

**AUGMENTED GEOTECHNICAL EXPLORATION
EL RODEO K-8 SCHOOL
BUILDINGS A, C AND D PROPOSED SHEAR WALLS
605 WHITTIER DRIVE
BEVERLY HILLS, LOS ANGELES COUNTY, CALIFORNIA
CGS APPLICATION NO. 03-CGS1921**

Prepared for:

BEVERLY HILLS UNIFIED SCHOOL DISTRICT
255 South Lasky Drive
Beverly Hills, California 90212-3697

Project No. 10274.015

January 7, 2016



Leighton Consulting, Inc.
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Thursday, January 07, 2016

Project No. 10274.015

Beverly Hills Unified School District
Facilities Planning Office
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Beverly Hills, California 90212-3697

Attention: Ms. Barbara Beach
Administrative Assistant II

Subject: **Augmented Geotechnical Exploration
El Rodeo K-8 School
Buildings A, C and D Proposed Shear Walls
605 Whittier Drive
Beverly Hills, Los Angeles County, California
CGS Application No. 03-CGS1921**

In accordance with our September 3, 2015 proposals, authorized by the September 9, 2015, *First Amendment To Agreement For Professional Services* (PO 8085W16), Leighton Consulting, Inc. has completed this *Augmented Geotechnical Exploration* for use in design of proposed new shear walls to be constructed within existing Buildings A, C and D at the El Rodeo K-8 School campus located in western Beverly Hills, Los Angeles County, California. Intent is to solely improve existing buildings lateral load resistance. This report is intended to meet requirements of Section 1803A.2 of the 2013 California Building Code (CBC) and the California Geological Survey's (CGS's) Note 48 (October 2013 version) regarding assessment of site-specific geologic hazards. Purposes of our exploration were to evaluate geologic/geotechnical conditions at and in the vicinity of this public school, and to provide geotechnical recommendations for proposed shear walls to be constructed within existing Buildings A, C and D. **No** new buildings are proposed.

We find this site is **not** within a currently designated Alquist-Priolo Special Studies Zone. Based on our review of published and available unpublished geologic reports for the site vicinity, review of aerial photos, interpolation of 23 continuous core borings and three fault trenches, it is our opinion that there is no evidence to suggest active faults underlie existing El Rodeo K-8 School campus buildings. In addition, building setback from active faults is deemed unnecessary for any existing El Rodeo K-8 School campus building. Although shallow isolated seepage was encountered in our borings as shallow as 20 feet, free groundwater was encountered in only four of our borings at depths of 128 feet or deeper. This campus is also not within a currently designated liquefaction

hazard zone and damaging liquefaction is not expected to impact these existing buildings. There are no significant slopes on this site, and, other than strong ground shaking, there are no other known site-specific geologic hazards.

Fill soils were encountered in our test pits within and adjacent to Buildings A and D to depths of 2 to 4 feet below existing grade; but deeper fill is expected adjacent existing basement walls as backfill. Deeper fill exists under Building C, particularly over east-west trending storm drains, as approximately mapped on Plate 1, *Exploration Map* (in pocket). Fill soils as deep as 17½ feet below adjacent western parking lot grade were encountered in our borings just west of Building C. In addition, a 1927 as-built plan (*Plot Plan No. 1*) showed an east-west trending ravine under the central portion of Building C, indicating old undocumented fill deeper-than (>) 5 feet. Zones of deeper fills also do exist in the eastern portion of this campus (see Plate 1, in pocket). As previously recommended in our March 2, 2015 *Geohazard Report*, new shear walls can be founded on drilled cast-in-place concrete piles to penetrate through any existing fill soils for support solely from underlying native alluvium, and to provide uplift resistance within a small footprint area. Based upon our supplemental geotechnical exploration and analysis, for Buildings A and D, proposed shear walls can also be founded on conventional spread footings bearing solely on undisturbed native alluvium; matching bearing surface elevations for existing adjacent footings. New spread footings are not recommended for the portion of Building C overlying storm drains. Tested site clays were found to be slightly to moderately expansive (EI≤46).

We appreciate the opportunity to be of additional service to the District. If you have any questions or if we can be of further service, please contact us at your convenience at **866-LEIGHTON**, directly at the phone extensions and/or e-mail addresses listed below.

Respectfully submitted,

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1.0 INTRODUCTION

1.1 Site Location and Description

As can be seen on Figure 1, *Site Location Map*, El Rodeo K-8 School is located in the northwestern corner of the intersection of Wilshire Boulevard and Whittier Drive (N34.0676° latitude, W-118.4158° longitude), within the United States Geological Survey (USGS) *Beverly Hills*, Los Angeles County, California 7.5 Minute Series Quadrangle. To the west and north of this school is the Los Angeles Country Club golf course and a buried 20- by 15-foot box-culvert storm drain aligned parallel to the west property line and City of Los Angeles/Beverly Hills city limits; as mapped on Plate 1, *Exploration Map* (in pocket). Also depicted on Plate 1 (in pocket), this site is extensively developed with multi-level and split-level school buildings, paved play yards, track and field facilities, parking and driveways, exterior stairs and retaining walls to accommodate terraced pads and landscaped areas with extensive fencing around and within the campus.

As can be seen on Figure 1, site topography slopes relatively uniformly down to the south-southeast on this alluvial fan. This school campus is on the eastern edge of low hills referred to as Beverly and Cheviot Hills. These hills are characterized as terrestrial fluvial and alluvial sediments, which are locally incised from drainages emanating from the Santa Monica Mountains to the north and west; and are elevated 10 to 20 feet above Benedict Canyon drainage to the east. Campus elevations range from a high of approximately 310 feet above mean sea level (msl) in the northwest corner to a low of 290 feet msl in the southeast. Presumably and as mapped, the artificially channelized Moreno Creek Drainage transects the eastern portion of this campus within a buried 5½- by 7-foot box culvert, which intercepts local drainage from storm drain catch basins on the campus flowing southerly under Wilshire Boulevard. However, during fault trench excavations across mapped alignment of this box culvert, no evidence of the box culvert was observed in excavations up to 20 feet deep (see Plate 1, in pocket).

This school was originally known as El Rodeo de Las Aguas Elementary School, which was built in 1927. Reportedly, following the Long Beach Earthquake, initial earthquake renovations were made in 1934. With rising enrollment, a two story



addition was completed in 1963, which included a gymnasium, a new shop and music rooms. In the latter 1960's, there were a series of additions including a three story structure and additional classrooms.

1.2 Proposed Improvements

We understand that **no** new buildings or structures are currently proposed at this school. Intent is to solely improve existing buildings dynamic lateral load resistance; at this time. We assume this public school is a Risk Category III facility.

Reportedly, a braced frame was installed in or around 2000, to provide enhanced lateral load resistance for existing Building C (see Plate 1, in pocket). However, seismic lateral-load resistance improvements are once again proposed for the main reinforced-concrete classroom Buildings A, C and D, to further improve seismic lateral load resistance more consistent with 2013 California Building Code (CBC) requirements. Based on February 10, 2015 plans prepared by Kanda and Tso Associates, Structural Engineers, for HMC Architects, we understand that new shear walls are proposed to be constructed within existing Buildings A, C and D as follows:

Table 1. Proposed Shear Walls

Building	Drawing	New Grade Beams or Shear Walls	
		N-S Aligned	E-W Aligned
A	SAB2.0.1	D/40-41.2	56, 57 and 62 <A
		C/39.8 & C/35.8	
C	SC2.0.1	7/P-V & 10/P-V	N/7-10 & V.8/7-10
D	SD2.0.1	2/B-F & 3/B-F	F.5/3-4 & G/1-3

Based on our brief discussion with the project Structural Engineer, Mr. Leslie Tso, SE at Kanda & Tso Associates, we understand that proposed seismic improvements have not been completely designed, but could include stiffening and/or augmentation of existing shear walls, either with new steel braced frames, fiber-wrapped concrete and/or new conventionally-reinforced concrete shear walls (e.g. pneumatically-applied concrete augmenting existing shear walls).

1.3 Purpose and Scope of Exploration

Purposes of our exploration were to: (1) evaluate geotechnical conditions in the vicinity of proposed new shear walls, (2) identify significant geotechnical or



geologic issues that would impact proposed shear wall construction, and (3) provide initial geotechnical recommendations for design and construction of conceptually-proposed seismic strengthening of existing Buildings A, C and D. In accordance with our September 3, 2015 proposals, authorized by the September 9, 2015, *First Amendment To Agreement For Professional Services* (PO 8085W16), this *Augmented Geotechnical Exploration* included the following:

- **Research:** We reviewed readily available published and unpublished geotechnical literature, reports and aerial photographs relevant to this site. This included review of our March 2, 2015 *Geohazard Report* for this campus. Pertinent geotechnical documents and aerial photos are referenced at the end of this report text.
- **Subsurface Exploration:** On September 23 and 26, 2015, four borings were drilled to depths of 5- to 31½-feet deep. Both bulk and driven soil samples were obtained from these borings. On June 2 and 3, 2015, existing concrete slabs-on-grade and walkways were saw-cut and removed at four locations, so that exploratory test pits could be hand excavated to depths of 2½- to 4½-feet below existing concrete surface elevation. We obtained bulk soil samples from these test pits, for visual classification and geotechnical laboratory testing. We also performed in-situ density tests using a nuclear density gauge (ASTM D 6938). Each test pit was digitally photographed. All subsurface explorations were logged by our geologist. Soil samples from our borings and test pits were transported to our Irvine geotechnical laboratory (DSA LEA-63) for geotechnical testing. Test pits and borings were backfilled the same day. Two fault trenches were also excavated at this campus in 2014 and a third recently. Previous borings CB-1 through CB-22 were drilled in 2012, 2014 and 2015 at this campus. Approximate boring, test pit and trench locations are depicted in **red (2015 borings and test pits in and adjacent buildings)**, **orange (fault trenches)** and **blue (deep continuous core borings)** on Plate 1, *Exploration Map* (in pocket). A description of our field exploration, logs and test pit photos, are all presented in Appendix A, *Field Explorations*.
- **Geotechnical Laboratory Testing:** Geotechnical laboratory tests were conducted on selected bulk and driven soil samples obtained from our test pits and borings. This laboratory testing program was designed to evaluate geotechnical (physical) characteristics of site soil. A description of geotechnical laboratory test-procedures and results are presented in Appendix B, *Geotechnical Laboratory Testing*.
- **Engineering and Geologic Analysis:** Data obtained from field explorations and geotechnical laboratory testing was evaluated and analyzed to develop geotechnical conclusions and provide recommendations in accordance with



the California Geological Survey (CGS) Note 48 (October 2013 version). Site-specific geotechnical analyses for seismicity and piles are presented in Appendix C, *Geotechnical Calculations*.

- **Report Preparation:** Results of our geologic hazards review and geotechnical exploration have been summarized in this report, presenting our findings, conclusions and preliminary geotechnical design recommendations for improving Building A, C and D dynamic lateral load resistance. In addition, our response to the California Geological Survey's (CGS's) June 30, 2015 review of our March 2, 2015 *Geohazard Report* for this campus and project, is presented in Appendix D, *Response To CGS's June 30, 2015 Review*.

2.0 FINDINGS

2.1 Regional Geologic Setting

Regionally mapped on Figure 2, *Regional Geologic Map*, this school is located within the northwest portion of the Los Angeles Basin at a transition between elevated and dissected old Pleistocene alluvial and fluvial fan deposits (Qoa) transitioning to younger Pleistocene to Holocene age alluvial sediments associated with Benedict Canyon drainage to the east (Qa). This uplifted area, commonly referred to as Beverly Hills, was dissected by streams emerging from the Santa Monica Mountains to the north. Older alluvium is exposed near-surface, and underlain by interbedded Pleistocene-age marine and terrestrial fan deposits.

The Santa Monica Mountains are north of this area, as can be seen on Figure 3, *Regional Surface Fault Map*. Uplift of the Santa Monica Mountains is considered a result mainly from movement along the Santa Monica and Hollywood Fault Zones. These faults are two of a series of east-west trending, reverse, left-lateral oblique-slip structures along the southern Transverse Ranges Geomorphic Province that accommodate north-directed shortening between the Peninsular Ranges Geomorphic Province (including the Los Angeles Basin), against the Transverse Ranges and westerly escape to accommodate NW-vergent portion of tectonic strain (Dolan et al., 1997).

2.2 On Site Geologic Units

In addition to our borings, test pits and trenches, recent (2014) borings and Cone Penetrometer Test (CPT) soundings performed by others within Wilshire



Boulevard are shown in green on Plate 1 (in pocket). Our approximate boring, test pit and trench locations are depicted in red (2015 borings and test pits), orange (fault trenches) and blue (prior deep continuous core borings), respectively, on Plate 1 (in pocket).

All these explorations generally exposed fill soils in filled ravines and on the low sides of terraces (and associated with numerous storm drains in the area). Deepest encountered fill was west of (behind) the retaining wall under the parking lot west of Building C. A north-south trending geotechnical section at Building C is provided in this report on Plate 2, *Geotechnical Cross Section A-A'*, primarily depicting fill depth variation under Building C, associated with east-west trending storm drains. Existing fill is postulated to have been predominantly placed during initial construction in or shortly after 1927; and hence is described as undocumented fill (not likely compacted in accordance with current standards). Some of this exposed fill contained significant concrete rubble and other debris.

Native soils under undocumented fill consisted of flat lying to gently dipping Holocene to Pleistocene age sediments. Most sediments range in grain size from basal channel gravels overlain by progressively fining upward sands, silt and clays. These were mainly laid down by now dissected distributary fans emanating from the Santa Monica Mountains to the north. Clast composition typically consisted of angular Santa Monica Slate (Jsm), siltstone and sandstone of the Monterey Formation (Tm), and occasional rounded basalt or granitic cobbles and pebbles. Encountered geologic units are presented from youngest to oldest as follows:

- 2.2.1 Artificial Fill, Undocumented (Afu):** Up to 18 feet of undocumented fill was observed during our exploration onsite, the deepest in the eastern ends of Fault Trenches FT-1 and FT-2 (see Plate A-1, in pocket in Appendix A), and in boring LB-2 in the parking lot west of Building C. We are unaware of any documentation regarding compaction of fill material associated with prior grading and construction of the campus or within Wilshire Boulevard. Encountered fill consisted of locally derived sandy silt and silty sand, locally with clay and varying amounts of gravel and artificial debris. Abundant concrete rubble, exceeding 24-inches in diameter, was observed in places within backfill of Moreno Creek drainage in Fault Trenches FT-1 and FT-2. Localized seepage along root traces was observed in backfill along the southern sidewall of Fault Trench FT-1 and near a storm drain inlet within Fault Trench FT-2. A summary of fill depths encountered in our 2015 borings



and test pits follows:

Table 2. Subsurface Findings Summary

Test Pit	Date Drilled or Excavated	Surface Elevation (feet)	Bottom of Fill (feet)		Slab-On-Grade Thickness (inches)
			Depth	Elevation	
HA-1	9/23/2015	298	>5*	<293	landscape area
LB-1	9/23/2015	306	12½	293½	3½ (asphalt**)
LB-2	9/26/2015	305	17½	287½	4 (asphalt**)
LB-3	9/26/2015	304	10	294	5½ (asphalt**)
LB-4	9/23/2015	298	10	288	landscape area
TP-1	6/2/2015	305	4	301	4
TP-2	6/2/2015	295	>3*	<292	6
TP-3	6/2/2015	295	2	293	4
TP-4	6/3/2015	298	4	294	landscape area

*Unable to penetrate to native soils; HA=hand auger

**Asphalt thickness in parking lot west of Building C

- 2.2.2 Modern and Holocene Alluvium in Historical Moreno Creek (Qw):** This unit consisted of very recent alluvial washes, apparently occurring since asphalt pavement was placed within the area; consisting of silty sand to clayey sand grading to sand at depth, with minor gravel and thin gravel beds; light yellowish brown, brown to dark reddish brown; massive to crudely stratified; with small fragments of asphalt observed locally in CB-3.
- 2.2.3 Holocene Alluvium of Benedict Canyon Wash (Qal):** This slightly older alluvium consisted of sandy clay to clayey sand grading laterally to silty sand to sand with silt; coarsening downward near the thalweg of the channel to sand with gravel, sandy gravel or gravelly sand; brown, dark yellowish brown, dark brown to reddish brown; locally laminated; gravel consist of fine- to coarse-grained sub-angular to sub-rounded fragments of siltstone and slate; with few to common manganese oxide and iron oxide stains; and few roots.
- 2.2.4 Pleistocene Alluvium of Benedict Canyon Wash (BCW₁):** Recent continuous core borings exposed a repeating fining upward sequence of terrestrially derived fluvial, alluvial fan and mudflow sediments emanating from the Santa Monica Mountains via Benedict Canyon Wash and its tributaries. This unit consists predominately of dark yellowish brown, brown, dark brown to reddish brown; mottled; locally gleyed, poorly to moderately sorted channel (fluvial) deposits occurring in fining upward sequences beginning at basal gravel or sand beds grading upwards to sandy clay, clayey sand, sand with clay, and silty sand with clay. This unit grades laterally to silty sand and sand with silt. Near the channel centerline, this deposit coarsens downward to gravelly sand to clayey sand with gravel. Material was slightly moist to moist; massive too thinly laminated with few to many



scattered gravel that consisted of sub-angular to sub-rounded and tabular fragments of siltstone, slate and weathered basalt.

Paleosols cap these sequences suggesting these sediments had frequent depositional hiatuses allowing time for the stable ground surface to develop a pedogenic weathering profile. Observed finer-grained sections were both gleyed and oxidized, resulting in a “tiger banded” appearance due to oxidation and reduction reactions along individual thin stratigraphic units. Observed material contained sporadic to heavy manganese oxide development along poorly to moderately well-developed blocky ped structure. Incision associated with low sea level stand of Marine Isotope 6 (MI6), approximately 150,000 years ago, is estimated to correlate with cessation of BCW₁ deposition (Kenney, 2014).

- 2.2.5 Pleistocene Alluvium of Benedict Canyon Wash (BCW₂):** Recent continuous core borings exposed a similar repetitive fining upward sequence of terrestrially derived fluvial, alluvial fan, and mudflow sediments derived from the Santa Monica Mountains to the north. This unit consisted predominately of dark grayish brown, reddish brown, very dark brown, and dark yellowish brown; locally mottled and/or gleyed; poorly to moderately sorted channel (fluvial) deposits characterized as sandy clay, clayey sand and silty clay grading laterally to silty sand to sand with silt. This unit contained lenses and interbeds of sandy gravel coarsening downwards to basal channel deposits of sand, gravelly sand and gravel. Observed weathering consisted of oxidation-reduction banding; iron oxide and manganese oxide stains common on rock clasts and along basal channel contact. Encountered gravel consisted of fine- to medium-grained sub-rounded to sub-angular fragments of siltstone, slate, basalt and quartz. BCW₂ is characterized by moderate to well-developed paleosols with many moderately thin to thick clay films on ped faces and moderate to strong angular blocky soil structure with a distinctive erosional contact with underlying Cheviot Hills deposits. Cessation of deposition of the BCW₂ deposits may have been associated with the end of a glacial maximum estimated to be around Marine Isotope Stage 10 to 11 (MI 10 to 11), approximately 400,000 to 350,000 years ago (Kenney, 2014).

- 2.2.6 Pleistocene Cheviot Hills Deposits (CHD):** This unit correlates to Leighton Consulting, Inc.’s “Quaternary Old Alluvial and Fluvial Deposits (Qoaf)” identified and characterized as part of the work performed on the Beverly Hills High School (BHHS) campus (Leighton, 2012a, 2012d) and with the “Older Surficial Sediments (Qoa)” of Hoots, 1931.

Encountered Cheviot Hills Deposits were reddish brown, brown, and grayish brown locally gleyed alluvial sediments characterized as poorly to well-sorted sandy clay, clayey sand and silty clay; with thin silty sand and gravel layers and beds. Where encountered, this unit was moist to wet along sand beds



with manganese oxide stains, streaks and nodules and iron oxide stains on rock fragments. Weathering, profiles of light gray to dark orange brown coloring as a result of oxidation-reduction banding were observed. Gravel consisted of sub-rounded to sub-angular fragments of siltstone and slate. At depth, encountered CHDs included abundant calcium carbonate in the form of specks, filaments, horizontal layers, and coatings on ped faces; color changes to grayish brown, gray and blue green reminiscent of the Lomita Marl with iron oxide staining along layers and locally on ped faces. Unit has been modified by soil-forming processes, with pedogenic characteristics, including clay films on ped faces and moderate to strong angular blocky soil structure, observed at several intervals, including directly at or below its contact with the overlying Benedict Canyon Wash deposits. Predominately a terrestrial deposit consisting of fluvial and alluvial sediments derived from the San Pedro Formation deposited over a long period of time, with depositional hiatuses that allowed for soil development. This unit was exposed at the surface for thousands of years before it was buried by the Pleistocene alluvium of Benedict Canyon Wash.

The upper portion of the Cheviot Hills Deposits (CHD) is recognized as an approximately 12- to 15-foot thick, fine-grained clayey sequence that is typically well oxidized and gleyed forming a "tiger-banded" appearance due to oxidation and reduction of individual layers, possibly indicating seasonal variations, i.e. water-logging and aeration of soils. This sequence marked the erosional boundary between overlying Benedict Canyon Wash sediments. Several buried soils observed in borings performed at BHHS (Leighton, 2012a) estimates a minimum age for the Cheviot Hills Deposits (CHD) of about 530,000 to 1,300,000 years at the contact between the underlying San Pedro sequences which include Marine Isotope Stages 19 through 15 at a minimum.

- 2.2.7 Quaternary San Pedro Formation (Qsp):** In continuous corings, we recognized the San Pedro Formation, as described by Parsons (2011b) and encountered during fault study at BHHS (Leighton 2012a, b and d) as "Upper San Pedro Formation: (Qsp₁)". At El Rodeo, the San Pedro Formation was encountered at 132.1 feet below grade in boring CB-6 (see Plate 1, in pocket). This formation is typically a massive, friable to loose, yellow, olive brown to reddish orange brown to light greenish-gray, fine to medium-grained sand with scattered gravel and few silty to clayey laminations. Where encountered, this formation was described as loose to hard; dry near upper contact, becoming moist to wet at depth. Sand fraction consists of fine to coarse, well-rounded quartz grains with scattered bi-valve shell fragments. This is a transitional terrestrial to marine unit deposited in a wave-dominated (beach) environment. In short, this is an overconsolidated beach sand.



2.3 Groundwater

Groundwater was not encountered in our **shallow borings** drilled September 23-26, 2015 and test pits excavated June 2-3, 2015. Perched Groundwater was encountered in several **deep core borings** (drilled in 2012 and 2014). Groundwater conditions encountered in each boring is summarized below:

Table 3. Encountered Depth to Groundwater

Boring	Perched Water Depth (feet)	Groundwater Depth (feet)
CB-1	20-21.8, 35-37.4, 81.8-82.5, 91.5-93, 124.4-125	NE
CB-2	36.3, 41.6-44.5, 54.5-56.4, 61.7-62.3, 70-73.9, 75-78, 80-82, 90-91,100-100.7	NE
CB-3	44-45, 45.8-49.3, 51.5-53, 55.8-58.1, 60-64.3, 66.3-66.9, 90.3-92.8, 103.8-104.3, 107.8-109.3, 111.3-112, 112.5-112.7	NE
CB-4	24.5-25.8, 40-40.6, 54.5-55.8, 70-73, 80-81.5, 101.2-105, 107.1-109.8, 120.9-121.4	NE
CB-5	94.2-95, 101.7-103.4, 110-111.3, 113-113.9, 125-125.4, 130-130.9, 137.9-185	137.9
CB-6	25-27.5, 35-35.7, 40-76.7, 88-88.9, 90.9-92.1, 92.6-98.1, 100-101.6, 105-111, 114-115.7, 120-123.7, 130-131.3, 132.1-157.7	132
CB-7	40-40.9, 41.8-43.7, 52-52.5, 100-100.2, 105-108.1, 110-110.8, 120-121.8, 135-139, 140-140.7, 145-145.1, 145.3-148.2	135
CB-8	38.5-39.4, 40-43.6, 47.2-48.8, 51.5-52, 55-57, 58.6-59, 60-61.1,81.4-81.6, 81.9-82.2, 94.5-95, 95.7-99.3,99.7-102.4, 110-110.7, 111.6-111.9, 115-124.1, 128.4	128.4
CB-9	34.7-37.8, 40-41.8, 53.9-54.6	Groundwater not encountered in borings shallower than 95 feet
CB-10	35.4-36.5, 36.8-39.6, 43-46, 48.6-50, 55-56.2	
CB-11	34-34.5, 42-43.2, 43.8-49	
CB-12	32.7-33.4, 38.4-40.5, 41-43.7, 45-45.3, 60-60.5, 67.9-74.6	
CB-13	37-37.1, 68.4-72.8	
CB-14	35-39.7, 40-41.6, 43.2-43.5, 45-47.3, 52.2-52.4, 60-60.2, 64.4-64.5, 67.7-69.7	
CB-15	39.4-40.4, 45.5-48.8, 65.3-65.5, 70-70.2, 71.7-71.9, 75-82.3	
CB-16	35-38.2, 40-42.1, 50-50.5, 53.6-54.4, 62.8-65., 69-69.5, 70-74.2, 76.5-77	
HA-1	No seepage in shallow borings	
LB-1		
LB-2		
LB-3		
LB-4		

NE=groundwater table not encountered

3.0 SITE-SPECIFIC SURFACE FAULTING HAZARDS

3.1 Nearby Surface Rupture Fault Zones

3.1.1 North-South Trending West Beverly Hills Lineament (WBHL): Dolan and



Sieh (1992) described the West Beverly Hills Lineament (WBHL) as a north, northwest-trending lineament oriented west of, but parallel to the projected trend of the Newport Inglewood fault zone (NIFZ) suggesting that the lineament is the possible northern extension of the NIFZ; as depicted on Figure 3, *Regional Surface Fault Map*. This lineament is mainly comprised of continuous, east-facing erosional escarpments that separate the elevated alluvial terrain to the west (within the Cheviot and Beverly Hills) from the gently sloping younger alluvium within the Benedict Canyon drainage to the east. Earlier work at Beverly Hills High School has shown this slope to be erosional and the geologic contact between these two units to be unconformable and not faulted (Leighton 2012a, 2012d).

3.1.2 East-West Trending Santa Monica Fault: The Santa Monica Fault consists of one or more strands is about 40 kilometers (km, 25 miles) in length and is one of a series of east-southeast trending reverse, left-lateral oblique-slip structures that extend more than 200 km (125 miles) across southern California and accommodate westward motion of the Transverse Ranges (Dolan *et al.*, 1997). It has been delineated locally at depths of several-thousand feet through exploratory oil well drilling and oil field development (Wills *et al.*, 2008). High resolution seismic reflection profiles across the Santa Monica Fault zone were acquired (Pratt, *et al.*, 1998) as part of an integrated hazard assessment of this fault, which showed a series of near vertical strike-slip faults beneath topographic scarps inferred to be caused by thrust faulting on the Santa Monica Fault. Pleistocene or Holocene movement had been postulated, but not directly proven along some upper plate secondary fault segments related to the Santa Monica Fault in this zone (Dolan *et al.*, 2000a). But recurrence interval and recency of movement along many fault segments are neither well documented nor understood, mainly because intense urbanization has modified or destroyed any surface traces of the fault (Hill *et al.*, 1979). The Santa Monica Fault zone at the presumed eastern terminus (at El Rodeo K-8 School) had been mapped (Dolan *et al.*, 2000a) to occupy a broad zone approximately 300 feet wide extending into the southern portion of the school campus (see Figure E-3, *Aerial Photo*), even though unconformities interpreted in the seismic profile (Pratt, *et al.*, 1998) were constrained to a relatively narrow zone of approximately 150 feet wide.

3.1.3 2012 and 2014 Site-Specific Surface Fault Studies Synopsis: Based on our 2012 and 2014 site-specific trenching and core logging, we interpreted four stratigraphic anomalies in older deposits as possible faults (see Plate 2, in pocket). However, we found no active (Holocene-age) faults. Rather, we demonstrably correlated sediments and soils, dated by relative methods, as being un-faulted and overlying postulated faults; and these deposits were found to be substantially older than 11,700 years. This is older than defining age for an active fault hazard in California. Soil development age estimation



of the sedimentary packages within the cores, and from the trench exposures, support an age of at least 100,000 years for stratigraphy lying un-faulted over postulated fault traces. Accordingly, we conclude that no active faults have ruptured to the surface at the El Rodeo K-8 school campus for at least 100,000 years and possibly considerably farther back in time. Therefore, we conclude that surface rupture along active faults does not pose a direct surface-rupture hazard to the El Rodeo K-8 school campus structures. For a compilation of fault assessment data see our February 27, 2015 *Fault Hazard Assessment, El Rodeo K-8 School* report. Additional fault studies are underway (in 2015) with a separate report pending.

3.2 Surface Fault Rupture

Based on our review of available in-house literature and recently completed (2012 to 2014) continuous coring and fault trenching, there are no currently known active surface faults that traverse this site, and this site is **not** located within a currently designated Alquist-Priolo Earthquake Fault Zone (CGS, 2007). However, as very roughly mapped for this region on Figure 4, *Regional Surface Fault Map*, the West Beverly Hills Lineament (WBHL) is labeled as the Pleistocene age Newport-Inglewood Fault, but should not be construed to project through this site. As described previously in Sections 3.1.3 of this report, it is our opinion, based on a high degree of intensive fault investigation across Beverly Hills High School and this El Rodeo K-8 School campus, that there is no evidence of active surface faulting through the El Rodeo K-8 School campus.

Location of closest active faults to the site was generated using the United States Geological Survey (USGS) Earthquake Hazards Program (USGS, 2008a) and site decimal degree (latitude-longitude) coordinates N34.0676° and W-118.4158°. Closest faults to the site considered active are the Santa Monica-Hollywood Fault Zone and the Newport Inglewood Fault Zone (NIFZ) electronically modeled to be within (<) two miles from this site. The San Andreas Fault, which is the largest active fault in California, is approximately 37 miles northeast of the site. Local active faults are described below:

- 3.2.1 **Santa Monica Fault Zone (SMFZ)**: Although not yet recognized by the State of California as a Special Studies Zone, the Santa Monica Fault is the closest known fault to the site, considered but not proven to be active, mapped as being located primarily along Santa Monica Boulevard. This fault zone trends east-west along the southern boundary of the Santa Monica Mountains for more than 40 km included as part of the Transverse Ranges Southern Boundary fault system which consists of east-west trending, left-lateral and oblique-reverse movements along several active faults. North-dip west-slip



rate across the SMFZ is estimated to vary with location along en-echelon faults to be minimally on the order of 0.6 mm/year (Dolan et. al., 2000) and as high as 3.9 to 5.9mm/year (Davis and Namson, 1994). For this fault, a deterministic estimated maximum magnitude earthquake is generally modeled between Magnitude (M_o) 6.0 and 7.0 if the entire Santa Monica Fault ruptured at once.

- 3.2.2 Hollywood Fault:** The Hollywood Fault begins near the Los Angeles River and eastern edge of the Santa Monica Mountains and extends westward for approximately 9½ miles before shifting its locus of active deformation to the area of the West Beverly Hills Lineament (WBHL), where faulting takes a left step to the Santa Monica Fault. The Hollywood Fault is capable of producing a M_w 6.4 to 6.6 earthquake (Dolan et al., 1997). Investigators have estimated the lateral slip rate to be about 1.0 ± 0.5 mm/year, with a vertical slip rate to be 0.25 mm/year (Dolan et al., 1997). Conversely, a lower slip rate of 0.04-0.4 mm/year (Ziony and Yerkes, 1985) leads to a long return period.

Recent detailed geologic and geotechnical studies have provided cumulative physical evidence for Holocene displacements resulting in an Alquist-Priolo Special Study Zone being established for the Hollywood Fault (CGS, 2014). Exposures identified in prior explorations (Crook and Proctor, 1992), coupled with bulk-soil radiocarbon ages provide scant evidence for an early to mid-Holocene age for the most recent surface rupture approximately 6,000 years to 11,000 years ago; suggesting a long period of quiescence between surface rupturing on the Hollywood Fault (Dolan, 1997, 2000) (Ziony and Yerkes, 1985).

- 3.2.3 Newport Inglewood Fault Zone (NIFZ):** The Newport Inglewood Fault Zone (NIFZ) is an active northwest-trending, approximately 2- to 4-mile wide belt of anticlinal folds and faults disrupting early Holocene to Late Pleistocene-age and older deposits (Barrows, 1974). The NIFZ is characterized by trends related to right-lateral shearing at depth (Moody and Hill, 1956). The zone defines the boundary between the western basement complex of Catalina type schist and related rocks to the southwest, and the eastern basement complex of metasedimentary, metavolcanic and plutonic rocks to the northeast (Yerkes, et al., 1965). Right-lateral, strike-slip displacement of 3,000 to 5,000 feet has been measured in Lower Pliocene strata along the NIFZ (Dudley, 1954; Hill, 1954; Poland, et al., 1959). Apparent vertical offset across faults of the NIFZ ranges from 4,000 feet at the basement interface, to 1,000 feet in the Pliocene strata, and 200 feet at the Plio-Pleistocene boundary (Yerkes, et al., 1965). Movement along this structural zone is inferred to have been initiated during middle Miocene time (circa 15 million years ago), with seismic activity continuing to the present time. There is abundant seismic evidence that the zone is tectonically active; thus, the surrounding metropolitan area is subject to certain seismic risks. At least five



earthquakes of magnitude 4.9 or larger have been associated with the NIFZ since 1920 (Barrows, 1974). Estimated maximum deterministic magnitude earthquake is generally modeled between Magnitude (M_0) 6.5 and 7.2.

- 3.2.4 Las Cienegas Fault:** Seismic models developed for the downtown Los Angeles area, based on oil well data, indicate oil development in the 1960's took place largely along a monocline overlying the Las Cienegas structural shelf located in the subsurface between the deep, regionally continuous, northwest trending syncline of the central trough in the Los Angeles Basin and the northern shelf of the Los Angeles Basin. The northern shelf defines the north and northeastern margin of the central trough and comprises a series of active folds and blind surface cutting faults. This monocline is interpreted to be surface expression of the buried Las Cienegas thrust fault system, which terminates westward against the Newport-Inglewood Fault system and north against the Santa Monica Mountains. Cores of late Quaternary sediments, collected on both sides of this fault, indicate a differential vertical uplift rate for the past 330 thousand-years (ky) as 0.09-0.13 mm/year (Ponti et al., 1996).
- 3.2.5 San Vicente Fault:** This east striking San Vicente blind fault, included in the northern Los Angeles fault system, extends through the San Vicente and South Salt Lake oil fields, and has a long varied history as an early to late Miocene extensional, north-dipping normal fault. At approximately the beginning of Pliocene (5.3 to 2.5 million years ago), contraction of the Los Angeles Basin began, resulting in reactivation of Miocene normal faults in a reverse sense with the initiation of monoclinical and secondary compressive structures. The San Vicente Fault is believed to account for approximately 20 percent of the structural relief represented by the northern Los Angeles shelf. Deformation modeling (Schneider, *et al.*, 1996) based on the length and thickness of growth strata suggests the northern Los Angeles fault system is growing at a reverse slip rate of 1.5 to 1.9 mm/year.
- 3.2.6 Salt Lake Anticline:** Early Pliocene uplift on the monoclinical high of the northern Los Angeles Shelf has produced a structural buttress impinging on the position of the east Beverly Hills fold. This structure, the South Salt Lake anticline, plunges and dies out to the west under the San Vicente thrust. The Salt Lake anticlinal structures are highly permeable and porous serving as a trapping mechanism for oilfield gas migration which consistently produces high volumes of oil field gas from the Salt Lake Oilfield.



4.0 SEISMIC SHAKING AND FLOODING HAZARDS

4.1 Historical Seismicity

Although southern California has been seismically active during the historic recorded past 200 years, written accounts of only the strongest shocks survive the early part of this historical period. Early descriptions of earthquakes were rarely specific enough to allow an association with any particular fault zone. It is also not possible to locate epicenters of earthquakes that have occurred prior to the twentieth century precisely. A search of historical earthquakes listed in the ANSS Comprehensive Earthquake Catalog (ComCat) was performed from the USGS website for the time period between 1900 and July 29, 2014.

Within that time frame, 168 earthquakes ($>M_o$ 4) were found within a 100-kilometer (62-mile) radius of the site. As plotted on Figure 4, *Historical Seismicity Map*, of these earthquakes, the closest was located 1.8 miles (2.8 km) east of the site and occurred on September 9, 2001. Although not precisely located, its epicenter ($N34.0590^\circ$ latitude, $W-118.3870^\circ$ longitude) is approximately located within the Benedict Canyon Wash Drainage at a focal depth of approximately 2.4 miles (4 km). This magnitude 4.2 M_w earthquake was located near the tectonic intersection of the Newport Inglewood Fault and Hollywood Fault. Reported focal mechanism suggests horizontal strike slip motion of a northwest striking plane suggesting this event may be associated with the north end of the Newport Inglewood Fault.

Strongest recent earthquake causing regional damage was the January 17, 1994 Northridge Earthquake ($6.7M_w$). We are aware of significant damage in the area as a result of the Northridge Earthquake, including failure of nearby I-10 (Santa Monica Freeway) bridges farther away from the epicenter than this campus. However, the collapsed bridge was in a wetland/estuary peat zone, with much different site response than this school campus. Measured peak ground acceleration of 0.41g were measured in this region. However, we are unaware of any El Rodeo School campus damage resulting from the Northridge Earthquake. We do know that Building C lateral load resistance structural improvements were constructed in or shortly after 2000.

4.2 Modeled Seismicity (Ground Shaking)

Principal seismic hazard that could affect El Rodeo K-8 School is ground shaking resulting from an earthquake occurring along several major active or potentially



active faults in southern California. Blind-thrust-faults also exist throughout the Los Angeles Basin. Therefore, a site specific response analysis was developed using the computer program *EZ-FRISK* by Risk Engineering (v. 7.62) and the 2008 CGS Statewide Fault Model. Site-specific probabilistic and deterministic response spectra were developed using the average of the median ground motions obtained from the following next generation attenuation relationships (NGA):

- Boore and Atkinson (2008),
- Campbell and Bozorgnia (2008), and
- Abrahamson-Silva (2008).

Our probabilistic seismic hazard analysis (PSHA) performed using these NGA relationships considered the maximum rotated component of ground motion. Deterministic seismic hazard analysis (DSHA) performed using the NGA relations incorporated the 84th percentile of the maximum rotated component of ground motion. Site-specific acceleration response spectra are attached in Appendix C, *Geotechnical Calculations* as Figure C-1. Site-specific MCE and site-specific design response spectra in tabulated numerical form are shown on Tables C-1 through C-4, also included in Appendix C.

4.3 Secondary Seismic Hazards

In general, secondary seismic hazards for sites in this region could include soil liquefaction, earthquake-induced settlement, lateral spreading, slope instability and landslides, earthquake-induced seiches and tsunamis flooding. These potential secondary seismic hazards are discussed in the subsections below.

4.3.1 Liquefaction Potential: Liquefaction is the loss of soil strength due to a buildup of excess pore-water pressure during strong and long-duration ground shaking. Liquefaction is associated primarily with loose (low density), saturated, relatively uniform fine- to medium-grained, clean cohesionless soils. As shaking action of an earthquake progresses, soil granules are rearranged and the soil densifies within a short period. This rapid densification of soil results in a buildup of pore-water pressure. When the pore-water pressure approaches the total overburden pressure, soil shear strength reduces abruptly and temporarily behaves similar to a fluid. For liquefaction to occur there must be:

- (1) loose, clean granular soils,
- (2) shallow groundwater, **and**



(3) strong, long-duration ground shaking.

The site is **not** located within an area defined by the State of California as a liquefaction susceptibility zone (CDMG, March 25, 1999); as overlain in **green** on Figure 5, *Seismic Hazard Zone Map*, and as shown on the CGS web page:

http://gmw.consrv.ca.gov/shmp/download/pdf/ozn_bevh.pdf

Based on results of our current and prior explorations, alluvium below the historic-high ground-water level is predominantly stiff to very stiff, silty clay, silt, and sandy clay with thin layers of very dense sand. Susceptibility of these materials to liquefaction is considered to be low. In addition, except for some thin perched zones, encountered groundwater was well below 50 feet from the surface. Historic high groundwater levels at this site were 30 feet or more below existing grade; see:

http://gmw.consrv.ca.gov/shmp/download/quad/BEVERLY_HILLS/reports/bevh_eval.pdf

This is well into non-liquefiable Pleistocene deposits.

- 4.3.2 Seismically Induced Settlement:** During a strong seismic event, seismically induced settlement can occur within loose to moderately dense, unsaturated granular soils, separate from liquefaction. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement. Based primarily on CPT results (Leighton, 2014), seismically induced differential settlements of up to 1 inch over a distance of 30 feet should be anticipated in the vicinity of the school.
- 4.3.3 Lateral Spreading:** Lateral spreading is a phenomenon in which large blocks of intact, non-liquefied soil move downslope on a liquefied soil layer. Lateral spreading is often a regional event. For lateral spreading to occur, the liquefiable soil zone must be laterally continuous, unconstrained laterally and free to move along sloping ground. Benedict Canyon Wash has been in-filled to the current grade thereby constraining the site laterally. In addition, liquefaction at this site is unlikely. Therefore, potential for lateral spreading is considered very low at this site.
- 4.3.4 Seismically Induced Landslides:** Significant slopes are **not** located at this campus. Based on the State of California Seismic Hazard Zones Map for the Beverly Hills Quadrangle (CDMG, 1999), as reproduced on Figure 5, this campus and vicinity are **not** located within an area that has been identified by the State of California as being potentially susceptible to seismically induced landslides (depicted in **blue** on Figure 5). Therefore, the potential for seismically induced landslides to affect the site is not a consideration for this



campus.

4.3.5 Earthquake-Induced Seiches and Tsunamis: Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Tsunamis are predominately ocean waves generated by undersea large magnitude fault displacement or major ground movement. Based on separation of this campus from large bodies of water, site elevation approximately 300 feet above mean sea level and the inland location of the site relative to the Pacific Ocean (see California Geological Survey, 2009), seiche and tsunami risks at the site are not a concern.

4.3.6 Earthquake-Induced Inundation: This inundation hazard is flooding caused by failure of dams or other water-retaining structures as a result of earthquakes. Due to the absence of such structures upslope/up-gradient and near this site, the potential for earthquake-induced flooding is considered to be low. Stone Canyon Reservoir is located northwest of this site in the Santa Monica Mountains. Note that if Stone Canyon Reservoir were to fail, it would flood UCLA and areas to the northwest, and not likely to impact this site.

Portions of Beverly Hills lie within the inundation path of the Lower Franklin Canyon Dam, an earth fill dam constructed in 1915 and removed from service in 1976. The Lower Franklin Reservoir was constructed as a replacement in 1982, with a 200-acre-foot capacity that, reportedly, could be drained within 72 hours. In the event of a breach of Lower Franklin Reservoir, the residential area north and west of Carmelita Avenue would be exposed to immediate and severe flooding depending on level of impounded water at the time of breach. Below Carmelita Avenue, anticipated flooding diminishes rapidly, although flooding of structures could occur (Beverly Hills General Plan Update, 2010).

4.4 Storm-Induced Flood Hazard

As depicted on Figure 6, *Flood Hazard Zone Map*, El Rodeo K-8 School is **not** located within a “100-year” or “500-year” flood zone as defined by the Federal Emergency Management Agency’s (FEMA) Flood Insurance Rate Map (FIRM).

5.0 CONCLUSIONS AND RECOMMENDATIONS

This site is **not** located within a currently designated Alquist-Priolo Special Studies Zone for surface fault rupture. However, as is the case for most of Southern California, strong ground shaking has and will occur at this site. This site is also not within a currently designated liquefaction hazard zone. Due to the depth to groundwater and age/density of deeper native soil, damaging liquefaction is unlikely to occur at this site.



Borings and test pits generally exposed fill soils in filled ravines and on the low sides of terraces (and associated with numerous storm drains in the area). As listed in Table 2 (earlier in this report), fill soils were encountered in our borings and test pits within and adjacent to Buildings A, C and D to depths of 2 to 17½ feet below existing grade; but deeper fill is expected adjacent existing basement walls as backfill and possibly over storm drains. Deepest encountered fill was west of (behind) the retaining wall under the parking lot west of Building C. A north-south trending geotechnical section at Building C is provided in this report on Plate 2, primarily depicting fill depth variation under Building C. Reportedly, there are east-west trending storm drains under Building C, roughly aligned parallel to Wilshire Boulevard, presumably placed in an old ravine, in an area of deeper fill. In addition, a 1927 as-built plan ("Plot Plan No. 1") showed an east-west trending ravine under the central portion of Building C, indicating old undocumented fill deeper-than (>) 5 feet. Based on fault trenches and other prior geotechnical exploration on this campus, zones of deeper fills also do exist in the eastern portion of this campus. Considering all this available data, we approximately mapped on Plate 1 (in pocket), an eastern and central zone of fill on this campus deeper than 5 feet below existing grade.

Existing fill is postulated to have been predominantly placed during initial construction in or shortly after 1927; and hence is described as undocumented fill (not likely compacted in accordance with current standards). Some of this exposed fill contained significant concrete rubble. Therefore, existing undocumented fill is considered unsuitable for support of new shear walls. As previously recommended in our March 2, 2015 *Geohazard Report*, new shear walls can be founded on drilled cast-in-place concrete piles penetrating through any existing fill soils to derive support solely from underlying native alluvium, and to provide uplift resistance within a small footprint area. Piles can be used to support new shear walls at Buildings A, C and D. As another option, based upon our supplemental geotechnical exploration and analysis, for Buildings A and D, and portions of Building C, proposed shear walls can also be founded on conventional spread footings bearing solely on undisturbed native alluvium; matching bearing surface elevations for existing adjacent footings. **New spread footings are not recommended for the portion of Building C spanning over storm drains.** Piles on either side of these storm drains can be used to support a grade beam spanning over storm drains and associated fill. Such grade beams should be designed to derive vertical support solely from these piles, and not from soils under the span.

Tested site clays had an Expansion Index (EI) of 46 or less, indicative of low to moderate expansion potential. Samples from similar soil types taken from the near-by



Beverly Hills High School were found to be moderately expansive ($EI \leq 70$). Tested soils were found to be highly corrosive for ferrous metals, although measured sulfate content was negligible.

Detailed geotechnical recommendations for new shear wall foundations in existing buildings are presented in the following subsections.

5.1 **Earthwork**

Earthwork within existing buildings is expected to be limited to shear wall foundation backfill and possibly buried utility repair and rerouting. Project earthwork is expected to include complete demolition/removal of existing slabs-on-grade in new foundation areas and complete overexcavation and recompaction of any remaining unsuitable or disturbed soils below new improvement footprints; as described in the following subsections:

- 5.1.1 Earthwork Observation and Testing:** Leighton Consulting, Inc. should observe and test all earthwork, to check that the site is properly prepared, the selected fill materials are satisfactory, and that placement and compaction of fills has been performed in accordance with our recommendations and the project specifications. Sufficient notification to us prior to earthwork is essential. Project plans and specifications should incorporate recommendations contained in the text of this report.

Variations in site conditions are possible and may be encountered during construction. To confirm correlation between soil data obtained during our field and laboratory testing and actual subsurface conditions encountered during construction, and to observe conformance with approved plans and specifications, it is essential that we be retained to perform continuous or intermittent review during earthwork, excavation and foundation construction phases. Therefore, conclusions and recommendations presented in this report are contingent upon us performing construction observation services.

- 5.1.2 Subgrade Preparation:** Resulting removal excavation bottom-surfaces should be observed by Leighton Consulting, Inc., prior to placement of any backfill or new construction. After these over-excavations are completed, and prior to fill placement, exposed surfaces should be scarified to a minimum depth of 6 inches, moisture-conditioned to or slightly above optimum moisture content, and recompacted to a minimum 90 percent relative compaction as determined by ASTM D 1557 standard test method (modified Proctor compaction curve). Efforts should be made to locate any existing utility lines that conflict with new foundations. Those lines should be removed or rerouted where interfering with proposed new foundations. **It is essential**



that excavation not undermine existing building foundations to remain.

5.1.3 Reuse of Concrete and Asphalt In Fill: Pulverized demolition concrete free of rebar and other deleterious materials and demolished asphalt pavement can be pulverized to particles no-larger-than (\leq) 3-inches, and mixed with site soils for use in compacted fill. Blended pulverized concrete and asphalt should be mixed with at least 25% soils by weight. Such materials must be free of and segregated from any hazardous materials and/or organic material of any kind.

5.1.4 Fill Placement and Compaction: Onsite soils free of organics, debris and oversized material (greater-than 3-inches in largest dimension) are suitable for use as compacted structural fill. However, any soil to be placed as fill, whether onsite or imported material, should be first viewed by Leighton Consulting, Inc., and then tested if and as necessary, prior to approval for use as compacted fill. All structural fill must be free of hazardous materials.

All fill soil should be placed in thin, loose lifts, moisture-conditioned, as necessary, to within 3 percent above optimum moisture content, and compacted to a minimum 90% relative compaction as determined by ASTM D 1557 standard test method (modified Proctor compaction curve) within building footprints. Aggregate base for pavement sections should be compacted to a minimum of 95% relative compaction.

5.1.5 Pipeline Backfilling: Pipeline trenches should be backfilled with compacted fill in accordance with this report, and applicable *Standard Specifications For Public Works Construction* (Greenbook), 2015 Edition standards. Backfill in and above the pipe zone should be as follows:

- **Pipe Zone:** Pipe bedding zone should be backfilled with Controlled Low Strength Material (CLSM) consisting of at least one sack of Portland cement per cubic-yard of sand, conforming to Section 201-6 of the 2015 Edition of the *Standard Specifications For Public Works Construction* (Greenbook). Due to expansive clays, sand bedding for conduits should not be allowed on this site. CLSM bedding should be placed to 1-foot (0.3 m) over the top of the conduit, and vibrated. CLSM should **not** be jetted.
- **Over Pipe Zone:** Above the pipe zone, trenches can be backfilled with excavated on-site soils free of debris, organic and oversized material greater-than ($>$) 3-inches in largest dimension. As an option, the whole trench can be backfilled with one-sack CLSM same as presented above for the pipe bedding zone. Oversized rock (cobbles and/or boulders) should either be removed from any backfill, or pulverized for use in backfill only above the pipe zone. Gravel larger than $\frac{3}{4}$ -inch in diameter should be mixed with at least 80-percent soil by weight passing the No. 4 sieve.



Native soil backfill over the pipe-bedding zone should be placed in thin lifts, moisture conditioned, as necessary, and mechanically compacted using a minimum standard of 90% relative compaction (relative to the laboratory modified Proctor maximum **dry** density), relative to the ASTM D 1557 laboratory maximum dry density within building footprints, or 85% under hardscape areas. Backfill above the pipe zone should **not** be jetted. In any case, backfill above the pipe zone (bedding) should be observed and tested by Leighton Consulting, Inc..

5.2 Seismic Design Parameters

To accommodate effects of ground shaking produced by regional seismic events, seismic design can, at the discretion of the designing Structural Engineer, be performed in accordance with the 2013 Edition of the California Building Code (CBC). Table 3, *2013 CBC Seismic Parameters* (next page), lists seismic design parameters based on the 2013 CBC methodology and ASCE 41-06 methodology, using the USGS 2008 design maps:



Table 4. 2013 CBC and ASCE 41-06 Site Specific Seismic Parameters

2013 CBC Seismic Design Parameters	2013 CBC	ASCE 41-06 Standard	
		BSE-1	BSE-2
Site Longitude (decimal degrees) West		-118.4158	
Site Latitude (decimal degrees) North		34.0676	
Site Class Definition (2013 CBC 1613A.3.2 and ASCE 7-10)		D	
Mapped Spectral Response Acceleration at 0.2s Period, S_s (Figure 1613.3.1(1))*	2.276g	1.186	2.397
Mapped Spectral Response Acceleration at 1s Period, S_1 (Figure 1613.3.1(2))*	0.835	0.420	0.878
Short Period Site Coefficient at 0.2s Period, F_a (Table 1613A.3.3(1))	1.0	1.025	1.0
Long Period Site Coefficient at 1s Period, F_v (Table 1613A.3.3(2))	1.5	1.580	1.5
Adjusted Spectral Response Acceleration at 0.2s Period, S_{MS} (Eq. 16A-37)	2.276	1.217	2.397
Adjusted Spectral Response Acceleration at 1s Period, S_{M1} (Eq. 16A-38)	1.252	0.664	1.317
Design Spectral Response Acceleration at 0.2s Period, S_{DS} (Eq. 16A-39)	1.517	1.217	2.397
Design Spectral Response Acceleration at 1s Period, S_{D1} (Eq. 16A-40)	0.835	0.664	1.317
Probability of exceedance in 50 years (percent)		10	2
Return period (years)		474	2,475
Seismic Design Category (1613A.3.5, $S_1 > 0.75$, Risk Category III)	E	D	E

*All were derived from the USGS web page: <http://earthquake.usgs.gov/designmaps/us/application.php> (2008 seismic hazard maps); all coefficients in units of g (spectral acceleration).

Site-specific probabilistic seismic hazard analyses (see Appendix C) result in $S_{DS}=1.334g$ and $S_{D1}=1.162$.



A site specific ground motion analysis was also performed. Details of the site specific evaluation are provided in Appendix C.

5.3 Conventional Spread Footings

New spread footings are not recommended for the portion of Building C spanning over storm drains. Piles on either side of these storm drains can be used to support a grade beam spanning over storm drains and associated fill. Such grade beams should be designed to derive vertical support solely from these piles, and not from soils under the span.

Based on our preliminary exploration and our experience in the region, conventional shallow spread footings may be used to support Buildings A and D shear walls, when either founded solely on undisturbed old alluvium or solely on newly placed properly compacted fill of uniform thickness no more than 5-feet-thick over old alluvium. Spread footings can be used under portions of Building C **not** overlying storm drains or deep fill. Overexcavation and recompaction should be performed as detailed in Section 5.1.2, particularly where spread footings may overlie deeper fill, but **not** over storm drains. Spread footing design parameters solely for new shear walls in Buildings A and D (and portions of Building C) are as follows:

- 5.3.1 Minimum Embedment and Width:** Based on our preliminary exploration, footings for proposed new shear walls should have a minimum embedment of 30 inches and a minimum width of 18 inches. Embedment is defined as depth below lowest adjacent grade.
- 5.3.2 Allowable Bearing Capacity:** An allowable net bearing capacity of 3,000 pounds-per-square-foot (psf) may be used, based on recommended minimum embedment depth and footing width, above. This allowable bearing value may be increased by 600 psf per foot increase in embedment-depth or width to a maximum allowable bearing pressure of 6,000 psf. These allowable bearing pressures are for total dead load and sustained live loads, and can be increased by one-third when considering short-duration wind or seismic loads. Footing reinforcement should be designed by the structural engineer.
- 5.3.3 Lateral Load Resistance:** Soil resistance available to withstand lateral loads on a shallow foundation is a function of the frictional resistance along the base of the footing and the passive resistance that may develop as the face of the structure tends to move into the soil. The frictional resistance between the base of the foundation and the subgrade soil may be computed using a



coefficient of friction of 0.30. The passive resistance may be computed using an equivalent fluid pressure of 250 pounds-per-cubic-foot (pcf), assuming there is constant contact between the footing and undisturbed soil. These friction and passive values have already been reduced by a factor-of-safety of 1.5, and can be increased by one-third when considering short-duration wind or seismic loads. For spread footings and slabs-on-grade bearing on properly compacted fill over undisturbed native soils, full friction and passive resistance can be combined to resist lateral loads; although some lateral displacement is required to mobilize full passive resistance.

5.3.4 Settlement Estimates: Expansive soil heave is a concern at this site for lightly loaded footings and flatwork. The above recommended allowable bearing capacity is generally based on a total allowable, post-construction settlement of 1 inch for shear wall static loads not exceed 15 kips-per-foot of wall for dead plus sustained live loads when bearing on undisturbed old alluvium . Differential settlement due to static loading is generally estimated at ½ inch over a horizontal distance of 30 feet. However, since Buildings A, C and D have presumably reached foundation equilibrium decades ago, any new footing settlement will become differential settlement between new foundations relative to the existing structure. If sustained (dead) loads exceed 15 kips-per-foot of bearing wall, total settlements in excess of an inch could result, manifest as differential settlement between new and existing structural elements.

Once developed by the Structural Engineer, we should review total dead and sustained live loads for critical columns including plan location and span distance, to evaluate if differential settlements between dissimilarly loaded columns will be tolerable. Excessive differential settlement can be mitigated with the use of reduced bearing pressures, deeper footing embedment, possibly changing overexcavation schemes and using imported base material under spread footings, or possibly other methods (e.g. piles).

5.4 Drilled Cast-In-Place Concrete (CIDH) Piles (New Shear Walls)

Micropiles can also be considered to support new shear walls; see:

<http://www.haywardbaker.com/WhatWeDo/Techniques/StructuralSupport/Micropiles/default.aspx>

New shear walls should be supported solely either on spread footings or solely on drilled, cast-in-place concrete friction piles, as space permits and at the discretion of the project Structural Engineer (SE) based on uplift load demands and other structural considerations. **Spread footings are not recommended to span over storm drains under Building C.** Cast-in-place concrete friction piles



are also known as cast-in-drilled-hole (CIDH) piles. Piles should be designed as specified in Section 1810A.3.9 of the 2013 California Building Code (CBC). Specific pile design recommendations are presented below.

5.4.1 CIDH Pile Vertical Load Capacity: Piles must derive support solely from the underlying native alluvium below any undocumented fill. Recommended allowable vertical downward pile capacities are presented on Figure 7, *Pile Downward Capacities*, as a function of penetration into undisturbed native alluvium below undocumented fill soils. Fill depth at proposed pile locations (on the order of 5- to 10-feet) should be added to design pile penetration into undisturbed native alluvium, to determine total design length of piles. This, ultimately, must be verified at the time of pile drilling, during construction, by geotechnical observation during pile installation. These are “net” capacities. Therefore, weight of the below-grade portion of piles need not be added to the anticipated vertical loads for structural design. Plotted pile capacities shown are for friction only, **without** end bearing, and these values include a factor-of-safety (FS) of 2.0. Plotted allowable downward capacities are for total dead loads and frequently applied live loads, and can be increased by one-third for short duration wind and seismic loads. Uplift for dynamic loads only, **not** sustained static loads, can be assumed to be half of downward capacities plotted on Figure 7.

These capacities are for undisturbed native alluvium capacities, and do not consider the pile as a reinforced-concrete structural element. Pile reinforcement should be designed by the project Structural Engineer. Relatively low skin friction values have been provided considering reductions in pile capacities due to anticipated undocumented fill downdrag. Capacities can be increased based on results of pile load tests. These values are for isolated single piles. Otherwise, a group action reduction in capacity will be required for piles spaced closer than three diameters on center. For closely spaced piles, vertical capacities should be reduced as follows:

Table 5. Reduction In Closely-Spaced Pile Vertical Capacities

Horizontal Pile Spacing Center-To-Center (pile diameters)	Reduced Static Vertical Capacity (percent)*	
	2 piles in a row	3 piles in a row
2½	90	80
2	80	70
1½	70	60

*Percent of capacity for pile spaced three or more diameters on center

Piles should not be spaced closer than 1½ diameters on center.



5.4.2 Pile Lateral Load Capacity: We do not expect sustained (static) lateral loads on piles. Short duration lateral wind and seismic loads exerted on new shear walls supported on piles and grade beams may be resisted by passive pressures against both the piles and grade beams. A passive equivalent fluid pressure of 240 pounds-per-square-foot per foot of embedment (pcf) acting against grade beams or pile caps can be used, not to exceed total passive pressure of 2,000 pounds-per-square-foot (psf). A passive resistance based on an equivalent fluid pressure of 480 pcf, acting against the projected area of an individual pile below lowest adjacent grade, can also be used for design, assuming 1/2-inch lateral deflection of a free pile head. This maximum passive pressure on piles, however, should not exceed 4,000 psf.

For design of pile lateral load resistance during short duration wind and/or seismic loads, laterally loaded pile design capacities are tabulated below:

Table 6. Drilled Cast-In-Place Pile Preliminary Lateral Capacities

Lateral Load Parameter As A Function Of Pile Diameter (inches)	18-inch		24-Inch		30-Inch	
	Free	Fixed	Free	Fixed	Free	Fixed
Maximum Lateral Load for 1/4-Inch Deflection At Head (kips)	7	16	12	26	19	40
Maximum Moment (kip-feet)	26	-50	51	-89	93	-151
Depth To Maximum Moment (feet)	5	-0-	6½	-0-	7	-0-
Depth To First Zero Moment (feet)	16	3½	19½	3½	23	4

These capacities are for a 1/4-inch dynamic (elastic) deflection at the top of 18-, 24- and 30-inch diameter drilled cast-in-place concrete piles, with a 28-day concrete compressive strength of 3,000 pounds-per-square-inch (psi). Both free head (no moment at head) and fixed head (translation without rotation at the head) lateral capacities are provided. For this analysis, a 40-foot-long pile was modeled with level ground around the pile in the direction of loading, for at least 40 feet. No factor of safety has been applied to these capacities. Individual pile lateral load/deflection criteria can also be developed upon request, based upon the pile stiffness (EI) and sustained vertical load. Lateral capacities should be reduced for pile groups when the lateral (horizontal) load vector is in the direction of aligned piles as follows:



Table 7. Reduction In Closely-Spaced Pile Lateral Capacities

Horizontal Pile Spacing Center-To-Center (pile diameters)	Reduced Pile Capacity In Direction of Lateral Load (percent)*
7	94
6	88
5	82
4	75
3	70
2	65
1½	60

*Percent of capacity for pile spaced eight or more diameters on center aligned parallel to the lateral (horizontal) load vector

Lateral load capacity of piles need **not** be reduced for load vectors in a direction perpendicular to a row of piles.

5.4.3 Pile Settlement: Settlement of drilled cast-in-place concrete piles includes elastic shortening of the pile, as well as settlement of surrounding soil induced by mobilization skin-friction resistance. For design loads presented above, individual pile settlement is anticipated to be on the order of ¼-inch or less (in areas of 10 feet of undocumented fill or less where raising grade is **not** proposed), and will most likely be negligible. These settlement estimates are based on the assumption that finish grades will be approximately the same as existing grades. In the unlikely event that finish grades are raised substantially (>5 feet) where piles are installed, then underlying compressible undocumented fill soils could settle more relative to these piles, resulting in additional downdrag. Piles may experience additional settlement to mobilize adequate resistance to accommodate any downdrag.

Total post construction settlement for the recommended pile foundations should not exceed ¼-inch, and post construction differential settlement between columns spaced no more than 50 feet on center (founded solely on piles) should be less-than (<) ¼-inch due to static loads.

5.5 Concrete Slab-On-Grade

New replacement concrete slabs-on-grade should be designed by the structural engineer in accordance with 2013 CBC requirements for soils with a moderate expansion potential. More stringent requirements may be required by the structural engineer and/or architect; however, slabs-on-grade should have the following minimum recommended components:



- **Subgrade:** On-site soils are sometimes expansive and will shrink and swell with changes in the moisture content. Therefore, floor slabs-on-grade and adjacent concrete flatwork should be underlain by at least 18-inches of relatively non-expansive soil ($EI < 30$). Slab-on-grade subgrade soil should be moisture conditioned to or within 3% of optimum moisture content, to a minimum depth of 18-inches within building footprints, and compacted to 90% of the modified proctor (ASTM D 1557) laboratory maximum density prior to placing either a moisture barrier, steel and/or concrete.
- **Moisture Barrier:** A moisture barrier consisting of at least 15-mil-thick Stego-wrap vapor barriers (see: http://www.stegoindustries.com/products/stego_wrap_vapor_barrier.php), or equivalent, should then be placed below slabs where moisture-sensitive floor coverings or equipment will be placed.
- **Reinforced Concrete:** A conventionally reinforced concrete slab-on-grade with a thickness of at least 5-inches should be placed in pedestrian areas without heavy loads. This thickness can be reduced to 4-inches in areas where solely one-sack (or more) CLSM backfill is used. Reinforcing steel should be designed by the structural engineer, except when placed on potentially expansive site clays, where we recommend as a minimum that No. 3 rebar be placed at 18-inches on-center, each direction (perpendicularly), mid-depth in the slab. We defer to the project Structural Engineer to design/choose reinforcing for slabs-on-grade overlying solely CLSM backfill. A modulus of subgrade reaction (k) as a linear spring constant, of 75 pounds-per-square-inch per inch deflection (pci) can be used for design of heavily loaded slabs-on-grade, assuming a linear response up to deflections on the order of $\frac{3}{4}$ -inch.

Minor cracking of concrete after curing due to expansion, drying and shrinkage is normal and should be expected. However, cracking is often aggravated by a high water-to-cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. The use of low-slump concrete or low water/cement ratios can reduce the potential for shrinkage cracking.

5.6 Retaining Wall Design

- 5.6.1 **Design Static Lateral (Horizontal) Earth Pressures:** We recommend that existing or new retaining walls be backfilled with imported non-expansive soils ($EI \leq 20$), if/where new fill is placed behind retaining walls. For drained retaining walls with level backfill, the following parameters may be used for



retaining wall design:

Table 8. Retaining Wall Design Earth Pressures

Retaining Wall Condition (Level Backfill)	Equivalent Fluid Pressure (pounds-per-cubic-foot)*	
	Existing Wall**	New Wall***
Active (cantilever)	45	35
At-Rest (braced)	100	45
Passive Resistance (compacted fill)	250	

*Only for level and drained properly compacted backfill
 Based on SM-SC soil classification and Table 1610A.1 of the 2013 CBC
 ***Backfill EI≤20, SE≥20, SP, GP, SM and/or GM

Cantilever walls that are designed to yield at least 0.001H, where H is equal to the wall height, may be designed using the active condition. Rigid walls and walls braced at the top should be designed using the at-rest condition, which is expected to be the case for most existing buildings walls. Passive pressure is used to compute soil resistance to lateral structural movement.

5.6.2 Retaining Wall Sliding and Overturning: Total depth of retained earth for design of walls and for uplift resistance, should be measured as the vertical height of the stem below the ground surface at the wall face for stem design, or measured at the heel of the footing for overturning and sliding. A soil unit weight of 120 pounds-per-cubic-foot (pcf) may be assumed to calculate surcharge weight of properly compacted backfill over wall footings, if drained; or 60 pcf if submerged (undrained).

5.6.3 Retaining Wall Surcharges: In addition to the above lateral forces due to retained earth, surcharge due to above grade loads on the wall backfill, such as existing building foundations, should be considered in design of retaining walls. Vertical surcharge loads behind a retaining wall on or in backfill within a 1:1 (horizontal:vertical) plane projection up and out from the retaining wall toe, should be considered as lateral and vertical surcharge. Unrestrained (cantilever) retaining walls should be designed to resist one-third of these surcharge loads applied as a uniform horizontal pressure on the wall. Braced walls should also be designed to resist an additional uniform horizontal-pressure equivalent to one-half of uniform vertical surcharge-loads. Consideration should be given to underpinning existing structures to remain in this zone, to reduce surcharge loads on the wall and to reduce the potential for inducing damaging settlement within these existing buildings, due to soil movement within the wall influence zone.

In areas where autos and pickup trucks will drive (e.g. north side), we suggest assuming a uniform vertical surcharge of 300 psf, which would result in active and at-rest horizontal surcharges of 100 psf and 150 psf, respectively. This



should be doubled in areas of heavy construction traffic (such as concrete trucks, heavy equipment delivery-trucks, etc.). If crane outrigger loads or other point load sources are applied as wall surcharge, this will require additional analyses based on load source and location relative to the wall.

- 5.6.4 Retaining Wall Incremental Seismic Loads:** Seismic incremental loads need **not** be added to retaining walls with stem heights on the order of (\leq) 6-feet or less, with adjacent level backfill. However, for taller walls, incremental seismic earth pressures of 30 pounds-per-cubic-foot (pcf) can be applied for design, at the discretion of the Structural Engineer, in addition to static earth and surcharge pressures presented above. This is based on traditional Mononobe-Okabe (1929) equations. Traditionally, this incremental seismic earth pressure has been applied as an inverted triangle (inverted equivalent fluid pressure), with largest dynamic earth pressure occurring at the top of the wall (upper ground surface). Resultant seismic earth pressure force has traditionally been applied at approximately 0.6H from the bottom of the wall, where H is the wall (stem) height (e.g. Seed and Whitman, 1970).

However, recent studies (Sitar, et. al., 2010, U.C. Berkeley) suggest a uniform pressure distribution is likely closer to actual lateral seismic loads, so a uniform pressure of 15H (psf) applied as a uniform/rectangular pressure distribution can also be considered (based on current research and observations), at the discretion of the Structural Engineer. It is important to consider that for level backfill and in areas without shallow groundwater, both case history reviews and centrifuge test results suggest all of these approaches above are conservative, particularly for retaining walls with modest heights such as we expect **within** existing buildings.

- 5.6.5 Retaining Wall Drainage:** Adequate drainage may be provided by a subdrain system positioned behind the walls. Typically, this system consists of a 4-inch minimum diameter perforated pipe placed near the base of the wall (perforations placed downward). The pipe should be bedded and backfilled with pervious backfill material described in Section 300-3.5.2 of the *Standard Specifications for Public Works Construction* (Green Book), 2012 Edition. This pervious backfill should extend at least 2 feet out from the wall and to within 2 feet of the outside finished grade. This pervious backfill and pipe should be wrapped in filter fabric, such as Mirafi 140N or equivalent, placed as described in Section 300-8.1 of the *Standard Specifications for Public Works Construction* (Green Book), 2012 Edition. The subdrain outlet should be connected to a free-draining outlet or sump.

Miradrain, Geotech Drainage Panels, or Enkadrain drainage geocomposites, or similar, may be used for wall drainage as an alternative to the Class 2 Permeable Material or drain rock backfill, particularly where horizontal space is limited adjacent to shoring (where walls are cast against shoring). These



drainage panels should be connected to the perforated drainpipe at the base of the wall.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Wet Clays

Site clays likely are already predominantly over optimum moisture content; and therefore, will be more difficult to compact compared to sands. Disking, blending, cement and/or lime treatment may be considered by the earthwork contractor to facilitate compaction. However, additional sulfate testing will be required prior to treating/mixing soils with lime, to avoid an adverse sulfate heave reaction. Lime and/or cement treatment also require specialized equipment to blend plastic clay thoroughly with cement or lime, to be effective. Choice of means and methods to mitigate wet clay compaction difficulty will be at the discretion of the contractor based on weather at the time of earthwork, available materials and equipment, among other considerations specific to the contractor. However any proposed cement and/or lime treatment must be reviewed and approved by Leighton Consulting, Inc. and the District prior to implementation.

6.2 Excavations

Based on our field observations, caving of cohesionless strata and loose fill soil will likely be encountered in unshored excavations. To protect workers entering excavations, excavations should be performed in accordance with OSHA and Cal-OSHA requirements, and the current edition of the California Construction Safety Orders, see:

<http://www.dir.ca.gov/title8/sb4a6.html>

Contractors should be advised that fill soil should be considered Type C soil as defined in the California Construction Safety Orders. As indicated in Table B-1 of Article 6, Section 1541.1, Appendix B, of the California Construction Safety Orders, excavations less-than (<) 20 feet deep within Type C soil should be sloped back no steeper than 1½:1 (horizontal:vertical), where workers are to enter the excavation. This may be impractical near adjacent existing utilities and structures; so shoring may be required depending on trench locations. Stiff undisturbed native clay will stand steeper. Loose, non-cohesive sandy gravel channels below the site should be expected to ravel and cave in unshored excavations.



During construction, soil conditions should be regularly evaluated to verify that conditions are as anticipated. The contractor is responsible for providing the "competent person" required by OSHA standards to evaluate soil conditions. Close coordination between the competent person and Leighton Consulting, Inc. should be maintained to facilitate construction while providing safe excavations.

Excavations must not undermine existing foundations for existing buildings to remain. Excavations must not encroach within a 1:1 (horizontal:vertical) wedge extending down and out from existing shallow footings to remain. Shoring or underpinning of existing building foundations will likely be required if excavations will undermine adjacent existing structures.

6.3 Cast-In-Place Concrete Piles Construction

Bottoms of drilled cast-in-place pile excavations should be reasonably free of loose soil before reinforcing steel is installed and concrete is placed. We recommend that Leighton Consulting, Inc. observe pile drilling, in accordance with Section 1705A.8 of the 2013 California Building Code, to establish that piles are founded in suitable undisturbed native materials and constructed in accordance with the recommendations presented in this report. Cast-in-place piles should be constructed in accordance with Section 205-3.3.2 of the 2015 *Standard Specifications for Public Works Construction* (Green Book).

Due to the loose nature of fill and cohesionless alluvium, casing of each shaft may be necessary. If water cannot be removed from excavations prior to concrete placement, then concrete will need to be placed by tremie pipe or concrete pump hose. The concrete should be tremied or pumped to the bottom of the hole keeping the tremie or pipe below the surface of the concrete to avoid entrapment of water in placed concrete. As concrete is poured, water is displaced out of the hole. Some difficult drilling through the fill soils may be experienced due to rubble in the fill. The drilling contractor should be equipped to penetrate through this rubble, if encountered.

We understand that closely spaced piles may be required for this congested site. Care should be taken to avoid "blow-outs" into open drilled shafts when placing fresh concrete in adjacent closely spaced drilled shafts. Fluid pressure of uncured concrete under on-the-order-of (\approx) 40-feet of head can deform or displace soils into an adjacent closely spaced shaft, particularly in rubble fill with



voids. For new piles placed closer-than ($<$) $2\frac{1}{2}$ diameters on center, construction sequencing should require curing concrete in one shaft before drilling the adjacent closely spaced shaft. Or, multiple (two or more) temporary steel casings can be used to stabilize multiple (two or more) adjacent closely-spaced shafts simultaneously. Other options can be considered as the means-and-methods of the foundation contractor.

6.4 Geotechnical Services During Construction

Our geotechnical recommendations are contingent upon Leighton Consulting, Inc., providing geotechnical observation and testing services during earthwork and foundation construction. There is a potential for encountering deeper undocumented fill or otherwise unacceptable existing soil between or beyond our boring locations. We are unaware of any existing fill placement documentation for these building sites. Therefore, inconsistent existing fill materials and consistencies may be encountered during construction, possibly requiring revised geotechnical recommendations.

Our geotechnical recommendations provided in this report are based on information available at the time the report was prepared and may change as plans are developed. Additional geotechnical exploration, testing and/or analysis may be required based on final plans. Leighton Consulting, Inc. should review site grading, foundation and shoring (if any) plans when available, to comment further on geotechnical aspects of this project and check to see general conformance of final project plans to recommendations presented in this report.

Leighton Consulting, Inc. should be retained to provide geotechnical observation and testing during excavation and all phases of earthwork. Our conclusions and recommendations should be reviewed and verified by us during construction and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- During all excavation,
- During compaction of all fill materials,
- During pile installation,
- During utility trench backfilling and compaction,
- During pavement subgrade and base preparation, and/or
- If and when any unusual geotechnical conditions are encountered.



7.0 LIMITATIONS

This report does not address the potential for encountering hazardous materials in site soils nor groundwater.

This report was necessarily based in part upon data obtained from a limited number of observances, site visits, soil samples, tests, analyses, histories of occurrences, spaced subsurface explorations and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This exploration was performed with the understanding that only new shear walls are proposed to be constructed within existing buildings.

Until reviewed and accepted by the California Geological Survey (CGS), this report may be subject to change. Changes may be required as part of the CGS review process. Leighton Consulting, Inc. assumes no risk or liability for consequential damages that may arise due to design work progressing before this report is reviewed and accepted by CGS.

This report was prepared for the Beverly Hills Unified School District based on their needs, directions and requirements at the time of our exploration, in accordance with generally accepted geotechnical engineering practices at this time in California for public schools. This report is not authorized for use by, and is not to be relied upon by, any party except the District and their design and construction management team, with whom Leighton Consulting, Inc. has contracted for this work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton Consulting, Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, and/or strict liability of Leighton Consulting, Inc.



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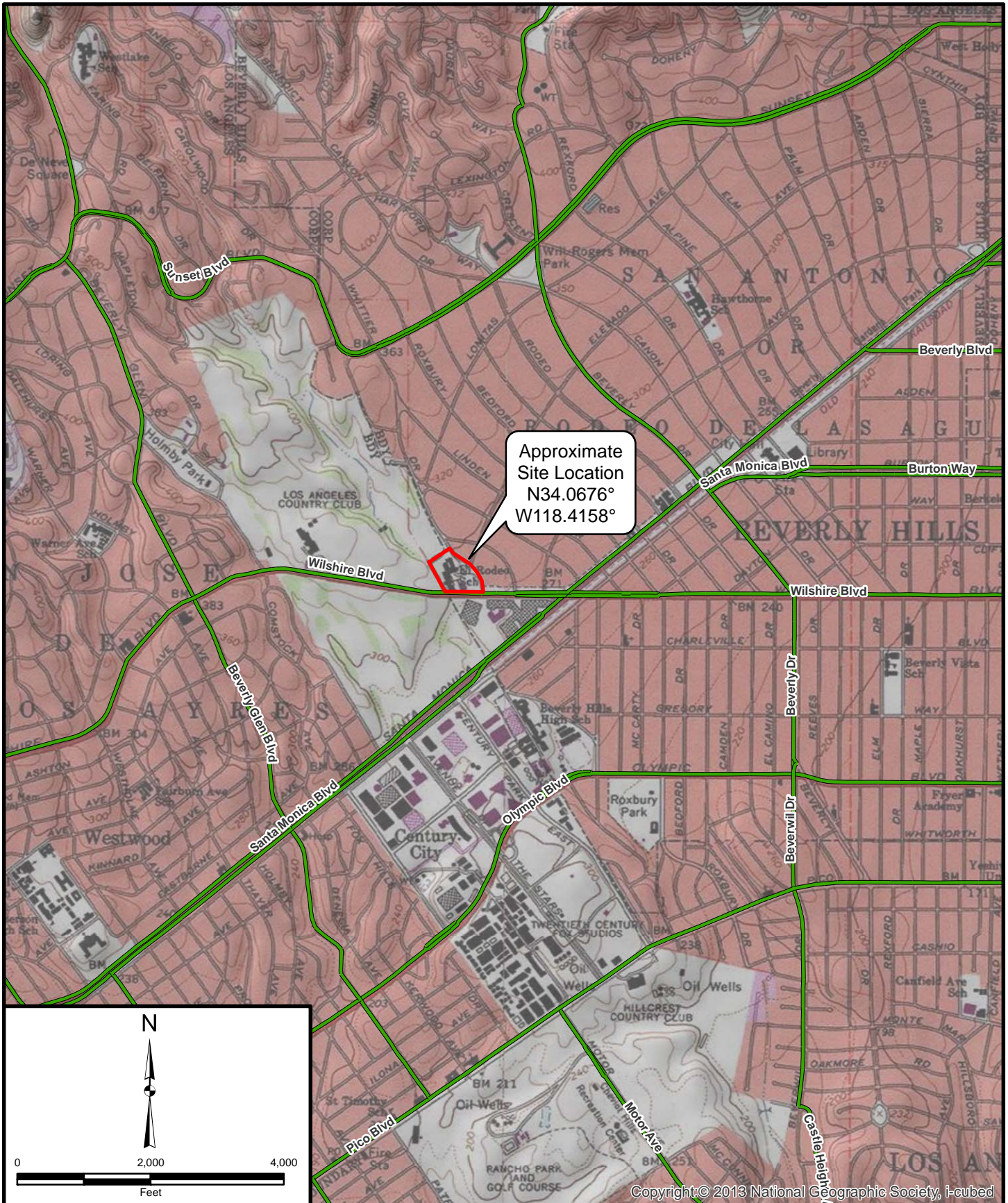


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Approximate
Site Location
N34.0676°
W118.4158°

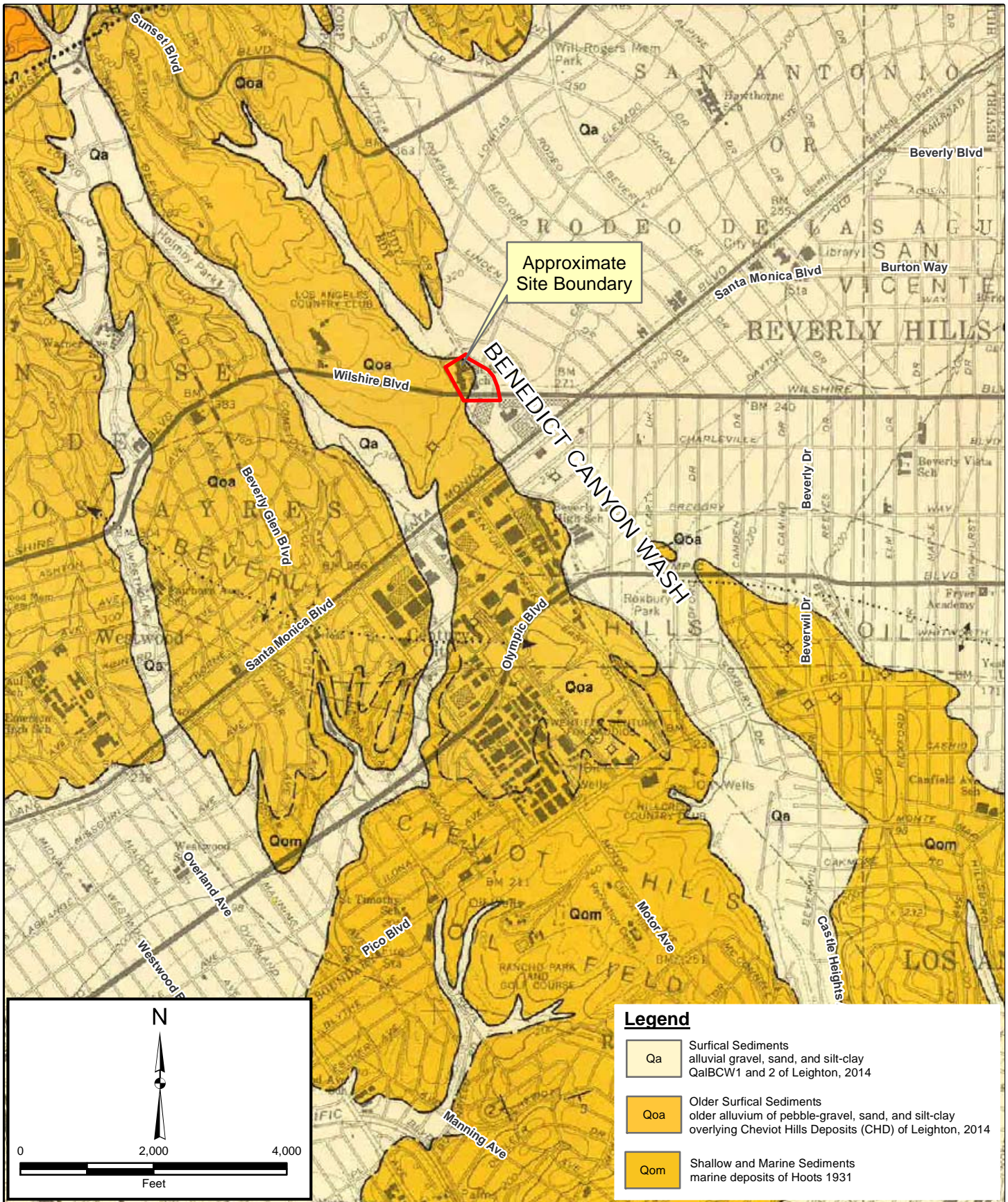
Project: 10274.015	Eng/Geol: TCB/JAR
Scale: 1" = 2,000'	Date: October 2015
Base Map: ESRI Resources Center, 2014	
Author: (btran)	

SITE LOCATION MAP

El Rodeo K-8
605 Whittier Boulevard
Beverly Hills, California

Figure 1

Leighton



Project: 10274.015	Eng/Geol: TCB/JAR
Scale: 1" = 2,000'	Date: October 2015
Geology: Geologic Map of the Beverly Hills And Van Nuys (South 1/2) Quadrangles, Los Angeles County, California by Thomas W. Dibblee, Jr., 1991.	

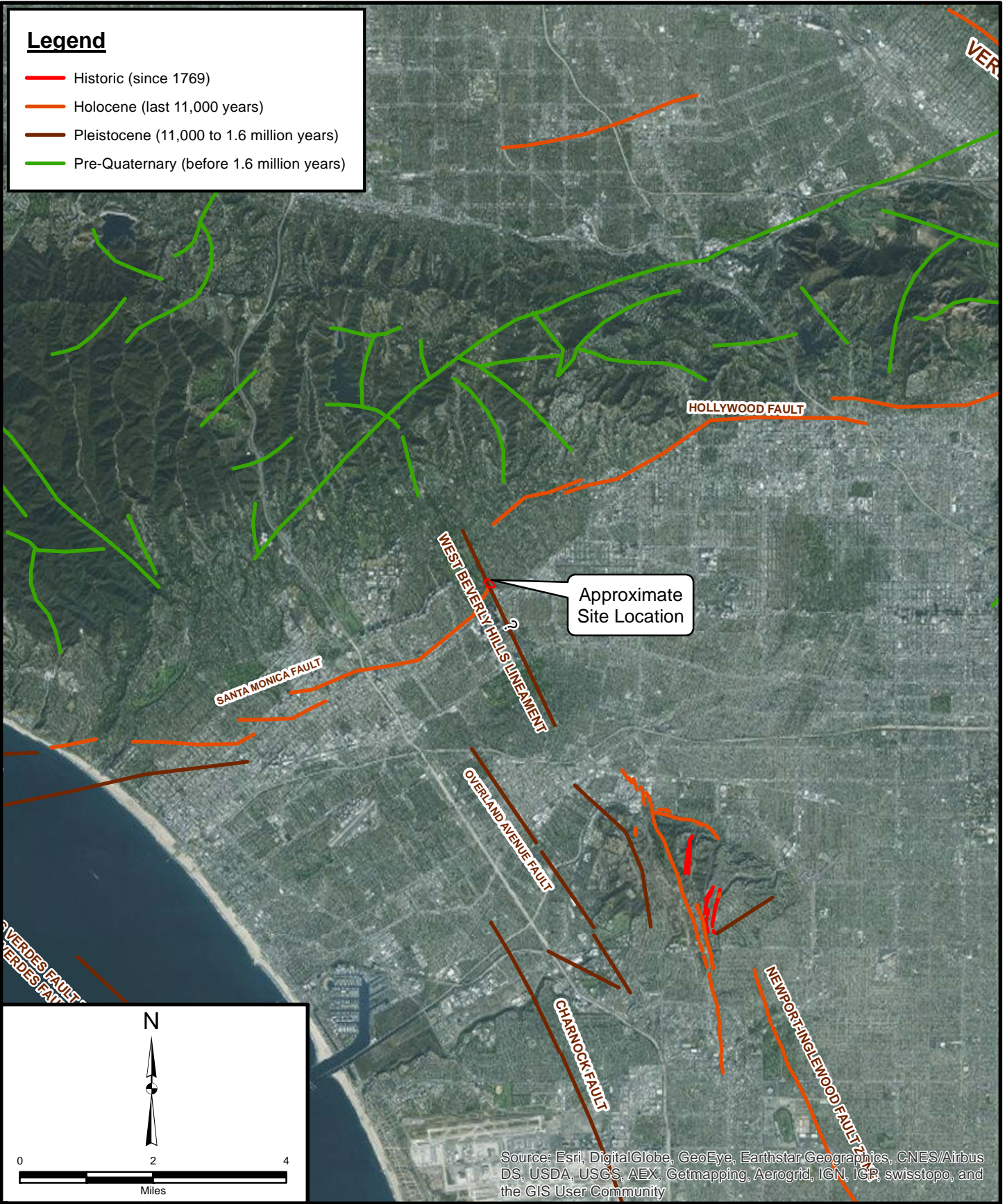
REGIONAL GEOLOGIC MAP
 El Rodeo K8
 605 Whittier Drive
 Beverly Hills, California

Figure 2

Leighton

Legend

- Historic (since 1769)
- Holocene (last 11,000 years)
- Pleistocene (11,000 to 1.6 million years)
- Pre-Quaternary (before 1.6 million years)



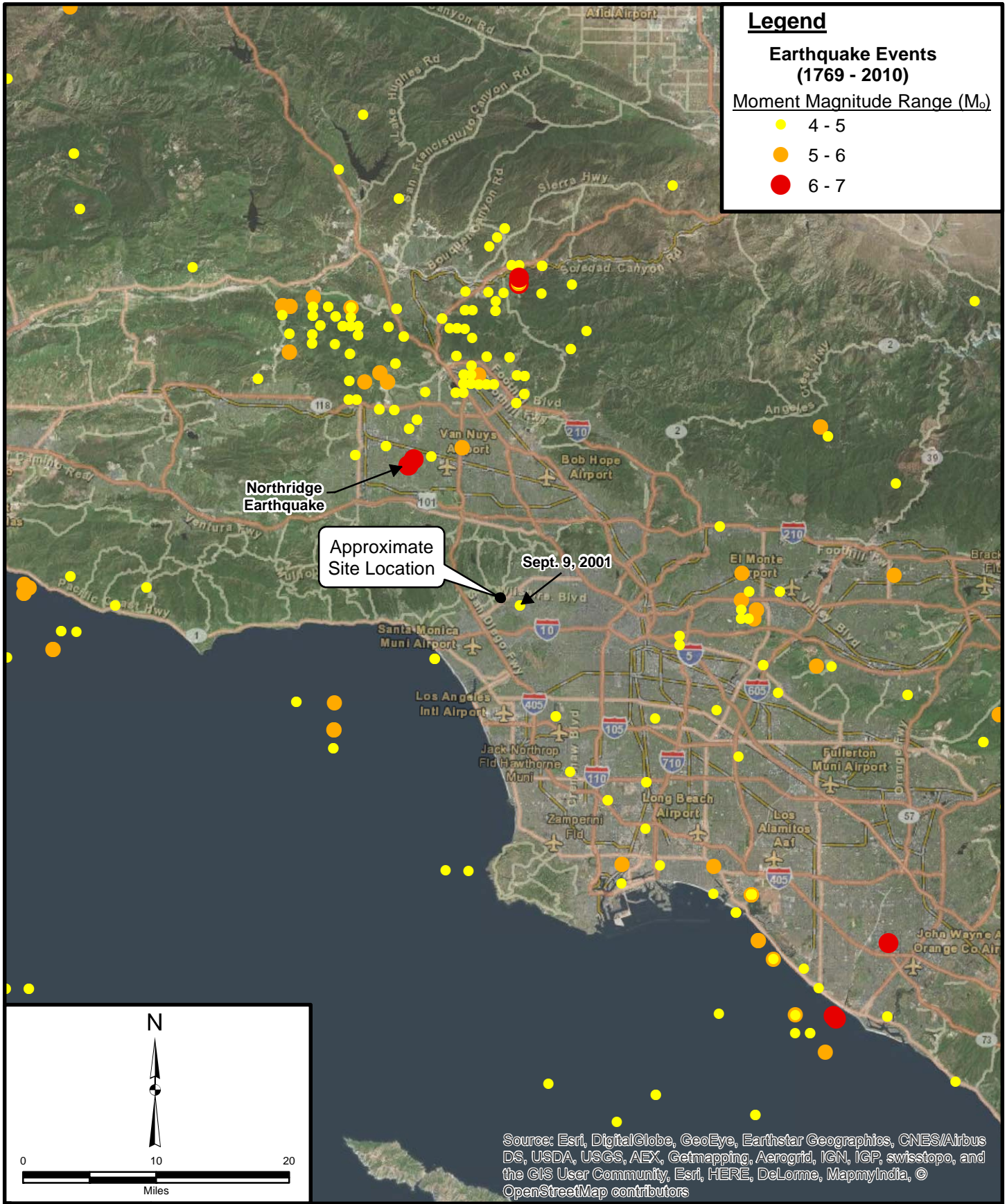
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Project: 10274.015	Eng/Geol: TCB/JAR
Scale: 1" = 2 miles	Date: October 2015
Base Map: ESRI Resources Center, 2014 Faults: CGS 2010	
Author: (btran)	

REGIONAL SURFACE FAULT MAP
 El Rodeo K-8
 605 Whittier Boulevard
 Beverly Hills, California

Figure 3

Leighton



Legend

Earthquake Events (1769 - 2010)

Moment Magnitude Range (M₀)

- 4 - 5
- 5 - 6
- 6 - 7

Approximate Site Location

Sept. 9, 2001

Northridge Earthquake

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors

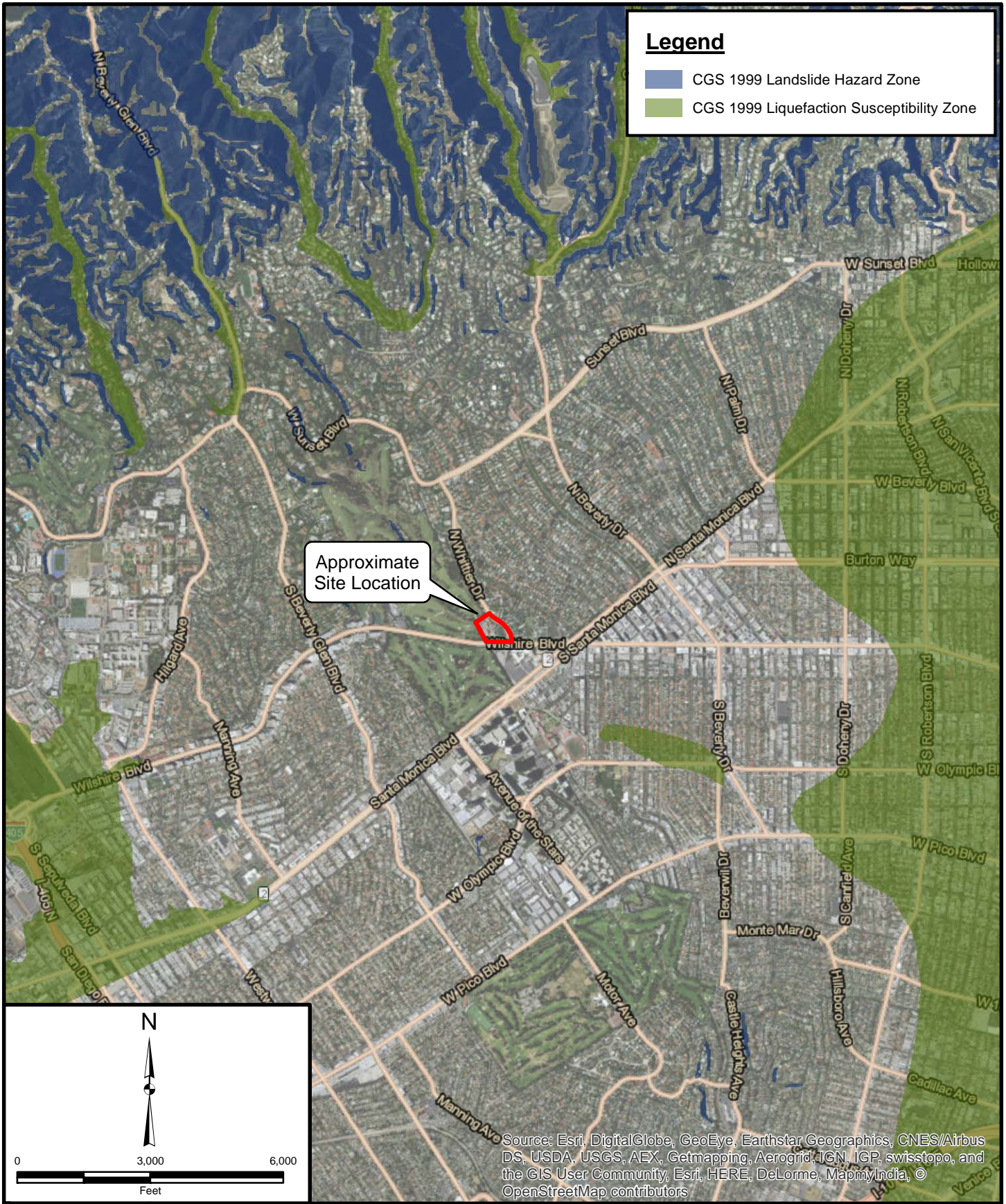
Project: 10274.015	Eng/Geol: TCB/JAR
Scale: 1" = 10 miles	Date: October 2015
Base Map: ESRI ArcGIS Online 2015 Thematic Information: Leighton, USGS, NCEDC	
Author: Leighton Geomatics (btran)	

HISTORICAL SEISMICITY MAP

El Rodeo K-8
605 Whittier Boulevard
Beverly Hills, California

Figure 4

Leighton

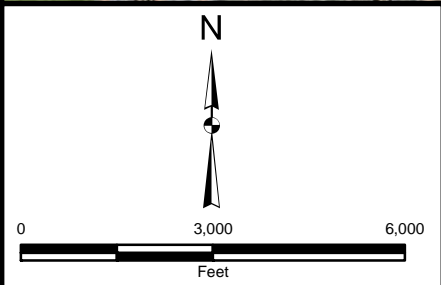


Legend

- CGS 1999 Landslide Hazard Zone
- CGS 1999 Liquefaction Susceptibility Zone

Approximate Site Location

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors



Project: 10274.015	Eng/Geol: TCB/JAR
Scale: 1" = 3,000'	Date: October 2015
Base Map: ESRI Resources Center, 2014 ArcGIS Online service, 2013 California Division of Mines and Geology (since renamed California Geological Survey), 1999 (seismic hazard zones) Author: (btran)	

SEISMIC HAZARD ZONE MAP

El Rodeo K-8
 605 Whittier Boulevard
 Beverly Hills, California

Figure 5

Leighton



Legend

- 500 Year Flood Plain
- 100 Year Flood Plain

Approximate Site Location

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors

N

0 3,000 6,000

Feet

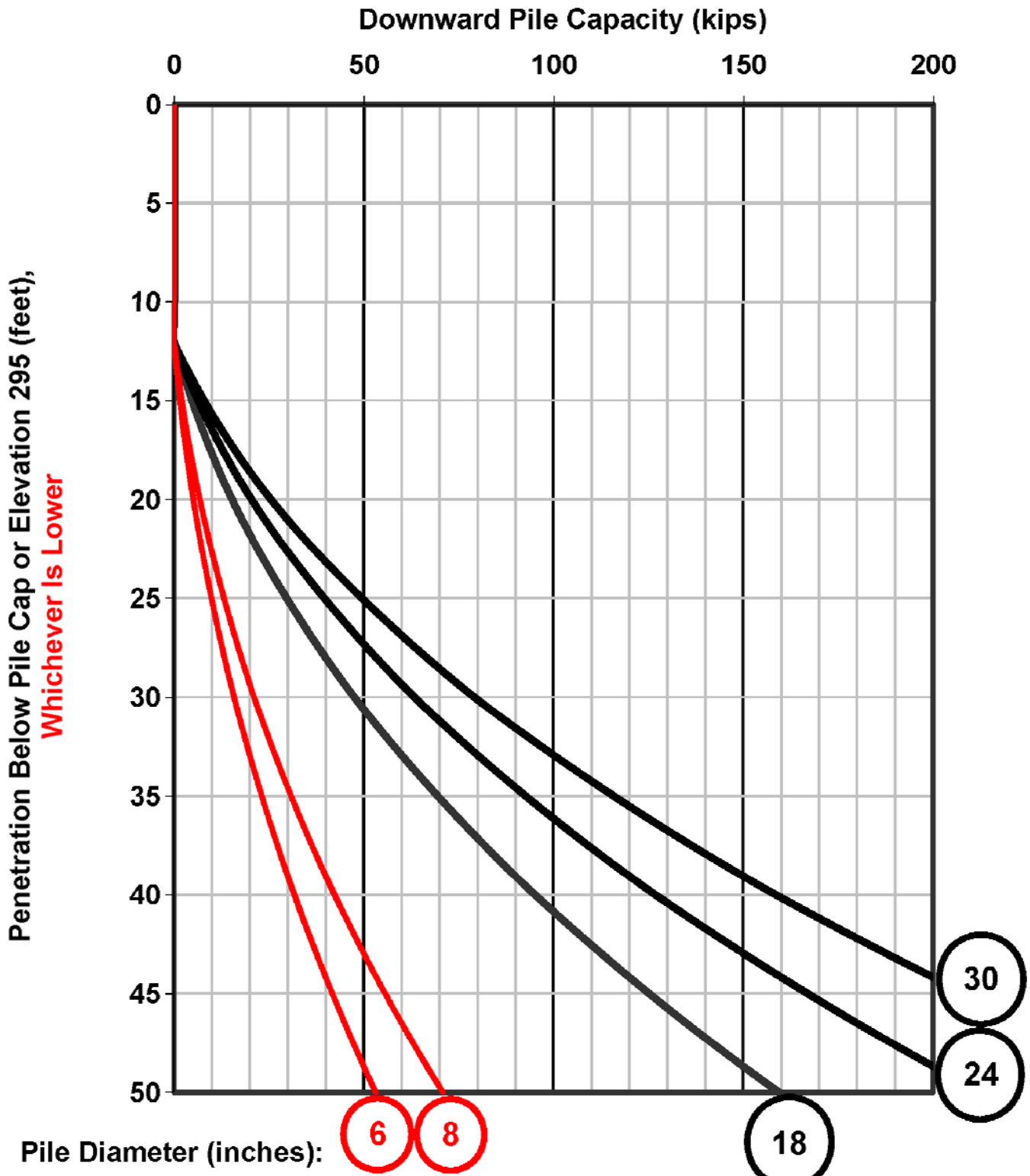
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Scale: 1" = 3,000'	Date: October 2015
Base Map: ESRI Resources Center, 2014 Thematic Info: FEMA Q3 data, 2014	
Author: (btran)	

FLOOD HAZARD ZONE MAP

El Rodeo K-8
605 Whittier Boulevard
Beverly Hills, California

Figure 6

Leighton



Proj: 10274.015	Eng/Geol: TCB/JAR
Scale: NTS	Date: 11/2015
Reference:	

PILE DOWNWARD CAPACITIES

El Rodeo K8
605 Whittier Drive
Beverly Hills, California

Figure 7



P:\DRAFTING\10274\10\CAD\GF_2015-10-15\10274-015_F07-DC_20151112.DWG (11-10-15 1:24:09PM) Plotted by: brian

EXPLORATION MAP

El Rodeo K-8 School Seismic Mitigation
605 Whittier Drive
Beverly Hills, California

Plate 1



Leighton




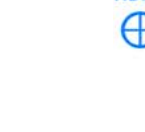



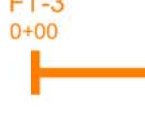




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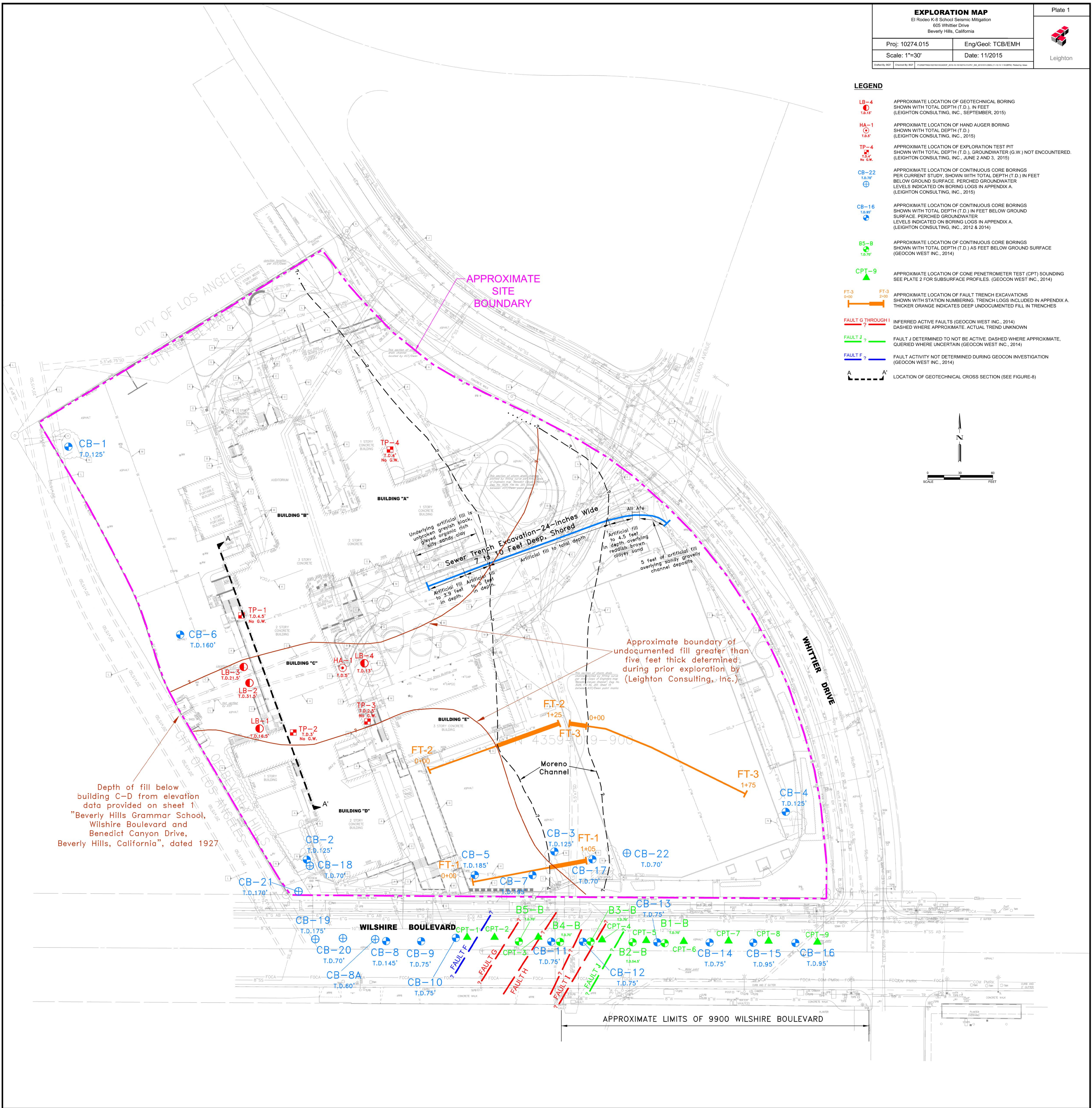
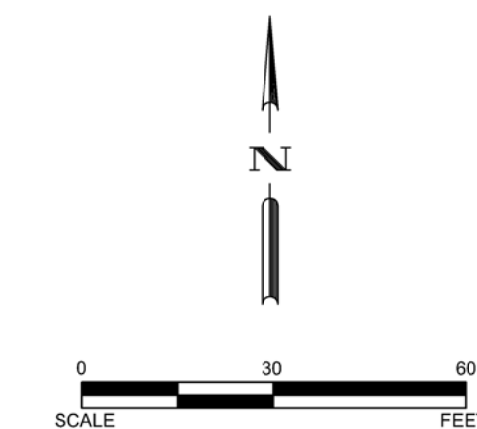
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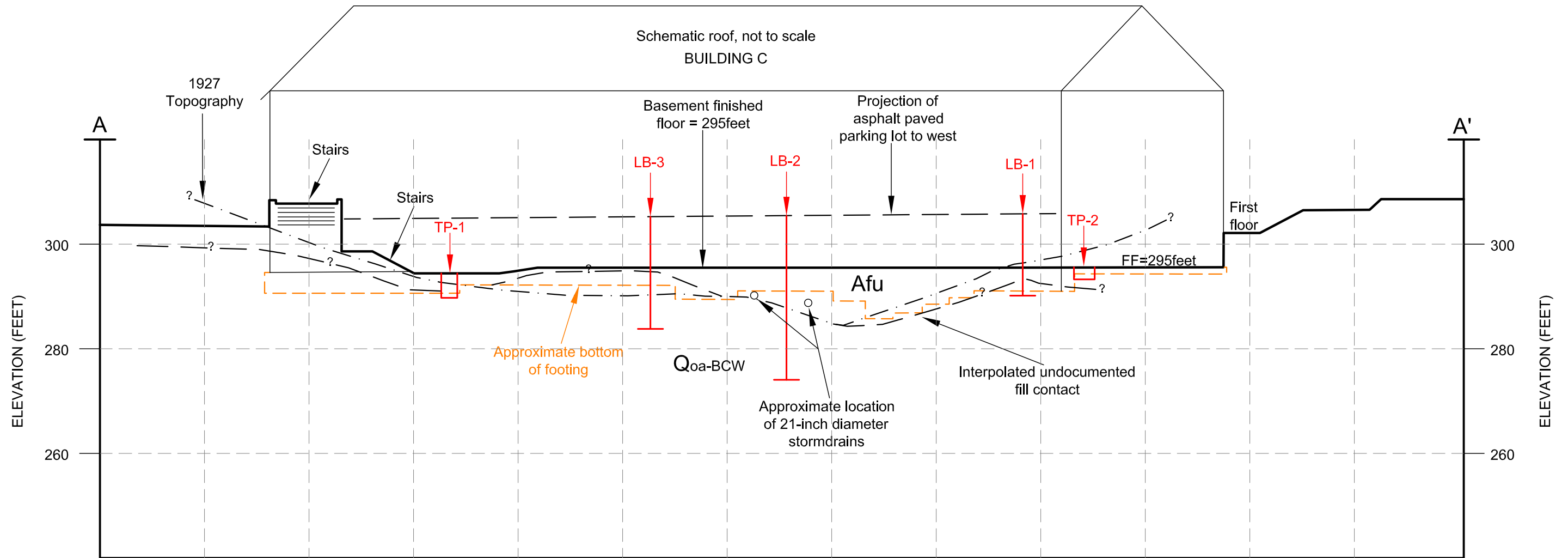
Scale: 1"=30'

Date: 11/2015

LEGEND

-  **LB-4** APPROXIMATE LOCATION OF GEOTECHNICAL BORING SHOWN WITH TOTAL DEPTH (T.D.), IN FEET (LEIGHTON CONSULTING, INC., SEPTEMBER, 2015)
-  **HA-1** APPROXIMATE LOCATION OF HAND AUGER BORING SHOWN WITH TOTAL DEPTH (T.D.) (LEIGHTON CONSULTING, INC., 2015)
-  **TP-4** APPROXIMATE LOCATION OF EXPLORATION TEST PIT SHOWN WITH TOTAL DEPTH (T.D.), GROUNDWATER (G.W.) NOT ENCOUNTERED. (LEIGHTON CONSULTING, INC., JUNE 2 AND 3, 2015)
-  **CB-22** APPROXIMATE LOCATION OF CONTINUOUS CORE BORINGS PER CURRENT STUDY, SHOWN WITH TOTAL DEPTH (T.D.) IN FEET BELOW GROUND SURFACE. PERCHED GROUNDWATER LEVELS INDICATED ON BORING LOGS IN APPENDIX A. (LEIGHTON CONSULTING, INC., 2015)
-  **CB-16** APPROXIMATE LOCATION OF CONTINUOUS CORE BORINGS SHOWN WITH TOTAL DEPTH (T.D.) IN FEET BELOW GROUND SURFACE. PERCHED GROUNDWATER LEVELS INDICATED ON BORING LOGS IN APPENDIX A. (LEIGHTON CONSULTING, INC., 2012 & 2014)
-  **B5-B** APPROXIMATE LOCATION OF CONTINUOUS CORE BORINGS SHOWN WITH TOTAL DEPTH (T.D.) AS FEET BELOW GROUND SURFACE (GEOCON WEST INC., 2014)
-  **CPT-9** APPROXIMATE LOCATION OF CONE PENETROMETER TEST (CPT) SOUNDING SEE PLATE 2 FOR SUBSURFACE PROFILES. (GEOCON WEST INC., 2014)
-  **FT-3 0+00** APPROXIMATE LOCATION OF FAULT TRENCH EXCAVATIONS SHOWN WITH STATION NUMBERING. TRENCH LOGS INCLUDED IN APPENDIX A. THICKER ORANGE INDICATES DEEP UNDOCUMENTED FILL IN TRENCHES
-  **FAULT G THROUGH I** INFERRED ACTIVE FAULTS (GEOCON WEST INC., 2014) DASHED WHERE APPROXIMATE. ACTUAL TREND UNKNOWN
-  **FAULT J** DETERMINED TO NOT BE ACTIVE. DASHED WHERE APPROXIMATE. QUERIED WHERE UNCERTAIN (GEOCON WEST INC., 2014)
-  **FAULT F** FAULT ACTIVITY NOT DETERMINED DURING GEOCON INVESTIGATION (GEOCON WEST INC., 2014)
-  **A-A** LOCATION OF GEOTECHNICAL CROSS SECTION (SEE FIGURE-8)





N20°E

- ? — — — Interpolated undocumented fill contact. dashed where approximate, queried where uncertain
- - - - Previous natural grade (1927 topo)
- TP-1 [red L-shaped symbol] Approximate location of test pit (Leighton Consulting, Inc., 2015)
- LB-2 [red T-shaped symbol] Approximate location of geotechnical boring (Leighton Consulting, Inc., 2015)
- Afu [red L-shaped symbol] Artificial fill, undocumented (1927?)
- Qoa-BCW [red L-shaped symbol] Pleistocene older alluvium of Benedict Canyon Wash
- FF [red L-shaped symbol] Finish floor elevation (feet)

References:

- (1) Boundary and Design Survey for Beverly Hills Unified School District, El Rodeo School, Psomas, April 29, 2011
- (2) El Rodeo School, Rattray and Associates, Inc., dated June 6, 1997 (interior basement elevation)
- (3) Beverly Hills Grammar School Whilshire Boulevard and Benedict Canyon Drive, prepared by John C. Austin FAIA, et al, dated February, 1927 (conceptual footing embedment)

Proj: 10274.015	Eng/Geol: TCB/JAR
Scale: 1"=20'	Date: 11/2015
Reference: 1927 AS-BUILT PLANS (AS NOTED ABOVE)	

GEOTECHNICAL CROSS SECTION A-A'

El Rodeo K-8 School Seismic Mitigation
605 Whittier Drive
Beverly Hills, California

Plate 2



APPENDIX A

FIELD EXPLORATION

Our field exploration consisted of a surface reconnaissance and a subsurface exploration program including test pits, core borings and fault trenches. Prior to beginning fieldwork, we prepared a health and safety plan in compliance with 29 CFR 1910.120, and cleared utilities at proposed subsurface exploration locations. These subsurface exploration locations are plotted on Plate 1, *Geotechnical Map* (in pocket), and describe in more detail below:

- **Borings (September 2015):** On September 23 and 26, 2015, four borings were drilled to depths of 5- to 31½-feet deep, east and west of Building C. Both bulk and driven soil samples were obtained, for visual classification and geotechnical laboratory testing. Boring logs are included in this appendix. Soil samples were transported to our Irvine geotechnical laboratory (DSA LEA-63) for geotechnical testing. Borings were backfilled the same day.
- **Test Pits (June 2015):** On June 2 and 3, 2015, existing concrete slabs-on-grade and walkways were saw-cut and removed at four locations, so that exploratory test pits could be hand excavated to depths of 2½ to 4½ feet below existing concrete surface. We obtained bulk soil samples from these test pits, for visual classification and geotechnical laboratory testing. We also performed in-situ density tests using a nuclear density gauge (ASTM D 6938). Each test pit was digitally photographed and logged by a geologist. Test pit photos are included in this appendix behind each test pit log, as Figures A-1 through A-4, *Photo* (with test pit number indicated). Soil samples were transported to our Irvine geotechnical laboratory (DSA LEA-63) for geotechnical testing. Test pits were backfilled the same day.
- **Fault Trenches (2014 and 2015):** Three fault trenches were excavated with a backhoe to depths of 10- to 15-feet at the locations depicted in orange on Plate 1 (in pocket). Cross-braced temporary shoring was required during detailed logging requiring several days to complete. All logging was by or supervised by a California licensed Certified Engineering Geologist (CEG). Two-dimensional fault trench logs are depicted on Plate A-1, *Fault Trench Logs FT-1 and FT-2* (in pocket in Appendix A). FT-3 will be presented in a separate forthcoming report.
- **Borings (2012 and 2014):** From June 17 through July 17, 2014, ten continuous core sample borings were drilled, logged and sampled to depths ranging from 75 feet to 195 feet. Encountered soils were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D 2488). Soil samples were transported to our Irvine geotechnical laboratory (DSA LEA-63) for geotechnical testing. Most of our borings were backfilled immediately after drilling, logging and sampling (the same day); using



drilling cuttings and bentonite grout as backfill. Boring logs are included as part of this appendix.

These attached subsurface exploration logs and related information depict subsurface conditions only at the approximate locations indicated and at the particular date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these locations. Passage of time may result in altered subsurface conditions due to possible environmental changes. In addition, any stratification lines depicted on these logs represent an approximate boundary between soil types, but these transitions can be gradual.



