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**Existing Geotechnical Boring Logs
The Earth Technology Corporation, 1987c**

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APPENDIX C
SITE BORING LOGS

BOREHOLE LOG

METRO RAIL TRANSIT

Project Name: _____
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-201 Sheet 1 of 2

Borehole Location: Traffic Island off 101 Fwy		Elevation and Datum: 277.4 feet	
Drilling Agency: DRILL LINE	Driller: Gregg DeLuca John Hale	Date Started: 1-8-87	Date Finished: 1-8-87
Drilling Equipment: B-53		Completion: 46.5	Rock Depth: (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 6	Dist.: 6 Core:
Borehole Size: 8 Inch		Water Depth (ft): 29	First: 24 hrs.
Type of Perforation Backfill: None		Logged By: Sharon Lagas	
Type of Seal: 5% Bentonite Cement Grout		Checked by: Barbara Fontes	

Depth (feet)	Description	Graphic Log		Samples				Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	Drilling Rate/Time	
	Dry, dark brown, silty fine to medium size grain sand with some small gravel	SM					9:30	Baseline OVA reading at 2 ppm. Traffic island has been disturbed during freeway construction OVA Readings at Baseline
5-6.5'	Same as above with small chips of brick	SM	1	1	Z	12/26/26	10:00	
7'	Hit debris (possibly brick)							
10-11.5'	Dry, dark brown, silty, fine to medium size sand	SM	1	2	Z	18/22/32	10:08	OVA Readings at Baseline
15-16.5'	Dry, brown to light brown silty sand with gravel	SM	-	3	Z	14/9/7	10:13	OVA Readings at Baseline No recovery for OVA
20'	No recovery-cobble, gravel		-			NOTE	10:20	OVA Readings at Baseline
25'	No recovery - 5" chunk of concrete		-			NOTE	10:30	Possibility of disturbed soil to 25 ft. OVA readings at Baseline
	Groundwater encountered at approximately 29 feet							

BOREHOLE LOG

Project name: METRO RAIL TRANSIT

Project Number: 87-600-0033 Field Log of Borehole Number: BH-201 Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
30-31.5'	Wet, gray, fine to medium size sand	SP	70	4	16/32/37	10:37	OVA Readings at Baseline, sample has oily film and slight oily odor with sheen
35-36.5'	Wet, gray, medium to coarse grained sand	SP	-	5	10/22/50	10:54	OVA Readings at Baseline No recovery for OVA
40'	No recovery - cobble, gravel	-	-	-	50/6"	11:04	
45-46.0'	Wet, dark gray, fine to medium size sand	SP	8	6	5/50	11:18	OVA Readings at Baseline
46.5'	Hit boulder End Hole					11:25	Collected water samples
55'	Note: On this and all logs that follow, there are missing blow counts at some sampling intervals. In those cases, blow counts were not recorded due to other demands on personnel time.						

BOREHOLE LOG

METRO RAIL TRANSIT

Project Name: _____
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-202 Sheet 1 of 2

Borehole Location: Traffic Island off 101 FWY		Elevation and Datum: 277.3 ft	
Drilling Agency: DRILL LINE	Driller: Gregg DeLuca John Hale	Date Started: 1/8/87	Date Finished: 1/8/87
Drilling Equipment: B-53		Completion: 50	Rock Depth: (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 8	Dist.: 8 Core:
Borehole Size: 8 Inch		Water Depth (ft): 29	First: 24 hrs. Compl.:
Type of Perforation Backfill: None		Logged By: Sharon Lagas Checked by: Barbara Fontes	
Type of Seal: 5% Bentonite Cement Grout			

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
	Dry, dark brown, silty fine to medium size sand with gravel. Hit concrete @ 1'	SM Fill					1:30 Baseline OVA Reading @2 ppm
5-6.5'	Dry, light brown, fine to medium size sand with some silt	SM	2	1	8/12/13	1:40	OVA Readings at Baseline
10-10.5'	Dry, brown, silty, fine to medium size sand with clay	SC	1	2	8/4/16	1:45	OVA Reading at Baseline
10.5-11.5'	Dry, light brown, medium to coarse grained sand with gravel	SP					
15-16.5'	Dry, light brown, medium to coarse sand with gravel	SP	4	3	23/40/25	1:50	OVA Readings at Baseline
17.5'	Hit cobble						
20-21.0'	Same as above						
		SP	2	4	28/50	1:58	OVA Readings at Baseline, oily film on sand
25-25.5'	Dry, light brown, medium to coarse sand which grades into a brown-gray silty clay	SP/CL	6	5	14/23	2:06	OVA Readings at Baseline
25.5-26.0'	Moist, brown-gray, medium to coarse sand Groundwater encountered at approximately 29 feet	SP					

BOREHOLE LOG

METRO RAIL TRANSIT

Project name: _____
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-202 Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
30-31.5'	Wet, gray, medium to coarse grained sand	SP	16	6	△	13/35/ 50	2:15 OVA Readings at Baseline
35'	No Recovery	-	-	-	-	8/16/ 40	2:20
40-41.5'	Wet, gray, medium to coarse grained sand	SP	10	7	△	8/16 47	2:28 OVA Readings at Baseline
45'	Hit boulder						
45.5'-46.5'	Wet, dark gray, fine to medium size sand	SP	-	8	△	30/50	2:42 OVA Readings at Baseline No recovery for OVA
50'	Hammer broke, ended hole						3:15 No water sample

BOREHOLE LOG

Project Name: METRO RAIL TRANSIT
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-203 Sheet 1 of 2

Borehole Location: Traffic Island off 101 FWY		Elevation and Datum: 276.5 ft	
Drilling Agency: DRILL LINE	Driller: Gregg Deluca John Hale	Date Started: 1/14/87	Date Finished: 1/14/87
Drilling Equipment: B-53		Completion: 60	Rock Depth: (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 5	Dist.: 5 Undist.: 5 Core:
Borehole Size: 8 Inch		Water Depth (ft): 30	First: 24 hrs. Compl.:
Type of Perforation Backfill: None		Logged By: Sharon Lagas Checked by: Barbara Fontes	
Type of Seal: 5% Bentonite Cement Grout			

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
0-5'	Dry, brown, silty fine to medium size sand - at 6" hit old brick and large boulder	SM					10:00 OVA not working
5'	Same as above with gravel and cobble - no sample collected	FILL			Note		No sample collected, augers grinding on gravel and cobble
7'	Broke through gravel	---					Black brown color soil
10-11.5'	Dry, black-brown, fine to medium sand and silt with small wood fragments	SM		1		15/19 26	10:51 Soil becomes brown in color and fluffy in texture
15-16.5'	Dry, brown, medium to coarse grained sand with gravel	SP		2		10/10 8	11:00
20'	No recovery				Note		Hammer sticking so drilling another 5 feet
25-25.5'	Dry, light brown, medium to coarse grained sand with gravel	SP		3	Note		11:21 Only 6" of sample due to sampler falling at an angle. Sampler hitting against the auger
30'	Groundwater encountered at approx. 30 feet						

BOREHOLE LOG

Project name: METRO RAIL TRANSIT

Project Number: 87-600-0033 Field Log of Borehole Number: BH-203 Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks	
		Lithology	QVA (ppm)	Number	Type	Blow Count		Drilling Rate/Time
30-30.5'	Wet, brown, coarse grained sand and gravel	SP		4		50/6"	1:30	
32.5'	Small Cobble, large gravel	GP						
35-35.7'	Wet, gray, medium to coarse grained sand	SP		5		39/50 for 2"	1:43	Slight oily odor, only 8-10" of sample, rest was slough
39'	Small Cobble, large gravel (about 2 in.)	GP						
40'	No recovery - Possibly cobble and gravel*			-		Note	12:00	Hammer sticking
45'	No recovery - Possibly cobble and gravel*			-		Note	1:11	Hammer sticking- cannot sample without hammer getting stuck so continuing on to 60 feet
50'	No recovery - Possibly cobble and gravel*			-		Note	12:17	
55'	No recovery			-		Note		Hitting cobbles
60'	Wet, gray, medium to coarse grained sand with slight hydrocarbon odor coming up from augers 60' End hole						12:33	Appears to be predominantly slough Collected water samples
65'								
70'								

*Augers bringing up slough from upper portion of borehole.

BOREHOLE LOG

METRO RAIL TRANSIT

Project Name: _____
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-204 Sheet 1 of 2

Borehole Location: Old Center St. (b/t Aliso & Comm.)		Elevation and Datum: 275.4 ft	
Drilling Agency: DRILL LINE	Driller: Gregg DeLuca John Hale	Date Started: 1/12/87	Date Finished: 1/12/87
Drilling Equipment: B-53		Completion: 61.5	Rock Depth: (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 6	Dist.: 6 Core:
Borehole Size: 8 Inch		Water Depth (ft): 30	First: 24 hrs. Compl.:
Type of Perforation Backfill: None		Logged By: Barbara Fontes Checked by: Sharon Lagas	
Type of Seal: 5% Bentonite Cement Grout			

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
0-5'	Asphalt, concrete debris Dry, dark brown, silty fine to medium size sand	SM					7:30 Baseline OVA Reading at 4 ppm
5-8'	5' Same as above	SM		-			No samples collected
8-10'	8-9' Moist clayey sand	SC					
10-15'	10-11.5' Dry, brown, silty, fine to medium size sand	SM	2	1	8/15/11	8:00	OVA Readings @ baseline
15-20'	15-15.5' Same as above	SM	4	2	18/6"	8:10	Collected only OVA sample. Hit large object-refusal. Sampler is not penetrating
20-25'	20-21.5' Dry, brown, medium to coarse grained sand with fragmented gravel and small cobbles	SP	4	3	39/50/49	8:17	OVA readings @ baseline
25-30'	25-25.5' Same as above Groundwater encountered at approx. 30 feet	SP	160	4	25/6"	8:25	Soil has hydrocarbon odor. OVA values recorded at 160 ppm

BOREHOLE LOG

METRO RAIL TRANSIT

Project name: _____
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-204 Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
30-31.0'	Wet, gray, coarse grained sand	SP	-	5		20/50	No OVA recovery
35-36.5'	Same as above	SP		6		Note	
38.5'	Cobble, gravel						
40'	No recovery - cobble, gravel			-		Note	8:59 OVA reading 2 ppm Hole has slight creosote odor (40 to 60 feet)
45'	No recovery - cobble, gravel			-		Note	
50'	No recovery - slough			-		Note	Augers contained approx. 4 feet of slough
55'	No recovery			-		Note	
60'	Wet, gray, coarse grained sand End Hole	SP	>1000	-		8/11/16	9:44 10:01 Collected water samples, not enough recovery for soil samples

BOREHOLE LOG

METRO RAIL TRANSIT

Project Name: _____

Project Number: 87-600-0033 Field Log of Borehole Number: BH-205 Sheet 1 of 2

Borehole Location: Commercial and Center St., West		Elevation and Datum: 274.7 ft	
Drilling Agency: DRILL LINE	Driller: Gregg DeLuca John Hale	Date Started: 1/13/87	Date Finished: 1/13/87
Drilling Equipment: B-53		Completion: Depth (feet) 61.5	Rock Depth: (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 7	Dist.: Undist.: 7 Core:
Borehole Size: 8 Inch		Water Depth (ft): 30	First: Compl.: 24 hrs.
Type of Perforation Backfill: None		Logged By: Barbara Fontes	
Type of Seal: 5% Bentonite Cement Grout		Checked by: Sharon Lagas	

Depth (feet)	Description	Graphic Log		Samples				Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	Drilling Rate/Time	
	Dry, brown, silty, fine to medium size sand with brick chips, possibly fill material	SM Fill					9:00	Baseline OVA reading @ 2ppm Surface soil contains shells and broken pottery. Soil type not evident in other areas
5'	No sample collected	----	-		Note			
10-11.5'	Dry, light brown, medium to coarse sand with gravel	SP	4	1	26/22/23	9:05		
15-16.0'	Same as above	SP	-	2	48/50	9:10		
20-21.0'	Dry, brown, coarse grained sand and small gravel	SP	-	3	49/50	9:20		
25-26.0'	Same as above	SP	-	4	33/56	9:36	Decomposed granite cobble in auger (cobble > 3 in.)	

BOREHOLE LOG

METRO RAIL TRANSIT

Project name: _____
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-205 Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks	
		Lithology	OVA (ppm)	Number	Type	Blow Count		Drilling Rate/Time
30-31.0'	Wet, grey, medium to coarse grained sand Groundwater encountered at approximately 30 feet	SP	30	5	✓	28/50	9:48	OVA and 1 brass recovery
35-36.5'	Same as above	SP	4	6	✓	14/37/48	9:54	
40-41.5'	Same as above	SP		7	✓	Note	10:00	1 brass recovery, no OVA sample OVA reading @ base-line
43'	Cobble, gravel	GP						
45'	No recovery - cobble, gravel			-		Note	10:27	
50'	Wet, dark gray, fine to medium size sand, oily film and odor	SP	100	-		10/26/50	10:37	Only OVA sample recovery OVA reading @ base-line
55-56.5'	Same as above	SP	100	-		3/13/50	10:48	
60'	No recovery-sampler and "A" rods stuck in augers End Hole			-		Note	10:59	Water samples collected

BOREHOLE LOG

METRO RAIL TRANSIT

Project Name: _____
 Project Number: 87-600-003 Field Log of Borehole Number: BH-206A Sheet 1 of 2

Borehole Location: Vignes St. (C.C. Meyer's yard)		Elevation and Datum: 276.5 ft	
Drilling Agency: DRILL LINE	Driller: Gregg DeLuca John Hale	Date Started: 1-9-87	Date Finished: 1-9-87
Drilling Equipment: B-53		Completion: Depth (feet) 41.5	Rock Depth (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 6	Dist.: 6 Core:
Borehole Size: 8 Inch		Water Depth (ft): 29.5	First: 24 hrs.
Type of Perforation Backfill: None		Logged By: Sharon Lagas	
Type of Seal: 5% Bentonite Cement Grout		Checked by: Barbara Fontes	

Depth (feet)	Description	Graphic Log		Samples				Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	Drilling Rate/Time	
	Dry, dark brown, sand and gravel with some silt	SP					10:00	Baseline OVA reading @ 2 to 5ppm
5	5-6' Dry, medium to coarse sand with some gravel	SP	3	1	10/10	10:10		OVA reading @ baseline
	6-6.5' Dry, medium grained sand with silt and some clay	SC						
10	10' No recovery (probably fill)					10/15/27	10:13	OVA reading @ baseline
15	15-15.5' Dry, light brown, medium to coarse sand with gravel	SP	14	2	50/6"		10:23	OVA reading @ baseline
20	20' Dry, gravel with coarse grained sand	GP				23/6"	10:30	No recovery, cobble stuck in sampler
	23' Gravel and cobble	GP						
25	25-26.5' Moist, medium to coarse grained sand with gravel	SP	12	3	10/43/50		10:38	OVA reading @ baseline
30	Groundwater encountered at approx. 29.5 feet							

