REVISED REPORT OF GEOTECHNICAL STUDY
PROPOSED AUTOMOTIVE DEALERSHIP
3 PARCEL LOT EAST OF CIVIC DRIVE
VICTORVILLE, CALIFORNIA
KLEINFELDER PROJECT NO. 20183689.0000

JUNE 29, 2018 (REVISED AUGUST 30, 2018)

PREPARED FOR:

CENTERPOINT INTEGRATED SOLUTIONS
355 UNION BOULEVARD, SUITE 301
LAKEWOOD, COLORADO

June 29, 2018 (Revised August 30, 2018)
Kleinfelder Project No. 20183822.001A

Ms. Stacie Haggerson
CenterPoint Integrated Solutions
355 Union Boulevard, Suite 301
Lakewood, Colorado 80228

SUBJECT: Revised Report of Geotechnical Services
Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

Dear Ms. Haggerson:

Kleinfelder is pleased to present this revised report summarizing the geotechnical study performed for the subject site, located on the east side of Civic Drive, approximately 600 feet south of Roy Rogers Drive in Victorville, California. This report has been revised to provide an update to boring log B-28. The purpose of our geotechnical study was to evaluate the subsurface soil conditions beneath the project site and provide geotechnical recommendations for the design and construction. A percolation study was performed to evaluate the shallow soils related to the onsite infiltration of storm water.

It is our professional opinion that the site is suitable from a geotechnical perspective for the proposed project provided the recommendations presented in this report are properly incorporated into design and construction of the project.

We appreciate the opportunity to provide geotechnical engineering services to you on this project. If you have any questions regarding this report or if we can be of further service, please do not hesitate to contact the undersigned.

Sincerely,

KLEINFELDER, INC.

REGISTERED PROFESSIONAL ENGINEER HANS F TOLKSDORF No. 80992 Exp 6/30/19 CIVIL STATE OF CALIFORNIA

Hans Tolksdorf, PE
Project Engineer

REGISTERED PROFESSIONAL ENGINEER JEFFERY D. WALLER NO. 2947 EXP. 9-30-18 GEOTECHNICAL STATE OF CALIFORNIA

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Senior Geotechnical Engineer

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1 INTRODUCTION

This report presents the results of our geotechnical study for the proposed CarMax Automotive Dealership. The subject site is located on the east side of Civic Drive, approximately 600 feet south of Roy Rogers Drive in Victorville, California (Site). The location of the proposed site is shown on Figure 1, Site Vicinity Map. The purpose of this geotechnical study was to evaluate the subsurface soil conditions at the site in order to provide geotechnical recommendations for the design and construction of the proposed development. The scope of our services was presented in our proposal dated December 19, 2017.

1.1 PROJECT DESCRIPTION

We understand that the proposed project will consist of constructing an approximately 4,909-square-foot (sf) sales floor, a 1,197 sf presentation area, a 4,309 sf retail service area, and a 936 sf carwash, as shown on Figure 2, Field Exploration Location Map. The anticipated maximum foundation loading for the proposed structures are 120 kips for column loads and 4 kips per foot for wall loads. We understand that the remaining portion of the site will be paved and used for vehicle parking and drive aisles.

We anticipate that the parking lot and drive aisles will consist of asphaltic concrete and the trash storage area will utilize Portland cement concrete (PCC). Ancillary construction is anticipated to include concrete flat work, landscaping, and the installation of buried utilities. The Water Quality Management Plan (WQMP) for the site may include infiltration or detention-type best management practices (BMPs) designed to manage storm water runoff.

1.2 SCOPE OF SERVICES

The scope of our geotechnical study consisted of a literature review, subsurface exploration, onsite percolation testing, geotechnical laboratory testing, engineering evaluation and analysis, and preparation of this report. Kleinfelder's scope of services for this project also included preparation of a Phase 1 Environmental Site Assessment, a Wetlands and Endangered Species Evaluation, and Cultural Resources Evaluation which are presented in separate reports.

Our geotechnical report includes a description of the work performed, a discussion of the geotechnical conditions observed at the site, and preliminary recommendations developed from our engineering analysis of field and laboratory data. An information sheet prepared by Geoprofessional Business Association (GBA) is also included. We recommend that all individuals utilizing this report read the limitations along with the attached GBA document. A description of our scope of services performed for this project is presented below.

Task 1 – Background Data Review. We reviewed published and unpublished geologic literature in our files and the files of public agencies, including selected publications prepared by the California Geological Survey (formerly known as the California Division of Mines and Geology) and the U.S. Geological Survey. We also reviewed readily available seismic and faulting information, including data for designated earthquake fault zones and our in-house database of faulting in the general site vicinity. In addition, we reviewed SWRCB GeoTracker website (http://geotracker.waterboards.ca.gov/) for nearest depth to groundwater elevation data.

Task 2 – Field Exploration. The subsurface conditions at the site were explored by excavating and logging thirty-five (35) hollow-stem auger geotechnical borings and 5 infiltration borings. The geotechnical borings were drilled to depths ranging from approximately 20 to 50 feet below the existing ground surface (bgs) and the infiltration borings were excavated to approximately 5 feet bgs. The locations of our borings are shown on Figure 2, Field Exploration Location Map.

Prior to commencement of the fieldwork, each of our proposed exploration locations were cleared for known existing utility lines and with the participating utility companies through Underground Service Alert (USA). A Kleinfelder representative supervised the field operations and logged the borings. Selected bulk and drive samples were retrieved, sealed and transported to our laboratory for further evaluation. Our typical sampling interval was every 5 feet to full depths explored. The number of blows necessary to drive both Standard Penetration Test (SPT) and modified California-type samplers were recorded. A description of the field exploration and the logs of the borings, including a Legend to the Logs of Borings, are presented in Appendix A, Field Explorations.

Percolation testing was also performed in Borings INF-1 through INF-5. The testing was performed in general accordance with the Technical Guidance Document for Water Quality Management Plans, prepared by CDM Smith Inc. for The County of San Bernardino Areawide

Stormwater Program, dated June 7, 2013. The results are discussed below and presented in Appendix C, Borehole Infiltration Testing.

Task 3 – Laboratory Testing. Laboratory testing was performed on representative samples of soil collected from our excavations to substantiate field classifications and to provide engineering parameters for geotechnical design. Laboratory testing included moisture determination and unit weight, sieve analysis, direct shear, maximum dry density and optimum moisture, R-Value, and preliminary corrosivity testing. A summary of the testing performed, and the results are presented in Appendix B, Laboratory Testing.

Task 4 – Geotechnical Analyses. Field and laboratory data were analyzed in conjunction with the proposed site plan presented on Figure 2 and our assumed structural loads to develop geotechnical recommendations for the design and construction of the proposed development. We evaluated potential foundation systems, lateral earth pressures, settlement, and earthwork considerations. Potential geologic hazards, such as ground shaking, liquefaction potential, flood hazard, fault rupture hazard and seismically-induced settlement, were also evaluated.

Task 5 – Report Preparation. This report summarizes the work performed, data acquired, and our findings, conclusions, and geotechnical recommendations for the design and construction of the proposed development. Recommendations for the following are presented in this report:

- Earthwork, including site preparation, excavation, site drainage, and the placement of engineered fill;
- Design of suitable foundation systems including allowable capacities, lateral resistance, and settlement estimates;
- Seismic design parameters in accordance with the 2016 California Building Code;
- Floor slab and slab-on-grade support, including subgrade preparation;
- Lateral earth pressures for design of minor retaining walls; and
- Design and construction of asphalt and Portland cement concrete pavements, including driveways, fire lanes, and concrete walks.

This report also contains reference maps and graphics, as well as the logs of the borings and laboratory test results.

2 SITE AND SUBSURFACE CONDITIONS

2.1 SITE DESCRIPTION

The proposed automotive dealership is located on the east side of Civic Drive, approximately 600 feet south of Roy Rogers Drive in Victorville, California, as shown in Figure 1, Site Vicinity Map. It is situated on a 6.3-acre parcel of land identified by the San Bernardino County Assessor as Assessor's Parcel Numbers (APNs) 3106-261-26, 3106-261-27, 3106-261-28, and 3106-261-29.

The lot is an undeveloped piece of land located within a commercial area. Based on the ALTA survey provided, the center of the lot has an approximate elevation of 2,938 feet above mean sea level (MSL) that slopes gently to the north northeast to the surrounding I-15 on-ramp and adjacent parking lot. At the time of our field exploration, the site was partially covered by low-lying dry desert vegetation.

2.2 SUBSURFACE CONDITIONS

The subject site is located within the western portion of the Mojave Desert Section of the Basin and Range geomorphic province of California (Norris and Webb, 1990). The project site is underlain by early Pleistocene to Late Pliocene ancestral Mojave River deposited alluvium. The alluvium consists of loose to very dense sand and gravel deposits derived from the weathering of the San Bernardino Mountains located south-southeast of the site. The surface deposit is locally composed of an eroded soil profile comprising an argillic horizon and an underlying calcic horizon (USGS, 2008). The geology at the site and the surrounding areas is presented on Figure 3, Regional Geologic Map.

Soils encountered during the field investigation consisted of approximately 15 to 20 feet of alluvial soils which generally consisted of silty sands and poorly graded sands. Below approximately 20 feet below the ground surface (bgs) alluvial soils consist of poorly graded sand and sand with gravel deposits to the maximum depths of our deepest boring (B-22) at 50 feet bgs. Detailed descriptions of the alluvial soil are provided in our boring logs presented in Appendix A.

2.2.1 Alluvial/Residual Soils

The soils generally consisted of silty sands and poorly graded sands with some gravel layers and were encountered at the ground surface to depths of approximately 50 feet bgs. Generally, the density of the subsurface soils was dense to very dense. The dry density of the alluvial soils ranged from 81.5 pcf to 130.5 pcf and the moisture contents ranged from 1.3 to 22.0 percent.

2.3 GROUNDWATER CONDITIONS

Groundwater was not encountered onsite in any of our borings drilled at the site. Depths of the borings ranged from approximately 20 feet to 50 feet bgs. Based on information from the SWRCB GeoTracker (2018), the nearest available depth to water measurement of 93 ft bgs is at approximately 0.5 mile east of the site. Based on the results of our borings and available research, groundwater at the site is anticipated to be greater than 50 feet below the ground surface.

Fluctuations of localized zones of perched water and rise in soil moisture content should be anticipated during the rainy season. Irrigation of landscaped areas may also lead to an increase in soil moisture content and fluctuations of intermittent shallow perched groundwater levels.

3 GEOLOGIC CONDITIONS

3.1 REGIONAL GEOLOGY

The subject site is located within the western portion of the Mojave Desert Section of the Basin and Range geomorphic province of California (Norris and Webb, 1990). The Basin and Range Province extends eastern California to central Utah, from southern Oregon and Idaho on the North, to southern Arizona and southwestern New Mexico. The California portion of the province includes the Mojave Desert a large triangular area bounded by the Colorado River on the east, Garlock fault of the north, and by the San Gabriel and San Bernardino mountains and San Andreas fault on the south.

3.2 SITE GEOLOGY

According to a review of available reports and maps, the project site is underlain by early Pleistocene to Pliocene alluvium of the ancestral Mojave River (Qoam). The near surface alluvium consists of loose to well-consolidated sand and gravel deposits derived from the weathering of the San Bernardino Mountains located south-southeast of the Site. The surface deposit is locally composed of eroded soil profile comprising an argillic horizon and an underlying calcic horizon (USGS, 2008). Surficial deposits observed consist primarily of colluvial/alluvial soils of fine alluvial silty sands with varying silt and some gravel content to depths ranging from approximately zero to 50 feet bgs.

3.3 GEOLOGIC HAZARDS

We have addressed below the potential geologic hazards for the site. Where these hazards are present on site, additional discussion follows in subsequent sections.

3.3.1 Active and Potentially Active Fault Search

Earthquakes and faulting occurs as the tectonic plates, which comprise the Earth's crust, or lithosphere, move relative to one-another. Faults identified by the State as being active are not known to be present at the surface within the project limits. No portion of the site is located within a State of California-Special Studies Zone, formerly Alquist-Priolo Earthquake Fault Zone (Bryant and Hart, 2007). The closest zoned fault to the site is the North Frontal Fault Zone (Western Segment). The nearest active fault segment associated with this zone is located approximately 10 miles to the southeast (CDMG, 2018) which is also known as Ord Mountain

Fault. The North Frontal Fault is a southern dipping reverse fault, being approximately 50.1 kilometers in length, with an estimated maximum moment magnitude of MW 7.2, and an associated slip-rate of 1 ±0.5 mm/year (CDMG, 1996; Cao et al., 2003; and Petersen et al., 2008). In many places there are high well-developed scarps, which have formed in older Quaternary deposits and are moderately degraded. Because of the distance to known active faults the risk of surface rupture resulting from faulting is considered low.

3.3.2 Flooding

Surface water flow at the site is generally via sheet flow from the southwest portion of the site towards the property boundary limits.

The site is within a flood hazard zone “X” according to Federal Emergency Management Agency (FEMA), where the flood hazard is “determined to be outside the 0.2% annual chance floodplain” (FEMA, 2008).

A seiche is a wave or sloshing of a body of water that is at least partially impounded caused by strong wind or seismic shaking. The site is not downstream of large bodies of water or tanks which potentially could causes flooding and inundate the project site. The risk of seiche damage following a seismic event at the site is considered low.

3.3.3 Landslides

Landslides and other forms of mass wasting, including mud flows, debris flows, soil slips, and rock falls occur as soil or rock moves down slope under the influence of gravity. Landslides are frequently triggered by intense rainfall or seismic shaking. The site is not located within a State or county designated landslide hazard zone. The site generally slopes to the west with a low hill in the north central portion of the site. The risk at the site from landslides and other forms of mass wasting is considered very low.

3.3.4 Subsidence

The potential for subsidence at the site is considered low based on the results of our document review, and our field and laboratory analysis.

3.3.5 Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from precipitation, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may result in unacceptable settlement or heave of structures or concrete slabs supported on grade.

The upper soils generally consisted of sandy silts, and silty sands. Based on the granular nature of the soil, the expansion potential is anticipated to be low.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 GENERAL

Based on the results of our field exploration, laboratory testing and geotechnical analyses conducted during this study, it is our professional opinion that the proposed project is geotechnically feasible, provided the recommendations presented in this report are incorporated into the project design and construction.

