CONVERSE CONSULTANTS

GEOTECHNICAL INVESTIGATION REPORT
Los Angeles County Hall of Justice
Northerly Corner of Temple Street
and Spring Street
Los Angeles, California

Over 50 Years of Dedication in Geotechnical Engineering and Environmental Sciences

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GEOTECHNICAL INVESTIGATION REPORT

Los Angeles County Hall of Justice
Northerly Corner of Temple Street
and Spring Street
Los Angeles, California

PREPARED FOR

Hall of Justice Associates, Inc.
C/O Clark Construction
304 South Broadway, Suite 400
Los Angeles, California 90013

Converse Project No. 03-31-102-01

May 5, 2003

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Over 50 Years of Dedication in Geotechnical Engineering and Environmental Sciences

May 5, 2003

Mr. Fred Case
Hall of Justice Associates, Inc.
C/O Clark Construction
304 South Broadway, Suite 400
Los Angeles, California 90013

Subject: **GEOTECHNICAL INVESTIGATION REPORT**
Los Angeles County Hall of Justice
Northerly Corner of Temple Street and Spring Street
Los Angeles, California
Converse Project No. 03-31-102-01

Dear Mr. Case:

We are pleased to present this geotechnical investigation report for the Los Angeles County Hall of Justice and a proposed parking structure located at Northerly Corner of Temple Street and Spring Street, Los Angeles, California. This report was prepared in accordance with our February 11, 2003 revised proposal and your authorization and notice to proceed dated February 25, 2003.

The findings of the investigation and recommendations for the design and construction of the structures are presented in the attached report and are summarized in the Executive Summary Section following this letter.

Thank you for this opportunity to be of continued service. If you have any questions, or if we can be of additional service, please do not hesitate to contact us.

CONVERSE CONSULTANTS

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EXECUTIVE SUMMARY

The following is a summary of our Geotechnical Investigation, findings, conclusions, and recommendations, as presented in the body of this report. This summary is presented for the cursory review of the investigation report and may not be adequate for other purposes. The summary should not be used separately for design and/or construction. Please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- Field exploration consisted of drilling six 8-inch-diameter exploratory borings and two 24-inch-diameter borings. Subsurface conditions encountered in the borings were continuously logged and classified in the field by visual/manual examination in accordance with the Unified Soil Classification System. The internal surface of two 24-inch-diameter borings were also observed and examined to collect the geological data. Boring BH-2 was converted to monitoring well.
- Laboratory testing included moisture and density determinations, gradation, compaction, R-value, direct-shear strength, Expansion Index, consolidation, pH, resistivity, soluble sulfate, and chloride concentration testing.
- The subject site is considered suitable from a geotechnical engineering viewpoint for the construction of the proposed parking structure and renovation of the Hall of Justice, provided that the recommendations presented in the attached report are incorporated into the design and construction.
- The site is not within a currently designated State of California Fault Rupture Hazard Zone. The nearest special studies earthquake fault rupture zone is the Hollywood Fault Zone, located approximately 4.3 miles of the subject site. Due to the close proximity of the site to the fault, there is a high probability of strong shaking at the site during a strong seismic event on the Hollywood Fault. Site parameters for seismic design by the 1997 Uniform Building Code are provided in the report. A probabilistic site-specific acceleration design response spectra analysis has also been performed and the results presented in the report.
- Groundwater was encountered in five borings in depths ranging from 16 to 65 feet below the existing ground surface. This groundwater is believed to be a localized perched condition and not an indication of regional groundwater condition. The water needs to be considered in the design and construction of the proposed parking structure.
- According to available Hazard zone maps, the site is not within a liquefaction or flood hazard zone. Site soils are not susceptible to liquefaction under earthquake ground shaking, due to the existing dense bedrock below the ground water in the site.

- Site soils should be able to be excavated with conventional heavy-duty earthmoving equipment.

- Based upon the laboratory test result, a medium expansion potential has been found in fill material. Further expansion testing of bedrock material should be conducted during the construction to evaluate the expansion potential of the bedrock material below the foundations. Special design and/or construction for expansive soil conditions are considered necessary for this project and are presented inside the report under earthwork, foundation design, retaining walls and slab-on-grade.

- All fill and backfill soils placed below footings and slab and behind retaining walls should be moisture-conditioned 2 percent above optimum moisture, and compacted to 90 percent of the ASTM D1557-91 laboratory maximum density.

- The proposed parking structure and existing Hall of Justice building may be supported on conventional shallow footings with an allowable net soil bearing capacity of 7,000 and 9,000 pounds per square foot for wall footing and isolated footing, respectively. This value may be increased in accordance with the provisions presented in the report for design of footings to resist wind and/or seismic loads.

- Basement walls should be backfilled with on-site materials or non-expansive imported soils. Backfill should be moisture-conditioned 2 percent above optimum moisture, and compacted to 90 percent of the ASTM D1557-91 laboratory maximum density.

- Geological layers of sedimentary bedrock have adverse bedding at north wall of pit excavation. Further investigation and analysis related to potential adverse affects is on the progress and its results will be presented in a subsequent supplemental report.

- Surface drainage should be sloped away from the structures. Ponding of surface water should not be allowed adjacent to the structure.

- Site soils contain negligible concentrations of water-soluble sulfate. Accordingly special considerations for sulfate resistant concrete are not considered necessary for the subject project. Concrete in contact with soil should conform to the requirements of the Uniform Building Code for negligible sulfate conditions.

- The site soils have a severe corrosive potential for ferrous metals. A corrosive engineer should be retained to provide mitigation recommendations.

- Temporary construction slopes, greater than three feet in height, should be sloped or shored in accordance with the requirements of CAL-OSHA. Due to site constrains, it is believed that sloping of the excavation walls for the four subterranean levels of the parking structure will not be possible. As a result, shoring of the excavation is expected to be required.

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Los Angeles County Hall of Justice
Los Angeles, California

Converse Project No. 03-31-102-01

1.0 INTRODUCTION

This report presents results of a geotechnical investigation performed by Converse Consultants (Converse) for the seismic renovation of the existing Los Angeles County Hall of Justice and the design and construction of a proposed parking structure located at Northerly Corner of Temple Street and Spring Street, Los Angeles, California. The purposes of this investigation were to determine the nature and engineering properties of the earth materials at this site, and to provide geotechnical recommendations for renovation and seismic upgrade of Los Angeles County Hall of Justice and design and construction of the proposed parking structure.

This report is for the renovation of the Los Angeles County Hall of Justice and design and construction of the proposed parking structure described herein, and is intended for use by Hall of Justice Associates Inc, Los Angeles County, and their design professionals. Since this report is intended for use by the designer(s), it should be recognized that it is impossible to include all construction details in this report at this phase in the project. Additional consultation may be prudent to interpret these findings for contractors, or possibly refine these recommendations based upon the final design and actual conditions encountered during construction.

2.0 PROJECT DESCRIPTION

The Los Angeles County Hall of Justice was constructed in 1925 and is located at 211 West Temple (Northerly Corner of Temple Street and Spring Street) in the Downtown Area of the City of Los Angeles, California. The 14-story structure was constructed with a steel frame encased in concrete, concrete floor slabs, granite exterior veneer and hollow clay tile interior partition walls. It sustained major damage during the 1994 Northridge earthquake. As a result of the damage, the building has been closed since the earthquake.

The current renovation concept calls for converting the structure from a mixed use (office, court, and jail) to office for the Sheriff's Department and District Attorney and upgrading the structural seismic resistance to comply with current building codes. As part of the renovation, two of the upper level floors will be removed, increasing the floor-to-floor heights of the remaining upper floors, and decreasing the structural mass. The seismic upgrade is expected to include the construction of new shear walls and new footings.

Included in the project is the construction of a new parking structure to the north of the Hall of Justice. The parking structure will have four levels below grade and five levels above the existing ground surface. It is assumed that the parking structure will be constructed with a reinforced concrete frame.

In the absence of detailed structural footing load information we have for the purpose of analysis assumed that maximum column dead load plus live loads for the Hall of Justice will be on the order of 1,500 to 2,000 kips and maximum continuous wall loads (dead load plus live loads) to be on the order of 65 kips per lineal foot. For the parking structure, we have assumed that the maximum column dead load plus live loads will be on the order of 1,000 to 1,300 kips and maximum continuous wall loads (dead load plus live loads) to be on the order of 45 kips per lineal foot.

3.0 SCOPE OF WORK

The scope of geotechnical services performed for this project included exploratory borings, geotechnical laboratory testing of soil samples, geotechnical engineering analyses, and preparation of this written report. This report did *not* include an evaluation of the potential for soil and/or groundwater contamination at this site. The scope of work for this investigation included the following:

- Field exploration consisted of drilling six 8-inch-diameter exploratory borings (BH-1 through BH-6) to depths ranging from about 27 to 81.5 feet below the existing ground surface and two 24-inch-diameter borings (BH-7 and BH-8) to a depth about 45 feet below the existing ground surface at the locations shown on Drawing No. 1, *"Location of Borings"*. Subsurface conditions encountered in the borings were continuously logged and classified in the field by visual/manual examination in accordance with the Unified Soil Classification System. The internal surface of two 24-inch-diameter borings were also observed to collect the geological data. Boring BH-2 was converted to monitoring well to monitor fluctuation in groundwater conditions. Field exploration procedures and boring logs are presented in Appendix A, *Field Exploration.*

- Laboratory testing included moisture and density determinations, gradation, compaction, R-value, direct-shear strength, Expansion Index, consolidation, pH, resistivity, soluble sulfate, and chloride concentration testing. Descriptions of the individual tests and test results are presented in Appendix B, *Laboratory Test Program.*

- Engineering analyses and evaluation of results of the field exploration and laboratory testing were performed to develop design and construction recommendations for the Hall of Justice and proposed parking structure. Findings and recommendations are documented in this written report.

4.0 EXISTING SITE CONDITIONS

4.1 Surface Conditions

The northern and eastern areas of the site is currently used as an asphalt-paved parking lot that is relatively level in east area and has about 2% slope in north area. The Hall of Justice building is located within the southwest corner and central areas of the site. The hall of Justice is surrounded with metal fence. Landscaping planters and grass areas are located within and around the proposed site. A 20 feet high retaining wall is located at northwest corner of the Hall of Justice, in south-north direction. It is our understanding that a small building previously existed just northerly of the Hall of Justice and that a portion of the retaining wall is from that second building.

4.2 Subsurface Conditions

Asphalt pavements in ranging of 2.5 to 6 inches in thickness were encountered in six exploratory borings. Undocumented fill material encountered below the pavement in the borings have depths ranging from 2.5 feet to 15 feet and consist of clayey sand, sandy silt and silty sands material.

Sedimentary bedrock consisting of interbeded siltstone, claystone and sandstone was encountered below the near surface fill material. These natural materials are generally dense and stiff. Based upon down-hole observations of the geologic structure, the bedrock generally dips at an angle varying from 40 to 55 degrees from horizontal in a southerly direction with a strike generally in an east-west direction.

Groundwater was encountered at different depths ranging from 16 to 65 feet below the existing ground surface. This groundwater is believed to be a localized perched condition and not an indication of regional groundwater condition. However, this pouched water is expected to affect the designed construction of the subterranean portions of the parking structure.

Based on the results of subsurface exploration and experience, variations in the continuity and depth of subsurface conditions should be anticipated. Care should be exercised in interpolating or extrapolating subsurface conditions between or beyond borings. Fill depths should be expected to vary between borings.

5.0 CONCLUSIONS

The following conclusions are based on the results of the field investigation, laboratory testing and our understanding of the scope of the project.

- The site is suitable from a geotechnical viewpoint for the proposed renovation and development, provided that the recommendations presented in this report are incorporated into the design and construction of the project.

- Undocumented fill was encountered in six borings ranging from 2.5 feet to 15 feet below the existing ground surface. It is expected that the existing foundations for the Hall of Justice extend through this fill and into the underlying sedimentary bedrock. The subterranean portion of the parking structure is expected to extend through the existing fill material.

- The fill soils encountered during the field exploration are predominately clayey sand, silty sand and sandy silt and are generally dense and firm. The sedimentary bedrocks encountered below the fill consists of interbedded layers of siltstone, claystone and sandstone that are generally stiff to very stiff.

- Groundwater was encountered in five borings in depths ranging from 16 to 65 feet below the existing ground surface. This groundwater is believed to be a localized perched condition and not an indication of regional groundwater condition. The groundwater needs to be considered in the design and construction of the proposed parking structure.

- There are no active faults projecting toward or extending across the proposed site. The site is not located within a currently designated State of California Fault Rapture Hazard Zone. However, due to the close proximity of the site to the Hollywood Fault, very strong shaking could result from a major seismic event on this fault.

- Site soils are not susceptible to liquefaction under earthquake ground shaking, due to the existing dense bedrock below the ground water in the site.

- Site soils should be able to be excavated with conventional heavy-duty earthmoving equipment.

- Based upon the laboratory test result, a medium expansion potential, as defined in Table 18-1-B of the 1997 Uniform Building Code (UBC) is expected in site soil. Special design and/or construction for expansive soil conditions are considered necessary for this project and are incorporated into the recommendations for earthwork, foundations and slab-on-grade.

- The proposed parking structure and existing Hall of Justice building may be supported on conventional shallow footings with an allowable net soil bearing capacity of 7,000 and 9,000 pounds per square foot for wall footing and isolated footing, respectively. This value may be increased in accordance with the provisions presented in the report for design of footings to resist wind and/or seismic loads.

- Site soils contain negligible concentrations of water-soluble sulfate. Accordingly special considerations for sulfate resistant concrete are not considered necessary for the subject project. Concrete in contact with soil should conform to the requirements of the Uniform Building Code for negligible sulfate conditions.

- The site soils have a severe corrosive potential for ferrous metals. A corrosive engineer should be retained to provide mitigation recommendations.

- Based upon the findings of this investigation, we have concluded that the subject site is safe. For the renovation of the Hall of Justice and proposed parking structure against hazard from landslides, settlement or slippage. We have also concluded that the proposed parking structure will not have an adverse affect on the geotechnical stability of property outside of the building site.

6.0 SEISMICITY

6.1 General

The site, as is all of Southern California, is located within a seismically active area. However, it is not within a currently designed Fault-Rupture Hazard Zone. It is located approximately 6.8 km of the Hollywood Fault. Accordingly, strong ground shaking due to seismic activity is anticipated at this site. The provisions of the Uniform Building Code (UBC), County of Los Angeles Building Code, and the Structural Engineers Association of California (SEAOC) guidelines are considered appropriate for design of the facility.

6.2 UBC Near Source Parameters

Based on the available site data, it is our opinion that Soil Profile Type S_C, as defined in Section 1636 of the 1997 UBC, is appropriate for the site. Faults within 20 km of the site are given in Table 1, 1997 UBC Seismic Design Parameters. Fault information was taken from California Division of Mines and Geology - California Fault Parameters. According to Tables 16-S and 16-T of the 1997 UBC, faults more than 15 km from a site do not affect near-source factors. All faults closer than 30 km are Seismic Source Type B faults, based on parameters in Table 16-U. Based on Tables 16-S and 16-T, the recommended values of near-source factors N_a and N_v occur for the Hollywood Fault. Using a Seismic Zone Factor of 0.4, seismic coefficients C_a and C_v are 0.40 and 0.63, respectively.

TABLE NO. 1,

1997 UBC Seismic Design Parameters

Fault	Moment Magnitude M_w	Slip Rate Mm/year	Closest* Distance to Site (km)	Seismic Source Type	N_a	N_v
Hollywood	6.5	1.0	6.8	B	1.0	1.1
Raymond	6.5	0.5	7.5	B	1.0	1.1
Verdugo	6.7	0.5	11.1	B	1.0	1.0
Newport-Inglewood (L. A. Basin)	6.9	1.0	12.9	B	1.0	1.0
Santa Monica	6.6	1.0	15.5	B	1.0	1.0
Sierra Madre (Central)	7.0	3.0	18.2	B	1.0	1.0

*Closest distance to surface projection of the rupture area.

6.3 Response Spectra Analysis

As an alternate to the design of the structure in accordance with the UBC and SEAOC guidelines, a probabilistic site-specific response spectra analysis was performed. Two design levels were selected to represent a reasonable range of earthquake energy levels for design. The first level represents an upper bound earthquake that will have a ten percent chance of exceedence in 100 years. The second level is for a maximum probable earthquake that represents a ten percent chance of exceedence in 50 years.

This analysis was made using the computer program FRISKSP, Blake (2000), DMG Open File Report 96-08 fault file and the attenuation relationship proposed by the "Bozorgnia Campbell & Niazi (1999) Hor.-Soft Rock- Uncor." Output for FRISKSP is presented on Figure 3, *"Probability of Exceedance vs. Acceleration"*. As indicated in the figure, the FRISKSP analysis indicates that peak horizontal ground acceleration at the site during the upper bound earthquake is estimated to be on the order of 0.60g. The peak horizontal ground acceleration during the maximum probable earthquake is estimated to be on the order of 0.50g.

