Los Angeles County
Metropolitan Transportation Authority

Westside Purple Line Extension Project, Section 2
Contract C1120

Fault Investigation Report Transect 9–Tunnel Reach 5

February 2, 2017

U.S. Department of Transportation
Federal Transit Administration

Metro

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1.0 INTRODUCTION

1.1 Introduction

This report has been prepared for the Transect 9 fault investigation performed in a portion of Tunnel Reach 5 within Section 2 of the proposed Westside Purple Line Extension project (WPLE) as part of the Advanced Preliminary Engineering (Adv. PE) phase for the Los Angeles County Metropolitan Transportation Authority (Metro). The location of Reach 5 is shown on Figure 1, Transect 9 Location Map.

A steeply dipping, southwest-northeast-trending fault, south of Santa Monica Boulevard and subparallel to the mapped location of the Santa Monica fault, was encountered in the prior fault investigation performed by Amec Foster Wheeler's predecessor company, AMEC, during the Preliminary Engineering (PE) phase of the project (Metro, 2011). A fault was encountered on the northern portion of the Beverly Hills High School campus by Leighton Consulting, Inc. (2012a and 2012b) during their fault investigation of the campus that is at a location consistent with it being a northeastern extension of the AMEC-encountered southwest-northeast fault. A further northeastern extension of this fault would cross the tunnel alignment within Reach 5.

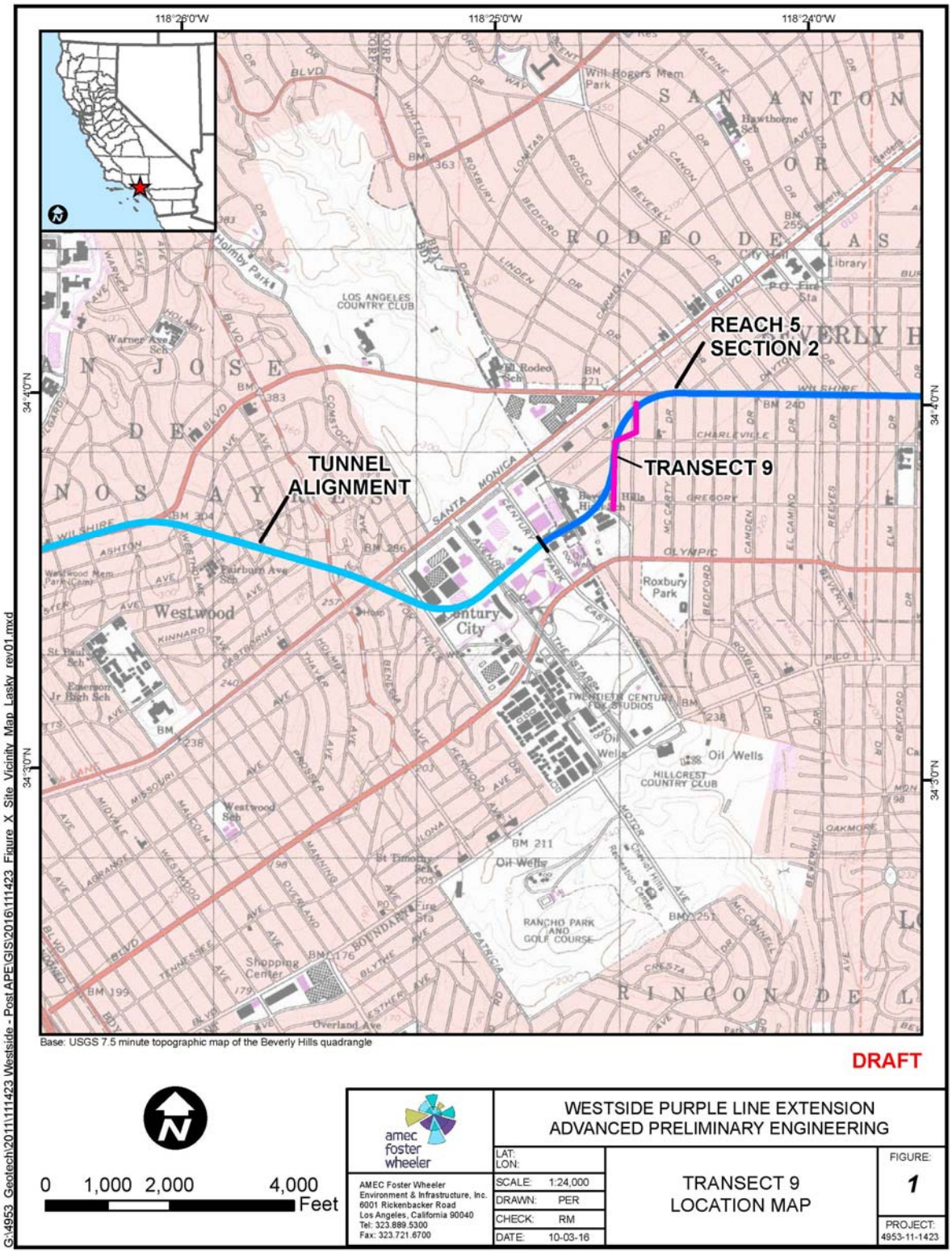
The West Beverly Hills Lineament (WBHL) is a north-northwest-trending topographic feature that crosses the tunnel alignment in the vicinity of South Moreno Drive. Dolan and Sieh (1992) and Dolan et al. (1997; 2000), based on its location, hypothesized that the northern part of the WBHL is a tear fault connecting the Santa Monica and Hollywood faults and the southern part of the WBHL is a northern continuation of the active Newport-Inglewood fault zone located approximately 3 miles to the south-southeast. By virtue of its assumed connection to the active Newport-Inglewood fault zone, the WBHL was interpreted by the California Geological Survey (CGS) to be an active fault and shown on their fault activity map (Bryant, 2005). The approximate trace of the Newport-Inglewood Fault from the Ballona Creek area northwest into Beverly Hills has been shown at slightly different locations by the CGS (Campbell et al., 2014, Bedrossian et al., 2012, and Jennings and Bryant, 2010) and the CGS/U.S. Geological Survey (as shown on Bryant, 2005) indicating uncertainty in its location. The fault investigation performed at Beverly Hills High School by Leighton Consulting, Inc. (2012a and 2012b) did not encounter any significant northwest-southeast trending faulting attributable to the Newport-Inglewood fault at locations shown previously on maps traversing the Beverly Hills High School campus by CGS, USGS, or Metro.

Transect 9 was performed across the Reach 5 tunnel alignment to evaluate whether faulting is present in the portion of the tunnel alignment between approximate tunnel stations 675+50 to 692+00, and to evaluate the activity of faults encountered.

1.2 Limitations

The professional services have been performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the information included in this report. This report has been prepared for Metro and its design consultants and contractors to be used solely for the evaluation for this portion of Tunnel Reach 5 planned as part of Section 2 of the proposed WPLE project. The report has not been prepared for use by other parties, and may not contain sufficient information for the purpose of other parties or other uses.

Figure 1: Transect 9 Location Map



2.0 PROJECT DESCRIPTION

2.1 Tunnel Description

The alignment of the subject portion of Tunnel Reach 5 between Station 675+50 and 692+00 is presented on Figure 1 and Plate 1, Boring and CPT Location Map Transect 9. The proposed tunnel configuration for the subway consists of dual tunnels, both with a diameter of about 18 feet 10 inches, and at the same depth, separated horizontally by about 20 feet. The tunnels will be constructed using either a slurry-shield tunnel boring machine (Slurry TBM) or an earth pressure balance tunnel boring machine (EPB TBM).

Tunnel Reach 5 is the portion of the tunnel alignment between the Wilshire/Rodeo and Century City Constellation Stations. Based on the plans dated December 2015, the tunnels in Reach 5 are each about 1.10 miles long. The depth to tunnel invert varies from 80 to 135 feet below ground surface (bgs) in Tunnel Reach 5.

2.2 Existing Site Conditions

The portion of Beverly Hills through which Tunnel Reach 5 traverses is densely developed. In order to perform a continuous line of subsurface explorations (boreholes and Cone Penetrometer Tests [CPTs]), Transect 9 was performed along a “dog leg” configuration in the paved streets of South Lasky Drive, Charleville Boulevard, and South Spalding Drive. The location of Transect 9 is shown on Plate 1. Based on utility plans available from the City of Beverly Hills, numerous underground utilities are located within the upper 10 to 20 feet of the ground surface.

3.0 FIELD EXPLORATIONS

The field program for this fault investigation consisted of one transect, Transect 9, composed of continuous core boreholes and Cone Penetrometer Tests (CPTs). Transect 9 extends from its north end, approximately 125 feet south of Wilshire Boulevard, south to South Moreno Drive along north-south segments on Spalding Drive and Lasky Drive connected with an east-west segment on Charleville Boulevard. The locations are shown on Plate 1. Transect 9 consists of:

- 20 hollow stem auger continuous core boreholes
- 34 CPTs

The fieldwork was performed from September 12 through November 23, 2015. The upper 5 feet below ground surface of the exploratory boreholes and CPTs were excavated by hand auger prior to drilling to avoid hitting underground utilities with the drill rig or CPT rig. Continuous core samples were collected in the boreholes. Due to time constraints, certain intervals of some of the boreholes were not sampled. In addition, due to the nature of the materials being drilled, there was no core recovery in many intervals. These intervals are identified on the boring logs. The cores retrieved were preliminarily logged in the field by Amec Foster Wheeler's field personnel and were then transported to a storage facility for detailed logging and descriptions. CPTs were pushed to between 61 and 117 feet bgs. The CPTs were attempted to be advanced to a minimum depth of 80 feet; depths of CPTs pushed less than 80 feet were terminated due to refusal.

4.0 STRATIGRAPHIC UNITS

4.1 Stratigraphy

The geologic units in the Transect 9 area of the tunnel alignment include Holocene and Pleistocene Alluvial Deposits, Pleistocene Lakewood Formation, and the older Pleistocene San Pedro Formation. The general lithologic compositions of the geologic units are presented in the following sections. More detailed stratigraphic descriptions are presented in the borings logs included in Appendix A.

4.1.1 Artificial Fill (Profile symbol: Af)

Artificial fill, generally approximately 5 to 6 feet thick, is present along Transect 9 at the borehole locations. As encountered in the boreholes, the fill consists of silty sand, sandy silt, silty clay clayey sand, and clayey silt, locally with some gravel. The geologic profile presented on Plate 2 show the symbol Af to indicate the artificial fill.

4.1.2 Alluvial Deposits (Profile symbol: Qal/Qalo)

Alluvial sediments of Holocene and Pleistocene age underlie the artificial fill. The Alluvial Deposits consist of Alluvial Fan Deposits, Fluvial Deposits, and Sag Deposits. The Alluvial Deposits consist of sediments deposited by streams and sheet flow that flowed across the La Brea Plain during mid to late Pleistocene time. These deposits were derived mainly from the Santa Monica Mountains to the north.

The Alluvial Fan Deposits consist of sheet flow and debris/mudflow deposits. They are composed of medium dense to dense fine to very fine sands and silty sands and medium stiff to hard silts and clays and gravelly silts and clays. The Alluvial Fan deposits are generally massive with some crude bedding and laminations. The silts and clays predominantly have some scattered coarse sand and gravel with locally moderately abundant coarse sand and gravel.

The Fluvial Deposits consist of stream channel and overbank deposits. They are composed of medium dense to dense sands and gravels in stream channel deposits and silts, clays, and fine to medium grained sand with local gravel in the overbank deposits. The overbank deposits are frequently bedded to laminated.

A subset of Alluvial Deposits encountered consists of rhythmically bedded to laminated clays and silts, characteristic of estuarine\lagoonal environments.

Sag Deposits were observed within the Alluvial Deposits, predominantly in the central and northern portions of Transect 9. Sag deposits are sediments deposited in a depression, or sag, formed where fault movement along a strike-slip fault has impounded drainage (American Geosciences Institute, 2011). The Sag Deposits consist of thin, well-bedded to laminated fine silt and clay, locally with fine sand, indicative of shallow depressions in low-energy environments. The Sag Deposits are observed within some of the Alluvial Deposits up to the contact with the artificial fill.

Localized zones of dispersed to heavily-impregnated carbonate were encountered in the Alluvial Deposits in many of the boreholes, at depths greater than 85 feet bgs in the south portion of the transect and greater than 160 feet bgs in the northern portion.

4.1.3 Lakewood Formation (Profile symbol: Qlw)

The marine and non-marine deposits of the Pleistocene-age Lakewood Formation underlie the Alluvial Deposits in the boreholes in the southern portion of Transect 9. The Lakewood Formation, as encountered in the boreholes, generally consists of massive to interbedded yellow and brown to light to medium gray silty sands and poorly graded sands, with subordinate layers of silts, clays, and clayey sand layers. The Lakewood Formation sediments are locally thin bedded and laminated.

4.1.4 San Pedro Formation (Profile symbol: Qsp)

Marine deposits of the Pleistocene age San Pedro Formation conformably underlie the Lakewood Formation in the boreholes in the southern portion of Transect 9 where the contact was observed. The San Pedro deposits consist primarily of dark greenish-gray and bluish-gray, fine-grained dense sand and silty sand with local silt layers. Marine shell fragments were encountered in some boreholes.

4.2 Groundwater

Groundwater was encountered at relatively shallow depth in the boreholes, generally between 33 and 49 feet in depth. Groundwater was not observed in Borings T9-B2 and T9-B4 at the south end of Transect 9, and T9-B19 at the north end of the transect, although the cores were described as wet at 45 feet in T9-B4. Groundwater was observed at a depth of 70 feet in Boring T9-B3 and 72 feet in Boring B-2A at the south end of the transect.

5.0 CARBON 14 TESTING

Samples of charcoal, where observed, were collected from the core samples and were tested at the Keck Carbon Cycle AMS Facility at the Earth System Science Department at the University of California, Irvine for age dating. The samples collected ranged in depth from 7.8 feet to 48.45 feet and were collected from Borings T9-B5, T9-B7, T9-B9, T9-B11, and T9-B17. The results are included in Appendix C and are presented on the profile, Plate 2. The dates (in radiocarbon years before present {BP}) range from 8,000 $\pm$ 20 years BP at a depth of 7.8 feet and 16,710 $\pm$ years BP at a depth of 45.9 feet in T9-B5, to 25,100 $\pm$ 1,100 years at a depth of 48.45 in Boring T9-B17. The age of the samples increased with depth within each borehole, adding to confidence in the tested ages.

6.0 DATA ANALYSIS

As illustrated on the Transect 9 Profile, Plate 2, the contact between the Alluvial Deposits and the Lakewood Formation is at a depth of approximately 52 feet and the contact between the Lakewood and the San Pedro formations is at a depth of approximately 102 feet in Boring T9-B2 at the south end of the transect. In general, the depth of these two contacts increases towards the north. There is an abrupt drop in the depth to the two contacts between Borings T9-B2 and T9-B3. The two contacts are somewhat higher in elevation in Borings T9-B4 and T9-B5 than in T9-B3 and T9-B6. The depth to the two contacts increases to the north. Between T9-B10 and T9-B11 there is an abrupt drop in the depth to the Alluvial Deposits-Lakewood Formation contact and the San Pedro Formation was not encountered in T9-B11, drilled to a depth of 170 feet. Lakewood and San Pedro formations were not encountered in Boring T9-B12, drilled to a depth of 185 feet, or in any of the borings north of T9-B12, drilled to depths ranging from 185 to 245 feet.

The Alluvial Deposits are predominantly Fluvial Deposits and fine-grained sand Alluvial Fan Deposits at the southern end of the transect. Silt and clay deposits are not present in T9-B2 and are relatively rare and generally located near the base of the Alluvial Deposits at the south end of Transect 9. The quantity of silt and clay deposits increases slightly towards the north up to T9-B12. In T9-B12 and the remainder of the borings to the north, silty and clayey Alluvial Deposits are common to pervasive. They are commonly bedded to laminated and include what are interpreted as Sag Deposits.

Sag Deposits are present at shallow depths in Boring T9-B6 and the borings to the north.

The Carbon-14 age dates (radiocarbon years before present) range from 8,000 $\pm$ 20 years BP at a depth of 7.8 feet bgs in Boring T9-B5 to 25,100 $\pm$ 1,100 years at a depth of 48.45 feet bgs in Boring T9-B17. A cluster of charcoal samples were obtained in Boring T9-B11 in fin- grained alluvial deposits from a low-energy environment. The ages ranged from 9,145 $\pm$ 30 years BP to 16,500 $\pm$ 1,300 years BP at depths between 19.1 to 31.2 feet bgs.

Based on the above findings, a fault zone with significant apparent vertical separation (greater than 90 feet) is interpreted to be present between Borings T9-B8 and T9-B12, as shown on Plate 2. Traces of this fault zone appear to extend to near the present day ground surface and through Holocene strata. The locations of near-surface fault traces are based on the presence of sag deposits in borings at shallow elevations where none are present at the same elevations in adjacent downgradient borings. Additional fault traces are interpreted between Borings T9-B12 and T9-B14 and between Borings T9-B17 and T9-B-18. The geometry of the fault shown on Plate 2 between Borings T9-B14 and T9-B15 and between T9-B16 and T9-B17 is due to the right angle bend in the transect, where it crosses the same fault trace twice. Most of the fault traces extend upward into radiocarbon-dated sediments of Holocene age and all are late Quaternary in age. An additional fault is interpreted between Borings T9-B2 and T9-B3 at the south end of Transect 9. It is not definitive as to how close to the existing ground surface this fault extends. The magnitude of the vertical offset of the Alluvial Deposits/Lakewood and Lakewood/San Pedro contacts is similar to the elevation change of the San Pedro 1 (Lakewood equivalent)/San Pedro 2 contact between Borings CB-12 and CB-19.

7.0 CONCLUSION AND RECOMMENDATIONS

The conclusion of this fault investigation is that faults are present along Transect 9 that extend upward into Holocene sediments and pond Holocene Sag Deposits against them. The amount of apparent vertical offset of the fault with the largest vertical offset appears to be of similar or greater magnitude as that of the fault observed in Leighton Consulting, Inc., 2012a and is at a location consistent with the strike of the Leighton Consulting, Inc., 2012a fault observed in their trench and borings. The total magnitude of apparent vertical separation across Transect 9 is not known but is over 90 feet. The southern-most fault appears to have a vertical separation with similar magnitude to a step observed in the San Pedro 1-San Pedro 2 contact in Leighton Consulting, Inc., 2012a in the same area. The strikes of all of the fault traces along Transect 9 are not well-determined from the data from this investigation. It is not clear whether the fault in the southern-most portion of Transect 9 extends upward into Holocene sediments or whether the upper limit of the fault is within late Pleistocene age sediments. Additional subsurface explorations are recommended in order to better constrain the geometries of the fault traces and their activity in Tunnel Reach 5.

8.0 BIBLIOGRAPHY

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APPENDIX A BORING LOGS

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	0								6-inch thick Asphalt over 6-inch thick Base Course			
246	1								**ARTIFICIAL FILL (af)** Silty Sand with Gravel, slate gravel, slightly moist			
	2											
244	3											
	4											
242	5								**ALLUVIAL DEPOSITS** **Fan Deposits** Silty Sand with Gravel, fine to coarse grained gravel up to 1-inch in diameter		1208	
	6								At 5.7 feet: Sandy Lean Clay to Clayey Sand, fine to coarse sand, some fine gravel, dark brown (10YR 3/3)			
240	7											
		1		100					At 7.4 feet: Sandy Lean Clay, fine sand, some medium to coarse, dark yellowish brown (10YR 4/4)		[150]	
	8											
238	9											
	10		1				NR		No core recovery from 10.0 to 11.0 feet		1210 1212	
236	11								At 11.2 feet: Silty Sand, very fine grained, few medium and coarse, slightly clayey, dark yellowish brown (10YR 4/4)			
	12											
		2		80							[300]	
234	13											

DATE(S) DRILLED:	9/12/2015 to 9/13/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	247.00 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	110.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	49 feet at completion

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B1

Sheet 1 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.1a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
234	13								**Fluvial Deposits** At 13.2 feet: Silty Sand with Gravel, fine sand with abundant medium to coarse, gravel up to 2 inches in diameter			
	14		1						**Fan Deposits** At 14.0 feet: Clayey Silt with Sand, fine sand, some coarse, some fine gravel, dark yellowish brown (10YR 4/4)			
232	15								At 15.0 feet: Sandier, yellowish brown (10YR 5/4)		1213 1216	
	16								From 15.8 to 16.7 feet: More abundant coarse sand and gravel			
230	17	3		90					**Fluvial Deposits** At 16.7 feet: Silty Sand with Gravel, fine sand, some coarse, abundant gravel up to 2 inches in diameter, subangular to subrounded, friable		[150]	
	18											
228	19		2						No core recovery from 19.5 to 20.8 feet			
	20						NR				1218 1224	
226	21											
	22	4		88					**Fan Deposits** At 21.6 feet: Silty Sand, fine grained, some medium to coarse, some fine gravel up to 1/2 inch in diameter, brown (10YR 5/3), sharp contact At 22.4 feet: Siltier, yellowish brown (10YR 5/4)		[150]	
224	23											
	24											
222	25								At 25.0 feet: Siltier, slightly clayey, dark yellowish brown (10YR 4/4)		1226 1232	
	26								At 26.5 feet: Dark yellowish brown (10YR 4/4)			
220	27	5	3	100					At 27.5 feet: Sandy Silt, fine sand, grades to very fine silty sand, scattered fine gravel, dark yellowish brown (10YR 3/4)		[300]	
	28											
218	29											

AMEC CORE; File: 495311423.25.01.GPJ; 12/27/2016

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B1

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.1b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
218	29											
	30								At 30.0 feet: Silty Sand, very fine sand, scattered gravel		1233 1239	
216	31		3									
	32											
		6		100							[150]	
214	33											
	34											
212	35								At 35.0 feet: Dark yellowish brown (10YR 4/4)		1241 1246	
	36											
210	37											
		7		100					At 37.5 feet: Less silt, yellowish brown (10YR 5/4)		[150]	
	38											
208	39		4									
	40								At 40.0 feet: Very fine sand, silty, brown (10YR 5/3)		1248 1259	
206	41								At 41.0 feet: Grayish brown (10YR 5/2) heavily mottled with yellowish brown (10YR 5/6)			
	42											
		8		100					From 42.4 to 42.6 feet: Lens of coarse sand and fine gravel		[-300]	
204	43								From 43.2 to 43.4 feet: Faint bedding, slightly micaceous At 43.4 feet: Silt to very fine Silty Sand At 43.5 feet: Some manganese flecks			
	44								From 43.9 to 44.3 feet: Slightly clayey, faint laminations			
									At 44.3 feet: Grades to fine sand with some coarse			
202	45											

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Log of Core Boring T9-B1

Sheet 3 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.1c

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
202	45								Gray (10YR 5/1), mottled with iron oxide stains		1268	
	46								At 46.6 feet: Grades to fine to medium sand			
200	47	9		90					**Fluvial Deposits** At 47.0 feet: Silty Sand with Gravel, coarse sand, wet, abundant iron oxide stains At 47.5 feet: Gravel with coarse sand, subangular to subrounded gravel up to 2 inches in diameter At 47.8 feet: No iron oxide stains		[150]	
	48											
198	49		5							▽		
	50						NR		No core recovery from 49.5 to 50.2 feet		1306	
									At 50.2 feet: Slightly clayey		1320	
196	51											
	52	10		96							[100]	
194	53											
	54								At 53.8 feet: Scattered gravel			
192	55										1323	
									At 55.0 feet: Medium sand, grades to coarse sand, some subrounded gravel, white, brown and dark gray		1334	
	56											
190	57								At 57.0 feet: Clayey fine Sand, carbonate, gravels at basal contact, contact dips 60 to 70°			
		11		100					From 57.0 to 58.1 feet: Sand with some Silt, very fine sand, white (2.5Y 8/1), tan to gray, mottled From 57.4 to 57.6 feet: Zone with manganese		[100]	
	58		6						At 57.8 feet: Grades to fine sand, light yellowish brown (2.5Y 6/4)			
									LAKEWOOD FORMATION (Qlw) At 58.1 feet: Pale yellow (2.5Y 7/3) At 58.4 feet: Light yellowish brown (2.5Y 6/4)			
188	59											
	60						NR		No core recovery from 60.0 to 61.5 feet		1337	
186	61										1350	

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Log of Core Boring T9-B1

Sheet 4 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.1d

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
186	61						NR					
									At 61.5 feet: Fine grained, some medium with depth, white (2.5Y 8/1)			
	62								At 61.8 feet: Pale yellow (2.5Y 7/3)			
		12		70							[100]	
184	63		6									
	64								At 64 feet: Grades to fine sand			
182	65								No core recovery from 65.0 to 67.0 feet		1353 1406	
	66						NR					
180	67								At 67.0 feet: Very fine sand, light yellowish brown (2.5Y 6/3)			
		13		60							[300]	
	68								From 67.8 to 68.0 feet: Fine sand, some coarse, some fine rounded gravel At 68.2 feet: Some iron oxide stains At 68.5 and 68.7 feet: Very fine sand, white, brown and iron oxide stained thin beds and laminations, subhorizontal, then folded to 45°			
178	69								At 69.2 feet: Massive, fine to medium sand At 69.5 feet: Some coarse sand			
	70		7						No core recovery from 70.0 to 71.0 feet		1407 1417	
							NR					
176	71								At 71.0 feet: Sand, fine to coarse sand, slightly silty, scattered fine gravel, light yellowish brown (2.5Y 6/3) with iron oxide stains At 71.5 feet: Fine sand At 71.6 feet: Fine to medium sand			
	72								At 71.7 feet: Some coarse sand			
		14		80					At 71.9 feet: Sand with Gravel, fine to coarse sand, fine gravel, slightly clayey, abundant iron oxide stain		[300]	
174	73								At 72.0 feet: 2-inch clast At 72.9 feet: More abundant gravel			
	74								From 74.0 to 74.2 feet: Very fine sand At 74.4 feet: 2-inch clast			
172	75								No core recovery from 75.0 to 77.7 feet		1418 1430	
	76		8				NR					
170	77											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B1

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.1e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
170	77						NR					
		15		46							[75]	
	78								At 77.7 feet: Sand, very fine sand, pale yellow (2.5Y 7/4)			
									At 78.3 feet: Some coarse sand and fine gravel			
168	79											
									At 79.6 feet: Sand, very fine grained some gravel, very pale brown and white			
	80		8								1434	
			8				NR		At 79.7 feet: Dark gray silt clast 1 inch in diameter, moderately abundant gravel		1507	
									No core recovery from 80.0 to 80.5 feet			
166	81								At 81.0 feet: Very fine sand, strong brown (7.5YR 5/6)			
									At 81.5 feet: Silty, reddish yellow (7.5YR 6/6)			
	82								At 81.9 feet: Laminated, pale yellow (2.5Y 7/3) with iron oxide stain on laminations			
		16		90					At 82.3 feet: Massive, iron oxide stains At 82.5 feet: Slightly coarser sand		[300]	
164	83								At 82.6 feet: Laminated, pale yellow (2.5Y 7/3) with iron oxide stain on laminations			
	84								At 84.0 feet: Very fine sand, massive, some iron oxide mottling			
162	85										1508	
									No core recovery from 85.0 to 86.5 feet		1520	
	86						NR					
									At 86.5 feet: Sand, very fine to fine grained, some medium and coarse, pale yellow (2.5Y 7/3)			
160	87								At 87.1 feet: Some iron oxide stained			
		17		70					At 87.4 feet: Fine grained At 87.6 feet: Very fine grained, laminated with some iron oxide stained laminations and mottling		[100]	
	88		9									
158	89											
	90										1523	
									No core recovery from 90.0 to 91.7 feet		1015	
156	91						NR					
									At 91.7 feet: Very fine sand, some silt, no iron oxide staining			
	92											
		18		66					At 92.5 feet: Fine sand At 92.9 feet: Very fine sand		[300]	
154	93											

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Log of Core Boring T9-B1

Sheet 6 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.1f

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
154	93								At 93.0 feet: Some iron oxide mottling			
									At 93.5 feet: Some iron oxide stained laminations			
	94		9						At 93.7 feet: Massive with iron oxide mottling			
									From 94.6 to 94.8 feet: Some laminations			
152	95										1016	
									No core recovery from 95.0 to 96.2 feet		1032	
							NR					
	96											
									At 96.2 feet: Very fine sand, some silt, light gray (2.5Y 7/1), faint iron oxide stained lamallae, some manganese mottles			
150	97								At 96.5 feet: Fine sand, olive yellow (2.5Y 6/6), massive			
		19		76							[150]	
	98								At 97.7 feet: Grades to light yellowish brown (2.5Y 6/4)			
148	99		10									
									SAN PEDRO FORMATION (Qsp)			
	100								Sand, very fine to fine grained, some silt, greenish gray (5/10Y), slightly micaceous, unoxidized, contact conformable		1034	
											1050	
									At 100.6 feet: Grades to dark greenish gray (4/10Y), occasional shell fragments			
146	101											
	102											
		20		86			NR		No core recovery from 102.2 to 102.9 feet		[150]	
144	103											
									At 103.4 feet: Manganese bleb			
	104											
142	105								At 104.8 feet: Very fine sand, greenish gray (6/5GY)		1052	
							NR		No core recovery from 105.0 to 105.7 feet		1106	
									At 105.7 feet: Very fine sand, gray (5/N)			
	106											
140	107		11									
		21		86							[150]	
	108								At 108.2 feet: More abundant shell fragments, horizontal			
138	109											

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Log of Core Boring T9-B1

Sheet 7 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.1g

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
138	109		11									
	110										1108	
									END OF BORING AT 110 FEET			
									NOTES:			
136	111								• Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at 49 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
	112											
134	113											
	114											
132	115											
	116											
130	117											
	118											
128	119											
	120											
126	121											
	122											
124	123											
	124											
122	125											

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Log of Core Boring T9-B1

Sheet 8 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.1h

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
246	0								4-inch thick Asphalt over 6-inch thick Concrete			
	1								**ARTIFICIAL FILL (af)** Silty, Clayey Sand with Gravel, fine sand, dark brown, moist			
244	2											
	3											
242	4											
	5										0955	
240	6								**ALLUVIAL DEPOSITS** **Fan Deposits** Sandy Silt to Clayey Silt, fine sand, some medium to coarse, some gravel up to 2 inches in diameter, very dark grayish brown (10YR 3/2)			
	7	1		100							[300]	
238	8											
	9		1						At 9.0 feet: Silty Sand, fine grained, dark yellowish brown (10YR 4/4)			
	10								At 10.0 feet: Trace coarse sands and fine gravel up to 1 inch in diameter, yellowish brown (10YR 5/4)		0956 1002	
236	11								At 11.1 feet: Reddish gravel clast			
	12											
234	13	2		100							[300]	

DATE(S) DRILLED:	10/12,13,14/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	246.20 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	110.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	Not encountered

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Log of Core Boring T9-B2

Sheet 1 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.2a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	13											
	14											
232												
	15								At 15.2 feet: Increased gravel, some reddish		1003 1009	
	16											
230									**Fluvial Deposits** At 16.2 feet: Silty Sand and Gravel, abundant subangular gravel up to 2 inches in diameter, dark yellowish brown (10YR 4/4) At 16.8 feet: Gravel with fine sand, some coarse gravel up to 3 inches in diameter, subangular to rounded, friable			
	17	3		96							[150]	
	18											
228												
	19											
	20		2				NR		**Fan Deposits** At 19.7 feet: Silty Sand, fine grained No core recovery from 19.8 to 20.0 feet At 20.0 feet: Silty Sand, fine grained, trace coarse sand and gravel, yellowish brown (10YR 5/4)		1011 1018	
226	21											
	22											
224		4		56							[300]	
	23								No core recovery from 22.8 to 25.0 feet			
							NR					
	24											
222												
	25								At 25.0 feet: Increase gravel abundance and size up to 1½ inches in diameter, brown (7.5YR 4/3)		1019 1024	
	26											
220												
	27		3									
		5		100							[300]	
	28											
218												
	29								At 28.5 feet: Dark yellowish brown (10YR 3/4)			

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Log of Core Boring T9-B2

Sheet 2 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.2b

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	29								**Fluvial Deposits** At 29.2 feet: Predominantly fine to coarse Gravel with Silty fine Sand, subrounded, friable			
	30										1025	
216									**Fan Deposits** At 30.2 feet: Silty Sand, fine grained, rare fine gravel, dark brown (10YR 3/3)		1032	
	31		3									
	32								At 31.8 feet: Very fine sand, trace silt, dark yellowish brown (10YR 3/4)			
214		6		100							[75]	
	33											
	34											
212												
	35								**Fluvial Deposits** At 34.6 feet: Sand and Gravel, fine to coarse sand, some silt, friable		1036	
									At 35.0 feet: Sand, medium to coarse grained, friable		1045	
	36											
210									At 36.4 feet: Clayey Silt with Gravel			
	37								At 36.7 feet: Sand, fine to coarse grained, some gravel, friable			
		7		96							[300]	
	38								At 37.5 feet: Fine to medium sand, some coarse, some silt, friable			
208									At 37.9 feet: Silty Sand and Gravel, fine to coarse grained, friable			
	39											
									At 39.5 feet: Fine to medium sand, few gravel, friable			
	40		4				NR		No core recovery from 39.8 to 40.0 feet		1046	
206									At 40.0 feet: Sand with Gravel, fine to coarse sand and gravel up to 2 inches in diameter, friable		1055	
	41											
									At 41.5 feet: Silty Sand, fine grained			
	42								At 42.0 feet: Gravel with Sand, fine to coarse sand, friable			
204		8		100							[75]	
	43								At 42.9 feet: 3-inch gravel clast			
									At 43.2 feet: Gravel size clasts 1-inch diameter, quartzite			
	44											
202									At 44.2 feet: Silty Sand with Gravel, fine grained			
									At 44.6 feet: Gravel with Sand, silty, friable			
	45											

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Log of Core Boring T9-B2

Sheet 3 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.2c

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	45								At 45.0 feet: Fine to coarse sand, fine gravel, friable		1050 1059	
	46								From 45.8 to 46.4 feet: Iron oxide staining			
200									From 46.4 to 46.8 feet: Abundant gravel up to 1/2 inch in diameter			
	47								At 46.8 feet: Silty Sand, medium to coarse grained, moderately abundant gravel, slightly clayey, friable			
		9		100							[150]	
	48								At 48.0 feet: Siltier, abundant gravel			
198												
	49								At 48.6 feet: Sandy Silt to Silty Sand, very fine sand, clayey, dark grayish brown (10YR 4/2), iron oxide stain at contact			
	50		5								1108	
196									Silty, Clayey Sand, fine grained, grayish brown (10YR 5/2)		1117	
	51								At 51.0 feet: Silty Sand, fine grained, trace clay			
	52								**LAKEWOOD FORMATION (Qlw)**			
194									Sand, fine grained, slightly clayey			
		10		100					At 52.5 feet: Fine sand, slightly silty with some dispersed iron oxide stain, light brownish gray (2.5Y 6/2)		[150]	
	53											
	54								At 54.0 feet: Finer grained			
192												
	55								At 55.0 feet: Fine grained, some dispersed iron oxide stain, light yellowish brown (2.5Y 6/3)		1119 1129	
	56											
190												
	57								From 56.7 to 57.0 feet: Heavy iron oxide stain From 57.0 to 57.6 feet: Less iron oxide stain			
		11		100							[300]	
	58		6						At 57.6 feet: Minor dispersed iron oxide stain			
188												
	59											
	60										1130 1142	
186												
	61											

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Log of Core Boring T9-B2

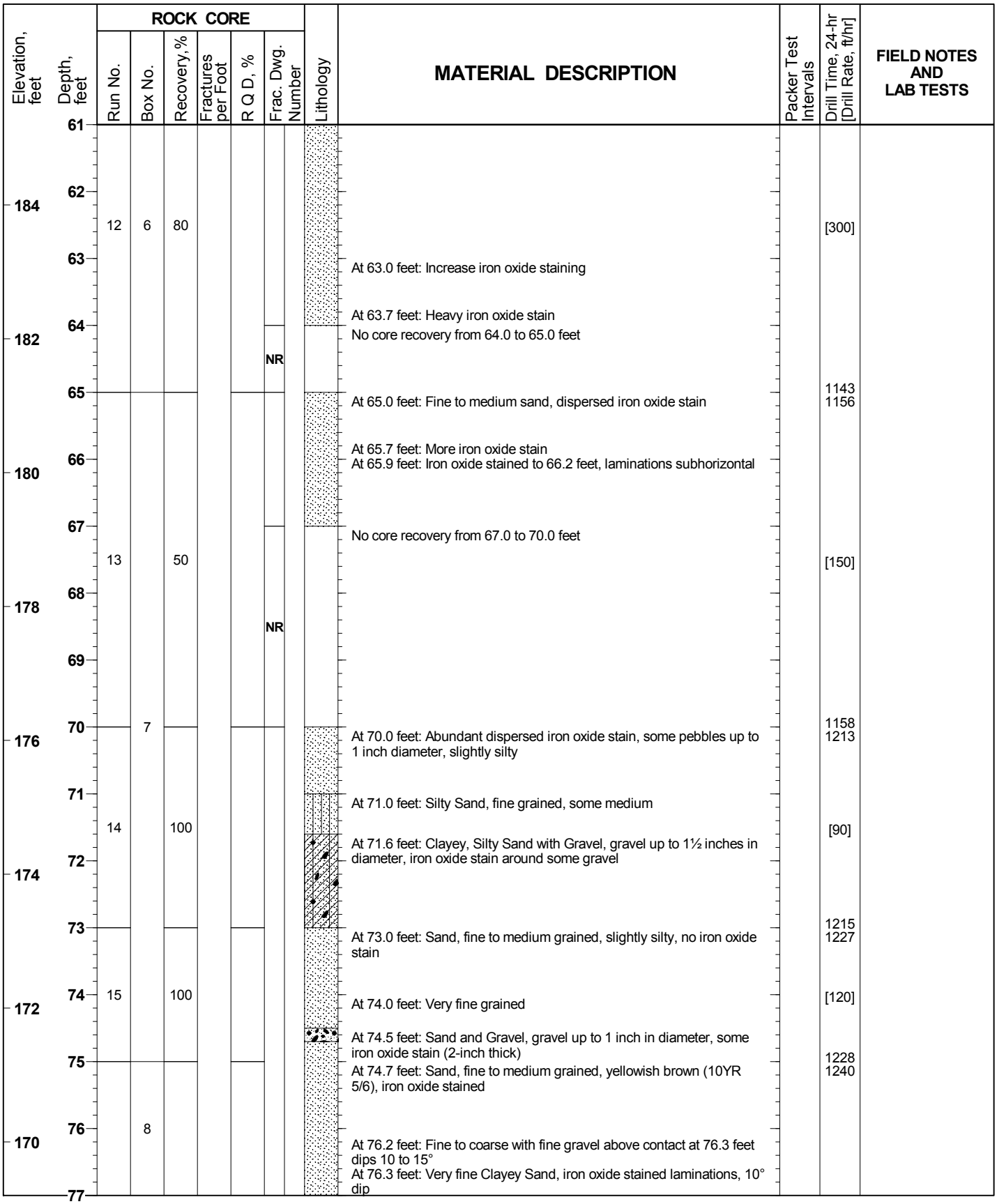
Sheet 4 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.2d

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016



AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B2

Sheet 5 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.2e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
168	77								At 76.5 feet: Horizontal iron oxide stained laminations, some fine gravel to 77 feet			
		16		84					At 77.0 feet: Iron oxide stain on very fine sand beds, none on silt beds/laminations		[300]	
	78											
	79						NR		No core recovery from 79.2 to 90.0 feet			
166	80								At 80.0 feet: Sand to Silty Sand, fine grained, alternating layers		1241 1253	
									At 80.5 feet: Massive fine sand with heavy iron oxide stain mottling			
	81								At 81.5 feet: Very fine grained			
164	82		8						No core recovery from 82.0 to 85.0 feet			
		17		40							[300]	
	83						NR					
162	84											
	85								At 85.0 feet: Sand, very fine grained, iron oxide stain mottling		1254 1308	
									At 85.4 feet: Fine grained			
160	86								At 85.9 feet: Some manganese At 86.0 feet: Coarser grained At 86.3 feet: Very fine grained			
	87											
		18		60							[150]	
158	88								No core recovery from 88.0 to 90.0 feet			
	89						NR					
156	90								At 90.0 feet: Very fine grained		1310 1325	
	91	19	9	100							[150]	
154	92								At 92.0 feet: Sand to Silty Sand, very fine grained, iron oxide mottling		1326 1340	
	93											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B2

Sheet 6 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.2f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	93											
	94	20		92							[150]	
152							NR		No core recovery from 94.5 to 95.0 feet			
	95										1341	
									At 95.0 feet: Fine grained, dispersed iron oxide stain		1356	
	96	21		100							[120]	
150			9						At 96.0 feet: Fine to medium At 96.3 feet: Rare gravel			
	97								At 96.7 feet: Silty Sand to Sandy Silt, very fine sand, some iron oxide stained lamination		1357	
									At 97.0 feet: Sand, very fine grained, rounded pebbles up to 1/2 inch in diameter from 97.2 to 97.3 feet At 97.6 feet: Slightly coasrer From 97.9 to 98.7 feet: Scattered manganese		1416	
148	98	22		67								
	99								No core recovery from 99.0 to 100.0 feet			
							NR					
	100										1416	
146									At 100.0 feet: Dark yellowish brown (10YR 4/4), dispersed iron oxide stain, some silt		1430	
	101	23		100							[-21]	
	102								**SAN PEDRO FORMATION (Qsp)**			
144									Sand, fine grained, greenish black (2.5/10GY), unoxidized, some fossil shells and fragments, horizontal contact abrupt color change		1423	
	103										1444	
		24	10	100							[150]	
142	104											
	105										1445	
									At 105.4 feet: Slightly silty, very fine grained, micaceous		1458	
140	106											
	107	25		96							[300]	
138	108											
	109											

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Log of Core Boring T9-B2

Sheet 7 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.2g

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	109		10									
	110						NR		No core recovery from 109.8 to 110.0 feet		1459	
136									END OF BORING AT 110 FEET			
	111								NOTES: • Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was not encountered. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
134	112											
	113											
132	114											
	115											
130	116											
	117											
128	118											
	119											
126	120											
	121											
124	122											
	123											
122	124											
	125											

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Log of Core Boring T9-B2

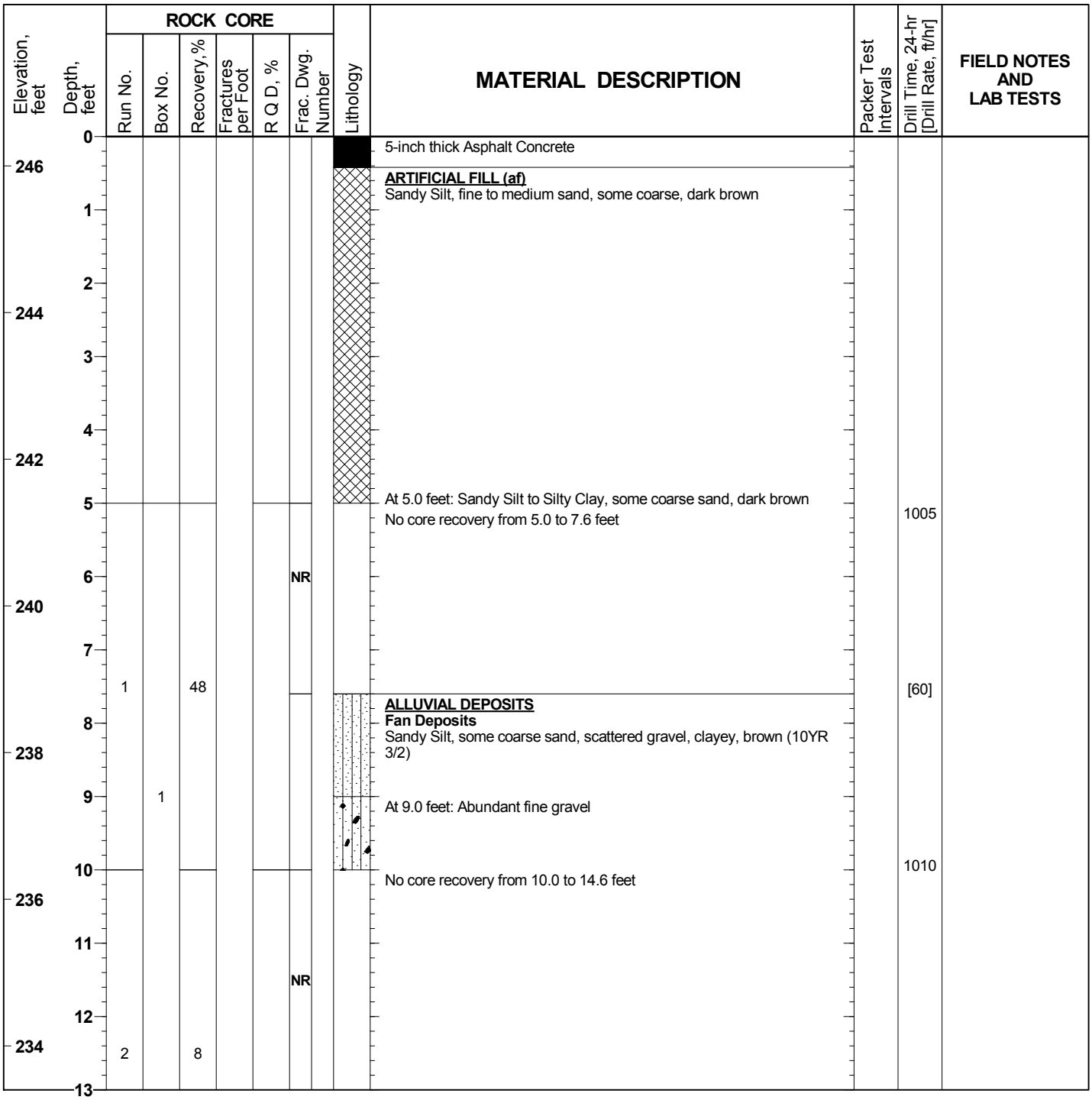
Sheet 8 of 8

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.2h

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016



DATE(S) DRILLED:	10/14/2015 to 10/15/2015	LOGGED BY:	P. Romo / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 85	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	ABC Liovin Drilling	SURFACE ELEVATION*:	246.40 feet
BIT SIZE / TYPE:	8" Diamater Bit / HQ	TOTAL DRILLED DEPTH:	130.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	Perched groundwater at 70 feet

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B3

Sheet 1 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.3a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	13											
	14		1				NR					
232									Sandy Silt, brown (10YR 4/3), hard			
	15								No core recovery from 15.0 to 23.2 feet		1015	
	16											
230												
	17						NR					
		3		0								
	18											
228												
	19											
	20								No core recovery from 20.0 to 23.2 feet		1020	
226												
	21											
			1				NR					
	22											
224												
		4		36								
	23								At 23.2 feet: Sandy Silt, dark grayish brown (10YR 4/2), hard			
	24								**Fluvial Deposits**			
222									At 24.0 feet: Silty Sand, fine to medium grained, brown (10YR 5/3), loose			
	25								No core recovery from 25.0 to 29.0 feet		1030	
	26											
220												
	27						NR					
		5		20								
	28											
218												
	29											

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Log of Core Boring T9-B3

Sheet 2 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.3b

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	29								**Fan Deposits** At 29.0 feet: Sandy Silt to Silty Sand, very fine grained, some gravel up to 1/4 inch in diameter			
	30						NR				1034	
216									No core recovery from 30.0 to 30.2 feet At 30.0 feet: silty sand, very fine sand, trace clay, brown (10YR 4/3) At 30.2 feet: Rare coarse sand and gravel			
	31	6		46								
	32								At 31.9 feet: Gravel clast 3/4 inch in diameter, rounded			
214									No core recovery from 32.5 to 32.6 feet		1036	
	33								At 32.6 feet: Silty Sand, very fine grained, scattered coarse sand and fine gravel, dark yellowish brown (10YR 3/4)			
	34	7		48								
212												
	35		1						No core recovery from 35.0 to 36.6 feet		1045	
	36						NR					
210									At 36.6 feet: Sandy Silt to Silty Sand, fine sand, some coarse, brown			
	37											
	38	8		68					At 37.3 feet: Some gravel up to 1½ inches in diameter			
208									At 38.3 feet: No gravel			
	39											
	40								From 39.5 to 39.9 feet: Some medium sand		1050	
206							NR		No core recovery from 40.0 to 41.0 feet			
	41								**Fluvial Deposits** At 41.0 feet: Silty Sand, very fine grained, some medium and coarse, dark yellowish brown (10YR 3/4), friable At 41.2 feet: Trace clay			
	42		2									
204		9		80								
	43								At 43.4 feet: Fine to coarse sand, some fine gravel, white, gray and brown, friable			
	44								At 44.0 feet: Very fine sand, trace clay, light olive brown (2.5Y 5/4)			
202												
	45											

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Log of Core Boring T9-B3

Sheet 3 of 9

Westside Purple Line Extension - Section 2
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Project No. 4953-11-1423

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Figure: A-1.3c

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	45								**Fan Deposits**		1057	
							NR		At 44.8 feet: Slightly Clay and Silt No core recovery from 45.0 to 46.3 feet			
	46											
200									At 46.3 feet: Sandy Silt, very fine sand, trace gravel up to 1/2 inch in diameter, dark olive brown (2.5Y 3/3), mottled iron oxide stains, moist			
	47								At 46.9 feet: Silty Sand, very fine grained, rare coarse, very dark grayish brown (10YR 3/2) wtih some iron oxide mottling			
		10		74								
	48								At 48.0 feet: Slightly clayey			
198									At 48.3 feet: No clay			
	49								At 49.0 feet: Silty Sand with Gravel, very fine grained with moderately abundand coarse, fine gravel			
									At 49.7 feet: No gravel			
	50		2								1110	
196									At 50.0 feet: Very fine sand, clayey, dark grayish brown (10YR 4/2), moderate iron oxide mottling			
	51											
	52								At 52.0 feet: Occasional coarse sand and fine gravel			
194		11		100								
	53								At 53.0 feet: Lighter gray mottled with iron oxide stains			
	54								At 54.1 feet: Gravelly up to 1/2 inch in diameter			
192									At 54.3 feet: Scattered gravel, slightly clayey			
	55								At 55.0 feet: Sandy Clay, fine to medium sand, scattered fine gravel, dark to medium brown		1120	
	56								At 56.1 feet: Silty Sand, very fine sand, trace clay, brown (10YR 5/3), some diffused iron oxide stains			
190												
	57											
		12		100					At 57.4 feet: Slightly clayey			
	58		3						At 58.0 feet: Clayey Silt			
188												
	59								At 58.8 feet: Sandy, yellowish brown (10YR 5/4) At 59.1 feet: Silty Sand, very fine grained, light yellowish brown (10YR 6/4)			
	60										1130	
							NR		No core recovery from 60.0 to 60.5 feet			
186												
	61								At 60.5 feet: Very fine sand, trace clay, dark yellowish brown (10YR 4/4)			

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B3

Sheet 4 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.3d

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	61											
	62											
184		13		92					At 62.3 feet: Silty Sand, fine grained			
	63								At 63.0 feet: Silty Clay, slightly sandy, dark grayish brown (10YR 4/2), some diffuse yellow iron oxide stains At 63.4 feet: Sandy Clay			
	64								At 63.8 feet: Silty Sand, fine grained			
182									At 64.1 feet: Clayey Sand to Sandy Clay, some iron oxide mottling			
	65		3				NR		No core recovery from 65.0 to 65.7 feet		1140	
	66								At 65.8 feet: Silty Sand, very fine to fine grained, light olive brown (2.5Y 5/3), scattered iron oxide mottling			
180												
	67											
		14		86								
	68											
178												
	69								At 68.6 feet: Less silt, light yellowish brown (2.5Y 6/4)			
	70								▽ No core recovery from 70.0 to 73.0 feet		1147	
176												
	71											
							NR					
	72											
174		15		40								
	73		4						At 73.0 feet: Clayey Sand to Sandy Clay, medium sand, dark to medium brown, moist			
									LAKEWOOD FORMATION (Qlw) At 73.6 feet: Sharp contact, Silty Sand, very fine to fine grained, light olive brown (2.5Y 5/4) to light yellowish orangish brown, friable			
172	74								At 74.8 feet: Pale yellow (2.5Y 8.2)			
	75								No core recovery from 75.0 to 77.6 feet		1205	
							NR					
170	76											
	77											

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Log of Core Boring T9-B3

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.3e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	77						NR					
		16		48					At 77.6 feet: Fine sand, olive yellow (2.5Y 6/6), diffuse orangish brown iron oxide stains, wet			
	78								At 78.0 feet: Fine to medium sand			
168												
	79								At 79.0 feet: Fine grained			
									At 79.6 feet: Abundant dark brown manganese			
	80								At 79.8 feet: Laminated		1220	
166									At 80.0 feet: Slightly Silty Sand, fine grained, rare fine gravel, yellowish brown (10YR 5/6), diffuse iron oxide staining, massive			
	81	17		100								
									At 81.5 feet: Less iron oxide staining			
	82								At 82.0 feet: Fine to very fine sand			
164									At 82.3 feet: Very fine sand		1235	
									At 82.35 feet: Silt, pale yellow (2.5Y 7/3)			
	83		4						At 82.5 feet: Fine to medium sand, some coarse, some very fine Silty Sand			
		18		100								
	84											
162									At 84.5 feet: Fine to coarse sand, some fine gravel			
	85								At 85.0 feet: Fine sand, pale yellow (2.5Y 7/4)		1245	
									At 85.5 feet: Some coarse sand and gravel up to 1/4 inch in diameter			
	86	19		100								
160												
	87								At 87.1 feet: Very fine sand, rare gravel up to 1/2 inch in diameter, iron oxide stains			
											1302	
							NR		No core recovery from 87.5 to 88.4 feet			
	88											
158									At 88.4 feet: Silty Sand, fine to medium grained, grayish brown, wet			
		20		64								
	89								At 88.8 feet: Silty Sand, very fine grained, iron oxide stained/mottled			
	90										1310	
156									No core recovery from 90.0 to 92.2 feet			
	91		5				NR					
	92											
154												
		21		56					At 92.2 feet: Iron oxide stains			
	93											

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Sheet 6 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.3f

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	93											
	94											
152												
	95								No core recovery from 95.0 to 97.2 feet		1325	
	96						NR					
150												
	97											
		22		56					At 97.2 feet: Predominantly very fine to fine sand, some fine to coarse, gravel up to 1½ inches in diameter, subrounded, laminated			
	98								At 98.0 feet: Laminated, gray and iron oxide stained			
148												
	99								At 99.0 feet: 1/16-inch thick gray clay bed, horizontal			
									At 99.5 feet: Gravel up to 1 inch in diameter			
	100		5						No core recovery from 100.0 to 102.2 feet		1335	
146												
	101						NR					
	102											
144		23		56					At 102.2 feet: Some rounded gravel up to 1 inch in diameter, massive			
	103								At 103.3 feet: Very fine grained, laminated			
	104											
142												
	105								No core recovery from 105.0 to 108.7 feet		1346	
	106											
140												
	107						NR					
		24		26								
	108											
138												
	109								At 108.7 feet: Sand, fine grained, mottled, wet, locally laminated			

