GEOTECHNICAL EXPLORATION UPDATE

HEMET – 63-ACRE SITE

SOUTHWEST CORNER OF CAWSTON AVENUE AND ACACIA AVENUE

CITY OF HEMET, COUNTY OF RIVERSIDE, CALIFORNIA

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Prepared For

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Leighton and Associates, Inc.
A Leighton Group Company

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Project No. 13577.001

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Attention: Ms. Lori Wu

Subject: Geotechnical Exploration Update
Hemet – 63-Acre Site , Southwest Corner of Cawston Avenue and Acacia Avenue
City of Hemet, County of Riverside, California

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In accordance with your request and authorization, Leighton and Associates, Inc. (Leighton) has updated our preliminary geotechnical investigation of the Hemet 63 site in the City of Hemet, Riverside County, California. The approximately 63-acre irregularly-shaped site is bounded by East Road to the west, Florida Avenue and Acacia Avenue to the north, Cawston Avenue to the east, and Hemet-Ryan Airport to the south (Figure 1, Site Location Map).

The purpose of this geotechnical review was to evaluate the general geotechnical opportunities and constraints of the subject property and provide preliminary foundation design parameters for buildings and recommendations for site earthwork. The subject site is considered suitable for the intended development provided the recommendations herein are implemented during design and construction. This report summarizes our findings and preliminary recommendations regarding the geotechnical conditions within the subject site.

If you have any questions regarding this report, please do not hesitate to contact the undersigned. We appreciate this opportunity to be of service on this project.

Respectfully submitted,

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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of our preliminary investigation was to summarize the pertinent, readily available geologic and geotechnical data, obtain additional site-specific data, and evaluate this data with respect to the proposed development of the subject site. Review of readily available geologic information and relevant publications listed in the references at the end of this report.

Our scope of work for this report included the following items:

- Geologic site reconnaissance;
- Review of maps and reports provided by your office as well as other pertinent in-house and published documents regarding geotechnical conditions at the proposed site.
- Review of a previous report and supplemental percolation testing prepared for the site by Leighton and Associates in 2006
- Detailed review of historical aerial photos;
- Drilling, sampling, and logging of three hollow-stem auger boreholes and two percolation test holes to evaluate subsurface soil and bedrock conditions and provide samples for laboratory testing.
- Percolation testing within the proposed infiltration areas to provide preliminary infiltration rates for the onsite soil. The two (2) percolation tests extended to a depth of approximately 5 feet below existing ground surface (BGS). The test data is presented in Appendix A.
- Laboratory testing of selected soil samples to determine in-situ moisture and density, soil classification (grain size distribution, percent passing the no. 200 sieve, and Atterberg Limits), compressibility, direct shear strength, expansion potential, maximum dry density and optimum moisture content, corrosion potential, subgrade Resistance Value (R-Value) and other engineering parameters of on site materials;
- Preparation of seismic design parameters in accordance with the 2019 CBC for use in continued development and planning;
- Preparation of this report summarizing current site conditions, summary of geological units encountered in the soil borings, a general description of laboratory test procedures and laboratory test results, and our preliminary geotechnical recommendations for the proposed residential development.

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1.2 Site Location and Description

The approximately 63-acre irregularly-shaped site is bounded by East Road to the west, Florida Avenue and Acacia Avenue to the north, Cawston Avenue to the east, and Hemet-Ryan Airport to the south (see Figure 1: Site Location Map).

The site is currently vacant and appears to have had a small single-family residence at the far northwest corner of the subject site in the past. This interpretation is based on the presence of delineated by mature eucalyptus trees, sections of the original building foundation, and other cultural debris. Dense grass blankets the majority of the site. Old, inactive, concrete storage containers can be observed above-ground along the eastern property line.

Topographically the site is relatively flat. Elevations vary from a high of approximately 1,512 feet above sea level (msl) at the northeastern corner of the property to a low elevation of approximately 1,510 feet (msl) at the extreme southwestern corner of the property (Google Earth, 2022).

1.3 Proposed Development

A conceptual site plan showing the proposed improvements at the site was provided for our review (GAA Architects, 2022). We understand the proposed development will consist of 4 commercial buildings with a total of approximately 1,075,500 square feet of warehouse space and 44,000 square feet of office space. The proposed buildings will range in size from approximately 82,500 square feet to 702,000 square feet. Site improvements will also include an on-site detention basin, loading docks and associated parking areas and concrete flatwork.

We anticipate minor (±10 feet) conventional cut and fill grading will be utilized to achieve desired grades for building pads and parking lot areas.

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2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Subsurface Exploration

On May 31, 2022, Leighton conducted a field exploration of the subject site using a CME-75, truck-mounted hollow-stem auger drill rig which consisted of the excavation, sampling and logging of six exploratory borings. The borings were advanced to depths of approximately 10 to 26.5 feet below the existing ground surface. Approximate locations of the borings are depicted on the Boring Locations Map (Figure 2).

The exploratory borings were sampled utilizing a 140-pound automatic safety hammer dropping 30-inches. During the drilling operation, bulk and relatively undisturbed samples were obtained from the borings for laboratory testing and evaluation. The relatively undisturbed samples were obtained utilizing a modified California drive sampler (2⅜-inch inside diameter and 3-inch outside diameter) driven 18 inches where possible in general accordance with ASTM Test Method D3550. In addition, standard penetration tests (SPT) were performed using a 2-inch outside diameter, 1⅜-inch inside diameter sampler driven 18 inches where possible in general accordance with ASTM Test Method D1586. The number of blows to achieve the last 12 inches of penetration, or number of blows and sampling penetration depth was recorded on the boring logs (Appendix B).

Sampling and logging of the borings was conducted by a Leighton geologist. Soil materials were visually classified according to the Unified Soil Classification System and further classified in the laboratory. Boring logs are presented in Appendix B. After logging and sampling, the excavations were backfilled with spoils generated during excavation. Samples were transported to our laboratory for testing.

2.2 Laboratory Testing

Laboratory tests were performed on selected representative bulk and relatively undisturbed samples to provide a basis for development of remedial earthwork and geotechnical design parameters. Selected samples were tested to determine the following parameters: in-situ moisture content and dry density, grain size distribution, percent passing the no. 200 sieve, Atterberg Limits, compressibility, shear strength, maximum dry density and optimum moisture (Modified Proctor), expansion index, R-value, and corrosion suite (soluble sulfate content, pH, resistivity and chloride content). The results of our laboratory testing along with summaries of the testing procedures are presented in Appendix C. The results of the in-situ moisture and density determinations as well as the depth of other tests are presented on the boring logs (Appendix B).

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3.0 GEOTECHNICAL AND GEOLOGIC FINDINGS

3.1 Regional Geology

The subject property is located within a prominent natural geomorphic province in southwestern California known as the Peninsular Ranges. It is characterized by steep, elongated ranges and valleys that generally trend northwestward. Tectonic activity along the numerous faults in the region has created the geomorphology present today.

Specifically, the property is situated in the eastern portion of the Perris Block, a stable, eroded mass of Cretaceous and older crystalline and metamorphic rock. Thin sedimentary, metamorphic and volcanic units locally mantle the bedrock with alluvial deposits filling in the lower valley and drainage areas. The Perris Block is bounded by the San Jacinto fault zone to the northeast, the Elsinore fault zone to the southwest, the Cucamonga fault zone to the northwest and the poorly-defined northern boundary of the Temecula basin to the southeast. The San Jacinto Valley segment of the active San Jacinto Fault Zone is approximately 3.9 miles to the northeast of the site.

3.2 Site Geologic Units

Our field observations and review of the pertinent literature (Appendix A) indicate that subsurface materials within the site are composed of topsoil and young alluvial deposits (*See Figure 3-Regional Geologic Map*). These materials were encountered in our soil borings during the field exploration. A general description of each unit follows.

3.2.1 Topsoil

Topsoil was encountered mantling the majority of the site to a depth of 9 to 18 inches. The topsoil generally consists of a light to medium brown, silty to clayey fine to medium sand with rootlets from surface vegetation.

3.2.2 Young Alluvial Deposits (Qal)

The site is underlain by unconsolidated Holocene to late Pleistocene-aged alluvial fan deposits (see Figure 3: Regional Geology Map). The alluvial deposits were encountered in all borings and, as observed, generally consisted of gray-brown to red-brown, moist, medium dense sand to silty sand with localized silt and clay layers. See the boring logs (Appendix B) for detailed descriptions of the soils encountered.

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3.3 Soil Compressibility

Compressibility characteristics of the onsite soils were interpreted from measured blowcounts, in-situ dry density and moisture, and consolidation tests. The clay and silt soils encountered were soft to very stiff. The sand soils encountered were loose to very dense. Based on our investigation, the topsoil and upper 7 feet of alluvium is generally considered slightly to moderately compressible.

Representative samples of the upper 10 feet of the subsurface soil were tested for hydrocollapse potential. The test results indicate that the near-surface site soil has a slight potential for hydrocollapse.

Partial removal and recompaction of the near-surface soils will be necessary to reduce the potential for excessive settlements of proposed structures, due to foundation loads and loads from proposed fill soils above existing ground elevations. See Section 5.1.1 for remedial grading recommendations.

3.4 Expansive Soils

Based on our limited laboratory testing of representative samples and visual observation, the near surface soils have a low to medium expansion potential. High expansive clays may be encountered locally. Addition laboratory testing should be performed on finished grade soils upon completion of grading and the foundation design should be based on finish grade soil testing.

3.5 Surface Water and Groundwater

No surface water was observed within the site boundaries during our field investigation. Portions of the site are located within a 100-year flood zone (FEMA, 2022).
No groundwater was encountered in any of the exploratory borings drilled during our field investigation. The highest regional groundwater in the vicinity of the subject site is reported to be 100 feet below existing ground surface (Riverside County, 2004). Although groundwater levels can be expected to fluctuate seasonally within the subject site, groundwater is not anticipated to be a factor during grading or future development.

3.6 Landslides and Rockfalls

No evidence of on-site landsliding or rockfall was observed during our field investigation. Due to the flat nature of the site, the potential for landsliding or rockfall in the future is considered to be very low. The proposed grading configurations should be evaluated by the geotechnical consultant when 40-scale rough grading plans are available. Geologic

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review during grading will be necessary to determine whether the potential for instability exists and whether remedial measures are required.

3.7 Faulting

The subject site, like the rest of Southern California, is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. The principal source of seismic activity is movement along the northwest-trending regional fault systems such as the San Andreas, San Jacinto and Elsinore fault zones. These fault systems produce up to approximately 55 millimeters per year of slip between the plates. The San Jacinto fault zone is estimated to accommodate a slip rate of 12 millimeters per year (mm/yr.) (WGCEP, 1995).

As defined by the California Geologic Survey (CGS), an active fault is one that has had surface displacement within the Holocene Epoch (roughly the last 11,000 years). The CGS has defined a potentially active fault as any fault which has been active during the Quaternary Period (approximately the last 1,600,000 years).

These definitions are used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazard Zones Act (subsequently revised as the Alquist-Priolo Earthquake Fault Zoning Act and Earthquake Fault Zones). The intent of the act is to require fault investigations on sites located within Earthquake Fault Hazard Zones (Special Studies Zones) to preclude new construction of certain inhabited structures across the trace of active faults.

No active or potentially active faults were observed on-site or trending to the project site. The closest active fault is the San Jacinto Valley Segment of the San Jacinto Fault Zone. The subject site is **not** included within an Earthquake Fault Zone as created by the Alquist-Priolo Earthquake Fault Zoning Act (Hart, 1999). The nearest zoned active faults, are the San Jacinto Valley Segment of the San Jacinto Fault Zone, measured to be approximately 3.9 miles (6.3 km) northeast of the site, the Anza Segment of the San Jacinto Fault Zone located 5.7 miles (9.1 km) to the east of the site, and the Temecula Segment of the Elsinore Fault Zone, 18.3 miles (29.4 km) generally southwest of the site (Blake, 2000d).

3.8 Seismicity

As is common for virtually all of Southern California, strong ground shaking can be expected at the site during moderate to severe earthquakes in this general region. Intensity of ground shaking at a given location depends primarily upon earthquake

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magnitude, site distance from the source, and site response (soil type) characteristics. The seismic coefficients were calculated utilizing an interactive program on current United States Geological Survey (USGS) website using ASCE 7-16 procedures, as well as USGS Unified Hazard Maps. Based on our exploration and review, the site will be underlain by relatively dense fill and older alluvial materials. As such, the site is classified as a Class D site, and the site-specific seismic coefficients are as listed in the following table:

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Table 1. 2019 CBC Seismic Coefficients per USGS General Procedure

Site Seismic Coefficients / Coordinates		Value
Latitude		**33.7414**
Longitude		**-117.0177**
Mapped Spectra (OSHPD)	Spectral Response – Class C (short), S_S	1.69
	Spectral Response – Class C (1 sec), S_1	0.66
	Site Modified Peak Ground Acceleration, PGA_M	0.79
	Max. Considered Earthquake Spectral Response Acceleration (short), S_{MS}	1.69
	Max. Considered Earthquake Spectral Response Acceleration – (1 sec), S_{M1}	1.12*
	5% Damped Design Spectral Response Acceleration (short), SDS	1.12
	5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.75*
	Peak Ground Acceleration, PGA	0.71

g = Gravity acceleration
*Per Exception 2 in Section 11.4.8 of ASCE 7-16, seismic response coefficient CS to be determined by Eq. 12.8-2 for values of T < 1.5Ts and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for TL > T > 1.5Ts or Eq. 12.8-4 for T > TL

g = Gravity acceleration

The project structural engineer should confirm if the above applies for the proposed structures, else a site–specific ground motion analysis may be required.

3.9 Secondary Seismic Hazards

Secondary seismic hazards generally associated with severe ground shaking during an earthquake include shallow ground rupture, liquefaction, seismically-induced settlement, flooding, and landslides or rockfall. These hazards are discussed in the following sections.

3.9.1 Shallow Ground Rupture

Ground rupture is generally considered most likely to occur along pre-existing active faults. Based on our review of available maps and current observations of the subject site and adjacent areas, there is no evidence of active or potentially active faulting within the site of the adjacent properties. The potential for on-site ground rupture should be considered nil to very low for the subject site.

3.9.2 Liquefaction

Liquefaction of cohesionless soils can be caused by strong vibratory motion due to earthquakes. Research and historical data indicate that loose granular soils below a near-surface groundwater table are most susceptible to liquefaction, while the stability of most clayey material is not adversely affected by vibratory motion. Liquefaction is characterized by a loss of shear strength in the affected soil layers, thereby causing the soil to behave as a viscous liquid. When insufficient confining

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overburden is present, liquefaction may be manifested at the ground surface by settlement or sand boils. In order for the potential effects of liquefaction to be manifested at the ground surface, the soils generally have to be granular, loose to medium dense, saturated relatively near the ground surface and must be subjected to a sufficient magnitude and duration of ground shaking.

During our subsurface field exploration groundwater was not encountered in the upper 50 feet below ground surface. In addition, regional groundwater maps, and groundwater data (Riverside County, 2003) indicate that shallow groundwater conditions do not exist locally, nor have they existed historically.

Due to the density of the granular soil layers, the presence of silt and clay within most of the soil layers, and the lack of shallow groundwater, it is Leighton's professional opinion that this site possesses a very low potential for liquefaction.

3.9.3 Seismically-induced Settlement

Ground accelerations generated from a seismic event can produce settlements in sands or granular earth materials both above and below the water table. Assuming unsuitable shallow soil will be removed and recompacted in accordance with the recommendations provided in this report, total post construction dynamic settlement (dry sand settlement) due to the design earthquake, calculated in accordance with Tokimatsu and Seed, 1987, is estimated to be on the order of 2 to 3 inches within the upper 50 feet of soil.

3.9.4 Flooding

Due to its inland location and distance from large bodies of water, the site is not at risk from tsunamis or seiches.

3.9.5 Landsliding and Rockfall

No evidence of on-site landsliding or rockfall was observed during our field investigation. Due to the flat nature of the site, the potential for landsliding or rockfall in the future is considered to be very low.

3.10 Percolation/Infiltration Testing

Two (2) preliminary percolation tests were performed in proposed infiltration areas (see, Figure 2) in general accordance with the procedures of the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Design Handbook (RCFC, 2018). Percolation tests were performed at a depth of approximately 5 feet BGS. The test results indicate poor percolation rates in the alluvial soils at locations tested. The actual test results/data sheets are included in Appendix A. The measured rates of infiltration yielded

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by field percolation tests are presented in Table 2 below, in units of inches per hour (in/hr). The measured rates are defined as “unfactored” in that no safety factor has been applied.

Table 2. Field Percolation Testing Summary

Percolation Test Boring/Well Designation	Percolation Test Method	Approximate Depth of Test Zone Below Ground Surface (feet)	Unfactored Infiltration Rate (in/hr)
P-1	Falling Head	5	0.101
P-2	Falling Head	5	0.092

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4.0 CONCLUSIONS

It is our opinion that the proposed development is feasible from a geotechnical standpoint, assuming that the preliminary recommendations presented herein are incorporated into the design and residential development of this site.