GEOTECHNICAL BORING LOG HA-1

Project No.	10274.015	Date Drilled	9-23-15
Project	El Rodeo School Supplemental	Logged By	ARR
Drilling Co.	Pacific Drilling	Hole Diameter	3"
Drilling Method	Hand Auger - NA	Ground Elevation	298'
Location	See Plate 1; Exploratory Location Map	Sampled By	NA

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
295	0	N S		BB-1				CL	@Surface: compacted soil in landscaped area, few scattered leaves: Artificial Fill, undocumented (Afu) Sandy CLAY, dark brown, moist, fine sand, few coarse sand sized slate, few fine flat subangular slaty gravel @2': Sandy CLAY, mottled light brown and yellowish brown, slightly moist, fine sand, few fine and coarse slaty gravel, and yellowish brown siltstone clasts @4.5': CLAY, dark brown, slightly moist, stiff, few fine and coarse subangular gravel	
290	5								Notes: Total Depth: 5 feet bgs No groundwater encountered during hand-augering Boring backfilled with soil cuttings	
285	10									
280	15									
275	20									
270	25									
30	30									

SAMPLE TYPES:

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

TYPE OF TESTS:

- 200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL

- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE

- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH
- UU UNCONSOLIDATED UNDRAINED TRIAXIAL
- SW SWELL OR SETTLEMENT



GEOTECHNICAL BORING LOG LB-1

Project No.	10274.015	Date Drilled	9-23-15
Project	El Rodeo School Supplemental	Logged By	EMH
Drilling Co.	JDK Drilling	Hole Diameter	8"
Drilling Method	Hollow Stem Auger - Autohammer	Ground Elevation	306'
Location	See Plate 1; Exploratory Location Map	Sampled By	EMH

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
305	0			B-1					@Surface: 3.5-inches asphalt over 4 inches base Artificial Fill, undocumented (Afu) Sandy CLAY (CL), brown, moist, fine to coarse sand, abundant concrete debris up to 2 inches	
300	5			R-1	5 5 6		17		@5': Sandy CLAY (CL), firm, brown, fine to coarse sand, abundant concrete debris	
				S-1	2 2 2		15		@7.5': Clayey SILT (ML), soft, dark brown, moist, few fine sand, low plasticity	
295	10			R-2	5 11 13	121	13		@10': Clayey SILT (ML), very stiff, dark brown, moist, few fine sand, low plasticity, increase in sand content	
									Pleistocene Alluvium of Benedict Canyon Wash (BCW)	
290	15			S-2	5 6 13		14		@15': Silty CLAY (CL), very stiff, dark reddish brown, fine to medium sand, occasional coarse sand and scattered siltstone and shale fragments	
									Notes: Total depth: 16.5 feet bgs No groundwater encountered during drilling Boring backfilled with soil cuttings	
285	20									
280	25									
30	30									

SAMPLE TYPES:

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

TYPE OF TESTS:

- 200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL

- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE

- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH
- UU UNCONSOLIDATED UNDRAINED TRIAXIAL
- SW SWELL OR SETTLEMENT



GEOTECHNICAL BORING LOG LB-2

Project No. 10274.015
Project El Rodeo School Supplemental
Drilling Co. Martini Drilling
Drilling Method Hollow Stem Auger - Autohammer
Location See Plate 1; Exploratory Location Map

Date Drilled 9-26-15
Logged By EBP
Hole Diameter 8"
Ground Elevation 305'
Sampled By EBP

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
305	0	N S							This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
									@Surface: 4-inches Asphalt (aggregate base not detected) Artificial Fill, undocumented (Afu)	
300	5			S-1	1 1 1		12		@5': Clayey SAND (SC), soft, olive brown, moist, fine to coarse grained sand, trace gravel	
295	10			R-1	3 4 5	123	12		@10': Sandy CLAY (CL), firm, dark brown, moist, fine grained sand, few coarse sand and fine gravel, with a cobble	
290	15			S-2	6 12 15		10		@15': Silty SAND (SM), medium dense, reddish brown, moist, few fine to coarse gravel.	
									Pleistocene Alluvium of Benedict Canyon Wash (BCW)	
285	20			R-2	25 50'6"	121	12		@20': Silty SAND (SM), very dense, light gray, fine to coarse grained sand, few fine gravel, slight hydrocarbon odor	
280	25			S-3	10 15 16		12		@25': Silty SAND (SM), medium dense, light gray to brownish black, fine to coarse sand, few fine gravel, strong hydrocarbon odor with product in sample	
275	30									

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

TYPE OF TESTS:
 -200 % FINES PASSING
 AL ATTERBERG LIMITS
 CN CONSOLIDATION
 CO COLLAPSE
 CR CORROSION
 CU UNDRAINED TRIAXIAL

DS DIRECT SHEAR
 EI EXPANSION INDEX
 H HYDROMETER
 MD MAXIMUM DENSITY
 PP POCKET PENETROMETER
 RV R VALUE

SA SIEVE ANALYSIS
 SE SAND EQUIVALENT
 SG SPECIFIC GRAVITY
 UC UNCONFINED COMPRESSIVE STRENGTH
 UU UNCONSOLIDATED UNDRAINED TRIAXIAL
 SW SWELL OR SETTLEMENT



GEOTECHNICAL BORING LOG LB-2

Project No. 10274.015
Project El Rodeo School Supplemental
Drilling Co. Martini Drilling
Drilling Method Hollow Stem Auger - Autohammer
Location See Plate 1; Exploratory Location Map

Date Drilled 9-26-15
Logged By EBP
Hole Diameter 8"
Ground Elevation 305'
Sampled By EBP

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
275	30			R-3	7 14 21	116	18		@30': Silty CLAY (CL), very stiff, light reddish brown and olive gray, moist, trace sand, slight hydrocarbon odor	
									Notes: Total Depth: 31.5 Feet bgs No groundwater encountered during drilling Boring backfilled with soil cuttings	
270	35									
265	40									
260	45									
255	50									
250	55									
245	60									

- | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SAMPLE TYPES:
B BULK SAMPLE
C CORE SAMPLE
G GRAB SAMPLE
R RING SAMPLE
S SPLIT SPOON SAMPLE
T TUBE SAMPLE | TYPE OF TESTS:
-200 % FINES PASSING
AL ATTERBERG LIMITS
CN CONSOLIDATION
CO COLLAPSE
CR CORROSION
CU UNDRAINED TRIAXIAL | DS DIRECT SHEAR
EI EXPANSION INDEX
H HYDROMETER
MD MAXIMUM DENSITY
PP POCKET PENETROMETER
RV R VALUE | SA SIEVE ANALYSIS
SE SAND EQUIVALENT
SG SPECIFIC GRAVITY
UC UNCONFINED COMPRESSIVE STRENGTH
UU UNCONSOLIDATED UNDRAINED TRIAXIAL
SW SWELL OR SETTLEMENT |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



GEOTECHNICAL BORING LOG LB-3

Project No.	10274.015	Date Drilled	9-26-15
Project	El Rodeo School Supplemental	Logged By	EBP
Drilling Co.	Martini Drilling	Hole Diameter	8"
Drilling Method	Hollow Stem Auger - Autohammer	Ground Elevation	304'
Location	See Plate 1; Exploratory Location Map	Sampled By	EBP

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0	N S							This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
				BB-1					@Surface: 5.5-inches of Asphalt (aggregate base not detected) Artificial Fill (Afu) Clayey SAND (SC), brown, moist, loose, fine to coarse grained sand, few gravel, trace concrete and brick debris	
300	5			R-1	3 3 4	115	10		@6': SAND with Clay (SP-SC), loose, yellow brown, moist, fine to coarse grained sand, poorly graded, layers of clayey sand throughout	
				S-1	5 6 8		17		@7': Clayey SILT (ML), stiff, olive brown, moist, trace fine to coarse sand	
295	10			R-2	10 11 11	112	17		Pleistocene Alluvium of Benedict Canyon Wash (BCW) @10': Sandy CLAY (CL), stiff, olive brown to reddish brown, mottled, moist, fine grained sand, trace coarse sand and gravel	
290	15			S-2	2 2 2		22		@20': Silty SAND (SM), very loose, light reddish brown, moist, fine to medium grained sand, trace clay	
285	20			R-3	4 10 12	102	23		@20': Clayey SILT (ML), stiff, dark yellowish brown and olive gray, mottled, moist, trace coarse sand and gravel	
280	25								Notes: Total Depth: 21.5 Feet bgs No groundwater encountered during drilling Boring backfilled with soil cuttings	
275										
	30									

SAMPLE TYPES:

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

TYPE OF TESTS:

- 200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL

- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE

- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH
- UU UNCONSOLIDATED UNDRAINED TRIAXIAL
- SW SWELL OR SETTLEMENT



GEOTECHNICAL BORING LOG LB-4

Project No.	10274.015	Date Drilled	9-23-15
Project	El Rodeo School Supplemental	Logged By	ARR
Drilling Co.	Pacific Drilling	Hole Diameter	6"
Drilling Method	Tripod Rig - 140lb - Rope and Cat Head - 30" Drop	Ground Elevation	298'
Location	See Plate 1; Exploratory Location Map	Sampled By	ARR

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							<i>This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</i>	
295	0	[Hatched Pattern]		BB-1				CL	@Surface: Compacted soil in landscaped area Artificial Fill, undocumented (Afu) CLAY, dark brown, dry, few hard clay pods and nodules, trace coarse angular gravel	
290	5	[Diagonal Pattern]		R-1	24 37 47		9		@3.5': Sandy CLAY, dark brown, slightly moist, fine sand, fine and coarse flat angular slaty gravel, trace concrete and asphalt fragments @5': Gravelly CLAY, dark brown, slightly moist, hard, fresh flat slaty gravel, weathered basalt clasts, mechanically broken slaty cobble	
290	7	[Diagonal Pattern]		R-2	11 27 37	115	12	SP	@7': Gravelly SAND, orangish brown, moist, very dense, fine sand, fractured coarse angular gravel	
285	10	[Dotted Pattern]		R-3	32 50/6"	106	14	SM-ML	Quaternary Alluvium (Qal) @10': Sandy SILT to Silty SAND, light reddish brown, slightly moist, very dense/hard, fine sand	
285	12	[Dotted Pattern]		R-4	22 50/6"	113	16		Notes: Total Depth: 13 feet bgs No groundwater encountered during drilling Boring backfilled with soil cuttings	
280	15									
280	20									
275	25									
270	30									

SAMPLE TYPES:

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

TYPE OF TESTS:

- 200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL

- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE

- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH
- UU UNCONSOLIDATED UNDRAINED TRIAXIAL
- SW SWELL OR SETTLEMENT



GEOTECHNICAL TEST PIT LOG TP-1

Project No.	10274.011	Date Excavated	6-2-15
Project	BHUSD - El Rodeo Shear Walls	Logged By	JWJ
Equipment Comp.	Earthworks Techniques, Inc	Test Pit Dimension	49 X 20 inches
Excavation Method	Hand Dug Test Pit	Ground Elevation	305'
Location	See Exploration Location Map (Plate 1)	Sampled By	JWJ

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0	N S		BB-1	98	12	SC	<p><i>This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</i></p> <p>4-inches Reinforced Concrete Slab, 1 ½ - inch embedment (rebar thickness approximately ½ -inch diameter) 15-inches on center spacing, one direction.</p> <p>Artificial Fill, undocumented: (Afu) Clayey SAND (SC), olive brown to reddish brown, moist, with fine slaty and siltstone gravels, subangular to subrounded and flattened rock fragments, concrete debris, 28% passing No.-200 sieve.</p>	-200, MD
				SPT-1			SC	<p>Quaternary older alluvium: (Qoa) Clayey SAND (SC), reddish brown, fine to medium grained, moist.</p>	
300								<p>Notes: Total Depth of Test Pit: 4.5 feet bgs No groundwater encountered Test pit backfilled and tamped with soil cuttings on 06/02/2015 Capped with Concrete Patch on 06/03/2015</p> <p>Dry density and moisture content obtained in field from Nuclear Gauge (ASTM D 6938).</p>	
	5								
295									
	10								

SAMPLE TYPES:

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

TYPE OF TESTS:

- 200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL

- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE

- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH





Proj: 10274.011	Eng/Geol: TCB
Scale: NTS	Date: 06/2015
Reference:	

PHOTO TP-1
EL RODEO
605 WHITTIER DRIVE
BEVERLY HILLS, CALIFORNIA

Figure A-1



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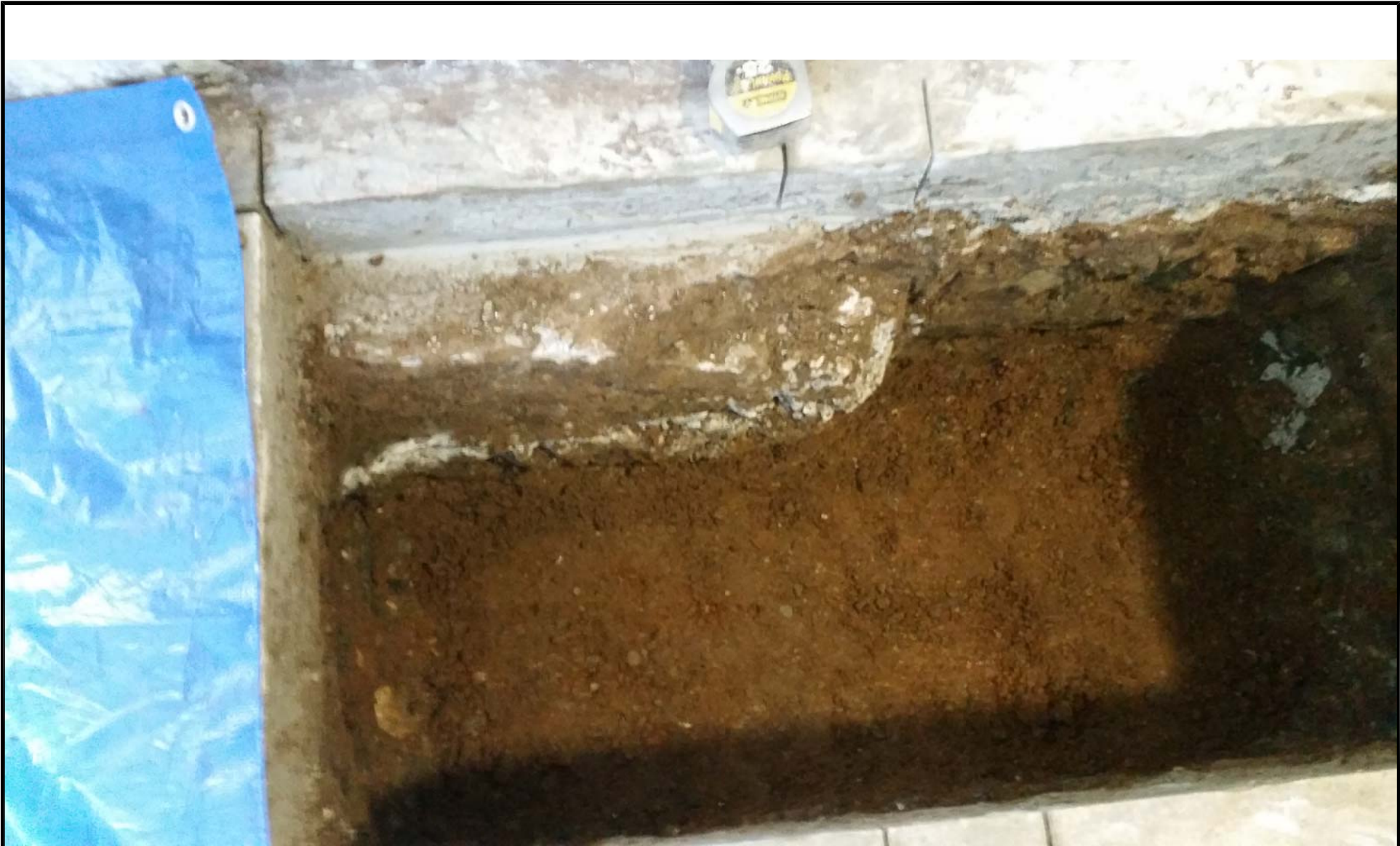
GEOTECHNICAL TEST PIT LOG TP-2

Project No.	10274.011	Date Excavated	6-2-15
Project	BHUSD - El Rodeo Shear Walls	Logged By	JWJ
Equipment Comp.	Earthworks Techniques, Inc	Test Pit Dimension	45 X 21 inches
Excavation Method	Hand Dug Test Pit	Ground Elevation	295'
Location	See Exploration Location Map (Plate 1)	Sampled By	JWJ

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
295	0	N S						<p><i>This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</i></p>	
		N S		BB-1	97	17	SM	<p>1 ½ -inch Concrete cap over 4 ½ -inch thick Wire Reinforced Footing Slab.</p> <p>Artificial Fill, undocumented: (Afu) Silty SAND (SM), dark olive brown to reddish orange brown, moist with some clay pods, 13% passing No.-200 sieve.</p>	-200, EI, CR
		N S		G-1				<p>Notes: Total Depth of Test Pit: 3 feet bgs No groundwater encountered Test pit backfilled and tamped with soil cuttings on 06/02/2015 Capped with Concrete Patch on 06/03/2015</p> <p>Dry density and moisture content obtained in field from Nuclear Gauge (ASTM D 6938).</p>	
290	5								
285	10								

- | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| SAMPLE TYPES:
B BULK SAMPLE
C CORE SAMPLE
G GRAB SAMPLE
R RING SAMPLE
S SPLIT SPOON SAMPLE
T TUBE SAMPLE | TYPE OF TESTS:
-200 % FINES PASSING
AL ATTERBERG LIMITS
CN CONSOLIDATION
CO COLLAPSE
CR CORROSION
CU UNDRAINED TRIAXIAL | DS DIRECT SHEAR
EI EXPANSION INDEX
H HYDROMETER
MD MAXIMUM DENSITY
PP POCKET PENETROMETER
RV R VALUE | SA SIEVE ANALYSIS
SE SAND EQUIVALENT
SG SPECIFIC GRAVITY
UC UNCONFINED COMPRESSIVE STRENGTH |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|





Proj: 10274.011	Eng/Geol: TCB
Scale: NTS	Date: 06/2015
Reference:	

PHOTO TP-2
EL RODEO
605 WHITTIER DRIVE
BEVERLY HILLS, CALIFORNIA

Figure A-2



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GEOTECHNICAL TEST PIT LOG TP-3

Project No.	10274.011	Date Excavated	6-2-15
Project	BHUSD - El Rodeo Shear Walls	Logged By	JWJ
Equipment Comp.	Earthworks Techniques, Inc	Test Pit Dimension	48 X 22 inches
Excavation Method	Hand Dug Test Pit	Ground Elevation	295'
Location	See Exploration Location Map (Plate 1)	Sampled By	JWJ

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0	N S						This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	
				BB-1	104	9	SC	4 -inch Concrete cap over subgrade. Artificial Fill, undocumented: (Afu) Clayey SAND (SC), dark olive brown to reddish orange brown, moist with minor slaty gravels, 19% passing No.-200 sieve.	-200, MD
					93	18			
						100	20	GC	Quaternary older alluvium: (Qoa) Clayey GRAVEL (GC), medium brown to yellowish brown, moist, with fine grained sand and subangular to subrounded rock fragments, includes flattened slate and siltstone gravels.
290	5							Notes: Total Depth of Test Pit: 2.5 feet bgs No groundwater encountered Test pit backfilled and tamped with soil cuttings on 06/02/2015 Capped with Concrete Patch on 06/03/2015 Dry density and moisture content obtained in field from Nuclear Gauge (ASTM D 6938).	
285	10								

- | | | | |
|----------------------|-----------------------|------------------------|------------------------------------|
| SAMPLE TYPES: | | TYPE OF TESTS: | |
| B BULK SAMPLE | -200 % FINES PASSING | DS DIRECT SHEAR | SA SIEVE ANALYSIS |
| C CORE SAMPLE | AL ATTERBERG LIMITS | EI EXPANSION INDEX | SE SAND EQUIVALENT |
| G GRAB SAMPLE | CN CONSOLIDATION | H HYDROMETER | SG SPECIFIC GRAVITY |
| R RING SAMPLE | CO COLLAPSE | MD MAXIMUM DENSITY | UC UNCONFINED COMPRESSIVE STRENGTH |
| S SPLIT SPOON SAMPLE | CR CORROSION | PP POCKET PENETROMETER | |
| T TUBE SAMPLE | CU UNDRAINED TRIAXIAL | RV R VALUE | |





Proj: 10274.011	Eng/Geol: TCB
Scale: NTS	Date: 06/2015
Reference:	

PHOTO TP-3
EL RODEO
605 WHITTIER DRIVE
BEVERLY HILLS, CALIFORNIA

Figure A-3



GEOTECHNICAL TEST PIT LOG TP-4

Project No.	10274.011	Date Excavated	6-3-15
Project	BHUSD - EI Rodeo Shear Walls	Logged By	JWJ
Equipment Comp.	Earthworks Techniques, Inc	Test Pit Dimension	36 X 20 inches
Excavation Method	Hand Dug Test Pit	Ground Elevation	298'
Location	See Exploration Location Map (Plate 1)	Sampled By	JWJ

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S						<i>This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</i>	
295	0	N S		BB-1	89	15	SC	Artificial Fill, undocumented: (Afu) Clayey SAND (SC), dark grayish brown to yellowish brown, moist, firm, high organic content, trace clay pipe, pvc, and concrete debris, trace rootlets, 44% passing No.-200 sieve.	-200, EI
290	5	N S		G-1	62	55	SC	Quaternary older alluvium: (Qoa) Clayey SAND (SC), light reddish brown, moist, fine to coarse grained and slaty gravels, 42% passing No.-200 sieve. Notes: Total Depth of Test Pit: 4 feet bgs No groundwater encountered Test pit backfilled and tamped with soil cuttings on 06/03/2015 Dry density and moisture content obtained in field from Nuclear Gauge (ASTM D 6938).	
10									

- | | | | |
|----------------------|-----------------------|------------------------|------------------------------------|
| SAMPLE TYPES: | | TYPE OF TESTS: | |
| B BULK SAMPLE | -200 % FINES PASSING | DS DIRECT SHEAR | SA SIEVE ANALYSIS |
| C CORE SAMPLE | AL ATTERBERG LIMITS | EI EXPANSION INDEX | SE SAND EQUIVALENT |
| G GRAB SAMPLE | CN CONSOLIDATION | H HYDROMETER | SG SPECIFIC GRAVITY |
| R RING SAMPLE | CO COLLAPSE | MD MAXIMUM DENSITY | UC UNCONFINED COMPRESSIVE STRENGTH |
| S SPLIT SPOON SAMPLE | CR CORROSION | PP POCKET PENETROMETER | |
| T TUBE SAMPLE | CU UNDRAINED TRIAXIAL | RV R VALUE | |





Proj: 10274.011

Eng/Geol: TCB

Scale: NTS

Date: 06/2015

Reference:

PHOTO TP-4








EL RODEO
605 WHITTIER DRIVE
BEVERLY HILLS, CALIFORNIA

Figure A-4



Leighton

LEIGHTON




CORE BORING LOG										BORING NO. CB-1		
PROJECT: El Rodeo School										PAGE 1 OF 9		
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 9		
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 2/14/2012	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/14/2012			
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini			
						INCLINED	Bit (Feet)		PREPARED BY: JMP			
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1			
					0	ANG. FROM VERT.	Total (Feet)					
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
303 0							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
		1-3	SB-1				@Surface: 5" Asphalt concrete (Ac) over 4" Aggregate base (Ab) @0' to 5': Hand Auger @0.75': Artificial Fill, undocumented (Afu): Silty SAND (SM), brown to reddish brown, dry to slightly moist, fine sand, some fine angular gravels					
298 5							@5.8': Pleistocene Alluvium of Benedict Canyon Wash (BCW₁): Sandy GRAVEL (GP), dark reddish to gray brown, dry to slightly moist, angular fine gravels, fine sand @6.4' to 7.3': Silty SAND (SM), reddish brown to olive brown, slightly moist					
		5-10	Run 1 Box 1	3.6	72		@7.3' to 8.6': Sandy GRAVEL (GP), dark reddish to gray brown, slightly moist, angular fine gravels, primarily black slate @8.6' to 10': No Recovery					
293 10							@10' to 15': No Recovery					
		10-15	Run 2 Box 1	0	0							
288 15												
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)			V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)			CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)			MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)			WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)			V. WIDE	>120"		MOD. SEVERE
									Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15




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

LEIGHTON

CORE BORING LOG										BORING NO. CB-1
PROJECT: El Rodeo School										PAGE 2 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:
						HORIZONTAL	SIZE	2.5 I.D.	2/14/2012	2/14/2012
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: JMP
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
288 15		15-20	Run 3 Box 1	2.9	58		@15' to 16.7': Sandy Silty GRAVEL (GP)			
							@16.7' to 17.9': SAND (SP), interlayered dark reddish brown to olive green, moist to very moist, fine sand, some interlayered silts			
							@17.9' to 20': No Recovery			
283 20		20-25	Run 1 Box 2	5	100		@20' to 21.8': SAND (SP), dark reddish to yellowish brown, wet, fine to medium sand, few scattered fine gravels			
							@21.8' to 22.7': Sandy GRAVEL (GP), dark gray brown with oxidation, moist, subangular gravels			
							@22.7': Pleistocene Alluvium of Benedict Canyon Wash (BCW₂) CLAY (CL), dark yellow brown with orange oxidation, moist, blebs of olive gray coloring within, paleosol			
							@24.3': Color grades to dark reddish brown			
278 25		25-30	Run 2 Box 2	5	100		@25.6': Gravel layer, becomes dark reddish brown to chocolate brown, moderately well-developed blocky structure, minor gleying along soil faces			
							@28.3' to 29': Gravelly Sandy CLAY (CL), dark reddish brown, very moist, fine to medium sand, fine gravels, basal gravel, base of paleosol			
							@29': Sandy CLAY to CLAY (CL), dark reddish to dark yellowish brown, few fine subrounded to angular scattered gravels			
273 30										

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								SEVERE	COMPLETE

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LEIGHTON

CORE BORING LOG										BORING NO. CB-1
PROJECT: El Rodeo School										PAGE 3 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 2/14/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/14/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
273 30		30-35	Run 3 Box 2	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
268 35		35-40	Run 1 Box 3	5	100		@33.3': Few scattered gravels in thin bed with fine sand @33.7' to 35', Chocolate brown, well developed soil			
263 40		40-45	Run 2 Box 3	5	100		@35' to 37.4': Sandy Clayey GRAVEL (GP), dark yellow brown to gray brown, wet, fine to coarse angular black slate gravels, erosional surface below Pleistocene Cheviot Hills Deposits (CHD): @37.4': CLAY (CL), dark yellow brown, moist, some fine sand, color grades to dark reddish brown, oxidation and reduction banding with clay laminations @39.7': Color grades to dark reddish brown, moderate blocky structure, paleosol @40.4': Sandy CLAY with Gravel (CL), dark yellow brown, moist, scattered fine subangular gravels throughout, some fine sand, decrease in gravel between 46.5' to 49' @41.1': GRAVEL (GP), pulse of gravel @41.2': Sandy CLAY with Gravel (CL), dark yellow brown, moist, scattered fine subangular gravels throughout, some fine sand, decrease in gravel between 46.5' to 49' @42.7': GRAVEL (GP), pulse of gravel @42.8': Sandy CLAY with Gravel (CL), dark yellow brown, moist, scattered fine subangular gravels throughout, some fine sand, decrease in gravel between 46.5' to 49'			
258 45										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON

CORE BORING LOG										BORING NO. CB-1
PROJECT: El Rodeo School										PAGE 4 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:
						HORIZONTAL	SIZE	2.5 I.D.	2/14/2012	2/14/2012
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: JMP
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
258 45		45-50	Run 3 Box 3	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						@45': Rounded gravels @45.1': Sandy CLAY with Gravel (CL), dark yellow brown, moist, scattered fine subangular gravels throughout, some fine sand, decrease in gravel between 46.5' to 49'				
						@47': Brown clay				
						@48': Poorly developed blocky structure @48.1': GRAVEL (GP), pulse of gravel @48.2': Sandy CLAY with Gravel (CL), dark yellow brown, moist, scattered fine subangular gravels throughout, some fine sand, decrease in gravel between 46.5' to 49'				
253 50		50-55	Run 1 Box 4	4.2	84	@49': Gravelly SAND (SP), dark yellow brown, very moist, fine to medium sand, fine subangular gravels @50' to 50.8': No Recovery			
						@50.8' to 52': Sandy GRAVEL (GP), dark yellow brown, very moist, fine to coarse angular gravels				
						@52' to 52.9': SAND with Gravel (SP), dark yellow brown, moist, fine sand, some fine gravels				
						@52.9' to 53.6': Sandy GRAVEL (GP), dark yellow brown, very moist, fine to coarse angular gravels				
248 55		55-60	Run 2 Box 4	3.9	78	@53.6' to 58': SAND with Gravel (SP), dark yellow brown, moist, fine sand, some fine gravels, "Salt and Pepper" sands			
						@58' to 58.3': CLAY (CL), dark yellow brown, very moist, some fine sand				
						@58.3' to 58.9': Sandy GRAVEL (GP), dark yellow to gray brown, moist, fine to coarse sand, fine to coarse gravels @58.9' to 60': No Recovery				
243 60										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
									V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-1	
PROJECT: El Rodeo School										PAGE 5 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	
						HORIZONTAL	SIZE	2.5 I.D.	2/14/2012	2/14/2012	
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
243	60	60-65	Run 3 Box 4	4.3	86		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
							@60' to 60.7': No Recovery @60.7': CLAY (CL), dark yellow brown, moist @62': Thin gravel layer @62.2': CLAY (CL), dark yellow brown, moist @62.4' to 65.9': Sandy GRAVEL (GP), dark yellow to gray brown, very moist, fine to medium sand, fine to coarse subrounded to subangular black slate gravels and weathered basalt clasts				
238	65	65-70	Run 1 Box 5	0.9	18		@65.9' to 70.4': No Recovery				
233	70	70-75	Run 2 Box 5	4.6	92		@70.4' to 72.8': CLAY with Gravel (CL), dark reddish brown to chocolate brown, moist, few fine gravels scattered throughout, well-developed blocky structure				
							@72.8' to 75': Sandy GRAVEL (GP), dark yellow brown, moist, fine to medium sands with some clay, fine to coarse black slate gravels				
228	75										
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)		V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)		V. WIDE	>120"		MOD. SEVERE
								Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

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CORE BORING LOG										BORING NO. CB-1	
PROJECT: El Rodeo School										PAGE 6 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/14/2012	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/14/2012		
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini		
						INCLINED	Bit (Feet)		PREPARED BY: JMP		
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS											
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.											
228	75									@75' to 76.8': No Recovery	
										@76.8' to 77.6': Sandy GRAVEL (GP), dark yellow brown, moist, fine to medium sands with some clay, fine to coarse black slate gravels	
		75-80	Run 3 Box 5	3.2	64	64				@77.6': CLAY (CL), dark yellow brown, moist, few scattered fine subrounded gravels	
										@78.5': Color grades to dark reddish brown, moderate blocky structure	
223	80									@80': Dark yellowish brown	
										@81.8' to 82.5': Sandy GRAVEL (GP), dark gray brown, wet, fine to coarse sand, fine to coarse subangular gravels	
		80-85	Run 1 Box 6	5	100	100				@82.5' to 84.6': Sandy CLAY (CL), dark yellowish brown, moist, fine sand	
										@84.6' to 85': Gravelly CLAY (CL), dark yellow to gray brown, moist, some sand, fine angular gravels	
218	85									@85' to 91.5': No Recovery	
		85-90	Run 2 Box 6	0	0	0					
213	90										
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)		V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)		V. WIDE	>120"		MOD. SEVERE
Fe = Iron Oxide Mn = Manganese Oxide											

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-1	
PROJECT: El Rodeo School										PAGE 7 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	2/14/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DATE FINISH:	2/14/2012	
						INCLINED	Bit (Feet)		DRILLER:	Martini	
						BEARING	Barrel (Feet)	5	PREPARED BY:	JMP	
					0	ANG. FROM VERT.	Total (Feet)		LOCATION:	See Plate 1	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
213 90		90-95	Run 3 Box 6	3.5	70		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
							@91.5' to 93': SAND (SP), dark yellow brown to brown, wet, fine to medium sand				
							@93' to 93.9': Sandy GRAVEL (GP), dark yellow brown, very moist, oxidized, fine to medium sand, fine gravels, basal gravels, erosional contact below				
							@93.9' to 94.3': Clayey SAND with Gravel (SC), dark yellow to red brown, moist				
208 95		95-100	Run 1 Box 7	5	100		@94.3': CLAY (CL), dark yellow brown, moist, MnO ₂ laminations				
							@97': Color grades to olive brown				
							@97.9': Color grades to grey marl				
203 100		100-105	Run 2 Box 7	5	100		@101.1': Color grades to olive green				
							@103.5': Color grades to olive brown				
							@104.5' to 106.9': Some scattered fine gravels				
198 105											
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
									COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-1	
PROJECT: El Rodeo School										PAGE 8 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 2/14/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/14/2012		
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini		
						INCLINED	Bit (Feet)		PREPARED BY: JMP		
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
198	105	105-110	Run 3 Box 7	5	100		@106.9': CLAY (CL), brown, moist				
							@108': CaCO ₃ in matrix				
193	110	110-115	Run 1 Box 8	5	100		@110': Grades to Silty CLAY (CL), brown to dark yellowish brown, moist, few scattered cemented CaCO ₃ nodules				
							@112': Color grades from brown to green, specks of CaCO ₃ with scattered cemented CaCO ₃ nodules				
							@113.6' to 118': Color grades from green to grey marl, continued specks of CaCO ₃ and scattered cemented CaCO ₃ nodules				
188	115	115-120	Run 2 Box 8	5	100		@118': Color grades to olive brown, abundant CaCO ₃ deposits and nodules				
183	120										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
									COMPLETE		

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CORE BORING LOG										BORING NO. CB-1
PROJECT: El Rodeo School										PAGE 9 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 302.5 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/14/2012 DATE FINISH: 2/14/2012 DRILLER: Martini PREPARED BY: JMP LOCATION: See Plate 1
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve		
						HORIZONTAL	SIZE	2.5 I.D.		
						INCLINED	Bit (Feet)			
					0	BEARING	Barrel (Feet)	5		
						ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
183	120	120-125	Run 3 Box 8	5	100		@120.5' to 121.8': Grades to Sandy CLAY (CL), olive brown, moist, fine sand, scattered CaCO ₃ deposits			
						@121.8' to 124.4': CLAY (CL), olive brown, moist, abundant CaCO ₃ deposits between 122.1' to 122.8'				
						@124.4' to 125': SAND (SP), dark yellow brown, wet, fine sand				
178	125						Total depth of boring: 125' bgs Perched groundwater encountered at approximately 20'-21.8', 35'-37.4', 81.8'-82.5', 91.5'-93', 124.4'-125' bgs Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.			
173	130									
168	135									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON


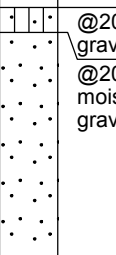

CORE BORING LOG										BORING NO. CB-2
PROJECT: El Rodeo School										PAGE 1 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/13/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/13/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
305 0						█	@Surface: 4" Asphalt concrete @0.3': Artificial Fill, undocumented (Afu): Silty SAND (SM), dark yellowish brown, moist, some angular black slate gravels			
		1-3	SB-1			█	----- Pleistocene Alluvium of Benedict Canyon Wash: (BCW₁):			
						█	@4': Cobble @4.4': Silty SAND (SM)			
300 5						█	@5' to 5.9': No Recovery @5.9': Sandy GRAVEL (GP), dark reddish brown to dark grayish brown, slightly moist, fine to coarse sand, fine to coarse subrounded to subangular black slate gravels, chaotic assemblage, oxidized			
		5-10	Run 1 Box 1	4.1	82	█				
295 10						█				
		10-15	Run 2 Box 1	2.5	50	█	@12.5' to 15': No Recovery			
290 15						█				
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-2	
PROJECT: El Rodeo School										PAGE 2 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START: 2/13/2012		
						HORIZONTAL	SIZE	2.5 I.D.	DATE FINISH: 2/13/2012		
						INCLINED	Bit (Feet)		DRILLER: Martini		
						BEARING	Barrel (Feet)	5	PREPARED BY: JMP		
					0	ANG. FROM VERT.	Total (Feet)		LOCATION: See Plate 1		
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
290 15		15-20	Run 3 Box 1	1.7	34		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
							@15' to 16.7': Sandy GRAVEL (GP), moist, large cobble @16.7' @16.7' to 20': No Recovery				
285 20		20-25	Run 1 Box 2	5	100		@20' to 20.3': Silty SAND (SM), dark yellowish brown, moist, some subrounded gravels @20.3' to 23': Gravelly SAND (SP), dark yellowish to dark reddish brown, moist, fine to coarse sand, subrounded to subangular fine to coarse black slate gravels				
							@23' to 24.5': Sandy GRAVEL (GP), dark gray brown to dark red brown, moist, few large cobbles				
280 25		25-30	Run 2 Box 2	3.9	78		@24.5' to 26.1': Silty SAND (SM), olive gray, moist, fine sand				
							@26.1' to 27.2': Sandy GRAVEL (GP), dark olive brown, moist, angular fine to coarse black slate gravels				
							@27.2' to 27.5': SAND with fine gravel (SP), dark reddish brown, moist, fine sand, erosional contact below @27.5': Sandy CLAY (CL), olive gray, moist, fine sand, oxidation-reduction banded, gleyed to 31'				
							@28.3' to 28.9': Sandy GRAVEL (GP), dark reddish brown, moist, fine to coarse subrounded gravels @28.9' to 30': No Recovery				
275 30											
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
									COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON

CORE BORING LOG										BORING NO. CB-2
PROJECT: El Rodeo School										PAGE 3 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/13/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/13/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
275 30		30-35	Run 3 Box 2	5	100		<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p> <p>@30': Pleistocene Alluvium of Benedict Canyon Wash (BCW,) CLAY (CL), dark yellow brown to dark reddish brown, some olive gray mottling, moist, some fine gravels, paleosol, blocky to hackly structure, minor gleying on soil peds, moderate clay lining peds, few highly weathered siltstone fragments, 2-3% oxidized fine slaty gravels</p>			
270 35							<p>@32.5': Base of paleosol. Grades to Sandy CLAY (CL), dark yellow brown mottled with olive gray, moist, fine sand, some fine gravels</p> <p>@33.3': CaCO₃ horizon</p>			
265 40		35-40	Run 1 Box 3	5	100		<p>@34.4': Thinly bedded gravel</p> <p>@34.6': Sandy CLAY (CL)</p>			
260 45							<p>@35.9': Thin gravel layer, angular siltstone clasts</p> <p>@36': Sandy CLAY (CL)</p> <p>@36.2': White siltstone, and slaty gravel bed</p> <p>@36.4': Sandy CLAY (CL)</p>			
255 40		40-45	Run 2 Box 3	5	100		<p>@39': Grades to CLAY to Silty CLAY (CL), dark chocolate brown, moist, some fine gravels and SILT</p>			
250 45							<p>@41.6' to 44.5': Sandy GRAVEL (GP), dark yellow brown to gray brown, wet, fine to coarse subangular to subrounded gravels, fine to coarse sand, some clay, erosional contact below</p>			
245 45		<p>@44.5': Pleistocene Cheviot Hills Deposits (CHD):</p>								
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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CORE BORING LOG										BORING NO. CB-2
PROJECT: El Rodeo School										PAGE 4 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/13/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/13/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
260 45		45-50	Run 3 Box 3	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							Sandy silty CLAY (CL), dark reddish brown mottled with olive gray, moist, paleosol, fine to coarse silty sand, subangular to subrounded gravels, gleying along ped faces, moderate silica cement. Base of paleosol @ 46.7'			
							@45' to 45.3': Silty Clayey SAND (SC), dark yellow brown, moist, fine sand			
							@45.3': CLAY (CL), dark yellow brown to dark reddish brown, moist, few fine gravels			
							@46.8': Thinly bedded gravels			
		@47': CLAY (CL) dark yellowish brown, moist								
		@48.4': Gravelly CLAY (CL), dark reddish brown, moist, fine angular gravels								
		@48.9': CLAY (CL), dark yellow brown, moist, some silt and fine sand, few fine gravels								
255 50		50-55	Run 1 Box 4	5	100		@50.4' to 50.6': Gravelly SAND (SP) layer, erosive contact below			
							@50.6': Sandy CLAY (CL), dark yellow brown, moist, fine sand, fine silty gravel and white siltstone chips, 6-inch thick brown soil, upper part missing, blocky structure			
							@51.5': Thin bed of fine to coarse sand			
							@51.7': Sandy CLAY (CL), dark yellow brown, moist, fine sand, fine silty gravel and white siltstone chips, 6-inch thick brown soil, upper part missing, blocky structure			
250 55		55-60	Run 2 Box 4	2.5	50		@54': Sandy clayey SILT (ML-CL), light orange brown, very moist, trace of siltstone rock fragments, poorly developed blocky structure, minor gleying along ped faces			
							@54.5' to 55': Clean SAND (SP), fine to medium grained sand over gravel, thin bed			
							@55' to 56.4': Sandy GRAVEL (GP), dark yellow to gray brown, wet, fine to coarse angular black slate gravels			
							@56.4' to 57': Silty SAND (SP), dark yellow brown to brown, very moist, fine to medium sand, thinly bedded			
							@57' to 57.5': Sandy GRAVEL (GP), dark yellow to gray brown, wet, angular gravels			
		@57.5' to 60': No Recovery								
245 60										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-2
PROJECT: El Rodeo School										PAGE 5 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/13/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/13/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
245 60		60-65	Run 3 Box 4	3.3	66		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@61.7': Sandy GRAVEL (GP), dark gray brown, wet, angular fine to coarse black slate gravels, white siltstone fragments, erosional contact below @62.3': CLAY to Sandy CLAY (CL), yellow brown, slightly mottled with olive gray, moist, very fine sand			
240 65		65-70	Run 1 Box 5	5	100		@65.6': CLAY with Sand and fine Gravels (CL), dark yellow brown, moist @66': Gravel bed @66.2': CLAY with Sand and fine Gravels (CL), dark yellow brown, moist @67.1': CLAY (CL), dark yellow brown, moist, some fine sand			
							@68': Gravel bed, CaCO ₃ @68.1': SAND to Gravelly SAND (SW), dark yellow brown, moist to very moist, fine to coarse sand, fine gravels, well graded			
235 70							@69.6' to 70': CLAY (CL), dark yellow brown, moist @70' to 70.5': Gravelly SAND (SW), dark yellow to gray brown, very moist to wet, fine to coarse sand, fine to coarse subrounded to subangular gravels, well graded @70.5' to 71.7': Sandy GRAVEL (GP), dark yellow to gray brown, very moist to wet, fine to coarse sand, fine to coarse subrounded to subangular gravels			
							@71.7' to 73.9': Gravelly SAND (SW), dark yellow to gray brown, gleyed gravels, very moist to wet, fine to coarse sand, fine to coarse subrounded to subangular gravels, well graded, contact @73.5' becomes chocolate brown clay, thinly laminated, with trace gravels below laminations			
							@73.9' to 75': No Recovery			
230 75										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-2
PROJECT: El Rodeo School										PAGE 6 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/13/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/13/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
230 75		75-80	Run 3 Box 5	3.3	66		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@75' to 78': SAND (SP), gray brown, wet, clean fine sand, "Salt and Pepper" sand @78' to 78.3': Sandy GRAVEL (GP), dark yellow to gray brown, moist, chaotic assemblage of gravels and rock fragments, well graded @78.3' to 80': No Recovery			
225 80		80-85	Run 1 Box 6	2.6	52		@80' to 82': SAND (SP), dark gray brown, wet, upward fining sequence @82' to 82.6': Sandy GRAVEL (GP), dark gray, brown, moist, angular fine gravels, chaotic assemblage, weathered slaty gravels @82.6' to 85': No Recovery			
							@85' to 88.3': Continued chaotic assemblage of Sandy GRAVEL (GP), dark gray brown, very moist, weathered slaty gravels			
220 85		85-90	Run 2 Box 6	3.3	66		@88.3' to 90': No Recovery, driller indicated that the material was hard based on drilling difficulty			
215 90										


ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
								COMPLETE	



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CORE BORING LOG										BORING NO. CB-2
PROJECT: El Rodeo School										PAGE 7 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/13/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/13/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
215 90		90-95	Run 3 Box 6	4.6	92	•••	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						@90' to 91': Gravelly SAND (SP), dark gray brown, wet, fine to very coarse sand, fine subrounded gravels, poorly graded, upward fining sequence, erosive contact below				
						@91': Silty Clayey SAND (SC), yellow brown, moist, fine sand				
						@92': Thinly bedded GRAVELS (GP)				
						@92.1': Silty Clayey SAND (SC), yellow brown, moist, fine sand				
		@92.3': Thin GRAVEL bed (GP)								
		@92.4': Silty Clayey SAND (SC), yellow brown, moist, fine sand								
		@93.8': Thin GRAVEL bed (GP)								
		@94': Silty Clayey SAND (SC), yellow brown, moist, fine sand								
		@94.6' to 95': No Recovery								
210 95		95-100	Run 1 Box 7	5	100	•••	@95': Silty Clayey SAND (SM-SC)			
						@96.2': GRAVEL (GP), thin bed				
						@95': Silty Clayey SAND (SM-SC)				
205 100		100-105	Run 2 Box 7	3.4	68	•••	@100' to 100.7': Gravelly SAND (SP), yellow brown, wet, fine sand, fine to coarse siltstone gravels, subrounded			
						@100.7' to 103': CLAY (CL), hard, dark reddish brown				
						@103' to 103.4': Gravelly SAND (SP), dark yellow brown, moist, fine sand, fine to medium subangular gravels				
		@103.4' to 105': No Recovery								
200 105						•••				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-2
PROJECT: El Rodeo School										PAGE 8 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/13/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/13/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p>										
200	105	105-110	Run 3 Box 7	5	100		<p>@105': GRAVEL bed (GP) @105.2' to 111': Gravel bed underlain by CLAY (CL), dark reddish brown, moist, isolated blebs of olive gray</p>			
						<p>@106.2': Thin bed of fine to medium grained sand with MnO₂ laminations @105.2' to 111': Gravel bed underlain by CLAY (CL), dark reddish brown, moist, isolated blebs of olive gray @107': gley banding</p>				
		110-115	Run 1 Box 8	5	100		<p>@108.2' to 108.6': heavy MnO₂ banding</p>			
195	110					<p>@110': becomes dark chocolate brown, oxidation-reduction banding, gleyed</p>				
						<p>@111' to 113.2': Grades to Sandy CLAY (CL), dark yellow brown, moist, some fine angular gravels between 111' to 112.8',</p>				
		115-120	Run 2 Box 8	5	100		<p>@113.2': Rounded fine gravel @113.3': Sandy CLAY (CL), dark yellow brown, moist, specks of CaCO₃</p>			
190	115					<p>@114' to 115.6': Silty Clayey SAND (SM-SC), dark yellow brown to brown, moist, fine sand</p>				
		<p>@115.6' to 116.3': Grades to CLAY (CL), dark yellow brown to olive brown, increase in olive color with depth, moist, some oxidation between 115.6' to 116.3', some specks of CaCO₃ between 116.3' to 117.5', color change to green @116.7': Abundant CaCO₃ as thin horizontal layers, paleo horizon, Paleosol, marl</p>								
		<p>Quaternary San Pedro Formation (Qsp): @117.8' to 120': Silty CLAY (CL), color grades to grey brown, moist, gleyed, some slight oxidation and specks of CaCO₃ scattered gravels, paleosol, marl</p>								
185	120									
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
									V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-2	
PROJECT: El Rodeo School										PAGE 9 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 304.9 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	
						HORIZONTAL	SIZE	2.5 I.D.	2/13/2012	2/13/2012	
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
185 120		120-125	Run 3 Box 8	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
							@120' to 120.6': gravel bed				
							@120.6' to 123': Blue green CLAY to Silty CLAY (CL), moist, grey marl, specks of CaCO ₃ scattered gravels, abrupt contact @120.6' to 121.6': heavy MnO ₂ lamination				
							@123': Grades to Silty SAND (SM), blue green, moist to very moist, fine sand				
		@124' to 124.8': CLAY (CL), blue green, moist									
180 125		@124.8' to 125': Silty SAND (SM), blue green, moist, fine sand					Total depth of boring: 125' bgs Perched groundwater encountered at approximately 36.3', 41.6'-44.5', 54.5'-56.4', 61.7'-62.3', 70'-73.9', 75'-78', 80'-82', 90'-91', 100'-100.7' bgs Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.				
175 130											
170 135											
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
									COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-3		
PROJECT: El Rodeo School										PAGE 1 OF 9		
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 9		
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 292.4 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 2/10/2012	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/10/2012			
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini			
						INCLINED	Bit (Feet)		PREPARED BY: JMP			
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1			
					0	ANG. FROM VERT.	Total (Feet)					
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
292 0						█	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
		1-2	SB-1				@Surface: 3" Asphalt concrete @0.33': 2" Aggregate base @0.4': Artificial Fill, undocumented (Afu): Clayey SILT (ML), brown, slightly moist					
287 5							@5.5' to 6.5': Sandy GRAVEL (GP), light brown, dry					
		5-10	Run 1 Box 1	2.5	50		@6.5' to 7.5': Clayey SILT (ML), dark brown, slightly moist, some coarse gravels and asphalt					
							@7.5' to 10': No Recovery					
282 10							@10' to 15': SILT to Clayey SILT (ML), dark brown, slightly moist, few fine angular to subangular gravels throughout, trace asphalt fragments					
277 15												
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)			V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)			CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)			MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)			WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)			V. WIDE	>120"		MOD. SEVERE
									Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

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LEIGHTON




CORE BORING LOG										BORING NO. CB-3	
PROJECT: El Rodeo School										PAGE 2 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 292.4 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	
						HORIZONTAL	SIZE	2.5 I.D.	2/10/2012	2/10/2012	
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
277 15		15-20	Run 3 Box 1	5	100		<p>@15': Pleistocene Alluvium of Benedict Canyon Wash (BCW): Silty Clayey SAND with Gravels (SP-SC), dark reddish/yellowish brown mottled, slightly moist, fine subangular to subrounded gravels, fine sand, well-graded</p>				
272 20							<p>@19.2' to 20.7': SAND with some Clay (SC), dark reddish brown, slightly moist to moist, fine sand</p>				
272 20		20-25	Run 1 Box 2	5	100		<p>@20.7' to 22.6': Grades to Sandy SILT (ML), dark reddish brown, slightly moist to moist with clay, paleosol, moderate blocky structure, well developed to 26.8'</p>				
267 25							<p>@22.6' to 25': Grades to CLAY (CL), olive brown to dark yellowish brown mottled, moist, few scattered subangular to angular fine gravels of weathered black slate and siltstone, moderate blocky structure, minor gleying along soil faces, paleosol</p>				
267 25		25-30	Run 2 Box 2	5	100		<p>@25': Grades to Silty CLAY (CL)</p>				
267 25							<p>@27.5' to 28.3': Sandy CLAY (CL)</p>				
262 30							<p>@28.3': Sandy GRAVEL (GP), dark grayish brown, moist to very moist, angular fine to coarse black slate gravels, erosive contact below</p>				
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
									COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB-3					
PROJECT: El Rodeo School										PAGE 3 OF 9					
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001					
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 9					
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 292.4 Feet					
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 2/10/2012					
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/10/2012						
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini						
						INCLINED	Bit (Feet)		PREPARED BY: JMP						
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1						
					0	ANG. FROM VERT.	Total (Feet)								
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS								
262 30		30-35	Run 3 Box 2	4.2	84		<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p> <p>Pleistocene Alluvium of Benedict Canyon Wash (BCW₂): @33.7' to 34.2': Silty CLAY (CL), dark yellowish brown, very moist, some angular coarse black slate gravels, Paleosol, blocky structure, gleyed on ped faces</p>								
257 35											35-40	Run 1 Box 3	5	100	
252 40		40-45	Run 2 Box 3	5	100		@39': Grades to Sandy CLAY (CL), dark reddish brown, very moist, very fine sand, few fine subangular gravels								
247 45							40-45	Run 2 Box 3	5	100					


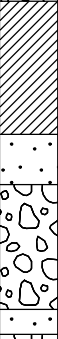


ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
								COMPLETE	





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LEIGHTON

CORE BORING LOG										BORING NO. CB-3	
PROJECT: El Rodeo School										PAGE 4 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 292.4 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 2/10/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/10/2012		
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini		
						INCLINED	Bit (Feet)		PREPARED BY: JMP		
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
247	45	45-50	Run 3 Box 3	4.2	84		@45' to 45.8': No Recovery				
							@45.8' to 46.4': SAND (SP), dark yellowish brown, wet, fine to coarse sand				
							@46.4' to 49.3': Grades to Sandy GRAVEL (GP), dark grayish brown to dark reddish brown, very moist to wet, fine to coarse subangular black slate gravels, secondary clay, erosive contact below				
242	50	50-55	Run 1 Box 4	5	100		Pleistocene Cheviot Hills Deposits (CHD):				
							@49.3' to 50.9': Grades to Sandy CLAY (CL), dark reddish brown, very moist, few fine gravels throughout, oxidation-reduction banding, gleyed, blocky structure				
							@50.9': Grades to SAND (SP)				
							@51.5' to 53': Grades to Sandy GRAVEL (GP), dark reddish brown, wet, fine to coarse angular to subangular gravels				
							@53' to 53.3': Thin layer of Silty Gravelly SAND (SP) @53.3' to 55': Sandy GRAVEL (GP)				
237	55	55-60	Run 2 Box 4	4.2	84		@55' to 55.8': No Recovery				
							@55.8' to 57.6': SAND (SP), dark yellow brown, wet, fine to medium sand				
							@57.6' to 58.1': Sandy GRAVEL (GP), dark gray brown, wet, fine to coarse sand, fine subangular gravels				
							@58.1' to 60': Clayey Sandy GRAVEL (GP), dark yellow brown, very moist, increase in gravel with depth to 60'				
232	60										
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES			V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"			HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)		V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120"		FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE	
								Fe = Iron Oxide Mn = Manganese Oxide			

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LEIGHTON

CORE BORING LOG										BORING NO. CB-3
PROJECT: El Rodeo School										PAGE 5 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 292.4 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/10/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/10/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
232 60		60-65	Run 3 Box 4	4.3	86		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@60' to 60.7': No Recovery @60.7' to 64.3': SAND (SP), dark yellow brown, wet, fine sand			
227 65		65-70	Run 1 Box 5	3.7	74		@64.3' to 65': Sandy GRAVEL (GP), dark yellow brown to dark gray brown, moist, subangular black slate gravels @65' to 66.3': No Recovery @66.3' to 66.9': SAND (SP), reddish brown, wet, fine to coarse sand with siltstone rock fragments @66.9' to 67.3': Clayey Gravelly SAND (SC) @67.3' to 67.6': Silty Clayey SAND (SM-SC) @67.6': CLAY to Sandy CLAY (CL), mottled olive brown and dark yellowish brown, well oxidized, oxidation-reduction banding, gleyed, few specs of MnO ₂ @68': Zone of increased sand @68.6': Color grades to dark brown			
222 70							@70' to 72.4': Zone of increased sand, isolated siltstone clasts @ 72.4'			
							@72.4': siltstone clasts, oxidation-reduction banded, with gley and MnO ₂ laminations @72.8': paleosol, moderate soil development, blocky structure, dark reddish brown, clayey, thin bed			
217 75										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES			V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"		HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)		V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120" Fe = Iron Oxide Mn = Manganese Oxide		FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE	

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CORE BORING LOG										BORING NO. CB-3	
PROJECT: El Rodeo School										PAGE 6 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 292.4 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	2/10/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DATE FINISH:	2/10/2012	
						INCLINED	Bit (Feet)		DRILLER:	Martini	
						BEARING	Barrel (Feet)	5	PREPARED BY:	JMP	
					0	ANG. FROM VERT.	Total (Feet)		LOCATION:	See Plate 1	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
217 75		75-80	Run 3 Box 5	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
							@76.0': Grades to Gravelly CLAY (CL), dark reddish brown, moist, scattered fine angular to subangular gravels, few siltstone clasts				
							@76.7': coarse sized siltstone clasts				
		@76.8': Gravelly CLAY (CL), dark reddish brown, moist, scattered fine angular to subangular gravels, few siltstone clasts					@77.8': Grades to Sandy CLAY (CL), dark yellowish to reddish brown, moist, some angular fine gravels, scattered fine sand				
212 80		80-85	Run 1 Box 6	5	100		@81.1' to 83': Increase in gravel				
							@83' to 90.3': paleosol, reddish brown to orange brown, sandy silty clay with fine rounded gravel				
207 85		85-90	Run 2 Box 6	5	100		@87.5' to 89.5': CLAY (CL), dark reddish brown, moist, few coarse sands, moderate blocky structure				
202 90							@89.5' to 90.3': Gravelly CLAY (CL), dark reddish brown, very moist, angular				
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
									COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



LEIGHTON

CORE BORING LOG										BORING NO. CB-3		
PROJECT: El Rodeo School										PAGE 7 OF 9		
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 9		
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 292.4 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:		
						HORIZONTAL	SIZE	2.5 I.D.	2/10/2012	2/10/2012		
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: JMP		
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1			
					0	ANG. FROM VERT.	Total (Feet)					
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
202 90		90-95	Run 3 Box 6	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
							black slate gravels					
							@90.3' to 92.8': Sandy GRAVEL (GP), dark yellow brown, wet, fine to coarse subrounded to angular gravel, medium to coarse sand					
		@92.8' to 93.6': Sandy CLAY (CL), dark yellow brown, moist, fine to medium sand, few fine gravels										
		@93.6' to 95.2': CLAY (CL), dark yellow brown, moist, few fine gravels										
197 95		95-100	Run 1 Box 7	5	100		@95.2' to 99': Grades to Silty CLAY with Gravel (CL), dark yellow brown, moist, concentrated gravels between 95.4' to 95.8' and 96.8' to 97', otherwise scattered fine gravels, increase in silt with depth					
							@99' to 101.1': Grades to Clayey Sandy SILT (ML), dark yellow brown, moist, fine sand, few fine angular gravel					
							@101.1' to 102.1': Sandy GRAVEL (GP), dark yellow brown, wet, fine to coarse sands, fine to coarse gravels, abundant black slaty gravels					
		@102.1' to 103.8': CLAY (CL), dark yellow brown, moist										
		@103.8' to 104.3': Sandy GRAVEL (GP), dark gray to yellow brown, wet, coarse gravels										
		@104.3' to 105': Sandy SILT (ML), weak soil development, dark yellow brown, moist, very fine sand										
192 100		100-105	Run 2 Box 7	5	100							
187 105												
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE			WEATHERING
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES			V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"			HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)			V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120"			FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE
									Fe = Iron Oxide Mn = Manganese Oxide			

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-3		
PROJECT: El Rodeo School										PAGE 8 OF 9		
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 9		
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 292.4 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	2/10/2012		
						HORIZONTAL	SIZE	2.5 I.D.	DATE FINISH:	2/10/2012		
						INCLINED	Bit (Feet)		DRILLER:	Martini		
						BEARING	Barrel (Feet)	5	PREPARED BY:	JMP		
					0	ANG. FROM VERT.	Total (Feet)		LOCATION:	See Plate 1		
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
187 105		105-110	Run 3 Box 7	3.9	78		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
							@105' to 106.1': No Recovery					
							@106.1' to 107.8': Sandy SILT (ML) with interlayered gravels, dark yellow brown					
							@107.8' to 109.3': Interlayered Sandy GRAVELS (GP) and CLAYS (CL), dark yellow brown, wet, fine to coarse subrounded gravels					
182 110		110-115	Run 1 Box 8	3.7	74		@109.3' to 110': CLAY (CL), dark yellow brown, moist					
							@110' to 111.3': No Recovery					
							@111.3' to 112': SAND to Gravelly SAND (SP), dark yellow brown, wet, fine subangular gravels					
							@112' to 112.5': CLAY with Gravel (CL)					
		@112.5' to 112.7': GRAVEL (GP) layer, fine subangular gravels, wet										
		@112.7' to 115': Clayey SAND to Sandy CLAY (SC-CL), dark yellowish brown, moist, fine sand										
177 115		115-120	Run 2 Box 8	4	80		@115' to 116': No Recovery					
							@116' to 116.3': Clayey SAND (SC), dark yellow brown, moist					
							@116.3': CLAY to Sandy CLAY (CL), dark yellow brown, moist					
							@116.8': Gravelly SAND (SP) layer					
		@117.2': CLAY to Sandy CLAY (CL), dark yellow brown, moist										
172 120												
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE			WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)			V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)			CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)			MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)			WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)			V. WIDE	>120"		MOD. SEVERE
												V. SEVERE
												COMPLETE

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CORE BORING LOG											BORING NO. CB-3
PROJECT: El Rodeo School											PAGE 9 OF 9
CLIENT: Beverly Hills Unified School District											JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation											PAGE NO.: 9 of 9
EQUIPMENT USED: CME-75, Continuous Core											ELEVATION: 292.4 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START:
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH:	DRILLER:	
						HORIZONTAL <td>SIZE <td>2.5 I.D. <td>2/10/2012 <td>Martini </td></td></td></td>	SIZE <td>2.5 I.D. <td>2/10/2012 <td>Martini </td></td></td>	2.5 I.D. <td>2/10/2012 <td>Martini </td></td>	2/10/2012 <td>Martini </td>	Martini	
						INCLINED <td>Bit (Feet) <td></td> <td>PREPARED BY: JMP <td>LOCATION: See Plate 1</td> </td></td>	Bit (Feet) <td></td> <td>PREPARED BY: JMP <td>LOCATION: See Plate 1</td> </td>		PREPARED BY: JMP <td>LOCATION: See Plate 1</td>	LOCATION: See Plate 1	
					0	ANG. FROM VERT. <td>Barrel (Feet) <td>5</td> <td></td> <td></td> </td>	Barrel (Feet) <td>5</td> <td></td> <td></td>	5			
							Total (Feet)				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS											
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.											
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG						
172 120	120-125	Run 3 Box 8	0.5	10	. . .	@120' to 120.5': Gravelly SAND (SP), dark yellow brown, moist, @120.5' to 125': No Recovery					
					. . .						
167 125						Total depth of boring: 125' bgs Perched groundwater encountered at approximately 44'-45', 45.8'-49.3', 51.5'-53', 55.8'-58.1', 60'-64.3', 66.3'-66.9', 90.3'-92.8', 103.8'-104.3', 107.8'-109.3', 111.3'-112', 112.5'-112.7' bgs Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.					
162 130											
157 135											
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING			
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE			
								COMPLETE			

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LEIGHTON

CORE BORING LOG										BORING NO. CB-4	
PROJECT: El Rodeo School										PAGE 1 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 2/9/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/9/2012		
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini		
						INCLINED	Bit (Feet)		PREPARED BY: JMP		
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
288 0						█	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
						█	@Surface: 4" Asphalt concrete @ 0.33': 2" Aggregate base @0.5': Artificial Fill, undocumented (Afu): Clayey SILT to Silty CLAY (ML-CL), brown, moist, trace fine sand @1' to 2': some concrete pieces				
						█	Pleistocene Alluvium of Benedict Canyon Wash (BCW₁): Gravelly CLAY (CL), fine to coarse rounded gravels, oxidized				
283 5						█	@5' to 5.4': Gravelly CLAY (CL), fine to coarse rounded gravels, oxidized @5.5': Clayey SILT to Silty CLAY (ML-CL), brown, moist @6' to 7': Grades to Sandy SILT (ML), medium brown, moist, fine sand, few fine gravels, moderate blocky structure, weak clay lined faces @7' to 10': Silty CLAY (CL), brown, moist, soft, scattered subangular fine black slate gravels, moderate blocky structure				
		5-10	Run 1 Box 1			█					
278 10						█	@10' to 12.2': Gravelly Silty SAND (SM), brown, moist, with subrounded fine to coarse black slate gravels, fine to medium sand, abrupt contact at 12.2'				
		10-15	Run 2 Box 1	5	100	█	@12.2': Pleistocene Alluvium of Benedict Canyon Wash (BCW₁): Grades to Silty CLAY (CL), brown, moist, few scattered fine gravels, moderate blocky structure, minor clay development on pedogenic faces, weathered slaty gravels				
273 15						█					
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES			V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"			HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)			V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120"		FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE
Fe = Iron Oxide Mn = Manganese Oxide											

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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


CORE BORING LOG										BORING NO. CB-4	
PROJECT: El Rodeo School										PAGE 2 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START: 2/9/2012		
						HORIZONTAL	SIZE	2.5 I.D.	DATE FINISH: 2/9/2012		
						INCLINED	Bit (Feet)		DRILLER: Martini		
						BEARING	Barrel (Feet)	5	PREPARED BY: JMP		
					0	ANG. FROM VERT.	Total (Feet)		LOCATION: See Plate 1		
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
273	15	15-20	Run 3 Box 1	5	100		@16.3': Thin GRAVEL (GP) layer, angular fine to coarse black slate gravels, 0.1' thick				
							@16.4': Silty CLAY (CL), brown, moist, few scattered fine gravels, moderate blocky structure, minor clay development on pedogenic faces, weathered slaty gravels				
268	20	20-25	Run 1 Box 2	5	100		@21.5': Grades to Sandy CLAY (CL), brown, moist, fine sand, few scattered fine subangular gravels				
							@22.3' to 24.3': Grades to Sandy SILT (ML), brown, moist to very moist, continued fine gravels scattered, some clay				
263	25	25-30	Run 2 Box 2	5	100		@24.5' to 25.8' Sandy SILT to Silty SAND (SM-ML), brown, very moist to wet, very fine sand				
							@25.8' to 27.5': Sandy GRAVEL (GP), brownish gray, slightly moist, fine to coarse subrounded to subangular gravels, coarse sand matrix				
258	30						@27.5' to 30': No Recovery				
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)		V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)		V. WIDE	>120"		MOD. SEVERE
								Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-4
PROJECT: El Rodeo School										PAGE 3 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START:
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH:	
						HORIZONTAL	SIZE	2.5 I.D.	2/9/2012	
						INCLINED	Bit (Feet)		DRILLER: Martini	
						BEARING	Barrel (Feet)	5	PREPARED BY: JMP	
					0	ANG. FROM VERT.	Total (Feet)		LOCATION: See Plate 1	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
258 30		30-35	Run 3 Box 2	2.5	50		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@30' to 31.5': Sandy GRAVEL (GP), moist, fine to coarse subangular to subrounded black slate gravels, few siltstone clasts, basal erosive contact, heavily weathered, oxidized gravels, siltstone, basalt, slate @31.5' Pleistocene Alluvium of Benedict Canyon Wash (BCW): Silty CLAY (CL), brown to reddish brown, moist, homogeneous, oxidized, oxidation reduction banding @32': Sandy CLAY (CL), dark reddish brown, fine sand with fine sand-sized siltstone fragments, moderate amount of silica cement, moderate blocky structure, some fine subrounded slaty gravel, gleyed along pedogenic faces, paleosol			
253 35		35-40	Run 1 Box 3	5	100		@35': Sandy CLAY (CL), brown to reddish brown, moist, some fine gravels @35.5' to 38.1': Sandy GRAVEL (GP), brown to reddish brown, moist, subrounded fine gravels, some coarse gravels, oxidized, heavily weathered, basal gravels and cobbles at 38.1' @38': well graded			
							@38.1' to 40': No Recovery			
248 40		40-45	Run 2 Box 3	3.1	62		@40' to 40.6': Gravelly SAND (SP), brown to reddish brown, very moist to wet, well graded @40.6' to 42.5': CLAY (CL), paleosol, brown to reddish brown, very moist, medium stiff, angular black slate gravels, well developed blocky fracture			
							@42.5' to 44.3': Grades to Sandy silty CLAY (CL), brown to reddish brown, moist to very moist, some angular black slate gravels @43.3' to 43.7': Very fine sand and clay laminations, trace siltstone sand-sized fragments, poorly developed soil, porous, 1-2 mm voids, minor gleying along sand laminations			
243 45							@44.3' to 44.9': Gravelly Clayey SAND (SC), brown, to grayish brown, very moist to moist, fine subrounded black slate gravels			
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES			V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"		HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)		V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120" Fe = Iron Oxide Mn = Manganese Oxide		FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE	

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CORE BORING LOG										BORING NO. CB-4
PROJECT: El Rodeo School										PAGE 4 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/9/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/9/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
243 45		45-50	Run 3 Box 3	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						@44.9' to 45.8': Silty SAND (SM), brown to reddish brown, very moist, fine sand				
						@45.8' to 46.2': Gradational zone of Clayey SILT (ML)				
238 50		50-55	Run 1 Box 4	5	100		@50' to 52.6': Sandy GRAVEL (GP), wet, brown, medium to coarse sand, fine subrounded gravels with few coarse gravels, upward fining sequence, erosive contact below			
						@52.6': Pleistocene Cheviot Hills Deposits (CHD): CLAY (CL), olive brown, moist, few scattered fine gravels, oxidized, blocky structure @53.7': Color grades to dark reddish brown				
233 55		55-60	Run 2 Box 4	5	100		@54.5' to 55.8': Grades to Clayey Gravelly SAND (SP), reddish brown, wet, fine to coarse subrounded gravels, well graded			
						@55.8' to 57': Grades to Silty SAND (SM), brown to reddish brown, very moist to wet, fine sand,				
						@56.8': basal pebbly GRAVELS (GP) @57' to 59.8': CLAY (CL), brown to reddish brown, moist				
228 60							@59.3': subangular GRAVELS (GP)			
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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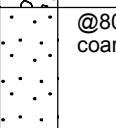
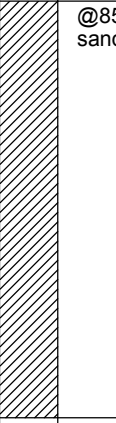

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CORE BORING LOG										BORING NO. CB-4
PROJECT: El Rodeo School										PAGE 5 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/9/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/9/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
228	60	Run 3 Box 4	5	100		@59.8' to 60': Grades to Silty SAND to SAND (SP-SM), very moist, brown to reddish brown, fine to medium sand @60': Clay to Sandy CLAY (CL), brown to reddish brown, moist to very moist, some gravels @60' to 60.3' and @63.1' @61.6': thin olive gray clay laminations, gleyed along moderately developed soil faces				
					@62.9': 2-3 inch thick gravel bed, erosive contact below, secondary clay development @63': Sandy CLAY (CL) below gravel					
223	65	Run 1 Box 5	5	100		@64.6': Siltstone rock fragments, thin bed, 2-3 inches thick @66.2': Sandy CLAY (CL), brown, very moist, fine gravels				
					@66.2': thin layer of fine angular siltstone gravels @66.4': Sandy CLAY (CL), brown, very moist, fine gravels					
					@67' to 67.5': Grades to CLAY (CL), brown, very moist @67.5' to 70': Clay to Sandy CLAY (CL), brown, very moist, fine gravels scattered throughout					
					@68.7' to 69.2': Dark red clay bed					
218	70	Run 2 Box 5	5	100		@70' to 73': Sandy GRAVEL (GP), grayish brown, wet, rounded fine to coarse black slate gravels, erosive contact below @73'				
					@73' to 73.8': CLAY (CL), olive gray, moist, few fine angular black slate gravels					
213	75					@73.8': Sandy Gravelly CLAY (CL), olive gray to brown, moist, generally fine subangular to subrounded gravel				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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CORE BORING LOG										BORING NO. CB-4
PROJECT: El Rodeo School										PAGE 6 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 2/9/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/9/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
213	75	75-80	Run 3 Box 5	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@76' to 80': Sandy GRAVEL (GP), grayish brown, subangular to subrounded gravels			
208	80	80-85	Run 1 Box 6	1.5	30		@80' to 81.5': Upward fining sequence of SAND (SP), grayish brown, wet, very coarse to fine sand			
							@81.5' to 85': No Recovery			
203	85	85-90	Run 2 Box 6	5	100		@85' to 90': CLAY (CL), paleosol, reddish brown, moist, few scattered coarse sands, homogeneous, well developed blocky structure, gleying along soil faces			
198	90									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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CORE BORING LOG										BORING NO. CB-4		
PROJECT: El Rodeo School										PAGE 7 OF 9		
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 9		
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	DRILLER:	
						HORIZONTAL	SIZE	2.5 I.D.	2/9/2012	2/9/2012	Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	LOCATION:	See Plate 1	
						BEARING	Barrel (Feet)	5				
					0	ANG. FROM VERT.	Total (Feet)					
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.												
198	90	90-95	Run 3 Box 6	5	100		@90': Sandy CLAY with Gravel (CL), brown to dark yellowish brown, moist					
							@91': thin gravel layer					
							@91.2': Sandy CLAY with Gravel (CL), brown to dark yellowish brown, moist					
							@92.9' to 93.1': GRAVEL layer (GP)					
							@93.1' to 95': Clayey SAND (SC), dark yellowish brown, moist, fine sand, few fine subrounded to subangular gravels					
193	95	95-100	Run 1 Box 7	5	100		@95.5' to 97.5: Grades to CLAY (CL), dark reddish brown, moist, few scattered coarse sands, well developed blocky structure					
							@97.8': siltstone rock fragments					
							@97.5': Grades to Sandy CLAY (CL), dark yellowish brown, fine sand, isolated 1/2					
							@97.8': siltstone rock fragments					
							@97.9': Sandy CLAY (CL), dark yellowish brown, fine sand					
188	100	100-105	Run 2 Box 7	5	100		@100' to 100.4': Sandy GRAVEL (GP)					
							@100.4' to 101.2': Sandy CLAY (CL), dark yellowish brown, moist					
							@101.2' to 105': Sandy GRAVELS (GP), grayish brown, wet, fine to coarse sand, fine to coarse subangular to subrounded gravels of various origins, primarily black slate					
183	105											
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)			V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)			CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)			MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)			WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)			V. WIDE	>120"		MOD. SEVERE
									Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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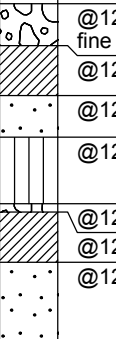
CORE BORING LOG										BORING NO. CB-4
PROJECT: El Rodeo School										PAGE 8 OF 9
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 9
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 2/9/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 2/9/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: JMP	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
183	105	105-110	Run 3 Box 7	2.9	58		@105' to 107.1': No Recovery			
							@107.1' to 109.8': SAND (SP), dark gray brown, wet, fine to coarse sand, upward fining sequence, with siltstone sand sized rock fragments			
178	110	110-115	Run 1 Box 8	5	100		@109.8' to 110': Sandy Clayey GRAVEL (GP-GC), dark gray brown, slightly moist, angular black slate gravels			
							@110' to 110.8': No Recovery			
							@110.8' to 111.5': Sandy CLAY (CL), dark yellowish brown, moist, few fine subangular black slate gravels			
							@111.5' to 113': Grades to Silty SAND (SM), very moist, dark yellowish brown, fine sand			
							@113' to 113.9': Grades to Sandy CLAY (CL), moist, dark yellowish brown			
		@113.9' to 115': Grades to CLAY (CL), dark reddish brown, moist								
173	115	115-120	Run 2 Box 8	2.8	56		@115' to 117.2': No Recovery			
							@117.2' to 117.8': CLAY with Sand and Gravel (CL), dark reddish brown, very moist, some fine sand and very fine gravels			
							@117.8' to 118.7': Grades to Clayey GRAVEL (GC), dark grayish brown, very moist, subangular gravels			
							@118.7' to 120': CLAY with Sand and Gravel (CL), dark reddish brown, moist, some coarse sands and few fine subangular gravels			
168	120									
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-4	
PROJECT: El Rodeo School										PAGE 9 OF 9	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 9	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 288.4 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	
						HORIZONTAL	SIZE	2.5 I.D.	2/9/2012	2/9/2012	
						INCLINED	Bit (Feet)		DRILLER:	Martini	
						BEARING	Barrel (Feet)	5	PREPARED BY:	JMP	
					0	ANG. FROM VERT.	Total (Feet)		LOCATION:	See Plate 1	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
168	120	120-125	Run 3 Box 8	4.1	82		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
							@120' to 120.9': No Recovery				
							@120.9' to 121.4': Sandy GRAVEL (GP), yellowish brown, very moist to wet, fine subangular gravels				
							@121.4' to 122': CLAY with Sand and Gravel (CL)				
							@122' to 122.5': Gravelly SAND (SP), dark yellow brown, very moist				
							@122.5' to 123.3': Clayey SILT (ML), dark yellow brown, very moist				
							@123.3' to 123.4': Sandy GRAVEL (GP) layer, dark yellow brown, very moist				
		@123.4' to 124': CLAY (CL), dark yellow brown, very moist									
		@124' to 125': Gravelly SAND (SP), dark yellow brown, very moist									
163	125						Total depth of boring: 125' bgs Perched groundwater encountered at approximately 24.5'-25.8', 40'-40.6', 54.5'-55.8', 70'-73', 80'-81.5', 101.2'-105', 107.1'-109.8', 120.9'-121.4' bgs Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.				
158	130										
153	135										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
									V. SEVERE		
									COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-5
PROJECT: El Rodeo School										PAGE 1 OF 13
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 13
EQUIPMENT USED: CME-75, Continous Core										ELEVATION: 294 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012	
		▽				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
294	0					●●●●●	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						●●●●●	@Surface: 3" Asphalt concrete @0.25': 3" Aggregate base @0.5': Artificial Fill, undocumented (Afu): Silty SAND (SM), dark yellow brown, slightly moist, fine sand, few fine gravels @1.0': Pleistocene Alluvium of Benedict Canyon Wash (BCW): Silty SAND (SM), orange brown, slightly moist, fine sand, few gravels, trace pieces of asphalt			
289	5	5-10	Run 1 Box 1	3	60	●●●●●	@5.8' to 6.4': Silty SAND (SM), dark yellow brown, moist, fine sand @6.4' to 7.3': Sandy GRAVEL (GP), dark yellow brown, moist, fine to coarse angular gravels, fine sand matrix, oxidized, highly weathered @7.3' to 8.0': Sandy SILT (ML), dark yellow brown, moist, fine sand @8' to 10': No Recovery			
284	10	10-15	Run 2 Box 1	5	100	●●●●●	@10' to 11.1': SAND (SP), orange brown, slightly moist, fine to medium sand, few fine black slate gravels @11.1' to 12.3': Silty CLAY (CL-ML), strong brown, moist, few fine black slate gravels @12.3' to 15': CLAY (CL), strong brown to gray brown, moist, few fine gravels			
279	15					●●●●●				
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON

CORE BORING LOG										BORING NO. CB-5	
PROJECT: El Rodeo School										PAGE 2 OF 13	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 13	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012		
		√				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini		
						INCLINED	Bit (Feet)		PREPARED BY: AWS		
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.						279	15				@15' to 17': Gravelly SAND (SP), strong brown to gray brown, slightly moist, fine sand, fine to coarse angular black slate gravels @17': CLAY (CL), orange brown to gray brown, moist, blocky structure, oxidized, gleyed @17.7': Thin GRAVEL (GP) bed @17.9': CLAY (CL), orange brown to gray brown, moist, blocky structure, oxidized, gleyed
274	20	Run 3 Box 1	5	100	100	@19.7': Some SAND (SP) @19.8': CLAY (CL), orange brown to gray brown, moist, blocky structure, oxidized, gleyed @20' to 20.4': Clayey SILT (ML) with sand, dark yellow, moist, paleosol, fine grained, blocky to columnar structure, minor gleying along pedogenic faces @20.4' to 23.5': Silty CLAY (CL), dark yellow brown to gray brown, blocky structure, Manganese Oxide on pedogenic faces @23.5' to 24.5': Sandy CLAY (CL), dark yellow brown to gray brown, fine sand					
269	25	Run 1 Box 2	5	100	100	@24.7' to 25.4': Sandy SILT (ML), moderate brown, moist, fine sand, few fine subrounded black slate gravels @25.4' to 27.7': Sandy GRAVEL (GP), gray brown, slightly moist, fine to coarse sand, fine to coarse rounded and weathered black slate and siltstone gravels, erosive contact below					
264	30	Run 2 Box 2	4.2	84	84	Pleistocene Alluvium of Benedict Canyon Wash (BCW): @27.7' to 29.2': Sandy CLAY (CL), moderate brown to gray brown, very moist, few gravels, fine sand, oxidized, gleyed @29.2' to 30': No Recovery					
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING			
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH				
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT				
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT				
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE				
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE				
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE			
								COMPLETE			

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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CORE BORING LOG										BORING NO. CB-5
PROJECT: El Rodeo School										PAGE 3 OF 13
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 13
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012	
		▽				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
264 30		30-35	Run 3 Box 2	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						@30' to 30.9': Silty CLAY (CL), banded dark yellow brown to chocolate brown, moist to very moist, base of developed soil				
						@30.9' to 32.1': Clayey SAND (SC), dark reddish brown to brown, moist, fine sand				
							@32.1': Sandy Clayey GRAVEL (GC-GP), dark gray brown, moist, fine to coarse angular to subangular black slate gravels			
							@34': Basal gravel contact, heavily oxidized, severely weathered, erosive contact below			
259 35		35-40	Run 1 Box 3	5	100		@34.2': Sandy CLAY (CL) to Clayey GRAVEL (GC) to 36.3', secondary clay			
						@36.3' to 43.2': CLAY to Sandy CLAY (CL), dark yellow brown to gray brown, moist, coarse sand, paleosol				
						@37.2' to 37.8': Increased sand				
							@38.6' to 39': Specks of MnO ₂ deposits in clay-rich zones			
254 40		40-45	Run 2 Box 3	5	100		@43.2': Basal gravel bed with carbonate, erosive contact below			
						@43.2' to 43.4': Clayey SAND (SC), gray brown, moist, coarse sand				
						@43.4' to 43.7': CLAY (CL), dark yellow brown to gray brown, moist, trace fine sand				
							@43.7' to 44.3': Sandy Clayey SILT (ML), dark yellow brown, moist, fine sand			
249 45							@44.3 to 44.7': Sandy Silty CLAY (CL), Paleosol, dark yellow brown to gray			
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-5		
PROJECT: El Rodeo School										PAGE 4 OF 13		
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 13		
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012			
		√				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini			
						INCLINED	Bit (Feet)		PREPARED BY: AWS			
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1			
					0	ANG. FROM VERT.	Total (Feet)					
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS						
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.						
249	45	Run 3 Box 3	5	100		brown, moist, trace of fine sand and clay laminations, siltstone rock fragments, poorly developed blocky fracture, gleying along pedogenic faces @44.7' to 45.8': Sandy SILT (ML), dark yellow brown to reddish brown, moist, fine sand @45.8' to 46.2': CLAY (CL), dark yellow brown to gray brown, moist @46.2' to 46.5': SAND (SP), orange brown, moist, fine sand @46.5' to 46.8': CLAY (CL), gray brown, moist, few fine gravels @46.8': Clayey Gravelly SAND (SP), dark orange brown, moist, fine to medium sand, fine black slate gravels, heavily oxidized contact with manganese oxide on gravels and sand grains @47.8': Pleistocene Cheviot Hills Deposits (CHD): CLAY (CL), orange brown to gray brown and dark brown between 48.2' to 49', moist, few fine black slate gravels, oxidation-reduction banding, gleyed, oxidized, banded between 49' to 55', heavy manganese oxide on well developed pedogenic faces, oxidized @49.5': Siltstone line						
244	50				Run 1 Box 4	5	100		@49.6': CLAY (CL), orange brown to gray brown and dark brown between 48.2' to 49', moist, few fine black slate gravels, oxidation-reduction banding, gleyed, oxidized, banded between 49' to 55', heavy manganese oxide on well developed pedogenic faces, oxidized @52.9' to 53.2': Sandy CLAY (CL), with 2-inch slaty gravels @53'-53.2': Siltstone rockline, heavily weathered Sandy CLAY (CL) below, oxidized with manganese oxide and clay on faces @53.2': Sandy CLAY (CL)			
239	55							Run 2 Box 4	5	100		@56.0' to 61.5': Sandy CLAY (CL), color change to dark reddish brown, moist, fine to medium sand, few coarse white siltstone gravels (light yellow brown to gray) @ 59', 59.8', and 60.4', well-developed blocky structure @58': 1-foot thick chocolate brown clay with siltstone rockline at 59' @59': Siltstone rockline @59.1': CLAY (CL), chocolate brown @59.5': Siltstone rock fragments, in sandy clay matrix, manganese oxide and
234	60											
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING				
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH				
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT				
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT				
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE				
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE				
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE				
								COMPLETE				

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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








CORE BORING LOG										BORING NO. CB-5			
PROJECT: El Rodeo School										PAGE 5 OF 13			
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001			
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 13			
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet			
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012				
		▽				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini				
						INCLINED	Bit (Feet)		PREPARED BY: AWS				
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1				
					0	ANG. FROM VERT.	Total (Feet)						
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS						
234 60		60-65	Run 3 Box 4	4.5	90		oxidation on pedogenic faces						
						@61.5' to 62.1': Silty CLAY (CL), moderate brown to gray brown, moist							
						@62.1' to 64.3': Sandy Gravelly CLAY (CL), moderate brown, moist, fine to coarse subrounded to angular gravels, scattered							
						@63.4': CaCO ₃ and siltstone cobble							
229 65		65-70	Run 1 Box 5	4.6	92		@64.3' to 64.5': Clayey SAND (SC), brown, moist, fine sand, basal well rounded coarse gravel						
						@64.5' to 65': No Recovery							
						@65' to 66.6': Silty CLAY (CL), dark yellow brown, moist, few very fine gravels							
						@66.6' to 68': Sandy Gravelly CLAY (CL), dark yellow brown, moist, subrounded to subangular gravels							
224 70		70-75	Run 2 Box 5	5	100		@68' to 69.6': Becomes more heavily gleyed and dark reddish brown						
						@69.6' to 70': No Recovery							
						@70' to 74.1': Sandy CLAY (CL), dark yellow brown, moist, fine sand, few very fine black slate gravels scattered							
219 75							@74.2'-74.7': Well rounded siltstone gravel bed, erosive contact below						
							@74.1' to 75': Gravelly Silty SAND (SM), dark yellow brown, moist, fine to						
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING				
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH				
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT				
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT				
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE				
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE				
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE				
									COMPLETE				

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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











LEIGHTON

CORE BORING LOG										BORING NO. CB-5				
PROJECT: El Rodeo School										PAGE 6 OF 13				
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001				
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 13				
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet				
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012				
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012					
		∇				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini					
						INCLINED	Bit (Feet)		PREPARED BY: AWS					
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1					
					0	ANG. FROM VERT.	Total (Feet)							
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS							
-219 75		75-80	Run 3 Box 5	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.							
-214 80											@76.8': Clayey Gravelly SILT (ML), dark yellow brown, moist, few fine subangular to subrounded black slate gravels			
											@78.6': Siltstone rounded basal cobble @79' to 81.6': Silty CLAY (CL), brown, moist, few very fine black slate gravels, lined with CaCO ₃			
-209 85		80-85	Run 1 Box 6	5	100		@81.6' to 85': Sandy GRAVEL (GP), gray brown, very moist, fine to coarse sand matrix, fine to coarse subangular to subrounded black slate gravels, few light brown siltstone gravels, basal coarse gravel at 85'							
-204 90							@85' to 86': Clayey SILT (ML), dark yellow brown, moist, trace fine sand							
			@86' to 87.3': Sandy CLAY (CL), strong brown, moist, scattered fine to medium sand, paleosol, coarse gravels at base, rounded, erosive contact below											
			@87.3' to 89.2': CLAY (CL), strong brown, moist, very homogeneous and plastic, fine gravel with CaCO ₃ , blocky structure, minor laminations and oxidation-reduction banding											
-204 90			@89.2' to 90.3': Gravelly CLAY (CL), strong brown, moist, fine to coarse angular to subangular slaty, siltstone, and basalt gravel of various origin											
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING					
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES		V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)		V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE					

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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CORE BORING LOG										BORING NO. CB-5
PROJECT: El Rodeo School										PAGE 7 OF 13
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 13
EQUIPMENT USED: CME-75, Continous Core										ELEVATION: 294 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012	
		√				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
204	90	90-95	Run 3 Box 6	5	100		@90.3' to 92.5': Clayey Gravelly SILT (ML), dark yellow brown, moist, some fine coarse subangular black slate gravels @ 92.5'			
							@92.5' to 94.2': Sandy CLAY (CL), dark yellow brown, moist, fine sand, few fine subangular gravels			
							@93.5' Siltstone rock line			
199	95	95-100	Run 1 Box 7	5	100		@94.2' to 95': Gravelly SAND (SP), gray brown, very moist to wet with some siltstone and slaty gravels, well graded			
							@95' to 95.4': CLAY (CL), dark yellow to strong brown, moist			
							@95.4' to 95.6': No Recovery			
							@95.6' to 97.5': Sandy Gravel (GP), gray brown, very moist, fine to coarse subrounded to subangular gravels, pulses of thin beds of gravels			
							@97.5' to 98.4': Silty SAND (SM), dark yellow brown, moist, fine sand			
194	100	100-105	Run 2 Box 7	5	100		@98.4' to 99.2': Sandy GRAVEL (GP), gray brown, very moist, fine subangular black slate gravels, basal gravel, erosive contact below			
							@99.2' to 100.9': CLAY (CL), dark yellow brown, moist, very fine sand			
							@100.9' to 101.7': Gravelly SAND (SP), dark yellow brown, moist, fine subangular gravels, some clay			
							@101.7' to 103.4': Sandy Gravel (GP), gray brown, very moist to wet, fine to coarse subangular gravels, slate, siltstone, and basalt, erosive contact below			
							@103.4' to 107': CLAY (CL), dark yellow brown, moist			
							@104': Thin gravel layer			
189	105						@104.2': CLAY (CL), dark yellow brown, moist			

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
								V. SEVERE	
								COMPLETE	



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LEIGHTON

CORE BORING LOG										BORING NO. CB-5		
PROJECT: El Rodeo School										PAGE 8 OF 13		
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 13		
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	DRILLER:	
		√				HORIZONTAL	SIZE	2.5 I.D.	3/26/2012	3/27/2012	Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	LOCATION: See Plate 1		
					0	BEARING	Barrel (Feet)	5				
						ANG. FROM VERT.	Total (Feet)					
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
189 105		105-110	Run 3 Box 7	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
							@105': Thin gravel layer @105.2': CLAY (CL), dark yellow brown, moist @106.5': Mildly banded					
							@107' to 108.6': Sandy GRAVEL (GP), gray brown, very moist, fine to medium sand, fine black slate gravels with a few coarse gravels, some clay, erosive contact below @108.6': CLAY (CL), dark yellow brown, moist, some fine sand, few very fine gravels of various origin, maganese oxide staining @108.9'-109.8': Sandy CLAY (CL), mildly banded					
184 110		110-115	Run 1 Box 8	5	100		@109.8'-110': CLAY (CL), yellow brown @110' to 111.3': Sandy GRAVEL (GP), gray brown, very moist to wet @111.3' to 113': SILT (ML), dark yellow brown, very moist, very fine sand, trace of very fine gravels @113' to 113.9': Sandy GRAVEL (GP), gray brown, very moist to wet, fine to coarse sand, fine angular black slate gravels @113.9' to 115': No Recovery					
							@115' to 116.5': Sandy GRAVEL (GP), gray brown, very moist, fine to coarse sand, fine subangular gravels, erosive contact below @116.5' to 117.5': Clayey GRAVEL (GC), dark yellow brown to gray brown, moist, fine subangular to angular gravels, basal coarse gravel and small cobbles @117.5' to 120': No Recovery					
179 115		115-120	Run 2 Box 8	2.5	50							
174 120												
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)			V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)			CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)			MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)			WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)			V. WIDE	>120"		MOD. SEVERE
									Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON

CORE BORING LOG										BORING NO. CB-5
PROJECT: El Rodeo School										PAGE 9 OF 13
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 13
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012	
		∇				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
174 120		120-125	Run 3 Box 8	1.5	30	• • •	@120' to 121.5': SAND (SP), fine to coarse sand, gray brown			
						@121.5' to 125': No Recovery				
169 125		125-130	Run 1 Box 9	3.3	66	• • •	@125' to 125.4': SAND (SP), gray brown, wet, fine to coarse (possible heaved material)			
						@125.4' to 128.3': CLAY (CL), dark yellow brown to strong brown				
						@126': Slightly varved with gray, few scattered very fine gravel				
		@128.3'-130': No Recovery								
164 130		130-135	Run 2 Box 9	0.9	18	Δ Δ Δ	@130' to 130.9': Gravelly SAND (SW), gray brown, wet, fine to coarse sand, fine to coarse gravel, some clay			
						@130.9' to 135': No Recovery				
159 135										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-5	
PROJECT: El Rodeo School										PAGE 10 OF 13	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 10 of 13	
EQUIPMENT USED: CME-75, Continous Core										ELEVATION: 294 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	
		√				HORIZONTAL	SIZE	2.5 I.D.	3/26/2012	3/27/2012	
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1		
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
159 135		135-140	Run 3 Box 9	4	80		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
						@135' to 136.7': CLAY (CL), yellow brown, moist, some silt					
						@136.7' to 137.9': Sandy Gravelly CLAY (CL), yellow brown, moist, some fine angular gravels, dark brown 0.5" thick silty sand clay bed @137'					
						@137.9' to 139': Sandy GRAVEL (GP), gray brown, wet, fine to coarse angular black slate gravels, fine to coarse sand					
		@139' to 140': No Recovery									
154 140		140-145	Run 1 Box 10	4.6	92		@140' to 140.4': SAND (SP), brown, wet, medium to coarse sand				
						@140.4' to 140.5': Silty SAND (SM) with clay, brown, wet, fine sand					
						@140.5' to 141.2': Silty SAND (SM), brown, wet, fine sand, fine subangular gravel					
						@141.2' to 142': Sandy CLAY (CL), orangish olive, wet, fine sand, FeO ₃ staining, fine subangular black slate gravel					
						@142' to 142.7': Sandy CLAY (CL), orangish brown, wet, fine sand, FeO ₃ staining					
						@142.7' to 143.5': Sandy CLAY (CL), dark brown, wet, fine sand, Mn nodules, subangular pebbles					
		@143.5': Clayey SAND (SC), brownish dark gray, wet, fine sand, MnO ₃ nodules, Fe staining, vertical CaCO ₂ stringers @143.75' to 143.85', MnO ₃ band @contact with below									
149 145		145-150	Run 2 Box 10	4.4	88		@144.5' to 144.6': Clayey SAND (SC), orangish olive, very moist, fine sand, Fe staining, few angular coarse sand				
						@144.6' to 145': No Recovery					
						@145' to 145.3': Clayey SAND (SC), orangish brown, wet, fine sand, subangular black slate pebbles					
						@145.3' to 146': Clayey SAND to Sandy CLAY (SC-CL), orangish olive, wet, fine sand, Fe staining, highly weathered angular gravels and pebbles					
						@146' to 148.5': Sandy CLAY (CL), mottled orange brown to olive, very moist to wet, fine sand, Fe staining, MnO ₃ banding, subangular to angular fine gravel					
						@148.5' to 149.1': CLAY (CL), mottled orange to olive, wet, Fe staining					
		@149.1' to 149.4': Clayey SAND (SC), mottled orange brown to olive, wet, fine with few coarse sand									
144 150		@149.4' to 150': No Recovery									
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
									V. SEVERE		
									COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB-5	
PROJECT: El Rodeo School										PAGE 11 OF 13	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 11 of 13	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	DRILLER:
		√				HORIZONTAL	SIZE	2.5 I.D.	3/26/2012	3/27/2012	Martini
						INCLINED	Bit (Feet)		PREPARED BY: AWS	LOCATION: See Plate 1	
					0	BEARING	Barrel (Feet)	5			
						ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
144 150		150-155	Run 3 Box 10	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
							@150' to 150.6': Clayey SAND (SC), mottled orangish to olive, wet, fine sand, FeO ₃ staining, few coarse sand				
							@150.6' to 153.2': Sandy CLAY (CL), mottled orange to olive, wet, very fine sand, FeO ₃ staining, Mn nodules, with CaCO ₃ , with siltstone clasts @151': gleyed, oxidation-reduction banded, MnO ₂				
139 155		155-160	Run 1 Box 11	5	100		@153.2' to 153.7': CLAY (CL), mottled orangish to olive, wet, FeO ₃ staining, MnO ₂ nodules				
							@153.7' to 153.85': CLAY (CL), mottled orangish to olive, wet, FeO ₃ staining, Mn ₂ nodules, subangular pebbles				
							@153.85' to 155.8': CLAY (CL), mottled orangish to dark olive, wet, FeO ₃ staining, MnO ₂ nodules				
							@155.8' to 157.35': Sandy CLAY (CL), mottled orangish to dark olive, wet, fine sand, FeO ₃ staining				
134 160		160-165	Run 2 Box 11	5	100		@157.35' to 158.1': CLAY (CL), mottled orangish gray, wet, Fe staining, heavy CaCO ₃ stringer development, near vertical, paleosol				
							@158.1' to 158.6': CLAY (CL), mottled brown gray, wet, Fe staining, Mn nodules, vertical CaCO ₃ stringers				
							@158.6' to 159.3': CLAY (CL), brown, wet, vertical CaCO ₃ stringers				
							@159.3' to 159.6': CLAY (CL), brown, wet, MnO ₂ nodules, horizontal and vertical CaCO ₃ stringers and nodules				
							@159.6' to 160.6': Clayey SAND (SC), brown, wet, fine sand, angular fine gravel, CaCO ₃ nodules				
129 165		@160.6' to 160.75': Angular gravel layer within unit									
		@160.75' to 162.6': Clayey SAND (SC), orangish olive, wet, fine angular pebbles, with some MnO ₂ and CaCO ₃ nodules									
		@162.2' to 162.3': MnO ₂ banding									
		@162.6' to 165': Sandy CLAY (CL), brown, wet, very fine sand, abundant CaCO ₃ nodules									

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
								V. SEVERE	
								COMPLETE	



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LEIGHTON

CORE BORING LOG										BORING NO. CB-5							
PROJECT: El Rodeo School										PAGE 12 OF 13							
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001							
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 12 of 13							
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet							
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/26/2012							
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/27/2012								
		√				HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini								
						INCLINED	Bit (Feet)		PREPARED BY: AWS								
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1								
					0	ANG. FROM VERT.	Total (Feet)										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS											
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.											
129 165	165-170	Run 3 Box 11	5	100		<p>@165' to 165.7': Sandy CLAY (CL), brown, wet, fine sand, fine subangular gravel, CaCO₃ nodules</p> <p>@165.7' to 166': Sandy CLAY (CL), olive brown, wet, very fine sand, MnO₂ nodules, CaCO₃ nodules</p> <p>@166' to 166.7': CLAY (CL), olive, wet, MnO₂ banding</p> <p>@166.2' to 166.4': Sandy CLAY (CL), olive brown, wet, very fine sand</p> <p>@166.4' to 166.5': SAND (SP), brown, wet, fine sand, poorly sorted</p> <p>@166.5' to 166.9': Clayey SAND (SC), brown, wet, very fine sand, MnO₂ nodules, CaCO₃ nodules</p> <p>@166.9' to 167': CLAY (CL), brown, wet, MnO₂ nodules, CaCO₃ nodules</p> <p>@167' to 167.2': CLAY (CL), olive, wet, MnO₂ nodules, CaCO₃ nodules</p> <p>@167.2' to 167.25': SAND (SP), olive, wet, fine sand, poorly sorted</p> <p>@167.25' to 167.4': Sandy CLAY (CL), dark olive, wet, MnO₂ nodules, CaCO₃ nodules</p>											
124 170					170-175	Run 1 Box 12	3	60		<p>@167.4' to 168.15': CLAY (CL), olive, wet, CaCO₃ nodules</p> <p>@168.15' to 168.5': CLAY (CL), mottled brown olive, wet, Mn nodules and CaCO₃ nodules prevalent</p> <p>@168.5' Quaternary San Pedro Formation (Qsp): Sandy CLAY (CL), dark gray, wet, fine to medium sand</p> <p>@168.6': Clayey SAND (SC), dark gray, wet, fine to medium sand</p> <p>@169.5' to 170': SAND (SP), dark gray, wet, fine to medium sand</p> <p>@170' to 170.75': Clayey SAND (SC), gray brown, wet, fine sand, fine subrounded gravel</p> <p>@170.75' to 170.85': Silty SAND (SM), gray olive, wet, fine sand, MnO₂ nodules</p> <p>@170.85' to 171.9': CLAY (CL) with sand, gray to olive, wet, fine sand, MnO₂ nodules, few fine subrounded gravel</p> <p>@171.9' to 172.8': Silty SAND (SM), dark olive gray, wet, fine sand</p> <p>@172.8' to 173': Silty SAND (SM), dark gray, wet, fine sand, FeO₃ staining</p> <p>@173' to 175': No Recovery</p>							
119 175									175-180	Run 2 Box 12	1.1	22		<p>@175' to 175.85': Silty SAND (SM), dark gray, wet, fine sand, fine subrounded gravel</p>			
114 180														<p>@175.85' to 176.1': CLAY (CL), marl, dark gray, wet, MnO₂ nodules, CaCO₃ nodules</p> <p>@176.1' to 180': No Recovery</p>			
FIELD HARDNESS									BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT									- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE		
									Fe = Iron Oxide Mn = Manganese Oxide								

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-5		
PROJECT: El Rodeo School										PAGE 13 OF 13		
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 13 of 13		
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 294 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:	DRILLER:	
		∇				HORIZONTAL	SIZE	2.5 I.D.	3/26/2012	3/27/2012	Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	LOCATION: See Plate 1		
					0	BEARING	Barrel (Feet)	5				
						ANG. FROM VERT.	Total (Feet)					
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
114	180	180-185	Run 3 Box 12	5	100	•••••	<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p> <p>@180' to 181.5': Silty SAND (SM), dark gray, wet, fine sand, massive, unconsolidated</p>					
						▨▨▨▨▨	<p>@181.5' to 183.8': CLAY (CL), dark gray, wet, with CaCO₃ nodules that increase with depth</p>					
						▨▨▨▨▨	<p>@183.8' to 184': Silty SAND (SM), brownish dark gray, wet, fine to very fine sand, MnO₂ banding</p>					
						•••••	<p>@184' to 185': CLAY (CL), mottled orange to olive, wet, CaCO₃ stringers and nodules, paleosol</p>					
109	185					▨▨▨▨▨	<p>@184.4' to 184.65': Silty SAND (SM), olive dark gray, wet, very fine sand, MnO₂ nodules, micaceous</p>					
						▨▨▨▨▨	<p>@184.65' to 184.85': CLAY (CL), dark olive, wet, MnO₂ nodules</p>					
						•••••	<p>@184.85' to 185': CLAY (CL), dark gray, wet</p>					
							<p>Total depth of boring: 185' bgs</p> <p>Perched groundwater encountered at approximately 94.2-95', 101.7-103.4', 110'-111.3', 113'-113.9', 125'-125.4', 130'-130.9', 137.9-185' bgs</p> <p>Excavation backfilled with cuttings and patched with asphalt upon completion of drilling.</p> <p>Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.</p>					
104	190											
99	195											
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE			WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)			V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)			CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)			MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)			WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)			V. WIDE	>120"		MOD. SEVERE
												COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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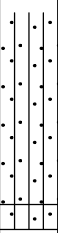


CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 1 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 11
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 305 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 3/28/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/29/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
305 0							@Surface: Asphalt concrete @0.4': Artificial Fill, undocumented (Afu): Silty SAND (SM), light brown, moist, fine to medium sand with angular gravel			
300 5							@5' to 5.8': Silty SAND (SM), brown, moist, fine to medium sand, clay, pipe fragments, rebar debris @5.8': Pleistocene Alluvium of Benedict Canyon Wash (BCW₁): Silty SAND (SM), gray brown, moist, fine to medium sand, fine and coarse subangular gravel			
		5-10	Run 1 Box 1	4	80		@7.3' to 7.65': Clayey SAND (SC), gray brown, moist, fine sand, fine and coarse subrounded gravels @7.65'- 8': Gravelly SAND (SP), gray brown, moist, fine sand, fine subangular black slaty gravel @8' to 9': Sandy CLAY (CL), orange brown, moist, fine sand, fine subrounded gravel @9' to 10': No Recovery			
295 10							@10' to 11': Sandy CLAY (CL), orange brown, moist, fine sand, FeO ₃ staining, fine subangular black slate gravel @11': Sandy CLAY (CL), mottled orange olive, moist, very fine sand, FeO ₃ staining			
		10-15	Run 2 Box 1	4.4	88		@12.1' to 14.1': Gravelly SAND (SP), orange brown, moist, fine sand, fine and coarse subrounded to subangular black slate gravel, well graded @14.1' to 14.4': Silty SAND (SM), orange brown, moist, fine sand @14.4' to 15': No Recovery			
290 15										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 2 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 11
EQUIPMENT USED: CME-75, Continous Core										ELEVATION: 305 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:
						HORIZONTAL	SIZE	2.5 I.D.	3/28/2012	3/29/2012
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: AWS
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
290 15		15-20	Run 3 Box 1	2.6	52		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@15' to 17.3': Silty SAND (SM) with clay, orange brown, moist, fine sand with interbedded layers of clay (~1/2" thick), olive, moist @17.3' to 17.6': Silty SAND (SM), dark brown, moist, fine to medium sand, subangular gravel, hydrocarbon odor @17.6' to 20': No Recovery			
285 20		20-25	Run 1 Box 2	3.7	74		@20' to 23': Gravelly SAND (SP), dark gray, moist, fine to medium sand, fine and coarse subangular to subrounded gravel, hydrocarbon odor and residue on material @23' to 23.7': Gravelly SAND (SP), orange gray, moist, fine to medium sand, fine and coarse subangular to sudrounded gravel, hydrocarbon odor @23.7' to 25': No Recovery			
280 25		25-30	Run 2 Box 2	4.3	86		@25' to 27.5': Sandy GRAVEL (GP), orange dark gray, wet, fine to medium sand, fine and coarse subangular to subrounded gravel, hydrocarbon odor, well graded, erosive contact below @27.2': Basal cobbles Pleistocene Alluvium of Benedict Canyon Wash (BCW): @27.5': CLAY (CL), mottled orange brown to olive brown, moist, FeO ₃ staining, gleyed, blocky structure @29.3' to 30': No Recovery			
275 30										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES			V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"		HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)		V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120" Fe = Iron Oxide Mn = Manganese Oxide		FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE	

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CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 3 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 11
EQUIPMENT USED: CME-75, Continous Core										ELEVATION: 305 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 3/28/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/29/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
275	30	30-35	Run 3 Box 2	5	100		@30': CLAY (CL), mottled olive to red brown, moist, FeO ₃ staining, few fine subangular black slate gravel, well developed blocky fracture, gleying along soil facies, paleosol			
						@32.6' to 34.5': Clayey SAND to Sandy CLAY (SC-CL), orange, moist, fine sand, fine subangular black slate gravel, with olive clay laminations				
						@34.5' to 35': Sandy CLAY (CL), orange brown, fine sand				
270	35	35-40	Run 1 Box 3	5	100		@35' to 35.7': Silty SAND (SM), red brown, wet, medium sand			
						@35.7' to 36.5': Sandy CLAY (CL), orange brown, very moist, fine sand, few subangular siltstone fragments, @36.6' base of paleosol				
						@36.5' to 38': Clayey SAND (SC), orange brown, very moist, fine sand with highly weathered angular gravels and fine subangular black slate gravel				
						@38' to 40': CLAY (CL), chocolate brown, very moist, few subangular black slate gravel				
265	40	40-45	Run 2 Box 3	4.1	82		@40' to 42.7': Gravelly SAND (SP), grayish brown, wet, subangular gravel			
						Pleistocene Cheviot Hills Deposits (CHD): @42.7' to 43.3': Silty SAND (SM) with clay, brown, wet, very fine sand, subrounded gravel, oxidized sand with MnO ₂				
						@43.3' to 44.1': Gravelly SAND (SP), gray brown, wet, fine subangular gravel, well graded				
						@44.1' to 45': No Recovery				
260	45									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

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CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 4 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 11
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 305 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/28/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/29/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
260 45		45-50	Run 3 Box 3	1.3	26	• • •	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						@45' to 45.7': SAND (SP), gray brown, wet, medium sand, poorly sorted				
						@45.7' to 46.1': SAND (SP), gray brown, wet, coarse sand, poorly sorted				
						@46.1' to 46.3': Gravelly SAND (SP), gray brown, wet, coarse sand, poorly sorted, fine and coarse subangular gravel, well graded @46.3' to 50': No Recovery				
255 50		50-55	Run 1 Box 4	1.5	30	• • •	@50' to 50.9': SAND (SP), gray brown, wet, medium sand, poorly sorted			
						@50.9' to 51.2': Gravelly SAND (SP), gray brown, wet, coarse sand, poorly sorted, subangular gravel, well graded				
						@51.2' to 51.5': CLAY (CL), orange brown, very moist to wet, angular black slate gravel				
						@51.5' to 55': No Recovery				
250 55		55-60	Run 2 Box 4	3.8	76	Δ Δ Δ	@55' to 55.7': Gravelly SAND (SW), dark gray brown, wet, medium to coarse sand, subangular gravel			
						@55.7' to 56.3': CLAY (CL), orange brown, wet, subangular gravels, poorly developed blocky fracture				
						@56.3' to 56.7': Silty SAND (SM), red brown, wet, fine sand, FeO ₃ staining, few subangular gravel				
						@56.7' to 58.8': Gravelly SAND (SP), dark grayish orange, wet, fine sand, fine subrounded to angular black slate gravel				
245 60							@58.8' to 60': No Recovery			
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
									COMPLETE	

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CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 5 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 11
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 305 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START:	DATE FINISH:
						HORIZONTAL	SIZE	2.5 I.D.	3/28/2012	3/29/2012
						INCLINED	Bit (Feet)		DRILLER: Martini	PREPARED BY: AWS
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
245 60		60-65	Run 3 Box 4	2.8	56	• • •	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						@60' to 60.5': SAND (SP), dark gray brown, wet, fine to coarse sand, subangular black slate gravel				
						@60.5' to 61.4': CLAY (CL), dark red brown, wet subangular black slate gravel				
						@61.4' to 61.8': Gravelly SAND (SW), dark gray brown, wet fine sand, subangular black slate gravel				
						@61.8' to 62.15': Silty SAND (SM), dark red brown, wet, fine sand				
		@62.15' to 62.3': SAND (SP), dark gray brown, wet, fine to medium sand, subangular black slate gravel								
		@62.3' to 62.5': Sandy CLAY (CL), dark red brown, wet, fine to very fine sand								
		@62.5' to 62.8': Gravelly SAND (SW), dark gray red brown, wet, fine sand, angular to subangular gravel								
		@62.8' to 65': No Recovery								
240 65		65-70	Run 1 Box 5	4.7	94	• • •	@65' to 65.4': CLAY (CL), olive brown, wet			
						@65.4' to 65.8': Sandy CLAY (CL), olive, wet, very fine sand				
						@65.8' to 66': Silty SAND (SM), olive, wet, fine sand				
						@66' to 66.3': Sandy CLAY (CL), olive, wet, very fine sand				
						@66.3' to 66.5': Silty SAND (SM), red brown, wet, fine sand				
						@66.5' to 67.3': Sandy CLAY (CL), red olive, wet, very fine sand				
						@67.3' to 68.3': CLAY (CL), chocolate brown, wet, FeO ₃ staining, MnO ₂ nodules				
		@68.3' to 68.6': CLAY (CL), brown, wet, subangular slaty gravel								
		@68.6' to 69': Silty SAND (SM), orange olive, wet, very fine sand								
		@69' to 69.7': CLAY (CL), olive, wet with brown banding								
235 70		70-75	Run 2 Box 5	4.4	88	• • •	@69.7' to 70': No Recovery			
						@70' to 70.9': Sandy CLAY (CL), orange olive, wet, fine to very fine sand				
						@70.9' to 72': Gravelly SAND (SW) with clay, dark gray brown, wet, fine to medium sand, subangular black slate gravel and subrounded gravel				
						@72' to 72.55': CLAY (CL), olive brown, wet				
						@72.55' to 73.15': Silty SAND (SM), orange brown, wet, fine to very fine sand				
		@73.15' to 73.5': Sandy CLAY (CL), dark brown, wet, very fine sand, subangular black slate gravel								
		@73.5' to 74.3': Silty SAND (SM), orange brown, wet, fine sand, subangular black slate gravel								
		@74.3' to 74.4': Gravelly SAND (SW), dark gray brown, wet, subangular gravel								
230 75		@74.4' to 75'- No Recovery								
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
									V. SEVERE	
									COMPLETE	

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CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 6 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 11
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 305 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 3/28/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/29/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
230	75	75-80	Run 3 Box 5	1.7	34	•••••	@75' to 76.7': Sity SAND (SM), dark gray brown, wet, fine to medium sand, few subangular gravel, "Salt and Pepper" sands			
						@76.7' to 80': No Recovery				
225	80	80-85	Run 1 Box 6	5	100	/ / / / /	@80' to 80.7': Sandy CLAY (CL), orange brown, very moist, fine sand, subangular gravel			
						@80.7' to 81.9': Sandy CLAY (CL), chocolate brown, very moist, fine sand, MnO ₂ nodules				
						@81.9' to 83.7': Sandy CLAY (CL), orange brown, very moist, fine sand, subangular gravel, with oxidation-reduction banded olive clayey sand				
						@83.7' to 85': CLAY (CL), orange brown, moist, abundant MnO ₂ nodules				
220	85	85-90	Run 2 Box 6	5	100	/ / / / /	@85' to 85.6': CLAY (CL), red brown, moist, MnO ₂ nodules			
						@85.6' to 88': Sandy CLAY (CL), red brown, moist, fine sand, fine subangular gravel				
						@88' to 88.9': Sandy CLAY (CL), red brown, wet, fine sand, subangular gravel				
						@88.9' to 90.2': Clayey SAND (SC), orange brown, very moist, fine sand, fine and coarse subangular gravels				
215	90					/ / / / /				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



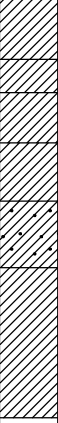
LEIGHTON


CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 7 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 11
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 305 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/28/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/29/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
215	90	Run 3 Box 6	5	100		@90.2' to 90.6': Silty SAND (SM), olive brown, very moist, fine sand				
						@90.6' to 90.9': CLAY (CL), olive brown, very moist				
						@90.9' to 91.6': Silty SAND (SM), red brown, wet, fine sand				
						@91.6' to 92.1': Silty SAND (SM), olive brown, wet, very fine sand				
						@92.1' to 92.4': Sandy CLAY (CL), olive brown, very moist, fine sand, FeO ₃ staining, MnO ₂ nodules				
						@92.4' to 92.6': CLAY (CL), olive brown, very moist, FeO ₃ staining, MnO ₂ nodules				
			@92.6' to 94.1': Clayey SAND (SC), orange olive, wet, fine sand, FeO ₃ staining, fine and coarse subangular black slaty gravels							
			@94.1' to 94.6': Clayey SAND(SC), orange olive, wet, very fine sand, FeO ₃ staining, subangular gravel							
210	95	Run 1 Box 7	5	100		@94.6' to 95': Clayey SAND (SC), red olive, moist, very fine sand, FeO ₃ staining				
						@95' to 95.7': Clayey SAND (SC), orange olive, moist, fine sand, FeO ₃ staining				
						@95.7' to 96.2': Clayey SAND (SC), red brown, moist, fine sand, FeO ₃ staining, subangular gravel				
						@96.2' to 96.7': Clayey SAND (SC), orangish olive, moist, fine sand, FeO ₃ staining				
						@96.7' to 97.8': Silty SAND (SM), brown, wet, fine sand, subangular to angular gravels				
						@97.8' to 98.1': Silty SAND (SM), olive brown, wet, fine sand				
			@98.1' to 98.6': Clayey SAND (SC), orangish olive, moist, very fine sand, subangular black slaty gravel							
			@98.6' to 98.8': CLAY (CL), olive brown, moist, MnO ₂ nodules							
			@98.8' to 99': Clayey SAND (SC), orange olive, moist, fine sand							
			@99' to 100': CLAY (CL), mottled orange to olive, moist, FeO ₃ staining, few MnO ₂ nodules from 99' to 99.2'							
205	100	Run 2 Box 7	5	100		@100' to 100.85': Silty SAND (SM), orange brown, wet, fine sand, angular black slaty gravels, basal gravelly sand				
						@100.85' to 101.6': Sandy CLAY (CL), red brown, wet, fine sand, FeO ₃ staining, some coarse sand, gleyed				
						@101.6' to 103': Sandy CLAY (CL), olive brown, moist, fine sand, FeO ₃ staining, MnO ₂ banding, few fine angular gravel				
						@103' to 103.9': Clayey Gravel (GC), mottled orange to olive, moist, FeO ₃ staining				
			@103.9' to 105': CLAY (CL), mottled orange to brown, moist, FeO ₃ staining							
200	105									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG											BORING NO. CB-6	
PROJECT: El Rodeo School											PAGE 8 OF 11	
CLIENT: Beverly Hills Unified School District											JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation											PAGE NO.: 8 of 11	
EQUIPMENT USED: CME-75, Continous Core											ELEVATION: 305 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 3/28/2012	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/29/2012		DRILLER: Martini	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini		PREPARED BY: AWS	
						INCLINED	Bit (Feet)		LOCATION: See Plate 1			
						BEARING	Barrel (Feet)	5				
					0	ANG. FROM VERT.	Total (Feet)					
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
200	105	105-110	Run 3 Box 7	5	100		@105' to 105.7': CLAY (CL), olive, wet, FeO ₃ staining, MnO ₂ nodules					
							@105.7' to 106.3': CLAY (CL), olive, wet, FeO ₃ staining, MnO ₂ nodules, subangular gravel					
							@106.3' to 109.2': CLAY (CL), mottled orange to olive, wet, FeO ₃ staining, trace MnO ₂ nodules					
195	110	110-115	Run 1 Box 8	5	100		@109.2' to 111': CLAY (CL), mottled red brown to dark gray, wet, FeO ₃ staining, MnO ₂ nodules					
							@111' to 113.2': CLAY (CL), orange brown, very moist, FeO ₃ staining, subangular black slaty gravel increasing with depth					
							@113.2' to 114.1': CLAY (CL) with sand, orangish olive, very moist, FeO ₃ staining, trace subangular gravel					
190	115	115-120	Run 2 Box 8	5	100		@114.1' to 115.7': CLAY (CL), brown, very moist to wet with few highly weathered angular gravel					
							@115.7' to 116.1': CLAY (CL), olive brown, moist to very moist, micaceous, sharp contact with above					
							@116.1' to 116.7': Sandy CLAY (CL), color change from brown to green, very moist, fine sand with few subangular gravel					
							@116.7' to 117.4': Sandy CLAY (CL), dark green, moist, fine sand					
							@117.4' to 118.2': Clayey SAND (SC), dark green, moist, fine sand, MnO ₂ nodules					
185	120	@118.2' to 120': CLAY (CL), color change brown to dark olive gray, moist, subrounded pebbles, CaCO ₃ nodules, MnO ₂ banding, grey marl with clayey calcareous laminations, marl										

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								SEVERE	
								COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 9 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 11
EQUIPMENT USED: CME-75, Continous Core										ELEVATION: 305 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 3/28/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/29/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
185	120	120-125	Run 3 Box 8	3.8	76	[Diagonal Hatching]	@120' to 120.5': CLAY (CL), dark gray, wet, CaCO ₃ stingers and nodules, MnO ₂ laminations			
						[Dotted]	@120.5' to 121.4': SAND (SP), dark gray, wet, fine to medium sand			
						[Diagonal Hatching]	@121.4' to 122': CLAY (CL), dark gray, wet, CaCO ₃ nodules			
						[Diagonal Hatching]	@122' to 123.55': Gravelly CLAY (CL) with sand, dark gray, wet, subangular to angular gravel, MnO ₂ laminations			
						[Diagonal Hatching]	@123.55' to 123.7': CLAY (CL), dark gray, wet, CaCO ₃ nodules			
						[Diagonal Hatching]	@123.7' to 123.8': SILT (ML), dark gray, moist			
						[Diagonal Hatching]	@123.8' to 125': No Recovery			
180	125	125-130	Run 1 Box 9	5	100	[Dotted]	@125' to 125.3': Silty SAND (SM), gray olive, moist, very fine sand			
						[Diagonal Hatching]	@125.3' to 126.15': CLAY (CL), dark gray olive, moist to very moist, CaCO ₃ nodules, MnO ₂ nodules			
						[Diagonal Hatching]	@126.15' to 126.8': CLAY (CL), sharp contact with above, brown, moist to very moist, CaCO ₃ nodules and medium sand prevalent			
						[Diagonal Hatching]	@126.8' to 128.7': CLAY (CL), olive dark gray, moist, CaCO ₃ nodules			
						[Diagonal Hatching]	@128.7' to 129.1': CLAY (CL), orangish olive gray, moist, CaCO ₃ nodules			
						[Diagonal Hatching]	@129.1' to 129.3': CLAY (CL), light brown, moist to very moist, FeO ₂ staining, sharp contact with below, CaCO ₃ , stringers			
						[Diagonal Hatching]	@129.3' to 130': CLAY (CL), gray, moist			
175	130	130-135	Run 2 Box 9	3.5	70	[Diagonal Hatching]	@130' to 131': Clayey SAND (SC), light yellow brown, wet, fine sand, MnO ₂ nodules			
						[Dotted]	@131' to 131.3': Silty SAND (SM), light yellow brown, wet, fine sand			
						[Diagonal Hatching]	@131.3' to 132.1': CLAY (CL), light yellow brown, moist, fine sand, FeO ₃ staining, MnO ₂ nodules			
						[Dotted]	@132.1': Quaternary San Pedro Formation (Qsp): Silty SAND (SM), light yellow brown, wet, very fine sand, FeO ₃ staining, angular gravel			
						[Diagonal Hatching]	@133.5' to 135': No Recovery			
170	135									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-6	
PROJECT: El Rodeo School										PAGE 10 OF 11	
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 10 of 11	
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 305 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE START: 3/28/2012		
						HORIZONTAL	SIZE	2.5 I.D.	DATE FINISH: 3/29/2012		
						INCLINED	Bit (Feet)		DRILLER: Martini		
						BEARING	Barrel (Feet)	5	PREPARED BY: AWS		
					0	ANG. FROM VERT.	Total (Feet)		LOCATION: See Plate 1		
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
170	135	135-140	Run 3 Box 9	0	0		@135' to 140': No Recovery				
165	140						@140' to 140.5': Sandy SILT (ML), yellowish olive, wet, very fine sand, subrounded gravel and cobbles @140.5' to 145': No Recovery				
160	145	140-145	Run 1 Box 10	0.5	10		@145' to 145.5': Silty SAND (SM), yellowish olive, wet, fine sand, FeO ₃ staining, subangular to subrounded gravel @145.5' to 147.2': Sandy SILT (ML), yellowish olive, wet, very fine sand, FeO ₃ staining, subangular to subrounded gravel				
155	150						@147.2' to 150': No Recovery				
150	150										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
									COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15



LEIGHTON


CORE BORING LOG										BORING NO. CB-6
PROJECT: El Rodeo School										PAGE 11 OF 11
CLIENT: Beverly Hills Unified School District										JOB NO.: 603367-001
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 11 of 11
EQUIPMENT USED: CME-75, Continuous Core										ELEVATION: 305 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 3/28/2012
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	DATE FINISH: 3/29/2012	
						HORIZONTAL	SIZE	2.5 I.D.	DRILLER: Martini	
						INCLINED	Bit (Feet)		PREPARED BY: AWS	
						BEARING	Barrel (Feet)	5	LOCATION: See Plate 1	
					0	ANG. FROM VERT.	Total (Feet)			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)		SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS		
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
155	150	150-155	Run 3 Box 10	2.1	42		@150' to 151': Silty SAND (SM), light olive, wet, fine to medium sand @151' to 151.4': Silty SAND (SM), orangish olive, wet, fine sand, FeO ₃ staining, subrounded gravel @151.4' to 152.1': Silty SAND (SM), orangish olive, wet, fine sand, FeO ₃ staining, subrounded gravel @152.1' to 155': No Recovery			
150	155	155-160	Run 1 Box 11	2.7	54		@155' to 155.5': Silty SAND (SM), red orange, wet, fine sand, FeO ₃ , prevalent staining @155.5' to 155.9': Silty SAND to Sandy SILT (SM-ML), orangish olive, wet, very fine sand, FeO ₃ staining @155.9' to 157.7': Silty SAND to Sandy SILT (SM-ML), light olive, wet, very fine sand, FeO ₃ staining, subrounded gravel @157.7' - 160': No Recovery			
145	160	Total depth of boring: 160' bgs Perched groundwater encountered @ 25'-27.5', 35'-35.7', 40'-76.7', 88'-88.9', 90.9'-92.1', 92.6'-98.1', 100'-101.6', 105'-111', 114.1'-115.7', 120'-123.7', 130'-131.3', and 132.1'-157.7' bgs. Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.								
140	165									
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 11/16/15






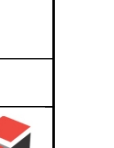
*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG										BORING NO. CB- 7				
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 14				
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006				
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 14				
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet				
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014				
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014				
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini				
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH				
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS								
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.								
293	0	0-5	Run 1 Box 1	5	100	@Surface: 3" Asphalt @0.25': 21" Aggregate base @2': Artificial Fill, Undocumented (Afu): Silty CLAY with sand (CL), brown, moist, fine to medium grained sand, trace fine gravel sized slate fragments, medium subrounded slate and pebbly gravels @3': Pleistocene Alluvium of Benedict Canyon Wash (BCW): Sandy CLAY (CL), brown to dark brown, fine grained sand, moderately blocky structure, few rounded slaty pebbles, weathered and subangular siltstone gravels, grades to below @4': Clayey SAND (SC), with fine to coarse sand and subangular weathered fine gravel								
288	5					5-10	Run 2 Box 1	4.4	88	@4.8': Silty SAND (SM), reddish brown, loose, fine grained, oxidized with thin pebbly beds @7.6': Grades to hard Silty SAND (SM), basal oxidized and heavily weathered @8.9': weathered to yellowish oxidation coating slate fragments @9.1': slate fragments @9.2' to 9.4': Gravel bed @9.4' to 10': No Recovery				
283	10									10-15	Run 1 Box 2	5	100	@10' to 10.6': Silty SAND (SM), reddish brown, moist, fine to medium grained sand, few coarse sand grains, few gravel sized slate fragments @10.6' to 10.8': Lamination of silty clay @10.8': Sandy GRAVEL (GP), subangular to subrounded heavily weathered slate, basalt and siltstone @11.3' to 11.9': Silty SAND (SM), reddish brown, moist, fine to coarse grained sand, few fine gravels, grades below @11.9': Sandy GRAVEL (GP), subangular to subrounded clasts with matrix of clayey sand, reddish brown, with yellowish oxidation staining, clasts consist of tabular slate and basalt, fine to coarse subrounded to subangular gravels, MnO staining, basal cobbles and zone of heavy oxide and MnO staining at 13.1', erosive contact at 16.4'
278	15													
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING						
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH							
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT							
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT							
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE							
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE							
								SEVERE	COMPLETE					
						Fe = Iron Oxide Mn = Manganese Oxide								

ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
278 15		15-20	Run 2 Box 2	3.9	78		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@16.4': Silty SAND (SM), with some clay, fine to medium grained sand, with interbedded medium to coarse grained sand, moist, dark reddish brown, heavily oxidized			
							@17.2': SAND bed (SP), dark orange brown with havily oxidized thin beds of fine grained sands, moist, coarse slaty sand, abrupt contact below			
							@17.8': Sandy GRAVEL (SP), fine gravel, dark reddish brown, moist, unconsolidated, friable, heavily weathered siltstone and slate			
		@18.9' to 20': No Recovery								
273 20		20-25	Run 1 Box 3	5	100		@20': Sandy CLAY (CL), reddish brown, mostly massive, clayey laminations, few fine slaty gravels, gleyed, moderate blocky structure with oxide and MnO on ped faces, grades below			
							@23.9': Clayey SILT (ML), with fine sand, dark reddish brown, increase in moisture, minor to poor blocky structure, abrupt contact below with MnO on ped faces			
268 25		25-30	Run 2 Box 3	5	100		@24.9': SAND (SP), orangish brown, fine grained			
							@25': Sandy GRAVEL (GP), subangular to subrounded tabular slate clasts, reddish brown, with yellow oxidation, clayey sand matrix, heavily oxidized, basal gravel bed at 27', erosive contact below			
							Pleistocene Alluvium of Benedict Canyon Wash (BCW): @27' to 28.9': Sandy CLAY (CL), with sand laminations, oxidation-reduction banding, gleying along sand laminations, orangish brown to grayish brown, sporadic fine gravels, very sandy from 27.8' to 28.3', gradational contact with below, oxidation-reduction banded			
		@28.9' to 30': Sandy CLAY (CL), color change to dark reddish brown, moderate blocky structure, MnO and clay development on ped faces, fine to medium grained sand, with fine weathered gravel								
263 30										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		SEVERE	
									COMPLETE	

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LEIGHTON

CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
263 30		30-35	Run 1 Box 4	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@30': Silty CLAY to Clayey SILT (CL-ML), with some fine sand, very moist, weathered basalt, abrupt contact below @30.2': Sandy CLAY (CL), very fine grained, orange brown, gleyed along laminations, spotty gleying in matrix, moderate blocky structure			
258 35		35-40	Run 2 Box 4	5	100		@33.5': Silty SAND (SM), thin bed, reddish brown to yellow brown to orange red, moist, fine grained @34.5': Becomes Sandy CLAY (CL), with very fine sand, reddish brown to orange brown, oxidized MnO and oxide on ped faces @35' to 35.7': Silty Sandy CLAY (CL-ML) @35.7' to 36.1': Sandy CLAY (CL), very dark reddish brown to chocolate brown, with fine gravel sized slate fragments, base of developed soil @36.1': Silty Sandy CLAY (CL-ML), poorly laminated, weathered slaty fragments to 39.7', gleyed along laminations and in matrix, brown, moderately blocky structure with oxide and very fine sand on ped faces, spotty MnO			
							@39.7' to 40': Silty CLAY (CL), dark reddish brown to brick red, gleyed, well developed blocky structure, MnO and oxide on ped faces @40' to 40.9': Clayey SILT (ML), with fine sand, dark brown, wet @40.9' to 42.2': Sandy CLAY (CL), orange brown to reddish brown, very moist, fine grained, minor gleying along laminations @41.6' to 42.2': coarse slaty rounded gravel bed, erosive contact below			
253 ∇ 40		40-45	Run 1 Box 5	3.7	74		@42.2': Gravelly SAND (SW), wet, fine to coarse sand and gravel, slaty rock fragments to 43.2' @43.2': Basal sandstone rounded cobbles @43.7' to 45': No Recovery			
∇										
248 45										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		SEVERE	
									COMPLETE	

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LEIGHTON

CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		▼			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
248	45					<p>@45' to 45.5': weathered gravel and sandstone cobble</p> <p>@45.5' to 47.1': Sandy GRAVEL (GP), dark reddish brown to orange brown, heavily oxidized, severely weathered gravels with MnO staining of weathered clasts, basal cobbles and slaty gravel, erosive contact below</p> <p>@47.1': Pleistocene Cheviot Hill Deposit (CHD): Sandy CLAY (CL), orange brown, very moist, fine grained, abrupt contact below</p> <p>@47.6': Becomes dark reddish brown to orange brown, gleying</p> <p>@48.1' to 48.3': Slaty coarse gravel in sandy clay matrix, moist</p> <p>@48.3' to 50': Sandy CLAY (CL), massive, light brown to orange brown, fine sand</p>				
243	50					<p>@50' to 52': Silty Sandy CLAY (CL-ML), blocky structure, spotty MnO on ped faces, reddish brown, moist, gleyed, fine grained sand</p> <p>@52' to 52.5': Silty SAND (SM), wet, perched zone, fine grained sand, reddish brown</p> <p>@52.5' to 52.7': CLAY (CL) lamination, poor blocky structure, reddish brown with yellow oxidation staining</p> <p>@52.7' to 52.9': Gravelly SAND with clay (SW-SC), fine to coarse grained sand, fine subangular to subrounded slaty gavel</p> <p>@52.9' to 53.2': CLAY (CL) lamination, poor blocky structure, reddish brown, with minor gleying, yellowish oxidation staining</p> <p>@53.2' to 55': Pebbly gravelly SAND (SP), olive brown to reddish brown, gleyed, massive, fine to coarse rounded slaty gravels, very moist, heavily oxidized @54.4'</p> <p>@55' to 55.5': Clayey Silty SAND (SC-SM), olive brown to reddish brown, gleyed, fine grained sand, trace medium grained sand, grades coarser</p> <p>@55.5' to 55.9': CLAY (CL), reddish brown, gleyed, poor blocky structure, some fine grained sand, gradational contact below</p> <p>@55.9': Sandy CLAY (CL), with gravel, reddish brown, gleyed, oxidized, massive, fine to coarse grained sand, fine subangular gravels, feldspars and slate</p> <p>@57.2': SAND (SP) bed, fine to coarse grained, trace fine gravel, erosional contact below</p> <p>@57.5' to 58.3': Sandy CLAY (CL), reddish brown, gleyed, poorly developed soil, fine to medium grained sand</p> <p>@58.3' to 59': Gravelly SAND (SP), brown, medium to coarse grained sand, fine subangular slate and quartz gravels, bedded coarse sand</p> <p>@59' to 59.5': Silty SAND with Clay lamination (SP-SC), fine grained, slightly micaceous</p>				
238	55									
233	60									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
233 - 60	60-65	Run 1 Box 7	2	40	•••••	@59.5': Medium to coarse grained sand lamination @59.6' to 59.8': Sandy SILT with Clay (ML-CL), reddish brown, moist, fine grained sand @59.8' to 60': Clayey SAND (SC), reddish brown, fine to coarse grained sand, gleyed, trace fine slaty gravels @60' to 62': SAND (SP), brown, moist, fine to medium grained sand, quartz, white siltstone and slate grains, poorly graded, well sorted @62' to 65': No Recovery				
228 - 65	65-70	Run 2 Box 7	5	100	•••••	@65' to 66.8': SAND (SP), reddish brown, fine to medium grained, white siltstone, quartz and slaty sand size fragments, poorly graded, erosive contact below @66.8': Sandy CLAY (CL), dark reddish brown, laminated, MnO on ped faces, trace fine subrounded slaty gravels, oxidation-reduction banded, oxidized, well developed blocky structure				
223 - 70	70-75	Run 1 Box 8	3.7	74	•••••	@69.2': Siltstone gravels, heavily weathered @70' to 70.3': Clayey SAND (SC), reddish brown, fine to medium grained, gradational contact below @70.3' to 71.3': Sandy CLAY (CL), reddish brown, minor gleying, laminated oxidation-reduction banding, spotty MnO on ped faces @71.3' to 73.7': Sandy CLAY (CL), color change to dark reddish brown, gleyed, MnO staining, faintly laminated, blocky structure, oxidation reduction banding				
218 - 75						@73.7' to 75': No Recovery				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

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CORE BORING LOG										BORING NO. CB- 7				
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 14				
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006				
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 14				
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet				
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014				
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014				
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini				
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH				
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG		FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS						
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.														
218	75	75-80	Run 2 Box 8	5	100	[Diagonal Hatching]		@75' to 75.6': Clayey SAND (SC), reddish brown, very moist, mostly fine to medium grained, trace coarse grained sand and fine gravel @75.5': Gravelly layer, fine to coarse rounded slate gravels @75.6' to 76.6': Sandy CLAY (CL), with gravel, gleying, massive, fine to coarse subangular to subrounded quartzite, slaty gravels, and basalt, basal weathered fine siltstone and slaty gravels, abrupt contact with below @76.6' to 78.9': Sandy CLAY (CL), reddish brown, moist, hard, minor gleying and oxidation, sporadic fine to coarse subangular to subrounded slate and quartzite, moderate blocky structure, sporadic MnO						
213	80					80-85	Run 1 Box 9	5	100	[Diagonal Hatching]		@78.9' to 79.1': GRAVEL (GP) thin bedded, weathered slate and siltstone @79.1' to 79.8': Becomes sandier, dark reddish brown, fine to medium grained sand, trace coarse grained sand and fine gravel @79.8' to 80.2': Subangular fine to coarse GRAVEL (GP) layer, slate, siltstone, basalt, erosive contact with below @80.2' to 81.8': Sandy CLAY (CL), reddish brown, gleyed, fine to medium grained sand, sporadic subrounded fine slaty gravels, moderate blocky structure, fine to coarse gravel layer		
										[Diagonal Hatching]		@81.8': Sandy GRAVEL (GP), thin bed, heavily oxidized, subrounded to subangular, slaty gravels, erosive contact below @82' to 83.9': Gravelly SAND (SP), fine to coarse grained sand, abundant fine rounded weathered basalt and slaty gravels, oxidized		
										[Diagonal Hatching]		@83.9' to 84.7': Basal Sandy GRAVEL (GP), rounded, oxidized, weathered slaty gravels, erosive contact below		
208	85	85-90	Run 2 Box 9	5	100	[Diagonal Hatching]		@84.7' to 87.3': Sandy CLAY (CL), dark reddish brown, fine grained sand, trace medium grained sand, sporadic fine slaty gravels, moderate blocky structure, caps underlying gravels at 87.3'						
						[Diagonal Hatching]		@87.3' to 89.6': Sandy GRAVEL (GP), fine to coarse gravels, subangular to subrounded, with tabular slate fragments, reddish brown, oxidized, heavily weathered, oxidized, MnO coating on slaty gravels, basal slate and siltstone at 89.6', erosive contact below						
203	90					[Diagonal Hatching]		@89.6' to 90': Sandy CLAY (CL), reddish brown, poor blocky structure, clay						
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING					
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH					
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT					
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT					
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE					
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE					
									V. SEVERE					
									COMPLETE					

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CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 7 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
203	90	Run 1 Box 10	5	100		development on ped faces, CaCO ₃ cement				
						@90' to 90.5': Gravelly SAND (SP), dark reddish brown, fine to coarse grained sand, fine subangular to subrounded slaty gravels, erosive contact below				
						@90.5' to 90.8': Sandy CLAY (CL), with silt, reddish brown, fine grained sand, poor blocky structure, clay development on ped faces				
						@90.8' to 91.1': Clayey SAND (SC), reddish brown, fine to medium grained sand, gradational contact below				
						@91.1' to 93.2': CLAY (CL), reddish brown, some silt, hard, trace fine grained sand				
		@91.7': Becomes dark chocolate brown, clay lamination, well developed blocky structure								
		@91.9': Dark reddish brown								
		@93.2' to 94.6': Sandy CLAY (CL), with gravel, reddish brown, hard, chaotic assemblage of fine to coarse gravel (debris flow), gravels consist of predominantly slate, siltstone, heavily weathered								
198	95	Run 2 Box 10	5	100		@94.6' to 95.6': Sandy GRAVEL (GP), fine to coarse sand, fine rounded gravels, oxidized, heavily weathered				
						@95.6' to 96.3': Clayey GRAVEL (GC), basal slaty gravels, oxidized, abundant MnO and clay on ped faces				
						@96.3' to 98.2': Sandy CLAY (CL), reddish brown, hard, poor blocky structure, clay development on ped faces, sporadic fine subangular slaty gravels, gradational contact				
						@98.2' to 98.7': GRAVEL (GP) bed, fine to coarse subangular slate fragments, erosive contact below				
		@98.7' to 102': Sandy CLAY (CL), reddish brown, moist, slightly micaceous, sporadic fine gravel								
193	100	Run 1 Box 11	5	100		@100' to 100.2': CLAY (CL), reddish brown, spotty MnO, staining on faces, trace fine sand				
						@100.6' to 102': Sandy CLAY (CL), reddish brown, fine grained sand, poor blocky structure, minor gleying, trace fine tabular slaty gravels, coated with clay				
						@102' to 102.7': Basal Gravel and Cobble bed, clasts up to 2-inches, tabular slate, siltstone, and basalt, clayey sand matrix, gleyed, erosive contact below				
						@102.7' to 104': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, mostly fine grained sand, trace medium to coarse grained sand, trace fine gravel, basal fine angular weathered siltstone				
		@104' to 105': Sandy CLAY (CL), reddish brown, fine grained sand, minor gleying, trace medium to coarse grained sand, sandy lenses @104.8' to 105'								
188	105									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 8 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
188	105					<p>@105' to 108.1': SAND (SP), brown, wet, mostly fine to medium grained sand, some coarse grained sand, fining upward, slightly micaceous, gradational contact, white siltstone rock fragments in matrix, erosive contact below</p>				
	105-110	Run 2 Box 11	5	100		<p>@108.1' to 108.4': Sandy CLAY (CL), dark reddish brown, fine to medium grained sand, trace coarse grained sand, gradational contact</p> <p>@108.4' to 109': Silty CLAY (CL-ML), dark reddish brown, faintly laminated, minor spotty MnO, abrupt contact</p> <p>@109' to 109.6': Channel Gravels, fine to coarse gravels, consisting of slate, quartz, and minor amounts of slaty, cobble-sized basalt, MnO and oxide staining</p>				
183	110					<p>@109.6' to 110': No Recovery</p> <p>@110' to 110.2': Gravelly SAND with Clay (SW-SC), reddish brown, wet, fine to coarse grained sand, fine subangular slaty gravels</p> <p>@110.2' to 110.5': CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand</p> <p>@110.5' to 110.8': Sandy GRAVEL (GP) bed, dark reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slate, Tm, and basalt gravels, gradational contact</p> <p>@110.8' to 111.1': Sandy CLAY (CL), reddish brown, moist, fine grained sand, faint laminations, minor gleying, poor blocky structure</p> <p>@111.1' to 111.6': Sandy GRAVEL (GP), dark reddish brown, fine to coarse grained sand, fine to coarse slate and quartzite, erosive contact below</p> <p>@111.6' to 112': Thin Sandy CLAY (CL) bed, moderate blocky structure</p> <p>@112' to 112.2': Clayey SAND (SC), reddish brown, moist, fine grained sand</p> <p>@112.2' to 115': No Recovery</p>				
	110-115	Run 1 Box 12	2.2	44						
178	115					<p>@115' to 115.8': Sandy CLAY (CL), reddish brown, fine to medium grained sand, laminated, moderate blocky structure, thin MnO, minor gleying, fine to medium grained sand lens @115.6'</p> <p>@115.8' to 115.9': Thin Silty CLAY (CL-ML) lamination, olive brown</p> <p>@115.9': Sandy CLAY (CL), reddish brown, fine to medium grained sand</p> <p>@116' to 116.2': Thin Silty CLAY (CL-ML) lamination, dark reddish brown, MnO₂ blebs</p> <p>@116.1': Sandy GRAVEL (GP) bed, fine to coarse grained sand, fine slaty gravels, heavily oxidized, weathered</p> <p>@116.2' to 116.7': Sandy CLAY (CL), dark reddish brown, fine grained sand, MnO₂ blebs, small brown blebs</p> <p>@116.7' to 117.3': Channel Deposits, fine to coarse subangular slate, fine to coarse grained sand, clayey matrix, gleyed, MnO lamination, yellow oxide laminations, entire unit laminated</p> <p>@117.3' to 120': No Recovery</p>				
	115-120	Run 2 Box 12	2.3	46						
	173									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15




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LEIGHTON


CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 9 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
173 120					• • •	@120' to 121.8': SAND (SP), brown, wet, fine to medium grained sand, trace coarse grained sand, trace fine subangular siltstone gravels				
	120-125	Run 1 Box 13	1.8	36		@121.8' to 125': No Recovery				
168 125					▨	@125' to 125.2': Sandy CLAY (CL), with gravel, dark reddish brown, fine to coarse grained sand, fine to coarse predominantly subangular to subrounded slaty gravels, clay coated grains				
	125-130	Run 2 Box 13	1.9	38	▨	@125.2' to 126.1': Sandy CLAY (CL), reddish brown, fine to medium grained sand, poor blocky structure, MnO blebs, trace fine gravel, lens of sand and gravel @125.6', gradational contact				
					▨	@126.1' to 126.5': Silty CLAY (CL-ML), reddish brown, trace fine to medium grained sand, fine gravel, shimmer on faces				
					▨	@126.5' to 126.9': Clayey GRAVEL (GC), dark reddish brown, hard, fine to medium grained sand, fine slaty gravels, iron oxide blebs, carbonate stringers				
					▨	@126.9' to 130': No Recovery				
163 ∇ 130					▨	@130' to 130.8': Clayey GRAVEL (GC), with sand, grayish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels, erosive contact below				
	130-135	Run 1 Box 14	3.6	72	▨	@130.8' to 133.1': Sandy CLAY (CL), reddish brown, laminated, hard, few fine subrounded gravels, gleyed, blocky structure, MnO spotting, laminations becomes less apparent, oxidation reduction banding				
					▨	@131': sharp contact, gleyed, clay below oxidation-reduction banded				
					▨	@132.7', gradational contact, MnO lamination				
					▨	@133.1' to 133.6': Silty CLAY (CL-ML), with sand, dark reddish brown, hard, massive, fine to medium grained sand, trace coarse grained sand, fine subrounded slaty gravels at base of sample				
					▨	@133.6' to 135': No Recovery				
158 ∇ 135										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"				
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"				
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"				
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"				
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB- 7												
PROJECT: El Rodeo Geohazard Investigation										PAGE 10 OF 14												
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006												
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 10 of 14												
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet												
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014												
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014												
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini												
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH												
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca												
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS																
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158	135	Run 2 Box 14	4.2	84		@135' to 135.5': Silty Clayey SAND (SM-SC), reddish brown, wet, fine to coarse grained sand, some fine gravels at contact below	@135.5' to 135.6': Gravelly CLAY (CL), with sand lamination, reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels	@135.6' to 137.7': Sandy GRAVEL (GP), with clay, dark reddish brown, wet, fine to coarse grained sand, fine to coarse subrounded slaty gravels, gradational contact	@137.7' to 138.1': Becomes Silty SAND (SM), with gravel, dark reddish brown, wet, mostly fine to medium grained sand, trace coarse grained sand, fine subrounded slate and quartz gravels	@138.1' to 139': GRAVEL (GP), heavily oxidized, dark reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slate and quartz gravels												
153	140					Run 1 Box 15	1.3	26		@139' to 139.2': 2-inch slate basal COBBLE, with heavily oxidized orange yellow staining	@139.2' to 140': No Recovery	@140' to 140.9': Fining upward sequence	@140': Silty SAND (SM), with clay, grayish reddish brown, wet, mostly fine to medium grained sand, trace coarse grained sand, fine slaty gravels	@140.5': Becomes mostly medium to coarse grained sand, wet	@140.7': Becomes mostly coarse grained sand and fine wet slaty gravels (SP-GP)	@140.9' to 141.2': Clayey GRAVEL (GC), with sand, grayish reddish brown, fine to coarse grained sand, fine to coarse subangular platy slate gravels	@141.2' to 141.3': 2+ - inch slate gravels, within clayey matrix, clay is oxidized and gleyed, waxy surface on faces	@141.3' to 145': No Recovery				
148	145									Run 2 Box 15	5	100		@145' to 145.1': Very thin layer of Clayey SAND (SC), with gravel, dark grayish reddish brown, wet, fine to coarse grained sand, fine slaty gravel	@145.1' to 145.3': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, fine slaty gravels, moderate blocky structure, minor gleying, faint oxidized laminations, abrupt contact	@145.3': Sandy GRAVEL (GP), wet, fine to coarse grained sand, fine to coarse subrounded platy slate and basalt gravels, clayey matrix, gleyed	@146.3' to 146.9': Basal channel gravel	@146.9': Increases in clayey matrix, heavily gleyed, yellow oxide band	@147.2', gravels become subangular, erosional contact below	@148.2': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, MnO spotting, moderate blocky structure, trace siltstone fragments, minor gleying, abrupt contact	@148.6' to 148.8': Clayey Sandy GRAVEL (GP-GC), reddish brown, fine to coarse grained sand, fine subrounded slaty gravels, abrupt contact	@148.8' to 149': Sandy Silty CLAY (CL-ML), reddish brown, MnO banding,
143	150																					

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FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
							COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 11 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 11 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
143	150					gradational contact				
						@149' to 150': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, fine gravel, MnO spotting and minor bands, minor gleying, spotty oxides, moderate blocky structure				
						@150' to 151.4': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, fine slaty gravels, gleyed on minor sandy laminations, moderate blocky structure, abundant MnO ₂ spotting on faces				
						@151.4' to 151.6': Increase in sand content, increase in gleying, moderate blocky structure, oxidation reduction banding				
						@151.6' to 152.4': Sandy CLAY (CL), reddish brown, fine to medium grained sand, poor blocky structure, moderately gleyed				
						@152.4': Sandier lamination				
						@152.5' to 152.7': Sandy CLAY (CL), reddish brown, fine to medium grained sand, gleyed, moderate blocky structure				
						@152.7' to 152.8': Lamination with increase in coarse grained sand				
138	155					@152.8' to 153.3': Fining upward sequence, Sandy CLAY (CL), reddish brown to dark reddish brown, gleyed, fine grained sand in upper zone, fine to medium grained sand in middle, fine to coarse grained at base, trace fine slaty gravels, moderate blocky structure, MnO spotting, gleyed				
						@153.3' to 153.8': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, poor blocky structure, faintly laminated				
						@153.8' to 154.4': Sandy CLAY (CL), dark reddish brown, fine to medium grained sand, trace coarse grained sand, fine gravel, laminated, gleyed, moderate blocky structure, MnO spotting				
						@154.4' to 155': No Recovery				
						@155' to 155.4': Sandy CLAY (CL), reddish brown, fine to medium grained sand, laminated, moderate blocky structure, trace fine gravel, gleyed				
						@155.4' to 155.6': Fine to coarse GRAVEL (GP) zone, matrix has moderate blocky structure				
						@155.6' to 156.5': Sandy CLAY (CL), reddish brown, fine to medium grained sand, minor gleying, massive				
						@156.3': GRAVEL (GP) bed, fine slate and basalt gravels, gradational contact below				
133	160					@156.5' to 158.6': Silty CLAY (CL-ML), with sand, dark reddish brown, faintly oxidation-reduction banded, progressively clayier, fine to medium grained sand, trace coarse grained sand, minor gleying, MnO spotting, caps gravel below				
						@158.6' to 158.8': Fine slaty GRAVEL bed with Clayey matrix (GC)				
						@158.8' to 159.1': Clayey SAND (SC), reddish brown, fine to medium grained sand, abrupt contact				
						@159.1' to 160': Silty Sandy CLAY (CL-ML), dark reddish brown, fine grained sand, faintly laminated, gleyed, moderate blocky structure, MnO spotting				
						@160' to 162.8': Silty Sandy CLAY (CL-ML), dark reddish brown, oxidation-reduction banded laminations, fine grained sand, poor blocky structure, gleyed, MnO spotting, gradational contact				
						@162.8' to 163.4': Increasing sand content, fine to medium grained sand, trace coarse grained sand, dark reddish brown, gradational contact				
						@163.4' to 164.3': Silty Sandy CLAY (CL-ML), dark reddish brown, faint oxidation-reduction banded laminations, fine grained sand, poor to moderate blocky structure				
128	165									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 12 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 12 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
128 165	165-170	Run 2 Box 17	5	100		@164.3' to 165': Becomes very dark reddish brown, laminations become less apparent and abundant @165' to 166.5': Silty CLAY (CL-ML), with sand, very dark reddish brown, fine to medium grained sand, trace fine slaty gravels, abundant vertical carbonate stringers, moderate blocky structure, basal slaty gravel @166.5': Becomes Sandy CLAY (CL), minor carbonate stringers continue				
						@167.2' to 167.6': Sporadic fine slaty GRAVEL in Sandy Clay matrix (GC), carbonate becomes less abundant @167.6' to 169.3': Sandy CLAY (CL), reddish brown, fine to medium grained sand, with few coarse grained sand, trace fine slaty and Tm gravels, poor blocky structure, sporadic carbonate stringers				
123 170						@169.3' to 169.4': Sandy lamination @169.4' to 171.4': Sandy CLAY (CL), dark reddish brown, fine to medium grained sand, few coarse grained sand, trace fine slaty gravels, sporadic carbonate stringers				
						@171.4' to 172.2': Becomes sandier				
	170-175	Run 1 Box 18	5	100		@172.2' to 174.7': Silty Sandy CLAY (CL-ML), very dark reddish brown, fine grained sand, trace medium to coarse grained sand, MnO nodules, sporadic carbonate stringers, moderate blocky structure				
118 175	175-180	Run 2 Box 18	5	100		@174.7' to 175': Sandy CLAY (CL), very dark reddish brown, fine to medium grained sand, sporadic carbonate stringers, oxidized blebs, MnO blebs, gradational contact @175' to 175.3': Sandy CLAY (CL), grayish brown, very moist, fine grained sand, few medium grained sand, soft, shimmer on faces, gradational contact @175.3' to 175.4': Lamination of Sandy CLAY to Clayey SAND (SC-CL), fine to medium grained sand, trace coarse grained sand @175.4' to 175.6': Sandy CLAY (CL), grayish brown, slight reddish brown mottling, poor blocky structure, slightly micaceous @175.6' to 175.9': Lamination of Clayey SAND (SC), fine to medium grained sand, trace coarse grained sand, slate fragments				
						Quaternary San Pedro Formation: (Qsp) @175.9' to 177.9': Sandy CLAY (CL), color change, grayish brown, fine grained sand, trace medium to coarse grained sand, trace fine gravel, Tm and slate, carbonate stringers, shell fragments, poor blocky structure, gradational contact @177.9' to 178.9': Clayey Silty SAND (SC-SM), gray, fine grained sand, trace medium grained sand, well sorted, abrupt contact				
113 180										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15 Fe = Iron Oxide Mn = Manganese Oxide										