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Log of Core Boring T9-B3

Sheet 7 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.3g

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	109											
			5									
	110								No core recovery from 110.0 to 112.6 feet		1418	
136												
	111						NR					
	112											
134		25		48					At 112.6 feet: Some fine laminations, yellowish brown (10YR 5/4)			
	113											
	114											
132									**SAN PEDRO FORMATION (Qsp)**			
									At 114.3 feet: Sand to Sandy Silt, very fine sand, unoxidized, black (2.5/10Y), moist to wet			
	115										1430	
							NR		No core recovery from 115.0 to 115.5 feet			
									At 115.5 feet: Fine to very fine Sand			
	116											
130												
	117											
		26		90								
	118		6									
128												
	119											
	120								No core recovery from 120.0 to 122.6 feet		1445	
126												
	121											
							NR					
	122											
124		27		48					From 122.6 to 122.7 feet: Some shell fragments			
	123											
	124								At 124.1 feet: Scattered shell fragments			
122												
	125											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Sheet 8 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.3h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	125								No core recovery from 125.0 to 127.7 feet		1510	
	126											
120							NR					
	127	28	6	46								
	128								At 127.7 feet: Sand, very fine grained			
118									At 128.5 feet: Intact shell			
	129											
	130										1530	
									END OF BORING AT 130 FEET			
116									NOTES:			
	131								• Hand augered upper 6½ feet to avoid damage to utilities. • Perched groundwater was encountered at 70 feet below the ground surface. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
	132											
114												
	133											
	134											
112												
	135											
	136											
110												
	137											
	138											
108												
	139											
	140											
106												
	141											

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Log of Core Boring T9-B3

Sheet 9 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.3i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	0								5-inch thick Asphalt Concrete			
									ARTIFICIAL FILL (Af) Sand with Silt to Silty, Clayey Sand, dark brown (7.5YR 3/3)			
246	1											
	2											
244	3											
	4											
242	5						NR		No core recovery from 5.0 to 5.3 feet			
									ALLUVIAL DEPOSITS **Fan Deposits** Silty Sand to Sandy Silt, very fine sand, scattered medium to coarse and fine gravel, slightly clayey, dark brown (10YR 3/3), massive, scattered carbonate filaments At 6.2 feet: Slightly clayey			
	6											
240	7	1		94								
	8											
238	9		1									
	10						NR		No core recovery from 10.0 to 10.4 feet			
									At 10.4 feet: Silty Sand to Sandy Silt, very fine grained, scattered coarse sand and fine gravel			
236	11								At 11.0 feet: Silty Sand, very fine grained			
									At 11.5 feet: Silty Sand to Sandy Silt, very fine grained			
	12								At 12.0 feet: Dark yellowish brown (10YR 4/4)			
		2		92					From 12.4 to 12.6 feet: Grades to Clayey Silt, some very fine sand			
234	13											

DATE(S) DRILLED:	10/9,12/2015	LOGGED BY:	P. Romo / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 85	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	ABC Liovin Drilling	SURFACE ELEVATION*:	247.00 feet
BIT SIZE / TYPE:	8" Diamater Bit / HQ	TOTAL DRILLED DEPTH:	130.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	Not encountered

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B4

Sheet 1 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.4a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
234	13								At 13.4 feet: Silty Sand, very fine grained, dark yellowish brown (10YR 4/4) At 13.6 feet: Some fine gravel At 13.7 feet: Clayey Silt, rare fine gravel, dark yellowish brown (10YR 3/4) At 14.0 feet: Sandy Silt, very fine grained			
	14											
232	15						NR		No core recovery from 15.0 to 15.5 feet			
	16		1						At 15.5 feet: Silty Sand, very fine grained, scattered coarse, scattered fine gravel, dark yellowish brown (10YR 4/4)			
230	17	3		90					At 16.8 feet: Core broken up, rare fine gravel			
	18											
228	19											
	20						NR		No core recovery from 20.0 to 20.3 feet			
226	21								**Fluvial Deposits** At 20.3 feet: Sand with Gravel At 20.5 feet: Fine grained with abundant medium to coarse, fine gravel up to 1/2 inch in diameter, brown (10YR 4/3), friable			
	22	4		94								
224	23								**Fan Deposits** At 22.5 feet: Silty Sand to Sandy Silt, very fine sand, rare fine gravel, trace clay, dark brown (10YR 3/3)			
	24								At 23.7 feet: Slightly porous			
222	25		2				NR		No core recovery from 25.0 to 25.4 feet			
	26								At 25.5 feet: Very fine sand, scattered coarse sand and fine gravel, dark brown (7.5YR 3/3), slightly porous			
220	27	5		92								
	28											
218	29								At 28.4 feet: Abundant coarse sand and fine gravel, 1½-inches thick bed			

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Log of Core Boring T9-B4

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.4b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
218	29								At 28.6 feet: Dark yellowish brown (10YR 3/4)			
	30						NR		No core recovery from 30.0 to 30.4 feet			
216	31											
	32		2						At 32.0 feet: Trace clay			
		6		92								
214	33											
	34								**Fluvial Deposits** At 34.0 feet: Silty Sand, fine to medium grained, medium brown, friable At 34.3 feet: Silty Sand, very fine grained, not friable			
212	35						NR		No core recovery from 35.0 to 35.8 feet			
	36								At 35.5 feet: Very fine sand lens 1/2-inch thick, friable At 35.9 feet: Sandy Silt, very fine sand, slightly clayey At 36.0 feet: Silty Sand, very fine grained, dark yellowish brown (10YR 4/4), slightly friable			
210	37											
		7		90					At 37.3 feet: Silty Sand, very fine grained, slightly clayey			
	38								**Fan Deposits** At 37.8 feet: Fine sand bed 1-inch thick, friable At 37.9 feet: Silty Sand to Sandy Silt, very fine grained			
208	39								At 38.9 feet: Silty Sand with Gravel, very fine grained, gravel up to 1-inch in diameter, 1½-inch thick bed At 39.0: Silty Sand to Sandy Silt, very fine sand, trace clay			
	40		3						At 40.0 feet: Silty Sand to Sandy Silt, very fine sand, rare fine gravel, slightly clayey, brown (10YR 3/2) mottled with iron oxide stain At 40.1 feet: No clay, dark yellowish brown (10YR 4/4) mottled			
206	41								At 40.8 feet: Trace clay, no gravel			
	42								At 41.6 feet: Clayey, rare coarse sand, fine gravel, iron oxide staining			
		8		100								
204	43											
	44								At 43.5 feet: Sandier At 43.8 feet: Silty Sand, very fine grained			
202	45								**Fluvial Deposits** At 44.1 feet: Coarse sand and gravel bed, gravel up to 1½ inches in diameter, minor silt and clay			

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Log of Core Boring T9-B4

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Westside Purple Line Extension - Section 2
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Project No. 4953-11-1423

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Figure: A-1.4c

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
202	45								No core recovery from 45.0 to 47.3 feet			
	46						NR					
200	47	9	3	54					**Fan Deposits** At 47.3 feet: Silty Clay, some coarse sand, dark yellowish brown (10YR 3/4) mottled At 47.7 feet: Sandy			
198	49								At 49.1 feet: Silty Sand, medium to coarse grained (fining up), some fine, fine gravel At 49.6 feet: Silty Clay, sandy			
	50								At 50.0 feet: Clayey Sand to Sandy Clay, fine sand, some medium to coarse, becomes sandier with depth, very dark grayish brown (10YR 3/2) with iron oxide mottling			
196	51								At 51.5 feet: Some gravel up to 1/2 inch in diameter			
	52	10		100					At 52.5 feet: Clayey Sand			
194	53								At 53.4 feet: Abundant gravel			
	54								At 54.5 feet: Clayey Sand to Sandy Clay, fine sand, dark grayish brown (2.5Y 4/2) mottled with iron oxide stain			
192	55		4						At 55.6 feet: Local manganese blebs within grayish brown Clayey Sand			
	56								At 56.5 feet: Clayey Sand, fine grained			
190	57	11		100					At 57.2 feet: Silty Sand, trace clay At 57.4 feet: Clayey Sand to Sandy Clay			
	58								At 58.8 feet: Sandier			
188	59								At 59.2 feet: Clayey Sand At 59.5 feet: Sandy Clay, fine sand			
	60											
186	61											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B4

Sheet 4 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.4d

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
186	61								At 60.9 feet: Silty Clay, abundant carbonate			
	62											
		12	4	100								
184	63								At 62.8 feet: Decrease carbonate, sandy			
									At 63.2 feet: Sandy Silt to Sandy Clay, scaterred fine gravel			
	64								At 64.0 feet: Silty, Clayey Sand to Sandy Silt, very fine sand, minor carbonate blebs			
									At 64.8 feet: Gravels			
182	65								No core recovery from 65.0 to 66.3 feet			
							NR					
	66											
									At 66.3 feet: Sandy Silty Clay, fine sand, some medium, olive brown (2.5Y 4/3), mottled iron oxide stains			
180	67											
		13		74								
	68								At 67.7 feet: Clayey Sand, fine to medium grained			
									LAKEWOOD FORMATION (Qlw)			
178	69								At 68.3 feet: Slightly Clayey Sand, fine to medium grained, light yellowish brown (2.5Y 6/3)			
	70								No core recovery from 70.0 to 72.5 feet			
176	71		5				NR					
	72											
		14		50								
174	73											
	74											
									At 74.7 feet: Silty Sand, fine to very fine grained			
172	75								No core recovery from 75.0 to 77.4 feet			
	76						NR					
170	77											

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Log of Core Boring T9-B4

Sheet 5 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.4e

AMEC CORE; File: 495311423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
170	77						NR					
		15		52					At 77.4 feet: Sand, fine grained, slightly clayey, some laminations, minor iron oxide stain on some laminations			
	78								From 77.8 to 78.2 feet: Dark brown			
									At 78.2 feet: Thin beds and laminations			
168	79								At 78.7 feet: Brown with some iron oxide stain			
									At 79.6 feet: Yellowish brown			
	80		5						No core recovery from 80.0 to 82.0 feet			
166	81						NR					
	82								At 82.0 feet: Sand, fine grained, slightly silty, light olive brown (2.5Y 5/6)			
		16		60					At 82.2 feet: Some fine gravel			
									At 82.7 feet: Some coarse sand and fine gravel			
164	83								At 83.1 feet: Gravel up to 1½ inches in diameter			
									At 83.3 feet: Very fine sand, rare coarse sand and fine gravel, light yellowish brown (2.5Y 6/4), some crude beds, some minor iron oxide mottles			
	84											
									At 84.7 feet: Fine to coarse sand 1-inch thick			
162	85								No core recovery from 85.0 to 86.3 feet			
							NR					
	86											
									At 86.3 feet: Sand, fine grained, some medium to coarse, some fine gravel, massive			
160	87								At 86.9 feet: Very fine grained, some fine gravel			
		17		74								
									At 87.6 feet: Some coarse sand and fine gravel			
	88								At 88.0 feet: Very fine sand, predominantly pale yellow (2.5Y 7/3)			
158	89											
	90		6						No core recovery from 90.0 to 91.8 feet			
156	91						NR					
	92								From 91.8 to 92.2 feet: Very fine sand and fine gravel			
		18		64					At 92.2 feet: Very fine sand, some laminations, iron oxide stained beds			
154	93								At 92.5 feet: Fine sand, light olive brown (2.5Y 5/6)			

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Log of Core Boring T9-B4

Sheet 6 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.4f

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
154	93								At 92.9 feet: Fine to medium sand At 93.0 feet: Fine to coarse sand At 93.2 feet: Very fine sand, some laminations At 93.5 feet: Fine to coarse sand At 93.7 feet: Very fine to fine sand, abundant iron oxide stain			
	94											
152	95								No core recovery from 95.0 to 98.0 feet			
	96											
							NR					
150	97	19		40								
	98								At 98.0 feet: Rounded coarse sand and fine gravel			
									At 98.4 feet: Fine sand, slightly silty			
148	99								At 98.8 feet: Some fine gravel, iron oxide stains, some crude bedding At 99.2 feet: No gravel			
	100		6						No core recovery from 100.0 to 100.9 feet			
							NR					
146	101	20		64					At 100.9 feet: Sand, very fine clean sand, some coarse At 101.3 feet: Fine sand, heavily iron oxide stained			
	102								At 101.7 feet: Very fine sand with trace silt			
									No core recovery from 102.5 to 104.0 feet			
144	103						NR					
		21		40								
	104								From 104.0 to 104.2 feet: Fine to very fine sand, some manganese, heaviley iron oxide stained			
142	105						NR		No core recovery from 105.0 to 105.2 feet At 105.2 feet: Very fine sand, light olive brown (2.5Y 5/4), some crude bedding, heavily iron oxide stained			
	106	22		92								
140	107											
							NR		No core recovery from 107.5 to 108.3 feet			
	108		7									
138	109	23		68					At 108.3 feet: Very fine sand, iron oxide heavy staining, some crude beds			

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Log of Core Boring T9-B4

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.4g

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
138	109											
	110								No core recovery from 110.0 to 112.3 feet			
136	111						NR					
	112											
		24		54					At 112.6 feet: Fine grained			
134	113								At 113.2 feet: Some coarse Sand			
									SAN PEDRO FORMATION (Qsp)			
	114								At 113.3 feet: Silty Sand, very fine grained, unoxidized, dark gray (2.5Y 4/1), some laminations, slightly miccaceous			
132	115		7						No core recovery from 115.0 to 117.1 feet			
	116						NR					
130	117								At 117.1 feet: Gray (2.5Y 5/1), slightly micaceous			
		25		58								
	118											
128	119								At 119.0 feet: Some laminations			
									At 119.5 feet: Some shell fragments			
	120								No core recovery from 120.0 to 123.9 feet			
126	121											
	122		8				NR					
		26		22								
124	123											
	124								At 123.9 feet: Sand to Sandy Silt, very fine sand, brown (2.5Y 3/2), slightly micaceous			
122	125											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B4

Sheet 8 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.4h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
122	125								No core recovery from 125.0 to 128.0 feet			
	126						NR					
120	127	27		40								
	128		8									
118	129								At 129.2 feet: Very fine gravel At 129.3 feet: Silty Clay with scattered coarse sand and fine gravel, greenish black (GLEY 1 2.5/10Y)			
	130								END OF BORING AT 130 FEET NOTES: • Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was not encountered. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
116	131											
	132											
114	133											
	134											
112	135											
	136											
110	137											
	138											
108	139											
	140											
106	141											

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Log of Core Boring T9-B4

Sheet 9 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.4i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	0								4-inch thick Asphalt over 6-inch thick Concrete			
	1								**ARTIFICIAL FILL (af)** Clayey Silt and Poorly Graded Sand with Gravel, dark brown (7.5YR 3/3), mottled			
246	2											
	3											
244	4											
	5						NR		No core recovery from 5.0 to 5.5 feet		1152	
242	6								**ALLUVIAL DEPOSITS** **Fan Deposits** At 5.6 feet: Silty Sand, very fine grained, scattered coarse sand and gravel, slightly clayey, very dark grayish brown (10YR 3/2)			
	7	1		90					At 7.4 feet: Slightly clayey, dark brown (10YR 3/3)			
240	8								At 8.2 feet: Silty Sand, very fine grained From 8.5 to 8.7 feet: Abundant gravel			
	9		1						At 8.8 feet: Yellowish brown (10YR 5/4) At 9.4 feet: No gravel			
238	10						NR		No core recovery from 10.0 to 10.3 feet		1152 1159	
	11								From 10.5 to 10.7 feet: Fine sand bed, slightly friable At 10.7 feet: Some fine gravel			
236	12								At 11.5 feet: Trace clay, brown (10YR 4/3)			
	13	2		94					At 12.7 feet: Slightly clayey		[300]	

DATE(S) DRILLED:	10/8,9/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	247.20 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	126.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	41 feet at completion

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Log of Core Boring T9-B5

Sheet 1 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.5a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
234	13								At 13.5 feet: Scattered coarse sand			
	14		1									
	15										1200	
232											1205	
	16								**Fluvial Deposits** At 16.0 feet: Fine to coarse sand and gravel, friable			
	17								At 16.4 feet: Silty Sand, fine grained with scattered gravel			
230		3		90							[300]	
	18								At 17.9 feet: Fine to coarse sand and gravel, friable			
	19											
228							NR		No core recovery from 19.5 to 20.0 feet			
	20		2						At 20.0 feet: Silty Sand, fine grained, scattered gravel, friable		1206 1212	
	21								At 20.7 feet: Silty Sand, very fine grained, scattered gravel, brown (10YR 4/3), friable			
226												
	22								**Fan Deposits** At 21.9 feet: Silty Sand, fine grained, dark yellowish brown (10YR 4/4)			
		4		100					At 22.4 feet: Silty Sand, fine grained with scattered gravel		[300]	
	23								At 23.0 feet: Very fine			
224												
	24								At 23.6 feet: Trace clay, dark yellowish brown (10YR 3/4)			
	25										1213	
222									At 25.0 feet: Rare gravel		1219	
	26											
	27		3									
220		5		100							[150]	
	28											
	29								**Fluvial Deposits** At 28.3 feet: Sand and Gravel, fine to coarse sand, gravel up to 2 inches in diameter, grayish brown, friable			

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Log of Core Boring T9-B5

Sheet 2 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.5b

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
218	29								At 28.9 feet: Fine gravel			
	30								At 30.0 feet: Gravel up to 2 inches in diameter		1221 1228	
									At 30.6 feet: Fine gravel			
216	31		3						At 31.5 feet: Gravel up to 3/4 inch in diameter			
	32	6		80					At 32.6 feet: Gravel up to 2 inches in diameter, clayey		[150]	
214	33											
	34						NR		No core recovery from 34.0 to 35.0 feet			
	35										1230 1240	
212	36											
	37	7		76							[150]	
210	38											
	39						NR		No core recovery from 38.8 to 40.0 feet			
208	40		4								1242 1249	
	41								At 41.0 feet: 1-inch thick iron oxide stained fine sand bed above a 1-inch thick clayey silt bed, gray	▽		
206	42								At 41.9 feet: Silty Sand, very fine grained, gray, micaceous No core recovery from 42.0 to 45.0 feet			
	43	8		40			NR				[300]	
204	44											
	45											

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Log of Core Boring T9-B5

Sheet 3 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.5c

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
202	45								At 45.0 feet: Silty Sand, fine grained, very dark grayish brown (2.5Y 3/2), micaceous, some manganese stains		1259	
	46								At 46.0 feet: Fine to medium sand, micaceous, some iron oxide banding			
									At 46.6 feet: Sand with Gravel, medium to coarse sand			
200	47								At 46.8 feet: Very fine Sandy Silt with crudely bedded Clayey Silt, brown (10YR 4/3), mottled			
		9		80					At 47.4 feet: Grades to Silty Sand, fine grained, some fine gravel		[300]	
	48								At 48.1 feet: Very fine sand			
									At 48.4 feet: Silty Sand, fine to medium grained, some coarse, some fine gravel, friable			
198	49								No core recovery from 49.0 to 50.0 feet			
							NR					
	50		5								1300	
									At 50.0 feet: Sand, fine grained, some medium, dark brown (10YR 3/3), friable		1309	
196	51											
	52								From 52.0 to 52.7 feet: Very fine to fine sand, silty, some gravel			
		10		80							[300]	
	53								At 52.7 feet: Sand, fine to coarse grained, some fine gravel, silty			
194												
	54								No core recovery from 54.0 to 55.0 feet			
							NR					
	55										1310	
192									**Fan Deposits** Silty Sand to Sandy Silt, very fine grained		1318	
									Sag Deposits At 55.4 feet: Slightly clayey, brown, mottled gray, laminated to bedded, dip 0° to 5°, with clay beds (1/16- to 1/2-inch thick) At 55.8 feet: Laminated to bedded Sandy Silty Clay, dark brown (10YR 3/3)			
	56											
	57											
190												
		11		100					At 57.5 feet: Beds rippled		[300]	
	58		6						At 57.8 feet: Sandier, scattered fine gravel, grayish brown, massive			
									Fan Deposits At 58.2 feet: Clayey Sand with Gravel, fine grained, moderately abundant fine gravel			
	59								At 58.7 feet: Faint crude bedding			
188									At 59.1 feet: Silty Sand, very fine to medium grained, slightly clayey, light olive brown (2.5Y 5/3), mottled orangish, black and light medium brown, some fine gravel, massive, flecks of manganese			
	60										1319 1328	
									Sag Deposits At 60.5 feet: Sandy Silt to Silty Sand, very fine sand, slightly clayey,			
	61											

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Log of Core Boring T9-B5

Sheet 4 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.5d

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
186	61								thinly bedded with Silty Clay laminations			
	62								At 61.8 feet: Sandier, light olive brown (2.5Y 5/4), mottled, more iron oxide staining			
		12		100					At 62.3 feet: Very fine Silty Sand interbedded with Clay		[300]	
	63		6						At 62.9 feet: Two manganese laminations, two iron oxide stained sand laminations			
184									**LAKEWOOD FORMATION (Qlw)** Silty Sand to Sandy Silt, very fine sand, slightly clayey, light olive brown (2.5Y 5/3), massive			
	64											
	65										1329	
182									Sand, fine grained, some medium, light olive brown (2.5Y 5/6), massive, friable		1341	
	66								At 65.4 feet: Fine grained, slightly silty, friable			
	67								At 66.7 feet: Fine to medium sand, rare gravel, friable			
180		13		100							[300]	
	68											
	69								At 68.4 feet: Fine sand, slightly clayey, grayish brown (2.5Y 5/2), friable			
178												
	70		7						At 70.0 feet: Silty Sand, very fine to fine grained, olive brown (2.5Y 4/3)		1342 1353	
	71											
176												
	72								At 72.0 feet: Brownish gray with moderate iron oxide staining			
		14		100							[300]	
	73											
174												
	74											
	75								At 75.0 feet: Fine to medium grained sand, less silt, light olive brown (2.5Y 5/4), massive		1354 1406	
172												
	76		8									
	77											

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Log of Core Boring T9-B5

Sheet 5 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.5e

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
		ROCK CORE										
170	77											
		15		100							[300]	
	78								At 78.2 feet: Iron oxide stained mottling			
	79								At 79.0 feet: Some laminations, heavy iron oxide staining			
168												
	80								At 80.0 feet: Sandy Silt, very fine sand, clayey, abundant subrounded gravel up to 2 inches in diameter, pale yellow (2.5Y 7/3)		1407 1423	
	81								No core recovery from 80.8 to 85.0 feet			
166												
	82											
		16		16							[300]	
	83		8				NR					
164												
	84											
	85								At 85.0 feet: Very fine to fine grained, light yellowish brown (2.5Y 6/3), predominantly iron oxide stained At 85.1 feet: Fine to medium sand		1424 1439	
162	86								At 86.0 feet: Fine to coarse sand			
									At 86.6 feet: Some fine gravel			
	87								At 87.0 feet: Slightly clayey, light olive brown (2.5Y 5/3), minor iron oxide staining			
160		17		70					At 87.4 feet: Very fine sand, slightly clayey and silty, scattered fine gravel		[300]	
	88								At 88.0 feet: No clay			
									No core recovery from 88.5 to 90.0 feet			
158	89						NR					
	90								At 90.0 feet: Sand, very fine grained, light yellowish brown (2.5Y 6/3) with minor light iron oxide staining, some fine beds and fine to medium beds and laminations		1440 1453	
	91											
156			9						From 91.4 to 91.5 feet: Medium to coarse sand bed			
	92											
		18		50							[300]	
	93						NR		No core recovery from 92.5 to 95.0 feet			

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Log of Core Boring T9-B5

Sheet 6 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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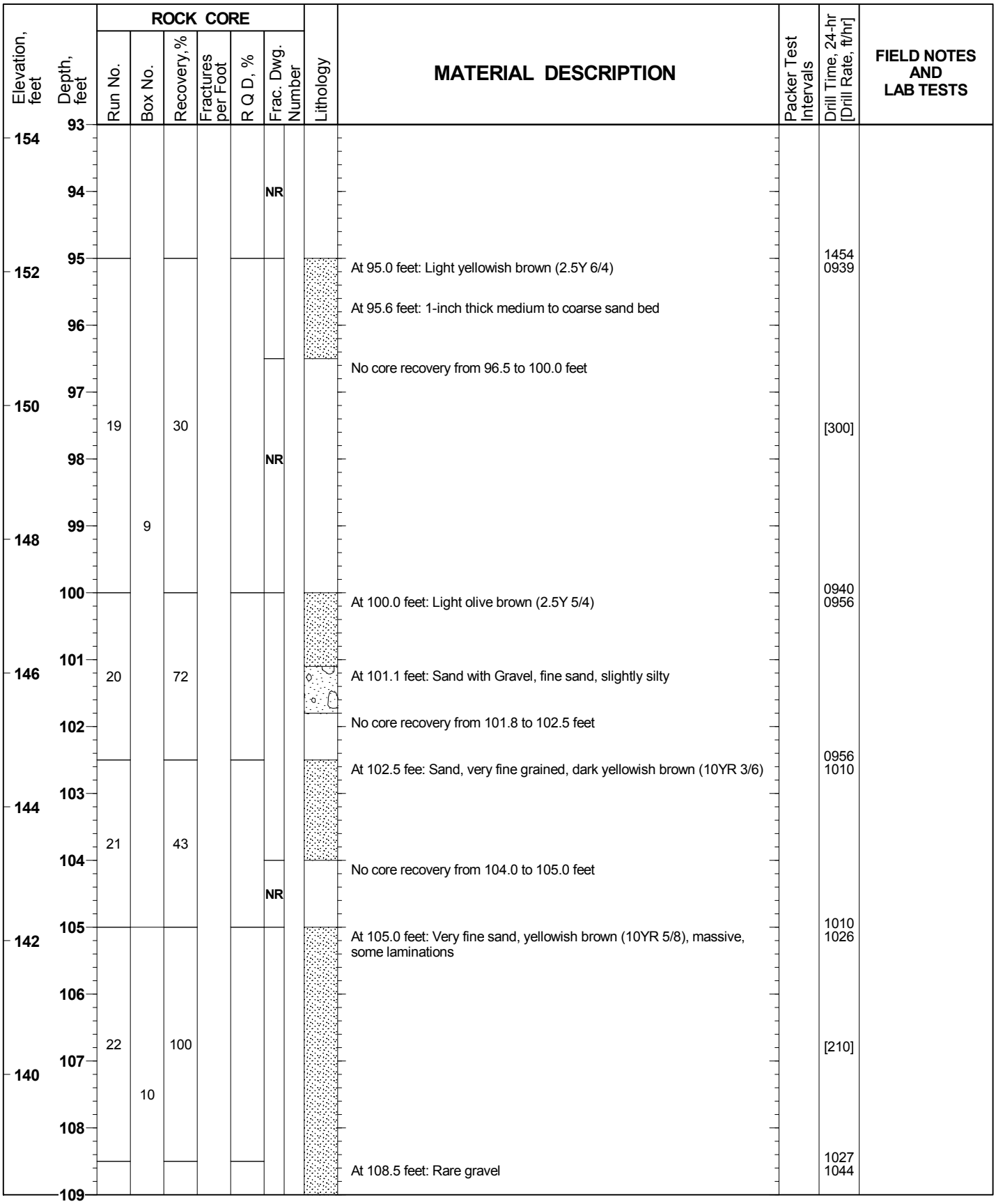
Figure: A-1.5f

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016



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Log of Core Boring T9-B5

Sheet 7 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.5g

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
138	109											
	110	23	10	100							[150]	
	111										1045	
136											1100	
	112											
	113											
134		24		90							[300]	
	114								From 114.3 to 114.6 feet: Light olive brown (2.5Y 5/3), black laminations At 114.6 feet: Occasional laminations			
	115											
132			11				NR		No core recovery from 115.5 to 116.0 feet			
	116										1101	
											1116	
	117											
130												
	118								**SAN PEDRO FORMATION (Qsp)** Sand, very fine grained, very dark greenish gray (3/10Y), light iron oxide staining, unoxidized, massive			
		25		90							[300]	
	119											
128												
	120								At 119.9 feet: Some shell fragments, mica			
							NR		No core recovery from 120.5 to 121.0 feet			
	121										1117	
126											1133	
	122											
	123											
124												
		26	12	50					No core recovery from 123.5 to 126.0 feet		[150]	
	124											
							NR					
	125											

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Log of Core Boring T9-B5

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.5h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
122	125		12				NR					
	126								At 126 feet: 2-inch gravel clast END OF BORING AT 126 FEET		1135	
120	127								NOTES: • Hand augered upper 5 feet to avoid damage to utilities. • Groundwater was encountered at 39 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
	128											
118	129											
	130											
116	131											
	132											
114	133											
	134											
112	135											
	136											
110	137											
	138											
108	139											
	140											
	141											

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Log of Core Boring T9-B5

Sheet 9 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.5i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
248	0								4-inch thick Asphalt over 6-inch thick Concrete			
	1								**ARTIFICIAL FILL (af)** Clayey, Silty Sand and Sandy Lean Clay, some rock fragments up to 2 inches in size, dark brown			
246	2											
	3											
244	4											
	5										0952	
									ALLUVIAL DEPOSITS **Sag Deposits** Silty Clay and Clayey Silt, some very fine sand, dark yellowish brown (10YR 4/4), interbedded dark brown (10YR 3/3) Silty Clay, 1/4- to 1/3-inch thick bed, dipping 5° to 10° From 5.8 to 6.1 feet: Core disturbed At 6.1 feet: Dark yellowish brown (10YR 4/4) At 6.5 and 6.6 feet: Dark brown clay beds dip about 5°			
242	6											
	7	1		100					**Fan Deposits** At 6.6 feet: Clayey Silt, base bedding with very fine sand, some medium to coarse, some fine gravel (up to 1/4-inch in diameter), rare larger, massive At 7.0 feet: Sandier		[300]	
240	8											
	9		1						**Sag Deposits** From 9.0 to 9.3 feet: Clayey Silt, yellowish brown (10YR 5/4), three dark brown beds dip 5°, some scattered gravel			
238	10						NR		**Fan Deposits** At 9.3 feet: Massive		0953 1001	
									At 9.5 feet: Silty Sand with Gravel, fine grained, gravel (up to 1-inch in diameter), friable			
	11								No core recovery from 10.0 to 10.3 feet At 10.3 feet: Slightly Clayey Silt with fine sand and gravel, dark yellowish brown (10YR 4/4)			
									At 10.5 feet: Grades to Silty Sand, very fine to fine grained At 11.4 feet: Clayey			
236	12								At 11.6 feet: Silty Sand with Gravel, fine grained, gravel up to 1/2 inch in diameter			
		2		94					From 11.9 to 12.4 feet: Lenses of fine to coarse sand and gravel		[300]	
	13								At 12.2 feet: Clayey Silt to Silty Clay, rare coarse grained sand, fine			

DATE(S) DRILLED:	10/6,7,8/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	248.00 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	130.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	39 feet at completion

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Log of Core Boring T9-B6

Sheet 1 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.6a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	13								sandy laminations, dip about 5° At 12.75 and 12.95 feet: ½-inch light brown very fine grained sand beds			
234	14								At 13.1 feet: Clayier, dark yellowish brown (10YR 3/4), massive, occassional laminations At 13.4 feet: Silt, slightly clayey, scattered fine gravel At 13.8 feet: Fine to coarse sand, trace clay, abundant fine gravel up to 1/4 inch in diameter, friable			
	15								At 13.9 feet: Clayey Sand, fine grained, scattered gravel At 14.1 feet: ½-inch thick fine sandy gravel bed		1002 1008	
							NR		No core recovery from 15.0 to 16.0 feet			
232	16								At 16.0 feet: Silty Sand, fine grained, abundant coarse sand and fine gravel, friable At 16.3 feet: Silty Sand, very fine grained, clayey, dark yellowish brown (10YR 3/4)			
	17								At 16.5 feet: Slightly clayey, fine sand At 16.9 feet: Slightly Clayey Silt, few lamination			
		3		80					At 17.0 feet: Silty Sand, very fine grained with a clay lamination At 17.2 feet: Silty Sand, fine grained, friable		[300]	
230	18								**Fluvial Deposits** At 17.3 feet: 2-inch granitic clast At 17.4 feet: Silty Sand, fine to coarse grained, fine gravel up to ¼ inch in size, grayish brown, friable			
	19								At 17.7 feet: Silty Sand, fine grained, brown (10YR 5/3), friable At 18.0 feet: Silty Sand, very fine grained sand At 18.1 feet: Clayey Sand, scattered gravel, dark brown (10YR 3/3) At 18.9 feet: Silty Sand, coarse grained sand and gravel, friable			
228	20		2						At 19.8 feet: Fine to coarse sand and very fine gravel up to 1/4 inch in diameter		1009 1015	
							NR		No core recovery from 20.0 to 21.0 feet			
	21								At 21.0 feet: Sand with Gravel, fine to coarse sand, subrounded gravel, some gravel up to 1½ inches in diameter, friable			
226	22											
		4		80					At 22.5 feet: Fine to medium sand, some coarse, less gravel up to 1/4 inch in diameter		[300]	
	23								**Fan Deposits** At 23.3 feet: Silt, some laminations			
224	24								At 23.6 feet: Silty Sand, very fine to fine grained, some coarse, slightly clayey, massive At 24.0 feet: Very fine sand, scattered fine gravel, slightly clayey At 24.5 feet: Silty Sand, fine grained, slightly clayey			
	25										1016	
							NR		No core recovery from 25.0 to 25.5 feet		1022	
									Fluvial Deposits At 25.5 feet: Silty Sand with Gravel, fine to coarse grained sand, gravel up to 2 inches in diameter			
222	26								At 26.0 feet: Silty Sand, fine grained, rare fine gravel, dark yellowish brown (10YR 4/4)			
	27											
		5		90					At 27.2 feet: Sand, fine to medium grained, some fine gravel, friable At 27.5 feet: Fine to coarse sand, some fine gravel, friable		[300]	
220	28								From 27.9 to 28.3 feet: Fine to medium sand, friable At 28.3 feet: Sand with Gravel, fine to coarse grained			
	29											

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Log of Core Boring T9-B6

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.6b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	29								At 29.1 feet: Gravel with Sand, gravel up to 3 inches in diameter, friable			
218	30										1023 1029	
									Fan Deposits At 30.3 feet: Silty Sand, fine grained, some gravel, dark brown (10YR 3/3), clayey			
	31		3									
									At 31.5 feet: Silty Sand, fine to medium grained, slightly clayey			
216	32											
		6		100							[300]	
	33								**Fluvial Deposits** At 32.8 feet: Sand with Gravel, coarse grained, some fine to medium, gravel up to 1/4 inch in size, friable			
214	34											
	35								At 34.9 feet: Gravel up to 2-inches in diameter At 35.0 feet: Gravel up to 3-inches in diameter		1030 1035	
									Fan Deposits At 35.8 feet: Silty Sand, some fine gravel, slightly clayey, very dark brown (10YR 2/2)			
212	36											
	37											
		7		100							[150]	
									Fluvial Deposits At 37.6 feet: Silty Sand and Gravel, medium to coarse grained sand, contact dips about 20°			
210	38											
	39									▽		
									At 39.5 feet: Predominantly gravel about 1/8 to 1/2-inch in diameter			
208	40		4						At 40.0 feet: Gravel up to 3-inches in diameter		1037 1042	
									At 40.7 feet: Silty Sand, micaceous, crudely bedded, dark gray (10YR 4/1), some iron oxide stain, fine grained bed At 41.0 feet: 1-inch thick clayey, soft, very fine sand At 41.3 feet: Sandy Clay bed, fine grained sand, between two 1/2-inch thick iron oxide stained beds, soft At 41.4 feet: Fine to medium sand, some silt, micaceous From 41.6 to 41.7 feet: Some soft clay interbedded with very fine silty sand At 41.8 feet: Fine to medium grained, rare fine gravel, micaceous, massive			
	41											
206	42											
		8		100							[300]	
	43											
									At 43.4 feet: Sand with Gravel, fine to coarse grained sand, gravel up to 2 inches in diameter, minor mica At 43.7 feet: Fine to coarse sand with gravel			
204	44											
	45											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B6

Sheet 3 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.6c

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	45								At 45.0 feet: Sand and gravel, subrounded, fine to coarse grained sand, friable		1052	
202	46								No core recovery from 46.0 to 50.0 feet, cobble blocked bit			
	47	9		20							[300]	
200	48						NR					
	49											
198	50								No core recovery from 50.0 to 53.5 feet		1053 1101	
	51											
196	52	10	5	30			NR				[300]	
	53											
194	54								**Fan Deposits** At 53.5 feet: Silty Sand to Sandy Silt, very fine grained sand, some fine gravel, trace clay, very dark grayish brown (10YR 3/2), iron oxide staining			
	55								**Fluvial Deposits** At 54.2 feet: Sand with Gravel, fine to coarse grained sand, slightly silty, friable		1102	
192	56						NR		No core recovery from 55.0 to 58.0 feet		1110	
	57	11		40							[150]	
190	58								At 58.0 feet: Silty Sand, fine to coarse grained sand, occassional gravel, dark yellowish brown (10YR 3/4), friable			
	59								At 58.7 feet: Fine to medium grained sand, scattered gravel At 59.0 feet: Silty Clay, 1-inch thick, horizontal			
188	60								At 59.5 feet: Clayey Sand, about 1½ inches thick, horizontal At 59.7 feet: Silty Sand, fine to coarse grained with gravel		1112	
	61								**Fan Deposits** At 60.0 feet: Silty Sand, fine grained, trace clay, olive brown (2.5Y 4/4), mottled		1121	

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Log of Core Boring T9-B6

Sheet 4 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.6d

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	61								At 60.9 feet: Silty Sand bed, fine grained, friable, 1/2 inch thick At 61.0 feet: Olive brown (2.5Y 4/3) mottled, some manganese blebs			
									At 61.6 feet: Sandy Silt, fine grained sand, trace clay			
186	62								At 61.8 feet: Sandy Silty Clay, mottled, abundant manganese blebs			
		12		100							[300]	
	63		5						At 62.7 feet: Clayey Silt to Clayey Sand, very fine sand			
184	64								At 64.0 feet: Scattered coarse sand			
									At 64.6 feet: Silty Sand, very fine grained, some coarse			
	65								At 65.0 feet: Very fine grained, occassional coarse, trace clay, olive brown (2.5Y 4/3) and light olive brown (2.5Y 5/3), mottled, some manganese		1122 1131	
182	66								At 65.5 feet: Very clayey			
									At 66.4 feet: Moderately abundant carbonate At 66.6 feet: Very heavy carbonate			
	67								At 67.1 feet: Silty Sand to Sandy Silt, very fine sand, some gravel, minor carbonate			
		13		100					At 67.3 feet: No gravel		[300]	
180	68								At 67.4 feet: Some carbonate blebs, trace clay At 67.6 feet: Few sandy laminations, 1/4 inch zone At 68.0 feet: Silt, some clay, some carbonate blebs At 68.5 feet: Core crumbled, abundant carbonate			
	69											
178	70		6								1132 1142	
									At 70.2 feet: Silty Sand, fine grained, grayish brown (2.5Y 5/2)			
	71											
									At 71.5 feet: Slightly silty to slightly clayey Sand, fine grained, abundant pebbles and gravel, subrounded, rounded, and subangular			
176	72											
		14		100							[300]	
	73								At 72.9 feet: Fine gravel			
									At 73.4 feet: Slighlty Clayey Sand, fine grained, scattered fine gravel			
174	74								At 73.7 feet: Moderately abundant gravel			
	75						NR		No core recovery from 75.0 to 75.9 feet		1143 1200	
172	76		7						At 75.8 feet: Abundant gravel, pinkish quartzite clasts **LAKEWOOD FORMATION (Qlw)** Silty Sand, fine grained, light olive brown (2.5Y 5/3) At 76.2 to feet: Silty Sand with Gravel, fine to medium grained sand			
	77											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B6

Sheet 5 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.6e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	77											
		15		96					At 77.2 feet: Silty Sand, fine to medium grained, slightly clayey		[150]	
170	78								At 77.7 feet: Silty Sand, fine grained, slightly clay, light olive brown (2.5Y 5/4)			
									At 78.3 feet: Some gravel At 78.4 feet: Fine grained, faint laminations			
	79											
									At 79.7 feet: Moderately abundant fine gravel		1202	
168	80		7						No core recovery from 80.0 to 82.0 feet		1215	
	81						NR					
166	82								Sand, very fine grained sand, rare fine gravel up to 1/4-inch in diameter, yellowish brown (10YR 5/6), some iron oxide mottling, slightly micaceous			
		16		60							[300]	
	83											
164	84											
									At 84.7 feet: Heavy iron oxide stain		1216	
	85								No core recovery from 85.0 to 90.0 feet (all washed out)		1231	
162	86											
	87						NR					
		17		0							[150]	
160	88											
	89											
											1233	
158	90		8						No core recovery from 90.0 to 93.0 feet		1250	
	91											
156	92						NR					
		18		40							[150]	
	93											

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Log of Core Boring T9-B6

Sheet 6 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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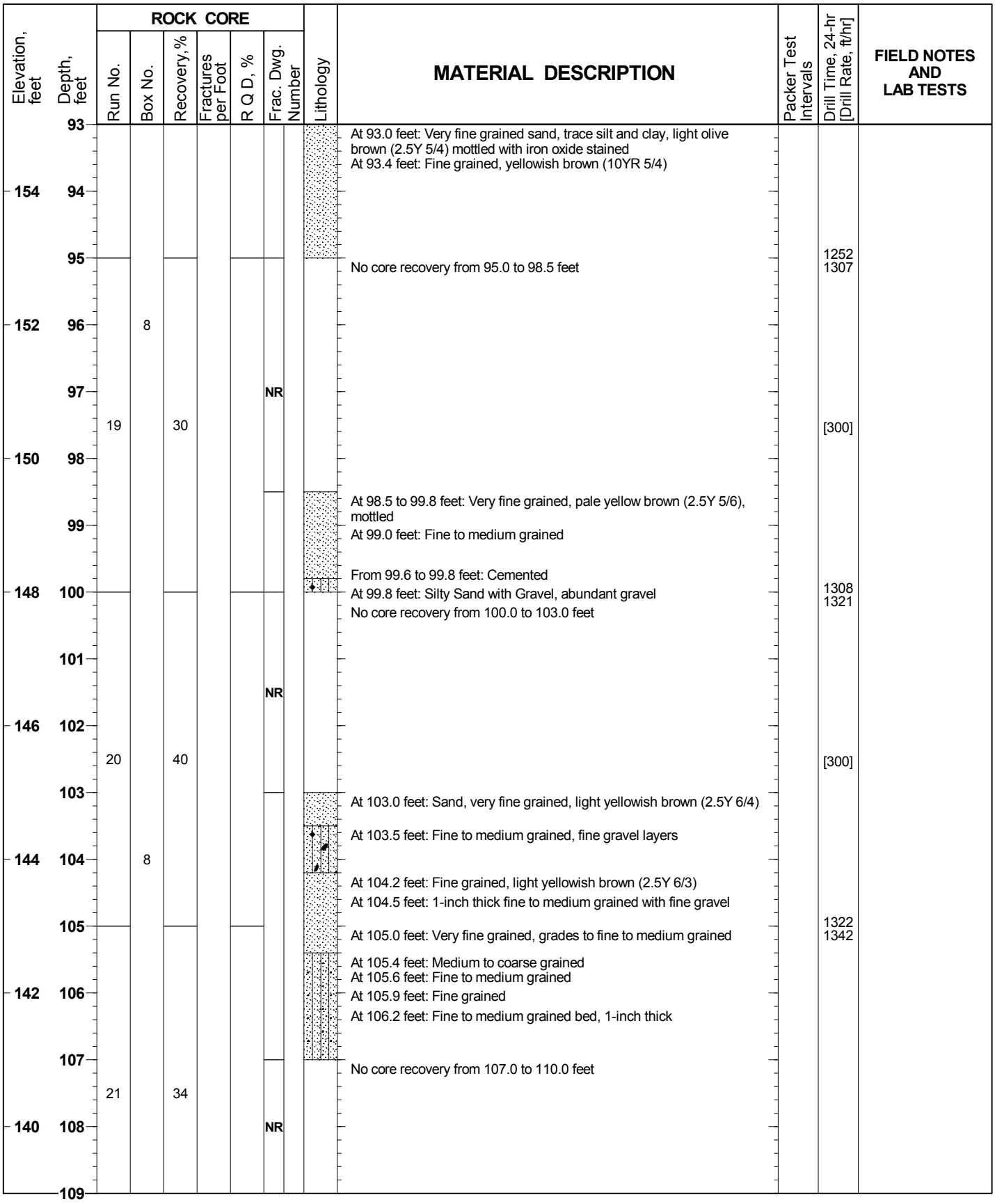
Figure: A-1.6f

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016



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Log of Core Boring T9-B6

Sheet 7 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.6g

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	109		8				NR					
138	110								Sand, fine grained, trace silt, yellowish brown (10YR 5/8)		1342 1355	
	111								At 111.4 feet: Very fine grained			
136	112	22		50					No core recovery from 112.5 to 115.0 feet		[300]	
	113						NR					
134	114											
	115								At 115.0 feet: Very fine, grades medium to coarse grained, light olive brown (2.5Y 5/4)		1356 1413	
132	116		9						At 116.0 feet: Very fine grained, some silt No core recovery from 116.5 to 120.0 feet			
	117	23		30							[300]	
130	118						NR					
	119											
128	120								At 120.0 feet: Fine grained		1414 1428	
	121								At 120.7 feet: Laminated, some manganese, conformable contact			
126	122	24		40					**SAN PEDRO FORMATION (Qsp)** At 121.3 feet: Silty Sand, very fine grained, unoxidized, very dark gray (3/N), minor iron oxide stained, micaceous, contact conformable No core recovery from 122.0 to 125.0 feet		[300]	
	123						NR					
124	124											
	125											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B6

Sheet 8 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.6h

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	125								At 125.0 feet: Very fine grained sand		1420	
									At 125.3 feet: Very fine grained sand to silt, very dark gray (3/N)			
122	126								At 125.8 feet: Very fine sand, slightly micaceous			
	127		9						No core recovery from 127.0 to 130.0 feet			
		25		50							[300]	
120	128						NR					
	129											
118	130										1447	
									END OF BORING AT 130 FEET			
									NOTES:			
	131								• Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at 39 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
116	132											
	133											
114	134											
	135											
112	136											
	137											
110	138											
	139											
108	140											
	141											

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Log of Core Boring T9-B6

Sheet 9 of 9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.6i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
248	0								4-inch thick Asphalt over 6-inch thick concrete			
	1								**ARTIFICIAL FILL (af)** Clayey Silt and Sandy Silt with Gravel, brown, moist, firm			
246	2											
	3											
244	4											
	5								No core recovery from 5.0 to 6.5 feet		0953	
	6						NR					
242	7								**ALLUVIAL DEPOSITS** From 6.5 to 6.8 feet: Clayey Silt and Silty Clay, core disturbed **Sag Deposits**			
		1		70					At 6.8 feet: Clayey Silt and Silty Clay, occassional coarse sand and fine gravel, brown (10YR 4/3) with interbedded very dark grayish brown (10YR 3/2), beds 1/8 to 3/4 inch thick, some rippled, dip 5°		[300]	
	8								**Fan Deposits** At 7.9 feet: Clayey Silt with Sand, very fine sand, scattered coarse sand and fine gravel up to 1/8 inch in diameter, brown (10YR 4/3), base bedding			
240	9								At 8.4 feet: Coarser, scattered sand and gravel At 9.1 feet: Silty Sand, fine grained, gravel up to 1½ inches in diamter, trace clay			
	10		1						At 10.0 feet: Silty Sand, fine grained, trace clay, brown (10YR 5/3) At 10.3 feet: Silty Sand, very fine grained, scattered fine gravel		0954 1000	
238	11											
	12								At 12.2 feet: Fine Sand, ¾-inch thick bed			
		2		100					**Sag Deposits** At 12.25 feet: Silty Clay and Clayey Silt, dark brown (10YR 3/3), faint bedding		[300]	
236	13											

DATE(S) DRILLED:	10/2,5,6/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	248.70 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	145.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	35 feet at completion

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Log of Core Boring T9-B7

Sheet 1 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.7a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	13								At 12.4 feet: ¼-inch bed appears folded to 45° dip, beds below dip ~10 to 15°			
	14		1						At 13.7 feet: Base bedding, scattered gravel			
234									**Fan Deposits** At 14.1: Silty Sand, very fine grained, trace clay			
	15								At 14.9 feet: Abundant subangular Gravel		1001	
									No core recovery from 15.0 to 16.5 feet		1010	
	16						NR					
232									**Fluvial Deposits** At 16.5 feet: Silty Sand with Gravel, fine to coarse grained, gravel up to 2 inches in diameter, occasional clast up to 1 inch, brown (10YR 5/3), friable			
	17	3		70					At 17.1 feet: Slightly Clayey Silt, trace sand with gravel, dark yellowish brown (10YR 4/4)		[300]	
	18								At 17.7 feet: No clay, friable			
230									At 18.7 feet: Siltier			
	19								**Fan Deposits** At 19.1 feet: Silty Sand, very fine grained, scattered gravel, dark yellowish brown (10YR 3/4), not friable			
	20		2						At 20.0 feet: Brown (10YR 4/3)		1011 1018	
228												
	21								From 20.8 to 21.0 feet: More abundant gravel, dark yellowish brown (10YR 4/4), slightly friable, massive At 21.0 feet: Siltier, fine sand, some medium			
	22								At 22.0 feet: Sand, very fine grained, rare gravel			
		4		100							[300]	
226												
	23								At 22.7 feet: Brown (10YR 4/3), faint bedding/laminations dipping ~5°			
	24											
224												
	25								At 25.0 feet: Massive		1019 1026	
									At 25.5 feet: Dark yellowish brown (10YR 4/4)			
	26								From 25.9 to 26.0 feet: Gravel bed At 26.0 feet: Sand, fine to coarse grained, some gravel			
222									At 26.2 feet: Sandy, Clayey Silt, fine sand, some coarse, some fine gravel, dark brown (7.5YR 3/2), slightly laminated			
	27		3						At 26.6 feet: Scattered coarse sand			
		5		100							[150]	
	28								At 28.0 feet: Sandier, slightly lighter brown			
220												
	29											

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Log of Core Boring T9-B7

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.7b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	29								At 29.2 feet: Silty Sand, fine grained, slightly clayey, grayish brown and slightly reddish brown mottling			
	30										1028 1039	
218	31		3						At 30.6 feet: Silty Sand, very fine grained, dark brown (7.5YR 3/3), mottled			
	32								At 32.0 feet: Brown (10YR 3/2), less mottling			
216	33	6		100					From 33.5 to 34.0 feet: 6-inch thick sand bed, very fine to coarse grained, slightly silty		[300]	
	34								At 34.0 feet: Silty Sand, very fine grained			
214	35								**Fluvial Deposits** At 34.7 feet: Fine to medium Sand, slightly silty, some gravel ▽		1040 1049	
	36								At 35.6 feet: Slightly Silty Sand, fine grained, brown (10YR 3/2), mottled, some iron oxide staining			
212	37								At 36.3 feet: Very fine Sand, slightly silty, micaceous beds several inches thick, gray with iron oxide staining			
	38	7		100					From 37.1 to 37.3 feet: Fine Sand, micaceous At 37.6 feet: Trace very fine sand, some clay, brown (2.5Y 3/2), micaceous bed, minor iron oxide staining		[300]	
210	39											
	40		4				NR		At 39.8 feet: Gravelly fine to coarse Sand, friable No core recovery from 40.0 to 40.4 feet		1050 1104	
208	41								At 40.4 feet: Silty Sand, very fine grained, trace clay, brown (10YR 3/2), trace mica			
	42								**Fan Deposits** At 41.5 feet: Slightly Clayier, faint darker brown beds At 42.0 feet: Silty Sand, very fine grained, mottled			
206	43	8		92					At 43.3 feet: 2-inch thick gravel bed		[300]	
	44								At 43.9 feet: Charcoal sample			
204	45								At 44.0 feet: Clayey, Silty Sand, fine grained, brown, mottled gray and orange, hard, some carbonate blebs			

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B7

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.7c

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	45								At 45.0 feet: Some coarse Sand and fine Gravel, brown (7.5YR 4/3)		1106	
	46								At 45.5 feet: Less clay, rare coarse sand, dark gray (7.5YR 4/1), mottled, soft, no carbonate From 46.0 to 46.3 feet: Some manganese, possible charcoal			
202	47								At 46.8 feet: Moderately abundant gravel			
		9		100					At 47.4 feet: Scattered gravel		[300]	
	48								From 47.8 to 48.0 feet: Silty Sand, fine grained, brown (10YR 4/3) and dark yellowish brown (10YR 4/4), slightly mottled, iron oxide staining At 48.0 feet: Trace clay			
200	49								At 49.5 feet: Sandy lenses/laminations			
	50		5						At 49.8 feet: Silty Clay, mottled At 49.9 feet: Some dark brown laminations		1117 1126	
									At 50.0 feet: Silty Clay to Clayey Silt, medium gray, slightly mottled			
198	51								At 50.7 feet: Scattered manganese			
									At 51.2 feet: Grades to Silty Sand, very fine grained, trace clay			
	52											
		10		100							[300]	
196	53								At 52.7 feet: Grades Silty Sand, very fine grained			
									From 53.2 to 53.6 feet: Silty Sand, fine to medium grained			
	54								At 53.6 feet: Clayey Silt, grades to Silty Sand, very fine grained, some coarse, with trace clay			
194												
	55								No core recovery from 55.0 to 56.8 feet		1127 1136	
	56						NR					
192												
	57								**Fluvial Deposits** At 56.8 feet: Sand, fine grained, scattered gravel, trace clay, brown (10YR 4/3), some iron oxide staining			
		11		64					At 57.5 feet: 1-inch thick Clayey very fine Sand bed From 57.7 to 58.0 feet: Clayey		[300]	
	58								At 58.2 feet: Sand, very fine to fine grained, moderately abundant gravel			
190												
	59		6						At 59.1 feet: Sand, very fine grained, trace silt and clay At 59.4 feet: Some Clayey Silt to Silty Clay laminations in very fine sand			
	60								At 60.0 feet: Sand, fine grained, slightly silty, brown (10YR 4/3), mottled		1137 1150	
188									At 60.3 feet: Sand, very fine grained, trace clay At 60.8 feet: No clay			
	61											

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Log of Core Boring T9-B7

Sheet 4 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.7d

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	61								From 61.2 to 61.6 feet: Silty Sand, very fine grained with medium to coarse, rare fine gravel At 61.6 feet: Silty Sand, very fine grained			
	62											
186		12	6	100					At 62.3 feet: Fine to medium sand bed At 62.4 feet: Clayey Silt At 62.6 feet: Fine to medium sand At 62.9 feet: Some coarse sand, fine gravel		[300]	
	63								**Fan Deposits** At 63.1 feet: Silt to Clayey Sand, very fine sand, dark grayish brown (10YR 4/2) At 63.5 feet: Sandier, trace coarse sand, some manganese			
	64											
184												
	65								At 65.0 feet: Scattered gravel		1151 1204	
	66								At 65.8 feet: Brown (10YR 4/3), mottled, occasional manganese blebs			
182												
	67								At 67.2 feet: Dark grayish brown (10YR 4/2) and brown (10YR 4/3), mottled, slightly olive gray, scattered manganese blebs			
		13		100							[300]	
	68											
180												
	69											
	70		7						At 70.0 feet: Slightly Clayey Silt, fine sand, some coarse, occassional fine gravel, light olive brown (2.5Y 5/3)		1205 1221	
178												
	71								At 71.1 feet: Clayey			
									At 71.7 feet: Sandy Silty Clay, manganese blebs			
	72								At 72.0 feet: Abundant carbonate			
		14		100							[300]	
176												
	73											
	74											
174												
	75								No core recovery from 75.0 to 76.8 feet		1222 1235	
	76		8				NR					
172												
	77											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B7