Site Specific Response Spectra for horizontal elastic response ground motion were also generated using the FRISKSP program and are presented on Figure 4 and 5 for the two design earthquakes. Figures 4 and 5 show the horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping. The response spectra values for 2, 5 and 10 percent damping are presented in Table 2. These values were derived from the 5 percent damping curve developed by the "Bozorgnia Campbell & Niazi (1999) Hor.-Soft Rock- Uncor." attenuation relationship, using the spectral amplification factors developed by Newmark and Hall (1982).

When combining horizontal and vertical acceleration in the structural analysis, it should be noted that the vertical motion will have in general a 40 to 60 percent higher frequency than the horizontal motions, and the maximum vertical and horizontal accelerations seldom occur simultaneously. It is recommended that the vertical acceleration be reduced relative to the horizontal acceleration, as allowed by the provisions of the Uniform Building Code (Section 1629.2.5 of the 1997 Edition).

6.4 Liquefaction Evaluation

Liquefaction is the sudden decrease in shearing strength of cohesionless soils due to vibration. During dynamic or cyclic shaking, the soil mass is distorted, and interparticulate stresses are transferred from the sand grains to the pore water. When the pore water pressure increases to the point that the interparticulate effective stresses are reduced to zero, the soil behaves temporarily as a viscous fluid (liquefaction) and, consequently, loses its capacity to support the structures founded thereon.

Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within a depth of about 50 feet or less. The potential for liquefaction decreases with increasing grain size and clay and gravel content, but increases as the ground acceleration and duration of shaking increase.

Groundwater was encountered within a depth of 16 feet. However, the results of our standard penetration tests conducted during the site exploration indicate that materials deposits below the water are generally dense and stiff bedrock. As a result, it has been concluded that the potential for liquefaction at the site is considered very low to nil.

6.5 Secondary Seismic Effects

In addition to ground shaking and liquefaction, secondary effects of seismic activity that could impact the project site include surface fault rupture, differential settlement of the structure, ground lurching, landsliding, lateral spreading, earthquake-induced flooding, seiches, and Tsunamis. The results of a site-specific evaluation of the potential for these secondary effects affecting the project site are presented below:

- Surface Fault Rupture: The project site is located approximately 6.8 km from the Hollywood Fault, which is the nearest known active fault with historical ground rupture to the site. As a result, the potential for surface rupture resulting from the movement of this fault or other nearby faults, although not known with certainty, is considered to be low.

- Landslides: The potential for seismically induced landslides and/or other types of slope failures, such as lateral spreading on or adjacent to slope surfaces, adversely affecting the site is considered to be very low, due to the absence of slopes on or adjacent to the site. The parking structure will extend below the bottom of the northerly adjacent State Route 101 (Hollywood Freeway) and will not be adversely affected by movement of the retaining wall.

- Differential Settlement Due to Seismic Shaking: Seismically induced differential settlement occurs as the result of loose medium to coarse sands densifying during strong shaking from an earthquake. Field samples and sampling blow counts indicate that the materials underlying the footings are predominately sedimentary bedrock that are not sensitive to seismically induced settlement.

- Tsunamis/Seiches: Tsunamis and seiches are large seismic generated waves in the ocean (Tsunamis) or large enclosed bodies of water (Seiches). Based upon the distance of the site from the ocean and/or lakes and/or reservoirs, the potential of Tsunamis and/or Seiches affecting the site are considered to be very low.

- Earthquake-Induced Flooding: This is flooding caused by failure of dams or other water-retaining structures up gradient of the site as a result of an earthquake. Review of the area adjacent to the site indicates that there are no significant up gradient lakes or reservoirs with the potential of flooding the site.

7.0 DESIGN RECOMMENDATIONS

7.1 General

Seismic evaluation of existing foundations and design of remedial measures for the Hall of Justice building may be designed and constructed in accordance with the recommendations presented herein.

The proposed nine-story parking structure with four basement levels may be supported on conventional spread footings bearing on undisturbed native soils. Excavation for the subterranean portion of the structure is expected to remove any existing fill that may exist. In the subsections below, design recommendations for earthwork, foundations, slabs-on-grade, and corrosion and chemical attack resistance are provided. Construction considerations, such as temporary excavations, are discussed in the Construction Considerations section presented later in this report.

7.2 Earthwork

Earthwork is expected to consist of subgrade preparation for basement slab-on-grade, placement of backfill around to outside of basement walls, placement of utility trench backfill and limited fine grading around the perimeter of the parking structure in conjunction with the construction of walkways, driveways and landscaping. Earthwork recommendations are presented in Appendix C, *Recommended Earthwork Specifications*, and also in the following subsections.

7.2.1 Removals: Prior to the start of construction, the existing structures, asphalt concrete pavement, and landscaping should be removed from the site. Any undocumented fill extending below the bottom of the design excavation should be removed. Loose, disturbed, or otherwise unsuitable materials should be excavated. Excavation activities should not disturb adjacent utilities, buildings, and structures to remain. Existing utilities should be removed and adequately capped at the project boundary line, or salvaged/rerouted as designed.

7.2.2 Subgrade Preparation and Compaction: All exposed subgrade soil surfaces, including subgrade surfaces below the proposed basement floor slabs, should be observed by a Converse representative prior to placement of fill or placement of slabs. If soft, yielding, or unsuitable soils are exposed at the subgrade surface, then the unsuitable soils should be removed and replaced with properly compacted fill soils. In order to provide uniform support for the basement floor slabs, the subgrade soil surfaces following backfilling of any utility trench should be scarified to a depth of 6 to 8 inches, moisture-conditioned 2 percent above optimum moisture, and then compacted to 90 percent relative compaction. The relative compaction should be based upon the maximum unit dry weight determined in accordance with ASTM Test Method D-1557.

7.2.3 Fill Compaction: All fill and backfill soils should be placed in lifts not exceeding eight inches in thickness, moisture-conditioned 2 percent above optimum moisture, and compacted to 90 percent of the ASTM D1557 laboratory maximum density. All fill and backfill should be placed and compacted under observation and testing performed by Converse.

7.2.4 Fill Materials: Fill soils should consist of site or imported non-expansive soils free of organics, cobbles, boulders, rubble, or rock larger than three inches in largest dimension. Any imported soils should be granular and non-expansive, with an EI less than 20. Import soils should be evaluated and possibly tested by Converse if the materials are questionable.

7.2.5 Site Grading: A grading plan was not available for review at the time of writing this report. However, final grades should slope at one (for pavement) to two (for landscaping) percent away from structures to prevent ponding and to reduce percolation of water into foundation soils. Any permanent slope to be included in the site grading should be designed for an inclination of 2:1 (horizontal to vertical) or flatter.

7.3 Foundations

7.3.1 Vertical Capacity: Conventional spread footings, founded on undisturbed bedrock, may be used to support the proposed parking structure and/or carry new loads for the existing Hall of Justice. Footings for the proposed parking structure should be founded at least 24 inches below lowest adjacent final grade. Continuous spread footings should have a minimum width of 80 inches. Pad footings supported by bedrock with the above minimum size and embedment depths may be designed for a net allowable vertical bearing pressure of 9,000 pounds-per-square-foot (psf) for dead-plus-live loads. Continuous wall foundation supported by bedrock with the above minimum size and embedment depths may be designed for a net allowable vertical bearing pressure of 7,000 pounds-per-square-foot (psf) for dead-plus-live loads. Bearing valves for existing footings not meeting the above minimum width or embedment depth should be evaluated on an individual case by the Geotechnical Engineer. Where new footings are located immediately adjacent to existing footings, the bottom of the new footing should be located at the same elevation as the bottom of the existing footing.

If possible, footings located at the ground surface that extend beyond the limits of the basement should be avoided. If such footings are needed, they should be designed to bridge over any basement wall backfill and/or designed for greater than normal differential settlement. Footings located at or near the ground surface should be designed for a net allowable vertical bearing pressure of 2500 pounds-per-square-foot (psf) for dead-plus-live loads. The minimum footing width and depth of 24 inches. Footings should be extended as necessary to extend at least 12 inches into natural bedrock. Anticipated differential settlement of at-grade footings with respect to basement wall depend on the actual design conditions and should be reviewed by the Geotechnical Engineer.

The maximum anticipated settlement of a square basement footing founded on undisturbed natural soils is estimated to be less than 1 inch for a column load of 1,300 kips. Differential settlements are expected to be on the order of 0.50 inch between adjacent footings.

7.3.2 Lateral Capacity: Resistance to lateral loads can be provided by friction acting at the base of the foundations and by passive earth pressure. A coefficient-of-friction of 0.30 may be assumed with the dead-load forces. An ultimate passive lateral earth pressure of 350 psf per foot of depth, up to a maximum of 3,500 psf, may be used for sides of footings or basement walls poured against undisturbed native soils or with compacted backfill.

7.3.3 Dynamic Increases: Bearing values and passive pressure indicated above are for total dead-load and frequently applied live loads. The above vertical bearing and passive pressure may be increased by 33 percent for a short duration of loading, which will include the effect of wind or seismic forces.

7.4 Slabs-on-Grade

Slabs-on-grade should be placed on properly compacted subgrade soils as described in Section 7.2.2. At the completion of subgrade preparation, the Expansion Index of the subgrade soils should be verified and recommendations should be re-evaluated as-needed.

Structural design elements such as thickness, reinforcement, joint spacing, etc., for the slab-on-grade should be selected based on the analysis performed by the project structural engineer considering anticipated loading conditions and the modulus of subgrade reaction of the supporting materials, as presented below.

Slabs-on-grade should have a minimum thickness of four inches for support of nominal ground-floor live loads. Minimum reinforcement for slabs-on-grade should be No. 3 reinforcing bars, spaced at 12 inches on-center each way. The thickness and reinforcement of more heavily-loaded slabs will be dependent upon the anticipated loads and should be designed by a structural engineer. A static modulus of subgrade reaction equal to 100 pounds per square inch per inch may be used in structural design of concrete slabs-on-grade.

Care should be taken during concrete placement to avoid slab curling.

Slabs should be designed and constructed as promulgated by the American Concrete Institute (ACI) and the Portland Cement Association (PCA). Prior to the slab pour, all utility trenches should be properly backfilled and compacted.

In areas where a moisture-sensitive floor covering (such as vinyl tile or carpet) is used, slabs should be protected by at least a six-mil-thick polyethylene vapor barrier between the slab and compacted subgrade. Where a vapor barrier is used, it should be protected with two inches of sand placed above the barrier to reduce the potential for punctures and to aid concrete curing. Polyethylene sheets should be overlapped a minimum of six inches, and should be taped or otherwise sealed.

7.5 Retaining Walls

Basement wall footings that are a load carrying structural part of the basement structure may be designed in accordance with the vertical bearing value presented above. All fill and backfill soils used for retaining walls, should be moisture-conditioned 2 percent above optimum moisture, and compacted to 90 percent of the ASTM D1557 laboratory maximum density.

Retaining walls that are less than eight feet in height and are structurally independent from the basement may be designed using a vertical bearing pressure of 2,500 pounds per square foot. The minimum width and embedment depth of independent walls should be 24 inches.

Lateral bearing pressure and coefficient-of-friction given above may be used for design of retaining walls.

Freestanding cantilever retaining walls designed to retain level on-site or similar soil backfill should be designed to resist an equivalent fluid pressure of 40 pounds per cubic foot (pcf). Retaining walls and/or basement walls, which are top-restrained, and support level on-site or similar soil backfill may be designed using an equivalent fluid pressure of 55 pcf or a uniform load of 26H (H = height of wall). For walls designed to retain sloped backfill (up to an inclination of 2:1(horizontal to vertical) may be designed using equivalent fluid pressures of 43 pcf and 70 pcf for cantilever and braced walls respectively.

If any surcharge is possible within a distance equal to the height of the wall, its effect should be added to the equivalent fluid pressure. Surcharge coefficients of 30% and 45% of any surcharge may be used in the design of cantilever and braced walls, respectively.

Adequate provisions to drain the retained earth must be included in the design and construction of the walls greater than three feet in height. Drainage may be provided by a 4-inch-diameter perforated drainpipe installed in the middle of a 12-inch wide by 12-inch high zone of open-graded gravel encased by a layer of a non-woven geotextile filter fabric such as Mirafi 140N or equivalent. An alternate to the pipe and gravel drain would be a layer of composite drain material such as Miradrain. Drains for the basement walls should connect to a sump where any water collected can be conveyed to offsite storm drains. Where a wet wall condition is not desirable, the wall should be waterproofed.

Care must be exercised during construction to avoid over-stressing retaining walls during the compaction of backfill.

7.6 Corrosivity and Chemical Attack

In order to determine the potential affects of the soil on concrete and buried metal pipes, resistivity, pH, soluble chloride and soluble sulfate test results were performed on a portion of two bulk soil samples recovered at the site, and the results are presented below and in Appendix B.

A sulfate concentration of 0.070 and 0.012 (% by weight) were measured in the laboratory test. These sulfate concentration are defined as a negligible concentration by Table 19-A-3 of the UBC (1997 Edition). As a result, special sulfate-resisting concrete is not currently considered necessary for this project. However, additional testing during construction prior to the placement of footing should be performed to confirm this condition.

Tests performed on a portion of a two bulk samples representative of the near surface indicates that the near surface soils have a chloride content of 60 and 70 ppm, and a pH of 7.60 and 7.09. However, a low saturated resistivity of 490 and 1,000 ohms-centimeter were also measured. These results would indicate a severe corrosivity potential for ferrous metals in contact with these soils. Therefore, a corrosive engineer should be retained to provide mitigation recommendations.

7.7 Pavement Design

A representative sample of the site soils was tested to evaluate the Resistance (R) values in accordance with the State of California Standard Test Method 301-G. The test is designed to provide a relative measure of soil strength for use in pavement design.

The results of the laboratory testing indicates that the R-value of the site soils is 16. At the completion of earthwork, the R-value of the subgrade soils should be confirmed and the pavement structural sections should be reevaluated.

An analysis was performed to evaluate structural sections for asphalt concrete pavements corresponding to Traffic Indices (TIs) ranging from 4 to 6 and an R-values of 16. The analysis was based on Caltrans' design procedure for flexible pavement structural. The results of our analysis are summarized in the following table.

Recommended Pavement Sections

Area and Recommended Traffic Index (T.I.)		Pavement Section	
		A.C. (inch)	A.B. (inch)
Automobile access and parking	4	4.0	5.5
	5	4.5	5.5
Truck access drive ways	6	5.0	7.5

Prior to placement of base aggregate, at least the upper 12 inches of subgrade soils should be scarified, moisture-conditioned, if necessary, and recompacted to at least 90 percent relative compaction as defined by ASTM Standard D-1557 test method.

Base materials should conform to Section 200-2.2, "Proceed Miscellaneous Base," of the current Standard Specifications for Public Works Construction (SSPWC, 2000 edition) and should be placed in accordance with Section 301.2 of the SSPWC.

Asphaltic concrete materials should conform to Section 203 of the SSPWC (2000) and should be placed in accordance with Section 302.5 of the SSPWC.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

8.0 CONSTRUCTION CONSIDERATIONS

8.1 Temporary Excavations

Temporary slopes may be used during excavations where not constrained by adjacent utilities and structures. Where space is limited due to adjacent facilities and buried utilities to be salvaged and protected, shoring may be required. Recommendations for shoring design can be provided upon request.

Based upon the soils encountered in the borings, it is our opinion that sloped temporary excavations may be cut according to the slope ratios presented in the following table:

TEMPORARY EXCAVATION SLOPES

Maximum Depth of Cut (feet)	Maximum Slope Ratio (horizontal:vertical)
0 - 4	vertical
4 - 20	0.75 : 1
20 - 45	1.5 : 1

Slope ratios given above are assumed to be uniform from top to toe of slope. Surfaces exposed in sloped excavations should be kept moist, but not saturated, to retard raveling and sloughing during construction. Adequate provisions should be made by the contractor to protect slopes from erosion during periods of rainfall. Surcharge loads should not be permitted within a horizontal distance equal to the depth of the cut from the top of slopes. There is the potential that sandy strata may be encountered that will require temporary cut slopes to be less steep than tabulated above. As a result, the excavation slope should be observed on a periodic basis during the excavation of the subterranean portion of the structure, in order to verify soil conditions. Workers entering excavations should be protected from possible caving and raveling soils.

8.2 Temporary Shoring

Earth materials encountered in our borings generally consisted of bedrock consisting of interbedded layers of siltstone, claystone and sandstone. Due to the nature of the subsurface material, significant caving in the bedrock is not expected during installation of soldier piles and tie backs.