BOREHOLE LOG

Project name: METRO RAIL TRANSIT

Project Number: 87-600-0033 Field Log of Borehole Number: BH-206A Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
30-31.5'	Wet, gray, medium to coarse grained sand	SP	8	4	3/6/10	11:20	OVA reading @ baseline
35-36.5'	Wet, gray, fine to medium size sand	SP	10	5	6/10/13	11:26	OVA reading @ baseline
40-41.5'	Same as above End Hole	SP	6	6	23/49/48	11:36	OVA reading at baseline, 10 feet of slough in hole Collected water samples

BOREHOLE LOG

METRO RAIL TRANSIT

Project Name: _____

Project Number: 87-600-0033 Field Log of Borehole Number: BH-207 Sheet 1 of 2

Borehole Location: 101 FWY South from Vignes		Elevation and Datum: 276.9 ft	
Drilling Agency: DRILL LINE	Driller: Gregg DeLuca John Hale	Date Started: 1/12/87	Date Finished: 1/12/87
Drilling Equipment: B-53		Completion: Depth (feet) 60	Rock Depth: (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 4	Dist.: Undist.: 4 Core:
Borehole Size: 8 Inch		Water Depth (ft): 30	First: Compl.: 24 hrs.
Type of Perforation Backfill: None		Logged By: Barbara Fontes	
Type of Seal: 5% Bentonite Cement Grout		Checked by: Sharon Lagas	

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
5	Dry, dark brown, silty, fine to medium size sand with gravel and rock/garbage debris	Fill					12:10 Baseline OVA reading @ 2 ppm
5-6.5'	Same as above	Fill			Note		Very little pressure on augers
10	10-11.5' Moist, black-brown, silty sand, medium plasticity clay with oxidation staining	SC	2	1	3/5/8	12:28	
12.5'	Hit debris-augers crunching						
15	15-16.5' Moist to dry, medium to coarse sand	SP	4	2	31/36/33	12:35	OVA reading @ baseline
19'	Gravel and cobbles	GP					
20'	Dry, coarse grained sand with gravel and cobbles	SP	6	-	50/6"	12:56	OVA reading @ baseline, cobble stuck in sampler
25'	Same as above	SP	6	-	50/6"	1:01	No recovery for lab samples

BOREHOLE LOG

Project name: METRO RAIL TRANSIT

Project Number: 87-600-0033 Field Log of Borehole Number: BH-207 Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks	
		Lithology	GVA (ppm)	Number	Type	Blow Count		Drilling Rate/Time
30-31.5'	Wet, gray, coarse sand with some silt Groundwater encountered at approximately 30 feet	SP	12	3		4/4/24	1:07	
35-36.0'	Same as above	SP	4	4		20/50	1:14	
38'	Gravel and cobble	GP						Augers vibrating
40'	Wet, gray, medium to coarse grained sand	SP	12	-		50/6	1:27	No recovery for lab samples
45'	No recovery - Possibly medium to coarse grained sand			-		Note	1:30	Having problem with sand heaves going to 60'-sand locking around drill
50'	No recovery - Possibly medium to coarse grained sand			-		Note		
55'	No recovery - Possibly medium to coarse grained sand			-		Note		
60'	End Hole						2:15	Collected water Samples

BOREHOLE LOG

METRO RAIL TRANSIT

Project Name: _____
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-208 Sheet 1 of 2

Borehole Location: NE of BH-205/Adjacent to Center St.		Elevation and Datum: 270.6 ft	
Drilling Agency: DRILL LINE	Driller: Gregg Deluca John Hale	Date Started: 1/13/87	Date Finished: 1/13/87
Drilling Equipment: B-53		Completion: Depth (feet) 60	Risk Depth (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 6	Dist.: 6 Core:
Borehole Size: 8 Inch		Water Depth (ft): 25	First: 24 hrs. Compl.:
Type of Perforation Backfill: None		Logged By: Barbara Fontes Checked by: Sharon Lagas	
Type of Seal: 5% Bentonite Cement Grout			

Depth (feet)	Description	Graphic Log		Samples				Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	Drilling Rate/Time	
	Dry, dark brown, silty fine to medium size sand	SM					12:42	Baseline OVA reading @ 2 ppm
5'	No sample collected					Note	12:45	OVA reading @ baseline
10-11.5'	Dry, brown, medium to coarse grained sand with gravel	SP	2	1	Z	33/45/45	12:48	OVA reading @ baseline, large cobble in sampler
15-16.0'	Dry, brown, fine to medium grained sand	SP	2	2	Z	34/50	12:58	OVA reading @ baseline
20-21.0'	Dry, brown, medium to coarse sand with gravel and broken cobble	SP	4	3	Z	40/50	1:05	Bouncing off large cobble
25-26.5'	Wet, gray, medium to coarse grained sand with occasional gravel Groundwater encountered at approx. 25 feet	SP	100	4	Z	16/19/15	1:12	Slight oily odor

BOREHOLE LOG

METRO RAIL TRANSIT

Project name: _____

Project Number: 87-600-0033 Field Log of Borehole Number: BH-208 Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks	
		Lithology	OVA (ppm)	Number	Type	Blow Count		Drilling Rate/Time
30-31.5'	Same as above-not as coarse	SP	40	5	/	7/7/13	1:19	Drilling very difficult
34'	Gravel and cobble	GP						
35'	No recovery-gravel and cobble	GP		-		Note	1:28	
40-41.5'	Wet, gray, medium grained sand	SP	2	6	/	7/9/34	1:43	OVA reading @ baseline, slight creosote odor
45'	No recovery - Possibly sand			-		Note		
50'	No recovery-6 feet of slough in augers - Possibly sand			-		Note		
55'	No recovery - Possibly sand			-		Note		
60'	Abandoned hole due to sampler being stuck in augers. Could not advance hole any further						2:44	Upon removal of augers, strong creosote odor. No water samples collected due to sampler being stuck

BOREHOLE LOG

Project Name: METRO RAIL TRANSIT
 Project Number: 87-600-0033 Field Log of Borehole Number: BH-200 Sheet 1 of 2

Borehole Location: East Corner Center & Commercial St.		Elevation and Datum: 273.6 ft	
Drilling Agency: DRILL LINE	Driller: Greg Deluca John Hale	Date Started: 1/21/87	Date Finished: 1/21/87
Drilling Equipment: B-53		Completion: Depth (feet) 50	Rock Depth: (feet)
Method of Drilling: Hollow Stem Auger - 6 Inch Dia.		Number of Samples: 8	Dist.: 8 Core:
Borehole Size: 8 Inch		Water Depth (ft): 30	First: 8 Compl.: 24 hrs.
Type of Perforation Backfill: None		Logged By: Sharon Lagas Checked by: Barbara Fontes	
Type of Seal: 5% Bentonite Cement Grout			

Depth (feet)	Description	Graphic Log		Samples			Remarks
		Lithology	OVA (ppm)	Number	Type	Blow Count	
0-6"	Asphalt						9:18 Baseline OVA reading @ 6 ppm
6"-1.2'	Brick Road						
1.2'-1.6'	Concrete						
8	Dry, dark brown, silty, fine to medium size sand with some gravel	F11					
5-6.5'	Dry, brown-black, silty, fine to medium size sand with some gravel	SM	6	1	5/4/4	9:54	OVA reading @ baseline, only OVA sample recovery
10	10.7-11.7' Moist, black-brown, silty, fine to medium size sand with some gravel	SM	6	2	16/17	10:00	At 10' sampler hit pocket and dropped approx. 8"
15	15-16.5' Dry, brown, fine to medium sand with pea size gravel. Upper 8" stained black. Gravel increasing in size with depth. Entire sample saturated with gasoline	SP	33	3	14/41/37	10:05	OVA reading @ baseline Large cobble in bottom of sampler Oily film on sampler
20	20-20.5' Dry, brown, silty sand	SM	6	4	20/37/43	10:20	OVA reading @ baseline
	20.5-21.5' Moist, gray, medium to coarse sand with pea size gravel	SP					Strong oily odor
25	25-26.0' Dry, brown, silty, medium to coarse sand with gravel.	SM	6	5	27/50	10:27	OVA reading @ baseline Strong oily odor
27.5'	Hit cobble and gravel Groundwater encountered at approx. 30 feet	GP					
30							

BOREHOLE LOG

Project name: METRO RAIL TRANSIT

Project Number: 87-600-0033 Field Log of Borehole Number: BH-209 Sheet 2 of 2

Depth (feet)	Description	Graphic Log		Samples			Remarks	
		Lithology	OVA (ppm)	Number	Type	Blow Count		Drilling Rate/Time
30-31.0'	Wet, green-gray, medium to coarse sand with some gravel	SP	24	6		36/50	10:35	OVA reading at baseline Hit void Soil has H ₂ S odor Oily film on sampler
35'	35'-35.5' Wet, gray, medium to coarse grained sand	SP	46	7		50/6"	10:44	OVA reading @ baseline
37'	Hit cobble and gravel	GP						Strong H ₂ S odor
39'	Broke through cobble							Slight creosote odor on sampler
40-41.5'	Wet, gray, medium to coarse grained sand with gravel	SP	12	8		6/8/ 16	10:59	OVA reading @ baseline Oily film on sampler
45'	No recovery - 4' slough in augers			-		Note		
50'	End hole - no recovery due to sampler sticking in augers						11:21	Water samples collected OVA reading 14 ppm at top of hole

Existing Geotechnical Boring Logs GeoBase & GPI, 1993

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UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

PRIMARY DIVISIONS		GROUP SYMBOL	SECONDARY DIVISIONS		
COARSE GRAINED SOILS MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	
		GRAVEL WITH FINES	GP	POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURE, NON PLASTIC FINES
			SANDS WITH FINES	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES.
	FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50	CLEAN SANDS (LESS THAN 5% FINES)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
			SANDS WITH FINES	SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.
			SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES.
		SANDS WITH FINES	SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES.	
SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.			
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.			
	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS.			
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.			
OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.				
HIGHLY ORGANIC SOILS	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS.			

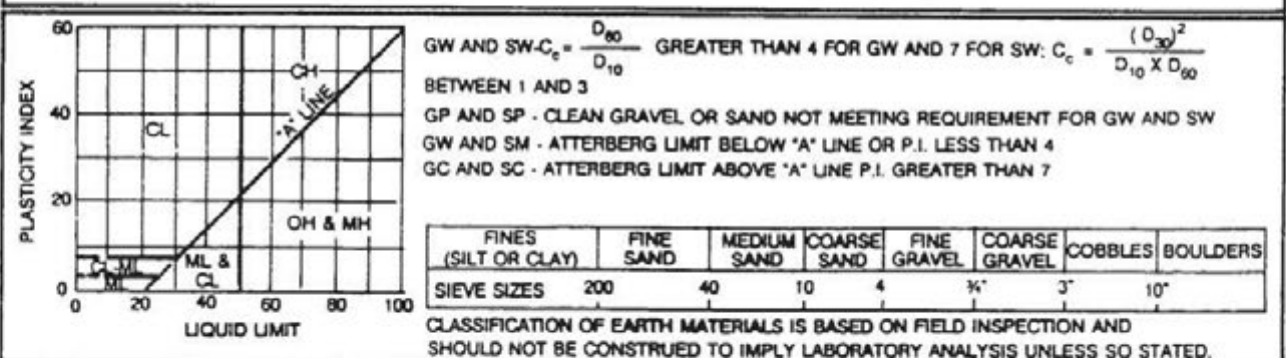
CLASSIFICATION CRITERIA BASED ON FIELD TESTS

PENETRATION RESISTANCE (PR)		CLAYS AND SILTS		
SANDS AND GRAVELS		CONSISTENCY	BLOWS/FOOT*	STRENGTH**
RELATIVE DENSITY	BLOWS/FOOT*	VERY SOFT	0 - 2	0 - 1/4
VERY LOOSE	0 - 4	SOFT	2 - 4	1/4 - 1/2
LOOSE	4 - 10	FIRM	4 - 8	1/2 - 1
MEDIUM DENSE	10 - 30	STIFF	8 - 15	1 - 2
DENSE	30 - 50	VERY STIFF	15 - 30	2 - 4
VERY DENSE	OVER 50	HARD	OVER 30	OVER 4

* NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1 1/4 INCH I.D.) SPLIT BARREL SAMPLER (ASTM-1586 STANDARD PENETRATION TEST)

** UNCONFINED COMPRESSIVE STRENGTH IN TONS/SQ. FT. READ FROM POCKET PENETROMETER

CLASSIFICATION CRITERIA BASED ON LAB TESTS



GEOBASE/GPI





KEY FOR SOIL EXPLORATION LOGS

FIGURE A-1

10310302210

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOBS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS		ELEVATION (FEET)
					This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.		
2.4	95		B	0		FILL: MISC. CRUSHED BASE COARSE, brown, slightly moist, medium dense to dense	-290-
						CRUSHED ROCK MIXED WITH SILTY SAND (SM), brown, slightly moist, dense to very dense, 1 to 1.5 inch gravels	
				24.1	B	SILTY CLAY to CLAYEY SILT (CL-ML), mottled grey green, moist to very moist, stiff to very stiff	
23.2			B	5	Refusal at 5 feet.		

SAMPLE TYPES <input type="checkbox"/> Rock Core <input type="checkbox"/> Standard Split Spoon <input type="checkbox"/> Drive Sample <input checked="" type="checkbox"/> Bulk Sample <input type="checkbox"/> Tube Sample	DATE DRILLED: 9-10-93 EQUIPMENT USED: : HAND GROUNDWATER LEVEL: NOT ENCOUNTERED	GEOBASE/GPI	PROJECT NO.: 1133.21 METROLINK
LOG OF BORING NO. B-1			FIGURE A-2

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS		ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.		
	28.2	90		B	0		FILL: SILTY GRAVEL (GM), grey, dry, loose, 3/4 to 1.5 inch gravels, trace sand	-290-
				B			SILTY CLAY to CLAYEY SILT (CL-ML), mottled brown green, moist, very stiff	
		29.5		B			@ 5.5', black ash	
	13.0			B	5		SILTY SAND (SM), grey, moist, medium dense to dense	-285-
					7.5		Refusal on rock at 7.5 feet.	