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CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 13 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 13 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
113 180	180-185	Run 1 Box 19	2	40		@178.8': MnO ₂ @178.9' to 179.9': Silty CLAY (CL-ML), gray, fine grained sand, sporadic carbonate stringers, shimmer on faces, thin sandy lamination @179.2' @179.9' to 180': Lamination of Silty SAND (SM), gray, fine to medium grained sand @180' to 180.4': Sandy CLAY to Clayey SAND (SC-CL), gray, very moist, fine grained sand, moderate blocky structure, carbonate stringers, calcite crystals, gradational contact @180.4' to 180.5': GRAVEL (GP) layer, fine subrounded slate and quartz gravels @180.5' to 180.9': Sandy Silty CLAY (CL-ML), gray, fine grained sand, trace medium grained sand, carbonate stringers and nodules, gradational contact @180.9' to 182': Sandy CLAY (CL), gray, fine grained sand, moderate blocky structure, faintly laminated, carbonate stringers @182' to 185': No Recovery				
108 185	185-190	Run 2 Box 19	3.7	74		@185' to 185.4': Interlaminated Silty CLAY and Clayey SAND (SM-SC), gray to dark gray, clay is well developed, with waxy finish on faces, fine grained sand @185.4' to 188.1': Silty CLAY (CL-ML), with sand, gray, massive, fine grained sand, minor carbonate blebs @188.1' to 188.7': Silty CLAY (CL-ML), with sand, gray, with abundant reddish brown staining, fine grained sand, carbonate blebs, minor carbonate stringers @188.7' to 190': No Recovery				
103 190	190-195	Run 1 Box 20	4.2	84		@190' to 193.8': Silty CLAY (CL-ML), dark gray, faintly laminated, sporadic carbon concretions and blebs, trace fine grained sand @193.8' to 194.2': Sandy SILT (ML), with clay, dark gray, fine grained sand, trace medium flat rounded sand grains @194.2' to 195': No Recovery				
98 195										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
Fe = Iron Oxide Mn = Manganese Oxide										

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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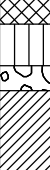
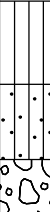

CORE BORING LOG										BORING NO. CB- 7
PROJECT: El Rodeo Geohazard Investigation										PAGE 14 OF 14
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 14 of 14
EQUIPMENT USED: CME-75										ELEVATION: 293 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	▽ 40				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)			PREPARED BY: EH
		▼			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)		SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS		
98 195								<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p> <p>Total depth of coring: 195' bgs Perched groundwater encountered @ 40'-40.9', 41.8'-43.7', 52'-52.5', 100'-100.2', 105'-108.1', 110'-110.8', 120'-121.8', 135'-139', 140'-140.7', 145'-145.1', and 145.3'-148.2' bgs Local groundwater table encountered @135' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of cold patch mix asphalt. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite</p>		
93 200										
88 205										
83 210										
FIELD HARDNESS				BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH			V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT			THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY			MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES			THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE
V. SOFT	- CARVES			V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE
								Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE
										COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15



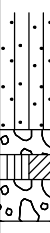

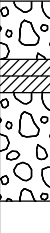
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CORE BORING LOG										BORING NO. CB- 8
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 10
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 10
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
300	0					@Surface: 5-inches Asphalt @0.4': 8-inches Portland Cement				
						@1': Artificial Fill, Undocumented (Afu): @1' to 5': Hand auger				
295	5					@5' to 5.2': Asphalt chunks with clay @5.2': Pleistocene Alluvium of Benedict Canyon Wash (BCW): Sandy SILT (ML), with clay, brown, moist, fine grained sand, trace medium to coarse grained sand @5.7'-7': Gravel (GP), thin bed, gleyed, oxidized, with minor manganese oxide on pedogenic faces @6' to 7': Sandy CLAY (CL), with silt, brown, fine grained sand, slightly micaceous, silt and fine sand on pedogenic faces @7' to 10': No Recovery				
290	10					@10' to 11': Sandy SILT (ML), reddish brown, moist, fine grained sand, trace clay, gradational contact @11' to 11.9': Silty SAND (SM), reddish brown, fine grained sand, trace medium grained sand, abrupt contact @11.9' to 12.0': Sandy GRAVEL (GP), reddish brown matrix, with fine to medium grained sand @12.9' to 13.2': Sandy SILT (ML), with clay, olive brown, moist, laminated, fine grained sand, oxidized, friable, windblown @13.2' to 15': No Recovery				
285	15									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB- 8
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 10
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 10
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
285 15		15-20	Run 1 Box 2	2.5	50		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
280 20						@15' to 16.4': Silty SAND (SM), olive brown, laminated, mostly fine grained oxidized sand, trace medium grained sand, trace clay, abrupt contact, with gravel below @16.4' to 16.7': GRAVEL (GP) bed, gray, fine subangular to subrounded slaty gravels, basal cobble (siliceous), erosive contact below @16.7' to 17': Silty CLAY (CL-ML), olive brown to greenish brown, moist, trace fine grained sand @17' to 17.5': Sandy GRAVEL (GP), reddish brown, moist, fine to coarse grained sand, fine subangular slate and basalt gravels, trace coarse gravels, heavily oxidized and weathered @17.5' to 20': No Recovery				
275 25						@20' to 20.6': Sandy GRAVEL (GP), reddish brown, moist, fine to coarse grained sand, fine to coarse subangular slate and basalt gravels @20.6' to 25': No Recovery				
270 30						@25' to 25.7': Sandy GRAVEL (GP), with gravel, brown, moist, fine to coarse grained sand, fine subrounded slate and basalt gravels, heavily oxidized at contact below Pleistocene Alluvium of Benedict Canyon Wash (BCW): @25.7' to 25.9': Interbedded Sandy CLAY (CL), reddish brown, fine grained sand, well oxidized @25.9' to 26.2': Sandy CLAY (CL), brownish gray, moist, fine grained sand, poor blocky structure @26.2' to 27.4': Sandy GRAVEL (GP), reddish brown with gray mottling, gleyed, weathered, fine to coarse sand, fine to coarse subangular slaty gravels @27.4' to 30': No Recovery				
285 15		20-25	Run 2 Box 2	0.6	12					
275 25		25-30	Run 1 Box 3	2.4	48					
270 30										





ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE	
								SEVERE
								COMPLETE



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CORE BORING LOG										BORING NO. CB- 8
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 10
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 10
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
270 - 30	30-35	Run 2 Box 3	3.9	78		<p>@30' to 32': Sandy GRAVEL (GP), reddish brown, fine to coarse grained sand, fine to coarse slate and basalt gravels, nested channel, oxidized at gradational contact below, becomes silty sand</p> <p>@32' to 32.9': Silty SAND (SM), reddish brown, moist, fine to medium grained sand, faintly laminated, poor blocky structure, minor carbonate stringers</p> <p>@32.9' to 33.9': Sandy GRAVEL (GP), reddish brown, fine to coarse grained sand, fine to coarse gravel, oxidized</p> <p>@33.9' to 35': No Recovery</p>				
265 - 35	35-40	Run 1 Box 4	5	100		<p>@35' to 35.3': Sandy SILT (ML), with clay, reddish olive brown, massive, fine to coarse grained sand, angular siltstone gravels, caps unit below</p> <p>@35.3'-37.5': Sandy GRAVEL (GP), fine to coarse rounded gravels, slaty, basalt, feldspar, siltstone, heavily weathered with heavy oxidation at basal coarse gravel, manganese and oxide rimming of weathered slate, erosive contact below</p> <p>@37.5' to 38': Sandy CLAY (CL), with gravel, reddish brown, moist, fine grained sand, trace medium grained sand, moderate blocky structure, white siltstone cobble at 38', rockline</p> <p>@38' to 42.9': Sandy GRAVEL (GP), reddish brown, very moist, fine to medium grained sand, trace coarse grained sand, fine gravel, poor to moderate blocky structure, yellowish oxidation staining, @42.9': bottom of gravel, top of clay paleosol, gleyed at top, capped with coarse gravels</p>				
260 - 40	40-45	Run 2 Box 4	4.3	86		<p>@42.9': Pleistocene Cheviot Hills Deposits (CHD): Sandy CLAY (CL), reddish brown, wet, fine grained sand, gleyed, heavy oxidation, with oxide stringers</p> <p>@43.6' to 44.3': Silty CLAY (CL-ML), olive brown, moist, trace fine sand, abundant oxide stringers, laminated, well oxidized, minor gleying</p> <p>@44.3' to 45': No Recovery</p>				
255 - 45										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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


CORE BORING LOG										BORING NO. CB- 8
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 10
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 10
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
255 45		45-50	Run 1 Box 5	3.8	76		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
∇							<p>@45' to 47.2': Sandy CLAY (CL), olive brown, moist, fine grained sand, moderate blocky structure, abundant reddish brown oxide and manganese oxide stringers, oxidation-reduction banding</p>			
∇							<p>@47.2' to 48.4': Clayey SAND (SC), reddish brown, wet, laminated, abundant dark reddish brown staining, fine grained sand, sporadic sandy clay laminations</p>			
250 50		50-55	Run 2 Box 5	3.8	76		<p>@48.4': Pebbly fine Sandy Gravel bed (GP), wet, oxidized at contact below with clayey sand</p>			
∇							<p>@48.6': Clayey SAND (SC), reddish brown, wet, laminated, abundant dark reddish brown staining, fine grained sand, sporadic sandy clay laminations</p>			
∇							<p>@48.8' to 50': No Recovery</p>			
∇							<p>@50' to 51.5': Silty SAND (SM), reddish brown, clean sand, very moist, mostly fine grained sand, some medium grained sand</p>			
∇							<p>@51.5' to 52': Becomes Sandy GRAVEL (GP), reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded gravel, weathered gravels, erosive basal contact below</p>			
245 55		55-60	Run 1 Box 6	3.6	72		<p>@52' to 52.2': Lamination of reddish brown SILT (ML)</p>			
∇							<p>@52.2' to 52.6': Sandy CLAY (CL), reddish brown, fine to coarse grained sand, moderate blocky structure</p>			
∇							<p>@52.6': Rock Line</p>			
∇							<p>@52.7' to 53.8': Sandy CLAY (CL), reddish brown, moist to very moist, fine to coarse sand, with white siltstone clasts, moderate blocky structure, sporadic clay rich laminations, abundant manganese oxide</p>			
∇							<p>@53.8' to 55': No Recovery</p>			
∇							<p>@55' to 55.9': Silty SAND (SM), reddish brown, wet, fine to medium grained sand</p>			
∇							<p>@55.9' to 56.2': Sandy GRAVEL (GP), reddish brown, wet, fine to coarse grained sand, fine subrounded slaty gravel, erosive contact below</p>			
240 60		<p>@56.2' to 56.4': Silty CLAY (CL-ML), reddish brown, wet, trace fine grained sand, heavily oxidized</p>								
∇		<p>@56.4' to 56.9': Sandy GRAVEL (GP), reddish brown, wet, fine to coarse grained sand, fine subrounded gravel, oxidized, heavily weathered</p>								
∇		<p>@57' to 58': Sandy CLAY (CL), reddish brown to grayish olive brown, laminated, fine to medium grained sand, trace coarse grained sand, gleyed, moderate blocky structure, slightly micaceous, MnO₂ spotting</p>								
∇		<p>@58' to 58.6': Sandy Clayey GRAVEL (GC), heavily oxidized</p>								
∇		<p>@58.6' to 59': Clayey SAND (SC), reddish brown, gleyed, wet, fine to coarse grained sand</p>								
∇		<p>@59' to 60': No Recovery, likely gravels</p>								

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FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								V. SEVERE	COMPLETE

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


CORE BORING LOG										BORING NO. CB- 8
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 10
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 10
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
240 60	60-65	Run 2 Box 6	5	100		<p>@60': Silty SAND (SM), reddish brown, gleyed, wet, fine to medium grained sand, normally graded</p> <p>@61.1': Basal gravels, sharp contact</p> <p>@61.1': Silty CLAY (CL-ML), with sand, reddish brown to grayish brown, thinly laminated, oxidation-reduction banding, MnO spotting, gleyed. well developed blocky structure</p>				
235 65						<p>@64.1' to 67.4': Sandy CLAY (CL), reddish brown and gray, with oxidation staining, laminated, oxidation-reduction banded, occasional fine slate and siltstone gravels, MnO spotting, dark red well developed paleosol, siltstone basal rockline at 67.4'</p>				
230 70	65-70	Run 1 Box 7	5	100		<p>@67.4'-68.7': Sandy CLAY (CL), with few siltstone angular gravels, oxidation-reduction banding, blocky structure, oxidized</p> <p>@68.7'-69.3': abundant angular siltstone and slate clasts, basal rounded slaty gravel at 69.3'</p>				
						<p>@70' to 70.9': Sandy CLAY (CL), reddish brown and gray, with faint MnO lamination, moderate blocky structure, fine to medium grained sand</p>				
225 75	70-75	Run 2 Box 7	5	100		<p>@70.9' to 72.9': Becomes mostly massive, occasional MnO laminations, reddish brown, gleyed, gray mottling, fine to medium grained sand, poor to moderate blocky structure, occasional carbonate stringers</p>				
						<p>@72.8': Siltstone and pebbly slate rock line</p>				
						<p>@73.7'-74.7': Gravelly CLAY (CL), angular siltstone and slate gravels</p>				
						<p>@74.7'-75.3': Sandy CLAY (CL), fine grained, basal coarse rounded slaty</p>				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

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CORE BORING LOG										BORING NO. CB- 8
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 10
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 10
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
225	75	75-80	Run 1 Box 8	5	100		gravel at 75.3'			
							@75.3'-80': Sandy CLAY (CL), reddish brown to orange brown, fine sand, occasional fine slaty gravel and clay lamination			
220	80	80-85	Run 2 Box 8	5	100		@80'-82.2': Clayey Sandy GRAVEL (GP), fine to coarse sand, fine to coarse heavily weathered gravel, oxidized, rounded slaty gravels, clay in matrix and on ped faces, erosive contact below			
							@82.2' to 82.9': Sandy CLAY (CL), reddish brown, very moist, fine grained sand, trace medium to coarse grained sand, moderate to strong blocky structure			
							@82.9' to 83.4': Sandy CLAY (CL), reddish brown, moist, fine grained sand, slightly micaceous			
							@83.4' to 83.5': Thin sand rich lens, fine to medium grained			
		@83.5' to 85': Becomes less sandy, reddish brown, moderate blocky structure, fine grained sand, white brown well developed soil with MnO ₂								
215	85	85-90	Run 1 Box 9	5	100		@85' to 86': Sandy CLAY (CL), reddish brown, with minor gleying, fine to medium grained sand, trace coarse grained sand, poor blocky structure, trace fine gravel, shimmer on facies			
							@86': Thinly laminated brown clay, oxidation-reduction banding of 1-foot thick clays			
							@87.3' to 88.3': increase in fine angular gravel content, gravels are coated with clay, white siltstone and weathered slaty gravel to 88.3'			
		@88.3' to 91.7': Sandy CLAY (CL), reddish brown, faintly laminated, minor gleying, fine to medium grained sand, trace coarse grained sand, trace fine slaty gravel, blocky structure, MnO								
210	90									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								V. SEVERE		
								COMPLETE		

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CORE BORING LOG										BORING NO. CB- 8			
PROJECT: El Rodeo Geohazard Investigation										PAGE 7 OF 10			
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006			
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 10			
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet			
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014			
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini			
06/17/14	ATD	∇ 128.4			0	BEARING	Barrel (Feet)			PREPARED BY: EH			
		∇				ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca			
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS							
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.							
210	90	Run 2 Box 9	5	100		@91.2': Sand rich lamination, fine grained sand	@91.7' to 91.9': Lamination of orangish brown fine grained SAND (SP), micaceous	@91.9' to 94.5': Sandy CLAY (CL), reddish brown, moist, fine grained sand, trace medium to coarse grained sand, minor sandier laminations, moderate blocky structure, MnO ₂ staining on faces	@92.1'-92.4': CLAY (CL), light brown to yellow brown, MnO lamination	@92.4'-94.5': Sandy CLAY (CL), reddish brown, moist, fine grained sand, minor sandier laminations, moderate blocky structure, MnO staining on faces, abrupt capping of gravels			
205	95					Run 1 Box 10	5	100		@94.5' to 95': Sandy GRAVEL (GP), fine to coarse grained sand, fine to coarse predominantly subangular slaty gravels, wet	@95' to 95.1': Thin lamination of Clayey SAND (SC), fine to coarse grained sand	@95.1' to 95.7': Sandy CLAY (CL), reddish brown, very moist, fine grained sand, trace medium grained sand, poor blocky structure, fining upward, gradational contact with below	@95.7' to 96.5': Gravelly SAND with Clay (SW-SC), wet, fine to coarse grained sand, fine subangular slaty gravels, trace Tm clasts
										@96.5' to 96.9': Clayey SAND (SC), reddish brown, wet, fine grained sand, slightly micaceous	@96.9' to 97.1': Slate GRAVEL (GP) bed	@97.1' to 97.7': Interbedded Sand (SP), fine to medium grained sand	
										@98.8' to 99.1': Fine to coarse slaty GRAVEL (GP) bed, subangular, erosive contact below	@99.1' to 99.3': Silty SAND (SM), reddish brown, wet, fine to coarse grained sand, trace gravel, gradational contact	@99.3' to 99.7': Sandy CLAY (CL), reddish brown, very moist, fine to medium grained sand, moderate blocky structure	
										@99.7' to 100': Clayey Sandy GRAVEL (GC), wet, fine to coarse grained sand, fine subangular slaty gravels	@100': SAND (SP), grayish brown to reddish brown, wet, fining upwards	@101.2' to 102': Medium to coarse grained sand, slate, quartz, and siltstone fragments, basalt pebble gravel contact below	
200	100	Run 2 Box 10	3.1	62		@102' to 102.4': Sandy CLAY (CL), reddish brown, wet, fine grained sand, trace medium grained sand, MnO ₂ spotting	@102.4' to 103.1': Sandy GRAVEL (GP), mottled yellowish brown to brown, fine to medium grained sand, carbonate stringers, chaotic jumble of gravels	@103.1' to 105': No Recovery					
195	105												


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FIELD HARDNESS	BEDDING	ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE	WEATHERING
V. HARD HARD MOD. HARD SOFT V. SOFT	V. THIN THIN MEDIUM THICK V. THICK	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE
- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	<2" 2"-12" 12"-36" 36"-120" >120"	<2" 2"-12" 12"-36" 36"-120" >120"		



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CORE BORING LOG										BORING NO. CB- 8								
PROJECT: El Rodeo Geohazard Investigation										PAGE 8 OF 10								
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006								
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 10								
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet								
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014								
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014								
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini								
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH								
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca								
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS											
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195	105	105-110	Run 1 Box 11	4.5	90	[Diagonal Hatching]	@105' to 105.6': Silty Sandy CLAY (CL-ML), reddish brown, moist, fine grained sand @105.6' to 106': Becomes less sandy, MnO ₂ spotting @106' to 106.5': Sandy CLAY (CL), reddish brown, moist, fine to medium grained sand, poor blocky structure @106.5' to 106.9': Becomes less sandy, MnO ₂ spotting @106.9' to 107.2': Sandy lamination @107.2' to 107.6': Sandy CLAY (CL), reddish brown, fine grained sand, some silt, MnO ₂ spotting @107.6' to 108.1': Becomes laminated, gleyed @108.1' to 108.3': Lamination of Clayey SAND (SC), reddish brown, fine to coarse grained sand @108.3' to 108.7': Sandy CLAY (CL), reddish brown, fine grained sand, trace medium grained sand, MnO ₂ spotting, carbonate stringers @108.7' to 109.5': Dark brown lamination @109.5' to 110': No Recovery											
190	110					110-115	Run 2 Box 11	3.9	78	[Diagonal Hatching]	@110' to 110.7': Clayey Gravelly SAND (SW-SC), reddish brown, wet, fine to coarse grained sand, fine slaty gravels, gradational contact @110.7' to 111.2': Sandy CLAY (CL), reddish brown, with minor gleying, faintly laminated, fine grained sand, MnO ₂ spotting @111.2' to 111.6': Sandy GRAVEL (GP) bed, fine to coarse grained sand, fine slaty gravels, trace coarse gravel @111.6' to 111.9': Sandy CLAY (CL), reddish brown, fine grained sand, wet, MnO ₂ spotting, blebs, grades coarser @111.9' to 113.9': Channel Deposits, Sandy Clayey GRAVEL (GP), fine to coarse grained sand, fine to coarse subangular slate fragments and gravels @113.9' to 115': No Recovery							
185	115									115-120	Run 1 Box 12	5	100	[Vertical Dotted]	@115' to 118.8': Silty SAND (SM), medium reddish brown, wet, fine to medium grained sand, low silt content, some clay @118.8' to 118.9': Thin layer of gray shale fragments @118.9': Silty SAND (SM), medium brown, wet, fine to medium grained sand, low silt content			
180	120																	
FIELD HARDNESS										BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES					V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE							

ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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CORE BORING LOG										BORING NO. CB- 8	
PROJECT: El Rodeo Geohazard Investigation										PAGE 9 OF 10	
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 10	
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet	
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014	
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini	
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH	
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
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180	120	120-125	Run 2 Box 12	4.1	82		@121.6' to 124.1': Slightly coarser				
							@124.1' to 125': No Recovery				
175	125						@125' to 125.6': Sandy CLAY (CL), dark reddish brown to strong brown, gleyed, fine grained sand, trace medium to coarse grained sand, minor CaCO ₃				
		@125.6' to 126.1': Sandy CLAY (CL), with gravel, dark reddish brown with gray mottling, fine grained sand, some medium to coarse grained sand, fine slaty gravels									
		@126.1' to 128.4': Gravelly Sandy CLAY (CL), reddish brown with gray mottling, very moist, fine to medium grained sand, some coarse grained sand, fine quartz and slate gravels, with carbonate nodules and concretions, poor to moderate blocky structure, high sand content, abrupt contact									
		@128.4': Clayey Gravelly SAND (SW-SC), reddish brown and gray, gleyed, wet, fine to coarse grained sand, fine subangular slate, oxide staining, minor carbonate blebs									
		@128.4' to 130': Missing									
170	130	130-135	Run 2 Box 13	1.2	24		@130' to 130.5': Silty SAND (SM), reddish brown, mostly fine to medium grained sand, some coarse grained sand				
							@130.5' to 130.7': Basal Gravelly SAND (SW), fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels				
							@130.7' to 131.2': Silty Clayey SAND (SM-SC), with gravel, thinly laminated, reddish brown to black, orange and tan, MnO ₂ banding, carbonate concretions, fine slaty gravels, fine to medium grained sand				
		@131.2' to 135': No Recovery									
165	135										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING			
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE			
								V. SEVERE			
								COMPLETE			

ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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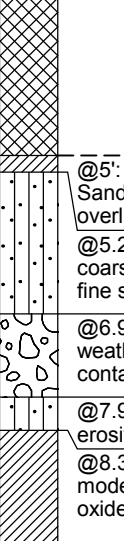
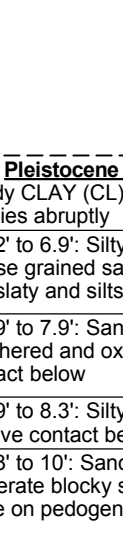
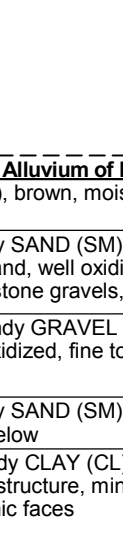
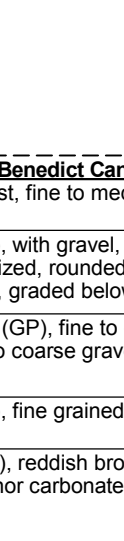
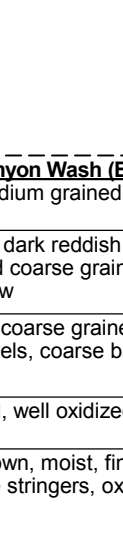
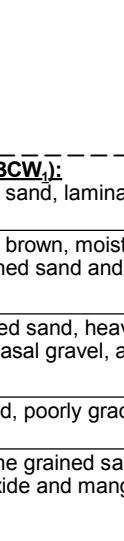
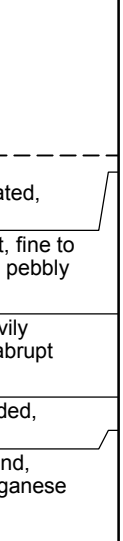

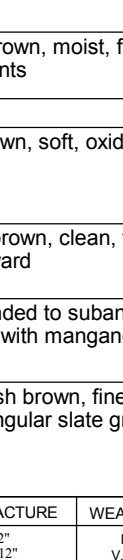
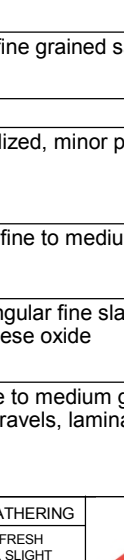
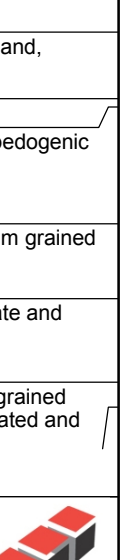


CORE BORING LOG										BORING NO. CB- 8
PROJECT: El Rodeo Geohazard Investigation										PAGE 10 OF 10
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 10 of 10
EQUIPMENT USED: CME-75										ELEVATION: 299.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 6/17/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 6/17/2014
06/17/14	ATD	∇ 38.5				INCLINED	Bit (Feet)			DRILLER: Martini
06/17/14	ATD	∇ 128.4				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
165 135	135-140	Run 1 Box 14	3.4	68		<p>@135' to 136.9': Clayey SAND (SC), orangish brown, fine to coarse grained sand, trace fine slaty gravels, carbonate nodules and concretions, coarsens downward, poor blocky structure, minor MnO₂ spotting, gradational contact</p> <p>@136.9' to 137.5': Clayey Sandy SILT (ML-CL), orangish brown, fine grained sand, trace medium grained sand, trace fine gravel, MnO₂ banding, minor carbonate, gradational contact</p> <p>@137.5' to 138': Clayey SAND (SC), with gravel, orangish brown, very moist, fine to coarse grained sand, fine slaty gravels, oxidation staining, faintly gleyed, abrupt contact</p> <p>@138.1' to 138.3': Silty SAND with Clay (SM-SC), orangish tan brown, fine grained sand, laminated, MnO₂ band</p> <p>@138.3' to 138.4': Becomes fine to medium grained Silty SAND (SM)</p> <p>@138.4' to 140': No Recovery</p>				
160 140						<p>@140' to 144.8': SAND with Silt (SP-SM), medium brown, very moist, fine to medium grained sand, trace coarse grained sand, quartz and slate grains</p>				
155 145						<p>@144.8' to 145': Lamination of Sandy CLAY (CL), with fine gravel, slate fragments, laminated, carbonate concretions</p>				
150 150						<p>Total depth of coring: 145' bgs Perched groundwater encountered @ 38.5'-39.4', 40'-43.6', 47.2'-48.8', 51.5'-52', 55-57', 58.6-59', 60'-61.1', 81.4'-81.6', 81.9'-82.2', 94.5'-95', 95.7'-99.3', 99.7'-102.4', 110'-110.7', 111.6'-111.9', 115'-124.1', and 128.4' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of cold patch mix asphalt. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite</p>				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

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CORE BORING LOG										BORING NO. CB- 9
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 6
EQUIPMENT USED: CME-75										ELEVATION: 298 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/7/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/8/2014
07/07/14	ATD	∇ 34.7				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
298	0						Artificial Fill, Undocumented (Afu): @0'-5': Hand Auger			
293	5						@5': Pleistocene Alluvium of Benedict Canyon Wash (BCW): Sandy CLAY (CL), brown, moist, fine to medium grained sand, laminated, overlies abruptly			
		5-10	Run 1 Box 1	5	100		@5.2' to 6.9': Silty SAND (SM), with gravel, dark reddish brown, moist, fine to coarse grained sand, well oxidized, rounded coarse grained sand and pebbly fine slaty and siltstone gravels, graded below			
							@6.9' to 7.9': Sandy GRAVEL (GP), fine to coarse grained sand, heavily weathered and oxidized, fine to coarse gravels, coarse basal gravel, abrupt contact below			
							@7.9' to 8.3': Silty SAND (SM), fine grained, well oxidized, poorly graded, erosive contact below			
							@8.3' to 10': Sandy CLAY (CL), reddish brown, moist, fine grained sand, moderate blocky structure, minor carbonate stringers, oxide and manganese oxide on pedogenic faces			
288	10						@10' to 10.8': Sandy CLAY (CL), reddish brown, moist, fine grained sand, moderate blocky structure, siltstone fragments			
							@10.8': Rock line			
		10-15	Run 2 Box 1	5	100		@10.9': Clayey SILT (ML), dark reddish brown, soft, oxidized, minor pedogenic structure, laminated near base at 12.3'			
							@12.3' to 13.2': Silty SAND (SM), reddish brown, clean, fine to medium grained sand, trace clay, grades coarser, fining upward			
							@13.2' to 14.2': Sandy GRAVEL (GP), rounded to subangular fine slate and quartz gravels, heavily weathered, oxidized with manganese oxide			
283	15						@14.2' to 14.5': Layer of SAND (SP), reddish brown, fine to medium grained sand, trace coarse grained sand, fine subangular slate gravels, laminated and			
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		



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LEIGHTON

CORE BORING LOG										BORING NO. CB- 9					
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 6					
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006					
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 6					
EQUIPMENT USED: CME-75										ELEVATION: 298 Feet					
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/7/2014					
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/8/2014					
07/07/14	ATD	∇ 34.7				INCLINED	Bit (Feet)			DRILLER: Martini					
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH					
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca					
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS								
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.								
283	15	15-20	Run 1 Box 2	5	100		well oxidized								
							@14.5' to 16.6': Sandy GRAVEL (GP), reddish brown to orange brown, fine to coarse grained sand, fine to coarse rounded, heavily weathered slaty, basalt, and white siltstone gravel								
							@16.6': Basal heavily oxidized slaty gravel and cobble sized white siltstone								
							@16.6' to 17.4': Color change, Clayey SAND (SC), olive brown to gray brown, very moist, fine grained sand, MnO staining, coarse siltstone gravel @17.4', abrupt contact								
							@17.4' to 17.7': CLAY (CL), grey brown, fine grained sand, basal siltstone, top of sand bed below								
							@17.7' to 17.9': SAND (SP) bed, olive gray to reddish gray, moist, minor gleying, sporadic slaty gravels								
							@17.9' to 18.9': Sandy CLAY (CL), gray brown, gleyed, faintly laminated, with yellow oxide staining, trace fine gravels, moderate blocky structure, oxidized with contact below								
278	20	20-25	Run 2 Box 2	5	100		@18.9' to 19.4': Sandy CLAY (CL), reddish brown, gleyed, fine grained sand, trace coarse grained sand, fine gravel, poor blocky structure, with clay on pedogenic faces, minor calcium carbonate on pedogenic faces								
							@19.4' to 20.3': Sandy CLAY (CL), reddish brown, gleyed, fine grained sand, moderate blocky structure, clay on faces, abrupt contact, heavily oxidation and fine gravel at contact below								
							@20.3' to 21.6': Sandy CLAY (CL), with gravel, dark reddish brown, moist, fine to coarse grained sand, fine to coarse subangular to subrounded slate and siltstone gravels, well developed blocky structure, heavily oxidized clasts, oxide and clay on pedogen								
							@21.6' to 23.6': Sandy GRAVEL (GP), dark reddish brown, oxidized, heavily weathered gravel, basal siltstone cobble, nested channel at 23.6'								
							@23.6' to 24.5': Sandy GRAVEL (GP), fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels								
273	25	25-30	Run 1 Box 3	5	100		@24.5' to 27.9': Sandy GRAVEL (GP), fine to coarse grained sand, reddish brown, fine rounded slaty gravel, heavily weathered siltstone, basalt, and slate, basal coarse gravel and cobble, at 27.6' to 27.9' erosive planar contact below, nested channel								
							@27.9' to 28.7': Gravelly SAND (SP)								
268	30							@28.7' to 30.2': Basal coarse gravels, cobbles, slaty siliceous crystalline, siltstone, rounded, heavily weathered, oxidized, abrupt erosive contact below							
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING							
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH							
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT							
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT							
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE							
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE							
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE							
								COMPLETE							

ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB- 9
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 6
EQUIPMENT USED: CME-75										ELEVATION: 298 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/7/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/8/2014
07/07/14	ATD	∇ 34.7				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
268 30	30-35	Run 2 Box 3	5	100		<p>@30.2': Pleistocene Alluvium of Benedict Canyon Wash (BCW₂): Sandy CLAY (CL), reddish brown, dark reddish brown in matrix, gleyed, very moist, gleyed, oxidation-reduction banding, fine grained sand, poor blocky structure</p> <p>@31.1' to 32.1': Clayey SAND (SC) laminated, reddish brown, fine grained sand</p> <p>@32.1' to 34.4': Sandy CLAY (CL), reddish brown, minor gleying, becomes more massive than above, moderate blocky structure, sandy laminations, abrupt contact below</p>				
263 35						<p>∇</p> <p>@34.4' to 35.4': Sandy GRAVEL (GP), reddish brown, moist, fine to coarse grained sand, fine gravels, basal cobbles at 35.4', nested channel</p> <p>@35.4 to 40.7': Sandy GRAVEL (GP), reddish brown, wet, fine to coarse grained sand, subangular slate and siltstone gravels, thin clay and windblown silt lamination @36.3', weathered gravels, MnO oxidation on coarse gravels, at 40.7' layer of yellow brown</p>				
258 40	35-40	Run 1 Box 4	4.6	92		<p>@39.6' to 40': No Recovery</p> <p>@40.7' to 42.1': Sandy GRAVEL (GP), reddish brown, wet, fine to coarse grained sand, fine to coarse slaty gravel, heavily weathered basalt gravels, basal zone heavily oxidized, manganese oxide and oxidized weathered gravels, erosive contact below</p>				
253 45						<p>@41.8': Pleistocene Cheviot Hills Deposits (CHD): Sandy CLAY (CL), reddish brown to orange brown, massive, poorly graded, fine grained sand, oxidized, gleyed, oxidation stringers</p> <p>@44.6' to 45': No Recovery, sand in sampler</p>				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB- 9
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 6
EQUIPMENT USED: CME-75										ELEVATION: 298 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/7/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/8/2014
07/07/14	ATD	∇ 34.7				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
253	45	45-50	Run 1 Box 5	5	100		@45' to 47.2': Sandy CLAY (CL), reddish brown, gleyed, MnO spotting			
							@47.2' to 47.8': Silty fine SAND (SM), coarse grained basal sand, MnO development at contact below			
							@47.8' to 47.9' Sandy CLAY bed @47.9' to 48.9': Becomes fine Silty SAND (SM), basal rounded fine gravel at 48.9', heavily oxidized at contact			
248	50	50-55	Run 2 Box 5	5	100		@48.9' to 53.9': Sandy CLAY (CL), reddish brown, gleyed and oxidized, fine to medium grained sand, well developed blocky structure, clay and oxide on pedogenic faces, gleyed, abrupt contact with gravel below			
							@53.9' to 54.6': Sandy Gravel (GP), reddish brown, wet, fine to coarse grained sand, fine subangular slate gravels, siltstone clasts, base of contact is sand with coarse sand-sized siltstone fragments, abrupt erosional contact below, heavily weathered clasts			
							@54.6' to 59.5': Sandy CLAY (CL), light reddish brown, gleyed and oxidized, fine to medium grained sand, few coarse grained sand, oxidation-reduction banding, variegated below, very sporadic fine subrounded white slaty gravels, MnO and oxide on pedogenic			
243	55	55-60	Run 1 Box 6	5	100		@59.5' to 60': Sandy CLAY (CL), color change, dark reddish brown, gleyed and			
238	60									


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FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
								V. SEVERE	
								COMPLETE	



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LEIGHTON

CORE BORING LOG										BORING NO. CB- 9
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 6
EQUIPMENT USED: CME-75										ELEVATION: 298 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/7/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/8/2014
07/07/14	ATD	∇ 34.7				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
238	60	60-65	Run 2 Box 6	5	100		oxidized, fine to medium grained sand, trace coarse grained sand, with minor faint carbonate stringers, moderate blocky structure, minor MnO spotting, "Chocolate brown clay" @60' to 66.4': Sandy CLAY (CL), reddish brown and gray, laminated, oxidation-reduction banding, gleyed, fine grained sand, trace medium to coarse grained sand, heavily oxidized, well developed blocky structure, iron oxide, MnO and clay on pedogenic faces,			
233	65	65-70	Run 1 Box 7	5	100		@66.4': Color change, very dark reddish brown, Sandy CLAY (CL), well developed blocky structure, iron oxide and MnO on pedogenic faces			
							@68.2' to 70.2': Gravelly CLAY (CL), reddish brown, gleyed, fine to medium grained sand, trace coarse grained sand, fine subrounded slate and siltstone gravels, moderate blocky structure, heavily weathered slate, siltstone, basalt gravels, basal gravel be			
228	70	70-75	Run 2 Box 7	5	100		@70.2' to 71.7': Sandy CLAY (CL), reddish brown, faintly laminated, fine grained sand, few medium to coarse grained sand, trace fine gravel, MnO spotting			
							@71.7': Thin coarse sand fine pebbly slate and weathered siltstone gravels, erosive contact below @71.7' to 74.3': Sandy CLAY (CL), reddish brown to gray brown, oxidized, MnO in matrix @74.3': Basal slaty weathered gravel, rock line, Sandy CLAY to depth.			
223	75									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB- 9
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 6
EQUIPMENT USED: CME-75										ELEVATION: 298 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/7/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/8/2014
07/07/14	ATD	▽ 34.7				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
223	75					Total depth of coring: 75' bgs Perched groundwater encountered @34.7'-37.8', 40'-41.8', and 53.9'-54.6' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete				
218	80									
213	85									
208	90									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE V. SEVERE COMPLETE		
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-10
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 6
EQUIPMENT USED: CME-75										ELEVATION: 296.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/8/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/9/2014
07/08/14	ATD	∇ 35.4				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p>				
297	0					<p>Artificial Fill, Undocumented (Afu): @0'-5': Hand Auger 2.5 ft Runs to 30'</p>				
292	5					<p>@5': Pleistocene Alluvium of Benedict Canyon Wash (BCW): Sandy SILT with Clay (ML-CL), medium brown, moist, fine grained sand, occasional fine slaty gravel, blocky structure, clay and oxide on ped faces, oxidized</p>				
287	10	Run 1 Box 1	5	100		<p>@9.4' to 10': Clayey Silty SAND (SC-SM), with gravel, medium brown, moist, mostly fine to medium grained sand, some coarse grained sand, fine subangular slate and siltstone gravels</p>				
287	10					<p>@10' to 12.1': Sandy GRAVEL (GP), with gravel, medium brown to slightly reddish brown, moist, fine to medium grained sand, some coarse grained sand, high fines content, fine rounded slate and siltstone gravels, heavily weathered gravels, erosive contact below</p>				
287	10	Run 2 Box 1	5	100		<p>@12.1' to 14.1': Clayey SILT (ML), reddish brown, moist, fine grained sand, slightly micaceous, poor blocky structure, MnO on ped faces</p>				
282	15					<p>@14.1' to 15.7': Sandy GRAVEL (GP), reddish brown, moist, mostly fine to medium grained sand, few coarse grained sand, fine subrounded slaty gravels</p>				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		SEVERE		
								COMPLETE		

ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-10
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 6
EQUIPMENT USED: CME-75										ELEVATION: 296.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/8/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/9/2014
07/08/14	ATD	∇ 35.4				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
282	15	15-20	Run 1 Box 2	5	100		@15.7' to 17.2': SAND (SP), with gravel, reddish brown, moist, mostly fine to medium grained sand, some coarse grained sand, fine subround slaty gravels			
							@17.2'-18.9': Sandy GRAVEL (GP), mottled reddish brown to yellowish brown to orange, fine to coarse sand, fine to coarse slate and siltstone gravels, erosional contact below			
							@18.9' to 19.6': Sandy CLAY (CL), reddish brown, moist, fine grained sand, gradational contact			
277	20	20-25	Run 2 Box 2	5	100		@19.4' to 20': Clayey GRAVEL (GC), mottled reddish brown to yellowish brown to orange, fine to medium grained sand, fine subangular slaty gravels, oxidized clasts			
							@20' to 20.5': Sandy CLAY (CL), olive brown to reddish brown, fine grained sand, with trace medium to coarse grained sand, fine gravel, poor blocky structure, abundant MnO spotting			
							@20.5' to 20.6': Lamination of Clayey SAND (SC), fine to coarse grained sand, gradational contact			
							@20.6' to 22.6': Sandy CLAY (CL), reddish brown, very moist, fine grained sand, faint gleying, occasional fine subrounded slaty gravels, clasts are clay coated, poor to moderate blocky structure, abrupt contact			
		@22.6' to 24.6': Sandy GRAVEL (GP), mottled reddish brown to yellowish brown to greenish brown, faintly gleyed, fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels, weathered heavily, oxidized, with MnO								
		@24.6' to 25.8': Basal COBBLES, reddish brown, moist, mostly fine to medium grained sand, fine slate and quartz gravels and cobbles								
272	25	25-30	Run 1 Box 3	5	100		@25.8' to 27.5': Clayey SAND to Sandy CLAY (SC-CL), with gravel, reddish brown, faintly gleyed, fine to coarse grained sand, fine subangular slate and siltstone gravels, occasional yellowish oxidation staining, abrupt contact			
							@27.5' to 28.3': Sandy GRAVEL (GP), dark reddish brown, moist, fine to coarse grained sand, fine subangular to subrounded slate gravels, gradational contact, secondary clay development, basal cobble, nested channel			
							@28.3' to 30.3': Sandy GRAVEL (GP), mottled reddish brown to yellowish brown to red and olive brown, very chaotic assemblage of fine to coarse grained sand, fine subangular slate, basalt, and siltstone gravels, secondary clay development highly weathered and oxidized clasts, faint gleying, abrupt erosional contact			
267	30									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB-10
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 6
EQUIPMENT USED: CME-75										ELEVATION: 296.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/8/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 7/9/2014	
07/08/14	ATD	▽ 35.4				HORIZONTAL	Bit (Feet)		DRILLER: Martini	
		▽				INCLINED	Barrel (Feet)		PREPARED BY: EH	
		▽			0	BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
		▽				ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
267 30	30-35	Run 2 Box 3	5	100		<p>@30.3': Pleistocene Alluvium of Benedict Canyon Wash (BCW₂): Sandy CLAY (CL), reddish brown, moist, fine grained sand, faint gleying, MnO streaking, with discrete clayey sand laminations, base of developed soil @31.5', 31.8', 32', and 34.6', moderate blocky structure, minor MnO spotting @33.3': siltstone rock clast</p>				
262 35	35-40	Run 1 Box 4	4.6	92		<p>@35' to 35.4': Sandy CLAY (CL), reddish brown, very moist, fine to medium grained sand, faintly gleyed, MnO₂ spotting, poor blocky structure, with waxy finish and shimmer on facies @35.4' to 35.9': Clayey SAND (SC), reddish brown, wet, faint gleying, poor blocky structure, MnO streaking @35.9' to 36.8': SAND (SP), reddish brown, wet, very low clay content, abrupt contact below @36.8' to 39.6': Sandy GRAVEL with Clay (GP), dark reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slate and few quartz gravels, heavily weathered, oxidized with MnO in matrix and at basal contact in nested channel</p>				
257 40	40-45	Run 2 Box 4	5	100		<p>@39.6' to 40': No Recovery @40' to 43': Sandy GRAVEL (GP), orange brown to reddish brown, oxidized, fine to coarse sand, fine to coarse heavily weathered gravels, MnO in matrix and at basal erosive contact below</p>				
252 45						<p>@43': Pleistocene Cheviot Hills Deposits (CHD): Sandy CLAY (CL), reddish brown, wet, fine to medium grained sand, high sand content, thin beds, very fine, friable, poor blocky structure, MnO₂ spotting, faint gleying, minor sand rich laminations</p>				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
Fe = Iron Oxide Mn = Manganese Oxide										

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LEIGHTON


CORE BORING LOG										BORING NO. CB-10
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 6
EQUIPMENT USED: CME-75										ELEVATION: 296.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/8/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/9/2014
07/08/14	ATD	∇ 35.4				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
252 45		45-50	Run 1 Box 5	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
∇										
247 50		50-55	Run 2 Box 5	5	100		@50' to 53.3': Silty SAND (SM), , moist, fine to medium grained sand, trace coarse grained sand with sand sized siltstone chips(salt and pepper sands), very low silt content, trace clay, heavy MnO development at abrupt contact below			
∇										
242 55		55-60	Run 1 Box 6	2.7	54		@53.3' to 53.7': Clayey SAND with Silt (SC-SM), reddish brown, gleyed, increasingly clayier, moderate blocky structure, gradational contact @53.7' to 55': Sandy GRAVEL with Clay (GP), mottled reddish brown to grayish brown to yellowish orange brown, fine to coarse grained sand, fine to coarse slaty gravels, 3-inch cobble stuck in shoe			
∇										
		237 60						@55' to 56.2': wet, grades coarser, gradational contact @55' to 56.5': basal gravel, abrupt erosive contact below @56.5' to 57': Interlaminated Sandy CLAY and Clayey SAND (SC-CL), reddish brown, moist, gleyed, fine to medium grained sand in sandy clay, fine to coarse grained sand in clayey sand, abundant MnO ₂ , oxidation-reduction banding @56.2' to 56.8': minor sand bed with siltstone chips @56.8': sandy clay, gleyed, oxidized @57' to 57.7': Sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, gleyed, heavily oxidized zones, white siltstone clasts @57.7' to 60': No Recovery		
∇										

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FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								SEVERE	COMPLETE

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LEIGHTON

CORE BORING LOG										BORING NO. CB-10
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 6
EQUIPMENT USED: CME-75										ELEVATION: 296.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/8/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/9/2014
07/08/14	ATD	∇ 35.4				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
237 60					[Hatched Pattern]	<p>@60' to 60.7': Sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, laminated with minor sand rich zones, MnO spotting, clay on ped faces slightly micaceous, heavily oxidized and gleyed</p> <p>@60.7' to 61.3': chocolate brown clay, paleosol</p>				
	60-65	Run 2 Box 6	5	100	[Hatched Pattern]	<p>@61.3'-65': Sandy CLAY (CL), reddish brown to orange brown, heavily oxidized, gleyed, well developed block structure, heavy MnO and oxidation on ped faces, with trace weathered angular siltstone clasts</p>				
232 65					[Hatched Pattern]	<p>@65' to 67.2': Sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, fine grained sand, abundant MnO₂ spotting and streaking, sandy zones @65.8' and 67', exhibit moderate blocky structure</p>				
	65-70	Run 1 Box 7	5	100	[Hatched Pattern]	<p>@67.2'-68.8': color change, dark reddish brown clay with some fine sand and minor slaty gravel, well developed blocky structure, clay, oxide and MnO on ped faces</p>				
					[Hatched Pattern]	<p>@68.8': thin gravel bed over dark reddish brown clayey soil</p>				
227 70					[Hatched Pattern]	<p>@68.9' to 73': Sandy CLAY (CL), dark reddish brown, laminated, gleyed, occasional fine subrounded slaty gravels, gravel bed @73', erosive contact below</p> <p>@69.2': Siltstone rock line</p>				
	70-75	Run 2 Box 7	5	100	[Hatched Pattern]	<p>@73': Sandy CLAY (CL), dark reddish brown, laminated, gleyed, occasional fine subrounded slaty gravels, gravel bed @73', erosive contact below</p>				
222 75					[Hatched Pattern]	<p>@73' to 75': Sandy CLAY (CL), dark reddish brown to orange brown, blocky structure, oxidized</p>				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-10
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 6
EQUIPMENT USED: CME-75										ELEVATION: 296.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/8/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/9/2014
07/08/14	ATD	▽ 35.4				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
		▼			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
222	75					<p>Total depth of coring: 75' bgs Perced groundwater encountered @ 35.4'-36.5', 36.8'-39.6', 43'-46', 48.6'-50' and 55'-56.5' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite</p>				
217	80									
212	85									
207	90									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15



LEIGHTON

CORE BORING LOG										BORING NO. CB-11
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 6
EQUIPMENT USED: CME-75										ELEVATION: 292.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/9/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/10/2014
07/09/14	ATD	∇ 34				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
293	0				[Cross-hatched pattern]	Artificial Fill, Undocumented (Afu): @0'-5': Hand Auger				
288	5				[Diagonal lines pattern]	@5' to 5.2': Chunks of asphalt @5.2': Holocene Alluvium of Benedict Canyon Wash (Qal): Sandy CLAY (CL), dark olive brown, moist, soft, little fine grained sand, minor very occasional reddish brown laminations, mostly massive, MnO ₂ spotting, blocky str				
283	10	Run 1 Box 1	5	100	[Diagonal lines pattern]					
283	10	Run 2 Box 1	5	100	[Diagonal lines pattern]	@10.9': Pleistocene Alluvium of Benedict Canyon Wash (BCW₁): Occasional fine subrounded gravels, with reddish brown FeO ₃ staining, heavy oxide and MnO with oxide stringers @11.1' to 11.4': Dark reddish brown, coarse slaty gravel @11.4' @11.4' to 12.9': Clayey SAND (SC), with gravel, mottled brown to reddish brown to greenish brown, fine to coarse grained sand, fine subangular to subrounded gravels, heavy oxide and MnO, basal contact @12.9' @12.9' to 14.3': Sandy GRAVEL (GP), reddish brown, moist, fine to medium grained sand, heavily oxidized and weathered gravels with MnO				
278	15				[Dotted pattern]	@14.2': Thin clayey laminations @14.3' to 15.8': Becomes Silty SAND (SM), dark reddish brown, moist, fine to				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		SEVERE		
								COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB-11
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 6
EQUIPMENT USED: CME-75										ELEVATION: 292.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/9/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/10/2014
07/09/14	ATD	∇ 34				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
278	15	15-20	Run 1 Box 2	5	100		coarse grained sand, occasional fine gravel			
							@15.8' to 16.2': Basal slaty and basalt gravel			
							@16.5' to 16.8': GRAVEL (GP) layer, fine subangular slate gravels in sandy clay matrix			
		@16.8' to 20.0': Sandy GRAVEL (GP), mottled reddish brown to brown to yellowish brown, fine to coarse grained sand, fine to coarse subangular to subrounded slate, siltstone, and sandstone gravels, appears chaotic, minor notable stratigraphy, heavily oxidized								
273	20	20-25	Run 2 Box 2	5	100		@20' to 20.7': Clayey SAND (SC), reddish brown, gleyed, fine grained sand, poor to moderate blocky structure, shimmer on faces, abrupt contact			
							@20.7' to 21.9': SAND (SP), with gravel, reddish brown and grayish brown, gleyed, fine to coarse grained sand, fine subangular slaty gravels, poorly graded, gradational contact			
							@21.9' to 22.3': Sandy GRAVEL (GP), reddish gray brown, very moist, fine to coarse grained sand, normally graded, some fine gravels at base, abrupt contact with below			
							@22.3' to 22.9': Sandy CLAY (CL), reddish brown, gleyed, fine grained sand, some medium grained sand, abundant brownish blebs, gleyed on laminations, poor blocky structure			
		@22.9' to 25.0': Sandy CLAY (CL), reddish brown, slightly gleyed, moderate blocky structure, shimmer on faces, faintly laminated, MnO ₂ spotting, well developed blocky structure, clay development and oxide on ped faces								
268	25	25-30	Run 1 Box 3	5	100		@25.0' to 29': Sandy CLAY (CL), reddish brown, with grayish oxidation-reduction banding, gleyed, laminated, fine grained sand, MnO ₂ spotting, clay and oxide on ped faces			
							@29' to 30': Grades to dark reddish brown to olive brown, oxidation-reduction banding, with occasional medium to coarse grained sand and fine gravel			
263	30									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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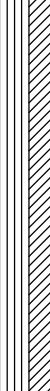


LEIGHTON

CORE BORING LOG										BORING NO. CB-11
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 6
EQUIPMENT USED: CME-75										ELEVATION: 292.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/9/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 7/10/2014	
07/09/14	ATD	∇ 34				HORIZONTAL	Bit (Feet)		DRILLER: Martini	
		▼				INCLINED	Barrel (Feet)		PREPARED BY: EH	
					0	BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
						ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
263	30									<p>@30' to 32': Sandy CLAY (CL), greenish brown to olive reddish brown, moist, fine grained sand, with some medium to coarse slaty sand, mottled, gleyed, moderate blocky structure, fine subangular basal slaty gravels, abrupt contact</p>
			30-35	Run 2 Box 3	5	100				<p>@32': Lamination of carbonate, caliche, very hard basalt clasts</p> <p>@32.1' to 33.7': Clayey Sandy GRAVEL (GP), mottled reddish brown to gray to yellowish brown, gleyed, fine to coarse grained sand, fine subangular to subrounded slate and siltstone gravels, abundant yellowish oxide staining, discrete sand rich laminations,</p> <p>@33.7' to 34': Grades finer, less gravel</p> <p>@34' to 34.5': Sandy GRAVEL (GP), wet, medium to coarse grained sand, fine subrounded slate fragments, gradational contact</p> <p>@34.5': Pleistocene Alluvium of Benedict Canyon Wash (BCW₂):</p>
258	35									<p>Sandy CLAY (CL), reddish brown to gray, oxidation-reduction banding, gleyed, fine to medium grained sand, few fine slaty gravels, oxidized</p> <p>@35' to 36.3': Sandy CLAY (CL), reddish brown, gleyed, fine grained sand, trace medium grained sand, well developed blocky structure</p>
			35-40	Run 1 Box 4	5	100				<p>@36.3' to 38.7': Sandy CLAY (CL), reddish brown to grayish brown, oxidation-reduction banding, fine grained sand, with occasional medium to coarse grained sand, gleyed, blocky structure, silt and fine sand on ped faces</p>
										<p>@38.7': Clayey SAND (SC), with gravel, dark reddish brown, fine grained sand, some medium to coarse grained sand, fine subangular slaty gravels, trace granitic gravels and siltstone gravels</p>
253	40									<p>@39.6': Basal weathered siltstone cobble (rock line)</p>
			40-45	Run 2 Box 4	5	100				<p>@40' to 41.2': Sandy CLAY grading to Clayey SAND (SC-CL), reddish brown, gleyed, mostly fine grained sand, some medium to coarse grained sand, occasional fine slaty gravels, fining upward sequence, MnO₂ spotting, sandier zones have poor to m</p> <p>@41.3': Basal weathered angular slaty gravel rock line</p> <p>@41.3' to 42.0': Sandy CLAY (CL), reddish brown, fine grained sand, siltstone fragments</p> <p>@42' to 43.8': Clayey Sandy GRAVEL (GP), reddish brown, wet, fine to coarse grained sand, fine subangular slaty gravels, basal cobble @43.8, nested channels</p>
										<p>@43.8': Channel Deposits, Clayey Sandy GRAVEL (GP), reddish brown, wet, fine to coarse grained sand, fine subangular to subrounded slate and siltstone gravels, poorly stratified, weathered gravels</p>
248	45									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								COMPLETE		

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-11
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 6
EQUIPMENT USED: CME-75										ELEVATION: 292.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/9/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/10/2014
07/09/14	ATD	∇ 34				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
248	45									
		45-50	Run 1 Box 5	5	100					<p>@46.0': Basal cobble, rounded, heavily weathered, MnO in in basal gravel</p> <p>@46.7': Basal slate, heavily oxidized sandy gravel below, abrupt basal erosive contact @49'</p>
243	50									
		50-55	Run 2 Box 5	5	100					<p>Pleistocene Cheviot Hills Deposits (CHD):</p> <p>@49' to 53.8': Sandy CLAY with Silt (CL-ML), reddish brown, moist, minor gleying, fine grained sand, occasional medium to coarse grained sand, MnO₂ spotting and streaking, sand I</p>
238	55									
		55-60	Run 1 Box 6	5	100					<p>@53.8' to 55': Grades to Sandy CLAY (CL), with gravel, reddish brown, very moist, fine to medium grained sand, some coarse grained sand, fine subangular slaty gravels, MnO</p>
233	60									
										<p>@55' to 58.2': Laminated Sandy CLAY and Clayey SAND (SC-CL), reddish brown and gray, gleyed, mostly fine grained sand, some medium to coarse grained sand, occasional fine subrounded slaty gravels, MnO₂ spotting throughout, gravel bed @55.6',</p> <p>@58.2' to 59.7': Sandy CLAY (CL), reddish brown, gleyed, fine to coarse grained sand, occasional fine gravel, massive</p> <p>@59.7' to 64': Interlaminated Sandy CLAY and Clayey SAND (SC-CL), reddish</p>
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15


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LEIGHTON

CORE BORING LOG										BORING NO. CB-11		
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 6		
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 6		
EQUIPMENT USED: CME-75										ELEVATION: 292.5 Feet		
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/9/2014		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 7/10/2014			
07/09/14	ATD	∇ 34				HORIZONTAL	Bit (Feet)		DRILLER: Martini			
		▼				INCLINED	Barrel (Feet)		PREPARED BY: EH			
					0	ANG. FROM VERT.	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca			
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.		
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG							
233 60	60-65	Run 2 Box 6	5	100	[Hatched Pattern]	brown, gleyed, mostly fine grained sand, some medium to coarse grained sand, MnO ₂ nodules, sand lens @62.1' to 62.4': sand bed with fine to coarse sand and siltstone						
					[Hatched Pattern]	@63' to 65': Sandy CLAY (CL), reddish brown, gleyed, faintly laminated, fine to medium grained sand, some coarse grained sand, well oxidized						
228 65	65-70	Run 1 Box 7	5	100	[Hatched Pattern]	@65' to 73.6': Sandy CLAY (CL), reddish brown to gray, oxidation-reduction banding, fine grained sand, with some medium to coarse grained sand, occasional fine subrounded slaty gravel, MnO ₂ streaks, @64.1' carbonate stringers begin, @70-70.5						
223 70	70-75	Run 2 Box 7	5	100	[Hatched Pattern]							
218 75					[Hatched Pattern]	@74.4': Dark reddish brown, well developed paleosal, oxide, clay, and MnO on ped faces, minor carbonate stringers at 74.4						
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING				
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH					
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT					
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT					
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE					
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE					
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE				
								COMPLETE				






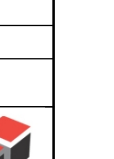
ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-11
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 6
EQUIPMENT USED: CME-75										ELEVATION: 292.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/9/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/10/2014
07/09/14	ATD	▽ 34				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
218	75					Total depth of coring: 75' bgs Perched groundwater encountered @ 34'-34.5', @42'-43.2', and 43.8'-49' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete an				
213	80									
208	85									
203	90									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
								V. SEVERE		
								COMPLETE		

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-12
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 6
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/10/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/11/2014
07/10/14	ATD	∇ 32				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
291	0						<p>Artificial Fill, Undocumented (Afu): @0'-5': Hand Auger 2.5 ft Runs to 30'</p>			
286	5						<p>@5': Holocene Alluvium of Benedict Canyon Wash (Qal) Sandy CLAY (CL), dark brown to reddish brown, well developed blocky structure, heavily oxidized with oxide on ped faces</p> <p>@5.8' to 6.5': Sandy CLAY (CL), dark brown to reddish brown, well developed blocky structure, heavily oxidized with oxide on ped faces</p> <p>@6.5' to 7.5': No Recovery</p>			
		5-10	Run 1 Box 1	3.4	68		<p>@7.5': Sandy CLAY with Silt (CL-ML), medium brown, slightly moist, fine grained sand, some oxidation, trace fine subrounded gravel, soft, rootlets in unit</p> <p>@8.4' to 10': No Recovery</p>			
281	10						<p>@10'-10.5': Sandy GRAVEL (GP), dark reddish brown, fine to coarse sand, fine rounded, weathered slate and siltstone gravels, oxidized with heavy oxidation at basal contact</p> <p>@10.5': Pleistocene Alluvium of Benedict Canyon Wash (BCW,): Silty Sandy CLAY (CL-ML), mottled medium brown to olive brown to reddish brown, mostly fine grained sand, blocky structure, oxidized with some heavily weathered slaty gravels. Heavy oxide and minor MnO on ped faces, minor root traces at 14'</p>			
		10-15	Run 2 Box 1	4.6	92		<p>@14.6' to 15': No Recovery</p>			
276	15									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		


ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-12
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 6
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/10/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/11/2014
07/10/14	ATD	32				INCLINED	Bit (Feet)			DRILLER: Martini
						BEARING	Barrel (Feet)			PREPARED BY: EH
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
276 15		15-20	Run 1 Box 2	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
271 20							@15' to 15.1': siltstone fragment in sample, subangular, 2-inch diameter @15.1' to 15.9': Silty Gravelly SAND (SM), dark grayish brown to orange brown, moist, fine grained sand, trace fine siltstone and tabular slaty gravels, oxidized along sandy laminations and thin sand beds, basal erosive contact below @15.9' to 16.4': Silty CLAY (CL-ML), with sand, reddish brown, moist, fine grained sand, trace very fine tabular slate fragments, poorly developed blocky structure, gleyed, coarse well rounded siltstone gravel at 16.4' @16.4'-16.9': Sandy CLAY (CL), dark brown, oxidized, moderate blocky structure, fine sand on ped faces @16.9'-17.1': Gravel Bed (GP), gray, coarse, weathered slaty and siltstone gravels, gleyed, minor roots traces, basal erosive contact below @17.1': Sandy CLAY (CL), dark reddish brown, blocky structure, clay development and Mn on ped faces, fine sand with heavily weathered fine siltstone and slaty gravels in matrix, oxidized			
266 25		20-25	Run 2 Box 2	5	100		@20.4'-20.5': yellow oxidized very fine sand lamination @20.5'-22.3': Sandy CLAY (CL), dark brown to reddish brown, moderate blocky structure, with few slaty gravels and severely weathered basalt and siltstone gravels in matrix, coarse slaty gravel rock line at 22.3', gleyed @23': Light reddish staining in sand and gravel bed @23.5': Light gray gleying more prevalent, fine subrounded slaty gravels, thin fine grained sand lenses, occasional coarse grained sand, poorly developed blocky structure			
261 30							@24.7' to 24.8': Fine gravel layer, subangular siltstone fragments @24.8' to 25.6': Silty Sandy CLAY (CL-ML), reddish brown, slightly moist, fine grained sand, poorly developed blocky structure, minor gleying, gradational contact below @25.6'-25.8': Gravel Bed (GP), rounded basalt and white siltstone chips, erosive contact below @25.8' to 27.2': Clayey GRAVEL (GC), reddish brown, moist, fine grained sand, occasional coarse grained sand, fine subangular to subrounded slate and siltstone gravels, poorly to moderately developed blocky structure, basal siltstone gravels, erosive contact below @27.2' to 30.4': Becomes Sandy Silty CLAY (CL-ML), reddish brown to medium brown, blocky structure, clay and MnO on ped faces. Oxidized, severely weathered siltstone rock fragments			
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15 Fe = Iron Oxide Mn = Manganese Oxide										

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LEIGHTON

CORE BORING LOG										BORING NO. CB-12
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 6
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/10/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/11/2014
07/10/14	ATD	∇ 32				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
261	30									
	∇									
		30-35	Run 2 Box 3	5	100					
										@30.4' to 32.7': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, very moist, thinly laminated, trace FeO staining between pedogenic faces, spotty MnO ₂ staining
										@32.7' to 33.4': Sandy CLAY (CL) interbedded with Silty SAND (SM), reddish brown to medium brown, very moist to wet
										@33.4' to 35.4': Grades to Sandy GRAVEL (GP), very moist, fine grained sand, trace coarse grained sand, fine subrounded slaty gravels, trace mechanically broken fine siltstone rock fragments, olive gray mottling, poorly to moderately developed blocky structure, @34.8' 2-inch subangular black siltstone rock fragment, @35.4' trace fine subangular dark purplish red siltstone rock fragments, coarse basal slaty gravel and cobble, secondary clay development, nested channel
256	35									
	∇									
		35-40	Run 1 Box 4	5	100					
										@35.4'-36.9': Sandy GRAVEL (GP), fine to coarse sand, fine to coarse heavily weathered slaty and siltstone gravels, secondary clay development, erosive contact below at 36.9'.
										Pleistocene Alluvium of Benedict Canyon Wash (BCW₂): @36.9' to 38.4': Silty CLAY (CL-ML), reddish brown to olive brown, moist, trace fine grained sand, trace fine subangular slaty gravels, trace coarse grained sand
										@38.4'-38.5': Sand bed with rounded siltstone gravel
										@38.4' to 39.3': Sandy CLAY (CL), with gravel, medium brown to olive gray, wet, fine grained sand, trace coarse grained sand, trace fine slaty gravels, poorly developed blocky structure, grades to gravel
										@39.3' to 43.7': Sandy GRAVEL (GP), olive brown to gray brown, wet, fine to coarse grained sand, fine to coarse slaty, siltstone and weathered basalt gravels
251	40									
		40-45	Run 2 Box 4	4.7	94					
										@43.7' to 44': Sandy SILT (ML), reddish brown to gray, fine grained sand, oxidized
										@44'-44.2': Gravel bed
										@44.2' to 44.7': Sandy Silty CLAY (CL-ML), reddish brown to gray, moist, thin
246	45									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-12
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 6
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/10/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/11/2014
07/10/14	ATD	∇ 32				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
246 45	45-50	Run 1 Box 5	4.5	90		well defined laminations, oxidation-reduction banded @44.7' to 45': No Recovery @45' to 45.3': Silty Clayey SAND (SM-SC), reddish brown, wet, fine to medium grained sand, grades coarser, trace fine gravel @45.3' to 45.5': Sandy CLAY (CL), reddish brown to olive brown, fine grained sand, trace medium to coarse grained sand, fine slaty gravel @45.5' to 47.6': Sandy GRAVEL (GP), reddish brown, mostly fine to coarse grained sand, fine subangular to subrounded slaty gravels, heavy oxidation and MnO, abrupt contact @47.6': Pleistocene Cheviot Hills Deposits (CHD): Sandy CLAY to Clayey SAND (SC/CL), reddish brown and gray, gleyed, laminated, fine to medium grained sand, trace coarse grained sand, fine slaty gravels, poor blocky structure, gradational contact @47.9' to 48.5': Clayey SAND (SC), reddish brown, gleyed, fine to coarse grained sand, normally graded sequence, basal fine subrounded gravels, abrupt contact below @48.5': Sandy CLAY (CL), olive brown, greenish brown, fine sand, spotty oxidation, with minor MnO, becomes dark reddish orange at 49.2'-49.4' @49.5' to 50': No Recovery @50': Sandy CLAY (CL), reddish brown to gray, gleyed, fine grained sand, waxy finish on moderately developed faces, gradational contact @50.3' to 51': Grades to Silty CLAY with Sand (CL-ML), gray brown to greenish gray, highly gleyed, plastic, gradational contact @52' to 55': Sandy CLAY (CL), color change to reddish brown, gleyed, mostly fine grained sand, with some medium to coarse grained sand, occasional fine subrounded slate and siltstone gravel, waxy finish on poorly developed faces @53.9': becomes dark brown to reddish brown, oxidation-reduction banding, well developed blocky structure @54.5': becomes oxidation-reduction banded with thin laminations				
241 50	50-55	Run 2 Box 5	5	100		@55' to 55.9': Sandy CLAY (CL), reddish brown, gleyed, moist, fine grained sand, well developed faces, oxidized @55.9' to 58': Sandy CLAY (CL), reddish brown, gleyed, oxidation-reduction banding, mostly fine grained sand, with some medium to coarse grained sand, occasional fine subangular slaty gravel, faint MnO ₂ spotting @58' to 60': Becomes more massive, with increase in fine gravels, oxidized zone @59.2', @59' to 60' increase in fine subangular slaty gravels				
236 55	55-60	Run 1 Box 6	5	100						
231 ∇ 60										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-12
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 6
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/10/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/11/2014
07/10/14	ATD	∇ 32				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
231 60	60-65	Run 2 Box 6	5	100		@60' to 60.5': Sandy GRAVEL (GP), reddish brown, wet, medium to coarse grained sand, fine subrounded slaty gravels, gradational contact @60.5' to 61.3': Becomes Sandy GRAVEL (GP), reddish brown to orangish brown, highly oxidized, fine to medium grained sand, with some coarse grained sand, fine subrounded slaty gravels, secondary clay development @61.3' to 64.4': Sandy CLAY (CL), with gravel, reddish brown to greenish gray, heavily gleyed, fine to coarse grained sand, fine subangular slaty gravels, faintly laminated, oxidized, carbonate blebs in matrix, basal gravel at 64.4, erosive contact below				
226 65						@64.4'-65': Sandy CLAY (CL), reddish brown to greenish gray, mostly fine grained sand, basal siltstone cobble at 64.9' @65'-66.8': Sandy CLAY (CL), olive brown to orange brown, heavily oxidized, predominantly fine sand with trace pebbles, fine slaty rounded gravel and white siltstone chips				
∇	65-70	Run 1 Box 7	5	100		@66.8' to 67.3': Sandy GRAVEL (GP), reddish brown to greenish gray, gleyed, fine to medium grained sand, some coarse grained sand, fine subangular slaty gravels, normally graded, with fine to coarse basal slate and siltstone gravels, heavily weathered, secondary clay development @67.3' to 67.7': Becomes Clayey SAND (SC), with gravel, reddish brown, gleyed, fine grained sand, fine subangular slaty gravels @67.7' to 70': Sandy GRAVEL (GP), reddish brown to greenish gray, gleyed, wet, fine to coarse grained sand, fine to coarse subangular slate and siltstone gravels, heavily weathered gravels, secondary clay development, abundant MnO and oxide on rock clasts and in matrix				
221 70	70-75	Run 2 Box 7	4.6	92						
216 75						@74.6' to 75': No Recovery				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON


CORE BORING LOG										BORING NO. CB-12
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 6
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/10/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/11/2014
07/10/14	ATD	∇ 32				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EH
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
216	75						<p>Total depth of coring: 75' bgs Perched groundwater encountered @ 32.7'-33.4', 38.4'-40.5', 41'-43.7', 45'-45.3', 60'-60.5' and 67.9'-74.6' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite</p>			
211	80									
206	85									
201	90									

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS	BEDDING	ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE	WEATHERING
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES	V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120" Fe = Iron Oxide Mn = Manganese Oxide	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE



LEIGHTON


CORE BORING LOG										BORING NO. CB-13
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 6
EQUIPMENT USED: CME-75										ELEVATION: 287.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/11/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/12/2014
07/11/14	ATD	∇ 37				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EBP
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
288 0						@Surface: 6" Asphalt Concrete @0.5': 8" Portland Cement Concrete				
						Artificial Fill, Undocumented (Afu): Hand augered to 5'				
283 5	5-10	Run 1 Box 1	5	100		@5': Holocene Alluvium of Benedict Canyon Wash (Qal): Silty SAND (SM), yellowish brown, moist, fine grained sand, trace coarse grained sand, trace fine to coarse subangular slate and siltstone gravels @5.4': Becomes brown in color, porous, unlined pinhole voids				
278 10						@9.2': Gravelly Silty SAND (SM), brown, fine grained sand, fine subrounded slaty gravel with rounded siltstone fragments, porous				
	10-15	Run 2 Box 1	5	100		@11.0': Coarse pebbly sand bed, erosive contact @11.0': Pleistocene Alluvium of Benedict Canyon Wash (BCW₁): Sandy CLAY with Silt (ML-CL), color change to dark brown, moist, fine grained sand, trace coarse grained sand, few subangular to subrounded fine to coarse grained gravel @12.4' to 12.9': Sandy SILT with Clay (ML-CL), brown, moist, fine grained sand @12.9' to 15.1': Sandy CLAY with Silt (ML-CL), dark brown, moist, fine grained sand, trace coarse grained sand, few subangular to subrounded fine to coarse gravel, moderate blocky structure, some fine sand and minor clay on ped faces				
273 15										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
Fe = Iron Oxide Mn = Manganese Oxide										

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-13
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 6
EQUIPMENT USED: CME-75										ELEVATION: 287.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/11/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/12/2014
07/11/14	ATD	∇ 37				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EBP
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
273	15	15-20	Run 1 Box 2	5	100		@15.1' to 16.7': Silty CLAY with Sand (ML-CL), dark yellowish brown, moist, fine grained sand, well developed block structure with silt and fine sand on ped faces, trace rounded pebbly gravel			
							@16.7': Siltstone basal gravel			
							@16.9' to 19.1': Silty SAND (SM), brown, moist, fine to coarse sand, rounded with few subangular pebbly gravel			
268	20	20-25	Run 2 Box 2	5	100		@19.1' to 19.8': Gravelly SAND (SP), fine to coarse grained, basal contact @19.8'			
							@19.8' to 20.0': Silty SAND (SM), fine to coarse grained slaty and siltstone sand fragements			
							@20' to 22.1': Gravelly SAND (SP), yellowish brown, moist, fine to coarse grained, fine to coarse rounded siltstone, slate, and feldspar sands and gravel			
263	25	25-30	Run 1 Box 3	5	100		@22.1' to 24.2': Sandy GRAVEL (GP), yellowish brown, moist, fine to coarse grained, few fine gravels, spotty gleying, bottom of channel deposit, weathered gravel, clast supported, sharp contact with below			
							@24.2': CLAY (CL), dark reddish brown, moist, trace medium to coarse grained sand, gleying, heavily oxidized, well developed blocky structure, MnO and clay on ped face			
							@26.1': Siltstone gravel bed, angular, weathered			
							@26.2' to 27.3': CLAY with Sand (CL), dark yellowish brown, moist, fine to coarse grained sand, trace fine gravel, blocky structure, clay films, oxidation reduction banding, subangular to subrounded, minor gleying along laminations and pedogenic faces, he			
							@27.3' to 31.8': Sandy CLAY (CL) with gravel, reddish brown to orange brown, well developed blocky structure, fine to coarse grained sand, fine subrounded pebbly gravel, gleyed, MnO in matrix, basal gravel contact @ 31.8'			
258	30									

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE	
								V. SEVERE
								COMPLETE

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

LEIGHTON

CORE BORING LOG										BORING NO. CB-13	
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 6	
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 6	
EQUIPMENT USED: CME-75										ELEVATION: 287.5 Feet	
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/11/2014	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/12/2014	
07/11/14	ATD	∇ 37				INCLINED	Bit (Feet)			DRILLER: Martini	
		▼				BEARING	Barrel (Feet)			PREPARED BY: EBP	
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.									
258	30	30-35	Run 2 Box 3	5	100						
253	35	35-40	Run 1 Box 4	4.6	92		@31.8' to 35.2': Sandy Clay (CL), dark yellowish brown, moist, fine grained sand, trace coarse grained sand, poorly graded, moderate blocky structure, silt and minor clay on ped faces				
							@35.2' to 36.1': Sandy CLAY (CL) with gravel, dark yellowish brown, very moist, fine grained sand, fine subangular to subrounded slaty gravels, coarse basal siltstone and slaty gravel @36.1'				
							@35.7' to 36.9': Sandy CLAY (CL), dark yellowish brown, very moist, fine grained, trace fine subangular to subrounded slaty gravels				
							@36.9' to 37.1': Gravel bed, fine rounded slaty and siltstone gravel, erosive contact below with CaCO ₃ at contact				
							@37.1' to 37.9': Sandy CLAY (CL), dark yellowish brown, very moist, fine grained, trace fine subangular to subrounded slaty and white siltstone gravel				
		@37.9' to 38.8': Silty SAND (SM), dark yellowish brown, moist, fine grained sand									
		@38.8' to 39.2': gravel bed, fine to coarse rounded to subangular slate and siltstone gravels									
		@39.2': Silty SAND with Clay (SM-SC), brown, very moist, fine to coarse grained, few fine subangular to angular slaty gravels									
		@39.6' to 40': No Recovery									
		@40.1' to 41': Sandy GRAVEL (GP) fine to coarse grained, rounded slaty siltstone and weathered basalt gravel, trace clay, oxidation of slaty gravels, sharp basal coarse sand contact @41'									
		@41': Pleistocene Alluvium of Benedict Canyon Wash (BCW₂): Sandy SILT (ML), yellowish brown, moist, fine grained, trace fine gravel, coarse grained sand, coarse gravel @41.9"									
		@41.9' to 42.4': Silty SAND with Clay (SM-SC), dark yellowish brown, moist, fine to medium grained, trace gravel									
		@42.4' to 44.5': Sandy GRAVEL (GP), yellowish brown, moist, trace silt and clay, medium to coarse grained sand, fine to coarse gravel, subangular to subrounded FeO staining, basalt and slate gravels									
		@44.5' to 45': No Recovery									
248	40	40-45	Run 2 Box 4	4.5	90						
243	45										

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								V. SEVERE	COMPLETE

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LEIGHTON

CORE BORING LOG

BORING NO. CB-13
PAGE 4 OF 6

JOB NO.: 10274.006
PAGE NO.: 4 of 6
ELEVATION: 287.5 Feet
DATE START: 7/11/2014
DATE FINISH: 7/12/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE		
07/11/14	ATD	∇ 37				INCLINED	Bit (Feet)		
		▼				BEARING	Barrel (Feet)		
					0	ANG. FROM VERT.	Total (Feet)		

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
243	45	Run 1 Box 5	5	100		@45.0' to 45.5': Basal GRAVELS (GP), erosive contact below
						@45.5' to 46.3': Sandy SILT (ML), brown, very moist, fine to medium grained sand, oxidation staining and gleying along laminations, trace coarse grained sand
						@46.2': 1-inch gravel bed, fine to coarse slate gravels in light yellow brown silty sand matrix
						@46.3' to 46.9': Sandy CLAY (CL), reddish brown, moist, fine grained sand, gleying along laminations, trace coarse grained sand
						@46.9' to 47.6': Silty SAND (SM), yellowish brown, moist, fine to medium grained, lenses with trace clay
						@47.6' to 48.3': Sandy GRAVEL (GP), erosive contact below
238	50	Run 2 Box 5	5	100		@48.3' to 48.8': Sandy SILT (ML), brown, moist, fine grained
						@48.5': 1-inch lens of silty sand with fine gravels
						@48.6': Sandy SILT (ML), brown, moist, fine grained
						@48.8' to 49.8': SAND with Silt (SP-SM), yellowish brown, moist, fine to coarse grained, few fine gravels
						@49.8' to 50.3': Sandy SILT (ML), grayish brown, moist, fine grained, few fine to coarse subangular to subrounded slaty gravels
						@50.3' to 51.9': Sandy GRAVEL (GP), yellowish brown, fine to coarse grained sand, fine subrounded to subangular gravels, abrupt erosive contact below
						@51.9': Sandy SILT with Clay (ML-CL), brown, moist, fine grained sand, trace coarse grained sand, gleying along laminations at top of bed
						@52.8' to 52.9': Sand bed, yellow brown, fine to medium grained sand, few fine gravels, erosive contact below
						@52.9' to 55.0': Sandy SILT (ML), olive gray to orange brown, fine grained, spotty oxidation, well developed blocky structure, silt, oxide, and clay on ped faces, pebbly fine gravels, rounded @54.9' to 55.0'
233	55	Run 1 Box 6	5	100		Pleistocene Cheviot Hills Deposits (CHD):
						@55' to 56.6': Sandy CLAY (CL), brown, moist, fine grained sand, gleying along laminations, blocky structure, few fine subangular slate and basalt gravels
						@55.8' to 56.1', FeO staining, 1/8-inch to 1/4-inch dark brown fine silty sand lamination @57.6', sh
						@56.6' to 59.3 : CLAY (CL), brown, very moist, trace coarse grained sand, faint laminations, blocky structure, basal gravel, heavily weathered siltstone and slate rock line
228	60					@59.3' to 60.0': CLAY (CL), light brown to brown, coarse sand to fine gravel size slate grains @60', abrupt contact below








ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS	BEDDING	ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE	WEATHERING
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES	V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE

Fe = Iron Oxide Mn = Manganese Oxide



LEIGHTON

CORE BORING LOG										BORING NO. CB-13
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 6
EQUIPMENT USED: CME-75										ELEVATION: 287.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/11/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/12/2014
07/11/14	ATD	∇ 37				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EBP
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
228	60	60-65	Run 2 Box 6	5	100		@60.0' to 60.9': Silty CLAY (CL), color change to dark reddish brown, well developed blocky structure, gleyed with MnO and clay on ped faces, weathered basalt gravel @60.9'			
							@60.9' to 65.0': Sandy CLAY (CL), light brown to brown, blocky structure, gleyed, laminated clay on ped faces			
223	65	65-70	Run 1 Box 7	5	100		@65' to 68.2': Sandy CLAY (CL), laminated with disseminated white siltstone and slaty gravel in mass, blocky structure, fine grained sand, clayey development on ped faces			
	∇						@68.2' to 68.4': Gravel bed (GP), with white siltstone fragments			
							@68.4' to 68.8': Silty SAND (SM), brown, wet, fine to medium grained sand, some clay			
							@68.8' to 70.0': Sandy GRAVEL (GP), brown, wet, medium to coarse grained sand, fine to coarse subangular to subrounded gravel, mainly weathered basalt and siltstone rock fragments, abrupt contact below			
218	70	70-75	Run 2 Box 7	5	100		@70' to 70.6': Sandy SILT (ML), dark yellowish brown, wet, fine grained sand, trace coarse grained sand, fine gravel			
							@70.6' to 72.2': Sandy GRAVEL (GP), dark yellowish brown, wet, coarse grained sand, trace fine to medium grained sand, fine subrounded to subangular gravel, trace coarse gravel, trace clay, erosive contact below			
							@72.2' to 73.4': SILT (ML), with sand and clay, brown, wet, fine grained sand, gleyed, oxidation at contact and in mass as oxide stringers			
							@73.4' to 75': Silty CLAY (CL-ML), olive brown, very moist, trace fine grained gleyed sand, trace fine to coarse gravels, FeO ₃ staining, @74.5' 1/4-inch Silty SAND (SM) lamination with weathered gravelly basalt, light yellowish brown, oxidat			
213	75									

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
								V. SEVERE	
								COMPLETE	



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LEIGHTON

CORE BORING LOG										BORING NO. CB-13
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 6
EQUIPMENT USED: CME-75										ELEVATION: 287.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/11/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/12/2014
07/11/14	ATD	∇ 37				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: EBP
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
213	75					<p>Total depth of coring: 75' bgs Perched groundwater encountered @ 68.4'-73.4' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cutt</p>				
208	80									
203	85									
198	90									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15






LEIGHTON

CORE BORING LOG										BORING NO. CB-14
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 6
EQUIPMENT USED: CME-75										ELEVATION: 286.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/14/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/15/2014
07/14/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: JWJ
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p>				
287	0					<p>@Surface: Artificial Fill, Undocumented (Afu): 0-5': Hand auger</p>				
282	5	Run 1 Box 1	5	100		<p>Holocene Alluvium of Benedict Canyon Wash (Qal): @5' to 5.3': Silty SAND (SM), with trace clay, medium to olive brown, dry, trace very fine subangular slaty gravels, fine grained sand, trace rootlets @5.3' to 5.4': GRAVEL (GP) layer, subrounded slate @5.4': Silty SAND (SM), with trace gravel, medium brown, slightly moist, fine grained sand, fine tabular slaty gravels, trace rootlets, minor clay @7.5': Becomes Gravelly SAND (SP), with trace silt, reddish brown to dark gray brown, dry, fine grained sand, trace coarse grained sand, fine subrounded to subangular slate, Tm, and basalt gravels</p>				
277	10	Run 2 Box 1	5	100		<p>Pleistocene Alluvium of Benedict Canyon Wash (BCW,): @10': Clayey SAND with Gravel (SW-SC), reddish to dark brown, dry, fine grained sand, trace coarse grained sand, fine subangular slate and Tm gravels @10.3': Sandy CLAY (CL), reddish brown, moist, fine grained sand, poorly developed blocky structure, trace subangular slaty gravels @10.7' to 10.8': Thin Silty SAND (SM) lens, light tan, moist, fine grained sand @10.8' to 15': Sandy CLAY (CL), reddish brown, moist, fine grained sand, pinhole voids, very light frosting of sand grains between pedogenic faces, trace very fine subangular slaty gravels, poorly developed blocky structure @13.6' to 15': Increase in gravel size to fine to coarse subangular gravels</p>				
272	15									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		


ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-14
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 6
EQUIPMENT USED: CME-75										ELEVATION: 286.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/14/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 7/15/2014	
07/14/14	ATD	∇ 35				HORIZONTAL	Bit (Feet)		DRILLER: Martini	
		∇				INCLINED	Barrel (Feet)		PREPARED BY: JWJ	
		∇			0	BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
		∇				ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
272 - 15	15-20	Run 1 Box 2	5	100		@15' to 16.8': Sandy CLAY (CL), reddish brown, moist, poorly developed blocky structure, some fine subangular slate and siltstone gravels, gradational contact below				
						@16.8' to 18.1': Clayey Silty SAND (SC-SM), with gravel, reddish brown, moist, fine grained sand, subangular to subrounded slaty gravels				
						@18.1' to 19': Grades to Clayey SAND (SC), with gravel, reddish brown, moist, fine grained sand, subangular slaty gravels, poorly developed blocky structure				
						@19' to 20.5': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, moist, fine grained sand, trace fine subrounded siltstone, basalt, and slate gravel				
267 - 20	20-25	Run 2 Box 2	5	100		@20.5' to 24': Becomes CLAY (CL), reddish brown, moist, trace very fine to fine subangular slate and siltstone gravel, very poor blocky structure, heavily oxidized and gleyed				
						@24' to 25.6': Becomes Sandy CLAY (CL), reddish brown to light olive gray, moist, more developed thin laminations, moderate blocky structure, FeO ₃ staining between pedogenic faces, trace fine slaty gravels, heavily gleyed along pedogenic faces, porous with root holes, clay films				
						@25.6' to 26.8': Sandy CLAY (CL), reddish orange brown to medium brown to light olive gray, moist, fine grained sand, oxidation-reduction banded laminations, moderately developed blocky structure, thin MnO ₂ band @26.0' to 26.1'				
						@26.8' : Trace fine slaty gravels, moderately to well developed blocky structure, waxy finish on pedogenic faces, oxidation-reduction banded thin laminations, color change below				
						@27.7' to 28': Sandy CLAY (CL), reddish orange brown to medium brown to light olive gray, moist, moderately developed blocky structure, trace fine siltstone gravel @28' to 28.4'				
						@28.4' to 29.3': Silty CLAY (CL), with sand and gravels, reddish brown, moist, laminated oxidation-reduction banding				
						@29.3': basal siltstone rock clast				
262 - 25	25-30	Run 1 Box 3	5	100						
257 - 30										

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FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								SEVERE	COMPLETE

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LEIGHTON

CORE BORING LOG										BORING NO. CB-14
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 6
EQUIPMENT USED: CME-75										ELEVATION: 286.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/14/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 7/15/2014	
07/14/14	ATD	∇ 35				HORIZONTAL	Bit (Feet)		DRILLER: Martini	
		∇				INCLINED	Barrel (Feet)		PREPARED BY: JWJ	
		∇			0	BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
		∇				ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
257 30		30-35	Run 2 Box 3	5	100	<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p> <p>@30' to 32.2': Sandy CLAY (CL), with trace silt, reddish brown, moist, fine grained sand, trace slaty tabular to subrounded gravels, moderately developed blocky structure</p>				
						<p>@32.2' to 32.9': Sandy CLAY (CL), reddish brown, moist, fine grained sand, moderately developed blocky structure, trace CaCO₃ development between pedogenic faces</p> <p>@32.9': Clayey GRAVEL (GC), reddish brown to dark olive gray, moist, subangular slate, siltstone, and basalt gravels, fine grained sand, trace coarse grained sand,</p>				
252 ∇ 35		35-40	Run 1 Box 4	4.7	94	<p>@34.7' to 34.8' reddish staining and coarse subangular gravels, abrupt change below</p> <p>@34.8' to 35': Silty Sandy CLAY (CL-ML), medium brown, fine grained sand, moist, moderately developed blocky structure</p> <p>@35' to 35.4': SAND with Gravel (SP), reddish brown to light brown to dark olive gray, very moist to wet, medium to coarse grained, fine tabular to subrounded slaty gravels, gradational contact below</p> <p>@35.4' to 36.2': Sandy CLAY (CL), reddish brown to medium brown, very moist to wet, fine grained sand, moderately developed structure</p> <p>@36.2' to 38.9': Becomes Sandy CLAY (CL), with gravel, reddish brown, very moist to wet, fine grained sand, fine to medium subangular slate and siltstone gravel, trace CaCO₃ development, FeO₃ staining, poor to moderately developed blocky structure</p>				
						<p>@38.9' to 39.7': Clayey SAND with Gravel (SC), trace silt, wet, fine grained sand, trace coarse grained sand, fine to medium subangular slate and basalt gravels, light orange FeO₃ staining, @39.3' to 39.7' becomes medium to coarse grained sand</p>				
247 40						<p>@39.7' to 40': No Recovery</p> <p>@40' to 41': Clayey SAND with Gravel (SW-SC), reddish brown to olive brown, wet, subrounded fine slaty gravels, with CaCO₃ stringers, @40.5' to 40.6' granitic cobble, @40.6' to 41' dark red staining, abrupt contact below</p>				
						<p>@41' to 41.6': Becomes Silty SAND with Gravel (SM), medium brown to olive brown, wet, fine to medium grained sand, trace coarse grained sand, subrounded quartz gravel, subangular fine slaty gravels</p>				
		40-45	Run 2 Box 4	5	100	<p>Pleistocene Alluvium of Benedict Canyon Wash (BCW₂):</p> <p>@41.6' to 41.7': Thin coarse grained Clayey SAND (SC) lens, fine subangular slaty gravels</p> <p>@41.7' to 43.2': Sandy CLAY (CL), with gravel, very moist, fine grained sand, moderately developed blocky structure, trace FeO₃ staining on pedogenic faces, tabular slaty fine gravels, subangular Tm gravels</p> <p>@43.2' to 43.5': Clayey SAND (SC) lens, wet, coarse grained, with fine subangular gravels, trace FeO staining</p> <p>@43.5' to 44.1': Becomes Clayey GRAVEL (GC), reddish brown, very moist,</p>				
242 45										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	
						Fe = Iron Oxide Mn = Manganese Oxide				

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LEIGHTON

CORE BORING LOG										BORING NO. CB-14	
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 6	
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 6	
EQUIPMENT USED: CME-75										ELEVATION: 286.5 Feet	
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/14/2014	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/15/2014	
07/14/14	ATD	▽ 35				INCLINED	Bit (Feet)			DRILLER: Martini	
		▽				BEARING	Barrel (Feet)			PREPARED BY: JWJ	
		▽			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
242	45				46		subangular siltstone rock fragments @44.1': trace coarse grained sand @44.6' to 45': No Recovery @45' to 47.3': Clayey SAND with Gravel (SW-SC), and trace silt, medium brown to reddish brown, wet, fine grained sand, trace coarse grained sand, subangular slaty gravels @47.3' to 50': No Recovery				
237	50				86		@50' to 51.5': Clayey SAND with Gravel (SW-SC), reddish brown to olive gray, very moist, fine to coarse grained, fine subrounded to subangular slate, basalt, and quartz gravel @51.5' to 52.2': No Recovery @52.2': Clayey SAND with Gravel (SW-SC), medium brown to dark olive gray, wet, fine to coarse grained sand, trace subangular slaty gravels, abrupt contact below @52.4': Pleistocene Cheviot Hills Deposits (CHD): Sandy CLAY (CL), reddish brown to medium brown to dark olive gray, fine grained sand, trace fine subangular slate rock fragments, moderately to well developed blocky structure, clay on pedogenic faces, Fe ₂ O ₃ staining prevalent, MnO ₂ nodules				
232	55				100		@55' to 55.6': Sandy CLAY (CL), reddish brown to light olive gray, moist, fine grained sand, Fe ₂ O ₃ staining prevalent, MnO ₂ development, light olive gray gleying, poorly to moderately developed blocky structure, shimmer on well developed pedogenic faces @55.6' to 57.1': Grades to Sandy CLAY (CL), reddish orange brown to medium brown to light olive gray, wet @51.1' to 51.5', trace fine subrounded slate fragments, dark reddish brown Fe ₂ O ₃ staining prevalent, well developed blocky structure, oxidation-reduction banding, well developed thin laminations @57.1' to 57.6': Silty CLAY (CL-ML), with trace sand and gravel, reddish brown to light olive gray, moderately developed blocky structure, Fe ₂ O ₃ staining, gleying prevalent, well developed thin laminations @57.6' to 58.1': Grades to Sandy Silty CLAY (CL-ML) @58.1' to 60': Grades to Silty CLAY (CL-ML), with sand, reddish brown to light olive gray, moist, moderately developed blocky structure, gleying prevalent, Fe ₂ O ₃ staining, shimmer on faces, trace fine slaty gravels				
227	60										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING			
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE				
Fe = Iron Oxide Mn = Manganese Oxide											

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-14
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 6
EQUIPMENT USED: CME-75										ELEVATION: 286.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/14/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/15/2014
07/14/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: JWJ
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
227 60						<p>@60' to 60.2': Sandy CLAY (CL), with gravel, reddish brown, wet, well developed blocky structure, waxy finish on faces, trace fine slaty rock fragments</p> <p>@60.2' to 64.4': Sandy CLAY (CL), massive, reddish orange brown to light olive gray, moist, fine grained sand, trace fine subangular slate and siltstone rock fragments, gleying prevalent, FeO₃ staining, moderately developed blocky structure</p>				
	60-65	Run 2 Box 6	5	100						
∇						<p>@64.4' to 64.5': Thin Clayey SAND with Gravel (SW-SC) lens, reddish brown to olive gray, wet, fine to coarse grained sand, subrounded fine slaty gravels</p> <p>@64.5' to 65': Silty CLAY (CL-ML), light olive gray to medium brown, trace fine subrounded slate fragments, well developed blocky structure, FeO₃ staining prevalent, gleying prevalent, thinly laminated weak beds, trace MnO₂ nodules</p> <p>@65' to 67.7': Sandy CLAY (CL), reddish brown to light olive gray, moist, fine grained sand, FeO₃ staining prevalent, gleying prevalent, trace fine slate and siltstone gravel, moderately to well developed blocky structure,</p>				
222 65										
	65-70	Run 1 Box 7	5	100						
∇						<p>@67.7' to 68.5': Clayey SAND with Gravel (SW-SC), reddish brown to olive gray, wet, fine to coarse grained sand, subrounded to subangular slate and siltstone gravel</p> <p>@68.5' to 68.8': Becomes Silty SAND (SM), with fine gravels, wispy thin light brown and black MnO₂ laminations, wet</p> <p>@68.8' to 68.9': Clayey SAND with Gravel (SW-SC) lens, fine to coarse grained, wet, subrounded slate, siltstone, and quartz rock fragments</p> <p>@68.9' to 69.4': Silty SAND (SM), with fine gravels, medium brown to light olive gray, wet, fine grained sand, subrounded to subangular slaty gravel</p> <p>@69.4' to 69.7': Clayey SAND with Gravel (SW-SC), medium brown to light olive gray, wet, subrounded slaty fine gravel</p> <p>@69.7': Sandy CLAY (CL), with trace gravels, light olive gray with orange red staining, moist, moderately developed blocky structure, MnO₂ development on pedogenic faces, trace fine grained sand grains between pedogenic faces</p> <p>@71' to 72.3': Sandy CLAY (CL), light olive gray with orange brown staining, moist, gleying prevalent, moderately developed blocky structure, MnO₂ development on pedogenic faces, trace fine grained sand grains between pedogenic faces</p> <p>@72.3' to 75': Becomes Sandy CLAY (CL), with gravel, medium brown to olive gray with orange brown staining, moist, fine grained sand, fine subrounded to subangular slate, Tm, and quartz gravels, FeO staining prevalent, moderately developed blocky structure, MnO₂ development and fine sand on pedogenic faces.</p>				
217 70										
	70-75	Run 2 Box 7	5	100						
∇										
212 75										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
Fe = Iron Oxide Mn = Manganese Oxide										

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-14
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 6
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 6
EQUIPMENT USED: CME-75										ELEVATION: 286.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/14/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/15/2014
07/14/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: JWJ
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
212 75							<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p> <p>Total depth of coring: 75' bgs Perched groundwater encountered @ 35'-39.7', 40'-41.6', 43.2'-43.5', 45'-47.3', 52.2'-52.4', 60'-60.2', 64.4'-64.5' and 67.7'-69.7' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite</p>			
207 80										
202 85										
197 90										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
									COMPLETE	

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LEIGHTON

CORE BORING LOG										BORING NO. CB-15
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/15/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/16/2014
07/15/14	ATD	∇ 38.7				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: JWJ
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
-286 0						[Cross-hatched pattern]	<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p> <p>@Surface: Artificial Fill, Undocumented (Afu): @0'-5': Hand auger</p>			
-281 5		5-10	Run 1 Box 1	5	100	[Diagonal lines pattern]	<p>@5': Holocene Alluvium of Benedict Canyon Wash (Qal): Sandy CLAY to Clayey SAND (SC-CL), with silt, olive brown, dry, fine grained sand, trace fine slaty gravels</p> <p>@5.4' to 5.9': Silty Clayey SAND (SM-SC), olive brown to light reddish brown, dry, fine grained sand, trace subrounded fine slaty gravels, clay lamination</p> <p>@5.7', light reddish brown, gradational contact</p> <p>@5.9' to 7.5': Sandy CLAY (CL), with gravels, light reddish brown to medium brown, dry to slightly moist, fine grained sand, trace fine tabular to subrounded slate and siltstone gravels, poorly developed blocky structure</p> <p>@7.5' to 10': Sandy, Clayey GRAVEL (GC), reddish brown to light orange brown to medium brown, slightly moist, fine grained sand, subrounded to subangular slate and siltstone gravel, poorly developed blocky structure, oxidized</p>			
-276 10		10-15	Run 2 Box 1	5	100	[Diagonal lines pattern]	<p>@10': Pleistocene Alluvium of Benedict Canyon Wash (BCW,): Sandy CLAY (CL), with trace gravels, reddish brown, moist, fine grained sand, poorly developed blocky structure, pinhole voids, trace fine subangular slate and siltstone gravel, gleyed, trace basalt fragments</p>			
-271 15						[Diagonal lines pattern]				
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
									V. SEVERE	
									COMPLETE	
							Fe = Iron Oxide Mn = Manganese Oxide			

ROCKLOG2014-10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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

LEIGHTON

CORE BORING LOG										BORING NO. CB-15
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/15/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/16/2014
07/15/14	ATD	▽ 38.7				INCLINED	Bit (Feet)			DRILLER: Martini
		▽				BEARING	Barrel (Feet)			PREPARED BY: JWJ
		▽			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
271 - 15	15-20	Run 1 Box 2	5	100	[Hatched Pattern]	<p>@17.4' to 17.9': Clayey SAND (SC), light reddish brown, moist, fine grained, trace fine tabular and subangular slaty gravel, trace silt, gradational contact below</p> <p>@17.9' to 21.5': Grades to Sandy CLAY (CL), reddish brown to medium brown, with minor olive gray gleying, moist, fine grained sand, poorly developed blocky structure, trace fine gravel, trace rootlets</p>				
266 - 20	20-25	Run 2 Box 2	5	100	[Hatched Pattern]	<p>@21.5' to 24.1': Becomes Sandy CLAY (CL), reddish brown to olive gray, moist, fine grained sand, trace fine subangular gravel, poorly developed blocky structure, @22' very faint thin light olive gray and orange reddish brown laminations</p>				
261 - 25	25-30	Run 1 Box 3	2.4	48	[Hatched Pattern]	<p>@24.1': Becomes Silty Gravelly SAND (SW-SM), with trace clay, light reddish brown to medium brown, moist, fine to coarse grained sand, subrounded to subangular slate and siltstone gravel</p> <p>@25.9': Pleistocene Alluvium of Benedict Canyon Wash (BCW₂): CLAY (CL) with Sand, reddish orange brown to light olive gray, moist, trace fine subrounded slaty gravels, moderately developed blocky structure, some gleying, poorly developed thin laminations, oxidation-reduction banding</p> <p>@27.4' to 30': No Recovery</p>				
256 - 30										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"				
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"				
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"				
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"				
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15



LEIGHTON

CORE BORING LOG										BORING NO. CB-15	
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 7	
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 7	
EQUIPMENT USED: CME-75										ELEVATION: 285.5 Feet	
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/15/2014	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/16/2014	
07/15/14	ATD	∇ 38.7				INCLINED	Bit (Feet)			DRILLER: Martini	
		∇				BEARING	Barrel (Feet)			PREPARED BY: JWJ	
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS											
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
256	30				[Hatched Pattern]	<p>@30' to 32.5': Sandy CLAY (CL), medium brown to light olive gray, moist, moderately developed blocky structure, fine grained sand, trace fine subangular slaty gravel, trace MnO₂ development, gleyed</p>					
		30-35	Run 2 Box 3	5	100	[Hatched Pattern]	<p>@32.5' to 35.9': Sandy Silty CLAY (CL-ML), light reddish brown to medium brown, moist, fine grained sand, moderately developed blocky structure, trace MnO₂ development</p>				
251	35				[Dotted Pattern]	<p>@35.9' to 36.2': Sandy GRAVEL (GW) lens, subrounded siltstone fragments, fine subrounded slaty gravel</p>					
		35-40	Run 1 Box 4	5	100	[Dotted Pattern]	<p>@36.2': Sandy CLAY (CL), medium brown to olive gray, very moist, fine grained sand, trace fine slaty gravel, blocky structure, with pods of well developed dark purplish red clay</p>				
					[Dotted Pattern]	<p>@38': Clayey SAND with Gravel (SW-SC), medium brown to reddish brown, very moist, fine to medium grained sand, trace coarse grained sand, with fine subrounded to subangular slate, siltstone, and basalt gravels</p>					
					[Dotted Pattern]	<p>@38' to 39.4': Becomes Sandy CLAY (CL-ML), with gravels, reddish brown to medium brown, with dark purplish red stained nodules, very moist, fine to coarse grained sand, fine subrounded slate, siltstone, and basalt gravels</p>					
246	40				[Dotted Pattern]	<p>@39.4' to 40': Silty Sandy CLAY (ML-CL), with gravel, medium brown to light olive gray, wet, gleyed</p>					
		40-45	Run 2 Box 4	3.7	74	[Dotted Pattern]	<p>@40' to 40.4': Sandy GRAVEL (GW) lens, medium brown to olive gray, wet, fine to coarse grained sand, subrounded slate, siltstone, basalt, and quartz gravel</p>				
					[Dotted Pattern]	<p>@40.4': Sandy CLAY (CL), light reddish to medium brown with minor light olive gray gleying, fine grained sand, trace fine subangular slaty fragments, @40.5' to 40.7' sandstone cobble, trace CaCO₃ stringers, @42' to 42.1' becomes sandier</p>					
					[Dotted Pattern]	<p>@43.2' to 43.7': Clayey GRAVEL (GC), olive gray to medium brown, moist, subrounded to subangular slate, siltstone, and basalt gravels, @43.3' siltstone rock fragment</p>					
					[Dotted Pattern]	<p>@43.7' to 45': No Recovery</p>					
	241	45									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING			
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH				
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT				
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT				
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE				
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE				
								SEVERE	COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-15
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/15/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/16/2014
07/15/14	ATD	▽ 38.7				INCLINED	Bit (Feet)			DRILLER: Martini
		▽				BEARING	Barrel (Feet)			PREPARED BY: JWJ
		▽			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
241 45		45-50	Run 1 Box 5	3.8	76		<p>The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.</p> <p>@45' to 45.5': Gravelly CLAY (CL), with sand, reddish brown to olive gray, very moist, gleyed, moderately developed blocky structure, faint thinly laminated sand and clay laminations</p> <p>@45.5' to 48.8': Gravelly SAND (SP), reddish brown to olive gray, very moist to wet, fine grained</p> <p>@45.8' to 46': Becomes fine to coarse grained, with fine slate, siltstone, and basalt gravels at basal contact</p> <p>@48.8' to 50': No Recovery</p>			
236 50							<p>@50' to 50.8': Clayey SAND with Gravel to Clayey Sandy GRAVEL (GP), reddish brown to medium brown to light yellow brown, moist, fine to coarse grained sand, fine subrounded to subangular slate, basalt, and siltstone gravels, sharp contact below</p> <p>@50.8': Pleistocene Cheviot Hills Deposits (CHD): Silty CLAY (CL), dark olive gray, moist, well developed blocky structure, well developed FeO₃ staining and nodules, MnO₂ development on pedogenic faces, laminated, oxidized, gleyed clay 1-foot below oxidation-reduction banding</p>			
231 55		55-60	Run 1 Box 6	5	100		<p>@55.4' to 55.5': Thin Silty Clayey SAND (SM-SC) lens, reddish brown to light olive gray, fine grained sand</p> <p>@55.5' to 65.3': Sandy CLAY (CL), reddish orange brown to dark olive gray, moist, varved, fine grained sand, scattered fine slate and Tm gravels, well defined thin laminations, oxidation-reduction banded</p> <p>@56' to 56.8' dark olive gray vertical gleying, FeO staining prevalent, well developed blocky structure, clay developed pedogenic on faces, minor MnO₂ development</p> <p>@56.8': Sandy CLAY (CL), reddish orange brown to dark olive gray, moist, varved, fine grained sand, scattered fine slate and Tm gravels, well defined thin laminations, oxidation-reduction banded</p>			
226 60										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15



LEIGHTON

CORE BORING LOG										BORING NO. CB-15
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/15/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/16/2014
07/15/14	ATD	▽ 38.7				INCLINED	Bit (Feet)			DRILLER: Martini
		▼				BEARING	Barrel (Feet)			PREPARED BY: JWJ
		▼			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
226	60	60-65	Run 2 Box 6	5	100					
							@64.1': heavy gleying and mineral leaching zone			
							@64.4' to 65' increase in gravels			
221	65	65-70	Run 1 Box 7	5	100		@65': Sandy CLAY (CL), reddish orange brown to dark olive gray, moist, varved, fine grained sand, scattered fine slate and Tm gravels, well defined thin laminations, oxidation-reduction banded			
							@65.3' to 65.5': Silty SAND (SM) lens, dark brown to reddish orange brown, wet, fine grained, oxidized heavily at contact below			
							@65.5' to 66.2': Sandy Silty CLAY (CL-ML), reddish orange brown to dark olive gray, gleyed, FeO staining prevalent, poorly to moderately developed blocky structure			
							@66.2' to 66.3': Sandy GRAVEL (GW) lens, fine to coarse grained sand, subrounded slaty gravel			
							@66.3' to 67.1': CLAY with Silt (CL-ML), and sand, reddish orange brown to dark olive gray, moist, gleyed, FeO ₃ staining prevalent, fine grained sand, trace subrounded fine slaty gravel, moderately developed blocky structure, clay on facies, MnO ₂ development			
							@67.1' to 67.5': Sandy Clayey GRAVEL (GW-GC) lens, fine to coarse grained sand, subrounded to subangular slate and siltstone gravels, abrupt contact with below			
216	70	70-75	Run 2 Box 7	2.5	50		@67.5' to 68.8': Silty Sandy CLAY (CL-ML), with fine gravels, reddish orange brown to olive gray, moderately to well developed blocky structure, very moist,			
							@68.8' to 70': Sandy CLAY (CL), reddish orange brown to olive gray, moist, moderately developed blocky structure, FeO ₃ nodules, MnO ₂ development, coarse sand grains between pedogenic faces			
							@70' to 70.2': Thin Clayey SAND with Gravel (SW-SC) lens, wet, fine to coarse grained sand, with subangular slaty gravels			
							@70.2' to 71.7': Sandy Gravelly CLAY (CL), with silt, reddish brown to olive gray, moist, well developed blocky structure, orange FeO ₃ staining, waxy finish on faces			
							@71.7' to 71.9': Sandy Clayey GRAVEL (GW-GC) lens, wet			
							@71.9' to 72.5': Silty Sandy CLAY (CL-ML), with gravel, reddish brown to olive gray, very moist, well developed blocky structure. @72.1' to 72.2' sand and gravel lens			
							@72.5' to 75': No Recovery			
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15


LEIGHTON

CORE BORING LOG										BORING NO. CB-15
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/15/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/16/2014
07/15/14	ATD	∇ 38.7				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: JWJ
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
211 75		75-80	Run 1 Box 8	5	100	•••••	@75' to 76.1': Silty SAND (SM), black and white, wet, fine to medium grained, coarsens downward, siltstone rock fragments			
						Δ Δ Δ Δ Δ	@76.1' to 77': Becomes Gravelly SAND (SW), black and white, wet, medium to coarse grained sand, primarily subrounded grains, with subrounded to subangular fine gravels, slaty			
						•••••	@77' to 80.7': Becomes Clayey Sandy GRAVEL (GW-GC), black and white to medium brown, wet, gradational contact below			
206 80		80-85	Run 2 Box 8	5	100	•••••	@80' to 82': Silty SAND (SM), olive brown, wet, fine grained, @81.3' to 82' medium grained, abundant gravel			
						•••••	@82' to 82.3': Sandy Clayey GRAVEL (GW-GC), wet, primarily coarse grained sand, subrounded to rounded slaty gravels, abrupt contact below			
						•••••	@82.3': 1-inch glazed @82.3' to 83.1': Silty CLAY (CL-ML), dark olive gray, massive, moist, thin MnO ₂ bands, well developed blocky structure, waxy finish on faces, FeO ₃ staining @83.1' to 89.8': Sandy CLAY (CL), dark red brown with dark olive gray laminations, moist, massive unit, oxidation-reduction banded, fine grained sand, trace fine subangular slate and siltstone gravels, well developed blocky structure, FeO ₃ staining prevalent, MnO ₂ development between well developed faces			
201 85		85-90	Run 1 Box 9	5	100	•••••	@89': Dark red clayey paleosol			
196 90										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15



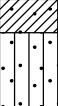



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LEIGHTON

CORE BORING LOG										BORING NO. CB-15	
PROJECT: El Rodeo Geohazard Investigation										PAGE 7 OF 7	
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 7	
EQUIPMENT USED: CME-75										ELEVATION: 285.5 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE				
07/15/14	ATD	∇ 38.7				INCLINED	Bit (Feet)				
		∇				BEARING	Barrel (Feet)				
		∇			0	ANG. FROM VERT.	Total (Feet)				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS											
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
196 90	90-95	Run 2 Box 9	5	100		<p>@90.9': MnO₂ bands</p> <p>@ 92.3': MnO₂ bands</p> <p>@92.9': MnO₂ bands</p> <p>@93.9': MnO₂ bands</p>					
191 95											
186 100											
181 105											
						<p>Total depth of coring: 95' bgs Perched groundwater encountered @ 39.4'-40.4', 45.5'-48.8', 65.3'-65.5', 70'-70.2', 71.7'-71.9', and 75'-82.3' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite</p>					
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING			
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH				
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"					
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"					
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"					
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"					
						Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE			

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-16
PROJECT: El Rodeo Geohazard Investigation										PAGE 1 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/16/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/17/2014
07/16/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EBP
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
-285	0					<p>@Surface: 8-inches Asphalt Concrete</p> <p>@0.67': 7-inches Portland Cement Concrete</p> <p>-----</p> <p>@1.25': Artificial Fill, Undocumented (Afu):</p> <p>@1.25 to 5': Hand auger</p>				
-280	5					<p>-----</p> <p>@5': Holocene Alluvium of Benedict Canyon Wash: (Qal): Sandy SILT with Clay (ML), dark brown, moist, fine to medium grained sand, trace gravel</p> <p>@5.5' to 6.5': Silty SAND (SM), dark yellowish brown, moist, fine grained, trace clay, few fine to coarse subrounded to subangular gravels</p> <p>@6.5' to 7.7': Silty CLAY (CL), with sand, dark brown, moist, fine to coarse grained sand, trace fine gravel</p>				
	5-10	Run 1 Box 1	5	100		<p>@7.7' to 8.1': Clayey SAND (SC), dark yellowish brown, moist, fine grained sand, few coarse sand and gravel, gradational contact</p> <p>@8.1' to 10.2': Silty SAND (SM), dark yellowish brown, moist, fine grained, few coarse grained sand, fine to coarse gravel, trace clay</p>				
-275	10					<p>-----</p> <p>@10.2': Pleistocene Alluvium of Benedict Canyon Wash (BCW₁): Sandy CLAY (CL), dark yellowish brown to orange brown, moist, trace coarse grained sand</p>				
-270	15									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		SEVERE		
								COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB-16
PROJECT: El Rodeo Geohazard Investigation										PAGE 2 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/16/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/17/2014
07/16/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EBP
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
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ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
270 15	15-20	Run 1 Box 2	5	100		@15.3' to 17.7': SAND with Clay (SC), yellowish brown to orange brown, moist, fine grained sand, trace coarse grained sand				
						@17.7' to 18.4': Sandy CLAY (CL), , dark yellow brown, moist, fine grained sand, trace fine gravel, few coarse gravel, mainly subrounded to subangular slaty gravels				
						@18.4' to 19.9': Clayey SAND (SC), dark yellowish brown, moist, fine to medium grained, few fine to coarse gravel, mainly subrounded to subangular slaty gravels				
265 20	20-25	Run 2 Box 2	5	100		@19.9' to 20.9': Silty SAND with Clay (SM-SC), dark yellowish brown, moist, fine to medium grained sand, few fine to coarse gravel, mainly subrounded to subangular slaty gravel				
						@20.9' to 23.6': Sandy CLAY (CL), dark yellowish brown to brown, moist, fine grained sand, trace coarse grained sand				
						@24.3' to 25': Silty SAND with Clay (SM-SC), yellowish brown, moist, fine grained sand, few fine to coarse subangular slaty gravels				
260 25	25-30	Run 1 Box 3	3.9	78		@25' to 25.2': Sandy CLAY (CL), dark brown, moist, medium to coarse grained sand, few fine gravels				
						@25.2' to 26.2': Silty SAND with Clay (SM-SC), dark yellowish brown, moist, fine to medium grained sand, trace fine gravel, fining upwards from 26.4'				
						@25.7': Becomes Silty SAND (SM), yellow brown, fine to coarse grained sand, no clay				
						@26.2' to 26.4': Sandy GRAVEL (GW), dark yellowish brown, moist, fine to coarse grained sand, fine to coarse subrounded to subangular slate, siltstone, basalt, and granitic gravels, FeO3 stained				
						@26.4' to 27.3': Silty SAND (SM), dark yellowish brown, moist, fine to coarse grained, trace fine gravel				
						@27.3' to 27.7': basal GRAVEL (GP) bed, siltstone and slate clasts				
						@27.7': Sandy CLAY (CL), reddish-brown, moist, trace coarse grained sand, few slaty gravels				
						@28.9' to 30': No Recovery				
255 30										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

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LEIGHTON

CORE BORING LOG										BORING NO. CB-16
PROJECT: El Rodeo Geohazard Investigation										PAGE 3 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/16/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/17/2014
07/16/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EBP
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
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ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
255 30	30-35	Run 2 Box 3	5	100		@30' to 30.6': Sandy CLAY (CL), reddish brown, moist, fine grained sand, trace fine gravel				
						@30.6' to 31.3': SAND and GRAVEL beds (SP-GP)				
						@31.3' to 33.6': Sandy CLAY (CL), dark yellow brown, moist, trace coarse grained sand				
250 ∇ 35	35-40	Run 1 Box 4	5	100		@33.6' to 34.4': Clayey SAND (SC), dark yellowish brown, moist, fine to coarse grained, trace fine gravel				
						@34.4' to 35': Silty SAND with Clay (SM-SC), dark yellowish brown, moist, fine to medium grained sand, trace fine gravel				
						@35' to 38.2': Clayey SAND (SC) with Silt, dark yellowish brown, wet, fine to coarse grained sand, trace clay				
						@35.6': Fine grained sand				
						@36.9' to 37.1': Few fine subangular slaty gravels				
						@38.2' to 39.5': Silty SAND (SM) lamination, fine grained, yellowish brown				
245 ∇ 40	40-45	Run 2 Box 4	4.8	96		@39.5' to 42.1': CLAY (CL), olive brown, very moist, gleying and oxidation staining along laminations				
						@41.5': rounded 1+1/2-inch size gravel rock line				
						@40' to 42.1': SAND with Clay (SC), dark yellowish brown to olive brown, wet, fine to medium grained, trace fine gravel				
						@42.1' to 43.2': Sandy SILT (ML), dark yellowish brown, moist, fine grained sand, few fine to coarse subangular slaty gravels, slight Fe ₂ O ₃ staining				
						@43.2' to 43.3': Silty SAND (SM), yellowish brown, moist, fine to medium grained, sharp contact below, at basal siltstone rock clast				
						@43.3' to 43.7': Sandy CLAY (CL), dark yellowish brown, moist, trace coarse grained sand				
240 45						@43.7' to 44': Silty SAND (SM), dark yellowish brown, moist, fine grained sand, trace fine gravel				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	

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LEIGHTON

CORE BORING LOG										BORING NO. CB-16
PROJECT: El Rodeo Geohazard Investigation										PAGE 4 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/16/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/17/2014
07/16/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EBP
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
240 45		45-50	Run 1 Box 5	4.1	82		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@44' to 44.8': Sandy CLAY (CL), dark yellowish brown, moist, fine grained sand, trace fine gravel at base of contact			
							@44.8' to 45': No Recovery			
							@45' to 45.7': Sandy SILT (ML), dark yellowish brown, moist, fine grained sand			
							@45.7' to 46': CLAY with Sand (CL), gleyed, oxidized			
		@46' to 46.5': Silty SAND (SM), dark yellowish brown, moist, fine grained								
		@46.5': SILT with Sand (ML), yellowish brown, very moist, fine to coarse grained sand								
		@48.9': GRAVEL (GP), basal well cemented gravels								
		@49.1' to 50': No Recovery								
235 ∇ 50		50-55	Run 2 Box 5	5	100		Pleistocene Cheviot Hills Deposits (CHD):			
							@50' to 50.5': Sandy SILT (ML), dark yellowish brown, wet, fine grained sand, pockets of gleyed clay			
							@50': 1-inch Clay, gley to reddish orange, some banding			
							@50.5' to 51.6': Clayey SILT (ML-CL), brown, very moist, gleying along laminations			
		@51.6' to 53.6': Grades to Sandy CLAY (CL), reddish brown, moist, gleying and oxidation staining along laminations								
		@53.6' to 54.4': Sandy CLAY (CL), brown, wet, fine grained sand								
		54.4' to 55.3': Grades to Clayey SILT (ML), with fine grained sand, very moist								
230 55		55-60	Run 1 Box 6	5	100		@55.3' to 55.9': Silty CLAY (CL), with sand, olive brown, very moist, fine grained sand			
							@55.6': Trace coarse sand			
							@55.9' to 56.4': Sandy CLAY (CL), fine to medium grained sand, trace fine gravel			
		@56.4' to 62.8': Sandy CLAY (CL), olive brown, moist, vertical gleying, fine to medium grained sand, trace fine gravel								
225 60										

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FIELD HARDNESS	BEDDING	ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE	WEATHERING
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES	V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120" Fe = Iron Oxide Mn = Manganese Oxide	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE



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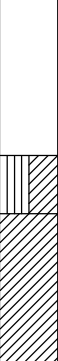



LEIGHTON

CORE BORING LOG										BORING NO. CB-16
PROJECT: El Rodeo Geohazard Investigation										PAGE 5 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/16/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/17/2014
07/16/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EBP
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
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225	60	60-65	Run 2 Box 6	5	100					
							@62.8' to 62.9': Clayey GRAVEL (GC) bed, brown, wet, fine to coarse subangular slaty gravels @62.9' to 63.7': Sandy CLAY (CL), brown, wet, medium to coarse grained sand, trace fine gravel @63.5' to 63.8': Gravelly SAND bed (SP), olive brown, wet, coarse grained sand, fine subangular slaty gravel @63.8' to 64.6': Sandy CLAY (CL), olive brown, wet, trace fine gravel, gleying @64.6': Sandy GRAVEL with Clay (GW-GC), brown, wet, medium to coarse grained sand @64.9': Fine slate and basalt gravels, trace coarse gravels, minor Fe ₃ staining @65' to 69': Clayey GRAVEL (GC), fine to coarse gravels, poor recovery			
220	65	65-70	Run 1 Box 7	5	100					
							@69' to 69.5': Clayey GRAVEL (GC), brown, wet, medium to coarse grained sand, few fine to coarse subrounded to subangular gravels, well cemented @69.5' to 70': Sandy CLAY (CL), dark gray and olive brown, moist, fine to medium grained sand, trace fine gravels @70' to 74.2': SAND (SP), yellowish brown, wet, medium grained, trace coarse grained sand, trace silt @74.2' to 74.3': Gravelly CLAY (CL) bed, dark gray and brown, fine gravel, trace coarse grained sand			
215	70	70-75	Run 2 Box 7	4.3	86					
210	75									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE		
								COMPLETE		

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON

CORE BORING LOG										BORING NO. CB-16
PROJECT: El Rodeo Geohazard Investigation										PAGE 6 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/16/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/17/2014
07/16/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EBP
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
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ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
210 - 75	75-80	Run 1 Box 8	2.8	56		<p>@74.3' to 75': No Recovery</p> <p>@75' to 76.5': SAND (SP), yellowish brown, wet, medium grained, trace coarse grained sand, trace silt</p> <p>@76.5' to 77': Sandy GRAVEL (GW), yellowish brown, wet, coarse grained sand, fine subrounded gravel</p> <p>@77' to 77.8': Gravelly CLAY to Clayey GRAVEL (GC), dark yellowish brown to olive brown, moist, fine to coarse slaty gravels, slight Fe₂O₃ staining</p> <p>@77.8' to 80': No Recovery</p>				
205 - 80	80-85	Run 2 Box 8	5	100		<p>@80' to 80.7': Silty CLAY (CL-ML), olive gray, moist, trace coarse grained sand, oxidation staining, gleyed zone, top of thick soil development</p> <p>@80.7' to 85': CLAY (CL), reddish brown, moist, trace coarse grained sand, trace fine gravel, slight gleying, faint lamination, 1-foot thick gleyed clay over oxidation-reduction banded clay unit</p>				
200 - 85	85-90	Run 1 Box 9	5	100		<p>@85' to 87.1': Sandy CLAY with Gravel (CL), dark yellowish brown, moist, trace coarse grained sand, trace fine to coarse gravel</p> <p>@86.7': GRAVEL (GW) beds within yellowish brown sandy clay matrix, fine to coarse subangular to angular siltstone and slaty gravels</p> <p>@87.1' to 87.3': GRAVEL (GW) beds within yellowish brown sandy clay matrix, fine to coarse subangular to subrounded silty and slaty gravels</p> <p>@87.3' to 90': Sandy CLAY (CL), dark yellowish brown, moist, fine to coarse grained sand, fine slaty gravel</p>				
195 - 90										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
Fe = Iron Oxide Mn = Manganese Oxide										


ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-16
PROJECT: El Rodeo Geohazard Investigation										PAGE 7 OF 7
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 7
EQUIPMENT USED: CME-75										ELEVATION: 285 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 7/16/2014
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 7/17/2014
07/16/14	ATD	∇ 35				INCLINED	Bit (Feet)			DRILLER: Martini
		∇				BEARING	Barrel (Feet)			PREPARED BY: EBP
		∇			0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
195	90	90-95	Run 2 Box 9	5	100		<p>@90' to 90.1': GRAVEL (GW) beds within yellowish brown sandy clay matrix, fine to coarse subangular to angular siltstone and slaty gravels</p> <p>@90.1' to 95': Sandy CLAY with Gravel (CL), reddish brown, moist, trace coarse grained sand, fine gravels, gleyed, developed paleosol</p> <p>@90.5': CLAY (CL), reddish brown, moist, fine to coarse grained sand, trace fine gravel, minor gleying</p>			
190	95					<p>Total depth of coring: 95' bgs</p> <p>Perched groundwater encountered @ 35'-38.2', 40'-42.1', 50'-50.5', 53.6'-54.4', 62.8'-65', 69'-69.5', 70'-74.2', and 76.5'-77' bgs</p> <p>Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye.</p> <p>Excess cuttings disposed of in D.O.T. approved drums and disposed offsite</p>				
185	100									
180	105									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014_10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-17
PROJECT: El Rodeo School										PAGE 1 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/24/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/25/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
291	0									<p>@Surface: 4 inches asphalt concrete</p> <p>-----</p> <p>@0.3': No recovery</p>
		0-5	Run 1 Box 1	3.5	70	█				<p>Artificial Fill, undocumented (Afu)</p> <p>@1.5': Sandy CLAY (CL), dark brown, moist, soft, fine to medium sand, few fine gravel, few asphalt and concrete rubble</p>
286	5									<p>@6.4': No recovery (rig chatter from 6-10'; continued rubble)</p>
		5-10	Run 2 Box 1	1.4	28	▨				
281	10									
		10-12.5	Run 1 Box 2	0	0	█				
		12.5-15	Run 2 Box 2	1	40	█				<p>@14': Concrete rubble</p>
276	15									-----
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON


CORE BORING LOG										BORING NO. CB-17
PROJECT: El Rodeo School										PAGE 2 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/24/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/25/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
276 15		15-17.5	Run 3 Box 2	5	200	[Diagonal Hatching]	Pleistocene Alluvium of Benedict Canyon Wash (BCW₁): @15': Sandy CLAY (CL), reddish brown, moist, fine sand, oxidized, blocky structure with rounded slaty gravel			
						[Cross-hatching]	@16.2': Sandy GRAVEL (GP), brown, moist, fine to coarse sand, few slaty weathered gravel @16.6': Clayey GRAVEL (GC), reddish brown, very moist, fine sand, basal cobble @ 17'			
		17.5-20	Run 4 Box 2	5	200	[Stippled]	@17.1': GRAVEL (GP), brown, moist, fine to coarse sand, slaty gravel @17.3': SILT (ML), reddish brown, slightly moist, laminated with clay and trace coarse slaty sand @17.5': Sandy GRAVEL (GP), reddish brown, very moist, fine to coarse sand and gravel			
						[Diagonal Hatching]	@19.4': Clayey SAND (SC), reddish brown, very moist, fine to coarse sand and gravel @19.8': Gravelly CLAY (CL), reddish brown, very moist, fine sand, few flat slaty gravel and siltstone @20'-20.6': Clayey SAND with Gravel (SC), reddish brown, very moist, fine sand, slaty gravel @20.6': grades to Sandy CLAY (CL)			
271 20		20-25	Run 1 Box 3	5	100	[Stippled]	@21.1'-21.3': Gravel bed, fine weathered slaty gravel with white siltstone at basal contact @21.3': becomes fine grained Silty SAND (SM), oxidized @21.5'-22.8': becomes Sandy GRAVEL (GP), rounded, fine slaty gravel @22.8': grades to fine grained Silty SAND (SM), with clay. @23.3'-25.8': Uneven erosive contact, well oxidized Sandy CLAY (CL), oxidized with fine weathered, angular siltstone gravels, laminated, gleyed, moderate blocky structure			
						[Diagonal Hatching]	@25.8': Rock line, coarse sized flattened and rounded slaty gravel @26.0-27.4': Sandy CLAY (CL), fine sand, faint oxidation-reduction banding			
266 25		25-30	Run 2 Box 3	5	100	[Diagonal Hatching]	@27.4': Pleistocene Alluvium of Benedict Canyon Wash (BCW₂): color change, Sandy CLAY (CL), dark brown with heavy oxidation reduction banding, well developed blocky structure, minor clay on pedogenic faces, gleyed, Manganese oxide staining			
261 30						[Diagonal Hatching]				
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
									V. SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15






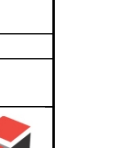
*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG										BORING NO. CB-17
PROJECT: El Rodeo School										PAGE 3 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/24/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/25/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd.,	
					0	ANG. FROM VERT.			Beverly Hills, Ca	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
261 30		30-35	Run 1 Box 4	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						@30'-31.2': CLAY with Gravel (CL), dark orange brown to reddish brown, dominantly angular slaty, siltstone and crystalline (feldspar) gravels,				
						@31.2'-31.3': rounded slaty gravels				
						@31.3': Well oxidized orange brown Sandy CLAY (CL), well developed blocky structure				
						@32.3': color change, Sandy CLAY (CL), gray, fine grained				
		@33.3'-33.6': Gravel bed, weathered basalt, slate and white siltstone, rounded								
		@33.6': Sandy CLAY (CL), olive gray, fine grained sand								
		@34.4': white siltstone chips in gray Sandy CLAY (CL)								
256 35		35-40	Run 2 Box 4	5	100		@35'-38.5': Sandy GRAVEL (GP), gray brown, basal cobble at 28.5', oxidized, weathered and rounded slaty gravels, erosive contact, abrupt			
						@38.5': sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, well developed blocky structure				
						@38.5': sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, well developed blocky structure				
251 40		40-45	Run 1 Box 5	5	100		@38.5': sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, well developed blocky structure			
						@38.5': sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, well developed blocky structure				
246 45						. . .				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"				
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"				
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"				
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"				
						Fe = Iron Oxide Mn = Manganese Oxide				


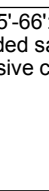
ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-17
PROJECT: El Rodeo School										PAGE 4 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/24/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 8/25/2015
						INCLINED	Bit (Feet)			DRILLER: Martini
						BEARING	Barrel (Feet)			PREPARED BY: ARR
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
246	45	Run 2 Box 5	3.9	78		@44.8': Gravelly SAND (SP), very moist, fine to coarse sand, fine and coarse gravel, rounded white siltstone gravels @45.4'-45.7': thin bed of Silty SAND with Clay (SM-SC), orange brown, fine grained @45.7': sandy GRAVEL (GP), fine to coarse sand, fine to coarse rounded slaty gravels, silstone and weathered basalt, coarse basal cobble @48.9'-50': No recovery				
241	50					Run 1 Box 6	4.2	84		@50'-53.8': Sandy GRAVEL (GP), dark brown to orange brown, saturated, fine to coarse sand, fine and coarse gravel, severely weathered, rounded slate, silstone and basalt, fine to coarse sand, heavily oxidized, decomposed silstone and yellow brown sandsto @53.1': Sandy Gravelly CLAY (CL), dark reddish brown, very moist to saturated, fine to coarse sand and gravel Pleistocene Cheviot Hills Deposit (CHD) 53.8'-54.2': Basal Clayey Gravel (GC), coarse slaty and cobbly with secondary clay development in matrix @54.2'-55': No recovery @55': SAND (SP), dark brown (salt and pepper), saturated, fine to coarse sand @56.4': Sandy GRAVEL (GP), reddish brown to orange brown, nested channel, small cobble at 57.5', channel gravels below to 58.9', abrupt contact @58.9': Sandy CLAY with Gravel (CL), dark reddish brown, very moist to saturated, fine to medium sand, fine gravel @59.7'-60': No recovery
236	55	Run 2 Box 6	4.7	94						
231	60									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-17
PROJECT: El Rodeo School										PAGE 5 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/24/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/25/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
231 60		60-65	Run 1 Box 7	4	80		@60': Silty SAND (SM), fine sand with coarse sandstone and slaty sand, grades belwo to sandy gravel (GP), basal contact at 60.9', coarse rounded slaty gravels			
						@60.9': Gravely SAND (SP), reddish brown, saturated, fine sand				
						61.7': Gravelly SAND (GP), dark reddish brown, saturated, fine to coarse sand and gravel, slate and weathered siltstone, basal siltstone cobble at 62.2				
						@62.4': Gravelly SAND (SP), reddish brown				
						@63.7': Basal rounded granitic cobbles				
		@64': No recovery								
226 65		65-70	Run 2 Box 7	4.6	92		@65'-66': Sandy Gravel (GP), coarse rounded, slaty gravel at 65.4' to 66', well graded sands with fine rounded slaty and siltstone gravels at 66' to 67.2'. Erosive contact below			
						@67.2': Sandy CLAY (CL), thin bed, becomes sandy SILT (ML), oxidized, blocky structure, iron oxide and Manganese Oxide on pedogenic faces, abrupt contact at top of sand below				
						@68.8': SAND (SP), fine to coarse sand, fine rounded gravels				
		@69.6': No recovery								
221 70		Notes: Total Depth: 70 feet bgs Perched groundwater encountered at approximately 44.8-48.9', 50-54.2', 55-59.7', 60-62.2', 62.4-63.7', 65-69.2' Boring backfilled with soil cuttings and patched with cold patch asphalt								
216 75										

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
								V. SEVERE	
								COMPLETE	



