GEOTECHNICAL REPORT

KAISER PERMANENTE
SFNT 2018 MLF HESPERIA MOB D0476,
VACANT PARCELS 5-9, APN #3057-011-22-0-00
THRU 3057-011-26-0-000,
ESCONDIDO AVENUE
HESPERIA, CALIFORNIA

GEOBASE, INC.

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I. INTRODUCTION

1.1 General

Kaiser Foundation Health Plan, Inc. is planning the construction of the Kaiser Permanente - SFNT 2018 MLF Hesperia MOB D0476. The site consists of vacant parcels 5-9, APN #3057-011-22-0-00 thru 3057-011-26-0-000, and is located on Escondido Avenue in the City of Hesperia, California. The site location is shown on the Location Map, Figure A-1, Appendix A. GEOBASE, INC. (GEOBASE) was retained by Kaiser Foundation Health Plan, Inc. to complete a geotechnical report for the proposed development at the subject site.

For this geotechnical report we were provided with the following:

- An architectural plan prepared by HMC Architects; the field investigation was directed towards this plan which is reproduced herein as Figure A-2, Appendix A, Site, Boring and CPT Locations Plan.

- ALTA/NSPS Land Title Survey prepared by CDS, dated July 20, 2017. The ALTA Survey Plan is reproduced herein as Figure A-3, Appendix A.

This report describes the site investigation and summarizes the results of both field and laboratory testing. These results are discussed with reference to the proposed development. Both general and specific recommendations pertinent to suitable site development and foundation design, respectively, are provided. Construction guidelines related to the geotechnical aspects of the project are also addressed.

1.2 Objectives of the Geotechnical Report

The objectives of the geotechnical investigation were to obtain soil parameters and subsequently, evaluate the subsoils conditions in order to provide recommendations pertinent to suitable site development and foundation design. These recommendations will assist with final design and construction of the project as planned.

1.3 Scope of Services

To achieve the objectives of the geotechnical report, stated above, the services provided during the course of this investigation included:

- Review of available published and unpublished geotechnical, geological, and seismological reports and maps pertinent to the site;
- Review of previous soils reports and related documents (see references);
- Field exploration program consisting of advancing twelve (12) borings (these borings were logged and samples representative of the materials encountered were selected for laboratory testing);
- Field testing consisting of advancing seven (7) Cone Penetration Tests (CPT's);
- Field testing consisting of the Standard Penetration Test (SPT);
- Selection of appropriate laboratory tests and laboratory testing;
- Evaluation of data obtained from the above;
- Engineering analyses; and,
- Preparation of this report describing the field investigation, summarizing the results of field testing, laboratory testing and engineering analyses, and providing appropriate recommendations for site development and foundation design.

II. REVIEW OF AVAILABLE REPORT

GEOBASE, INC. had previously completed a geotechnical evaluation of the proposed site as part of a ten (10) acre undeveloped site that was acquired by Kaiser Foundation Health Plan, Inc. The result of this evaluation was presented in a report titled "Geotechnical Evaluation and Preliminary Recommendations, Land Purchase High Desert (Hesperia) Medical Office Building, Vacant Parcels 5-9, APN #3057-011-22-0-00 thru 3057-011-26-0-000, Escondido Avenue, Hesperia, California", dated August 2017.

The review of the available data and report noted above indicate the following:

- the subsoils to a depth of up to seven (7) feet were observed to be in "very loose" to "loose" state and considered not suitable for foundation support.

- the site is not within areas currently mapped as susceptible to subsidence, landslide, liquefaction or current State of California Earthquake Fault Zones.

- laboratory test results indicated that the subsoils are collapsible. Collapsible soils undergo significant volume reduction (settlement) upon wetting, with or without additional loading. A maximum collapse strain in the order of four (4) percent at a vertical stress of 1,600 psf was obtained at the locations.

III. SITE AND PROJECT DESCRIPTIONS

3.1 Site Description

The project site is roughly rectangular-shaped undeveloped vacant lot, approximately ten (10) acres. It consists of vacant parcels 5-9, APN #3057-011-22-0-00 thru 3057-011-26-0-000, and is located on Escondido Avenue in the City of Hesperia, California. It is bounded to the east by Escondido Avenue, to the west by future Mountain Vista Avenue and vacant land to the north and south.

The site is slightly elevated from the northeast to the southwest with elevations ranging from 3504 to 3524 feet above mean sea level (asml). Drainage appears to direct towards the northeast and the nearby street. Ground surface cover consists of grass and weeds with occasional small to large shrubs. Dirt roads were observed on and outside the property lines; noticeably, a dirt road traverses along the southern property line that was constructed at approximately five (5) feet above adjacent grade.

3.2 Project Description

The upper five (5) to six (6) feet of soils will be removed to lower the project site to the proposed elevation. Proposed development is planned in phases and is anticipated to include:

- an at-grade three (3) storey, 41,000 square foot MOB (Phase I);
- a one (1) storey, at-grade 11,830 square foot Eye Services Physical Therapy building;
- a three (3) storey, at-grade, 44,600 square foot MOB (Phase 2);
- an at-grade, one (1) storey, 1,600 square foot, Community Center building; and,
- at-grade parking and associated facilities.

The layout of the proposed development is shown on the Site, Boring and CPT Locations Plan, Figure A-2, Appendix A.

IV. SITE INVESTIGATION

4.1 Field Program

The field investigation was carried out on March 29th and 30th, 2018, and consisted of advancing twelve (12) borings and seven (7) CPTs at the site, at the approximate locations shown on the Site, Boring and CPT Locations Plan, Figure A-2, Appendix A. The borings were located in the field utilizing cloth tape and boring elevations were estimated from topographic contours. Therefore, the boring locations and elevations should be considered accurate only to the degree implied by the methods used.

The borings were advanced to a maximum depth of fifty-one and one-half (51.5) feet using a truck-mounted CME-75 drill rig, fitted with hollow stem augers. The Log of Borings, together with an Explanation of Terms and Symbols used are given in Appendix B, Figures B-1 thru B-13, inclusive.

The CPT's were advanced to a maximum depth of approximately sixty (60) feet and refusal was obtained at two (2) CPT locations, at approximate depths of forty (40) and fifty (50) feet. The CPT Plots are presented in Appendix B, Figures B-14 thru B-20, inclusive. The Cone Penetration Tests (CPT's) were performed in accordance with ASTM D 3441. The CPT equipment consists of a cone assembly mounted at the end of a series of hollow sounding rods. A set of hydraulic rams is used to push the cone and rods into the soil, and a continuous record of cone tip and friction resistance versus depth is obtained in digital form at the ground surface. A specially designed

truck is used to transport and house the test equipment and to provide a ten (10) ton reaction to the thrust of the hydraulic rams. Near-continuous CPT records provide: approximate correlations with soil classification; relatively accurate definition of the thickness of various soil layers; subsoils data for seismic settlement analyses; and, engineering properties of the subsoils for static settlement analyses.

Field testing also consisted of the Standard Penetration Test (SPT). The SPT test involves failure of the soil around the tip of a split spoon sampler for a condition of constant energy transmittal. The split spoon, two (2) inches outside diameter and one and three-eights (1-3/8) inches inside diameter, is driven eighteen (18) inches and the number of blows required to drive the sampler the last foot is recorded as the "N" value, or SPT blow count. The driving energy is provided by a 140-pound weight dropping thirty (30) inches.

Sampling consisted of:

- Collection of bulk samples at selected locations retrieved from the auger;
- Collection of samples retrieved from the Standard Penetration Test (SPT) split spoon; and,
- Collection of soil samples at selected locations using a California Modified Sampler. The soil samples were retained in a series of brass rings, each having an inside diameter of 2.41 inches and a height of one (1) inch. These ring samples were placed in close- fitting, moisture-tight containers for shipment to the laboratory.

Borings from the geotechnical evaluation (GEOBASE, INC., 2017) are presented herein as Figures B-21 thru B-24, inclusive, Appendix B.

4.2 Laboratory Testing

The samples obtained during the field program were returned to the laboratory for visual examination and testing. The soils were classified in accordance with ASTM D 2487 and D 2488. The laboratory testing program consisted of the following:

- Laboratory determination of water (moisture) content of soil, rock, and

soil-aggregate mixtures (ASTM D 2216) and dry density (ASTM D2937);

- Particle size analysis of soils (ASTM D 422);
- Standard Method for the amount of material in soils finer than the No. 200 sieve (ASTM D 1140);
- Atterberg limits (ASTM D4318);
- Direct shear test of soils (ASTM D 3080);
- Swell/Collapse Potential (ASTM D 4546);
- Consolidation tests (ASTM D 2435);
- Expansion potential of soils (ASTM D 4829);
- Laboratory compaction characteristics of soils using Modified Effort (ASTM D1557);
- Resistance "R" Value of soils (CT 301); and,
- Water soluble sulfates content of soils (CT-417), pH, electrical resistivity (CT-643) and water soluble chlorides (CT-422).

The laboratory test results are presented on the Log of Borings, Figures B-2 thru B-13, inclusive, Appendix B, where applicable, and in Appendix C.

Laboratory test results from the geotechnical evaluation (GEOBASE, INC. 2017) are presented on the log of borings, Figures B-21 thru B-24, inclusive, Appendix B, where applicable, and in Appendix D.

V. SUBSURFACE CONDITIONS

5.1 Subsoils Conditions

The generalized stratigraphic profile at the boring locations consists of approximately one (1) foot of surface soils with abundant grass and roots. These surface soils are underlain by poorly graded sands with little to some silt to the maximum depth of exploration, sixty (60) feet. At various locations, as observed during the current and

previous (GEOBASE, INC., 2017) investigations, occasional seams and layers of very stiff/dense silts/silty sands and clayey sands were encountered.

Laboratory test results show that the subsoils at the site are relatively dry, with in-situ moisture contents typically not exceeding six (6) percent; however, in the clayey sands and silt/silty sand layers, moisture contents up to eleven (11) percent were obtained. The consolidation tests showed collapse potential for the on-site soils with a maximum collapse strain in the order of twelve (12) percent at a vertical stress of 1,600 psf.

Based on the SPT test results, the subsoils below a depth of seven (7) feet below existing grade are generally inferred to be in a "dense", high dry strength state; however, when subject to wetting the potential of hydro-collapse is classified as "severe trouble".

5.2 Groundwater Conditions

Borings and CPT's advanced at the site to a maximum depth of sixty (60) feet did not encounter groundwater to the total depth investigated.

According to the USGS National Water Information System Mapper, approximately one (1) to two (2) miles to the northwest and west of the site, respectively, active wells data from 1996 to the present show historical high groundwater levels ranging in depth from 550 to 650 feet below ground surface (bgs). Therefore, the historical highest groundwater level at the site was judged to be in excess of 500 feet bgs.

VI. SEISMICITY

6.1 Site Accelerations

6.1.1 *Site Coordinates*

The site latitude and longitude are 34.4235 degrees north and 117.3750 degrees west, respectively.

6.1.2 *Site Classification*

The site classification procedure recommended by CBC 2016, subsection 1613.3.2, which references ASCE 7-10, Chapter 20, was adhered to.

The average field Standard Penetration Resistance (SPT "N" value) for the upper 100 feet is between fifteen (15) and fifty (50). Therefore, to develop seismic design criteria, the subsoils within the upper 100 feet at the site are judged to be Site Class D.

6.1.3 *Seismic Design Criteria*

Based on CBC 2016, subsection 1616.1.3, which references and modifies ASCE 7-10, subsection 11.4.7, since the structure is assigned to Seismic Design Category D and S_1 is less than 0.75g (see subsection 6.1.3.2), a site-specific GMHA was not completed. The following subsections present the seismic design parameters based on mapped parameters.

6.1.3.1 Mapped Accelerations Response Spectra

Mapped, risk-targeted maximum considered earthquake, MCE_R, spectral response accelerations for 0.2 and 1.0 second periods are provided in maps published in the ASCE 7-10, which is the reference used in the CBC 2016. These maps are prepared by the USGS and the California portion of the map was prepared jointly with the CGS. These maps use results of seismic hazard analyses from both probabilistic and deterministic procedures, and are applicable to Site Class B and five (5) percent of critical damping. The mapped site accelerations are adjusted for site class effects using parameters Fa and Fv, which are functions of site class and mapped site spectral accelerations.

The mapped design horizontal spectral accelerations were evaluated in accordance with ASCE 7-10, using the US Seismic Design Maps Application (USGS, 2018) available at the USGS website: http://geohazards.gov/designmaps/us/application.php. This web application requires the inputs of site location (coordinates) and site soil classification.

The project site is Site Class D and coefficient values Fa and Fv of 1.0 and 1.5,

respectively, are obtained for the site. Mapped MCE_R accelerations obtained for the project site are summarized in Table I.

TABLE I
MCE_R MAPPED ACCELERATIONS

		Site Class D	
PERIOD (SECONDS)	MAPPED ACCELERATION PARAMETERS (g)	MCE_R ACCELERATIONS ADJUSTED FOR SITE CLASS EFFECTS (g)	RISK COEFFICIENTS
0.2	S_s: 1.50	1.50	C_{RS} = 1.085
1.0	S_1: 0.60	0.90	C_{R1} = 1.043

Based on Table I, the mapped spectral response accelerations, adjusted for Site Class D, S_{MS} and S_{M1} are 1.50g and 0.90g, respectively.

6.1.3.2 Seismic Design Category

The mapped spectral response acceleration parameter at one (1) second period (S_1) is 0.60g which is less than 0.75g. The design spectral response acceleration coefficients S_{DS} and S_{D1} are 1.0 and 0.6g, respectively. Therefore, a Seismic Design Category D should be used for the design of the proposed structure per Section 1613.3.5 of CBC 2016.

6.1.3.3 Design Spectra Based on Mapped Parameters

Section 11.4.5 of ASCE 7-10 describes a procedure to obtain a design response spectra curve for use in cases where a design response spectrum is required by the ASCE 7-10 standard, and site-specific ground motion procedures are not used. This procedure is based on the use of the mapped spectral response accelerations adjusted for site class effects in the determination of the design response spectra curve. Using this procedure, numerical values of the design spectral response accelerations based on the mapped parameters for the project site are provided in Table II, below.

TABLE II
MAPPED DESIGN RESPONSE SPECTRUM

Period (Seconds)	Mapped Design Spectral Response Acceleration (g)
0.00	0.40
0.12	1.00
0.20 (S_{DS})	1.00
0.40	1.00
0.60	1.00
0.70	0.86
0.80	0.75
0.90	0.67
1.00 (S_{D1})	0.60
2.00	0.30
3.00	0.20
4.00	0.15
5.00	0.12

6.1.3.4 Maximum Considered Earthquake Geometric Mean (MCE_G) Peak Ground Acceleration

From Figure 22-7 of ASCE 7-10, PGA = 0.50g is multiplied by the site coefficient F_{PGA} = 1.0 (Table 11.8-1) to obtain the mapped MCE Geometric Mean Peak Ground Acceleration (PGA_M). For Site Class D, $PGA_M = F_{PGA}$ x PGA. Therefore, PGA_M = 0.50g may be used for evaluation of liquefaction, lateral spreading, seismic settlements and soil-related issues.

6.1.3.5 Seismic Hazard Deaggregation

Relative contributions of various combinations of earthquake magnitudes and distances to a particular seismic hazard at a site are determined using deaggregation of the seismic hazards. Magnitude-distance deaggregation, obtained from Unified Hazard Tool "Dynamic: Conterminous US 2008 (V.3.3.1)" edition that is available on the

USGS website, indicates that the deaggregated mode magnitude and distance for the peak ground acceleration at the project site are M7.9 and 18.9 kilometers, respectively.

6.2 Earthquake Effects

6.2.1 *Liquefaction*

Liquefaction occurs when the pore pressures generated within a soil mass equals the overburden pressure. This results in a loss of strength and the soil then possesses a certain degree of mobility.

Factors considered to evaluate liquefaction potential include groundwater conditions, soil type, particle size distribution, earthquake magnitude and acceleration, and soil density obtained through the Standard Penetration Test (SPT) and Cone Penetration Test (CPT). Soils subject to liquefaction comprise saturated fine grained sands to coarse silts. Coarser-grained soils are considered free-draining and therefore dissipate excess pore pressures, while fine-grained soils posses undrained shear strength.

The Seismic Hazards Zones Map indicates that the project site is not located in an area subject to liquefaction, Figure A-4, Appendix A. Furthermore, the subsoils are considered “dense” to “very dense” with a historic highest groundwater table at a depth greater than 500 feet; therefore, the subsoils at the site possess a very low potential for liquefaction.

6.2.2 *Seismically Induced Settlements*

The proposed structures will be underlain primarily by dense (N>30) to very dense native soils; therefore, seismically induced settlements are anticipated to be negligible.

6.2.3 *Tsunamis, Inundation, Seiche and Flooding*

A tsunami is a sea wave generated by a submarine earthquake, landslide, or volcanic event. The site is not located within a coastal area. Therefore, a tsunami hazard at the site is considered very low.

A seiche is an earthquake induced wave in a confined body of water, such as a lake, reservoir, or bay. Resulting oscillations could cause waves up to tens of feet high, which in turn could cause extensive damage along the shoreline. The most serious consequence of a seiche would be the overtopping and failure of a dam. The site is not located downstream of any large bodies of water that could adversely affect the property in the event of earthquake failures or seiches.

According to the Federal Emergency Management Agency (FEMA), map numbers 06071C475H and 06071C6490H, dated August 28, 2008, Flood Insurance Rate Map, San Bernardino County and Incorporated Areas, California, the proposed project site is located in Zone X, area of minimal flood hazard (Figure A-5, Appendix A).

6.2.4 *Surface Rupture*

Ground surface displacement along a fault, although more limited in area than the ground shaking associated with it, can have disastrous consequences when structures are located straddling a fault or near a fault zone. Fault displacement involves forces so great that in most cases it is not practically feasible (structurally or economically) to design and build structures to accommodate rapid displacement and remain intact. Amounts of movement during a single earthquake can range from several inches to tens of feet. Another aspect of fault displacement comes not from the violent movement associated with earthquakes, but the barely perceptible movement along a fault called "fault creep". Damage by fault creep is usually expressed by the rupture or bending of buildings, fences, railroad tracks, streets, pipelines, curbs, and other linear features.

No faulting was observed during our field reconnaissance. In addition, active, potentially active, and other major inactive faults, noted on fault maps, do not cross nor project toward the site. Furthermore, the site is not located within any Alquist-Priolo Earthquake Fault zone (APEQFZ) Map as designated by the California Geological Survey (CGS), Figure A-4, Appendix A. The closest active (APEQFZ) fault to the site is the Cleghorn fault located approximately 14.6 km to the south. Therefore, the possibility of any hazard due to ground surface rupture or fault offset at the property is considered low; however, cracking due to shaking from distant events is not considered a significant hazard, although it is a possibility at any site.

6.2.5 *Seismically Induced Landsliding*

The site area is relatively flat and the site is not located within a designated area where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacement such that mitigation would be required.

6.2.6 *Lateral Spreading*

Seismically induced lateral spreading involves primarily movement of earth materials due to ground shaking. Lateral spreading is demonstrated by near vertical cracks with predominantly horizontal movement of the soil mass involved. The potential for liquefaction at the site is considered very low. Therefore, the potential for lateral spreading at the subject site is considered very low.

6.2.7 *Subsidence*

Subsidence refers to the sudden sinking or gradual downward settling and compaction of soils and other surface material with little or no horizontal motion. It may be caused by a variety of human and natural activities, including changes in groundwater level, soil moisture and earthquakes. Since the site is underlain by dense to very dense native soils and groundwater level is very deep, it is our opinion that the potential hazard associated with subsidence at the site is very low.

VII. CONCLUSIONS

It is our opinion that the site is geotechnically suitable for the proposed development provided that the geotechnical recommendations presented herein are incorporated in the project plans and specifications, and properly carried out in the field during construction. The following presents a summary of the findings:

- Based on observations at the boring and CPT locations, the generalized stratigraphic profile consists of up to seven (7) feet of “very loose” to “loose” soils overlying primarily cohesionless soils which become “dense” to “very dense” below seven (7) feet below existing grade.

- the laboratory test results indicate that the subsoils at the site are collapsible. Collapsible soils undergo significant volume reduction (settlement) upon wetting, with or without additional loading. The potential of hydro-collapse is classified as "severe trouble".

- Groundwater was not encountered at the site during the field geotechnical investigation to the total depth of exploration, sixty (60) feet. Published historic highest groundwater level is in excess of 500 feet below existing grade.

- The project site is classified as Site Class D per CBC 2016.

- The project site is not mapped in an area susceptible to subsidence, landslides, liquefaction, or current City of Hesperia/State of California APEQFZ.

- On site soils were possess a "very low" expansion potential (Expansion Index of 0) and, have a "moderate" sulfate concentration and are "moderately corrosive" to metals.

- The flood insurance rate map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), map numbers 06071C475H and 06071C6490H, effective date August 28, 2008 shows the site to be in Zone X, an area of minimal flood hazard.

VIII. SITE DEVELOPMENT RECOMMENDATIONS

8.1 General

The proposed development, outlined in subsection 3.2, is feasible from a geotechnical engineering standpoint; project plans and specifications should take into account the appropriate geotechnical features of the site and conform to the recommendations of the geotechnical report.

8.2 Clearing

All undocumented fills, surface vegetation, trash and debris should be cleared and

removed from the site. The existing "very loose" to "loose" soils should also be removed and may be re-used as structural fill provided that they do not contain any deleterious materials or particles over six (6) inches in largest dimension. Topsoil and soils with organic inclusions are not considered suitable for reuse as structural fill, but it may be stockpiled for future landscape use. In this respect, approximately one (1) foot of topsoil and grass were observed at various boring locations.

Underground facilities such as utilities, pipes or underground storage tanks may exist at the site. Removal of underground tanks is subject to state law as regulated by County or City Health and/or Fire Department agencies. If storage tanks containing hazardous or unknown substances are encountered, the proper authorities must be notified prior to any attempts at removing such objects.

Septic tanks should be removed in their entirety. Cesspools or seepage pits should be pumped of their contents and removed in their entirety. Any wells, if encountered during construction, should be exposed and capped in accordance with the requirements of the regulating agencies.

Depressions resulting from the removal of foundation of existing structures, buried pipes, obstructions and/or tree roots should be backfilled with properly compacted material.

8.3 Subgrade Preparation

8.3.1 *Building Pad*

Within the building pads, all undocumented fills/"very loose" to "loose" soils should be removed and replaced as properly compacted fill. Depth of the aforementioned soils, as observed at the boring locations, was to found range up to approximately seven (7) feet below existing grade. If these soils are observed to extend deeper at other locations, they should be removed and replaced as properly compacted fill. The lateral extent of overexcavation should be at least equal to the depth of fill. Of the aforementioned seven (7) feet, it is understood that up to six (6) feet of soils will be removed to lower the site to the proposed elevation. The exposed subgrade should be observed to verify the removal of all unsuitable materials.

Construction activities and exposure to the environment can cause deterioration of the subgrade. Therefore, it is recommended that the condition of the subgrade soils be observed and/or tested by GEOBASE immediately prior to construction.

Additional subgrade preparation recommendations pertinent to footing foundations and deep foundations are presented in the following.

8.3.2 *Minor Structures, Walkways, Flatwork and Pavement Areas*

In order to minimize the potential for excessive settlement of minor structures which are structurally separated from the building structure, the footing subgrade areas should be overexcavated to provide a uniform compacted fill blanket a minimum three (3) feet in thickness below adjacent grade, or at least two (2) feet below footing bottoms, whichever is greater. The lateral extent of removal beyond the footing limits should be equal to at least the depth of overexcavation. The fill should be compacted to a minimum of ninety (90) percent relative compaction (ASTM D 1557).

The subsoils within the concrete walkways, flatwork and parking areas, and within two (2) feet of their proposed limits, should be over excavated at least two (2) feet and replaced as properly compacted fills.

The above subgrade preparation recommendations may only be considered if future maintenance as a result of settlement of underlying undocumented fills and hydro-collapsible soils can be tolerated. Alternatively, all undocumented fills should be removed and replaced as properly compacted fills, and hydro-collapsible soils should be treated as described in subsection 8.3.3 below.

8.3.3 *Footing Foundations*

Footing foundations may be used where the maximum footing width is ten (10) feet.

The depth of removal should be a minimum of seven (7) feet below footing base. The exposed bottom should be thoroughly wetted (ponding) prior to fill placement. The lateral extent of removal beyond footing limits should be equal to the depth of removal.

8.3.4 *Deep Foundations*

Deep foundations are likely to consist of GEOPIER Ram Aggregate Piers (RAP). The subgrade for deep foundations may be prepared as described in subsections 8.3.1 and 8.4.1. Subgrade preparation should be completed prior to RAP construction.

8.4 Fill Placement

8.4.1 *Preparation of Bottom of Excavations*

Prior to placing any fill, the exposed surface soils should be scarified to a minimum depth of eight (8) to ten (10) inches, moisture-conditioned to at least optimum moisture content and compacted to a minimum of ninety (90) percent relative compaction based on ASTM D 1558. Within the building pad areas, exposed bottom of overexcavations (surface soils) should be thoroughly wetted (ponding) prior to compaction.

8.4.2 *Compaction*

Cohesive soils should be placed in loose lifts not exceeding six (6) inches, moisture-conditioned to approximately two (2) to four (4) percentage points above optimum moisture content, and compacted to the minimum densities listed in Table III below.

TABLE III
COMPACTION REQUIREMENTS

TYPE OF FILL/AREA	RELATIVE COMPACTION (ASTM D 1557) MINIMUM PERCENT
Fills within building pad area	95
All other structural fill	90

Granular fill materials should be placed in loose lifts of six (6) to eight (8) inches, moisture-conditioned to near-optimum, and compacted to the minimum densities listed in the preceding table.

8.4.3 *Fill Material*

The on-site soils have a "very low" expansion potential (Expansion Index = 0). The on-site soils may be reused as compacted fill provided they are free of organics, deleterious materials, debris and particles over six (6) inches in largest dimension.

Any soils imported to the site for use as fill for subgrade materials should be predominantly granular and non expansive (Expansion Index less than 20) and should contain sufficient fines (approximately twenty [20] percent) so as to be relatively impermeable when compacted. The imported soils should be approved by GEOBASE, INC. prior to importing.

8.4.4 *Shrinkage*

The on-site soils will undergo some volume change when excavated and replaced as properly compacted fill. Since an accurate determination of in-place and compacted densities cannot be made over the entire project area, accurate earthwork shrinkage estimates cannot be provided. Based on our experience with similar soils, a shrinkage value in the order of ten (10) to twenty-five (25) percent may be used as a guideline for the on-site soils.

8.5 Surface Drainage

To enhance future site performance, it is recommended that all pad drainage be collected and directed away from proposed structures to disposal areas. For soils areas, we recommend that a minimum of five (5) percent gradient away from foundation elements be maintained. All roof drains should be connected to solid pipes discharging to the curb or other suitable area drains. It is important that drainage be directed away from foundations and that proper drainage patterns be established at the time of construction and maintained throughout the life of the structures.

Landscape areas within fifteen (15) feet of the building perimeter should consist of drought tolerant planters that have sealed bottoms and bottom drains to prevent infiltration of water into the adjacent foundation soils, due to the collapsible nature of the subsoils. The surface of the ground in these areas should also be maintained at a

minimum gradient of five (5) percent towards surface area drains

Care should be exercised in controlling surface runoff onto permanent and temporary slopes. The area back of slope crests should be graded such that water will not be allowed to flow freely onto the slope face. If excavations of temporary slopes are carried out in the rainy season, appropriate erosion protection measures may be required to minimize erosion of the slope cuts.

8.6 Temporary Excavations

Temporary construction excavations are anticipated for construction of the basement, utility trenches, footings and removal of existing undocumented fills.

Temporary construction excavations in soils may be made vertically without shoring to a depth of approximately four (4) feet below adjacent surrounding grade. For deeper cuts in soils, the slopes should be properly shored or sloped back at least 1H:1V (Horizontal:Vertical) or flatter. The exposed slope face should be kept moist (but not saturated) during construction to reduce local sloughing. No surcharge loads should be permitted within a horizontal distance equal to the height of cut from the crest of excavation unless the cut is properly shored. Excavations that extend below an imaginary plane inclined at forty-five (45) degrees below the edge of any nearby adjacent existing site facilities including foundations of existing buildings and underground pipelines, should be properly shored to maintain foundation support of the adjacent structures and utilities.

All excavations and shoring systems should meet, as a minimum, the requirements given in the State of California Occupational Safety and Health Standards. Stability of temporary slopes are the responsibility of the contractor.

8.7 Trench Backfill

It is our opinion that utility trench backfill could be placed and compacted by mechanical means. Jetting or flooding of backfill material is not recommended.

If utility contractors indicated that it is undesirable to use compaction equipment in

close proximity to a buried conduit, other methods of utility trench compaction may also be appropriate, as approved by the geotechnical engineer at the time of construction.

IX. FOUNDATION RECOMMENDATIONS

9.1 General

The following recommendations have been formulated from visual, physical and analytical considerations of existing site conditions and are believed to be applicable for the proposed development.

The on-site soils possess a “severe trouble” hydro-collapse potential and a "very low" expansion potential. The following recommendations are based on the anticipated hydro-collapse and expansion potential of the subsoils.

9.2 Foundation Alternatives

The results of the site investigation indicate that the foundations for the proposed developments may be influenced by the potentially collapsible nature of the subsoils.

Although no column loads have been determined for the proposed structures at this time, based on our past experience with similar developments, the following foundation alternatives are considered suitable for the proposed structures and are evaluated in the following subsections:

- deep foundations/GEOPIER Ram Aggregate Piers (RAP); and,
- a footing foundation with overexcavation and recompaction.

9.3 GEOPIER Ram Aggregate Piers (RAP)

The GEOPIER RAP constructs a highly densified inclusion of rammed crushed aggregates to form relatively stiff columns to the target depth of improvement. This is accomplished by applying direct vertical ramming energy to compact successive lifts

of the aggregates. Constructed RAP elements provide a reinforced soil profile with less compressibility than the existing soil. These elements typically range from twenty (20) to thirty (30) inches in diameter and can extend to depths of up to twenty (20) to thirty (30) feet, depending on construction technique and/or design requirement.

RAP allowable dead-plus-live bearing pressures of 6,000 psf may be used. RAP lengths can be estimated in the order of twenty (20) feet and the upper portion should be constructed to account for potential collapse of the subsoils.

Lateral loads against structures may be resisted by friction between the bottom of foundations and the supporting soils. An allowable friction coefficient of 0.35 is recommended. An allowable lateral bearing pressure equal to an equivalent fluid weight of 150 pounds per cubic foot acting against the foundations to a maximum of 2,250 pounds per square foot may be used, provided the foundations are poured tight against compacted soil. The total frictional resistance and lateral resistance of the soils can be combined without reduction in determining the total lateral resistance.

9.4 Footings

Footings based in compacted fills as described in subsection 8.3.3 may be used to support the proposed structures.

9.4.1 *Soil Bearing Pressures*

Spread or continuous footings should have a minimum width of eighteen (18) inches and should be placed a minimum of three (3) feet below the lowest adjacent grade. Footings based on seven (7) feet of compacted fills constructed as described in subsection 8.3.2 may be designed for an allowable dead-plus-live load bearing pressure of 4,000 psf.

9.4.2 *Lateral Load Resistance*

Lateral loads (wind or seismic) against structures may be resisted by friction between the bottom of foundations and the supporting soils. An allowable friction coefficient of 0.35 is recommended. An allowable lateral bearing pressure equal to an equivalent

fluid weight of 150 pounds per cubic foot to a maximum of 2,250 pounds per square foot acting against the foundations may also be used, provided the foundations are poured tight against compacted fill.

9.4.3 *Footings Adjacent to Trenches or Existing Footings*

Where footings are located adjacent to utility trenches, they should extend below a one-to-one plane projected upward from the inside bottom corner of the trench. Footings excavations adjacent to the footings of existing buildings should be carried put such that the existing footings are not undermined.

9.4.4 *Settlement*

Total static settlement of the footings are not anticipated to exceed one (1) inch and the differential settlement is not expected to exceed one-half (½) an inch. Seismic settlements are estimated to be negligible.

Notwithstanding the above, the settlement of the footings foundation system should be reviewed by GEOBASE once the configuration of the footings are finalized.

9.4.5 *Footing Observations*

All foundation excavations should be observed by GEOBASE prior to placement of forms, or reinforcement. Materials from footing excavations should not be spread in slab-on-grade areas unless compacted.

All foundation excavations should be observed by GEOBASE prior to the placement of forms, reinforcement, or concrete, for verification of conformance with the intent of these recommendations and confirmation of the bearing capacities. All loose or unsuitable materials should be removed prior to the placement of concrete. Materials from footing excavations should not be spread in slab-on-grade areas unless compacted.

9.5 Minor Structures

Minor structures may be designed using the presumptive load-bearing values outlined in CBC 2016, provided that the risk of future settlements/hydro-collapse of the subsoils and associated maintenance can be tolerated.

9.6 Retaining Walls

9.6.1 *Earth Pressures*

Retaining walls backfill is anticipated to consist of "very low" expansive soils. The site retaining walls should be designed to resist lateral pressures imposed by the surrounding soils and surcharge loads. For static-loading conditions, walls which are free to rotate at the top (at least 0.01 radian deflection) should be designed to resist lateral earth pressures imposed equivalent fluid weighing thirty-five (35) pounds per cubic foot.

In addition, a uniform pressure equal to one-third (1/3) of any vertical pressure adjacent to the site walls should be assumed to act on the walls. These aforementioned pressures assume that positive drainage will be provided as recommended in subsection 9.6.2.

For seismic loading conditions, where appropriate, the dynamic loading increment of active earth pressures may be taken as fifteen (15) psf per foot of wall height distributed in an inverted triangular distribution.

Footings for the proposed site retaining walls may be designed as recommended in subsections 9.4 and 9.5 for minor walls.

9.6.2 *Wall Backfill and Drainage*

The backfill for retaining walls shall be granular soils as described in subsection 8.4.3 and the walls should be provided with backdrains to relieve possible hydrostatic pressures on the walls. A pre-fabricated drainage system such as Miradrain, Eakadrain or equivalent, installed in accordance with the manufacturer's recommendations, may

be used. The drainage system should meet the minimum requirements of CBC 2016 subsections 1805.4.2 and 1805.4.3.

The retaining walls should be waterproofed to prevent moisture build up on the interior sides of the walls as a result of water migration from the soils in contact with the walls. The water proofing should be applied for the full height of the walls, and meet as a minimum the requirements of the CBC 2016, subsection 1805.3.

9.7 Ultimate Values

The recommended design values presented herein are for use with loadings determined by a conventional working stress design. When considering an ultimate design approach, the recommended design values may be multiplied by the factors given in Table IV:

TABLE IV
LOAD FACTORS FOR ULTIMATE DESIGN

Foundation Loading	Ultimate Design Loading
Bearing Value	3
Passive Pressure	1.33
Coefficient of Friction	1.25

In no event, should the foundation sizes be reduced from those required for support of dead-plus-live loads when using working stress values.

9.8 Floor Slabs

In moisture sensitive areas, as a minimum, the floor slabs should be damproofed per CBC 2016, subsection 1805.2; specific recommendations can be provided by a Waterproofing Consultant.

The subgrade for the floor slab should be prepared in accordance with subsection 8.4.1. In this respect, it should be noted that the floor slab may require future maintenance, in the event of water/sewer leaks, as a result of settlement of the underlying collapsible soils. Alternatively, the footing foundation subgrade preparation

alternative or a slab supported by the Geopier RAM may be used.

Slab on grade floors should be designed by the Structural Engineer using applicable CBC requirements and designed for the intended use and loading. As a minimum, slabs should be reinforced with # 4 bars at twelve (12) inch spacing, located at mid height of the slab. Thickness of floor slabs should be at least five (5) inches actual and determined by the project Structural Engineer for the project loading and service conditions. Actual slab reinforcement and thickness should be determined by the project Structural Engineer.

X. SOIL CORROSIVITY

Electrical conductivity, pH, chloride and water soluble sulfate tests were conducted on representative samples by Anaheim Test Lab, and the results are provided in Appendix C. The tests results indicate that the subsoils at the site have a "moderate" corrosive potential with respect to concrete and "moderately corrosive" potential with respect to steel and other metals. Therefore, Type II Portland cement should be used for the construction of concrete structures in contact with the subgrade soils.

XI. PAVEMENT RECOMMENDATIONS

11.1 Asphaltic Concrete Pavement

The following alternative minimum pavement sections may be used based on a R-Value of fifty (50). The traffic index assumed in Table V, below, **should be confirmed by the Civil Engineer** and R-value tests should be performed during grading, prior to finalizing the pavement sections.

TABLE V

ASPHALTIC CONCRETE PAVEMENT SECTIONS

PAVEMENT UTILIZATION	TRAFFIC INDEX	ASPHALTIC CONCRETE (INCHES)	AGGREGATE BASE (INCHES)
Automobile parking areas	5	3	4
Truck and bus loading/unloading areas and driveways	6	4	4
Extension of Major Place Street	7	4	5

The top two (2) feet of subgrade soils, below the aggregate base, should be scarified, moisture conditioned and recompacted to a minimum of ninety-five (95) and ninety (90) percent relative compaction for the upper and lower foot, respectively, at to slightly above optimum moisture content, based on ASTM D 1557.

The aggregate base must meet CALTRANS "Class 2 Aggregate Base" specifications and should be compacted to at least ninety-five (95) percent relative compaction based on ASTM D 1557. Asphaltic concrete should be compacted to at least ninety five (95) percent of the density obtained with the California Kneading Compactor (CAL 304).

11.2 Rigid Pavement

A Portland Cement concrete (PCC) pavement may also be used. In the design of the PCC pavement section shown in Table VI, below, the following design parameters were used:

- Modulus of subgrade reaction of the soil, k -- 250 pci
- Modulus of rupture of concrete, MR -- 550 psi
- Traffic Category, TC -- C
- Average daily truck traffic, ADTT -- 100

The traffic category and average daily truck traffic should be confirmed by the civil engineer and R-value tests should be performed during grading, prior to finalizing PCC thickness.

Based on the design parameters presented above, the following rigid pavement section, calculated in general conformance with the procedure recommended by ACI 330R-01, may be used.

TABLE VI
PCC PAVEMENT SECTION

PAVEMENT UTILIZATION	PCC Minimum Thickness (inches)
Truck loading/unloading areas (TC = C)	6

The upper twelve (12) inches of subgrade soils below the PCC should be scarified, moisture conditioned and recompacted to a minimum of ninety-five (95) percent relative compaction, at to slightly above optimum moisture content, based on ASTM D 1557.

The PCC pavement reinforcement should be designed by the structural engineer for shrinkage, temperature stresses and loading conditions including vehicular traffic. A thickened edge should be constructed on the outside of concrete pavements subject to wheel loads. Control joints should be included in the design of the PCC by the structural engineer at a maximum spacing of fifteen (15) feet each way.

XII. PLAN REVIEW, OBSERVATIONS AND TESTING

Post-investigation services are an important and integrated part of this investigation and should be carried out by GEOBASE. The project foundation and grading plans, and specifications should be forwarded to GEOBASE for review for conformance with the intent of the soils recommendations.

Geotechnical observations of excavation bottoms should be carried out prior to fill placement. Observations and testing of all fill placement should be carried out on a continuous basis to verify the design assumptions and conformance with the intent of the recommendations. Observations of footing bases should be carried out prior to concrete pour.

XIII. LIMITATIONS

This investigation was performed in accordance with generally accepted geotechnical engineering principles and practices. No warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

This report is intended for use by the client and its representatives, and with regard to the specific project discussed herein. Any changes in the design or location of the proposed new structure, however slight, should be brought to our attention so that we may determine how they may affect our conclusions. The conclusions and recommendations contained in this report are based on the data relating only to the

specific project and location discussed herein. This report does not relate any conclusions or recommendations about the potential for hazardous and/or contaminated materials existing at the site.

The analyses and recommendations submitted in this report are based upon the observations noted during drilling of the borings, interpretation of laboratory test results, and geological evidence. This report does not reflect any variations which may occur away from the borings and which may be encountered during construction. If conditions observed during construction are at variance with the preliminary findings, we should be notified so that we may modify our conclusions and recommendations, or provide alternate recommendations, if necessary.

The recommendations presented herein assume that the plan review, observations and testing services, outlined in Section XII of the report, will be provided by GEOBASE. During execution of the aforementioned services, GEOBASE can finalize the report recommendations based on observations of actual subsurface conditions evident during construction. GEOBASE cannot assume liability for the adequacy of the recommendations if another party is retained to observe construction.

This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project, and incorporated into the plans and specifications. In this respect, it is recommended that we be allowed the opportunity to review the project plans and the specifications for conformance with the geotechnical recommendations.

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

This report is subject to review by the appropriate regulating agencies.

Respectfully submitted
GEOBASE, INC.

H. D. Nguyen, P.E.
R.C.E. 82460
Associate Engineer

J-M. Chevallier, P.E., G.E.
R.C.E. 39198; G.E. 2056
Managing Principal

REFERENCES

American Society of Civil Engineers, 2010 "Minimum Design Loads for Buildings and Other Structures", ASCE Standard, ASCE/SEI 7-10 with March 2013 errata.

California Building Standards Commission, 2016, California Building Code (CBC): California Code of Regulations, Title 24, Part 2, Volumes 1 and 2.

City of Hesperia, General Plan 2020, Safety Element, updated May 05, 2014.

City of Hesperia, Safety Element, Map Showing the Seismic Hazards In and Near Hesperia, California. Exhibit SF-1, Page SF-9.

Coduto, DP (2001), "Foundation Design: Principles and Practices 2nd Edition". Prentice - Hall (1999).

Day, S., R. Graves, J. Bielak, D. Dreger, S. Larsen, K. Olsen, A. Pitarka, and L. Petersen, M. and others, 2008. Documentation for the 2008 update of the national seismic hazard maps, USGS OFR 08-1128. Available on the web at http://pubs.usgs.gov/of/2008/1128/.

GEOBASE, INC., 2017, "Geotechnical Evaluation and Preliminary Recommendations, Land Purchase High Desert (Hesperia) Medical Office Building, Vacant Parcels 5-9, APN #3057-011-22-0-000 THRU 3057-011-26-0-000, Escondido Avenue, Hesperia, California", prepared for Kaiser Foundation Health Plan, Inc., Fontana, California, dated August 2017, project number: C.314.84.00

Federal Emergency Management Agency (FEMA), San Bernardino County, California and Incorporated Areas, Flood Insurance Rate Map, Map Numbers 06071C6490H and 06071C6475H, effective date August 28, 2008.

Lawton, E.C., Fragaszy, R.S. and Hetherington, M.D., "Review of Wetting-Induced Collapse in Compacted Soil", Journal of geotechnical Engineering, ASCE, 118-9 (1992), 1376-94.

Tokimatsu, K., and Seed, H.B., 1987 "Evaluation of Settlements in Sands due to Earthquake Shaking", J. Geotechnical Engineering Division, ASCE, Vol. 113, No. 8, pp. 861-878.

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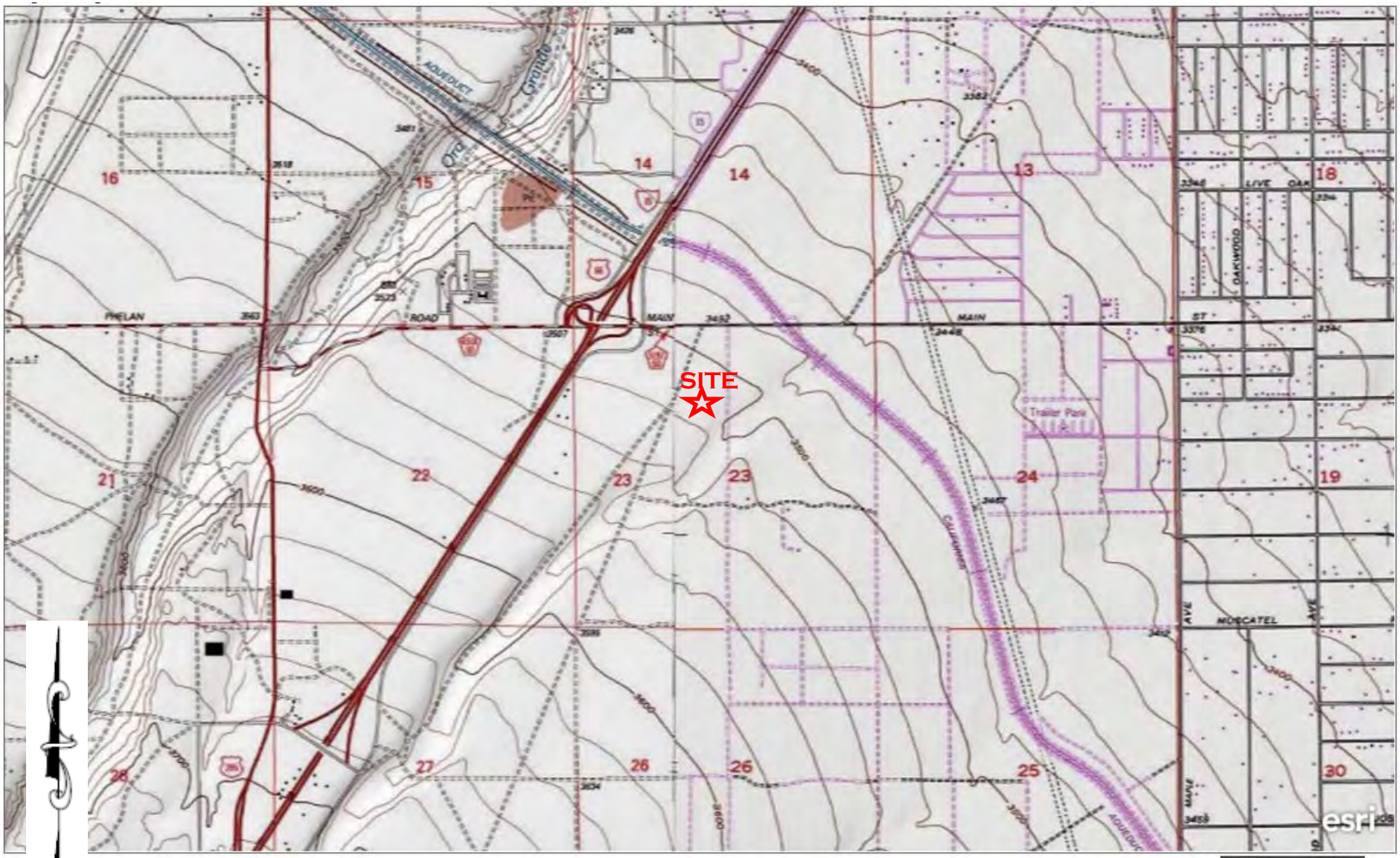
APPENDIX A



NORTH

SITE COORDINATES:
LAT: 34.4235° N
LON: -117.375° W

Source: Esri, Arcgis.com, 2013 National Geographic Society, i-cubed

GEOBASE

SITE LOCATION MAP

Kaiser Permanente – SFNT 2018 MLF HESPERIA MOB D0476
Escondido Avenue
Hesperia, California

C.314.84.10

FIGURE A-1

KAISER PERMANENTE®
HESPERIA MOB SITE MASTER PLANNING
KAISER PERMANENTE
MEDICAL OFFICE BUILDING MASTER PLAN STUDY

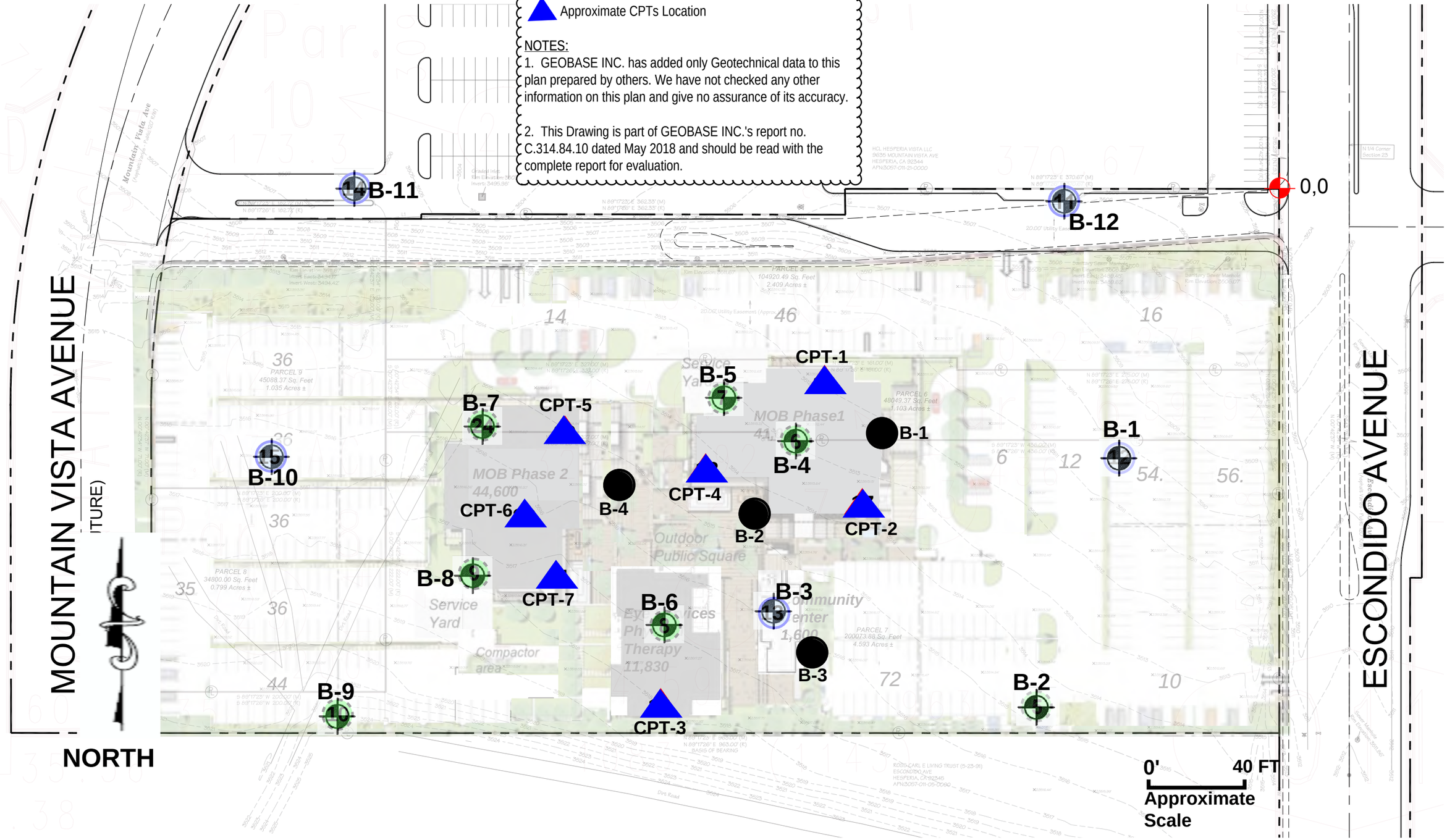
EXPLANATIONS:

- Approximate Boring Location (GEOBASE 2017)
- Approximate Boring Location
- Approximate CPTs Location

NOTES:

1. GEOBASE INC. has added only Geotechnical data to this plan prepared by others. We have not checked any other information on this plan and give no assurance of its accuracy.