1010409200B16068

SAMPLE TYPES <input type="checkbox"/> Rock Core <input type="checkbox"/> Standard Split Spoon <input type="checkbox"/> Drive Sample <input type="checkbox"/> Bulk Sample <input type="checkbox"/> Tube Sample	DATE DRILLED: 9-10-93 EQUIPMENT USED: HAND GROUNDWATER LEVEL: NOT ENCOUNTERED	GEOBASE/GPI LOG OF BORING NO. B-2	PROJECT NO.: 1133.21 METROLINK
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FIGURE A-3

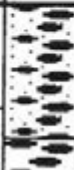
1010409200B16068

	MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS		ELEVATION (FEET)
						This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.		
	3.2	144		B	0		294.6	
	18.6	100		B				
	9.1			B				
						Refusal on concrete at 3.5 feet.		

1010409200816068

SAMPLE TYPES <input type="checkbox"/> Rock Core <input type="checkbox"/> Standard Split Spoon <input type="checkbox"/> Drive Sample <input type="checkbox"/> Bulk Sample <input type="checkbox"/> Tube Sample	DATE DRILLED: 9-2-93 EQUIPMENT USED: HAND GROUNDWATER LEVEL: NOT ENCOUNTERED	GEOBASE/GPI LOG OF BORING NO. B-3	PROJECT NO.: 1133.21 METROLINK FIGURE A-4
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1130303072

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOWS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS		ELEVATION (FEET)
					This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.		
				0		FILL: SANDY GRAVEL (GW), brown, dry, loose, glass, trash	290
						SANDY GRAVEL (GP), grey, dry, loose, 3/8" round gravels	
						Refusal at 20 inches on asphalt concrete.	

SAMPLE TYPES <input type="checkbox"/> Rock Core <input type="checkbox"/> Standard Split Spoon <input type="checkbox"/> Drive Sample <input type="checkbox"/> Bulk Sample <input type="checkbox"/> Tube Sample	DATE DRILLED: 9-2-93 EQUIPMENT USED: HAND GROUNDWATER LEVEL: NOT ENCOUNTERED	GEOBASE/GPI	PROJECT NO.: 1133.21 METROLINK
LOG OF BORING NO. B-5			FIGURE A-5

1010400200510000

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLONS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS		ELEVATION (FEET)
					This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.		
10.7	113		B	0	FILL: SILTY SAND to SAND (SM-SP), brown, slightly moist to moist, medium dense, gravels to 3 inches, concrete fragments, bricks @ 7.5' - 9.0', bricks, ash	-295-	
3.4	99	1	D				
7.7	99	3	D	5			
10.6	97	6	D				
12.7	96	PUSH	D	10			
22.9	96	3	D				
				10	SILTY SAND (SM), brown, moist, loose, slight petroleum odor		
				10	NATIVE: SILTY SAND to SAND (SM-SP), green, moist, dense, gravels, strong petroleum odor	-285-	
				15	Terminated at 15 feet. No caving.		

Standard Penetration Test Log

SAMPLE TYPES <input type="checkbox"/> Rock Core <input type="checkbox"/> Standard Split Spoon <input type="checkbox"/> Drive Sample <input type="checkbox"/> Bulk Sample <input type="checkbox"/> Tube Sample	DATE DRILLED: 9-7-93 EQUIPMENT USED: 18" BUCKET AUGER GROUNDWATER LEVEL: NOT ENCOUNTERED	GEOBASE/GPI LOG OF BORING NO. B-6	PROJECT NO.: 1133.21 METROLINK
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FIGURE A-7

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLOBS/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS		ELEVATION (FEET)
					This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.		
4.1	111		B	0	FILL: SILTY SAND (SM), brown, slightly moist to moist, loose to medium dense, glass, bricks, gravels, concrete, chunks of clay.	-295-	
6.6	91	1	D				
12.5	99	PUSH	D	5	@ 5', brick		
3.1		3	D		@ 7', refusal on concrete, moved boring 5 feet.	-290-	
					SAND (SP), grey, slightly moist, dense		
5.8	97	6	D	10	SANDY CLAY (CL), brown, moist, stiff, bricks		
					NATIVE: SAND (SW), grey, moist, dense, gravels to 3"	-285-	
3.2		5	D	15			
					Terminated at 16 feet. Slight caving and ravelling.		

113321227

SAMPLE TYPES <input type="checkbox"/> Rock Core <input type="checkbox"/> Standard Split Spoon <input type="checkbox"/> Drive Sample <input type="checkbox"/> Bulk Sample <input type="checkbox"/> Tube Sample	DATE DRILLED: 9-7-93 EQUIPMENT USED: 18" BUCKET AUGER GROUNDWATER LEVEL: NOT ENCOUNTERED	GEOBASE/GPI	PROJECT NO.: 1133.21 METROLINK
LOG OF BORING NO. B-7			FIGURE A-8

11332100516068

MOISTURE (%)	DRY DENSITY (PCF)	PENETRATION RESISTANCE (BLDG/FOOT)	SAMPLE TYPE	DEPTH (FEET)	DESCRIPTION OF SUBSURFACE MATERIALS		ELEVATION (FEET)
					This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.		
4.1	117	1	B	0		-285-	
3.4	92		D	2			
2.6	119	6	D	5	NATIVE: SAND (SW), grey, moist, very dense, gravels to 3"	-280-	
6.2	102	10	D	10			
					Terminated at 11 feet. No caving.		

SAMPLE TYPES <input type="checkbox"/> Rock Core <input type="checkbox"/> Standard Split Spoon <input type="checkbox"/> Drive Sample <input type="checkbox"/> Bulk Sample <input type="checkbox"/> Tube Sample	DATE DRILLED: 9-7-93 EQUIPMENT USED: 18" BUCKET AUGER GROUNDWATER LEVEL: NOT ENCOUNTERED	GEOBASE/GPI LOG OF BORING NO. B-8	PROJECT NO.: 1133.21 METROLINK
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FIGURE A-9

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Existing Geotechnical Boring Logs Geotechnical Soilutions, 2005

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Geotechnical Soilutions, Inc.		Project No: GS5101	Client: Tetra Tech
501 S. Fairfax Avenue, Suite 101 Los Angeles, California 90036 Tel: (323) 937-1097 Fax: (323) 937-1099		Location: Aliso Sector D/MTA	
Logged by: SMD		Drilling Contractor: C&C Drilling	
Date: 5/9/2005		Equipment: 8" Hollow Stem Auger	Boring 2
		Driving Weight: 140 lbs	Sheet 1
		Surface Elevation:	of 1
		Reference:	

Depth in Feet	Drive Sample	Sample Type	Bag Sample	Blows Per 6 inches	Visual Description	Moisture Content %	Dry Unit Weight (Pcf)
0					About 6 inches asphalt, about 5 inches base. Fill: Dark gray medium grained sand, lumps of brown clay, pieces of concrete, brick and asphalt, slightly moist, moderateley loose.		
5					Black sand, pieces of brick and concrete, slightly moist, moderately loose.		
		SPT		6 6 6			
10					11 <u>Possible Native:</u> Brown sand, medium grained, scattered gravel, slightly moist, 13 moderately loose.		
		CA			17 End of boring 11 feet. Fill to about 10 feet No groundwater.		
15							

PLATE XIX

Geotechnical Soillutions, Inc.				Project No: GS5101	Client: Tetra Tech		
501 S. Fairfax Avenue, Suite 101 Los Angeles, California 90036 Tel: (323) 937-1097 Fax: (323) 937-1099				Location: Aliso Sector D/MTA			
Logged by: SMD				Drilling Contractor: C&C Drilling	Boring 3		
Date: 5/9/2005				Equipment: 8" Hollow Stem Auger			
				Driving Weight: 140 lbs	Sheet 1 of 1		
				Surface Elevation:			
				Reference:			
Depth in Feet	Drive Sample	Sample Type	Bag Sample	Blows Per 6 inches	Visual Description	Moisture Content %	Dry Unit Weight (Pcf)
0					About 6 inches asphalt, about 5 inches base. Fill: Gray-brown sand, pieces of brick and asphalt, slightly moist, moderately loose. Black sand, pieces of brick and concrete, slightly moist, moderately loose.		
5							
10		SPT		11 15 26	Black sand and clayey sand, slight odor, scattered pieces of brick, gravel, slightly moist, moderately loose.		
15		CA		26 50 6"	<u>Possible Native:</u> Light gray coarse sand with abundant gravel, odor, slightly moist, moderately dense.		
20		CA		100 6"	Light gray coarse sand and gravel, odor, slightly moist, moderately dense. Layers of coarse gravel/boulders.		
25		CA		20 32 33	Gray clayey silt and coarse sand, odor, moist to wet, moderately dense. End of boring at 26 feet. Water at 26 feet, possibly perched. Fill to about 15 feet.		

PLATE XX

Geotechnical Solutions, Inc.				Project No: GS5101	Client: Tetra Tech Location: Aliso Sector D/MTA		
501 S. Fairfax Avenue, Suite 101 Los Angeles, California 90036 Tel: (323) 937-1097 Fax: (323) 937-1099				Drilling Contractor: C&C Drilling			
				Equipment: 8" Hollow Stem Auger	Boring 4		
				Driving Weight: 140 lbs			
				Surface Elevation:	Sheet 2		
Logged by: SMD		Date: 5/9/2005		Reference:	of 2		
Depth in Feet	Drive Sample	Sample Type	Bag Sample	Blows Per 6 inches	Visual Description	Moisture Content %	Dry Unit Weight (Pcf)
30					End of boring at 31 feet. Fill to about 15 feet. No groundwater.		
35							

PLATE XXII

1010212200744793

Geotechnical Soilutions, Inc.				Project No: GS5101	Client: Tetra Tech Location: Aliso Sector D/MTA		
501 S. Fairfax Avenue, Suite 101 Los Angeles, California 90036 Tel: (323) 937-1097 Fax: (323) 937-1099				Drilling Contractor: C&C Drilling			
Logged by: SMD				Equipment: 8" Hollow Stem Auger	Boring 5		
Date: 5/9/2005				Driving Weight: 140 lbs			
				Surface Elevation:	Sheet 1		
				Reference:	of 1		
Depth in Feet	Drive Sample	Sample Type	Bag Sample	Blows Per 6 inches	Visual Description	Moisture Content %	Dry Unit Weight (Pcf)
0					About 4 inches asphalt, about 8 inches base. Fill: Brown medium grained sand, abundant gravel, brick pieces, slightly moist, moderately loose.		
5							
10		CA			Gray and brown silty clay, moist, moderately stiff.		
10				10	Gray-brown silty fine sand, moist, moderately dense, slight odor.		
15				10			
15		CA		15			
18				18	<u>Possible Native:</u> Light brown coarse sand and gravel, moist, moderately dense.		
38				38			
50				50			
20		SPT		50	Light brown silty fine sand with occasional gravel, slightly moist, dense.		
25				5"			
25		CA		40	Gray fine to coarse sand and gravel, slight odor, slightly moist, dense.		
50				50	End of boring at 26 feet.		
30				5"	Fill to about 15 feet.		
					No groundwater.		

PLATE XXIII

1010212200744793

Existing Geotechnical Boring Logs Kleinfelder, 2003

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Date Drilled:
 Drilled By:
 Drilling Method:
 Logged By:

Water Depth:
 Date Measured:
 Reference Elevation:
 Datum:

Elevation (feet) Depth	Sample	Sample No.	Blow Count (Blows/ft.)	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
		1	6			108	10	DS, SE
		2	12					GS
5	(1)	(2)	(3)	(4)	(5)	(6)	(6)	(7)
10								

NOTES ON FIELD INVESTIGATION

- SAMPLE** - Graphical representation of sample type as shown below.

 - Split Spoon - Standard Penetration Test Sample (SPT)
 - Drive Sample - California Sample (Cal)
 - Bulk Sample - Obtained by collecting cuttings in a plastic bag
 - Tube Sample - Shelby/Pitcher Tube Sample
- SAMPLE NO.** - Sample Number
- BLOWS/FT** - Number of blows required to advance sampler 1 foot (unless a lesser distance is specified). Samplers in general were driven into the soil at the bottom of the hole with a standard (140 lb) hammer dropping a standard 30 inches. Drive samples collected in bucket auger borings may be obtained by dropping non-standard weight from variable heights. When a SPT sampler is used the blow count conforms to ASTM D-1586.

SCR/ROD - Sample Core Recovery (SCR) in percent (%) and Rock Quality Designation (ROD) in percent (%). ROD is defined as the percentage of core in each run which the spacing between natural fractures is greater than 4 inches. Mechanical breaks of the core are not considered.
- GRAPHIC LOG** - Standard symbols for soil and rock types, as shown on plate B-1b.
- GEOTECHNICAL DESCRIPTION**

Soil - Soil classifications are based on the Unified Soil Classification System per ASTM D-2487, and designations include consistency, moisture, color and other modifiers. Field descriptions have been modified to reflect results of laboratory analyses where deemed appropriate.

Rock - Rock classifications generally include a rock type, color, moisture, mineral constituents, degree of weathering, alteration, and the mechanical properties of the rock. Fabric, lineations, bedding spacing, foliations, and degree of cementation are also presented where appropriate.

Description of soil origin or rock formation is placed in brackets at the beginning of the description where applicable, for example, Residual Soil.
- DRY DENSITY, MOISTURE CONTENT:** As estimated by laboratory or field testing.
- ADDITIONAL TESTS** - (Indicates sample tested for properties other than the above):

MAX - Maximum Dry Density	SG - Specific Gravity	PP - Pocket Penetrometer
GS - Grain Size Distribution	HA - Hydrometer Analysis	WA - Wash Analysis
SE - Sand Equivalent	AL - Atterberg Limits	DS - Direct Shear
EI - Expansion Index	RV - R-Value	CP - Collapse Potential
CHEM - Sulfate and Chloride Content, pH, Resistivity	CN - Consolidation	UC - Unconfined Compression
PM - Permeability	CU - Consolidation Undrained Triaxial	T - Torvane
UU - Unconsolidated Undrained Triaxial	CD - Consolidated Drained Triaxial	
- ATTITUDES** - Orientation of rock discontinuity observed in bucket auger boring or rock core, expressed in strike/dip and dip angle, respectively, preceded by a one-letter symbol denoting nature of discontinuity as shown below.





