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LEIGHTON

CORE BORING LOG										BORING NO. CB-18
PROJECT: El Rodeo School										PAGE 1 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 5
EQUIPMENT USED: CME-75										ELEVATION: 305 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/25/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/26/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
305 0		0-5	Run 1 Box 1	5	100		@Surface: 4 inches asphalt concrete Artificial Fill, undocumented (Afu) @0.3': Sandy CLAY (CL), mottled reddish brown and gray, slightly moist, fine sand, trace flat slaty gravel			
						Pleistocene Alluvium of Bendedict Canyon Wash (BCW.) @1.4': Sandy SILT (ML), dark orange brown to reddish brown with pockets of gleyed sand, oxidized fine siltstone gravels, laminated oxidation reduction banding, base of unit at 3.5' - slaty rockline				
						@3.5': Sandy SILT (ML), color change light brown with oxide staining, slightly moist, fine sand				
300 5		5-10	Run 2 Box 1	5	100		@5': Gravelly SAND (SP), light brown, fine sand, fine rounded slaty gravel			
						@5.5': Silty SAND (SM), gray brown to light orange brown, with pockets of gleyed sand, MnO on pedogenic faces, oxidized				
						@8.2': SAND (SP), olive brown to gray brown, slightly moist, fine sand				
						@8.9': SAND (SP), becomes oxidized orange brown				
295 10		10-15	Run 1 Box 2	4.7	94		@9.6': Becomes fine to coarse Sandy GRAVEL (GP), with weathered slate clasts and white siltstone chips			
						@12.6': Sandy GRAVEL (GP), fine to coarse sand, fine and coarse slaty gravel and cobbles, base of nested channel, weathered clasts, basal rounded gravels and cobbles at 14.7'				
290 15							@14.7': No recovery			
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

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

LEIGHTON

CORE BORING LOG										BORING NO. CB-18				
PROJECT: El Rodeo School										PAGE 2 OF 5				
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006				
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 5				
EQUIPMENT USED: CME-75										ELEVATION: 305 Feet				
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/25/2015				
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/26/2015					
						HORIZONTAL	Bit (Feet)		DRILLER: Martini					
						INCLINED	Barrel (Feet)		PREPARED BY: ARR					
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca					
					0	ANG. FROM VERT.								
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS								
		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.												
290	15	15-20	Run 2 Box 2	5	100	@15':	Sandy GRAVEL (GP), olive brown to reddish brown, moist, friable, fine to coarse sand and slaty gravel, weathered clasts, oxidized							
						@17.3':	Sandy CLAY (CL), olive brown, moist, stiff, fine sand							
						@17.6':	Gravelly SAND (SP), reddish brown, moist, fine sand, few coarse sand, fine and coarse gravel							
						@18.6':	basal GRAVEL (GP), crystalline igneous coarse rounded gravel							
						@18.8':	becomes heavily oxidized							
						@19':	SAND (SP), gray, moist, fine sand, abundant oxide stains above and below sand bed							
285	20	20-25	Run 1 Box 3	4.6	92	@19.6':	Gravelly SAND (SP), reddish to olive brown, moist to very moist, fine to coarse sand and gravel, heavily oxidized							
						@21.6':	SAND (SP), gray, very moist, fine sand, angular coarse slaty gravel							
						@21.9':	Sandy GRAVEL (GP), olive brown, moist, fine to coarse sand and gravel, nested channel overlying MnO stained sandy gravel to 24.6', heavily weathered slaty, basalt and siltstone clasts							
						@24.6':	No recovery							
280	25	25-30	Run 2 Box 3	5	100	@25':	Sandy GRAVEL to Gravelly SAND (SP/GP), olive brown, very moist, fine to coarse sand, abundant slaty gravel, few oxide stains, heavy MnO and weathering of rock clasts, basal erosive contact below							
						Pleistocene Alluvium of Benedict Canyon Wash (BCW)								
						@27.6':	Sandy CLAY (CL), oxidation reduction, fine sand, gleyed, spotty MnO							
						@28.7':	Siltstone rock line							
275	30													
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING						
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH							
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT							
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT							
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE							
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE							
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE						
								COMPLETE						

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-18
PROJECT: El Rodeo School										PAGE 3 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 5
EQUIPMENT USED: CME-75										ELEVATION: 305 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/25/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/26/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd.,	
					0	ANG. FROM VERT.			Beverly Hills, Ca	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
275 30		30-35	Run 1 Box 4	5	100	[Hatched Pattern]	@30': Sandy CLAY (CL), dark reddish brown to orange brown, blocky structure, iron oxide, clay and MnO on pedogenic faces, gleyed			
						@31.6': rock line siltstone chips				
						@32.5': Gravelly CLAY (CL), heavily weathered slate and siltstone gravels, basal coarse				
						@33': SAND bed (SP)				
						@33.1': Sandy CLAY (CL), oxidation reduction, orange brown to reddish brown, gleyed, siltstone gravel at 33.4' and 33.6'				
270 35		35-40	Run 2 Box 4	5	100	[Hatched Pattern]	@35': Sandy SILT (ML), basal heavily weathered siltstone rock fragments at 35.8', 36', and 36.3'			
						@36.6': GRAVEL bed (GP), basal siltstone and weathered slaty gravel				
						@36.8': Sandy CLAY (CL), coarse gravel rock line at 37.7'				
						@38': Sandy Clayey GRAVEL (GP), rounded coarse slaty gravels in oxidized fine sand matrix				
						@38.8': CLAY (CL), brown to red brown, blocky structure				
265 40		40-45	Run 1 Box 5	5	100	[Hatched Pattern]	@39.1': Gravelly SAND (SP), heavily weathered slate and basalt gravels, abundant clay in matrix			
						@39.6': basal Clayey GRAVEL (GC), weathered basalt, siltstone clasts				
						@40': Sandy Gravelly CLAY (CL), reddish brown, moist, fine sand, fine and coarse gravel				
						@42.4': basal cobbles, 42.4' to 44' Sandy GRAVEL (GP), reddish brown, oxidized with minor clayey gravel from 43' to 43.6', erosive contact at 44'				
						@44': Pleistocene Cheviot Hills Deposit (CHD) CLAY (CL), light reddish brown, trace fine and coarse angular gravel at 44.5'				
260 45						[Hatched Pattern]				
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-18
PROJECT: El Rodeo School										PAGE 4 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 5
EQUIPMENT USED: CME-75										ELEVATION: 305 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/25/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL HORIZONTAL	TYPE SIZE			DATE FINISH: 8/26/2015
						INCLINED	Bit (Feet)			DRILLER: Martini
						BEARING	Barrel (Feet)			PREPARED BY: ARR
					0	ANG. FROM VERT.	Total (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
260	45	45-50	Run 2 Box 5	4.6	92	• • •	@45': Gravelly SAND (SP), reddish brown, saturated, fine sand, fine and coarse gravel			
						• • •	@46': Grades finer with depth to SAND (SP), saturated, fine sand			
						[Hatched Pattern]	@46.4': Sandy CLAY (CL), orange brown to reddish brown, very moist, fine sand, oxidation reduction banding, some clay laminae at 47.5' overlain by siltstone gravel			
						[Hatched Pattern]	@49.1': CLAY (CL), with basal GRAVEL (GC), weathered slate gravel, clay development around rock clasts			
255	50	50-55	Run 1 Box 6	5	100	[Hatched Pattern]	@49.6': No recovery			
						[Hatched Pattern]	@50': Sandy CLAY (CL), light reddish brown, moist, gleyed, oxidized, fine sand			
						[Dotted Pattern]	@51': Siltstone rock line			
						[Hatched Pattern]	@51.4': coarse, rounded slaty gravel			
		[Hatched Pattern]	@52.1': CLAY with Silt (CL), chocolate brown, trace coarse sand sized slate							
250	55	55-60	Run 2 Box 6	5	100	[Dotted Pattern]	@54.5': Clayey Sandy GRAVEL (GP), dark olive brown, saturated, fine to medium sand, fine and coarse gravel, sharp contact with below, weathered siltstone and yellow sandstone, slate clasts			
						[Hatched Pattern]	@55.6': Sandy CLAY (CL), dark reddish brown, very moist, fine sand			
						[Hatched Pattern]	@57.4': CLAY (CL), dark reddish brown, very moist, stiff			
						[Dotted Pattern]	@59.2': Clayey GRAVEL (GC), fine and coarse gravel, severely weathered slaty gravels and siltstone clasts, clay matrix			
245	60					[Dotted Pattern]				




FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
								COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15



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

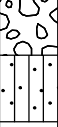
CORE BORING LOG										BORING NO. CB-18
PROJECT: El Rodeo School										PAGE 5 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 5
EQUIPMENT USED: CME-75										ELEVATION: 305 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/25/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/26/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
245 60		60-65	Run 1 Box 7	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@60': Sandy GRAVEL (GP), olive brown, saturated, fine to coarse sand and rounded gravel, sharp contact at 60.8'			
							@60.8': Sandy CLAY (CL), reddish brown, very moist, fine sand			
							@61.2': pebbly gravel and fine sand bed (SP-GP) to 61.3', grades to silty clay @ 61.5' @61.5': Silty CLAY (CL), yellow brown to reddish brown siltstone rock clast at 62.8'			
240 65		65-70	Run 2 Box 7	5	100		@64.1': thin SAND bed (SP), very fine sand @64.2': Silty CLAY (CL), brown to light brown, trace fine sand			
							@65.3': SAND with Gravel and Clay (SP)			
							@65.8': CLAY (CL)			
							@66.1': Silty SAND (SM), medium brown to light brown, gravel bed			
							@66.2': GRAVEL (GP), consisting of siltstone and slaty pebbles			
							@66.6': Silty SAND (SM), fine sand with coarse sand size siltstone @67.3': CLAY bed (CL), 3 inch thick @67.6': Silty SAND (SM)			
235 70		65-70	Run 2 Box 7	5	100		@68.5': Sandy GRAVEL (GP), fine to coarse sand, rounded fine to pebbly slaty gravel, basal contact at 69.5' @69.5': CLAY bed (CL)			
230 75							Notes: Total Depth: 70 feet bgs Perched groundwater encountered at approximately 43.7-46.4', 54.5-55.6', 60-60.5', and 65-70' Boring backfilled with soil cuttings and patched with cold patch asphalt			
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15




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CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 1 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
303 0							<p>@Surface: 6 inches asphalt concrete over 10 inches concrete</p>			
298 5							<p>Artificial Fill, undocumented (Afu) @1.3': Gravelly SAND (SP), mottled brown, slightly moist, fine to medium sand, fine and coarse gravel</p>			
293 10							<p>Pleistocene Alluvium of Benedict Canyon Wash (BCW) @5.7': CLAY (CL), dark brown to reddish brown, moist, well developed blocky structure, oxidation and clay lining of pedogenic faces, minor manganese oxide on pedogenic faces @6.1': becomes Sandy CLAY (CL) @6.3': Sandy GRAVEL with Clay (GC), fine to coarse gravels, slate, siltstone and basalt all heavily weathered, basal contact at 6.7' @6.7': Sandy CLAY (CL), hard, reddish brown to dark brown, fine sand, blocky structure with clay and iron oxide on pedogenic faces, minor carbonate development in Krotovina, MnO in matrix, gleyed</p>			
288 15							<p>@9.3': pebbly GRAVEL bed (GP), rounded slate and granitic clasts @9.7': Clayey GRAVEL (GC) @10': No recovery</p>			
							<p>@12.9': Sandy CLAY (CL), brown to orange brown, fine sand with coarse slaty sand, MnO rimming of slate clasts @13.2': Sandy GRAVEL (GP), hard, fine sand, fine to coarse slaty gravel, heavily oxidized with red brown sand laminations, abrupt contact at 14.2' @14.2': Silty SAND (SM), laminated, oxidized, very fine grained</p>			
										

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								SEVERE	COMPLETE

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LEIGHTON

CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 2 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
288	15					•••••	@15': Silty SAND (SM), oxidized, very fine grained			
						•••••	@15.9': Sandy SILT (ML), gray brown, fine sand			
						•••••	@18.1': SAND (SP) with Gravel, weathered slaty gravels			
						•••••	@19.2': Basal gravels (GP) and small cobbles, oxidized gravels and sandy matrix			
283	20					•••••	@20.4': Sandy CLAY (CL), gray brown, slightly moist, with silt and carbonate, oxidized at 21.1'			
		20-22.5	Run 1 Box 3	1.1	44	•••••	@21.2': No recovery			
		22.5-25	Run 2 Box 3	2.5	100	•••••	@22.5': Silty CLAY (CL), dark orange brown to reddish brown, slightly moist, well developed blocky structure with oxide and MnO and carbonate on pedogenic faces			
						•••••	@24.6': few slaty gravels at base of unit over clay			
278	25					•••••	@25': Sandy CLAY (CL), orange brown to reddish brown, slightly moist, fine sand, oxidized, gleyed with few slaty pebbles, spotty MnO in matrix, blocky structure			
		25-27.5	Run 3 Box 3	2.5	100	•••••	@27.2': becomes dark reddish brown, moist, few coarse weathered slaty basal gravels, abrupt erosive contact below			
		27.5-30	Run 4 Box 3	2.5	100	•••••	Pleistocene Alluvium of Benedict Canyon Wash (BCW) @27.5': Sandy CLAY (CL), olive gray to orange brown, hard, oxidized, iron oxide and clay development on pedogenic faces, gleyed, fine sand			
						•••••	@28.7': grades to Silty SAND (SM), oxidized, gleyed, with fine to coarse sand, and fine slaty gravels, white siltstone chips and some clay			
273	30					•••••				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15




LEIGHTON

CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 3 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
273 30		30-35	Run 1 Box 4	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@32.6': Sandy CLAY (CL), orange brown to olive gray, laminated to thinly bedded, oxidized with very fine gray sand, MnO and minor carbonate on pedogenic faces, gleyed			
268 35		35-40	Run 2 Box 4	5	100		@35': Sandy SILT with Clay (ML), dark reddish brown to orange brown, oxidized, clay lined pores, blocky structure			
							@35.7': rock line of coarse rounded slaty gravel over fine grained Sandy SILT (ML)			
							@37.5': Silty SAND (SM), dark orange brown to olive gray, thinly bedded, very fine sand, gleyed, poor blocky structure			
263 40		40-45	Run 1 Box 5	5	100		@39.4': weathered fine gravel sized siltstone chips			
							@39.5': Silty SAND (SM), dark orange brown to olive gray, thinly bedded, very fine sand, gleyed, poor blocky structure			
							@40': becomes Sandy GRAVEL (GP), basal slaty gravel with fine sand matrix			
							@40.9': Silty SAND (SM) with fine slaty Gravel, erosive contact with below			
							@41.4': Siltstone chips			
		@41.9': Sandy SILT (ML), orange brown to olive gray, oxidized, very fine sand, gleyed, minor MnO on pedogenic faces								
		@42.5': Pleistocene Cheviot Hills Deposit (CHD)								
		Sandy CLAY (CL), orange brown to olive gray, heavily oxidized, blocky structure, fine gray sand and clay on pedogenic faces								
		@42.9': Sandy SILT (ML), very fine sand, oxidized, gleyed, grades to silty sand below								
		@43.5': Silty SAND (SM), orange brown to dark red brown, fine sand with occasional coarse slaty sand and thin clay laminations								
258 45										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
							Fe = Iron Oxide Mn = Manganese Oxide		SEVERE	
									COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 4 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
258 45		45-50	Run 2 Box 5	4.6	92		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
						@46.1': Gravelly SAND (SP), dark brown, saturated, fine to coarse sand and gravel				
						@46.5': Sandy GRAVEL (GP), dark reddish brown, fine to coarse sand, fine to coarse slaty and crystalline gravels, oxidized basal gravel at 48.6'				
						@48.6': SAND bed (SP), light brown, saturated, fine sand @48.8': Sandy GRAVEL (GP), brown, saturated, fine to coarse sand and gravel				
253 50		50-55	Run 1 Box 6	4.2	84		@49.6': No recovery @50': Gravelly SAND (SP), brown, saturated, fine to coarse sand and gravel @50.4': basal coarse GRAVEL and COBBLES (GP), dark brown, saturated, fine to coarse sand and gravel @51': Gravelly SAND bed (SP), fine to coarse oxidized sands, siltstone and slaty gravels @51.4': Sandy GRAVEL (GP), dark reddish brown to orange blackish brown, weathered slaty gravels			
						@54.2': No recovery				
						@55': Gravelly SAND (SP), olive brown, saturated, coarse sand and slaty gravel with feldspar grains, rounded, well graded basal oxidized sand, erosive contact with below				
						@56.3': Sandy CLAY (CL), reddish brown, saturated, fine sand, stiff @56.7': GRAVEL bed (GP), slaty, siltstone, weathered gravels with heavy MnO @56.9': CLAY (CL), dark reddish brown, orange brown to olive gray, oxidized with heavy MnO, blocky structure @57.6': 1-inch coarse SAND bed (SP), erosive contact below @57.7': CLAY (CL), dark reddish brown to orange brown, oxidized, MnO pervasive @57.9': grades to Sandy CLAY (CL) to 59.2'				
248 55		55-60	Run 2 Box 6	4.7	94		@59.2': becomes Silty SAND (SM), fine sand and siltstone chips, siltstone gravel from 59.4' to 59.5', silty clean sand below			
243 60										


ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE
								V. SEVERE
								COMPLETE



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LEIGHTON

CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 5 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
243	60	60-65	Run 1 Box 7	5	100		@59.7': No recovery	@60': Silty SAND (SM), very hard, oxidized, fine gravel	@60.2': Sandy CLAY (CL), reddish brown to dark brown, moist, fine sand	@61': Sandy CLAY (CL), abrupt color change to very dark reddish brown and orange brown, intensely weathered, abundant MnO, siltstone gravels at 61.2' and 62.2'
						@62.7': GRAVEL bed consisting of siltstone and slaty gravels, abrupt contact	@62.8': Sandy CLAY (CL)			
238	65	65-70	Run 2 Box 7	5	100		@64.7': CLAY (CL), reddish brown, very moist, intensely weathered, blocky structure, oxide and MnO on pedogenic faces, gleyed	@66.8': Sandy CLAY (CL), orange brown to reddish brown, gleyed, MnO stains	@68': Sandy CLAY (CL), orange brown to reddish brown, gleyed, MnO stains, siltstone and slaty gravels	@68.5': Sandy CLAY (CL), with basal slaty gravels
						@69.5': decomposed siltstone clasts, erosive contact below				
233	70	70-75	Run 1 Box 8	4.6	92		@70': Sandy CLAY (CL), orange brown, fine sand, few coarse slaty sand to pebbly gravel, heavily weathered	@71.1': Coarse sand bed, orange brown to grey brown, oxidized	@72.3': Clayey GRAVEL (GC), predominantly severely weathered siltstone gravels, cobbles	@73.1': Sandy CLAY (CL), with few siltstone gravels in matrix
						@74': Sandy SILT (ML)	@74.6': No recovery			
228	75									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-19			
PROJECT: El Rodeo School										PAGE 6 OF 12			
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006			
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 6 of 12			
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet			
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015				
						HORIZONTAL	Bit (Feet)		DRILLER: Martini				
						INCLINED	Barrel (Feet)		PREPARED BY: ARR				
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca				
					0	ANG. FROM VERT.							
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS													
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.													
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG								
228 75	75-80	Run 2 Box 8	5	100		@75': Silty SAND (SM) @75.2': Gravel bed (GP), weathered siltstone gravels @75.4': Sandy CLAY (CL), orange brown, MnO and oxide stained, fine sand with some coarse sand to pebble sized slate and siltstone, coarse siltstone rock line at base of contact @76.1': Sandy CLAY (CL), oxidation reduction banding, fine to coarse thin sand beds at 76.4' and 77' @77': becomes laminated Sandy SILT (ML), with carbonate laminations on bedding							
223 80					80-85	Run 1 Box 9	5	100	@78.4': Gravelly CLAY (CL), siltstone and slaty gravels, highly weathered, abrupt contact at 79.3' @79.3': CLAY (CL), dark reddish brown to brown, blocky structure, clay and MnO on pedogenic faces @81.7': becomes Clayey GRAVEL (GC) @82.2': Sandy SILT (ML), grades downward to Silty SAND (SM) @82.8': Sandy GRAVEL (GP), olive brown, saturated, fine sand, few medium to coarse sand, fine and coarse slaty gravel				
218 85									85-90	Run 2 Box 9	5	100	@84.5': Clayey SILT (ML), reddish brown, moist @85': Gravelly SAND (SP), olive brown, saturated, fine to coarse sand and gravel, erosive contact with below @85.6': CLAY (CL), yellowish brown, moist @86.1': Sandy CLAY (CL) with Silt, orange brown to reddish brown, gleyed, some coarse sand, MnO on pedogenic faces and clayey laminations @87': Gravelly CLAY (CL), color change, slaty gravels in matrix to approximately 90'
213 90													
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING					
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH					
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT					
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT					
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE					
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE					
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE					
								COMPLETE					

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15



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CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 7 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
213 90		90-95	Run 1 Box 10	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@90': Clayey GRAVEL (GC), reddish brown, saturated, fine to coarse sand and gravel, basal gravel consisting of siltstone and coarse slaty gravel at 92'			
							@91.8': CLAY (CL), brown, moist, trace fine sand, few gravel			
							@92.4': Sandy CLAY (CL) with Gravel, basal coarse gravel at 93'			
							@93': CLAY (CL) with Gravel, dark reddish brown			
		@93.4': Gravelly SAND bed (SP), erosive abrupt contact below								
		@93.6': Clayey Gravelly SAND (SP), olive brown, fine to coarse sand and gravel								
		@94.2': rock line, coarse slaty gravel, Sandy CLAY (CL) to 95.5'								
208 95		95-100	Run 2 Box 10	4.8	96		@95.5': Clayey GRAVEL (GC)			
							@95.8': Sandy GRAVEL (GP), fine to coarse sand, fine to coarse gravels with siltstone chips, cobble at 98', basal channel at 99.4'			
203 100		100-105	Run 1 Box 11	4.5	90		@99.4': Silty SAND (SM), reddish brown, moist, fine sand, some clay			
							@99.8': No recovery			
							@100': SAND (SP), olive brown, saturated, fine to medium sand, trace coarse sand and fine gravel			
							@100.6': Sandy CLAY (CL), reddish brown, moist, fine sand			
							@100.9': CLAY (CL), reddish brown, moist, clay bed to 101.2'			
							@101.2': Sandy CLAY (CL), medium brown, moist, fine sand, coarse basal gravels at 101.5'			
							@101.6': CLAY (CL), brown, MnO stained			
							@101.8': Silty Sandy CLAY (CL), abrupt contact below			
							@102.1': Clay bed (CL)			
							@102.2': Clayey GRAVEL (GC), siltstone and slaty gravels with weathered basalt chips			
		@102.6': Sandy GRAVEL (GP), fine to coarse sand, fine slaty gravel, abrupt contact below								
		@103.5': Silty SAND (SM), fine sand								
		@103.8': CLAY bed (CL), chocolate brown								
198 105										

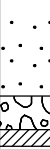
ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS	BEDDING	ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE	WEATHERING
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES	V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120" Fe = Iron Oxide Mn = Manganese Oxide	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE




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LEIGHTON

CORE BORING LOG										BORING NO. CB-19							
PROJECT: El Rodeo School										PAGE 8 OF 12							
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006							
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 12							
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet							
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015							
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015								
						HORIZONTAL	Bit (Feet)		DRILLER: Martini								
						INCLINED	Barrel (Feet)		PREPARED BY: ARR								
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca								
					0	ANG. FROM VERT.											
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS																	
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.																	
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG												
198 105	105-110	Run 2 Box 11	1.6	32		@104': Sandy SILT (ML), grading down to Silty SAND (SM) light brown, pebbly gravel at 104.5'	@104.5': No recovery	@105': Gravelly SAND (SP), olive brown, wet, fine to coarse sand and gravel	@106': Sandy GRAVEL (GP), slaty weathered siltstone gravels and cobbles, abrupt basal contact below	@106.4': CLAY, yellow brown, moist, stiff	@106.6': No recovery						
193 110						110-115	Run 1 Box 12	4.5	90	@110': basal GRAVELS and COBBLES	@110.4': Sandy CLAY (CL), reddish brown, moist, trace medium sand	@111': Sandy GRAVEL (GP), reddish brown, wet, fine to medium sand and slaty gravel with sandy matrix, coarse gravels and cobbles to 112'	@112': Sandy GRAVEL (GP), basal cobble at 114.5'				
188 115										115-120	Run 2 Box 12	2.9	58	@114.5': No recovery (driller states that no recovery due to large rock)	@116.5': SAND (SP), olive brown, saturated, fine sand	@117.9': Gravelly SAND (SP), olive brown, saturated, fine to coarse sand, coarse gravel to 2 inch diameter	@118.7': Sandy GRAVEL (GP), mottled olive brown and gray, moist, fine to medium sand and basal cobbles, clay in matrix, severely oxidized and weathered clasts
183 120														@119.4': No recovery			

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								V. SEVERE	COMPLETE

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LEIGHTON


CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 9 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
183 120	120-125	Run 1 Box 13	3.6	72	•••	@120': SAND (SP), olive brown, wet, fine sand, trace siltstone gravel, "salt and pepper" appearance, relatively clean sand @123.4': Sandy CLAY (CL), olive to dark brown, wet, hard @123.6': No recovery				
178 125	125-130	Run 2 Box 13	4.3	86	•••	@125': SAND (SP), dark olive brown, wet, fine to coarse sand, trace gravel, trace clay @128.1': Sandy Gravel (GP), dark olive brown, wet, fine to coarse sand and gravel @128.3': Basal GRAVEL (GP), weathered slate, basalt and siltstone gravel and cobbles @129.3': No recovery				
173 130	130-135	Run 1 Box 14	3.1	62	•••	@130': SAND (SP), dark brown, saturated, fine to medium sand, trace gravel @133': Clayey GRAVEL (GC), reddish brown, moist, slaty basal gravel @133.1': No recovery				
168 135										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 10 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 10 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
168	135	135-140	Run 2 Box 14	4.4	88	• • •	@135': SAND (SP), dark brown, saturated, fine to medium sand			
						@135.6': Sandy CLAY (CL), yellowish brown, moist, coarse sand, fine slaty gravel, gleyed, oxidation reduction banding to 137', MnO				
						@137': Gravelly CLAY (CL), coarse sand and fine angular slate and siltstone gravels				
						@138.1': Grades finer with depth, becomes olive brown				
						@138.8': Sandy CLAY (CL), very moist, fine to coarse sand, few gravel				
		@139.4': No recovery								
163	140	140-145	Run 1 Box 15	5	100	/ / / / /	@140': Sandy CLAY (CL), hard, orange brown to olive brown, fine sand, few fine angular gravels, rock line at 140.8' consisting of coarse slaty gravels, abundant spotty MnO			
						@140.8': Sandy CLAY (CL) with Gravel, weathered clasts with pulses (thin beds) of coarse sand at 141.7' and 142-142.3'				
						@142.5': Silty Gravelly SAND with Clay (SM-SC), yellowish brown to olive brown, moist, fine sand, basal gravels at 142.5-143', becomes less gravelly below, basal weathering gravels again at 147.2'				
		145-150	Run 2 Box 15	5	100	/ / / / /	@147.2': CLAY (CL), reddish brown, moist, few coarse sand			
						@147.8': Gravelly CLAY (CL), weathered siltstone and fine slaty gravels, abrupt contact below				
						@148': CLAY (CL), dark blackish brown, heavily weathered, abundant MnO, trace slaty pebbles				
						@149.2': Sandy CLAY (CL), olive brown, fine sand				
153	150					/ / / / /				

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								SEVERE	COMPLETE

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LEIGHTON

CORE BORING LOG										BORING NO. CB-19
PROJECT: El Rodeo School										PAGE 11 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 11 of 12
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 8/26/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 8/28/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
153 - 150	150-155	Run 1 Box 16	5	100		@150.2': CLAY (CL), mottled gray with oxide stained hue, moist, trace slaty gravel @150.4': Cobbles and SAND (SP), brown, very moist, basal cobbles, abrupt contact below @150.8': Silty SAND (SM:), fine sand and basal gravel at 151.2', abrupt erosive contact below @151.2': Sandy CLAY (CL), reddish brown, moist, trace sand and gravel @151.3': CLAY (CL), brown to olive gray, gleyed with MnO on pedogenic faces @153.6': fine to coarse SAND bed (SP), fine siltstone gravel at basal contact @153.7': CLAY to Sandy CLAY (CL), dark blackish brown to reddish brown, pervasive blocky structure, MnO and clay on well developed pedogenic faces				
148 - 155	155-160	Run 2 Box 16	5	100		@158.3': Sandy CLAY (CL), brown to reddish brown, slightly moist to moist, fine sand, trace coarse sand and pebbles				
143 - 160	160-165	Run 1 Box 17	5	100		@159.6': rock line, weathered coarse gravel size siltstone contact @160': Sandy CLAY (CL), olive brown, moist, fine to coarse sand, fine angular gravel, basal slaty gravel at 162.6' @162.6': Silty Gravelly SAND bed (SP/SM), erosive contact below @163.1': CLAY (CL), reddish brown, moist, trace fine sand and angular gravel @163.7': CLAY (CL), reddish brown, moist, laminated with brown clay and occasional sand and fine gravels, MnO and onset of calcium carbonate to 167.3'				
138 - 165										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

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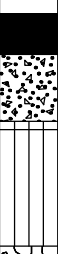


LEIGHTON

CORE BORING LOG										BORING NO. CB-19		
PROJECT: El Rodeo School										PAGE 12 OF 12		
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 12 of 12		
EQUIPMENT USED: CME-75										ELEVATION: 302.5 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE				
						HORIZONTAL	Bit (Feet)					
						INCLINED	Barrel (Feet)					
						BEARING	Total (Feet)					
					0	ANG. FROM VERT.						
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS												
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.												
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG							
138 165	165-170	Run 2 Box 17	5	100		<p>@167.3': Silty SAND (SM), brown to orange brown, oxidized, basal siltstone gravel at 168.1'</p> <p>Quaternary San Pedro Formation (Qsp)</p> <p>@168.1': Silty CLAY (CL), olive grey to yellow green, with pockets of heavily oxidized fine sand inclusions, abundant carbonate</p>						
133 170												
170-175	170-175	Run 1 Box 18	5	100		<p>@170': Silty CLAY (CL), dark olive brown to yellow green, heavily weathered with trace pebbly slate and abundant carbonate stringers, trace shell debris</p> <p>@170.5': Sandy Silty CLAY (CL) to Silty SAND (SM), dark gray, gradational, abundant carbonate and some small shell debris</p>						
128 175												
123 180	<p>Notes: Total Depth: 175 feet bgs Perched groundwater encountered at approximately Boring backfilled with bentonite-cement grout and capped with cold patch asphalt Soil cuttings stored in D.O.T. approved drums</p>											
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE			WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)			V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)			CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)			MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)			WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)			V. WIDE	>120"		MOD. SEVERE
											COMPLETE	
											Fe = Iron Oxide Mn = Manganese Oxide	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15



LEIGHTON

CORE BORING LOG										BORING NO. CB-20
PROJECT: El Rodeo School										PAGE 1 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 5
EQUIPMENT USED: CME-75										ELEVATION: 300.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/1/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/2/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
301 0		0-5	Run 1 Box 1	5	100		@Surface: 6 inches asphalt concrete over 10 inches concrete @1.3': Artificial Fill, undocumented (Afu) Clayey SILT (ML), dark reddish brown, slightly moist to moist, stiff, trace medium sand, trace slaty gravel Pleistocene Alluvium of Benedict Canyon Wash (BCW): @1.4': Clayey SILT (ML), brown to dark brown, moderate blocky structure with iron oxide development on pedogenic faces, some fine sand, becomes sandy CLAY (CL) to 2.8' @2.8'-3.2': coarse gravel bed, severely weathered clasts of siltstone, slate and basalt, with clayey matrix. Oxide and clay on pedogenic faces @3.2'-3.7': CLAY (CL), with sand, oxidized, fine slaty gravel, s, well developed blocky structure, iron oxide and clay on pedogenic faces @3.7'-4.5': Sandy Gravel (GP), fine to coarse sand, fine slaty and siltstone gravels, heavily oxidized, severely weathered gravels, erosive contact below @4.5'-5': Sandy CLAY (CL), reddish brown, fine sand and coarse sand size slate chips @5'-7': Gravely SAND (SP), dark reddish brown, heavily weathered siltstone and slaty gravels @7'-7.8': Sandy GRAVEL (GP), reddish brown to olive brown, slightly moist to moist, abundant slaty gravel and siltstone chips, heavily weathered and oxidized clasts @7.8': erosive contact, abrupt, becomes Sandy CLAY (CL), laminated brown clay @8.4'-8.6': Gravel (GP), weathered slate, siltstone, and basalt gravels, abrupt contact below @8.6'-10': Sandy CLAY (CL), fine grained sand, laminated, trace slaty fine pebbles			
296 5							5-10	Run 2 Box 1	5	100
291 10		10-15	Run 1 Box 2	5	100					
286 15										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON


CORE BORING LOG										BORING NO. CB-20				
PROJECT: El Rodeo School										PAGE 2 OF 5				
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006				
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 5				
EQUIPMENT USED: CME-75										ELEVATION: 300.5 Feet				
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/1/2015				
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/2/2015					
						HORIZONTAL	Bit (Feet)		DRILLER: Martini					
						INCLINED	Barrel (Feet)		PREPARED BY: ARR					
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca					
					0	ANG. FROM VERT.								
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS							
286 15		15-20	Run 2 Box 2	4.6	92		@15': Silty SAND (SM), brown, moist, fine sand, few fine subrounded basal gravel @15.8': SAND (SP), reddish brown to olive brown, moist, fine to medium sand, few fine gravel, friable, heavily oxidized @17.7': SAND (SP), brown, moist, fine to coarse sand, fine and coarse gravel, few basal cobbles, loose and friable, sharp contact with below @18.2'-19.6': Silty SAND (SM) to Sandy SILT (ML), color change to medium gray, moist, fine sand, loose @19.4'-19.6': Basal cobbles with pockets of oxidized sand							
281 20						20-25	Run 1 Box 3	4.8	96		@19.6': No recovery @20'-20.2': Basal cobbles @20': Sandy GRAVEL (GP), brown with heavy oxidation, moist, fine to coarse sand and gravel @21.6': SAND (SP), brown, moist, fine sand, few fine gravel			
276 25										25-30	Run 2 Box 3	5	100	
271 30														
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING					
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH					
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT					
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT					
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE					
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE					
							Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE					

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON

CORE BORING LOG										BORING NO. CB-20
PROJECT: El Rodeo School										PAGE 3 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 5
EQUIPMENT USED: CME-75										ELEVATION: 300.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/1/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/2/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd.,	
					0	ANG. FROM VERT.			Beverly Hills, Ca	
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
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271	30									@30.5'-31.8': Gravelly SAND (SP)
		30-35	Run 1 Box 4	5	100					@31.8'-35': Sandy GRAVEL (GP), oxidized and severely weathered basalt fragments at 34.5'
266	35									@35': SAND (SP), light reddish brown, moist, loose, fine to medium sand, trace to few fine and coarse gravel
		35-40	Run 2 Box 4	5	100					@35.7'-38.1': Sandy GRAVEL (GP), light reddish brown, moist, loose, fine to medium sand, fine and coarse gravel, basal contact, erosive contact below
										@38.1'-38.5': SAND Bed (SP), reddish brown, fine sand
										@38.5'-40.2': Sandy GRAVEL (GP), basal slaty gravels and cobbles
261	40									Pleistocene Cheviot Hills Deposit (CHD)
		40-45	Run 1 Box 5	5	100					@40.2'-42.7': Sandy CLAY (CL), medium brown to orange brown, very moist, oxidized, blocky structure, gleyed with Manganese Oxide in matrix
										@42.7'-43.7': Sandy SILT (ML), medium reddish brown, saturated, abrupt contact at 43.7', heavy oxidation and Manganese Oxide along contact
										@43.7'-44.7': Sandy SILT (ML), fine grained coarse at contact below
256	45									@44.7'-46.5': Silty CLAY (CL), reddish brown, very moist, oxide stained,
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-20
PROJECT: El Rodeo School										PAGE 4 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 5
EQUIPMENT USED: CME-75										ELEVATION: 300.5 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START:
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH:	
						HORIZONTAL	Bit (Feet)		9/1/2015	
						INCLINED	Barrel (Feet)		9/2/2015	
						BEARING	Total (Feet)		DRILLER: Martini	
					0	ANG. FROM VERT.			PREPARED BY: ARR	
									LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
256	45					gleyed, laminated with fine sand and brown clay, occasional slaty fine pebbly gravel, oxidized, heavily weathered clasts				
		Run 2 Box 5	5	100		@46.5'-48.5': SAND (SP), brown, wet, fine to coarse sand, and fine pebbly gravels, coarse gravel at 47.7' consisting of weathered slaty to heavily weathered siltstone				
						@48.5'-50': Basal Cobbles				
251	50					@50': SAND (SP), brown, saturated, fine sand,				
		Run 1 Box 6	2.8	56		@51.2': Becomes fine to coarse sand with siltstone gravels				
						@51.9': Pebbly gravels				
						@52.5': Clayey Gravelly SAND (GP), brown, saturated, fine to coarse sand				
						@52.6'-52.8': Clayey GRAVEL (GC), reddish brown, severely weathered and oxidized slaty, siltstone and basalt gravels, heavy oxide and clay laminae with oxidized rimming of slate				
						@52.8': No recovery				
246	55					@55'-55.3': Basal Clayey Gravel (GC), base of channel described at 52.6'				
		Run 2 Box 6	3.9	156		@55.3'-55.9': Sandy CLAY (CL), reddish brown, blocky structure, oxidized, Manganese Oxide development				
						@58.9'-58.6': Sandy SILT (ML), dark reddish brown, oxidized, gleyed with internal laminations of clay and Manganese Oxide, weathered siltstone chips and trace siltstone gravel, basal gravels at 58.6'				
		Run 3 Box 6	1.9	76		@58.6'-59': Sandy CLAY (CL), yellowish brown, oxidized, laminated with clay and fine sand				
						@59'-59.3': Gravelly SAND Bed, heavily weathered gravels, oxidized				
241	60					@59.3'-60': Sandy CLAY (CL), oxidized, fine grained with Manganese Oxide on				
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								V. SEVERE	COMPLETE	
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-20																			
PROJECT: El Rodeo School										PAGE 5 OF 5																			
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006																			
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 5																			
EQUIPMENT USED: CME-75										ELEVATION: 300.5 Feet																			
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL																				
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE																					
						HORIZONTAL	Bit (Feet)																						
						INCLINED	Barrel (Feet)																						
						BEARING	Total (Feet)																						
					0	ANG. FROM VERT.																							
										DATE START: 9/1/2015																			
										DATE FINISH: 9/2/2015																			
										DRILLER: Martini																			
										PREPARED BY: ARR																			
										LOCATION: 605 Whittier Blvd., Beverly Hills, Ca																			
ELEVATION & CORE DEPTH (Feet)										CORE DEPTH RANGE (Feet)		SAMPLE NUMBER		RECOVERY %		RQD		GRAPHIC LOG		FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS									
241 60										60-65		Run 1 Box 7		5		100				pedogenic faces @60': CLAY (CL), dark reddish brown to orange brown and gray brown, moist, oxidation reduction banding, well developed blocky structure, oxidized with abundant Manganese Oxide on pedogenic faces @62.6'-62.8': Basal Gravel (Rock Line) @62.8': Sandy CLAY (CL), oxidation reduction banding, with heavily weathered angular siltstone chips, fine to medium sand, basal gravel (Rock Line)									
236 65										65-70		Run 2 Box 7		5		100				@65': Sandy CLAY (CL), severely weathered, oxidized, fine sand, well developed blocky structure, Manganese Oxide, general lack of gravels, oxidation reduction banding @68.1': Slaty Gravels reappear in matrix becoming more abundant, angular with depth									
231 70																		Notes: Total Depth: 70 feet bgs Perched groundwater encountered at approximately 42.7-44.7', 45-52.8', 58.9-59.4' Boring backfilled with bentonite-cement grout and patched with cold patch asphalt Soil cuttings stored in D.O.T. appr											
226 75																													

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								SEVERE	COMPLETE

Fe = Iron Oxide Mn = Manganese Oxide




LEIGHTON

CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 1 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
304	0					0				<p>@Surface: 6 inches concrete</p> <p>Artificial Fill, undocumented (Afu) Hand Auger 0-5' @0.5': Clayey Gravelly SAND (SP-SC), dark reddish brown, dry to slightly moist, fine to medium sand, fine gravel</p>
299	5	0-5	Run 1 Box 1	5	100					<p>Pleistocene Alluvium of Benedict Canyon Wash (BCW.) @5.4': Sandy Gravelly CLAY (CL), hard, brown to orange brown, fine to coarse sand, fine and coarse weathered siltstone and slaty gravel</p>
		5-10	Run 2 Box 1	5	100					<p>@6.8': Silty SAND (SM), well indurated, hard, orange brown, oxidized with iron oxide on pedogenic faces</p> <p>@7.4': grades to Sandy GRAVEL to Gravelly SAND, oxide stained with clay, weathered and rounded coarse sands, basal gravels, abrupt contact below</p> <p>@7.6': Sandy SILT (ML), light yellowish brown to orange brown, dry, hard, oxidized, fine sand with MnO laminations and on pedogenic faces</p>
294	10									<p>@10.2': Silty fine pebbly SAND (SM), light yellowish brown, dry to slightly moist, unconsolidated with rounded slaty pebbles, becomes oxidized orange brown with coarse rounded flattened slaty gravels</p> <p>@10.9': Basal gravels and pebbles, abrupt contact below</p> <p>@11.1': Silty SAND (SM), light yellow brown to gray brown, dry, hard, coarse sand sized slaty fragments</p> <p>@11.6': Silty SAND with Gravel (SM), reddish brown, dry to slightly moist, fine sand with weathered slate and siltstone clasts, oxidized sands, carbonate lined voids, becomes heavily oxidized at 13' to 13.3'</p>
289	15									<p>@13.5': Sandy GRAVEL (GP), reddish brown, slightly moist, loose, fine to medium sand, fine and coarse gravel, heavily to severely weathered slate, siliceous gravel and basalt chips, unit consists of three nested channels with gradational basal contacts, heavily oxidized unit</p>
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15





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LEIGHTON

CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 2 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd.,	
					0	ANG. FROM VERT.			Beverly Hills, Ca	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
							The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
289	15	15-20	Run 2 Box 2	5	100					
284	20						<p>@20': Silty SAND (SM) with Gravel, light brown, slightly moist, hard, fine sand with fine heavily weathered gravels, severely oxidized as laminations and as rims around slaty pebbles</p> <p>@20.2': oxidation zone becomes yellow brown, fine sand and fine slaty gravel and siltstone chips</p> <p>@21.4': Sandy GRAVEL (GP), dark reddish brown, slightly moist, fine sand, fine to coarse gravel, slaty weathered fragments, basal cobble at 22.2', severely weathered silicious cobble</p> <p>@22.2': Sandy CLAY (CL), orange brown, moist, hard, very fine sand, oxide stained, oxidation reduction banding of clayey sand, fine to coarse sand, becomes gray clay @23.6'</p> <p>@23.6': CLAY (CL), gray to olive brown, moist, laminated with some very fine sand</p>			
279	25	20-25	Run 1 Box 3	5	100		<p>@25': Clayey SILT (ML), olive brown to gray with minor oxidation, very moist, fine sand, trace fine gravel, dark orange brown and spotty MnO development in matrix and on pedogenic faces</p> <p>@26': Siltstone gravels, weathered</p>			
274	30						<p>@27.3': Gravelly Clayey SAND (SC-SP), dark brown, moist, fine to medium sand, fine and coarse gravel, abrupt contact below</p> <p>@27.8': Pleistocene Alluvium of Benedict Canyon Wash (BCW₂) CLAY (CL), olive brown moist, oxidation reduction banding, orange brown oxidation primarily confined to sand, thin beds in unit and on pedogenic faces</p>			
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15



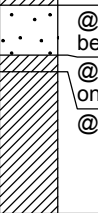
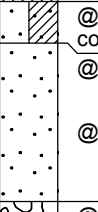
LEIGHTON

CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 3 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
274 30		30-35	Run 1 Box 4	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@30': Sandy CLAY (CL), orange brown, moist, fine sand, gleyed, blocky structure, heavily oxidized with MnO staining @30.5': Sandy CLAY (CL), mottled dark blackish to reddish brown, orange brown and gleyed, blocky structure, fine sand, severely weathered sandstone clasts and fine slaty gravel			
269 35		35-40	Run 2 Box 4	5	100		@34.1': Clayey basal GRAVEL (GC), siltstone and slate and weathered basalt @34.3': Sandy CLAY (CL), orange brown to red brown, oxidized, gleyed, with coarse sand sized slaty fragments, MnO development in Matrix @35': Sandy SILT (ML), very moist, very fine sand, orange brown to gray brown, severely weathered white siltstone fragments			
							@36.1': Sandy SILT (ML), gradational contact below, orange brown, oxidized, clay and MnO on pedogenic faces, trace gravel in mass			
							@37.9': Sandy CLAY (CL), dark orange brown, to reddish brown and grayish black, blocky structure with clay and MnO on pedogenic faces, minor gravels heavily weathered, minor carbonate on voids			
264 40		40-45	Run 1 Box 5	5	100		@40': Sandy GRAVEL (GP) with Clay, reddish brown to orange brown, moist, oxidized, gleyed, fine to coarse sand, fine to coarse gravel, @41.3': coarse size rounded slaty gravel @42': thin layer of carbonate in sandy clay matrix @43.5': severely weathered siltstone and slaty coarse gravels Pleistocene Cheviot Hills Deposit (CHD) @44.5': Sandy SILT (ML), reddish brown, moist, fine to medium sand with occasional slaty gravel, windblown silt			
259 45										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 4 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
259 45		45-50	Run 2 Box 5	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							<p>@45.8': CLAY (CL), dark reddish brown, very moist, trace silt and fine sand, weathered basalt fragment at 46.3'</p> <p>@46.9': Sandy CLAY, with coarse sand sized rock fragments in matrix, white siltstone fragment at 49.7', basal contact below</p>			
254 50		50-55	Run 1 Box 6	5	100		<p>@49.7': Silty Sandy CLAY (CL), reddish brown, very moist, some coarse sand size rock fragments, gleyed along pedogenic faces with white silt chips and severely weathered rounded sandstone, fine gravel</p>			
							<p>@52': Coarse SAND bed, slate, siltstone and basalt fragments, sandy clay below</p>			
							<p>@52.6': CLAY (CL), orange brown to reddish brown, becomes oxidized, gleyed on vertical faces</p> <p>@52.8': becomes oxidized gleyed Sandy CLAY (CL)</p>			
249 55		55-60	Run 2 Box 6	3.4	68		<p>@54.5': Gravelly SAND with Clay (SP-SC), reddish brown, saturated, fine to coarse sand, fine and coarse gravel</p>			
							<p>@55': SAND (SP), dark brown, saturated, fine sand</p>			
							<p>@55.9': fine to coarse sand</p>			
							<p>@56.9': Sandy GRAVEL (GP) with Clay, dark brown, moist, fine to coarse sand, fine to coarse weathered slate, sandstone, siltstone and basalt, basalt gravels</p>			
							<p>@58.4': No recovery</p>			
244 60										

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE	
								V. SEVERE
								COMPLETE



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LEIGHTON

CORE BORING LOG										BORING NO. CB-21		
PROJECT: El Rodeo School										PAGE 5 OF 12		
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006		
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 12		
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet		
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL			
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE START: 9/2/2015			
						HORIZONTAL	Bit (Feet)		DATE FINISH: 9/5/2015			
						INCLINED	Barrel (Feet)		DRILLER: Martini			
						BEARING	Total (Feet)		PREPARED BY: ARR			
					0	ANG. FROM VERT.			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca			
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS					
244 60		60-65	Run 1 Box 7	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.					
							@60': Sandy GRAVELS (GP), dark brown, saturated, fine to coarse sand, fine and coarse gravel, weathered slaty clasts, abrupt erosive contact below					
							@61.3': CLAY (CL), yellowish brown, moist, trace gravel and fine sand					
		65-70	Run 2 Box 7	5	100		@62.7': Sandy SILT (ML), dark brown, with trace basalt fragments at contact, very fine sands with thin irregular dark brown clay laminations					
239 65							@64.2': Silty CLAY (CL) light yellowish brown, moderate blocky structure, thinly bedded to laminated silts and clays, oxidized and gleyed					
							@66.8': thin bed of coarse sands and weathered fine gravels consisting of siltstone, basalt and slate					
		70-75	Run 1 Box 8	5	100		@67.3': yellow CLAY (CL)					
							@68.1': Sandy GRAVEL (GP); abrupt basal contact below					
							@69.3': Gravelly Clayey SAND (SC-SP), dark brown, saturated, fine to coarse sand, fine and coarse gravel, abrupt contact at 72.4'					
234 70		70-75	Run 1 Box 8	5	100		@70': SILT (ML), reddish brown, very moist, trace clay, basal gravels					
							@70.7': Gravelly SAND (SP), dark brown, saturated, fine to coarse sand, fine and coarse gravel, trace clay, abrupt contact at 72.4'					
							@72.4': Sandy SILT (ML), reddish brown, very moist, fine sand					
		75					@72.8': Sandy GRAVEL (GP), dark brown, saturated, fine to coarse sand, fine and coarse gravel					
							@74.2': No recovery					
229 75												
FIELD HARDNESS			BEDDING			ATTITUDE AND ANGLE			JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"		HORIZONTAL (0-5°)			V. CLOSE	<2"		FRESH
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"		SHALLOW OR LOW ANGLE (5-35°)			CLOSE	2"-12"		V. SLIGHT
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"		MODERATELY DIPPING (35-55°)			MOD. CLOSE	12"-36"		SLIGHT
SOFT	- GROVES		THICK	36"-120"		STEEP OR HIGH ANGLE (55-85°)			WIDE	36"-120"		MODERATE
V. SOFT	- CARVES		V. THICK	>120"		VERTICAL (85-90°)			V. WIDE	>120"		MOD. SEVERE
									Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15




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CORE BORING LOG											BORING NO. CB-21
PROJECT: El Rodeo School											PAGE 6 OF 12
CLIENT: Beverly Hills Unified School District											JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation											PAGE NO.: 6 of 12
EQUIPMENT USED: CME-75											ELEVATION: 304 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	HORIZONTAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
										DRILLER: Martini	
										PREPARED BY: ARR	
										LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.					
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS											
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.											
229	75		Run 2 Box 8	4.2	84	•••	@75': SAND (SP), brown, saturated, fine sand				
		75-80				•••	@77.6': gradationally becomes fine to coarse sand				
						•••	@78.9': basal contact, sandy GRAVEL (GP) over clay lamination at 79', very moist, fine to medium sand, cemented				
						•••	@79.1': No recovery				
224	80		Run 1 Box 9	4.1	82	•••					
		80-85				•••					
219	85		Run 2 Box 9	1.2	24	•••					
		85-90				•••					
						•••	@88.8': Clayey GRAVEL (GC), brown, saturated, fine to medium sand, large granitic crystalline basal cobble, intense clay development in pedogenic faces				
						•••	@89.2': Sandy SILT (ML), orange brown, moist, fine sand				
214	90					•••					

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS	BEDDING	ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE	WEATHERING	
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES	V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE	
					Fe = Iron Oxide Mn = Manganese Oxide

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LEIGHTON

CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 7 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 7 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
214 90	90-95	Run 1 Box 10	3.8	76	[Hatched Pattern]	<p>@90': Sandy CLAY (CL), reddish brown, slightly moist, fine sand with slaty fine pebbles and white siltstone chips, spotty MnO in matrix and heavily developed on slaty gravels and rock fragments, slaty coarse gravels at 91.8', 92.7', and 93.8'</p> <p>@93.8': No recovery</p>				
209 95	95-100	Run 2 Box 10	5	100	[Hatched Pattern]	<p>@95': Sandy CLAY (CL), light orange brown to reddish brown, slightly moist, fine to coarse sand with MnO development in matrix, pulses of siltstone, slate and basalt rock fragments at 96.8', 98', and 99.4', gleyed</p>				
204 100					[Hatched Pattern]	<p>@100': trace subrounded gravel</p>				
	100-105	Run 1 Box 11	5	100	[Hatched Pattern]	<p>@101.6': SAND (SP), olive gray, slightly moist, fine to medium sand, fine and coarse gravel</p> <p>@102.2': Sandy GRAVEL (GP), dark brown, saturated, loose, coarse sand, fine and coarse gravel, abrupt basal contact with below</p> <p>@102.5': CLAY (CL), reddish brown, moist, stiff, trace coarse sand, trace fine gravel, blocky structure, well developed, oxidized and gleyed with spotty MnO in matrix,</p>				
199 105					[Hatched Pattern]					
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"				
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"				
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"				
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"				
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15


LEIGHTON

CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 8 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 8 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
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199	105									
		105-110	Run 2 Box 11	5	100					@106.2': color change to dark reddish to blackish brown, pervasive blocky structure with very fine sand and clay on pedogenic faces, gleyed, vertical gleying of soil faces outward approximately 1/4-inch
194	110									
		110-115	Run 1 Box 12	5	100					@110': Sandy CLAY (CL), reddish brown, moist, stiff, fine sand, trace coarse sand, trace fine gravel, with influx of slaty gravels at 111.5' to 112' @112': 2-foot zone, orange brown to reddish brown Sandy CLAY (CL), fine sand, gleyed
189	115									
		115-120	Run 2 Box 12	5	100					@114': Silty SAND (SM), reddish brown, very moist, fine sand, few angular slaty gravel @114.6': SILT (ML), brown, moist, stiff, very fine sand, MnO in matrix and on pedogenic faces Quaternary San Pedro Formation (Qsp) @116.6': color change, becomes dark gray brown Sandy CLAY (CL) with carbonate stringers and lining of krotovina @118': Silty CLAY (SP-SC), gray, very moist, fine sand and shell fragments, abundant carbonate stringers @118.2': SILT (ML), dark gray brown, moist, stiff, trace clay
184	120									@119.5': Sandy CLAY (CL), moist, stiff, very fine sand, shell fragments and
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

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LEIGHTON

CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 9 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 9 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
184 120	120-125	Run 1 Box 13	3.9	78		carbonate stringers				
						@120': CLAY to Sandy CLAY (CL), gray, moist, few fine sand				
						@121.4': Clayey SAND (SC), gray moist, fine sand				
						@121.9': CLAY (CL), moist, trace sand				
						@122.2': SAND (SP), gray, moist, fine sand				
						@122.5': CLAY (CL), gray, moist				
						@123.6': SAND (SP), gray, moist, fine sand				
						@123.9': No recovery				
179 125	125-130	Run 1 Box 14	5	100		@125': SAND (SP), gray, saturated, fine sand				
						@126': SILT (ML), gray, very moist				
						@126.7': SAND (SP), gray, saturated, fine sand				
						@126.9': SILT (ML), gray, moist				
						@128': 2 inch fine sand layer				
						@128.9': CLAY (CL), gray, moist				
174 130	130-135	Run 2 Box 14	5	100		@130': Sandy SILT (ML), gray, moist				
						@133': CLAY (CL), gray, moist, trace carbonate				
169 135										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE	COMPLETE	
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON


CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 10 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 10 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
169 135		135-140	Run 1 Box 15	5	100	[Hatched Pattern]	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@135': CLAY (CL), dark gray, moist, very stiff, trace carbonate lenses			
164 140		140-145	Run 2 Box 15	5	100	[Hatched Pattern]	@140': Sandy CLAY (CL), dark gray, moist, very fine sand			
							@143.9': Clayey Gravelly SAND (SP-SC), dark gray, saturated, fine sand, fine and coarse gravel			
159 145		145-150	Run 1 Box 16	3.7	74	[Hatched Pattern]	@144.9': Clayey SAND (SC), dark gray, very moist, fine sand			
							@145': No recovery			
							@146.3': Silty SAND (SM), gray, moist, fine sand			
							@146.9': SAND with Clay (SP-SC), gray, fine to coarse sand, downward coarsening, shell fragments			
154 150						[Hatched Pattern]	@148.8': Silty CLAY (CL), olive gray, moderately plastic, few gravel and cobbles			
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD - KNIFE CAN'T SCRATCH HARD - SCRATCHES DIFFICULT MOD. HARD - SCRATCHES EASILY SOFT - GROVES V. SOFT - CARVES			V. THIN <2" THIN 2"-12" MEDIUM 12"-36" THICK 36"-120" V. THICK >120"		HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)		V. CLOSE <2" CLOSE 2"-12" MOD. CLOSE 12"-36" WIDE 36"-120" V. WIDE >120" Fe = Iron Oxide Mn = Manganese Oxide		FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE	

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON

CORE BORING LOG										BORING NO. CB-21
PROJECT: El Rodeo School										PAGE 11 OF 12
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 11 of 12
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL		DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/5/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
154 - 150	150-155	Run 2 Box 16	5	100		@150': No gravel and cobbles, carbonate nodules				
						@152.4': trace fine sand				
						@153.6': Silty SAND (SM), gray, fine sand, trace fine gravel, gradational contact				
149 - 155	155-160	Run 1 Box 17	2.1	42		@154.6': trace clay				
						@155.5': Clayey SAND (SC), gray, fine sand				
						@155.8': Sandy CLAY (CL), gray, fine sand, trace carbonate, gradational contact				
						@157.1': No recovery				
144 - 160	160-165	Run 2 Box 17	0	0						
139 - 165										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"				
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"				
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"				
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"				
						Fe = Iron Oxide Mn = Manganese Oxide				

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-21	
PROJECT: El Rodeo School										PAGE 12 OF 12	
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006	
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 12 of 12	
EQUIPMENT USED: CME-75										ELEVATION: 304 Feet	
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION		CORE BARREL			DATE START: 9/2/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE			DATE FINISH: 9/5/2015	
						HORIZONTAL	SIZE			DRILLER: Martini	
						INCLINED	Bit (Feet)			PREPARED BY: ARR	
						BEARING	Barrel (Feet)			LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.	Total (Feet)				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
139	165	165-170	Run 1 Box 18	2.2	44		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
						@165': Silty SAND (SM), gray, fine to medium sand, few coarse sand, subangular gravel and cobbles, trace clay					
							@167.2': No recovery				
134	170						Notes: Total Depth: 170 feet bgs Perched groundwater encountered at approximately 54.5-56.9', 60-61.1', 69.6-70', 71.1-72.5', 72.8-74.2', 75-78.9', 88.8-89.2', 102.2-102.5', 114-114.6', 125-126', 126.7-126.9', 143.9-144.9' Boring backfilled with soil cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.				
129	175										
124	180										
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
							Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
									COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON





CORE BORING LOG										BORING NO. CB-22
PROJECT: El Rodeo School										PAGE 1 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.2 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/3/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/3/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS				
290	0					@0': No recovery <hr style="border-top: 1px dashed black;"/> Artificial Fill, undocumented (Afu) @0.2': CLAY (CL), brown, slightly moist, hard, fine to medium sand, trace coarse sand, trace fine gravel <hr style="border-top: 1px dashed black;"/> Holocene Alluvium of Benedict Canyon Wash (Qal) @3.5': CLAY (CL), brown, moist, hard, few fine to medium sand, trace coarse sand, trace fine gravel, siltstone, rounded slaty gravel, oxidized blebs on poorly developed pedogenic faces <hr style="border-top: 1px dashed black;"/> @4.8': Sandy CLAY (CL), medium brown, slightly moist, fine to medium sand, trace coarse sand, trace fine gravel, grades coarser <hr style="border-top: 1px dashed black;"/> @7.9': Gravel, up to 1 inch length, matrix supported @8.1': massive debris flow, fine to coarse sand, occasional fine angular Monterey siltstone gravel fragments <hr style="border-top: 1px dashed black;"/> @9.5': No recovery <hr style="border-top: 1px dashed black;"/> Pleistocene Alluvium of Benedict Canyon Wash (BCW,) @10': Sandy CLAY (CL), medium brown to faint reddish brown, slightly moist, fine to medium sand, massive, poorly developed, minor blocky faces, incompetent (disturbed) core <hr style="border-top: 1px dashed black;"/> @12.5': increase in fine gravel content, clasts consist of slate and Monterey siltstone randomly and sporatically spaced				
285	5	Run 1 Box 1	5	100	[Hatched Pattern]					
285	5	Run 2 Box 1	4.4	88	[Hatched Pattern]					
280	10	Run 1 Box 2	5	100	[Hatched Pattern]					
275	15									

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE		
								SEVERE	COMPLETE

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LEIGHTON

CORE BORING LOG										BORING NO. CB-22
PROJECT: El Rodeo School										PAGE 2 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.2 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/3/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/3/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd.,	
					0	ANG. FROM VERT.			Beverly Hills, Ca	
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
275 15		15-20	Run 2 Box 2	5	100		@15': increase in fine sand content, very occasional gravel, continued debris flow deposit			
						@16.8': fine to medium sand, occasional coarse sand and sporadic fine slate and siltstone gravels				
						@17.1': thin lamination of siltstone fragments				
						@18': thin lamination of siltstone fragments				
270 20		20-25	Run 1 Box 3	5	100		@18.8': thin sandier lamination			
						@20': fine to medium sand, massive, grades more competent and very slightly coarser, very occasional gravel near base, slightly gradational contact below				
						@22.6': Gravelly SAND bed (SP), dark brown, moist, fine to coarse sand, fine subrounded gravel scour surface below, little clay in matrix				
						@23.4': Sandy CLAY with Gravel (CL), medium brown to faint reddish brown, very moist, high sand content, fine to coarse sand, mostly massive gravels consist of Monterey siltstone and slate, chaotic assemblage				
265 25		25-30	Run 2 Box 3	5	100		@24.6': becomes sandier with gravels up to an inch diameter			
						@25.5': Sandy CLAY (CL), very moist to saturated, fine sand, grades coarser with depth				
						@26.7'-27.1: Sand bed over gravel bed, reddish brown, orange brown, oxidized, fine				
						Pleistocene Alluvium of Benedict Canyon Wash (BCW.)				
260 30							@27.1': Sandy CLAY (CL), orange brown, reddish brown to blackish brown, well developed blocky structure, iron oxide, clay and manganese oxide on pedogenic faces, some coarse sand (slaty pebbles)			

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
								COMPLETE	



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LEIGHTON

CORE BORING LOG										BORING NO. CB-22
PROJECT: El Rodeo School										PAGE 3 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.2 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/3/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/3/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
260 30		30-35	Run 1 Box 4	5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@30': Basal SANDS and GRAVELS with clayey matrix, fine to coarse sand, fine subangular to subrounded slate and siltstone gravels, erosional contact below			
							@31.3': Sandy CLAY (CL), reddish brown with very faint gleying, fine to medium sand with occasional coarse sand and fine gravel			
							@32.2': 5-inch zone of poor to moderate soil development, minor blocky structure with clay development on faces			
255 35		35-40	Run 2 Box 4	5	100		@34.1': grades significantly coarser with abundant slate gravels within sandy clay matrix, erosional contact below			
							@34.6': Sandy CLAY, faint reddish brown, fine sand, grades slightly coarser to include medium to coarse sand and very occasional fine gravel			
							@36.1': 2.5-inch zone of poorly developed soil, poor blocky structure, and very faint shimmer on faces			
							@36.7': grades into basal SANDS and GRAVELS, abundant weathered slate, siltstone and granitic gravels amidst clayey sand matrix, secondary clay development, manganese oxide development in matrix, erosional contact below			
250 40		40-45	Run 1 Box 5	5	100		@37.5': Basal gravels, weathered oxidized, granitic, siltstone and heavily weathered basal gravels			
							@38.3': Sandy CLAY, reddish brown, normally graded with slight coarsening into fine to coarse sand with occasional fine gravel			
							@39.4': SAND (SP) laminations, fine to coarse sand, trace fine gravel			
							@39.7': Sandy CLAY (CL), reddish brown, fine to medium sand with occasional fine gravel grades coarser with depth			
245 45							@40.3': Gravelly SAND in CLAY matrix, reddish brown, very moist to saturated, fine to coarse sand, fine gravels up to 1.5-inches, clasts consist of slates and siltstones, erosional contact below			
							@42.1': Sandy CLAY, reddish brown, fine to medium sand, fine gravels up to 1.5-inches, clasts consist of slates and siltstones, erosional contact below			
							@43.7': sandy laminations			
							@44.4': sandy laminations			

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
								V. SEVERE	
								COMPLETE	




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LEIGHTON

CORE BORING LOG										BORING NO. CB-22
PROJECT: El Rodeo School										PAGE 4 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.2 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/3/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/3/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
245 45		45-50	Run 2 Box 5	4.4	88		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.			
							@44.8': sandy laminations			
							@45': poor recovery, disturbed			
							@45.6': sandy lamination, reddish brown, fine sand, clayey			
						@46': Sandy CLAY (CL), brown to orange brown, fine sand, clayey				
						@47.3': Clayey SAND (SC), very moist, stiff, fine to coarse sand, oxidized				
						@48': poorly developed soil, orange to reddish brown, poor to moderately blocky structure, high clay content				
						@48.4': channel deposits: Clayey SAND with Gravel, oxidized, gleyed, faint laminations, fine to coarse sand, fine slate gravels, chaotic assemblage				
						Pleistocene Cheviot Hills Deposit (CHD)				
240 50		50-55	Run 1 Box 6	4.3	86		@49.4': No recovery			
							@50': Clayey SAND (SC), brown to reddish brown, mostly fine sand, few medium sand, trace coarse sand and fine gravel			
							@50.6'-51.2': Sandy GRAVEL bed (GP), over fine grained Silty SAND (SM), with oxide laminations			
							@51.5': zone of well developed soil, moderate blocky structure, clay development on pedogenic faces, abrupt contact below			
						@52.2': Silty SAND (SM), light reddish brown, moist, mostly fine to medium sand, normally graded, erosional contact below				
						@52.7': Sandy CLAY (CL), olive brown, very moist, fine sand with occasional medium to coarse sand and fine gravel, mostly massive, thin oxidized sandy lamination at 54.1'				
						@54': color change to dark orange brown, heavily oxidized				
						@54.3': No recovery				
235 55		55-60	Run 2 Box 6	5	100		@55': Sandy CLAY (CL), brown, very moist, fine sand, trace medium to coarse sand and fine gravel, poor to moderate soil development throughout, normally graded becoming clayey sand near base, erosional contact below			
							@58': Sandy CLAY, olive brown to reddish brown, moist, mostly fine sand, with few medium to coarse sand and fine gravel, mostly massive with chaotic assemblage, competent and hard			
230 60										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
								SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-22
PROJECT: El Rodeo School										PAGE 5 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 5
EQUIPMENT USED: CME-75										ELEVATION: 290.2 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 9/3/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/3/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
230 60						@60': Sandy CLAY, brown, moist, mostly fine to medium sand, trace coarse sand and gravel, minor MnO spotting, less competent than overlying soils, sandy laminate at base @61.1': grades to more competent hard Sandy CLAY (CL), reddish brown, moist, faintly laminated, slightly gleyed, mostly fine to medium sand with occasional coarse sand and fine gravel, gradational contact below, well developed blocky structure with shimmer on faces				
	60-65	Run 1 Box 7	5	100						
225 65						@65': grades sandier with increased gravel, progressively coarser with depth, with chaotic assemblage of slate gravels in sandy clay matrix, erosional contact with below @67': Sandy CLAY, reddish brown, mostly fine to medium sand with occasional fine gravel, minor gleying, very minor sandy laminations, finer with depth				
	65-70	Run 2 Box 7	5	100						
220 70						@69': CLAY, reddish brown, trace fine to medium sand, minor MnO spotting Notes: Total Depth: 70 feet bgs Perched groundwater encountered at approximately 25.4-27.1', 40.3-42', and 45-45.8' Boring backfilled with soil cuttings				
215 75										
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
Fe = Iron Oxide Mn = Manganese Oxide										

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-8A
PROJECT: El Rodeo School										PAGE 1 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 1 of 5
EQUIPMENT USED: CME-75										ELEVATION: 300 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/31/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/1/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG					
300	0					3.5 inches Asphalt				
						@0.3'-1.2': Artificial Fill (Afu)				
	0-5	Run 1 Box 1				Pleistocene Alluvium of Benedict Canyon Wash (BCW₁) @1.2'-3.1': Sandy CLAY (CL), dark brown, hard, white sand sized siltstone chips, clay development on pedogenic faces, severely weathered sandstone clasts				
						@3.1'-3.6': Silty SAND (SM), reddish brown, fine to coarse sand, over coarse slaty gravels				
						@3.6'-3.9' Basal Sandy GRAVEL (GP), rounded fine gravels, weathered slate and white siltstone chips, erosive contact below				
						@3.9'-5': Sandy CLAY (CL), brown to reddish brown, trace coarse slaty sand and white siltstone chips, oxidized, gleyed				
295	5					@5'-6': Gravelly SAND (GP), reddish brown, fine to coarse rounded slaty gravel and siltstone chips				
						@6'-6.8': Silty SAND (SM), brown fine sand, trace coarse sand, and fine to pbbly gravel				
	5-10	Run 2 Box 1				@6.8'-7.7': Sandy GRAVEL (GP) at base of contact from 7.3' to 7.7', silty sand above, weathered basalt and slate fragments				
						@7.7'-10.2': Sandy CLAY (CL), lite brown, fine sand				
						Becomes laminated				
290	10					@10.2'-13.5': SAND with Gravel (SP), yellow brown, fine to coarse sand, weathered slate and silt stone gravels				
	10-15	Run 1 Box 2				@13.5'-13.9': Basal Gravel (GP), weathered slate and siltstone gravels, erosive contact below				
						@13.9'-15.5': Silty SAND (SM), light gray brown (color change from above)				
285	15									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH		
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT		
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT		
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE		
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE		
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15



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LEIGHTON


CORE BORING LOG										BORING NO. CB-8A						
PROJECT: El Rodeo School										PAGE 2 OF 5						
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006						
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 2 of 5						
EQUIPMENT USED: CME-75										ELEVATION: 300 Feet						
GROUNDWATER:			DEPTH TO (Feet):			ORIENTATION			CORE BARREL							
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE								
						HORIZONTAL	Bit (Feet)									
						INCLINED	Barrel (Feet)									
						BEARING	Total (Feet)									
					0	ANG. FROM VERT.										
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS																
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.																
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG											
285 15	15-20	Run 2 Box 2				@15.5'-17': Sandy GRAVEL (GP), gray brown, fine to coarse sand, fine to coarse rounded slaty gravel, oxidized clasts at 16'. Basal COBBLE at 16.7'-17', siliceous sandy rounded cobble, nested channel @17'-19': Sandy GRAVEL (GP), oxidized, severely weathered slate and basalt fragments, basal cobble @19', well rounded @19'-20': No recovery										
280 20						20-22.5	Run 1 Box 3	2.4	96		@20'-22.4': Sandy GRAVEL (GP), dark reddish brown, slightly moist, fine to coarse sand, severely weathered slate, basalt and siltstone fragments, rounded gravels, nested channel @22.4': No recovery @22.5': Gravelly SAND (SP), olive brown, slightly moist, fine to coarse sand, trace clay @24.5'-25': Basal Sandy GRAVEL (GP)					
275 25						22.5-25	Run 2 Box 3	2.5	100		@25'-25.7': Sand (SP) Pleistocene Alluvium of Benedict Canyon Wash (BCW₂) @25.7'-26.8': Sandy Gravel (GP), orange brown to reddish brown, basal gravels, erosive contact below, nested channel, weathered gravels, oxidized @26.8': Silty SAND (SM), olive brown, moist, fine sand, trace angular gravel @27.3': Gravelly SAND (SP), olive brown, moist, fine to coarse sand and gravel, rounded gravels, weathered slate @29.3'-30': Basal Sandy GRAVEL (GP), heavily oxidized slate and siltstone, oxidized crystalline rock fragments at 29.3'.					
270 30	27.5-30	Run 4 Box 3	2.5	100												
FIELD HARDNESS			BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING							
V. HARD	- KNIFE CAN'T SCRATCH		V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH							
HARD	- SCRATCHES DIFFICULT		THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT							
MOD. HARD	- SCRATCHES EASILY		MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT							
SOFT	- GROVES		THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE							
V. SOFT	- CARVES		V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE							
									V. SEVERE							
									COMPLETE							

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15






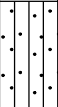

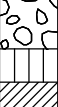


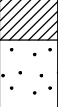
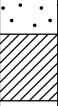
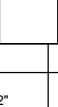

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG										BORING NO. CB-8A
PROJECT: El Rodeo School										PAGE 3 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 3 of 5
EQUIPMENT USED: CME-75										ELEVATION: 300 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/31/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/1/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.										
270	30									<p>@30'-31.7': Sandy GRAVEL (GP), fine gravels, rounded to 31.3', coarse rounded to small cobbles to 31.7', nested channels</p> <p>@31.7'-32.6': Sandy Gravel (GP), oxidized, weathered, rounded slaty gravels with white siltstone chips</p> <p>@32.6'-33': SAND (SP), fine to coarse sand, oxidized, with white siltstone chips</p> <p>33'-33.2': Basal COBBLES, heavily weathered siltstone cobble, nedted channel</p> <p>@33.2'-34.5': Sandy Gravel (GP), fine to coarse sand, fine to coarse rounded and severely oxidized gravels</p> <p>@34.5': No recovery</p>
265	35	30-35	Run 1 Box 4	4.5	90					<p>@35'-36.2': Gravelly SAND (SP), light gray brown, fine to coarse sand, fine to coarse rounded slaty gravels, @ 36.2' oxidized orange brown basalt frgments</p> <p>@36.2'-37.6': Sandy Gravel (GP), with crystalline rock fragments and white siltstone from 36.9 to 37.1, basal contact below</p> <p>@37.6': Becomes Gravelly SAND (SP) to Sandy GRAVEL (GP) @ 38.1, basalt fragment at 39.2'</p>
260	40	35-40	Run 2 Box 4	5	100					<p>@40'-42.2': Gravelly SAND (SP), fine to coarse sand, brown to reddish brown, rounded gravels, basal cobble at 42.2', well rounded</p> <p>Pleistocene Cheviot Hills Deposit (CHD)</p> <p>@42.2': Sandy GRAVEL (GP), heavily weathered, oxidized rimming of gravels, dark reddish brown clay matrix, clay development on ped faces, decomposed sandstone and granitic rock clasts</p>
255	45	40-45	Run 1 Box 5	4.6	92					<p>@44.6': No recovery</p>
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD HARD MOD. HARD SOFT V. SOFT	- KNIFE CAN'T SCRATCH - SCRATCHES DIFFICULT - SCRATCHES EASILY - GROVES - CARVES	V. THIN THIN MEDIUM THICK V. THICK	<2" 2"-12" 12"-36" 36"-120" >120"	HORIZONTAL (0-5°) SHALLOW OR LOW ANGLE (5-35°) MODERATELY DIPPING (35-55°) STEEP OR HIGH ANGLE (55-85°) VERTICAL (85-90°)	V. CLOSE CLOSE MOD. CLOSE WIDE V. WIDE	<2" 2"-12" 12"-36" 36"-120" >120"	FRESH V. SLIGHT SLIGHT MODERATE MOD. SEVERE V. SEVERE COMPLETE			
Fe = Iron Oxide Mn = Manganese Oxide										

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

LEIGHTON

CORE BORING LOG										BORING NO. CB-8A
PROJECT: El Rodeo School										PAGE 4 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 4 of 5
EQUIPMENT USED: CME-75										ELEVATION: 300 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/31/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/1/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd., Beverly Hills, Ca	
					0	ANG. FROM VERT.				
ELEVATION & CORE DEPTH (Feet)		CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS			
255 45		45-50	Run 2 Box 5	5	100		<p>@45': CLAY (CL), brown to orange brown, moist, oxidized, well developed blocky fracture, oxide and manganese oxide on pedogenic faces</p>			
250 50										
250 50		50-55	Run 1 Box 6	3.8	76		<p>@50': No recovery (due to overdrill from previous night)</p>			
245 55										
245 55							<p>@52.5'-53.2': Sandy SILT (ML), orange brown, fine grained, oxidized</p>			
245 55							<p>@53.2'-54.3': Sandy GRAVEL (GP), fine to coarse rounded sand and pebbles, fine to coarse slaty gravel. Basal contact at 54.3'.</p>			
245 55							<p>@54.3': Sandy SILT (ML), laminated, very fine sand, orange brown to olive brown</p>			
245 55		55-60	Run 2 Box 6	5	100		<p>@54.7'-55.5': CLAY (CL), laminated, dark reddish brown to orange brown, blocky structure, clay and oxide with manganese oxide on pedogenic faces</p>			
240 60										
240 60							<p>@56.5'-58': Sandy CLAY (CL), brown to red brown, blocky structure, fine sand, oxidized, white siltstone chips at base of contact</p>			
240 60			<p>@58'-59.2': SAND (SP), orange brown, fine sand with fine to pebbly rounded slaty gravels, heavy oxidation, very fine sand at contact below</p>							
240 60			<p>@59.2': CLAY (CL), dark brown to reddish brown, well developed blocky structure, manganese oxide on pedogenic faces, occasional rounded slaty fine</p>							

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)		V. CLOSE	<2"	FRESH	
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)		CLOSE	2"-12"	V. SLIGHT	
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)		MOD. CLOSE	12"-36"	SLIGHT	
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)		WIDE	36"-120"	MODERATE	
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)		V. WIDE	>120"	MOD. SEVERE	
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE	
								COMPLETE	



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LEIGHTON

CORE BORING LOG										BORING NO. CB-8A
PROJECT: El Rodeo School										PAGE 5 OF 5
CLIENT: Beverly Hills Unified School District										JOB NO.: 10274.006
CONTRACTOR: Martini Drilling Corporation										PAGE NO.: 5 of 5
EQUIPMENT USED: CME-75										ELEVATION: 300 Feet
GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION			CORE BARREL		DATE START: 8/31/2015
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	SIZE	DATE FINISH: 9/1/2015	
						HORIZONTAL	Bit (Feet)		DRILLER: Martini	
						INCLINED	Barrel (Feet)		PREPARED BY: ARR	
						BEARING	Total (Feet)		LOCATION: 605 Whittier Blvd.,	
					0	ANG. FROM VERT.			Beverly Hills, Ca	
FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS										
ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.				
240	60					<div style="border: 1px solid black; padding: 5px;"> gravel </div> <p>Notes: Total Depth: 60 feet bgs Perched groundwater encountered at approximately 38.4-44.6', 48.1-50', 51.2-51.5', 53.2-54.1', 55.5-56.6' Boring backfilled with bentonite-cement grout and patched with cold patch asphalt</p>				
235	65									
230	70									
225	75									
FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE		JOINTS / SHEAR / FRACTURE		WEATHERING		
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH			
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT			
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT			
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE			
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE			
						Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE		
								COMPLETE		

ROCKLOG2014 EL RODEO BORING LOGS 8-24-15.GPJ ROCKLOG2012.GDT 11/16/15

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APPENDIX B

GEOTECHNICAL LABORATORY TESTING

Our geotechnical laboratory testing program was directed toward a quantitative and qualitative evaluation of physical and mechanical properties of soils underlying this campus at proposed improvements, and to aid in verifying soil classification. This geotechnical testing was performed at our Irvine laboratory (DSA LEA 63).

Percent Fines (Percentage Passing Sieve No. 200 Sieve): Selected soil samples were wet-wash sieved through a No. 200 U.S. Standard brass sieve in accordance with ASTM Test Methods D 1140 to measure percent fines (silts and clays). This data was used to refine the Unified Soil Classification for tested soil samples. Test results are presented in this appendix and on logs in Appendix A.

Modified Proctor Compaction Curve: Laboratory modified Proctor compaction curves (ASTM D 1557) were established for bulk soil-samples to determine sample-specific modified Proctor laboratory maximum dry density and optimum moisture content. Results of these tests are presented on the following "*Modified Proctor Compaction Test*" sheets in this appendix.


Expansion Index (EI): Expansion Index (EI) tests were performed in accordance with the ASTM D 4829 Standard Test Method, for a shallow bulk soil samples from this site. EI results are included in this appendix on the "*Expansion Index of Soils*" sheets.

Direct Shear Tests: Direct shear tests were performed, in general accordance with ASTM Test Method D 3080, on remolded soil samples remolded to 90% of the ASTM D 1557 laboratory maximum density. Remolded specimens were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. These specimens were tested under various normal loads with a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of 0.05 inches per minute (depending upon the soil type). Test results are presented on the *Direct Shear Test Results* sheets which follow in this appendix.



Soil Corrosivity: Bulk samples of site soils were tested for corrosivity. Tests for water-soluble sulfate, water-soluble chloride, pH and minimum resistivity were performed in accordance with California Test Methods (CTMs) 417 Part II, 422 and 532/643, respectively. Test results are presented at the end of this appendix.



Boring No.	TP-1	TP-2	TP-3	TP-4	TP-4			
Sample No.	BB-1	BB-1	BB-1	BB-1	SPT-1			
Depth (ft.)	0-4.5	0-3	0-2.5	0-4	4.0			
Sample Type	Bulk	Bulk	Bulk	Bulk	SPT			
Soil Identification	Dark olive brown clayey sand with gravel (SC)g	Dark brown silty sand (SM)	Dark olive brown clayey sand with gravel (SC)g	Brown clayey sand (SC)	Brown clayey sand (SC)			
Moisture Correction								
Wet Weight of Soil + Container (g)	0.0	0.0	0.0	0.0	0.0			
Dry Weight of Soil + Container (g)	0.0	0.0	0.0	0.0	0.0			
Weight of Container (g)	1.0	1.0	1.0	1.0	1.0			
Moisture Content (%)	0.0	0.0	0.0	0.0	0.0			
Sample Dry Weight Determination								
Weight of Sample + Container (g)	2715.7	932.5	2465.0	1027.0	886.6			
Weight of Container (g)	223.4	111.5	233.3	109.7	110.5			
Weight of Dry Sample (g)	2492.3	821.0	2231.7	917.3	776.1			
Container No.:								
After Wash								
Method (A or B)	B	B	B	B	B			
Dry Weight of Sample + Cont. (g)	2007.9	823.1	2047.9	619.9	558.3			
Weight of Container (g)	223.4	111.5	233.3	109.7	110.5			
Dry Weight of Sample (g)	1784.5	711.6	1814.6	510.2	447.8			
% Passing No. 200 Sieve	28.4	13.3	18.7	44.4	42.3			
% Retained No. 200 Sieve	71.6	86.7	81.3	55.6	57.7			
 Leighton	PERCENT PASSING No. 200 SIEVE ASTM D 1140				Project Name: <u>BHUSD/EI Rodeo School</u> Project No.: <u>10274.011</u> Client Name: <u>Beverly Hills Unified School District</u> Tested By: <u>S. Felter</u> Date: <u>06/08/15</u>			



MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name: BHUSD/EI Rodeo School/Geo Tested By: O. Figueroa Date: 07/21/14
 Project No.: 10274.006 Input By: J. Ward Date: 07/23/14
 Location: Trench Backfill Depth (ft.): N/A
 Sample No.: S-1
 Soil Identification: Olive brown clayey sand with gravel (SC)g

Preparation Method:	<input checked="" type="checkbox"/>	Moist			Rammer Weight (lb.) = 10.0
		Dry			Height of Drop (in.) = 18.0
Compaction Method:	<input checked="" type="checkbox"/>	Mechanical Ram			
		Manual Ram			Mold Volume (ft ³) = 0.03320

Scalp Fraction (%)	
#3/4	
#3/8	12.5
#4	

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3770.0	3918.0	3965.0	3890.0		
Weight of Mold (g)	1843.0	1843.0	1843.0	1843.0		
Net Weight of Soil (g)	1927.0	2075.0	2122.0	2047.0		
Wet Weight of Soil + Cont. (g)	458.60	466.30	434.80	471.80		
Dry Weight of Soil + Cont. (g)	436.60	434.10	396.70	420.70		
Weight of Container (g)	37.70	38.20	36.80	37.80		
Moisture Content (%)	5.52	8.13	10.59	13.35		
Wet Density (pcf)	128.0	137.8	140.9	135.9		
Dry Density (pcf)	121.3	127.4	127.4	119.9		

Maximum Dry Density (pcf) 128.0
Corrected Dry Density (pcf) 132.0

Optimum Moisture Content (%) 9.5
Corrected Optimum Moisture Content (%) 8.5

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

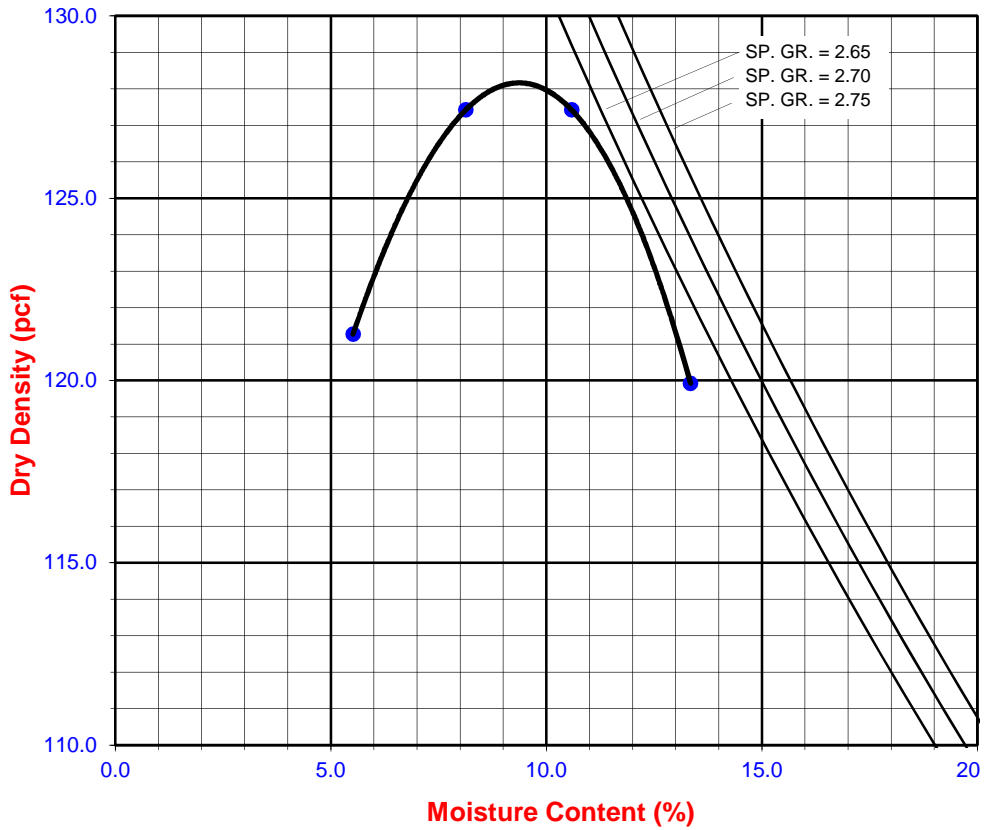
Procedure B
 Soil Passing 3/8 in. (9.5 mm) Sieve
 Mold : 4 in. (101.6 mm) diameter
 Layers : 5 (Five)
 Blows per layer : 25 (twenty-five)
 Use if + #4 is >20% and + 3/8 in. is 20% or less

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

Particle-Size Distribution:

 GR:SA:FI
Atterberg Limits:

 LL,PL,PI





MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name: BHUSD/EI Rodeo School/Geo Tested By: O. Figueroa Date: 07/21/14
 Project No.: 10274.006 Input By: J. Ward Date: 07/23/14
 Location: Trench Backfill Depth (ft.): N/A
 Sample No.: S-2
 Soil Identification: Dark olive brown clayey sand with gravel (SC)g

Preparation Method:	<input checked="" type="checkbox"/>	Moist			Rammer Weight (lb.) =	10.0
		Dry			Height of Drop (in.) =	18.0
Compaction Method:	<input checked="" type="checkbox"/>	Mechanical Ram			Mold Volume (ft ³)	0.03320
		Manual Ram				

Scalp Fraction (%)	
#3/4	
#3/8	11.3
#4	

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3736.0	3912.0	3964.0	3898.0		
Weight of Mold (g)	1843.0	1843.0	1843.0	1843.0		
Net Weight of Soil (g)	1893.0	2069.0	2121.0	2055.0		
Wet Weight of Soil + Cont. (g)	422.80	403.80	439.90	427.10		
Dry Weight of Soil + Cont. (g)	405.90	379.70	405.40	384.90		
Weight of Container (g)	39.00	37.80	51.00	38.10		
Moisture Content (%)	4.61	7.05	9.73	12.17		
Wet Density (pcf)	125.7	137.4	140.8	136.5		
Dry Density (pcf)	120.2	128.3	128.3	121.7		

Maximum Dry Density (pcf) 129.5
Corrected Dry Density (pcf) 133.0

Optimum Moisture Content (%) 8.5
Corrected Optimum Moisture Content (%) 7.5

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

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

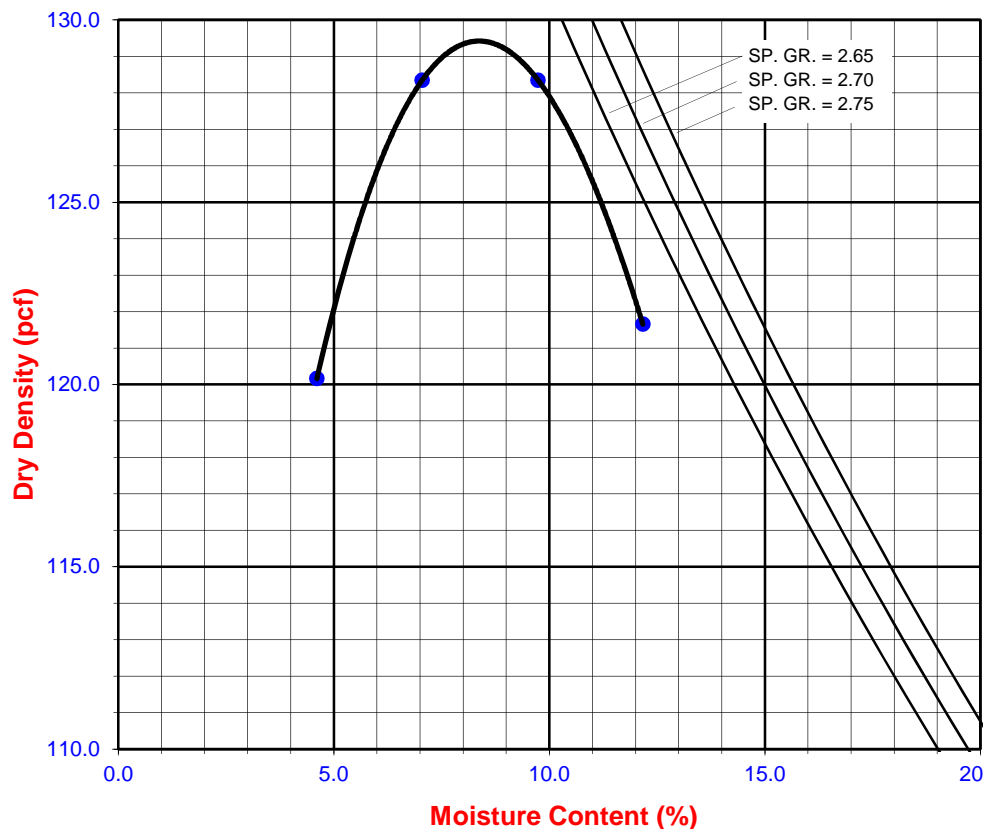
Procedure C
 Soil Passing 3/4 in. (19.0 mm) Sieve
 Mold : 6 in. (152.4 mm) diameter
 Layers : 5 (Five)
 Blows per layer : 56 (fifty-six)
 Use if + 3/8 in. is >20% and + 3/4 in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL, PL, PI





MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name: BHUSD/EI Rodeo School Tested By: O. Figueroa Date: 06/09/15
 Project No.: 10274.011 Input By: J. Ward Date: 06/10/15
 Boring No.: TP-1 Depth (ft.): 0-4.5
 Sample No.: BB-1
 Soil Identification: Dark olive brown clayey sand with gravel (SC)g

Preparation Method: Moist Dry Mechanical Ram Manual Ram
 Mold Volume (ft³) 0.07500 Ram Weight = 10 lb.; Drop = 18 in.

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	7020	7264	7413	7249		
Weight of Mold (g)	2710	2710	2710	2710		
Net Weight of Soil (g)	4310	4554	4703	4539		
Wet Weight of Soil + Cont. (g)	763.9	767.4	821.4	848.7		
Dry Weight of Soil + Cont. (g)	718.8	705.8	741.4	748.3		
Weight of Container (g)	77.2	82.7	75.7	77.0		
Moisture Content (%)	7.03	9.89	12.02	14.96		
Wet Density (pcf)	126.7	133.9	138.2	133.4		
Dry Density (pcf)	118.4	121.8	123.4	116.1		

Maximum Dry Density (pcf) 123.5 Optimum Moisture Content (%) 12.0

PROCEDURE USED

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

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

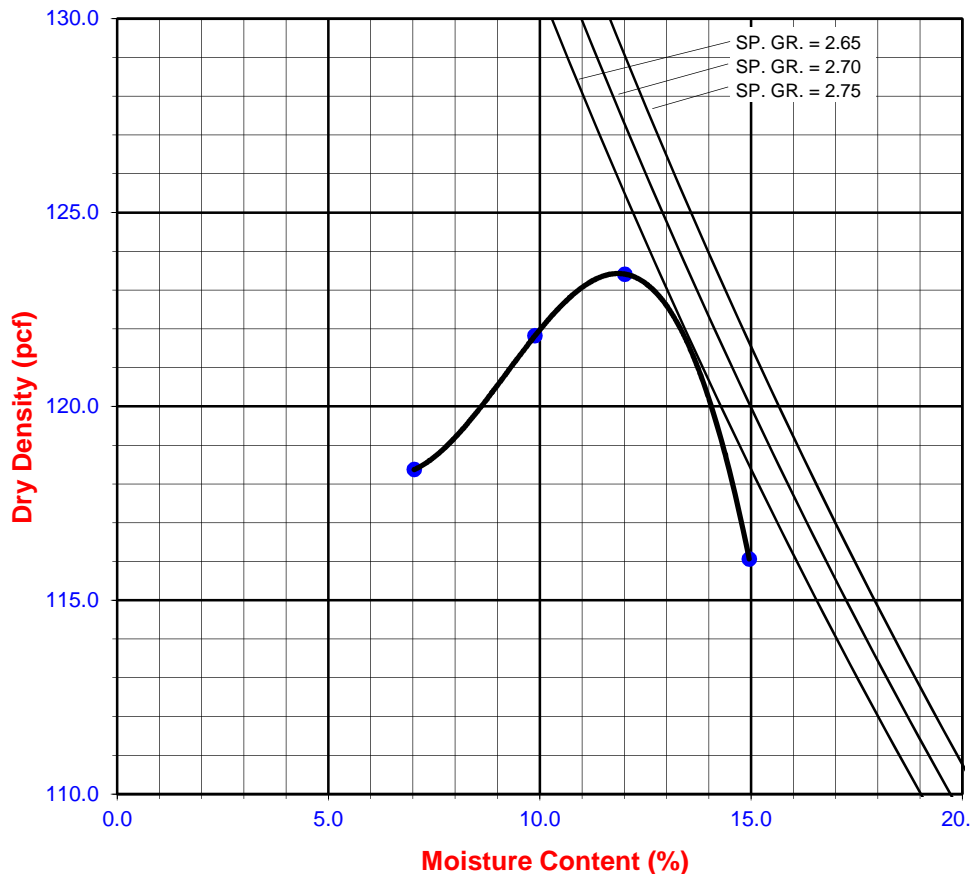
Procedure C
 Soil Passing 3/4 in. (19.0 mm) Sieve
 Mold : 6 in. (152.4 mm) diameter
 Layers : 5 (Five)
 Blows per layer : 56 (fifty-six)
 Use if +3/8 in. is >20% and +3/4 in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI





MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name: BHUSD/EI Rodeo School Tested By: O. Figueroa Date: 06/08/15
 Project No.: 10274.011 Input By: J. Ward Date: 06/10/15
 Boring No.: TP-3 Depth (ft.): 0-2.5
 Sample No.: BB-1
 Soil Identification: Dark olive brown clayey sand with gravel (SC)g

Note: Corrected dry density calculation assumes specific gravity of 2.70 and moisture content of 1.0% for oversize material

Preparation Method:	<input checked="" type="checkbox"/>	Moist		Scalp Fraction (%)		Rammer Weight (lb.) =	10.0
		Dry		#3/4	13.7	Height of Drop (in.) =	18.0
Compaction Method:	<input checked="" type="checkbox"/>	Mechanical Ram		#3/8			
		Manual Ram		#4		Mold Volume (ft ³)	0.07500

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	7273	7564	7438			
Weight of Mold (g)	2710	2710	2710			
Net Weight of Soil (g)	4563	4854	4728			
Wet Weight of Soil + Cont. (g)	725.2	826.1	791.9			
Dry Weight of Soil + Cont. (g)	684.4	765.5	718.9			
Weight of Container (g)	77.4	74.8	77.7			
Moisture Content (%)	6.72	8.77	11.38			
Wet Density (pcf)	134.1	142.7	139.0			
Dry Density (pcf)	125.7	131.2	124.8			

Maximum Dry Density (pcf) 131.0
Corrected Dry Density (pcf) 135.0

Optimum Moisture Content (%) 9.0
Corrected Moisture Content (%) 8.0

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

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

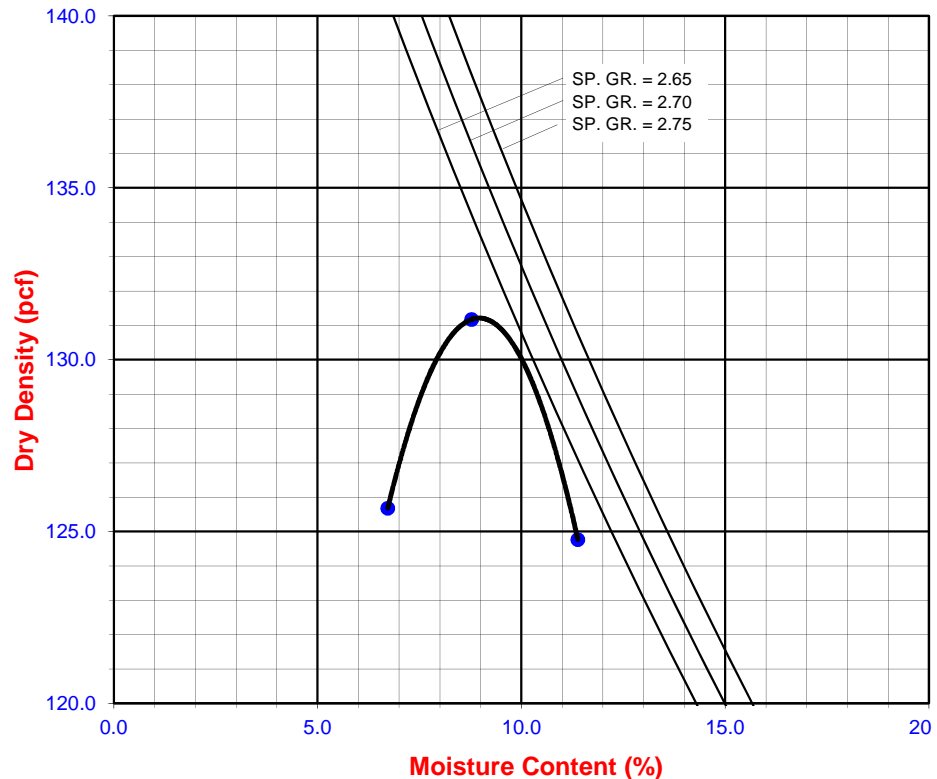
Procedure C
 Soil Passing 3/4 in. (19.0 mm) Sieve
 Mold : 6 in. (152.4 mm) diameter
 Layers : 5 (Five)
 Blows per layer : 56 (fifty-six)
 Use if + 3/8 in. is >20% and + 3/4 in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI





EXPANSION INDEX of SOILS
ASTM D 4829

Project Name: BHUSD/EI Rodeo School/Geo Tested By: S. Felter Date: 07/24/14
 Project No.: 10274.006 Checked By: J. Ward Date: 07/28/14
 Location: Trench Backfill Depth (ft.): N/A
 Sample No.: S-1
 Soil Identification: Olive brown clayey sand with gravel (SC)g

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0225
Wt. Comp. Soil + Mold (g)	573.80	437.93
Wt. of Mold (g)	163.50	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	0	0
Wet Wt. of Soil + Cont. (g)	819.60	601.43
Dry Wt. of Soil + Cont. (g)	751.90	539.92
Wt. of Container (g)	0.00	163.50
Moisture Content (%)	9.00	16.34
Wet Density (pcf)	123.8	129.2
Dry Density (pcf)	113.5	111.0
Void Ratio	0.485	0.518
Total Porosity	0.326	0.341
Pore Volume (cc)	67.6	72.2
Degree of Saturation (%) [S _{meas}]	50.1	85.2

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

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
07/24/14	12:12	1.0	0	0.1230
07/24/14	12:22	1.0	10	0.1230
Add Distilled Water to the Specimen				
07/24/14	13:09	1.0	47	0.1450
07/25/14	7:10	1.0	1128	0.1455
07/25/14	8:17	1.0	1195	0.1455

Expansion Index (EI _{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	23
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EXPANSION INDEX of SOILS
ASTM D 4829

Project Name: BHUSD/EI Rodeo School/Geo Tested By: S. Felter Date: 07/24/14
 Project No.: 10274.006 Checked By: J. Ward Date: 07/28/14
 Location: Trench Backfill Depth (ft.): N/A
 Sample No.: S-2
 Soil Identification: Dark olive brown clayey sand with gravel (SC)g

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0205
Wt. Comp. Soil + Mold (g)	601.10	438.82
Wt. of Mold (g)	190.50	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	0	0
Wet Wt. of Soil + Cont. (g)	828.60	629.32
Dry Wt. of Soil + Cont. (g)	763.00	568.57
Wt. of Container (g)	0.00	190.50
Moisture Content (%)	8.60	16.07
Wet Density (pcf)	123.9	129.7
Dry Density (pcf)	114.0	111.8
Void Ratio	0.478	0.509
Total Porosity	0.323	0.337
Pore Volume (cc)	67.0	71.2
Degree of Saturation (%) [S _{meas}]	48.5	85.3

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

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
07/24/14	11:53	1.0	0	0.1940
07/24/14	12:03	1.0	10	0.1930
Add Distilled Water to the Specimen				
07/24/14	13:12	1.0	69	0.2135
07/25/14	7:16	1.0	1153	0.2145
07/25/14	8:29	1.0	1226	0.2145

Expansion Index (EI _{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	22
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EXPANSION INDEX of SOILS
ASTM D 4829

Project Name: BHUSD/EI Rodeo School Building C Tested By: S. Felter Date: 10/13/15
 Project No.: 10274.015 Checked By: J. Ward Date: 10/14/15
 Boring No.: HA-1 Depth (ft.): 0-5
 Sample No.: B-1
 Soil Identification: Dark brown clayey sand (SC)

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0215
Wt. Comp. Soil + Mold (g)	550.70	416.71
Wt. of Mold (g)	163.20	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	0	0
Wet Wt. of Soil + Cont. (g)	768.60	579.91
Dry Wt. of Soil + Cont. (g)	689.30	510.70
Wt. of Container (g)	0.00	163.20
Moisture Content (%)	11.50	19.92
Wet Density (pcf)	116.9	123.1
Dry Density (pcf)	104.8	102.6
Void Ratio	0.608	0.643
Total Porosity	0.378	0.391
Pore Volume (cc)	78.3	82.7
Degree of Saturation (%) [S _{meas}]	51.1	83.6

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

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
10/13/15	11:47	1.0	0	0.0160
10/13/15	11:57	1.0	10	0.0160
Add Distilled Water to the Specimen				
10/13/15	14:22	1.0	145	0.0350
10/14/15	6:34	1.0	1117	0.0375
10/14/15	7:51	1.0	1194	0.0375

Expansion Index (EI _{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	22
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EXPANSION INDEX of SOILS
ASTM D 4829

Project Name: BHUSD/EI Rodeo School Building C Tested By: S. Felter Date: 10/08/15
 Project No.: 10274.015 Checked By: J. Ward Date: 10/14/15
 Boring No.: LB-1 Depth (ft.): 0-5
 Sample No.: B-1
 Soil Identification: Brown clayey sand (SC)

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0340
Wt. Comp. Soil + Mold (g)	570.60	435.46
Wt. of Mold (g)	167.30	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	0	0
Wet Wt. of Soil + Cont. (g)	808.60	602.76
Dry Wt. of Soil + Cont. (g)	738.50	535.65
Wt. of Container (g)	0.00	167.30
Moisture Content (%)	9.49	18.22
Wet Density (pcf)	121.7	127.0
Dry Density (pcf)	111.1	107.5
Void Ratio	0.517	0.569
Total Porosity	0.341	0.363
Pore Volume (cc)	70.6	77.6
Degree of Saturation (%) [S _{meas}]	49.5	86.5

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

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
10/08/15	9:47	1.0	0	0.0230
10/08/15	9:57	1.0	10	0.0230
Add Distilled Water to the Specimen				
10/08/15	13:42	1.0	225	0.0555
10/09/15	6:20	1.0	1223	0.0570
10/09/15	7:45	1.0	1308	0.0570

Expansion Index (EI _{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	34
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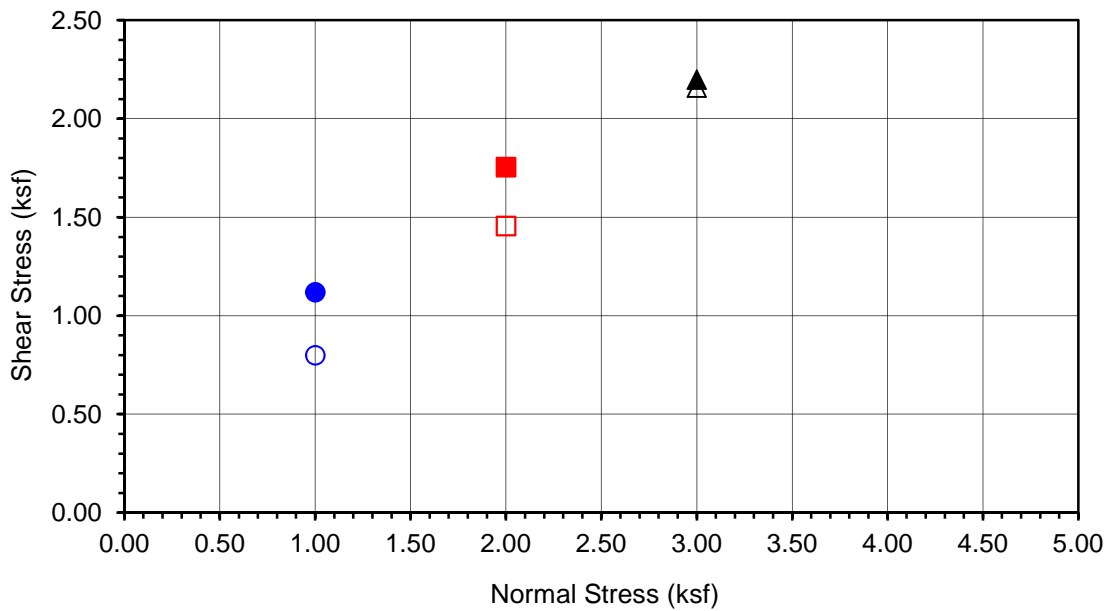
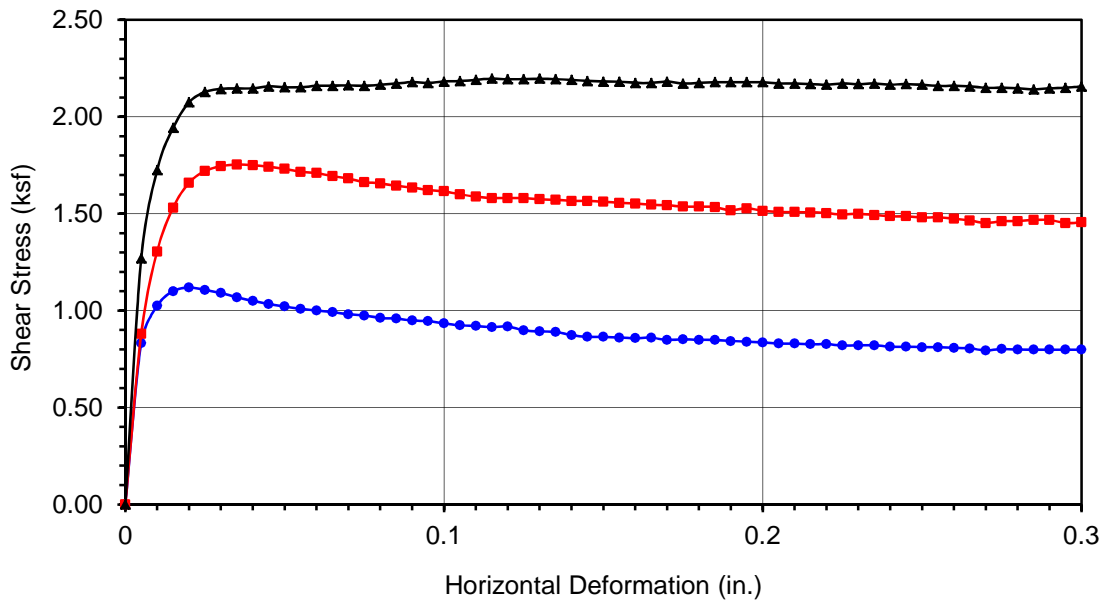
DIRECT SHEAR TEST

Consolidated Undrained

Project Name: BHUSD/EI Rodeo School/Geo	Tested By: G. Bathala	Date: 07/24/14
Project No.: 10274.006	Checked By: J. Ward	
Location: Trench Backfill	Sample Type: 90% Remold	
Sample No.: S-1	Depth (ft.): N/A	
Soil Identification: Olive brown clayey sand with gravel (SC)g		

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	194.47	194.26	194.03
Weight of Ring(gm):	42.81	42.68	42.48
Before Shearing			
Weight of Wet Sample+Cont.(gm):	266.86	266.86	266.86
Weight of Dry Sample+Cont.(gm):	247.03	247.03	247.03
Weight of Container(gm):	37.96	37.96	37.96
Vertical Rdg.(in): Initial	0.0000	0.2430	0.2489
Vertical Rdg.(in): Final	-0.0019	0.2508	0.2629
After Shearing			
Weight of Wet Sample+Cont.(gm):	198.84	194.98	196.76
Weight of Dry Sample+Cont.(gm):	176.64	174.59	176.20
Weight of Container(gm):	39.22	37.61	39.07
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43

Note: Tests were performed on material passing sieve #4. Test samples were prepared to 90% relative compaction of the maximum dry density at optimum moisture content determined according to ASTM D1557 Procedure B, which includes material passing the 3/8-in sieve and retained on sieve #4.



Location	Trench Backfill
Sample No.	S-1
<u>Sample Type:</u>	
90% Remold	
<u>Soil Identification:</u>	
Olive brown clayey sand with gravel (SC)g	

Normal Stress (kip/ft ²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft ²)	● 1.119	■ 1.754	▲ 2.197
Shear Stress @ End of Test (ksf)	○ 0.799	□ 1.456	△ 2.157
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	9.48	9.48	9.48
Dry Density (pcf)	115.2	115.1	115.1
Saturation (%)	55.3	55.2	55.2
Soil Height Before Shearing (in.)	0.9981	0.9922	0.9860
Final Moisture Content (%)	16.2	14.9	15.0

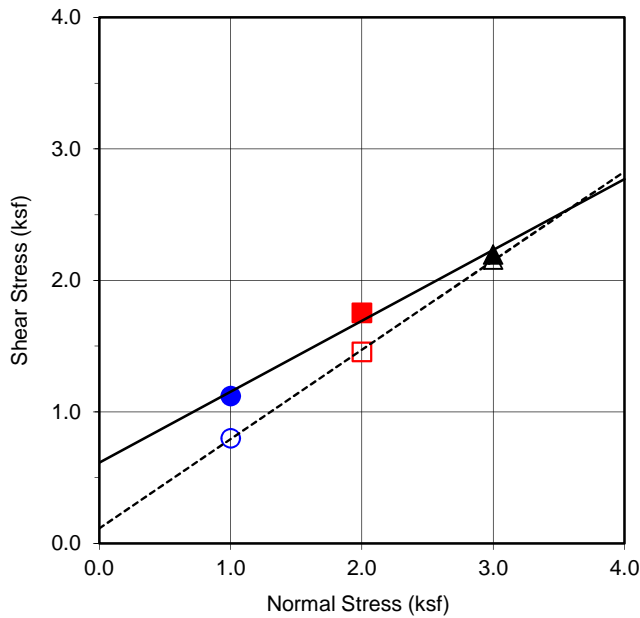
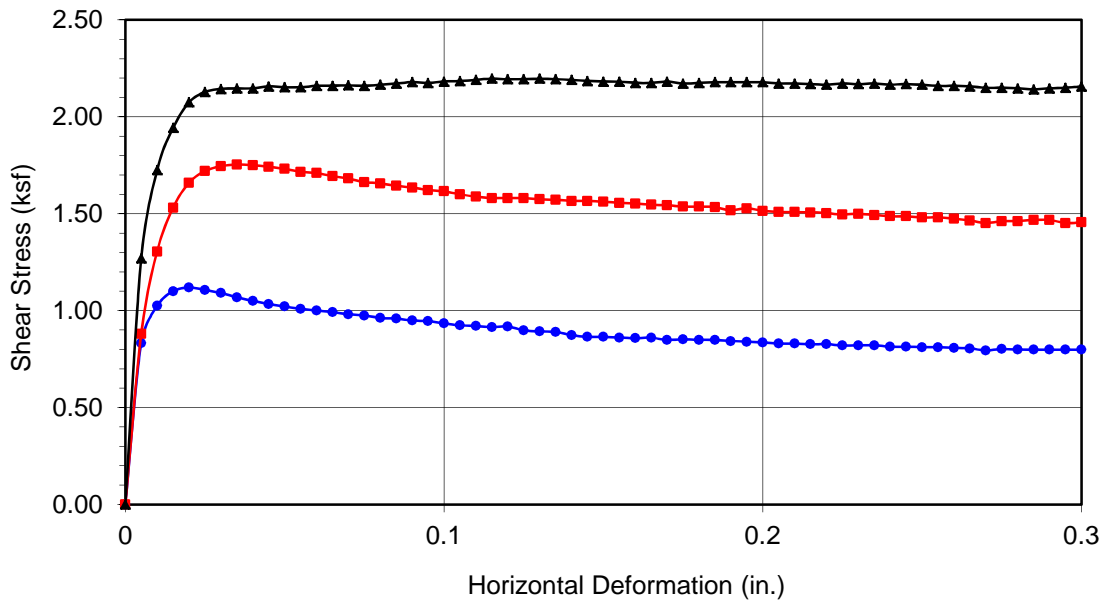


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DIRECT SHEAR TEST RESULTS
Consolidated Undrained

Project No.: 10274.006

BHUSD/EI Rodeo School/Geo



Location	Trench Backfill	
Sample No.	S-1	
Sample Type: 90% Remold		
Soil Identification: Olive brown clayey sand with gravel (SC)g		
Strength Parameters		
	C (psf)	ϕ (°)
Peak	612.0	28.3
Ultimate	112.7	34.2

Normal Stress (kip/ft ²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft ²)	● 1.119	■ 1.754	▲ 2.197
Shear Stress @ End of Test (ksf)	○ 0.799	□ 1.456	△ 2.157
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	9.48	9.48	9.48
Dry Density (pcf)	115.2	115.1	115.1
Saturation (%)	55.3	55.2	55.2
Soil Height Before Shearing (in.)	0.9981	0.9922	0.9860
Final Moisture Content (%)	16.2	14.9	15.0



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DIRECT SHEAR TEST RESULTS
Consolidated Undrained

Project No.: 10274.006

BHUSD/EI Rodeo School/Geo



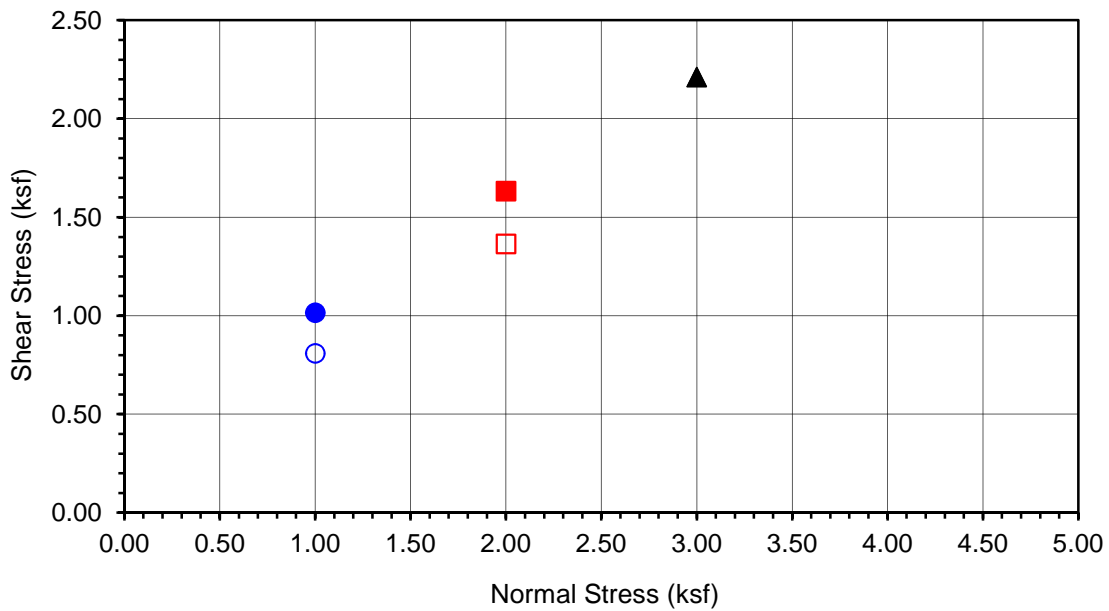
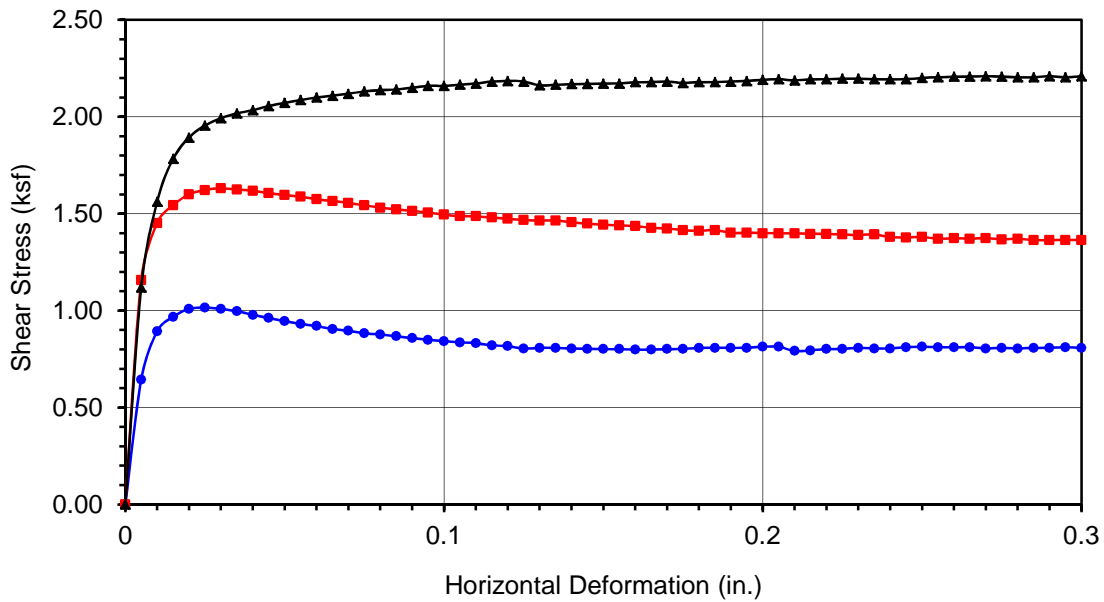
DIRECT SHEAR TEST

Consolidated Undrained

Project Name: BHUSD/EI Rodeo School/Geo	Tested By: G. Bathala	Date: 07/24/14
Project No.: 10274.006	Checked By: J. Ward	
Location: Trench Backfill	Sample Type: 90% Remold	
Sample No.: S-2	Depth (ft.): N/A	
Soil Identification: Dark olive brown clayey sand with gravel (SC)g		

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	192.03	193.90	194.96
Weight of Ring(gm):	42.68	42.48	42.81
Before Shearing			
Weight of Wet Sample+Cont.(gm):	272.42	272.42	272.42
Weight of Dry Sample+Cont.(gm):	254.49	254.49	254.49
Weight of Container(gm):	37.63	37.63	37.63
Vertical Rdg.(in): Initial	0.0000	0.2530	0.2642
Vertical Rdg.(in): Final	-0.0007	0.2587	0.2796
After Shearing			
Weight of Wet Sample+Cont.(gm):	195.21	198.37	196.40
Weight of Dry Sample+Cont.(gm):	174.17	177.87	176.67
Weight of Container(gm):	37.97	39.22	37.98
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43

Note: Tests were performed on material passing sieve #4. Test samples were prepared to 90% relative compaction of the maximum dry density at optimum moisture content determined according to ASTM D1557 Procedure B, which includes material passing the 3/8-in sieve and retained on sieve #4.