2. This Drawing is part of GEOBASE INC.'s report no. C.314.84.10 dated May 2018 and should be read with the complete report for evaluation.



C.314.84.10

SITE, BORING AND CPT LOCATIONS PLAN

FIGURE A-2 APRIL 16, 2018

HMC Architects
3546 Concours Street Ontario, CA 91764

This survey coordinated, but not performed, by Commercial Due Diligence Services. Survey obtained from and certified to by a land surveyor licensed in the state property is located.

CDS COMMERCIAL DUE DILIGENCE SERVICES

1 TITLE DESCRIPTION

THE LAND REFERRED TO IN THIS COMMITMENT IS SITUATED IN THE CITY OF HESPERIA, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL NO. 1:

PARCELS 5, 6 AND 7 OF PARCEL MAP NO. 14623, IN THE CITY OF HESPERIA, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AS PER PLAT RECORDED IN BOOK 175, PAGE(S) 37, 38 AND 39 OF PARCEL MAPS, RECORDS OF SAID COUNTY; AND AS AMENDED BY AMENDING PARCEL MAP NO. 14623, RECORDED IN BOOK 179, PAGE(S) 49, 50 AND 51 OF PARCEL MAPS, RECORDS OF SAID COUNTY.

PARCEL NO. 1A:

AN EASEMENT FOR THE CONSTRUCTION, MAINTENANCE AND OPERATION OF A SIGN OVER, ON AND UNDER THAT CERTAIN PROPERTY SET OUT IN THAT CERTAIN "FREEWAY PYLON SIGN EASEMENT" RECORDED JULY 7, 1994 AS INSTRUMENT NO. 94-296280 OF OFFICIAL RECORDS AS AMENDED BY AMENDMENT TO FREEWAY PYLON SIGN EASEMENT DATED MAY 21, 1996 AND RECORDED JUNE 12, 1996 AS INSTRUMENT NO. 96- 208237 OF OFFICIAL RECORDS

PARCEL 1B:

ALL THOSE CERTAIN RECIPROCAL EASEMENTS AS SET OUT IN THAT CERTAIN "RECIPROCAL EASEMENT AND OPERATION AGREEMENT" RECORDED JULY 7, 1994 AS INSTRUMENT NO. 94- 296279 OF OFFICIAL RECORDS.

PARCEL 2:

PARCELS 8 AND 9 OF PARCEL MAP NO. 14623, IN THE CITY OF HESPERIA, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AS PER PLAT RECORDED IN BOOK 175, PAGES 37, 38 AND 39, OF PARCEL MAPS, RECORDS OF SAID COUNTY; AND AS AMENDED BY AMENDING PARCEL MAP NO. 14623, RECORDED IN BOOK 179, PAGES 49, 50 AND 51 OF PARCEL MAPS, RECORDS OF SAID COUNTY.

APN: 3057-011-22-0-000 (PARCEL 5 OF PARCEL NO. 1)
3057-011-23-0-000 (PARCEL 6 OF PARCEL NO. 1)
3057-011-24-0-000 (PARCEL 7 OF PARCEL NO. 1)
3057-011-25-0-000 (PARCEL 8 OF PARCEL 2)
3057-011-26-0-000 (PARCEL 9 OF PARCEL 2)

THE LAND SHOWN IN THIS SURVEY IS THE SAME AS THAT DESCRIBED IN FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NUMBER NCS-851808-SF WITH AN EFFECTIVE DATE OF MAY 16, 2017.

2 TITLE INFORMATION

THE TITLE DESCRIPTION AND SCHEDULE B ITEMS HEREON ARE FROM FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. NCS-851808-SF, DATED MAY 16, 2017.

4 SURVEYOR CERTIFICATION

To First American Title Insurance Company, Commercial Due Diligence Services

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 2, 3, 4, 5, 6(a), 6(b), 7(a), 7(b)(1), 7(c), 8, 9, 11 (Observed evidence together with evidence from plans obtained from utility companies or provided by client, and markings by utility companies and other appropriate sources), 13, 14, 16, 19, and 20 of Table A thereof. The fieldwork was completed on 7/20/2017.

Date of Plat or Map: 7/24/2017

Surveyor's signature
printed name and seal with Registration/License Number
surveyor@firstam.com

Approved CDS Surveyor

Surveyors Name: Buckley D. Blew
Address: 524 W. Sycamore St. Ste 4
Telephone Number: 479-443-4506
email: survey@blewinc.com

19 SURVEY DRAWING

3 SCHEDULE 'B' ITEMS

NOTES CORRESPONDING TO SCHEDULE "B":

(3) AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 27, 1929 AS BOOK 504, PAGE 176 AND RECORDED ON JULY 1, 1929 AS BOOK 515, PAGE 194 BOTH OF OFFICIAL RECORDS.
IN FAVOR OF: THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY
AFFECTS: AS DESCRIBED THEREIN
THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION. (UNABLE PLOT INSUFFICIENT LEGAL DESCRIPTION)

(4) ABUTTER'S RIGHTS OF INGRESS AND EGRESS TO OR FROM STREET, HIGHWAY, OR FREEWAY HAVE BEEN RELINQUISHED IN THE DOCUMENT RECORDED AUGUST 23, 1962 AS BOOK 5755, PAGE 904 OF OFFICIAL RECORDS . (DOES NOT AFFECT)

(5) AN OFFER OF DEDICATION FOR HIGHWAY, ROAD AND UTILITIES AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 12, 1985 AS INSTRUMENT NO. 85-034069 OF OFFICIAL RECORDS.
TO: THE COUNTY OF SAN BERNARDINO, A BODY CORPORATE AND POLITIC OF THE STATE OF CALIFORNIA, AND TO THE PUBLIC IN GENERAL SAID OFFER WAS ACCEPTED BY RESOLUTION, A CERTIFIED COPY OF WHICH WAS RECORDED DECEMBER 7, 1992 AS INSTRUMENT NO. 92-502387 OF OFFICIAL RECORDS. (DOES NOT AFFECT, LIES WITHIN ESCONDIDO AVENUE RIGHT-OF-WAY)

(6) AN EASEMENT FOR PIPELINES, UTILITIES AND ACCESS AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 19, 1988 AS INSTRUMENT NO. 88-051463 OF OFFICIAL RECORDS.
IN FAVOR OF: HESPERIA WATER DISTRICT
AFFECTS: AS DESCRIBED THEREIN (AFFECTS, PLOTTED AND SHOWN)

(7) THE FACT THAT THE LAND LIES WITHIN THE BOUNDARIES OF THE HESPERIA REDEVELOPMENT PROJECT AREA, AS DISCLOSED BY THE DOCUMENT RECORDED JULY 21, 1993 AS INSTRUMENT NO. 1993-310136 OF OFFICIAL RECORDS. (AFFECT, CONTAINS NO PLOTTABLE ITEMS)

(8) THE TERMS, PROVISIONS AND EASEMENT(S) CONTAINED IN THE DOCUMENT ENTITLED "EASEMENT AND OPERATION AGREEMENT" RECORDED JULY 07, 1994 AS INSTRUMENT NO. 94-296279 OF OFFICIAL RECORDS.
DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED OCTOBER 25, 2005 AS INSTRUMENT NO. 2005- 0798765 AND RECORDED ON JANUARY 25, 2006 AS INSTRUMENT NO. 2006-0054889 BOTH OF OFFICIAL RECORDS.
(AFFECTS, CONTAINS NO PLOTTABLE ITEMS)

(9) THE TERMS, PROVISIONS AND EASEMENT(S) CONTAINED IN THE DOCUMENT ENTITLED "FREEWAY PYLON SIGN EASEMENT AGREEMENT" RECORDED JULY 07, 1994 AS INSTRUMENT NO. 94-296280 OF OFFICIAL RECORDS.
DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED JUNE 12, 1996 AS INSTRUMENT NO. 1996- 0208237 OF OFFICIAL RECORDS. (DOES NOT AFFECT)

(10) AN EASEMENT FOR PIPELINES AND INCIDENTAL PURPOSES, RECORDED AUGUST 02, 1996 AS INSTRUMENT NO. 96-281512 OF OFFICIAL RECORDS.
IN FAVOR OF: HESPERIA WATER DISTRICT
AFFECTS: AS DESCRIBED THEREIN (AFFECTS, PLOTTED AND SHOWN)

6 CEMETERY

There is no visible evidence of cemeteries on the subject property at the time of survey.

7 STATEMENT OF ENCROACHMENTS

(A) NONE OBSERVED AT THE TIME OF THE SURVEY

5 FLOOD INFORMATION

By graphic plotting only, this property is located in Zone "X" of the Flood Insurance Rate Map, Community Panel No. 06071C6475H, which bears an effective date of 8/28/2008 and IS NOT located in a special flood hazard area. No field surveying was performed to determine this Zone and an elevation certificate may be needed to verify this determination or apply for a variance from the Federal Emergency Management Agency.

Zone "X" - Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

8 ZONING INFORMATION

ZONING NOT PROVIDED TO THE SURVEYOR AT THE TIME OF THE ALTA SURVEY.

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13 LAND AREA

Total Acreage:
432932.11 Sq. Feet
9.939 Acres ±

14 BUILDING AREA

NO BUILDING ON SUBJECT PROPERTY

15 BUILDING HEIGHT

NO BUILDING ON SUBJECT PROPERTY

SCALE : 1" = 40'

17 NORTH ARROW / SCALE

0 20 40 80

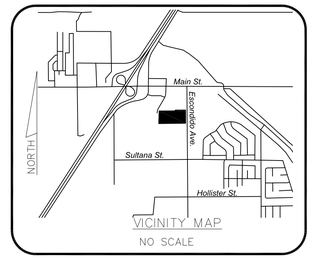
12 PARKING INFORMATION

NO STRIPED PARKING ON SITE AT THE TIME OF THE ALTA SURVEY

10 BASIS OF BEARINGS

THE BASIS OF BEARING FOR THE SUBJECT PROPERTY IS THE SOUTH LINE WHICH BEARS N89°17'23"E, PER CALIFORNIA STATE PLANE COORDINATE SYSTEM, 5TH ZONE, NAD83.

16 VICINITY MAP



11 SURVEYOR'S NOTES

1. No observable evidence of earth moving work, building construction or building additions within recent months.

2. No observable evidence of changes in street right of way lines completed, and available from the controlling jurisdiction and no observable evidence of recent street or sidewalk construction or repairs.

3. Property has physical access to Mountain Vista Ave., and Escondido Ave., both being public streets or highways.

4. All statements within the certification, and other references located elsewhere hereon, related to: utilities, improvements, structures, buildings, party walls, parking, easements, servitudes, and encroachments; are based solely on above ground, visible evidence, unless another source of information is specifically referenced hereon.

Key to CDS ALTA Survey

18 ALTA/NSPS Land Title Survey

This survey prepared in accordance with the "2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys" (Effective February 23, 2016)

This Work Coordinated By:
FA Commercial Due Diligence Services Co.
CDS COMMERCIAL DUE DILIGENCE SERVICES
3550 W. Robinson Street, Third Floor
Norman, Oklahoma 73072
Office: 405-253-2444
website: www.firstamcds.com
Toll Free: 888.322.7371

Drwn By:	D.C.	Date:	
		Revision:	
Surveyor Ref.No:	17-1333	Date:	
		Revision:	
Aprvd By:	TWP	Date:	
		Revision:	
Field Date:	7/20/2017	Date:	
Scale:	1"=40'	Revision:	

Prepared For:

Client Ref. No:

20 PROJECT ADDRESS

ESCONDIDO AVE, HESPERIA, CA

Project Name:
KAISER HESPERIA LAND
CDS Project Number:
17-06-0219

C.314.84.10 ALTA SURVEY PLAN FIGURE A-3 Page 1 of 2

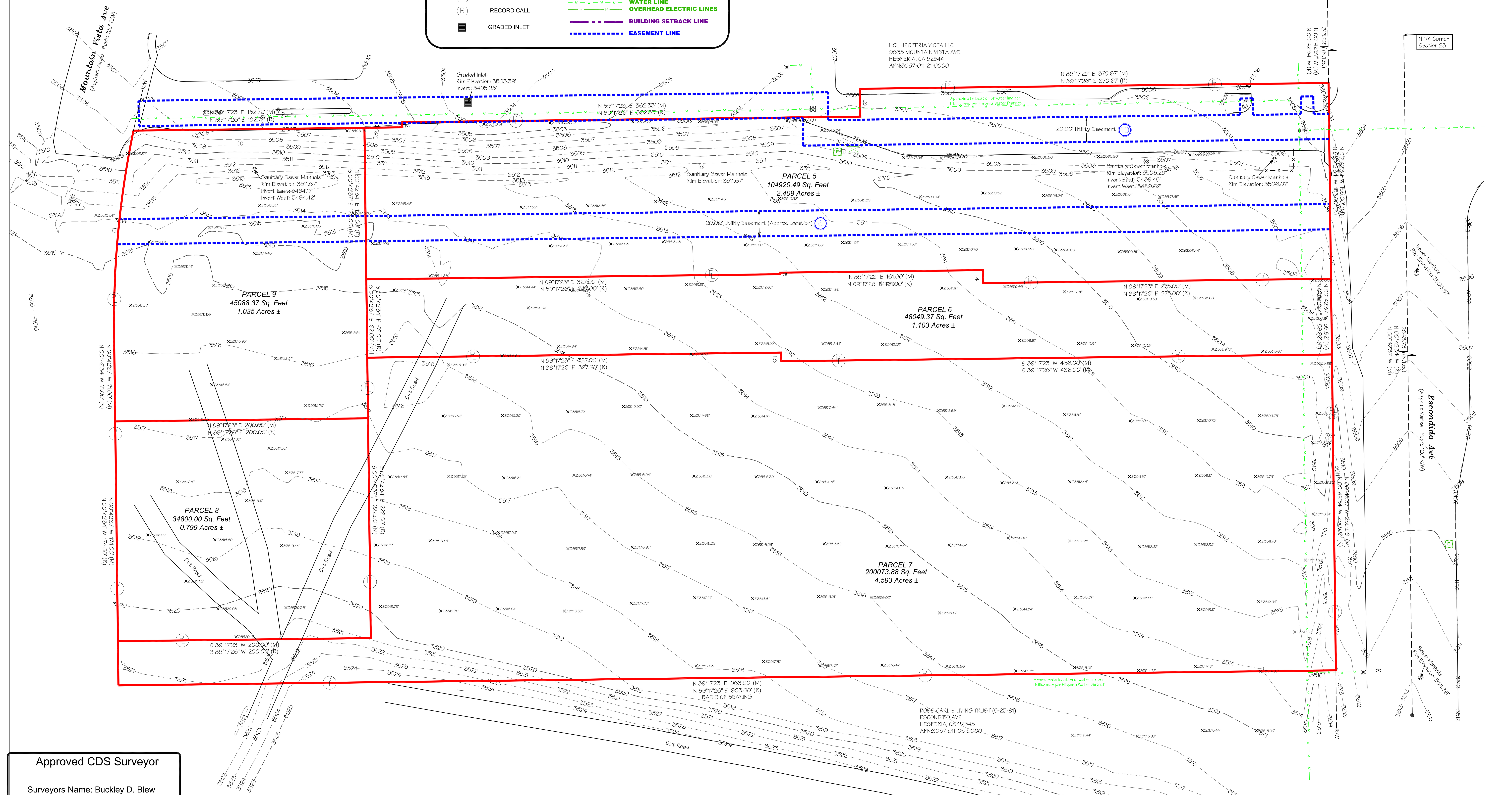
This survey coordinated, but not performed, by Commercial Due Diligence Services. Survey obtained from and certified to by a land surveyor licensed in the state property is located.

CDS COMMERCIAL DUE DILIGENCE SERVICES

9 LEGEND

- PROPERTY LINE
- P.O.B. POINT OF BEGINNING
- P.O.C. POINT OF COMMENCEMENT
- CONCRETE
- M/L MORE OR LESS
- RAILROAD TRACK
- FENCE
- (N.T.S.) NOT TO SCALE
- CENTERLINE
- (M) MEASURED CALL
- (R) RECORD CALL
- GRADED INLET
- SET IRON ROD (I.R.)
- FOUND IRON ROD (I.R.)
- HANDICAP PARKING
- TELEPHONE MANHOLE
- SANITARY SEWER
- WATER METER
- UTILITY POLE
- FIRE VALVE
- ELECTRICAL BOX
- GAS METER
- ELECTRIC CONTROL CABINET
- LIGHT POLE
- ELECTRIC MANHOLE
- WATER LINE
- OVERHEAD ELECTRIC LINES
- BUILDING SETBACK LINE
- EASEMENT LINE

19 SURVEY DRAWING



17 NORTH ARROW / SCALE

SCALE : 1" = 40'

0 20 40 80

18 ALTA/NSPS Land Title Survey

This survey prepared in accordance with the "2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys" (Effective February 23, 2016)

This Work Coordinated By:
FA Commercial Due Diligence Services Co.

CDS COMMERCIAL DUE DILIGENCE SERVICES
3550 W. Robinson Street, Third Floor
Norman, Oklahoma 73072
Office: 405-253-2444
website: www.firstamcds.com
Toll Free: 888.322.7371

Drwn By: D.C.	Date: Revision:
Surveyor Ref.No: 17-1333	Date: Revision:
Aprvd By: TWP	Date: Revision:
Field Date: 7/20/2017	Date: Revision:
Scale: 1"=40'	

Prepared For:

Client Ref. No:

20 PROJECT ADDRESS

ESCONDIDO AVE, HESPERIA, CA

Project Name:
KAISER HESPERIA LAND

CDS Project Number:
17-06-0219

Approved CDS Surveyor

Surveyors Name: Buckley D. Blew
Address: 524 W. Sycamore St. Ste 4
Telephone Number: 479-443-4506
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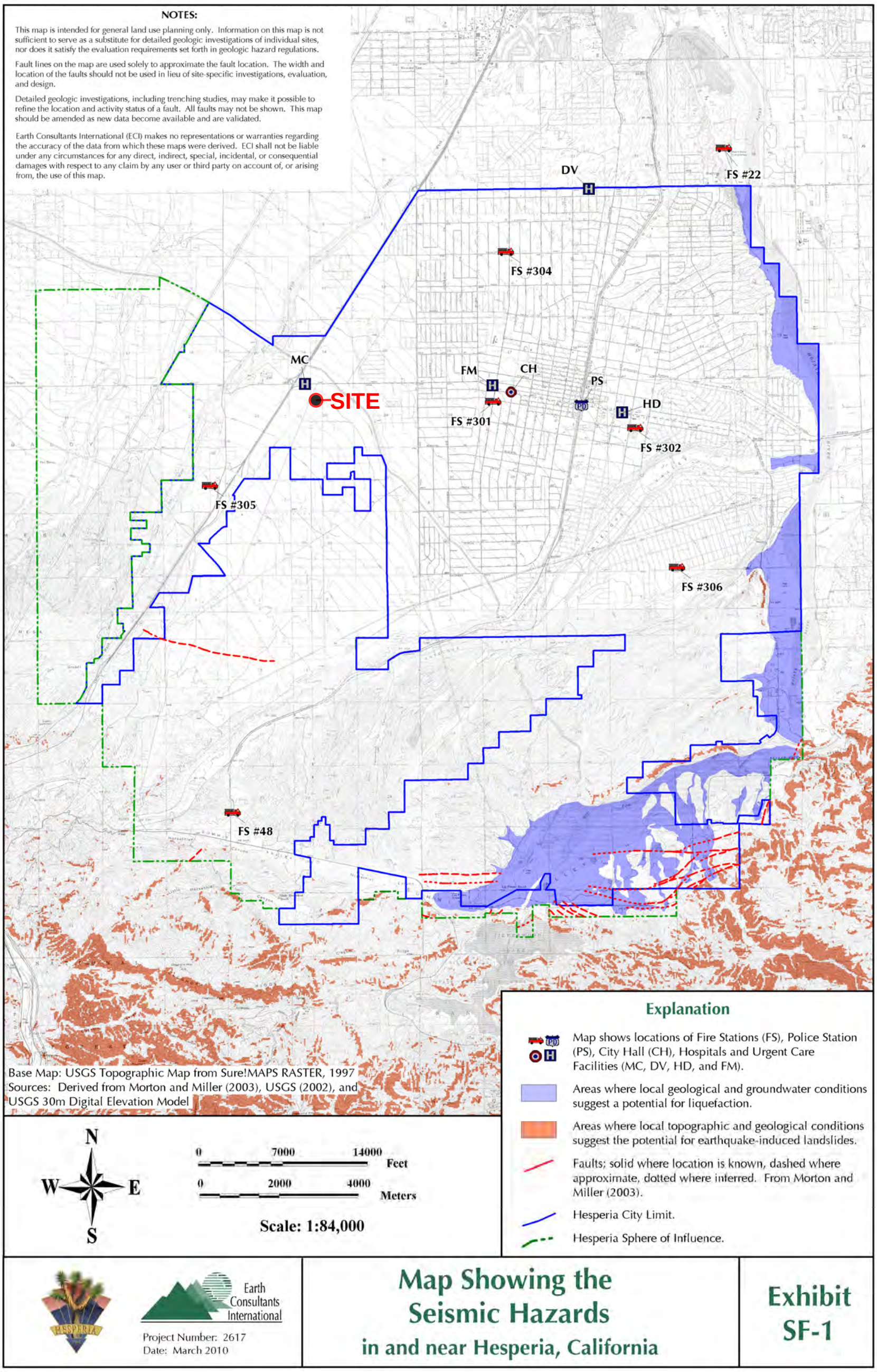
Sheet 2 of 2

EXHIBIT SF-1
SEISMIC HAZARDS



C.314.84.10 **SEISMIC HAZARDS ZONES MAP** **FIGURE A-4**

The SITE is in **Zone X** – Area of minimal flood hazard

GEOBASE

FEMA FLOOD MAP
Kaiser Permanente – SFNT 2018 MLF HESPERIA MOB D0476
Escondido Avenue
Hesperia, California

C.314.84.10

FIGURE A-5

APPENDIX B

GEOBASE, INC., 2017

The terms and symbols used on the Log of Borings to summarize the results of the field investigation and subsequent laboratory testing are described in the following:

It should be noted that materials, boundaries, and conditions have been established only at the boring locations, and are not necessarily representative of subsurface conditions elsewhere across the site.

A. PARTICLE SIZE DEFINITION (ASTM D2487 AND D422)

Boulder	-- larger than 12-inches	Sand, medium	-- No.40 to No. 10 sieves
Cobble	-- 3-inches to 12-inches	Sand, fine	-- No.200 to No. 40 sieves
Gravel, coarse	-- 3/4-inch to 3-inches	Silt	-- 5µm to No. 200 sieves
Gravel, fine	-- No.4 sieve to 3/4 -inch	Clay	-- smaller than 5 µm
Sand, coarse	-- No.10 to No.4 sieve		

B. SOIL CLASSIFICATION

Soils and bedrock are classified and described according to their engineering properties and behavioral characteristics. The soil of each stratum is described using ASTM D2487 and D2488.

The following adjectives may be employed to define percentage ranges by weight of minor components:

trace	--	1-10%	some	--	20-35%
little	--	10-20%	"and" or "y"	--	35-50%

The following descriptive terms may be used for stratified soils:

parting	--	0 to 1/16-in. thickness;	layer	--	½-in. to 12-in. thickness;
seam	--	1/16 to ½-in. thickness;	stratum	--	greater than 12-in. thickness.

C. SOIL DENSITY AND CONSISTENCY

The density of coarse grained soils and the consistency of fine grained soils are described on the basis of the Standard Penetration Test:

COARSE GRAINED SOILS		FINE GRAINED SOILS		
DENSITY	SPT BLOWS PER FOOT	ESTIMATED CONSISTENCY	SPT BLOWS PER FOOT	ESTIMATED RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TSF)
very loose	less than 4	very soft	less than 2	less than 0.25
loose	5 to 10	soft	2 to 4	0.25 to 0.50
medium	11 to 30	firm (medium)	5 to 8	0.50 to 1.0
dense	31 to 50	stiff	9 to 15	1.0 to 2.0
very dense	over 50	very stiff	16 to 30	2.0 to 4.0
		hard	over 30	over 4.0

D. STANDARD PENETRATION TEST (SPT) -- D1586

The SPT test involves failure of the soil around the tip of a split spoon sampler for a condition of constant energy transmittal. The split spoon, 2-inches outside diameter and 1 3/8-inches inside diameter, is driven eighteen (18) inches. The sampler is seated in the first six (6) inches and the number of blows required to drive the sampler the last foot is recorded as the "N" value or SPT blow count. The driving energy is provided by a 140 pound weight dropping thirty (30) inches.

E. ABBREVIATION OF LABORATORY TEST DESIGNATIONS

C	Consolidation	pH	pH
CBR	California Bearing Ratio	pp	Pocket Penetrometer
Ch	Water Soluble Chlorides	PS	Particle Size
DS	Direct Shear	RV	R-Value
EI	Expansion Index	SE	Sand Equivalent
ER	Electrical Resistivity	SG	Specific Gravity
k	Permeability	SO_4	Water Soluble Sulfates
MD	Moisture	TX	Triaxial Compression
MP	Modified Proctor Compaction Test	TV	Torvane Shear
O	Organic Content	U	Unconfined Compression

F. STRATIFICATION LINES

The stratification lines indicated on the boring logs and profiles represent the ***approximate*** boundary between material types and the transition may be gradual.

SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

MAJOR DIVISION			GROUP SYMBOL	GRAPHIC SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
HIGHLY ORGANIC SOILS			Pt		Peat and other highly organic soils	Strong color or odor and often fibrous texture
COARSE-GRAINED SOILS (More than half by weight larger than No. 200 sieve size)	GRAVELS (More than half coarse fraction larger than No. 4 sieve size)	CLEAN GRAVELS	GW		Well-graded Gravels, Gravel-Sand mixtures (<5% fines)	$C_u = \frac{D_{60}}{D_{10}} > 4$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$
			GP		Poorly-graded Gravels and Gravel-Sand mixtures (<5% fines)	Not meeting all above requirements
		DIRTY GRAVELS	GM		Silty Gravels, Gravel-Sand-Silt mixtures (>12% fines)	Atterberg limits below "A" line or $I_p < 4$
			GC		Clayey Gravels, Gravel-Sand-Clay mixtures (>12% fines)	Atterberg limits above "A" line or $I_p > 7$
	SANDS (More than half coarse fraction smaller than No. 4 sieve size)	CLEAN SANDS	SW		Well-graded Sands, Gravelly Sands (<5% fines)	$C_u = \frac{D_{60}}{D_{10}} > 6$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$
			SP		Poorly-graded Sands or Gravelly Sands (<5% fines)	Not meeting all above requirements
		DIRTY SANDS	SM		Silty Sands, Sand-Silt mixtures (>12% fines)	Atterberg limits below "A" line or $I_p < 4$
			SC		Clayey Sands, Sand-Clay mixtures (>12% fines)	Atterberg limits above "A" line or $I_p > 7$
FINE-GRAINED SOILS (More than half by weight passes No. 200 sieve size)	SILTS Below "A" line on plasticity chart: negligible organic content		ML		Inorganic Silts and very fine Sands, Rock Flour, Silty Sands of slight plasticity	$W_L < 50$
			MH		Inorganic Silts micaceous or diatomaceous, fine Sandy or Silty soils	$W_L > 50$
	CLAYS Above "A" line on plasticity chart: negligible organic content		CL		Inorganic Clays of low plasticity, Gravelly, Sandy, or Silty Clays, lean Clays	$W_L < 30$
			CI		Inorganic Clays of medium plasticity, Silty Clays	$W_L > 30, < 50$
			CH		Inorganic Clays of high plasticity, fat Clays	$W_L > 50$
	ORGANIC SILTS & ORGANIC CLAYS Below "A" line on plasticity chart		OL		Organic Silts and organic Silty Clays of low plasticity	$W_L < 50$
			OH		Organic Clays of high plasticity	$W_L > 50$

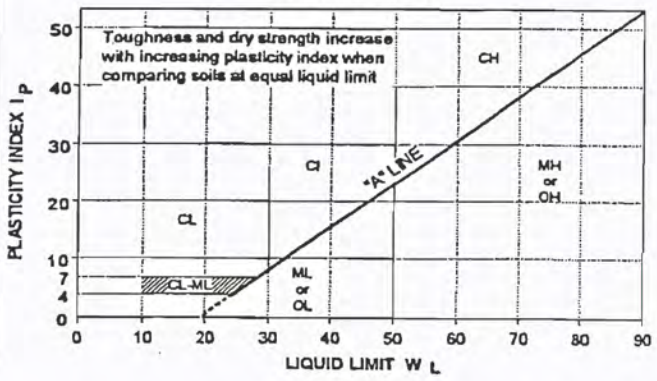
See chart below

The soil of each stratum is described using ASTM D2487 and D2488 modified slightly so that an inorganic clay of "medium plasticity" is recognized.

ADDITIONAL SOIL CLASSIFICATION

- Fill Soil
- Ss Sandstone
- Cs Claystone
- Ms Siltstone

PLASTICITY CHART



GEOBASE

EXPLANATION OF TERMS AND SYMBOLS USED

Figure B-1

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, fine- to medium grained, little silt, trace of gravels, very loose.	SP-SM			
5		...medium dense, medium- to coarse-grained				
		SAND, light brown, silty, fine-grained, dense.	SM			200 Wash
10		...trace of gravels				
15		End of Boring at 11.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
20						
25						
30						
35						

GEOBASE, INC.

PROJECT	**Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**			**BORING NO. B-1**
DEPTH TO WATER ▼ feet	SURFACE ELEV. **3510.5 feet**		LOGGED BY **HDN**	PROJECT NO. **C.314.84.10**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75** DRILLER **2R Drilling**		DATE LOGGED **03/29/2018**	FIGURE NO. B-**2**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, medium grained, little silt, very loose.	SP			
5		...very loose, trace of gravels.				
10		SAND, brown, silty, fine- to medium-grained, little gravels, very dense.	SM			200 Wash
15		...little silt, trace of gravels, very dense				Blow count = 89/11 in. PS, CP, DS
		SAND, light brown, trace of silt, medium- to coarse-grained, , micaceous, medium dense.	SP-SM			
20		...coarse-grained, medium dense				
25		...4 IN SILT layer, fine-grained, medium dense				200 Wash
30		...medium- to coarse-grained, little silt and gravels, dense				Blow count = 60/12 in.
		End of Boring at 31.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

BORING NO. B-2

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3514.5 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/29/2018** | FIGURE NO. B- **3**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, little silt and gravels, very loose.	SP-SM			
5		...fine- to medium-grained, trace of silt, medium dense				200 Wash
10		...some silt , trace of gravels, very dense				Blow count = 50/3 in. PS, DS.
15		...coarse-grained, little gravels, micaceous, dense.				
20		...trace of silt and gravels, dense				
25		...trace of silt and fine-gravels, very dense				Blow count = 90/12 in. PS.
30		...fine- to medium-grained				
35		End of Boring at 31.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				

GEOBASE, INC.

PROJECT	**Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**			**BORING NO. B-3**
DEPTH TO WATER feet ▼	SURFACE ELEV. **3516 feet**		LOGGED BY **HDN**	PROJECT NO. **C.314.84.10**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75** DRILLER **2R Drilling**		DATE LOGGED **03/29/2018**	FIGURE NO. B-**4**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, little silt and gravels, very loose.	SP-SM			
5		...medium- to coarse-grained, little silt, micaceous, medium dense				200 Wash Bulk sample 5-10 ft. RV. Ch, ER, pH, SO_4
10		SAND, brown, fine- to medium-grained, cementation, little silt and gravels, very dense.	SM			
15		SAND, light brown, coarse-grained, trace of 1-in gravels, little silt, very dense.	SP-SM			Blow count = 50/3 in. PS, CP, DS.
20		...little gravels, dense				
25		...cementation, trace of silt, dense				Blow count = 76/12 in. 200 Wash.
30		...trace of silt, dense				
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

BORING NO. B-4

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3513 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/29/2018** | FIGURE NO. B- **5**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, light brown, medium- to coarse-grained, little silt and gravels, very dense.	SP-SM		■ Blow count = 50/4 in.	
40		...some silt				
45		...dense				
50		...dense, trace of silt and gravels				
55		End of Boring at 51.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
60						
65						
70						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476**
Escondido Avenue, Hesperia, CA

BORING NO. B-4

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3513 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/29/2018** | FIGURE NO. B- **5**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, little silt and gravels, very loose.	SP-SM			
5		...medium dense, some silt, fine-grained				
10		SAND, brown, medium-grained, little silt, trace of gravels, dense.	SM			
15		SAND, light brown, coarse-grained, trace of silt, little gravels, dense.	SP-SM			PS
20		...1-in gravels,				Blow count = 93/12 in. CP, DS.
25		...dense				
30		...coarse-grained, little silt, trace of gravel, very dense.				Blow count = 85/12 in. PS
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

BORING NO. B-5

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3513 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/29/2018** | FIGURE NO. B- **6**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, light brown, medium- to coarse-grained, trace of silt, 1-in gravels, dense.	SP-SM			
40		...very dense				Blow count = 50/4 in.
45		...dense				
50		...dense, trace of silt and gravels				
55		End of Boring at 51.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
60						
65						
70						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

BORING NO. B-5

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3513 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/29/2018** | FIGURE NO. B-**6**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	SOIL DESCRIPTION	SOIL CLASSIFICATION	REMARKS/ OTHER TESTS
	GRASS AND ROOTS,		
	SAND, brown, little silt and gravels, very loose.	SP-SM	Bulk sample 0-5 ft. RV Ch, ER, pH, SO_4
5	...medium dense, some silt, fine-grained		200 Wash
10	SAND, brown, medium-grained,some silt, trace of gravels, medium dense.	SM	Blow count = 93/12 in. PS, CP, DS.
15	light brown, coarse-grained, little silt, medium dense.		200 Wash
20	...cementation, silty, very dense		Blow count = 50/6 in. CP, 200 Wash
25	SAND, light brown, micaceous, fine- to medium-grained, trace of silt, medium dense.	SP-SM	200 Wash
30	...fine-grained, very dense.		Blow count = 50/6 in. 200 Wash
35			

DRY DENSITY (PCF): 80 90 100 110 120

Water Content (%): ●

Plastic Limit (W_P) ⊢——⊣ Liquid Limit (W_L)

Penetration, blows/foot: ■ 10 20 30 40 50

GEOBASE, INC.

PROJECT	**Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**		**BORING NO. B-6**
DEPTH TO WATER feet ▼	SURFACE ELEV. **3517 feet**	LOGGED BY **HDN**	PROJECT NO. **C.314.84.10**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75** DRILLER **2R Drilling**	DATE LOGGED **03/29/2018**	FIGURE NO. B- **7**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, brown, medium- to coarse-grained, some silt and clayey, cementation, dense.	SC-SM			200 Wash
		SAND, light brown, medium- to coarse-grained, trace of silt.	SP-SM			
40		...very dense, little gravels				Blow count = 50/4 in. 200 Wash
45		...fine-grained, dense				200 Wash
50		...fine-grained, very dense				200 Wash
55		End of Boring at 51.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
60						
65						
70						

GEOBASE, INC.

PROJECT	**Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**			**BORING NO. B-6**
DEPTH TO WATER feet ▼	SURFACE ELEV. **3517 feet**		LOGGED BY **HDN**	PROJECT NO. **C.314.84.10**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75** DRILLER **2R Drilling**		DATE LOGGED **03/29/2018**	FIGURE NO. B- **7**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, little silt, trace of gravels, very loose.	SP-SM			Bulk sample 0-5 ft. PS, EI, MP, 95 RC.
5		...medium dense, clayey, cementation, fine-grained				200 Wash
10		SAND, brown, coarse-grained, little silt, 1-in gravels, medium dense.	SM			200 Wash
15		SAND, light brown, little silt, micaceous, dense.	SP-SM			Blow count = 51/12 in. PS, CP.
20		...trace of silt, medium dense				200 Wash
25		...fine- to medium-grained, very dense				Blow count =83/12 in. 200 Wash
30		...medium-grained, dense				200 Wash
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

BORING NO. B-7

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3515.5 feet** | LOGGED BY **HDN**

PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/30/2018**

FIGURE NO. B- **8**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, brown, silty, fine-grained, cementation, very dense.	SC-SM		>>	Blow count = 50/5 in. 200 Wash
		SAND, light brown, fine- to medium grained, little silt and gravels, very dense.	SP-SM			
40		...very dense				N = 100, PS
45		...fine-grained, trace of silt and gravels, very dense				200 Wash
50		...SILTY, cementation, very dense				200 Wash
55		End of Boring at 51.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
60						
65						
70						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

BORING NO. B-7

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3515.5 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/30/2018** | FIGURE NO. B-**8**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ▯ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, little silt, trace of gravels, very loose.	SM			
5		...tan brown, silty, fine-grained, medium dense				
10		...very dense				Blow count = 50/3 in. CP, DS, 200 Wash.
15		SAND, light brown, fine-grained, trace of silt, very dense.	SP-SM			
20		...coarse-grained with gravels, very dense				Blow count = 50/6 in. CP
25		...medium-dense				
30		...some silt with trace of gravels, very dense				Blow count = 90/12 in.
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

BORING NO. B-8

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3518 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/30/2018** | FIGURE NO. B-**9**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, tan brown, silty, fine-grained, very dense	SP-SM			200 Wash
40		...light brown, coarse-grained with 2-in rock fragment, very dense.				Blow count = 50/3 in.
45		...trace of silt, fine-grained, dense				
50		...silty, dense				
55		End of Boring at 51.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
60						
65						
70						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3518 feet** | LOGGED BY **HDN**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/30/2018**

BORING NO. B-8

PROJECT NO. **C.314.84.10**

FIGURE NO. B-**9**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, some silt and gravels, very loose.	SM			
5		...fine-grained, silty, loose				PS
10		...silty to clayey, very dense				Blow count = 50/6 in. PS, CP, DS.
15		SAND, light brown, medium-grained, trace of silt and gravels, medium dense.	SP-SM			
20		...coarse-grained with gravels, dense				Blow count = 67/12 in.
25		...medium- to coarse-grained, trace of silt, dense				
30		...fine-grained, silty, medium dense				
35		End of Boring at 31.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				

GEOBASE, INC.

PROJECT	**Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**			**BORING NO. B-9**
DEPTH TO WATER feet ▼	SURFACE ELEV. **3523 feet**		LOGGED BY **HDN**	PROJECT NO. **C.314.84.10**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75** DRILLER **2R Drilling**		DATE LOGGED **03/30/2018**	FIGURE NO. B- **10**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, brown, silty, very loose.	SM			
5		SAND, brown, fine- to medium-grained, little silt and gravels, very dense.	SP-SM		● ▲ ■	Blow count = 50/5.5 in.
		...cementation, well-graded, dense.				
10		...trace of silt, medium dense			● ■	
15		End of Boring at 11.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
20						
25						
30						
35						

GEOBASE, INC.