B: Bedding Plane J: Jointing C: Contact F: Fault S: Shear



EXPLANATION OF LOGS

PLATE
A-1a

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

PRIMARY DIVISIONS			GROUP SYMBOLS	SECONDARY DIVISIONS		
COARSE-GRAINED SOILS <small>MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE</small>	GRAVELS <small>MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE</small>	CLEAN GRAVELS (LESS THAN 5% FINES)	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		GRAVEL WITH FINES	GP		POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		GRAVEL WITH FINES	GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	
		GRAVEL WITH FINES	GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	
	SANDS <small>MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE</small>	CLEAN SANDS (LESS THAN 5% FINES)	SW		WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
		CLEAN SANDS (LESS THAN 5% FINES)	SP		POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES	
		SANDS WITH FINES	SM		SILTY SANDS, SAND-SILT MIXTURES	
		SANDS WITH FINES	SC		CLAYEY SANDS, SAND-CLAY MIXTURES	
		SILTS AND CLAYS <small>LIQUID LIMIT IS LESS THAN 50</small>	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS	ML		INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
			INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS	CL		INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS	OL			ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY		
SILTS AND CLAYS <small>LIQUID LIMIT IS GREATER THAN 50</small>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS	
	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS	PT		PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS			
TYPICAL FORMATIONAL MATERIALS	SANDSTONES	SS				
	SILTSTONES	SH				
	CLAYSTONES	CS				
	LIMESTONES	LS				
	SHALES	SL				

CONSISTENCY CRITERIA BASED ON FIELD TESTS

RELATIVE DENSITY: COARSE-GRAINED SOIL			CONSISTENCY: FINE-GRAINED SOIL		TORVANE	POCKET ** PENETROMETER
RELATIVE DENSITY	SPT * (# blows/ft)	RELATIVE DENSITY (%)	CONSISTENCY	SPT (# blows/ft)	UNDRAINED SHEAR STRENGTH (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)
Very Loose	<4	0 - 15	Very Soft	<2	<0.13	<0.25
Loose	4 - 10	15 - 35	Soft	2 - 4	0.13 - 0.25	0.25 - 0.5
Medium Dense	10 - 30	35 - 65	Medium Stiff	4 - 8	0.25 - 0.5	0.5 - 1.0
Dense	30 - 50	65 - 85	Stiff	8 - 15	0.5 - 1.0	1.0 - 2.0
Very Dense	>50	85 - 100	Very Stiff	15 - 30	1.0 - 2.0	2.0 - 4.0
			Hard	>30	>2.0	>4.0

* NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1 3/8 INCH I.D.) SPLIT BARREL SAMPLER (ASTM-1586 STANDARD PENETRATION TEST)

** UNCONFINED COMPRESSIVE STRENGTH IN TONS/SQ.FT. READ FROM POCKET PENETROMETER

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure



KLEINFELDER

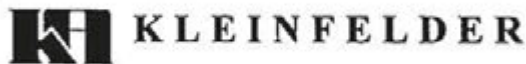
EXPLANATION OF LOGS

PLATE
A-1b

1010210200513241

Date Drilled: 4/24/03 Water Depth: >30.5 feet
 Drilled By: West Hazmat Date Measured: 4/24/03
 Drilling Method: Hollow Stem Auger 6" Elevation: ~280 feet
 Logged By: Ed Che Reference Datum: MSL

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests	PID (ppm)
280					Asphaltic Concrete (AC): approximately 3 inches thick over 1 foot base approximatley				
275	5	1	35		Artificial Fill (Af): Sandy Clay (CL): olive gray, moist, fine to coarse sand, brick fragments found, no odor Sandy Silt (ML): olive brown, moist, very stiff, iron oxide stains, mottled with pockets of clay, no odor	90	20.9	DS	
270	10	2	32		Native Sand (SP): yellow brown, slightly moist, medium dense, fine grained, no odor			WA	
265	15	3	45		-- moist, dense, fine to coarse grained, some fine gravel, 2 inch layer of gray clay, highly moist, no odor	110	6.8		
260		4	81						




PROJECT NO. 29712

Proposed Shored Excavation Project
 710 N. Keller Street
 Los Angeles, California
LOG OF BORING B-1

PLATE
 A-2a

Explanation To Logs On Plate A-1

1010210200513241

Elevation (feet) Depth	Sample Type Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION <i>(Continued From Previous Page)</i>	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
260				-- very dense			
255 25	5	26 50/6"					
250 30	6	19 50/6"		<p>Gravelly Sand with Silt (SP-SM): gray, moist, very dense, fine to medium grained, fine and coarse gravel, no odor</p> <p>Total depth of boring: 30.5 feet No groundwater encountered Boring backfilled with bentonite grout and topped with rapid set concrete</p>			



PROJECT NO. 29712

Proposed Shored Excavation Project
 710 N. Keller Street
 Los Angeles, California
LOG OF BORING B-1

PLATE
 A-2b

Explanation To Logs On Plate A-1

1010210200513241

Date Drilled: 4/24/03 Water Depth: >31 feet
 Drilled By: West Hazmat Date Measured: 4/24/03
 Drilling Method: Hollow Stem Auger 6" Elevation: ~280 feet
 Logged By: Ed Che Reference Datum: MSL

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests	PID (ppm)
280					Asphaltic Concrete (AC): approximately 3.5 inches thick without base				
					Artificial Fill (Af):				
					Clayey Sand (SC): dark olive gray, moist, fine to medium sand, brick fragments, trace fine gravel, some staining, no odor, trace coarse gravel and cobbles, concrete debris				
275	5	1	16		-- olive brown, trace wood debris and fragments of ceramics	94	22.7	CHEM, WA	
					Native:				
					Sand (SP): yellow brown, moist, dense, fine to medium grained, some coarse gravel, no odor	105	6.0		GS
270	10	2	39						
					Silty Sand (SM): olive brown, moist, very dense, fine grained, no odor				
265	15	3	28 50/6"			87	7.4		
					Gravelly Sand with Silt (SP-SM): gray, moist to very moist, dense, fine to coarse grained, fine and coarse gravel, occasional layers of sandy gravel, no odor				
260		4	59						



PROJECT NO. 29712

Proposed Shored Excavation Project
 710 N. Keller Street
 Los Angeles, California

LOG OF BORING B-2

PLATE

A-3a

Explanation To Logs On Plate A-1

1010210200513241

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**Existing Geotechnical Boring Logs
Lowney Associates, 2003**

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EXPLORATORY BORING: LB-01

Sheet 1 of 1

DRILL RIG: AL-ROY DRILLING CO.

PROJECT NO: 1651-15A

BORING TYPE: BUCKET AUGER

PROJECT: TOSCO CENTER STREET REMEDIATION

LOGGED BY: TKK

LOCATION: LOS ANGELES, CALIFORNIA

START DATE: 7-30-03

FINISH DATE: 7-30-03

COMPLETION DEPTH: 17.5 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
274.0	0		SURFACE ELEVATION: 274 FT. (+/-)							
	0	5-INCHES OF ASPHALT		GW						
	0	2-INCHES OF CRUSHED AGGREGATED BASE								
	0	(GW), greenish brown								
	0	FILL: SILTY SAND (SM), trace of fine gravel and asphalt, moist, dark brown to black							33	
	5		- loose, no odor	SM	1	X	12	102		
	10		AUGER REFUSAL DUE TO STEEL PIPE MOVED TO 3- FEET SOUTH OF ORIGINAL LOCATION							
	10		- weak petroleum odor							
	10		- weak petroleum odor, cohesive		6	X	11	122		
	15		NATIVE: SAND (SP), fine to coarse, trace of fine gravel, dense, moist, light brown, no odor	SP						
	15				14	X	4	127		
	20		AUGER REFUSAL DUE TO BOULDER (greater than 18-inches in diameter)							
	20		BOTTOM OF BORING AT 17½ FEET							
	20		NO FREE GROUNDWATER ENCOUNTERED							
	20		BORING WAS BACKFILLED WITH CUTTINGS							
	25		WEIGHT OF KELLY: 0 TO 24- FEET: 2,150 POUNDS 25 TO 44- FEET: 1,350 POUNDS 45 TO 65- FEET: 650 POUNDS							

GROUND WATER OBSERVATIONS:
NO FREE GROUNDWATER ENCOUNTERED

LA CORP GDT 08/15/03 Fullerton JSR

101021920051 08 09

EXPLORATORY BORING: LB-02

Sheet 1 of 2

DRILL RIG: AL-ROY DRILLING CO.
 BORING TYPE: BUCKET AUGER
 LOGGED BY: TKK
 START DATE: 7-30-03 FINISH DATE: 7-30-03

PROJECT NO: 1651-15A
 PROJECT: TOSCO CENTER STREET REMEDIATION
 LOCATION: LOS ANGELES, CALIFORNIA
 COMPLETION DEPTH: 32.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)							
										○ Pocket Penetrometer	△ Torvane	● Unconfined Compression	▲ U-U Triaxial Compression				
			SURFACE ELEVATION: 272 FT. (+/-)							1.0	2.0	3.0	4.0				
272.0	0		FILL: SILTY SAND (SM), trace of fine gravel, slightly moist to moist, brick rubble, brown	SM													
	5		FILL: SILT (ML), trace of sand and fine gravel, medium stiff, moist, brown, no odor	ML													
			FILL: SAND (SP), fine to coarse, with fine to coarse gravel and cobbles less than 12-inches in diameter, moist, light brown - concrete rubble greater than 24-inches in diameter	SP	3	X	10	104									
	10		REFUSAL DUE TO SAND CAVING, MOVED TO 5-FEET NORTH, 4-FEET WEST OF ORIGINAL LOCATION SAND (SP), with fine to coarse gravel and cobbles less than 12-inches in diameter, medium dense, orange brown	SP	6	X	4	110									
	15		- brown	SP	18	X	3	130									
	20			SP	19	X	7	114									
			GRAVELLY SAND (SW), fine to coarse gravel and cobbles less than 12-inches in diameter, dense, moist, orange brown with white mottling, no odor	SW													
	25		SAND (SP), medium to coarse, trace of gravel and cobbles less than 12-inches in diameter, dense to very dense, olive green, no odor	SP	30/10"	X	6	115									
	30		- fine to medium, moist to very moist	SP	30/10"	X	19	105									
240.0	32.0																

Continued Next Page

GROUND WATER OBSERVATIONS:

▽: FREE GROUND WATER MEASURED DURING DRILLING AT 32.0 FEET

LA CORP GDT 08/15/03 Fullerton JSR

EXPLORATORY BORING: LB-02 Cont'd

Sheet 2 of 2

DRILL RIG: AL-ROY DRILLING CO.

PROJECT NO: 1651-15A

BORING TYPE: BUCKET AUGER

PROJECT: TOSCO CENTER STREET REMEDIATION

LOGGED BY: TKK

LOCATION: LOS ANGELES, CALIFORNIA

START DATE: 7-30-03 FINISH DATE: 7-30-03

COMPLETION DEPTH: 32.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)								
										○	△	●	▲	1.0	2.0	3.0	4.0	
240.0			<p>BOTTOM OF BORING AT 32 FEET</p> <p>FREE GROUNDWATER ENCOUNTERED AT 32 FEET</p> <p>BORING WAS BACKFILLED WITH CUTTINGS</p> <p>BORING HALTED AT 32-FEET DUE TO REFUSAL, BOULDERS GREATER THAN 18-INCH DIAMETER, ALSO SAND CAVED DUE TO GROUNDWATER</p> <p>WEIGHT OF KELLY:</p> <p>0 TO 24-FEET: 2,150 POUNDS</p> <p>25 TO 44-FEET: 1,350 POUNDS</p> <p>45 TO 65-FEET: 650 POUNDS</p>															
	35																	
	40																	
	45																	
	50																	
	55																	
	60																	

GROUND WATER OBSERVATIONS:

∇: FREE GROUND WATER MEASURED DURING DRILLING AT 32.0 FEET

LA CORP GDT 08/15/03 Fullerton JSR

EXPLORATORY BORING: LB-03

Sheet 1 of 1

DRILL RIG: AL-ROY DRILLING CO.

PROJECT NO: 1651-15A

BORING TYPE: BUCKET AUGER

PROJECT: TOSCO CENTER STREET REMEDIATION

LOGGED BY: TKK

LOCATION: LOS ANGELES, CALIFORNIA

START DATE: 7-30-03 FINISH DATE: 7-30-03

COMPLETION DEPTH: 24.0 FT.

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ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
272.0	0		SURFACE ELEVATION: 272 FT. (+/-)							
	0		FILL: SILT (ML), trace of fine sand and gravel, slightly moist to moist, brick rubble, brown	ML						
	5		FILL: CLAYEY SAND (SC), with fine gravel, trace of asphalt, low to medium plasticity, moist, brown	SC					45	
	5		FILL: SAND (SP), medium to coarse, trace of gravel and cobbles less than 12-inches in diameter, medium dense to dense, moist, light brown to brown	SP	8	5	110			
	10		- light brown - with gravel and cobbles less than 12-inches in diameter	SP	10	3	114			
	15		SILT (ML), trace of fine sand, soft to medium stiff, moist, brown with iron oxide stains, no odor	ML	4	12	107			
	20		SILTY SAND (SM), with gravel and cobbles less than 12-inches in diameter, fine to coarse, moist, brown	SM						
	20		SAND (SP), fine to coarse with gravel and cobbles less than 12-inches in diameter, medium dense to dense, moist, orange brown, no odor - olive green	SP	13	6	115			
	25		BOTTOM OF BORING AT 24 FEET NO FREE GROUNDWATER ENCOUNTERED BORING HOLE WAS BACKFILLED WITH CUTTINGS BORING STOPPED AT 34 FEET DUE TO REFUSAL, BOULDER GREATER THAN 18-INCHES IN DIAMETER							
	30		WEIGHT OF KELLY: 0 TO 24- FEET: 2,150 POUNDS 25 TO 44- FEET: 1,350 POUNDS 45 TO 65- FEET: 650 POUNDS							

