PRELIMINARY
GEOTECHNICAL ENGINEERING REPORT

PROPOSED MIXED USE DEVELOPMENT
4301 TO 4311 SUNSET BOULEVARD
AND 4300 TO 4306 EFFIE STREET
LOS ANGELES, CALIFORNIA

Terracon Project No. 60075014
June 1, 2007

Prepared for:

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Prepared by:

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F & S Silverlake
PO Box 292269
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Attention: Mr. Devan Pailet

Re: Preliminary Geotechnical Engineering Report
Proposed Mixed Use Development
4301 to 4311 Sunset Boulevard and 4300 to 4306 Effie Street
Los Angeles, Los Angeles County, California
Terracon Project No. 60075014

Mr. Devan Pailet:

Terracon is pleased to transmit our report of the subsurface exploration and geotechnical engineering services performed for the construction of the proposed mixed use development to be located at 4301 to 4311 Sunset Boulevard and 4300 to 4306 Effie Street in the Silver Lake area of the city of Los Angeles, California. The scope of our services was outlined in our Proposal dated March 16, 2007. Mr. Pailet gave the authorization to proceed on March 19, 2007.

We appreciate the opportunity to work with you on this project, and we are prepared to provide any construction observation and testing services the project may require. If you have any questions regarding this report, or if we may be of further service in other ways, please let us know.

Sincerely,
Terracon

Authorized Reviewer:

Jinny Park, E.I.T.
Staff Engineer

Michael W. Laney, P.E., G.E.
Geotechnical Department Manager

JP:MWL

Distribution: 5 originals to addressee

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INTRODUCTION

The subsurface exploration and geotechnical engineering services requested for the construction of a proposed mixed use development to be located at 4301 to 4311 Sunset Boulevard and 4300 to 4306 Effie Street in Los Angeles, California has been completed. As requested, exploration of the subsurface materials at the project site consisted of three hollow-stem auger borings taken to depths ranging from approximately 46-½ to 56-½ feet below the ground surface (bgs). The logs of these borings and a diagram showing their approximate locations are included in this report.

The recommendations contained in this report are based upon the results of field and laboratory testing, engineering analysis, and experience with similar soil conditions, structures and our understanding of the proposed project.

These recommendations are also subject to the limitations presented in the "**General Comments**" section of this report. An information sheet prepared by ASFE (the Association of Engineering Firms Practicing in the Geosciences) is also included as Appendix C. We recommend that all individuals utilizing this report read the limitations along with the attached document.

PROJECT DESCRIPTION

We understand that the proposed project involves constructing a mid-rise structure (between 6 to 8 stories above grade) with street level retail and condominiums above this level. Most likely subterranean parking will be required, and is estimated to be 2 levels below street level.

We have not been provided with structural loads, but it is anticipated that the proposed building will have column loads of 1,500 to 1,700 kips and continuous wall loads on the order of 5 to 8 kips per lineal foot. Floor loads are anticipated to be light. Grade changes for the site were not provided to us; however, based on existing topography, we anticipate moderate cuts will be necessary to develop design grades for this site.

This report describes the subsurface conditions encountered in the borings, presents the laboratory data obtained, and provides geotechnical recommendations for the design of building foundations, support of floor slabs and pavements, and general earthwork.

A geotechnical report, "Geotechnical Investigation Proposed Multi (4-Plex) Family Residence", prepared by Gorian & Associates, Inc. on the site in June of 2005, was provided by the client for our review. The Geotechnical investigation involved the advancement of two (2) soil borings, for the proposed residence located at 4308 West Effie Street, to a maximum depth of 21 feet. Subsurface materials encountered in the soil borings included fill and alluvial soils overlying the Puente Formation bedrock. Groundwater was not encountered in either boring.

SITE EXPLORATION PROCEDURES

Field Exploration

Terracon personnel located the borings in the field by taping or pacing distances and estimating right angles from the references shown on the attached boring location diagram, Plate 2. The locations of the borings should be considered accurate only to the degree implied by the methods used to define them.

A truck-mounted, hollow-stem drill rig operated by JET Drilling of Signal Hill, California was used to advance the boreholes. Representative samples were obtained by the split-barrel sampling procedure described below. The borings were completed under the continuous technical supervision of a Terracon staff engineer, who visually inspected the soil samples, maintained detailed logs of the boring, interpreted stratigraphy, classified the soils, and obtained drive samples and bulk samples. Logs of the soil borings, including blowcount data and in-situ moisture content and soil density are presented on *Plates A.* The soils were classified in the field and further examined in the laboratory in general accordance with the Unified Soil Classification System (*a summary of the USCS and General Notes regarding Drilling are included in Appendix A, after the Boring Logs*). Field classifications were modified, where necessary, on the basis of laboratory test results.

The split-barrel sampling procedure uses a 3-inch outer diameter (O.D.), 2.4-inch inner diameter (I.D.) California type or a 2-inch O.D., 1.5-inch I.D. standard split spoon (SPT) type sampler that is driven into the bottom of the boring (elevation shown at sample depth) with a 140-pound drive hammer falling 30 inches. The number of blows required to advance the sampling spoon the last 12 inches, or less, of an 18-inch sampling interval or portion thereof, is recorded as the field resistance value, N. The samples were tagged for identification, sealed to reduce water (moisture) loss and returned to the laboratory for further examination, testing and classification.

An automatic drive hammer was used to advance the sampler. A greater mechanical efficiency is achieved with the automatic drive hammer when compared to a conventional safety drive hammer operated with a cathead and rope. This higher efficiency has been considered in our interpretation and analysis of the subsurface information provided with this report.

The final boring logs included with this report, in Appendix A, represent the engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in the laboratory.

Laboratory Testing

Relatively undisturbed small bag and bulk samples were carefully sealed in the field to prevent moisture loss. All samples were then transported to our laboratory in Irvine, California for examination and testing.

Each of the relatively undisturbed samples in the upper 20 feet was tested to determine the in-situ moisture content and dry density. Where applicable, the sample's unconfined compressive strength was estimated using a calibrated hand penetrometer. The laboratory testing was performed in general accordance with appropriate ASTM, Uniform Building Code (UBC) and California (Caltrans) Standard Test standards, as appropriate. The results of these laboratory tests are summarized below, on the boring logs in Appendix A and graphical results are presented in the Laboratory Summary in Appendix B of this report.

Tests were performed on selected samples as an aid in classifying the soils and to evaluate their physical properties and engineering characteristics that may be present in the soil samples. Details of the laboratory testing program and test results are discussed in the following sections.

<u>WATER CONTENT/DRY DENSITY DETERMINATION</u>

Water (moisture) content and dry density were determined for selected samples, where applicable. The drive samples were trimmed to obtain volume and wet weight, then were dried in accordance with ASTM D2937 (current edition). After drying, the weight of each sample was measured, and water content and dry density were calculated. The water content of selected drive samples and bulk samples were also determined. Water content and dry density values are summarized in the following tables and presented on the boring logs in Appendix A.

<u>GRAIN SIZE DISTRIBUTION</u>

Representative samples were dried, weighed, and soaked in water until individual soil particles were separated, and then washed on the No. 200 sieve. That portion of the material retained on the No. 200 sieve was oven-dried and then run through a standard set of sieves in accordance with ASTM D422 (current edition). The grain size distribution data are presented as Plate B-1 in Appendix B.

PERCENT PASSING NO. 200 SIEVE

Representative samples were dried, weighed, and soaked in water until individual soil particles were separated, and then washed on the No. 200 sieve. That portion of the material retained on the No. 200 sieve was oven-dried and weighed in accordance with ASTM D1140 (current edition) to determine the percentage of fines. The results of this test are presented in Appendix B, in Table B-1.

ATTERBERG LIMITS

The Atterberg limits were performed in general accordance with ASTM D 4318 (current edition) and are used frequently in soil classification and identification. The soil descriptions defined by the United Soil Classification System (USCS) are based on these limits. Fine-grained soils are classified in the laboratory by performing several tests that define the plastic and liquid limits. The results of this test are presented in Appendix B, in Table B-2.

DIRECT SHEAR TESTS

Direct shear tests were performed in general accordance with ASTM D3080 (current eiditon) on selected remolded and/or undisturbed samples that were pre-soaked for a minimum of 24 hours. The samples were then tested under various normal loads; a different specimen being used for each normal load. The samples were sheared in a motor driven, strain-controlled direct shear testing apparatus at a strain rate of 0.05 inches per minute. The results of this test are presented as Plate B-2 in Appendix B.

EXPANSION INDEX TESTS

The expansion potential of selected materials was evaluated by the Expansion Index Test, U.B.C. Standard No. 18-2. Specimens were molded under a standard given compactive energy with the water content adjusted in order to achieve an approximate 50 percent saturation. The prepared 1-inch thick by 4-inch diameter specimens were then loaded with a 144 psf surcharge and inundated with water until volumetric equilibrium was reached. The results of this test are presented in Appendix B, in Table B-3.

CORROSION TESTS

Soluble sulfates, chloride, salinity, sodium, and pH test results should always be considered together to determine the potential for premature corrosivity failure of metals. A minimum moisture content of approximately 30 to 50% over an extended period is generally needed to trigger and sustain the ionization process that produces corrosion. However, the specific moisture content required is highly dependent on the subject soil constituency. The results of this test are presented in Appendix B, as Table B-4.

CHLORIDE/SODIUM

Concentrations of soluble salts, such as chloride and sodium, are directly related to the potential of the soil to initiate and/or sustain corrosion. In general, soluble salt concentrations of less than 500 ppm are considered to be low in corrosion potential; concentrations ranging from 500 to 1000 ppm are considered moderate in corrosion potential; concentrations of greater than 1000 ppm are considered high corrosion potential. The results of this test are presented in Appendix B, as Table B-4.

SOLUBLE SULFATES

Soluble sulfate tests determined in general accordance with California Test Method No. 417 were also performed on representative samples collected during the field investigation. Soils with a sulfate concentration greater than 0.07% may be corrosive to metals; concentrations greater than 0.10% are considered potentially harmful to concrete and would require following the current U.B.C. for "moderate" or worse sulfate exposure requirements. The results of this test are presented in Appendix B, as Table B-5.

UNIFIED SOIL CLASSIFICATION SYSTEM

As part of the testing program, a geotechnical engineer examined the soil samples in the laboratory. Based on the laboratory test results and the material's texture and plasticity, the soil samples were described according to the attached General Notes and classified in general accordance with the USCS, in accordance with ASTM Test Methods D2487 and D2488 (current editions). The estimated group symbols for the USCS is shown in the appropriate column on the boring logs. A brief description of the USCS is included in the Appendix A, after the boring logs.

SITE CONDITIONS

The proposed site is located at 4301 to 4311 Sunset Boulevard and 4300 to 4306 Effie Street in Los Angeles, California. At the time the borings were advanced, the site consisted of approximately 2 acres of land developed with a hotel building (vacant), a body shop (vacant) and two residential structures (occupied). Based on our field observations and boring elevations, the site generally sloped steeply downward from the southwest to the northeast.

GEOLOGIC CONDITIONS

Regional Geology

The site is situated within the Northeastern Block of the Los Angeles Basin. The Los Angeles Basin represents a transition between the Peninsular and the Transverse Range Geomorphic Provinces in Southern California. Geologic structures within the Transverse Range Province trend mostly east-west, in contrast to the prevailing northwest trend elsewhere in the state including the Peninsular Range Province.[1,2] The Property is located nearest to the Hollywood Fault, a more detailed discussion of seismicity is included in the **Faulting and Estimated Ground Motions** Section of this report.

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[1] Harden, D. R., "*California Geology, Second Edition*," Pearson Prentice Hall, 2004.

[2] Norris, R. M. and Webb, R. W., *"Geology of California, Second Edition,"* John Wiley & Sons, Inc., 1990.

The Northeastern block is bounded by the Central block to the southwest, the San Gabriel Mountains to the north, the San Jacinto Fault to the east and the Whittier Fault to the southwest. [3]

Local Geology

In general, Quaternary fan deposits (Qc) regionally underlie the Property.[4] More specifically, the Hollywood-Burbank (South ½) Map indicates that Quaternary alluvial deposits (Qa) consisting of "alluvium: clay, sand and gravel; includes gravel and sand of minor stream channels" underlie the site.[5]

Faulting and Estimated Ground Motions

The subject site is located in Southern California, which is a seismic active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. Table 1 indicates the distance of the fault zones and the associated maximum credible earthquake that can be produced by nearby seismic events, as calculated using the EQFAULT program.[6] The Hollywood Fault (a Type B Fault), which is located less than miles north of the site, is considered to have the most significant affect at the site from a design standpoint. Additionally, the site is located less than 2 miles from the postulated outside limits to the Upper Elysian Park and Puente Hills faults, both blind thrust faults.

TABLE 1
Characteristics and Estimated Earthquakes for Regional Faults

Fault Name	Approximate Distance to Site (miles)	Fault Type	Maximum Credible Earthquake (MCE) Magnitude
Upper Elysian Park Blind Thrust	< 2	Blind Thrust	6.4
Puente Hills Blind Thrust	< 2	Blind Thrust	7.1
Hollywood	< 2	B	6.4
Raymond	3.9	B	6.5
Verdugo	5.2	B	6.9
Newport-Inglewood (L.A. Basin)	7.1	B	7.1
Santa Monica	7.9	B	6.6
Sierra Madre	9.6	B	7.2
Northridge (E. Oak Ridge)	12.2	B	7.0
Malibu Coast	14.3	B	6.7
San Gabriel	15.4	B	7.2
Clamshell-Sawpit	16.6	B	6.5

[3] *ibid*
[4] CDMG, Geological Map of California, Los Angeles Sheet, Los Angeles County, California, 1991.
[5] Dibblee, Geological Map of the Hollywood and Burbank (South ½) Quadrangles, Los Angeles County, California, 1991.
[6] Blake, T. F., "*EQFAULT: A Computer Program for the Deterministic Prediction of Peak Horizontal Acceleration from Digitized California Fault*", User Manual and Program, 1989, (Updated 1999).

Fault Name	Approximate Distance to Site (miles)	Fault Type	Maximum Credible Earthquake (MCE) Magnitude
Whittier	16.8	B	6.8
Palos Verdes	18.4	B	7.3
Santa Susana	20.0	B	6.7
San Jose	22.0	B	6.4
Anacapa-Dume	24.8	B	7.5
Holser	25.1	B	6.5
Simi-Santa Rosa	27.3	B	7.0
Chino-Central Ave. (Elsinore)	28.0	B	6.7
Cucamonga	30.0	A	6.9
Oak Ridge (Onshore)	30.8	B	7.0
San Andreas – Whole M-1a	32.6	A	8.0
San Joaquin Hills	34.1	Blind Thrust	6.6
San Cyetano	36.2	B	7.0

In order to estimate the seismic ground motions at the subject site, Terracon reviewed seismic hazard map information;[7] and performed a probabilistic analysis using the FRISKSP computer program[8] utilizing the Joyner Boore (1997), Campbell (1997), and Abrahamson and Silva (1997) attenuation curves.[9] Based on these sources the peak ground acceleration at the subject site for a 10% Probability of Exceedance in 50 years is expected to be about 0.63g.

Furthermore, the site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of the State Fault Hazard Maps.[10]

Liquefaction Potential

Liquefaction is the phenomenon where saturated soils develop high pore water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismicity, where ground water is shallow and loose granular soils or hydraulic fill soils are present.

The site is not located within an area, which the State of California has designated as a Seismic Hazard Zones for Liquefaction and/or Slope Instability. [11]

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[7] California Geologic Survey (CGS), "The Revised 2002 California Probabilistic Seismic Hazard Maps" June 2003. Note: Supersedes the "Probabilistic Seismic Hazard Assessment for the State of California", Open File Report 96-08 (1996) and 97-706 (1997).

[8] Blake, T. F., "FRISKSP: A Computer Program for the Probabilistic Prediction of Peak Ground Acceleration from Digitized California Faults," ver. 4.00, User Manual and Program, 2000.

[9] Seismological Society of America, "Equations for the Estimating Horizontal Response Spectra and Peak Acceleration from Western North American Earthquakes: A Summary of Recent Work": Seismological Research Letters, Vol. 68, No. 1, pp. 128-153.

[10] California Department of Conservation Division of Mines and Geology (CDMG), *"Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region"*, CDMG Compact Disc 2000-003, 2000.

[11] CDMG, "Official Seismic Hazard Zone Map Hollywood 7.5-Minute Quadrangle, Los Angeles County, California," 1998.

