

FOR CONTRACT NO.: 07-259014

INFORMATION HANDOUT

MATERIALS INFORMATION

GEOTECHNICAL REPORT

Geotechnical Information for
Four Infiltration Trenches and One Austin Vault Sand Filter

ROUTE: 07-LA-710-PM 6.7/R15.9

DEPARTMENT OF TRANSPORTATION

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. AMIR ELSHARIEF, STE
Office of Design D.
District 7

Date: February 22, 2013

File: 07-LA-710-PM 6.7/R15.9

Attn: Mr. Dan Pham

0713000045 (EA-07-259011)

LA River Metal TMDL

From: DEPARTMENT OF TRANSPORTATION
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design – South 1
Branch C

Subject: Geotechnical Information for Four Infiltration Trenches and One Austin Vault Sand Filter

1.0 Introduction

Corridor Stormwater Management Study for Route 710, prepared by CH2MHILL, dated April 2009, identified locations for the placement of infiltration devices, after evaluation of preliminary opportunities for placement of Best Management Practices (BMPs). Your office is in need of a detailed site selection for some of the locations.

Pursuant to the request by your office on August 21, 2012, the Office of Geotechnical Design South 1 (OGDS-1), Branch C has conducted a site specific geotechnical investigation to provide the subsurface conditions, infiltration rates and the Seasonal High Ground Water Elevation (SHGWE) for the proposed locations for four infiltration trenches (IFT) and one Austin Vault Sand Filter (AVSF), in the city of Long Beach, Los Angeles County.

2.0 Site Description

The locations of four infiltration trenches (IFT) and one Austin Vault Sand Filter (AVSD) are as follows:

- Location 2 (IFT) is located near the NB I-710 on ramp from WB Willow Street.
- Location 4 (IFT) is located inside the SB I-710 loop off ramp to EB Wardlow Road.
- Location 6 (IFT) is located inside the SB I-710 loop off ramp to EB I-405.
- Location 9 (IFT) is located near the SB I-710 off ramp to NB I-405.
- Location 15 (AVSF) is located near the SB I-710 on ramp from WB Long Beach Blvd.

3.0 Pertinent Literature Review

A review of the following resources provided information for the geotechnical investigation.

- Corridor Stormwater Management Study for I-710 from Pacific Coast Highway to I-105, prepared by CH2MHILL, dated April 2009.
- Layout Plan sheets L-2, L-3, L-4, L-5, L-9, provided by D7-Design D Office.

4.0 Field Investigation

A field investigation consisting of hollow stem auger borings and percolation testing was performed in the locations of four IFTs and the AVSF from December 4, 2012 to January 8, 2013. During the investigation, eight exploratory borings were drilled: A-12-001 and A-12-002 were drilled at Location 2; A-12-003 was drilled at Location 4; A-12-004 was drilled at Location 9; A-12-005 was drilled at Location 6; A-12-006, A-12-007 and A-12-008 were drilled at Location 15. Information on borings is summarized in Table 1. Three shallow hollow-stem auger borings at each IFT location were drilled to a depth of approximately one foot below the invert levels for the percolation tests.

The boring was advanced utilizing a 6-inch diameter hollow stem auger with a CME-75 drill rig equipped with an automatic hammer. Boring was logged and sampled using a Standard Penetration Test (SPT) sampler at selected intervals. The SPT was performed in accordance with ASTM Test Method D1586 using a standard 1.4 inch I.D. sampler with a 140-lb hammer dropped 30-inch. Following drilling, sampling and logging, the boring was backfilled with bentonite chips and soil cuttings.

Percolation Tests were conducted by Geotechnical Support and Percolation Test Results are attached as Appendix 1 of this report. Boring Records for the recent field investigation are attached as Appendix 2 of this report.

Table 1 – Summary of Subsurface Exploration

Location	Boring No.	Date Drilled	Station and Offset (ft) from CL 710 FWY	Surface Elevation (ft)	Total Depth (ft)	Groundwater Elevation (ft)
Location 2 (IFT)	A-12-001	12/4/12	STA.425+02.34 X 158.43' RT	22.2	51.5	-11.9
	A-12-002	12/5/12	STA. 427+89.13 X 112.92' RT	22.9	41.5	1.6
	P-12-001	12/5/12	STA.425+23.53 X 154.16' RT	22.7	10.0	-
	P-12-002	12/5/12	STA.426+72.47 X 127.72' RT	23.1	10.0	-
	P-12-003	12/5/12	STA. 427+70.59 X 116.87' RT	23.4	10.0	-
Location 4 (IFT)	A-12-003	12/11/12	STA.478+71.16 X 150.52' LT	29.1	51.5	8.9
	P-12-004	12/11/12	STA.478+72.67 X 136.19' LT	30.5	14.5	-
	P-12-005	12/11/12	STA.479+06.94 X 182.72'LT	28.8	14.5	-
	P-12-006	12/11/12	STA.478+53.04 X 170.60' LT	28.4	14.5	-
Location 6 (IFT)	A-12-005	12/18/12	STA.494+81.92 X 175.77' LT	31.8	41.5	-0.3
	P-12-010	12/19/12	STA. 494+83.00 X 189.34' LT	32.4	10.0	-
	P-12-011	12/19/12	STA. 495+04.97 X 229.32' LT	32.8	10.0	-
	P-12-012	12/19/12	STA.495+17.02 X 253.35" LT	32.3	10.0	-
Location 9 (IFT)	A-12-004	12/12/12	STA.504+19.11 X 176.97' LT	31.3	51.5	-6.7
	P-12-007	12/12/12	STA.504+20.89 X 161.46' LT	32.2	10.0	-
	P-12-008	12/12/12	STA.503+88.31 X 193.96' LT	32.1	10.0	-
	P-12-009	12/12/12	STA.503+91.67 X 234.51LT	32.0	10.0	-
Location 15 (AVSF)	A-12-006	12/19/12	STA. 630+90.82 X 158.15' LT	45.9	51.5	5.7
	A-12-007	12/19/12	STA. 631+62.40 X 124.79' LT	44.0	31.5	-
	A-12-008	12/19/12	STA.630+42.70 X 102.36' LT	45.8	31.5	-

Note: Vertical datum NAVD 88

5.0 Laboratory Testing Program

The following laboratory tests were performed on some selected samples obtained from the borings:

- Particle Size analyses (Sieve Analysis and Mechanical Analysis)
- Atterberg Limits
- Corrosion

Laboratory tests were performed in accordance with California Test Methods and/or ASTM procedures (see Table 2 below), at the Material Laboratories in Fontana and Sacramento.

Table 2 – Laboratory Test Methods

Test	Standard
Sieve Analysis	CTM 202
Mechanical Analysis	CTM 203
Atterberg Limits	CTM 204
Corrosion – Resistivity, pH	CTM 643
Corrosion – Chloride content	CTM 422
Corrosion – Sulfate content	CTM 417

6.0 Site Geology

The entire project is directly underlain by recent Holocene age alluvium. This alluvium was deposited primarily by floods emanating from the Los Angeles River and the San Gabriel River and from the mountains and hills to the north of the Coastal Plain. Depth to bedrock or bedrock like material should be estimated at greater than 400 feet for this project. The 710 Freeway is primarily built at grade or with thin fills (less than 5 feet) in the project area except for the fill embankments constructed for on and off ramps and bridge approaches for the local street overpasses. The proposed locations for the drainage improvements for this project are located entirely at grade or in small cuts. No fill was encountered at the five project locations for this investigation.