GROUND WATER OBSERVATIONS:
NO FREE GROUNDWATER ENCOUNTERED

LA CORP.GDT_08/15/03 Fullerton*.JSR

EXPLORATORY BORING: LB-04

Sheet 1 of 1

DRILL RIG: AL-ROY DRILLING CO.
 BORING TYPE: BUCKET AUGER
 LOGGED BY: TKK
 START DATE: 7-30-03 FINISH DATE: 7-30-03

PROJECT NO: 1651-15A
 PROJECT: TOSCO CENTER STREET REMEDIATION
 LOCATION: LOS ANGELES, CALIFORNIA
 COMPLETION DEPTH: 24.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
272.0	0		SURFACE ELEVATION: 272 FT. (+/-)							
	0		FILL: SILT (ML), with sand, trace of gravel, slightly moist to moist, brown							
	2.5		- trace of sand, moist, gray brown	ML						
	5		- trace of fine sand, soft, brown							
	5		FILL: SILTY SAND (SM), fine to coarse, moist, dark brown	SM	3	X	10	105		
	10		NATIVE: SAND (SP), medium to coarse, with gravel, medium dense, moist, light brown	SP	9	X	2	128		
	15		- disturbed soil sample was retrieved in sampler tip, only, due to gravel		9	O	3			
	18		SILT (ML), trace of fine sand and gravel, moist, gray brown	ML						
	20		SAND (SP), fine to coarse, with gravel and cobbles less than 12-inches in diameter, moist, light brown	SP	9	X	3	125		
	22		- medium to coarse, medium dense							
	24		- required 30 minutes to drill from 22-feet to 24-feet due to gravel and cobbles less than 12-inches in diameter							
	25		BOTTOM OF THE BORING AT 24 FEET NO GROUNDWATER ENCOUNTERED BORING WAS BACKFILLED WITH CUTTINGS BORING STOPPED AT 24- FEET DUE TO REFUSAL							
	30		WEIGHT OF KELLY: 0 TO 24- FEET: 2,150 POUNDS 25 TO 44- FEET: 1,350 POUNDS 45 TO 65- FEET: 650 POUNDS							

GROUND WATER OBSERVATIONS:
 NO FREE GROUNDWATER ENCOUNTERED

LA CORP.GDT 08/15/03 F:\linton* JSR

PRIMARY DIVISIONS			SOIL TYPE	LEGEND	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (Less than 5% Fines)	GW		Well graded gravels, gravel-sand mixtures, little or no fines
			GP		Poorly graded gravels or gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES	GM		Silty gravels, gravel-sand-silt mixtures, plastic fines
			GC		Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (Less than 5% 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	SM		Silty sands, sand-silt-mixtures, non-plastic fines
			SC		Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50 %		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays 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 IS GREATER THAN 50 %		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils

DEFINITION OF TERMS

SILTS AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

U.S. STANDARD SIEVE SIZE: 200, 40, 10, 4
CLEAR SQUARE SIEVE OPENINGS: 3/4", 3", 12"

GRAIN SIZES

TERZAGHI (N-values)
SPLIT SPOON, STANDARD
PENETRATION TEST (SPT)

MODIFIED CALIFORNIA
SAMPLER (brass ring lined)

D & M
UNDERWATER
SAMPLER

PISTON SAMPLER

SAMPLERS

AT TIME OF DRILLING

MEASURED FOLLOWING DRILLING

GROUND WATER

SAND AND GRAVEL	BLOWS/FOOT*
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH+	BLOWS/FOOT*
VERY SOFT	0-1/4	0-2
SOFT	1/4-1/2	2-4
MEDIUM STIFF	1/2-1	4-8
STIFF	1-2	8-16
VERY STIFF	2-4	16-32
HARD	OVER 4	OVER 32

CONSISTENCY

*Applicable only for Standard Penetration Tests (ASTM D-1586).

+Unconfined compressive strength in tons/sq.ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

KEY TO EXPLORATORY BORING LOGS

Unified Soil Classification System (ASTM D 2487)

LOVNEY ASSOCIATES
Environmental/Geotechnical/Engineering Services

FIGURE A-1

1010219200513830

**Existing Geotechnical Boring Logs
Sladden Engineering, 2004**

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Dynamic Builders
718 & 728 East Commercial, L.A.

Date: 2/14/2004

Boring No. 1

Job Number:

444-4041

Depth, ft	Symbol	Core	Blows/6"	Description	Soil type	Unit Wt, pcf	Moisture, %	% Minus #200	Remarks
0			::	Silty Sand with Gravel: Brown	SM	::	::	::	Artificial Fill 4'
5			10/24/28	No Recovery	---	---	---	---	Native Soils
10			11/42/50	Silty Sand: Grey Brown	SM	107	3	4	
15			50-5"	Gravelly Sand: Brown	SM		2		
20			34/50-3"	Sand: Grey Brown	SM	103	3	2	
25			50-5"	Silty Sand: Grey Brown	SM		4		
30			50-4"	Gravelly Sand: Grey	SM		11		Petroleum Odor Groundwater @ 29'
35			50-5"	Gravelly Sand: Grey	SM		10		
40			40/50-3"	Sand: Grey	SM		11		Note: The stratification lines represent the approximate boundaries between the soil types; the transition may be gradual.
45			50-3"	Sand: Grey	SM		15		Total Depth = 50.5' No Bedrock
50			50-4"	Sand: Grey	SM		10		

Dynamic Builders
718 & 728 East Commercial, L.A.

Date: 2/14/2004

Boring No. 2

Job Number:

444-4041

Depth, ft	Symbol	Core	Blows/6"	Description	Soil type	Unit Wt, pcf	Moisture, %	% Minus #200	Remarks
0			::	Silty Sand Brown	SM	::	::	::	Artificial Fill 5'
5		18/20/22		Silty Sand Grey	SM	99	3	8	Native Soils Disturbed Sample
10		18/22/26		Silty Sand Brown	SM	---	2	---	
15		50-5"		Gravelly Silty Sand Brown	SM	101	3	5	
20		50-3"		Gravelly Sand Brown	SM	102	2	6	
25									Total Depth = 20.5' No Bedrock No Groundwater
30		Recovered Sample							
		Unrecovered Sample							
		Standard Penetration Sample							
35									
40									
45									
50									

Note: The stratification lines represent the approximate boundaries between the soil types; the transition may be gradual.

Dynamic Builders
718 & 728 East Commercial, L.A.

Date: 2/14/2004

Boring No. 3

Job Number:

444-4041

Depth, ft	Symbol	Core	Blows/6"	Description	Soil type	Unit Wt, pcf	Moisture, %	% Minus #200	Remarks	
0			::	Silty Sand: Brown	SM	::	::	::	Artificial Fill 5'	
6			36/50-5"	8" to 12" Thick Concrete @ 5' Gravelly Silty Sand: Grey Brown	SM	104	3	6	Native Soils	
10			10/16/23	Silty Sand: Brown	SM	98	7	5		
15			27/40/50	Gravelly Sand: Brown	SM	123	4	4		
20			39/50-3"	Gravelly Sand: Brown	SM	104	3	6		
25									Total Depth = 20.5' No Bedrock No Groundwater	
30				Recovered Sample						
				Unrecovered Sample						
				Standard Penetration Sample						
40				Note: The stratification lines represent the approximate boundaries between the soil types, the transition may be gradual.						
45										
50										








**Dynamic Builders
718 & 728 East Commercial, L.A.**

Date: 2/14/2004

Boring No. 4

Job Number:

444-4041

Depth, ft	Symbol	Core	Blows/6"	Description	Soil type	Unit Wt, pcf	Moisture, %	% Minus #200	Remarks
0			::	Silty Sand, Brown	SM	::	::	::	Artificial Fill 19'
5			18/40/50	Gravelly Silty Sand, Dark Brown	SM	119	12	45	
10			20/31/42	Silty Sand with Gravel, Dark Grey Brown	SM	119	10	30	
15			50-3"	No Recovery	---	---	---	---	
20			42/50-3"	Gravelly Silty Sand, Brown	SM	107	3	6	Native Soils
25									Total Depth = 20.5' No Bedrock No Groundwater
30				Recovered Sample					
				Unrecovered Sample					
				Standard Penetration Sample					
35									
40									Note: The stratification lines represent the approximate boundaries between the soil types, the transition may be gradual.
45									
50									

Dynamic Builders
718 & 728 East Commercial, L.A.

Date: 2/14/2004

Boring No. 5

Job Number:

444-4041

Depth, ft	Symbol	Core	Blows/6"	Description	Soil type	Unit Wt, pcf	Moisture, %	% Minus #200	Remarks	
0			---	Silty Sand with Gravel: Grey Brown	SM	---	---	---	Artificial Fill 9'	
5		7/7/7		Silty Sand with Gravel: Grey Brown	SM	96	9	31		
10		35/50-2"		Silty Sand: Grey Brown	SM	106	3	6	Native Soils	
15		36/50-2"		Gravelly Sand: Brown	SM	113	2	7		
20		28/30/50		No Recovery	---	---	---	---		
25									Total Depth = 20.5' No Bedrock No Groundwater	
30		Recovered Sample								
		Unrecovered Sample								
		Standard Penetration Sample								
40				Note: The stratification lines represent the approximate boundaries between the soil types; the transition may be gradual.						
45										
50										

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**Existing Geotechnical Boring Logs
Smith-Emery GeoServices, 2003**

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MAJOR SUBDIVISIONS			GROUP SYMBOL	MAJOR SUBDIVISIONS		
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	
				GP	POORLY GRADED GRAVELS, OR GRAVEL-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.	
	SAND AND SANDY SOILS	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	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50.		ML	INORGANIC SILTS, SANDY SILTS, AND CLAYEY SILTS OF LOW PLASTICITY.
					CL	INORGANIC CLAYS OF LOW TO MED. PLASTICITY; GRAVELLY, SANDY OR 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. PLASTIC SILTS.	
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.	
				OH	ORGANIC CLAYS AND SILTY CLAYS OF MEDIUM TO HIGH PLASTICITY.	
HIGHLY ORGANIC SOILS				PT	PEAT AND OTHER HIGHLY ORGANIC SOILS.	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE CLASSIFICATIONS

SOIL CLASSIFICATION CHART

UNIFIED SOIL CLASSIFICATION SYSTEM

Smith-Emery GeoServices

PLATE NO.: A-1A

1010330200515544

KEY TO LOG OF BORINGS

SYMBOL	TYPE OF TEST	KEY TO SAMPLES
COMP	COMPACTION CHARACTERISTICS	<input type="checkbox"/> INDICATES DEPTH OF UNDISTURBED SAMPLE
TX	TRIAxIAL COMPRESSION TEST	<input type="checkbox"/> INDICATES DEPTH OF BULK SAMPLE
DS	DIRECT SHEAR TEST	<input type="checkbox"/> INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY
UC	UNCONFINED COMPRESSION TEST	<input type="checkbox"/> INDICATES DEPTH OF STANDARD PENETRATION TEST (SPT)
C	CONSOLIDATION TEST	<input checked="" type="checkbox"/> INDICATES DEPTH OF DISTURBED SAMPLE
COLL	COLLAPSE TEST	
EXP	PERCENT EXPANSION	
EI	EXPANSION INDEX	
SA	SIEVE ANALYSIS (+ #200 ONLY)	
-200	% PASSING #200 SIEVE	
HA	HYDROMETER ANALYSIS (- #200 ONLY)	
AL	ATTERBERG LIMITS	
SE	SAND EQUIVALENT	
P	PERMEABILITY	
R	R-VALUE	
Gs	SPECIFIC GRAVITY	
S	SOLUBLE SULFATES	
CH	HYDROGEN ION CONTENT	
RE	RESISTIVITY	
CL	CHLORIDE	
PTV	POCKET TORQUE VANE	
PP	POCKET PENETROMETER	

NOTE ON SAMPLERS:

Undisturbed samples were obtained with a "California" sampler having an O.D. of 3.0 inches and an I.D. of 2.4 inches. The SPT sampler is 2 inches O.D.; the bit has an I.D. of 1.4 inches and the split barrel has an I.D. of 1.5 inches. Unless practical refusal was encountered, the samplers were driven 18 inches into the soil using a 140 pound weight falling 30 inches. The blow count for the final 12 inches is recorded on the boring logs.

NOTES:

The descriptions on the boring logs apply only at the specific boring locations and at the time the borings were made. They are not warranted to be representative of subsurface conditions. Soil and rock descriptions are based on commonly accepted geotechnical methods of identification and classification and are based on our professional judgment and experience. Field descriptions have been modified where appropriate to reflect laboratory test results. The stratification of soil layers is represented with approximate boundaries and the transition between soil types may be gradual. Groundwater depths indicated on boring logs are specific to the time of drilling. The term "encountered" refers to the level at which free water was first noticed in the boring. The term "stabilized" refers to the level of the water after a lapse of at least one hour.

Smith-Emery GeoServices

PLATE NO.: A-1B

1010330200515544

SMITH-EMERY GEOSERVICES

PROJECT: Proposed Two Elevators
 LOCATION: 801 E. Commercial Street, Los Angeles, California
 SURFACE ELEVATION: (Not surveyed)
 GROUNDWATER LEVEL: Not encountered
 DATUM

FILE NO.: 33182-1
 REPORT NO. G-03-5577
 DATE DRILLED: 9-11-03
 CORRECTED LOG BY: ABC
 SHEET 1 OF 1

LOG OF BORING NO. 1

PLATE NO. A-2A

SP-SM: MDD = 121.2 pcf

D (FT.)	ST	MATERIAL DESCRIPTION	USC	SYM	N'	G _s (pcf)	W %	S %	LL %	PL %	% -200	RC %	G _m (pcf)
0		5" thick reinforced concrete floor slab											
		Fill: SILTY SAND- brown, some gravel, brick fragments, loose, damp	SM		31	98.9	6.6	26.0				81.6	105.4
		(moist)			27	111.5	10.6	58.2				92.0	123.3
5		FINE SANDY SILT - olive brown, very loose, moist	ML		22	87.8	19.8	59.4			63.5	76.3	105.2
		(wet)			29	85.2	33.0	92.9				74.1	113.3
10		Bottom at 10 feet											

LOG OF BORING NO. 2

D (FT.)	ST	MATERIAL DESCRIPTION	USC	SYM	N'	G _s (pcf)	W %	S %	LL %	PL %	% -200	RC %	G _m (pcf)
0		3" thick concrete floor slab											
		SILTY SAND- olive brown, w/ gravel, loose to medium dense, humid	SP		28	104.0	1.7	7.6				85.8	105.8
					42	108.0	2.2	11.0			4.0	89.1	110.4
5					38	106.0	3.2	15.1				87.5	109.4
					45	109.0	3.3	16.9				89.9	112.6
10		Bottom at 9 feet											

ML: MDD* = 115.0 pcf
 *Estimated

LEGEND:

B - Bedding
 J - Joint
 C - Contact
 F - Fault
 RS - Rupture Surface

N' - Blows per Foot (35-lb. weight)
 G_s - Dry Unit Weight
 W - Water Content
 S - Saturation
 LL - Liquid Limit
 MDD - Maximum Dry Density

PL - Plastic Limit
 RC - Relative Compaction
 ST - Sample Type
 USC - Unified Classification System
 D - Depth
 G_m - Moist Density (pcf)

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Existing Geotechnical Boring Logs
URS, 2003

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GC CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		CLEAN SANDS (LITTLE OR NO FINES)		SP POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM SILTY SANDS, SAND - SILT MIXTURES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		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 OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
			CL INORGANIC CLAYS 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	
			OH ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS				PT PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Dual symbols are used to indicate gravels or sand with 5-12% fines and soils with fines classifying as CL-ML. Symbols separated by a slash indicate borderline soil classifications.