The following opinions, conclusions, and recommendations are based on the properties of the materials encountered in the explorations, the results of our literature review, the results of the laboratory testing program, and our engineering analyses performed. Our recommendations regarding the geotechnical aspects of the design and construction of the project are presented in the following sections.

4.2 SEISMIC DESIGN CONSIDERATIONS

4.2.1 General

The site is located in a seismically active region of southern California. The proposed site can be expected to be subject to strong seismic shaking during its design life. Potential seismic hazards include ground shaking, localized liquefaction, ground rupture due to faulting, and seismic settlement. The following sections discuss these potential seismic hazards where relevant with respect to this site.

4.2.2 Seismic Design Parameters

According to the 2016 California Building Code (CBC), every structure, and portion thereof, including non-structural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7-10, excluding Chapter 14 and Appendix 11A. The Seismic Design Category for a structure may be determined in accordance with Section 1613.3.5 of the 2016 CBC.

The Risk-Targeted Maximum Considered Earthquake (MCE_R) mapped spectral accelerations for 0.2 seconds and 1 second periods (S_s and S_1) were estimated using Section 1613.3 of the 2016 CBC and the U.S. Geological Survey (USGS) web-based application (USGS, 2018). The mapped acceleration values and associated soil amplification factors (F_a and F_v) based on the 2016 CBC and corresponding site modified spectral accelerations (S_{MS} and S_{M1}) and design spectral accelerations (S_{DS} and S_{D1}) are presented in Table 1.

Table 1

2016 CBC Seismic Design Parameters

DESIGN PARAMETER	RECOMMENDED VALUE
Site Class (Table 1613.5.2)	D
S_s (Figure 22-1) (g)	1.475
S_1 (Figure 22-2) (g)	0.580
F_a (Table 11.4-1)	1.0
F_v (Table 11.4-2)	1.5
S_{MS} (Equation 11.4-1) (g)	1.475
S_{M1} (Equation 11.4-2) (g)	0.870
S_{DS} (Equation 11.4-3) (g)	0.984
S_{D1} (Equation 11.4-4) (g)	0.580
PGA_m (g)	0.500

4.2.3 Liquefaction and Seismic Settlement

The term liquefaction describes a phenomenon in which saturated, cohesionless soils temporarily lose shear strength (liquefy) due to increased pore water pressures induced by strong, cyclic ground motions during an earthquake. Structures founded on or above potentially liquefiable soils may experience bearing capacity failures due to the temporary loss of foundation support, vertical settlements (both total and differential), and undergo lateral spreading. The factors known to influence liquefaction potential include soil type, relative density, grain size, confining pressure, depth to groundwater, and the intensity and duration of the seismic ground shaking. The cohesionless soils most susceptible to liquefaction are loose, saturated sands and some silt.

The characteristics of the soil, and depth to groundwater indicate that the site has a remote potential for liquefaction and dry seismic settlement during a design-level earthquake is calculated to be ¼-inch or less.

4.3 FOUNDATIONS

4.3.1 General

Based on our analysis, the anticipated structural loads for the proposed building may be supported on conventional shallow foundations underlain by engineered fill provided that the building pad preparation recommendations included in this report are implemented. Recommendations for shallow foundations are presented in the following sections.

4.3.2 Allowable Bearing Capacity

Based on the current layout of the building, spread foundations underlain by a minimum of 3 feet of engineered fill may be designed for a net allowable bearing pressure of 3,000 pounds per square foot (psf) for dead plus sustained live loads. Footings should be established at a depth of at least18 inches below the lowest adjacent grade or finished slab grade, whichever is deeper. Thus, for interior column footings, embedment may be considered from the top of slab based on our understanding that the floor slabs will be a minimum of 6 inches thick directly over the finished subgrade pad (no gravel or sand between the engineered fill and floor slab). Where the slab is loaded in proximity to the columns, or above the underlying spread foundation, the allowable bearing pressure of the footing remains 3,000 psf and should include the slab load.

The building perimeter footings should be embedded at least 24 inches into engineered fill soils and be a minimum of 24 inches wide. Embedment for perimeter footings should not be considered from top of pavements, flatwork, or aggregate base grades. The footing dimensions and reinforcement should be designed by the structural engineer. Footings should be deepened as needed based on the recommendations in Section 4.3.5 to avoid surcharging existing buried utilities and/or walls. The engineered fill should be prepared as recommended in Section 4.4.

The allowable bearing pressure provided above is a net value; therefore, the weight of the foundation (which extends below grade) may be neglected when computing dead loads. The allowable bearing pressure applies to dead plus live loads. This value may be increased by one-third for short-term loading due to wind or seismic forces.

4.3.3 Estimated Settlements

Total static settlement for foundations designed in accordance with the recommendations presented herein is estimated to be less than 1 inch. Differential static settlement between similarly loaded columns is estimated to be less than 1/2 inch over 40 feet.

4.3.4 Lateral Resistance

Resistance to lateral loads (including those due to wind or seismic forces) may be provided by frictional resistance between the bottom of concrete foundations and the underlying soils and by passive soil pressure against the sides of the foundations. A coefficient of friction of 0.40 may be used between cast-in-place concrete foundations and the underlying soil. The ultimate passive pressure available for engineered fill may be taken as equivalent to the pressure developed by a fluid with a unit weight of 300 pounds per cubic foot (pcf). A one-third increase in the passive resistance may be used for resistance to transient loads such as wind and seismic. The upper one foot of soil should be neglected when calculating passive resistance.

The lateral resistance parameters provided above are ultimate values. Therefore, a suitable factor of safety should be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project Structural Engineer. Depending on the application, typical factors of safety could range from 1.5 to 2.0.

4.3.5 Foundations Adjacent to Buried Utilities

To avoid surcharging existing utilities and walls below grade, foundations should be deepened below a 1:1 (H:V) plane projected from the bottom of the utility or wall. Alternatively, the utilities or wall could be evaluated for potential surcharge pressures due to the foundation loads.

4.4 EARTHWORK

4.4.1 General

Recommendations for site preparation are presented below. All site preparation and earthwork operations should be performed in accordance with applicable codes, safety regulations and other local, state or federal specifications. All references to maximum unit weights are established in accordance with the latest version of ASTM Standard Test Method D1557.

Grading operations during the wet season or in areas where the soils are saturated may require provisions for drying of soils prior to compaction. If the project necessitates fill placement and compaction in wet conditions, we can provide suggested alternative recommendations for drying the soil. Conversely, additional moisture may be required during the dry months. A sufficient water source should be available to provide adequate water during compaction. During dry months, moisture conditioning of the subgrade soils may be required if left exposed for greater than a few days.

4.4.2 Site Preparation

Prior to general site grading, existing vegetation, debris, and oversized materials (greater than 3 inches in maximum dimension) should be stripped and disposed outside the construction limits. We estimate the depth of stripping to be approximately 6 to 12 inches over most portions of the site. Deeper stripping or grubbing may be required where higher concentrations of vegetation are encountered during site grading. Stripped topsoil (less any debris) may be stockpiled and reused for landscaping purposes; however, this material should be evaluated for suitability if it is desired to use this material for engineered fill below structures.

All debris, including any produced by demolition operations, (wood, steel, piping, plastics, etc.), should be separated and disposed offsite. Existing utility pipelines (if encountered) which extend beyond the limits of the proposed construction and are to be abandoned in place should be plugged with cement grout to prevent migration of soil and/or water. Demolition, disposal, and grading operations should be observed and tested by a representative from our office.

4.4.3 Overexcavation

Recommendations for overexcavation of the building pads (building foundations and floor slabs) and parking lot (pavements) are presented below. All site preparation and earthwork operations should be performed in accordance with applicable codes, safety regulations and other local, state or federal specifications. All references to maximum unit weights are established in accordance with the latest version of ASTM Standard Test Method D1557.

Structural Areas Supporting Spread Footings:

In order to provide uniform support for the proposed spread foundations and slab-on-grade floors, we recommend that spread footings be founded on engineered fill. Foundations supported on engineered fill should be overexcavated to a depth of at least 2 feet below the bottom of foundations. Footing excavations should be observed, evaluated, and approved by Kleinfelder prior to placement of concrete.

In areas to receive fill, the existing soil should be excavated to a depth of at least 2 feet from existing grade and be replaced as engineered fill. Depending on the observed variable condition of the existing soils, deeper overexcavation may be required in some areas. The overexcavation should extend horizontally at least 5 feet beyond the edges of foundations and/or a distance equivalent to the thickness of anticipated fill below the footing, whichever is greater.

Non-Structural Areas:

For non-structural areas, pavements, sidewalks, other flatwork, etc., we recommend that the existing soils be overexcavated and replaced as engineered fill. We recommend that the existing onsite soils be overexcavated and be replaced as engineered fill to a depth of at least 18 inches below existing grade and at least 18 inches below finished subgrade, whichever is deeper. Depending on the observed condition of the existing soils and the observation of soil porosity and animal burrows during our investigation, deeper overexcavation may be required in some areas. The overexcavation should extend beyond the proposed improvements a horizontal distance of at least two feet.

After site preparation and overexcavation, and prior to scarification or placement of compacted fills, the excavation bottom should be observed, evaluated, and approved by Kleinfelder. Additional removals may be needed if significant porosity or other adverse conditions are observed. If the bottom of the overexcavation is observed to be in competent bedrock, scarification and recompaction is not needed. Otherwise, the subgrade should be scarified to a depth of approximately 8 inches, moisture conditioned to at least optimum moisture content; and recompacted. After compaction, the subgrade should be proof rolled using equipment with sufficient weight to evaluate surface deflection. Proof rolling should be performed to verify that the subgrade soils are firm and unyielding at the depth of the recommended overexcavation presented above.

4.4.5 Engineered Fill

We anticipate that most of the on-site soils may be reusable as engineered fill once any debris and oversized materials greater than 3 inches in diameter have been removed, and after any vegetation and organic debris is cleared. Engineered fill should contain less than 2 percent organic content and maximum material size should be less than 3 inches in maximum dimension. Disturbed/tilled soil, less vegetation, may be used in landscape areas, exported or placed in a controlled manner and blended with the onsite soils, provided that the resulting engineered fill contains less than 2 percent organic content.

Fill should be placed in lifts no greater than 8 inches thick, loose measurement, and should be compacted to at least 90 percent of the maximum dry density. The moisture content of the on-site soils should be near optimum moisture at the time of compaction.

Engineered fill placed below pavement should be compacted to at least 90 percent of maximum dry density obtained by the ASTM D1557 method of compaction with the upper 12 inches below pavements compacted to at least 95 percent relative compaction.

Although not anticipated, any imported fill materials to be used for engineered fill should be sampled and tested for approval by the geotechnical engineer prior to being transported to the site. The expansion index of an imported soil should be less than 20. In general, well-graded mixtures of gravel, sand and non-plastic silt are acceptable for use as import fill. A minimum notice of 3 working days will be required to allow for qualification testing prior to compaction of imported materials.

4.4.6 Excavation Characteristics

The borings were advanced using a truck-mounted, hollow-stem auger drill rig. Drilling was completed with moderate effort through the existing site soil. Based on our estimate of excavation depth, conventional earth moving equipment should be capable of performing the soil excavations.

4.4.8 Temporary Excavations

All excavations must comply with applicable local, state, and federal safety regulations including the current OSHA Excavation and Trench Safety Standards. Construction site safety generally is the sole responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. We are providing the information below solely as a service to our client. Under no circumstances should the information provided be interpreted to mean that Kleinfelder is assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

Temporary, shallow excavations with vertical side slopes less than 4 feet high should generally be stable, although sloughing may be encountered. Vertical excavations greater than 4 feet high should not be attempted without appropriate shoring to prevent local instability. All trench excavations should be braced and shored in accordance with good construction practice and all applicable safety ordinances and codes. The contractor should be responsible for the structural design and safety of the temporary shoring system, and we recommend that this design be submitted to Kleinfelder for review to check that our recommendations have been incorporated.

Stockpiled (excavated) materials should be placed no closer to the edge of an excavation than a distance equal to the depth of the excavation, but no closer than 4 feet. All trench excavations should be made in accordance with OSHA requirements.

4.4.9 Pipe Bedding and Trench Backfill

Pipe bedding and pipe zone material should consist of sand or similar granular material having a minimum sand equivalent value of 30. Onsite soils may be suitable, but should be tested and approved by the engineer of record prior to use. The sand should be placed in a zone that extends a minimum of 6 inches below and 6 inches above the pipe for the full trench width. The bedding material should be compacted to a minimum of 90 percent of the maximum dry density or to the satisfaction of the geotechnical engineer's representative observing the compaction of the bedding material. Bedding material should consist of sand, gravel, crushed aggregate, or native free-draining granular material with a maximum particle size of ¾ inch. Bedding materials should also conform to the pipe manufacturer's specifications, if available. Trench backfill above bedding and pipe zone materials may consist of approved, on-site or import soils placed in lifts no greater than 8 inches loose thickness and compacted to 90 percent of the maximum dry density based on ASTM Test Method D1557. Jetting of backfill is not recommended. The on-site soils are suitable for backfill of utility trenches from 6 inches above the top of the pipe to the surface provided the material is free of organic and deleterious substances and material greater than 6 inches in maximum dimension.

4.4.10 Stockpiling Excess Material

All stockpiles of excess soil materials should be kept away from the top of the excavations a minimum distance equal to the depth of the excavation. We recommend that stockpiles be constructed with a slope ratio of at least 2:1 (horizontal to vertical) and compacted to at least 85 percent relative compaction. Compaction requirements and slope ratios are provided only for temporary stockpiling considerations, such as erosion control and temporary influences on excavations. We have not considered any long-term or structural support usage of stockpiles.

4.5 CONCRETE SLABS SUPPORTED ON GRADE

4.5.1 General

Slab-on-grade floors should be underlain by engineered fill as discussed in the Earthwork Section of this report. The structural engineer should design the slabs for any specific loading conditions. A modulus of subgrade reaction of 150 pounds per cubic inch may be used for design. The moisture content of the upper 18 inches of engineered fill should be at the recommended range for fill compaction at the time the floor slab is constructed. Precautions should be taken so as not to allow the upper engineered fill below the slab to dry out below the recommended moisture range between completion of the building pad and construction of the floor slab.

Construction activities and exposure to the environment can cause deterioration of the prepared subgrade. We recommend that a Kleinfelder representative inspect the final subgrade conditions prior to placement of the concrete, and if necessary, perform additional moisture and density testing to determine the subgrade suitability. A low slump concrete should be used to reduce possible curling of the slab.