Therefore, a site specific liquefaction analysis is not required. However, due to the proposed height of the building, and depth of the proposed parking structure, borings were advanced to depths of greater than 50 feet, and we were able to evaluate the liquefaction potential based on these factors. Based on the relative densities of the soils encountered in our borings and the depth of bedrock materials below 20 feet bgs (which coincides with the historical high groundwater depths discussed in the **Groundwater Conditions** Section below), the potential for liquefaction is considered remote.

SUBSURFACE CONDITIONS

Beneath the varied surficial conditions (grass, concrete, and asphalt) we encountered approximately 2 to 5 feet of existing fill consisting of moist sandy clays, clayey silts with sand and silty sands. The fill material is underlain by native alluvial soils consisting of moist clayey silts, silty sands, sandy silts, sandy clays, and lean clays. The native alluvial soils are in turn underlain by siltstone, silty sandstone and sandy claystone, to the maximum depth explored, approximately 56-½ feet bgs.

The subsurface conditions encountered at each boring location are indicated on the boring logs in Appendix A. The stratification boundaries shown on the boring logs represent the approximate locations of changes in soil types; in-situ, the transition between material types may be gradual and indistinct

GROUNDWATER CONDITIONS

The borings were monitored for groundwater while drilling and immediately after completing the drilling operations. As indicated in the lower left corner of the boring logs, groundwater was not encountered or measured in the borings at this time to the maximum depth explored, approximately 56-½ feet bgs. Based on our research, historical groundwater has been as high as 20 feet bgs in this area. [12]

Fluctuations in groundwater levels can occur due to seasonal variations in the amount of rainfall, runoff, altered natural drainage paths, and other factors not evident at the time the borings were advanced. Consequently, the designer and contractor should be aware of this possibility while designing and constructing the building.

ENGINEERING RECOMMENDATIONS

Geotechnical Considerations

Based on the subsurface conditions encountered, a mat foundation system can be used to support the proposed building, based on the current plans of a subterranean garage. two to

[12] CDMG, "*Seismic Hazard Evaluation Hollywood*, 7.5-Minute Quadrangle, Los Angeles County, *California*," Seismic Hazard Report 98-17, 1998.

three feet of undocumented fill materials within the proposed building footprint were encountered. However, these materials will be removed as a part of the excavation of the proposed parking garage.

Based on the data, analysis and findings presented in the this and the other referenced soils report, and as required by Section 111 of the 2002 Los Angeles Building Code, it is our opinion that the grading/building site will be safe from hazards from future landsliding, settlement, or slippage, as long as the recommendations presented it the above referenced report are followed. Also, it is our opinion that the proposed building or grading construction will not adversely affect the geotechnical stability of adjacent properties outside the proposed building site.

Based on the current conceptual site plans, a one to two story below grade parking garage is proposed. This will require deep excavations adjacent to public streets and adjacent properties.

If plans change and the structure is to be a at-grade structure, than deep foundations will be required to support the proposed structure. If the project is to be slab on-grade, we recommend that this report be submitted to Geopier Foundation, LLC (http://www.geopier.com/) for their review to determine if this technology would be a viable alternative to the use of deep foundations. This technology improves the soil in place using compacted gravel “piers” that improve the bearing capacity and reduce the settlement potential of subgrade soils, allowing the use of conventional foundations or a mat foundation. Achieving a higher bearing capacity could also reduce the size of the footings significantly, achieving additional costs savings for the project, and further reducing the depth of influence for settlement.

Recommendations regarding foundations and other issues related to the geotechnical aspects of the project are presented in the following sections.

Site and Building Pad Preparation

Following existing building demolition and removal, site preparation for the proposed project should include removing any vegetation, topsoil, existing pavements, existing foundations, existing floor slabs and any other unsuitable materials encountered on-site. Loose materials in depressions or excavations should also be removed. The depressions or excavations should be backfilled as outlined in the following paragraphs. Based on boring information, we expect removal of 2 to 6 inches of asphalt and concrete pavement will be required in some areas of the site. Actual stripping depths should be determined at the time of construction by a representative of the geotechnical engineer.

Mat Foundations

Mat foundations are considered applicable for any depth when bearing on the natural granular soils or bedrock materials.

A mat foundation founded in the on-site alluvium may be designed for any practical allowable bearing pressure up to a maximum of 2,000 psf and if founded on the siltstone materials at or below 20 feet bgs a maximum of 3,000 psf may be used. Total settlement of mat foundations designed to the maximum bearing pressure are estimated to be on the order of 2-inches or less and differential settlement between adjacent columns should not exceed ¾-inch provided that the mat is designed using the subgrade values below.

For structural design of mat foundations founded from 10 to 19 feet below grade, the modulus of subgrade reaction, k_s, (in pounds per cubic inch [pci]) may be calculated using the following formula:

$$k_s = \frac{185 \times \left(\frac{B+1}{2 \times B}\right)^2 \times \left(1 + 0.5 \times \frac{B}{L}\right)}{1.5},$$

where *B*= width of mat and *L*= length of mat

For structural design of mat foundations founded 20 feet below grade, the modulus of subgrade reaction, k_s, (in pounds per cubic inch [pci]) may be calculated using the following formula:

$$k_s = \frac{800 \times \left(\frac{B+1}{2 \times B}\right)^2 \times \left(1 + 0.5 \times \frac{B}{L}\right)}{1.5},$$

where *B*= width of mat and *L*= length of mat

This k_s may be used when bearing on the existing granular soils or bedrock at the site, respectively. Other details including treatment of loose foundation soils, superstructure reinforcement and observation of foundation excavations as outlined in this report are applicable for the design and construction of mat foundation at the site.

Cast in Drill Hole (CIDH) Pile Foundation Systems

If the structure is to be located at grade, it can be supported on a drilled pier foundations. Based on the results of our borings, we have developed the following CIDH foundation design parameters:

Drilled Pier Foundation Design Parameters

Depth (feet) *	Description **	Allowable Skin Friction (psf)***	Allowable End Bearing Pressure (psf)	Allowable Passive Pressure (psf)	Internal Angle of Friction (Degree)	Cohesion (psf)	Lateral Subgrade Modulus (pci)	Strain, ε_{50} (in/in)
0 - 3'	Topsoil and Disturbed Materials	-	-	-	-	-	-	-
3 – 20	Silty Sands and Sandy Silts	500	1,000	175	20	-	90	-
20 – 50'	Siltstone	1,000	3,000	225	20	500	1,000	0.004

* Pier inspection is recommended to adjust pier length if variable soil/rock conditions are encountered.
** A total unit weight of 115 pcf can be assumed for sands.
*** Increases linearly with depth. Skin friction values for sands assume that uplift controls design.

The above indicated cohesion, friction angle, lateral subgrade modulus and strain values have no factors of safety, and the allowable skin friction and the passive resistances have factors of safety of about 2. The cohesion, internal friction angle, lateral subgrade modulus and strain values given in the above table are based on our boring, published values and our past experience with similar soil types. These values should, therefore, be considered approximate. The allowable end bearing pressure provided in the table has an approximate factor of safety of at least 3. If the drilled pier is designed using the above parameters, settlements are anticipated to be on the order of about ½ inch.

The upper 3 feet of soils materials should be ignored due to the potential affects of construction activities. To avoid a reduction in lateral and uplift resistance caused by variable subsurface conditions, we recommend that drawings instruct the contractor to notify the engineer if subsurface conditions significantly different than encountered in our boring are disclosed during drilled pier installation. Under these circumstances, it may be necessary to adjust the overall length of the pier. To facilitate these adjustments and verify that the pier is embedded in suitable materials, it is recommended that a Terracon representative observe the drilled pier excavation.

A drilled pier foundation should be designed with a minimum shaft diameter of 30 inches to facilitate clean out and possible dewatering of the pier excavation. Temporary casing may be required during the pier excavation in order to control possible groundwater seepage and support the sides of the excavation in weak soil zones. Care should be taken so that the sides and bottom of the excavations are not disturbed during construction. The bottom of the shaft should be free of loose soil or debris prior to reinforcing steel and concrete placement.

A concrete slump of at least 6 inches is recommended to facilitate temporary casing removal. It should be possible to remove the casing from a pier excavation during concrete placement provided that the concrete inside the casing is maintained at a sufficient level to resist any earth and hydrostatic pressures outside the casing during the entire casing removal procedure.

Construction Recommendations

The contractor should be prepared to stabilize the sides of the holes if loose sands and/or perched groundwater are encountered. If required, the holes should either be cased or have the sides stabilized using slurry methods. Bentonite slurry is not acceptable for drilling mud. The bottoms of the holes should be clear of loose soil, and should be observed by the geotechnical engineer or his representative, if the hole is cased.

The concrete for the piers should be placed using a down-hole tremie, or similar provision, such that the falling concrete does not strike the sides of the shaft. Concrete should be placed in newly excavated piers as soon as possible. Under no conditions should the pier excavation be allowed to remain open for more than 12 hours. The concrete must be able to propagate between reinforcement bars to come into contact with the soil.

Quality of construction is of primary importance in the construction of CIDH piers. The timely placing of concrete and the installation within specified tolerances must be accomplished. The pier must remain within two inches of the design plan location and remain within two percent of verticality, as measured from the as-constructed position.

Full-time observation by the geotechnical engineer or his representative is recommended. The observation work should provide full documentation of the pier construction.

Driven Pile Foundation Systems

Due to the proximity of the nearby structures, and the potential for unacceptable vibration and settlement of the existing structures, driven piles most likely are not a foundation alternative for the proposed structure. However, if requested we can perform the analysis for pile capacities for driven piles under a separate scope.

Floor Slab Subgrade

It is our understanding that the proposed structure may sit on two levels of a parking structure, and therefore a slab-on-grade for the building is not proposed at this time. However, we are providing building slab on grade recommendations in case the proposed design changes and required these recommendations. Recommendations for the proposed parking garage slab are discussed in the “**Pavement**” section of this report.

Generally, a building such as proposed for this site is designed for post-construction vertical floor slab movements of less than ½ inch. The near surface soils encountered in the borings were clayey silts, silty sands and low to moderately plastic clays. Based on laboratory testing, correlations with Atterberg Limits testing and soil classifications these soils are expected to exhibit “moderate” expansion potential (Table 18-1-B, 2001 CBC) with variations in the subgrade moisture content. Based on the measured in-situ moisture contents and dry densities, the near surface soils are considered unsuitable for providing direct support for floor slabs in their current condition (without additional site preparation/recompaction)

After stripping the site, the building area should be overexcavated to a minimum depth of 5 feet below the bottom of the proposed subgrade.

We recommend the minimum thickness of the slab be 6–inches. The actual required slab thickness and reinforcement should be determined by the project structural engineer.

Care should be taken to maintain the minimum recommended moisture content in the subgrade until floor slabs are constructed. Positive drainage should also be developed away from the building to prevent water from ponding along the perimeter and affecting future floor slab performance. We recommend a positive cutoff in utility trenches at the building lines to reduce the potential for water migrating through the utility trench backfill to areas under the building.

The use of a vapor retarder should be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 for procedures and cautions regarding the use and placement of a vapor retarder.

Retaining Walls

Lateral Earth Pressures

For soils above any free water surface, recommended equivalent fluid pressures for unrestrained foundation elements are:

Active:	
Cohesive soil backfill (on-site clay or silt)	55 psf/ft
Compacted granular backfill	40 psf/ft
Passive:	
Cohesive soil backfill (on-site clay or silt)	225 psf/ft
Bedrock (below 20 feet bgs)	450 psf/ft
Coefficient of base friction	0.35*

*The coefficient of base friction should be reduced to 0.30 when used in conjunction with passive pressure.

Where the design includes restrained elements, the following equivalent fluid pressures are recommended:

At rest:

Cohesive soil backfill (on-site clay or silt)	65 psf/ft
Compacted granular backfill	55 psf/ft

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if submerged conditions are to be included in the design.

Fill against grade beams and retaining walls should be compacted to densities specified in Earthwork. Medium to high plasticity clay soils or claystone shale should not be used as backfill against retaining walls. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors. Overcompaction may cause excessive lateral earth pressures which could result in wall movement.

Retaining Wall Drainage

To reduce hydrostatic loading on retaining walls, a subsurface drain system should be placed behind the wall. The drain system should consist of free-draining granular soils containing less than five percent fines (by weight) passing a No. 200 sieve placed adjacent to the wall. The free-draining granular material should be graded to prevent the intrusion of fines or encapsulated in a suitable filter fabric. A drainage system consisting of either weep holes or perforated drain lines (placed near the base of the wall) should be used to intercept and discharge water which would tend to saturate the backfill. Where used, drain lines should be embedded in a uniformly graded filter material and provided with adequate clean-outs for periodic maintenance. An impervious soil should be used in the upper layer of backfill to reduce the potential for water infiltration. As an alternative, a prefabricated drainage structure, such as geocomposite, may be used as a substitute for the granular backfill adjacent to the wall.

Subterranean Garage Construction

Groundwater was not encountered on the site to the maximum depth of exploration, 56 feet bgs. However, perched groundwater may occur at times since the contact between bedrock and the subsurface soils are relatively impermeable and tend to trap water. Completion of site development, including installation of landscaping and irrigation systems, will likely lead to perched groundwater development.

To reduce the potential for perched groundwater to impact foundation bearing soils and enter the subterranean portions of the structure, installation of a perimeter drainage system is recommended. The drainage system should be constructed around the exterior perimeter of the subterranean portions' foundation, and sloped at a minimum 1/8 inch per foot to a suitable outlet, such as a sump and pump system.

The drainage system should consist of a properly sized perforated pipe, embedded in free-draining gravel, placed in a trench at least 12-inches in width. Gravel should extend a minimum of 3-inches beneath the bottom of the pipe, and at least 2 feet above the bottom of the foundation wall. The system should be underlain with a polyethylene moisture barrier, sealed to the foundation walls, and extending at least to the edge of the backfill zone. The gravel should be covered with drainage fabric prior to placement of foundation backfill.

For shoring recommendations, see the "**Excavation and Trench Construction**" Section in this report.

Pavements

The near surface soils at the boring locations generally consisted of low to moderately plastic sandy clays, low to moderately plastic clayey silts with sand, and silty sand. In their existing condition these soils are not expected to provide adequate long-term support for the proposed pavements. Recommendations regarding subgrade preparation for at grade pavements are provided in the following paragraphs.

Site preparation for the proposed pavement areas should include removing any vegetation, topsoil, existing pavements, existing foundations, existing floor slabs and any other unsuitable materials encountered. Loose materials in depressions or excavations should also be removed. The depressions or excavations should be backfilled as outlined in the **"Earthwork Considerations"** section.

After site stripping and completing any required cuts, we recommend the exposed subgrade be overexcavated to a depth of 12-inches below the proposed pavement subgrade. A representative of the geotechnical engineer should observe the overexcavation bottom.

We recommend the top 8 inches of the overexcavation bottom be scarified and be compacted to at least 90 percent of the material's maximum dry density in accordance with ASTM D 1557 (current edition).

If fill is required to develop final grade lines, it should consist of approved materials which are free of organic matter and debris. These fill materials should conform to the plasticity specifications for low volume change soil, outlined in the **"Earthwork Considerations"** section of this report.

Based on our previous experience with soils similar to those encountered on-site, our recommendations for preparing the pavement subgrades, a Resistance Value (R-Value) of 20 may be used in determining the asphaltic concrete pavement sections. A modulus of subgrade reaction value (k) of 100 pounds per cubic inch (pci) may be used in determining the Portland cement concrete pavement sections. Assuming the pavement subgrades will be prepared as recommended within this report, but without specific traffic loading information, the following pavement sections should be considered minimums for this project. If traffic information becomes available, we should be contacted to reevaluate our pavement recommendations.

MINIMUM PAVEMENT RECOMMENDATIONS *		
	Light (Automobile) Parking Assumed Traffic Index (T.I.) = 4.0	**Heavy Parking and Drive Areas Assumed T.I. = 6.0**
Section I Portland Cement Concrete (3,500 psi, Air Entrained)	3.0" Concrete 3.0" Class II Aggregate Base	4.0" Concrete 7.0" Class II Aggregate Base
Section II Asphaltic Concrete	3.0" Asphaltic Concrete over 4.0" Class II Aggregate Base	3.5" Asphaltic Concrete over 9.0" Class II Aggregate Base
* All materials should meet the CALTRANS Standard Specifications for Highway Construction.		