- The near surface soils, consisting of topsoil and alluvium are unsuitable for the support of fill soils or structural improvements. These soils should be removed and recompacted.
- The existing onsite near-surface soils are suitable for re-use as fill during proposed grading, provided they are relatively free of organic material.
- On-site earth materials can be excavated with heavy-duty conventional grading equipment in good working condition.
- Groundwater was not encountered to a depth of 51.5 feet below existing ground surface during our field investigation. Widespread shallow groundwater is not expected to be a factor during site remedial grading excavations.
- Evidence of active or potentially active faulting was not identified within the subject site.
- The design ground motion having a 10 percent probability of being exceeded in 50 years is expected to produce a peak horizontal ground surface acceleration at the site of 0.79g.
- Due to absence of ground water in the upper 50 feet below existing ground surface across the entire subject site, the liquefaction potential is considered very low for this site. Seismic densification (total and differential) associated with ground shaking is estimated to be within Riverside County Guidelines.
- Field observation and limited laboratory testing performed during the preliminary investigation indicates that the onsite earth materials are expected to possess a very low to medium expansion potential. Additional testing should be performed during site grading to verify the limited laboratory test data.
- Limited laboratory testing (Appendix C) indicates that the on-site soils may be moderately to highly corrosive to concrete and buried metal improvements. Additional corrosion testing should be performed during site grading.
- Fill slopes less than 10 feet in height and constructed at 2:1 (horizontal:vertical) or flatter are anticipated to be grossly stable and surficially stable.

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5.0 PRELIMINARY RECOMMENDATIONS

5.1 General

Earthwork should be performed in accordance with the General Earthwork and Grading Specifications in Appendix E and as per the following recommendations. The recommendations contained in Appendix E are general grading specifications provided for typical grading projects and some of the recommendations may not be strictly applicable to this project. The specific recommendations contained in the text of this report supersede the general recommendations in Appendix E.

The contract between the developer and earthwork contractor should be worded such that it is the responsibility of the contractor to place the fill properly in accordance with the recommendations of this report and the specifications in Appendix E, notwithstanding the testing and observation of the geotechnical consultant.

5.1.1 Site Preparation and Removal

Prior to grading, the proposed structural improvement areas (i.e. all-structural fill areas, pavement areas, buildings, etc.) of the site should be cleared of surface and subsurface obstructions and organic material. Heavy vegetation, roots, and debris should be disposed of offsite. Septic tanks and cesspools, if encountered, should be removed or abandoned in accordance with the Riverside County Department of Health Services guidelines. Voids created by removal of buried material should be backfilled with properly compacted soil in general accordance with the recommendations of this report.

The near surface soils onsite composed of artificial fill, topsoil, and loose alluvium vary in consistencies. These soils should be removed down to competent material as determined by the geotechnical engineer and replaced with properly compacted fill for uniform support under structural improvements and additional fill soils. Competent material is considered to be undisturbed alluvium (younger or older) with a minimum of 85 percent relative compaction (based on ASTM D1557). Acceptability of all removal bottoms should be reviewed by an engineering geologist with field or laboratory testing under the supervision of a geotechnical engineer. The removal bottom elevations, methodology of testing alluvium and test results of left-in-place alluvium should be documented in the as-graded geotechnical report. The remedial removal depths are generally expected to be in the order of 5 feet below existing grade, and locally deeper.

The removal limit should be established by a 1:1 projection from the edge of fill soils supporting settlement-sensitive structures downward and outward to competent material identified by the geotechnical consultant. The lateral extent of the removals should include the area within a perimeter of at least 5 feet beyond the outermost foundation elements for a given structure or established by a 1:1 projection from the

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edge of fill soils supporting settlement-sensitive structures downward and outward to competent material identified by the geotechnical consultant. A structural setback will be required where complete removals are not made.

After completion of the recommended removal and prior to placing additional fill, the approved surface should be scarified a minimum of 8 inches, moisture conditioned and compacted to a minimum 90 percent of the maximum dry density in accordance with ASTM D1557.

5.1.2 Structural Fills

Areas to receive structural fill and/or other surface improvements should be scarified to a minimum depth of 8 inches, moisture conditioned to optimum moisture content, and recompacted to minimum 90 percent of the maximum dry density in accordance with ASTM Test Method D1557.

The onsite soils are suitable for reuse as compacted fill, provided they are relatively free of organic materials, debris and oversize materials. The excavated soils near or below the groundwater table will require drying and/or blending with drier materials prior to use as compacted fill. Materials greater than 8 inches in greatest dimension should not be used within structural fills.

Fill soils should be placed at or above the optimum moisture content (minimum 2 percent above optimum for clay soils) and compacted to 90 percent of the maximum dry density as determined by ASTM Test Method D1557. Placement and compaction of fill should be performed in accordance with local grading ordinances under the observation and testing of the geotechnical consultant. The optimum lift thickness to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in

5.1.3 Import Soils

Import soils, if utilized, should be evaluated by the geotechnical consultant prior to importation. Import soils should be granular in nature, free of organic material, have very low expansion potential, have a minimum R-Value of 20, and have a low corrosion impact to the proposed improvements.

5.1.4 Trench Excavations and Backfill

The onsite soils may generally be suitable as trench backfill provided they are screened of rocks over 6 inches in diameter (or per governing agency requirements) and organic matter. Trench backfill should be compacted in uniform lifts (not exceeding 8 inches in compacted thickness) by mechanical means to at least 90 percent relative compaction (ASTM Test Method D1557).

Excavation of utility trenches should be performed in accordance with the project plans, specifications, and all applicable OSHA requirements. The contractor should be responsible for providing the "competent person" required by OSHA standards.

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Contractors should be advised that sandy soils (such as native site alluvium and future fills generated from the onsite alluvium) could make excavations particularly unsafe, even if all safety precautions are taken. In addition, excavations at or near the toe of slopes and/or parallel to slopes may be highly unstable due to the increased driving force and load on the trench wall. Spoil piles from the excavation(s) and construction equipment should be kept away from the sides of the trenches.

5.2 Shrinkage and Bulking

The volume change of excavated onsite materials upon recompaction is expected to vary with materials, density, insitu moisture content, location, and compaction effort. The in-place and compacted densities of soil materials vary and accurate overall determination of shrinkage and bulking cannot be made. Therefore, we recommend site grading include, if possible, a balance area or ability to adjust import quantities to accommodate some variation.

Based on our experience with similar materials, we anticipate shrinkage of 10 to 15 percent in the onsite topsoil and alluvial soils. A subsidence value of 0.1 to 0.2 feet may be used.

5.3 Preliminary Foundation Design

Shallow spread or continuous footings bearing on a newly placed properly compacted fill are anticipated for the proposed structures.

5.3.1 Design Parameters – Spread/Continuous Shallow Footings

Footings should be embedded at least 12-inches below lowest adjacent grade for the proposed structure. Footing embedment should be measured from lowest adjacent finished grade, considered as the top of interior slabs-on-grade or the finished exterior grade, excluding landscape topsoil, whichever is lower. Footings located adjacent to utility trenches or vaults should be embedded below an imaginary 1:1 (horizontal:vertical) plane projected upward and outward from the bottom edge of the trench or vault, up towards the footing.

- **Bearing Capacity**: For footings on newly placed, properly compacted fill soil, an allowable vertical bearing capacity of 2,500 pounds-per-square-foot (psf) should be used. These footings should have a minimum base width of 18 inches for continuous wall footings and a minimum bearing area of 3 square feet (1.75-ft by 1.75-ft) for pad foundations. The bearing pressure value may be increased by 250 psf for each additional foot of embedment or each additional foot of width to a maximum vertical bearing value of 4,500 psf. Additionally, these bearing values may be increased by one-third when considering short-term seismic or

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wind loads. A modulus of subgrade reaction, K of 200 PCI may be used to relative dense bedrock or onsite soil compacted to minimum 90% relative compaction.

- **Lateral loads**: Lateral loads may be resisted by friction between the footings and the supporting subgrade. A maximum allowable frictional resistance of 0.35 may be used for design. In addition, lateral resistance may be provided by passive pressures acting against foundations poured neat against properly compacted granular fill. We recommend that an allowable passive pressure based on an equivalent fluid pressure of 350 pounds-per-cubic-foot (pcf) be used in design. These friction and passive values have already been reduced by a factor-of-safety of 1.5.

5.4 Settlement Considerations

For settlement estimates, we assumed that column loads will be no larger than 200 kips, with bearing wall loads not exceeding 10 kips per foot of wall. If greater column or wall loads are required, we should re-evaluate our foundation recommendation, and re-calculate settlement estimates.

Buildings located on compacted fill soils as required per Section 4.2.1 above should be designed in anticipation of 1 inch of total static settlement and 0.5-inch of static differential settlement within a 40 foot horizontal run.

5.5 Vapor Retarder

It has been a standard of care to install a moisture-vapor retarder underneath all slabs where moisture condensation is undesirable. Moisture vapor retarders may retard but not totally eliminate moisture vapor movement from the underlying soils up through the slabs. Moisture vapor transmission may be additionally reduced by use of concrete additives. Leighton Consulting, Inc. does not practice in the field of moisture vapor transmission evaluation/mitigation. Therefore, we recommend that a qualified person/firm be engaged/consulted with to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. This person/firm should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structure as deemed appropriate.

However, based on our experience, the standard of practice in Southern California has evolved over the last 15 to 20 years into a construction of a vapor retarder system that generally consisted of a membrane (such as 15-mil thick), underlain by a capillary break consisting of 4 inches of clean ½-inch-minimum gravel or 2-inch sand layer (SE>30). The structural engineer/architect or concrete contractor often require a sand layer be placed over the membrane (typically 2-inch thick layer) to help in curing and reduction of curling of concrete. If such sand layer is placed on top of the membrane, the contractor should

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not allow the sand to become wet prior to concrete placement (e.g., sand should not be placed if rain is expected).

In conclusion, the construction of the vapor barrier/retarder system is dependent on several variables which cannot be all geotechnically evaluated and/or tested. As such, the design of this system should be a design team/owner decision taking into consideration finish flooring materials and manufacture's installation requirements of proposed membrane. Moreover, we recommend that the design team also follow ACI Committee 302 publication for "Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials" (ACI 302.2R-06) which includes a flow chart that assists in determining if a vapor barrier/retarder is required and where it is to be placed.

5.6 Retaining Walls

Retaining wall earth pressures are a function of the amount of wall yielding horizontally under load. If the wall can yield enough to mobilize full shear strength of backfill soils, then the wall can be designed for "active" pressure. If the wall cannot yield under the applied load, the shear strength of the soil cannot be mobilized and the earth pressure will be higher. Such walls should be designed for "at rest" conditions. If a structure moves toward the soils, the resulting resistance developed by the soil is the "passive" resistance. Retaining walls backfilled with non-expansive soils can be designed using the following equivalent fluid pressures:

Table 3. Retaining Wall Design Earth Pressures (Static, Drained)

Loading Conditions	Equivalent Fluid Density (pcf)	
	Level Backfill	2:1 Backfill
Active	36	55
At-Rest	55	90
Passive*	350	150 (2:1, sloping down)

* This assumes level condition in front of the wall will remain for the duration of the project, not to exceed 3,500 psf at depth.

Unrestrained (yielding) cantilever walls should be designed for the active equivalent-fluid weight value provided above for very low to low expansive soils that are free draining. In the design of walls restrained from movement at the top (non-yielding) such as basement or elevator pit/utility vaults, the at-rest equivalent fluid weight value should be used. Total depth of retained earth for design of cantilever walls should be measured as the vertical distance below the ground surface measured at the wall face for stem design, or measured at the heel of the footing for overturning and sliding calculations. Should a sloping backfill other than a 2:1 (horizontal:vertical) be constructed above the wall (or a backfill is loaded by an adjacent surcharge load), the equivalent fluid weight values

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provided above should be re-evaluated on an individual case basis by us. Non-standard wall designs should also be reviewed by us prior to construction to check that the proper soil parameters have been incorporated into the wall design.

All retaining walls should be provided with appropriate drainage. The outlet pipe should be sloped to drain to a suitable outlet. Wall backfill should be non-expansive (EI $\leq$ 21) sands compacted by mechanical methods to a minimum of 90 percent relative compaction (ASTM D 1557). Clayey site soils should not be used as wall backfill. Walls should not be backfilled until wall concrete attains the 28-day compressive strength and/or as determined by the Structural Engineer that the wall is structurally capable of supporting backfill. Lightweight compaction equipment should be used, unless otherwise approved by the Structural Engineer.

5.7 Site Drainage and Erosion Control

Surface drainage should be controlled at all times. Positive surface drainage should be provided to direct surface water away from the structures toward the street or suitable drainage facilities. Positive drainage may be accomplished by providing a minimum 2 percent gradient away from the structures for a distance of at least 5 feet. Below grade planters should not be situated adjacent to structures or pavements unless provisions for drainage such as catch basins and drains are made. In general, ponding of water should be avoided adjacent to the structures or pavements. Over-watering of the site should be avoided. Protective measures to mitigate excessive site erosion during construction should also be implemented in accordance with the latest Riverside County grading ordinances.

5.8 Soil Corrosivity

Preliminary laboratory testing indicated that onsite soils likely possess a high concentration of soluble sulfates. The soils may be corrosive to concrete structures.

A moderate chloride concentration was detected. High chloride levels tend to reduce soil resistivity and break down otherwise protective surface deposits, which can result in corrosion of buried steel or reinforced concrete structures.

Minimum resistivity and pH testing indicated that the onsite soils have a severe to very severe potential for corrosion to buried metal conduits. The laboratory test results are presented in Appendix C.

Additional corrosion testing should be performed on representative finish grade soils at the completion of rough grading.

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5.9 Preliminary Pavement Design Recommendations

Our preliminary HMA pavement design is based on an R-value of 15 and the Caltrans Highway Design Manual. For planning and estimating purposes, the pavement sections are calculated based on Traffic Indexes (TI) as indicated in Table below:

Table 4. Asphalt Pavement Sections

General Traffic Condition	Traffic Index (TI)	Asphalt Concrete (inches)	Aggregate Base* (inches)
Automobile Parking Lanes	5.0	3.0	8.0
Truck Access & Driveways	6.0	4.0	10.0
Roadways	7.0	5.0	12.0
Roadways	8.0	6.0	13.0

Appropriate Traffic Index (TI) should be selected or verified by the project civil engineer and actual R-value of the subgrade soils will need to be verified after completion of site grading to finalize the pavement design. Pavement design and construction should also conform to applicable local, county and industry standards. The Caltrans pavement section design calculations were based on a pavement life of approximately 20 years with periodic flexible pavement maintenance.

Where PCC pavement is planned, the following table provides sections based on the design standards presented in the ACI "Guide for the Design and construction of Concrete Parking Lots" (ACI 330R-14), R-value test results, and the provided Average Daily Truck Traffic Indices (ADTT). The ADTT index is provided by Client/civil engineer.

Table 5. Pavement Sections

Street	ADTT	R-Value	PCC (Inches)
Heavy Truck Traffic	>700	>40	8.0
Moderate Truck Traffic/Parking	≤ 300		7.0
Parking/Light Traffic	≤ 50		6.5

- **Traffic Categories ACI 330, Table 3.3*

The above recommended concrete sections are based on properly compacted fill soils with a very low expansion potential (EI<21) and R-Value greater than 40. All utility trenches should be compacted to 90 percent relative compaction and pavement subgrade (upper 12-inches) uniformly compacted (non-yielding) to 95 percent of the laboratory maximum dry density (ASTM D1557) and at/or slightly above optimum moisture content.

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Compaction should extend a minimum of 12-inches beyond formlines. Slab edges and construction joint details provided by ACI should be followed. Slab edges that will be subject to through going traffic should be tapered from the heaviest traffic load into the lessor traffic load area a minimum of 3 feet. The PCC pavement should have a minimum of 28-day compressive strength of 3250 psi (or MOR of 550 psi). Construction and crack control joints should be designed per structural engineer's requirements and/or ACI or ACPA guidelines.

The upper 6 inches of the subgrade soils should be moisture-conditioned to near optimum moisture content, compacted to at least 95 percent relative compaction (ASTM D1557) and kept in this condition until the pavement section is constructed. Minimum relative compaction requirements for aggregate base should be 95 percent of the maximum laboratory density as determined by ASTM D1557. If applicable, aggregate base should conform to the "Standard Specifications for Public Works Construction" (green book) current edition or Caltrans Class 2 aggregate base.

If pavement areas are adjacent to heavily watered landscape areas, some deterioration of the subgrade load bearing capacity and pavement failure may result. Moisture control measures such as deepened curbs or other moisture barrier materials may be used to prevent the subgrade soils from becoming saturated. The use of concrete cutoff or edge barriers should be considered when pavement is planned adjacent to either open (unfinished) or irrigated landscaped areas.

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6.0 GEOTECHNICAL REVIEW

Geotechnical review is of paramount importance in engineering practice. Poor performances of many foundation and earthwork projects have been attributed to inadequate construction review. We recommend that Leighton be provided the opportunity to review the grading plan and foundation plan(s) prior to bid.

Reasonably-continuous construction observation and review during site grading and foundation installation allows for evaluation of the actual soil conditions and the ability to provide appropriate revisions where required during construction. Geotechnical conclusions and preliminary recommendations should be reviewed and verified by Leighton during construction, and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- After completion of site clearing,
- During preparation and overexcavation of surface soils as described herein,
- During compaction of all fill materials,
- Testing of slab subgrade moisture content, prior to placement of vapor retarder,
- After excavation of all footings, and prior to placement of concrete,
- During utility trench backfilling and compaction, and
- When any unusual conditions are encountered.

Additional geotechnical exploration and analysis may be required based on final development plans, for reasons such as significant changes in proposed structure locations/footprints. We should review grading (civil) and foundation (structural) plans, and comment further on geotechnical aspects of this project.

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7.0 LIMITATIONS

This report was necessarily based in part upon data obtained from a limited number of observances, site visits, soil samples, tests, analyses, histories of occurrences, spaced subsurface explorations and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This investigation was performed with the understanding that the subject site is proposed for residential and commercial development. The client is referred to Appendix D regarding important information provided by the GBA (Geoprofessional Business Association) on geotechnical engineering studies and reports and their applicability.