PROJECT	**Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**		**BORING NO. B-10**
DEPTH TO WATER feet ▼	SURFACE ELEV. **3516.5 feet**	LOGGED BY **HDN**	PROJECT NO. **C.314.84.10**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75** DRILLER **2R Drilling**	DATE LOGGED **03/30/2018**	FIGURE NO. B- **11**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: THIN WALLED TUBE | SPT SPLIT SPOON | CALIFORNIA MODIFIED SAMPLER | DISTURBED | NO RECOVERY | CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%); Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: 10 20 30 40 50	REMARKS/ OTHER TESTS
0		PAVEMENT, AC = 3 IN; AB = 6 IN				
		SAND, brown, coarse-grained, little gravels, trace of silt.	SP-SM			Bulk sample 0-5 ft. RV
5		...dense				Blow count = 56/12 in. PS
		...medium dense				
10						
15		End of Boring at 11.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
20						
25						
30						
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476**
Escondido Avenue, Hesperia, CA

DEPTH TO WATER feet ▼

DEPTH TO SLOUGH ▲

SURFACE ELEV. **3506 feet**

DRILL RIG **CME-75**
DRILLER **2R Drilling**

LOGGED BY **HDN**

DATE LOGGED **03/30/2018**

BORING NO. B-11

PROJECT NO. **C.314.84.10**

FIGURE NO. B- **12**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
0	■	PAVEMENT, AC = 4.5 IN; AB = 3 IN				
		SAND, brown, coarse-grained, little gravels, trace of silt.	SP			
		...fine-grained, loose				200 Wash
5		...silty with some Clay, medium dense				200 Wash
10		...light brown, medium- to coarse-grained				
15		End of Boring at 11.5 feet. Boring dry at completion of drilling. Backfilled with soil cuttings.				
20						
25						
30						
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente --SFNT 2018 MLF HESPERIA MOB D0476 Escondido Avenue, Hesperia, CA**

BORING NO. B-12

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3506 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.10**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75** DRILLER **2R Drilling** | DATE LOGGED **03/30/2018** | FIGURE NO. B- **13**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

Kehoe Testing and Engineering
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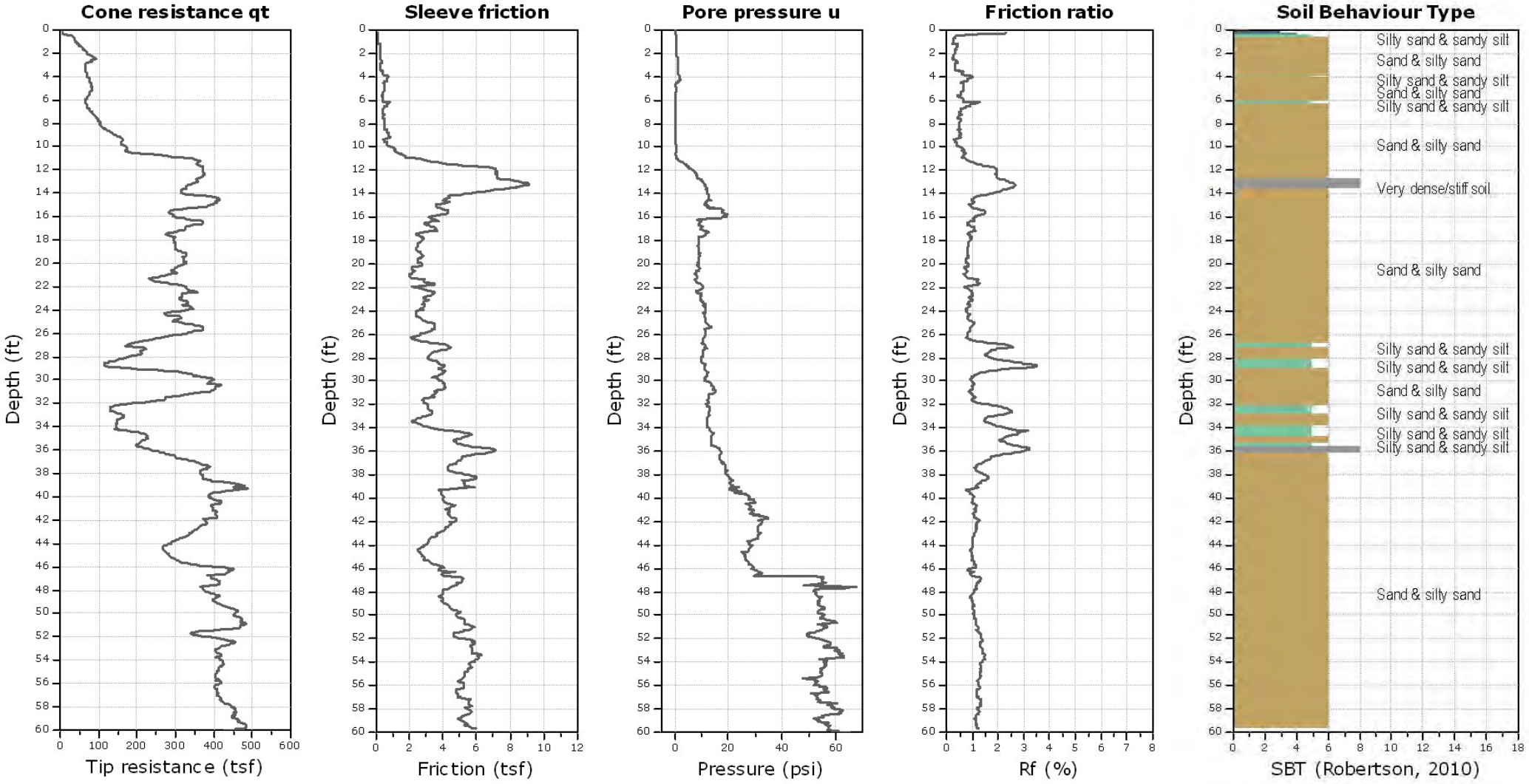
CPT-1

Project: **GEOBASE, Inc.**
Location: **9492 Escondido Avenue Hesperia, CA**

Total depth: 60.06 ft, Date: 3/30/2018
Cone Type: Vertek



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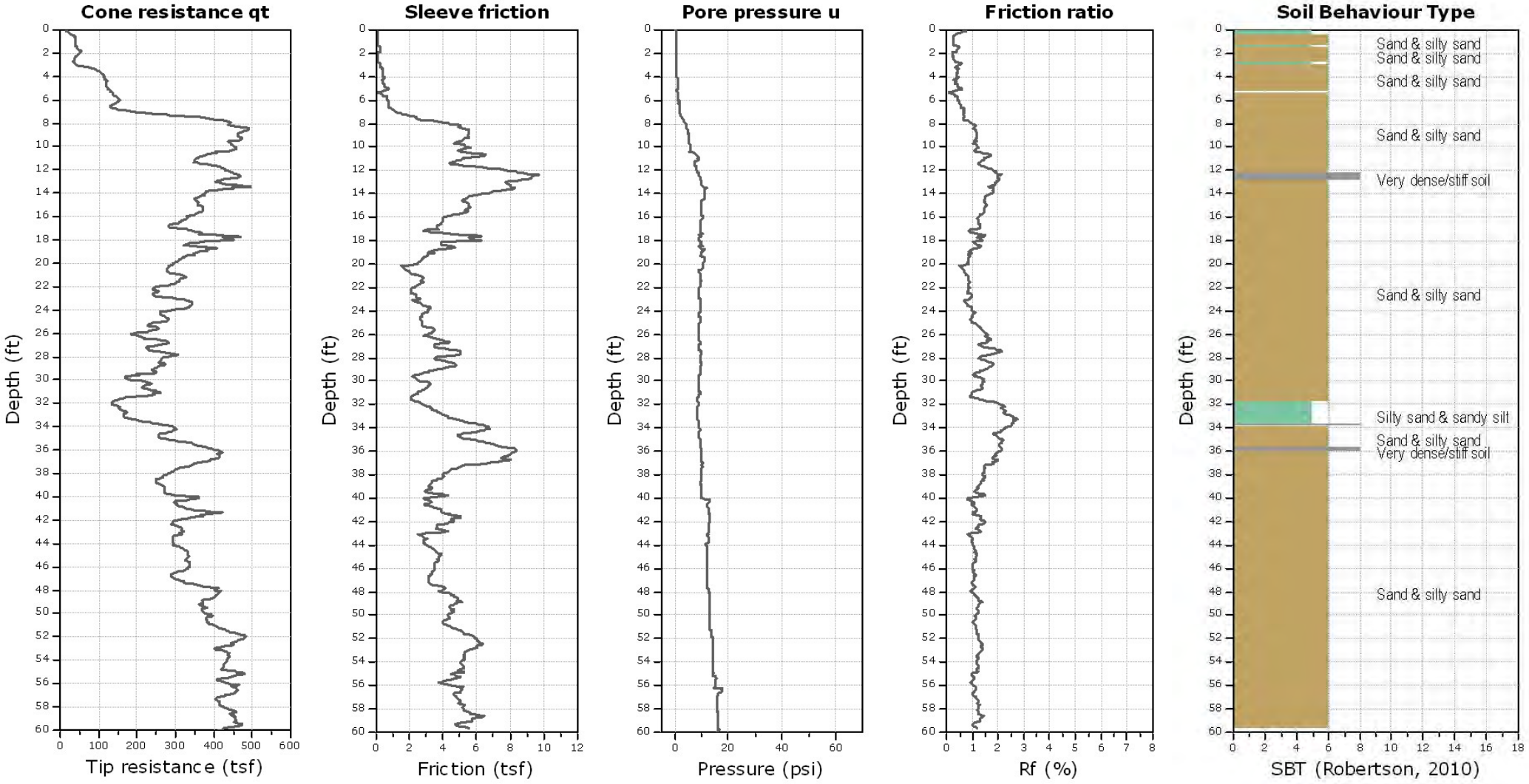
CPT-2

Project: **GEOBASE, Inc.**
Location: **9492 Escondido Avenue Hesperia, CA**

Total depth: 60.05 ft, Date: 3/30/2018
Cone Type: Vertek



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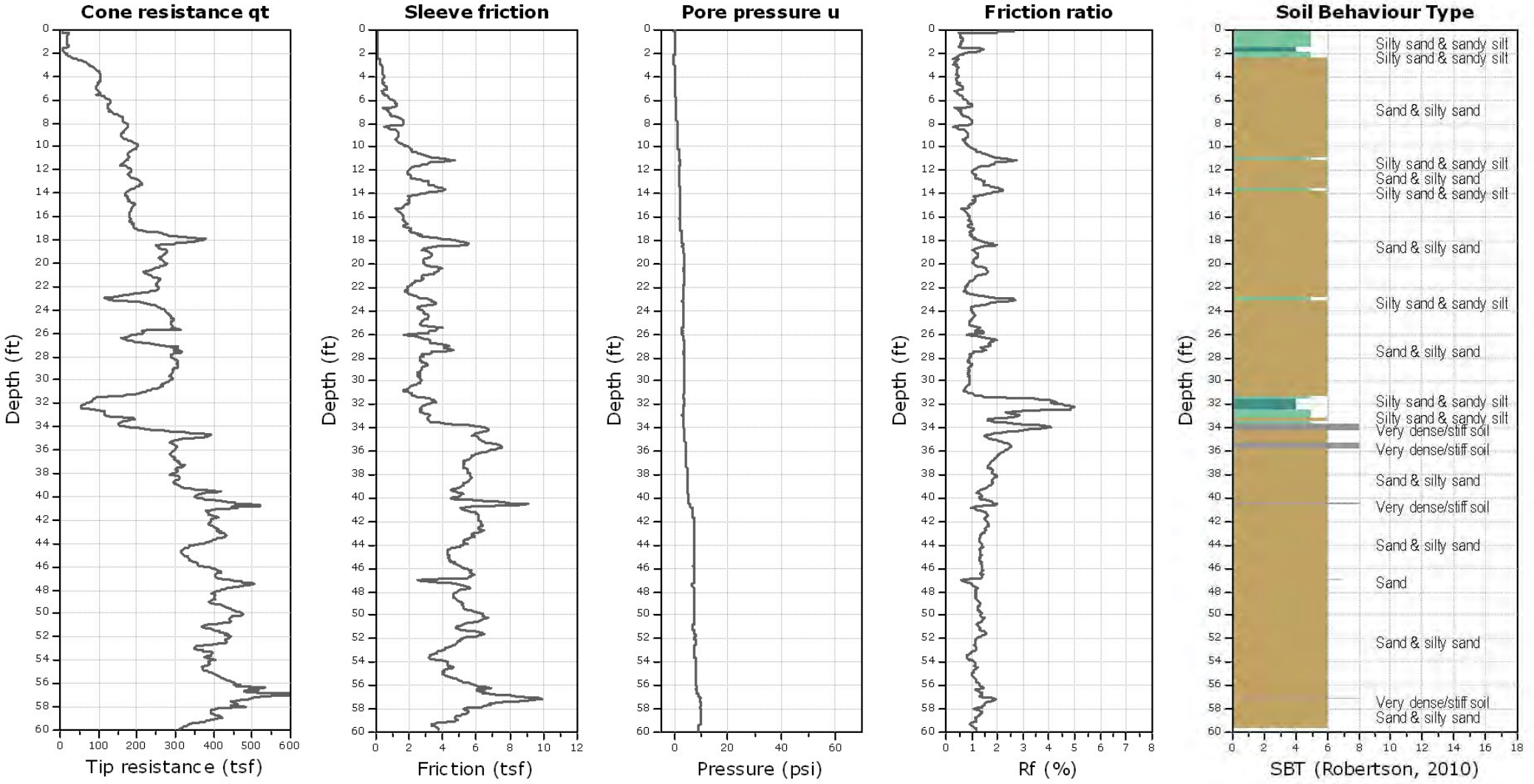
CPT-3

Project: **GEOBASE, Inc.**
Location: **9492 Escondido Avenue Hesperia, CA**

Total depth: 60.12 ft, Date: 3/30/2018
Cone Type: Vertek



Kehoe Testing and Engineering
714-901-7270
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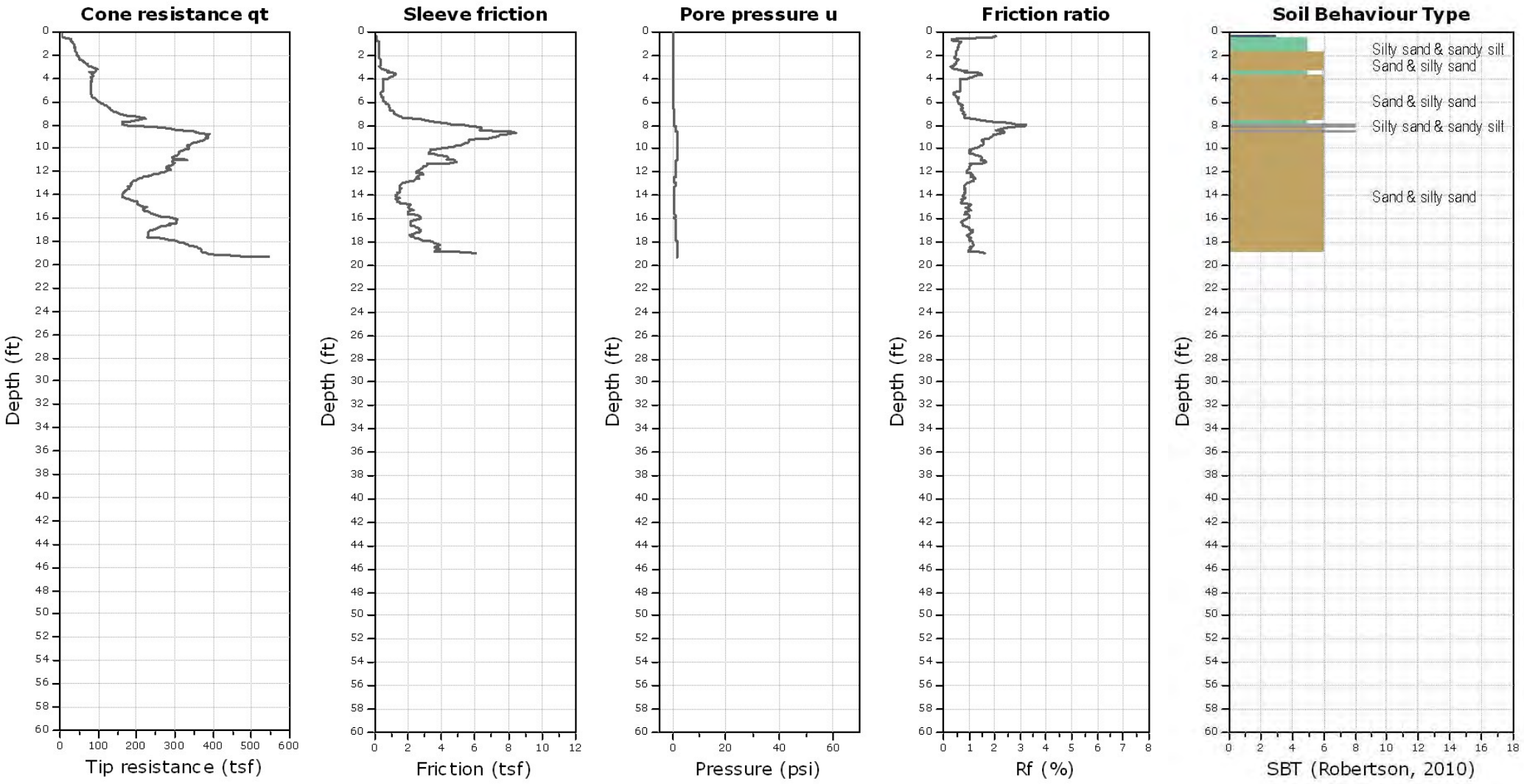
CPT-4

Project: GEOBASE, Inc.
Location: 9492 Escondido Avenue Hesperia, CA

Total depth: 19.30 ft, Date: 3/30/2018
Cone Type: Vertek



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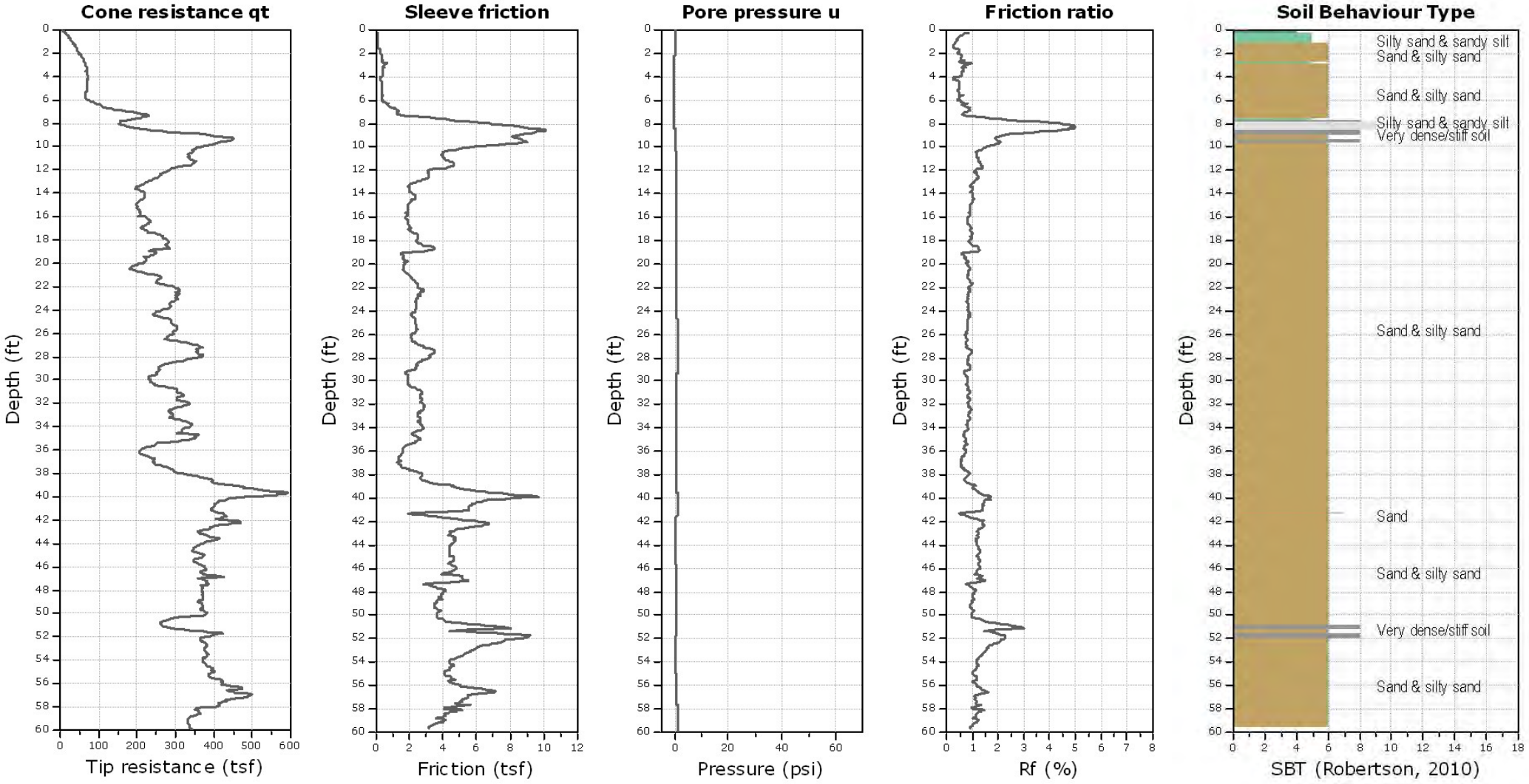
Project: **GEOBASE, Inc.**
Location: **9492 Escondido Avenue Hesperia, CA**

CPT-4B
Total depth: 59.98 ft, Date: 3/30/2018
Cone Type: Vertek



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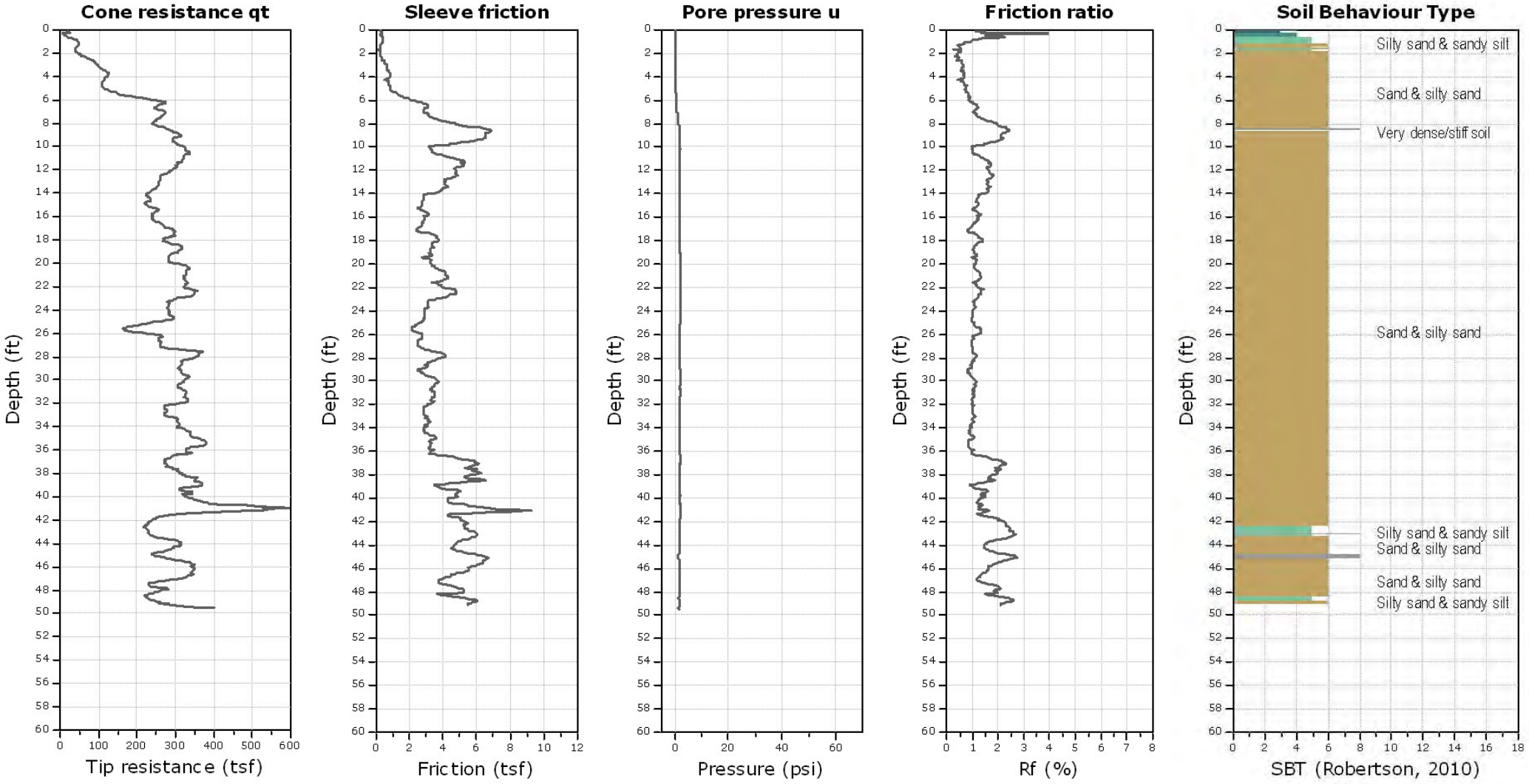
CPT-5

Project: **GEOBASE, Inc.**
Location: **9492 Escondido Avenue Hesperia, CA**

Total depth: 49.48 ft, Date: 3/30/2018
Cone Type: Vertek



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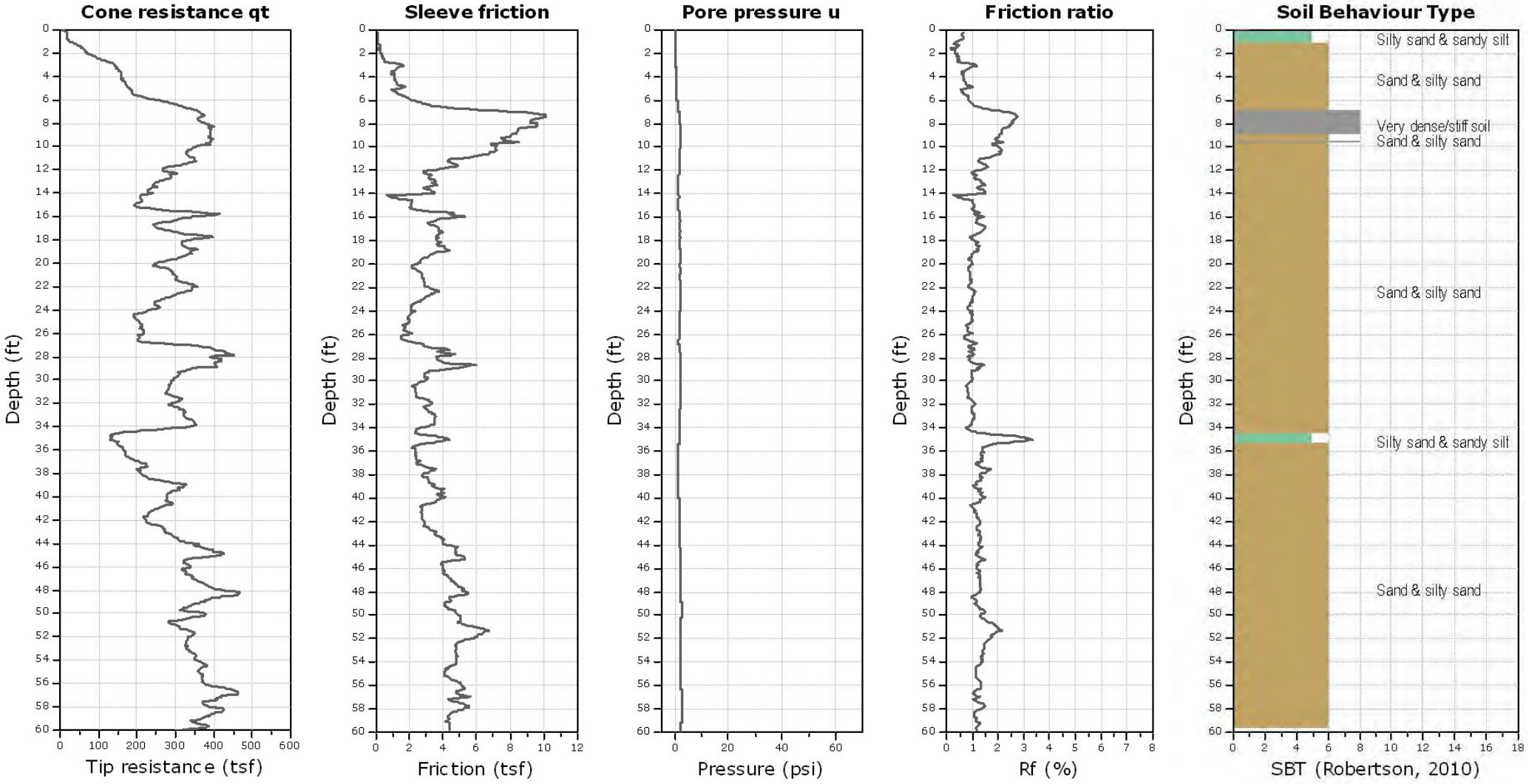
CPT-6

Project: **GEOBASE, Inc.**
Location: **9492 Escondido Avenue Hesperia, CA**

Total depth: 60.11 ft, Date: 3/30/2018
Cone Type: Vertek



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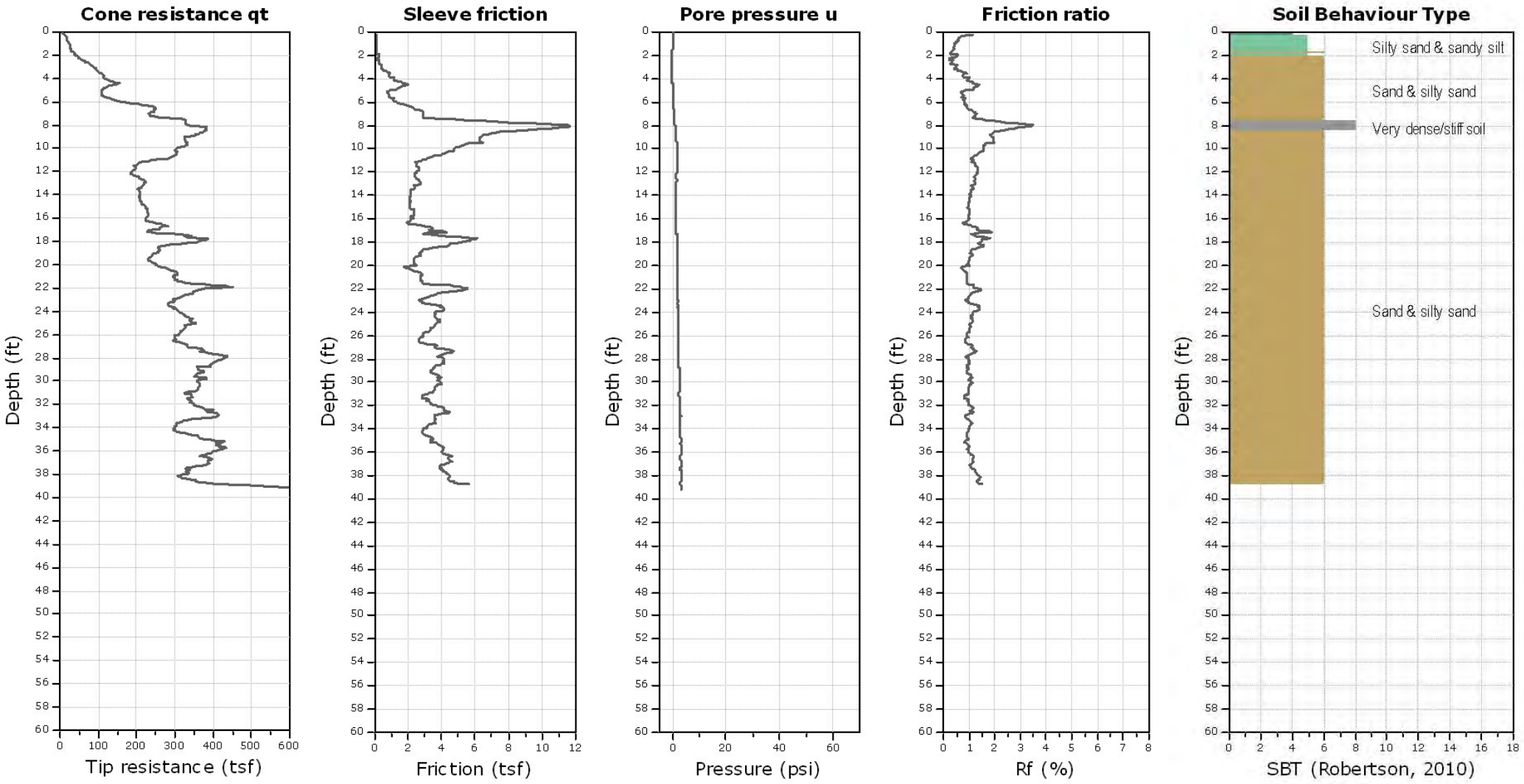
CPT-7

Project: **GEOBASE, Inc.**
Location: **9492 Escondido Avenue Hesperia, CA**

Total depth: 39.12 ft, Date: 3/30/2018
Cone Type: Vertek



C.314.84.10

Figure B-20

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	SOIL DESCRIPTION	SOIL CLASSIFICATION	REMARKS/ OTHER TESTS
	GRASS AND ROOTS,		
	SAND, light gray, fine- to medium grained, silty, trace of gravels, very loose.	SP-SM	Bulk sample from 0-5 feet. EI, MP, 95 RC
5	...loose, medium- to coarse-grained, trace of silt, micaceous		200 Wash
	SAND, light brown, little silt, fine- to coarse-grained, cementation, dense.	SM	
10	...trace of gravels, very dense		PS, C, DS. Blow count = 85/9 in.
15	...trace of silt, medium dense		200 Wash
20	SAND, tan brown, trace of silt, medium- to coarse-grained, micaceous, dense.	SP-SM	200 Wash, C, DS. Blow count = 62/12 in.
25	...fine- to medium- grained, dense		200 Wash
30	...little silt, dense		200 Wash. Blow count = 46/12 in.
35			

DRY DENSITY (PCF): 80 90 100 110 120

Water Content (%): ●

Plastic Limit (W_P) ⊢—⊣ Liquid Limit (W_L)

Penetration, blows/foot: ■ 10 20 30 40 50

GEOBASE, INC.

PROJECT	**Kaiser Permanente -- Hesperia MOB Vacant Parcels 5-9, Escondido Avenue, Hesperia, CA**		**BORING NO. B-1**
DEPTH TO WATER ▼ feet	SURFACE ELEV. **3512 feet**	LOGGED BY **HDN**	PROJECT NO. **C.314.84.00**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75 HT** DRILLER **2R Drilling**	DATE LOGGED **07/28/2017**	FIGURE NO. B-**2**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, reddish brown, fine-grained, silty to clayey, dense.	SC			200 Wash
40		SAND, light brown, fine- to medium-grained, little silt, gravels up to 1.5 in, very dense.	SP-SM			PS
45		...trace of silt and gravels, dense				200 Wash
50		...trace of silt, dense				200 Wash
55		End of Boring at 51.5 feet. Boring dry at completion of drilling.. Backfilled with soil cuttings.				
60						
65						
70						

GEOBASE, INC.

PROJECT	**Kaiser Permanente -- Hesperia MOB Vacant Parcels 5-9, Escondido Avenue, Hesperia, CA**			**BORING NO. B-1**
DEPTH TO WATER ▼ feet	SURFACE ELEV. **3512 feet**		LOGGED BY **HDN**	PROJECT NO. **C.314.84.00**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75 HT** DRILLER **2R Drilling**		DATE LOGGED **07/28/2017**	FIGURE NO. B-**2**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, light gray, fine- to medium grained, silty, trace of gravels, very loose.	SP-SM			
5		...loose, fine-grained, little silt, trace of gravels				Blow count = 15/12 in.
		SAND, light brown, fine- to medium-grained, little silt , dense.	SM			
10		SAND, light reddish brown, clayey, little silt, dense.	SC			200 Wash
15		SAND, light brown, fine- to coarse-grained, trace of silt, little gravels, disturbed, very dense.	SP-SM			PS, Blow count = 81/12 in.
20		...tan brown, micaceous, dense.				
25		...coarse-grained, little gravels, very dense				PS, Blow count = 75/12 in.
30		...fine-grained, little silt, dense				
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente -- Hesperia MOB**
Vacant Parcels 5-9, Escondido Avenue, Hesperia, CA

BORING NO. B-2

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3516 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.00**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75 HT** DRILLER **2R Drilling** | DATE LOGGED **07/28/2017** | FIGURE NO. B-**3**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, reddish brown, fine-grained, silty to clayey, very dense.	SC			200 Wash
40		SAND, light brown, fine- to medium-grained, little silt and gravels, very dense.	SP-SM			
45		...trace of silt and gravels				
50		SAND, light brown, fine- to medium grained, some silt, dense.	SM			200 Wash
55		End of Boring at 51.5 feet. Boring dry at completion of drilling.. Backfilled with soil cuttings.				
60						
65						
70						

GEOBASE, INC.

PROJECT	**Kaiser Permanente -- Hesperia MOB Vacant Parcels 5-9, Escondido Avenue, Hesperia, CA**			**BORING NO. B-2**
DEPTH TO WATER ▼ feet	SURFACE ELEV. **3516 feet**		LOGGED BY **HDN**	PROJECT NO. **C.314.84.00**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75 HT** DRILLER **2R Drilling**		DATE LOGGED **07/28/2017**	FIGURE NO. B- **3**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, light gray, fine- to medium grained, silty, trace of gravels, very loose.	SP-SM			
5		...loose, fine-grained, little silt, trace of gravels				200 Wash, C, DS
		SAND, orange brown, fine- to medium-grained, little silt, trace of roots, very dense.	SM			Blow count = 76/12 in.
10		CLAY, light reddish brown, little silt and sands, cemented, dense.	CL			
15		SAND, light brown, fine-grained, silty, medium dense.	SM			
20		...silty, dense				Blow count = 55/12 in.
25		...silty, trace of clay, medium dense				
30		SAND, light brown, medium- to coarse-grained, trace of silt, some gravels, medium dense.	SP-SM			Blow count = 41/12 in.
35						

GEOBASE, INC.

PROJECT: **Kaiser Permanente -- Hesperia MOB**
Vacant Parcels 5-9, Escondido Avenue, Hesperia, CA

BORING NO. B-3

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3514.5 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.00**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75 HT** DRILLER **2R Drilling** | DATE LOGGED **07/28/2017** | FIGURE NO. B-**4**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, reddish brown, fine-grained, silty to clayey, very dense.	SC			
40		SAND, light brown, fine- to medium-grained, little of silt and gravels, dense.	SP-SM			
45		...trace of silt and gravels				
50		SAND, light brown, fine- to medium- grained, some silt, dense.	SM			
55		End of Boring at 51.5 feet. Boring dry at completion of drilling.. Backfilled with soil cuttings.				
60						
65						
70						

GEOBASE, INC.

PROJECT: **Kaiser Permanente -- Hesperia MOB**
Vacant Parcels 5-9, Escondido Avenue, Hesperia, CA

BORING NO. B-3

DEPTH TO WATER feet ▼ | SURFACE ELEV. **3514.5 feet** | LOGGED BY **HDN** | PROJECT NO. **C.314.84.00**

DEPTH TO SLOUGH ▲ | DRILL RIG **CME-75 HT** DRILLER **2R Drilling** | DATE LOGGED **07/28/2017** | FIGURE NO. B-**4**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		GRASS AND ROOTS,				
		SAND, tan brown, silty, trace of gravels, very loose.	SP-SM			
5		...fine-grained, little silt, medium dense				
		SAND, light reddish brown, fine- to medium-grained, little silt and clay, dense.	SC			Bulk sample from 5-10 feet. RV, Ch, ER, pH, SO_4
10		SAND, light brown, medium to coarse-grained, little silt and gravels, very dense.	SM			Blow count = 50/6 in.
15		SAND, light brown, trace of silt, some gravels up to 1 in., dense.	SP-SM			PS. Blow count = 68/12 in.
20		...fine-grained, trace of silt, dense				
25		...coarse-grained, little gravels, very dense				Blow count = 90/12 in.
30		...fine- to medium-grained, trace of silt, dense.				
35						

GEOBASE, INC.

PROJECT	**Kaiser Permanente -- Hesperia MOB Vacant Parcels 5-9, Escondido Avenue, Hesperia, CA**			**BORING NO. B-4**
DEPTH TO WATER ▼ feet	SURFACE ELEV. **3515.5 feet**		LOGGED BY **HDN**	PROJECT NO. **C.314.84.00**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75 HT** DRILLER **2R Drilling**		DATE LOGGED **07/28/2017**	FIGURE NO. B- **5**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

LOG OF BORING

SAMPLE TYPE: ■ THIN WALLED TUBE ◫ SPT SPLIT SPOON ☒ CALIFORNIA MODIFIED SAMPLER ▤ DISTURBED ◥ NO RECOVERY ▦ CORE

DEPTH (feet)	GRAPHIC LOG	SOIL DESCRIPTION	SOIL CLASSIFICATION	SAMPLE	DRY DENSITY (PCF) 80 90 100 110 120; Water Content (%): ●; Plastic Limit (W_P) — Liquid Limit (W_L); Penetration, blows/foot: ■ 10 20 30 40 50	REMARKS/ OTHER TESTS
		SAND, light brown, medium-grained, trace of silt and gravels, dense.	SP-SM			
40		...trace of gravels, difficult to drill, auger plug, dense				
		End of Boring at 41.5 feet. Boring dry at completion of drilling.. Backfilled with soil cuttings.				
45						
50						
55						
60						
65						
70						

GEOBASE, INC.

PROJECT	**Kaiser Permanente -- Hesperia MOB Vacant Parcels 5-9, Escondido Avenue, Hesperia, CA**		**BORING NO. B-4**
DEPTH TO WATER feet ▼	SURFACE ELEV. **3515.5 feet**	LOGGED BY **HDN**	PROJECT NO. **C.314.84.00**
DEPTH TO SLOUGH ▲	DRILL RIG **CME-75 HT** DRILLER **2R Drilling**	DATE LOGGED **07/28/2017**	FIGURE NO. B- **5**

Note: This log of boring should be evaluated in conjunction with the complete geotechnical report. This log of boring represents conditions observed at the specific boring location and at the date indicated.

APPENDIX C

GEOBASE, INC.

Figure C-1

SUMMARY OF LABORATORY TEST RESULTS

PROJECT: Kaiser Permanente - SFNT 2018 MLF Hesperia MOB D0476

PROJECT NO: C.314.84.10

DATE: May 9, 2018

BORING	DEPTH (feet)	MOISTURE CONTENT (Percent)	DRY DENSITY (pcf)	ATTERBERG LIMITS			PARTICLE SIZE DISTRIBUTION				OTHER TESTS	DESCRIPTION AND REMARKS
				LL (%)	PL (%)	PI (%)	CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)		
B-1	5.0-6.5	4					25		75		200 Wash	SM
	7.0-8.5	3										SP-SM
	10.0-11.5	2										SP-SM
B-2	5.0-6.5	2										SP-SM
	10.0-11.5	3					25		75		200 Wash	SM
	15.0-16.5	3	123.0				19		80	1	CP, DS	SM
	20.0-21.5	6										SM
	25.0-26.5	11					46		54		200 Wash	SM-ML
	30.0-31.5	2	113.9									SP-SM
B-3	5.0-6.5	1					9		91		200 Wash	SP-SM
	10.0-11.5	5	109.9				26		69	5	DS	SM
	15.0-16.5	3										SP-SM
	20.0-21.5	1										SP-SM
	25.0-26.5	1	114.7				8		90	2		SP-SM
	30.0-31.5	1										SP-SM
B-4	5.0-6.5	2					15		85		200 Wash	SM
	5.0-10.0	---										SM
	10.0-11.5	5										SM
	15.0-16.5	2	92.5				16		76	8	CP, DS	SP-SM
	20.0-21.5	4										SP-SM
	25.0-26.5	2	113.2				8		92		200 Wash	SP-SM
	30.0-31.5	2										SP-SM
B-4	35.0-36.5	6	119.0									SM

GEOBASE, INC.

Figure C-1

SUMMARY OF LABORATORY TEST RESULTS

PROJECT: Kaiser Permanente - SFNT 2018 MLF Hesperia MOB D0476

PROJECT NO: C.314.84.10

DATE: May 9, 2018

BORING	DEPTH (feet)	MOISTURE CONTENT (Percent)	DRY DENSITY (pcf)	ATTERBERG LIMITS			PARTICLE SIZE DISTRIBUTION				OTHER TESTS	DESCRIPTION AND REMARKS
				LL (%)	PL (%)	PI (%)	CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)		
	40.0-41.5	2										SP-SM
	45.0-46.5	2										SP-SM
	50.0-51.5	3										SP-SM
B-5	5.0-6.5	2										SP-SM
	10.0-11.5	4										SM
	15.0-16.5	2					7		82	11		SW-SM
	20.0-21.5	2	118.1								CP, DS	SP-SM, Disturbed
	25.0-26.5	2										SP-SM
	30.0-31.5	2	115.2				8		91	1		SW-SM
	35.0-36.5	2										SP-SM
	40.0-14.5	3	112.1									SP-SM
	45.0-46.5	3										SP-SM
	50.0-51.5	4										SP-SM
B-6	0-5.0	---									ph, ER, S04, Ch, RV	Bulk sample 0-5 feet, SM
	5.0-6.5	3					13		87		200 Wash	SM
	10.0-11.5	6	120.6				27		69	4	CP, DS	SM
	15.0-16.5	4					19		81		200 Wash	SM
	20.0-21.5	5	116.1				41		59		200 Wash, CP	SM
	25.0-26.5	2					9		91		200 Wash	SP-SM
	30.0-31.5	1	106.5				5		95		200 Wash	SP-SM
B-6	35.0-36.5	6					43		57		200 Wash	SC-SM

GEOBASE, INC.

Figure C-1

SUMMARY OF LABORATORY TEST RESULTS

PROJECT: Kaiser Permanente - SFNT 2018 MLF Hesperia MOB D0476

PROJECT NO: C.314.84.10

DATE: May 9, 2018

BORING	DEPTH (feet)	MOISTURE CONTENT (Percent)	DRY DENSITY (pcf)	ATTERBERG LIMITS			PARTICLE SIZE DISTRIBUTION				OTHER TESTS	DESCRIPTION AND REMARKS
				LL (%)	PL (%)	PI (%)	CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)		
	40.0-41.5	2	117.3				11		89		200 Wash	SP-SM
	45.0-46.5	2					8		92		200 Wash	SP-SM
	50.0-51.5	2					12		88		200 Wash	SP-SM
B-7	0-5.0	--					16		70	8	EI=0, RV, MP, RC	Bulk sample 0-5 feet, SM
	5.0-6.5	11					39		62		200 Wash	SC
	10.0-11.5	5					23		77		200 Wash	SM
	15.0-16.5	2					7		70	23	CP	SW-SM
	20.0-21.5	2	117.8				6		94		200 Wash	SP-SM
	25.0-26.5	2					6		94		200 Wash	SP-SM
	30.0-31.5	2	113.4				4		96		200 Wash	SP
	35.0-36.5	6					41		59		200 Wash	SC
	40.0-41.5	2	130.5	26	13	13	11		64	25		SW-SM
	45.0-46.5	2					6		94		200 Wash	SP-SM
	50.0-51.5	5					34		66		200 Wash	SM
B-8	5.0-6.5	3										SM
	10.0-11.5	4	97.7				20		80		200 Wash, CP, DS	SM
	15.0-16.5	1										SP-SM
	20.0-21.5	2	112.0								CP	SP-SM
	25.0-26.5	2										SP-SM
	60.0-31.5	1	107.9				21		79		200 Wash	SM
	35.0-36.5	3										SP-SM
B-8	40.0-41.5	2	112.7									SP-SM

GEOBASE, INC.

Figure C-1

SUMMARY OF LABORATORY TEST RESULTS

PROJECT: Kaiser Permanente - SFNT 2018 MLF Hesperia MOB D0476

PROJECT NO: C.314.84.10

DATE: May 9, 2018

BORING	DEPTH (feet)	MOISTURE CONTENT (Percent)	DRY DENSITY (pcf)	ATTERBERG LIMITS			PARTICLE SIZE DISTRIBUTION				OTHER TESTS	DESCRIPTION AND REMARKS
				LL (%)	PL (%)	PI (%)	CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)		
	45.0-46.5	2										SP-SM
	50.0-51.5	4										SP-SM
B-9	5.0-6.5	3					18		78	4		SM
	10.0-11.5	10	124.9				41		59	0	CP, DS	SC-SM
	15.0-16.5	3										SP-SM
	20.0-21.5	3	121.3									SP-SM
	25.0-26.5	3										SP-SM
	30.0-31.5	15										SM
B-10	5.0-6.5	3	111.9									SM
	7.0-8.5	5										SP-SM
	10.0-11.5	3										SP-SM
B-11	5.0-6.5	2	121.8				9		88	3		SW-SM
	7.0-8.5	2										SP-SM
	10.0-11.5	3										SP-SM
B-12	3.0-4.5	3					6		94		200 Wash	SP-SM
	7.0-8.5	11					41		59		200 Wash	SC
	10.0-11.5	6										SP-SM

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Hushmand Associates, Inc.
1721 E. Lambert Rd, Ste. B
La Habra, CA 90631

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April 17, 2018

Geobase, Inc.
23362 Peralta Dr., Unit 4
Laguna Hills. CA 92653

Attention: Mr. Hai Nguyen

SUBJECT: Laboratory Test Results
Geobase Project Name: KP Hesperia Mob
Geobase Project No.: C.314.84.10
HAI Project No.: GBA-18-001

Dear Mr. Nguyen,

Enclosed is the result of the laboratory testing program conducted on samples from the above referenced project. The testing performed for this program was conducted in general accordance with the following test procedure:

Type of Test	Test Procedure
Moisture Content	ASTM D2216
Moisture Content & Dry Density	ASTM D2937
Percentage Passing #200 Sieve	ASTM D1140
Particle Size Analysis (Sieve only)	ASTM D6913
Atterberg Limits	ASTM D4318
Modified Proctor Compaction	ASTM D1557
Direct Shear (Consolidated & Drained)	ASTM D3080
Consolidation	ASTM D2435
Swell / Collapse Potential	ASTM D4546
Expansion Index	ASTM D4829

Attached is: fifty-five (55) Moisture Content test results; twenty-four (24) Moisture Content & Dry Density test results; twenty-seven (27) Percentage passing #200 Sieve test results; thirteen (13) Particle Size Analysis (Sieve only) test results; one (1) Atterberg Limits test result; one (1) Modified Proctor Compaction test result; seven (7) 3-point Direct Shear test results; one (1) Consolidation test result with one (1) sample remolding; nine (9) Swell / Collapse Potential test results; and one (1) Expansion Index test result.

We appreciate the opportunity to provide our testing services to Geobase, Inc. If you have any questions regarding the test results, please contact us.

Sincerely,

HUSHMAND ASSOCIATES, INC.