6.1 Seismicity

The proposed project site is not within an Alquist-Priolo Earthquake Fault Zone. An analysis was performed to recommend ground motion parameters. This analysis was performed in accordance with requirements specified in the Caltrans' 2010 Seismic Design Criteria (SDC, Version 1.6, November 2010) and utilizing the "Caltrans ARS Online" and other tools available at the internet sites. The average shear wave velocity (V_{s30}) for the upper 100 feet of the subsurface profile was estimated to be about 350.0 m/sec (1148 ft/sec) based on the SPT values obtained during the investigation.

The closest fault to the site is the Newport-Inglewood Fault oriented in a northwest-southeast striking direction as a vertical strike slip fault. This fault is located and crosses the freeway approximately 0.4 to 0.5 miles north of the 710/405 Interchange. Another nearby fault is the Compton-Los Alamitos Blind Thrust Fault oriented in a northwest-southeast striking direction dipping 20 degrees toward the northeast directly under the site. The distance to the fault plane is at approximately 5 miles depth below the proposed project (Caltrans ARS Online Version 2.1.5, 2012).

The design Peak Ground Acceleration (PGA) for the project site is 0.6g.

6.2 Liquefaction Potential

Liquefaction is a phenomenon in which loose, saturated, fine grained granular soils behave like a fluid when subjected to high intensity ground shaking. Liquefaction occurs when three general conditions exist: (1) shallow ground water (2) low-density, fine, sandy soils and (3) high-intensity ground motion. Saturated, loose and medium dense, near surface cohesionless soils exhibit the greatest liquefaction potential, while dense cohesionless soil and cohesive soil exhibit the lowest or negligible liquefaction potential. Effects of liquefaction on ground surface include sand boils, settlement and lateral spreading.

Groundwater depth encountered during the field investigation is more than 10 feet below the invert elevation of four IFTs and more than 20 feet below the invert of AVSF. Therefore, the liquefaction potential of the soil surrounding them can be considered as low. The soils inside the IFTs may be saturated during wet season and therefore, there is a potential for localized liquefaction.

7.0 Subsurface Condition and Groundwater

Eight soil borings were drilled and sampled for geological and geotechnical information at five locations for this project. The borings were conducted between December 4 and 19, 2012. Maximum boring depth ranged from 31.5 to 51.5 feet. The borings were drilled by Caltrans Office of Drilling Services. Stationing, offsets and elevations of the soil borings were determined by a survey and the boring information will be provided on Boring Record Sheets as Appendix 2 of this report. Each of the five locations and subsurface profile are discussed below.

7.1 Location 2

The native material encountered is composed primarily of medium dense sands, silt and sand mixtures and sand and clay mixtures to the full depth explored (51.5 and 41.5 feet) except for thin (1 to 3 foot thick) lenses of sandy lean clay, lean clay with sand and sandy silty clay from approximately 16.5 to 18 and 27 to 28.5 foot depths (approximately elevations 4.2 to 5.7 and -4.8 to -6.3) in boring A-12-001 and from approximately 12 to 13.5 and 21 to 24 foot depth (approximately elevation 9.4 to 10.9 and 1.9 to -1.1) in boring A-12-002. Groundwater was encountered at depths of 34.1 and 21.3 feet in borings A-12-001 and A-12-002 (elevations -11.9 and +1.6 feet).

7.2 Location 4

The native material encountered in boring A-12-003 is composed primarily of medium dense sands, silt and sand mixtures and sand and clay mixtures to the full depth explored (51.5 feet) except for a 5 foot thick sandy silty clay lens from approximately 9 to 14 foot depth (approximately elevation 15 to 20). Groundwater was encountered at depth of 20.2 feet (elevation 8.9 feet).

7.3 Location 6

The native material encountered in boring A-12-005 is composed primarily of medium dense sands, silt and sand mixtures and sand and clay mixtures to the full depth explored (41.5 feet). Groundwater was encountered at depth of 32.1 feet (elevation -0.3 feet).

7.4 Location 9

The native material encountered in boring A-12-004 is composed primarily of medium dense sands, silt and sand mixtures and sand and clay mixtures to the full depth explored (51.5 feet) except for two lenses of sandy lean clay from approximately 22.5 to 24 and 25.5 to 27 foot depth (approximately elevations 7.3 to 8.8 and 4.3 to 5.8). Groundwater was encountered at depth of 38.0 feet (elevation -6.7 feet).

7.5 Location 15

The native material encountered in the three borings (A-12-006, 007, 008) is composed primarily of medium dense sands, silt and sand mixtures and sand and clay mixtures to the full depth explored (51.5, 31.5, 31.5 feet) except for a 1.5 foot thick sandy silty clay lens from approximately 30 to 31.5

foot depth (approximately elevation 12.5 to 14) in boring A-12-007. Groundwater was encountered at depth of 40.2 feet (elevation 5.7 feet) in boring A-12-006.

8.0 Corrosion Evaluation

Composite soil samples from the exploratory boring A-12-006, A-12-007 and A-12-008 at the AVSF location was tested at the Southern Regional Transportation Laboratory in Fontana for corrosion potential. A summary of corrosion test results is presented in Table 3.

Table 3 - Corrosion Test Summary-Composite Sample

Boring No.	Sample Depth	pH	Minimum Resistivity (Ohm-Cm)	Sulfate* Content (PPM)	Chloride* Content (PPM)
A-12-006	0'-25'	7.75	980	1250	86
A-12-007	0'-25'	7.79	900	1600	140
A-12-008	0'-25'	7.84	970	1180	41

* The Corrosion Technology Section policy states that if the minimum resistivity is greater than 1000 Ohm-Cm the sample is considered to be non-corrosive and testing to determine sulfate and chloride is not performed.

Caltrans currently considers a site to be corrosive if one or more of the following conditions exist for the representative soil and/or water samples taken at the site: Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

Based on the results of corrosion analyses, the site is considered non-corrosive to metal and reinforced concrete.

9.0 Bearing Capacity

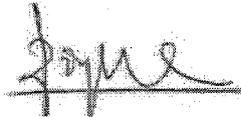
Allowable bearing capacity of the mat foundation of AVSF at Location 15 is 20 ksf, after applying a Factor of Safety 3.0. We noted that LRFD design methodology has not been adopted for the design of AVSF.

10.0 Construction Consideration

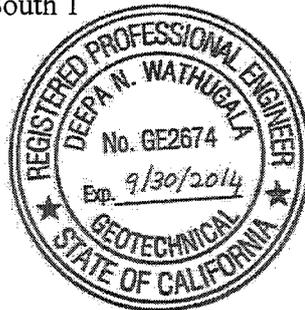
For excavation for AVSF at Location 15, when there is no space for 1:1 slope for sides, temporary shoring will be needed. The subsurface soil at this location is medium dense silty sand with estimated internal friction angle 32 degrees. The ground water level is more than 20 feet below the bottom of AVSF (bottom of elevation is approximately +31 feet and ground water elevation at this location was measured as +5.7 feet during the field investigation). Therefore, ground water is not anticipated during excavation.