Cantilevered Shoring

Temporary shoring may be required for support of construction excavations. A soldier-pile shoring system may be used to maintain temporary support of vertical walled excavations. Due to the nature of the fill materials encountered during this investigation, caving during the drilling of soldier-pile borings inside the fill material might be expected. A soldier-pile system in fill materials will also most likely require continuous lagging to control caving and sloughing in the excavation between soldier piles. Shoring design must consider the support of adjacent underground utilities and/or structures, and should consider the effects of shoring deflection on supported improvements.

Temporary cantilever shoring should be designed to resist a lateral earth pressure equivalent to a fluid density of 30 pounds-per-cubic-foot (pcf). This equivalent fluid pressure is valid only for shoring retaining level ground. Temporary cantilevered shoring retaining slope ground with an inclination of 2 to 1 (horizontal to vertical) or flatter, should be designed to resist a lateral earth pressure equivalent to a fluid density of 55 pounds-per-cubic-foot (pcf). These values for active earth pressure are considered actual earth pressure with no increase for factors of safety. The shoring design engineer in designing the shoring system should add an appropriate factor of safety.

Surcharge pressures should be added to the above earth pressures for surcharges within a distance from the top of the shoring less than or equal to the shoring height. A surcharge coefficient of 30 percent of any uniform vertical surcharge should be added as a horizontal shoring pressure for cantilever shoring.

Lateral resistance for soldier piles may be assumed to be provided by passive pressure below the bottom of excavations. The allowable passive pressure for soldier piles spaced at least 3 diameters on center may be taken as 600 psf on the pile per foot of depth, measured below the bottom of excavation. Closer spaced soldier piles should be designed using a passive resistance of 350 psf. The allowable maximum passive resistance should not exceed 8,000 psf. It should be noted that the above values for passive earth pressure given for the design of soldier piles have been adjusted for potential arching between piles and no additional increases for arching should be assumed.

Caving soils should be anticipated between the piles in fill areas. To limit local sloughing, caving soils in fill areas can be supported by continuous lagging or guniting. The need for lagging between soldier piles in bedrock should be determined by the Geotechnical Engineer during construction based upon the condition of the bedrock exposed and the mount (if any) of seepage encountered. All lumber to be left in the ground should be treated in accordance with Section 204-2 of the "Standard Specifications for Public Works Construction" (Green Book).

It is recommended that Converse review plans and specifications for proposed shoring and that a Converse representative observe the installation of shoring. A licensed surveyor should be retained to establish monuments on shoring and the surrounding ground prior to excavation. Such monuments should be monitored for horizontal and vertical movement during construction. Results of the monitoring program should be provided immediately to the project Structural (shoring) Engineer and Converse for review and evaluation. Adjacent buildings should be photo-documented prior to construction.

Braced (Tie back) Shoring

A tie back soldier-pile shoring system may be used to maintain temporary support of deep vertical walled excavations. Braced or tie back shoring, retaining a level ground surface, should be designed for a uniform pressure of 20H psf, where H is the height of the retained cut in feet. Surcharge pressures should be added to this earth pressure for surcharges within a distance from the top of the shoring less than or equal to the shoring height. A surcharge coefficient of 45 percent of any uniform vertical surcharge should be added as a horizontal shoring pressure for braced shoring. Braced or tie back shoring, retaining a sloping ground surface with a inclination of 2 to 1 (horizontal to vertical) or flatter, should be designed for a uniform pressure of 25H psf, where H is the height of the retained cut at the back of the shoring in feet. These values for earth pressure are considered actual earth pressure with no increase for factors of safety. The shoring design engineer in designing the shoring system should add an appropriate factor of safety.

Tie Backs

For design of tie back shoring, it should be assumed that the potential wedge of failure is determined by a plane at 30 degrees from the vertical, through the bottom of the excavation. Tie back anchors may be installed at angles of 15 to 40 degrees below a horizontal plane. Tie back installation and testing guidelines and procedures are presented in Appendix D, *"Guide Specifications for Installation and Acceptance of Tie back Anchors"*. Soil friction values, for estimating the allowable capacity of drilled friction anchors, may be computed using the following equation:

$q = 150+35H;\quad q \leq 800$ *pounds-per-square-foot (psf)*
where:
H = average depth of anchor below ground surface, shown on Figure 1,
q = anchor surface area resistance, in psf (excluding tip),

"Post Grouted" anchors should be designed in accordance with the Caltrans "Trenching and Shoring Manual" Criteria.

Only the frictional resistance developed beyond the assumed failure plane should be included in the tie back design for resisting lateral loads.

8.3 Geotechnical Services During Construction

This report has been prepared to aid in the evaluation of the existing Hall of Justice and the proposed parking structure and to assist architects and engineers in design of the proposed structures. It is recommended that this office be provided an opportunity to review final design drawings and specifications to determine if the recommendations of this report have been properly implemented.

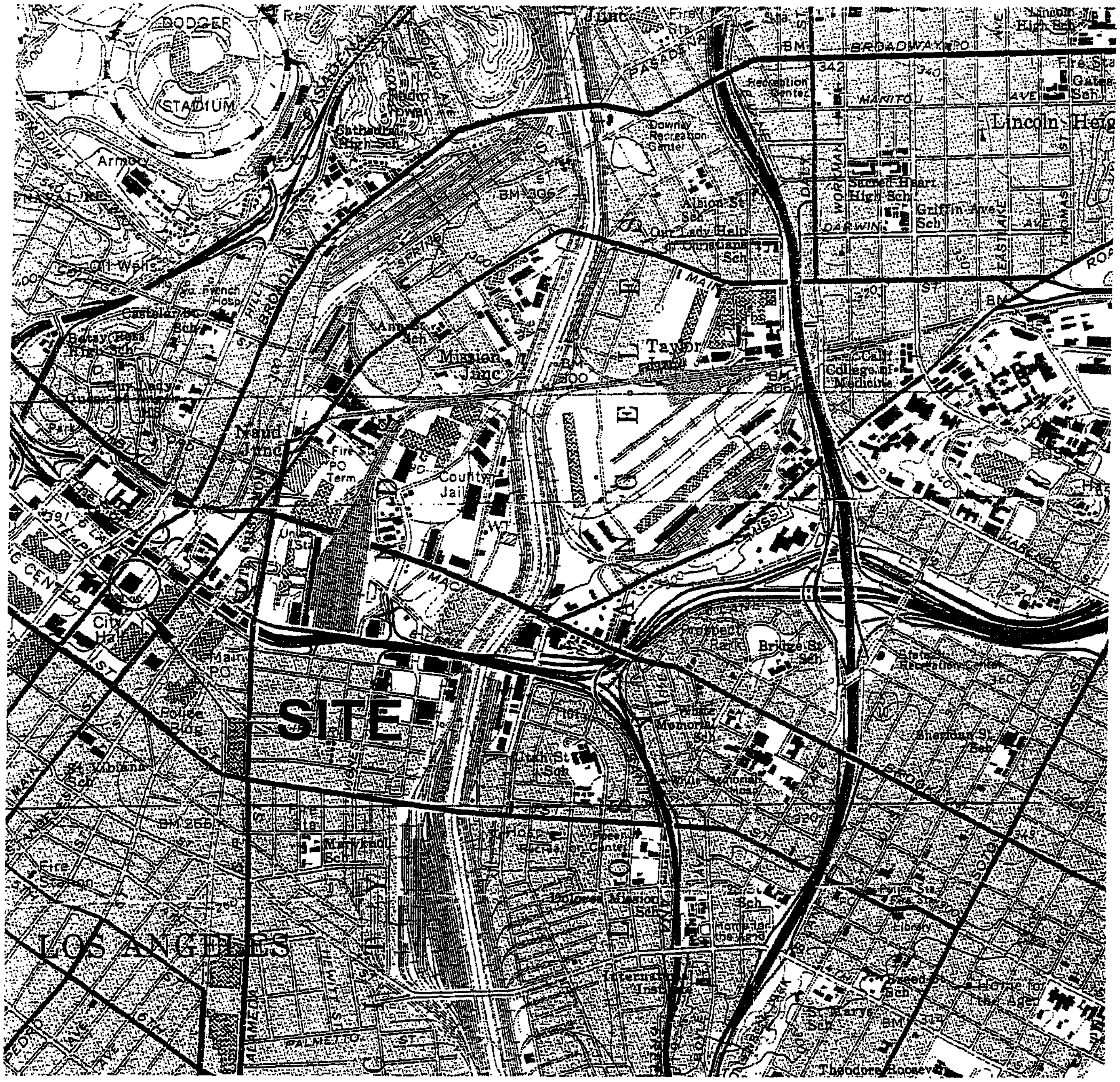
Foundation recommendations in this report are based on the assumption that all structural foundations will be placed on undisturbed bedrock. All foundation excavations should be observed by Converse prior to placement of steel and concrete, to verify that foundation elements are founded on satisfactory materials and that excavations are free of loose and disturbed soils. All structural fill and backfill should be placed and compacted during observation and testing by Converse.

During construction, the geotechnical engineer and/or their authorized representatives are present at the site to provide a source of advice to the client regarding the geotechnical aspects of the project and to observe and test the earthwork performed. Their presence should not be construed as an acceptance of responsibility for the performance of the completed work, since it is the sole responsibility of the contractor performing the work to ensure that it complies with all applicable plans, specifications, ordinances, etc.

This firm does not practice or consult in the field of safety engineering. We do not direct the contractor's operations, and cannot be responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any recommended actions presented herein to be unsafe.

9.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practice for Southern California at this time. We make no other warranty, either expressed or implied. Conclusions and recommendations presented in this report are based on results of this field and laboratory investigation, combined with an interpolation and extrapolation of subsurface conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those assumed in this report, this office should be notified immediately.