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.7e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	77								At 76.8 feet: Sand, fine grained, slightly silty, well sorted, light yellowish brown (2.5Y 6/3), no carbonate			
		15		64							[300]	
	78								At 77.6 feet: Some large carbonate blebs, grades to olive brown (2.5Y 4/3)			
170	79											
	80		8						At 79.8 feet: Rounded fine cobble 2½ inches in diameter		1236	
									At 80.0 feet: Gravel		1251	
168	81								At 80.8 feet: Cobbles, blocked off sampler			
									No core recovery from 81.0 to 85.0 feet			
	82											
		16		20							[300]	
166	83						NR					
	84											
164												
	85								No core recovery from 85.0 to 88.0 feet, washed out sample		1252	
											1307	
	86											
							NR					
162	87		8									
		17		40							[300]	
	88								**LAKEWOOD FORMATION (Qlw)**			
									Sand, very fine grained, trace silt, scattered round gravel, rounded pebbles up to ¾ inch in diameter, dark yellowish brown (10YR 4/6) to yellowish brown (10YR 5/6), massive			
160	89								At 88.9 feet: Slightly yellowish brown			
	90										1308	
									No core recovery from 90.0 to 92.0 feet		1325	
158												
	91						NR					
	92								At 92.0 feet: Sand, very fine grained, some silt, scattered rounded gravel, light olive brown (2.5Y 5/3), minor iron oxide staining			
		18		60							[300]	
156	93											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B7

Sheet 6 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.7f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	93								From 92.9 to 93.1 feet: 3-inch pocket rounded gravel on side of core			
	94		8									
154												
	95								No core recovery from 95.0 to 97.5 feet		1326 1347	
	96											
152							NR					
	97											
		19		50							[150]	
	98								At 97.8 feet: Some small round gravel, slightly iron oxide staining			
150												
	99											
	100		9						No core recovery from 100.0 to 102.5 feet		1349 1409	
148												
	101						NR					
	102											
		20		50							[300]	
146									At 102.5 feet: Sand, very fine grained, light yellowish brown (2.5Y 6/3)			
	103								At 102.9 feet: Grades to fine to medium Sand with small gravel to fine to coarse sand with rounded gravel up to ¼ inch in diameter, some iron oxide mottling			
	104											
144												
	105								No core recovery from 105.0 to 108.2 feet		1410 0941	
	106											
142							NR					
	107											
		21		36							[300]	
	108											
140									At 108.2 feet: Sand, fine grained, moderately abundant gravel, pale yellow (2.5Y 7/3)			
	109								At 108.6 feet: Clayey Sand, fine to medium, scattered rounded gravel,			

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Log of Core Boring T9-B7

Sheet 7 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.7g

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	109								dark grayish brown (2.5Y 4/2), some manganese			
			9						At 109.2 feet: Silty fine Sand, some gravel, light brownish gray (2.5Y 6/2), carbonate			
	110										0942	
									No core recovery from 110.0 to 111.0 feet		0958	
138							NR					
	111								Sand, fine to very coarse grained, grayish brown (2.5Y 5/2)			
									At 111.7 feet: Very fine Sand with coarse sand and gravel layers			
	112											
									At 112.2 feet: 2-inch wide band of heavy iron oxide staining			
		22		80							[300]	
136	113											
									At 113.5 feet: Fine Sand with scattered fine gravel, light olive brown (2.5Y 5/4), some iron oxide staining			
	114											
134												
	115										0959	
									No core recovery from 115.0 to 117.5 feet		1018	
	116											
							NR					
132	117											
		23	10	50					At 117.5 feet: Sand, fine to medium grained, some coarse		[150]	
	118											
									At 118.5 feet: Very fine sand, some laminations			
130	119								At 118.9 feet: Iron oxide staining			
	120										1020	
									No core recovery from 120.0 to 123.0 feet		1044	
128	121											
							NR					
	122											
		24		40							[300]	
126	123								At 123.0 feet: Sand, fine grained, trace silt, dark yellowish brown (10YR 4/6) to yellowish brown (10YR 5/6)			
									From 123.8 to 124.0 feet: Some laminations			
	124											
124	125											

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Log of Core Boring T9-B7

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.7h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	125								No core recovery from 125.0 to 128.5 feet		1045	
	126											
122	127		11				NR					
		25		30								
	128											
120	129								At 128.5 feet: Very fine Sand, light olive brown (2.5Y 5/4), slightly micaceous At 129.0 feet: Fine to medium Sand, some iron oxide staining			
	130								**SAN PEDRO FORMATION (Qsp)** Sand, very fine to fine grained, trace silt, greenish black (3/10Y), unoxidized, subhorizontal		1105 1125	
118	131								No core recovery from 130.0 to 133.5 feet			
	132						NR					
		26		30							[300]	
116	133											
	134								At 134.3 feet: Dark gray (4/N), few shell fragments			
114	135								No core recovery from 135.0 to 138.3 feet		1126 1149	
	136											
112			11				NR					
	137											
		27		34							[300]	
	138											
110	139								At 138.6 feet: Occassional laminations			
	140								No core recovery from 140.0 to 142.5 feet		1150 1208	
108	141						NR					

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Log of Core Boring T9-B7

Sheet 9 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.7i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	141											
	142						NR					
106	143	28	11	50					At 142.5 feet: Very dark greenish gray (3/10Y)		[300]	
104	144											
	145								END OF BORING AT 145.0 FEET		1209	
102	146								NOTES: • Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at 35.0 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
	147											
	148											
100	149											
	150											
98	151											
	152											
96	153											
	154											
94	155											
	156											
92	157											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B7

Sheet 10 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.7j

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	0								4-inch thick Asphalt over 6-inch thick Concrete			
248	1								**ARTIFICIAL FILL (af)** Silty Clay and Sandy Silt, dark brown, occassional gravel			
	2											
246	3											
	4											
244	5								**ALLUVIAL DEPOSITS** **Fan Deposits** At 5.0 feet: Clayey Silt, scattered coarse sand and fine gravel, massive, dark brown (7.5YR 3/2), sub-horizontal bedding, two shale clasts (up to 1-inch in diameter) From 5.6 to 5.8 feet: Core disturbed From 6.1 to 6.5 feet: Core disturbed		1024	
	6								**Sag Deposits** At 6.5 feet: Clayey Silt, scattered coarse sand ~¼ to ¾-inch thick beds, dipping ~5°, dark brown (10YR 3/3)			
242	7	1		100					At 7.0 feet: Core disturbed At 7.2 feet: Scattered coarse sand, fine gravel, faint bedding, dark brown (10YR 3/3)		[300]	
	8								At 8.0 feet: Bedded, dips 5 to 10°			
240	9		1						**Fan Deposits** At 8.35 feet: Silty very fine Sand to very fine Sandy Silt, trace clay, scattered to some coarse sand and fine gravel, rare gravel up to 1 inch in diameter brown (10YR 4/3)			
	10										1025 1030	
									No core recovery from 10.0 to 13.5 feet			
238	11						NR					
	12											
		2		30							[300]	
236	13											

DATE(S) DRILLED:	9/25,28/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	249.00 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	150.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	35 feet at completion

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Log of Core Boring T9-B8

Sheet 1 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.8a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
236	13						NR					
	14								**Fluvial Deposits** At 13.5 feet: Silty Gravel with Sand, subangular, fine to coarse gravel (up to 2-inches in diameter)			
234	15		1						At 15.0 feet: Silty fine Sand, some coarse sand and gravel		1031 1337	
	16	3		100					At 15.4 feet: Sand, coarse, subangular fine gravel (up to 1-inch in diameter), friable **Fan Deposits** At 16.2 feet: Clayey Silt to very fine Sand, rare gravel, brown (10YR 4/3), some discontinuous bedding to 16.5 feet		[-1]	
232	17										1038	
	18	4		100					**Fluvial Deposits** At 17.5 feet: Silty fine Sand, some gravel, brown (10YR 5/3), friable At 18.5 feet: Sand with Silt, trace clay		1041 [150]	
230	19								**Fan Deposits** At 18.7 feet: Silty very fine Sand, dark yellowish brown (10YR 4/4) At 19.5 feet: Trace clay			
	20								At 20.0 feet: Silty very fine Sand, dark yellowish brown (10YR 3/4)		1042 1050	
228	21		2									
	22	5		100							[300]	
226	23								At 23.3 feet: Fine Sand, some coarse sand and gravel			
	24								At 23.8 feet: Very fine Sand, trace clay, trace gravel, dark brown (10YR 3/3)			
224	25								At 25.0 feet: Silty Clay to Clayey Silt, trace sand, very dark brown (10YR 2/2)		1051 1058	
	26											
222	27	6	3	100					At 27.4 feet: Silty Sand to Sandy Silt, very fine to some coarse, slightly clayey, gray brown, mottled, some manganese			
	28											
220	29								At 28.5 feet: Slightly clayey, fine to coarser sand and fine gravel			

AMEC CORE; File: 49531111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B8

Westside Purple Line Extension - Section 2
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Figure: A-1.8b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
220	29								At 29.0 feet: Fine Sand, trace silt			
	30								At 30.0 feet: Very fine Sand, trace clay, trace silt, brown (10YR 3/2), wet, slightly micaceous		1058 1105	
218	31								**Fluvial Deposits** At 30.8 feet: Some fine gravel At 31.0 feet: Silty fine Sand, dark brown (10YR 3/3), iron oxide mottling, slightly micaceous At 31.4 feet: Coarser grained			
	32		3									
		7		100					At 32.3 feet: Grades to Silt, trace clay, brown (10YR 3/2), mottled, iron oxide mottling, slightly micaceous		[300]	
216	33											
	34								**Fan Deposits** At 34.2 feet: Very fine Silty Sand, rare fine gravel, increase iron oxide mottling			
214	35								At 35.0 feet: Brown (10YR 3/2), wet, some iron oxide mottling	▽	1106 1113	
	36								At 36.0 feet: Fine Sand, trace silt, no clay, olive (5Y 4/3), wet			
212	37								**Fluvial Deposits** At 37.0 feet: Fine Sand, coarser, increase mica			
		8		100							[300]	
	38								At 38.2 feet: Sand, fine to medium, massive, dark yellowish brow (10YR 4/6), iron oxide staining			
210	39								At 38.4 feet: Sand, fine to medium some coarse, some gravel, dark yellowish brown (10YR 4/4 to 4/6) and yellowish brown (10YR 5/6) At 39.0 feet: Coarse Sand and gravel, friable			
	40		4								1114	
									No core recovery from 40.0 to 42.5 feet		1135	
208	41											
							NR					
	42											
		9		50							[150]	
206	43								At 42.8 feet: Silty very fine Sand, dark yellowish brown (10YR 4/4), slightly micaceous			
									At 43.5 feet: Sand, fine to medium, some gravel, very dark gray (10YR 3/1)			
	44								At 43.8 feet: Coarse Sand, fine gravel, trace clay			
									At 44.4 feet: Clayey			
204	45											

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Log of Core Boring T9-B8

Westside Purple Line Extension - Section 2
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Figure: A-1.8c

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
204	45								**Fan Deposits** At 45.0 feet: Silty very fine Sand, scattered gravel, dark yellowish brown (10YR 4/4)		1137	
	46								At 46.0 feet: Some coarse Sand, increase gravel, trace clay, dark yellowish brown (10YR 3/4), occassional manganese, iron oxide mottling			
202	47	10		100								
	48								At 47.8 feet: Clayey, brown (10YR 3/2), iron oxide mottling			
200	49								At 48.8 feet: Clayey Silt bed, 1/4- to 1/2-inch thick At 48.85 feet: 1/8-inch thick bed			
	50		5				NR		From 49.6 to 49.8 feet: Some faint dark brown laminations No core recovery from 50.0 to 50.5 feet		1149 1158	
198	51								At 50.5 feet: Clayey fine Sand, some medium and coarse sand and fine gravel, dark Brown (10YR 3/3)			
	52								At 51.2 feet: Crudely bedded, some dark brown clay laminations 52.1 feet: Abundant fine gravel, massive			
196	53	11		90					At 52.5 feet: Clayey Silty fine Sand At 52.6 feet: 1/2-inch thick Silt bed, light brown At 52.7 feet: 1/2-inch thick gravelly bed At 52.8 feet: Scattered Gravel, some coarse Sand		[300]	
	54											
194	55										1159 1214	
	56								From 55.2 to 55.4 feet: Fine Sand bed, grayish brown (10YR 5/2), slightly friable At 55.4 feet: Clayier At 56.0 feet: Brown (10YR 4/3)			
192	57	12		100					At 57.2 feet: Clayey Sandy Silt, brown (10YR 4/3) mottled, some manganese blebs		[300]	
	58		6						At 57.4 feet: Very fine Sand with gravel At 58.3 feet: Clayey Silt, scattered gravel and manganese blebs			
190	59											
	60						NR		No core recovery from 60.0 to 60.2 feet **Fluvial Deposits** At 60.2 feet: Silty fine Sand, some coarse, fine gravel, slightly friable		1215 1223	
188	61											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B8

Westside Purple Line Extension - Section 2
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Figure: A-1.8d

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
188	61											
	62											
		13	6	96					At 62.4 feet: Silty Sand, fine to coarse, gravel, friable		[150]	
186	63											
	64								At 64.5 feet: Silty fine Sand, crude bedding			
184	65								At 65.0 feet: Silty very fine Sand to Sandy Silty, brown (10YR 4/3), mottled, massive		1225 1235	
									At 65.5 feet: Silty Clay At 65.7 feet: Fine Sandy Clay At 65.9 feet: Silty fine Sand, rare gravel			
	66								From 66.4 to 67.0 feet: Fine to medium Sand, some coarse sand and fine gravel			
182	67								At 66.8 feet: 1-inch thick fine Sand with gravel bed At 67.0 feet: Silt and very fine to fine Sand, crudely bedded			
		14		100					At 67.5 feet: Fine Sand with some Gravel		[300]	
	68											
									At 68.6 feet: 1½-inch thick Clayey Silty bed			
180	69								At 68.9 feet: 2-inch thick Clayey Silty bed			
	70		7						**Fan Deposits** At 69.8 Silty Sandy Clay		1236 1245	
									At 70.6 feet: Silty Sand, very fine to coarse, some clay, scattered fine gravel, dark grayish brown (10YR 4/2)			
178	71											
	72								At 72.0 feet: Increase sand and gravel (up to ½-inch in diameter), gradational			
		15		100					At 72.5 feet: Silty fine Sand, rare fine gravel		[300]	
176	73											
	74								At 74.0 feet: Slightly Clayey			
174	75								At 75.0 feet: Clayey Sand to Sandy Clay, dark grayish brown (10YR 4/2)		1246 1304	
	76		8						**Sag Deposits** At 75.7 feet: Very fine Sandy Silt and Clayey Silt with clay laminations At 76.0 feet: Scattered coarse Sand			
172	77								At 76.6 feet: Interbedded Silty very fine Sand and Clay			

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Log of Core Boring T9-B8

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Westside Purple Line Extension - Section 2
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Figure: A-1.8e

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
172	77								**Fan Deposits**			
		16		100					At 77.0 feet: Silty very fine Sand, slightly clayey, grayish brown (10YR 5/2), massive		[300]	
	78								At 77.4 feet: Silty Clayey fine to medium Sand			
									Sag Deposits			
170	79								At 78.4 feet: Interbedded to laminated Silty Clay and very fine Sandy Silt			
									At 78.7 feet: Scattered coarse Sand			
									At 79.0 feet: Clayey very fine Sandy Silt, some carbonate			
									Fan Deposits			
	80								At 79.3 feet: Silty very fine Sand		1305	
									At 80.0 feet: Dark grayish brown (10YR 4/2), moderately abundant carbonate nodules		1315	
168	81		8						**Sag Deposits**			
									At 80.9 feet: Interbedded to laminated very fine Sandy Silt and Silty Clay, moderately abundant carbonate			
	82								At 81.9 feet: Silty very fine Sand with Clay laminations, some carbonate nodules			
		17		100					At 82.2 feet: Minor carbonate		[300]	
									Fan Deposits			
166	83								At 82.7 feet: Crudely bedded Clayey very fine Sand and Silty Clay, moderately abundant carbonate			
									At 83.2 feet: Appears massive			
	84								At 83.4 feet: 75% carbonate			
									At 84.4 feet: Silty very fine Sand, no carbonate			
164	85								At 85 feet: Sand, fine to medium, dark yellowish brown (10YR 4/4)		1316 1327	
	86											
162	87								At 86.8 feet: Rounded Cobble (6-inches in diameter)			
									No core recovery from 87.0 to 90.0 feet			
		18		40							[300]	
	88											
			9				NR					
160	89											
	90								At 90 feet: Silt to Clayey Sand, some gravel		1328 1344	
158	91								No core recovery from 91.0 to 95.0 feet			
	92						NR					
		19		20							[300]	
156	93											

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Figure: A-1.8f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
156	93											
	94											
154	95		9						**LAKEWOOD FORMATION (Qlw)** Fine Sand, slightly light yellowish brown (2.5Y 6/4), massive		1345 1401	
	96								From 96.0 to 96.6 feet: Coarsening downward from fine to coarse Sand and fine gravel At 96.6 feet: Fine Sand, trace silt, light olive brown (2.5Y 5/4)			
152	97								At 97.0 feet: Very fine Sandy Silt to Silty very fine Sand			
		20		100							[300]	
	98											
150	99								At 99.0 feet: Rounded coarse Sand, fine gravel At 99.4 feet: Silty very fine Sand and Clayey Silt			
	100						NR		No core recovery from 100.0 to 100.2 feet		1402 1419	
148	101								At 100.2 feet: Very fine Sand, light olive brown (2.5Y 5/3), slightly mottled with iron oxide stained			
	102											
		21		96					At 102.4 feet: Grayish brown (2.5Y 5/2), no iron oxide staining		[300]	
146	103											
	104		10									
144	105								No core recovery from 105.0 to 108.0 feet		1420 1030	
	106											
							NR					
142	107											
		22		40							[300]	
	108											
140	109											

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Log of Core Boring T9-B8

Westside Purple Line Extension - Section 2
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Figure: A-1.8g

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
140	109								At 109.0 feet: Fine Sand			
			10								1031	
	110								No core recovery from 110.0 to 111.2 feet		1050	
							NR					
138	111								At 111.2 feet: Trace Silt, light olive brown (2.5Y 5/3)			
									At 111.5 feet: Fine to medium Sand, abundant gravel			
	112											
		23		76							[300]	
136	113											
									At 113.4 feet: Fine Sand			
	114								At 113.7 feet: Fine to medium Sand, crudely bedded			
									From 114.0 to 114.1 feet: Occassional Gravel			
									At 114.5 feet: Very fine Sand			
134	115								At 115.0 feet: Fine Sand, some medium to coarse, light gray (2.5Y 7/2)		1051 1112	
	116											
			11						No core recovery from 116.3 to 123.0 feet			
132	117											
		24		34							[100]	
	118						NR					
130	119											
	120										1115 1134	
128	121											
							NR					
	122											
		25		40							[150]	
126	123											
									At 123.5 feet: Fine Sand, light yellowish brown (2.5Y 6/3)			
	124								At 124.0 feet: Medium to coarse Sand			
124	125											

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Westside Purple Line Extension - Section 2
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Figure: A-1.8h

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
124	125								No core recovery from 125.0 to 127.5 feet		1206	
	126		11				NR					
122	127	26		50							[150]	
	128								At 127.8 feet: Fine Sand, light olive brown (2.5Y 5/3)			
120	129								At 129.0 feet: Medium Sand			
	130								No core recovery from 130.0 to 132.8 feet		1203 1224	
118	131						NR					
	132	27		44							[150]	
116	133								At 133 feet: Sand, very fine to fine, light yellowish brown (2.5Y 6/3)			
	134								At 133.5 feet: Fine Sand, moderate iron oxide staining At 134.0 feet: Heavy iron oxide staining			
114	135		12						At 134.5 feet: Silt and very fine sand, laminated, brown, minor iron oxide staining No core recovery from 135.0 to 137.8 feet		1226 1248	
	136						NR					
112	137	28		44							[150]	
	138								**SAN PEDRO FORMATION (Qsp)** Sand, very fine, very dark gray (2.5Y 3/1), unoxidized, faint iron oxide staining to 138.0 feet			
110	139											
	140						NR		No core recovery from 140.0 to 141.0 feet		1250 1315	
108	141											

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Log of Core Boring T9-B8

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Westside Purple Line Extension - Section 2
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Figure: A-1.8i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
108	141								At 141.0 feet: Fine Sand, brown (2.5Y 3/2)			
	142											
		29		80							[150]	
106	143		12									
	144											
104	145										1317	
									No core recovery from 145.0 to 147.0 feet		1341	
	146						NR					
102	147		13						At 147.0 feet: Very dark greenish gray (3/10Y), scattered shell fragments			
		30		60							[300]	
	148											
100	149											
	150										1342	
									END OF BORING AT 150.0 FEET			
									NOTES:			
98	151								• Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at 35.0 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
	152											
96	153											
	154											
94	155											
	156											
92	157											

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Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.8j

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
250	0								2-inch thick Asphalt over 4-inch thick Concrete			
									ARTIFICIAL FILL (af) Sandy Silt, some clay, occasional gravel, brown, moist			
	1											
248	2											
	3											
246	4											
	5								**ALLUVIAL DEPOSITS** **Fan Deposits** At 5.0 feet: Sandy to Silty Clay, some coarse sand, scattered gravel (up to 3/4-inch in diameter), very dark grayish brown (10YR 3/2)		1122	
244	6								**Sag Deposits** At 5.8 feet: Clayey Silt and very fine Sand, no gravel, dark brown (10YR 3/3), 1/4-inch thick faint bedding At 6.0 feet: Fine sand, trace gravel, clayey, medium dark brown From 6.0 to 6.35 feet: Disturbed From 6.45 to 6.6 feet: Faint bedding At 6.9 feet: Clayier			
	7	1		100					At 7.0 feet: Rare gravel		[300]	
242	8								At 7.8 feet: Very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3), 1/8- to 1/2- inch thick distinct bedding, dip approximately 5 to 10°			
	9		1						**Fan Deposits** At 8.3 feet: Silty Sand, very fine to fine grained, some coarse, some fine gravel (up to 3/4-inch in diameter), trace clay, massive, base of bedding At 9.3 feet: Dark yellowish brown (10YR 4/4)			
240	10								**Fluvial Deposits** At 9.6 feet: Moderately abundant gravel up to 2-inches in diameter		1123	
									At 10.0 feet: Gravel		1130	
	11								At 10.3 feet: Silty Sand, fine grained, coarsening downward, yellowish brown (10YR 5/4), moderately abundant gravel (up to 1-inch in diameter) At 10.9 feet: Silty Sand, fine to medium grained, brown (10YR 4/3), friable At 11.2 feet: Silty Sand, fine to coarse grained with fine gravel At 11.6 feet: Overall coarser sand, some gravel up to (1/2-inch in diameter) At 12.0 feet: Trace silt, some fine gravel, brown (10YR 5/3), friable			
238	12	2		60							[300]	
	13											

DATE(S) DRILLED:	9/16/2015 to 9/18/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	250.00 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	155.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	33 feet at completion

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B9

Sheet 1 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.9a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	13								No core recovery from 13.0 to 15.0 feet			
236	14		1				NR					
	15								At 15.0 feet: Silty to Clayey Sand and fine Gravel, fine to coarse grained, brown, friable		1131 1138	
234	16	3		100					At 16.0 feet: Sand and Gravel, minor silt, gravel (up to 3-inches in diameter), friable		[180]	
	17								At 17.0 feet: Brownish gray			
232	18										1139 1145	
	19	4		100							[120]	
230	20		2								1146 1152	
	21	5		100								
228	22								No core recovery from 22.0 to 23.0 feet		1152 1152	
	23						NR		From 23.0 to 23.4 feet: Clayey			
		6		67							[180]	
226	24								From 23.8 to 24.0 feet: Silty Sand			
	25								**Fan Deposits** At 25.0 feet: Silty Sand, fine grained, some fine gravel, brown (10YR 4/3)		1153 1205	
224	26								At 26.2 feet: Dark brown (10YR 3/3)			
	27		3						At 27.2 feet: Some manganese blebs			
		7		100					At 27.5 feet: Brown (10YR 4/3), mottled with iron staining		[150]	
222	28								At 27.9 feet: Charcoal, trace clay			
	29								At 28.5 feet: Silty Sand, fine grained, dark grayish brown (10YR 4/2), mottled with iron staining			

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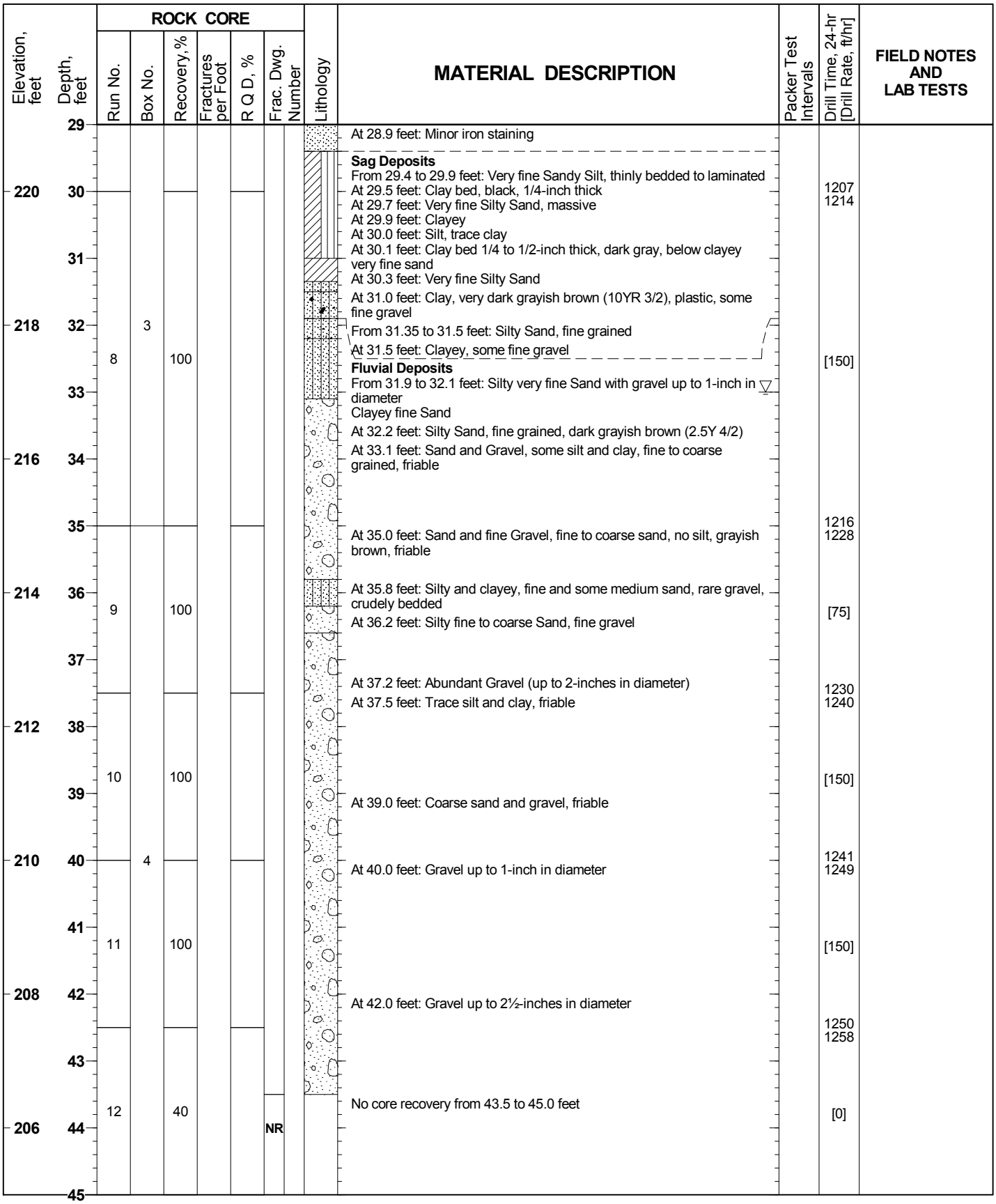
Log of Core Boring T9-B9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.9b



THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.9c

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	45						NR		No core recovery from 45.0 to 46.0 feet		1307	
204	46								At 46.0 feet: Sand, fine to medium grained, medium yellowish brown, friable			
	47								At 46.6 feet: Silty fine to coarse Sand with some gravel, brown (10YR 4/3) At 46.9 feet: Slightly silty			
		13		80							[300]	
202	48								**Sag Deposits** At 48.1 feet: Silty Clay, brown (10YR 4/3) At 48.2 feet: Thin bedded and laminated Silty very fine Sand and Silty Clay, grayish brown, dipping ~5°			
	49		5									
200	50						NR		No core recovery from 50.0 to 50.6 feet		1308 1317	
	51								**Fan Deposits** At 50.6 feet: Clayey Sand, fine to coarse grained			
198	52								**Sag Deposits** At 51.2 feet: Silty Sand and Clayey Silt, very fine sand, trace clay, brown (10YR 4/3) and dark yellowish brown (10YR 4/4) with medium to dark brown laminations, thin bedded and laminated At 52.0 feet: Scattered coarse sand, darker			
		14		88							[300]	
	53								At 53.1 feet: Silty Clay, very dark grayish brown (10YR 3/2), mottled, laminated			
196	54								**Fan Deposits** At 53.5 feet: Sandy Silt, dark yellowish brown (10YR 4/6) At 54.2 feet: Moderately abundant fine gravel, slightly clayey			
	55								At 55.0 feet: Silty Sand, very fine grained, scattered fine gravel, clayey, dark yellowish brown (10YR 4/4), mottled dark grayish brown (10YR 4/2) and brown (10YR 4/3) From 55.6 to 56.5 feet: Some manganese blebs		1318 1330	
194	56								From 56.6 to 57.4 feet: Clayey			
	57											
		15		100					From 57.4 to 57.6 feet: Coarse sand and some fine gravel, friable		[300]	
192	58								At 57.6 feet: Silty Sand to Silt, very fine sand, rare coarse From 58.4 to 58.6 feet: Clayey, brown (10YR 4/3), mottled, some thin beds			
	59		6						At 59.0 feet: Silty very fine Sand, slightly clayey, dark yellowish brown (10YR 4/4)			
190	60								At 60.0 feet: Yellowish brown (10YR 5/4), mottled		1331 1345	
	61											

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Log of Core Boring T9-B9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.9d

Elevation, feet	Depth, feet	Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
									ROCK CORE			
	61								At 61.0 feet: Slightly clayey			
									At 61.2 feet: Clayey to Silty Clay			
188	62								At 61.5 feet: Clayey Silt, dark grayish brown (10YR 4/2), mottled, few manganese blebs			
		16	6	100					At 62.4 feet: Silty Sand, very fine grained, trace clay, grayish brown (10YR 5/2), mottled with iron oxide stains, scattered manganese blebs		[100]	
	63											
186	64								From 63.9 to 64.1 feet: Fine to medium sand bed			
									At 64.1 feet: Clayey Silt to Silty Clay			
	65										1348	
									Silty to Clayey Sand, very fine grained, some fine gravel, brown (10YR 4/3), slightly mottled gray and brown		1358	
184	66											
									At 66.5 feet: Clayey Sand, fine grained			
	67											
		17		100							[300]	
182	68								**Fluvial Deposits**			
									At 68.2 feet: Clayey Sand with Gravel, fine to coarse grained			
	69		7						At 69.0 feet: Fine to coarse sand and gravel, trace silt, gray and brown			
									At 69.3 feet: Slightly Silty Sand, very fine grained			
180	70										1359	
							NR		No core recovery from 70.0 to 71.2 feet		1411	
	71											
									At 71.2 feet: Silty very fine to fine Sand			
									At 71.3 feet: Sand and Gravel			
178	72								At 71.8 feet: Very fine to medium Sand, brown and white, friable			
									At 72.1 feet: Fine to coarse sand and gravel, brownish gray			
		18		76							[100]	
									At 72.6 feet: Clayey, brown (10YR 4/3), mottled			
	73								At 72.8 feet: Clayey fine Sand to Sandy Clay			
									At 73.1 feet: Silty Sand, very fine grained, scattered fine gravel, trace clay, subhorizontal contact			
									From 73.3 to 73.6 feet: Zone with coarse sand and gravel			
176	74											
									From 74.2 to 74.7 feet: Zone with more gravel			
	75										1414	
									At 75.0 feet: Slightly Silty fine to medium Sand, dark brown (10YR 3/3) to brown (10YR 4/3), friable		1115	
									At 75.4 feet: Fine to coarse sand, some fine gravel			
174	76		8						From 75.8 to 76.1 feet: Silty Sand, very fine grained			
									At 76.1 and 76.4 feet: 1½-inch thick coarse sand and gravel beds, horizontal			
	77								From 76.9 to 77.0 feet: Slightly silty, fine to coarse sand bed			

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B9

Sheet 5 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.9e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	77								**Fan Deposits** At 77.0 feet: Silty, Clayey Sand to Clayey Silt, very fine sand, scattered fine gravel, dark grayish brown (2.5Y 4/2), massive, sharp contact			
		19		100							[150]	
172	78								At 78.0 feet: Some iron oxide mottling and manganese blebs			
	79								From 78.8 to 79.4 feet: Very clayey, scattered fine gravel			
170	80								At 80.0 feet: Silty Sand, very fine grained, brown (10YR 4/3), mottled		1117 1129	
	81		8									
168	82								At 81.7 feet: Sandy Lean Clay to Clayey Sand, dark grayish brown (2.5Y 4/2), mottled			
		20		100							[300]	
	83								From 83.0 to 83.2 feet: Couple of laminations At 83.4 feet: Sandier			
166	84								At 84.0 feet: Some coarse sand and fine gravel			
	85								**Sag Deposits** At 84.3 feet: Thinly bedded to laminated Silty Clay and Clayey Sand, fine grained, lighter and darker beds		1130 1140	
									Fan Deposits At 85.0 feet: Silty Sand, very fine grained, clayey, light yellowish brown (2.5Y 6/3), massive			
164	86								At 86.0 feet: Light olive brown (2.5Y 5/3)			
	87								At 87.0 feet: Silty Sand, very fine grained, clayier, dark grayish brown (2.5Y 4/2)			
		21		100					At 87.5 feet: Moderately abundant carbonate, filaments and small nodules		[300]	
162	88								At 88.0 feet: Sandier At 88.5 feet: Silty Sand, fine grained			
	89		9									
									At 89.5 feet: Clayey			
160	90								From 90.0 to 90.4 feet: Silty Sand, very fine grained, light yellowish brown (2.5Y 6/4), mottled, scattered carbonate		1141 1152	
	91								At 90.7 feet: Clayier, grayish brown (2.5Y 5/2), mottled At 90.9 feet: Silty Sand, fine grained, light olive brown (2.5Y 5/3), mottled From 91.4 to 92.5 feet: Clayey			
158	92								From 91.9 to 92.4 feet: Scattered carbonate			
		22		100							[150]	
	93								At 92.5 feet: Silty Sand, fine grained, grayish brown (2.5Y 5/2), diffuse iron oxide staining			

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Log of Core Boring T9-B9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.9f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	93											
156	94		9						At 93.6 feet: Clayier From 93.7 to 95.0 feet: Some carbonate			
	95										1154	
									Fluvial Deposits Clayey Sand, fine grained, grayish brown (2.5Y 5/2), slightly mottled with brown (10YR 4/3), massive		1205	
154	96											
	97											
		23		100					From 97.4 to 98.2 feet: Rare gravel		[150]	
152	98								At 97.6 feet: Slightly Silty Sand, fine grained, brown (10YR 5/3) to reddish brown (2.5YR 5/3)			
	99											
150	100		10						At 100.0 feet: Slightly clayey, grayish brown (2.5Y 5/2)		1207 1223	
	101								From 100.9 to 101.3 feet: Couple of clayey laminations			
148	102								At 102.0 feet: Very fine sand			
		24		100					From 102.5 to 103.0 feet: Some fine gravel At 102.6 feet: Carbonate bleb		[150]	
	103								At 103.0 feet: Slightly Silty Sand, fine grained, ½- to 1-inch thick layer of fine gravel up to 1 inch in diameter, light olive brown (2.5Y 5/3) At 103.5 feet: Silty Sand, fine to medium grained, some coarse			
146	104								At 103.9 feet: Some gravel			
	105										1225	
									At 105.0 feet: Sand, fine to medium grained, pale yellow (2.5Y 7/3), friable At 105.4 feet: Fine to coarse sand with some gravel, grayish brown		1243	
144	106								No core recovery from 106.2 to 110.0 feet			
	107											
		25	11	24			NR				[150]	
142	108											
	109											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B9

Sheet 7 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.9g

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	109						NR					
140	110								No core recovery from 110.0 to 113.0 feet		1245 1300	
	111											
138	112		11				NR					
		26		40							[300]	
	113								**LAKEWOOD FORMATION (Qlw)** At 113.0 feet: Slightly Silty Sand, very fine grained, grayish brown (2.5Y 5/2) From 113.4 to 113.6 feet: Couple fine gravel			
136	114								At 113.6 feet: Sand to Silt, very fine grained, light olive brown (2.5Y 5/3)			
	115								No core recovery from 115.0 to 118.5 feet		1301 1317	
134	116											
	117											
		27		30							[300]	
132	118											
	119								At 118.5 feet: Slightly Silty Sand, very fine grained, light olive brown (2.5Y 5/6)			
130	120		11						No core recovery from 120.0 to 121.2 feet		1318 1338	
							NR					
	121								At 121.2 feet: Medium to coarse sand and gravel, some silt, abundant slate gravel, subrounded, light gray (2.5Y 7/2), some fine sand beds			
128	122											
		28		96							[150]	
	123											
									At 123.5 feet: Fine to coarse sand with some gravel, pale yellow (2.5Y 7/3)			
126	124											
	125								At 124.7 feet: Less gravel			

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Log of Core Boring T9-B9

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.9h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	125								No core recovery from 125.0 to 127.5 feet		1302	
124	126						NR					
	127											
		29		50					At 127.5 feet: Very fine sand, pale yellow (2.5Y 7/3 to 2.5Y 7/4)		[150]	
122	128								At 127.9 feet: Fine to medium sand, some coarse, trace fine gravel			
	129		12						At 129.1 feet: Very fine grained, gray with some iron oxide stains			
120	130								No core recovery from 130.0 to 135.0 feet		1404 1001	
	131											
118	132											
		30		0			NR				[300]	
	133											
116	134											
	135								No core recovery from 135.0 to 138.3 feet		1002 1021	
114	136		12				NR					
	137											
		31		34							[300]	
112	138								At 138.3 feet: Very fine sand, light olive brown (2.5Y 5/3)			
	139								At 138.7 feet: Light olive brown (2.5Y 5/4), iron oxide stains At 139.0 feet: 1/4-inch thick dark orange bed			
110	140										1022 1046	
	141								At 140.6 feet: Very fine sand, heavy iron oxide stain, some gray patches			

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Log of Core Boring T9-B9

Sheet 9 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.9i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	141								**SAN PEDRO FORMATION (Qsp)** At 141.1 feet: Sand, fine grained, medium gray No core recovery from 141.2 to 145.0 feet			
108	142	32		24							[300]	
	143						NR					
106	144											
	145								At 145.0 feet: Sand, fine grained, greenish black (GLEY 1 2.5/10Y), some shells		1047 1111	
104	146		12						No core recovery from 146.0 to 150.0 feet			
	147	33		30							[100]	
102	148						NR					
	149											
100	150										1114 1136	
	151								From 150.8 to 151.2 feet: Pocket of some medium sand with shells, dark greenish gray (2.5Y 3/10Y), slightly micaceous			
98	152	34		40					No core recovery from 152.0 to 155.0 feet		[150]	
	153						NR					
96	154											
	155								END OF BORING AT 155 FEET		1138	
94	156								NOTES: • Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at approximately 33 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
	157											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B9

Sheet 10 of 10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.9j

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
251	0								6-inch thick Asphalt over 4-inch thick Concrete			
									ARTIFICIAL FILL (af) Clayey Silty Sand to Sandy Clay with Gravel, occasional gravel, dark brown, moist			
250	1											
	2											
248	3											
	4											
246	5						NR		No recovery from 5.0 to 5.5 feet: Hand auger sample loss		1054	
									ALLUVIAL DEPOSITS **Fan Deposits** At 5.5 feet: Clayey Silt to Clayey Sand, very fine sand, some coarse, some gravel up to 1 inch in diameter, very dark grayish brown (10YR 3/2)			
	6								**Sag Deposits** At 6.5 feet: Faint bedding, dip 5-10° At 6.9 feet: Rare coarse sand, laminated and bedded ¼-inch thick, very dark grayish brown (10YR 3/2)			
244	7	1		90							[300]	
	8								At 8.5 feet: Sandier, bedding more distinct			
242	9		1									
	10								**Fan Deposits** At 9.8 feet: Possible base of bedding No core recovery from 10.0 to 13.5 feet		1055 1104	
240	11						NR					
	12											
		2		30							[300]	
238	13											

DATE(S) DRILLED:	9/21,22,24/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	251.00 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	165.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	33 feet at completion

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Log of Core Boring T9-B10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.10a

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
238	13						NR					
									At 13.5 feet: Silty Sand, very find sand, some coarse sand, rare fine gravel, dark yellowish brown (10YR 4/4), trace clay			
	14											
236	15		1				NR		No core recovery from 15.0 to 15.3 feet		1105	
											1113	
									At 15.3 feet: Silty very fine Sand, dark brown (10YR 3/3)			
									At 15.6 feet: With coarse sand and some fine gravel (up to ½-inch in diameter)			
	16	3		88					At 16.2 feet: Clayey bedding with laminations, no gravel		[150]	
									At 16.4 feet: Massive with gravel			
									At 16.7 feet: Clayey with laminations			
234	17								**Fluvial Deposits**			
									At 17.0 feet: Fine to coarse Sand and Gravel		1114	
									At 17.5 feet: Silty Sand, some fine and very fine gravel, brown (10YR 5/3)		1118	
	18											
		4		100					**Fan Deposits**		[150]	
232	19								At 18.5 feet: Silty very fine Sand, scattered gravel, dark brown (10YR 3/3)			
	20		2								1119	
									At 20.0 feet: Trace clay, very fine sand		1126	
230	21	5		100					At 21.0 feet: No clay			
									At 21.4 feet: Brown (10YR 4/3)			
	22										1126	
											1134	
228	23								At 22.8 feet: Trace clay			
		6		100							[180]	
									At 23.6 feet: Very fine sand, slightly clayey, dark brown (10YR 3/3)			
	24								At 24.0 feet: Clayey, Silty Sand, very fine grained, rare gravel			
226	25										1135	
											1142	
									Sag Deposits			
	26								At 25.5 feet: Very fine Silty Sand, Silty Clay, and Clayey very fine sand, some bedding and laminations			
									At 26.2 feet: Dark brown (10YR 3/3)			
224	27		3									
		7		100					At 27.3 feet: Silty Sand bedded with Clayey Sand, very fine sand, light brown, dark brown, and gray		[300]	
	28								At 27.7 feet: Clay bed ½-inch thick, very dark brown interbedded with very dark grayish brown and brown (10YR 3/1, 3/2, 4/3)			
									At 28.0 feet: Clay bed 1/4-inch thick, dark brown			
222	29								**Fan Deposits**			
									At 28.5 feet: Silty very fine Sand, brownish gray, slightly mottled,			

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Log of Core Boring T9-B10

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.10b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
222	29								massive			
									At 29.3 feet: Silty Clay, sandy, dark brown (10YR 3/3), some iron oxide mottling			
	30								At 29.9 feet: Silty Sand, very fine grained		1143	
									At 30.0 feet: Slightly Clayey, very fine sand		1151	
220	31								At 30.9 feet: Silty fine Sand, some coarse sand and gravel			
			3									
	32								At 31.8 feet: Clayier			
		8		100							[150]	
218	33								▽			
	34											
									Fluvial Deposits			
									At 34.2 feet: Silty Sand with Gravel, fine sand			
									At 34.4 feet: Yellowish brown (10YR 5/6), some iron oxide staining			
216	35						NR		No core recovery from 35.0 to 35.2 feet		1153 1203	
									At 35.2 feet: Fine to medium Sand with gravel, grayish brown, friable			
	36								At 35.6 feet: Fine to coarse Sand with gravel, friable			
									At 36.3 feet: Slightly Clayey			
214	37								At 37.0 feet: No clay			
		9		96							[300]	
	38											
									At 38.6 feet: Slightly clayey			
212	39								At 39.3 feet: No clay, friable			
	40		4								1204	
							NR		No core recovery from 40.0 to 40.5 feet		1213	
210	41											
	42											
		10		90							[300]	
208	43								At 42.7 feet: Silty fine Sand with gravel			
									At 43.3 feet: Fine to coarse sand, abundant iron oxide stains			
	44											
									From 44.4 to 44.6 feet: Clayey			
206	45								At 44.6 feet: Fine to coarse gravel from ¼ to 1½-inch in diameter, no iron oxide stains			

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Log of Core Boring T9-B10

Westside Purple Line Extension - Section 2
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Figure: A-1.10c

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
206	45						NR		No core recovery from 45.0 to 45.7 feet		1228	
	46								At 45.7 feet: Medium to coarse sand, grayish brown, friable			
204	47								At 46.9 feet: Coarser grained			
		11		86							[300]	
	48								At 47.8 feet: Clayey, fine to coarse sand and gravel (up to 2 inch in diameter)			
202	49											
	50		5						**Fan Deposits** At 49.7 feet: Clayey fine Sand, brown At 50.0 feet: Clayey Silty fine Sand to Sandy Clay, dark yellowish brown (10YR 4/4) mottled		1229 1239	
200	51								At 51.5 feet: Dark yellowish brown (10YR 3/4)			
	52											
		12		100							[300]	
198	53								**Sag Depostis** At 52.5 feet: Thin bedded to laminated			
									Fan Deposits At 53.2 feet: Becomes mottled with dark grayish brown (10YR 4/2)			
	54											
196	55								At 55.0 feet: Grayish brown (10YR 5/2)		1240 1251	
	56								At 56.1 feet: Sandier, some coarse sand and fine gravel, brown (10YR 4/3)			
194	57											
		13		100							[150]	
	58		6									
192	59								**Sag Deposits** At 58.5 feet: Silty very fine Sand and Silty Clay with 1/8 to ½-inch thick beds, dark yellowish brown (10YR 4/4) with dark brown clay			
									Fan Deposits At 59.5 feet: Silty very fine Sand, moderately abundant gravel, massive		1253 1303	
	60								At 60.6 feet: Dark yellowish brown (10YR 3/4), carbonate nodules to 61.0 feet			
190	61											

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Log of Core Boring T9-B10

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Figure: A-1.10d

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
190	61								At 60.8 feet: Less gravel, mottled At 61.3 and 61.5 feet: Smaller carbonate nodules			
	62											
		14		100					At 62.5 feet: Silty Clay, some gravel, dark brown (7.5YR 3/3), mottled		[300]	
188	63		6									
	64								At 63.7 feet: More abundant gravel			
									Fluvial Deposits At 64.1 feet: Gravel with some Silt and fine Sand			
186	65								At 65 feet: Clayey fine sand with abundant gravel up to 1/2 inch		1304 1317	
	66								**Fan Deposits** At 65.9 feet: Clay with some gravel, brown (10YR 4/3) At 66.2 feet: Silty, fine Sandy Clay At 66.6 feet: More abundant gravel			
184	67								At 67.0 feet: Silty Sand, fine to coarse sand, fine gravel At 67.2 feet: Clayey			
		15		100					At 67.4 feet: Sandy bed 1-inch thick, fine to coarse		[100]	
	68								**Sag Deposits** At 67.5 feet: Clay, olive brown (2.5Y 4/3), mottled iron oxide, moderately abundant manganese At 67.8 feet: Some laminations At 68.1 feet: Silty very fine Sand			
182	69								At 68.3 feet: Sandy Clay and Clay with manganese laminations, olive brown (2.5Y 4/3)			
									Fan Deposits At 69.0 feet: Silty fine Sand, light olive brown (2.5Y 5/3)			
	70		7						At 69.7 feet: Clayey Sand, very fine sand, olive brown (2.5Y 4/3)		1320 1334	
									At 70.3 feet: Silty fine Sand, light olive brown (2.5Y 5/4)			
180	71								At 70.8 feet: Silty Clay, olive brown (2.5Y 4/4), abundant manganese At 71.0 feet: Olive brown (2.5Y 4/3)			
									At 71.5 feet: Light olive brown (2.5Y 5/3)			
	72								At 71.7 feet: Sandy Silty Clay, dark brown (10YR 3/3) mottled with brownish gray, manganese stains, massive			
		16		100							[300]	
178	73											
	74								At 74.0 feet: Silty Sand, very fine grained At 74.3 feet: Coarser			
									At 74.6 feet: Clayey Sand to Sandy Clay			
176	75										1335 1348	
	76		8						At 75.8 feet: Some gravel up to 1/2 inch in diameter			
									At 76.4 feet: Silty fine Sand, gravelly			
174	77											

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Log of Core Boring T9-B10

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Figure: A-1.10e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
174	77											
		17		100					**Fluvial Deposits** At 77.2 feet: Abundant gravel At 77.6 feet: Fine to coarse Sand and gravel, friable		[100]	
	78								At 78.4 feet: Slightly clayey, less gravel			
172	79								At 78.8 feet: Silty very fine Sand, bedded, brown (10YR 4/3) mottled			
	80										1351	
									At 80.0 feet: Clayey with gravel, massive, dark yellowish brown (10YR 4/4)		1305	
170	81		8						At 80.8 feet: Silty very fine Sand with gravel			
									At 81.6 feet: Rare gravel, yellowish brown (10YR 5/4), slightly bedded			
	82											
		18		100					At 82.3 feet: Sand with fine gravel		[300]	
168	83								At 82.8 feet: Silty fine Sand			
									At 83.2 feet: Fine Sand and gravel			
									At 83.6 feet: Fine Sand			
	84											
									At 84.3 feet: Fine to coarse sand and gravel			
166	85										1306	
									At 85 feet: Fine Sand, friable		1019	
									At 85.4 feet: Fine Sand, some fine gravel, pale brown (10YR 6/3)			
	86											
									Sag Deposits At 86.0 feet: Sandy Clay, dark grayish brown (2.5Y 4/2), some manganese, some dark laminations			
164	87											
		19		60					No core recovery from 87.5 to 89.5 feet		[300]	
	88						NR					
162	89											
			9						**Fan Deposits** At 89.5 feet: Sandy Clay, very dark grayish brown (10YR 3/2)		1020	
	90											
							NR		No core recovery from 90.0 to 90.5 feet		1048	
									At 90.5 feet: Sandy Clay, with fine gravel, very dark grayish brown (10YR 3/2), dark gray laminations, massive			
160	91								At 91.1 feet: Sandy Clay, rare gravel			
									At 91.5 feet: Clayey fine Sand to Sandy Clay			
	92								At 91.8 feet: Dark grayish brown (2.5Y 4/2)			
		20		90							[300]	
158	93								**Sag Deposits**			

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Log of Core Boring T9-B10

Westside Purple Line Extension - Section 2
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Figure: A-1.10f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
158	93								At 92.6 feet: Moderately abundant coarse sand, dark grayish brown (2.5Y 4/2), laminated			
	94		9									
									Fan Deposits			
156	95								At 94.5 feet: Sandy Clay, massive		1049	
									At 95.0 feet: Very fine Sand and Silt, grayish brown (2.5Y 5/2) mottled, massive, scattered manganese		1106	
	96								At 95.6 feet: Silty Sand, very fine sand, some silt			
154	97											
		21		100					At 97.5 feet: Silty very fine Sand and Clay, with lighter and very fine sand beds, olive brown (2.5Y 4/3), bedded and laminated		[300]	
	98											
152	99											
	100		10								1107	
									At 100.0 feet: Clayey very fine Sand, grayish brown (2.5Y 5/2), massive		1123	
150	101								At 100.7 feet: Silty very fine Sand, brown (10YR 5/3)			
	102								At 102.0 feet: Sandy Clay, brown (10YR 4/3), mottled			
		22		100							[300]	
148	103											
	104								At 103.8 feet: Some carbonate, scattered filaments			
146	105										1124	
									At 105.0 feet: Clayey Sand to Sandy Clay, scattered gravel, gray and mottled brown (10YR 4/3)		1140	
	106								At 106.0 feet: Silty Sand, fine to medium, brown			
144	107		11						At 107.0 feet: Moderate to abundant gravel			
		23		80							[300]	
	108											
142	109								At 108.6 feet: Clayey			

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Log of Core Boring T9-B10

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Westside Purple Line Extension - Section 2
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Figure: A-1.10g

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
142	109						NR		No core recovery from 109.0 to 110.0 feet			
	110								At 110.0 feet: Gravel		1141 1159	
140	111								Clayey Sand, fine sand, scattered gravel, grayish brown (2.5Y 5/2)			
	112								**LAKEWOOD FORMATION (Qlw)** At 111.8 feet: Very fine Sand, some laminations, pale yellow (2.5Y 7/3), some iron oxide stains			
		24		60							[300]	
138	113								At 112.9 feet: Rounded cobble (3-inch in diameter) No core recovery from 113.0 to 115.0 feet			
	114		11				NR					
136	115								No core recovery from 115.0 to 118.5 feet		1200 1226	
	116											
							NR					
134	117											
		25		30							[300]	
	118											
									At 118.0 feet: Clayey Sand, very fine sand, light brownish gray (10YR 6/2), some laminations			
132	119											
	120								No core recovery from 120.0 to 121.0 feet		1227 1249	
							NR					
130	121								At 121.0 feet: Clayey Sand, gray (10YR 6/1), scattered discontinuous laminations, with moderately abundant iron oxide staining			
	122											
		26		80							[100]	
128	123		12									
	124								From 124.1 to 124.4 feet: Fine grained horizon			
126	125								At 124.6 feet: Fine sand			

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B10

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.10h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
126	125								No core recovery from 125.0 to 128.0 feet		1252	
	126						NR					
124	127	27		40							[50]	
	128								At 128.0 feet: Clayey Sand, very fine to fine, mottled			
122	129								At 129.0 feet: Very fine Sand, light gray (10YR 7/1)			
	130		12						No core recovery from 130.0 to 131.0 feet		1319 1342	
							NR					
120	131								At 131.1 feet: Silty Sand, fine to coarse sand and gravel, light olive brown (2.5Y 5/3), slightly clayey			
	132	28		80							[150]	
118	133								At 132.6 feet: Clast, 2 inches in diameter			
									At 133.6 feet: Grades to orange brown fine Sand, iron oxide staining			
	134								At 134.0 feet: Clay with Silt and Gravel			
									At 134.4 feet: Very fine to fine Sand			
									At 134.7 feet: Fine to coarse sand and gravel			
116	135								No core recovery from 135.0 to 136.3 feet		1344 1407	
							NR					
	136								At 136.3 feet: Silty Sand, fine sand, pale yellow (2.5Y 7/3), friable			
114	137								At 136.9 feet: Fine to medium Sand, light yellowish brown (2.5Y 6/4), friable			
		29		74					At 137.1 feet: Fine to medium Sand, coarse and fine gravel		[150]	
									At 137.7 feet: 2-inch fine gravel bed			
	138		13						At 138.1 feet: Fine Sand			
									At 138.4 feet: Very fine Sand, light yellowish brown (2.5Y 6/3)			
112	139											
	140								No core recovery from 140.0 to 143.8 feet		1409 0954	
							NR					
110	141											