If you have any questions or comments, please call Deepa Wathugala at (213) 620-2134, or Ted Liu at or (213) 620-2136.

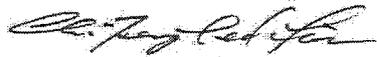
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APPENDIX 1
PERCOLATION TEST RESULTS

Calculation of Infiltration Rate from Field Percolation Tests

Test Pit ID	Test Date	Perc Rate (in/hr)	d1 (ft)	d1 (inches)	Δd (inches)	DIA (inches)	Rf	Infiltration Rate (in/hr)
P-12-001	12/6/2012	243.00	2.70	32.40	16.20	6.00	9.10	26.70
P-12-002	12/6/2012	1152.00	2.50	30.00	19.20	6.00	7.80	147.69
P-12-003	12/6/2012	162.00	2.50	30.00	21.60	6.00	7.40	21.89
P-12-004	12/12/2012	64.08	4.40	52.80	10.68	6.00	16.82	3.81
P-12-005	12/19/2012	4.80	4.30	51.60	2.40	6.00	17.80	0.27
P-12-006	12/19/2012	1.20	4.57	54.84	0.60	6.00	19.18	0.06
P-12-007	12/18/2012	262.80	2.80	33.60	8.76	6.00	10.74	24.47
P-12-008	12/18/2012	338.40	2.80	33.60	11.28	6.00	10.32	32.79
P-12-009	12/18/2012	117.60	2.80	33.60	11.76	6.00	10.24	11.48
P-12-010	1/8/2013	35.76	4.08	48.96	17.88	6.00	14.34	2.49
P-12-011	1/8/2013	583.20	3.96	47.52	9.72	6.00	15.22	38.32
P-12-012	1/8/2013	698.40	3.67	44.04	11.64	6.00	13.74	50.83

Boring/Excavation Percolation Testing Field Log

Date: 12-06-2012

Project Location: Loc 2 Willow/710	Boring/Test Number: P-12-001
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of Casing: 1.5"
Tested By: Donovan Brooks	Depth of Boring: 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table: 21'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP: 7.7'
Levellogger Serial No.: 2008660	PVC Casing Stickup (above OG): 0.20'
Depth to Bottom of Levellogger (from Top of Casing): 10.20'	Depth of Starting Water Level (from Top of Casing): 7.70' Initial Water Depth (d1): 2.70'
Start Time for Pre-Soak: 07:45am	Water Remaining in Boring (Y/N): No
Start Time for Standard: 10:12am	Standard Time Interval Between Readings: 4 min

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	10:17am	4	7.70	18.00	270.00	Silty sand (SM)
	10:21am		9.20			
2	10:23am	4	7.70	18.00	270.00	Water refilled every 4 min to maintain initial water depth
	10:27am		9.20			
3	10:32am	4	7.70	16.20	243.00	Stabilized rate achieved with Δd Readings 1, 2, and 3.
	10:36am		9.05			
4						
5						
6						
7						
8						

Note: Form created by Caltrans-GIB based on Administrative Manual, County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division, Boring Percolation Testing Procedures (Page 7 of 12, GS200.1, 06/01/11)

Boring/Excavation Percolation Testing Field Log

Date: 12-06-2012

Project Location: Loc 2 Willow/710	Boring/Test Number: P-12-002
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of Casing: 1.5"
Tested By: Donovan Brooks	Depth of Boring: 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table: 21'
Measurement Method: Souder	Depth to Invert of BMP: 7.7'
Levelogger Serial No.: 2008984	PVC Casing Stickup (above OG): 0.0'
Depth to Bottom of Levelogger (from Top of Casing): 10.20'	Depth of Starting Water Level (from Top of Casing): 7.70' Initial Water Depth (d1): 2.50'
Start Time for Pre-Soak: 11:01am	Water Remaining in Boring (Y/N): No
Start Time for Standard: 11:29am	Standard Time Interval Between Readings: 1 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	11:34am	1	7.70	21.60	1296.00	Silty sand (SM)
	11:35am		9.50			
2	11:39am	1	7.70	20.40	1224.00	Water refilled every minute to maintain initial water depth
	11:40am		9.40			
3	11:43am	1	7.70	20.40	1224.00	
	11:44am		9.40			
4	01:15pm	1	7.70	19.20	1152.00	Stabilized rate achieved with Δd Readings 2, 3, and 4.
	01:16pm		9.30			
5						
6						
7						
8						

Boring/Excavation Percolation Testing Field Log

Date: 12-06-2012

Project Location: Loc 2 Willow/710	Boring/Test Number: P-12-003
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of Casing: 1.5"
Tested By: Donovan Brooks	Depth of Boring: 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table: 21'
Measurement Method: Sounder	Depth to Invert of BMP: 7.7'
Levelogger Serial No.: 1060056	PVC Casing Stickup (above OG): 0.0'
Depth to Bottom of Levelogger (from Top of Casing): 10.2	Depth of Starting Water Level (from Top of Casing): 7.70' Initial Water Depth (d1): 2.50
Start Time for Pre-Soak: 01:41pm	Water Remaining in Boring (Y/N): No
Start Time for Standard: 02:24pm	Standard Time Interval Between Readings: 8 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	02:24pm	8	7.70	24.00	180.00	Silty sand (SM)
	02:32pm		9.70			
2	02:40pm	8	7.70	21.60	162.00	Water refilled every 8 min to maintain initial water depth
	02:48pm		9.50			
3	02:57pm	8	7.70	21.60	162.00	Stabilized rate achieved with Δd Readings 1, 2, and 3.
	03:05pm		9.50			
4						
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7						
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Note: Form created by Caltrans-GIB based on Administrative Manual, County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division, Boring Percolation Testing Procedures (Page 7 of 12, GS200.1, 06/01/11)

Boring/Excavation Percolation Testing Field Log

Date: 12-12-2012

Project Location: Loc 4 Wardlow	Boring/Test Number: P-12-004
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of Casing: 1.5"
Tested By: Donovan Brooks	Depth of Boring: 13.6'
Liquid Description: Clean tap water	Depth to Groundwater Table: 20'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP: 9.6'
Levellogger Serial No.: 2008984	PVC Casing Stickup (above OG): 0.40'
Depth to Bottom of Levellogger (from Top of Casing): 11.35'	Depth of Starting Water Level (from Top of Casing): 9.60' Initial Water Depth (d1): 4.40'
Start Time for Pre-Soak: 10:07am	Water Remaining in Boring (Y/N): N
Start Time for Standard: 10:55am	Standard Time Interval Between Readings: 10 min

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	10:55am	10	9.60	10.80	64.80	Sandy silt (ML)
	11:05am		10.50			
2	11:24am	10	9.60	10.92	65.52	Water refilled every 10 min to maintain initial water depth
	11:34am		10.51			
3	11:45am	10	9.60	10.68	64.08	Stabilized rate achieved with Δd Readings 1, 2, and 3.
	11:55am		10.49			
4						
5						
6						
7						
8						

