Appendix E:
Geotechnical Evaluation

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GEOTECHNICAL EVALUATION
PROPOSED WAL-MART SUPERCENTER
SEC LIMONITE AND ARCHIBALD AVENUES
EASTVALE, CALIFORNIA

PREPARED FOR:
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March 28, 2011
Project No. 107078001

March 28, 2012
Project No. 107078001

Mr. Kevin Roberson
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Orange, California 92868

Subject: Geotechnical Evaluation
Proposed Wal-Mart Supercenter
SEC Limonite and Archibald Avenues
Eastvale, California

Dear Mr. Roberson:

In accordance with your request and authorization, we have performed a geotechnical evaluation for the proposed Wal-Mart Supercenter at the southeast corner of Limonite and Archibald Avenues in Eastvale, California. This report summarizes our findings and presents our conclusions and recommendations regarding the geotechnical aspects of the planned construction. Our study was conducted in accordance with the scope of services presented in our revised proposal of March 4, 2011. Our evaluation was performed in general accordance with Wal-Mart's Geotechnical Investigation Specifications and Report Requirements (2011). This report was prepared for the exclusive use of Kimley-Horn and Associates, Inc., Wal-Mart Stores, Inc., and their respective successors or assigns.

We appreciate the opportunity to be of service on this project.

Sincerely,
NINYO & MOORE

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1. INTRODUCTION

In accordance with your request and authorization, we have performed a geotechnical evaluation for the proposed Wal-Mart Supercenter at the southeast corner (SEC) of Limonite and Archibald Avenues in Eastvale, California (Figure 1). The purpose of this study was to evaluate the subsurface soil and geologic conditions and to provide geotechnical design recommendations for the proposed construction. Our evaluation was performed in general accordance with Wal-Mart's Geotechnical Investigation Specifications and Report Requirements (GISRR, 2011). However, due to access restrictions our borings (although sufficient to characterize the site conditions) could not all be drilled in strict conformance with the GISRR. This report presents our findings, conclusions, and geotechnical recommendations based on subsurface exploration, laboratory testing, and geotechnical analyses.

2. SCOPE OF SERVICES

The scope of our geotechnical services included the following:

- Project coordination and review of readily available published and in-house geotechnical literature pertaining to the site and the general site area, including geologic and fault maps, and geotechnical and environmental reports for the site.

- Coordination and mobilization for the performance of geotechnical reconnaissance of the site to observe the existing site conditions and to mark-out boring locations for utility clearance by Underground Service Alert (USA).

- Performance of a subsurface exploration consisting of the drilling, logging, and sampling of 107 small-diameter borings. The borings were advanced to depths up to approximately 101 feet. The purpose of the borings was to explore the subsurface conditions at the site and to collect soil samples for geotechnical and environmental laboratory testing and analysis.

- Performance of an infiltration test. The purpose of the infiltration test was to evaluate the infiltration rate of on-site soils in the proposed detention pond area.

- Performance of geotechnical laboratory testing on selected soil samples to evaluate geotechnical design parameters. Testing included an evaluation of in-situ moisture content and dry density, gradation analysis, Atterberg limits, consolidation, shear strength, expansion index, soil corrosivity, R-value, total organic content, and topsoil analysis.

- Geotechnical analysis of the data obtained from our background review, site reconnaissance, subsurface exploration, and laboratory testing.
- Preparation of this report presenting our findings, conclusions, and recommendations pertaining to the design and construction of the proposed construction.

3. SITE CONDITIONS

Currently, the irregularly-shaped, approximately 40-acre site of the proposed Wal-Mart Supercenter is generally undeveloped. The site was previously used as a dairy farm and structures and debris (buildings, pavements, concrete and block walls, and wood and concrete fragments) remain on site. Portions of the site are fields with vegetative cover of grass and shrubs (Figure 2). Empty pond structures are present in the southwest portion of the site. The site is bordered by Limonite Avenue/Cloverdale Road to the north, single-family residences to the east, the James C. Huber Park to the south, and Archibald Avenue to the west.

The site coordinates are approximately 33.9736°N latitude and -117.5906°W longitude. Topographically, the parcel slopes gently from northeast to southwest. Site elevations range from approximately 645 feet above mean sea level (MSL) in the northeast corner of the site to approximately 640 feet MSL in the southwest corner of the site. Elevations in the empty pond structures in the southwest portion of the site are approximately 635 feet MSL.

4. PROPOSED IMPROVEMENTS

We understand that Wal-Mart intends to develop the site with a new, approximately 180,000-square-foot Wal-Mart Supercenter. Additional improvement to the site will include the construction of a loading dock, a truck turn-around, parking areas, drive areas, hardscape, landscaping, a detention pond, and underground utilities.

Based on the current Geotechnical Investigation Specifications and Report Requirements (GISRR) guidelines (Wal-Mart, 2011), we have assumed that the building construction will consist of a combination of concrete masonry shear walls (load-bearing and non-load-bearing) and steel columns supporting roof loads by way of steel joist girders and steel joists. Typical bay spacing

between columns and walls will be approximately 55 feet by 48 feet and gravity loads at interior columns will be approximately 85 kilo-pounds (kips). The estimated gravity load that may occasionally occur due to severe live loading will be approximately 150 kips. Column uplift forces from wind are estimated at approximately 30 kips, or less. The estimated typical exterior column gravity load will be approximately 50 kips. The concrete masonry wall gravity loads will range from approximately 1.5 to 2 kips per lineal foot for non load-bearing walls and approximately 4 to 6 kips per lineal foot for load-bearing walls. The estimated uniform floor slab live load will be approximately 125 pounds per square foot (psf). Estimated floor slab concentrated loads are approximately 5 kips.

Paved travel lanes and parking spaces are planned for the proposed construction. For the paved areas, we understand that the design parameters include a 20-year design life, equivalent single-axle loads (ESALs) of 109,500 in standard-duty pavement areas, and 335,800 ESALs in heavy-duty pavement areas.

5. SUBSURFACE EXPLORATION AND LABORATORY TESTING

5.1. Subsurface Explorations

Our subsurface exploration was conducted May 2 through May 6, and May 20 2011, and consisted of the drilling, logging, and sampling of 107 small-diameter borings. Borings were numbered consecutively from B-1 to B-107. The borings were performed utilizing a truck-mounted drill rig equipped with 6-inch diameter, hollow-stem augers. The borings were drilled to depths of approximately 101 feet and were logged by geologists and engineers from our firm. Representative bulk and undisturbed soil samples were collected at selected depths for geotechnical analysis. Logs of the exploratory borings are presented in Appendix A. The approximate locations of the borings are shown on Figure 2. Presented on Table 1 below, is data regarding the location and depth of each exploratory boring. Elevations were obtained from survey data of existing site conditions (Kimley-Horn, 2011).

Table 1 – Exploratory Boring Information

Boring No.	Approximate Latitude[1]	Approximate Longitude[1]	Approximate Elevation (feet above MSL)[2]	Approximate Depth of Boring (in feet)
B-1	33.9733	-117.5911	640	101.0
B-2	33.9735	-117.5903	640	21.5
B-3	33.9737	-117.5896	643	21.5
B-4	33.9732	-117.5906	641	21.5
B-5	33.9734	-117.5898	642	21.2
B-6	33.9730	-117.5910	639	21.5
B-7	33.9732	-117.5894	640	21.5
B-8	33.9737	-117.5898	643	21.5
B-9	33.9734	-117.5906	641	21.5
B-10	33.9734	-117.5903	640	21.5
B-11	33.9732	-117.5911	639	21.5
B-12	33.9731	-117.5906	640	21.5
B-13	33.9731	-117.5904	640	21.5
B-14	33.9733	-117.5901	641	21.5
B-15	33.9733	-117.5894	643	51.5
B-16	33.9745	-117.5919	645	10.0
B-17	33.9745	-117.5916	643	10.0
B-18	33.9745	-117.5913	643	10.0
B-19	33.9745	-117.5909	643	10.0
B-20	33.9745	-117.5906	643	10.0
B-21	33.9745	-117.5903	643	10.0
B-22	33.9745	-117.5899	644	10.0
B-23	33.9745	-117.5896	645	10.0
B-24	33.9745	-117.5893	645	10.0
B-25	33.9745	-117.5890	644	10.0
B-26	33.9745	-117.5886	644	10.0
B-27	33.9745	-117.5883	644	10.0
B-28	33.9745	-117.5880	644	10.0
B-29	33.9742	-117.5919	644	10.0
B-30	33.9742	-117.5916	642	10.0
B-31	33.9742	-117.5913	642	10.0
B-32	33.9742	-117.5909	642	10.0
B-33	33.9742	-117.5906	643	10.0
B-34	33.9742	-117.5903	643	10.0
B-35	33.9742	-117.5899	644	10.0
B-36	33.9742	-117.5896	645	10.0
B-37	33.9742	-117.5893	645	10.0
B-38	33.9742	-117.5889	644	10.0
B-39	33.9742	-117.5886	643	10.0
B-40	33.9742	-117.5883	643	10.0
B-41	33.9743	-117.5880	643	10.0
B-42	33.9739	-117.5919	643	10.0
B-43	33.9739	-117.5916	643	10.0
B-44	33.9739	-117.5913	641	10.0
B-45	33.9740	-117.5909	641	10.0
B-46	33.9739	-117.5906	641	10.0

Table 1 – Exploratory Boring Information

Boring No.	Approximate Latitude[1]	Approximate Longitude[1]	Approximate Elevation (feet above MSL)[2]	Approximate Depth of Boring (in feet)
B-47	33.9740	-117.5903	642	10.0
B-48	33.9740	-117.5899	643	10.0
B-49	33.9740	-117.5896	644	10.0
B-50	33.9740	-117.5893	644	10.0
B-51	33.9740	-117.5889	643	10.0
B-52	33.9740	-117.5886	642	10.0
B-53	33.9740	-117.5883	642	10.0
B-54	33.9736	-117.5923	641	10.0
B-55	33.9736	-117.5919	643	10.0
B-56	33.9737	-117.5916	641	10.0
B-57	33.9736	-117.5913	641	10.0
B-58	33.9737	-117.5909	640	10.0
B-59	33.9737	-117.5906	641	10.0
B-60	33.9737	-117.5889	642	10.0
B-61	33.9737	-117.5886	641	10.0
B-62	33.9737	-117.5883	641	10.0
B-63	33.9734	-117.5923	640	10.0
B-64	33.9734	-117.5919	642	10.0
B-65	33.9734	-117.5916	640	10.0
B-66	33.9734	-117.5889	641	10.0
B-67	33.9734	-117.5886	641	10.0
B-68	33.9731	-117.5923	640	10.0
B-69	33.9731	-117.5919	642	10.0
B-70	33.9731	-117.5916	639	10.0
B-71	33.9732	-117.5889	639	10.0
B-72	33.9728	-117.5922	639	10.0
B-73	33.9728	-117.5919	640	10.0
B-74	33.9729	-117.5916	640	10.0
B-75	33.9728	-117.5913	638	10.0
B-76	33.9729	-117.5889	638	10.0
B-77	33.9725	-117.5922	638	10.0
B-78	33.9725	-117.5919	638	10.0
B-79	33.9725	-117.5916	639	10.0
B-80	33.9726	-117.5912	636	10.0
B-81	33.9723	-117.5922	638	10.0
B-82	33.9723	-117.5919	637	10.0
B-83	33.9723	-117.5915	639	10.0
B-84	33.9724	-117.5912	636	10.0
B-85	33.9724	-117.5909	638	10.0
B-86	33.9719	-117.5925	638	10.0
B-87	33.9720	-117.5921	637	10.0
B-88	33.9720	-117.5919	637	10.0
B-89	33.9720	-117.5915	638	10.0
B-90	33.9718	-117.5920	637	10.0
B-91	33.9748	-117.5878	645	10.0
B-92	33.9748	-117.5889	646	10.0

Table 1 – Exploratory Boring Information

Boring No.	Approximate Latitude[1]	Approximate Longitude[1]	Approximate Elevation (feet above MSL)[2]	Approximate Depth of Boring (in feet)
B-93	33.9748	-117.5908	645	10.0
B-94	33.9748	-117.5911	645	10.0
B-95	33.9748	-117.5914	645	10.0
B-96	33.9748	-117.5918	645	10.0
B-97	33.9748	-117.5921	644	10.0
B-98	33.9747	-117.5924	643	10.0
B-99	33.9747	-117.5926	642	10.0
B-100	33.9744	-117.5927	642	10.0
B-101	33.9742	-117.5927	642	10.0
B-102	33.9739	-117.5927	642	10.0
B-103	33.9737	-117.5927	641	10.0
B-104	33.9734	-117.5927	641	10.0
B-105	33.9731	-117.5927	641	10.0
B-106	33.9729	-117.5927	639	10.0
B-107	33.9724	-117.5927	639	10.0

Notes:
[1] Google, Inc., 2011, www.googleearth.com.
[2] Kimley-Horn, 2011, Topographic Survey, Eastvale, Riverside County, California.

As noted, we reviewed available geotechnical and environmental geology reports for the site. These included geotechnical studies for a previously proposed development at the site (Leighton, 2004; Geokinetics, 2005 and 2006). During the Leighton study six borings were drilled and 28 test pits were excavated. During the Geokinetics studies 12 borings were drilled using a truck-mounted drill rig and 34 borings were excavated manually.

5.2. Geotechnical Laboratory Testing

Geotechnical laboratory testing was performed on representative soil samples collected during our subsurface explorations. Testing included an evaluation of in-situ moisture content and dry density, gradation analysis, Atterberg limits, consolidation, shear strength, expansion index, soil corrosivity, R-value, total organic content, and topsoil analysis. Results of the in-situ moisture content and dry density testing are presented on the logs in Appendix A. Other laboratory test results are presented Appendix B. Samples collected as part of our subsurface evaluation will be kept at our in-house geotechnical laboratory for 6 months following the date of our subsurface explorations.

6. GEOLOGY AND SUBSURFACE CONDITIONS

Our findings regarding regional and site geology and groundwater conditions at the project sites are provided in the following sections. Site geology and the regional fault locations are depicted in Figures 3 and 4.

6.1. Regional Geologic Setting

The project area is situated in the Peninsular Ranges Geomorphic Province. This geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California (Norris and Webb, 1990). The province varies in width from approximately 30 to 100 miles. In general, the province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith. The portion of the province in Riverside County that includes the project area consists generally of Cretaceous granitic rock and older alluvial units.

6.2. Materials Encountered

The results of our background review and subsurface evaluation indicate that the site is underlain by organic material, fill, and Quaternary-age Alluvium (Morton, 2002; Figure 3). As noted, additional descriptions of the materials encountered in our borings are presented on the boring logs in Appendix A. Testing performed by Geokinetics (2005) indicated elevated methane levels in the organic and fill materials.

6.2.1. Organics

Organic materials associated with the site's previous use as a dairy farm were encountered to depths of approximately 1 foot in several of our borings (B-1, B-4, B-9 through B-13).

6.2.2. Fill

Fill materials were encountered in several of our borings underlying the organic materials or concrete pavements, or from the ground surface to depths of approximately 9 feet. As encountered, these soils generally consisted of various shades of brown, damp to moist, loose to medium dense, silty and clayey sand, sandy silt, silty gravel, and stiff silty clay. Scattered gravel, cobbles, and organic material were also encountered in these soils.

6.2.3. Alluvium

Quaternary-aged Alluvium was encountered in each of our borings underlying the fill to the total depths explored. As encountered, the materials generally consisted of various shades of brown and gray, damp to moist, medium dense to very dense silty sand, sandy silt, poorly graded sand, and stiff to hard sandy and clayey silt and silty clay. Scattered gravel and cobbles were encountered in the alluvium.

6.3. Groundwater

Groundwater was not encountered during our subsurface exploration. Our boring B-1 was drilled to depth of 101 feet, temporary casing was installed to prevent the boring from caving, and the boring was left open overnight. Although left open overnight, the boring was left open for less than 24 hours due to Riverside County permitting restrictions.

Groundwater described as perched water was encountered during the previous evaluations at the site at depths as shallow as 18 feet. In addition, historic groundwater levels are documented for the site area at a depth of 10 feet (CDWR; 1970 after Leighton, 2004).

It should be noted that fluctuations in groundwater typically occur due to variations in precipitation, ground surface topography, subsurface stratification, irrigation, and groundwater pumping and other factors.

6.4. Storm Water Infiltration

Infiltration testing was performed May 4, 2011 in the location shown on Figure 2 designated IT-1. Double ring infiltrometer testing was performed in accordance with Wal-Mart's Storm Water Infiltration Testing and Report Requirements (2008) in the area of the proposed detention basin shown on the plans (Kimley-Horn, 2011). The testing was performed using a 24-inch diameter outer ring and a 12-inch diameter inner ring. The rings were filled with water and a constant water level was maintained within the rings by adding water from plastic storage containers connected to the rings with rubber tubing. The readings were performed at 15 minute time intervals. The change in the level of water within the storage containers was measured over each time interval. For each interval, the volume of water that infiltrated the ground and the infiltration velocity was calculated for the inner ring and the annulus between the two rings. The results of the testing are presented in Appendix C.

7. GEOLOGIC HAZARDS

In general, hazards associated with seismic activity include strong ground motion, ground surface rupture, and liquefaction. These considerations and other geologic hazards such as landsliding are discussed in the following sections.

7.1. Faulting and Seismicity

Like most of southern California, the project area is considered to be seismically active. Based on our review of the referenced geologic maps as well as on our geologic field mapping, the site is not underlain by known active or potentially active faults (i.e., faults that exhibit evidence of ground displacement in the last 11,000 years and 2,000,000 years, respectively). However, the site is located in a seismically active area, as is the majority of southern California, and the potential for strong ground motion is considered significant during the design life of the proposed structure. The nearest known active fault is the Elsinore segment of the Chino-Central Avenue Fault located approximately 5 miles southwest of the site (Figure 4). Table 4 lists the selected principal known active faults that may affect the subject site, the maximum moment magnitude (M_{max}) and the fault types as published for the California Geological Survey by Cao et al. (2003). The approximate fault to site distance was calculated by the computer program FRISKSP (Blake, 2001).

Table 2 – Principal Active Faults

Fault	Approximate Fault to Site Distance in miles (km)	Maximum Moment Magnitude[1] (Mmax)	Fault Type[2]
Chino-Central Avenue (Elsinore)	4.8 (7.7)	6.7	B
Whittier	8.6 (13.9)	6.8	A
Elsinore (Glen Ivy)	8.7 (13.9)	6.8	A
San Jose	11.0 (17.7)	6.5	B
Cucamonga	12.7 (20.4)	7.0	B
Sierra Madre	13.4 (21.5)	7.0	B
San Jacinto (San Bernardino)	16.5 (26.6)	6.7	A
San Jacinto (San Jacinto Valley)	20.7 (33.3)	6.9	A
San Andreas	21.2 (34.2)	7.4	A
Clamshell-Sawpit	23.4 (37.7)	6.5	B
San Joaquin Hills	23.7 (38.1)	6.6	B
Cleghorn	24.3 (39.0)	6.5	B
Raymond	26.3 (42.4)	6.5	B
Elsinore (Temecula)	26.7 (42.9)	6.8	A
Upper Elysian Park Blind Thrust	29.9 (48.1))	6.7	B
Newport-Inglewood (L.A. Basin)	30.9 (51.9)	6.9	B
Newport-Inglewood (Offshore)	32.3 (54.8)	7.1	B
Verdugo	34.0 (54.8)	6.7	B

Notes:
[1] Cao, et al., 2003.
[2] California Building Code (CBC), 2010; Cao et al., 2003.

7.1.1. Ground Rupture

There are no known active faults crossing the site, and the potential for ground rupture due to faulting is considered low. Surface ground cracking related to shaking from distant events is considered a hazard.

7.1.2. Strong Ground Motions

The 2010 CBC recommends that the design of structures be based on the peak horizontal ground acceleration (PGA) having a 2 percent probability of exceedance in 50 years which is defined as the Maximum Considered Earthquake (MCE). The statistical return period for PGA_{MCE} is approximately 2,475 years. In evaluating the seismic hazards associated with the project site, we have used a Site Classification D. The site modified PGA_{MCE} was estimated to be 0.60g using the United States Geological Survey (USGS) (USGS, 2011) ground motion calculator (web-based). The design PGA was estimated to be 0.40g using the USGS ground motion calculator. These estimates of ground motion do not include near-source factors that may be applicable to the design of structures on site.

7.1.3. Liquefaction

Liquefaction is the phenomenon in which loosely deposited granular soils with silt and clay contents of less than approximately 35 percent and non-plastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure, and causes the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

According to the Generalized Liquefaction map for Riverside County (2000), the project site is an area mapped as having high to very high liquefaction potential. Leighton (2004) identified 5-foot thick liquefiable layers of soil at depths greater than 20 feet. Geokinetics (2006) identified liquefiable layers of soil from 23 to 38 feet. We evaluated the liquefaction potential of subsurface soils was evaluated using the boring data. The liquefaction analysis was based on the NCEER procedure (Youd et al., 2001) developed from the methods originally recommended by Seed and Idriss (1982) using the computer program LIQUEFYPro (CivilTech, 2007). A historic high groundwater table located at a depth of 10 feet was used in our evaluation. Our liquefaction analysis indicates that the relatively loose to medium dense, granular soil layers occurring below the historic high groundwater level and up to a depth of approximately 43 feet below the ground surface are susceptible to liquefaction during the design seismic event.

7.1.4. Seismically Induced Settlement

As a result of liquefaction, the proposed structure may be subject to several hazards including liquefaction-induced settlement. In order to estimate the amount of post-earthquake settlement, the method proposed by Tokimatsu and Seed (1987) was used in which the seismically induced cyclic stress ratios and corrected N-values are related to the volumetric strain of the soil. The amount of soil settlement during a strong seismic event depends on the thickness of the liquefiable layers and the density and/or consistency of the soils.

Under the current conditions, a post-earthquake total settlement of approximately 4 inches is estimated for the liquefiable soils located below the historic high groundwater.

7.1.5. Dynamic Compaction of Dry Soils

Relatively dry soils (e.g., soils above the groundwater table) with low density or softer consistency tend to undergo a degree of compaction during a seismic event. Earthquake shaking often induces significant cyclic shear strain in a soil mass, which responds to the vibration by undergoing volumetric changes. Volumetric changes in dry soils take place primarily through changes in the void ratio (usually contraction in loose or normally consolidated soft soils, and dilation in dense or overconsolidated stiff soils) and secondarily through particle reorientation. Such volumetric changes are generally non-recoverable.

The likely settlement induced by dynamic compaction of relatively dry soil layers above the current groundwater table (i.e., within the upper approximately 75 feet) was estimated using the method proposed by Tokimatsu and Seed (1987). Under the current conditions, the site soils up to a depth of approximately 75 feet are estimated to undergo a total post-earthquake settlement of approximately ¾-inch or less; differential settlement due to dynamic compaction is considered to be negligible.

7.2. Landsliding

No landslides or indications of deep-seated landslides were noted underlying the project site during our field exploration or our review of available geologic literature and topographic maps.

8. CONCLUSIONS

Based on our geotechnical evaluation, it is our opinion that construction of the proposed Wal-Mart Supercenter is feasible from a geotechnical standpoint, provided the following recommendations are incorporated into the design and construction of the project. In general, the following conclusions were made:

- On-site organic and fill materials are unsuitable for use in their current condition for support of engineered fill or structures.

- On-site soils are considered excavatable with heavy-duty equipment to the anticipated depths of excavation.

- Testing performed by Geokinetics (2005) indicated elevated methane levels in the organic and fill materials and recommended removal of these materials to depths of approximately 6 feet.

- The site is not located within a State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zone). Based on our review of published geologic maps and aerial photographs, no known active faults underlie the site. The potential for surface fault rupture at the site is considered to be low.

- The site is located in an area mapped as having a high potential for liquefaction. Our liquefaction analysis indicates that the relatively loose to medium dense, granular soil layers occurring below the historic high groundwater level and up to a depth of approximately 43 feet below the ground surface are susceptible to liquefaction during the design seismic event.

- We estimate that total dynamic settlement of approximately 4 inches could occur within the liquefiable soils located below the historic high groundwater. Settlement due to dynamic compaction of soils located above the historic high groundwater level is estimated to be approximately ¾ inch or less.

- Based on the laboratory test results and Caltrans criteria, the on site soils are considered corrosive.

9. RECOMMENDATIONS

The following sections include our geotechnical recommendations for the new construction associated with the proposed Wal-Mart Supercenter. These recommendations are based on our evaluation of the site geotechnical conditions and our understanding of the planned construction. Presented in Appendix D are the "Geotechnical Investigation Fact Sheet," "Foundation Design Criteria," and a "Foundation Subsurface Preparation" sheet for new construction. These documents are required by Wal-Mart and are summaries of data and recommendations presented in this report.

9.1. Earthwork

Earthwork at the site is anticipated to consist of conventional cut and fill grading to expand and prepare the site for the proposed building and associated improvements. Earthwork should be performed in accordance with the requirements of applicable governing agencies and the recommendations presented in the following sections.

9.1.1. Pre-Construction Conference

We recommend that a pre-construction conference be held. The owner and/or their representative, the governing agencies' representatives, the civil engineer, Wal-Mart's construction quality control consultant, and the contractor should be in attendance to discuss the work plan, project schedule, and earthwork requirements.

9.1.2. Site Preparation

Prior to the placement of fill or structural improvements, the surface areas should be cleared of existing vegetation, surface obstructions, soils containing manure or methane, and other deleterious materials. Vegetation and debris generated from the clearing operations should be disposed of off-site. Obstructions that extend below finish grade should be removed and the resulting holes filled with compacted fill.