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Log of Core Boring T9-B10

Westside Purple Line Extension - Section 2
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Figure: A-1.10i

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
110	141											
	142						NR					
		30		24							[300]	
108	143											
	144								At 143.8 feet: Silty fine Sand, light gray (2.5Y 7/2) At 144.0 feet: Fine to medium with some coarse Sand			
106	145								No core recovery from 145.0 to 148.5 feet		0955 1020	
	146											
							NR					
104	147											
		31		30							[150]	
	148											
									At 148.5 feet: Very fine to fine sand, grayish brown (2.5Y 5/2)			
102	149		13									
	150								No core recovery from 150.0 to 152.5 feet		1022 1043	
100	151											
							NR					
	152											
		32		50					At 152.5 feet: Silty fine Sand, gray (2.5Y 5/1), iron oxide staining		[150]	
98	153								At 153.2 feet: Some rounded gravel At 153.6 feet: Very fine Sand			
	154											
									SAN PEDRO FORMATION (Qsp) At 154.4 feet: Very fine Sand, dark gray (2.5Y 4/1) with yellowish, iron oxide staining, unoxidized			
96	155								No core recovery from 155.0 to 156.7 feet		1045 1106	
	156		14									
94	157								At 156.7 feet: Very fine Sand, occasional iron oxide mottles,			

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Figure: A-1.10j

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
94	157								unoxidized, dark gray (4/N), some yellowish iron oxide stains			
		33		66							[300]	
	158								At 158.0 feet: Some faint laminations			
92	159											
	160								No core recovery from 160.0 to 162.5 feet		1107 1130	
90	161											
			14				NR					
	162											
		34		50					At 162.5 fee: Silty Sand, very dark gray (3/N), no iron oxide staining		[150]	
88	163											
	164											
86	165								END OF BORING AT 165.0 FEET		1132	
									NOTES:			
	166								• Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at 33.0 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
84	167											
	168											
82	169											
	170											
80	171											
	172											
78	173											

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Log of Core Boring T9-B10

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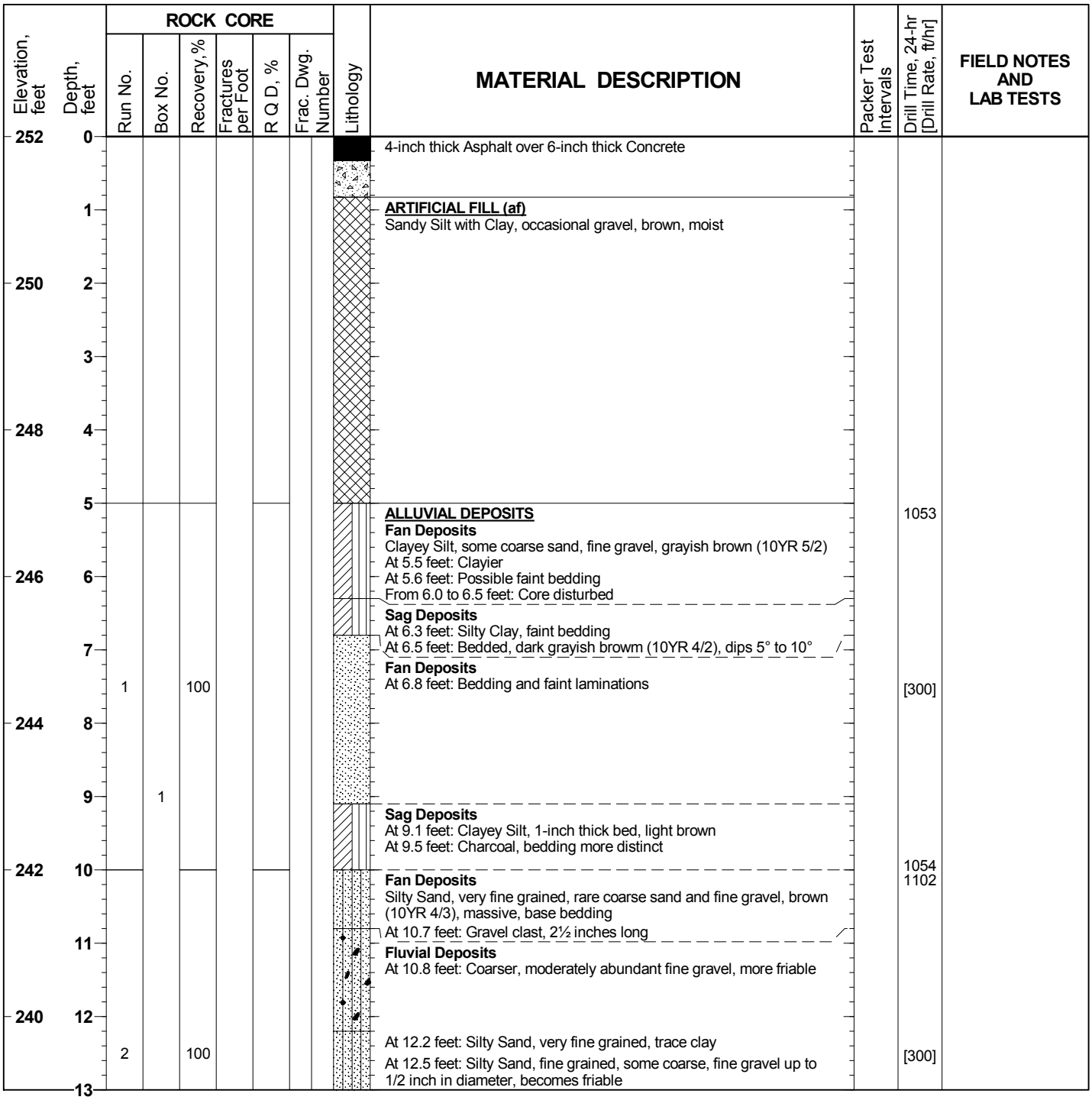
Figure: A-1.10k

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016



DATE(S) DRILLED:	9/29,30/2015 & 10/1,2/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	252.00 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	170.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	34 feet at completion

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Log of Core Boring T9-B11

Sheet 1 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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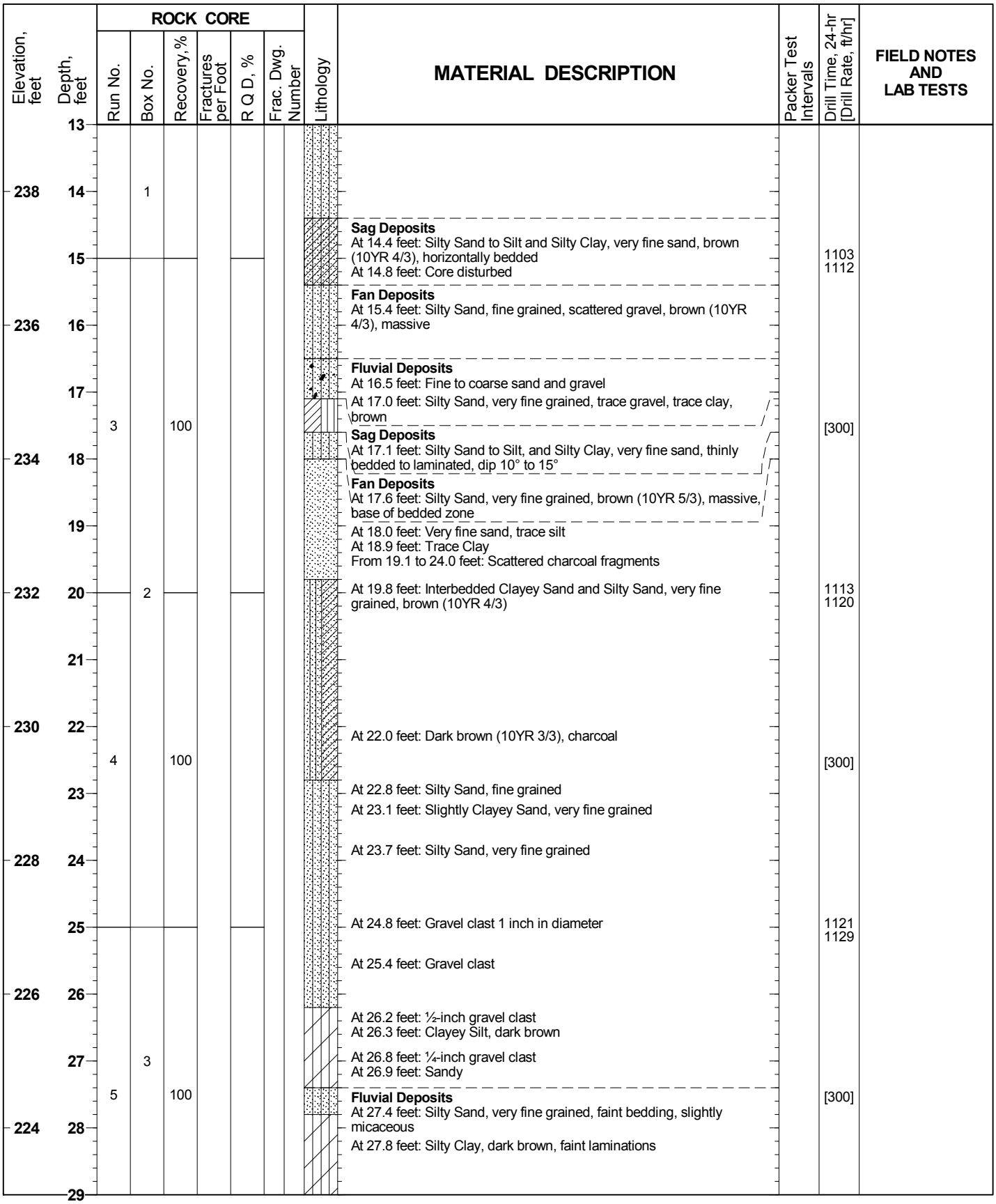
Figure: A-1.11a



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Westside Purple Line Extension - Section 2
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Project No. 4953-11-1423

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Figure: A-1.11b

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	29											
									At 29.5 feet: Silty Sand, fine to coarse grained, some gravel, brown (10YR 3/2)			
222	30										1130	
									At 30.2 feet: Very fine to fine sand, brown (10YR 3/2), moderately micaceous		1142	
	31		3									
									At 31.6 feet: Some coarse sand			
220	32											
		6		96							[300]	
	33											
									At 33.3 feet: Gravel with fine to coarse Sand, some sandier and clayier zones, friable			
218	34								▽			
							NR		No core recovery from 34.8 to 35.0 feet			
	35								At 35.0 feet: Fine to coarse Sand with abundant gravel		1143 1155	
216	36											
	37											
		7		84							[300]	
214	38											
	39											
							NR		No core recovery from 39.2 to 40.0 feet			
212	40		4						At 40.0 feet: Sand, fine grained, brown (10YR 3/2), friable		1156 1208	
									At 40.7 feet: Grades to fine to coarse Sand with fine Gravel			
	41											
									At 41.5 feet: Abundant gravel			
210	42											
		8		100					At 42.4 feet: Fine to coarse Sand, some fine gravel		[300]	
	43								At 43.0 feet: Abundant gravel			
208	44											
									At 44.2 feet: Grades to fine to medium Sand, some fine gravel			
	45											

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Log of Core Boring T9-B11

Sheet 3 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.11c

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	45								At 45.0 feet: Silty Sand, fine to medium grained, friable		1209	
206	46								At 46.3 feet: Fine to coarse sand			
	47								At 46.7 feet: Abundant gravel			
		9		44					No core recovery from 47.2 to 50.0 feet		[75]	
204	48						NR					
	49											
202	50		5						**Fan Deposits** At 50.0 feet: Clayey fine Sand, some coarse sand and fine gravel, light brownish gray (10YR 6/2) From 50.3 to 50.5 feet: Some iron oxide mottling		1232 1245	
	51								At 50.8 feet: Contact with clay, dipping ~20° From 51.1 to 52.8 feet: Silty fine Sand, heavy iron oxide staining At 51.4 feet: 4-inch clast of clay			
200	52								At 51.7 feet: 1/2-inch Gravel			
		10		100							[300]	
	53								**Sag Deposits** At 52.8 feet: Interbedded non-oxide stained Silt and fine Sand, some medium At 53.0 feet: Silty Clay and Silt, thinly bedded to laminated At 53.4 feet: Completely iron oxide stained			
198	54								**Fan Deposits** At 53.5 feet: Silt to very fine Sandy Silt, rare fine gravel At 53.9 feet: Silty Sand, very fine grained, some coarse, some gravel, dark grayish brown (10YR 4/2), massive			
	55								At 55.0 feet: Clayey Sand, scattered fine gravel, dark yellowish brown (10YR 3/4), iron oxide stain mottling		1246 1254	
196	56								**Fluvial Deposits** At 56.1 feet: Clayey Sand, fine to coarse grained, crudely bedded, iron oxide stained layers			
	57											
		11		90							[300]	
194	58		6						At 57.9 feet: Very dark brown (10YR 2/2) with gray interbeds, increasing fine gravel and fine sandy beds and fine gravely beds			
	59								At 59.0 feet: Abundant fine gravel, very dark brown (10YR 2/2), massive No core recovery from 59.5 to 60.0 feet			
192	60						NR		No core recovery from 60.0 to 60.2 feet		1255 1305	
	61								At 60.2 feet: Sand and Gravel, fine to coarse sand, trace silt, dark yellowish brown (10YR 3/6), heavy iron oxide staining			

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Log of Core Boring T9-B11

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Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.11d

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	61								At 61.3 feet: Crudely bedded			
190	62											
		12		92					At 62.5 feet: Clayey and Silty Sand, fine grained, dark brown (10YR 3/3) with some dark iron oxide staining, micaceous, thinly bedded, fining downward		[300]	
	63		6									
									Fan Deposits			
188	64								At 63.5 feet: Silty Sand to Sandy Silt, very fine sand, trace clay, brown (10YR 4/3), massive At 64.0 feet: Clayey Silt At 64.4 feet: Silty Clay			
	65								At 65.0 feet: Some bedding		1306 1317	
									At 65.3 feet: Silt bed, pale brown (10YR 6/3) At 65.5 feet: Silty Clay, brown (10YR 3/2) At 65.7 feet: Irregular, Silt bed (about ¾ inch thick), brown (7.5YR 4/4), below Clayey Silt and Silty Clay ¾ inch thick At 66.2 feet: Some coarse Sand At 66.4 feet: Silty Clay, some coarse sand, very dark gray (10YR 3/1)			
186	66											
	67											
		13		100					At 67.5 feet: Clayey Silt bed, some coarse sand and fine gravel, 1-inch thick bed		[300]	
184	68											
	69								At 69.4 feet: Dark yellowish brown (10YR 3/4) mottled			
182	70		7								1318 1329	
									At 70.5 feet: Silty to Clayey Sand, very fine grained, gray with iron oxide stained, mottled			
	71											
180	72											
		14		100					At 72.5 feet: Crude bedding, dips 3° to 5°, single carbonate filament		[300]	
	73								At 73.2 and 73.7 feet: Some carbonate blebs			
178	74								At 73.9 feet: Silty Sand, fine grained At 74.1 feet: Some fine gravel			
									Sag Deposits			
	75								At 74.5 feet: Silt and Clay beds, thin bed to laminated, heavy iron oxide staining At 75.0 feet: Silty Clay, with silt laminations, light brown and dark grayish brown		1330 1342	
									Fan Deposits			
176	76		8						At 75.6 feet: Silt, brown (10YR 5/3), mottled At 76.1 feet: Silty Clay, brown (10YR 3/2) At 76.4 feet: Silty very fine Sand At 76.6 feet: Silty Clay			
	77											

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Log of Core Boring T9-B11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.11e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	77								At 77.0 feet: Slightly clayey, very fine sand, rare gravel, some iron oxide staining			
		15		100							[150]	
174	78								**Sag Deposits** At 77.9 feet: Thinly bedded to laminated very fine Sandy Silt, Silt and Clay			
	79								**Fan Deposits** At 78.3 feet: Clayey fine Sand, some coarse sand and fine gravel, mottled, faint crude bedding At 78.7 feet: Massive			
172	80		8						At 80.0 feet: Clayey Sand, very fine grained		1344 1355	
									At 80.4 feet: Moderately abundant gravel			
	81											
170	82								At 82.2 feet: Coarse sand and gravel			
		16		100					At 82.5 feet: Friable		[100]	
	83								At 83.3 feet: Silty to Clayey Sand, very fine grained, mottled			
168	84								At 83.9 feet: Silty very fine Sand, trace clay, brown (10YR 4/3), mottled			
									Fluvial Deposits At 84.4 feet: Silty very fine to fine Sand			
	85								From 84.8 to 85.1 feet: Some fine Gravel		1358 1412	
									At 85.1 feet: Silty Sand, very fine grained, some coarse, some fine gravel, pale brown (10YR 6/3)			
									At 85.5 feet: Sandy Silt bed At 85.6 feet: Clayey Silt bed			
166	86								At 85.7 feet: Silty very fine Sand, some fine gravel At 85.8 feet: No Gravel			
									Sag Deposits At 86.2 feet: Silt, Clay, fine Sand, dark grayish brown (2.5Y 4/2), olive brown (2.5Y 4/4), and grayish brown (2.5Y 5/2), thin bedded to laminated			
	87	17		100					At 87.0 feet: Fine to coarse Sand bed, about 1½-inch thick		[9]	
164	88								**Fan Deposits** At 87.5 feet: Clayey Silt to Silty Clay, olive brown (2.5Y 4/4), some manganese blebs, massive At 88.2 feet: Sandy, some coarse grained			
	89		9						**Sag Deposits** At 88.5 feet: Silty and Clayey Sand, fine to very fine grained, some coarse, thin bedded to laminated			
									Fan Deposits At 89.2 feet: Some fine gravel, massive			
162	90								At 90.0 feet: Silty Sand, very fine grained, some gravel up to 1 inch in diameter At 90.3 feet: Scattered fine gravel, brown (10YR 4/3)		1444 1015	
	91								**Sag Deposits** At 91.1 feet: Silty Clay, dark grayish brown (2.5Y 4/2), some iron oxide stain, few laminations			
160	92								At 91.8 feet: Abundant manganese and/or clay laminations, interbedded clayey silt and silt			
		18		88					At 92.0 feet: Clayey Silt, light and medium brown		[300]	
	93								At 92.2 feet: Clayey Sand, very fine grained, some coarse with clay interbeds			

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Log of Core Boring T9-B11

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.11f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	93								At 92.8 feet: Silty Sand and Clayey Sand interbedded, very fine grained			
158	94		9						**Fan Deposits** At 93.6 feet: Sandy Clay, some coarse sand, fine gravel, brown (2.5Y 3/2), massive			
							NR		**Fluvial Deposits** At 94.1 feet: Gravel, some sand			
	95								No core recovery from 94.3 to 95.0 feet		1016	
									At 95.0 feet: Sand and Gravel, light brownish gray (10YR 6/2), medium grained, friable		1032	
156	96								At 95.7 feet: Clayey Sand with Gravel, dark grayish brown (2.5Y 4/2) mottled with iron oxide staining			
	97								At 96.8 feet: Sand and Gravel, gray, friable			
		19		100							[300]	
154	98								At 98.0 feet: Silty Sand, some gravel up to 1 inch in diameter, light brownish gray (2.5Y 6/2), mottled			
	99											
									At 99.4 feet: Sand and Gravel, some Silt, friable			
152	100		10						No core recovery from 100.0 to 101.5 feet		1033 1115	
	101											
150	102											
		20		70							[300]	
	103								**Sag Deposits** At 103.0 feet: Clayey Sand to Sandy Clay, fine sand, brown (2.5Y 3/2), some gray laminations			
148	104								**Fan Deposits** At 104.4 feet: Sandy Silt, olive brown (2.5Y 4/3), mottled			
	105								At 105.0 feet: Scattered coarse Sand, brown (2.5Y 3/2) slightly mottled, massive		1116 1133	
146	106											
	107		11									
		21		100					At 107.5 feet: Gravel clast (¼ inch), orange		[300]	
144	108								At 108.2 feet: Silty Clay, faint laminations			
	109											

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Log of Core Boring T9-B11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.11g

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	109								At 109.2 feet: Sandy Silt with some clay laminations			
									At 109.6 feet: Massive		1134	
142	110								At 110.0 feet: Clayey to Silty Sand, very fine grained, trace coarse, brown (2.5Y 3/2), minor iron oxide staining, slightly mottled		1150	
	111								**Sag Deposits** From 110.7 to 112.5 feet: Gray Clay laminations			
140	112											
		22		100							[150]	
	113								**Fan Deposits** From 112.8 to 113.4 feet: Clayey Sand, very fine grained, some carbonate blebs and filaments			
									From 113.6 to 113.7 feet: Some faint laminations			
138	114								At 113.9 feet: ½-inch thick sand bed, dips 10°			
									From 114.3 to 114.6 feet: Faint bedding			
	115										1152	
									At 115 feet: Dark grayish brown (2.5Y 4/2), some iron oxide mottling		1209	
									At 115.3 feet: Sandy Clay			
									At 115.6 feet: Some carbonate blebls			
136	116								A 115.8 feet: Clayey Sand, fine grained			
									At 116.1 feet: Sandy Clay			
	117								At 116.8 feet: Clayey Sand, fine grained			
									At 117.0 feet: Sandy Clay, brown (2.5Y 3/2)			
		23		100							[3]	
134	118								At 117.7 feet: More abundant carbonate			
									At 118.5 feet: Abundant carbonate			
	119											
132	120		12								1337	
									At 120.0 feet: Few carbonate blebs, abundant iron oxide staining, some coarse sand		1358	
	121								At 120.7 feet: Moderately abundant carbonate			
									At 121.7 feet: More carbonate			
130	122								At 122.0 feet: 1/2-inch clay bed, below possibly laminated			
		24		100							[300]	
	123								At 123.0 feet: Some carbonate			
128	124											
	125											

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Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.11h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	125										1329	
126	126								At 126.3 feet: Sandy Clay to Clayey Sand, fine grained, scattered coarse sand, fine gravel			
	127								At 126.8 feet: Rare carbonate			
		25		100					At 127.6 feet: Moderately abundant coarse sand and fine gravel		[300]	
124	128											
	129								At 129.5 feet: Moderately abundant carbonate, faint bedding			
122	130		13						At 130.3 feet: Clayey Sand, fine grained, some fine gravel, dark olive brown (2.5Y 3/3), no carbonate		1428 1004	
	131								At 131.2 to 131.5 feet: Manganese laminations			
120	132								At 132.1 feet: Clayey Sand, very fine grained, some gravel, moderately abundant carbonate			
		26		100							[300]	
	133								At 133.0 to 133.3 feet: Zone of iron oxide staining			
									At 133.5 feet: Some gravel			
118	134								At 133.6 feet: Fine sand, some carbonate			
									LAKEWOOD FORMATION (Qlw)			
	135								Silty Sand, very fine to fine grained, pale yellow (2.5Y 7/3), friable		1005	
									At 135.0 feet: 3-inch rounded cobble		1025	
									At 135.3 feet: Silty Sand, very fine grained, light yellowish brown (2.5Y 6/4)			
116	136								No core recovery from 136.0 to 140.0 feet			
	137											
		27		20							[300]	
114	138		14				NR					
	139											
112	140								No core recovery from 140.0 to 142.5 feet		1026 1104	
	141											

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Log of Core Boring T9-B11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.11i

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	141						NR					
110	142	28		50							[150]	
	143								At 143.0 feet: Sand, fine grained, light yellowish brown (2.5Y 6/3)			
108	144								At 143.7 feet: Silty Sand to Sandy Silt, very fine grained, reddish brown (2.5Y 5/3)			
	145		14						No core recovery from 145.0 to 148.5 feet		1106 1132	
106	146											
	147						NR					
		29		25							[150]	
104	148											
	149								At 148.6 feet: Silty Sand, very fine grained, grayish brown (2.5Y 5/2)			
102	150								No core recovery from 150.0 to 153.7 feet		1134 1159	
	151											
100	152		14				NR					
		30		26							[150]	
	153											
98	154								At 153.7 feet: Light yellowish brown (2.5Y 6/3) At 154.3 feet: Some coarse Sand			
	155								At 154.8 feet: Rounded gravel No core recovery from 155.0 to 157.7 feet		1201 1224	
96	156						NR					
	157											

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Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.11j

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	157											
		31		46							[300]	
94	158		14						At 157.7 feet: Sand, fine to coarse grained, scattered fine gravel, light olive brown (2.5Y 5/3) At 158.1 feet: Fine to medium grained, some coarse sand and fine gravel			
	159											
92	160								No core recovery from 160.0 to 162.2 feet		1225 1244	
	161						NR					
90	162								At 162.2 feet: Sand, fine grained, grades to fine to medium sand, with some coarse and some gravel, olive brown (2.5Y 4/3)			
		32		56							[300]	
	163											
88	164											
	165		15						No core recovery from 165.0 to 167.5 feet		1245 1310	
86	166											
							NR					
	167											
		33		50					At 167.5 feet: Sand, very fine grained, grades to fine to coarse grained, some gravel, light olive brown (2.5Y 5/3)		[150]	
84	168											
	169											
82	170								At 169.7 feet: Very fine grained Sand		1312	
									END OF BORING AT 170 FEET			
	171								NOTES: • Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at 34 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
80	172											
	173											

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Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.11k

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	0								Asphalt			
									Concrete			
252	1								**ARTIFICAL FILL (af)** Silty clay with some sand and occasional gravels, moist, dark brown to brown			
	2											
250	3											
	4											
248	5								**ALLUVIAL DEPOSITS** **Fan Deposits** Clayey Silt to silty Clay, trace sand, scattered coarse sand to fine gravel, dark brown (7.5YR 4/3) At 5.7 feet: Sandy Silt to Clayey Silt, very fine, rare coarse sand At 6.1 feet: Possible bedding, core disturbed		1032	
	6											
246	7	1		100					**Sag Deposits** At 6.7 feet: Laminated and bedded from 1/16 to 1/2-inch thick, 5-10° dip, no coarse sand, dark brown (10YR 3/3) At 7.3 feet: Sandier, brown (10YR 4/3)		[300]	
	8								At 8.0 feet: Rare coarse sand, base of bedding At 8.5 feet: Faint bedding			
244	9		1						At 8.8 feet: Well developed bedding			
	10								**Fan Deposits** At 9.3 feet: Silty very fine Sand to Sandy Silt, some clay, more abundant coarse sandy silt, massive At 10.0 feet: Sandier		1033 1041	
242	11								At 11.1 feet: Clayier At 11.3 feet: Faint bedding At 11.6 feet: Sandier, massive			
	12								At 11.9 feet: Scattered gravel			
		2		100					**Fluvial Deposits** At 12.2 feet: Silty fine Sand with coarse sand and fine gravel, friable At 12.7 feet: Very fine Sandy Silt		[300]	
240	13											

DATE(S) DRILLED:	10/16,19,20,21/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	253.00 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	185.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	35 feet at completion

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Log of Core Boring T9-B12

Sheet 1 of 12

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.12a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
240	13								At 13.0 feet: Silty and Clayey fine to medium Sand and some fine and coarse gravel, dark brown (10YR 3/3)			
	14		1						At 13.7 feet: Abundant coarse sand and gravel (up to 1-inch in diameter), friable			
									At 14.3 feet: Silty very fine Sand, trace clay, faint laminations, dark yellowish brown (10YR 4/4)			
238	15								At 14.7 feet: Clayey to Silty, very fine sand with abundant gravel		1042	
									At 15.0 feet: Silty Sand, fine to medium, with coarse sand and fine gravel, brown (10YR 4/3)		1053	
	16											
									At 16.1 feet: Silty Sand, fine to very fine with some coarse sand and fine gravel			
									At 16.6 feet: Clayey Silty fine Sand, some fine gravel, dark yellowish brown (10YR 3/4)			
236	17								At 16.9 feet: Silty Clay with gravel, dark brown (10YR 3/3)			
		3		96					At 17.0 feet: Silty Sand, fine to coarse, abundant fine gravel (up to 1 1/2-inch in diameter)		[300]	
	18								At 17.3 feet: Friable, gray brown			
									At 18.7 feet: Silty very fine Sand, some coarse sand and fine gravel, brown (10YR 4/3)			
234	19											
									At 19.5 feet: Abundant gravel (up to 1 1/2-inch in diameter) in clayey fine sand matrix			
	20		2				NR		No core recovery from 19.8 to 20.0 feet		1054	
									At 20.0 feet: Silty fine sand with abundant fine gravel		1104	
									Sag Deposits			
232	21								At 20.4 feet: Silty fine Sand, dark yellowish brown (10YR 4/4)			
									At 20.6 feet: Clayey very fine Sand, faint bedding and laminations, sub-horizontal to slightly dipping			
									Fan Deposits			
	22								At 21.4 feet: Silty very fine Sand, trace clay, rare coarse sand and fine gravel, base lamination/bedding, 1/4-inch root			
		4		76					At 21.7 feet: Faint occasional discontinuous lamination		[300]	
230	23								At 23.0 feet: Silty very fine Sand, faint bedding, brown (10YR 4/3)			
									Fluvial Deposits			
	24								At 23.4 feet: Silty fine to coarse Sand with fine gravel, gray brown, friable			
							NR		No core recovery from 23.8 to 25.0 feet			
228	25								At 25.0 feet: Silty fine to medium Sand with gravel (up to 1 1/2-inch in diameter), friable		1105 1111	
									At 25.2 feet: Silty fine sand, crudely bedded, sub-horizontal, brown (10YR 4/3 and 5/3)			
	26								At 25.7 feet: Clayey Silt, faint bedding, brown (10YR 4/3)			
									Fan Deposits			
									At 26.3 feet: Sandy Clayey Silt to very fine Sand			
226	27		3						At 26.9 feet: Abundant manganese and possible charcoal, manganese lamination			
		5		100					At 27.25 feet: Clay with rare coarse sand and fine gravel, very dark grayish brown (10YR 3/2), massive		[300]	
	28								At 27.4 feet: Less clayey, scattered mica			
									At 27.9 feet: Gravel clast			
									Sag Deposits			
224	29								At 28.3 feet: Clayier, dark brown beds			

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Log of Core Boring T9-B12

Westside Purple Line Extension - Section 2
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Figure: A-1.12b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
224	29								**Fan Deposits** At 28.7 feet: Clayey Silt, very fine Sand At 28.9 feet: Silty Clay, rare gravel, no mica			
	30								**Fluvial Deposits** At 29.5 feet: Base bedding At 30.0 feet: Clayey very fine Sand to Sandy Clay, brown (10YR 4/3) with some iron oxide mottling From 30.3 to 30.4 feet: Possible scattered charcoal		1112 1121	
222	31								At 30.6 feet: Sandy Silt to Silty very fine Sand, trace clay, slightly micaceous			
			3						At 31.0 feet: Dark grayish brown (10YR 4/2), trace iron oxide staining			
	32								At 31.4 feet: Silty Clay, rare coarse sand, very dark grayish brown (10YR 3/2), soft At 31.6 feet: Grades to Silty very fine Sand, trace clay			
		6		96					At 32.4 feet: Clayier At 32.6 feet: Silty very fine Sand, rare fine gravel		[300]	
220	33								At 32.9 feet: Less Silt, moderately abundant mica, some iron oxide mottling			
	34								At 34.0 feet: Some coarse sand, rare fine gravel			
									At 34.5 feet: Silty Clay, soft			
218	35						NR		No core recovery from 34.8 to 35.0 feet ▽		1122	
									At 35.0 feet: Clayey very fine Silty Sand, rare gravel, occasional mica, very dark grayish brown (10YR 3/2)		1130	
	36								At 35.7 feet: Increased gravel At 35.9 feet: Grades to Silty fine to medium Sand with coarse sand and gravel (up to 1 1/2-inch in diameter) At 36.5 feet: Fraible, brown			
216	37											
		7		50					No core recovery from 37.5 to 45.0 feet		[300]	
	38						NR					
214	39											
	40		4								1131 1143	
212	41											
	42											
		8		0								
210	43						NR					
	44											
208	45											

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Log of Core Boring T9-B12

Westside Purple Line Extension - Section 2
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Figure: A-1.12c

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
208	45								At 45.0 feet: Sand, medium to coarse, friable		1152	
									At 45.4 feet: Clayey Silt to Silty Clay, dark grayish brown (10YR 4/2), iron oxide mottling			
	46								At 46.2 feet: Grades to slightly Clayey to Clayey very fine Sand, slightly micaceous			
206	47		4						At 47.0 feet: Slightly Silty fine to very fine Sand, rare coarse sand, moderately abundant iron oxide staining			
		9		100								
	48								At 48.2 feet: Slightly Clayey			
									At 48.4 feet: Fine Sand bed, 1-inch thick, friable, above silty very fine sand			
204	49								At 48.7 feet: Fine to coarse sand and abundant gravel (up to 3-inches in diameter)			
	50										1152	
									At 50.0 feet: Slightly Silty fine to medium Sand, dark yellowish brown (10YR 3/4), friable		1203	
									At 50.4 feet: Grades to medium to coarse Sand with Gravel (up to 1-inch in diameter), slightly silty, dark brownish gray			
202	51											
	52											
		10		100							[300]	
									At 52.6 feet: Contact dip ~ 10°, Sand, very fine, slightly silty, dark yellowish brown (10YR 4/2), some iron oxide staining			
200	53								At 52.9 feet: Slightly clayey, slightly micaceous, some faint iron oxide staining along 10-20° dipping beds			
	54								At 53.8 to 54.0 feet and 54.3 to 54.5 feet: Clay beds			
									At 54.6 feet: Base bedding			
198	55		5								1204	
									At 55.2 feet: Clay, 1/4-inch thick bed		1215	
	56								At 55.8 feet: Fine gravel, increased iron oxide staining abundance			
									At 56.1 feet: Slightly coarser silty fine sand			
196	57								At 56.8 feet: Slightly coarser, some fine gravel, one clast (1-inch in diameter), no mica			
		11		100					At 57.5 feet: Sand, very fine, slightly silty, scattered fine gravel		[300]	
	58								At 58.1 feet: Sandy Clay bed dips ~ 5°, 1/8 to 1/4-inch thick			
194	59											
									At 59.5 feet: Fine Gravel			
	60								At 59.6 feet: Silty fine Sand with fine gravel		1216	
									At 59.8 feet: Grades to fine to medium Sand, friable		1227	
			6						At 60.0 feet: Fine Sand, slightly silty, brown (10YR 4/3), friable			
192	61								At 60.7 feet: Grades coarser			

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Log of Core Boring T9-B12

Sheet 4 of 12

Westside Purple Line Extension - Section 2
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Figure: A-1.12d

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
192	61								At 60.9 feet: Sand, fine to medium At 61.0 feet: Some fine Gravel At 61.3 feet: Grades to fine to coarse Sand and increasing gravel			
	62								At 61.9 feet: Sub-horizontal contact, Silty very fine Sand, rare gravel, dark gray (10YR 4/1), minor iron oxide mottling			
		12		90							[300]	
190	63								At 63.0 feet: Fine Sand			
									At 63.5 feet: Grades to slightly Silty, medium to coarse Sand and fine gravel			
	64								At 64.1 feet: Very fine Sand, manganese At 64.4 feet: Coarse Sand and fine Gravel, slightly silty			
							NR		No core recovery from 64.5 to 65.0 feet			
188	65		6						At 65.0 feet: Silty very fine Sand At 65.3 feet: Grades to fine Sand		1228 1243	
									At 65.6 feet: Grades to coarse Sand and Gravel (up to 1 inch in diameter)			
	66								At 66.0 feet: Sub-horizontal and irregular contact, Clayey Silt, very dark grayish brown (10YR 3/2), soft			
									At 66.3 feet: Grades coarser, Silty fine Sand, some coarse sand and fine gravel			
186	67								At 66.8 feet: Silty fine Sand with coarse sand and fine gravel			
		13		90					At 67.1 feet: Silty Clay, 1 1/2-inch thick bed At 67.4 feet: Silty fine Sand with fine gravel		[300]	
	68								At 67.8 feet: Base Gravel			
									Fan Deposits At 68.4 feet: Silty Clay, some very fine sand, occasional fine gravel			
184	69								At 68.7 feet: Clay, scattered coarse sand, dark gray (10YR 4/1) At 68.8 feet: Sand bed dips ~ 10°, 1/16-inch thick, massive below At 69.2 feet: Very dark grayish brown (10YR 3/2)			
							NR		No core recovery from 69.5 to 70.0 feet			
	70										1244	
									At 70.0 feet: Clay to Silty Clay, scattered coarse sand, very dark gray to black (2.5Y 3/1 to 2.5Y 2.5/1), massive		1257	
182	71											
									At 71.5 feet: Silty Sand, very fine, some coarse			
	72								At 71.7 feet: Clayey Gravel (up to 1 1/2-inch in diameter), very dark grayish brown (10YR 3/2), some pale iron oxide staining			
		14		96					At 71.9 feet: Silty very fine Sand, scattered coarse sand and fine gravel At 72.5 feet: Sand, very fine, rare fine gravel, slightly yellowish		[300]	
180	73											
									At 73.5 feet: Clayey very fine Sand to very fine Sandy Clay			
	74		7						At 74.1 feet: Very fine Sand, 1/4-inch thick bed At 74.2 feet: Bedding more distinct, 1/4 to 1/2-inch thick, dark gray and iron oxide staining, scattered fine gravel			
178	75						NR		No core recovery from 74.8 to 75.0 feet		1258	
									At 75.0 feet: Very fine Sand, some clay and silt, scattered coarse sand, dark gray (10YR 4/1), pale iron oxide staining		1312	
	76								At 75.7 feet: Some medium to coarse Sand and fine Gravel At 75.9 feet: Very fine Sand, grades down to fine sand with some coarse sand and fine gravel			
176	77								At 76.5 feet: Very fine Sand, rare fine gravel, slightly yellowish			

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Log of Core Boring T9-B12

Westside Purple Line Extension - Section 2
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Figure: A-1.12e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
176	77	15		90					At 77.5 feet: Slightly clayey, moderately abundant iron oxide staining		[300]	
	78								At 77.8 feet: Gravel (up to 2-inches in diameter) At 78.0 feet: Clayey very fine Sand, scattered fine gravel At 78.4 feet: Sandy Clay and Clayey Sand, very fine, crudely bedded, iron oxide staining			
174	79								At 78.5 feet: 1-inch gravel zone At 78.8 feet: Single Gravel clast (1-inch in diameter)			
							NR		**Sag Deposits** At 79.0 feet: Sandy Clay and Clay, thin bedded to laminated No core recovery form 79.5 to 80.0 feet			
	80								**Fan Deposits** At 80.0 feet: Clayey Silt with very fine sand, dark brown (10YR 3/3)		1313 1327	
172	81								At 80.4 feet: Very fine Sandy Silt and Silty Clay, laminated, lighter brown At 80.55 feet: Silty fine Sand, rare fine gravel At 81.2 feet: Sand, 1/4-inch thick bed, one gravel (1/4 inch in diameter), friable			
	82								**Sag Deposits** At 81.25 feet: Clayey Silt, grayish brown and brown, horizontal contact, sub-horizontal bedding			
		16		100					At 81.5 feet: Very fine Sand, slightly clayey At 81.7 feet: Silty Clay to Clayey Silt with gray clay beds and laminations		[300]	
170	83								At 82.3 feet: Beds dip +/-10° At 82.7 feet: Beds dip ~5°			
	84								At 82.9 feet: Rare coarse sand, predominately very dark gray (10YR 3/1) At 83.9 feet: Bedding less distinct			
									At 84.5 feet: Bedding more distinct			
168	85		8								1328	
									Fan Deposits At 85.0 feet: Clayey Silt and Silty Clay, mottled, not bedded		1342	
	86								At 86.1 feet: Single Shale clast (1/2-inch in diameter)			
									At 86.8 feet: Faint bedding/lamination			
166	87								At 87.0 feet: Silty very fine Sand, dark brown (10YR 3/3)			
		17		100					At 87.2 feet: Silty very fine Sand and Clayey very fine Sand to Sandy Clay, sub-horizontal laminations to thinly bedded, dark brown to very dark brown (10YR 3/3 and 2/2)		[300]	
	88								At 87.8 feet: Scattered coarse Sand, rare fine gravel			
									Sag Deposits At 88.2 feet: Silty very fine Sand with clayey laminations			
164	89								At 88.8 feet: Moderately abundant coarse Sand and fine gravel			
									At 89.2 feet: Interbedded to laminated Silt and Clay rippled beds			
	90										1343	
									Fan Deposits At 90.0 feet: Silty very fine Sand, dark brown (7.5YR 3/2)		1402	
162	91								At 90.15 feet: Lighter brown At 90.5 feet: Slightly Clayey very fine Sand, scattered coarse sand, single clast (1/4-inch in diameter), brown (10YR 3/2) At 90.9 feet: Faint bedding			
			9						At 91.3 feet: Silty very fine Sand, 1/2 inch thick bed, trace clay with scattered coarse sand below, massive			
	92											
		18		100					At 92.4 feet: Faint bedding		[300]	
160	93											

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Log of Core Boring T9-B12

Westside Purple Line Extension - Section 2
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Figure: A-1.12f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
160	93								At 93.0 feet: Single gravel (1/4-inch in diameter)			
	94								At 93.9 feet: Silty Clay and Clayey to Silty with very fine Sand, scattered coarse sand, faint bedding, dark gray At 94.1 feet: Single gravel (1/4-inch in diameter)			
158	95								At 94.4 feet: Silty very fine Sand, dark grayish brown (10YR 4/2), mottled		1403 1416	
	96		9						At 95.4 feet: Silty Clay with very fine Sand, very dark brown (7.5YR 2.5/2) From 95.5 to 95.77 feet: Very fine Sand beds/laminations, 1/16 to 1/8-inch thick At 95.9 feet: Rare coarse Sand, single gravel (clast 1/4-inch in diameter), slightly mottled			
156	97	19		100					At 96.0 feet: Silty Clay At 96.9 feet: Dark brown (10YR 3/3)		[300]	
	98								At 97.5 feet: Dark brown (7.5YR 3/2), slightly mottled, scattered manganese At 97.6 feet: Diffuse 1/8-inch thick bed At 98.4 feet: Very fine Sandy Silty Clay, faint bedding			
154	99								At 99.2 feet: Less Sandy At 99.5 feet: Silty Clay			
	100								At 100.0 feet: Clayey Sand to Sandy Clay, very fine, dark brown (7.5YR 3/2) and very dark gray (7.5YR 3/1), mottled		1417 1431	
152	101								At 101.1 feet: Predominately Clay with very fine sand At 101.5 feet: Silty very fine Sand, faintly laminated, dark grayish brown (10YR 4/2)			
	102	20		100					At 101.8 feet: Silty Clay, dark brown (7.5YR 3/2) and very dark gray (7.5YR 3/1), mottled		[300]	
150	103								From 103.7 to 104.1 feet: Some Clay beds, dark gray, dip about 5°			
	104								At 104.5 feet: Very fine Sandy Clay, rare coarse sand, very dark gray (7.5YR 3/1), faint mottling			
148	105		10						At 105.0 feet: Less sandy		1432 1037	
	106											
146	107	21		100					At 106.7 feet: Clayey very fine Sand		[300]	
	108								At 107.8 feet: Silty very fine Sand, brown (7.5YR 4/2) and very dark gray (7.5YR 3/1), mottled			
144	109											

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Log of Core Boring T9-B12

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.12g

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
144	109								At 109.1 feet: Clayey			
			10									
	110										1038	
									At 110.0 feet: Clayey very fine Sand to Sandy Clay, scattered coarse sand, dark brown (7.5YR 3/2)		1102	
142	111								At 110.8 feet: Silty Clay, rare coarse sand			
									At 111.6 feet: Few dark gray (7.5YR 4/1) mottles			
	112											
		22		100							[150]	
140	113								At 113.2 feet: Very fine Silty Sand, dark yellowish brown (10YR 4/4)			
									At 113.5 feet: Trace clay, dark brown (10YR 3/3)			
	114								At 113.8 feet: Less clay			
									At 114.3 feet: Scattered fine gravel			
									At 114.6 feet: No gravel			
138	115		11								1104	
									At 115.0 feet: Silty very fine Sand, trace clay, dark brown (10YR 3/3)		1120	
									At 115.2 feet: No clay, trace mica, wet, friable			
	116											
136	117								At 116.9 feet: Moderately abundant fine gravel (up to 1/4-inch in diameter)			
		23		100					At 117.1 feet: Silty very fine Sand, base of gravel, slightly micaceous		[300]	
									At 117.2 feet: Faint laminations			
	118								At 117.8 feet: Grades to Silty Clay, dark grayish brown (10YR 4/2)			
									At 118.1 feet: Silty very fine Sand			
									At 118.4 feet: Very fine Sandy Clay			
134	119								At 118.9 feet: Sandy, faint bedding			
									Sag Deposits			
									At 119.3 feet: Clay, bedded, dark and medium gray			
									At 119.5 feet: Brown, faint bedding		1121	
	120								At 120.0 feet: Clayey Silt, brown (10YR 4/3) and very dark grayish brown (10YR 3/2), moderately well developed bedding		1140	
									At 120.6 feet: Silty Clay, dark yellowish brown (7.5YR 4/2) to dark gray (7.5YR 4/1), mottled, faint bedding/lamination			
132	121											
	122											
		24		100					**Fan Deposits**			
									At 122.2 feet: Black (7.5YR 2.5/1), massive		[150]	
130	123		12						At 122.8 feet: Clayey very fine Sand			
									At 123.0 feet: Very fine Sandy Clay			
									At 123.4 feet: Clayey very fine Sand, dark grayish brown (10YR 4/2)			
	124								At 123.8 feet: Interlayered Silty very fine Sand and Clayey very fine Sand, dark grayish brown and brown (10YR 4/2 and 4/3)			
									Sag Deposits			
128	125								At 124.5 feet: Interbedded/laminated very fine Sand and Clay, pale			

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Log of Core Boring T9-B12

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Beverly Hills, California
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Figure: A-1.12h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
128	125								brown and dark brown (10YR 6/3 and 3/3), irregular, dip ~10°		1202	
									Fan Deposits			
									At 125.1 feet: Silty Clay, dark gray and dark brown, mottled, massive, some iron oxide staining and manganese blebs			
	126								At 125.5 feet: Very fine Sand, 1/4-inch thick bed			
									At 125.9 feet: 1 1/2-inch lens with some fine gravel			
									At 126.1 feet: Sand bed, 3/4-inch thick dipping ~10-15°, below rare coarse sand grains			
126	127								At 126.3 feet: 1/4-inch thick bed dips ~15°, dark gray			
									At 126.6 feet: Sand bed, disturbed			
		25	12	100					At 126.7 feet: Very fine Sandy Clay, some faint laminations, brown (10YR 3/2), mottled with ligher gray and pale iron oxide stain		[60]	
	128								At 128.2 feet: Rare coarse Sands			
124	129								At 129.1 feet: Fine Sandy Clay to Clayey Sand with coarse sand and fine gravel, massive, moderate to abundant iron oxide mottling			
									At 129.7 feet: Single Gravel (clast 1-inch in diameter)		1205	
	130										1222	
									At 130.3 feet: Some Coarse Sand and fine Gravel, occasional larger gravel, dark gray (10YR 4/1), abundant iron oxide staining/mottling, dark brown (7.5YR 3/4)			
122	131								At 131.0 feet: Fine Sandy Clay, Single gravel (clast 1-inch in diameter)			
	132											
		26		100							[100]	
120	133								At 132.9 feet: More abundant gravel			
									At 133.4 feet: Less gravel, grades to brown (10YR 3/2), decrease iron oxide staining			
	134								At 134.2 feet: Moderately abundant coarse Sand			
118	135		13								1225	
									At 135.0 feet: Scattered coarse sand, moderately abundant iron oxide mottling		1248	
	136								At 136.4 feet: More abundant coarse Sand			
116	137								At 137.0 feet: Rare coarse Sand, scattered manganese blebs			
		27		100							[50]	
	138											
114	139								From 138.8 to 139.2 feet: Some carbonate, 1/4-inch long stringers			
	140										1254	
			14								1313	
112	141											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B12

Sheet 9 of 12

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.12i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
112	141								At 140.8 feet: Abundant dark iron oxide staining			
	142											
		28		100					At 142.2 feet: Grades to Clayey Silty fine Sand		[300]	
110	143								At 143.0 feet: Some coarse Sand and fine Gravel At 143.3 feet: Single clast (1-inch in diameter)			
	144											
									At 144.3 feet: Grades to fine Sandy Clay, rare coarse sand, dark brown (7.5YR 3/3), pervasive dark iron oxide staining			
108	145		14								1314 1333	
	146											
									At 146.6 feet: Less Sandy, rare coarse sand			
106	147								At 147.2 feet: Fine Sandy Clay			
		29		100							[100]	
	148											
									At 148.3 feet: Some coarse Sand and fine Gravel			
104	149											
	150										1336 1355	
									At 150.3 feet: Increase coarse Sand and fine Gravel			
102	151								At 150.8 feet: Grades to Clayey to slightly Clayey fine Sand with coarse sand and fine gravel			
	152											
		30		100					At 152.4 feet: Fine Sand with coarse sand and fine gravel, single 3/4-inch gravel clast		[150]	
100	153								At 152.5 feet: Clayey fine Sand with some coarse sand and fine gravel			
									Fluvial Deposits At 153.4 feet: Fine to coarse Sand, slightly silty with gravel, dark yellowish brown (10YR 4/4)			
	154								At 153.9 feet: Silty very fine Sand, rare gravel, dark yellowish brown (10YR 4/4)			
									At 154.6 feet: Silty medium to coarse Sand, some gravel, friable			
98	155		15						At 155.0 feet: Silty very fine to fine Sand, friable		1357 1419	
									At 155.6 feet: Grades to very fine to medium Sand, slightly silty			
	156											
									At 156.6 feet: Grades to fine and coarse Sand			
96	157											

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Log of Core Boring T9-B12

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.12j

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
96	157								At 157.0 feet: Fine to coarse Sand with gravel			
		31		60							[150]	
									At 157.6 feet: Clayey fine Sand with some coarse sand and fine gravel			
	158								No core recovery from 158.0 to 160.0 feet			
94	159						NR					
	160										1421	
									At 160.0 feet: Medium to coarse Sand, fraible, white, brown and dark gray grains		1448	
92	161								At 161.1 feet: Coarse Sand and fine Gravel, some medium sand			
			15									
	162								At 161.9 feet: Very Clayey No core recovery from 162.0 to 165.0 feet			
		32		40							[150]	
90	163						NR					
	164											
88	165										1450	
									At 165.0 feet: Fine to medium Sand, yellowish brown, friable		0955	
									At 165.6 feet: Rare fine Gravel			
	166								At 165.9 feet: Increase coarse Sand			
									At 166.1 feet: Fine to coarse Sand with fine Gravel			
86	167								At 166.8 feet: Silty very fine Sand to Sandy Silt, some clay, laminated, brown (10YR 4/3)			
		33		40					No core recovery from 167.0 to 170.0 feet		[75]	
	168											
			16				NR					
84	169											
	170										0959	
											1029	
									At 170.2 feet: Very fine Sandy Clay, soft			
									At 170.5 feet: Very fine Sand, slightly laminated			
82	171								At 170.75 feet: Fine to coarse Sand and fine Gravel At 170.75 feet: Fine and some coarse Sand At 171.1 feet: Some laminations			
									At 171.2 feet: Coarse Sand, 1/4-inch thick bed in contact with slightly clayey very fine sand			
	172								At 171.3 feet: Fine Sand and some fine Gravel At 171.5 feet: Fine sand, iron oxide staining			
		34		100					**Fan Deposits**		[150]	
80	173								At 171.6 feet: Clayey Silt, dark yellowish brown (10YR 4/2)			

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Log of Core Boring T9-B12

Sheet 11 of 12

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.12k

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
80	173								At 172.0 feet: Grades to Silty Clay			
									At 172.7 feet: Grades to Silty very fine Sand, trace clay, iron oxide mottling			
	174		16						At 173.6 feet: Very fine Sand, subhorizontal laminations?, light brown and gray, mottled			
									At 174.0 feet: Very fine Sandy Clay			
									At 174.1 feet: Very fine Sand, gray (10YR 6/1)			
78	175								At 174.7 feet: Grades to very fine Sandy Clay, gray		1031	
									At 175.0 feet: Silty Clay, dark gray (2.5YR 3/1)		1056	
									At 175.1 feet: Very fine Sand, 1-inch thick bed, slightly laminated, light grayish brown			
	176								At 175.45 feet: Very fine Sand, 1-inch thick sub-horizontal laminated bed above Silty Clay with wispy sand horizons			
									At 175.8 feet: Very fine Sand with manganese blebs			
76	177								At 176.7 feet: Very fine Sand, abundant manganese, dark grayish brown (10YR 4/2)			
									At 177.1 feet: Clay with very fine sand, blebs			
		35		100					At 177.6 feet: Clay with very fine sand laminations		[100]	
	178								At 177.75 feet: Well bedded			
									At 177.9 feet: Clay, faint bedding, very dark gray (10YR 3/1)			
									At 178.2 feet: Grades to Sandy Silty Clay, some coarse sand, massive			
									At 178.6 feet: Clayey very fine Sand to Sandy Clay, some coarse sand and rare fine gravel			
74	179								At 179.2 feet: Grades to Clayey very fine Sand, dark grayish brown (10YR 4/2)			
	180		17								1059	
									At 180.2 feet: Dark gray (10YR 4/1)		1123	
									At 180.6 feet: Silty very fine Sand, light gray brown with iron oxide staining, mottled			
72	181								At 180.7 feet: Clay, dark gray (10YR 4/1)			
									At 180.9 feet: Fine Sand with some medium and coarse, ~ 1-inch thick bed			
	182								At 181.0 feet: Very fine Sand			
									At 181.2 feet: Some iron oxide staining			
		36		90					At 181.25 feet: Clay, 1/2-inch thick horizontal bed		[75]	
									At 181.35 feet: Clay, 1/2-inch thick horizontal bed			
70	183								At 181.5 feet: Very fine Sandy Clay			
									At 181.9 feet: Sand with gravel, fine to medium, 1 1/2-inch thick bed, friable			
									At 182.1 feet: Clayey very fine Sand, occasional coarse sand			
	184								At 182.3 feet: Fine Sand, 3/4-inch thick bed			
									At 182.4 feet: Clayey very fine Sand			
									At 182.7 feet: Sandier, some coarse sand			
							NR		At 183.3 feet: Clayier, rare coarse sand			
									At 184.0 feet: Some coarse Sand and fine Gravel			
68	185								No core recovery from 184.5 to 185.0 feet		1127	
									END OF BORING AT 185.0 FEET			
									NOTES:			
	186								• Hand augered upper 6 feet to avoid damage to utilities.			
									• Groundwater was encountered at 35.0 feet below the ground surface after completion of drilling.			
66	187								• Boring backfilled with cement/bentonite grout from bottom up and patched.			
	188											
64	189											