Reference: U.S.G.S. Los Angeles, California Photo Revised 1966

SCALE: 1: 24,000

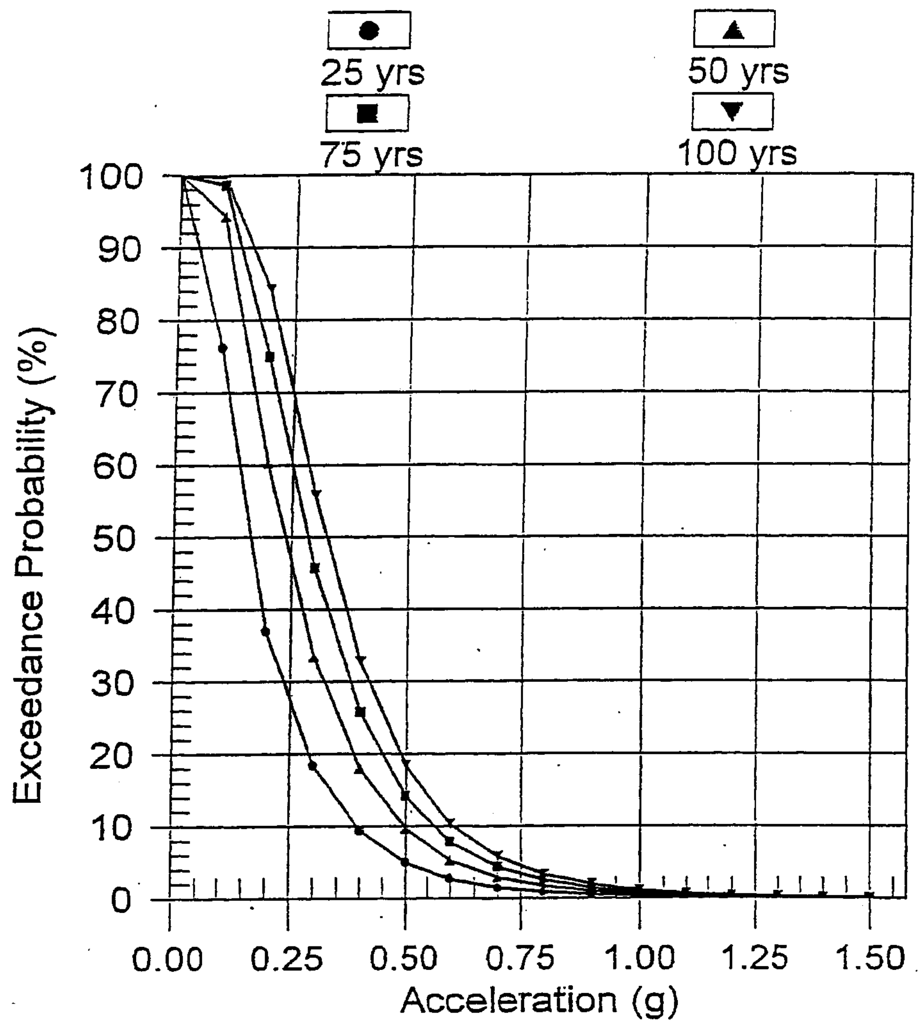
SITE LOCATION MAP

LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Converse Consultants

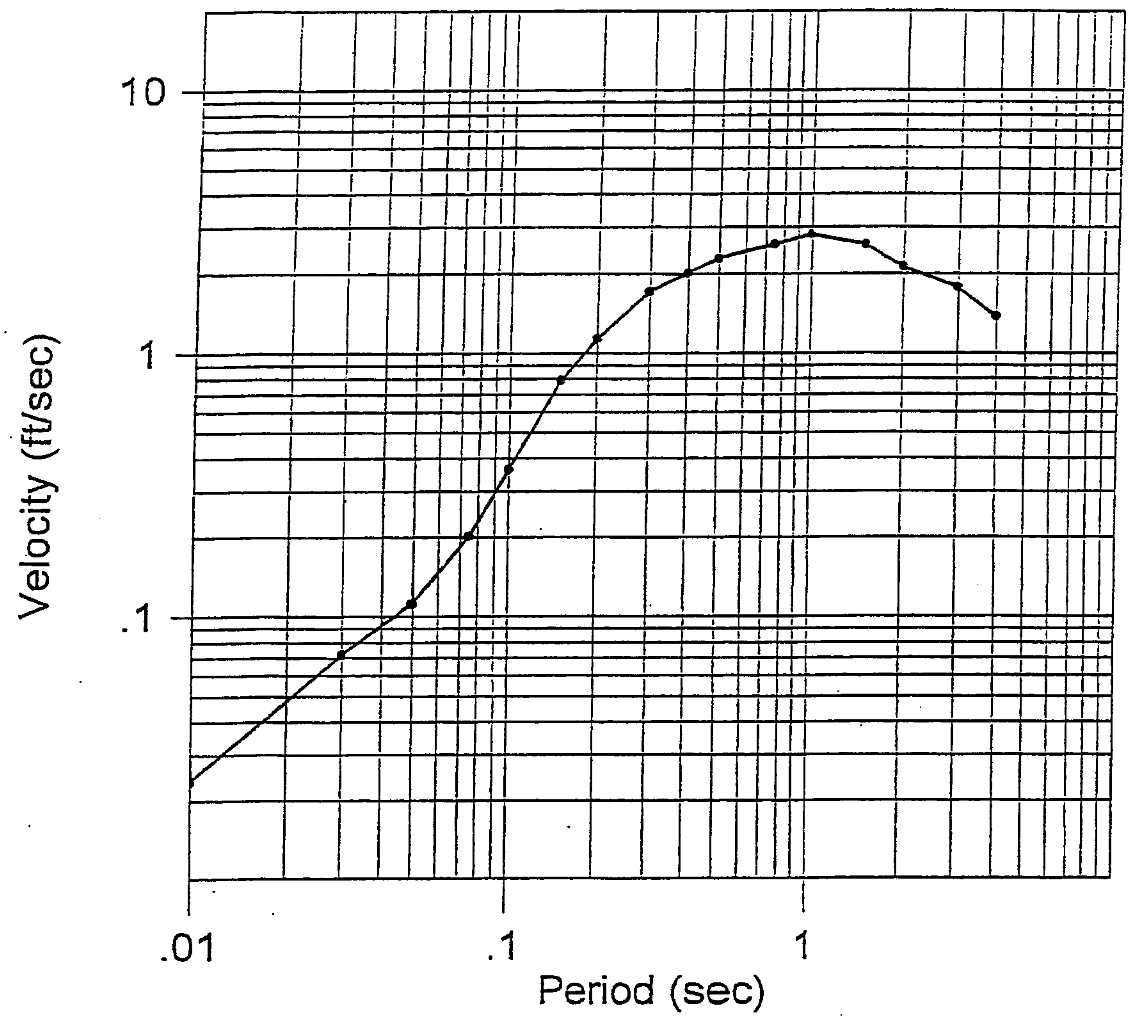
Figure No.
1



BOZORGNIA CAMPBELL & NIAZI (1999) HOR.-SOFT ROCK-UNCOR. PGA

PROBABILITY OF EXCEEDANCE vs. ACCELERATION

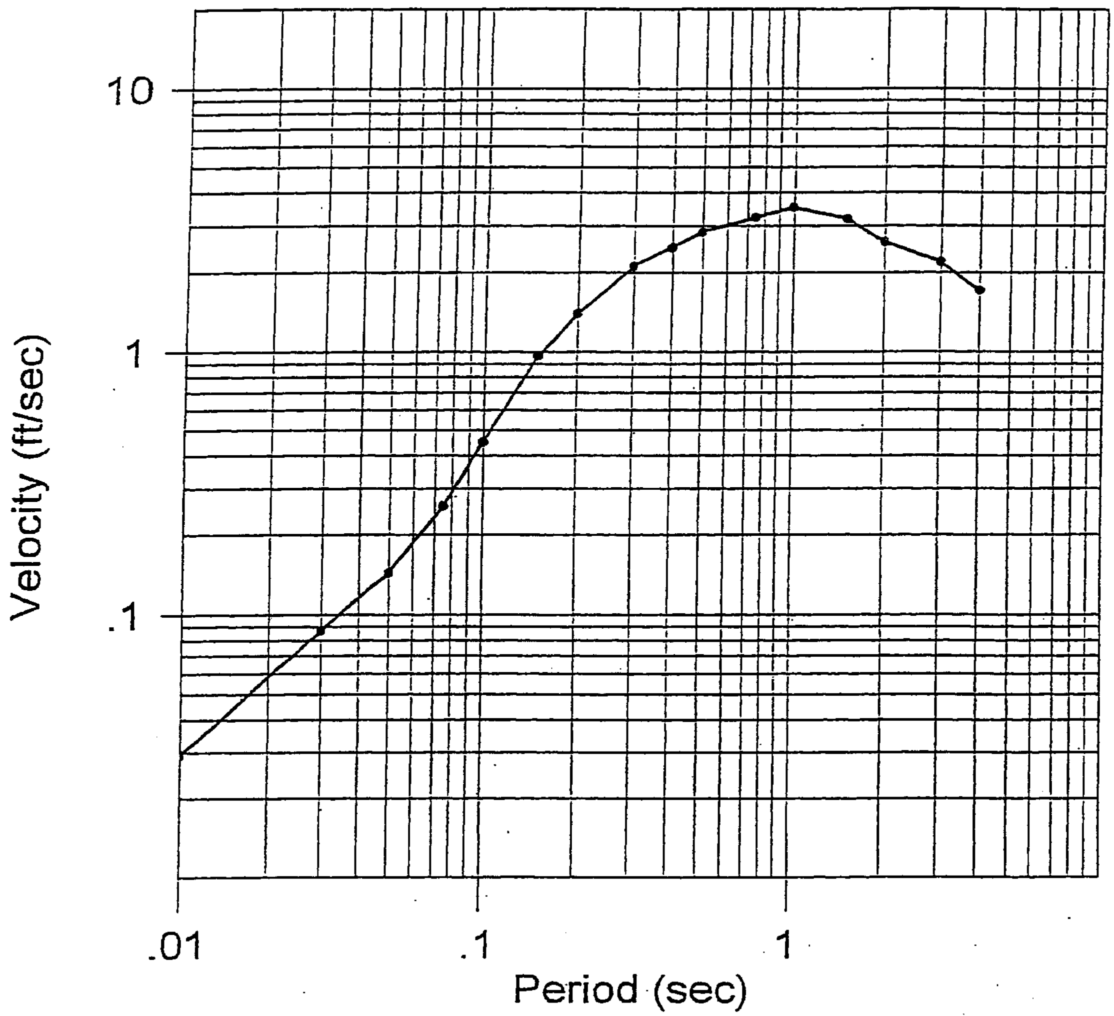
Converse Consultants	LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	Project No. 03-31-102-01	Figure No. 3



5% CRITICAL DAMPING

EARTHQUAKE DESIGN SPECTRA
10% PROBABILITY OF EXCEEDANCE IN 50 YEARS
(RETUN PERIOD = 475 YEARS)

		Project No.	Figure No.
Converse Consultants	LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	03-31-102-01	4



5% CRITICAL DAMPING

EARTHQUAKE DESIGN SPECTRA
10% PROBABILITY OF EXCEEDANCE IN 100 YEARS
(RETUN PERIOD = 1000 YEARS)

Converse Consultants	LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	Project No. 03-31-102-01	Figure No. 5

10% PROBABILITY OF EXCEEDANCE IN 50 YEARS

PERIOD (sec)	PSEUDO VELOCITY (ft./sec.)		
	2% Damping	5% Damping	10% Damping
0.01	0.029	0.024	0.020
0.03	0.088	0.072	0.060
0.10.	0.446	0.363	0.300
0.15	0.969	0.789	0.653
0.20	1.394	1.135	0.940
0.30	2.107	1.715	1.420
0.50	2.811	2.289	1.900
0.75	3.175	2.586	2.141
1.0	3.467	2.824	2.338
1.5	3.179	2.589	2.144
2.0	2.615	2.129	1.763
3.0	2.192	1.785	1.478

10% PROBABILITY OF EXCEEDANCE IN 100 YEARS

PERIOD (sec)	PSEUDO VELOCITY (ft./sec.)		
	2% Damping	5% Damping	10% Damping
0.01	0.036	0.029	0.024
0.03	0.107	0.087	0.072
0.10.	0.554	0.451	0.374
0.15	1.190	0.969	0.802
0.20	1.720	1.400	1.160
0.30	2.600	2.116	1.752
0.50	3.482	2.836	2.348
0.75	3.953	3.219	2.665
1.0	4.318	3.516	2.911
1.5	3.919	3.191	2.642
2.0	3.202	2.608	2.160
3.0	2.703	2.201	1.823

SEISMIC RESPONSE SPECTRA
PSEUDO VELOCITY
FOR VARIOUS DAMPING RATIOS

APPENDIX A

FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

Field exploration included a site reconnaissance and subsurface drilling. During the site reconnaissance, surface conditions were noted, and the locations of the test borings were determined. Borings were approximately located using existing features as a guide.

Test borings included eight exploratory borings. Six exploratory borings were advanced using a truck-mounted, 8-inch-diameter, hollow-stem auger drill rig equipped for soil sampling. Soils were continuously logged and classified in the field by visual/manual examination, in accordance with the Unified Soil Classification System. Field descriptions have been modified, where appropriate, to reflect laboratory test results. Other two exploratory borings were advanced using a truck mounted, 24-inch-diameter bucket auger drill rig. The internal surface of the two 24-inch-diameter borings were observed to collect geological data.

Relatively undisturbed samples of the subsurface soils were obtained at frequent intervals in the borings using a drive sampler (2.4-inch inside diameter, 3-inch outside diameter) lined with sample rings and a Standard Penetrometer Test (SPT) sampler. The steel sampler was driven into the bottom of the borehole with successive 30-inch drops of a 140-pound drive weight. An automatic ("safety") hammer was used. Blows required to drive the sampler 1.5 feet are shown on the boring logs in the "blows" column. Samples were retained in brass rings (2.4 inches in diameter, 1.0 inch in height) and carefully sealed in waterproof plastic containers for shipment to the Converse geotechnical laboratory. Standard Penetration Tests (SPT) were performed in general accordance with the ASTM Standard Test Method D1586. Blow counts given for the three 6-inch increments are indicated in parentheses on the boring logs, which is the uncorrected SPT *"N"*-value. Bulk samples of the near surface soils were also obtained.

Drawing No. A-1, *Exploration Log Key,* describes the various symbols and nomenclature shown on the logs. Logs of the borings are presented on Drawings Nos. A-2 through A-9, which also include descriptions of the soils encountered, pertinent field data, and supplemental laboratory results.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

BORING LOG SYMBOLS

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method

DRIVE SAMPLE 2.42" I.D. sampler.

DRIVE SAMPLE No recovery

DISTURBED BULK SAMPLE

GROUNDWATER WHILE DRILLING

GROUNDWATER AFTER DRILLING

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pl
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Project Name	Project No.	Drawing No.
LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	03-31-102-01	A-1

Log of Boring No. BH-1

Dates Drilled: 3/17/2003 Logged by: KF Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): 55

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3" ASPHALT **FILL(Qaf):** **CLAYEY SAND (SC):** fine-grained, asphalt debris, brown.			2/7/9	3	103	r
5		**SANDY SILT (ML):** fine-grained sand, few clay, gravel up to 1" in max. dimension, light brown.			45/50(60")	1		dis.
10		-fine to medium-grained, yellow			36/50(6")	16	83	
15		**WEATHERED SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE,** Puente Formation, thinnly bedded to laminated, soft to moderately hard.			22,40,50(6")	27	90	ds
20		-olive gray to gray color, less weathered, thinnly bedded, moderately hard			14,18,26	30	86	ma,max h, ca, er ds
25		**SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE,** Puente Formation, thinnly bedded, moderately hard, dark olive gray to blackish gray color.			(12,15,22)	29		
30		-thin fine silty sand layers, yellow brown color			20/40/50(4")	33	79	ds

Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
A-2a

Log of Boring No. BH-1

Dates Drilled: 3/17/2003 Logged by: KF Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): 55

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE. Puente Formation, thinnly bedded, moderately hard, dark olive gray to blackish gray color.			(14,22,32)	37		
40		-bedding dipping about 60 degrees, strike unknown, becoming less weathered with depth			20/39/50(4.5")	35		dis.
45		-fine grained layers			(11,18,32)			
50		-trace of white colored layers, fine grained			32,50 (5")	25	84	
55		-wet seepage			(20,28,43)	28		
60					17,42,50(4")			c
65					(15,40,50(4"))	26		

Converse Consultants

Project Name: LA County Hall of Justice, Los Angeles, California, For: Hall of Justice Associates, Inc.

Project No. 03-31-102-01

Drawing No. A-2b

Log of Boring No. BH-1

Dates Drilled: 3/17/2003 Logged by: KF Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): 55

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE, Puente Formation-(continued)			13,20,50(5")	23		dis.
75					(15,25,50(6"))	30		
80					36,50(6")	41	69	
		End of boring at 81.5 feet. Groundwater encountered at 55 feet. Boring backfilled with soil cutting and surface patched with asphalt on 3/17/03.						

Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
A-2c

Project ID: 03-31-102-01.GPJ; Template: LOG

Log of Boring No. BH-2

Dates Drilled: 3/18/2003 Logged by: KF Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer) /

Ground Surface Elevation (ft): N/A Depth to Water (ft): 65

SUMMARY OF SUBSURFACE CONDITIONS

This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth (ft)	Summary of Subsurface Conditions	Samples: Drive	Samples: Bulk	Blows/Foot	Moisture (%)	Dry Unit Wt. (pcf)	Other	Summary of Well Installations
0	2.5" ASPHALT							-Traffic rated well box set in concrete
	FILL(Qaf): SANDY SILT (ML): fine to medium-grained sand, geological layers, yellow to brown.		X					
	WEATHERED SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE, Puente Formation, yellowish brown to olive yellow, thinnly bedded, bedding dipping about 60 degrees strike unknown.	X	X	27,34,47	23	98	ma, h	
5		X		40,50(4")	29		dis.	-Bentonite Grout
10		X		34,50(4")	5	96		
15	-medium-grained sandstone layers, yellowish brown	X		29,50(3")	11	97		-Sand
20		X		21,50(4")	7	91		-4" Blank PVC Casing
25	-olive gray to olive brown, thinnly bedded to laminated	X		36,50(2")	15		dis.	-4" PVC, 0.2" slotted casing
30	-fine to medium-grained sandstone layers bedding dipping about 80 degrees	X		17,50(4")	24	99		
35	-fine-grained sandstone layers, yellow to brown	X		(9/13/29)	31			-Sand
								-4" PVC, 0.2" slotted casing

Converse Consultants

Project Name: LA County Hall of Justice, Los Angeles, California, For: Hall of Justice Associates, Inc.

Project No. 03-31-102-01

Drawing No. A-3a

Log of Boring No. BH-2

Dates Drilled: 3/18/2003 Logged by: KF Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer) /

Ground Surface Elevation (ft): N/A Depth to Water (ft): 65

SUMMARY OF SUBSURFACE CONDITIONS

This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth (ft)	Summary of Subsurface Conditions	Samples: Drive	Samples: Bulk	Blows/Foot	Moisture (%)	Dry Unit Wt. (pcf)	Other	Summary of Well Installations
	SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE, Puente Formation, becoming less weathered with depth, dark gray, moderately hard, fine grained.	■		9,17,32			c	
45		☒	▩	12,16,21	32			
50		■		41,33,34	38		dis.	
55	-dry	☒		11,14,22	37			
60	-thinnly bedded, bedding dipping about 60 degrees, strike unknown	■		25,26,38	35	80		
65	-water seepage	☒		17,25,26	29			
								-PVC cap
70		■		26,50(4")	24		dis.	-Benotnite Backfill

End of boring at 71.5 feet.
Groundwater encountered at 65 feet.
Boring converted to monitoring well on 3/18/03.

Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
A-3b

Log of Boring No. BH-3

Dates Drilled: 3/18/2003 Logged by: KF Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		6" CONCRETE PAVEMENT OVER 1" BASE						
		FILL(Qaf): **CLAYEY SAND (SC):** fine to medium-grained, yellow to light brown.			5,8,13	24	84	
5		**SANDY SILT (ML):** fine to medium-grained sand, silt, trace clay, yellow to light brown.			7,13,22	35	72	
10		**WEATHERED SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE,** Puente Formation, olive gray to olive brown, soft, thinnly bedded.			10,20,21	44	73	
15		-bedding dipping about 60 degrees, strike unknown			16,13,15	34	75	
20		-fine grained layers, brown, oxidized			5,9,9	48	69	
25					(10,30,32)	58		
		Boring finished at 27 feet due to refusal. Groundwater not encountered. Boring backfilled with soil cutting and surface patched with asphalt on 3/18/03.						

Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
A-4

Log of Boring No. BH-4

Dates Drilled: 3/19/2003 Logged by: BK Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): 33

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
0		3" THICK ASPHALT LAYER **FILL(Qaf):** **SANDY SILT (ML):** light brown.						
					9/12/23	26	93	max,ei h,ca,er
5					8/13/10	28	89	
10		**WEATHERED SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE,** Puente Formation, olive gray to olive brown, thinnly bedded, soft.			9/15/30	30	88	
15					14/23/50(5")	25		dis.
20		-trace of clay, yellowish brown, oxidized			3/11/10	21	98	
25					(6/12/44)	27		
30					17/54(4")	25	96	
		-water seepage						

Converse Consultants

Project Name: LA County Hall of Justice, Los Angeles, California, For: Hall of Justice Associates, Inc.

Project No. 03-31-102-01

Drawing No. A-5a

Log of Boring No. BH-4

Dates Drilled: 3/19/2003 Logged by: BK Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): 33

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		WEATHERED SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE, Puente Formation, thinly bedded, soft to moderately hard, olive gray to olive brown.	X		(18/19/28)	27		
40			■		12/42/50(3")	27	97	
45			X		(8/16/25)	31		
50		**SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE,** Puente Formation, less weathered with depth, blackish gray to gray, moderately hard, thinly bedded.	■		12/32/50(4")	29	92	
55			X		(9/15/22)	35		
60		-with some sandstone layers	■		10/21/27	30	91	
65			X		(7/17/26)	32		

Log of Boring No. BH-4

Dates Drilled: 3/19/2003 Logged by: BK Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): 33

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE, Puente Formation	■		7/29/50(4")	27	97	
75			■		11/43/50(3")	26	97	
80			■		12/39/50(5")	26	100	
		End of boring at 81.5 feet. Groundwater encountered at 33 feet. Boring backfilled with soil cutting and surface patched with asphalt on 3/19/03.						

Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
A-5c

Log of Boring No. BH-5

Dates Drilled: 3/19/2003 Logged by: BK Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
0		**FILL(Qaf):** **CLAYEY SAND (SC):** with some brick and concrete debris.		X				
5			■		5/9/9	25	96	
10		-light brownsilty sand, with some bricks	■		3/5/3	28	89	
15		**WEATHERED SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE,** Puente Formation, thinnly bedded, soft, olive gray.	■		6/12/25	16	92	
20			■		8/11/25	33	84	ds
25			■		7/12/21	28	87	
29		End of boring at 29 feet, due to refusal. Groundwater not encountered. Boring backfilled with soil cutting and on 3/19/03.	■		50(6')	25		dis.

