384e-002	1.577e-002	1.319e-002	1.257e-002
0.700	7.645e-003	8.502e-003	7.129e-003	7.304e-003
1.000	3.717e-003	3.957e-003	3.354e-003	3.840e-003
2.000	6.525e-004	6.442e-004	5.014e-004	8.120e-004
3.000	1.745e-004	1.745e-004	1.084e-004	2.407e-004

SPECTRAL PERIOD: 0.4
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.245e-002	9.245e-002	9.245e-002	9.245e-002
0.010	9.240e-002	9.243e-002	9.244e-002	9.234e-002
0.020	9.194e-002	9.223e-002	9.225e-002	9.134e-002
0.050	8.587e-002	8.861e-002	8.739e-002	8.163e-002
0.070	7.927e-002	8.365e-002	8.095e-002	7.321e-002
0.100	6.860e-002	7.445e-002	6.988e-002	6.146e-002
0.200	4.079e-002	4.655e-002	4.059e-002	3.523e-002
0.300	2.534e-002	2.937e-002	2.474e-002	2.190e-002
0.400	1.671e-002	1.935e-002	1.611e-002	1.466e-002
0.500	1.160e-002	1.330e-002	1.109e-002	1.041e-002
0.700	6.287e-003	6.972e-003	5.943e-003	5.947e-003
1.000	3.038e-003	3.198e-003	2.835e-003	3.081e-003
2.000	5.500e-004	5.311e-004	4.803e-004	6.387e-004
3.000	1.509e-004	1.470e-004	1.191e-004	1.866e-004

SPECTRAL PERIOD: 0.5
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.245e-002	9.245e-002	9.245e-002	9.245e-002
0.010	9.238e-002	9.242e-002	9.243e-002	9.230e-002
0.020	9.170e-002	9.213e-002	9.211e-002	9.087e-002
0.050	8.388e-002	8.717e-002	8.566e-002	7.881e-002
0.070	7.615e-002	8.106e-002	7.813e-002	6.926e-002
0.100	6.442e-002	7.056e-002	6.610e-002	5.661e-002
0.200	3.627e-002	4.161e-002	3.674e-002	3.045e-002
0.300	2.175e-002	2.523e-002	2.180e-002	1.824e-002
0.400	1.401e-002	1.615e-002	1.393e-002	1.195e-002
0.500	9.574e-003	1.087e-002	9.477e-003	8.375e-003
0.700	5.090e-003	5.543e-003	5.026e-003	4.702e-003
1.000	2.426e-003	2.482e-003	2.403e-003	2.394e-003
2.000	4.340e-004	3.938e-004	4.325e-004	4.758e-004
3.000	1.177e-004	1.046e-004	1.149e-004	1.335e-004

SPECTRAL PERIOD: 0.75
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.245e-002	9.245e-002	9.245e-002	9.245e-002
0.010	9.225e-002	9.237e-002	9.236e-002	9.203e-002
0.020	9.051e-002	9.146e-002	9.114e-002	8.893e-002
0.050	7.686e-002	8.161e-002	7.836e-002	7.059e-002
0.070	6.630e-002	7.243e-002	6.764e-002	5.884e-002
0.100	5.252e-002	5.917e-002	5.340e-002	4.501e-002
0.200	2.548e-002	2.999e-002	2.550e-002	2.096e-002
0.300	1.401e-002	1.654e-002	1.384e-002	1.166e-002
0.400	8.539e-003	9.927e-003	8.362e-003	7.329e-003
0.500	5.617e-003	6.376e-003	5.477e-003	4.997e-003
0.700	2.837e-003	3.047e-003	2.769e-003	2.695e-003
1.000	1.282e-003	1.272e-003	1.268e-003	1.306e-003
2.000	2.005e-004	1.706e-004	2.068e-004	2.239e-004
3.000	4.831e-005	3.864e-005	5.088e-005	5.540e-005

SPECTRAL PERIOD: 1.
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.245e-002	9.245e-002	9.245e-002	9.245e-002
0.010	9.194e-002	9.225e-002	9.211e-002	9.146e-002
0.020	8.850e-002	9.039e-002	8.912e-002	8.600e-002
0.050	6.895e-002	7.518e-002	6.958e-002	6.209e-002
0.070	5.649e-002	6.339e-002	5.683e-002	4.924e-002
0.100	4.196e-002	4.830e-002	4.205e-002	3.555e-002
0.200	1.773e-002	2.071e-002	1.762e-002	1.485e-002
0.300	9.034e-003	1.030e-002	8.941e-003	7.865e-003
0.400	5.254e-003	5.767e-003	5.189e-003	4.808e-003
0.500	3.345e-003	3.524e-003	3.302e-003	3.209e-003
0.700	1.609e-003	1.569e-003	1.590e-003	1.668e-003
1.000	6.850e-004	6.062e-004	6.794e-004	7.694e-004
2.000	8.806e-005	6.590e-005	8.651e-005	1.118e-004
3.000	1.777e-005	1.189e-005	1.706e-005	2.435e-005

SPECTRAL PERIOD: 2.

Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

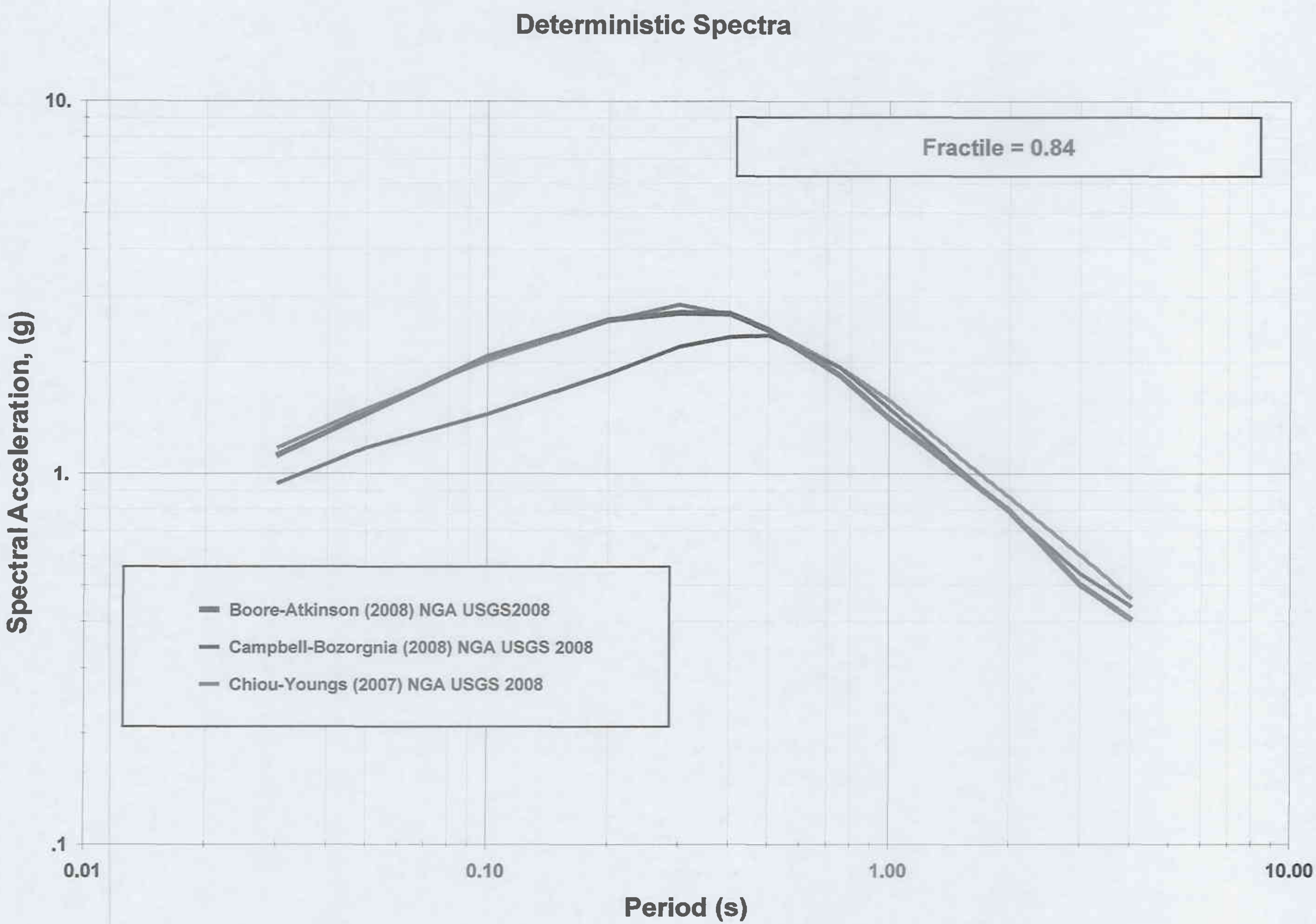
1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.244e-002	9.245e-002	9.244e-002	9.244e-002
0.010	8.657e-002	8.919e-002	8.715e-002	8.337e-002
0.020	7.141e-002	7.765e-002	7.209e-002	6.447e-002
0.050	3.775e-002	4.442e-002	3.814e-002	3.068e-002
0.070	2.607e-002	3.119e-002	2.640e-002	2.061e-002
0.100	1.619e-002	1.949e-002	1.644e-002	1.263e-002
0.200	5.082e-003	5.927e-003	5.147e-003	4.172e-003
0.300	2.264e-003	2.519e-003	2.260e-003	2.011e-003
0.400	1.198e-003	1.280e-003	1.174e-003	1.141e-003
0.500	7.024e-004	7.249e-004	6.736e-004	7.088e-004
0.700	2.889e-004	2.844e-004	2.648e-004	3.174e-004
1.000	9.759e-005	9.318e-005	8.340e-005	1.162e-004
2.000	5.755e-006	5.314e-006	3.692e-006	8.259e-006
3.000	3.268e-007	2.913e-007	1.154e-007	5.737e-007

SPECTRAL PERIOD: 3.
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.243e-002	9.244e-002	9.244e-002	9.240e-002
0.010	7.524e-002	8.054e-002	7.702e-002	6.815e-002
0.020	5.207e-002	5.885e-002	5.395e-002	4.342e-002
0.050	2.110e-002	2.490e-002	2.225e-002	1.615e-002
0.070	1.337e-002	1.581e-002	1.416e-002	1.013e-002
0.100	7.663e-003	8.985e-003	8.120e-003	5.884e-003
0.200	2.101e-003	2.314e-003	2.181e-003	1.807e-003
0.300	8.527e-004	8.802e-004	8.591e-004	8.187e-004
0.400	4.156e-004	4.047e-004	4.055e-004	4.364e-004
0.500	2.255e-004	2.091e-004	2.130e-004	2.545e-004
0.700	8.036e-005	6.915e-005	7.094e-005	1.010e-004
1.000	2.206e-005	1.740e-005	1.740e-005	3.138e-005
2.000	5.191e-007	2.624e-007	2.181e-007	1.077e-006
3.000	7.948e-009	1.638e-009	6.558e-010	2.155e-008

SPECTRAL PERIOD: 4.
Column 1: Acceleration (g)
Column 2: Mean
Column 3: Boore-Atkinson (2008) NGA USGS2008
Column 4: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
1.0e-004	9.245e-002	9.245e-002	9.245e-002	9.245e-002
1.0e-003	9.230e-002	9.241e-002	9.240e-002	9.210e-002
0.010	6.329e-002	6.985e-002	6.705e-002	5.296e-002
0.020	3.862e-002	4.427e-002	4.204e-002	2.957e-002
0.050	1.344e-002	1.542e-002	1.522e-002	9.672e-003
0.070	8.106e-003	9.148e-003	9.273e-003	5.896e-003
0.100	4.427e-003	4.844e-003	5.085e-003	3.352e-003
0.200	1.105e-003	1.095e-003	1.246e-003	9.743e-004
0.300	4.218e-004	3.855e-004	4.610e-004	4.190e-004
0.400	1.960e-004	1.681e-004	2.071e-004	2.129e-004
0.500	1.020e-004	8.340e-005	1.040e-004	1.187e-004
0.700	3.352e-005	2.541e-005	3.167e-005	4.347e-005
1.000	8.013e-006	5.449e-006	6.664e-006	1.193e-005
2.000	1.092e-007	4.431e-008	4.557e-008	2.377e-007
3.000	4.289e-010	1.673e-010	1.258e-010	9.936e-010


Deterministic Spectra
Fractile = 0.84
Boore-Atkinson (2008) NGA USGS2008
Campbell-Bozorgnia (2008) NGA USGS 2008
Chiou-Youngs (2007) NGA USGS 2008
Spectral Acceleration, (g)
10.
1.
.1
0.01
0.10
1.00
10.00
Period (s)

Deterministic Spectra Results using EZ-FRISK 7.32 Build 001

Source: Santa Monica
Region: California USGS02
Closest Distance: 0.94 km
Amplitude Units: Acceleration (g)
Magnitude: 6.73 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.081e+000	1.125e+000	9.437e-001	1.175e+000
5.e-002	1.373e+000	1.449e+000	1.174e+000	1.494e+000
0.1	1.843e+000	2.067e+000	1.442e+000	2.020e+000
0.2	2.347e+000	2.598e+000	1.860e+000	2.584e+000
0.3	2.592e+000	2.718e+000	2.204e+000	2.855e+000
0.4	2.575e+000	2.703e+000	2.338e+000	2.684e+000
0.5	2.421e+000	2.445e+000	2.365e+000	2.452e+000
0.75	1.905e+000	1.842e+000	1.935e+000	1.940e+000
1.	1.490e+000	1.407e+000	1.495e+000	1.569e+000
2.	8.142e-001	7.933e-001	7.872e-001	8.621e-001
3.	5.461e-001	5.006e-001	5.360e-001	6.017e-001
4.	4.241e-001	3.833e-001	4.274e-001	4.616e-001

Source: Malibu Coast
Region: California USGS02
Closest Distance: 5.99 km
Amplitude Units: Acceleration (g)
Magnitude: 6.83 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	7.106e-001	6.947e-001	6.650e-001	7.721e-001
5.e-002	8.984e-001	8.496e-001	8.547e-001	9.909e-001
0.1	1.281e+000	1.243e+000	1.218e+000	1.381e+000
0.2	1.640e+000	1.647e+000	1.529e+000	1.745e+000
0.3	1.737e+000	1.722e+000	1.625e+000	1.865e+000
0.4	1.650e+000	1.665e+000	1.579e+000	1.706e+000
0.5	1.507e+000	1.496e+000	1.497e+000	1.529e+000
0.75	1.150e+000	1.133e+000	1.134e+000	1.182e+000
1.	9.012e-001	8.709e-001	8.832e-001	9.494e-001
2.	5.473e-001	5.501e-001	5.278e-001	5.639e-001
3.	4.058e-001	3.879e-001	4.075e-001	4.219e-001
4.	3.435e-001	3.271e-001	3.589e-001	3.446e-001

Source: Newport-Inglewood
Region: California USGS02
Closest Distance: 7.33 km
Amplitude Units: Acceleration (g)
Magnitude: 7.18 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	6.911e-001	6.890e-001	6.207e-001	7.637e-001
5.e-002	8.741e-001	8.446e-001	7.982e-001	9.794e-001
0.1	1.247e+000	1.213e+000	1.159e+000	1.368e+000
0.2	1.574e+000	1.529e+000	1.453e+000	1.740e+000
0.3	1.677e+000	1.629e+000	1.527e+000	1.874e+000
0.4	1.582e+000	1.550e+000	1.471e+000	1.726e+000
0.5	1.459e+000	1.399e+000	1.424e+000	1.556e+000
0.75	1.153e+000	1.110e+000	1.130e+000	1.220e+000
1.	9.223e-001	8.556e-001	9.177e-001	9.936e-001
2.	6.048e-001	5.890e-001	6.086e-001	6.168e-001
3.	4.779e-001	4.698e-001	4.883e-001	4.756e-001
4.	4.148e-001	4.067e-001	4.398e-001	3.978e-001

Source: Hollywood
Region: California USGS02
Closest Distance: 8.14 km
Amplitude Units: Acceleration (g)
Magnitude: 6.80 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	6.120e-001	6.074e-001	5.752e-001	6.533e-001
5.e-002	7.728e-001	7.332e-001	7.443e-001	8.408e-001
0.1	1.122e+000	1.068e+000	1.112e+000	1.185e+000
0.2	1.434e+000	1.427e+000	1.386e+000	1.490e+000
0.3	1.493e+000	1.479e+000	1.426e+000	1.573e+000
0.4	1.397e+000	1.416e+000	1.350e+000	1.425e+000
0.5	1.263e+000	1.267e+000	1.254e+000	1.266e+000
0.75	9.459e-001	9.475e-001	9.253e-001	9.648e-001
1.	7.368e-001	7.265e-001	7.150e-001	7.688e-001
2.	4.311e-001	4.419e-001	4.109e-001	4.404e-001
3.	3.102e-001	3.013e-001	3.091e-001	3.202e-001
4.	2.574e-001	2.500e-001	2.665e-001	2.555e-001

Source: Palos Verdes
Region: California USGS02
Closest Distance: 13.43 km
Amplitude Units: Acceleration (g)
Magnitude: 7.38 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	5.370e-001	5.717e-001	4.576e-001	5.816e-001
5.e-002	6.764e-001	6.918e-001	5.898e-001	7.477e-001
0.1	9.750e-001	9.630e-001	9.000e-001	1.062e+000
0.2	1.212e+000	1.159e+000	1.128e+000	1.349e+000
0.3	1.271e+000	1.230e+000	1.150e+000	1.432e+000
0.4	1.176e+000	1.152e+000	1.073e+000	1.304e+000
0.5	1.081e+000	1.043e+000	1.035e+000	1.165e+000
0.75	8.607e-001	8.463e-001	8.326e-001	9.031e-001
1.	6.934e-001	6.574e-001	6.894e-001	7.335e-001
2.	4.665e-001	4.663e-001	4.775e-001	4.559e-001
3.	3.771e-001	3.926e-001	3.871e-001	3.515e-001
4.	3.285e-001	3.414e-001	3.500e-001	2.941e-001

Source: Puente Hills blind thrust
Region: California USGS02
Closest Distance: 16.74 km
Amplitude Units: Acceleration (g)

Magnitude: 7.18 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	5.418e-001	4.973e-001	4.934e-001	6.348e-001
5.e-002	6.734e-001	5.908e-001	6.223e-001	8.071e-001
0.1	9.699e-001	8.282e-001	9.551e-001	1.126e+000
0.2	1.232e+000	1.069e+000	1.216e+000	1.412e+000
0.3	1.305e+000	1.177e+000	1.253e+000	1.484e+000
0.4	1.196e+000	1.079e+000	1.171e+000	1.338e+000
0.5	1.092e+000	9.795e-001	1.113e+000	1.183e+000
0.75	8.507e-001	7.869e-001	8.739e-001	8.912e-001
1.	6.567e-001	5.826e-001	6.901e-001	6.974e-001
2.	3.637e-001	3.419e-001	3.916e-001	3.576e-001
3.	2.673e-001	2.610e-001	2.870e-001	2.541e-001
4.	2.278e-001	2.178e-001	2.597e-001	2.060e-001

Source: Upper Elysian Park
Region: California USGS02
Closest Distance: 18.45 km
Amplitude Units: Acceleration (g)
Magnitude: 6.80 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	4.313e-001	4.147e-001	4.279e-001	4.512e-001
5.e-002	5.353e-001	4.824e-001	5.449e-001	5.788e-001
0.1	7.910e-001	6.897e-001	8.564e-001	8.268e-001
0.2	1.026e+000	9.665e-001	1.084e+000	1.028e+000
0.3	1.064e+000	1.042e+000	1.094e+000	1.057e+000
0.4	9.639e-001	9.532e-001	1.003e+000	9.359e-001
0.5	8.614e-001	8.529e-001	9.149e-001	8.165e-001
0.75	6.367e-001	6.419e-001	6.683e-001	5.999e-001
1.	4.777e-001	4.695e-001	5.019e-001	4.616e-001
2.	2.398e-001	2.454e-001	2.489e-001	2.250e-001
3.	1.631e-001	1.618e-001	1.729e-001	1.546e-001
4.	1.346e-001	1.313e-001	1.511e-001	1.215e-001

Source: Anacapa-Dume
Region: California USGS02
Closest Distance: 21.53 km
Amplitude Units: Acceleration (g)
Magnitude: 7.63 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	4.527e-001	4.977e-001	3.530e-001	5.076e-001
5.e-002	5.657e-001	5.968e-001	4.505e-001	6.497e-001
0.1	8.035e-001	8.035e-001	6.799e-001	9.271e-001
0.2	9.953e-001	9.369e-001	8.662e-001	1.183e+000
0.3	1.066e+000	1.050e+000	8.959e-001	1.252e+000
0.4	9.752e-001	9.583e-001	8.305e-001	1.137e+000
0.5	9.046e-001	8.855e-001	8.145e-001	1.014e+000
0.75	7.314e-001	7.510e-001	6.736e-001	7.696e-001

1.	5.792e-001	5.602e-001	5.671e-001	6.103e-001
2.	2.952e-001	2.828e-001	3.343e-001	2.685e-001
3.	1.980e-001	2.004e-001	2.278e-001	1.658e-001
4.	1.444e-001	1.402e-001	1.759e-001	1.172e-001

Source: Northridge
Region: California USGS02
Closest Distance: 23.15 km
Amplitude Units: Acceleration (g)
Magnitude: 7.08 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	5.244e-001	5.264e-001	4.347e-001	6.119e-001
5.e-002	6.575e-001	6.272e-001	5.430e-001	8.022e-001
0.1	9.528e-001	8.899e-001	8.327e-001	1.136e+000
0.2	1.218e+000	1.171e+000	1.075e+000	1.407e+000
0.3	1.281e+000	1.288e+000	1.116e+000	1.438e+000
0.4	1.163e+000	1.187e+000	1.034e+000	1.267e+000
0.5	1.049e+000	1.075e+000	9.719e-001	1.101e+000
0.75	7.909e-001	8.403e-001	7.414e-001	7.909e-001
1.	5.942e-001	6.135e-001	5.716e-001	5.974e-001
2.	2.525e-001	2.855e-001	2.463e-001	2.257e-001
3.	1.455e-001	1.763e-001	1.402e-001	1.198e-001
4.	1.025e-001	1.252e-001	1.033e-001	7.891e-002

Source: Verdugo
Region: California USGS02
Closest Distance: 23.34 km
Amplitude Units: Acceleration (g)
Magnitude: 6.93 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	3.339e-001	3.780e-001	2.872e-001	3.365e-001
5.e-002	4.143e-001	4.377e-001	3.714e-001	4.338e-001
0.1	6.103e-001	6.160e-001	5.828e-001	6.320e-001
0.2	7.904e-001	8.445e-001	7.343e-001	7.925e-001
0.3	8.212e-001	9.148e-001	7.353e-001	8.136e-001
0.4	7.386e-001	8.320e-001	6.635e-001	7.204e-001
0.5	6.612e-001	7.470e-001	6.066e-001	6.299e-001
0.75	4.964e-001	5.723e-001	4.493e-001	4.676e-001
1.	3.786e-001	4.209e-001	3.502e-001	3.647e-001
2.	2.075e-001	2.254e-001	2.102e-001	1.870e-001
3.	1.499e-001	1.544e-001	1.619e-001	1.333e-001
4.	1.250e-001	1.256e-001	1.421e-001	1.074e-001

Source: Raymond
Region: California USGS02
Closest Distance: 24.74 km
Amplitude Units: Acceleration (g)
Magnitude: 6.90 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008

Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	3.070e-001	3.633e-001	2.721e-001	2.855e-001
5.e-002	3.805e-001	4.209e-001	3.518e-001	3.689e-001
0.1	5.619e-001	5.919e-001	5.520e-001	5.418e-001
0.2	7.232e-001	7.942e-001	6.966e-001	6.788e-001
0.3	7.354e-001	8.151e-001	6.979e-001	6.933e-001
0.4	6.650e-001	7.554e-001	6.283e-001	6.112e-001
0.5	5.919e-001	6.706e-001	5.723e-001	5.328e-001
0.75	4.385e-001	4.993e-001	4.215e-001	3.948e-001
1.	3.409e-001	3.840e-001	3.270e-001	3.118e-001
2.	2.047e-001	2.394e-001	1.936e-001	1.810e-001
3.	1.504e-001	1.700e-001	1.483e-001	1.328e-001
4.	1.273e-001	1.453e-001	1.297e-001	1.070e-001

Source: Sierra Madre-San Fernando
Region: California USGS02
Closest Distance: 29.18 km
Amplitude Units: Acceleration (g)
Magnitude: 6.70 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.547e-001	3.000e-001	2.261e-001	2.379e-001
5.e-002	3.143e-001	3.438e-001	2.922e-001	3.068e-001
0.1	4.675e-001	4.897e-001	4.606e-001	4.523e-001
0.2	6.167e-001	7.018e-001	5.831e-001	5.652e-001
0.3	6.357e-001	7.519e-001	5.829e-001	5.724e-001
0.4	5.640e-001	6.716e-001	5.198e-001	5.006e-001
0.5	4.976e-001	5.955e-001	4.641e-001	4.332e-001
0.75	3.606e-001	4.383e-001	3.295e-001	3.140e-001
1.	2.696e-001	3.194e-001	2.486e-001	2.407e-001
2.	1.345e-001	1.562e-001	1.332e-001	1.141e-001
3.	9.017e-002	9.749e-002	9.655e-002	7.647e-002
4.	7.166e-002	7.546e-002	8.102e-002	5.852e-002

Source: Sierra Madre
Region: California USGS02
Closest Distance: 30.75 km
Amplitude Units: Acceleration (g)
Magnitude: 7.28 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	3.111e-001	3.637e-001	2.523e-001	3.173e-001
5.e-002	3.840e-001	4.237e-001	3.218e-001	4.067e-001
0.1	5.523e-001	5.764e-001	4.880e-001	5.926e-001
0.2	7.035e-001	7.315e-001	6.270e-001	7.519e-001
0.3	7.428e-001	8.035e-001	6.469e-001	7.782e-001
0.4	6.713e-001	7.307e-001	5.890e-001	6.941e-001
0.5	6.115e-001	6.666e-001	5.573e-001	6.107e-001
0.75	4.803e-001	5.408e-001	4.407e-001	4.594e-001
1.	3.754e-001	4.052e-001	3.581e-001	3.630e-001
2.	2.181e-001	2.310e-001	2.332e-001	1.902e-001
3.	1.644e-001	1.737e-001	1.828e-001	1.368e-001
4.	1.374e-001	1.402e-001	1.611e-001	1.107e-001

Source: Santa Susana
Region: California USGS02
Closest Distance: 30.85 km
Amplitude Units: Acceleration (g)
Magnitude: 6.83 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.580e-001	3.078e-001	2.234e-001	2.429e-001
5.e-002	3.168e-001	3.504e-001	2.875e-001	3.125e-001
0.1	4.671e-001	4.929e-001	4.481e-001	4.602e-001
0.2	6.166e-001	7.015e-001	5.705e-001	5.779e-001
0.3	6.398e-001	7.564e-001	5.753e-001	5.878e-001
0.4	5.720e-001	6.839e-001	5.154e-001	5.166e-001
0.5	5.087e-001	6.107e-001	4.663e-001	4.490e-001
0.75	3.756e-001	4.579e-001	3.398e-001	3.290e-001
1.	2.837e-001	3.358e-001	2.609e-001	2.545e-001
2.	1.463e-001	1.691e-001	1.459e-001	1.238e-001
3.	1.001e-001	1.084e-001	1.075e-001	8.439e-002
4.	8.079e-002	8.581e-002	9.112e-002	6.544e-002

Source: San Gabriel
Region: California USGS02
Closest Distance: 36.34 km
Amplitude Units: Acceleration (g)
Magnitude: 7.23 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.605e-001	3.226e-001	2.185e-001	2.405e-001
5.e-002	3.199e-001	3.741e-001	2.775e-001	3.081e-001
0.1	4.594e-001	5.070e-001	4.174e-001	4.536e-001
0.2	5.844e-001	6.353e-001	5.406e-001	5.772e-001
0.3	6.026e-001	6.578e-001	5.590e-001	5.911e-001
0.4	5.483e-001	6.106e-001	5.084e-001	5.258e-001
0.5	4.976e-001	5.517e-001	4.795e-001	4.618e-001
0.75	3.876e-001	4.359e-001	3.783e-001	3.484e-001
1.	3.097e-001	3.434e-001	3.062e-001	2.797e-001
2.	1.895e-001	2.193e-001	1.889e-001	1.603e-001
3.	1.400e-001	1.639e-001	1.416e-001	1.144e-001
4.	1.149e-001	1.347e-001	1.204e-001	8.977e-002

Source: Simi-Santa Rosa
Region: California USGS02
Closest Distance: 36.80 km
Amplitude Units: Acceleration (g)
Magnitude: 7.03 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.397e-001	2.962e-001	2.040e-001	2.188e-001
5.e-002	2.933e-001	3.397e-001	2.600e-001	2.803e-001
0.1	4.254e-001	4.675e-001	3.956e-001	4.131e-001

0.2	5.507e-001	6.183e-001	5.106e-001	5.231e-001
0.3	5.632e-001	6.351e-001	5.228e-001	5.318e-001
0.4	5.100e-001	5.875e-001	4.721e-001	4.703e-001
0.5	4.576e-001	5.255e-001	4.365e-001	4.109e-001
0.75	3.461e-001	4.004e-001	3.320e-001	3.058e-001
1.	2.722e-001	3.120e-001	2.618e-001	2.427e-001
2.	1.548e-001	1.852e-001	1.482e-001	1.309e-001
3.	1.074e-001	1.270e-001	1.064e-001	8.889e-002
4.	8.561e-002	1.021e-001	8.761e-002	6.711e-002

Source: Whittier
Region: California USGS02
Closest Distance: 41.77 km
Amplitude Units: Acceleration (g)
Magnitude: 7.20 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.294e-001	2.888e-001	1.935e-001	2.059e-001
5.e-002	2.800e-001	3.323e-001	2.447e-001	2.629e-001
0.1	4.009e-001	4.495e-001	3.649e-001	3.882e-001
0.2	5.150e-001	5.726e-001	4.761e-001	4.963e-001
0.3	5.297e-001	5.899e-001	4.937e-001	5.053e-001
0.4	4.825e-001	5.483e-001	4.491e-001	4.500e-001
0.5	4.381e-001	4.957e-001	4.230e-001	3.956e-001
0.75	3.418e-001	3.915e-001	3.343e-001	2.996e-001
1.	2.738e-001	3.100e-001	2.702e-001	2.413e-001
2.	1.627e-001	1.922e-001	1.610e-001	1.350e-001
3.	1.164e-001	1.384e-001	1.172e-001	9.364e-002
4.	9.342e-002	1.113e-001	9.727e-002	7.173e-002

Source: Holser
Region: California USGS02
Closest Distance: 40.74 km
Amplitude Units: Acceleration (g)
Magnitude: 6.90 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.168e-001	2.696e-001	1.839e-001	1.969e-001
5.e-002	2.638e-001	3.049e-001	2.339e-001	2.527e-001
0.1	3.847e-001	4.242e-001	3.558e-001	3.742e-001
0.2	5.126e-001	6.023e-001	4.611e-001	4.746e-001
0.3	5.320e-001	6.466e-001	4.708e-001	4.785e-001
0.4	4.771e-001	5.853e-001	4.239e-001	4.221e-001
0.5	4.270e-001	5.255e-001	3.875e-001	3.679e-001
0.75	3.186e-001	3.983e-001	2.874e-001	2.701e-001
1.	2.419e-001	2.940e-001	2.223e-001	2.095e-001
2.	1.066e-001	1.272e-001	1.063e-001	8.635e-002
3.	6.273e-002	7.134e-002	6.676e-002	5.008e-002
4.	4.425e-002	4.957e-002	4.926e-002	3.392e-002

Source: Oak Ridge-onshore
Region: California USGS02
Closest Distance: 44.52 km
Amplitude Units: Acceleration (g)
Magnitude: 7.08 Mw

Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.393e-001	2.713e-001	2.333e-001	2.132e-001
5.e-002	2.905e-001	3.085e-001	2.908e-001	2.721e-001
0.1	4.181e-001	4.219e-001	4.318e-001	4.005e-001
0.2	5.516e-001	5.733e-001	5.702e-001	5.112e-001
0.3	5.773e-001	6.183e-001	5.963e-001	5.174e-001
0.4	5.224e-001	5.622e-001	5.454e-001	4.597e-001
0.5	4.748e-001	5.104e-001	5.111e-001	4.029e-001
0.75	3.657e-001	4.014e-001	3.963e-001	2.995e-001
1.	2.807e-001	3.007e-001	3.071e-001	2.344e-001
2.	1.213e-001	1.352e-001	1.314e-001	9.731e-002
3.	7.055e-002	7.952e-002	7.587e-002	5.626e-002
4.	4.969e-002	5.490e-002	5.615e-002	3.803e-002

Source: Clamshell-Sawpit
Region: California USGS02
Closest Distance: 45.51 km
Amplitude Units: Acceleration (g)
Magnitude: 6.90 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.922e-001	2.411e-001	1.646e-001	1.709e-001
5.e-002	2.324e-001	2.708e-001	2.085e-001	2.179e-001
0.1	3.375e-001	3.753e-001	3.145e-001	3.227e-001
0.2	4.538e-001	5.394e-001	4.101e-001	4.120e-001
0.3	4.712e-001	5.783e-001	4.201e-001	4.152e-001
0.4	4.234e-001	5.238e-001	3.786e-001	3.678e-001
0.5	3.798e-001	4.710e-001	3.467e-001	3.216e-001
0.75	2.865e-001	3.603e-001	2.601e-001	2.391e-001
1.	2.193e-001	2.684e-001	2.023e-001	1.872e-001
2.	1.022e-001	1.225e-001	1.021e-001	8.197e-002
3.	6.276e-002	7.135e-002	6.707e-002	4.985e-002
4.	4.594e-002	5.135e-002	5.142e-002	3.503e-002

Source: San Cayetano
Region: California USGS02
Closest Distance: 52.58 km
Amplitude Units: Acceleration (g)
Magnitude: 7.03 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.780e-001	2.232e-001	1.512e-001	1.596e-001
5.e-002	2.142e-001	2.507e-001	1.899e-001	2.019e-001
0.1	3.070e-001	3.421e-001	2.806e-001	2.984e-001
0.2	4.120e-001	4.800e-001	3.703e-001	3.857e-001
0.3	4.298e-001	5.162e-001	3.836e-001	3.897e-001
0.4	3.891e-001	4.704e-001	3.483e-001	3.486e-001
0.5	3.530e-001	4.276e-001	3.242e-001	3.072e-001
0.75	2.741e-001	3.380e-001	2.516e-001	2.327e-001
1.	2.136e-001	2.562e-001	1.999e-001	1.848e-001

2.	1.008e-001	1.184e-001	1.027e-001	8.119e-002
3.	6.191e-002	7.002e-002	6.683e-002	4.889e-002
4.	4.462e-002	4.933e-002	5.057e-002	3.396e-002