This report was prepared for Lecangs, LLC based on Lecangs, LLC's needs, directions, and requirements at the time of our investigation. This report is not authorized for use by, and is not to be relied upon by any party except Lecangs, LLC, and its successors and assigns as owner of the property, with whom Leighton and Associates, Inc. has contracted for the work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton and Associates, Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, or strict liability of Leighton and Associates, Inc.

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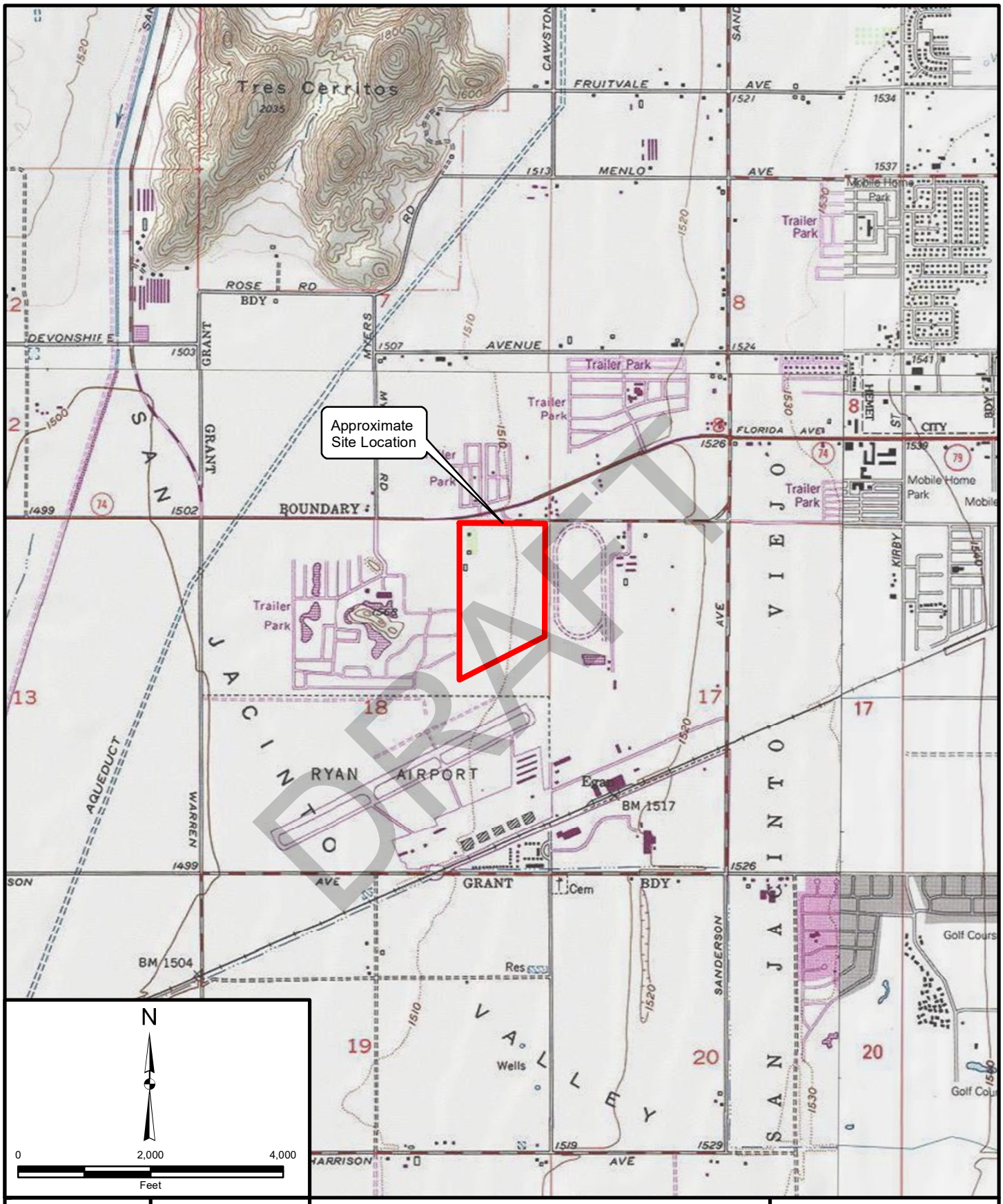
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Project: 13577.001	Eng/Geol: BAA
Scale: 1 " = 2,000 '	Date: September 2022

Reference: Copyright:© 2013 National Geographic Society, i-cubed

SITE LOCATION MAP

Hemet 60 Update
Hemet, California

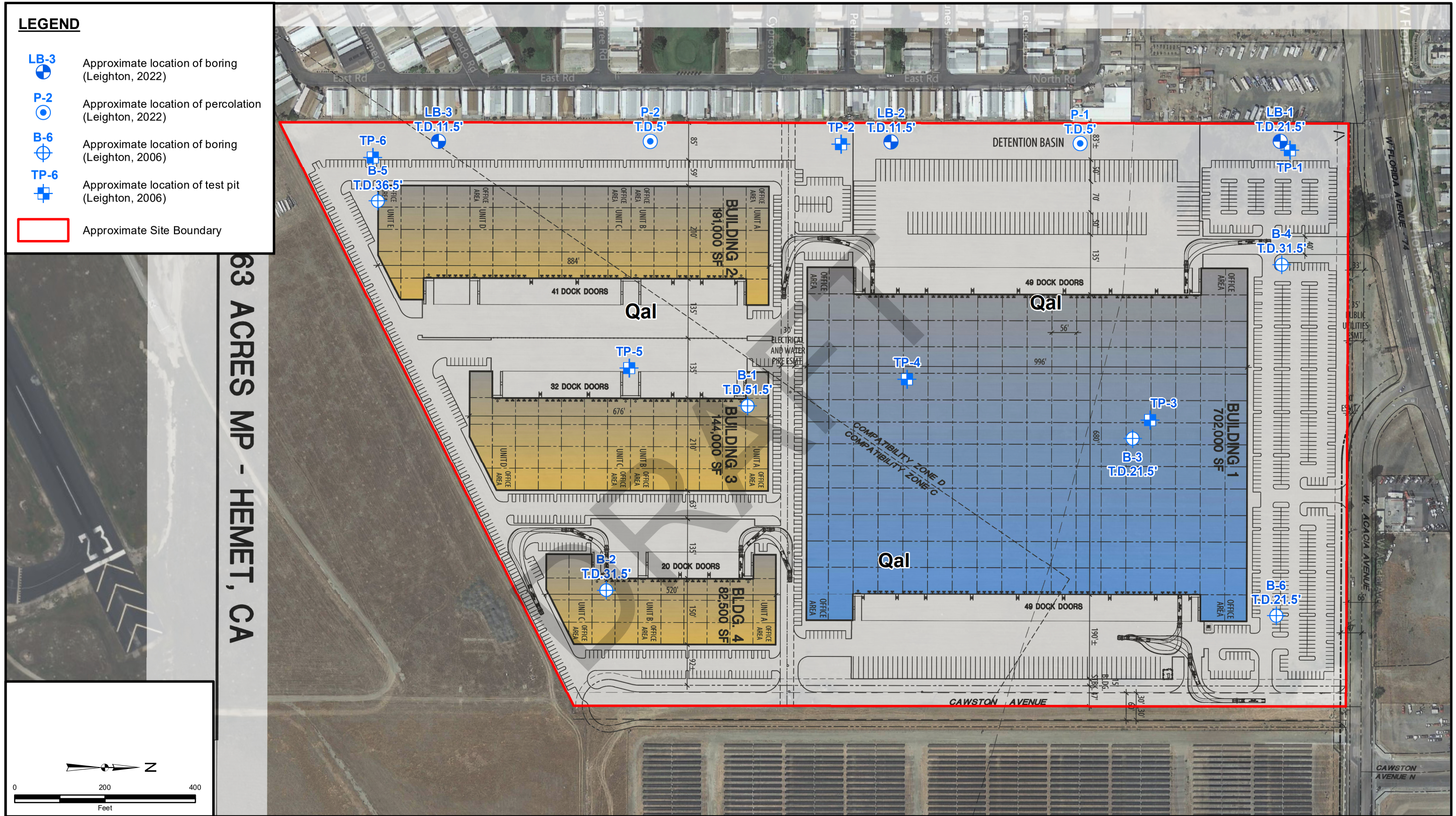
FIGURE 1

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LEGEND

- LB-3 — Approximate location of boring (Leighton, 2022)
- P-2 — Approximate location of percolation (Leighton, 2022)
- B-6 — Approximate location of boring (Leighton, 2006)
- TP-6 — Approximate location of test pit (Leighton, 2006)
- Approximate Site Boundary



0 200 400 Feet

Project: 13577.001	Eng/Geol: BAA
Scale: 1 " = 200 '	Date: September 2022

Reference: Conceptual Site Plan, Sheet A1-0
Dated: 10/21/2022 by Rexford Industrial Realty

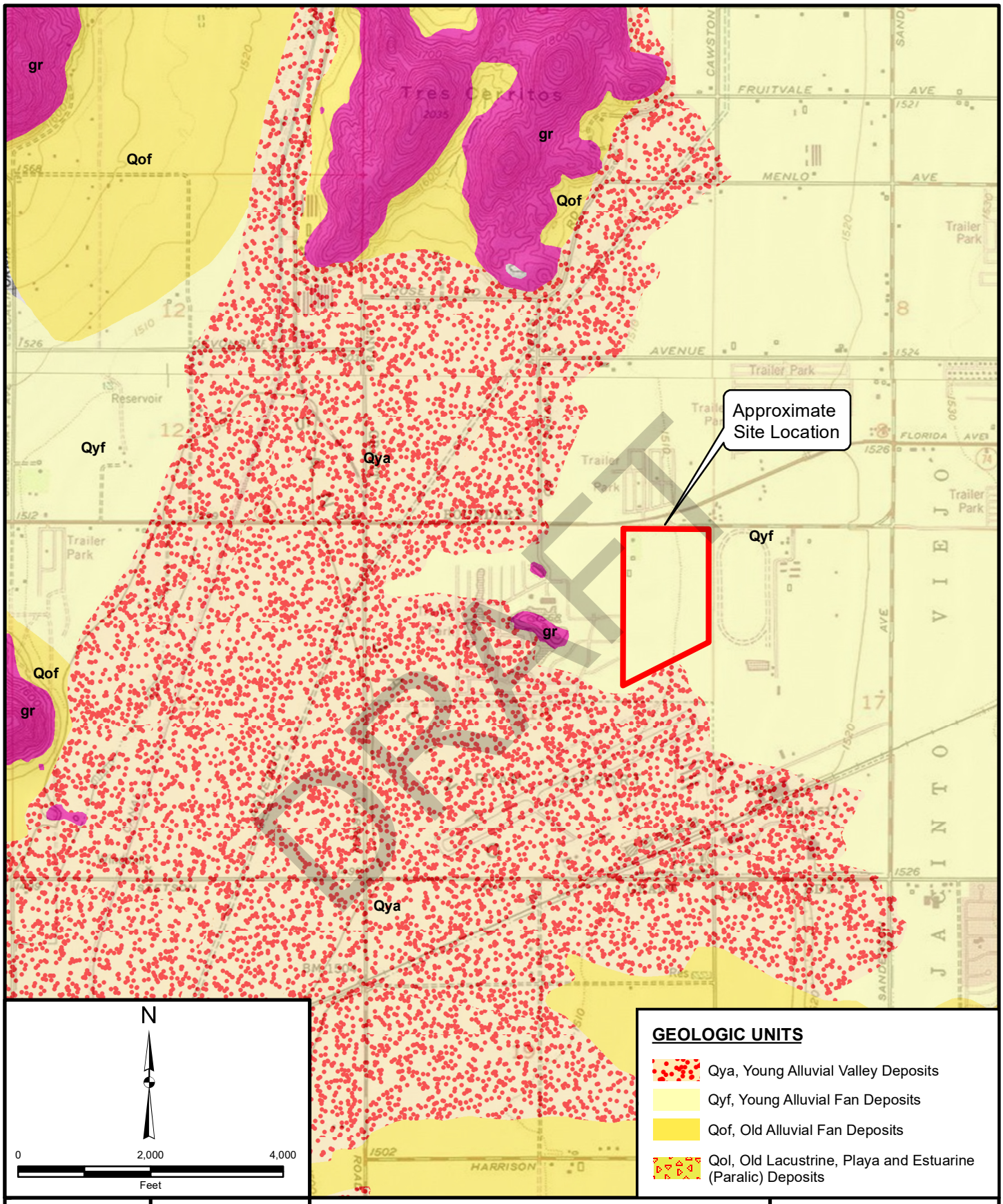
BORING LOCATION MAP

Hemet 60 Update
Hemet, California

FIGURE 2

Leighton

Map Saved as J:\Drafting\13577\001\Maps\13577-001_F02_BLM_2022-12-01.mxd on 9/1/2022 1:27:54 PM Author: KVM (btran)



N

0 2,000 4,000

Feet

GEOLOGIC UNITS

- Qya, Young Alluvial Valley Deposits
- Qyf, Young Alluvial Fan Deposits
- Qof, Old Alluvial Fan Deposits
- Qol, Old Lacustrine, Playa and Estuarine (Paralic) Deposits

Project: 13577.001	Eng/Geol: BAA
Scale: 1 " = 2,000 '	Date: September 2022

Reference: Geologic Compilation of Quaternary Surficial Deposits in Southern California, Los Angeles County, Bedrossian et. al., July, 2012

REGIONAL GEOLOGY MAP

Hemet 60 Update
Hemet, California

FIGURE 3

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Map Saved as J:\Drafting\13577\001\Maps\13577-001_F03_RGM_2022-12-01.mxd on 8/1/2022 1:38:09 PM Author: KVM (btran)

APPENDIX A

FIELD EXPLORATORY LOGS

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GEOTECHNICAL BORING LOG LB-1

Project No.	13577.001	**Date Drilled**	5-31-22
Project	Hemet 63-Acre Site	**Logged By**	BAA
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	BAA

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0							SC	@ Surface **Topsoil**; Sandy CLAY, light brown, slightly moist, fine grained sand.	
								CL	**Alluvium (Qal)**; Sandy CLAY, brown to strong brown, moist, fine to medium grained sand	
				R-1	7 8 13					
	5			R-2	5 10 14					
				R-3	7 9 13					
	10			R-4	8 14 18			SC	CLAYEY SAND, medium dense, medium brown, moist, fine to medium grained sand	
	15			S-1	2 1 2					
	20			S-2	6 8 7					
	25			S-3	5 7 8					
	30								Total Depth = 26.75' bgs, no groundwater encountered, backfilled with cuttings on 5-31-22	

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

DRAFT

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

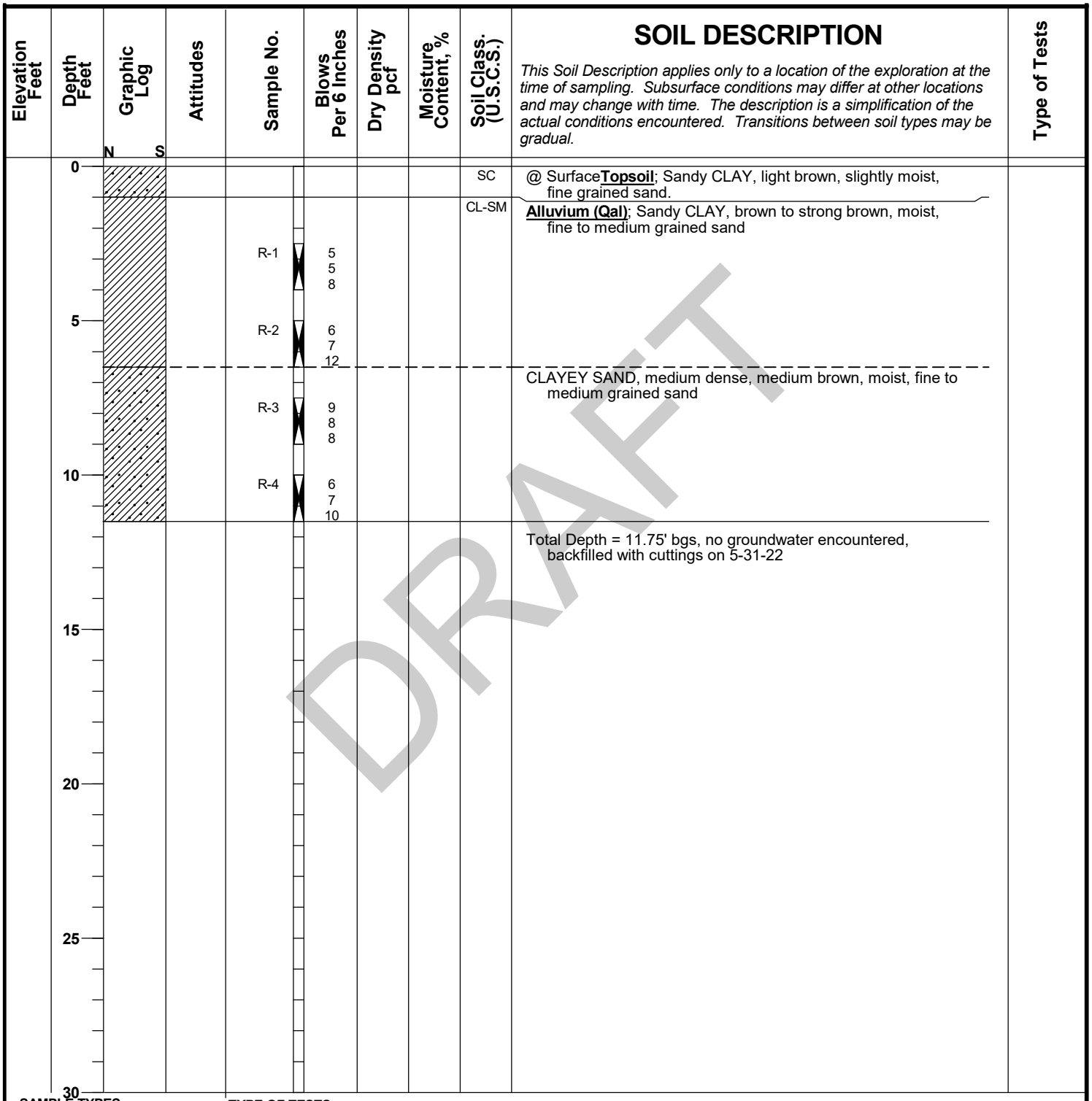
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-2