Woongju (MJ) Mun, Ph.D.
Senior Staff Engineer / Research Scientist / Lab Manager

Min Zhang, Ph.D., P.E.
Senior Staff Engineer

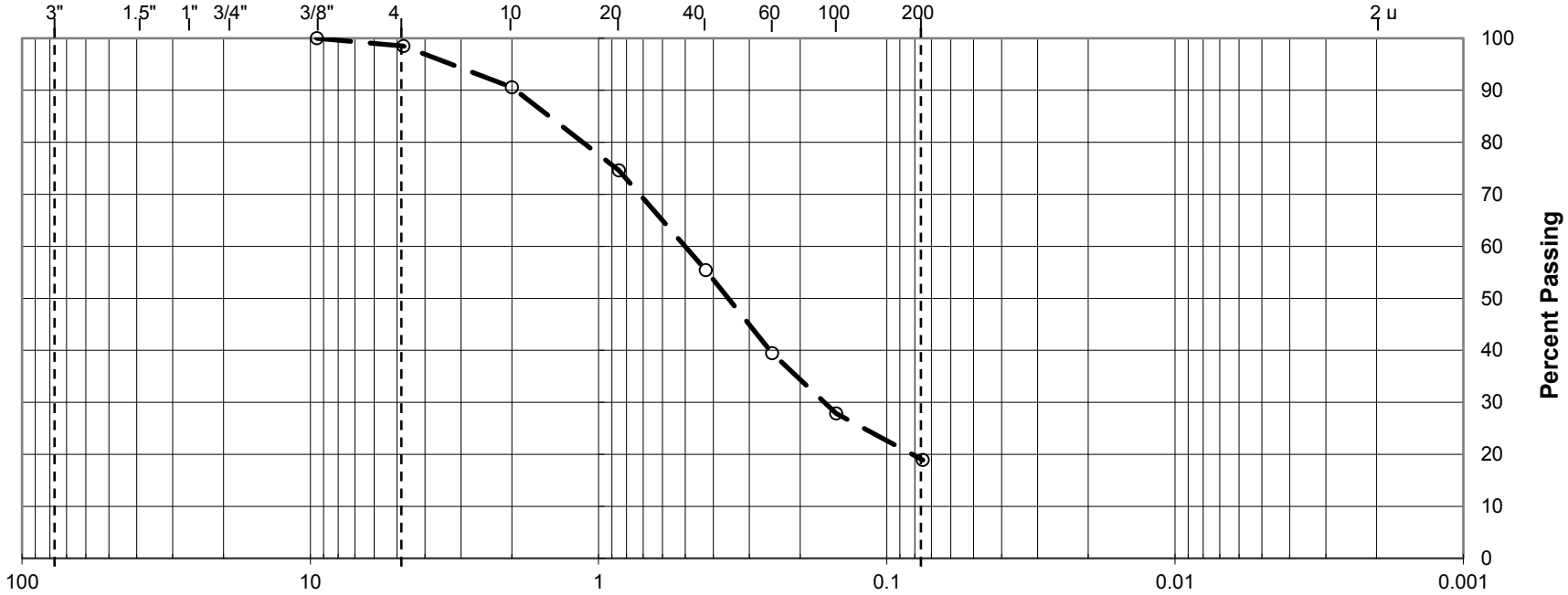
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	AH
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



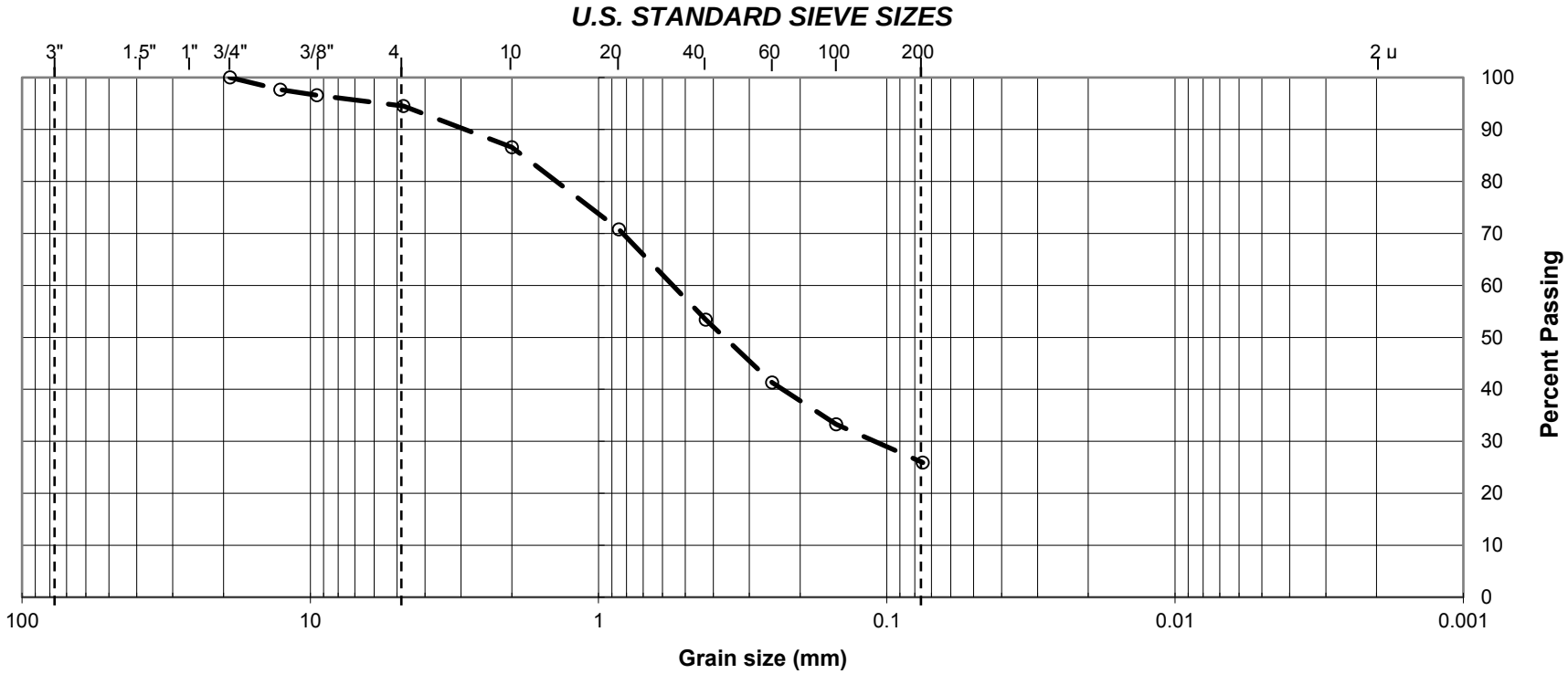
Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-2	-	15-16.5	○	Light Brown, Silty Sand (SM)	1.5	79.6	18.9

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	AH
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-3	-	10-11.5	○	Light Brown, Silty Sand (SM)	5.5	68.6	25.9

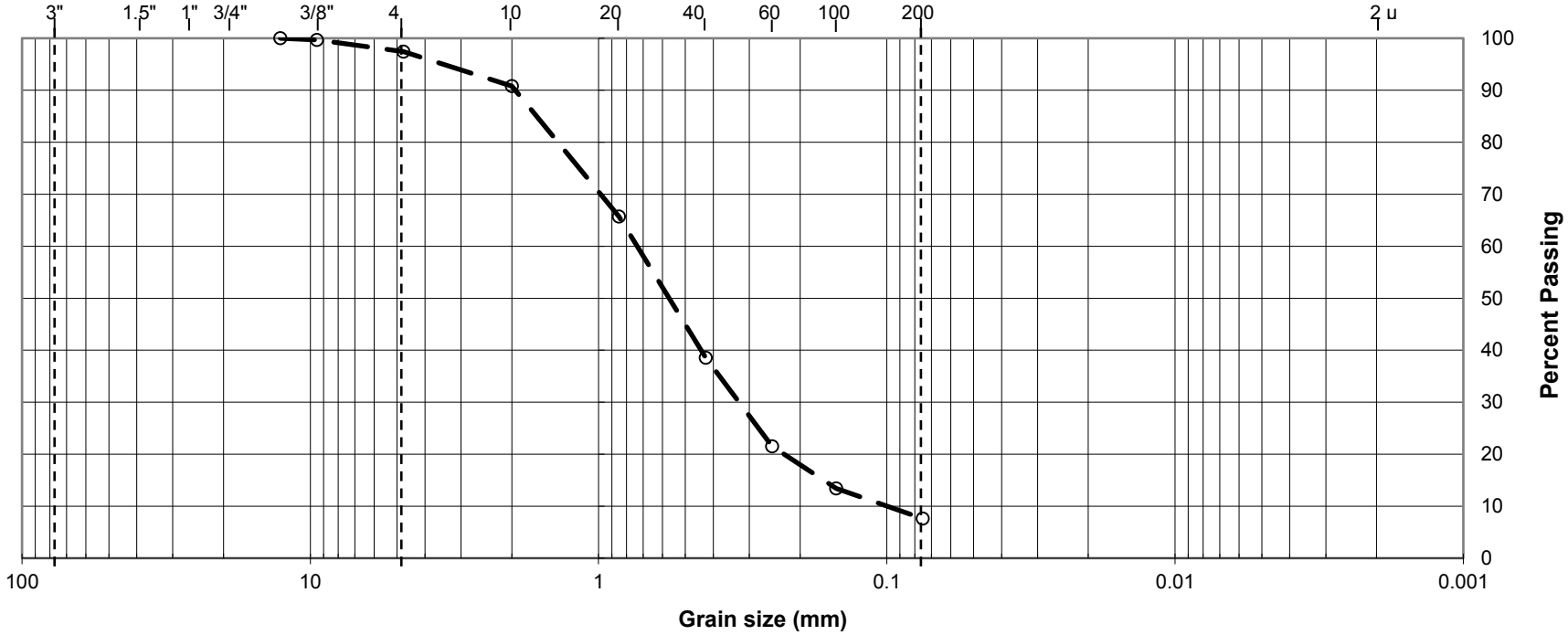
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-3	-	25-26.5	○	Light Tan Brown,Well-Graded Sand with Silt (SW-SM)	2.5	89.9	7.6

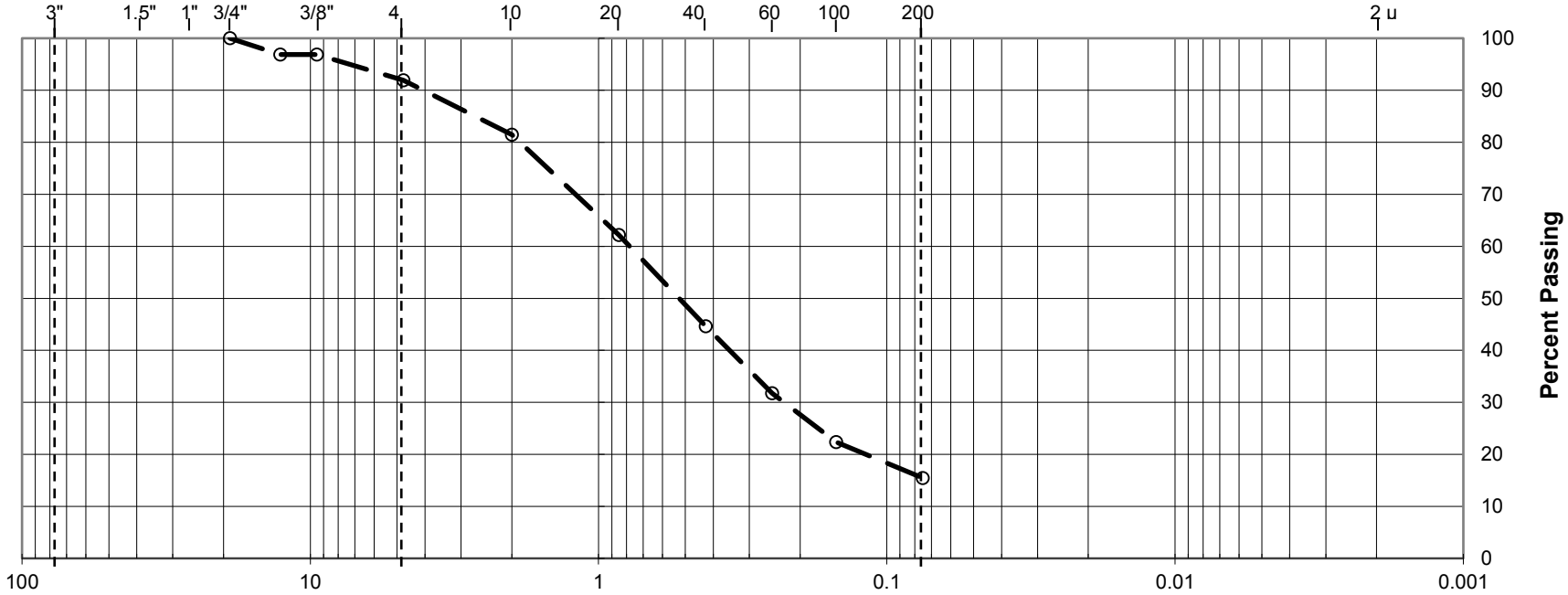
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	AH
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-4	-	15-16.5	○	Light Reddish Brown, Silty Sand (SM)	8.1	76.4	15.5

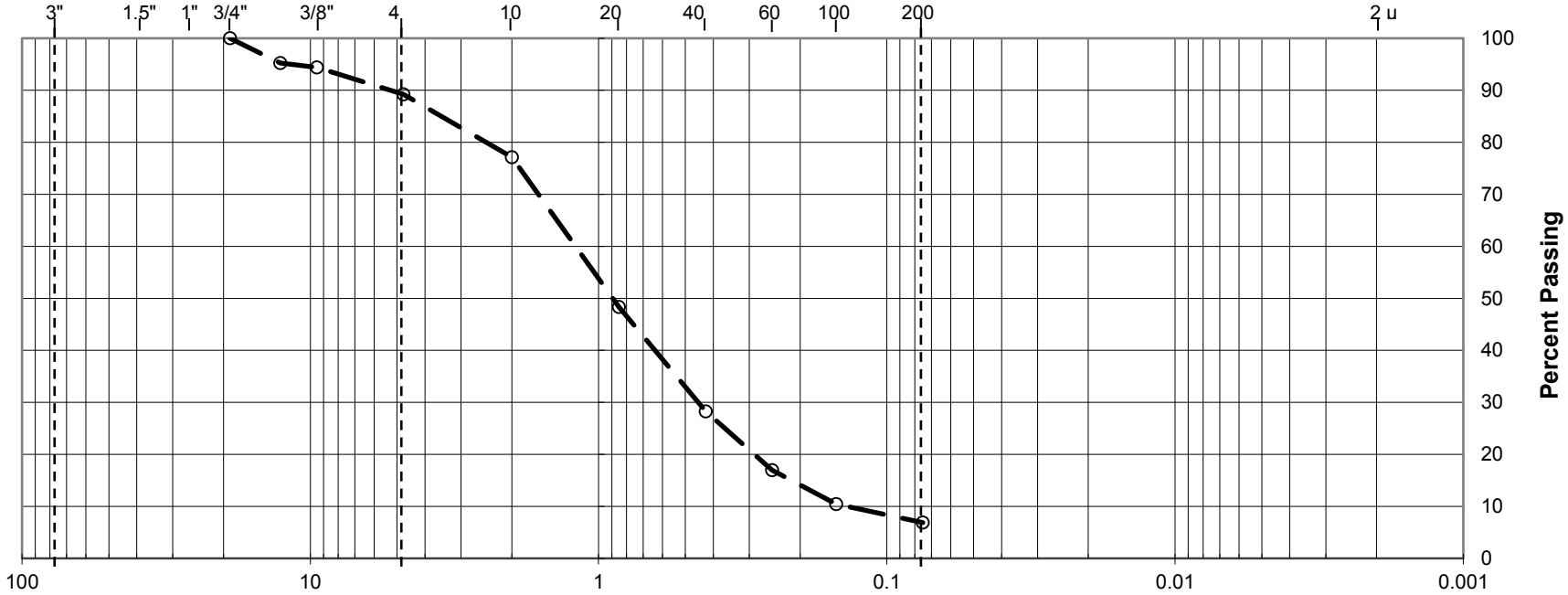
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	AH
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-5	-	15-16.5	○	Brown, Well-Graded Sand with Silt (SW-SM)	10.8	82.4	6.9

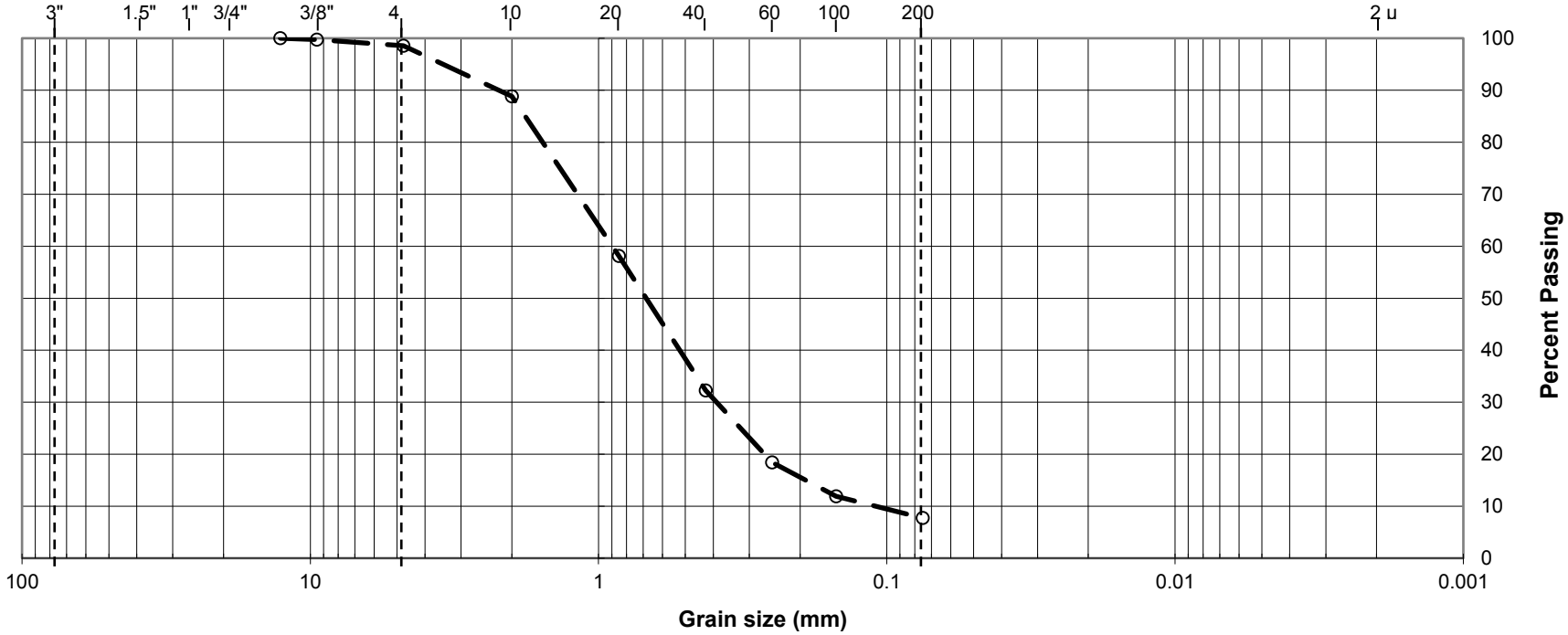
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	AH
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-5	-	30-31.5	○	Tan Brown, Well-Graded Sand with Silt (SW-SM)	1.4	90.8	7.7

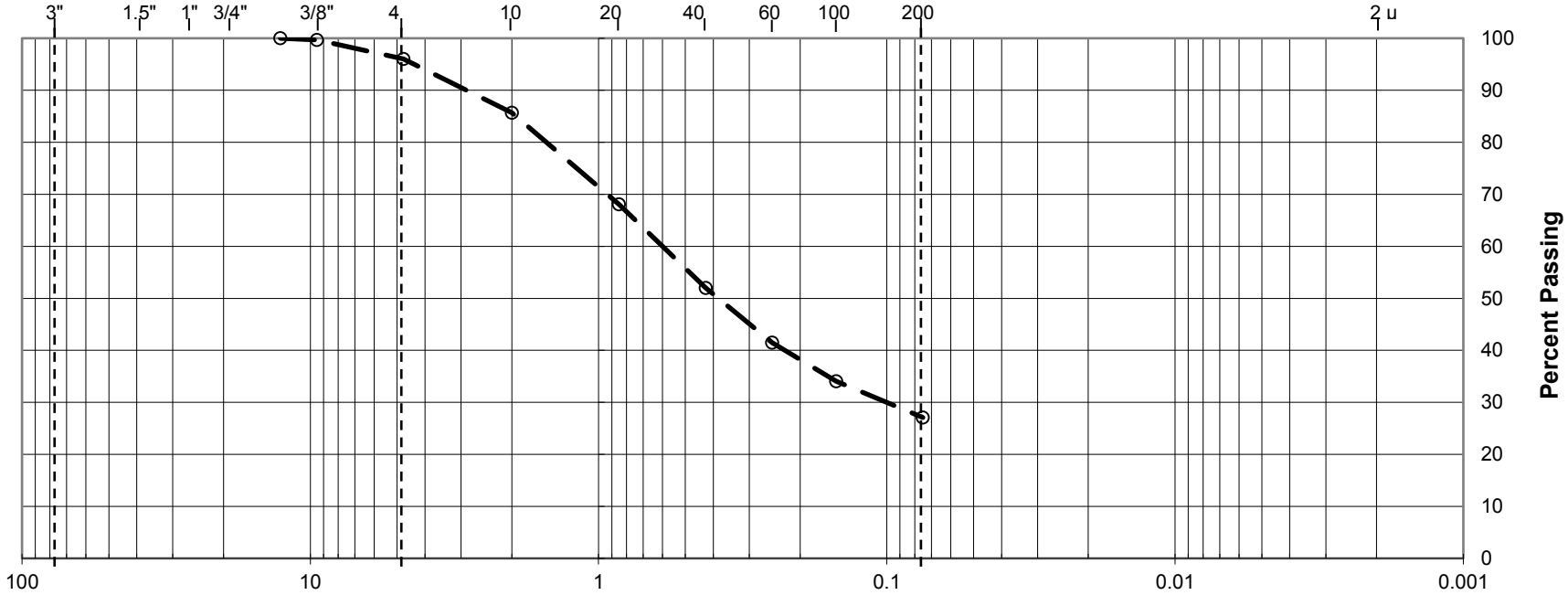
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	GA
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



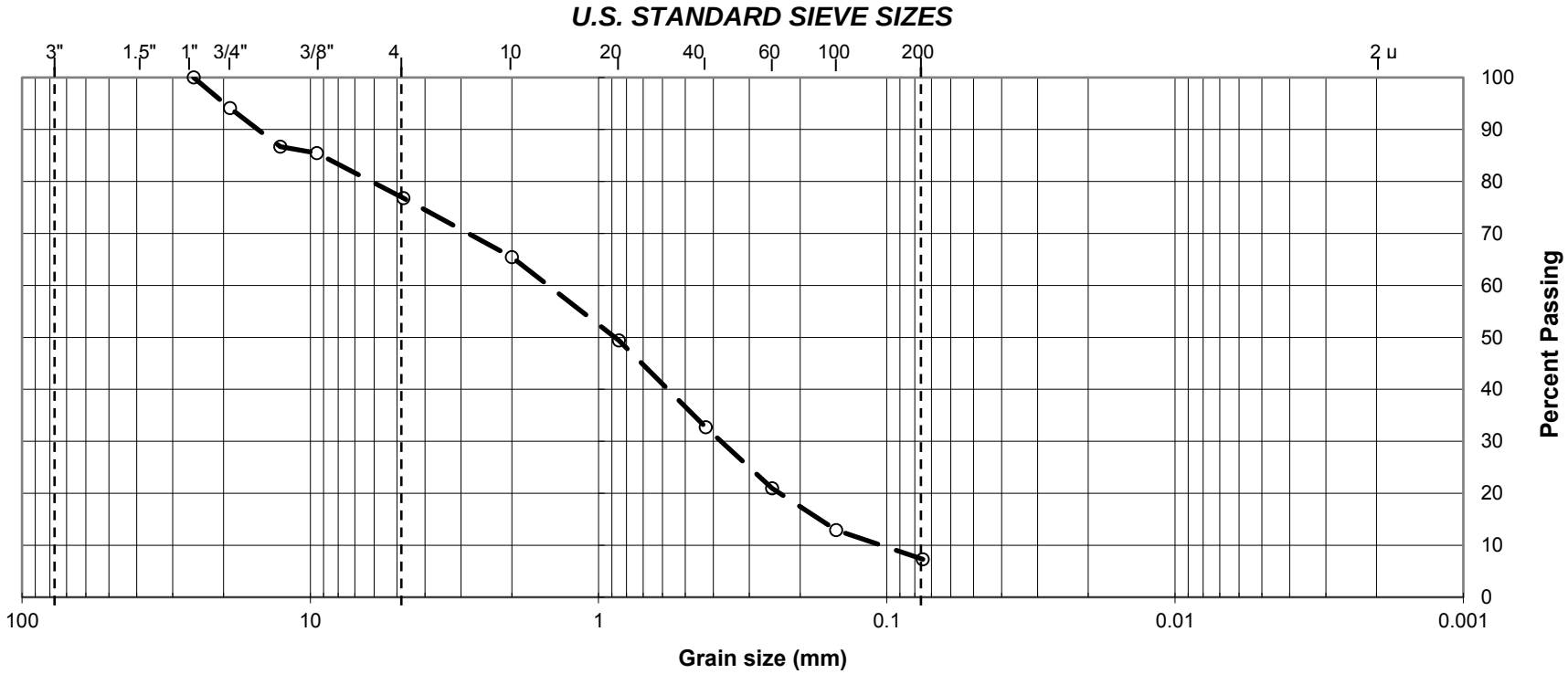
Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-6	-	10-11.5	○	Tan Brown, Silty Sand (SM)	4.0	68.9	27.1

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	GA
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	



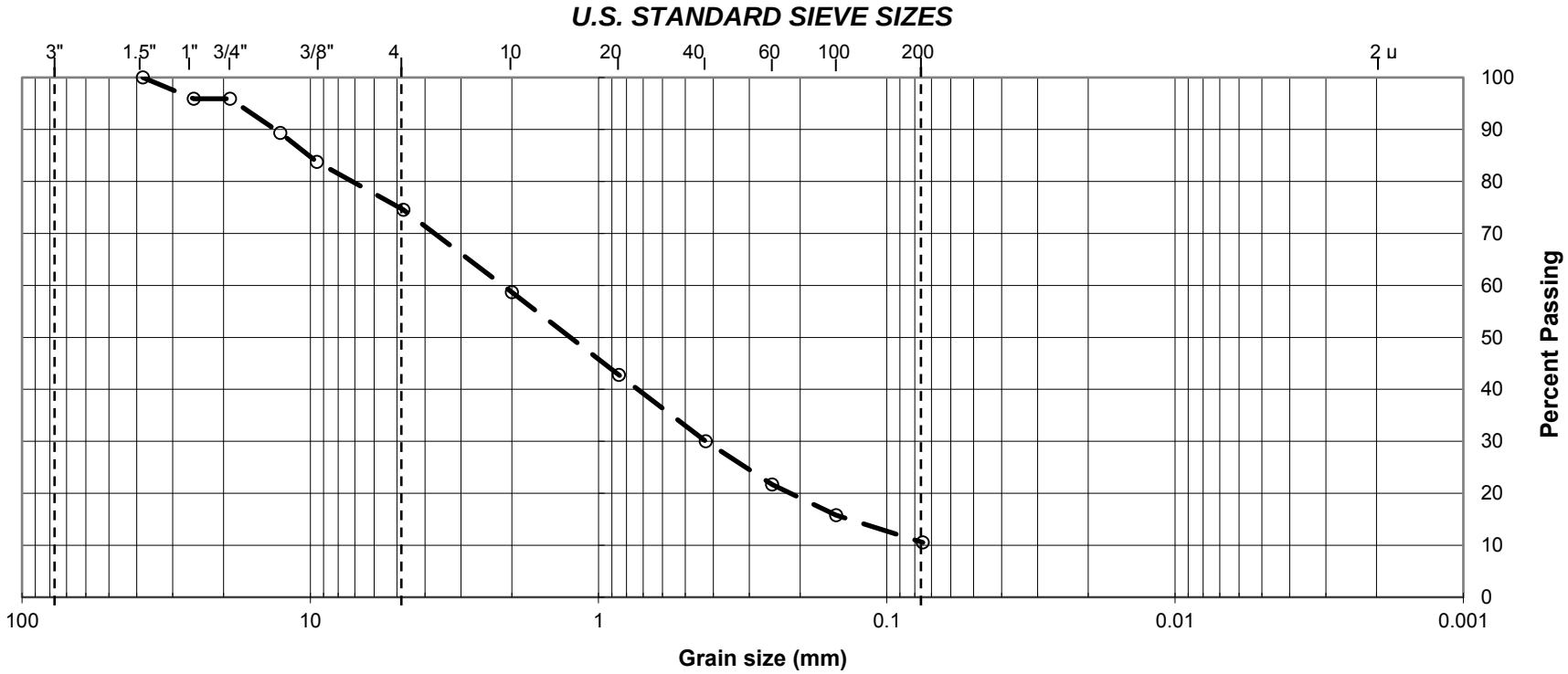
Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-7	-	15-16.5	○	Light Brown, Well Graded Sand with Silt and Gravel (SW-SM)	23.2	69.5	7.3

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	GA
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-7	-	40-41.5	○	Grayish Brown, Well-Graded Sand with Silt and Gravel (SW-SM)	25.4	64.0	10.5

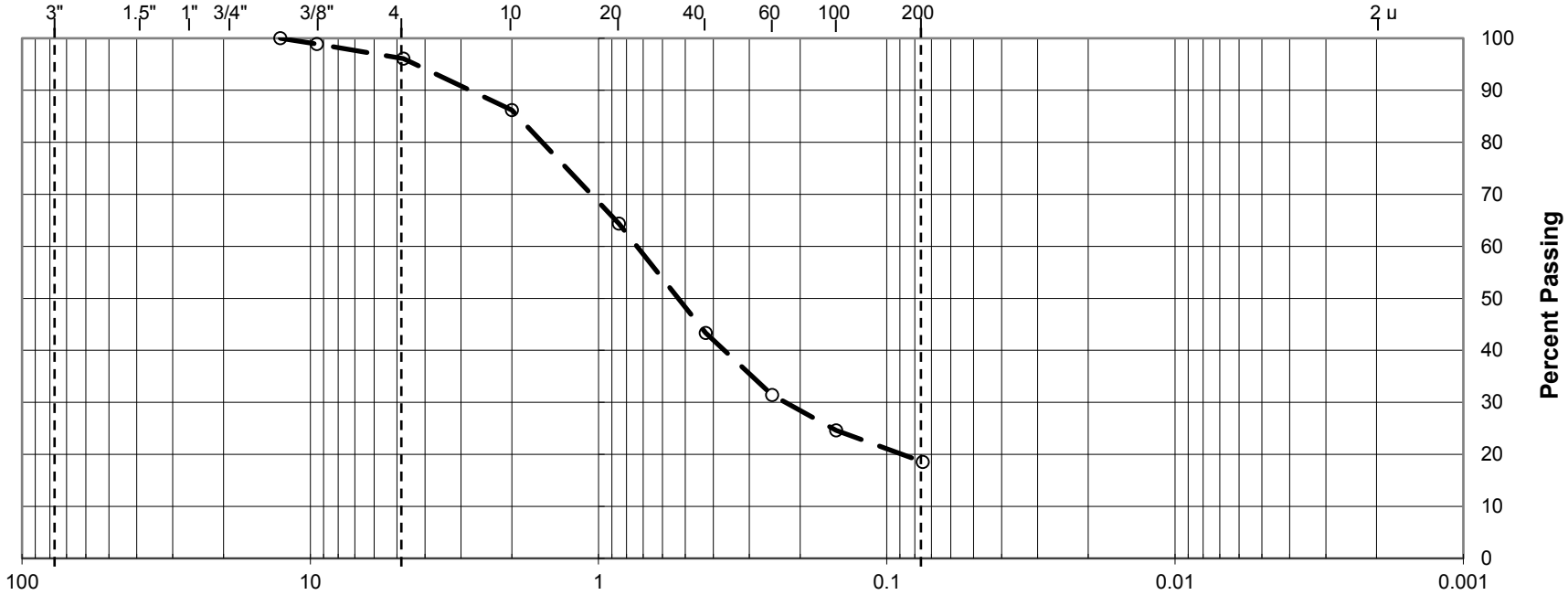
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	GA
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-9	-	5-6.5	○	Brown, Silty Sand (SM)	3.9	77.5	18.5

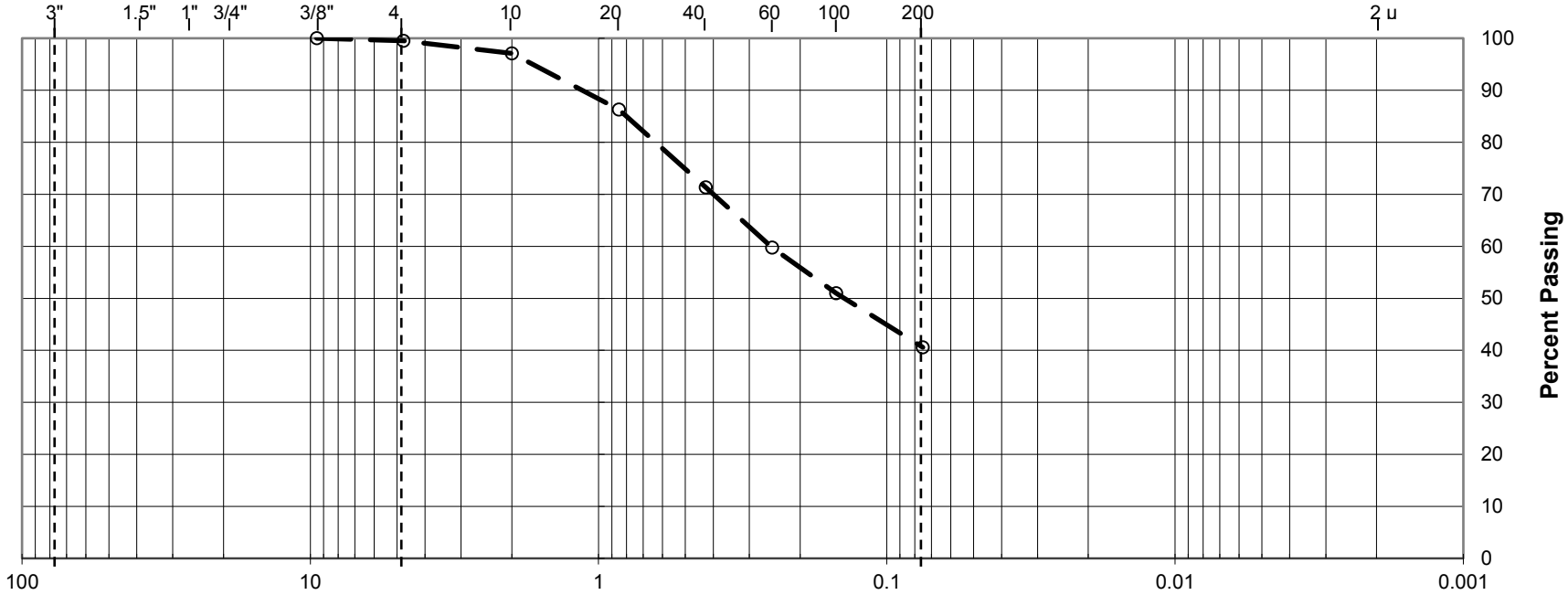
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	GA
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-9	-	10-11.5	○	Reddish Brown, Silty Clayey Sand (SC-SM)	0.5	58.9	40.6

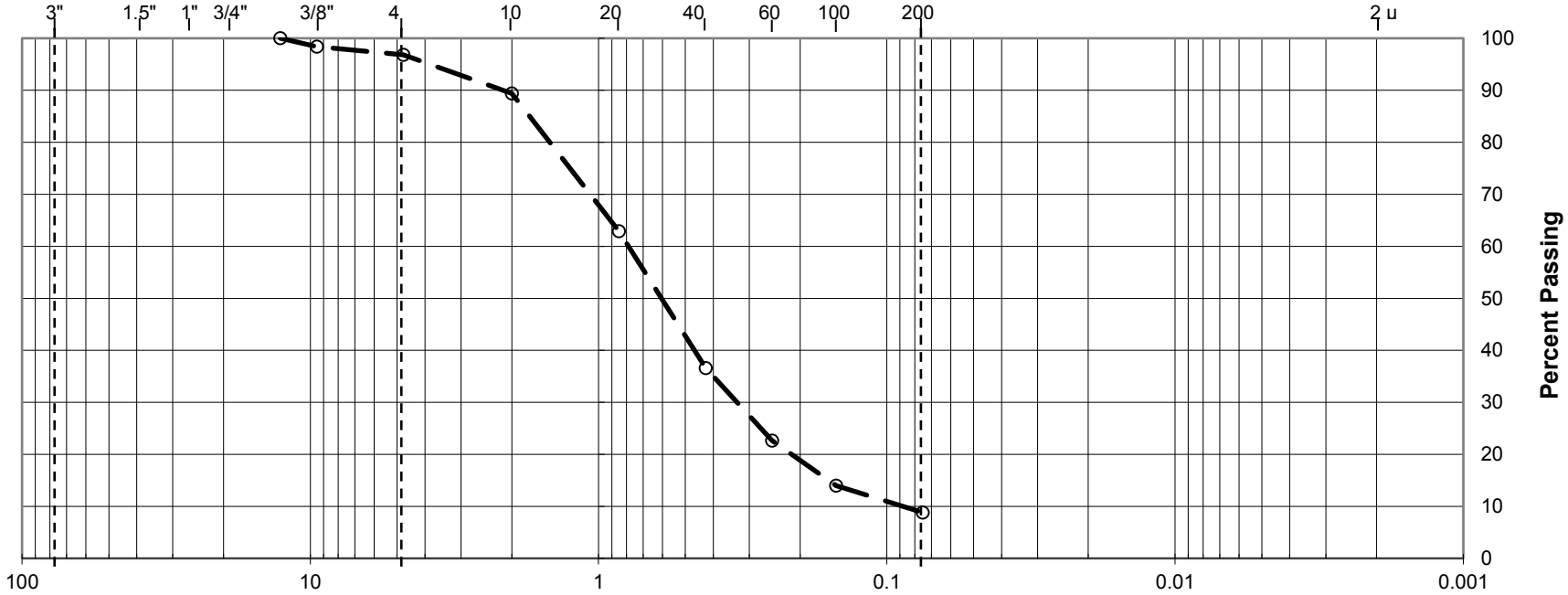
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	GA
Project No.:	C.314.84.10	***Checked by:***	MJ
		Date:	4/3/2018

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-11	-	5-6.5	○	Light Brown, Well-Graded Sand with Silt (SW-SM)	3.2	88.0	8.8

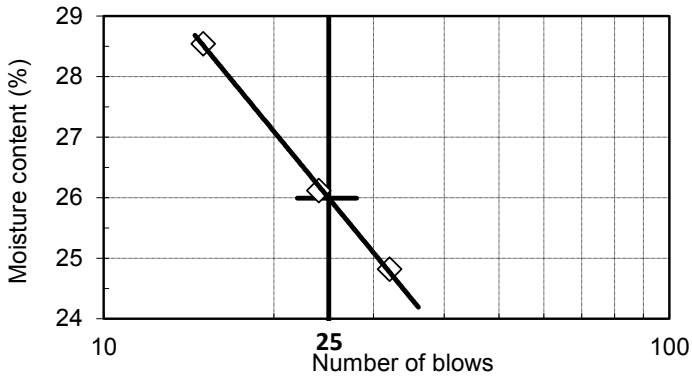
ATTERBERG LIMITS
ASTM D 4318

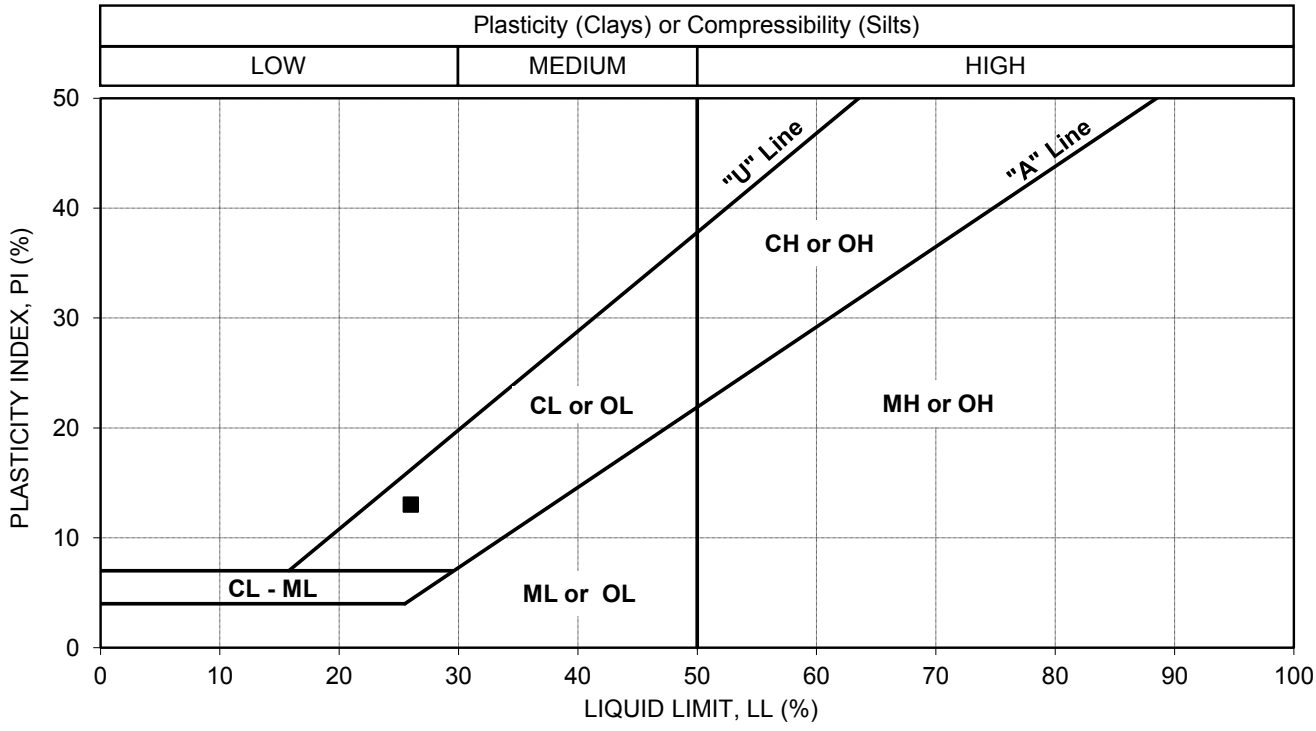
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-7	***Date:***	4/3/2018
Sample No.:	-		
Depth (ft):	35-36.5		
Soil Description:	Reddish Brown, Clayey Sand (SC)	(Less than 50% passing #200)	

Test		LL	LL	LL	PL	PL
No. of blows	**-**	**32**	**24**	**15**	-	-
Wt. of wet soil + tare	(g)	23.13	23.48	23.74	10.27	10.49
Wt. of dry soil + tare	(g)	20.74	20.91	20.96	9.22	9.43
Wt. of tare	(g)	11.11	11.07	11.22	1.12	1.11
Water content	**(%)**	**24.8**	**26.1**	**28.5**	**13.0**	**12.7**

Liquid Limit (LL)	**26**
Plastic Limit (PL)	**13**
Plasticity Index (PI)	**13**
USCS	**CL**





EXPANSION INDEX

ASTM D4829

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Apparatus #:***	2
Project No.:	C.314.84.10		
Boring No.:	B-7	***Tested by:***	AH
Sample No.:	-	***Checked by:***	MJ
Depth (ft):	0-5	***Date:***	4/3/2018
Soil Description:	Reddish Brown, Silty Sand (SM)		

INITIAL SPECIMEN INFO		
Wt. of wet soil + cont.	101.41	g
Wt. of dry soil + cont.	94.70	g
Wt. of container	4.96	g
Wt. of water	6.71	g
Wt. of dry soil	89.74	g
Moisture Content	**7.48**	**%**
Wt. of wet soil + ring	613.10	g
Wt. of ring	190.82	g
Wt. of wet soil	422.28	g
Wet density of soil	128.0	pcf
Dry density of soil	119.1	pcf
Specific gravity of soil	2.68	
Saturation	**49.5**	**%**

FINAL SPECIMEN INFO		
Wt. of wet soil + cont.	624.61	g
Wt. of dry soil + cont.	577.50	g
Wt. of container	190.82	g
Wt. of water	47.11	g
Wt. of dry soil	386.68	g
Moisture Content	**12.2**	**%**

Date & Time	Elapsed Time (min)	Dial Reading	Δh, Expansion
4/18/2018 12:52	0	0	-
4/18/2018 13:02	10	0.0000	-
Add Distilled Water to Sample			
4/19/2018 12:52	1440	0.0000	0.0000

Expansion Index = 0

CONSOLIDATION TEST
ASTM D2435

Client :	Geobase	***HAI Project No.:***	DYAL-18-005
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-7	***Date:***	4/3/2018
Sample No.:	-		
Type of Sample:	Remolded to 95% of Dry Density		
Depth (ft):	0-5		
Soil Description:	Reddish Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
163.43	168.72	153.66

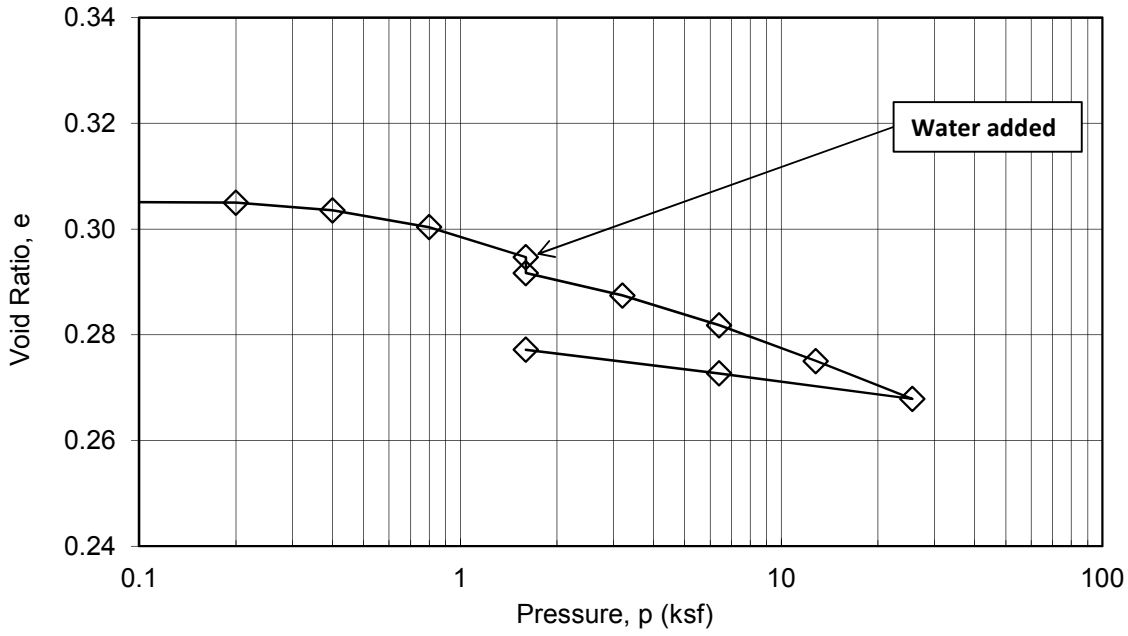
			Initial Conditions	Final Conditions
Height	H	(in)	1.000	0.978
Height of Solids	Hs	(in)	0.766	0.766
Height of Water	Hw	(in)	0.130	0.200
Height of Air	Ha	(in)	0.104	0.012
Dry Density		**(pcf)**	**127.6**	**133.3**
Water Content		**(%)**	**6.4**	**9.8**
Saturation		**(%)**	**55.6**	**94.4**

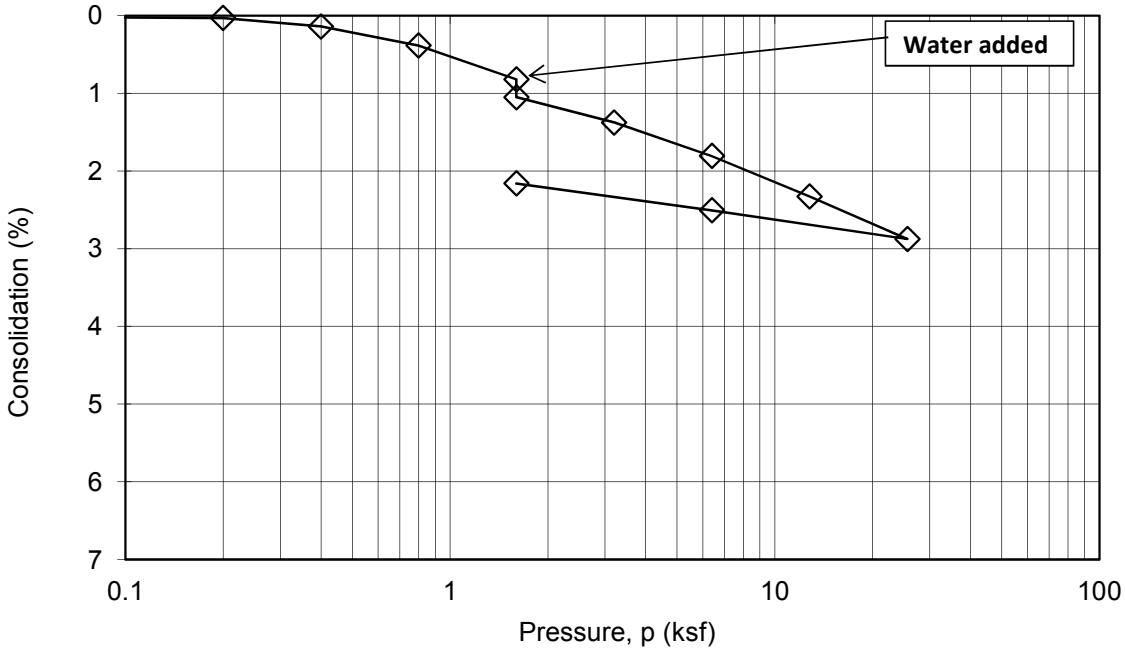
* Saturation is calcualted based on Gs= 2.67