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Log of Core Boring T9-B12

Sheet 12 of 12

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.12l

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
254	0								4-inch thick Asphalt over 6-inch thick Concrete			
	1								**ARTIFICIAL FILL (af)** Clayey Silty Sand to Clayey Silt, some sand and gravel, moist, dark brown to brown			
252	2											
	3											
250	4											
	5								At 5.0 feet: Silty to clayey very fine Sand to Sandy Silt, some coarse sand, very dark brown (10YR 2/2)		1010	
248	6											
	7								**ALLUVIAL DEPOSITS** **Sag Deposits** Clayey very fine Sand to Sandy Silt, some coarse sand, faint bedding, grades to brown (10YR 3/2)			
		1		100					At 7.0 feet: Bedding becomes more distinct At 7.4 feet: Bedding becomes less distinct, massive		[300]	
	8								At 7.9 feet: Faint bedding			
246									At 8.3 feet: Silty Clay, well developed ½-inch thick beds, dipping 5 to 10°, brown and dark brown, beds rippled			
	9		1						At 8.6 feet: Bedding becomes less distinct, dark brown (10YR 3/3), dip a few degrees			
	10										1011 1019	
244									**Fan Deposits** At 10.4 feet: Clayey very fine Sand, scattered medium and coarse sand, base bedding			
	11								At 11.1 feet: Fine Sandy Clayey Silt and some medium to coarse sand			
									Sag Deposits At 11.3 feet: Faint bedding			
	12								**Fan Deposits** At 11.9 feet: Abundant coarse Sand, some gravel, base bedding			
242		2		94							[300]	
	13								At 12.7 feet: Silty fine Sand, trace clay, some medium to coarse sand			

DATE(S) DRILLED:	10/21,22,23/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	254.20 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	185.4 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	45 feet at completion

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Log of Core Boring T9-B13

Sheet 1 of 12

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.13a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	13								and fine gravel At 13.2 feet: Gravel, up to 1-inch thick bed At 13.4 feet: Slity very fine Sand			
	14		1						At 14.0 feet: Trace Clay and scattered coarse Sand			
240							NR		No core recovery from 14.7 to 15.0 feet			
	15								At 15.0 feet: Silty very fine Sand, brown (10YR 5/3) At 15.2 feet: Scattered Gravel At 15.6 feet: Faint laminations, no gravel At 15.85 feet: Some fine Gravel		1020 1027	
	16								**Sag Deposits** At 15.9 feet: Silty very fine Sand and Clayey Sand to Sandy Clay, faint and sub-horizontal bedding/laminations, dark grayish brown (10YR 4/2)			
238	17								**Fan Deposits** At 16.1 feet: Silty very fine Sand, some gravel, single gravel 1 inch in dimension, dark brown (10YR 3/3)			
		3		90					At 16.7 feet: Fine Sand, 1/4-inch thick bed, dipping ~5°, weak red (10R 4/3), slightly micaceous, becomes slightly clayey with depth		[300]	
	18								At 17.6 feet: Moderately abundant fine Gravel, some up to 1 inch in diameter At 17.8 feet: Fine silty Sand with gravel, friable			
236	19								At 18.1 feet: Slightly Clayey, no gravel At 18.5 feet: Gravel, 1-inch thick bed At 18.8 feet: Silty very fine Sand, scattered fine gravel, brown (10YR 4/3)			
							NR		No core recovery from 19.5 to 20.0 feet		1028	
	20		2						At 20.0 feet: No gravel, dark yellowish brown (10YR 4/4) At 20.1 feet: Slightly Clayey, rare coarse sand		1034	
234	21								At 20.6 feet: Rare fine gravel			
	22								At 21.8 feet: Silty very fine Sand, rare coarse sand, trace clay, faint bedding/laminations, dark brown (10YR 3/3)			
232		4		92					At 22.0 feet: Bedding becomes more distinct, 1/4 to 1/2-inch thick horizontal beds, rare gravel		[300]	
	23								At 22.9 feet: Fine Gravel, 1-inch thick bed 23.1 feet: Silty fine Sand			
	24								At 24.2 feet: Very fine Sandy Clayey Silt			
230							NR		No core recovery from 24.6 to 25.0 feet		1035	
	25								At 25.0 feet: Silty very fine Sand, brown (10YR 5/3), friable		1043	
									At 25.5 feet: Brown (10YR 4/3)			
	26								At 25.9 feet: Clayey Silt, dark brown (10YR 3/3), soft			
228									At 26.1 feet: Grades to Clayey Silt and fine Sand, dark brown (10YR 3/3)			
	27		3						At 26.2 feet: Silty very fine Sand and scattered coarse gravel, single clast 1/2-inch in diameter, scattered mica At 26.8 feet: Slightly Clayey			
		5		100					At 27.4 feet: Silty Clay to Clayey Silt, slightly sandy, some fine gravel, soft		[300]	
	28								At 27.9 feet: Abundant fine Gravel, clayey silty very fine sand			
226									At 28.2 feet: Less Gravel			
	29								At 28.4 feet: Silty Clay, slightly sandy, dark brown (10YR 3/3), soft, some mica			

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Log of Core Boring T9-B13

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.13b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	29								At 28.6 fee: Scattered coarse Sand, faint bedding, scattered manganese and charcoal blebs			
									At 29.6 feet: Slightly Clayey Silty very fine Sand, base faint bedding			
	30								At 29.8 feet: Silty very fine Sand		1044	
224									At 30.0 feet: Trace Clay, dark brown (10YR 3/3)		1051	
									At 30.6 feet: Clayier, rare coarse sand			
	31		3						At 30.9 feet: Clayey very fine Sand to Sandy Silty Clay, scattered coarse sand, dark brown (7.5YR 3/3)			
									At 31.2 feet: Gray, slightly micaceous			
									At 31.5 feet: Iron oxide staining, ~1 1/2-inch thick, dark yellowish brown (10YR 4/6)			
	32								At 31.6 feet: Silty Clay, very dark grayish brown (10YR 3/2), soft			
222									At 31.7 feet: Slightly Sandy, light minor iron oxide mottling			
									At 32.2 feet: Silty to Clayey very fine Sand			
		6		94					At 32.4 feet: Very dark gray (10YR 3/1)		[150]	
	33								**Fluvial Deposits**			
									At 32.6 feet: Slightly Silty fine to coarse Sand with fine gravel, gray, friable			
									At 32.8 feet: Silty fine Sand			
									At 33.0 feet: Fine to medium Sand, some gravel, friable			
	34								**Fan Deposits**			
220									At 33.5 feet: Silty fine Sand			
									At 33.6 feet: Very fine Sand, trace clay, very dark grayish brown (10YR 3/2)			
							NR		At 33.7 feet: Clayier, minor iron oxide mottling		1053	
	35								At 33.9 feet: Sandier		1104	
									At 34.1 feet: Silty clay, soft			
									At 34.4 feet: Silty fine to medium Sand, some coarse sand			
	36								No core recovery from 34.7 to 35.0 feet			
218									At 35.0 feet: Slightly Silty fine to coarse Sand, some fine gravel, very dark grayish brown (10YR 3/2)			
									At 35.7 feet: Slightly Clayey fine Sand, slightly micaceous			
	37								At 35.8 feet: Single Gravel 3/4 inch in diameter			
									Fluvial Deposits			
		7		70					At 36.2 feet: Some coarse Sand			
									At 36.4 feet: Silty fine Sand, heavy iron oxide staining, micaceous		[300]	
	38								At 37.0 feet: Faint iron oxide staining			
216									At 37.5 feet: Silty Clay, 1/4-inch thick bed, soft, contact with fine to coarse sand and fine gravel, friable			
									At 38.0 feet: Gravel up to 2 inches in diameter			
	39						NR		No core recovery from 38.5 to 40.0 feet			
											1105	
	40		4						At 40.0 feet: Slightly Silty Sand, very fine to fine, slightly micaceous, dark brown (10YR 3/3)		1117	
214									At 40.5 feet: Silty fine to coarse Sand and gravel up to 1½ inch in diameter			
	41											
	42											
212												
		8		80							[150]	
	43								At 43.0 feet: Gravel up to 1/4 inch in diameter, grayish brown			
									At 43.3 feet: Fine to coarse Sand, less silty, less gravel, subangular to subrounded gravel			
	44											
210									No core recovery from 44.0 to 45.0 feet			
							NR					
	45								▽			

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Log of Core Boring T9-B13

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.13c

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	45								At 45.0 feet: Silty fine to medium Sand, friable		1139	
									At 45.2 feet: Silty fine Sand			
									At 45.4 feet: Fine to medium Sand, 3/4-inch thick bed			
	46								At 45.6 feet: Medium to coarse Sand, some fine gravel			
208									At 45.7 feet: Fine to coarse Sand with gravel up to 1½ inch in diameter, slightly clayey			
									No core recovery from 46.5 to 48.0 feet			
	47											
		9		50			NR				[150]	
	48								From 48.0 to 50.0 feet: Blind drill and no sampling due to hard drilling			
206												
	49						NS					
											1135	
	50		5						At 50.0 feet: Silty fine to coarse Sand, slightly clayey with fine gravel		1147	
204									At 50.4 feet: Silty very fine sand, brown (10YR 4/3)			
									At 50.6 feet: Grades to very fine Sandy Clay, brown (10YR 3/2)			
	51								At 50.8 feet: Scattered Gravel			
									At 51.0 feet: Grades to Clayey very fine Sand, some iron oxide mottling, slightly micaceous			
	52								At 51.4 feet: Less Clayey			
202									At 51.6 feet: Silty fine Sand			
									At 51.8 feet: Gravel, 1½ inch thick bed			
									At 52.2 feet: Silty fine to coarse Sand and fine Gravel			
		10		100					At 52.4 feet: Contact with Silty fine Sand, dips ~45°		[300]	
	53								At 52.7 feet: Clayey fine Sand, minor iron oxide mottling, slightly micaceous			
									At 53.7 feet: Contact with Silty very fine Sand, subhorizontal, dark brown (10YR 3/3)			
	54								At 54.0 feet: Trace Clay			
200									At 54.3 feet: No clay, rare coarse sand			
											1148	
	55								At 55.0 feet: Silty fine to medium Sand		1159	
									At 55.15 feet: Silty very fine Sand			
									At 55.3 feet: Slightly Silty fine to medium Sand with subangular to subrounded gravel up to 1/2 inch in diameter, friable			
	56								At 55.5 feet: Slightly Clayey Silt, brown (10YR 3/2), some iron oxide mottling			
198									At 55.6 feet: Grades to Silty very fine Sand, trace clay			
									At 55.9 feet: Relatively sharp conatact with Silty fine Sand, rare coarse sand and fine gravel, dark brown (10YR 3/3), iron oxide staining			
	57								At 56.6 feet: Silty very fine Sand			
									At 56.9 feet: Single gravel 3 inches in diameter			
		11	6	50					No core recovery from 57.5 to 60.0 feet		[300]	
	58											
196							NR					
	59											
											1200	
	60								At 60.0 feet: Fine to very fine Sand, slightly silty, brownish gray, friable		1213	
194									At 60.2 feet: Gravel with some fine to medium Sand, subangular to subrounded up to 1 inch in diameter, friable			
	61											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B13

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.13d

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	61	12		100							[150]	
192	62								At 61.9 feet: Two gravel clasts (2 and 3-inches in diameter)			
									From 62.5 to 65.0 feet: Blind drill and no sampling due to hard drilling		1214	
	63						NS					
	64											
190	65								At 65.0 feet: Fine to medium Sand		1228	
	66								At 66.0 feet: Cobble, blocked off sampler shoe No core recovery from 66.0 to 70.0 feet			
188	67											
		13		20							[300]	
	68		6				NR					
186	69											
	70								At 70.0 feet: Silty fine Sand, trace clay and scattered gravel, brown (10YR 3/2), abundant iron oxide mottling		1229 1240	
184	71											
	72								From 71.9 to 72.0 feet: Very Clayey, very dark grayish brown (10YR 3/2), abundant iron oxide mottling			
182		14		100					From 72.3 to 72.4 feet: Moderately abundant Gravel		[300]	
	73								From 73.1 to 73.2 feet: Silty fine Sand, dark yellowish brown (10YR 3/4)			
	74								At 73.9 feet: Sandy Clayey Silt			
180									From 74.4 to 74.5 feet: Silty very fine Sand			
	75								At 75.0 feet: Silty very fine Sand		1241 1255	
									At 75.3 feet: Trace Clay At 75.5 feet: Some Gravel up to 1/2 to 3/4 inch in diameter			
	76		7						At 75.6 feet: Silty fine Sand with fine Gravel, brown (10YR 4/3), abundant iron oxide staining At 75.9 feet: Clayey very fine Sand, 1/2-inch thick bed At 76.0 feet: Silty fine Sand At 76.3 feet: Coarse Sand and fine Gravel			
178	77											

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Log of Core Boring T9-B13

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.13e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	77								At 76.45 feet: Silty very fine Sand and Clayey Silt, some gray clay beds, sub-horizontal beds to laminations, dark brown (10YR 3/3)			
		15		100					At 77.3 feet: Silty very fine Sand, trace clay, base bedding		[300]	
	78								At 77.6 feet: Fine gravel zone			
176									**Sag Deposits**			
									At 77.9 feet: Clayey Silt and Silty Clay, brown (10YR 3/2), some iron oxide staining			
	79								At 78.1 feet: Some Silty very fine sand laminations and bedding			
									Fan Deposits			
									At 78.7 feet: Silty Clay, massive			
									At 79.1 feet: Rare coarse Sand, massive			
									At 79.7 feet: Very fine Sand		1256	
	80								At 80.0 feet: Rare coarse Sand, brown (10YR 3/2), iron oxide mottling		1308	
174												
			7						At 80.7 feet: Clayier			
	81											
									At 81.8 feet: A few flecks of charcoal or manganese			
	82											
172												
		16		100							[300]	
	83											
									At 83.2 feet: Silty very fine Sand			
									At 83.6 feet: Trace Clay			
	84											
170												
	85								At 84.9 feet: No clay		1309	
									At 85.0 feet: Clayey		1329	
									At 85.2 feet: Silty very fine Sand with fine gravel			
									At 85.3 feet: Gravel bed			
	86								At 85.5 feet: Silt with fine Sand			
168									At 85.6 feet: Rare coarse Sand and Gravel, trace clay			
									From 86.6 to 86.8 feet: Sandy, iron oxide staining			
	87											
									At 87.0 feet: Silty fine Sand, some coarse sand			
		17		100					At 87.3 feet: Clayey Silt		[300]	
	88											
166									At 87.9 feet: Silty very fine Sand, no coarse sand			
									At 88.4 feet: Trace Clay			
	89		8									
	90										1330	
164									At 90.0 feet: Silty Clay, slightly sandy, some iron oxide staining and brown mottling		1345	
									At 90.8 feet: Sandy Clayey Silt			
	91											
	92											
162												
		18		100					At 92.2 feet: Scattered manganese blebs and rare coarse sand		[150]	
	93											

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Log of Core Boring T9-B13

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Project No. 4953-11-1423

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Figure: A-1.13f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	93											
	94		8									
160												
	95								At 95.0 feet: Silty Clayey very fine Sand, brown (10YR 3/2), abundant iron oxide staining		1347 1359	
	96								At 96.1 feet: Clayey Silt, 1-inch thick bed with diffuse contacts At 96.2 feet: Silty very fine Sand, 2-inch thick bed At 96.3 feet: Sandy Silty Clay At 96.4 feet: Dark brown, sub-horizontal, 1/2-inch thick bed At 96.5 feet: Clayey Silty very fine Sand, dark brown (7.5YR 3/2)			
158												
	97	19		100					At 97.1 feet: Sandy Clayey Silty to Silty Clay, faint discontinuous laminations At 97.5 feet: Silty Clay, dark brown and dark gray brown, mottled		[150]	
	98								At 98.1 feet: Very fine Sandy Clay			
156									At 98.55 feet: Contact with Clayey Silt to Silty Clay, darker brown			
	99								At 99.0 feet: Sandy At 99.2 feet: Silty very fine Sand At 99.5 feet: Clayey			
	100		9						At 99.8 feet: Trace clay At 100.0 feet: Very dark brown (7.5YR 2.5/2)		1401 1441	
154									At 100.5 feet: Clayey zone, ~1 1/2-inch thick			
	101								At 100.9 feet: Scattered coarse Sand At 101.0 feet: Clayier			
	102								At 101.6 feet: Gravel clast 1/2 inch in diameter, pink, scattered coarse sand, dark gray (10YR 4/1), varigated iron oxide staining			
152		20		100							[150]	
	103								At 103.0 feet: Dark brown (10YR 3/3)			
	104											
150												
	105								At 105.0 feet: Sandy Clay, no coarse sand, dark brown (10YR 3/3), softer, faint mottling		1443 0949	
	106								At 105.5 feet: Grades to Clayey Silty very fine Sand, single pinkish gravel 1/4 inch in diameter, stiff			
148												
	107		10						At 106.7 feet: Clayier At 107.0 feet: Clay and Sandy Clay, faint bedding to laminated, sub-horizontal			
		21		100							[150]	
	108								At 107.7 feet: Clayey Silty very fine Sand, massive			
146												
	109								At 108.6 feet: Silty very fine Sand, with very fine sandy horizons/blebs,			

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Log of Core Boring T9-B13

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Figure: A-1.13g

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	109								lighter brown			
	110										0951	
144									At 110.0 feet: Trace clay, massive		1010	
									At 110.3 feet: Clayey, brown (10YR 3/2), faint iron oxide staining			
	111								At 110.4 feet: Sandy Clayey Silt At 110.8 feet: Softer At 111.0 feet: Silty very fine Sand, trace clay, iron oxide staining At 111.1 feet: Sandy Clayey Silt			
	112		10						**Fluvial Deposits** At 111.5 feet: Grades to Silty very fine to fine Sand, trace clay, single 1/2-inch gravel, friable At 111.7 feet: Clayey very fine Sand			
142		22		90					At 111.8 feet: Silty very fine Sand, dark yellowish brown (10YR 4/4)		[300]	
	113								At 112.3 feet: Grades to Silty fine Sand At 112.5 feet: Silty very fine to medium Sand, friable At 112.6 feet: Single fine gravel 1/8 inch in diameter At 112.7 feet: Silty fine Sand At 112.9 feet: Silty very fine Sand, faintly bedded At 113.4 feet: Very fine Sand At 113.8 feet: Fine Sand At 113.9 feet: Fine to medium Sand, rare gravel At 114.1 feet: Very fine Sand			
	114											
140							NR		No core recovery from 114.5 to 115.0 feet			
	115										1011	
									At 115.0 feet: Fine Sand, grayish brown, friable At 115.2 feet: Fine to medium Sand At 115.4 feet: Some coarse Sand At 115.7 feet: Very fine Sand		1035	
	116											
138									At 116.2 feet: Fine and some medium Sand			
	117											
		23		50					No core recovery from 117.5 to 120.0 feet		[150]	
	118											
136							NR					
	119											
	120		11								1037	
134									**Fan Deposits** At 120.0 feet: Sandy Clayey Silt to Silty Clay, some coarse sand and fine gravel, brown (10YR 3/2), mottled with iron oxide stain		1103	
	121								At 120.4 feet: Sandier At 120.9 feet: More abundant coarse Sand and fine Gravel			
	122											
132												
		24		50					No core recovery from 122.5 to 125.0 feet		[150]	
	123											
							NR					
	124											
130												
	125											

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Figure: A-1.13h

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	125								**Fluvial Deposits** At 125.0 feet: Silty very fine Sand, brown (10YR 4/3), friable		1105	
	126								At 125.3 feet: Fine Sand			
128												
	127		11									
		25		90							[150]	
	128								At 127.8 feet: Silty fine to coarse Sand, clayey At 128.0 feet: Clayey fine Sand with coarse sand and gravel			
126									At 128.4 feet: Gravel up to 1/2 inch in diameter			
	129								**Fan Deposits** At 128.6 feet: Sandy Clayey Silt, some coarse, very dark brown (7.5YR 2.5/2), stiff At 129.1 feet: Moderately abundant coarse Sand and Gravel			
							NR		No core recovery from 129.5 to 130.0 feet			
	130										1149	
124									**Fluvial Deposits** At 130.0 feet: Silty very fine Sand, friable, brown and white At 130.3 feet: Fine Sand		1301	
	131								At 130.5 feet: Slightly Clayey, some gravel 1/4 to 1/2 inch in diameter At 130.8 feet: Silty and Clayey, moderately abundant gravel up to 1/2 inch in diameter, not friable			
	132								At 131.7 feet: Slightly Silty fine to medium Sand, some coarse sand, friable At 132.0 feet: Silghtly Silty fine to coarse Sand, rare fine gravel			
122		26		54							[300]	
	133								No core recovery from 132.7 to 135.0 feet			
							NR					
	134											
120												
	135										1302	
			12						At 135.0 feet: Silty fine Sand, grayish brown, friable		1348	
									At 135.5 Silty fine Sand, some medium and coarse sand			
	136								At 135.9 feet: Silty fine to medium Sand, some coarse sand			
118									At 136.4 feet: Slightly Silty fine to coarse Sand, light gray			
	137								At 137.0 feet: Moderately abundant Gravel up to 1/2-inch in diameter			
		27		50					No core recovery from 137.5 to 145.0 feet		[100]	
	138											
116												
	139						NR					
	140										1351	
114											1422	
							NR					
	141											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B13

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Figure: A-1.13i

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	141											
	142											
112		28		0			NR				[300]	
	143											
	144											
110												
	145		12						At 145.0 feet: Silty fine to very fine Sand, brown, friable		1423	
											1450	
									At 145.5 feet: Silty fine Sand			
	146											
108												
	147											
		29		60					At 147.5 feet: Some medium Sand		[100]	
	148								At 147.9 feet: Silty very fine to fine Sand			
106									No core recovery from 148.0 to 150.0 feet			
	149						NR					
	150										1453	
104									At 150.0 feet: Silty very fine Sand		0947	
									At 150.2 feet: Silty Clay, 1/4-inch thick bed, dark grayish brown (10YR 4/2), some iron oxide mottling, faint clayey laminations, silty very fine sand and very fine sandy clay			
	151								At 150.9 feet: Some fine Silty Sand horizons, iron oxide staining, slightly micaceous			
									At 151.1 feet: Silty very fine Sand			
	152								At 151.4 feet: Very fine Sandy Clayey Silt to Silty Clay, brown (10YR 3/2) with iron oxide mottling, bedded, some ripples			
102		30		64							[100]	
	153		13						At 152.7 feet: Very fine Silty Sand and Silty Clay, bedded/laminated, no iron oxide staining			
									No core recovery from 153.2 to 155.0 feet			
	154						NR					
100												
	155										0950	
											1012	
	156											
98												
	157								Fan Deposits			

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Figure: A-1.13j

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	157								At 156.7 feet: Silty Clay to Clayey Silt, scattered coarse sand and fine gravel, very dark grayish brown (10YR 3/2)			
		31		90					At 157.5 feet: Abundant coarse Sand and fine Gravel		[100]	
	158		13						At 157.65 feet: Basal Sand and Gravel, rare coarse sand, charcoal blebs			
96									At 158.5 feet: Clayey Silt with very fine sand horizons			
	159								At 158.9 feet: Silty very fine Sand and some sub-horizontal clay laminations, reddish brown (2.5YR 4/3)			
							NR		No core recovery from 159.5 to 160.0 feet			
	160								At 160.0 feet: Silty Clay, brown (10YR 3/2) brown		1015 1038	
94									At 160.4 feet: Soft			
									At 160.5 feet: Silty very fine Sand, bedded/laminated, slightly micaceous, some iron oxide staining			
	161								At 160.9 feet: Clayey Silt, 1/2-inch thick bed			
									At 161.1 feet: Silty Clay, brown (10YR 3/2)			
									From 161.2 to 161.3 feet: Some very fine Sand laminations			
	162								At 161.4 feet: Several charcoal or manganese flecks			
92									At 161.6 feet: Manganese horizon, some charcoal or manganese flecks below			
		32		100					At 162.1 feet: Clayey fine Sand to Sandy Clay with coarse sand and scattered fine gravel		[100]	
	163								At 162.5 feet: Slightly Clayey fine Sand with some coarse sand and fine gravel			
									At 163.3 feet: Sandy Clay with coarse sand and fine gravel			
	164								At 164.0 feet: Single gravel 1/2-inch in diameter			
90									At 164.5 feet: Grades to Clayey fine Sand, some medium to coarse sand and fine gravel			
	165		14						At 165.0 feet: Silty fine to medium Sand, friable		1041 1114	
									At 165.2 feet: Slightly Clayey, some iron oxide mottling			
									At 165.6 feet: Fine to medium and some coarse Sand			
									At 165.9 feet: Silty very fine Sand			
	166								At 166.0 feet: Silty Clay and Silty, very fine Sand, bedded and laminated, soft, iron oxide staining along sandy horizons			
88									At 166.6 feet: Silty Clay, very dark gray (10YR 3/1), soft			
									At 166.8 feet: Stiff			
	167								**Fluvial Deposits**			
									At 166.9 feet: Clayey Silty Sand and Sandy Clay, fine to coarse			
		33		90					At 167.5 feet: Abundant coarse Sand and Gravel		[150]	
	168								At 168.0 feet: Slightly Silty fine to coarse Sand and Gravel, iron oxide staining, friable			
86									At 168.55 feet: Horizontal contact, Silty Clay, very dark grayish brown (10YR 3/2)			
	169								At 168.7 feet: Silty fine to coarse Sand			
									At 168.85 feet: Silty very fine Sand, bedded to laminated, slightly micaceous, iron oxide staining along beds			
							NR		At 169.0 feet: Silty Clay, 1/4-inch thick bed			
	170								No core recovery from 169.5 to 172.5 feet		1116 1138	
84												
	171						NR					
	172		15									
82												
		34		100					At 172.5 feet: Silty very fine Sand, laminated, brown (10YR 4/3), some iron oxide along sandier beds, moderately micaceous		[100]	
	173											

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Figure: A-1.13k

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	173								At 173.0 feet: Clay, 1/4 to 1/2-inch thick bed, some coarse sand below			
									At 173.4 feet: Silty very fine Sand to Clayey Sand, with inter bedded silty clay, generally sub-horizontal			
80	174								At 173.7 feet: Very dark gray (10YR 3/1), with lighter gray sand beds and laminations			
									At 173.95 feet: Silty very fine Sand to Sandy Silt, 1/2 to 3/4-inch thick bed, iron oxide staining along bed, very dusky red (2.5YR 2.5/2)			
	175								At 174.4 feet: Silty very fine Sand, with some coarse sand, 1 1/4-inch thick bed, dark gray (10YR 4/1)		1141	
									At 174.6 feet: Silty fine Sand, with coarse sand, 1 1/2-inch thick bed		1206	
									At 174.8 feet: Silty Clay, black (10YR 2/1), massive			
	176		15						At 175.4 feet: Silty very fine Sand to Sandy Silt horizons			
78									At 175.55 feet: Silty very fine Sand to Sandy Silt, brown (10YR 3/2), clayey zones			
									At 176.1 feet: Silty Clay and very fine sand to Sandy Silt beds and laminations, dark gray and bluish gray			
	177								At 176.4 feet: Slightly Clayey Silty very fine Sand to Sandy Silt, some laminations, moderately micaceous			
		35		96					At 176.9 feet: Silty Clay with some coarse sand, moderately micaceous		[100]	
									At 177.2 feet: Very fine Sandy Silt			
	178								At 177.4 feet: Sand with single gravel 1/4 inch in diameter			
76									At 177.6 feet: Silt			
									Fan Deposits			
									At 177.8 feet: Silty Clay, scattered coarse sand, very dark gray (10YR 3/1), massive			
	179								At 178.5 feet: Single Gravel 1/4 inch in diameter			
									At 178.8 feet: Grades to Clayey very fine Sandy Silt with scattered carbonate filaments			
	180						NR		No core recovery from 179.8 to 180.0 feet		1209	
74									At 180.0 feet: Clayey Silt to Silty Clay, very dark gray (10YR 3/1), some pale iron oxide mottling, moderately abundant carbonate filaments		1234	
	181								At 180.5 feet: Dark gray (10YR 4/1)			
									At 181.5 feet: Grades to slightly Clayey very fine Sandy Silt, scattered coarse sand, moderately abundant carbonate filaments			
72	182											
		36	16	108							[100]	
	183								At 182.7 feet: Silty Clay with carbonate filaments			
70	184											
	185										1237	
									END OF BORING AT 185.4 FEET			
	186								NOTES:			
68									• Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at 45.0 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
	187											
	188											
66												
	189											

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Westside Purple Line Extension - Section 2
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Figure: A-1.13l

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
256	0								4-inch thick Asphalt over 6-inch thick concrete			
	1								**ARTIFICIAL FILL (af)** Clayey Silt to Sandy Clay, some rock fragments up to 1 inch in diameter, dark brown			
254	2											
	3											
252	4											
	5								At 5.0 feet: Silty Sand, very fine grained, some gravel, dark grayish brown (10YR 4/2)		1004	
250	6								**ALLUVIAL DEPOSITS** **Fan Deposits** Silty Sand to Sandy Silt, very fine sand, some coarse, some fine gravel, very dark grayish brown (10YR 3/2) At 6.5 feet: Slightly clayey, dark brown (10YR 3/3)			
	7	1		90							[300]	
248	8								**Sag Deposits** At 8.0 feet: Faint bedding At 8.25 feet: Silty Clay and Sandy Silt, some coarse sand, dark brown and medium brown, bedding more distinct and dips 3 to 5°			
	9		1									
							NR		No core recovery from 9.5 to 10.0 feet			
246	10								From 10.0 to 10.3 feet: Core disturbed		1005 1011	
									At 10.5 feet: Faint bedding			
	11								**Fan Deposits** At 11.0 feet: Sandy Silt, very fine sand, trace coarse, slightly clayey, brown (10YR 4/3), massive, base bedding			
244	12											
		2		100					**Sag Deposits**		[300]	
	13								From 12.45 to 12.7 feet: Silt and Clayey Silt bedded			

DATE(S) DRILLED:	10/27,28,29/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 75	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	Martini Drilling	SURFACE ELEVATION*:	256.00 feet
BIT SIZE / TYPE:	8" Diameter Bit / PQ	TOTAL DRILLED DEPTH:	200.0 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	35 feet at completion

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Log of Core Boring T9-B14

Sheet 1 of 13

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.14a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	13								**Fan Deposits** Silty Sand, very fine grained, scattered coarse, slightly clayey			
242	14		1									
	15										1012	
									Fluvial Deposits At 15.0 feet: Silty Sand, very fine to medium grained, some coarse, some fine gravel, brown (10YR 5/3)		1016	
240	16								**Fan Deposits** At 15.8 feet: Silty Sand to Sandy Silt, very fine sand, scattered coarse, fine gravel			
	17								At 17.0 feet: Silty Sand, very fine grained			
		3		100					At 17.5 feet: Silty Sand, very fine to fine grained, scattered coarse sand and fine gravel		[300]	
238	18								**Sag Deposits** At 17.8 feet: Sandy Silt, very fine sand, some silty laminations			
									Fan Deposits At 18.1 feet: Silty Sand, very fine grained, rare coarse sand and fine gravel, trace clay, brown (10YR 4/3), base lamination From 18.8 to 19.0 feet: Faint bedding			
	19											
236	20		2								1017	
									At 20.0 feet: Silt, brown (10YR 5/3)		1023	
	21								At 20.7 feet: Sandy Silt, very fine sand At 21.1 feet: Scattered fine gravel			
									Sag Deposits At 21.4 feet: Clayey Silt and Silt, scattered coarse sand, brown (10YR 4/3), bedded			
234	22											
		4		100					**Fan Deposits** At 22.3 feet: Sandy Silt to Silty Sand, very fine grained, scattered coarse sand and fine gravel, trace clay, base bedding		[300]	
	23								At 22.8 feet: Silty Sand, fine grained At 23.1 feet: Silty Sand to Sandy Silt, very fine sand, possible manganese blebs or charcoal			
232	24								At 23.8 feet: Clayey Silt to Silty Clay At 24.1 feet: Sandy Silt to Silty Sand, very fine sand, some coarse, some fine gravel, trace clay			
	25										1024	
									Fluvial Deposits At 25.0 feet: Silty Sand, fine to coarse grained, abundant gravel from 25.0 to 25.4 feet, grayish brown, friable		1030	
230	26								At 26.3 feet: Some gravel up to 2 inches in diameter			
	27		3									
		5		80					At 27.0 feet: Fine sand, some clayey laminations and beds, brown (10YR 4/3)		[300]	
228	28											
	29								At 28.9 feet: Silty Sand, fine grained, brown and white, friable			

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Log of Core Boring T9-B14

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.14b

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	29						NR		No core recovery from 29.0 to 30.0 feet			
226	30								At 30.3 feet: Silty Sand to Sandy Silt, very fine sand, trace clay At 30.5 feet: Silty Sand with Gravel, fine to coarse sand, fine to coarse gravel		1031 1038	
224	32	6	3	96					**Fan Deposits** At 32.0 feet: Sandy to Clayey Silt, very dark brown (10YR 2/2)		[300]	
222	34								At 33.5 feet: Silty, Clayey Sand, very fine grained, dark brown (10YR 3/3)			
220	35	7		100					At 35.0 feet: Clayey Sand to Clayey Silt, very fine sand, dark brown (7.5YR 3/2) At 36.0 feet: Scattered coarse sand At 36.2 feet: Very dark grayish brown (10YR 3/2), mottled At 36.5 feet: Silt	▽	1039 1047	
218	37								**Fluvial Deposits** At 36.9 feet: Clayey to Sandy Silt, very fine sand, moderately abundant gravel and medium sand, very dark grayish brown (10YR 3/2) with abundant iron oxide mottling		[300]	
216	40	8	4	100					At 40.0 feet: Silty Sand with Gravel, very fine sand with abundant gravel, grayish brown At 41.5 feet: Fine to coarse sand and gravel, slightly clayey		1048 1055	
214	42								**Fan Deposits** At 43.0 feet: Clayey Sand, fine grained, very dark grayish brown (10YR 3/2) with some iron oxide mottling			
212	44								**Sag Deposits** At 43.7 feet: Sandy Clay and Silty Sand, very fine sand, grayish brown, thin bedded to laminated From 44.2 to 44.3 feet: Some fine gravel			
	45											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Sheet 3 of 13

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.14c

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	45								**Fluvial Deposits** At 45.0 feet: Silty Sand, fine grained, dark grayish brown (10YR 4/2), some iron oxide mottling, massive		1065	
210	46								At 46.0 feet: Clayey Silt to Silty Clay At 46.2 feet: Slate gravel up to 1 inch in diameter in Clayey Silt			
	47								At 46.7 feet: Clayey Sand, fine grained, moderately abundant fine gravel At 47.2 feet: Less fines			
		9		100					At 47.5 feet: Silty Sand, fine grained with coarse, some fine gravel, iron oxide stained		[300]	
208	48								At 48.0 feet: Silty Sand, very fine grained, occasional gravel, slightly clayey, dark grayish brown (10YR 4/2) with minor iron oxide stain mottling			
	49											
									At 49.5 feet: Silty Sand with Gravel, fine grained, gravel up to 2 inches in diameter, slightly clayey, grayish brown			
206	50		5								1104 1113	
	51											
204	52											
		10		96							[300]	
	53											
									Fan Deposits At 53.1 feet: Silty Clay, some coarse sand, very dark grayish brown (10YR 3/2)			
202	54								At 53.8 feet: Some faint laminations At 54.3 feet: Massive			
	55						NR		No core recovery from 54.8 to 55.0 feet		1114	
									At 55.0 feet: Sandy, massive		1123	
200	56								At 55.4 feet: Clayey Sand, fine grained, some coarse, very dark grayish brown (10YR 3/2) with some to moderately abundant iron oxide mottling			
	57								At 57.0 feet: Scattered gravel			
		11		100							[300]	
198	58		6						At 57.7 feet: Less iron oxide staining			
	59								At 59.0 feet: Silty Sand, very fine grained			
196	60								At 60.0 feet: Sandy Clay At 60.1 feet: Silty Sand, very fine grained, slightly clayey At 60.4 feet: Silty Sand, fine grained At 60.7 feet: Very fine grained At 60.8 feet: Sandy Clay		1124 1132	
	61											

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Westside Purple Line Extension - Section 2
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Figure: A-1.14d

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	61								At 61.1 feet: Sandy Clay and Clayey Sand, very fine sand			
194	62								At 61.9 feet: Silty Sand, very fine grained At 62.2 feet: Fine sand bed and very fine			
		12		100							[300]	
	63		6						At 62.7 feet: Clayey			
									At 63.4 feet: Silty Clay			
192	64								**Sag Deposits** At 63.7 feet: Silt and Clay, brownish gray, thin bedded to laminated			
	65								**Fan Deposits** At 64.9 feet: Slightly Clayey Silt, mottled grayish brown, massive		1133 1143	
190	66								At 65.9 feet: Clayey Silt to Silty Clay			
	67								At 67.0 feet: Clay, very dark gray (7.5YR 3/1) mottled with dark brown (7.5YR 3/2)			
		13		100							[300]	
188	68											
	69								At 69.0 feet: Rare gravel			
186	70		7						At 70.0 feet: Silty, Clayey Sand, fine to coarse grained, some fine gravel		1144 1154	
	71								**Fluvial Deposits** At 70.9 feet: Silty Sand, very fine grained, very dark grayish brown (10YR 3/2), thinly bedded to laminated Silt			
184	72								At 71.4 feet: Sandy Silt, thinly bedded to laminated gray Silty Clay and brown Clay At 72.0 feet: Thinly bedded to laminated Silty Clay			
		14		100							[300]	
	73								At 72.7 feet: Some brown Silt, thinly bedded to laminated At 73.2 feet: Some coarse sand and very fine sand beds, dark brown (10YR 3/3)			
182	74								At 73.5 feet: Silty Sand, very fine grained, laminated At 74.5 feet: Clayey			
	75								**Fan Deposits** At 75.0 feet: Silty Sand to Sandy Silt, very fine sand, very dark grayish brown (10YR 3/2) mottled with dark brown (10YR 3/3), massive		1155 1207	
180	76		8						At 76.0 feet: Clayey			
	77								At 76.7 feet: 1/4-inch gravel clast			

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Figure: A-1.14e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	77								At 76.9 feet: Sandy			
		15		100					At 77.6 feet: Silty Clay, approximately 1½-inch thick laminated zone		[300]	
178	78											
	79								At 78.9 feet: Clayey Silt From 79.1 to 79.2 feet: Some manganese At 79.2 feet: Silty Sand, very fine grained, dark brown (10YR 3/3), mottled with gray			
176	80								At 80.0 feet: Silty Sand, fine grained, some coarse, scattered fine gravel, trace clay		1208 1221	
	81		8						At 80.8 feet: Silty Clay From 81.1 to 81.3 feet: Silty Clay and Silt, faint lamination At 81.3 feet: Silty Sand, very fine grained At 81.7 feet: 1-inch thick fine sand bed			
174	82								From 82.0 to 82.3 feet: Sandy Silt, very fine sand with clay laminations, laminated to thinly bedded			
		16		100					At 82.3 feet: Silty Clay		[150]	
	83								At 83.3 feet: 1½-inch thick dark brown clay bed			
172	84								At 84.1 feet: Sandy			
	85								At 85.0 feet: Silty Sand, fine grained, some medium and coarse, rare fine gravel, slightly clayey		1223 1233	
170	86											
	87								At 86.7 feet: Sandy Clay, some medium sand			
		17		100							[150]	
168	88								At 87.6 feet: Clayey Sand, fine grained, some coarse, dark yellowish brown (10YR 3/4) mottled At 87.9 feet: Moderately abundant coarse sand, some fine gravel			
									At 88.6 feet: Scattered coarse sand, fine gravel			
	89		9						At 89.0 feet: Silty Sand, very fine grained At 89.2 feet: Clayey At 89.4 feet: Silty Sand, fine grained			
166	90								At 90.0 feet: Silty Sand, very fine grained, dark yellowish brown (10YR 4/4) At 90.6 feet: Trace clay From 90.7 to 90.9 feet: Very clayey		1235 1246	
	91								**Sag Deposits** At 90.9 feet: Predominantly Silty Sand and Silt, very fine sand, some clay, some bedding and laminations			
164	92								At 91.9 feet: Predominantly Clay with some Silt laminations			
		18		100					**Fan Deposits** At 92.5 feet: Silty Sand, very fine grained		[150]	
	93											

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Log of Core Boring T9-B14

Westside Purple Line Extension - Section 2
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Figure: A-1.14f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	93								At 92.9 feet: Silty Clay, dark yellowish brown (10YR 3/4)			
									At 93.2 feet: Sandy			
									At 93.4 feet: Silty Sand, fine to medium grained			
162	94		9						At 93.6 feet: Slightly clayey, fine sand			
									At 94.4 feet: Silty Clay, mottled			
									At 94.7 feet: 1-inch thick silt bed			
	95								At 95.0 feet: Silty Clay, soft		1248	
											1320	
									Fluvial Deposits			
160	96								At 95.4 feet: Fine sand, yellowish brown (10YR 5/4), friable			
	97											
		19		76							[300]	
158	98								At 97.8 feet: Some gravel			
	99						NR		No core recovery from 98.8 to 100.0 feet			
156	100		10								1321	
									At 100.0 feet: Sand, very fine grained, friable		1334	
									At 100.5 feet: Sand, fine grained, friable			
	101								At 100.9 feet: Thinly bedded to laminated Clayey Sand and Sand, very fine grained, brown (10YR 4/3)			
									At 101.7 feet: 1-inch thick coarse sand			
154	102								At 101.8 feet: Moderately abundant iron oxide staining			
		20		100					**Fan Deposits**		[150]	
	103								At 102.3 feet: Silty Clay, very dark grayish brown (10YR 3/2), some iron oxide staining			
									At 102.7 feet: Clayey Sand to Silt, very fine sand			
									At 103.0 feet: Silty Clay, dark grayish brown (10YR 4/2), mottled			
									At 103.3 feet: Silty Clay, very dark grayish brown (10YR 3/2), mottled			
152	104								At 103.6 feet: Sandy Clay, some coarse sand			
									At 104.3 feet: Clayey Sand to Sandy Clay, fine sand, rare coarse			
	105										1336	
									At 105.0 feet: Clayey Sand, very fine grained, some coarse		1351	
150	106								At 105.8 feet: Scattered fine gravel			
									At 106.0 feet: Silty Sand, fine grained, slightly clayey			
									At 106.5 feet: Clayey Sand, fine grained, some coarse, dark yellowish brown (10YR 4/4) mottled with gray			
	107											
		21	11	100							[100]	
148	108								At 107.9 feet: Abundant fine gravel and coarse sand			
									At 108.6 feet: Sandy Clay, gray with brown (7.5YR 4/4)			
	109											

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Westside Purple Line Extension - Section 2
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Figure: A-1.14g

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	109								At 180.8 feet: Slightly clayey At 109.1 feet: Grades to Clayey Sand, fine grained At 109.4 feet: Moderately abundant coarse sand, occasional fine gravel			
146	110								At 110.0 feet: Clayey Sand to Clayey Silt, very fine sand, dark brown (7.5YR 3/3) mottled with gray		1354 1407	
	111											
			11						**Sag Deposits** At 111.3 feet: Laminated Silty Clay and Sandy Silt, very fine sand			
144	112	22		100					At 112.1 feet: Clayey Sand and Sandy Clay, very fine sand, some coarse, some fine gravel, dark yellowish brown (10YR 3/4) mottled with gray, laminated		[150]	
	113								**Fan Deposits** At 112.9 feet: Base of laminations At 113.2 feet: Moderately abundant coarse sand, some fine gravel, dark grayish brown (10YR 4/2), mottled			
142	114								At 113.7 feet: Clayey Sand, fine grained with some coarse sand and fine gravel At 114.0 feet: Dark yellowish brown (10YR 4/4) At 114.2 feet: Silty Sand, fine grained, some coarse, some fine gravel			
	115								At 115.0 feet: Slightly bedded appearance		1409 1423	
140	116								At 115.7 feet: Moderately abundant coarse sand, very dark gray (10YR 3/1), slightly mottled			
	117	23		86					At 117.0 feet: Sandy Clay, grades to brown (10YR 4/3) At 117.2 feet: Clayey Sand, very fine grained, some coarse, scattered fine gravel		[100]	
138	118								At 117.7 feet: Fine sand, slightly clayey At 117.9 feet: 2-inch clayey bed At 118.1 feet: Silty Sand, fine to very fine grained At 118.5 feet: Silty Sand, very fine grained			
	119								At 118.8 feet: Clayey At 119.0 feet: Slightly clayey			
							NR		No core recovery from 119.3 to 120.0 feet			
136	120		12						**Fluvial Deposits** At 120.0 feet: Sand, very fine grained, dark yellowish brown (10YR 4/4), friable At 120.2 feet: Fine grained		1426 1446	
	121											
134	122	24		80					At 122.0 feet: Some medium and coarse grained		[150]	
	123								At 123.3 feet: Fine to medium grained, some coarse At 123.8 feet: Clayey			
132	124								At 123.9 feet: Clay			
							NR		No core recovery from 124.0 to 125.0 feet			
	125											

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Log of Core Boring T9-B14

Westside Purple Line Extension - Section 2
Beverly Hills, California
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Figure: A-1.14h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	125								At 125.0 feet: Silty Sand, very fine to fine grained, friable		0958	
130	126								At 126.3 feet: Silty Sand, very fine grained, thinly bedded to laminated Silty Clay From 126.7 to 126.9 feet: Medium to coarse grained, slightly clayey			
	127								At 126.9 feet: Clayey Silt and Silt laminations At 127.3 feet: Some coarse sand			
		25		50					At 127.4 feet: Silty Sand, fine grained, friable		[100]	
128	128								No core recovery from 127.5 to 130.0 feet			
							NR					
	129											
126	130								At 130.0 feet: Silty Sand, fine grained, dark yellowish brown (10YR 4/4), friable		0957 1031	
									At 130.7 feet: Some coarse			
	131								At 131.0 feet: Sand, fine to coarse grained, some gravel			
									No core recovery from 131.5 to 135.0 feet			
124	132											
		26		30							[150]	
	133		13				NR					
122	134											
	135								Silty Sand and Silt, very fine sand, some Clayey Silt and fine Sand, pale red (2.5YR 6/2), some iron oxide staining, crudely bedded		1033 1053	
120	136								From 136.1 to 136.2 feet: Fine and coarse sand bed			
									Fan Deposits At 136.5 feet: Slightly Sandy Clay, dusky red (2.5YR 3/2), minor iron oxide staining, manganese blebs, massive			
	137								No core recovery from 137.0 to 140.0 feet			
		27		40							[100]	
118	138											
							NR					
	139											
116	140								At 140.0 feet: Sandy Silt, very fine sand At 140.2 feet: Silty Clay to Clayey Silt At 140.5 feet: Scattered coarse sand		1056 1136	
	141											

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Figure: A-1.14i

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	141								At 140.9 feet: Sandy Clay, some coarse sand			
									Fluvial Deposits			
									At 141.3 feet: Clayey Sand, some coarse grained, some fine gravel			
114	142								At 141.5 feet: Fine to coarse sand, some gravel			
			13						At 141.9 feet: Fine sand			
		28		46					No core recovery from 142.3 to 145.0 feet		[150]	
	143											
							NR					
112	144											
	145										1138	
									At 145.0 feet: Clayey Sand, fine grained, some coarse, some gravel, dark grayish brown (2.5Y 4/2)		1156	
110	146								At 146.1 feet: Silty fine Sand, minor iron oxide staining			
									At 146.5 feet: Very fine sand, moderate iron oxide staining, crudely bedded			
	147								At 146.7 feet: Clayey Silt, then Silty Clay and Clayey Silt with some laminations, minor iron oxide staining			
		29		60					At 147.6 feet: Silty Sand, very fine grained, grayish brown (2.5Y 5/2)		[100]	
									At 147.7 feet: Clay bed			
108	148								At 147.8 feet: Fine to coarse sand			
							NR		No core recovery from 148.0 to 150.0 feet			
	149											
106	150		14								1159	
									At 150.0 feet: Sand, fine grained, olive brown (2.5Y 4/4), friable		1224	
									At 150.8 feet: Clayey Silt, very dark grayish brown (2.5Y 3/2), some manganese blebs			
	151								From 151.0 to 151.4 feet: Several fine sand beds, some iron oxide staining			
									Sag Deposits			
104	152								At 151.4 feet: Clayey Silt and Silty Clay, moderate laminations			
									From 151.9 to 152.3 feet: Predominantly unoxidized, very dark gray (2.5Y 3/1)			
		30		100					At 152.3 feet: Dark reddish brown (5YR 3/3)		[300]	
									At 152.6 feet: Some sandy zones, very dark gray (2.5Y 3/1)			
	153								At 152.9 feet: 1-inch thick clay bed, black			
									At 153.4 feet: 1-inch thick fine to coarse sand bed			
									At 153.5 feet: Silty Clay and Clay, some scattered coarse sand, thinly bedded			
102	154											
									Fan Deposits			
									At 154.3 feet: Clayey Sand, very fine grained, some scattered coarse, very dark grayish brown (2.5Y 3/2), massive		1225	
	155								At 155.0 feet: Clayey Sand, very fine grained		1245	
									At 155.5 feet: Silty Sand to Sandy Silt, very fine grained, dark olive brown (2.5Y 3/3), some pale iron oxide staining, slightly micaceous			
100	156		15									
									Sag Deposits			
									At 156.3 feet: Silty Clay, very dark gray (2.5Y 3/1)			
	157								At 156.5 feet: Silty Clay, very dark gray (10YR 3/1), stiff			

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B14

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.14j

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	157								From 156.7 to 156.9 feet: Bedded			
		31		100					At 156.9 feet: Very dark grayish brown (10YR 3/2), mottled From 157.35 to 157.7 feet: Bedded		[75]	
98	158								At 157.7 feet: Slightly sandy, mottled			
	159								**Fan Deposits** At 158.6 feet: Silty Sand, fine grained, trace clay, very dark grayish brown (10YR 3/2) and gray mottled At 158.9 feet: Few small carbonate blebs			
96	160								At 160.0 feet: Silty Clay to Clayey Silt, slightly sandy, very dark grayish brown (10YR 3/2), slightly mottled with dark brown iron oxide staining, scattered small carbonate blebs and filaments		1249 1313	
	161		15									
94	162											
		32		100					At 162.5 feet: Silty Clay		[100]	
	163											
92	164								At 164.4 feet: Slightly sandy, very dark gray (10YR 3/1)			
	165										1316 1339	
90	166								At 166.0 feet: Clayey Silt, slightly sandy, no carbonate			
	167								At 166.9 feet: Silty Clay and Clayey Silt, dark gray (10YR 4/1)			
		33	16	100					At 167.4 feet: Very fine silty sand		[150]	
88	168								From 167.9 to 168.2 feet: Some 1/4-inch clay beds			
	169								At 168.4 feet: Silty Clay, rare coarse sand, very dark gray (2.5Y 3/1)			
86	170										1341 1006	
									At 170.4 feet: Some carbonate blebs			
	171								At 170.9 feet: Clayey Sand and Sandy Clay, very fine sand, dark brown (7.5YR 3/2), scattered carbonate blebs (1/16- to 1-inch)			
			17									
84	172											
		34		90							[150]	
	173											

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Log of Core Boring T9-B14

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.14k

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	173								**Sag Deposits** At 173.0 feet: Clayey Sand, fine grained, scattered coarse, bedded with few dark brown thin clay beds to laminations			
82	174								At 173.5 feet: Silty Clay **Fan Deposits** At 173.8 feet: Base bedding			
							NR		No core recovery from 174.5 to 175.0 feet			
	175								At 175.0 feet: Sandy Clay, very dark gray (7.5YR 3/1), mottled		1008 1032	
80	176		17									
	177								At 177.1 feet: No carbonate			
		35		100					At 177.4 feet: Sandy Clay to Clayey Sand, some fine gravel		[150]	
78	178								At 178.0 feet: Clayey Sand, some coarse sand and fine gravel, dark brown (10YR 3/3)			
	179											
76	180								At 180.0 feet: Sandy Silt, some fine sand		1034 1100	
	181								At 181.0 feet: Silty Clay, some scattered coarse sand, dark brown (7.5YR 3/2) **Sag Deposits** At 181.5 feet: Bedded with dark brown clay beds			
74	182								**Fan Deposits** At 182.1 feet: Clayey Silt to Silty Clay, slightly sandy, scattered fine gravel, massive			
		36		100							[100]	
	183								**Sag Deposits** At 182.9 feet: Sandy Silt and Silty Clay, bedded At 183.4 feet: Silty Sand, very fine grained, brown (10YR 4/3), mottled, base bedding			
72	184		18						At 183.6 feet: Clayey At 183.9 feet: Faint bedding **Fan Deposits** At 184.2 feet: Silty Sand to Sandy Silt, very fine grained, base bedding			
	185								At 185.0 feet: Brown (10YR 4/3) At 185.3 feet: Clayey		1103 1132	
70	186								At 186.0 feet: Scattered coarse sand			
	187											
		37		100							[60]	
68	188								At 188.5 feet: Rare fine gravel			
	189											

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Log of Core Boring T9-B14

Sheet 12 of 13

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.14l

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	189								From 189.0 to 189.5 feet: Less clay, some carbonate			
			18						At 189.4 feet: Silty Sand, fine to coarse grained, some fine gravel			
66	190										1137	
									At 190.0 feet: Silty Sand, fine to medium grained, some coarse, dark yellowish brown (10YR 4/4), friable		1204	
									At 190.3 feet: Sandy Clay, soft			
	191								At 190.6 feet: Clayey Sand, fine to coarse grained			
									At 190.8 feet: Some fine gravel			
									At 191.1 feet: Fine sand			
64	192								**Sag Deposits**			
									At 191.3 feet: Clay, slightly sandy, scattered coarse sand, very dark grayish brown (10YR 3/2)			
									At 191.5 feet: Clay interbeds, scattered coarse sand			
			38		100				At 192.4 feet: Very fine Sandy Silt with Clay interbeds		[150]	
	193								From 192.7 to 193.1 feet: Silty Sand, very fine grained with 2 clay interbeds, brown (10YR 4/3)			
									At 193.1 feet: Silty Clay with thin Clay interbeds, very dark grayish brown (10YR 3/2), some iron oxide mottling			
62	194								At 193.8 feet: Silt interbeds or laminations			
	195		19								1206	
									Fan Deposits		1238	
									At 195.0 feet: Clayey Silt and Silty Clay, scattered coarse sand, mottled, some small carbonate bleb, massive			
60	196											
									Sag Deposits			
	197								At 196.3 feet: Silty Sand to Sandy Silt and Silty Clay, very fine sand, thinly bedded to laminated			
									At 196.6 feet: Predominantly Silt			
			39		104				At 197.2 feet: Predominantly Clay		[60]	
58	198								**Fan Deposits**			
									At 197.7 feet: Massive			
									From 198.5 to 198.8 feet: Some silt			
	199											
									Sag Deposits			
									At 199.1 feet: Bedded			
56	200										1243	
									END OF BORING AT 200 FEET			
									NOTES:			
	201								• Hand augered upper 6 feet to avoid damage to utilities. • Groundwater was encountered at 35 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
54	202											
	203											
52	204											
	205											