Log of Boring No. BH-6

Dates Drilled: 3/20/2003 Logged by: KF Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Qaf): **CLAYEY SAND (SC):** fine to medium-grained, roots, brown.						
		WEATHERED SEDIMENTARY BEDROCK- INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE, Puente Formation, thinnly bedded, soft.			7,15,23	18	89	
5					6,13,18	29		dis.
		-fine grained, easly breaks along 45 to 55 degrees bedding layers, light brown, oxidized						
10		-yellow to light brown			13,21,29	23	93	
15					11,17,35	26	85	
20		-few clay layers light brown to light olive green to olive gray			9,14,26	22	98	
25		-light olive gray			7,9,19	30	84	
30		-fine grained, brown			7,10,24	32	90	

Log of Boring No. BH-6

Dates Drilled: 3/20/2003 Logged by: KF Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in (Automatic Hammer)

Ground Surface Elevation (ft): N/A Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		WEATHERED SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE, Puente Formation	X		(5,6,14)	29		
40		-bedding dipping 30 to 40 degrees, thinnly bedded, dark olive brown to dark gray	■		10,22,34	48	72	ds
45		-dark green to dark brown,	X		(5,9,18)	33		
50		**SEDIMENTARY BEDROCK-INTERBEDDED SILTSTONE, CLAYSTONE AND SANDSTONE** Puente Formation, becoming less weathered with depth, dark gray to blackish gray. -breaks easy bedding, bedding dipping 30 to 40 degrees, dark gray	■		9,16,50	35	86	
55			X		(7,5,(50")	15		
60			■		8,14,36	26	90	
		End of boring at 61.5 feet. Groundwater not encountered. Boring backfilled with soil cutting and on 3/20/03.						

Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
A-7b

Project ID: 03-31-102-01.GPJ; Template: LOG

Log of Boring No. BH-7

Dates Drilled: 4/9/2003 Logged by: JR Checked By: MS

Equipment: 24" BUCKET AUGER Driving Weight and Drop: N/A

Ground Surface Elevation (ft): N/A Depth to Water (ft): 23.2

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3" ASPHALT CONCRETE over FILL						
		FILL: **SANDY CLAY (CL):** some fine to coarse sand and concrete gravel fragments to 8", moist, olive grey.						
5		**3" ASPHALT CONCRETE** old parking lot or buried street surface,						20.9% oxygen
		-BASE						
		PUENTE FORMATION (TERTIARY MARINE) **WEATHERED SEDIMENTARY BEDROCK** thinly interbedded layers of siltstone, claystone and sandstone, moderately hard,						
10		-oxidized, moist to very moist with depth, olive gray to olive brown -bedding contact N81W, 42S -bedding contact N82W, 42S -siltstone and claystone increasing with depth -bedding contact N70W, 52S						
15		-bedding contact N82W, 52S						
		PUENTE FORMATION UNWEATHERED SEDIMENTARY BEDROCK						
20		-bedding contact N88W, 56S						
		-bedding contact N87W, 47S seepage, low flow						
25		-bedding contact N78E, 52S, dark blackish grey						
		-seepage along weathered bedding planes -bedding contact N85W, 54S; oxidized layer producing seepage, some dripping						
30		-bedding contact N75W, 49S; dripping sidewalls, blackish grey						20.9% oxygen

Converse Consultants

Project Name: LA County Hall of Justice, Los Angeles, California, For: Hall of Justice Associates, Inc.

Project No. 03-31-102-01

Drawing No. A-8a

Project ID: 03-31-102-01.GPJ; Template: LOG

Log of Boring No. BH-7

Dates Drilled: 4/9/2003 Logged by: JR Checked By: MS

Equipment: 24" BUCKET AUGER Driving Weight and Drop: N/A

Ground Surface Elevation (ft): N/A Depth to Water (ft): 23.2

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		-bedding contact N69W, 55S along bedding laminae						
		▼ -bedding contact N81W, 49S						
40								
		-seepage water filling bottom of borehole to 43.3 feet						
45		End of boring @ 45.0' below ground surface Groundwater encountered @ 23.2 as seepage from sidewalls QRAE Multi-4 gas monitor used to detect presence of Hydrogen Sulfide, Oxygen, Carbon Monoxide and Lower Explosive Limit Boring backfilled with soil cuttings upon completion of logging on 4/9/2003.						

Converse Consultants

Project Name	Project No.	Drawing No.
LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	03-31-102-01	A-8b

Log of Boring No. BH-8

Dates Drilled: 4/9/2003 | Logged by: JR | Checked By: MS

Equipment: 24" BUCKET AUGER | Driving Weight and Drop: N/A

Ground Surface Elevation (ft): N/A | Depth to Water (ft): 16

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3" ASPHALT CONCRETE over 4" AGGREGATE BASE						
		PUENTE FORMATION (TERTIARY MARINE) **WEATHERED SEDIMENTARY BEDROCK** thinly interbedded layers of laminated siltstone, claystone and sandstone, moderately hard, moist to very moist with increasing depth, oxidized, light brown to yellowish brown						
5		-bedding contact N85W, 51S						20.9% oxygen
		-steeply dipping black clay layer 9" thick						
10		-bedding contact N88W, 52S; clay laminae						
		-bedding contact N84W, 51S; clay laminae						
		-bedding contact N88W, 48S; sandstone layer						
15								
		-start of seepage, no drips, wet side walls occurring at basal portion of sandstone layer						
		-seepage on sandstone layer 3-4" thick, dripping along layer						
20		-bedding contact N85W, 52S						
		-bedding contact N89W, 54S; claystone laminae						
25								
		-bedding contact N84W, 48S; claystone laminae -steady seepage flow on side walls, rapid deterioration of sidewalls, estimate 1-2 Gpm						
30		-bedding contact N88E,55S						co 1-2ppm
		-bedding contact N88W,53S; steady flow down sidewalls						20.9% oxygen

Converse Consultants

Project Name: LA County Hall of Justice, Los Angeles, California, For: Hall of Justice Associates, Inc.

Project No. 03-31-102-01

Drawing No. A-9a

Log of Boring No. BH-8

Dates Drilled: 4/9/2003 Logged by: JR Checked By: MS

Equipment: 24" BUCKET AUGER Driving Weight and Drop: N/A

Ground Surface Elevation (ft): N/A Depth to Water (ft): 16

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		▼ -seepage water clear, no odor, rising						20.9% oxygen
40								
45		End of boring @ 45.0' below ground surface Groundwater encountered @ 16.0 as seepage from sidewalls,water filled to 38.0 feet in bottom of boring. QRAE Multi-4 gas monitor used to detect presence of Hydrogen Sulfide, Oxygen, Carbon Monoxide and Lower Explosive Limit Boring backfilled with soil cuttings upon completion of logging on 4/9/2003.						

APPENDIX B

LABORATORY TEST PROGRAM

APPENDIX B

LABORATORY TEST PROGRAM

Laboratory tests were conducted in the Converse Consultants (Converse) geotechnical laboratory on representative soil samples for the purpose of evaluating the physical properties and engineering characteristics of the sampled materials. A summary of the various laboratory tests conducted is presented below.

In-Situ Moisture Content and Dry Density
Data obtained from these tests performed on relatively undisturbed ring samples obtained from the field were used to aid in the classification and correlation of the earth materials and to provide qualitative information regarding soil strength and compressibility. The percent of moisture as a function of dry weight and the encountered dry density in units of pounds-per-cubic-foot (pcf) are provided in the right-hand columns on the exploration logs.

Grain Size Distribution
Analyses of the distribution of grain sizes within the soils encountered were performed on portions of the samples recovered with the Standard Penetrometer Sampler and were performed in accordance with ASTM Test Method D-422. The results of these tests are presented on Drawings Nos. B-1 and B-2, *Grain Size Distribution Results.*

Maximum Unit Weight and Optimum Moisture
The maximum unit weight and optimum moisture content for two bulk samples were determined in accordance with ASTM Test Method D-1557-91. This test was performed to assist in the evaluation of the relative compaction of the near-surface soils. The results of this test are presented on Drawing Nos. B-3 and B-4, *Compaction Tests.*

Consolidation Tests
Consolidation tests were performed on relatively undisturbed ring samples. These tests were performed to evaluate the compressibility and moisture sensitivity of site soils under load. This test involved loading specimens into a consolidometer, which contained porous stones top and bottom to accommodate vertical drainage during testing. Normal vertical axial loads were applied through the porous stones, and the resulting deflections were recorded at various time periods. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. Samples were tested at field and submerged moisture contents. Test results are shown on Drawing Nos. B-5 and B-6, *Consolidation Test Results.*

Direct Shear Tests
Direct shear tests were performed using relatively undisturbed ring samples. Specimens were soaked prior to shearing or tested at the natural moisture content. Individ-

ual specimens were prepared and different vertical normal stresses were applied. Samples were sheared at a constant rate of strain. Based upon the range of normal loads applied, the shear strength envelope was determined. Results of the tests are presented on Drawing Nos. B-7 through B-12, *Direct Shear Test Results*.

R-Value

R-Value test is used to measure the resistance of soils and base material under traffic loading for use in the design of structural pavement design. This test was performed in accordance with ASTM Test Method D-2844 on a portion of a bulk sample. Test results are presented as follows:

Boring Number	Depth (feet)	Soil Description	R- Value
BH-1	0 – 5	Clayey Sand (SC)	16

Expansion Index Test

One representative bulk sample was tested for expansion index to evaluate the expansion potential of material encountered at the site. The test was conducted in accordance with UBC Standard 29-2. Test result is presented in the following table:

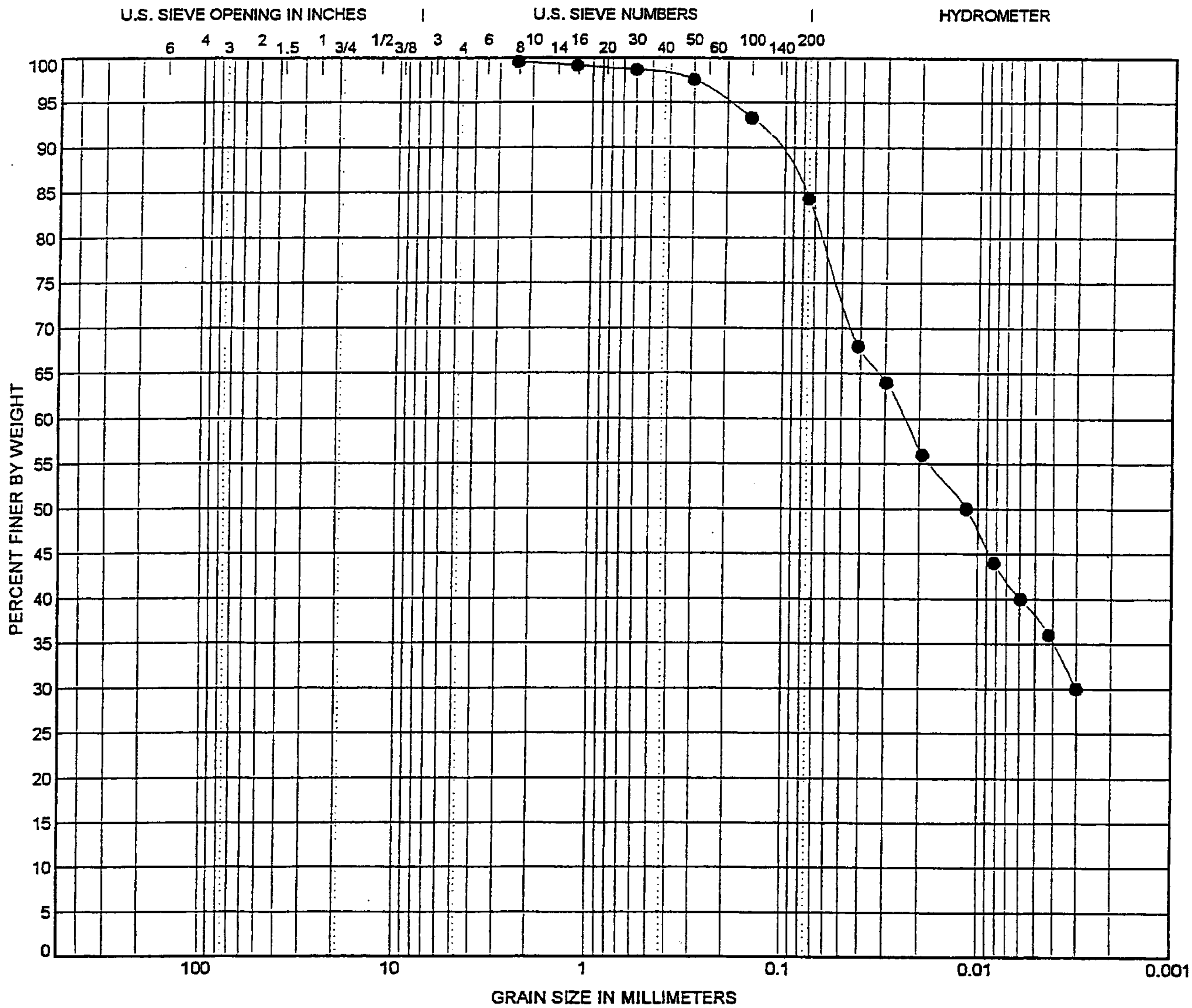
Boring Number	Depth (feet)	Soil Description	Expansion Index
BH-4	0 – 5	Sandy Silt (ML)	68

Soil Corrosivity

Resistivity, pH, soluble sulfate and chloride concentrations were determined for two bulk soil samples to evaluate the corrosion potential of common construction materials in contact with site soils. These tests were performed by Environmental Geotechnology Laboratory. Test results are enclosed at the end of this appendix on their letterhead.

Sample Storage

Samples presently stored in the Converse laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain samples for a longer period.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**BH-1**	**15-20**	**SANDY SILT (ML)**					

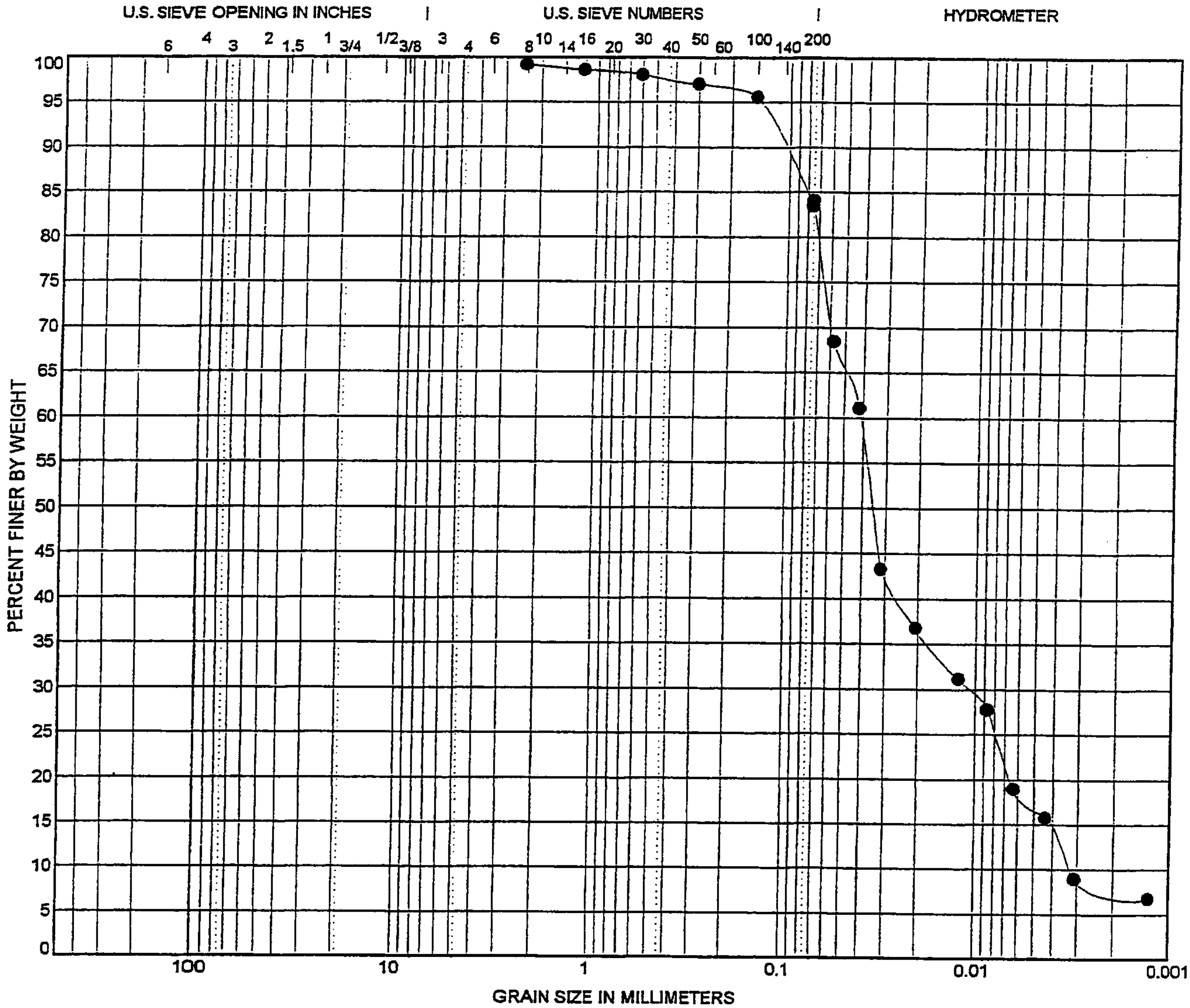
	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH-1**	**15-20**						**15.2**	**84.8**	

GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Project Name	Project No.	Drawing No.
LA County Hall of Justice **Los Angeles, California** **For: Hall of Justice Associates, Inc.**	**03-31-102-01**	**B-1**

Project ID: 03-31-102-01.GPJ; Template: GRAIN SIZE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	BH-2	0-5	SANDY SILT (ML)					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH-2	0-5					0.0	15.1	84.7	

GRAIN SIZE DISTRIBUTION RESULTS

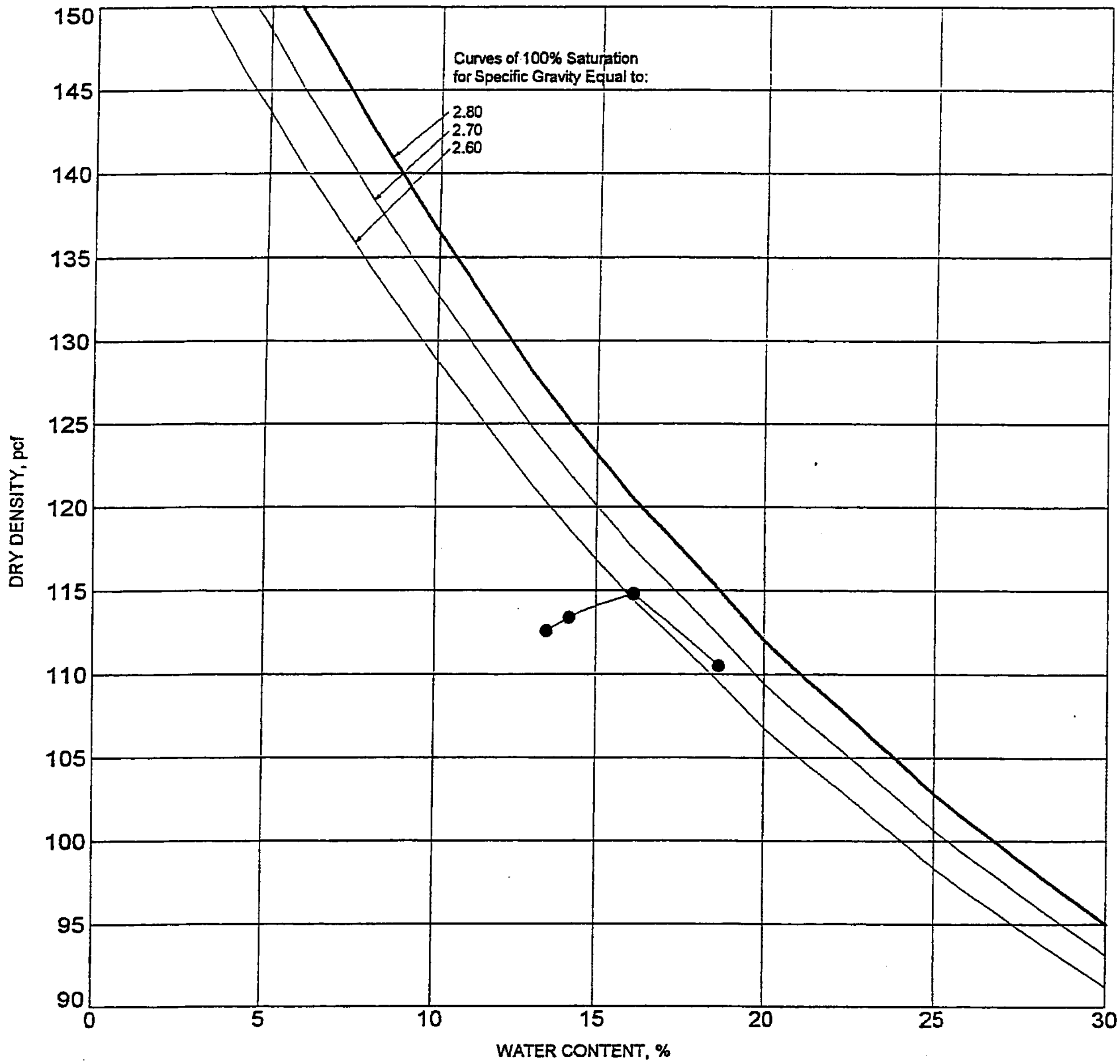
Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
B-2

Project ID: 03-31-102-01.GPJ; Template: GRAIN SIZE



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-1	15-20	SANDY SILT (ML)	D1557 Method D	16.4	114.7

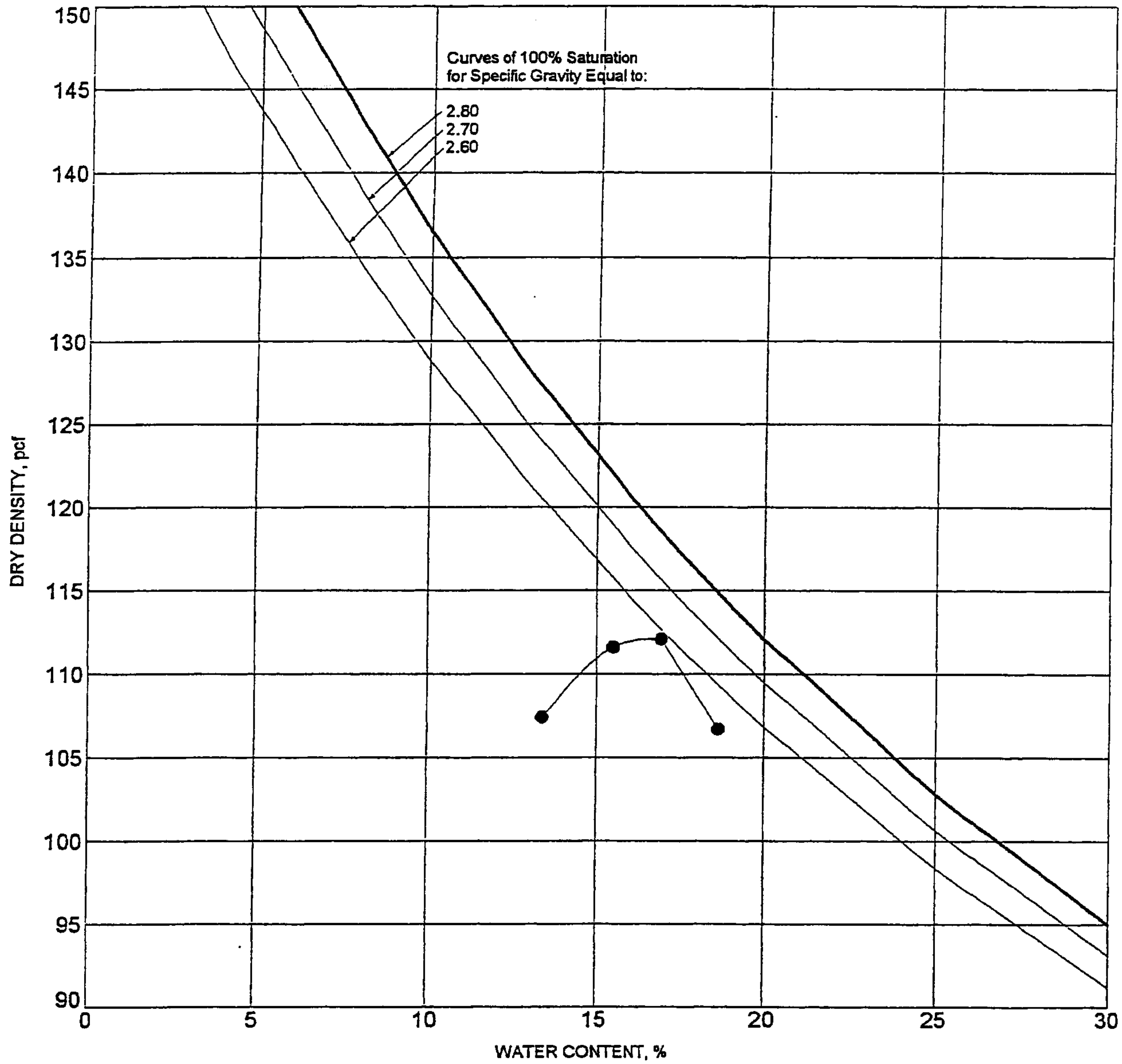
COMPACTION TESTS

Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
B-3



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-4	0-5	SANDY SILT (ML)	D1557 Method D	16.4	112.6

COMPACTION TESTS

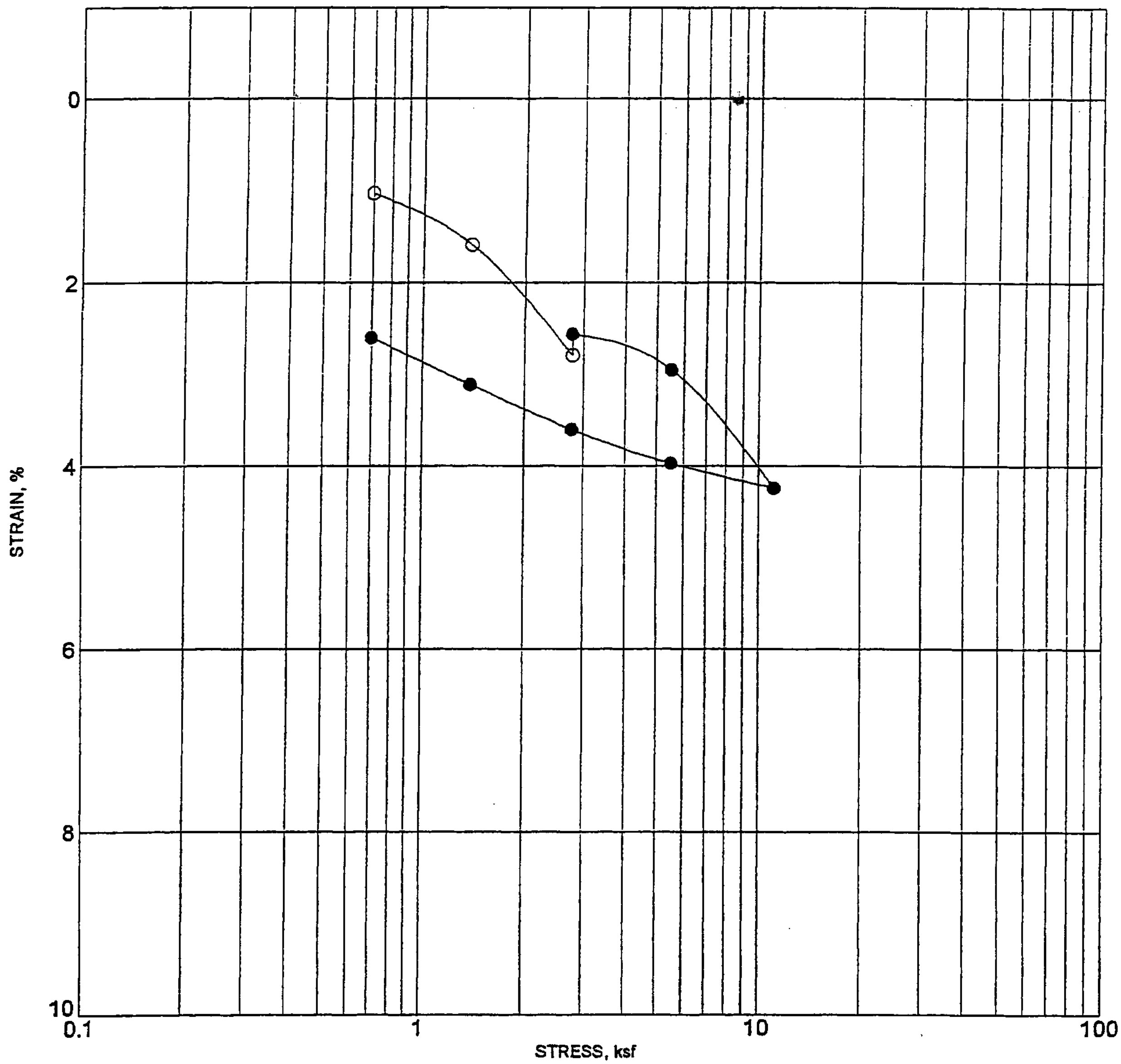
Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
B-4

Project ID: 03-31-102-01.GPJ; Template: COMPACTION



BORING NO. :	BH-1	DEPTH (ft) :	60
DESCRIPTION :	SEDIMENTARY BEDROCK		
MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL			
FINAL			

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDTION OF WATER

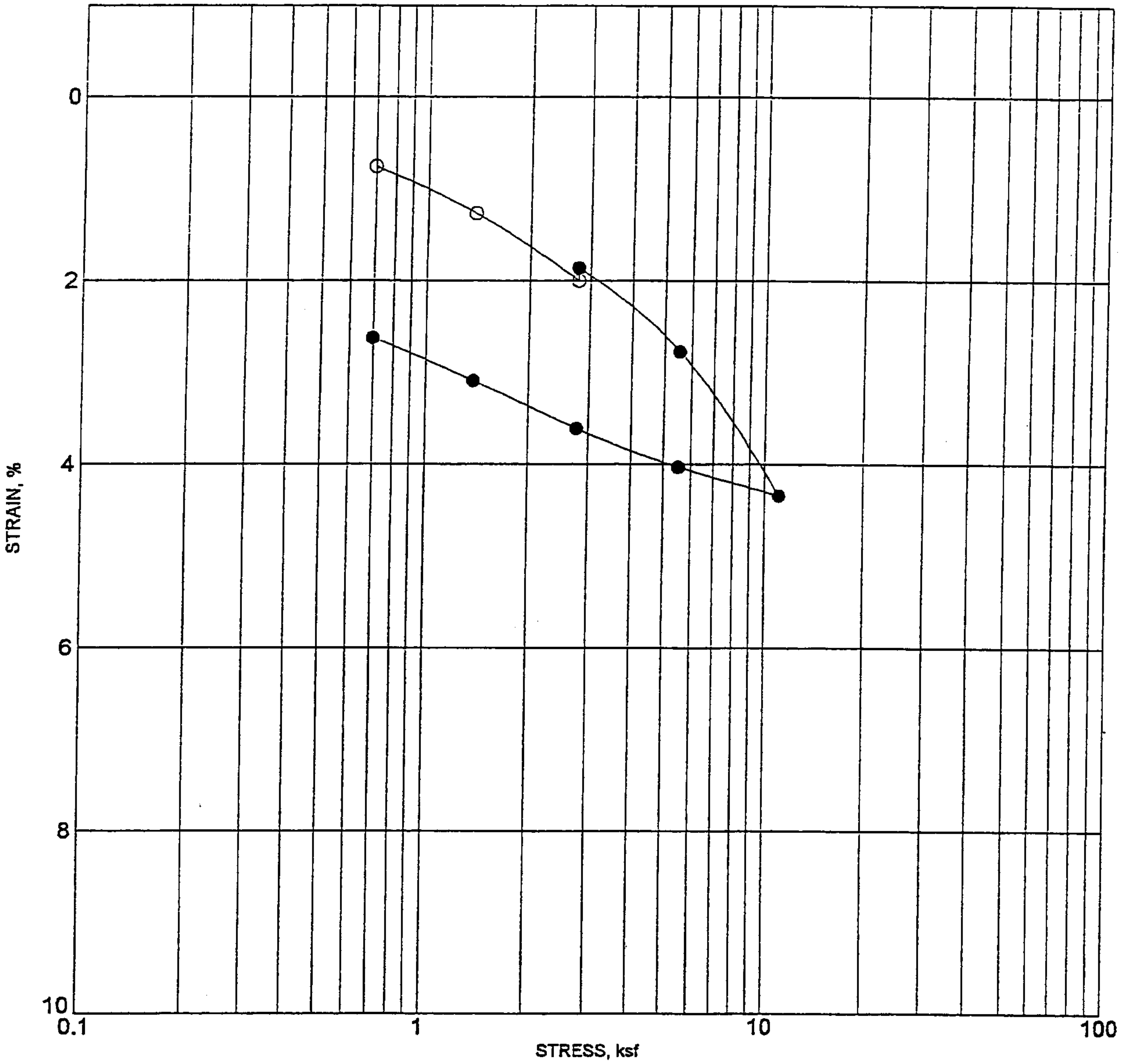
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
B-5