4.5.2 Exterior Flatwork

Where exterior flatwork, such as sidewalks, are to be constructed, the subgrade should be prepared by being scarified to a depth of 8 inches and moisture conditioned to a moisture content near optimum, and recompacted as recommended in the Earthwork Section of this report. Exterior, structurally loaded flatwork, such as truck docks or trash enclosures should adhere to the recommendations for rigid pavement presented in this report.

4.5.3 Vapor Barrier

Subsurface moisture and moisture vapor naturally migrate upward through the soil and, where the soil is covered by a building or pavement, this subsurface moisture will collect. To reduce the impact of this subsurface moisture and the potential impact of future introduced moisture (such as landscape irrigation or precipitation) on moisture sensitive flooring, we recommend placement of a vapor barrier. Selection and placement of a vapor barrier should be performed based on the applicable American Concrete Institute (ACI) procedures and/or the project Structural Engineer.

4.5.4 Concrete Curing and Flooring

Various factors such as surface grades, adjacent planters, the quality of slab concrete and the permeability of the on-site soils affect slab moisture and can control future performance. In many cases, floor moisture problems are the result of either improper curing of floor slabs or improper application of flooring adhesives. We recommend contacting a flooring consultant experienced in the area of concrete slab-on-grade floors for specific recommendations regarding your proposed flooring applications. Special precautions must be taken during the placement and curing of all concrete slabs. Excessive slump (high water-cement ratio) of the concrete and/or improper curing procedures used during either hot or cold weather conditions could lead to excessive shrinkage, cracking or curling of the slabs. High water-cement ratio and/or improper curing also greatly increase the water vapor permeability of concrete. We recommend that all concrete placement and curing operations be performed in accordance with the ACI Manual.

It is emphasized that we are not floor moisture-proofing experts. We make no guarantee, nor provide any assurance that use of the capillary break/vapor retarder system will reduce concrete slab-on-grade floor moisture penetration to any specific rate or level, particularly those required by floor covering manufacturers. The builder and designers should consider all available measures for slab moisture protection.

4.6 RETAINING WALLS

Based on our understanding of the site, we do not anticipate that retaining walls will be greater than three feet based on existing grades. If retaining walls greater than six feet are planned, we should be contacted and additional evaluation may be needed. For preliminary design considerations we have provided the following criteria which may be used for retaining walls 6 feet or less in retained height. We should be contacted to evaluate walls greater than six feet as they will include analysis of seismic lateral forces.

4.6.1 General

Design earth pressures for retaining walls depend primarily on the allowable wall movement, wall inclination, type of backfill materials, backfill slopes, surcharges, and drainage. The earth pressures provided assume that that the wall is 6 feet or less and a non-expansive backfill will be used and a drainage system will be installed behind the walls, so that external water pressure will not develop. If a drainage system will not be installed, the wall should be designed to resist hydrostatic pressure in addition to the earth pressure as well as reinforcement that should be protected from rust or other corrosion-inducing effects of moisture. Determination of whether the active or at-rest condition is appropriate for design will depend on the flexibility of the walls. Walls that are free to rotate at least 0.002 radians (deflection at the top of the wall of at least 0.002 x H, where H is the unbalanced wall height) may be designed for the active condition. Walls that are not capable of this movement should be assumed rigid and designed for the at-rest condition. The recommended active and at-rest earth pressures and passive resistance values are provided in Table 2.

Table 2
Earth Pressures for Retaining Walls
(Non-Expansive Backfill)

Wall Movement	Equivalent Fluid Pressure Level Backfill
Free to Deflect (active condition)	45
Restrained (at-rest condition)	65

In addition to the above lateral pressure, undrained walls will have to be designed for full hydrostatic pressure. The above lateral earth pressures do not include the effects of surcharges (e.g., traffic, footings), compaction, or truck-induced wall pressures. Any surcharge (live, including traffic, or dead load) located within a 1:1 plane drawn upward from the base of the excavation should be added to the lateral earth pressures. The lateral contribution of a uniform surcharge load located immediately behind walls may be calculated by multiplying the surcharge by 0.33 for cantilevered walls and 0.50 for restrained walls. Walls adjacent to areas subject to vehicular traffic should be designed for a 2-foot equivalent soil surcharge (240 psf). Lateral load contributions from other surcharges located behind walls may be provided once the load configurations and layouts are known.

4.6.2 Backfill Compaction

Care must be taken during the compaction operation not to overstress the wall. Wall backfill should be compacted to a least 90 percent relative compaction; however, heavy construction equipment should be maintained a distance of at least 3 feet away from the walls while the backfill soils are being placed. Kleinfelder should be contacted when development plans are finalized for review of wall and backfill conditions on a case-by-case basis.

4.6.3 Drainage

Walls should be properly drained or designed to resist hydrostatic pressures. Adequate drainage is essential to provide a free-drained backfill condition and to limit hydrostatic buildup behind the wall. Walls should also be appropriately waterproofed and include weep holes for drainage. In lieu of weep holes, a 4-inch diameter perforated PVC pipe, placed perforations down leading to a suitable gravity outlet, should be installed at the base of the walls.

4.7 STORM WATER MANAGEMENT

Kleinfelder understands that, as part of storm water management for the project, Infiltration Best Management BMPs, such as near surface bioswales, are being considered. We performed five borehole infiltration tests in accordance with the San Bernardino County guidelines in order to provide recommendations for designing subterranean infiltration galleries. The borehole infiltration test results are presented in Appendix C.

As shown in Appendix C, the long-term design infiltration rates of the near surface soils range from approximately 0.21 to 0.36 inches per hour. Based on the results from our testing, our knowledge of the project, and our professional judgment, the following is a list of recommendations for development of the proposed project.

- The design should incorporate pre-treatment of influent water. Pre-treatment could consist of combinations of debris screens, sediment settling chambers, filters and/or other mechanisms.
- Maintenance of the facility should be performed annually or at more frequent intervals depending on frequency of storm events and infiltration system manufacturer's guidelines. The maintenance schedule may also be selected based on volume and turbidity of influent water, and final design of the facility.
- The facility should be designed with an outlet/overflow system to discharge into the storm drain.
- The facility should not be constructed within 10 feet of proposed or existing foundations.

4.8 DRAINAGE AND LANDSCAPING

It is important that positive surface drainage be provided to prevent ponding and/or saturation of the soils in the vicinity of foundations, concrete slabs-on-grade, or pavements. We recommend that the site be graded to carry surface water away from the improvements and that positive measures be implemented to carry away roof runoff. Poor perimeter or surface drainage could allow migration of water beneath the building or pavement areas, which may result in distress to project improvements. If planted areas adjacent to structures are desired, we suggest that care be taken not to over irrigate and to maintain a leak-free sprinkler piping system. In addition, it is recommended that planter areas next to buildings have a minimum of 5 percent positive fall away from building perimeters to a distance of at least 5 feet. Drain spouts should be extended to discharge a minimum of 5 feet from the building, or some other method should be utilized to prevent water from accumulating in planters. Landscaping after construction should not promote ponding of water adjacent to structures.

4.9 EXPANSION POTENTIAL

Expansive soils are characterized by their ability to undergo significant volume change (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from rainfall, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors, and may cause unacceptable settlement or heave of structures, concrete slabs supported-on-grade, or pavements supported over these materials. Depending on the extent and location below finished subgrade, expansive soils can have a detrimental effect on structures. Due to the granular nature of the soils encountered, the expansion potential of the soil is estimated to be low.

4.10 SOIL CORROSION

The corrosion potential of the on-site materials to steel and buried concrete was preliminarily evaluated. Testing was performed in general accordance with California Test Methods 643, 417, and 422 for pH and resistivity, soluble chlorides, and soluble sulfates, respectively. The test results are presented in Table 3.

Table 3
Corrosion Test Results

Boring	Depth (ft)	Minimum Resistivity (ohm-cm)	pH	Soluble Sulfate Content (ppm)	Soluble Chloride Content (ppm)
B – 15	0 – 5	2400	8.6	44	52

These tests are only an indicator of soil corrosivity for the samples tested. Other soils found on site may be more, less, or of a similar corrosive nature. Imported fill materials should be tested to confirm that their corrosion potential is not more severe than those noted.

Although Kleinfelder does not practice corrosion engineering, resistivity values between 1,000 ohm-cm and approximately 3,000 ohm-cm are normally considered “Highly corrosive” to buried ferrous metals (NACE, 2006). The concentrations of soluble sulfates indicate that the potential of sulfate attack on concrete in contact with the on-site soils is “negligible” based on ACI 318 Table 4.3.1 (ACI, 2011). Accordingly, a concrete mix and maximum water-cement ratios are not specified for these sulfate concentrations.

We recommend that a competent corrosion engineer be retained to evaluate the corrosion potential of the on-site soils to the proposed improvements, to recommend further testing as required, and to provide specific corrosion mitigation methods appropriate for the project, if desired.

4.1 PAVEMENT SECTIONS

4.11.1 Asphalt-Concrete Pavement Sections

The required pavement structural sections will depend on the expected wheel loads, volume of traffic, and subgrade soils. The Traffic Indexes (TI’s) assumed should be reviewed by the project Owner, Architect, and/or Civil Engineer to evaluate their suitability for this project. Changes in the TI's will affect the corresponding pavement section. The pavement subgrade should be prepared just prior to placement of the base course. Positive drainage of the paved areas should be provided since moisture infiltration into the subgrade may decrease the life of pavements. Pavement sections for TI’s of 5 and 7 are presented for asphalt concrete pavements in Table 4.

Table 4
Preliminary Asphalt Concrete Pavement Sections
(Design R-value = 50)

<table>
<tr><th>Traffic Use</th><th>Assumed Traffic Index (TI)</th><th>Asphalt Concrete (inches)</th><th>Class 2 Aggregate Base (inches)</th></tr>
<tr><td>Automobile-Parking and Traffic Areas</td><td>5</td><td>3.0</td><td>4.0</td></tr>
<tr><td rowspan="2">Heavy Truck Access Way</td><td>7</td><td>3.0</td><td>6.5</td></tr>
<tr><td>7</td><td>4.0</td><td>4.5</td></tr>
</table>

The tested R-value result was 54 for near surface soils. We anticipate the final subgrade soils will consist of a blend of the upper and lower fill materials. As the generally accepted standard of practice and to account for soil variability across the site, the design subgrade R-value was averaged to be 50 for the purposes of our pavement calculations. Since the characteristics of the near-surface soils can change as a result of grading, we recommend that the subgrade soils be retested for pavement support characteristics, to confirm the parameters used in design and allow for a possible reduction in structural section thickness. Pavement sections provided above are contingent on the following recommendations being implemented during construction.

- The pavement sections recommended above should be placed on at least 18 inches of engineered fill compacted to at least 90 percent of maximum dry density with the upper 12 inches compacted to 95 percent relative compaction. The overexcavation of the pavement areas should be conducted as recommended in the earthwork section of this report. Prior to fill placement, the exposed subgrade should be scarified to a depth of 8 inches, uniformly moisture conditioned to near optimum moisture content, and recompacted to at least 90 percent relative compaction.
- Subgrade soils should be in a stable, non-pumping condition at the time aggregate base materials are placed and compacted.
- Aggregate base materials should be compacted to at least 95 percent relative compaction.
- Adequate drainage (both surface and subsurface) should be provided such that the subgrade soils and aggregate base materials are not allowed to become wet.
- Aggregate base materials should meet current Caltrans specifications for Class 2 aggregate base rock or crushed miscellaneous base as specified in the "Standard Specifications for Public Work Construction" ("Greenbook").
- The asphalt pavement should be placed in accordance with “Green Book” specifications.
- All concrete curbs separating pavement and landscaped areas should extend into the subgrade and below the bottom of adjacent, aggregate base materials.

Pavement sections provided above are based on the soil conditions encountered during our field investigation, our assumptions regarding final site grades, and limited laboratory testing. Since the actual pavement subgrade materials exposed during grading may be significantly different than those tested for this study, we recommend that representative subgrade samples be obtained and additional R-value tests performed. Should the results of these tests indicate a significant difference, the design pavement section(s) provided above may need to be revised.

4.11.2 Portland Cement Concrete Pavement

Concrete pavements may be desirable in loading dock and trash collection areas. The concrete pavement should have a minimum 28-day compressive strength of 3,000 psi. Control joints should be spaced approximately every 11 feet. The concrete pavement section should be placed on at least 18 inches of engineered fill compacted to at least 90 percent of the maximum dry density. Prior to fill placement, the exposed subgrade should be scarified to a depth of 8 inches, uniformly moisture conditioned to the moisture content range recommended in Section 4.4 of this report. Table 5 presents our recommendations of Portland Cement Concrete pavement sections.

Table 5
Preliminary Recommended PCC Pavement Sections

TI	Concrete Compressive Strength (psi)	Concrete Thickness (inches)	Aggregate Base Thickness (in)
5	3,000	6.5	4
	4,000	6.0	4
7	3,000	7.0	4
	4,000	6.5	4

Aggregate base materials should meet current Caltrans specifications for Class 2 aggregate base, or crushed miscellaneous base as specified in the "Standard Specifications for Public Work Construction" ("Greenbook").

5 ADDITIONAL SERVICES

5.1 PLANS AND SPECIFICATIONS REVIEW

We recommend that a general review of the project plans and specifications be conducted before they are finalized to verify that our geotechnical recommendations have been properly interpreted and implemented during design. If we are not accorded the privilege of performing this review, we can assume no responsibility for misinterpretation of our recommendations. The review can be completed on a time-and-expense basis in accordance with our current Fee Schedule.

5.2 CONSTRUCTION OBSERVATION AND TESTING

The construction process is an integral design component with respect to the geotechnical aspects of a project. Because geotechnical engineering is an inexact science due to the variability of natural processes and materials, and because we sample only a small portion of the soils affecting the performance of the proposed project, unanticipated or changed conditions can be disclosed during grading. Proper geotechnical observation and testing during construction is imperative to allow the geotechnical engineer the opportunity to verify assumptions made during the design process. Therefore, we recommend that Kleinfelder be retained during the construction of the proposed development to observe compliance with the design concepts and geotechnical recommendations, and to allow design changes in the event that subsurface conditions or methods of construction differ from those assumed while completing this study.