Boring/Excavation Percolation Testing Field Log

Date: 12-13-2012

Project Location: Loc 4 Wardlow	Boring/Test Number: P-12-005
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of Casing: 1.5"
Tested By: Donovan Brooks	Depth of Boring: 13.6'
Liquid Description: Clean tap water	Depth to Groundwater Table: 20'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP: 9.6'
Levellogger Serial No.: 2008997	PVC Casing Stickup (above OG): 0.30'
Depth to Bottom of Levellogger (from Top of Casing): 11.30'	Depth of Starting Water Level (from Top of Casing): 9.60' Initial Water Depth (d1): 4.30'
Start Time for Pre-Soak: 09:20am	Water Remaining in Boring (Y/N): Yes
Start Time for Standard: 09:53am	Standard Time Interval Between Readings: 30 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	1:56pm	29	9.60	2.40	4.80	Sandy silt (ML)
	2:25pm		9.80			
2	2:28pm	30	9.60	2.40	4.80	Water refilled every 30 min to maintain initial water depth
	2:58pm		9.80			
3	3:00pm	30	9.60	2.40	4.80	Stabilized rate achieved with Δd Readings 1, 2, and 3.
	3:30pm		9.80			
4						
5						
6						
7						
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Note: Form created by Caltrans-GIB based on Administrative Manual, County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division, Boring Percolation Testing Procedures (Page 7 of 12, GS200.1, 06/01/11)

Boring/Excavation Percolation Testing Field Log

Date: 12-13-2012

Project Location: Loc 4 Wardlow	Boring/Test Number: P-12-006
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of Casing: 1.5"
Tested By: Robert R.	Depth of Boring: 13.6'
Liquid Description: Clean tap water	Depth to Groundwater Table: 20'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP: 9.6'
Levellogger Serial No.: 1060056	PVC Casing Stickup (above OG): 0.50'
Depth to Bottom of Levellogger (from Top of Casing): 11.20'	Depth to Starting Water Level (from Top of Casing): 9.53' Initial Water Depth (d ₁): 4.57'
Start Time for Pre-Soak: 09:20am	Water Remaining in Boring (Y/N): Yes
Start Time for Standard: 09:53am	Standard Time Interval Between Readings: 30 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	2:04pm	30	9.53	0.60	1.20	Sandy silt (ML)
	2:34pm		9.58			
2	2:53pm	30	9.53	0.60	1.20	Water refilled every 30 min to maintain initial water depth
	3:23pm		9.58			
3	3:25pm	30	9.53	0.60	1.20	Stabilized rate achieved with Δd Readings 1, 2, and 3.
	3:55pm		9.58			
4						
5						
6						
7						
8						

Boring/Excavation Percolation Testing Field Log

Date: 12-18-2012

Project Location: Loc 9	Boring/Test Number: P-12-007
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of PVC Casing: 1.5"
Tested By: D. Brooks/R. Runnestrand	Boring Depth (from OG): 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table (from OG): 28'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP (from OG): 7.4'
Levellogger Serial No: 2008984	PVC Casing Stickup (above OG): 0:30'
Depth to Bottom of Levellogger (from Top of Casing): 10.10'	Depth to Starting Water Level (from Top of Casing): 7.70' Initial Water Depth (d ₁): 2.80'
Start Time for Pre-Soak: 10:52am	Water Remaining in Boring (Y/N): No
Start Time for Standard: 11:55am	Standard Time Interval Between Readings: 2 min

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Descriptions Notes Comments
1	12:04	2	7.70	9.60	288.00	Sand with Silt
	12:06		8.50			
2	12:10	2	7.70	9.12	273.60	
	12:12		8.46			
3	12:17	2	7.70	9.12	273.60	Water refilled every 2 min to maintain initial water depth
	12:19		8.46			
4	12:23	2	7.70	8.76	262.80	Stabilized rate achieved with Δd Readings 2, 3, and 4.
	12:25		8.43			
5						
6						
7						
8						

Note: Form created by Caltrans-GIB based on Administrative Manual, County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division, Boring Percolation Testing Procedures (Page 7 of 12, GS200.1, 06/01/11)

Boring/Excavation Percolation Testing Field Log

Date: 12-18-2012

Project Location: Loc 9	Boring/Test Number: P-12-008
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of Casing: 1.5"
Tested By: Brooks/Runnestrand	Depth of Boring: 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table: 28'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP: 7.4'
Levellogger Serial No.: 2008997	PVC Casing Stickup (above OG): 0.0'
Depth to Bottom of Levellogger (from Top of Casing): 10.10'	Depth of Starting Water Level (from Top of Casing): 7.40' Initial Water Depth (d ₁): 2.80'
Start Time for Pre-Soak: 12:42	Water Remaining in Boring (Y/N): No
Start Time for Standard: 13:32	Standard Time Interval Between Readings: 2 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	13:37	2	7.40	12.48	374.40	Sand with Silt
	13:39		8.44			
2	13:42	2	7.40	12.12	363.60	
	13:44		8.41			
3	13:47	2	7.40	11.04	331.20	Water refilled every 2 min to maintain initial water depth
	13:49		8.32			
4	13:53	2	7.40	11.28	338.40	Stabilized rate achieved with Δd Readings 2, 3, and 4.
	13:55		8.34			
5						
6						
7						
8						

Boring/Excavation Percolation Testing Field Log

Date: 12-18-2012

Project Location: Loc 9	Boring/Test Number: P-12-009
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of Casing: 1.5"
Tested By: Brooks/Runnestrand	Depth of Boring: 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table: 28'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP: 7.4'
Levellogger Serial No.: 1060056	PVC Casing Stickup (above OG): 0.0'
Depth to Bottom of Levellogger (from Top of Casing): 10.10'	Depth of Starting Water Level (from Top of Casing): 7.40' Initial Water Depth (d ₁): 2.80'
Start Time for Pre-Soak: 14:05	Water Remaining in Boring (Y/N): No
Start Time for Standard: 14:48	Standard Time Interval Between Readings: 6 min

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	14:59	6	7.40	13.56	135.60	Sand with Silt
	15:05		8.53			
2	15:08	6	7.40	12.48	124.80	
	15:14		8.44			
3	15:19	6	7.40	12.24	122.40	Water refilled every 6 min to maintain initial water depth
	15:25		8.42			
4	15:28	6	7.40	11.76	117.60	Stabilized rate achieved with Δd Readings 2, 3, and 4.
	15:34		8.38			
5						
6						
7						
8						

Note: Form created by Caltrans-GIB based on Administrative Manual, County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division, Boring Percolation Testing Procedures (Page 7 of 12, GS200.1, 06/01/11)

Boring/Excavation Percolation Testing Field Log

Date: 01-08-13

Project Location: Location 6/SB405	Boring/Test Number: P-12-010
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of PVC Casing: 1.5"
Tested By: Brooks/Runnestrand	Boring Depth (from OG): 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table (from OG): 32'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP (from OG): 6.9'
Levellogger Serial No.: 2008997	PVC Casing Stickup (above OG): 0.58'
Depth to Bottom of Levellogger (from Top of Casing): 9.30'	Depth to Starting Water Level (from Top of Casing): 6.70' Initial Water Depth (d ₁): 4.08'
Start Time for Pre-Soak: 10:50	Water Remaining in Boring (Y/N): No
Start Time for Standard: 11:20	Standard Time Interval Between Readings: 30 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Descriptions Notes Comments
1	11:53	30	6.70	18	36.00	Sand with silt
	12:23		8.20			
2	12:49	30	6.70	18	36.00	Water refilled every 30 min to maintain initial water depth
	13:19		8.20			
3	13:26	30	6.70	17.88	35.76	Stabilized rate achieved with Δd readings 1, 2, and 3.
	13:56		8.19			
4						
5						
6						
7						
8						