Project No.	13577.001	**Date Drilled**	5-31-22
Project	Hemet 63-Acre Site	**Logged By**	BAA
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	BAA



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SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

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GEOTECHNICAL BORING LOG LB-3

Project No.	13577.001	**Date Drilled**	5-31-22
Project	Hemet 63-Acre Site	**Logged By**	BAA
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	BAA

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0							SC	@ Surface **Topsoil**; Sandy CLAY, light brown, slightly moist, fine grained sand.	
								CL-SM	**Alluvium (Qal)**; Sandy CLAY, brown to strong brown, moist, fine to medium grained sand	
				R-1	9 9 10					
	5			R-2	9 11 16					
									SILTY SAND, medium dense, medium brown, moist, fine to medium grained sand	
				R-3	7 11 14					
	10			R-4	8 10 13					
									Total Depth = 11.75' bgs, no groundwater encountered, backfilled with cuttings on 5-31-22	
	15									
	20									
	25									
	30									

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SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
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- CN CONSOLIDATION
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- DS DIRECT SHEAR
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- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

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GEOTECHNICAL BORING LOG P-1

Project No.	13577.001	**Date Drilled**	5-31-22
Project	Hemet 63-Acre Site	**Logged By**	BAA
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	BAA

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
	0							SC	@ Surface **Topsoil**; Sandy CLAY, light brown, slightly moist, fine grained sand.	
				B-1				CL	**Alluvium (Qal)**; Sandy CLAY, brown to strong brown, moist, fine to medium grained sand	
	5								Total Depth = 5.0' bgs, no groundwater encountered, converted to percolation/infiltration test	
	10									
	15									
	20									
	25									
	30									

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SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
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- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG P-2

Project No.	13577.001	**Date Drilled**	5-31-22
Project	Hemet 63-Acre Site	**Logged By**	BAA
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	BAA

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
	0							SC	@ Surface **Topsoil**; Sandy CLAY, light brown, slightly moist, fine grained sand.	
				B-1				CL	**Alluvium (Qal)**; Sandy CLAY, brown to strong brown, moist, fine to medium grained sand	
	5								Total Depth = 5.0' bgs, no groundwater encountered, converted to percolation/infiltration test	
	10									
	15									
	20									
	25									
	30									

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SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG B1

Date 6-1-06 **Sheet** 1 **of** 2

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION (Logged By PC; Sampled By PC)	Type of Tests
	0							SM	Topsoil @surface: Silty SAND; light brown, damp, fine grain, loose, dense vegetation, trace gravel <5mm in diameter	
			B1 @ 0-5'	R2	16	107.0	11.4	ML	Quaternary-Age Young Alluvium (Qal) @2.5': Sandy SILT; gray brown, moist, stiff, fine grain, micaceous, trace gravel <5mm, 68% fines	-200
	5			R3	19	112.7	12.1	SM	@5': Silty SAND; gray brown, moist, fine grain, loose, thick calcium carbonate stringers throughout, micaceous	HCO
			B4 @ 5'-10'	R5	35	104.9	9.4		@7.5': Silty SAND with gravel; brown, moist, fine to medium grain, medium dense, micaceous	
	10			R6	14	106.9	10.3		@10': Silty SAND; reddish brown, very moist, fine to coarse grain, loose, micaceous	HCO
				R7	7			ML	@12.5': Sandy SILT; gray brown, very moist, medium stiff, micaceous	
	15			R8	12	85.6	26.4		@15': Sandy SILTY; gray brown, very moist, medium stiff, slightly micaceous	
	20			S9	9			SM-ML	@20': Silty SAND to sandy SILT; brown, very moist, loose to medium stiff, micaceous	
	25			R10	20			SM	@25': Silty SAND; dark brown, very moist, medium to coarse grain, medium dense, very micaceous	
	30									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS



GEOTECHNICAL BORING LOG B1

Date 6-1-06 **Sheet** 2 **of** 2

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N / S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION (Logged By PC; Sampled By PC)	Type of Tests
	30			S11	20			SM	@30': Silty SAND; light brown, moist, medium dense, micaceous, 22% fines	-200
	35			R12	13			ML	@35': Sandy SILT; light brown, very moist, medium stiff, micaceous	
	40			S13	18				@40': Sandy SILT; gray brown, moist, very stiff, micaceous	
	45			R14	28			SM-ML	@45': Silty SAND to sandy SILT; light gray, moist, medium dense, micaceous	
	50			S15	20			ML	@50': SILT; gray brown, moist, very stiff, micaceous	
									Total Depth @ 51'6" Grounwater not Encountered Backfilled with Spoils 06/01/06	
	55									
	60									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

GEOTECHNICAL BORING LOG B2

Date 6-1-06 **Sheet** 1 **of** 2

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION (Logged By PC; Sampled By PC)	Type of Tests
	0							SM	Topsoil @suface: Silty SAND; light brown, damp, loose	
								CL	Quaternary-Age Young Alluvium (Qal)	
			B1@ 1-5'	R2	16	97.2	10.3		@2.5': Low plasticity CLAY; gray brown, damp to moist, stiff, micaceous, 55% fines, EI = 47	SA,MD, EI,CS
	5			R3	18			SM-ML	@5': Silty SAND to sandy SILT; gray brown, damp, fine grain, medium dense, slightly micaceous	
			B4@ 5-10'	R5	15	103.7	5.0	SM	@7.5': Silty SAND; orange brown, damp, medium to coarse grain, medium dense, micaceous, 37% fines	-200
	10			R6	26	105.5	5.8		@10': Silty SAND; orange brown, damp, medium to coarse grain, medium dense, micaceous	
				S7	8				@12.5': Silty SAND; reddish brown, moist, medium to coarse grain, loose, micaceous	
	15			R8	12	108.3	12.5		@15': Silty SAND; brown, moist, coarse grain, loose, micaceous	
	20			S9	14				@20': Silty SAND; gray brown, very moist, coarse grain, loose, very micaceous	
	25			R10	54			SP	@25': Poorly graded SAND; light gray, damp, coarse grain, dense, micaceous	
	30									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

GEOTECHNICAL BORING LOG B2

Date 6-1-06 **Sheet** 2 **of** 2

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	30			S11	20				Logged By PC Sampled By PC @30': Poorly graded SAND; brown, moist, coarse grain, medium dense, micaceous	
									Total Depth 31'6" Grounwater not Encountered Backfilled with Spoils 06/01/06	
	35									
	40									
	45									
	50									
	55									
	60									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

GEOTECHNICAL BORING LOG B3

Date 6-1-06 **Sheet** 1 **of** 1

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N / S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION (Logged By PC; Sampled By PC)	Type of Tests
	0							SM	Topsoil @surface: Silty SAND; brown, damp, loose	
								SM-ML	Quaternary-Age Young Alluvium (Qal)	
				R1	15	98.1	13.1		@2.5': Silty SAND to sandy SILT; gray brown, very moist, stiff, micaceous	
	5			R2	15			ML	@5': Sandy SILT; gray brown, damp, stiff, micaceous	
				R3	17	96.5	15.4		@7.5': Sandy SILT; brown, moist, stiff, micaceous	
	10			R4	17			SM	@10': Silty SAND; brown, damp, fine to coarse grain, medium dense, micaceous	
	15			S5	5			ML	@15': SILT; brown, moist, medium stiff, calcium carbonate layers, micaceous	
	20			R6	13			SM	@20': Silty SAND; dark brown, very moist, fine to medium grain, loose, micaceous	
									Total Depth 21'6" Grounwater not Encountered Backfilled with Spoils 06/01/06	
	25									
	30									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

GEOTECHNICAL BORING LOG B4

Date 6-1-06 **Sheet** 1 **of** 2

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N–S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION (Logged By PC; Sampled By PC)	Type of Tests
	0							SM	Topsoil @surface: Silty SAND; light brown, damp, loose	
			B1@0-5'					CL	Quaternary-Age Young Alluvium (Qal)	
				R2	18				@2.5': Low plasticity CLAY; dark brown, moist, stiff, calcium carbonate stringers, micaceous, 67% fines, EI = 84	SA, MD, EI, RV
	5			R3	15	101.9	13.7	ML	@5': Sandy SILT; gray brown, moist, stiff, micaceous, 85% fines, LL = 41, PI = 18	-200, AI, HCO
				R4	9	102.5	13.6		@7.5': SILT; brown, moist, stiff, micaceous	
	10			R5	21	94.6	8.8	SM	@10': Silty SAND; reddish brown, moist, medium grain, medium dense, micaceous, 49% fines	-200, HCO
	15			S6	10				@15': Silty SAND; gray brown, very moist, medium to coarse grain, loose, micaceous	
	20			R7	14	109.8	16.9		@20': Silty SAND; gray brown, very moist, coarse grain, loose, micaceous	
	25			S8	2				@25': Silty SAND; brown, very moist to wet, coarse grain, very loose, micaceous	
	30									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

GEOTECHNICAL BORING LOG B4

Date 6-1-06 **Sheet** 2 **of** 2

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	30			R9	15				**Logged By** PC **Sampled By** PC @30': Silty SAND; gray brown, very moist to wet, coarse grain, loose, micaceous	
									Total Depth 31'6" Grounwater not Encountered Backfilled with Spoils 06/01/06	
	35									
	40									
	45									
	50									
	55									
	60									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

GEOTECHNICAL BORING LOG B5

Date 6-1-06 **Sheet** 1 **of** 2

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION (Logged By PC; Sampled By PC)	Type of Tests
	0							SM	Topsoil @surface: Silty SAND; light brown, damp, loose	
								SM	Quaternary-Age Young Alluvium (Qal)	
				R1	17	97.4	8.2		@2.5': Silty SAND; gray brown, damp, fine to medium grain, medium dense, micaceous	
	5			R2	18	106.9	14.1	S(CL)	@5': Sandy lean CLAY; gray brown, damp, fine to medium grain, stiff, micaceous, 66% fines	AI, HCO
				R3	22				@7.5': Sandy lean CLAY; brown, damp, fine to medium grain, stiff, micaceous	
	10			R4	23	104.6	9.7		@10': Sandy lean CLAY; dark brown, moist, fine to medium grain, stiff, micaceous	HCO
	15			S5	9			ML	@15': Sandy SILT; gray brown, moist, stiff, calcium carbonate stringers, micaceous, 52% fines	-200
	20			R6	18			SM	@20': Silty SAND; brown, damp, coarse grain, medium dense, micaceous	
	25			S7	1			CL	@25': Sandy CLAY; brown, wet, very soft, micaceous	
	30									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

GEOTECHNICAL BORING LOG B5

Date 6-1-06 **Sheet** 2 **of** 2

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
	30			R8	30			SM-SP	Logged By PC Sampled By PC @30': Silty to poorly sorted SAND; brown, very moist, coarse grain, medium dense, micaceous	
	35			S9	16			SM-ML	@35': Silty SAND to sandy SILT; brown, very moist, fine grain, medium dense to very stiff, micaceous	
	40								Total Depth 36'6" Grounwater not Encountered Backfilled with Spoils 06/01/06	
	45									
	50									
	55									
	60									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

GEOTECHNICAL BORING LOG B6

Date 6-1-06 **Sheet** 1 **of** 1

Project Hemet 63 **Project No.** 111990-002

Drilling Co. CalPac Drilling **Type of Rig**

Hole Diameter 8 inches **Drive Weight** 140 lbs. **Drop** 30 inches

Elevation Top of Hole +/- feet **Location** See Geotechnical Map

Elevation Feet	Depth Feet	Graphic Log (N S)	Notes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION (Logged By PC; Sampled By PC)	Type of Tests
	0							SM	Topsoil @surface: Silty SAND; light brown, damp, loose	
								SM-ML	Quaternary-Age Young Alluvium (Qal)	
				R1	16	96.2	9.5		@2.5': Silty SAND to sandy SILT; gray brown, damp to moist, fine grain, medium dense, calcium carbonate stringers, micaceous, pinhole pores	
	5			R2	18			ML	@5': Sandy SILT; gray brown, moist, stiff, calcium carbonate stringers, micaceous	
				R3	12	98.0	22.1		@7.5': SILT; gray brown, very moist, medium stiff, calcium carbonate stringers, micaceous	
	10			R4	16	98.6	23.0		@10': SILT; gray brown, very moist, stiff, calcium carbonate stringers, micaceous	
	15			R5	16			SM-SP	@15': Silty SAND to poorly sorted SAND; reddish brown, moist, medium to coarse grain, moist, micaceous	
	20			S6	10			SM	@20': Silty SAND; gray brown, very moist, fine to coarse grain, loose to medium dense, micaceous	
									Total Depth 21'6" Grounwater not Encountered Backfilled with Spoils 06/01/06	
	25									
	30									

DRAFT

SAMPLE TYPES:

- S SPT
- R RING SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE
- G GRAB SAMPLE
- C CORE SAMPLE

TYPE OF TESTS:

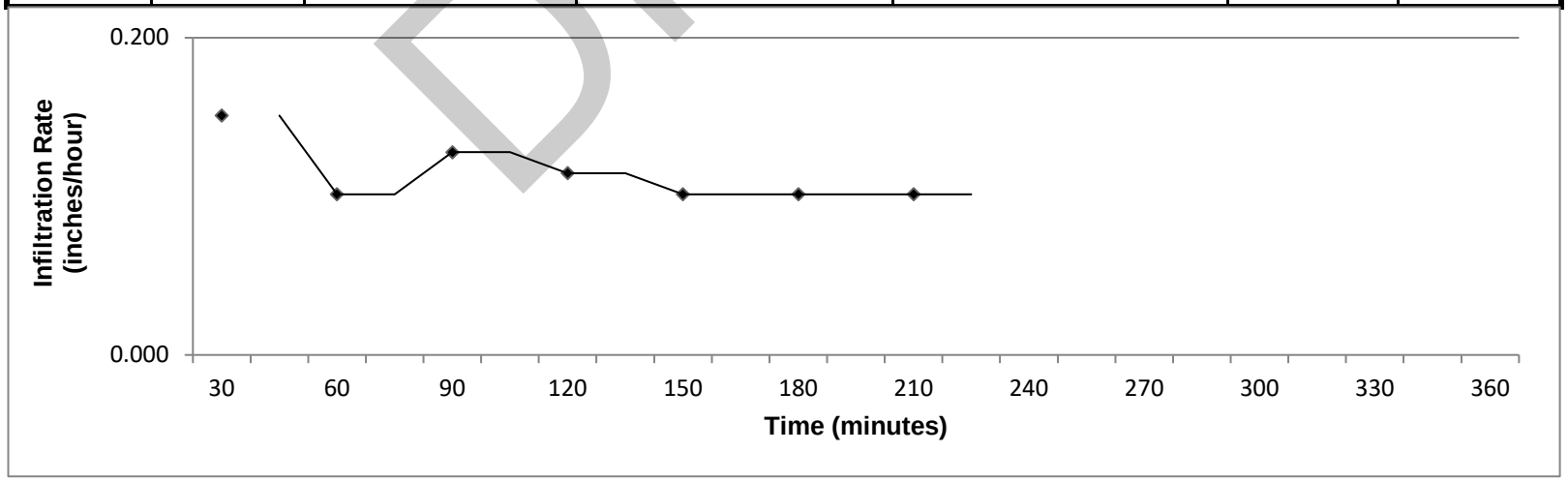
- SU SULFATE
- DS DIRECT SHEAR
- MD MAXIMUM DENSITY
- CN CONSOLIDATION
- CR CORROSION
- HCO HYDROCOLLAPSE
- HD HYDROMETER
- SA SIEVE ANALYSIS
- AL ATTERBERG LIMITS
- EI EXPANSION INDEX
- RV R-VALUE
- CS CORROSION SUITE
- MC MOISTURE CONTENT
- SE SAND EQUIVALENT
- -200 200 WASH
- RDS Remolded DS

Test Hole Number: P-1
Date Excavated: 5/9/2022
Tested by: BAA
Soil Unit: Alluvium (Qal)
USCS Soil Type: Silty SAND (SM)

Project: 45108 Menifee, CA
Project Number: 13577.001
Date Tested: 5/10/2022
Test Hole Depth (inches): 60
Test Hole Diameter (inches): 8

Sunny ~90 °

Time	Δt (minutes)	Initial Water Depth (inches)	Final Water Depth (inches)	Change In Water Level (inches)	Infiltration/Percolation Rate	
					inches/hour*	minute/inch
9:58:00 10:28:00	30.00	21.50	23.00	1.50	0.151	20.000
10:28:00 10:58:00	30.00	22.00	23.00	1.00	0.101	30.000
10:58:00 11:28:00	30.00	22.25	23.50	1.25	0.128	24.000
11:28:00 11:58:00	30.00	22.00	23.13	1.13	0.115	26.549
11:58:00 12:28:00	30.00	22.00	23.00	1.00	0.101	30.000
12:28:00 12:58:00	30.00	22.00	23.00	1.00	0.101	30.000
12:58:00 13:28:00	30.00	22.00	23.00	1.00	0.101	30.000