6 LIMITATIONS

This report has been prepared for the exclusive use of CenterPoint Integrated Solutions and its consultants and contractors for specific application to the proposed CarMax Automotive Dealership. The findings, conclusions and recommendations presented in this report were prepared in a manner consistent with the standards of care and skill ordinarily exercised by members of our profession practicing under similar conditions in the geographic vicinity and at the time the services will be performed. No warranty or guarantee, express or implied, is made. Our field exploration program for the geotechnical study of this project was based on the approximate building locations provided to us by the client.

The client has the responsibility to see that all parties to the project, including the designer, contractor, subcontractors, etc., are made aware of this report in its entirety. This report contains information that may be useful in the preparation of contract specifications. However, this report is not designed as a specification document and may not contain sufficient information for this use without proper modification.

This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance, but in no event later than one year from the date of the report. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party, other than the client who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of this report and the nature of the new project, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party and the client agrees to defend, indemnify, and hold harmless Kleinfelder from any claims or liability associated with such unauthorized use or non-compliance.

The scope of our geotechnical services did not include any environmental site assessment for the presence or absence of hazardous/toxic materials, including methane or other landfill related gases. Kleinfelder will assume no responsibility or liability whatsoever for any claim, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

7 REFERENCES

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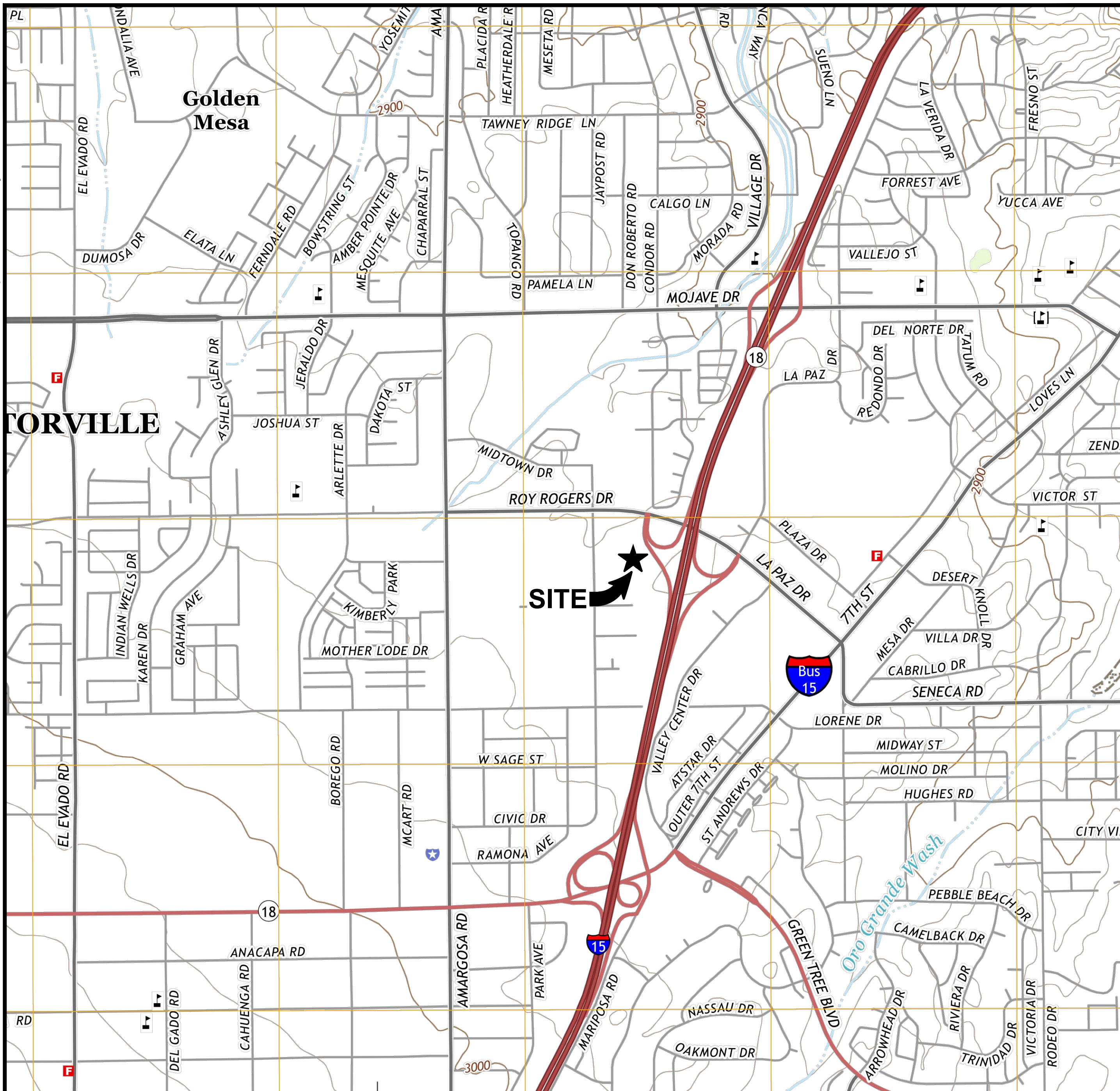
FIGURES

PLOTTED: 06 Jun 2018, 8:18pm, DFahrney

LAYOUT: 1

CAD FILE: U:\Projects\CADD\CADD 2018\20183689\

ATTACHED IMAGES:
ATTACHED XREFS:
RIVERSIDE, CA



SOURCE: U.S.G.S. 7.5' Topographic series, Victorville, California Quadrangle 2015.

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APPROXIMATE SCALE (feet)

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PROJECT NO.	20183689
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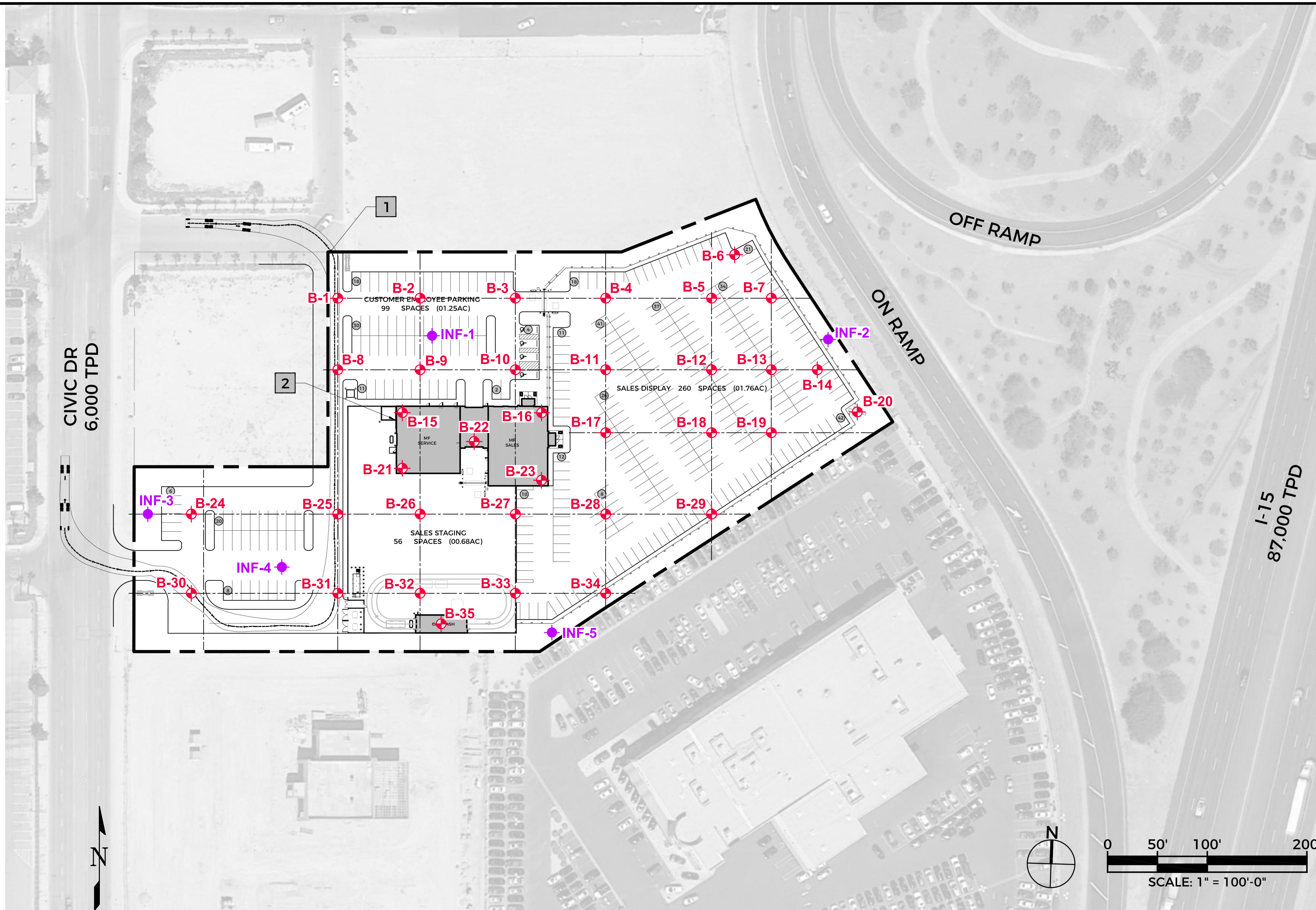
DRAWN BY:	DMF
CHECKED BY:	JDW
FILE NAME: 20183689_F1.dwg	

SITE VICINITY MAP

PROPOSED AUTOMOTIVE DEALERSHIP
3 PARCEL LOT EAST OF CIVIC DRIVE
VICTORVILLE, CALIFORNIA

FIGURE

1



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RIVERSIDE, CALIFORNIA

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EXPLANATION

B-35 APPROXIMATE LOCATION OF PROPOSED GEOTECHNICAL BORINGS

INF-5 APPROXIMATE LOCATION OF PROPOSED INFILTRATION TEST

REFERENCE: BASE MAP PROVIDED BY CARMAX, DATED 03/13/2018.

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DRAWN BY:	DMF
CHECKED BY:	JDW
FILE NAME:	20183689_F2.dwg

FIELD EXPLORATION LOCATION MAP

PROPOSED AUTOMOTIVE DEALERSHIP
3 PARCEL LOT EAST OF CIVIC DRIVE
VICTORVILLE, CALIFORNIA

FIGURE
2

APPENDIX A
FIELD EXPLORATIONS

APPENDIX A
FIELD EXPLORATION

The subsurface conditions at the site were explored by excavating and logging forty (40) hollow-stem auger borings. Percolation testing was conducted in five of the borings, INF-1, INF-2, INF-3, INF-4, and INF-5. The results of the percolation tests can be found in Appendix C. The borings were drilled with a CME-75 truck-mounted drill rig equipped with 9.5-inch diameter hollow-stem augers provided by CalPac Drilling of Calimesa, California. The drill rig mentioned above was equipped with an automatic hammer system to drive the samplers. The approximate locations of our borings are shown on Figure 2, Field Exploration Location Map.

The logs of borings are presented as Figures A-3 through A-42 Boring Logs. An explanation to the logs is presented on Figure A-1 and A-2. The Logs of Borings describe the earth materials encountered, samples obtained, and show field and laboratory tests performed. The logs also show the boring number, excavation date and the name of the logger and excavation subcontractor. A Kleinfelder staff engineer logged the borings utilizing the Unified Soil Classification System. The boundaries between soil types shown on the logs are approximate because the transition between different soil layers may be gradual. Bulk and drive samples of representative earth materials were obtained from the borings at maximum intervals of about 5 feet.

A California sampler was used to obtain drive samples of the soil encountered. This sampler consists of a 3 inch O.D., 2.4 inch I.D. split barrel shaft that is driven a total of 18 inches into the soil at the bottom of the boring. The soil was retained in six 1-inch brass rings for laboratory testing. The sampler was driven using a 140-pound hammer falling 30 inches. The total number of hammer blows required to drive the sampler the final 12 inches is termed the blow count and is recorded on the Logs of Borings. Where the sample was driven less than 12 inches, the number of blows to drive the sample for each 6-inch segment, or portion thereof, is shown on the logs. For example, 50/4" indicates 50 blows to drive the sampler 4 inches to refusal.

Samples were also obtained using a Standard Penetration Sampler (SPT). This sampler consists of a 2-inch O.D., 1.4-inch I.D. split barrel shaft that is advanced into the soils at the bottom of the drill hole a total of 18 inches. The sampler was driven using a 140 pounds hammer falling 30 inches. The total number of hammer blows required to drive the sampler the final 12 inches is termed the blow count (N-value) and is recorded on the Logs of Borings. Where the sample was driven less than 12 inches, the number of blows to drive the sample for each 6-inch segment, or portion thereof, is shown on the logs. The procedures we employed in the field are generally consistent with those described in ASTM Standard Test Method D-1586.

Soil samples by the SPT were stored in plastic bags. Bulk samples of the sub-surface soils were retrieved directly from the soil cuttings and placed in large plastic bags.

BORING LOG B-01

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear	**Bore Diameter:**	8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

FIELD EXPLORATION / LABORATORY RESULTS

Surface Condition: Bare Earth

Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1 inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet
5		very dense, white carbonate staining	1		BC=15 50/6"			12.4	100.2					
10		reddish yellow, iron oxide and carbonate staining	2		BC=7 12 20									
15		dense	3		BC=15 20 26									
20		fine to coarse-grained, light brownish gray, iron oxide and carbonate staining	4		BC=11 18 27									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

25

30

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	JW
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-01

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
A-3

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-02**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1 inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		very dense, decrease in gravel content	1		BC=22 50/6"			11.7	100.8					
10		reddish yellow, dense, iron oxide and carbonate staining	2		BC=9 18 35			5.0	112.4					
		Poorly Graded SAND with Gravel (SP): fine to coarse-grained, reddish yellow, dry to moist, dense, fine (1/2-inch) gravel, sub-angular to sub-rounded												
15			3		BC=13 18 19									
		Silty SAND (SM): fine to coarse-grained, light brownish gray, dry to moist, dense, trace fine (1/2-inch) gravel, sub-angular to sub-rounded, cohesionless												
20			4		BC=12 16 21									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

25

30

KLEINFELDER Bright People. Right Solutions.	PROJECT NO.: 20183689	BORING LOG B-02	FIGURE
	DRAWN BY: CC		
	CHECKED BY: JW	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	A-4
	DATE: 5/31/2018		
	REVISED: 6/4/2018		PAGE: 1 of 1

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-03**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine to coarse-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
		increase in gravel												
5		very dense, carbonate staining	1		BC=16 35 39			12.5	85.9					
10		fine-grained, yellowish brown, dense	2		BC=24 24 24									
15		fine to medium-grained, reddish yellow, trace coarse sand, trace fine (1/4-inch) gravel, sub-angular to subrounded	3		BC=11 16 16									
		Poorly Graded SAND (SP): fine to coarse-grained, reddish yellow, dry to moist, dense, cohesionless, trace fine (1/4-inch) gravel												
20			4		BC=8 11 15									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-03		FIGURE
DRAWN BY: CC			
CHECKED BY: JW	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		A-5
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-04**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine to coarse-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		dense, carbonate staining, decrease in gravel	1		BC=16 21 29			12.8	81.5					
10		fine-grained, yellowish brown	2		BC=10 17 25			5.1	116.3					
15		fine to medium-grained, iron oxide staining	3		BC=14 24 22									
19		**Poorly Graded SAND (SP)**: fine to coarse-grained, reddish yellow, dry to moist, dense, cohesionless												
20			4		BC=8 14 18									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-04		FIGURE
DRAWN BY: CC			
CHECKED BY: JW	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		A-6
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling	**BORING LOG B-05**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim	
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:** 140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger	
Weather:	Clear	**Bore Diameter:**	8 in. O.D.	