Minimizing subgrade saturation is an important factor in maintaining subgrade strength. Water allowed to pond on or adjacent to pavements could saturate the subgrade and cause premature pavement deterioration. The pavement should be sloped to provide rapid surface drainage, and positive surface drainage should be maintained away from the edge of the paved areas. Design alternatives which could reduce the risk of subgrade saturation and improve long-term pavement performance include crowning the pavement subgrades to drain toward the edges, rather than to the center of the pavement areas; and installing surface drains next to any areas where surface water could pond. Properly designed and constructed subsurface drainage will reduce the time subgrade soils are saturated and can also improve subgrade strength and performance. In areas where there will be irrigation adjacent to pavements, we recommend the owner consider installing perimeter drains for the pavements.

Periodic maintenance extends the service life of the pavement and should include crack sealing, surface sealing and patching of any deteriorated areas. Also, thicker pavement sections could be used to reduce the required maintenance and extend the service life of the pavement. The owner/user should consider placing signs at entryways to deter heavy duty trucks from light duty pavement areas, or by extending concrete curbs to a depth of 12-inches below the pavement subgrade.

If asphaltic concrete is used for this project, we recommend that reinforced concrete pads be provided in front of and beneath trash receptacles. The trash collection trucks should be parked on the rigid concrete pavement when the trash receptacles are lifted. The concrete pads should be a minimum of 7 inches thick and properly reinforced. Thickened edges should be used along outside edges of concrete pavements. Edge thickness should be at least 2 inches thicker than concrete pavement thickness and taper to the actual concrete pavement thickness 36 inches inward from the edge. Integral curbs may be used in lieu of thickened edges.

Care should be taken to properly backfill utility cuts in pavement areas. Backfilling should be accomplished by compacting the backfill to meet the requirements for fill as outlined in the **"Earthwork Considerations"** section of this report.

Earthwork Considerations

General

Based on our findings, we expect remedial removals on the order of 4 feet below the proposed footings within the building pad, and 5 feet below the proposed pavement subgrade to be necessary. It is our opinion that the on-site soils that are excavated in the upper 10 feet of the site are suitable for reuse as fill material.

After completing the overexcavation and any corrective work, we recommend all exposed subgrade soils be scarified and compacted to a depth of 8 inches. The moisture content of the scarified soil should be adjusted to at least 2 to 4 percentage points above its optimum value, as determined by ASTM D1557 (current edition), prior to being compacted to at least 90 percent of its maximum dry density.

All fill required to develop the design subgrade elevation should consist of an approved granular soil that is free of organic matter and debris, placed in lifts not exceeding 9 inches in loose thickness, and compacted to at least 90 percent of the maximum dry density and at least 2 to 4 percentage points above its optimum value, as determined by test method ASTM D1557 (current edition). The zone of fill compacted to meet this criteria should extend beyond the building footprint at least 1 foot laterally for each foot of fill required to develop design grade.

Excavation and Trench Construction

Excavations into the on-site soils will encounter caving soils and possibly groundwater, depending upon the final depth of excavation. The individual contractor(s) should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

For this site, the subsurface soils consisting of the granular materials can be considered Type C soils when applying the OSHA regulations. OSHA allows a maximum slope inclination of 1-1/2:1 (horizontal to vertical) for Type C soils in excavations of 20 feet or less. Flatter slopes may be required if caving soils or seepage is encountered in any excavation. If any excavation, including a utility trench, is extended to a depth of more than 20 feet, it will be necessary to have the side slopes designed by a professional engineer.

The soils to be penetrated by the proposed excavations may vary significantly across the site. The preliminary soil classifications are based solely on the materials encountered in widely spaced exploratory test borings. The contractor should verify that similar conditions exist throughout the proposed area of excavation. If different subsurface conditions are encountered at the time of construction, the actual conditions should be evaluated to determine any excavation modifications necessary to maintain safe conditions.

As a safety measure, it is recommended that all vehicles and soil piles be kept to a minimum lateral distance from the crest of the slope equal to no less than the slope height. The exposed slope face should be protected against the elements.

The contractor should retain a geotechnical engineer to monitor the soils exposed in all excavations and provide engineering services for slopes. This will provide an opportunity to monitor the soil types encountered and to modify the excavation slopes as necessary. It also offers an opportunity to verify the stability of the excavation slopes during construction.

Exterior Slab Design and Construction

Compacted subgrade or existing clay soils will expand with increasing moisture content; therefore, exterior concrete grade slabs may heave, resulting in cracking or vertical offsets. The potential for damage would be greatest where exterior slabs are constructed adjacent to the building or other structural elements. To reduce the potential for damage caused by movement, we recommend:

- exterior slabs be supported on fill with no, or very low expansion potential
- strict moisture-density control during placement of subgrade fills
- placement of effective control joints on relatively close centers and isolation joints between slabs and other structural elements
- provision for adequate drainage in areas adjoining the slabs
- use of designs which allow vertical movement between the exterior slabs and adjoining structural elements

In those locations where movement of exterior slabs cannot be tolerated or must be reduced, consideration should be given to:

- Constructing slabs with a stem or key-edge, a minimum of 6 inches in width and at least 12 inches below grade;
- supporting keys or stems on drilled piers; or
- providing structural exterior slabs supported on foundations similar to the building.

Shoring

Parking Garage Excavations

Shoring of the parking garage excavation may be required where space limitations, or other restrictions, will not allow for a sloped embankment. Typically for the soil types encountered at this site, and similar construction practices, conventional shoring consisting of a soldier pile and wooden lagging system and/or sheet pile system may be used. Tie-backs may be required to provide lateral support of the shoring system.

If soldier piles are to be used, the wide-flanged sections may be installed in pre-drilled holes, if possible, and surrounded by concrete. If caving of the drilled holes occurs, drilling slurry may be required.

Also, a slurry wall construction may also be an alternative to using the soldier pile and tie-back option. A contractor specializing in this type of construction should be contacted to provide the design and cost for such a system.

Lateral Earth Pressures

Cantilevered shoring systems should be designed to resist an active earth pressure of 55 pcf (equivalent fluid unit weight). If the excavation is to be braced or if tie-back anchors are to be used, the shoring system should be designed to resist a uniform soil pressure of 25xH (H = the wall height in feet, resulting horizontal earth pressure in psf).

Any potential surcharge loads placed adjacent to the shoring (i.e. existing structures, traffic, soil piles, etc.) should be included in the design of the shoring system. It may be assumed that 30-percent of any surcharge load may be assumed to act as a uniform horizontal pressure against the shoring. Special cases, such as combining shoring and sloping systems, need to be considered by the project Geotechnical engineer on a case-by-case basis.

The surcharge and active earth pressures provided above do not include hydrostatic pressures. We did not encounter groundwater in the upper 56 feet of our borings, and is any perched water is encountered we assume that adequate dewatering or drainage will be provided.

Principals of force and moment equilibrium should be used in calculating the required embedment depths of soldier and sheet pile walls. These systems should be extended to a sufficient depth below the excavation bottom to provide the required lateral resistance, and we recommend that a factor of safety of 1.2 be applied to the stability analysis. An allowable passive pressure against the soldier pile walls of 225 pcf (equivalent fluid unit weight) may be used for this method in the upper 20 feet of the excavation, and 450 may be used below that depth.

Also, the appropriate “Designs Employing Lateral Bearing” presented in Section 1806.8 of the 2001 CBC may be used in determining the lateral capacity of the soldier pile walls extending below the excavation bottom. If this method is used, an allowable lateral soil bearing of 150 psf per foot of embedment may be used.

Tie-Back Anchors

Tie-back anchors may be required to provide additional lateral support if the required penetration depths make the use of cantilever piles impractical or uneconomical. The bond resistance (the grout anchor) is developed behind the horizontal plane that is a minimum of 15 feet below the existing ground and the anchor inclination from the horizontal should be at least 26.5-degrees (2:1 [horizontal: vertical]).

The ultimate anchor capacity for pullout, P_u, in kips per square foot (ksf) may be determined using the following formula:

$$P_u = 5.9 \times d \times L \qquad [ksf]$$

d = Nominal diameter of auger hole [ft]
L = Bonded length of anchor [ft]

The allowable anchor capacity should incorporate a Factor of Safety (FOS) of 2 at a minimum. Additionally, the tie backs should be designed to accommodate 150 percent of the design load (to accommodate the proposed test loads discussed below) without exceeding 80 percent of the ultimate tensile strength of the steel elements.

The subject site soils shall be considered corrosive toward concrete and metals, and as such appropriate measures should be taken to protect the tendons, grout anchors and lock off bolts from corrosion, if the tiebacks are to be permanent. A corrosion specialist should review the final plans to evaluate the appropriateness of the proposed corrosion design.

All tied-back tendons shall be tested, after the grout anchors have been allowed to cure for at least 7-days. During testing, the movement of the tendons shall be measured and recorded at each load increment, to the nearest 0.001 inches, from a fixed reference point and the jack loads shall be monitored using a load cell. Each load increment will need to be reached within 30-seconds after the jack pump has been started. Once the final structural plans have been developed and reviewed by this office, a testing plan shall be developed.

Lagging

To support loose or soft soils, timber lagging may be used between the soldier piles. If the shoring is to become a permanent part of the construction, we recommend that treated lumber be used. The lagging should be designed considering the provided lateral pressures above. It is recommended, if possible, that the proposed structural walls be cast directly against the shoring, therefore eliminated that need to backfill. If this method is used, special provisions for wall drainage (i.e. prefabricated composite drains) may be required.

Underground Utility Systems

Underground piping within or near the proposed structure should be designed with flexible couplings, so minor deviations in alignment do not result in breakage or distress. Utility knockouts in foundation walls should be oversized to accommodate differential movements.

Geotechnical Observation and Testing during Grading

Geotechnical observation and testing should be conducted during the following stages of grading:

- Upon completion of clearing and grubbing;
- During Demolition of existing foundations, pavement and utilities;
- During excavation and overexcavation of the building and pavement subgrade;
- During all phases of grading, including, fill placement and recompaction;
- When any unusual conditions are encountered during grading

The exposed subgrade and each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the geotechnical engineer's representative prior to placement of additional lifts.

Surface Drainage

Positive drainage should be provided during construction and maintained throughout the life of the proposed project. Infiltration of water into utility or foundation excavations must be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

Downspouts, roof drains or scuppers should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems should not be installed within 5 feet of foundation walls. Landscaped irrigation adjacent to the foundation system should be minimized or eliminated.

Corrosion Considerations

Three selected samples of the near surface soils encountered in our borings was tested for soluble sulfate concentrations. The test results indicated a sulfate concentration of 0.0012 to 0.0038 percentage by weight, which according to Table 19-A-4 of the 2001 CBC, indicates that the on-site soils of similar concentration should be "negligibly" corrosive towards concrete elements in contact with the ground. We recommend that the concrete mix design take into account using the cement type and parameters presented in Table 19-A-4 of the CBC for this level.

Minimum resistivity testing and pH of the near surface soils were performed on three selected samples. Based on the Caltrans criteria, these soils exhibit a "corrosive" to "severe" potential for corrosion to ferrous metals in contact with the soils. These corrosion test results are included in Appendix B, and should be reviewed by a qualified corrosion engineer to provide recommendations for protecting ferrous metals in contact with the soil.

California Building Code Seismic Coefficients

For seismic analysis of the proposed improvements in accordance with the seismic provisions of the CBC 2001, we recommend the following:

Item	Value	Location
Seismic Zone Factor Z	0.4	Table 16-I [R1]
Distance from Seismic Source	2 kilometers	Page M-32 [R2]
Controlling Fault Name	Hollywood	Page M-32 [R2]
Soil Profile Type	S_D	Table 16-J [R1]
Seismic Source Type	B	Table 16-U [R1]
Near Source factor N_a	1.2	Table 16-S [R1]
Near Source Factor N_v	1.4	Table 16-T [R1]
Seismic Coefficient C_a	0.44 x N_a	Table 16-Q [R1]
Seismic Coefficient C_v	0.64 x N_v	Table 16-R [R1]

R1 International Conference of Building Officials (ICBO), "California Building Code," 2001 Edition (CBC).
R2 ICBO, "*Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, to be used with the 1997 Uniform Building Code*," February 1998.

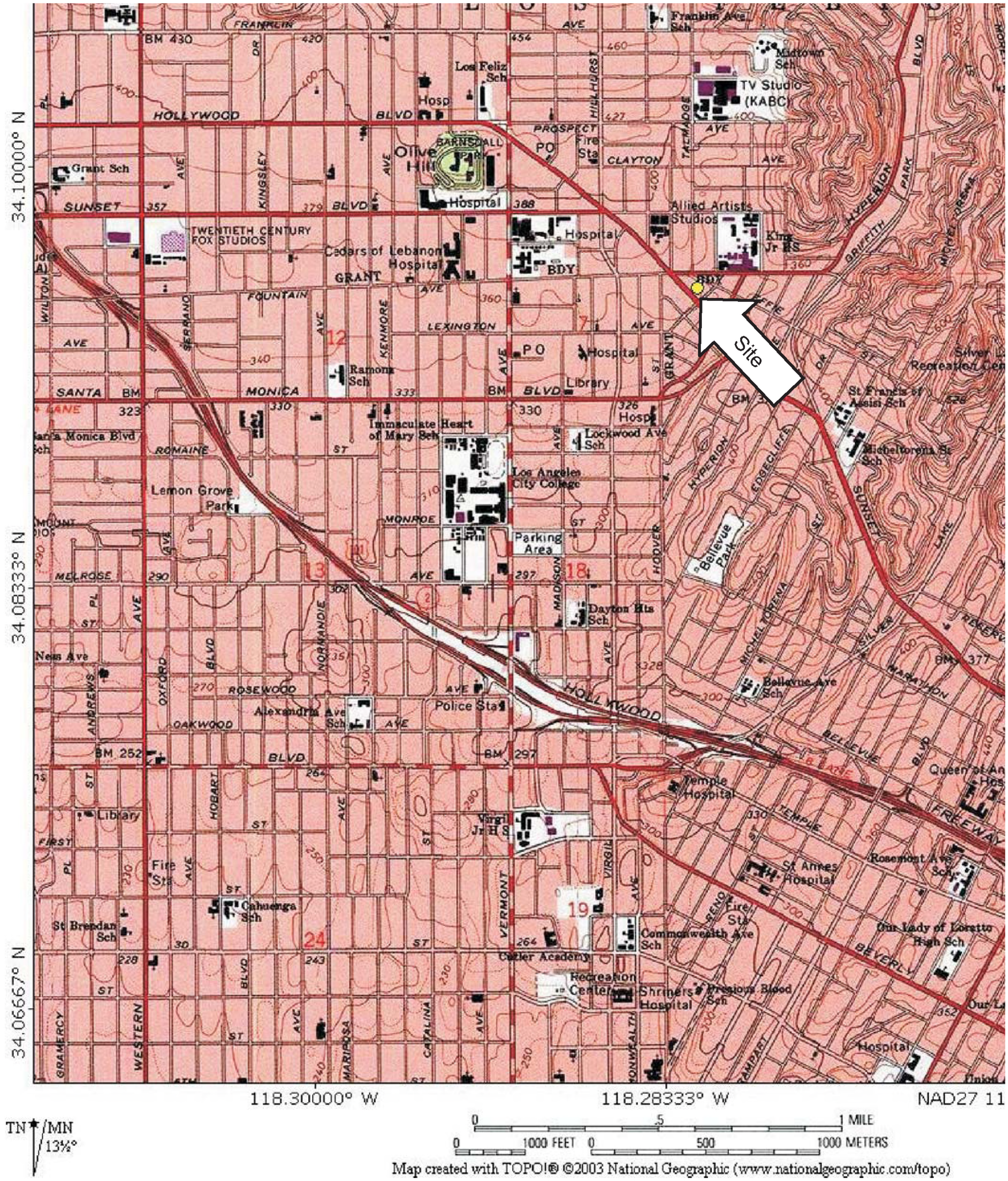
GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide testing and observation during excavation, grading, foundation and construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services of this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential of such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that any changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes, and either verifies or modifies the conclusions of this report in writing.