Source: San Jose
Region: California USGS02
Closest Distance: 53.81 km
Amplitude Units: Acceleration (g)
Magnitude: 6.80 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.537e-001	2.025e-001	1.372e-001	1.215e-001
5.e-002	1.842e-001	2.255e-001	1.729e-001	1.542e-001
0.1	2.670e-001	3.133e-001	2.585e-001	2.293e-001
0.2	3.638e-001	4.558e-001	3.401e-001	2.955e-001
0.3	3.686e-001	4.616e-001	3.486e-001	2.957e-001
0.4	3.346e-001	4.270e-001	3.142e-001	2.625e-001
0.5	2.985e-001	3.796e-001	2.859e-001	2.299e-001
0.75	2.228e-001	2.822e-001	2.135e-001	1.727e-001
1.	1.746e-001	2.211e-001	1.650e-001	1.379e-001
2.	8.751e-002	1.152e-001	7.982e-002	6.754e-002
3.	5.317e-002	6.720e-002	5.097e-002	4.134e-002
4.	3.901e-002	5.025e-002	3.824e-002	2.854e-002

Source: San Joaquin Hills Thrust
Region: California USGS02
Closest Distance: 61.93 km
Amplitude Units: Acceleration (g)
Magnitude: 6.73 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.454e-001	1.658e-001	1.523e-001	1.180e-001
5.e-002	1.731e-001	1.825e-001	1.890e-001	1.477e-001
0.1	2.503e-001	2.544e-001	2.790e-001	2.175e-001
0.2	3.498e-001	3.932e-001	3.729e-001	2.831e-001
0.3	3.637e-001	4.210e-001	3.864e-001	2.838e-001
0.4	3.285e-001	3.816e-001	3.503e-001	2.537e-001
0.5	2.949e-001	3.430e-001	3.188e-001	2.227e-001
0.75	2.219e-001	2.608e-001	2.381e-001	1.669e-001
1.	1.685e-001	1.960e-001	1.787e-001	1.309e-001
2.	6.845e-002	8.299e-002	6.967e-002	5.268e-002
3.	3.731e-002	4.377e-002	3.883e-002	2.935e-002
4.	2.577e-002	3.001e-002	2.813e-002	1.918e-002

Source: Chino-Central Ave
Region: California USGS02
Closest Distance: 62.84 km
Amplitude Units: Acceleration (g)
Magnitude: 6.83 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.353e-001	1.785e-001	1.217e-001	1.057e-001
5.e-002	1.610e-001	1.979e-001	1.521e-001	1.331e-001
0.1	2.314e-001	2.731e-001	2.236e-001	1.975e-001
0.2	3.185e-001	3.995e-001	2.977e-001	2.584e-001
0.3	3.246e-001	4.062e-001	3.081e-001	2.595e-001
0.4	2.964e-001	3.778e-001	2.789e-001	2.325e-001
0.5	2.662e-001	3.380e-001	2.556e-001	2.049e-001
0.75	2.016e-001	2.551e-001	1.937e-001	1.559e-001
1.	1.594e-001	2.018e-001	1.508e-001	1.256e-001
2.	7.759e-002	1.024e-001	7.066e-002	5.974e-002
3.	4.552e-002	5.804e-002	4.334e-002	3.519e-002
4.	3.230e-002	4.201e-002	3.139e-002	2.350e-002

Source: San Andreas - 1857 [model 1]
Region: California USGS02
Closest Distance: 66.19 km
Amplitude Units: Acceleration (g)
Magnitude: 8.10 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.440e-001	2.928e-001	1.887e-001	2.505e-001
5.e-002	2.965e-001	3.488e-001	2.292e-001	3.116e-001
0.1	3.965e-001	4.285e-001	3.098e-001	4.512e-001
0.2	4.861e-001	4.296e-001	4.253e-001	6.034e-001
0.3	5.180e-001	4.526e-001	4.720e-001	6.294e-001
0.4	4.893e-001	4.387e-001	4.472e-001	5.821e-001
0.5	4.720e-001	4.247e-001	4.650e-001	5.264e-001
0.75	4.226e-001	4.046e-001	4.420e-001	4.212e-001
1.	3.680e-001	3.490e-001	4.022e-001	3.528e-001
2.	2.285e-001	2.318e-001	2.688e-001	1.848e-001
3.	1.634e-001	1.888e-001	1.849e-001	1.164e-001
4.	1.186e-001	1.322e-001	1.421e-001	8.147e-002

Source: San Andreas - 1857 [model 2]
Region: California USGS02
Closest Distance: 66.19 km
Amplitude Units: Acceleration (g)
Magnitude: 8.10 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.440e-001	2.928e-001	1.887e-001	2.505e-001
5.e-002	2.965e-001	3.488e-001	2.292e-001	3.116e-001
0.1	3.965e-001	4.285e-001	3.098e-001	4.512e-001
0.2	4.861e-001	4.296e-001	4.253e-001	6.034e-001
0.3	5.180e-001	4.526e-001	4.720e-001	6.294e-001
0.4	4.893e-001	4.387e-001	4.472e-001	5.821e-001
0.5	4.720e-001	4.247e-001	4.650e-001	5.264e-001
0.75	4.226e-001	4.046e-001	4.420e-001	4.212e-001
1.	3.680e-001	3.490e-001	4.022e-001	3.528e-001
2.	2.285e-001	2.318e-001	2.688e-001	1.848e-001
3.	1.634e-001	1.888e-001	1.849e-001	1.164e-001
4.	1.186e-001	1.322e-001	1.421e-001	8.147e-002

Source: San Andreas - Mojave [model 1]
Region: California USGS02
Closest Distance: 66.19 km
Amplitude Units: Acceleration (g)
Magnitude: 7.60 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.886e-001	2.339e-001	1.552e-001	1.767e-001
5.e-002	2.272e-001	2.702e-001	1.907e-001	2.206e-001
0.1	3.122e-001	3.474e-001	2.660e-001	3.231e-001
0.2	3.989e-001	4.069e-001	3.611e-001	4.287e-001
0.3	4.179e-001	4.231e-001	3.901e-001	4.405e-001
0.4	3.895e-001	4.032e-001	3.628e-001	4.025e-001
0.5	3.659e-001	3.781e-001	3.589e-001	3.606e-001
0.75	3.080e-001	3.282e-001	3.120e-001	2.839e-001
1.	2.586e-001	2.739e-001	2.668e-001	2.352e-001
2.	1.465e-001	1.638e-001	1.552e-001	1.204e-001
3.	9.756e-002	1.157e-001	1.023e-001	7.470e-002
4.	7.026e-002	8.211e-002	7.693e-002	5.173e-002

Source: San Andreas - Mojave [model 2]
Region: California USGS02
Closest Distance: 66.19 km
Amplitude Units: Acceleration (g)
Magnitude: 7.70 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.987e-001	2.447e-001	1.614e-001	1.901e-001
5.e-002	2.398e-001	2.844e-001	1.979e-001	2.371e-001
0.1	3.278e-001	3.624e-001	2.744e-001	3.465e-001
0.2	4.150e-001	4.115e-001	3.732e-001	4.604e-001
0.3	4.362e-001	4.289e-001	4.054e-001	4.744e-001
0.4	4.076e-001	4.101e-001	3.784e-001	4.344e-001
0.5	3.850e-001	3.870e-001	3.780e-001	3.899e-001
0.75	3.282e-001	3.422e-001	3.345e-001	3.080e-001
1.	2.776e-001	2.875e-001	2.896e-001	2.557e-001
2.	1.601e-001	1.756e-001	1.732e-001	1.316e-001
3.	1.082e-001	1.276e-001	1.152e-001	8.195e-002
4.	7.806e-002	9.032e-002	8.698e-002	5.689e-002

Source: San Andreas-All southern segments [model 1]
Region: California USGS02
Closest Distance: 66.19 km
Amplitude Units: Acceleration (g)
Magnitude: 8.40 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.835e-001	3.350e-001	2.118e-001	3.035e-001
5.e-002	3.461e-001	4.064e-001	2.555e-001	3.765e-001
0.1	4.552e-001	4.859e-001	3.386e-001	5.410e-001
0.2	5.466e-001	4.437e-001	4.683e-001	7.279e-001
0.3	5.889e-001	4.713e-001	5.284e-001	7.671e-001
0.4	5.611e-001	4.615e-001	5.065e-001	7.153e-001
0.5	5.497e-001	4.553e-001	5.429e-001	6.509e-001
0.75	5.099e-001	4.587e-001	5.447e-001	5.263e-001
1.	4.538e-001	4.036e-001	5.144e-001	4.435e-001
2.	2.980e-001	2.855e-001	3.738e-001	2.348e-001
3.	2.220e-001	2.534e-001	2.638e-001	1.489e-001
4.	1.620e-001	1.760e-001	2.053e-001	1.046e-001

Source: Cucamonga
Region: California USGS02
Closest Distance: 67.81 km
Amplitude Units: Acceleration (g)
Magnitude: 7.03 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.408e-001	1.769e-001	1.223e-001	1.233e-001
5.e-002	1.674e-001	1.967e-001	1.516e-001	1.540e-001
0.1	2.374e-001	2.664e-001	2.186e-001	2.271e-001
0.2	3.257e-001	3.828e-001	2.938e-001	3.003e-001
0.3	3.431e-001	4.148e-001	3.092e-001	3.054e-001
0.4	3.132e-001	3.812e-001	2.820e-001	2.764e-001
0.5	2.862e-001	3.493e-001	2.638e-001	2.455e-001
0.75	2.256e-001	2.802e-001	2.076e-001	1.889e-001
1.	1.775e-001	2.152e-001	1.656e-001	1.516e-001
2.	8.149e-002	9.720e-002	8.216e-002	6.510e-002
3.	4.827e-002	5.556e-002	5.144e-002	3.782e-002
4.	3.373e-002	3.805e-002	3.768e-002	2.546e-002

Source: Newport-Inglewood offshore
Region: California USGS02
Closest Distance: 70.70 km
Amplitude Units: Acceleration (g)
Magnitude: 7.18 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.415e-001	1.800e-001	1.246e-001	1.199e-001
5.e-002	1.685e-001	2.024e-001	1.538e-001	1.493e-001
0.1	2.361e-001	2.695e-001	2.188e-001	2.200e-001
0.2	3.164e-001	3.609e-001	2.958e-001	2.926e-001
0.3	3.293e-001	3.738e-001	3.148e-001	2.993e-001
0.4	3.045e-001	3.527e-001	2.887e-001	2.721e-001
0.5	2.801e-001	3.234e-001	2.742e-001	2.426e-001
0.75	2.241e-001	2.613e-001	2.218e-001	1.890e-001
1.	1.827e-001	2.128e-001	1.802e-001	1.552e-001
2.	9.598e-002	1.170e-001	9.337e-002	7.755e-002
3.	6.001e-002	7.339e-002	5.939e-002	4.725e-002
4.	4.295e-002	5.271e-002	4.387e-002	3.226e-002

Source: Oakridge-blind thrust offshore
Region: California USGS02
Closest Distance: 71.15 km
Amplitude Units: Acceleration (g)
Magnitude: 7.13 Mw
Fractile: 0.84

Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.666e-001	1.779e-001	1.592e-001	1.629e-001
5.e-002	1.982e-001	1.986e-001	1.947e-001	2.015e-001
0.1	2.783e-001	2.663e-001	2.765e-001	2.923e-001
0.2	3.782e-001	3.729e-001	3.764e-001	3.854e-001
0.3	4.007e-001	4.061e-001	4.033e-001	3.927e-001
0.4	3.673e-001	3.747e-001	3.713e-001	3.557e-001
0.5	3.378e-001	3.458e-001	3.523e-001	3.154e-001
0.75	2.689e-001	2.829e-001	2.836e-001	2.402e-001
1.	2.111e-001	2.192e-001	2.235e-001	1.906e-001
2.	9.197e-002	1.013e-001	9.714e-002	7.751e-002
3.	5.278e-002	5.957e-002	5.581e-002	4.296e-002
4.	3.662e-002	4.070e-002	4.104e-002	2.812e-002

Source: Ventura-Pitas Point
Region: California USGS02
Closest Distance: 71.12 km
Amplitude Units: Acceleration (g)
Magnitude: 6.93 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.385e-001	1.575e-001	1.457e-001	1.123e-001
5.e-002	1.641e-001	1.737e-001	1.790e-001	1.395e-001
0.1	2.332e-001	2.369e-001	2.575e-001	2.051e-001
0.2	3.248e-001	3.533e-001	3.489e-001	2.721e-001
0.3	3.438e-001	3.844e-001	3.699e-001	2.772e-001
0.4	3.140e-001	3.531e-001	3.381e-001	2.509e-001
0.5	2.865e-001	3.226e-001	3.143e-001	2.227e-001
0.75	2.233e-001	2.552e-001	2.442e-001	1.706e-001
1.	1.730e-001	1.952e-001	1.877e-001	1.362e-001
2.	7.379e-002	8.659e-002	7.733e-002	5.746e-002
3.	4.164e-002	4.814e-002	4.384e-002	3.294e-002
4.	2.903e-002	3.309e-002	3.204e-002	2.196e-002

Source: Channel Island Thrust
Region: California USGS02
Closest Distance: 73.78 km
Amplitude Units: Acceleration (g)
Magnitude: 7.63 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	2.100e-001	2.131e-001	1.881e-001	2.289e-001
5.e-002	2.510e-001	2.444e-001	2.272e-001	2.813e-001
0.1	3.423e-001	3.126e-001	3.114e-001	4.030e-001
0.2	4.478e-001	3.774e-001	4.299e-001	5.362e-001
0.3	4.821e-001	4.165e-001	4.746e-001	5.550e-001
0.4	4.487e-001	3.913e-001	4.454e-001	5.093e-001
0.5	4.245e-001	3.728e-001	4.444e-001	4.563e-001
0.75	3.604e-001	3.345e-001	3.916e-001	3.550e-001
1.	2.946e-001	2.690e-001	3.283e-001	2.864e-001
2.	1.413e-001	1.383e-001	1.642e-001	1.213e-001
3.	8.725e-002	9.381e-002	9.876e-002	6.919e-002
4.	6.122e-002	6.312e-002	7.434e-002	4.619e-002

Source: Santa Ynez-east segment
Region: California USGS02
Closest Distance: 72.77 km
Amplitude Units: Acceleration (g)
Magnitude: 7.18 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.390e-001	1.775e-001	1.220e-001	1.175e-001
5.e-002	1.653e-001	1.994e-001	1.504e-001	1.462e-001
0.1	2.314e-001	2.654e-001	2.133e-001	2.154e-001
0.2	3.107e-001	3.559e-001	2.890e-001	2.871e-001
0.3	3.238e-001	3.690e-001	3.085e-001	2.939e-001
0.4	2.996e-001	3.484e-001	2.831e-001	2.673e-001
0.5	2.758e-001	3.197e-001	2.690e-001	2.385e-001
0.75	2.208e-001	2.585e-001	2.178e-001	1.860e-001
1.	1.801e-001	2.107e-001	1.769e-001	1.527e-001
2.	9.458e-002	1.159e-001	9.157e-002	7.628e-002
3.	5.907e-002	7.270e-002	5.815e-002	4.637e-002
4.	4.225e-002	5.221e-002	4.290e-002	3.163e-002

Source: San Andreas - Carrizo [model 1]
Region: California USGS02
Closest Distance: 74.37 km
Amplitude Units: Acceleration (g)
Magnitude: 7.70 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.789e-001	2.182e-001	1.479e-001	1.705e-001
5.e-002	2.146e-001	2.524e-001	1.803e-001	2.112e-001
0.1	2.918e-001	3.202e-001	2.470e-001	3.082e-001
0.2	3.735e-001	3.673e-001	3.389e-001	4.143e-001
0.3	3.960e-001	3.855e-001	3.722e-001	4.302e-001
0.4	3.714e-001	3.706e-001	3.478e-001	3.959e-001
0.5	3.520e-001	3.513e-001	3.480e-001	3.566e-001
0.75	3.015e-001	3.123e-001	3.089e-001	2.832e-001
1.	2.559e-001	2.643e-001	2.674e-001	2.359e-001
2.	1.481e-001	1.623e-001	1.599e-001	1.222e-001
3.	1.001e-001	1.178e-001	1.063e-001	7.622e-002
4.	7.216e-002	8.326e-002	8.027e-002	5.294e-002

Source: Oakridge Mid Channel Montalvo-Oak
Region: California USGS02
Closest Distance: 78.43 km
Amplitude Units: Acceleration (g)
Magnitude: 6.73 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.177e-001	1.263e-001	1.229e-001	1.038e-001
5.e-002	1.387e-001	1.378e-001	1.509e-001	1.273e-001
0.1	1.978e-001	1.908e-001	2.176e-001	1.851e-001
0.2	2.821e-001	3.037e-001	2.957e-001	2.467e-001
0.3	2.994e-001	3.332e-001	3.131e-001	2.519e-001
0.4	2.724e-001	3.049e-001	2.845e-001	2.278e-001
0.5	2.459e-001	2.767e-001	2.596e-001	2.012e-001
0.75	1.866e-001	2.133e-001	1.952e-001	1.514e-001
1.	1.422e-001	1.616e-001	1.463e-001	1.185e-001
2.	5.762e-002	6.930e-002	5.700e-002	4.657e-002
3.	3.122e-002	3.667e-002	3.175e-002	2.524e-002
4.	2.149e-002	2.526e-002	2.300e-002	1.620e-002

Source: Elsinore - Glen-Ivy
Region: California USGS02
Closest Distance: 79.13 km
Amplitude Units: Acceleration (g)
Magnitude: 7.20 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.271e-001	1.595e-001	1.140e-001	1.076e-001
5.e-002	1.505e-001	1.788e-001	1.399e-001	1.328e-001
0.1	2.095e-001	2.368e-001	1.965e-001	1.951e-001
0.2	2.836e-001	3.195e-001	2.681e-001	2.632e-001
0.3	2.985e-001	3.347e-001	2.888e-001	2.720e-001
0.4	2.773e-001	3.178e-001	2.653e-001	2.490e-001
0.5	2.564e-001	2.932e-001	2.528e-001	2.231e-001
0.75	2.067e-001	2.393e-001	2.058e-001	1.751e-001
1.	1.694e-001	1.962e-001	1.674e-001	1.444e-001
2.	8.961e-002	1.089e-001	8.712e-002	7.280e-002
3.	5.621e-002	6.867e-002	5.548e-002	4.448e-002
4.	4.025e-002	4.932e-002	4.102e-002	3.042e-002

Source: Mission Ridge-Arroyo Parida-Santa Ana
Region: California USGS02
Closest Distance: 80.65 km
Amplitude Units: Acceleration (g)
Magnitude: 7.28 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.341e-001	1.617e-001	1.164e-001	1.244e-001
5.e-002	1.589e-001	1.811e-001	1.424e-001	1.531e-001
0.1	2.203e-001	2.383e-001	1.986e-001	2.241e-001
0.2	2.996e-001	3.240e-001	2.718e-001	3.031e-001
0.3	3.225e-001	3.587e-001	2.945e-001	3.144e-001
0.4	2.984e-001	3.350e-001	2.714e-001	2.888e-001
0.5	2.781e-001	3.140e-001	2.609e-001	2.594e-001
0.75	2.285e-001	2.662e-001	2.157e-001	2.037e-001
1.	1.844e-001	2.101e-001	1.773e-001	1.659e-001
2.	8.971e-002	1.010e-001	9.441e-002	7.377e-002
3.	5.545e-002	6.203e-002	6.056e-002	4.376e-002
4.	3.899e-002	4.219e-002	4.493e-002	2.986e-002

Source: Red Mountain

Region: California USGS02
Closest Distance: 84.74 km
Amplitude Units: Acceleration (g)
Magnitude: 7.03 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.096e-001	1.338e-001	1.000e-001	9.497e-002
5.e-002	1.288e-001	1.475e-001	1.226e-001	1.165e-001
0.1	1.805e-001	1.981e-001	1.727e-001	1.707e-001
0.2	2.538e-001	2.929e-001	2.361e-001	2.324e-001
0.3	2.736e-001	3.255e-001	2.540e-001	2.415e-001
0.4	2.523e-001	3.028e-001	2.323e-001	2.218e-001
0.5	2.325e-001	2.806e-001	2.180e-001	1.991e-001
0.75	1.856e-001	2.287e-001	1.727e-001	1.556e-001
1.	1.471e-001	1.777e-001	1.376e-001	1.260e-001
2.	6.827e-002	8.133e-002	6.837e-002	5.509e-002
3.	4.059e-002	4.660e-002	4.293e-002	3.225e-002
4.	2.843e-002	3.199e-002	3.151e-002	2.178e-002

Source: San Jacinto - San Bernardino
Region: California USGS02
Closest Distance: 91.52 km
Amplitude Units: Acceleration (g)
Magnitude: 7.10 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.018e-001	1.257e-001	9.632e-002	8.347e-002
5.e-002	1.195e-001	1.394e-001	1.174e-001	1.017e-001
0.1	1.659e-001	1.852e-001	1.635e-001	1.489e-001
0.2	2.310e-001	2.627e-001	2.251e-001	2.052e-001
0.3	2.467e-001	2.800e-001	2.448e-001	2.152e-001
0.4	2.305e-001	2.678e-001	2.246e-001	1.989e-001
0.5	2.133e-001	2.479e-001	2.125e-001	1.794e-001
0.75	1.713e-001	2.012e-001	1.707e-001	1.419e-001
1.	1.400e-001	1.653e-001	1.371e-001	1.175e-001
2.	7.317e-002	9.073e-002	6.936e-002	5.943e-002
3.	4.524e-002	5.570e-002	4.380e-002	3.621e-002
4.	3.237e-002	4.018e-002	3.224e-002	2.468e-002

Source: San Andreas - San Bernardino [model 1]
Region: California USGS02
Closest Distance: 93.78 km
Amplitude Units: Acceleration (g)
Magnitude: 7.80 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.506e-001	1.756e-001	1.298e-001	1.463e-001
5.e-002	1.788e-001	2.026e-001	1.560e-001	1.778e-001
0.1	2.391e-001	2.520e-001	2.074e-001	2.578e-001
0.2	3.115e-001	2.868e-001	2.902e-001	3.575e-001
0.3	3.386e-001	3.081e-001	3.278e-001	3.798e-001

0.4	3.218e-001	3.020e-001	3.083e-001	3.553e-001
0.5	3.093e-001	2.918e-001	3.125e-001	3.237e-001
0.75	2.715e-001	2.686e-001	2.844e-001	2.616e-001
1.	2.341e-001	2.329e-001	2.491e-001	2.203e-001
2.	1.392e-001	1.481e-001	1.530e-001	1.166e-001
3.	9.543e-002	1.105e-001	1.026e-001	7.325e-002
4.	6.880e-002	7.753e-002	7.780e-002	5.107e-002

Source: San Andreas - Southern 2 segments [model 1]
Region: California USGS02
Closest Distance: 93.78 km
Amplitude Units: Acceleration (g)
Magnitude: 8.00 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.692e-001	1.945e-001	1.421e-001	1.709e-001
5.e-002	2.016e-001	2.272e-001	1.700e-001	2.076e-001
0.1	2.668e-001	2.773e-001	2.232e-001	2.998e-001
0.2	3.419e-001	2.956e-001	3.137e-001	4.164e-001
0.3	3.736e-001	3.183e-001	3.581e-001	4.444e-001
0.4	3.569e-001	3.143e-001	3.392e-001	4.173e-001
0.5	3.466e-001	3.075e-001	3.508e-001	3.813e-001
0.75	3.114e-001	2.935e-001	3.309e-001	3.098e-001
1.	2.725e-001	2.585e-001	2.970e-001	2.620e-001
2.	1.680e-001	1.713e-001	1.929e-001	1.398e-001
3.	1.183e-001	1.351e-001	1.315e-001	8.833e-002
4.	8.550e-002	9.405e-002	1.006e-001	6.182e-002

Source: San Andreas - Southern 2 segments [model 2]
Region: California USGS02
Closest Distance: 93.78 km
Amplitude Units: Acceleration (g)
Magnitude: 8.00 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.692e-001	1.945e-001	1.421e-001	1.709e-001
5.e-002	2.016e-001	2.272e-001	1.700e-001	2.076e-001
0.1	2.668e-001	2.773e-001	2.232e-001	2.998e-001
0.2	3.419e-001	2.956e-001	3.137e-001	4.164e-001
0.3	3.736e-001	3.183e-001	3.581e-001	4.444e-001
0.4	3.569e-001	3.143e-001	3.392e-001	4.173e-001
0.5	3.466e-001	3.075e-001	3.508e-001	3.813e-001
0.75	3.114e-001	2.935e-001	3.309e-001	3.098e-001
1.	2.725e-001	2.585e-001	2.970e-001	2.620e-001
2.	1.680e-001	1.713e-001	1.929e-001	1.398e-001
3.	1.183e-001	1.351e-001	1.315e-001	8.833e-002
4.	8.550e-002	9.405e-002	1.006e-001	6.182e-002

Source: Santa Cruz Island
Region: California USGS02
Closest Distance: 96.61 km
Amplitude Units: Acceleration (g)
Magnitude: 7.03 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	9.168e-002	1.124e-001	8.910e-002	7.358e-002
5.e-002	1.071e-001	1.239e-001	1.084e-001	8.916e-002
0.1	1.487e-001	1.654e-001	1.506e-001	1.302e-001
0.2	2.102e-001	2.414e-001	2.080e-001	1.813e-001
0.3	2.258e-001	2.594e-001	2.268e-001	1.913e-001
0.4	2.114e-001	2.487e-001	2.079e-001	1.776e-001
0.5	1.954e-001	2.302e-001	1.955e-001	1.606e-001
0.75	1.563e-001	1.858e-001	1.555e-001	1.274e-001
1.	1.273e-001	1.523e-001	1.239e-001	1.056e-001
2.	6.592e-002	8.285e-002	6.154e-002	5.336e-002
3.	4.035e-002	4.998e-002	3.864e-002	3.243e-002
4.	2.885e-002	3.616e-002	2.836e-002	2.204e-002

Source: Garlock West
Region: California USGS02
Closest Distance: 96.11 km
Amplitude Units: Acceleration (g)
Magnitude: 7.38 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.143e-001	1.366e-001	1.053e-001	1.010e-001
5.e-002	1.345e-001	1.537e-001	1.273e-001	1.226e-001
0.1	1.835e-001	1.986e-001	1.733e-001	1.786e-001
0.2	2.494e-001	2.592e-001	2.409e-001	2.482e-001
0.3	2.694e-001	2.785e-001	2.670e-001	2.626e-001
0.4	2.540e-001	2.698e-001	2.476e-001	2.446e-001
0.5	2.392e-001	2.547e-001	2.410e-001	2.219e-001
0.75	2.000e-001	2.183e-001	2.039e-001	1.777e-001
1.	1.673e-001	1.838e-001	1.696e-001	1.486e-001
2.	9.243e-002	1.074e-001	9.281e-002	7.707e-002
3.	5.971e-002	7.139e-002	6.004e-002	4.771e-002
4.	4.285e-002	5.092e-002	4.474e-002	3.290e-002

Source: Coronado Bank
Region: California USGS02
Closest Distance: 98.42 km
Amplitude Units: Acceleration (g)
Magnitude: 7.73 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	1.375e-001	1.592e-001	1.215e-001	1.318e-001
5.e-002	1.627e-001	1.828e-001	1.457e-001	1.595e-001
0.1	2.176e-001	2.282e-001	1.936e-001	2.311e-001
0.2	2.870e-001	2.668e-001	2.715e-001	3.228e-001
0.3	3.133e-001	2.882e-001	3.071e-001	3.444e-001
0.4	2.982e-001	2.831e-001	2.884e-001	3.230e-001
0.5	2.863e-001	2.734e-001	2.907e-001	2.948e-001
0.75	2.501e-001	2.498e-001	2.618e-001	2.387e-001
1.	2.151e-001	2.165e-001	2.274e-001	2.013e-001
2.	1.267e-001	1.362e-001	1.371e-001	1.066e-001
3.	8.604e-002	9.980e-002	9.141e-002	6.692e-002

4.	6.197e-002	7.017e-002	6.915e-002	4.660e-002

Source: Cleghorn
Region: California USGS02
Closest Distance: 97.50 km
Amplitude Units: Acceleration (g)
Magnitude: 6.90 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	8.359e-002	1.031e-001	8.301e-002	6.469e-002
5.e-002	9.739e-002	1.128e-001	1.011e-001	7.825e-002
0.1	1.361e-001	1.523e-001	1.416e-001	1.143e-001
0.2	1.956e-001	2.323e-001	1.952e-001	1.593e-001
0.3	2.100e-001	2.500e-001	2.117e-001	1.682e-001
0.4	1.960e-001	2.389e-001	1.931e-001	1.560e-001
0.5	1.800e-001	2.197e-001	1.793e-001	1.409e-001
0.75	1.414e-001	1.735e-001	1.394e-001	1.113e-001
1.	1.139e-001	1.409e-001	1.092e-001	9.174e-002
2.	5.754e-002	7.458e-002	5.226e-002	4.578e-002
3.	3.445e-002	4.335e-002	3.244e-002	2.757e-002
4.	2.461e-002	3.154e-002	2.368e-002	1.861e-002

Source: Pleito Thrust
Region: California USGS02
Closest Distance: 98.37 km
Amplitude Units: Acceleration (g)
Magnitude: 7.08 Mw
Fractile: 0.84
Column 1: Spectral Period
Column 2: Acceleration (g) for: Weighted Mean of Attenuation Equations
Column 3: Acceleration (g) for: Boore-Atkinson (2008) NGA USGS2008
Column 4: Acceleration (g) for: Campbell-Bozorgnia (2008) NGA USGS 2008
Column 5: Acceleration (g) for: Chiou-Youngs (2007) NGA USGS 2008

1	2	3	4	5
PGA	9.543e-002	1.129e-001	9.006e-002	8.338e-002
5.e-002	1.115e-001	1.242e-001	1.093e-001	1.009e-001
0.1	1.545e-001	1.652e-001	1.512e-001	1.470e-001
0.2	2.199e-001	2.453e-001	2.093e-001	2.051e-001
0.3	2.415e-001	2.783e-001	2.292e-001	2.171e-001
0.4	2.249e-001	2.622e-001	2.105e-001	2.020e-001
0.5	2.093e-001	2.460e-001	1.990e-001	1.829e-001
0.75	1.699e-001	2.050e-001	1.598e-001	1.449e-001
1.	1.360e-001	1.613e-001	1.281e-001	1.184e-001
2.	6.416e-002	7.542e-002	6.446e-002	5.262e-002
3.	3.848e-002	4.390e-002	4.059e-002	3.096e-002
4.	2.697e-002	3.011e-002	2.982e-002	2.096e-002

E Q S E A R C H

Version 3.00

ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 8266.009

DATE: 06-18-2009

JOB NAME: SMC-AET/KCRW

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

MAGNITUDE RANGE:
MINIMUM MAGNITUDE: 4.00
MAXIMUM MAGNITUDE: 9.00

SITE COORDINATES:
SITE LATITUDE: 34.0308
SITE LONGITUDE: 118.4678

SEARCH DATES:
START DATE: 1800
END DATE: 2000

SEARCH RADIUS:
100.0 mi
160.9 km

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
ASSUMED SOURCE TYPE: BT [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
SCOND: 0 Depth Source: A
Basement Depth: 5.00 km Campbell SSR: Campbell SHR:
COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 0.0