Location	Trench Backfill
Sample No.	S-2
<u>Sample Type:</u>	
90% Remold	
<u>Soil Identification:</u>	
Dark olive brown clayey sand with gravel (SC)g	

Normal Stress (kip/ft ²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft ²)	● 1.015	■ 1.632	▲ 2.210
Shear Stress @ End of Test (ksf)	○ 0.808	□ 1.364	△ 2.210
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.27	8.27	8.27
Dry Density (pcf)	114.7	116.3	116.9
Saturation (%)	47.6	49.7	50.5
Soil Height Before Shearing (in.)	0.9993	0.9943	0.9846
Final Moisture Content (%)	15.4	14.8	14.2

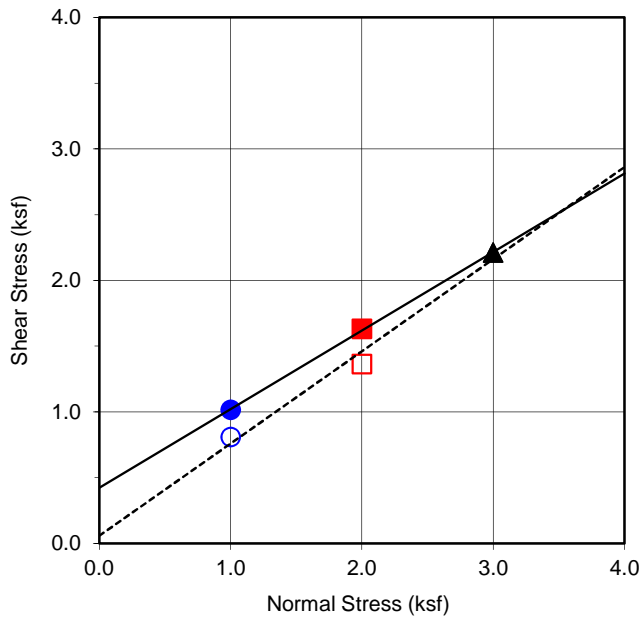
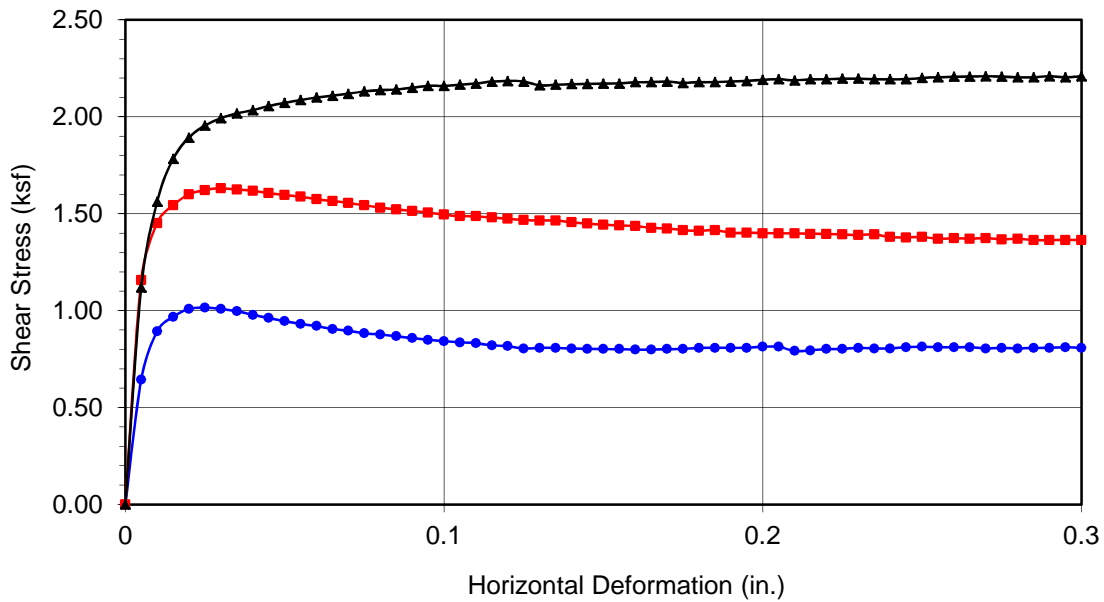


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DIRECT SHEAR TEST RESULTS
Consolidated Undrained

Project No.: 10274.006

BHUSD/EI Rodeo School/Geo



Location	Trench Backfill	
Sample No.	S-2	
Sample Type: 90% Remold		
Soil Identification: Dark olive brown clayey sand with gravel (SC)g		
Strength Parameters		
	C (psf)	ϕ (°)
Peak	424.0	30.9
Ultimate	58.7	35.0

Normal Stress (kip/ft ²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft ²)	● 1.015	■ 1.632	▲ 2.210
Shear Stress @ End of Test (ksf)	○ 0.808	□ 1.364	△ 2.210
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.27	8.27	8.27
Dry Density (pcf)	114.7	116.3	116.9
Saturation (%)	47.6	49.7	50.5
Soil Height Before Shearing (in.)	0.9993	0.9943	0.9846
Final Moisture Content (%)	15.4	14.8	14.2



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DIRECT SHEAR TEST RESULTS
Consolidated Undrained

Project No.: 10274.006

BHUSD/EI Rodeo School/Geo



DIRECT SHEAR TEST
Consolidated Undrained

Project Name: [BHUSD/EI Rodeo School Building C](#) Tested By: [G. Bathala](#) Date: 10/12/15
Project No.: [10274.015](#) Checked By: [J. Ward](#)
Boring No.: [LB-3](#) Sample Type: [Ring](#)
Sample No.: [R-3](#) Depth (ft.): [20.0](#)
Soil Identification: [Dark yellowish brown lean clay \(CL\)](#)

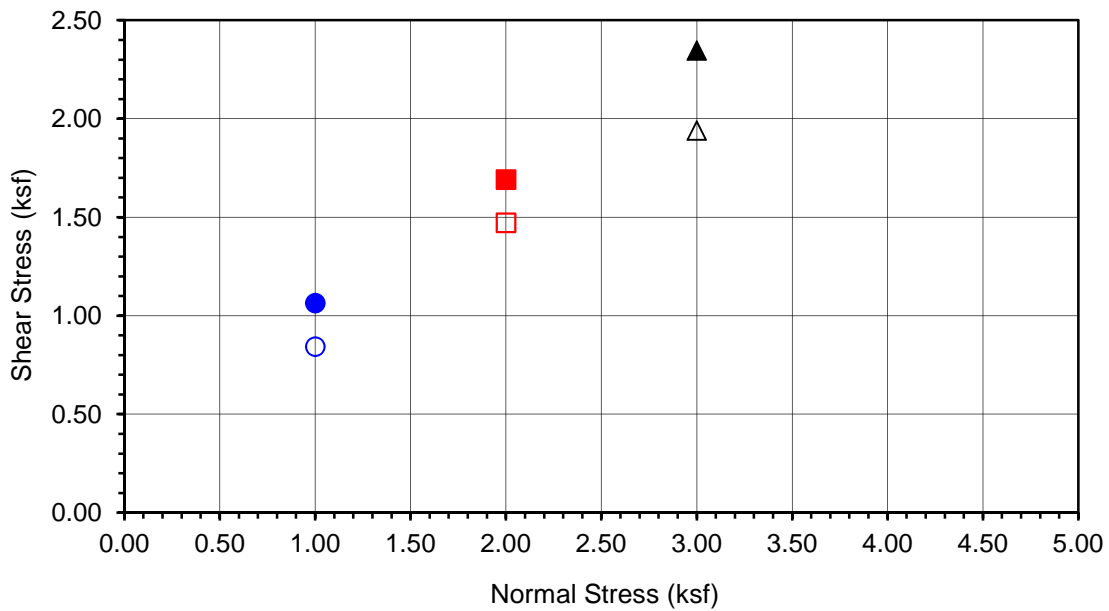
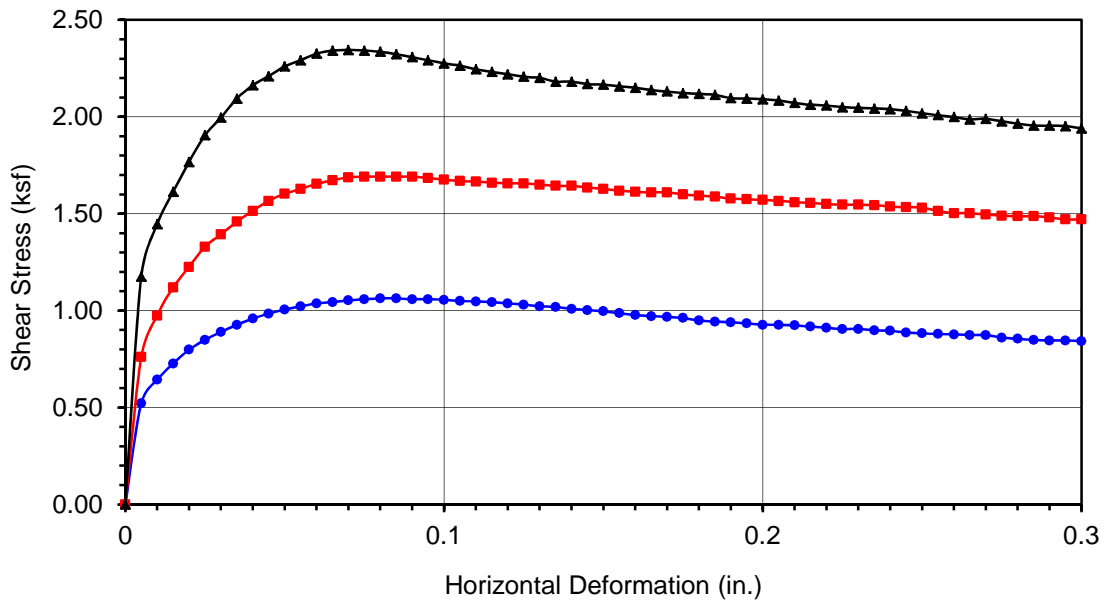
Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	190.19	193.79	198.20
Weight of Ring(gm):	43.13	42.95	46.02

Before Shearing

Weight of Wet Sample+Cont.(gm):	175.61	175.61	175.61
Weight of Dry Sample+Cont.(gm):	149.72	149.72	149.72
Weight of Container(gm):	37.73	37.73	37.73
Vertical Rdg.(in): Initial	0.0000	0.2420	0.2343
Vertical Rdg.(in): Final	-0.0070	0.2600	0.2539

After Shearing

Weight of Wet Sample+Cont.(gm):	184.06	186.59	188.96
Weight of Dry Sample+Cont.(gm):	152.56	160.47	162.96
Weight of Container(gm):	38.25	37.57	39.04
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43



Boring No.	LB-3
Sample No.	R-3
Depth (ft)	20
<u>Sample Type:</u>	
Ring	
<u>Soil Identification:</u>	
Dark yellowish brown lean clay (CL)	

Normal Stress (kip/ft ²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft ²)	● 1.063	■ 1.691	▲ 2.345
Shear Stress @ End of Test (ksf)	○ 0.843	□ 1.471	△ 1.940
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	23.12	23.12	23.12
Dry Density (pcf)	99.3	101.9	102.8
Saturation (%)	89.6	95.4	97.6
Soil Height Before Shearing (in.)	0.9930	0.9820	0.9804
Final Moisture Content (%)	27.6	21.3	21.0

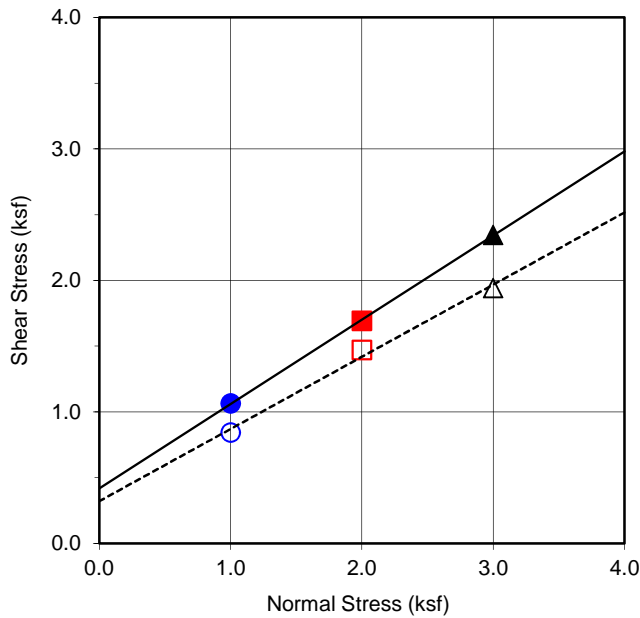
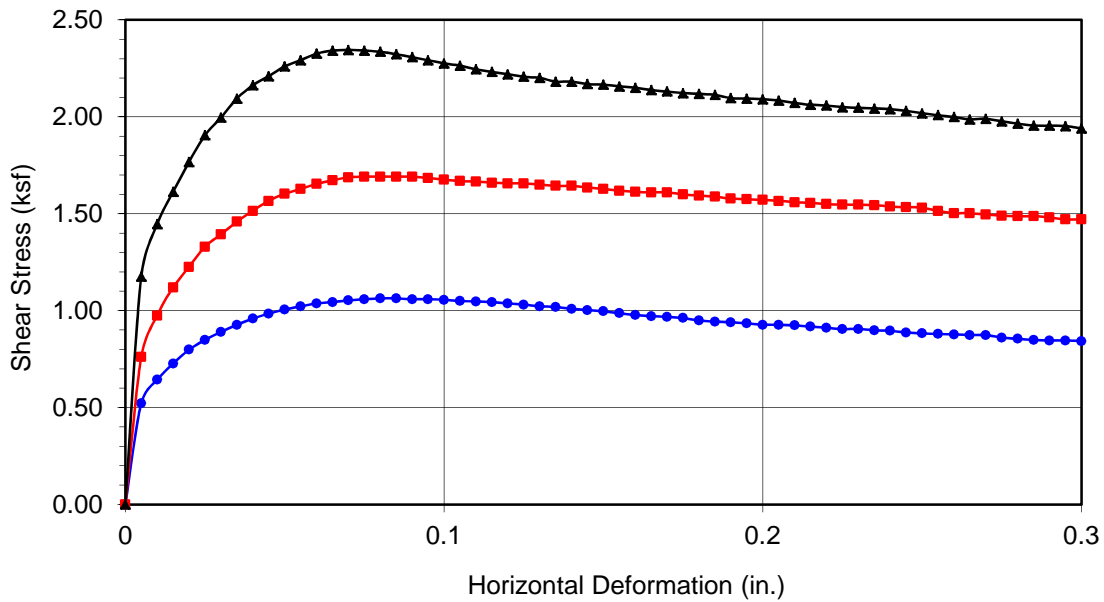


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DIRECT SHEAR TEST RESULTS
Consolidated Undrained

Project No.: 10274.015

BHUSD/EI Rodeo School Building C



Boring No.	LB-3	
Sample No.	R-3	
Depth (ft)	20	
Sample Type:	Ring	
Soil Identification:		
Dark yellowish brown lean clay (CL)		
Strength Parameters		
	C (psf)	ϕ (°)
Peak	417.7	32.7
Ultimate	321.0	28.7

Normal Stress (kip/ft ²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft ²)	● 1.063	■ 1.691	▲ 2.345
Shear Stress @ End of Test (ksf)	○ 0.843	□ 1.471	△ 1.940
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	23.12	23.12	23.12
Dry Density (pcf)	99.3	101.9	102.8
Saturation (%)	89.6	95.4	97.6
Soil Height Before Shearing (in.)	0.9930	0.9820	0.9804
Final Moisture Content (%)	27.6	21.3	21.0



Leighton

DIRECT SHEAR TEST RESULTS
Consolidated Undrained

Project No.: 10274.015

BHUSD/EI Rodeo School Building C



**TESTS for SULFATE CONTENT
CHLORIDE CONTENT and pH of SOILS**

Project Name: BHUSD/EI Rodeo School
Project No. : 10274.011

Tested By : GEB/GB Date: 06/05/15
Data Input By: J. Ward Date: 06/10/15

Boring No.	TP-2			
Sample No.	SPT-1			
Sample Depth (ft)	1.5			
Soil Identification:	Dark brown (SM)g			
Wet Weight of Soil + Container (g)	201.69			
Dry Weight of Soil + Container (g)	201.09			
Weight of Container (g)	55.54			
Moisture Content (%)	0.41			
Weight of Soaked Soil (g)	100.70			

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	62			
Crucible No.	3			
Furnace Temperature (°C)	850			
Time In / Time Out	9:35/10:20			
Duration of Combustion (min)	45			
Wt. of Crucible + Residue (g)	21.6371			
Wt. of Crucible (g)	21.6336			
Wt. of Residue (g) (A)	0.0035			
PPM of Sulfate (A) x 41150	144.02			
PPM of Sulfate, Dry Weight Basis	145			

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	30			
ml of AgNO ₃ Soln. Used in Titration (C)	1.0			
PPM of Chloride (C -0.2) * 100 * 30 / B	80			
PPM of Chloride, Dry Wt. Basis	80			

pH TEST, DOT California Test 643

pH Value	7.28			
Temperature °C	23.3			



SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name: BHUSD/EI Rodeo School
 Project No. : 10274.011
 Boring No.: TP-2
 Sample No. : SPT-1

Tested By : G. Berdy Date: 06/05/15
 Data Input By: J. Ward Date: 06/10/15
 Depth (ft.) : 1.5

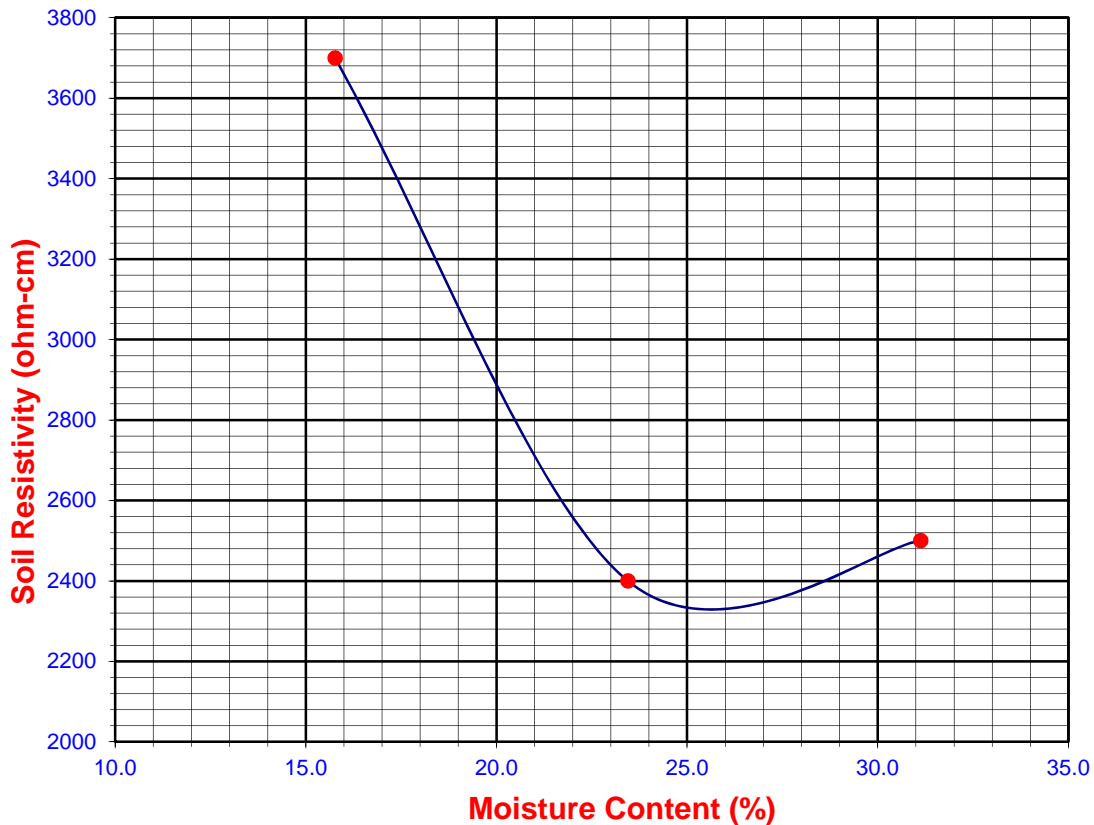
Soil Identification:* Dark brown (SM)g

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	20	15.77	3700	3700
2	30	23.45	2400	2400
3	40	31.12	2500	2500
4				
5				

Moisture Content (%) (Mci)	0.41
Wet Wt. of Soil + Cont. (g)	201.69
Dry Wt. of Soil + Cont. (g)	201.09
Wt. of Container (g)	55.54
Container No.	
Initial Soil Wt. (g) (Wt)	130.78
Box Constant	1.000
$MC = (((1 + Mci / 100) \times (Wa / Wt + 1)) - 1) \times 100$	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II		DOT CA Test 643	
2320	25.7	145	80	7.28	23.3





TESTS for SULFATE CONTENT CHLORIDE CONTENT and pH of SOILS

Project Name: BHUSD/EI Rodeo School Building C Tested By : G. Bathala Date: 10/03/15
 Project No. : 10274.015 Data Input By: J. Ward Date: 10/14/15

Boring No.	LB-3	LB-4		
Sample No.	B-1	B-1		
Sample Depth (ft)	0-5	0-5		
Soil Identification:				
	Olive brown SC	Dark olive gray SC		
Wet Weight of Soil + Container (g)	178.38	188.63		
Dry Weight of Soil + Container (g)	173.29	183.10		
Weight of Container (g)	66.74	67.16		
Moisture Content (%)	4.78	4.77		
Weight of Soaked Soil (g)	101.46	101.35		

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	0	30		
Crucible No.	6	8		
Furnace Temperature (°C)	840	840		
Time In / Time Out	11:30/12:15	11:30/12:15		
Duration of Combustion (min)	45	45		
Wt. of Crucible + Residue (g)	23.3457	20.3838		
Wt. of Crucible (g)	23.3448	20.3825		
Wt. of Residue (g) (A)	0.0009	0.0013		
PPM of Sulfate (A) x 41150	37.04	53.50		
PPM of Sulfate, Dry Weight Basis	39	56		

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	30	20		
ml of AgNO ₃ Soln. Used in Titration (C)	0.7	0.8		
PPM of Chloride (C -0.2) * 100 * 30 / B	50	90		
PPM of Chloride, Dry Wt. Basis	53	95		

pH TEST, DOT California Test 643

pH Value	8.09	7.24		
Temperature °C	21.1	21.1		



SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name: BHUSD/EI Rodeo School Building C

Tested By : G. Bathala Date: 10/14/15

Project No. : 10274.015

Data Input By: J. Ward Date: 10/14/15

Boring No.: LB-3

Depth (ft.) : 0-5

Sample No. : B-1

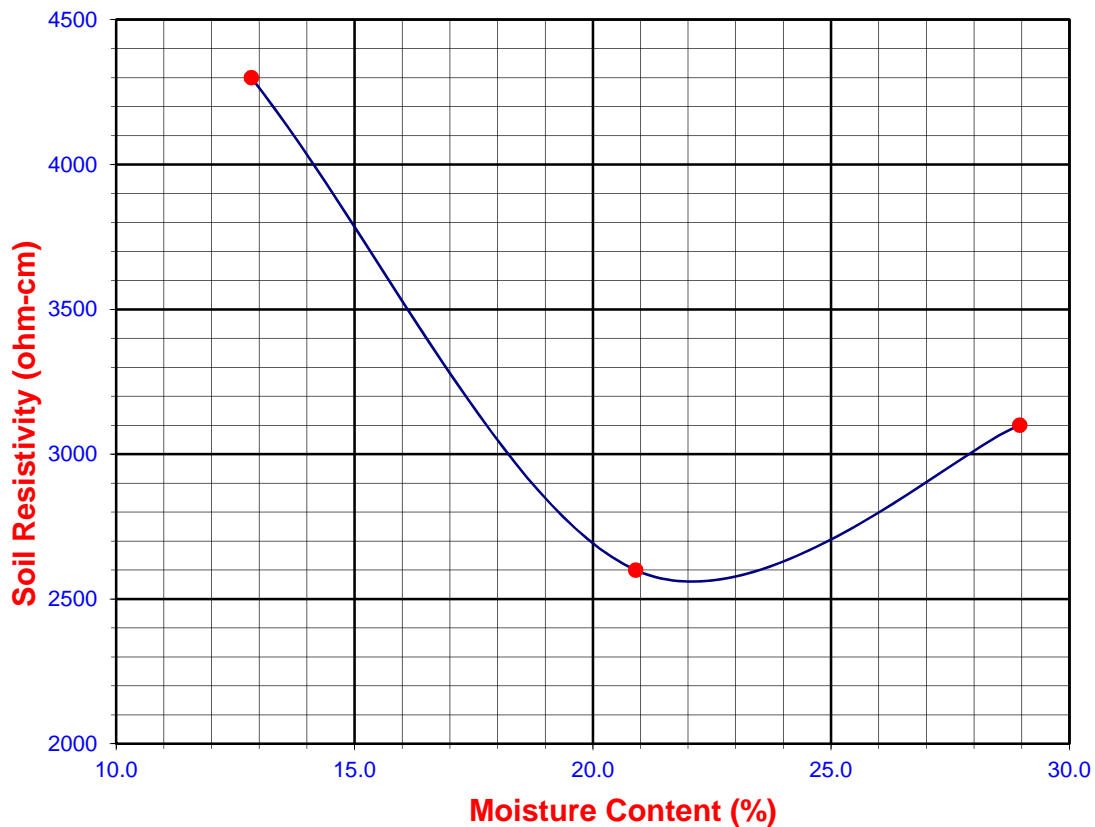
Soil Identification:* Olive brown SC

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	10	12.84	4300	4300
2	20	20.90	2600	2600
3	30	28.96	3100	3100
4				
5				

Moisture Content (%) (Mci)	4.78
Wet Wt. of Soil + Cont. (g)	178.38
Dry Wt. of Soil + Cont. (g)	173.29
Wt. of Container (g)	66.74
Container No.	
Initial Soil Wt. (g) (Wt)	130.00
Box Constant	1.000
$MC = (((1 + Mci/100) \times (Wa/Wt + 1)) - 1) \times 100$	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II		DOT CA Test 643	
2550	22.1	39	53	8.09	21.1





Leighton

SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name: BHUSD/EI Rodeo School Building C
 Project No. : 10274.015
 Boring No.: LB-4
 Sample No. : B-1

Tested By : G. Bathala Date: 10/14/15
 Data Input By: J. Ward Date: 10/14/15
 Depth (ft.) : 0-5

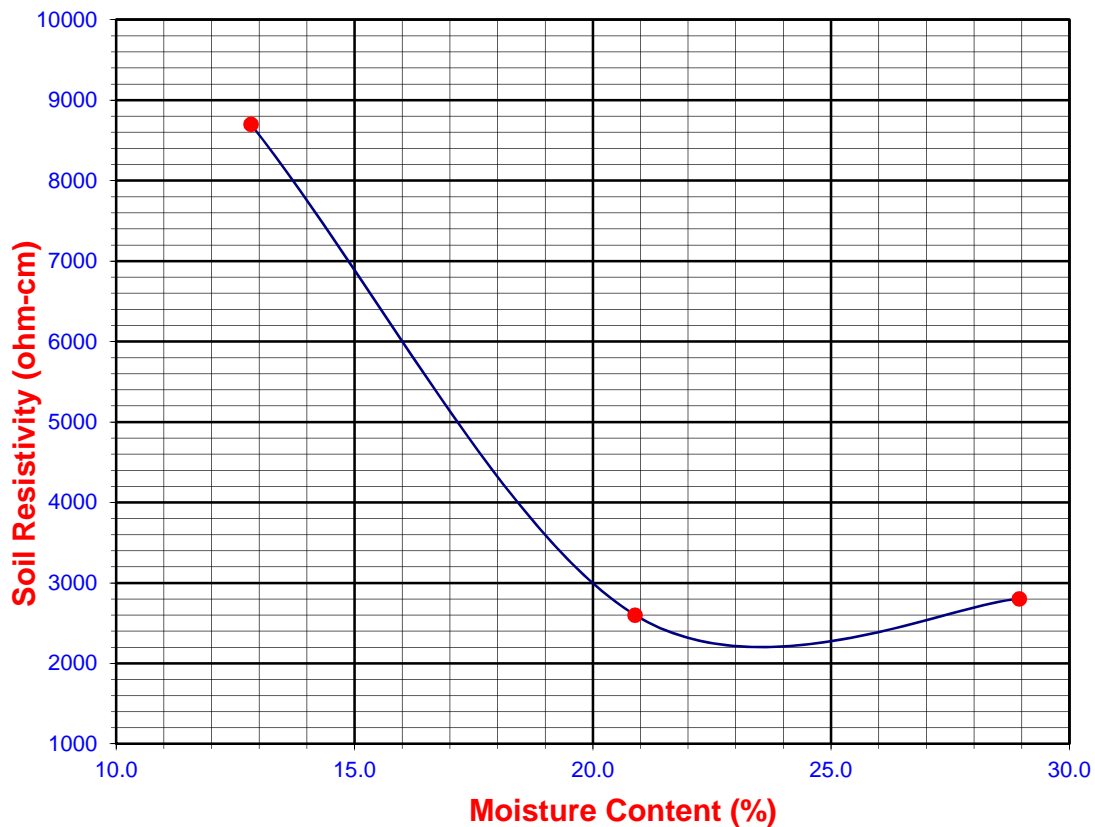
Soil Identification:* Dark olive gray SC

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	10	12.83	8700	8700
2	20	20.89	2600	2600
3	30	28.95	2800	2800
4				
5				

Moisture Content (%) (Mci)	4.77
Wet Wt. of Soil + Cont. (g)	188.63
Dry Wt. of Soil + Cont. (g)	183.10
Wt. of Container (g)	67.16
Container No.	
Initial Soil Wt. (g) (Wt)	130.00
Box Constant	1.000
$MC = (((1 + Mci / 100) \times (Wa / Wt + 1)) - 1) \times 100$	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
2200	23.5	56	95	7.24	21.1



APPENDIX C
GEOTECHNICAL CALCULATIONS


Design Maps Detailed Report

ASCE 41-13 Retrofit Standard, Custom, 2% in 50 year values (34.0676°N, 118.4158°W)

Site Class D – “Stiff Soil”, Risk Category I/II/III

Section 2.4.1 – General Procedure for Hazard Due to Ground Shaking

From Section 2.4.1.5

$$S_{S,Custom} = 2.397 \text{ g}$$

From Section 2.4.1.5

$$S_{1,Custom} = 0.878 \text{ g}$$

Section 2.4.1.6 – Adjustment for Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Section 2.4.1.6.1.

SITE CLASS	SOIL PROFILE NAME	Soil shear wave velocity, \bar{v}_s, (ft/s)	Standard penetration resistance, \bar{N}	Soil undrained shear strength, \bar{s}_{ur}, (psf)
A	Hard rock	$\bar{v}_s > 5,000$	N/A	N/A
B	Rock	$2,500 < \bar{v}_s \leq 5,000$	N/A	N/A
C	Very dense soil and soft rock	$1,200 < \bar{v}_s \leq 2,500$	$\bar{N} > 50$	>2,000 psf
D	Stiff soil profile	$600 \leq \bar{v}_s < 1,200$	$15 \leq \bar{N} \leq 50$	1,000 to 2,000 psf
E	Stiff soil profile	$\bar{v}_s < 600$	$\bar{N} < 15$	<1,000 psf
E	—	Any profile with more than 10 ft of soil having the characteristics: <ol style="list-style-type: none"> 1. Plasticity index $PI > 20$, 2. Moisture content $w \geq 40\%$, and 3. Undrained shear strength $\bar{s}_u < 500$ psf 		
F	—	Any profile containing soils having one or more of the following characteristics: <ol style="list-style-type: none"> 1. Soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils, quick and highly sensitive clays, collapsible weakly cemented soils. 2. Peats and/or highly organic clays ($H > 10$ feet of peat and/or highly organic clay where H = thickness of soil) 3. Very high plasticity clays ($H > 25$ feet with plasticity index $PI > 75$) 4. Very thick soft/medium stiff clays ($H > 120$ feet) 		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Table 2-3. Values of F_a as a Function of Site Class and Mapped Short-Period Spectral Response Acceleration S_s

Site Class	Mapped Spectral Acceleration at Short-Period S_s				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	Site-specific geotechnical and dynamic site response analyses shall be performed				

Note: Use straight-line interpolation for intermediate values of S_s

For Site Class = D and $S_s = 2.397$ g, $F_a = 1.000$

Table 2-4. Values of F_v as a Function of Site Class and Mapped Spectral Response Acceleration at 1 s Period S_1

Site Class	Mapped Spectral Acceleration at 1 s Period S_1				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	Site-specific geotechnical and dynamic site response analyses shall be performed				

Note: Use straight-line interpolation for intermediate values of S_1

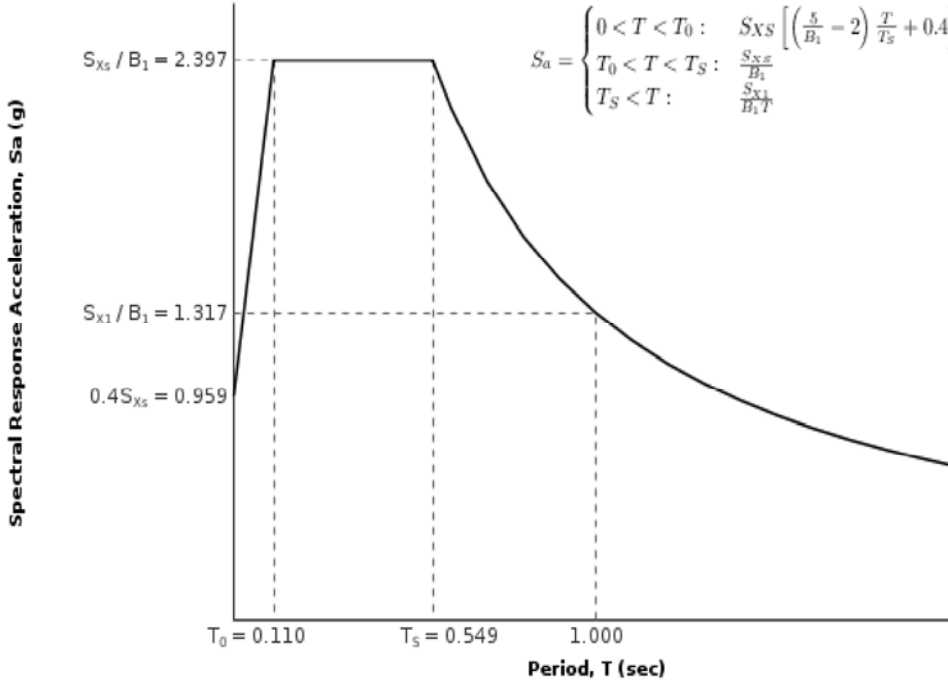
For Site Class = D and $S_1 = 0.878$ g, $F_v = 1.500$

Equation (2-4): $S_{XS,Custom} = F_a S_{S,Custom} = 1.000 \times 2.397 \text{ g} = 2.397 \text{ g}$

Equation (2-5): $S_{X1,Custom} = F_v S_{1,Custom} = 1.500 \times 0.878 \text{ g} = 1.317 \text{ g}$

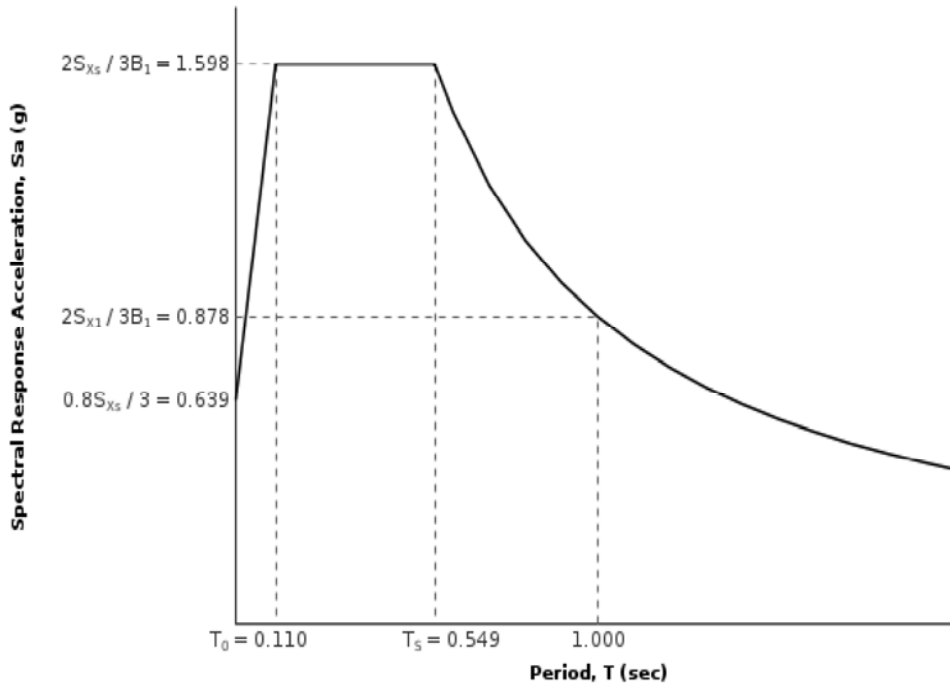
Section 2.4.1.7.1 — General Horizontal Response Spectrum

Figure 2-1. General Horizontal Response Spectrum



Section 2.4.1.7.2 — General Vertical Response Spectrum

The General Vertical Response Spectrum is determined by multiplying the General Horizontal Response Spectrum by $\frac{2}{3}$.




Design Maps Detailed Report

ASCE 41-13 Retrofit Standard, Custom, 10% in 50 year values (34.0676°N, 118.4158°W)

Site Class D – “Stiff Soil”, Risk Category I/II/III

Section 2.4.1 – General Procedure for Hazard Due to Ground Shaking

From Section 2.4.1.5

$$S_{S,Custom} = 1.186 \text{ g}$$

From Section 2.4.1.5

$$S_{1,Custom} = 0.420 \text{ g}$$

Section 2.4.1.6 – Adjustment for Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Section 2.4.1.6.1.

SITE CLASS	SOIL PROFILE NAME	Soil shear wave velocity, \bar{v}_s, (ft/s)	Standard penetration resistance, \bar{N}	Soil undrained shear strength, \bar{s}_{ur}, (psf)
A	Hard rock	$\bar{v}_s > 5,000$	N/A	N/A
B	Rock	$2,500 < \bar{v}_s \leq 5,000$	N/A	N/A
C	Very dense soil and soft rock	$1,200 < \bar{v}_s \leq 2,500$	$\bar{N} > 50$	>2,000 psf
D	Stiff soil profile	$600 \leq \bar{v}_s < 1,200$	$15 \leq \bar{N} \leq 50$	1,000 to 2,000 psf
E	Stiff soil profile	$\bar{v}_s < 600$	$\bar{N} < 15$	<1,000 psf
E	—	Any profile with more than 10 ft of soil having the characteristics: <ol style="list-style-type: none"> 1. Plasticity index $PI > 20$, 2. Moisture content $w \geq 40\%$, and 3. Undrained shear strength $\bar{s}_u < 500$ psf 		
F	—	Any profile containing soils having one or more of the following characteristics: <ol style="list-style-type: none"> 1. Soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils, quick and highly sensitive clays, collapsible weakly cemented soils. 2. Peats and/or highly organic clays ($H > 10$ feet of peat and/or highly organic clay where H = thickness of soil) 3. Very high plasticity clays ($H > 25$ feet with plasticity index $PI > 75$) 4. Very thick soft/medium stiff clays ($H > 120$ feet) 		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Table 2-3. Values of F_a as a Function of Site Class and Mapped Short-Period Spectral Response Acceleration S_s

Site Class	Mapped Spectral Acceleration at Short-Period S_s				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	Site-specific geotechnical and dynamic site response analyses shall be performed				

Note: Use straight-line interpolation for intermediate values of S_s

For Site Class = D and $S_s = 1.186$ g, $F_a = 1.025$

Table 2-4. Values of F_v as a Function of Site Class and Mapped Spectral Response Acceleration at 1 s Period S_1

Site Class	Mapped Spectral Acceleration at 1 s Period S_1				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	Site-specific geotechnical and dynamic site response analyses shall be performed				

Note: Use straight-line interpolation for intermediate values of S_1

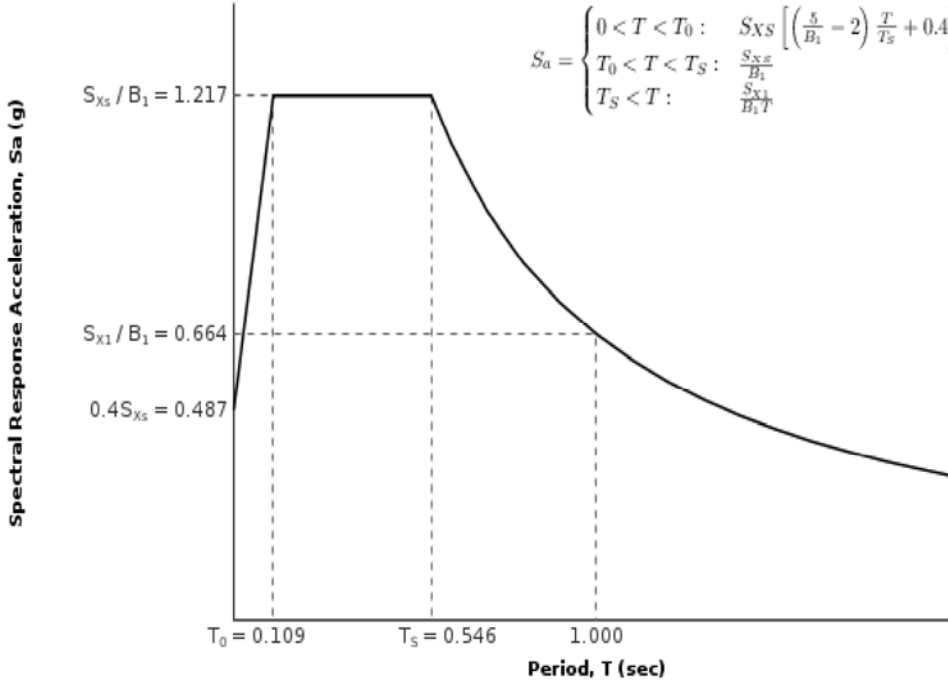
For Site Class = D and $S_1 = 0.420$ g, $F_v = 1.580$

Equation (2-4): $S_{XS,Custom} = F_a S_{S,Custom} = 1.025 \times 1.186 \text{ g} = 1.217 \text{ g}$

Equation (2-5): $S_{X1,Custom} = F_v S_{1,Custom} = 1.580 \times 0.420 \text{ g} = 0.664 \text{ g}$

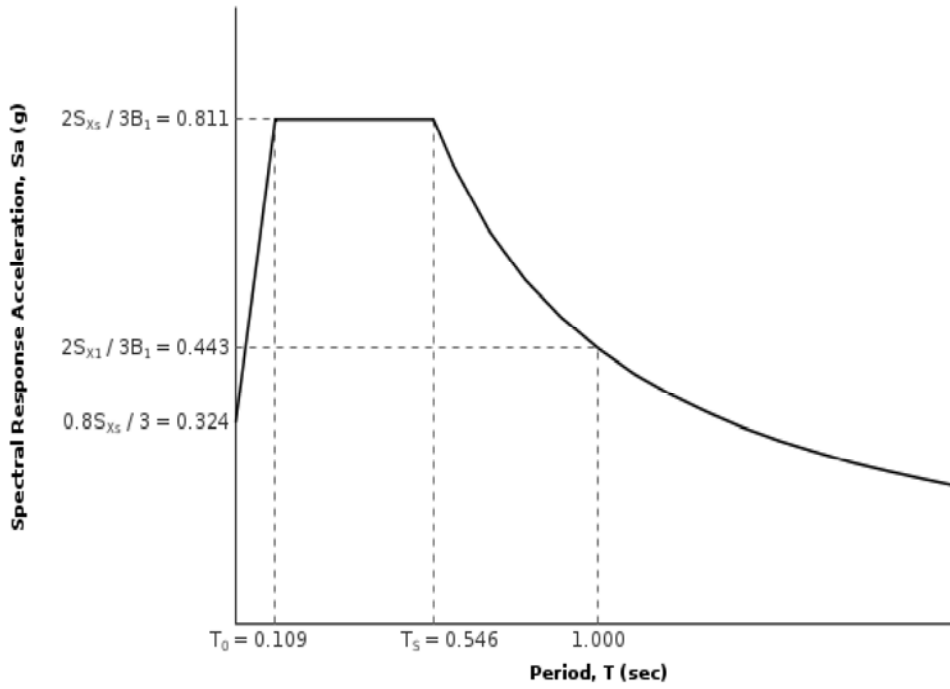
Section 2.4.1.7.1 — General Horizontal Response Spectrum

Figure 2-1. General Horizontal Response Spectrum



Section 2.4.1.7.2 — General Vertical Response Spectrum

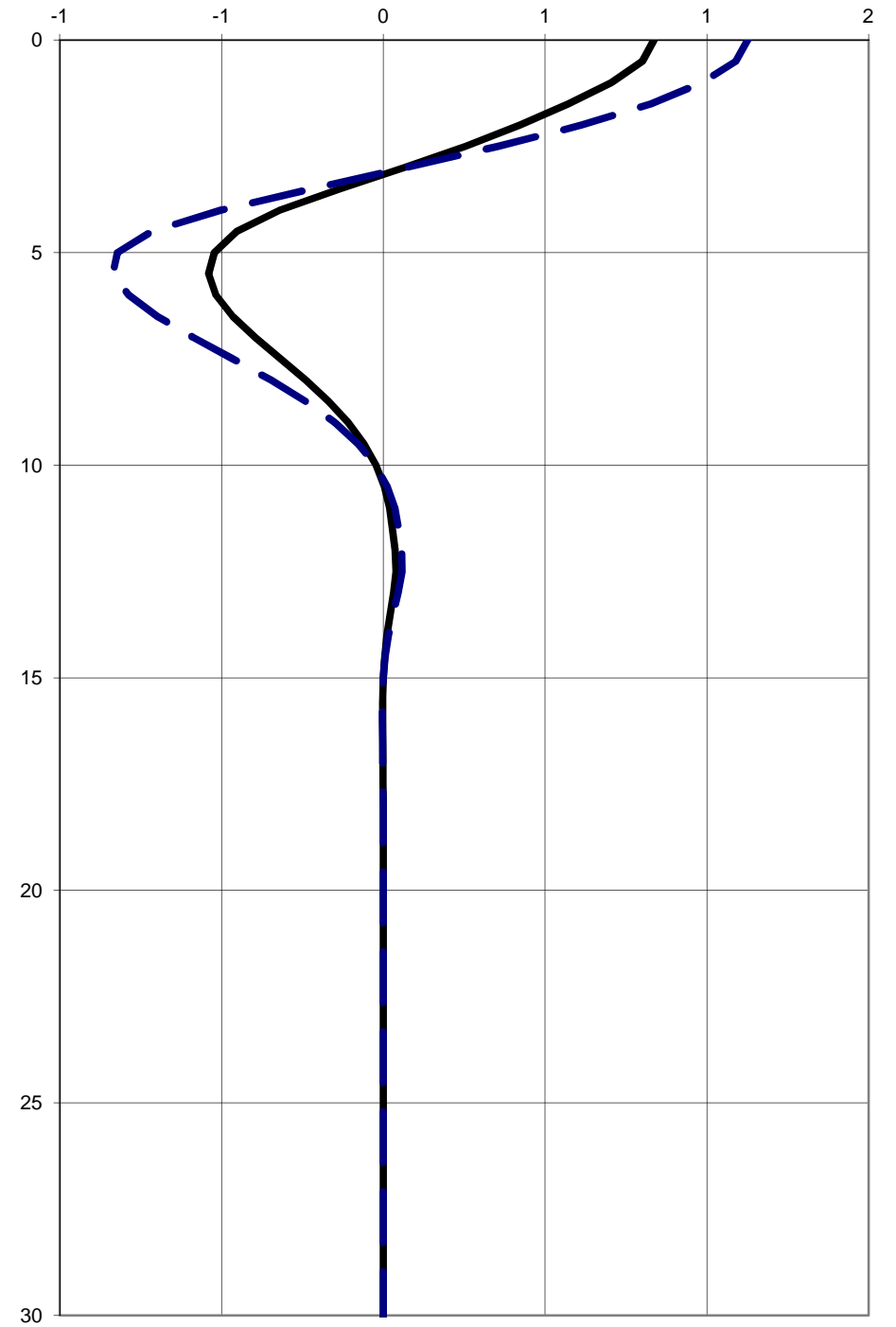
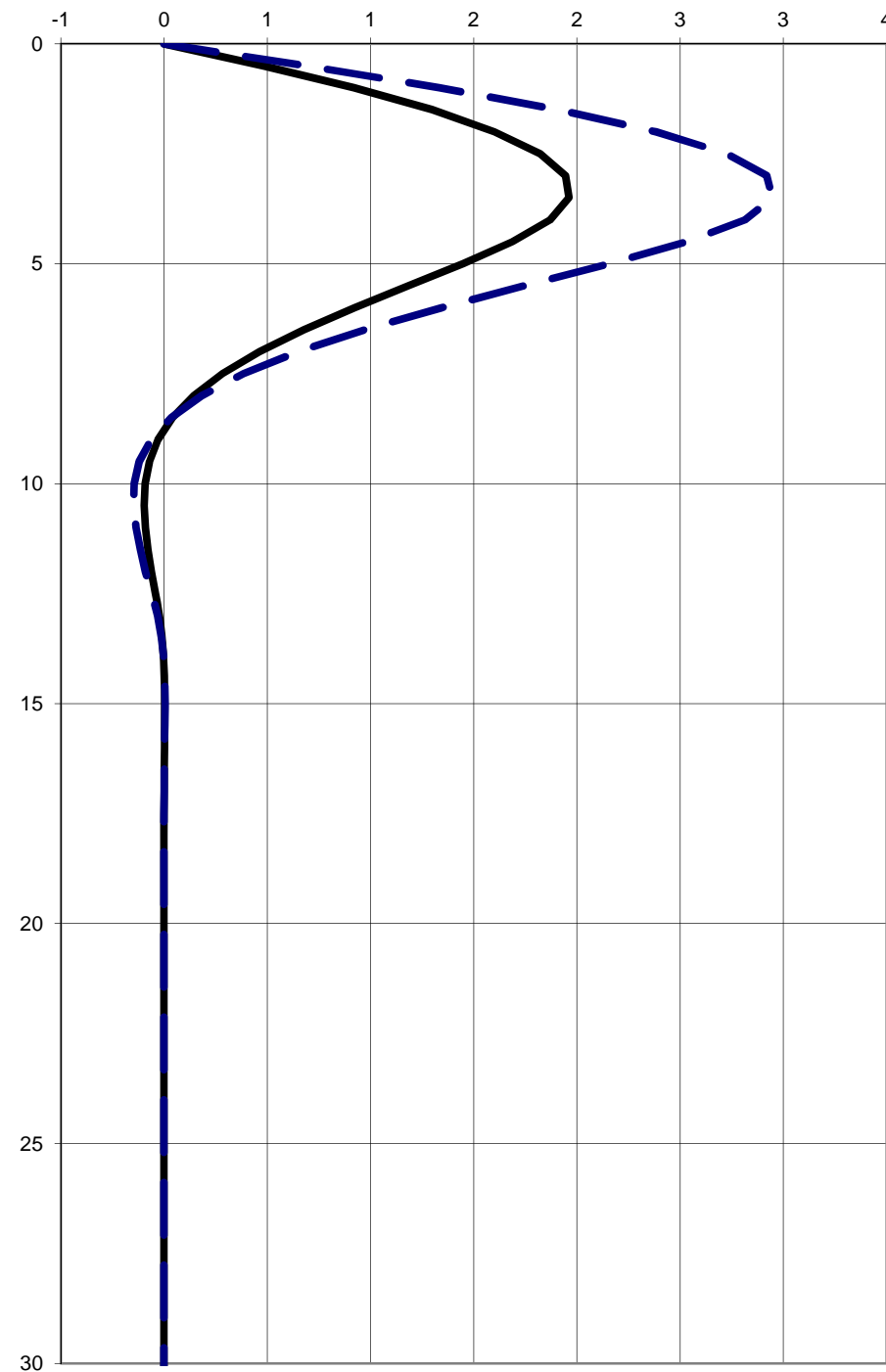
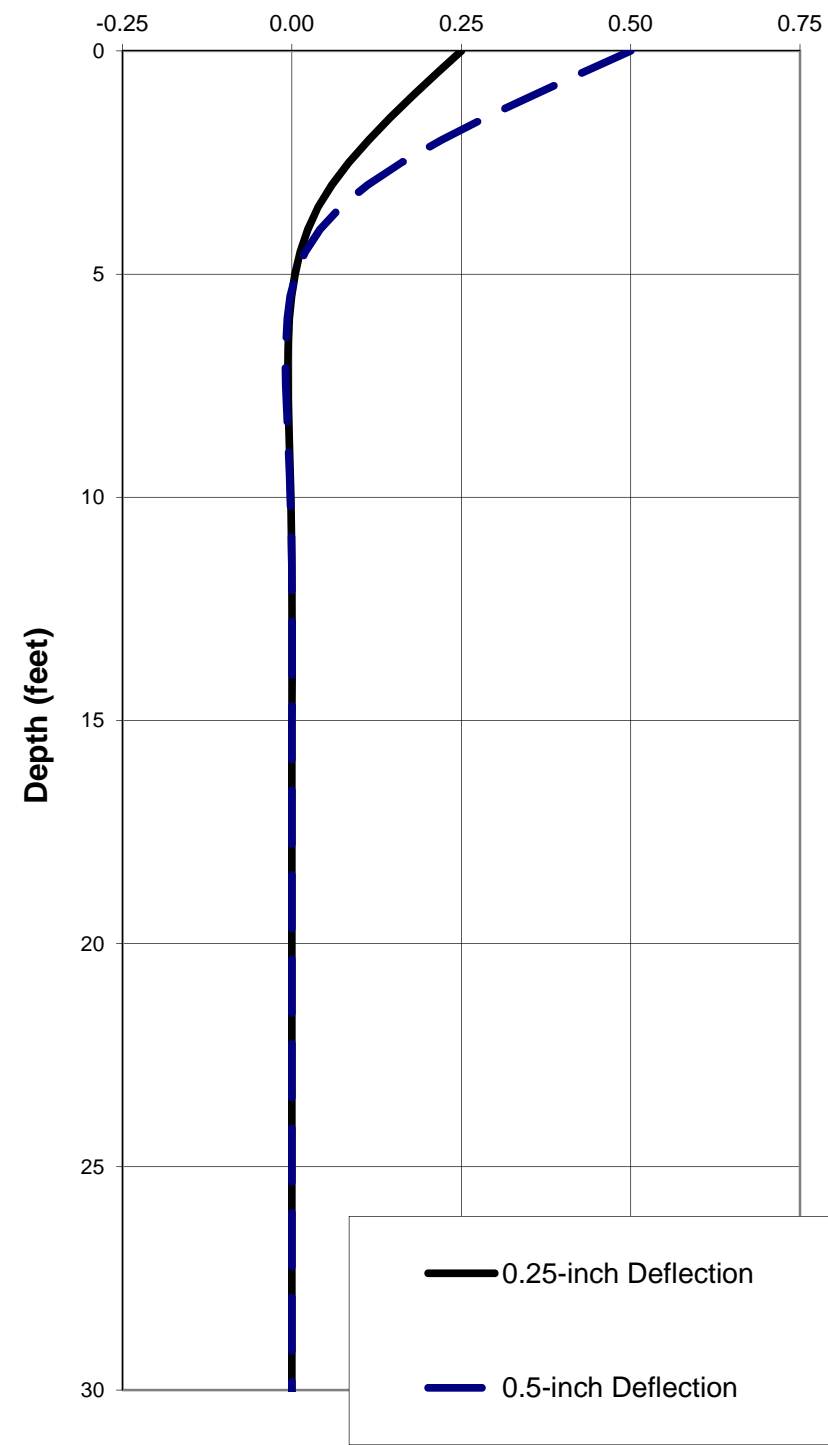
The General Vertical Response Spectrum is determined by multiplying the General Horizontal Response Spectrum by $\frac{2}{3}$.



Deflection (inches)

Moment (kips-feet)

Shear (kips)



**LATERAL LOAD CAPACITIES OF 6-INCH DIAMETER MICRO PILE
 FREE HEAD CONDITION
 EL RODEO K-8 SCHOOL
 BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
 Project No.: 10274.015
 Date: 10/2015

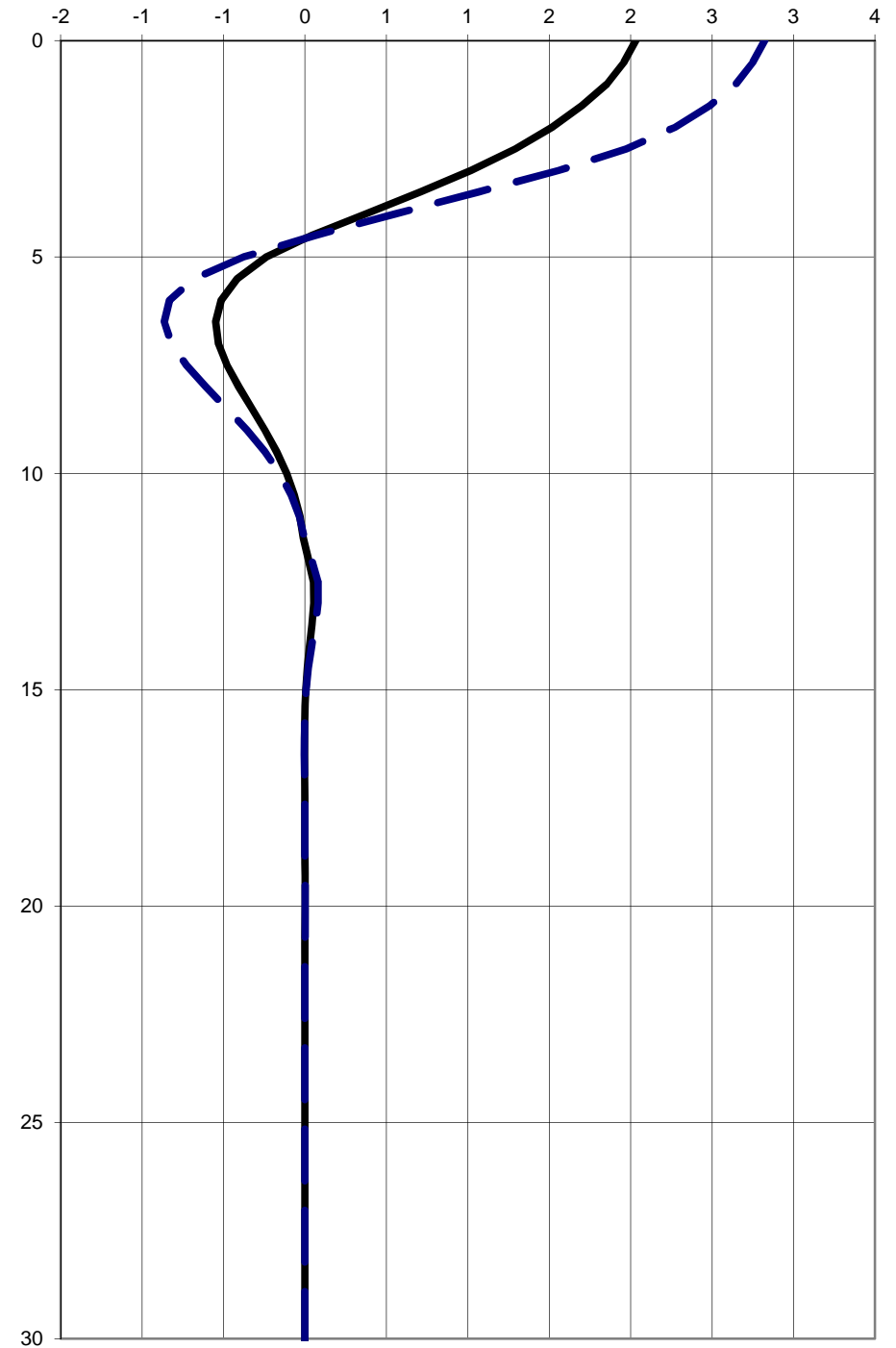
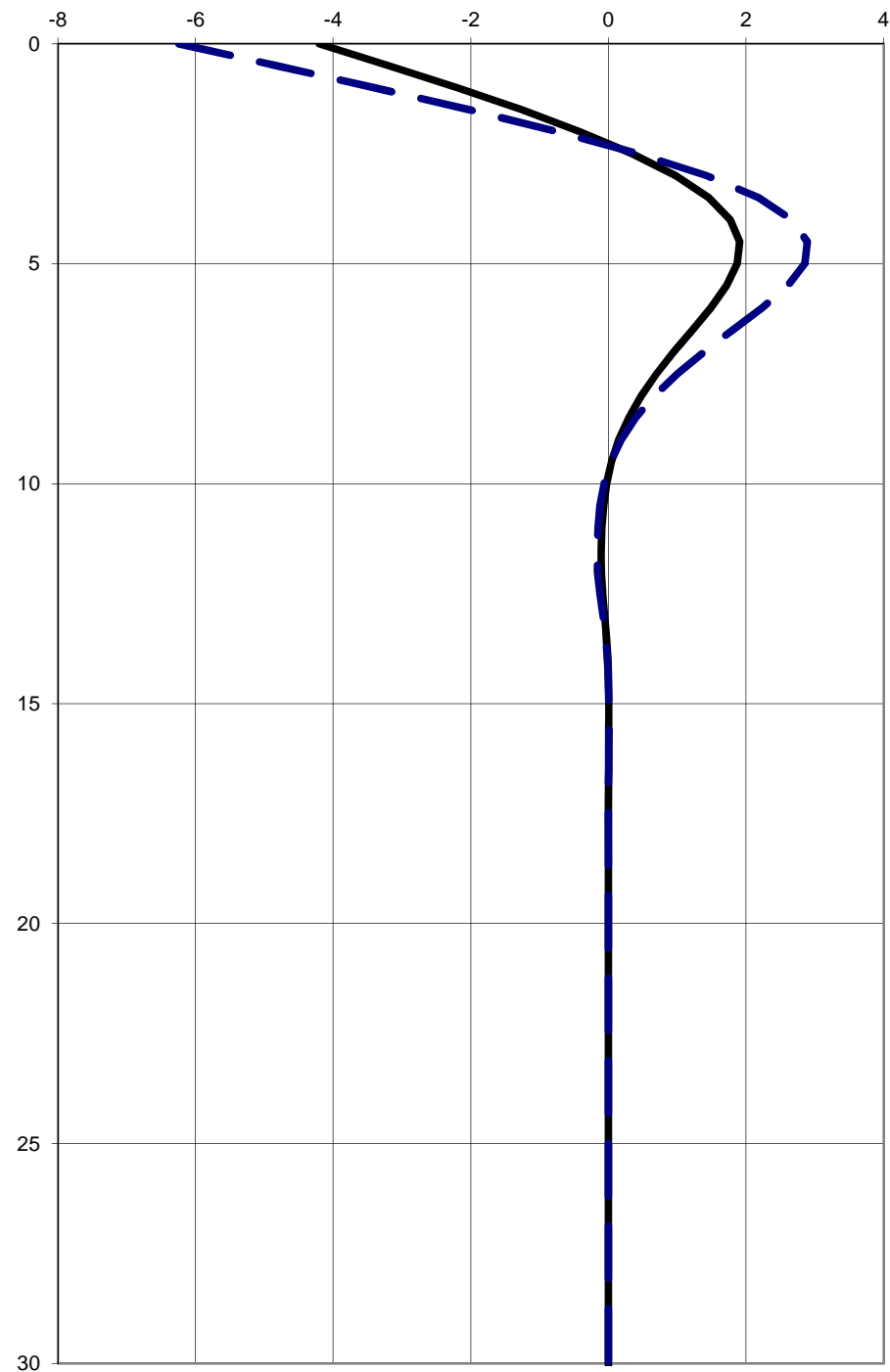
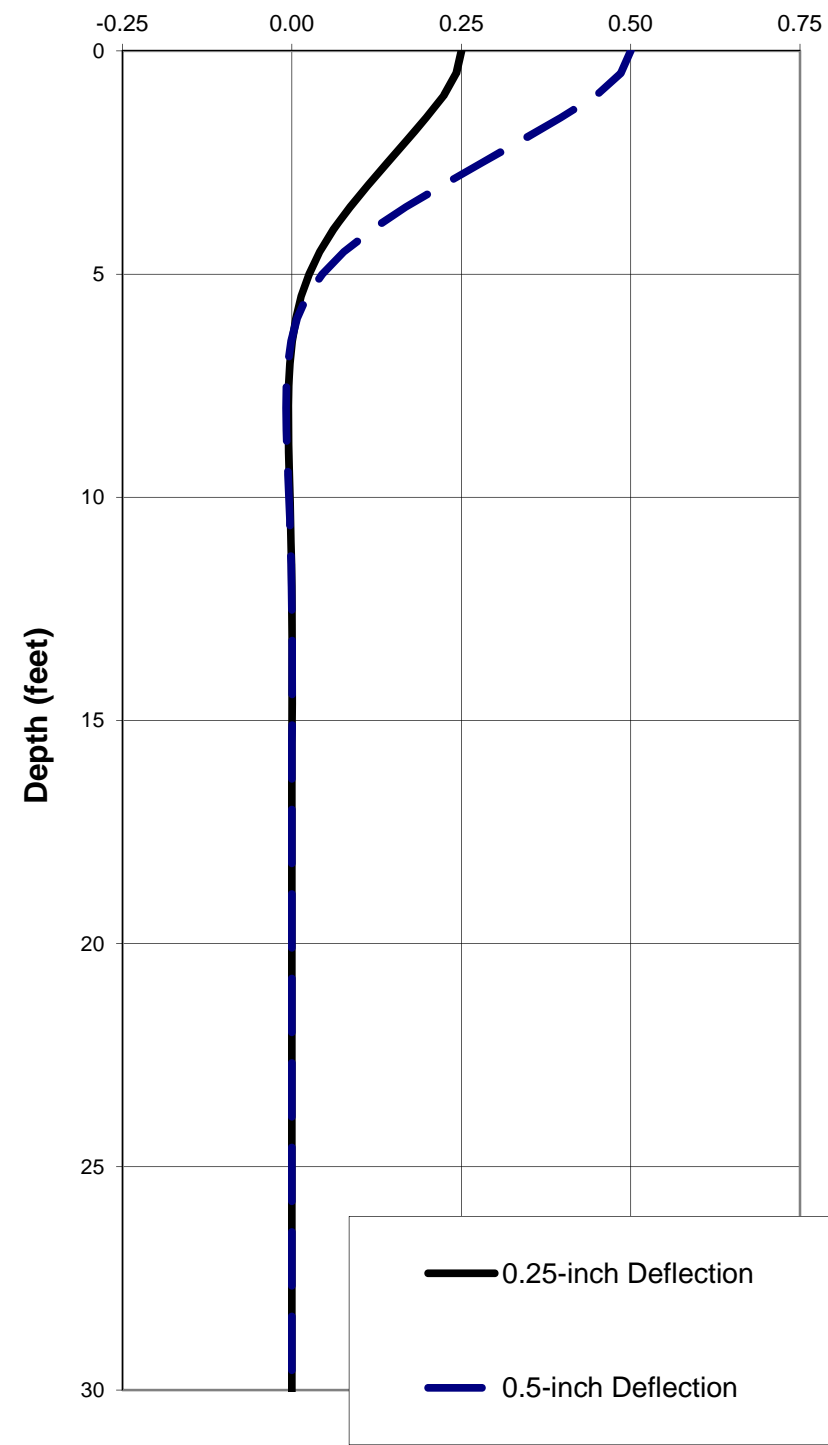


Figure C-1a

Deflection (inches)

Moment (kips-feet)

Shear (kips)



**LATERAL LOAD CAPACITIES OF 6-INCH DIAMETER MICRO PILE
 FIXED HEAD CONDITION
 EL RODEO K-8 SCHOOL
 BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
 Project No.: 10274.015
 Date: 10/2015



Figure C-1b

=====
LPile Plus for Windows, Version 6.0 (6.0.08)
Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

(c) 1985-2010 by Ensoft, Inc.
All Rights Reserved

=====
This program is licensed to:

CD
Leighton

Files Used for Analysis

Path to file locations: P:\INFOCUS PROJECTS\10000-10500\10274 BHUSD\015 EI Rodeo Bldg C\Analyses\LPile\
Name of input data file: 6-inch diameter.lp6d
Name of output file: 6-inch diameter.lp6o
Name of plot output file: 6-inch diameter.lp6p
Name of runtime file: 6-inch diameter.lp6r

Date and Time of Analysis

Date: October 28, 2015 Time: 16:07:06

Problem Title

Project Name: Beverly Hills High School Building C

Job Number: 10274.015

Client: Beverly Hills Unified School District

Engineer: CD

Description: 30-inch CIDH pile

Program Options

Units Used - US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal Moment
Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:

- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

Solution Control Parameters:

- Number of pile increments = 100
 - Maximum number of iterations allowed = 1000
 - Deflection tolerance for convergence = 1.0000E-05 in
 - Maximum allowable deflection = 100.0000 in

Pile Response Output Options:

- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
 - Printing Increment (nodal spacing of output points) = 1

 Pile Structural Properties and Geometry

Total Number of Sections = 1
 Total Pile Length = 50.00 ft
 Depth of ground surface below top of pile = 0.00 ft
 Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points.
 p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Di ameter in
1	0.00000	6.000000
2	50.00000	6.000000

 Input Structural Properties:

Section No. 1:

Section Type = Drilled Shaft (Bored Pile)
 Section Length = 50.000 ft
 Section Diameter = 6.000 in

 Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
 = 0.000 radians
 Pile Batter Angle = 0.000 degrees
 = 0.000 radians

 Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 0.000 ft
 Distance from top of pile to bottom of layer = 12.000 ft
 p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
 p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

Layer 2 is cemented silt with cohesion and friction

Distance from top of pile to top of layer = 12.000 ft

Distance from top of pile to bottom of layer = 60.000 ft
 p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
 p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

(Depth of lowest layer extends 10.00 ft below pile tip)

 Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 4 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	0.00	120.00000
2	12.00	120.00000
3	12.00	120.00000
4	60.00	120.00000

 Summary of Soil Properties

Layer RQD Num. percent	Soil Type (p-y Curve Criteria) pci	Rock Emass psi	Depth ft	Eff. Unit Weight, pcf	Cohesion Test Type psf	Friction Prop. Ang., deg.	Elas. Subgr. pci	qu psi
1	Sand (Reese, et al.)	--	0.00	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	300.000	30.000	--	--
2	Cemented Silt	--	0.00	120.000	300.000	30.000	--	--
--	-- default	--	60.000	120.000	300.000	30.000	--	--
--	-- default	--	--	--	--	--	--	--

 Loading Type

p-y criteria for static loading was used for all analyses.

 Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 4

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs
1	4	y = 0.250 in	M = 0.000 in-lbs	20000.000
2	5	y = 0.250 in	S = 0.000 in/in	20000.000
3	4	y = 0.500 in	M = 0.000 in-lbs	20000.000
4	5	y = 0.500 in	S = 0.000 in/in	20000.000

 Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust values were determined from pile-head loading conditions

Number of Sections = 1

Section No. 1:

Dimensions and Properties of Drilled Shaft:

Length of Section = 600.0000000 in
 Shaft Diameter = 6.0000000 in
 Concrete Cover Thickness = 1.0000000 in
 Number of Reinforcing Bars = 1 bars
 Yield Stress of Reinforcing Bars = 60.0000000 ksi
 Modulus of Elasticity of Reinforcing Bars = 29000. ksi
 Gross Area of Shaft = 28.27433388 sq. in.
 Total Area of Reinforcing Steel = 2.2500000 sq. in.
 Area Ratio of Steel Reinforcement = 7.96 percent
 Nom. Axial Structural Capacity = $0.85 F_c A_c + F_y A_s$ = 223.483 kips
 Tensile Load for Cracking of Concrete = -18.352 kips
 Nominal Axial Tensile Capacity = -135.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Di am. inches	Bar Area sq. in.	X inches	Y inches
1	1.69300	2.25000	0.00000	0.00000

Concrete Properties:

Compressive Strength of Concrete = 4.0000000 ksi
 Modulus of Elasticity of Concrete = 3604.9965326 ksi
 Modulus of Rupture of Concrete = -0.4743416 ksi
 Compression Strain at Peak Stress = 0.0018863
 Tensile Strain at Fracture = -0.0001154
 Maximum Coarse Aggregate Size = 0.7500000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	20.000

Definitions of Run Messages and Notes:

C = concrete has cracked in tension
 Y = stress in reinforcement has reached yield stress
 T = tensile strain in reinforcement exceeds 0.005 when compressive strain in concrete is less than 0.003.
 Bending Stiffness = Bending Moment / Curvature
 Position of neutral axis is computed from compression side of pile
 Compressive stresses are positive in sign. Tensile stresses are negative in sign.

Axial Thrust Force = 20.000 kips

Run Msg	Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in ²	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi
0.00001250	0.3305586	264447.	95.9015555	0.0001199	0.0001124	0.4921142	3.4753439	
0.00002500	0.6597125	263885.	49.4515311	0.0001236	0.0001086	0.5068512	3.5830610	
0.00003750	0.9888651	263697.	33.9685405	0.0001274	0.0001049	0.5215624	3.6908163	
0.00005000	1.3180157	263603.	26.2273083	0.0001311	0.0001011	0.5362477	3.7986097	
0.00006250	1.6471635	263546.	21.5827794	0.0001349	0.0000974	0.5509071	3.9064413	
0.00007500	1.9763078	263508.	18.4866023	0.0001386	0.0000936	0.5655406	4.0143110	
0.00008750	2.3054480	263480.	16.2751976	0.0001424	0.0000899	0.5801482	4.1222189	

0.0000100	2.6345833	263458.	14.6167756	0.0001462	0.0000862	0.5947298	4.2301649
0.0000113	2.9637130	263441.	13.3270088	0.0001499	0.0000824	0.6092853	4.3381491
0.0000125	3.2928365	263427.	12.2953006	0.0001537	0.0000787	0.6238149	4.4461715
0.0000138	3.6219530	263415.	11.4512713	0.0001575	0.0000750	0.6383183	4.5542320
0.0000150	3.9510619	263404.	10.7480014	0.0001612	0.0000712	0.6527956	4.6623306
0.0000163	4.2801624	263395.	10.1530078	0.0001650	0.0000675	0.6672468	4.7704675
0.0000175	4.6092538	263386.	9.6430884	0.0001688	0.0000638	0.6816718	4.8786424
0.0000188	4.9383354	263378.	9.2012285	0.0001725	0.0000600	0.6960706	4.9868555
0.0000200	5.2674066	263370.	8.8146669	0.0001763	0.0000563	0.7104431	5.0951068
0.0000213	5.5964666	263363.	8.4736450	0.0001801	0.0000526	0.7247893	5.2033963
0.0000225	5.9255147	263356.	8.1705729	0.0001838	0.0000488	0.7391093	5.3117239
0.0000238	6.2545503	263349.	7.8994585	0.0001876	0.0000451	0.7534029	5.4200896
0.0000250	6.5835726	263343.	7.6555083	0.0001914	0.0000414	0.7676701	5.5284936
0.0000263	6.9125809	263336.	7.4348415	0.0001952	0.0000377	0.7819109	5.6369356
0.0000275	7.2415745	263330.	7.2342832	0.0001989	0.0000339	0.7961252	5.7454159
0.0000288	7.5705527	263324.	7.0512105	0.0002027	0.0000302	0.8103131	5.8539343
0.0000300	7.8995149	263317.	6.8834377	0.0002065	0.0000265	0.8244745	5.9624909
0.0000313	8.2284602	263311.	6.7291289	0.0002103	0.0000228	0.8386093	6.0710856
0.0000325	8.5573881	263304.	6.5867305	0.0002141	0.0000191	0.8527176	6.1797186
0.0000338	8.8862978	263298.	6.4549191	0.0002179	0.0000154	0.8667992	6.2883896
0.0000350	9.2151886	263291.	6.3325604	0.0002216	0.0000116	0.8808542	6.3970989
0.0000363	9.5440598	263284.	6.2186765	0.0002254	0.000007927	0.8948825	6.5058463
0.0000375	9.8729107	263278.	6.1124201	0.0002292	0.000004216	0.9088841	6.6146319
0.0000388	10.2017407	263271.	6.0130528	0.0002330	0.000000506	0.9228590	6.7234556
0.0000400	10.5305476	263264.	5.9199289	0.0002368	-0.000003203	0.9368071	6.8323175
0.0000413	10.8593184	263256.	5.8324800	0.0002406	-0.000006910	0.9507282	6.9412168
0.0000425	11.1880287	263248.	5.7502044	0.0002444	-0.0000106	0.9646223	7.0501520
0.0000438	11.5166522	263238.	5.6726573	0.0002482	-0.0000143	0.9784890	7.1591215
0.0000450	11.8451616	263226.	5.5994433	0.0002520	-0.0000180	0.9923280	7.2681237
0.0000463	12.1735302	263211.	5.5302099	0.0002558	-0.0000217	1.0061392	7.3771567
0.0000475	12.5017334	263194.	5.4646416	0.0002596	-0.0000254	1.0199224	7.4862190
0.0000488	12.8297482	263174.	5.4024554	0.0002634	-0.0000291	1.0336772	7.5953090
0.0000513	13.1579528	263154.	5.3442692	0.0002672	-0.0000328	1.0474420	7.7044090
0.0000538	13.4861574	263134.	5.2900830	0.0002710	-0.0000365	1.0611010	7.8135661
0.0000563	13.8143620	263114.	5.2398968	0.0002748	-0.0000402	1.0747600	7.9227232
0.0000588	14.1425666	263094.	5.1937106	0.0002786	-0.0000439	1.0884092	8.0319171
0.0000613	14.4707712	263074.	5.1515244	0.0002824	-0.0000476	1.1020584	8.1411110
0.0000638	14.7989758	263054.	5.1133382	0.0002862	-0.0000513	1.1156004	8.2503052
0.0000663	15.1271804	263034.	5.0791520	0.0002900	-0.0000550	1.1291424	8.3594993
0.0000688	15.4553850	263014.	5.0489658	0.0002938	-0.0000587	1.1426734	8.4686934
0.0000713	15.7835896	262994.	5.0227796	0.0002976	-0.0000624	1.1562044	8.5778875
0.0000738	16.1117942	262974.	5.0005934	0.0003014	-0.0000661	1.1697354	8.6870816
0.0000763	16.4400000	262954.	4.9824072	0.0003052	-0.0000698	1.1832664	8.7962757
0.0000788	16.7682046	262934.	4.9682210	0.0003090	-0.0000735	1.1967974	8.9054698
0.0000813	17.0964092	262914.	4.9580348	0.0003128	-0.0000772	1.2103284	9.0146639
0.0000838	17.4246138	262894.	4.9518486	0.0003166	-0.0000809	1.2238594	9.1238580
0.0000863	17.7528184	262874.	4.9496624	0.0003204	-0.0000846	1.2373904	9.2330521
0.0000888	18.0810230	262854.	4.9514762	0.0003242	-0.0000882	1.2509214	9.3422462

	0.0000713	18.6842406	262235.	4.6578678	0.0003319	-0.0000956	1.2762338	9.5623321
	0.0000738	19.3275700	262069.	4.6033134	0.0003395	-0.0001030	1.3025801	9.7811742
	0.0000763	19.9692965	261892.	4.5523547	0.0003471	-0.0001104	1.3288033	10.0000570
C	0.0000788	19.9692965	253578.	4.4069726	0.0003470	-0.0001255	1.3283078	9.9959115
C	0.0000813	19.9692965	245776.	4.3542108	0.0003538	-0.0001337	1.3513272	10.1889218
C	0.0000838	19.9692965	238439.	4.3041953	0.0003605	-0.0001420	1.3741308	10.3809520
C	0.0000863	19.9692965	231528.	4.2567491	0.0003671	-0.0001504	1.3967384	10.5721565
C	0.0000888	19.9692965	225006.	4.2116929	0.0003738	-0.0001587	1.4191627	10.7626324
C	0.0000913	19.9692965	218842.	4.1688696	0.0003804	-0.0001671	1.4414170	10.9524841
C	0.0000938	19.9692965	213006.	4.1279534	0.0003870	-0.0001755	1.4634555	11.1413110
C	0.0000963	19.9692965	207473.	4.0889722	0.0003936	-0.0001839	1.4853371	11.3296063
C	0.0000988	20.1164774	203711.	4.0518126	0.0004001	-0.0001924	1.5070736	11.5174660
C	0.0001013	20.3942093	201424.	4.0161552	0.0004066	-0.0002009	1.5286034	11.7043484
C	0.0001038	20.6695298	199224.	3.9821377	0.0004131	-0.0002094	1.5500128	11.8909945
C	0.0001063	20.9391038	197074.	3.9494729	0.0004196	-0.0002179	1.5712420	12.0768762
C	0.0001088	21.2057746	194996.	3.9182033	0.0004261	-0.0002264	1.5923406	12.2624214
C	0.0001113	21.4679769	192971.	3.8881544	0.0004326	-0.0002349	1.6132799	12.4473710
C	0.0001138	21.7274842	191011.	3.8593286	0.0004390	-0.0002435	1.6340914	12.6319982
C	0.0001163	21.9827438	189099.	3.8315671	0.0004454	-0.0002521	1.6547455	12.8160333
C	0.0001188	22.2365829	187255.	3.8049416	0.0004518	-0.0002607	1.6752965	12.9999554
C	0.0001213	22.4857672	185450.	3.7792147	0.0004582	-0.0002693	1.6956792	13.1831766
C	0.0001238	22.7345386	183713.	3.7545463	0.0004646	-0.0002779	1.7159797	13.3664658
C	0.0001263	22.9791770	182013.	3.7306791	0.0004710	-0.0002865	1.7361196	13.5491118
C	0.0001288	23.2225378	180369.	3.7077124	0.0004774	-0.0002951	1.7561595	13.7316592
C	0.0001313	23.4646705	178778.	3.6855950	0.0004837	-0.0003038	1.7760997	13.9141087
C	0.0001338	23.7031432	177220.	3.6641523	0.0004901	-0.0003124	1.7958869	14.0959688
C	0.0001363	23.9412059	175715.	3.6435133	0.0004964	-0.0003211	1.8155927	14.2778947
C	0.0001388	24.1776862	174254.	3.6235721	0.0005028	-0.0003297	1.8351903	14.4596361
C	0.0001413	24.4113163	172823.	3.6042254	0.0005091	-0.0003384	1.8546506	14.6409211
C	0.0001438	24.6445377	171440.	3.5855671	0.0005154	-0.0003471	1.8740300	14.8222709
C	0.0001463	24.8769087	170099.	3.5675385	0.0005218	-0.0003557	1.8933177	15.0035857
C	0.0001488	25.1061050	168781.	3.5499854	0.0005281	-0.0003644	1.9124581	15.1843373
C	0.0001588	26.0143153	163870.	3.4852040	0.0005533	-0.0003992	1.9880995	15.9068958
C	0.0001688	26.9051670	159438.	3.4277583	0.0005784	-0.0004341	2.0621747	16.6277801
C	0.0001788	27.7811389	155419.	3.3765073	0.0006036	-0.0004689	2.1347400	17.3474576
C	0.0001888	28.6442732	151758.	3.3305474	0.0006286	-0.0005039	2.2058459	18.0663718
C	0.0001988	29.4934377	148395.	3.2889954	0.0006537	-0.0005388	2.2754498	18.7840351
C	0.0002088	30.3327412	145307.	3.2514075	0.0006787	-0.0005738	2.3436672	19.5015963
C	0.0002188	31.1623504	142456.	3.2172482	0.0007038	-0.0006087	2.4105032	20.2191064
C	0.0002288	31.9811983	139809.	3.1859958	0.0007288	-0.0006437	2.4759151	20.9360875

C	0.0002388	32.7923190	137350.	3.1574428	0.0007538	-0.0006787	2.5400025	21.6536329
C	0.0002488	33.5936049	135050.	3.1311426	0.0007789	-0.0007136	2.6026866	22.3708682
C	0.0002588	34.3871140	132897.	3.1069438	0.0008039	-0.0007486	2.6640388	23.0886179
C	0.0002688	35.1731564	130877.	3.0846246	0.0008290	-0.0007835	2.7240644	23.8069815
C	0.0002788	35.9498347	128968.	3.0638783	0.0008541	-0.0008184	2.7826917	24.5251145
C	0.0002888	36.7199388	127169.	3.0446930	0.0008792	-0.0008533	2.8400221	25.2442862
C	0.0002988	37.4829003	125466.	3.0268815	0.0009043	-0.0008882	2.8960292	25.9642329
C	0.0003088	38.2368233	123844.	3.0102028	0.0009294	-0.0009231	2.9506365	26.6839917
C	0.0003188	38.9840971	122303.	2.9946853	0.0009546	-0.0009579	3.0039361	-27.5030647
C	0.0003288	39.7246783	120836.	2.9802237	0.0009797	-0.0009928	3.0559225	-28.5037789
C	0.0003388	40.4579755	119433.	2.9666916	0.0010050	-0.0010275	3.1065669	-29.5037501
C	0.0003488	41.1828715	118087.	2.9539436	0.0010302	-0.0010623	3.1558208	-30.5036395
C	0.0003588	41.9009910	116797.	2.9420113	0.0010554	-0.0010971	3.2037495	-31.5024368
C	0.0003688	42.6122888	115559.	2.9308290	0.0010807	-0.0011318	3.2503472	-32.5001339
C	0.0003788	43.3167189	114368.	2.9203381	0.0011061	-0.0011664	3.2956080	-33.4967227
C	0.0003888	44.0142347	113220.	2.9104860	0.0011315	-0.0012010	3.3395260	-34.4921949
C	0.0003988	44.7033636	112109.	2.9011322	0.0011568	-0.0012357	3.3820332	-35.4876184
C	0.0004088	45.3854507	111035.	2.8923272	0.0011822	-0.0012703	3.4231867	-36.4819622
C	0.0004188	46.0605254	109995.	2.8840372	0.0012077	-0.0013048	3.4629837	-37.4751597
C	0.0004288	46.7285391	108988.	2.8762268	0.0012332	-0.0013393	3.5014180	-38.4672018
C	0.0004388	47.3894424	108010.	2.8688639	0.0012587	-0.0013738	3.5384832	-39.4580795
C	0.0004488	48.0431851	107060.	2.8619193	0.0012843	-0.0014082	3.5741729	-40.4477837
C	0.0004588	48.6897166	106136.	2.8553664	0.0013099	-0.0014426	3.6084807	-41.4363049
C	0.0004688	49.3288648	105235.	2.8491719	0.0013355	-0.0014770	3.6413947	-42.4237555
C	0.0004788	49.9599510	104355.	2.8432671	0.0013612	-0.0015113	3.6728818	-43.4107759
C	0.0004888	50.5837074	103496.	2.8376900	0.0013869	-0.0015456	3.7029709	-44.3965774
C	0.0004988	51.2000804	102657.	2.8324215	0.0014127	-0.0015798	3.7316551	-45.3811498
C	0.0005088	51.8090158	101836.	2.8274441	0.0014385	-0.0016140	3.7589276	-46.3644829
C	0.0005188	52.4104586	101032.	2.8227417	0.0014643	-0.0016482	3.7847814	-47.3465663
C	0.0005288	53.0043528	100245.	2.8182993	0.0014902	-0.0016823	3.8092094	-48.3273894
C	0.0005388	53.5906418	99472.	2.8141032	0.0015161	-0.0017164	3.8322044	-49.3069414
C	0.0005488	54.1692683	98714.	2.8101406	0.0015421	-0.0017504	3.8537591	-50.2852114
C	0.0006088	57.4767899	94418.	2.7906598	0.0016988	-0.0019537	3.9524225	-56.1272749
CY	0.0006688	60.4917192	90455.	2.7770557	0.0018572	-0.0021553	3.9972812	-60.0000000
CY	0.0007288	63.1935925	86715.	2.7682110	0.0020173	-0.0023552	3.9994571	-60.0000000
CY	0.0007888	65.5635528	83123.	2.7632081	0.0021795	-0.0025530	3.9997668	60.0000000
CY	0.0008488	67.6329517	79685.	2.7611320	0.0023435	-0.0027490	3.9992077	60.0000000
CY	0.0009088	69.4445512	76418.	2.7612302	0.0025093	-0.0029432	3.9999816	60.0000000
CY	0.0009688	71.0350612	73327.	2.7629456	0.0026766	-0.0031359	3.9982302	60.0000000
CY	0.0010288	72.4387791	70414.	2.7658443	0.0028454	-0.0033271	3.9992620	60.0000000

CY	0.0010888	73.6822607	67676.	2.7696132	0.0030154	-0.0035171	3.9997783	60.0000000
CY	0.0011488	74.7897278	65105.	2.7740043	0.0031866	-0.0037059	3.9978559	60.0000000
CY	0.0012088	75.7811436	62694.	2.7788306	0.0033589	-0.0038936	3.9997758	60.0000000
CY	0.0012688	76.6714778	60431.	2.7839603	0.0035321	-0.0040804	3.9971183	60.0000000
CY	0.0013288	77.4736045	58306.	2.7892916	0.0037063	-0.0042662	3.9967777	60.0000000
CY	0.0013888	77.7329099	55973.	2.7961610	0.0038832	-0.0044493	3.9977673	60.0000000

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	20.000	73.570	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are spirals or tied hoops.

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = 0.250000 in
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	836.3037	-0.006022	0.000	2.634E+08	0.000	0.000	0.000
6.000	0.2139	5740.4862	800.6973	-0.005957	0.000	2.634E+08	-11.8688	332.9771	0.000
12.000	0.1785	11038.	704.4655	-0.005766	0.000	2.634E+08	-20.2085	679.2070	0.000
18.000	0.1447	15578.	572.1038	-0.005462	0.000	2.629E+08	-23.9121	991.6637	0.000
24.000	0.1130	19214.	422.3715	-0.005064	0.000	2.621E+08	-25.9987	1380.8004	0.000
30.000	0.0839	21862.	254.5469	-0.004499	0.000	1.899E+08	-29.9428	2141.1893	0.000
36.000	0.0590	23349.	65.3731	-0.003764	0.000	1.795E+08	-33.1151	3368.6889	0.000
42.000	0.0387	23550.	-134.8910	-0.002977	0.000	1.781E+08	-33.6395	5209.8318	0.000
48.000	0.0233	22444.	-319.5474	-0.002218	0.000	1.857E+08	-27.9126	7200.0000	0.000
54.000	0.0121	20247.	-452.4179	-0.001556	0.000	2.030E+08	-16.3776	8100.0000	0.000
60.000	0.004593	17389.	-522.2179	-0.001058	0.000	2.625E+08	-6.8891	9000.0000	0.000
66.000	-0.000562	14234.	-540.1050	-0.000697	0.000	2.630E+08	0.9267	9900.0000	0.000
72.000	-0.003768	11075.	-516.9776	-0.000408	0.000	2.633E+08	6.7824	10800.	0.000
78.000	-0.005460	8128.6241	-464.6905	-0.000189	0.000	2.633E+08	10.6467	11700.	0.000
84.000	-0.006040	5543.7314	-394.6963	-3.360E-05	0.000	2.634E+08	12.6847	12600.	0.000
90.000	-0.005863	3400.3328	-317.0665	6.827E-05	0.000	2.634E+08	13.1919	13500.	0.000
96.000	-0.005221	1722.5483	-239.8990	0.000127	0.000	2.635E+08	12.5306	14400.	0.000
102.000	-0.004344	491.1595	-169.0771	0.000152	0.000	2.641E+08	11.0767	15300.	0.000
108.000	-0.003400	-342.8075	-108.3106	0.000153	0.000	2.644E+08	9.1788	16200.	0.000
114.000	-0.002502	-845.4037	-59.3821	0.000140	0.000	2.638E+08	7.1307	17100.	0.000
120.000	-0.001720	-1088.9875	-22.5117	0.000118	0.000	2.637E+08	5.1594	18000.	0.000
126.000	-0.001086	-1143.8575	3.2324	9.257E-05	0.000	2.636E+08	3.4219	18900.	0.000
132.000	-0.000609	-1072.4146	19.5275	6.735E-05	0.000	2.637E+08	2.0098	19800.	0.000
138.000	-0.000278	-925.6913	28.4356	4.462E-05	0.000	2.637E+08	0.9596	20700.	0.000
144.000	-7.363E-05	-741.8954	36.4364	2.565E-05	0.000	2.638E+08	1.7073	139132.	0.000
150.000	2.965E-05	-494.6108	39.3488	1.159E-05	0.000	2.641E+08	-0.7365	149032.	0.000
156.000	6.550E-05	-272.4925	31.9339	2.884E-06	0.000	2.644E+08	-1.7351	158932.	0.000

162.000	6.426E-05	-112.0962	21.3040	-1.479E-06	0.000	2.644E+08	-1.8082	168832.	0.000
168.000	4.776E-05	-16.4901	11.6115	-2.938E-06	0.000	2.644E+08	-1.4226	178732.	0.000
174.000	2.901E-05	27.9470	4.6077	-2.808E-06	0.000	2.644E+08	-0.9120	188632.	0.000
180.000	1.406E-05	39.4768	0.4757	-2.043E-06	0.000	2.644E+08	-0.4654	198532.	0.000
186.000	4.494E-06	34.1457	-1.3888	-1.208E-06	0.000	2.644E+08	-0.1561	208432.	0.000
192.000	-4.270E-07	23.1010	-1.8106	-5.582E-07	0.000	2.644E+08	0.0155	218332.	0.000
198.000	-2.204E-06	12.5528	-1.5125	-1.537E-07	0.000	2.644E+08	0.0838	228232.	0.000
204.000	-2.272E-06	4.9882	-0.9905	4.529E-08	0.000	2.644E+08	0.0902	238132.	0.000
210.000	-1.660E-06	0.6555	-0.5142	1.093E-07	0.000	2.644E+08	0.0686	248032.	0.000
216.000	-9.598E-07	-1.2083	-0.1845	1.030E-07	0.000	2.644E+08	0.0413	257932.	0.000
222.000	-4.238E-07	-1.5833	-0.003979	7.137E-08	0.000	2.644E+08	0.0189	267832.	0.000
228.000	-1.033E-07	-1.2731	0.0671	3.897E-08	0.000	2.644E+08	0.004782	277732.	0.000
234.000	4.382E-08	-0.7873	0.0752	1.559E-08	0.000	2.644E+08	-0.002101	287632.	0.000
240.000	8.378E-08	-0.3749	0.0564	2.407E-09	0.000	2.644E+08	-0.004155	297532.	0.000
246.000	7.271E-08	-0.1111	0.0328	-3.106E-09	0.000	2.644E+08	-0.003725	307432.	0.000
252.000	4.651E-08	0.0189	0.0142	-4.152E-09	0.000	2.644E+08	-0.002460	317332.	0.000
258.000	2.288E-08	0.0603	0.003708	-3.253E-09	0.000	2.644E+08	-0.001248	327232.	0.000
264.000	7.469E-09	0.0566	-0.001925	-1.927E-09	0.000	2.644E+08	-0.000420	337132.	0.000
270.000	-2.362E-10	0.0377	-0.003143	-8.567E-10	0.000	2.644E+08	1.366E-05	347032.	0.000
276.000	-2.812E-09	0.0191	-0.002600	-2.124E-10	0.000	2.644E+08	0.000167	356932.	0.000
282.000	-2.785E-09	0.006528	-0.001588	7.855E-11	0.000	2.644E+08	0.000170	366832.	0.000
288.000	-1.869E-09	4.916E-05	-0.000725	1.532E-10	0.000	2.644E+08	0.000117	376732.	0.000
294.000	-9.469E-10	-0.002205	-0.000189	1.287E-10	0.000	2.644E+08	6.102E-05	386632.	0.000
300.000	-3.247E-10	-0.002256	5.794E-05	7.812E-11	0.000	2.644E+08	2.146E-05	396532.	0.000
306.000	-9.493E-12	-0.001528	0.000124	3.520E-11	0.000	2.644E+08	6.430E-07	406432.	0.000
312.000	9.767E-11	-0.000773	0.000106	9.090E-12	0.000	2.644E+08	-6.777E-06	416332.	0.000
318.000	9.959E-11	-0.000260	6.428E-05	-2.632E-12	0.000	2.644E+08	-7.075E-06	426232.	0.000
324.000	6.609E-11	-1.171E-06	2.864E-05	-5.597E-12	0.000	2.644E+08	-4.804E-06	436132.	0.000
330.000	3.243E-11	8.488E-05	6.998E-06	-4.647E-12	0.000	2.644E+08	-2.411E-06	446032.	0.000
336.000	1.033E-11	8.391E-05	-2.589E-06	-2.732E-12	0.000	2.644E+08	-7.846E-07	455932.	0.000
342.000	0.000	5.447E-05	-4.859E-06	-1.162E-12	0.000	2.644E+08	2.764E-08	465832.	0.000
348.000	-3.622E-12	2.588E-05	-3.915E-06	0.000	0.000	2.644E+08	2.872E-07	475732.	0.000
354.000	-3.364E-12	7.552E-06	-2.237E-06	0.000	0.000	2.644E+08	2.723E-07	485632.	0.000
360.000	-2.079E-12	-9.930E-07	-9.049E-07	0.000	0.000	2.644E+08	1.717E-07	495532.	0.000
366.000	0.000	-3.356E-06	-1.554E-07	0.000	0.000	2.644E+08	7.818E-08	505432.	0.000
372.000	0.000	-2.895E-06	1.395E-07	0.000	0.000	2.644E+08	2.014E-08	515332.	0.000
378.000	0.000	-1.701E-06	1.828E-07	0.000	0.000	2.644E+08	-5.695E-09	525232.	0.000
384.000	0.000	-7.081E-07	1.302E-07	0.000	0.000	2.644E+08	-1.186E-08	535132.	0.000
390.000	0.000	-1.398E-07	6.615E-08	0.000	0.000	2.644E+08	-9.489E-09	545032.	0.000
396.000	0.000	8.722E-08	2.189E-08	0.000	0.000	2.644E+08	-5.265E-09	554932.	0.000
402.000	0.000	1.245E-07	8.208E-11	0.000	0.000	2.644E+08	-2.003E-09	564832.	0.000
408.000	0.000	8.929E-08	-6.663E-09	0.000	0.000	2.644E+08	-2.457E-10	574732.	0.000
414.000	0.000	4.502E-08	-6.234E-09	0.000	0.000	2.644E+08	3.887E-10	584632.	0.000
420.000	0.000	1.463E-08	-3.755E-09	0.000	0.000	2.644E+08	4.374E-10	594532.	0.000
426.000	0.000	-6.384E-11	-1.582E-09	0.000	0.000	2.644E+08	2.869E-10	604432.	0.000
432.000	0.000	-4.425E-09	-3.252E-10	0.000	0.000	2.644E+08	1.321E-10	614332.	0.000
438.000	0.000	-4.017E-09	1.759E-10	0.000	0.000	2.644E+08	3.489E-11	624232.	0.000
444.000	0.000	-2.342E-09	2.573E-10	0.000	0.000	2.644E+08	-7.722E-12	634132.	0.000
450.000	0.000	-9.387E-10	1.818E-10	0.000	0.000	2.644E+08	-1.746E-11	644032.	0.000
456.000	0.000	-1.613E-10	8.874E-11	0.000	0.000	2.644E+08	-1.356E-11	653932.	0.000
462.000	0.000	1.282E-10	2.672E-11	0.000	0.000	2.644E+08	-7.112E-12	663832.	0.000
468.000	0.000	1.614E-10	-1.888E-12	0.000	0.000	2.644E+08	-2.423E-12	673732.	0.000
474.000	0.000	1.068E-10	-9.443E-12	0.000	0.000	2.644E+08	0.000	683632.	0.000
480.000	0.000	4.858E-11	-7.872E-12	0.000	0.000	2.644E+08	0.000	693532.	0.000
486.000	0.000	1.249E-11	-4.276E-12	0.000	0.000	2.644E+08	0.000	703432.	0.000
492.000	0.000	-2.786E-12	-1.532E-12	0.000	0.000	2.644E+08	0.000	713332.	0.000
498.000	0.000	-5.974E-12	0.000	0.000	0.000	2.644E+08	0.000	723232.	0.000
504.000	0.000	-4.441E-12	0.000	0.000	0.000	2.644E+08	0.000	733132.	0.000
510.000	0.000	-2.198E-12	0.000	0.000	0.000	2.644E+08	0.000	743032.	0.000
516.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	752932.	0.000
522.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	762832.	0.000
528.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	772732.	0.000
534.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	782632.	0.000
540.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	792532.	0.000
546.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	802432.	0.000
552.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	812332.	0.000
558.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	822232.	0.000
564.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	832132.	0.000
570.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	842032.	0.000
576.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	851932.	0.000
582.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	861832.	0.000
588.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	871732.	0.000
594.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	881632.	0.000
600.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	891532.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
 Computed slope at pile head = -0.0060222 radians
 Maximum bending moment = 23550. inch-lbs
 Maximum shear force = 836.3036627 lbs
 Depth of maximum bending moment = 42.0000000 inches below pile head
 Depth of maximum shear force = 0.0000000 inches below pile head
 Number of iterations = 17
 Number of zero deflection points = 15

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Slope (BC Type 5)

Displacement of pile head = 0.250000 in
 Slope of pile head = 0.000E+00 in/in
 Axial load on pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	-50421.	2031.4750	0.000	0.000	1.237E+08	0.000	0.000	0.000
6.000	0.2427	-38304.	1958.5068	-0.002152	0.000	1.237E+08	-12.1614	300.6976	0.000
12.000	0.2242	-26403.	1854.1845	-0.003721	0.000	1.237E+08	-22.6128	605.2178	0.000
18.000	0.1980	-15161.	1701.7838	-0.004534	0.000	2.629E+08	-28.1875	854.1259	0.000
24.000	0.1698	-4892.9835	1516.1596	-0.004763	0.000	2.634E+08	-33.6873	1190.6115	0.000
30.000	0.1409	4175.8740	1290.3357	-0.004771	0.000	2.634E+08	-41.5874	1771.5479	0.000
36.000	0.1125	11736.	1018.2173	-0.004590	0.000	2.632E+08	-49.1188	2619.4778	0.000
42.000	0.0858	17496.	707.2489	-0.004256	0.000	2.625E+08	-54.5374	3815.1137	0.000
48.000	0.0614	21245.	374.1209	-0.003729	0.000	1.946E+08	-56.5053	5518.8028	0.000
54.000	0.0410	22880.	40.5662	-0.003026	0.000	1.826E+08	-54.6796	7997.2911	0.000
60.000	0.0251	22458.	-236.5356	-0.002287	0.000	1.856E+08	-37.6877	9000.0000	0.000
66.000	0.0136	20591.	-416.8329	-0.001615	0.000	2.000E+08	-22.4114	9900.0000	0.000
72.000	0.005746	17843.	-515.0945	-0.001102	0.000	2.624E+08	-10.3425	10800.	0.000
78.000	0.000357	14674.	-548.2082	-0.000731	0.000	2.630E+08	-0.6954	11700.	0.000
84.000	-0.003024	11440.	-531.2441	-0.000433	0.000	2.632E+08	6.3501	12600.	0.000
90.000	-0.004840	8403.2579	-479.5248	-0.000207	0.000	2.633E+08	10.8897	13500.	0.000
96.000	-0.005507	5735.4647	-407.2059	-4.584E-05	0.000	2.634E+08	13.2166	14400.	0.000
102.000	-0.005390	3527.7895	-326.3227	5.967E-05	0.000	2.634E+08	13.7445	15300.	0.000
108.000	-0.004791	1805.2725	-246.2828	0.000120	0.000	2.635E+08	12.9355	16200.	0.000
114.000	-0.003945	543.5007	-173.7445	0.000147	0.000	2.640E+08	11.2439	17100.	0.000
120.000	-0.003025	-314.9714	-112.7837	0.000150	0.000	2.644E+08	9.0764	18000.	0.000
126.000	-0.002149	-845.8372	-65.2509	0.000137	0.000	2.638E+08	6.7679	18900.	0.000
132.000	-0.001387	-1130.7500	-31.2153	0.000114	0.000	2.637E+08	4.5773	19800.	0.000
138.000	-0.000780	-1247.7910	-9.4103	8.698E-05	0.000	2.636E+08	2.6910	20700.	0.000
144.000	-0.000343	-1264.5480	22.5468	5.839E-05	0.000	2.636E+08	7.9614	139132.	0.000
150.000	-7.935E-05	-991.2425	52.3436	3.272E-05	0.000	2.637E+08	1.9709	149032.	0.000
156.000	4.931E-05	-644.2775	54.3381	1.412E-05	0.000	2.639E+08	-1.3061	158932.	0.000
162.000	9.007E-05	-342.5735	42.8163	2.907E-06	0.000	2.644E+08	-2.5345	168832.	0.000
168.000	8.420E-05	-131.1797	27.6885	-2.468E-06	0.000	2.644E+08	-2.5081	178732.	0.000
174.000	6.046E-05	-9.7194	14.4618	-4.066E-06	0.000	2.644E+08	-1.9008	188632.	0.000
180.000	3.540E-05	43.3382	5.2451	-3.685E-06	0.000	2.644E+08	-1.1714	198532.	0.000
186.000	1.624E-05	54.1064	0.0379	-2.579E-06	0.000	2.644E+08	-0.5643	208432.	0.000
192.000	4.452E-06	44.4121	-2.1410	-1.462E-06	0.000	2.644E+08	-0.1620	218332.	0.000
198.000	-1.295E-06	28.7650	-2.4792	-6.314E-07	0.000	2.644E+08	0.0493	228232.	0.000
204.000	-3.126E-06	14.8127	-1.9593	-1.371E-07	0.000	2.644E+08	0.1240	238132.	0.000
210.000	-2.940E-06	5.2859	-1.2226	9.092E-08	0.000	2.644E+08	0.1215	248032.	0.000
216.000	-2.035E-06	0.1197	-0.5956	1.522E-07	0.000	2.644E+08	0.0875	257932.	0.000
222.000	-1.113E-06	-1.8982	-0.1842	1.321E-07	0.000	2.644E+08	0.0497	267832.	0.000
228.000	-4.497E-07	-2.1225	0.0273	8.646E-08	0.000	2.644E+08	0.0208	277732.	0.000
234.000	-7.544E-08	-1.5916	0.1006	4.432E-08	0.000	2.644E+08	0.003616	287632.	0.000
240.000	8.215E-08	-0.9262	0.0992	1.576E-08	0.000	2.644E+08	-0.004074	297532.	0.000
246.000	1.137E-07	-0.4050	0.0695	6.556E-10	0.000	2.644E+08	-0.005824	307432.	0.000
252.000	9.002E-08	-0.0923	0.0378	-4.986E-09	0.000	2.644E+08	-0.004761	317332.	0.000
258.000	5.383E-08	0.0493	0.0147	-5.474E-09	0.000	2.644E+08	-0.002936	327232.	0.000
264.000	2.434E-08	0.0850	0.001755	-3.951E-09	0.000	2.644E+08	-0.001367	337132.	0.000
270.000	6.419E-09	0.0713	-0.003461	-2.178E-09	0.000	2.644E+08	-0.000371	347032.	0.000
276.000	-1.796E-09	0.0440	-0.004254	-8.702E-10	0.000	2.644E+08	0.000107	356932.	0.000
282.000	-4.023E-09	0.0204	-0.003196	-1.394E-10	0.000	2.644E+08	0.000246	366832.	0.000
288.000	-3.468E-09	0.005669	-0.001805	1.567E-10	0.000	2.644E+08	0.000218	376732.	0.000
294.000	-2.142E-09	-0.001268	-0.000737	2.066E-10	0.000	2.644E+08	0.000138	386632.	0.000

300.000	-9.890E-10	-0.003230	-0.000127	1.556E-10	0.000	2.644E+08	6.536E-05	396532.	0.000
306.000	-2.753E-10	-0.002831	0.000125	8.683E-11	0.000	2.644E+08	1.865E-05	406432.	0.000
312.000	5.291E-11	-0.001753	0.000170	3.482E-11	0.000	2.644E+08	-3.672E-06	416332.	0.000
318.000	1.425E-10	-0.000802	0.000128	5.826E-12	0.000	2.644E+08	-1.012E-05	426232.	0.000
324.000	1.228E-10	-0.000214	7.124E-05	-5.703E-12	0.000	2.644E+08	-8.928E-06	436132.	0.000
330.000	7.405E-11	5.384E-05	2.794E-05	-7.519E-12	0.000	2.644E+08	-5.505E-06	446032.	0.000
336.000	3.260E-11	0.000123	3.995E-06	-5.510E-12	0.000	2.644E+08	-2.477E-06	455932.	0.000
342.000	7.933E-12	0.000103	-5.285E-06	-2.942E-12	0.000	2.644E+08	-6.159E-07	465832.	0.000
348.000	-2.701E-12	6.052E-05	-6.490E-06	-1.086E-12	0.000	2.644E+08	2.142E-07	475732.	0.000
354.000	-5.097E-12	2.548E-05	-4.610E-06	0.000	0.000	2.644E+08	4.125E-07	485632.	0.000
360.000	-4.023E-12	5.227E-06	-2.376E-06	0.000	0.000	2.644E+08	3.322E-07	495532.	0.000
366.000	-2.237E-12	-3.083E-06	-8.137E-07	0.000	0.000	2.644E+08	1.885E-07	505432.	0.000
372.000	0.000	-4.600E-06	-2.375E-08	0.000	0.000	2.644E+08	7.485E-08	515332.	0.000
378.000	0.000	-3.410E-06	2.355E-07	0.000	0.000	2.644E+08	1.156E-08	525232.	0.000
384.000	0.000	-1.795E-06	2.318E-07	0.000	0.000	2.644E+08	-1.278E-08	535132.	0.000
390.000	0.000	-6.345E-07	1.460E-07	0.000	0.000	2.644E+08	-1.582E-08	545032.	0.000
396.000	0.000	-4.199E-08	6.564E-08	0.000	0.000	2.644E+08	-1.098E-08	554932.	0.000
402.000	0.000	1.555E-07	1.646E-08	0.000	0.000	2.644E+08	-5.414E-09	564832.	0.000
408.000	0.000	1.576E-07	-4.808E-09	0.000	0.000	2.644E+08	-1.676E-09	574732.	0.000
414.000	0.000	9.893E-08	-9.520E-09	0.000	0.000	2.644E+08	1.048E-10	584632.	0.000
420.000	0.000	4.380E-08	-7.370E-09	0.000	0.000	2.644E+08	6.121E-10	594532.	0.000
426.000	0.000	1.058E-08	-3.927E-09	0.000	0.000	2.644E+08	5.355E-10	604432.	0.000
432.000	0.000	-3.385E-09	-1.394E-09	0.000	0.000	2.644E+08	3.087E-10	614332.	0.000
438.000	0.000	-6.229E-09	-1.014E-10	0.000	0.000	2.644E+08	1.222E-10	624232.	0.000
444.000	0.000	-4.659E-09	3.226E-10	0.000	0.000	2.644E+08	1.919E-11	634132.	0.000
450.000	0.000	-2.385E-09	3.233E-10	0.000	0.000	2.644E+08	-1.897E-11	644032.	0.000
456.000	0.000	-7.875E-10	1.976E-10	0.000	0.000	2.644E+08	-2.293E-11	653932.	0.000
462.000	0.000	-1.322E-11	8.338E-11	0.000	0.000	2.644E+08	-1.514E-11	663832.	0.000
468.000	0.000	2.161E-10	1.726E-11	0.000	0.000	2.644E+08	-6.902E-12	673732.	0.000
474.000	0.000	1.963E-10	-8.755E-12	0.000	0.000	2.644E+08	-1.770E-12	683632.	0.000
480.000	0.000	1.123E-10	-1.279E-11	0.000	0.000	2.644E+08	0.000	693532.	0.000
486.000	0.000	4.334E-11	-8.839E-12	0.000	0.000	2.644E+08	0.000	703432.	0.000
492.000	0.000	6.297E-12	-4.163E-12	0.000	0.000	2.644E+08	0.000	713332.	0.000
498.000	0.000	-6.715E-12	-1.154E-12	0.000	0.000	2.644E+08	0.000	723232.	0.000
504.000	0.000	-7.644E-12	0.000	0.000	0.000	2.644E+08	0.000	733132.	0.000
510.000	0.000	-4.782E-12	0.000	0.000	0.000	2.644E+08	0.000	743032.	0.000
516.000	0.000	-2.023E-12	0.000	0.000	0.000	2.644E+08	0.000	752932.	0.000
522.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	762832.	0.000
528.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	772732.	0.000
534.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	782632.	0.000
540.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	792532.	0.000
546.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	802432.	0.000
552.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	812332.	0.000
558.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	822232.	0.000
564.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	832132.	0.000
570.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	842032.	0.000
576.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	851932.	0.000
582.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	861832.	0.000
588.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	871732.	0.000
594.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	881632.	0.000
600.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	445766.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.250000 inches
 Computed slope at pile head = -0.0002939 radians
 Maximum bending moment = -50421. inch-lbs
 Maximum shear force = 2031.4749744 lbs
 Depth of maximum bending moment = 0.000000 inches below pile head
 Depth of maximum shear force = 0.000000 inches below pile head
 Number of iterations = 12
 Number of zero deflection points = 15

 Computed Values of Pile Loading and Deflection on
 for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (BC Type 4)
 Deflection at pile head = 0.500000 in

Moment at pile head = 0.000 in-lbs
 Axial load at pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	1126.8143	-0.0122	0.000	2.633E+08	0.000	0.000	0.000
6.000	0.4270	8221.3083	1090.3300	-0.0121	0.000	2.633E+08	-12.1614	170.8948	0.000
12.000	0.3551	15982.	985.8770	-0.0118	0.000	2.633E+08	-22.6563	382.8348	0.000
18.000	0.2854	22884.	826.8522	-0.0112	0.000	1.826E+08	-30.3520	638.1611	0.000
24.000	0.2202	28603.	614.2613	-0.0103	0.000	1.519E+08	-40.5117	1104.0134	0.000
30.000	0.1617	32728.	355.2662	-0.009023	0.000	1.375E+08	-45.8200	1699.6848	0.000
36.000	0.1119	35032.	70.9624	-0.007508	0.000	1.312E+08	-48.9479	2624.7291	0.000
42.000	0.0716	35381.	-222.5392	-0.005893	0.000	1.304E+08	-48.8859	4093.8716	0.000
48.000	0.0412	33775.	-502.1030	-0.004326	0.000	1.345E+08	-44.3020	6455.9019	0.000
54.000	0.0197	30394.	-714.9438	-0.002944	0.000	1.451E+08	-26.6449	8100.0000	0.000
60.000	0.005842	25903.	-821.1664	-0.001843	0.000	1.644E+08	-8.7627	9000.0000	0.000
66.000	-0.002383	20983.	-835.6597	-0.001051	0.000	1.967E+08	3.9316	9900.0000	0.000
72.000	-0.006768	16127.	-787.3180	-0.000547	0.000	2.628E+08	12.1824	10800.	0.000
78.000	-0.008944	11666.	-698.4493	-0.000230	0.000	2.632E+08	17.4405	11700.	0.000
84.000	-0.009524	7800.7640	-586.1247	-7.863E-06	0.000	2.633E+08	20.0010	12600.	0.000
90.000	-0.009038	4634.3124	-465.1138	0.000134	0.000	2.634E+08	20.3360	13500.	0.000
96.000	-0.007919	2187.2878	-347.0910	0.000211	0.000	2.635E+08	19.0049	14400.	0.000
102.000	-0.006500	418.4642	-240.3482	0.000241	0.000	2.642E+08	16.5760	15300.	0.000
108.000	-0.005025	-754.7643	-149.9175	0.000237	0.000	2.638E+08	13.5676	16200.	0.000
114.000	-0.003653	-1437.5000	-77.9844	0.000212	0.000	2.636E+08	10.4101	17100.	0.000
120.000	-0.002477	-1741.5450	-24.4643	0.000176	0.000	2.635E+08	7.4299	18000.	0.000
126.000	-0.001539	-1773.3544	12.3645	0.000136	0.000	2.635E+08	4.8463	18900.	0.000
132.000	-0.000843	-1625.8503	35.2458	9.747E-05	0.000	2.635E+08	2.7808	19800.	0.000
138.000	-0.000369	-1373.7973	47.4059	6.333E-05	0.000	2.636E+08	1.2726	20700.	0.000
144.000	-8.271E-05	-1072.1781	56.9777	3.549E-05	0.000	2.637E+08	1.9180	139132.	0.000
150.000	5.705E-05	-698.5829	58.4803	1.535E-05	0.000	2.639E+08	-1.4171	149032.	0.000
156.000	0.000102	-374.0985	46.1626	3.163E-06	0.000	2.643E+08	-2.6888	158932.	0.000
162.000	9.501E-05	-145.3907	30.0762	-2.733E-06	0.000	2.644E+08	-2.6734	168832.	0.000
168.000	6.871E-05	-12.5278	15.9155	-4.524E-06	0.000	2.644E+08	-2.0469	178732.	0.000
174.000	4.072E-05	46.6809	5.9346	-4.137E-06	0.000	2.644E+08	-1.2801	188632.	0.000
180.000	1.907E-05	59.6805	0.2012	-2.930E-06	0.000	2.644E+08	-0.6311	198532.	0.000
186.000	5.554E-06	49.7982	-2.2709	-1.688E-06	0.000	2.644E+08	-0.1929	208432.	0.000
192.000	-1.185E-06	32.8344	-2.7204	-7.508E-07	0.000	2.644E+08	0.0431	218332.	0.000
198.000	-3.455E-06	17.3338	-2.1967	-1.816E-07	0.000	2.644E+08	0.1314	228232.	0.000
204.000	-3.365E-06	6.5171	-1.4019	8.895E-08	0.000	2.644E+08	0.1335	238132.	0.000
210.000	-2.387E-06	0.4901	-0.7052	1.684E-07	0.000	2.644E+08	0.0987	248032.	0.000
216.000	-1.343E-06	-1.9852	-0.2358	1.515E-07	0.000	2.644E+08	0.0578	257932.	0.000
222.000	-5.696E-07	-2.3761	0.0137	1.020E-07	0.000	2.644E+08	0.0254	267832.	0.000
228.000	-1.193E-07	-1.8452	0.1066	5.412E-08	0.000	2.644E+08	0.005523	277732.	0.000
234.000	7.980E-08	-1.1104	0.1117	2.059E-08	0.000	2.644E+08	-0.003825	287632.	0.000
240.000	1.277E-07	-0.5103	0.0812	2.201E-09	0.000	2.644E+08	-0.006334	297532.	0.000
246.000	1.062E-07	-0.1369	0.0458	-5.142E-09	0.000	2.644E+08	-0.005442	307432.	0.000
252.000	6.604E-08	0.0410	0.0190	-6.230E-09	0.000	2.644E+08	-0.003493	317332.	0.000
258.000	3.145E-08	0.0930	0.003416	-4.710E-09	0.000	2.644E+08	-0.001715	327232.	0.000
264.000	9.521E-09	0.0831	-0.003334	-2.711E-09	0.000	2.644E+08	-0.000535	337132.	0.000
270.000	-1.090E-09	0.0537	-0.004750	-1.159E-09	0.000	2.644E+08	6.302E-05	347032.	0.000
276.000	-4.393E-09	0.0264	-0.003777	-2.512E-10	0.000	2.644E+08	0.000261	356932.	0.000
282.000	-4.104E-09	0.008414	-0.002241	1.435E-10	0.000	2.644E+08	0.000251	366832.	0.000
288.000	-2.671E-09	-0.000541	-0.000985	2.328E-10	0.000	2.644E+08	0.000168	376732.	0.000
294.000	-1.311E-09	-0.003459	-0.000228	1.874E-10	0.000	2.644E+08	8.445E-05	386632.	0.000
300.000	-4.215E-10	-0.003327	0.000109	1.104E-10	0.000	2.644E+08	2.785E-05	396532.	0.000
306.000	1.470E-11	-0.002183	0.000189	4.792E-11	0.000	2.644E+08	-9.959E-07	406432.	0.000
312.000	1.536E-10	-0.001070	0.000154	1.102E-11	0.000	2.644E+08	-1.066E-05	416332.	0.000
318.000	1.469E-10	-0.000337	9.083E-05	-4.935E-12	0.000	2.644E+08	-1.044E-05	426232.	0.000
324.000	9.440E-11	2.155E-05	3.894E-05	-8.509E-12	0.000	2.644E+08	-6.862E-06	436132.	0.000
330.000	4.481E-11	0.000133	8.357E-06	-6.760E-12	0.000	2.644E+08	-3.331E-06	446032.	0.000
336.000	1.328E-11	0.000123	-4.663E-06	-3.855E-12	0.000	2.644E+08	-1.009E-06	455932.	0.000
342.000	-1.451E-12	7.760E-05	-7.352E-06	-1.574E-12	0.000	2.644E+08	1.127E-07	465832.	0.000
348.000	-5.615E-12	3.560E-05	-5.678E-06	0.000	0.000	2.644E+08	4.452E-07	475732.	0.000
354.000	-4.932E-12	9.532E-06	-3.145E-06	0.000	0.000	2.644E+08	3.992E-07	485632.	0.000
360.000	-2.951E-12	-2.194E-06	-1.216E-06	0.000	0.000	2.644E+08	2.437E-07	495532.	0.000
366.000	-1.269E-12	-5.139E-06	-1.644E-07	0.000	0.000	2.644E+08	1.069E-07	505432.	0.000
372.000	0.000	-4.221E-06	2.303E-07	0.000	0.000	2.644E+08	2.466E-08	515332.	0.000
378.000	0.000	-2.403E-06	2.726E-07	0.000	0.000	2.644E+08	-1.056E-08	525232.	0.000
384.000	0.000	-9.589E-07	1.871E-07	0.000	0.000	2.644E+08	-1.795E-08	535132.	0.000
390.000	0.000	-1.586E-07	9.195E-08	0.000	0.000	2.644E+08	-1.375E-08	545032.	0.000
396.000	0.000	1.470E-07	2.852E-08	0.000	0.000	2.644E+08	-7.390E-09	554932.	0.000
402.000	0.000	1.861E-07	-1.671E-09	0.000	0.000	2.644E+08	-2.675E-09	564832.	0.000
408.000	0.000	1.285E-07	-1.035E-08	0.000	0.000	2.644E+08	-2.172E-10	574732.	0.000
414.000	0.000	6.264E-08	-9.131E-09	0.000	0.000	2.644E+08	6.230E-10	584632.	0.000
420.000	0.000	1.907E-08	-5.321E-09	0.000	0.000	2.644E+08	6.468E-10	594532.	0.000
426.000	0.000	-1.265E-09	-2.152E-09	0.000	0.000	2.644E+08	4.096E-10	604432.	0.000
432.000	0.000	-6.851E-09	-3.780E-10	0.000	0.000	2.644E+08	1.818E-10	614332.	0.000

438.000	0.000	-5.873E-09	2.981E-10	0.000	0.000	2.644E+08	4.355E-11	624232.	0.000
444.000	0.000	-3.312E-09	3.847E-10	0.000	0.000	2.644E+08	-1.471E-11	634132.	0.000
450.000	0.000	-1.271E-09	2.613E-10	0.000	0.000	2.644E+08	-2.641E-11	644032.	0.000
456.000	0.000	-1.769E-10	1.232E-10	0.000	0.000	2.644E+08	-1.962E-11	653932.	0.000
462.000	0.000	2.107E-10	3.446E-11	0.000	0.000	2.644E+08	-9.948E-12	663832.	0.000
468.000	0.000	2.397E-10	-4.975E-12	0.000	0.000	2.644E+08	-3.198E-12	673732.	0.000
474.000	0.000	1.528E-10	-1.445E-11	0.000	0.000	2.644E+08	0.000	683632.	0.000
480.000	0.000	6.697E-11	-1.145E-11	0.000	0.000	2.644E+08	0.000	693532.	0.000
486.000	0.000	1.563E-11	-6.010E-12	0.000	0.000	2.644E+08	0.000	703432.	0.000
492.000	0.000	-5.238E-12	-2.044E-12	0.000	0.000	2.644E+08	0.000	713332.	0.000
498.000	0.000	-9.014E-12	0.000	0.000	0.000	2.644E+08	0.000	723232.	0.000
504.000	0.000	-6.410E-12	0.000	0.000	0.000	2.644E+08	0.000	733132.	0.000
510.000	0.000	-3.064E-12	0.000	0.000	0.000	2.644E+08	0.000	743032.	0.000
516.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	752932.	0.000
522.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	762832.	0.000
528.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	772732.	0.000
534.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	782632.	0.000
540.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	792532.	0.000
546.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	802432.	0.000
552.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	812332.	0.000
558.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	822232.	0.000
564.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	832132.	0.000
570.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	842032.	0.000
576.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	851932.	0.000
582.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	861832.	0.000
588.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	871732.	0.000
594.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	881632.	0.000
600.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	445766.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0121702 radians
Maximum bending moment	=	35381. inch-lbs
Maximum shear force	=	1126.8142628 lbs
Depth of maximum bending moment	=	42.0000000 inches below pile head
Depth of maximum shear force	=	0.0000000 inches below pile head
Number of iterations	=	13
Number of zero deflection points	=	15

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 4

Pile-head conditions are Displacement and Slope (BC Type 5)

Displacement of pile head	=	0.500000 in
Slope of pile head	=	0.000E+00 in/in
Axial load on pile head	=	20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	-74878.	2822.9764	0.000	0.000	93848452.	0.000	0.000	0.000
6.000	0.4856	-57872.	2750.0081	-0.004244	0.000	93848452.	-12.1614	150.2522	0.000
12.000	0.4491	-40860.	2645.5554	-0.007400	0.000	93848452.	-22.6562	302.7032	0.000
18.000	0.3968	-24349.	2486.5311	-0.009127	0.000	1.733E+08	-30.3519	458.9005	0.000
24.000	0.3395	-8830.6683	2271.9765	-0.009649	0.000	2.633E+08	-41.1663	727.4279	0.000
30.000	0.2810	5230.2034	1972.5795	-0.009690	0.000	2.634E+08	-58.6327	1251.7227	0.000
36.000	0.2233	17166.	1557.1098	-0.009435	0.000	2.626E+08	-79.8572	2146.0842	0.000
42.000	0.1678	26180.	1063.8458	-0.008757	0.000	1.629E+08	-84.5641	3023.1682	0.000
48.000	0.1182	32034.	556.9892	-0.007586	0.000	1.396E+08	-84.3881	4284.2410	0.000
54.000	0.0768	34684.	63.6675	-0.006111	0.000	1.321E+08	-80.0525	6254.5472	0.000
60.000	0.0449	34264.	-374.5757	-0.004551	0.000	1.332E+08	-66.0286	8832.0428	0.000
66.000	0.0222	31282.	-682.4363	-0.003119	0.000	1.421E+08	-36.5916	9900.0000	0.000
72.000	0.007424	26824.	-832.3031	-0.001955	0.000	1.598E+08	-13.3639	10800.	0.000
78.000	-0.001286	21764.	-864.8698	-0.001110	0.000	1.908E+08	2.5084	11700.	0.000
84.000	-0.005890	16712.	-820.2384	-0.000576	0.000	2.627E+08	12.3688	12600.	0.000
90.000	-0.008203	12059.	-727.7616	-0.000248	0.000	2.632E+08	18.4569	13500.	0.000

96.000	-0.008867	8037.9670	-608.5491	-1.907E-05	0.000	2.633E+08	21.2806	14400.	0.000
102.000	-0.008432	4761.0214	-480.2038	0.000127	0.000	2.634E+08	21.5012	15300.	0.000
108.000	-0.007346	2245.1037	-356.1975	0.000207	0.000	2.635E+08	19.8342	16200.	0.000
114.000	-0.005953	437.0830	-245.7930	0.000237	0.000	2.642E+08	16.9673	17100.	0.000
120.000	-0.004501	-761.3072	-154.3797	0.000233	0.000	2.638E+08	13.5039	18000.	0.000
126.000	-0.003153	-1471.4810	-84.0720	0.000208	0.000	2.636E+08	9.9320	18900.	0.000
132.000	-0.002006	-1820.0817	-34.4189	0.000170	0.000	2.635E+08	6.6190	19800.	0.000
138.000	-0.001107	-1925.4258	-3.1032	0.000128	0.000	2.635E+08	3.8196	20700.	0.000
144.000	-0.000472	-1888.0042	41.1584	8.444E-05	0.000	2.635E+08	10.9343	139132.	0.000
150.000	-9.387E-05	-1451.7902	80.9563	4.642E-05	0.000	2.636E+08	2.3317	149032.	0.000
156.000	8.550E-05	-927.6698	81.1570	1.934E-05	0.000	2.637E+08	-2.2648	158932.	0.000
162.000	0.000138	-482.5484	62.6932	3.308E-06	0.000	2.641E+08	-3.8898	168832.	0.000
168.000	0.000125	-176.1456	39.8353	-4.172E-06	0.000	2.644E+08	-3.7295	178732.	0.000
174.000	8.818E-05	-3.5241	20.3303	-6.210E-06	0.000	2.644E+08	-2.7722	188632.	0.000
180.000	5.068E-05	69.3080	6.9831	-5.464E-06	0.000	2.644E+08	-1.6769	198532.	0.000
186.000	2.261E-05	81.5840	-0.4043	-3.752E-06	0.000	2.644E+08	-0.7856	208432.	0.000
192.000	5.656E-06	65.3574	-3.3784	-2.085E-06	0.000	2.644E+08	-0.2058	218332.	0.000
198.000	-2.405E-06	41.5440	-3.7213	-8.722E-07	0.000	2.644E+08	0.0915	228232.	0.000
204.000	-4.811E-06	20.9113	-2.8740	-1.637E-07	0.000	2.644E+08	0.1909	238132.	0.000
210.000	-4.369E-06	7.0948	-1.7594	1.541E-07	0.000	2.644E+08	0.1806	248032.	0.000
216.000	-2.962E-06	-0.2388	-0.8356	2.318E-07	0.000	2.644E+08	0.1273	257932.	0.000
222.000	-1.587E-06	-2.9881	-0.2411	1.952E-07	0.000	2.644E+08	0.0708	267832.	0.000
228.000	-6.191E-07	-3.1787	0.0574	1.253E-07	0.000	2.644E+08	0.0287	277732.	0.000
234.000	-8.389E-08	-2.3290	0.1555	6.279E-08	0.000	2.644E+08	0.004021	287632.	0.000
240.000	1.343E-07	-1.3282	0.1476	2.130E-08	0.000	2.644E+08	-0.006660	297532.	0.000
246.000	1.717E-07	-0.5635	0.1012	-1.611E-10	0.000	2.644E+08	-0.008797	307432.	0.000
252.000	1.324E-07	-0.1140	0.0538	-7.846E-09	0.000	2.644E+08	-0.007001	317332.	0.000
258.000	7.754E-08	0.0838	0.0201	-8.188E-09	0.000	2.644E+08	-0.004229	327232.	0.000
264.000	3.412E-08	0.1291	0.001656	-5.7712E-09	0.000	2.644E+08	-0.001917	337132.	0.000
270.000	8.279E-09	0.1051	-0.005532	-3.115E-09	0.000	2.644E+08	-0.000479	347032.	0.000
276.000	-3.256E-09	0.0635	-0.006387	-1.202E-09	0.000	2.644E+08	0.000194	356932.	0.000
282.000	-6.146E-09	0.0287	-0.004679	-1.558E-10	0.000	2.644E+08	0.000376	366832.	0.000
288.000	-5.125E-09	0.007395	-0.002586	2.540E-10	0.000	2.644E+08	0.000322	376732.	0.000
294.000	-3.098E-09	-0.002370	-0.001022	3.110E-10	0.000	2.644E+08	0.000200	386632.	0.000
300.000	-1.393E-09	-0.004942	-0.000147	2.281E-10	0.000	2.644E+08	9.209E-05	396532.	0.000
306.000	-3.615E-10	-0.004185	0.000203	1.245E-10	0.000	2.644E+08	2.449E-05	406432.	0.000
312.000	1.008E-10	-0.002535	0.000256	4.829E-11	0.000	2.644E+08	-6.993E-06	416332.	0.000
318.000	2.180E-10	-0.001129	0.000188	6.724E-12	0.000	2.644E+08	-1.549E-05	426232.	0.000
324.000	1.815E-10	-0.000279	0.000102	-9.252E-12	0.000	2.644E+08	-1.319E-05	436132.	0.000
330.000	1.070E-10	9.781E-05	3.866E-05	-1.130E-11	0.000	2.644E+08	-7.953E-06	446032.	0.000
336.000	4.581E-11	0.000188	4.355E-06	-8.065E-12	0.000	2.644E+08	-3.481E-06	455932.	0.000
342.000	1.021E-11	0.000152	-8.467E-06	-4.209E-12	0.000	2.644E+08	-7.927E-07	465832.	0.000
348.000	-4.699E-12	8.723E-05	-9.727E-06	-1.495E-12	0.000	2.644E+08	3.726E-07	475732.	0.000
354.000	-7.733E-12	3.564E-05	-6.732E-06	0.000	0.000	2.644E+08	6.259E-07	485632.	0.000
360.000	-5.915E-12	6.480E-06	-3.388E-06	0.000	0.000	2.644E+08	4.885E-07	495532.	0.000
366.000	-3.215E-12	-5.109E-06	-1.110E-06	0.000	0.000	2.644E+08	2.709E-07	505432.	0.000
372.000	-1.211E-12	-6.934E-06	1.465E-08	0.000	0.000	2.644E+08	1.040E-07	515332.	0.000
378.000	0.000	-4.995E-06	3.662E-07	0.000	0.000	2.644E+08	1.318E-08	525232.	0.000
384.000	0.000	-2.568E-06	3.443E-07	0.000	0.000	2.644E+08	-2.050E-08	535132.	0.000
390.000	0.000	-8.717E-07	2.117E-07	0.000	0.000	2.644E+08	-2.369E-08	545032.	0.000
396.000	0.000	-2.618E-08	9.259E-08	0.000	0.000	2.644E+08	-1.601E-08	554932.	0.000
402.000	0.000	2.430E-07	2.146E-08	0.000	0.000	2.644E+08	-7.702E-09	564832.	0.000
408.000	0.000	2.343E-07	-8.435E-09	0.000	0.000	2.644E+08	-2.261E-09	574732.	0.000
414.000	0.000	1.435E-07	-1.443E-08	0.000	0.000	2.644E+08	2.634E-10	584632.	0.000
420.000	0.000	6.179E-08	-1.082E-08	0.000	0.000	2.644E+08	9.396E-10	594532.	0.000
426.000	0.000	1.375E-08	-5.628E-09	0.000	0.000	2.644E+08	7.908E-10	604432.	0.000
432.000	0.000	-5.852E-09	-1.921E-09	0.000	0.000	2.644E+08	4.450E-10	614332.	0.000
438.000	0.000	-9.421E-09	-7.461E-11	0.000	0.000	2.644E+08	1.704E-10	624232.	0.000
444.000	0.000	-6.830E-09	5.040E-10	0.000	0.000	2.644E+08	2.246E-11	634132.	0.000
450.000	0.000	-3.411E-09	4.802E-10	0.000	0.000	2.644E+08	-3.040E-11	644032.	0.000
456.000	0.000	-1.078E-09	2.862E-10	0.000	0.000	2.644E+08	-3.428E-11	653932.	0.000
462.000	0.000	2.466E-11	1.173E-10	0.000	0.000	2.644E+08	-2.203E-11	663832.	0.000
468.000	0.000	3.340E-10	2.185E-11	0.000	0.000	2.644E+08	-9.776E-12	673732.	0.000
474.000	0.000	2.905E-10	-1.448E-11	0.000	0.000	2.644E+08	-2.335E-12	683632.	0.000
480.000	0.000	1.621E-10	-1.922E-11	0.000	0.000	2.644E+08	0.000	693532.	0.000
486.000	0.000	6.049E-11	-1.290E-11	0.000	0.000	2.644E+08	1.349E-12	703432.	0.000
492.000	0.000	7.286E-12	-5.920E-12	0.000	0.000	2.644E+08	0.000	713332.	0.000
498.000	0.000	-1.069E-11	-1.545E-12	0.000	0.000	2.644E+08	0.000	723232.	0.000
504.000	0.000	-1.140E-11	0.000	0.000	0.000	2.644E+08	0.000	733132.	0.000
510.000	0.000	-6.942E-12	0.000	0.000	0.000	2.644E+08	0.000	743032.	0.000
516.000	0.000	-2.853E-12	0.000	0.000	0.000	2.644E+08	0.000	752932.	0.000
522.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	762832.	0.000
528.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	772732.	0.000
534.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	782632.	0.000
540.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	792532.	0.000
546.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	802432.	0.000
552.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	812332.	0.000
558.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	822232.	0.000
564.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	832132.	0.000
570.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	842032.	0.000

576.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	851932.	0.000
582.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	861832.	0.000
588.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	871732.	0.000
594.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	881632.	0.000
600.000	0.000	0.000	0.000	0.000	0.000	2.644E+08	0.000	445766.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 4:

Pile-head deflection = 0.5000000 inches
 Computed slope at pile head = -0.0005436 radians
 Maximum bending moment = -74878. inch-lbs
 Maximum shear force = 2822.9763859 lbs
 Depth of maximum bending moment = 0.000000 inches below pile head
 Depth of maximum shear force = 0.000000 inches below pile head
 Number of iterations = 12
 Number of zero deflection points = 15

 Summary of Pile Response(s)

Definitions of Pile-Head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
 Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
 Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
 Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
 Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

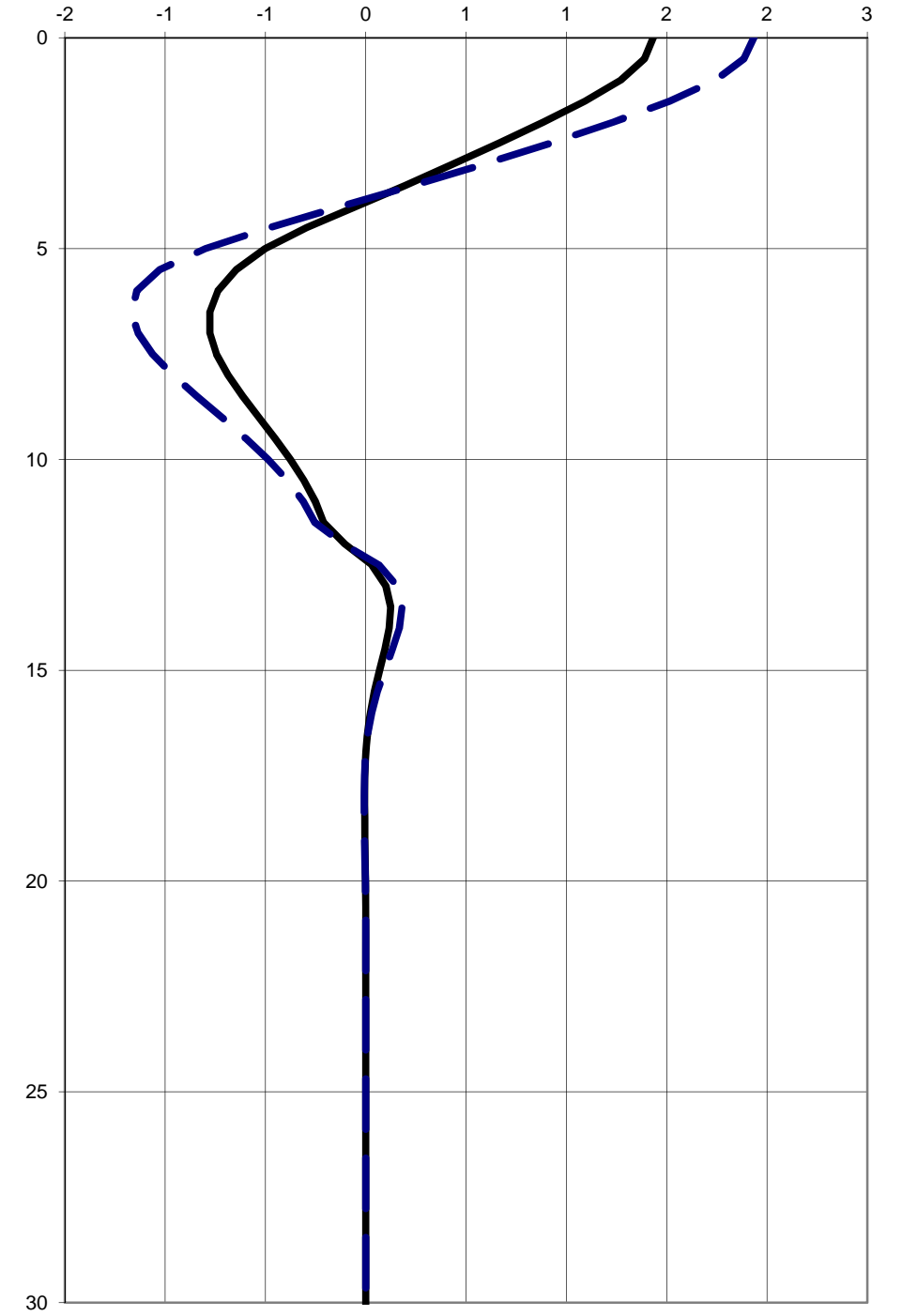
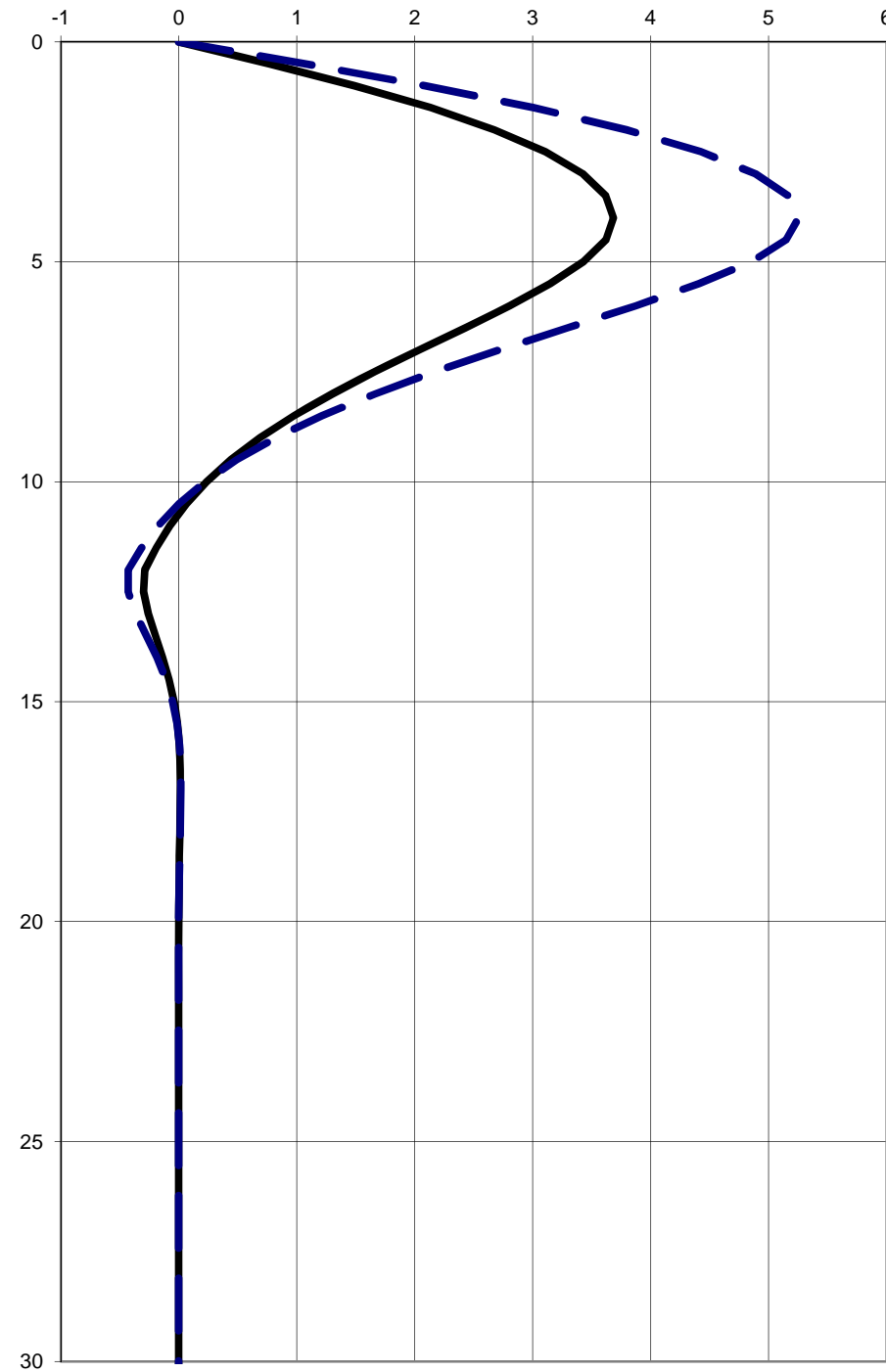
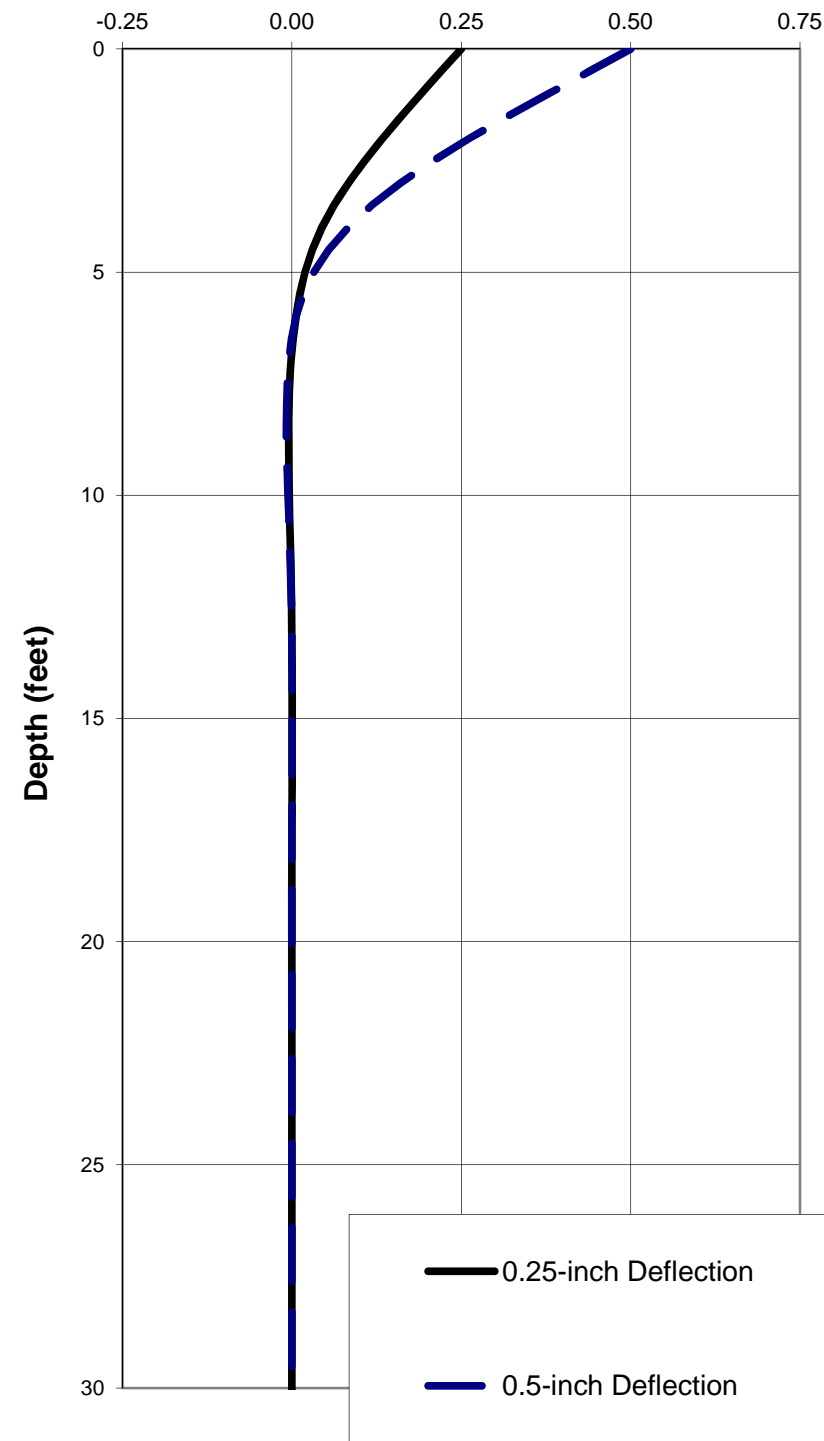
Load Case	Load Type	Condition 1	Condition 2	Axial Load	Pile-Head Deflection	Maximum Moment	Maximum Shear
No.	No.	V(lbs) or y(inches)	M or S (in-lb/rad.)	lbs	inches	in-lbs	lbs
1	4	y = 0.2500	M = 0.000	20000.	0.25000000	23550.	836.3037
0.00000000	2	y = 0.2500	S = 0.000	20000.	0.25000000	-50421.	2031.4750
0.00000000	3	y = 0.5000	M = 0.000	20000.	0.50000000	35381.	1126.8143
0.00000000	4	y = 0.5000	S = 0.000	20000.	0.50000000	-74878.	2822.9764
0.00000000	5						

The analysis ended normally.