9.1.3. Ground Improvement - Building Pad Area

As discussed before, relatively loose to medium dense granular soil layers located below the historic high groundwater level have the potential to liquefy during the design seismic event. Our analysis indicates that this liquefaction may result in seismically induced settlements up to approximately 4 inches. We recommend the improvement of the subsurface soils in a manner such that the liquefaction potential is reduced significantly.

The primary objectives of ground improvement at the site would be to provide improved support for site improvements during and immediately after an earthquake, and to reduce the potential for unacceptable damage due to liquefaction of soils. The ground improvement methods may also help improve the bearing condition of the near-surface soils. Ground improvement methods considered for this site include dynamic compaction, vibro-compaction, rammed aggregate piers, and stone columns. We recommend stone columns be used to improve the existing subsurface soil conditions.

Stone columns densify relatively loose or soft subsurface soils at a site during the process of insertion of crushed stones into the ground. The strength of the soil mass is increased due to the reinforcement provided by crushed stone and densification of surrounding soils. In addition, the potential for liquefaction of the subsurface soils is reduced due to improved drainage provided by these stone columns. Use of stone columns would also allow supporting the proposed structure on relatively shallow, conventional spread footings. A specialty contractor should design the actual size, spacing, depth, and layout of the stone columns. However, we recommend that the stone columns extend to depths of approximately 10 to 45 feet from the existing ground surface (i.e., the lower end of a stone column will be located at a depth of approximately 45 feet below the surface, and the upper end will be located at a depth of approximately 10 feet below the surface), and have center-to-center spacing on the order of 6 to 10 feet.

Compliance testing consisting of CPT sounding data should be provided by the contractor to support their calculations indicating that the design and installation meet the settlement and bearing capacity parameters specified. The calculations should be based on current recognized geotechnical practice and methods and be reviewed by our offices. We recommend that the work be regularly monitored by Wal-Mart's construction quality control consultant. We anticipate that existing, relatively recent improvements beyond approximately 30 feet from the operation will not be adversely affected. However, monitoring and protection of the improvements should be a part of the contractor's work. We recommend that a pre-construction survey be conducted of adjacent improvements to establish a baseline.

9.1.4. Remedial Grading - Building Pad Area

From a geotechnical standpoint, we recommend the building pad be overexcavated to a depth of 10 feet below finished subgrade elevation or 5 feet below the bottom of footings, whichever is deeper. Loose, unconsolidated materials should be removed prior to placing fill material at the site. Wal-Mart's construction quality control consultant should observe the excavation prior to filling to evaluate the need for deeper removals. Locally deeper removals may be needed if loose, compressible or otherwise unsuitable materials are exposed

during grading. The removal area should extend horizontal distance of 5 feet beyond the limits of the building pad plus the depth of the overexcavation beyond the outer edge of the building footprint. The resulting excavation bottom should be scarified 8 inches, moisture conditioned, and compacted to 95 percent relative compaction. The excavation should then be filled with soils that meet the recommendations for fill materials presented in following sections. These soils should possess a low potential for expansion (Expansion Index of less than 50) and be placed at a relative compaction of 95 percent as evaluated by the current version of American Society for Testing and Materials (ASTM) Test Method D 1557. However, on-site excavations may produce clayey, expansive soils. On-site soils that possess a medium to very high expansion potential (i.e., expansion index of 51 or more) should not be placed within the building pad to a depth of 5 feet below the bottom of the foundations.

For the purpose of this report, building pad areas are defined as the area underlying the store building, vestibules, utility pads, building apron, canopy area, loading docks, truck loading wells, and trash compactors and extending a horizontal distance of 5 feet beyond the limits of the structures. The depth and extent of the removals should be verified in the field by Wal-Mart's construction quality control consultant.

Loose, soft, or otherwise deleterious material encountered at the bottom of excavation should be overexcavated and recompacted in accordance with the recommendations provided herein. Additional stabilization efforts may be used in lieu of the additional removal at the bottom of the excavations, Wal-Mart's construction quality control consultant should be consulted regarding the placement of crushed aggregate or Caltrans Class 2 base materials into the excavation in conjunction with geosynthetic materials or placement of a lean concrete mud mat. We estimate that the per unit pricing for this scale of overexcavation will be approximately $5 to $10 per cubic yard.

9.1.5. Remedial Grading - Pavement and Flatwork Areas

In areas to receive pavements or concrete flatwork, we recommend that the existing soils be removed to a depth of 2 feet below finished subgrade elevation. The resultant removal surfaces should then be scarified to a depth of 8 inches or more, moisture conditioned and recompacted. The excavation should then be filled with soils that meet the recommendations for fill materials presented in following sections.

9.1.6. Excavation Characteristics

Based on the results of our exploratory borings and our experience with similar soils, it is our opinion that the on-site materials can be excavated using heavy-duty earthmoving equipment in good working condition. Lenses of cohesionless sand layers were encountered during our evaluation. Excavations that encounter these cohesionless layers of sand may be subjected to sloughing or caving. Also, due to the historic groundwater elevation at the site and potential seepage conditions, on-site excavations may encounter yielding and pumping wet soils.

9.1.7. Fill Material

Some on-site soils possess manure, methane, or an organic content greater than 3 percent by volume (or 1 percent by weight). Accordingly, on-site soils may not be suitable for reuse as fill. On-site and imported fill soils should be free of trash, debris, roots, vegetation, or deleterious materials. Fill should generally be free of rocks or hard lumps of materials greater than approximately 4 inches in diameter. Rocks or hard lumps larger than 4 inches in diameter should be broken into smaller pieces or should be removed from the site. Fill soils should possess an organic content of less than approximately 3 percent by volume (or 1 percent by weight). Soils with an expansion index [EI] of 51 or higher should not be placed within the building pad to a depth of 5 feet below the bottom of the foundations.

Imported fill material should generally be granular soils with a very low to low expansion potential (i.e., an EI of 50 or less as evaluated by ASTM 4829). Import material should also be non-corrosive in accordance with the Caltrans (2003) corrosion guidelines. Materials for use as fill should be evaluated by Wal-Mart's construction quality control consultant prior to filling or importing. A summary of the import soil criteria is indicated in the following table.

Table 3 – Import Fill Requirements

Test (Designation)		Specified Value
Expansion Index (ASTM D 4829)		≤ 50
Sieve Analysis (ASTM D 422)	Passing 4-inch sieve, percent	100
	Passing No. 4 sieve, percent	35 – 100
	Passing No. 30 sieve, percent	20 – 100
Sand Equivalent (ASTM D 2419)		≥ 20
Corrosivity Testing	pH (CT 643)	> 5.5
	Chloride Content (CT 417), ppm	≤ 500
	Sulfate Content (CT 422), ppm	≤ 2,000

Notes:
CT – California Test Method
ppm – parts per million

Materials imported for use as fill should be evaluated by Wal-Mart's construction quality control consultant prior to importing. The contractor should be responsible for the uniformity of import material brought to the site. We estimate that the per unit pricing for import fill material will be approximately $10 to $15 per cubic yard, not including transportation.

9.1.8. Fill Placement and Compaction

In general, fill soils placed on-site should be compacted in horizontal lifts to a relative compaction of 95 percent (per Wal-Mart requirements) as evaluated by ASTM D 1557. The lift thickness for fill soils will vary depending on the type of compaction equipment used but should generally be placed in horizontal lifts not exceeding 8 inches in loose thickness. In general, fill soils should be placed within approximately 2 percent of optimum moisture content as evaluated by ASTM D 1557. Special care should be taken to avoid damage to wet and dry utility lines when compacting fill and subgrade materials.

9.1.9. Temporary Excavations

We recommend that trenches and excavations be designed and constructed in accordance with Occupational Safety and Health Administration (OSHA) regulations. These regulations provide trench sloping and shoring design parameters for trenches up to 20 feet deep based on the soil types encountered. Trenches over 20 feet deep should be designed by the contractor's engineer based on site-specific geotechnical analyses. For planning purposes, we recommend that on-site be considered as OSHA soil Type C.

Temporary excavations should be constructed in accordance with OSHA recommendations. For trench or other excavations, OSHA requirements regarding personnel safety should be met by using appropriate shoring (including trench boxes) or by laying back the slopes no steeper than 1½:1 (horizontal:vertical). Temporary excavations that encounter seepage may need shoring or may be mitigated by placing sandbags or gravel along the base of the seepage zone. Excavations encountering seepage should be evaluated on a case-by-case basis. Dewatering is not anticipated to be needed in the performance of the overexcavation for the proposed pad. However, zones of seepage or perched water may be encountered at shallower depths. On-site safety of personnel is the responsibility of the contractor.

9.1.10. Slopes

Unless otherwise recommended by the geotechnical consultant and approved by the regulating agencies, permanent cut and fill slopes should not be steeper than 2:1 (horizontal:vertical). Interior slopes for detention basins should not be steeper than 3:1.

Compaction of the face of fill slopes should be performed by backrolling at intervals of 4 feet or less in vertical slope height, or as dictated by the capability of the available equipment, whichever is less. Fill slopes should be backrolled utilizing a conventional sheepsfoot-type roller. Care should be taken to maintain the desired moisture conditions and/or reestablish them, as needed, prior to backrolling. The placement, moisture conditioning, and compaction of fill slope materials should be done in accordance with the recommendations presented in this report.

Site runoff should not be permitted to flow over the tops of slopes. Positive drainage should be established away from the top of slopes. This may be accomplished by utilizing brow ditches placed at the top of slopes to divert surface runoff away from the slope face where drainage devices are not otherwise available.

The on-site soils are likely to be susceptible to erosion; therefore, the project plans and specifications should contain design features and construction requirements to mitigate erosion of on-site soils during and after construction. Slopes and other exposed ground surfaces should be appropriately planted with protective ground cover.

9.1.11. Temporary Slope Stability

We recommend that trenches and excavations be designed and constructed in accordance with Occupational Safety and Health Administration (OSHA) regulations. These regulations provide trench sloping and shoring design parameters for trenches up to 20 feet deep based on a description of the soil types encountered. Trenches over 20 feet deep should be designed by the Contractor's engineer based on site-specific geotechnical analyses. For planning purposes, we recommend that the following OSHA soil classifications be used:

Compacted Fill and Alluvium	*Type C*

Upon making the excavations, the soil/rock classifications and excavation performance should be evaluated in the field by the geotechnical consultant in accordance with OSHA regulations. Recommendations for temporary shoring can be provided, if requested.

In general, temporary slopes above the water table and excavated in compacted fill or alluvium should be inclined no steeper than 1-1/2:1. Temporary excavations that encounter seepage may need shoring or may be stabilized by placing sandbags or gravel along the base of the seepage zone. Excavations encountering seepage should be evaluated on a case-by-case basis. On-site safety of personnel is the responsibility of the Contractor.

9.1.12. Projected Cost of Cuts and Fills

We recommend that the existing soils within the building pad area be overexcavated a depth of 5 feet below the bottom of the foundations. The limits of overexcavation should extend laterally beyond the building footprint to a distance of approximately 5 feet. We recommend that the existing soils within the parking areas be overexcavated a depth of 2 feet below subgrade. We estimate that the per unit pricing for this scale of overexcavation will be approximately $5 to $10 per cubic yard.

9.2. Seismic Design Considerations

Design of the proposed improvements should comply with design for structures located in Seismic Zone 4 and should be designed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 6 presents the seismic design parameters for the sites in accordance with CBC (2010) guidelines and mapped spectral acceleration parameters (USGS, 2011).

Table 4 – Seismic Design Parameters

Parameter	Value
Site Class	D
Site Coefficient, F_a	1.000
Site Coefficient, F_v	1.500
Mapped Short Period Spectral Acceleration, S_S	1.500g
Mapped One-Second Period Spectral Acceleration, S_1	0.600g
Short Period Spectral Acceleration Adjusted For Site Class, S_{MS}	1.500g
One-Second Period Spectral Acceleration Adjusted For Site Class, S_{M1}	0.900g
Design Short Period Spectral Acceleration, S_{DS}	1.000g
Design One-Second Period Spectral Acceleration, S_{D1}	0.600g

9.3. Foundations

The proposed building may be supported on foundations bearing on competent fill materials, provided that the recommended ground improvements are performed. Foundations should be designed in accordance with structural considerations and the following recommendations. In addition, requirements of the appropriate governing jurisdictions and applicable building codes should be considered in the design of the structures.

9.3.1. Footings

Conventional spread footings should be 24 inches deep and bear on competent engineered fill. Continuous and isolated pad footings should be 18 and 24 inches wide or more, respectively. From a geotechnical standpoint, continuous footings should be reinforced with four No. 4 steel reinforcing bars, two placed near the top and two placed near the bottom of the footings, and further detailed in accordance with the recommendations of the structural engineer.

Spread footings, as described above and bearing on compacted fill soils, may be designed using a net allowable bearing capacity of 2,500 psf. Total settlement is estimated to be on the order of 3/4 inch. Differential settlement is estimated to be on the order of 1/2-inch over a horizontal span of 40 feet.

Footings bearing on compacted fill may be designed using a coefficient of friction of 0.30, where the total frictional resistance equals the coefficient of friction times the dead load. The footings may be designed using a passive resistance of 300 psf per foot of depth up to a value of 3,000 psf. The allowable lateral resistance can be taken as the sum of the frictional resistance and passive resistance, provided the passive resistance does not exceed one-half of the total allowable resistance. The passive resistance may be increased by one-third when considering loads of short duration, such as wind or seismic forces.

Trenches should not be excavated adjacent to spread footings. If trenches are to be excavated near a continuous footing, the bottom of the trench should be located above a 1:1 plane projected downward from the bottom of the footing. Utility lines that cross beneath footings should be encased in concrete below the footing.

9.3.2. Floor Slabs

Building floor slabs should be designed by the project structural engineer based on the anticipated loading conditions including fork-lift traffic. New building floor slabs should be underlain by compacted soil prepared in accordance with the recommendations presented in the Earthwork section of this report. From a geotechnical standpoint, we recommend that slabs be 5 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on-center (each way) placed near the mid-height of the slab. The placement of the reinforcement in the slab is vital for satisfactory performance. The floor slab and foundations should be tied together by extending the slab reinforcement into the footings. Alternatively dowels, designed in accordance to the structural engineer's recommendations, may be used to tie the slab to the perimeter foundations as described in the GISRR.

Per Wal-Mart guidelines, new slabs should be underlain by 2 inches of fine aggregate over 4 inches of Caltrans Class 2 aggregate base. The fine aggregate should consist of ASTM D 448 No. 10, with 6 to 12 percent passing the No. 200 sieve, and meet the following gradation requirements:

Table 5 – Recommended Fine Aggregate Gradation

Sieve Size	Percent Passing (by weight)
No. 4	85 – 100
No. 8	75 – 95
No. 16	55 – 75
No. 50	25 – 45
No. 200	6 – 12

Per Wal-Mart guidelines, coarse aggregate should consist of ASTM D 448 No. 467, No. 57, or No. 67 crushed rock material. The fine aggregate and coarse aggregate should be separated by a polyethylene vapor retarder, 15-mil thick if moisture sensitive floor coverings are anticipated. Soils underlying the slabs should be moisture conditioned and compacted in accordance with the recommendations presented in this report prior to concrete placement. Joints should be constructed at intervals designed by the structural engineer to help reduce random cracking of the slab. For concrete slab-on-grade design, we recommend a modulus of subgrade reaction, k, of 150 pounds per square inch (psi) per inch.

9.4. Restrained Retaining Walls

Based on our understanding of the project, restrained retaining walls may be constructed as part of the new building and/or loading dock. Restrained retaining walls should be designed using the lateral earth pressures presented in Figure 5. Loads due to traffic may be modeled as a 2 foot level surcharge of soil. This surcharge will act as a uniform horizontal pressure equal to 120 psf against the wall. The presented values assume non-expansive, granular soil and free draining conditions. Measures should be taken to avoid moisture buildup behind retaining walls. Drainage measures should include a full height of wall zone of granular non-expansive soil backfill immediately adjacent to the walls. Expansive soil should not be used

for backfill. Perforated drains, as designed by the project architect or engineer, should also be provided. Drains should outlet away from the walls. A typical retaining wall drain detail is shown on Figure 6. We recommend that all wall drains be constructed to within approximately 1 foot of the full height of the wall.

9.5. Exterior Flatwork

Exterior concrete flatwork should be 5 inches in thickness and should be reinforced with No. 3 reinforcing bars placed at 24 inches on-center both ways. No vapor retarder is needed for exterior flatwork. To reduce the potential manifestation of distress to exterior concrete flatwork due to movement of the underlying soil, we recommend that such flatwork be installed with crack-control joints at appropriate spacing as designed by the structural engineer. Exterior slabs should be underlain by 5 inches of clean sand. The subgrade soils should be scarified to a depth of 8 inches, moisture conditioned to generally above the laboratory optimum moisture content, and compacted to a relative compaction of 95 percent, as evaluated by ASTM D 1557. Positive drainage should be established and maintained adjacent to flatwork.

9.6. Underground Utilities

For the construction of new underground utility pipelines, we anticipate that they will be supported on fill materials. The depths of the pipelines are not known.

9.6.1. Pipe Bedding

For new piping, we recommend that bedding material be placed around pipe zones to 1 foot or more above the top of the pipe. The bedding material should be classified as sand, be free of organic material, and have a sand equivalent of 30 or more. We do not recommend gravel be used for bedding material because it has been our experience that the voids within gravel material are sufficiently large to allow fines to migrate into the voids, thereby creating the potential for sinkholes and depressions to develop at the ground surface.

Special care should be taken not to allow voids beneath and around the pipe. Compaction of the bedding material and backfill should proceed up both sides of the pipe. Trench backfill, including bedding material, should be placed in accordance with the recommendations presented in the Earthwork section of this report.

9.6.2. Trench Zone Backfill

Generally granular soils with an organic content of less than approximately 3 percent by volume (or 1 percent by weight) that meet the following gradation are suitable for reuse as trench backfill. For the purpose of this report, the trench zone is considered to extend from 1 foot above the top of the pipe to the top of the trench. The backfill material should not generally contain rocks or lumps greater than approximately 3 inches, and particles not more than approximately 30 percent larger than ¾ inch. Larger chunks, if generated during excavation, may be broken into acceptably sized pieces or disposed of off-site. Imported fill material, if needed for the project, should generally be granular soils with a very low to low expansion potential. Import materials should also be non-corrosive in accordance with the Caltrans (2003) corrosion guidelines. Materials for use as backfill should be evaluated by Wal-Mart's construction quality control consultant prior to filling or importing.

Backfill should be moisture conditioned to within 2 percent of the laboratory optimum, placed, and compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557. Wet soils should be allowed to dry to moisture contents near the optimum prior to their placement as backfill. Backfill lift thickness will be dependent upon the type of compaction equipment utilized. Backfill should generally be placed in lifts not exceeding 8 inches in loose thickness. Care should be taken to not damage utilities during the backfill process.

9.6.3. Modulus of Soil Reaction (E')

The modulus of soil reaction is used to characterize the stiffness of soil backfill placed at the sides of buried flexible pipelines for the purpose of evaluating deflection caused by the weight of the backfill above the pipe. A soil reaction modulus of 1,000 psi may be used for an excavation depth of up to about 5 feet when backfilled with granular soil and compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557. A soil reaction modulus of 1,400 psi may be used for trenches deeper than 5 feet.

9.7. Pavement Design

For the paved areas, we anticipate that both asphalt concrete (AC) pavement and Portland cement concrete (PCC) pavement may be used for the project. Our pavement analysis for flexible and rigid pavements was based on the American Association of State Highway and Transportation Officials design method (AASHTO, 1993). Laboratory testing by Ninyo & Moore of the subgrade soils indicated R-values of 11, 15, and 48. For pavement design analysis we have assumed an R-value of 10. The following input parameters, provided in Wal-Mart's GISRR (Wal-Mart, 2011), were also used in our analysis:

Table 6 – Pavement Design Input Parameters

Design Period	20 years
ESALs (standard-duty pavement):	109,500 (15 ESALs per day)
ESALs (heavy-duty pavement):	335,800 (46 ESALs per day)
Reliability:	85 percent
Overall Deviation (flexible pavements):	0.45
Overall Deviation (rigid pavements):	0.35
Structural Number	
(Standard duty pavement)	2.99
(Heavy-duty pavement)	3.54
Initial Serviceability	4.2
Terminal Serviceability:	2.0

The following sections present our recommendations for both flexible and rigid pavement sections. Cross sections depicting the recommended pavement sections are presented on Figure 7 and the structural pavement design calculations are presented in Appendix D.

9.7.1. Flexible Pavement Design

The following table presents the recommended asphalt concrete pavement sections, based on Wal-Mart's input parameters and our design R-value. For pavement design analysis we have assumed an R-value of 10.

Table 7 – Asphalt Concrete Pavement Sections

Pavement Type	ESALs	Design R-value	AC (inches)	Class 2 Base (inches)
Standard-Duty	109,500	10	3½	12
Heavy-Duty	335,800	10	5	11

In general, the AC should consist of a Greenbook Type III B2 mix with a Type III C2 mix topping course. The asphalt grade should be PG64-10. Prior to placement of aggregate base materials, we recommend that the upper 2 feet of subgrade soils be overexcavated and compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557. Base material should conform to the specifications in Section 26 for Class 2 aggregate base of the Caltrans Standard Specifications and should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557. AC should conform to Section 203-6 of the Greenbook and should be compacted to a relative compaction of 95 percent as evaluated by Caltrans Test Method 301. Routine maintenance should be expected, including periodic sealing of the pavement and repair of cracks or other isolated distress.

We recommend that the paving operations be observed and tested by Wal-Mart's construction quality control consultant.

9.7.2. Rigid Pavement Design

The following table presents the recommended PCC pavement sections based on Wal-Mart's input parameters and our design R-value. A subgrade modulus of 50 pounds per cubic inch as used in our analysis, along with a load transfer coefficient of 3.8 (no dowels or reinforcement used in the slab construction).

Table 8 – Portland Cement Concrete Pavement Sections

Pavement Type	ESALs	Design R-value	PCC (inches)	Class 2 Base (inches)
Standard-Duty	109,500	10	6	6
Heavy-Duty	335,800	10	8	6

PCC should have a compressive strength of 4,000 psi after 28 days, and develop a modulus of rupture of 550 psi after 28 days. Concrete placed by hand or with vibrating screeds should have a slump of 4 inches (±1 inch). In general, typical design and construction practice in the southern California area is to use non-air entrained PCC for pavements, because of the lack of freeze-thaw cycles.

Transverse contraction joints should be spaced at 12 feet or less in standard-duty pavement areas, and 15 feet or less in heavy-duty pavement areas. Reinforcement for the concrete pavement areas should be evaluated by the structural/civil engineer based on specific loading conditions. However, in general, the pavement design provided above assumes that the PCC pavement is un-reinforced and without dowels. If load transfer devices at pavement joints, such as dowels, are needed, they should be designed in accordance with the structural/civil engineer.

PCC should conform to the latest edition of the Standard Specifications for Public Works Construction Section 201-1 for concrete and 200-1 for aggregates. Class 2 aggregate base should conform to the latest edition of the Caltrans Standard Specifications, Section 26. Base material should be placed at a relative compaction of 95 percent or more as evaluated by the latest edition of ASTM D 1557. Routine maintenance should be expected, including periodic re-sealing of the PCC pavement joints and repair of cracks, spalls, or other isolated distress. Base material should conform to the specifications in Section 26 for Class 2 aggregate base of the Caltrans Standard Specifications and should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557.

9.8. Corrosivity

Laboratory testing was performed on a representative sample of near-surface soil to evaluate soil pH, electrical resistivity, water-soluble chloride content, and water-soluble sulfate content. The soil pH and electrical resistivity tests were performed in general accordance with CT 643. Chloride content tests were performed in general accordance with CT 422. Sulfate testing was performed in general accordance with CT 417. The laboratory test results from our evaluation as well as the previous evaluation are presented in Appendix B.

The pH of the tested samples ranged from 7.8 to 8.4. The electrical resistivities of the tested samples ranged from approximately 720 to 2,300 ohm-centimeters. The chloride contents of the tested samples ranged from approximately 280 to 520 ppm. The sulfate contents of the tested samples ranged from approximately 0.006 to 0.083 percent by weight (i.e., 60 to 830 ppm). Based on the laboratory evaluated chloride content and Caltrans (2003) corrosion criteria, the project site is classified as corrosive, which is defined as having earth materials with more than 500 ppm chlorides, more than 0.20 percent sulfates (i.e., 2,000 ppm), or a pH of 5.5 or less, or an electrical resistivity of 1,000 ohm-centimeters or less. On-site soils are corrosive to ferrous metals. We recommend additional corrosion protection measures be incorporated into the design of improvements in contact with soil.

9.9. Concrete Placement

Concrete in contact with soil or water that contains high concentrations of soluble sulfates can be subject to chemical deterioration. Laboratory testing indicated a sulfate contents of approximately 0.006 to 0.083 percent by weight for the tested samples, which is considered to represent a negligible potential for sulfate attack (ACI, 2011). Per ACI 318-08 Type II cement is appropriate for use in concrete. It has been our experience that concrete in contact with soils that are inherently variable, along with outside influences such as landscape soil amendments and fertilizers and/or use of reclaimed water may lead to premature aging/deterioration of concrete. To mitigate this potential, consideration may be given to the use of Type V cement. In addition, we recommend a water-to-cement ratio of no more than 0.45. We also recommend that crack-control joints be provided in slabs in accordance with

the recommendations of the structural engineer to reduce the potential for distress due to minor soil movement and concrete shrinkage. The structural engineer should be consulted for additional concrete specifications.