EARTHQUAKE SEARCH RESULTS

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
MGI	34.0000	118.5000	06/23/1920	1220 0.0	0.0	4.00	0.127	VIII	2.8(4.5)
MGI	34.0000	118.5000	11/19/1918	2018 0.0	0.0	5.00	0.215	VIII	2.8(4.5)
DMG	34.0000	118.5000	03/06/1918	1820 0.0	0.0	4.00	0.127	VIII	2.8(4.5)
DMG	34.0000	118.5000	08/04/1927	1224 0.0	0.0	5.00	0.215	VIII	2.8(4.5)
DMG	34.0000	118.5000	11/08/1914	1140 0.0	0.0	4.50	0.165	VIII	2.8(4.5)
DMG	34.0000	118.5000	06/22/1920	248 0.0	0.0	4.90	0.204	VIII	2.8(4.5)
MGI	34.0000	118.5000	03/08/1918	1230 0.0	0.0	4.00	0.127	VIII	2.8(4.5)
DMG	34.0000	118.4170	12/07/1938	338 0.0	0.0	4.00	0.116	VII	3.6(5.8)
MGI	34.0000	118.4000	02/22/1920	1610 0.0	0.0	4.60	0.145	VIII	4.4(7.1)
MGI	34.0000	118.4000	10/01/1930	040 0.0	0.0	4.60	0.145	VIII	4.4(7.1)
MGI	34.0000	118.4000	01/29/1927	2324 0.0	0.0	4.00	0.106	VII	4.4(7.1)
MGI	34.0000	118.4000	02/07/1927	429 0.0	0.0	4.60	0.145	VIII	4.4(7.1)
DMG	33.9030	118.4310	11/29/1938	192115.8	10.0	4.00	0.069	VI	9.1(14.6)
MGI	34.0000	118.3000	09/03/1905	540 0.0	0.0	5.30	0.130	VIII	9.8(15.8)
MGI	34.0000	118.3000	06/22/1920	2035 0.0	0.0	4.00	0.065	VI	9.8(15.8)
MGI	34.0000	118.3000	06/30/1920	350 0.0	0.0	4.00	0.065	VI	9.8(15.8)
DMG	33.9830	118.3000	02/11/1940	192410.0	0.0	4.00	0.064	VI	10.2(16.3)
MGI	34.1000	118.3000	07/16/1920	2127 0.0	0.0	4.60	0.085	VII	10.7(17.2)
MGI	34.1000	118.3000	07/16/1920	2130 0.0	0.0	4.60	0.085	VII	10.7(17.2)
MGI	34.1000	118.3000	07/16/1920	2022 0.0	0.0	4.60	0.085	VII	10.7(17.2)
MGI	34.1000	118.3000	07/26/1920	1215 0.0	0.0	4.00	0.062	VI	10.7(17.2)
DMG	33.9500	118.6320	08/31/1930	04036.0	0.0	5.20	0.114	VII	10.9(17.6)
PAS	33.9190	118.6270	01/19/1989	65328.8	11.9	5.00	0.097	VII	11.9(19.2)
MGI	34.0800	118.2600	07/16/1920	18 8 0.0	0.0	5.00	0.094	VII	12.4(19.9)
T-A	34.0000	118.2500	09/23/1827	0 0 0.0	0.0	5.00	0.093	VII	12.6(20.3)
T-A	34.0000	118.2500	05/02/1856	810 0.0	0.0	4.30	0.064	VI	12.6(20.3)
T-A	34.0000	118.2500	01/10/1856	0 0 0.0	0.0	5.00	0.093	VII	12.6(20.3)
T-A	34.0000	118.2500	03/26/1860	0 0 0.0	0.0	5.00	0.093	VII	12.6(20.3)
T-A	34.0000	118.2500	01/17/1857	1 0 0.0	0.0	4.30	0.064	VI	12.6(20.3)
T-A	34.0000	118.2500	03/21/1880	1425 0.0	0.0	4.30	0.064	VI	12.6(20.3)
T-A	34.0000	118.2500	05/04/1857	6 0 0.0	0.0	4.30	0.064	VI	12.6(20.3)
GSP	34.2150	118.5100	01/19/1994	140914.8	17.0	4.50	0.070	VI	12.9(20.8)
GSP	34.2130	118.5370	01/17/1994	123055.4	18.0	6.70	0.220	IX	13.2(21.2)
PAS	33.9330	118.6690	10/17/1979	205237.3	5.5	4.20	0.058	VI	13.3(21.5)
DMG	33.8830	118.3170	03/11/1933	1457 0.0	0.0	4.90	0.084	VII	13.4(21.5)
PAS	33.9440	118.6810	01/01/1979	231438.9	11.3	5.00	0.088	VII	13.6(21.9)
GSP	34.2310	118.4750	03/20/1994	212012.3	13.0	5.30	0.102	VII	13.8(22.2)
GSP	34.2450	118.4710	01/18/1994	155144.9	12.0	4.00	0.049	VI	14.8(23.8)
GSP	34.2280	118.5730	01/17/1994	175608.2	19.0	4.60	0.067	VI	14.9(23.9)
GSP	34.2180	118.6070	01/18/1994	113509.9	12.0	4.20	0.053	VI	15.2(24.4)
MGI	34.0000	118.2000	06/26/1917	424 0.0	0.0	4.00	0.047	VI	15.5(24.9)
MGI	34.0000	118.2000	06/26/1917	2115 0.0	0.0	4.60	0.065	VI	15.5(24.9)
MGI	34.0000	118.2000	06/26/1917	2130 0.0	0.0	4.60	0.065	VI	15.5(24.9)
MGI	34.0000	118.2000	02/13/1917	13 5 0.0	0.0	4.60	0.065	VI	15.5(24.9)
MGI	34.0000	118.2000	06/26/1917	2120 0.0	0.0	4.60	0.065	VI	15.5(24.9)
GSP	34.2540	118.5450	01/17/1994	130627.9	0.0	4.60	0.063	VI	16.0(25.8)
MGI	33.8000	118.5000	06/18/1915	15 5 0.0	0.0	4.00	0.046	VI	16.0(25.8)
MGI	34.1000	118.2000	05/02/1916	1432 0.0	0.0	4.00	0.046	VI	16.0(25.8)
MGI	34.1000	118.2000	04/21/1921	1538 0.0	0.0	4.00	0.046	VI	16.0(25.8)
MGI	34.1000	118.2000	01/27/1860	830 0.0	0.0	4.30	0.054	VI	16.0(25.8)
DMG	33.9390	118.2050	01/11/1950	214135.0	0.4	4.10	0.048	VI	16.3(26.3)
GSP	34.2610	118.5340	01/17/1994	123939.8	14.0	4.50	0.059	VI	16.3(26.3)
DMG	34.2680	118.4450	08/30/1964	225737.1	15.4	4.00	0.045	VI	16.4(26.4)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	34.0300	118.1800	06/12/1989	165718.4	16.0	4.40	0.056	VI	16.5(26.5)
GSP	34.0200	118.1800	06/12/1989	172225.5	16.0	4.10	0.047	VI	16.5(26.5)
DMG	33.8500	118.2670	03/11/1933	1425 0.0	0.0	5.00	0.075	VII	17.0(27.3)
DMG	33.8500	118.2670	03/11/1933	629 0.0	0.0	4.40	0.054	VI	17.0(27.3)
DMG	34.2730	118.5320	06/21/1971	16 1 8.5	4.1	4.00	0.044	VI	17.1(27.5)
DMG	34.2650	118.5770	04/15/1971	111432.0	4.2	4.20	0.048	VI	17.3(27.9)
DMG	33.7830	118.4170	11/02/1940	25826.0	0.0	4.00	0.043	VI	17.4(27.9)
DMG	33.7830	118.4170	10/14/1940	205111.0	0.0	4.00	0.043	VI	17.4(27.9)
DMG	33.7830	118.4170	10/12/1940	024 0.0	0.0	4.00	0.043	VI	17.4(27.9)
DMG	33.7830	118.4170	11/01/1940	725 3.0	0.0	4.00	0.043	VI	17.4(27.9)
GSP	34.2690	118.5760	01/17/1994	125546.8	16.0	4.10	0.045	VI	17.6(28.3)
GSP	34.2740	118.5630	01/27/1994	171958.8	14.0	4.60	0.059	VI	17.6(28.4)
GSP	34.2870	118.4660	01/19/1994	071406.2	11.0	4.00	0.043	VI	17.7(28.5)
MGI	33.9000	118.2000	10/08/1927	1914 0.0	0.0	4.60	0.058	VI	17.8(28.6)
DMG	34.2840	118.5280	04/02/1971	54025.0	3.0	4.00	0.043	VI	17.8(28.7)
DMG	34.2860	118.5150	03/31/1971	145222.5	2.1	4.60	0.058	VI	17.8(28.7)
GSP	34.2910	118.4760	02/06/1994	131926.9	11.0	4.10	0.045	VI	18.0(28.9)
DMG	33.7700	118.4800	04/24/1931	182754.8	0.0	4.40	0.052	VI	18.0(29.0)
GSP	34.2920	118.4660	01/19/1994	144635.2	6.0	4.00	0.042	VI	18.0(29.0)
DMG	33.7670	118.4500	10/11/1940	55712.3	0.0	4.70	0.060	VI	18.2(29.3)
DMG	33.8670	118.2170	06/19/1944	3 6 7.0	0.0	4.40	0.051	VI	18.3(29.4)
DMG	33.8670	118.2170	06/19/1944	0 333.0	0.0	4.50	0.054	VI	18.3(29.4)
DMG	34.2960	118.4640	03/30/1971	85443.3	2.6	4.10	0.044	VI	18.3(29.5)
GSP	34.2970	118.4580	01/21/1994	185344.6	7.0	4.30	0.049	VI	18.4(29.6)
GSB	34.3000	118.4660	01/21/1994	183915.3	10.0	4.70	0.060	VI	18.6(29.9)
GSP	34.2990	118.4390	02/03/1994	162335.4	8.0	4.20	0.046	VI	18.6(29.9)
MGI	33.8000	118.3000	12/31/1928	1045 0.0	0.0	4.00	0.041	V	18.6(29.9)
DMG	33.8000	118.3000	11/03/1931	16 5 0.0	0.0	4.00	0.041	V	18.6(29.9)
GSP	34.2930	118.3890	12/06/1994	034834.5	9.0	4.50	0.053	VI	18.7(30.0)
GSB	34.2990	118.4280	01/23/1994	085508.7	6.0	4.20	0.046	VI	18.7(30.0)
GSP	34.3010	118.4520	01/21/1994	185244.2	7.0	4.30	0.048	VI	18.7(30.0)
GSP	34.3040	118.4730	01/17/1994	150703.2	2.0	4.20	0.045	VI	18.9(30.4)
GSP	34.2780	118.6110	01/29/1994	121656.4	2.0	4.30	0.048	VI	18.9(30.5)
DMG	33.8670	118.2000	11/13/1933	2128 0.0	0.0	4.00	0.040	V	19.1(30.7)
DMG	34.3080	118.4540	02/09/1971	144346.7	6.2	5.20	0.076	VII	19.2(30.8)
GSB	34.3100	118.4740	01/21/1994	184228.8	7.0	4.20	0.045	VI	19.3(31.0)
GSP	34.3110	118.4560	01/17/1994	193534.3	2.0	4.00	0.040	V	19.4(31.1)
GSB	34.3010	118.5650	01/17/1994	204602.4	9.0	5.20	0.075	VII	19.5(31.3)
T-A	34.1700	118.1700	03/07/1888	1554 0.0	0.0	4.30	0.046	VI	19.5(31.5)
DMG	34.1000	118.8000	05/10/1911	1340 0.0	0.0	4.00	0.040	V	19.6(31.5)
GSB	34.2850	118.6240	01/17/1994	135602.4	19.0	4.70	0.057	VI	19.7(31.7)
GSP	34.3110	118.3980	06/15/1994	055948.6	7.0	4.20	0.044	VI	19.7(31.8)
GSP	34.3170	118.4550	01/17/1994	132644.7	2.0	4.70	0.057	VI	19.8(31.8)
GSP	34.3120	118.3930	05/25/1994	125657.1	7.0	4.40	0.048	VI	19.9(32.0)
DMG	33.9500	118.1330	10/25/1933	7 046.0	0.0	4.30	0.046	VI	20.0(32.1)
GSP	34.3050	118.5790	01/29/1994	112036.0	1.0	5.10	0.070	VI	20.0(32.1)
DMG	34.3000	118.6000	04/04/1893	1940 0.0	0.0	6.00	0.112	VII	20.1(32.3)
GSB	34.3190	118.5580	01/18/1994	132444.1	1.0	4.50	0.050	VI	20.6(33.1)
DMG	33.8170	118.2170	10/22/1941	65718.5	0.0	4.90	0.061	VI	20.6(33.1)
PAS	34.1490	118.1350	12/03/1988	113826.4	13.3	4.90	0.061	VI	20.7(33.3)
GSP	34.3310	118.4420	01/17/1994	141430.3	1.0	4.50	0.049	VI	20.8(33.4)
GSG	34.3340	118.4840	01/17/1994	223152.1	10.0	4.20	0.042	VI	21.0(33.7)
PAS	34.0490	118.1010	10/01/1987	144541.5	13.6	4.70	0.054	VI	21.0(33.8)

EARTHQUAKE SEARCH RESULTS

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PAS	34.0600	118.1000	10/01/1987	1449 5.9	11.7	4.70	0.054	VI	21.1(34.0)
DMG	33.7830	118.2500	11/14/1941	84136.3	0.0	5.40	0.078	VII	21.2(34.1)
PAS	34.0730	118.0980	10/04/1987	105938.2	8.2	5.30	0.074	VII	21.3(34.4)
MGI	34.1000	118.1000	07/11/1855	415 0.0	0.0	6.30	0.124	VII	21.6(34.7)
PAS	34.0520	118.0900	10/01/1987	151231.8	10.8	4.70	0.053	VI	21.7(34.9)
PAS	34.0500	118.0870	10/01/1987	155953.5	10.4	4.00	0.036	V	21.8(35.1)
PAS	34.0760	118.0900	10/01/1987	1448 3.1	11.7	4.10	0.038	V	21.8(35.1)
GSB	34.3450	118.5520	01/24/1994	041518.8	6.0	4.80	0.055	VI	22.2(35.8)
DMG	34.3530	118.4560	03/07/1971	13340.5	3.3	4.50	0.047	VI	22.3(35.8)
PAS	34.0610	118.0790	10/01/1987	144220.0	9.5	5.90	0.098	VII	22.3(35.9)
DMG	34.3350	118.3310	02/09/1971	155820.7	14.2	4.80	0.054	VI	22.4(36.1)
DMG	33.7590	118.2530	08/31/1938	31814.2	10.0	4.50	0.046	VI	22.4(36.1)
DMG	34.3560	118.4740	03/25/1971	2254 9.9	4.6	4.20	0.040	V	22.5(36.1)
GSP	34.3570	118.4800	02/25/1994	125912.6	1.0	4.10	0.038	V	22.5(36.3)
DMG	34.3390	118.3320	02/09/1971	141612.9	11.1	4.10	0.037	V	22.6(36.4)
GSB	34.3330	118.6230	01/18/1994	072356.0	14.0	4.30	0.042	V	22.7(36.5)
DMG	34.3570	118.4060	02/09/1971	141950.2	11.8	4.00	0.035	V	22.8(36.7)
DMG	34.3610	118.4870	02/10/1971	143526.7	4.4	4.20	0.039	V	22.8(36.7)
DMG	33.9000	118.1000	07/08/1929	1646 6.7	13.0	4.70	0.051	VI	22.9(36.9)
DMG	33.7830	118.2000	12/27/1939	192849.0	0.0	4.70	0.051	VI	23.0(37.0)
GSB	34.3600	118.5710	01/19/1994	044048.0	2.0	4.50	0.045	VI	23.5(37.8)
DMG	34.3440	118.6360	02/09/1971	143436.1	-2.0	4.90	0.055	VI	23.7(38.1)
GSP	34.3740	118.4950	01/28/1994	200953.4	0.0	4.20	0.038	V	23.7(38.2)
GSG	34.3040	118.7220	01/17/1994	221922.3	10.0	4.00	0.034	V	23.8(38.3)
PAS	34.3800	118.4590	08/12/1977	21926.1	9.5	4.50	0.044	VI	24.1(38.8)
GSB	34.3580	118.6220	01/18/1994	040126.8	1.0	4.50	0.044	VI	24.2(39.0)
GSP	34.3260	118.6980	01/17/1994	233330.7	9.0	5.60	0.078	VII	24.3(39.0)
PAS	34.0770	118.0470	02/11/1988	152555.7	12.5	4.70	0.049	VI	24.3(39.1)
DMG	33.9670	118.0500	01/30/1941	13446.9	0.0	4.10	0.035	V	24.3(39.1)
PAS	34.3470	118.6560	04/08/1976	152138.1	14.5	4.60	0.046	VI	24.3(39.2)
GSP	34.3040	118.7370	01/19/1994	091310.9	13.0	4.10	0.035	V	24.3(39.2)
GSB	34.3430	118.6660	01/17/1994	234925.4	8.0	4.30	0.039	V	24.3(39.2)
GSP	34.3620	118.6150	03/20/1996	073759.8	13.0	4.10	0.035	V	24.4(39.2)
DMG	34.3840	118.4550	02/10/1971	113134.6	6.0	4.20	0.037	V	24.4(39.3)
GSP	34.3590	118.6290	01/24/1994	055024.3	12.0	4.30	0.039	V	24.5(39.4)
DMG	34.3610	118.3060	02/09/1971	141021.5	5.0	4.70	0.048	VI	24.6(39.6)
GSP	34.3790	118.5610	01/18/1994	152346.9	7.0	4.80	0.051	VI	24.6(39.6)
GSP	34.3790	118.5630	01/18/1994	003935.0	7.0	4.40	0.041	V	24.6(39.7)
GSP	34.3630	118.6270	01/24/1994	055421.1	10.0	4.20	0.037	V	24.7(39.7)
DMG	34.3680	118.3140	04/25/1971	1448 6.5	-2.0	4.00	0.033	V	24.9(40.0)
DMG	34.3920	118.4270	02/21/1971	71511.7	7.2	4.50	0.043	VI	25.0(40.3)
GSP	34.3680	118.6370	01/17/1994	194353.4	13.0	4.10	0.034	V	25.2(40.6)
DMG	34.3700	118.3020	02/10/1971	31212.0	0.8	4.00	0.033	V	25.3(40.6)
GSP	34.3740	118.6220	01/17/1994	155410.8	12.0	4.80	0.050	VI	25.3(40.7)
DMG	34.3870	118.3640	02/09/1971	143917.8	-1.6	4.00	0.033	V	25.3(40.7)
DMG	34.3970	118.4390	02/21/1971	55052.6	6.9	4.70	0.047	VI	25.3(40.8)
DMG	33.7500	118.1830	08/04/1933	41748.0	0.0	4.00	0.033	V	25.3(40.8)
DMG	34.3990	118.4730	03/09/1974	05431.9	24.4	4.70	0.047	VI	25.4(40.9)
GSP	34.3780	118.6180	01/19/1994	211144.9	11.0	5.10	0.058	VI	25.5(41.0)
DMG	34.3990	118.4190	02/10/1971	134953.7	9.7	4.30	0.038	V	25.6(41.1)
DMG	33.6630	118.4130	01/08/1967	738 5.3	17.7	4.00	0.032	V	25.6(41.2)
GSP	34.0490	118.9150	02/19/1995	212418.1	15.0	4.30	0.038	V	25.6(41.2)
DMG	34.3800	118.6230	10/29/1936	223536.1	10.0	4.00	0.032	V	25.7(41.3)

EARTHQUAKE SEARCH RESULTS

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DMG	33.7830	118.1330	01/13/1940	749 7.0	0.0	4.00	0.032	V	25.7(41.4)
DMG	33.7830	118.1330	11/20/1933	1032 0.0	0.0	4.00	0.032	V	25.7(41.4)
DMG	33.7830	118.1330	10/02/1933	91017.6	0.0	5.40	0.067	VI	25.7(41.4)
DMG	34.3960	118.3660	02/10/1971	173855.1	6.2	4.20	0.036	V	25.9(41.6)
DMG	33.7500	118.1670	05/16/1933	205855.0	0.0	4.00	0.032	V	25.9(41.7)
GSP	34.3770	118.6490	04/27/1997	110928.4	15.0	4.80	0.049	VI	26.0(41.9)
GSP	34.3540	118.7040	05/01/1996	194956.4	14.0	4.10	0.034	V	26.1(42.0)
GSP	34.3690	118.6720	04/26/1997	103730.7	16.0	5.10	0.057	VI	26.1(42.0)
DMG	34.4110	118.4010	02/09/1971	14 2 3.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 434.0	8.0	4.20	0.035	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 154.0	8.0	4.20	0.035	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 730.0	8.0	4.00	0.031	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 041.8	8.4	6.40	0.111	VII	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 140.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 439.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 1 8.0	8.0	5.80	0.081	VII	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 133.0	8.0	4.20	0.035	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	141028.0	8.0	5.30	0.062	VI	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 325.0	8.0	4.40	0.039	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 244.0	8.0	5.80	0.081	VII	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 838.0	8.0	4.50	0.041	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 444.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 446.0	8.0	4.20	0.035	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 8 4.0	8.0	4.00	0.031	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 230.0	8.0	4.30	0.037	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 541.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 159.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 710.0	8.0	4.00	0.031	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 231.0	8.0	4.70	0.045	VI	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 346.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 550.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 4 7.0	8.0	4.10	0.033	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 745.0	8.0	4.50	0.041	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 150.0	8.0	4.50	0.041	V	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 853.0	8.0	4.60	0.043	VI	26.5(42.7)
DMG	34.4110	118.4010	02/09/1971	14 8 7.0	8.0	4.20	0.035	V	26.5(42.7)
GSP	34.3970	118.6090	07/22/1999	095724.0	11.0	4.00	0.031	V	26.5(42.7)
GSG	34.4080	118.5590	01/17/1994	200205.4	0.0	4.00	0.031	V	26.6(42.7)
GSP	34.3650	118.7080	01/19/1994	044314.5	12.0	4.10	0.033	V	26.8(43.2)
MGI	34.0000	118.0000	12/25/1903	1745 0.0	0.0	5.00	0.053	VI	26.9(43.2)
MGI	34.0000	118.0000	05/05/1929	1 7 0.0	0.0	4.60	0.043	VI	26.9(43.2)
MGI	34.0000	118.0000	05/05/1929	735 0.0	0.0	4.00	0.031	V	26.9(43.2)
DMG	33.7670	118.1170	11/04/1939	2141 0.0	0.0	4.00	0.031	V	27.1(43.6)
MGI	34.1000	118.0000	01/27/1930	2026 0.0	0.0	4.60	0.042	VI	27.2(43.7)
DMG	33.7500	118.1330	03/11/1933	11 4 0.0	0.0	4.60	0.042	VI	27.3(43.9)
GSP	34.3770	118.6980	01/18/1994	004308.9	11.0	5.20	0.058	VI	27.3(43.9)
DMG	34.4110	118.3290	02/10/1971	5 636.0	4.7	4.30	0.036	V	27.4(44.1)
DMG	34.4260	118.4140	02/10/1971	518 7.2	5.8	4.50	0.040	V	27.5(44.2)
DMG	33.6320	118.4670	01/08/1967	73730.4	11.4	4.00	0.031	V	27.5(44.3)
GSP	34.3940	118.6690	06/26/1995	084028.9	13.0	5.00	0.052	VI	27.6(44.4)
DMG	34.4280	118.4130	04/01/1971	15 3 3.6	8.0	4.10	0.032	V	27.6(44.4)
DMG	33.6330	118.4000	10/17/1934	938 0.0	0.0	4.00	0.030	V	27.7(44.6)
GSB	34.3790	118.7110	01/19/1994	210928.6	14.0	5.50	0.067	VI	27.8(44.7)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.4330	118.3980	02/09/1971	144017.4	-2.0	4.10	0.032	V	28.0(45.1)
DMG	34.4310	118.3690	08/14/1974	144555.2	8.2	4.20	0.033	V	28.2(45.4)
DMG	33.9960	117.9750	06/15/1967	458 5.5	10.0	4.10	0.032	V	28.3(45.5)
PAS	34.0540	118.9640	04/13/1982	11 212.2	16.6	4.00	0.030	V	28.4(45.8)
DMG	34.0170	118.9670	04/16/1948	222624.0	0.0	4.70	0.043	VI	28.6(46.0)
DMG	34.4460	118.4360	02/10/1971	185441.7	8.1	4.20	0.033	V	28.7(46.2)
MGI	34.2000	118.0000	01/09/1921	530 0.0	0.0	4.60	0.040	V	29.2(47.0)
DMG	33.7500	118.0830	03/11/1933	257 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	837 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	323 0.0	0.0	5.00	0.049	VI	29.4(47.2)
DMG	33.7500	118.0830	03/13/1933	1929 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	252 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	832 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/14/1933	2242 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/14/1933	036 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	515 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1025 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	2 4 0.0	0.0	4.90	0.047	VI	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	311 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	618 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	210 0.0	0.0	4.60	0.040	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	611 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/15/1933	2 8 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/15/1933	432 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	448 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	227 0.0	0.0	4.60	0.040	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	034 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	230 0.0	0.0	5.10	0.052	VI	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	546 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	6 1 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/21/1933	326 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1547 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	3 9 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	15 2 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	1651 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	04/02/1933	1536 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	336 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	524 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	439 0.0	0.0	4.90	0.047	VI	29.4(47.2)
DMG	33.7500	118.0830	03/13/1933	1532 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/13/1933	432 0.0	0.0	4.70	0.042	VI	29.4(47.2)
DMG	33.7500	118.0830	03/13/1933	131828.0	0.0	5.30	0.058	VI	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	513 0.0	0.0	4.70	0.042	VI	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1357 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/20/1933	1358 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/18/1933	2052 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/23/1933	840 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	521 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/14/1933	1219 0.0	0.0	4.50	0.038	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	553 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	555 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/15/1933	540 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/17/1933	1651 0.0	0.0	4.10	0.031	V	29.4(47.2)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.7500	118.0830	03/11/1933	216 0.0	0.0	4.80	0.044	VI	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1147 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	751 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	2240 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/19/1933	2123 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	8 8 0.0	0.0	4.50	0.038	V	29.4(47.2)
DMG	33.7500	118.0830	03/13/1933	617 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	759 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	23 5 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	04/01/1933	642 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/31/1933	1049 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	926 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	3 5 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	1738 0.0	0.0	4.50	0.038	V	29.4(47.2)
DMG	33.7500	118.0830	04/02/1933	8 0 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	339 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/16/1933	1529 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1138 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1141 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	436 0.0	0.0	4.60	0.040	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	440 0.0	0.0	4.70	0.042	VI	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	027 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1956 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	2 9 0.0	0.0	5.00	0.049	VI	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	211 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	2231 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/30/1933	1225 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	835 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	2 5 0.0	0.0	4.30	0.034	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	347 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	740 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	910 0.0	0.0	5.10	0.052	VI	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	11 0 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	2232 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/16/1933	1530 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	222 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/25/1933	1346 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	911 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	259 0.0	0.0	4.60	0.040	V	29.4(47.2)
DMG	33.7500	118.0830	03/23/1933	1831 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	2128 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	1825 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	258 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	2354 0.0	0.0	4.50	0.038	V	29.4(47.2)
DMG	33.7500	118.0830	03/16/1933	1456 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1129 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/12/1933	616 0.0	0.0	4.60	0.040	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1653 0.0	0.0	4.80	0.044	VI	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1944 0.0	0.0	4.00	0.029	V	29.4(47.2)
DMG	33.7500	118.0830	03/13/1933	343 0.0	0.0	4.10	0.031	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	635 0.0	0.0	4.20	0.032	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	22 0 0.0	0.0	4.40	0.036	V	29.4(47.2)
DMG	33.7500	118.0830	03/11/1933	1045 0.0	0.0	4.00	0.029	V	29.4(47.2)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.7330	118.1000	03/11/1933	1447 0.0	0.0	4.40	0.036	V	29.4(47.4)
DMG	33.7330	118.1000	03/11/1933	15 9 0.0	0.0	4.40	0.036	V	29.4(47.4)
DMG	33.7330	118.1000	03/11/1933	1350 0.0	0.0	4.40	0.036	V	29.4(47.4)
DMG	34.4570	118.4270	02/09/1971	161926.5	-1.0	4.20	0.032	V	29.5(47.5)
PAS	34.0160	118.9880	10/26/1984	172043.5	13.3	4.60	0.039	V	29.8(47.9)
PAS	34.4630	118.4090	09/24/1977	212824.3	5.0	4.20	0.032	V	30.0(48.3)
DMG	34.0000	119.0000	09/24/1827	4 0 0.0	0.0	7.00	0.137	VIII	30.5(49.1)
MGI	34.0000	119.0000	12/14/1912	0 0 0.0	0.0	5.70	0.069	VI	30.5(49.1)
GSP	34.2620	118.0020	06/28/1991	144354.5	11.0	5.40	0.058	VI	31.0(49.9)
DMG	33.8000	118.0000	10/21/1913	938 0.0	0.0	4.00	0.028	V	31.2(50.2)
GSP	34.2500	117.9900	06/28/1991	170055.5	9.0	4.30	0.032	V	31.2(50.2)
DMG	33.6330	118.2000	11/01/1940	20 046.0	0.0	4.00	0.028	V	31.5(50.6)
DMG	34.4850	118.5210	07/16/1965	74622.4	15.1	4.00	0.028	V	31.5(50.7)
DMG	33.6300	118.2000	09/13/1929	132338.2	0.0	4.00	0.027	V	31.6(50.9)
DMG	33.7000	118.0670	03/11/1933	51022.0	0.0	5.10	0.048	VI	32.4(52.1)
DMG	33.7000	118.0670	07/20/1940	4 113.0	0.0	4.00	0.027	V	32.4(52.1)
DMG	33.7000	118.0670	03/11/1933	85457.0	0.0	5.10	0.048	VI	32.4(52.1)
DMG	33.7000	118.0670	02/08/1940	165617.0	0.0	4.00	0.027	V	32.4(52.1)
DMG	34.0650	119.0350	02/21/1973	144557.3	8.0	5.90	0.073	VII	32.5(52.3)
GSP	34.5000	118.5600	07/05/1991	174157.1	11.0	4.10	0.028	V	32.8(52.8)
DMG	33.7500	118.0000	11/16/1934	2126 0.0	0.0	4.00	0.027	V	33.1(53.2)
PAS	33.9650	117.8860	01/01/1976	172012.9	6.2	4.20	0.029	V	33.6(54.1)
DMG	34.4170	118.8330	06/01/1946	11 631.0	0.0	4.10	0.027	V	33.8(54.5)
DMG	33.9900	119.0580	05/29/1955	164335.4	17.4	4.10	0.027	V	33.9(54.5)
DMG	33.6830	118.0500	03/11/1933	658 3.0	0.0	5.50	0.057	VI	33.9(54.6)
DMG	33.6830	118.0500	03/11/1933	1250 0.0	0.0	4.40	0.032	V	33.9(54.6)
DMG	33.5430	118.3400	09/14/1963	35116.2	2.2	4.20	0.029	V	34.5(55.5)
DMG	34.2000	117.9000	08/28/1889	215 0.0	0.0	5.50	0.057	VI	34.5(55.5)
DMG	34.2000	117.9000	07/13/1935	105416.5	0.0	4.70	0.037	V	34.5(55.5)
DMG	33.6170	118.1170	01/20/1934	2117 0.0	0.0	4.50	0.033	V	34.9(56.2)
DMG	34.5290	118.6440	02/07/1956	21656.5	16.0	4.20	0.028	V	35.8(57.7)
DMG	33.6710	118.0120	10/20/1961	223534.2	5.6	4.10	0.026	V	36.1(58.0)
MGI	33.8000	117.9000	05/22/1902	740 0.0	0.0	4.30	0.029	V	36.2(58.3)
DMG	33.6800	117.9930	11/20/1961	85334.7	4.4	4.00	0.025	V	36.4(58.6)
DMG	34.5190	118.1980	08/23/1952	10 9 7.1	13.1	5.00	0.041	V	37.1(59.6)
PAS	33.5380	118.2070	05/25/1982	134430.3	13.7	4.10	0.026	V	37.2(59.8)
T-A	34.4200	118.9200	03/29/1917	8 6 0.0	0.0	4.30	0.028	V	37.3(60.0)
DMG	33.6540	117.9940	10/20/1961	194950.5	4.6	4.30	0.028	V	37.6(60.5)
DMG	33.6650	117.9790	10/20/1961	214240.7	7.2	4.00	0.024	V	37.7(60.7)
DMG	33.6590	117.9810	10/20/1961	20 714.5	6.1	4.00	0.024	IV	37.9(61.0)
DMG	33.6170	118.0330	05/21/1938	944 0.0	0.0	4.00	0.024	IV	37.9(61.0)
DMG	34.1000	117.8000	03/31/1931	2033 0.0	0.0	4.00	0.024	IV	38.5(61.9)
DMG	33.6170	118.0170	03/15/1933	111332.0	0.0	4.90	0.038	V	38.5(62.0)
DMG	33.6170	118.0170	10/02/1933	1326 1.0	0.0	4.00	0.024	IV	38.5(62.0)
DMG	33.6170	118.0170	03/14/1933	19 150.0	0.0	5.10	0.042	VI	38.5(62.0)
DMG	33.5000	118.2500	06/18/1920	10 8 0.0	0.0	4.50	0.031	V	38.7(62.3)
DMG	34.5860	118.6130	02/07/1956	31638.6	2.6	4.60	0.032	V	39.2(63.1)
DMG	33.6000	118.0170	12/25/1935	1715 0.0	0.0	4.50	0.030	V	39.4(63.4)
MGI	33.7000	117.9000	07/08/1902	945 0.0	0.0	4.00	0.023	IV	39.8(64.0)
DMG	33.6000	118.0000	03/11/1933	231 0.0	0.0	4.40	0.028	V	40.1(64.5)
DMG	33.6000	118.0000	03/11/1933	217 0.0	0.0	4.50	0.030	V	40.1(64.5)
DMG	33.5610	118.0580	01/15/1937	183547.0	10.0	4.00	0.023	IV	40.1(64.5)
PAS	34.3780	119.0350	04/03/1985	4 449.8	27.9	4.00	0.023	IV	40.3(64.8)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.6170	117.9670	03/11/1933	154 7.8	0.0	6.30	0.076	VII	40.5(65.2)
PAS	33.9060	119.1660	05/23/1978	91650.8	6.0	4.00	0.023	IV	40.9(65.8)
DMG	33.5170	118.1000	03/22/1941	82240.0	0.0	4.00	0.022	IV	41.3(66.4)
MGI	33.8000	117.8000	11/09/1926	1535 0.0	0.0	4.60	0.031	V	41.4(66.7)
MGI	33.8000	117.8000	05/19/1917	635 0.0	0.0	4.00	0.022	IV	41.4(66.7)
MGI	33.8000	117.8000	11/04/1926	2238 0.0	0.0	4.60	0.031	V	41.4(66.7)
MGI	33.8000	117.8000	05/19/1917	719 0.0	0.0	4.00	0.022	IV	41.4(66.7)
MGI	33.8000	117.8000	11/07/1926	1948 0.0	0.0	4.60	0.031	V	41.4(66.7)
MGI	33.8000	117.8000	05/20/1917	945 0.0	0.0	4.00	0.022	IV	41.4(66.7)
MGI	33.8000	117.8000	11/10/1926	1723 0.0	0.0	4.60	0.031	V	41.4(66.7)
DMG	33.7670	117.8170	08/22/1936	521 0.0	0.0	4.00	0.022	IV	41.5(66.8)
PAS	34.0060	117.7390	02/18/1989	717 4.8	3.3	4.30	0.026	V	41.7(67.2)
DMG	33.5750	117.9830	03/11/1933	518 4.0	0.0	5.20	0.042	V	42.0(67.6)
PAS	33.6300	119.0200	10/23/1981	172816.9	12.0	4.60	0.030	V	42.1(67.7)
DMG	34.5650	118.1130	02/28/1969	45612.4	5.3	4.30	0.026	V	42.1(67.7)
DMG	33.5670	117.9830	07/07/1937	1112 0.0	0.0	4.00	0.022	IV	42.4(68.3)
DMG	33.5670	117.9830	04/17/1934	1833 0.0	0.0	4.00	0.022	IV	42.4(68.3)
PAS	33.5080	118.0710	11/20/1988	53928.7	6.0	4.50	0.028	V	42.7(68.7)
DMG	33.8540	117.7520	10/04/1961	22131.6	4.3	4.10	0.023	IV	42.8(68.8)
DMG	34.4830	118.9830	09/03/1942	14 6 1.0	0.0	4.50	0.028	V	42.9(69.0)
DMG	34.4830	118.9830	09/04/1942	63433.0	0.0	4.50	0.028	V	42.9(69.0)
GSP	34.1100	117.7200	04/17/1990	223227.2	4.0	4.60	0.030	V	43.1(69.4)
GSP	33.6200	117.9000	04/07/1989	200730.2	13.0	4.50	0.028	V	43.2(69.5)
PAS	33.6370	119.0560	10/23/1981	191552.5	6.3	4.60	0.030	V	43.3(69.7)
DMG	34.1180	119.2200	03/18/1957	185628.0	13.8	4.70	0.031	V	43.4(69.9)
MGI	34.2000	119.2000	06/16/1914	1052 0.0	0.0	4.60	0.029	V	43.5(69.9)
GSP	34.1500	117.7200	03/01/1990	032303.0	11.0	4.70	0.031	V	43.5(70.1)
GSP	33.9510	117.7090	01/05/1998	181406.5	11.0	4.30	0.025	V	43.8(70.5)
MGI	34.0000	117.7000	12/03/1929	9 5 0.0	0.0	4.00	0.021	IV	44.0(70.8)
PAS	34.1360	117.7090	06/26/1988	15 458.5	7.9	4.60	0.029	V	44.0(70.8)
GSP	34.1300	117.7000	03/01/1990	003457.1	4.0	4.00	0.021	IV	44.4(71.5)
PAS	33.6710	119.1110	09/04/1981	155050.3	5.0	5.30	0.042	VI	44.5(71.6)
GSP	34.1400	117.7000	02/28/1990	234336.6	5.0	5.20	0.040	V	44.5(71.7)
GSP	34.1400	117.6900	03/02/1990	172625.4	6.0	4.60	0.029	V	45.1(72.6)
DMG	34.1000	117.6830	01/09/1934	1410 0.0	0.0	4.50	0.027	V	45.1(72.6)
DMG	34.1000	117.6830	01/18/1934	214 0.0	0.0	4.00	0.021	IV	45.1(72.6)
PAS	33.4710	118.0610	02/27/1984	101815.0	6.0	4.00	0.021	IV	45.2(72.7)
GDP	33.8060	117.7150	03/07/2000	002028.2	11.0	4.00	0.021	IV	45.8(73.8)
DMG	34.4000	117.8000	02/24/1946	6 752.0	0.0	4.10	0.022	IV	45.9(73.8)
PAS	34.5410	118.9890	06/12/1984	02752.4	11.7	4.10	0.022	IV	46.1(74.2)
DMG	34.6000	118.9000	05/18/1940	91512.0	0.0	4.00	0.020	IV	46.4(74.6)
DMG	33.6040	119.1050	03/25/1956	332 2.3	8.2	4.20	0.022	IV	46.9(75.6)
DMG	34.6670	118.8330	01/24/1950	215659.0	0.0	4.00	0.020	IV	48.6(78.2)
DMG	34.5000	119.1170	11/17/1954	23 351.0	0.0	4.40	0.024	V	49.2(79.2)
DMG	33.3670	118.1500	04/16/1942	72833.0	0.0	4.00	0.019	IV	49.3(79.4)
DMG	33.5450	117.8070	10/27/1969	1316 2.3	6.5	4.50	0.025	V	50.6(81.5)
DMG	33.9500	117.5830	04/11/1941	12024.0	0.0	4.00	0.019	IV	51.0(82.0)
MGI	34.3000	119.3000	05/15/1927	1120 0.0	0.0	4.00	0.019	IV	51.0(82.1)
MGI	34.3000	119.3000	09/28/1926	1749 0.0	0.0	4.00	0.019	IV	51.0(82.1)
MGI	34.3000	119.3000	05/01/1904	1830 0.0	0.0	4.60	0.026	V	51.0(82.1)
DMG	34.1500	119.3500	08/22/1950	224758.0	0.0	4.20	0.021	IV	51.1(82.2)
DMG	33.5830	119.1830	02/10/1952	135055.0	0.0	4.00	0.019	IV	51.4(82.7)
DMG	34.1830	117.5830	10/03/1948	24628.0	0.0	4.00	0.019	IV	51.7(83.1)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
MGI	33.8000	117.6000	04/22/1918	2115 0.0	0.0	5.00	0.032	V	52.2(84.0)
DMG	33.8000	117.6000	09/16/1903	1210 0.0	0.0	4.00	0.019	IV	52.2(84.0)
DMG	34.3700	117.6500	12/08/1812	15 0 0.0	0.0	7.00	0.091	VII	52.2(84.1)
GSP	34.3740	117.6490	08/20/1998	234958.4	9.0	4.40	0.023	IV	52.4(84.3)
DMG	34.3000	117.6000	07/30/1894	512 0.0	0.0	6.00	0.053	VI	52.9(85.2)
DMG	34.1000	119.4000	05/19/1893	035 0.0	0.0	5.50	0.040	V	53.5(86.1)
DMG	34.6170	119.0830	02/26/1950	0 622.0	0.0	4.70	0.026	V	53.6(86.2)
DMG	34.1830	117.5480	09/01/1937	163533.5	10.0	4.50	0.024	IV	53.6(86.3)
MGI	34.4000	119.3000	08/12/1925	1845 0.0	0.0	4.00	0.018	IV	53.9(86.8)
DMG	34.1670	117.5330	03/01/1948	81213.0	0.0	4.70	0.026	V	54.3(87.3)
DMG	34.6830	119.0000	04/06/1943	223624.0	0.0	4.00	0.018	IV	54.3(87.4)
DMG	34.1270	117.5210	12/27/1938	10 928.6	10.0	4.00	0.018	IV	54.5(87.8)
DMG	34.3040	117.5700	05/05/1969	16 2 9.6	8.8	4.40	0.022	IV	54.6(87.9)
DMG	33.4300	119.0960	10/31/1969	103929.0	7.3	4.80	0.027	V	55.0(88.5)
DMG	34.1400	117.5150	01/01/1965	8 418.0	5.9	4.40	0.022	IV	55.0(88.5)
DMG	34.2110	117.5300	09/01/1937	1348 8.2	10.0	4.50	0.023	IV	55.0(88.5)
PAS	34.2110	117.5300	10/19/1979	122237.8	4.9	4.10	0.019	IV	55.0(88.5)
DMG	34.2810	117.5520	09/13/1970	44748.6	8.0	4.40	0.022	IV	55.1(88.7)
DMG	34.7170	118.9670	06/11/1935	1810 0.0	0.0	4.00	0.018	IV	55.3(88.9)
DMG	34.7000	119.0000	10/23/1916	254 0.0	0.0	5.50	0.039	V	55.3(88.9)
MGI	34.0000	117.5000	12/16/1858	10 0 0.0	0.0	7.00	0.087	VII	55.4(89.2)
DMG	34.0000	117.5000	07/03/1908	1255 0.0	0.0	4.00	0.018	IV	55.4(89.2)
DMG	34.2700	117.5400	09/12/1970	143053.0	8.0	5.40	0.037	V	55.5(89.4)
DMG	34.2000	117.5000	06/14/1892	1325 0.0	0.0	4.90	0.028	V	56.5(91.0)
DMG	34.2670	117.5180	09/12/1970	141011.2	8.0	4.10	0.018	IV	56.7(91.2)
DMG	34.1240	117.4800	05/15/1955	17 326.0	7.6	4.00	0.017	IV	56.9(91.5)
DMG	34.1160	117.4750	06/28/1960	20 048.0	12.0	4.10	0.018	IV	57.1(91.9)
T-A	34.8300	118.7500	11/27/1852	0 0 0.0	0.0	7.00	0.084	VII	57.5(92.5)
DMG	34.7840	118.9020	07/27/1972	03117.4	8.0	4.40	0.021	IV	57.6(92.7)
DMG	33.6820	117.5530	07/05/1938	18 655.7	10.0	4.50	0.022	IV	57.7(92.9)
DMG	33.9860	119.4750	08/06/1973	232917.0	16.9	5.00	0.029	V	57.7(92.9)
DMG	34.3000	117.5000	07/22/1899	2032 0.0	0.0	6.50	0.064	VI	58.3(93.9)
DMG	34.2170	117.4670	03/25/1941	234341.0	0.0	4.00	0.017	IV	58.6(94.3)
DMG	33.7170	117.5170	06/19/1935	1117 0.0	0.0	4.00	0.017	IV	58.6(94.4)
PAS	34.1350	117.4480	01/08/1983	71930.4	4.6	4.10	0.018	IV	58.8(94.6)
MGI	34.0000	119.5000	05/03/1926	1353 0.0	0.0	4.30	0.020	IV	59.1(95.1)
DMG	34.0000	119.5000	03/19/1905	440 0.0	0.0	4.00	0.017	IV	59.1(95.1)
DMG	34.0000	119.5000	02/18/1926	1818 0.0	0.0	5.00	0.029	V	59.1(95.1)
DMG	33.7170	117.5070	08/06/1938	22 056.0	10.0	4.00	0.017	IV	59.2(95.2)
GSP	34.4810	119.3530	10/23/1996	220929.4	14.0	4.20	0.019	IV	59.3(95.4)
DMG	33.6990	117.5110	05/31/1938	83455.4	10.0	5.50	0.037	V	59.4(95.7)
DMG	33.7250	117.4980	01/03/1956	02548.9	13.7	4.70	0.024	V	59.5(95.7)
DMG	33.9170	119.5000	08/26/1954	1348 3.0	0.0	4.80	0.026	V	59.6(95.9)
DMG	34.1120	117.4260	03/19/1937	12338.4	10.0	4.00	0.017	IV	59.8(96.3)
DMG	33.7480	117.4790	06/22/1971	104119.0	8.0	4.20	0.019	IV	59.9(96.5)
DMG	34.1320	117.4260	04/15/1965	20 833.3	5.5	4.50	0.022	IV	60.0(96.5)
T-A	34.0000	117.4200	04/12/1888	1315 0.0	0.0	4.30	0.020	IV	60.0(96.6)
T-A	34.0000	117.4200	09/10/1920	1415 0.0	0.0	4.30	0.020	IV	60.0(96.6)
DMG	33.3390	119.1040	10/24/1969	202642.5	-1.8	4.70	0.024	V	60.1(96.8)
DMG	34.2500	119.5000	04/21/1917	659 0.0	0.0	4.00	0.017	IV	60.9(98.0)
DMG	34.2500	119.5000	04/13/1917	359 0.0	0.0	4.50	0.022	IV	60.9(98.0)
DMG	33.7330	117.4670	10/26/1954	162226.0	0.0	4.10	0.017	IV	60.9(98.1)
MGI	34.0000	117.4000	05/22/1907	652 0.0	0.0	4.60	0.023	IV	61.1(98.4)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.8670	118.8670	07/22/1952	74455.0	0.0	4.10	0.017	IV	62.0(99.8)
DMG	34.2670	119.5170	04/12/1944	153310.0	0.0	4.00	0.016	IV	62.1(100.0)
DMG	34.2000	117.4000	07/22/1899	046 0.0	0.0	5.50	0.036	V	62.1(100.0)
USG	34.1390	117.3860	02/21/1987	231530.1	2.6	4.07	0.017	IV	62.3(100.3)
DMG	34.3490	119.4920	07/14/1958	52555.3	16.0	4.70	0.023	IV	62.5(100.5)
GSP	34.1900	117.3900	12/28/1989	094108.1	15.0	4.50	0.021	IV	62.6(100.7)
DMG	33.8330	117.4000	06/05/1940	82727.0	0.0	4.00	0.016	IV	62.7(100.9)
DMG	34.8350	118.9880	11/29/1936	55445.3	10.0	4.00	0.016	IV	62.9(101.3)
USG	34.4180	119.4680	09/07/1984	11 345.2	9.5	4.00	0.016	IV	63.0(101.5)
DMG	33.9330	117.3670	10/24/1943	02921.0	0.0	4.00	0.016	IV	63.4(102.0)
DMG	34.8670	118.9330	09/21/1941	1953 7.2	0.0	5.20	0.030	V	63.5(102.2)
DMG	34.0330	117.3500	04/18/1940	184343.9	0.0	4.40	0.020	IV	64.0(102.9)
DMG	34.8000	119.1000	09/05/1883	1230 0.0	0.0	6.00	0.046	VI	64.2(103.3)
DMG	33.6670	119.5000	11/30/1939	64251.0	0.0	4.00	0.016	IV	64.3(103.5)
DMG	34.8430	119.0260	03/07/1939	195331.8	10.0	4.00	0.016	IV	64.5(103.7)
DMG	34.1180	117.3410	09/22/1951	82239.1	11.9	4.30	0.018	IV	64.7(104.2)
DMG	34.9000	118.9000	10/23/1916	244 0.0	0.0	6.00	0.045	VI	64.9(104.4)
DMG	34.2670	119.5670	06/29/1968	191357.0	10.0	4.40	0.019	IV	64.9(104.4)
PAS	34.9430	118.7430	06/10/1988	23 643.0	6.8	5.40	0.033	V	64.9(104.4)
DMG	34.1270	117.3380	02/23/1936	222042.7	10.0	4.50	0.020	IV	64.9(104.5)
DMG	34.1400	117.3390	02/26/1936	93327.6	10.0	4.00	0.016	IV	65.0(104.6)
DMG	33.7000	117.4000	04/11/1910	757 0.0	0.0	5.00	0.027	V	65.3(105.1)
DMG	33.7000	117.4000	05/15/1910	1547 0.0	0.0	6.00	0.045	VI	65.3(105.1)
DMG	33.7000	117.4000	05/13/1910	620 0.0	0.0	5.00	0.027	V	65.3(105.1)
GSP	34.1680	117.3370	06/28/1997	214525.1	9.0	4.20	0.017	IV	65.3(105.1)
DMG	34.8670	119.0170	07/21/1952	2153 9.0	0.0	4.30	0.018	IV	65.7(105.7)
DMG	34.2450	119.5880	06/29/1968	203633.6	1.8	4.00	0.016	IV	65.7(105.7)
DMG	34.0330	117.3170	09/03/1935	647 0.0	0.0	4.50	0.020	IV	65.8(106.0)
DMG	33.2910	119.1930	10/24/1969	82912.1	10.0	5.10	0.028	V	65.9(106.1)
DMG	34.9000	118.9500	08/01/1952	13 430.0	0.0	5.10	0.028	V	66.0(106.2)
T-A	34.1700	117.3200	12/02/1859	2210 0.0	0.0	4.30	0.018	IV	66.3(106.7)
DMG	34.8850	119.0020	02/23/1939	91846.7	10.0	4.50	0.020	IV	66.4(106.8)
T-A	34.9200	118.9200	05/23/1857	0 0 0.0	0.0	5.00	0.026	V	66.6(107.1)
T-A	34.9200	118.9200	01/20/1857	0 0 0.0	0.0	5.00	0.026	V	66.6(107.1)
T-A	34.9200	118.9200	08/29/1857	0 0 0.0	0.0	4.30	0.018	IV	66.6(107.1)
MGI	34.1000	117.3000	12/27/1901	11 0 0.0	0.0	4.60	0.021	IV	67.0(107.8)
DMG	34.1000	117.3000	02/16/1931	1327 0.0	0.0	4.00	0.015	IV	67.0(107.8)
MGI	34.1000	117.3000	11/22/1911	257 0.0	0.0	4.00	0.015	IV	67.0(107.8)
MGI	34.1000	117.3000	07/15/1905	2041 0.0	0.0	5.30	0.031	V	67.0(107.8)
DMG	34.3330	119.5830	07/01/1941	1820 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/01/1941	945 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/01/1941	2354 0.0	0.0	4.50	0.020	IV	67.0(107.9)
DMG	34.3330	119.5830	07/01/1941	858 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/01/1941	830 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/01/1941	819 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	11/18/1941	18 810.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/03/1941	1926 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/01/1941	848 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/02/1941	2219 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/01/1941	1025 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	09/08/1941	31245.0	0.0	4.50	0.020	IV	67.0(107.9)
DMG	34.3330	119.5830	07/01/1941	821 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	09/08/1941	31423.0	0.0	4.00	0.015	IV	67.0(107.9)