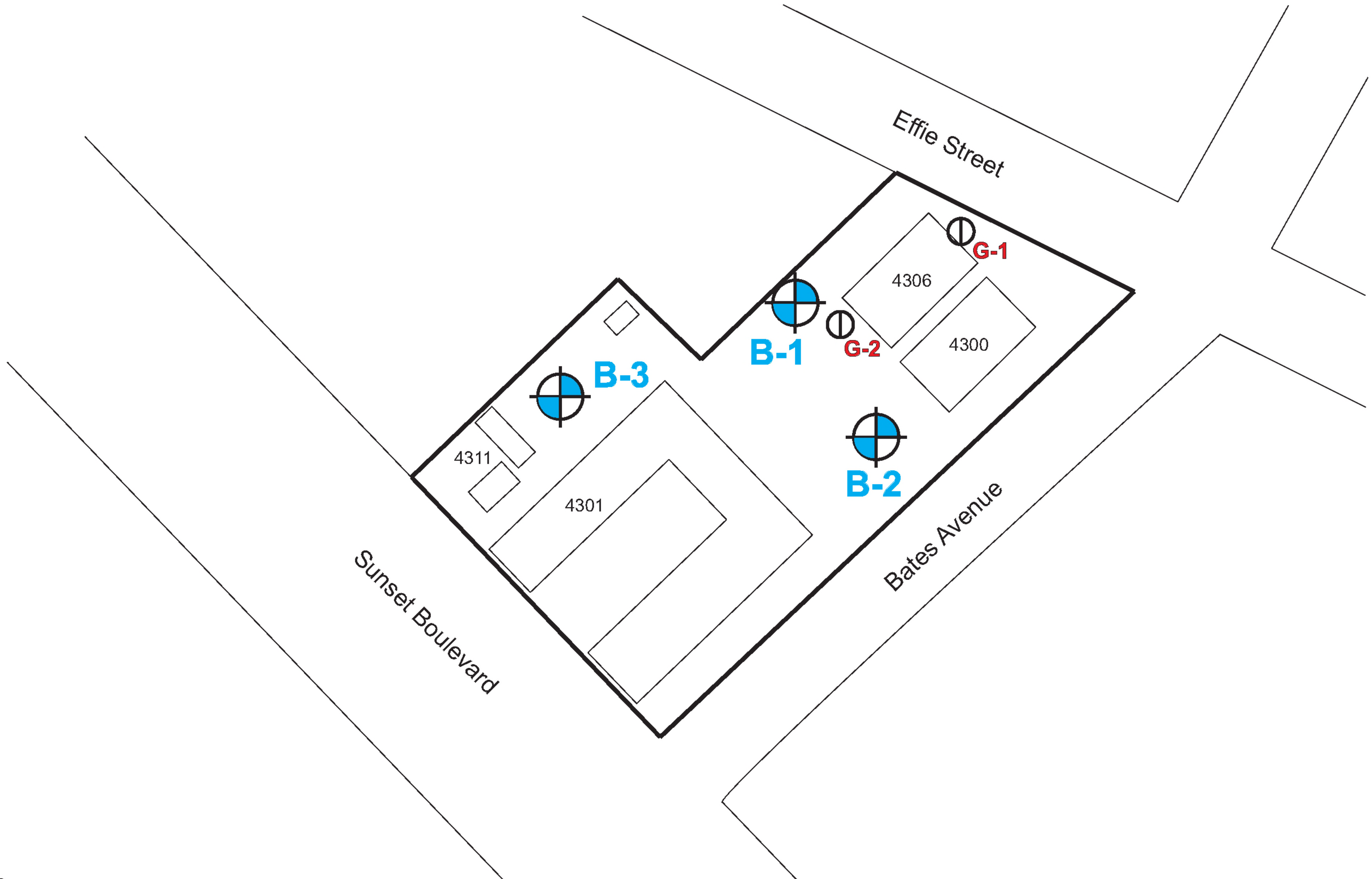
Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

Reference: USGS Hollywood, California 7.5-minute Quadrangle (Photorevised 1994)

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP
SILVERLAKE DEVELOPMENT
NC OF W SUNSET BLVD & BATES AVE
LOS ANGELES, CALIFORNIA
For F&S Silverlake, LLC

Project Mngr:	MWL	Terracon	Project No.	60075014
Designed By:	PK		Scale:	1" = 2000'
Checked By:	MWL	16662 Millikan Avenue	Date:	03-27-2007
Approved By:	MWL	Irvine, California 92606	Drawn By:	PK
File Name:		L(Layout1)	Plate No.	1



LEGEND:

B-3 Terracon Boring Location

G-1 Gorian Boring Location (performed May 23, 2005).

Reference: Carter-Burgess, "Floor Plan D-1, YUM! Brands KFC/LJS S.W.C. Euclid Ave. & Broadway Street, Anaheim, CA" dated July 12, 2004

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

N

BORING LOCATION DIAGRAM
Wilmington and Glenn
18420 Harmon
Carson, California
For VelociTel

Project Mngr: MWL	Terracon		Project No.	60065040
Designed By: PK			Scale:	Not to Scale
Checked By: MWL	16662 Millikan Avenue		Date:	06-20-2007
Approved By: MWL	Irvine, California 92606		Drawn By:	PK
File Name: \Plate_2.cdr	L(Layout1)		Plate No.	2

APPENDIX A

Field Investigation

LOG OF BORING NO. B-01

CLIENT	SITE
F & S Silverlake, LLC.	**4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California**
ELEVATION feet	PROJECT **Silverlake Development**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	Asphalt - 2 inches									
	FILL SANDY CLAY - dark brown, moist, fine to medium grained, hand auger down to 5 feet.	1	CL		B					
		2								
		3								
	NATIVE CLAYEY SILT - brown, moist, fine grained.	4								
	SILT - brown, moist, hard, very fine grained.	5	ML		R		70	15.9	115	
		6								
		7								
		8								
	- more sandy.	9								
		10	ML		R		50	14.3	111	
		11								
		12								
		13								
	- yellow-brown.	14								

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None	
WL		
BORING LOCATION	See Boring Location Plan	

Terracon

BORING STARTED	4-10-07
BORING COMPLETED	4-10-07
RIG CME 55	Logged by: WJO
JOB # 60075014	PLATE **A-1a**

LOG OF BORING NO. B-01

CLIENT	SITE
F & S Silverlake, LLC.	**4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California**
ELEVATION **feet**	PROJECT **Silverlake Development**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
		15–20	ML		R		56	26.1	94	
	PUENTE FORMATION SILTSTONE - yellow-brown, very fine grained, completely weathered, friable.	20			R		47	27.5	96	
	- weak.	25			R		57	27.5	97	
	Continued Next Page									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			BORING STARTED	4-10-07
WL	None		BORING COMPLETED	4-10-07
WL			RIG CME 55	Logged by: WJO
BORING LOCATION	See Boring Location Plan		JOB # 60075014	PLATE A-1b

Terracon

BOREHOLE 99 60075014 BORING LOGS.GPJ TERRACON.GDT 4/25/07

LOG OF BORING NO. B-01

CLIENT	SITE
F & S Silverlake, LLC.	4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California
ELEVATION feet	PROJECT Silverlake Development

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
		30			SPT		51			
	- olive-brown, weathered, moderately strong.	35			R		88	28.0	97	
		40			SPT		33			
	SANDY CLAYSTONE - dark brown, moist, medium grained.	43								
	SILTSTONE - olive, fine grained, severely weathered, weak to friable.	44								

Depth scale: 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			BORING STARTED	4-10-07
WL	None		BORING COMPLETED	4-10-07
WL			RIG CME 55	Logged by: WJO
BORING LOCATION	See Boring Location Plan		JOB # 60075014	PLATE A-1c

Terracon

LOG OF BORING NO. B-01

CLIENT F & S Silverlake, LLC.	SITE 4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California
ELEVATION feet	PROJECT Silverlake Development

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
		45–46.5			R		81/4"			
		50–51.5			SPT		38			
		54								
	Refusal due to bedrock at 54 feet. No groundwater encountered. Backfilled with soil cuttings and topped with asphalt concrete patch.									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None	
WL		
BORING LOCATION	See Boring Location Plan	

Terracon

BORING STARTED	4-10-07
BORING COMPLETED	4-10-07
RIG CME 55	Logged by: WJO
JOB # 60075014	PLATE A-1d

LOG OF BORING NO. B-02

CLIENT	SITE
F & S Silverlake, LLC.	**4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California**
ELEVATION feet	PROJECT **Silverlake Development**

DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
FILL CLAYEY SILT with SAND - brown, moist, fine to medium grained.	0	CL ML	B					
NATIVE SILTY SAND - olive-brown, moist to damp, dense, medium grained with some fine grained.	5	SM	R		21	9.9	114	
- yellow-brown, moist, dense, medium to coarse grained with some fine grained.	10	SM	R		33	11.6	108	
- with trace fine gravel.								

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None	
WL		
BORING LOCATION	See Boring Location Plan	

Terracon

BORING STARTED	4-10-07
BORING COMPLETED	4-10-07
RIG CME 55	Logged by: WJO
JOB # 60075014	PLATE A-2a

LOG OF BORING NO. B-02

CLIENT F & S Silverlake, LLC.	SITE 4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California
ELEVATION feet	PROJECT Silverlake Development

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	- red-brown, medium dense.	15–16.5	SM		R		29	19.0	106	
	- dark brown, very dense, fine to medium grained, medium plasticity.	20–21.5	SM		R		70	15.0	118	
	PUENTE FORMATION SILTSTONE - yellow-brown, fine to medium grained, completely weathered, weak to friable, medium plasticity.	25–26.5			R		50	23.0	101	

Depth scale: 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			BORING STARTED	4-10-07
WL	None		BORING COMPLETED	4-10-07
WL			RIG CME 55	Logged by: WJO
BORING LOCATION See Boring Location Plan			JOB # 60075014	PLATE A-2b

Terracon

LOG OF BORING NO. B-02

CLIENT	SITE
F & S Silverlake, LLC.	**4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California**
ELEVATION **feet**	PROJECT **Silverlake Development**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	- very fine grained, weak.	30			SPT		30			
	- yellow-brown mixed with gray, moderately strong.	35			R		57	30.6	94	
	- weathered.	40			SPT		47			

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None	
WL		
BORING LOCATION	See Boring Location Plan	

Terracon

BORING STARTED	4-10-07
BORING COMPLETED	4-10-07
RIG CME 55	Logged by: WJO
JOB # 60075014	PLATE A-2c

LOG OF BORING NO. B-02

CLIENT	SITE
F & S Silverlake, LLC.	**4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California**
ELEVATION **feet**	PROJECT **Silverlake Development**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf	
	- olive-brown, weathered, moderately strong.	46			R		90/4"				
	Refusal due to bedrock at 46-1/2 feet. No groundwater encountered. Backfilled with soil cuttings.										

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None	
WL		
BORING LOCATION	See Boring Location Plan	

Terracon

BORING STARTED	4-10-07
BORING COMPLETED	4-10-07
RIG CME 55	Logged by: WJO
JOB # 60075014	PLATE A-2d

LOG OF BORING NO. B-03

CLIENT F & S Silverlake, LLC.	SITE 4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California
ELEVATION feet	PROJECT Silverlake Development

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	Concrete - 6 inches									
	FILL SILTY SAND - yellow-brown, moist, fine to medium grained.		SM		B					
	NATIVE SILTY SAND - brown, medium to coarse grained.	3								
	- brown, moist, very dense, medium to coarse grained with some fine grained.	5	SM		R		67	12.5	121	
	SANDY CLAY - dark brown, moist, medium grained, low to medium plasticity.	8								
		10	CL		R		31	21.0	107	
	SILTY SAND - brown, moist, medium coarse grained.	13.5								

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	∇ None	▼
WL	▼	▼
BORING LOCATION	See Boring Location Plan	

Terracon

BORING STARTED	4-11-07
BORING COMPLETED	4-11-07
RIG CME 55	Logged by: WJO
JOB # 60075014	PLATE A-3a

LOG OF BORING NO. B-03

CLIENT: **F & S Silverlake, LLC.**

SITE: **4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California**

ELEVATION: **feet**

PROJECT: **Silverlake Development**

DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
LEAN CLAY - dark brown, moist, stiff, fine grained, medium plasticity.	16, 17, 18	CL	R		29	22.9	104	
SILT - brown, damp to moist, fine grained.	19							
PUENTE FORMATION SANDY SILTSTONE - brown, moist, hard, fine to medium grained, medium plasticity, severely weathered, thinly bedded.	20, 21, 22, 23, 24		R		48	16.1	114	
- red-brown, stiff.	25, 26, 27, 28		R		29	21.9	105	
- brown, medium to coarse grained.	29							

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None	
WL		

BORING LOCATION: See Boring Location Plan

Terracon

BORING STARTED	4-11-07
BORING COMPLETED	4-11-07
RIG: CME 55	Logged by: WJO
JOB #: 60075014	PLATE: A-3b

LOG OF BORING NO. B-03

CLIENT	SITE
F & S Silverlake, LLC.	4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California
ELEVATION feet	PROJECT Silverlake Development

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	SILTY SANDSTONE - brown, moist, medium dense, fine to medium grained, with some coarse grained.	31			SPT		18			
		32								
	- light brown, damp to moist, very fine grained.	33								
		34								
	- olive-brown, very fine grianed, severely weathered, weak to friable.	35			R		45	30.0	91	
		36								
		37								
		38								
		39								
	- yellow-brown, friable.	40			SPT		32			
		41								
		42								
		43								
		44								

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	None		
WL			
BORING LOCATION	See Boring Location Plan		

Terracon

BORING STARTED	4-11-07
BORING COMPLETED	4-11-07
RIG CME 55	Logged by: WJO
JOB # 60075014	PLATE A-3c

LOG OF BORING NO. B-03

CLIENT	SITE
F & S Silverlake, LLC.	4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, California
ELEVATION feet	PROJECT Silverlake Development

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: GRAPHICS	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	- light olive-brown.	46			R		63			
		47								
		48								
		49								
	- yellow-brown.	50			SPT		27			
		51								
		52								
		53								
		54								
		55			R		58			
		56								
	Refusal at 56-1/2 feet. No groundwater encountered. Backfilled with soil cuttings and topped with concrete.									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			BORING STARTED	4-11-07
WL	None		BORING COMPLETED	4-11-07
WL			RIG CME 55	Logged by: WJO
BORING LOCATION	See Boring Location Plan		JOB # 60075014	PLATE A-3d

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GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon - 1-^{3}/8" I.D., 2" O.D., unless otherwise noted	HS:	Hollow Stem Auger
ST:	Thin-Walled Tube - 2" O.D., unless otherwise noted	PA:	Power Auger
RS:	Ring Sampler - 2.42" I.D., 3" O.D., unless otherwise noted	HA:	Hand Auger
DB:	Diamond Bit Coring - 4", N, B	RB:	Rock Bit
BS:	Bulk Sample or Auger Sample	WB:	Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the “Standard Penetration” or “N-value”. For 3” O.D. ring samplers (RS) the penetration value is reported as the number of blows required to advance the sampler 12 inches using a 140-pound hammer falling 30 inches, reported as “blows per foot,” and is not considered equivalent to the “Standard Penetration” or “N-value.”