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0000	0.234	0.305	0			
0.2	0.0003	0.9997	0.234	0.305	0.0	2.1E-03	1.6E-03	
0.4	0.0014	0.9986	0.233	0.304	0.1	7.2E-03	5.5E-03	
0.8	0.0039	0.9962	0.230	0.300	0.4	8.0E-03	6.1E-03	
1.6	0.0082	0.9918	0.226	0.295	0.8	7.1E-03	5.5E-03	
1.6	0.0105	0.9895	0.223	0.292	1.1	Water Added		
3.2	0.0138	0.9863	0.220	0.287	1.4	2.7E-03	2.1E-03	
6.4	0.0181	0.9820	0.216	0.282	1.8	1.8E-03	1.4E-03	
12.8	0.0233	0.9768	0.211	0.275	2.3	1.1E-03	8.3E-04	
25.6	0.0288	0.9713	0.205	0.268	2.9	5.6E-04	4.4E-04	
6.4	0.0251	0.9750	0.209	0.273	2.5	Unloaded		
1.6	0.0216	0.9784	0.212	0.277	2.2			

CONSOLIDATION TEST
ASTM D2435

Client:	Geobase	***HAI Project No.:***	DYAL-18-005
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-7	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Remolded to 95% of Dry Density		
Depth (ft):	0-5		
Soil Description:	Reddish Brown, Silty Sand (SM)		





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-2	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	15-16.5		
Soil Description:	Light Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
144.00	158.55	139.15

			Initial Conditions	Final Conditions
Height	H	(in)	1.025	0.996
Height of Solids	Hs	(in)	0.691	0.691
Height of Water	Hw	(in)	0.065	0.258
Height of Air	Ha	(in)	0.269	0.046
Dry Density		**(pcf)**	**112.8**	**116.6**
Water Content		**(%)**	**3.5**	**13.9**
Saturation		**(%)**	**19.3**	**84.8**

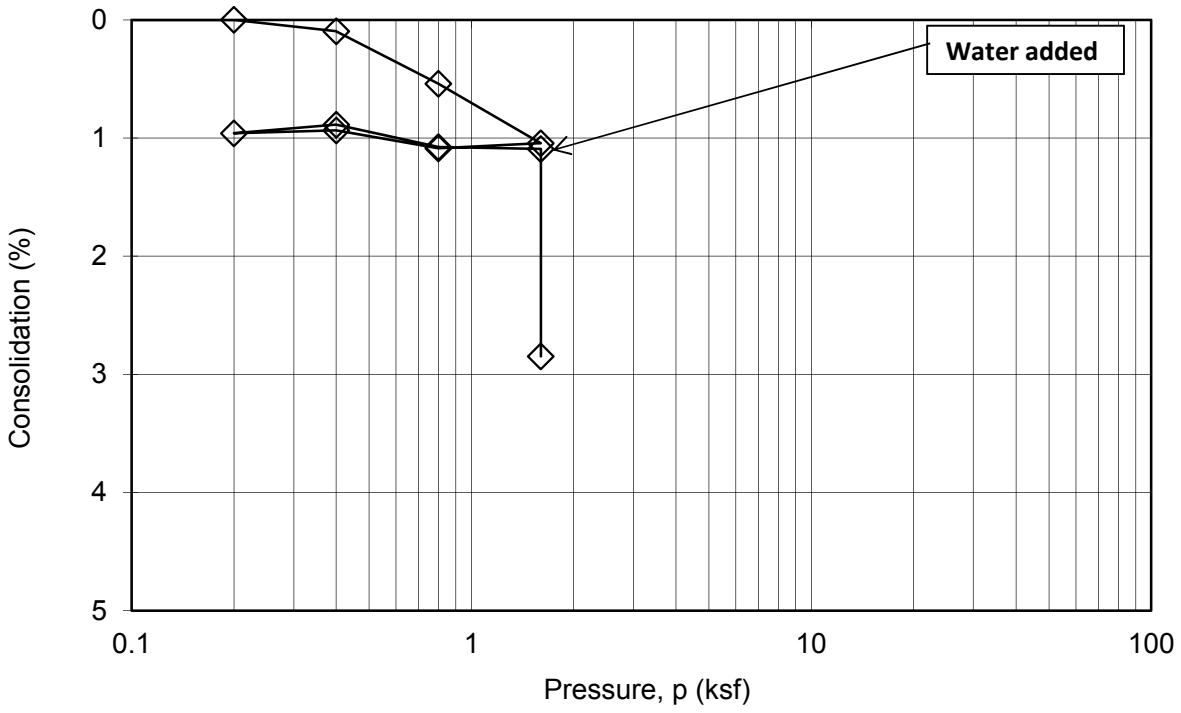
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0250	0.334	0.483	0			
0.2	0.0000	1.0250	0.334	0.483	0.0	0.0E+00	0.0E+00	
0.4	0.0010	1.0240	0.333	0.482	0.1	7.2E-03	4.9E-03	
0.8	0.0055	1.0195	0.328	0.475	0.5	1.6E-02	1.1E-02	
1.6	0.0107	1.0143	0.323	0.468	1.0	9.3E-03	6.3E-03	
0.8	0.0112	1.0139	0.323	0.467	1.1	Unloaded		
0.4	0.0096	1.0154	0.324	0.469	0.9			
0.2	0.0098	1.0152	0.324	0.469	1.0			
0.4	0.0091	1.0159	0.325	0.470	0.9	-5.4E-03	-3.7E-03	
0.8	0.0111	1.0140	0.323	0.467	1.1	7.1E-03	4.8E-03	
1.6	0.0112	1.0138	0.323	0.467	1.1	2.7E-04	1.8E-04	
1.6	0.0292	0.9958	0.305	0.441	2.8	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-2	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	15-16.5		
Soil Description:	Light Brown, Silty Sand (SM)		

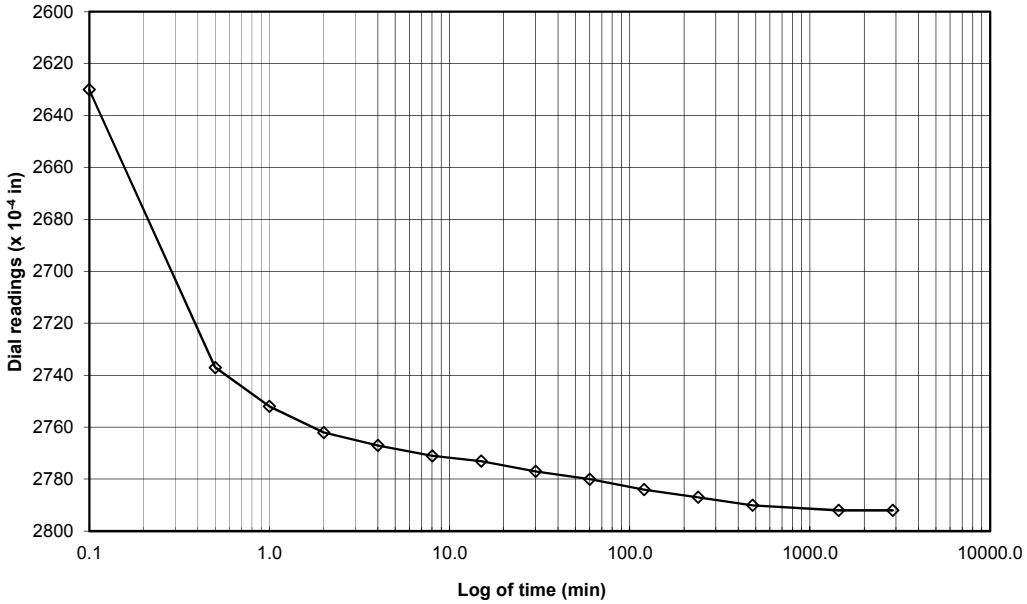


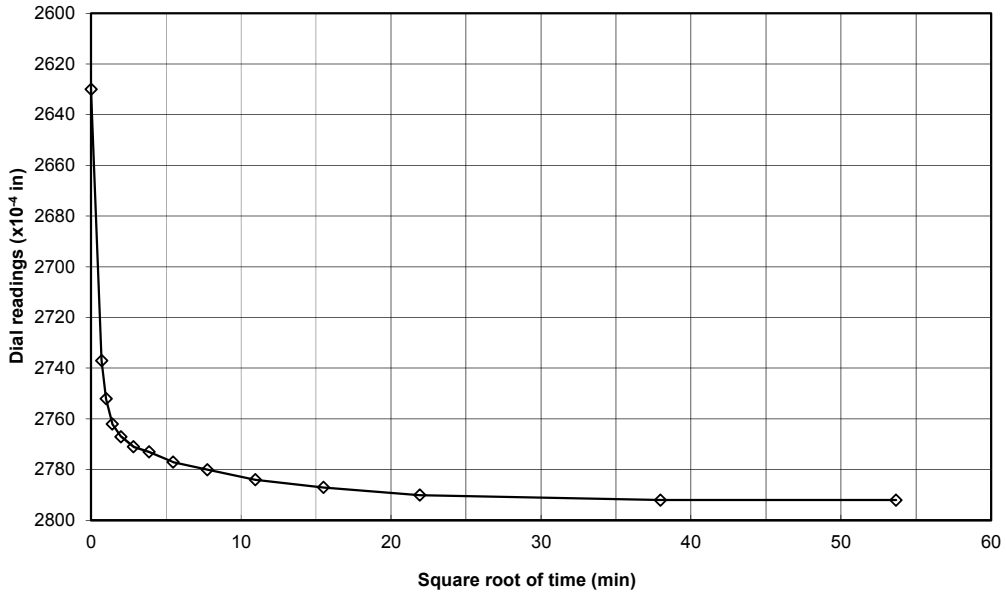
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-2
Sample No.:	-
Soil Description:	Light Brown, Silty Sand (SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-4	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	15-16.5		
Soil Description:	Light Reddish Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
123.19	138.24	120.42

			Initial Conditions	Final Conditions
Height	H	(in)	1.017	0.896
Height of Solids	Hs	(in)	0.598	0.598
Height of Water	Hw	(in)	0.037	0.237
Height of Air	Ha	(in)	0.382	0.061
Dry Density		**(pcf)**	**98.4**	**124.5**
Water Content		**(%)**	**2.3**	**14.8**
Saturation		**(%)**	**8.8**	**79.6**

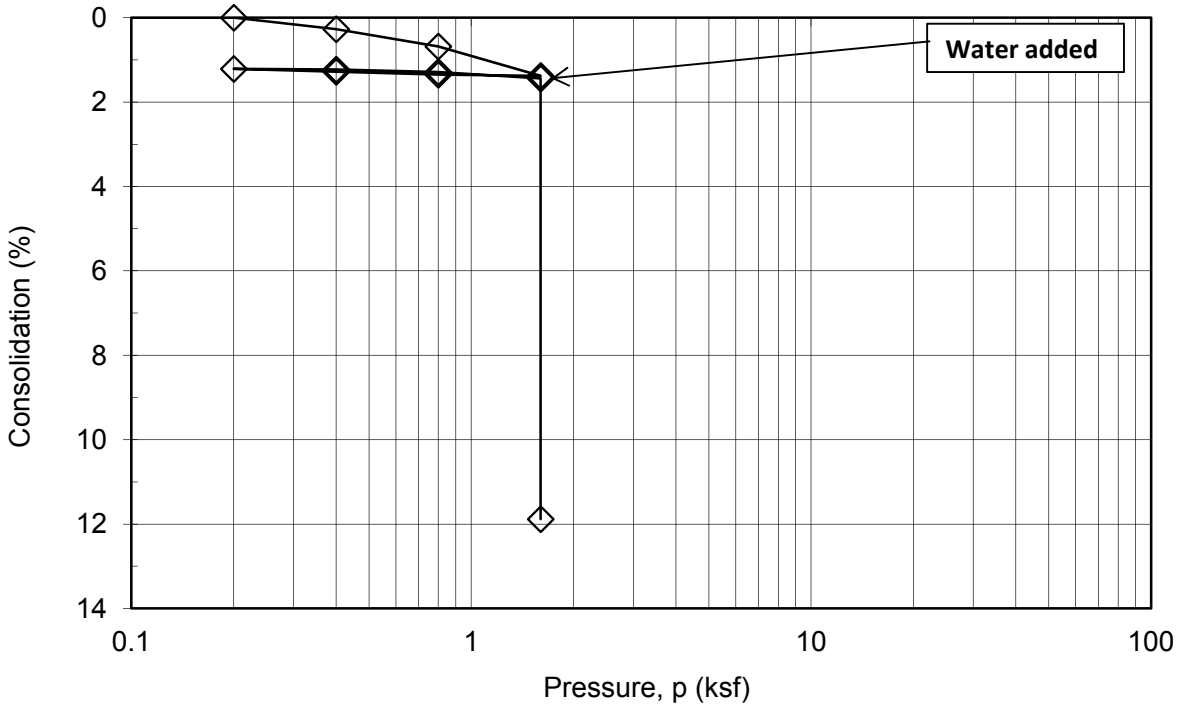
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0170	0.419	0.700	0			
0.2	0.0000	1.0170	0.419	0.700	0.0	0.0E+00	0.0E+00	
0.4	0.0028	1.0143	0.416	0.696	0.3	2.3E-02	1.4E-02	
0.8	0.0069	1.0101	0.412	0.689	0.7	1.7E-02	1.0E-02	
1.6	0.0141	1.0030	0.405	0.677	1.4	1.5E-02	8.9E-03	
0.8	0.0137	1.0033	0.405	0.677	1.3	Unloaded		
0.4	0.0131	1.0040	0.406	0.679	1.3			
0.2	0.0124	1.0047	0.407	0.680	1.2			
0.4	0.0125	1.0046	0.406	0.680	1.2	8.4E-04	5.0E-04	
0.8	0.0131	1.0039	0.406	0.678	1.3	2.7E-03	1.6E-03	
1.6	0.0147	1.0024	0.404	0.676	1.4	3.2E-03	1.9E-03	
1.6	0.1208	0.8962	0.298	0.498	11.9	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-4	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	15-16.5		
Soil Description:	Light Reddish Brown, Silty Sand (SM)		

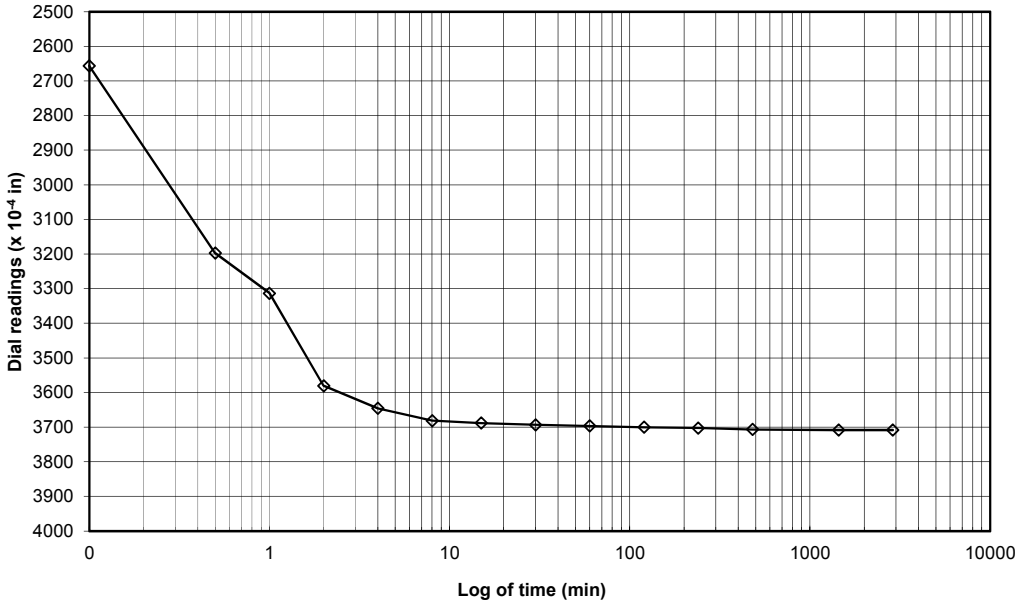


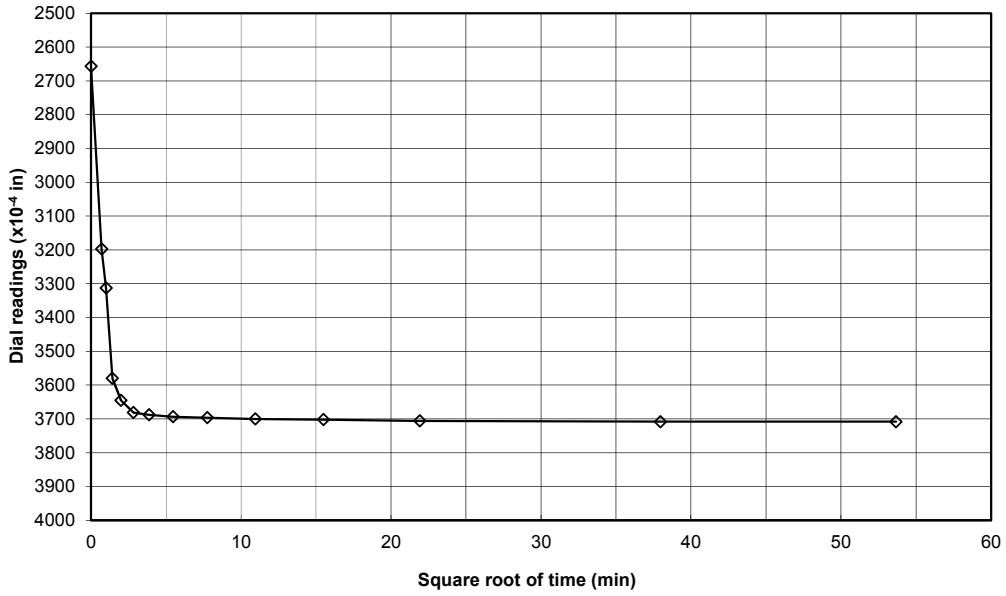
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-4
Sample No.:	-
Soil Description:	Light Reddish Brown, Silty Sand (SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-5	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	20-21.5		
Soil Description:	Light Brown, Well-graded sand with silt (SW-SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
134.71	150.00	132.14

			Initial Conditions	Final Conditions
Height	H	(in)	1.014	0.872
Height of Solids	Hs	(in)	0.656	0.656
Height of Water	Hw	(in)	0.034	0.238
Height of Air	Ha	(in)	0.323	0.000
Dry Density		**(pcf)**	**108.2**	**144.4**
Water Content		**(%)**	**1.9**	**13.5**
Saturation		**(%)**	**9.6**	**100.0**

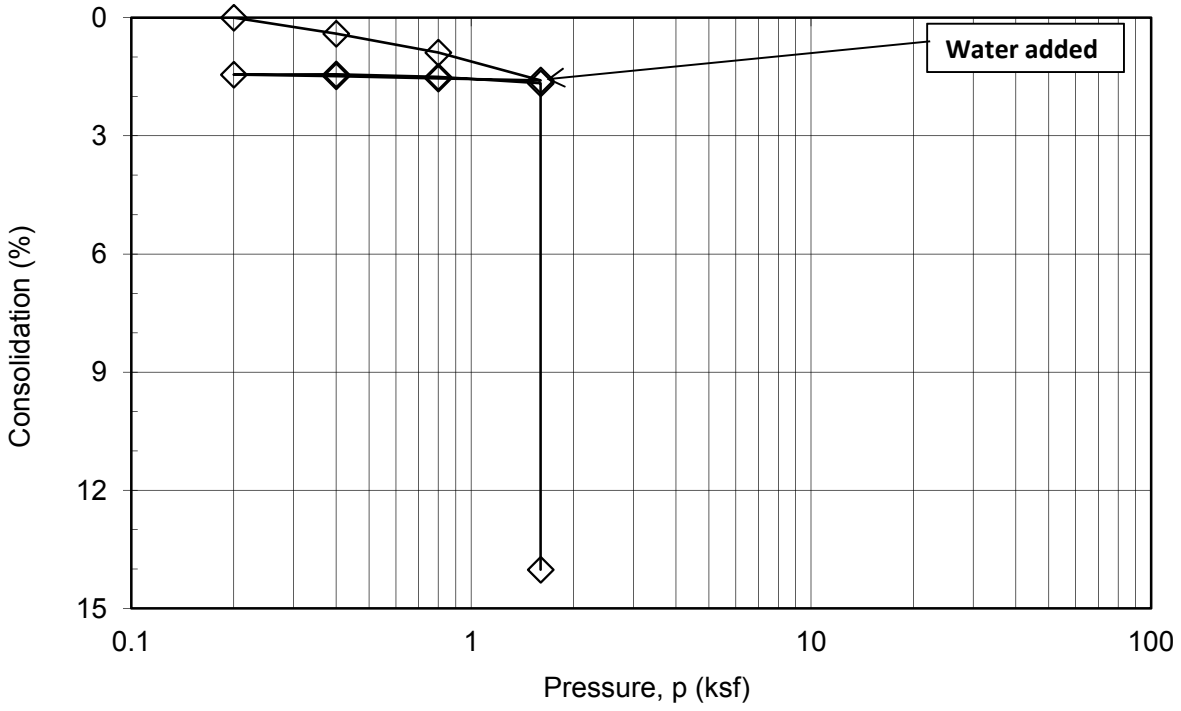
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0140	0.358	0.545	0			
0.2	0.0000	1.0140	0.358	0.545	0.0	0.0E+00	0.0E+00	
0.4	0.0041	1.0099	0.354	0.539	0.4	3.1E-02	2.0E-02	
0.8	0.0090	1.0051	0.349	0.531	0.9	1.8E-02	1.2E-02	
1.6	0.0162	0.9979	0.342	0.520	1.6	1.4E-02	9.0E-03	
0.8	0.0157	0.9984	0.342	0.521	1.5	Unloaded		
0.4	0.0151	0.9989	0.343	0.522	1.5			
0.2	0.0147	0.9994	0.343	0.523	1.4			
0.4	0.0146	0.9994	0.343	0.523	1.4	-3.8E-04	-2.5E-04	
0.8	0.0153	0.9988	0.342	0.522	1.5	2.5E-03	1.6E-03	
1.6	0.0169	0.9972	0.341	0.519	1.7	3.0E-03	2.0E-03	
1.6	0.1421	0.8719	0.216	0.328	14.0	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-5	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	20-21.5		
Soil Description:	Light Brown, Well-graded sand with silt (SW-SM)		

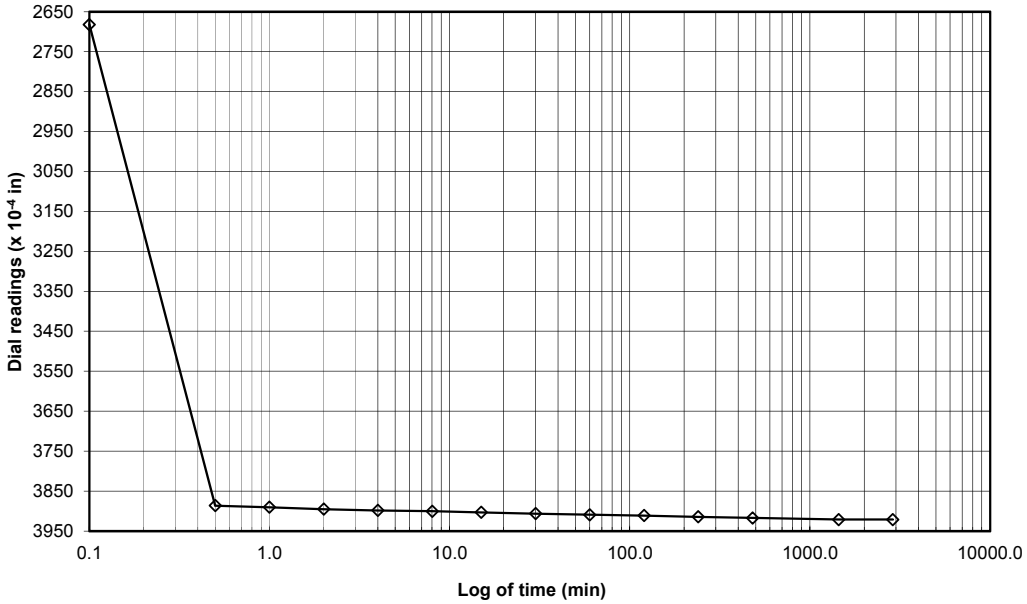


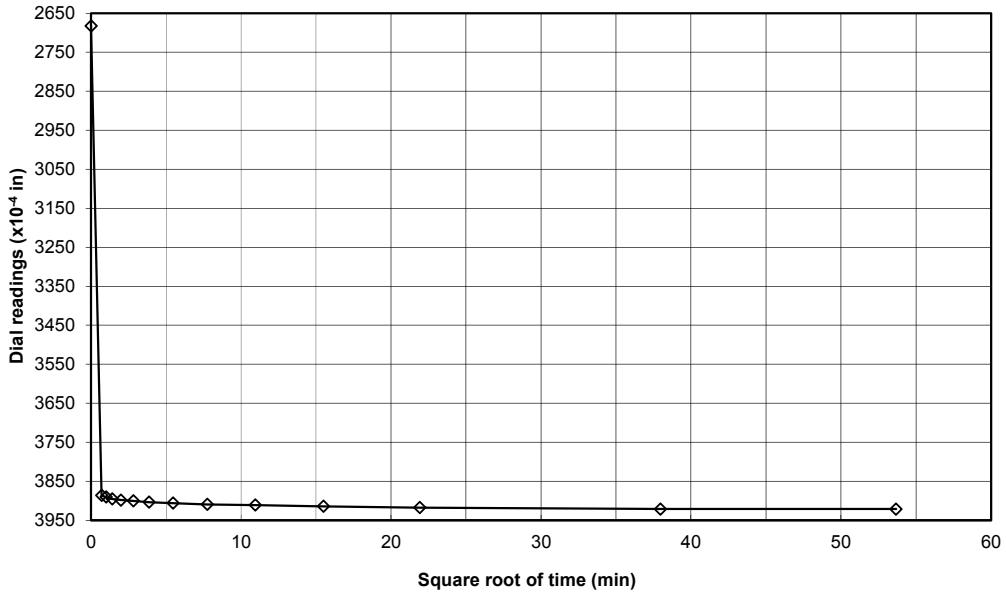
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-5
Sample No.:	-
Soil Description:	Light Brown, Well-graded sand with silt (SW-SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-6	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	10-11.5		
Soil Description:	Tan Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
156.56	159.87	148.07

			Initial Conditions	Final Conditions
Height	H	(in)	1.021	0.934
Height of Solids	Hs	(in)	0.735	0.735
Height of Water	Hw	(in)	0.113	0.157
Height of Air	Ha	(in)	0.173	0.042
Dry Density		**(pcf)**	**120.5**	**141.0**
Water Content		**(%)**	**5.7**	**8.0**
Saturation		**(%)**	**39.6**	**79.1**

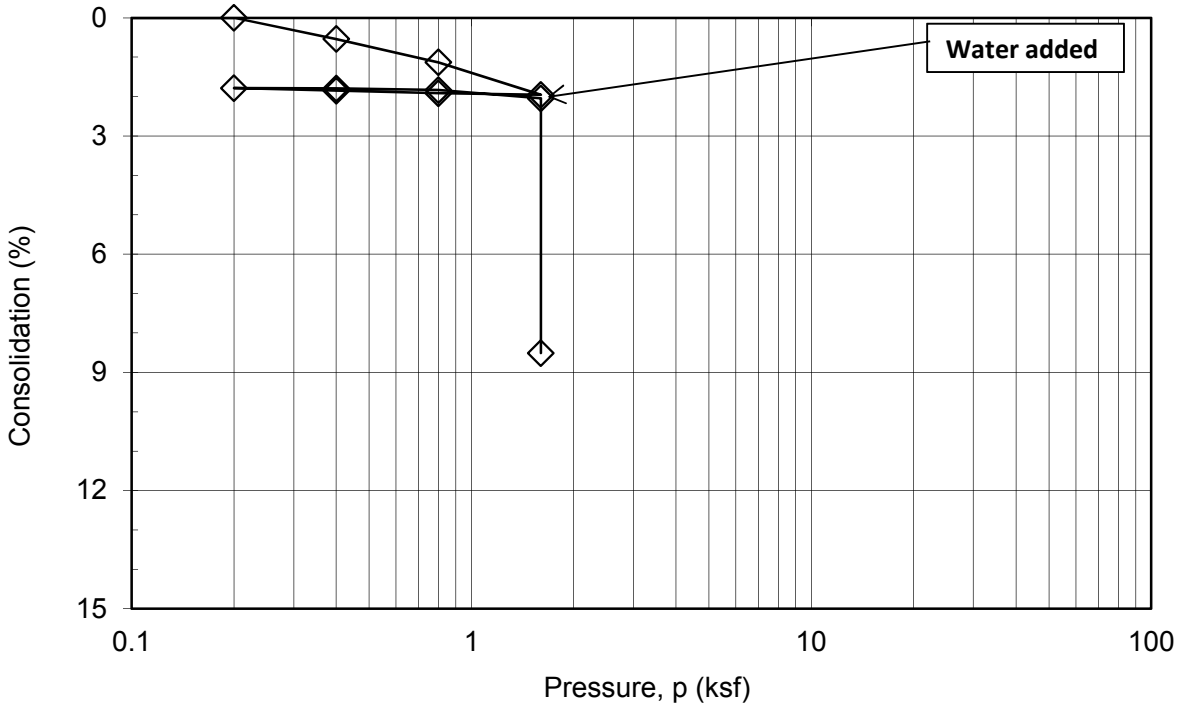
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0210	0.286	0.388	0			
0.2	0.0000	1.0210	0.286	0.388	0.0	0.0E+00	0.0E+00	
0.4	0.0055	1.0155	0.280	0.381	0.5	3.7E-02	2.7E-02	
0.8	0.0116	1.0095	0.274	0.373	1.1	2.1E-02	1.5E-02	
1.6	0.0200	1.0010	0.266	0.361	2.0	1.4E-02	1.1E-02	
0.8	0.0196	1.0015	0.266	0.362	1.9	Unloaded		
0.4	0.0189	1.0021	0.267	0.363	1.9			
0.2	0.0182	1.0028	0.267	0.364	1.8			
0.4	0.0183	1.0027	0.267	0.363	1.8	6.8E-04	5.0E-04	
0.8	0.0188	1.0023	0.267	0.363	1.8	1.5E-03	1.1E-03	
1.6	0.0209	1.0001	0.265	0.360	2.0	3.7E-03	2.7E-03	
1.6	0.0869	0.9341	0.199	0.270	8.5	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-6	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	10-11.5		
Soil Description:	Tan Brown, Silty Sand (SM)		

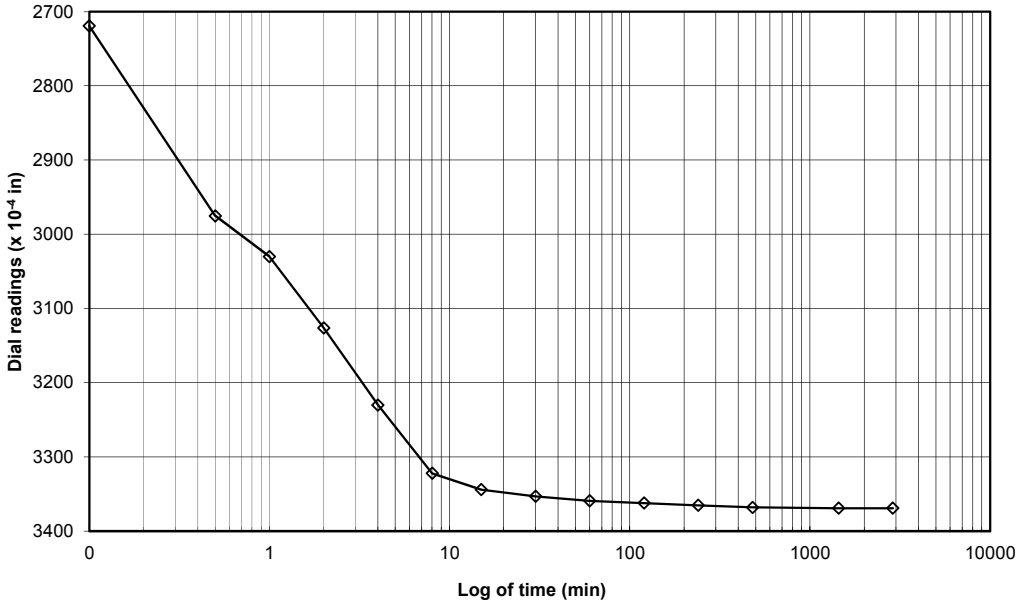


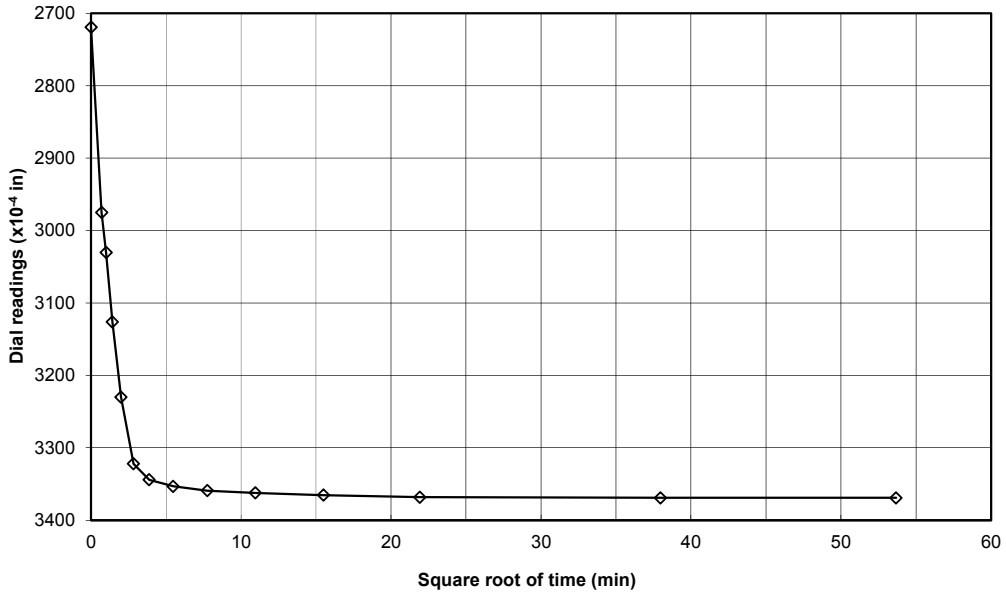
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-6
Sample No.:	-
Soil Description:	Tan Brown, Silty Sand (SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-6	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	20-21.5		
Soil Description:	Light Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
147.96	159.94	140.65

			Initial Conditions	Final Conditions
Height	H	(in)	1.005	0.984
Height of Solids	Hs	(in)	0.699	0.699
Height of Water	Hw	(in)	0.097	0.257
Height of Air	Ha	(in)	0.209	0.028
Dry Density		**(pcf)**	**116.2**	**120.7**
Water Content		**(%)**	**5.2**	**13.7**
Saturation		**(%)**	**31.8**	**90.0**

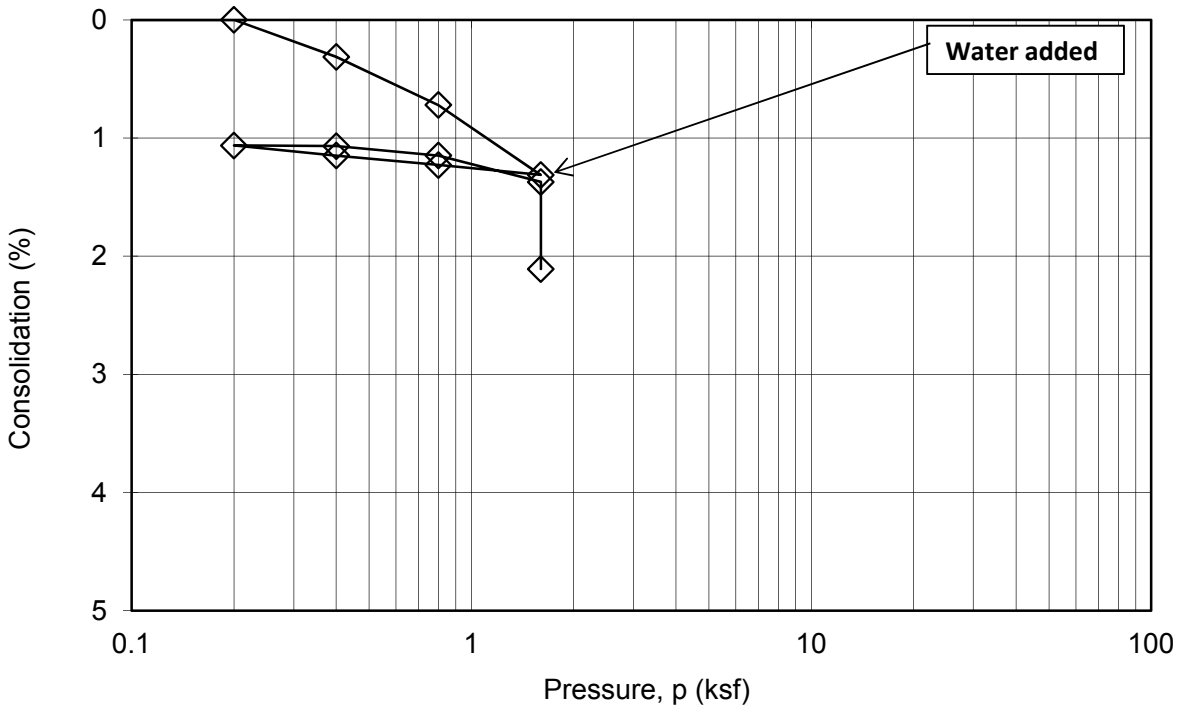
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0050	0.306	0.439	0			
0.2	0.0000	1.0050	0.306	0.439	0.0	0.0E+00	0.0E+00	
0.4	0.0031	1.0019	0.303	0.434	0.3	2.3E-02	1.6E-02	
0.8	0.0073	0.9978	0.299	0.428	0.7	1.5E-02	1.0E-02	
1.6	0.0132	0.9918	0.293	0.420	1.3	1.1E-02	7.5E-03	
0.8	0.0124	0.9927	0.294	0.421	1.2	Unloaded		
0.4	0.0116	0.9935	0.295	0.422	1.1			
0.2	0.0107	0.9943	0.296	0.423	1.1			
0.4	0.0108	0.9943	0.296	0.423	1.1	3.6E-04	2.5E-04	
0.8	0.0116	0.9935	0.295	0.422	1.1	2.9E-03	2.0E-03	
1.6	0.0138	0.9912	0.293	0.419	1.4	4.0E-03	2.8E-03	
1.6	0.0212	0.9838	0.285	0.408	2.1	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-6	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	20-21.5		
Soil Description:	Light Brown, Silty Sand (SM)		

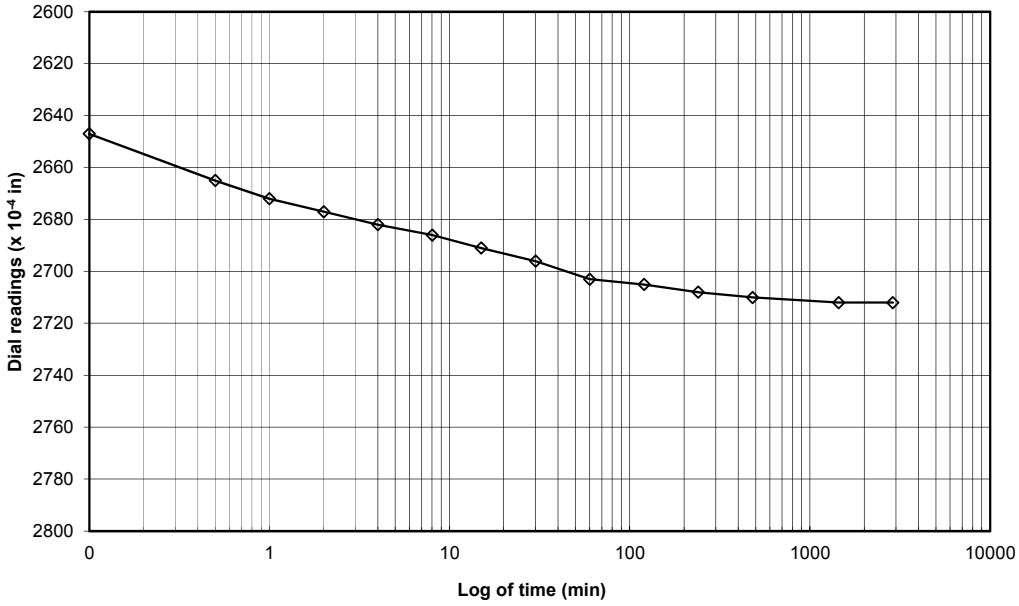


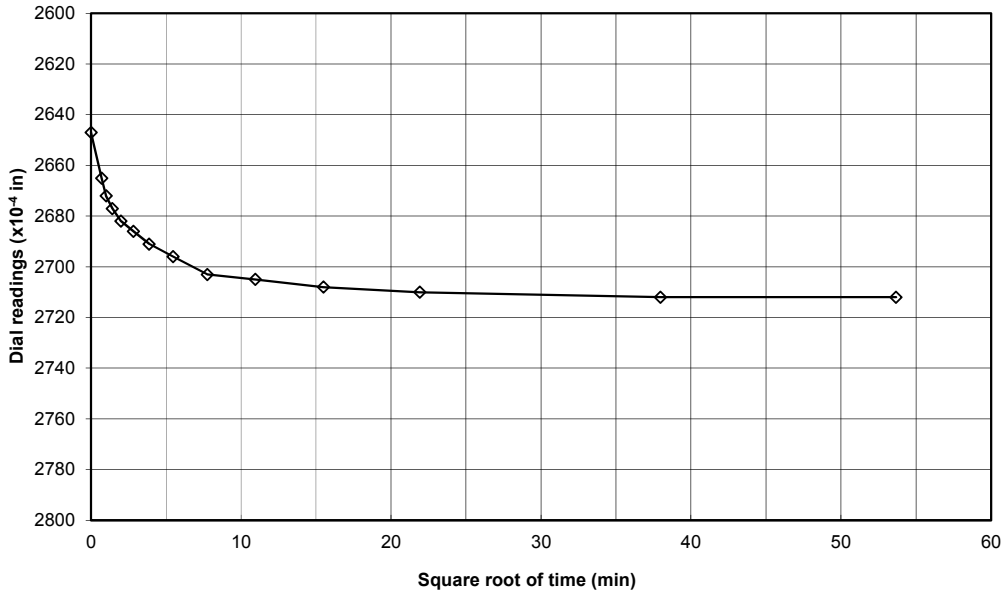
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-6
Sample No.:	-
Soil Description:	Light Brown, Silty Sand (SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-7	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	15-16.5		
Soil Description:	Light Brown, Well Graded Sand with Silt and Gravel (SW-SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
140.46	156.11	137.84

			Initial Conditions	Final Conditions
Height	H	(in)	1.004	0.980
Height of Solids	Hs	(in)	0.685	0.685
Height of Water	Hw	(in)	0.035	0.243
Height of Air	Ha	(in)	0.284	0.052
Dry Density		**(pcf)**	**114.0**	**119.2**
Water Content		**(%)**	**1.9**	**13.3**
Saturation		**(%)**	**10.9**	**82.4**

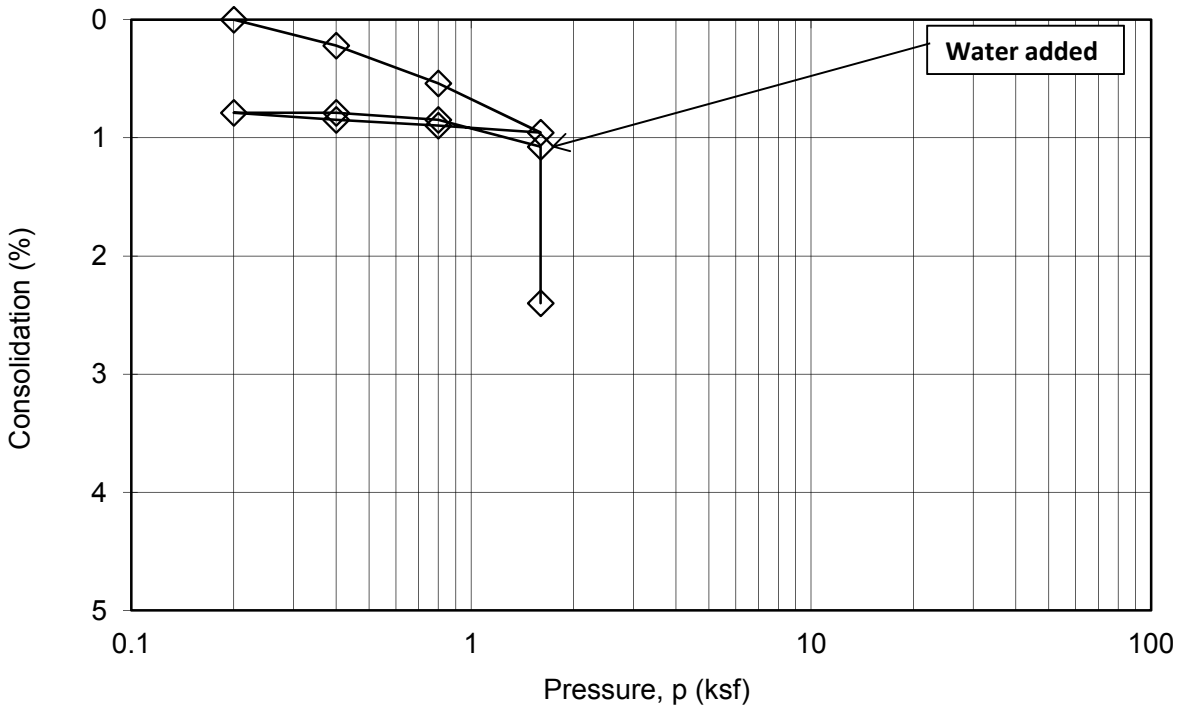
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0040	0.319	0.466	0			
0.2	0.0000	1.0040	0.319	0.466	0.0	0.0E+00	0.0E+00	
0.4	0.0022	1.0018	0.317	0.463	0.2	1.6E-02	1.1E-02	
0.8	0.0054	0.9986	0.314	0.459	0.5	1.2E-02	8.0E-03	
1.6	0.0096	0.9944	0.310	0.452	1.0	7.7E-03	5.3E-03	
0.8	0.0090	0.9950	0.310	0.453	0.9	Unloaded		
0.4	0.0085	0.9955	0.311	0.454	0.8			
0.2	0.0079	0.9961	0.311	0.455	0.8			
0.4	0.0079	0.9961	0.311	0.455	0.8	0.0E+00	0.0E+00	
0.8	0.0085	0.9955	0.311	0.454	0.8	2.2E-03	1.5E-03	
1.6	0.0108	0.9932	0.309	0.451	1.1	4.2E-03	2.9E-03	
1.6	0.0241	0.9799	0.295	0.431	2.4	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-7	***Date:***	04/03/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	15-16.5		
Soil Description:	Light Brown, Well Graded Sand with Silt and Gravel (SW-SM)		