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.3330	119.5830	07/01/1941	9 5 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	11/21/1941	1656 3.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	10/02/1938	1845 0.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	07/12/1941	1618 0.0	0.0	4.50	0.020	IV	67.0(107.9)
DMG	34.3330	119.5830	09/15/1941	137 2.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	09/25/1941	51256.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.3330	119.5830	09/14/1941	14518.0	0.0	4.00	0.015	IV	67.0(107.9)
DMG	34.8830	119.0330	08/20/1952	84747.0	0.0	4.20	0.017	IV	67.1(107.9)
DMG	34.5000	119.5000	12/05/1920	1158 0.0	0.0	4.50	0.020	IV	67.2(108.2)
DMG	34.5000	119.5000	08/05/1930	1125 0.0	0.0	5.00	0.026	V	67.2(108.2)
DMG	34.5000	119.5000	06/29/1926	2321 0.0	0.0	5.50	0.034	V	67.2(108.2)
DMG	34.9110	118.9730	02/23/1939	84551.7	10.0	4.50	0.020	IV	67.2(108.2)
DMG	34.2550	119.6140	07/31/1968	224445.3	15.0	4.00	0.015	IV	67.3(108.3)
DMG	34.9500	118.8670	07/21/1952	121936.0	0.0	5.30	0.030	V	67.4(108.5)
PAS	34.2510	119.6220	03/23/1988	84247.0	16.4	4.00	0.015	IV	67.7(108.9)
MGI	34.2000	117.3000	04/13/1913	1045 0.0	0.0	4.00	0.015	IV	67.8(109.1)
DMG	34.3670	119.5830	07/01/1941	75054.8	0.0	5.90	0.041	V	67.8(109.1)
DMG	34.0000	117.2830	11/07/1939	1852 8.4	0.0	4.70	0.022	IV	67.8(109.2)
DMG	34.2540	119.6280	07/08/1968	91837.2	15.7	4.00	0.015	IV	68.1(109.5)
DMG	34.1830	119.6460	06/29/1968	63320.9	8.4	4.00	0.015	IV	68.2(109.7)
DMG	34.9280	118.9700	01/15/1955	1 3 6.7	9.1	4.30	0.018	IV	68.2(109.8)
DMG	34.9030	119.0380	05/08/1939	248 5.3	10.0	4.50	0.020	IV	68.4(110.1)
DMG	34.9000	119.0500	07/22/1952	143018.0	0.0	4.30	0.018	IV	68.6(110.3)
DMG	33.9960	117.2700	02/17/1952	123658.3	16.0	4.50	0.020	IV	68.6(110.4)
DMG	35.0000	118.7330	04/29/1953	124745.0	0.0	4.70	0.022	IV	68.6(110.4)
DMG	35.0000	118.7330	08/23/1952	6 3 3.0	0.0	4.30	0.018	IV	68.6(110.4)
DMG	34.9320	118.9760	03/01/1963	02557.9	13.9	5.00	0.026	V	68.6(110.4)
GSP	34.9180	119.0200	12/24/2000	010421.9	14.0	4.40	0.019	IV	68.8(110.8)
DMG	33.4000	119.4000	07/24/1947	1654 2.0	0.0	4.30	0.018	IV	69.0(111.1)
DMG	34.9500	118.9500	10/16/1952	1222 7.0	0.0	4.30	0.018	IV	69.1(111.3)
DMG	34.9450	118.9680	03/04/1963	201042.3	8.5	4.00	0.015	IV	69.2(111.4)
GDP	34.0470	117.2550	02/21/2000	134943.1	15.0	4.50	0.019	IV	69.4(111.7)
DMG	34.9410	118.9870	11/15/1961	53855.5	10.7	5.00	0.025	V	69.4(111.7)
DMG	34.2500	119.6540	06/29/1968	153242.8	14.6	4.10	0.016	IV	69.5(111.8)
DMG	34.0000	117.2500	11/01/1932	445 0.0	0.0	4.00	0.015	IV	69.7(112.2)
DMG	34.0000	117.2500	07/23/1923	73026.0	0.0	6.25	0.049	VI	69.7(112.2)
T-A	34.0800	117.2500	10/07/1869	0 0 0.0	0.0	4.30	0.017	IV	69.7(112.2)
PAS	34.0230	117.2450	10/02/1985	234412.4	15.2	4.80	0.023	IV	70.0(112.6)
DMG	35.0000	118.8330	07/23/1952	181351.0	0.0	5.20	0.028	V	70.1(112.8)
DMG	35.0000	118.8330	12/01/1952	52610.0	0.0	4.40	0.018	IV	70.1(112.8)
DMG	35.0000	118.8330	07/23/1952	75319.0	0.0	5.40	0.031	V	70.1(112.8)
DMG	34.9830	118.9000	03/23/1953	17 637.0	0.0	4.00	0.015	IV	70.2(113.0)
DMG	34.9830	118.9000	07/24/1952	95032.0	0.0	4.30	0.017	IV	70.2(113.0)
DMG	34.9670	118.9500	07/30/1952	11 255.0	0.0	4.10	0.016	IV	70.2(113.0)
DMG	34.9670	118.9500	11/27/1952	153641.0	0.0	4.00	0.015	IV	70.2(113.0)
DMG	33.0380	118.7340	09/13/1937	221439.5	10.0	4.00	0.015	IV	70.2(113.0)
DMG	34.9500	119.0170	11/11/1952	181225.0	0.0	4.10	0.016	IV	70.7(113.8)
GSP	34.0240	117.2300	03/11/1998	121851.8	14.0	4.50	0.019	IV	70.8(114.0)
DMG	34.1180	119.7020	07/05/1968	04517.2	5.9	5.20	0.028	V	70.8(114.0)
DMG	34.0430	117.2280	04/03/1939	25044.7	10.0	4.00	0.015	IV	70.9(114.2)
DMG	34.9330	119.0670	02/10/1954	235838.0	0.0	4.50	0.019	IV	71.0(114.3)
DMG	34.2120	119.6910	06/26/1968	181111.2	13.9	4.00	0.015	IV	71.0(114.3)
DMG	34.8410	119.2400	01/11/1958	23 847.4	10.8	4.00	0.015	IV	71.2(114.5)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.0630	118.4230	08/26/1952	205640.6	-0.8	4.40	0.018	IV	71.3(114.8)
DMG	34.9220	119.1030	01/09/1963	6 4 3.8	8.7	4.00	0.015	IV	71.4(114.8)
DMG	34.9670	119.0000	09/02/1952	204556.0	0.0	4.70	0.021	IV	71.4(114.9)
DMG	34.0720	119.7230	07/05/1968	23614.1	4.3	4.00	0.015	IV	71.9(115.6)
DMG	34.2530	119.6980	06/29/1968	191221.3	9.5	4.20	0.016	IV	72.0(115.8)
DMG	34.9830	118.9830	05/23/1954	235243.0	0.0	5.10	0.026	V	72.0(115.8)
DMG	35.0670	118.6170	07/23/1952	235136.0	0.0	4.00	0.015	IV	72.0(115.9)
DMG	35.0330	118.8500	10/07/1953	145921.0	0.0	4.90	0.023	IV	72.5(116.7)
MGI	34.1000	117.2000	04/23/1923	2113 0.0	0.0	4.00	0.014	IV	72.7(116.9)
DMG	35.0830	118.5830	08/04/1952	535 0.0	0.0	4.00	0.014	IV	72.9(117.4)
DMG	35.0830	118.5830	07/22/1952	81624.0	0.0	4.40	0.018	IV	72.9(117.4)
DMG	34.3170	119.7000	10/21/1953	16 238.0	0.0	4.00	0.014	IV	73.1(117.6)
DMG	33.9000	117.2000	12/19/1880	0 0 0.0	0.0	6.00	0.041	V	73.2(117.7)
DMG	34.1920	119.7330	07/05/1968	036 6.4	15.6	4.00	0.014	IV	73.2(117.8)
DMG	34.9830	119.0330	07/21/1952	235328.0	0.0	4.50	0.019	IV	73.2(117.8)
DMG	35.0000	119.0000	07/21/1952	1210 0.0	0.0	4.50	0.019	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	14 6 0.0	0.0	4.20	0.016	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1417 0.0	0.0	4.10	0.015	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1313 0.0	0.0	4.50	0.019	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1638 0.0	0.0	4.50	0.019	IV	73.4(118.2)
DMG	35.0000	119.0000	02/16/1919	1557 0.0	0.0	5.00	0.024	V	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	12 7 0.0	0.0	4.70	0.021	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1218 0.0	0.0	4.40	0.018	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1317 0.0	0.0	4.00	0.014	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	12 531.0	0.0	6.40	0.051	VI	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1617 0.0	0.0	4.10	0.015	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1359 0.0	0.0	4.60	0.020	IV	73.4(118.2)
DMG	35.0000	119.0000	07/22/1952	133143.0	0.0	4.80	0.022	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1415 0.0	0.0	4.40	0.018	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1442 0.0	0.0	4.20	0.016	IV	73.4(118.2)
DMG	35.0000	119.0000	07/22/1952	175236.0	0.0	4.10	0.015	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1222 0.0	0.0	4.90	0.023	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	18 0 0.0	0.0	4.50	0.019	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	12 6 0.0	0.0	4.80	0.022	IV	73.4(118.2)
DMG	35.0000	119.0000	07/23/1952	043 8.0	0.0	4.40	0.018	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1228 0.0	0.0	4.20	0.016	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1336 0.0	0.0	4.10	0.015	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1212 0.0	0.0	4.60	0.020	IV	73.4(118.2)
DMG	35.0000	119.0000	07/22/1952	82122.0	0.0	4.10	0.015	IV	73.4(118.2)
DMG	35.0000	119.0000	07/25/1952	0 3 0.0	0.0	4.00	0.014	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	13 8 0.0	0.0	4.50	0.019	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1311 0.0	0.0	4.10	0.015	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1259 0.0	0.0	4.20	0.016	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1240 0.0	0.0	4.90	0.023	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1451 0.0	0.0	4.20	0.016	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	132512.0	0.0	4.50	0.019	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1553 0.0	0.0	4.50	0.019	IV	73.4(118.2)
DMG	35.0000	119.0000	01/25/1919	2229 0.0	0.0	4.00	0.014	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1225 0.0	0.0	4.70	0.021	IV	73.4(118.2)
DMG	35.0000	119.0000	08/10/1952	194424.0	0.0	4.10	0.015	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1239 0.0	0.0	4.20	0.016	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1542 0.0	0.0	4.20	0.016	IV	73.4(118.2)
DMG	35.0000	119.0000	07/22/1952	191024.0	0.0	4.10	0.015	IV	73.4(118.2)