Boring/Excavation Percolation Testing Field Log

Date: 01-08-13

Project Location: Location 6/SB405	Boring/Test Number: P-12-011
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of PVC Casing: 1.5"
Tested By: Brooks/Runnestrand	Boring Depth (from OG): 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table (from OG): 32'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP (from OG): 6.9'
Levellogger Serial No.: 2008984	PVC Casing Stickup (above OG): 0.46'
Depth to Bottom of Levellogger (from Top of Casing): 9.40'	Depth to Starting Water Level (from Top of Casing): 6.70' Initial Water Depth (d ₁): 3.96'
Start Time for Pre-Soak: 9:35	Water Remaining in Boring (Y/N): No
Start Time for Standard: 9:46	Standard Time Interval Between Readings: 1 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Descriptions Notes Comments
1	9:48	1	6.70	12.00	720.00	Sand with silt.
	9:49		7.70			
2	9:53	1	6.70	11.50	690.00	Water refilled every minute to maintain initial water depth
	9:54		7.66			
3	9:56	1	6.70	11.30	678.00	
	9:57		7.64			
4	9:59	1	6.70	11.90	714.00	
	10:00		7.69			
5	10:02	1	6.70	10.56	633.60	
	10:03		7.58			
6	10:05	1	6.70	10.56	633.60	
	10:06		7.58			
7	10:07	1	6.70	10.32	619.20	
	10:08		7.56			
8	10:11	1	6.70	9.72	583.20	Stabilized rate achieved with Δd readings 6, 7, and 8.
	10:12		7.51			

Note: Form created by Caltrans-GIB based on Administrative Manual, County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division, Boring Percolation Testing Procedures (Page 7 of 12, GS200.1, 06/01/11)

Boring/Excavation Percolation Testing Field Log

Date: 01-08-13

Project Location: Location 6/SB405	Boring/Test Number: P-12-012
Earth Description: Alluvium	Dia. of Boring (DIA): 6" Dia. of PVC Casing: 1.5"
Tested By: Brooks/Runnestrand	Boring Depth (from OG): 10.2'
Liquid Description: Clean tap water	Depth to Groundwater Table (from OG): 32'
Measurement Method: Sounder/Levellogger	Depth to Invert of BMP (from OG): 6.9'
Levellogger Serial No.: 1060056	PVC Casing Stickup (above OG): 0.17'
Depth to Bottom of Levellogger (from Top of Casing): 9.40'	Depth to Starting Water Level (from Top of Casing): 6.70' Initial Water Depth (d ₁): 3.67'
Start Time for Pre-Soak: 08:45	Water Remaining in Boring (Y/N): No
Start Time for Standard: 08:53	Standard Time Interval Between Readings: 1 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min.)	Depth to Water from Top of Casing (ft)	Water Drop During Standard Time Interval Δd (inches)	Percolation Rate for Reading (in/hr)	Soil Descriptions Notes Comments
1	8:56	1	6.70	19.80	1188.00	Sand with silt
	8:57		8.35			
2	9:00	1	6.70	18.12	1087.20	Water refilled every minute to maintain initial water depth
	9:01		8.21			
3	9:03	1	6.70	12.84	770.40	
	9:04		7.77			
4	9:06	1	6.70	12.96	777.60	
	9:07		7.78			
5	9:09	1	6.70	12.96	777.60	
	9:10		7.78			
6	9:13	1	6.70	11.64	698.40	
	9:14		7.67			
7	9:16	1	6.70	12.60	756.00	
	9:17		7.75			
8	9:19	1	6.70	11.64	698.40	Stabilized rate achieved with Δd readings 6, 7, and 8.
	9:20		7.67			

Note: Form created by Caltrans-GIB based on Administrative Manual, County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division, Boring Percolation Testing Procedures (Page 7 of 12, GS200.1, 06/01/11)

APPENDIX 2
BORING RECORDS

LOGGED BY M. Islam/ C. Lee	BEGIN DATE 12-4-12	COMPLETION DATE 12-4-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 1752038.4 ft / 6498871.6 ft	HOLE ID A-12-001
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 158.43' Rt Sta 425+2.34 CL 710 FWY		SURFACE ELEVATION 22.20 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG CME-75		BOREHOLE DIAMETER 6 in.	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")	SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, ERI 79%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with cuttings and bentonite chips.	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS 34.1 ft		TOTAL DEPTH OF BORING 51.5 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM); medium dense; light gray; moist; fine SAND; some fines.	S-1	3	13									
	1				6										
	2			S-2	2	8									
20.20	3				4										
	4		SANDY SILT (ML); medium dense; light gray; moist; some fine SAND.	S-3	3	8									
18.20	5				4										
	6		SILTY SAND (ML); loose; light gray; moist; fine SAND; little fines.	S-4	2	7									
16.20	7		-medium dense.		3										
	8			S-5	8	8									
14.20	9				4										
	10		-loose.	S-6	8	8									
12.20	11				4										
	12		SILT with SAND (ML); medium dense; dark brown; moist; little fine SAND.	S-7	5	6									
10.20	13				3										
	14			S-8	2	5									
8.20	15				2										
	16		SANDY SILT (ML); loose; dark gray; moist; some fine to medium SAND.	S-9	3	9									
6.20	17				4										
	18		Lean CLAY with SAND (CL); soft; light gray; moist; little fine SAND.	S-10	3	8									
4.20	19				1										
	20		SILT with SAND (ML); medium dense; light gray; moist; little fine SAND.	S-11	1	5									
2.20	21				1										
	22		SANDY SILT (ML); medium dense; light gray; moist; some fine SAND.	S-12	3	3									
0.20	23				1										
	24		SILT with SAND (ML); medium dense; light gray; moist; little fine SAND.	S-13	2	8									
					4										
			SANDY SILT (ML); medium dense; light gray; moist; some fine SAND.	S-14	4	12									
					5										
			SILT with SAND (ML); medium dense; light gray; moist; little fine SAND.	S-15	6	13									
					7										
			SANDY SILT (ML); medium dense; light gray; moist; few fine SAND.	S-16	5	13									
					6										
					7										

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CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-001	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710-TMDL					
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-24-13	SHEET 1 of 2		

CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks	
	24		SILT (ML); medium dense; light gray; moist; few fine SAND.	S-17	5	11										
	25				5											
	26				6											
-3.80	26		SANDY SILT (ML); medium dense; light gray; wet; some fine to medium SAND.	S-18	5	15										
	27				6											
	28				9											
-5.80	27		SANDY lean CLAY (CL); stiff; light gray; wet; some fine SAND; pp = 1.5 tsf.	S-19	2	10										
	28				4											
	29				6											
-7.80	29		SANDY SILT (ML); medium dense; light gray; wet; some fine SAND.	S-20	2	12										
	30				5											
	31				7											
-9.80	32															
	33															
-11.80	34															
	35															
-13.80	36			S-21	2	9										
	37		5													
	38		4													
-15.80	39															
	40		SILTY SAND (SM); medium dense; dark gray; moist; some fine SAND.	S-22	4	12										
	41				6											
	42				6											
-19.80	43															
	44															
-21.80	45		SILT with SAND (ML); medium dense; dark gray; moist; little fine SAND.	S-23	4	8										
	46				3											
	47				5											
-25.80	48															
	49															
-27.80	50		SILT (ML); medium stiff to stiff; dark gray; moist; few fine SAND; pp = 1.0 tsf.	S-24	5	10										
	51				4											
	52				6											
-29.80	52		Bottom of Borehole at 51.5 ft.													