9.10. Drainage

Proper surface drainage is imperative for satisfactory site performance. Positive drainage should be provided and maintained to direct surface water away from foundations and off-site. Positive drainage is defined as a slope of 2 percent or more over a distance of 5 feet away from the foundations. Runoff should then be directed by the use of swales or pipes into a collective drainage system. Surface waters should not be allowed to pond adjacent to footings or on top of pavements. We recommend that structures have roof drains and downspouts installed to collect runoff. Area drains for landscaped and paved areas are recommended.

9.11. Landscaping

Project landscaping is anticipated to consist of landscaped island endcaps within the parking areas and planters surrounding the store building. Landscaping should consist of drought tolerant plants. Landscape irrigation should be kept to a level just sufficient to maintain plant vigor. Overwatering should not be permitted.

10. CONSTRUCTION OBSERVATION

The recommendations provided in this report are based on our understanding of the proposed project and on our evaluation of the data collected based on subsurface conditions disclosed by widely spaced exploratory borings. It is imperative that the interpolated subsurface conditions be checked by our representative during construction. Observation and testing of compacted fill and backfill should be performed by Wal-Mart's construction quality control consultant during construction. In addition, Wal-Mart's construction quality control consultant should review the project plans and specifications prior to construction. It should be noted that, upon review of these documents, some recommendations presented in this report might be revised or modified.

During construction we recommend that Wal-Mart's construction quality control consultant perform the following duties:

- Observing removals.
- Observing excavation bottoms and the placement and compaction of fill, including trench backfill.
- Evaluating imported materials prior to their use as fill.
- Performing field tests to evaluate fill compaction.
- Observing foundation excavations for bearing materials and cleaning prior to placement of reinforcing steel or concrete.

11. LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by Wal-Mart, Inc., Kimley-Horn and Associates, Inc., and their respective successors or assigns. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

12. REFERENCES

American Association of State Highway and Transportation Officials, 1993, Guide for Design of Pavement Structures.

American Concrete Institute, 201, Building Code Requirements for Structural Concrete (ACI 318-05) and Commentary (ACI 318R-08).

Blake, T.F., 2001, FRISKSP (ver. 4.00) A Computer Program for the Probabilistic Estimation of Peak Acceleration and Uniform Hazard Spectra Using 3-D Faults as Earthquake Sources.

Bowles, J.E., 1996, Foundation Analysis and Design, Fifth Edition, The McGraw-Hill Companies, Inc.

Building News, 2009, "Greenbook" Standard Specifications for Public Works Construction: BNI Publications.

California Building Standards Commission (CBSC), 2010, California Building Code (CBC), Title 24, Part 2, Volumes 1 and 2.

California Department of Conservation, Division of Mines and Geology, 1997, Guidelines for Evaluating and Mitigating Seismic Hazards in California, CDMG Special Publication 117.

California Department of Transportation (Caltrans), 2003, Corrosion Guidelines, Version 1.0, Division of Engineering Services, Materials Engineering and Testing Services, Corrosion Technology Branch.

California Geological Survey, 2006, Seismic Shaking Hazards in California, http:// www.consrv.ca.gov/cgs/rghm/pshamap/pshamain.html: last edited on October 30.

Cao, T., Bryant, W. A., Rowshandel, B., Branum, D., and Willis, C. J., 2003, The Revised 2002 California Probabilistic Seismic Hazards Maps: California Geological Survey: dated June.

CivilTech Software, 2007, Liquefy Pro (Version 5.5j), A Computer Program for Liquefaction and Settlement Analysis.

County of Riverside, 2000, General Plan, Generalized Liquefaction Map: dated August 1.

Environmental Geotechnical Laboratory, Inc., 2004, Laboratory Test Results/Report, Project Name: HREG/Menifee Valley, Project No. 001-09274-00, EGL Job No. 04-264-002; dated August 20.

Geokinetics, 2005, Preliminary Geotechnical Site Investigation, Stelzer Property 14100 Cloverdale Road, Corona, California: dated December 27.

Geokinetics, 2006, Preliminary Geotechnical Site Investigation, Laing Property (APN: 0144-030-012), Corona, California: dated September 8.

Geotracker, 2011, http://geotracker.swrcb.ca.gov/.

Google, Inc., 2011, www.googleearth.com.

Hart, E.W., and Bryant, W.A., 1997, Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps: California Department of Conservation, Division of Mines and Geology, Special Publication 42, with Supplements 1 and 2 added in 1999.

Hartley, J.D., and Duncan, J.M., 1987, E' and Its Variation with Depth: American Society of Civil Engineers (ASCE), Journal of Transportation Engineering, Vol. 113, No. 5: dated September.

Jennings, C.W. and Bryant, W.A., 2010, Fault Activity Map of California and Adjacent Areas: California Geological Survey, California Geologic Data Map Series, Map No. 6, Scale 1:750,000.

Kimley-Horn and Associates, Inc., 2011, Plan for Wal-Mart Supercenter, Eastvale, California: undated.

Leighton and Associates, Inc., 2004, Preliminary Geotechnical Investigation, Proposed 36-Acre Mixed-Use Commercial and residential Development, Stelzer Property, Southeast Corner of Cloverdale Road and Archibald Avenue, Unincorporated Riverside County, California: dated April 2.

Morton, D. M., 2002, Geologic Map of the Corona North 7.5' Quadrangle, Riverside and San Bernardino Counties, California, Scale 1:24,000.

Morton, D. M., 2006, Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California, Scale 1:100,000.

Naval Facilities Engineering Command (NAVFAC), 1979, Civil Engineering Pavements, Manual DM 5.4: dated October.

Naval Facilities Engineering Command (NAVFAC), 1982, Foundations and Earth Structures Design Manuals: dated May.

Ninyo & Moore, 2011, Revised Proposal for Geotechnical Evaluation, Proposed Wal-Mart Supercenter, SEC Limonite and Archibald Avenues, Eastvale, California, Proposal No. P-28101: dated March 4.

Ninyo & Moore, In-house proprietary information.

Norris, R.M., and Webb, R.W., 1990, Geology of California: John Wiley & Sons, pp. 541.

Peterson, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M.S., 1996, Probabilistic Seismic Hazard Assessment for the State of California: California Department of Conservation Division of Mines and Geology Open File Report 96-08, and United States Department of the Interior United States Geological Survey Open File Report 96-706.

Seed, H.B., and Idriss, I.M., 1982, Ground Motions and Soil Liquefaction During Earthquakes, Earthquake Engineering Research Institute Monograph, Oakland, California.

Tokimatsu, K., and Seed, H.B., 1987, Evaluation of Settlements in Sands Due to Earthquake Shaking, Journal of Geotechnical Engineering, American Society of Civil Engineers, 113(8), 861-878.

United States Department of the Interior, Bureau of Reclamation, 1998, Engineering Geology Field Manual.

United States Geological Survey, 1967, Corona North Quadrangle, California, Riverside and San Bernardino Counties, 7.5-Minute Series (Topographic): Scale 1:24,000.

United States Geological Survey, 2011, Ground Motion Parameter Calculator v. 5.0.9, World Wide Web, http://earthquake.usgs.gov/research/hazmaps/design/.

Wal-Mart, 2008, Storm Water Infiltration Testing and Report Requirements: dated March 7.

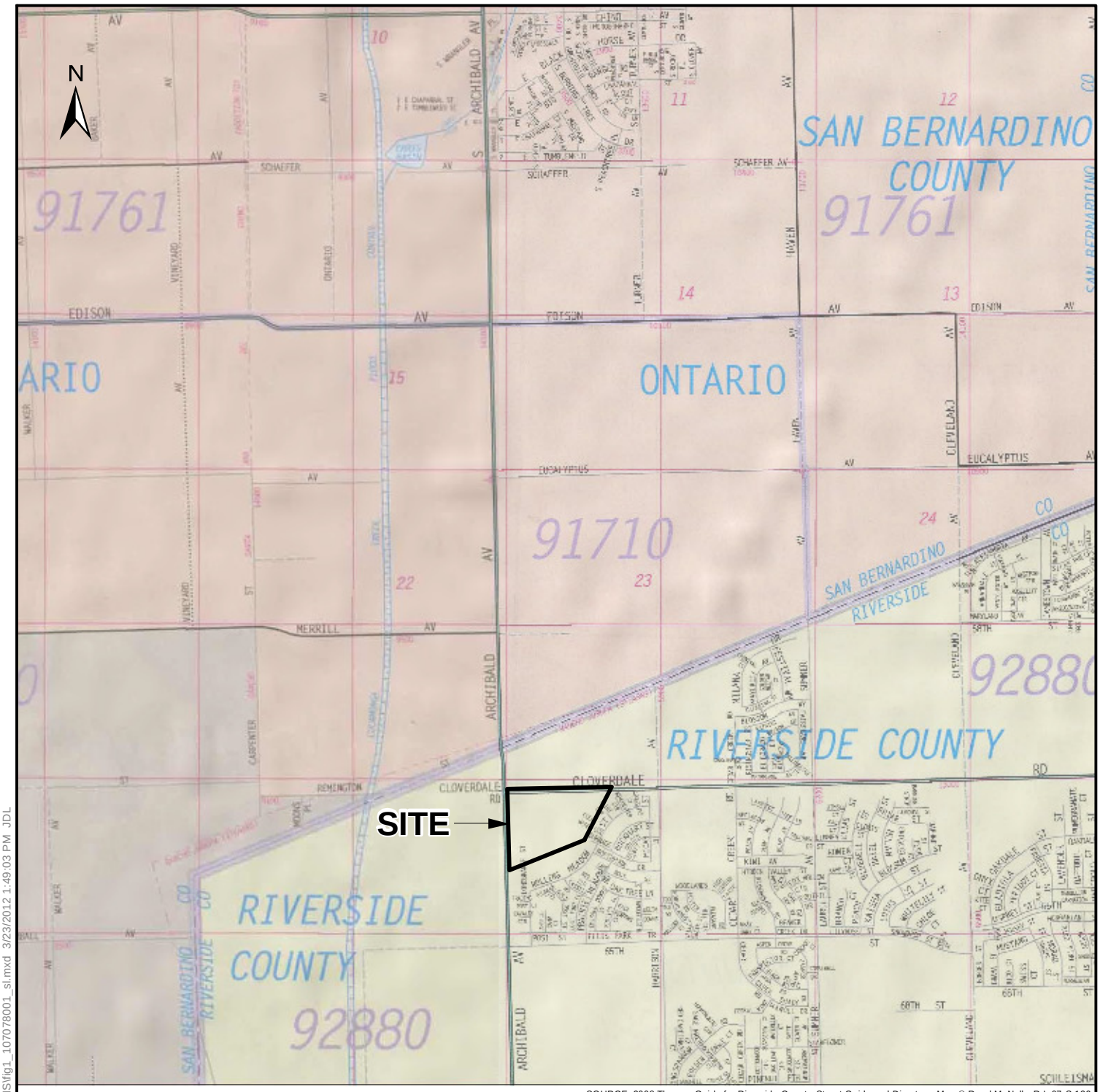
Wal-Mart, 2011, Geotechnical Investigation Specifications and Report Requirements (GISRR): dated September 22.

Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J.T., Dobry, R., Finn, W.D., Harder, L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S.S.C., Marcuson, W.F., Martin, G.R., Mitchell, J.K., Moriwaki, Y., Power, M.S., Robertson, P.K., Seed, R.B., and Stokoe, K.H., II, 2001, "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 124(10), 817-833.

Youd, T.L., Hansen, C.M., and Bartlett, S.F., 2002, Revised Multilinear Regression Equations for Prediction of Lateral Spread Displacement, Journal of Geotechnical and Geoenvironmental Engineer, Vol. 128, No. 12, ASCE: dated December 1.

AERIAL PHOTOGRAPHS

Source	Date	Flight	Numbers	Scale
USDA	September 23, 1953	AXM-7K	20 and 21	1:24,000



SOURCE: 2008 Thomas Guide for Riverside County, Street Guide and Directory; Map © Rand McNally, R.L.07-S-129

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

SCALE IN FEET

0 1,150 2,300 4,600

Ninyo & Moore	SITE LOCATION	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	1

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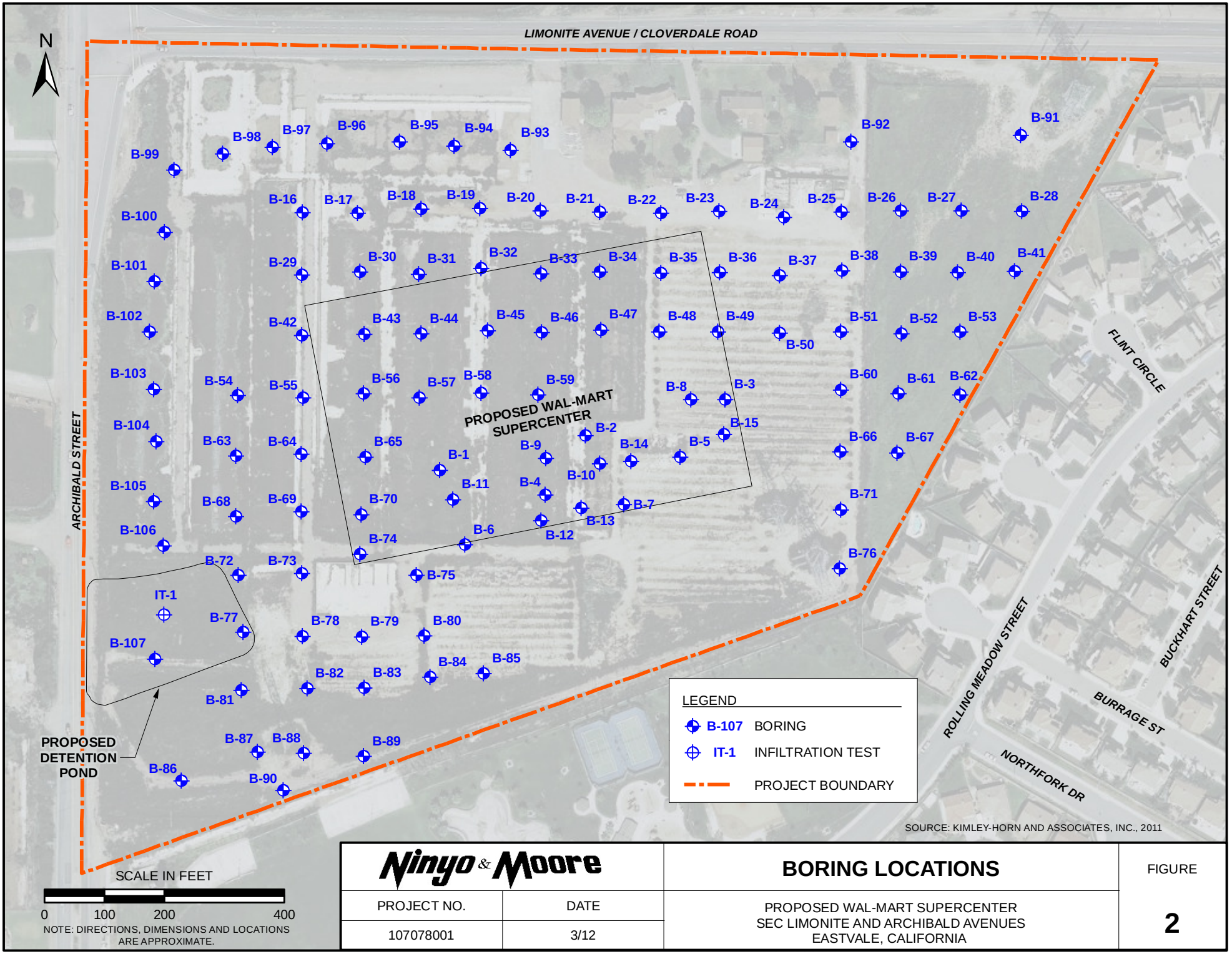

Ninyo & Moore	BORING LOCATIONS	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	2

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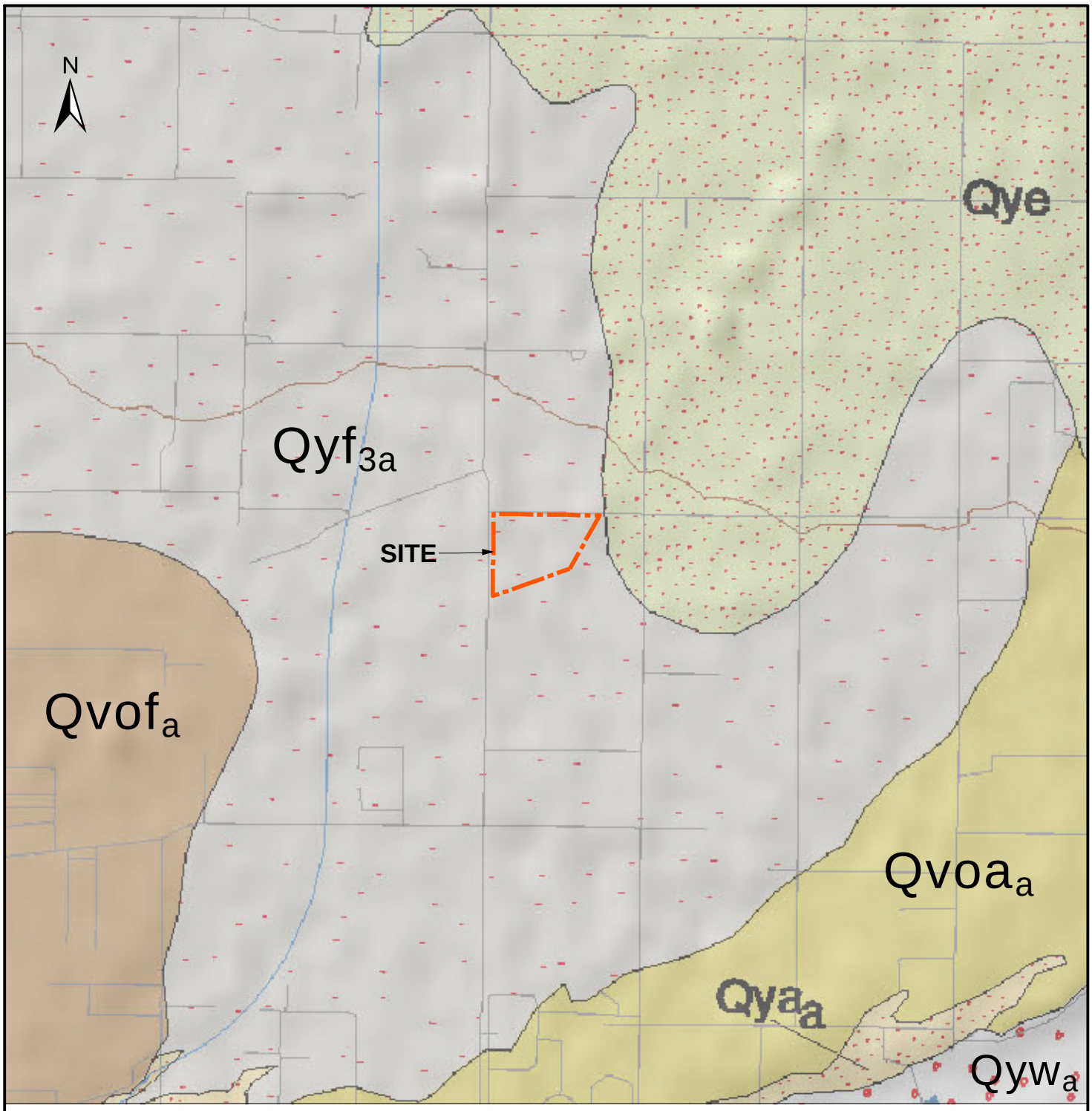

SOURCE: MORTON, D.M., 2006, GEOLOGIC MAP OF THE SANTA ANA 30' X 60' QUADRANGLE, SOUTHERN CALIFORNIA.

LEGEND

- Qyw_a YOUNG WASH DEPOSITS (HOLOCENE AND LATE PLEISTOCENE)
- Qyf_{3a} YOUNG ALLUVIAL FAN DEPOSITS, UNIT 3A (MIDDLE HOLOCENE)
- Qya_a YOUNG AXIAL CHANNEL DEPOSITS (HOLOCENE AND LATE PLEISTOCENE)
- Qye YOUNG EOLIAN DEPOSITS (HOLOCENE AND LATE PLEISTOCENE)
- $Qvof_a$ VERY OLD ALLUVIAL FAN DEPOSITS, UNIT A (MIDDLE TO EARLY PLEISTOCENE)
- $Qvoa_a$ VERY OLD AXIAL CHANNEL DEPOSITS, UNIT A (MIDDLE TO EARLY PLEISTOCENE)

SCALE IN FEET

0 1,150 2,300 4,600

NOTES: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore

GEOLOGY

FIGURE **3**

PROJECT NO.	DATE
107078001	3/12

PROPOSED WAL-MART SUPERCENTER
SEC LIMONITE AND ARCHIBALD AVENUES
EASTVALE, CALIFORNIA

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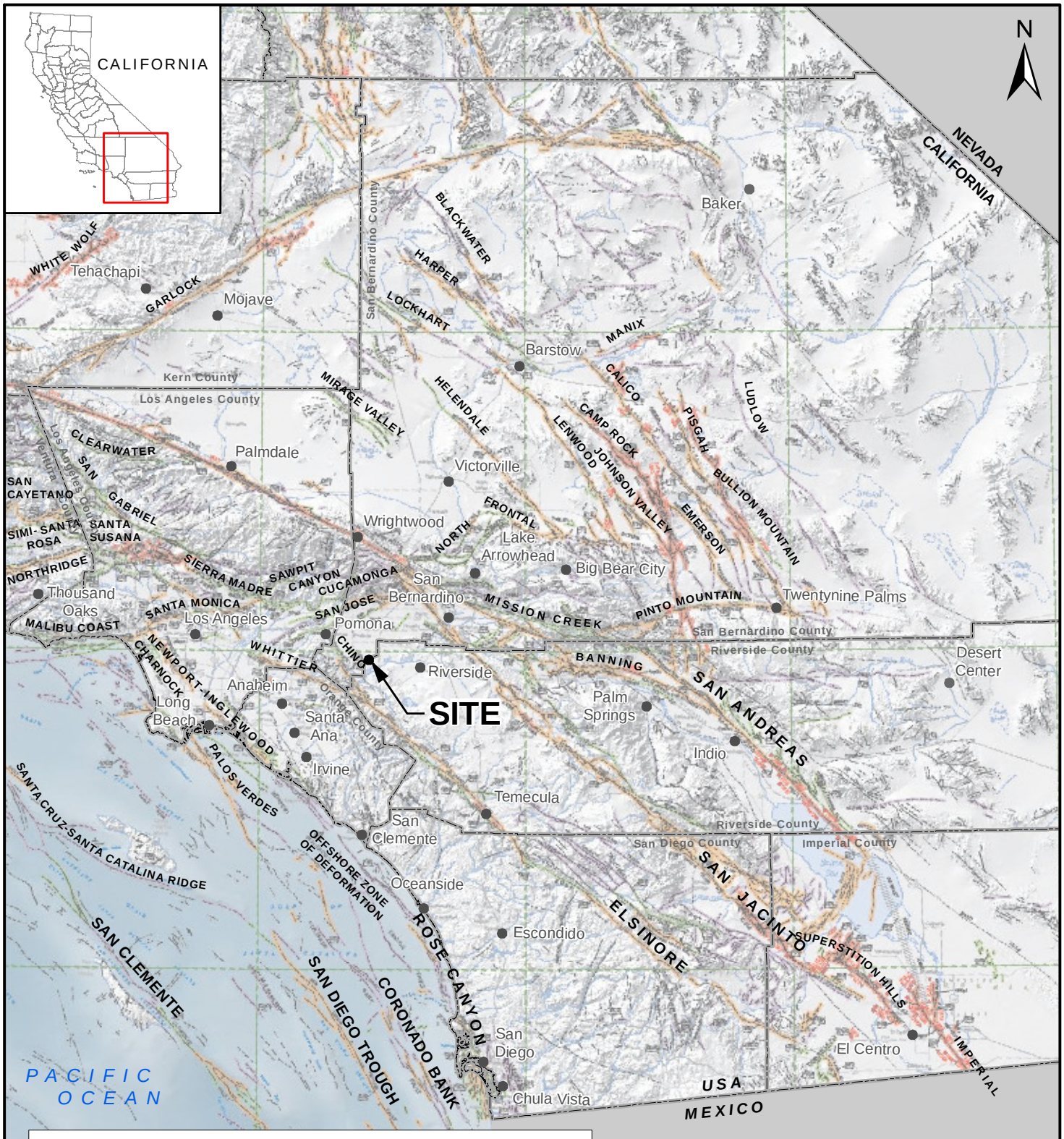

LEGEND

CALIFORNIA FAULT ACTIVITY

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- LATE QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (POTENTIALLY ACTIVE)
- STATE/COUNTY BOUNDARY

SOURCE: Fault Activity Map of California, 2010, Jennings, C.W., and Bryant, W.A., California Geological Survey.