BORING NO. :	BH-2	DEPTH (ft) :	40
DESCRIPTION :	WEATHERED SEDIMENTARY BEDROCK		

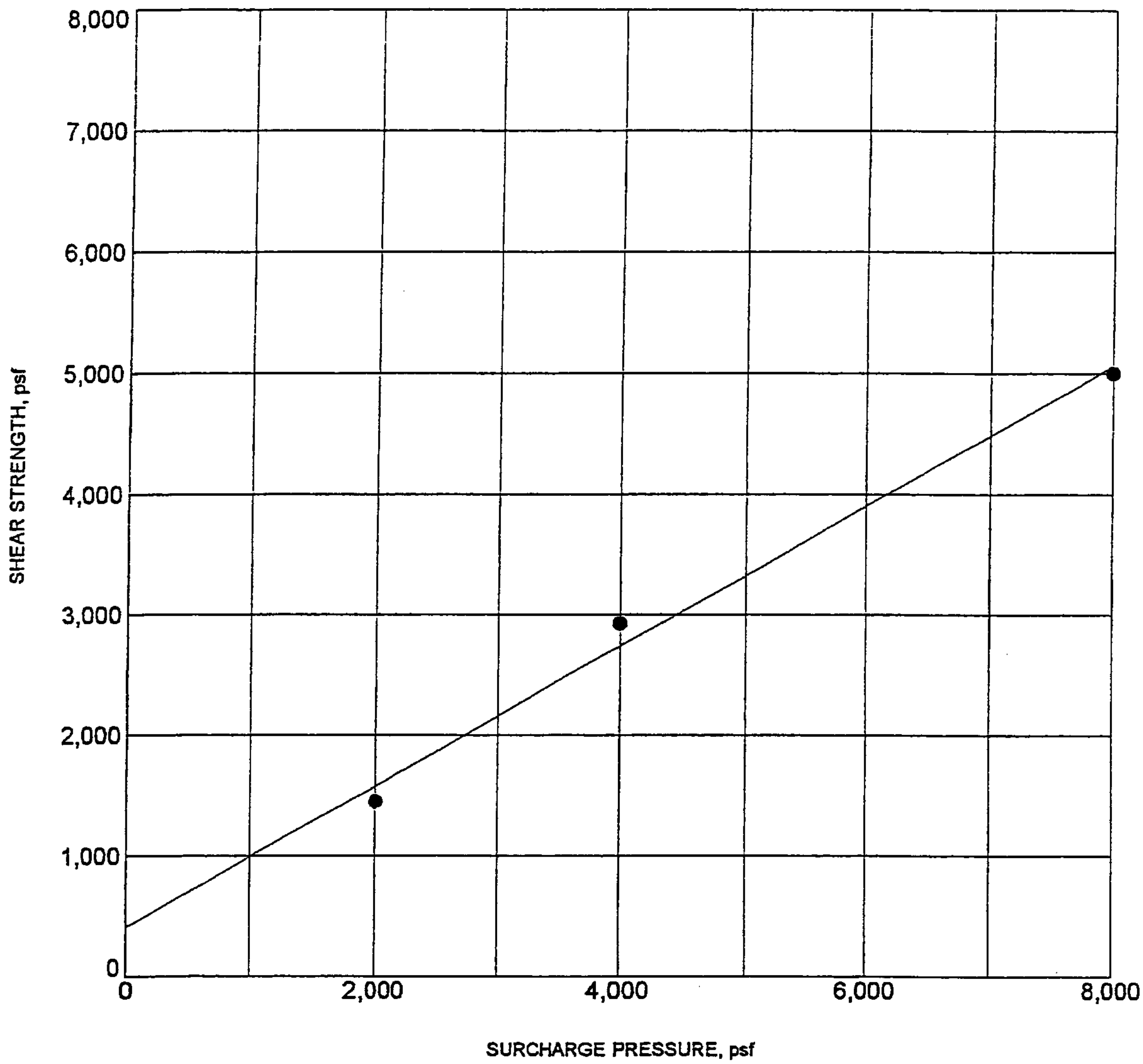
	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL				
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDTION OF WATER

CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name	Project No.	Drawing No.
LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	03-31-102-01	B-6



BORING NO.	:	BH-1	DEPTH (ft)	:	15
DESCRIPTION	:	SANDY SILT (ML)			
COHESION (psf)	:	400	FRICTION ANGLE (degrees)	:	30
MOISTURE CONTENT (%)	:	27.0	DRY DENSITY (pcf)	:	89.8

NOTE:

DIRECT SHEAR TEST RESULTS

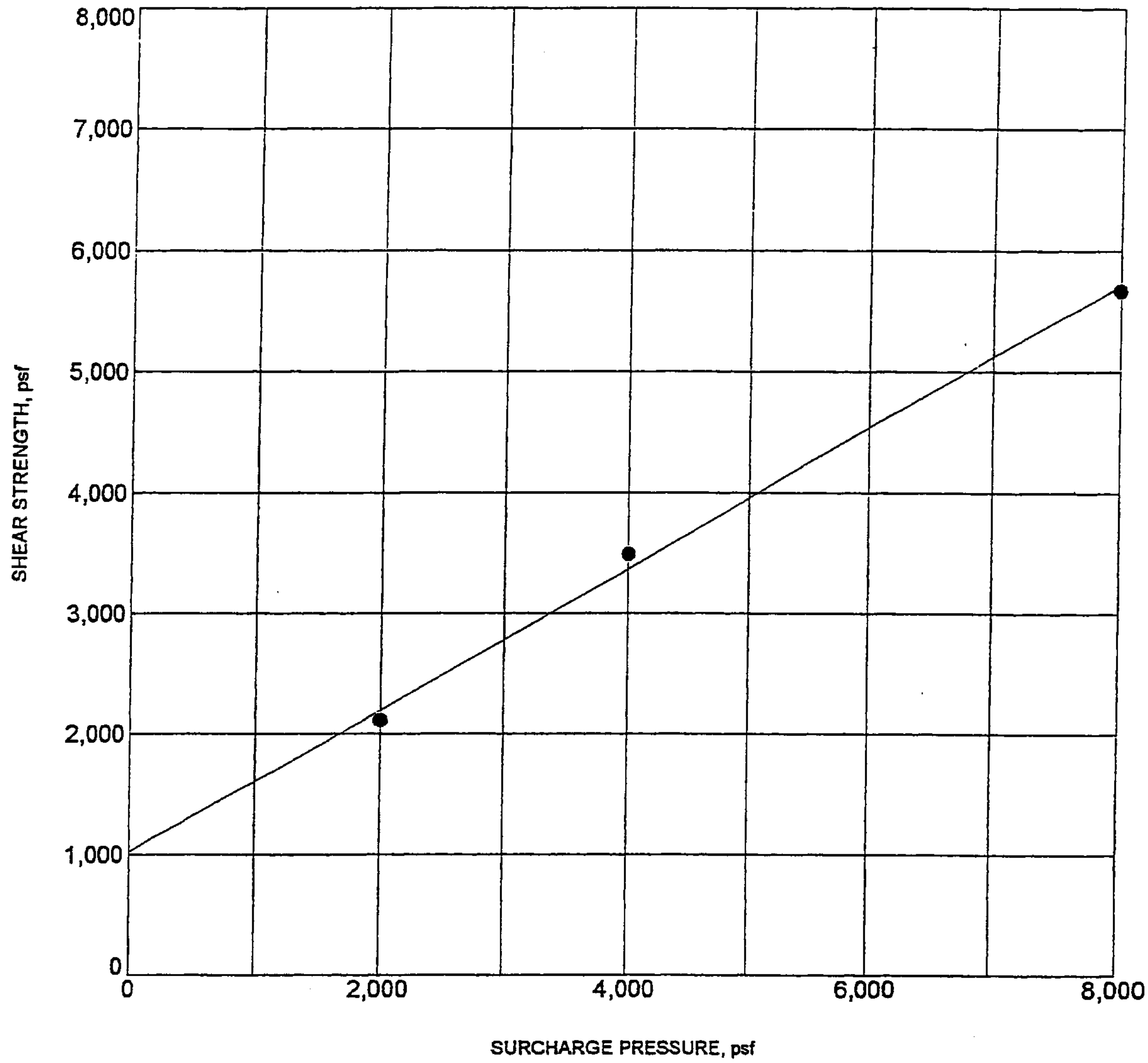
Converse Consultants

Project Name
LA County Hall of Justice
Los Angeles, California
For: Hall of Justice Associates, Inc.

Project No.
03-31-102-01

Drawing No.
B-7

Project ID: 03-31-102-01.GPJ; Template: DIRECT SHEAR



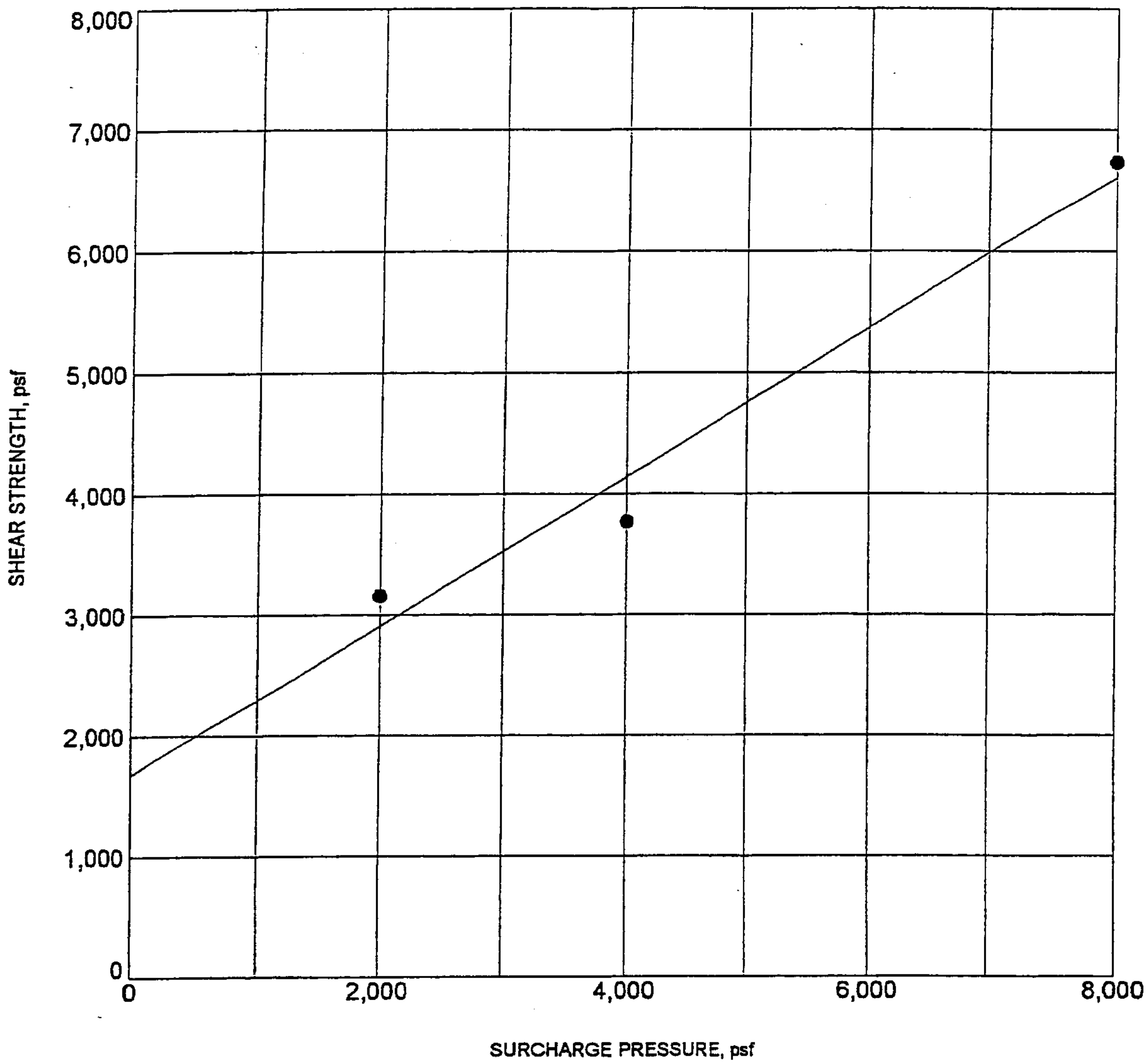
BORING NO.	:	BH-1	DEPTH (ft)	:	20
DESCRIPTION	:	WEATHERED SEDIMENTARY BEDROCK			
COHESION (psf)	:	1000	FRICTION ANGLE (degrees)	:	30
MOISTURE CONTENT (%)	:	30.4	DRY DENSITY (pcf)	:	85.8

NOTE:

DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name	Project No.	Drawing No.
LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	03-31-102-01	B-8



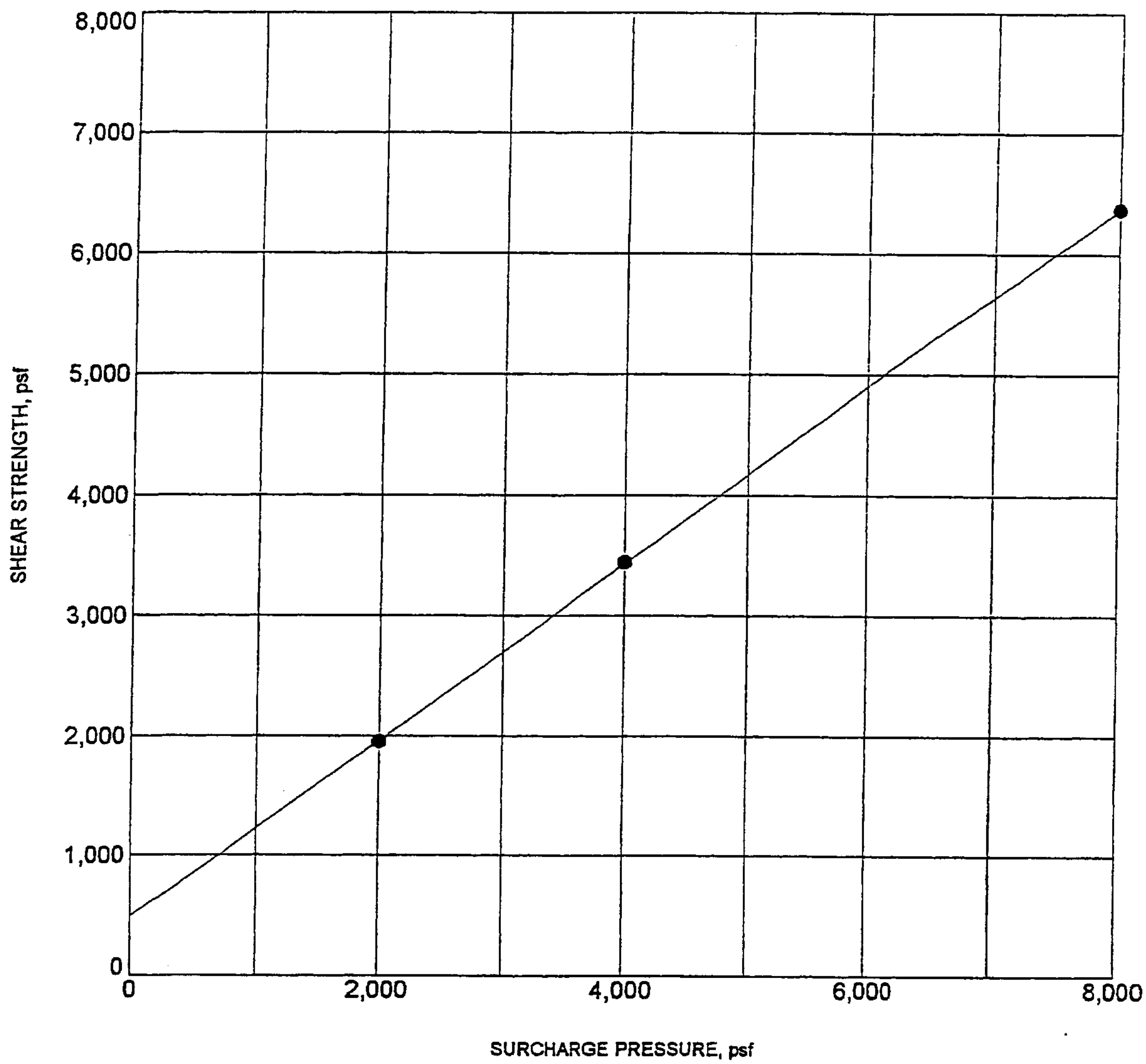
BORING NO.	:	BH-1	DEPTH (ft)	:	30
DESCRIPTION	:	SEDIMENTARY BEDROCK			
COHESION (psf)	:	1700	FRICTION ANGLE (degrees)	:	32
MOISTURE CONTENT (%)	:	33.2	DRY DENSITY (pcf)	:	79.1