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine to coarse-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		dense	1		BC=9 17 28			7.3	90.1					
10		fine-grained, yellowish brown	2		BC=13 26 42									
15		iron oxide staining	3		BC=14 22 28									
		Poorly Graded SAND with Gravel (SP): fine to coarse-grained, reddish yellow, dry to moist, dense, fine (1/2-inch) gravel, sub-angular to sub-rounded												
20			4		BC=9 13 17									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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KLEINFELDER Bright People. Right Solutions.	PROJECT NO.: 20183689	BORING LOG B-05	FIGURE
	DRAWN BY: CC		A-7
	CHECKED BY: JW	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
	DATE: 5/31/2018		
	REVISED: 6/4/2018		PAGE: 1 of 1

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-06**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Surface Condition: Bare Earth / Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded	1											Hand auger to 5 feet - very difficult
5		fine to medium-grained, brown, dry to moist, dense, carbonate staining	2		BC=14 23 26			10.9	118.5					
10		light brownish gray, very dense, carbonate staining	3		BC=18 34 42									
15		**Silty SAND with Gravel (SM)**: fine to coarse-grained, reddish yellow to pink, dry to moist, very dense, fine (1/4-inch) gravel, sub-angular to sub-rounded	4		BC=16 29 32									
		Poorly Graded SAND (SP): fine to coarse-grained, reddish yellow, dry to moist, medium dense, cohesionless												
20			5		BC=10 12 13									

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The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

BORING LOG B-07

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear	**Bore Diameter:**	8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist												Hand auger to 5 feet - very difficult
5		fine to medium-grained, brown, dry to moist, medium dense, carbonate staining	1		BC=13 13 18			8.6	120.1					
10		yellowish brown, dense, carbonate staining	2		BC=11 17 25			11.9	105.1					
15		**Poorly Graded SAND with Gravel (SP)**: fine-grained, reddish yellow, dry to moist, dense, fine (up to 1/2-inch) gravel, sub-angular to sub-rounded	3		BC=10 18 24									
20		**Poorly Graded SAND (SP)**: fine to coarse-grained, reddish yellow to pink, dry to moist, medium dense, trace fine gravel	4		BC=9 12 15									

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The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-07

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE

A-9

BORING LOG B-08

Date Begin - End:	5/09/2018	**Drilling Company:**	Cal Pac Drilling
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear	**Bore Diameter:**	8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

Depth (feet)	Lithologic Description (FIELD EXPLORATION; Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0	**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5	very dense, carbonate staining	1		BC=10 33 50/5"			7.2	113.3					
10	reddish brown, dense	2		BC=11 15 25									
15	**Silty SAND with Gravel (SM)**: fine to coarse-grained, reddish yellow, dry to moist, dense, fine (1/2-inch) gravel, sub-angular to sub-rounded	3		BC=10 16 16									
18.5	**Silty SAND (SM)**: fine to coarse-grained, brown, dry to moist, dense, trace fine (1/2-inch) gravel, sub-angular to sub-rounded												
20		4		BC=10 19 22									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 09, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-08

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
A-10

Date Begin - End:	5/09/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-09**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		increase in fine to coarse (up to 3-inch) gravel, sub-angular to sub-rounded fine-grained, medium dense, carbonate staining	5 1		BC=11 20 15			4.4	106.4					
10		reddish yellow, medium dense	2		BC=6 11 22									
15		yellowish brown, dry to moist, dense, fine (1/2-inch) gravel, sub-angular to sub-rounded	3		BC=8 17 30									
20		light brownish gray, trace fine gravel	4		BC=9 14 17									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 09, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-09		FIGURE
DRAWN BY: CC			A-11
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

Date Begin - End:	5/09/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-10**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

FIELD EXPLORATION							LABORATORY RESULTS							
Depth (feet)	Graphical Log	Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		very dense	1		BC=15 26 35			11.0	93.8					
10		brown	2		BC=12 21 40									
15		fine to medium-grained, reddish yellow, dry to moist, dense	3		BC=14 22 24									
20		yellowish brown, dry to moist, trace fine (1/4-inch) gravel, sub-rounded to sub-angular	4		BC=8 13 15									

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The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 09, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689	BORING LOG B-10	FIGURE
DRAWN BY:	CC		A-12
CHECKED BY:	RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
DATE:	5/31/2018		
REVISED:	6/4/2018		PAGE: 1 of 1

BORING LOG B-11

Date Begin - End:	5/09/2018	**Drilling Company:**	Cal Pac Drilling
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear	**Bore Diameter:**	8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

FIELD EXPLORATION / LABORATORY RESULTS

Surface Condition: Bare Earth

Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand Auger to 5 feet - very difficult
5		very dense, gravel decreases to fine-grained (1/2-inch)	1		BC=10 29 50/4"			19.5	92.8					
10		reddish yellow, medium dense	2		BC=6 11 14									
15		iron oxide staining	3		BC=6 12 13									
		Poorly Graded SAND (SP): fine to coarse-grained, reddish yellow, dry to moist, dense												
20			4		BC=8 14 16									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 09, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-11

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE

A-13

BORING LOG B-12

Date Begin - End:	5/09/2018	**Drilling Company:**	Cal Pac Drilling		
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Surface Condition: Bare Earth / Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist												Hand auger to 5 feet
5		very dense, carbonate staining	1		BC=6 17 26			10.5	108.3					
10		light brownish gray, dense	2		BC=11 17 25									
15		yellowish brown, dense	3		BC=8 17 27									
		Poorly Graded SAND (SP): fine to coarse-grained, reddish yellow, dry, dense												
20			4		BC=9 13 18									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 09, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-12

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE

A-14

PLOTTED: 06/07/2018 08:36 AM BY: CCoffey

Date Begin - End:	5/08/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-13**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B53 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	6 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist												Hand auger to 5 feet
5		reddish brown to brown, very dense	1		BC=15 29 40			11.5	105.5					
10		light brownish gray, dense	2		BC=15 19 32									
15		reddish brown, very dense, iron oxide staining	3		BC=23 50/6"									
		Silty SAND with Gravel (SM): fine to coarse-grained, brown, dry, dense, fine (1/2-inch) gravel, sub-angular to sub-rounded												
20			4		BC=13 16 20									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-13	FIGURE
DRAWN BY: CC		
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	A-15
DATE: 5/31/2018		
REVISED: 6/4/2018		PAGE: 1 of 1

gINT FILE: Klf_gint_master_2017 PROJECT NUMBER: 20183689.001A OFFICE FILTER: RIVERSIDE
gINT TEMPLATE: E:KLF_STANDARD_GINT_LIBRARY_2017.GLB [__KLF_BORING/TEST PIT SOIL LOG]

Date Begin - End:	5/09/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-14**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Surface Condition: Bare Earth — Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist												Hand auger to 5 feet - very difficult
		reddish brown light brownish gray												
5		reddish brown, dense, carbonate staining	1		BC=5 14 29			9.9	106.4					
10		light brownish gray, iron oxide staining	2		BC=11 13 23									
15		reddish brown to brown	3		BC=10 14 18									
20		fine-grained, brown, moist, medium dense, trace coarse (up to 1-inch) gravel, little cohesion	4		BC=5 10 12									
25		The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 09, 2018.												
30														

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-14		FIGURE
DRAWN BY: CC			
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		A-16
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-15**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Sandy SILT (ML): fine-grained, light brownish gray, dry to moist, with fine-grained sand, trace fine (up to 3/8-inch) gravel, sub-angular to sub-rounded	1							96	54			Hand auger to 5 feet - very difficult
		increase in coarse (up to 2-inches) gravel, sub-angular to sub-rounded	6											
5		dense, trace fine to coarse (up to 1-inch) gravel, sub-angular to subrounded	2		BC=18 28 31			5.8	107.9					
		Silty SAND (SM): fine-grained, reddish yellow, dry to moist, dense												
10			3		BC=10 19 30			11.9	118.5					
15		**Silty SAND with Gravel (SM)**: fine to coarse-grained, reddish yellow, dry to moist, dense, fine to coarse (up to 1½ -inch) gravel, sub-angular to subrounded	4		BC=10 19 32									
20		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, dense, trace coarse sand, trace fine (1/2-inch) gravel, sub-angular to sub-rounded	5		BC=8 14 20									
25														
30														

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.:	20183689	BORING LOG B-15	FIGURE
DRAWN BY:	CC		A-17
CHECKED BY:	RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
DATE:	5/31/2018		
REVISED:	6/4/2018		PAGE: 1 of 1

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-16**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine to coarse-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded								98	38			Hand auger to 5 feet - very difficult
5		very dense, trace iron oxide staining	1		BC=11 15 20			16.8	95.1					Consolidation test
10		fine-grained, yellowish brown, dry to moist, medium dense, trace clay in shoe of sampler	2		BC=7 9 15			12.0	102.4					
		Poorly Graded SAND with Gravel (SP): fine-grained, reddish brown to pink, dry to moist, medium dense												
15			3		BC=12 18 26									
		Poorly Graded SAND (SP): fine-grained, reddish yellow, dry to moist, dense, cohesionless												
20			4		BC=8 14 24									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-16	FIGURE
DRAWN BY: CC		
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	A-18
DATE: 5/31/2018		
REVISED: 6/4/2018		PAGE: 1 of 1

BORING LOG B-17

Date Begin - End:	5/08/2018	**Drilling Company:**	Cal Pac Drilling		
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B53 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	6 in. O.D.		

FIELD EXPLORATION / LABORATORY RESULTS

Surface Condition: Bare Earth

Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist												Hand auger to 5 feet - very difficult
5		yellowish brown, very dense	1		BC=11 39 50/4"			13.8	92.3					
10		dense, trace iron oxide staining	2		BC=19 23 30									
15		reddish brown to red	3		BC=13 18 19									
		Poorly Graded SAND (SP): fine to coarse-grained, yellowish brown, dry to moist, dense, cohesionless												
20			4		BC=12 18 20									
25														
30														

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-17		FIGURE
DRAWN BY: CC			
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		A-19
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

BORING LOG B-18

Date Begin - End:	5/08/2018	**Drilling Company:**	Cal Pac Drilling		
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B53 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	6 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist												Hand auger to 5 feet - very difficult
5		fine to coarse-grained, reddish brown, very dense, carbonate staining	1		BC=30 30 42			13.8	106.9					
10		yellowish brown, iron oxide staining, carbonate staining	2		BC=23 41 50/5"									
15		fine-grained, yellowish brown, iron oxide staining	3		BC=12 18 31									
		Poorly Graded SAND (SP): fine to coarse-grained, yellowish brown, dry to moist, dense, cohesionless												
20			4		BC=13 18 22									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-18		FIGURE
DRAWN BY: CC			A-20
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

BORING LOG B-19

Date Begin - End:	5/08/2018	**Drilling Company:**	Cal Pac Drilling
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B53 Mobile
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear	**Bore Diameter:**	6 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist	1											Hand auger to 5 feet - very difficult R-Value test
5		reddish brown, very dense, carbonate staining	2		BC=22 50/6"			12.6	98.4					
10		moist, dense, carbonate staining	3		BC=13 15 22									
15		reddish yellow, very dense	4		BC=17 50/5.5"									
		Poorly Graded SAND (SP): fine to coarse-grained, yellowish brown to brown, dry to moist, dense, cohesionless												
20			5		BC=9 15 16									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

Date Begin - End:	5/08/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-20**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B53 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	6 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist												Hand auger to 5 feet - very difficult
5		reddish brown, medium dense, trace roots	1		BC=13 15 20			1.3	110.8					
10		brown to light grayish brown, dense	2		BC=15 26 30			12.8	103.7					
		trace fine to coarse (up to 1¼-inch) gravel, sub-angular to sub-rounded, in cuttings from 12 to 15 feet												
15		**Poorly Graded SAND (SP)**: fine to coarse-grained, yellowish brown to red, dry to moist, dense	3		BC=7 13 21									
20		reddish yellow, cohesionless	4		BC=11 14 14									
25														
30														

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

KLEINFELDER Bright People. Right Solutions.	PROJECT NO.: 20183689	BORING LOG B-20	FIGURE
	DRAWN BY: CC		A-22
	CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
	DATE: 5/31/2018		
	REVISED: 6/4/2018		PAGE: 1 of 1

Date Begin - End:	5/09/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-21**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

FIELD EXPLORATION / LABORATORY RESULTS

Depth (feet)	Graphical Log	Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
		cobbles up to 6-inches in diameter from 2½ to 3 feet	5											
5		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, dense, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded, carbonate staining	1		BC=9 17 28			9.6	102.1					
10			2		BC=11 17 26									
		Poorly Graded SAND (SP): fine to coarse-grained, reddish brown to pink, dry to moist, very dense, cohesionless												
15			3		BC=18 34 47									
		Silty SAND with Gravel (SM): fine to coarse-grained, brown, dry to moist, dense, fine (up to 1/2-inch) gravel, sub-angular to sub-rounded												
20			4		BC=8 16 20									
25														
30														

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 09, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-21		FIGURE
DRAWN BY: CC			
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		A-23
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

Date Begin - End:	5/09/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-22**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