WATER LEVEL MEASUREMENT SYMBOLS:

WL:	Water Level	WS:	While Sampling	N/E:	Not Encountered
WCI:	Wet Cave in	WD:	While Drilling		
DCI:	Dry Cave in	BCR:	Before Casing Removal		
AB:	After Boring	ACR:	After Casing Removal		

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

CONSISTENCY OF FINE-GRAINED SOILS

Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-value (SS) Blows/Ft.	Consistency
< 500	<2	Very Soft
500 – 1,000	2-3	Soft
1,001 – 2,000	4-6	Medium Stiff
2,001 – 4,000	7-12	Stiff
4,001 – 8,000	13-26	Very Stiff
8,000+	26+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Standard Penetration or N-value (SS) Blows/Ft.	Ring Sampler (RS) Blows/Ft.	Relative Density
0 – 3	0-6	Very Loose
4 – 9	7-18	Loose
10 – 29	19-58	Medium Dense
30 – 49	59-98	Dense
50+	99+	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 – 29
Modifier	> 30

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 – 12
Modifiers	> 12

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75 mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 Sieve (0.075mm)

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1-10
Medium	11-30
High	30+

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UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]

				Soil Classification	
				Group Symbol	**Group Name**[B]
Coarse Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$[E]	GW	Well-graded gravel[F]
			$Cu < 4$ and/or $1 > Cc > 3$[E]	GP	Poorly graded gravel[F]
		Gravels with Fines More than 12% fines[C]	Fines classify as ML or MH	GM	Silty gravel[F,G, H]
			Fines classify as CL or CH	GC	Clayey gravel[F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$[E]	SW	Well-graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3$[E]	SP	Poorly graded sand[I]
		Sands with Fines More than 12% fines[D]	Fines classify as ML or MH	SM	Silty sand[G,H,I]
			Fines Classify as CL or CH	SC	Clayey sand[G,H,I]
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	inorganic	PI > 7 and plots on or above "A" line[J]	CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]	ML	Silt[K,L,M]
		organic	Liquid limit – oven dried / Liquid limit – not dried < 0.75	OL	Organic clay[K,L,M,N]
					Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay[K,L,M]
			PI plots below "A" line	MH	
		organic	Liquid limit – oven dried / Liquid limit – not dried < 0.75	OH	Organic clay[K,L,M,P]
					Organic silt[K,L,M,Q]
Highly organic soils			Primarily organic matter, dark in color, and organic odor	PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

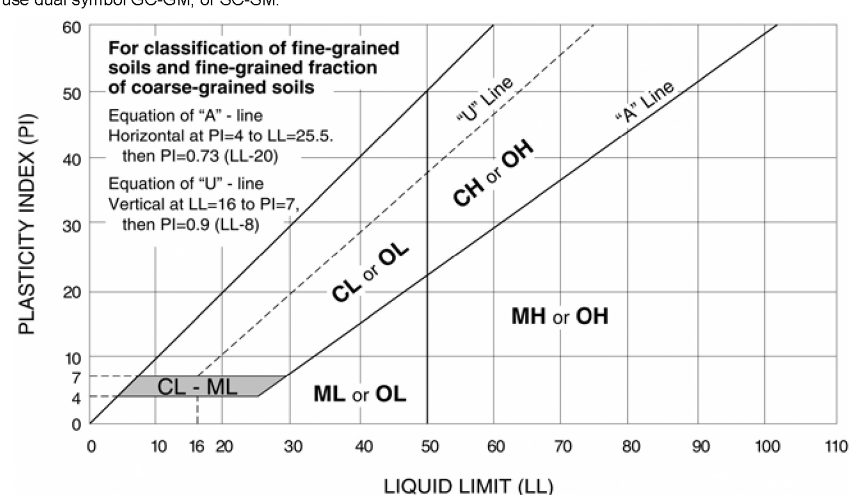
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



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Gorian Boring Logs

Project: Lopez, 4308 W. Effie Street, Los Angeles

Work Order: 2654-0-0-10
Report Log: 23862

SUBSURFACE LOG

Excavation Number: B-1

Page Number: 1

Date(s) Excavated 5/23/05	Logged By CHD	Excavation Location See Location Map	Approximate Surface Elevation 101.3'±
Excavation Dimension 8"	Equipment Contractor ProSonic	Equipment Type LAR 8" HSA	Hammer Data 140#, Auto

Elevation / Depth (ft.)	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	USCS	Description	Remarks
101.3 / 0				SC	ARTIFICIAL FILL: Dark brown clayey fine SAND (moist, medium dense).	
	15	12.1	113			
				SC	OLDER ALLUVIUM: Reddish brown clayey fine to coarse SAND (moist, medium dense to dense).	
	43	12.4	117			
	35					
		10.5	112	SC	Yellowish brown clayey fine to coarse SAND (moist, dense).	
	42	15.3	113			
					PUENTE FORMATION: Yellowish brown CLAYSTONE (moist) interbedded with clayey siltstone. Thinly bedded. Fissile.	
	32	26.3	100			
	70	28.0	96			
					Total Depth 21' No caving, No groundwater	

GORIAN & ASSOCIATES, INC.

Project: Lopez, 4308 W. Effie Street, Los Angeles

Work Order: 2654-0-0-10
Report Log:

SUBSURFACE LOG

Excavation Number: B-2

Page Number: 1

Date(s) Excavated 5/23/05	Logged By CHD	Excavation Location See Location Map	Approximate Surface Elevation 108.6'±
Excavation Dimension 8"	Equipment Contractor ProSonic	Equipment Type LAR 8" HSA	Hammer Data 140#, Auto

Elevation / Depth (ft.)	Bulk	Sample Type	Blow Counts	Moisture Content (% dry weight)	Dry Density (pcf)	USCS	Soil / Lithology	Description	Remarks
0						SC		ASPHALTIC CONCRETE (2") ARTIFICIAL FILL: Dark brown clayey fine to coarse SAND (moist, medium dense).	
			28	10.4	112	CL		OLDER ALLUVIUM: Brown sandy CLAY (moist, very stiff).	
105			60	20.9	101	SC		Yellowish brown silty CLAY (moist, hard).	
5			70	18.9	108				
100						SC		Yellowish brown clayey fine to coarse SAND (damp, very dense).	
10			70	8.5	121				
95 / 15			60	9.4	122				
90								PUENTE FORMATION: Pale yellow clayey SILTSTONE interbedded with claystone (moist). Thinly bedded. Fissile. Minor thin gray silty fine-grained sandstone interbeds.	
20			86	26.7	96				
								Total Depth 21' No caving, No groundwater	
85 / 25									
80 / 30									
75 / 35									
70									

APPENDIX B

Laboratory Testing

Table B-1
Percent Passing #200 Sieve

Boring No.	Depth [feet]	Percent Passing #200 Sieve [%]
B-02	5	31.2
B-03	20	46.9
B-03	25	55.7

Table B-2
Atterberg Limits

Boring No.	Depth [feet]	Liquid Limit [%]	Plastic Limit [%]	Plastic Index [%]
B-01	5	35	22	13
B-02	0 to 5	46	23	23
B-03	10	41	23	18

Table B-3
Expansion Potential

Boring No.	Depth [feet]	Expansion Index	Expansion Potential [N]
B-01	0 to 2	72	Medium

[N] As presented in Table 18-1-B of the 2001 CBC

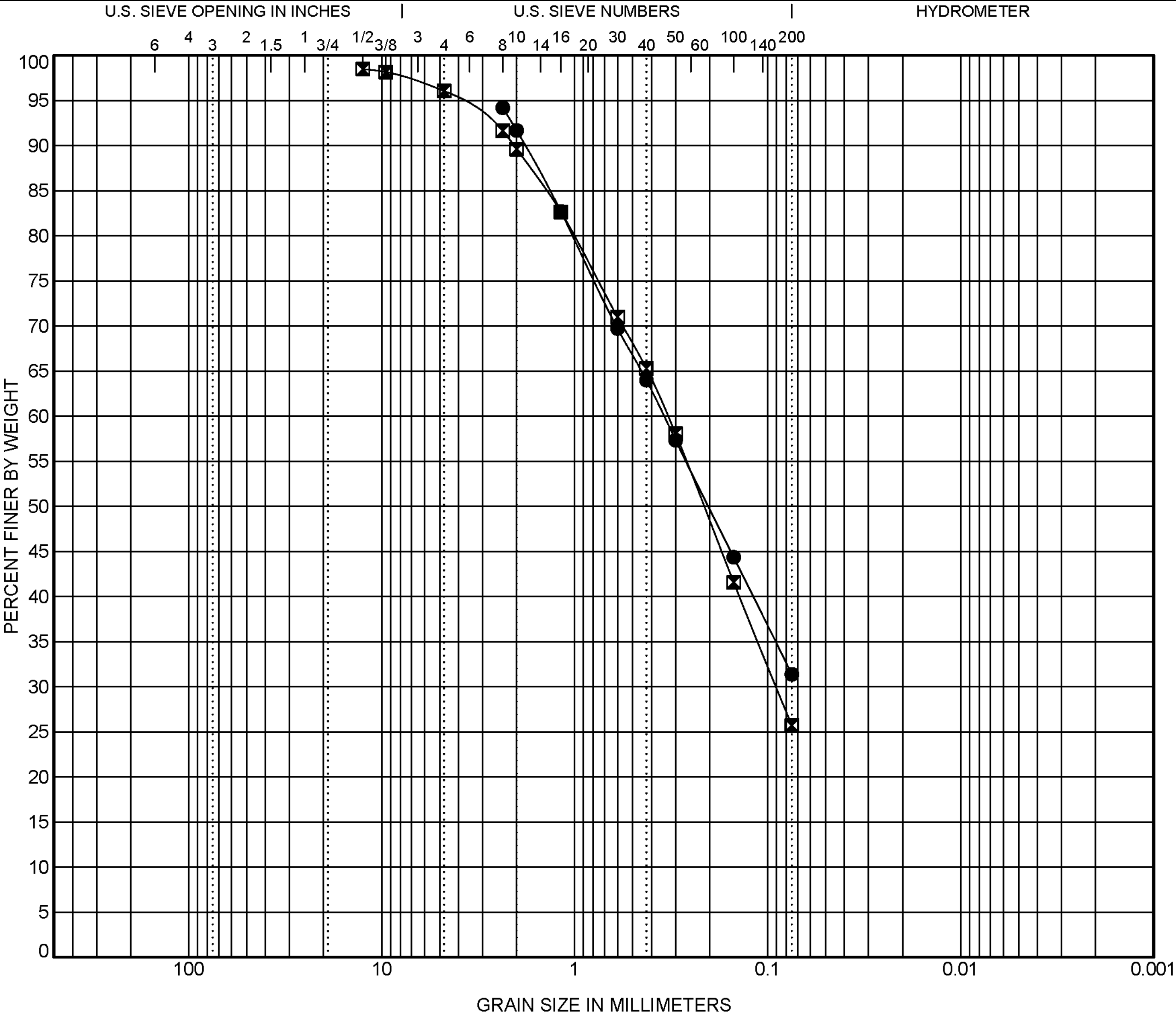
Table B-4
Minimum Resistivity, pH and Chloride

Boring No.	Depth [feet]	Resistivity [ohm-cm]	pH	Chloride
B-01	5	910	6.62	71
B-02	20	700	7.24	68
B-03	15	1,300	5.85	78

Table B-5
Sulfate Content

Boring No.	Depth [feet]	Sulfate Content [percentage by weight]	Sulfate Exposure [N]
B-01	0 to 5	0.0033	Negligible
B-02	20	0.0038	Negligible
B-03	14	0.0012	Negligible

[N] As presented in Table 19-A-4 of the 2001 CBC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

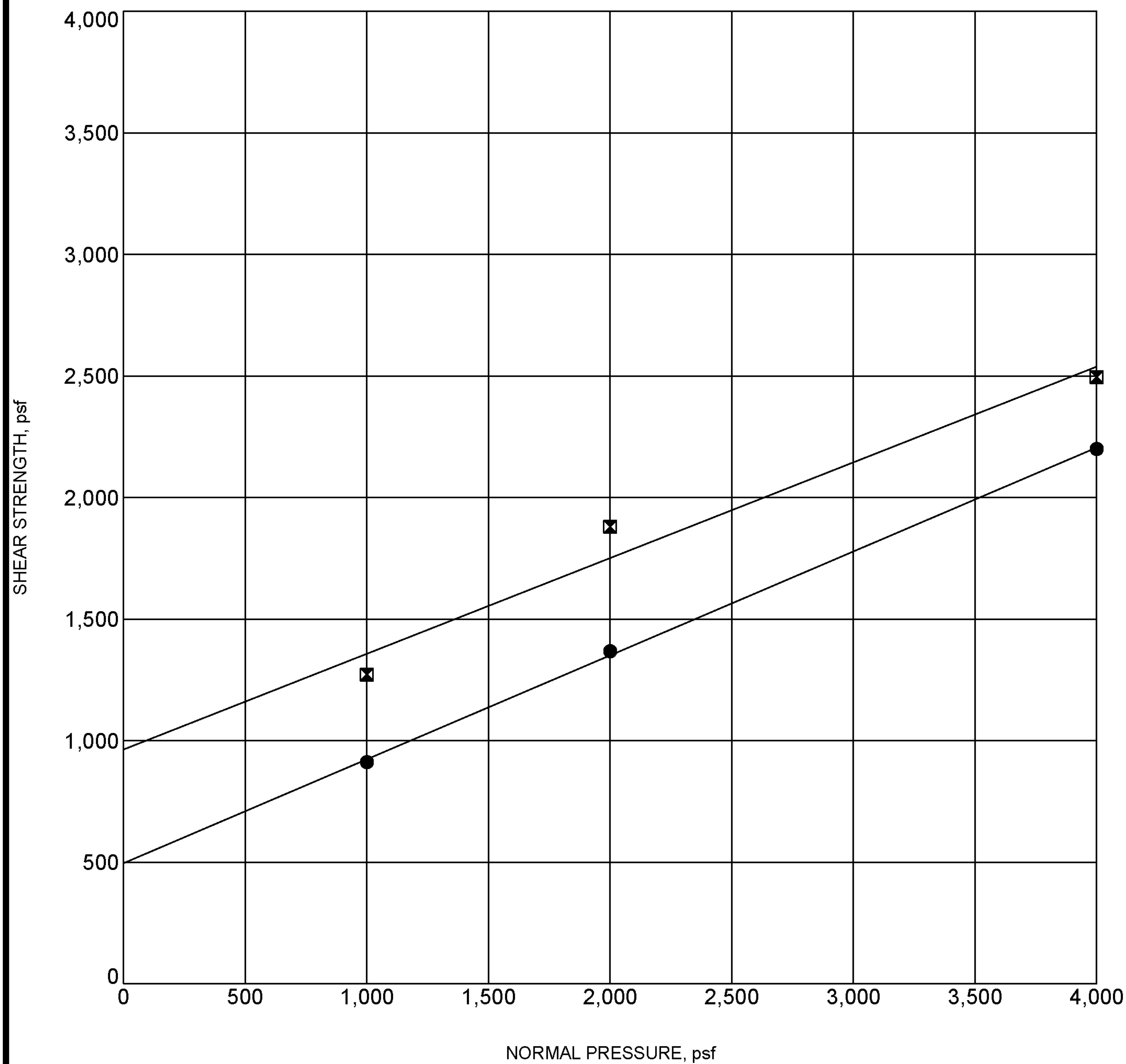
	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	B-02	10.0ft	**SILTY SAND (SM)**					
⊠	B-03	5.0ft	**SILTY SAND (SM)**					

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-02**	**10.0ft**	**2.36**	**0.345**			**0.0**	**62.8**	**31.4**	
⊠	**B-03**	**5.0ft**	**12.5**	**0.329**	**0.09**		**2.4**	**70.3**	**25.7**	

Terracon

GRAIN SIZE DISTRIBUTION

Project: Silverlake Development
Site: 4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, CA
Job #: 60075014
Date: 4-25-07



	Specimen Identification		Classification	γ_d, pcf	WC,%	c, psf	ϕ°
●	**B-01**	**5.0ft**	**CLAYEY SILT (ML)**	**115**	**16**	**496**	**23**
⊠	**B-03**	**35.0ft**	**SILTSTONE**	**91**	**30**	**964**	**21**

Terracon

DIRECT SHEAR TEST

Project: Silverlake Development

Site: 4301, 4311 Sunset Blvd. & 4300, 4306 Effie St. Los Angeles, CA

Job #: 60075014

Date: 4-25-07

Gorian Laboratory Testing Results

APPENDIX B
LABORATORY TESTING

General

Laboratory test results on selected relatively undisturbed and bulk samples are presented below. Tests were performed to evaluate the physical and engineering properties of the encountered soils, including field moisture and density, compaction characteristics, expansion/consolidation potential, and shear strength.

Field Density and Moisture Tests

In-situ dry density and moisture content were determined for relatively undisturbed samples obtained from the exploratory excavations. The test results and a detailed description of the soils encountered are shown on the attached logs.