Deflection (inches)

Moment (kips-feet)

Shear (kips)



**LATERAL LOAD CAPACITIES OF 8-INCH DIAMETER MICRO PILE
FREE HEAD CONDITION
EL RODEO K-8 SCHOOL
BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
Project No.: 10274.015
Date: 10/2015

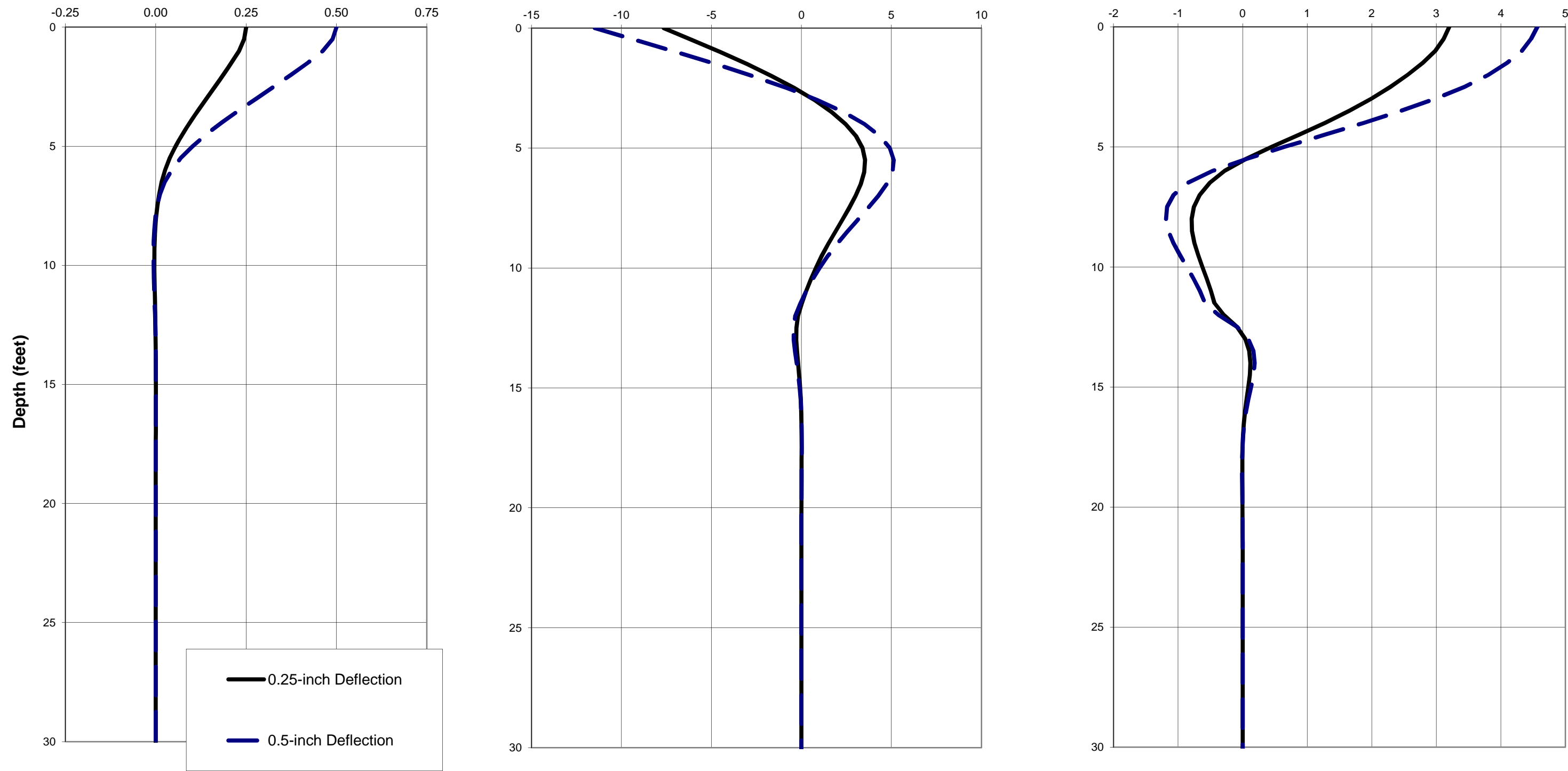


Figure C-2a

Deflection (inches)

Moment (kips-feet)

Shear (kips)



**LATERAL LOAD CAPACITIES OF 8-INCH DIAMETER MICRO PILE
FIXED HEAD CONDITION
EL RODEO K-8 SCHOOL
BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
Project No.: 10274.015
Date: 10/2015



Figure C-2b

=====
LPile Plus for Windows, Version 6.0 (6.0.08)
Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

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=====
This program is licensed to:

CD
Leighton

Files Used for Analysis

Path to file locations: P:\INFOCUS PROJECTS\10000-10500\10274 BHUSD\015 EI Rodeo Bldg C\Analyses\LPile\
Name of input data file: 8-inch diameter.lp6d
Name of output file: 8-inch diameter.lp6o
Name of plot output file: 8-inch diameter.lp6p
Name of runtime file: 8-inch diameter.lp6r

Date and Time of Analysis

Date: October 28, 2015 Time: 16:07:43

Problem Title

Project Name: Beverly Hills High School Building C

Job Number: 10274.015

Client: Beverly Hills Unified School District

Engineer: CD

Description: 30-inch CIDH pile

Program Options

Units Used - US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal Moment
Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:

- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

Solution Control Parameters:

- Number of pile increments = 100
- Maximum number of iterations allowed = 1000
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in

Pile Response Output Options:

- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1

Pile Structural Properties and Geometry

- Total Number of Sections = 1
- Total Pile Length = 50.00 ft
- Depth of ground surface below top of pile = 0.00 ft
- Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points. p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Di ameter in
1	0.00000	8.000000
2	50.00000	8.000000

Input Structural Properties:

Section No. 1:

- Section Type = Drilled Shaft (Bored Pile)
- Section Length = 50.000 ft
- Section Diameter = 8.000 in

Ground Slope and Pile Batter Angles

- Ground Slope Angle = 0.000 degrees
= 0.000 radians
- Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

- Distance from top of pile to top of layer = 0.000 ft
- Distance from top of pile to bottom of layer = 12.000 ft
- p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
- p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

Layer 2 is cemented silt with cohesion and friction

- Distance from top of pile to top of layer = 12.000 ft

Distance from top of pile to bottom of layer = 60.000 ft
 p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
 p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

(Depth of lowest layer extends 10.00 ft below pile tip)

 Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 4 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	0.00	120.00000
2	12.00	120.00000
3	12.00	120.00000
4	60.00	120.00000

 Summary of Soil Properties

Layer RQD Num. percent	Soil Type (p-y Curve Criteria) pci	Rock Emass psi	Depth ft	Eff. Unit Weight, pcf	Cohesion Test Type psf	Friction Prop. Ang., deg.	Elas. Subgr. pci	qu psi
1	Sand (Reese, et al.)	--	0.00	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	300.000	30.000	--	--
2	Cemented Silt	--	60.000	120.000	300.000	30.000	--	--
--	0.00 default	--	--	--	--	--	--	--
--	0.00 default	--	--	--	--	--	--	--

 Loading Type

p-y criteria for static loading was used for all analyses.

 Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 4

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs
1	4	y = 0.250 in	M = 0.000 in-lbs	20000.000
2	5	y = 0.250 in	S = 0.000 in/in	20000.000
3	4	y = 0.500 in	M = 0.000 in-lbs	20000.000
4	5	y = 0.500 in	S = 0.000 in/in	20000.000

 Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust values were determined from pile-head loading conditions

Number of Sections = 1

Section No. 1:

Dimensions and Properties of Drilled Shaft:

Length of Section	=	600.0000000	in
Shaft Diameter	=	8.0000000	in
Concrete Cover Thickness	=	1.0000000	in
Number of Reinforcing Bars	=	1	bars
Yield Stress of Reinforcing Bars	=	60.0000000	ksi
Modulus of Elasticity of Reinforcing Bars	=	29000.	ksi
Gross Area of Shaft	=	50.26548246	sq. in.
Total Area of Reinforcing Steel	=	2.2500000	sq. in.
Area Ratio of Steel Reinforcement	=	4.48	percent
Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	298.253	ki ps
Tensile Load for Cracking of Concrete	=	-27.498	ki ps
Nominal Axial Tensile Capacity	=	-135.000	ki ps

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Di am. inches	Bar Area sq. in.	X inches	Y inches
1	1.69300	2.25000	0.00000	0.00000

Concrete Properties:

Compressive Strength of Concrete	=	4.0000000	ksi
Modulus of Elasticity of Concrete	=	3604.9965326	ksi
Modulus of Rupture of Concrete	=	-0.4743416	ksi
Compression Strain at Peak Stress	=	0.0018863	
Tensile Strain at Fracture	=	-0.0001154	
Maximum Coarse Aggregate Size	=	0.7500000	in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	20.000

Definitions of Run Messages and Notes:

C = concrete has cracked in tension
 Y = stress in reinforcement has reached yield stress
 T = tensile strain in reinforcement exceeds 0.005 when compressive strain in concrete is less than 0.003.
 Bending Stiffness = Bending Moment / Curvature
 Position of neutral axis is computed from compression side of pile
 Compressive stresses are positive in sign. Tensile stresses are negative in sign.

Axial Thrust Force = 20.000 kips

Run Msg	Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi
0.00001250	1.0368760	829501.	64.4205450	0.0000805	0.0000705	0.3340304	2.3337948	
0.00002500	2.0728356	829134.	34.2118717	0.0000855	0.0000655	0.3541172	2.4774607	
0.00003750	3.1087862	829010.	24.1430350	0.0000905	0.0000605	0.3741597	2.6212051	
0.00005000	4.1447232	828945.	19.1091574	0.0000955	0.0000555	0.3941578	2.7650278	
0.00006250	5.1806420	828903.	16.0892635	0.0001006	0.0000506	0.4141115	2.9089290	
0.00007500	6.2165379	828872.	14.0763615	0.0001056	0.0000456	0.4340207	3.0529086	
0.00008750	7.2524066	828846.	12.6388834	0.0001106	0.0000406	0.4538852	3.1969667	

0.0000100	8.2882433	828824.	11.5610452	0.0001156	0.0000356	0.4737051	3.3411031
0.0000113	9.3240435	828804.	10.7229670	0.0001206	0.0000306	0.4934801	3.4853180
0.0000125	10.3598026	828784.	10.0527208	0.0001257	0.0000257	0.5132102	3.6296113
0.0000138	11.3955160	828765.	9.5045342	0.0001307	0.0000207	0.5328954	3.7739831
0.0000150	12.4311792	828745.	9.0478923	0.0001357	0.0000157	0.5525355	3.9184332
0.0000163	13.4667876	828725.	8.6616695	0.0001408	0.0000108	0.5721304	4.0629618
0.0000175	14.5023367	828705.	8.3307760	0.0001458	0.000005789	0.5916800	4.2075689
0.0000188	15.5378217	828684.	8.0441458	0.0001508	0.000000828	0.6111843	4.3522543
0.0000200	16.5732258	828661.	7.7934790	0.0001559	-0.000004130	0.6306431	4.4970179
0.0000213	17.6084105	828631.	7.5724229	0.0001609	-0.000009086	0.6500559	4.6418557
0.0000225	18.6431464	828584.	7.3760316	0.0001660	-0.0000140	0.6694215	4.7867607
0.0000238	19.6772099	828514.	7.2004005	0.0001710	-0.0000190	0.6887389	4.9317259
0.0000250	20.7104066	828416.	7.0424065	0.0001761	-0.0000239	0.7080074	5.0767448
0.0000263	21.7425720	828288.	6.8995224	0.0001811	-0.0000289	0.7272259	5.2218115
0.0000275	22.7735686	828130.	6.7696813	0.0001862	-0.0000338	0.7463938	5.3669209
0.0000288	23.8032840	827940.	6.6511767	0.0001912	-0.0000388	0.7655104	5.5120687
0.0000300	24.8316227	827721.	6.5425870	0.0001963	-0.0000437	0.7845752	5.6572508
0.0000313	25.8585077	827472.	6.4427189	0.0002013	-0.0000487	0.8035877	5.8024641
0.0000325	26.8838735	827196.	6.3505629	0.0002064	-0.0000536	0.8225476	5.9477056
0.0000338	27.9076651	826894.	6.2652595	0.0002115	-0.0000585	0.8414544	6.0929728
0.0000350	28.9298370	826567.	6.1860723	0.0002165	-0.0000635	0.8603078	6.2382635
0.0000363	29.9503504	826217.	6.1123669	0.0002216	-0.0000684	0.8791075	6.3835758
0.0000375	30.9691724	825845.	6.0435934	0.0002266	-0.0000734	0.8978534	6.5289079
0.0000388	31.9862753	825452.	5.9792733	0.0002317	-0.0000783	0.9165451	6.6742585
0.0000400	33.0016359	825041.	5.9189879	0.0002368	-0.0000832	0.9351826	6.8196261
0.0000413	34.0152330	824612.	5.8623696	0.0002418	-0.0000882	0.9537656	6.9650097
0.0000425	35.0270477	824166.	5.8090937	0.0002469	-0.0000931	0.9722940	7.1104081
0.0000438	36.0370670	823704.	5.7588732	0.0002520	-0.0000980	0.9907676	7.2558205
0.0000450	37.0452765	823228.	5.7114528	0.0002570	-0.0001030	1.0091864	7.4012461
0.0000463	38.0516636	822739.	5.6666049	0.0002621	-0.0001079	1.0275501	7.5466840
0.0000475	39.0562206	822236.	5.6241260	0.0002671	-0.0001129	1.0458589	7.6921337
0.0000488	39.0562206	801153.	5.3197686	0.0002593	-0.0001307	1.0171514	7.4642729
C 0.0000513	39.0562206	762073.	5.2211108	0.0002676	-0.0001424	1.0469010	7.7004261
C 0.0000538	39.0562206	726627.	5.1303612	0.0002758	-0.0001542	1.0762540	7.9346006
C 0.0000563	39.0562206	694333.	5.0465483	0.0002839	-0.0001661	1.1052312	8.1669321
C 0.0000588	39.0562206	664787.	4.9688736	0.0002919	-0.0001781	1.1338542	8.3975686
C 0.0000613	39.0562206	637653.	4.8966762	0.0002999	-0.0001901	1.1621461	8.6266713
C 0.0000638	39.0562206	612647.	4.8294105	0.0003079	-0.0002021	1.1901320	8.8544229
C 0.0000663	39.0562206	589528.	4.7665360	0.0003158	-0.0002142	1.2178186	9.0808574
C 0.0000688	39.0562206	568090.	4.7075923	0.0003236	-0.0002264	1.2452128	9.3060123

C	0.0000713	39.0562206	548157.	4.6523977	0.0003315	-0.0002385	1.2723749	9.5303669
C	0.0000738	39.0562206	529576.	4.6006579	0.0003393	-0.0002507	1.2993285	9.7541072
C	0.0000763	39.0562206	512213.	4.5517348	0.0003471	-0.0002629	1.3259960	9.9765738
C	0.0000788	39.0562206	495952.	4.5057760	0.0003548	-0.0002752	1.3524926	10.1987161
C	0.0000813	39.4451371	485479.	4.4623026	0.0003626	-0.0002874	1.3787617	10.4200506
C	0.0000838	40.0402244	478092.	4.4212277	0.0003703	-0.0002997	1.4048434	10.6409070
C	0.0000863	40.6287239	471058.	4.3823027	0.0003780	-0.0003120	1.4307270	10.8611849
C	0.0000888	41.2124712	464366.	4.3454242	0.0003857	-0.0003243	1.4564368	11.0810859
C	0.0000913	41.7896467	457969.	4.3103303	0.0003933	-0.0003367	1.4819449	11.3003618
C	0.0000938	42.3649847	451893.	4.2771107	0.0004010	-0.0003490	1.5073252	11.5196449
C	0.0000963	42.9318382	446045.	4.2452744	0.0004086	-0.0003614	1.5324672	11.7379725
C	0.0000988	43.4975773	440482.	4.2150881	0.0004162	-0.0003738	1.5574942	11.9564089
C	0.0001013	44.0587659	435148.	4.1862477	0.0004239	-0.0003861	1.5823453	12.1744202
C	0.0001038	44.6151263	430025.	4.1586408	0.0004315	-0.0003985	1.6070161	12.3919607
C	0.0001063	45.1703812	425133.	4.1323679	0.0004391	-0.0004109	1.6315725	12.6096089
C	0.0001088	45.7213064	420426.	4.1071655	0.0004467	-0.0004233	1.6559537	12.8268235
C	0.0001113	46.2680614	415893.	4.0829689	0.0004542	-0.0004358	1.6801632	13.0436288
C	0.0001138	46.8137198	411549.	4.0598684	0.0004618	-0.0004482	1.7042588	13.2605411
C	0.0001163	47.3577190	407378.	4.0377628	0.0004694	-0.0004606	1.7282292	13.4774583
C	0.0001188	47.8956953	403332.	4.0163577	0.0004769	-0.0004731	1.7519868	13.6935821
C	0.0001213	48.4325838	399444.	3.9958654	0.0004845	-0.0004855	1.7756312	-13.9388878
C	0.0001238	48.9683822	395704.	3.9762309	0.0004921	-0.0004979	1.7991620	-14.2967511
C	0.0001263	49.5024232	392098.	3.9573668	0.0004996	-0.0005104	1.8225650	-14.6546405
C	0.0001288	50.0313096	388593.	3.9390460	0.0005072	-0.0005228	1.8457670	-15.0132367
C	0.0001313	50.5591146	385212.	3.9214510	0.0005147	-0.0005353	1.8688560	-15.3717267
C	0.0001338	51.0858356	381950.	3.9045412	0.0005222	-0.0005478	1.8918320	-15.7301103
C	0.0001363	51.6114703	378800.	3.8882790	0.0005298	-0.0005602	1.9146947	-16.0883872
C	0.0001388	52.1341033	375741.	3.8725243	0.0005373	-0.0005727	1.9373996	-16.4469799
C	0.0001413	52.6535487	372768.	3.8572396	0.0005448	-0.0005852	1.9599426	-16.8059319
C	0.0001438	53.1719162	369892.	3.8425121	0.0005524	-0.0005976	1.9823729	-17.1647773
C	0.0001463	53.6892034	367106.	3.8283133	0.0005599	-0.0006101	2.0046902	-17.5235159
C	0.0001488	54.2054077	364406.	3.8146165	0.0005674	-0.0006226	2.0268944	-17.8821475
C	0.0001588	56.2496973	354329.	3.7638562	0.0005975	-0.0006725	2.1143360	-19.3179965
C	0.0001688	58.2727928	345320.	3.7192658	0.0006276	-0.0007224	2.1998697	-20.7530925
C	0.0001788	60.2678248	337163.	3.6794197	0.0006577	-0.0007723	2.2832966	-22.1894577
C	0.0001888	62.2455035	329778.	3.6441154	0.0006878	-0.0008222	2.3649079	-23.6240725
C	0.0001988	64.1982171	323010.	3.6122475	0.0007179	-0.0008721	2.4444706	-25.0593577
C	0.0002088	66.1324067	316802.	3.5836703	0.0007481	-0.0009219	2.5221767	-26.4932054
C	0.0002188	68.0484571	311079.	3.5579577	0.0007783	-0.0009717	2.5980303	-27.9254550
C	0.0002288	69.9409484	305753.	3.5344250	0.0008085	-0.0010215	2.6718474	-29.3581577

C	0.0002388	71.8157043	300799.	3.5131299	0.0008388	-0.0010712	2.7438194	-30.7890165
C	0.0002488	73.6725562	296171.	3.4938052	0.0008691	-0.0011209	2.8139350	-32.2180122
C	0.0002588	75.5103591	291827.	3.4761620	0.0008995	-0.0011705	2.8821462	-33.6455984
C	0.0002688	77.3266281	287727.	3.4598651	0.0009298	-0.0012202	2.9483568	-35.0729259
C	0.0002788	79.1246556	283855.	3.4449768	0.0009603	-0.0012697	3.0126869	-36.4983183
C	0.0002888	80.9042614	280188.	3.4313533	0.0009908	-0.0013192	3.0751244	-37.9217541
C	0.0002988	82.6652622	276704.	3.4188703	0.0010214	-0.0013686	3.1356572	-39.3432116
C	0.0003088	84.4074711	273385.	3.4074193	0.0010520	-0.0014180	3.1942728	-40.7626684
C	0.0003188	86.1299558	270212.	3.3968510	0.0010827	-0.0014673	3.2509264	-42.1806077
C	0.0003288	87.8316604	267169.	3.3870197	0.0011135	-0.0015165	3.3055698	-43.5976500
C	0.0003388	89.5141449	264248.	3.3779818	0.0011443	-0.0015657	3.3582664	-45.0126006
C	0.0003488	91.1772071	261440.	3.3696715	0.0011752	-0.0016148	3.4090029	-46.4254344
C	0.0003588	92.8206407	258733.	3.3620304	0.0012061	-0.0016639	3.4577657	-47.8361256
C	0.0003688	94.4442352	256120.	3.3550065	0.0012372	-0.0017128	3.5045409	-49.2446481
C	0.0003788	96.0477755	253591.	3.3485535	0.0012683	-0.0017617	3.5493144	-50.6509749
C	0.0003888	97.6310423	251141.	3.3426296	0.0012994	-0.0018106	3.5920718	-52.0550785
C	0.0003988	99.1938117	248762.	3.3371975	0.0013307	-0.0018593	3.6327983	-53.4569309
C	0.0004088	100.7358548	246449.	3.3322236	0.0013620	-0.0019080	3.6714791	-54.8565031
C	0.0004188	102.2569379	244196.	3.3276775	0.0013935	-0.0019565	3.7080990	-56.2537657
C	0.0004288	103.7568223	241998.	3.3235315	0.0014250	-0.0020050	3.7426423	-57.6486885
C	0.0004388	105.2352244	239852.	3.3197563	0.0014565	-0.0020535	3.7750911	-59.0412995
CY	0.0004488	106.6913850	237752.	3.3162716	0.0014882	-0.0021018	3.8054052	-60.0000000
CY	0.0004588	108.1257389	235696.	3.3131249	0.0015199	-0.0021501	3.8336000	-60.0000000
CY	0.0004688	109.5379698	233681.	3.3102969	0.0015517	-0.0021983	3.8596582	-60.0000000
CY	0.0004788	110.9278074	231703.	3.3077703	0.0015836	-0.0022464	3.8835621	-60.0000000
CY	0.0004888	112.2949748	229760.	3.3055292	0.0016156	-0.0022944	3.9052940	-60.0000000
CY	0.0004988	113.6391884	227848.	3.3035589	0.0016476	-0.0023424	3.9248357	-60.0000000
CY	0.0005088	114.9601578	225966.	3.3018461	0.0016798	-0.0023902	3.9421685	-60.0000000
CY	0.0005188	116.2575854	224111.	3.3003785	0.0017121	-0.0024379	3.9572736	-60.0000000
CY	0.0005288	117.5311660	222281.	3.2991448	0.0017444	-0.0024856	3.9701312	-60.0000000
CY	0.0005388	118.7805870	220474.	3.2981347	0.0017769	-0.0025331	3.9807217	-60.0000000
CY	0.0005488	120.0055275	218689.	3.2973387	0.0018094	-0.0025806	3.9890246	-60.0000000
CY	0.0006088	126.8103820	208313.	3.2966639	0.0020068	-0.0028632	3.9999984	-60.0000000
CY	0.0006688	132.6131954	198300.	3.3021188	0.0022083	-0.0031417	3.9992558	60.0000000
CY	0.0007288	137.4975231	188676.	3.3120851	0.0024137	-0.0034163	3.9992142	60.0000000
CY	0.0007888	141.5940474	179517.	3.3250812	0.0026227	-0.0036873	3.9969175	60.0000000
CY	0.0008488	145.0225480	170866.	3.3399910	0.0028348	-0.0039552	3.9985427	60.0000000
CY	0.0009088	147.8852730	162735.	3.3562641	0.0030500	-0.0042200	3.9985579	60.0000000
CY	0.0009688	150.2646619	155112.	3.3733946	0.0032680	-0.0044820	3.9969549	60.0000000
CY	0.0010288	152.2313049	147977.	3.3910051	0.0034885	-0.0047415	3.9999923	60.0000000

CY	0.0010888	153.8402675	141300.	3.4086524	0.0037112	-0.0049988	3.9974366	60.0000000
CY	0.0011488	153.8402675	133920.	3.4340595	0.0039449	-0.0052451	3.9999060	60.0000000

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	20.000	147.220	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (ϕ -factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are spirals or tied hoops.

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = 0.250000 in
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	1432.2367	-0.004986	0.000	8.288E+08	0.000	0.000	0.000
6.000	0.2201	9191.7311	1389.8550	-0.004953	0.000	8.288E+08	-14.1272	385.1405	0.000
12.000	0.1906	17867.	1270.2800	-0.004855	0.000	8.288E+08	-25.7311	810.1381	0.000
18.000	0.1618	25600.	1093.2863	-0.004697	0.000	8.275E+08	-33.2668	1233.4137	0.000
24.000	0.1342	32114.	884.7831	-0.004488	0.000	8.254E+08	-36.2343	1619.9956	0.000
30.000	0.1080	37295.	662.8218	-0.004235	0.000	8.231E+08	-37.7528	2097.8516	0.000
36.000	0.0834	41084.	433.1582	-0.003835	0.000	4.659E+08	-38.8018	2792.1356	0.000
42.000	0.0620	43413.	195.5334	-0.003275	0.000	4.413E+08	-40.4065	3912.7674	0.000
48.000	0.0441	44216.	-49.8914	-0.002674	0.000	4.337E+08	-41.4018	5635.1670	0.000
54.000	0.0299	43456.	-294.6662	-0.002072	0.000	4.410E+08	-40.1898	8071.9952	0.000
60.000	0.0192	41178.	-501.6919	-0.001511	0.000	4.649E+08	-28.8188	9000.0000	0.000
66.000	0.0117	37798.	-646.2618	-0.001108	0.000	8.229E+08	-19.3712	9900.0000	0.000
72.000	0.005921	33688.	-736.3508	-0.000847	0.000	8.247E+08	-10.6585	10800.	0.000
78.000	0.001573	29165.	-777.5292	-0.000619	0.000	8.265E+08	-3.0676	11700.	0.000
84.000	-0.001505	24507.	-777.2524	-0.000424	0.000	8.278E+08	3.1599	12600.	0.000
90.000	-0.003517	19940.	-744.0346	-0.000263	0.000	8.285E+08	7.9127	13500.	0.000
96.000	-0.004662	15641.	-686.7273	-0.000134	0.000	8.287E+08	11.1897	14400.	0.000
102.000	-0.005129	11732.	-613.9251	-3.522E-05	0.000	8.288E+08	13.0777	15300.	0.000
108.000	-0.005085	8282.6569	-533.5035	3.723E-05	0.000	8.288E+08	13.7295	16200.	0.000
114.000	-0.004682	5320.7028	-452.2858	8.646E-05	0.000	8.289E+08	13.3430	17100.	0.000
120.000	-0.004047	2834.4760	-375.8298	0.000116	0.000	8.290E+08	12.1423	18000.	0.000
126.000	-0.003290	782.9105	-308.3122	0.000129	0.000	8.295E+08	10.3636	18900.	0.000
132.000	-0.002499	-896.2464	-252.4851	0.000129	0.000	8.295E+08	8.2455	19800.	0.000
138.000	-0.001746	-2277.7887	-209.6763	0.000117	0.000	8.291E+08	6.0241	20700.	0.000
144.000	-0.001093	-3440.4837	-105.6191	9.648E-05	0.000	8.290E+08	28.6616	157404.	0.000
150.000	-0.000588	-3568.3729	29.5825	7.112E-05	0.000	8.290E+08	16.4056	167304.	0.000
156.000	-0.000239	-3102.5622	99.9865	4.698E-05	0.000	8.290E+08	7.0624	177204.	0.000
162.000	-2.464E-05	-2379.8091	123.4787	2.714E-05	0.000	8.291E+08	0.7683	187104.	0.000
168.000	8.652E-05	-1627.3307	117.2612	1.264E-05	0.000	8.292E+08	-2.8408	197004.	0.000
174.000	0.000127	-975.7077	95.5975	3.223E-06	0.000	8.295E+08	-4.3805	206904.	0.000
180.000	0.000125	-480.9344	68.8850	-2.045E-06	0.000	8.295E+08	-4.5237	216804.	0.000
186.000	0.000102	-148.5969	43.6972	-4.322E-06	0.000	8.295E+08	-3.8722	226704.	0.000
192.000	7.333E-05	44.4690	23.4059	-4.699E-06	0.000	8.295E+08	-2.8915	236604.	0.000
198.000	4.610E-05	133.4012	9.0496	-4.056E-06	0.000	8.295E+08	-1.8939	246504.	0.000
204.000	2.466E-05	154.0378	0.2066	-3.016E-06	0.000	8.295E+08	-1.0538	256404.	0.000

210.000	9.906E-06	136.6037	-4.2739	-1.965E-06	0.000	8.295E+08	-0.4397	266304.	0.000
216.000	1.082E-06	103.2222	-5.7424	-1.097E-06	0.000	8.295E+08	-0.0498	276204.	0.000
222.000	-3.263E-06	67.9581	-5.4251	-4.783E-07	0.000	8.295E+08	0.1556	286104.	0.000
228.000	-4.658E-06	38.2362	-4.2689	-9.428E-08	0.000	8.295E+08	0.2298	296004.	0.000
234.000	-4.394E-06	16.7542	-2.9073	1.046E-07	0.000	8.295E+08	0.2240	305904.	0.000
240.000	-3.403E-06	3.3229	-1.6979	1.772E-07	0.000	8.295E+08	0.1791	315804.	0.000
246.000	-2.268E-06	-3.6630	-0.7912	1.760E-07	0.000	8.295E+08	0.1231	325704.	0.000
252.000	-1.291E-06	-6.2141	-0.2052	1.403E-07	0.000	8.295E+08	0.0722	335604.	0.000
258.000	-5.846E-07	-6.1596	0.1124	9.551E-08	0.000	8.295E+08	0.0337	345504.	0.000
264.000	-1.452E-07	-4.8878	0.2392	5.555E-08	0.000	8.295E+08	0.008603	355404.	0.000
270.000	8.203E-08	-3.3021	0.2501	2.593E-08	0.000	8.295E+08	-0.004994	365304.	0.000
276.000	1.660E-07	-1.8933	0.2039	7.144E-09	0.000	8.295E+08	-0.0104	375204.	0.000
282.000	1.678E-07	-0.8564	0.1405	-2.801E-09	0.000	8.295E+08	-0.0108	385104.	0.000
288.000	1.324E-07	-0.2065	0.0821	-6.645E-09	0.000	8.295E+08	-0.008714	395004.	0.000
294.000	8.802E-08	0.1299	0.0381	-6.922E-09	0.000	8.295E+08	-0.005940	404904.	0.000
300.000	4.930E-08	0.2523	0.0101	-5.540E-09	0.000	8.295E+08	-0.003408	414804.	0.000
306.000	2.154E-08	0.2519	-0.004743	-3.716E-09	0.000	8.295E+08	-0.001525	424704.	0.000
312.000	4.707E-09	0.1963	-0.0103	-2.095E-09	0.000	8.295E+08	-0.000341	434604.	0.000
318.000	-3.605E-09	0.1283	-0.0106	-9.213E-10	0.000	8.295E+08	0.000267	444504.	0.000
324.000	-6.348E-09	0.0698	-0.008318	-2.049E-10	0.000	8.295E+08	0.000481	454404.	0.000
330.000	-6.063E-09	0.0285	-0.005468	1.507E-10	0.000	8.295E+08	0.000469	464304.	0.000
336.000	-4.540E-09	0.004133	-0.002984	2.688E-10	0.000	8.295E+08	0.000359	474204.	0.000
342.000	-2.837E-09	-0.007348	-0.001221	2.572E-10	0.000	8.295E+08	0.000229	484104.	0.000
348.000	-1.454E-09	-0.0106	-0.000175	1.923E-10	0.000	8.295E+08	0.000120	494004.	0.000
354.000	-5.294E-10	-0.009495	0.000317	1.197E-10	0.000	8.295E+08	4.446E-05	503904.	0.000
360.000	-1.706E-11	-0.006800	0.000455	6.080E-11	0.000	8.295E+08	1.461E-06	513804.	0.000
366.000	2.002E-10	-0.004047	0.000407	2.157E-11	0.000	8.295E+08	-1.747E-05	523704.	0.000
372.000	2.418E-10	-0.001919	0.000290	0.000	0.000	8.295E+08	-2.150E-05	533604.	0.000
378.000	2.000E-10	-0.000564	0.000171	-8.993E-12	0.000	8.295E+08	-1.812E-05	543504.	0.000
384.000	1.338E-10	0.000140	8.001E-05	-1.053E-11	0.000	8.295E+08	-1.234E-05	553404.	0.000
390.000	7.371E-11	0.000399	2.221E-05	-8.581E-12	0.000	8.295E+08	-6.920E-06	563304.	0.000
396.000	3.087E-11	0.000408	-7.394E-06	-5.663E-12	0.000	8.295E+08	-2.949E-06	573204.	0.000
402.000	5.750E-12	0.000311	-1.792E-05	-3.061E-12	0.000	8.295E+08	-5.588E-07	583104.	0.000
408.000	-5.862E-12	0.000194	-1.786E-05	-1.234E-12	0.000	8.295E+08	5.794E-07	593004.	0.000
414.000	-9.059E-12	9.726E-05	-1.339E-05	0.000	0.000	8.295E+08	9.103E-07	602904.	0.000
420.000	-8.034E-12	3.330E-05	-8.195E-06	0.000	0.000	8.295E+08	8.206E-07	612804.	0.000
426.000	-5.565E-12	-1.150E-06	-4.001E-06	0.000	0.000	8.295E+08	5.775E-07	622704.	0.000
432.000	-3.145E-12	-1.481E-05	-1.273E-06	0.000	0.000	8.295E+08	3.316E-07	632604.	0.000
438.000	-1.368E-12	-1.652E-05	1.607E-07	0.000	0.000	8.295E+08	1.465E-07	642504.	0.000
444.000	0.000	-1.294E-05	7.004E-07	0.000	0.000	8.295E+08	3.343E-08	652404.	0.000
450.000	0.000	-8.142E-06	7.372E-07	0.000	0.000	8.295E+08	-2.114E-08	662304.	0.000
456.000	0.000	-4.102E-06	5.605E-07	0.000	0.000	8.295E+08	-3.777E-08	672204.	0.000
462.000	0.000	-1.418E-06	3.432E-07	0.000	0.000	8.295E+08	-3.465E-08	682104.	0.000
468.000	0.000	1.952E-08	1.663E-07	0.000	0.000	8.295E+08	-2.432E-08	692004.	0.000
474.000	0.000	5.816E-07	5.205E-08	0.000	0.000	8.295E+08	-1.378E-08	701904.	0.000
480.000	0.000	6.473E-07	-7.052E-09	0.000	0.000	8.295E+08	-5.923E-09	711804.	0.000
486.000	0.000	4.992E-07	-2.849E-08	0.000	0.000	8.295E+08	-1.224E-09	721704.	0.000
492.000	0.000	3.066E-07	-2.927E-08	0.000	0.000	8.295E+08	9.646E-10	731604.	0.000
498.000	0.000	1.484E-07	-2.167E-08	0.000	0.000	8.295E+08	1.568E-09	741504.	0.000
504.000	0.000	4.658E-08	-1.282E-08	0.000	0.000	8.295E+08	1.381E-09	751404.	0.000
510.000	0.000	-5.546E-09	-5.879E-09	0.000	0.000	8.295E+08	9.325E-10	761304.	0.000
516.000	0.000	-2.410E-08	-1.574E-09	0.000	0.000	8.295E+08	5.023E-10	771204.	0.000
522.000	0.000	-2.456E-08	5.232E-10	0.000	0.000	8.295E+08	1.969E-10	781104.	0.000
528.000	0.000	-1.790E-08	1.186E-09	0.000	0.000	8.295E+08	2.416E-11	791004.	0.000
534.000	0.000	-1.036E-08	1.111E-09	0.000	0.000	8.295E+08	-4.931E-11	800904.	0.000
540.000	0.000	-4.580E-09	7.715E-10	0.000	0.000	8.295E+08	-6.385E-11	810804.	0.000
546.000	0.000	-1.098E-09	4.253E-10	0.000	0.000	8.295E+08	-5.155E-11	820704.	0.000
552.000	0.000	5.281E-10	1.736E-10	0.000	0.000	8.295E+08	-3.234E-11	830604.	0.000
558.000	0.000	9.901E-10	2.902E-11	0.000	0.000	8.295E+08	-1.586E-11	840504.	0.000
564.000	0.000	8.803E-10	-3.378E-11	0.000	0.000	8.295E+08	-5.074E-12	850404.	0.000
570.000	0.000	5.871E-10	-4.753E-11	0.000	0.000	8.295E+08	0.000	860304.	0.000
576.000	0.000	3.110E-10	-3.861E-11	0.000	0.000	8.295E+08	2.486E-12	870204.	0.000
582.000	0.000	1.241E-10	-2.351E-11	0.000	0.000	8.295E+08	2.548E-12	880104.	0.000
588.000	0.000	2.877E-11	-1.043E-11	0.000	0.000	8.295E+08	1.812E-12	890004.	0.000
594.000	0.000	-1.316E-12	-2.376E-12	0.000	0.000	8.295E+08	0.000	899904.	0.000
600.000	0.000	0.000	0.000	0.000	0.000	8.295E+08	0.000	454902.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
 Computed slope at pile head = -0.0049859 radians
 Maximum bending moment = 44216. inch-lbs

Maximum shear force = 1432.2367489 lbs
 Depth of maximum bending moment = 48.000000 inches below pile head
 Depth of maximum shear force = 0.000000 inches below pile head
 Number of iterations = 19
 Number of zero deflection points = 12

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Slope (BC Type 5)
 Displacement of pile head = 0.250000 in
 Slope of pile head = 0.000E+00 in/in
 Axial load on pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	-91778.	3201.1105	0.000	0.000	2.985E+08	0.000	0.000	0.000
6.000	0.2445	-72726.	3112.5699	-0.001653	0.000	2.985E+08	-14.7568	362.1809	0.000
12.000	0.2302	-54031.	2984.8590	-0.002927	0.000	2.985E+08	-27.8135	725.0698	0.000
18.000	0.2093	-36206.	2790.4986	-0.003602	0.000	8.236E+08	-36.9733	1059.7350	0.000
24.000	0.1869	-19680.	2553.9652	-0.003806	0.000	8.285E+08	-41.8711	1343.9673	0.000
30.000	0.1637	-4644.6538	2287.7200	-0.003894	0.000	8.289E+08	-46.8773	1718.4984	0.000
36.000	0.1402	8707.1296	1989.4754	-0.003879	0.000	8.288E+08	-52.5376	2248.3090	0.000
42.000	0.1171	20160.	1653.3330	-0.003774	0.000	8.285E+08	-59.5099	3048.6374	0.000
48.000	0.0949	29453.	1276.8029	-0.003594	0.000	8.264E+08	-66.0001	4172.2705	0.000
54.000	0.0740	36344.	869.5136	-0.003355	0.000	8.236E+08	-69.7630	5657.4490	0.000
60.000	0.0547	40692.	450.3106	-0.002963	0.000	4.700E+08	-69.9713	7682.0764	0.000
66.000	0.0384	42459.	50.1663	-0.002421	0.000	4.506E+08	-63.4101	9900.0000	0.000
72.000	0.0256	41875.	-278.3175	-0.001863	0.000	4.567E+08	-46.0845	10800.	0.000
78.000	0.0161	39566.	-510.6128	-0.001343	0.000	4.855E+08	-31.3472	11700.	0.000
84.000	0.009482	36070.	-664.3933	-0.000967	0.000	8.237E+08	-19.9129	12600.	0.000
90.000	0.004466	31826.	-754.2755	-0.000720	0.000	8.255E+08	-10.0478	13500.	0.000
96.000	0.000837	27192.	-790.4450	-0.000506	0.000	8.271E+08	-2.0087	14400.	0.000
102.000	-0.001608	22462.	-784.1679	-0.000326	0.000	8.282E+08	4.1010	15300.	0.000
108.000	-0.003077	17860.	-746.9407	-0.000180	0.000	8.286E+08	8.3080	16200.	0.000
114.000	-0.003770	13542.	-689.7842	-6.645E-05	0.000	8.287E+08	10.7442	17100.	0.000
120.000	-0.003874	9598.7994	-622.6816	1.732E-05	0.000	8.288E+08	11.6234	18000.	0.000
126.000	-0.003562	6065.6829	-554.1498	4.402E-05	0.000	8.289E+08	11.2206	18900.	0.000
132.000	-0.002986	2931.2381	-490.9240	0.000107	0.000	8.290E+08	9.8547	19800.	0.000
138.000	-0.002283	149.0168	-437.7290	0.000118	0.000	8.295E+08	7.8769	20700.	0.000
144.000	-0.001574	-2349.7637	-290.2523	0.000110	0.000	8.291E+08	41.2820	157404.	0.000
150.000	-0.000966	-3360.3526	-85.5930	8.910E-05	0.000	8.290E+08	26.9378	167304.	0.000
156.000	-0.000504	-3398.2626	39.9161	6.464E-05	0.000	8.290E+08	14.8986	177204.	0.000
162.000	-0.000190	-2896.8730	102.4257	4.186E-05	0.000	8.290E+08	5.9380	187104.	0.000
168.000	-2.175E-06	-2179.2003	120.4539	2.349E-05	0.000	8.291E+08	0.0714	197004.	0.000
174.000	9.145E-05	-1457.0638	111.2079	1.033E-05	0.000	8.293E+08	-3.1534	206904.	0.000
180.000	0.000122	-847.1858	88.5425	1.998E-06	0.000	8.295E+08	-4.4017	216804.	0.000
186.000	0.000115	-395.0331	62.2547	-2.495E-06	0.000	8.295E+08	-4.3609	226704.	0.000
192.000	9.188E-05	-99.5311	38.3028	-4.284E-06	0.000	8.295E+08	-3.6230	236604.	0.000
198.000	6.401E-05	65.6291	19.5441	-4.406E-06	0.000	8.295E+08	-2.6299	246504.	0.000
204.000	3.900E-05	136.0555	6.6546	-3.677E-06	0.000	8.295E+08	-1.6666	256404.	0.000
210.000	1.989E-05	146.3663	-0.9937	-2.655E-06	0.000	8.295E+08	-0.8828	266304.	0.000
216.000	7.134E-06	124.7688	-4.6273	-1.675E-06	0.000	8.295E+08	-0.3284	276204.	0.000
222.000	-2.082E-07	91.2409	-5.5827	-8.937E-07	0.000	8.295E+08	0.009927	286104.	0.000
228.000	-3.590E-06	57.9912	-5.0215	-3.539E-07	0.000	8.295E+08	0.1771	296004.	0.000
234.000	-4.455E-06	31.0674	-3.8087	-3.184E-08	0.000	8.295E+08	0.2272	305904.	0.000
240.000	-3.972E-06	12.2942	-2.5000	1.250E-07	0.000	8.295E+08	0.2091	315804.	0.000
246.000	-2.956E-06	1.0370	-1.3915	1.732E-07	0.000	8.295E+08	0.1604	325704.	0.000
252.000	-1.894E-06	-4.4451	-0.5923	1.609E-07	0.000	8.295E+08	0.1059	335604.	0.000
258.000	-1.025E-06	-6.1098	-0.0974	1.227E-07	0.000	8.295E+08	0.0590	345504.	0.000
264.000	-4.215E-07	-5.6440	0.1546	8.019E-08	0.000	8.295E+08	0.0250	355404.	0.000
270.000	-6.289E-08	-4.2743	0.2410	4.432E-08	0.000	8.295E+08	0.003829	365304.	0.000
276.000	1.103E-07	-2.7631	0.2318	1.887E-08	0.000	8.295E+08	-0.006895	375204.	0.000
282.000	1.635E-07	-1.4978	0.1796	3.455E-09	0.000	8.295E+08	-0.0105	385104.	0.000
288.000	1.517E-07	-0.6089	0.1181	-4.164E-09	0.000	8.295E+08	-0.009989	395004.	0.000
294.000	1.135E-07	-0.0791	0.0652	-6.652E-09	0.000	8.295E+08	-0.007662	404904.	0.000
300.000	7.190E-08	0.1749	0.0273	-6.306E-09	0.000	8.295E+08	-0.004971	414804.	0.000
306.000	3.786E-08	0.2498	0.004338	-4.770E-09	0.000	8.295E+08	-0.002680	424704.	0.000
312.000	1.466E-08	0.2281	-0.006887	-3.042E-09	0.000	8.295E+08	-0.001062	434604.	0.000
318.000	1.360E-09	0.1679	-0.0104	-1.609E-09	0.000	8.295E+08	-0.000101	444504.	0.000
324.000	-4.652E-09	0.1040	-0.009620	-6.259E-10	0.000	8.295E+08	0.000352	454404.	0.000
330.000	-6.151E-09	0.0526	-0.007135	-5.947E-11	0.000	8.295E+08	0.000476	464304.	0.000
336.000	-5.366E-09	0.0184	-0.004435	1.973E-10	0.000	8.295E+08	0.000424	474204.	0.000
342.000	-3.783E-09	-0.000635	-0.002247	2.615E-10	0.000	8.295E+08	0.000305	484104.	0.000

348.000	-2.228E-09	-0.008657	-0.000781	2.279E-10	0.000	8.295E+08	0.000183	494004.	0.000
354.000	-1.048E-09	-0.0101	3.278E-05	1.602E-10	0.000	8.295E+08	8.802E-05	503904.	0.000
360.000	-3.055E-10	-0.008302	0.000375	9.373E-11	0.000	8.295E+08	2.616E-05	513804.	0.000
366.000	7.672E-11	-0.005586	0.000434	4.350E-11	0.000	8.295E+08	-6.696E-06	523704.	0.000
372.000	2.165E-10	-0.003107	0.000356	1.206E-11	0.000	8.295E+08	-1.926E-05	533604.	0.000
378.000	2.215E-10	-0.001319	0.000238	-3.943E-12	0.000	8.295E+08	-2.006E-05	543504.	0.000
384.000	1.692E-10	-0.000251	0.000131	-9.620E-12	0.000	8.295E+08	-1.561E-05	553404.	0.000
390.000	1.060E-10	0.000255	5.424E-05	-9.606E-12	0.000	8.295E+08	-9.956E-06	563304.	0.000
396.000	5.393E-11	0.000402	8.915E-06	-7.230E-12	0.000	8.295E+08	-5.153E-06	573204.	0.000
402.000	1.928E-11	0.000364	-1.216E-05	-4.461E-12	0.000	8.295E+08	-1.874E-06	583104.	0.000
408.000	0.000	0.000257	-1.791E-05	-2.216E-12	0.000	8.295E+08	-4.002E-08	593004.	0.000
414.000	-7.307E-12	0.000149	-1.582E-05	0.000	0.000	8.295E+08	7.343E-07	602904.	0.000
420.000	-8.543E-12	6.754E-05	-1.100E-05	0.000	0.000	8.295E+08	8.725E-07	612804.	0.000
426.000	-6.847E-12	1.719E-05	-6.253E-06	0.000	0.000	8.295E+08	7.106E-07	622704.	0.000
432.000	-4.405E-12	-7.581E-06	-2.728E-06	0.000	0.000	8.295E+08	4.645E-07	632604.	0.000
438.000	-2.292E-12	-1.563E-05	-5.979E-07	0.000	0.000	8.295E+08	2.455E-07	642504.	0.000
444.000	0.000	-1.483E-05	4.184E-07	0.000	0.000	8.295E+08	9.329E-08	652404.	0.000
450.000	0.000	-1.065E-05	7.204E-07	0.000	0.000	8.295E+08	7.390E-09	662304.	0.000
456.000	0.000	-6.205E-06	6.546E-07	0.000	0.000	8.295E+08	-2.932E-08	672204.	0.000
462.000	0.000	-2.806E-06	4.572E-07	0.000	0.000	8.295E+08	-3.649E-08	682104.	0.000
468.000	0.000	-7.184E-07	2.583E-07	0.000	0.000	8.295E+08	-2.982E-08	692004.	0.000
474.000	0.000	2.963E-07	1.109E-07	0.000	0.000	8.295E+08	-1.929E-08	701904.	0.000
480.000	0.000	6.162E-07	2.308E-08	0.000	0.000	8.295E+08	-9.985E-09	711804.	0.000
486.000	0.000	5.760E-07	-1.775E-08	0.000	0.000	8.295E+08	-3.626E-09	721704.	0.000
492.000	0.000	4.048E-07	-2.904E-08	0.000	0.000	8.295E+08	-1.371E-10	731604.	0.000
498.000	0.000	2.283E-07	-2.562E-08	0.000	0.000	8.295E+08	1.276E-09	741504.	0.000
504.000	0.000	9.760E-08	-1.733E-08	0.000	0.000	8.295E+08	1.487E-09	751404.	0.000
510.000	0.000	2.031E-08	-9.378E-09	0.000	0.000	8.295E+08	1.165E-09	761304.	0.000
516.000	0.000	-1.507E-08	-3.721E-09	0.000	0.000	8.295E+08	7.207E-10	771204.	0.000
522.000	0.000	-2.448E-08	-5.092E-10	0.000	0.000	8.295E+08	3.499E-10	781104.	0.000
528.000	0.000	-2.127E-08	8.692E-10	0.000	0.000	8.295E+08	1.096E-10	791004.	0.000
534.000	0.000	-1.410E-08	1.157E-09	0.000	0.000	8.295E+08	-1.373E-11	800904.	0.000
540.000	0.000	-7.417E-09	9.433E-10	0.000	0.000	8.295E+08	-5.738E-11	810804.	0.000
546.000	0.000	-2.790E-09	5.970E-10	0.000	0.000	8.295E+08	-5.807E-11	820704.	0.000
552.000	0.000	-2.511E-10	2.968E-10	0.000	0.000	8.295E+08	-4.199E-11	830604.	0.000
558.000	0.000	7.764E-10	9.885E-11	0.000	0.000	8.295E+08	-2.398E-11	840504.	0.000
564.000	0.000	9.398E-10	-4.054E-12	0.000	0.000	8.295E+08	-1.032E-11	850404.	0.000
570.000	0.000	7.308E-10	-4.154E-11	0.000	0.000	8.295E+08	-2.176E-12	860304.	0.000
576.000	0.000	4.430E-10	-4.340E-11	0.000	0.000	8.295E+08	1.557E-12	870204.	0.000
582.000	0.000	2.108E-10	-3.106E-11	0.000	0.000	8.295E+08	2.555E-12	880104.	0.000
588.000	0.000	7.032E-11	-1.674E-11	0.000	0.000	8.295E+08	2.218E-12	890004.	0.000
594.000	0.000	9.682E-12	-5.841E-12	0.000	0.000	8.295E+08	1.416E-12	899904.	0.000
600.000	0.000	0.000	0.000	0.000	0.000	8.295E+08	0.000	454902.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.250000 inches
 Computed slope at pile head = -0.0001915 radians
 Maximum bending moment = -91778. inch-lbs
 Maximum shear force = 3201.1104840 lbs
 Depth of maximum bending moment = 0.000000 inches below pile head
 Depth of maximum shear force = 0.000000 inches below pile head
 Number of iterations = 19
 Number of zero deflection points = 12

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (BC Type 4)

Deflection at pile head = 0.500000 in
 Moment at pile head = 0.000 in-lbs
 Axial load at pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	1933.6903	-0.0101	0.000	8.287E+08	0.000	0.000	0.000

6.000	0.4393	12816.	1885.1181	-0.0101	0.000	8.287E+08	-16.1907	221.1341	0.000
12.000	0.3792	25038.	1742.0844	-0.009933	0.000	8.287E+08	-31.4871	498.2685	0.000
18.000	0.3201	36105.	1515.4822	-0.009711	0.000	8.237E+08	-44.0469	825.6117	0.000
24.000	0.2626	45555.	1233.4516	-0.009255	0.000	4.218E+08	-49.9633	1141.4629	0.000
30.000	0.2090	53128.	921.1448	-0.008501	0.000	3.701E+08	-54.1390	1553.9401	0.000
36.000	0.1606	58649.	587.4681	-0.007558	0.000	3.437E+08	-57.0866	2132.5113	0.000
42.000	0.1183	61991.	236.5496	-0.006484	0.000	3.307E+08	-59.8863	3036.3156	0.000
48.000	0.0828	63043.	-125.3546	-0.005343	0.000	3.269E+08	-60.7485	4401.4757	0.000
54.000	0.0542	61769.	-480.8604	-0.004205	0.000	3.315E+08	-57.7534	6390.4753	0.000
60.000	0.0323	58282.	-799.6810	-0.003140	0.000	3.453E+08	-48.5201	9000.0000	0.000
66.000	0.0165	52927.	-1027.1448	-0.002206	0.000	3.712E+08	-27.3012	9900.0000	0.000
72.000	0.005879	46486.	-1140.7935	-0.001441	0.000	4.140E+08	-10.5817	10800.	0.000
78.000	-0.000747	39583.	-1168.1704	-0.000859	0.000	4.846E+08	1.4561	11700.	0.000
84.000	-0.004431	32674.	-1135.8844	-0.000495	0.000	8.252E+08	9.3059	12600.	0.000
90.000	-0.006691	26071.	-1062.8051	-0.000282	0.000	8.274E+08	15.0538	13500.	0.000
96.000	-0.007815	19988.	-961.3724	-0.000115	0.000	8.285E+08	18.7571	14400.	0.000
102.000	-0.008072	14563.	-843.3522	1.000E-05	0.000	8.287E+08	20.5830	15300.	0.000
108.000	-0.007695	9865.4500	-719.2702	9.843E-05	0.000	8.288E+08	20.7777	16200.	0.000
114.000	-0.006891	5907.7310	-598.0223	0.000156	0.000	8.289E+08	19.6383	17100.	0.000
120.000	-0.005829	2651.8579	-486.6446	0.000186	0.000	8.291E+08	17.4876	18000.	0.000
126.000	-0.004653	23.2358	-390.2144	0.000196	0.000	8.295E+08	14.6558	18900.	0.000
132.000	-0.003475	-2077.7973	-311.8438	0.000189	0.000	8.291E+08	11.4677	19800.	0.000
138.000	-0.002388	-3764.1886	-252.7280	0.000168	0.000	8.290E+08	8.2376	20700.	0.000
144.000	-0.001464	-5150.7577	-112.8100	0.000135	0.000	8.289E+08	38.4017	157404.	0.000
150.000	-0.000764	-5150.3899	66.2742	9.806E-05	0.000	8.289E+08	21.2930	167304.	0.000
156.000	-0.000287	-4379.0007	155.5931	6.357E-05	0.000	8.289E+08	8.4800	177204.	0.000
162.000	-8.005E-07	-3298.5293	181.1079	3.578E-05	0.000	8.290E+08	0.0250	187104.	0.000
168.000	0.000142	-2214.2945	167.1677	1.584E-05	0.000	8.291E+08	-4.6717	197004.	0.000
174.000	0.000189	-1296.3176	133.5774	3.134E-06	0.000	8.294E+08	-6.5251	206904.	0.000
180.000	0.000180	-612.1176	94.5020	-3.769E-06	0.000	8.295E+08	-6.5001	216804.	0.000
186.000	0.000144	-161.3889	58.6802	-6.567E-06	0.000	8.295E+08	-5.4405	226704.	0.000
192.000	0.000101	93.6206	30.3996	-6.812E-06	0.000	8.295E+08	-3.9863	236604.	0.000
198.000	6.225E-05	205.0409	10.7682	-5.732E-06	0.000	8.295E+08	-2.5575	246504.	0.000
204.000	3.231E-05	224.2140	-1.0465	-4.179E-06	0.000	8.295E+08	-1.3807	256404.	0.000
210.000	1.210E-05	193.4860	-6.8000	-2.668E-06	0.000	8.295E+08	-0.5371	266304.	0.000
216.000	2.889E-07	143.2549	-8.4511	-1.451E-06	0.000	8.295E+08	-0.0133	276204.	0.000
222.000	-5.306E-06	92.4208	-7.7320	-5.982E-07	0.000	8.295E+08	0.2530	286104.	0.000
228.000	-6.890E-06	50.6147	-5.9533	-8.090E-08	0.000	8.295E+08	0.3399	296004.	0.000
234.000	-6.277E-06	21.0007	-3.9736	1.781E-07	0.000	8.295E+08	0.3200	305904.	0.000
240.000	-4.752E-06	2.8887	-2.2632	2.645E-07	0.000	8.295E+08	0.2501	315804.	0.000
246.000	-3.103E-06	-6.2210	-1.0075	2.525E-07	0.000	8.295E+08	0.1684	325704.	0.000
252.000	-1.723E-06	-9.2623	-0.2132	1.965E-07	0.000	8.295E+08	0.0964	335604.	0.000
258.000	-7.450E-07	-8.8264	0.2046	1.310E-07	0.000	8.295E+08	0.0429	345504.	0.000
264.000	-1.504E-07	-6.8384	0.3600	7.430E-08	0.000	8.295E+08	0.008908	355404.	0.000
270.000	1.476E-07	-4.5238	0.3598	3.329E-08	0.000	8.295E+08	-0.008984	365304.	0.000
276.000	2.491E-07	-2.5287	0.2861	7.785E-09	0.000	8.295E+08	-0.0156	375204.	0.000
282.000	2.410E-07	-1.0923	0.1930	-5.311E-09	0.000	8.295E+08	-0.0115	385104.	0.000
288.000	1.854E-07	-0.2118	0.1099	-1.003E-08	0.000	8.295E+08	-0.0122	395004.	0.000
294.000	1.207E-07	0.2294	0.0489	-9.964E-09	0.000	8.295E+08	-0.008143	404904.	0.000
300.000	6.586E-08	0.3773	0.0108	-7.769E-09	0.000	8.295E+08	-0.004553	414804.	0.000
306.000	2.743E-08	0.3609	-0.008679	-5.100E-09	0.000	8.295E+08	-0.001942	424704.	0.000
312.000	4.666E-09	0.2744	-0.0155	-2.802E-09	0.000	8.295E+08	-0.000338	434604.	0.000
318.000	-6.193E-09	0.1754	-0.0152	-1.175E-09	0.000	8.295E+08	0.000459	444504.	0.000
324.000	-9.439E-09	0.0928	-0.0116	-2.056E-10	0.000	8.295E+08	0.000715	454404.	0.000
330.000	-8.660E-09	0.0358	-0.007480	2.594E-10	0.000	8.295E+08	0.000670	464304.	0.000
336.000	-6.326E-09	0.002951	-0.003969	3.996E-10	0.000	8.295E+08	0.000500	474204.	0.000
342.000	-3.864E-09	-0.0119	-0.001534	3.672E-10	0.000	8.295E+08	0.000312	484104.	0.000
348.000	-1.920E-09	-0.0155	-0.000124	2.679E-10	0.000	8.295E+08	0.000158	494004.	0.000
354.000	-6.498E-10	-0.0135	0.000514	1.630E-10	0.000	8.295E+08	5.457E-05	503904.	0.000
360.000	3.563E-11	-0.009421	0.000668	8.016E-11	0.000	8.295E+08	-3.051E-06	513804.	0.000
366.000	3.122E-10	-0.005472	0.000577	2.630E-11	0.000	8.295E+08	-2.725E-05	523704.	0.000
372.000	3.513E-10	-0.002500	0.000402	-2.529E-12	0.000	8.295E+08	-3.124E-05	533604.	0.000
378.000	2.818E-10	-0.000650	0.000231	-1.392E-11	0.000	8.295E+08	-2.553E-05	543504.	0.000
384.000	1.842E-10	0.000281	0.000104	-1.526E-11	0.000	8.295E+08	-1.699E-05	553404.	0.000
390.000	9.876E-11	0.000600	2.513E-05	-1.207E-11	0.000	8.295E+08	-9.272E-06	563304.	0.000
396.000	3.938E-11	0.000586	-1.398E-05	-7.779E-12	0.000	8.295E+08	-3.762E-06	573204.	0.000
402.000	5.414E-12	0.000435	-2.684E-05	-4.090E-12	0.000	8.295E+08	-5.261E-07	583104.	0.000
408.000	-9.695E-12	0.000264	-2.555E-05	-1.562E-12	0.000	8.295E+08	9.582E-07	593004.	0.000
414.000	-1.333E-11	0.000128	-1.865E-05	0.000	0.000	8.295E+08	1.339E-06	602904.	0.000
420.000	-1.139E-11	4.054E-05	-1.115E-05	0.000	0.000	8.295E+08	1.164E-06	612804.	0.000
426.000	-7.698E-12	-5.464E-06	-5.258E-06	0.000	0.000	8.295E+08	7.989E-07	622704.	0.000
432.000	-4.239E-12	-2.270E-05	-1.520E-06	0.000	0.000	8.295E+08	4.469E-07	632604.	0.000
438.000	-1.765E-12	-2.382E-05	3.879E-07	0.000	0.000	8.295E+08	1.890E-07	642504.	0.000
444.000	0.000	-1.812E-05	1.061E-06	0.000	0.000	8.295E+08	3.539E-08	652404.	0.000
450.000	0.000	-1.113E-05	1.059E-06	0.000	0.000	8.295E+08	-3.620E-08	662304.	0.000
456.000	0.000	-5.433E-06	7.826E-07	0.000	0.000	8.295E+08	-5.583E-08	672204.	0.000
462.000	0.000	-1.741E-06	4.675E-07	0.000	0.000	8.295E+08	-4.921E-08	682104.	0.000
468.000	0.000	1.815E-07	2.189E-07	0.000	0.000	8.295E+08	-3.366E-08	692004.	0.000
474.000	0.000	8.919E-07	6.224E-08	0.000	0.000	8.295E+08	-1.857E-08	701904.	0.000
480.000	0.000	9.329E-07	-1.636E-08	0.000	0.000	8.295E+08	-7.631E-09	711804.	0.000

486.000	0.000	6.985E-07	-4.301E-08	0.000	0.000	8.295E+08	-1.252E-09	721704.	0.000
492.000	0.000	4.183E-07	-4.194E-08	0.000	0.000	8.295E+08	1.610E-09	731604.	0.000
498.000	0.000	1.958E-07	-3.019E-08	0.000	0.000	8.295E+08	2.306E-09	741504.	0.000
504.000	0.000	5.606E-08	-1.741E-08	0.000	0.000	8.295E+08	1.955E-09	751404.	0.000
510.000	0.000	-1.332E-08	-7.686E-09	0.000	0.000	8.295E+08	1.286E-09	761304.	0.000
516.000	0.000	-3.638E-08	-1.807E-09	0.000	0.000	8.295E+08	6.734E-10	771204.	0.000
522.000	0.000	-3.516E-08	9.637E-10	0.000	0.000	8.295E+08	2.500E-10	781104.	0.000
528.000	0.000	-2.492E-08	1.764E-09	0.000	0.000	8.295E+08	1.680E-11	791004.	0.000
534.000	0.000	-1.404E-08	1.581E-09	0.000	0.000	8.295E+08	-7.797E-11	800904.	0.000
540.000	0.000	-5.965E-09	1.068E-09	0.000	0.000	8.295E+08	-9.274E-11	810804.	0.000
546.000	0.000	-1.220E-09	5.730E-10	0.000	0.000	8.295E+08	-7.243E-11	820704.	0.000
552.000	0.000	9.180E-10	2.228E-10	0.000	0.000	8.295E+08	-4.427E-11	830604.	0.000
558.000	0.000	1.462E-09	2.700E-11	0.000	0.000	8.295E+08	-2.101E-11	840504.	0.000
564.000	0.000	1.248E-09	-5.453E-11	0.000	0.000	8.295E+08	-6.170E-12	850404.	0.000
570.000	0.000	8.104E-10	-6.928E-11	0.000	0.000	8.295E+08	1.254E-12	860304.	0.000
576.000	0.000	4.176E-10	-5.426E-11	0.000	0.000	8.295E+08	3.751E-12	870204.	0.000
582.000	0.000	1.595E-10	-3.208E-11	0.000	0.000	8.295E+08	3.645E-12	880104.	0.000
588.000	0.000	3.253E-11	-1.361E-11	0.000	0.000	8.295E+08	2.509E-12	890004.	0.000
594.000	0.000	-4.173E-12	-2.680E-12	0.000	0.000	8.295E+08	1.135E-12	899904.	0.000
600.000	0.000	0.000	0.000	0.000	0.000	8.295E+08	0.000	454902.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	0.5000000	inches
Computed slope at pile head	=	-0.0101165	radians
Maximum bending moment	=	63043.	inch-lbs
Maximum shear force	=	1933.6902819	lbs
Depth of maximum bending moment	=	48.0000000	inches below pile head
Depth of maximum shear force	=	0.0000000	inches below pile head
Number of iterations	=	19	
Number of zero deflection points	=	12	

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 4

Pile-head conditions are Displacement and Slope (BC Type 5)

Displacement of pile head	=	0.500000	in
Slope of pile head	=	0.000E+00	in/in
Axial load on pile head	=	20000.000	lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	-137729.	4564.4688	0.000	0.000	2.324E+08	0.000	0.000	0.000
6.000	0.4893	-110420.	4467.3245	-0.003203	0.000	2.324E+08	-16.1907	198.5238	0.000
12.000	0.4616	-83352.	4324.2913	-0.005704	0.000	2.324E+08	-31.4870	409.3106	0.000
18.000	0.4209	-57160.	4097.6899	-0.007270	0.000	3.502E+08	-44.0467	627.9239	0.000
24.000	0.3743	-32435.	3803.6745	-0.007878	0.000	8.253E+08	-53.9584	864.9001	0.000
30.000	0.3263	-9625.0778	3435.7067	-0.008030	0.000	8.288E+08	-68.6975	1263.0246	0.000
36.000	0.2780	10720.	2979.9127	-0.008026	0.000	8.288E+08	-83.2338	1796.6972	0.000
42.000	0.2300	28060.	2451.8645	-0.007886	0.000	8.268E+08	-92.7822	2420.0888	0.000
48.000	0.1833	42035.	1874.5667	-0.007507	0.000	4.551E+08	-99.6504	3261.4166	0.000
54.000	0.1399	52357.	1267.1808	-0.006810	0.000	3.744E+08	-102.8116	4407.8828	0.000
60.000	0.1016	58876.	652.7078	-0.005876	0.000	3.428E+08	-102.0127	6024.2607	0.000
66.000	0.0694	61599.	58.5915	-0.004804	0.000	3.321E+08	-96.0260	8297.1017	0.000
72.000	0.0440	60732.	-466.8524	-0.003704	0.000	3.354E+08	-79.1220	10800.	0.000
78.000	0.0250	56886.	-850.4214	-0.002675	0.000	3.514E+08	-48.7344	11700.	0.000
84.000	0.0119	51169.	-1071.3136	-0.001787	0.000	3.815E+08	-24.8964	12600.	0.000
90.000	0.003548	44459.	-1169.9508	-0.001075	0.000	4.315E+08	-7.9827	13500.	0.000
96.000	-0.001051	37388.	-1186.3348	-0.000630	0.000	8.231E+08	2.5214	14400.	0.000
102.000	-0.004014	30374.	-1148.0661	-0.000384	0.000	8.261E+08	10.2349	15300.	0.000
108.000	-0.005653	23703.	-1071.5715	-0.000187	0.000	8.280E+08	15.2633	16200.	0.000
114.000	-0.006262	17560.	-972.2429	-3.789E-05	0.000	8.286E+08	17.8462	17100.	0.000
120.000	-0.006108	12045.	-863.7349	6.929E-05	0.000	8.288E+08	18.3231	18000.	0.000
126.000	-0.005430	7179.0411	-757.4491	0.000139	0.000	8.288E+08	17.1055	18900.	0.000
132.000	-0.004441	2922.4621	-662.1653	0.000175	0.000	8.290E+08	14.6557	19800.	0.000
138.000	-0.003325	-809.0484	-583.7839	0.000183	0.000	8.295E+08	11.4714	20700.	0.000

144.000	-0.002244	-4126.8866	-372.7576	0.000165	0.000	8.289E+08	58.8707	157404.	0.000
150.000	-0.001342	-5321.7949	-83.8591	0.000131	0.000	8.289E+08	37.4288	167304.	0.000
156.000	-0.000672	-5164.6435	87.9394	9.308E-05	0.000	8.289E+08	19.8374	177204.	0.000
162.000	-0.000225	-4288.8605	168.5344	5.886E-05	0.000	8.289E+08	7.0276	187104.	0.000
168.000	3.470E-05	-3156.3585	186.1993	3.192E-05	0.000	8.290E+08	-1.1393	197004.	0.000
174.000	0.000158	-2062.1300	166.4680	1.304E-05	0.000	8.291E+08	-5.4378	206904.	0.000
180.000	0.000191	-1161.8715	129.4339	1.374E-06	0.000	8.294E+08	-6.9069	216804.	0.000
186.000	0.000174	-509.2533	88.9701	-4.671E-06	0.000	8.295E+08	-6.5810	226704.	0.000
192.000	0.000135	-93.1088	53.2446	-6.849E-06	0.000	8.295E+08	-5.3275	236604.	0.000
198.000	9.198E-05	131.3256	25.9248	-6.711E-06	0.000	8.295E+08	-3.7791	246504.	0.000
204.000	5.457E-05	219.5988	7.5917	-5.442E-06	0.000	8.295E+08	-2.3319	256404.	0.000
210.000	2.668E-05	223.7317	-2.9571	-3.838E-06	0.000	8.295E+08	-1.1843	266304.	0.000
216.000	8.508E-06	185.0349	-7.6850	-2.360E-06	0.000	8.295E+08	-0.3917	276204.	0.000
222.000	-1.637E-06	132.0779	-8.6258	-1.213E-06	0.000	8.295E+08	0.0781	286104.	0.000
228.000	-6.050E-06	81.8163	-7.4963	-4.396E-07	0.000	8.295E+08	0.2985	296004.	0.000
234.000	-6.912E-06	42.2282	-5.5437	9.052E-09	0.000	8.295E+08	0.3524	305904.	0.000
240.000	-5.941E-06	15.2895	-3.5484	2.171E-07	0.000	8.295E+08	0.3127	315804.	0.000
246.000	-4.307E-06	-0.4049	-1.9089	2.709E-07	0.000	8.295E+08	0.2338	325704.	0.000
252.000	-2.690E-06	-7.6823	-0.7561	2.417E-07	0.000	8.295E+08	0.1505	335604.	0.000
258.000	-1.407E-06	-9.5358	-0.0616	1.794E-07	0.000	8.295E+08	0.0810	345504.	0.000
264.000	-5.377E-07	-8.4640	0.2771	1.143E-07	0.000	8.295E+08	0.0319	355404.	0.000
270.000	-3.566E-08	-6.2383	0.3791	6.111E-08	0.000	8.295E+08	0.002171	365304.	0.000
276.000	1.956E-07	-3.9290	0.3489	2.434E-08	0.000	8.295E+08	-0.0122	375204.	0.000
282.000	2.564E-07	-2.0568	0.2629	2.692E-09	0.000	8.295E+08	-0.0165	385104.	0.000
288.000	2.280E-07	-0.7753	0.1685	-7.550E-09	0.000	8.295E+08	-0.0150	395004.	0.000
294.000	1.658E-07	-0.0334	0.0899	-1.048E-08	0.000	8.295E+08	-0.0112	404904.	0.000
300.000	1.023E-07	0.3056	0.0351	-9.491E-09	0.000	8.295E+08	-0.007069	414804.	0.000
306.000	5.194E-08	0.3899	0.002852	-6.975E-09	0.000	8.295E+08	-0.003677	424704.	0.000
312.000	1.855E-08	0.3415	-0.0122	-4.330E-09	0.000	8.295E+08	-0.001344	434604.	0.000
318.000	-1.592E-11	0.2445	-0.0162	-2.210E-09	0.000	8.295E+08	1.180E-06	444504.	0.000
324.000	-7.973E-09	0.1472	-0.0144	-7.937E-10	0.000	8.295E+08	0.000604	454404.	0.000
330.000	-9.541E-09	0.0716	-0.0104	-2.288E-12	0.000	8.295E+08	0.002788	464304.	0.000
336.000	-8.001E-09	0.0225	-0.006283	3.380E-10	0.000	8.295E+08	0.000632	474204.	0.000
342.000	-5.484E-09	-0.003874	-0.003059	4.054E-10	0.000	8.295E+08	0.000443	484104.	0.000
348.000	-3.136E-09	-0.0143	-0.000956	3.395E-10	0.000	8.295E+08	0.000258	494004.	0.000
354.000	-1.409E-09	-0.0154	0.000173	2.320E-10	0.000	8.295E+08	0.000118	503904.	0.000
360.000	-3.518E-10	-0.0123	0.000619	1.318E-10	0.000	8.295E+08	3.013E-05	513804.	0.000
366.000	1.725E-10	-0.008038	0.000664	5.832E-11	0.000	8.295E+08	-1.506E-05	523704.	0.000
372.000	3.480E-10	-0.004328	0.000526	1.360E-11	0.000	8.295E+08	-3.095E-05	533604.	0.000
378.000	3.357E-10	-0.001729	0.000342	-8.310E-12	0.000	8.295E+08	-3.041E-05	543504.	0.000
384.000	2.483E-10	-0.000223	0.000182	-1.537E-11	0.000	8.295E+08	-2.290E-05	553404.	0.000
390.000	1.512E-10	0.000459	7.070E-05	-1.452E-11	0.000	8.295E+08	-1.420E-05	563304.	0.000
396.000	7.408E-11	0.000629	6.874E-06	-1.059E-11	0.000	8.295E+08	-7.077E-06	573204.	0.000
402.000	2.421E-11	0.000544	-2.142E-05	-6.345E-12	0.000	8.295E+08	-2.353E-06	583104.	0.000
408.000	-2.063E-12	0.000373	-2.786E-05	-3.028E-12	0.000	8.295E+08	2.039E-07	593004.	0.000
414.000	-1.213E-11	0.000210	-2.359E-05	0.000	0.000	8.295E+08	1.219E-06	602904.	0.000
420.000	-1.308E-11	9.046E-05	-1.593E-05	0.000	0.000	8.295E+08	1.336E-06	612804.	0.000
426.000	-1.011E-11	1.889E-05	-8.769E-06	0.000	0.000	8.295E+08	1.049E-06	622704.	0.000
432.000	-6.318E-12	-1.491E-05	-3.623E-06	0.000	0.000	8.295E+08	6.662E-07	632604.	0.000
438.000	-3.172E-12	-2.472E-05	-6.051E-07	0.000	0.000	8.295E+08	3.397E-07	642504.	0.000
444.000	-1.099E-12	-2.228E-05	7.727E-07	0.000	0.000	8.295E+08	1.195E-07	652404.	0.000
450.000	0.000	-1.551E-05	1.129E-06	0.000	0.000	8.295E+08	-7.544E-10	662304.	0.000
456.000	0.000	-8.759E-06	9.790E-07	0.000	0.000	8.295E+08	-4.929E-08	672204.	0.000
462.000	0.000	-3.773E-06	6.630E-07	0.000	0.000	8.295E+08	-5.604E-08	682104.	0.000
468.000	0.000	-8.015E-07	3.627E-07	0.000	0.000	8.295E+08	-4.407E-08	692004.	0.000
474.000	0.000	5.841E-07	1.474E-07	0.000	0.000	8.295E+08	-2.767E-08	701904.	0.000
480.000	0.000	9.729E-07	2.299E-08	0.000	0.000	8.295E+08	-1.380E-08	711804.	0.000
486.000	0.000	8.640E-07	-3.226E-08	0.000	0.000	8.295E+08	-4.614E-09	721704.	0.000
492.000	0.000	5.882E-07	-4.532E-08	0.000	0.000	8.295E+08	2.599E-10	731604.	0.000
498.000	0.000	3.212E-07	-3.820E-08	0.000	0.000	8.295E+08	2.113E-09	741504.	0.000
504.000	0.000	1.301E-07	-2.505E-08	0.000	0.000	8.295E+08	2.270E-09	751404.	0.000
510.000	0.000	2.051E-08	-1.310E-08	0.000	0.000	8.295E+08	1.714E-09	761304.	0.000
516.000	0.000	-2.734E-08	-4.872E-09	0.000	0.000	8.295E+08	1.028E-09	771204.	0.000
522.000	0.000	-3.815E-08	-3.493E-10	0.000	0.000	8.295E+08	4.792E-10	781104.	0.000
528.000	0.000	-3.168E-08	1.490E-09	0.000	0.000	8.295E+08	1.339E-10	791004.	0.000
534.000	0.000	-2.035E-08	1.782E-09	0.000	0.000	8.295E+08	-3.667E-11	800904.	0.000
540.000	0.000	-1.033E-08	1.395E-09	0.000	0.000	8.295E+08	-9.214E-11	810804.	0.000
546.000	0.000	-3.618E-09	8.558E-10	0.000	0.000	8.295E+08	-8.763E-11	820704.	0.000
552.000	0.000	-5.617E-11	4.092E-10	0.000	0.000	8.295E+08	-6.124E-11	830604.	0.000
558.000	0.000	1.301E-09	1.239E-10	0.000	0.000	8.295E+08	-3.386E-11	840504.	0.000
564.000	0.000	1.438E-09	-1.909E-11	0.000	0.000	8.295E+08	-1.381E-11	850404.	0.000
570.000	0.000	1.076E-09	-6.726E-11	0.000	0.000	8.295E+08	-2.243E-12	860304.	0.000
576.000	0.000	6.331E-10	-6.552E-11	0.000	0.000	8.295E+08	2.823E-12	870204.	0.000
582.000	0.000	2.909E-10	-4.512E-11	0.000	0.000	8.295E+08	3.975E-12	880104.	0.000
588.000	0.000	9.165E-11	-2.336E-11	0.000	0.000	8.295E+08	3.280E-12	890004.	0.000
594.000	0.000	1.035E-11	-7.607E-12	0.000	0.000	8.295E+08	1.971E-12	899904.	0.000
600.000	0.000	0.000	0.000	0.000	0.000	8.295E+08	0.000	454902.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the

actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 4:

Pile-head deflection = 0.5000000 inches
 Computed slope at pile head = -0.0003525 radians
 Maximum bending moment = -137729. inch-lbs
 Maximum shear force = 4564.4687558 lbs
 Depth of maximum bending moment = 0.000000 inches below pile head
 Depth of maximum shear force = 0.000000 inches below pile head
 Number of iterations = 13
 Number of zero deflection points = 12

 Summary of Pile Response(s)

Definitions of Pile-Head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
 Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
 Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
 Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
 Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

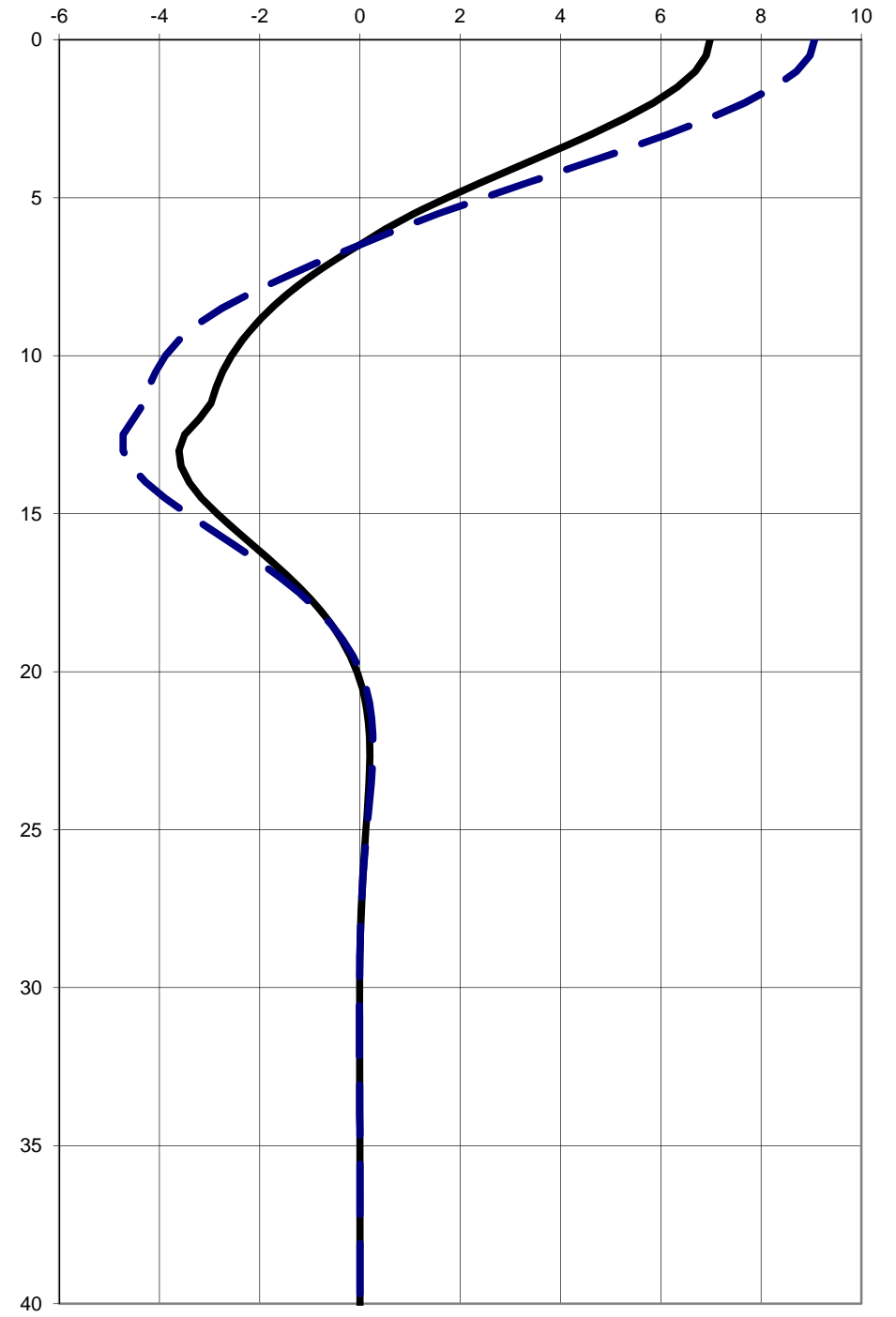
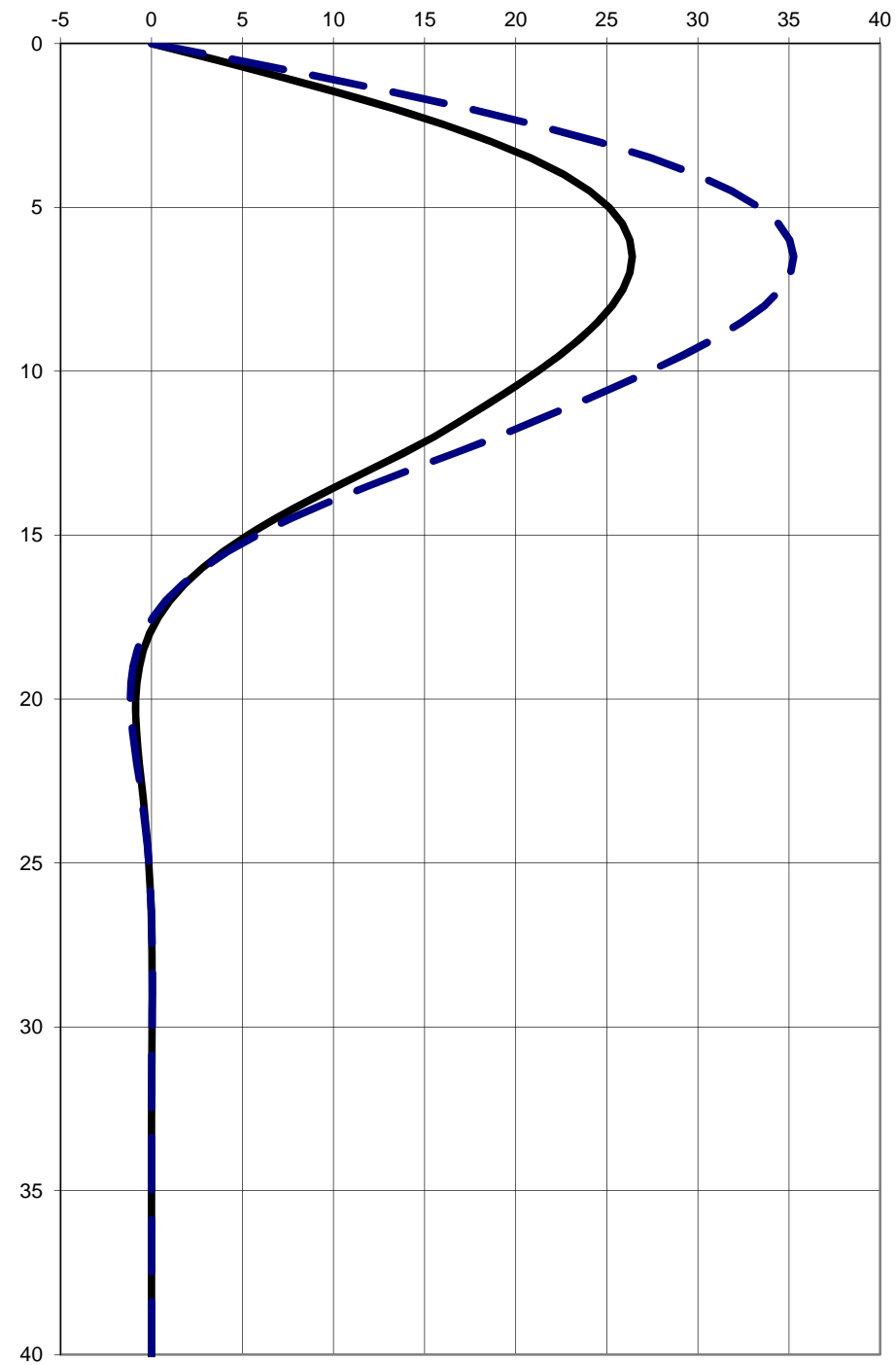
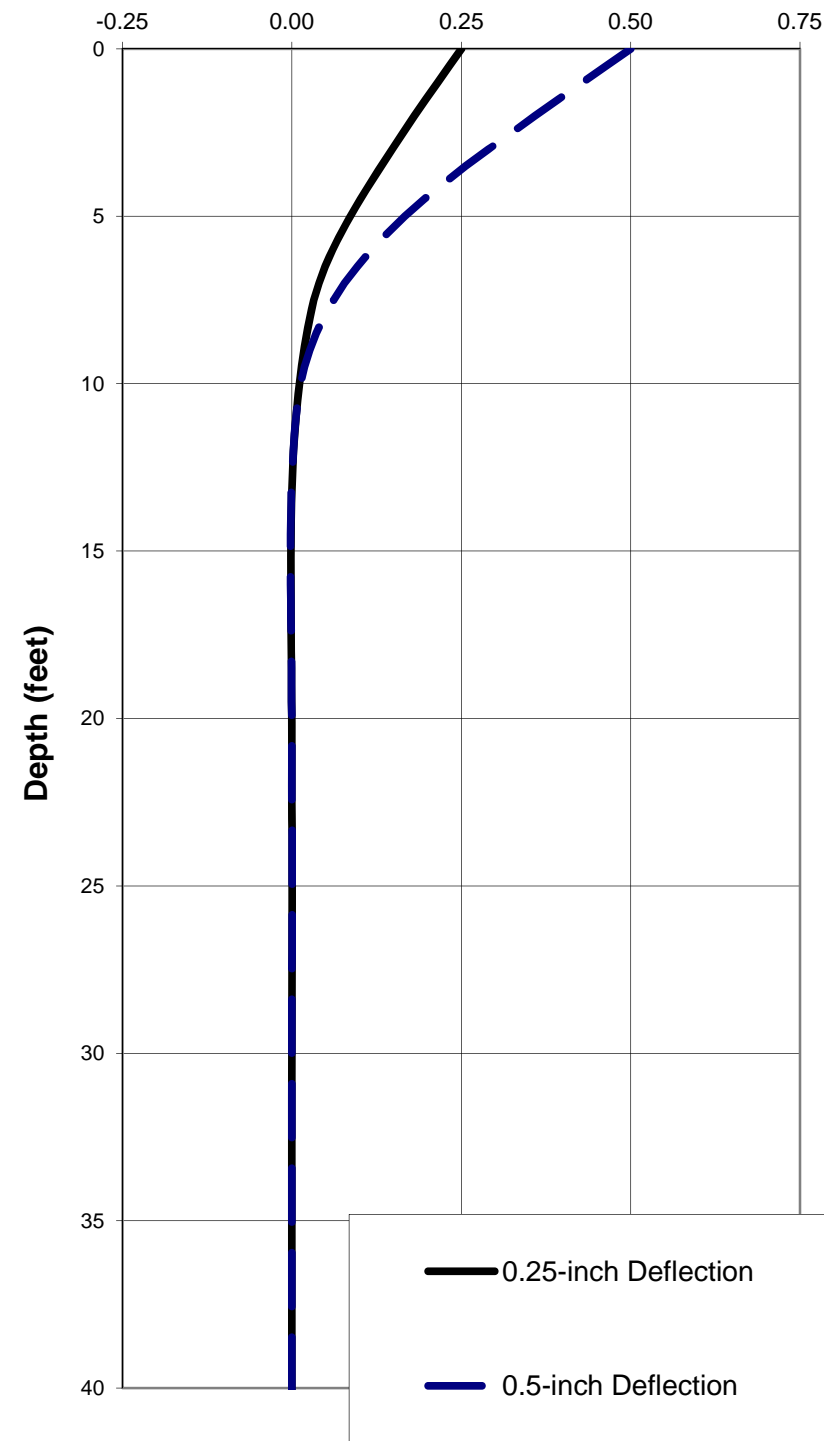
Load Case No.	Load Type No.	Condition 1	Condition 2	Axial Load	Pile-Head Deflection	Maximum Moment	Maximum Shear
		V(lbs) or y(inches)	in-lb, rad., or in-lb/rad.	lbs	inches	in-lbs	lbs
1	4	y = 0.2500	M = 0.000	20000.	0.25000000	44216.	1432.2367
0.00000000	2	y = 0.2500	S = 0.000	20000.	0.25000000	-91778.	3201.1105
0.00000000	3	y = 0.5000	M = 0.000	20000.	0.50000000	63043.	1933.6903
0.00000000	4	y = 0.5000	S = 0.000	20000.	0.50000000	-137729.	4564.4688
0.00000000	5						

The analysis ended normally.

Deflection (inches)

Moment (kips-feet)

Shear (kips)



**LATERAL LOAD CAPACITIES OF 18-INCH DIAMETER CIDH PILE
FREE HEAD CONDITION
EL RODEO K-8 SCHOOL
BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
Project No.: 10274.015
Date: 10/2015

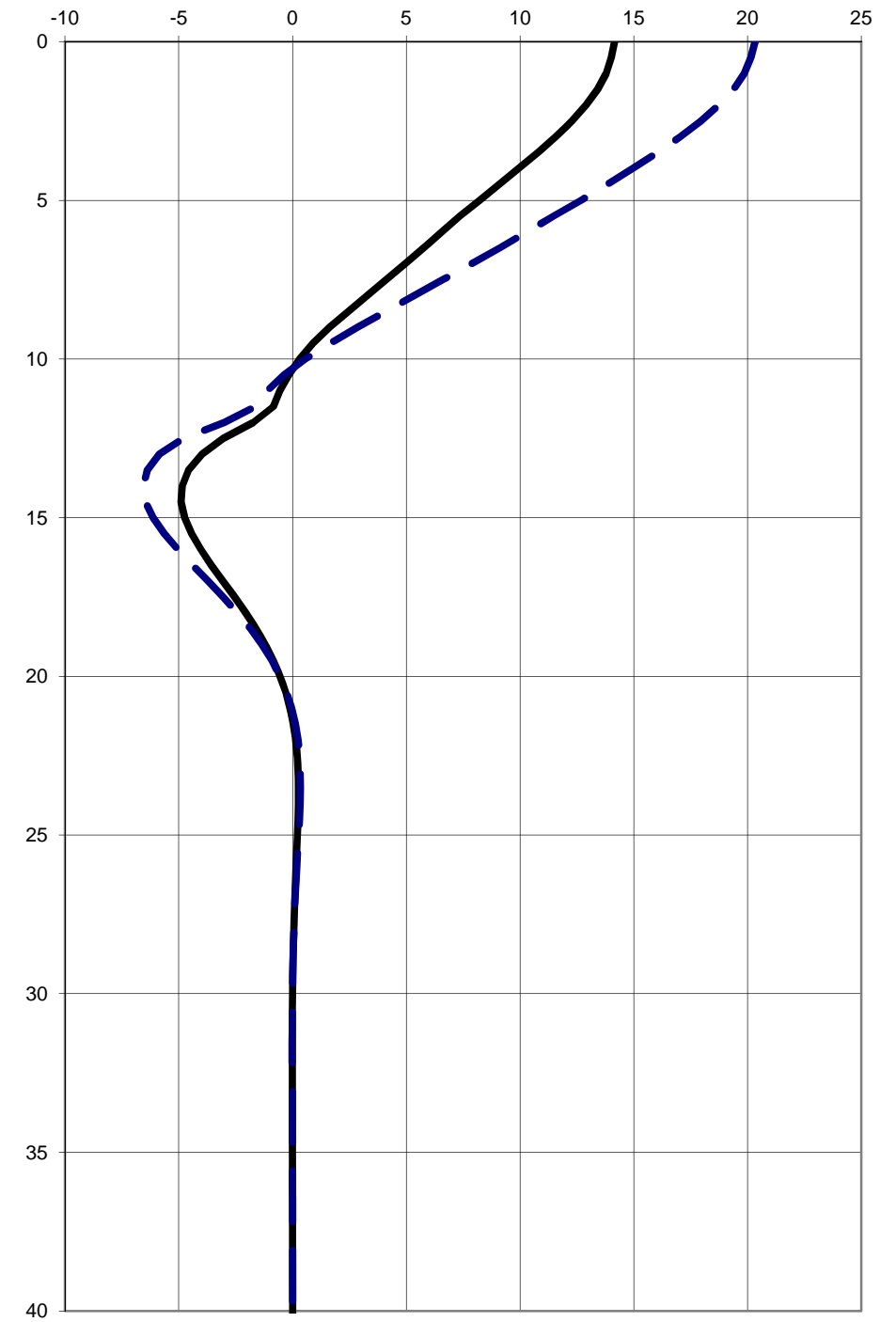
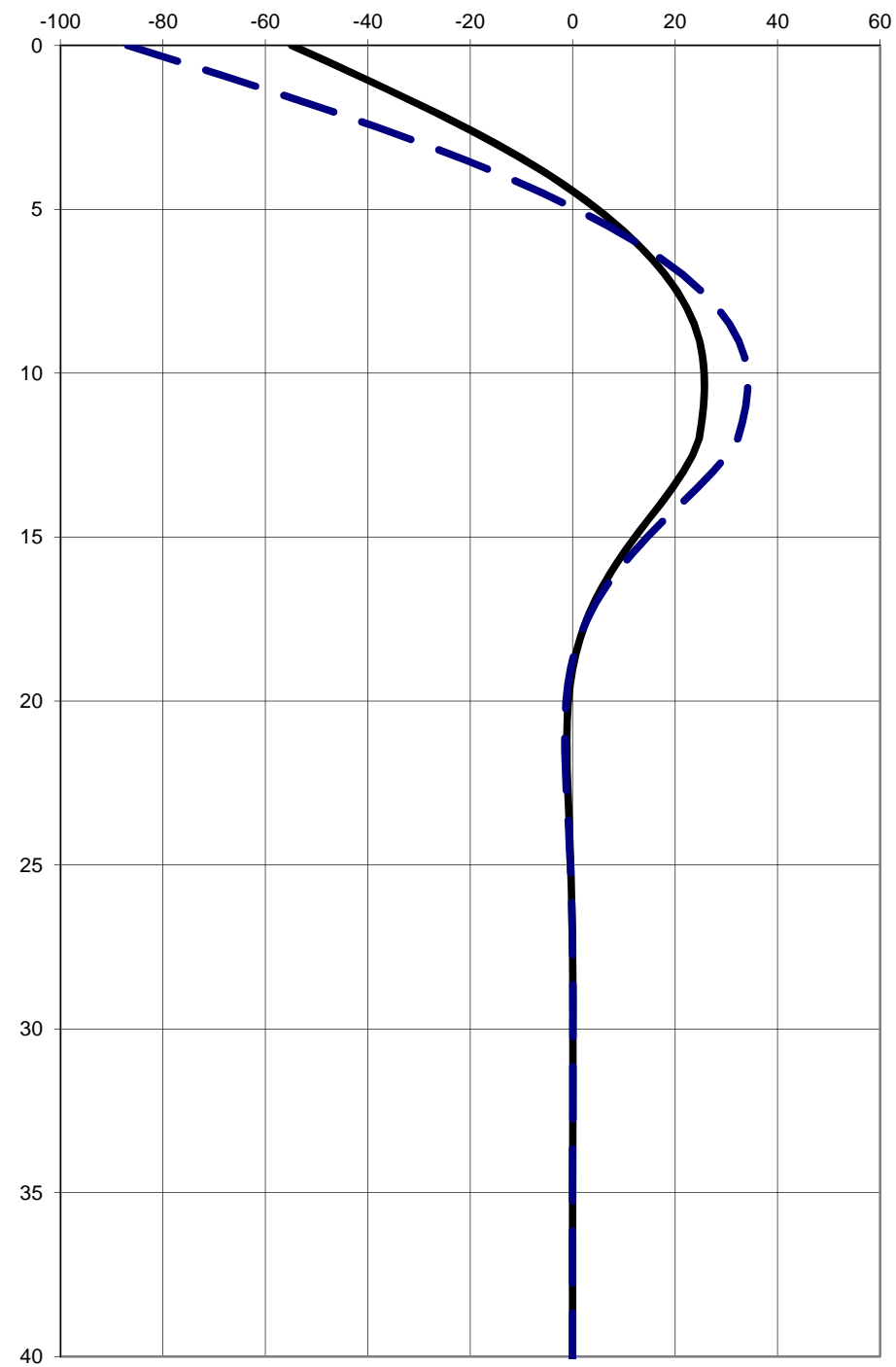
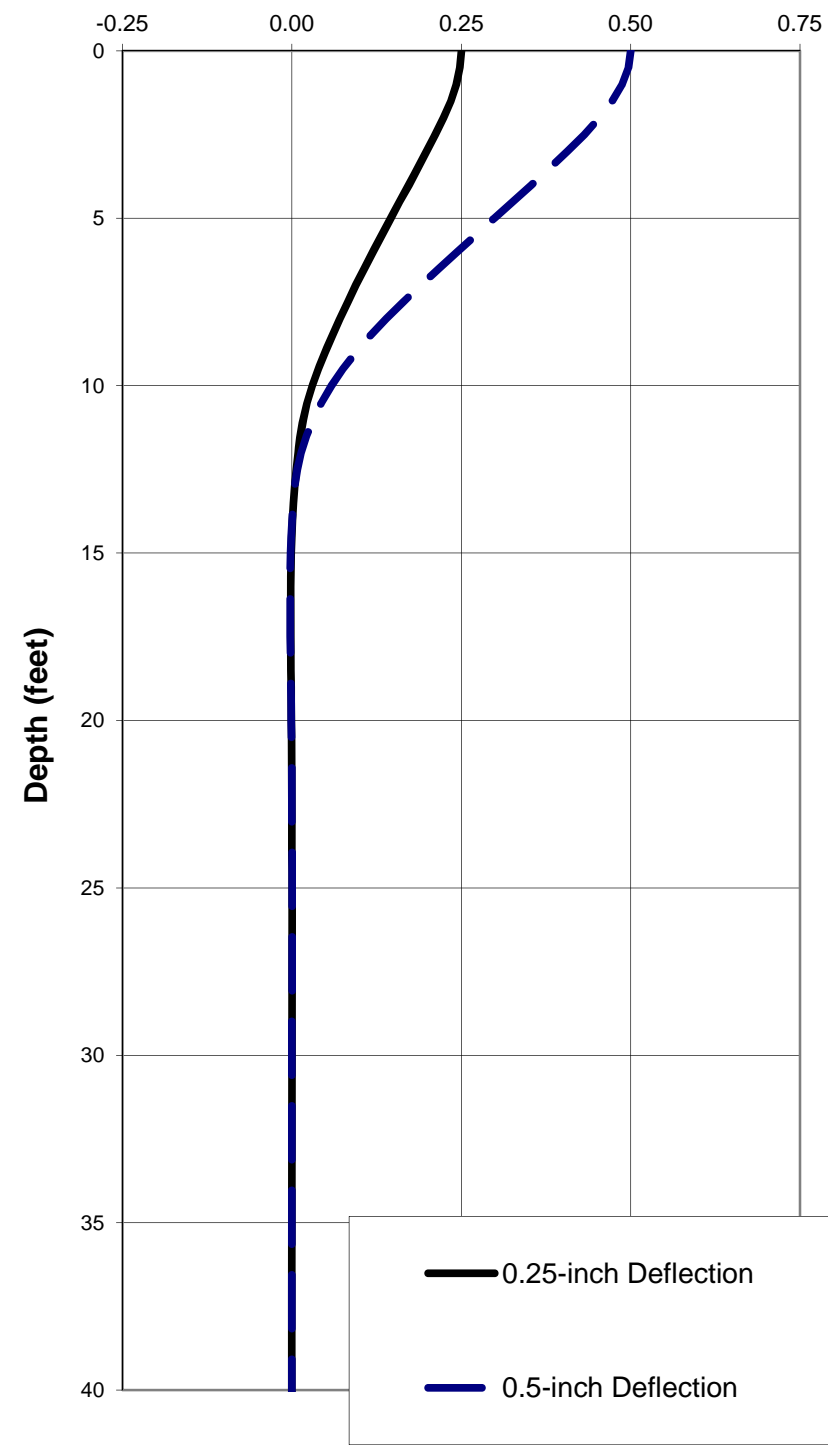


Figure C-3a

Deflection (inches)

Moment (kips-feet)

Shear (kips)



**LATERAL LOAD CAPACITIES OF 18-INCH DIAMETER CIDH PILE
FIXED HEAD CONDITION
EL RODEO K-8 SCHOOL
BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
Project No.: 10274.015
Date: 10/2015



Figure C-3b

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LPIle Plus for Windows, Version 6.0 (6.0.08)
Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

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This program is licensed to:

CD
Leighton

Files Used for Analysis

Path to file locations: P:\INFOCUS PROJECTS\10000-10500\10274 BHUSD\015 EI Rodeo Bldg C\Analyses\LPIle\
Name of input data file: 18-inch diameter.lp6d
Name of output file: 18-inch diameter.lp6o
Name of plot output file: 18-inch diameter.lp6p
Name of runtime file: 18-inch diameter.lp6r

Date and Time of Analysis

Date: October 28, 2015 Time: 15:08:58

Problem Title

Project Name: Beverly Hills High School Building C

Job Number: 10274.015

Client: Beverly Hills Unified School District

Engineer: CD

Description: 30-inch CIDH pile

Program Options

Units Used - US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal Moment
Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:

- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

Solution Control Parameters:

- Number of pile increments = 100
 - Maximum number of iterations allowed = 1000
 - Deflection tolerance for convergence = 1.0000E-05 in
 - Maximum allowable deflection = 100.0000 in

Pile Response Output Options:

- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
 - Printing Increment (nodal spacing of output points) = 1

 Pile Structural Properties and Geometry

Total Number of Sections = 1
 Total Pile Length = 50.00 ft
 Depth of ground surface below top of pile = 0.00 ft
 Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points.
 p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Di ameter in
1	0.00000	18.000000
2	50.00000	18.000000

Input Structural Properties:

Section No. 1:

Section Type = Drilled Shaft (Bored Pile)
 Section Length = 50.000 ft
 Section Diameter = 18.000 in

 Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
 = 0.000 radians
 Pile Batter Angle = 0.000 degrees
 = 0.000 radians

 Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 0.000 ft
 Distance from top of pile to bottom of layer = 12.000 ft
 p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
 p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

Layer 2 is cemented silt with cohesion and friction

Distance from top of pile to top of layer = 12.000 ft

Distance from top of pile to bottom of layer = 60.000 ft
 p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
 p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

(Depth of lowest layer extends 10.00 ft below pile tip)

 Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 4 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	0.00	120.00000
2	12.00	120.00000
3	12.00	120.00000
4	60.00	120.00000

 Summary of Soil Properties

Layer RQD Num. percent	Soil Type (p-y Curve Criteria) pci	Rock Emass psi	Depth ft	Eff. Unit Weight, pcf	Cohesion Test Type psf	Friction Prop. Ang., deg.	Elas. Subgr. pci	qu psi
1	Sand (Reese, et al.)	--	0.00	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	300.000	30.000	--	--
2	Cemented Silt	--	0.00	120.000	300.000	30.000	--	--
--	-- default	--	60.000	120.000	300.000	30.000	--	--
--	-- default	--	--	--	--	--	--	--

 Loading Type

p-y criteria for static loading was used for all analyses.

 Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 4

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs
1	4	y = 0.250 in	M = 0.000 in-lbs	20000.000
2	5	y = 0.250 in	S = 0.000 in/in	20000.000
3	4	y = 0.500 in	M = 0.000 in-lbs	20000.000
4	5	y = 0.500 in	S = 0.000 in/in	20000.000

 Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust values were determined from pile-head loading conditions

Number of Sections = 1

Section No. 1:

Dimensions and Properties of Drilled Shaft:

Length of Section	=	600.0000000 in
Shaft Diameter	=	18.0000000 in
Concrete Cover Thickness	=	3.0000000 in
Number of Reinforcing Bars	=	6 bars
Yield Stress of Reinforcing Bars	=	60.0000000 ksi
Modulus of Elasticity of Reinforcing Bars	=	29000. ksi
Gross Area of Shaft	=	254.46900494 sq. in.
Total Area of Reinforcing Steel	=	4.7400000 sq. in.
Area Ratio of Steel Reinforcement	=	1.86 percent
Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	921.209 kips
Tensile Load for Cracking of Concrete	=	-106.347 kips
Nominal Axial Tensile Capacity	=	-284.400 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Di am. inches	Bar Area sq. in.	X inches	Y inches
1	1.00000	0.79000	5.50000	0.00000
2	1.00000	0.79000	2.75000	4.76314
3	1.00000	0.79000	-2.75000	4.76314
4	1.00000	0.79000	-5.50000	0.00000
5	1.00000	0.79000	2.75000	-4.76314
6	1.00000	0.79000	-2.75000	-4.76314

Concrete Properties:

Compressive Strength of Concrete	=	3.0000000 ksi
Modulus of Elasticity of Concrete	=	3122.0185778 ksi
Modulus of Rupture of Concrete	=	-0.4107919 ksi
Compression Strain at Peak Stress	=	0.0016336
Tensile Strain at Fracture	=	-0.0001160
Maximum Coarse Aggregate Size	=	0.7500000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	20.000

Definitions of Run Messages and Notes:

C = concrete has cracked in tension
 Y = stress in reinforcement has reached yield stress
 T = tensile strain in reinforcement exceeds 0.005 when compressive strain in concrete is less than 0.003.
 Bending Stiffness = Bending Moment / Curvature
 Position of neutral axis is computed from compression side of pile
 Compressive stresses are positive in sign. Tensile stresses are negative in sign.

Axial Thrust Force = 20.000 kips

Run Msg	Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi
0.00001250	25.6648540	20531883.	24.2544805	0.0000303	0.000007818	0.1099183	0.8759624	
0.00002500	51.3319110	20532764.	16.6375656	0.0000416	-0.000003406	0.1500225	1.1996985	
0.00003750	76.9630250	20523473.	14.1020048	0.0000529	-0.0000146	0.1898920	1.5238055	
0.00005000	102.5055869	20501117.	12.8352703	0.0000642	-0.0000258	0.2294990	1.8480642	
0.00006250	127.9454568	20471273.	12.0756207	0.0000755	-0.0000370	0.2688335	2.1723938	

	0.00007500	153.2786176	20437149.	11.5693720	0.0000868	-0.0000482	0.3078916	2.4967634
	0.00008750	178.5036286	20400415.	11.2078698	0.0000981	-0.0000594	0.3466716	2.8211595
	0.0000100	203.6198769	20361988.	10.9368101	0.0001094	-0.0000706	0.3851725	3.1455750
	0.0000113	228.6270699	20322406.	10.7260338	0.0001207	-0.0000818	0.4233938	3.4700061
	0.0000125	253.5250493	20282004.	10.5574493	0.0001320	-0.0000930	0.4613353	3.7944504
	0.0000138	278.3137269	20240998.	10.4195462	0.0001433	-0.0001042	0.4989968	4.1189066
	0.0000150	302.9930493	20199537.	10.3046520	0.0001546	-0.0001154	0.5363780	4.4433736
C	0.0000163	302.9930493	18645726.	8.1345508	0.0001322	-0.0001603	0.4609327	-4.6066804
C	0.0000175	302.9930493	17313889.	7.9710853	0.0001395	-0.0001755	0.4851868	-5.0439992
C	0.0000188	302.9930493	16159629.	7.8270952	0.0001468	-0.0001907	0.5091789	-5.4825794
C	0.0000200	302.9930493	15149652.	7.6984152	0.0001540	-0.0002060	0.5328770	-5.9227191
C	0.0000213	302.9930493	14258496.	7.5835105	0.0001611	-0.0002214	0.5563657	-6.3636991
C	0.0000225	302.9930493	13466358.	7.4805245	0.0001683	-0.0002367	0.5796791	-6.8052327
C	0.0000238	302.9930493	12757602.	7.3865499	0.0001754	-0.0002521	0.6027381	-7.2480262
C	0.0000250	302.9930493	12119722.	7.3019058	0.0001825	-0.0002675	0.6256812	-7.6908682
C	0.0000263	302.9930493	11542592.	7.2238560	0.0001896	-0.0002829	0.6483889	-8.1348270
C	0.0000275	302.9930493	11017929.	7.1527795	0.0001967	-0.0002983	0.6709765	-8.5788833
C	0.0000288	302.9930493	10538889.	7.0874613	0.0002038	-0.0003137	0.6934160	-9.0232916
C	0.0000300	302.9930493	10099768.	7.0267146	0.0002108	-0.0003292	0.7156631	-9.4684582
C	0.0000313	302.9930493	9695778.	6.9709598	0.0002178	-0.0003447	0.7378156	-9.9135051
C	0.0000325	302.9930493	9322863.	6.9193475	0.0002249	-0.0003601	0.7598450	-10.3586899
C	0.0000338	302.9930493	8977572.	6.8706815	0.0002319	-0.0003756	0.7816732	-10.8047329
C	0.0000350	302.9930493	8656944.	6.8256103	0.0002389	-0.0003911	0.8034075	-11.2506554
C	0.0000363	302.9930493	8358429.	6.7837624	0.0002459	-0.0004066	0.8250479	-11.6964571
C	0.0000375	302.9930493	8079815.	6.7446755	0.0002529	-0.0004221	0.8465778	-12.1422903
C	0.0000388	302.9930493	7819175.	6.7073649	0.0002599	-0.0004376	0.8679112	-12.5889611
C	0.0000400	302.9930493	7574826.	6.6724914	0.0002669	-0.0004531	0.8891513	-13.0355099
C	0.0000413	302.9930493	7345286.	6.6398337	0.0002739	-0.0004686	0.9102980	-13.4819364
C	0.0000425	302.9930493	7129248.	6.6091966	0.0002809	-0.0004841	0.9313512	-13.9282401
C	0.0000438	307.3823820	7025883.	6.5804072	0.0002879	-0.0004996	0.9523107	-14.3744208
C	0.0000450	314.0239844	6978311.	6.5528474	0.0002949	-0.0005151	0.9731132	-14.8210841
C	0.0000463	320.6537933	6933055.	6.5265966	0.0003019	-0.0005306	0.9937844	-15.2679897
C	0.0000475	327.2769727	6890042.	6.5018181	0.0003088	-0.0005462	1.0143625	-15.7147705
C	0.0000488	333.8935045	6849098.	6.4783989	0.0003158	-0.0005617	1.0348474	-16.1614259
C	0.0000513	347.1065511	6772811.	6.4352416	0.0003298	-0.0005927	1.0755368	-17.0543595
C	0.0000538	360.2927843	6703122.	6.3964235	0.0003438	-0.0006237	1.1158512	-17.9467873
C	0.0000563	373.4373498	6638886.	6.3605454	0.0003578	-0.0006547	1.1556563	-18.8400476
C	0.0000588	386.5520819	6579610.	6.3278564	0.0003718	-0.0006857	1.1950591	-19.7330770
C	0.0000613	399.6400043	6524735.	6.2981293	0.0003858	-0.0007167	1.2340871	-20.6255852
C	0.0000638	412.7009633	6473741.	6.2710173	0.0003998	-0.0007477	1.2727389	-21.5175691

C	0.0000663	425.7348030	6426186.	6.2462263	0.0004138	-0.0007787	1.3110131	-22.4090251
C	0.0000688	438.7413659	6381693.	6.2235047	0.0004279	-0.0008096	1.3489085	-23.2999498
C	0.0000713	451.7169617	6339887.	6.2024173	0.0004419	-0.0008406	1.3863815	-24.1907925
C	0.0000738	464.6590000	6300461.	6.1826420	0.0004560	-0.0008715	1.4234013	-25.0818866
C	0.0000763	477.5736416	6263261.	6.1644128	0.0004700	-0.0009025	1.4600415	-25.9724295
C	0.0000788	490.4607212	6228073.	6.1475839	0.0004841	-0.0009334	1.4963007	-26.8624175
C	0.0000813	503.3200713	6194709.	6.1320279	0.0004982	-0.0009643	1.5321774	-27.7518465
C	0.0000838	516.1515227	6163003.	6.1176323	0.0005124	-0.0009951	1.5676702	-28.6407129
C	0.0000863	528.9549040	6132810.	6.1042977	0.0005265	-0.0010260	1.6027776	-29.5290127
C	0.0000888	541.7300421	6104000.	6.0919361	0.0005407	-0.0010568	1.6374981	-30.4167418
C	0.0000913	554.4767616	6076458.	6.0804690	0.0005548	-0.0010877	1.6718302	-31.3038962
C	0.0000938	567.1948851	6050079.	6.0698263	0.0005690	-0.0011185	1.7057724	-32.1904719
C	0.0000963	579.8842330	6024771.	6.0599454	0.0005833	-0.0011492	1.7393230	-33.0764647
C	0.0000988	592.5446238	6000452.	6.0507697	0.0005975	-0.0011800	1.7724807	-33.9618704
C	0.0001013	605.1758735	5977046.	6.0422486	0.0006118	-0.0012107	1.8052437	-34.8466847
C	0.0001038	617.7777961	5954485.	6.0343361	0.0006261	-0.0012414	1.8376105	-35.7309034
C	0.0001063	630.3490775	5932697.	6.0268960	0.0006404	-0.0012721	1.8695568	-36.6148140
C	0.0001088	642.8892455	5911625.	6.0198645	0.0006547	-0.0013028	1.9010741	-37.4985146
C	0.0001113	655.3997290	5891234.	6.0133425	0.0006690	-0.0013335	1.9321929	-38.3815908
C	0.0001138	667.8802045	5871474.	6.0072981	0.0006833	-0.0013642	1.9629115	-39.2640408
C	0.0001163	680.3307317	5852307.	6.0017016	0.0006977	-0.0013948	1.9932285	-40.1458533
C	0.0001188	692.7509676	5833692.	5.9965265	0.0007121	-0.0014254	2.0231419	-41.0270266
C	0.0001213	705.1407053	5815593.	5.9917479	0.0007265	-0.0014560	2.0526501	-41.9075559
C	0.0001238	717.4997348	5797978.	5.9873433	0.0007409	-0.0014866	2.0817512	-42.7874358
C	0.0001263	729.8278436	5780815.	5.9832919	0.0007554	-0.0015171	2.1104435	-43.6666613
C	0.0001288	742.1248162	5764076.	5.9795746	0.0007699	-0.0015476	2.1387252	-44.5452271
C	0.0001313	754.3904341	5747737.	5.9761736	0.0007844	-0.0015781	2.1665944	-45.4231278
C	0.0001338	766.6244760	5731772.	5.9730726	0.0007989	-0.0016086	2.1940492	-46.3003581
C	0.0001363	778.8267175	5716159.	5.9702564	0.0008134	-0.0016391	2.2210879	-47.1769124
C	0.0001388	790.9969311	5700879.	5.9677112	0.0008280	-0.0016695	2.2477084	-48.0527851
C	0.0001413	803.1348862	5685911.	5.9654238	0.0008426	-0.0016999	2.2739089	-48.9279706
C	0.0001438	815.2403489	5671237.	5.9633822	0.0008572	-0.0017303	2.2996875	-49.8024630
C	0.0001463	827.3130821	5656842.	5.9615752	0.0008719	-0.0017606	2.3250421	-50.6762567
C	0.0001488	839.3528452	5642708.	5.9599923	0.0008865	-0.0017910	2.3499708	-51.5493456
C	0.0001588	887.1771545	5588518.	5.9557167	0.0009455	-0.0019120	2.4453854	-55.0345346
C	0.0001688	934.4539883	5537505.	5.9543541	0.0010048	-0.0020327	2.5338191	-58.5079421
C	0.0001788	981.1658768	5489040.	5.9554981	0.0010645	-0.0021530	2.6151308	-60.0000000
CY	0.0001888	1027.2945959	5442620.	5.9588336	0.0011247	-0.0022728	2.6891721	-60.0000000
CY	0.0001988	1072.8210077	5397842.	5.9641144	0.0011854	-0.0023921	2.7557865	-60.0000000
CY	0.0002088	1117.7241529	5354367.	5.9711473	0.0012465	-0.0025110	2.8148074	-60.0000000

CY	0.0002188	1161.9820289	5311918.	5.9797804	0.0013081	-0.0026294	2.8660584	-60.0000000
CY	0.0002288	1205.5709812	5270256.	5.9898948	0.0013702	-0.0027473	2.9093519	-60.0000000
CY	0.0002388	1248.4656314	5229175.	6.0013982	0.0014328	-0.0028647	2.9444879	-60.0000000
CY	0.0002488	1290.6386862	5188497.	6.0142204	0.0014960	-0.0029815	2.9712528	-60.0000000
CY	0.0002588	1330.0937854	5140459.	6.0249764	0.0015590	-0.0030985	2.9892287	-60.0000000
CY	0.0002688	1360.4510712	5062144.	6.0228522	0.0016186	-0.0032189	2.9982809	-60.0000000
CY	0.0002788	1379.8756185	4950226.	6.0048611	0.0016739	-0.0033436	2.9986255	-60.0000000
CY	0.0002888	1391.4180961	4818764.	5.9765879	0.0017257	-0.0034718	2.9983974	-60.0000000
CY	0.0002988	1401.9049553	4692569.	5.9501888	0.0017776	-0.0035999	2.9980012	-60.0000000
CY	0.0003088	1412.0915710	4573576.	5.9267012	0.0018299	-0.0037276	2.9996265	-60.0000000
CY	0.0003188	1421.9804088	4461115.	5.9058621	0.0018825	-0.0038550	2.9999038	-60.0000000
CY	0.0003288	1431.5901646	4354647.	5.8873943	0.0019355	-0.0039820	2.9993770	-60.0000000
CY	0.0003388	1440.9403213	4253698.	5.8710466	0.0019888	-0.0041087	2.9981029	-60.0000000
CY	0.0003488	1450.0499153	4157849.	5.8565936	0.0020425	-0.0042350	2.9998149	-60.0000000
CY	0.0003588	1458.8941683	4066604.	5.8436066	0.0020964	-0.0043611	2.9994814	-60.0000000
CY	0.0003688	1467.5157795	3979704.	5.8318810	0.0021505	-0.0044870	2.9974912	60.0000000
CY	0.0003788	1475.9368228	3896863.	5.8216184	0.0022049	-0.0046126	2.9999261	60.0000000
CY	0.0003888	1484.1481525	3817744.	5.8127496	0.0022597	-0.0047378	2.9983237	60.0000000
CY	0.0003988	1492.1951174	3742182.	5.8050358	0.0023148	-0.0048627	2.9999995	60.0000000
CY	0.0004088	1500.0404295	3669824.	5.7985229	0.0023701	-0.0049874	2.9985471	60.0000000
CY	0.0004188	1507.7460158	3600588.	5.7929370	0.0024258	-0.0051117	2.9998346	60.0000000
CY	0.0004288	1515.2664425	3534149.	5.7883686	0.0024818	-0.0052357	2.9982629	60.0000000
CY	0.0004388	1522.6635191	3470458.	5.7845578	0.0025380	-0.0053595	2.9999838	60.0000000
CY	0.0004488	1529.8930285	3409232.	5.7816060	0.0025945	-0.0054830	2.9973282	60.0000000
CY	0.0004588	1537.0067938	3350424.	5.7792951	0.0026513	-0.0056062	2.9997638	60.0000000
CY	0.0004688	1543.9808313	3293826.	5.7776724	0.0027083	-0.0057292	2.9958379	60.0000000
CY	0.0004788	1550.8344166	3239341.	5.7766360	0.0027656	-0.0058519	2.9988946	60.0000000
CY	0.0004888	1557.5862571	3186877.	5.7760952	0.0028231	-0.0059744	2.9996167	60.0000000
CY	0.0004988	1564.1980603	3136237.	5.7761532	0.0028809	-0.0060966	2.9966682	60.0000000
CY	0.0005088	1570.7237504	3087418.	5.7766022	0.0029388	-0.0062187	2.9994283	60.0000000
CY	0.0005188	1577.1473030	3040284.	5.7774782	0.0029971	-0.0063404	2.9980120	60.0000000
CY	0.0005288	1583.4581650	2994720.	5.7787969	0.0030555	-0.0064620	2.9968143	60.0000000
CY	0.0005388	1589.6930579	2950706.	5.7804159	0.0031142	-0.0065833	2.9994323	60.0000000
CY	0.0005488	1595.8378298	2908133.	5.7823711	0.0031731	-0.0067044	2.9982334	60.0000000
CY	0.0006088	1627.3648224	2673289.	5.7887708	0.0035239	-0.0074336	2.9991678	60.0000000
CY	0.0006688	1639.5552958	2451671.	5.7800976	0.0038654	-0.0081721	2.9989730	60.0000000

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003

or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	20.000	1577.464	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (ϕ -factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are spirals or tied hoops.