SCALE IN MILES

0 30 60

NOTES: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore

FAULT LOCATIONS

FIGURE 4

PROJECT NO.	DATE
107078001	3/12

PROPOSED WAL-MART SUPERCENTER
SEC LIMONITE AND ARCHIBALD AVENUES
EASTVALE, CALIFORNIA

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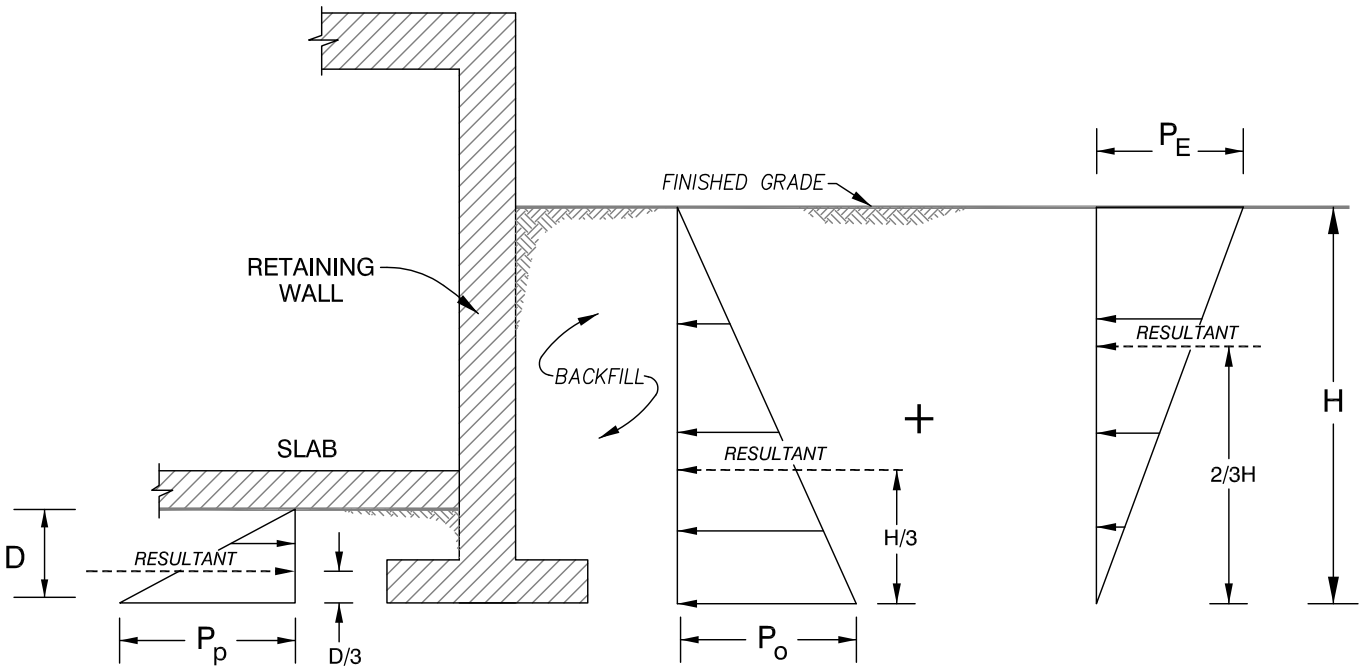


PASSIVE PRESSURE

AT-REST PRESSURE

DYNAMIC PRESSURE

NOTES:

1. ASSUMES NO HYDROSTATIC PRESSURE BUILD-UP BEHIND THE RETAINING WALL
2. GRANULAR BACKFILL MATERIALS SHOULD BE USED FOR RETAINING WALL BACKFILL
3. DRAINS AS RECOMMENDED IN THE RETAINING WALL DRAINAGE DETAIL SHOULD BE INSTALLED BEHIND THE RETAINING WALL
4. DYNAMIC LATERAL EARTH PRESSURE IS BASED ON A PEAK GROUND ACCELERATION OF 0.4g
5. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
6. H AND D ARE IN FEET

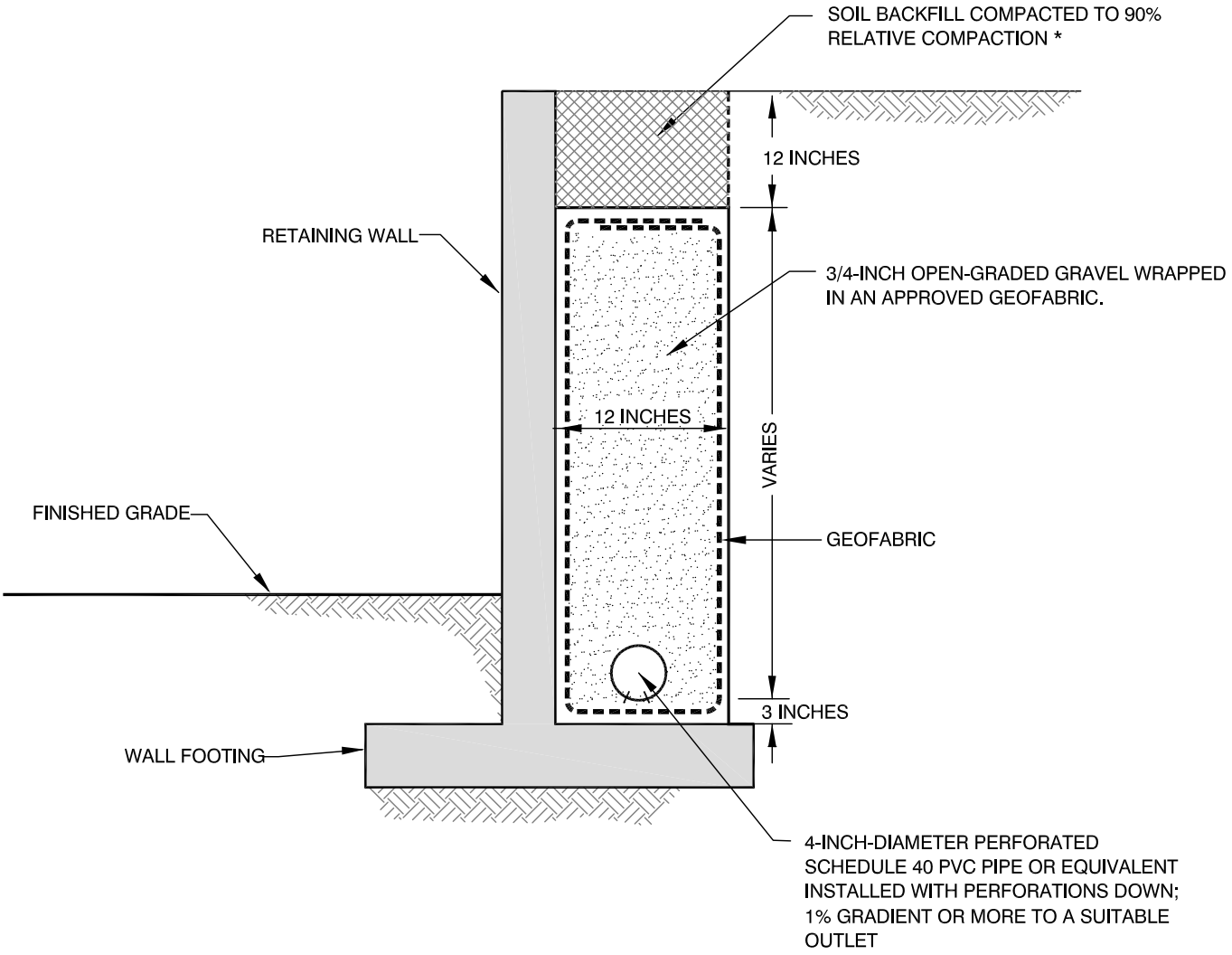
NOT TO SCALE

RECOMMENDED GEOTECHNICAL DESIGN PARAMETERS

Lateral Earth Pressure	Equivalent Fluid Pressure ($lb/ft^2/ft$)[1]	
P_O	Level Backfill with Granular Soils [2]	2H:1V Sloping Backfill with Granular Soils [2]
	65 H	95 H
P_E	22 H	
P_p	Level Ground	2H:1V Descending Ground
	300 D	150 D

fig5_107078001_restr_ret.dwg

Ninyo & Moore	LATERAL EARTH PRESSURES FOR RESTRAINED RETAINING WALLS	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	5



*BASED ON ASTM D1557

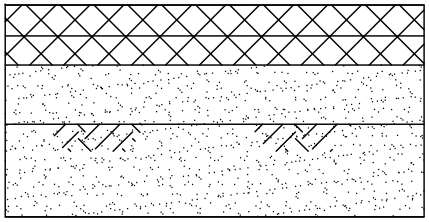
NOT TO SCALE

NOTE: AS AN ALTERNATIVE, AN APPROVED GEOCOMPOSITE DRAIN SYSTEM MAY BE USED.

fig6_107078001_ret_wall3.dwg

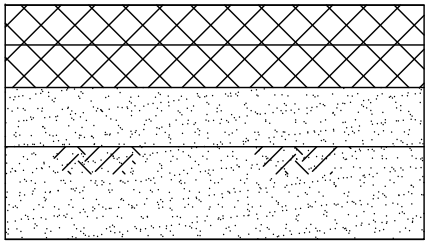
Ninyo & Moore	RETAINING WALL DRAINAGE DETAIL	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	6

FLEXIBLE PAVEMENT DESIGN



1.5" TYPE III C2 AC
2" TYPE III B2 AC
11" AB
24" OF PREPARED SUBGRADE SOIL

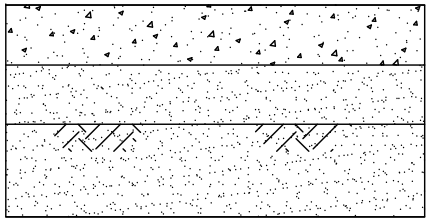
STANDARD DUTY



2" TYPE III C2 AC
3" TYPE III B2 AC
11" AB
24" OF PREPARED SUBGRADE SOIL

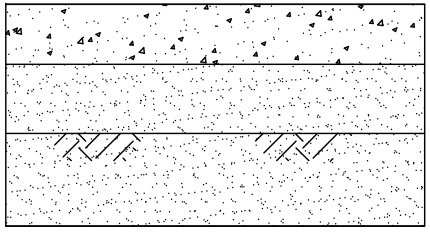
HEAVY DUTY

RIGID PAVEMENT DESIGN



6" PCC
6" AB
24" OF PREPARED SUBGRADE SOIL

STANDARD DUTY



8" PCC
6" AB
24" OF PREPARED SUBGRADE SOIL

HEAVY DUTY

LEGEND	
AB	CALTRANS CLASS 2 AGGREGATE BASE
AC	ASPHALT CONCRETE
PCC	PORTLAND CEMENT CONCRETE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE

NOT TO SCALE

Ninyo & Moore	PAVEMENT DESIGN CROSS SECTION	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	7

fig7 107078001 pav des.dwg

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Spoon

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test spoon sampler. The sampler is composed of split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The spoon was driven into the ground 12 to 18 inches with a 140-pound hammer free-falling from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetrations. Soils samples were observed and removed from the spoon, bagged, sealed and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler

The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

BORING LOG EXPLANATION SHEET

DEPTH (feet)	SAMPLES: Bulk	SAMPLES: Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0	■							Bulk sample.
		■						Modified split-barrel drive sampler.
		⊠						No recovery with modified split-barrel drive sampler.
		▥						Sample retained by others.
		◪						Standard Penetration Test (SPT).
5		◫						No recovery with a SPT.
		▯	XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
		◪						No recovery with Shelby tube sampler.
		▥						Continuous Push Sample.
				⚲				Seepage.
10				▽				Groundwater encountered during drilling.
				▼				Groundwater measured after drilling.
						▦	SM	ALLUVIUM: Solid line denotes unit change.
								Dashed line denotes material change.
								Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Sheared Bedding Surface
15								
								The total depth line is a solid line that is drawn at the bottom of the boring.
20								

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BORING LOG

EXPLANATION OF BORING LOG SYMBOLS

PROJECT NO.	DATE	FIGURE
	Rev. 01/03	

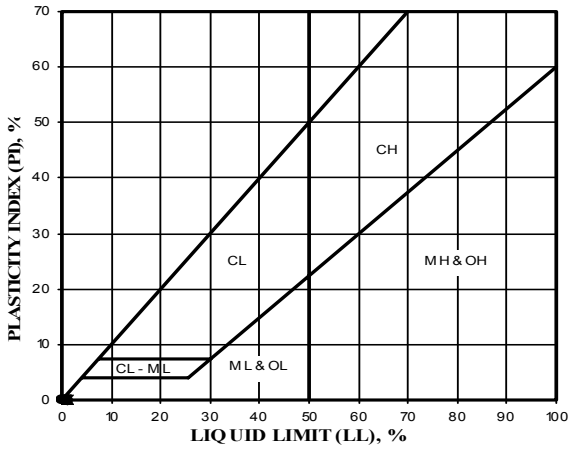
U.S.C.S. METHOD OF SOIL CLASSIFICATION

MAJOR DIVISIONS		SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS (More than 1/2 of soil >No. 200 sieve size)	**GRAVELS (More than 1/2 of coarse fraction > No. 4 sieve size)**	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction <No. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (More than 1/2 of soil <No. 200 sieve size)	**SILTS & CLAYS Liquid Limit <50**	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean
		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS Liquid Limit >50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

GRAIN SIZE CHART

CLASSIFICATION	RANGE OF GRAIN SIZE	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.76
Coarse	3" to 3/4"	76.2 to 19.1
Fine	3/4" to No. 4	19.1 to 4.76
SAND	No. 4 to No. 200	4.76 to 0.075
Coarse	No. 4 to No. 10	4.76 to 2.00
Medium	No. 10 to No. 40	2.00 to 0.420
Fine	No. 40 to No. 200	0.420 to 0.075
SILT & CLAY	Below No. 200	Below 0.075

PLASTICITY CHART



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U.S.C.S. METHOD OF SOIL CLASSIFICATION

DATE DRILLED 5/5/11 BORING NO. B-1

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 6

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ORGANICS (Manure): Approximately 1 foot thick.
		17				SM	FILL: Brown, moist, medium dense, silty SAND.
		13				ML	ALLUVIUM: Brown, damp to moist, loose, sandy SILT.
5							Brownish gray, moist.
10		31					Medium dense.
						SM	Brown to grayish brown, damp, medium dense, silty SAND.
15		29				ML	Light gray, damp to moist, dense, sandy SILT; fine SAND.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-1

DATE DRILLED 5/5/11 BORING NO. B-1

GROUND ELEVATION 640' ± (MSL) SHEET 2 OF 6

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20						ML	ALLUVIUM: (Continued) Brown, moist, medium dense, sandy SILT; fine SAND.
	Driven	15					
25	Driven	12				CL	Brownish gray to light gray, stiff, silty CLAY.
30	Driven	9					
35							
40							

Ninyo & Moore

BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-2

DATE DRILLED 5/5/11 BORING NO. B-1

GROUND ELEVATION 640' ± (MSL) SHEET 3 OF 6

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40						ML	ALLUVIUM: (Continued) Brown, moist, medium dense, sandy SILT; fine SAND.
		11					
45							
						SP-SM	Brown, damp to moist, dense, poorly graded SAND with silt.
50		28					
						ML	Brown, moist, hard, sandy SILT; fine SAND.
55							
60							

Ninyo & Moore

BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-3

DATE DRILLED 5/5/11 BORING NO. B-1

GROUND ELEVATION 640' ± (MSL) SHEET 4 OF 6

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
60						ML	ALLUVIUM: (Continued) Brown, moist, hard, sandy SILT; fine SAND.
		29					
65							
						SM	Brown, moist, very dense, silty SAND.
70		37					
75							
80							

Ninyo & Moore

BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-4

DATE DRILLED 5/5/11 BORING NO. B-1

GROUND ELEVATION 640' ± (MSL) SHEET 5 OF 6

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
80						SM	ALLUVIUM: (Continued) Brown, damp, very dense, silty fine SAND.
		63					
85						ML	Grayish brown, damp to moist, dense, sandy SILT; fine SAND.
90		31				SP-SM	Grayish brown, damp, dense, poorly graded SAND with silt; scattered gravel and cobbles.
						ML	Brown, moist, hard, clayey SILT.
95							Scattered gravel and cobbles.
100							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-5

DATE DRILLED 5/5/11 BORING NO. B-1

GROUND ELEVATION 640' ± (MSL) SHEET 6 OF 6

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
100	■	66				ML	ALLUVIUM: (Continued) Brown, moist, hard clayey SILT.
							Total Depth = 101 feet. Groundwater not encountered during drilling or 20 hours after drilling. Backfilled with bentonite grout after drilling on 5/5/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
105							
110							
115							
120							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-6

DATE DRILLED 5/3/11 BORING NO. B-2

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		8	19.3	104.6		SM	FILL: Brown, damp to moist, loose, silty SAND.
5		19	16.4	90.7		ML	ALLUVIUM: Brown, damp to moist, medium dense, sandy SILT; fine sand. Greenish gray.
10		21				SP-SM	Brownish gray, damp to moist, medium dense, poorly graded SAND with silt; micaceous. Reddish brown; scattered gravel.
15		5	18.8	97.9		ML	Brown, moist, very loose to loose, sandy SILT; fine sand.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-7

DATE DRILLED 5/3/11 BORING NO. B-2

GROUND ELEVATION 640' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		22				ML	ALLUVIUM: (Continued) Brown, moist, very stiff, clayey SILT with fine sand.
							Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-8

DATE DRILLED 5/3/11 BORING NO. B-3

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND; scattered gravel.
		16	7.0	116.7			
						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
5		13					
10		21	5.3	103.9			Reddish brown to gray.
15		43					Dense; scattered gravel.
						SP-SM	Brownish gray, damp to moist, medium dense, poorly graded SAND with silt.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-9

DATE DRILLED 5/3/11 BORING NO. B-3

GROUND ELEVATION 643' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		39				SP-SM	ALLUVIUM: (Continued) Brownish gray, damp to moist, medium dense, poorly graded SAND with silt.
							Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-10

DATE DRILLED 5/3/11 BORING NO. B-4

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ORGANICS (Manure): Approximately 6 inches thick.
						SM	FILL: Brown, damp to moist, loose, silty SAND.
		25					
						ML	ALLUVIUM: Brown, damp to moist, loose, sandy SILT; fine sand.
5		8	20.4	91.9			Brown to dark brown.
						SP-SM	Brownish gray, damp to moist, medium dense, poorly graded SAND with silt.
10		19	12.4	98.5			
15		38					Fine sand; micaceous.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-11

DATE DRILLED 5/3/11 BORING NO. B-4

GROUND ELEVATION 641' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		48				SP-SM	ALLUVIUM: (Continued) Brownish gray, damp, dense, poorly graded SAND with silt; micaceous.
							Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-12

DATE DRILLED 5/3/11 BORING NO. B-5

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		16				SM	FILL: Brown, damp to moist, medium dense, silty SAND; scattered gravel.
5		13	16.4	103.6		ML	ALLUVIUM: Brown, damp to moist, loose, sandy SILT; fine sand.
10		23	6.2	98.5		SM	Brownish gray, damp to moist, medium dense, silty SAND; scattered gravel.
15		37					Brown to reddish brown.
20							

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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-13

DATE DRILLED 5/3/11 BORING NO. B-5

GROUND ELEVATION 642' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	37			▒	SM	ALLUVIUM: (Continued) Brown to reddish brown, damp to moist, medium dense, silty SAND; scattered gravel.
								Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-14

DATE DRILLED 5/3/11 BORING NO. B-6

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	FILL:
						SM	Brown, damp, dense, silty GRAVEL with sand.
		21					Brown, damp to moist, medium dense, silty SAND.
						SM	ALLUVIUM:
							Brown, damp to moist, medium dense, silty SAND.
5		13	20.7	94.1		ML	Brown, damp to moist, medium dense, sandy SILT; fine sand.
						SM	Gray to reddish brown, moist, medium dense, silty SAND.
10		25					
						ML	Brown, moist, medium dense, sandy SILT; fine sand.
15		17					
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-15

DATE DRILLED 5/3/11 BORING NO. B-6

GROUND ELEVATION 639' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		8				ML	ALLUVIUM: (Continued) Brown, moist, loose, sandy SILT; fine sand.
							Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-16

DATE DRILLED 5/6/11 BORING NO. B-7

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, loose, silty SAND.
		13					Olive gray.
						SP	ALLUVIUM: Grayish brown, damp to moist, medium dense, poorly graded SAND with gravel.
5		15					
10		25					Brownish gray.
15		49					Dense.
20							

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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-17

DATE DRILLED 5/6/11 BORING NO. B-7

GROUND ELEVATION 640' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	37			▒	SP	ALLUVIUM: (Continued) Brownish gray, damp to moist, medium dense, poorly graded SAND with gravel.
								Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-18

DATE DRILLED 5/6/11 BORING NO. B-8

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		17				SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5		10				SM	ALLUVIUM: Brown, moist, loose, silty SAND; scattered gravel.
10		20				SP	Grayish brown, damp to moist, medium dense, poorly graded SAND with gravel.
15		33				SP-SM	Brownish gray, damp to moist, medium dense, poorly graded SAND with silt; scattered gravel.
20							

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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-19

DATE DRILLED 5/6/11 BORING NO. B-8

GROUND ELEVATION 643' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	36			▨	SP-SM	ALLUVIUM: (Continued) Brownish gray, damp to moist, medium dense, poorly graded SAND with silt; scattered gravel.
								Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-20

DATE DRILLED 5/6/11 BORING NO. B-9

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ORGANICS (Manure): Approximately 1 foot thick.
	Bulk					SM	FILL: Brown, moist, loose to medium dense, silty SAND.
	Driven	14					
						ML	ALLUVIUM: Brown, moist, loose to medium dense, sandy SILT; fine SAND.
5	Driven	9					Olive brown; loose.
						SM	Brown, damp to moist, medium dense, silty SAND.
10	Driven	21					
						ML	Brownish gray, damp to moist, medium dense, sandy SILT; fine SAND.
15	Driven	26					
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-21

DATE DRILLED 5/6/11 BORING NO. B-9

GROUND ELEVATION 641' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20						ML	ALLUVIUM: (Continued) Brown, damp to moist, medium dense, sandy SILT; fine SAND.
		36					
						SM	Grayish brown, damp to moist, medium dense, silty SAND.
							Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-22

DATE DRILLED 5/6/11 BORING NO. B-10

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ORGANICS (Manure): Approximately 6 inches thick.
						ML	FILL: Brown, damp to moist, medium dense, sandy SILT; fine sand.
	Driven	15					
						SM	ALLUVIUM: Grayish brown, damp to moist, medium dense, silty SAND.
5	Driven	37					
10	Driven	35					
						SP-SM	Gray to reddish brown, damp, medium dense, poorly graded SAND with silt.
15	Driven	30					
						SP	Grayish brown, damp, medium dense, poorly graded SAND with gravel.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-23

DATE DRILLED 5/6/11 BORING NO. B-10

GROUND ELEVATION 640' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	30				SP	ALLUVIUM: (Continued) Grayish brown, damp, medium dense, poorly graded SAND with gravel.
		■					ML	Gray, moist, medium dense, sandy SILT; fine SAND.
								Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-24

DATE DRILLED 5/5/11 BORING NO. B-11

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ORGANICS (Manure): Approximately 1 foot thick.
	Bulk	14				SM	FILL: Grayish brown, damp to moist, medium dense, silty SAND.
5	Driven	13				ML	ALLUVIUM: Brownish gray, damp to moist, stiff to very stiff, sandy SILT.
10	Driven	34				SP-SM	Grayish brown to reddish brown, damp, medium dense, poorly graded SAND with silt.
15	Driven	6				ML	Light gray, moist, firm to stiff, clayey SILT.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-25

DATE DRILLED 5/5/11 BORING NO. B-11

GROUND ELEVATION 639' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		29				ML	ALLUVIUM: (Continued) Brown, damp to moist, medium dense, sandy SILT; fine SAND.
							Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/5/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-26

DATE DRILLED 5/6/11 BORING NO. B-12

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ORGANICS (Manure): Approximately 1 foot thick.
		17				SM	FILL: Brown, moist, medium dense, silty SAND.
5		16				ML	ALLUVIUM: Brown, damp to moist, medium dense, sandy SILT; fine SAND. Light gray.
10		31				SM	Reddish brown to gray, damp to moist, medium dense, silty SAND.
15		21					Gray; scattered gravel.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-27

DATE DRILLED 5/6/11 BORING NO. B-12

GROUND ELEVATION 640' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	22			▒	SM	ALLUVIUM: (Continued) Brownish gray, damp to moist, medium dense, silty SAND.
								Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-28

DATE DRILLED 5/6/11 BORING NO. B-13

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 4 inches thick.
						ML	FILL: Brown, damp to moist, medium dense, sandy SILT; fine SAND; scattered gravel.
		11					
						ML	ALLUVIUM: Grayish brown, damp to moist, very stiff, sandy SILT.
						SP-SM	Brown, damp to moist, medium dense, poorly graded SAND with silt; scattered gravel.
5		18					
10		34					Gray.
15		36					
						SM	Gray, moist, medium dense, silty SAND.
						SP-SM	Grayish brown, damp to moist, dense, poorly graded SAND with silt.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-29

DATE DRILLED 5/6/11 BORING NO. B-13

GROUND ELEVATION 640' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	48			▨	SP-SM	ALLUVIUM: (Continued) Grayish brown, damp to moist, dense, poorly graded SAND with silt.
								Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-30

DATE DRILLED 5/6/11 BORING NO. B-14

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, loose to medium dense, silty SAND.
		14					
						SM	ALLUVIUM: Brown, damp to moist, loose, silty SAND.
5		13					
10		26					Gray to reddish brown, moist, medium dense.
15		27					Brownish gray.
20							

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-31

DATE DRILLED 5/6/11 BORING NO. B-14

GROUND ELEVATION 641' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	42			▒	SM	ALLUVIUM: (Continued) Grayish brown, damp to moist, medium dense to dense, silty SAND.
								Total Depth = 21.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-32

DATE DRILLED 5/5/11 BORING NO. B-15

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 3

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		20				SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5		10				SM	ALLUVIUM: Brown, damp to moist, loose, silty SAND.
10		29				GM	Brown, damp to moist, medium dense, silty GRAVEL with sand.
15		61				SP	Brown, damp, dense, poorly graded SAND with some gravel.
20						SM	Grayish brown, damp, dense, silty SAND.