Sampler and Symbol Descriptions

- Dames & Moore Type-U sample
- Standard Penetration Test
- No Recovery
- Bk Bulk sample
- Disturbed Type-U Sample
- Shelby Tube Sample
- Rock Core Sample
- Approximate depth of perched water or groundwater

Note: Number of blows required to advance driven sample 12" (or length noted) is recorded.

Laboratory and Field Test Abbreviations

- | | |
|---------|---|
| CBR | California Bearing Ratio test |
| COL | Collapse Potential test (test result in parentheses) |
| COMP | Compaction test |
| CON | Consolidation test |
| CORR | Corrosivity test |
| DSCD | Consolidated drained direct shear test (normal pressure and shear strength results shown) |
| EI | Expansion Index test (test result in parentheses) |
| LL=29 | Liquid limit (Atterberg limits test) |
| PI=11 | Plasticity Index (Atterberg limits test) |
| PP | Pocket Penetrometer test (test result in parentheses, tsf) |
| R-Value | Resistance Value test |
| SA | Sieve Analysis (-200 result in parentheses) |
| SE | Sand Equivalent test (test result in parentheses) |
| SWELL | Swell Load test (test result in parentheses) |
| TV | Torvane test (test result in parentheses, tsf) |
| -200 | Percent passing #200 sieve (test result in parentheses) |

KEY TO LOG OF BORING

PROPOSED WEST CAMPUS INFRASTRUCTURE PROJECT
UNION STATION
LOS ANGELES, CALIFORNIA

Date(s) Drilled	10-14-02	Logged By	Jeff Pyska	Boring B-1 Sheet 1 of 1	
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	B61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type-U, SPT, Bulk			Job Number	29401632.00001
Approximate Groundwater Depth and Date Measured	Groundwater encountered at 24 feet below ground surface on 10/14/2002			Total Depth Drilled (ft)	40.0
Comments	None			Approximate Ground Surface Elevation(ft)	278 feet MSL

Elevation (ft)	SAMPLES			Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Type	Number	Blows per 6-inch						
0	☒ Bk-1				SM	About 2.5-inch thick Asphaltic Concrete			
1	■	1	35			FILL Silty SAND mottled brown, loose to medium dense, moist, fine to coarse, with fine gravel Pieces of bricks in cuttings	12	101	-200(26); +4(27)
5	☐		11			Grades dark gray, with trace asphalt	11		
270	☒	2	4						
	■	3	35/1'						
10	☒	4	28		SM	ALLUVIUM Silty SAND brown, medium dense, slightly moist, fine to coarse, with fine to coarse gravel Gravel/rock powder in shoe	2		
15	■	5	91/11'		SP-SM	SAND with silt brown, very dense, slightly moist, fine to coarse, with fine to coarse gravel	3	124	
260									
20	☒	6	50/5'						
25	■	7	56			Grades wet	13	111	
250									
30	☒	8	56		SM	Silty SAND gray, very dense, wet, fine to coarse, with fine to coarse gravel			
35	■	9	50/0"			Grades with coarse gravel and cobble			
240									
40	☒	10	50/2"						

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LOG OF BORING
PROPOSED WEST CAMPUS INFRASTRUCTURE PROJECT
UNION STATION
LOS ANGELES, CALIFORNIA



FIGURE A-2

1020312200514722

Report: URS-1FOOT - Project File: G:\GINT-ZZWP\PROJECTS\UNION3.GPJ - Data Template: DMLA.GDT - Printed: 10/24/03

Date(s) Drilled	10-14-02	Logged By	Jeff Pyska	Boring B-2 Sheet 1 of 2	
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	B61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type-U, SPT, Bulk			Job Number	29401632.00001
Approximate Groundwater Depth and Date Measured	Groundwater encountered at 40 feet below ground surface on 10/14/2002			Total Depth Drilled (ft)	51.5
Comments	None			Approximate Ground Surface Elevation(ft)	293 feet MSL

Elevation (ft)	Depth (ft)	SAMPLES			USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number	Blows per 6-inch					
0		BK-1			SM	About 2.5-inch thick Asphaltic Concrete FILL			
290					ML	Silty SAND brown, loose to medium dense, moist, fine to coarse, with fine gravel and pieces of brick			COMP DSCD
5	1		14		ML	Sandy SILT olive-brown, medium dense, moist, fine to coarse, with trace fine gravel and pieces of siltstone	20		-200(57); +4(7)
10	2		42			Grades mottled brown and gray, with fine to coarse gravel			
280	3		50/6"			Grades very dense	10		
15	4		28	SM	ALLUVIUM Silty SAND gray, loose to medium dense, moist, fine to coarse, with trace fine gravel				
20	5		8	ML	Sandy SILT gray, medium dense, moist, fine			DSCD	
25	6		35			White with black crystals rock in shoe			
270	7		27	SM	Silty SAND light greenish-gray, medium dense, slightly moist, fine to coarse, with some fine to coarse gravel	4			
25	8		79			Grades with some brown layers, dense			
30	9		38	SP-SM	SAND with silt gray, dense, slightly moist, fine				
30	10		36	SM	Silty SAND greenish-gray to gray, medium dense, slightly moist, fine to coarse, with some fine to coarse gravel	25	96	CON	
260	35		50/5"			Grades greenish-gray to brown, very dense, with more sand	3		
40									

Report: URS-1FOOT - Project File: C:\GINT-ZZ\WP\PROJECTS\UNION03.GPJ, Data Template: DMLA.GDT Printed: 10/24/03

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LOG OF BORING
PROPOSED WEST CAMP INFRASTRUCTURE PROJECT
UNION STATION
LOS ANGELES, CALIFORNIA



FIGURE A-3

1020312200514722

Elevation (ft)	SAMPLES			Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Type	Number	Blows per 6-inch						
40	■	12	64		SM	Silty SAND greenish-gray to brown, dense, wet, fine to coarse, with fine to coarse gravel			
250					SP-SM	SAND with silt gray, medium dense, moist, fine to coarse, with trace fine gravel	12	112	-200(8); +4(7)
45	■	13	28						
50	■	14	45				9		
240									
55									
60									
230									
65									
70									
220									
75									
80									
210									
85									
90									

Report: URS-1FOOT; Project File: G:\GINT-Z\W\PROJECTS\UNION3.GPJ; Data Template: DMLA.GOT; Printed: 10/24/03

Date(s) Drilled	10-16-02	Logged By	Jeff Pyska	Boring B-3 Sheet 1 of 2	
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	861	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type-U, SPT, Bulk			Job Number	29401632.00001
Approximate Groundwater Depth and Date Measured	Groundwater encountered at 38 feet below ground surface on 10/16/2002			Total Depth Drilled (ft)	51.5
Comments	None			Approximate Ground Surface Elevation(ft)	293 feet MSL

Elevation (ft)	Depth (ft)	SAMPLES			USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number	Blows per 6-inch					
0		Bk-1			SM	About 2.5-inch thick Asphaltic Concrete FILL			
290						Silty SAND brown, loose to medium dense, moist, fine to coarse, with fine to coarse gravel			CORR
5		1	11		CL	Sandy CLAY mottled brown and gray, stiff, moist, fine to coarse, with trace fine gravel and some organics	19		-200(61); +4(2)
10		2	37			Grades very stiff, with some silty sand layers, some siltstone fragments, and no organics	23	103	-200(76); +4(2)
280		3	26			Grades with pieces of wood and brick in cuttings	26		
15		5	22			Grades stiff, with large gravel particle in bottom ring and nothing in shoe	26	98	
20		6	7		SM	ALLUVIUM Silty SAND dark gray, loose, moist, fine, with organics			
270		8	39			Grades gray, dense, fine to coarse, with fine to coarse gravel			
25		9	50/4"			Grades gray to brown, very dense, slightly moist, coarse gravel in shoe	4	120	
30		10	50/6"						
260		11	50/4"		SP-SM	SAND with silt gray, very dense, moist, fine to coarse, with fine to coarse gravel			
35									
40									

Report URS-1FOOT, Project File: G:\CINT-ZZWP\PROJECTS\UNION3.GPJ, Data Template DMILA.GDT Printed: 10/24/03

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LOG OF BORING
PROPOSED WEST CAMPUS INFRASTRUCTURE PROJECT
UNION STATION
LOS ANGELES, CALIFORNIA

FIGURE A-4



1020312200514722

Elevation (ft)	Depth (ft)	SAMPLES			USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number	Blows per 6-inch					
40	40	■	12	79/11*	SP-SM	SAND with silt gray, very dense, moist, fine to coarse, with fine to coarse gravel	8	128	
250	45	■	13	50/6*					
50	50	■	14	69/11*					
240	55								
60	60								
230	65								
220	70								
210	75								
85	80								
90	85								

Report URS-1FOOT, Project File: G:\GINT-22\PROJECTS\UNION3 GPJ, Data Template DMLA.GDT Printed 10/24/03

Date(s) Drilled	10-16-02	Logged By	Jeff Pyska	Boring B-4 Sheet 1 of 2	
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	B61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type-U, SPT, Bulk			Job Number	29401632.00001
Approximate Groundwater Depth and Date Measured	Groundwater encountered at 39 feet below ground surface on 10/16/2002			Total Depth Drilled (ft)	51.5
Comments	None			Approximate Ground Surface Elevation(ft)	293 feet MSL

Elevation (ft)	Depth (ft)	SAMPLES			USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number	Blows per 6-inch					
0		<input checked="" type="checkbox"/>	Bk-1		SM	About 2.5-inch thick Asphaltic Concrete			
290						FILL Silty SAND brown to reddish-brown, loose to medium dense, moist, fine to coarse, with trace fine gravel			
	5	<input checked="" type="checkbox"/>	1	36			16	112	
	10	<input checked="" type="checkbox"/>	2	50/6*		Grades gray, moist, very dense, with asphalt and grass	11		
280						Pieces of brick and wood in cuttings			
	15	<input checked="" type="checkbox"/>	4	24	ML	SILT gray, black, and brown mottled, very stiff, moist, with fine to coarse sand and pieces of wood	16		
	20	<input checked="" type="checkbox"/>	6	21		Grades with pieces of wood and concrete			
270		<input type="checkbox"/>	7	50/6*	SM	ALLUVIUM Silty SAND grayish-brown, very dense, slightly moist, fine to coarse, with trace fine gravel			
	25	<input checked="" type="checkbox"/>	8	50/4*			4		
	30	<input checked="" type="checkbox"/>	10	50/6*					
260									
	35	<input checked="" type="checkbox"/>	11	89/11*		Grades gray, with fine to coarse gravel			
40									

Report: URS-1FOOT; Project File: G:\GINT-ZZ\PROJECTS\UNION3.GPJ; Data Template: DMLA.GDT Printed: 10/24/03

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LOG OF BORING
PROPOSED WEST CAMPUS INFRASTRUCTURE PROJECT
UNION STATION
LOS ANGELES, CALIFORNIA



FIGURE A-5

1020312200514702

Elevation (ft)	SAMPLES			Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Type	Number	Blows per 6-inch						
40	▲	12	53		SM	Silty SAND gray, very dense, moist, fine to coarse, with fine to coarse gravel			
250	■	13	50/5*		SP-SM	SAND with silt gray, very dense, wet, fine to coarse, with fine gravel			
50	▲	14							
240									
55									
60									
230									
65									
70									
220									
75									
80									
210									
85									
90									

Report: URS-1FCOOT, Project File: G:\GINT-ZZ\PROJECTS\UNION3.GPJ, Data Template: DMLA.GDT, Printed: 10/24/03



FIGURE A-5

1020312200514722

Date(s) Drilled	10-14-02	Logged By	Jeff Pyska	Boring B-6 Sheet 1 of 2	
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	861	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type-U, SPT, Bulk			Job Number	29401632.00001
Approximate Groundwater Depth and Date Measured	Groundwater encountered at 24 feet below ground surface on 10/14/2002			Total Depth Drilled (ft)	51.0
Comments	None			Approximate Ground Surface Elevation(ft)	278 feet MSL

Elevation (ft)	Depth (ft)	SAMPLES			USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number	Blows per 6-inch					
0		Bk-1			SM	About 2.5-inch thick Asphaltic Concrete			
					ML	FILL Silty SAND brown, moist, fine to coarse, with fine gravel	25		-200(76); +4(0) CORR
	1		9			Sandy SILT grayish-brown, loose, moist, fine to coarse, with trace fine to coarse gravel and some clay			
	5		26		SM		3	92	
270			35			ALLUVIUM Silty SAND brown, medium dense to dense, moist, fine to coarse, with some fine to coarse gravel and trace clay	2		
	10		63			Grades with iron-oxide staining and trace gray clay/silt chunks			
	15		50/6'			Grades very dense, without clay/silt chunks	4		-200(9); +4(39)
260			50/6'			Grades gray	3	115	
	25		37			Grades dense, wet	12		
250			31		ML	Sandy SILT greenish-gray, medium dense, wet, fine to coarse, with fine to coarse gravel and some clay			CON, DSCD
	35		5			Grades loose	45		-200(92); +4(0)
240					SP	SAND			
40									

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LOG OF BORING
PROPOSED WEST CAMPUS INFRASTRUCTURE PROJECT
UNION STATION
LOS ANGELES, CALIFORNIA

FIGURE A-7



Elevation (ft)	SAMPLES			Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Type	Number	Blows per 6-inch						
40	■	10	36		SP	SAND gray, medium dense, wet, fine to coarse			
45	■	11	56		SM	Silty SAND gray to greenish-gray, very dense, wet, fine to coarse, with some fine gravel			
50	⊗	12	50/6*					12	
55									
60									
65									
70									
75									
80									
85									
90									

Report: URS-1FOOT; Project File: G:\GINT-ZZ\PROJECTS\UNION3.GPJ; Data Template: DMLA.GDT Printed: 10/24/03

Date(s) Drilled	10-16-02	Logged By	Jeff Pyska	Boring B-7 Sheet 1 of 1	
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	B61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type-U, SPT, Bulk			Job Number	29401632.00001
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Total Depth Drilled (ft)	16.0
Comments	None			Approximate Ground Surface Elevation(ft)	278 feet MSL