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.0000	119.0000	03/13/1929	228 0.0	0.0	4.50	0.019	IV	73.4(118.2)
DMG	35.0000	119.0000	07/21/1952	1536 0.0	0.0	4.20	0.016	IV	73.4(118.2)
PAS	34.3470	119.6960	08/13/1978	225453.4	12.8	5.10	0.026	V	73.5(118.2)
PAS	35.0950	118.5190	06/22/1981	45747.3	5.0	4.00	0.014	IV	73.5(118.3)
DMG	35.0670	118.7670	07/22/1952	21 211.0	0.0	4.20	0.016	IV	73.5(118.3)
DMG	35.0330	118.9170	07/23/1952	211658.0	0.0	4.10	0.015	IV	73.8(118.7)
DMG	35.0000	119.0170	07/21/1952	115214.0	0.0	7.70	0.100	VII	73.8(118.8)
DMG	35.0000	119.0170	05/25/1953	324 1.0	0.0	4.80	0.022	IV	73.8(118.8)
DMG	35.0000	119.0170	01/12/1954	233349.0	0.0	5.90	0.039	V	73.8(118.8)
DMG	35.0330	118.9330	07/22/1952	223133.0	0.0	4.70	0.021	IV	74.1(119.2)
DMG	35.0170	118.9830	08/17/1952	9 9 7.0	0.0	4.10	0.015	IV	74.1(119.3)
DMG	34.1760	119.7540	07/07/1968	143330.8	12.8	4.50	0.018	IV	74.2(119.4)
DMG	35.0000	119.0330	07/21/1952	1157 0.0	0.0	4.50	0.018	IV	74.2(119.5)
DMG	35.0000	119.0330	07/21/1952	1158 0.0	0.0	4.60	0.019	IV	74.2(119.5)
DMG	35.0000	119.0330	07/21/1952	1159 0.0	0.0	4.50	0.018	IV	74.2(119.5)
DMG	35.0000	119.0330	07/21/1952	1155 0.0	0.0	4.50	0.018	IV	74.2(119.5)
DMG	35.0000	119.0330	07/21/1952	1154 0.0	0.0	4.50	0.018	IV	74.2(119.5)
DMG	35.0000	119.0330	07/21/1952	12 2 0.0	0.0	5.60	0.033	V	74.2(119.5)
GSP	35.0980	118.3060	12/31/1995	214823.1	7.0	4.00	0.014	IV	74.3(119.5)
DMG	35.1000	118.6170	09/26/1952	202120.0	0.0	4.00	0.014	IV	74.3(119.6)
DMG	35.0830	118.7500	07/26/1952	18 244.0	0.0	4.00	0.014	IV	74.4(119.7)
DMG	35.0830	118.7500	07/26/1952	15 831.0	0.0	4.40	0.017	IV	74.4(119.7)
DMG	35.0830	118.7500	07/22/1952	84734.0	0.0	4.70	0.020	IV	74.4(119.7)
DMG	35.0500	118.9000	09/25/1952	162136.0	0.0	4.10	0.015	IV	74.5(119.9)
DMG	35.0000	119.0500	09/12/1952	103525.0	0.0	4.50	0.018	IV	74.7(120.2)
MGI	34.4000	119.7000	08/09/1926	412 0.0	0.0	4.00	0.014	IV	74.8(120.4)
MGI	34.4000	119.7000	06/24/1926	1530 0.0	0.0	4.00	0.014	IV	74.8(120.4)
MGI	34.4000	119.7000	03/25/1806	8 0 0.0	0.0	5.00	0.024	IV	74.8(120.4)
MGI	34.4000	119.7000	07/06/1926	1745 0.0	0.0	4.00	0.014	IV	74.8(120.4)
MGI	34.4000	119.7000	08/26/1927	1240 0.0	0.0	4.00	0.014	IV	74.8(120.4)
DMG	35.1170	118.4810	05/01/1953	64820.9	2.4	4.10	0.015	IV	75.0(120.7)
PAS	33.0330	117.9440	02/22/1983	21830.4	10.0	4.30	0.016	IV	75.2(121.0)
GSP	32.9750	118.7910	03/04/1992	190627.0	6.0	4.20	0.016	IV	75.2(121.1)
DMG	35.0670	118.8830	08/14/1952	114146.0	0.0	4.20	0.016	IV	75.3(121.2)
DMG	35.0670	118.8830	08/17/1952	21 442.0	0.0	4.30	0.016	IV	75.3(121.2)
DMG	35.0000	119.0830	11/07/1952	85535.0	0.0	4.60	0.019	IV	75.5(121.5)
DMG	35.0500	118.9500	11/14/1952	2334 1.4	0.0	4.00	0.014	IV	75.5(121.5)
DMG	35.0500	118.9500	08/17/1952	614 4.0	0.0	4.00	0.014	IV	75.5(121.5)
DMG	35.0330	119.0000	07/22/1952	101939.0	0.0	4.10	0.015	IV	75.5(121.5)
DMG	35.0170	119.0500	08/05/1953	122059.0	0.0	4.30	0.016	IV	75.7(121.8)
T-A	34.5000	119.6700	06/01/1893	12 0 0.0	0.0	5.00	0.024	IV	75.9(122.1)
T-A	34.5000	119.6700	02/09/1902	15 0 0.0	0.0	4.30	0.016	IV	75.9(122.1)
T-A	34.5000	119.6700	05/31/1854	1250 0.0	0.0	4.30	0.016	IV	75.9(122.1)
T-A	34.5000	119.6700	06/25/1855	22 0 0.0	0.0	4.30	0.016	IV	75.9(122.1)
T-A	34.5000	119.6700	07/09/1885	0 0 0.0	0.0	4.30	0.016	IV	75.9(122.1)
T-A	34.5000	119.6700	03/14/1857	23 0 0.0	0.0	4.30	0.016	IV	75.9(122.1)
PAS	35.0000	119.1030	05/13/1975	02135.6	19.1	4.50	0.018	IV	76.0(122.4)
DMG	33.7380	117.1870	04/27/1962	91232.1	5.7	4.10	0.015	IV	76.1(122.5)
DMG	35.1330	118.5170	08/14/1952	72822.0	0.0	4.10	0.015	IV	76.1(122.5)
DMG	35.1330	118.5170	07/28/1952	54554.0	0.0	4.20	0.015	IV	76.1(122.5)
DMG	35.1330	118.5170	07/23/1952	152524.0	0.0	4.00	0.014	IV	76.1(122.5)
DMG	35.1330	118.5170	07/22/1952	141 2.0	0.0	4.50	0.018	IV	76.1(122.5)
DMG	35.0670	118.9330	07/23/1952	223220.0	0.0	4.10	0.015	IV	76.3(122.7)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
PAS	35.0460	119.0010	06/05/1975	144645.3	9.0	4.10	0.015	IV	76.4(122.9)
DMG	35.0450	119.0040	03/23/1956	212327.1	12.1	4.30	0.016	IV	76.4(122.9)
DMG	34.3250	119.7610	08/09/1956	0 849.2	4.0	4.00	0.014	IV	76.6(123.3)
DMG	34.4900	119.6910	09/16/1962	181235.2	13.3	4.00	0.014	IV	76.7(123.4)
DMG	35.0330	119.0500	07/27/1952	71611.0	0.0	4.10	0.015	IV	76.7(123.4)
DMG	35.0330	119.0500	08/07/1952	163151.0	0.0	4.90	0.022	IV	76.7(123.4)
DMG	35.0330	119.0500	08/18/1952	44010.0	0.0	4.70	0.020	IV	76.7(123.4)
DMG	34.2000	119.8000	12/21/1812	19 0 0.0	0.0	7.00	0.067	VI	77.0(124.0)
DMG	35.1330	118.7000	09/02/1952	124132.0	0.0	4.60	0.019	IV	77.2(124.3)
DMG	33.2670	119.4500	11/18/1947	2159 3.0	0.0	5.00	0.023	IV	77.2(124.3)
DMG	35.0670	118.9830	08/04/1952	194750.0	0.0	4.00	0.014	III	77.3(124.4)
DMG	34.3500	119.7670	11/10/1940	102510.0	0.0	4.00	0.014	III	77.4(124.6)
MGI	34.5000	119.7000	08/26/1919	1457 0.0	0.0	4.00	0.014	III	77.4(124.6)
MGI	34.5000	119.7000	08/26/1919	1212 0.0	0.0	4.00	0.014	III	77.4(124.6)
MGI	34.5000	119.7000	07/29/1925	14 0 0.0	0.0	4.00	0.014	III	77.4(124.6)
DMG	35.1500	118.6330	01/27/1954	141948.0	0.0	5.00	0.023	IV	77.8(125.3)
DMG	35.1330	118.7670	07/21/1952	194122.0	0.0	5.50	0.030	V	78.0(125.5)
DMG	35.1330	118.7670	07/25/1952	143442.0	0.0	4.40	0.017	IV	78.0(125.5)
DMG	35.0330	119.1000	09/02/1953	152756.0	0.0	4.00	0.014	III	78.0(125.5)
DMG	35.0330	119.1000	02/07/1954	0 953.0	0.0	4.40	0.017	IV	78.0(125.5)
DMG	35.0330	119.1000	01/13/1954	14531.0	0.0	4.40	0.017	IV	78.0(125.5)
DMG	35.0330	119.1000	01/12/1954	234037.0	0.0	4.10	0.014	IV	78.0(125.5)
PAS	35.0180	119.1410	11/10/1981	223435.5	3.1	4.50	0.018	IV	78.2(125.8)
DMG	35.1500	118.6830	08/13/1952	173925.0	0.0	4.70	0.020	IV	78.2(125.9)
MGI	34.3000	119.8000	07/03/1925	1638 0.0	0.0	5.30	0.027	V	78.3(126.1)
DMG	34.3000	119.8000	06/29/1925	144216.0	0.0	6.25	0.045	VI	78.3(126.1)
MGI	34.3000	119.8000	07/03/1925	1821 0.0	0.0	5.30	0.027	V	78.3(126.1)
DMG	35.0670	119.0330	07/23/1952	175329.0	0.0	4.10	0.014	IV	78.4(126.2)
DMG	35.0670	119.0330	07/27/1952	113438.0	0.0	4.10	0.014	IV	78.4(126.2)
DMG	35.0660	119.0490	01/24/1974	5 2 0.8	6.4	4.30	0.016	IV	78.7(126.7)
PAS	35.0120	119.1790	11/10/1981	2237 5.0	9.4	4.20	0.015	IV	78.9(127.0)
DMG	34.2000	117.1000	09/20/1907	154 0.0	0.0	6.00	0.039	V	79.1(127.2)
DMG	35.1000	118.9670	08/25/1952	62026.0	0.0	4.70	0.020	IV	79.1(127.3)
PAS	35.0350	119.1370	06/16/1978	42131.6	1.8	4.30	0.016	IV	79.1(127.3)
DMG	35.0670	119.0670	02/24/1954	223022.0	0.0	4.50	0.018	IV	79.2(127.5)
GSP	34.1920	117.0950	04/06/1994	190104.1	7.0	4.80	0.021	IV	79.3(127.5)
USG	33.0170	117.8170	07/14/1986	11112.6	10.0	4.12	0.014	IV	79.4(127.8)
USG	33.0170	117.8170	07/16/1986	1247 3.7	10.0	4.11	0.014	IV	79.4(127.8)
DMG	34.4710	119.7570	11/16/1958	934 6.1	15.2	4.00	0.013	III	79.6(128.1)
DMG	35.1000	119.0000	07/24/1952	311 7.0	0.0	4.10	0.014	IV	79.8(128.4)
DMG	35.1000	119.0000	07/22/1952	14 511.0	0.0	4.30	0.016	IV	79.8(128.4)
DMG	35.0500	119.1330	05/23/1953	75255.0	0.0	4.20	0.015	IV	79.9(128.6)
DMG	35.0500	119.1330	08/06/1953	1120 4.0	0.0	4.40	0.017	IV	79.9(128.6)
DMG	35.1830	118.6000	07/29/1952	154950.0	0.0	4.90	0.022	IV	79.9(128.6)
DMG	35.1830	118.6000	07/26/1952	2241 3.0	0.0	4.60	0.018	IV	79.9(128.6)
DMG	35.1830	118.6000	07/26/1952	63850.0	0.0	4.00	0.013	III	79.9(128.6)
PAS	32.9900	117.8490	07/13/1986	14 133.0	12.0	4.60	0.018	IV	80.2(129.1)
MGI	34.4000	119.8000	09/09/1929	515 0.0	0.0	4.60	0.018	IV	80.2(129.1)
DMG	35.1830	118.6500	07/21/1952	151358.0	0.0	5.10	0.024	IV	80.2(129.1)
DMG	35.1940	118.4650	07/22/1952	19 858.2	3.7	4.30	0.016	IV	80.3(129.2)
PAS	34.4020	119.8020	03/10/1986	153316.3	18.0	4.10	0.014	IV	80.4(129.3)
PAS	32.9860	117.8440	10/01/1986	201218.6	6.0	4.00	0.013	III	80.6(129.7)
DMG	34.3330	119.8330	06/26/1933	62542.0	0.0	4.30	0.016	IV	80.7(129.9)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.3330	119.8330	06/26/1933	62752.0	0.0	4.30	0.016	IV	80.7(129.9)
DMG	35.1990	118.5310	09/01/1961	165148.9	4.5	4.00	0.013	III	80.7(129.9)
DMG	35.0500	119.1670	12/14/1950	135623.0	0.0	4.40	0.016	IV	80.8(130.1)
PAS	32.9710	117.8700	07/13/1986	1347 8.2	6.0	5.30	0.026	V	80.9(130.1)
DMG	34.0170	117.0500	02/19/1940	12 655.7	0.0	4.60	0.018	IV	81.1(130.6)
DMG	35.2000	118.6330	07/22/1952	321 5.0	0.0	4.40	0.016	IV	81.3(130.8)
GSP	32.9850	117.8180	06/21/1995	211736.2	6.0	4.30	0.015	IV	81.3(130.9)
DMG	32.8670	118.2500	02/13/1952	151337.0	0.0	4.70	0.019	IV	81.3(130.9)
DMG	33.7000	117.1000	06/11/1902	245 0.0	0.0	4.50	0.017	IV	81.7(131.4)
DMG	35.1000	119.0830	12/06/1934	743 0.0	0.0	4.00	0.013	III	81.7(131.5)
DMG	35.1000	119.0830	07/24/1946	019 8.0	0.0	4.00	0.013	III	81.7(131.5)
T-A	34.4200	119.8200	00/00/1862	0 0 0.0	0.0	5.70	0.032	V	81.7(131.5)
GSP	32.9700	117.8100	04/04/1990	085439.3	6.0	4.00	0.013	III	82.5(132.7)
PAS	32.9700	117.8030	07/14/1986	03246.2	10.0	4.00	0.013	III	82.6(133.0)
DMG	35.2170	118.6670	09/14/1952	204324.0	0.0	4.10	0.014	IV	82.7(133.0)
DMG	35.0500	119.2330	08/19/1952	191226.0	0.0	4.50	0.017	IV	82.7(133.1)
DMG	35.2290	118.5130	06/28/1957	1132 0.8	1.6	4.10	0.014	III	82.8(133.2)
DMG	33.1500	119.4500	01/05/1940	62052.0	0.0	4.00	0.013	III	83.0(133.6)
DMG	33.1500	119.4500	06/17/1934	243 0.0	0.0	4.00	0.013	III	83.0(133.6)
DMG	35.2330	118.5330	07/21/1952	174244.0	0.0	5.10	0.023	IV	83.1(133.7)
DMG	35.2330	118.5330	07/30/1952	144650.0	0.0	4.10	0.014	III	83.1(133.7)
DMG	35.2330	118.5330	07/22/1952	15 314.0	0.0	4.20	0.014	IV	83.1(133.7)
DMG	35.2330	118.5330	03/17/1953	161517.0	0.0	4.00	0.013	III	83.1(133.7)
DMG	35.2330	118.5330	07/29/1952	173643.0	0.0	4.40	0.016	IV	83.1(133.7)
DMG	35.2330	118.5330	07/24/1952	1735 6.0	0.0	4.20	0.014	IV	83.1(133.7)
DMG	35.2350	118.5480	03/03/1973	181449.5	8.0	4.00	0.013	III	83.3(134.0)
DMG	35.2330	118.6000	07/22/1952	91025.0	0.0	4.50	0.017	IV	83.3(134.1)
DMG	35.2330	118.6000	01/10/1953	221738.0	0.0	4.00	0.013	III	83.3(134.1)
GSP	34.1800	117.0200	12/04/1991	081703.5	11.0	4.00	0.013	III	83.4(134.2)
PAS	32.9450	117.8310	07/29/1986	81741.8	10.0	4.10	0.014	III	83.5(134.3)
DMG	35.2390	118.5180	07/21/1952	2021 5.1	-2.0	4.20	0.014	IV	83.5(134.3)
DMG	35.2410	118.5600	07/21/1952	1912 7.4	5.8	4.30	0.015	IV	83.7(134.7)
PAS	32.9330	117.8410	07/29/1986	81741.6	10.0	4.30	0.015	IV	83.9(135.1)
DMG	34.0000	117.0000	06/30/1923	022 0.0	0.0	4.50	0.017	IV	84.0(135.2)
DMG	35.1500	119.0500	11/11/1952	1722 8.0	0.0	4.20	0.014	IV	84.1(135.3)
DMG	32.8170	118.3500	12/26/1951	04654.0	0.0	5.90	0.035	V	84.1(135.3)
PAS	32.9450	117.8060	09/07/1984	11 313.4	6.0	4.30	0.015	IV	84.1(135.3)
DMG	35.2500	118.4830	07/23/1952	93842.0	0.0	4.20	0.014	IV	84.2(135.5)
DMG	35.2500	118.4830	07/23/1952	1330 4.0	0.0	4.40	0.016	IV	84.2(135.5)
DMG	35.2170	118.8170	07/23/1952	1317 5.0	0.0	5.70	0.032	V	84.3(135.6)
DMG	35.2170	118.8170	12/15/1953	124436.0	0.0	4.60	0.018	IV	84.3(135.6)
GSP	34.1200	116.9980	06/29/1992	144126.0	4.0	4.40	0.016	IV	84.3(135.6)
GSP	34.0970	116.9960	12/05/1997	170438.9	4.0	4.10	0.014	III	84.3(135.7)
GSP	35.2100	118.0660	07/11/1992	181416.2	10.0	5.70	0.031	V	84.6(136.1)
GSP	34.0850	116.9890	06/30/1992	214900.3	3.0	4.40	0.016	IV	84.7(136.3)
DMG	35.0830	119.2330	03/03/1956	62412.0	0.0	4.20	0.014	IV	84.7(136.3)
GSP	35.1490	119.1040	05/28/1993	044740.6	21.0	5.20	0.024	V	85.3(137.2)
DMG	35.2670	118.4500	07/21/1952	191619.0	0.0	4.30	0.015	IV	85.4(137.4)
DMG	34.1670	116.9830	10/16/1951	1241 5.0	0.0	4.00	0.013	III	85.4(137.4)
DMG	33.8000	117.0000	12/25/1899	1225 0.0	0.0	6.40	0.045	VI	85.6(137.7)
PAS	32.9470	117.7360	01/15/1989	153955.2	6.0	4.20	0.014	IV	85.9(138.2)
PAS	34.1510	116.9720	11/20/1978	655 9.5	6.1	4.30	0.015	IV	85.9(138.3)
DMG	33.7500	117.0000	06/06/1918	2232 0.0	0.0	5.00	0.021	IV	86.3(138.9)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.7500	117.0000	04/21/1918	223225.0	0.0	6.80	0.055	VI	86.3(138.9)
DMG	34.3330	117.0000	02/27/1942	1 853.0	0.0	4.00	0.013	III	86.4(139.0)
DMG	35.2830	118.5500	07/23/1952	737 0.0	0.0	4.80	0.019	IV	86.6(139.3)
DMG	35.2830	118.5500	07/23/1952	34928.0	0.0	4.70	0.018	IV	86.6(139.3)
DMG	35.2830	118.5500	08/01/1952	31611.6	0.0	4.50	0.016	IV	86.6(139.3)
DMG	35.2830	118.5500	07/31/1952	41022.0	0.0	4.20	0.014	IV	86.6(139.3)
DMG	35.2830	118.5500	07/26/1952	922 6.0	0.0	4.30	0.015	IV	86.6(139.3)
DMG	35.2830	118.5500	07/22/1952	15151.0	0.0	4.40	0.016	IV	86.6(139.3)
DMG	35.2830	118.5830	07/31/1952	1719 8.0	0.0	4.50	0.016	IV	86.7(139.5)
DMG	35.2890	118.4600	07/26/1952	1 221.3	10.8	4.20	0.014	IV	86.9(139.8)
DMG	35.2890	118.4110	08/10/1952	122318.0	4.0	4.60	0.017	IV	86.9(139.9)
DMG	35.2900	118.4700	07/24/1952	12 757.6	14.1	4.10	0.013	III	86.9(139.9)
PAS	34.1980	116.9590	04/01/1978	105227.4	8.0	4.00	0.013	III	87.0(140.0)
DMG	34.1330	116.9500	06/10/1938	1440 0.0	0.0	4.00	0.013	III	87.1(140.1)
DMG	34.2670	116.9670	08/29/1943	35754.0	0.0	4.00	0.013	III	87.3(140.5)
DMG	34.2670	116.9670	08/29/1943	51630.0	0.0	4.00	0.013	III	87.3(140.5)
DMG	34.2670	116.9670	08/29/1943	34513.0	0.0	5.50	0.028	V	87.3(140.5)
DMG	35.2940	118.4010	08/13/1952	42940.6	14.5	4.60	0.017	IV	87.3(140.5)
DMG	35.1840	119.0990	07/01/1959	234923.4	9.0	4.70	0.018	IV	87.3(140.5)
USG	32.7700	118.3340	06/16/1985	1027 0.7	5.0	4.14	0.013	III	87.4(140.6)
DMG	35.2990	118.4350	07/25/1952	20 6 6.1	-1.4	4.80	0.019	IV	87.6(140.9)
DMG	35.3000	118.5000	02/19/1953	812 6.0	0.0	4.40	0.015	IV	87.6(141.0)
DMG	35.3000	118.4320	07/23/1952	61045.9	14.5	4.20	0.014	IV	87.7(141.1)
DMG	35.3000	118.5330	09/02/1952	1638 9.0	0.0	4.00	0.012	III	87.7(141.1)
DMG	35.3000	118.5330	07/30/1952	95929.0	0.0	4.00	0.012	III	87.7(141.1)
DMG	35.3000	118.5330	07/21/1952	182628.0	0.0	4.10	0.013	III	87.7(141.1)
DMG	35.3000	118.5330	07/21/1952	182338.0	0.0	4.50	0.016	IV	87.7(141.1)
DMG	35.3030	118.4730	08/01/1952	213522.4	4.2	4.00	0.012	III	87.8(141.4)
DMG	35.3030	118.4810	09/04/1952	18 649.1	5.8	4.40	0.015	IV	87.8(141.4)
DMG	35.3050	118.5070	08/09/1952	10 732.1	-2.0	4.20	0.014	IV	88.0(141.6)
T-A	33.5000	117.0700	12/29/1880	7 0 0.0	0.0	4.30	0.015	IV	88.2(141.9)
DMG	35.3080	118.5160	07/31/1952	19 515.4	7.3	4.00	0.012	III	88.2(142.0)
GSP	34.1210	116.9280	08/16/1998	133440.2	6.0	4.70	0.018	IV	88.3(142.1)
DMG	35.3000	118.6670	08/13/1952	212548.0	0.0	4.10	0.013	III	88.4(142.2)
DMG	35.3110	118.4990	07/25/1952	1313 8.2	2.8	5.00	0.021	IV	88.4(142.3)
DMG	35.3130	118.4890	10/20/1952	181443.6	14.0	4.30	0.014	IV	88.5(142.5)
DMG	35.3140	118.4820	08/30/1952	45559.8	5.5	4.70	0.018	IV	88.6(142.6)
DMG	35.3140	118.5300	07/26/1952	225856.1	6.8	4.30	0.014	IV	88.7(142.7)
DMG	34.0000	120.0170	04/01/1945	234342.0	0.0	5.40	0.026	V	88.7(142.7)
GSP	34.1120	116.9200	10/01/1998	181816.0	4.0	4.70	0.018	IV	88.7(142.7)
DMG	35.3150	118.5160	07/25/1952	194323.7	11.2	5.70	0.030	V	88.7(142.8)
DMG	35.3160	118.4870	09/15/1952	44013.2	4.2	4.90	0.020	IV	88.7(142.8)
DMG	35.3160	118.5140	07/24/1952	14 525.9	5.4	4.30	0.014	IV	88.8(142.9)
DMG	35.3170	118.4940	07/25/1952	19 944.6	5.5	5.70	0.030	V	88.8(142.9)
GSP	34.1780	116.9220	06/28/1992	170131.9	13.0	4.70	0.018	IV	89.0(143.1)
DMG	35.3200	118.5180	07/27/1952	0 915.6	6.5	4.20	0.014	III	89.1(143.3)
DMG	34.1800	116.9200	01/16/1930	034 3.6	0.0	5.10	0.022	IV	89.1(143.4)
DMG	34.1800	116.9200	01/16/1930	02433.9	0.0	5.20	0.023	IV	89.1(143.4)
DMG	35.3210	118.4940	02/11/1955	194431.5	14.7	4.50	0.016	IV	89.1(143.4)
DMG	35.1830	119.1740	06/04/1956	83319.3	14.3	4.00	0.012	III	89.1(143.4)
DMG	35.3210	118.5400	07/24/1952	141012.2	9.5	4.00	0.012	III	89.2(143.5)
DMG	34.4330	116.9830	04/18/1945	458 2.0	0.0	4.30	0.014	IV	89.2(143.5)
DMG	35.3240	118.4860	01/20/1953	81322.8	7.2	4.00	0.012	III	89.3(143.7)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.3000	118.8000	12/23/1905	2223 0.0	0.0	5.00	0.021	IV	89.6(144.2)
DMG	35.3300	118.5070	05/29/1968	22938.7	3.1	4.00	0.012	III	89.7(144.4)
DMG	32.7500	118.2000	06/25/1939	149 0.0	0.0	4.50	0.016	IV	89.8(144.5)
DMG	35.3330	118.5330	08/01/1952	103556.0	0.0	4.00	0.012	III	90.0(144.8)
DMG	35.3350	118.4740	07/23/1952	172224.0	6.6	4.50	0.016	IV	90.0(144.9)
DMG	35.3330	118.5670	08/08/1952	51718.0	0.0	4.00	0.012	III	90.1(145.0)
DMG	35.3360	118.4720	07/23/1952	105413.5	19.7	4.10	0.013	III	90.1(145.0)
DMG	35.3330	118.6000	07/23/1952	164853.0	0.0	4.50	0.016	IV	90.2(145.2)
DMG	35.3330	118.6000	07/23/1952	161838.0	0.0	4.50	0.016	IV	90.2(145.2)
DMG	35.3330	118.6000	08/10/1952	6 118.0	0.0	4.00	0.012	III	90.2(145.2)
DMG	35.3330	118.6000	09/16/1952	142454.0	0.0	4.00	0.012	III	90.2(145.2)
DMG	35.3330	118.6000	07/31/1952	12 9 9.0	0.0	5.80	0.031	V	90.2(145.2)
GSP	34.2560	116.9120	06/28/1992	170557.5	8.0	4.60	0.017	IV	90.3(145.2)
DMG	35.3370	118.5370	08/30/1952	45954.8	3.5	4.00	0.012	III	90.3(145.3)
DMG	35.3380	118.5230	08/06/1952	34624.2	12.6	4.30	0.014	IV	90.3(145.3)
DMG	34.3200	116.9250	04/18/1968	174213.4	4.7	4.00	0.012	III	90.4(145.4)
MGI	34.2000	116.9000	10/10/1915	5 6 0.0	0.0	4.00	0.012	III	90.4(145.4)
DMG	35.3400	118.4730	07/24/1952	5 249.6	2.1	4.50	0.016	IV	90.4(145.5)
PAS	34.2460	116.9010	06/29/1979	55320.5	5.7	4.60	0.017	IV	90.8(146.1)
DMG	35.3450	118.5070	07/23/1952	18 328.3	10.4	4.00	0.012	III	90.8(146.1)
DMG	34.1000	116.8830	10/24/1935	1527 0.0	0.0	4.00	0.012	III	90.8(146.1)
DMG	34.1000	116.8830	10/24/1935	1451 0.0	0.0	4.50	0.016	IV	90.8(146.1)
DMG	34.1000	116.8830	10/24/1935	1452 0.0	0.0	4.50	0.016	IV	90.8(146.1)
DMG	35.3460	118.4650	12/25/1952	55633.0	4.6	4.10	0.013	III	90.8(146.1)
PAS	34.2490	116.9000	06/30/1979	7 353.0	5.6	4.50	0.016	IV	90.8(146.2)
DMG	33.9680	116.8820	06/27/1959	162211.1	13.8	4.00	0.012	III	90.9(146.2)
PAS	34.2430	116.8960	06/30/1979	03411.6	5.8	4.90	0.019	IV	91.0(146.5)
GSP	34.3620	116.9230	12/07/1992	033331.5	1.0	4.00	0.012	III	91.1(146.7)
DMG	35.3330	118.7330	08/05/1952	65010.0	0.0	4.40	0.015	IV	91.2(146.7)
DMG	33.7100	116.9250	09/23/1963	144152.6	16.5	5.00	0.020	IV	91.2(146.7)
DMG	35.3510	118.5270	08/11/1952	132149.2	-2.0	4.40	0.015	IV	91.2(146.8)
MGI	33.8000	116.9000	12/18/1920	1726 0.0	0.0	4.00	0.012	III	91.2(146.8)
MGI	33.8000	116.9000	04/29/1918	2 0 0.0	0.0	4.00	0.012	III	91.2(146.8)
MGI	33.8000	116.9000	04/23/1918	1415 0.0	0.0	4.00	0.012	III	91.2(146.8)
MGI	33.8000	116.9000	06/14/1918	1024 0.0	0.0	4.00	0.012	III	91.2(146.8)
MGI	34.3000	116.9000	12/01/1915	14 5 0.0	0.0	4.00	0.012	III	91.5(147.2)
DMG	34.3370	116.9090	11/30/1962	2351 5.5	7.0	4.30	0.014	IV	91.5(147.3)
DMG	35.3560	118.5380	07/19/1955	2 425.5	6.4	4.10	0.013	III	91.6(147.4)
GSP	34.3770	116.9180	12/04/1992	052511.2	2.0	4.80	0.018	IV	91.7(147.5)
GSP	34.3610	116.9130	12/04/1992	125942.1	0.0	4.20	0.013	III	91.7(147.5)
DMG	35.3600	118.4380	08/03/1952	15156.1	7.0	4.10	0.013	III	91.8(147.7)
DMG	33.5000	117.0000	08/08/1925	1013 0.0	0.0	4.50	0.016	IV	91.9(147.8)
DMG	35.3580	118.6160	08/24/1955	17 540.9	7.2	4.00	0.012	III	92.0(148.1)
GSP	34.3400	116.9000	11/27/1992	160057.5	1.0	5.30	0.024	IV	92.1(148.1)
DMG	34.4000	116.9170	02/01/1942	16 334.0	0.0	4.50	0.016	IV	92.1(148.3)
DMG	34.4000	116.9170	02/01/1942	151828.0	0.0	4.50	0.016	IV	92.1(148.3)
DMG	34.4000	116.9170	01/25/1942	215133.0	0.0	4.00	0.012	III	92.1(148.3)
DMG	34.4000	116.9170	02/01/1942	151555.0	0.0	4.00	0.012	III	92.1(148.3)
GSP	34.3640	116.9040	11/27/1992	183225.0	1.0	4.10	0.013	III	92.2(148.4)
DMG	32.7180	118.1720	04/28/1938	6 728.0	10.0	4.50	0.016	IV	92.2(148.4)
PAS	32.7560	117.9880	01/12/1975	212214.8	15.3	4.80	0.018	IV	92.3(148.5)
DMG	35.3670	118.5000	06/20/1953	231852.0	0.0	4.40	0.015	IV	92.3(148.5)
DMG	35.3670	118.5330	07/23/1952	195134.0	0.0	4.20	0.013	III	92.3(148.6)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	34.1410	116.8570	09/19/1997	223714.5	10.0	4.10	0.013	III	92.4(148.7)
DMG	35.3670	118.5830	07/23/1952	31923.0	0.0	5.00	0.020	IV	92.5(148.8)
DMG	35.3670	118.5830	09/16/1952	1521 8.0	0.0	4.30	0.014	IV	92.5(148.8)
DMG	35.3670	118.5830	07/23/1952	65342.0	0.0	4.20	0.013	III	92.5(148.8)
DMG	35.3670	118.5830	07/23/1952	03832.0	0.0	6.10	0.036	V	92.5(148.8)
DMG	35.3670	118.5830	07/23/1952	62628.0	0.0	4.00	0.012	III	92.5(148.8)
DMG	35.3670	118.5830	07/23/1952	04738.0	0.0	4.60	0.016	IV	92.5(148.8)
DMG	35.3670	118.5830	07/28/1952	154120.0	0.0	4.00	0.012	III	92.5(148.8)
DMG	35.3670	118.5830	07/27/1952	73539.0	0.0	4.20	0.013	III	92.5(148.8)
DMG	35.3670	118.5830	07/23/1952	4 140.0	0.0	4.70	0.017	IV	92.5(148.8)
GSP	34.1950	116.8620	08/17/1992	204152.1	11.0	5.30	0.024	IV	92.5(148.8)
GSP	34.1980	116.8620	08/18/1992	094640.7	12.0	4.20	0.013	III	92.5(148.9)
DMG	32.8000	117.8330	01/24/1942	214148.0	0.0	4.00	0.012	III	92.5(148.9)
DMG	34.3240	116.8850	12/01/1962	03548.8	9.6	4.30	0.014	IV	92.6(149.1)
GSP	34.1630	116.8550	06/28/1992	144321.0	6.0	5.30	0.024	IV	92.7(149.1)
GSP	34.3690	116.8970	12/04/1992	020857.5	3.0	5.30	0.024	IV	92.7(149.2)
MGI	35.3000	119.0000	01/08/1903	030 0.0	0.0	4.60	0.016	IV	92.7(149.2)
MGI	35.3000	119.0000	09/04/1908	0 0 0.0	0.0	4.60	0.016	IV	92.7(149.2)
DMG	33.9500	116.8500	09/28/1946	719 9.0	0.0	5.00	0.020	IV	92.8(149.3)
DMG	34.3120	116.8790	01/31/1972	155 4.2	8.0	4.00	0.012	III	92.8(149.4)
DMG	34.3330	116.8830	10/14/1943	142844.0	0.0	4.50	0.016	IV	92.9(149.5)
DMG	35.3170	118.9500	09/01/1952	1039 0.0	0.0	4.10	0.013	III	92.9(149.5)
GSP	32.7260	118.0680	12/27/2000	002714.1	6.0	4.10	0.013	III	93.0(149.6)
DMG	34.3250	116.8750	12/02/1962	04138.4	6.7	4.40	0.015	IV	93.2(150.0)
DMG	35.3330	118.9170	07/29/1952	195132.0	0.0	4.50	0.015	IV	93.5(150.4)
DMG	35.3330	118.9170	08/22/1952	224124.0	0.0	5.80	0.031	V	93.5(150.4)
DMG	35.3330	118.9170	08/07/1952	1919 7.0	0.0	4.20	0.013	III	93.5(150.4)
DMG	35.3330	118.9170	07/31/1952	195314.0	0.0	4.50	0.015	IV	93.5(150.4)
DMG	35.3830	118.5670	07/23/1952	546 3.0	0.0	4.70	0.017	IV	93.5(150.5)
PAS	32.7590	117.9060	10/18/1976	172753.1	13.8	4.20	0.013	III	93.6(150.6)
GSP	34.3700	116.8800	11/29/1992	142120.5	3.0	4.00	0.012	III	93.6(150.7)
DMG	35.3830	118.6000	09/05/1953	192436.0	0.0	4.10	0.012	III	93.7(150.7)
GSP	34.2320	116.8460	07/10/1992	012940.0	0.0	4.20	0.013	III	93.7(150.8)
GSP	34.2250	116.8440	07/09/1992	023435.0	0.0	4.10	0.012	III	93.8(150.9)
DMG	35.3790	118.6680	11/21/1955	205527.6	5.3	4.30	0.014	IV	93.8(150.9)
DMG	34.3250	116.8650	10/29/1962	24253.9	8.6	4.80	0.018	IV	93.8(150.9)
DMG	34.3500	116.8670	10/15/1943	1650 1.0	0.0	4.50	0.015	IV	94.0(151.3)
PAS	35.3720	118.7740	12/15/1987	182346.1	3.2	4.10	0.012	III	94.2(151.6)
GSP	34.1630	116.8270	06/28/1992	150451.5	12.0	4.40	0.015	IV	94.3(151.7)
GSP	34.2390	116.8370	07/09/1992	014357.6	0.0	5.30	0.023	IV	94.3(151.8)
GSN	34.2030	116.8270	06/28/1992	150530.7	5.0	6.70	0.049	VI	94.5(152.1)
GSP	34.3200	116.8500	10/27/1998	154017.1	4.0	4.10	0.012	III	94.5(152.1)
DMG	35.3670	118.8330	03/17/1935	2026 0.0	0.0	4.00	0.012	III	94.6(152.2)
DMG	35.3950	118.6200	08/08/1955	32150.5	4.1	4.70	0.017	IV	94.6(152.2)
T-A	35.3300	119.0000	01/04/1870	7 0 0.0	0.0	4.30	0.014	IV	94.7(152.3)
DMG	35.4000	118.5830	07/24/1952	114756.0	0.0	4.40	0.014	IV	94.8(152.5)
DMG	35.4000	118.5830	07/25/1952	7 351.0	0.0	4.10	0.012	III	94.8(152.5)
GSP	34.3220	116.8460	09/20/1999	070249.2	2.0	4.20	0.013	III	94.8(152.5)
GSP	32.6850	118.1380	06/20/1997	053855.0	6.0	4.20	0.013	III	94.8(152.6)
GSP	34.3230	116.8440	10/27/1998	010840.7	5.0	4.90	0.019	IV	94.9(152.7)
GSP	35.3700	118.8500	12/18/1990	165643.0	6.0	4.20	0.013	III	95.0(152.8)
DMG	35.4000	118.6330	10/02/1952	231021.0	0.0	4.20	0.013	III	95.0(152.9)
DMG	34.3070	116.8350	08/28/1950	194526.4	11.7	4.20	0.013	III	95.2(153.2)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.3670	118.8830	09/12/1953	64116.0	0.0	4.10	0.012	III	95.2(153.2)
PAS	35.2250	117.6290	05/02/1975	18 323.1	10.0	4.20	0.013	III	95.2(153.3)
DMG	35.3500	118.9670	02/04/1954	204841.0	0.0	4.00	0.012	III	95.4(153.5)
GSP	32.6810	118.1090	06/20/1997	043540.5	6.0	4.70	0.017	IV	95.5(153.6)
DMG	34.1000	116.8000	10/24/1935	1448 7.6	0.0	5.10	0.021	IV	95.5(153.7)
DMG	34.7000	117.0000	07/16/1916	1230 0.0	0.0	4.00	0.012	III	95.6(153.8)
DMG	34.7000	117.0000	07/16/1916	1150 0.0	0.0	4.50	0.015	IV	95.6(153.8)
DMG	33.9670	116.8000	09/07/1945	153424.0	0.0	4.30	0.014	III	95.6(153.8)
GSP	34.2370	116.8110	06/28/1992	125730.8	10.0	4.00	0.012	III	95.7(154.1)
GSP	34.1830	116.8020	06/28/1992	192637.6	1.0	4.00	0.012	III	95.8(154.2)
DMG	35.3830	118.8500	07/29/1952	7 347.0	0.0	6.10	0.035	V	95.8(154.2)
DMG	35.3830	118.8500	10/13/1952	222035.0	0.0	4.00	0.012	III	95.8(154.2)
DMG	32.6800	118.0770	10/28/1973	22 0 2.7	8.0	4.50	0.015	IV	95.9(154.4)
DMG	34.4170	116.8500	02/11/1932	231120.0	0.0	4.00	0.012	III	96.1(154.7)
DMG	34.0290	116.7870	04/30/1954	03623.9	11.1	4.20	0.013	III	96.2(154.8)
PAS	34.6610	119.9730	05/07/1984	193232.8	9.9	4.20	0.013	III	96.2(154.8)
PAS	33.7010	116.8370	08/22/1979	2 136.3	5.0	4.10	0.012	III	96.2(154.9)
DMG	33.5000	116.9170	11/04/1935	355 0.0	0.0	4.50	0.015	IV	96.3(154.9)
PAS	32.7140	117.9100	10/18/1976	172652.6	15.1	4.20	0.013	III	96.4(155.2)
PAS	34.3220	116.8150	08/29/1985	759 8.7	6.1	4.10	0.012	III	96.5(155.3)
DMG	34.2290	116.7950	05/11/1956	163050.5	13.3	4.70	0.017	IV	96.6(155.4)
DMG	35.4000	118.8170	07/29/1952	8 146.0	0.0	5.10	0.021	IV	96.6(155.4)
GSP	34.2980	116.8040	07/05/1992	200303.1	3.0	4.00	0.012	III	96.8(155.8)
DMG	33.9760	116.7750	10/17/1965	94519.0	17.0	4.90	0.019	IV	97.0(156.0)
PAS	33.5350	120.0490	01/12/1983	1719 0.6	5.0	4.20	0.013	III	97.0(156.1)
DMG	34.0140	116.7710	06/10/1944	111150.5	10.0	4.50	0.015	IV	97.1(156.3)
DMG	34.3170	116.8000	08/12/1950	21717.0	0.0	4.30	0.013	III	97.3(156.6)
DMG	33.9730	116.7690	06/10/1944	111531.9	10.0	4.00	0.012	III	97.3(156.6)
DMG	34.4360	116.8340	07/14/1973	8 020.1	8.0	4.80	0.018	IV	97.4(156.7)
DMG	35.4320	118.6640	09/30/1964	175125.8	7.4	4.00	0.011	III	97.4(156.7)
DMG	35.4400	118.3470	01/02/1964	194841.0	6.3	4.20	0.013	III	97.5(157.0)
DMG	35.4330	118.7000	05/01/1954	22 439.0	0.0	4.20	0.013	III	97.7(157.2)
DMG	32.7170	117.8330	11/06/1950	205546.0	0.0	4.40	0.014	IV	97.8(157.4)
GSP	34.2190	116.7710	07/21/1992	211029.0	1.0	4.10	0.012	III	97.8(157.5)
DMG	35.1060	117.3460	10/11/1966	165912.9	6.5	4.40	0.014	IV	97.9(157.5)
DMG	33.0000	117.3000	11/22/1800	2130 0.0	0.0	6.50	0.043	VI	97.9(157.5)
DMG	34.2990	116.7840	03/18/1956	24217.3	6.3	4.40	0.014	IV	98.0(157.6)
GSP	34.2670	116.7750	12/02/2000	082807.4	3.0	4.10	0.012	III	98.1(157.9)
DMG	34.2500	116.7700	03/16/1956	203344.3	0.8	4.00	0.011	III	98.2(158.0)
GSP	34.2730	116.7740	08/24/1992	135146.0	1.0	4.30	0.013	III	98.2(158.0)
GSP	35.4530	118.4310	05/06/1997	191253.8	6.0	4.50	0.015	IV	98.2(158.1)
DMG	35.4540	118.4760	11/23/1953	2039 0.9	5.9	4.40	0.014	IV	98.3(158.1)
DMG	35.3530	117.8260	07/03/1944	53823.5	-2.0	4.70	0.017	IV	98.3(158.2)
GSP	34.2110	116.7600	06/28/1992	152429.3	6.0	4.50	0.015	IV	98.4(158.4)
DMG	34.1170	116.7500	08/22/1942	125913.0	0.0	4.00	0.011	III	98.4(158.4)
DMG	33.4540	116.8980	07/29/1936	142252.8	10.0	4.00	0.011	III	98.5(158.6)
GSP	34.2070	116.7570	06/28/1992	161719.2	3.0	4.20	0.013	III	98.5(158.6)
DMG	35.4540	118.6050	02/07/1964	22 750.3	-2.0	4.40	0.014	IV	98.6(158.6)
DMG	33.9330	116.7500	10/28/1944	183016.0	0.0	4.40	0.014	IV	98.6(158.6)
DMG	33.9330	116.7500	08/06/1938	228 0.0	0.0	4.00	0.011	III	98.6(158.6)
DMG	33.4560	116.8960	06/16/1938	55916.9	10.0	4.00	0.011	III	98.6(158.6)
DMG	33.2670	117.0170	06/07/1935	1633 0.0	0.0	4.00	0.011	III	98.7(158.8)
DMG	33.9170	116.7500	01/25/1933	1444 0.0	0.0	4.00	0.011	III	98.7(158.8)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	32.6260	118.1510	06/20/1997	080413.6	6.0	4.60	0.016	IV	98.7(158.8)
GSP	35.0170	117.2030	06/29/1992	041642.6	3.0	4.00	0.011	III	99.1(159.4)
DMG	34.2640	116.7550	03/16/1956	203613.6	3.3	4.00	0.011	III	99.2(159.6)
DMG	32.8500	117.4830	02/23/1943	92112.0	0.0	4.00	0.011	III	99.3(159.8)
GSP	34.1300	116.7340	06/30/1992	212254.4	12.0	4.80	0.017	IV	99.4(159.9)
DMG	34.3060	116.7590	03/16/1956	202933.6	1.3	4.80	0.017	IV	99.4(160.0)
DMG	33.9500	116.7330	04/26/1942	151023.0	0.0	4.00	0.011	III	99.5(160.1)
DMG	35.4650	118.6680	02/07/1964	221052.0	-0.5	4.20	0.013	III	99.7(160.4)
DMG	35.2000	119.5000	06/09/1928	822 0.0	0.0	4.00	0.011	III	99.8(160.6)
MGI	35.2000	119.5000	12/01/1920	130 0.0	0.0	4.60	0.015	IV	99.8(160.6)

-END OF SEARCH- 1017 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2000

LENGTH OF SEARCH TIME: 201 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 2.8 MILES (4.5 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.7

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.220 g

COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 3.886
b-value= 0.802
beta-value= 1.846

TABLE OF MAGNITUDES AND EXCEEDANCES:

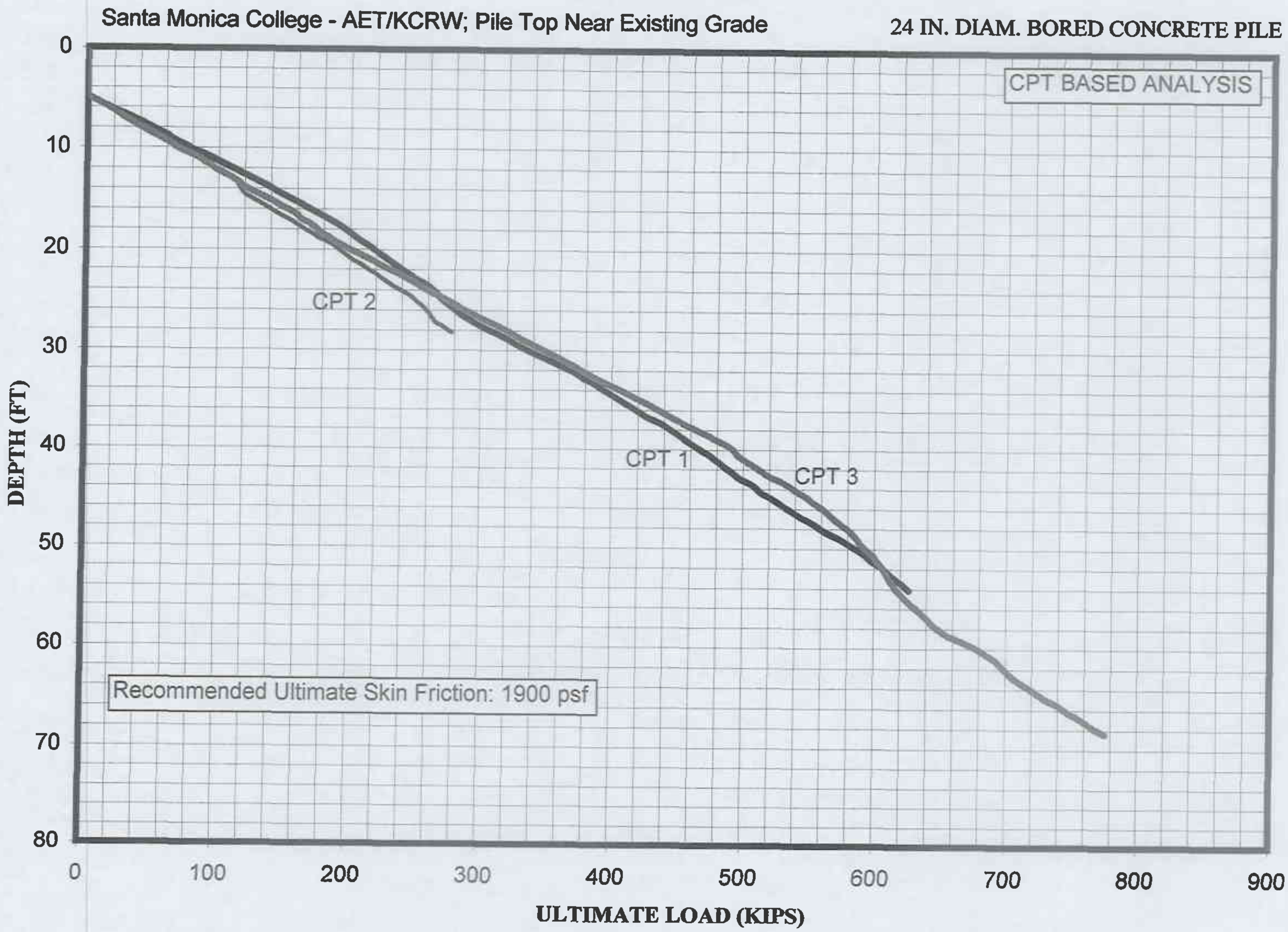
Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	1017	5.05970
4.5	388	1.93035
5.0	140	0.69652
5.5	54	0.26866
6.0	27	0.13433
6.5	11	0.05473
7.0	6	0.02985
7.5	1	0.00498

APPENDIX D

PILE ANALYSES

VERTICAL PILE CAPACITY

L.C.P.C. METHOD



LPILE Plus for Windows, Version 5.0 (5.0.30)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This program is licensed to:

LKS
GEOLABS-WESTLAKE VILLAGE

Path to file locations: S:\8266 SMC\Stewart Street\
Name of input data file: 8266.009 Initial Trial_24od pile.lpd
Name of output file: 8266.009 Initial Trial_24od pile.lpo
Name of plot output file: 8266.009 Initial Trial_24od pile.lpp
Name of runtime file: 8266.009 Initial Trial_24od pile.lpr

Time and Date of Analysis

Date: July 6, 2009 Time: 8:48:14

Problem Title

AET/KCRW Buildings 24" diameter pile,
Fixed and free head condition, 0.25" displacement

Program Options

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 1:
- Computation of Lateral Pile Response Using User-specified Constant EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- Additional p-y curves computed at specified depths

Solution Control Parameters:
- Number of pile increments = 120
- Maximum number of iterations allowed = 150
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 1.5000E+02 in

Printing Options:
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (spacing of output points) = 1

Pile Structural Properties and Geometry

Pile Length = 360.00 in
Depth of ground surface below top of pile = -30.00 in
Slope angle of ground surface = .00 deg.