Optimum Moisture-Maximum Density Curve

Maximum density/optimum moisture tests (compaction characteristics) were performed on selected bulk samples of the encountered materials in general accordance with ASTM test method D1557. The results are as follows:

Boring	Depth (feet)	Visual Soil Classification	Maximum Dry Density – pcf	Optimum Moisture Content - %
B-1	6	Older Alluvium, reddish brown clayey f/c sand	125.0	11.5
B-2	6	Older Alluvium, yellowish brown silty clay	118.0	14.5

Expansion Test

A selected sample of the encountered soils was tested for expansiveness. The sample was passed through the #10 sieve, wet to approximately 80% of the optimum moisture content, and compacted in a one-inch thick ring. An axial load of 144 psf was applied to the sample and water was added to saturate the sample. Twenty-four hours after adding water, the amount of expansion was evaluated in terms of the "expansion index". The results are as follows:

Boring	Depth (feet)	Visual Soil Classification	Expansion Index	Index Range
B-2	6	Older Alluvium, yellowish brown silty clay	122	91-130

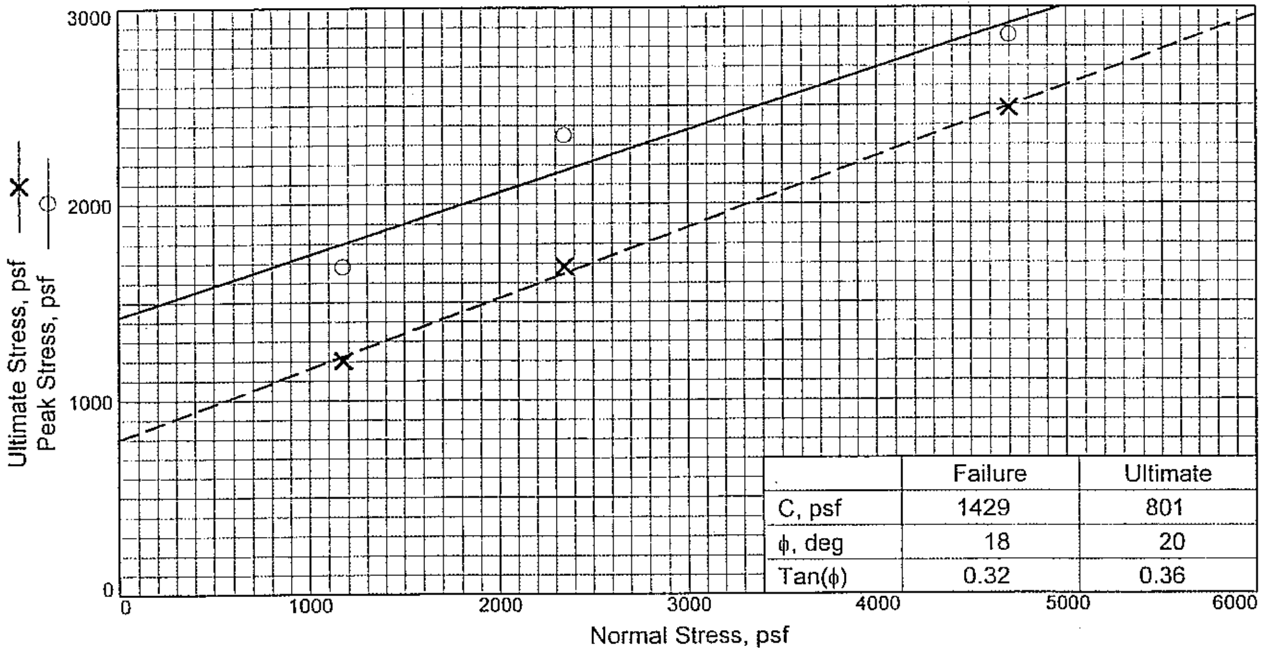
Direct Shear Test

Strain controlled direct shear testing was performed on a relatively undisturbed sample of the earth materials encountered during our exploratory program. The sample sets were saturated prior to shearing under axial loads ranging from 920 to 3,680 psf at a rate of 0.01 inches per minute. The ultimate shear strength results are attached as graphic summaries.

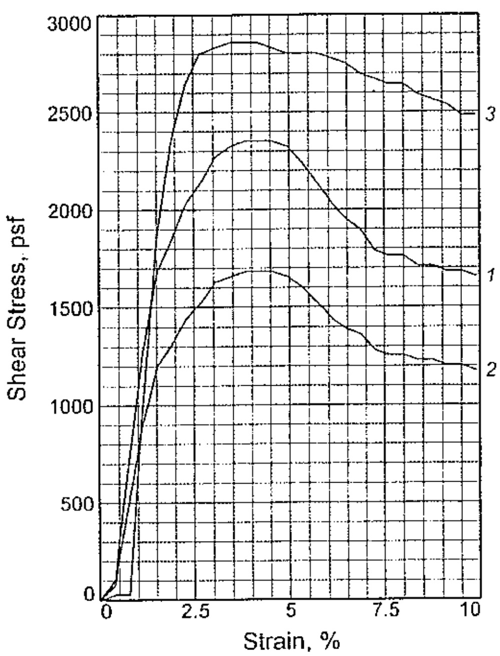
Load Consolidation Tests

Load consolidation tests were conducted on several relatively undisturbed soil samples. Test loads were added in increments to a maximum of 9,400 psf. Water was added at axial loads similar to overburden pressure to study the effect of moisture infiltration on potential consolidation behavior. The results are attached as graphic summaries.

GORIAN AND ASSOCIATES, INC.



	Failure	Ultimate
C, psf	1429	801
ϕ, deg	18	20
Tan(ϕ)	0.32	0.36



Sample No.		1	2	3
Initial	Water Content, %	20.9	20.9	20.9
	Dry Density, pcf	96.1	102.6	102.3
	Saturation, %	76.9	90.4	89.7
	Void Ratio	0.7207	0.6128	0.6174
	Diameter, in.	2.62	2.62	2.62
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	26.5	22.9	25.4
	Dry Density, pcf	96.1	102.6	102.3
	Saturation, %	97.4	99.1	108.9
	Void Ratio	0.7207	0.6128	0.6174
	Diameter, in.	2.62	2.62	2.62
	Height, in.	1.00	1.00	1.00
Normal Stress, psf		2350	1175	4700
Peak Stress, psf		2350	1683	2858
Strain, %		4.6	4.6	4.2
Ultimate Stress, psf		1683	1202	2484
Strain, %		9.5	9.5	9.5
Strain rate, in./min.		0.01	0.01	0.01

Sample Type: Undisturbed, Saturated

Description:

LL= **PL=** **PI=**

Assumed Specific Gravity= 2.65

Remarks:

Figure ________

Client: Lopez

Project: Lopez, 4308 W. Effie Street, Los Angeles

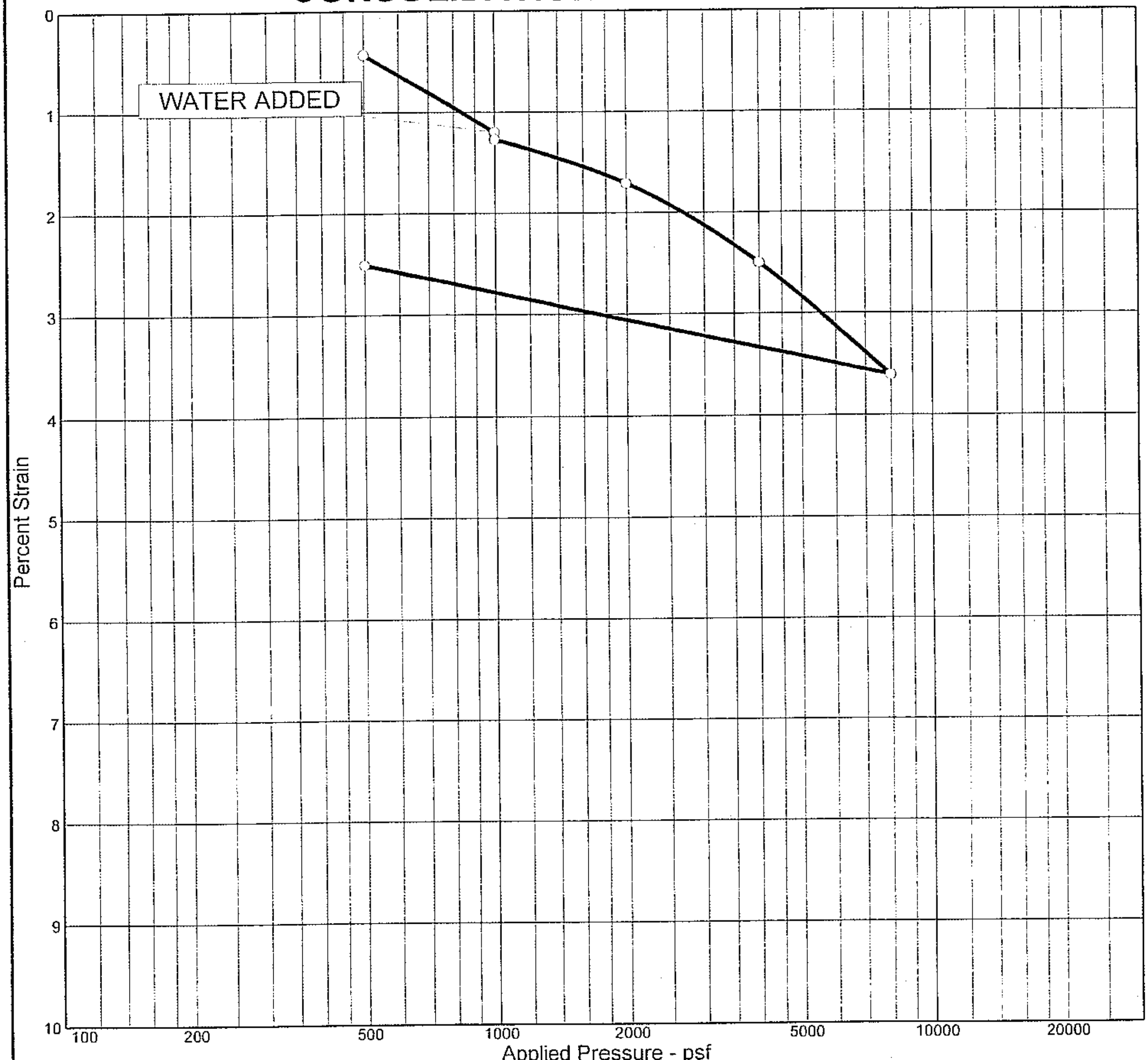
Source of Sample: B-2 **Depth:** 4

Proj. No.: 2654-0-0-10 **Date:**

DIRECT SHEAR TEST REPORT

GORIAN & ASSOCIATES, INC.

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Clpse. %	e_o
Sat.	Moist.											
							2713				0.1	

MATERIAL DESCRIPTION	USCS	AASHTO

Project No. 2654-0-0-10 **Client:** Lopez

Project: Lopez, 4308 W. Effie Street, Los Angeles

Source: B-1 **Elev./Depth:** 10

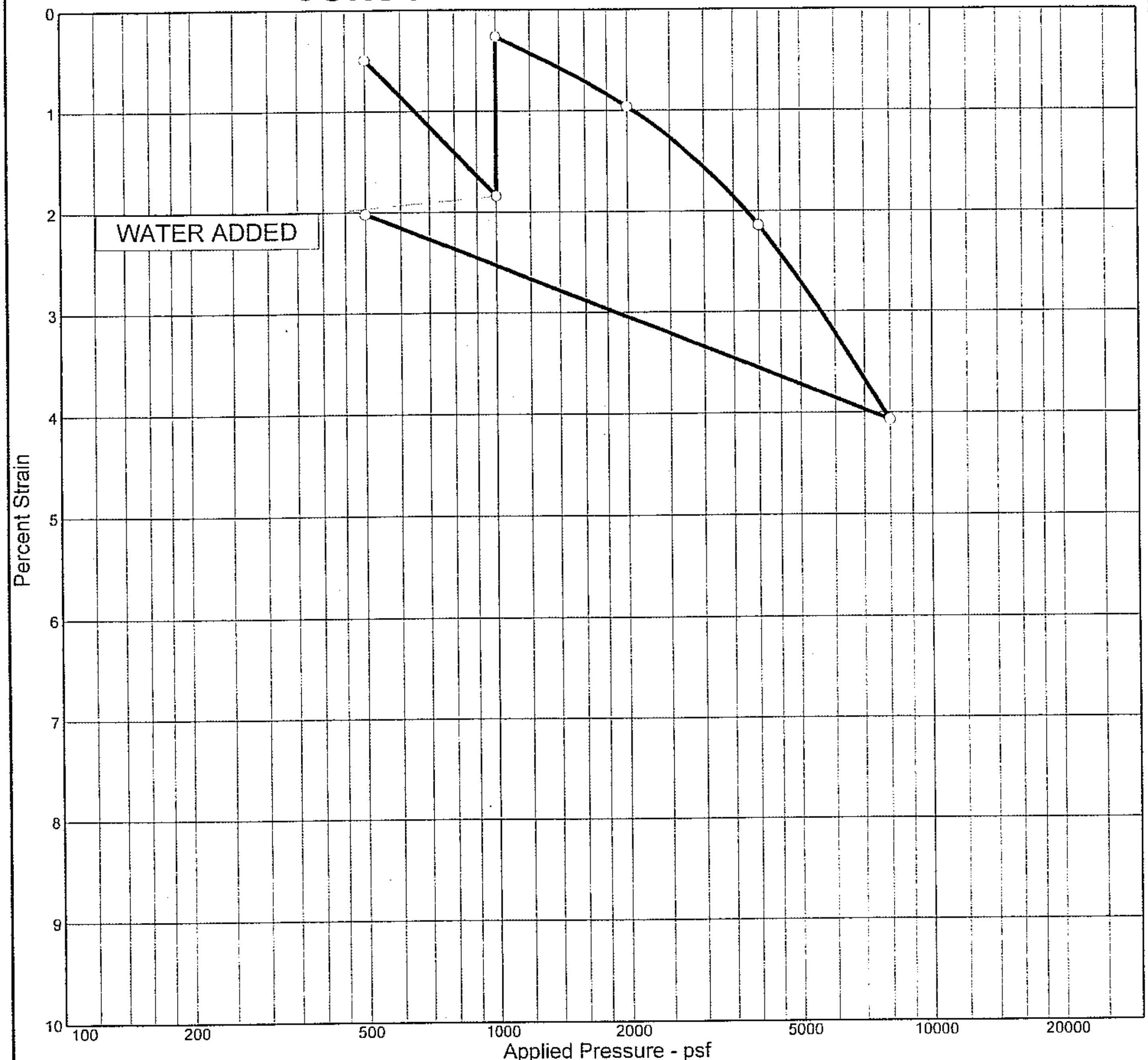
Remarks:

CONSOLIDATION TEST REPORT

GORIAN & ASSOCIATES, INC.

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Swell %	e_o
Sat.	Moist.											
							3286			3481	1.5	

MATERIAL DESCRIPTION	USCS	AASHTO

Project No. 2654-0-0-10 **Client:** Lopez

Project: Lopez, 4308 W. Effie Street, Los Angeles

Source: B-2 **Elev./Depth:** 6

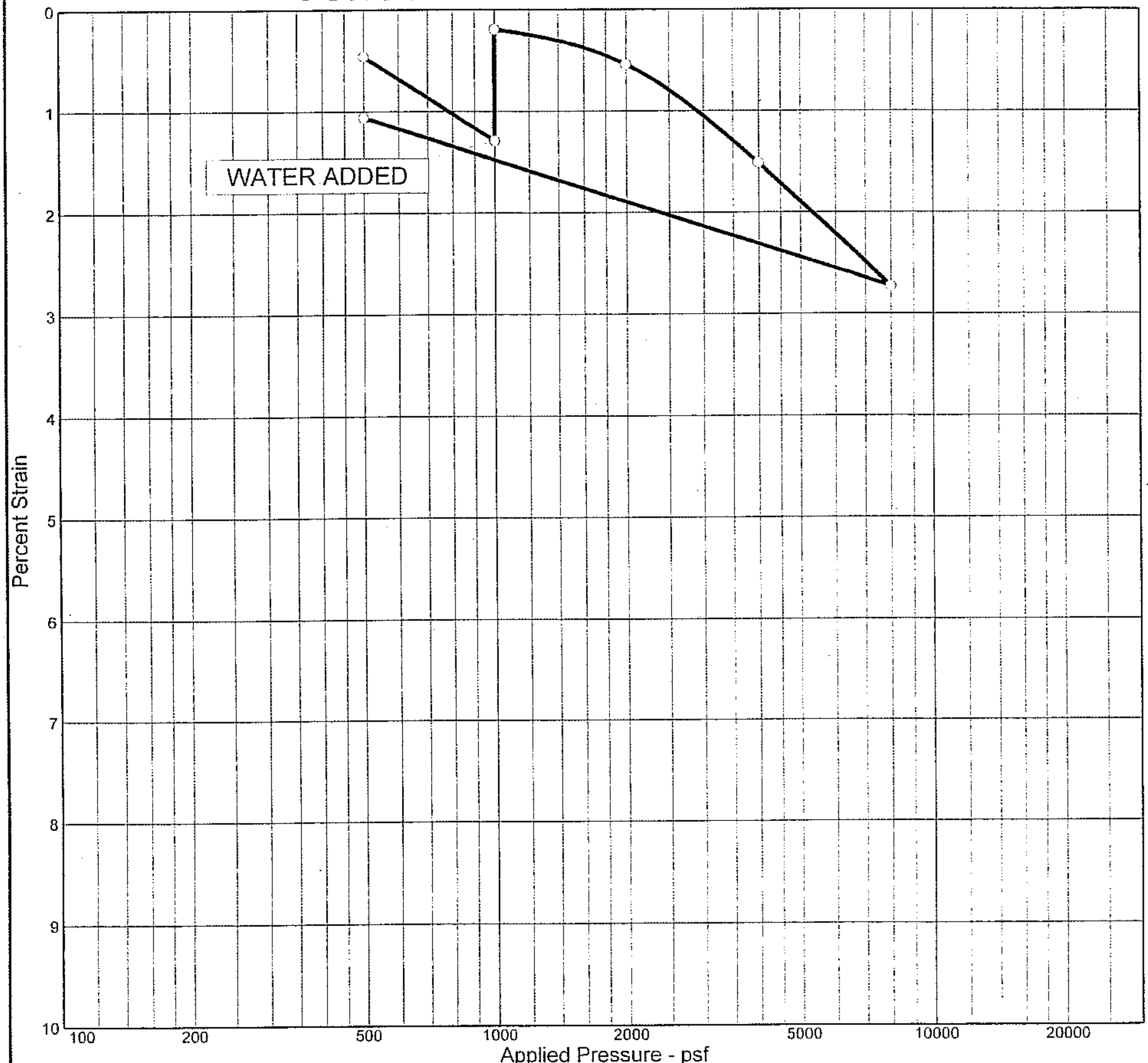
CONSOLIDATION TEST REPORT

GORIAN & ASSOCIATES, INC.