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Log of Core Boring T9-B14

Sheet 13 of 13

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.14m

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	0								4-inch thick Asphalt over 6-inch thick Concrete			
	1								**ARTIFICIAL FILL (af)** Clayey Silt to Silty Clay, some sand, occasional gravel, dark brown to brown, moist			
254	2											
	3											
252	4											
	5										1145	
250	6											
	7								**ALLUVIAL DEPOSITS** **Fan Deposits** At 6.3 feet: Silt, brown (10YR 3/2), very fine sand, trace clay			
248	8	1		100					At 7.2 feet: Scattered coarse sand, brown (10YR 3/2), porous At 8.2 feet: Scattered fine gravel			
	9		1									
246	10								At 9.6 feet: Brown (10YR 4/3)		1145 1148	
	11								At 10.6 feet: Silty Sand, very fine sand, slight lighter brown At 10.9 feet: Trace clay, dark brown (10YR 3/3), porous			
244	12											
	13	2		100								

DATE(S) DRILLED:	10/30/15 & 11/2/2015	LOGGED BY:	M. Espinoza / R. Munro
DRILL METHOD:	Hollow Stem Auger Continuous Dry Core	CHECKED BY:	R. Munro
DRILL EQUIPMENT:	CME 85	HOLE INCLINATION:	90°
DRILL CONTRACTOR:	JDK Drilling	SURFACE ELEVATION*:	255.50 feet
BIT SIZE / TYPE:	8" Diamater Bit / HQ	TOTAL DRILLED DEPTH:	160.4 feet
HOLE COMPLETION:	Backfilled cement/bentonite grout	WATER OBSERVATIONS:	40 feet at completion

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Log of Core Boring T9-B15

Sheet 1 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.15a

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
242	13											
	14								At 13.6 feet: Brown (10YR 4/3)			
	15								At 15.0 feet: Clayier, still porous		1148 1152	
240	16		1									
	17											
238	18	3		80					At 17.9 feet: Fine sand bed, slightly silty, brown (10YR 4/4)		[150]	
	19								At 18.4 feet: Silt to Sandy Silt, very fine sand, scattered to moderately abundant coarse sand, fine gravel up to ½-inch in diameter, brown (10YR 4/3)			
236	20						NR		No core recovery from 19.0 to 20.0 feet Start blind drill from 20.0 to 55.0 feet (no core samples collected)		1154	
234	21											
	22											
	23											
232	24											
	25											
230	26											
	27											
228	28											
	29											

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Log of Core Boring T9-B15

Sheet 2 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.15b

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
226	29								Continue Blind Drill			
	30											
	31											
224												
	32											
	33											
222												
	34											
	35											
220												
	36											
	37											
218												
	38											
	39											
216												
	40								▽			
	41											
214												
	42											
	43											
212												
	44											
	45											

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Log of Core Boring T9-B15

Sheet 3 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.15c

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
210	45								Continue Blind Drill			
	46											
	47											
208	48											
	49											
206	50											
	51											
204	52											
	53											
202	54											
	55								End blind drill at 55.0 feet			
200									At 55.0 feet: Silty Sand, brown (10YR 3/2), very fine sand, slightly micaceous		1251	
	56								At 55.3 feet: Faint lamination At 55.4 feet: Slightly clayey silt, faint lamination At 55.5 feet: Sandy Silt, very fine sand, massive At 55.7 feet: Grades to very fine Sandy Silt, minor iron oxide stain			
	57								At 56.9 feet: Silt, slightly clayey and sandy, contact iron stained, dip about 20°, slightly micaceous			
198		4	2	76					At 57.4 feet: Silty, very fine sand to sandy silt, occasional iron stained blebs		[150]	
	58								At 57.8 feet: Slightly Clayey At 57.9 feet: Gravelly At 58.0 feet: Abundant gravel up to ¼-inch in diameter At 58.1 feet: Gravel up to 2-inches in diameter			
	59						NR		No core recovery from 58.8 to 60.0 feet			
196												
	60								At 60.0 feet: Fine Gravel with medium to coarse Sand, fine gravel up to 1 inch in diameter, some clay		1253 1303	
	61											

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Log of Core Boring T9-B15

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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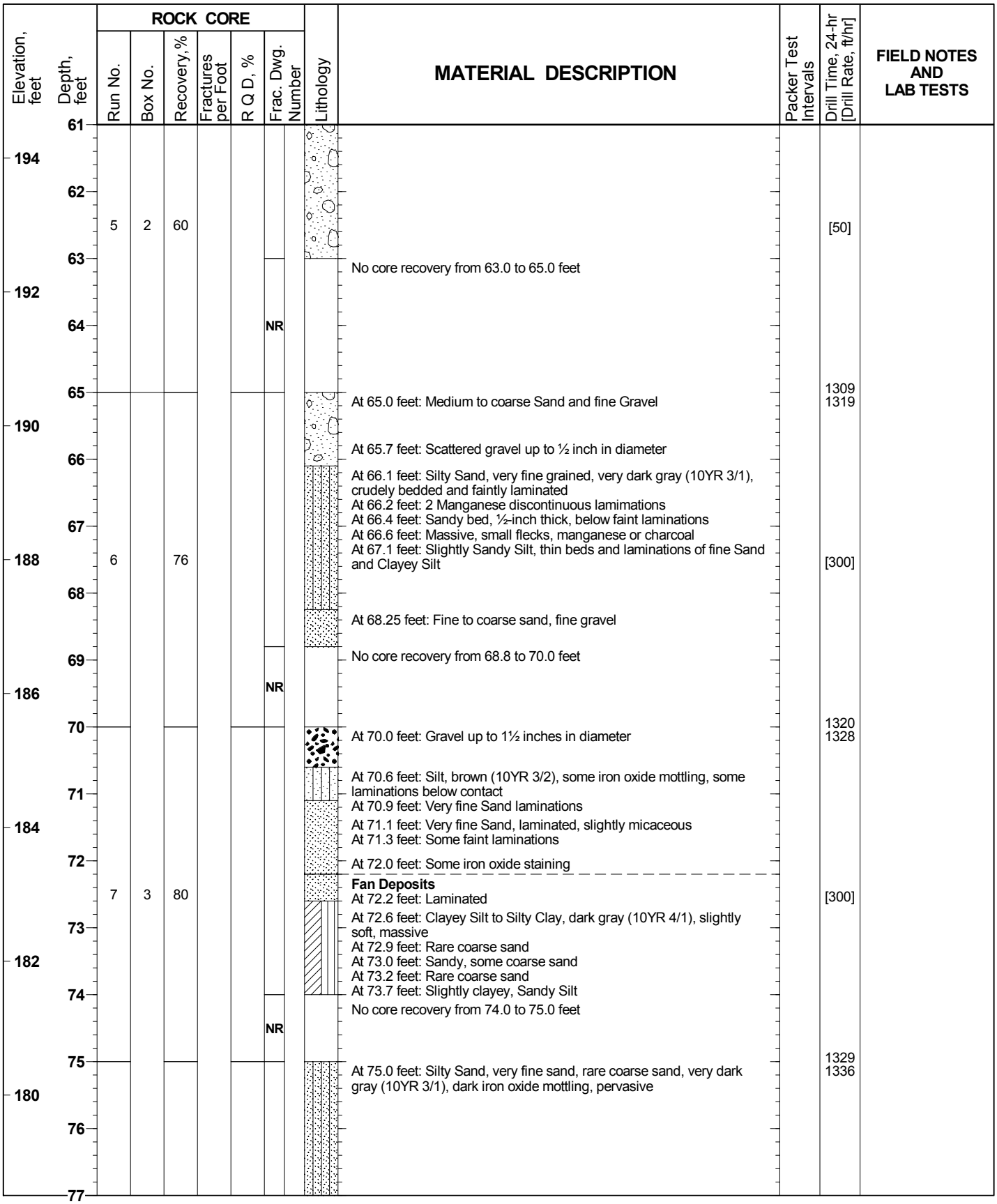
Figure: A-1.15d



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Log of Core Boring T9-B15

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.15e

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
	77											
178		8		100					At 77.3 feet: Clayey, Sandy Silt to Silty Sand, very fine sand, scattered coarse sand, brown (10YR 3/2), some iron oxide mottling		[150]	
	78								At 78.4 feet: Clayey Silt to Silty Clay, heavy iron oxide staining At 78.6 feet: Sandy			
	79								At 79.1 feet: Clayey Sand, very fine grained At 79.2 feet: Silty Sand, very fine grained			
176									At 79.6 feet: Trace clay			
	80								At 80.0 feet: Clayey Silt, dark brown (7.5YR 3/3), mottled dark gray (7.5YR 4/1), abundant dark iron oxide staining		1338 1348	
									At 80.5 feet: Silty Sand, very fine grained			
	81								At 80.85 feet: Clayey Silt to Silty Clay			
174												
	82								At 81.85 feet: 1/8-inch thick discontinuous Silt bed, dips 5°			
		9	4	90					At 82.2 feet: Silty Sand, very fine sand bed, slightly clay (about ½-inch thick), Clayey Sand, very fine grained At 82.6 feet: Silty Sand, very fine grained		[150]	
	83								At 83.1 feet: Clayey Silt to Silty Clay			
172												
	84								At 83.8 feet: Clayey Sand, very fine grained, some coarse, fine gravel			
							NR		No core recovery from 84.5 to 85.0 feet			
	85								Start blind drill from 85.0 to 100.0 feet (no core samples collected)		1350	
170												
	86											
	87											
168												
	88											
	89											
166												
	90											
	91											
164												
	92											
	93											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B15

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.15f

Elevation, feet	Depth, feet	ROCK CORE: Run No.	Box No.	Recovery, %	Fractures per Foot	R Q D, %	Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
162	93								Continue Blind Drill			
	94											
	95											
160												
	96											
	97											
158												
	98											
	99											
156									End blind drill at 100.0 feet			
	100								**Fluvial Deposits** At 100.0 feet: Clayey Sand, fine to coarse grained		1442	
									At 100.15 feet: Silt At 100.2 feet: Silty Clay to Clayey Silt, some coarse sand, very dark gray (7.5YR 3/1), mottled with iron oxide staining			
	101								**Fan Deposits** At 101.1 feet: Slightly Sandy			
154												
	102											
		10		96					At 102.4 feet: Clayey Silt, sandy, zone with coarse sand, fine gravel		[300]	
	103								At 102.7 feet: Sandy Silt, very fine sand At 102.9 feet: Silty Clay to Clayey Silt, sandy with scattered coarse sand			
152									At 103.3 feet: Silty Clay			
	104								At 103.9 feet: Silt At 104.0 feet: Clayey Silt At 104.1 feet: Clayey Silt to Silty Clay			
			4				NR		No core recovery from 104.6 to 105.0 feet			
	105								At 105.0 feet: Clayey Silt to Silty Clay, some coarse sand		1443 1454	
150									At 105.3 feet: Clayey Silt			
									At 105.6 feet: Sandy Silt, brown (7.5YR 4/3) with some gray			
	106								**Sag Deposits** At 106.2 feet: Some laminations			
									At 106.4 feet: Clayey Silt to Silty Clay, dark brown (7.5YR 3/2) mottled with gray, faint laminations From 106.7 to 107.2 feet: Scattered manganese blebs			
	107											
148		11		100					At 107.0 feet: Slightly sandy		[150]	
									At 107.6 feet: Silty Clay			
	108								**Fan Deposits** At 108.0 feet: Massive			
	109											

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

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Log of Core Boring T9-B15

Sheet 7 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.15g

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
146	109		4						At 109.1 feet: Sandy, scattered coarse			
									At 109.6 feet: Silty Clay			
	110								Start blind drill from 110.0 to 150.0 feet (no core samples collected)		1456	
144	111											
	112											
	113											
142	114											
	115											
140	116											
	117											
138	118											
	119											
136	120											
	121											
134	122											
	123											
132	124											
	125											

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Log of Core Boring T9-B15

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.15h

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
130	125								Continue Blind Drill			
	126											
	127											
128												
	128											
	129											
126												
	130											
	131											
124												
	132											
	133											
122												
	134											
	135											
120												
	136											
	137											
118												
	138											
	139											
116												
	140											
	141											

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Log of Core Boring T9-B15

Sheet 9 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

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Figure: A-1.15i

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
114	141								Continue Blind Drill			
	142											
	143											
112												
	144											
	145											
110												
	146											
	147											
108												
	148											
	149											
106												
	150								**Fan Deposits** At 150.0 feet: Clayey Silt to Silty Clay, scattered coarse sand, brown (7.5YR 3/2) mottled with medium to dark gray, pervasive dark iron oxide staining		1348	
	151								At 150.7 feet: Rare coarse sand			
104									At 151.6 feet: Silty Clay			
	152	12		100							[150]	
	153											
102									At 153.6 feet: Few coarse sand, fine gravel			
	154		5						At 153.8 feet: Rare coarse sand			
	155										1350 1406	
100									At 155.2 feet: Some coarse sand and gravel At 155.3 feet: Clayey Silt to Silty Clay, dark brown (7.5YR 3/2), soft			
	156								At 155.4 feet: Stiff At 155.7 feet: Some coarse Sand, dark gray (7.5YR 4/1), abundant iron oxide mottling			
	157											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B15

Sheet 10 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.15j

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

Elevation, feet	Depth, feet	ROCK CORE: Run No.	ROCK CORE: Box No.	ROCK CORE: Recovery, %	ROCK CORE: Fractures per Foot	ROCK CORE: R Q D, %	ROCK CORE: Frac. Dwg. Number	Lithology	MATERIAL DESCRIPTION	Packer Test Intervals	Drill Time, 24-hr [Drill Rate, ft/hr]	FIELD NOTES AND LAB TESTS
98	157	13		100					At 157.4 feet: Moderately abundant coarse sand, fine gravel		[75]	
	158		5						At 158.4 feet: Clayey Sand, fine to coarse grained, gravel up to ½ inch in diameter			
96	159											
	160										1410	
	161								END OF BORING AT 160.4 FEET NOTES: • Hand augered upper 6 feet to avoid damage to utilities. • Groundwater encountered at 40 feet below the ground surface after completion of drilling. • Boring backfilled with cement/bentonite grout from bottom up and patched.			
94	162											
	163											
92	164											
	165											
90	166											
	167											
88	168											
	169											
86	170											
	171											
84	172											
	173											

THIS LOG IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSUFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Log of Core Boring T9-B15

Sheet 11 of 11

Westside Purple Line Extension - Section 2
Beverly Hills, California
Project No. 4953-11-1423

amec foster wheeler

Figure: A-1.15k

AMEC CORE; File: 4953111423.25.01.GPJ; 12/27/2016

MAJOR DIVISIONS			GROUP SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)		GW	Well graded gravels, gravel - sand mixtures, little or no fines.
				GP	Poorly graded gravels or grave - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)		GM	Silty gravels, gravel - sand - silt mixtures.
				GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size)	CLEAN SANDS (Little or no fines)		SW	Well graded sands, gravelly sands, little or no fines.
				SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)		SM	Silty sands, sand - silt mixtures
				SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)			ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts and with slight plasticity.
				CL	Inorganic lays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
				OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
				CH	Inorganic clays of high plasticity, fat clays
Bedrock					SANDSTONE

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

SILT OR CLAY	SAND			GRAVEL		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		

No.200 No.40 No.10 No.4 3/4" 3" 12"

U.S. STANDARD SIEVE SIZE

Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

Undisturbed Sample		Auger Cuttings	
Split Spoon Sample		Bulk Sample	
Rock Core		Crandall Sampler	
Dilatometer		Pressure Meter	
California-Modified Sampler		No Recovery	
Water Table at time of drilling		Water Table after drilling	

Correlation of Penetration Resistance with Relative Density and Consistency

SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 1	Very Soft
5 - 10	Loose	2 - 4	Soft
11 - 30	Medium Dense	5 - 8	Medium Stiff
31 - 50	Dense	9 - 15	Stiff
Over 50	Very Dense	16 - 30	Very Stiff
		Over 30	Hard

KEY TO SYMBOLS AND DESCRIPTIONS

amec foster wheeler

Figure A-2

APPENDIX B CPT SOUNDING LOGS

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C1

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 69.81 ft, Date: 10/13/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

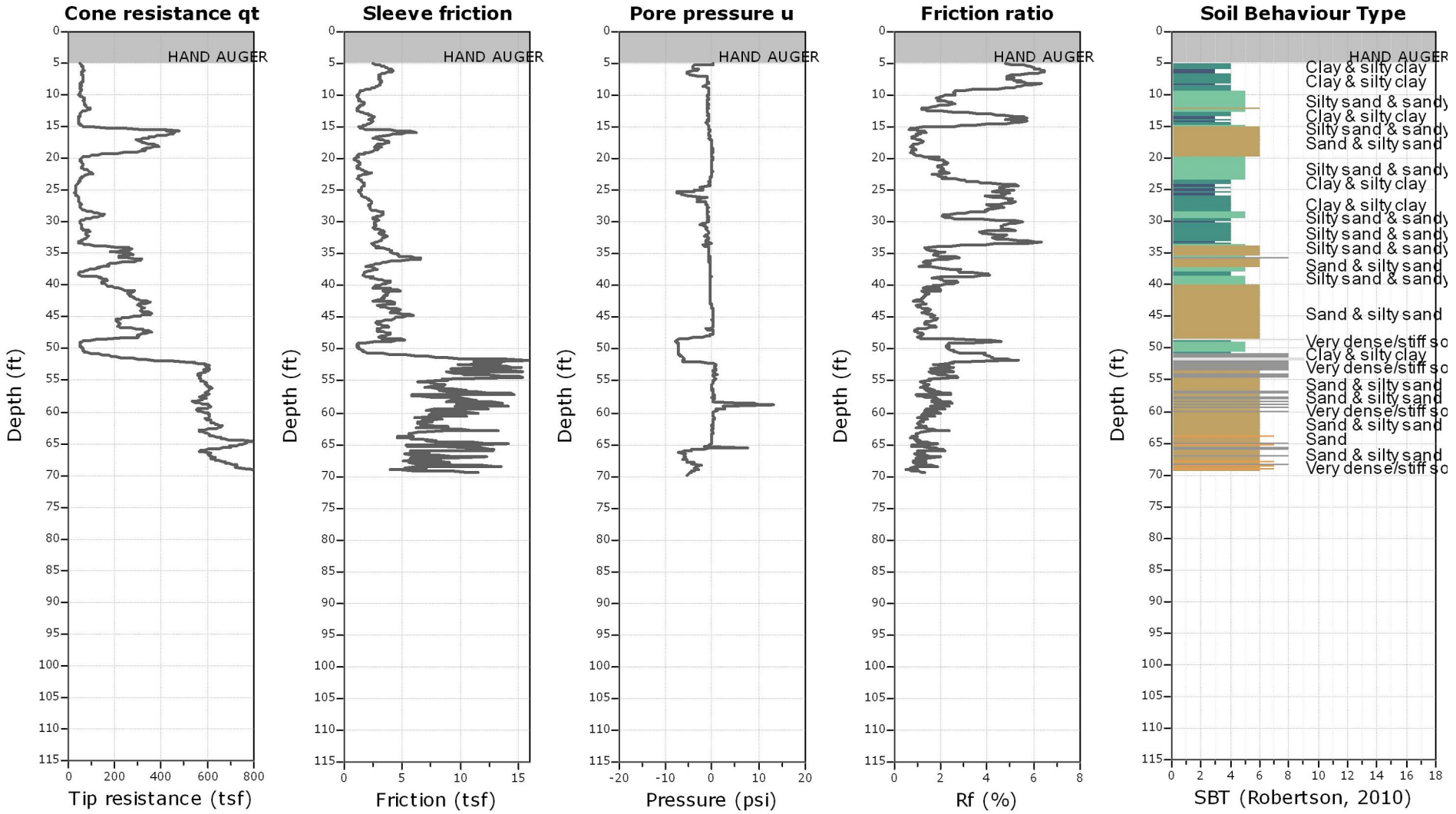


Figure B-1

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C2

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 61.59 ft, Date: 10/13/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

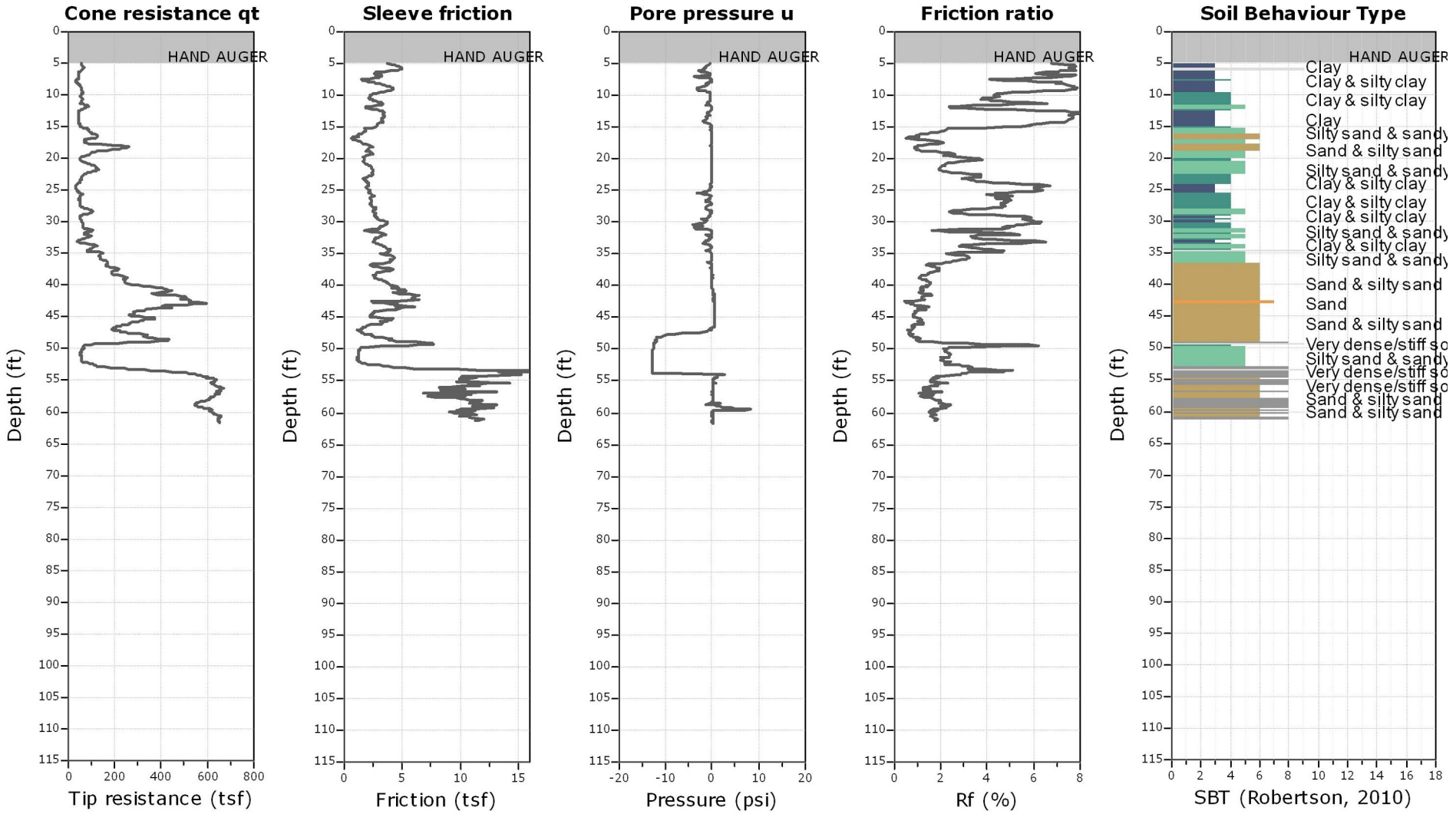
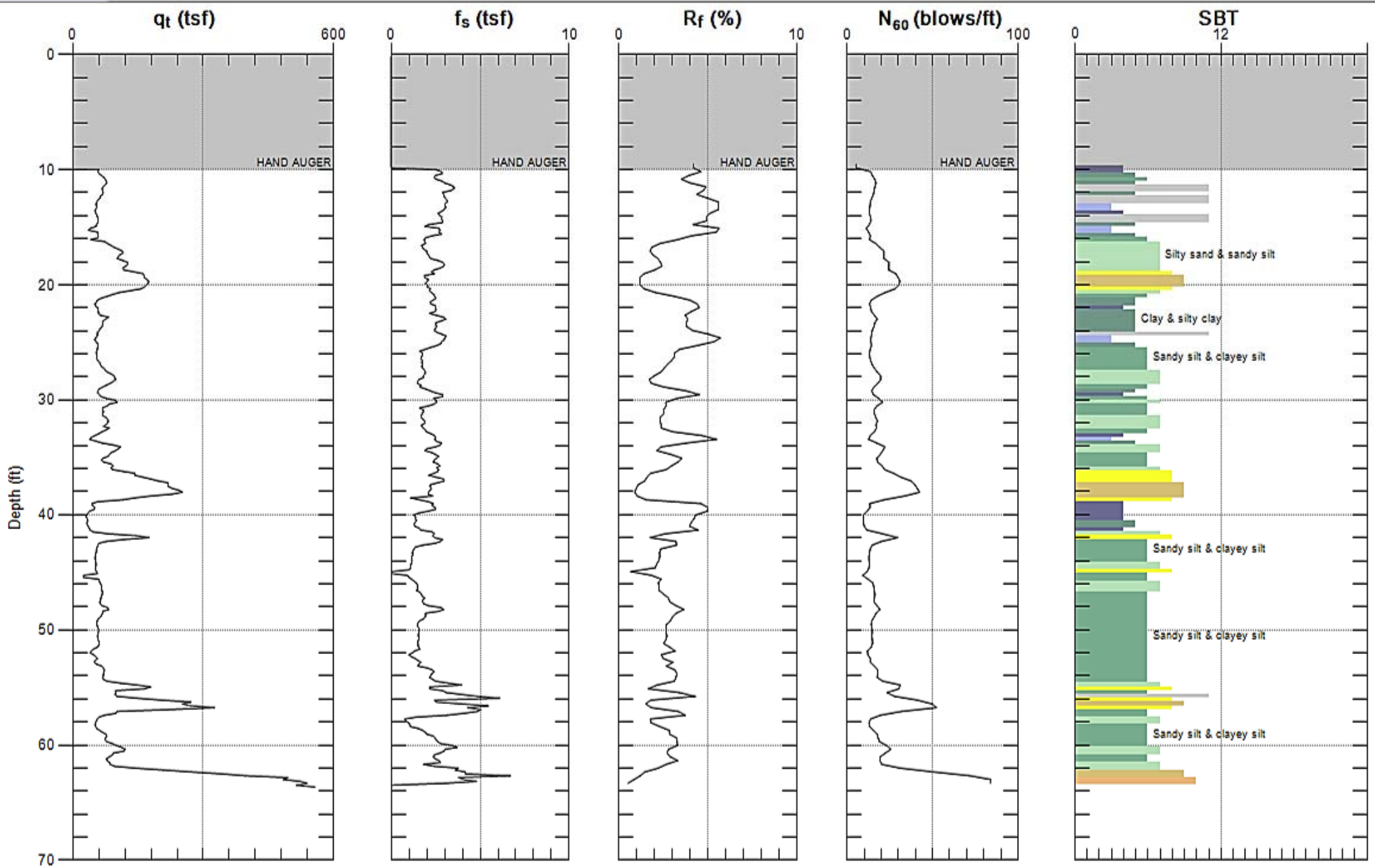


Figure B-2

AMEC FOSTER WHEELER

Site: S.LASKY DR.
Sounding: T9-C4

Engineer: M.ESPINOZA
Date: 10/8/2015 12:31



Max. Depth: 63.648 (ft)
Avg. Interval: 0.328 (ft)

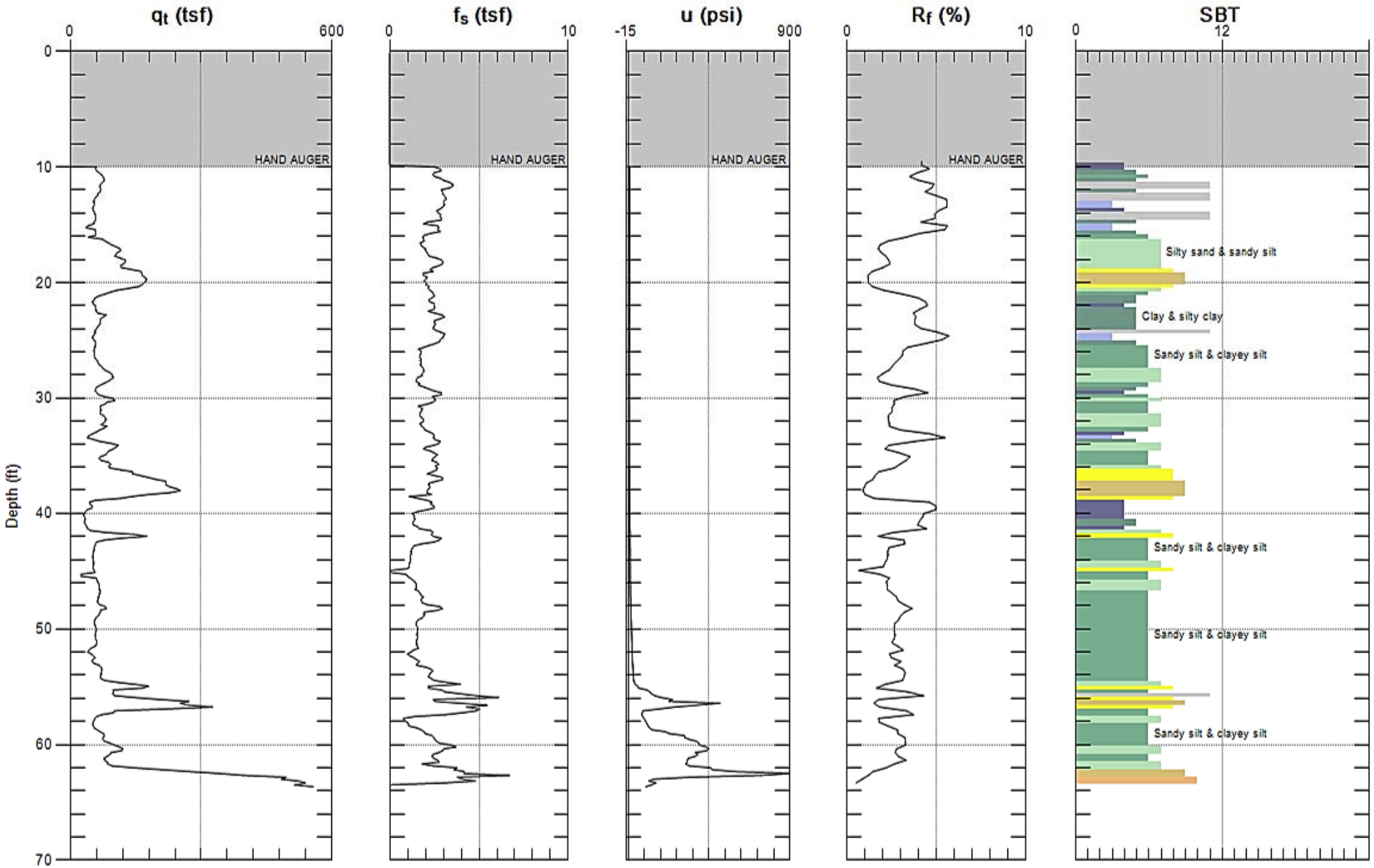
Figure B-3

SBT: Soil Behavior Type (Robertson 1990)

AMEC FOSTER WHEELER

Site: S.LASKY DR.
Sounding: T9-C4

Engineer: M.ESPINOZA
Date: 10/8/2015 12:31



Max. Depth: 63.648 (ft)
Avg. Interval: 0.328 (ft)

Figure B-4

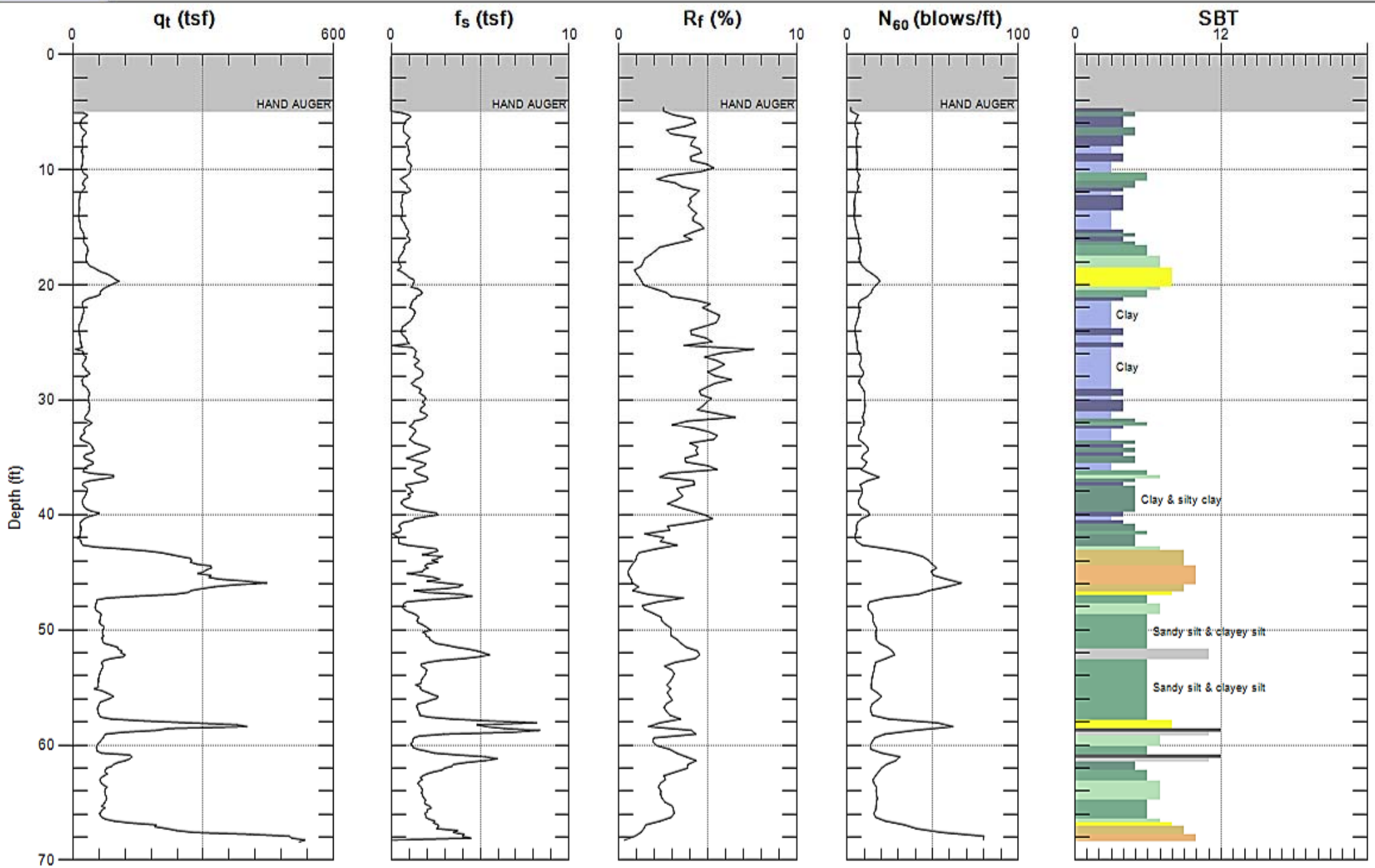
SBT: Soil Behavior Type (Robertson 1990)

GREGG

AMEC FOSTER WHEELER

Site: S.LASKY DR.
Sounding: T9-C5

Engineer: M.ESPINOZA
Date: 10/8/2015 10:30



Max. Depth: 68.406 (ft)
Avg. Interval: 0.328 (ft)

Figure B-5

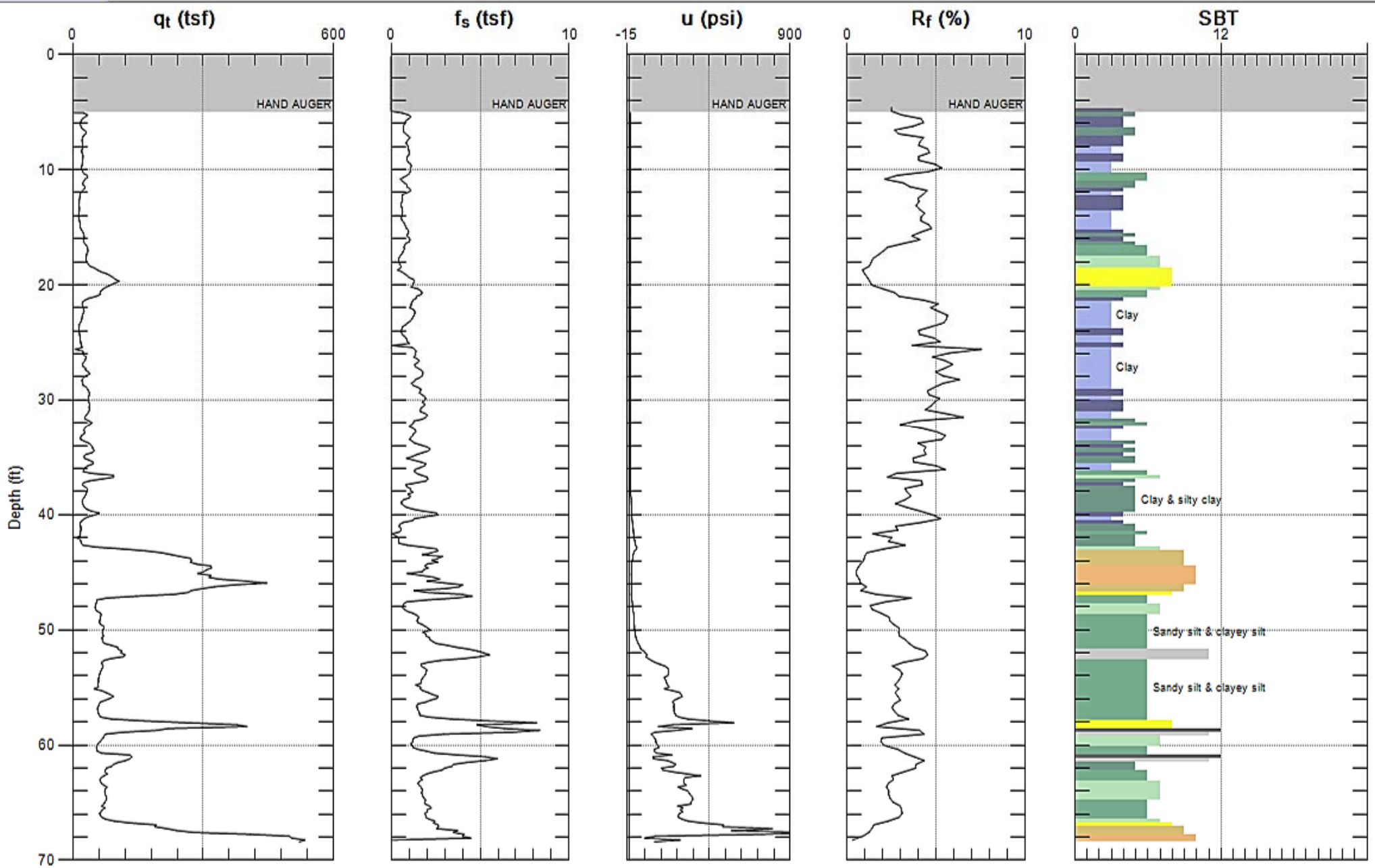
SBT: Soil Behavior Type (Robertson 1990)

GREGG

AMEC FOSTER WHEELER

Site: S.LASKY DR.
Sounding: T9-C5

Engineer: M.ESPINOZA
Date: 10/8/2015 10:30



Max. Depth: 68.406 (ft)
Avg. Interval: 0.328 (ft)

Figure B-6

SBT: Soil Behavior Type (Robertson 1990)

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CPT: T9-C6

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 76.67 ft, Date: 10/2/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

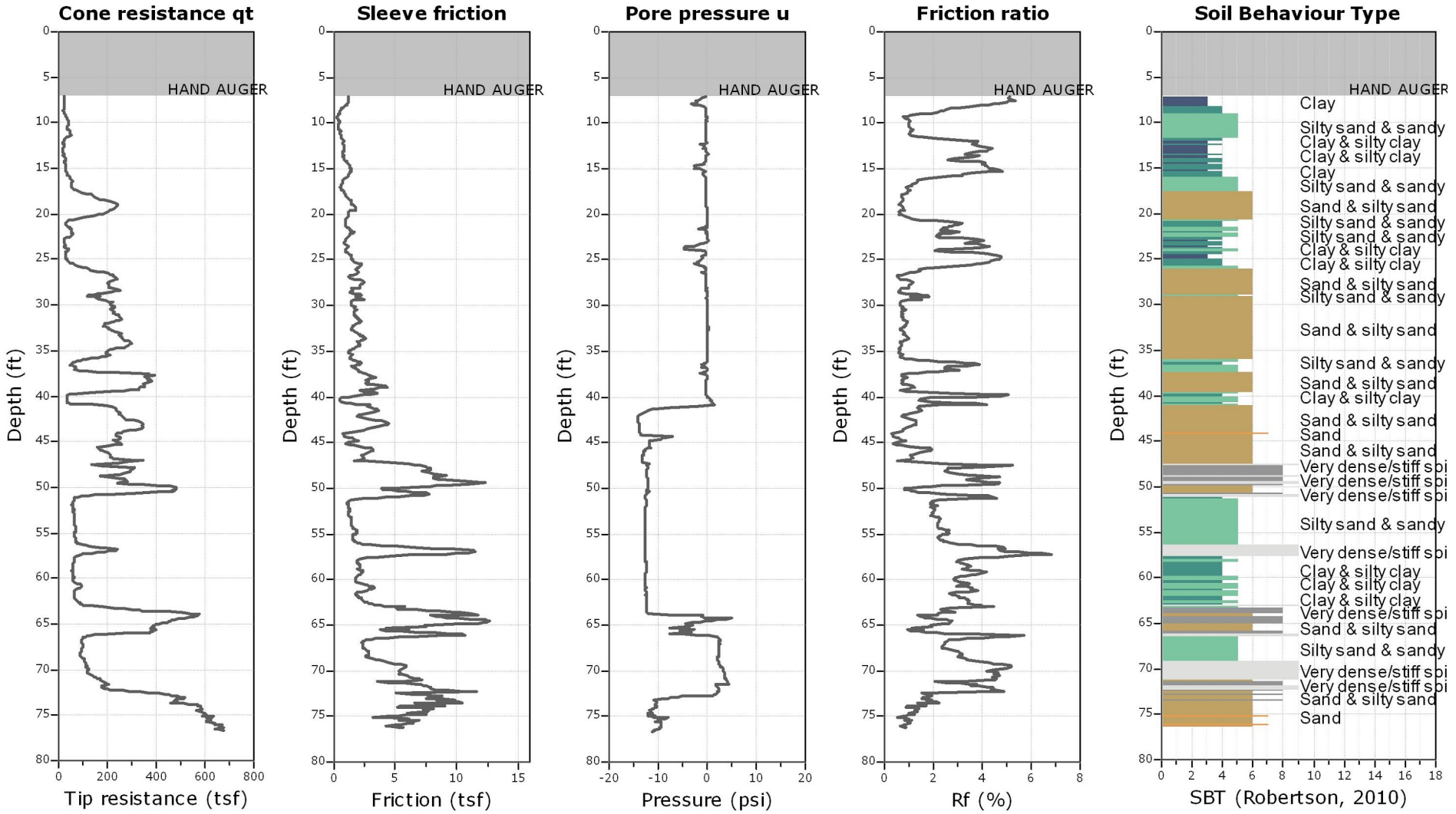

Figure B-7

Kehoe Testing and Engineering
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rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C7

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 68.54 ft, Date: 10/2/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

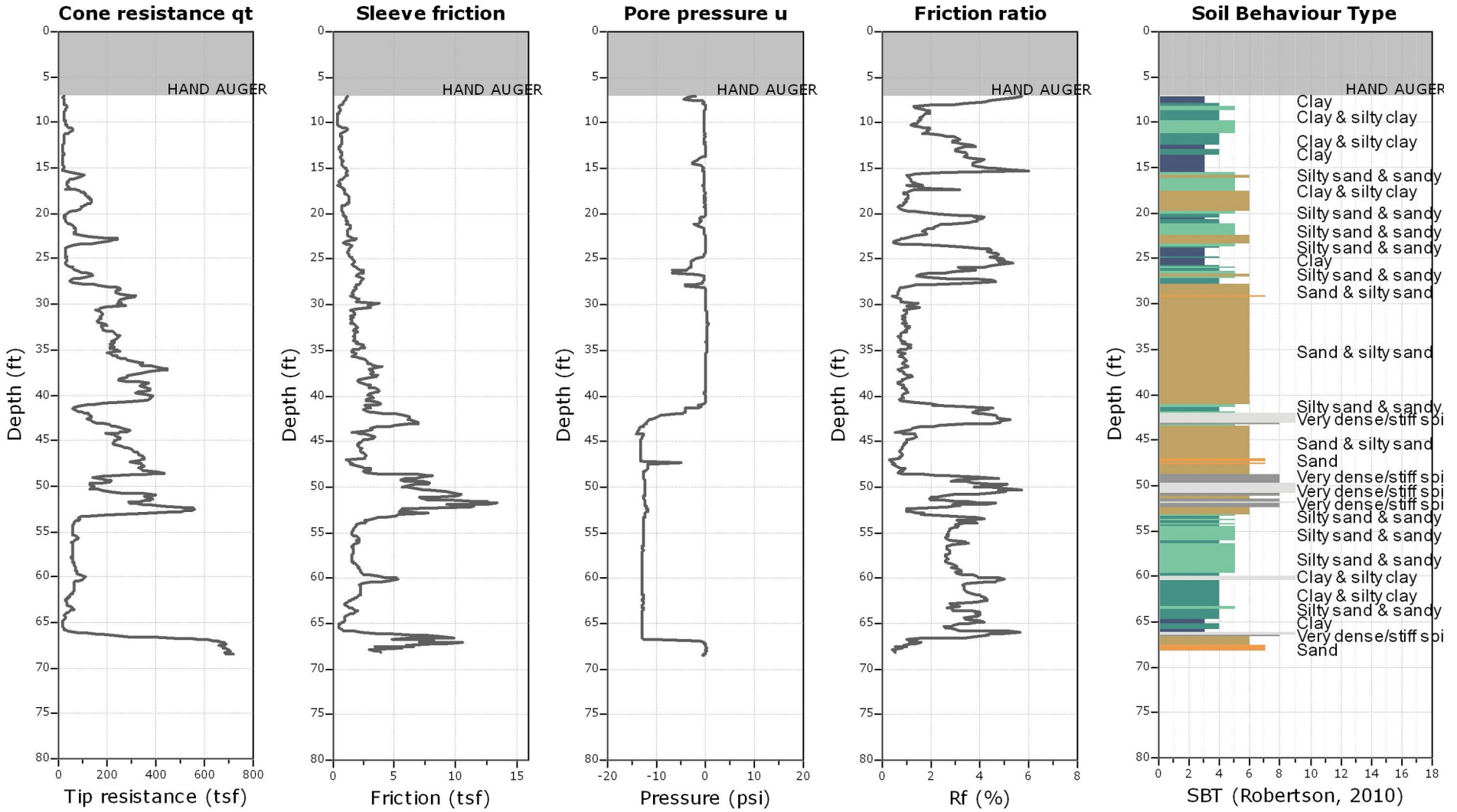

Figure B-8

Kehoe Testing and Engineering
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rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C8

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 73.59 ft, Date: 10/1/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

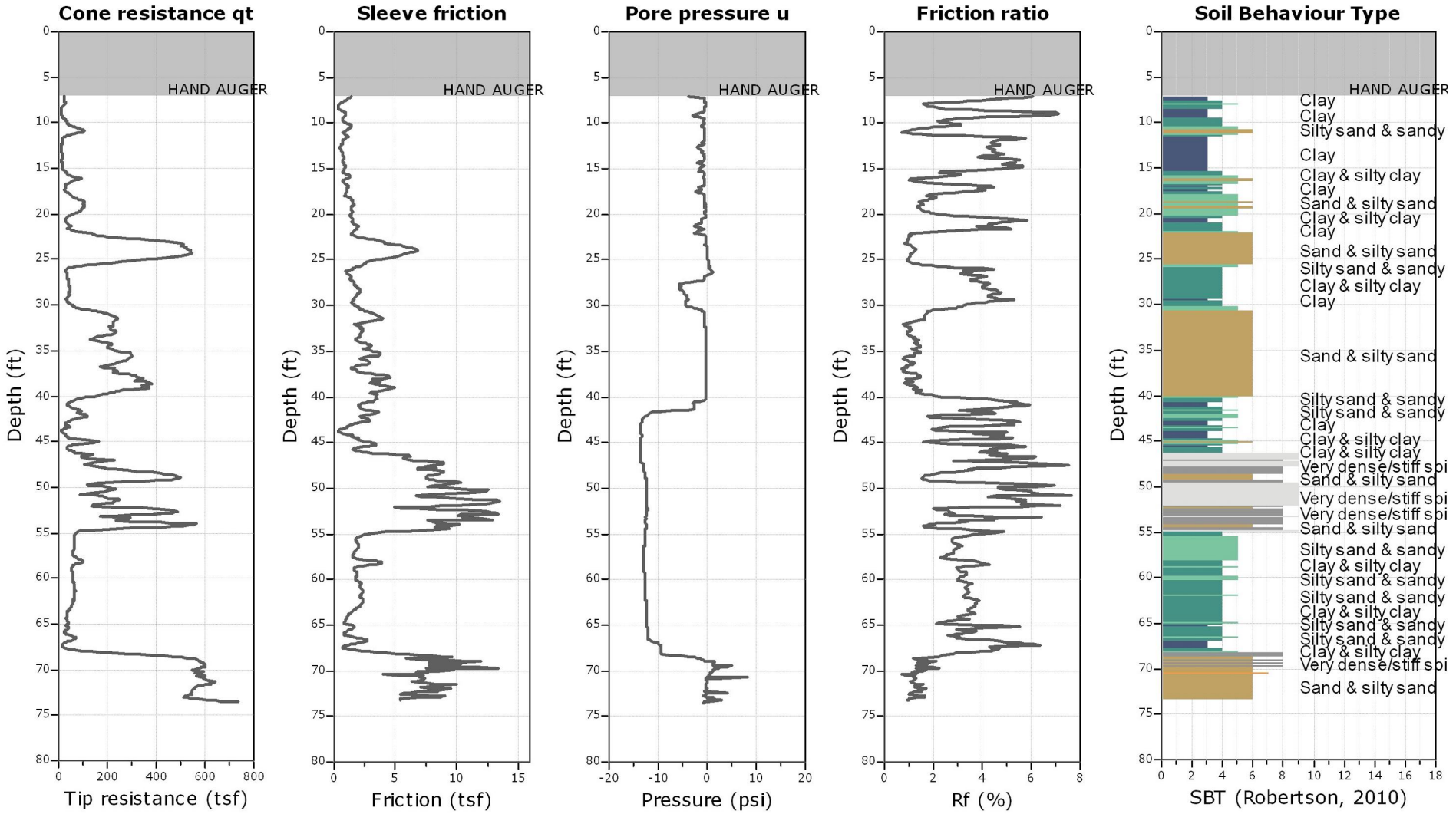

Figure B-9

Kehoe Testing and Engineering
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rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C9

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 74.85 ft, Date: 10/2/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

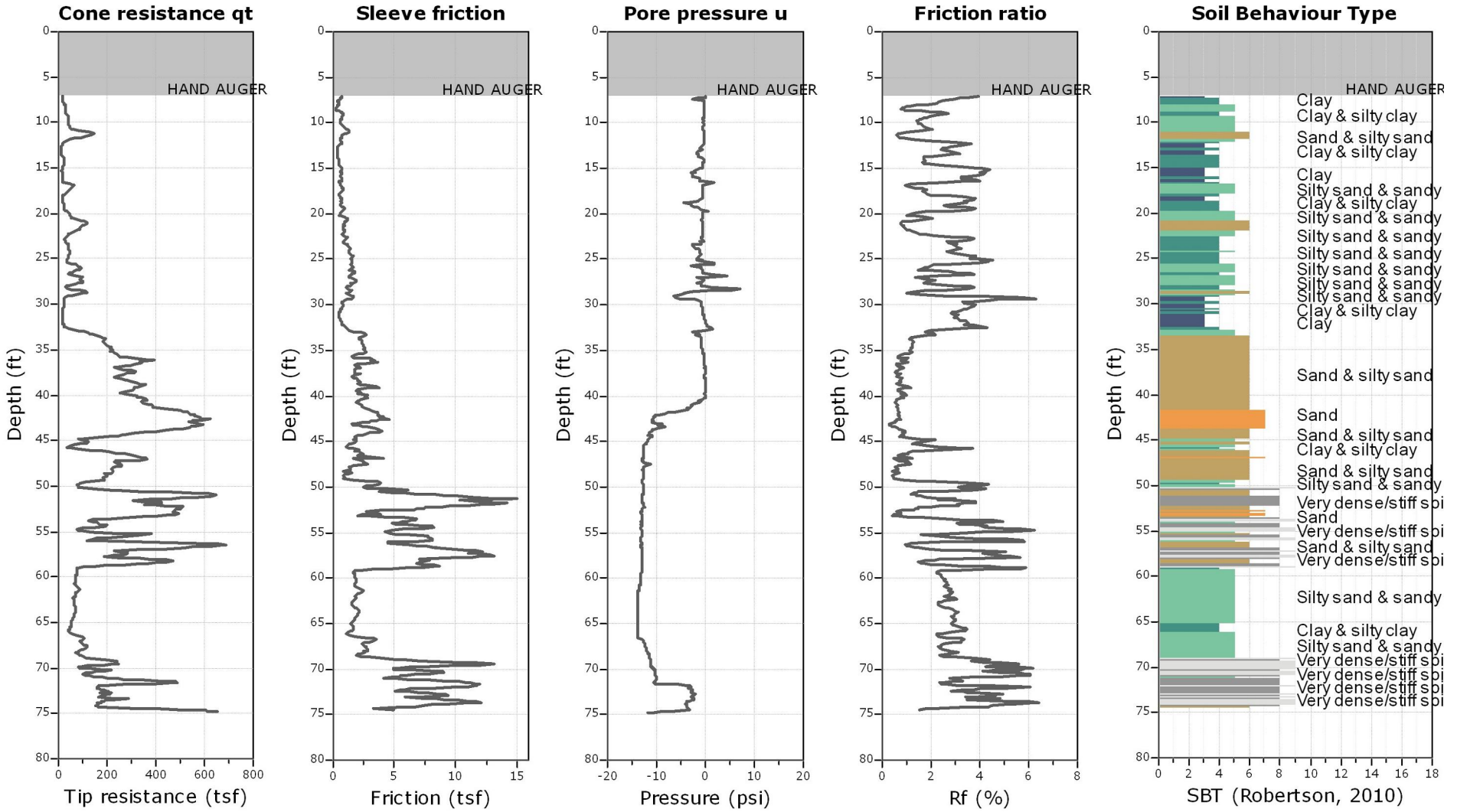

Figure B-10

Kehoe Testing and Engineering
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rich@kehoetesting.com
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CPT: T9-C10