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

 Computed Values of Pile Loading and Deflection on
 for Lateral Loading for Load Case Number 1

Pile-head conditions are Displacement and Moment (BC Type 4)
 Deflection at pile head = 0.250000 in
 Moment at pile head = 0.000 in-lbs
 Axial load at pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	SIope S radians	Total Stress psi *	Bendi ng Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distri b. Lat. Load lb/inch
0.00	0.2500	0.000	6980.5114	-0.002915	0.000	2.053E+10	0.000	0.000	0.000
6.000	0.2325	42233.	6907.4458	-0.002909	0.000	2.053E+10	-24.3552	628.4962	0.000
12.000	0.2151	83587.	6688.8328	-0.002891	0.000	2.053E+10	-48.5158	1353.3473	0.000
18.000	0.1978	123193.	6331.4301	-0.002860	0.000	2.048E+10	-70.6184	2141.8743	0.000
24.000	0.1808	160251.	5851.1980	-0.002819	0.000	2.043E+10	-89.4590	2969.2841	0.000
30.000	0.1640	194083.	5269.9513	-0.002767	0.000	2.038E+10	-104.2899	3815.5417	0.000
36.000	0.1476	224155.	4613.0971	-0.002705	0.000	2.033E+10	-114.6615	4662.0045	0.000
42.000	0.1315	250090.	3904.3838	-0.002635	0.000	2.029E+10	-121.5763	5545.6007	0.000
48.000	0.1160	271640.	3170.0185	-0.002558	0.000	2.025E+10	-123.2122	6375.7587	0.000
54.000	0.1008	288744.	2443.2741	-0.002475	0.000	2.022E+10	-119.0360	7082.2452	0.000
60.000	0.0863	301553.	1741.7625	-0.002381	0.000	1.767E+10	-114.8012	7985.6738	0.000
66.000	0.0723	310216.	1084.3114	-0.002197	0.000	7.005E+09	-104.3492	8662.1667	0.000
72.000	0.0599	315092.	505.0903	-0.001928	0.000	6.971E+09	-88.7245	8887.6634	0.000
78.000	0.0491	316740.	-20.7869	-0.001656	0.000	6.959E+09	-86.5679	10569.	0.000
84.000	0.0400	315240.	-528.6470	-0.001384	0.000	6.970E+09	-82.7188	12400.	0.000
90.000	0.0325	310729.	-996.4378	-0.001115	0.000	7.002E+09	-73.2114	13500.	0.000
96.000	0.0266	303550.	-1407.9383	-0.000883	0.000	9.192E+09	-63.9554	14400.	0.000
102.000	0.0219	294045.	-1767.6961	-0.000740	0.000	2.021E+10	-55.9638	15300.	0.000
108.000	0.0178	282515.	-2079.5150	-0.000654	0.000	2.023E+10	-47.9758	16200.	0.000
114.000	0.0141	269248.	-2343.9431	-0.000573	0.000	2.026E+10	-40.1669	17100.	0.000
120.000	0.0109	254525.	-2562.5176	-0.000495	0.000	2.028E+10	-32.6912	18000.	0.000
126.000	0.008152	238617.	-2737.6303	-0.000422	0.000	2.031E+10	-25.6797	18900.	0.000
132.000	0.005831	221775.	-2872.3920	-0.000354	0.000	2.033E+10	-19.2408	19800.	0.000
138.000	0.003902	204233.	-2970.4951	-0.000291	0.000	2.036E+10	-13.4602	20700.	0.000
144.000	0.002334	186199.	-3207.0590	-0.000234	0.000	2.039E+10	-65.3945	168141.	0.000
150.000	0.001094	165804.	-3500.6655	-0.000182	0.000	2.042E+10	-32.4744	178041.	0.000
156.000	0.000148	144235.	-3611.9555	-0.000137	0.000	2.045E+10	-4.6223	187941.	0.000
162.000	-0.000545	122494.	-3571.8793	-9.753E-05	0.000	2.048E+10	17.9811	197841.	0.000
168.000	-0.001023	101396.	-3411.6924	-6.475E-05	0.000	2.050E+10	35.4146	207741.	0.000
174.000	-0.001322	81569.	-3161.5519	-3.799E-05	0.000	2.052E+10	47.9656	217641.	0.000
180.000	-0.001479	63466.	-2849.4227	-1.679E-05	0.000	2.053E+10	56.0775	227541.	0.000
186.000	-0.001524	47380.	-2500.2880	-5.882E-07	0.000	2.053E+10	60.3007	237441.	0.000
192.000	-0.001486	33463.	-2135.6412	1.122E-05	0.000	2.053E+10	61.2482	247341.	0.000
198.000	-0.001389	21749.	-1773.2323	1.929E-05	0.000	2.053E+10	59.5548	257241.	0.000
204.000	-0.001254	12179.	-1427.0347	2.425E-05	0.000	2.053E+10	55.8444	267141.	0.000
210.000	-0.001098	4619.2350	-1107.3920	2.670E-05	0.000	2.053E+10	50.7032	277041.	0.000
216.000	-0.000934	-1115.7456	-821.3050	2.721E-05	0.000	2.053E+10	44.6592	286941.	0.000
222.000	-0.000772	-5242.9560	-572.8175	2.629E-05	0.000	2.053E+10	38.1699	296841.	0.000
228.000	-0.000618	-7995.8647	-363.4626	2.435E-05	0.000	2.053E+10	31.6150	306741.	0.000
234.000	-0.000479	-9610.3514	-192.7333	2.178E-05	0.000	2.053E+10	25.2947	316641.	0.000
240.000	-0.000357	-10314.	-58.5518	1.887E-05	0.000	2.053E+10	19.4324	326541.	0.000
246.000	-0.000253	-10318.	42.2878	1.585E-05	0.000	2.053E+10	14.1808	336441.	0.000
252.000	-0.000167	-9810.2421	113.7191	1.291E-05	0.000	2.053E+10	9.6296	346341.	0.000
258.000	-9.795E-05	-8955.9717	160.0551	1.017E-05	0.000	2.053E+10	5.8157	356241.	0.000
264.000	-4.478E-05	-7892.0212	185.7007	7.708E-06	0.000	2.053E+10	2.7328	366141.	0.000
270.000	-5.452E-06	-6729.4132	194.9241	5.572E-06	0.000	2.053E+10	0.3417	376041.	0.000

276.000	2.208E-05	-5554.2690	191.6883	3.777E-06	0.000	2.053E+10	-1.4203	385941.	0.000
282.000	3.987E-05	-4430.0601	179.5357	2.318E-06	0.000	2.053E+10	-2.6306	395841.	0.000
288.000	4.990E-05	-3400.3973	161.5208	1.174E-06	0.000	2.053E+10	-3.3744	405741.	0.000
294.000	5.396E-05	-2492.0921	140.1832	3.131E-07	0.000	2.053E+10	-3.7382	415641.	0.000
300.000	5.366E-05	-1718.2742	117.5521	-3.021E-07	0.000	2.053E+10	-3.8055	425541.	0.000
306.000	5.034E-05	-1081.3946	95.1760	-7.111E-07	0.000	2.053E+10	-3.6532	435441.	0.000
312.000	4.512E-05	-575.9920	74.1689	-9.533E-07	0.000	2.053E+10	-3.3492	445341.	0.000
318.000	3.890E-05	-191.1396	55.2673	-1.065E-06	0.000	2.053E+10	-2.9513	455241.	0.000
324.000	3.234E-05	87.4715	38.8924	-1.081E-06	0.000	2.053E+10	-2.5070	465141.	0.000
330.000	2.593E-05	275.8290	25.2123	-1.027E-06	0.000	2.053E+10	-2.0531	475041.	0.000
336.000	2.001E-05	390.2659	14.2016	-9.301E-07	0.000	2.053E+10	-1.6172	484941.	0.000
342.000	1.477E-05	446.4715	5.6958	-8.079E-07	0.000	2.053E+10	-1.2181	494841.	0.000
348.000	1.031E-05	458.8093	-0.5615	-6.756E-07	0.000	2.053E+10	-0.8676	504741.	0.000
354.000	6.662E-06	439.8959	-4.8788	-5.443E-07	0.000	2.053E+10	-0.5715	514641.	0.000
360.000	3.782E-06	400.3943	-7.5852	-4.215E-07	0.000	2.053E+10	-0.3307	524541.	0.000
366.000	1.604E-06	348.9746	-9.0059	-3.120E-07	0.000	2.053E+10	-0.1429	534441.	0.000
372.000	3.814E-08	292.3981	-9.4450	-2.183E-07	0.000	2.053E+10	-0.003461	544341.	0.000
378.000	-1.015E-06	235.6868	-9.1740	-1.411E-07	0.000	2.053E+10	0.0938	554241.	0.000
384.000	-1.656E-06	182.3437	-8.4256	-8.007E-08	0.000	2.053E+10	0.1557	564141.	0.000
390.000	-1.976E-06	134.5982	-7.3915	-3.376E-08	0.000	2.053E+10	0.1891	574041.	0.000
396.000	-2.061E-06	93.6543	-6.2226	-4.050E-10	0.000	2.053E+10	0.2006	583941.	0.000
402.000	-1.981E-06	59.9270	-5.0327	2.204E-08	0.000	2.053E+10	0.1961	593841.	0.000
408.000	-1.796E-06	33.2561	-3.9023	3.565E-08	0.000	2.053E+10	0.1807	603741.	0.000
414.000	-1.553E-06	13.0907	-2.8835	4.242E-08	0.000	2.053E+10	0.1589	613641.	0.000
420.000	-1.287E-06	-1.3564	-2.0057	4.414E-08	0.000	2.053E+10	0.1338	623541.	0.000
426.000	-1.024E-06	-10.9878	-1.2802	4.233E-08	0.000	2.053E+10	0.1081	633441.	0.000
432.000	-7.792E-07	-16.7288	-0.7054	3.828E-08	0.000	2.053E+10	0.0835	643341.	0.000
438.000	-5.641E-07	-19.4614	-0.2705	3.300E-08	0.000	2.053E+10	0.0614	653241.	0.000
444.000	-3.832E-07	-19.9823	0.0409	2.723E-08	0.000	2.053E+10	0.0424	663141.	0.000
450.000	-2.373E-07	-18.9777	0.2478	2.154E-08	0.000	2.053E+10	0.0266	673041.	0.000
456.000	-1.247E-07	-17.0139	0.3703	1.628E-08	0.000	2.053E+10	0.0142	682941.	0.000
462.000	-4.198E-08	-14.5383	0.4274	1.167E-08	0.000	2.053E+10	0.004847	692841.	0.000
468.000	1.530E-08	-11.8878	0.4366	7.810E-09	0.000	2.053E+10	-0.001792	702741.	0.000
474.000	5.174E-08	-9.3013	0.4128	4.714E-09	0.000	2.053E+10	-0.006145	712641.	0.000
480.000	7.187E-08	-6.9358	0.3684	2.341E-09	0.000	2.053E+10	-0.008654	722541.	0.000
486.000	7.983E-08	-4.8815	0.3132	6.145E-10	0.000	2.053E+10	-0.009746	732441.	0.000
492.000	7.924E-08	-3.1780	0.2545	-5.631E-10	0.000	2.053E+10	-0.009804	742341.	0.000
498.000	7.308E-08	-1.8273	0.1976	-1.294E-09	0.000	2.053E+10	-0.009162	752241.	0.000
504.000	6.371E-08	-0.8063	0.1459	-1.679E-09	0.000	2.053E+10	-0.008092	762141.	0.000
510.000	5.293E-08	-0.0766	0.1011	-1.808E-09	0.000	2.053E+10	-0.006810	772041.	0.000
516.000	4.201E-08	0.4079	0.0643	-1.760E-09	0.000	2.053E+10	-0.005475	781941.	0.000
522.000	3.181E-08	0.6953	0.0353	-1.599E-09	0.000	2.053E+10	-0.004198	791841.	0.000
528.000	2.282E-08	0.8315	0.0135	-1.376E-09	0.000	2.053E+10	-0.003050	801741.	0.000
534.000	1.530E-08	0.8580	-0.001827	-1.129E-09	0.000	2.053E+10	-0.002070	811641.	0.000
540.000	9.279E-09	0.8099	-0.0118	-8.850E-10	0.000	2.053E+10	-0.001271	821541.	0.000
546.000	4.679E-09	0.7160	-0.0176	-6.621E-10	0.000	2.053E+10	-0.000648	831441.	0.000
552.000	1.334E-09	0.5988	-0.0201	-4.700E-10	0.000	2.053E+10	-0.000187	841341.	0.000
558.000	-9.608E-10	0.4748	-0.0203	-3.131E-10	0.000	2.053E+10	0.000136	851241.	0.000
564.000	-2.423E-09	0.3557	-0.0188	-1.918E-10	0.000	2.053E+10	0.000348	861141.	0.000
570.000	-3.262E-09	0.2491	-0.0163	-1.034E-10	0.000	2.053E+10	0.000474	871041.	0.000
576.000	-3.664E-09	0.1596	-0.0133	-4.369E-11	0.000	2.053E+10	0.000538	880941.	0.000
582.000	-3.786E-09	0.0894	-0.0100	-7.313E-12	0.000	2.053E+10	0.000562	890841.	0.000
588.000	-3.752E-09	0.0394	-0.006636	1.151E-11	0.000	2.053E+10	0.000563	900741.	0.000
594.000	-3.648E-09	0.009744	-0.003285	1.869E-11	0.000	2.053E+10	0.000554	910641.	0.000
600.000	-3.528E-09	0.000	0.000	2.011E-11	0.000	2.053E+10	0.000541	460271.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection	=	0.2500000 inches
Computed slope at pile head	=	-0.0029151 radians
Maximum bending moment	=	316740. inch-lbs
Maximum shear force	=	6980.5113501 lbs
Depth of maximum bending moment	=	78.0000000 inches below pile head
Depth of maximum shear force	=	0.0000000 inches below pile head
Number of iterations	=	186
Number of zero deflection points	=	5

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Slope (BC Type 5)

Displacement of pile head = 0.250000 in
 Slope of pile head = 0.000E+00 in/in
 Axial load on pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	-657873.	14158.	0.000	0.000	6.038E+09	0.000	0.000	0.000
6.000	0.2480	-573332.	14009.	-0.000612	0.000	6.038E+09	-24.7912	599.6935	0.000
12.000	0.2427	-489615.	13784.	-0.001140	0.000	6.038E+09	-50.2281	1241.9445	0.000
18.000	0.2344	-407648.	13411.	-0.001572	0.000	6.493E+09	-74.2521	1900.9786	0.000
24.000	0.2238	-328308.	12902.	-0.001903	0.000	6.884E+09	-95.4557	2559.1312	0.000
30.000	0.2115	-252371.	12276.	-0.002083	0.000	2.028E+10	-112.9692	3204.4367	0.000
36.000	0.1988	-180492.	11558.	-0.002147	0.000	2.040E+10	-126.4171	3815.4127	0.000
42.000	0.1858	-113157.	10769.	-0.002190	0.000	2.049E+10	-136.6102	4412.5501	0.000
48.000	0.1725	-50736.	9933.0635	-0.002214	0.000	2.053E+10	-142.0870	4941.7266	0.000
54.000	0.1592	6571.3190	9079.2836	-0.002221	0.000	2.053E+10	-142.5063	5371.3653	0.000
60.000	0.1459	58748.	8218.0570	-0.002211	0.000	2.053E+10	-144.5693	5946.6918	0.000
66.000	0.1326	105719.	7362.1738	-0.002187	0.000	2.050E+10	-140.7251	6365.2923	0.000
72.000	0.1196	147619.	6548.3383	-0.002150	0.000	2.044E+10	-130.5534	6548.4771	0.000
78.000	0.1068	184815.	5750.9865	-0.002101	0.000	2.039E+10	-135.2305	7593.7909	0.000
84.000	0.0944	217135.	4933.3028	-0.002042	0.000	2.034E+10	-137.3307	8728.2694	0.000
90.000	0.0823	244504.	4111.4955	-0.001974	0.000	2.030E+10	-136.6051	9953.7106	0.000
96.000	0.0707	266947.	3284.3396	-0.001898	0.000	2.026E+10	-139.1136	11803.	0.000
102.000	0.0596	284372.	2449.4738	-0.001816	0.000	2.023E+10	-139.1750	14019.	0.000
108.000	0.0489	296777.	1635.6924	-0.001730	0.000	2.021E+10	-132.0854	16200.	0.000
114.000	0.0388	304416.	907.6659	-0.001591	0.000	9.600E+09	-110.5901	17100.	0.000
120.000	0.0298	308051.	307.4431	-0.001364	0.000	7.021E+09	-89.4842	18000.	0.000
126.000	0.0224	308432.	-172.9929	-0.001101	0.000	7.018E+09	-70.6611	18900.	0.000
132.000	0.0166	306239.	-549.4967	-0.000839	0.000	7.058E+09	-54.8401	19800.	0.000
138.000	0.0124	302040.	-842.0091	-0.000631	0.000	1.163E+10	-42.6640	20700.	0.000
144.000	0.009050	296286.	-1730.8260	-0.000509	0.000	2.021E+10	-253.6083	168141.	0.000
150.000	0.006261	281392.	-3049.0132	-0.000423	0.000	2.024E+10	-185.7874	178041.	0.000
156.000	0.003973	259800.	-3979.7093	-0.000343	0.000	2.027E+10	-124.4446	187941.	0.000
162.000	0.002146	233718.	-4565.3365	-0.000270	0.000	2.031E+10	-70.7645	197841.	0.000
168.000	0.000734	205080.	-4853.8212	-0.000205	0.000	2.036E+10	-25.3971	207741.	0.000
174.000	-0.000316	175521.	-4895.5788	-0.000149	0.000	2.040E+10	11.4779	217641.	0.000
180.000	-0.001057	146369.	-4740.9242	-0.000102	0.000	2.045E+10	40.0736	227541.	0.000
186.000	-0.001539	118655.	-4437.9641	-6.304E-05	0.000	2.048E+10	60.9131	237441.	0.000
192.000	-0.001813	93129.	-4030.9837	-3.204E-05	0.000	2.051E+10	74.7471	247341.	0.000
198.000	-0.001924	70290.	-3559.3138	-8.142E-06	0.000	2.053E+10	82.4762	257241.	0.000
204.000	-0.001911	50419.	-3056.6423	9.498E-06	0.000	2.053E+10	85.0809	267141.	0.000
210.000	-0.001810	33608.	-2550.7145	2.178E-05	0.000	2.053E+10	83.5617	277041.	0.000
216.000	-0.001650	19805.	-2063.3579	2.958E-05	0.000	2.053E+10	78.8905	286941.	0.000
222.000	-0.001455	8841.0450	-1610.7679	3.377E-05	0.000	2.053E+10	71.9729	296841.	0.000
228.000	-0.001244	467.7426	-1203.9899	3.513E-05	0.000	2.053E+10	63.6198	306741.	0.000
234.000	-0.001033	-5615.2640	-849.5427	3.437E-05	0.000	2.053E+10	54.5293	316641.	0.000
240.000	-0.000832	-9735.0193	-550.1214	3.213E-05	0.000	2.053E+10	45.2778	326541.	0.000
246.000	-0.000648	-12224.	-305.3309	2.892E-05	0.000	2.053E+10	36.3191	336441.	0.000
252.000	-0.000485	-13406.	-112.4049	2.518E-05	0.000	2.053E+10	27.9896	346341.	0.000
258.000	-0.000346	-13579.	33.1191	2.123E-05	0.000	2.053E+10	20.5184	356241.	0.000
264.000	-0.000230	-13014.	136.7958	1.735E-05	0.000	2.053E+10	14.0405	366141.	0.000
270.000	-0.000137	-11942.	204.7516	1.370E-05	0.000	2.053E+10	8.6115	376041.	0.000
276.000	-6.566E-05	-10560.	243.2563	1.041E-05	0.000	2.053E+10	4.2234	385941.	0.000
282.000	-1.243E-05	-9025.3714	258.3872	7.552E-06	0.000	2.053E+10	0.8202	395841.	0.000
288.000	2.497E-05	-7461.0325	255.7821	5.144E-06	0.000	2.053E+10	-1.6886	405741.	0.000
294.000	4.929E-05	-5957.2203	240.4729	3.183E-06	0.000	2.053E+10	-3.4145	415641.	0.000
300.000	6.317E-05	-4576.1219	216.7896	1.644E-06	0.000	2.053E+10	-4.4799	425541.	0.000
306.000	6.902E-05	-3356.1400	188.3234	4.849E-07	0.000	2.053E+10	-5.0088	435441.	0.000
312.000	6.898E-05	-2316.3574	157.9363	-3.440E-07	0.000	2.053E+10	-5.1202	445341.	0.000
318.000	6.489E-05	-1460.8216	127.8055	-8.959E-07	0.000	2.053E+10	-4.9234	455241.	0.000
324.000	5.823E-05	-782.4762	99.4920	-1.224E-06	0.000	2.053E+10	-4.5145	465141.	0.000
330.000	5.021E-05	-266.6239	74.0238	-1.377E-06	0.000	2.053E+10	-3.9749	475041.	0.000
336.000	4.171E-05	106.1396	51.9854	-1.400E-06	0.000	2.053E+10	-3.3712	484941.	0.000
342.000	3.340E-05	357.5375	33.6079	-1.333E-06	0.000	2.053E+10	-2.7547	494841.	0.000
348.000	2.572E-05	509.7541	18.8532	-1.206E-06	0.000	2.053E+10	-2.1635	504741.	0.000
354.000	1.893E-05	584.0656	7.4916	-1.046E-06	0.000	2.053E+10	-1.6237	514641.	0.000
360.000	1.317E-05	599.9038	-0.8324	-8.731E-07	0.000	2.053E+10	-1.1510	524541.	0.000
366.000	8.453E-06	574.2860	-6.5441	-7.015E-07	0.000	2.053E+10	-0.7529	534441.	0.000
372.000	4.747E-06	521.5429	-10.0949	-5.414E-07	0.000	2.053E+10	-0.4307	544341.	0.000
378.000	1.956E-06	453.2771	-11.9289	-3.990E-07	0.000	2.053E+10	-0.1807	554241.	0.000
384.000	-4.060E-08	378.4913	-12.4595	-2.774E-07	0.000	2.053E+10	0.003818	564141.	0.000
390.000	-1.373E-06	303.8296	-12.0538	-1.777E-07	0.000	2.053E+10	0.1314	574041.	0.000
396.000	-2.174E-06	233.8878	-11.0250	-9.918E-08	0.000	2.053E+10	0.2115	583941.	0.000
402.000	-2.564E-06	171.5532	-9.6292	-3.994E-08	0.000	2.053E+10	0.2537	593841.	0.000
408.000	-2.653E-06	118.3468	-8.0672	2.421E-09	0.000	2.053E+10	0.2669	603741.	0.000

414.000	-2.535E-06	74.7459	-6.4888	3.063E-08	0.000	2.053E+10	0.2592	613641.	0.000
420.000	-2.285E-06	40.4742	-4.9987	4.747E-08	0.000	2.053E+10	0.2375	623541.	0.000
426.000	-1.965E-06	14.7506	-3.6639	5.554E-08	0.000	2.053E+10	0.2074	633441.	0.000
432.000	-1.619E-06	-3.5055	-2.5208	5.718E-08	0.000	2.053E+10	0.1736	643341.	0.000
438.000	-1.279E-06	-15.5132	-1.5825	5.440E-08	0.000	2.053E+10	0.1392	653241.	0.000
444.000	-9.659E-07	-22.5083	-0.8446	4.885E-08	0.000	2.053E+10	0.1068	663141.	0.000
450.000	-6.926E-07	-25.6595	-0.2912	4.181E-08	0.000	2.053E+10	0.0777	673041.	0.000
456.000	-4.642E-07	-26.0130	0.1003	3.426E-08	0.000	2.053E+10	0.0528	682941.	0.000
462.000	-2.814E-07	-24.4636	0.3564	2.688E-08	0.000	2.053E+10	0.0325	692841.	0.000
468.000	-1.416E-07	-21.7432	0.5036	2.013E-08	0.000	2.053E+10	0.0166	702741.	0.000
474.000	-3.986E-08	-18.4251	0.5676	1.426E-08	0.000	2.053E+10	0.004734	712641.	0.000
480.000	2.957E-08	-14.9359	0.5711	9.389E-09	0.000	2.053E+10	-0.003561	722541.	0.000
486.000	7.281E-08	-11.5743	0.5337	5.515E-09	0.000	2.053E+10	-0.008888	732441.	0.000
492.000	9.575E-08	-8.5323	0.4715	2.577E-09	0.000	2.053E+10	-0.0118	742341.	0.000
498.000	1.037E-07	-5.9165	0.3970	4.662E-10	0.000	2.053E+10	-0.0130	752241.	0.000
504.000	1.013E-07	-3.7687	0.3193	-9.489E-10	0.000	2.053E+10	-0.0129	762141.	0.000
510.000	9.235E-08	-2.0841	0.2451	-1.804E-09	0.000	2.053E+10	-0.0119	772041.	0.000
516.000	7.969E-08	-0.8273	0.1783	-2.230E-09	0.000	2.053E+10	-0.0104	781941.	0.000
522.000	6.559E-08	0.0557	0.1211	-2.342E-09	0.000	2.053E+10	-0.008656	791841.	0.000
528.000	5.159E-08	0.6270	0.0745	-2.243E-09	0.000	2.053E+10	-0.006893	801741.	0.000
534.000	3.868E-08	0.9501	0.0381	-2.012E-09	0.000	2.053E+10	-0.005233	811641.	0.000
540.000	2.744E-08	1.0849	0.0111	-1.715E-09	0.000	2.053E+10	-0.003758	821541.	0.000
546.000	1.811E-08	1.0843	-0.007653	-1.398E-09	0.000	2.053E+10	-0.002509	831441.	0.000
552.000	1.067E-08	0.9934	-0.0197	-1.094E-09	0.000	2.053E+10	-0.001496	841341.	0.000
558.000	4.975E-09	0.8486	-0.0263	-8.251E-10	0.000	2.053E+10	-0.000706	851241.	0.000
564.000	7.680E-10	0.6783	-0.0287	-6.020E-10	0.000	2.053E+10	-0.000110	861141.	0.000
570.000	-2.249E-09	0.5041	-0.0281	-4.292E-10	0.000	2.053E+10	0.000327	871041.	0.000
576.000	-4.383E-09	0.3415	-0.0252	-3.057E-10	0.000	2.053E+10	0.000643	880941.	0.000
582.000	-5.917E-09	0.2022	-0.0206	-2.262E-10	0.000	2.053E+10	0.000879	890841.	0.000
588.000	-7.097E-09	0.0944	-0.0148	-1.829E-10	0.000	2.053E+10	0.001065	900741.	0.000
594.000	-8.112E-09	0.0251	-0.007874	-1.654E-10	0.000	2.053E+10	0.001231	910641.	0.000
600.000	-9.082E-09	0.0000	0.0000	-1.618E-10	0.000	2.053E+10	0.001393	460271.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.2500000 inches
Computed slope at pile head	=	-0.0000420 radians
Maximum bending moment	=	-657873. inch-lbs
Maximum shear force	=	14158. lbs
Depth of maximum bending moment	=	0.000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	43
Number of zero deflection points	=	5

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (BC Type 4)

Deflection at pile head	=	0.500000 in
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	9065.3726	-0.005924	0.000	2.053E+10	0.000	0.000	0.000
6.000	0.4645	55103.	8975.2226	-0.005916	0.000	2.053E+10	-30.0500	388.1985	0.000
12.000	0.4290	109123.	8705.0911	-0.005892	0.000	2.053E+10	-59.9938	839.0694	0.000
18.000	0.3937	160978.	8263.2804	-0.005853	0.000	2.042E+10	-87.2764	1329.9478	0.000
24.000	0.3588	209687.	7669.7705	-0.005798	0.000	2.035E+10	-110.5602	1848.9961	0.000
30.000	0.3242	254407.	6950.2741	-0.005730	0.000	2.028E+10	-129.2719	2392.7128	0.000
36.000	0.2900	294465.	6133.2547	-0.005648	0.000	2.021E+10	-143.0679	2959.9104	0.000
42.000	0.2564	329362.	5247.0664	-0.005461	0.000	6.877E+09	-152.3282	3564.8591	0.000
48.000	0.2245	358741.	4321.5698	-0.005157	0.000	6.711E+09	-156.1707	4174.2191	0.000
54.000	0.1945	382458.	3390.3727	-0.004823	0.000	6.597E+09	-154.2283	4757.7040	0.000
60.000	0.1666	400582.	2467.8979	-0.004464	0.000	6.521E+09	-153.2633	5519.4656	0.000
66.000	0.1409	413145.	1573.1378	-0.004089	0.000	6.472E+09	-144.9901	6173.0498	0.000

72.000	0.1175	420441.	750.3024	-0.003701	0.000	6.445E+09	-129.2884	6599.5683	0.000
78.000	0.0965	423037.	-20.2361	-0.003309	0.000	6.436E+09	-127.5578	7930.3831	0.000
84.000	0.0778	420993.	-770.5359	-0.002915	0.000	6.443E+09	-122.5422	9445.6774	0.000
90.000	0.0615	414490.	-1481.4440	-0.002527	0.000	6.467E+09	-114.4272	11159.	0.000
96.000	0.0475	403822.	-2152.4624	-0.002149	0.000	6.508E+09	-109.2456	13795.	0.000
102.000	0.0357	389176.	-2753.6260	-0.001785	0.000	6.568E+09	-91.1422	15300.	0.000
108.000	0.0261	371207.	-3238.4700	-0.001439	0.000	6.649E+09	-70.4725	16200.	0.000
114.000	0.0185	350660.	-3607.8030	-0.001116	0.000	6.753E+09	-52.6385	17100.	0.000
120.000	0.0127	328181.	-3880.0888	-0.000817	0.000	6.884E+09	-38.1234	18000.	0.000
126.000	0.008662	304295.	-4076.3175	-0.000564	0.000	8.310E+09	-27.2862	18900.	0.000
132.000	0.005935	279400.	-4216.9322	-0.000413	0.000	2.024E+10	-19.5854	19800.	0.000
138.000	0.003705	253791.	-4314.0315	-0.000334	0.000	2.028E+10	-12.7811	20700.	0.000
144.000	0.001925	227712.	-4514.1960	-0.000263	0.000	2.032E+10	-53.9404	168141.	0.000
150.000	0.000548	199684.	-4724.8318	-0.000200	0.000	2.037E+10	-16.2715	178041.	0.000
156.000	-0.000475	171062.	-4728.9942	-0.000145	0.000	2.041E+10	14.8841	187941.	0.000
162.000	-0.001197	142971.	-4565.9371	-9.933E-05	0.000	2.045E+10	39.4683	197841.	0.000
168.000	-0.001667	116295.	-4274.3722	-6.132E-05	0.000	2.048E+10	57.7200	207741.	0.000
174.000	-0.001933	91693.	-3890.8852	-3.087E-05	0.000	2.051E+10	70.1090	217641.	0.000
180.000	-0.002038	69612.	-3448.7453	-7.286E-06	0.000	2.053E+10	77.2710	227541.	0.000
186.000	-0.002020	50310.	-2977.0911	1.024E-05	0.000	2.053E+10	79.9470	237441.	0.000
192.000	-0.001915	33884.	-2500.4611	2.254E-05	0.000	2.053E+10	78.9296	247341.	0.000
198.000	-0.001750	20299.	-2038.6216	3.046E-05	0.000	2.053E+10	75.0168	257241.	0.000
204.000	-0.001549	9413.3332	-1606.6459	3.480E-05	0.000	2.053E+10	68.9751	267141.	0.000
210.000	-0.001332	1010.6680	-1215.1926	3.632E-05	0.000	2.053E+10	61.5094	277041.	0.000
216.000	-0.001113	-5177.6949	-870.9363	3.571E-05	0.000	2.053E+10	53.2427	286941.	0.000
222.000	-0.000904	-9449.1389	-577.0990	3.358E-05	0.000	2.053E+10	44.7031	296841.	0.000
228.000	-0.000710	-12111.	-334.0349	3.043E-05	0.000	2.053E+10	36.3183	306741.	0.000
234.000	-0.000538	-13465.	-139.8299	2.669E-05	0.000	2.053E+10	28.4167	316641.	0.000
240.000	-0.000390	-13795.	9.1180	2.271E-05	0.000	2.053E+10	21.2326	326541.	0.000
246.000	-0.000266	-13361.	117.5617	1.874E-05	0.000	2.053E+10	14.9153	336441.	0.000
252.000	-0.000165	-12389.	190.9296	1.498E-05	0.000	2.053E+10	9.5407	346341.	0.000
258.000	-8.629E-05	-11073.	234.9217	1.155E-05	0.000	2.053E+10	5.1234	356241.	0.000
264.000	-2.672E-05	-9572.7738	255.1825	8.531E-06	0.000	2.053E+10	1.6302	366141.	0.000
270.000	1.608E-05	-8013.1901	257.0507	5.961E-06	0.000	2.053E+10	-1.0075	376041.	0.000
276.000	4.482E-05	-6489.5965	245.3798	3.842E-06	0.000	2.053E+10	-2.8828	385941.	0.000
282.000	6.218E-05	-5069.5551	224.4250	2.153E-06	0.000	2.053E+10	-4.1022	395841.	0.000
288.000	7.065E-05	-3797.0137	197.7852	8.574E-07	0.000	2.053E+10	-4.7778	405741.	0.000
294.000	7.247E-05	-2696.3382	168.3916	-9.135E-08	0.000	2.053E+10	-5.0201	415641.	0.000
300.000	6.956E-05	-1776.2921	138.5318	-7.449E-07	0.000	2.053E+10	-4.9332	425541.	0.000
306.000	6.353E-05	-1033.7775	109.9006	-1.155E-06	0.000	2.053E+10	-4.6106	435441.	0.000
312.000	5.569E-05	-457.2071	83.6683	-1.373E-06	0.000	2.053E+10	-4.1336	445341.	0.000
318.000	4.705E-05	-29.4286	60.5581	-1.444E-06	0.000	2.053E+10	-3.5698	455241.	0.000
324.000	3.836E-05	269.8367	40.9277	-1.409E-06	0.000	2.053E+10	-2.9736	465141.	0.000
330.000	3.014E-05	462.0422	24.8483	-1.302E-06	0.000	2.053E+10	-2.3862	475041.	0.000
336.000	2.273E-05	568.3294	12.1786	-1.152E-06	0.000	2.053E+10	-1.8371	484941.	0.000
342.000	1.632E-05	608.4620	2.6302	-9.798E-07	0.000	2.053E+10	-1.3457	494841.	0.000
348.000	1.097E-05	600.1275	-4.1757	-8.033E-07	0.000	2.053E+10	-0.9229	504741.	0.000
354.000	6.678E-06	558.5461	-8.6629	-6.340E-07	0.000	2.053E+10	-0.5728	514641.	0.000
360.000	3.364E-06	496.3249	-11.2635	-4.798E-07	0.000	2.053E+10	-0.2941	524541.	0.000
366.000	9.199E-07	423.4997	-12.3915	-3.454E-07	0.000	2.053E+10	-0.0819	534441.	0.000
372.000	-7.814E-07	347.7098	-12.4247	-2.327E-07	0.000	2.053E+10	0.0709	544341.	0.000
378.000	-1.873E-06	274.4597	-11.6929	-1.418E-07	0.000	2.053E+10	0.1730	554241.	0.000
384.000	-2.483E-06	207.4285	-10.4734	-7.142E-08	0.000	2.053E+10	0.2335	564141.	0.000
390.000	-2.730E-06	148.7959	-8.9893	-1.937E-08	0.000	2.053E+10	0.2612	574041.	0.000
396.000	-2.716E-06	99.5610	-7.4128	1.691E-08	0.000	2.053E+10	0.2643	583941.	0.000
402.000	-2.527E-06	59.8382	-5.8695	4.020E-08	0.000	2.053E+10	0.2501	593841.	0.000
408.000	-2.233E-06	29.1174	-4.4449	5.320E-08	0.000	2.053E+10	0.2247	603741.	0.000
414.000	-1.889E-06	6.4861	-3.1913	5.840E-08	0.000	2.053E+10	0.1932	613641.	0.000
420.000	-1.533E-06	-9.1917	-2.1340	5.801E-08	0.000	2.053E+10	0.1593	623541.	0.000
426.000	-1.193E-06	-19.1354	-1.2784	5.387E-08	0.000	2.053E+10	0.1259	633441.	0.000
432.000	-8.861E-07	-24.5459	-0.6157	4.749E-08	0.000	2.053E+10	0.0950	643341.	0.000
438.000	-6.227E-07	-26.5352	-0.1273	4.002E-08	0.000	2.053E+10	0.0678	653241.	0.000
444.000	-4.058E-07	-26.0828	0.2107	3.234E-08	0.000	2.053E+10	0.0449	663141.	0.000
450.000	-2.347E-07	-24.0147	0.4242	2.502E-08	0.000	2.053E+10	0.0263	673041.	0.000
456.000	-1.056E-07	-20.9981	0.5393	1.844E-08	0.000	2.053E+10	0.0120	682941.	0.000
462.000	-1.342E-08	-17.5479	0.5800	1.281E-08	0.000	2.053E+10	0.001549	692841.	0.000
468.000	4.804E-08	-14.0412	0.5678	8.191E-09	0.000	2.053E+10	-0.005626	702741.	0.000
474.000	8.488E-08	-10.7367	0.5206	4.571E-09	0.000	2.053E+10	-0.0101	712641.	0.000
480.000	1.029E-07	-7.7946	0.4532	1.863E-09	0.000	2.053E+10	-0.0124	722541.	0.000
486.000	1.072E-07	-5.2984	0.3768	-5.007E-11	0.000	2.053E+10	-0.0131	732441.	0.000
492.000	1.023E-07	-3.2732	0.2996	-1.302E-09	0.000	2.053E+10	-0.0127	742341.	0.000
498.000	9.160E-08	-1.7034	0.2271	-2.030E-09	0.000	2.053E+10	-0.0115	752241.	0.000
504.000	7.793E-08	-0.5471	0.1630	-2.358E-09	0.000	2.053E+10	-0.009899	762141.	0.000
510.000	6.330E-08	0.2529	0.1089	-2.401E-09	0.000	2.053E+10	-0.008145	772041.	0.000
516.000	4.911E-08	0.7597	0.0652	-2.253E-09	0.000	2.053E+10	-0.006401	781941.	0.000
522.000	3.626E-08	1.0361	0.0317	-1.991E-09	0.000	2.053E+10	-0.004785	791841.	0.000
528.000	2.522E-08	1.1401	0.007193	-1.673E-09	0.000	2.053E+10	-0.003370	801741.	0.000
534.000	1.618E-08	1.1228	-0.009484	-1.342E-09	0.000	2.053E+10	-0.002189	811641.	0.000
540.000	9.110E-09	1.0266	-0.0198	-1.028E-09	0.000	2.053E+10	-0.001247	821541.	0.000
546.000	3.840E-09	0.8855	-0.0251	-7.490E-10	0.000	2.053E+10	-0.000532	831441.	0.000

552.000	1.219E-10	0.7252	-0.0268	-5.137E-10	0.000	2.053E+10	-1.709E-05	841341.	0.000
558.000	-2.324E-09	0.5643	-0.0258	-3.252E-10	0.000	2.053E+10	0.000330	851241.	0.000
564.000	-3.781E-09	0.4152	-0.0232	-1.821E-10	0.000	2.053E+10	0.000543	861141.	0.000
570.000	-4.510E-09	0.2857	-0.0196	-7.971E-11	0.000	2.053E+10	0.000655	871041.	0.000
576.000	-4.738E-09	0.1797	-0.0156	-1.171E-11	0.000	2.053E+10	0.000696	880941.	0.000
582.000	-4.650E-09	0.0987	-0.0114	2.897E-11	0.000	2.053E+10	0.000690	890841.	0.000
588.000	-4.390E-09	0.0426	-0.007373	4.962E-11	0.000	2.053E+10	0.000659	900741.	0.000
594.000	-4.055E-09	0.0102	-0.003550	5.734E-11	0.000	2.053E+10	0.000615	910641.	0.000
600.000	-3.702E-09	0.000	0.000	5.884E-11	0.000	2.053E+10	0.000568	460271.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	0.5000000	inches
Computed slope at pile head	=	-0.0059245	rad
Maximum bending moment	=	423037.	inch-lbs
Maximum shear force	=	9065.3726154	lbs
Depth of maximum bending moment	=	78.0000000	inches below pile head
Depth of maximum shear force	=	0.0000000	inches below pile head
Number of iterations	=	45	
Number of zero deflection points	=	5	

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 4

Pile-head conditions are Displacement and Slope (BC Type 5)
 Displacement of pile head = 0.500000 in
 Slope of pile head = 0.000E+00 in/in
 Axial load on pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S rad	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	-1042745.	20324.	0.000	0.000	5.551E+09	0.000	0.000	0.000
6.000	0.4966	-921288.	20139.	-0.001061	0.000	5.551E+09	-30.8186	372.3417	0.000
12.000	0.4873	-800821.	19858.	-0.001992	0.000	5.551E+09	-62.9765	775.4724	0.000
18.000	0.4727	-682518.	19388.	-0.002775	0.000	5.849E+09	-93.5025	1186.7976	0.000
24.000	0.4540	-567497.	18746.	-0.003406	0.000	6.049E+09	-120.6225	1594.2603	0.000
30.000	0.4318	-456750.	17954.	-0.003905	0.000	6.324E+09	-143.4886	1993.6572	0.000
36.000	0.4071	-351117.	17038.	-0.004277	0.000	6.751E+09	-161.5830	2381.4277	0.000
42.000	0.3805	-251264.	16028.	-0.004470	0.000	2.029E+10	-175.1971	2762.5775	0.000
48.000	0.3535	-157709.	14949.	-0.004531	0.000	2.043E+10	-184.3773	3129.7955	0.000
54.000	0.3261	-70786.	13828.	-0.004564	0.000	2.053E+10	-189.2551	3481.7463	0.000
60.000	0.2987	9326.6714	12667.	-0.004573	0.000	2.053E+10	-198.0253	3977.8710	0.000
66.000	0.2713	82310.	11472.	-0.004560	0.000	2.052E+10	-200.1869	4427.9558	0.000
72.000	0.2440	148083.	10288.	-0.004526	0.000	2.044E+10	-194.3886	4780.6043	0.000
78.000	0.2169	206854.	9095.6215	-0.004474	0.000	2.036E+10	-203.1173	5617.5659	0.000
84.000	0.1903	258305.	7862.8751	-0.004405	0.000	2.027E+10	-207.7982	6552.2329	0.000
90.000	0.1641	302266.	6616.2389	-0.004270	0.000	9.335E+09	-207.7472	7596.6766	0.000
96.000	0.1390	338724.	5363.4413	-0.004024	0.000	6.821E+09	-209.8520	9055.3288	0.000
102.000	0.1158	367593.	4108.3783	-0.003709	0.000	6.667E+09	-208.5024	10803.	0.000
108.000	0.0945	388915.	2872.1357	-0.003366	0.000	6.570E+09	-203.5785	12921.	0.000
114.000	0.0754	402866.	1676.2760	-0.003003	0.000	6.512E+09	-195.0414	15520.	0.000
120.000	0.0585	409751.	564.6737	-0.002628	0.000	6.485E+09	-175.4927	18000.	0.000
126.000	0.0439	410273.	-376.3491	-0.002249	0.000	6.483E+09	-138.1816	18900.	0.000
132.000	0.0315	405775.	-1102.8927	-0.001871	0.000	6.500E+09	-103.9996	19800.	0.000
138.000	0.0214	397487.	-1636.4860	-0.001502	0.000	6.534E+09	-73.8649	20700.	0.000
144.000	0.0135	386497.	-2992.6445	-0.001143	0.000	6.580E+09	-378.1880	168141.	0.000
150.000	0.007695	361850.	-4812.2393	-0.000805	0.000	6.695E+09	-228.3436	178041.	0.000
156.000	0.003841	328943.	-5858.1787	-0.000499	0.000	6.880E+09	-120.3028	187941.	0.000
162.000	0.001707	291671.	-6387.9860	-0.000312	0.000	2.022E+10	-56.2996	197841.	0.000
168.000	9.354E-05	252362.	-6566.6008	-0.000232	0.000	2.028E+10	-3.2387	207741.	0.000
174.000	-0.001072	212928.	-6459.6132	-0.000163	0.000	2.035E+10	38.9012	217641.	0.000
180.000	-0.001862	174886.	-6131.1062	-0.000106	0.000	2.041E+10	70.6011	227541.	0.000
186.000	-0.002342	139380.	-5641.2174	-5.967E-05	0.000	2.045E+10	92.6952	237441.	0.000
192.000	-0.002578	107206.	-5044.3433	-2.354E-05	0.000	2.049E+10	106.2629	247341.	0.000
198.000	-0.002625	78854.	-4387.9539	3.685E-06	0.000	2.052E+10	112.5336	257241.	0.000
204.000	-0.002534	54550.	-3711.9512	2.318E-05	0.000	2.053E+10	112.8006	267141.	0.000

210.000	-0.002347	34305.	-3048.4993	3.617E-05	0.000	2.053E+10	108.3500	277041.	0.000
216.000	-0.002100	17959.	-2422.2311	4.380E-05	0.000	2.053E+10	100.4061	286941.	0.000
222.000	-0.001821	5227.2567	-1850.7461	4.719E-05	0.000	2.053E+10	90.0889	296841.	0.000
228.000	-0.001533	-4261.3733	-1345.3272	4.733E-05	0.000	2.053E+10	78.3840	306741.	0.000
234.000	-0.001253	-10928.	-911.8035	4.511E-05	0.000	2.053E+10	66.1239	316641.	0.000
240.000	-0.000992	-15214.	-551.4865	4.129E-05	0.000	2.053E+10	53.9818	326541.	0.000
246.000	-0.000757	-17556.	-262.1199	3.650E-05	0.000	2.053E+10	42.4738	336441.	0.000
252.000	-0.000554	-18368.	-38.7911	3.126E-05	0.000	2.053E+10	31.9691	346341.	0.000
258.000	-0.000382	-18029.	125.2300	2.594E-05	0.000	2.053E+10	22.7046	356241.	0.000
264.000	-0.000243	-16872.	237.7541	2.084E-05	0.000	2.053E+10	14.8034	366141.	0.000
270.000	-0.000132	-15181.	307.0489	1.615E-05	0.000	2.053E+10	8.2948	376041.	0.000
276.000	-4.873E-05	-13191.	341.3372	1.201E-05	0.000	2.053E+10	3.1346	385941.	0.000
282.000	1.176E-05	-11088.	348.4139	8.462E-06	0.000	2.053E+10	-0.7757	395841.	0.000
288.000	5.281E-05	-9011.8604	335.3739	5.525E-06	0.000	2.053E+10	-3.5710	405741.	0.000
294.000	7.805E-05	-7064.3993	308.4397	3.176E-06	0.000	2.053E+10	-5.4071	415641.	0.000
300.000	9.092E-05	-5311.3467	272.8741	1.367E-06	0.000	2.053E+10	-6.4481	425541.	0.000
306.000	9.446E-05	-3790.2386	232.9630	3.762E-08	0.000	2.053E+10	-6.8556	435441.	0.000
312.000	9.137E-05	-2515.7999	192.0513	-8.838E-07	0.000	2.053E+10	-6.7816	445341.	0.000
318.000	8.386E-05	-1485.4109	152.6184	-1.468E-06	0.000	2.053E+10	-6.3627	455241.	0.000
324.000	7.375E-05	-684.0266	116.3791	-1.785E-06	0.000	2.053E+10	-5.7171	465141.	0.000
330.000	6.243E-05	-88.4332	84.3984	-1.898E-06	0.000	2.053E+10	-4.9431	475041.	0.000
336.000	5.097E-05	329.2101	57.2109	-1.863E-06	0.000	2.053E+10	-4.1193	484941.	0.000
342.000	4.008E-05	598.5453	34.9370	-1.728E-06	0.000	2.053E+10	-3.3053	494841.	0.000
348.000	3.024E-05	748.8683	17.3901	-1.531E-06	0.000	2.053E+10	-2.5436	504741.	0.000
354.000	2.171E-05	807.5943	4.1730	-1.303E-06	0.000	2.053E+10	-1.8621	514641.	0.000
360.000	1.460E-05	799.2566	-5.2420	-1.068E-06	0.000	2.053E+10	-1.2762	524541.	0.000
366.000	8.888E-06	744.9471	-11.4457	-8.428E-07	0.000	2.053E+10	-0.7917	534441.	0.000
372.000	4.484E-06	662.1105	-15.0413	-6.372E-07	0.000	2.053E+10	-0.4068	544341.	0.000
378.000	1.241E-06	564.6049	-16.6058	-4.580E-07	0.000	2.053E+10	-0.1147	554241.	0.000
384.000	-1.012E-06	462.9513	-16.6644	-3.078E-07	0.000	2.053E+10	0.0951	564141.	0.000
390.000	-2.453E-06	364.7055	-15.6751	-1.869E-07	0.000	2.053E+10	0.2347	574041.	0.000
396.000	-3.254E-06	274.8946	-14.0209	-9.346E-08	0.000	2.053E+10	0.3167	583941.	0.000
402.000	-3.574E-06	196.4767	-12.0095	-2.458E-08	0.000	2.053E+10	0.3538	593841.	0.000
408.000	-3.549E-06	130.7870	-9.8767	2.324E-08	0.000	2.053E+10	0.3572	603741.	0.000
414.000	-3.295E-06	77.9505	-7.7941	5.373E-08	0.000	2.053E+10	0.3170	613641.	0.000
420.000	-2.905E-06	37.2445	-5.8775	7.057E-08	0.000	2.053E+10	0.3019	623541.	0.000
426.000	-2.449E-06	7.4041	-4.1963	7.709E-08	0.000	2.053E+10	0.2585	633441.	0.000
432.000	-1.980E-06	-13.1302	-2.7841	7.625E-08	0.000	2.053E+10	0.2123	643341.	0.000
438.000	-1.534E-06	-26.0229	-1.6464	7.053E-08	0.000	2.053E+10	0.1670	653241.	0.000
444.000	-1.133E-06	-32.9039	-0.7698	6.192E-08	0.000	2.053E+10	0.1252	663141.	0.000
450.000	-7.905E-07	-35.2750	-0.1280	5.196E-08	0.000	2.053E+10	0.0887	673041.	0.000
456.000	-5.096E-07	-34.4528	0.3120	4.177E-08	0.000	2.053E+10	0.0580	682941.	0.000
462.000	-2.892E-07	-31.5409	0.5862	3.213E-08	0.000	2.053E+10	0.0334	692841.	0.000
468.000	-1.241E-07	-27.4257	0.7300	2.351E-08	0.000	2.053E+10	0.0145	702741.	0.000
474.000	-7.045E-09	-22.7864	0.7761	1.618E-08	0.000	2.053E+10	0.000837	712641.	0.000
480.000	7.004E-08	-18.1161	0.7533	1.020E-08	0.000	2.053E+10	-0.008435	722541.	0.000
486.000	1.154E-07	-13.7488	0.6858	5.545E-09	0.000	2.053E+10	-0.0141	732441.	0.000
492.000	1.366E-07	-9.8880	0.5928	2.091E-09	0.000	2.053E+10	-0.0169	742341.	0.000
498.000	1.405E-07	-6.6353	0.4893	-3.229E-10	0.000	2.053E+10	-0.0176	752241.	0.000
504.000	1.327E-07	-4.0162	0.3859	-1.879E-09	0.000	2.053E+10	-0.0169	762141.	0.000
510.000	1.179E-07	-2.0039	0.2898	-2.759E-09	0.000	2.053E+10	-0.0152	772041.	0.000
516.000	9.960E-08	-0.5378	0.2054	-3.130E-09	0.000	2.053E+10	-0.0130	781941.	0.000
522.000	8.035E-08	0.4611	0.1346	-3.141E-09	0.000	2.053E+10	-0.0106	791841.	0.000
528.000	6.191E-08	1.0782	0.0780	-2.917E-09	0.000	2.053E+10	-0.008272	801741.	0.000
534.000	4.535E-08	1.3975	0.0348	-2.555E-09	0.000	2.053E+10	-0.006135	811641.	0.000
540.000	3.125E-08	1.4958	0.003511	-2.132E-09	0.000	2.053E+10	-0.004279	821541.	0.000
546.000	1.977E-08	1.4401	-0.0175	-1.703E-09	0.000	2.053E+10	-0.002739	831441.	0.000
552.000	1.081E-08	1.2857	-0.0303	-1.305E-09	0.000	2.053E+10	-0.001516	841341.	0.000
558.000	4.111E-09	1.0767	-0.0366	-9.596E-10	0.000	2.053E+10	-0.000583	851241.	0.000
564.000	-7.029E-10	0.8467	-0.0381	-6.786E-10	0.000	2.053E+10	0.000101	861141.	0.000
570.000	-4.032E-09	0.6202	-0.0360	-4.642E-10	0.000	2.053E+10	0.000585	871041.	0.000
576.000	-6.274E-09	0.4148	-0.0315	-3.130E-10	0.000	2.053E+10	0.000921	880941.	0.000
582.000	-7.788E-09	0.2426	-0.0252	-2.169E-10	0.000	2.053E+10	0.001156	890841.	0.000
588.000	-8.877E-09	0.1119	-0.0178	-1.651E-10	0.000	2.053E+10	0.001333	900741.	0.000
594.000	-9.769E-09	0.0293	-0.009332	-1.445E-10	0.000	2.053E+10	0.001483	910641.	0.000
600.000	-1.061E-08	0.000	0.000	-1.402E-10	0.000	2.053E+10	0.001628	460271.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 4:

Pile-head deflection = 0.500000 inches
 Computed slope at pile head = -0.0000656 radians
 Maximum bending moment = -1042745. inch-lbs

Maximum shear force = 20324. lbs
 Depth of maximum bending moment = 0.000000 inches below pile head
 Depth of maximum shear force = 0.000000 inches below pile head
 Number of iterations = 47
 Number of zero deflection points = 5

 Summary of Pile Response(s)

Definitions of Pile-Head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
 Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
 Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
 Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
 Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

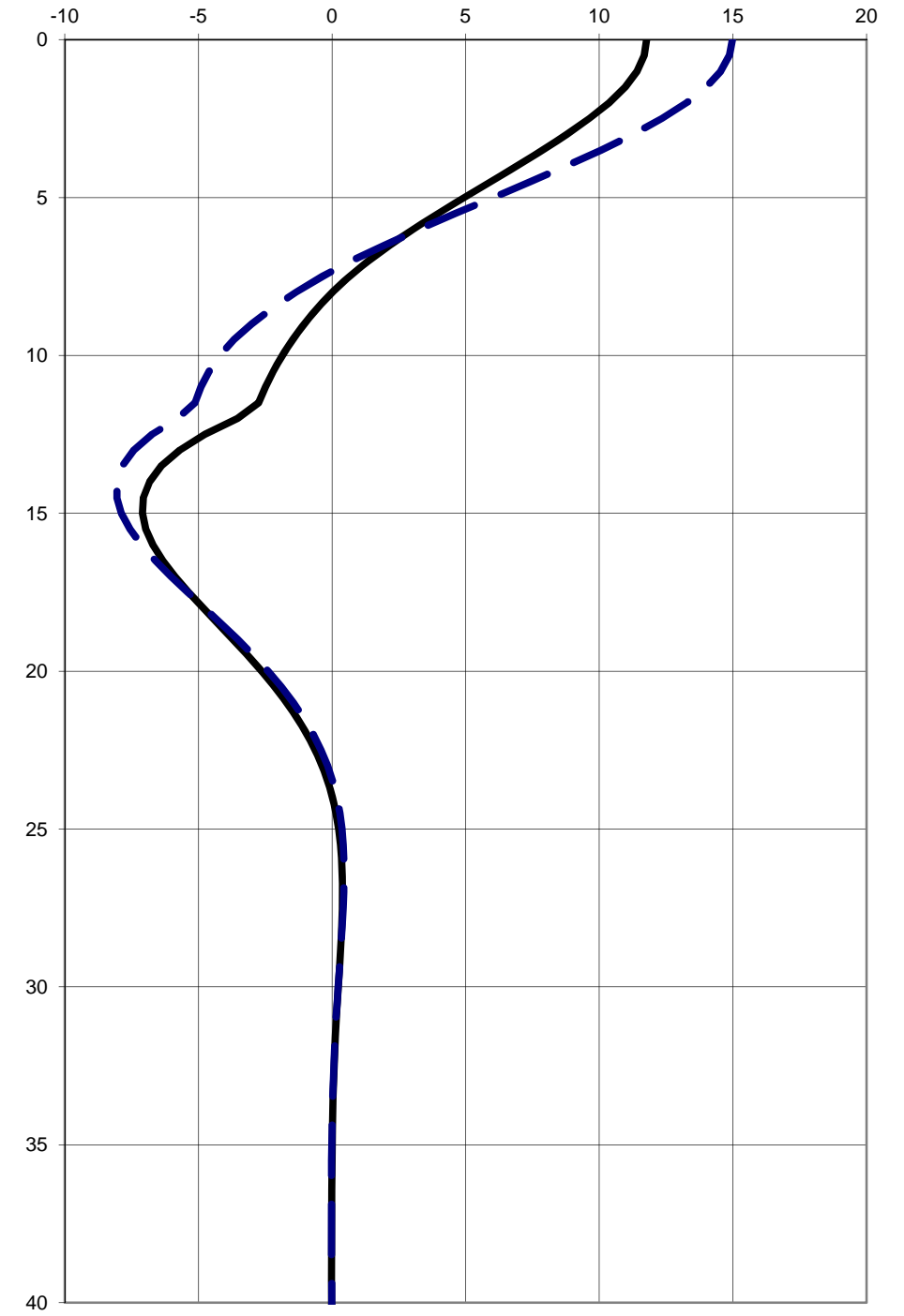
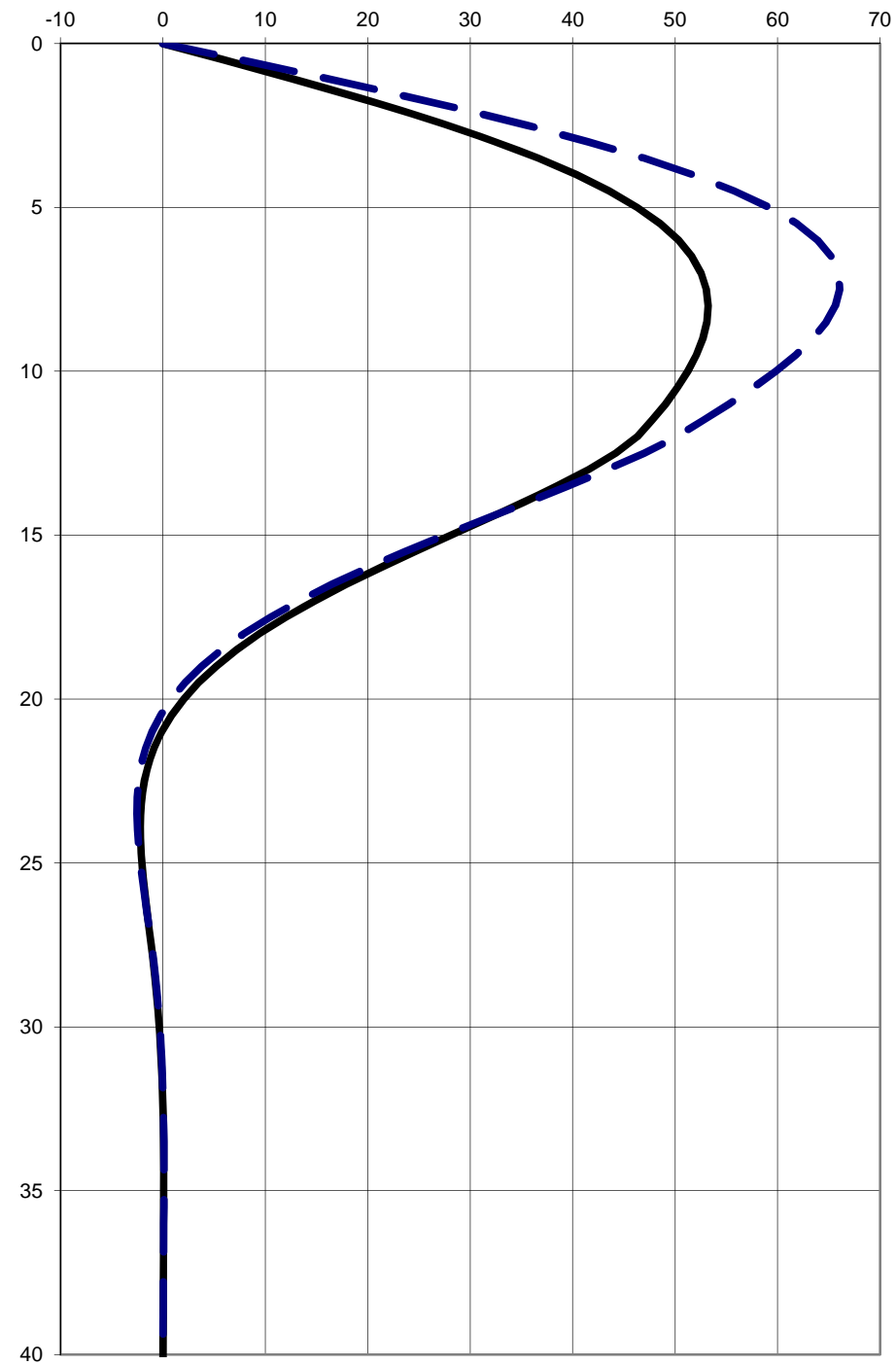
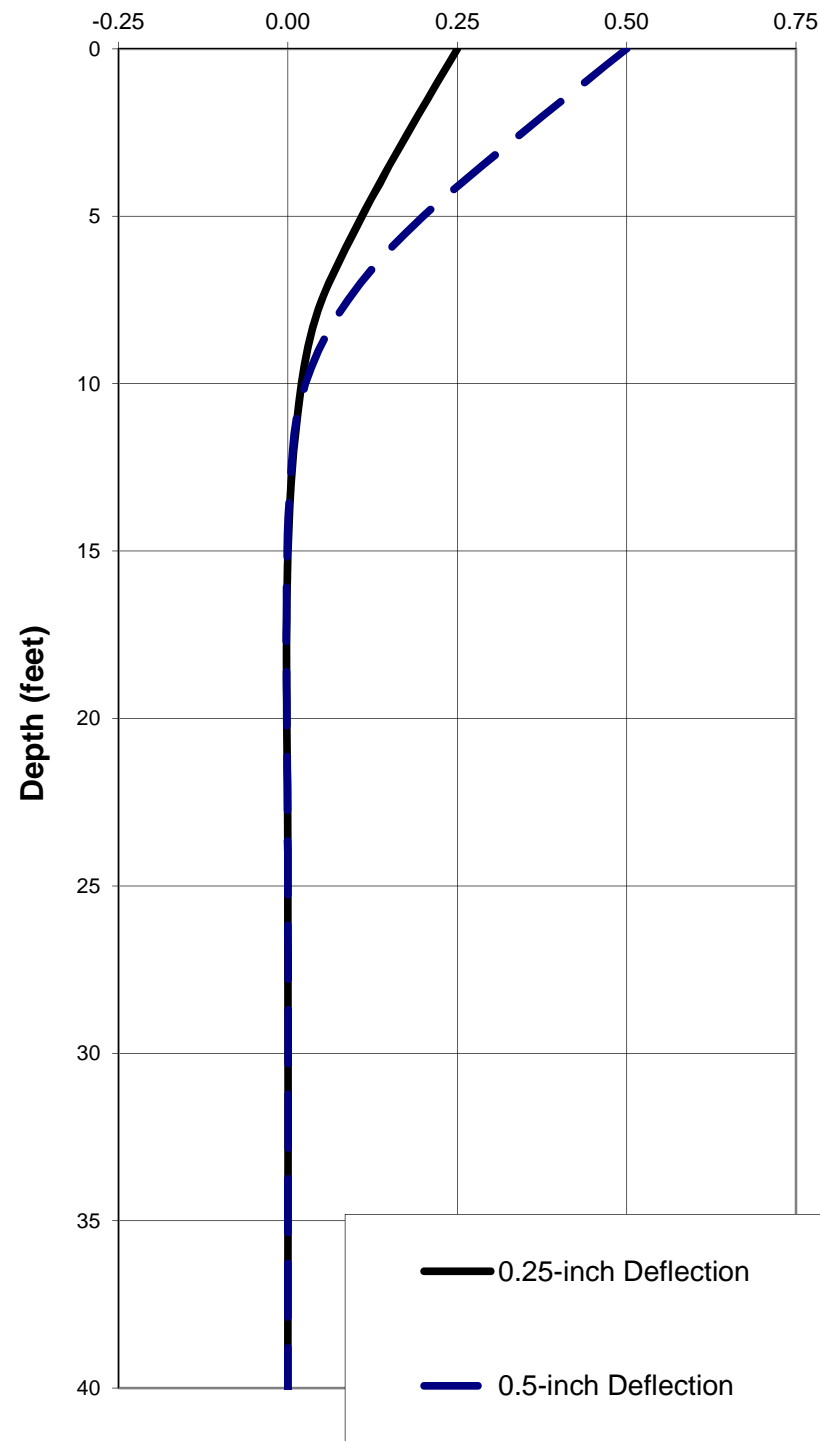
Load Case No.	Load Type No.	Condition	Condition 1	Condition 2	Axial Load	Pile-Head Deflection	Maximum Moment	Maximum Shear
			V(lbs) or y(inches)	in-lb, rad., or in-lb/rad.	lbs	inches	in-lbs	lbs
1	4	y =	0.2500	M = 0.000	20000.	0.25000000	316740.	6980.5114
0.00000000								
2	5	y =	0.2500	S = 0.000	20000.	0.25000000	-657873.	14158.
0.00000000								
3	4	y =	0.5000	M = 0.000	20000.	0.50000000	423037.	9065.3726
0.00000000								
4	5	y =	0.5000	S = 0.000	20000.	0.50000000	-1042745.	20324.
0.00000000								

The analysis ended normally.

Deflection (inches)

Moment (kips-feet)

Shear (kips)



**LATERAL LOAD CAPACITIES OF 24-INCH DIAMETER CIDH PILE
FREE HEAD CONDITION
EL RODEO K-8 SCHOOL
BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
Project No.: 10274.015
Date: 10/2015

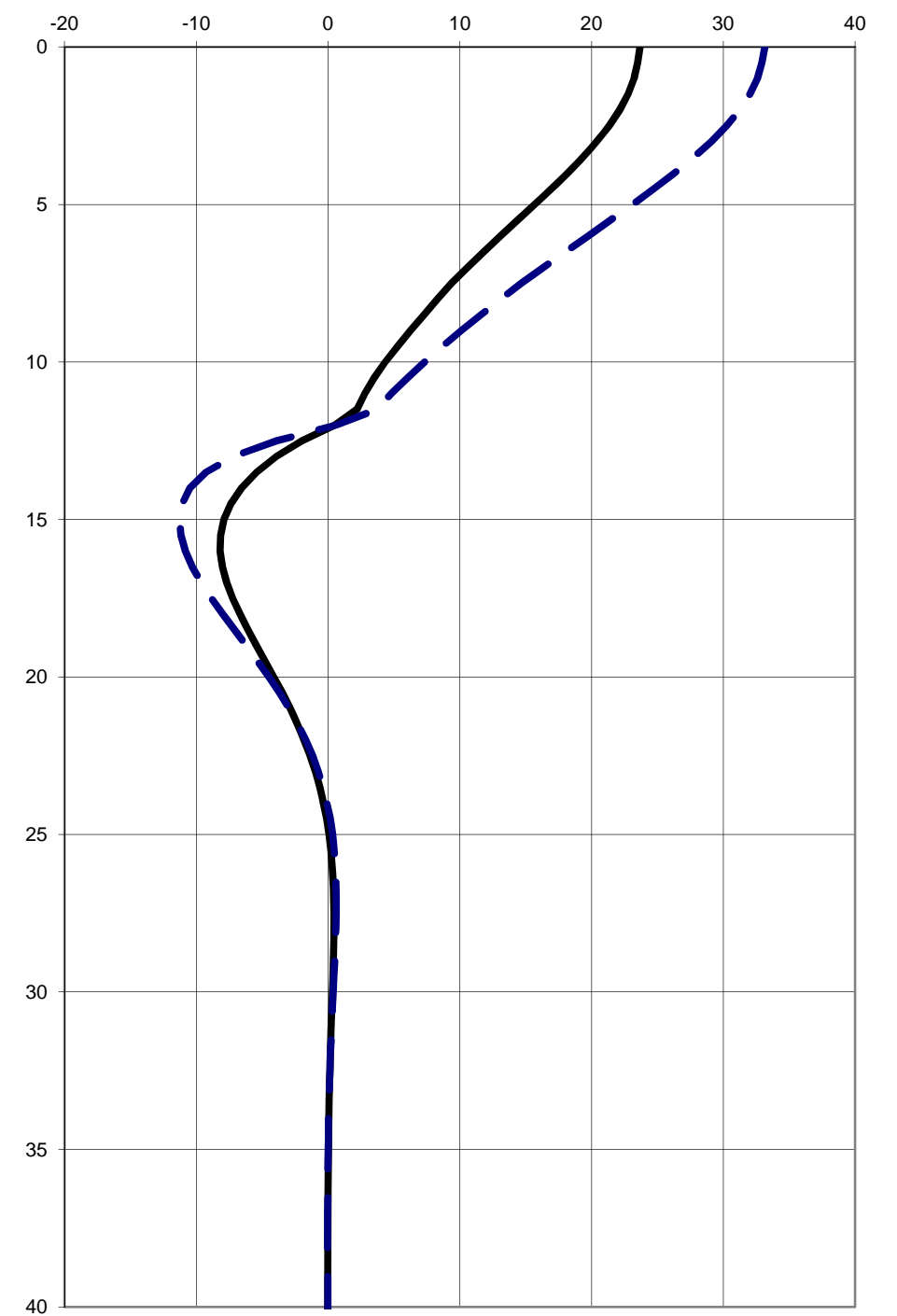
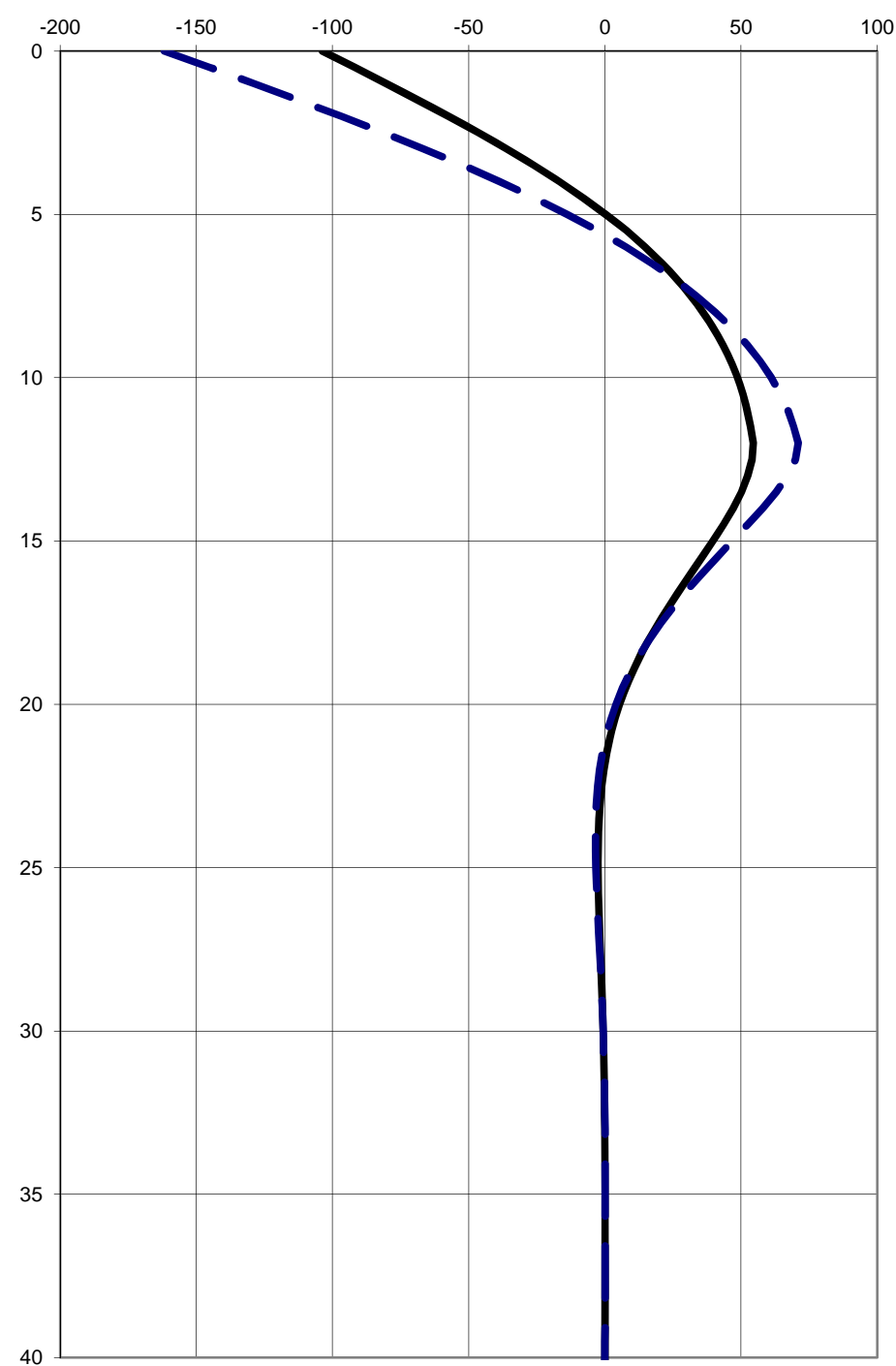
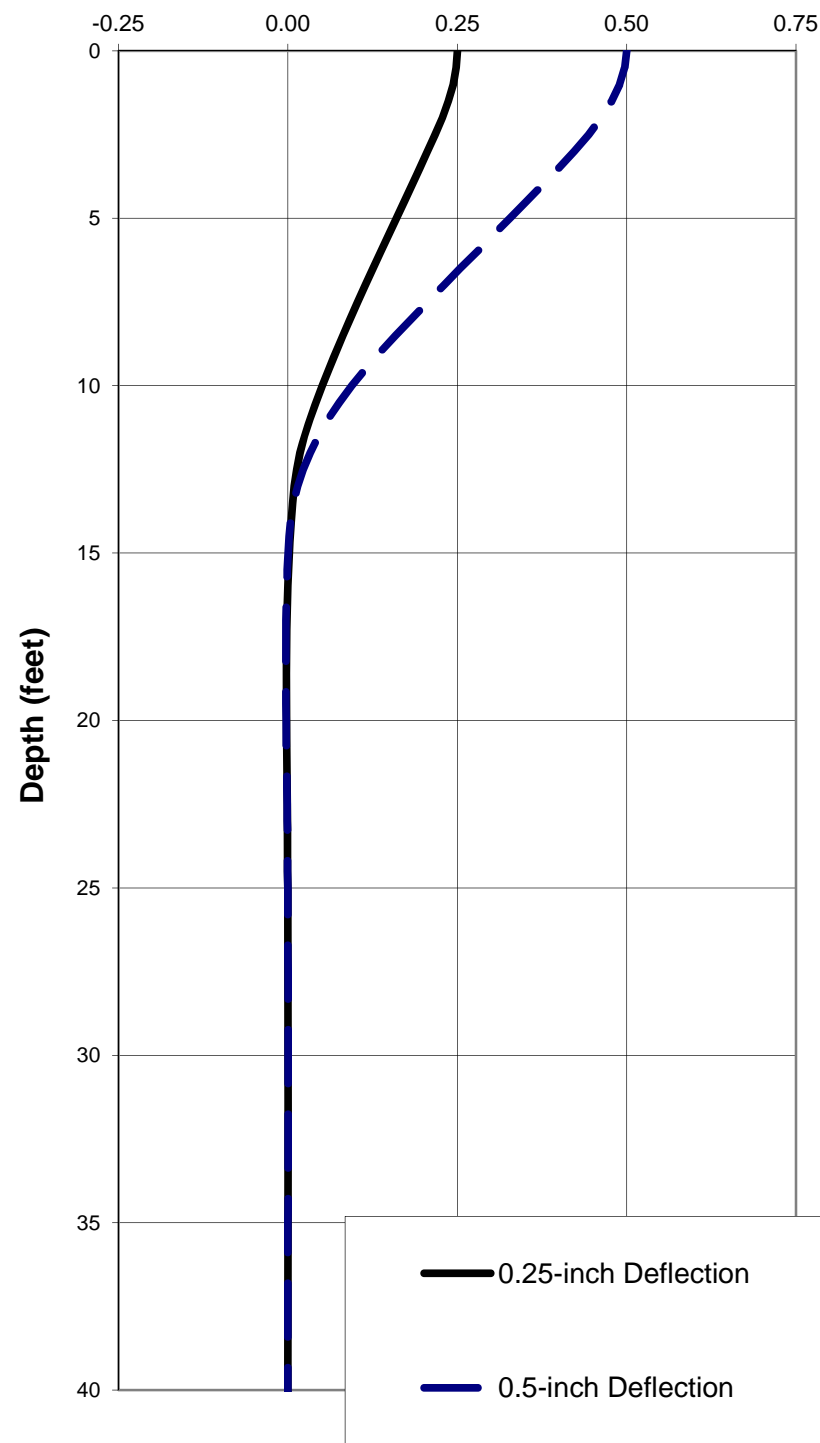


Figure C-4a

Deflection (inches)

Moment (kips-feet)

Shear (kips)



**LATERAL LOAD CAPACITIES OF 24-INCH DIAMETER CIDH PILE
FIXED HEAD CONDITION
EL RODEO K-8 SCHOOL
BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
Project No.: 10274.015
Date: 10/2015



Figure C-4b

=====
LPIle Plus for Windows, Version 6.0 (6.0.08)
Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

(c) 1985-2010 by Ensoft, Inc.
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=====
This program is licensed to:

CD
Leighton

Files Used for Analysis

Path to file locations: P:\INFOCUS PROJECTS\10000-10500\10274 BHUSD\015 EI Rodeo Bldg C\Analyses\LPIle\
Name of input data file: 24-inch diameter.lp6d
Name of output file: 24-inch diameter.lp6o
Name of plot output file: 24-inch diameter.lp6p
Name of runtime file: 24-inch diameter.lp6r

Date and Time of Analysis

Date: October 28, 2015 Time: 15:07:56

Problem Title

Project Name: Beverly Hills High School Building C

Job Number: 10274.015

Client: Beverly Hills Unified School District

Engineer: CD

Description: 30-inch CIDH pile

Program Options

Units Used - US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal Moment
Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:

- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

Solution Control Parameters:

- Number of pile increments = 100
- Maximum number of iterations allowed = 1000
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in

Pile Response Output Options:

- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1

Pile Structural Properties and Geometry

- Total Number of Sections = 1
- Total Pile Length = 50.00 ft
- Depth of ground surface below top of pile = 0.00 ft
- Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points. p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Di ameter in
1	0.00000	24.000000
2	50.00000	24.000000

Input Structural Properties:

Section No. 1:

- Section Type = Drilled Shaft (Bored Pile)
- Section Length = 50.000 ft
- Section Diameter = 24.000 in

Ground Slope and Pile Batter Angles

- Ground Slope Angle = 0.000 degrees
= 0.000 radians
- Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

- Distance from top of pile to top of layer = 0.000 ft
- Distance from top of pile to bottom of layer = 12.000 ft
- p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
- p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

Layer 2 is cemented silt with cohesion and friction

- Distance from top of pile to top of layer = 12.000 ft

Distance from top of pile to bottom of layer = 60.000 ft
 p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
 p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

(Depth of lowest layer extends 10.00 ft below pile tip)

 Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 4 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	0.00	120.00000
2	12.00	120.00000
3	12.00	120.00000
4	60.00	120.00000

 Summary of Soil Properties

Layer RQD Num. percent	Soil Type (p-y Curve Criteria) pci	Rock Emass psi	Depth ft	Eff. Unit Weight, pcf	Cohesion Test Type psf	Friction Prop. Ang., deg.	Elas. Subgr. pci	qu psi
1	Sand (Reese, et al.)	--	0.00	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	300.000	30.000	--	--
2	Cemented Silt	--	0.00	120.000	300.000	30.000	--	--
--	-- default	--	60.000	120.000	300.000	30.000	--	--
--	-- default	--	--	--	--	--	--	--

 Loading Type

p-y criteria for static loading was used for all analyses.

 Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 4

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs
1	4	y = 0.250 in	M = 0.000 in-lbs	20000.000
2	5	y = 0.250 in	S = 0.000 in/in	20000.000
3	4	y = 0.500 in	M = 0.000 in-lbs	20000.000
4	5	y = 0.500 in	S = 0.000 in/in	20000.000

 Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust values were determined from pile-head loading conditions

Number of Sections = 1

Section No. 1:

Dimensions and Properties of Drilled Shaft:

Length of Section	=	600.0000000	in
Shaft Diameter	=	24.0000000	in
Concrete Cover Thickness	=	3.0000000	in
Number of Reinforcing Bars	=	6	bars
Yield Stress of Reinforcing Bars	=	60.0000000	ksi
Modulus of Elasticity of Reinforcing Bars	=	29000.	ksi
Gross Area of Shaft	=	452.38934212	sq. in.
Total Area of Reinforcing Steel	=	4.7400000	sq. in.
Area Ratio of Steel Reinforcement	=	1.05	percent
Nom. Axial Structural Capacity = $0.85 F_c A_c + F_y A_s$	=	1425.906	ki ps
Tensile Load for Cracking of Concrete	=	-177.999	ki ps
Nominal Axial Tensile Capacity	=	-284.400	ki ps

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Di am. inches	Bar Area sq. in.	X inches	Y inches
1	1.00000	0.79000	8.50000	0.00000
2	1.00000	0.79000	4.25000	7.36122
3	1.00000	0.79000	-4.25000	7.36122
4	1.00000	0.79000	-8.50000	0.00000
5	1.00000	0.79000	-4.25000	-7.36122
6	1.00000	0.79000	4.25000	-7.36122

Concrete Properties:

Compressive Strength of Concrete	=	3.0000000	ksi
Modulus of Elasticity of Concrete	=	3122.0185778	ksi
Modulus of Rupture of Concrete	=	-0.4107919	ksi
Compression Strain at Peak Stress	=	0.0016336	
Tensile Strain at Fracture	=	-0.0001160	
Maximum Coarse Aggregate Size	=	0.7500000	in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	20.000

Definitions of Run Messages and Notes:

- C = concrete has cracked in tension
- Y = stress in reinforcement has reached yield stress
- T = tensile strain in reinforcement exceeds 0.005 when compressive strain in concrete is less than 0.003.
- Bending Stiffness = Bending Moment / Curvature
- Position of neutral axis is computed from compression side of pile
- Compressive stresses are positive in sign. Tensile stresses are negative in sign.

Axial Thrust Force = 20.000 kips

Run Msg	Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in ²	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi
0.00001250	79.6978880	63758310.	21.0218366	0.0000263	-0.000003723	0.0951972	0.7576916	
0.00002500	159.1842425	63673697.	16.5251293	0.0000413	-0.0000187	0.1487476	1.1893719	
0.00003750	238.2341687	63529112.	15.0272524	0.0000564	-0.0000336	0.2018134	1.6211637	
0.00005000	316.8262026	63365241.	14.2785608	0.0000714	-0.0000486	0.2543852	2.0529913	
0.00006250	394.9574950	63193199.	13.8294549	0.0000864	-0.0000636	0.3064607	2.4848387	

	0.00007500	472.6273361	63016978.	13.5301173	0.0001015	-0.0000785	0.3580394	2.9167005
	0.00008750	549.8354752	62838340.	13.3163526	0.0001165	-0.0000935	0.4091209	3.3485745
	0.0000100	626.5818108	62658181.	13.1560673	0.0001316	-0.0001084	0.4597050	3.7804595
C	0.0000113	626.5818108	55696161.	9.1733256	0.0001032	-0.0001668	0.3624290	-4.7980525
C	0.0000125	626.5818108	50126545.	8.9216358	0.0001115	-0.0001885	0.3904929	-5.4224070
C	0.0000138	626.5818108	45569586.	8.7103398	0.0001198	-0.0002102	0.4181552	-6.0489020
C	0.0000150	626.5818108	41772121.	8.5304588	0.0001280	-0.0002320	0.4454769	-6.6770504
C	0.0000163	626.5818108	38558881.	8.3740815	0.0001361	-0.0002539	0.4724249	-7.3071641
C	0.0000175	626.5818108	35804675.	8.2387747	0.0001442	-0.0002758	0.4991554	-7.9379218
C	0.0000188	626.5818108	33417697.	8.1191373	0.0001522	-0.0002978	0.5255955	-8.5699691
C	0.0000200	626.5818108	31329091.	8.0138878	0.0001603	-0.0003197	0.5518575	-9.2023450
C	0.0000213	626.5818108	29486203.	7.9189323	0.0001683	-0.0003417	0.5778329	-9.8360079
C	0.0000225	626.5818108	27848080.	7.8347834	0.0001763	-0.0003637	0.6036887	-10.4695038
C	0.0000238	626.5818108	26382392.	7.7583319	0.0001843	-0.0003857	0.6293158	-11.1037989
C	0.0000250	626.5818108	25063272.	7.6886678	0.0001922	-0.0004078	0.6547355	-11.7387158
C	0.0000263	626.5818108	23869783.	7.6258599	0.0002002	-0.0004298	0.6800369	-12.3734641
C	0.0000275	626.5818108	22784793.	7.5689741	0.0002081	-0.0004519	0.7052199	-13.0080431
C	0.0000288	626.5818108	21794150.	7.5156997	0.0002161	-0.0004739	0.7301428	-13.6437353
C	0.0000300	626.5818108	20886060.	7.4667664	0.0002240	-0.0004960	0.7549202	-14.2795132
C	0.0000313	626.5818108	20050618.	7.4219375	0.0002319	-0.0005181	0.7795804	-14.9151190
C	0.0000325	626.5818108	19279440.	7.3807403	0.0002399	-0.0005401	0.8041231	-15.5505522
C	0.0000338	626.5818108	18565387.	7.3427717	0.0002478	-0.0005622	0.8285481	-16.1858121
C	0.0000350	626.5818108	17902337.	7.3072284	0.0002558	-0.0005842	0.8528053	-16.8213631
C	0.0000363	626.5818108	17285015.	7.2735169	0.0002637	-0.0006063	0.8768569	-17.4575653
C	0.0000375	626.5818108	16708848.	7.2422160	0.0002716	-0.0006284	0.9007918	-18.0935900
C	0.0000388	626.5818108	16169853.	7.2130931	0.0002795	-0.0006505	0.9246098	-18.7294365
C	0.0000400	626.5818108	15664545.	7.1859445	0.0002874	-0.0006726	0.9483107	-19.3651042
C	0.0000413	631.4407651	15307655.	7.1605914	0.0002954	-0.0006946	0.9718941	-20.0005924
C	0.0000425	646.8224332	15219351.	7.1368759	0.0003033	-0.0007167	0.9953599	-20.6359003
C	0.0000438	662.1902683	15135778.	7.1146582	0.0003113	-0.0007387	1.0187077	-21.2710273
C	0.0000450	677.5442217	15056538.	7.0938140	0.0003192	-0.0007608	1.0419374	-21.9059726
C	0.0000463	692.8804572	14981199.	7.0740091	0.0003272	-0.0007828	1.0650182	-22.5410351
C	0.0000475	708.1940890	14909349.	7.0548762	0.0003351	-0.0008049	1.0879105	-23.1766079
C	0.0000488	723.4939505	14840902.	7.0368572	0.0003430	-0.0008270	1.1106855	-23.8119929
C	0.0000513	754.0521619	14713213.	7.0038371	0.0003589	-0.0008711	1.1558823	-25.0821970
C	0.0000538	784.5546857	14596366.	6.9743762	0.0003749	-0.0009151	1.2006065	-26.3516409
C	0.0000563	815.0011108	14488909.	6.9480039	0.0003908	-0.0009592	1.2448559	-27.6203185
C	0.0000588	845.3910200	14389634.	6.9243297	0.0004068	-0.0010032	1.2886284	-28.8882231
C	0.0000613	875.7239904	14297535.	6.9030270	0.0004228	-0.0010472	1.3319218	-30.1553482
C	0.0000638	905.9995928	14211758.	6.8838203	0.0004388	-0.0010912	1.3747338	-31.4216871

C	0.0000663	936.2173920	14131583.	6.8664759	0.0004549	-0.0011351	1.4170622	-32.6872329
C	0.0000688	966.3769464	14056392.	6.8507942	0.0004710	-0.0011790	1.4589048	-33.9519789
C	0.0000713	996.4759399	13985627.	6.8364640	0.0004871	-0.0012229	1.5002333	-35.2162060
C	0.0000738	1026.5105411	13918787.	6.8230862	0.0005032	-0.0012668	1.5409965	-36.4804742
C	0.0000763	1056.4861660	13855556.	6.8109689	0.0005193	-0.0013107	1.5812719	-37.7438948
C	0.0000788	1086.4023356	13795585.	6.7999955	0.0005355	-0.0013545	1.6210571	-39.0064600
C	0.0000813	1116.2585635	13738567.	6.7900639	0.0005517	-0.0013983	1.6603495	-40.2681616
C	0.0000838	1146.0543553	13684231.	6.7810842	0.0005679	-0.0014421	1.6991467	-41.5289914
C	0.0000863	1175.7892088	13632339.	6.7729770	0.0005842	-0.0014858	1.7374462	-42.7889411
C	0.0000888	1205.4626138	13582677.	6.7656718	0.0006005	-0.0015295	1.7752453	-44.0480020
C	0.0000913	1235.0738263	13535056.	6.7591059	0.0006168	-0.0015732	1.8125412	-45.3061683
C	0.0000938	1264.6228048	13489310.	6.7532236	0.0006331	-0.0016169	1.8493318	-46.5634253
C	0.0000963	1294.1087494	13445286.	6.7479747	0.0006495	-0.0016605	1.8856141	-47.8197672
C	0.0000988	1323.5311158	13402847.	6.7433144	0.0006659	-0.0017041	1.9213854	-49.0751848
C	0.0001013	1352.8893504	13361870.	6.7392021	0.0006823	-0.0017477	1.9566428	-50.3296688
C	0.0001038	1382.1828903	13322245.	6.7356015	0.0006988	-0.0017912	1.9913837	-51.5832096
C	0.0001063	1411.4111628	13283870.	6.7324796	0.0007153	-0.0018347	2.0256051	-52.8357977
C	0.0001088	1440.5735853	13246654.	6.7298065	0.0007319	-0.0018781	2.0593042	-54.0874232
C	0.0001113	1469.6695653	13210513.	6.7275549	0.0007484	-0.0019216	2.0924781	-55.3380760
C	0.0001138	1498.6984996	13175371.	6.7257004	0.0007650	-0.0019650	2.1251236	-56.5877459
C	0.0001163	1527.6597746	13141159.	6.7242202	0.0007817	-0.0020083	2.1572379	-57.8364224
C	0.0001188	1556.5527655	13107813.	6.7230939	0.0007984	-0.0020516	2.1888178	-59.0840950
CY	0.0001213	1585.3768364	13075273.	6.7223027	0.0008151	-0.0020949	2.2198602	-60.0000000
CY	0.0001238	1614.1313398	13043486.	6.7218293	0.0008318	-0.0021382	2.2503619	-60.0000000
CY	0.0001263	1642.8156163	13012401.	6.7216579	0.0008486	-0.0021814	2.2803198	-60.0000000
CY	0.0001288	1671.4289945	12981973.	6.7217740	0.0008654	-0.0022246	2.3097305	-60.0000000
CY	0.0001313	1699.9707903	12952158.	6.7221643	0.0008823	-0.0022677	2.3385907	-60.0000000
CY	0.0001338	1728.4403067	12922918.	6.7228165	0.0008992	-0.0023108	2.3668970	-60.0000000
CY	0.0001363	1756.8368337	12894215.	6.7237192	0.0009161	-0.0023539	2.3946460	-60.0000000
CY	0.0001388	1785.1596476	12866015.	6.7248620	0.0009331	-0.0023969	2.4218342	-60.0000000
CY	0.0001413	1813.4080106	12838287.	6.7262352	0.0009501	-0.0024399	2.4484580	-60.0000000
CY	0.0001438	1841.5811706	12810999.	6.7278300	0.0009671	-0.0024829	2.4745137	-60.0000000
CY	0.0001463	1869.6783607	12784126.	6.7296382	0.0009842	-0.0025258	2.4999978	-60.0000000
CY	0.0001488	1897.6987989	12757639.	6.7316520	0.0010013	-0.0025687	2.5249064	-60.0000000
CY	0.0001588	2008.6916638	12653176.	6.7412673	0.0010702	-0.0027398	2.6186332	-60.0000000
CY	0.0001688	2080.1926154	12327067.	6.7090877	0.0011322	-0.0029178	2.6940783	-60.0000000
CY	0.0001788	2110.9575750	11809553.	6.6376587	0.0011865	-0.0031035	2.7532136	-60.0000000
CY	0.0001888	2140.4918203	11340354.	6.5734675	0.0012407	-0.0032893	2.8059454	-60.0000000
CY	0.0001988	2169.4407913	10915425.	6.5156570	0.0012950	-0.0034750	2.8523341	-60.0000000
CY	0.0002088	2197.9470430	10529088.	6.4651688	0.0013496	-0.0036604	2.8926551	-60.0000000

CY	0.0002188	2225.9964910	10175984.	6.4210560	0.0014046	-0.0038454	2.9267813	-60.0000000
CY	0.0002288	2253.5742033	9851691.	6.3825410	0.0014600	-0.0040300	2.9545793	-60.0000000
CY	0.0002388	2280.6247371	9552355.	6.3482862	0.0015157	-0.0042143	2.9758535	-60.0000000
CY	0.0002488	2307.1078814	9274806.	6.3172679	0.0015714	-0.0043986	2.9904870	-60.0000000
CY	0.0002588	2333.0873934	9016763.	6.2904174	0.0016276	-0.0045824	2.9984640	-60.0000000
CY	0.0002688	2358.5294187	8775923.	6.2673770	0.0016844	-0.0047656	2.9976262	-60.0000000
CY	0.0002788	2383.4066042	8550338.	6.2478303	0.0017416	-0.0049484	2.9984060	-60.0000000
CY	0.0002888	2407.7071453	8338380.	6.2314754	0.0017993	-0.0051307	2.9999373	-60.0000000
CY	0.0002988	2431.4339171	8138691.	6.2180238	0.0018576	-0.0053124	2.9991881	-60.0000000
CY	0.0003088	2454.6286416	7950214.	6.2071330	0.0019165	-0.0054935	2.9971266	-60.0000000
CY	0.0003188	2477.3243524	7771998.	6.1985142	0.0019758	-0.0056742	2.9999954	-60.0000000
CY	0.0003288	2499.4197863	7602798.	6.1919577	0.0020356	-0.0058544	2.9988558	-60.0000000
CY	0.0003388	2519.6757174	7438157.	6.1846506	0.0020951	-0.0060349	2.9970210	-60.0000000
CY	0.0003488	2536.6285870	7273487.	6.1738712	0.0021531	-0.0062169	2.9993268	60.0000000
CY	0.0003588	2548.1206200	7102775.	6.1552213	0.0022082	-0.0064018	2.9968890	60.0000000
CY	0.0003688	2555.0254099	6928882.	6.1301858	0.0022605	-0.0065895	2.9984773	60.0000000
CY	0.0003788	2558.5381152	6755216.	6.0992282	0.0023101	-0.0067799	2.9999693	60.0000000
CY	0.0003888	2559.4698415	6583845.	6.0646983	0.0023577	-0.0069723	2.9949436	60.0000000
CY	0.0003988	2560.2521454	6420695.	6.0321596	0.0024053	-0.0071647	2.9980465	60.0000000
CY	0.0004088	2560.9827241	6265401.	6.0016087	0.0024532	-0.0073568	2.9997717	60.0000000
CY	0.0004188	2561.6372159	6117343.	5.9730231	0.0025012	-0.0075488	2.9972177	60.0000000
CY	0.0004288	2562.2234730	5976031.	5.9462279	0.0025494	-0.0077406	2.9957253	60.0000000
CY	0.0004388	2562.7687916	5841068.	5.9209732	0.0025978	-0.0079322	2.9985364	60.0000000
CY	0.0004488	2563.2721321	5712027.	5.8971611	0.0026464	-0.0081236	2.9998794	60.0000000
CY	0.0004588	2563.6582460	5588356.	5.8742117	0.0026948	-0.0083152	2.9968249	60.0000000
CY	0.0004688	2563.8417247	5469529.	5.8506382	0.0027425	-0.0085075	2.9941198	60.0000000
CY	0.0004788	2563.9985504	5355611.	5.8282873	0.0027903	-0.0086997	2.9972213	60.0000000
CY	0.0004888	2564.1281527	5246298.	5.8070875	0.0028382	-0.0088918	2.9991808	60.0000000
CY	0.0004988	2564.2299181	5141313.	5.7869736	0.0028863	-0.0090837	2.9999806	60.0000000
CY	0.0005088	2564.2745910	5040343.	5.7680506	0.0029345	-0.0092755	2.9960769	60.0000000
CY	0.0005188	2564.2922801	4943214.	5.7500799	0.0029829	-0.0094671	2.9923567	60.0000000
CY	0.0005288	2564.2922801	4849725.	5.7329701	0.0030313	-0.0096587	2.9957340	60.0000000
CY	0.0005388	2564.2922801	4759707.	5.7166761	0.0030799	-0.0098501	2.9981424	60.0000000
CY	0.0005488	2564.2922801	4672970.	5.7011558	0.0031285	-0.0100415	2.9995682	60.0000000
CY	0.0006088	2564.2922801	4212390.	5.6201424	0.0034213	-0.0111887	2.9983296	60.0000000
CY	0.0006688	2564.2922801	3834456.	5.5514617	0.0037125	-0.0123375	2.9913397	60.0000000
CY	0.0007288	2564.2922801	3518754.	5.5209767	0.0040234	-0.0134666	2.9940379	60.0000000

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	20.000	2564.292	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are spirals or tied hoops.

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = 0.250000 in
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	11774.	-0.002449	0.000	6.376E+10	0.000	0.000	0.000
6.000	0.2353	70939.	11685.	-0.002446	0.000	6.376E+10	-29.9004	762.4294	0.000
12.000	0.2206	140801.	11416.	-0.002436	0.000	6.376E+10	-59.5713	1619.9090	0.000
18.000	0.2061	208517.	10973.	-0.002420	0.000	6.357E+10	-88.2884	2570.6349	0.000
24.000	0.1916	273053.	10365.	-0.002397	0.000	6.344E+10	-114.2074	3576.2271	0.000
30.000	0.1773	333473.	9623.4862	-0.002368	0.000	6.332E+10	-132.9802	4500.0000	0.000
36.000	0.1632	389103.	8783.9260	-0.002334	0.000	6.320E+10	-146.8732	5400.0000	0.000
42.000	0.1493	439440.	7873.0123	-0.002295	0.000	6.308E+10	-156.7647	6300.0000	0.000
48.000	0.1357	484130.	6914.3506	-0.002251	0.000	6.299E+10	-162.7892	7200.0000	0.000
54.000	0.1223	522953.	5930.6990	-0.002203	0.000	6.289E+10	-165.0947	8100.0000	0.000
60.000	0.1092	555827.	4943.8964	-0.002151	0.000	6.282E+10	-163.8395	9000.0000	0.000
66.000	0.0965	582796.	3974.8072	-0.002097	0.000	6.276E+10	-159.1902	9900.0000	0.000
72.000	0.0841	604028.	3043.2817	-0.002040	0.000	6.271E+10	-151.3183	10800.	0.000
78.000	0.0720	619805.	2168.1304	-0.001981	0.000	6.267E+10	-140.3988	11700.	0.000
84.000	0.0603	630521.	1367.1131	-0.001829	0.000	1.540E+10	-126.6070	12600.	0.000
90.000	0.0501	636649.	649.4379	-0.001581	0.000	1.528E+10	-112.6181	13500.	0.000
96.000	0.0413	638693.	14.1078	-0.001331	0.000	1.527E+10	-99.1586	14400.	0.000
102.000	0.0341	637138.	-544.1253	-0.001080	0.000	1.527E+10	-86.9191	15300.	0.000
108.000	0.0284	632423.	-1034.5769	-0.000831	0.000	1.530E+10	-76.5648	16200.	0.000
114.000	0.0241	624922.	-1470.4682	-0.000672	0.000	5.395E+10	-68.7323	17100.	0.000
120.000	0.0203	614939.	-1859.3010	-0.000608	0.000	6.268E+10	-60.8786	18000.	0.000
126.000	0.0168	602756.	-2200.9079	-0.000550	0.000	6.271E+10	-52.9903	18900.	0.000
132.000	0.0137	588660.	-2495.4873	-0.000493	0.000	6.274E+10	-45.2028	19800.	0.000
138.000	0.0109	572929.	-2744.0252	-0.000437	0.000	6.278E+10	-37.6432	20700.	0.000
144.000	0.008453	555836.	-3537.4465	-0.000383	0.000	6.282E+10	-226.8306	161009.	0.000
150.000	0.006313	530571.	-4757.4256	-0.000331	0.000	6.288E+10	-179.8291	170909.	0.000
156.000	0.004477	498827.	-5701.6748	-0.000282	0.000	6.295E+10	-134.9207	180809.	0.000
162.000	0.002927	462219.	-6385.4997	-0.000236	0.000	6.304E+10	-93.0209	190709.	0.000
168.000	0.001640	422257.	-6829.0520	-0.000194	0.000	6.312E+10	-54.8298	200609.	0.000
174.000	0.000594	380317.	-7056.0664	-0.000156	0.000	6.322E+10	-20.8417	210509.	0.000
180.000	-0.000235	337622.	-7092.6644	-0.000122	0.000	6.331E+10	8.6423	220409.	0.000
186.000	-0.000873	295234.	-6966.2557	-9.225E-05	0.000	6.340E+10	33.4940	230309.	0.000
192.000	-0.001342	254049.	-6704.5615	-6.628E-05	0.000	6.349E+10	53.7374	240209.	0.000
198.000	-0.001668	214796.	-6334.7712	-4.413E-05	0.000	6.356E+10	69.5260	250109.	0.000
204.000	-0.001872	178043.	-5882.8420	-2.560E-05	0.000	6.363E+10	81.1171	260009.	0.000
210.000	-0.001975	144208.	-5372.9413	-1.041E-05	0.000	6.368E+10	88.8498	269909.	0.000
216.000	-0.001997	113570.	-4827.0277	1.729E-06	0.000	6.371E+10	93.1214	279809.	0.000
222.000	-0.001954	86283.	-4264.5655	1.114E-05	0.000	6.375E+10	94.3660	289709.	0.000
228.000	-0.001863	62392.	-3702.3560	1.813E-05	0.000	6.376E+10	93.0372	299609.	0.000
234.000	-0.001737	41850.	-3154.4737	2.304E-05	0.000	6.376E+10	89.5902	309509.	0.000
240.000	-0.001587	24533.	-2632.2985	2.616E-05	0.000	6.376E+10	84.4682	319409.	0.000
246.000	-0.001423	10256.	-2144.6221	2.780E-05	0.000	6.376E+10	78.0906	329309.	0.000
252.000	-0.001253	-1209.0379	-1697.8155	2.822E-05	0.000	6.376E+10	70.8449	339209.	0.000
258.000	-0.001084	-10124.	-1296.0445	2.769E-05	0.000	6.376E+10	63.0788	349109.	0.000

264.000	-0.000921	-16768.	-941.5166	2.643E-05	0.000	6.376E+10	55.0971	359009.	0.000
270.000	-0.000767	-21429.	-634.7494	2.463E-05	0.000	6.376E+10	47.1587	368909.	0.000
276.000	-0.000625	-24391.	-374.8440	2.247E-05	0.000	6.376E+10	39.4765	378809.	0.000
282.000	-0.000497	-25932.	-159.7582	2.011E-05	0.000	6.376E+10	32.2188	388709.	0.000
288.000	-0.000384	-26313.	13.4332	1.765E-05	0.000	6.376E+10	25.5117	398609.	0.000
294.000	-0.000286	-25775.	148.2946	1.520E-05	0.000	6.376E+10	19.4421	408509.	0.000
300.000	-0.000202	-24537.	248.8088	1.283E-05	0.000	6.376E+10	14.0626	418409.	0.000
306.000	-0.000132	-22793.	319.1822	1.060E-05	0.000	6.376E+10	9.3952	428309.	0.000
312.000	-7.444E-05	-20710.	363.6774	8.555E-06	0.000	6.376E+10	5.4366	438209.	0.000
318.000	-2.896E-05	-18431.	386.4747	6.713E-06	0.000	6.376E+10	2.1626	448109.	0.000
324.000	6.120E-06	-16073.	391.5609	5.090E-06	0.000	6.376E+10	-0.4672	458009.	0.000
330.000	3.212E-05	-13733.	382.6447	3.687E-06	0.000	6.376E+10	-2.5049	467909.	0.000
336.000	5.037E-05	-11483.	363.0973	2.501E-06	0.000	6.376E+10	-4.0109	477809.	0.000
342.000	6.213E-05	-9376.4258	335.9141	1.519E-06	0.000	6.376E+10	-5.0501	487709.	0.000
348.000	6.860E-05	-7451.9728	303.6964	7.274E-07	0.000	6.376E+10	-5.6891	497609.	0.000
354.000	7.086E-05	-5732.2435	268.6485	1.071E-07	0.000	6.376E+10	-5.9935	507509.	0.000
360.000	6.988E-05	-4228.2161	232.5891	-3.616E-07	0.000	6.376E+10	-6.6263	517409.	0.000
366.000	6.652E-05	-2941.0873	196.9722	-6.989E-07	0.000	6.376E+10	-5.8460	527309.	0.000
372.000	6.150E-05	-1864.3819	162.9163	-9.250E-07	0.000	6.376E+10	-5.5060	537209.	0.000
378.000	5.542E-05	-985.8701	131.2383	-1.059E-06	0.000	6.376E+10	-5.0533	547109.	0.000
384.000	4.879E-05	-289.2675	102.4913	-1.119E-06	0.000	6.376E+10	-4.5290	557009.	0.000
390.000	4.199E-05	244.2945	77.0024	-1.121E-06	0.000	6.376E+10	-3.9673	566909.	0.000
396.000	3.533E-05	635.0303	54.9110	-1.080E-06	0.000	6.376E+10	-3.3965	576809.	0.000
402.000	2.903E-05	903.4855	36.2053	-1.007E-06	0.000	6.376E+10	-2.8387	586709.	0.000
408.000	2.324E-05	1069.7363	20.7564	-9.146E-07	0.000	6.376E+10	-2.3109	596609.	0.000
414.000	1.805E-05	1152.7820	8.3485	-8.101E-07	0.000	6.376E+10	-1.8250	606509.	0.000
420.000	1.352E-05	1170.1130	-1.2934	-7.008E-07	0.000	6.376E+10	-1.3889	616409.	0.000
426.000	9.645E-06	1137.4291	-8.4807	-5.922E-07	0.000	6.376E+10	-1.0068	626309.	0.000
432.000	6.413E-06	1068.4866	-13.5413	-4.884E-07	0.000	6.376E+10	-0.6800	636209.	0.000
438.000	3.785E-06	975.0509	-16.8040	-3.922E-07	0.000	6.376E+10	-0.4075	646109.	0.000
444.000	1.706E-06	866.9331	-18.5862	-3.056E-07	0.000	6.376E+10	-0.1866	656009.	0.000
450.000	1.176E-07	752.0894	-19.1850	-2.294E-07	0.000	6.376E+10	-0.0130	665909.	0.000
456.000	-1.047E-06	636.7676	-18.8706	-1.640E-07	0.000	6.376E+10	0.1179	675809.	0.000
462.000	-1.851E-06	525.6820	-17.8823	-1.094E-07	0.000	6.376E+10	0.2115	685709.	0.000
468.000	-2.359E-06	422.2061	-16.4273	-6.475E-08	0.000	6.376E+10	0.2735	695609.	0.000
474.000	-2.628E-06	328.5701	-14.6798	-2.943E-08	0.000	6.376E+10	0.3090	705509.	0.000
480.000	-2.712E-06	246.0552	-12.7827	-2.389E-09	0.000	6.376E+10	0.3234	715409.	0.000
486.000	-2.657E-06	175.1781	-10.8492	1.743E-08	0.000	6.376E+10	0.3212	725309.	0.000
492.000	-2.503E-06	115.8608	-8.9657	3.113E-08	0.000	6.376E+10	0.3067	735209.	0.000
498.000	-2.283E-06	67.5823	-7.1951	3.976E-08	0.000	6.376E+10	0.2835	745109.	0.000
504.000	-2.026E-06	29.5106	-5.5797	4.433E-08	0.000	6.376E+10	0.2549	755009.	0.000
510.000	-1.751E-06	0.6148	-4.1452	4.574E-08	0.000	6.376E+10	0.2233	764909.	0.000
516.000	-1.477E-06	-20.2433	-2.9034	4.482E-08	0.000	6.376E+10	0.1907	774809.	0.000
522.000	-1.214E-06	-34.2362	-1.8551	4.226E-08	0.000	6.376E+10	0.1587	784709.	0.000
528.000	-9.696E-07	-42.5151	-0.9938	3.864E-08	0.000	6.376E+10	0.1284	794609.	0.000
534.000	-7.498E-07	-46.1706	-0.3069	3.447E-08	0.000	6.376E+10	0.1005	804509.	0.000
540.000	-5.560E-07	-46.2063	0.2211	3.012E-08	0.000	6.376E+10	0.0755	814409.	0.000
546.000	-3.883E-07	-43.5246	0.6075	2.590E-08	0.000	6.376E+10	0.0533	824309.	0.000
552.000	-2.452E-07	-38.9221	0.8698	2.202E-08	0.000	6.376E+10	0.0341	834209.	0.000
558.000	-1.240E-07	-33.0920	1.0244	1.863E-08	0.000	6.376E+10	0.0174	844109.	0.000
564.000	-2.154E-08	-26.6335	1.0860	1.582E-08	0.000	6.376E+10	0.003066	854009.	0.000
570.000	6.589E-08	-20.0644	1.0667	1.363E-08	0.000	6.376E+10	-0.009487	863909.	0.000
576.000	1.420E-07	-13.8365	0.9762	1.203E-08	0.000	6.376E+10	-0.0207	873809.	0.000
582.000	2.103E-07	-8.3529	0.8213	1.099E-08	0.000	6.376E+10	-0.0310	883709.	0.000
588.000	2.738E-07	-3.9841	0.6060	1.041E-08	0.000	6.376E+10	-0.0408	893609.	0.000
594.000	3.352E-07	-1.0836	0.3322	1.017E-08	0.000	6.376E+10	-0.0505	903509.	0.000
600.000	3.959E-07	0.0000	0.0000	1.012E-08	0.000	6.376E+10	-0.0603	456704.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
 Computed slope at pile head = -0.0024494 radians
 Maximum bending moment = 638693. inch-lbs
 Maximum shear force = 11774. lbs
 Depth of maximum bending moment = 96.0000000 inches below pile head
 Depth of maximum shear force = 0.0000000 inches below pile head
 Number of iterations = 102
 Number of zero deflection points = 4

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Slope (BC Type 5)
Displacement of pile head = 0.250000 in
Slope of pile head = 0.000E+00 in/in
Axial load on pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	-1243911.	23682.	0.000	0.000	1.376E+10	0.000	0.000	0.000
6.000	0.2484	-1102332.	23500.	-0.000511	0.000	1.376E+10	-30.3400	732.9295	0.000
12.000	0.2439	-961788.	23225.	-0.000961	0.000	1.376E+10	-61.2892	1507.9532	0.000
18.000	0.2368	-823399.	22766.	-0.001342	0.000	1.446E+10	-91.9195	2328.6643	0.000
24.000	0.2278	-688279.	22129.	-0.001650	0.000	1.500E+10	-120.2048	3166.5702	0.000
30.000	0.2170	-557453.	21331.	-0.001814	0.000	6.282E+10	-145.7146	4028.2915	0.000
36.000	0.2060	-431866.	20394.	-0.001862	0.000	6.310E+10	-166.6123	4853.0027	0.000
42.000	0.1947	-312272.	19338.	-0.001897	0.000	6.337E+10	-185.6231	5720.3277	0.000
48.000	0.1832	-199358.	18183.	-0.001921	0.000	6.359E+10	-199.1365	6520.9196	0.000
54.000	0.1716	-93609.	16955.	-0.001935	0.000	6.373E+10	-210.4294	7355.7011	0.000
60.000	0.1600	4564.1597	15676.	-0.001939	0.000	6.376E+10	-215.8091	8092.3136	0.000
66.000	0.1484	94969.	14375.	-0.001934	0.000	6.373E+10	-217.7776	8806.3623	0.000
72.000	0.1368	177532.	13083.	-0.001922	0.000	6.363E+10	-213.0547	9344.6320	0.000
78.000	0.1253	252423.	11811.	-0.001901	0.000	6.349E+10	-211.0145	10103.	0.000
84.000	0.1140	319716.	10568.	-0.001874	0.000	6.336E+10	-203.2759	10700.	0.000
90.000	0.1028	379686.	9388.7070	-0.001841	0.000	6.322E+10	-189.7309	11071.	0.000
96.000	0.0919	432822.	8307.7622	-0.001802	0.000	6.310E+10	-170.5840	11138.	0.000
102.000	0.0812	479812.	7284.8172	-0.001759	0.000	6.300E+10	-170.3977	12591.	0.000
108.000	0.0708	520662.	6271.4451	-0.001711	0.000	6.290E+10	-167.3930	14189.	0.000
114.000	0.0607	555480.	5285.1695	-0.001660	0.000	6.282E+10	-161.3655	15960.	0.000
120.000	0.0509	584482.	4344.7106	-0.001605	0.000	6.275E+10	-152.1208	17944.	0.000
126.000	0.0414	608002.	3497.1224	-0.001548	0.000	6.270E+10	-130.4087	18900.	0.000
132.000	0.0323	626819.	2786.2891	-0.001429	0.000	2.091E+10	-106.5358	19800.	0.000
138.000	0.0242	641780.	2215.7285	-0.001213	0.000	1.525E+10	-83.6511	20700.	0.000
144.000	0.0177	653699.	537.8081	-0.000958	0.000	1.518E+10	-475.6557	161009.	0.000
150.000	0.0128	648464.	-1979.0743	-0.000701	0.000	1.521E+10	-363.3051	170909.	0.000
156.000	0.009318	630118.	-3911.4179	-0.000486	0.000	2.177E+10	-280.8094	180809.	0.000
162.000	0.006924	601643.	-5414.1103	-0.000370	0.000	6.271E+10	-220.0880	190709.	0.000
168.000	0.004876	565238.	-6563.4155	-0.000314	0.000	6.280E+10	-163.0137	200609.	0.000
174.000	0.003151	522958.	-7384.0988	-0.000263	0.000	6.289E+10	-110.5474	210509.	0.000
180.000	0.001725	476692.	-7905.8976	-0.000215	0.000	6.301E+10	-63.3856	220409.	0.000
186.000	0.000572	428139.	-8161.9795	-0.000172	0.000	6.311E+10	-21.9750	230309.	0.000
192.000	-0.000336	378789.	-8187.5163	-0.000133	0.000	6.322E+10	13.4628	240209.	0.000
198.000	-0.001029	329920.	-8018.4022	-9.988E-05	0.000	6.333E+10	42.9086	250109.	0.000
204.000	-0.001535	282592.	-7690.1333	-7.089E-05	0.000	6.342E+10	66.5144	260009.	0.000
210.000	-0.001880	237656.	-7236.8716	-4.630E-05	0.000	6.353E+10	84.5729	269909.	0.000
216.000	-0.002090	195761.	-6690.6830	-2.584E-05	0.000	6.359E+10	97.4900	279809.	0.000
222.000	-0.002190	157374.	-6080.9612	-9.193E-06	0.000	6.367E+10	105.7506	289709.	0.000
228.000	-0.002201	122792.	-5434.0182	4.005E-06	0.000	6.370E+10	109.8971	299609.	0.000
234.000	-0.002142	92165.	-4772.8302	1.413E-05	0.000	6.374E+10	110.4989	309509.	0.000
240.000	-0.002031	65514.	-4116.9264	2.155E-05	0.000	6.376E+10	108.1357	319409.	0.000
246.000	-0.001884	42756.	-3482.3898	2.664E-05	0.000	6.376E+10	103.3766	329309.	0.000
252.000	-0.001712	23719.	-2881.9653	2.977E-05	0.000	6.376E+10	96.7649	339209.	0.000
258.000	-0.001526	8165.6133	-2325.2504	3.127E-05	0.000	6.376E+10	88.8067	349109.	0.000
264.000	-0.001336	-4191.1664	-1818.9469	3.146E-05	0.000	6.376E+10	79.9611	359009.	0.000
270.000	-0.001149	-13669.	-1367.1609	3.062E-05	0.000	6.376E+10	70.6342	368909.	0.000
276.000	-0.000969	-20604.	-971.7309	2.900E-05	0.000	6.376E+10	61.1757	378809.	0.000
282.000	-0.000801	-25337.	-632.5713	2.684E-05	0.000	6.376E+10	51.8775	388709.	0.000
288.000	-0.000647	-28202.	-348.0154	2.432E-05	0.000	6.376E+10	42.9745	398609.	0.000
294.000	-0.000509	-29519.	-115.1481	2.161E-05	0.000	6.376E+10	34.6479	408509.	0.000
300.000	-0.000388	-29589.	69.8804	1.883E-05	0.000	6.376E+10	27.0282	418409.	0.000
306.000	-0.000283	-28685.	211.5678	1.608E-05	0.000	6.376E+10	20.2009	428309.	0.000
312.000	-0.000195	-27054.	314.8042	1.346E-05	0.000	6.376E+10	14.2113	438209.	0.000
318.000	-0.000121	-24911.	384.6502	1.102E-05	0.000	6.376E+10	9.0707	448109.	0.000
324.000	-6.239E-05	-22441.	426.1501	8.788E-06	0.000	6.376E+10	4.7626	458009.	0.000
330.000	-1.600E-05	-19799.	444.1806	6.800E-06	0.000	6.376E+10	1.2476	467909.	0.000
336.000	1.922E-05	-17112.	443.3328	5.064E-06	0.000	6.376E+10	-1.5302	477809.	0.000
342.000	4.477E-05	-14480.	427.8256	3.577E-06	0.000	6.376E+10	-3.6388	487709.	0.000
348.000	6.214E-05	-11979.	401.4479	2.332E-06	0.000	6.376E+10	-5.1537	497609.	0.000
354.000	7.275E-05	-9663.3016	367.5251	1.314E-06	0.000	6.376E+10	-6.1539	507509.	0.000
360.000	7.791E-05	-7569.0233	328.9081	5.031E-07	0.000	6.376E+10	-6.7185	517409.	0.000
366.000	7.879E-05	-5716.5246	287.9792	-1.220E-07	0.000	6.376E+10	-6.9245	527309.	0.000
372.000	7.644E-05	-4113.2438	246.6722	-5.845E-07	0.000	6.376E+10	-6.8445	537209.	0.000
378.000	7.178E-05	-2756.3173	206.5041	-9.078E-07	0.000	6.376E+10	-6.5449	547109.	0.000
384.000	6.555E-05	-1634.9764	168.6130	-1.114E-06	0.000	6.376E+10	-6.0855	557009.	0.000
390.000	5.840E-05	-732.6935	133.8019	-1.226E-06	0.000	6.376E+10	-5.5182	566909.	0.000
396.000	5.084E-05	-29.0592	102.5842	-1.262E-06	0.000	6.376E+10	-4.8877	576809.	0.000

402.000	4.326E-05	498.6191	75.2295	-1.240E-06	0.000	6.376E+10	-4.2305	586709.	0.000
408.000	3.597E-05	873.9923	51.8087	-1.175E-06	0.000	6.376E+10	-3.5764	596609.	0.000
414.000	2.916E-05	1120.6052	32.2353	-1.081E-06	0.000	6.376E+10	-2.9481	606509.	0.000
420.000	2.299E-05	1261.0752	16.3043	-9.690E-07	0.000	6.376E+10	-2.3623	616409.	0.000
426.000	1.754E-05	1316.4890	3.7261	-8.478E-07	0.000	6.376E+10	-1.8305	626309.	0.000
432.000	1.282E-05	1305.9916	-5.8436	-7.244E-07	0.000	6.376E+10	-1.3594	636209.	0.000
438.000	8.843E-06	1246.5395	-12.7788	-6.043E-07	0.000	6.376E+10	-0.9523	646109.	0.000
444.000	5.569E-06	1152.7914	-17.4624	-4.914E-07	0.000	6.376E+10	-0.6089	656009.	0.000
450.000	2.947E-06	1037.1085	-20.2703	-3.883E-07	0.000	6.376E+10	-0.3270	665909.	0.000
456.000	9.095E-07	909.6405	-21.5588	-2.967E-07	0.000	6.376E+10	-0.1024	675809.	0.000
462.000	-6.141E-07	778.4744	-21.6555	-2.173E-07	0.000	6.376E+10	0.0702	685709.	0.000
468.000	-1.698E-06	649.8262	-20.8544	-1.501E-07	0.000	6.376E+10	0.1969	695609.	0.000
474.000	-2.415E-06	528.2581	-19.4117	-9.467E-08	0.000	6.376E+10	0.2840	705509.	0.000
480.000	-2.834E-06	416.9082	-17.5459	-5.019E-08	0.000	6.376E+10	0.3379	715409.	0.000
486.000	-3.018E-06	317.7190	-15.4378	-1.563E-08	0.000	6.376E+10	0.3648	725309.	0.000
492.000	-3.022E-06	231.6584	-13.2327	1.022E-08	0.000	6.376E+10	0.3703	735209.	0.000
498.000	-2.895E-06	158.9246	-11.0434	2.860E-08	0.000	6.376E+10	0.3595	745109.	0.000
504.000	-2.678E-06	99.1312	-8.9537	4.074E-08	0.000	6.376E+10	0.3370	755009.	0.000
510.000	-2.406E-06	51.4704	-7.0224	4.783E-08	0.000	6.376E+10	0.3067	764909.	0.000
516.000	-2.105E-06	14.8514	-5.2869	5.095E-08	0.000	6.376E+10	0.2718	774809.	0.000
522.000	-1.795E-06	-11.9841	-3.7674	5.108E-08	0.000	6.376E+10	0.2347	784709.	0.000
528.000	-1.492E-06	-30.3699	-2.4707	4.909E-08	0.000	6.376E+10	0.1975	794609.	0.000
534.000	-1.206E-06	-41.6444	-1.3932	4.570E-08	0.000	6.376E+10	0.1616	804509.	0.000
540.000	-9.431E-07	-47.0991	-0.5242	4.153E-08	0.000	6.376E+10	0.1280	814409.	0.000
546.000	-7.072E-07	-47.9450	0.1513	3.706E-08	0.000	6.376E+10	0.0972	824309.	0.000
552.000	-4.984E-07	-45.2926	0.6507	3.267E-08	0.000	6.376E+10	0.0693	834209.	0.000
558.000	-3.152E-07	-40.1450	0.9916	2.865E-08	0.000	6.376E+10	0.0443	844109.	0.000
564.000	-1.546E-07	-33.4006	1.1906	2.519E-08	0.000	6.376E+10	0.0220	854009.	0.000
570.000	-1.294E-08	-25.8635	1.2623	2.240E-08	0.000	6.376E+10	0.001863	863909.	0.000
576.000	1.142E-07	-18.2590	1.2180	2.032E-08	0.000	6.376E+10	-0.0166	873809.	0.000
582.000	2.309E-07	-11.2528	1.0661	1.893E-08	0.000	6.376E+10	-0.0340	883709.	0.000
588.000	3.414E-07	-5.4709	0.8115	1.815E-08	0.000	6.376E+10	-0.0508	893609.	0.000
594.000	4.487E-07	-1.5192	0.4563	1.782E-08	0.000	6.376E+10	-0.0676	903509.	0.000
600.000	5.552E-07	0.0000	0.0000	1.775E-08	0.000	6.376E+10	-0.0845	456704.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.2500000 inches
Computed slope at pile head	=	-0.0000309 radians
Maximum bending moment	=	-1243911. inch-lbs
Maximum shear force	=	23682. lbs
Depth of maximum bending moment	=	0.000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	44
Number of zero deflection points	=	4

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (BC Type 4)

Deflection at pile head	=	0.500000 in
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	14979.	-0.005160	0.000	6.374E+10	0.000	0.000	0.000
6.000	0.4690	90490.	14870.	-0.005155	0.000	6.374E+10	-36.1146	461.9788	0.000
12.000	0.4381	179679.	14544.	-0.005143	0.000	6.374E+10	-72.4537	992.2080	0.000
18.000	0.4073	266258.	14004.	-0.005122	0.000	6.346E+10	-107.5535	1584.2669	0.000
24.000	0.3767	348962.	13263.	-0.005092	0.000	6.329E+10	-139.5130	2222.2698	0.000
30.000	0.3462	426639.	12341.	-0.005056	0.000	6.311E+10	-167.7677	2907.4029	0.000
36.000	0.3160	498272.	11268.	-0.005012	0.000	6.295E+10	-190.1385	3610.1140	0.000
42.000	0.2861	563054.	10068.	-0.004961	0.000	6.280E+10	-209.7245	4398.5434	0.000
48.000	0.2565	620280.	8771.9350	-0.004904	0.000	6.267E+10	-222.3301	5201.1436	0.000
54.000	0.2272	669495.	7411.4446	-0.004742	0.000	1.510E+10	-231.1667	6103.9416	0.000

60.000	0.1996	710355.	6019.3652	-0.004466	0.000	1.490E+10	-232.8598	7000.5417	0.000
66.000	0.1736	742799.	4628.6637	-0.004172	0.000	1.476E+10	-230.7074	7971.7662	0.000
72.000	0.1495	766900.	3274.5750	-0.003864	0.000	1.466E+10	-220.6555	8854.5549	0.000
78.000	0.1273	783021.	1975.3651	-0.003546	0.000	1.460E+10	-212.4145	10013.	0.000
84.000	0.1070	791456.	746.0317	-0.003222	0.000	1.457E+10	-197.3633	11070.	0.000
90.000	0.0886	792747.	-373.8242	-0.002896	0.000	1.457E+10	-175.9219	11911.	0.000
96.000	0.0722	787665.	-1348.9147	-0.002571	0.000	1.458E+10	-149.1082	12388.	0.000
102.000	0.0578	777177.	-2217.2013	-0.002249	0.000	1.462E+10	-140.3206	14574.	0.000
108.000	0.0452	761598.	-3004.5284	-0.001934	0.000	1.468E+10	-122.1217	16200.	0.000
114.000	0.0346	741586.	-3666.3779	-0.001628	0.000	1.476E+10	-98.4948	17100.	0.000
120.000	0.0257	717992.	-4193.1366	-0.001332	0.000	1.487E+10	-77.0914	18000.	0.000
126.000	0.0186	691588.	-4599.9308	-0.001049	0.000	1.499E+10	-58.5067	18900.	0.000
132.000	0.0131	663045.	-4905.2511	-0.000779	0.000	1.513E+10	-43.2668	19800.	0.000
138.000	0.009226	632912.	-5130.5430	-0.000523	0.000	1.530E+10	-31.8306	20700.	0.000
144.000	0.006831	601604.	-5775.9323	-0.000370	0.000	6.271E+10	-183.2992	161009.	0.000
150.000	0.004780	563690.	-6734.3371	-0.000315	0.000	6.280E+10	-136.1691	170909.	0.000
156.000	0.003053	520868.	-7418.8759	-0.000263	0.000	6.290E+10	-92.0105	180809.	0.000
162.000	0.001624	474727.	-7849.7912	-0.000216	0.000	6.301E+10	-51.6280	190709.	0.000
168.000	0.000467	426722.	-8051.4693	-0.000173	0.000	6.311E+10	-15.5980	200609.	0.000
174.000	-0.000448	378151.	-8051.1250	-0.000134	0.000	6.322E+10	15.7128	210509.	0.000
180.000	-0.001147	330141.	-7877.5928	-0.000101	0.000	6.333E+10	42.1313	220409.	0.000
186.000	-0.001658	283644.	-7560.2397	-7.181E-05	0.000	6.342E+10	63.6531	230309.	0.000
192.000	-0.002009	239435.	-7128.0302	-4.708E-05	0.000	6.353E+10	80.4169	240209.	0.000
198.000	-0.002223	198119.	-6608.7378	-2.644E-05	0.000	6.359E+10	92.6807	250109.	0.000
204.000	-0.002326	160136.	-6028.3184	-9.544E-06	0.000	6.367E+10	100.7925	260009.	0.000
210.000	-0.002338	125781.	-5410.4322	3.926E-06	0.000	6.370E+10	105.1696	269909.	0.000
216.000	-0.002279	95210.	-4776.1103	1.433E-05	0.000	6.373E+10	106.2710	279809.	0.000
222.000	-0.002166	68464.	-4143.5553	2.203E-05	0.000	6.376E+10	104.5806	289709.	0.000
228.000	-0.002014	45482.	-3528.0513	2.740E-05	0.000	6.376E+10	100.5874	299609.	0.000
234.000	-0.001837	26121.	-2941.9814	3.077E-05	0.000	6.376E+10	94.7693	309509.	0.000
240.000	-0.001645	10171.	-2394.9299	3.247E-05	0.000	6.376E+10	87.5812	319409.	0.000
246.000	-0.001447	-2625.8730	-1893.8528	3.283E-05	0.000	6.376E+10	79.4445	329309.	0.000
252.000	-0.001251	-12563.	-1443.3020	3.211E-05	0.000	6.376E+10	70.7391	339209.	0.000
258.000	-0.001062	-19953.	-1045.6879	3.058E-05	0.000	6.376E+10	61.7989	349109.	0.000
264.000	-0.000884	-25119.	-701.5651	2.846E-05	0.000	6.376E+10	52.9087	359009.	0.000
270.000	-0.000721	-28379.	-409.9285	2.595E-05	0.000	6.376E+10	44.3035	368909.	0.000
276.000	-0.000573	-30044.	-168.5084	2.320E-05	0.000	6.376E+10	36.1698	378809.	0.000
282.000	-0.000442	-30406.	25.9447	2.035E-05	0.000	6.376E+10	28.6479	388709.	0.000
288.000	-0.000329	-29737.	177.3937	1.752E-05	0.000	6.376E+10	21.8352	398609.	0.000
294.000	-0.000232	-28282.	290.2722	1.479E-05	0.000	6.376E+10	15.7910	408509.	0.000
300.000	-0.000151	-26258.	369.2688	1.223E-05	0.000	6.376E+10	10.5412	418409.	0.000
306.000	-8.522E-05	-23854.	419.1420	9.868E-06	0.000	6.376E+10	6.0832	428309.	0.000
312.000	-3.274E-05	-21230.	444.5655	7.747E-06	0.000	6.376E+10	2.3913	438209.	0.000
318.000	7.747E-06	-18521.	450.0035	5.877E-06	0.000	6.376E+10	-0.5786	448109.	0.000
324.000	3.778E-05	-15832.	439.6165	4.260E-06	0.000	6.376E+10	-2.8838	458009.	0.000
330.000	5.887E-05	-13246.	417.1925	2.892E-06	0.000	6.376E+10	-4.5909	467909.	0.000
336.000	7.248E-05	-10826.	386.1035	1.759E-06	0.000	6.376E+10	-5.7271	477809.	0.000
342.000	7.998E-05	-8613.5523	349.2833	8.447E-07	0.000	6.376E+10	-6.5013	487709.	0.000
348.000	8.262E-05	-6634.9282	309.2238	1.272E-07	0.000	6.376E+10	-6.8519	497609.	0.000
354.000	8.151E-05	-4902.8971	267.9852	-4.157E-07	0.000	6.376E+10	-6.8943	507509.	0.000
360.000	7.763E-05	-3419.0058	227.2193	-8.073E-07	0.000	6.376E+10	-6.6943	517409.	0.000
366.000	7.182E-05	-2176.0720	188.2005	-1.071E-06	0.000	6.376E+10	-6.3119	527309.	0.000
372.000	6.478E-05	-1160.3423	151.8639	-1.228E-06	0.000	6.376E+10	-6.8943	537209.	0.000
378.000	5.709E-05	-353.4104	118.8458	-1.299E-06	0.000	6.376E+10	-5.2057	547109.	0.000
384.000	4.920E-05	266.1194	89.5269	-1.303E-06	0.000	6.376E+10	-4.5672	557009.	0.000
390.000	4.146E-05	721.2254	64.0745	-1.256E-06	0.000	6.376E+10	-3.9169	566909.	0.000
396.000	3.412E-05	1035.3146	42.4832	-1.174E-06	0.000	6.376E+10	-3.2802	576809.	0.000
402.000	2.737E-05	1231.3057	24.6135	-1.067E-06	0.000	6.376E+10	-2.6764	586709.	0.000
408.000	2.132E-05	1330.9324	10.2258	-9.465E-07	0.000	6.376E+10	-2.1195	596609.	0.000
414.000	1.601E-05	1354.2428	-0.9882	-8.202E-07	0.000	6.376E+10	-1.6185	606509.	0.000
420.000	1.147E-05	1319.2703	-9.3799	-6.944E-07	0.000	6.376E+10	-1.1787	616409.	0.000
426.000	7.679E-06	1241.8512	-15.3205	-5.739E-07	0.000	6.376E+10	-0.8016	626309.	0.000
432.000	4.586E-06	1135.5621	-19.1840	-4.620E-07	0.000	6.376E+10	-0.4863	636209.	0.000
438.000	2.134E-06	1011.7542	-21.3323	-3.610E-07	0.000	6.376E+10	-0.2298	646109.	0.000
444.000	2.540E-07	879.6606	-22.1052	-2.720E-07	0.000	6.376E+10	-0.0278	656009.	0.000
450.000	-1.130E-06	746.5572	-21.8124	-1.955E-07	0.000	6.376E+10	0.1254	665909.	0.000
456.000	-2.092E-06	617.9589	-20.7294	-1.313E-07	0.000	6.376E+10	0.2356	675809.	0.000
462.000	-2.705E-06	497.8356	-19.0952	-7.878E-08	0.000	6.376E+10	0.3091	685709.	0.000
468.000	-3.037E-06	388.8359	-17.1114	-3.706E-08	0.000	6.376E+10	0.3521	695609.	0.000
474.000	-3.150E-06	292.5080	-14.9439	-5.001E-09	0.000	6.376E+10	0.3704	705509.	0.000
480.000	-3.097E-06	209.5098	-12.7250	1.862E-08	0.000	6.376E+10	0.3693	715409.	0.000
486.000	-2.926E-06	139.8040	-10.5558	3.506E-08	0.000	6.376E+10	0.3537	725309.	0.000
492.000	-2.677E-06	82.8314	-8.5107	4.553E-08	0.000	6.376E+10	0.3280	735209.	0.000
498.000	-2.380E-06	37.6648	-6.6401	5.120E-08	0.000	6.376E+10	0.2956	745109.	0.000
504.000	-2.062E-06	3.1378	-4.9750	5.312E-08	0.000	6.376E+10	0.2595	755009.	0.000
510.000	-1.742E-06	-22.0479	-3.5301	5.223E-08	0.000	6.376E+10	0.2221	764909.	0.000
516.000	-1.435E-06	-39.2362	-2.3076	4.935E-08	0.000	6.376E+10	0.1854	774809.	0.000
522.000	-1.150E-06	-49.7513	-1.3002	4.516E-08	0.000	6.376E+10	0.1504	784709.	0.000
528.000	-8.934E-07	-54.8499	-0.4940	4.024E-08	0.000	6.376E+10	0.1183	794609.	0.000
534.000	-6.675E-07	-55.6884	0.1295	3.504E-08	0.000	6.376E+10	0.0895	804509.	0.000

540.000	-4.730E-07	-53.3044	0.5906	2.991E-08	0.000	6.376E+10	0.0642	814409.	0.000
546.000	-3.085E-07	-48.6087	0.9103	2.511E-08	0.000	6.376E+10	0.0424	824309.	0.000
552.000	-1.716E-07	-42.3865	1.1091	2.083E-08	0.000	6.376E+10	0.0239	834209.	0.000
558.000	-5.856E-08	-35.3049	1.2054	1.718E-08	0.000	6.376E+10	0.008238	844109.	0.000
564.000	3.454E-08	-27.9264	1.2153	1.420E-08	0.000	6.376E+10	-0.004916	854009.	0.000
570.000	1.119E-07	-20.7245	1.1523	1.191E-08	0.000	6.376E+10	-0.0161	863909.	0.000
576.000	1.775E-07	-14.1022	1.0264	1.027E-08	0.000	6.376E+10	-0.0258	873809.	0.000
582.000	2.351E-07	-8.4103	0.8449	9.215E-09	0.000	6.376E+10	-0.0346	883709.	0.000
588.000	2.881E-07	-3.9652	0.6123	8.632E-09	0.000	6.376E+10	-0.0429	893609.	0.000
594.000	3.387E-07	-1.0644	0.3306	8.396E-09	0.000	6.376E+10	-0.0510	903509.	0.000
600.000	3.888E-07	0.0000	0.0000	8.346E-09	0.000	6.376E+10	-0.0592	456704.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	0.5000000	inches
Computed slope at pile head	=	-0.0051596	radians
Maximum bending moment	=	792747.	inch-lbs
Maximum shear force	=	14979.	lbs
Depth of maximum bending moment	=	90.0000000	inches below pile head
Depth of maximum shear force	=	0.0000000	inches below pile head
Number of iterations	=	126	
Number of zero deflection points	=	4	

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 4

Pile-head conditions are Displacement and Slope (BC Type 5)

Displacement of pile head	=	0.500000	in
Slope of pile head	=	0.000E+00	in/in
Axial load on pile head	=	20000.000	lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	-1940420.	33143.	0.000	0.000	1.291E+10	0.000	0.000	0.000
6.000	0.4973	-1742168.	32923.	-0.000856	0.000	1.291E+10	-36.7727	443.6733	0.000
12.000	0.4897	-1545143.	32587.	-0.001620	0.000	1.291E+10	-75.0391	919.3530	0.000
18.000	0.4779	-1350734.	32023.	-0.002282	0.000	1.336E+10	-113.0165	1419.0416	0.000
24.000	0.4623	-1160320.	31238.	-0.002840	0.000	1.366E+10	-148.5712	1928.0548	0.000
30.000	0.4438	-975193.	30249.	-0.003303	0.000	1.404E+10	-181.0265	2447.5422	0.000
36.000	0.4227	-796534.	29082.	-0.003676	0.000	1.455E+10	-208.0685	2953.3907	0.000
42.000	0.3997	-625325.	27758.	-0.003904	0.000	2.945E+10	-233.1910	3500.8157	0.000
48.000	0.3759	-462496.	26303.	-0.003990	0.000	6.304E+10	-251.9840	4022.5515	0.000
54.000	0.3518	-308733.	24744.	-0.004026	0.000	6.338E+10	-267.6256	4564.5631	0.000
60.000	0.3275	-164601.	23113.	-0.004049	0.000	6.366E+10	-276.1517	5058.6257	0.000
66.000	0.3032	-30409.	21435.	-0.004058	0.000	6.376E+10	-283.0581	5601.3573	0.000
72.000	0.2788	93593.	19739.	-0.004055	0.000	6.373E+10	-282.1367	6070.7745	0.000
78.000	0.2545	207438.	18036.	-0.004041	0.000	6.357E+10	-285.5866	6731.7030	0.000
84.000	0.2304	310999.	16334.	-0.004016	0.000	6.337E+10	-281.8533	7341.2234	0.000
90.000	0.2064	404409.	14678.	-0.003982	0.000	6.317E+10	-270.2395	7857.6732	0.000
96.000	0.1826	488087.	13116.	-0.003940	0.000	6.298E+10	-250.2986	8225.7210	0.000
102.000	0.1591	562748.	11615.	-0.003890	0.000	6.280E+10	-250.0495	9431.4688	0.000
108.000	0.1359	628401.	10131.	-0.003741	0.000	1.550E+10	-244.7696	10807.	0.000
114.000	0.1142	685213.	8690.9805	-0.003483	0.000	1.502E+10	-235.1017	12354.	0.000
120.000	0.0941	733529.	7322.2734	-0.003197	0.000	1.480E+10	-221.1340	14099.	0.000
126.000	0.0758	773848.	6026.4019	-0.002890	0.000	1.464E+10	-210.8232	16685.	0.000
132.000	0.0594	806539.	4805.5928	-0.002564	0.000	1.452E+10	-196.1132	19800.	0.000
138.000	0.0450	832130.	3751.0720	-0.002225	0.000	1.443E+10	-155.3937	20700.	0.000
144.000	0.0327	852086.	649.9136	-0.001874	0.000	1.437E+10	-878.3258	161009.	0.000
150.000	0.0226	840379.	-3912.4849	-0.001521	0.000	1.440E+10	-642.4737	170909.	0.000
156.000	0.0145	805501.	-7148.8998	-0.001180	0.000	1.452E+10	-436.3312	180809.	0.000
162.000	0.008401	754875.	-9258.9332	-0.000859	0.000	1.471E+10	-267.0133	190709.	0.000
168.000	0.004170	694600.	-10478.	-0.000566	0.000	1.497E+10	-139.4076	200609.	0.000
174.000	0.001609	629273.	-11066.	-0.000335	0.000	2.045E+10	-56.4371	210509.	0.000
180.000	0.000155	561892.	-11252.	-0.000215	0.000	6.281E+10	-5.7000	220409.	0.000
186.000	-0.000976	494299.	-11157.	-0.000165	0.000	6.296E+10	37.4708	230309.	0.000
192.000	-0.001825	428049.	-10825.	-0.000121	0.000	6.311E+10	73.0598	240209.	0.000

198.000	-0.002429	364425.	-10302.	-8.347E-05	0.000	6.325E+10	101.2712	250109.	0.000
204.000	-0.002827	304442.	-9630.9624	-5.178E-05	0.000	6.339E+10	122.4893	260009.	0.000
210.000	-0.003051	248866.	-8851.7755	-2.561E-05	0.000	6.350E+10	137.2396	269909.	0.000
216.000	-0.003134	198227.	-8001.6060	-4.503E-06	0.000	6.359E+10	146.1502	279809.	0.000
222.000	-0.003105	152848.	-7113.4064	1.205E-05	0.000	6.368E+10	149.9163	289709.	0.000
228.000	-0.002989	112863.	-6215.8433	2.457E-05	0.000	6.371E+10	149.2714	299609.	0.000
234.000	-0.002810	78252.	-5333.1627	3.356E-05	0.000	6.376E+10	144.9554	309509.	0.000
240.000	-0.002587	48857.	-4485.2093	3.954E-05	0.000	6.376E+10	137.6957	319409.	0.000
246.000	-0.002336	24420.	-3687.5686	4.299E-05	0.000	6.376E+10	128.1845	329309.	0.000
252.000	-0.002071	4596.1895	-2951.8192	4.436E-05	0.000	6.376E+10	117.0653	339209.	0.000
258.000	-0.001803	-11013.	-2285.8601	4.405E-05	0.000	6.376E+10	104.9211	349109.	0.000
264.000	-0.001542	-22845.	-1694.2975	4.246E-05	0.000	6.376E+10	92.2664	359009.	0.000
270.000	-0.001294	-31355.	-1178.8698	3.991E-05	0.000	6.376E+10	79.5428	368909.	0.000
276.000	-0.001063	-37001.	-738.8889	3.670E-05	0.000	6.376E+10	67.1175	378809.	0.000
282.000	-0.000853	-40230.	-371.6828	3.306E-05	0.000	6.376E+10	55.2846	388709.	0.000
288.000	-0.000666	-41469.	-73.0230	2.922E-05	0.000	6.376E+10	44.2687	398609.	0.000
294.000	-0.000503	-41113.	162.4724	2.533E-05	0.000	6.376E+10	34.2298	408509.	0.000
300.000	-0.000362	-39525.	340.9714	2.154E-05	0.000	6.376E+10	25.2699	418409.	0.000
306.000	-0.000244	-37027.	469.1007	1.794E-05	0.000	6.376E+10	17.4398	428309.	0.000
312.000	-0.000147	-33900.	553.6615	1.460E-05	0.000	6.376E+10	10.7471	438209.	0.000
318.000	-6.913E-05	-30387.	601.3926	1.157E-05	0.000	6.376E+10	5.1633	448109.	0.000
324.000	-8.275E-06	-26686.	618.7775	8.887E-06	0.000	6.376E+10	0.6317	458009.	0.000
330.000	-0.002336	-22963.	611.8957	6.551E-06	0.000	6.376E+10	-2.9256	467909.	0.000
336.000	7.034E-05	-19345.	586.3143	4.561E-06	0.000	6.376E+10	-5.6015	477809.	0.000
342.000	9.224E-05	-15929.	547.0159	2.901E-06	0.000	6.376E+10	-7.4979	487709.	0.000
348.000	0.000105	-12782.	498.3603	1.550E-06	0.000	6.376E+10	-8.7206	497609.	0.000
354.000	0.000111	-9948.6751	444.0718	4.804E-07	0.000	6.376E+10	-9.3755	507509.	0.000
360.000	0.000111	-7453.0054	387.2508	-3.384E-07	0.000	6.376E+10	-9.5648	517409.	0.000
366.000	0.000107	-5301.5839	330.4031	-9.385E-07	0.000	6.376E+10	-9.3845	527309.	0.000
372.000	9.965E-05	-3487.9431	275.4823	-1.352E-06	0.000	6.376E+10	-8.9225	537209.	0.000
378.000	9.056E-05	-1995.4714	223.9429	-1.610E-06	0.000	6.376E+10	-8.2574	547109.	0.000
384.000	8.033E-05	-800.2424	176.7978	-1.742E-06	0.000	6.376E+10	-7.4577	557009.	0.000
390.000	6.966E-05	126.5202	134.6803	-1.773E-06	0.000	6.376E+10	-6.5815	566909.	0.000
396.000	5.905E-05	816.3472	97.9048	-1.729E-06	0.000	6.376E+10	-5.6770	576809.	0.000
402.000	4.891E-05	1301.7931	66.5261	-1.629E-06	0.000	6.376E+10	-4.7826	586709.	0.000
408.000	3.950E-05	1615.0519	40.3952	-1.492E-06	0.000	6.376E+10	-3.9278	596609.	0.000
414.000	3.100E-05	1786.8934	19.2097	-1.332E-06	0.000	6.376E+10	-3.1341	606509.	0.000
420.000	2.352E-05	1845.8881	2.5595	-1.161E-06	0.000	6.376E+10	-2.4160	616409.	0.000
426.000	1.707E-05	1817.8858	-10.0346	-9.887E-07	0.000	6.376E+10	-1.7820	626309.	0.000
432.000	1.165E-05	1725.7101	-19.0875	-8.219E-07	0.000	6.376E+10	-1.2356	636209.	0.000
438.000	7.208E-06	1589.0330	-25.1231	-6.660E-07	0.000	6.376E+10	-0.7762	646109.	0.000
444.000	3.661E-06	1424.3931	-28.6527	-5.242E-07	0.000	6.376E+10	-0.4003	656009.	0.000
450.000	9.184E-07	1245.3261	-30.1594	-3.986E-07	0.000	6.376E+10	-0.1019	665909.	0.000
456.000	-1.121E-06	1062.5756	-30.0863	-2.900E-07	0.000	6.376E+10	0.1263	675809.	0.000
462.000	-2.561E-06	884.3602	-28.8293	-1.984E-07	0.000	6.376E+10	0.2927	685709.	0.000
468.000	-3.502E-06	716.6722	-26.7332	-1.230E-07	0.000	6.376E+10	0.4060	695609.	0.000
474.000	-4.037E-06	563.5907	-24.0911	-6.278E-08	0.000	6.376E+10	0.4747	705509.	0.000
480.000	-4.255E-06	427.5938	-21.1448	-1.615E-08	0.000	6.376E+10	0.5074	715409.	0.000
486.000	-4.231E-06	309.8566	-18.0883	1.855E-08	0.000	6.376E+10	0.5115	725309.	0.000
492.000	-4.032E-06	210.5295	-15.0715	4.304E-08	0.000	6.376E+10	0.4941	735209.	0.000
498.000	-3.715E-06	128.9881	-12.2052	5.901E-08	0.000	6.376E+10	0.4613	745109.	0.000
504.000	-3.324E-06	64.0525	-9.5664	6.810E-08	0.000	6.376E+10	0.4183	755009.	0.000
510.000	-2.898E-06	14.1752	-7.2033	7.178E-08	0.000	6.376E+10	0.3694	764909.	0.000
516.000	-2.463E-06	-22.4041	-5.1410	7.139E-08	0.000	6.376E+10	0.3180	774809.	0.000
522.000	-2.041E-06	-47.5334	-3.3861	6.810E-08	0.000	6.376E+10	0.2669	784709.	0.000
528.000	-1.646E-06	-63.0532	-1.9315	6.290E-08	0.000	6.376E+10	0.2179	794609.	0.000
534.000	-1.286E-06	-70.7262	-0.7603	5.660E-08	0.000	6.376E+10	0.1724	804509.	0.000
540.000	-9.665E-07	-72.1902	0.1506	4.988E-08	0.000	6.376E+10	0.1312	814409.	0.000
546.000	-6.876E-07	-68.9309	0.8275	4.324E-08	0.000	6.376E+10	0.0945	824309.	0.000
552.000	-4.476E-07	-62.2701	1.2976	3.706E-08	0.000	6.376E+10	0.0622	834209.	0.000
558.000	-2.428E-07	-53.3682	1.5868	3.162E-08	0.000	6.376E+10	0.0342	844109.	0.000
564.000	-6.814E-08	-43.2359	1.7184	2.708E-08	0.000	6.376E+10	0.009698	854009.	0.000
570.000	8.212E-08	-32.7540	1.7120	2.350E-08	0.000	6.376E+10	-0.0118	863909.	0.000
576.000	2.139E-07	-22.6973	1.5831	2.089E-08	0.000	6.376E+10	-0.0311	873809.	0.000
582.000	3.328E-07	-13.7618	1.3426	1.918E-08	0.000	6.376E+10	-0.0490	883709.	0.000
588.000	4.440E-07	-6.5910	0.9971	1.822E-08	0.000	6.376E+10	-0.0661	893609.	0.000
594.000	5.515E-07	-1.8007	0.5496	1.782E-08	0.000	6.376E+10	-0.0830	903509.	0.000
600.000	6.579E-07	0.0000	0.0000	1.774E-08	0.000	6.376E+10	-0.1002	456704.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 4:

Pile-head deflection = 0.500000 inches

Computed slope at pile head = -0.0000461 radians
 Maximum bending moment = -1940420. inch-lbs
 Maximum shear force = 33143. lbs
 Depth of maximum bending moment = 0.000000 inches below pile head
 Depth of maximum shear force = 0.000000 inches below pile head
 Number of iterations = 36
 Number of zero deflection points = 4

 Summary of Pile Response(s)

Definitions of Pile-Head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
 Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
 Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
 Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
 Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

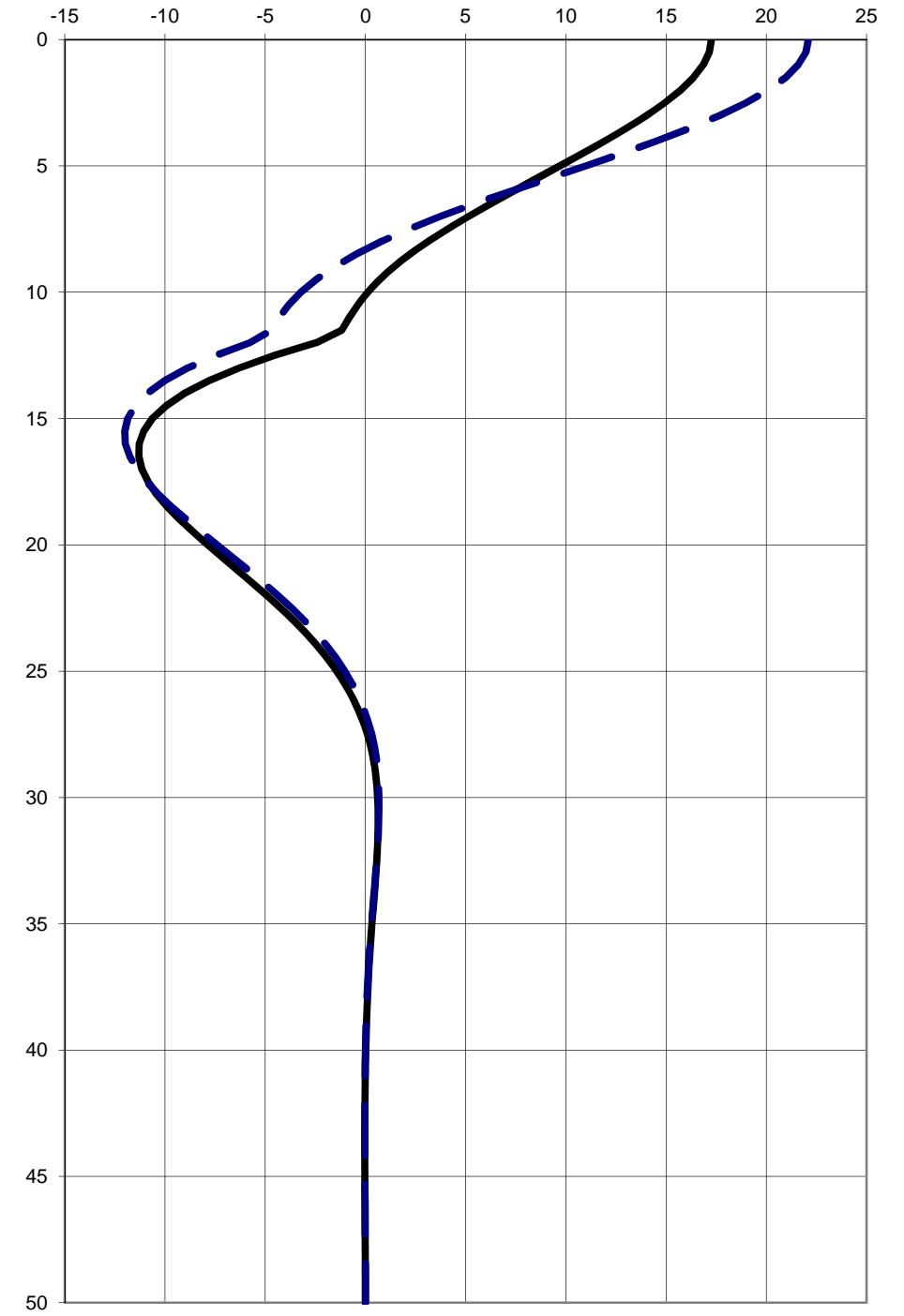
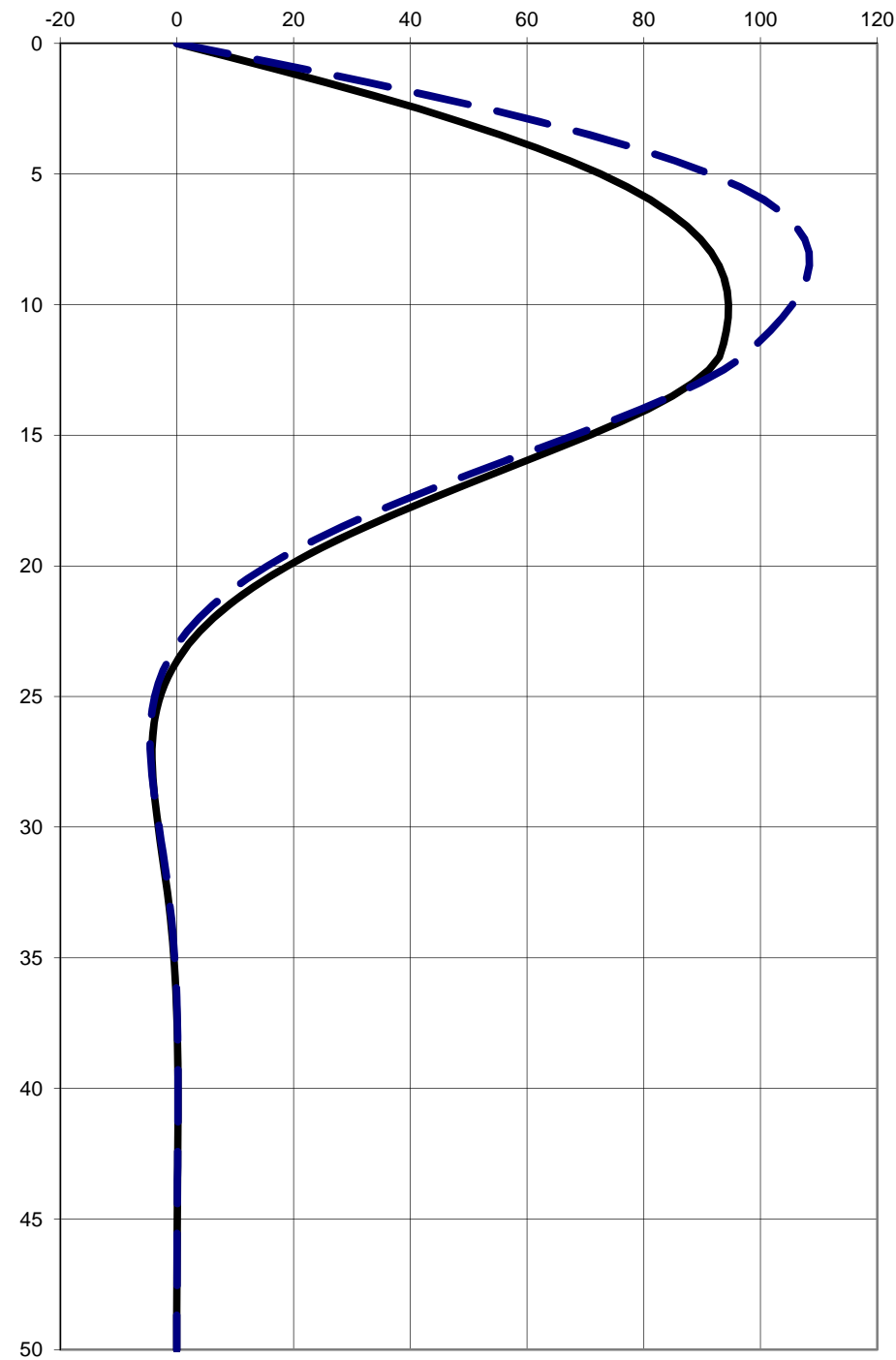
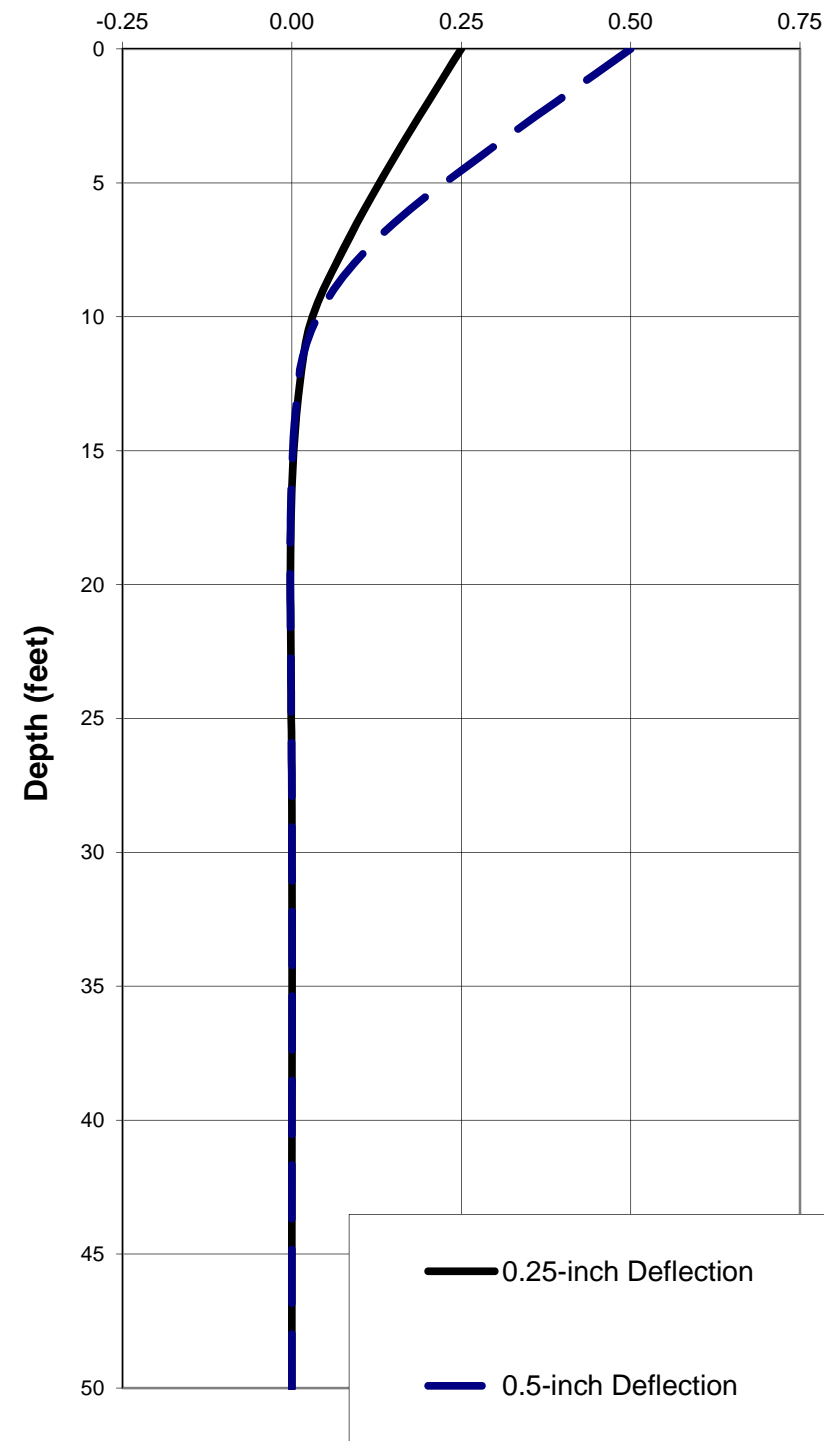
Load Case No.	Load Type No.	Condition 1	Condition 2	Axial Load	Pile-Head Deflection	Maximum Moment	Maximum Shear
		V(lbs) or y(inches)	in-lb, rad., or in-lb/rad.	lbs	inches	in-lbs	lbs
1	4	y = 0.2500	M = 0.000	20000.	0.25000000	638693.	11774.
0.00000000							
2	5	y = 0.2500	S = 0.000	20000.	0.25000000	-1243911.	23682.
0.00000000							
3	4	y = 0.5000	M = 0.000	20000.	0.50000000	792747.	14979.
0.00000000							
4	5	y = 0.5000	S = 0.000	20000.	0.50000000	-1940420.	33143.
0.00000000							

The analysis ended normally.