*Based on Porchet Method: http://rcflood.org/downloads/NPDES/Documents/LIDManual/Appendix%20A_Infiltration_Testing.pdf

DRAFT

PERCOLATION TEST
P-1

Project Name: Hemet - 63-Acre Site
W Corner Cawston Ave and Acacia Ave, Hemet, Californ

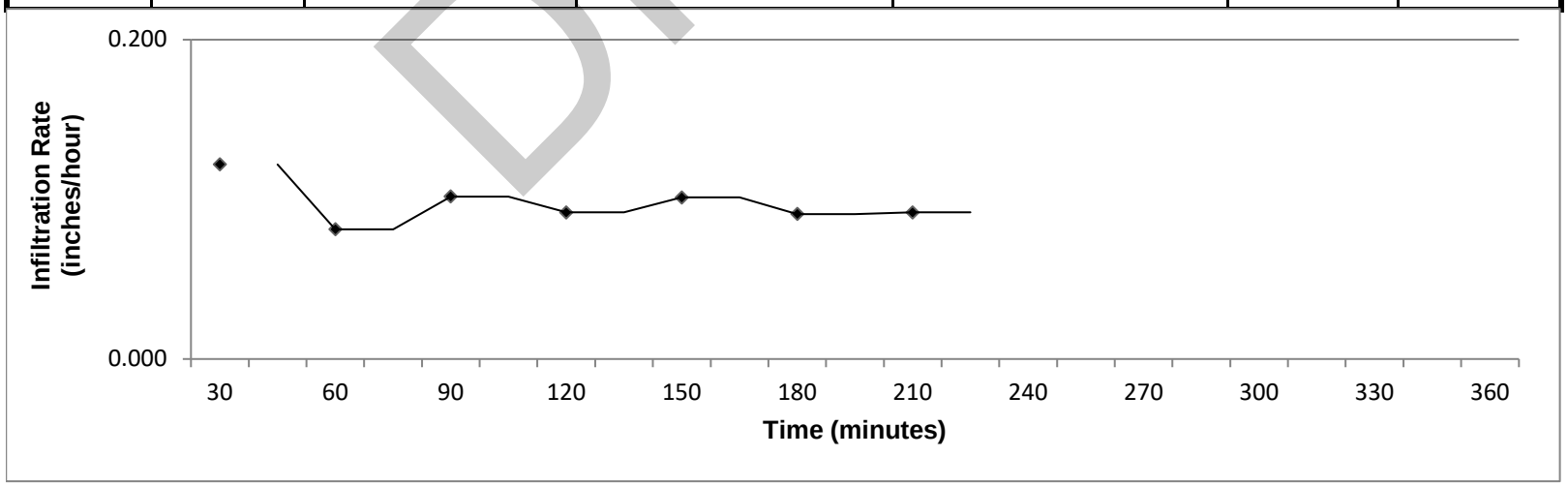
Project No.: 13577.002

Test Hole Number: P-2
Date Excavated: 5/9/2022
Tested by: BAA
Soil Unit: Alluvium (Qal)
USCS Soil Type: Silty SAND (SM)

Project: 45108 Menifee, CA
Project Number: 13577.001
Date Tested: 5/10/2022
Test Hole Depth (inches): 60
Test Hole Diameter (inches): 8

Sunny ~90 °

Time	Δt (minutes)	Initial Water Depth (inches)	Final Water Depth (inches)	Change In Water Level (inches)	Infiltration/Percolation Rate	
					inches/hour*	minute/inch
10:32:00	30.00	12.00	13.50	1.50	0.122	20.000
11:02:00						
11:02:00	30.00	12.25	13.25	1.00	0.081	30.000
11:32:00						
11:32:00	30.00	12.25	13.50	1.25	0.102	24.000
12:02:00						
12:02:00	30.00	12.25	13.38	1.13	0.092	26.549
12:32:00						
12:32:00	30.00	12.00	13.25	1.25	0.101	24.000
13:03:00						
13:03:00	30.00	12.13	13.25	1.12	0.091	26.786
13:33:00						
13:33:00	30.00	12.25	13.38	1.13	0.092	26.549
14:03:00						



*Based on Porchet Method: http://rcflood.org/downloads/NPDES/Documents/LIDManual/Appendix%20A_Infiltration_Testing.pdf

DRAFT

PERCOLATION TEST
P-2

Project Name: Hemet - 63-Acre Site
W Corner Cawston Ave and Acacia Ave, Hemet, Californ

Project No.: 13577.002

APPENDIX B

GEOTECHNICAL LABORATORY TEST RESULTS

DRAFT

Leighton and Associates, Inc.

ATTERBERG LIMITS

ASTM D 4318

Project Name:	HEMET 63	Tested By:	JMB	Date:	6/19/06
Project No. :	111990-002	Input By:	JMB	Date:	6/19/06
Boring No.:	B-4	Checked By:	JMB	Date:	6/19/06
Sample No.:	R-3	Depth (ft.)	5.0		

Sample Description: (CL)s, OLIVE BROWN LEAN CLAY WITH SAND

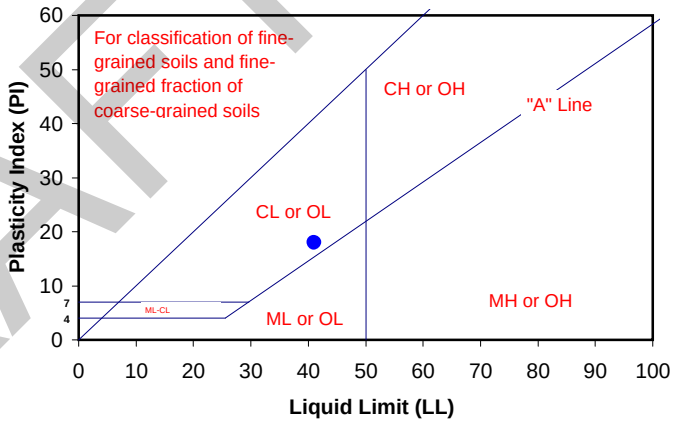
	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	
Number of Blows [N]			30	25	18	
Wet Wt. of Soil + Cont. (gm)	21.37	23.31	26.06	24.52	24.60	
Dry Wt. of Soil + Cont. (gm)	19.91	21.47	22.46	21.36	21.30	
Wt. of Container (gm)	13.57	13.52	13.45	13.61	13.51	
Moisture Content (%) [Wn]	23.0	23.1	40.0	40.8	42.4	

Liquid Limit	**41**
Plastic Limit	**23**
Plasticity Index	**18**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) =

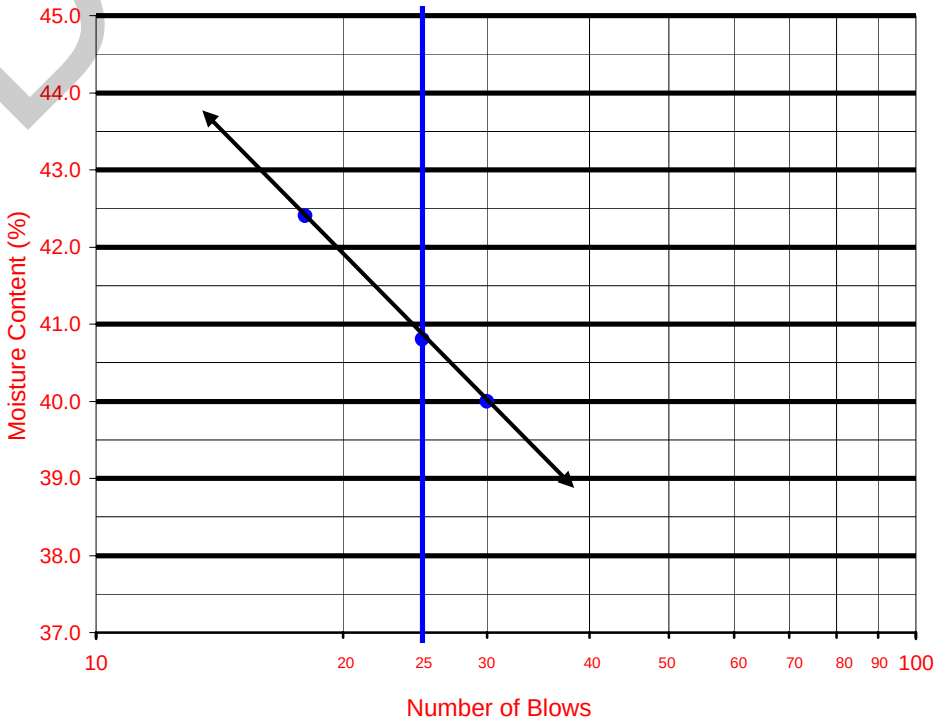
One - Point Liquid Limit Calculation

LL =Wn(N/25) $^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



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Boring No.	B-1	B-1	B-2	B-4	B-4	B-5	B-5	
Sample No.	R-2	S-11	B-4	R-3	R-5	R-2	S-5	
Depth (ft.)	2.5	30	5-10	5	10	5	15	
Sample Type	RING	SPT	BULK	RING	RING	RING	SPT	
Visual Soil Classification	s(ML)	SM	SM	(CL)s	SM	s(CL)	s(ML)	
Moisture Correction								
Wet Weight of Soil + Container (gm.)	286.3	337.0	332.6	277.7	375.3	274.6	343.9	
Dry Weight of Soil + Container (gm.)	265.7	327.8	314.0	250.6	354.3	253.4	294.5	
Weight of Container (gm)	84.4	117.5	82.0	85.9	84.9	83.6	112.4	
Moisture Content (%)	11.4	4.4	8.0	16.5	7.8	12.5	27.1	
Container No.:	D	S	A	P	E	F	R	
Sample Dry Weight Determination								
Weight of Sample + Container (gm.)	286.3	337.0	332.6	277.7	375.3	274.6	343.9	
Weight of Container (gm.)	84.4	117.5	82.0	85.9	84.9	83.6	112.4	
Weight of Dry Sample (gm.)	181.3	210.3	232.0	164.7	269.4	169.8	182.1	
Container No.:	D	S	A	P	E	F	R	
After Wash								
Dry Weight of Sample + Container (gm)	142.5	281.3	228.3	111.1	222.1	141.0	199.3	
Weight of Container (gm)	84.4	117.5	82.0	85.9	84.9	83.6	112.4	
Dry Weight of Sample (gm)	58.1	163.8	146.3	25.2	137.2	57.4	86.9	
% Passing No. 200 Sieve	**68**	**22**	**37**	**85**	**49**	**66**	**52**	
% Retained No. 200 Sieve	32	78	63	15	51	34	48	

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PERCENT PASSING No. 200 SIEVE
ASTM D 1140

Leighton and Associates, Inc.

Project Name: HEMET 63

Project No.: 111990-002

Client Name:

Tested By: BRM Date: 6/9/06

Leighton and Associates, Inc.

One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

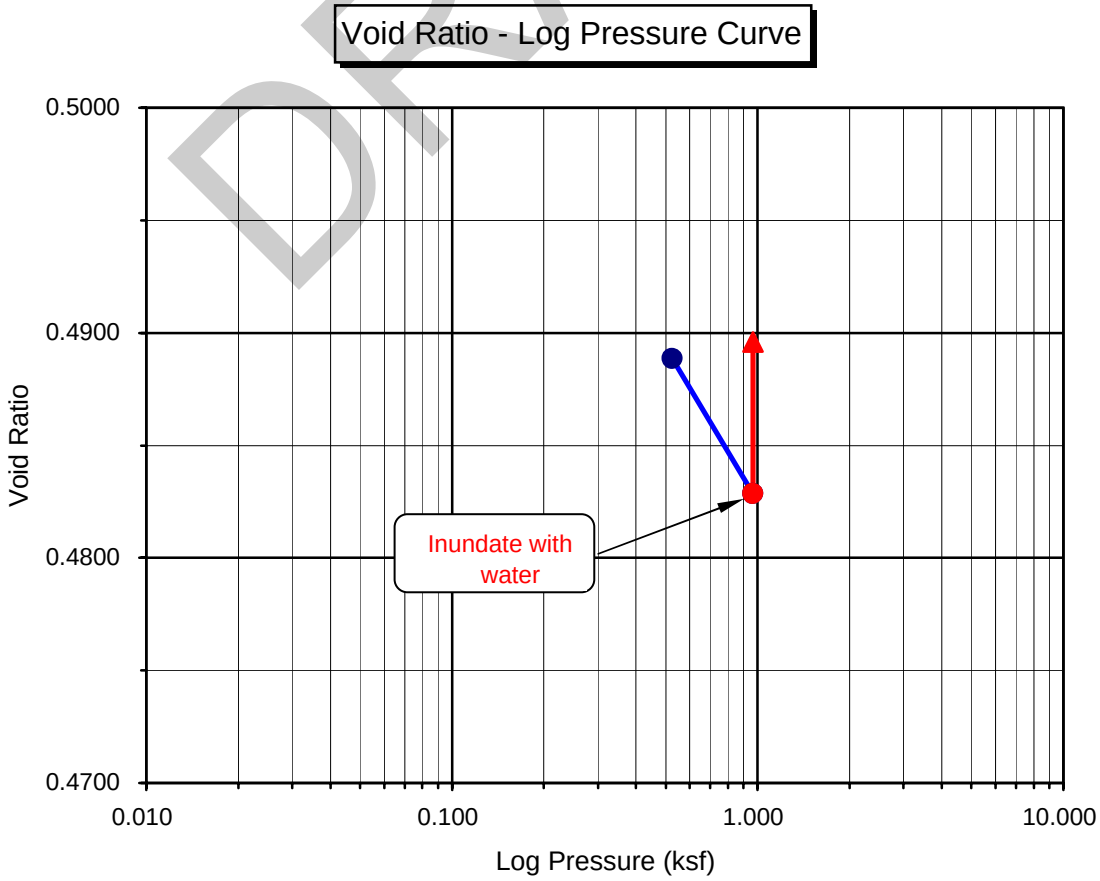
Project Name:	HEMET 63		Tested By:	BRM	Date: 6/12/06
Project No.:	111990-002		Checked By:	PRC	Date: 6/19/06
Boring No.:	B-1		Sample Type:	IN SITU	
Sample No.:	R-3		Depth (ft.)	5.0	
Sample Description:	SC, BROWN CLAYEY SAND.				

Initial Dry Density (pcf):	112.7
Initial Moisture (%):	12.1
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0500
Diameter(in):	2.416

Final Dry Density (pcf):	113.2
Final Moisture (%) :	17.8
Initial Void ratio:	0.4959
Specific Gravity(assumed):	2.70
Initial Saturation (%)	65.9

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.525	0.0547	0.9953	0.00	-0.47	0.4888	-0.47
0.963	0.0587	0.9913	0.00	-0.87	0.4829	-0.87
H2O	0.0542	0.9958	0.00	-0.42	0.4896	-0.42

Percent Swell / Settlement After Inundation = 0.45



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Rev. 08-04

Leighton and Associates, Inc.

One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

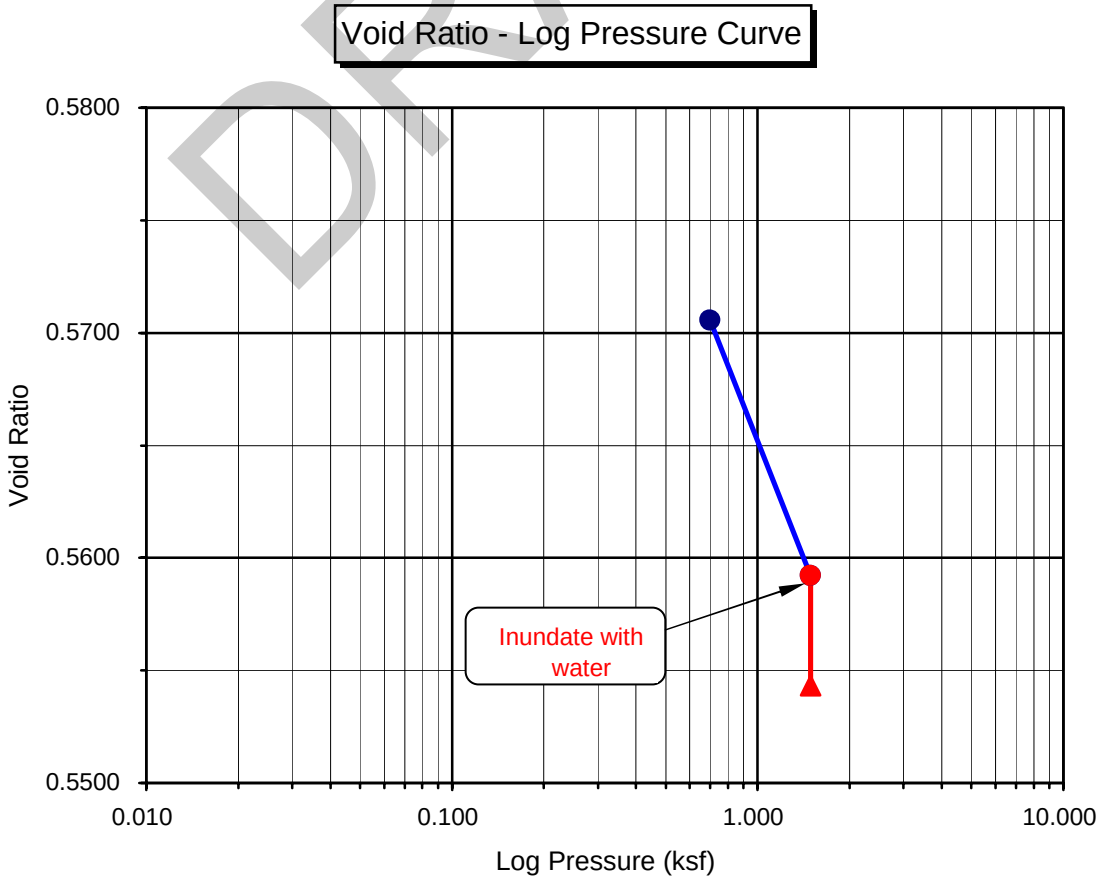
Project Name:	HEMET 63	Tested By:	BRM	Date:	6/12/06
Project No.:	111990-002	Checked By:	JMB	Date:	6/14/06
Boring No.:	B-1	Sample Type:	IN SITU		
Sample No.:	R-6	Depth (ft.)	10		
Sample Description:	SM, DARK REDDISH BROWN SILTY SAND.				