Structural properties of pile defined using 2 points

Point	Depth X in	Pile Diameter in	Moment of Inertia in**4	Pile Area Sq.in	Modulus of Elasticity lbs/Sq.in
1	0.0000	24.00000000	16286.0000	452.0000	3604996.
2	600.0000	24.00000000	16286.0000	452.0000	3604996.

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water
Distance from top of pile to top of layer = -30.000 in
Distance from top of pile to bottom of layer = 450.000 in

Layer 2 is stiff clay with water-induced erosion
Distance from top of pile to top of layer = 450.000 in
Distance from top of pile to bottom of layer = 1000.000 in
p-y subgrade modulus k for top of soil layer = .000 lbs/in**3
p-y subgrade modulus k for bottom of layer = .000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

(Depth of lowest layer extends 640.00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Distribution of effective unit weight of soil with depth
is defined using 4 points

Point No.	Depth X in	Eff. Unit Weight lbs/in**3
1	-30.00	.07500
2	450.00	.07500
3	450.00	.04200
4	1000.00	.04200

Shear Strength of Soils

Distribution of shear strength parameters with depth defined using 4 points

Point No.	Depth X in	Cohesion c lbs/in**2	Angle of Friction Deg.	E50 or k_rm	RQD %
1	-30.000	20.83000	.00	.00500	.0
2	450.000	20.83000	.00	.00500	.0
3	450.000	20.83000	.00	------	------
4	1000.000	20.83000	.00	------	------

Notes:

(1) Cohesion = uniaxial compressive strength for rock materials.
(2) Values of E50 are reported for clay strata.
(3) Default values will be generated for E50 when input values are 0.
(4) RQD and k_rm are reported only for weak rock strata.

Loading Type

Static loading criteria was used for computation of p-y curves

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load Case Number 1

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = .250 in
Bending moment at pile head = .000 in-lbs
Axial load at pile head = 130000.000 lbs

Load Case Number 2

Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Deflection at pile head = .250 in
Slope at pile head = .000 in/in
Axial load at pile head = 130000.000 lbs

Output of p-y Curves at Specified Depths

p-y curves are generated and printed for verification at 5 depths.

Depth No.	Depth Below Pile Head in	Depth Below Ground Surface in
1	60.000	90.000
2	120.000	150.000
3	180.000	210.000
4	240.000	270.000
5	300.000	330.000

Depth of ground surface below top of pile = -30.00 in

p-y Curve Computed Using Static Criteria for Stiff Clay without Free Water

Soil Layer Number = 1
Depth below pile head = 60.000 in
Depth below ground surface = 90.000 in
Equivalent Depth = 90.000 in
Diameter = 24.000 in
Undrained cohesion, c = 20.83000 lbs/in**2
Average Eff. Unit Weight = .07500 lbs/in**3
Epsilon-50 = .00500
Pct = 2599.110 lbs/in
Pcd = 4499.280 lbs/in
Pu = 2599.110 lbs/in
y50 = .300 in
p-multiplier = 1.00000
y-multiplier = 1.00000

y, in	p, lbs/in
0.0000	0.0000
4.8000E-05	146.1587
.0002400	218.5582
.0004800	259.9110
.0024000	388.6576
.0048000	462.1944
.0240000	691.1418
.0480000	821.9107
.1200000	1033.4981
.2400000	1229.0432
.3600000	1360.1599
.4800000	1461.5870
1.2000	1837.8483
2.4000	2185.5823
4.8000	2599.1100
5.4000	2599.1100
6.0000	2599.1100

p-y Curve Computed Using Static Criteria for Stiff Clay without Free Water

Soil Layer Number = 1
Depth below pile head = 120.000 in
Depth below ground surface = 150.000 in
Equivalent Depth = 150.000 in
Diameter = 24.000 in
Undrained cohesion, c = 20.83000 lbs/in**2
Average Eff. Unit Weight = .07500 lbs/in**3
Epsilon-50 = .00500
Pct = 3332.010 lbs/in
Pcd = 4499.280 lbs/in
Pu = 3332.010 lbs/in
y50 = .300 in
p-multiplier = 1.00000
y-multiplier = 1.00000

y, in	p, lbs/in
0.0000	0.0000
4.8000E-05	187.3727
.0002400	280.1875
.0004800	333.2010
.0024000	498.2517
.0048000	592.5245
.0240000	886.0308
.0480000	1053.6741

```
       .1200000        1324.9250
       .2400000        1575.6103
       .3600000        1743.6994
       .4800000        1873.7269
         1.2000        2356.0869
         2.4000        2801.8753
         4.8000        3332.0100
         5.4000        3332.0100
         6.0000        3332.0100


p-y Curve Computed Using Static Criteria for Stiff Clay without Free Water

Soil Layer Number             =          1
Depth below pile head         =     180.000 in
Depth below ground surface =        210.000 in
Equivalent Depth              =     210.000 in
Diameter                      =      24.000 in
Undrained cohesion, c         =    20.83000 lbs/in**2
Average Eff. Unit Weight      =      .07500 lbs/in**3
Epsilon-50                    =      .00500
Pct                           =    4064.910 lbs/in
Pcd                           =    4499.280 lbs/in
Pu                            =    4064.910 lbs/in
y50                           =        .300 in
p-multiplier                  =     1.00000
y-multiplier                  =     1.00000

         y, in              p, lbs/in
   ----------------     -----------------
         0.0000              0.0000
     4.8000E-05            228.5867
       .0002400            341.8168
       .0004800            406.4910
       .0024000            607.8458
       .0048000            722.8546
       .0240000           1080.9197
       .0480000           1285.4374
       .1200000           1616.3520
       .2400000           1922.1773
       .3600000           2127.2388
       .4800000           2285.8669
         1.2000           2874.3254
         2.4000           3418.1682
         4.8000           4064.9100
         5.4000           4064.9100
         6.0000           4064.9100


p-y Curve Computed Using Static Criteria for Stiff Clay without Free Water

Soil Layer Number             =          1
Depth below pile head         =     240.000 in
Depth below ground surface =        270.000 in
Equivalent Depth              =     270.000 in
Diameter                      =      24.000 in
Undrained cohesion, c         =    20.83000 lbs/in**2
Average Eff. Unit Weight      =      .07500 lbs/in**3
Epsilon-50                    =      .00500
Pct                           =    4797.810 lbs/in
Pcd                           =    4499.280 lbs/in
Pu                            =    4499.280 lbs/in
y50                           =        .300 in
p-multiplier                  =     1.00000
y-multiplier                  =     1.00000

         y, in              p, lbs/in
   ----------------     -----------------
         0.0000              0.0000
     4.8000E-05            253.0131
       .0002400            378.3428
       .0004800            449.9280
       .0024000            672.7993
       .0048000            800.0977
       .0240000           1196.4251
       .0480000           1422.7973
       .1200000           1789.0728
       .2400000           2127.5782
       .3600000           2354.5523
       .4800000           2530.1311
         1.2000           3181.4714
         2.4000           3783.4284
         4.8000           4499.2800
         5.4000           4499.2800
         6.0000           4499.2800


p-y Curve Computed Using Static Criteria for Stiff Clay without Free Water

Soil Layer Number             =          1
Depth below pile head         =     300.000 in
Depth below ground surface =        330.000 in
Equivalent Depth              =     330.000 in
Diameter                      =      24.000 in
Undrained cohesion, c         =    20.83000 lbs/in**2
Average Eff. Unit Weight      =      .07500 lbs/in**3
Epsilon-50                    =      .00500
Pct                           =    5530.710 lbs/in
Pcd                           =    4499.280 lbs/in
Pu                            =    4499.280 lbs/in
y50                           =        .300 in
p-multiplier                  =     1.00000
y-multiplier                  =     1.00000

         y, in              p, lbs/in
   ----------------     -----------------
         0.0000              0.0000
     4.8000E-05            253.0131
       .0002400            378.3428
       .0004800            449.9280
       .0024000            672.7993
       .0048000            800.0977
       .0240000           1196.4251
       .0480000           1422.7973
       .1200000           1789.0728
       .2400000           2127.5782
       .3600000           2354.5523
       .4800000           2530.1311
         1.2000           3181.4714
         2.4000           3783.4284
         4.8000           4499.2800
         5.4000           4499.2800
         6.0000           4499.2800


--------------------------------------------------------------------------------
              Computed Values of Load Distribution and Deflection
                 for Lateral Loading for Load Case Number  1
--------------------------------------------------------------------------------

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Specified deflection at pile head     =         .250000 in
Specified moment at pile head         =            .000 in-lbs
```

Specified axial load at pile head = 130000.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	.250000	0.0000	62417.8410	-.0035277	287.6106	-891.5284	5349.1707
3.000	.239417	184617.	59731.6607	-.0035230	423.6421	-899.2584	11268.1061
6.000	.228862	361138.	57023.3174	-.0035090	553.7076	-906.3038	11880.1283
9.000	.218363	529494.	54294.8860	-.0034863	677.7575	-912.6504	12538.5478
12.000	.207944	689627.	51548.4849	-.0034551	795.7475	-918.2837	13248.0141
15.000	.197632	841480.	48786.2761	-.0034160	907.6379	-923.1889	14013.7624
18.000	.187448	985009.	46010.4662	-.0033693	1013.3937	-927.3510	14841.7039
21.000	.177416	1120171.	43223.3074	-.0033156	1112.9854	-930.7548	15738.5327
24.000	.167555	1246935.	40427.0981	-.0032551	1206.3884	-933.3847	16711.8524
27.000	.157885	1365273.	37624.1845	-.0031883	1293.5834	-935.2244	17770.3279
30.000	.148425	1475167.	34816.9616	-.0031158	1374.5565	-936.2576	18923.8670
33.000	.139191	1576605.	32007.8748	-.0030378	1449.2991	-936.4670	20183.8398
36.000	.130198	1669583.	29199.4219	-.0029549	1517.8084	-935.8350	21563.3452
39.000	.121461	1754106.	26394.1550	-.0028674	1580.0872	-934.3430	23077.5349
42.000	.112994	1830185.	23594.6828	-.0027758	1636.1443	-931.9718	24744.0122
45.000	.104806	1897839.	20803.6738	-.0026806	1685.9941	-928.7009	26583.3244
48.000	.096910	1957098.	18023.8591	-.0025821	1729.6574	-924.5089	28619.5751
51.000	.089314	2007997.	15258.0364	-.0024808	1767.1611	-919.3729	30881.1932
54.000	.082025	2050581.	12509.0746	-.0023771	1798.5386	-913.2683	33401.9042
57.000	.075051	2084905.	9779.9193	-.0022714	1823.8296	-906.1686	36221.9713
60.000	.068397	2111032.	7073.5987	-.0021642	1843.0808	-898.0451	39389.7943
63.000	.062066	2129035.	4393.2322	-.0020559	1856.3456	-888.8660	42963.9934
66.000	.056061	2138995.	1742.0388	-.0019469	1863.6847	-878.5963	47016.1581
69.000	.050385	2141006.	-876.6504	-.0018375	1865.1661	-867.1965	51634.5220
72.000	.045036	2135169.	-3459.3785	-.0017283	1860.8652	-854.6221	56928.9470
75.000	.040015	2121597.	-6002.5442	-.0016195	1850.8655	-840.8217	63037.8005
78.000	.035319	2100417.	-8502.3793	-.0015116	1835.2588	-825.7351	70137.6201
81.000	.030945	2071762.	-10954.9188	-.0014050	1814.1455	-809.2912	78456.9924
84.000	.026889	2035783.	-13355.9615	-.0013001	1787.6349	-791.4040	88296.9731
87.000	.023145	1992641.	-15701.0184	-.0011972	1755.8463	-771.9673	100062.
90.000	.019706	1942511.	-17985.2402	-.0010966	1718.9092	-750.8473	114308.
93.000	.016565	1885584.	-20203.3170	-.0009988	1676.9643	-727.8706	131822.
96.000	.013713	1822070.	-22349.3321	-.0009041	1630.1649	-702.8061	153755.
99.000	.011140	1752194.	-24416.5421	-.0008128	1578.6781	-675.3340	181865.
102.000	.008836	1676205.	-26397.0322	-.0007252	1522.6871	-644.9927	218986.
105.000	.006789	1594377.	-28281.1387	-.0006416	1462.3942	-611.0783	270032.
108.000	.004986	1507018.	-30056.4093	-.0005624	1398.0256	-572.4354	344410.
111.000	.003415	1414477.	-31705.5004	-.0004878	1329.8388	-526.9587	462986.
114.000	.002060	1317166.	-33201.1118	-.0004180	1258.1367	-470.1155	684751.
117.000	.000907	1215597.	-34488.8582	-.0003533	1183.2978	-388.3820	1285056.
120.000	-5.99E-05	1110508.	-35009.0292	-.0002938	1105.8654	41.6014	2082506.
123.000	-.000856	1005772.	-34365.8294	-.0002398	1028.6926	387.1985	1356505.
126.000	-.001499	904500.	-33108.1519	-.0001910	954.0727	451.2532	903397.
129.000	-.002002	807272.	-31695.1241	-.0001472	882.4320	490.7654	735385.
132.000	-.002382	714444.	-30181.6635	-.0001083	814.0340	518.2084	652689.
135.000	-.002652	626266.	-28597.2750	-7.4094E-05	749.0619	538.0507	608617.
138.000	-.002826	542918.	-26961.5167	-4.4223E-05	687.6487	552.4549	586378.
141.000	-.002918	464532.	-25288.8671	-1.8484E-05	629.8911	562.6449	578555.
144.000	-.002937	391200.	-23590.8231	3.3793E-06	575.8579	569.3844	581529.
147.000	-.002897	322984.	-21876.9730	2.1626E-05	525.5948	573.1823	593515.
150.000	-.002808	259921.	-20155.6083	3.6518E-05	479.1279	574.3941	613758.
153.000	-.002678	202022.	-18434.1024	4.8321E-05	436.4663	573.2765	642179.
156.000	-.002518	149279.	-16719.1581	5.7296E-05	397.6034	570.0197	679223.
159.000	-.002334	101662.	-15016.9788	6.3707E-05	362.5184	564.7665	725815.
162.000	-.002135	59127.0139	-13333.3916	6.7815E-05	331.1771	557.6250	783392.
165.000	-.001927	21609.1144	-11673.9394	6.9878E-05	303.5328	548.6765	853994.
168.000	-.001716	-10971.1270	-10043.9534	7.0150E-05	295.6945	537.9808	940439.
171.000	-.001507	-38709.3229	-8448.6142	6.8880E-05	316.1328	525.5787	1046587.
174.000	-.001303	-61716.5389	-6893.0057	6.6315E-05	333.0852	511.4936	1177764.
177.000	-.001109	-80119.0824	-5382.1702	6.2691E-05	346.6447	495.7300	1341427.
180.000	-.000927	-94058.4588	-3921.1704	5.8241E-05	356.9156	478.2698	1548248.
183.000	-.000759	-103692.	-2515.1702	5.3189E-05	364.0136	459.0636	1813961.
186.000	-.000608	-109191.	-1169.5532	4.7750E-05	368.0657	438.0144	2162679.
189.000	-.000473	-110746.	104.1973	4.2130E-05	369.2116	411.1526	2609278.
192.000	-.000355	-108599.	1187.8973	3.6526E-05	367.6293	311.3141	2632181.
195.000	-.000254	-103647.	1991.4816	3.1104E-05	363.9809	224.4088	2655084.
198.000	-.000168	-96674.0164	2553.3054	2.5986E-05	358.8429	150.1404	2677987.
201.000	-9.76E-05	-88347.6393	2910.3820	2.1259E-05	352.7077	87.9106	2700891.
204.000	-4.06E-05	-79228.3065	3097.5975	1.6977E-05	345.9883	36.8998	2723794.
207.000	4.22E-06	-69775.2969	3147.1544	1.3170E-05	339.0231	-3.8618	2746697.
210.000	3.84E-05	-60355.6528	3088.2114	9.8458E-06	332.0824	-35.4336	2769600.
213.000	6.33E-05	-51253.7082	2946.6887	6.9943E-06	325.3758	-58.9149	2792503.
216.000	8.03E-05	-42680.9761	2745.3466	4.5944E-06	319.0592	-75.3132	2812050.
219.000	9.09E-05	-34785.2124	2504.6272	2.6152E-06	313.2414	-85.1664	2812050.
222.000	9.60E-05	-27655.2526	2241.8458	1.0199E-06	307.9878	-90.0212	2812050.
225.000	9.70E-05	-21334.9328	1970.4605	-2.3175E-07	303.3308	-90.9023	2812050.
228.000	9.46E-05	-15832.3087	1701.0303	-1.1813E-06	299.2763	-88.7178	2812050.
231.000	8.99E-05	-11127.8296	1441.5660	-1.8701E-06	295.8099	-84.2584	2812050.
234.000	8.34E-05	-7181.4541	1197.8784	-2.3379E-06	292.9021	-78.2000	2812050.
237.000	7.59E-05	-3938.7354	973.9139	-2.6220E-06	290.5128	-71.1097	2812050.
240.000	6.77E-05	-1335.9255	772.0692	-2.7568E-06	288.5950	-63.4534	2812050.
243.000	5.93E-05	695.8301	593.4812	-2.7731E-06	288.1233	-55.6052	2812050.
246.000	5.11E-05	2227.1246	438.2878	-2.6985E-06	289.2516	-47.8570	2812050.
249.000	4.31E-05	3327.6616	305.8591	-2.5565E-06	290.0625	-40.4288	2812050.
252.000	3.57E-05	4064.2730	194.9977	-2.3677E-06	290.6053	-33.4787	2812050.
255.000	2.89E-05	4499.4947	104.1106	-2.1489E-06	290.9260	-27.1127	2812050.
258.000	2.28E-05	4690.6126	31.3518	-1.9141E-06	291.0668	-21.3931	2812050.
261.000	1.74E-05	4689.0987	-25.2593	-1.6745E-06	291.0657	-16.3476	2812050.
264.000	1.28E-05	4540.3629	-67.7445	-1.4387E-06	290.9561	-11.9758	2812050.
267.000	8.81E-06	4283.7541	-98.0929	-1.2132E-06	290.7670	-8.2565	2812050.
270.000	5.50E-06	3952.7517	-118.2066	-1.0028E-06	290.5231	-5.1526	2812050.
273.000	2.79E-06	3575.2968	-129.8607	-8.1044E-07	290.2450	-2.6168	2812050.
276.000	6.34E-07	3174.2199	-134.6778	-6.3800E-07	289.9495	-.5946311	2812050.
279.000	-1.04E-06	2767.7279	-134.1126	-4.8619E-07	289.6500	.9714012	2812050.
282.000	-2.28E-06	2369.9235	-129.4459	-3.5493E-07	289.3568	2.1397	2812050.
285.000	-3.17E-06	1991.3294	-121.7850	-2.4350E-07	289.0779	2.9675	2812050.
288.000	-3.74E-06	1639.4036	-112.0698	-1.5074E-07	288.8186	3.5092	2812050.
291.000	-4.07E-06	1319.0281	-101.0830	-7.5156E-08	288.5825	3.8153	2812050.
294.000	-4.19E-06	1032.9642	-89.4622	-1.5065E-08	288.3717	3.9319	2812050.
297.000	-4.16E-06	782.2669	-77.7142	3.1312E-08	288.1870	3.9001	2812050.
300.000	-4.01E-06	566.6544	-66.2304	6.5775E-08	288.0281	3.7558	2812050.
303.000	-3.77E-06	384.8329	-55.3016	9.0085E-08	287.8942	3.5301	2812050.
306.000	-3.47E-06	234.7748	-45.1326	1.0592E-07	287.7836	3.2492	2812050.
309.000	-3.13E-06	113.9544	-35.8572	1.1482E-07	287.6946	2.9344	2812050.
312.000	-2.78E-06	19.5418	-27.5505	1.1824E-07	287.6250	2.6034	2812050.
315.000	-2.42E-06	-51.4409	-20.2413	1.1742E-07	287.6485	2.2695	2812050.
318.000	-2.07E-06	-101.9973	-13.9226	1.1350E-07	287.6858	1.9430	2812050.
321.000	-1.74E-06	-135.0648	-8.5614	1.0744E-07	287.7101	1.6311	2812050.
324.000	-1.43E-06	-153.4494	-4.1066	1.0007E-07	287.7237	1.3387	2812050.
327.000	-1.14E-06	-159.7825	-.4960563	9.2070E-08	287.7284	1.0683	2812050.
330.000	-8.76E-07	-156.4975	2.3378	8.3989E-08	287.7259	.8208981	2812050.
333.000	-6.36E-07	-145.8213	4.4631	7.6265E-08	287.7181	.5959599	2812050.
336.000	-4.18E-07	-129.7786	5.9450	6.9224E-08	287.7062	.3919746	2812050.
339.000	-2.20E-07	-110.2055	6.8429	6.3093E-08	287.6918	.2066372	2812050.
342.000	-3.96E-08	-88.7705	7.2085	5.8009E-08	287.6760	.0371352	2812050.
345.000	1.28E-07	-66.9995	7.0848	5.4029E-08	287.6600	-.1196114	2812050.
348.000	2.85E-07	-46.3037	6.5053	5.1135E-08	287.6447	-.2667309	2812050.
351.000	4.34E-07	-28.0075	5.4944	4.9236E-08	287.6313	-.4071970	2812050.
354.000	5.80E-07	-13.3756	4.0682	4.8179E-08	287.6205	-.5436388	2812050.
357.000	7.23E-07	-3.6361	2.2355	4.7744E-08	287.6133	-.6781586	2812050.
360.000	8.66E-07	0.0000	0.0000	4.7651E-08	287.6106	-.8121559	1406025.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = .25000000 in

```
Computed slope at pile head         =     -.00352769
Maximum bending moment              =       2141006. lbs-in
Maximum shear force                 =    62417.84099 lbs
Depth of maximum bending moment     =    69.00000000 in
Depth of maximum shear force        =        0.00000 in
Number of iterations                =             16
Number of zero deflection points    =              4
```

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 2

```
Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Specified deflection at pile head    =          .250000 in
Specified slope at pile head         =        0.000E+00 in/in
Specified axial load at pile head    =       130000.000 lbs
```

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	.250000	-5459016.	120916.	0.0000	4309.9728	-891.5284	5349.1707
3.000	.249582	-5100303.	118190.	-.0002698	4045.6627	-908.6540	10922.1277
6.000	.248381	-4749666.	115439.	-.0005214	3787.3034	-925.0373	11172.7884
9.000	.246453	-4407260.	112641.	-.0007554	3535.0087	-940.6805	11450.6283
12.000	.243849	-4073233.	109796.	-.0009721	3288.8874	-955.5834	11756.2509
15.000	.240621	-3747724.	106908.	-.0011719	3049.0432	-969.7446	12090.5403
18.000	.236818	-3430869.	103979.	-.0013553	2815.5748	-983.1611	12454.6514
21.000	.232489	-3122793.	101010.	-.0015227	2588.5758	-995.8287	12850.0092
24.000	.227682	-2823618.	98005.1356	-.0016746	2368.1348	-1007.7423	13278.3141
27.000	.222441	-2533456.	94965.1782	-.0018115	2154.3351	-1018.8959	13741.5531
30.000	.216813	-2252414.	91892.9104	-.0019338	1947.2550	-1029.2826	14242.0178
33.000	.210839	-1980590.	88790.6441	-.0020419	1746.9675	-1038.8949	14782.3281
36.000	.204561	-1718077.	85660.7150	-.0021364	1553.5402	-1047.7246	15365.4613
39.000	.198020	-1464960.	82505.4838	-.0022177	1367.0357	-1055.7629	15994.7899
42.000	.191254	-1221315.	79327.3389	-.0022864	1187.5109	-1063.0005	16674.1248
45.000	.184302	-987212.	76128.6970	-.0023428	1015.0175	-1069.4275	17407.7693
48.000	.177198	-762715.	72912.0053	-.0023875	849.6014	-1075.0336	18200.5809
51.000	.169977	-547878.	69679.7431	-.0024210	691.3032	-1079.8079	19058.0467
54.000	.162672	-342748.	66434.4226	-.0024437	540.1576	-1083.7391	19986.3709
57.000	.155314	-147365.	63178.5912	-.0024563	396.1937	-1086.8152	20992.5797
60.000	.147934	38239.1200	59914.8325	-.0024591	315.7863	-1089.0239	22084.6453
63.000	.140560	214042.	56645.7682	-.0024526	445.3228	-1090.3523	23271.6332
66.000	.133218	380027.	53374.0594	-.0024374	567.6254	-1090.7869	24563.8791
69.000	.125935	536187.	50102.4088	-.0024140	682.6890	-1090.3135	25973.1997
72.000	.118734	682524.	46833.5623	-.0023829	790.5143	-1088.9175	27513.1476
75.000	.111638	819047.	43570.3112	-.0023445	891.1085	-1086.5832	29199.3187
78.000	.104667	945775.	40315.4945	-.0022994	984.4851	-1083.2946	31049.7268
81.000	.097841	1062734.	37072.0012	-.0022481	1070.6639	-1079.0343	33085.2609
84.000	.091178	1169960.	33842.7734	-.0021911	1149.6715	-1073.7842	35330.2478
87.000	.084695	1267499.	30630.8093	-.0021288	1221.5412	-1067.5251	37813.1492
90.000	.078405	1355406.	27439.1670	-.0020618	1286.3130	-1060.2364	40567.4306
93.000	.072324	1433743.	24270.9687	-.0019905	1344.0340	-1051.8959	43632.6524
96.000	.066462	1502584.	21129.4053	-.0019155	1394.7584	-1042.4798	47055.8535
99.000	.060831	1562013.	18017.7423	-.0018372	1438.5475	-1031.9622	50893.3190
102.000	.055439	1612124.	14939.3266	-.0017561	1475.4703	-1020.3149	55212.8629
105.000	.050294	1653019.	11897.5947	-.0016727	1505.6032	-1007.5064	60096.8067
108.000	.045403	1684814.	8896.0818	-.0015874	1529.0306	-993.5021	65645.9135
111.000	.040770	1707634.	5938.4345	-.0015007	1545.8449	-978.2627	71984.6521
114.000	.036398	1721615.	3028.4250	-.0014131	1556.1468	-961.7436	79268.3445
117.000	.032291	1726906.	169.9695	-.0013250	1560.0456	-943.8933	87693.0331
120.000	.028448	1723668.	-2632.8480	-.0012369	1557.6598	-924.6517	97509.3530
123.000	.024870	1712074.	-5375.7460	-.0011491	1549.1168	-903.9470	109042.
126.000	.021554	1692310.	-8054.2056	-.0010621	1534.5541	-881.6927	122721.
129.000	.018497	1664577.	-10663.4172	-.0009763	1514.1197	-857.7817	139123.
132.000	.015695	1629091.	-13198.2079	-.0008922	1487.9726	-832.0787	159042.
135.000	.013144	1586084.	-15652.9385	-.0008101	1456.2836	-804.4083	183603.
138.000	.010835	1535805.	-18021.3549	-.0007303	1419.2369	-774.5359	214452.
141.000	.008762	1478525.	-20296.3635	-.0006533	1377.0313	-742.1365	254100.
144.000	.006915	1414537.	-22469.6782	-.0005794	1329.8826	-706.7400	306593.
147.000	.005286	1344159.	-24531.2300	-.0005089	1278.0264	-667.6279	378923.
150.000	.003862	1267746.	-26468.1014	-.0004422	1221.7231	-623.6197	484416.
153.000	.002633	1185696.	-28262.3798	-.0003795	1161.2657	-572.5658	652422.
156.000	.001585	1098468.	-29886.0151	-.0003211	1096.9939	-509.8577	964870.
159.000	.000706	1006630.	-31283.7559	-.0002673	1029.3249	-421.9695	1792780.
162.000	-1.87E-05	910974.	-31894.2116	-.0002183	958.8429	14.9990	2403150.
165.000	-.000604	815435.	-31259.1903	-.0001742	888.4469	408.3485	2028500.
168.000	-.001064	723555.	-29932.1621	-.0001349	820.7469	476.3370	1342918.
171.000	-.001413	635947.	-28442.6610	-.0001002	756.1951	516.6638	1096652.
174.000	-.001665	552977.	-26852.3717	-6.9802E-05	695.0602	543.5290	979229.
177.000	-.001832	474887.	-25194.1712	-4.3541E-05	637.5216	561.9379	920106.
180.000	-.001926	401846.	-23489.8149	-2.1141E-05	583.7024	574.2996	894353.
183.000	-.001959	333965.	-21755.4022	-2.3423E-06	533.6858	581.9755	891214.
186.000	-.001940	271315.	-20003.7149	1.3122E-05	487.5237	585.8160	905680.
189.000	-.001880	213933.	-18245.4070	2.5519E-05	445.2424	586.3892	935572.
192.000	-.001787	161823.	-16489.6822	3.5120E-05	406.8465	584.0940	980376.
195.000	-.001670	114967.	-14744.7104	4.2191E-05	372.3217	579.2205	1040768.
198.000	-.001534	73321.8106	-13017.9014	4.7002E-05	341.6363	571.9855	1118463.
201.000	-.001388	36822.9800	-11316.0920	4.9816E-05	314.7429	562.5541	1216260.
204.000	-.001235	5386.4020	-9645.6817	5.0894E-05	291.5795	551.0528	1338251.
207.000	-.001082	-21090.8077	-8012.7349	5.0493E-05	303.1509	537.5783	1490214.
210.000	-.000932	-42729.3920	-6423.0655	4.8863E-05	319.0949	522.2013	1680266.
213.000	-.000789	-59667.3135	-4882.3133	4.6246E-05	331.5752	504.9669	1919925.
216.000	-.000655	-72059.3441	-3396.8955	4.2881E-05	340.7060	485.3116	2223224.
219.000	-.000532	-80082.1338	-1977.9596	3.8994E-05	346.6175	460.6456	2598819.
222.000	-.000421	-83957.5171	-695.1786	3.4803E-05	349.4730	394.5418	2812050.
225.000	-.000323	-84280.3514	350.6932	3.0505E-05	349.7108	302.7061	2812050.
228.000	-.000238	-81877.1512	1139.2234	2.6259E-05	347.9401	222.9807	2812050.
231.000	-.000165	-77465.4934	1706.2246	2.2188E-05	344.6895	155.0201	2812050.
234.000	-.000105	-71657.1108	2086.0405	1.8379E-05	340.4097	98.1905	2812050.
237.000	-5.51E-05	-64963.5855	2310.8123	1.4888E-05	335.4777	51.6573	2812050.
240.000	-1.54E-05	-57803.8495	2409.9864	1.1751E-05	330.2022	14.4587	2812050.
243.000	1.54E-05	-50512.8333	2410.0233	8.9841E-06	324.8299	-14.4341	2812050.
246.000	3.85E-05	-43350.7172	2334.2691	6.5860E-06	319.5527	-36.0687	2812050.
249.000	5.49E-05	-36512.3560	2202.9544	4.5456E-06	314.5140	-51.4743	2812050.
252.000	6.58E-05	-30136.5361	2033.2927	2.8428E-06	309.8161	-61.6335	2812050.
255.000	7.20E-05	-24314.8172	1839.6489	1.4516E-06	305.5265	-67.4624	2812050.
258.000	7.45E-05	-19099.7749	1633.7592	3.4240E-07	301.6839	-69.7974	2812050.
261.000	7.40E-05	-14512.5288	1424.9810	-5.1636E-07	298.3039	-69.3881	2812050.
264.000	7.14E-05	-10549.4859	1220.5589	-1.1567E-06	295.3838	-66.8934	2812050.
267.000	6.71E-05	-7188.2734	1025.8945	-1.6098E-06	292.9071	-62.8829	2812050.
270.000	6.17E-05	-4392.8634	844.8109	-1.9057E-06	290.8474	-57.8395	2812050.
273.000	5.57E-05	-2117.9212	679.8044	-2.0721E-06	289.1712	-52.1649	2812050.
276.000	4.93E-05	-312.4207	532.2782	-2.1342E-06	287.8408	-46.1859	2812050.
279.000	4.28E-05	1077.4126	402.7561	-2.1146E-06	288.4045	-40.1621	2812050.
282.000	3.66E-05	2105.7653	291.0732	-2.0333E-06	289.1622	-34.2931	2812050.
285.000	3.06E-05	2825.4379	196.5435	-1.9073E-06	289.6925	-28.7267	2812050.
288.000	2.51E-05	3286.5140	118.1041	-1.7512E-06	290.0322	-23.5662	2812050.
291.000	2.01E-05	3535.4283	54.4377	-1.5769E-06	290.2156	-18.8780	2812050.
294.000	1.57E-05	3614.3699	4.0738	-1.3942E-06	290.2738	-14.6978	2812050.
297.000	1.18E-05	3560.9588	-34.5284	-1.2109E-06	290.2344	-11.0370	2812050.
300.000	8.42E-06	3408.1440	-62.9156	-1.0328E-06	290.1218	-7.8878	2812050.
303.000	5.58E-06	3184.2710	-82.5898	-8.6439E-07	289.9569	-5.2283	2812050.
306.000	3.23E-06	2913.2796	-94.9719	-7.0860E-07	289.7572	-3.0264	2812050.
309.000	1.33E-06	2614.9924	-101.3762	-5.6736E-07	289.5374	-1.2431	2812050.
312.000	-1.75E-07	2305.4652	-102.9941	-4.4165E-07	289.3094	.1644701	2812050.
315.000	-1.32E-06	1997.3723	-100.8862	-3.3171E-07	289.0823	1.2408	2812050.
318.000	-2.17E-06	1700.4065	-95.9800	-2.3724E-07	288.8635	2.0301	2812050.
321.000	-2.75E-06	1421.6774	-89.0724	-1.5747E-07	288.6582	2.5750	2812050.
324.000	-3.11E-06	1166.0951	-80.8363	-9.1359E-08	288.4698	2.9157	2812050.
327.000	-3.30E-06	936.7310	-71.8295	-3.7634E-08	288.3008	3.0888	2812050.
330.000	-3.34E-06	735.1477	-62.5052	5.0806E-09	288.1523	3.1274	2812050.