FIELD EXPLORATION / LABORATORY RESULTS

Surface Condition: Bare Earth

Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine (up to 3/8-inch) gravel, sub-angular to sub-rounded	1					9.3	113.8					Hand auger to 5 feet - very difficult Direct Shear test Compaction Characteristics of Soil test
		Poorly Graded SAND with Gravel (SP): fine to coarse-grained, light brownish gray, dry to moist, with coarse (up to 3-inches) gravel, sub-angular to sub-rounded												
5		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine (up to 3/8-inch) gravel, sub-angular to sub-rounded reddish yellow, dense, carbonate staining	2		BC=15 19 29			6.9	115.5					
10		reddish brown, iron oxide staining	3		BC=9 17 20			7.2	116.8					
15		reddish brown to brown, very dense	4		BC=15 30 37									
20		fine to coarse-grained, light brownish gray, medium dense	5		BC=8 10 14									
25		fine-grained	6		BC=7 12 19									
30		yellowish brown	7		BC=9 15 17									

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PROJECT NO.:	20183689	BORING LOG B-22	FIGURE
DRAWN BY:	CC		A-24
CHECKED BY:	RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
DATE:	5/31/2018		
REVISED:	6/4/2018		PAGE: 1 of 2

Date Begin - End: 5/09/2018	**Drilling Company:** Cal Pac Drilling		**BORING LOG B-22**
Logged By: R. Ferryman	**Drill Crew:** James/Jeff/Tim		
Hor.-Vert. Datum: Not Available	**Drilling Equipment:** B61 Mobile	**Hammer Type - Drop:** 140 lb. Auto - 30 in.	
Plunge: -90 degrees	**Drilling Method:** Hollow Stem Auger		
Weather: Clear	**Bore Diameter:** 8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine (up to 3/8-inch) gravel, sub-angular to sub-rounded very dense	8		BC=16 35 45									
		Silty SAND with Gravel (SM): fine to coarse-grained, yellowish brown, dry to moist, dense, fine (up to 1/2-inch) gravel, sub-angular to sub-rounded												
40			9		BC=13 19 22									
		Poorly Graded SAND (SP): fine to coarse-grained, reddish brown, dry to moist, medium dense												
45			10		BC=8 12 14									
		Silty SAND (SM): fine-grained, yellowish brown, dry to moist, dense												
50			11		BC=13 17 17									

The boring was terminated at approximately 51.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 09, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-22

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
A-24

BORING LOG B-23

Date Begin - End: 5/10/2018
Logged By: R. Ferryman
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Clear

Drilling Company: Cal Pac Drilling
Drill Crew: James/Jeff/Tim
Drilling Equipment: B61 Mobile
Drilling Method: Hollow Stem Auger
Bore Diameter: 8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		very dense, trace iron oxide staining, pin hole voids in sample	1		BC=24 44 50/5.5"			12.4	98.6					
10		yellowish brown, medium dense, carbonate staining	2		BC=8 14 20									
15		reddish yellow, dense, iron oxide staining	3		BC=14 27 34									
		Poorly Graded SAND (SP): fine-grained, reddish yellow, dry to moist, dense, cohesionless												
20			4		BC=8 14 24									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 10, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.: 20183689
DRAWN BY: CC
CHECKED BY: RF
DATE: 5/31/2018
REVISED: 6/4/2018

BORING LOG B-23

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
A-25

BORING LOG B-24

Date Begin - End:	5/07/2018	**Drilling Company:**	Cal Pac Drilling		
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded	1											Hand auger to 5 feet - very difficult
5		dense, trace iron oxide staining	2		BC=10 22 32			9.1	96.0					
10		yellowish brown, moist, medium dense, carbonate staining	3		BC=9 16 18									
15		dense	4		BC=6 16 25									
20		**Poorly Graded SAND (SP)**: medium to coarse-grained, reddish brown, moist, medium dense, cohesionless	5		BC=9 12 15									
		Silty SAND (SM): fine-grained, light brownish gray, moist, medium dense												
25														
30														

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 07, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-24	FIGURE	
DRAWN BY: CC			
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	A-26	
DATE: 5/31/2018			
REVISED: 6/4/2018		PAGE: 1 of 1	

Date Begin - End:	5/08/2018	Drilling Company:	Cal Pac Drilling	BORING LOG B-25
Logged By:	R. Ferryman	Drill Crew:	James/Jeff/Tim	
Hor.-Vert. Datum:	Not Available	Drilling Equipment:	B53 Mobile	Hammer Type - Drop: 140 lb. Auto - 30 in.
Plunge:	-90 degrees	Drilling Method:	Hollow Stem Auger	
Weather:	Clear	Bore Diameter:	6 in. O.D.	

Depth (feet)	Graphical Log	FIELD EXPLORATION: Lithologic Description (Surface Condition: Bare Earth)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		reddish brown, dry to moist, dense, carbonate staining	1		BC=13 25 31			5.5	106.3					
10		very dense	2		BC=11 24 40									
15		yellowish brown, dense, trace fine (up to 1/2 inch) gravel, sub-angular to sub-rounded	3		BC=16 20 29									
20			4		BC=14 19 24									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689	BORING LOG B-25	FIGURE
DRAWN BY:	CC		
CHECKED BY:	RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	A-27
DATE:	5/31/2018		
REVISED:	6/4/2018		PAGE: 1 of 1

Date Begin - End: 5/08/2018	**Drilling Company:** Cal Pac Drilling		**BORING LOG B-26**
Logged By: R. Ferryman	**Drill Crew:** James/Jeff/Tim		
Hor.-Vert. Datum: Not Available	**Drilling Equipment:** B53 Mobile	**Hammer Type - Drop:** 140 lb. Auto - 30 in.	
Plunge: -90 degrees	**Drilling Method:** Hollow Stem Auger		
Weather: Clear	**Bore Diameter:** 6 in. O.D.		

FIELD EXPLORATION							LABORATORY RESULTS							
Depth (feet)	Graphical Log	Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		yellowish brown, very dense, carbonate staining	1		BC=20 35 49			6.2	113.1					
10		medium dense, iron oxide staining	2		BC=12 14 19									
15			3		BC=17 26 28									
20			4		BC=10 13 17									
25														
30														

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

KLEINFELDER Bright People. Right Solutions.	PROJECT NO.: 20183689 DRAWN BY: CC CHECKED BY: RF DATE: 5/31/2018 REVISED: 6/4/2018	BORING LOG B-26 Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	FIGURE A-28

BORING LOG B-27

Date Begin - End:	5/08/2018	**Drilling Company:**	Cal Pac Drilling
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B53 Mobile
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear	**Bore Diameter:**	6 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

		FIELD EXPLORATION					LABORATORY RESULTS							
Depth (feet)	Graphical Log	Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		yellowish brown, very dense, carbonate staining	1		BC=9 31 50/5"			11.3	94.3					
10		medium dense	2		BC=10 14 16									
15		iron oxide staining	3		BC=15 17 22									
20			4		BC=10 15 19									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-27

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
A-29

Date Begin - End:	5/07/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-28**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

FIELD EXPLORATION / LABORATORY RESULTS

Surface Condition: Bare Earth

Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Sandy SILT (ML): fine-grained, light brownish gray, dry to moist, with fine-grained sand, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		**Silty SAND (SM)**: fine-grained, reddish brown to yellowish brown, dry to moist, very dense	1		BC=9 29 43			22.0	88.3	99	40			
10		yellowish brown, dense	2		BC=14 24 19									
15		very dense, trace black staining	3		BC=16 27 31									
20		fine to coarse-grained, light brownish gray	4		BC=11 21 21									

25

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The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 07, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689	BORING LOG B-28	FIGURE
DRAWN BY:	CC		A-30
CHECKED BY:	RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
DATE:	5/31/2018		
REVISED:	6/4/2018		PAGE: 1 of 1

Date Begin - End:	5/07/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-29**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

		FIELD EXPLORATION					LABORATORY RESULTS							
Depth (feet)	Graphical Log	Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine (3/8-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		reddish brown, very dense, carbonate staining	1		BC=6 20 34			10.5	117.5					
		reddish yellow												
10		light brownish gray, very dense, carbonate staining	2		BC=16 28 39			5.5	116.2					
15		fine to coarse-grained, reddish brown to reddish yellow, moist, medium dense, iron oxide staining	3		BC=10 13 13									
20		light brownish gray	4		BC=10 13 13									

25

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The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 07, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

KLEINFELDER
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PROJECT NO.:	20183689	BORING LOG B-29	FIGURE
DRAWN BY:	CC		A-31
CHECKED BY:	RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
DATE:	5/31/2018		
REVISED:	6/4/2018		PAGE: 1 of 1

Date Begin - End: 5/07/2018
Logged By: R. Ferryman
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Clear

Drilling Company: Cal Pac Drilling
Drill Crew: James/Jeff/Tim
Drilling Equipment: B61 Mobile
Drilling Method: Hollow Stem Auger
Bore Diameter: 8 in. O.D.

BORING LOG B-30

Hammer Type - Drop: 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION: Surface Condition: Bare Earth / Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
		brown												
5		yellowish brown, moist, very dense	1		BC=14 50/6"			9.7	110.8					
10		medium dense, iron oxide staining	2		BC=10 18 30			7.9	107.1					
15			3		BC=11 17 21									
20		decrease in iron oxide staining	4		BC=8 16 23									
25														
30														

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 07, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-30

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
A-32

Date Begin - End:	5/07/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-31**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

FIELD EXPLORATION							LABORATORY RESULTS							
Depth (feet)	Graphical Log	Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		dry to moist, dense, carbonate staining	1		BC=7 9 26			4.8	100.5					
10		yellowish brown, very dense	2		BC=14 40 50/5"									
15		fine to coarse-grained, dense, trace fine (up to 1/4-inch) gravel	3		BC=5 18 20									
20		light brownish gray, decrease in gravel	4		BC=8 19 20									
25														
30														

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 07, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-31		FIGURE
DRAWN BY: CC			A-33
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

BORING LOG B-32

Date Begin - End: 5/07/2018
Logged By: R. Ferryman
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Clear

Drilling Company: Cal Pac Drilling
Drill Crew: James/Jeff/Tim
Drilling Equipment: B61 Mobile
Drilling Method: Hollow Stem Auger
Bore Diameter: 8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

Surface Condition: Bare Earth

Depth (feet)	Graphical Log	Lithologic Description (FIELD EXPLORATION)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol (LABORATORY RESULTS)	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0		**Silty SAND (SM)**: fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded												Hand auger to 5 feet - very difficult
5		yellowish brown, moist, dense, trace carbonate staining	1		BC=4 13 22			5.1	130.5					
10			2		BC=14 14 35									
15		fine to coarse-grained	3		BC=13 15 17									
20			4		BC=12 17 18									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 07, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

KLEINFELDER
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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-32

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
A-34

Date Begin - End:	5/08/2018	Drilling Company:	Cal Pac Drilling	BORING LOG B-33
Logged By:	R. Ferryman	Drill Crew:	James/Jeff/Tim	
Hor.-Vert. Datum:	Not Available	Drilling Equipment:	B53 Mobile	Hammer Type - Drop: 140 lb. Auto - 30 in.
Plunge:	-90 degrees	Drilling Method:	Hollow Stem Auger	
Weather:	Clear	Bore Diameter:	6 in. O.D.	

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded reddish brown												Hand auger to 5 feet - very difficult
5		yellowish brown, very dense, carbonate staining	1		BC=15 38 50/3"			9.8	119.8					
10		reddish brown	2		BC=19 50/6"									
15		fine to coarse-grained, yellowish brown, dense	3		BC=13 17 22									
20		trace fine (up to 1/2-inch) gravel, sub-angular to sub-rounded	4		BC=22 24 24									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

25

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG B-33

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
A-35

Date Begin - End:	5/08/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-34**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B53 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	6 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Surface Condition: Bare Earth / Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded reddish brown												Hand auger to 5 feet - very difficult
5		light brownish gray, very dense, carbonate staining	1		BC=18 40 50/5"			4.2	109.4					
10		reddish brown, dense, carbonate staining nodules	2		BC=7 11 27									
15		fine to coarse-grained, brown, medium dense	3		BC=7 12 13									
20		yellowish brown, very dense	4		BC=14 25 36									

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 08, 2018.

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GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.: 20183689	BORING LOG B-34	FIGURE
DRAWN BY: CC		A-36
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
DATE: 5/31/2018		
REVISED: 6/4/2018		PAGE: 1 of 1

PLOTTED: 06/07/2018 08:47 AM BY: CCoffey

Date Begin - End:	5/07/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG B-35**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

FIELD EXPLORATION / LABORATORY RESULTS

Surface Condition: Bare Earth

Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist, trace fine to coarse (up to 1-inch) gravel, sub-angular to sub-rounded	1											Hand auger to 5 feet - very difficult
5		**Poorly Graded SAND (SP)**: fine to coarse-grained, reddish yellow, dense, trace fine (up to 1/2 inch) gravel, sub-angular to sub-rounded	2		BC=9 16 20			1.3	107.9					
		Silty SAND (SM): fine-grained, light reddish brown, moist												
10			3		BC=15 20 32			6.7	86.9					
15		fine to medium-grained, reddish yellow	4		BC=11 23 32									
20		fine-grained, yellowish brown	5		BC=11 16 18									

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The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with auger cuttings on May 07, 2018.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

OFFICE FILTER: RIVERSIDE

gINT FILE: Klf_gint_master_2017 PROJECT NUMBER: 20183689.001A
gINT TEMPLATE: E:KLF_STANDARD_GINT_LIBRARY_2017.GLB [_KLF_BORING/TEST PIT SOIL LOG]

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PROJECT NO.: 20183689	BORING LOG B-35		FIGURE
DRAWN BY: CC			
CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California		A-37
DATE: 5/31/2018			
REVISED: 6/4/2018			PAGE: 1 of 1

BORING LOG INF-1

Date Begin - End:	5/10/2018	**Drilling Company:**	Cal Pac Drilling
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear	**Bore Diameter:**	8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist	1					5.3		100	49			Hand auger to 4.5 feet - very difficult

5

The percolation test hole was terminated at approximately 4.5 ft. below ground surface. The percolation test hole was backfilled with approximately 2 inches of gravel and perforated pipe for testing. After testing was complete, the boring was backfilled with soil cuttings.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG INF-1

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE

A-38

Date Begin - End:	5/09/2018	Drilling Company:	Cal Pac Drilling	BORING LOG INF-2
Logged By:	R. Ferryman	Drill Crew:	James/Jeff/Tim	
Hor.-Vert. Datum:	Not Available	Drilling Equipment:	B61 Mobile	Hammer Type - Drop: 140 lb. Auto - 30 in.
Plunge:	-90 degrees	Drilling Method:	Hollow Stem Auger	
Weather:	Clear	Bore Diameter:	8 in. O.D.	