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-001	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-24-13	SHEET 2 of 2		

LOGGED BY M. Islam/ C. Lee	BEGIN DATE 12-5-12	COMPLETION DATE 12-5-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 1752329.5 ft / 6498872.5 ft	HOLE ID A-12-002
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 112.92' Rt Sta 427+89.13 CL 710 FWY		SURFACE ELEVATION 22.90 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG CME-75		BOREHOLE DIAMETER 6 in.	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")	SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, ERI 79%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with cuttings and bentonite chips.	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS 21.3 ft		TOTAL DEPTH OF BORING 41.5 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM); loose; light brown; moist; fine SAND; some fines.	S-1	2	5								
	1				2									
	2		SANDY SILT (ML); medium dense; light brown; moist; some fine SAND.	S-2	4	11								
20.90	3				5									
	4		SILTY SAND (SM); medium dense; light gray; moist; some fines.	S-3	6	11								
18.90	5				6									
	6		-loose; few fines.	S-4	5	9								
	7				4									
16.90	8		-little fines.	S-5	4	5								
	9				2									
	10		-some fines.	S-6	4	7								
14.90	11				3									
	12		SILT with SAND (ML); medium dense; dark gray; moist; little fine SAND.	S-7	3	7								
12.90	13				4									
	14		SANDY lean CLAY (CL); very stiff; dark gray; moist; some fine SAND.	S-8	2	8								
10.90	15				3									
	16		SANDY SILT (ML); medium dense; dark gray; moist; some fine to coarse SAND.	S-9	3	13								
	17				6									
8.90	18				7									
	19		-some fine to medium SAND.	S-10	5	13								
	20				6									
6.90	21				7									
	22		SANDY SILTY CLAY (CL-ML); very stiff; pale brown; moist; some fine to medium SAND.	S-11	4	11								
	23				5									
4.90	24				6									
	25				9									
2.90	26				6	11								
	27				6									
0.90	28				5									
	29				3	13								
	30				6									
	31				7									
	32				3	7								
	33				2									
	34				5									

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CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - South 1.

REPORT TITLE BORING RECORD				HOLE ID A-12-002
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011
PROJECT OR BRIDGE NAME 710 TMDL				
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-25-13	SHEET 1 of 2	

CALTRANS BORING RECORD 052007 710 TMDL 13.GPJ CT SACTO 053107.GDT 2/14/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	24		SANDY SILT (ML); medium dense; grayish brown; moist; trace fine GRAVEL; some fine to coarse SAND.	S-17	5	5	10								
	25	5													
	26	5													
-3.10	26		SILT with SAND (ML); medium dense; grayish brown; moist; little fine to coarse SAND. - trace fine GRAVEL.	S-18	5	5	12								
	27	7													
	28	8													
-5.10	28		SILT (ML); medium dense; grayish brown; moist; some fine to coarse SAND.	S-19	7	8	16								
	29	8													
	30	7													
-7.10	30		SANDY SILT (ML); dense; light brown; moist; some fine to coarse SAND.	S-20	3	6	28								
	31	13													
	32	15													
-9.10	32		SANDY SILT (ML); dense; light brown; moist; some fine to coarse SAND.	S-21	6	13	28								
	33	15													
	34														
-11.10	34		SANDY SILT (ML); dense; light brown; moist; some fine to coarse SAND.	S-22	6	9	24								
	35	15													
	36														
-13.10	36		SANDY SILT (ML); dense; light brown; moist; some fine to coarse SAND.	S-22	6	9	24								
	37	15													
	38														
-15.10	38		SANDY SILT (ML); dense; light brown; moist; some fine to coarse SAND.	S-22	6	9	24								
	39	15													
	40														
-17.10	40		SANDY SILT (ML); dense; light brown; moist; some fine to coarse SAND.	S-22	6	9	24								
	41	15													
	42														
-19.10	42		Bottom of Borehole at 41.5 ft.												
	43														
	44														
	45														
	46														
	47														
	48														
	49														
	50														
	51														
	52														



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-002	
DIST. 07	COUNTY Los Angeles 710	ROUTE R6.6/R22.1	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-25-13	SHEET 2 of 2		

LOGGED BY M. Islam/ C. Lee	BEGIN DATE 12-11-12	COMPLETION DATE 12-11-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 1757427.4 ft / 6498660.7 ft	HOLE ID A-12-003
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 150.52' Lt Sta 478+71.16 CL 710 FWY		SURFACE ELEVATION 29.10 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG CS-1000		BOREHOLE DIAMETER 6 in.	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")	SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, ERI 95%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with cuttings and bentonite chips.			GROUNDWATER DURING DRILLING READINGS 20.2 ft	AFTER DRILLING (DATE) 51.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SANDY SILT (ML); medium dense; light gray; moist; some fine SAND.	S-1	4	9									
	1				4										
	2			S-2	4	9									
27.10	3				4										
	4			S-3	4	9									
25.10	5		SILT with SAND (ML); medium dense; light brownish gray; moist; little fine SAND.	S-4	6	15									
	6				7										
	7		Poorly graded SAND (SP); medium dense; light gray; moist; fine SAND.	S-5	7	18									
23.10	8		SANDY lean CLAY (CL); hard; light brownish gray; moist; some fine SAND.	S-6	6	21									
	9				10										
	10		SANDY SILTY CLAY (CL-ML); very stiff; light gray; moist; some fine SAND.	S-7	5	17									
19.10	11				8										
	12			S-8	7	17									
	13				8										
17.10	14			S-9	7	15									
	15				7										
	16		SANDY SILT (ML); medium dense; light gray; moist; fine SAND.	S-10	10	12									
15.10	17				7										
	18			S-11	12	13									
	19		Poorly graded SAND with SILT (SP-SM); medium dense; grayish brown; moist; fine SAND.		7										
13.10	20			S-12	13	14									
	21				7										
	22		SILTY SAND (SM); medium dense; dark gray; moist; fine SAND; some fines.	S-13	9	15									
11.10	23				7										
	24			S-14	13	14									
	25				8										
9.10	26			S-15	8	11									
	27				5										
7.10	28			S-16	5	10									
	29				4										
	30		CLAYEY SAND (SC); medium dense; dark gray; wet; fine SAND.		6										

(continued)

CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-003
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011
PROJECT OR BRIDGE NAME 710_TMDL				
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-28-13	SHEET 1 of 2	