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
0		☒	Bk-1		SM	About 4-inch thick Asphaltic Concrete over 2-inch thick Base			
	1	☑	1	4	ML	FILL Silty SAND reddish-brown, moist, fine to coarse, with trace fine to coarse gravel and brick fragments	13		-200(37); +4(18)
	5	■	2	35		Sandy SILT dark brown, loose, moist, fine to coarse	8	115	
270		☑	3	34	SP-SM	ALLUVIUM SAND with silt yellowish-brown, medium dense to dense, moist, fine to coarse, with some fine to coarse gravel			
	10	□	4	50/5*		Grades very dense			
	15	☑	5	50/5*			5		
260									
	20								
	25								
250									
	30								
	35								
240									
	40								

Report: URS:1FOOT; Project File: G:\GINT-ZZ\PROJECTS\UNION\G.P.J; Data Template DMLA.CDT Printed: 10/24/03

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LOG OF BORING
PROPOSED WEST CAMPUS INFRASTRUCTURE PROJECT
UNION STATION
LOS ANGELES, CALIFORNIA



FIGURE A-8

1020312200514712

Date(s) Drilled	10-16-02	Logged By	Jeff Pyska	Boring B-8 Sheet 1 of 1	
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	B61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type-U, SPT, Bulk			Job Number	29401632.00001
Approximate Groundwater Depth and Date Measured	No groundwater encountered			Total Depth Drilled (ft)	16.5
Comments	None			Approximate Ground Surface Elevation(ft)	278 feet MSL

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
0	0	Bk-1			SM	About 4-inch thick Asphaltic Concrete FILL			
	1		19		SM	Silty SAND brown to dark brown, loose, moist, fine to coarse, with fine to coarse gravel and concrete debris			
	5		25		SM	ALLUVIUM Silty SAND brown to yellowish-brown, medium dense, slightly moist, fine to coarse, with fine to coarse gravel	2		
270	3		26		SP-SM	SAND with silt brown, medium dense, slightly moist, fine to coarse, with trace fine gravel	4	96	
	10		10						
	15		24			Grades yellowish-brown, moist, with some silt lenses, and iron-oxide staining	8	100	
260	20								
	25								
250	30								
	35								
240	40								

Report: URS-1FOOT; Project File: G:\0\INT-ZZWP\PROJECT\SUNICK3.GPJ; Data Template: DMLA.GDT; Printed: 10/24/03

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











LOG OF BORING
PROPOSED WEST CAMPUS INFRASTRUCTURE PROJECT
UNION STATION
LOS ANGELES, CALIFORNIA

FIGURE A-9



1020312200514722

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS		SYMBOLS	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)	 GW WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	 GP POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		CLEAN SANDS (LITTLE OR NO FINES)	 GM SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	 GC CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)	 SW WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	 SP POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		 SM SILTY SANDS, SAND - SILT MIXTURES	
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50	 SC CLAYEY SANDS, SAND - CLAY MIXTURES	
		 ML INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
		 CL INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50	 OL ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
		 MH INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS	
		 CH INORGANIC CLAYS OF HIGH PLASTICITY	
HIGHLY ORGANIC SOILS		 OH ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS		 PT PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: Dual symbols are used to indicate gravels or sand with 5-12% fines and soils with fines classifying as CL-ML. Symbols separated by a slash indicate borderline soil classifications.

Sampler and Symbol Descriptions

- Dames & Moore Type-U sample
- Standard Penetration Test
- No Recovery
- Bk Bulk sample
- Disturbed Type-U Sample
- Pitcher Tube Sample
- Shelby Tube Sample
- Rock Core Sample
- Approximate depth of perched water or groundwater

Note: Number of blows required to advance driven sample 12" (or length noted) is recorded.

Laboratory and Field Test Abbreviations

- CBR California Bearing Ratio Test
- COL Collapse Potential test (test result in parentheses)
- COMP Compaction test
- CON Consolidation test
- CORR Corrosivity test
- DSCD Consolidated drained direct shear test (normal pressure and shear strength results shown)
- EI Expansion Index test (test result in parentheses)
- LL=29 Liquid limit (Atterberg limits test)
- PI=11 Plasticity Index (Atterberg limits test)
- PP Pocket Penetrometer test (test result in parentheses, tsf)
- R-Value Resistance Value test
- SA Sieve Analysis (-200 result in parentheses)
- SE Sand Equivalent test (test result in parentheses)
- SWELL Swell Load test (test result in parentheses)
- TV Torvane test (test result in parentheses, tsf)
- 200 Percent passing #200 sieve (test result in parentheses)

KEY TO LOG OF BORING
 PROPOSED 3-STORY OFFICE BUILDING
 LOS ANGELES, CALIFORNIA
 FOR: CATELLUS DEVELOPMENT CORPORATION

Figure A-0

Date(s) Drilled	9/11/01	Logged By	TO	Boring BH-1 Sheet 1 of 2	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	Drag		
Drill Rig Type	Mobile Drill B-61	Hammer Data	140-lbs Hammer / 30-inch drop		
Sampling Method(s)	Dames & Moore Type U, SPT, Bulk			Job Number	59-00112046.01
Approximate Groundwater Depth and Date Measured	Not encountered			Total Depth Drilled (ft)	51.5
Comments	None			Approximate Ground Surface Elevation(ft)	278

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type Number	Blows per foot						
0					SM	4-inch Asphalt over 6-inch base material ARTIFICIAL FILL (Af): Dark brown silty fine to medium SAND, moist (loose)			
5		☒ Bk-1							
	5	■ 1	23				7	107	
270					SP	ALLUVIUM (Qal): Dark gray fine to coarse SAND with fine gravel, moist (medium dense)			
10		□ 2	23						
15		■ 3	100/8"			Grades medium to coarse sand with fine gravel (very dense)	3		DSCD -200(5)
260									
20		▣ 4	52			PUEENTE FORMATION (Tp): Dark olive-gray SILTSTONE and CLAYSTONE, moist (weathered)			
250		■ 5	50/2"						
30		▣ 6	50/6"			Grades with clasts			
35		■ 7	50/5"						
240									
40									

Report: DMG4; Project File: G:\GINTW\PROJECTS\UNION2.GPJ; Data Template DMLA.GDT Printed: 10/20/02

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LOG OF BORING
PROPOSED 3-STORY OFFICE BUILDING
LOS ANGELES, CALIFORNIA
FOR: CATELLUS DEVELOPMENT CORPORATION



Figure A-1

1020312000514722

Elevation (ft)	SAMPLES			Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Depth (ft)	Type Number	Blows per foot						
40	8	80							
45	9	32				Grades olive-brown			
50	10	70/10*				Becomes interbedded with SANDSTONE, thinly bedded, bedding inclined about 40 degrees from horizontal			
51.5						Boring completed to a depth of 51.5 feet below the existing ground surface. Borehole backfilled with soil cuttings on 9/11/01.			

Report: DMG4, Project File: G:\GINT\PROJECTS\UNBOX2.GPJ, Data Template: DMLA.GDT Printed: 10/03/02



Figure A-1

Date(s) Drilled	9/11/01	Logged By	YO	Boring BH-2 Sheet 1 of 2	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	Drag		
Drill Rig Type	Mobile Drill B-61	Hammer Data	140-lbs Hammer / 30-inch drop		
Sampling Method(s)	Dames & Moore Type U, SPT			Job Number	59-00112046.01
Approximate Groundwater Depth and Date Measured	24.5 feet			Total Depth Drilled (ft)	50.9
Comments	None			Approximate Ground Surface Elevation(ft)	278

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type Number	Blows per foot						
0					SM	4-inch of asphalt over 6-inch of base material ARTIFICIAL FILL (Af): Dark brown moist silty fine to medium SAND with gravel to 0.5 inches, moist (medium dense)			
5	1	29			CL	Dark brown silty CLAY with coarse sand, moist (stiff)			
270	2	42			SP	ALLUVIUM (Qal): Yellowish-brown fine to medium SAND with trace coarse sand, moist (medium dense)	3	108	DSCD
10	3	11			ML	Dark brown fine to medium sandy SILT, wet (medium dense)	12		
15	4	50/6"			SP	Yellowish-brown fine to medium SAND with trace gravel up to 2-inch, moist (very dense)	3	97	
260	5	50/6"							
25					CL	Light brown silty CLAY, wet (hard)			
250	6					Grades bluish-gray			
30	7	79				PUENTE FORMATION (Tp): Dark olive-gray interbedded CLAYSTONE and SANDSTONE, wet (weathered)			
35	8	50/4"							
240									
40									

Report: DMGA; Project File: G:\INTWP\PROJECTS\UNOR2.GPJ; Data Template: DMLA.GDT Printed: 10/30/02

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LOG OF BORING
PROPOSED 3-STORY OFFICE BUILDING
LOS ANGELES, CALIFORNIA
FOR: CATELLUS DEVELOPMENT CORPORATION



Figure A-2

1020312200514722

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pct)	OTHER TESTS and REMARKS
		Type	Number						
40		■	9	50/6"					
45		■	10	100/10"		Grades black SILTSTONE with fine sand			
50		■	11	50/5"		Grades dark gray			
51		Boring completed to a depth of 51 feet below the existing ground surface. Borehole backfilled with soil cuttings 9/11/01.							
55									
60									
65									
70									
75									
80									
85									
90									

Report: DMG4 - Project File: G:\INTW\PROJECTS\UNION2.GPJ; Data Template: DMLA.GDT Printed: 10/30/02

Date(s) Drilled	9/11/01	Logged By	TO	Boring BH-3 Sheet 1 of 2	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	Drag		
Drill Rig Type	Mobile Drill B-61	Hammer Data	140-lbs Hammer / 30-inch drop		
Sampling Method(s)	Dames & Moore Type U, SPT			Job Number	59-00112046.01
Approximate Groundwater Depth and Date Measured	20 feet			Total Depth Drilled (ft)	51.0
Comments	None			Approximate Ground Surface Elevation(ft)	278

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type Number	Blows per foot						
0					SM	4-inch of Asphalt over 6-inch of base material			
						ARTIFICIAL FILL (Af): Dark brown silty fine to medium SAND with gravel up to 0.5-inch, moist (loose to medium dense)			
5		1	27		SP	ALLUVIUM (Qal): Yellowish-brown fine to medium SAND, slightly moist (loose)			DSCD CORR
					SP-SC	Dark brown fine to medium SAND with clay, moist (medium dense)			
270					SP	Yellowish-brown fine to coarse SAND with fine to coarse gravel, slightly moist (dense)	3		SA(3) CORR
10		2	45						
15		3	50/5'				3	93	CON
260						PUEENTE FORMATION (Tp): Yellowish-brown SANDSTONE and bluish-gray SILTSTONE, thinly bedded, moist (weathered)			
20		4	50						
25		5	50/5'			Becomes wet, less weathered	27	95	CON
250									
30		6	50						
35		7	100/8'						
240									
40									

Report: DMG4; Project File: G:\GINT\PROJECTS\UNION2.GPJ; Data Template: OMLA.GDT Printed: 10/30/02

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LOG OF BORING
PROPOSED 3-STORY OFFICE BUILDING
LOS ANGELES, CALIFORNIA
FOR: CATELLUS DEVELOPMENT CORPORATION



Figure A-3

1020312200514720

Elevation (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pct)	OTHER TESTS and REMARKS
	Type	Number						
40	□	8	85					Bedding inclined at about 30 to 35 degrees from horizontal
45	■	9	50/6'					Bedding inclined at about 65 to 70 degrees from horizontal
50	□	10	50					
55	Boring completed to a depth of 51 feet below the existing ground surface. Borehole backfilled with soil cuttings 9/11/01.							
60								
65								
70								
75								
80								
85								
90								

Report: DMG4; Project File: G:\GIT\PROJECTS\UNION2.GPJ; Data Template: DMLA.GDT Printed: 10/30/02



Figure A-3

Date(s) Drilled	9/11/01	Logged By	TO	Boring BH-4 Sheet 1 of 2	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	Drag		
Drill Rig Type	Mobile Drill B-61	Hammer Data	140-lbs Hammer / 30-inch drop		
Sampling Method(s)	Dames & Moore Type U, SPT			Job Number	59-00112046.01
Approximate Groundwater Depth and Date Measured	19.5 feet			Total Depth Drilled (ft)	50.9
Comments	None			Approximate Ground Surface Elevation(ft)	278

Elevation (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Type Number	Blows per foot						
0				SM	4-inch of Asphalt over 6-inch of base material ARTIFICIAL FILL (Af): Dark brown silty fine to medium SAND with gravel up to 2.5-inch, moist (loose)			
5	■ 1	20			Grades brown	12	116	-200(30)
270				SP	ALLUVIUM (Qal): Yellowish-brown fine SAND with trace coarse sand and fine to coarse gravel, moist (dense)			
10	▣ 2	40				3		
15	■ 3	50/4*				5	116	
260					PUENTE FORMATION (Tp): Gray CLAYSTONE and yellowish-brown SANDSTONE, thinly bedded, wet (weathered)			Bedding inclined at about 50 to 60 degrees from horizontal
20	▣ 4	38						
250								
25	■ 5	50/5*						
30	▣ 6	65			Grades light bluish-gray and dark gray			
35	■ 7	50/4*						
240								
40								

Report: DMG4; Project File: G:\GINT\PROJECTS\UNION2.GPJ; Data Template: DM4A.GDT Printed: 10/30/02

This log is part of the report prepared by URS for this project and should be read together with the report. This summary applies only at the location of the exploration and at the time of drilling or excavation. Subsurface conditions may differ at other locations and may change at this location with time. Data presented are a simplification of actual conditions encountered.

LOG OF BORING
PROPOSED 3-STORY OFFICE BUILDING
LOS ANGELES, CALIFORNIA
FOR: CATELLUS DEVELOPMENT CORPORATION



Figure A-4

1020312200514722

Elevation (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Type	Number						
40	▣	8	50/5					
45	■	9	50/4					
50	▣	10	50/5					
					Boring completed to a depth of 51 feet below the existing ground surface. Borehole backfilled with soil cuttings 9/11/01.			