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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-33

DATE DRILLED 5/5/11 BORING NO. B-15

GROUND ELEVATION 643' ± (MSL) SHEET 2 OF 3

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20						SM	ALLUVIUM: (Continued) Grayish brown, damp, dense, silty SAND.
		46					
25		30					Medium dense, fine sand.
						SP-SM	Brownish gray, damp, dense, poorly graded SAND with silt; scattered gravel and cobbles.
30		62					
						SP	Brownish gray, damp, dense, poorly graded SAND with gravel.
35							
40							

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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-34

DATE DRILLED 5/5/11 BORING NO. B-15

GROUND ELEVATION 643' ± (MSL) SHEET 3 OF 3

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40						SW-SM	ALLUVIUM: (Continued) Brownish gray, damp, dense, well graded SAND with silt; some gravel.
		33					
45							
						SP-SM	Brown to reddish brown, damp, very dense, poorly graded SAND with silt; scattered gravel.
50		37					
							Total Depth = 51.5 feet. No groundwater encountered. Backfilled with bentonite and soil on 5/5/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
55							
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-35

DATE DRILLED 5/2/11 BORING NO. B-16

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	FILL: Brown to dark brown, damp to moist, loose, silty fine SAND; some clay; organic odor.
	■						SM	ALLUVIUM: Dark brown, moist, loose, silty fine SAND; some clay; micaceous.
5	■							
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-36

DATE DRILLED 5/2/11 BORING NO. B-17

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	PORTLAND CEMENT CONCRETE: Approximately 1 to 1.5 inches thick.
							FILL: Dark brown to brown, damp, loose, silty fine SAND; scattered gravel; micaceous.
5						CL	ALLUVIUM: Grayish brown, damp, soft to firm, silty CLAY with fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-37

DATE DRILLED 5/2/11 BORING NO. B-18

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Dark brown to brown, damp, loose, silty fine SAND.
5							SM	ALLUVIUM: Grayish brown, damp to moist, loose, silty fine SAND with clay. Some coarse sand and gravel.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-38

DATE DRILLED 5/6/11 BORING NO. B-19

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp, medium dense, silty SAND.
5						ML	ALLUVIUM: Brownish gray, moist, medium dense, sandy SILT; fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-39

DATE DRILLED 5/6/11 BORING NO. B-20

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Light to dark brown, damp, medium dense, silty SAND.
5							SM	ALLUVIUM: Grayish brown, moist, medium dense, silty SAND.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-40

DATE DRILLED 5/6/11 BORING NO. B-21

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND; cobbles encountered at approximately 2 feet.
5						CL	ALLUVIUM: Brownish gray, moist, stiff, sandy CLAY.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-41

DATE DRILLED 5/6/11 BORING NO. B-22

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Brownish gray, moist, stiff, sandy SILT; fine SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-42

DATE DRILLED 5/4/11 BORING NO. B-23

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Grayish brown, damp to moist, medium dense, sandy SILT.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-43

DATE DRILLED 5/3/11 BORING NO. B-24

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Brown, damp to moist, medium dense, sandy SILT; fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-44

DATE DRILLED 5/3/11 BORING NO. B-25

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML	FILL: Brown, moist, medium dense, sandy SILT; fine sand.
5						SM	ALLUVIUM: Brown to reddish brown, moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-45

DATE DRILLED 5/4/11 BORING NO. B-26

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SC	FILL: Brown, moist, medium dense, clayey SAND.
5						ML	ALLUVIUM: Brown, moist, medium dense, sandy SILT; fine SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-46

DATE DRILLED 5/4/11 BORING NO. B-27

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML	FILL: Brown, moist, medium dense, sandy SILT; fine SAND.
5						SM	ALLUVIUM: Dark gray, moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-47

DATE DRILLED 5/4/11 BORING NO. B-28

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SC	FILL: Brown, moist, medium dense, clayey SAND.
5	■						SM	ALLUVIUM: Dark gray, moist, medium dense, silty SAND.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-48

DATE DRILLED 5/2/11 BORING NO. B-29

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■			10.5			SM	FILL: Dark brown, damp to moist, loose, silty fine SAND; scattered gravel.
5	■						SM	ALLUVIUM: Brown to dark brown, damp to moist, loose, silty fine SAND with clay.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-49

DATE DRILLED 5/2/11 BORING NO. B-30

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown to light brown, damp, loose, silty fine SAND; scattered gravel; micaceous.
5						CL	ALLUVIUM: Gray, moist, soft to firm, silty CLAY.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-50

DATE DRILLED 5/2/11 BORING NO. B-31

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	FILL: Dark brown to brown, damp, loose, silty fine SAND; micaceous.
5	■						ML	ALLUVIUM: Grayish brown, damp, loose, sandy SILT; fine SAND; few clay; scattered gravel.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-51

DATE DRILLED 5/6/11 BORING NO. B-32

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								PORTLAND CEMENT CONCRETE: Approximately 4 inches thick.
							ML	FILL: Brown, damp to moist, medium dense, sandy SILT; fine SAND.
5							ML	ALLUVIUM: Brown, damp to moist, medium dense, sandy SILT.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11.
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-52

DATE DRILLED 5/6/11 BORING NO. B-33

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5	■						CL	ALLUVIUM: Brownish gray, moist, stiff, sandy CLAY.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-53

DATE DRILLED 5/6/11 BORING NO. B-34

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Brownish gray, moist, stiff, sandy SILT; fine SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-54

DATE DRILLED 5/6/11 BORING NO. B-35

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5	■						ML	ALLUVIUM: Brownish gray, moist, medium dense, sandy SILT; fine SAND.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-55

DATE DRILLED 5/4/11 BORING NO. B-36

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Grayish brown, damp to moist, medium dense, sandy SILT; fine SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-56

DATE DRILLED 5/3/11 BORING NO. B-37

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, damp to moist, medium dense, silty SAND; scattered gravel.
5							SM	ALLUVIUM: Grayish brown, damp to moist, medium dense, silty SAND; scattered gravel.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-57

DATE DRILLED 5/3/11 BORING NO. B-38

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML	FILL: Brown, damp to moist, medium dense, sandy SILT; fine sand.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-58

DATE DRILLED 5/4/11 BORING NO. B-39

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML	FILL: Brown, damp to moist, medium dense, sandy SILT; fine sand.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-59

DATE DRILLED 5/4/11 BORING NO. B-40

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	FILL: Brown, moist, medium dense, clayey SAND.
5							CL	ALLUVIUM: Grayish brown, moist, stiff, sandy CLAY.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-60

DATE DRILLED 5/4/11 BORING NO. B-41

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Grayish brown, damp to moist, medium dense, silty SAND.
5						SM	ALLUVIUM: Dark brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-61

DATE DRILLED 5/2/11 BORING NO. B-42

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GW	FILL: Gray, damp, loose, well-graded GRAVEL.
						SM	Dark brown, moist, loose, silty fine SAND; micaceous.
5							
						SM	ALLUVIUM: Brown to dark brown, moist, loose, silty fine SAND with clay.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-62

DATE DRILLED 5/2/11 BORING NO. B-43

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown to light brown, damp, loose, silty fine SAND; scattered gravel; micaceous.
5							CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY; few fine sand.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-63

DATE DRILLED 5/2/11 BORING NO. B-44

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Dark brown to brown, damp, loose, silty fine SAND.
5						CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY; few fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-64

DATE DRILLED 5/6/11 BORING NO. B-45

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■	■					SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5	■	■					ML	ALLUVIUM: Brownish gray, moist, medium dense, sandy SILT; fine sand.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-65

DATE DRILLED 5/6/11 BORING NO. B-46

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Brownish gray, moist, medium dense, sandy SILT; fine SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-66

DATE DRILLED 5/6/11 BORING NO. B-47

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5							ML	ALLUVIUM: Brownish gray, moist, medium dense, sandy SILT; fine sand.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-67

DATE DRILLED 5/4/11 BORING NO. B-48

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-68

DATE DRILLED 5/4/11 BORING NO. B-49

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-69

DATE DRILLED 5/3/11 BORING NO. B-50

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE
AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-70

DATE DRILLED 5/3/11 BORING NO. B-51

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-71

DATE DRILLED 5/4/11 BORING NO. B-52

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						ML	FILL: Brown, moist, stiff, clayey SILT.
5	■						ML	ALLUVIUM: Brown, moist, stiff, clayey SILT.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-72

DATE DRILLED 5/4/11 BORING NO. B-53

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							CL	FILL: Grayish brown, moist, stiff, sandy CLAY; fine SAND.
5							SM	ALLUVIUM: Grayish brown, moist, medium dense, silty SAND.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-73

DATE DRILLED 5/6/11 BORING NO. B-54

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY _____ LOGGED BY _____ REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5							CL	ALLUVIUM: Brownish gray, moist, stiff, sandy CLAY; fine SAND.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-74

DATE DRILLED 5/2/11 BORING NO. B-55

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM-GM	FILL: Light brown, damp, loose, silty SAND and GRAVEL.
							SM	Dark brown, damp to moist, loose, silty fine SAND; micaceous.
5							ML	ALLUVIUM: Olive brown, moist, soft to firm, clayey SILT.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-75

DATE DRILLED 5/2/11 BORING NO. B-56

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Reddish brown to brown, damp, loose, silty fine SAND; scattered gravel; micaceous.
5							CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-76

DATE DRILLED 5/2/11 BORING NO. B-57

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0			16.6			SM	FILL: Dark brown to brown, damp, loose, silty fine SAND; micaceous; scattered gravel.
5						ML	ALLUVIUM: Grayish brown, damp to moist, loose, clayey SILT with fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-77

DATE DRILLED 5/6/11 BORING NO. B-58

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								PORTLAND CEMENT CONCRETE: Approximately 4 inches thick.
							SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5							ML	ALLUVIUM: Grayish brown, damp to moist, medium dense, sandy SILT; fine sand.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11.
15								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-78

DATE DRILLED 5/6/11 BORING NO. B-59

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5	■						CL	ALLUVIUM: Brownish gray, moist, stiff, silty CLAY.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-79

DATE DRILLED 5/3/11 BORING NO. B-60

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML	FILL: Grayish brown, damp to moist, medium dense, sandy SILT; fine sand.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-80

DATE DRILLED 5/4/11 BORING NO. B-61

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SC	FILL: Brown, moist, medium dense, clayey SAND.
5						ML	ALLUVIUM: Grayish brown, moist, stiff, clayey SILT with sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-81

DATE DRILLED 5/4/11 BORING NO. B-62

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	Brownish gray, damp to moist, medium dense SILT.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-82

DATE DRILLED 5/6/11 BORING NO. B-63

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						CL	ALLUVIUM: Brownish gray, moist, stiff, sandy CLAY; fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-83

DATE DRILLED 5/2/11 BORING NO. B-64

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM-GM	FILL: Light brown, damp, loose, silty SAND and GRAVEL.
							SM	Brown to dark brown, damp, loose, silty fine SAND; scattered gravel; micaceous.
5								
							CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY; few fine sand.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-84

DATE DRILLED 5/2/11 BORING NO. B-65

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Reddish brown to light brown, damp, loose, silty fine SAND; scattered gravel; micaceous.
5						CL	ALLUVIUM: Gray, damp to moist, soft to firm, silty CLAY; few fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-85

DATE DRILLED 5/3/11 BORING NO. B-66

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-86

DATE DRILLED 5/4/11 BORING NO. B-67

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Brown, moist, stiff, silty CLAY.
5						ML	ALLUVIUM: Brown, moist, stiff, clayey SILT with sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-87

DATE DRILLED 5/6/11 BORING NO. B-68

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	FILL: Brown to light brown, damp to moist, medium dense, silty SAND.
5	■						CL	ALLUVIUM: Brownish gray, moist, stiff, sandy CLAY.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-88

DATE DRILLED 5/2/11 BORING NO. B-69

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM-GM	FILL: Light brown, damp, loose, silty SAND and GRAVEL.
							SM	Dark brown, damp to moist, loose, silty SAND; scattered gravel; micaceous.
5								
							CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY; few fine sand.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-89

DATE DRILLED 5/2/11 BORING NO. B-70

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Light brown to dark brown, damp, loose, silty fine SAND; micaceous.
5							CL	ALLUVIUM: Gray, moist, soft to firm, silty CLAY.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-90

DATE DRILLED 5/3/11 BORING NO. B-71

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						ML	FILL: Grayish brown, damp to moist, medium dense, sandy SILT; fine sand.
5	■						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-91

DATE DRILLED 5/6/11 BORING NO. B-72

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
						CL	Brown, moist, stiff, CLAY.
5							@ 8': Scattered cobbles.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-92

DATE DRILLED 5/2/11 BORING NO. B-73

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM-GM	FILL: Light brown and gray, damp, loose, silty SAND and GRAVEL.
	■						SM	Brown to dark brown, damp to moist, loose, silty fine SAND; scattered gravel; micaceous.
5								
	■						CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY; few fine sand.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-93

DATE DRILLED 5/2/11 BORING NO. B-74

GROUND ELEVATION 640' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM-GM	FILL: Light brown and gray, damp, loose, silty SAND and GRAVEL.
							SM	Light brown to dark brown, damp, loose, silty fine SAND; scattered gravel; micaceous.
5							CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-94

DATE DRILLED 5/4/11 BORING NO. B-75

GROUND ELEVATION 638' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
5						ML	Grayish brown, damp to moist, stiff SILT.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-95

DATE DRILLED 5/3/11 BORING NO. B-76

GROUND ELEVATION 638' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Grayish brown, moist, ,medium dense, sandy SILT; fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/3/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-96

DATE DRILLED 5/3/11 BORING NO. B-77

GROUND ELEVATION 638' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY AO LOGGED BY AO REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Grayish brown, moist, stiff SILT.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/6/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-97

DATE DRILLED 5/2/11 BORING NO. B-78

GROUND ELEVATION 638' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown to dark brown, damp, loose, silty fine SAND; scattered gravel; micaceous.
5						CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY; few fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-98

DATE DRILLED 5/2/11 BORING NO. B-79

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MJB LOGGED BY MJB REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Light brown and gray, damp, loose, silty SAND and GRAVEL.
						SM	Brown to dark brown, damp to moist, loose, silty fine SAND.
5						CL	ALLUVIUM: Grayish brown, moist, soft to firm, silty CLAY; few fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/2/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-99

DATE DRILLED 5/4/11 BORING NO. B-80

GROUND ELEVATION 636' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-100

DATE DRILLED 5/6/11 BORING NO. B-81

GROUND ELEVATION 638' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Limited Access)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML	FILL: Brown, damp to moist, stiff, sandy SILT; fine sand.
5						ML	ALLUVIUM: Brownish gray, damp to moist, stiff SILT.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-101

DATE DRILLED 5/4/11 BORING NO. B-82

GROUND ELEVATION 637' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp, medium dense, silty SAND.
						ML	ALLUVIUM: Grayish brown, damp to moist, medium dense, sandy SILT; fine sand.
5							
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-102

DATE DRILLED 5/4/11 BORING NO. B-83

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND; scattered gravel.
						ML	ALLUVIUM: Grayish brown, damp to moist, medium dense, sandy SILT; fine sand.
5							
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-103

DATE DRILLED 5/4/11 BORING NO. B-84

GROUND ELEVATION 636' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						ML	ALLUVIUM: Grayish brown, damp to moist, medium dense SILT.
5						SM	Brown, damp to moist, medium dense, silty fine SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-104

DATE DRILLED 5/4/11 BORING NO. B-85

GROUND ELEVATION 638' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						SM	ALLUVIUM: Brown, damp to moist, medium dense, silty SAND.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-105

DATE DRILLED 5/4/11 BORING NO. B-86

GROUND ELEVATION 638' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Grayish brown, damp to moist, medium dense, sandy SILT; fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-106

DATE DRILLED 5/4/11 BORING NO. B-87

GROUND ELEVATION 637' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Grayish brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Grayish brown, moist, medium dense, sandy SILT; fine sand.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-107

DATE DRILLED 5/4/11 BORING NO. B-88

GROUND ELEVATION 637' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5							SM	ALLUVIUM: Grayish brown, damp to moist, medium dense, silty SAND.
10								Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-108

DATE DRILLED 5/4/11 BORING NO. B-89

GROUND ELEVATION 638' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Brown, damp to moist, medium dense, sandy SILT.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-109

DATE DRILLED 5/4/11 BORING NO. B-90

GROUND ELEVATION 637' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Hollow-Stem Auger (Mobile B-61)(Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY BTM LOGGED BY BTM REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Brown, damp to moist, medium dense, silty SAND.
5						ML	ALLUVIUM: Grayish brown, damp to moist, stiff SILT.
10							Total Depth = 10.0 feet. No groundwater encountered. Backfilled with soil on 5/4/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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Ninyo & Moore

BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ARCHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-110

DATE DRILLED 5/20/11 BORING NO. B-91

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								SC	FILL: Brown, moist, medium dense, clayey SAND.
5								SM	ALLUVIUM: Brown, moist, medium dense, silty SAND; trace gravel.
								ML	Dark gray,moist, soft to stiff, sandy SILT; fine to coarse sand.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-111

DATE DRILLED 5/20/11 BORING NO. B-92

GROUND ELEVATION 646' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								SC	ASPHALT CONCRETE: Approximately 3.5 inches thick. FILL: Grayish brown, moist, medium dense, clayey SAND.
5								ML	ALLUVIUM: Olive brown, moist, soft, sandy SILT; fine sand.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-112

DATE DRILLED 5/20/11 BORING NO. B-93

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								SM	FILL: Light brown to brown, moist, medium dense, silty fine SAND; trace gravel.
5								SC	ALLUVIUM: Brown, wet, medium dense, clayey fine SAND.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-113

DATE DRILLED 5/20/11 BORING NO. B-94

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								ML	FILL: Brown to dark brown, moist, loose, sandy SILT; fine sand.
5								SC	ALLUVIUM: Gray, moist, medium dense, clayey fine SAND.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-114

DATE DRILLED 5/20/11 BORING NO. B-95

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								ML	FILL: Brown, wet, loose, sandy SILT; fine sand.
5								ML	ALLUVIUM: Gray, wet, soft, clayey SILT.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-115

DATE DRILLED 5/20/11 BORING NO. B-96

GROUND ELEVATION 645' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								ML	FILL: Dark brown, moist, soft SILT; trace coarse sand.
5								SC	ALLUVIUM: Gray, moist, medium dense, clayey fine SAND.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-116

DATE DRILLED 5/20/11 BORING NO. B-97

GROUND ELEVATION 644' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								ML	FILL: Grayish brown, moist, soft SILT.
5								CL	ALLUVIUM: Gray, moist, soft, silty CLAY; trace gravel.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-117

DATE DRILLED 5/20/11 BORING NO. B-98

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, moist, medium dense, silty fine SAND; micaceous.
5							SC	ALLUVIUM: Grayish brown, moist, medium dense, clayey fine SAND.
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-118

DATE DRILLED 5/20/11 BORING NO. B-99

GROUND ELEVATION 643' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								SM	FILL: Brown, moist, medium dense, silty fine SAND; micaceous.
5								SC	ALLUVIUM: Olive brown, moist, medium dense, clayey fine to medium SAND.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-119

DATE DRILLED 5/20/11 BORING NO. B-100

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, moist, medium dense, silty fine SAND; trace coarse sand.
5							ML	ALLUVIUM: Gray, moist, soft, clayey SILT.
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-120

DATE DRILLED 5/20/11 BORING NO. B-101

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, moist, medium dense, silty fine SAND.
5							ML	ALLUVIUM: Gray, moist, soft, clayey SILT.
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-121

DATE DRILLED 5/20/11 BORING NO. B-102

GROUND ELEVATION 642' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■							SM	FILL: Brown, moist, medium dense, silty fine SAND; trace roots.
5	■							SM	ALLUVIUM: Light gray, moist, medium dense, silty fine SAND; some clay.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-122

DATE DRILLED 5/20/11 BORING NO. B-103

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■							SM	FILL: Dark brown, moist, medium dense, silty fine SAND.
5	■							SM	ALLUVIUM: Grayish brown, moist, medium dense, silty fine SAND; some clay.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-123

DATE DRILLED 5/20/11 BORING NO. B-104

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								SM	FILL: Dark brown, moist to wet, medium dense, silty fine SAND.
5								CL	ALLUVIUM: Light grayish brown, moist, soft, silty CLAY.
10									Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-124

DATE DRILLED 5/20/11 BORING NO. B-105

GROUND ELEVATION 641' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, moist, medium dense, silty fine SAND.
5							ML	ALLUVIUM: Gray, moist, soft to stiff, clayey SILT.
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-125

DATE DRILLED 5/20/11 BORING NO. B-106

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ML	FILL: Brown, moist, medium dense, loose, sandy SILT; fine sand.
5							ML	ALLUVIUM: Dark grayish brown, moist, soft to stiff, clayey SILT.
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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Ninyo & Moore

BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-126

DATE DRILLED 5/20/11 BORING NO. B-107

GROUND ELEVATION 639' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 6" Diameter Hollow Stem Auger (Mobile B-61) (Cal-Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto-Trip Hammer) DROP 30"

SAMPLED BY MBG LOGGED BY MBG REVIEWED BY JG

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Brown, moist, medium dense, silty fine SAND; trace coarse sand.
5							SC	ALLUVIUM: Dark grayish brown, moist, medium dense, clayey fine SAND.
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled with soil on 5/20/11. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
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Ninyo & Moore

BORING LOG

PROPOSED WAL-MART SUPERCENTER, SEC LIMONITE AND ACHIBALD AVENUES, EASTVALE, CALIFORNIA

PROJECT NO.	DATE	FIGURE
107078001	3/12	A-127

APPENDIX B

GEOTECHNICAL LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory excavations in Appendix A.

In-Place Moisture and Density Tests

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory excavations were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory excavations in Appendix A.

Gradation Analysis

Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain-size distribution curves are shown on Figures B-1 through B-11. These test results were utilized in evaluating the soil classifications in accordance with USCS.

Atterberg Limits

Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figure B-12.

Consolidation Tests

Consolidation tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D 2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the tests are summarized on Figures B-13 through B-15.

Direct Shear Tests

Direct shear tests were performed on undisturbed samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of the selected materials. The samples were inundated during shearing to represent adverse field conditions. The results are shown on Figure B-16 through B-18.

Expansion Index Tests

The expansion index of selected materials was evaluated in general accordance with ASTM D 4829. Specimens were molded under a specified compactive energy at approximately 50 percent saturation (plus or minus 1 percent). The prepared 1-inch thick by 4-inch diameter specimens were loaded with a surcharge of 144 pounds per square foot and were inundated with tap water. Readings of volumetric swell were made for a period of 24 hours. The results of these tests are presented on Figure B-19.

Soil Corrosivity Tests

Soil pH and resistivity tests were performed on representative samples in general accordance with CT 643. The chloride content of the selected samples were evaluated in general accordance with CT 422. The sulfate content of the selected samples were evaluated in general accordance with CT 417. The test results are presented on Figure B-20.

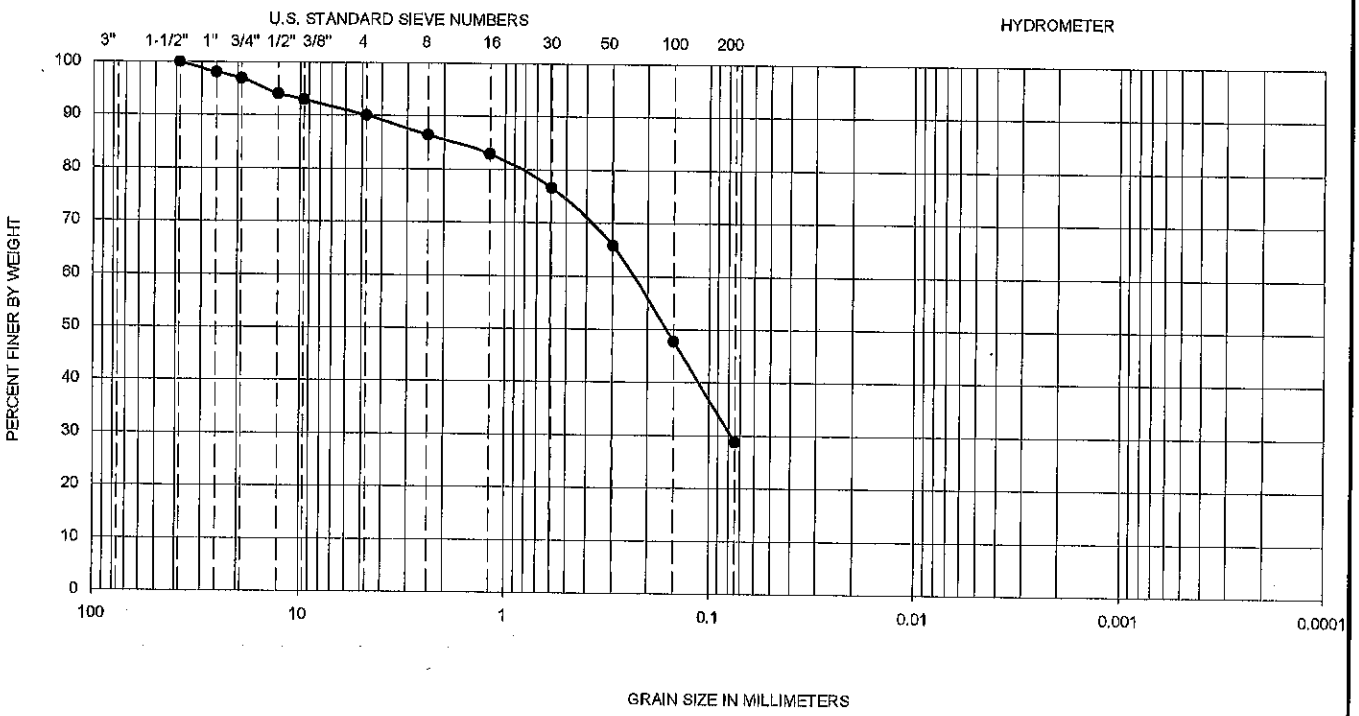
R-Value

The resistance value, or R-value, for site soils was evaluated in general accordance with CT 301. Samples were prepared and evaluated for exudation pressure and expansion pressure. The equilibrium R-value is reported as the lesser or more conservative of the two calculated results. The test results are shown on Figure B-21.