333.000	-3.26E-06	561.6961	-53.2237	3.8213E-08	288.0245	3.0603	2812050.
336.000	-3.11E-06	415.7757	-44.2646	6.3187E-08	287.9170	2.9124	2812050.
339.000	-2.89E-06	296.0590	-35.8386	8.1373E-08	287.8288	2.7049	2812050.
342.000	-2.62E-06	200.6804	-28.0991	9.4065E-08	287.7585	2.4548	2812050.
345.000	-2.32E-06	127.3910	-21.1531	1.0245E-07	287.7045	2.1759	2812050.
348.000	-2.00E-06	73.6819	-15.0714	1.0758E-07	287.6649	1.8786	2812050.
351.000	-1.68E-06	36.8790	-9.8972	1.1041E-07	287.6378	1.5708	2812050.
354.000	-1.34E-06	14.2126	-5.6545	1.1171E-07	287.6211	1.2577	2812050.
357.000	-1.01E-06	2.8650	-2.3542	1.1215E-07	287.6127	.9425159	2812050.
360.000	-6.69E-07	0.0000	0.0000	1.1222E-07	287.6106	.6269388	1406025.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection              =      .25000000 in
Computed slope at pile head       =     -.00000916
Maximum bending moment            =      -5459016. lbs-in
Maximum shear force               =   120915.79918 lbs
Depth of maximum bending moment   =        0.00000 in
Depth of maximum shear force      =        0.00000 in
Number of iterations              =             16
Number of zero deflection points  =              3
```

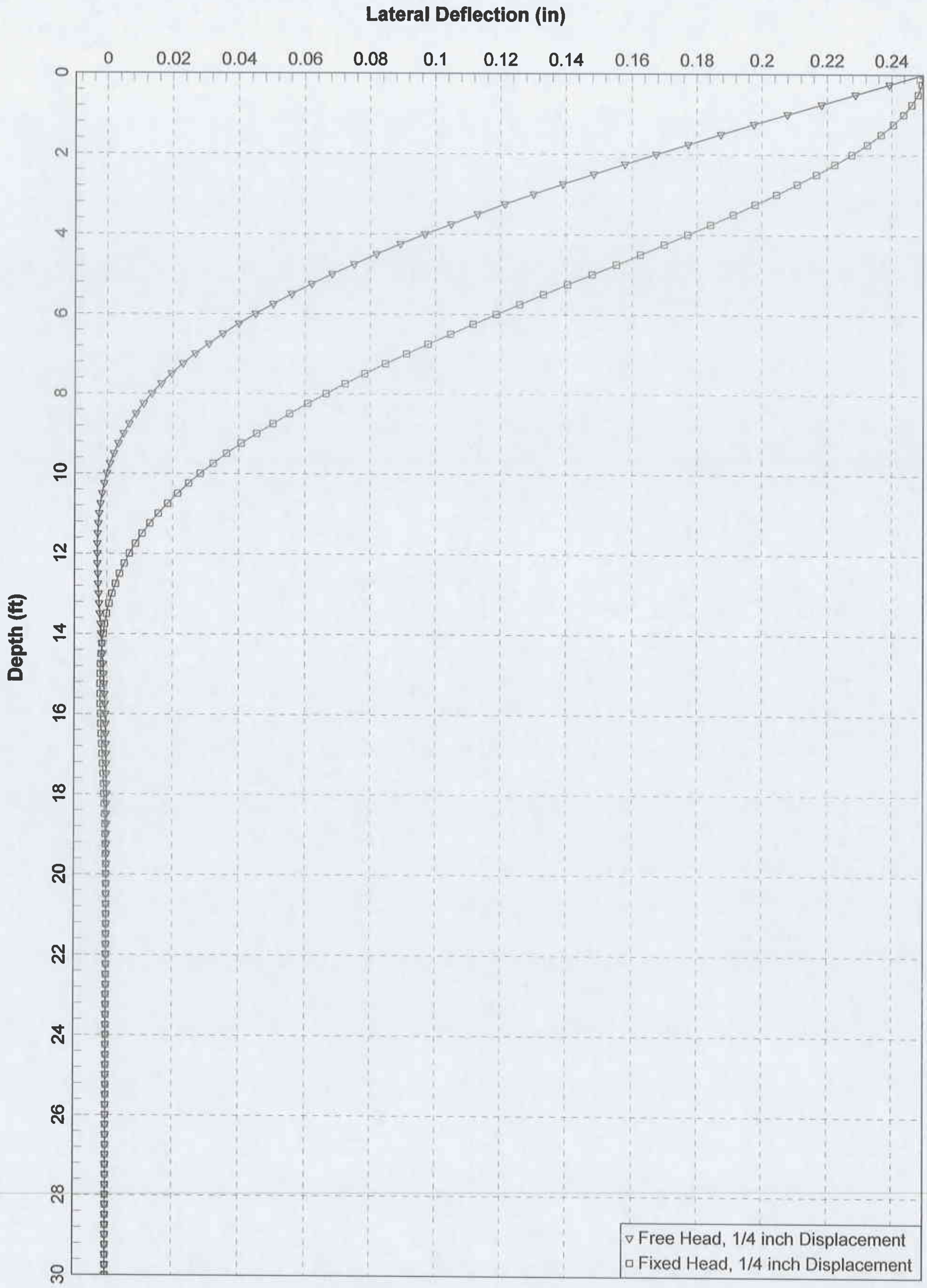
Summary of Pile Response(s)

Definition of Symbols for Pile-Head Loading Conditions:

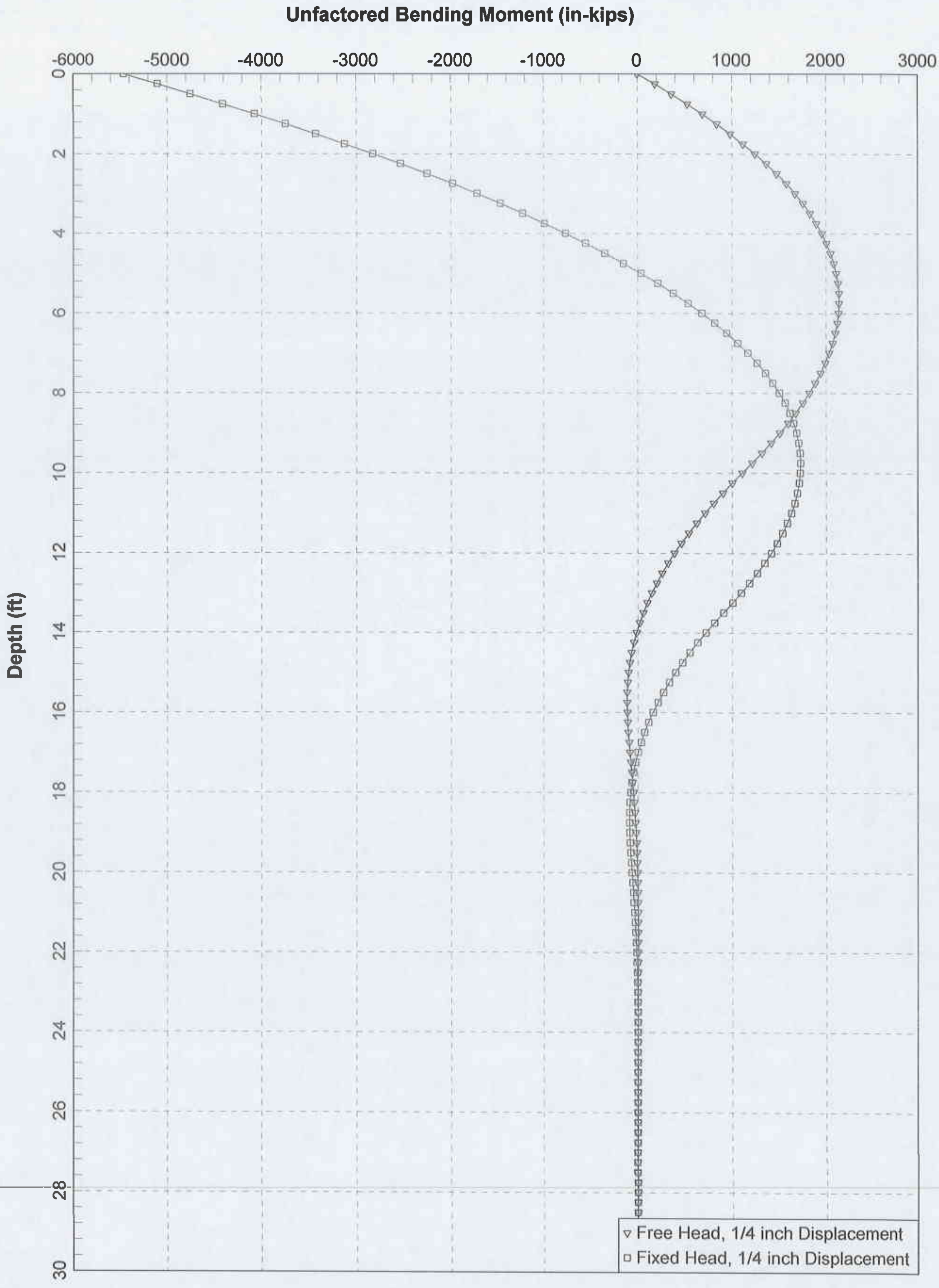
```
Type 1 = Shear and Moment,          y = pile-head displacment in
Type 2 = Shear and Slope,           M = Pile-head Moment lbs-in
Type 3 = Shear and Rot. Stiffness,  V = Pile-head Shear Force lbs
Type 4 = Deflection and Moment,     S = Pile-head Slope, radians
Type 5 = Deflection and Slope,      R = Rot. Stiffness of Pile-head in-lbs/rad
```

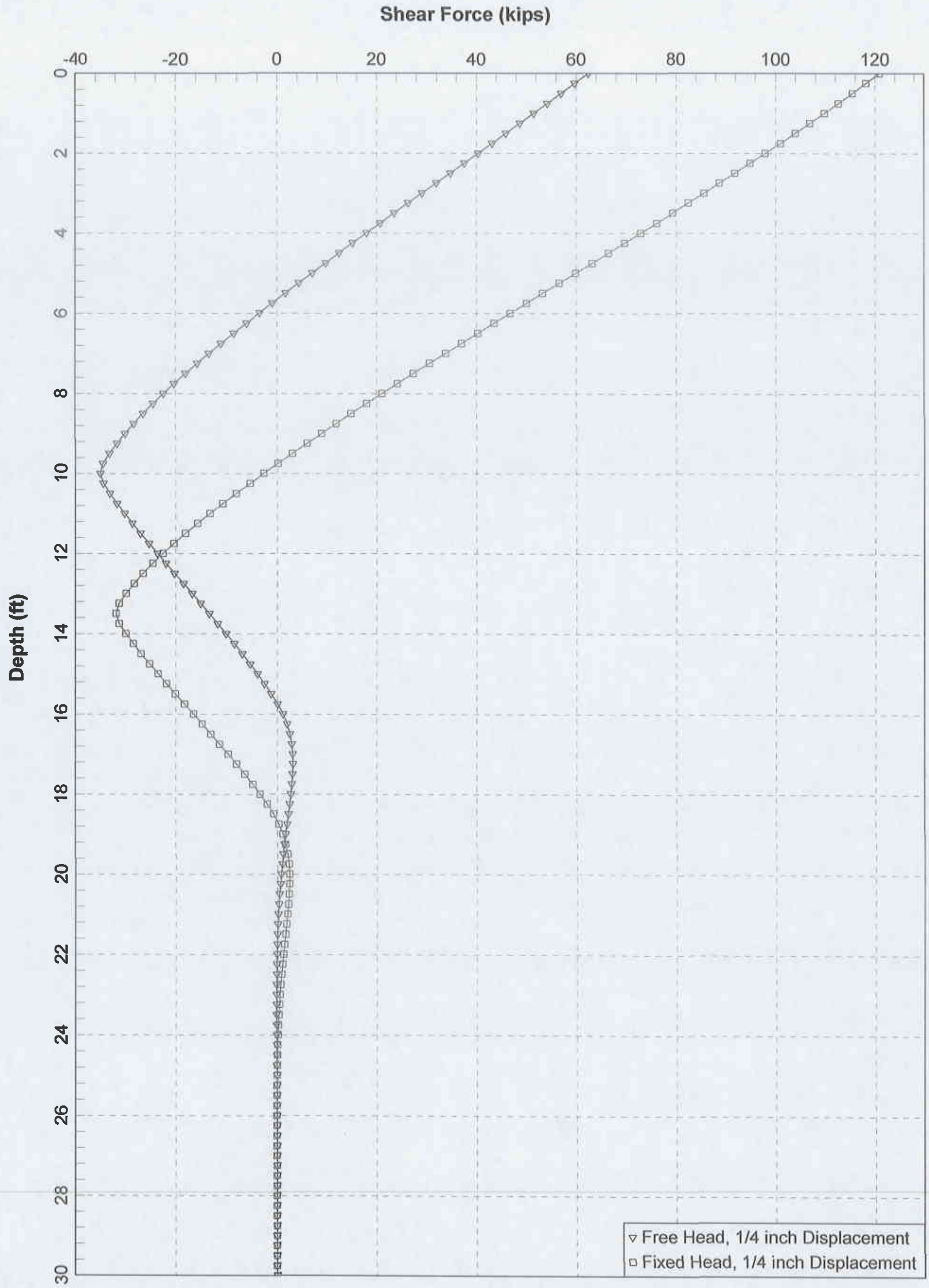
Load Type	Pile-Head Condition 1	Pile-Head Condition 2	Axial Load lbs	Pile-Head Deflection in	Maximum Moment in-lbs	Maximum Shear lbs
4	y= .250000	M= 0.000	130000.	.2500000	2141006.	62417.8410
5	y= .250000	S= 0.000	130000.	.2500000	-5459016.	120916.

The analysis ended normally.



Lateral Deflection (in)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
Free Head, 1/4 inch Displacement
Fixed Head, 1/4 inch Displacement


Unfactored Bending Moment (in-kips)
-6000
-5000
-4000
-3000
-2000
-1000
0
1000
2000
3000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
Free Head, 1/4 inch Displacement
Fixed Head, 1/4 inch Displacement



Shear Force (kips)
-40
-20
0
20
40
60
80
100
120
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
Free Head, 1/4 inch Displacement
Fixed Head, 1/4 inch Displacement

LPILE Plus for Windows, Version 5.0 (5.0.30)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This program is licensed to:

LKS
GEOLABS-WESTLAKE VILLAGE

```
Path to file locations:      S:\8266 SMC\Stewart Street\
Name of input data file:     8266.009 Initial Trial_36od pile.lpd
Name of output file:         8266.009 Initial Trial_36od pile.lpo
Name of plot output file:    8266.009 Initial Trial_36od pile.lpp
Name of runtime file:        8266.009 Initial Trial_36od pile.lpr
```

Time and Date of Analysis

Date: July 6, 2009 Time: 8:57:42

Problem Title

AET/KCRW Buildings 36" diameter pile,
Fixed and free head condition, 0.25" displacement

Program Options

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 1:
- Computation of Lateral Pile Response Using User-specified Constant EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis uses p-y multiplers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- Additional p-y curves computed at specified depths

Solution Control Parameters:
```
- Number of pile increments                =        100
- Maximum number of iterations allowed     =        150
- Deflection tolerance for convergence     = 1.0000E-05 in
- Maximum allowable deflection             = 1.5000E+02 in
```

Printing Options:
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (spacing of output points) = 1

Pile Structural Properties and Geometry

```
Pile Length                                  =    600.00 in
Depth of ground surface below top of pile    =    -30.00 in
Slope angle of ground surface                =       .00 deg.
```

Structural properties of pile defined using 2 points

Point	Depth X in	Pile Diameter in	Moment of Inertia in**4	Pile Area Sq.in	Modulus of Elasticity lbs/Sq.in
1	0.0000	36.00000000	82448.0000	1017.0000	3604996.
2	600.0000	36.00000000	82448.0000	1017.0000	3604996.

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

```
Layer  1 is stiff clay without free water
Distance from top of pile to top of layer    =     -30.000 in
Distance from top of pile to bottom of layer =     200.000 in

Layer  2 is stiff clay with water-induced erosion
Distance from top of pile to top of layer    =     200.000 in
Distance from top of pile to bottom of layer =    1000.000 in
p-y subgrade modulus k for top of soil layer =        .000 lbs/in**3
p-y subgrade modulus k for bottom of layer   =        .000 lbs/in**3
```

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

(Depth of lowest layer extends 400.00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Distribution of effective unit weight of soil with depth is defined using 4 points

Point No.	Depth X in	Eff. Unit Weight lbs/in**3
1	-30.00	.07500
2	200.00	.07500
3	200.00	.04200
4	1000.00	.04200

Shear Strength of Soils

Distribution of shear strength parameters with depth defined using 4 points

Point No.	Depth X in	Cohesion c lbs/in**2	Angle of Friction Deg.	E50 or k_rm	RQD %
1	-30.000	20.83000	.00	.00500	.0
2	200.000	20.83000	.00	.00500	.0
3	200.000	20.83000	.00	------	------
4	1000.000	20.83000	.00	------	------

Notes:

(1) Cohesion = uniaxial compressive strength for rock materials.
(2) Values of E50 are reported for clay strata.
(3) Default values will be generated for E50 when input values are 0.
(4) RQD and k_rm are reported only for weak rock strata.

p-y Modification Factors

Distribution of p-y multipliers with depth defined using 2 points

Point No.	Depth X in	p-mult	y-mult
1	.000	.8800	1.0000
2	600.000	.8800	1.0000

Loading Type

Static loading criteria was used for computation of p-y curves

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load Case Number 1

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = .250 in
Bending moment at pile head = .000 in-lbs
Axial load at pile head = 800000.000 lbs

Load Case Number 2

Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Deflection at pile head = .250 in
Slope at pile head = .000 in/in
Axial load at pile head = 800000.000 lbs

Output of p-y Curves at Specified Depths

p-y curves are generated and printed for verification at 5 depths.

Depth No.	Depth Below Pile Head in	Depth Below Ground Surface in
1	60.000	90.000
2	120.000	150.000
3	180.000	210.000
4	240.000	270.000
5	300.000	330.000

Depth of ground surface below top of pile = -30.00 in

p-y Curve Computed Using Static Criteria for Stiff Clay without Free Water

Soil Layer Number = 1
Depth below pile head = 60.000 in
Depth below ground surface = 90.000 in
Equivalent Depth = 90.000 in
Diameter = 36.000 in
Undrained cohesion, c = 20.83000 lbs/in**2
Average Eff. Unit Weight = .07500 lbs/in**3
Epsilon-50 = .00500
Pct = 3429.990 lbs/in
Pcd = 6748.920 lbs/in
Pu = 3429.990 lbs/in
y50 = .450 in
p-multiplier = .88000
y-multiplier = 1.00000

y, in	p, lbs/in
0.0000	0.0000
7.2000E-05	169.7366
.0003600	253.8154
.0007200	301.8391
.0036000	451.3548
.0072000	536.7543
.0360000	802.6349
.0720000	954.4991
.1800000	1200.2191
.3600000	1427.3091
.5400000	1579.5772
.7200000	1697.3661
1.8000	2134.3249
3.6000	2538.1543
7.2000	3018.3912
8.1000	3018.3912
9.0000	3018.3912

p-y Curve Computed Using Static Criteria for Stiff Clay without Free Water

Soil Layer Number = 1
Depth below pile head = 120.000 in
Depth below ground surface = 150.000 in
Equivalent Depth = 150.000 in
Diameter = 36.000 in
Undrained cohesion, c = 20.83000 lbs/in**2
Average Eff. Unit Weight = .07500 lbs/in**3
Epsilon-50 = .00500
Pct = 4216.890 lbs/in
Pcd = 6748.920 lbs/in
Pu = 4216.890 lbs/in

```
y50                           =         .450 in
p-multiplier                  =       .88000
y-multiplier                  =      1.00000
```

y, in	p, lbs/in
0.0000	0.0000
7.2000E-05	208.6772
.0003600	312.0452
.0007200	371.0863
.0036000	554.9035
.0072000	659.8952
.0360000	986.7734
.0720000	1173.4780
.1800000	1475.5704
.3600000	1754.7589
.5400000	1941.9599
.7200000	2086.7717
1.8000	2623.9765
3.6000	3120.4516
7.2000	3710.8632
8.1000	3710.8632
9.0000	3710.8632

p-y Curve Computed Using Static Criteria for Stiff Clay without Free Water

```
Soil Layer Number             =          1
Depth below pile head         =      180.000 in
Depth below ground surface    =      210.000 in
Equivalent Depth              =      210.000 in
Diameter                      =       36.000 in
Undrained cohesion, c         =     20.83000 lbs/in**2
Average Eff. Unit Weight      =       .07500 lbs/in**3
Epsilon-50                    =       .00500
Pct                           =     5003.790 lbs/in
Pcd                           =     6748.920 lbs/in
Pu                            =     5003.790 lbs/in
y50                           =         .450 in
p-multiplier                  =       .88000
y-multiplier                  =      1.00000
```

y, in	p, lbs/in
0.0000	0.0000
7.2000E-05	247.6177
.0003600	370.2749
.0007200	440.3335
.0036000	658.4522
.0072000	783.0360
.0360000	1170.9120
.0720000	1392.4568
.1800000	1750.9218
.3600000	2082.2087
.5400000	2304.3427
.7200000	2476.1774
1.8000	3113.6282
3.6000	3702.7488
7.2000	4403.3352
8.1000	4403.3352
9.0000	4403.3352

p-y Curve Computed Using Static Criteria for Stiff Clay with Free Water

```
Soil Layer Number             =          2
Depth below pile head         =      240.000 in
Depth below ground surface    =      270.000in
Equivalent Depth              =     1284.388in
Diameter                      =       36.000in
c                             =       20.830 lbs/in**2
Cavg                          =       20.830 lbs/in**2
Gamma Avg                     =       .07011 lbs/in**3
k                             =     1000.000 pci
E50                           =       .00500
y50                           =         .180 in
As                            =         .600
Ac                            =       .30000
pct                           =    80454.7951b/in
pcd                           =     8248.6801b/in
pu                            =     8248.6801b/in
p-multiplier                  =       .88000
y-multiplier                  =      1.00000
```

y, in	p, lbs/in
0.0000	0.0000
.0540000	1987.9148
.1080000	2811.3360
.1620000	3275.3113
.2160000	3576.5934
.2700000	3782.3715
.3240000	3919.8280
.3780000	4004.4960
.4320000	4046.3992
.4860000	4052.5059
.5400000	4027.9180
.5940000	3976.5185
.6480000	3902.9561
1.0800	2814.1303
1.5120	1725.3046
1.9440	636.4788
21.6000	636.4788

p-y Curve Computed Using Static Criteria for Stiff Clay with Free Water

```
Soil Layer Number             =          2
Depth below pile head         =      300.000 in
Depth below ground surface    =      330.000in
Equivalent Depth              =     1344.388in
Diameter                      =       36.000in
c                             =       20.830 lbs/in**2
Cavg                          =       20.830 lbs/in**2
Gamma Avg                     =       .06500 lbs/in**3
k                             =     1000.000 pci
E50                           =       .00500
y50                           =         .180 in
As                            =         .600
Ac                            =       .30000
pct                           =    83895.8021b/in
pcd                           =     8248.6801b/in
pu                            =     8248.6801b/in
p-multiplier                  =       .88000
y-multiplier                  =      1.00000
```

y, in	p, lbs/in
0.0000	0.0000
.0540000	1987.9148
.1080000	2811.3360
.1620000	3275.3113
.2160000	3576.5934

.2700000	3782.3715
.3240000	3919.8280
.3780000	4004.4960
.4320000	4046.3992
.4860000	4052.5059
.5400000	4027.9180
.5940000	3976.5185
.6480000	3902.9561
1.0800	2814.1303
1.5120	1725.3046
1.9440	636.4788
21.6000	636.4788

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 1

Pile-head boundary conditions are Displacement and Moment (BC Type 4)
Specified deflection at pile head = .250000 in
Specified moment at pile head = .000 in-lbs
Specified axial load at pile head = 800000.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	.250000	0.0000	102524.	-.0024397	786.6273	-1004.0296	12048.3548
6.000	.235362	608784.	96456.8580	-.0024335	919.5366	-1018.4446	25962.8545
12.000	.220798	1180844.	90307.6542	-.0024155	1044.4286	-1031.2899	28024.4849
18.000	.206376	1715664.	84086.2342	-.0023862	1161.1901	-1042.5168	30309.1965
24.000	.192163	2212787.	77802.4573	-.0023466	1269.7217	-1052.0755	32849.5023
30.000	.178217	2671821.	71466.4842	-.0022973	1369.9377	-1059.9155	35683.9172
36.000	.164595	3092439.	65088.7846	-.0022391	1461.7667	-1065.9844	38858.3348
42.000	.151348	3474381.	58680.1478	-.0021728	1545.1523	-1070.2279	42427.7855
48.000	.138522	3817459.	52251.6951	-.0020992	1620.0529	-1072.5896	46458.7071
54.000	.126158	4121554.	45814.8961	-.0020191	1686.4427	-1073.0100	51031.9056
60.000	.114293	4386621.	39381.5878	-.0019332	1744.3120	-1071.4260	56246.4604
66.000	.102959	4612692.	32963.9999	-.0018424	1793.6676	-1067.7699	62224.9416
72.000	.092184	4799876.	26574.7851	-.0017474	1834.5335	-1061.9683	69120.4765
78.000	.081991	4948364.	20227.0586	-.0016490	1866.9514	-1053.9405	77126.4721
84.000	.072396	5058431.	13934.4482	-.0015480	1890.9811	-1043.5963	86490.2278
90.000	.063415	5130438.	7711.1593	-.0014451	1906.7017	-1030.8333	97532.3781
96.000	.055055	5164838.	1572.0608	-.0013412	1914.2119	-1015.5329	110675.
102.000	.047320	5162179.	-4467.2002	-.0012370	1913.6312	-997.5541	126486.
108.000	.040211	5123107.	-10390.0400	-.0011332	1905.1011	-976.7258	145741.
114.000	.033722	5048377.	-16178.7169	-.0010305	1888.7860	-952.8332	169533.
120.000	.027845	4938855.	-21814.0104	-.0009297	1864.8754	-925.5980	199448.
126.000	.022566	4795534.	-27274.7409	-.0008315	1833.5855	-894.6455	237879.
132.000	.017867	4619540.	-32537.0188	-.0007364	1795.1627	-859.4471	288610.
138.000	.013729	4412159.	-37573.0066	-.0006453	1749.8874	-819.2155	358036.
144.000	.010124	4174859.	-42348.7298	-.0005586	1698.0801	-772.6923	457931.
150.000	.007025	3909337.	-46819.8060	-.0004770	1640.1115	-717.6665	612917.
156.000	.004400	3617600.	-50921.7837	-.0004010	1576.4197	-649.6594	885859.
162.000	.002213	3302125.	-54541.7605	-.0003312	1507.5454	-556.9995	1510063.
168.000	.000426	2966278.	-57073.1098	-.0002679	1434.2235	-286.7836	4038675.
174.000	-.001002	2619820.	-56529.0872	-.0002115	1358.5849	468.1245	2803809.
180.000	-.002112	2289960.	-53400.2653	-.0001620	1286.5701	574.8161	1632796.
186.000	-.002945	1980572.	-49770.9539	-.0001189	1219.0246	634.9543	1293447.
192.000	-.003539	1693850.	-45840.2195	-8.1779E-05	1156.4276	675.2905	1144993.
198.000	-.003927	1431274.	-41702.9684	-5.0236E-05	1099.1023	703.7933	1075381.
204.000	-.004141	1193896.	-37941.2237	-2.3739E-05	1047.2781	550.1216	796990.
210.000	-.004212	976207.	-34626.4940	-1.8355E-06	999.7524	554.7883	790367.
216.000	-.004164	778396.	-31307.2424	1.5874E-05	956.5663	551.6289	794946.
222.000	-.004021	600368.	-28025.9787	2.9791E-05	917.6993	542.1257	808915.
228.000	-.003806	441798.	-24817.3044	4.0310E-05	883.0805	527.4324	831468.
234.000	-.003537	302173.	-21709.5608	4.7819E-05	852.5977	508.4821	862463.
240.000	-.003232	180825.	-18725.9643	5.2694E-05	826.1048	486.0501	902264.
246.000	-.002905	76955.9542	-15885.4280	5.5296E-05	803.4283	460.7953	951699.
252.000	-.002569	-10331.4461	-13203.1816	5.5968E-05	788.8829	433.2868	1012094.
258.000	-.002233	-82019.5201	-10691.2561	5.5036E-05	804.5338	404.0217	1085365.
264.000	-.001908	-139155.	-8358.8777	5.2804E-05	817.0075	373.4378	1174197.
270.000	-.001600	-182833.	-6212.7990	4.9554E-05	826.5433	341.9218	1282347.
276.000	-.001314	-214184.	-4257.5919	4.5547E-05	833.3879	309.8139	1415133.
282.000	-.001053	-234361.	-2495.9213	4.1019E-05	837.7930	277.4096	1580281.
288.000	-.000821	-244529.	-928.8246	3.6186E-05	840.0128	244.9560	1789428.
294.000	-.000619	-245855.	443.9703	3.1236E-05	840.3022	212.6423	2061023.
300.000	-.000447	-239501.	1623.6253	2.6337E-05	838.9151	180.5760	2426488.
306.000	-.000303	-226624.	2611.5363	2.1632E-05	836.1037	148.7276	2945164.
312.000	-.000187	-208370.	3408.0798	1.7242E-05	832.1187	116.7868	3748695.
318.000	-9.61E-05	-185892.	4009.5038	1.3262E-05	827.2113	83.6878	5225468.
324.000	-2.78E-05	-160384.	4360.9091	9.7672E-06	821.6422	33.4472	7225087.
330.000	2.11E-05	-133655.	4384.6388	6.7994E-06	815.8069	-25.5374	7256767.
336.000	5.38E-05	-107833.	4119.6610	4.3620E-06	810.1695	-62.7886	7000253.
342.000	7.35E-05	-84261.2912	3711.3566	2.4231E-06	805.0232	-73.3129	5988131.
348.000	8.29E-05	-63320.3319	3257.8484	9.3348E-07	800.4514	-77.8565	5635393.
354.000	8.47E-05	-45176.0712	2788.2794	-1.6161E-07	796.4901	-78.6665	5575234.
360.000	8.10E-05	-29859.4277	2321.5373	-9.1897E-07	793.1462	-76.9142	5700555.
366.000	7.36E-05	-17308.8014	1870.7628	-1.3951E-06	790.4062	-73.3440	5976508.
372.000	6.42E-05	-7396.8812	1445.2770	-1.6444E-06	788.2422	-68.4846	6399067.
378.000	5.39E-05	50.3097	1051.6133	-1.7186E-06	786.6383	-62.7366	6983777.
384.000	4.36E-05	5238.9766	699.0250	-1.6652E-06	787.7711	-54.7928	7541887.
390.000	3.39E-05	8454.5959	406.2107	-1.5270E-06	788.4731	-42.8120	7573567.
396.000	2.53E-05	10128.1641	181.6936	-1.3394E-06	788.8385	-32.0270	7605247.
402.000	1.78E-05	10647.7773	17.4759	-1.1297E-06	788.9520	-22.7122	7636927.
408.000	1.17E-05	10348.7208	-95.5622	-9.1779E-07	788.8867	-14.9672	7668607.
414.000	6.83E-06	9509.8417	-166.7623	-7.1735E-07	788.7035	-8.7661	7700287.
420.000	3.10E-06	8354.4600	-205.0543	-5.3704E-07	788.4513	-3.9979	7731967.
426.000	3.86E-07	7054.3459	-218.5465	-3.8151E-07	788.1674	-.4995454	7763647.
432.000	-1.48E-06	5735.5645	-214.2930	-2.5242E-07	787.8795	1.9174	7795327.
438.000	-2.64E-06	4485.2526	-198.1978	-1.4925E-07	787.6066	3.4477	7827007.
444.000	-3.27E-06	3358.6236	-175.0182	-7.0083E-08	787.3606	4.2788	7858687.
450.000	-3.48E-06	2385.7070	-148.4370	-1.2103E-08	787.1482	4.5816	7890367.
456.000	-3.41E-06	1577.4961	-121.1770	2.7899E-08	786.9717	4.5051	7922047.
462.000	-3.15E-06	931.3156	-95.1380	5.3221E-08	786.8307	4.1746	7953727.
468.000	-2.77E-06	435.3292	-71.5409	6.7015E-08	786.7224	3.6911	7985407.
474.000	-2.34E-06	72.1814	-51.0676	7.2138E-08	786.6431	3.1333	8017087.
480.000	-1.91E-06	-178.1751	-33.9903	7.1068E-08	786.6662	2.5592	8048767.
486.000	-1.49E-06	-336.3839	-20.2841	6.5874E-08	786.7008	2.0095	8080447.
492.000	-1.12E-06	-422.2173	-9.7239	5.8218E-08	786.7195	1.5106	8112127.
498.000	-7.94E-07	-453.6295	-1.9610	4.9377E-08	786.7264	1.0771	8143807.
504.000	-5.25E-07	-446.2238	3.4151	4.0295E-08	786.7248	.7149932	8175487.
510.000	-3.10E-07	-413.0352	6.8321	3.1622E-08	786.7175	.4240221	8207167.
516.000	-1.45E-07	-364.5417	8.7026	2.3774E-08	786.7069	.1994776	8238847.
522.000	-2.47E-08	-308.8317	9.4032	1.6977E-08	786.6948	.0340556	8270527.
528.000	5.85E-08	-251.8657	9.2628	1.1318E-08	786.6823	-.0808810	8302207.
534.000	1.11E-07	-197.7871	8.5572	6.7791E-09	786.6705	-.1543233	8333887.
540.000	1.40E-07	-149.2450	7.5094	3.2764E-09	786.6599	-.1949207	8365567.
546.000	1.50E-07	-107.7055	6.2931	6.8290E-10	786.6508	-.2105221	8397247.
552.000	1.48E-07	-73.7344	5.0378	-1.1484E-09	786.6434	-.2079093	8428927.
558.000	1.37E-07	-47.2409	3.8360	-2.3695E-09	786.6376	-.1926776	8460607.
564.000	1.20E-07	-27.6792	2.7503	-3.1257E-09	786.6334	-.1692274	8492287.
570.000	9.91E-08	-14.2070	1.8201	-3.5485E-09	786.6304	-.1408341	8523967.
576.000	7.70E-08	-5.8034	1.0683	-3.7504E-09	786.6286	-.1097714	8555647.
582.000	5.41E-08	-1.3511	.5066039	-3.8226E-09	786.6276	-.0774687	8587327.
588.000	3.11E-08	.3125350	.1401292	-3.8331E-09	786.6274	-.0446896	8619007.
594.000	8.13E-09	.3672814	-.0291056	-3.8263E-09	786.6274	-.0117220	8650687.
600.000	-1.48E-08	0.0000	0.0000	-3.8226E-09	786.6273	.0214239	4341184.

Output Verification:

Computed forces and moments are within specified convergence limits.