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist	1					2.7		100	46			Hand auger to 4.5 feet - very difficult

5

The percolation test hole was terminated at approximately 4.5 ft. below ground surface. The percolation test hole was backfilled with approximately 2 inches of gravel and perforated pipe for testing. After testing was complete, the boring was backfilled with soil cuttings.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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KLEINFELDER
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PROJECT NO.:	20183689	BORING LOG INF-2	FIGURE
DRAWN BY:	CC		A-39
CHECKED BY:	RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
DATE:	5/31/2018		
REVISED:	6/4/2018		PAGE: 1 of 1

Date Begin - End:	5/07/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG INF-3**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION: Surface Condition: Bare Earth — Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0–4.5		**SILT (ML)**: light brownish gray, dry to moist, trace fine-grained sand	1					14.0		100	95			Hand auger to 4.5 feet - very difficult

The percolation test hole was terminated at approximately 4.5 ft. below ground surface. The percolation test hole was backfilled with approximately 2 inches of gravel and perforated pipe for testing. After testing was complete, the boring was backfilled with soil cuttings.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

Depth scale: 5, 10, 15, 20, 25, 30

KLEINFELDER Bright People. Right Solutions.	PROJECT NO.: 20183689	BORING LOG INF-3	FIGURE
	DRAWN BY: CC		A-40
	CHECKED BY: RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
	DATE: 5/31/2018		
	REVISED: 6/4/2018		PAGE: 1 of 1

Date Begin - End:	5/07/2018	**Drilling Company:**	Cal Pac Drilling		**BORING LOG INF-4**
Logged By:	R. Ferryman	**Drill Crew:**	James/Jeff/Tim		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	B61 Mobile	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	Clear	**Bore Diameter:**	8 in. O.D.		

Depth (feet)	Graphical Log	FIELD EXPLORATION Surface Condition: Bare Earth Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Silty SAND (SM): fine-grained, light brownish gray, dry to moist	1					8.5		100	32			Hand auger to 4.5 feet - very difficult
5														

The percolation test hole was terminated at approximately 4.5 ft. below ground surface. The percolation test hole was backfilled with approximately 2 inches of gravel and perforated pipe for testing. After testing was complete, the boring was backfilled with soil cuttings.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.

GENERAL NOTES:

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PROJECT NO.:	20183689
DRAWN BY:	CC
CHECKED BY:	RF
DATE:	5/31/2018
REVISED:	6/4/2018

BORING LOG INF-4

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE

A-41

Date Begin - End:	5/07/2018 - 5/08/2018	Drilling Company:	Cal Pac Drilling	BORING LOG INF-5
Logged By:	R. Ferryman	Drill Crew:	James/Jeff/Tim	
Hor.-Vert. Datum:	Not Available	Drilling Equipment:	B61 Mobile	Hammer Type - Drop: 140 lb. Auto - 30 in.
Plunge:	-90 degrees	Drilling Method:	Hollow Stem Auger	
Weather:	Clear	Bore Diameter:	8 in. O.D.	

Depth (feet)	Graphical Log	FIELD EXPLORATION: Surface Condition: Bare Earth / Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	LABORATORY RESULTS: USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
0–4.5		**Silty SAND (SM)**: light brownish gray, dry to moist, fine-grained sand	1					6.9		100	42			Hand auger to 4.5 feet - very difficult

Depth scale: 5, 10, 15, 20, 25, 30

The percolation test hole was terminated at approximately 4.5 ft. below ground surface. The percolation test hole was backfilled with approximately 2 inches of gravel and perforated pipe for testing. After testing was complete, the boring was backfilled with soil cuttings.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:

KLEINFELDER
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PROJECT NO.:	20183689	BORING LOG INF-5	FIGURE
DRAWN BY:	CC		A-42
CHECKED BY:	RF	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
DATE:	5/31/2018		
REVISED:	6/4/2018		PAGE: 1 of 1

APPENDIX B
LABORATORY TESTING

APPENDIX B
LABORATORY TESTING

Laboratory tests were performed on representative intact and bulk soil samples to estimate engineering characteristics of the various earth materials encountered. Laboratory testing was performed by Kleinfelder, with the exception of corrosion testing which was performed by AP Engineering and Testing, Inc. of Pomona, California. Testing was performed in accordance with one of the following references:

1. ASTM Standards for Soil Testing, latest revisions.
2. State of California Department of Transportation, Standard Test Methods, latest revisions.

LABORATORY MOISTURE DETERMINATIONS AND UNIT WEIGHTS

Moisture content and dry unit weight tests were performed on selected samples recovered from the borings. Moisture contents and dry unit weights were determined in general accordance with ASTM Test Method D2216 and D7263, respectively. Results of these tests are presented on the boring logs.

GRAIN SIZE DISTRIBUTION AND HYDROMETER ANALYSIS

The grain-size distribution was determined for selected samples of the materials encountered at the site to aid in their classification. The tests were performed in general accordance with ASTM Test Method D6913. Results of the testing are presented as Figure B-1 and Figure B-2, Grain Size Distribution.

REMOLDED DIRECT SHEAR

One bulk sample was remolded to 90 percent relative compaction, and subjected to direct shear testing to evaluate the shear strength parameters of engineered fill in general accordance with ASTM Standard Test Method D3080. The soil sample was soaked to near saturation prior to testing. The results are presented as Figure B-3.

CONSOLIDATION TESTS

Consolidation testing was performed on one relatively undisturbed sample in accordance with ASTM Standard Test Method D-2435. The test result is presented as Figure B-4, Consolidation Test.

MAXIMUM DENSITY

A maximum density/optimum moisture test was performed on a select bulk sample of the on-site soils to determine compaction characteristics. The test was performed in accordance with ASTM Standard Test Method D-1557-91. The result of the test is presented below in Table B-1.

Table B-1

Maximum Dry Density and Optimum Moisture

Boring	Depth (ft)	Maximum Density (pcf)	Optimum Moisture (%)
B-22	0-5	126.2	9.3

R-VALUE TEST

Resistance value (R-value) testing was performed on a selected sample of the near-surface soils to evaluate pavement support characteristics of the near-surface onsite soils. R-value testing was performed in accordance with Caltrans Standard Test Method 301. Results of these tests are presented below in Table B-2.

Table B-2

R-Value Test Results

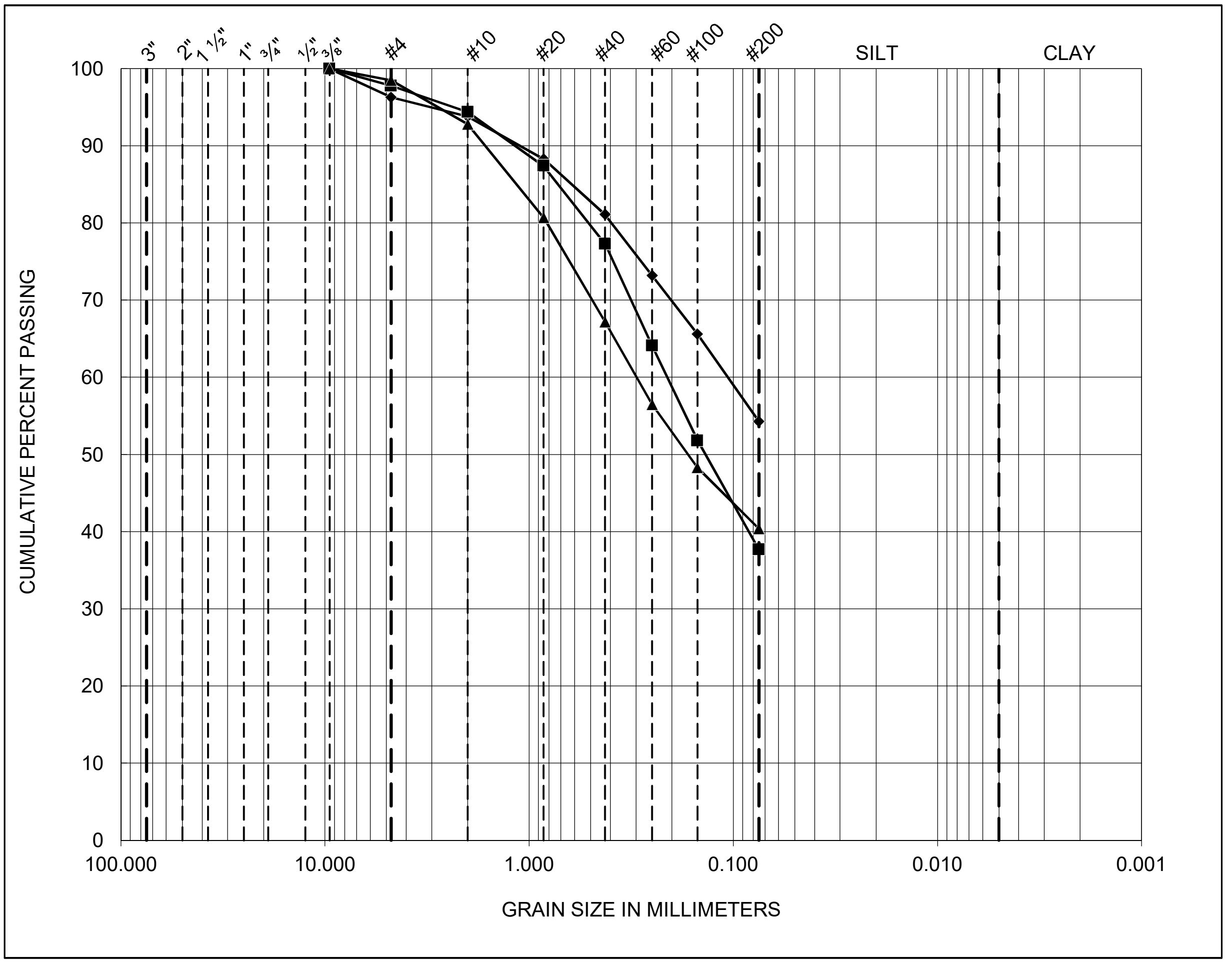
Boring	Depth (ft)	R-Value
B-19	0-5	54

PRELIMINARY SOIL CORROSIVITY

A series of chemical tests were performed on a selected sample of the near-surface soils to estimate pH, resistivity and sulfate and chloride contents. The sample was tested in general accordance with California Test Methods 643, 422, and 417 for pH and minimum resistivity, soluble chlorides, and soluble sulfates, respectively. Test results may be used by a qualified corrosion engineer to evaluate the general corrosion potential with respect to construction materials. The tests were performed by AP Engineering and Laboratory, Inc. of Pomona, California. Results of these tests are presented below in Table B-3.

Table B-3
Preliminary Corrosion Test Results

Boring	Depth (ft)	pH	Sulfate (percent)	Chloride (percent)	Resistivity (ohm-cm)
B-1	0-5	8.6	44	52	2,400

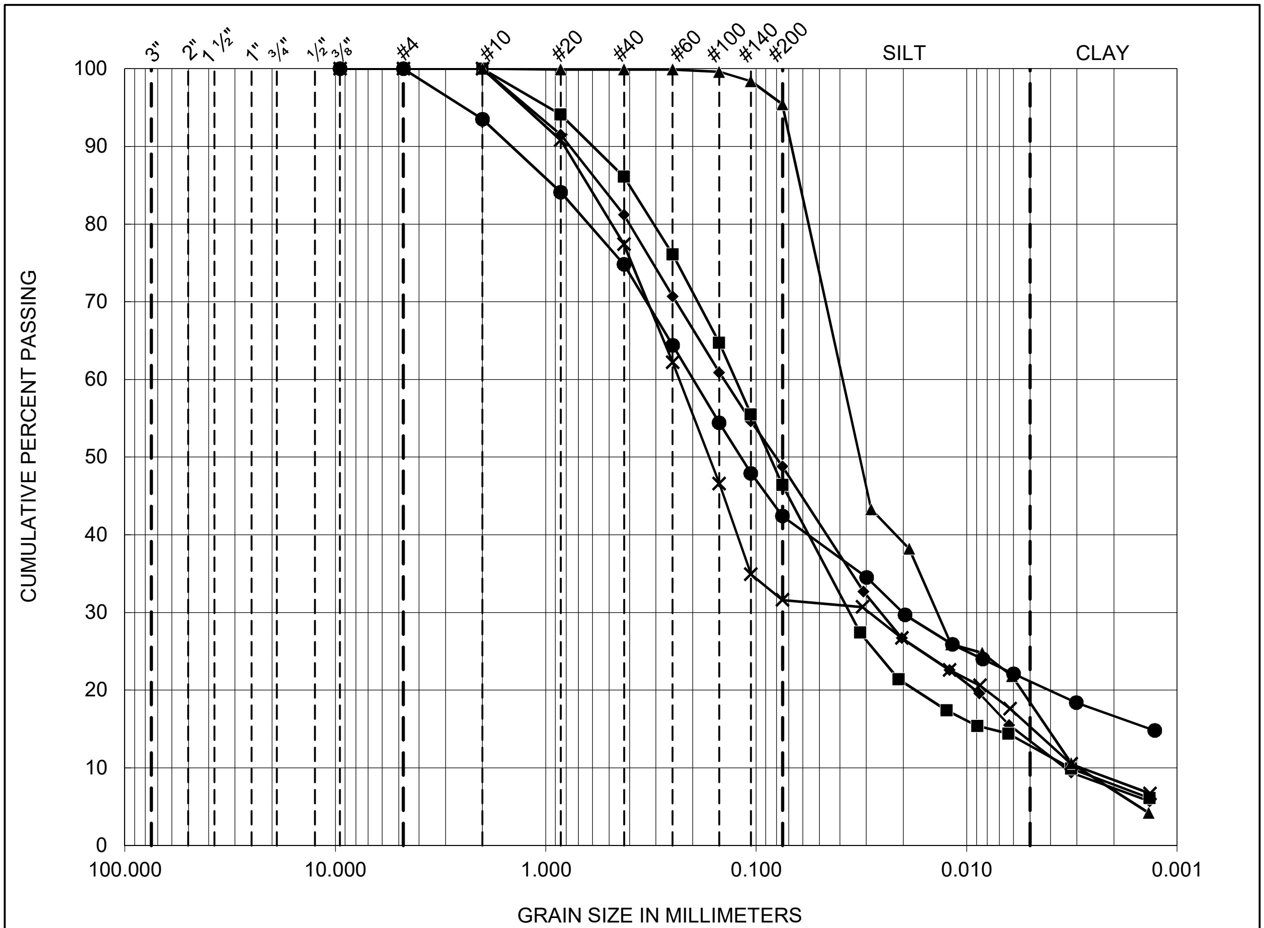


COBBLE	GRAVEL	SAND	SILT	CLAY

SYMBOL	SAMPLE IDENTIFICATION			PERCENTAGES			ATTERBERG LIMITS			SOIL CLASSIFICATION
	BORING NO.	SAMPLE NO.	DEPTH (ft.)	GRAVEL	SAND	FINES	LL	PL	PI	
◆	B-15	1	0-5	3.7	42.0	54.3	N/A	N/A	N/A	Sandy Silt (ML)
■	B-22	1	0-5	2.2	60.1	37.7	N/A	N/A	N/A	Silty Sand (SM)
▲	B-28	1	5	1.5	58.1	40.4	N/A	N/A	N/A	Silty Sand (SM)