Deflection (inches)

Moment (kips-feet)

Shear (kips)



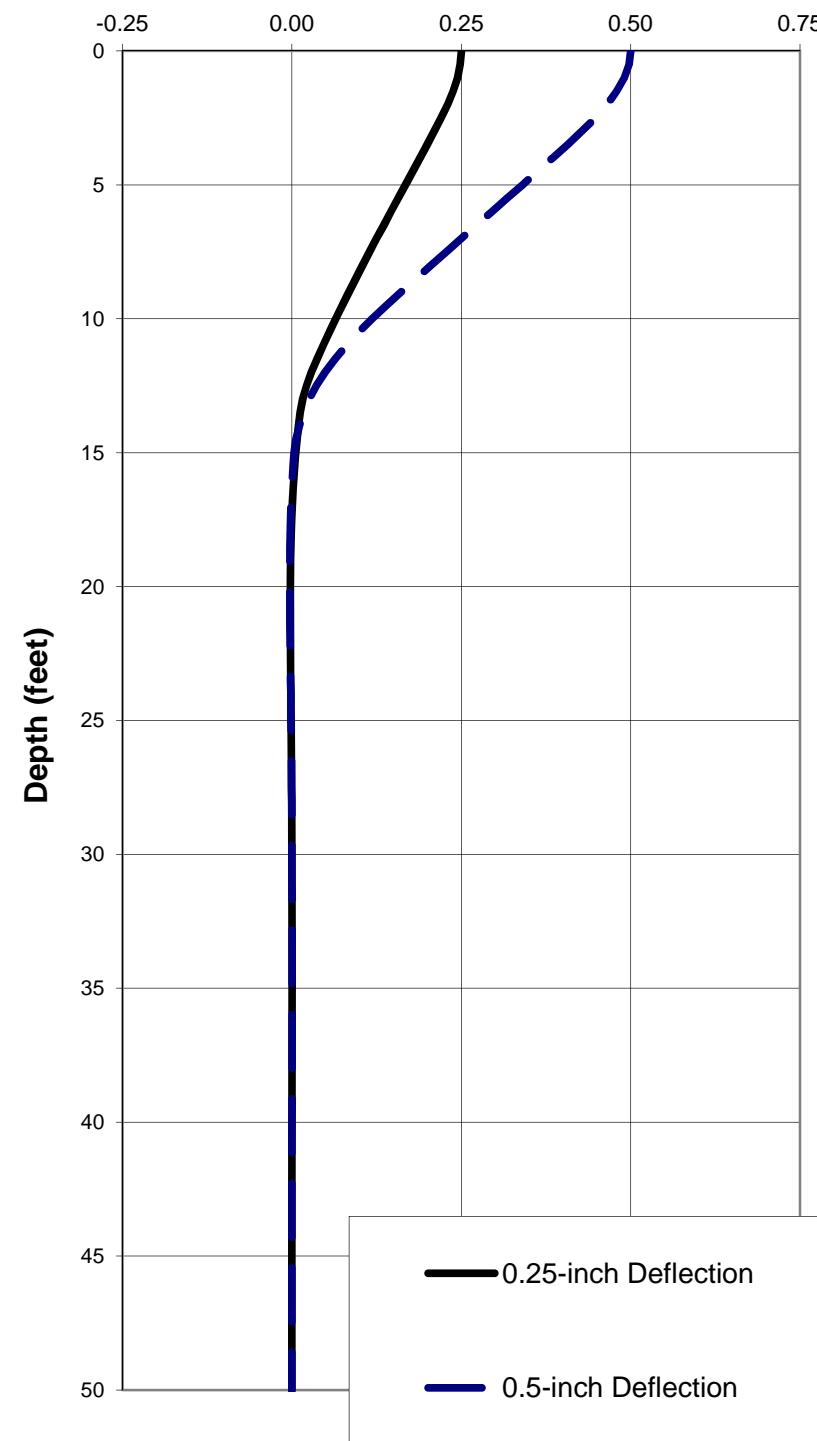
**LATERAL LOAD CAPACITIES OF 30-INCH DIAMETER CIDH PILE
FREE HEAD CONDITION
EL RODEO K-8 SCHOOL
BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
Project No.: 10274.015
Date: 10/2015

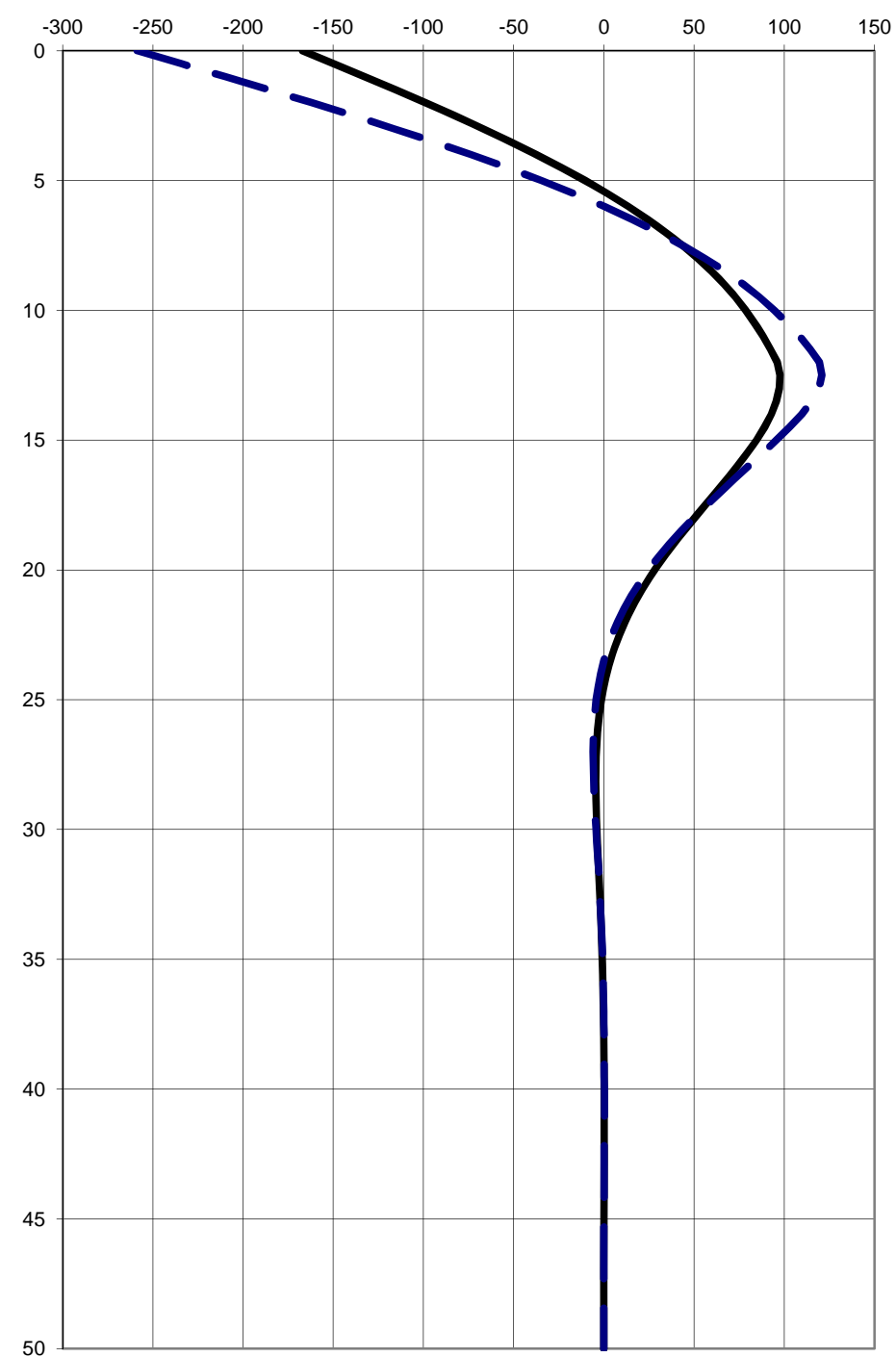


Figure C-5a

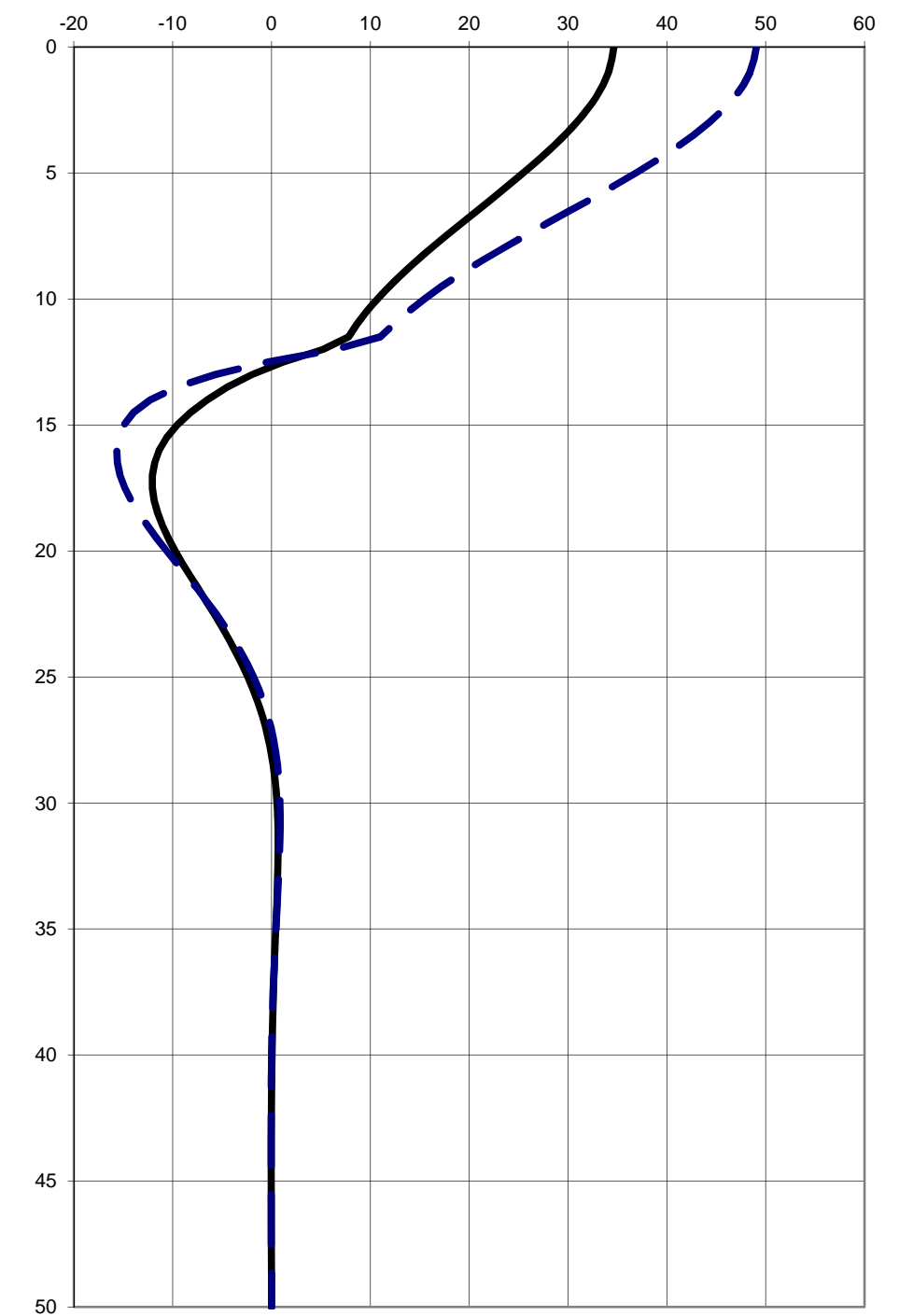
Deflection (inches)



Moment (kips-feet)



Shear (kips)



**LATERAL LOAD CAPACITIES OF 30-INCH DIAMETER CIDH PILE
FIXED HEAD CONDITION
EL RODEO K-8 SCHOOL
BEVERLY HILLS, CALIFORNIA**

Project Name: El Rodeo Building C
Project No.: 10274.015
Date: 10/2015



Figure C-5b

=====
LPIle Plus for Windows, Version 6.0 (6.0.08)
Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

(c) 1985-2010 by Ensoft, Inc.
All Rights Reserved

=====
This program is licensed to:

CD
Leighton

Files Used for Analysis

Path to file locations: P:\INFOCUS PROJECTS\10000-10500\10274 BHUSD\015 EI Rodeo Bldg C\Analyses\LPIle\
Name of input data file: 30-inch diameter.lp6d
Name of output file: 30-inch diameter.lp6o
Name of plot output file: 30-inch diameter.lp6p
Name of runtime file: 30-inch diameter.lp6r

Date and Time of Analysis

Date: October 28, 2015 Time: 15:07:16

Problem Title

Project Name: Beverly Hills High School Building C

Job Number: 10274.015

Client: Beverly Hills Unified School District

Engineer: CD

Description: 30-inch CIDH pile

Program Options

Units Used - US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal Moment
Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:

- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

Solution Control Parameters:

- Number of pile increments = 100
- Maximum number of iterations allowed = 1000
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in

Pile Response Output Options:

- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1

Pile Structural Properties and Geometry

- Total Number of Sections = 1
- Total Pile Length = 50.00 ft
- Depth of ground surface below top of pile = 0.00 ft
- Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points. p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	30.000000
2	50.00000	30.000000

Input Structural Properties:

Section No. 1:

- Section Type = Drilled Shaft (Bored Pile)
- Section Length = 50.000 ft
- Section Diameter = 30.000 in

Ground Slope and Pile Batter Angles

- Ground Slope Angle = 0.000 degrees
= 0.000 radians
- Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

- Distance from top of pile to top of layer = 0.000 ft
- Distance from top of pile to bottom of layer = 12.000 ft
- p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
- p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

Layer 2 is cemented silt with cohesion and friction

- Distance from top of pile to top of layer = 12.000 ft

Distance from top of pile to bottom of layer = 60.000 ft
 p-y subgrade modulus k for top of soil layer = 0.000 lbs/in**3
 p-y subgrade modulus k for bottom of layer = 0.000 lbs/in**3

NOTE: Internal default values for p-y subgrade modulus will be computed for the above soil layer.

(Depth of lowest layer extends 10.00 ft below pile tip)

 Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 4 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	0.00	120.00000
2	12.00	120.00000
3	12.00	120.00000
4	60.00	120.00000

 Summary of Soil Properties

Layer RQD Num. percent	Soil Type (p-y Curve Criteria) pci	Rock Emass psi	Depth ft	Eff. Unit Weight, pcf	Cohesion Test Type psf	Friction Prop. Ang., deg.	Elas. Subgr. pci	qu psi
1	Sand (Reese, et al.)		0.00	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	--	20.000	--	--
--	-- default	--	12.000	120.000	300.000	30.000	--	--
2	Cemented Silt		0.00	120.000	300.000	30.000	--	--
--	-- default	--	60.000	120.000	300.000	30.000	--	--
--	-- default	--	--	--	--	--	--	--

 Loading Type

p-y criteria for static loading was used for all analyses.

 Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 4

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs
1	4	y = 0.250 in	M = 0.000 in-lbs	20000.000
2	5	y = 0.250 in	S = 0.000 in/in	20000.000
3	4	y = 0.500 in	M = 0.000 in-lbs	20000.000
4	5	y = 0.500 in	S = 0.000 in/in	20000.000

 Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust values were determined from pile-head loading conditions

Number of Sections = 1

Section No. 1:

Dimensions and Properties of Drilled Shaft:

Length of Section = 600.0000000 in
 Shaft Diameter = 30.0000000 in
 Concrete Cover Thickness = 3.0000000 in
 Number of Reinforcing Bars = 6 bars
 Yield Stress of Reinforcing Bars = 60.0000000 ksi
 Modulus of Elasticity of Reinforcing Bars = 29000. ksi
 Gross Area of Shaft = 706.85834706 sq. in.
 Total Area of Reinforcing Steel = 4.74000000 sq. in.
 Area Ratio of Steel Reinforcement = 0.67 percent
 Nom. Axial Structural Capacity = $0.85 F_c A_c + F_y A_s$ = 2074.802 kips
 Tensile Load for Cracking of Concrete = -270.122 kips
 Nominal Axial Tensile Capacity = -284.400 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Di am. inches	Bar Area sq. in.	X inches	Y inches
1	1.00000	0.79000	11.50000	0.00000
2	1.00000	0.79000	5.75000	9.95929
3	1.00000	0.79000	-5.75000	9.95929
4	1.00000	0.79000	-11.50000	0.00000
5	1.00000	0.79000	5.75000	-9.95929
6	1.00000	0.79000	11.50000	-9.95929

Concrete Properties:

Compressive Strength of Concrete = 3.0000000 ksi
 Modulus of Elasticity of Concrete = 3122.0185778 ksi
 Modulus of Rupture of Concrete = -0.4107919 ksi
 Compression Strain at Peak Stress = 0.0016336
 Tensile Strain at Fracture = -0.0001160
 Maximum Coarse Aggregate Size = 0.7500000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	20.000

Definitions of Run Messages and Notes:

C = concrete has cracked in tension
 Y = stress in reinforcement has reached yield stress
 T = tensile strain in reinforcement exceeds 0.005 when compressive strain in concrete is less than 0.003.
 Bending Stiffness = Bending Moment / Curvature
 Position of neutral axis is computed from compression side of pile
 Compressive stresses are positive in sign. Tensile stresses are negative in sign.

Axial Thrust Force = 20.000 kips

Run Msg	Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in ²	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi
0.00001250	191.5320389	153225631.	20.9198704	0.0000261	-0.0000114	0.0946009	0.7529078	
0.00002500	381.9072977	152762919.	17.9732541	0.0000449	-0.0000301	0.1614283	1.2921859	
0.00003750	570.8766765	152233780.	16.9913661	0.0000637	-0.0000488	0.2274824	1.8314986	
0.00005000	758.4348017	151686960.	16.5005318	0.0000825	-0.0000675	0.2927608	2.3708271	
0.00006250	944.5809973	151132960.	16.2060986	0.0001013	-0.0000862	0.3572629	2.9101679	

	0.00007500	1129.3150972	150575346.	16.0098609	0.0001201	-0.0001049	0.4209887	3.4495198
C	0.00008750	1129.3150972	129064583.	9.8983506	0.0000866	-0.0001759	0.3051171	-5.0627310
C	0.0000100	1129.3150972	112931510.	9.5677399	0.0000957	-0.0002043	0.3359389	-5.8818554
C	0.0000113	1129.3150972	100383564.	9.3014560	0.0001046	-0.0002329	0.3662296	-6.7039625
C	0.0000125	1129.3150972	90345208.	9.0828301	0.0001135	-0.0002615	0.3961076	-7.5280991
C	0.0000138	1129.3150972	82132007.	8.8995696	0.0001224	-0.0002901	0.4256100	-8.3539841
C	0.0000150	1129.3150972	75287673.	8.7431220	0.0001311	-0.0003189	0.4547550	-9.1814919
C	0.0000163	1129.3150972	69496314.	8.6094663	0.0001399	-0.0003476	0.4836643	-10.0096014
C	0.0000175	1129.3150972	64532291.	8.4929955	0.0001486	-0.0003764	0.5122968	-10.8386797
C	0.0000188	1129.3150972	60230139.	8.3902568	0.0001573	-0.0004052	0.5406533	-11.6687353
C	0.0000200	1129.3150972	56465755.	8.3007209	0.0001660	-0.0004340	0.5688712	-12.4985818
C	0.0000213	1129.3150972	53144240.	8.2208317	0.0001747	-0.0004628	0.5968643	-13.3289749
C	0.0000225	1129.3150972	50191782.	8.1481675	0.0001833	-0.0004917	0.6245738	-14.1604457
C	0.0000238	1129.3150972	47550109.	8.0834616	0.0001920	-0.0005205	0.6521465	-14.9917033
C	0.0000250	1129.3150972	45172604.	8.0255215	0.0002006	-0.0005494	0.6795821	-15.8227469
C	0.0000263	1129.3150972	43021528.	7.9733818	0.0002093	-0.0005782	0.7068803	-16.6535755
C	0.0000275	1129.3150972	41066004.	7.9251669	0.0002179	-0.0006071	0.7339454	-17.4850543
C	0.0000288	1129.3150972	39280525.	7.8804347	0.0002266	-0.0006359	0.7607850	-18.3171250
C	0.0000300	1129.3150972	37643837.	7.8396845	0.0002352	-0.0006648	0.7874888	-19.1489744
C	0.0000313	1129.3150972	36138083.	7.8024397	0.0002438	-0.0006937	0.8140565	-19.9806014
C	0.0000325	1129.3150972	34748157.	7.7682968	0.0002525	-0.0007225	0.8404877	-20.8120051
C	0.0000338	1129.3150972	33461188.	7.7369122	0.0002611	-0.0007514	0.8667821	-21.6431846
C	0.0000350	1129.3150972	32266146.	7.7079914	0.0002698	-0.0007802	0.8929393	-22.4741387
C	0.0000363	1129.3150972	31153520.	7.6812804	0.0002784	-0.0008091	0.9189591	-23.3048664
C	0.0000375	1129.3150972	30115069.	7.6565591	0.0002871	-0.0008379	0.9448410	-24.1353668
C	0.0000388	1129.3150972	29143615.	7.6328513	0.0002958	-0.0008667	0.9704929	-24.9665208
C	0.0000400	1129.3150972	28232877.	7.6105341	0.0003044	-0.0008956	0.9959727	-25.7977803
C	0.0000413	1129.3150972	27377336.	7.5897676	0.0003131	-0.0009244	1.0213160	-26.6288029
C	0.0000425	1134.3206676	26689898.	7.5704158	0.0003217	-0.0009533	1.0465224	-27.4595873
C	0.0000438	1162.4210749	26569625.	7.5523585	0.0003304	-0.0009821	1.0715914	-28.2901325
C	0.0000450	1190.4983552	26455519.	7.5354886	0.0003391	-0.0010109	1.0965228	-29.1204372
C	0.0000463	1218.5524097	26347079.	7.5197108	0.0003478	-0.0010397	1.1213163	-29.9505002
C	0.0000475	1246.5831385	26243856.	7.5049397	0.0003565	-0.0010685	1.1459714	-30.7803205
C	0.0000488	1274.5904412	26145445.	7.4910986	0.0003652	-0.0010973	1.1704877	-31.6098967
C	0.0000513	1330.5343617	25961646.	7.4659379	0.0003826	-0.0011549	1.2191028	-33.2683122
C	0.0000538	1386.3833500	25793179.	7.4437532	0.0004001	-0.0012124	1.2671587	-34.9257370
C	0.0000563	1442.1365710	25637983.	7.4241541	0.0004176	-0.0012699	1.3146522	-36.5821610
C	0.0000588	1497.7931756	25494352.	7.4068163	0.0004352	-0.0013273	1.3615805	-38.2375741
C	0.0000613	1553.3523001	25360854.	7.3914688	0.0004527	-0.0013848	1.4079404	-39.8919659
C	0.0000638	1608.8130658	25236283.	7.3778832	0.0004703	-0.0014422	1.4537288	-41.5453257

C	0.0000663	1664.1745790	25119616.	7.3658657	0.0004880	-0.0014995	1.4989425	-43.1976429
C	0.0000688	1719.4359299	25009977.	7.3552506	0.0005057	-0.0015568	1.5435783	-44.8489064
C	0.0000713	1774.5939694	24906582.	7.3456824	0.0005234	-0.0016141	1.5875946	-46.4995461
C	0.0000738	1829.6479226	24808785.	7.3370351	0.0005411	-0.0016714	1.6309854	-48.1496034
C	0.0000763	1884.5996918	24716062.	7.3294693	0.0005589	-0.0017286	1.6737950	-49.7985232
C	0.0000788	1939.4479556	24627911.	7.3228878	0.0005767	-0.0017858	1.7160197	-51.4462944
C	0.0000813	1994.1923556	24543906.	7.3172053	0.0005945	-0.0018430	1.7576565	-53.0928991
C	0.0000838	2048.8314573	24463659.	7.3123469	0.0006124	-0.0019001	1.7987014	-54.7383260
C	0.0000863	2103.3641857	24386831.	7.3082466	0.0006303	-0.0019572	1.8391506	-56.3825613
C	0.0000888	2157.7894439	24313120.	7.3048459	0.0006483	-0.0020142	1.8790006	-58.0255907
C	0.0000913	2212.1061131	24242259.	7.3020928	0.0006663	-0.0020712	1.9182474	-59.6673996
CY	0.0000938	2266.3130516	24174006.	7.2999410	0.0006844	-0.0021281	1.9568871	-60.0000000
CY	0.0000963	2320.4090939	24108146.	7.2983489	0.0007025	-0.0021850	1.9949158	-60.0000000
CY	0.0000988	2374.3930505	24044487.	7.2972797	0.0007206	-0.0022419	2.0323295	-60.0000000
CY	0.0001013	2428.2637070	23982851.	7.2966999	0.0007388	-0.0022987	2.0691240	-60.0000000
CY	0.0001038	2482.0198229	23923083.	7.2965797	0.0007570	-0.0023555	2.1052951	-60.0000000
CY	0.0001063	2535.6601315	23865037.	7.2968919	0.0007753	-0.0024122	2.1408387	-60.0000000
CY	0.0001088	2589.1833385	23808582.	7.2976122	0.0007936	-0.0024689	2.1757503	-60.0000000
CY	0.0001113	2642.5881214	23753601.	7.2987184	0.0008120	-0.0025255	2.2100255	-60.0000000
CY	0.0001138	2695.8731283	23699984.	7.3001906	0.0008304	-0.0025821	2.2436598	-60.0000000
CY	0.0001163	2743.9538259	23603904.	7.2972145	0.0008483	-0.0026392	2.2756427	-60.0000000
CY	0.0001188	2775.0368458	23368731.	7.2788203	0.0008644	-0.0026981	2.3036724	-60.0000000
CY	0.0001213	2791.4154395	23021983.	7.2476700	0.0008788	-0.0027587	2.3283041	-60.0000000
CY	0.0001238	2805.5607372	22671198.	7.2159073	0.0008930	-0.0028195	2.3520971	-60.0000000
CY	0.0001263	2819.6686821	22334009.	7.1855809	0.0009072	-0.0028803	2.3754988	-60.0000000
CY	0.0001288	2833.7389934	22009623.	7.1566083	0.0009214	-0.0029411	2.3985074	-60.0000000
CY	0.0001313	2847.7713874	21697306.	7.1289135	0.0009357	-0.0030018	2.4211210	-60.0000000
CY	0.0001338	2861.7655771	21396378.	7.1024258	0.0009499	-0.0030626	2.4433376	-60.0000000
CY	0.0001363	2875.7212721	21106211.	7.0770801	0.0009643	-0.0031232	2.4651555	-60.0000000
CY	0.0001388	2889.6381784	20826221.	7.0528159	0.0009786	-0.0031839	2.4865726	-60.0000000
CY	0.0001413	2903.4032665	20555067.	7.0282215	0.0009927	-0.0032448	2.5073022	-60.0000000
CY	0.0001438	2917.1161407	20292982.	7.0044673	0.0010069	-0.0033056	2.5276014	-60.0000000
CY	0.0001463	2930.7917283	20039602.	6.9816882	0.0010211	-0.0033664	2.5475076	-60.0000000
CY	0.0001488	2944.4297849	19794486.	6.9598362	0.0010353	-0.0034272	2.5670189	-60.0000000
CY	0.0001588	2998.6007790	18888824.	6.8808480	0.0010923	-0.0036702	2.6410742	-60.0000000
CY	0.0001688	3052.1471167	18086798.	6.8135921	0.0011498	-0.0039127	2.7086471	-60.0000000
CY	0.0001788	3105.0483040	17370900.	6.7561755	0.0012077	-0.0041548	2.7696004	-60.0000000
CY	0.0001888	3157.0660419	16726178.	6.7039311	0.0012654	-0.0043971	2.8232549	-60.0000000
CY	0.0001988	3208.3978091	16142882.	6.6588283	0.0013234	-0.0046391	2.8700944	-60.0000000
CY	0.0002088	3259.0492506	15612212.	6.6203154	0.0013820	-0.0048805	2.9100385	-60.0000000

CY	0.0002188	3308.9950957	15126835.	6.5875797	0.0014410	-0.0051215	2.9429152	-60.0000000
CY	0.0002288	3358.2078244	14680690.	6.5599584	0.0015006	-0.0053619	2.9685412	-60.0000000
CY	0.0002388	3402.9000082	14252984.	6.5320974	0.0015595	-0.0056030	2.9864383	-60.0000000
CY	0.0002488	3429.9609544	13788788.	6.4868109	0.0016136	-0.0058489	2.9963118	-60.0000000
CY	0.0002588	3438.8408384	13290206.	6.4215669	0.0016616	-0.0061009	2.9998691	-60.0000000
CY	0.0002688	3442.8863781	12810740.	6.3533803	0.0017075	-0.0063550	2.9975139	-60.0000000
CY	0.0002788	3446.7167816	12364903.	6.2912008	0.0017537	-0.0066088	2.9999681	-60.0000000
CY	0.0002888	3450.2815083	11949027.	6.2345680	0.0018002	-0.0068623	2.9972019	-60.0000000
CY	0.0002988	3453.6543709	11560349.	6.1827037	0.0018471	-0.0071154	2.9998751	-60.0000000
CY	0.0003088	3456.5908561	11195436.	6.1336127	0.0018938	-0.0073687	2.9953962	-60.0000000
CY	0.0003188	3458.9549389	10851623.	6.0849543	0.0019396	-0.0076229	2.9990761	-60.0000000
CY	0.0003288	3461.1672028	10528265.	6.0400862	0.0019857	-0.0078768	2.9985601	-60.0000000
CY	0.0003388	3463.1911572	10223443.	5.9988085	0.0020321	-0.0081304	2.9961164	-60.0000000
CY	0.0003488	3465.1043924	9935783.	5.9605403	0.0020787	-0.0083838	2.9992614	-60.0000000
CY	0.0003588	3466.8841682	9663789.	5.9251167	0.0021256	-0.0086369	2.9983872	60.0000000
CY	0.0003688	3468.5007847	9406104.	5.8924171	0.0021728	-0.0088897	2.9946216	60.0000000
CY	0.0003788	3470.0272345	9161788.	5.8619673	0.0022202	-0.0091423	2.9983530	60.0000000
CY	0.0003888	3471.2544591	8929272.	5.8313358	0.0022669	-0.0093956	2.9999269	60.0000000
CY	0.0003988	3472.2062001	8707727.	5.8014046	0.0023133	-0.0096492	2.9954689	60.0000000
CY	0.0004088	3473.0779840	8496827.	5.7734283	0.0023599	-0.0099026	2.9943755	60.0000000
CY	0.0004188	3473.8902783	8295857.	5.7471846	0.0024066	-0.0101559	2.9978739	60.0000000
CY	0.0004288	3474.6415167	8104120.	5.7225606	0.0024535	-0.0104090	2.9997096	60.0000000
CY	0.0004388	3475.3024174	7920917.	5.6995793	0.0025007	-0.0106618	2.9975969	60.0000000
CY	0.0004488	3475.8746429	7745682.	5.6781257	0.0025481	-0.0109144	2.9918082	60.0000000
CY	0.0004588	3476.4016818	7577987.	5.6579133	0.0025956	-0.0111669	2.9944632	60.0000000
CY	0.0004688	3476.8824527	7417349.	5.6388687	0.0026432	-0.0114193	2.9977208	60.0000000
CY	0.0004788	3477.3158369	7263323.	5.6209248	0.0026910	-0.0116715	2.9995624	60.0000000
CY	0.0004888	3477.6866764	7115471.	5.6040844	0.0027390	-0.0119235	2.9988056	60.0000000
CY	0.0004988	3477.9697704	6973373.	5.5883957	0.0027872	-0.0121753	2.9934640	60.0000000
CY	0.0005088	3478.2193330	6836795.	5.5735537	0.0028355	-0.0124270	2.9897842	60.0000000
CY	0.0005188	3478.4346419	6705416.	5.5595136	0.0028840	-0.0126785	2.9941114	60.0000000
CY	0.0005288	3478.5744656	6578864.	5.5455798	0.0029322	-0.0129303	2.9972291	60.0000000
CY	0.0005388	3478.5835033	6456768.	5.5308132	0.0029797	-0.0131828	2.9991408	60.0000000
CY	0.0005488	3478.5835033	6339104.	5.5168115	0.0030274	-0.0134351	2.9999657	60.0000000
CY	0.0006088	3478.5835033	5714306.	5.4475092	0.0033162	-0.0149463	2.9969220	60.0000000
CY	0.0006688	3478.5835033	5201620.	5.3967460	0.0036091	-0.0164534	2.9855477	60.0000000
CY	0.0007288	3478.5835033	4773356.	5.3925055	0.0039298	-0.0179327	2.9998614	60.0000000

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	20.000	3478.584	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are spirals or tied hoops.

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Displacement and Moment (BC Type 4)
Deflection at pile head = 0.250000 in
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	17269.	-0.002076	0.000	1.532E+11	0.000	0.000	0.000
6.000	0.2375	103860.	17163.	-0.002074	0.000	1.532E+11	-35.1188	887.0506	0.000
12.000	0.2251	206456.	16855.	-0.002068	0.000	1.532E+11	-67.5331	1800.0000	0.000
18.000	0.2127	306620.	16365.	-0.002058	0.000	1.529E+11	-95.7268	2700.0000	0.000
24.000	0.2004	403335.	15718.	-0.002044	0.000	1.527E+11	-120.2485	3600.0000	0.000
30.000	0.1882	495720.	14933.	-0.002026	0.000	1.524E+11	-141.1480	4500.0000	0.000
36.000	0.1761	583022.	14034.	-0.002005	0.000	1.522E+11	-158.4879	5400.0000	0.000
42.000	0.1641	664615.	13042.	-0.001981	0.000	1.519E+11	-172.3426	6300.0000	0.000
48.000	0.1523	740000.	11977.	-0.001953	0.000	1.517E+11	-182.7978	7200.0000	0.000
54.000	0.1407	808802.	10858.	-0.001922	0.000	1.515E+11	-189.9487	8100.0000	0.000
60.000	0.1293	870761.	9706.7322	-0.001889	0.000	1.513E+11	-193.8992	9000.0000	0.000
66.000	0.1180	925736.	8540.7527	-0.001853	0.000	1.512E+11	-194.7606	9900.0000	0.000
72.000	0.1070	973695.	7378.5210	-0.001815	0.000	1.510E+11	-192.6500	10800.	0.000
78.000	0.0963	1014714.	6237.5036	-0.001776	0.000	1.509E+11	-187.6892	11700.	0.000
84.000	0.0857	1048971.	5134.4249	-0.001735	0.000	1.508E+11	-180.0037	12600.	0.000
90.000	0.0754	1076743.	4085.2498	-0.001693	0.000	1.507E+11	-169.7213	13500.	0.000
96.000	0.0654	1098400.	3105.1735	-0.001649	0.000	1.507E+11	-156.9708	14400.	0.000
102.000	0.0556	1114401.	2208.6167	-0.001604	0.000	1.399E+11	-141.8815	15300.	0.000
108.000	0.0462	1125288.	1409.0609	-0.001513	0.000	5.097E+10	-124.6372	16200.	0.000
114.000	0.0375	1131673.	714.7054	-0.001330	0.000	2.887E+10	-106.8146	17100.	0.000
120.000	0.0302	1134184.	122.4002	-0.001085	0.000	2.670E+10	-90.6204	18000.	0.000
126.000	0.0245	1133402.	-380.6478	-0.000834	0.000	2.753E+10	-77.0622	18900.	0.000
132.000	0.0202	1129816.	-811.8527	-0.000630	0.000	4.217E+10	-66.6728	19800.	0.000
138.000	0.0169	1123811.	-1186.8698	-0.000509	0.000	8.321E+10	-58.3330	20700.	0.000
144.000	0.0141	1115696.	-2464.9871	-0.000446	0.000	1.506E+11	-367.7061	156487.	0.000
150.000	0.0116	1094338.	-4529.4619	-0.000402	0.000	1.507E+11	-320.4522	166387.	0.000
156.000	0.009274	1061439.	-6308.2865	-0.000359	0.000	1.508E+11	-272.4894	176287.	0.000
162.000	0.007246	1018725.	-7800.3445	-0.000318	0.000	1.509E+11	-224.8633	186187.	0.000
168.000	0.005462	967911.	-9010.4002	-0.000278	0.000	1.511E+11	-178.4886	196087.	0.000
174.000	0.003907	910667.	-9948.2964	-0.000241	0.000	1.512E+11	-134.1435	205987.	0.000
180.000	0.002570	848589.	-10628.	-0.000206	0.000	1.514E+11	-92.4703	215887.	0.000
186.000	0.001434	783179.	-11067.	-0.000174	0.000	1.516E+11	-53.9776	225787.	0.000
192.000	0.000485	715821.	-11287.	-0.000144	0.000	1.518E+11	-19.0431	235687.	0.000
198.000	-0.000295	647775.	-11307.	-0.000117	0.000	1.520E+11	12.0760	245587.	0.000
204.000	-0.000921	580160.	-11154.	-9.296E-05	0.000	1.522E+11	39.2345	255487.	0.000
210.000	-0.001411	513955.	-10849.	-7.140E-05	0.000	1.524E+11	62.3902	265387.	0.000
216.000	-0.001778	449993.	-10417.	-5.243E-05	0.000	1.525E+11	81.5882	275287.	0.000
222.000	-0.002040	388967.	-9881.0866	-3.594E-05	0.000	1.527E+11	96.9510	285187.	0.000
228.000	-0.002210	331429.	-9264.2302	-2.180E-05	0.000	1.528E+11	108.6678	295087.	0.000
234.000	-0.002301	277802.	-8587.2970	-9.840E-06	0.000	1.529E+11	116.9766	304987.	0.000
240.000	-0.002328	228384.	-7869.8980	8.507E-08	0.000	1.531E+11	122.1564	314887.	0.000
246.000	-0.002300	183363.	-7129.8821	8.151E-06	0.000	1.532E+11	124.5156	324787.	0.000
252.000	-0.002230	142823.	-6383.1909	1.454E-05	0.000	1.532E+11	124.3814	334687.	0.000
258.000	-0.002126	106761.	-5643.7837	1.942E-05	0.000	1.532E+11	122.0877	344587.	0.000

264.000	-0.001997	75093.	-4923.6145	2.298E-05	0.000	1.532E+11	117.9687	354487.	0.000
270.000	-0.001850	47672.	-4232.6515	2.539E-05	0.000	1.532E+11	112.3523	364387.	0.000
276.000	-0.001692	24295.	-3578.9356	2.680E-05	0.000	1.532E+11	105.5530	374287.	0.000
282.000	-0.001528	4718.4283	-2968.6754	2.737E-05	0.000	1.532E+11	97.8670	384187.	0.000
288.000	-0.001364	-11335.	-2406.3696	2.724E-05	0.000	1.532E+11	89.5682	394087.	0.000
294.000	-0.001202	-24165.	-1894.9495	2.654E-05	0.000	1.532E+11	80.9051	403987.	0.000
300.000	-0.001045	-34081.	-1435.9379	2.540E-05	0.000	1.532E+11	72.0987	413887.	0.000
306.000	-0.000897	-41402.	-1029.6163	2.392E-05	0.000	1.532E+11	63.3418	423787.	0.000
312.000	-0.000758	-46442.	-675.1961	2.220E-05	0.000	1.532E+11	54.7982	433687.	0.000
318.000	-0.000630	-49510.	-370.9901	2.032E-05	0.000	1.532E+11	46.6038	443587.	0.000
324.000	-0.000514	-50899.	-114.5782	1.836E-05	0.000	1.532E+11	38.8669	453487.	0.000
330.000	-0.000410	-50889.	97.0332	1.637E-05	0.000	1.532E+11	31.6703	463387.	0.000
336.000	-0.000318	-49739.	267.2635	1.439E-05	0.000	1.532E+11	25.0731	473287.	0.000
342.000	-0.000237	-47685.	399.8210	1.249E-05	0.000	1.532E+11	19.1127	483187.	0.000
348.000	-0.000168	-44944.	498.5810	1.067E-05	0.000	1.532E+11	13.8073	493087.	0.000
354.000	-0.000109	-41705.	567.4778	8.977E-06	0.000	1.532E+11	9.1583	502987.	0.000
360.000	-6.028E-05	-38136.	610.4116	7.414E-06	0.000	1.532E+11	5.1530	512887.	0.000
366.000	-2.028E-05	-34382.	631.1709	5.994E-06	0.000	1.532E+11	1.7668	522787.	0.000
372.000	1.165E-05	-30563.	633.3683	4.723E-06	0.000	1.532E+11	-1.0343	532687.	0.000
378.000	3.640E-05	-26782.	620.3914	3.600E-06	0.000	1.532E+11	-3.2913	542587.	0.000
384.000	5.485E-05	-23120.	595.3654	2.623E-06	0.000	1.532E+11	-5.0506	552487.	0.000
390.000	6.787E-05	-19639.	561.1284	1.786E-06	0.000	1.532E+11	-6.3617	562387.	0.000
396.000	7.628E-05	-16387.	520.2163	1.080E-06	0.000	1.532E+11	-7.2756	572287.	0.000
402.000	8.084E-05	-13396.	474.8581	4.974E-07	0.000	1.532E+11	-7.8438	582187.	0.000
408.000	8.225E-05	-10688.	426.9777	2.581E-08	0.000	1.532E+11	-8.1163	592087.	0.000
414.000	8.115E-05	-8272.5381	378.2039	-3.454E-07	0.000	1.532E+11	-8.1416	601987.	0.000
420.000	7.810E-05	-6149.8028	329.8839	-6.278E-07	0.000	1.532E+11	-7.9650	611887.	0.000
426.000	7.361E-05	-4313.7800	283.1028	-8.327E-07	0.000	1.532E+11	-7.6287	621787.	0.000
432.000	6.811E-05	-2752.3696	238.7043	-9.710E-07	0.000	1.532E+11	-7.1708	631687.	0.000
438.000	6.196E-05	-1449.0957	197.3149	-1.053E-06	0.000	1.532E+11	-6.6256	641587.	0.000
444.000	5.547E-05	-384.3379	159.3684	-1.089E-06	0.000	1.532E+11	-6.0232	651487.	0.000
450.000	4.889E-05	463.5866	125.1306	-1.088E-06	0.000	1.532E+11	-5.3894	661387.	0.000
456.000	4.242E-05	1117.4908	94.7243	-1.057E-06	0.000	1.532E+11	-4.7461	671287.	0.000
462.000	3.621E-05	1600.5320	68.1527	-1.003E-06	0.000	1.532E+11	-4.1112	681187.	0.000
468.000	3.038E-05	1935.5637	45.3218	-9.342E-07	0.000	1.532E+11	-3.4991	691087.	0.000
474.000	2.500E-05	2144.6184	26.0618	-8.543E-07	0.000	1.532E+11	-2.9209	700987.	0.000
480.000	2.013E-05	2248.5097	10.1449	-7.683E-07	0.000	1.532E+11	-2.3847	710887.	0.000
486.000	1.578E-05	2266.5412	-2.6968	-6.799E-07	0.000	1.532E+11	-1.8959	720787.	0.000
492.000	1.197E-05	2216.3114	-12.7569	-5.921E-07	0.000	1.532E+11	-1.4575	730687.	0.000
498.000	8.676E-06	2113.6006	-20.3420	-5.074E-07	0.000	1.532E+11	-1.0709	740587.	0.000
504.000	5.880E-06	1972.3287	-25.7610	-4.274E-07	0.000	1.532E+11	-0.7355	750487.	0.000
510.000	3.547E-06	1804.5707	-29.3161	-3.534E-07	0.000	1.532E+11	-0.4496	760387.	0.000
516.000	1.639E-06	1620.6199	-31.2960	-2.864E-07	0.000	1.532E+11	-0.2104	770287.	0.000
522.000	1.111E-07	1429.0871	-31.9706	-2.266E-07	0.000	1.532E+11	-0.0144	780187.	0.000
528.000	-1.081E-06	1237.0277	-31.5869	-1.744E-07	0.000	1.532E+11	0.1423	790087.	0.000
534.000	-1.982E-06	1050.0865	-30.3669	-1.297E-07	0.000	1.532E+11	0.2643	799987.	0.000
540.000	-2.637E-06	872.6554	-28.5062	-9.202E-08	0.000	1.532E+11	0.3559	809887.	0.000
546.000	-3.087E-06	708.0341	-26.1732	-6.108E-08	0.000	1.532E+11	0.4217	819787.	0.000
552.000	-3.370E-06	558.5916	-23.5100	-3.628E-08	0.000	1.532E+11	0.4660	829687.	0.000
558.000	-3.522E-06	425.9222	-20.6336	-1.708E-08	0.000	1.532E+11	0.4928	839587.	0.000
564.000	-3.574E-06	310.9926	-17.6371	-2.574E-09	0.000	1.532E+11	0.5060	849487.	0.000
570.000	-3.553E-06	214.2775	-14.5925	7.711E-09	0.000	1.532E+11	0.5089	859387.	0.000
576.000	-3.481E-06	135.8809	-11.5527	1.457E-08	0.000	1.532E+11	0.5044	869287.	0.000
582.000	-3.378E-06	75.6415	-8.5546	1.871E-08	0.000	1.532E+11	0.4950	879187.	0.000
588.000	-3.257E-06	33.2212	-5.6218	2.084E-08	0.000	1.532E+11	0.4826	889087.	0.000
594.000	-3.128E-06	8.1747	-2.7680	2.165E-08	0.000	1.532E+11	0.4687	898987.	0.000
600.000	-2.997E-06	0.0000	0.0000	2.181E-08	0.000	1.532E+11	0.4540	454443.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
 Computed slope at pile head = -0.0020762 radians
 Maximum bending moment = 1134184. inch-lbs
 Maximum shear force = 17269. lbs
 Depth of maximum bending moment = 120.0000000 inches below pile head
 Depth of maximum shear force = 0.0000000 inches below pile head
 Number of iterations = 109
 Number of zero deflection points = 3

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Slope (BC Type 5)

Displacement of pile head = 0.250000 in
 Slope of pile head = 0.000E+00 in/in
 Axial load on pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	-2004236.	34623.	0.000	0.000	2.487E+10	0.000	0.000	0.000
6.000	0.2485	-1797110.	34409.	-0.000459	0.000	2.487E+10	-35.5467	858.1011	0.000
12.000	0.2445	-1591212.	34088.	-0.000867	0.000	2.487E+10	-71.7805	1761.5098	0.000
18.000	0.2381	-1387852.	33551.	-0.001221	0.000	2.579E+10	-107.1631	2700.0000	0.000
24.000	0.2298	-1188311.	32815.	-0.001517	0.000	2.646E+10	-137.9078	3600.0000	0.000
30.000	0.2199	-993702.	31907.	-0.001671	0.000	1.510E+11	-164.9521	4500.0000	0.000
36.000	0.2098	-805027.	30846.	-0.001707	0.000	1.515E+11	-188.8100	5400.0000	0.000
42.000	0.1995	-623145.	29651.	-0.001735	0.000	1.520E+11	-209.4230	6300.0000	0.000
48.000	0.1890	-448800.	28342.	-0.001756	0.000	1.525E+11	-226.7573	7200.0000	0.000
54.000	0.1784	-282615.	26940.	-0.001771	0.000	1.529E+11	-240.8028	8100.0000	0.000
60.000	0.1677	-125099.	25463.	-0.001779	0.000	1.532E+11	-251.5710	9000.0000	0.000
66.000	0.1570	23362.	23931.	-0.001781	0.000	1.532E+11	-259.0931	9900.0000	0.000
72.000	0.1463	162495.	22363.	-0.001777	0.000	1.532E+11	-263.4187	10800.	0.000
78.000	0.1357	292145.	20779.	-0.001768	0.000	1.529E+11	-264.6140	11700.	0.000
84.000	0.1251	412267.	19197.	-0.001754	0.000	1.526E+11	-262.7605	12600.	0.000
90.000	0.1146	522928.	17635.	-0.001736	0.000	1.523E+11	-257.9532	13500.	0.000
96.000	0.1043	624300.	16110.	-0.001713	0.000	1.520E+11	-250.2990	14400.	0.000
102.000	0.0941	716658.	14639.	-0.001687	0.000	1.518E+11	-239.9154	15300.	0.000
108.000	0.0840	800376.	13239.	-0.001657	0.000	1.515E+11	-226.9286	16200.	0.000
114.000	0.0742	875920.	11924.	-0.001624	0.000	1.513E+11	-211.4727	17100.	0.000
120.000	0.0646	943848.	10709.	-0.001588	0.000	1.511E+11	-193.2113	17956.	0.000
126.000	0.0551	1004815.	9608.6818	-0.001549	0.000	1.509E+11	-173.7200	18900.	0.000
132.000	0.0460	1059524.	8632.3654	-0.001508	0.000	1.508E+11	-151.7188	19800.	0.000
138.000	0.0371	1108765.	7793.6936	-0.001465	0.000	1.506E+11	-127.8384	20700.	0.000
144.000	0.0284	1153399.	5188.1551	-0.001313	0.000	2.661E+10	-740.6744	156487.	0.000
150.000	0.0213	1171338.	1193.8139	-0.001050	0.000	2.653E+10	-590.7727	166387.	0.000
156.000	0.0158	1167977.	-1970.9517	-0.000786	0.000	2.655E+10	-464.1492	176287.	0.000
162.000	0.0119	1147875.	-4468.9090	-0.000524	0.000	2.663E+10	-368.5033	186187.	0.000
168.000	0.009505	1114476.	-6506.2869	-0.000373	0.000	1.506E+11	-310.6227	196087.	0.000
174.000	0.007400	1069889.	-8200.3477	-0.000329	0.000	1.507E+11	-254.0643	205987.	0.000
180.000	0.005552	1016151.	-9561.8080	-0.000288	0.000	1.509E+11	-199.7559	215887.	0.000
186.000	0.003945	955217.	-10606.	-0.000249	0.000	1.511E+11	-148.4697	225787.	0.000
192.000	0.002567	888933.	-11354.	-0.000212	0.000	1.513E+11	-100.8227	235687.	0.000
198.000	0.001400	819015.	-11829.	-0.000178	0.000	1.515E+11	-57.2849	245587.	0.000
204.000	0.000427	747031.	-12055.	-0.000147	0.000	1.517E+11	-18.1837	255487.	0.000
210.000	-0.000368	674390.	-12061.	-0.000119	0.000	1.519E+11	16.2863	265387.	0.000
216.000	-0.001004	602331.	-11874.	-9.402E-05	0.000	1.521E+11	46.0471	275287.	0.000
222.000	-0.001496	531927.	-11522.	-7.167E-05	0.000	1.523E+11	71.1294	285187.	0.000
228.000	-0.001864	464081.	-11034.	-5.206E-05	0.000	1.525E+11	91.6549	295087.	0.000
234.000	-0.002121	399532.	-10435.	-3.508E-05	0.000	1.527E+11	107.8225	304987.	0.000
240.000	-0.002285	338864.	-9752.3110	-2.058E-05	0.000	1.528E+11	119.8965	314887.	0.000
246.000	-0.002368	282510.	-9008.0557	-8.383E-06	0.000	1.529E+11	128.1886	324787.	0.000
252.000	-0.002385	230769.	-8224.3497	1.682E-06	0.000	1.531E+11	133.0467	334687.	0.000
258.000	-0.002348	183817.	-7420.6776	9.804E-06	0.000	1.532E+11	134.8440	344587.	0.000
264.000	-0.002268	141719.	-6614.2450	1.618E-05	0.000	1.532E+11	133.9669	354487.	0.000
270.000	-0.002154	104442.	-5819.9377	2.100E-05	0.000	1.532E+11	130.8022	364387.	0.000
276.000	-0.002016	71874.	-5050.3363	2.445E-05	0.000	1.532E+11	125.7316	374287.	0.000
282.000	-0.001860	43832.	-4315.7713	2.671E-05	0.000	1.532E+11	119.1234	384187.	0.000
288.000	-0.001695	20079.	-3624.4202	2.797E-05	0.000	1.532E+11	111.3269	394087.	0.000
294.000	-0.001525	332.5217	-2982.4389	2.837E-05	0.000	1.532E+11	102.6668	403987.	0.000
300.000	-0.001355	-15718.	-2394.1188	2.806E-05	0.000	1.532E+11	93.4399	413887.	0.000
306.000	-0.001188	-28404.	-1862.0635	2.720E-05	0.000	1.532E+11	83.9119	423787.	0.000
312.000	-0.001028	-38069.	-1387.3775	2.590E-05	0.000	1.532E+11	74.3168	433687.	0.000
318.000	-0.000877	-45058.	-969.8614	2.427E-05	0.000	1.532E+11	64.8553	443587.	0.000
324.000	-0.000737	-49713.	-608.2079	2.242E-05	0.000	1.532E+11	55.6959	453487.	0.000
330.000	-0.000608	-52362.	-300.1939	2.042E-05	0.000	1.532E+11	46.9754	463387.	0.000
336.000	-0.000492	-53320.	-42.8650	1.835E-05	0.000	1.532E+11	38.8009	473287.	0.000
342.000	-0.000388	-52881.	167.2910	1.627E-05	0.000	1.532E+11	31.2511	483187.	0.000
348.000	-0.000297	-51317.	334.1840	1.423E-05	0.000	1.532E+11	24.3798	493087.	0.000
354.000	-0.000217	-48874.	461.9765	1.227E-05	0.000	1.532E+11	18.2176	502987.	0.000
360.000	-0.000149	-45776.	554.9549	1.041E-05	0.000	1.532E+11	12.7752	512887.	0.000
366.000	-9.234E-05	-42217.	617.4179	8.692E-06	0.000	1.532E+11	8.0458	522787.	0.000
372.000	-4.515E-05	-38369.	653.5814	7.114E-06	0.000	1.532E+11	4.0086	532687.	0.000
378.000	-6.977E-06	-34376.	667.5001	5.689E-06	0.000	1.532E+11	0.6309	542587.	0.000
384.000	2.312E-05	-30360.	663.0058	4.422E-06	0.000	1.532E+11	-2.1290	552487.	0.000
390.000	4.609E-05	-26421.	643.6594	3.310E-06	0.000	1.532E+11	-4.3198	562387.	0.000
396.000	6.284E-05	-22637.	612.7176	2.350E-06	0.000	1.532E+11	-5.9942	572287.	0.000

402.000	7.428E-05	-19069.	573.1116	1.533E-06	0.000	1.532E+11	-7.2078	582187.	0.000
408.000	8.124E-05	-15760.	527.4367	8.513E-07	0.000	1.532E+11	-8.0171	592087.	0.000
414.000	8.450E-05	-12740.	477.9517	2.933E-07	0.000	1.532E+11	-8.4779	601987.	0.000
420.000	8.476E-05	-10025.	426.5858	-1.524E-07	0.000	1.532E+11	-8.6441	611887.	0.000
426.000	8.267E-05	-7620.8622	374.9520	-4.979E-07	0.000	1.532E+11	-8.5671	621787.	0.000
432.000	7.879E-05	-5525.2814	324.3662	-7.553E-07	0.000	1.532E+11	-8.2948	631687.	0.000
438.000	7.361E-05	-3728.2862	275.8697	-9.365E-07	0.000	1.532E+11	-7.8708	641587.	0.000
444.000	6.755E-05	-2214.6206	230.2538	-1.053E-06	0.000	1.532E+11	-7.3345	651487.	0.000
450.000	6.097E-05	-964.9881	188.0872	-1.115E-06	0.000	1.532E+11	-6.7210	661387.	0.000
456.000	5.417E-05	42.6938	149.7433	-1.133E-06	0.000	1.532E+11	-6.0603	671287.	0.000
462.000	4.737E-05	832.2030	115.4270	-1.116E-06	0.000	1.532E+11	-5.3784	681187.	0.000
468.000	4.078E-05	1428.0859	85.2022	-1.072E-06	0.000	1.532E+11	-4.6966	691087.	0.000
474.000	3.451E-05	1854.8860	59.0161	-1.007E-06	0.000	1.532E+11	-4.0321	700987.	0.000
480.000	2.869E-05	2136.5206	36.7236	-9.293E-07	0.000	1.532E+11	-3.3987	710887.	0.000
486.000	2.336E-05	2295.7926	18.1087	-8.426E-07	0.000	1.532E+11	-2.8063	720787.	0.000
492.000	1.857E-05	2354.0269	2.9037	-7.515E-07	0.000	1.532E+11	-2.2620	730687.	0.000
498.000	1.434E-05	2330.8169	-9.1932	-6.598E-07	0.000	1.532E+11	-1.7702	740587.	0.000
504.000	1.066E-05	2243.8672	-18.5029	-5.702E-07	0.000	1.532E+11	-1.3330	750487.	0.000
510.000	7.499E-06	2108.9195	-25.3529	-4.850E-07	0.000	1.532E+11	-0.9504	760387.	0.000
516.000	4.837E-06	1939.7487	-30.0669	-4.057E-07	0.000	1.532E+11	-0.6209	770287.	0.000
522.000	2.630E-06	1748.2147	-32.9557	-3.335E-07	0.000	1.532E+11	-0.3420	780187.	0.000
528.000	8.343E-07	1544.3605	-34.3113	-2.691E-07	0.000	1.532E+11	-0.1099	790087.	0.000
534.000	-5.988E-07	1336.5441	-34.4013	-2.127E-07	0.000	1.532E+11	0.0798	799987.	0.000
540.000	-1.718E-06	1131.5954	-33.4662	-1.643E-07	0.000	1.532E+11	0.2319	809887.	0.000
546.000	-2.571E-06	934.9886	-31.7168	-1.239E-07	0.000	1.532E+11	0.3513	819787.	0.000
552.000	-3.204E-06	751.0230	-29.3337	-9.087E-08	0.000	1.532E+11	0.4431	829687.	0.000
558.000	-3.661E-06	583.0056	-26.4674	-6.476E-08	0.000	1.532E+11	0.5123	839587.	0.000
564.000	-3.981E-06	433.4299	-23.2393	-4.485E-08	0.000	1.532E+11	0.5637	849487.	0.000
570.000	-4.200E-06	304.1452	-19.7436	-3.041E-08	0.000	1.532E+11	0.6015	859387.	0.000
576.000	-4.346E-06	196.5138	-16.0499	-2.061E-08	0.000	1.532E+11	0.6297	869287.	0.000
582.000	-4.447E-06	111.5511	-12.2059	-1.458E-08	0.000	1.532E+11	0.6516	879187.	0.000
588.000	-4.521E-06	50.0462	-8.2411	-1.142E-08	0.000	1.532E+11	0.6700	889087.	0.000
594.000	-4.584E-06	12.6603	-4.1707	-1.019E-08	0.000	1.532E+11	0.6868	898987.	0.000
600.000	-4.644E-06	0.000	0.000	-9.940E-09	0.000	1.532E+11	0.7034	454443.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.2500000 inches
Computed slope at pile head	=	-0.0000250 radians
Maximum bending moment	=	-2004236. inch-lbs
Maximum shear force	=	34623. lbs
Depth of maximum bending moment	=	0.000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	62
Number of zero deflection points	=	3

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (BC Type 4)
 Deflection at pile head = 0.500000 in
 Moment at pile head = 0.000 in-lbs
 Axial load at pile head = 20000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	22103.	-0.004661	0.000	1.532E+11	0.000	0.000	0.000
6.000	0.4720	133179.	21977.	-0.004658	0.000	1.532E+11	-42.1991	536.3917	0.000
12.000	0.4441	264838.	21596.	-0.004651	0.000	1.532E+11	-84.7470	1144.9763	0.000
18.000	0.4162	393446.	20963.	-0.004638	0.000	1.527E+11	-126.2939	1820.5614	0.000
24.000	0.3884	517504.	20087.	-0.004620	0.000	1.523E+11	-165.7445	2560.1240	0.000
30.000	0.3608	635594.	18985.	-0.004597	0.000	1.520E+11	-201.4641	3350.4107	0.000
36.000	0.3333	746427.	17680.	-0.004570	0.000	1.517E+11	-233.5668	4204.8809	0.000
42.000	0.3059	848849.	16199.	-0.004538	0.000	1.514E+11	-260.0000	5098.8848	0.000
48.000	0.2788	941907.	14573.	-0.004503	0.000	1.511E+11	-281.9395	6067.1128	0.000
54.000	0.2519	1024811.	12829.	-0.004464	0.000	1.509E+11	-299.3865	7130.6080	0.000

60.000	0.2253	1096931.	11003.	-0.004421	0.000	1.506E+11	-309.4588	8242.8183	0.000
66.000	0.1989	1157906.	9125.3146	-0.004269	0.000	2.659E+10	-316.3923	9546.1997	0.000
72.000	0.1740	1207459.	7236.3761	-0.004001	0.000	2.639E+10	-313.2539	10800.	0.000
78.000	0.1508	1245703.	5414.1570	-0.003721	0.000	2.625E+10	-294.1525	11700.	0.000
84.000	0.1294	1273323.	3716.6464	-0.003433	0.000	2.615E+10	-271.6844	12600.	0.000
90.000	0.1097	1291126.	2161.4389	-0.003138	0.000	2.609E+10	-246.7182	13500.	0.000
96.000	0.0917	1300013.	760.9500	-0.002840	0.000	2.606E+10	-220.1115	14400.	0.000
102.000	0.0756	1300940.	-477.4915	-0.002541	0.000	2.606E+10	-192.7024	15300.	0.000
108.000	0.0612	1294893.	-1551.5082	-0.002242	0.000	2.608E+10	-165.3032	16200.	0.000
114.000	0.0487	1282860.	-2463.5021	-0.001946	0.000	2.612E+10	-138.6948	17100.	0.000
120.000	0.0379	1265798.	-3220.4577	-0.001653	0.000	2.618E+10	-113.6237	18000.	0.000
126.000	0.0288	1244611.	-3833.7264	-0.001366	0.000	2.625E+10	-90.7992	18900.	0.000
132.000	0.0215	1220121.	-4318.8008	-0.001085	0.000	2.634E+10	-70.8923	19800.	0.000
138.000	0.0158	1193046.	-4695.0835	-0.000811	0.000	2.645E+10	-54.5353	20700.	0.000
144.000	0.0118	1163974.	-5778.5363	-0.000544	0.000	2.656E+10	-306.6156	156487.	0.000
150.000	0.009283	1123834.	-7470.6299	-0.000381	0.000	1.081E+11	-257.4156	166387.	0.000
156.000	0.007183	1074418.	-8876.0195	-0.000329	0.000	1.507E+11	-211.0476	176287.	0.000
162.000	0.005340	1017400.	-10006.	-0.000287	0.000	1.509E+11	-165.7147	186187.	0.000
168.000	0.003740	954412.	-10870.	-0.000248	0.000	1.511E+11	-122.2335	196087.	0.000
174.000	0.002367	887018.	-11481.	-0.000211	0.000	1.513E+11	-81.2786	205987.	0.000
180.000	0.001206	816694.	-11855.	-0.000177	0.000	1.515E+11	-43.3889	215887.	0.000
186.000	0.000238	744804.	-12012.	-0.000147	0.000	1.517E+11	-8.9695	225787.	0.000
192.000	-0.000552	672588.	-11974.	-0.000119	0.000	1.519E+11	21.7007	235687.	0.000
198.000	-0.001184	601150.	-11763.	-9.338E-05	0.000	1.521E+11	48.4560	245587.	0.000
204.000	-0.001673	531453.	-11404.	-7.105E-05	0.000	1.523E+11	71.2371	255487.	0.000
210.000	-0.002036	464319.	-10920.	-5.145E-05	0.000	1.525E+11	90.0765	265387.	0.000
216.000	-0.002290	400425.	-10335.	-3.445E-05	0.000	1.527E+11	105.0857	275287.	0.000
222.000	-0.002450	340312.	-9670.0017	-1.990E-05	0.000	1.528E+11	116.4455	285187.	0.000
228.000	-0.002529	284389.	-8947.4989	-7.641E-06	0.000	1.529E+11	124.3888	295087.	0.000
234.000	-0.002542	232944.	-8186.7604	2.504E-06	0.000	1.531E+11	129.1907	304987.	0.000
240.000	-0.002499	186148.	-7405.7137	1.071E-05	0.000	1.532E+11	131.1582	314887.	0.000
246.000	-0.002413	144072.	-6620.3847	1.718E-05	0.000	1.532E+11	130.6182	324787.	0.000
252.000	-0.002293	106699.	-5844.8130	2.209E-05	0.000	1.532E+11	127.9057	334687.	0.000
258.000	-0.002148	73929.	-5091.0232	2.563E-05	0.000	1.532E+11	123.3575	344587.	0.000
264.000	-0.001985	45600.	-4369.0373	2.797E-05	0.000	1.532E+11	117.3044	354487.	0.000
270.000	-0.001812	21494.	-3686.9303	2.928E-05	0.000	1.532E+11	110.0646	364387.	0.000
276.000	-0.001634	1350.2050	-3050.9217	2.973E-05	0.000	1.532E+11	101.9383	374287.	0.000
282.000	-0.001456	-15124.	-2465.4958	2.946E-05	0.000	1.532E+11	93.2036	384187.	0.000
288.000	-0.001281	-28243.	-1933.5451	2.861E-05	0.000	1.532E+11	84.1132	394087.	0.000
294.000	-0.001112	-38333.	-1456.5287	2.730E-05	0.000	1.532E+11	74.8922	403987.	0.000
300.000	-0.000953	-45728.	-1034.6409	2.566E-05	0.000	1.532E+11	65.7370	413887.	0.000
306.000	-0.000804	-50755.	-666.9855	2.377E-05	0.000	1.532E+11	56.8148	423787.	0.000
312.000	-0.000668	-53737.	-351.7484	2.172E-05	0.000	1.532E+11	48.2642	433687.	0.000
318.000	-0.000544	-54981.	-86.3674	1.960E-05	0.000	1.532E+11	40.1961	443587.	0.000
324.000	-0.000433	-54778.	132.3060	1.745E-05	0.000	1.532E+11	32.6950	453487.	0.000
330.000	-0.000334	-53398.	307.8546	1.533E-05	0.000	1.532E+11	25.8212	463387.	0.000
336.000	-0.000249	-51088.	444.1566	1.328E-05	0.000	1.532E+11	19.6128	473287.	0.000
342.000	-0.000175	-48071.	545.2596	1.134E-05	0.000	1.532E+11	14.0882	483187.	0.000
348.000	-0.000113	-44547.	615.2699	9.528E-06	0.000	1.532E+11	9.2486	493087.	0.000
354.000	-6.060E-05	-40690.	658.2570	7.859E-06	0.000	1.532E+11	5.0804	502987.	0.000
360.000	-1.823E-05	-36650.	678.1727	6.345E-06	0.000	1.532E+11	1.5581	512887.	0.000
366.000	1.554E-05	-32554.	678.7857	4.990E-06	0.000	1.532E+11	-1.3538	522787.	0.000
372.000	4.165E-05	-28506.	663.6302	3.795E-06	0.000	1.532E+11	-3.6981	532687.	0.000
378.000	6.107E-05	-24591.	635.9674	2.755E-06	0.000	1.532E+11	-5.5229	542587.	0.000
384.000	7.471E-05	-20875.	598.7596	1.865E-06	0.000	1.532E+11	-6.8797	552487.	0.000
390.000	8.345E-05	-17406.	554.6546	1.115E-06	0.000	1.532E+11	-7.8219	562387.	0.000
396.000	8.810E-05	-14219.	505.9801	4.961E-07	0.000	1.532E+11	-8.4029	572287.	0.000
402.000	8.940E-05	-11335.	454.7465	-4.194E-09	0.000	1.532E+11	-8.6750	582187.	0.000
408.000	8.805E-05	-8762.4629	402.6556	-3.977E-07	0.000	1.532E+11	-8.6886	592087.	0.000
414.000	8.463E-05	-6502.8566	351.1159	-6.966E-07	0.000	1.532E+11	-8.4912	601987.	0.000
420.000	7.969E-05	-4548.9044	301.2619	-9.129E-07	0.000	1.532E+11	-8.1268	611887.	0.000
426.000	7.368E-05	-2887.4944	253.9760	-1.059E-06	0.000	1.532E+11	-7.6352	621787.	0.000
432.000	6.699E-05	-1500.9388	209.9131	-1.144E-06	0.000	1.532E+11	-7.0524	631687.	0.000
438.000	5.994E-05	-368.2629	169.5264	-1.181E-06	0.000	1.532E+11	-6.4098	641587.	0.000
444.000	5.281E-05	533.6613	133.0932	-1.178E-06	0.000	1.532E+11	-5.7346	651487.	0.000
450.000	4.581E-05	1229.1380	100.7405	-1.143E-06	0.000	1.532E+11	-5.0496	661387.	0.000
456.000	3.909E-05	1742.8217	72.4699	-1.085E-06	0.000	1.532E+11	-4.3739	671287.	0.000
462.000	3.279E-05	2099.0368	48.1807	-1.010E-06	0.000	1.532E+11	-3.7225	681187.	0.000
468.000	2.698E-05	2321.2324	27.6920	-9.234E-07	0.000	1.532E+11	-3.1071	691087.	0.000
474.000	2.171E-05	2431.5629	10.7623	-8.303E-07	0.000	1.532E+11	-2.5362	700987.	0.000
480.000	1.701E-05	2450.5798	-2.8930	-7.347E-07	0.000	1.532E+11	-2.0156	710887.	0.000
486.000	1.289E-05	2397.0238	-13.5857	-6.398E-07	0.000	1.532E+11	-1.5487	720787.	0.000
492.000	9.334E-06	2287.7044	-21.6420	-5.481E-07	0.000	1.532E+11	-1.1367	730687.	0.000
498.000	6.315E-06	2137.4513	-27.3905	-4.614E-07	0.000	1.532E+11	-0.7794	740587.	0.000
504.000	3.797E-06	1959.1291	-31.1536	-3.812E-07	0.000	1.532E+11	-0.4749	750487.	0.000
510.000	1.740E-06	1763.6995	-33.2399	-3.083E-07	0.000	1.532E+11	-0.2205	760387.	0.000
516.000	9.704E-08	1560.3237	-33.9388	-2.433E-07	0.000	1.532E+11	-0.0125	770287.	0.000
522.000	-1.179E-06	1356.4921	-33.5162	-1.862E-07	0.000	1.532E+11	0.1533	780187.	0.000
528.000	-2.137E-06	1158.1742	-32.2121	-1.369E-07	0.000	1.532E+11	0.2814	790087.	0.000
534.000	-2.822E-06	969.9802	-30.2391	-9.525E-08	0.000	1.532E+11	0.3763	799987.	0.000

540.000	-3.280E-06	795.3279	-27.7821	-6.069E-08	0.000	1.532E+11	0.4427	809887.	0.000
546.000	-3.550E-06	636.6093	-24.9987	-3.265E-08	0.000	1.532E+11	0.4851	819787.	0.000
552.000	-3.672E-06	495.3512	-22.0203	-1.049E-08	0.000	1.532E+11	0.5077	829687.	0.000
558.000	-3.676E-06	372.3681	-18.9539	6.502E-09	0.000	1.532E+11	0.5144	839587.	0.000
564.000	-3.594E-06	267.9025	-15.8843	1.904E-08	0.000	1.532E+11	0.5088	849487.	0.000
570.000	-3.448E-06	181.7516	-12.8765	2.784E-08	0.000	1.532E+11	0.4938	859387.	0.000
576.000	-3.259E-06	113.3779	-9.9783	3.362E-08	0.000	1.532E+11	0.4722	869287.	0.000
582.000	-3.044E-06	62.0038	-7.2233	3.705E-08	0.000	1.532E+11	0.4461	879187.	0.000
588.000	-2.815E-06	26.6889	-4.6338	3.879E-08	0.000	1.532E+11	0.4171	889087.	0.000
594.000	-2.579E-06	6.3893	-2.2233	3.944E-08	0.000	1.532E+11	0.3864	898987.	0.000
600.000	-2.342E-06	0.0000	0.0000	3.956E-08	0.000	1.532E+11	0.3547	454443.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	0.500000	inches
Computed slope at pile head	=	-0.0046611	radians
Maximum bending moment	=	1300940.	inch-lbs
Maximum shear force	=	22103.	lbs
Depth of maximum bending moment	=	102.000000	inches below pile head
Depth of maximum shear force	=	0.000000	inches below pile head
Number of iterations	=	55	
Number of zero deflection points	=	3	

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 4

Pile-head conditions are Displacement and Slope (BC Type 5)

Displacement of pile head	=	0.500000	in
Slope of pile head	=	0.000E+00	in/in
Axial load on pile head	=	20000.000	lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi *	Bending Stiffness in-lb/rad.	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	-3104791.	49061.	0.000	0.000	2.253E+10	0.000	0.000	0.000
6.000	0.4975	-2811147.	48804.	-0.000788	0.000	2.253E+10	-42.7968	516.1228	0.000
12.000	0.4905	-2518955.	48414.	-0.001498	0.000	2.253E+10	-87.1253	1065.6528	0.000
18.000	0.4795	-2229818.	47758.	-0.002109	0.000	2.422E+10	-131.5187	1645.5364	0.000
24.000	0.4652	-1945350.	46840.	-0.002623	0.000	2.462E+10	-174.6726	2252.7059	0.000
30.000	0.4481	-1667113.	45671.	-0.003059	0.000	2.511E+10	-214.8149	2876.4953	0.000
36.000	0.4285	-1396562.	44271.	-0.003421	0.000	2.576E+10	-251.8996	3526.9477	0.000
42.000	0.4070	-1135040.	42664.	-0.003628	0.000	7.533E+10	-283.7157	4182.2382	0.000
48.000	0.3850	-883721.	40878.	-0.003691	0.000	1.513E+11	-311.7927	4859.2594	0.000
54.000	0.3627	-643622.	38933.	-0.003721	0.000	1.520E+11	-336.3329	5563.2668	0.000
60.000	0.3403	-415628.	36861.	-0.003742	0.000	1.526E+11	-354.2609	6245.5668	0.000
66.000	0.3178	-200386.	34689.	-0.003754	0.000	1.532E+11	-369.9476	6983.8867	0.000
72.000	0.2953	1538.9704	32443.	-0.003758	0.000	1.532E+11	-378.7906	7696.9071	0.000
78.000	0.2727	189828.	30158.	-0.003754	0.000	1.532E+11	-382.8599	8422.7992	0.000
84.000	0.2502	364332.	27863.	-0.003744	0.000	1.528E+11	-381.9182	9157.7343	0.000
90.000	0.2278	525087.	25599.	-0.003726	0.000	1.523E+11	-372.7678	9817.9434	0.000
96.000	0.2055	672418.	23376.	-0.003702	0.000	1.519E+11	-368.2422	10751.	0.000
102.000	0.1834	806490.	21203.	-0.003673	0.000	1.515E+11	-356.0857	11651.	0.000
108.000	0.1614	927740.	19127.	-0.003639	0.000	1.512E+11	-335.8702	12483.	0.000
114.000	0.1397	1036893.	17198.	-0.003600	0.000	1.508E+11	-307.4084	13202.	0.000
120.000	0.1182	1134975.	15463.	-0.003452	0.000	2.669E+10	-270.8774	13746.	0.000
126.000	0.0983	1223274.	13876.	-0.003185	0.000	2.633E+10	-258.0247	15750.	0.000
132.000	0.0800	1302251.	12379.	-0.002895	0.000	2.605E+10	-241.0605	18075.	0.000
138.000	0.0635	1372514.	10998.	-0.002586	0.000	2.583E+10	-219.2466	20700.	0.000
144.000	0.0490	1434846.	6506.9413	-0.002259	0.000	2.566E+10	-1277.7240	156487.	0.000
150.000	0.0364	1451140.	-358.1494	-0.001921	0.000	2.561E+10	-1010.6396	166387.	0.000
156.000	0.0259	1431009.	-5676.2997	-0.001584	0.000	2.567E+10	-762.0772	176287.	0.000
162.000	0.0174	1383404.	-9585.9017	-0.001256	0.000	2.580E+10	-541.1235	186187.	0.000
168.000	0.0109	1316280.	-12275.	-0.000943	0.000	2.601E+10	-355.2021	196087.	0.000
174.000	0.006121	1236332.	-13971.	-0.000650	0.000	2.628E+10	-210.1553	205987.	0.000
180.000	0.003068	1148785.	-14933.	-0.000380	0.000	2.663E+10	-110.3779	215887.	0.000
186.000	0.001567	1057233.	-15441.	-0.000229	0.000	1.508E+11	-58.9701	225787.	0.000
192.000	0.000319	963552.	-15655.	-0.000189	0.000	1.511E+11	-12.5264	235687.	0.000

198.000	-0.000700	869417.	-15607.	-0.000153	0.000	1.513E+11	28.6375	245587.	0.000
204.000	-0.001511	776308.	-15328.	-0.000120	0.000	1.516E+11	64.3556	255487.	0.000
210.000	-0.002139	685512.	-14851.	-9.102E-05	0.000	1.519E+11	94.5996	265387.	0.000
216.000	-0.002604	598119.	-14209.	-6.569E-05	0.000	1.521E+11	119.4581	275287.	0.000
222.000	-0.002927	515023.	-13433.	-4.375E-05	0.000	1.523E+11	139.1235	285187.	0.000
228.000	-0.003129	436934.	-12554.	-2.502E-05	0.000	1.526E+11	153.8705	295087.	0.000
234.000	-0.003227	364381.	-11600.	-9.270E-06	0.000	1.528E+11	164.0421	304987.	0.000
240.000	-0.003240	297733.	-10598.	3.727E-06	0.000	1.529E+11	170.0331	314887.	0.000
246.000	-0.003182	237204.	-9571.1293	1.422E-05	0.000	1.530E+11	172.2712	324787.	0.000
252.000	-0.003069	182876.	-8540.6933	2.245E-05	0.000	1.532E+11	171.2075	334687.	0.000
258.000	-0.002913	134710.	-7525.1632	2.867E-05	0.000	1.532E+11	167.3026	344587.	0.000
264.000	-0.002725	92567.	-6540.2184	3.312E-05	0.000	1.532E+11	161.0124	354487.	0.000
270.000	-0.002516	56220.	-5598.8364	3.603E-05	0.000	1.532E+11	152.7816	364387.	0.000
276.000	-0.002293	25372.	-4711.3860	3.763E-05	0.000	1.532E+11	143.0352	374287.	0.000
282.000	-0.002064	-326.0614	-3885.7643	3.812E-05	0.000	1.532E+11	132.1720	384187.	0.000
288.000	-0.001836	-21266.	-3127.5715	3.769E-05	0.000	1.532E+11	120.5589	394087.	0.000
294.000	-0.001612	-37866.	-2440.3115	3.654E-05	0.000	1.532E+11	108.5277	403987.	0.000
300.000	-0.001397	-50559.	-1825.6120	3.481E-05	0.000	1.532E+11	96.3721	413887.	0.000
306.000	-0.001194	-59782.	-1283.4557	3.265E-05	0.000	1.532E+11	84.3467	423787.	0.000
312.000	-0.001005	-65968.	-812.4145	3.018E-05	0.000	1.532E+11	72.6670	433687.	0.000
318.000	-0.000832	-69538.	-409.8836	2.753E-05	0.000	1.532E+11	61.5100	443587.	0.000
324.000	-0.000675	-70893.	-72.3066	2.478E-05	0.000	1.532E+11	51.0157	453487.	0.000
330.000	-0.000535	-70412.	204.6096	2.201E-05	0.000	1.532E+11	41.2897	463387.	0.000
336.000	-0.000411	-68443.	425.6949	1.930E-05	0.000	1.532E+11	32.4054	473287.	0.000
342.000	-0.000303	-65308.	596.1339	1.668E-05	0.000	1.532E+11	24.4076	483187.	0.000
348.000	-0.000211	-61294.	721.3021	1.420E-05	0.000	1.532E+11	17.3152	493087.	0.000
354.000	-0.000133	-56656.	806.6231	1.189E-05	0.000	1.532E+11	11.1252	502987.	0.000
360.000	-6.803E-05	-51617.	857.4454	9.769E-06	0.000	1.532E+11	5.8156	512887.	0.000
366.000	-1.549E-05	-46369.	878.9401	7.850E-06	0.000	1.532E+11	1.3493	522787.	0.000
372.000	2.617E-05	-41071.	876.0184	6.138E-06	0.000	1.532E+11	-2.3232	532687.	0.000
378.000	5.817E-05	-35858.	853.2672	4.632E-06	0.000	1.532E+11	-5.2606	542587.	0.000
384.000	8.175E-05	-30833.	814.9023	3.326E-06	0.000	1.532E+11	-7.5268	552487.	0.000
390.000	9.809E-05	-26080.	764.7378	2.212E-06	0.000	1.532E+11	-9.1938	562387.	0.000
396.000	0.000108	-21657.	706.1688	1.277E-06	0.000	1.532E+11	-10.3292	572287.	0.000
402.000	0.000113	-17606.	642.1672	5.085E-07	0.000	1.532E+11	-11.0047	582187.	0.000
408.000	0.000114	-13951.	575.2868	-1.093E-07	0.000	1.532E+11	-11.2888	592087.	0.000
414.000	0.000112	-10703.	507.6785	-5.920E-07	0.000	1.532E+11	-11.2473	601987.	0.000
420.000	0.000107	-7858.9020	441.1112	-9.554E-07	0.000	1.532E+11	-10.9418	611887.	0.000
426.000	0.000101	-5409.0542	376.9985	-1.215E-06	0.000	1.532E+11	-10.4291	621787.	0.000
432.000	9.271E-05	-3334.6283	316.4294	-1.386E-06	0.000	1.532E+11	-9.7606	631687.	0.000
438.000	8.400E-05	-1611.5688	260.2009	-1.483E-06	0.000	1.532E+11	-8.9822	641587.	0.000
444.000	7.491E-05	-211.8611	208.8525	-1.519E-06	0.000	1.532E+11	-8.1339	651487.	0.000
450.000	6.577E-05	895.0257	162.7001	-1.506E-06	0.000	1.532E+11	-7.2502	661387.	0.000
456.000	5.684E-05	1740.9014	121.8701	-1.454E-06	0.000	1.532E+11	-6.3598	671287.	0.000
462.000	4.833E-05	2357.8156	86.3314	-1.374E-06	0.000	1.532E+11	-5.4864	681187.	0.000
468.000	4.036E-05	2777.2079	55.9260	-1.273E-06	0.000	1.532E+11	-4.6487	691087.	0.000
474.000	3.305E-05	3029.2338	30.3971	-1.159E-06	0.000	1.532E+11	-3.8609	700987.	0.000
480.000	2.645E-05	3142.2517	9.4142	-1.039E-06	0.000	1.532E+11	-3.1334	710887.	0.000
486.000	2.058E-05	3142.4536	-7.4040	-9.156E-07	0.000	1.532E+11	-2.4727	720787.	0.000
492.000	1.546E-05	3053.6235	-20.4699	-7.943E-07	0.000	1.532E+11	-1.8826	730687.	0.000
498.000	1.105E-05	2897.0055	-30.2101	-6.778E-07	0.000	1.532E+11	-1.3641	740587.	0.000
504.000	7.325E-06	2691.2647	-37.0514	-5.684E-07	0.000	1.532E+11	-0.9163	750487.	0.000
510.000	4.231E-06	2452.5253	-41.4090	-4.677E-07	0.000	1.532E+11	-0.5362	760387.	0.000
516.000	1.714E-06	2194.4693	-43.6777	-3.767E-07	0.000	1.532E+11	-0.2200	770287.	0.000
522.000	-2.887E-07	1928.4836	-44.2250	-2.960E-07	0.000	1.532E+11	0.0375	780187.	0.000
528.000	-1.838E-06	1663.8404	-43.3863	-2.256E-07	0.000	1.532E+11	0.2420	790087.	0.000
534.000	-2.996E-06	1407.9022	-41.4618	-1.655E-07	0.000	1.532E+11	0.3995	799987.	0.000
540.000	-3.824E-06	1166.3388	-38.7149	-1.151E-07	0.000	1.532E+11	0.5161	809887.	0.000
546.000	-4.377E-06	943.3505	-35.3724	-7.377E-08	0.000	1.532E+11	0.5981	819787.	0.000
552.000	-4.709E-06	741.8876	-31.6248	-4.078E-08	0.000	1.532E+11	0.6512	829687.	0.000
558.000	-4.866E-06	563.8629	-27.6284	-1.521E-08	0.000	1.532E+11	0.6810	839587.	0.000
564.000	-4.892E-06	410.3505	-23.5078	3.862E-09	0.000	1.532E+11	0.6925	849487.	0.000
570.000	-4.820E-06	281.7678	-19.3590	1.741E-08	0.000	1.532E+11	0.6904	859387.	0.000
576.000	-4.683E-06	178.0378	-15.2526	2.642E-08	0.000	1.532E+11	0.6784	869287.	0.000
582.000	-4.503E-06	98.7299	-11.2378	3.183E-08	0.000	1.532E+11	0.6599	879187.	0.000
588.000	-4.301E-06	43.1761	-7.3465	3.461E-08	0.000	1.532E+11	0.6373	889087.	0.000
594.000	-4.088E-06	10.5635	-3.5973	3.566E-08	0.000	1.532E+11	0.6125	898987.	0.000
600.000	-3.873E-06	0.0000	0.0000	3.587E-08	0.000	1.532E+11	0.5866	454443.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships. The above values of total stress are computed for combined axial stress and do not equal the actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 4:

Pile-head deflection = 0.500000 inches

Computed slope at pile head = -0.0000391 radians
 Maximum bending moment = -3104791. inch-lbs
 Maximum shear force = 49061. lbs
 Depth of maximum bending moment = 0.000000 inches below pile head
 Depth of maximum shear force = 0.000000 inches below pile head
 Number of iterations = 60
 Number of zero deflection points = 3

 Summary of Pile Response(s)

Definitions of Pile-Head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
 Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
 Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
 Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
 Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Condition 1	Condition 2	Axial Load	Pile-Head Deflection	Maximum Moment	Maximum Shear
		V(lbs) or y(inches)	in-lb, rad., or in-lb/rad.	lbs	inches	in-lbs	lbs
1	4	y = 0.2500	M = 0.000	20000.	0.25000000	1134184.	17269.
0.00000000							
2	5	y = 0.2500	S = 0.000	20000.	0.25000000	-2004236.	34623.
0.00000000							
3	4	y = 0.5000	M = 0.000	20000.	0.50000000	1300940.	22103.
0.00000000							
4	5	y = 0.5000	S = 0.000	20000.	0.50000000	-3104791.	49061.
0.00000000							

The analysis ended normally.

APPENDIX D

RESPONSE TO CGS'S JUNE 30, 2015 REVIEW





Leighton Consulting, Inc.

A LEIGHTON GROUP COMPANY

Thursday, January 07, 2016

Project No. 10274.015

Beverly Hills Unified School District
Facilities Planning Office
241 South Moreno Drive
Beverly Hills, California 90212-3639

Attention: Ms. Barbara Beach
Administrative Assistant II

**Subject: Response to California Geologic Survey's (CGS's)
June 30, 2015 Engineering Geology and Seismology Review
El Rodeo K-8 School, Seismic Mitigation
605 Whittier Drive
Beverly Hills, Los Angeles County, California
CGS Application No. 03-CGS1921**

This letter is written in response to the California Geologic Survey's (CGS's) June 30, 2015 *Engineering Geology and Seismology Review* of Leighton Consulting, Inc.'s March 2, 2015 *Geohazard Report* for proposed seismic resistance improvements to be constructed within Buildings A, C and D at the current active El Rodeo K-8 School campus in Beverly Hills, Los Angeles County, California.

CGS COMMENTS AND RESPONSES

In this letter, we address items described by the CGS reviewer as "*Additional information is requested.*" We do not address or restate items noted as "*Adequately addressed*" or "*Not applicable.*" A copy of CGS's review letter is attached as Appendix A, *CGS's June 30, 2015 Review Letter* (10 pages). This response does **not** address *Fault Hazard Assessment* issues, which will be addressed in a separate document signed and stamped by a California licensed Certified Engineering Geologist (CEG). Therefore, in the following subsections, we restate CGS's Geohazard comments requiring additional information followed by our response for each.

Comment 6: *“Subsurface Geology: Based on the subsurface data collected at the site, the campus is underlain by artificial fill and Holocene to Pleistocene alluvium. Additional subsurface exploration is required to evaluate the soils underlying the proposed structural rehabilitation improvements.”*

Comment 6 Response: Additional subsurface exploration has been performed in two rounds of subsurface exploration (test pits and borings) under and adjacent existing buildings to be strengthened with new shear walls; as documented in the attached January 7, 2016 *Geotechnical Exploration* report.

Comment 8: *“Active Faulting & Coseismic Deformation Across Site: Additional information is requested. See attached enclosure”*

Comment 8 Response: Potential for active surface faulting through this site is addressed in a separate report signed and stamped by a California licensed Certified Engineering Geologist (CEG). This response and report does not address faulting.

Comment 10: *“Geotechnical Testing of Representative Samples: The consultants performed limited laboratory testing on bulk samples collected from their [fault study] core borings. Additional site-specific testing may be necessary for the specific improvements proposed at the site. The consultants should provide these data once they are available.”*

Comment 10 Response: Additional subsurface exploration has been performed in two rounds of subsurface exploration (test pits and borings), in addition to commensurate geotechnical laboratory testing as documented in Appendix B in the attached January 7, 2016 *Geotechnical Exploration* report.

Comment 11: *“Geological Consideration of Grading Plans and Foundation Plans: It appears final design plans are not available at this time. They should review any plans once they are finalized in light of the subsurface geotechnical data collected for the site.”*

Comment 11 Response: Neither new structures nor grading are proposed, but new shear walls are proposed to be constructed within existing Buildings A, C and D at this El Rodeo school campus. New shear walls are proposed to strengthen existing bearing walls, with new foundations abutting existing foundations, bearing at same adjacent elevation. Primarily spread footings are proposed with cast-in-drilled-hole (CIDH) concrete friction piles drilled to support grade beams spanning across existing storm drains under Building C. **No** interior or exterior grade changes are proposed.



Comment 12: “Evaluation of Historic Seismicity: *Marginally adequate*. *The consultants discuss historical seismicity in the vicinity of the school site, but do not discuss any onsite effects from significant historical earthquakes. CGS notes publically available strong-motion data indicates a site approximately 1,500 feet southwest of the school experienced a peak ground acceleration of 0.35g from the Northridge earthquake (6.7M_w) in January 1994. In the future, the consultants should provide a discussion of any effects (e.g. ground failure, structural damage, etc.) from earthquakes, especially strong earthquakes, in the immediate vicinity of the site.”*

Comment 12 Response: *Acknowledged and agreed*. We are aware of significant damage in the area as a result of the Northridge Earthquake, including failure of nearby I-10 bridges farther away from the epicenter than this campus. However, we are unaware of any El Rodeo School campus damage resulting from the Northridge Earthquake. The reviewer’s quoted measured ground accelerations were less-than (<) what current USGS/ASCE 7-10 (2013 California Building Code) design procedures require, as presented in our March 2, 2015 *Geohazard Report* and current report. Therefore, there is no change in seismic design parameters.

Comment 14: “General Procedure Seismic Parameters: *The consultants also provide Earthquake Hazard Levels BSE-1E and BSE-2E parameters. However, CGS notes the values provided are too low and not considered reasonable. Also, it appears the consultants used the methodology described in ASCE 41-13, which is not applicable under the 2013 CBC. The consultants should review the methodologies described in Chapter 34 of the 2013 CBC and ASCE 41-06 and provide the appropriate BSE-1 and BSE-2 parameters. Because a site-specific ground motion analysis is required for this project, the BSE values should be determined from the final MCE_R spectrum (see Item 16).”*

Comment 14 Response: Basic Safety Earthquake (BSE) -1 and -2 were calculated based on ASCE 41-06, as listed in Table 4 within our January 7, 2016 *Geotechnical Exploration* report. These have a probability of exceedance within 50 years of 10- and 2-percent, respectively. In accordance with Section 3417.5 of the 2013 California Building Code (January 1, 2014 errata), BSE-2 is to be set the same as the Risk Targeted Maximum Considered Earthquake (MCE_R) from ASCE 7-10, using Next Generation Attenuation (NGA) relationships as presented in Appendix C of our January 7, 2016 *Geotechnical Exploration* report.



Comment 19: “Geologic Setting for Occurrence of Seismically Induced Liquefaction: *The consultants characterize the general subsurface soil conditions at the campus and conclude there is little to no potential for liquefaction due to the relatively high density of the alluvial soils below the historic high groundwater level. This conclusion appears reasonable; however, once specific improvements are planned, the consultants should review the subsurface data collected as part of the site-specific investigation (see Item 6) and comment on liquefaction potential.”*

Comment 19 Response: Shallow groundwater has not been encountered at this site. Benedict Canyon Wash deposits encountered below fill soils has Standard Penetration Test (SPT) N-values greater-than (>) 30, and therefore, this native strata is not prone to liquefaction.

Comment 30: “Corrosive/Reactive Geochemistry of the Geologic Subgrade: *Marginally adequate. The consultants did not perform corrosion testing on the onsite soils, but note surficial soils at nearby Beverly High School were highly corrosive. They should perform site-specific testing of the onsite soils prior to construction.”*

Comment 30 Response: Corrosivity test results are presented in Appendix B within the attached January 7, 2016 *Geotechnical Exploration* report. Tested site soil sulfate concentrations were very low, such that conventional Type II Portland cement can be used for new shear wall foundations. However, tested soil minimum electrical resistivity was relatively low in site clayey soils, indicative of corrosive soils on site. Recommendations for mitigating ferrous metal corrosion in contact with site soils were provided in our attached October 29, 2015 *Geotechnical Exploration* report.



CLOSURE

We appreciate the opportunity to be of additional service to the Beverly Hills Unified School District. If you have any questions or if we can be of further service, please contact us at your convenience at **866-LEIGHTON**, directly at the phone extensions or e-mail addresses listed below.

Respectfully submitted,

LEIGHTON CONSULTING, INC.



Joe Roe
Joe Roe, PG, CEG 2456
Associate Geologist
Extension 4263, jroe@leightongroup.com



Thomas Benson Jr.
Thomas C. Benson, Jr, GE 2091
President and CEO
Extension 8771, tbenson@leightonconsulting.com

JAR/TCB:tcb

- Distribution:
- (1) addressee
 - (2) California Geological Survey (Sacramento)
Attn.: Ms. Jennifer Thornburg, CEG, Senior Engineering Geologist
 - (1) California Geological Survey (Los Angeles)
Attn.: Mr. Brian Olson, CEG, Engineering Geologist

Enclosures: Appendix A, CGS's June 30, 2015 Review Letter (10 pages)



Leighton

APPENDIX A

CGS'S JUNE 30, 2015 REVIEW LETTER





DEPARTMENT OF CONSERVATION

CALIFORNIA GEOLOGICAL SURVEY

SCHOOL REVIEW UNIT • 801 K STREET, MS 12-31 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 324-7324 • FAX 916 / 445-3334 • TDD 916 / 324-2555 • WEB SITE conservation.ca.gov/cgs

Dr. Gary Woods
District Superintendent
Beverly Hills Unified School District
255 S. Laskey Drive
Beverly Hills, CA 90212

June 30, 2015

**Subject: Engineering Geology and Seismology Review for
El Rodeo Elementary School – Seismic Mitigation
605 Whittier Drive, Beverly Hills, CA
CGS Application No. 03-CGS1921**

Dear Dr. Woods:

In accordance with your request and transmittal of documents on March 16, 2015, the California Geological Survey (CGS) reviewed the engineering geology and seismology aspects of the consulting reports prepared for El Rodeo Elementary School. It is our understanding future improvements are planned for the campus, but no definite site plan was provided. This review was performed in accordance with Title 24, California Code of Regulations, 2013 California Building Code (CBC) and followed CGS Note 48 guidelines. We reviewed the following reports:

- 1. Fault Hazard Assessment, El Rodeo K8 School, 655 Whittier Drive, Beverly Hills, CA:** Leighton Consulting, Inc., 17781 Cowan, Irvine, CA, 92614-6009, dated February 27, 2015, Project No. 10274.006, 21 pages, six appendices, four plates, and four figures attached.
- 2. Geohazard Report, El Rodeo K-8 School, 655 Whittier Drive, Beverly Hills, Los Angeles, CA:** Leighton Consulting, Inc., 17781 Cowan, Irvine, CA, 92614-6009, dated March 2, 2015, Project No. 10274.006, 33 pages, six appendices, three plates, and seven figures attached.

Based on our review of the data and reports presented by Leighton Consulting, Inc., the consultants provide a thorough and well-documented assessment of the engineering geology issues at the site. However, additional information is needed to adequately address the seismic and geologic issues at the site. Specifically, the consultants should perform a subsurface investigation at the location of the proposed improvements and perform any necessary laboratory testing and analysis to support their geotechnical recommendations.

Basis for Eligibility for Seismic Mitigation Program Funding

We understand this project is currently in Phase I (Verification of Eligibility) of the Seismic Mitigation Program (SMP), and it appears the potential for seismic shaking forms the basis for eligibility for funding under this program. Therefore, we have reviewed the consultants' seismic design parameters in accordance with DSA Procedure 08-03 (errata dated 5-22-2014). The consultants report the following General Procedure seismic parameters derived from a map-based analysis in accordance with the methods prescribed in Chapter 11 of ASCE 7-10:

$$S_S = 2.276g \text{ and } S_1 = 0.835g$$
$$S_{MS} = 2.276g \text{ and } S_{M1} = 1.252g$$
$$S_{DS} = 1.517g \text{ and } S_{D1} = 0.835g$$

These values appear reasonable.

The consultants also provide Earthquake Hazard Levels BSE-1 and BSE-2 parameters, but since these parameters are not used to evaluation eligibility for funding under the SMP program, they are discussed in the attached checklist comments.

Report 1 documents an investigation to evaluate the presence or absence of active faulting associated with the Santa Monica fault (SMF) at the school site. The consultants reviewed published geologic maps, literature, and aerial photos, as well as a recently completed fault investigation report for a proposed development at 9900 Wilshire Boulevard (Geocon, 2014). Geocon suggested the presence of three active northeast-trending faults to the north and west of the 9900 Wilshire property, which they projected toward the school site based on a transect of closely spaced CPTs and borings along Wilshire Boulevard and a noted groundwater barrier at an adjacent gas station.

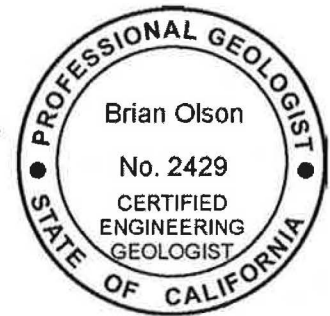
The consultants provided CGS with a geohazards report for the campus (Report 2), which evaluated the potential geologic and seismic hazards that may impact the site. However, this report does not address any specific planned improvements at the site. It is our understanding the current project involves structural rehabilitation of Buildings A through D and structural alterations to Building E. Consequently, a geotechnical investigation should be performed to evaluate the subsurface conditions in the vicinity of the proposed rehabilitation (see attached checklist for further discussion).

In conclusion, *the engineering geology and seismology issues at this site are not adequately assessed in the referenced report.* Additional information should be provided as requested. The consultants are reminded one copy of all supplemental documents should be submitted directly to CGS, and should include the CGS application number. If you have any further questions about this review letter, please contact the reviewer at (213) 239-0876.

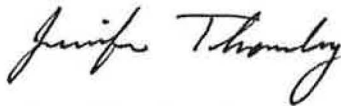
Respectfully submitted,



Brian Olson
Engineering Geologist
PG 7923, CEG 2429
brian.olson@conservation.ca.gov



Concur:



Jennifer Thornburg
Senior Engineering Geologist
PG 5476, CEG 2240



Enclosures:

Note 48 Checklist Review Comments

Keyed to: *Note 48 - Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*

Discussion of Fault Hazard Assessment

Copies to:

Ted Beckwith, *Senior Structural Engineer*

Division of State Architect, 700 North Alameda Street, Suite 5-500, Los Angeles, CA 930012

Joe Roe, *Certified Engineering Geologist*

Leighton Consulting, Inc., 17781 Cowan, Irvine, CA, 92614

Thomas Benson, Jr., *Registered Geotechnical Engineer*

Leighton Consulting, Inc., 10532 Acacia Street, #B-6, Rancho Cucamonga, CA, 91730

Note 48 Checklist Review Comments

In the numbered paragraphs below, this review is keyed to the paragraph numbers of California Geological Survey Note 48 (October, 2013 edition), *Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*.

Project Location

1. Site Location Map, Street Address, County Name: Adequately addressed.
2. Plot Plan with Exploration Data with Building Footprint: Adequately addressed. The consultants provide a site plan with a topographic base showing the locations of their exploratory trenches, cone penetrometer tests (CPTs), and continuous core borings drilled at the site and along Wilshire Boulevard to the south of the campus.
3. Site Coordinates: Adequately addressed. Latitude and Longitude provided in report: 34.0676°N, 118.4158°W.

Engineering Geology/Site Characterization

4. Regional Geology and Regional Fault Maps: Adequately addressed.
5. Geologic Map of Site: Adequately addressed.
6. Subsurface Geology: **Additional information is requested.** Based on the subsurface data collected at the site, the campus is underlain by artificial fill and Holocene to Pleistocene alluvium. Additional subsurface exploration is required to evaluate the soils underlying the proposed structural rehabilitation improvements.

The consultants report perched groundwater was encountered as shallow as 20 feet deep, but they indicate static groundwater was encountered greater than 125 feet deep in their borings.

7. Geologic Cross Sections: Adequately addressed. The consultants provide two geologic cross sections (A and B) depicting the subsurface information collected from their CPT/boring transects, as well as subsurface data collected offsite by others.
8. Active Faulting & Coseismic Deformation Across Site: **Additional information is requested.** *See attached enclosure.*
9. Geologic Hazard Zones (Liquefaction & Landslides): Adequately addressed. The consultants report this campus is not located within a Zone of Required Investigation for liquefaction or seismically induced landsliding established by the California Geological Survey.
10. Geotechnical Testing of Representative Samples: **Additional information is requested.** The consultants performed limited laboratory testing on bulk samples collected from their core borings. Additional site-specific testing may be necessary for the specific improvements proposed at the site. The consultants should provide these data once they are available.
11. Geological Consideration of Grading Plans and Foundation Plans: **Additional information is requested.** It appears final design plans are not available at this time. They should review any plans once they are finalized in light of the subsurface geotechnical data collected for the site.

Seismology & Calculation of Earthquake Ground Motion

12. Evaluation of Historic Seismicity: **Marginally adequate.** The consultants discuss historical seismicity in the vicinity of the school site, but do not discuss any onsite effects from significant historical earthquakes. CGS notes publically available strong-motion data indicates a site approximately 1,500 feet southwest of the school **experienced a peak ground acceleration of 0.35g from the Northridge earthquake (6.7Mw) in January 1994.** In the future, the consultants should provide a discussion of any effects (e.g. ground failure, structural damage, etc.) from earthquakes, especially strong earthquakes, in the immediate vicinity of the site.
13. Classify the Geologic Subgrade (Site Class): Adequately addressed. The consultants classify the site soil profile as Site Class D, Stiff Soil, based on the subsurface data collected from their borings and CPTs.
14. General Procedure Seismic Parameters: **Additional information is requested.** The consultants report the following parameters derived from a map-based analysis:
 $S_S = 2.276g$ and $S_1 = 0.835g$
 $S_{MS} = 2.276g$ and $S_{M1} = 1.252g$
 $S_{DS} = 1.517g$ and $S_{D1} = 0.835g$

The consultants also provide Earthquake Hazard Levels BSE-1E and BSE-2E parameters. However, CGS notes the values provided are too low and not considered reasonable. Also, it appears **the consultants used the methodology described in ASCE 41-13, which is not applicable under the 2013 CBC.** The consultants should review the methodologies described in Chapter 34 of the 2013 CBC and ASCE 41-06 and provide the appropriate BSE-1 and BSE-2 parameters. Because a site-specific ground motion analysis is required for this project, the BSE values should be determined from the final MCE_R spectrum (see Item 16).

15. Seismic Design Category: Not addressed. CGS notes the value of S_1 is greater than 0.75g and, therefore, the site will be assigned to **Seismic Design Category E**, per Section 1613A.3.5 of the 2013 CBC.
16. Site-Specific Ground Motion Analysis: Adequately addressed. The consultants provide a site-specific ground motion analysis as required by the 2013 CBC for sites classified as Seismic Design Category E. They utilize acceptable Next Generation Attenuation relationships, risk coefficients, and a shear wave velocity of 270 meters per second. Their probabilistic and deterministic MCE spectra appear reasonable, based on comparison with the California Geological Survey State-Wide Model (Petersen and others, 2008). The consultants' **site-specific seismic design parameters are $S_{DS}=1.334g$ and $S_{D1}=1.162g$.** These values are considered reasonable and in accordance with ASCE 7-10.
17. Deaggregated Seismic Source Parameters: Adequately addressed.
18. Time-Histories of Earthquake Ground Motion: Not applicable.

Liquefaction/Seismic Settlement Analysis

19. Geologic Setting for Occurrence of Seismically Induced Liquefaction: **Additional information may be needed.** The consultants characterize the general subsurface soil

conditions at the campus and conclude there is little to no potential for liquefaction due to the relatively high density of the alluvial soils below the historic high groundwater level. This conclusion appears reasonable; however, once specific improvements are planned, the consultants should review the subsurface data collected as part of the site-specific investigation (see Item 6) and comment on liquefaction potential.

20. Seismic Settlement Calculations: Not applicable.
21. Other Liquefaction Effects: Not applicable.
22. Mitigation Options for Liquefaction: Not applicable.

Slope Stability Analyses

23. Geologic Setting for Occurrence of Landslides: Adequately addressed. The consultants state no slopes exist at the campus.
24. Determination of Static and Dynamic Strength Parameters: Not applicable.
25. Determination of Pseudo-Static Coefficient (K_{eq}): Not applicable.
26. Identify Critical Slip Surfaces for Static and Dynamic Analyses: Not applicable.
27. Dynamic Site Conditions: Not applicable.
28. Mitigation Options/Other Slope Failure: Not applicable.

Other Geologic Hazards or Adverse Site Conditions

29. Expansive Soils: Adequately addressed. The consultants report the onsite soils have "very low" expansion potential based on laboratory testing. They also note similar soils were observed and tested at nearby Beverly Hills High School, which had up to "medium" expansion potential.
30. Corrosive/Reactive Geochemistry of the Geologic Subgrade: Marginally adequate. The consultants did not perform corrosion testing on the onsite soils, but note surficial soils at nearby Beverly Hills High School were highly corrosive. **They should perform site-specific testing of the onsite soils prior to construction.**
31. Conditional Geologic Assessment: Selected geologic hazards addressed by the consultants are listed below:
 - C. Flooding: Adequately addressed. According to FEMA FIRM documents the site is not located in a 100-year flood zone.
 - D. Tsunami and Seiche: Adequately addressed. The consultants report the site is located away from the coast or any large inland body of water.

Report Documentation

32. Geology, Seismology, and Geotechnical References: Adequately addressed.
33. Certified Engineering Geologist: Adequately addressed.
Joe Roe, Certified Engineering Geologist #2456
34. Registered Geotechnical Engineer: Adequately addressed.
Thomas C. Benson, Jr., Registered Geotechnical Engineer #2091

Discussion of Fault Hazard Assessment

The SMF zone is expressed as a series of *en echelon* scarps in the Quaternary alluvial fan deposits emanating from the Santa Monica Mountains. It extends easterly from the coast approximately 12 km through urbanized areas of Santa Monica, Beverly Hills, and western Los Angeles. The SMF is generally steeply north-dipping and exhibits left-lateral reverse oblique motion. Many investigators believe the primary fault is a low-angle blind thrust and the surface scarps are associated with sub-vertical hanging wall normal faults.

The subject fault study (Report 1) was performed to assess the potential presence of active faulting associated with the SMF at the El Rodeo school campus. The easternmost geomorphic feature associated with the SMF is a southeast-facing scarp extending from the Los Angeles Country Club property through the central portion of the El Rodeo campus.

Previous Studies

Limited geologic studies reveal both active and inactive strands of the SMF. Dolan et al. (2000) identified an active strand of the SMF in a fault trench excavated at the base of a scarp on the Veteran's Administration Hospital property, approximately 2.5 miles southwest of the site. On the adjacent property, located at 9900 Wilshire Boulevard, Geocon (2014) performed a fault investigation and inferred five northerly trending faults, which they concluded were inactive. Based on a boring/CPT transect along Wilshire Boulevard and a groundwater barrier noted on the gas station property located at 9988 Wilshire Boulevard, Geocon inferred five closely-spaced faults trending northeasterly through the gas station, across Wilshire Boulevard, and toward the El Rodeo school site. Based on the subsurface data from their boring/CPT transect, they concluded these faults were likely active as defined by the State of California.

Fault Investigation and Discussion

As part of the current fault investigation, the consultants excavated and geologically logged two fault trenches (FT-1 and FT-2) and drilled 16 continuous core borings (CB-1 through CB-16) to evaluate the fault rupture hazard for the campus. Detailed observations were made of the soil types, textures and colors, as well as any fractures or other discontinuities. The consultants also provide interpretations of depositional environment and estimated ages of the sedimentary deposits and paleosols exposed in the trenches and core samples. Representatives from CGS visited the site on July 2, 2014 to observe the fault trenches and review the initial core samples from borings CB-1 through CB-8. CGS representatives later returned to the school site on August 1, 2014 to review rock core samples taken from additional borings drilled along the Wilshire Boulevard median, offsite to the south.

Fault Trenches (FT-1 and FT-2)

The consultants excavated two fault trenches in the southern portion of the campus. The trenches ranged from 105 feet (FT-1) to 125 feet long (FT-2) and exposed native alluvial deposits in the western portions and artificial fill in the eastern. Soil age evaluation performed by the consultants indicates the alluvium exposed in these trenches is Pleistocene in age. Minor fractures lined with calcium carbonate were documented within the alluvial sediments, but no evidence of active faulting was observed. This conclusion appears reasonable given the data provided in the

referenced reports. CGS does note these trenches are limited in lateral extent and only expose suitable alluvial sediments in their western portions, so the best quality subsurface data shows an absence of faulting beneath a very limited portion of the school campus.

A-A' (Wilshire Boulevard transect)

In their investigation for 9900 Wilshire, Geocon (2014) drilled five core borings (B1-B through B5-B) and advanced nine CPTs (CPT-1 through CPT-9) along the Wilshire Boulevard center median. For the current campus fault investigation the consultants drilled nine additional continuous core borings along Wilshire Boulevard. The consultants used all this data to generate cross section A-A'. The consultants' profile essentially follows the same alignment as Transect B-B' from the Geocon fault study, but extends slightly farther west. Along this transect, Geocon postulated the existence of three active faults (Faults G, H, and I) as depicted on Leighton's cross section.

The consultants identified several paleosols and other stratigraphic markers in their core borings, and reviewed the Geocon boring logs for similarly described markers, which they depict and correlate on their cross section. Based on these data the consultants show Geocon Faults G and H do not appear to exist where they were mapped. Instead they infer a total of four faults (Faults 1 through 4) along this cross section, which they conclude are not active because of "the presence of unbroken sediments and soils, dated by relative means to be at least 34,000 to much greater than 100,000 years old near the surface" above these faults. The interpretation of continuous unbroken stratigraphy within the various Pleistocene deposits overlying these particular faults is a valid explanation of the data. However, our review of the subsurface data suggests these deposits do not appear continuous and unbroken in other areas. Specifically, it appears the data provided in the boring and CPT logs for cross section A-A' indicate a noticeable lack of correlation of stratigraphic markers between paired borings CB-11/B4-B and CB-12/B3-B. Various unique sedimentary marker units, which are relatively persistent elsewhere yet cannot be correlated between these borings include the following:

1. A relatively thick package of clay and silt with distinctive "oxidation-reduction banding" is described between 20 and 30 feet deep in borings CB-11, B4-B, and B5-B, but was not encountered in borings CB-12 or B3-B.
2. At a depth of approximately 30 feet a laminated sandy clay unit with manganese oxide nodules is described in CB-12 and B3-B and labeled on the cross section, but does not correlate with any units at this similar depth in CB-11 or B4-B.
3. A persistent clayey sand and gravel unit, which extends for at least 135 feet laterally from CB-9 to B4-B, was not encountered in CB-12 or B3-B.
4. At about 35 feet deep, another section of "oxidation-reduction banding" was encountered in CB-11 and B4-B and labeled on cross section A-A', but this distinct banding was not observed in CB-12 or B3-B.
5. Between a depth of 40 and 50 feet another thick clayey sand and gravel unit was encountered in CPT-3, CB-11, and B4-B, which cannot be correlated to CB-12.
6. Another distinct "oxidation-reduction banding" unit up to 8-feet thick was encountered at approximately 65 feet deep in CB-11 and B4-B, which cannot be correlated to CB-12.

Additionally, Geocon's active Fault I is mapped between these borings on their transect based on lack of stratigraphic correlations and the trend of the groundwater barrier identified at the gas station across Wilshire Boulevard. *For these reasons, CGS is concerned these distinct lateral discontinuities in the data provided may be related to fault offset and additional subsurface investigation is requested.*

B-B' (western transect)

The consultants also construct a northwest trending profile along the western edge of the campus, across Wilshire Boulevard, and along the western edge of the gas station and 9900 Wilshire property. The section provided in Appendix C of Report 1 includes subsurface data from four of Leighton's continuous core borings (CB-1, CB-2, CB-6, and CB-8) ranging from 125 to 160 feet deep as well as eight monitoring wells, and thirteen of Geocon's borings. At the subject site, they postulate the existence of a fault (Fault 1 on Plate 3 of Report 1) between CB-2 and CB-8, but state continuous and unbroken stratigraphic markers in the shallower Pleistocene deposits overlying this fault demonstrate it is not active. The subsurface data does not appear to support this conclusion. For example, the "chocolate brown soil", which is laterally continuous between CB-1, CB-6, and CB-2, does not appear in boring CB-8. At the depth where this soil is projected onto CB-8 on the cross section, there is a section of reddish brown clayey sand with gravel, not chocolate brown clay. Similarly, the sediments above the brown soil in CB-2 consist of sandy clay with occasional thin-bedded gravels and the correlative section in CB-8 shows silty to clayey gravelly sand. Lastly, the base of a paleosol in CB-2 noted on the cross section is apparently down-dropped at least 3 feet in CB-8. *This lack of correlation may suggest the fault inferred between these borings extends higher up in the section than depicted on the cross section. Therefore, the conclusion that this fault is not active is not yet clearly demonstrated.* Additionally, the correlations made by the consultants between CB-8 and MW-5 do not appear reasonable either. The base of the Benedict Canyon Wash unit (i.e. BCW₁) is defined by an erosional surface with a basal gravel deposit and the consultants project this contact through the middle of a 12-foot thick clay unit in MW-5. Similarly, the contact between BCW₂ deposits and the top of the Cheviot Hills deposits (CHD) is defined as a basal sand and gravel layer over a moderately developed reddish brown clayey paleosol. On the cross section this contact is projected through a section of very dark grayish brown silty to gravelly sand. *It appears there is also a lack of correlation between these borings, which may be related to fault offset.*

Using the data from 9900 Wilshire coupled with the limited sampling data from the monitoring well logs at the gas station, the consultants give possible interpretations to explain the lack of stratigraphic continuity in central portion of the cross section (i.e. near the gas station). The first assumes a 5 to 7 degree dip at the top of the Cheviot Hills Deposits unit, which allows this horizon to match up with a similar formational contact described in the 9900 Wilshire subsurface data. CGS notes this interpretation does not appear to be supported by the sample descriptions from the monitoring well soil samples, nor does it explain the significant and abrupt difference in groundwater elevation at the gas station site. The second interpretation postulates two faults below the gas station, which define an apparent graben. This model appears more reasonable. They correlate these two faults with Faults 2 and 3 identified in section A-A', and determined them to be inactive, since they also form an apparent graben. However, CGS notes the trend created by connecting these two faults with Faults 2 and 3 is oblique to the groundwater barrier, which does

not seem consistent with the data. *CGS notes if faulting exists between CB-11 and CB-12 (see above), and if the gas station faults are projected toward that area, the resulting fault trend would roughly parallel the groundwater barrier and align with the topographic escarpment on the adjacent golf course property, which seems more geologically reasonable. Consequently, it may not be appropriate to conclude the groundwater barrier faults are inactive without additional supporting data.*

Conclusions

Based on our review of the data provided in the report and our observations at the site, the consultants do not provide sufficient evidence to preclude active faulting at the site. The consultants excavated two fault trenches at the site, which exposed unfaulted alluvium but were not laterally extensive enough to cover the entire campus. Subsequently, the consultants drilled several closely-spaced borings along Wilshire Boulevard and supplemented these data with subsurface data collected by Geocon during their investigation for the 9900 Wilshire property to the south. The consultants also drilled borings along the western edge of the campus to screen for faults in this area. CGS notes these borings were very-widely-spaced, which is not typical for fault investigations; however, based on our review of the core samples from these borings in the field, the presence of several continuous and correlative layers that appear unbroken, and given the location of this portion of the campus above and behind the geomorphic escarpment, the conclusion that no active faults cross the portion of the campus between borings CB-1 and CB-2 appears reasonable. In other areas, although, CGS observed some significant marker beds and geologic contacts were not consistent or continuous between borings CB-2/CB-8, CB-8/MW-5, and CB-11/CB-12, which may be indicative of faulting. **The consultants should review their subsurface data and discuss the potential for faulting in these areas. Additional subsurface data may be necessary to adequately address the potential for active faulting.**