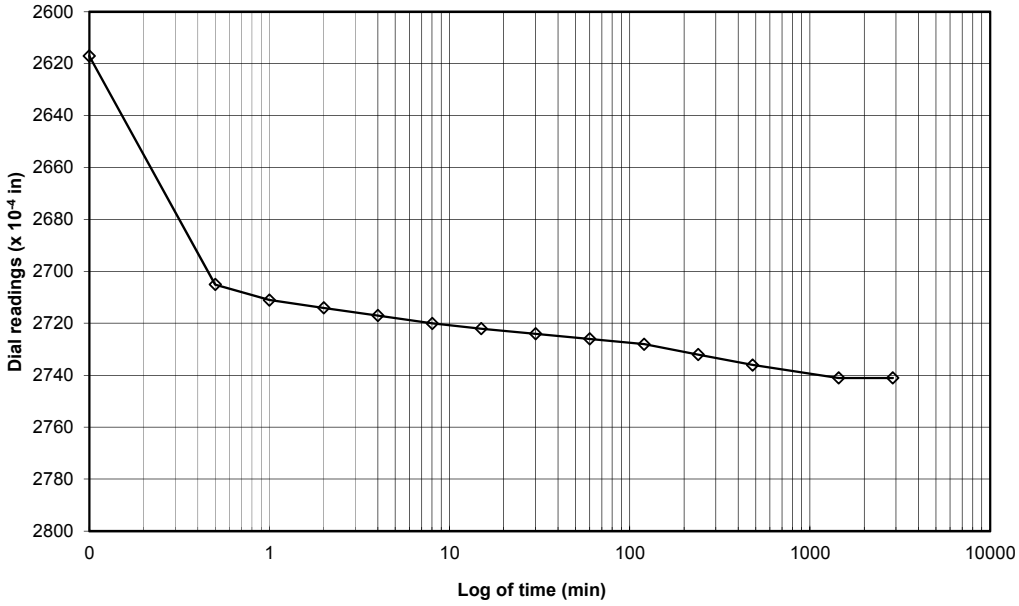


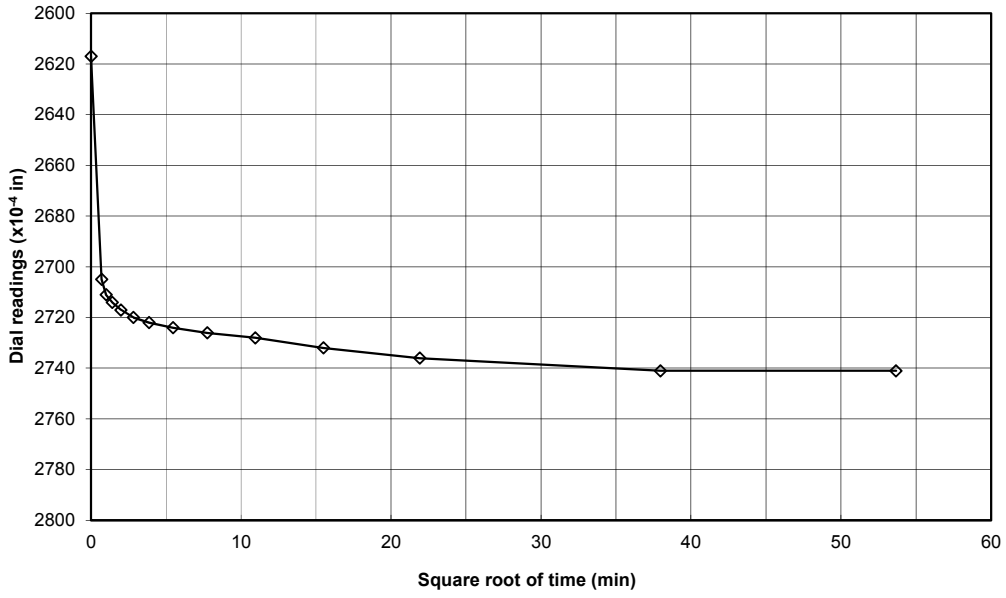
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-7
Sample No.:	-
Soil Description:	Light Brown, Well Graded Sand with Silt and Gravel (SW-SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-8	***Date:***	04/04/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	10-11.5		
Soil Description:	Reddish Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
126.28	139.45	121.50

			Initial Conditions	Final Conditions
Height	H	(in)	1.004	0.871
Height of Solids	Hs	(in)	0.603	0.603
Height of Water	Hw	(in)	0.064	0.239
Height of Air	Ha	(in)	0.337	0.029
Dry Density		**(pcf)**	**100.5**	**132.9**
Water Content		**(%)**	**3.9**	**14.8**
Saturation		**(%)**	**15.9**	**89.2**

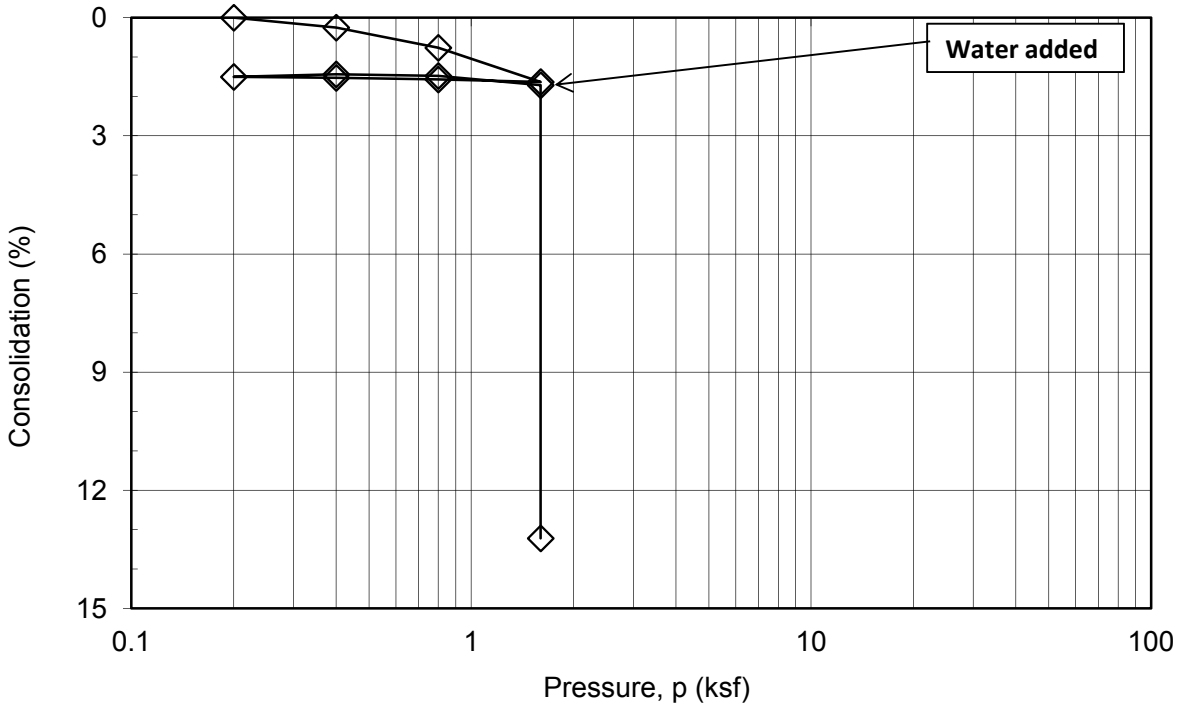
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0040	0.401	0.664	0			
0.2	0.0000	1.0040	0.401	0.664	0.0	0.0E+00	0.0E+00	
0.4	0.0025	1.0015	0.398	0.660	0.2	2.1E-02	1.2E-02	
0.8	0.0077	0.9964	0.393	0.651	0.8	2.1E-02	1.3E-02	
1.6	0.0164	0.9876	0.384	0.637	1.6	1.8E-02	1.1E-02	
0.8	0.0158	0.9883	0.385	0.638	1.6	Unloaded		
0.4	0.0153	0.9887	0.385	0.638	1.5			
0.2	0.0151	0.9890	0.385	0.639	1.5			
0.4	0.0144	0.9896	0.386	0.640	1.4	-5.4E-03	-3.3E-03	
0.8	0.0149	0.9892	0.386	0.639	1.5	1.9E-03	1.1E-03	
1.6	0.0172	0.9868	0.383	0.635	1.7	4.9E-03	3.0E-03	
1.6	0.1327	0.8713	0.268	0.444	13.2	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-8	***Date:***	04/04/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	10-11.5		
Soil Description:	Reddish Brown, Silty Sand (SM)		

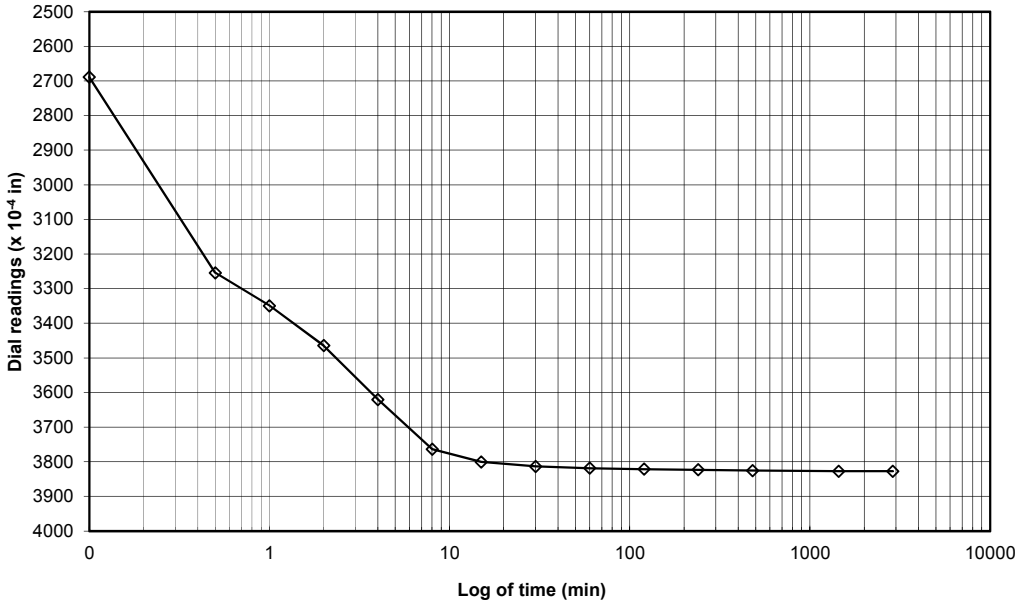


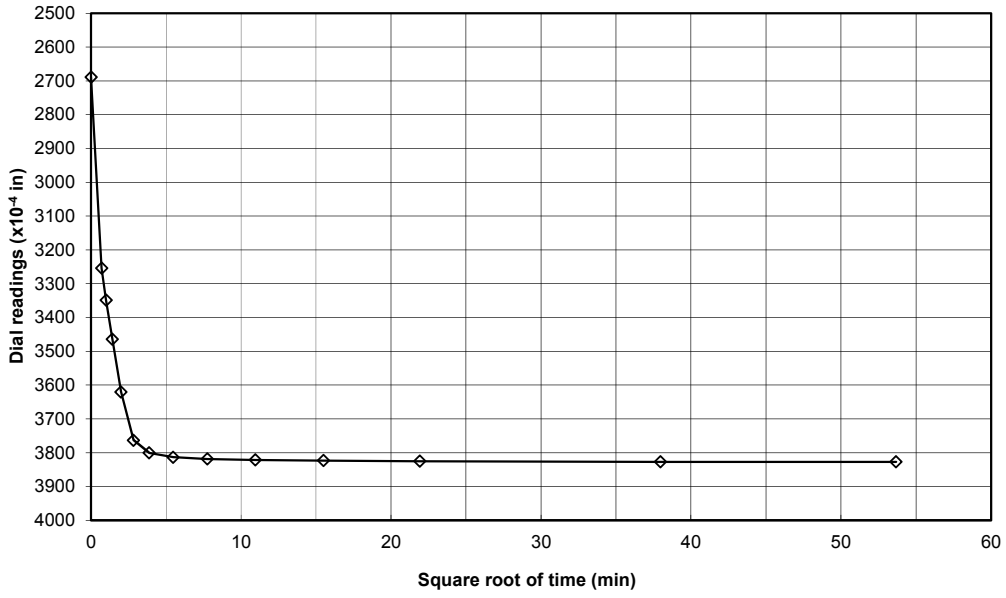
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-8
Sample No.:	-
Soil Description:	Reddish Brown, Silty Sand (SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-8	***Date:***	04/04/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	20-21.5		
Soil Description:	Light Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
137.34	152.78	135.19

			Initial Conditions	Final Conditions
Height	H	(in)	1.016	0.988
Height of Solids	Hs	(in)	0.671	0.671
Height of Water	Hw	(in)	0.029	0.234
Height of Air	Ha	(in)	0.316	0.082
Dry Density		**(pcf)**	**110.5**	**115.0**
Water Content		**(%)**	**1.6**	**13.0**
Saturation		**(%)**	**8.3**	**73.9**

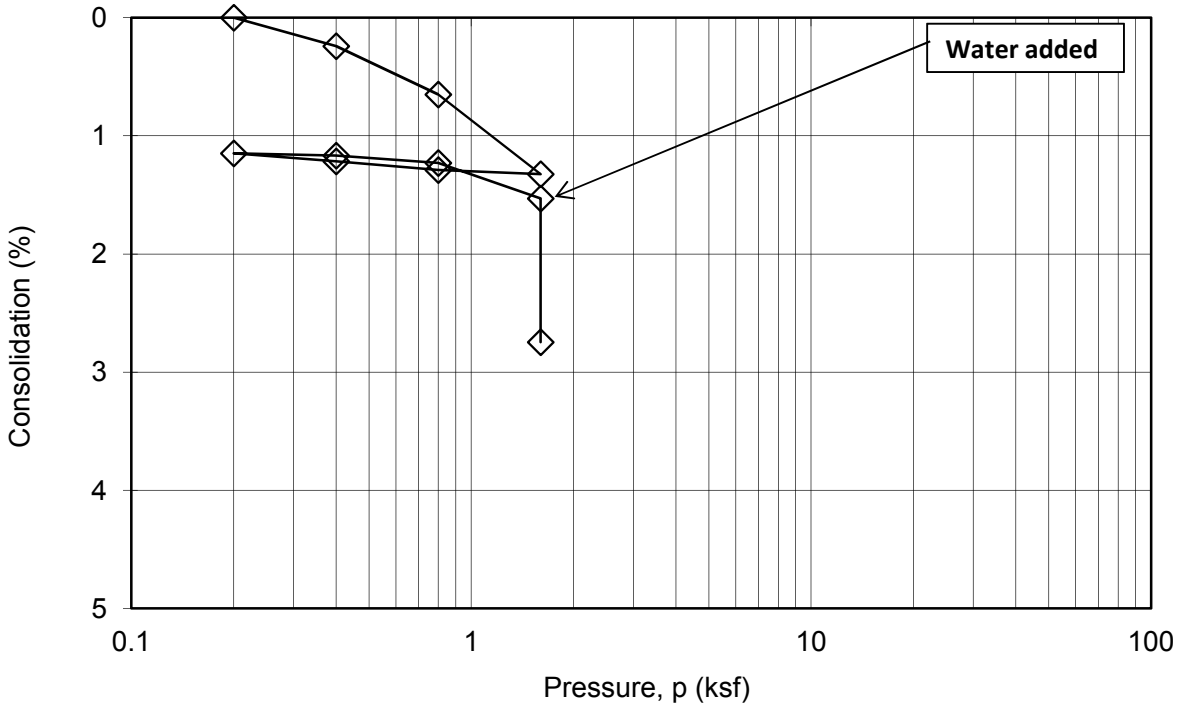
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0160	0.345	0.513	0			
0.2	0.0000	1.0160	0.345	0.513	0.0	0.0E+00	0.0E+00	
0.4	0.0024	1.0136	0.342	0.509	0.2	1.8E-02	1.2E-02	
0.8	0.0066	1.0094	0.338	0.503	0.6	1.5E-02	1.0E-02	
1.6	0.0135	1.0026	0.331	0.493	1.3	1.3E-02	8.5E-03	
0.8	0.0131	1.0029	0.331	0.494	1.3	Unloaded		
0.4	0.0124	1.0037	0.332	0.495	1.2			
0.2	0.0117	1.0044	0.333	0.496	1.1			
0.4	0.0119	1.0042	0.333	0.495	1.2	1.5E-03	1.0E-03	
0.8	0.0125	1.0035	0.332	0.494	1.2	2.4E-03	1.6E-03	
1.6	0.0156	1.0005	0.329	0.490	1.5	5.7E-03	3.8E-03	
1.6	0.0279	0.9881	0.317	0.472	2.7	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-8	***Date:***	04/04/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	20-21.5		
Soil Description:	Light Brown, Silty Sand (SM)		

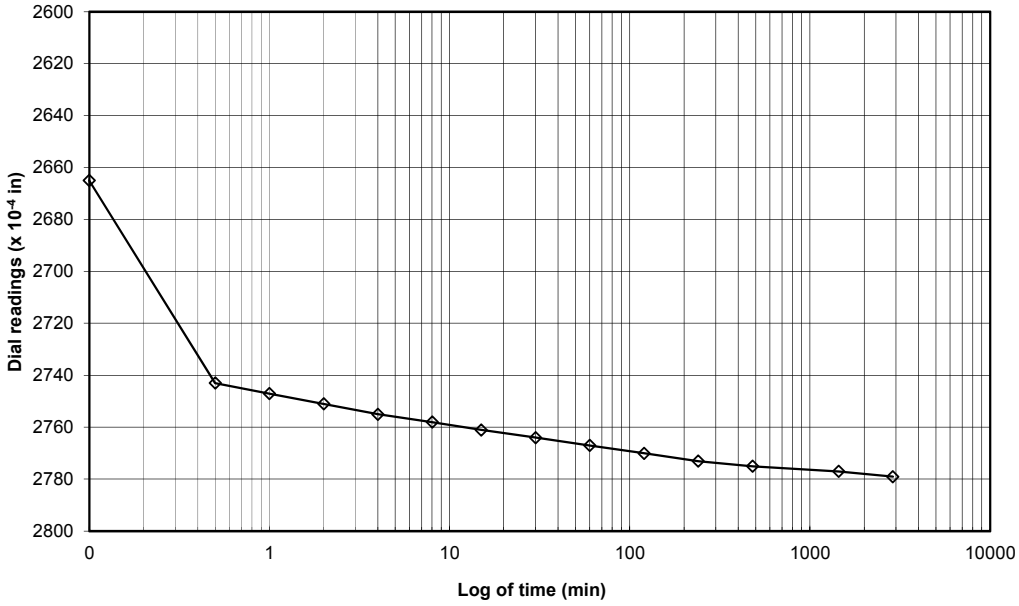


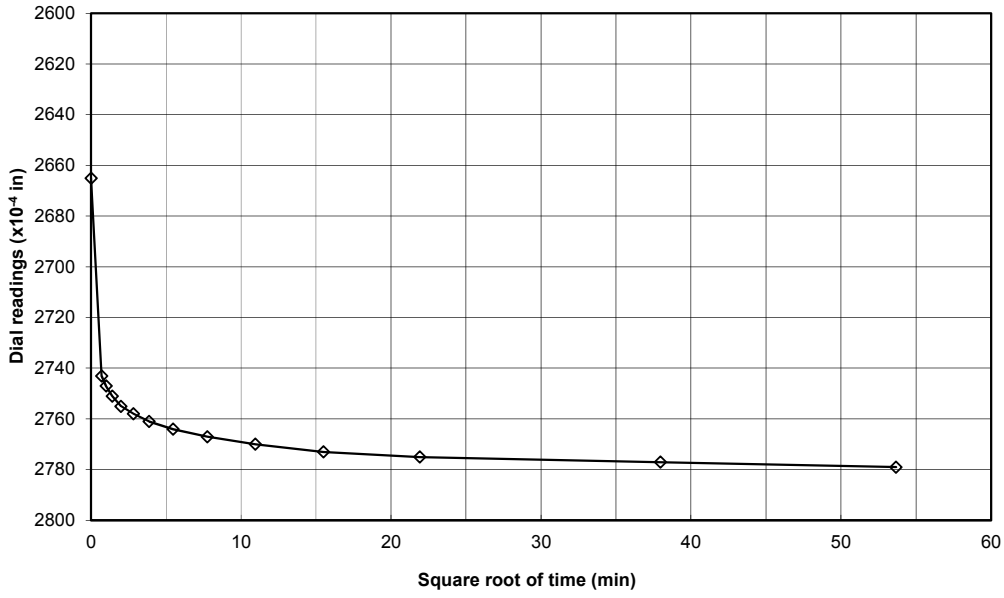
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-8
Sample No.:	-
Soil Description:	Light Brown, Silty Sand (SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





SWELL / COLLAPSE TEST
ASTM D4546

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-9	***Date:***	04/17/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	10-11.5		
Soil Description:	Reddish Brown, Silty Clayey Sand (SC-SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
165.22	171.26	150.57

			Initial Conditions	Final Conditions
Height	H	(in)	1.016	1.021
Height of Solids	Hs	(in)	0.748	0.748
Height of Water	Hw	(in)	0.195	0.275
Height of Air	Ha	(in)	0.073	0.000
Dry Density		**(pcf)**	**123.1**	**119.9**
Water Content		**(%)**	**9.7**	**13.7**
Saturation		**(%)**	**72.7**	**100.0**

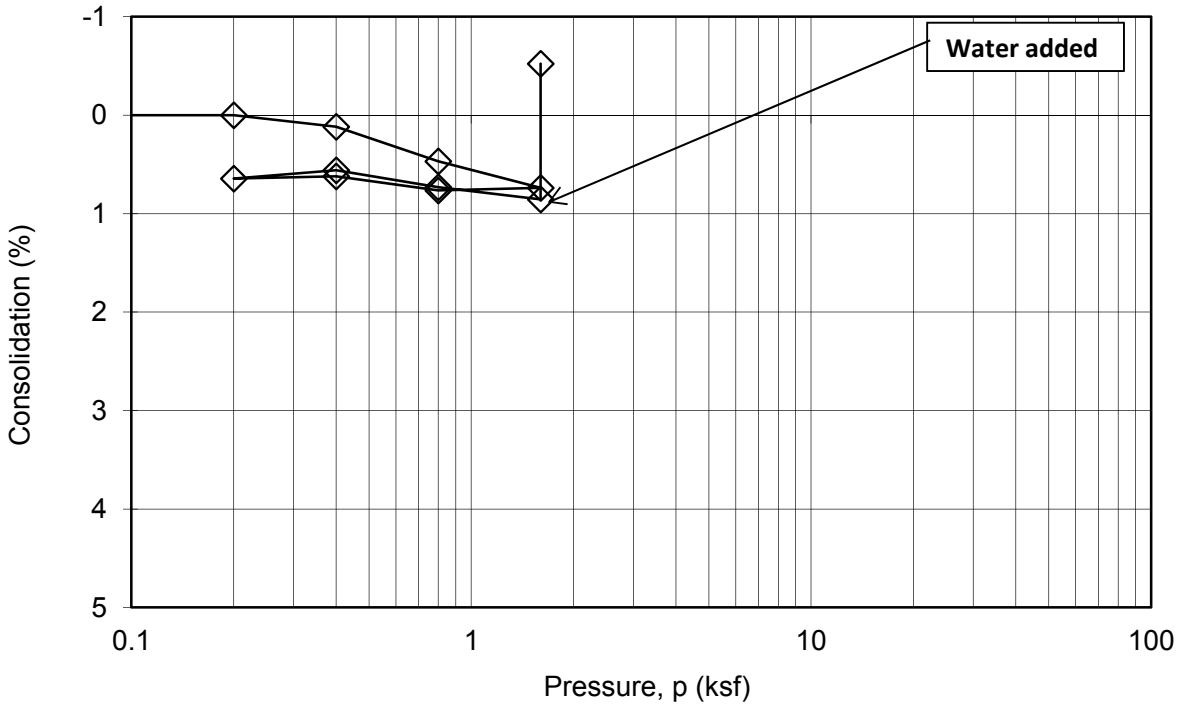
* Saturation is calcualted based on Gs=2.68

Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0160	0.268	0.359	0			
0.2	0.0000	1.0160	0.268	0.359	0.0	0.0E+00	0.0E+00	
0.4	0.0012	1.0148	0.267	0.357	0.1	8.0E-03	5.9E-03	
0.8	0.0048	1.0113	0.263	0.352	0.5	1.2E-02	8.8E-03	
1.6	0.0075	1.0085	0.261	0.349	0.7	4.6E-03	3.4E-03	
0.8	0.0078	1.0083	0.260	0.348	0.8	Unloaded		
0.4	0.0063	1.0097	0.262	0.350	0.6			
0.2	0.0066	1.0095	0.262	0.350	0.6			
0.4	0.0057	1.0103	0.262	0.351	0.6	-5.7E-03	-4.2E-03	
0.8	0.0074	1.0086	0.261	0.349	0.7	5.9E-03	4.3E-03	
1.6	0.0087	1.0073	0.259	0.347	0.9	2.1E-03	1.6E-03	
1.6	-0.0053	1.0213	0.273	0.366	-0.5	Water Added		

SWELL / COLLAPSE TEST

ASTM D4546

Client:	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.10	***Checked by:***	MJ
Boring No.:	B-9	***Date:***	04/17/18
Sample No.:	-		
Type of Sample:	Undisturbed Ring		
Depth (ft):	10-11.5		
Soil Description:	Reddish Brown, Silty Clayey Sand (SC-SM)		

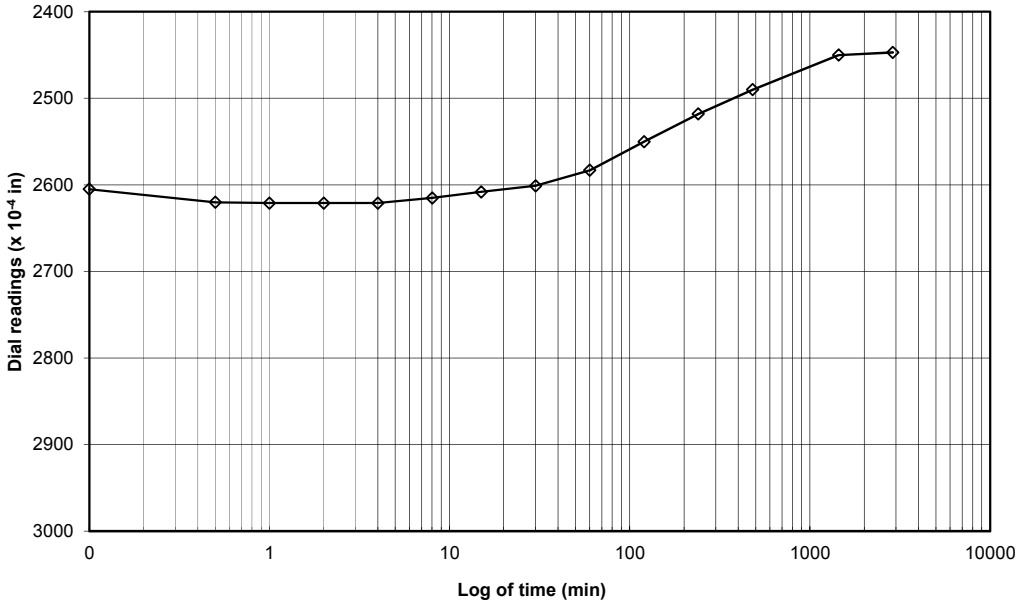


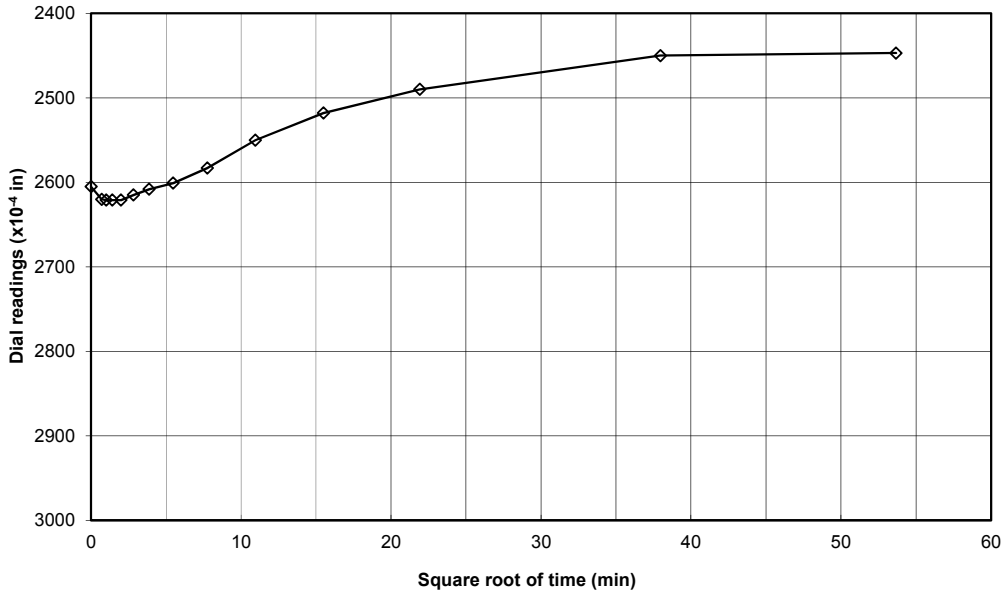
SWELL / COLLAPSE TEST
ASTM D4546

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase
Project Name:	KP Hesperia Mob
Project No.:	C.314.84.10
Boring No.:	B-9
Sample No.:	-
Soil Description:	Reddish Brown, Silty Clayey Sand (SC-SM)
Type of Sample:	Undisturbed Ring

Load (ksf): 1.6





HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

DIRECT SHEAR TEST

ASTM D3080

HAI Pr No.: GBA-18-001

Tested by: KL

Checked by: MJ

Date: 4/3/2018

Client: Geobase

Project Name: KP Hesperia Mob

Project Number: C.314.84.10

Boring No.: B-2

Sample No.: -

Sample Type: Undisturbed Ring

Depth (ft): 15-16.5

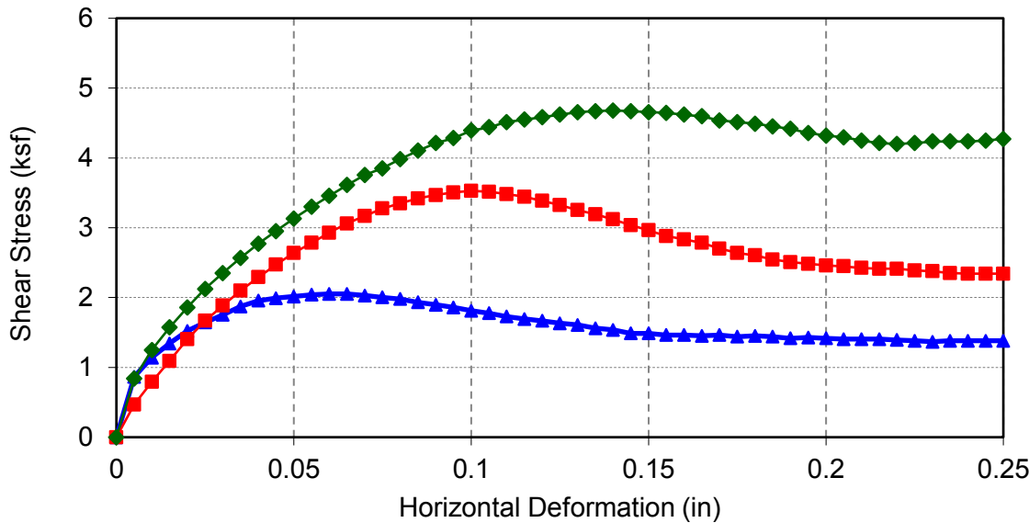
Soil description: Light Brown, Silty Sand (SM)

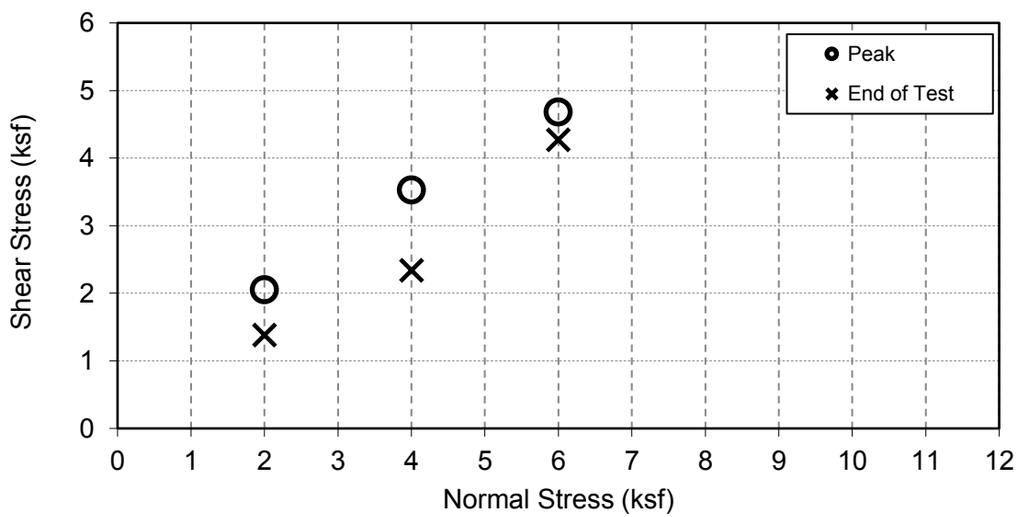
Type of test: **Consolidated, Drained**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.004**	**0.004**	**0.004**

Peak Shear Stress (ksf)	**O**	**2.05**	**3.53**	**4.68**
Shear Stress @ End of Test (ksf)	**X**	**1.38**	**2.34**	**4.27**

Initial Height of Sample (in)	1.000	1.000	1.000
Height of Sample before Shear (in)	0.9780	0.9641	0.9362
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**3.3**	**3.3**	**3.3**
Final Moisture Content (%)	**12.7**	**12.9**	**12.3**
Dry Density (pcf)	**116.2**	**116.3**	**113.1**





HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

DIRECT SHEAR TEST

ASTM D3080

HAI Pr No.: GBA-18-001

Tested by: KL

Checked by: MJ

Date: 4/3/2018

Client: Geobase

Project Name: KP Hesperia Mob

Project Number: C.314.84.10

Boring No.: B-3

Sample No.: -

Sample Type: Undisturbed Ring

Depth (ft): 10-11.5

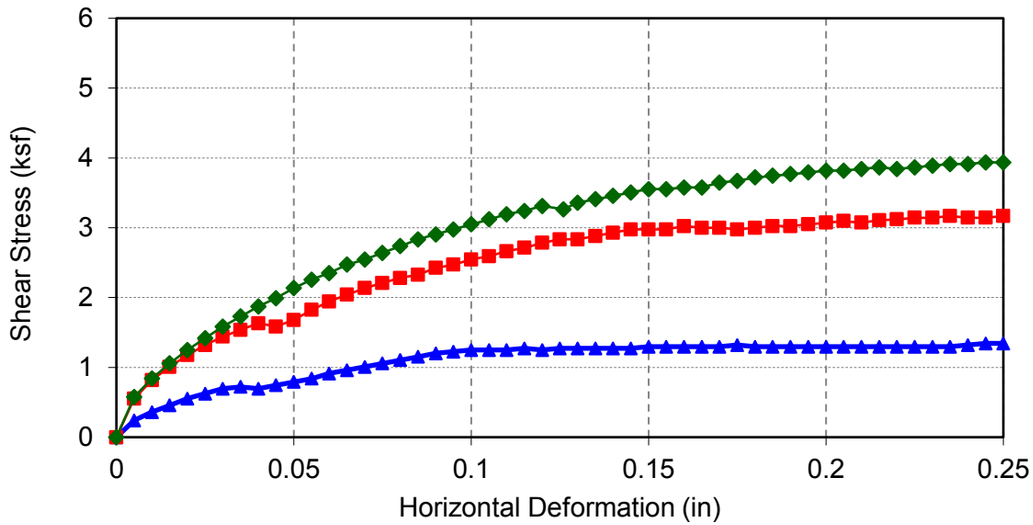
Soil description: Light Brown, Silty Sand (SM)

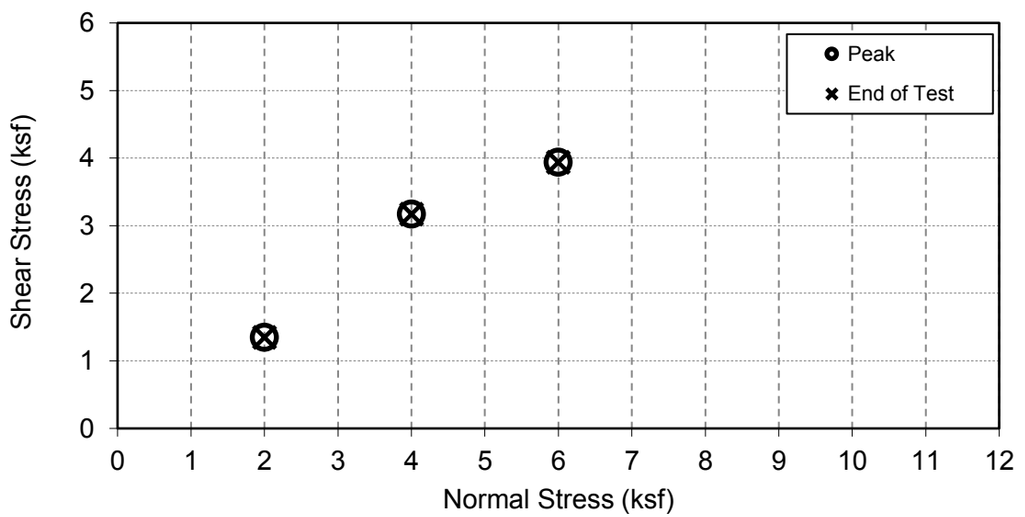
Type of test: **Consolidated, Drained**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.004**	**0.004**	**0.004**

Peak Shear Stress (ksf)	**O**	**1.34**	**3.17**	**3.94**
Shear Stress @ End of Test (ksf)	**X**	**1.34**	**3.17**	**3.94**

Initial Height of Sample (in)	1.000	1.000	1.000
Height of Sample before Shear (in)	0.9316	0.9308	0.8816
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**5.1**	**5.1**	**5.1**
Final Moisture Content (%)	**14.7**	**12.8**	**12.6**
Dry Density (pcf)	**106.0**	**105.0**	**105.7**





HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

DIRECT SHEAR TEST

ASTM D3080

HAI Pr No.: GBA-18-001

Tested by: KL

Checked by: MJ

Date: 4/3/2018

Client: Geobase

Project Name: KP Hesperia Mob

Project Number: C.314.84.10

Boring No.: B-4

Sample No.: -

Sample Type: Undisturbed Ring

Depth (ft): 15-16.5

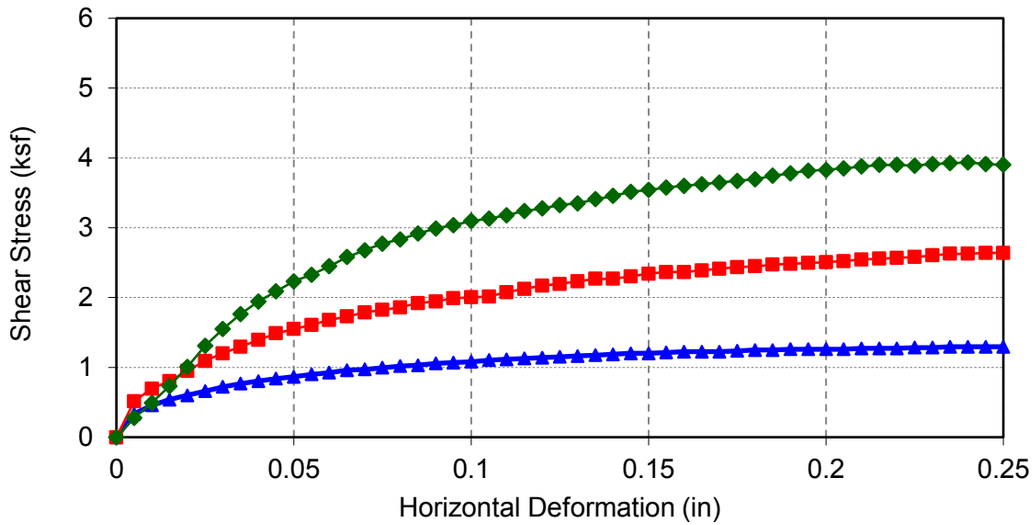
Soil description: Light Reddish Brown, Silty Sand (SM)

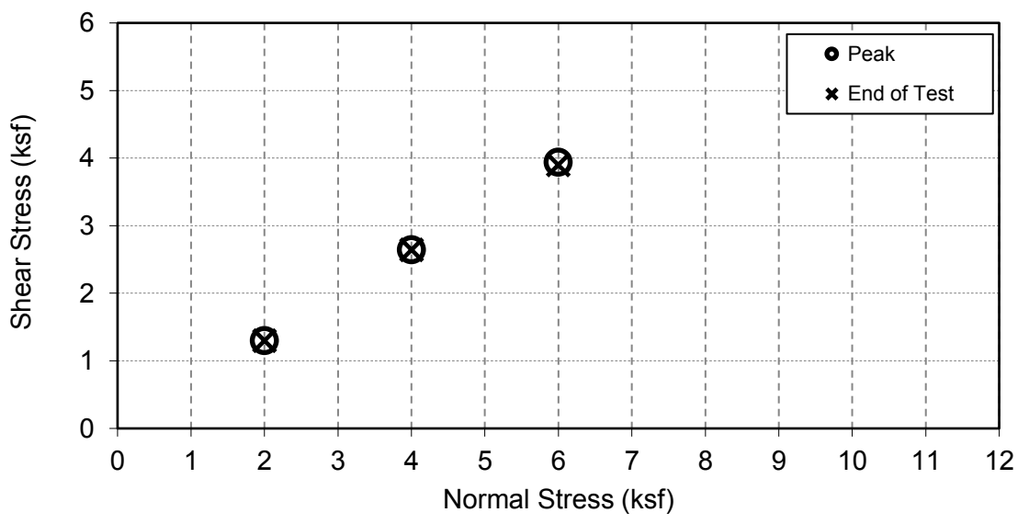
Type of test: **Consolidated, Drained**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.004**	**0.004**	**0.004**

Peak Shear Stress (ksf)	**O**	**1.30**	**2.64**	**3.94**
Shear Stress @ End of Test (ksf)	**X**	**1.30**	**2.64**	**3.90**

Initial Height of Sample (in)	1.000	1.000	1.000
Height of Sample before Shear (in)	0.8767	0.8807	0.8355
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**2.4**	**2.4**	**2.4**
Final Moisture Content (%)	**16.3**	**14.0**	**13.5**
Dry Density (pcf)	**93.9**	**97.8**	**93.5**





HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

DIRECT SHEAR TEST

ASTM D3080

HAI Pr No.: GBA-18-001

Tested by: KL

Checked by: MJ

Date: 4/3/2018

Client: Geobase

Project Name: KP Hesperia Mob

Project Number: C.314.84.10

Boring No.: B-5

Sample No.: -

Sample Type: Undisturbed Ring

Depth (ft): 20-21.5

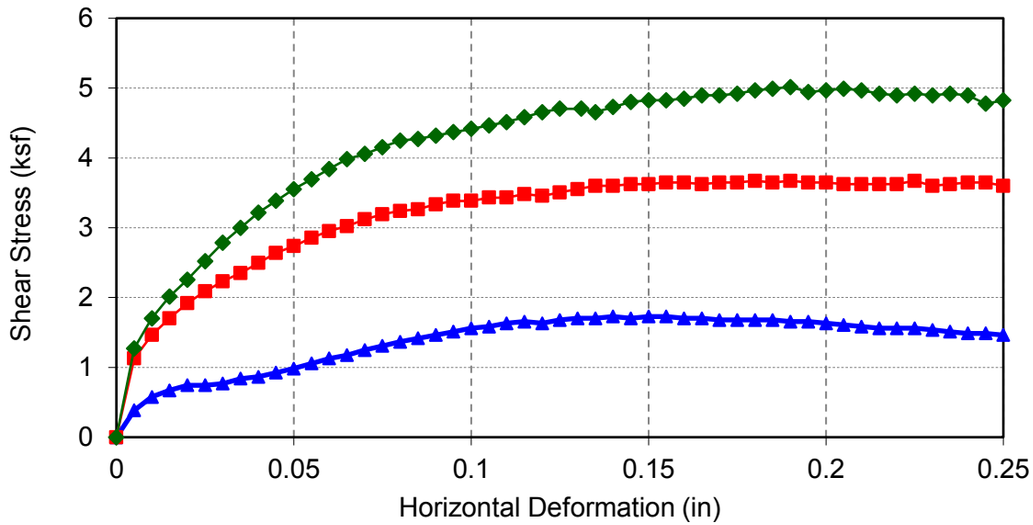
Soil description: Light Brown, Well-Graded Sand with Silt (SW-SM)

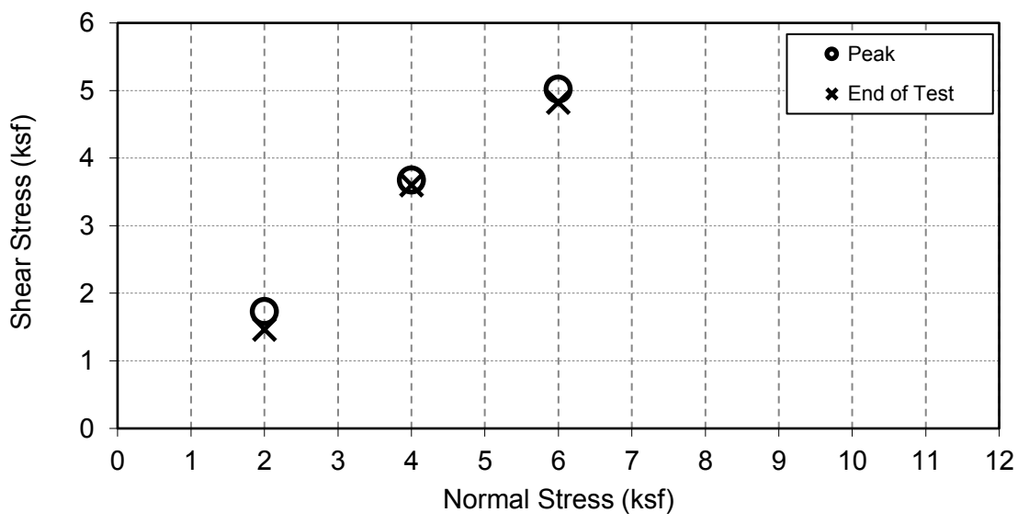
Type of test: **Consolidated, Drained**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.004**	**0.004**	**0.004**

Peak Shear Stress (ksf)	**O**	**1.73**	**3.67**	**5.02**
Shear Stress @ End of Test (ksf)	**X**	**1.46**	**3.60**	**4.82**

Initial Height of Sample (in)	1.000	1.000	1.000
Height of Sample before Shear (in)	0.9651	0.9634	0.9603
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**1.8**	**1.8**	**1.8**
Final Moisture Content (%)	**16.3**	**12.9**	**14.1**
Dry Density (pcf)	**109.7**	**111.0**	**113.8**





HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

DIRECT SHEAR TEST

ASTM D3080

HAI Pr No.: GBA-18-001

Tested by: KL

Checked by: MJ

Date: 4/3/2018

Client: Geobase

Project Name: KP Hesperia Mob

Project Number: C.314.84.10

Boring No.: B-6

Sample No.: -

Sample Type: Undisturbed Ring

Depth (ft): 10-11.5

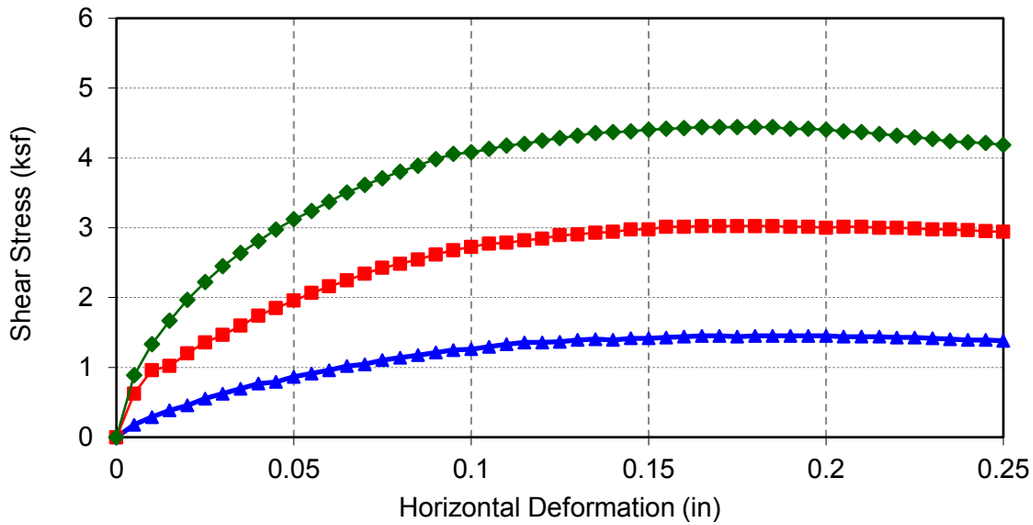
Soil description: Tan Brown, Silty Sand (SM)