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:20183689	GRAIN SIZE DISTRIBUTION	FIGURE
TESTED BY: J. Diaz		
DATE: 5/21/2018	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	B-1
CHECKED BY: J. Waller		
DATE: 6/6/18		



COBBLE	GRAVEL	SAND	SILT	CLAY

SYMBOL	SAMPLE IDENTIFICATION			PERCENTAGES			ATTERBERG LIMITS			SOIL CLASSIFICATION
	BORING NO.	SAMPLE NO.	DEPTH (ft.)	GRAVEL	SAND	FINES	LL	PL	PI	
◆	INF-1	1	4 - 4.5	0.0	51.2	48.8	N/A	N/A	N/A	Silty Sand (SM)
■	INF-2	1	4 - 4.5	0.0	53.6	46.4	N/A	N/A	N/A	Silty Sand (SM)
▲	INF-3	1	4 - 4.5	0.0	4.6	95.4	N/A	N/A	N/A	Silt (ML)
×	INF-4	1	4 - 4.5	0.0	68.4	31.6	N/A	N/A	N/A	Silty Sand (SM)
●	INF-5	1	4 - 4.5	0	57.6	42.4	N/A	N/A	N/A	Silty Sand (SM)

KLEINFELDER
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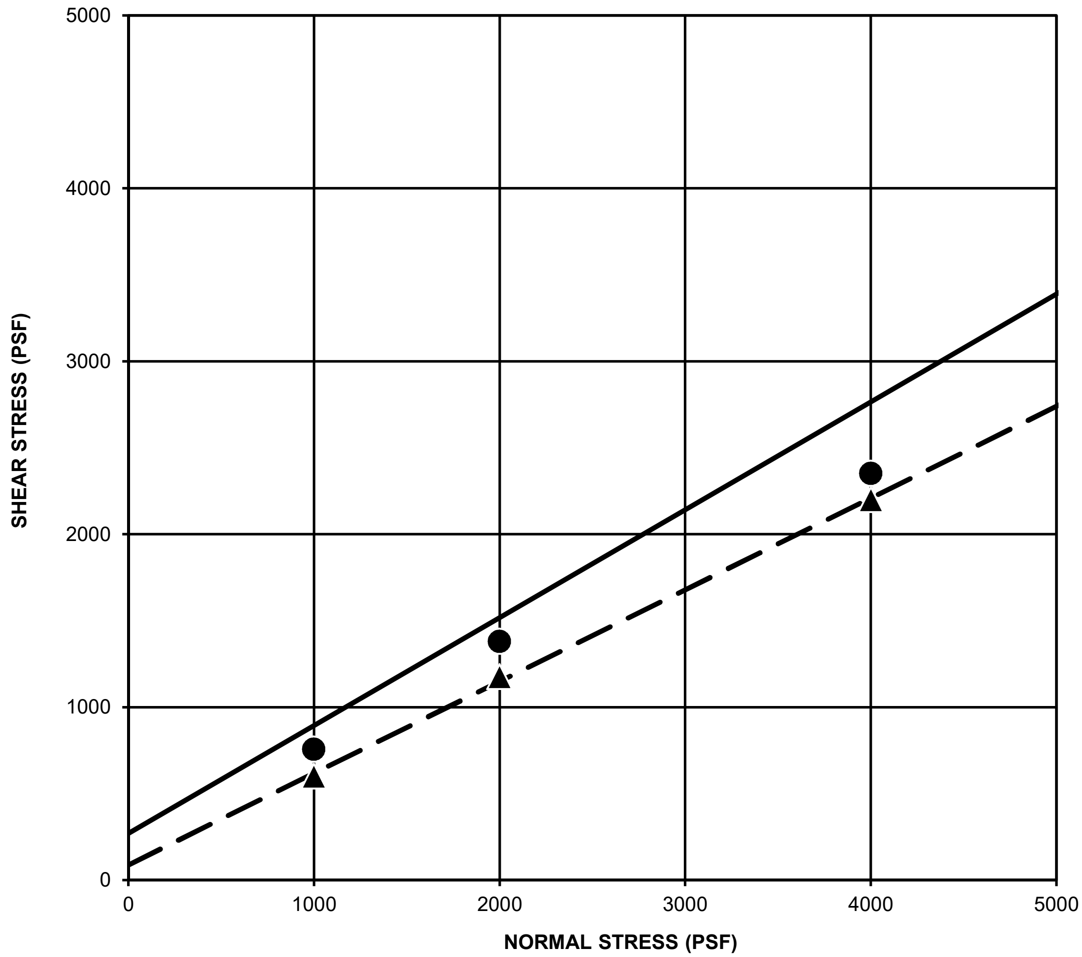
PROJECT NO.: 20183689
TESTED BY: J. Diaz
DATE: 5/21/2018
CHECKED BY: J. Waller
DATE: 6/6/18

GRAIN SIZE DISTRIBUTION

Proposed Automotive Dealership
3 Parcel Lot East of Civic Drive
Victorville, California

FIGURE
B-2



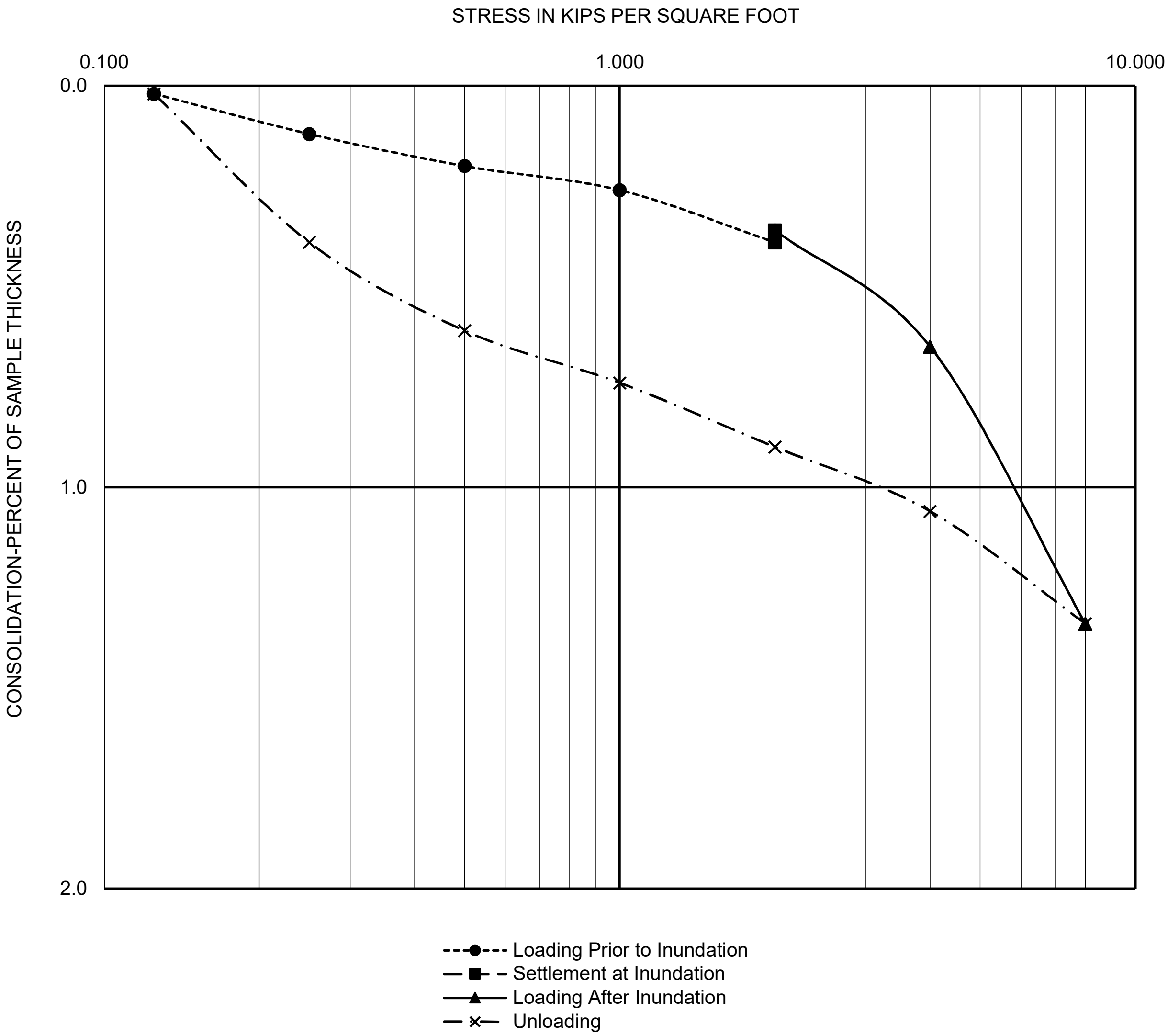
SYMBOL		BORING NO.	SAMPLE NO.	DEPTH (ft)	COHESION (psf)	FRICTION ANGLE (deg)	SOIL CLASSIFICATION
PEAK	●	B-22	1	0-5	270.0	28	Olive Brown Sandy Silt / Silty Sand (ML / SM)
ULTIMATE	▲	B-22	1	0-5	88.0	28	Olive Brown Sandy Silt / Silty Sand (ML / SM)

INITIAL MOISTURE (%):	9.3%	Normal Stress (psf)	1000	2000	4000
INITIAL DRY DENSTIY (pcf):	113.8	Peak Stress (psf)	756	1380	2352
FINAL MOISTURE (%):	17.8%	Ultimate Stress (psf)	600	1176	2200

Performed in general accordance with ASTM D 3080, Sample remolded to 90% relative compaction

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.20183689 TESTED BY: J. Diaz	DIRECT SHEAR TEST	FIGURE
DATE: 5/21/2018 CHECKED BY: J. Waller DATE: 6/6/2018	Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	B-3



SAMPLE IDENTIFICATION			SOIL CLASSIFICATION
BORING NO.	**SAMPLE NO.**	**DEPTH (ft.)**	
B-16	1	5	Silty Sand (SM)

INITIAL MOISTURE (%): 16.8

INITIAL DRY DENSITY (PCF): 95.1

FINAL MOISTURE(%): 30.3

Testing performed in general accordance with ASTM D2435/D2435M - 11

KLEINFELDER Bright People. Right Solutions.	PROJECT NO.: 20183689.001A		CONSOLIDATION TEST	FIGURE
	TESTED BY: J. Dlaz			B-4
	DATE: 5/11/2018		Proposed Automotive Dealership 3 Parcel Lot East of Civic Drive Victorville, California	
	CHECKED BY: J. Diaz			
	DATE: 5/29/2018			

APPENDIX C
BOREHOLE INFILTRATION TESTING

APPENDIX C
BOREHOLE INFILTRATION TESTING

Borehole infiltration testing was performed in general accordance with Appendix D of the San Bernardino County – Technical Guidance Document for Water Quality Management Plans. Based on Infiltration Testing Requirements and our selection of the Shallow Percolation Test, we performed five borehole infiltration tests in five Borings. The total depth of each of the five borings to perform percolation tests was approximately 4.5 feet. At the conclusion of drilling, the augers were removed vertically from the borings to limit the amount of "smearing" of the boring sidewall. Within each boring, approximately 2 inches of gravel was added to the bottom. Perforated pipe was then placed with the bottom directly on the gravel bottom. The pre-saturation of the boreholes subsequently commenced.

The long-term design infiltration rate is selected by applying a factor to the short-term percolation rate. The onsite percolation test results provide the short-term percolation rate of a soil layer. The long-term design infiltration rate is the short-term value with factors of safety applied. The factor to be implemented is selected with direction from the San Bernardino County Technical Guidance Document and is shown in the tables below. Table C-1 presents the suitability related considerations.

Table C-1
Suitability Assessment

Consideration	Assigned Weight	Factor Value	Factor Product
Soil assessment methods	0.25	2	0.5
Predominant soil texture	0.25	2	0.5
Site Soil Variability	0.25	1	0.25
Depth to groundwater / impervious layer	0.25	1	0.25
	Average		**1.5**

The factor is also evaluated based on the project site and the type of BMP system proposed. Table C-2 below presents these considerations.

Table C-2
Design Related Considerations

Consideration	Assigned	Factor Value	Assigned Factor
Tributary Area	0.25	2	0.5
Level of Pretreatment	0.25	2	0.5
Redundancy	0.25	2	0.5
Compaction During Construction	0.25	2	0.5
	Average		**2.0**

The Design Related Consideration factors can change based on the actual design of the BMP system.

The total correction factor is 1.5 * 2.0 = **3.0**

The short-term percolation rates are the results from our onsite testing. The long-term infiltration rates are calculated by dividing the percolation rate by the Total Correction Factor described above. The short-term percolation rates and the long-term infiltration rates are presented below.

Table C-3
Percolation and Infiltration Rates

Location	Depth of Test (ft)	Short-term Percolation Rate (in/hour)	Long-term Design Infiltration Rate (in/hour)
INF-1	4.5	1.08	0.36
INF-2	4.5	0.66	0.22
INF-3	4.5	0.87	0.29
INF-4	4.5	0.63	0.21
INF-5	4.5	0.69	0.23