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 78.06 ft, Date: 10/1/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

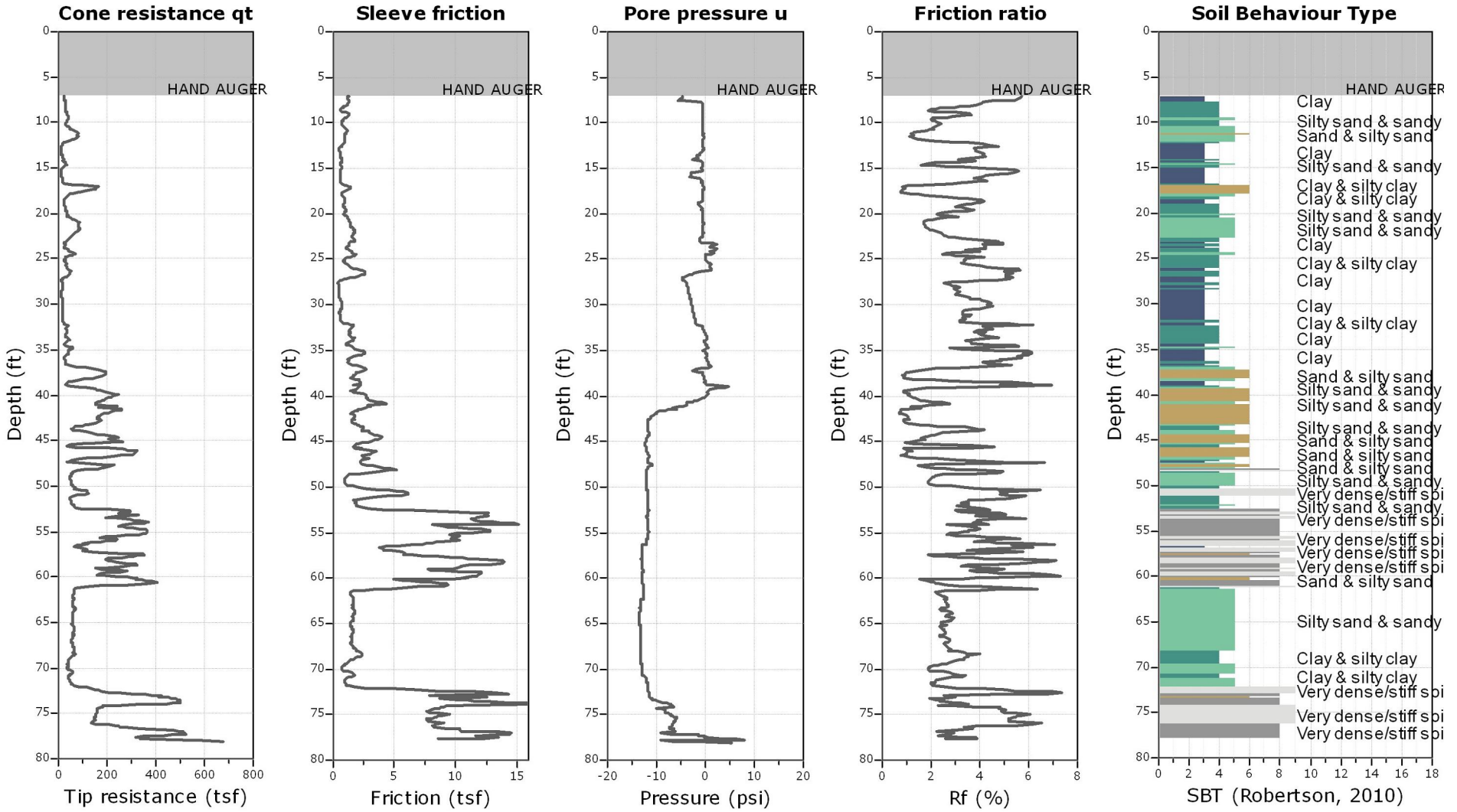

Figure B-11

Kehoe Testing and Engineering
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rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C11

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 80.39 ft, Date: 9/30/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

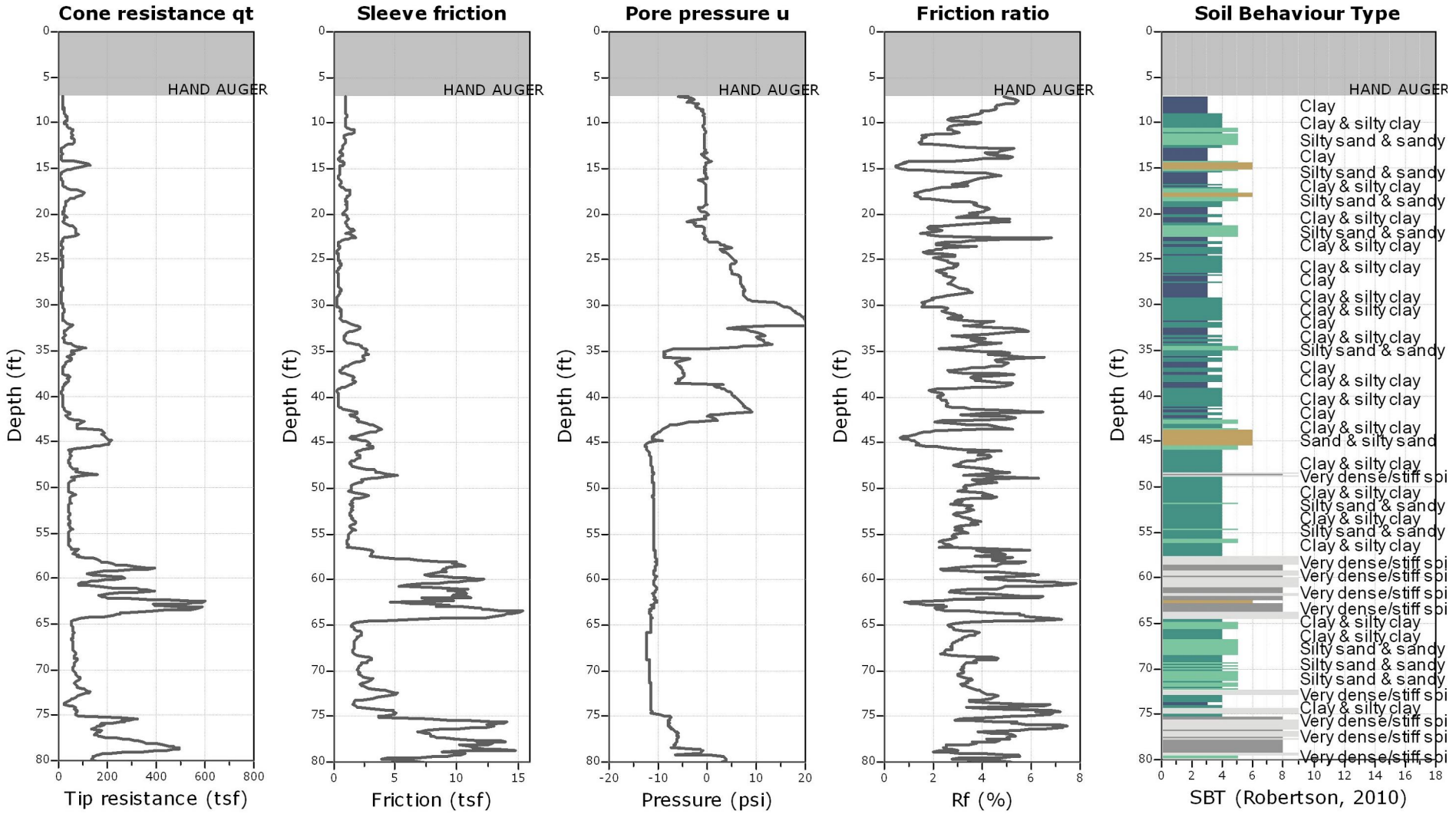

Figure B-12

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www.kehoetesting.com

CPT: T9-C12

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 80.22 ft, Date: 9/22/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

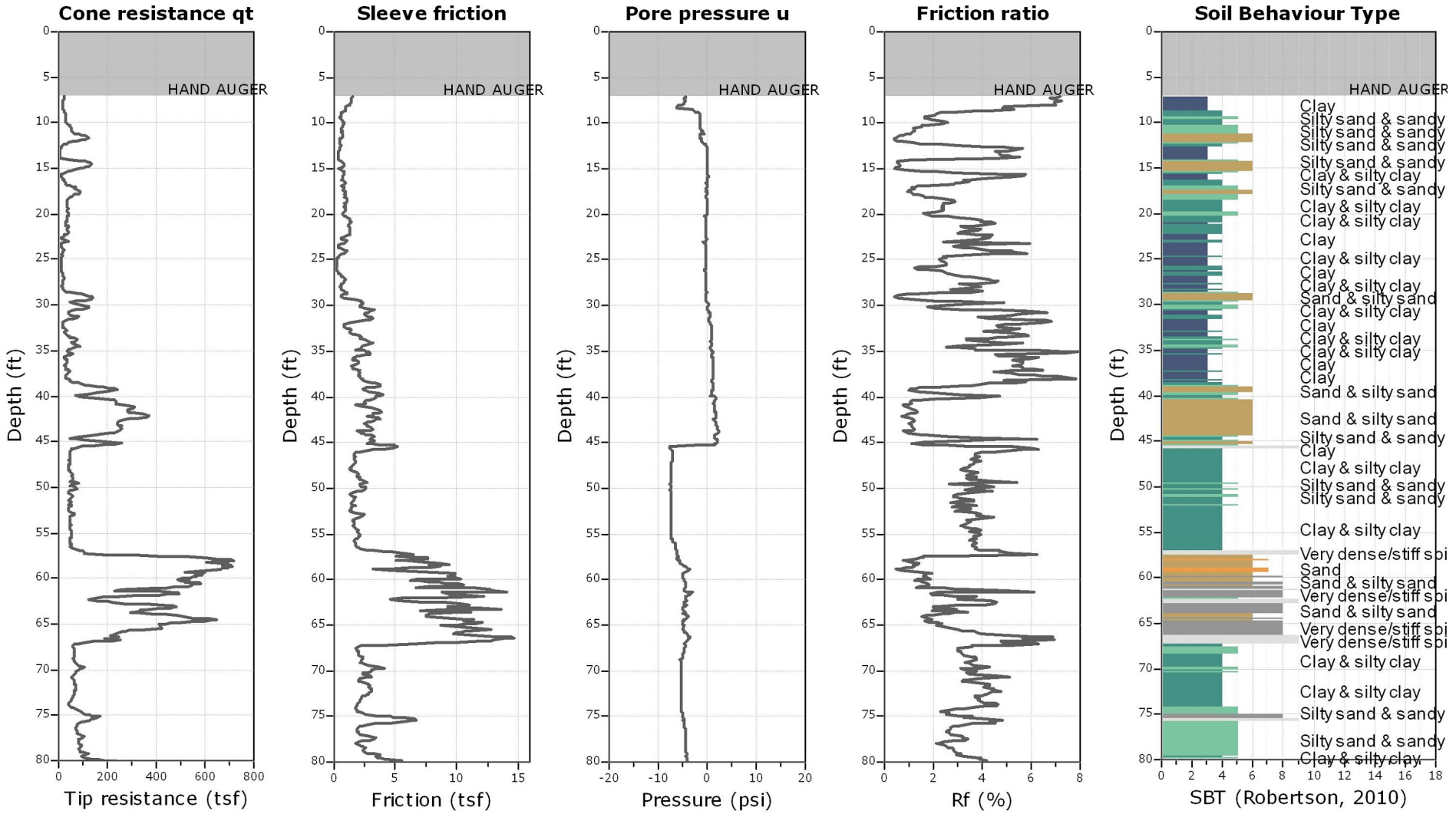

Figure B-13

Kehoe Testing and Engineering
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CPT: T9-C13

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 80.37 ft, Date: 9/22/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

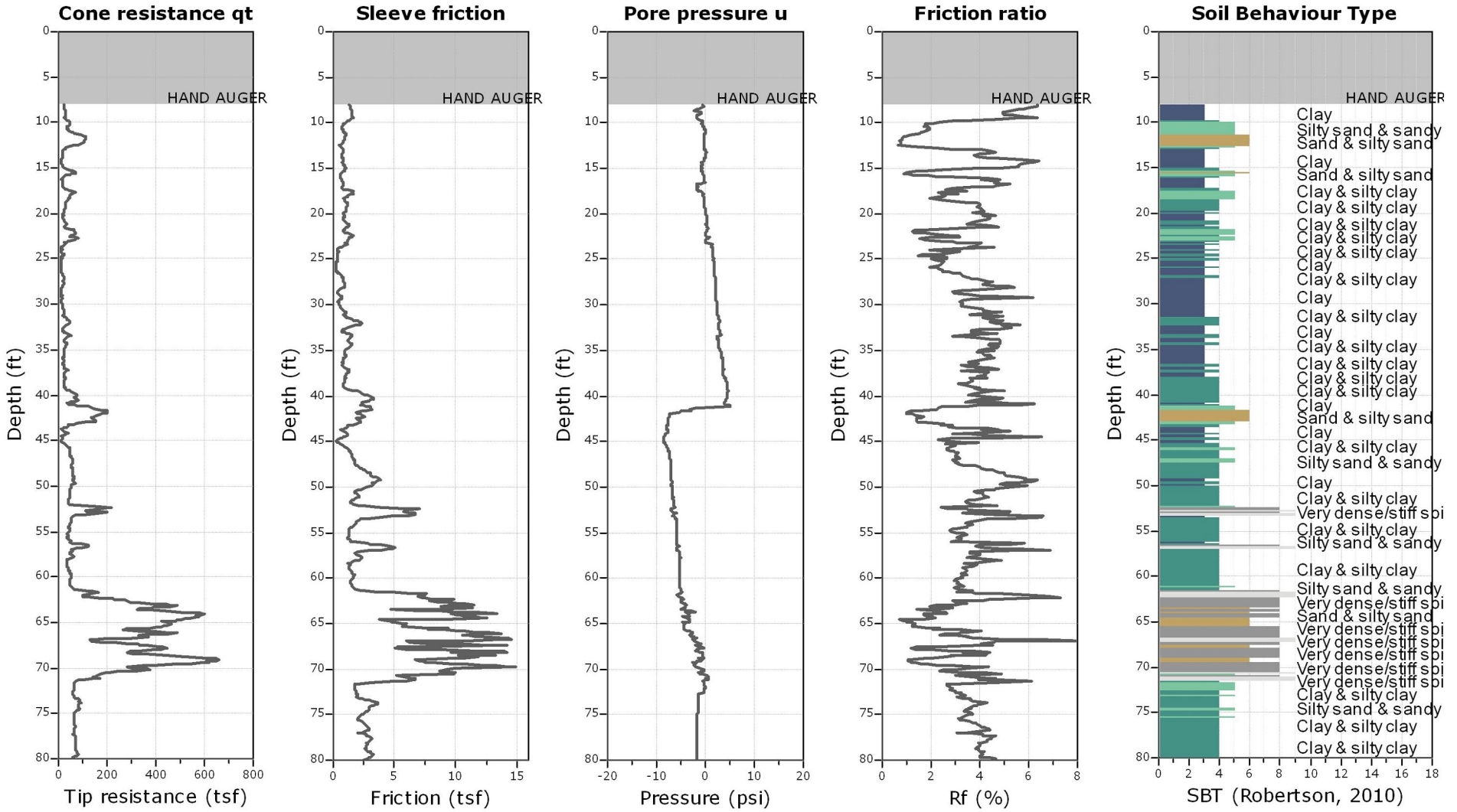

Figure B-14

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CPT: T9-C14

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 80.51 ft, Date: 9/24/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

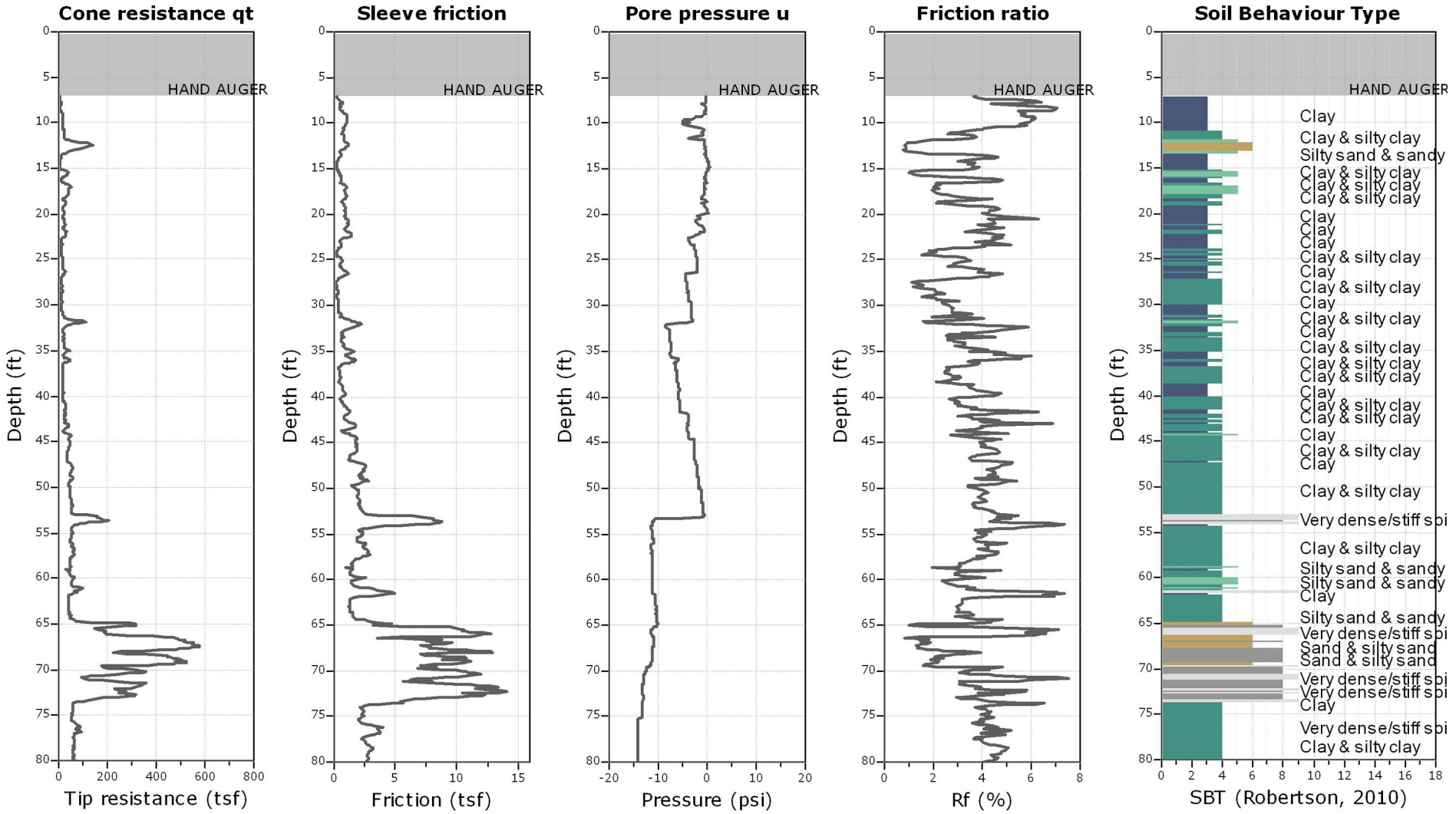

Figure B-15

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CPT: T9-C15

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 80.32 ft, Date: 9/24/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

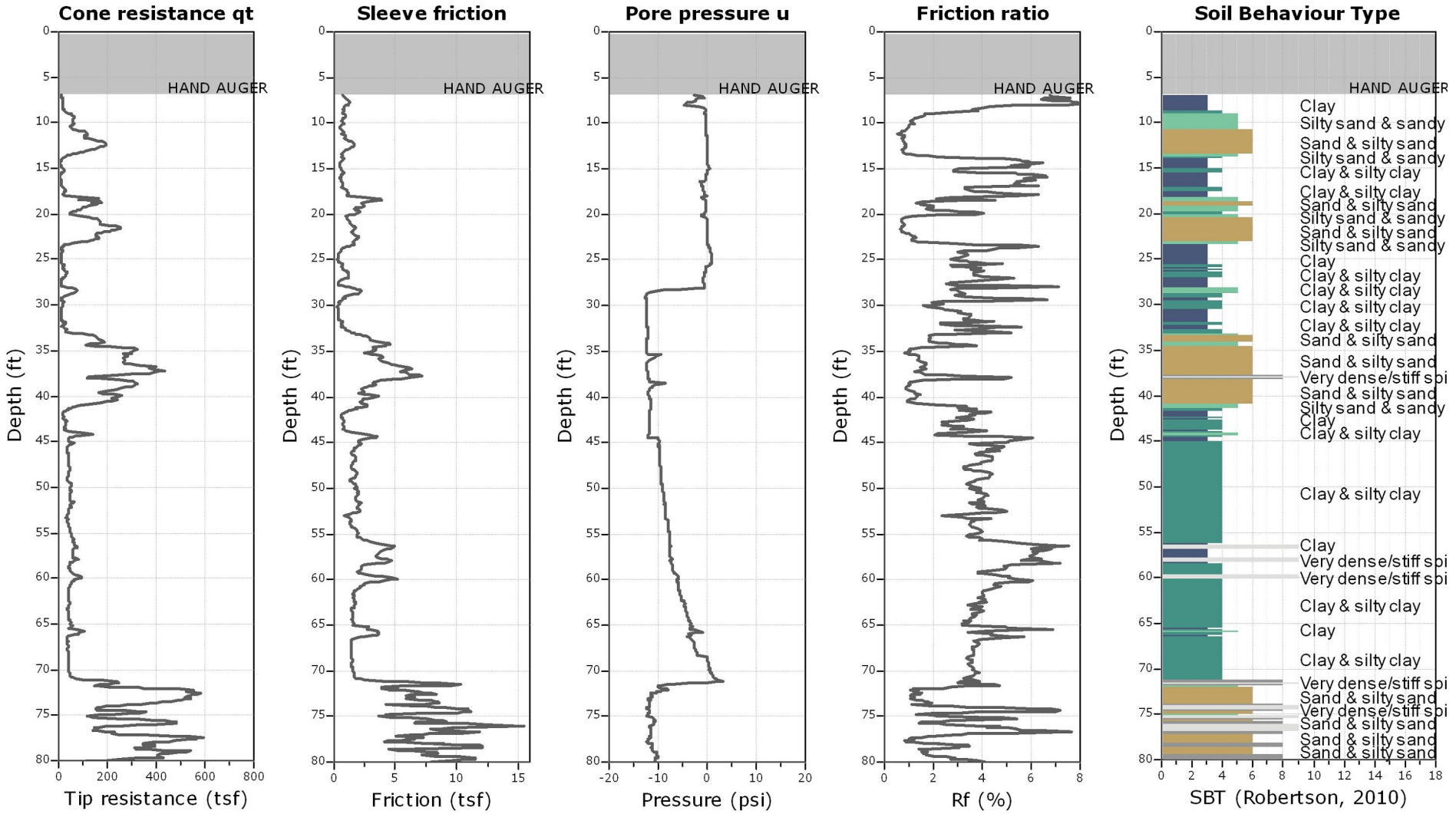

Figure B-16

Kehoe Testing and Engineering
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CPT: T9-C17

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 80.15 ft, Date: 9/29/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

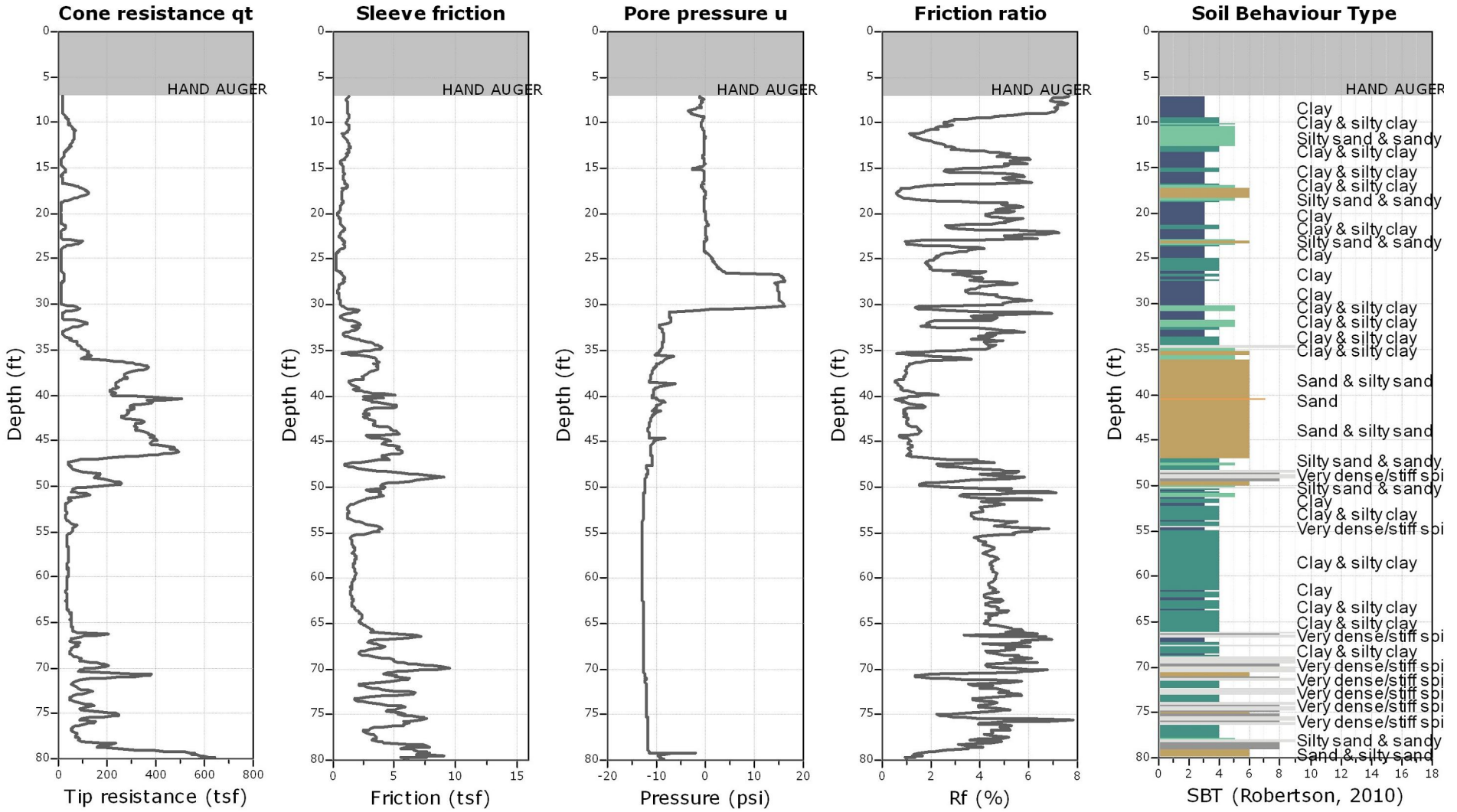

Figure B-17

Kehoe Testing and Engineering
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CPT: T9-C16

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 80.27 ft, Date: 9/29/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

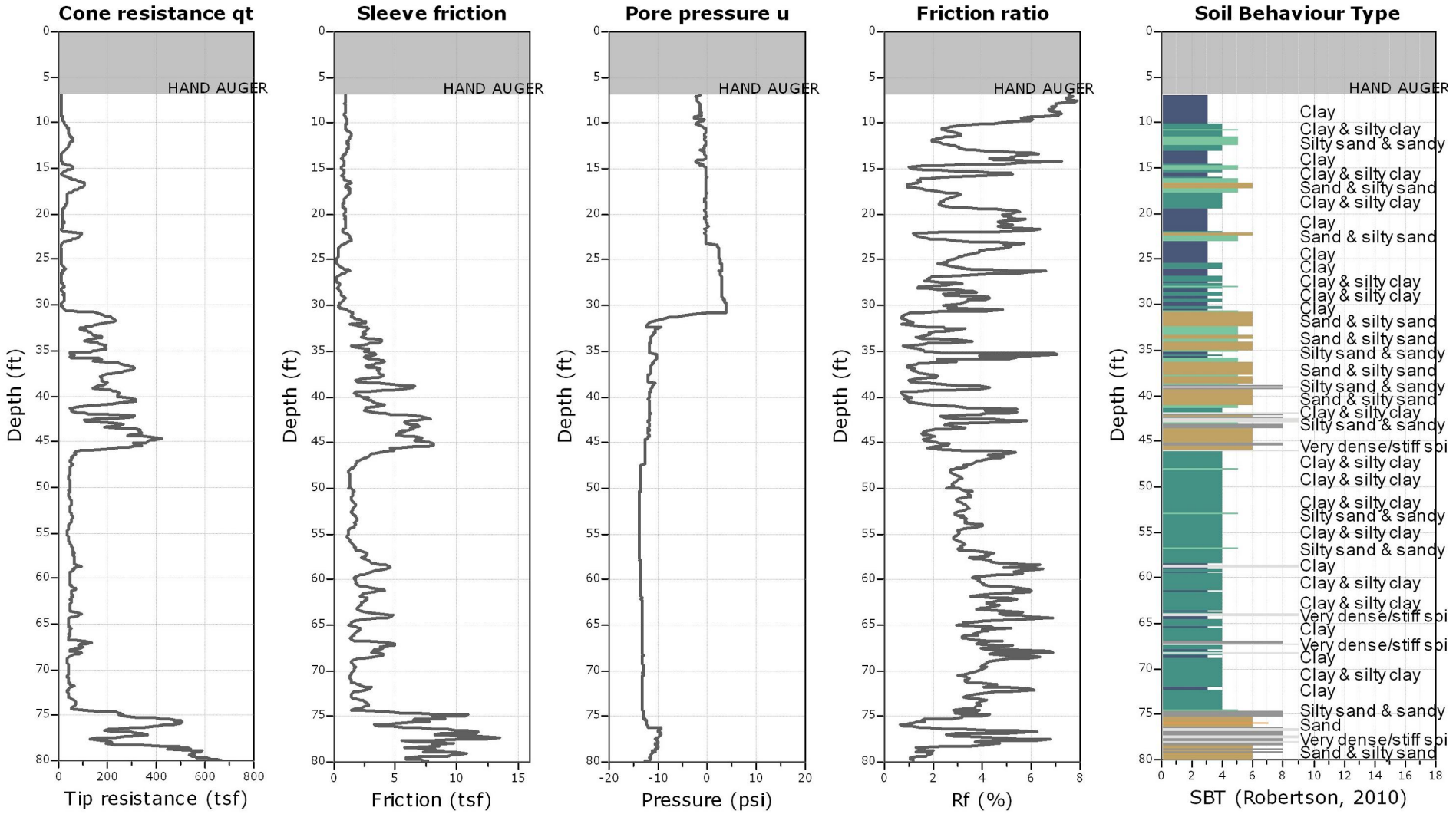

Figure B-18

Kehoe Testing and Engineering
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rich@kehoetesting.com
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CPT: T9-C18

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 80.75 ft, Date: 9/29/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

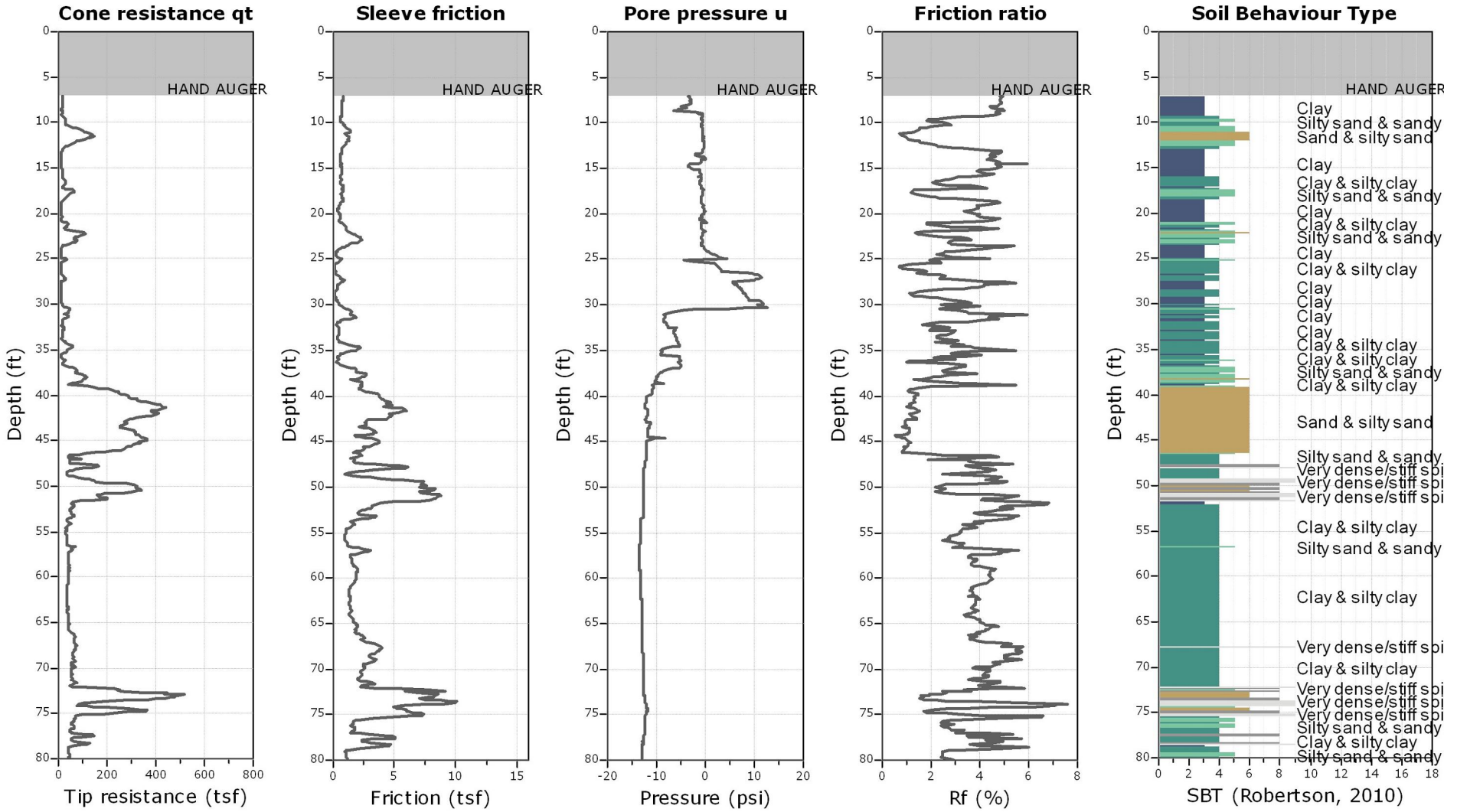

Figure B-19

Kehoe Testing and Engineering
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rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C19

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 98.31 ft, Date: 10/20/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

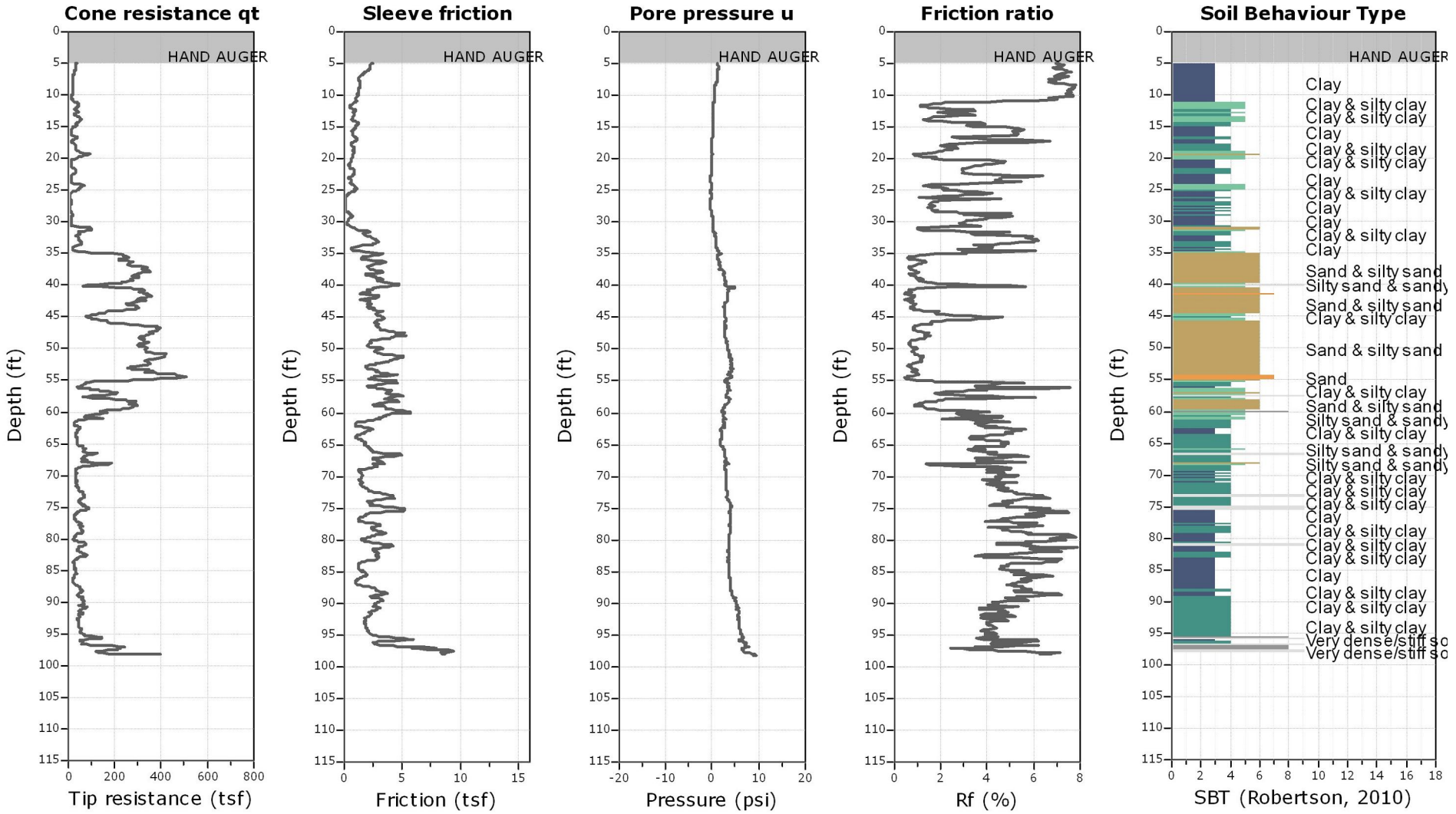

Figure B-20

Kehoe Testing and Engineering
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CPT: T9-C20

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 114.55 ft, Date: 10/21/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

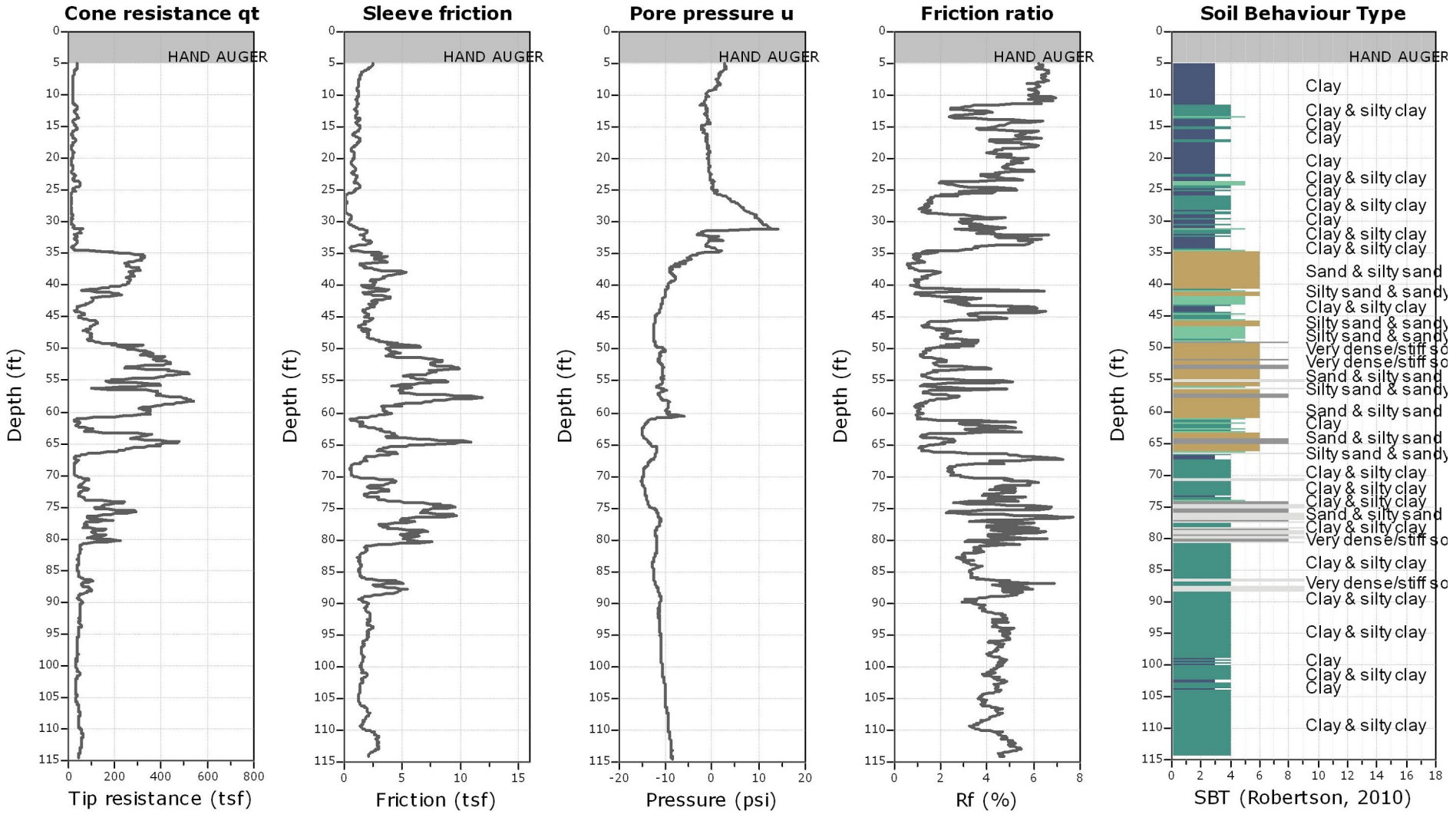

Figure B-21

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C21

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 49.44 ft, Date: 10/21/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

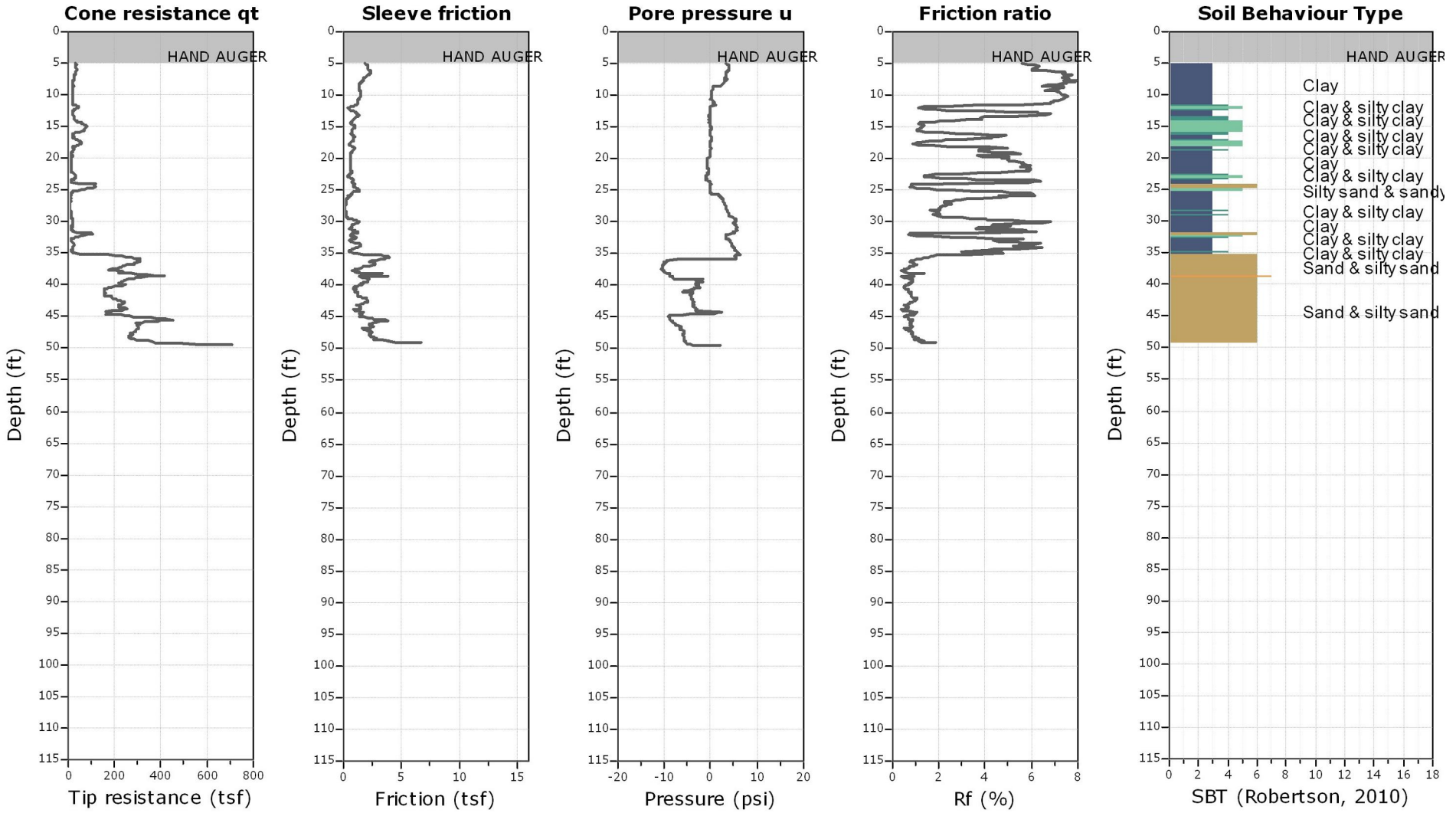

Figure B-22

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C21A

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 45.93 ft, Date: 10/21/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

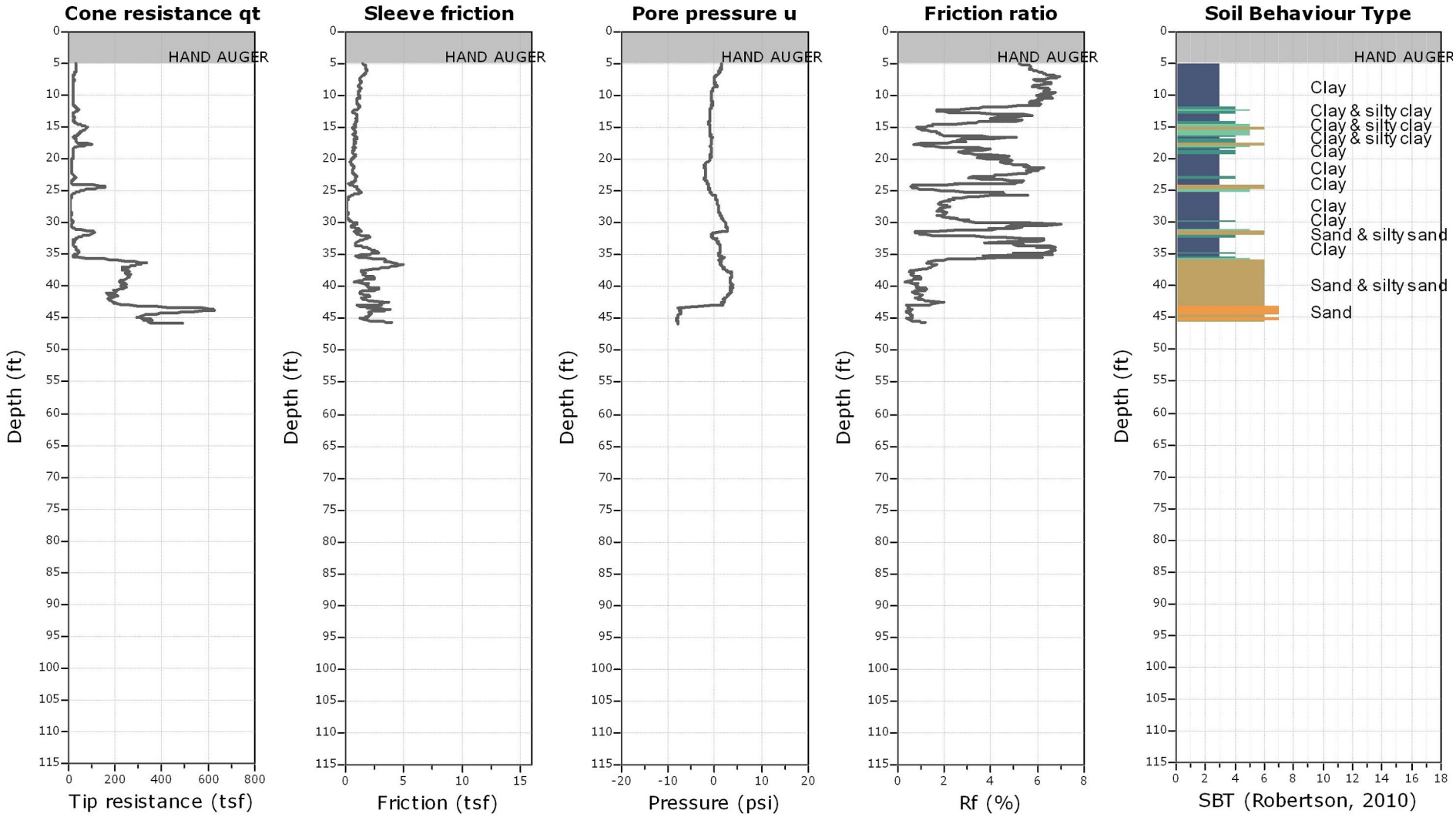

Figure B-23

Kehoe Testing and Engineering
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rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C22

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 110.50 ft, Date: 10/20/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

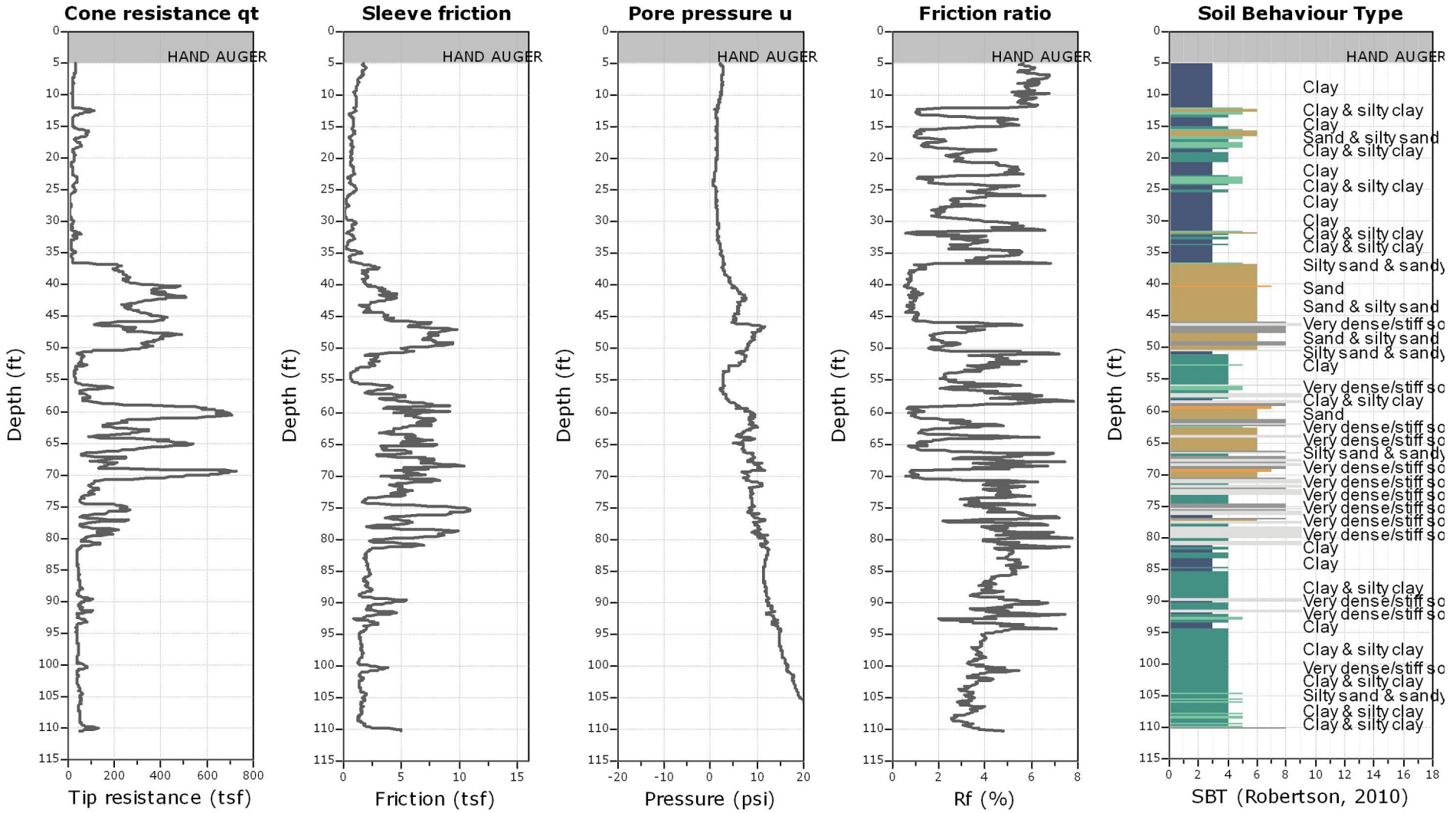

Figure B-24

Kehoe Testing and Engineering
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rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C22A

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 50.08 ft, Date: 10/20/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