Initial Dry Density (pcf):	106.9
Initial Moisture (%):	10.3
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0500
Diameter(in):	2.416

Final Dry Density (pcf):	108.4
Final Moisture (%) :	19.3
Initial Void ratio:	0.5761
Specific Gravity(assumed):	2.70
Initial Saturation (%)	48.1

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.700	0.0535	0.9965	0.00	-0.35	0.5706	-0.35
1.488	0.0607	0.9893	0.00	-1.07	0.5592	-1.07
H2O	0.0638	0.9862	0.00	-1.38	0.5543	-1.38

Percent Swell / Settlement After Inundation = -0.31



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One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

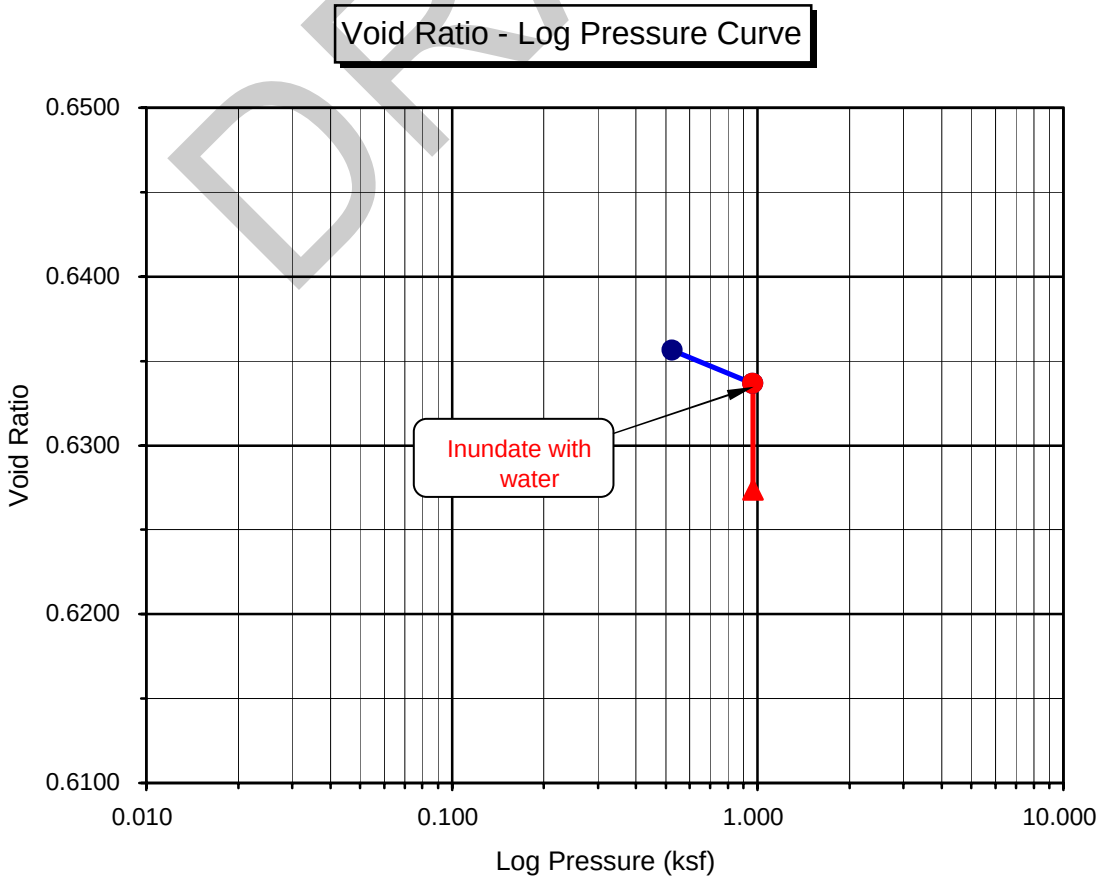
Project Name:	HEMET 63	Tested By:	BRM	Date:	6/12/06
Project No.:	111990-002	Checked By:	JMB	Date:	6/14/06
Boring No.:	B-4	Sample Type:	IN SITU		
Sample No.:	R-3	Depth (ft.)	5		
Sample Description:	CL, BROWN LEAN CLAY WITH TRACE OF SAND.				

Initial Dry Density (pcf):	101.9
Initial Moisture (%):	13.7
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0500
Diameter(in):	2.416

Final Dry Density (pcf):	103.6
Final Moisture (%) :	24.7
Initial Void ratio:	0.6545
Specific Gravity(assumed):	2.70
Initial Saturation (%)	56.5

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.525	0.0614	0.9886	0.00	-1.14	0.6356	-1.14
0.963	0.0626	0.9874	0.00	-1.26	0.6336	-1.26
H2O	0.0664	0.9836	0.00	-1.64	0.6274	-1.64

Percent Swell / Settlement After Inundation = -0.38



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Rev. 08-04

Leighton and Associates, Inc.

One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

Project Name:	HEMET 63	Tested By:	BRM	Date:	6/12/06
Project No.:	111990-002	Checked By:	JMB	Date:	6/14/06
Boring No.:	B-4	Sample Type:	IN SITU		
Sample No.:	R-5	Depth (ft.)	10		
Sample Description:	SM, BROWN SILTY SAND WITH TRACE OF GRAVEL.				

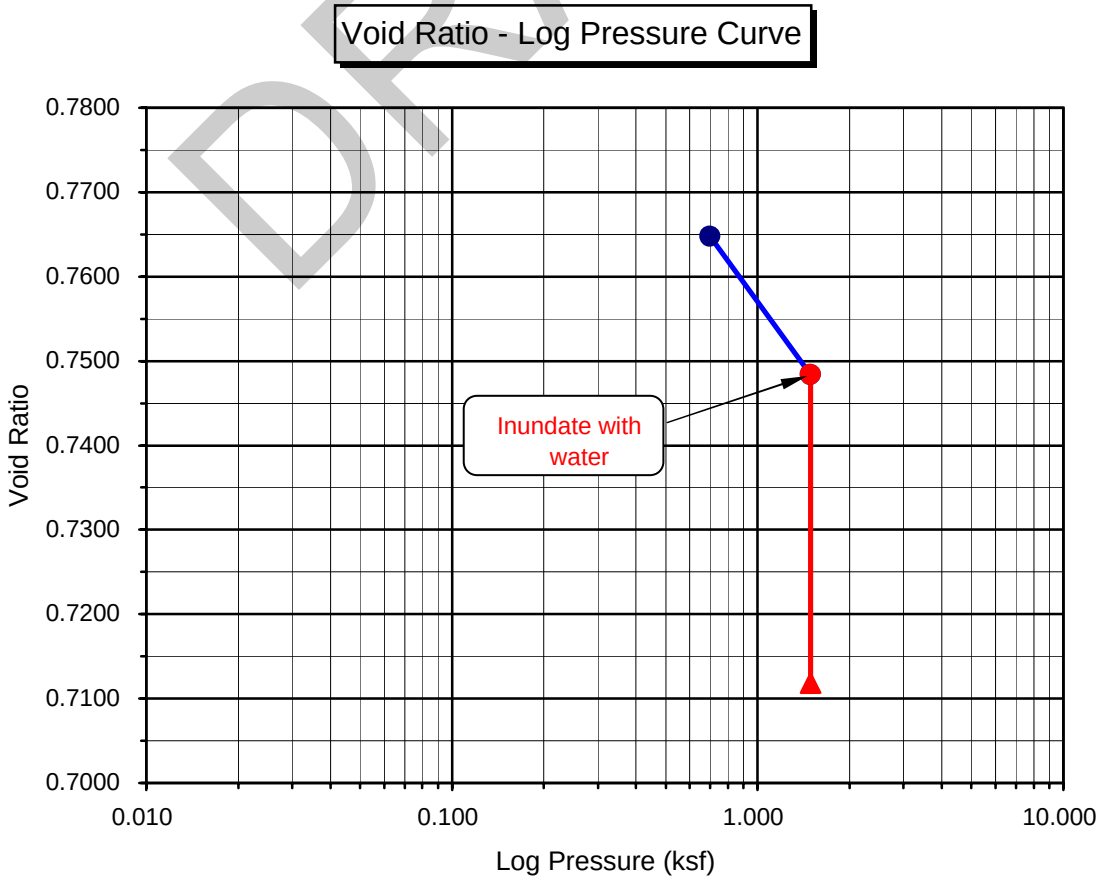
Initial Dry Density (pcf):	94.6
Initial Moisture (%):	8.8
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0500
Diameter(in):	2.416

Final Dry Density (pcf):	98.5
Final Moisture (%) :	23.9
Initial Void ratio:	0.7824
Specific Gravity(assumed):	2.70
Initial Saturation (%)	30.3

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.700	0.0599	0.9901	0.00	-0.99	0.7648	-0.99
1.488	0.0691	0.9809	0.00	-1.91	0.7484	-1.91
H2O	0.0896	0.9604	0.00	-3.96	0.7119	-3.96

Percent Swell / Settlement After Inundation = -2.09

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Leighton and Associates, Inc.

One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

Project Name:	HEMET 63	Tested By:	BRM	Date:	6/12/06
Project No.:	111990-002	Checked By:	JMB	Date:	6/14/06
Boring No.:	B-5	Sample Type:	IN SITU		
Sample No.:	R-2	Depth (ft.)	5		
Sample Description:	s(CL), PALE BROWN SANDY LEAN CLAY				

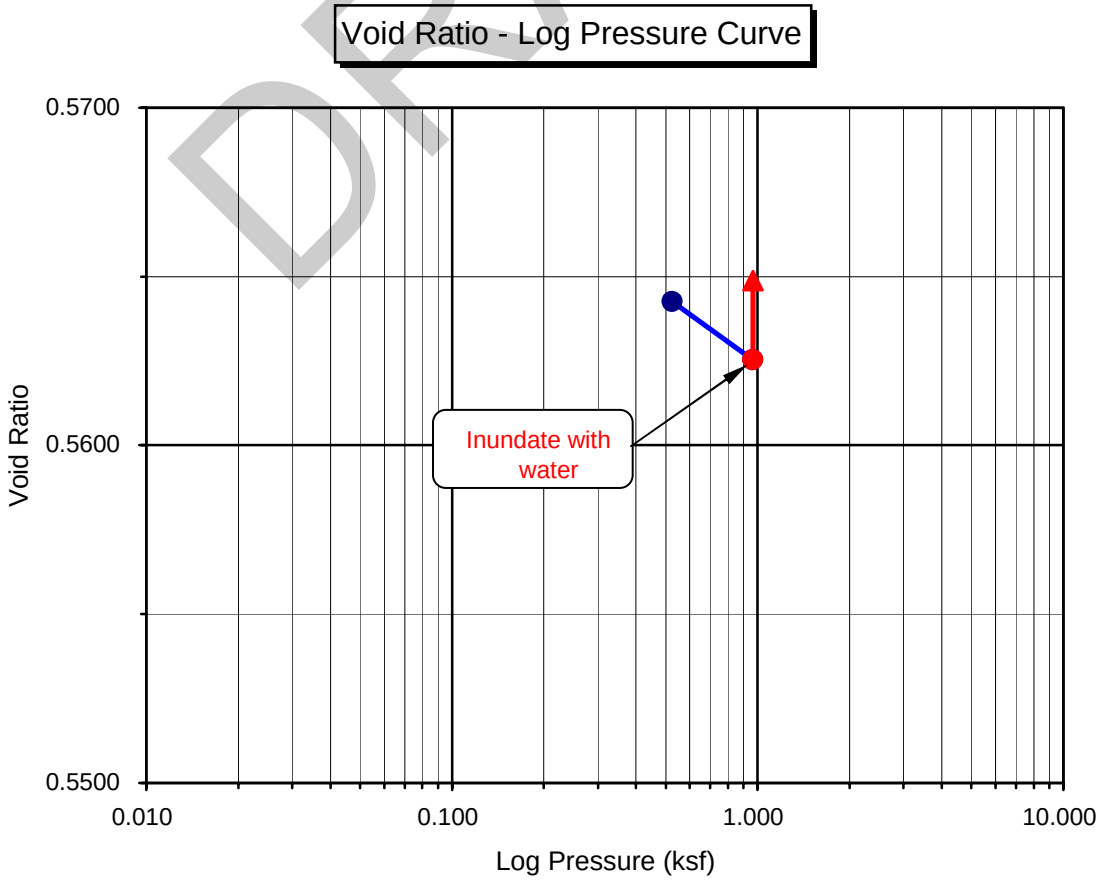
Initial Dry Density (pcf):	106.9
Initial Moisture (%):	14.1
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0500
Diameter(in):	2.416

Final Dry Density (pcf):	107.7
Final Moisture (%) :	21.1
Initial Void ratio:	0.5761
Specific Gravity(assumed):	2.70
Initial Saturation (%)	65.9

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.525	0.0575	0.9925	0.00	-0.75	0.5643	-0.75
0.963	0.0586	0.9914	0.00	-0.86	0.5625	-0.86
H2O	0.0571	0.9929	0.00	-0.71	0.5649	-0.71

Percent Swell / Settlement After Inundation = 0.15

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One-Dimensional Swell or Settlement Potential of Cohesive Soils

(ASTM D 4546)

Project Name:	HEMET 63	Tested By:	BRM	Date:	6/12/06
Project No.:	111990-002	Checked By:	JMB	Date:	6/14/06
Boring No.:	B-5	Sample Type:	IN SITU		
Sample No.:	R-4	Depth (ft.)	10		
Sample Description:	SM, DARK REDDISH BROWN SILTY SAND.				

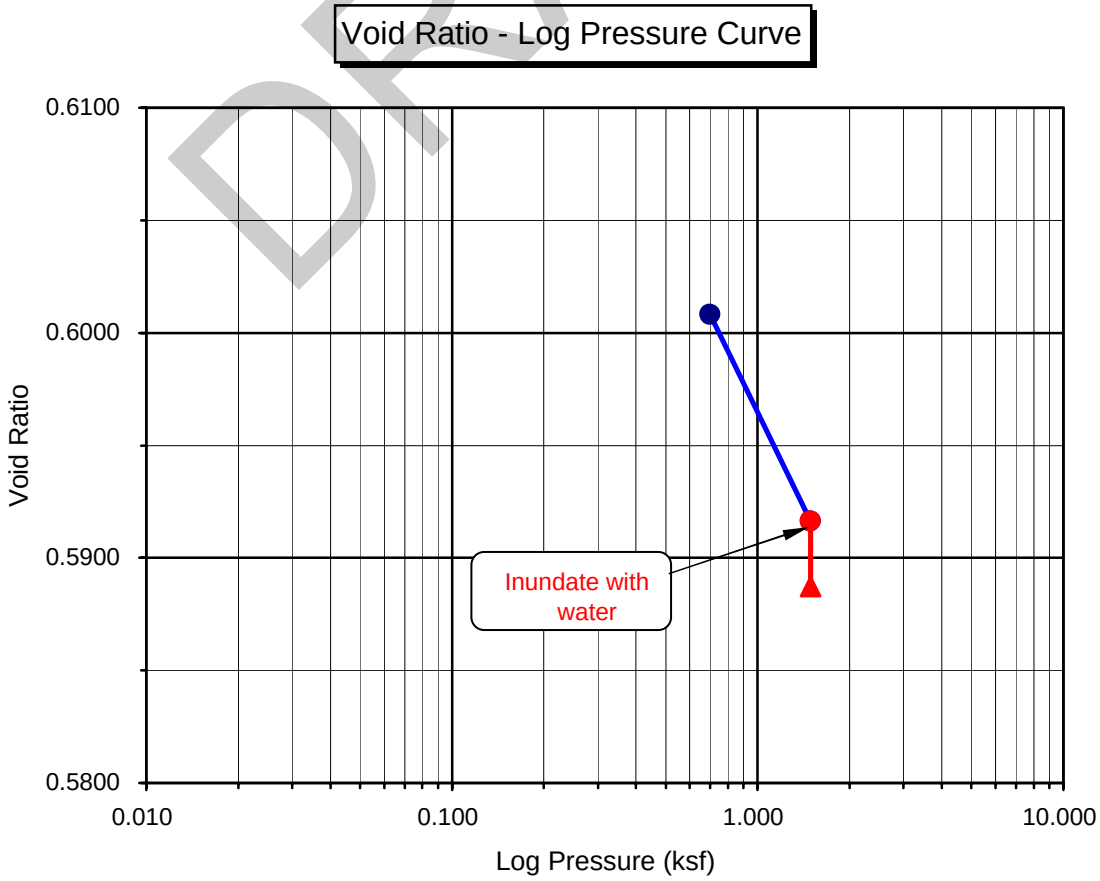
Initial Dry Density (pcf):	104.6
Initial Moisture (%):	9.7
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0500
Diameter(in):	2.416

Final Dry Density (pcf):	106.1
Final Moisture (%) :	20.7
Initial Void ratio:	0.6111
Specific Gravity(assumed):	2.70
Initial Saturation (%)	42.8

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.700	0.0564	0.9936	0.00	-0.64	0.6008	-0.64
1.488	0.0621	0.9879	0.00	-1.21	0.5916	-1.21
H2O	0.0639	0.9861	0.00	-1.39	0.5887	-1.39

Percent Swell / Settlement After Inundation = -0.18

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Rev. 08-04

Leighton and Associates, Inc.