CALTRANS BORING RECORD 062007 710_TMDL_13.GPJ CT SACTO 063107.GDT 2/14/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks	
3.10	24	[Material Graphic: Silty Sand]	SILTY SAND (SM); dense; dark gray; wet; fine SAND; little fines.	S-17	10	24									
	25														
	26					S-18	9	18							
1.10	27	[Material Graphic: Clayey Sand]	CLAYEY SAND (SC); medium dense; dark gray; wet; fine SAND; little fines.	S-19	5	16									
	28														
	29					S-20	9	23							
-0.90	30	[Material Graphic: Poorly graded sand with clay]	Poorly graded SAND with CLAY (SP-SC); dense; dark gray; wet; fine SAND.		11										
	31														
	32						12								
-2.90	33	[Material Graphic: Clayey Sand]	CLAYEY SAND (SC); dense; dark gray; wet; fine SAND.	S-21	10	22									
	34														
	35						12								
-6.90	36	[Material Graphic: Silty clay]	SILT (ML); medium stiff; dark gray; wet; pp = 0.75 - 1.0 tsf.		10										
	37														
	38														
-8.90	39	[Material Graphic: Silty clay]	- PP 0.75 tsf.	S-22	2	6									
	40														
	41						2								
-12.90	42	[Material Graphic: Silty clay]			4										
	43														
	44														
-14.90	45	[Material Graphic: Silty clay]		S-23	3	21									
	46														
	47						8								
-16.90	48	[Material Graphic: Poorly graded sand with clay]	Poorly graded SAND with CLAY (SP-SC); dense; wet.		13										
	49														
	50														
-20.90	51	[Material Graphic: Poorly graded sand with clay]													
	52														
-22.90		Bottom of Borehole at 51.5 ft.													



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-003	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER		PREPARED BY D. Wathugala/ M. Islam		DATE 1-28-13	SHEET 2 of 2

LOGGED BY M. Islam/ C. Lee	BEGIN DATE 12-12-12	COMPLETION DATE 12-12-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 1759902.3 ft / 6498330.7 ft	HOLE ID A-12-004
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 176.97' Lt Sta 504+19.11 CL 710 FWY		SURFACE ELEVATION 31.30 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG CS-1000		BOREHOLE DIAMETER 6 in.	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")	SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, ERI 95%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with cuttings and bentonite chips.	GROUNDWATER READINGS	DURING DRILLING 38.0 ft	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING 51.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location: Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM); medium dense; light gray; moist; fine SAND; some fines.	S-1	4	19								
	1				9									
	2			S-2	5	16								
29.30	3				7									
	4			S-3	6	11								
27.30	5				5									
	6		SANDY SILT (ML); medium dense; light gray; moist; some fine SAND.	S-4	6	11								
	7				4									
25.30	8			S-5	3	11								
	9				5									
	10			S-6	4	11								
23.30	11				5									
	12			S-7	7	7								
	13				3									
21.30	14			S-8	8	8								
	15		Poorly graded SAND with SILT (SP-SM); medium dense; light gray; moist; fine SAND; few fines.		4									
	16			S-9	4	9								
	17				5									
19.30	18			S-10	3	10								
	19		Light brownish gray; some interbedded CLAY.		5									
	20			S-11	6	15								
	21				6									
17.30	22			S-12	7	14								
	23		Dark gray.		7									
	24			S-13	3	13								
	25				6									
15.30	26			S-14	8	19								
	27				9									
	28			S-15	8	12								
	29				6									
13.30	30			S-16	9	9								
	31		SANDY lean CLAY (CL); stiff; dark gray; moist; some fine SAND; pp = 2 tsf.		4									
	32				5									

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CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-004	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER		PREPARED BY D. Wathugala/ M. Islam		DATE 1-28-13	SHEET 1 of 2

CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
24	24		SANDY SILT (ML); very stiff; light gray; moist; some fine to medium SAND; pp = 2.75 tsf.	S-17	9	17									
25	25				8										
26	26		SANDY lean CLAY (CL); stiff; light gray; moist; some fine to medium SAND; pp = 1.75 tsf.	S-18	16	14									
27	27				7										
28	28		SILTY SAND (SM); medium dense; light gray; moist; some fine SAND; pp = 1.75 tsf.	S-19	6	19									
29	29		Moist to wet.	S-20	9	19									
30	30				10										
31	31				9										
32	32				10										
33	33				9										
34	34				10										
35	35		Moist.	S-21	6	13									
36	36				7										
37	37				6										
38	38				7										
39	39				6										
40	40		Dark gray; wet.	S-22	4	11									
41	41				5										
42	42				6										
43	43														
44	44														
45	45		Poorly graded SAND with SILT (SP-SM); very dense; dark gray; wet; few SAND.	S-23	3	17									
46	46				7										
47	47				10										
48	48														
49	49														
50	50			S-24	15	44									
51	51				18										
52	52		Bottom of Borehole at 51.5 ft.		26										



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-004	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-28-13	SHEET 2 of 2		

LOGGED BY M. Islam/ C. Lee	BEGIN DATE 12-18-12	COMPLETION DATE 12-18-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 1758990.0 ft / 6498545.5 ft	HOLE ID A-12-005
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 175.77' Lt Sta 494+81.92 CL 710 FWY		SURFACE ELEVATION 31.80 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG CS-1000		BOREHOLE DIAMETER 6 in.	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")	SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, ERI 95%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with cuttings and bentonite chips.	GROUNDWATER DURING DRILLING READINGS		AFTER DRILLING (DATE) 32.1 ft	TOTAL DEPTH OF BORING 41.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM); medium dense; light brown; moist; fine SAND; some fines.	S-1	2	8									
	1					4									
29.80	2			S-2	3	7									
	3		-loose:			4									
27.80	4			S-3	3	5									
	5					2									
25.80	6			S-4	3	5									
	7					2									
	8		Poorly graded SAND with SILT (SP-SM); loose; light gray; moist; fine SAND; few fines.	S-6	3	4									
23.80	9					2									
	10		Poorly graded SAND (SP); loose; gray; moist; fine SAND.	S-7	2	6									
21.80	11					3									
	12		Light gray.	S-8	3	5									
19.80	13					2									
	14		CLAYEY SAND (SC); medium dense; light gray; moist; fine to medium SAND; some fines.	S-10	6	7									
17.80	15					4									
	16		Poorly graded SAND (SP); medium dense; light gray; moist; fine SAND; trace fines.	S-11	7	13									
15.80	17					6									
	18		SANDY SILT (ML); medium dense; grayish brown; moist; some fine to coarse SAND.	S-12	11	14									
13.80	19					7									
	20		Light gray.	S-13	15	12									
11.80	21					6									
	22			S-14	4	12									
9.80	23					6									
	24		SILTY SAND (SM); medium dense; light gray; moist; fine SAND; few fines.	S-16	5	13									
						5									
						8									

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CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-005
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011
PROJECT OR BRIDGE NAME 710 TMDL				
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-29-13	SHEET 1 of 2	

CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	24		Poorly graded SAND (SP); medium dense; light gray; moist.	S-17	7 9 8	17									
	25														
5.80	26														
	27		SILTY SAND (SM); medium dense; light gray; moist; fine SAND; some fines.	S-18	6 6 6	12									
	28														
3.80	29														
	30		SILT (ML); stiff; dark gray; wet; pp = 1.5 to 2 tsf.	S-19	5 5 5	10									
	31														
1.80	32														
	33		SILT (ML); stiff; dark gray; wet; pp = 1.5 to 2 tsf.	S-20											
	34														
-0.20	35														
	36		SILT (ML); stiff; dark gray; wet; pp = 1.5 to 2 tsf.	S-21	3 5 6	11									
	37														
-2.20	38														
	39		Very stiff; pp = 2.5 tst.	S-22	4 5 8	13									
	40														
-4.20	41														
	42	Bottom of Borehole at 41.5 ft.													
	43														
	44														
	45														
	46														
	47														
	48														
	49														
	50														
	51														
	52														