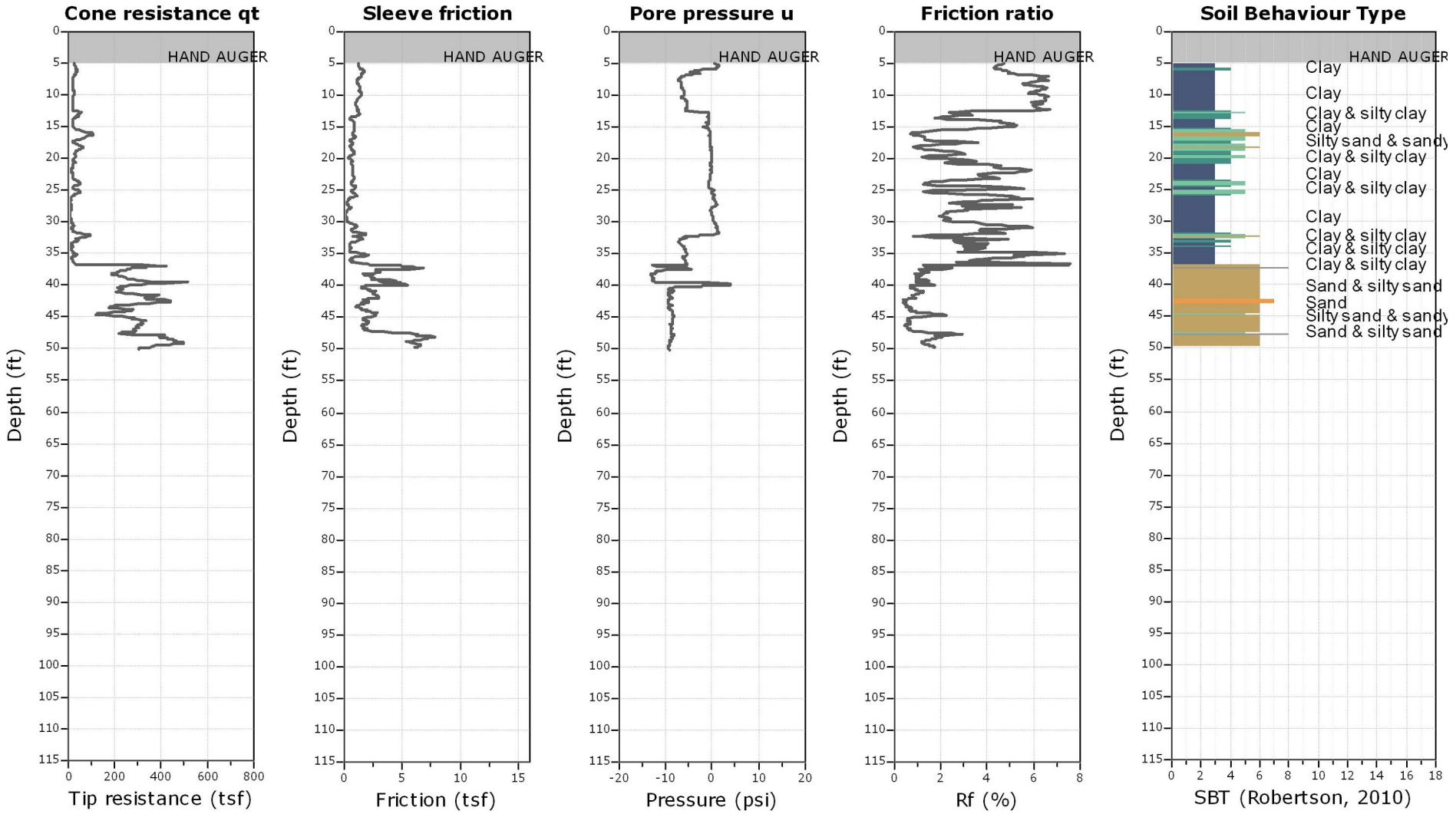


Figure B-25

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C23

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 102.93 ft, Date: 10/19/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

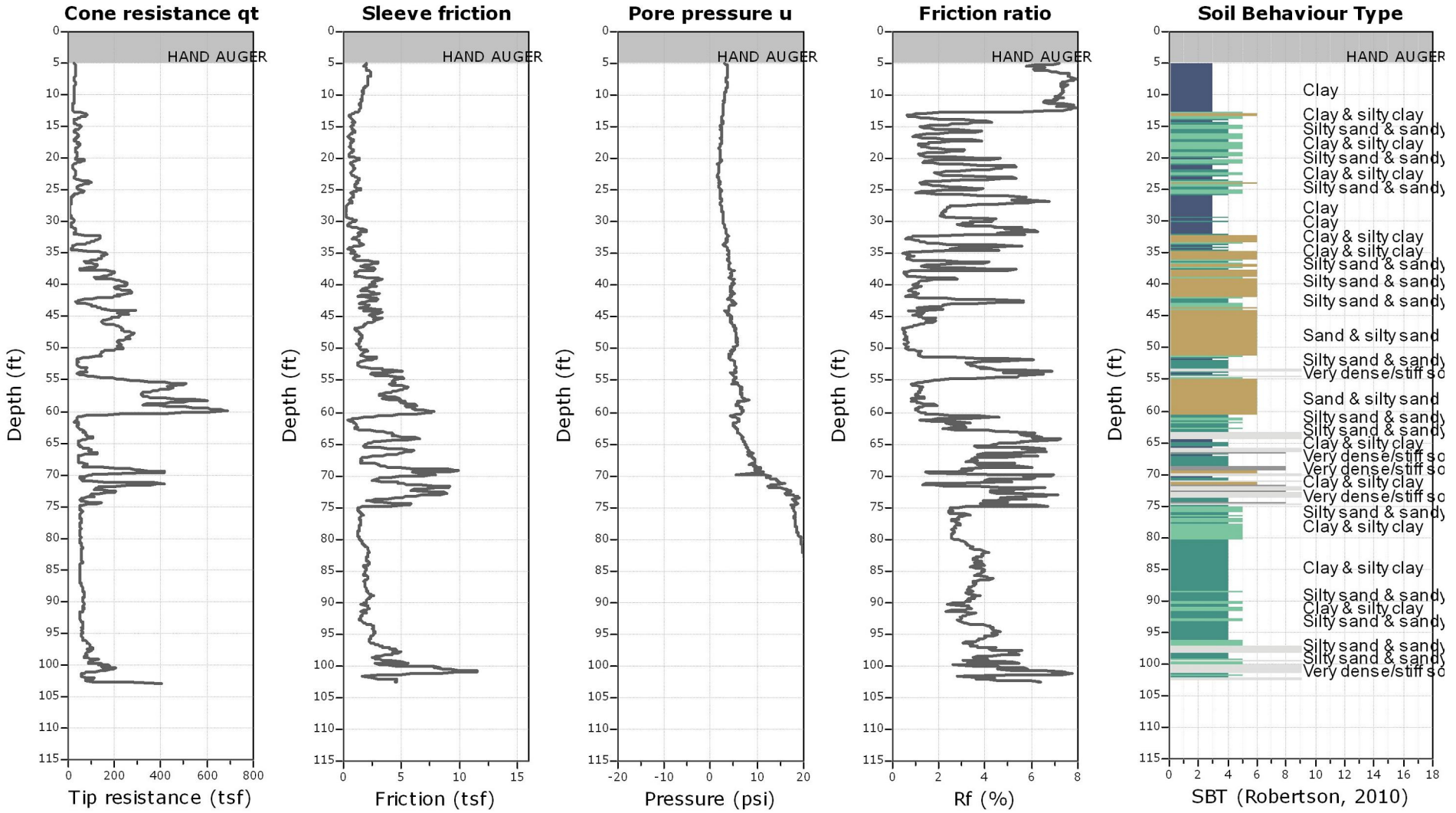


Figure B-26

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C24

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 91.89 ft, Date: 10/19/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

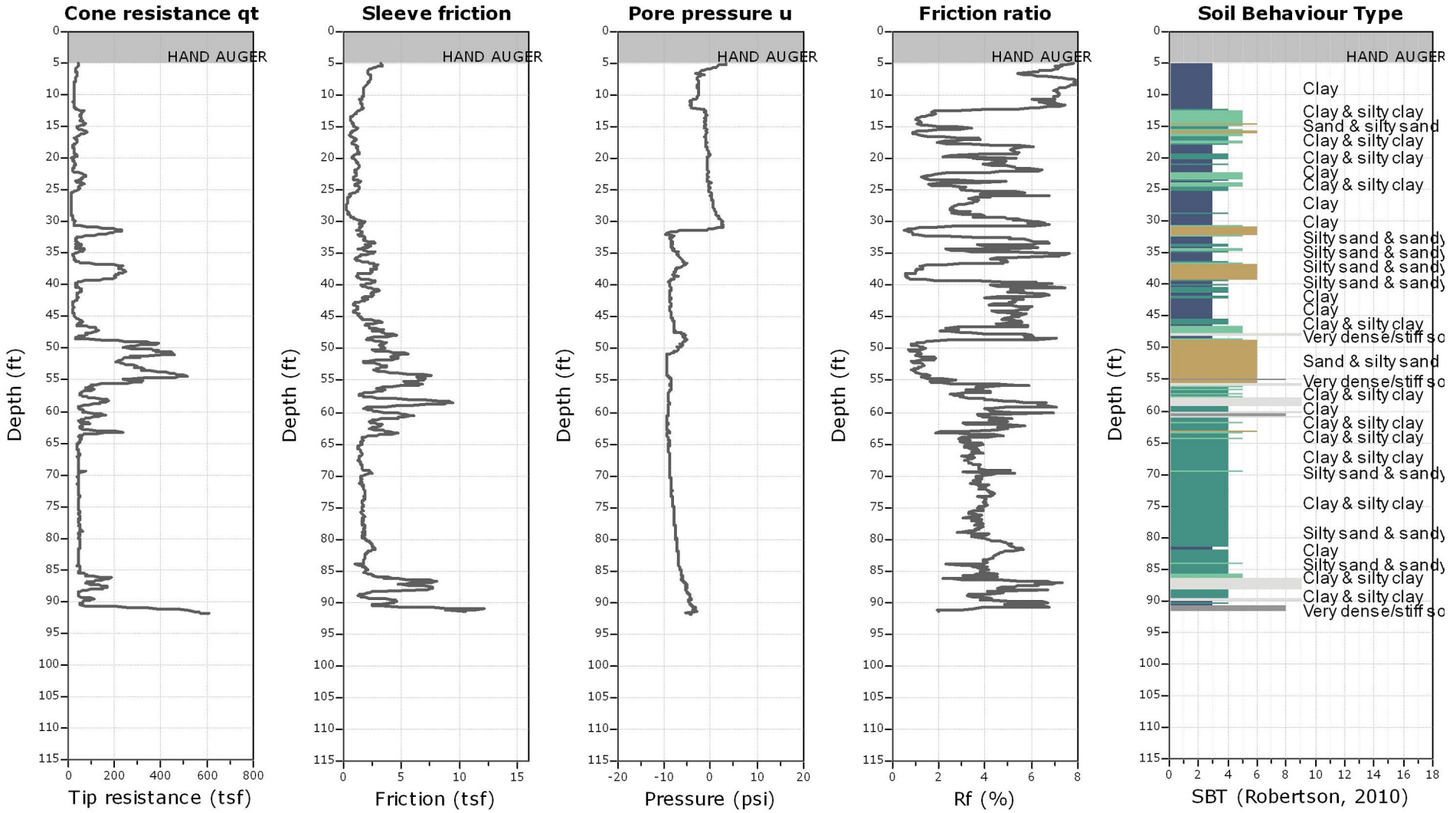


Figure B-27

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C25

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 94.51 ft, Date: 10/26/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

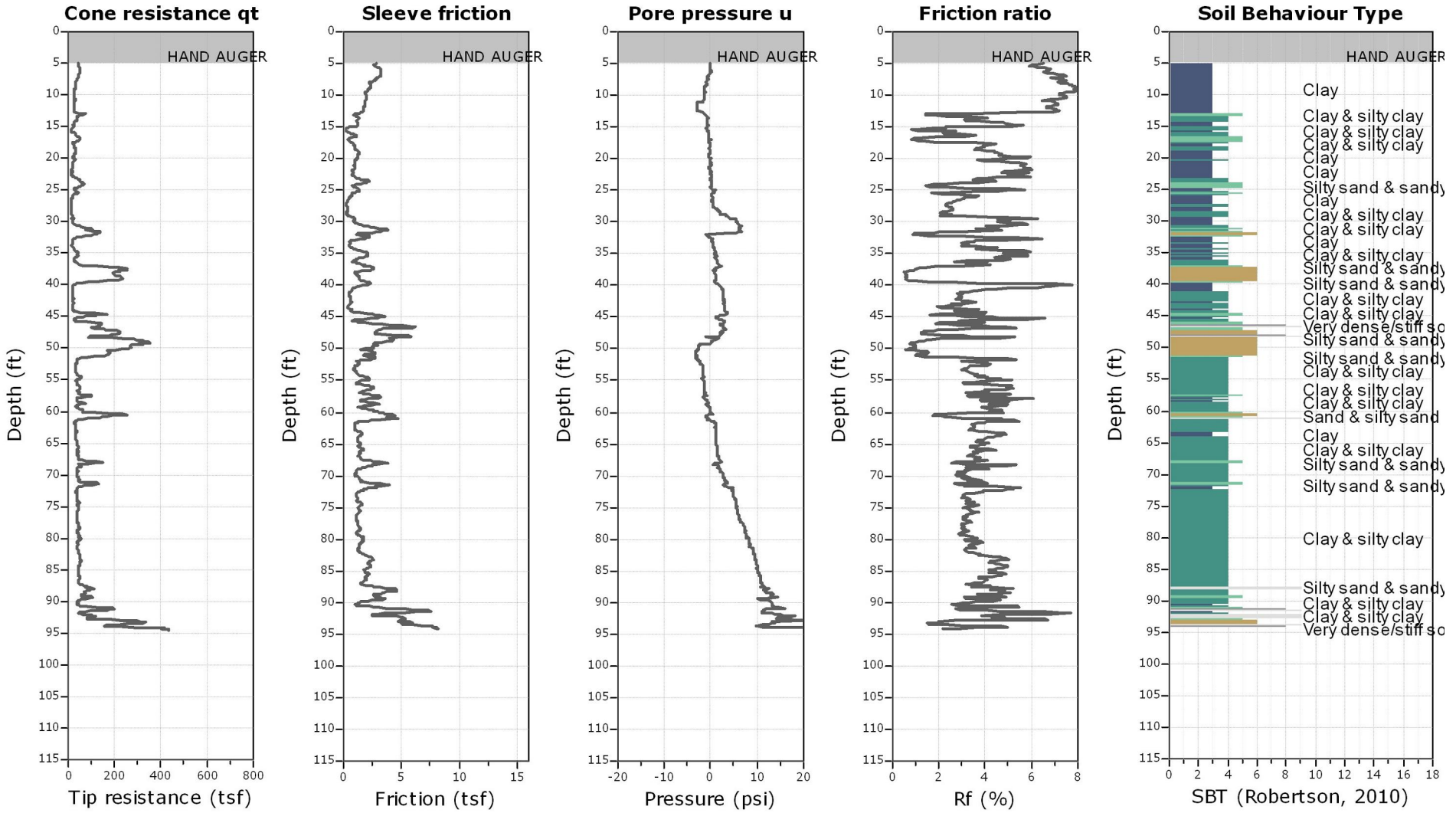


Figure B-28

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C26

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 96.14 ft, Date: 10/26/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

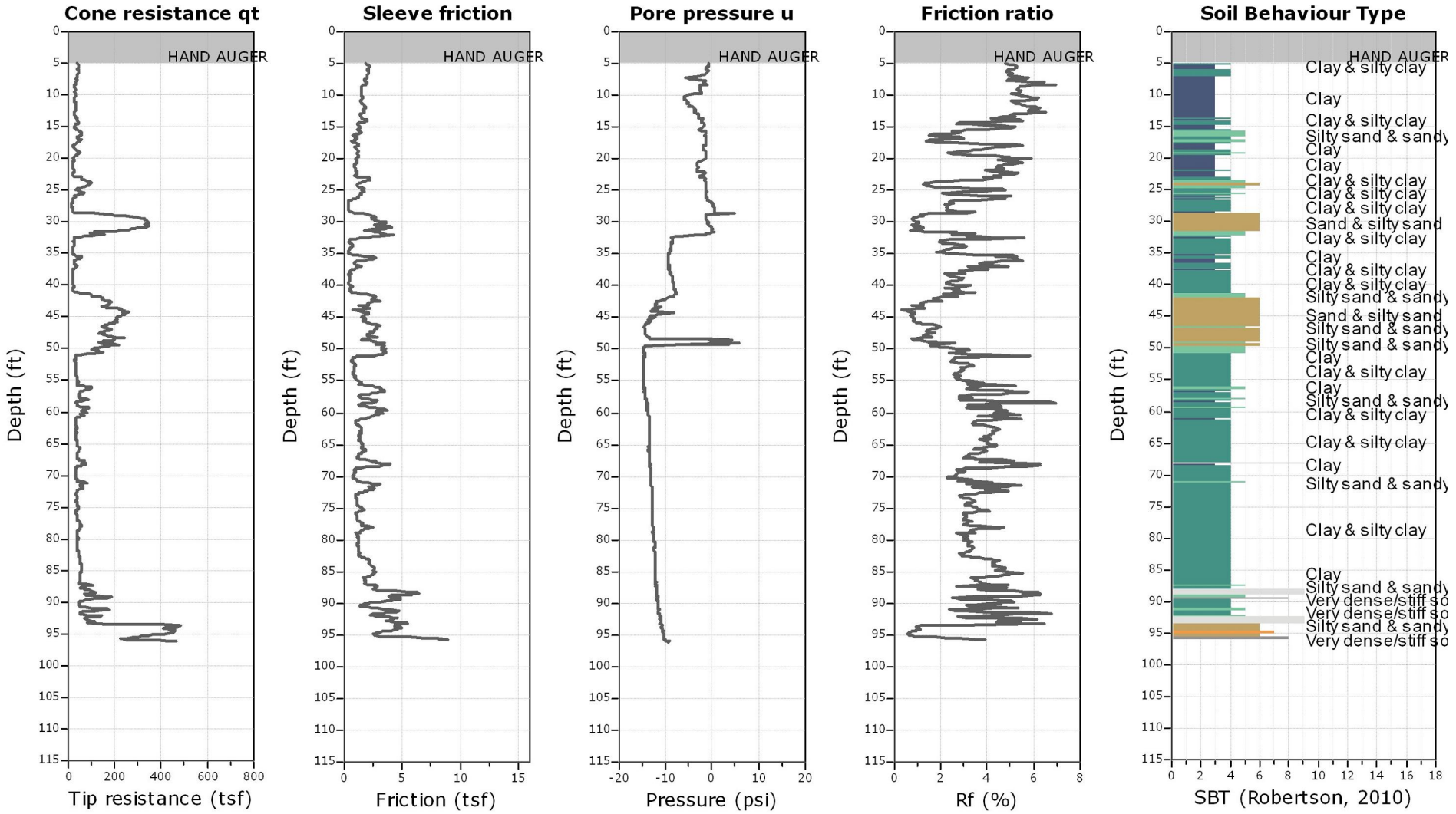


Figure B-29

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C27

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 117.31 ft, Date: 11/9/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

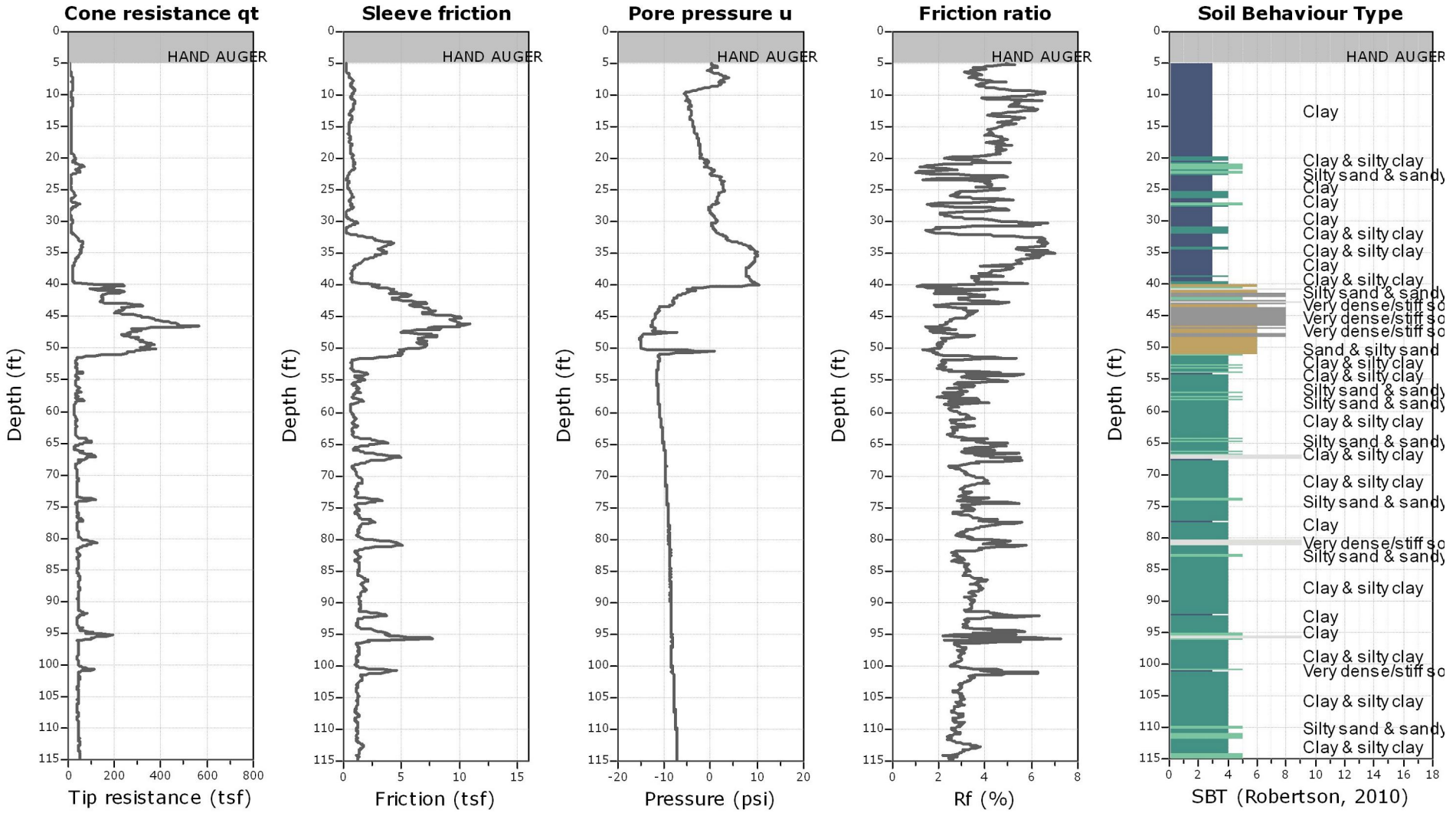


Figure B-30

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C28

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 112.09 ft, Date: 11/9/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

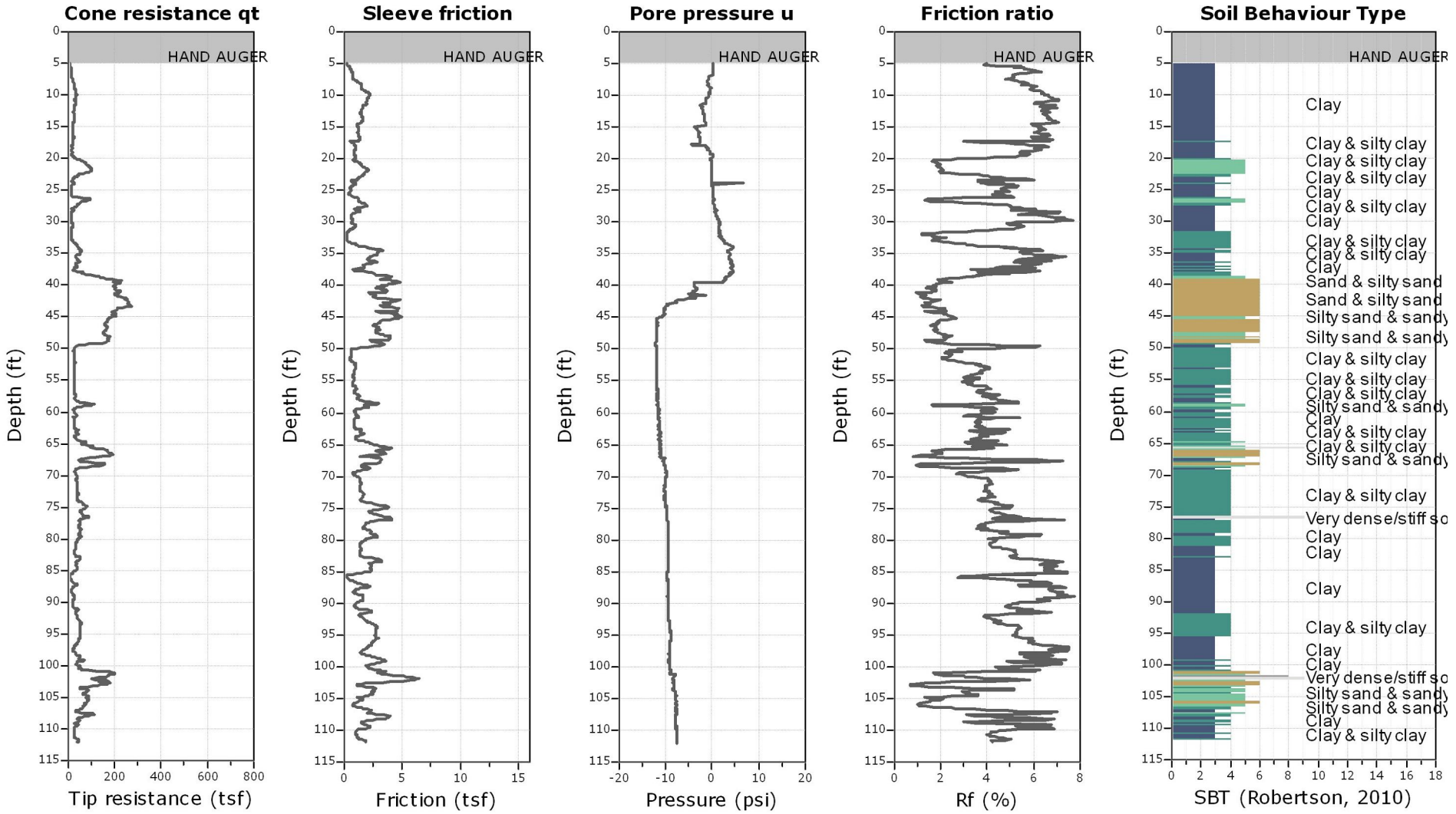


Figure B-31

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C29

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 96.98 ft, Date: 11/9/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

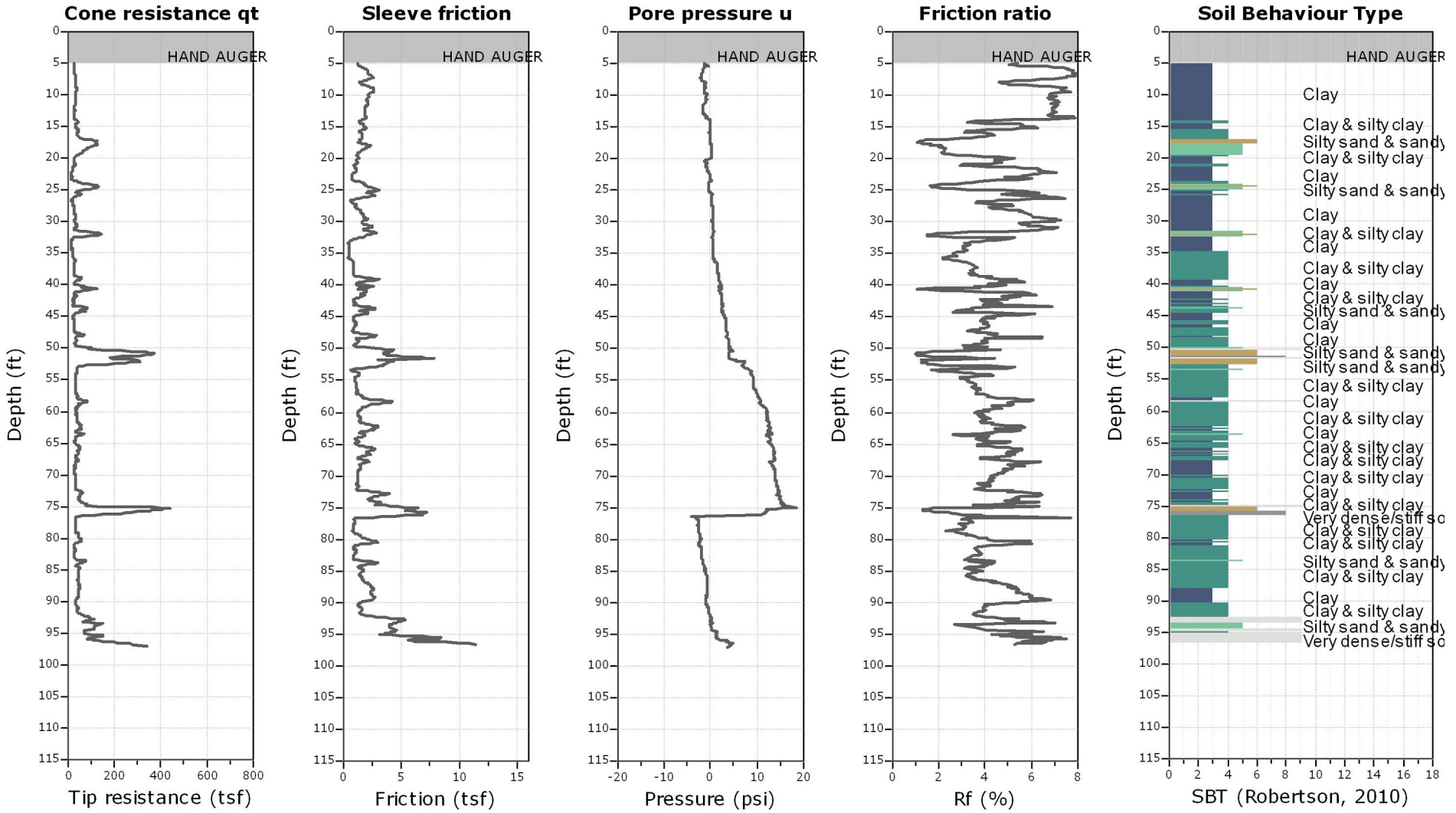


Figure B-32

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C30

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 95.63 ft, Date: 11/10/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

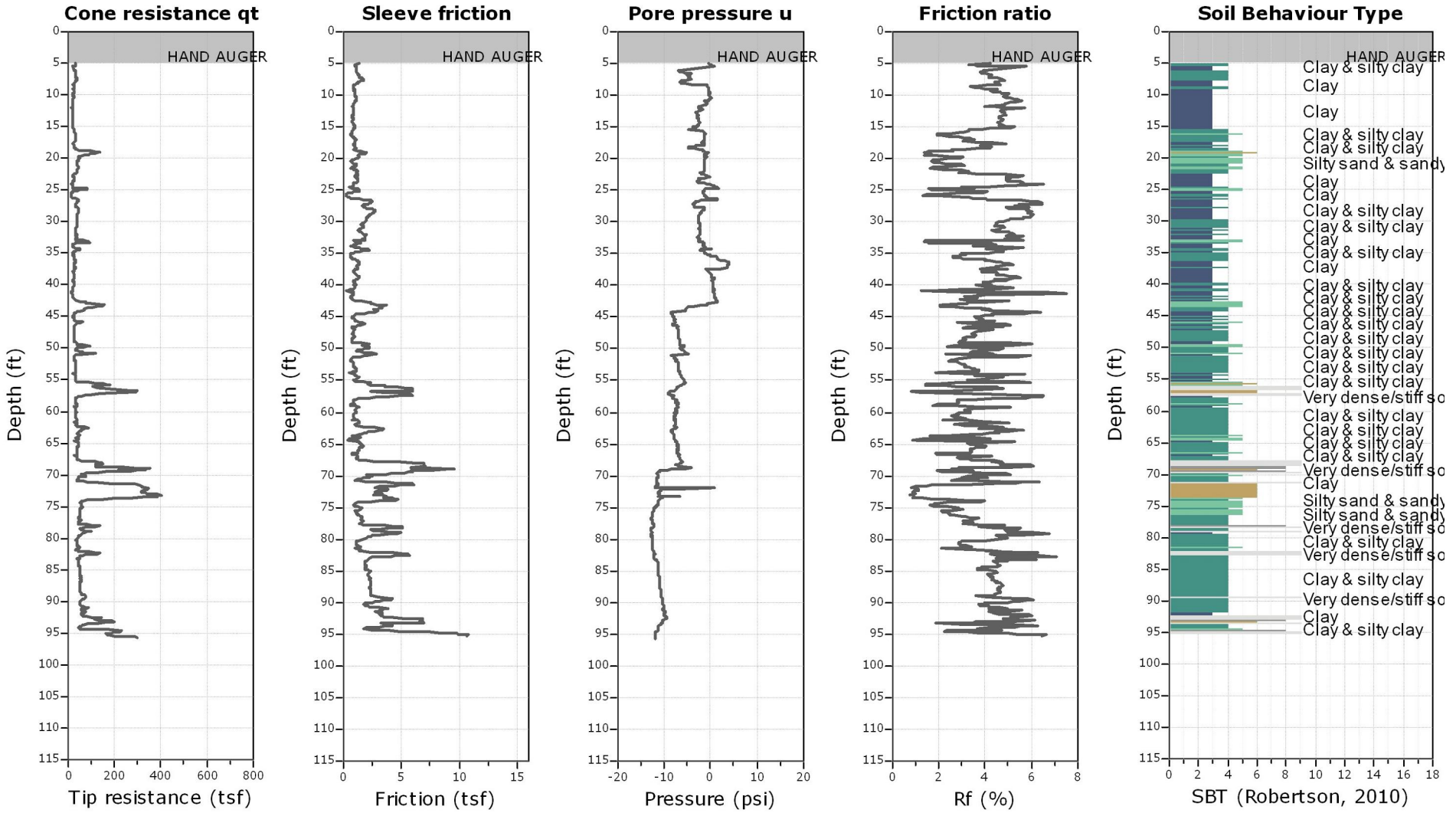


Figure B-33

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C31

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 97.74 ft, Date: 11/10/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

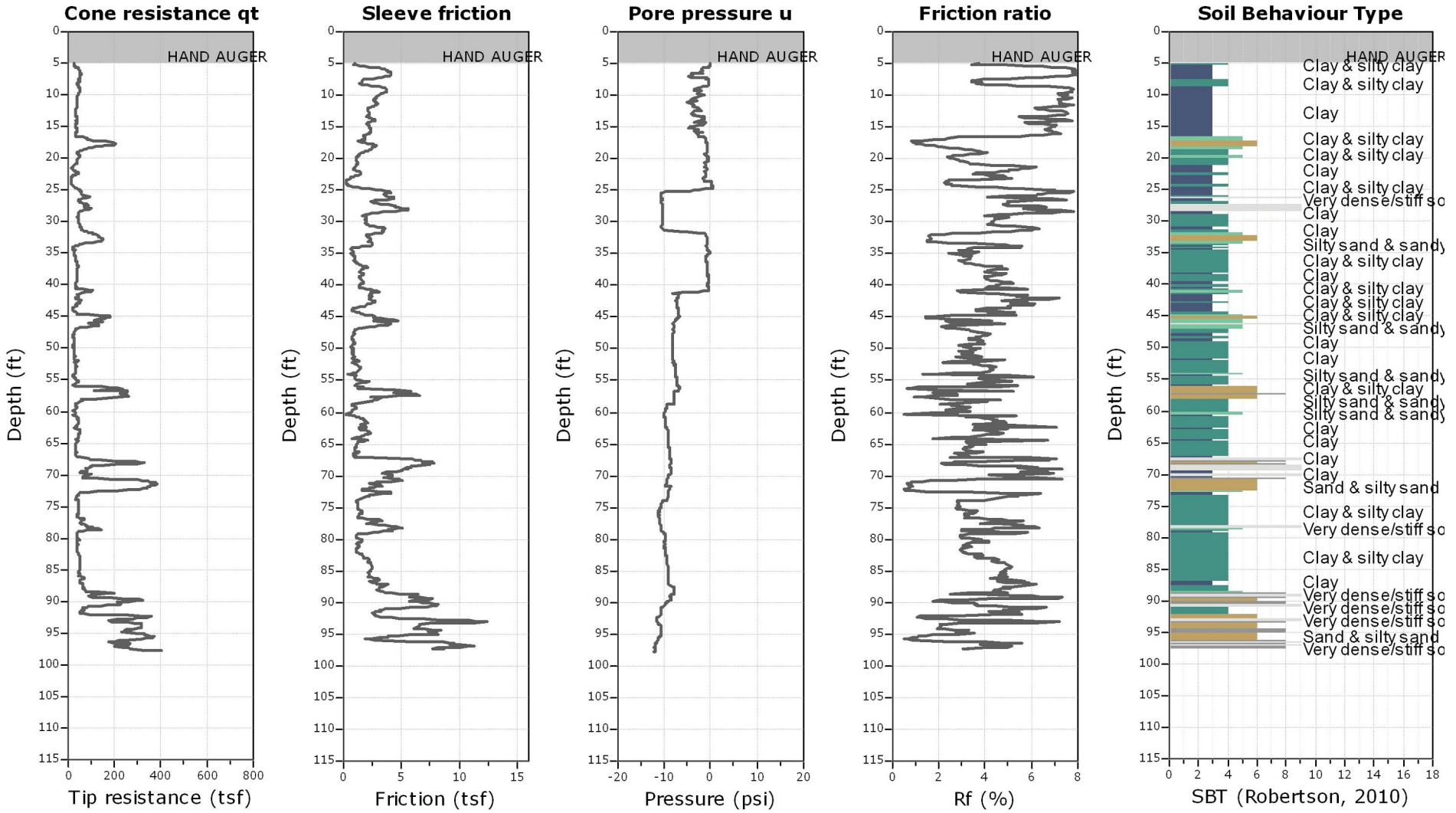


Figure B-34

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C32

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 98.62 ft, Date: 11/23/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

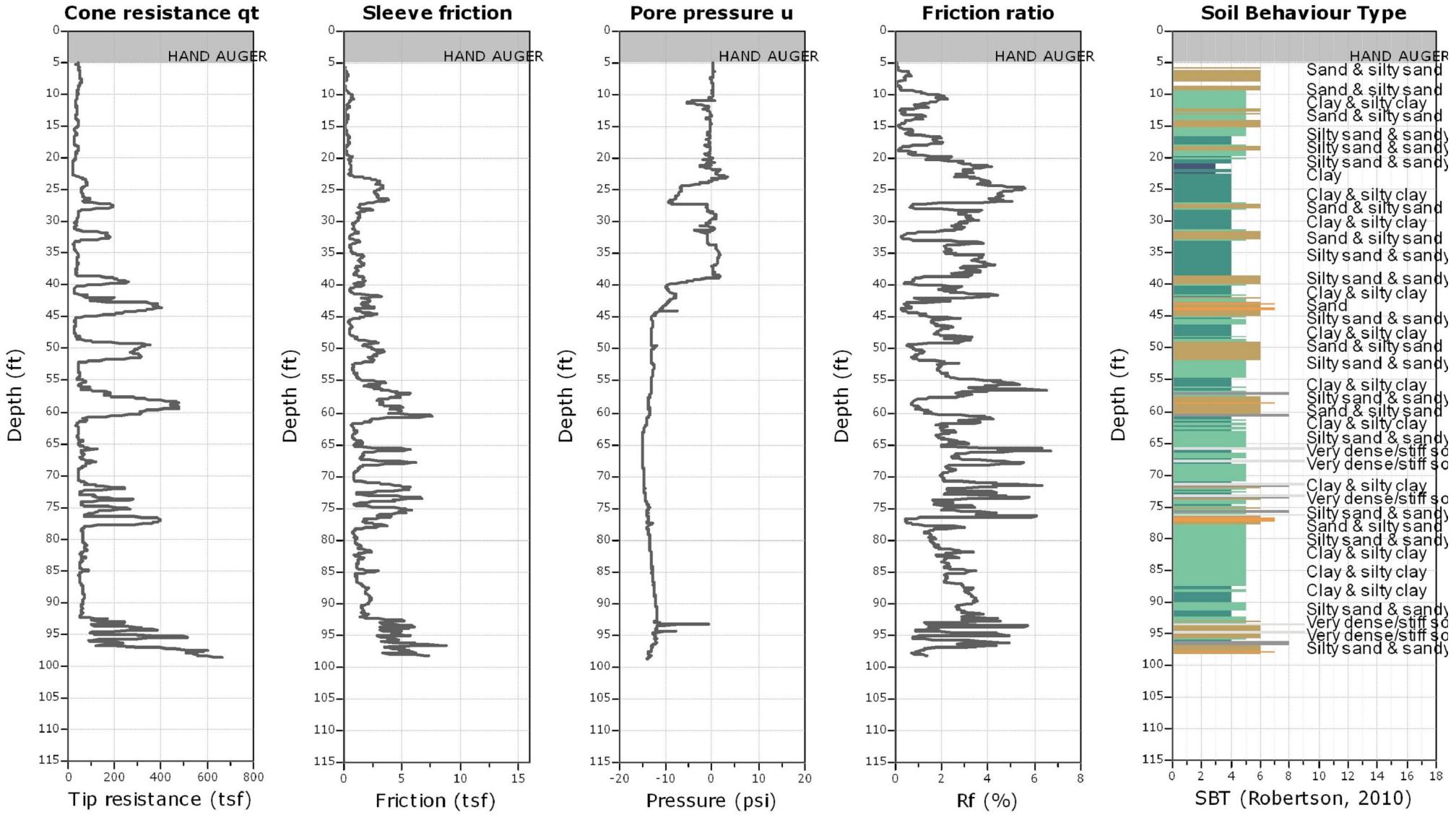


Figure B-35

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: T9-C33

Project: **AMEC Foster Wheeler/Westside Subway Extension (WSE) Mod 52**
Total depth: 100.21 ft, Date: 11/23/2015

Location: **S. Lasky Dr & Moreno Dr Beverly Hills, CA**
Cone Type: Vertek

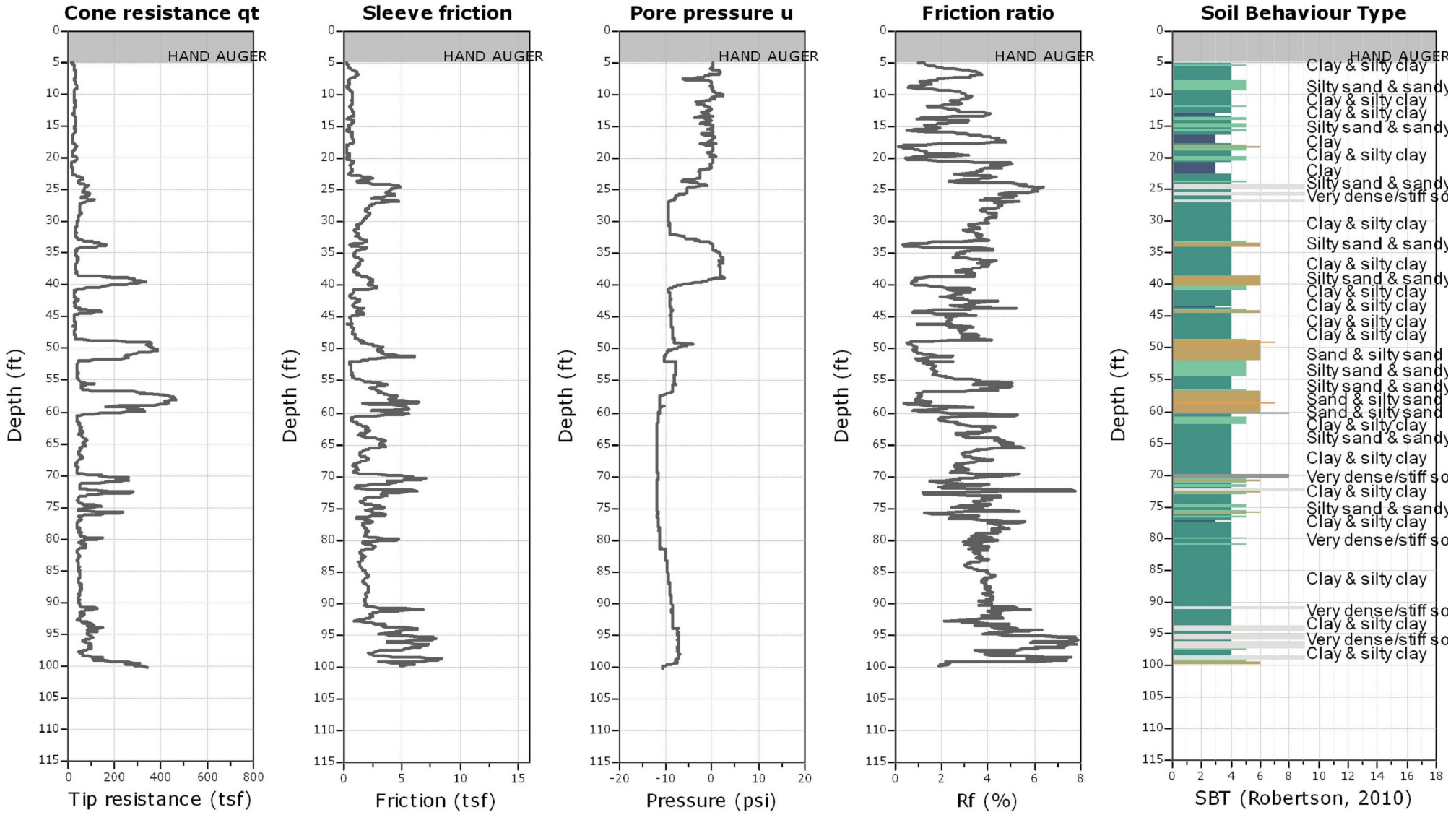


Figure B-36

APPENDIX C CARBON 14 TEST RESULTS

KECK CARBON CYCLE AMS FACILITY

EARTH SYSTEM SCIENCE DEPT, UC IRVINE

^{14}C results White/Rockwell Dec 17 2015

UCIAMS #	Sample name	Other ID	δ^{13}C (‰)	±	fraction Modern	±	D^{14}C (‰)	±	^{14}C age (BP)	±
166788	T9 B-11 19.1	.010mgC			0.3018	0.0230	-698.2	23.0	9620	620
166786	T9 B-11 19.8	.33mgC			0.3203	0.0011	-679.7	1.1	9145	30
166787	T9 B-11 23.1				0.3169	0.0011	-683.1	1.1	9230	30
166791	T9 B-17 23.3	.021mgC			0.0955	0.0141	-904.5	14.1	18900	1200
166785	T9 B-11 23.8	.015mgC			0.1277	0.0198	-872.3	19.8	16500	1300
166789	T9 B-9 29.9	.048mgC			0.2387	0.0052	-761.3	5.2	11510	180
166784	T9 B-11 31.2				0.2698	0.0012	-730.2	1.2	10525	35
166790	T9 B-7 31.8	.028mgC			0.1386	0.0096	-861.4	9.6	15880	560

Radiocarbon concentrations are given as fractions of the Modern standard, D^{14}C, and conventional radiocarbon age, following the conventions of Stuiver and Polach (Radiocarbon, v. 19, p.355, 1977).

Sample preparation backgrounds have been subtracted, based on measurements of ^{14}C-free calcite (carbonates) and wood (organics).

All results have been corrected for isotopic fractionation according to the conventions of Stuiver and Polach (1977), with d13C values measured on prepared graphite using the AMS spectrometer. These can differ from d13C of the original material, if fractionation ocurred during sample graphitization or the AMS measurement, and are not shown.

Comments:
The very large uncertanties for some of these results are due to a combination of age and very small sample sizes.
Sample T9 B-7 44.9 was not organic and was not run.

Figure C-1

KECK CARBON CYCLE AMS FACILITY

EARTH SYSTEM SCIENCE DEPT, UC IRVINE

^{14}C results White/Rockwell Feb 19 2016

UCIAMS #	Sample name	Other ID	δ^{13}C (‰)	±	fraction Modern	±	D^{14}C (‰)	±	^{14}C age (BP)	±
169100	T9 B-5 7.8				0.3694	0.0008	-630.6	0.8	8000	20
169101	T9 B-5 45.4 .25mgC				0.1701	0.0008	-829.9	0.8	14230	40
169102	T9 B-5 45.55				0.1710	0.0008	-829.0	0.8	14185	40
169103	T9 B-5 45.9 .23mgC				0.1250	0.0009	-875.0	0.9	16710	70
169104	T9 B-17 21.2 .14mgC				0.3203	0.0015	-679.7	1.5	9145	40
169105	T9 B-17 48.45 .050mgC				0.0439	0.0061	-956.1	6.1	25100	1100
169106	unmarked .017mgC				0.1323	0.0175	-867.7	17.5	16300	1100

Radiocarbon concentrations are given as fractions of the Modern standard, D^{14}C, and conventional radiocarbon age, following the conventions of Stuiver and Polach (Radiocarbon, v. 19, p.355, 1977).

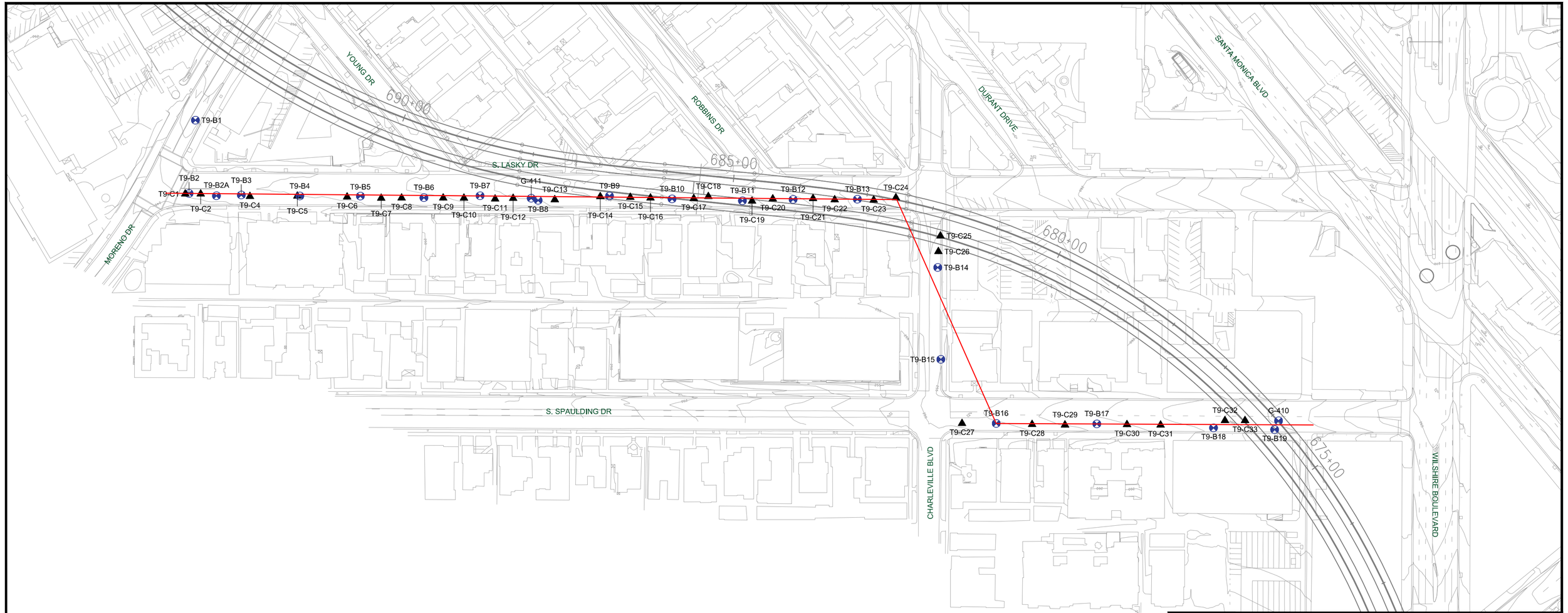
Sample preparation backgrounds have been subtracted, based on measurements of ^{14}C-free calcite (carbonates) and wood (organics).

All results have been corrected for isotopic fractionation according to the conventions of Stuiver and Polach (1977), with d13C values measured on prepared graphite using the AMS spectrometer. These can differ from d13C of the original material, if fractionation ocurred during sample graphitization or the AMS measurement, and are not shown.

Comments:
The very large uncertanty for the T9 B-17 48.45 result is due to a combination of age and very small sample size.
Sample T9 B-11 23.7 was too small after pretreatment and could not be measured

Figure C-2

PLATES



amec foster wheeler
Amec Foster Wheeler
Environment & Infrastructure, Inc.
6001 Rickenbacker Road
Los Angeles, CA 90040
Phone (323) 889-5300
Fax (323) 721-6700

WESTSIDE PURPLE LINE EXTENSION
ADVANCED PRELIMINARY ENGINEERING

BORING AND CPT LOCATION MAP TRANSECT 9

LT.LNG:	
PREPARED BY:	VMN
SCALE:	1" = 100'
DRAWN:	RM
CHKD:	RM
DATE:	4/11/2016

PLATE NO. 1

PROJECT NO: 4953-11-1423

Path: G:\4953_Geotech\2011111423 Westside - Post AP\EIC\ADDWG\Fault-Profiles\4953-11-1423_Fig-1_Transect-9_ Bing CPT Plan.dwg [B-17x11]
Date: April 11, 2016 2:42pm By: rmcgwynn

Transect 9

EXPLANATION

Af	ARTIFICIAL FILL
Qal	ALLUVIAL DEPOSITS
Qlw	LAKEWOOD FORMATION
Qsp	SAN PEDRO FORMATION
— — —	APPROXIMATE GEOLOGIC CONTACT
— — (red)	APPROXIMATE FAULT LOCATION
T9-B13	BORING NUMBER AND LOCATION
T9-C33	CPT NUMBER AND LOCATION
▽	GROUNDWATER ENCOUNTERED IN BORING
9,620	CARBON 14 DATE

CPT Data:

Sleeve Stress — Tip Stress

(tsf)

GROUP SYMBOLS AND NAMES	
Graphic/Symbol	Group Names
GW	Well-Graded Gravel
GP	Poorly Graded Gravel
GW-GM	Well-Graded Gravel with Silt
GW-GC	Well-Graded Gravel with Clay and (or Silty Clay)
GP-GM	Poorly Graded Gravel with Silt
GP-GC	Poorly-Graded Gravel with Clay (or Silty Clay)
GM	Silty Gravel

GROUP SYMBOLS AND NAMES	
Graphic/Symbol	Group Names
GC	Clayey Gravel
GC-GM	Silty, Clayey Gravel
SW	Well-Graded Sand
SP	Poorly Graded Sand
SW-SM	Well-Graded Sand with Silt
SW-SC	Well-Graded Sand with Clay (or Silty Clay)
SP-SM	Poorly Graded Sand with Silt

GROUP SYMBOLS AND NAMES	
Graphic/Symbol	Group Names
SP-SC	Poorly Graded Sand with Clay (or Silty Clay)
SM	Silty Sand
SC	Clayey Sand
SC-SM	Silty, Clayey Sand
CL	Lean Clay
CL-ML	Silty Clay
ML	Silt

GROUP SYMBOLS AND NAMES	
Graphic/Symbol	Group Names
CH	Fat Clay
MH	Elastic Silt

VERTICAL SCALE: 1" = 20'-0"

HORIZONTAL SCALE: 1" = 40'-0"

Amec Foster Wheeler
Environment & Infrastructure, Inc.
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Los Angeles, CA 90040
Phone (323) 889-5300
Fax (323) 721-6700

WESTSIDE PURPLE LINE EXTENSION
ADVANCED PRELIMINARY ENGINEERING

LT,LNG:	
PREPARED BY:	VMN
SCALE:	V: 1"=20' H: 1"=40'
DRAWN:	RM
CHKD:	RM
DATE:	11/16/2016

TRANSECT 9
PROFILE

PLATE NO. 2

PROJECT NO. 4953-11-1423