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	HEMET 63	Tested By :	JG	Date:	6/12/06
Project No.:	111990-002	Input By :	PRC	Date:	6/19/06
Boring No.:	B-2	Depth (ft.)	0-5		
Sample No. :	B-1				
Soil Identification:	s(CL), PALE OLIVE BROWN SANDY LEAN CLAY				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.03344 *Ram Weight = 10 lb.; Drop = 18 in.*

Moisture Added (ml)	0	50	100			
TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6306	6388	6380			
Weight of Mold (g)	4281	4281	4281			
Net Weight of Soil (g)	2025	2107	2099			
Wet Weight of Soil + Cont. (g)	207.4	120.5	225.3			
Dry Weight of Soil + Cont. (g)	191.0	109.0	201.0			
Weight of Container (g)	24.5	11.7	24.5			
Moisture Content (%)	9.8	11.8	13.8			
Wet Density (pcf)	133.5	138.9	138.4			
Dry Density (pcf)	121.5	124.2	121.6			

Maximum Dry Density (pcf) 124.5 **Optimum Moisture Content (%)** 12.5

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PROCEDURE USED

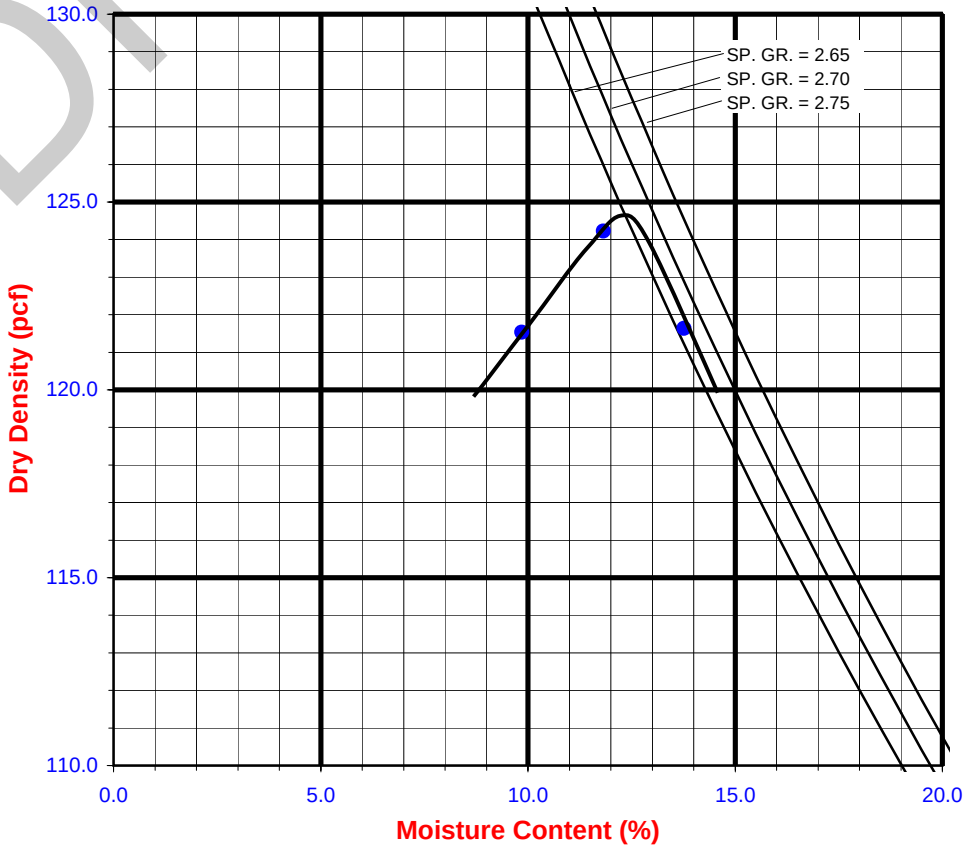
[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
GR:SA:FI

Atterberg Limits:
LL,PL,PI



Leighton and Associates, Inc.

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	HEMET 63	Tested By :	JG/JCM	Date:	6/19/06
Project No.:	111990-002	Input By :	PRC	Date:	6/19/06
Boring No.:	B-4	Depth (ft.)	0-5		
Sample No. :	B-1				
Soil Identification:	s(CL), OLIVE BROWN SANDY LEAN CLAY				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.03344 *Ram Weight = 10 lb.; Drop = 18 in.*

Moisture Added (ml)	0	50	100			
TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	5616	5698	5693			
Weight of Mold (g)	3604	3604	3604			
Net Weight of Soil (g)	2012	2094	2089			
Wet Weight of Soil + Cont. (g)	139.0	157.8	136.2			
Dry Weight of Soil + Cont. (g)	126.1	140.4	119.5			
Weight of Container (g)	11.9	11.9	11.9			
Moisture Content (%)	11.3	13.5	15.5			
Wet Density (pcf)	132.6	138.0	137.7			
Dry Density (pcf)	119.2	121.6	119.2			

Maximum Dry Density (pcf) 122.0 **Optimum Moisture Content (%)** 14.0

PROCEDURE USED

[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

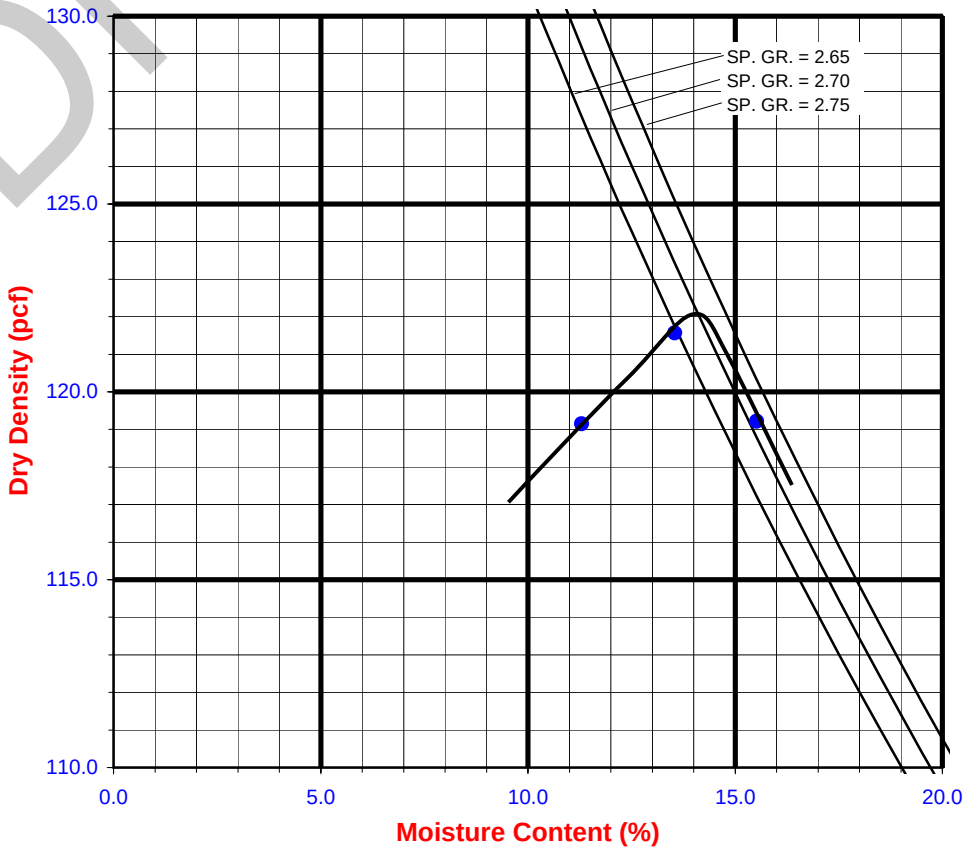
[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI



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Leighton and Associates, Inc.

SOIL RESISTIVITY TEST
DOT CA TEST 532 / 643

Project Name: HEMET 63 | Tested By : JG | Date: 6/13/06

Project No. : 111990-002 | Data Input By: JG | Date: 6/13/06

Boring No.: B-2 | Checked By: PRC | Date: 6/19/06

Sample No. : B-1 | Depth (ft.) : 0-5

Visual Soil Identification: s(CL)

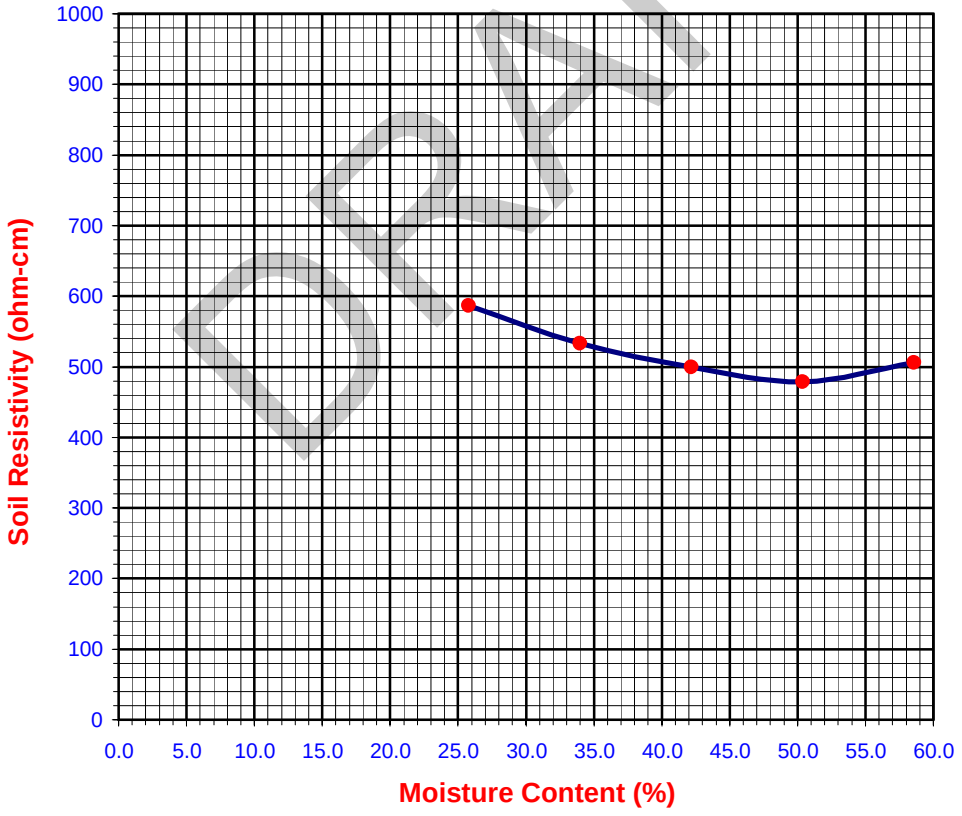
Initial Moisture Content (%)

Wet Wt. of Soil + Cont. (g)	149.0
Dry Wt. of Soil + Cont. (g)	138.3
Wt. of Container (g)	24.0
Moisture Content (%) (MCi)	9.36

Initial Soil Weight (gm)(Wt)	2000.0
Box Constant:	6.75

MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100

Remolded Specimen	Moisture Adjustments				
Water Added (ml) (Wa)	300	450	600	750	900
Adj. Moisture Content (%) (MC)	25.77	33.97	42.17	50.37	58.57
Resistance Rdg. (ohm)	87	79	74	71	75
Soil Resistivity (ohm-cm)	587	533	499	479	506



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Minimum Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH
DOT CA Test 532 / 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 532/643
479	50.37	2250	971	7.76

Rev. 11-04

Leighton and Associates, Inc.

TESTS for SULFATE CONTENT CHLORIDE CONTENT and pH of SOILS

Project Name: HEMET 63 | Tested By : JG | Date: 6/13/06

Project No. : 111990-002 | Data Input By: JG | Date: 6/13/06

Boring No.	B-2				
Sample No.	B-1				
Sample Depth (ft)	0-5				
Visual Soil Classification	s(CL)				
Wet Weight of Soil + Container (g)	149.0				
Dry Weight of Soil + Container (g)	138.3				
Weight of Container (g)	24.0				
Moisture Content (%)	9.4				
Weight of Soaked Soil (g)	100.0				

SULFATE CONTENT, DOT California Test 417, Hach Kit Method

Dillution : 1	15				
Water Fraction (ml)	25				
Tube Reading	150				
PPM Sulfate	2250				
% Sulfate	0.2250				

CHLORIDE CONTENT, DOT California Test 422

ml of Chloride Soln. For Titration (B)	30				
ml of AgNO3 Soln. Used in Titration (C	9				
PPM of Chloride (C -0.2) * 100 * 30 / B	880				
PPM of Chloride, Dry Wt. Basis	**971**				

pH TEST, DOT California Test 532/643

Container No.	A				
pH Value	**7.76**				

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Leighton and Associates, Inc.

EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	HEMET 63	Tested By:	JCM	Date:	6/15/06
Project No. :	111990-002	Checked By:	PRC	Date:	6/19/06
Boring No.:	B-2	Depth (ft.)	0-5		
Sample No. :	B-1	Location:	**		
Sample Description:	s(CL), PALE OLIVE BROWN SANDY LEAN CLAY				

Dry Wt. of Soil + Cont. (gm.)	3500.0
Wt. of Container No. (gm.)	0.0
Dry Wt. of Soil (gm.)	3500.0
Weight Soil Retained on #4 Sieve	0.0
Percent Passing # 4	100.0

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0514
Wt. Comp. Soil + Mold (gm.)	574.0	625.1
Wt. of Mold (gm.)	190.3	190.3
Specific Gravity (Assumed)	2.70	2.70
Container No.	E-19	E-19
Wet Wt. of Soil + Cont. (gm.)	311.7	625.1
Dry Wt. of Soil + Cont. (gm.)	286.7	351.7
Wt. of Container (gm.)	11.7	190.3
Moisture Content (%)	9.1	23.6
Wet Density (pcf)	115.7	131.0
Dry Density (pcf)	106.1	106.0
Void Ratio	0.589	0.671
Total Porosity	0.371	0.401
Pore Volume (cc)	76.7	87.4
Degree of Saturation (%) [S meas]	**41.7**	**95.1**

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SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h.

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
6/15/06	11:00	1.0	0	0.5000
6/15/06	11:10	1.0	10	0.4994
	Add Distilled Water to the Specimen			
6/16/06	6:55	1.0	1185	0.5514
6/16/06	7:55	1.0	1245	0.5514

Expansion Index (EI meas) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	52.0
Expansion Index (EI)$_{50}$ = EI meas - (50 -S meas)x((65+EI meas) / (220-S meas))	**47**

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EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	HEMET 63	Tested By:	JCM	Date:	6/15/06
Project No. :	111990-002	Checked By:	PRC	Date:	6/19/06
Boring No.:	B-4	Depth (ft.)	0-5		
Sample No. :	B-1	Location:	**		
Sample Description:	s(CL), OLIVE BROWN SANDY LEAN CLAY				

Dry Wt. of Soil + Cont. (gm.)	5831.5
Wt. of Container No. (gm.)	0.0
Dry Wt. of Soil (gm.)	5831.5
Weight Soil Retained on #4 Sieve	0.0
Percent Passing # 4	100.0

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0778
Wt. Comp. Soil + Mold (gm.)	574.0	624.2
Wt. of Mold (gm.)	190.2	190.2
Specific Gravity (Assumed)	2.70	2.70
Container No.	#13	#13
Wet Wt. of Soil + Cont. (gm.)	311.7	624.2
Dry Wt. of Soil + Cont. (gm.)	281.2	344.8
Wt. of Container (gm.)	11.7	190.2
Moisture Content (%)	11.3	25.9
Wet Density (pcf)	115.8	130.7
Dry Density (pcf)	104.0	103.9
Void Ratio	0.621	0.747
Total Porosity	0.383	0.428
Pore Volume (cc)	79.3	95.4
Degree of Saturation (%) [S meas]	**49.2**	**93.5**

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SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h.