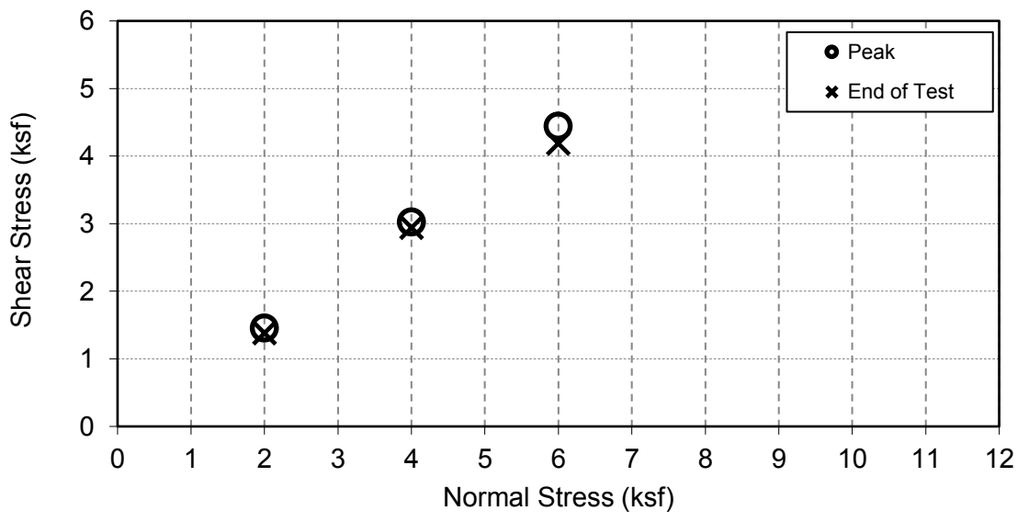
Type of test: **Consolidated, Drained**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.004**	**0.004**	**0.004**

Peak Shear Stress (ksf)	**O**	**1.45**	**3.02**	**4.44**
Shear Stress @ End of Test (ksf)	**X**	**1.38**	**2.94**	**4.19**

Initial Height of Sample (in)	1.000	1.000	1.000
Height of Sample before Shear (in)	0.9444	0.9288	0.9284
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**5.7**	**5.7**	**5.7**
Final Moisture Content (%)	**13.8**	**13.0**	**12.6**
Dry Density (pcf)	**121.5**	**119.7**	**120.9**





HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

DIRECT SHEAR TEST

ASTM D3080

HAI Pr No.: GBA-18-001

Tested by: KL

Checked by: MJ

Date: 4/3/2018

Client: Geobase

Project Name: KP Hesperia Mob

Project Number: C.314.84.10

Boring No.: B-8

Sample No.: -

Sample Type: Undisturbed Ring

Depth (ft): 10-11.5

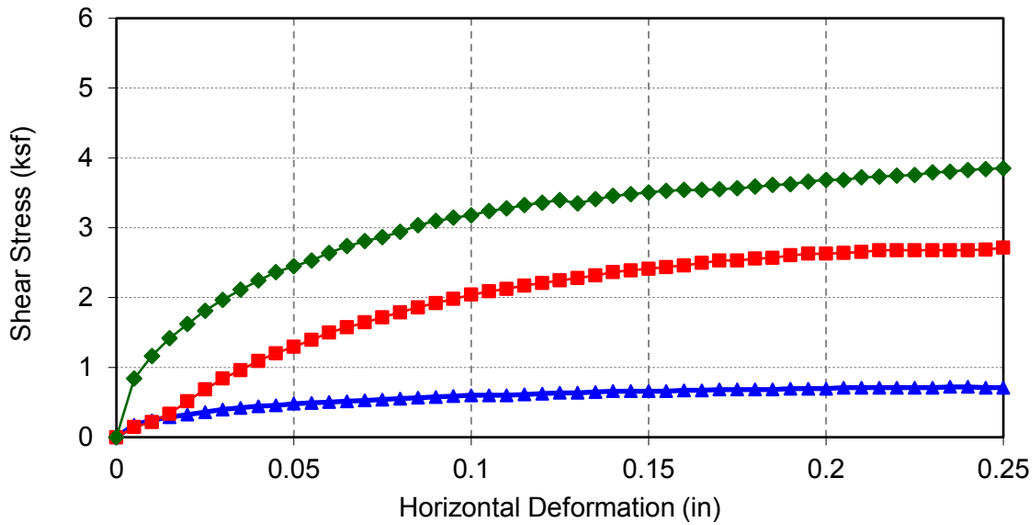
Soil description: Reddish Brown, Silty Sand (SM)

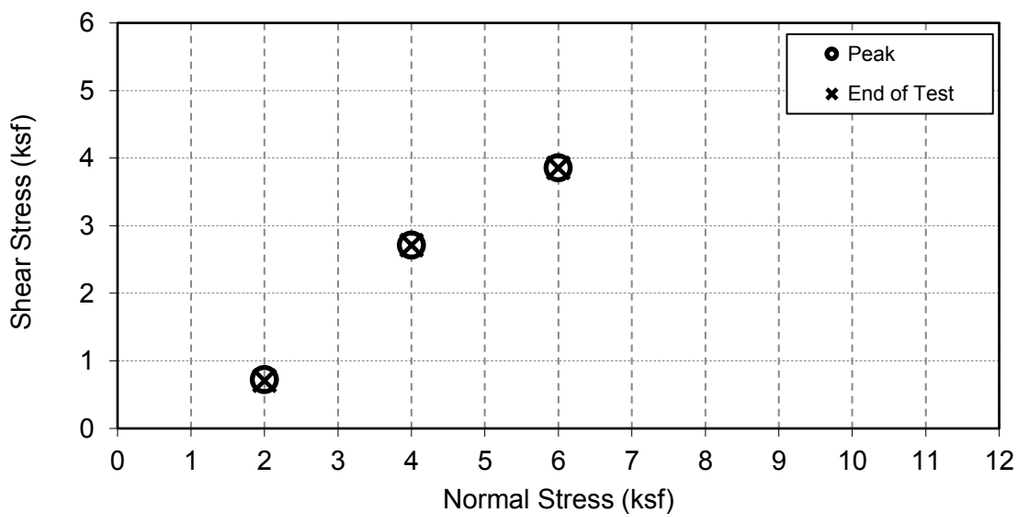
Type of test: **Consolidated, Drained**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.004**	**0.004**	**0.004**

Peak Shear Stress (ksf)	**O**	**0.72**	**2.71**	**3.85**
Shear Stress @ End of Test (ksf)	**X**	**0.71**	**2.71**	**3.85**

Initial Height of Sample (in)	1.000	1.000	1.000
Height of Sample before Shear (in)	0.8945	0.7989	0.7908
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**4.0**	**4.0**	**4.0**
Final Moisture Content (%)	**15.5**	**13.5**	**14.3**
Dry Density (pcf)	**97.6**	**95.8**	**96.7**





HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

DIRECT SHEAR TEST

ASTM D3080

HAI Pr No.: GBA-18-001

Tested by: KL

Checked by: MJ

Date: 4/3/2018

Client: Geobase

Project Name: KP Hesperia Mob

Project Number: C.314.84.10

Boring No.: B-9

Sample No.: -

Sample Type: Undisturbed Ring

Depth (ft): 10-11.5

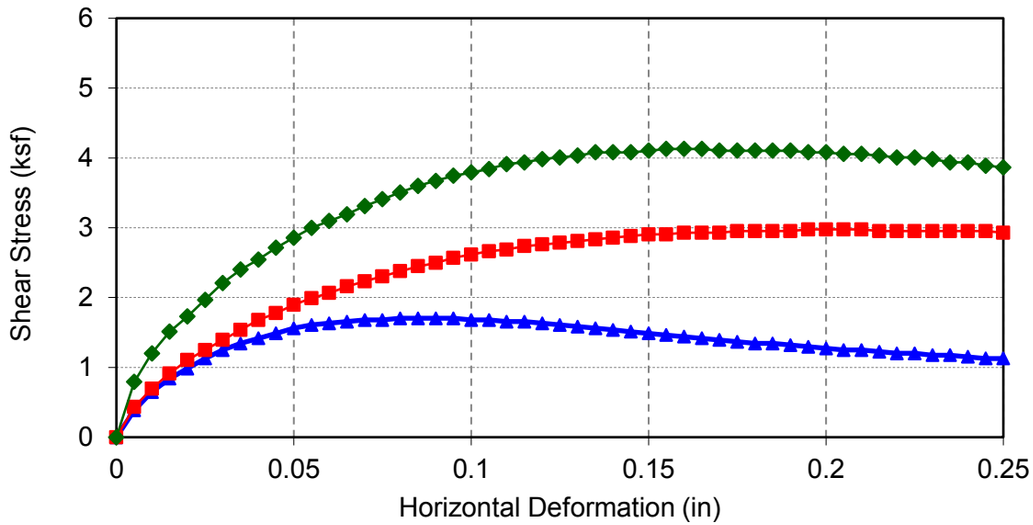
Soil description: Reddish Brown, Silty Clayey Sand (SC-SM)

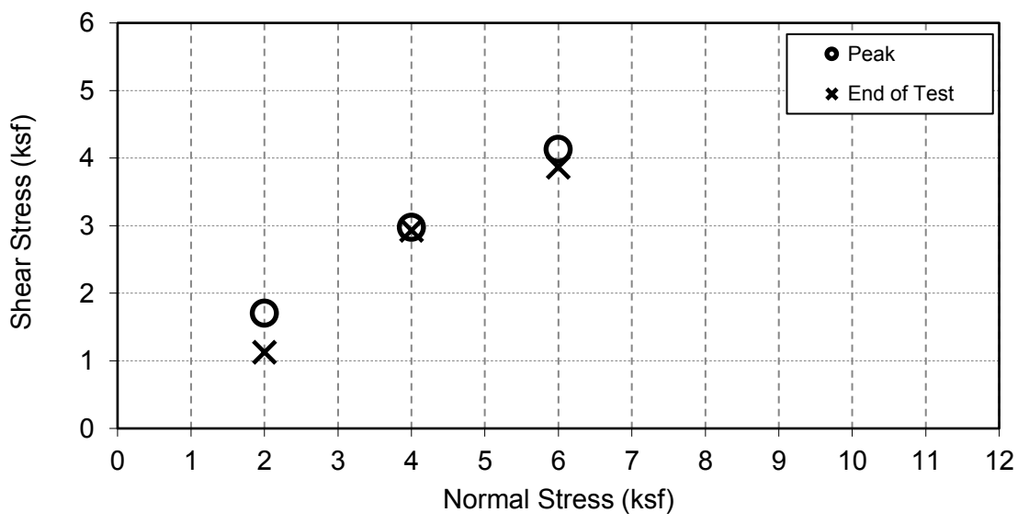
Type of test: **Consolidated, Drained**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.004**	**0.004**	**0.004**

Peak Shear Stress (ksf)	O	**1.70**	**2.98**	**4.13**
Shear Stress @ End of Test (ksf)	X	**1.13**	**2.93**	**3.86**

Initial Height of Sample (in)	1.000	1.000	1.000
Height of Sample before Shear (in)	1.0034	0.9763	0.9325
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**9.5**	**9.5**	**9.5**
Final Moisture Content (%)	**18.0**	**16.1**	**13.9**
Dry Density (pcf)	**118.4**	**119.4**	**119.2**





EXPANSION POTENTIAL
ASTM D4829

SOIL SAMPLE LOCATION (feet)	EXPANSION INDEX	EXPANSION POTENTIAL
B-7 at 0-5.0	0	Very Low
B-1 at 0-5.0 (GEOBASE 2017)	0	Very Low

WATER-SOLUBLE SULFATES
CT. 417

SOIL SAMPLE LOCATION (feet)	SOLUBLE SULFATES PPM	POTENTIAL FOR ATTACK ON CONCRETE
B-4 at 5.0-10.0	201	Moderate
B-6 at 0-5.0	176	Moderate
B-4 at 5.0-10.0 (GEOBASE 2017)	346	Moderate

CORROSIVITY SERIES TEST

SOIL SAMPLE LOCATION (feet)	pH (CT 643)	SOLUBLE CHLORIDE (CT.422) (PPM)	ELEC. RESISTIVITY (CT.643) (OHM-CM)	POTENTIAL FOR ATTACK ON STEEL (SENATOROFF)
B-4 at 5.0-10.0	6.8	76	10,000	Moderately Corrosive
B-6 at 0-5.0	6.9	69	15,000	Mildly Corrosive
B-4 at 5.0-10.0 (GEOBASE, Inc. 2017)	6.7	87	6,200	Moderately Corrosive

R-VALUE
(DEPARTMENT OF TRANSPORTATION, STATE OF CALIFORNIA,
MATERIALS AND RESEARCH TEST METHOD NO. 301)

SOIL SAMPLE LOCATION (feet)	R-VALUE BY EXUDATION
B-4 at 5.0-10.0	70
B-6 at 0-5.0	78
B-11 at 0-5.0	74
B-4 at 5.0-10.0 (GEOBASE, Inc., 2017)	53

MAXIMUM DRY DENSITY/OPTIMUM MOISTURE CONTENT
ASTM D1557

Boring No.	Maximum Dry Density (Pcf)	Optimum Moisture Contents (%)
B-7 at 0-5.0	134.4	6.4
B-4 at 5.0-10.0 (GEOBASE, Inc. 2017)	129.4	7.1

ANAHEIM TEST LABORATORY

3008 ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

TO:

GEOBASE
23362 PERALTA DRIVE, # 4&6
LAGUNA HILLS, CA. 92653

DATE: 04/04/18

P.O. NO: VERBAL

LAB NO: C-1728 1-2

SPECIFICATION: CA-417/422/643

MATERIAL: SOIL

PROJECT #: C3148410
KP Hesperia MOB

ANALYTICAL REPORT

CORROSION SERIES
SUMMARY OF DATA

	PH	SOLUBLE SULFATES per CA. 417 ppm	SOLUBLE CHLORIDES per CA. 422 ppm	MIN. RESISTIVITY per CA. 643 ohm-cm
1) B-4 @ 5'-10'	6.8	201	76	10,000
2) B-6 @ 0-5'	6.9	176	69	15,000

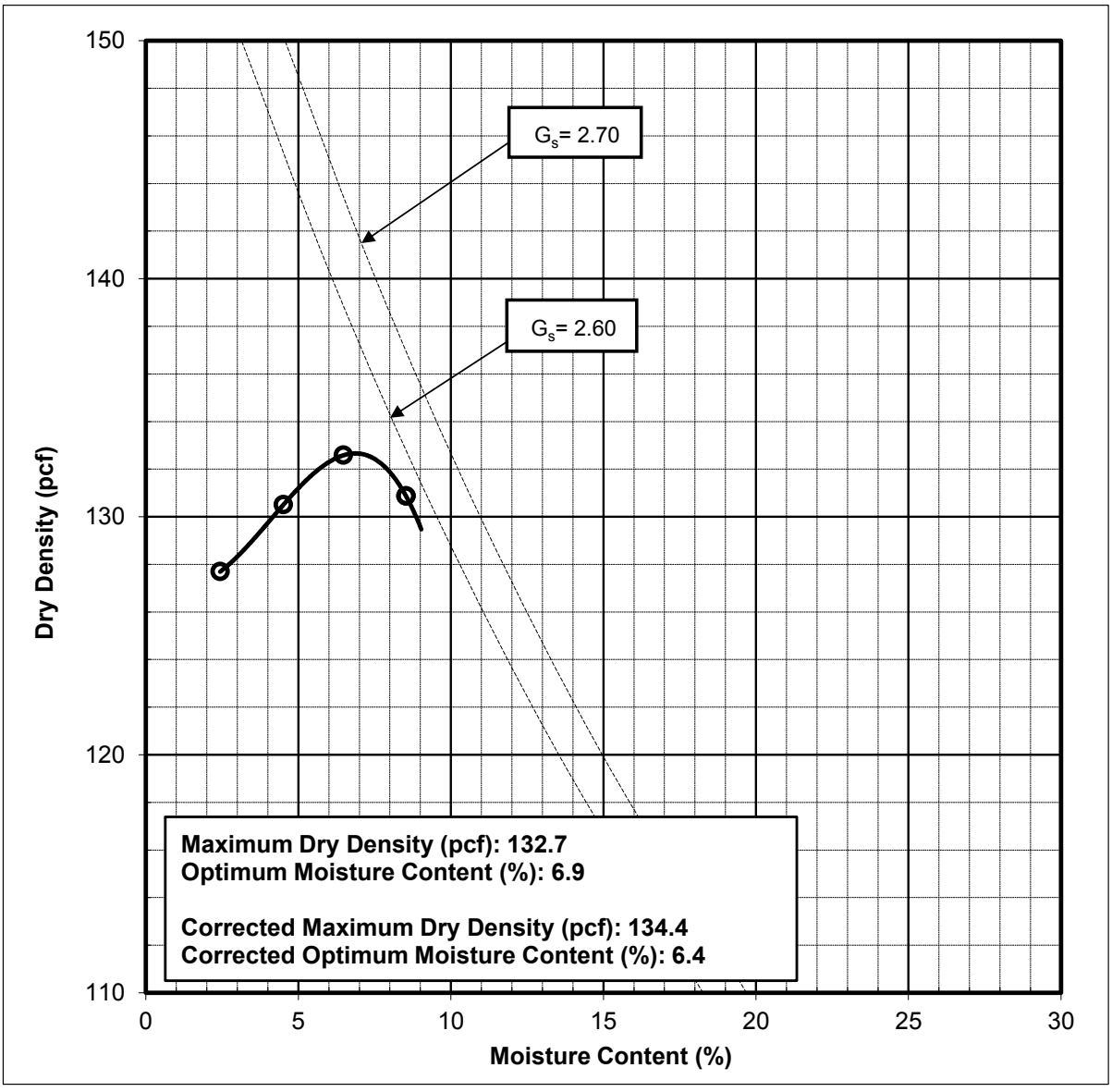
RESPECTFULLY SUBMITTED

WES BRIDGER CHEMIST

COMPACTION CHARACTERISTICS OF SOILS

ASTM D1557

Client :	Geobase	***HAI Project No.:***	GBA-18-001
Project Name:	KP Hesperia Mob	***Tested by:***	GA
Project Number:	C.314.84.10	***Checked by:***	MJ
Boring Number:	B-7	***Date:***	04/11/18
Sample No:	-	***Mold size (in):***	4
Depth (ft) :	0-5	***Procedure:***	A
Soil Description:	Reddish Brown, Silty Sand (SM)	***% Ret. On #4:***	8.2



ANAHEIM TEST LAB, INC

3008 ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

TO:

GEOBASE
23362 PERALTA DRIVE, # 4&6
LAGUNA HILLS, CA. 92653

DATE: 04/05/18

P.O. NO: VERBAL

LAB NO: C-1728 1-3

SPECIFICATION: CT 301

MATERIAL: Soil

PROJECT #: C3148410
KP Hesperia MOB

ANALYTICAL REPORT

"R" VALUE

	BY EXUDATION	BY EXPANSION
1) B-4 @ 5'-10'	70	N/A
2) B-6 @ 0-5'	78	N/A
3) B-11 @ 0-5'	74	N/A

RESPECTFULLY SUBMITTED

WES BRIDGER CHEMIST

APPENDIX D

GEOBASE, INC., 2017, Appendix C

GEOBASE, INC.

Figure C-1

SUMMARY OF LABORATORY TEST RESULTS

PROJECT:	PROJECT NO:	DATE:
KAISER PERMANENTE - Land Purchase High Desert (Hesperia) Medical Office Building, Vacant Parcels 5-9, APN #3057-011-22-0-000 thru 3057-011-26-0-000, Escondido Avenue in the City of Hesperia, California	C.314.84.00	August 28, 2017

BORING	DEPTH (feet)	MOISTURE CONTENT (Percent)	DRY DENSITY (pcf)	ATTERBERG LIMITS			PARTICLE SIZE DISTRIBUTION				OTHER TESTS	DESCRIPTION AND REMARKS
				LL (%)	PL (%)	PI (%)	CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)		
B-1	0-5.0	---									EI = 0, MP, 95 RC	Bulk Sample at 0-5 feet, SP-SM
	5.0-6.5	3					8		92		200 Wash	SC
	10.0-11.5	5	127.3				23		79	3	C, DS	SM
	15.0-16.5	3					14		87		200 Wash	SP-SM
	20.0-21.5	2	114.6				7		93		200 Wash, C, DS	SP-SM
	25.0-26.5	2					9		91		200 Wash	SP-SM
	30.0-31.5	2	111.9				11		89		200 Wash	SC
	35.0-36.5	5					39		61		200 Wash	SM
	40.0-41.5	2					12		83	5		SP-SM
	45.0-46.5	2					8		92		200 Wash	SP-SM
	50.0-51.5	1					9		91		200 Wash	
B-2	5.0-6.5	3	116.9									SM
	7.0-8.5	2										SM
	10.0-11.5	3					83		77		200 Wash	SC
	15.0-16.5	2	95.0				9		93	8		SP-SM
	20.0-21.5	3										SP-SM
	25.0-26.5	2	94.4				6		89	5		SP-SM
	30.0-31.5	2										SM
	35.0-36.5	5					43		57		200 Wash	SC
	40.0-41.5	2										SP-SM
	45.0-46.5	1										SP-SM
	50.0-51.5	3					22		78		200 Wash	SM

GEOBASE, INC.

Figure C-1

SUMMARY OF LABORATORY TEST RESULTS

PROJECT: KAISER PERMANENTE - Land Purchase High Desert (Hesperia) Medical Office Building, Vacant Parcels 5-9, APN #3057-011-22-0-000 thru 3057-011-26-0-000, Escondido Avenue in the City of Hesperia, California

PROJECT NO: C.314.84.00

DATE: August 28, 2017

BORING	DEPTH (feet)	MOISTURE CONTENT (Percent)	DRY DENSITY (pcf)	ATTERBERG LIMITS			PARTICLE SIZE DISTRIBUTION				OTHER TESTS	DESCRIPTION AND REMARKS
				LL (%)	PL (%)	PI (%)	CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)		
B-3	5.0-6.5	5										SM
	7.0-8.5	2	113.9				24		76		200 Wash, C, DS	SM
	10.0-11.5	6		23	14	9						CL
	15.0-16.5	3										SM
	20.0-21.5	3	109.2									SM
	25.0-26.5	6										SM
	30.0-31.5	3	110.4									SP
	35.0-36.5	5										SC
	40.0-41.5	2										SP-SM
	45.0-46.5	2										SP-SM
	50.0-51.5	4										SM
B-4	5.0-6.5	2										SM
	5.0-10.0	---									ph, ER, S04, Ch, RV	Bulk sample: 5-10 ft. SM
	7.0-8.5	3										SM
	10.0-11.5	4	110.9									SM
	15.0-16.5	2	109.1				11		79	10		SP-SM
	20.0-21.5	2										SP-SM
	25.0-26.5	1	110.1									SP-SM
	30.0-31.5	1										SP-SM
	35.0-36.5	1										SP-SM
	40.0-41.5	2										SP-SM

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Hushmand Associates, Inc.
1721 E. Lambert Rd, Ste. B
La Habra, CA 90631

p. (562) 690-3737
w. haieng.com
e. hai@haieng.com

August 14, 2017

Geobase, Inc.
23362 Peralta Dr., Unit 4
Laguna Hills. CA 92653

Attention: Mr. Hai Nguyen, P.E.

SUBJECT: Laboratory Test Results
Geobase Project Name: KP HESPERIA MOB
Geobase Project No.: C3148400
HAI Project No.: GBA-17-002

Dear Mr. Nguyen,

Enclosed are the result of the laboratory testing program conducted on samples from the above referenced project. The testing performed for this program was conducted in general accordance with the following test procedure:

Type of Test	Test Procedure
Moisture Content & Dry Density	ASTM D2937
Moisture Content	ASTM D2216
Percentage Passing #200 Sieve	ASTM D1140
Particle Size Analysis (Sieve only)	ASTM D422
Atterberg Limits	ASTM D4318
Modified Proctor Compaction	ASTM D1557
Direct Shear (Consolidated & Drained)	ASTM D3080
Consolidation	ASTM D2435
Expansion Index	ASTM D4829

Attached are: twelve (12) Moisture Content & Dry Density test results; twenty-nine (29) Moisture Content test results; twelve (12) Percentage passing #200 Sieve test results; five (5) Particle Size Analysis (Sieve only) test results; one (1) Atterberg Limits test result; one (1) Modified Proctor Compaction test results; three (3) 3-point Direct Shear test results; three (3) Consolidation test results with one (1) sample remolding; and one (1) Expansion Index test results.

We appreciate the opportunity to provide our testing services to Geobase, Inc. If you have any questions regarding the test results, please contact us.

Sincerely,

HUSHMAND ASSOCIATES, INC.

Woongju (MJ) Mun, Ph.D.
Senior Staff Engineer / Research Scientist / Lab Manager

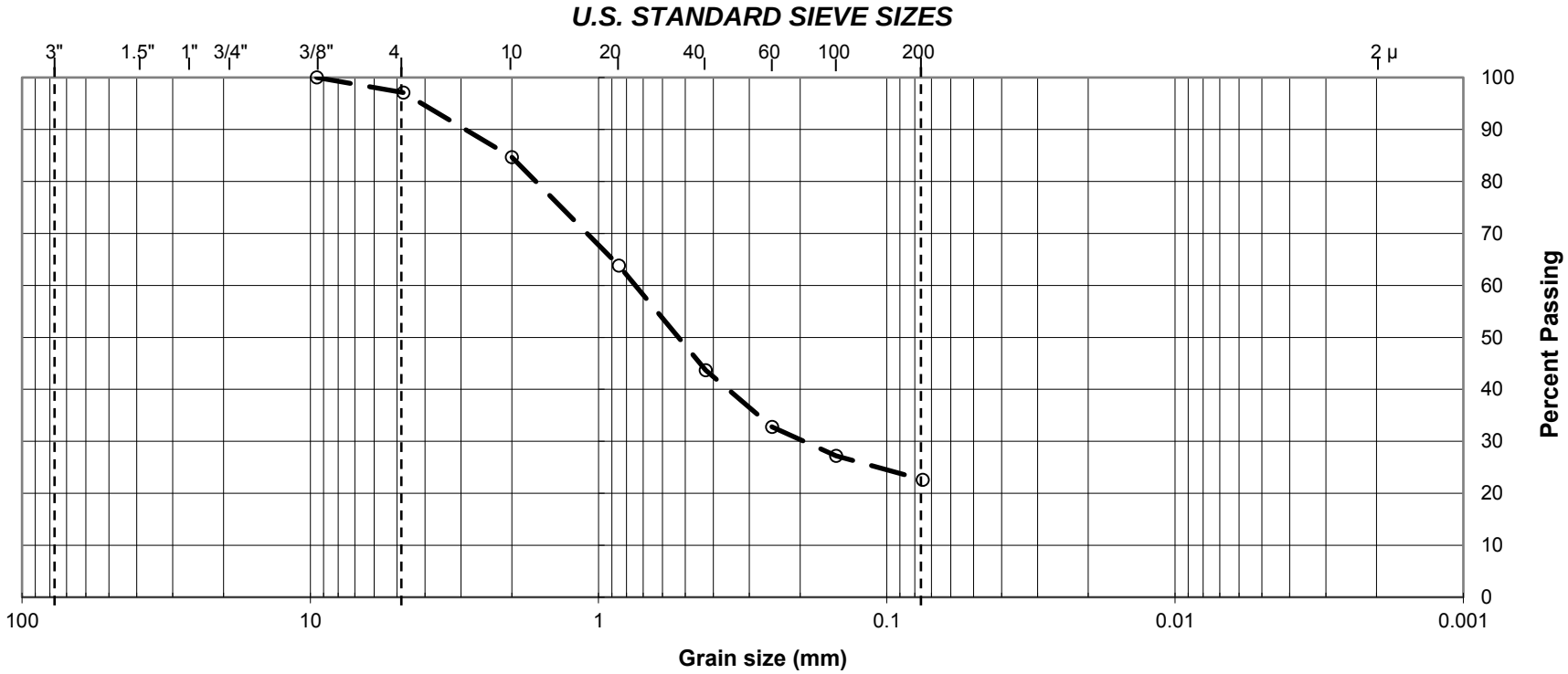
Min Zhang, Ph.D., P.E.
Senior Staff Engineer

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	RH/KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
		Date:	8/9/2017

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-1	---	10-11.5'	○	Orange Brown, Silty Sand (SM)	2.9	74.5	22.6

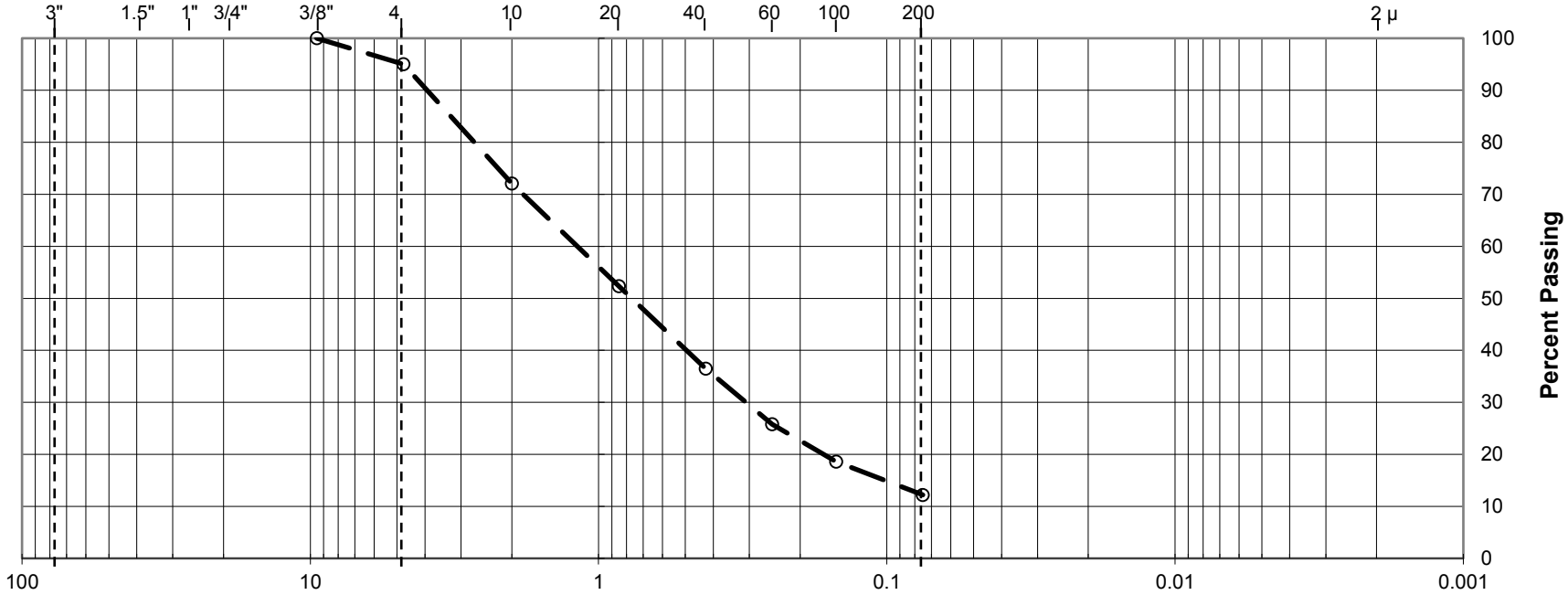
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	RH/KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
		Date:	8/9/2017

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-1	---	40-41.5'	○	Brown, Silty Sand (SM)	5.0	82.8	12.2

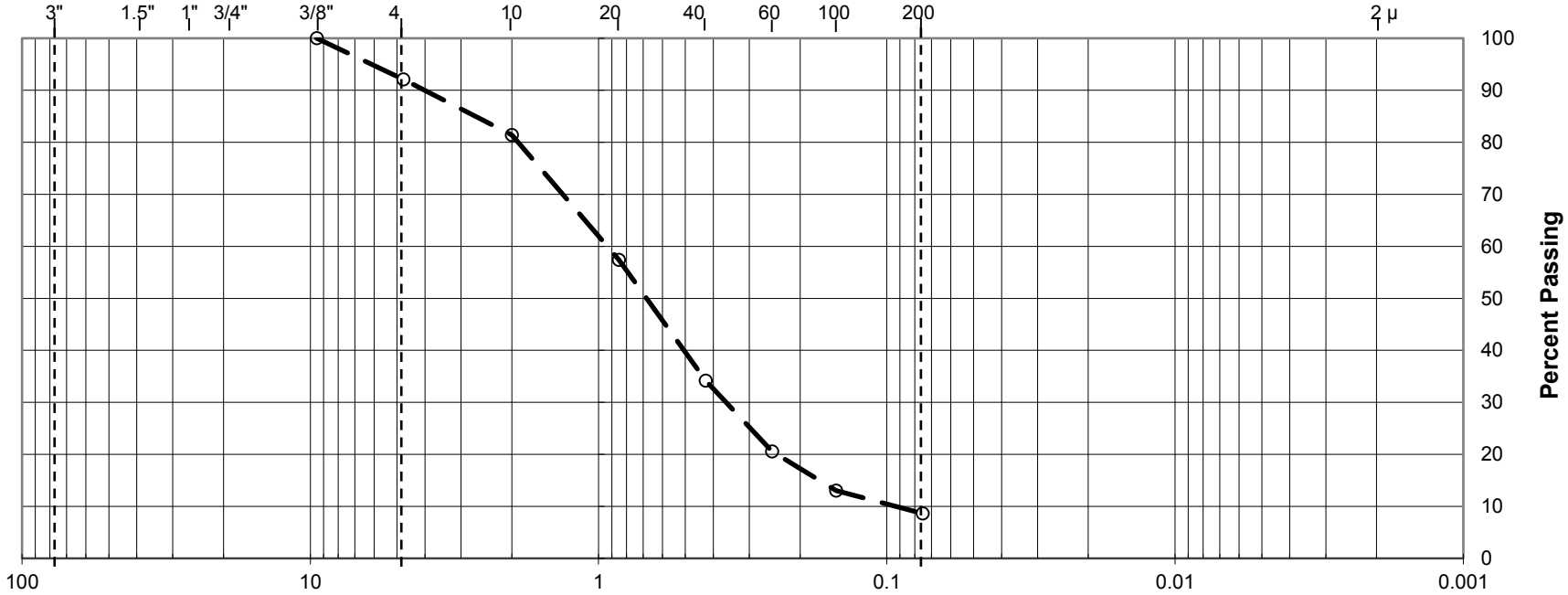
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	RH/KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
		Date:	8/9/2017

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-2	---	15-16.5'	○	Brown, Silty Sand (SM)	7.9	83.5	8.6

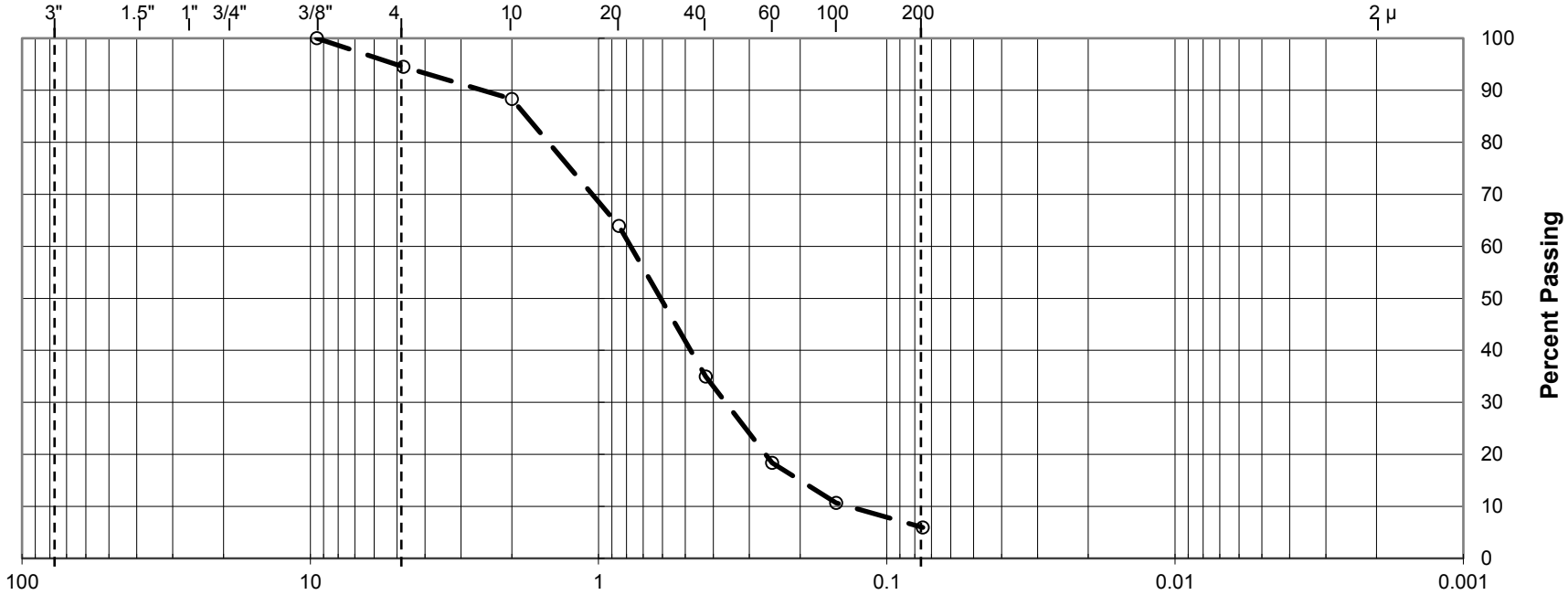
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	RH/KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
		Date:	8/9/2017

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-2	---	25-26.5'	○	Light Brown, Poorly Graded Sand with Silt (SP-SM)	5.5	88.6	5.9

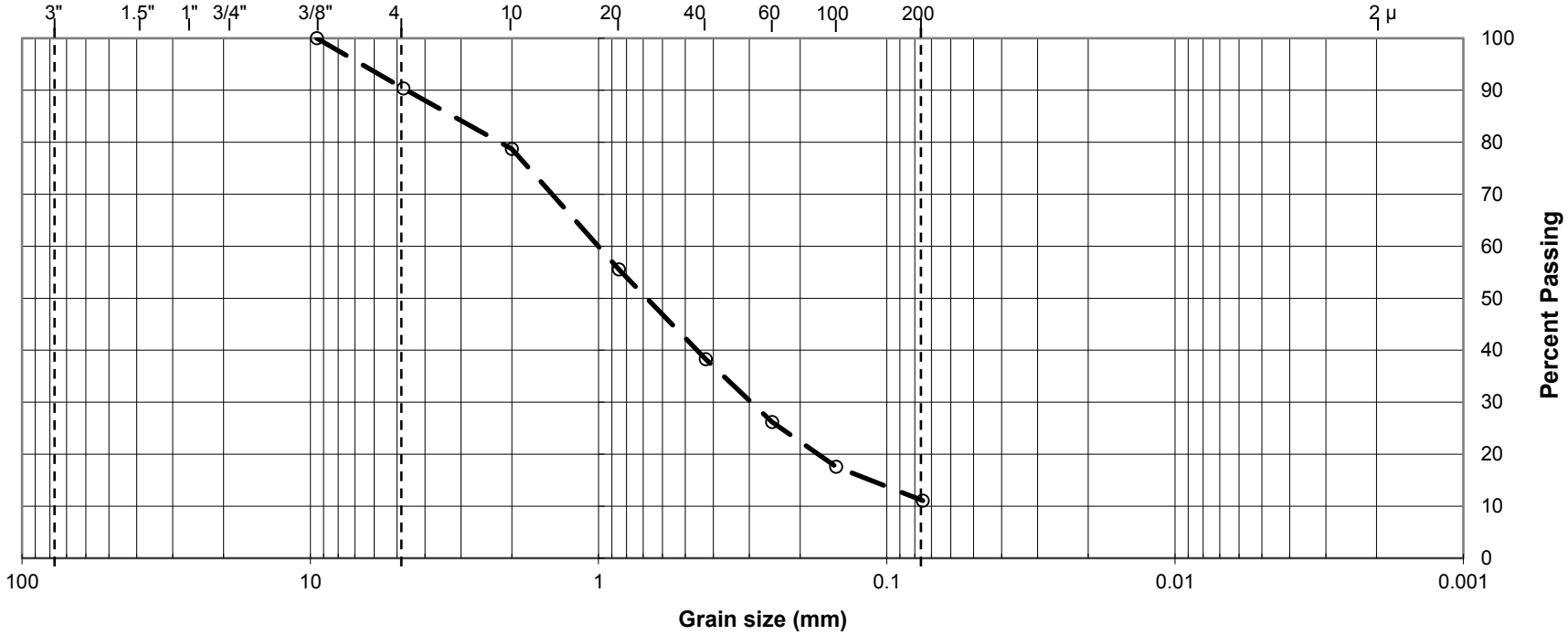
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

PARTICLE-SIZE ANALYSIS OF SOILS
ASTM D6913

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	RH/KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
		Date:	8/9/2017

COBBLES	GRAVEL		SAND			SILT AND CLAY
	Coarse	Fine	Coarse	Medium	Fine	

U.S. STANDARD SIEVE SIZES



Boring No.	Sample No.	Depth (ft)	Symbol	USCS	% Gravel	% Sand	% Fines
B-4	---	15-16.5'	○	Light Brown, Silty Sand (SM)	9.7	79.3	11.1

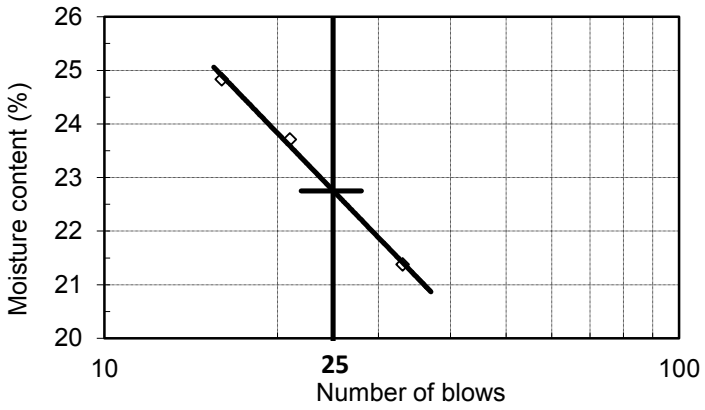
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

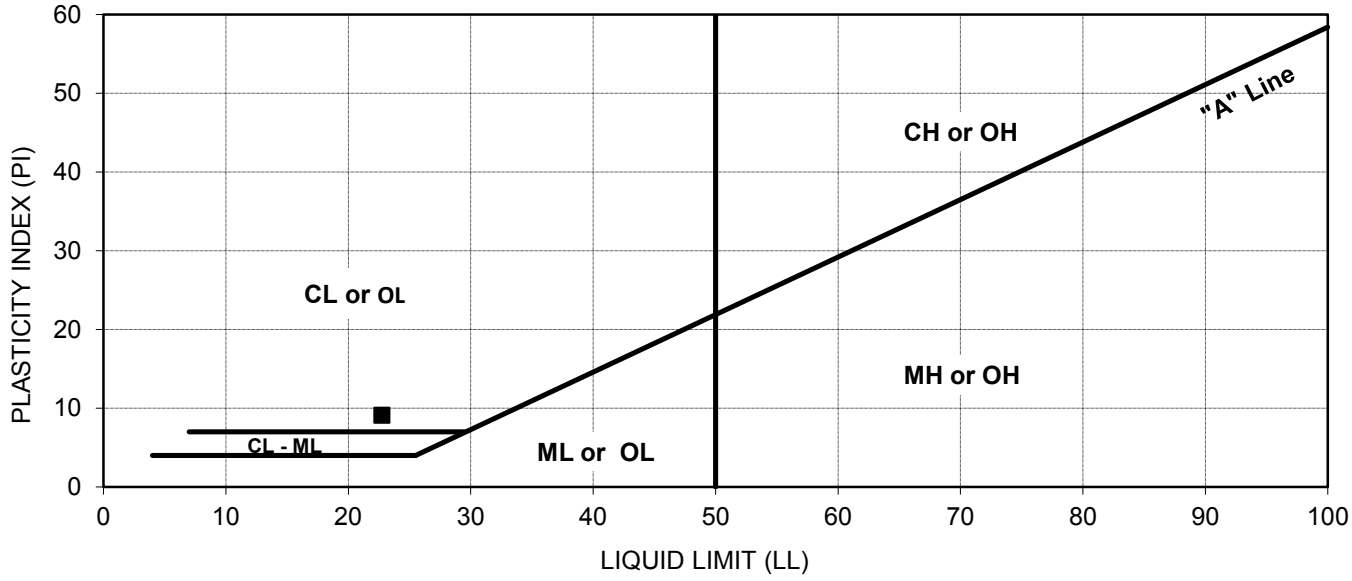
ATTERBERG LIMITS
ASTM D 4318

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP HesPeria Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-3	***Date:***	8/9/2017
Sample No.:	SPT @ 10-11.5'		
Soil Description:	Brown, Clayey Sand (SC), (Less than 50% passing # 200 sieve)		

Test		LL	LL	LL	PL	PL
Tare No.		3	7	11	H	32
No. of blows		**33**	**21**	**16**		
Wt. of wet soil + tare	(g)	22.59	24.20	23.86	10.76	10.21
Wt. of dry soil + tare	(g)	20.57	21.67	21.25	9.59	9.13
Wt. of tare	(g)	11.12	11.00	10.74	1.12	1.13
Water content	**(%)**	**21.4**	**23.7**	**24.8**	**13.8**	**13.5**

Liquid Limit (LL)	**23**
Plastic Limit (PL)	**14**
Plasticity Index (PI)	**9**
USCS	**CL**





EXPANSION INDEX

ASTM D4829

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project Number:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-1	***Date:***	8/2/2017
Sample No.:	Bulk		
Depth (ft):	0-5	***Apparatus #:***	1
Soil Description:	Brown, Silty Sand (SM)		

INITIAL SPECIMEN INFO		
Wt. of wet soil + cont.	227.77	g
Wt. of dry soil + cont.	214.65	g
Wt. of container	21.64	g
Wt. of water	13.12	g
Wt. of dry soil	193.01	g
Moisture Content	**6.80**	**%**
Wt. of wet soil + ring	637.02	g
Wt. of ring	206.92	g
Wt. of wet soil	430.10	g
Wet density of soil	130.3	pcf
Dry density of soil	122.0	pcf
Specific gravity of soil	2.68	
Saturation	**49.2**	**%**

FINAL SPECIMEN INFO		
Wt. of wet soil + cont.	653.58	g
Wt. of dry soil + cont.	608.61	g
Wt. of container	206.92	g
Wt. of water	44.97	g
Wt. of dry soil	401.69	g
Moisture Content	**11.2**	**%**

Date & time	Elapsed time (min)	Dial Reading	Δh, Expansion
8/2/2017 9:23	0	0	-
8/2/2017 9:33	10	-0.0008	-
Add distilled water to sample			
8/3/2017 9:23	1440	-0.0008	0.0000

Expansion Index = 0

CONSOLIDATION TEST
ASTM D2435

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

Client :	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-1	***Date:***	8/11/2017
Sample No.:	B		
Type of Sample:	Remold to 95% of Dry Density		
Depth (ft):	0-5		
Soil Description:	Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
159.85	164.36	148.97