Remarks:

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_s	Swell Press. (psf)	Swell %	e_o
Sat.	Moist.											
90.0 %	12.3 %	121.3			2.65		2328	0.06	0.02	3503	1.1	0.364

MATERIAL DESCRIPTION	USCS	AASHTO

Project No. 2654-0-0-10 **Client:** Lopez

Project: Lopez, 4308 W. Effie Street, Los Angeles

Source: B-2 **Elev./Depth:** 15

Remarks:

CONSOLIDATION TEST REPORT

GORIAN & ASSOCIATES, INC.

Figure

June 15, 2005

Gorian and Associates, Inc.
Attention:Matt Baumgardner
3595 Old Conejo Road
Thousand Oaks, CA 91320

CME Job No.: 1S05169

Subject: Soil Chemistry Analysis for Gorian Job # 2654-0-0-10
Carlos Lopez – Effie Street
1 Sample – B-2 @ 2'

Sample Number	As Rec'd Resistivity (ohm-cm)	[1]Minimum Resistivity (ohm-cm)	[2]pH	[3]Sulfate %	[3]Chloride %	[4]Ammonia %	[5] Keldahl Nitrogen %	(As Rec'd) Description
B-2	1,800	920	7.15	0.0044	0.0021	<0.0003	0.0160	Dark brown clay, moist

NOTE: SAMPLES WERE ANALYZED IN ACCORDANCE WITH THE FOLLOWING METHODS.
1. MINIMUM RESISTIVITY DETERMINED BY SOIL BOX METHOD, (PER ASTM G-57)
2. PH MEASURED BY POTENTIOMETRIC METHOD USING STANDARD ELECTRODES. (PER CAL TRANS. #643)
3. CHLORIDE AND SULFATE WERE ANALYZED IN ACCORDANCE WITH EPA METHODS FOR CHEMICAL ANALYSIS FOR WATER AND WASTE, NO. 300 EPA-600/4-79-020. CONCENTRATION BY WEIGHT OF DRY SOIL.
4. AMMONIA WAS ANALYZED IN ACCORDANCE WITH EPA METHOD 350.2
5. KELDAHL NITROGEN WAS ANALYZED IN ACCORDANCE WITH EPA METHOD 351.2

CONCLUSIONS:

Material	Corrosion Class
Concrete	Negligible for Sulfate exposure and Negligible for Chloride exposure (UBC Table 19-A-4)
Steel Cast/Ductile Iron Mortar Coated Steel Pipe or Other Buried Ferrous Metal	Corrosive
Copper Piping	Corrosive due to the presence of nitrogen and ammonia in soils.

The test results and corrosion classifications are based on the sample submitted, which may not be representative of overall site conditions. Additional sampling may be required to more fully characterize soil conditions. If recommendations, based upon the results of the testing are required, please feel free to contact our office.

Sincerely,

CONCECO/MATCOR Engineering, Inc.

Kerri M. Howell

Kerri M. Howell, P.E.
President

KMH/ch

APPENDIX C

ASFE Insert

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

December 5, 2014

Terracon

Junction Gateway, LLC
7551 W. Sunset Boulevard
#203 Los Angeles, CA 90046

Attn: Mr. James Frost
P: 323.883.1800

Re: Geotechnical Update Letter
Sunset & Effie Mixed Use Development
4301 to 4311 Sunset Boulevard, 4300 to 4306 Effie Street and 4312/4314 Effie Street
Los Angeles, CA

Dear Mr. Frost,

Pursuant to your request, we are providing the following letter which provides supplemental information and serves as an "update" letter to Terracon's previous preliminary report No. 60075014 dated June 1, 2007 concerning the subject site. In addition, we performed one (1) boring to a depth of 50 feet below ground surface (bgs), laboratory testing and engineering analysis at the 4312/4314 Effie Street location which was not included in our original report. These services were performed in general accordance with our Master Agreement and Task Order, P60140202 dated July 14, 2014.

It is our understanding that Junction Gateway is processing plans through the reviewing agencies for construction, and that a Geotechnical update letter is required as a supporting document to that process.

A supplemental geotechnical exploration has been performed for the project site to include the 4312/4314 Effie Street location. The remainder of the project area was explored during our field program in 2007.

During our site visit on November 14, 2014, it was noted that the existing site surface conditions are similar to those that existed at the time the referenced report was prepared. The test location is shown in Exhibit A-1, attached to this letter. Soil samples were collected and select samples were tested for soil classification and engineering properties. Logs of the boring are shown in the attached Exhibit A-2.

Specific conditions encountered at the boring location are indicated on the individual boring log. Stratification boundaries on the boring log represents the approximate location of changes in soil type in-situ, the transition between materials may be gradual. Details for the boring can be found on the boring log attached to this report. Subsurface soils consisted of fill materials comprised of silty sand overlying fat clay overlying sedimentary Claystone. Fat clay soils were found to be relatively expansive and may not be suitable for use as structural fill onsite during construction.

Groundwater was not observed in the test boring at the time of field exploration. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

Based on the information obtained from our exploration, laboratory testing and our review of our original preliminary report, the site is suitable for development of the proposed project provided our report recommendations are implemented. It is our opinion that the recommendations for design and construction provided in our previous report can be utilized for the proposed project. Please note that the referenced report is considered preliminary and further investigations and analysis will be required prior to final design.

Due to recent code changes and seismic information, this letter includes faulting data, estimated ground motions, and seismic considerations as supplemental information.

The site is located in Southern California, which is a seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. The table below indicates the distance of the fault zones and the associated maximum credible earthquake that can be produced by nearby seismic events, as calculated using the USGS Earthquake Hazard Program 2002 interactive deaggregations. The Upper Elysian Park, which is located approximately 2.9 kilometers from the site, is considered to have the most significant effect at the site from a design standpoint. In addition, the modal magnitude is anticipated to be on the order of 6.4.

Characteristics and Estimated Earthquakes for Regional Faults		
Fault Name	**Approximate Distance to Site (kilometers)**	**Maximum Credible Earthquake (MCE) Magnitude**
Upper Elysian Park	2.9	6.4
Hollywood	1.9*	6.4
Raymond	6.4	6.5

Based on these sources the peak ground acceleration at the subject site is expected to be about 1.05g per USGS design maps.

*In November 2014, CGS released an official map of earthquake fault zones in the Hollywood Quadrangle. The official map shows the Hollywood Fault Zone beginning near the Atwater Village neighborhood in the east, through central Hollywood and ending near La Cienega and Sunset Boulevard in the west. Based on our review, the project site is located approximately 1.9 kilometers from the Hollywood fault alignment.

DESCRIPTION	VALUE
2013 California Building Code Site Classification (CBC) [1]	D
Site Latitude	N 34.0950°
Site Longitude	W 118.2826°
S_s Spectral Acceleration for a Short Period	2.74g
S_1 Spectral Acceleration for a 1-Second Period	0.98g
S_{DS} Design Spectral Acceleration for a Short Period	1.82g
S_{D1} Design Spectral Acceleration for a 1-Second Period	0.98g

[1] Note: The 2013 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope does not include the required 100 foot soil profile determination. Borings extended to a maximum depth of approximately 54 feet. and this seismic site class definition considers that similar soils continue below the maximum depth of the subsurface exploration.

No specific development plans were reviewed at the time this letter was prepared. Any future development of the site will need to be reviewed by a qualified geotechnical consultant and appropriate recommendations need to be provided based on the site subsurface conditions.

Terracon should be retained to provide further geotechnical engineering in support of future development of the site including reviews of plans, preparation of supplemental reports, and providing observation and testing services during earthwork and construction.

The analyses and comments in this letter are based in part upon data obtained from the previous field exploration and our recent geotechnical exploration. The nature and extent of variations beyond the location of the test borings may not become evident until construction. If variations then appear evident, it may be necessary to re-evaluate the recommendations of the reports.

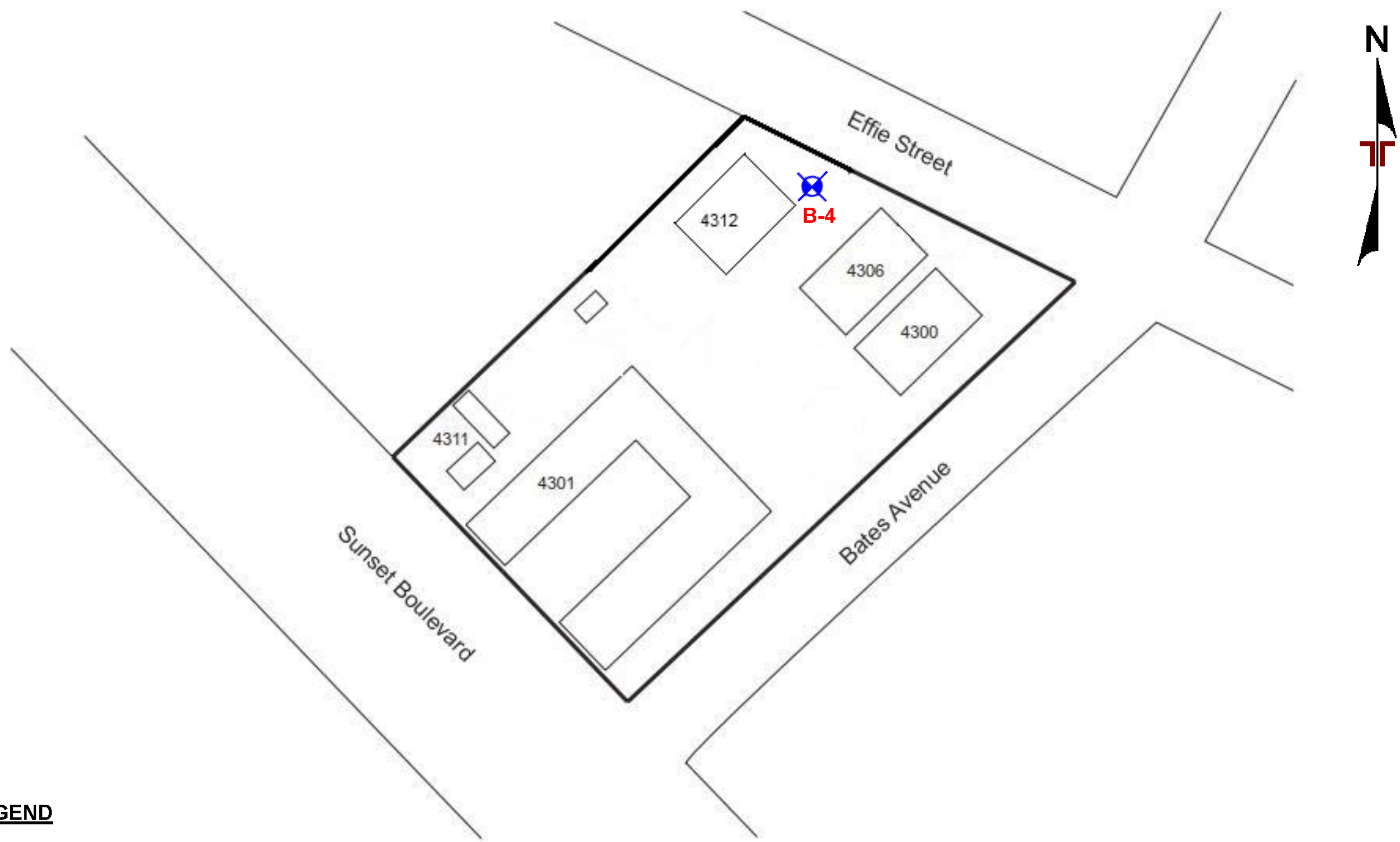
We appreciate being of service to you in the geotechnical engineering phase of this project. and are prepared to assist you during the construction phases as well. If you have any questions concerning this report or any of our testing, inspection, design, and consulting services. please contact us.

Sincerely.
Terracon Consultants, Inc.

Kimsear (Sear) Tang . EIT
Staff Engineer

Fouad (Fred) Abuhamdan . P.E.
Senior Project Manager

REGISTERED PROFESSIONAL ENGINEER
FOUAD ABUHAMDAN
C 77455
CIVIL
STATE OF CALIFORNIA



LEGEND

B-1 APPROXIMATE BORING LOCATION

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: FH	Project No. 60145047
Drawn by: SZ	Scale: 1" ~ 75'.
Checked by: JM	File Name: A-2
Approved by: FH	Date: 12/3/14

Terracon
Consulting Engineers & Scientists
2817 McGaw Avenue Irvine, CA 92614
PH. (949) 261-0051 FAX. (949) 261-6110

BORING LOCATION DIAGRAM

Sunset & Effie Mixed Use Development

4312/4314 Effie St
Los Angeles, CA

Exhibit A-1

BORING LOG NO. B-4

PROJECT: Sunset & Effie Mixed Use Development

CLIENT: Junction Gateway, LLC
Los Angeles, CA

SITE: 4312/4314 Effie St
Los Angeles, CA

LOCATION See Exhibit A-2

DEPTH	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (psf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	**CONCRETE**											
2.5	**FILL - SILTY SAND (SM)**, brown										NP	48
	FAT CLAY WITH SAND (CH), brown, hard				23-23-23				9	123		
		5			10-23-20				10	121		
	very stiff				7-11-17 N=28						54-20-34	78
	hard	10			8-25-25				18	102		
	yellowish-brown	15			7-15-19 N=34							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic SPT Hammer

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

2817 McGaw Avenue
Irvine, California

Boring Started: 11/14/2014	Boring Completed: 11/14/2014
Drill Rig: CME-75	Driller: Jet
Project No.: 60145047	Exhibit: A-2

BORING LOG NO. B-4

PROJECT: Sunset & Effie Mixed Use Development

CLIENT: Junction Gateway, LLC
Los Angeles, CA

SITE: 4312/4314 Effie St
Los Angeles, CA

LOCATION See Exhibit A-2 / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (psf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
FAT CLAY WITH SAND (CH), brown, hard *(continued)*											
20.0	20										
CLAYSTONE,PUENTE FORMATION, reddish-brown, very stiff to hard,Completely Weathered				7-13-20				31	89		
yellowish-brown	25			10-19-21 N=40						57-25-32	87
	30			9-17-30				33	90		
	35			12-18-19 N=37							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic SPT Hammer

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
2817 McGaw Avenue
Irvine, California

Boring Started: 11/14/2014	Boring Completed: 11/14/2014
Drill Rig: CME-75	Driller: Jet
Project No.: 60145047	Exhibit: A-2

BORING LOG NO. B-4

PROJECT: Sunset & Effie Mixed Use Development

CLIENT: Junction Gateway, LLC
Los Angeles, CA

SITE: 4312/4314 Effie St
Los Angeles, CA

GRAPHIC LOG	LOCATION See Exhibit A-2 / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (psf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	CLAYSTONE, PUENTE FORMATION, reddish-brown, very stiff to hard,Completely Weathered *(continued)*											
		40			15-30-40				24	98		
	brown	45			8-24-41 N=65							
	light brown	50			19-20-23 N=43							
	51.5											
	Boring Terminated at 51.5 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic SPT Hammer