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
6/15/06	11:15	1.0	0	0.5000
6/15/06	11:25	1.0	10	0.4932
	Add Distilled Water to the Specimen			
6/16/06	6:54	1.0	1169	0.5778
6/16/06	7:54	1.0	1229	0.5778

Expansion Index (EI meas) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	84.6
Expansion Index (EI)$_{50}$ = EI meas - (50 -S meas)x((65+EI meas) / (220-S meas))	**84**

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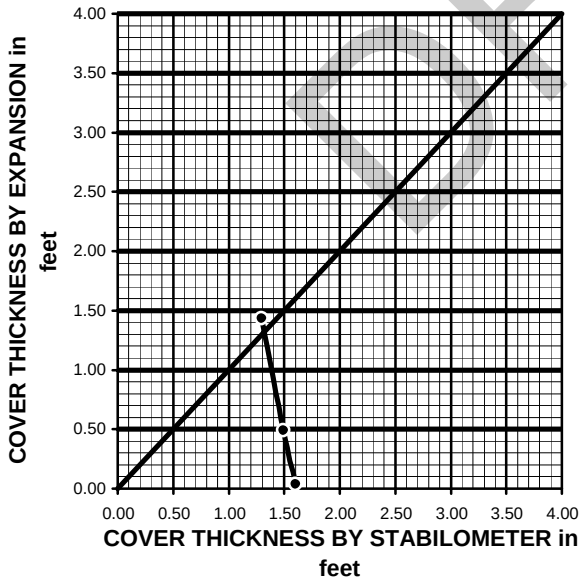
R-VALUE TEST RESULTS

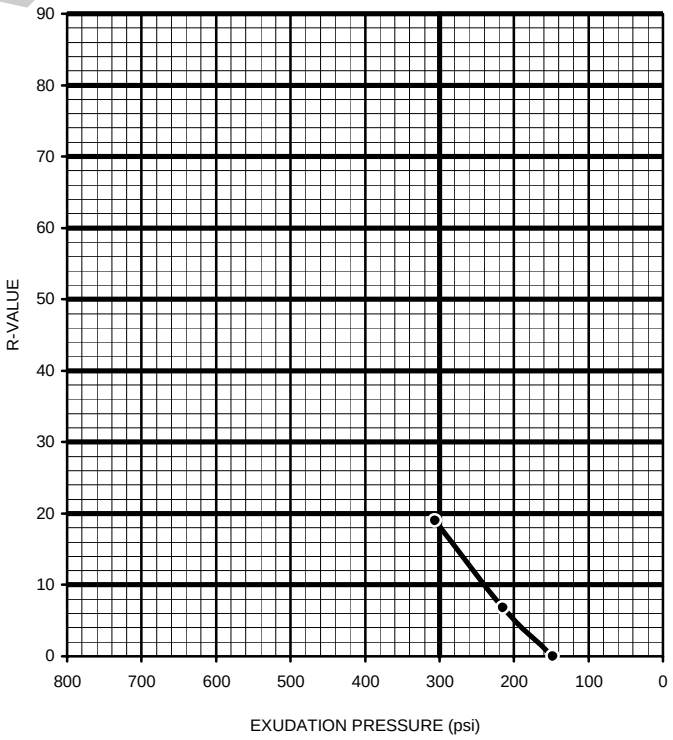
Project Name:	HEMET 63	Date:	6/15/06
Project Number:	111990-002	Technician:	JRH
Boring Number:	B-4	Depth:	0-5
Sample Number:	B-1	Sample Location:	**
Sample Description:	s(CL), OLIVE BROWN SANDY LEAN CLAY.		

TEST SPECIMEN	A	B	C
MOISTURE AT COMPACTION %	17.7	18.8	19.9
HEIGHT OF SAMPLE, Inches	2.43	2.47	2.51
DRY DENSITY, pcf	114.8	109.5	105.0
COMPACTOR AIR PRESSURE, psi	50	50	50
EXUDATION PRESSURE, psi	305	215	148
EXPANSION, Inches x 10exp-4	38	13	1
STABILITY Ph 2,000 lbs (160 psi)	113	140	180
TURNS DISPLACEMENT	4.49	4.88	5.00
R-VALUE UNCORRECTED	19	7	0
R-VALUE CORRECTED	19	7	0

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	1.30	1.49	1.60
EXPANSION PRESSURE THICKNESS, ft.	1.43	0.49	0.04

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R-VALUE BY EXPANSION:	18
R-VALUE BY EXUDATION:	19
EQUILIBRIUM R-VALUE:	18

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PARTICLE-SIZE ANALYSIS of SOILS
ASTM D 422

Project Name: HEMET 63 Tested By: BRM Date: 06/11/06

Project No.: 111990-002 Checked By: PRC Date: 06/19/06

Boring No.: B-2 Depth (ft.): 0-5

Sample No.: B-1

Visual Sample Description: s(CL), PALE OLIVE BROWN SANDY LEAN CLAY.

		Moisture Content of Total Air - Dry Soil	
Container No.:	KL	Wt. of Air-Dry Soil + Cont. (gm.)	684.7
Wt. of Air Dry Soil+Cont.(gm.)	684.7	Wt. of Dry Soil + Cont. (gm.)	648.0
Wt. of Container (gm.)	220.2	Wt. of Container No. KL (gm.)	220.2
Dry Wt. of Soil (gm.)	427.8	Moisture Content (%)	8.6

After Wet Sieve	Container No.	KL
	Wt. of Dry Soil + Container (gm.)	411.3
	Wt. of Container (gm.)	220.2
	Dry Wt. of Soil Retained on # 200 Sieve (gm.)	191.1

U. S. Sieve Size (in.)	U. S. Sieve Size (mm.)	Cumulative Weight Dry Soil Retained (gm.)	Percent Passing (%)
6"	152.400		
3"	75.000		
1 1/2"	37.500		
3/4"	19.000		
3/8"	9.500		
#4	4.750	0.0	100.0
#8	2.360	3.0	99.3
#16	1.180	35.8	91.6
#30	0.600	38.8	90.9
#50	0.300	75.9	82.3
#100	0.150	133.0	68.9
#200	0.075	190.8	55.4
PAN			

GRAVEL: 0 %

SAND: 45 %

FINES: 55 %

GRP. SYMBOL: s(CL)

Liquid Limit:

Plastic Limit

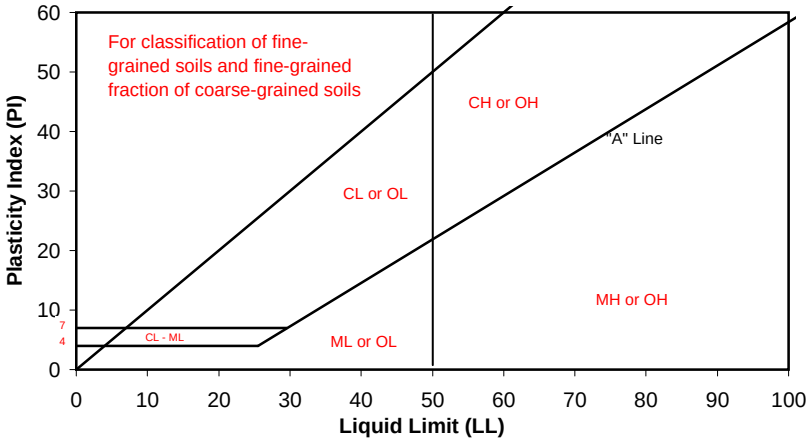
Plasticity Index: N/A

Cu = D60/D10 =

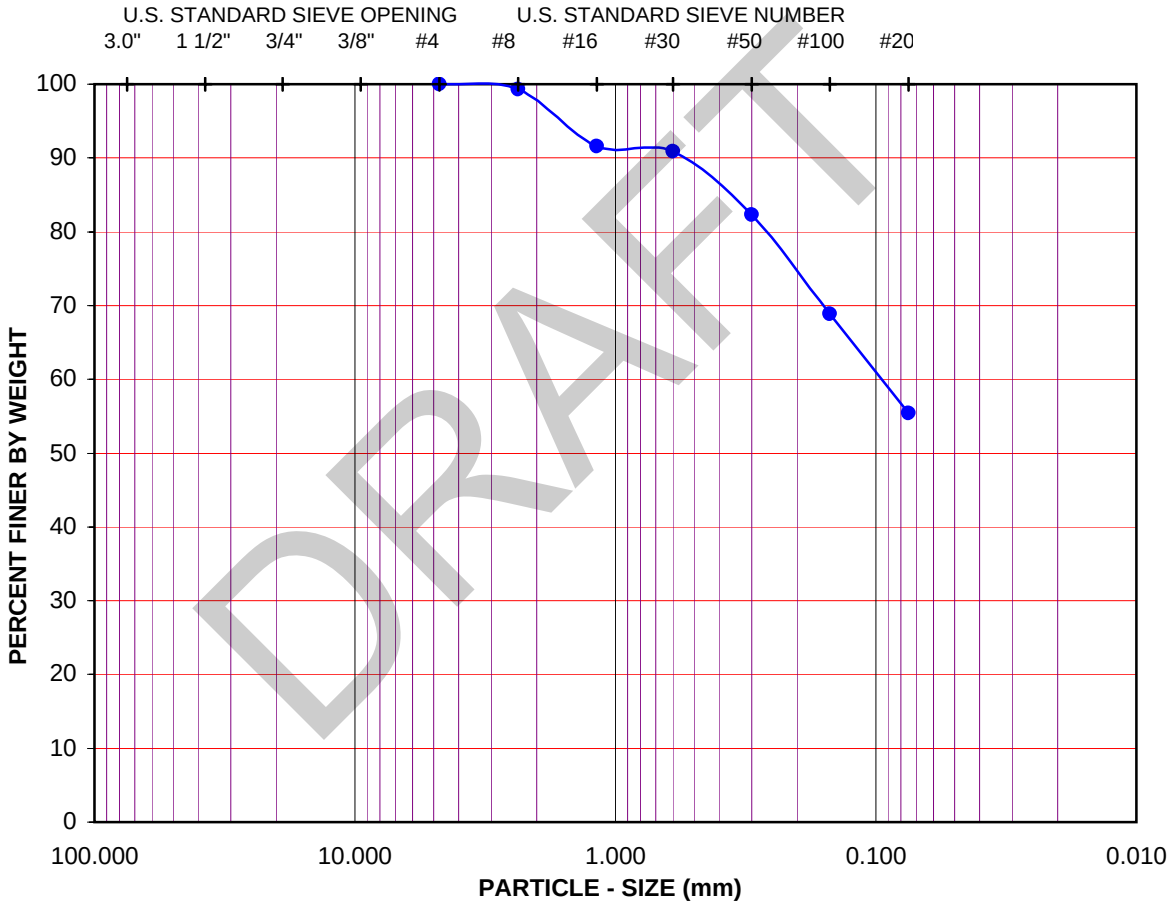
Cc = $(D30)^2/(D60*D10)$ =

Remarks:

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GRAVEL		SAND			FINES
COARSE	FINE	CRSE	MEDIUM	FINE	SILT / CLAY



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Boring No.:	Sample No.:	Depth (ft.):	Soil Type	GR:SA:FI	LL,PL,PI
B-2	B-1	0-5	s(CL)	0 : 45 : 55	N/A

Visual Sample Description:
s(CL), PALE OLIVE BROWN SANDY LEAN CLAY.

Leighton and Associates, Inc.

Project No.: 111990-002

HEMET 63

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

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Leighton and Associates, Inc.

PARTICLE-SIZE ANALYSIS of SOILS
ASTM D 422

Project Name: HEMET 63 Tested By: BRM Date: 06/11/06

Project No.: 111990-002 Checked By: PRC Date: 06/19/06

Boring No.: B-4 Depth (ft.): 0-5

Sample No.: B-1

Visual Sample Description: s(CL), OLIVE BROWN SANDY LEAN CLAY.

		Moisture Content of Total Air - Dry Soil	
Container No.:	ST	Wt. of Air-Dry Soil + Cont. (gm.)	604.5
Wt. of Air Dry Soil+Cont.(gm.)	604.5	Wt. of Dry Soil + Cont. (gm.)	571.4
Wt. of Container (gm.)	219.1	Wt. of Container No. ST (gm.)	219.1
Dry Wt. of Soil (gm.)	352.3	Moisture Content (%)	9.4

After Wet Sieve	Container No.	ST
	Wt. of Dry Soil + Container (gm.)	336.3
	Wt. of Container (gm.)	219.1
	Dry Wt. of Soil Retained on # 200 Sieve (gm.)	117.2

U. S. Sieve Size (in.)	U. S. Sieve Size (mm.)	Cumulative Weight Dry Soil Retained (gm.)	Percent Passing (%)
6"	152.400		
3"	75.000		
1 1/2"	37.500		
3/4"	19.000		
3/8"	9.500		
#4	4.750	0.0	100.0
#8	2.360	0.2	99.9
#16	1.180	3.1	99.1
#30	0.600	15.7	95.5
#50	0.300	37.4	89.4
#100	0.150	72.4	79.4
#200	0.075	116.0	67.1
PAN			

GRAVEL: 0 %

SAND: 33 %

FINES: 67 %

GRP. SYMBOL: s(CL)

Liquid Limit:

Plastic Limit

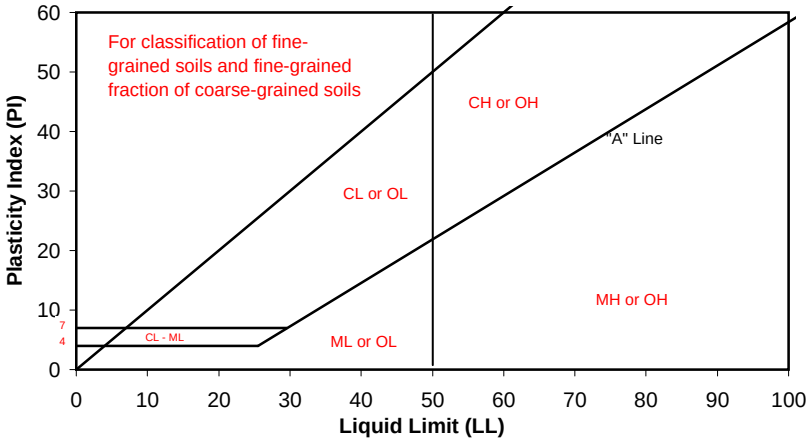
Plasticity Index: N/A

Cu = D60/D10 =

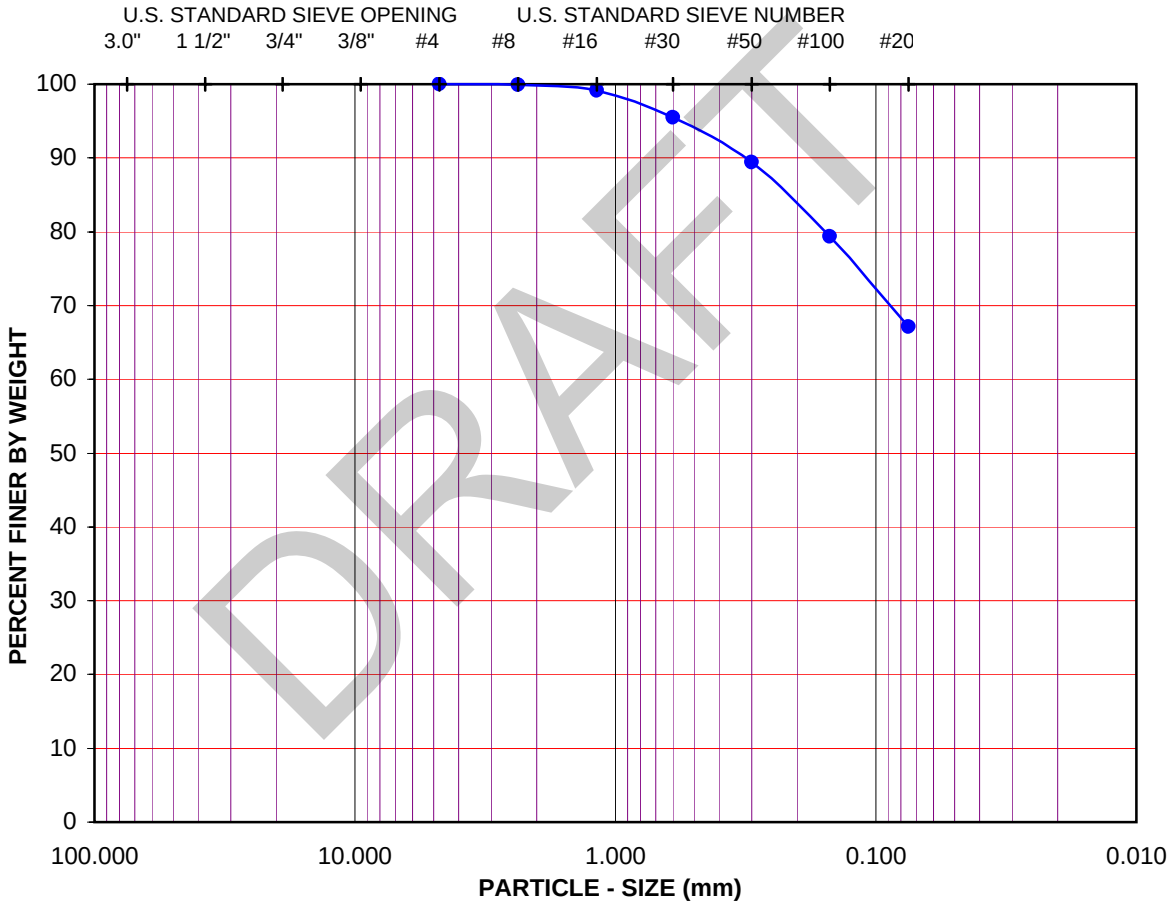
Cc = $(D30)^2/(D60*D10)$ =

Remarks:

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GRAVEL		SAND			FINES
COARSE	FINE	CRSE	MEDIUM	FINE	SILT / CLAY



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Boring No.:	Sample No.:	Depth (ft.):	Soil Type	GR:SA:FI	LL,PL,PI
B-4	B-1	0-5	s(CL)	0 : 33 : 67	N/A

Visual Sample Description:
s(CL), OLIVE BROWN SANDY LEAN CLAY.

Project No.: 111990-002

HEMET 63

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

Leighton and Associates, Inc.

Rev. 08-04

APPENDIX **C**

GBA IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL ENGINEERING REPORT

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Important Information about This

Geotechnical-Engineering Report

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

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

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responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are <u>not</u> final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are <u>Not</u> Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will <u>not</u> of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are <u>not</u> building-envelope or mold specialists.***

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GEOPROFESSIONAL BUSINESS ASSOCIATION

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