Total Organic Content

The total organic content of selected site soil samples were evaluated in general accordance with ASTM D 2974. The percentage organic content by dry weight was evaluated for the samples. The results are shown on Figure B-22.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



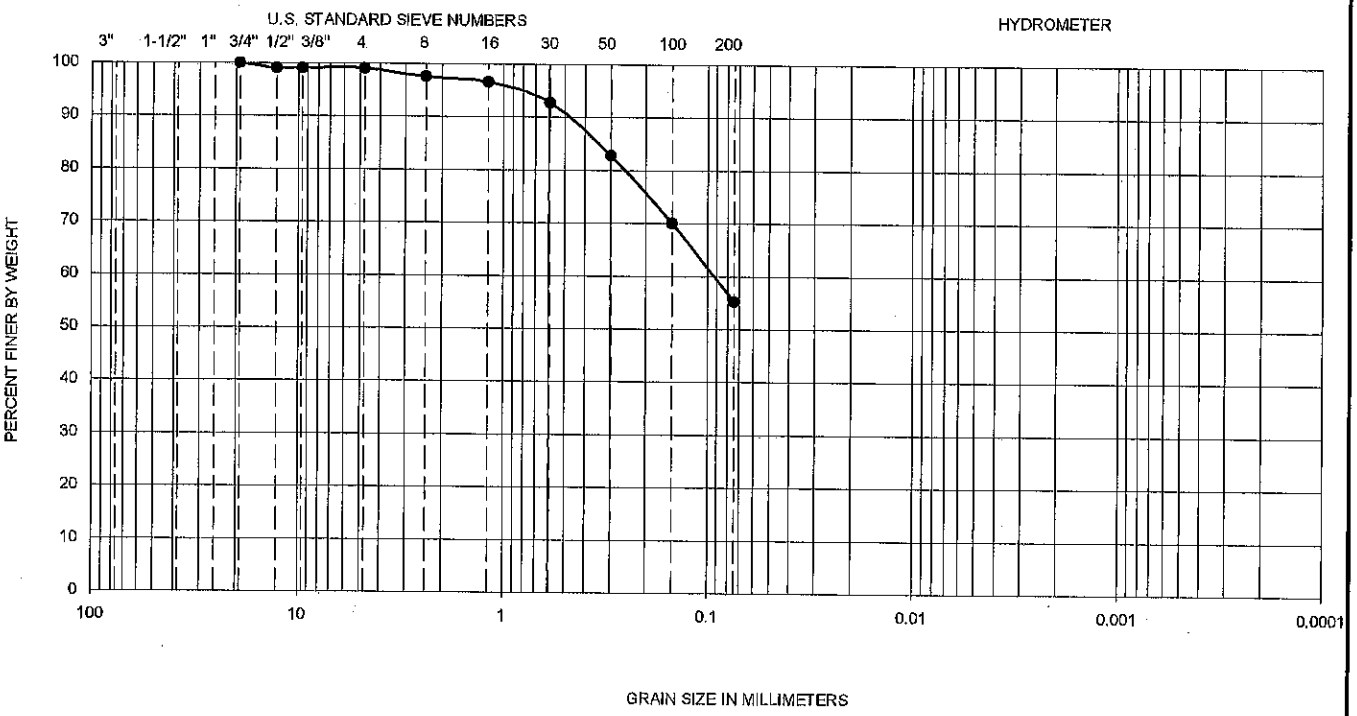
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-3	0.0-2.5	--	--	--	--	--	--	--	--	29	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-1

107078001 SIEVE B-3 @ 0.0-2.5.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



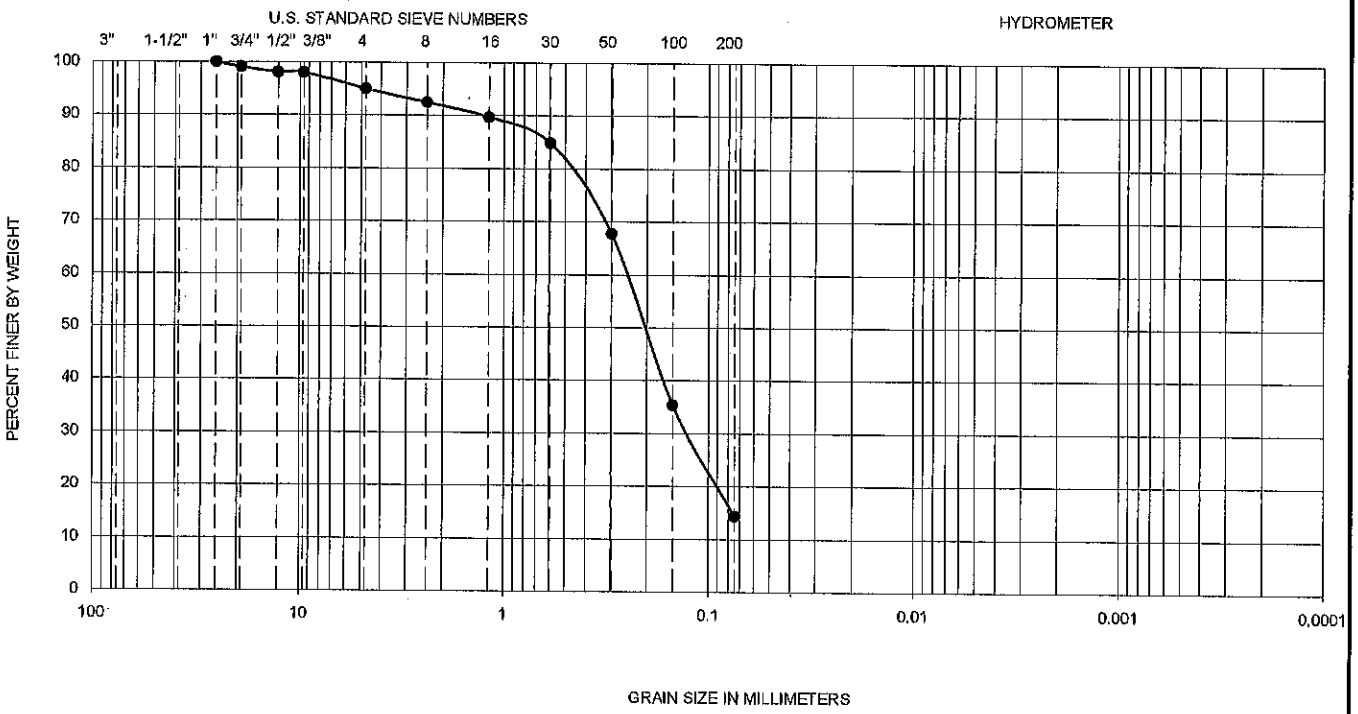
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-5	5.0-6.5	--	--	--	--	--	--	--	--	55	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-2
107078001 / 3/12		

107078001 SIEVE B-5 @ 5.0-6.5.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



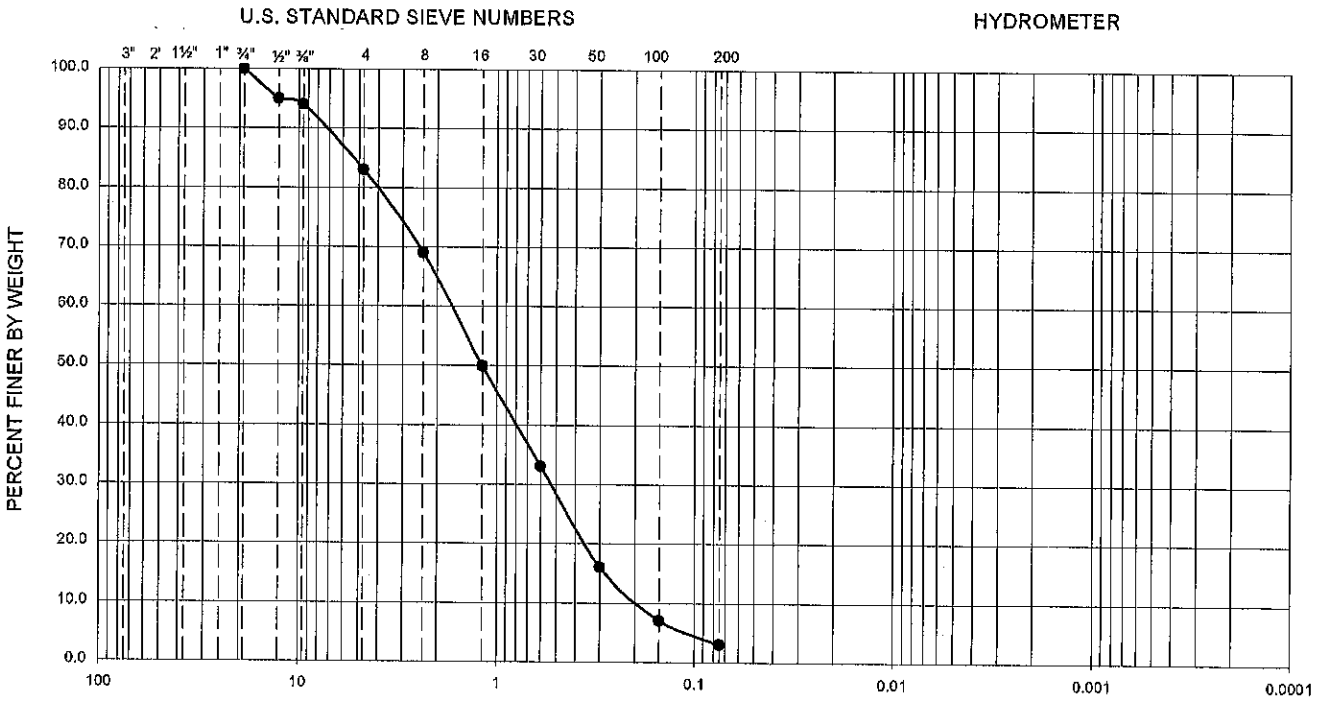
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-5	10.0-11.5	--	--	--	--	--	--	--	--	14	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-3

107078001 SIEVE B-5 @ 10.0-11.5.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-15	15.0-16.5	--	--	--	0.20	0.53	1.80	9.0	0.8	3	SP

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

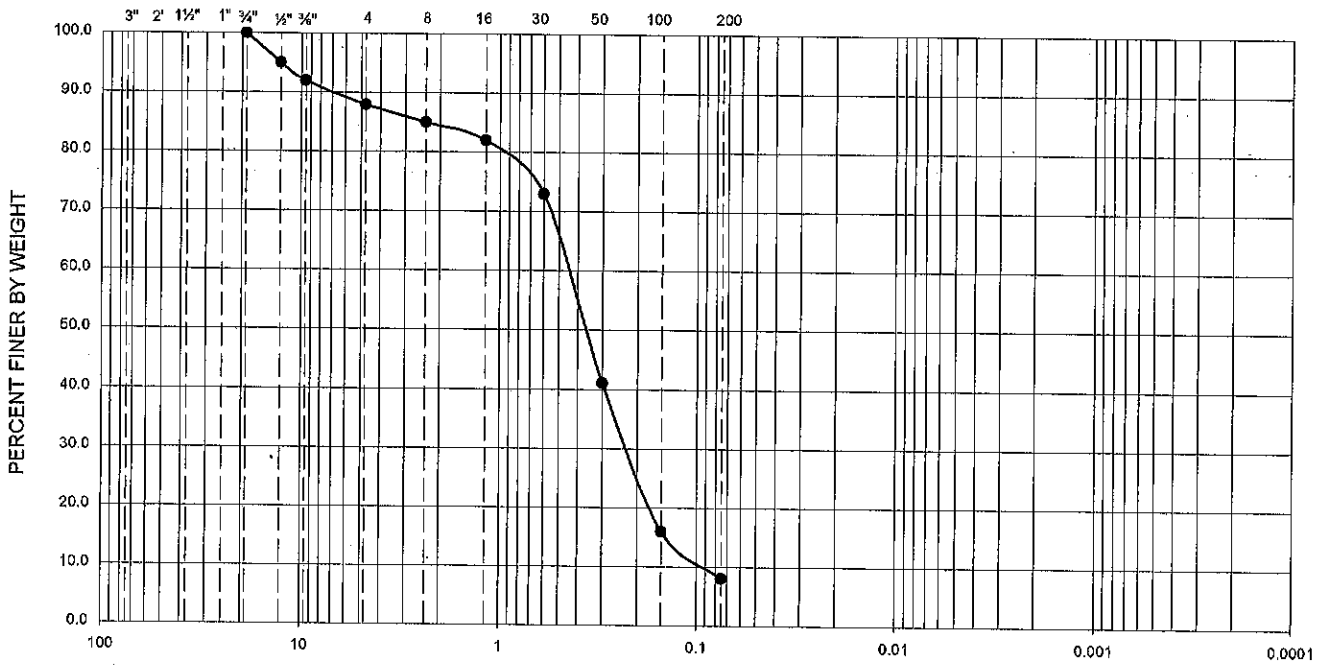
Ninyo & Moore		GRADATION TEST RESULTS	FIGURE
PROJECT NO.	DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-4
107078001	3/12		

107078001 SIEVE B-15 @ 15.0-16.5.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

U.S. STANDARD SIEVE NUMBERS

HYDROMETER

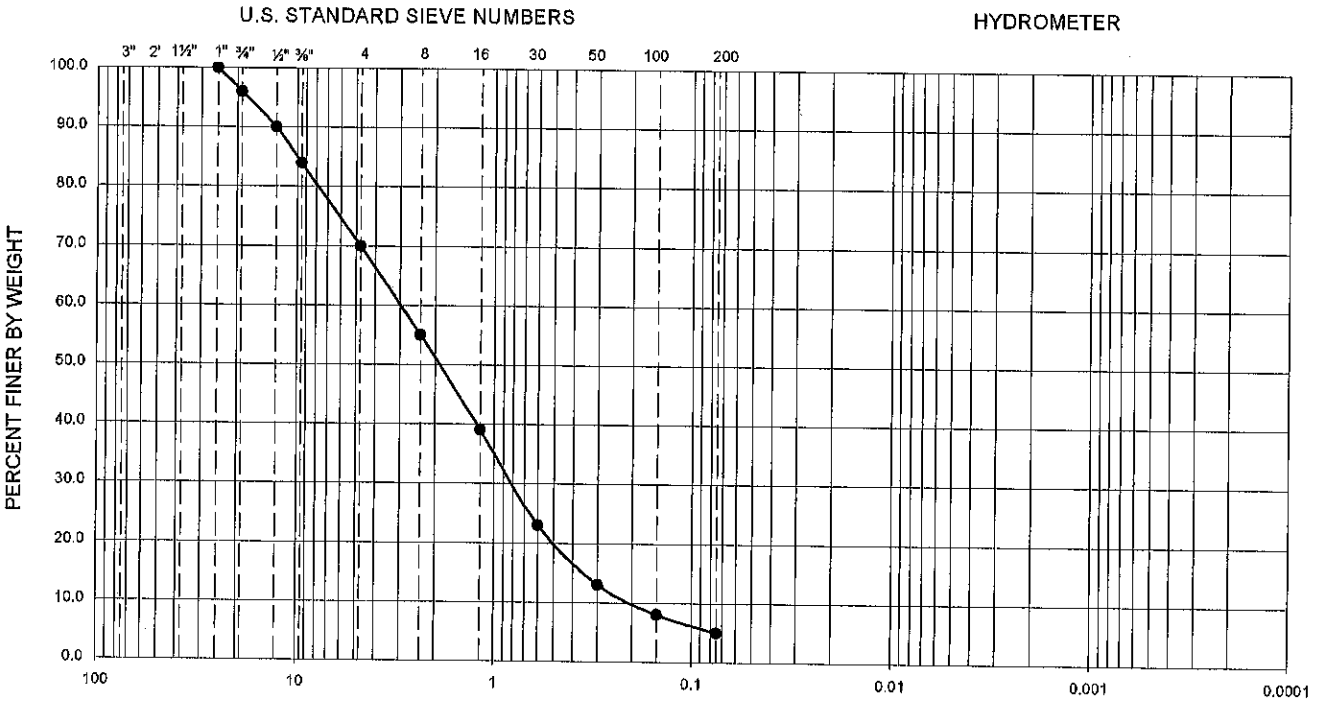


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-15	30.0-31.5	--	--	--	0.09	0.24	0.46	4.9	1.3	8	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-5
107078001 / 3/12		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

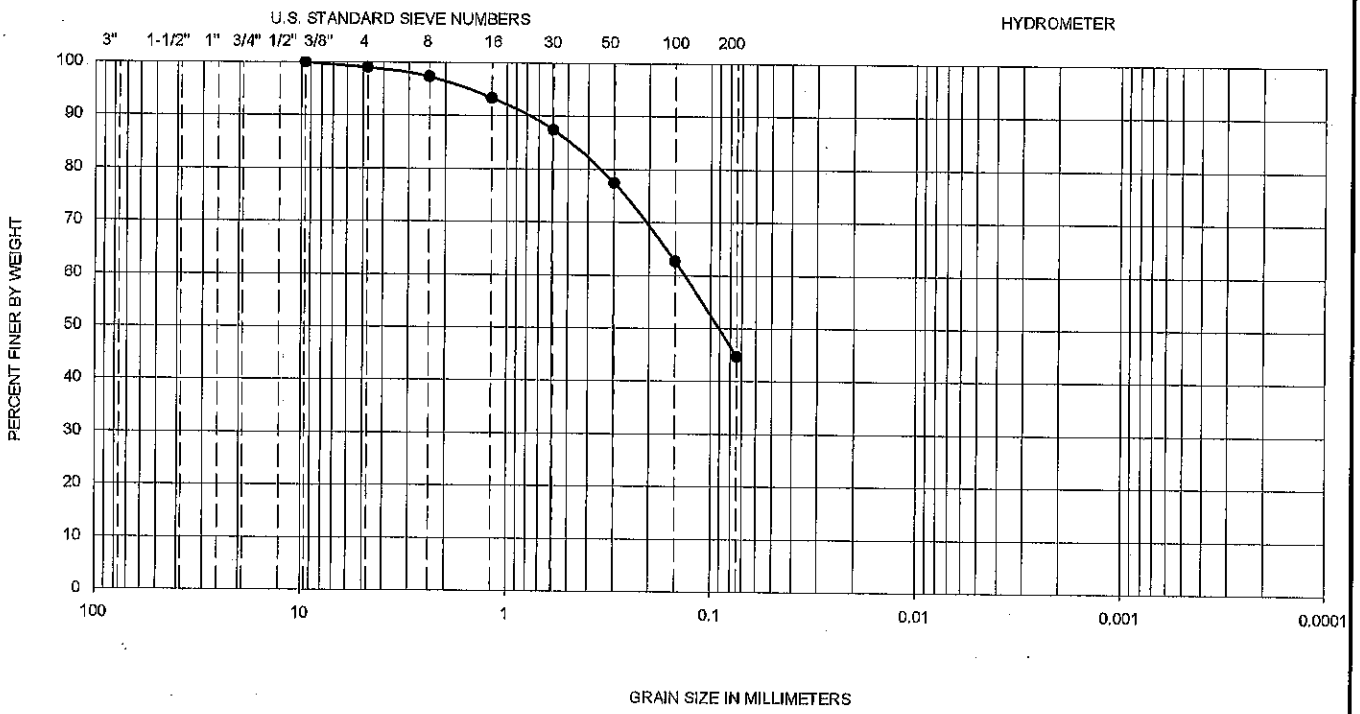


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-15	40.0-41.5	--	--	--	0.21	0.81	3.00	14.3	1.0	5	SW-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-6

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay

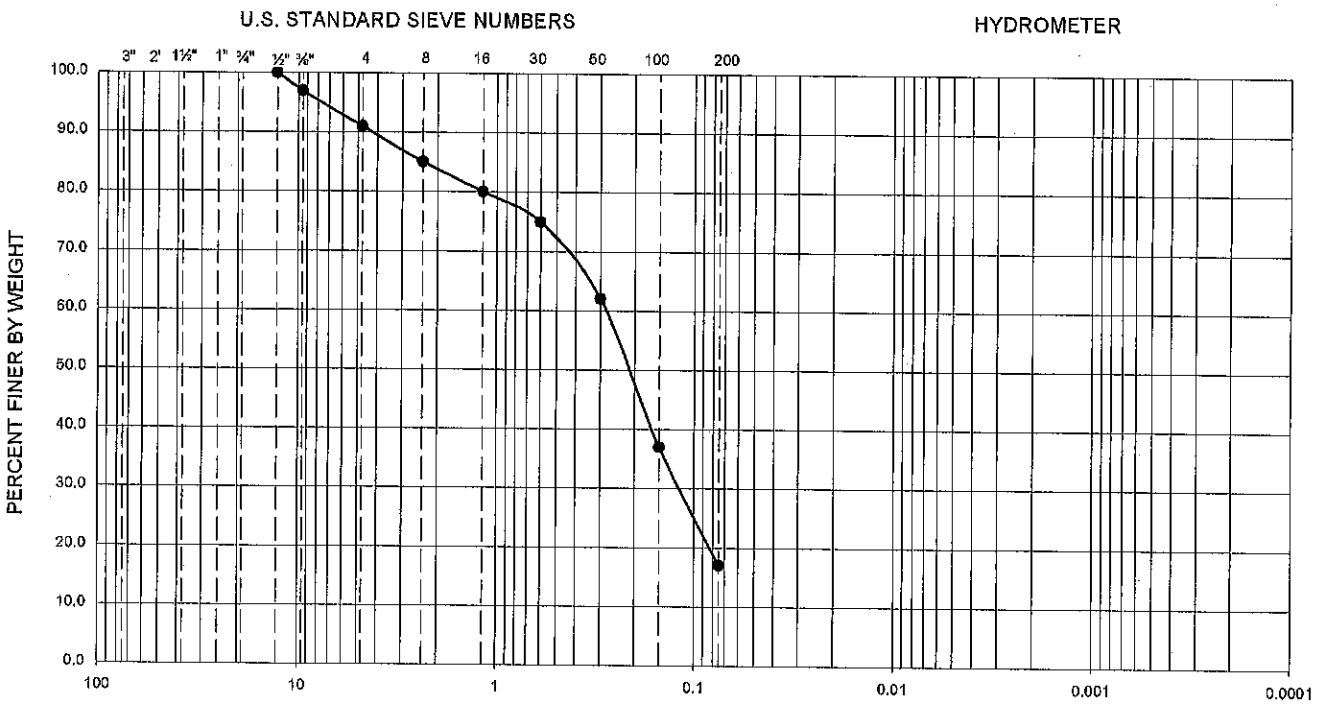


Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-26	0.0-5.0	27	17	10	--	--	--	--	--	45	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-7
107078001 / 3/12		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



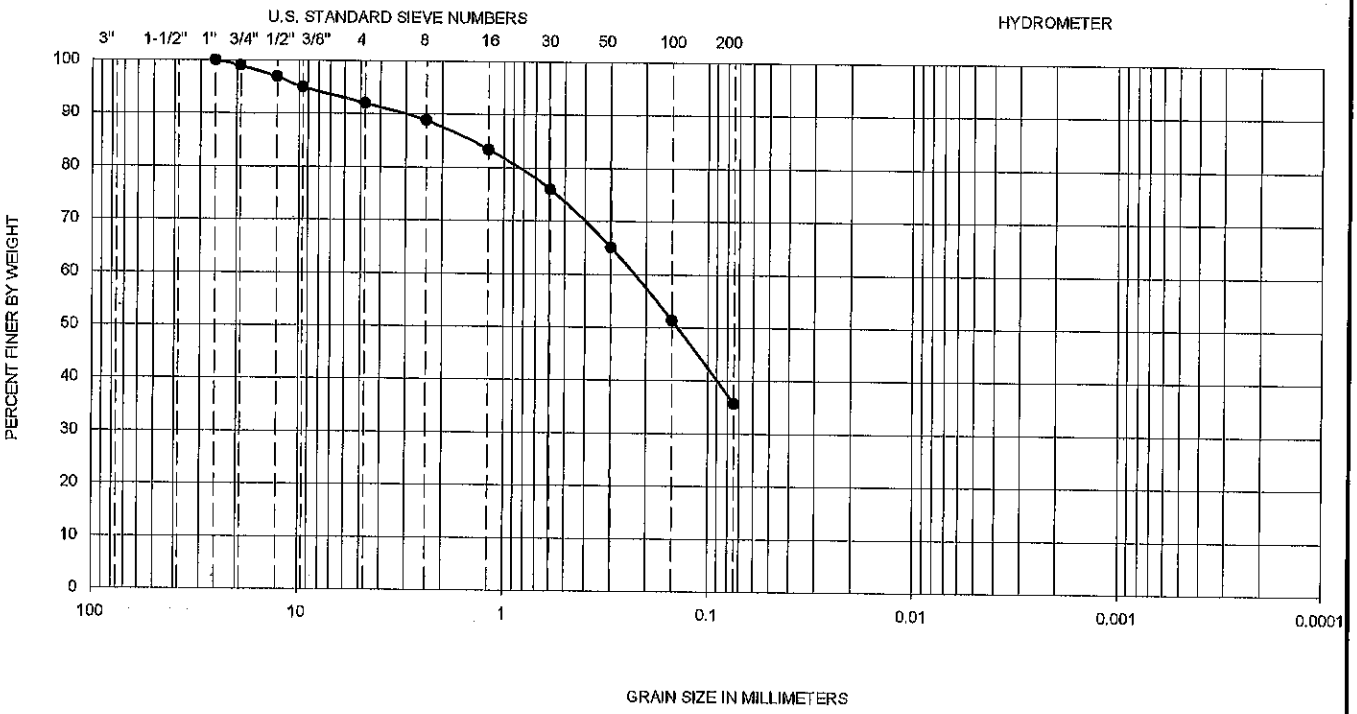
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-35	0.0-4.0	--	--	--	--	--	--	--	--	17	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-8
107078001 / 3/12		