			Initial Conditions	Final Conditions
Height	H	(in)	1.060	1.029
Height of Solids	Hs	(in)	0.740	0.740
Height of Water	Hw	(in)	0.145	0.205
Height of Air	Ha	(in)	0.175	0.084
Dry Density		**(pcf)**	**116.7**	**120.2**
Water Content		**(%)**	**7.3**	**10.3**
Saturation		**(%)**	**45.2**	**70.8**

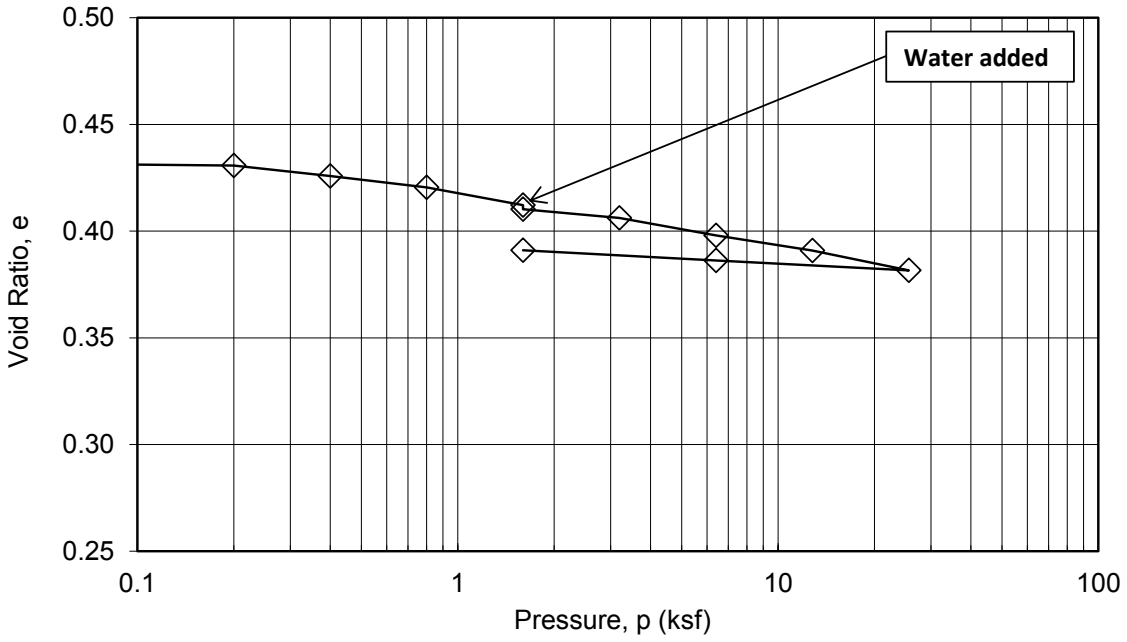
* Saturation is calcualted based on Gs=2.68

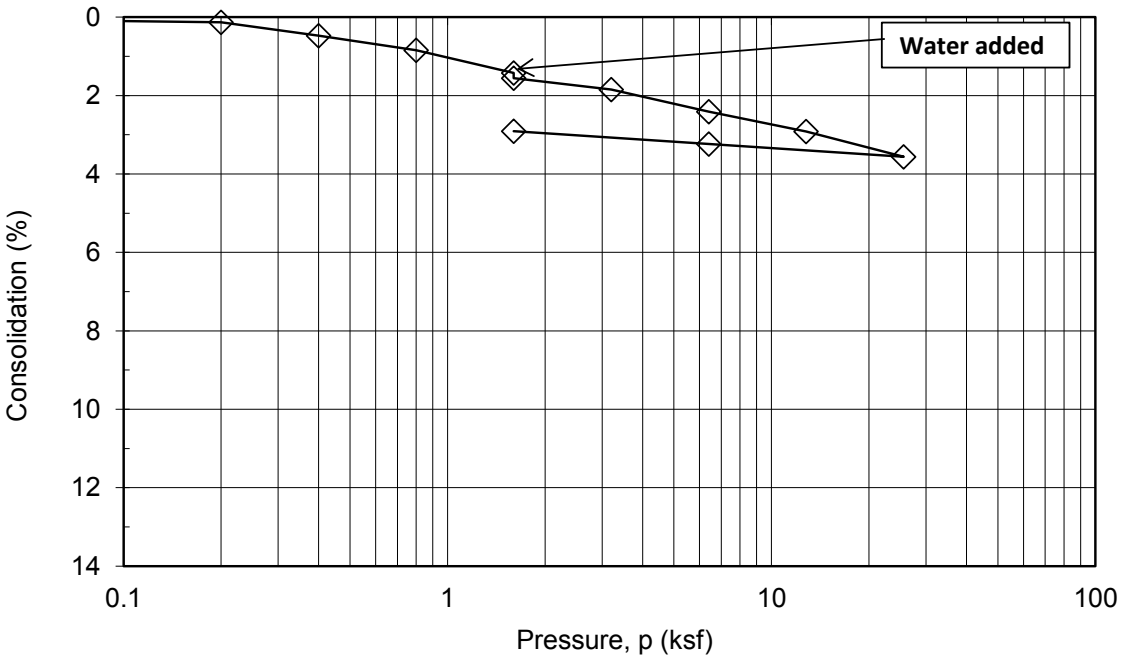
Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0600	0.320	0.433	0			
0.2	0.0014	1.0586	0.319	0.431	0.1	1.0E-02	7.0E-03	
0.4	0.0050	1.0550	0.315	0.426	0.5	2.4E-02	1.7E-02	
0.8	0.0089	1.0511	0.311	0.421	0.8	1.3E-02	9.4E-03	
1.6	0.0151	1.0449	0.305	0.412	1.4	1.0E-02	7.4E-03	
1.6	0.0165	1.0435	0.304	0.410	1.6			Water Added
3.2	0.0196	1.0405	0.301	0.406	1.8	2.6E-03	1.8E-03	
6.4	0.0256	1.0344	0.294	0.398	2.4	2.6E-03	1.8E-03	
12.8	0.0309	1.0291	0.289	0.391	2.9	1.1E-03	8.0E-04	
25.6	0.0378	1.0223	0.282	0.382	3.6	7.2E-04	5.2E-04	
6.4	0.0343	1.0257	0.286	0.386	3.2			Unloaded
1.6	0.0308	1.0292	0.289	0.391	2.9			

CONSOLIDATION TEST

ASTM D2435

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-1	***Date:***	08/11/17
Sample No.:	B		
Type of Sample:	Remold to 95% of Dry Density		
Depth (ft):	0-5		
Soil Description:	Brown, Silty Sand (SM)		





CONSOLIDATION TEST
ASTM D2435

Client :	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-1	***Date:***	8/11/2017
Sample No.:	R		
Type of Sample:	Undisturbed Ring		
Depth (ft):	10-11.5		
Soil Description:	Orange Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
167.23	175.55	158.76

			Initial Conditions	Unload
Height	H	(in)	1.021	0.960
Height of Solids	Hs	(in)	0.789	0.789
Height of Water	Hw	(in)	0.113	0.223
Height of Air	Ha	(in)	0.120	0.000
Dry Density		**(pcf)**	**129.2**	**137.4**
Water Content		**(%)**	**5.3**	**10.6**
Saturation		**(%)**	**48.5**	**100.0**

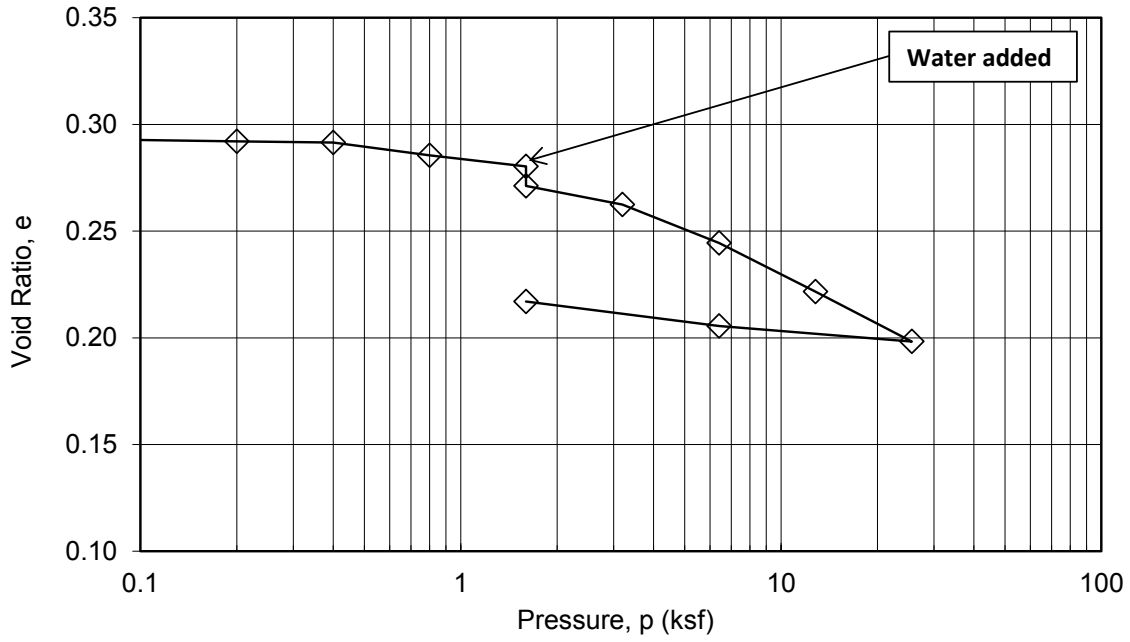
* Saturation is calcualted based on Gs=2.68

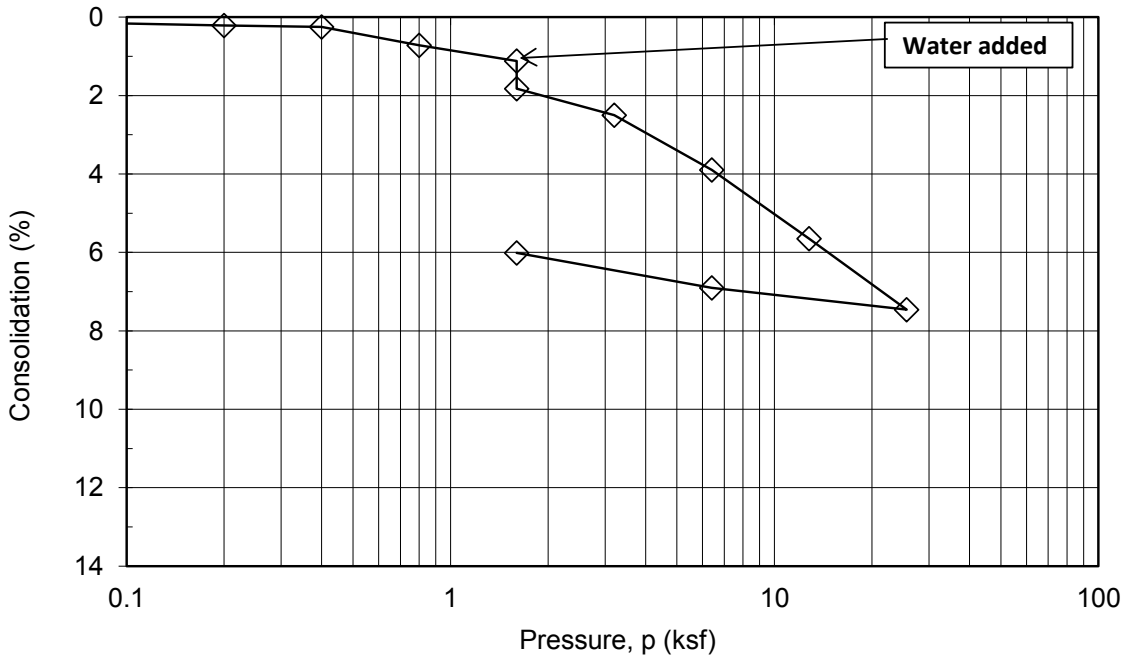
Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0210	0.232	0.295	0			
0.2	0.0021	1.0189	0.230	0.292	0.2	1.4E-02	1.1E-02	
0.4	0.0026	1.0184	0.230	0.292	0.3	2.9E-03	2.2E-03	
0.8	0.0074	1.0137	0.225	0.285	0.7	1.5E-02	1.2E-02	
1.6	0.0114	1.0096	0.221	0.280	1.1	6.4E-03	5.0E-03	
1.6	0.0186	1.0024	0.214	0.271	1.8			Water Added
3.2	0.0256	0.9955	0.207	0.262	2.5	5.5E-03	4.4E-03	
6.4	0.0398	0.9813	0.193	0.244	3.9	5.6E-03	4.5E-03	
12.8	0.0577	0.9633	0.175	0.222	5.7	3.6E-03	2.9E-03	
25.6	0.0762	0.9449	0.156	0.198	7.5	1.8E-03	1.5E-03	
6.4	0.0705	0.9506	0.162	0.205	6.9			Unloaded
1.6	0.0614	0.9596	0.171	0.217	6.0			

CONSOLIDATION TEST

ASTM D2435

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-1	***Date:***	08/11/17
Sample No.:	R		
Type of Sample:	Undisturbed Ring		
Depth (ft):	10-11.5		
Soil Description:	Orange Brown, Silty Sand (SM)		





CONSOLIDATION TEST
ASTM D2435

Client :	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-1	***Date:***	8/11/2017
Sample No.:	R		
Type of Sample:	Undisturbed Ring		
Depth (ft):	20-21.5		
Soil Description:	Tan Brown, Poorly Graded Sand with Silt (SP-SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
140.40	154.30	136.14

			Initial Conditions	Unload
Height	H	(in)	1.060	0.988
Height of Solids	Hs	(in)	0.676	0.676
Height of Water	Hw	(in)	0.057	0.242
Height of Air	Ha	(in)	0.327	0.070
Dry Density		**(pcf)**	**106.7**	**115.8**
Water Content		**(%)**	**3.1**	**13.3**
Saturation		**(%)**	**14.8**	**77.5**

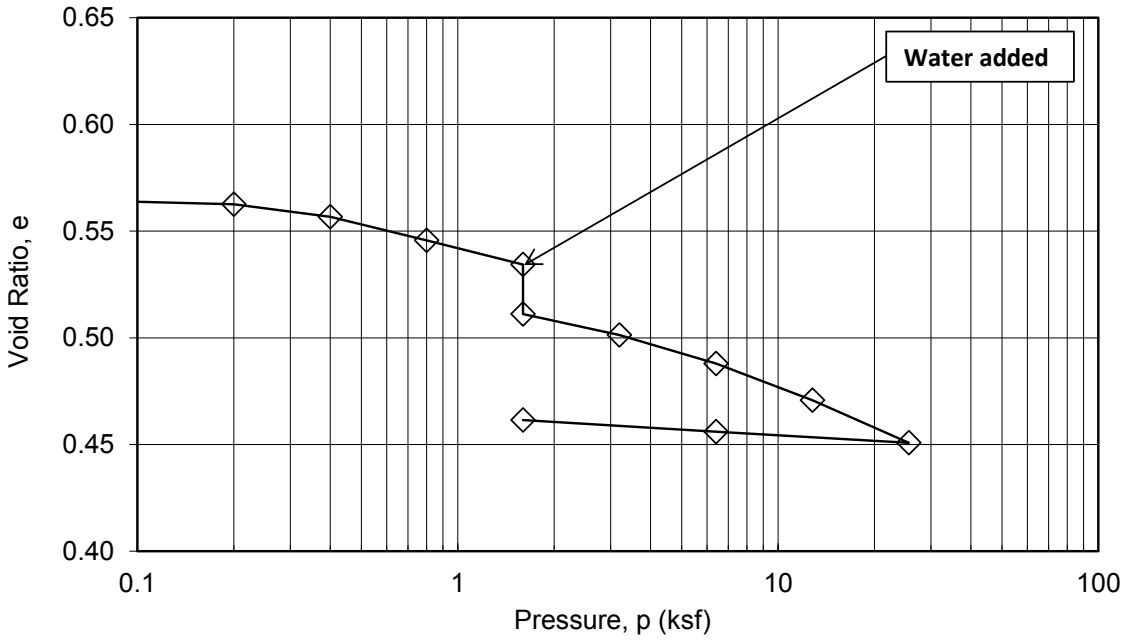
* Saturation is calcualted based on Gs=2.68

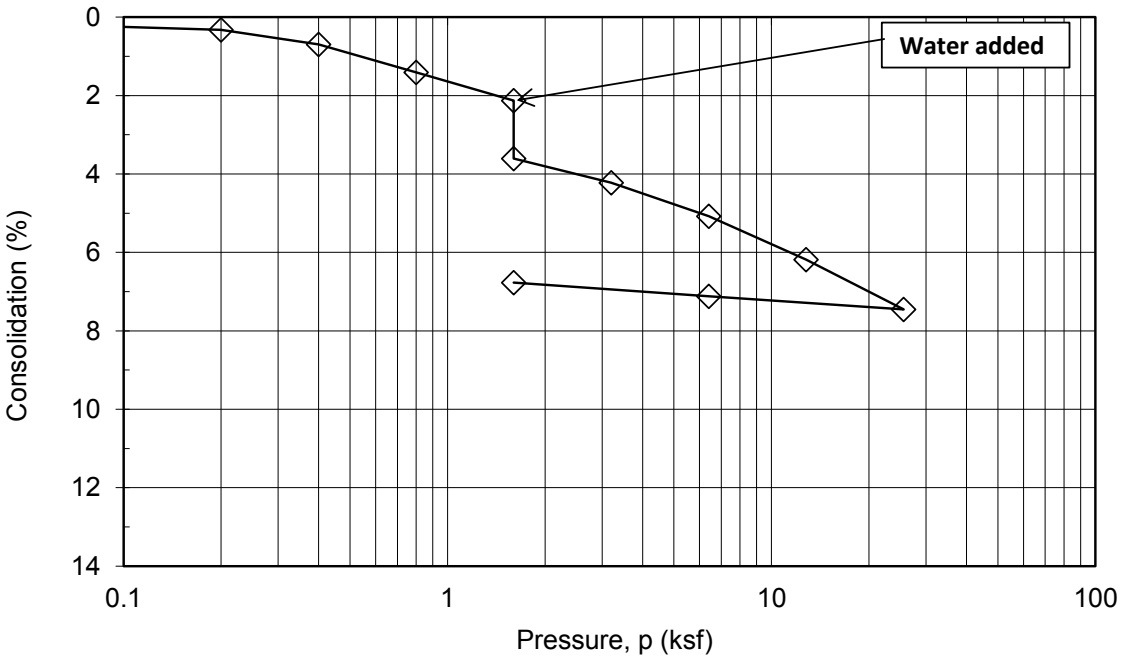
Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0600	0.384	0.568	0			
0.2	0.0034	1.0566	0.380	0.563	0.3	2.7E-02	1.7E-02	
0.4	0.0074	1.0527	0.376	0.557	0.7	2.9E-02	1.9E-02	
0.8	0.0149	1.0451	0.369	0.546	1.4	2.8E-02	1.8E-02	
1.6	0.0226	1.0375	0.361	0.534	2.1	1.4E-02	9.2E-03	
1.6	0.0382	1.0218	0.346	0.511	3.6			Water Added
3.2	0.0448	1.0152	0.339	0.501	4.2	6.1E-03	4.1E-03	
6.4	0.0539	1.0062	0.330	0.488	5.1	4.2E-03	2.8E-03	
12.8	0.0656	0.9945	0.318	0.471	6.2	2.7E-03	1.8E-03	
25.6	0.0790	0.9810	0.305	0.451	7.5	1.6E-03	1.1E-03	
6.4	0.0755	0.9846	0.308	0.456	7.1			Unloaded
1.6	0.0718	0.9883	0.312	0.462	6.8			

CONSOLIDATION TEST

ASTM D2435

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-1	***Date:***	08/11/17
Sample No.:	R		
Type of Sample:	Undisturbed Ring		
Depth (ft):	20-21.5		
Soil Description:	Tan Brown, Poorly Graded Sand with Silt (SP-SM)		





CONSOLIDATION TEST
ASTM D2435

Client :	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-3	***Date:***	8/11/2017
Sample No.:	R		
Type of Sample:	Undisturbed Ring		
Depth (ft):	7-8.5'		
Soil Description:	Brown, Silty Sand (SM)		

Initial Total Weight (g)	Final Total Weight (g)	Final Dry Weight (g)
137.81	149.85	133.41

			Initial Conditions	Unload
Height	H	(in)	1.018	0.897
Height of Solids	Hs	(in)	0.663	0.663
Height of Water	Hw	(in)	0.059	0.219
Height of Air	Ha	(in)	0.297	0.015
Dry Density		**(pcf)**	**108.9**	**137.8**
Water Content		**(%)**	**3.3**	**12.3**
Saturation		**(%)**	**16.5**	**93.5**

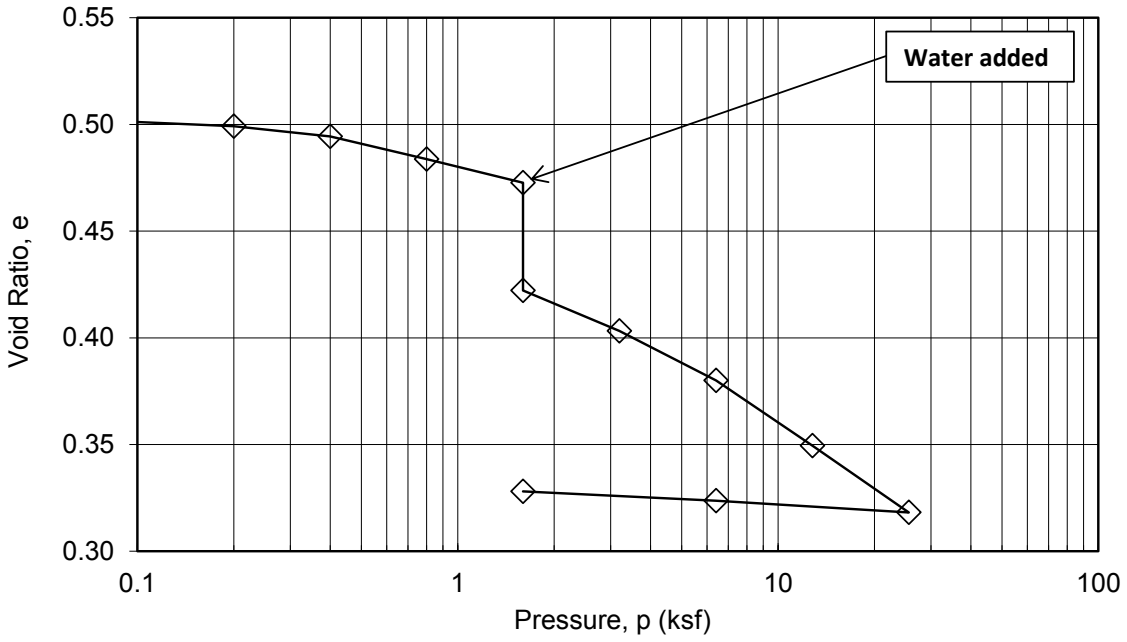
* Saturation is calcualted based on Gs=2.68

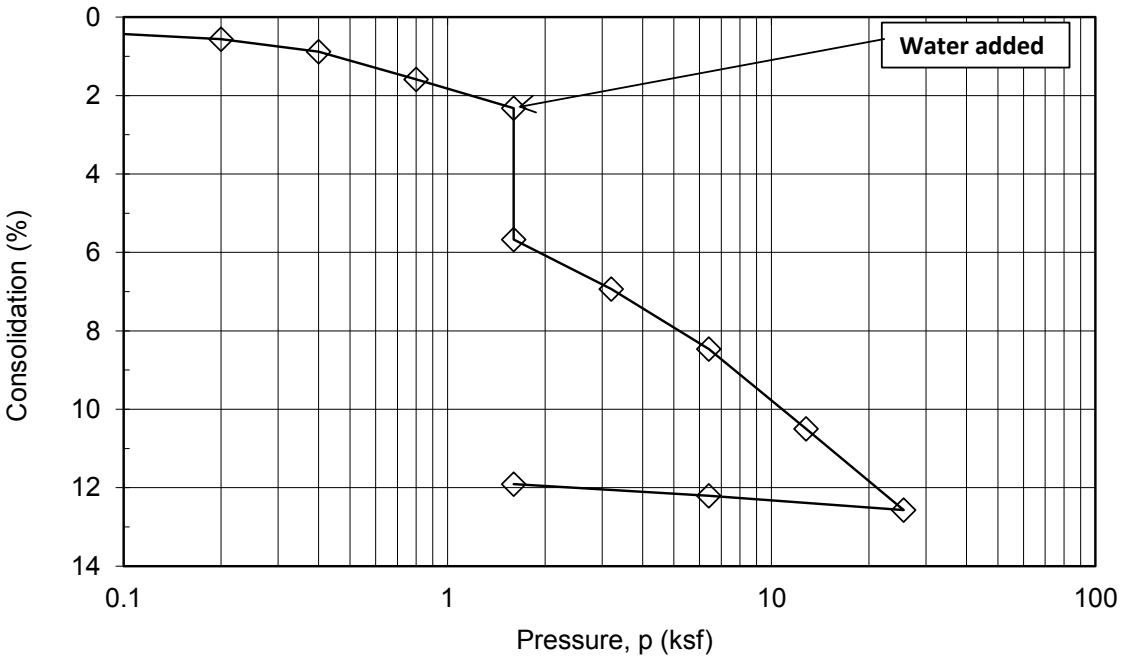
Load (ksf)	δH (in)	H (in)	Voids (in)	e	Consol. (%)	a_v (ksf^{-1})	M_v (ksf^{-1})	Comment
0.01	-------	1.0180	0.355	0.536	0			
0.2	0.0057	1.0123	0.350	0.528	0.6	4.6E-02	3.0E-02	
0.4	0.0090	1.0090	0.346	0.523	0.9	2.5E-02	1.6E-02	
0.8	0.0162	1.0019	0.339	0.512	1.6	2.7E-02	1.8E-02	
1.6	0.0237	0.9944	0.332	0.501	2.3	1.4E-02	9.4E-03	
1.6	0.0577	0.9603	0.298	0.449	5.7			Water Added
3.2	0.0706	0.9475	0.285	0.430	6.9	1.2E-02	8.5E-03	
6.4	0.0862	0.9319	0.269	0.406	8.5	7.4E-03	5.2E-03	
12.8	0.1069	0.9112	0.249	0.375	10.5	4.9E-03	3.5E-03	
25.6	0.1280	0.8901	0.227	0.343	12.6	2.5E-03	1.9E-03	
6.4	0.1243	0.8938	0.231	0.349	12.2			Unloaded
1.6	0.1213	0.8968	0.234	0.353	11.9			

CONSOLIDATION TEST

ASTM D2435

Client:	Geobase	***HAI Project No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-3	***Date:***	08/11/17
Sample No.:	R		
Type of Sample:	Undisturbed Ring		
Depth (ft):	7-8.5'		
Soil Description:	Brown, Silty Sand (SM)		





DIRECT SHEAR TEST

ASTM D3080

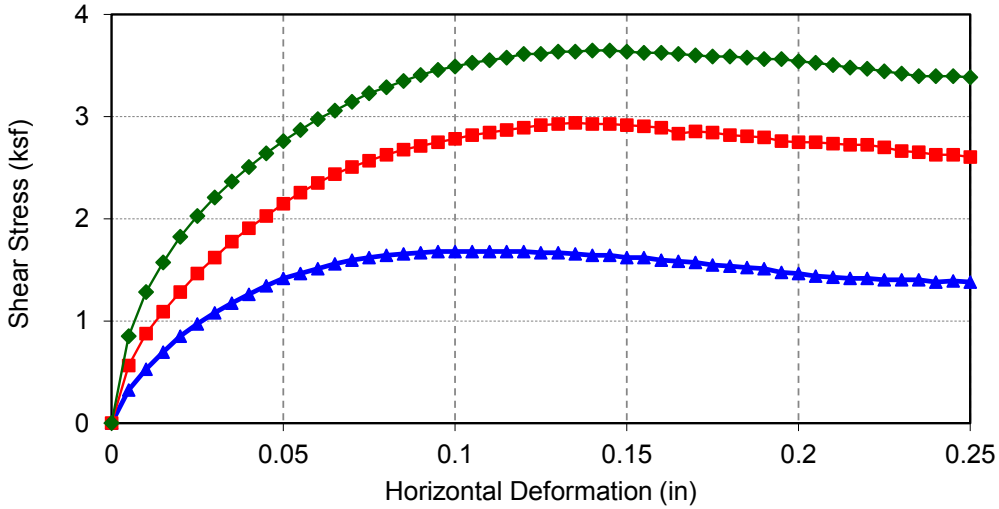
HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

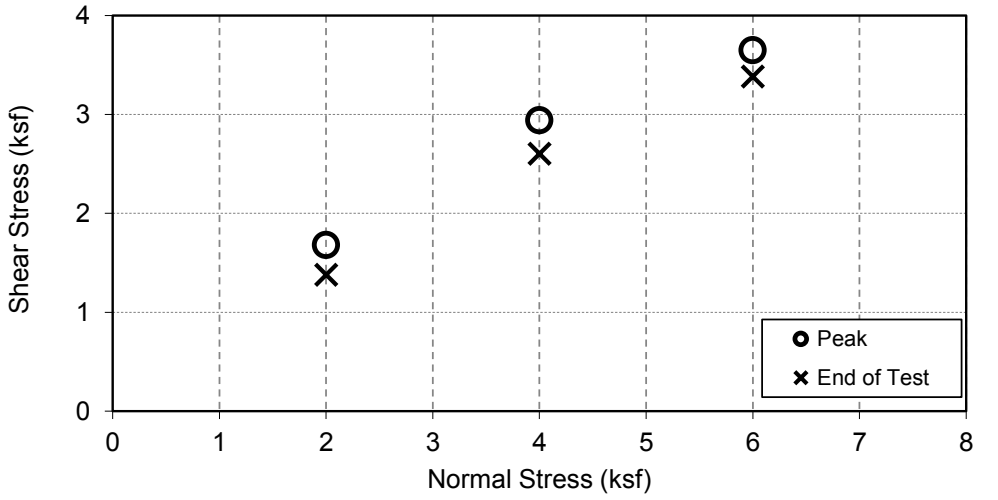
Client:	Geobase	***HAI Pr No.:***	GBA-17-002
Project Name:	KP Hesperia Mob	***Tested by:***	KL
Project Number:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No.:	B-1	***Date:***	8/9/2017
Sample No.:	R		
Sample type:	Undristributed Ring		
Depth (ft):	10-11.5		
Soil description:	Orange Borwn, Silty Sand (SM)		
Type of test:	**CD**		

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.002**	**0.002**	**0.002**

Peak Shear Stress (ksf)	**O**	**1.68**	**2.94**	**3.65**
Shear Stress @ End of Test (ksf)	**X**	**1.38**	**2.60**	**3.38**

Initial Height of Sample (in)	1.030	1.038	1.070
Height of Sample before Shear (in)	1.0059	1.0030	1.0380
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**5.4**	**5.4**	**5.4**
Final Moisture Content (%)	**14.7**	**13.2**	**13.8**
Dry Density (pcf)	**117.2**	**116.1**	**115.1**





DIRECT SHEAR TEST

ASTM D3080

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

HAI Pr No.: GBA-17-002

Client: Geobase
Project Name: KP Hesperia Mob
Project Number: C.314.84.00
Boring No.: B-1
Sample No.: R
Sample type: Undristributed Ring
Depth (ft): 20-21.5
Soil description: Tan Brown, Poorly Graded Sand with Silt (SP-SM)

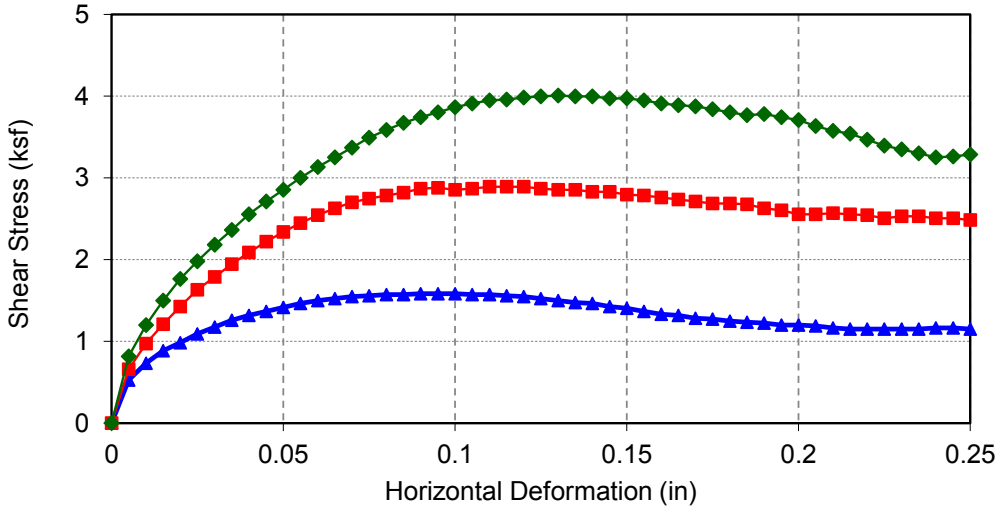
Tested by: KL
Checked by: MJ/MZ
Date: 8/9/2017

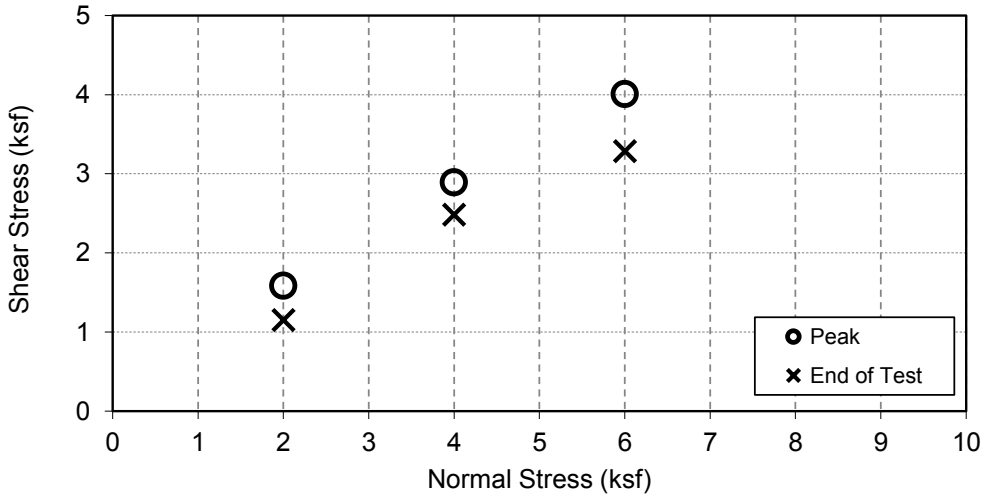
Type of test: **CD**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.002**	**0.002**	**0.002**

Peak Shear Stress (ksf)	**O**	**1.58**	**2.89**	**4.01**
Shear Stress @ End of Test (ksf)	**X**	**1.15**	**2.48**	**3.29**

Initial Height of Sample (in)	1.039	1.029	1.055
Height of Sample before Shear (in)	1.0060	0.9880	1.0078
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**1.9**	**1.9**	**1.9**
Final Moisture Content (%)	**16.7**	**15.5**	**17.4**
Dry Density (pcf)	**104.0**	**110.1**	**104.9**





DIRECT SHEAR TEST

ASTM D3080

HUSHMAND ASSOCIATES, INC.
Geotechnical and Earthquake Engineers

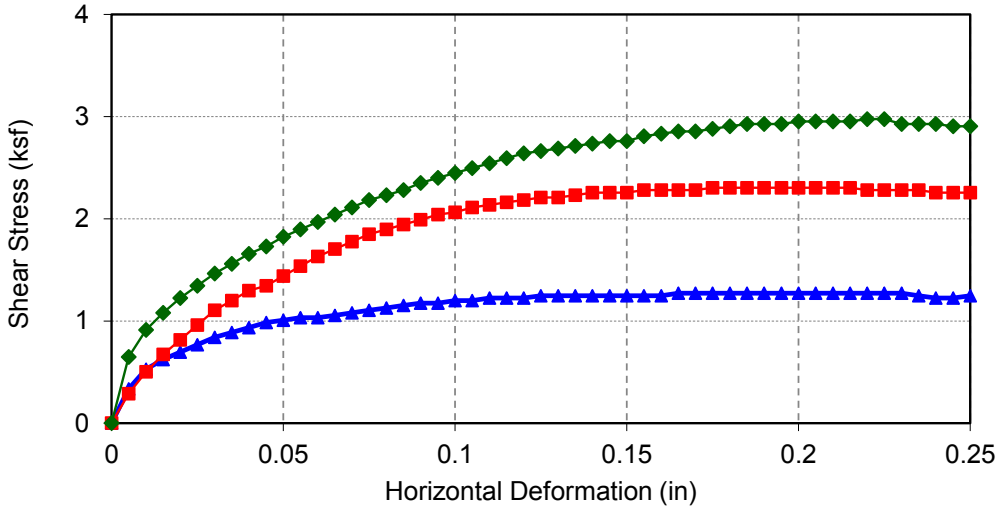
HAI Pr No.: GBA-17-002

Client: Geobase
Project Name: KP Hesperia Mob
Project Number: C.314.84.00
Boring No.: B-3
Sample No.: R
Sample type: Undristributed Ring
Depth (ft): 7-8.5
Soil description: Orange Brown, Silty Sand (SM)

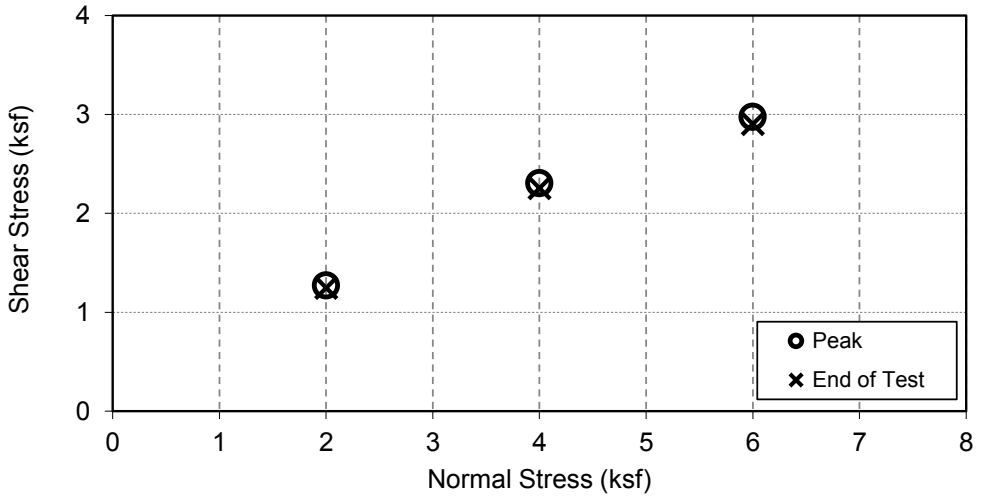
Tested by: KL
Checked by: MJ/MZ
Date: 8/9/2017

Type of test: **CD**

Test No.	1	2	3
Symbol	▲	■	◆
Normal Stress (ksf)	**2**	**4**	**6**
Deformation Rate (in/min)	**0.002**	**0.002**	**0.002**



Peak Shear Stress (ksf)	**O**	**1.27**	**2.30**	**2.98**
Shear Stress @ End of Test (ksf)	**X**	**1.25**	**2.26**	**2.90**



Initial Height of Sample (in)	1.050	1.010	1.068
Height of Sample before Shear (in)	1.0152	0.9499	0.9861
Diameter of Sample (in)	2.416	2.416	2.416
Initial Moisture Content (%)	**2.1**	**2.1**	**2.1**
Final Moisture Content (%)	**13.1**	**13.2**	**13.1**
Dry Density (pcf)	**108.0**	**109.4**	**107.1**

EXPANSION POTENTIAL
ASTM D4829

SOIL SAMPLE LOCATION (feet)	EXPANSION INDEX	EXPANSION POTENTIAL
B-1 at 0-5.0	0	Very Low

WATER-SOLUBLE SULFATES
CT 417-A

SOIL SAMPLE LOCATION (feet)	SOLUBLE SULFATES PPM	DEGREE OF SULFATE
B-4 at 5.0-10.0	346	Moderate

CORROSIVITY SERIES TEST

SOIL SAMPLE LOCATION (feet)	pH (CT 643)	SOLUBLE CHLORIDE (CT 422) (PPM)	ELEC. RESISTIVITY (CT 643) (OHM-CM)	CORROSIVITY CATEGORY
B-4 at 5.0-10.0	6.7	87	6200	Moderately Corrosive

MAXIMUM DRY DENSITY/OPTIMUM MOISTURE CONTENT
ASTM D1557

Boring No.	Maximum Dry Density (Pcf)	Optimum Moisture Contents (%)
B-1 at 0-5.0	129.4	7.1

R-VALUE
(DEPARTMENT OF TRANSPORTATION, STATE OF CTIFORNIA,
MATERIALS AND RESEARCH TEST METHOD NO. 301)

SOIL SAMPLE LOCATION (feet)	R-VALUE BY EXUDATION
B-4 at 5.0-10.0	53

ANAHEIM TEST LABORATORY

3008 ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

TO:

GEOBASE
23362 PERALTA DRIVE, # 4&6
LAGUNA HILLS, CA. 92653

DATE: 08/02/17

P.O. NO: VERBAL

LAB NO: C-0818-1

SPECIFICATION: CA-417/422/643

MATERIAL: SOIL

PROJECT #: C.314.84.00
KP Hesperia

ANALYTICAL REPORT

CORROSION SERIES
SUMMARY OF DATA

	PH	SOLUBLE SULFATES per CA. 417 ppm	SOLUBLE CHLORIDES per CA. 422 ppm	MIN. RESISTIVITY per CA. 643 ohm-cm
B-4 @ 5'-10'	6.7	346	87	6,200

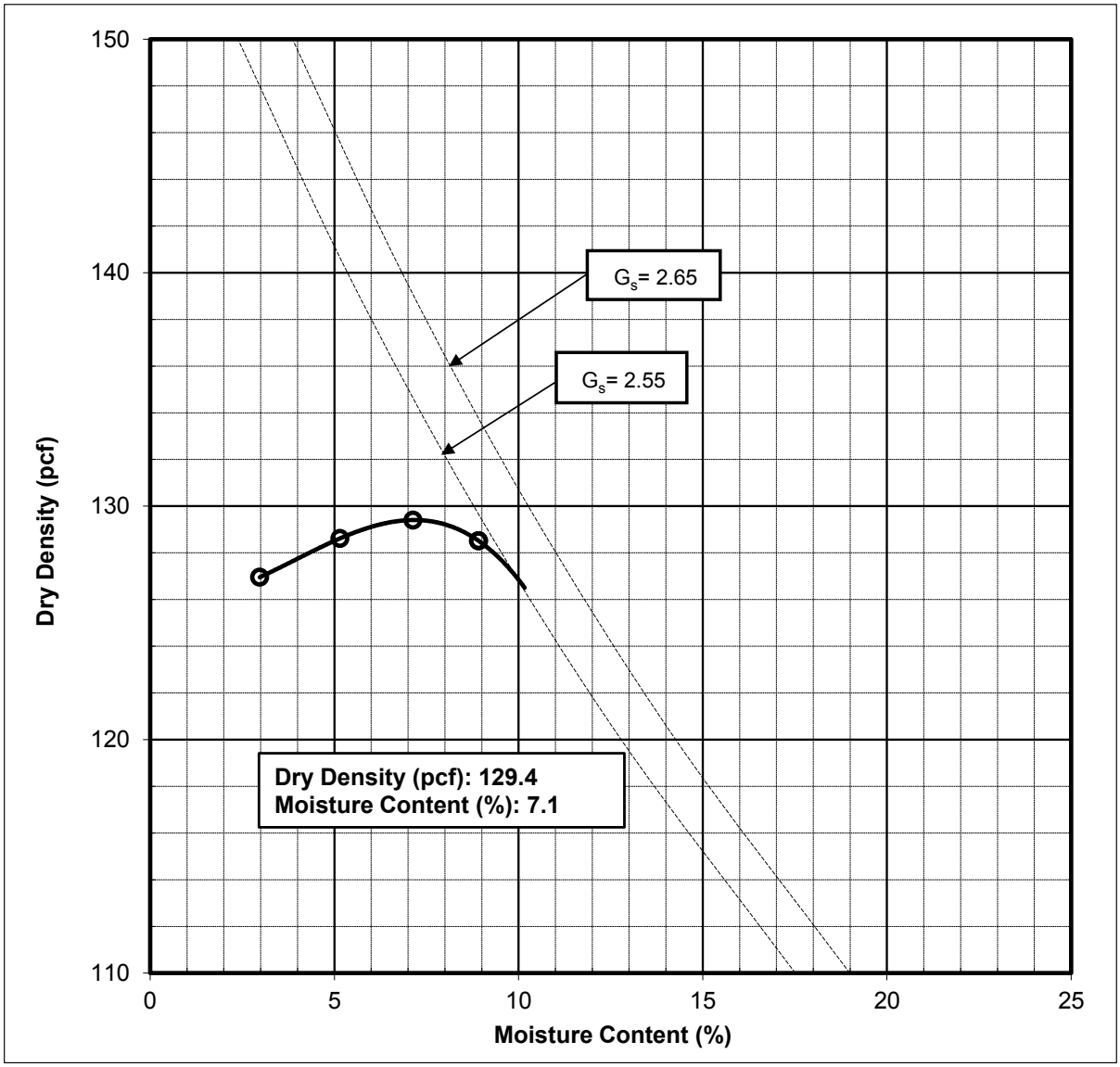
RESPECTFULLY SUBMITTED

WES BRIDGER CHEMIST

COMPACTION CHARACTERISTICS OF SOILS

ASTM D1557

Client :	Geobase	***HAI Project No.:***	GBA-17-003
Project Name:	KP Hesperia MOB	***Tested by:***	AH
Project No.:	C.314.84.00	***Checked by:***	MJ/MZ
Boring No:	B-1	***Date:***	08/01/17
Sample No.:	Bulk	***Mold size (Inch):***	4A
Depth (ft):	0-5	***Procedure:***	A
Soil Description:	Brown, Silty Sand (SM)	***% Ret. On #4 "***	3.9



ANAHEIM TEST LAB, INC

3008 ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

TO:

GEOBASE
23362 PERALTA DRIVE, # 4&6
LAGUNA HILLS, CA. 92653

DATE: 08/02/17

P.O. NO: VERBAL

LAB NO: C-0818-2

SPECIFICATION: CT 301

MATERIAL: Brown, Silty Sand w. trace F. Gravel

PROJECT #: C.314.84.00

ANALYTICAL REPORT

"R" VALUE

	BY EXUDATION	BY EXPANSION
B-4 @ 5'-10'0-5'	53	N/A

RESPECTFULLY SUBMITTED

WES BRIDGER CHEMIST

Client: Geobase **ATL No.:** C 0818-2 **Date:** 8/2/2017
Client Reference No.: C.314.84.00
Sample: B-4 @ 5'-10' **Soil Type:** Brown, Silty Sand w. trace F. Gravel

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	300	150	220	
Initial Moisture Content	%	2.4	2.4	2.4	
Moisture at Compaction	%	8.4	9.3	8.8	
Briquette Height	in.	2.48	2.52	2.51	
Dry Density	pcf	127.4	125.6	126.3	
EXUDATION PRESSURE	psi	496	238	336	
EXPANSION dial	(x .0001)	7	0	3	
Ph at 1000 pounds	psi	19	40	28	
Ph at 2000 pounds	psi	31	78	53	
Displacement	turns	3.34	3.69	3.58	
"R" Value		76	42	59	
CORRECTED "R" VALUE		76	42	59	

Final "R" Value	
BY EXUDATION: @ 300 psi	**53**
BY EXPANSION: TI = 5.0	**N/A**