NOTE:

DIRECT SHEAR TEST RESULTS

Converse Consultants	Project Name LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	Project No. 03-31-102-01	Drawing No. B-9

Project ID: 03-31-102-01.GPJ; Template: DIRECT SHEAR



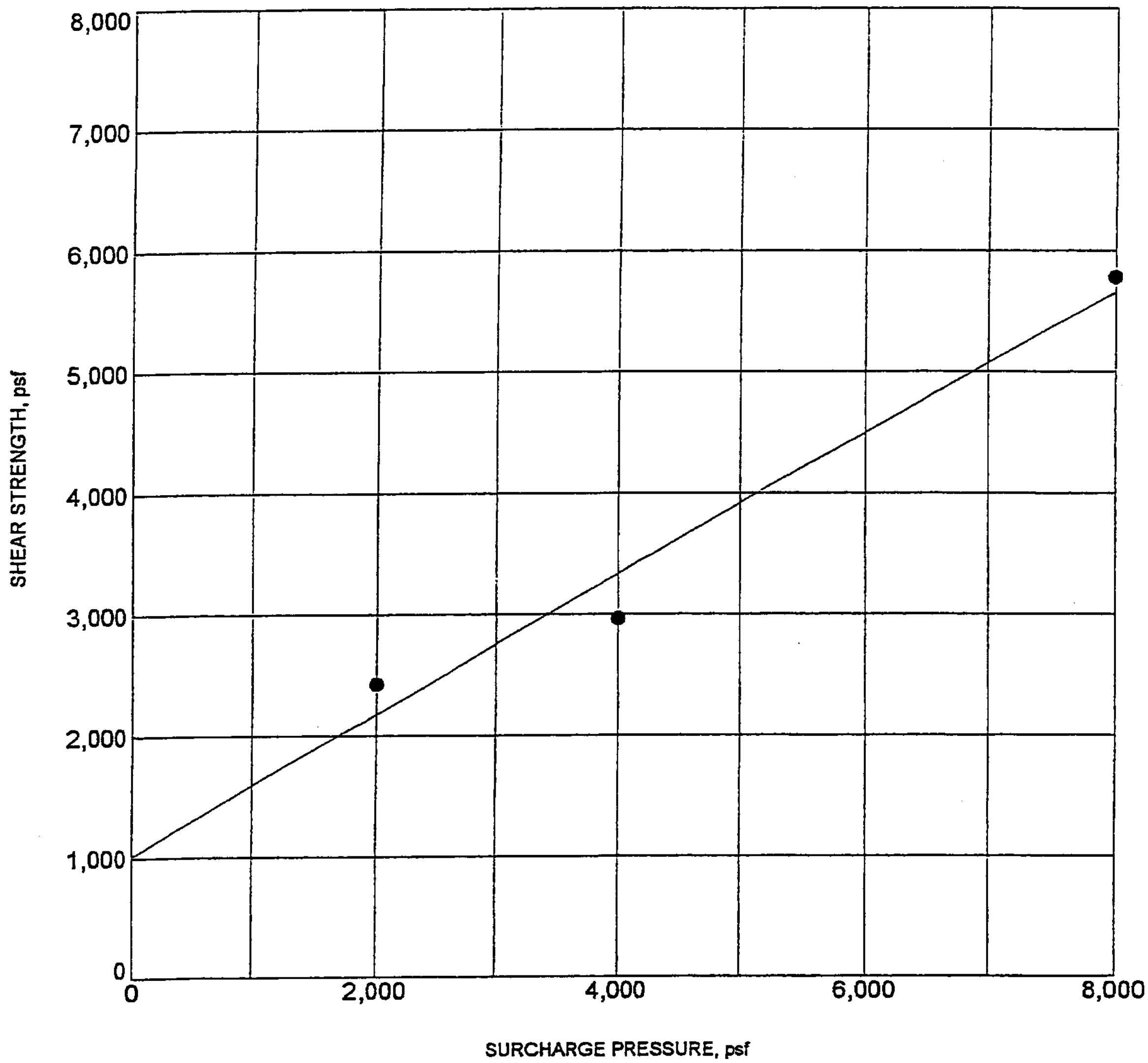
BORING NO. :	BH-4	DEPTH (ft) :	20
DESCRIPTION :	WEATHERED SEDIMENTARY BEDROCK		
COHESION (psf) :	500	FRICTION ANGLE (degrees) :	36
MOISTURE CONTENT (%) :	20.7	DRY DENSITY (pcf) :	98.2

NOTE:

DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name	Project No.	Drawing No.
LA County Hall of Justice **Los Angeles, California** **For: Hall of Justice Associates, Inc.**	**03-31-102-01**	**B-10**

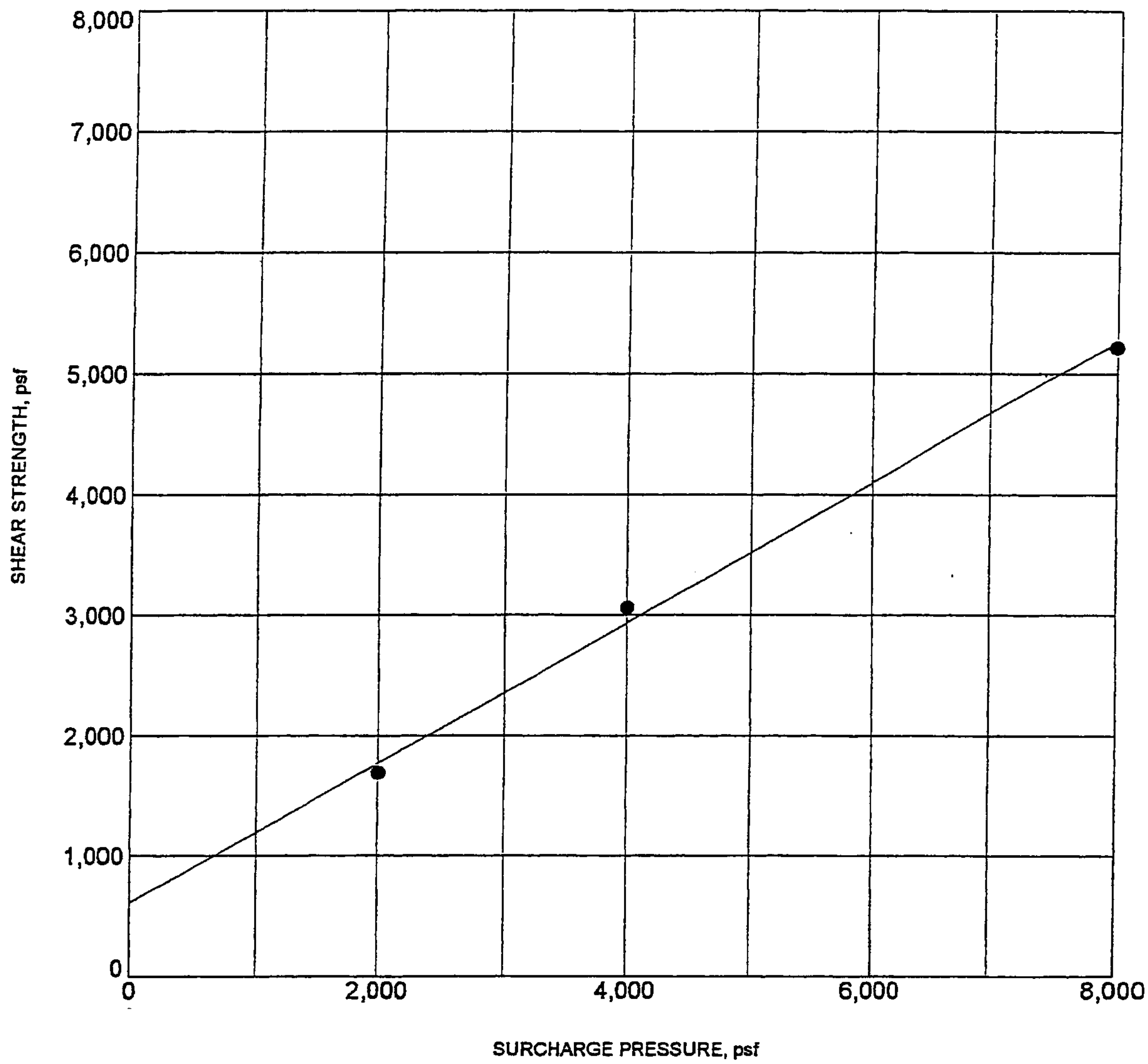


BORING NO.	:	BH-5	DEPTH (ft)	:	20
DESCRIPTION	:	WEATHERED SEDIMENTARY BEDROCK			
COHESION (psf)	:	1000	FRICTION ANGLE (degrees)	:	30
MOISTURE CONTENT (%)	:	32.7	DRY DENSITY (pcf)	:	84.1

NOTE:

DIRECT SHEAR TEST RESULTS

Converse Consultants	Project Name LA County Hall of Justice Los Angeles, California For: Hall of Justice Associates, Inc.	Project No. 03-31-102-01	Drawing No. B-11



BORING NO. :	BH-6	DEPTH (ft) :	40
DESCRIPTION :	WEATHERED SEDIMENTARY BEDROCK		
COHESION (psf) :	600	FRICTION ANGLE (degrees) :	30
MOISTURE CONTENT (%) :	47.6	DRY DENSITY (pcf) :	72.2

NOTE:

DIRECT SHEAR TEST RESULTS

Converse Consultants	Project Name **LA County Hall of Justice** **Los Angeles, California** **For: Hall of Justice Associates, Inc.**	Project No. **03-31-102-01**	Drawing No. **B-12**

SUMMARY OF CORROSION TEST RESULTS

PROJECT NAME: Los Angeles Hall of Justice

EGL JOB NO.: 03-118-004B

PROJECT NO.: 03-31-102-01

CLIENT: Converse Consultants

DATE: 04-14-03

SUMMARIZED BY: VW

BORING NO	SAMPLE NO	DEPTH (ft)	pH CALTRANS 643	CHLORIDE CONTENT CALTRANS 422 (ppm)	SULFATE CONTENT CALTRANS 417 (% by weight)	MINIMUM RESISTIVITY CALTRANS 532 (ohm-cm)
BH-1	N/A	15-20	7.60	60	0.070	1000
BH-4	N/A	0-5	7.09	70	0.012	490

APPENDIX C

RECOMMENDED EARTHWORK SPECIFICATIONS

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RECOMMENDED EARTHWORK SPECIFICATIONS

The following specifications are recommended to provide a basis for quality control during the placement of compacted backfill.

1. Areas that are to receive compacted fill shall be observed by Converse Consultants (Converse) prior to placement of fill.
2. Any subsurface drainage devices shall be properly installed and observed by a Converse and/or owner's representative prior to placement of backfill. Loose soil, formwork and debris shall be removed prior to backfilling subterranean walls.
3. Fill and backfill shall be placed in controlled layers (lifts), the thickness of which is compatible with the type of compaction equipment used. The thickness of the compacted fill layer shall be adjusted to obtain proper compaction with the equipment used, and generally should not exceed the maximum allowable thickness of eight inches. Each layer shall be compacted to a minimum of 90 percent of the ASTM D1557-91 laboratory maximum density, at or near optimum moisture for granular soils and 2 to 3 percent above optimum moisture for clay soils. Density testing shall be performed by Converse to verify compaction. The contractor shall provide safe access and level areas for testing.
4. Where space limitations do not allow for conventional backfill compaction operations, special backfill materials and procedures may be required. Pea gravel or other select backfill can be used in areas of limited space. A sand-and-portland-cement slurry (two sacks per cubic-yard mix) shall be used in limited space areas for shallow backfill near final pad grade, and pea gravel shall be placed in deeper backfill near drainage systems.
5. Fill soils shall consist of imported soils or on-site soils essentially cleaned of organics, cobbles, boulders, and deleterious material, and shall be approved by Converse. Rocks larger than three inches in diameter shall not be used unless sufficiently broken down. All imported soil shall be granular and non-expansive, with an Expansion Index (EI) less than 20. Converse shall evaluate and/or test import material for conformance with the specifications prior to delivery to the site. The contractor shall notify Converse at least two working days prior to importing material to the site.
6. Converse shall observe placement of compacted fill and conduct in-place field density tests on compacted fill to check for adequate moisture content and the required relative compaction. Where less than the specified relative compaction is indicated, additional compactive effort shall be applied and the soil moisture-conditioned as necessary until adequate relative compaction is attained.

APPENDIX D

GUIDE SPECIFICATIONS FOR INSTALLATION AND ACCEPTANCE OF TIE BACK ANCHORS

APPENDIX D

GUIDE SPECIFICATIONS FOR INSTALLATION AND ACCEPTANCE OF TIE BACK ANCHORS

Installation

1. Tie back installation shall be performed during continuous observation by Converse Consultants (Converse) to confirm that the recommended earth materials are penetrated, that the dimensions of the installed anchors are at least as large as that indicated on the shoring plan, and that anchor installation has been performed as specified. The Contractor shall provide access and necessary facilities, including lighting, at their expense, to accommodate observations.

2. All anchors shall be installed at the specified locations, to the required depth, and at the specified angle of inclination. A tolerance of 3° will be permitted on the required angle of inclination.

3. After drilling, all holes shall be cleaned of loose soils. Concrete shall be placed by pumping from the tip of the anchor to the active wedge. Concrete placement shall begin within four hours after completion of drilling. The portion of the anchor within the active wedge shall be backfilled with sand-cement slurry after the anchor has been tested as specified below. However, if excessive caving occurs, the active wedge portion of the excavation can be filled with slurry as the casing is pulled. A zone of soft soil shall (in this case) be placed between the anchor and slurry (before testing).

4. If a hollow-stem auger or casing is used due to caving, concrete shall be placed by pumping as the auger or casing is withdrawn, while always maintaining a head of concrete inside the casing or auger.

5. Concrete placement shall be continuous without interruption, and at such a rate that fresh concrete will not be deposited on concrete hardened sufficiently to form seams and planes of weakness.

6. Any anchor deemed by the Owner or Converse to be defective shall be replaced with substitute anchor(s) as directed by the Owner or Shoring Designer. The cost of installation of such substitute anchors shall be borne by the Contractor. Costs associated with analysis and design of substitute anchor(s) shall also be borne by the Contractor.

Acceptance Criteria

1. Actual capacities of anchors shall be determined by testing designated Test Anchors and all Production Anchors. Testing of anchors will enable evaluation of the applicability of design values for the chosen method of tieback construction.

2. All anchors shall be check-tested to at least 150% of the designed working load in accordance with the following procedures:

    a. Test load anchors to 150% of the design working load, incrementally noting loads, tendon extensions and soldier pile deflections. Hold load for 15 minutes. After pulling slack, the anchor movement shall not exceed 0.10 inch during the 15-minute load period. If the deflection is acceptable, reduce load to 100% of the design load and lock off.

    b. Where an anchor shows excessive movement for additional 15-minute intervals, the load should be reduced until the rate of movement is 0.10 inch per 15 minutes or less. The load at which acceptable movement is attained should be divided by 1.5 to establish the working load of the anchor and additional measures taken to carry the required load.

3. Converse shall designate at least 5% of all proposed anchors as 200% Test Anchors. Additional anchor steel reinforcement will likely be required for the 200 percent load test anchors, and should be appropriately considered prior to anchor installation. Half of the 200% Test Anchors shall be tested for 30 minutes. The remaining Test Anchors shall be tested for a 24-hour period. Test anchors shall be tested in the following manner:

    a. For the 30-minute test anchors, incrementally load the anchors to 200% of the design-working load noting loads, tendon/bar extensions and soldier pile deflections. Hold load for 30 minutes. Anchor movement shall not exceed 0.3 inch during the 30-minute load period. If the deflection is acceptable, reduce load to design load and lock off; otherwise, reduce the test load by 50% and repeat this step.

    b. For 24-hour test anchors, incrementally load to 200% and hold for 24 hours; check load after 24 hours. If a pre-stress loss of 8% or less is recorded, restore load to 100% of working load and lock off. If loss of pre-stress exceeds 8%, restore load to 150% of working load and hold for an additional 24 hours. Check load after second 24-hour hold and, if loss of pre-stress is less than 8%; restore to 100% and lock off as before. Where an anchor shows a continuous loss of pre-stress during a subsequent 24-hour period, the test load shall continue to be reduced by 50% until loss of pre-stress is negligible. Then the test load shall be divided by 1.5 to establish the working load of that anchor and additional measures taken to carry the required shoring load.

4. Any anchor pulled more than 12 inches shall not be used.

5. Immediately after testing, the active wedge portion of tieback excavations should be filled with slurry.

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