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
2817 McGaw Avenue
Irvine, California

Boring Started: 11/14/2014	Boring Completed: 11/14/2014
Drill Rig: CME-75	Driller: Jet
Project No.: 60145047	Exhibit: A-2

CHEMICAL LABORATORY TEST REPORT

Project Number: 60145047
Service Date: 11/25/14
Report Date: 11/25/14
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Project

Proposed Mixed Use Development

Sample Submitted By: Terracon (60) **Date Received:** 11/21/2014 Lab No.: 14-0660

Results of Corrosivity Analysis

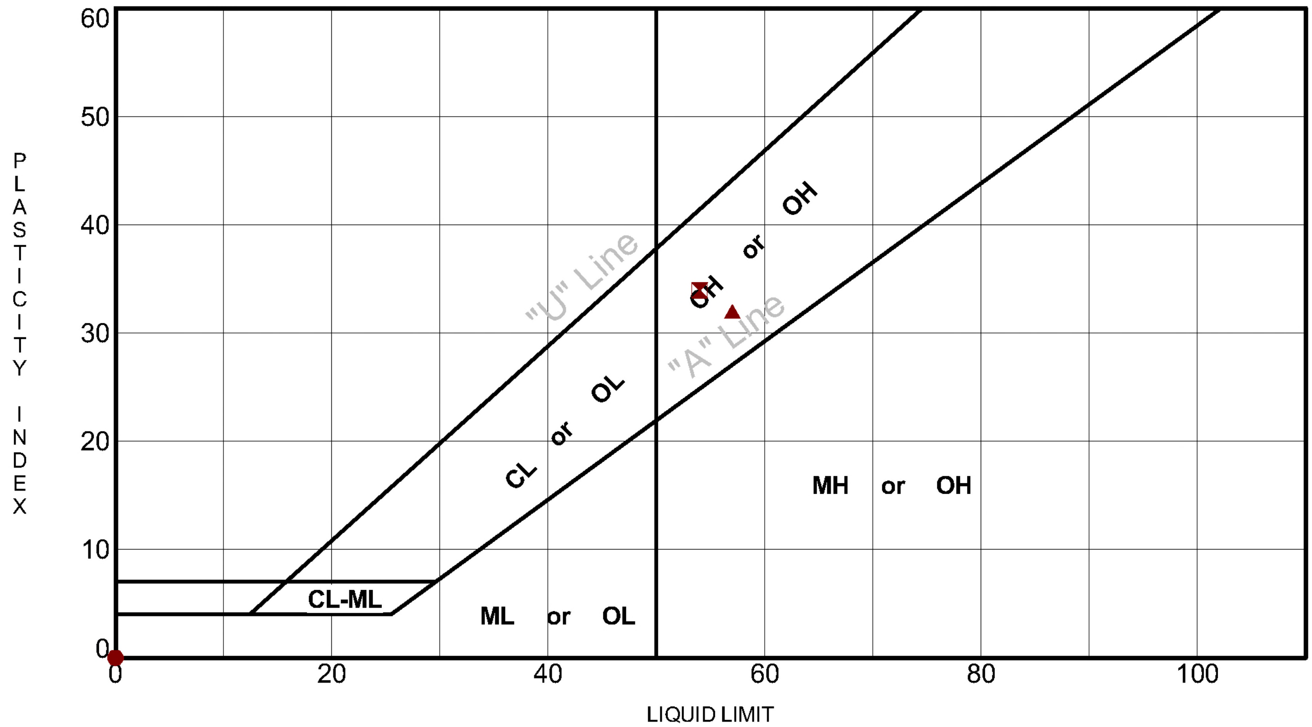
Sample Number	
Sample Location	B-4
Sample Depth (ft.)	0.0
pH Analysis, AWWA 4500 H	8.51
Water Soluble Sulfate (SO4), AWWA 4500 E (mg/kg)	0.01
Sulfides, AWWA 4500-S D, (mg/kg)	Nil
Red-Ox, AWWA 2580, (mV)	+580
Total Salts, AWWA 2510, (mg/kg)	392
Chlorides, AWWA 4500 Cl B, (mg/kg)	50
Resistivity, ASTM G-57, (ohm-cm)	4559

Analyzed By: Kurt D. Ergun

Kurt D. Ergun
Chemist

ATTERBERG LIMITS RESULTS

ASTM D4318



	Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
●	**B-4**	**0.2**	**NP**	**NP**	**NP**	**48**	**SM**	**SILTY SAND**
⧗	**B-4**	**7.5**	**54**	**20**	**34**	**78**	**CH**	**FAT CLAY WITH SAND**
▲	**B-4**	**25.0**	**57**	**25**	**32**	**87**	**CH**	**FAT CLAY**

PROJECT: Sunset & Effie Mixed Use Development

SITE: 4301/4314 Effie St
Los Angeles, CA

Terracon
2817 McGaw Avenue
Irvine, California

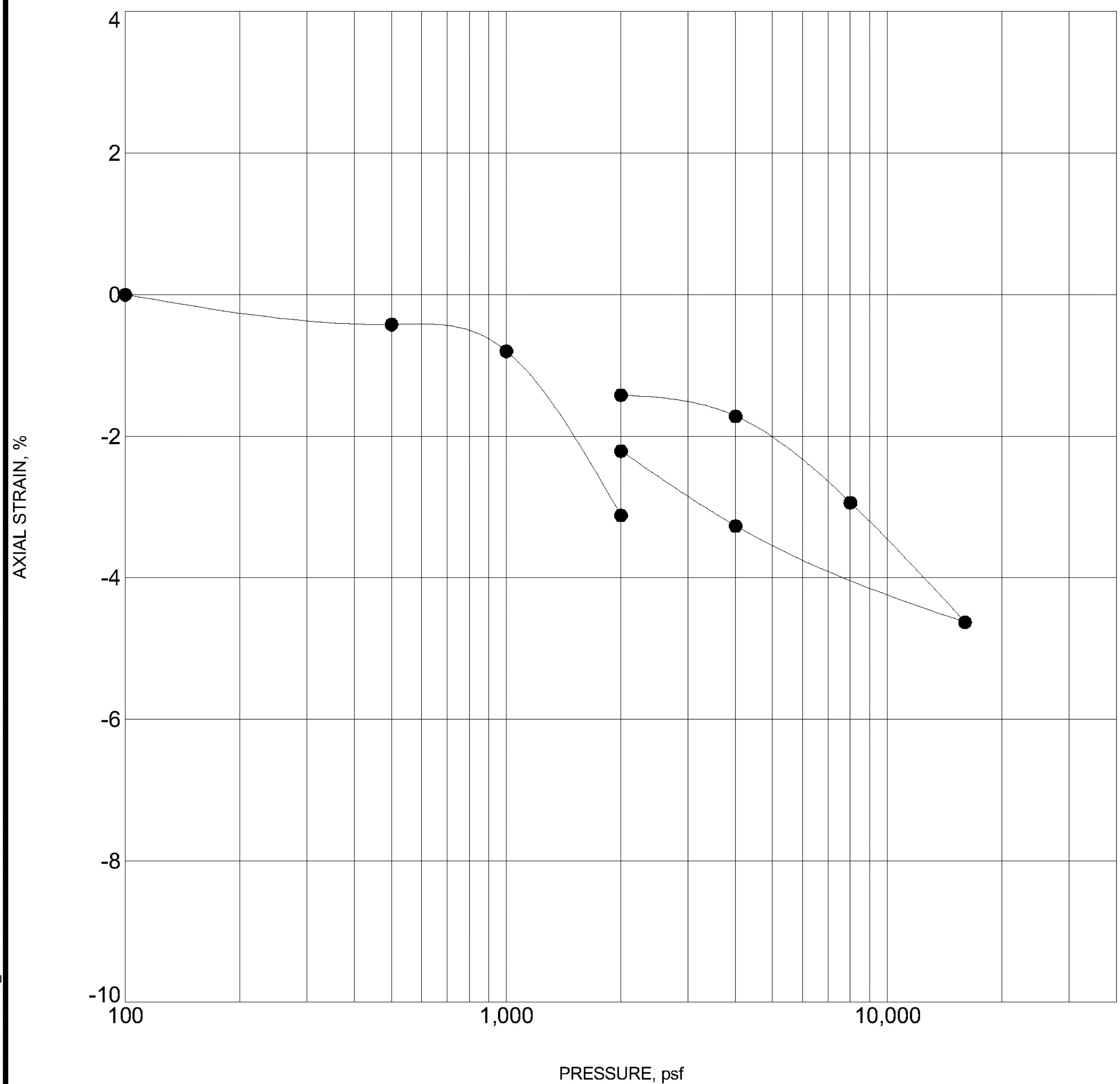
PROJECT NUMBER: 60145047

CLIENT: Junction Gateway, LLC
Los Angeles, CA

EXHIBIT: B-2

SWELL CONSOLIDATION TEST

ASTM D4546



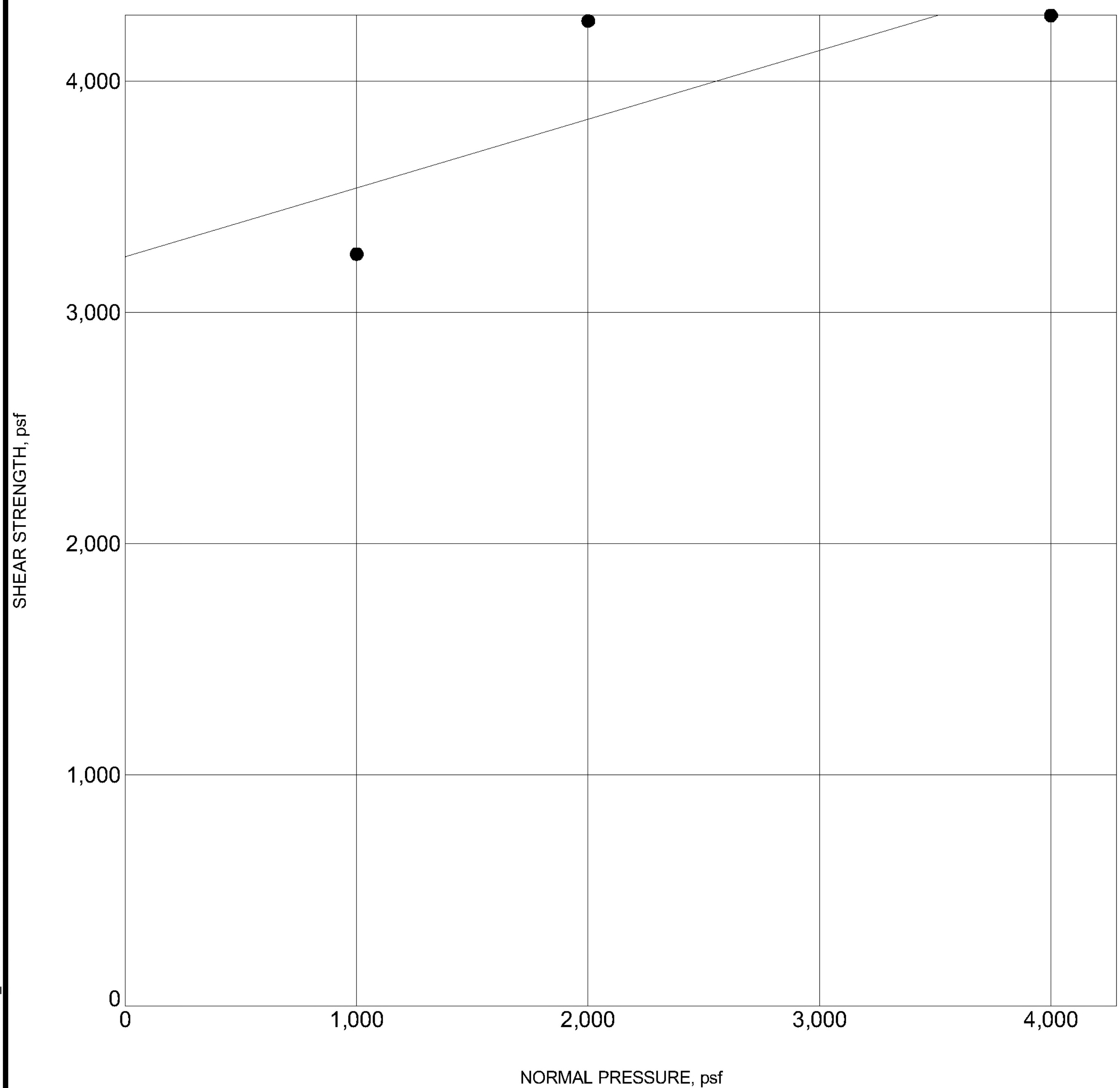
Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-4	2.5 ft	FAT CLAY WITH SAND	123	9

NOTES: Water added at 2000 psf

PROJECT: Sunset & Effie Mixed Use Development	Terracon 2817 McGaw Avenue Irvine, California	PROJECT NUMBER: 60145047
SITE: 4301/4314 Effie St Los Angeles, CA		CLIENT: Junction Gateway, LLC Los Angeles, CA
		EXHIBIT: B-3

DIRECT SHEAR TEST

ASTM D3080



	Specimen Identification		Classification	γ_d, pcf	WC,%	c, psf	φ°
●	**B-4**	**5.0ft**	**FAT CLAY WITH SAND**	**121**	**10**	**3240**	**17**

PROJECT: Sunset & Effie Mixed Use Development	Terracon 2817 McGaw Avenue Irvine, California	PROJECT NUMBER: 60145047
SITE: 4301/4314 Effie St Los Angeles, CA		CLIENT: Junction Gateway, LLC Los Angeles, CA
		EXHIBIT: B-4

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

Auger	Shelby Tube	Split Spoon
Rock Core	Macro Core	Modified California Ring Sampler
Grab Sample	No Recovery	Modified Dames & Moore Ring Sampler

WATER LEVEL

- **Water Initially Encountered**
- **Water Level After a Specified Period of Time**
- **Water Level After a Specified Period of Time**

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	**Hand Penetrometer**
(T)	**Torvane**
(b/f)	**Standard Penetration Test (blows per foot)**
N	**N value**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**
(WOH)	Weight of Hammer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, psf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Terracon

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification: Group Symbol	Soil Classification: Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.

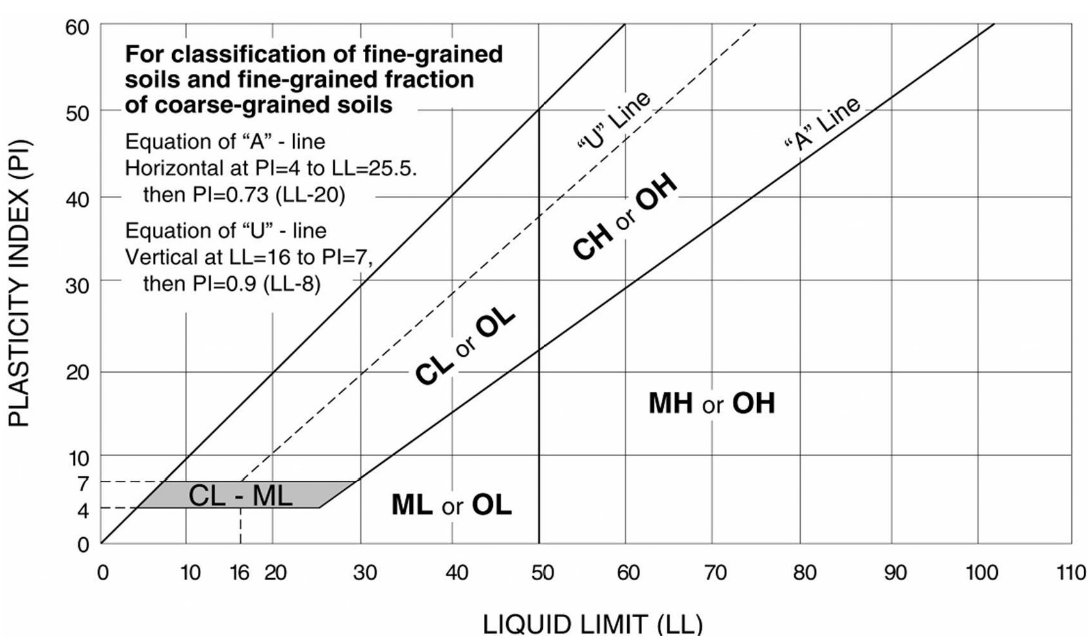


Exhibit C-2