107078001 SIEVE B-35 @ 0.0-4.0.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay

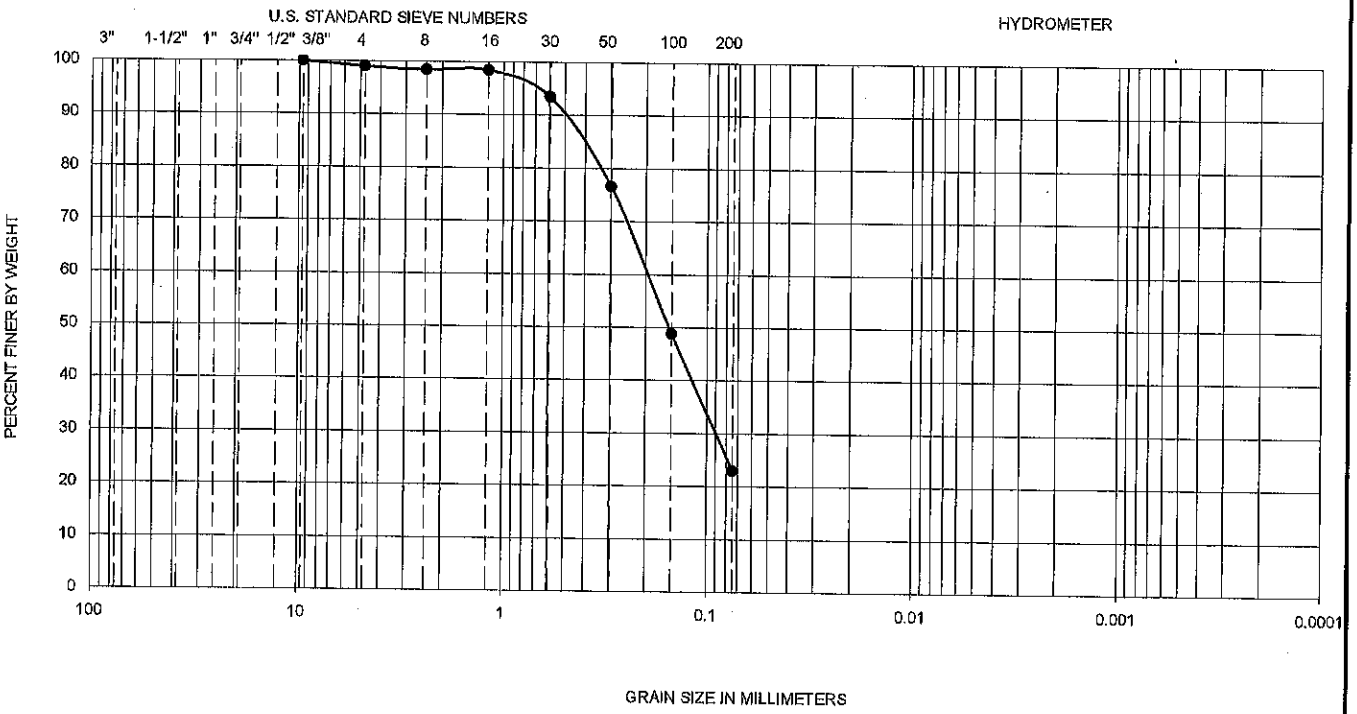


Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-40	0.0-5.0	29	16	13	--	--	--	--	--	36	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-9
107078001 / 3/12		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



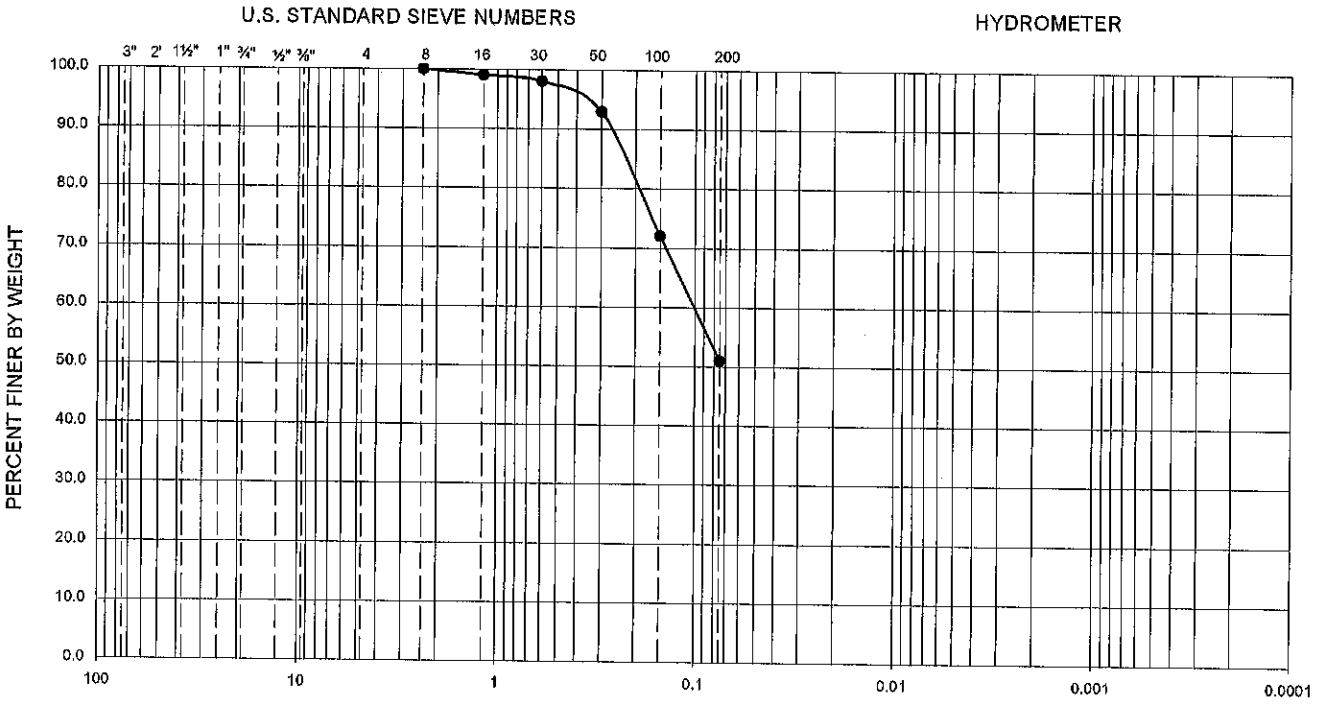
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-44	0.0-5.0	--	--	--	--	--	--	--	--	23	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-10

107078001 SIEVE B-44 @ 0.0-5.0.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



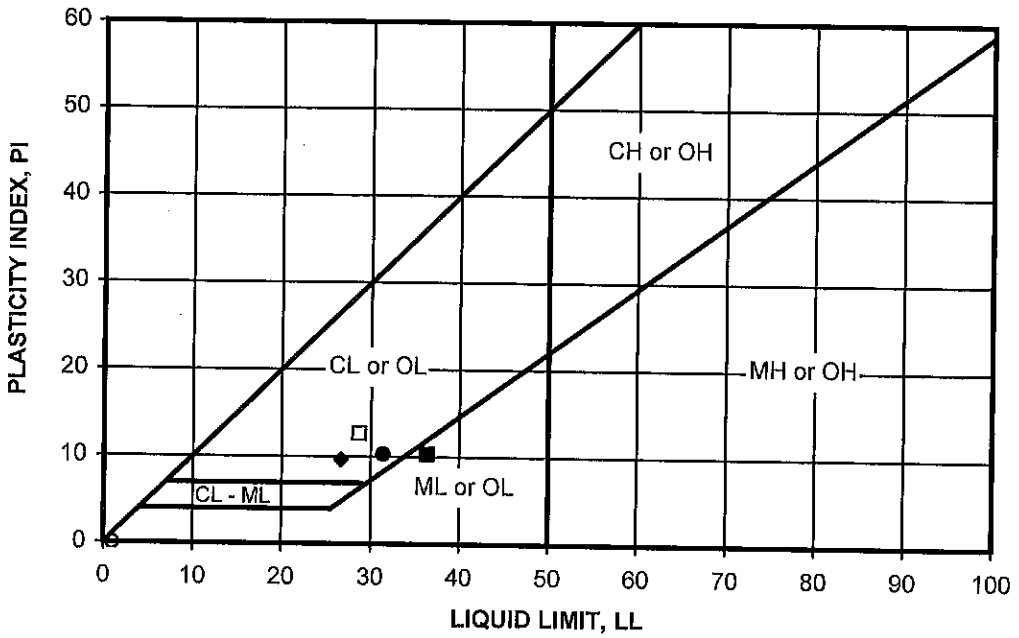
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	IT-1	0.5-2.0	--	--	--	--	--	--	--	--	51	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-11
107078001 / 3/12		

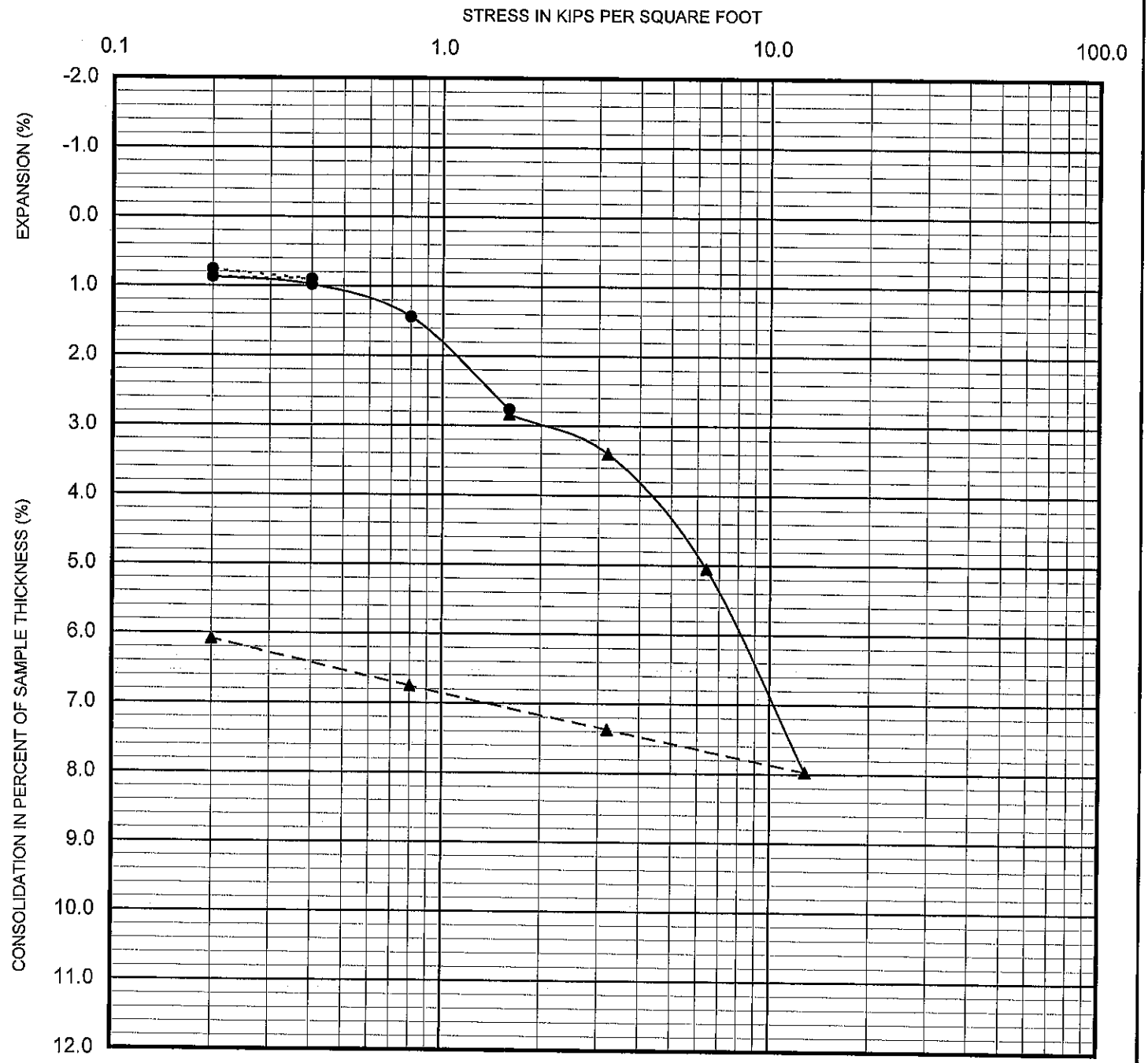
SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B-1	25.0-26.5	31	21	10	CL	CL
■	B-11	15.0-16.5	36	26	10	ML	ML
◆	B-26	0.0-5.0	27	17	10	CL	SC
○	B-31	0.0-5.0	NP	NP	NP	SM	SM
□	B-40	0.0-5.0	29	16	13	CL	SC

NP - INDICATES NON-PLASTIC



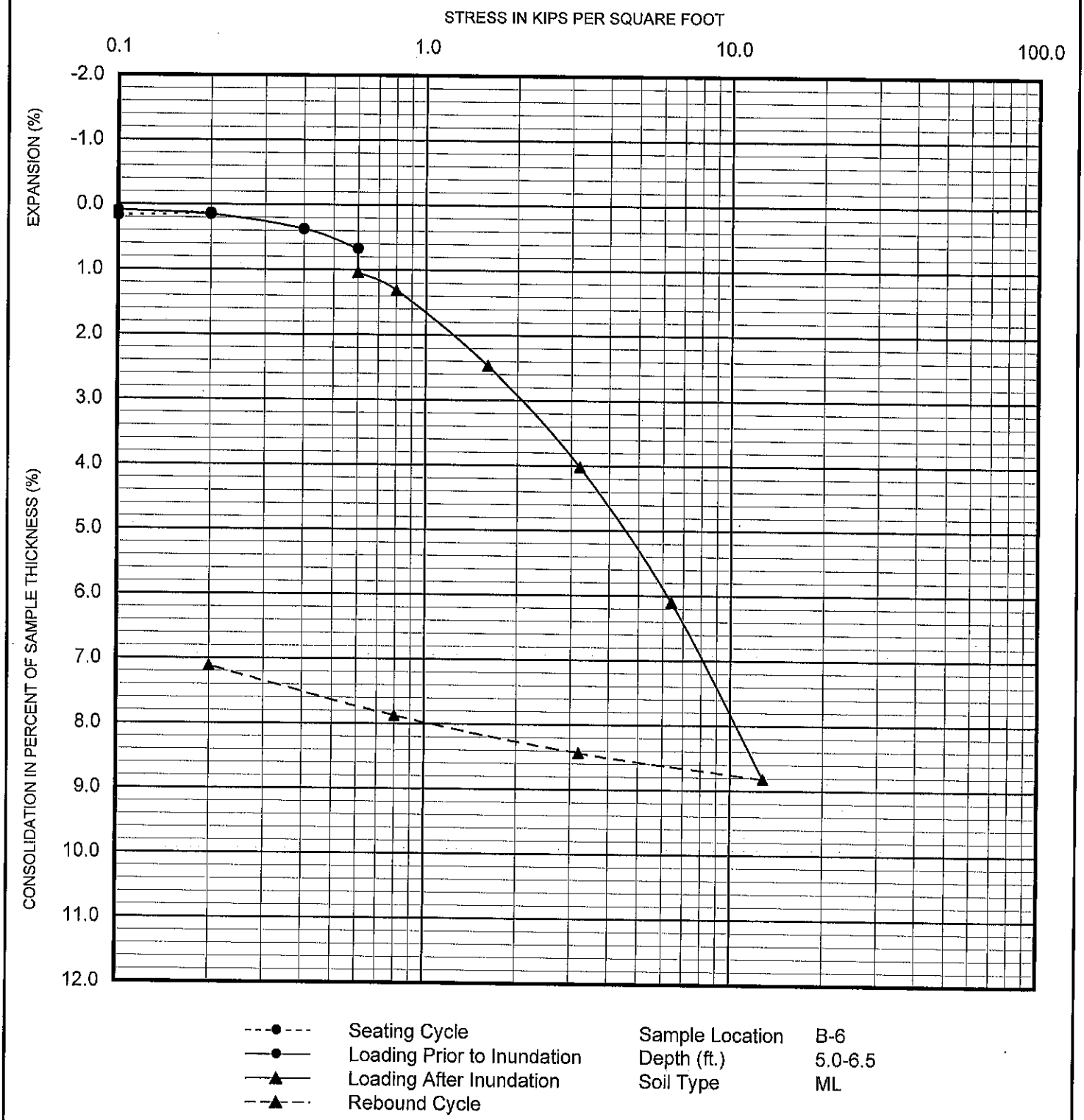
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore	ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASVALE, CALIFORNIA	B-12



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

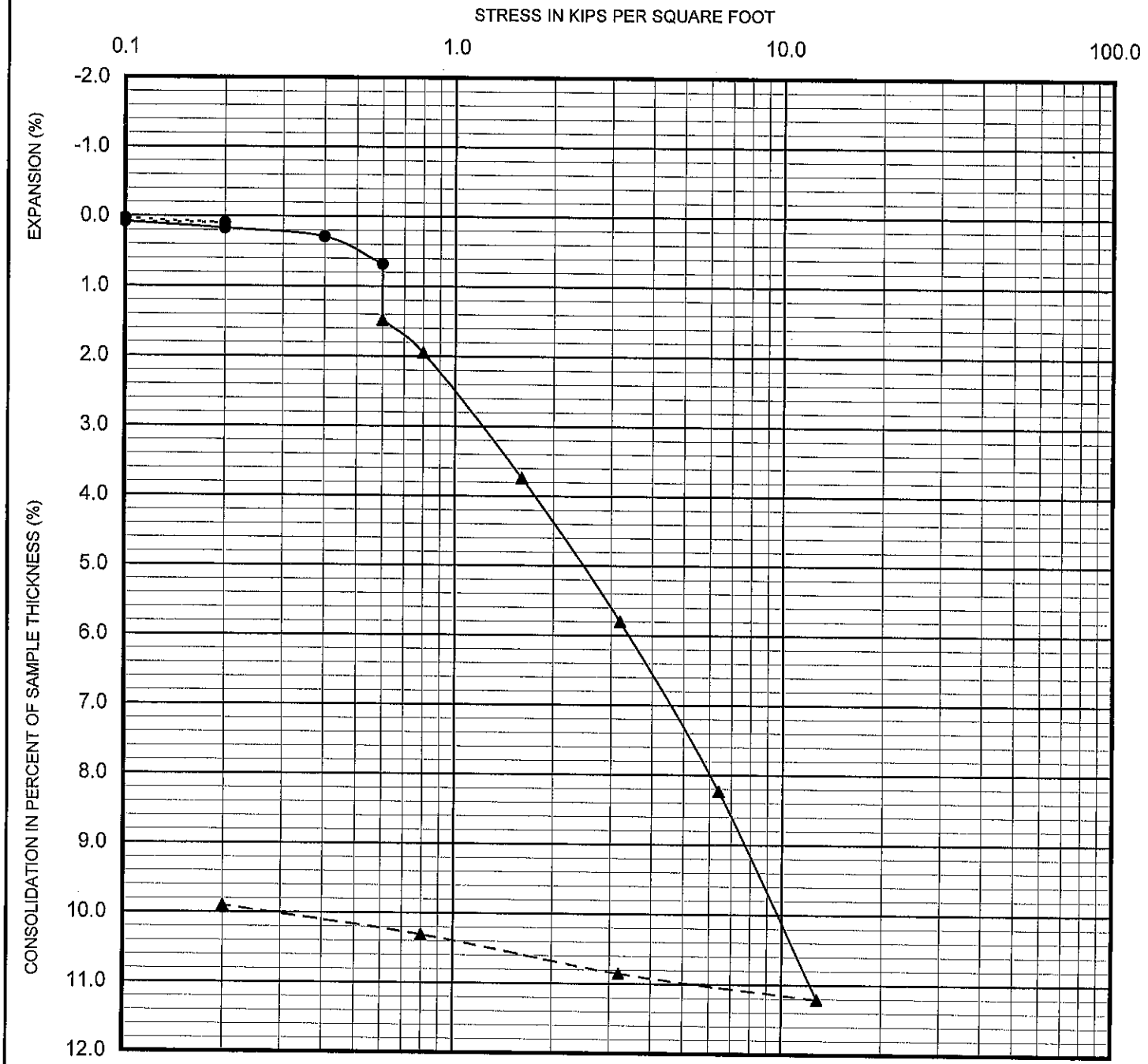
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. 107078001 / DATE 3/12	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-13



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

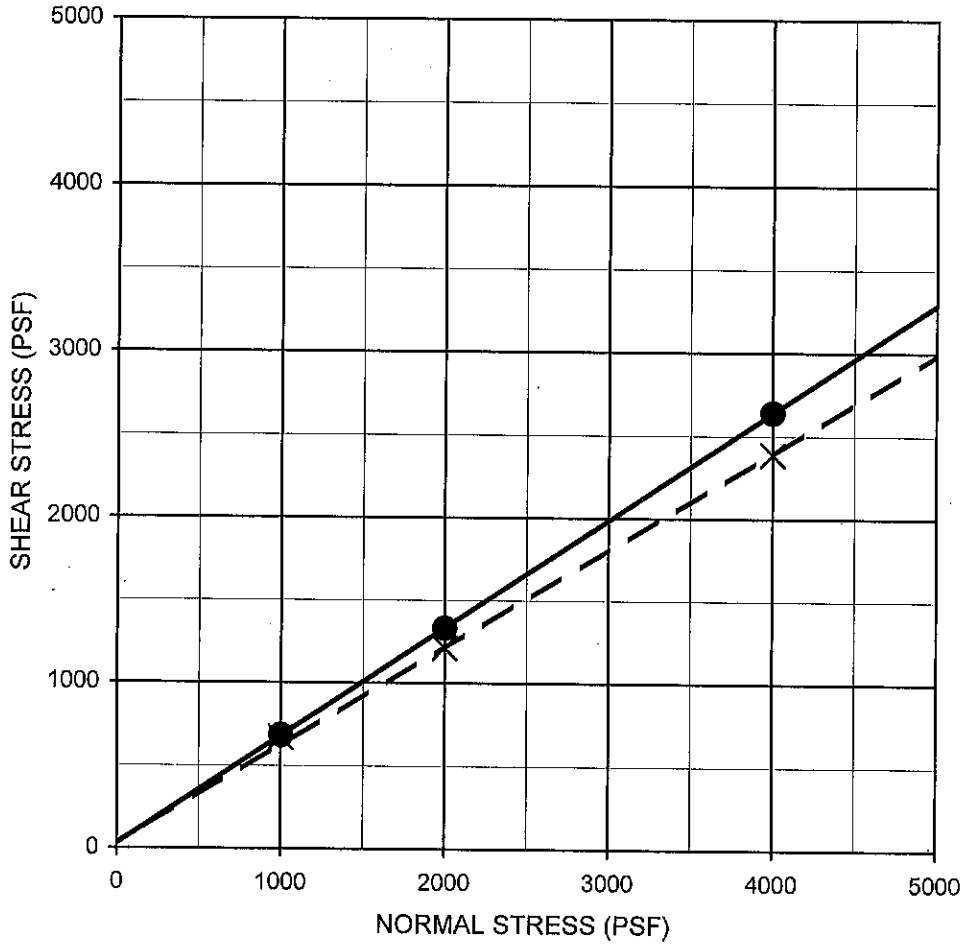
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-14
107078001 / 3/12		