```
Output Summary for Load Case No.  1:

Pile-head deflection              =      .25000000 in
Computed slope at pile head       =    -.00243968
Maximum bending moment            =       5164838. lbs-in
Maximum shear force               =   102524.28059 lbs
Depth of maximum bending moment   =    96.00000000 in
Depth of maximum shear force      =        0.00000 in
Number of iterations              =             14
Number of zero deflection points  =              5
```

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 2

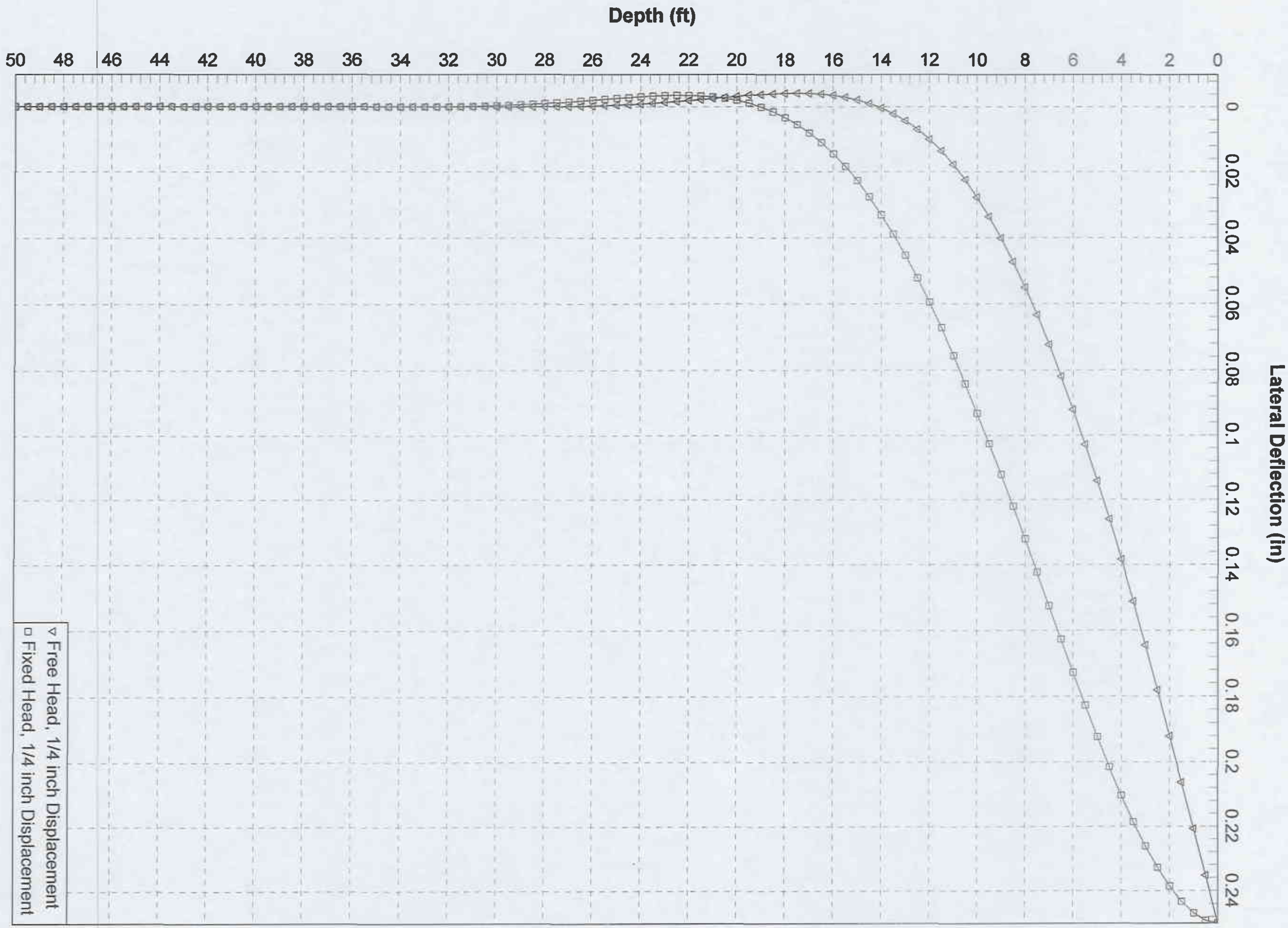
```
Pile-head boundary conditions are Displacement and Slope (BC Type 5)
Specified deflection at pile head   =        .250000 in
Specified slope at pile head        =      0.000E+00 in/in
Specified axial load at pile head   =     800000.000 lbs
```

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. p lbs/in	Es*h F/L lbs/in
0.000	.250000	-1.3176E+07	200470.	0.0000	3663.1376	-1004.0296	12048.3548
6.000	.249202	-1.1991E+07	194272.	-.0002540	3404.4586	-1033.0956	24873.6840
12.000	.246952	-1.0842E+07	187991.	-.0004845	3153.6456	-1060.5562	25767.5246
18.000	.243388	-9730290.	181550.	-.0006921	2910.9386	-1086.4022	26781.9414
24.000	.238646	-8656752.	174959.	-.0008777	2676.5644	-1110.6187	27922.9545
30.000	.232856	-7622357.	168227.	-.0010420	2450.7360	-1133.1861	29198.8179
36.000	.226142	-6628019.	161366.	-.0011859	2233.6526	-1154.0811	30620.0589
42.000	.218626	-5674585.	154384.	-.0013100	2025.4994	-1173.2772	32199.6180
48.000	.210422	-4762839.	147292.	-.0014154	1826.4476	-1190.7452	33953.0837
54.000	.201641	-3893499.	140100.	-.0015027	1636.6537	-1206.4536	35899.0256
60.000	.192389	-3067213.	132819.	-.0015730	1456.2596	-1220.3688	38059.4371
66.000	.182765	-2284564.	125461.	-.0016270	1285.3921	-1232.4554	40460.3041
72.000	.172865	-1546062.	118036.	-.0016657	1124.1627	-1242.6757	43132.3287
78.000	.162777	-852146.	110555.	-.0016899	972.6674	-1250.9904	46111.8429
84.000	.152586	-203184.	103030.	-.0017005	830.9863	-1257.3580	49441.9635
90.000	.142370	400534.	95472.2875	-.0016986	874.0716	-1261.7350	53174.0567
96.000	.132203	958790.	87894.8566	-.0016848	995.9498	-1264.0753	57369.6065
102.000	.122152	1471446.	80309.6394	-.0016603	1107.8727	-1264.3304	62102.6131
108.000	.112280	1938444.	72729.3027	-.0016259	1209.8274	-1262.4485	67462.7011
114.000	.102642	2359807.	65166.8348	-.0015825	1301.8189	-1258.3741	73559.1851
120.000	.093290	2735638.	57635.5694	-.0015311	1383.8704	-1252.0477	80526.4475
126.000	.084269	3066132.	50149.2145	-.0014725	1456.0234	-1243.4040	88531.1431
132.000	.075620	3351565.	42721.8884	-.0014077	1518.3391	-1232.3714	97781.9838
138.000	.067376	3592309.	35368.1641	-.0013376	1570.8981	-1218.8700	108543.
144.000	.059568	3788825.	28103.1262	-.0012631	1613.8013	-1202.8093	121154.
150.000	.052218	3941672.	20942.4444	-.0011851	1647.1710	-1184.0847	136054.
156.000	.045346	4051511.	13902.4705	-.0011044	1671.1509	-1162.5733	153826.
162.000	.038965	4119105.	7000.3696	-.0010220	1685.9079	-1138.1270	175254.
168.000	.033083	4145326.	254.3006	-.0009386	1691.6326	-1110.5626	201416.
174.000	.027702	4131166.	-6316.3263	-.0008550	1688.5412	-1079.6464	233839.
180.000	.022822	4077739.	-12690.4752	-.0007722	1676.8769	-1045.0699	274749.
186.000	.018436	3986293.	-18844.9132	-.0006908	1656.9126	-1006.4095	327530.
192.000	.014533	3858231.	-24753.3074	-.0006116	1628.9541	-963.0553	397597.
198.000	.011097	3695125.	-30384.7074	-.0005354	1593.3449	-914.0780	494219.
204.000	.008109	3498754.	-35438.9542	-.0004627	1550.4733	-770.6709	570241.
210.000	.005544	3274300.	-39663.0738	-.0003944	1501.4706	-637.3690	689754.
216.000	.003376	3026583.	-43067.8595	-.0003308	1447.3892	-497.5596	884204.
222.000	.001575	2760661.	-45581.0582	-.0002724	1389.3333	-340.1733	1295971.
228.000	.000108	2482225.	-46875.9092	-.0002195	1328.5453	-91.4437	5086201.
234.000	-.001059	2200257.	-46317.5258	-.0001722	1266.9862	277.5715	1573360.
240.000	-.001958	1928068.	-44350.6581	-.0001305	1207.5620	378.0510	1158237.
246.000	-.002625	1669302.	-41902.9617	-9.4212E-05	1151.0684	437.8478	1000880.
252.000	-.003089	1426137.	-39164.1719	-6.2969E-05	1097.9807	475.0821	922801.
258.000	-.003380	1199936.	-36247.7874	-3.6463E-05	1048.5968	497.0460	882225.
264.000	-.003527	991513.	-33233.5165	-1.4344E-05	1003.0940	507.7110	863819.
270.000	-.003553	801272.	-30181.5678	3.7516E-06	961.5606	509.6052	860692.
276.000	-.003481	629299.	-27139.2473	1.8191E-05	924.0155	504.5016	869458.
282.000	-.003334	475426.	-24144.5569	2.9341E-05	890.4221	493.7285	888471.
288.000	-.003129	339282.	-21228.3828	3.7564E-05	860.6992	478.3295	917103.
294.000	-.002883	220325.	-18415.9323	4.3213E-05	834.7286	459.1540	955423.
300.000	-.002611	117876.	-15727.7351	4.6626E-05	812.3620	436.9118	1004071.
306.000	-.002324	31144.7303	-13180.3751	4.8131E-05	793.4268	412.2083	1064247.
312.000	-.002033	-40750.3070	-10787.0475	4.8034E-05	795.5239	385.5676	1137774.
318.000	-.001748	-98760.9621	-8557.9999	4.6625E-05	808.1888	357.4483	1227262.
324.000	-.001474	-143894.	-6500.8942	4.4176E-05	818.0422	328.2536	1336385.
330.000	-.001217	-177196.	-4621.1172	4.0935E-05	825.3126	298.3387	1470342.
336.000	-.000983	-199740.	-2922.0624	3.7131E-05	830.2345	268.0129	1636646.
342.000	-.000772	-212617.	-1405.4040	3.2969E-05	833.0458	237.5399	1846509.
348.000	-.000587	-216922.	-71.3944	2.8633E-05	833.9855	207.1300	2117462.
354.000	-.000428	-213749.	1080.7674	2.4286E-05	833.2928	176.9239	2478752.
360.000	-.000295	-204186.	2052.3934	2.0068E-05	831.2050	146.9514	2983947.
366.000	-.000187	-189313.	2844.3386	1.6096E-05	827.9579	117.0303	3746131.
372.000	-.000102	-170208.	3454.7918	1.2467E-05	823.7871	86.4541	5069174.
378.000	-3.78E-05	-147975.	3856.2188	9.2559E-06	818.9331	47.3549	7510207.
384.000	8.74E-06	-124022.	3965.3189	6.5105E-06	813.7038	-10.9882	7541887.
390.000	4.03E-05	-100453.	3779.7691	4.2448E-06	808.5583	-50.8618	7573567.
396.000	5.97E-05	-78705.7982	3428.9836	2.4365E-06	803.8103	-66.0668	6642137.
402.000	6.95E-05	-59328.9803	3016.8793	1.0433E-06	799.5800	-71.3013	6152654.
408.000	7.22E-05	-42513.2620	2585.0304	1.5341E-08	795.9088	-72.6483	6037344.
414.000	6.97E-05	-28308.7634	2152.9382	-6.9949E-07	792.8077	-71.3824	6143385.
420.000	6.38E-05	-16671.2890	1733.9389	-1.1535E-06	790.2670	-68.2840	6421186.
426.000	5.59E-05	-7490.4229	1337.4016	-1.3974E-06	788.2626	-63.8951	6861287.
432.000	4.70E-05	-609.0552	969.8546	-1.4791E-06	786.7603	-58.6205	7477643.
438.000	3.81E-05	4162.0323	644.7905	-1.4433E-06	787.5360	-49.7342	7827007.
444.000	2.97E-05	7142.2860	378.8174	-1.3292E-06	788.1866	-38.9235	7858687.
450.000	2.22E-05	8720.6007	174.5617	-1.1690E-06	788.5312	-29.1617	7890367.
456.000	1.57E-05	9248.2488	24.9319	-9.8768E-07	788.6464	-20.7149	7922047.
462.000	1.03E-05	9029.2658	-78.2658	-8.0320E-07	788.5986	-13.6844	7953727.
468.000	6.05E-06	8316.7693	-143.4775	-6.2812E-07	788.4430	-8.0528	7985407.
474.000	2.79E-06	7313.5661	-178.8020	-4.7036E-07	788.2240	-3.7221	8017087.
480.000	4.06E-07	6175.6603	-191.6036	-3.3420E-07	787.9756	-.5451288	8048767.
486.000	-1.22E-06	5017.5314	-188.2903	-2.2123E-07	787.7228	1.6496	8080447.
492.000	-2.25E-06	3918.3006	-174.2221	-1.3103E-07	787.4828	3.0398	8112127.
498.000	-2.80E-06	2928.1236	-153.7125	-6.1931E-08	787.2666	3.7967	8143807.
504.000	-2.99E-06	2074.3451	-130.0937	-1.1439E-08	787.0802	4.0762	8175487.
510.000	-2.93E-06	1367.1084	-105.8231	2.3297E-08	786.9258	4.0140	8207167.
516.000	-2.71E-06	804.2443	-82.6093	4.5213E-08	786.8029	3.7239	8238847.
522.000	-2.39E-06	375.3625	-61.5462	5.7120E-08	786.7093	3.2971	8270527.
528.000	-2.03E-06	65.1413	-43.2425	6.1566E-08	786.6416	2.8041	8302207.
534.000	-1.65E-06	-144.1386	-27.9415	6.0768E-08	786.6588	2.2962	8333887.
540.000	-1.30E-06	-270.7400	-15.6265	5.6581E-08	786.6864	1.8088	8365567.
546.000	-9.74E-07	-332.1993	-6.1098	5.0495E-08	786.6999	1.3634	8397247.
552.000	-6.91E-07	-344.5424	.8942380	4.3665E-08	786.7026	.9712333	8428927.
558.000	-4.50E-07	-321.8877	5.7126	3.6938E-08	786.6976	.6348776	8460607.
564.000	-2.48E-07	-276.3462	8.6707	3.0900E-08	786.6877	.3511574	8492287.
570.000	-7.94E-08	-218.1362	10.0627	2.5909E-08	786.6750	.1128539	8523967.
576.000	6.28E-08	-155.8424	10.1326	2.2134E-08	786.6614	-.0895563	8555647.
582.000	1.86E-07	-96.7575	9.0646	1.9585E-08	786.6485	-.2664533	8587327.
588.000	2.98E-07	-47.2555	6.9818	1.8131E-08	786.6377	-.4278181	8619007.
594.000	4.04E-07	-13.1504	3.9520	1.7521E-08	786.6302	-.5821099	8650687.
600.000	5.08E-07	0.0000	0.0000	1.7389E-08	786.6273	-.7352153	4341184.

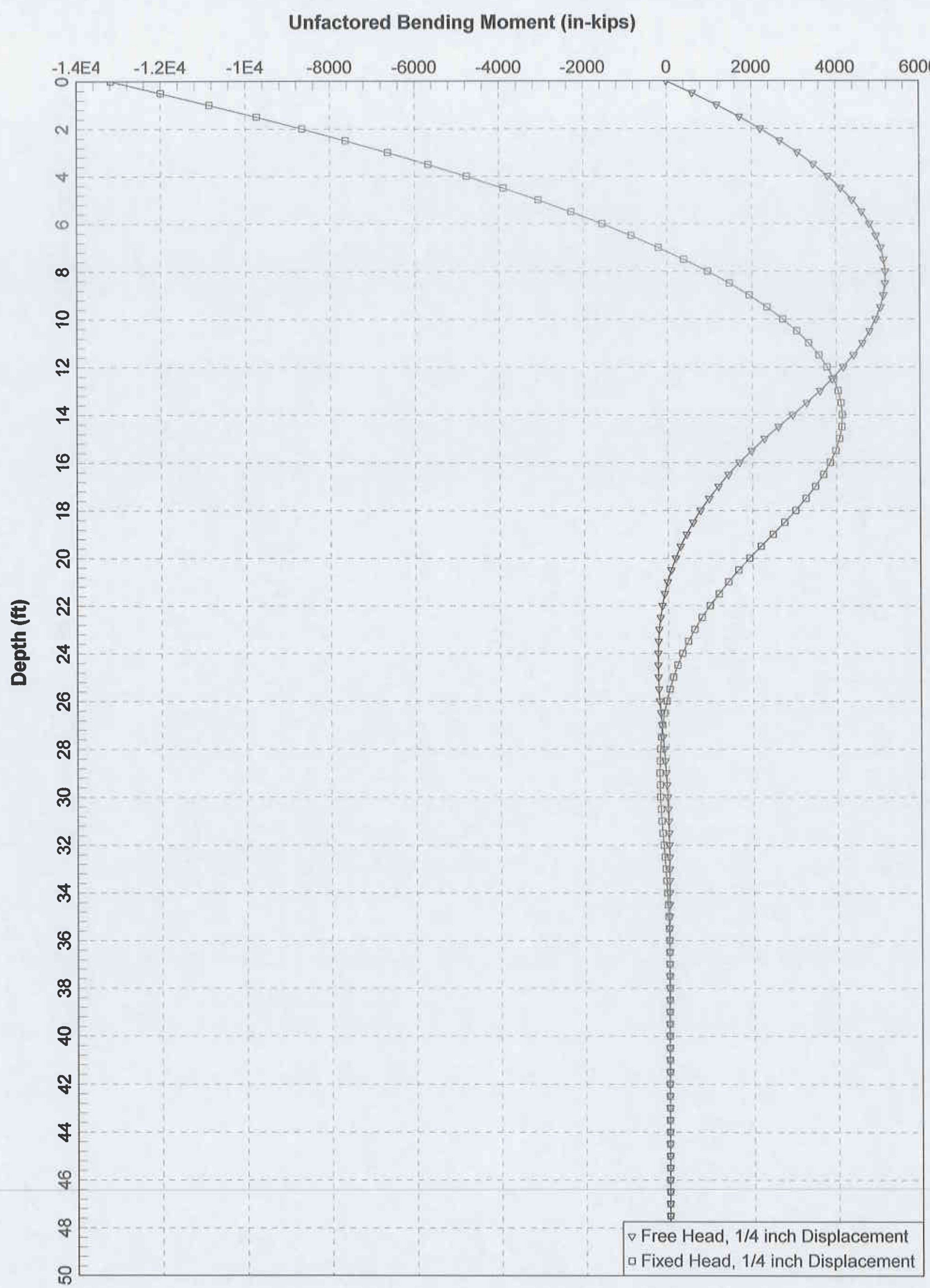
Output Verification:

Computed forces and moments are within specified convergence limits.

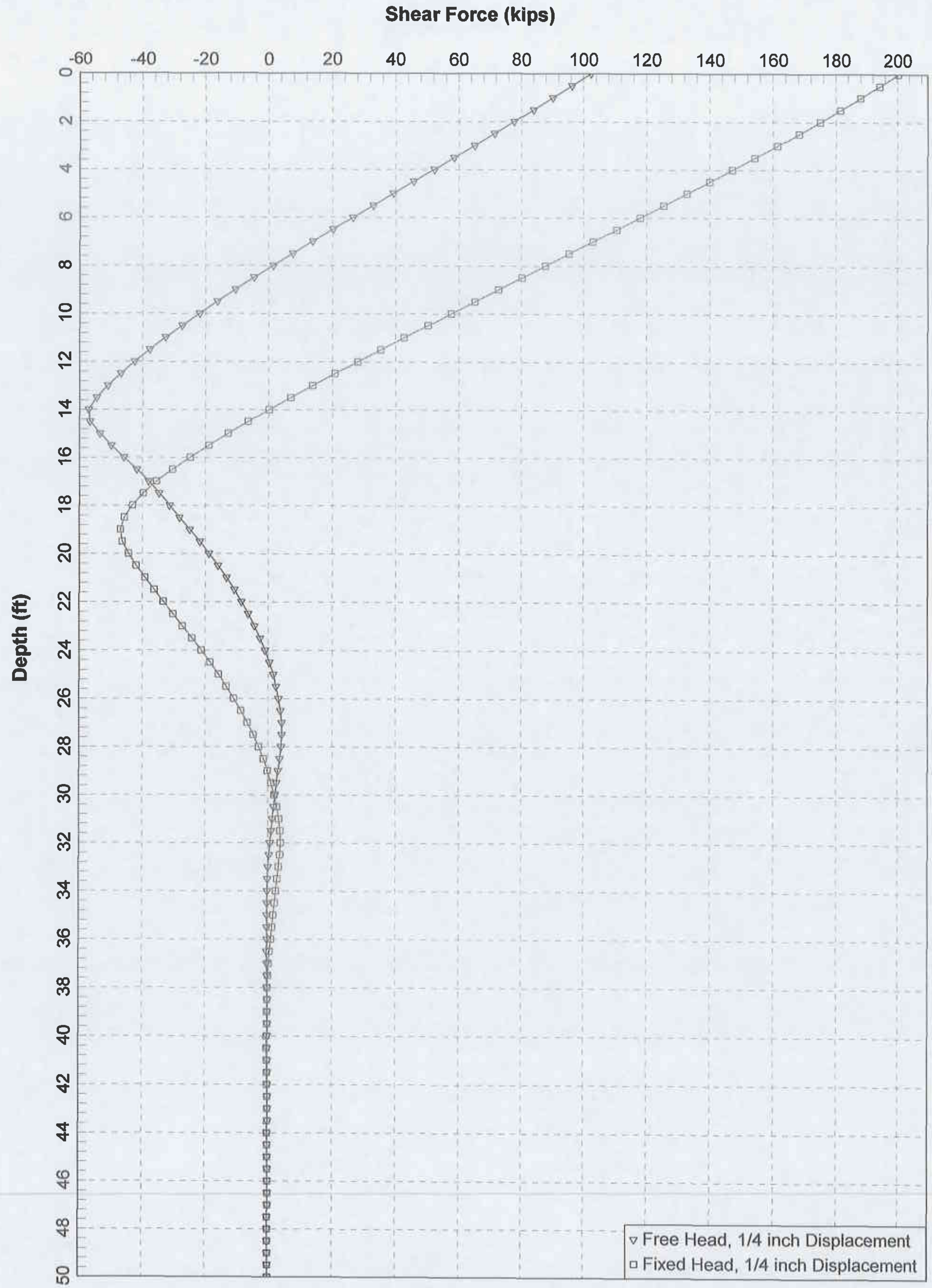
```
Output Summary for Load Case No.  2:

Pile-head deflection              =      .25000000 in
Computed slope at pile head       =    -.00001196
Maximum bending moment            =    -13175696. lbs-in
Maximum shear force               =   200470.36372 lbs
Depth of maximum bending moment   =       0.00000 in
Depth of maximum shear force      =       0.00000 in
Number of iterations              =            13
Number of zero deflection points  =             4


------------------------------------------------------------------------------
                           Summary of Pile Response(s)
------------------------------------------------------------------------------

Definition of Symbols for Pile-Head Loading Conditions:

Type 1 = Shear and Moment,          y = pile-head displacment in
Type 2 = Shear and Slope,           M = Pile-head Moment lbs-in
Type 3 = Shear and Rot. Stiffness,  V = Pile-head Shear Force lbs
Type 4 = Deflection and Moment,     S = Pile-head Slope, radians
Type 5 = Deflection and Slope,      R = Rot. Stiffness of Pile-head in-lbs/rad

Load  Pile-Head    Pile-Head        Axial    Pile-Head    Maximum     Maximum
Type  Condition    Condition        Load     Deflection    Moment      Shear
          1            2             lbs        in         in-lbs       lbs
---- ------------ ------------ ----------- ----------- ----------- -----------
  4  y=   .250000 M=     0.000     800000.    .2500000    5164838.     102524.
  5  y=   .250000 S=     0.000     800000.    .2500000 -1.3176E+07     200470.

The analysis ended normally.
```



Depth (ft)
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Lateral Deflection (in)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
Free Head, 1/4 inch Displacement
Fixed Head, 1/4 inch Displacement



Unfactored Bending Moment (in-kips)
-1.4E4 -1.2E4 -1E4 -8000 -6000 -4000 -2000 0 2000 4000 6000
Depth (ft)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50
Free Head, 1/4 inch Displacement
Fixed Head, 1/4 inch Displacement


Shear Force (kips)
-60 -40 -20 0 20 40 60 80 100 120 140 160 180 200
Depth (ft)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50
▿ Free Head, 1/4 inch Displacement
□ Fixed Head, 1/4 inch Displacement

APPENDIX E

CHEMICAL TEST RESULTS

Introduction

The following sections present a summary of the results from testing performed on several samples obtained from the subject site. The relevance of the results to widely accepted corrosion criteria are provided. Following this summary are the results provided by Shiff Associates, Consulting Corrosion Engineers. Recommendations for corrosion protection are beyond the scope of this report.

Soluble Sulfates

Testing of samples obtained from onsite exploration indicates soluble sulfate levels ranging from 58 to 1376 mg/kg. This equates to 0.005 to 0.138 percent water soluble sulfate by weight. Table 4.3.1 in ACI 318 designates these levels of soluble sulfates as negligible to moderate sulfate exposure. The ACI table presents requirements for concrete exposed to sulfate-containing solutions. For the moderate level, the requirements include a list of allowable cement types along with a maximum water-cementious material ratio of 0.5 and minimum concrete compressive strength of 4000 psi.

Soil Resistivity

The testing also indicates resistivity of saturated samples range from 640 to 2360 ohm-cm. Resistivity of soils is inversely proportional to corrosiveness. Thus, the analysis helps in determining whether the soils may have a deleterious affect on underground metallic structures or materials. A generally accepted correlation between resistivity and soil corrosiveness toward metals is provided below.

Resistivity (Ohm-Centimeter)	Corrosiveness
< 1,000	Severely Corrosive
1,000 - 2,000	Corrosive
2,000 - 10,000	Increasingly Moderate
> 10,000	Increasingly Mild

Resistivity testing was performed by M.J. Schiff and Associates, the results of which are presented in Table II.

pH Levels

Test results indicate that the samples have pH levels of 7.3 to 7.6, indicating that the soils are generally neutral to slightly basic.

Chlorides

Soils containing high concentrations (on the order of 10,000 ppm) of chlorides can be corrosive to ferrous metals. The samples were found to contain 70 to 240 ppm of chlorides, well below levels of concern with respect to corrosion.

Table 1 - Laboratory Tests on Soil Samples

Geolabs Westlake Village
SMC-AET/KCRW
Your #8266.009, SA #09-0510LAB
30-Jun-09

Sample ID			B1 @ 18-20'	B8 @ 0-3'	B10 @ 7-9'
Resistivity		**Units**			
as-received		ohm-cm	102,400	4,360	36,360
saturated		ohm-cm	640	460	2,360
pH			7.3	7.6	7.6
Electrical Conductivity		mS/cm	0.73	0.58	0.08
Chemical Analyses					
Cations					
calcium	Ca^{2+}	mg/kg	401	52	29
magnesium	Mg^{2+}	mg/kg	75	21	8.4
sodium	Na^{1+}	mg/kg	302	584	83
potassium	K^{1+}	mg/kg	24	7.0	3.3
Anions					
carbonate	CO_3^{2-}	mg/kg	ND	11	ND
bicarbonate	HCO_3^{1-}	mg/kg	165	345	122
flouride	F^{1-}	mg/kg	2.9	23	5.1
chloride	Cl^{1-}	mg/kg	70	240	11
sulfate	SO_4^{2-}	mg/kg	1,376	649	58
phosphate	PO_4^{3-}	mg/kg	1.9	1.8	16
Other Tests					
ammonium	NH_4^{1+}	mg/kg	ND	ND	ND
nitrate	NO_3^{1-}	mg/kg	8.5	0.8	2.8
sulfide	S^{2-}	qual	na	na	na
Redox		mV	na	na	na

Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

APPENDIX F

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REFERENCES

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United States Department of Agriculture, November 4, 1952, Frame Nos. AXJ-3K-130 to 131, Scale 1:21,600±

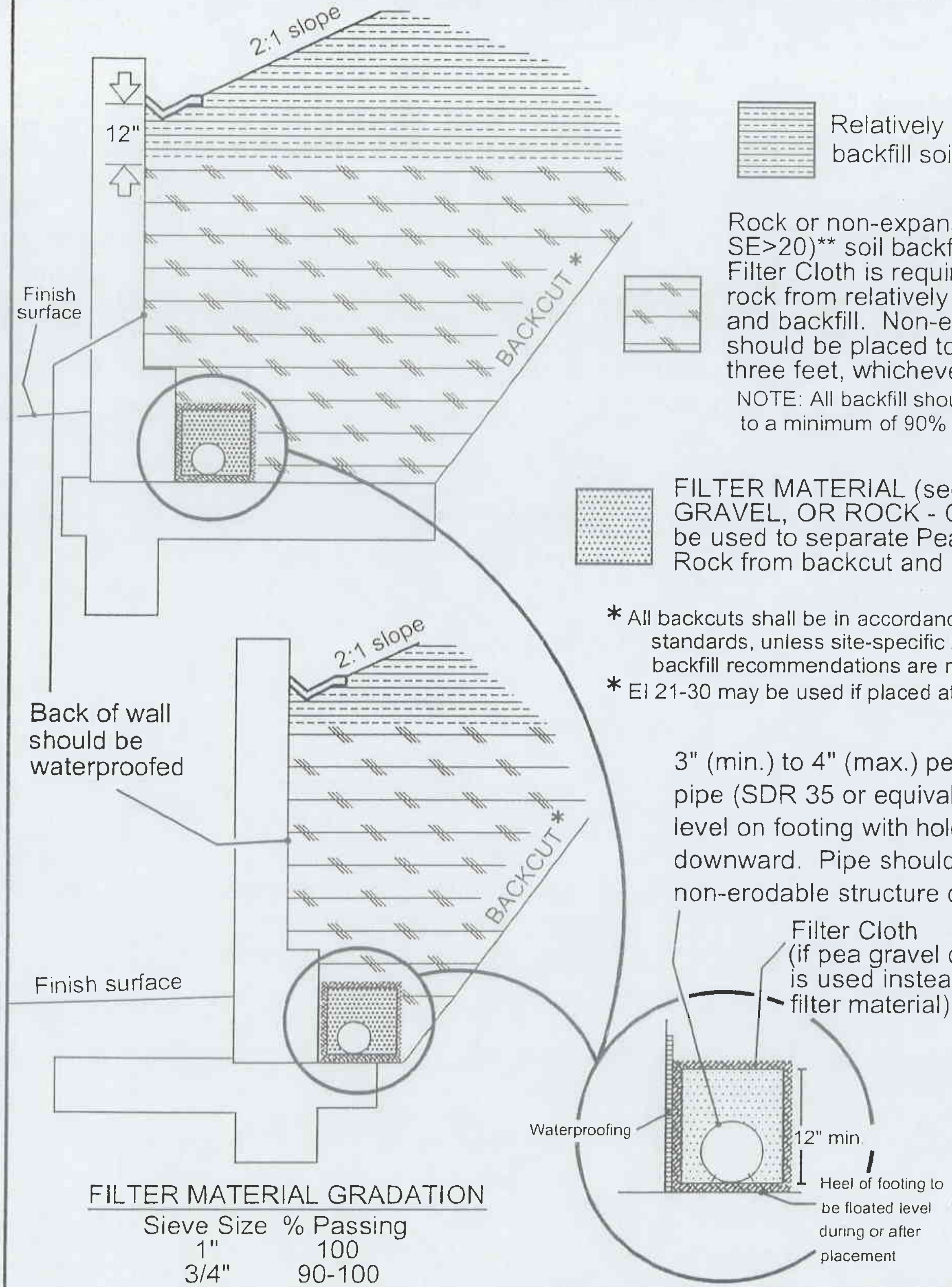
Los Angeles County Flood Control District, Flight 1933-01, 1965, Frame Nos. 106 to 107, Scale 1:18,000±

U-2 Photography, Flight 73-036, 1973, Frame No. 103, Scale 1:15600±

APPENDIX G

TYPICAL DETAILS

TYPICAL RETAINING WALL



Relatively impermeable backfill soil

Rock or non-expansive (EI<20 or SE>20)** soil backfill. If rock is used, Filter Cloth is required to separate rock from relatively impermeable soil and backfill. Non-expansive backfill should be placed to the backcut or three feet, whichever is less.

NOTE: All backfill should be compacted to a minimum of 90% relative density.

FILTER MATERIAL (see gradation), PEA GRAVEL, OR ROCK - Geotextile should be used to separate Pea Gravel or Rock from backcut and backfill.

* All backcuts shall be in accordance with OSHA standards, unless site-specific backcut and/or backfill recommendations are made by this office.

* EI 21-30 may be used if placed at 2% over optimum

3" (min.) to 4" (max.) perforated pipe (SDR 35 or equivalent) laid level on footing with holes set facing downward. Pipe should outlet to a non-erodable structure or device.

FILTER MATERIAL GRADATION

Sieve Size	% Passing
1"	100
3/4"	90-100
3/8"	40-100
#4	24-50
#8	15-35
#30	5-15
#50	0-7
#200	0-2

Geolabs - Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 6/29/2009 BY

SCALE NTS W.O. 8266

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PLATE RW1