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South

REPORT TITLE BORING RECORD				HOLE ID A-12-005	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-29-13	SHEET 2 of 2		

LOGGED BY M. Islam/ C. Lee	BEGIN DATE 12-19-12	COMPLETION DATE 12-19-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 1772190.4 ft / 6500850.2 ft	HOLE ID A-12-006
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 158.15' Lt Sta 630+90.82 CL 710 FWY		SURFACE ELEVATION 45.90 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG CME-75		BOREHOLE DIAMETER 6 in.	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")	SPT HAMMER TYPE Safety		HAMMER EFFICIENCY, ERI 79%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with cuttings and bentonite chips.	GROUNDWATER DURING DRILLING READINGS 40.2 ft		AFTER DRILLING (DATE) 51.5 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILT (ML); medium dense; light gray; dry to moist.												
43.90	2														
41.90	4														
39.90	6			S-1	4	11									
	5														
	6														
37.90	8														
	9														
35.90	10		SILTY SAND (SM); medium dense; light gray; moist; fine to medium SAND; some fines.	S-2	3	9									
	11														
33.90	12														
	13														
31.90	14														
	15														
29.90	16			S-3	4	16									
	17														
27.90	18														
	19														
25.90	20		SILT (ML); medium dense; light brown; moist.	S-4	7	21									
	21														
23.90	22														
	23														
	24														

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CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD			HOLE ID A-12-006	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011
PROJECT OR BRIDGE NAME 710 TMDL				
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-29-13	SHEET 1 of 2	

CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
24	24		SILT (ML) (continued).												
19.90	25		SILTY SAND (SM); medium dense; light brown; moist; fine to coarse SAND; some fines.		S-5	5 10 8	18								
15.90	30		Trace fine GRAVEL; few fines.		S-6	12 10 11	21								
9.90	35		Poorly graded SAND (SP); medium dense; light gray; moist; trace fines.		S-7	12 11 10	21								
5.90	40		Dark gray.		S-8	11 10 13	23								
-0.10	45		SILT (ML); stiff; dark gray; wet; pp = 1.25.		S-9	5 5 6	11								
-4.10	50		Poorly graded SAND (SP); medium dense; dark gray; wet; fine to medium SAND; trace fines.		S-10	9 9 12	21								
-6.10	52		Bottom of Borehole at 51.5 ft.												



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-006	
DIST. 07	COUNTY Los Angeles 710	ROUTE R6.6/R22.1	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710-TMDL					
BRIDGE NUMBER		PREPARED BY D. Wathugala/ M. Islam		DATE 1-29-13	SHEET 2 of 2

LOGGED BY M. Islam/ C. Lee	BEGIN DATE 12-19-12	COMPLETION DATE 12-19-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 1772236.3 ft / 6500913.3 ft	HOLE ID A-12-007
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 124.79' Lt Sta 631+62.4 CL 710 FWY		SURFACE ELEVATION 44.00 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG CME-75		BOREHOLE DIAMETER 6 in.	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")	SPT HAMMER TYPE Safety		HAMMER EFFICIENCY, ERI 79%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with cuttings and bentonite chips.	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE)		TOTAL DEPTH OF BORING 31.5 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM); medium dense; light brown; moist; trace fine GRAVEL; fine to coarse SAND; some fines.												
42.00	2														
38.00	6			S-1	3 5 8	13									
34.00	10			S-2	5 6 7	13									
28.00	16		SANDY SILT (ML); medium dense; grayish brown; moist; some fine SAND.	S-3	3 4 5	9									
24.00	20			S-4	8 11 12	23									

(continued)



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-007	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER		PREPARED BY D. Wathugala/ M. Islam		DATE 1-29-13	SHEET 1 of 2

CALTRANS BORING RECORD 05/2007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13

CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 063107.GDT 2/14/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	24		SANDY SILT (ML) (continued).												
	25		SILTY SAND (SM); medium dense; light gray; moist; fine to coarse SAND; some fines.	S-5		3	10								
18.00	26	5													
	27	5													
	28														
16.00	29														
	30		SANDY lean CLAY (CL); medium stiff; light gray; moist; some fine to medium SAND.	S-6		2	6								
14.00	31	2													
	32	4													
12.00	32		Bottom of Borehole at 31.5 ft.												
	33														
	34														
10.00	35														
	36														
8.00	37														
	38														
6.00	39														
	40														
4.00	41														
	42														
2.00	43														
	44														
0.00	45														
	46														
-2.00	47														
	48														
-4.00	49														
	50														
-6.00	51														
	52														
-8.00															



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design

REPORT TITLE BORING RECORD				HOLE ID A-12-007	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER		PREPARED BY D. Wathugala/ M. Islam		DATE 1-29-13	SHEET 2 of 2

LOGGED BY M. Islam/ C. Lee	BEGIN DATE 12-19-12	COMPLETION DATE 12-19-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 1772121.8 ft / 6500876.0 ft	HOLE ID A-12-008
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 102.36' Lt Sta 630+42.7 CL 710 FWY		SURFACE ELEVATION 45.80 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG CME-75		BOREHOLE DIAMETER 6 in.	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4")	SPT HAMMER TYPE Safety		HAMMER EFFICIENCY, ERI 79%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with cuttings and bentonite chips.	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS		TOTAL DEPTH OF BORING 31.5 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILT (ML); very stiff; light gray; moist.												
43.80	2														
41.80	4														
39.80	6			S-1	12	10	20								
37.80	8														
35.80	10		SILTY SAND (SM); medium dense; light gray; moist; fine SAND; some fines.	S-2	5	6	14								
33.80	12														
31.80	14														
29.80	16		SILT (ML); hard; light gray; dry to moist; pp = 25.5 tst.	S-3	8	11	25								
27.80	18														
25.80	20		- very stiff.	S-4	8	8	19								
23.80	22														
	24														

(continued)



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - South 1

REPORT TITLE BORING RECORD				HOLE ID A-12-008	
DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710 TMDL					
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-29-13	SHEET 1 of 2		

CALTRANS BORING RECORD 052007 710_TMDL_13.GPJ CT SACTO 053107.GDT 2/14/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks	
	24		SILT (ML) (continued).													
	25		SILTY SAND (SM); medium dense; light gray; moist; fine SAND; little fines.	S-5	7	19										
19.80	26	8														
	27	11														
17.80	28															
	29															
15.80	30			S-6	5	13										
	31			6												
	32			7												
13.80	32		Bottom of Borehole at 31.5 ft.													
	33															
11.80	34															
	35															
9.80	36															
	37															
7.80	38															
	39															
5.80	40															
	41															
3.80	42															
	43															
1.80	44															
	45															
-0.20	46															
	47															
-2.20	48															
	49															
-4.20	50															
	51															
-6.20	52															



Department of Transportation
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DIST. 07	COUNTY Los Angeles	ROUTE 710	POSTMILE R6.6/R22.1	EA 07-259011	
PROJECT OR BRIDGE NAME 710-TMDL					
BRIDGE NUMBER	PREPARED BY D. Wathugala/ M. Islam	DATE 1-29-13	SHEET 2 of 2		