107078001 CONSOLIDATION B-6 @ 5.0-6.5.xls



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

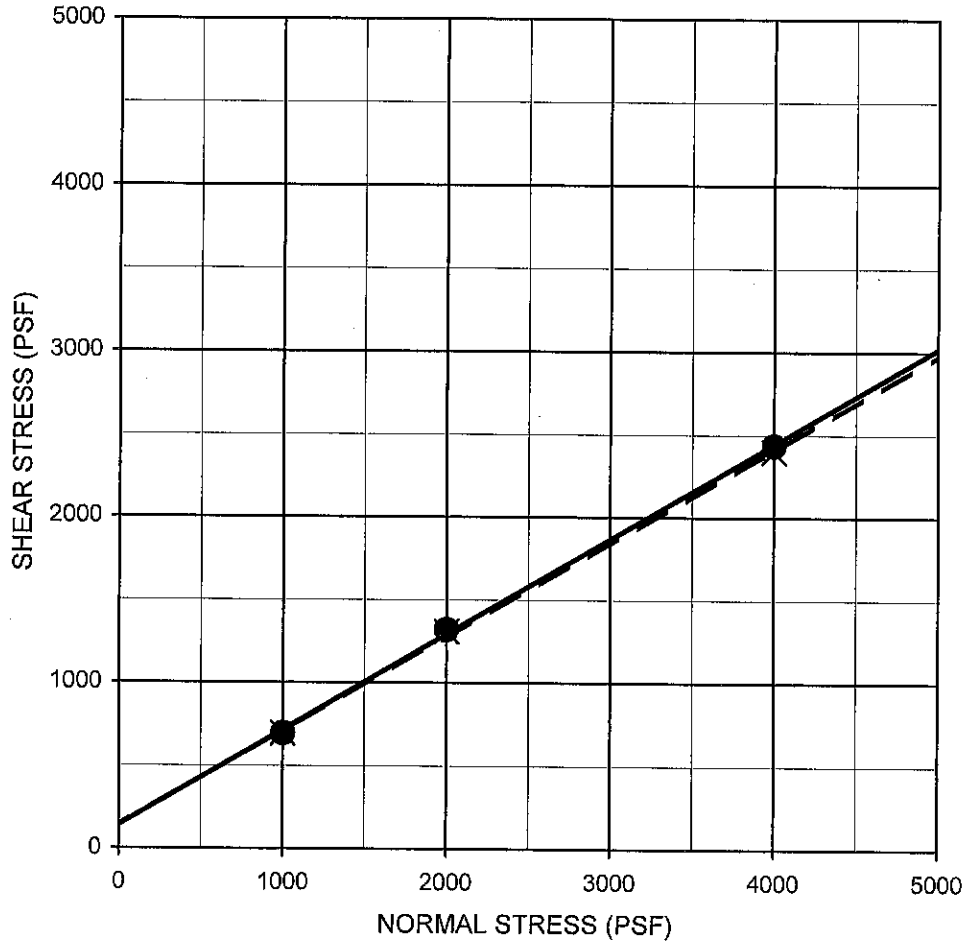
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-15
107078001 / 3/12		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Silty SAND	—●—	B-2	2.5-4.0	Peak	30	33	SM
Silty SAND	- - X - -	B-2	2.5-4.0	Ultimate	30	31	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

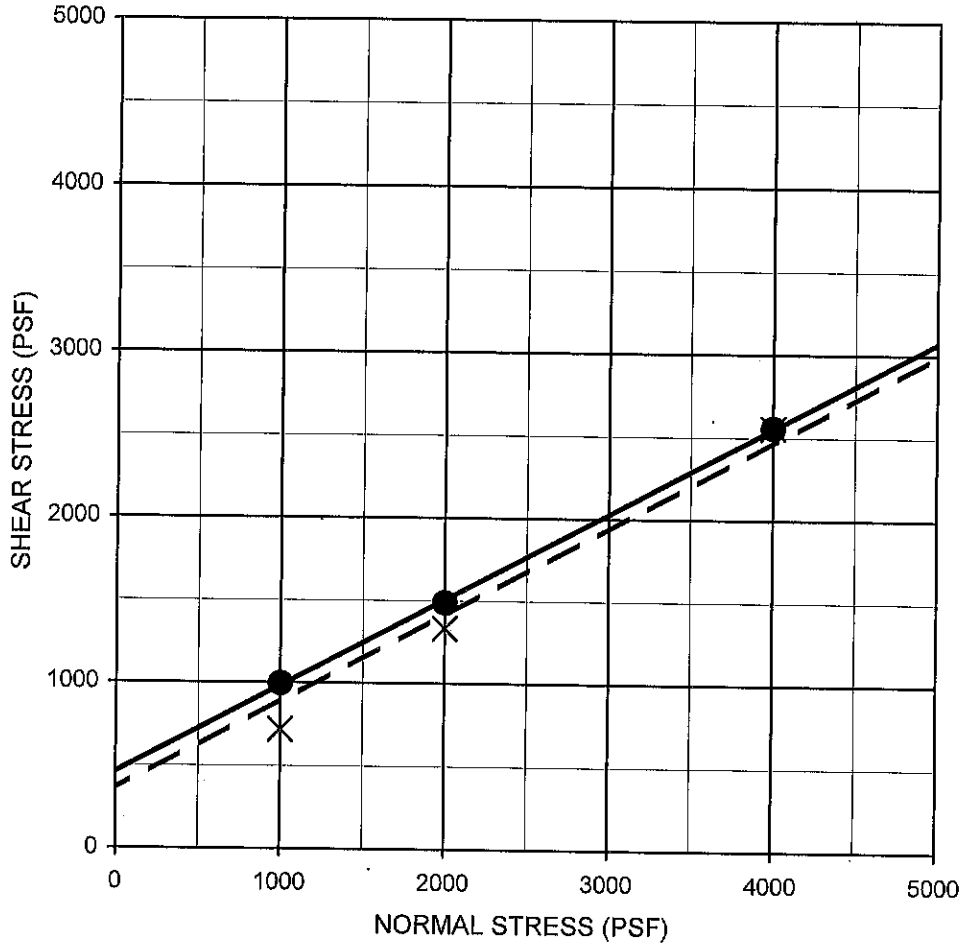
Ninyo & Moore	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-16
107078001 / 3/12		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Sandy SILT	—●—	B-4	5.0-6.5	Peak	140	30	ML
Sandy SILT	- - X - -	B-4	5.0-6.5	Ultimate	140	30	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore		DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO.	DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-17
107078001	3/12		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Sandy SILT	—●—	B-11	5.0-6.5	Peak	460	28	ML
Sandy SILT	- - X - -	B-11	5.0-6.5	Ultimate	360	28	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore		DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO.	DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-18
107078001	3/12		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (PCF)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (IN)	EXPANSION INDEX	POTENTIAL EXPANSION
B-28	0.0-5.0	9.0	114.7	17.0	0.010	10	Very Low
B-33	0.0-5.0	11.5	104.3	19.4	0.000	0	Very Low
B-39	0.0-4.0	9.5	112.6	18.6	0.013	13	Very Low

PERFORMED IN GENERAL ACCORDANCE WITH ☐ UBC STANDARD 18-2 ☑ ASTM D 4829

Ninyo & Moore		EXPANSION INDEX TEST RESULTS	FIGURE
PROJECT NO.	DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-19
107078001	3/12		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	pH [1]	RESISTIVITY [1] (Ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-5	2.5-4.0	8.2	720	710	0.071	520
B-13	0.5-2.5	8.4	2,300	60	0.006	300
B-40	0.0-5.0	7.8	850	570	0.057	425
B-69	1.0-5.0	7.8	1,100	830	0.083	280

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

Ninyo & Moore	CORROSIVITY TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-20
107078001 / 3/12		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	SOIL TYPE	R-VALUE
B-22	4.0-10.0	SILT (ML)	15
B-45	0.0-4.0	Silty SAND (SM)	48
B-67	0.0-5.0	Sandy CLAY (CL)	11

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2844/CT 301

Ninyo & Moore		R-VALUE TEST RESULTS	FIGURE
PROJECT NO.	DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-21
107078001	3/12		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	USCS SOIL TYPE	ORGANIC MATTER (% by dry weight)
B-4	0.5-2.5	SM	4.9
B-10	2.5-4.0	ML	2.9
B-16	0.0-4.0	SM	1.8
B-32	0.5-4.0	ML	1.9

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2974

Ninyo & Moore	TOTAL ORGANIC CONTENT TEST RESULTS	FIGURE
PROJECT NO. / DATE	PROPOSED WAL-MART SUPERCENTER SEC LIMONITE AND ARCHIBALD AVENUES EASTVALE, CALIFORNIA	B-22
107078001 / 3/12		

APPENDIX C

FIELD INFILTRATION TEST DATA

DOUBLE RING INFILTROMETER TESTING

Project Name: Eastvale Store, Eastvale California
Test Hole Number: IT-1
Project Number: 107078001
Date Tested: 5/4/2011
Test Depth (ft): Existing Grade
Tested By: MJG
Classification: ML
Soil Type: Sandy SILT

Inner Ring Test Data

Reservoir Area (in^2): 6.25 **Reservoir Volume (in^3):** 219 **Ring Diameter (in):** 12.0

Test Time		Interval (min)	Reservoir Reading (in)		Reading Difference (in)	Volume (in^3)	Rate (in/hr)
Initial	Final		Initial	Final			
5/4/11 11:20 AM	5/4/11 11:35 AM	15.0	31 12/16	13	18.75	117	4.1
5/4/11 11:35 AM	5/4/11 11:50 AM	15.0	31 7/16	11 14/16	19.56	122	4.3
5/4/11 11:50 AM	5/4/11 12:05 PM	15.0	32 6/16	16 12/16	15.63	98	3.5
5/4/11 12:05 PM	5/4/11 12:20 PM	15.0	32 3/16	17 10/16	14.56	91	3.2
5/4/11 12:20 PM	5/4/11 12:35 PM	15.0	34	20 8/16	13.50	84	3.0
5/4/11 12:35 PM	5/4/11 12:50 PM	15.0	33 10/16	22 4/16	11.38	71	2.5
5/4/11 12:50 PM	5/4/11 1:05 PM	15.0	33 5/16	23 10/16	9.69	61	2.1
5/4/11 1:05 PM	5/4/11 1:20 PM	15.0	23 5/16	13 5/16	10.00	63	2.2
5/4/11 1:20 PM	5/4/11 1:35 PM	15.0	34 5/16	25	9.31	58	2.1
5/4/11 1:35 PM	5/4/11 1:50 PM	15.0	25	16	9.00	56	2.0
5/4/11 1:50 PM	5/4/11 2:05 PM	15.0	16	7 7/16	8.56	54	1.9
5/4/11 2:05 PM	5/4/11 2:20 PM	15.0	32 8/16	24 10/16	7.88	49	1.7
5/4/11 2:20 PM	5/4/11 2:35 PM	15.0	24 10/16	16 14/16	7.75	48	1.7
5/4/11 2:35 PM	5/4/11 2:50 PM	15.0	16 14/16	9 4/16	7.63	48	1.7
5/4/11 2:50 PM	5/4/11 3:05 PM	15.0	33	25 5/16	7.69	48	1.7

Outer Ring Test Data

Reservoir Area (in^2): 16.00 **Reservoir Volume (in^3):** 704 **Ring Diameter (in):** 20.0

Test Time		Interval (min)	Reservoir Reading (in)		Reading Difference (in)	Volume (in^3)	Rate (in/hr)
Initial	Final		Initial	Final			
5/4/11 11:21 AM	5/4/11 11:36 AM	15.0	39	8 1/16	30.96	495	9.9
5/4/11 11:36 AM	5/4/11 11:51 AM	15.0	42 7/16	20 6/16	22.02	352	7.0
5/4/11 11:51 AM	5/4/11 12:06 PM	15.0	27 15/16	5 13/16	22.14	354	7.0
5/4/11 12:06 PM	5/4/11 12:21 PM	15.0	30 6/16	9 12/16	20.64	330	6.6
5/4/11 12:21 PM	5/4/11 12:36 PM	15.0	40 7/16	20 9/16	19.86	318	6.3
5/4/11 12:36 PM	5/4/11 12:51 PM	15.0	32 1/16	14 1/16	18.00	288	5.7
5/4/11 12:51 PM	5/4/11 1:06 PM	15.0	41 12/16	23 4/16	18.54	297	5.9
5/4/11 1:06 PM	5/4/11 1:21 PM	15.0	39 10/16	23 4/16	16.32	261	5.2
5/4/11 1:21 PM	5/4/11 1:36 PM	15.0	38 8/16	21 13/16	16.68	267	5.3
5/4/11 1:36 PM	5/4/11 1:51 PM	15.0	26 14/16	11	15.90	254	5.1
5/4/11 1:51 PM	5/4/11 2:06 PM	15.0	21 13/16	6 2/16	15.72	252	5.0
5/4/11 2:06 PM	5/4/11 2:21 PM	15.0	36 10/16	20 12/16	15.84	253	5.0
5/4/11 2:21 PM	5/4/11 2:36 PM	15.0	20 12/16	9 8/16	11.28	180	3.6
5/4/11 2:36 PM	5/4/11 2:51 PM	15.0	42 10/16	32 8/16	10.08	161	3.2
5/4/11 2:51 PM	5/4/11 3:06 PM	15.0	33 12/16	24 1/16	9.66	155	3.1

APPENDIX D

GEOTECHNICAL INVESTIGATION FACT SHEET, FOUNDATION DESIGN CRITERIA, AND FOUNDATION SUBSURFACE PREPARATION MEMO

GEOTECHNICAL INVESTIGATION FACT SHEET

PROJECT LOCATION: SEC Limonite and Archibald Avenues, Eastvale, California

Engineer: Jeffrey T. Kent, P.E., G.E. Phone #: (858) 576-1000

Geotechnical Engineering Co.: Ninyo & Moore Report Date: March 28, 2012

Ground Water Elevation: Greater than 100 feet Fill Soils Characteristics: Granular and Clayey Soils

Date Groundwater Measured: May 5, 2011 Maximum Liquid Limit: 27

Topsoil/Stripping Depth: Estimated at 1 foot Maximum Plasticity Index: 10

Undercut (If Required): 5 feet below finished building pad or 3 feet below footings, whichever is deeper, extending 5 feet beyond building limits Specified Compaction: 95%

Standard Proctor Results: (Attach plots.) N/A Moisture Content Range: +/- 2%

pH: 7.8 to 8.4

Corrective actions required for construction based on pH level noted: none required

Resistivity: 720 to 2,300

Corrective actions required for construction based on resistivity level noted: none required

*Chloride content indicates that on-site soils are corrosive to ferrous metals. We recommend additional corrosion protection measures be incorporated into the design of improvements in contact with soil.

Cement Type: Type II or Type V

Recommended local DOT subbase/base material (reference section plan in Foundation Subsurface Preparation):

No subbase/Caltrans Class 2 Aggregate Base

Recommended Compaction Control Tests:

1 Test for Each 5,000 Sq. Ft. each Lift (bldg. area)
1 Test for Each 10,000 Sq. Ft. each Lift (parking area)

Structural Fill Maximum Lift Thickness 8 in. (Measured loose)

Subgrade Design R-value = 10

COMPONENT	ASPHALT		CONCRETE	
	standard	heavy	standard	heavy
Stabilized Subgrade	24 in.	24 in.	12 in.	12 in.
Base Material (Stone, Sand/Shell, etc.)	12 in.	11 in.	6 in.	6 in.
Asphalt Base Course	2 in.	3 in.	--	--
Leveling Binder Course	--	--	--	--
Surface Course	1.5 in.	2 in.	6 in.	8 in.

NOTE: This information shall not be used separately from the geotechnical report.

FOUNDATION DESIGN CRITERIA

PROJECT LOCATION: SEC Limonite and Archibald Avenues, Eastvale, California

Engineer: Jeffrey T. Kent, P.E., G.E. Phone #: (858) 576-1000

Geotechnical Engineering Co.: Ninyo & Moore Report Date: March 28, 2012

Foundation type: Conventional Spread/Continuous Footings

Allowable bearing pressure: 2,500 psf

Factor of Safety: 3.0

Minimum footing dimensions: Individual: 2.0 foot Continuous: 1.5 foot

Minimum footing embedment: Exterior: 2.0 foot Interior: 2.0 foot

Frost depth: not applicable

Maximum foundation settlements: Total: 0.75 inch Differential: 0.5 inch in 40 feet

Slab: 5 inches thick

Potential vertical rise: Provided that the earthwork recommendations of the geotechnical report are implemented, the building pad will be underlain by materials that have a low expansion potential.

Capillary Break (not a vapor barrier) describe: 2 inches of fine aggregate underlain by 4 inches of Caltrans Class 2 base.

Subgrade reaction modulus: 150 psi/in Method obtained: Estimated based on soil type and remedial grading recommendations.

Active Equivalent Fluid Pressures: not applicable

Passive Equivalent Fluid Pressures: 300 psf

Perimeter Drains (describe): Building: none
Retaining Walls : none

Retaining Wall: At rest pressure: 65 pcf
Coefficient of friction: 0.30

COMMENTS:

FOUNDATION SUBSURFACE PREPARATION WAL-MART

SEC Limonite and Archibald Avenues, Eastvale, California

Report Date March 28, 2012

UNLESS SPECIFICALLY INDICATED OTHERWISE IN THE DRAWINGS AND/OR SPECIFICATIONS, THE LIMITS OF THIS SUBSURFACE PREPARATION ARE CONSIDERED TO BE THAT PORTION OF THE SITE DIRECTLY BENEATH AND 5 FEET BEYOND THE BUILDING AND APPURTENANCES.

APPURTENANCES ARE THOSE ITEMS ATTACHED TO THE BUILDING PROPER (REFER TO DRAWING SHEET SP1), TYPICALLY INCLUDING, BUT NOT LIMITED TO, THE BUILDING SIDEWALKS, GARDEN CENTER, PORCHES, RAMPS, STOOPS, TRUCK WELLS/DOCKS, CONCRETE APRONS AT THE AUTOMOTIVE CENTER, COMPACTOR PAD, ETC. THE BASE AND THE VAPOR BARRIER, WHERE REQUIRED, DO NOT EXTEND BEYOND THE LIMITS OF THE ACTUAL BUILDING AND THE APPURTENANCES.

ESTABLISH THE FINAL SUBGRADE ELEVATION TO ALLOW FOR THE CONCRETE SLAB, FINE AGGREGATE AND BASE. REFERENCE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR REQUIRED SLAB THICKNESS. THE SLAB SHOULD BE UNDERLAIN BY 2 INCHES OF FINE AGGREGATE OVER 4 INCHES OF CALTRANS CLASS 2 AGGREGATE BASE. THE FINE AGGREGATE AND BASE SHALL BE PROVIDED BY THE BUILDING CONTRACTOR IN JOINT PROJECTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ACCURATE MEASUREMENTS FOR ALL CUT AND FILL DEPTHS REQUIRED. ANY PROPOSED EQUIVALENT ALTERNATIVE FINE AGGREGATE AND BASE MATERIAL MUST BE SUBMITTED FOR APPROVAL WITHIN 30 DAYS AFTER AWARD OF CONTRACT. ANY EQUIVALENT ALTERNATIVE SHALL ONLY BE USED IF APPROVED IN WRITING BY THE CEC AND AOR.

EXISTING FOUNDATIONS, SLABS, PAVEMENTS, AND BELOW-GRADE STRUCTURES SHALL BE REMOVED FROM THE BUILDING AREA. REMOVE SURFACE VEGETATIONS, TOPSOIL, ROOT SYSTEMS, ORGANIC MATERIAL, EXISTING FILL, AND SOFT OR OTHERWISE UNSUITABLE MATERIAL FROM THE BUILDING AREA. PROOFROLL EXPOSED SUBGRADE. REMOVE AND REPLACE UNSUITABLE AREAS WITH SUITABLE MATERIAL. SUBGRADE MATERIAL SHALL BE FREE OF ORGANIC AND OTHER DELETERIOUS MATERIALS AND SHALL MEET THE FOLLOWING REQUIREMENTS:

LOCATION WITH RESPECT TO FINAL GRADE	P.I.	L.L.
BUILDING AREA, BELOW UPPER 4 FEET	<20 MAX.>	<50 MAX.>
BUILDING AREA, UPPER 4 FEET	<12 MAX.>	<40 MAX.>

SUBGRADE MATERIAL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS AND COMPACTED TO AT LEAST 95 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D 1557) AT A MOISTURE CONTENT WITHIN 2 PERCENT BELOW TO 2 PERCENT ABOVE THE OPTIMUM.

THE FOUNDATION SYSTEM SHALL BE ISOLATED SPREAD FOOTINGS AT COLUMNS AND CONTINUOUS SPREAD FOOTINGS AT WALLS.

THIS FOUNDATION SUBSURFACE PREPARATION DOES NOT CONSTITUTE A COMPLETE SITE WORK SPECIFICATION. IN CASE OF CONFLICT, INFORMATION COVERED IN THIS PREPARATION SHALL TAKE PRECEDENCE OVER THE WAL-MART SPECIFICATIONS. REFER TO THE SPECIFICATIONS FOR SPECIFIC INFORMATION NOT COVERED IN THIS PREPARATION. THIS INFORMATION WAS TAKEN FROM A GEOTECHNICAL REPORT PREPARED BY NINYO & MOORE, DATED MARCH 28, 2012 (GEOTECHNICAL REPORT IS FOR INFORMATION ONLY AND IS NOT A CONSTRUCTION SPECIFICATION).

1.1. SPECIFIER'S NOTE:

1.2. An E-Mail address for the Geotechnical Engineer: jkent@ninyoandmoore.com

Additional Requirements:

1. **A final review of the pad prep before the construction documents are completed is required.**
2. **The email address of the Geotechnical Engineer shall not show on the final pad prep note on the construction documents.**

APPENDIX E

NEW PAVEMENT DESIGN CALCULATIONS

AASHTO FLEXIBLE PAVEMENT DESIGN

Layer Thickness Determination Using Layered Analysis Approach

Layer No.	Description	Layer Coefficient, ai	Drainage Coefficient, mi	Elastic Modulus, psi	SN Using E of next lower layer in inputs box below	Min. Layer Thickness, D, inches	Practical Layer Thickness, D, inches	Associated SN
Layer 1	AC Layer	0.44	1.00	400,000	3.33	7.57	3.50	1.54
Layer 2	Gran Base A	0.14	0.90	35,000	3.33	14.21	12.00	1.51
Subgrade	Subgrade	N/A	N/A	3,500	N/A	N/A	N/A	N/A
					Total Pavement Thickness, inches,	21.77	15.50	3.05 Calculated SN 2.99 Design SN

Design is sufficient

Inputs Box

W18 =	109,500		*ESALs Applications Over Design Period*
R =	85	%	*Reliability*
So =	0.45		*Standard Deviation*
MR =	3,500	psi	*Subgrade Resilient Modulus*
Pi =	4.2		*Initial Serviceability*
Pt =	2		*Terminal Serviceability*

SN on top of layer =	2.99

AASHTO RIGID PAVEMENT DESIGN

Design Inputs

W18 =	109,500		*ESALs Applications Over Design Period*	Typ. Range 0.5 to 100 million
PCC MR =	550	psi	*Concrete Modulus of Rupture*	Typ. Range 550 to 750 psi
E =	4,000,000	psi	*Concrete Elastic Modulus*	Typ. Range 3 to 6 million psi
k-value =	50	psi/in	*Modulus of Subgrade Reaction*	Typ. Range 100 to 500 psi/in
R =	85	%	*Reliability*	Typ. Range 80 to 95%
So =	0.35		*Standard Deviation*	Typ. Range 0.3 to 0.5
J =	3.8		*Load Transfer Coefficient*	Typ. Range 2.2 to 4.4
Cd =	1		*Drainage Coefficient*	Typ. Range 0.9 to 1.1
Pi =	4.2		*Initial Serviceability*	Typ. Range 4.5 to 4.8
Pt =	2		*Terminal Serviceability*	Typ. Range 2.0 to 3.0

DESIGN D, inches, = 6.00

AASHTO FLEXIBLE PAVEMENT DESIGN

Layer Thickness Determination Using Layered Analysis Approach

Layer No.	Description	Layer Coefficient, ai	Drainage Coefficient, mi	Elastic Modulus, psi	SN Using E of next lower layer in inputs box below	Min. Layer Thickness, D, inches	Practical Layer Thickness, D, inches	Associated SN
Layer 1	AC Layer	0.44	1.00	400,000	3.33	7.57	5.00	2.20
Layer 2	Gran Base A	0.14	0.90	35,000	3.33	8.97	11.00	1.39
Subgrade	Subgrade	N/A	N/A	3,500	N/A	N/A	N/A	N/A
					Total Pavement Thickness, inches,	16.54	16.00	3.59 Calculated SN 3.54 Design SN

Design is sufficient

Inputs Box

W18 =	335,800		*ESALs Applications Over Design Period*
R =	85	%	*Reliability*
So =	0.45		*Standard Deviation*
MR =	3,500	psi	*Subgrade Resilient Modulus*
Pi =	4.2		*Initial Serviceability*
Pt =	2		*Terminal Serviceability*

SN on top of layer =	3.54

AASHTO RIGID PAVEMENT DESIGN

Design Inputs

W18 =	335,800		*ESALs Applications Over Design Period*	Typ. Range 0.5 to 100 million
PCC MR =	550	psi	*Concrete Modulus of Rupture*	Typ. Range 550 to 750 psi
E =	4,000,000	psi	*Concrete Elastic Modulus*	Typ. Range 3 to 6 million psi
k-value =	50	psi/in	*Modulus of Subgrade Reaction*	Typ. Range 100 to 500 psi/in
R =	85	%	*Reliability*	Typ. Range 80 to 95%
So =	0.35		*Standard Deviation*	Typ. Range 0.3 to 0.5
J =	3.8		*Load Transfer Coefficient*	Typ. Range 2.2 to 4.4
Cd =	1		*Drainage Coefficient*	Typ. Range 0.9 to 1.1
Pi =	4.2		*Initial Serviceability*	Typ. Range 4.5 to 4.8
Pt =	2		*Terminal Serviceability*	Typ. Range 2.0 to 3.0

DESIGN D, inches, = 8.00

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