Report: DMG4; Project File: G:\GINTW\PROJECTS\UNION2 GPJ; Data Template: DMLA.GDT Printed: 10/20/02



Figure A-4

Date(s) Drilled	5/22/01	Logged By	KK - AP Engineering	Boring BH-1 Sheet 1 of 2	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	Mobile Drill B-61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type U, SPT, Bulk			Job Number	59-00112046.01
Approximate Groundwater Depth and Date Measured	Encountered at 24.0 feet, 5/22/01			Total Depth Drilled (ft)	50.5
	None			Approximate Ground Surface Elevation(ft)	278.0

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
0					SM	5-inches Asphalt Grayish-brown, silty fine SAND with gravel, dry (medium dense)			
	2	☒	22						SA(13)
	5	■	41		SP-SM	Brown, fine SAND with silt and gravel to 3/4-inch, medium to coarse, dry (medium dense)	2	119	
270	10	☒	46			Becomes yellowish-brown to grayish-brown (dense)	3		SA(5)
	15	■	50/4"		SP	Yellowish-brown, poorly graded SAND with gravel to 3/8-inch, medium to coarse, moist (very dense)	8	104	-200(4), DS
260	20	□	50/4"						No recovery @ 20'
	25	■	60		ML	Gray, sandy SILT, moist (dense) Becomes wet	29	96	-200(78), DS, CON
250	30	☒	70		SP	Gray, poorly graded SAND, medium, trace gravel, wet (very dense)	13		-200(2)
	35	■	100/5"			Becomes coarse with more gravel	14	119	
240	40								

DMG4 UNION_1 GPJ DMLA GDT 7/23/01

This log is part of the report prepared by Dames & Moore for this project and should be read together with the report. This summary applies only at the location of the exploration and at the time of drilling or excavation. Subsurface conditions may differ at other locations and may change at this location with time. Data presented are a simplification of actual conditions encountered.

LOG OF BORING
ONE UNION STATION PLAZA
LOS ANGELES, CALIFORNIA
FOR: CATELLUS DEVELOPMENT CORPORATION



1020312200514722

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
40	40	■	50/5"				17		
45	45	■	50/1"		SM	Gray, silty fine to medium SAND, wet (very dense)	19	108	DS, CON
230	230				SP-SM	Gray, fine to medium SAND with silt, wet (very dense)			
50	50	■	50/6"			Borehole completed to a depth of 50 1/2 feet below the ground surface on 05/22/01. Borehole backfilled with soil cuttings.	24		
55									
220									
60									
65									
210									
70									
75									
200									
80									
85									
190									
90									

DMG4 UNION_1.GPJ DMLA.GDT T2301

Date(s) Drilled	5/22/01	Logged By	KK - AP Engineering	Boring BH-2 Sheet 1 of 2	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	Mobile Drill B-61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type U, SPT, Bulk			Job Number	59-00112046.01
Approximate Groundwater Depth and Date Measured	Encountered at 30.0 feet, 5/22/01			Total Depth Drilled (ft)	50.8
None				Approximate Ground Surface Elevation(ft)	278.0

Elevation (ft)	SAMPLES			USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Depth (ft)	Type Number	Blows per foot					
0				SM	4-inches Asphalt over 3-inches of Base			
	2.5	24			Dark grayish-brown, silty fine to medium SAND with fine gravel, moist (medium dense)	14	117	
	5	53		SP-SM	Grayish-brown, medium SAND with silt and gravel to 3/8-inch, moist (medium dense)		118	
270	10	62		SM	Grayish-brown, silty medium to coarse SAND, moist (dense)	8		-200(17)
	15	50		SP-SM	Olive-brown, medium SAND with silt and fine gravel, moist (very dense)	4		CORR
260	20	50/2"			Becomes yellowish-brown, gravel to 3/4-inch	6		-200(7)
	25	30				22		
250	30	36		ML	Gray, sandy SILT, moist (medium dense)			
					Becomes wet	38	79	LL=44, PI=15 -200(88), DS, CON
	35	70		SP	Gray, poorly graded SAND with gravel, medium, wet (very dense)	9		-200(4)
240								
40								

DMG4 UNION_-1.GPJ DMLA.GDT 7/23/01

This log is part of the report prepared by Dames & Moore for this project and should be read together with the report. This summary applies only at the location of the exploration and at the time of drilling or excavation. Subsurface conditions may differ at other locations and may change at this location with time. Data presented are a simplification of actual conditions encountered.

LOG OF BORING
ONE UNION STATION PLAZA
LOS ANGELES, CALIFORNIA
FOR: CATELLUS DEVELOPMENT CORPORATION



1020312200514722

Elevation (ft)	Depth (ft)	SAMPLES		Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number						
40	40			50/2"		Becomes fine to medium	17	117	
45	45			40	SP-SM	Gray, medium SAND with silt, trace gravel, wet (dense)	18		-200(7)
50	50			50/3"		Becomes very dense	18	112	DS
Borehole completed to a depth of 50 3/4 feet below the ground surface on 05/22/01. Borehole backfilled with soil cuttings.									

DMG4 UNION -1.GPJ DMLA.GDT 7/23/01

Date(s) Drilled	5/22/01	Logged By	KK - AP Engineering	Boring BH-3 Sheet 1 of 1	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	Mobile Drill B-61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type U, SPT, Bulk			Job Number	59-00112046.01
Approximate Groundwater Depth and Date Measured	Encountered at 24.0 feet, 5/22/01			Total Depth Drilled (ft)	36.0
	None			Approximate Ground Surface Elevation(ft)	278.0

Elevation (ft)	Depth (ft)	SAMPLES		USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
		Type	Number					
0				SM	4-inches Asphalt Dark brown, silty fine to medium SAND, moist (medium dense)			
	17	☒						
5		■		SP	Yellowish-brown, poorly graded SAND with gravel to 3/4-inch, medium, dry (medium dense)	2	115	-200(2)
	32	☒						
10		☒			Gravel to 3/8-inch (very dense)	2		
	57	☒						
15		■		SP-SM	Brown, medium to coarse SAND with silt and gravel to 3/8-inch, dry (very dense)	3	112	-200(6)
	50/1"	☒						
20		☒			Becomes grayish-brown, medium	3		
	50/6"	☒						
25		■			Becomes wet	20	100	DS
	50/5"	☒						
30		☒			Becomes gray	11		-200(7)
	50/6"	☒						
35		■				16	108	Drill chatter @ 35' DS
	50/2"	☒						
40					Borehole terminated due to refusal at a depth of 36 feet below the ground surface on 05/22/01. Borehole backfilled with soil cuttings.			

This log is part of the report prepared by Dames & Moore for this project and should be read together with the report. This summary applies only at the location of the exploration and at the time of drilling or excavation. Subsurface conditions may differ at other locations and may change at this location with time. Data presented are a simplification of actual conditions encountered.

LOG OF BORING
ONE UNION STATION PLAZA
LOS ANGELES, CALIFORNIA
FOR: CATELLUS DEVELOPMENT CORPORATION

DMG4 UNION_-1.GPJ DMLA.GDT 7/23/01



1020312200514722

Date(s) Drilled	5/22/01	Logged By	KK - AP Engineering	Boring BH-4 Sheet 1 of 2	
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-inch O.D.		
Drill Rig Type	Mobile Drill B-61	Hammer Data	140 lbs, 30-inch drop		
Sampling Method(s)	Dames & Moore Type U, SPT, Bulk			Job Number	59-00112046.01
Approximate Groundwater Depth and Date Measured	Encountered at 29.0 feet, 5/22/01			Total Depth Drilled (ft)	50.9
	None			Approximate Ground Surface Elevation(ft)	278.0

Elevation (ft)	SAMPLES			Graphic Log	USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Depth (ft)	Type Number	Blows per foot						
0					SP-SM	5-inches Asphalt over 5-inches Base Grayish-brown, fine SAND with silt, dry (loose)			
	15						6	115	
	5					Becomes medium with gravel to 3/8-inch (medium dense)	2		
270					SM	Brown, silty medium SAND with gravel to 3/8-inch, moist (dense)			
	10						16	106	-200(34)
	15		50/6"		SP-SM	Grayish-brown, medium SAND with silt and gravel to 3/8-inch, dry (very dense)	3		CORR
260					SM	Gray, silty fine SAND, moist (medium dense)			
	20						27	98	-200(45), DS, CON
	25				SP-SM	Gray, medium SAND with silt, moist (dense)			
	31						11		
250					ML	Gray, sandy SILT, very moist (medium dense)			
	30					Becomes wet	34		-200(84)
	35				SP-SM	Gray, medium SAND with silt and gravel, wet (very dense)			
	55						10		-200(7)
240									
40									

DMG4 UNION_-1.GPJ DWL.A.GDT 7/23/01

This log is part of the report prepared by Dames & Moore for this project and should be read together with the report. This summary applies only at the location of the exploration and at the time of drilling or excavation. Subsurface conditions may differ at other locations and may change at this location with time. Data presented are a simplification of actual conditions encountered.

LOG OF BORING
ONE UNION STATION PLAZA
LOS ANGELES, CALIFORNIA
FOR: CATELLUS DEVELOPMENT CORPORATION



1020312200514722

Elevation (ft)	SAMPLES			USCS	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	OTHER TESTS and REMARKS
	Depth (ft)	Type Number	Blows per foot					
40			49			18		-200(7)
45			50/5"	ML	Gray, sandy SILT, wet (very dense)	12		
50			50/5"					
Borehole completed to a depth of 51 feet below the ground surface on 05/22/01. Borehole backfilled with soil cuttings.								
55								
60								
65								
70								
75								
80								
85								
90								

DMG4 UNION_-1.GPJ DMLA.GDT 7/23/01

Existing Geotechnical Boring Logs Law Crandall, 1997

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BORING 1

DATE DRILLED: August 19, 1997
 EQUIPMENT USED: 8" - Diameter Hollow Stem Auger
 ELEVATION: 275**

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD. PEN. TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
270	5	23.2	89	0		23	ML
		19.5	104	0		14	ML
265	10	--	--	0		16	SP
260	15	1.7	106	0		41	
255	20	9.9	105	0		105	
250	25	--	--			100	
245	30	--	--			75 for 4"	
240	35	27.0	93	> 1000		76	
		30.3	90	> 1000		79	
235	40	33.6	84	> 1000		55	

3" Asphalt Paving
ARTIFICIAL FILL (af)
 CLAYEY SILT - some bedrock fragments, some roots, light brown

SANDY SILT - brown

ALLUVIUM (Qal)
 SAND - fine to coarse, some Gravel, few Cobbles (to 6" in size), brown
 Sample not recovered

Some Silt

SAN PEDRO FORMATION (Qsp)
 SILT - bedded, lenses of fine Sand, dark grey

Sample not recovered

Sample not recovered
 Some Clay
 Some sulfur odor

* Number of blows required to drive the Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

** See Plot Plan for location of bench mark

*** OVA Gastechtor Model No. 1238 used

NOTE: Water not encountered.

END OF BORING AT 40'.

Note: The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL



BORING 2

DATE DRILLED: August 19 and 21, 1997
 EQUIPMENT USED: 24"-Diameter Bucket to 16 1/2"
 10"-Dia. Hollow Stem Auger to 40 1/2"
 ELEVATION: 275

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD. PEN. TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
		12.1	114	0		1	SM
		4.8	119	0		1	
270	5	2.3	111	0		4	SW
		2.1	122	20		6	
265	10						
		2.9	128	30		5	
260	15	8.1	133	0		12	
255	20			0	100		SP-SM
250	25	16.4	116	0		68+	SW
				0	90		
245	30	24.1	98	0		47	
240	35	25.6	100	0	100 for 8"		
235	40			0	50		

4" Asphalt Paving
ARTIFICIAL FILL (af)
 SILTY SAND - fine to coarse, about 40% Gravel, few Cobbles (to 5" in size), some pieces of brick, brown

ALLUVIUM (Qal)
 SAND - well graded, about 10% Gravel and Cobbles, light brownish grey

About 30% Gravel and Cobbles (to 6" in size)

Grey

SAND and SILTY SAND - fine to coarse, about 20% Gravel, light greyish brown

SAN PEDRO FORMATION (Qsp)
 SAND - well graded, thin layers of Clayey Silt, some Gravel, grey to dark grey

Some fine Sand

SILT - bedded, lenses of fine Sand, dark grey

* Number of blows required to drive the Crandall sampler 12 inches using a 1600 pound hammer falling 12 inches.
 + Number of blows required to drive the Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

It is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

LAW/CRANDALL



BORING 3

DATE DRILLED: August 14, 1997
 EQUIPMENT USED: 24"-Diameter Bucket to 17½'
 10"-Dia. Hollow Stem Auger to 42'
 ELEVATION: 277

Note: This log of subsurface conditions is a summary of data obtained from test logs and reports. It is not warranted to be representative of subsurface conditions at other locations and times.

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD.PEN.TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.	DESCRIPTION
275	0	6.9	114	30		1	SM	7" Asphalt Paving ARTIFICIAL FILL (af) SILTY SAND - fine to coarse, some Clay, some Gravel, dark grey SANDY SILT - grey
	5	18.6	105	0		< 1	ML	
270	5	8.0	100	20		1	SM	ALLUVIUM (Qa) SILTY SAND - fine, some pieces of wood, light brown SAND - well graded, some Gravel and Cobbles (to 8" in size), light brownish grey
	10	2.6	122	50		5	SW	
265	10	3.7	113	80		6		
	15	11.4	116	0		2		About 30% Gravel
260	15							
	20	11.5	120	50		135		Grey
255	20							
	25	33.0	90	60		75 for 10"	ML	CLAYEY SILT - grey to dark grey
250	25							
	30	27.1	96	200		70		SAN PEDRO FORMATION (Qsp) SILT - massive, dark grey
245	30							
	35	35.1	89	0		47	SM	SILTY SAND - fine, thin layers of Silty Clay, bluish grey to dark grey
240	35							
	40	15.0	111	0		65	SW	SAND - well graded, some lenses of Clayey Silt, dark grey

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

LAW/CRANDALL 

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O. V. A.*** (ppm)	"N" VALUE STD. PEN. TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
275		9.7	103	0		17	SM
	5			0		35	SW
270		2.8	107	0		36	
	10						
265		42.8	79	0		10	
	15						
260		6.2	124	5		57	
	20						
255		8.5	126	10		60	
	25						
250		29.9	91	10		34	
	30						
245		25.8	98	300		80	
	35						
240		25.4	100	190		80	
	40						
		26.0	100	250		75 for 4"	
		25.9	97	200		80	

BORING 4

DATE DRILLED: August 20, 1997
 EQUIPMENT USED: 8" - Diameter Hollow Stem Auger
 ELEVATION: 276

3' Asphalt Paving
 ARTIFICIAL FILL (af)
 SILTY SAND - fine, some Gravel, brownish grey

ALLUVIUM (Qal)
 SAND - well graded, about 30% Gravel, light grey

* Number of blows required to drive the Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

Layer of Silty Clay
 Some fine Sand

About 40% Gravel

SAN PEDRO FORMATION (Qsp)
 SILT - bedded, lenses of fine Sand, dark grey

NOTE: Water seepage encountered during drilling at depths of 18' to 20', and 30'. Water level measured at a depth of 18' at completion of drilling.

END OF BORING AT 40'.

Note: The log of subsurface conditions shown here represents only one of many possible conditions at other locations and times. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL



FIGURE A-1.4

BORING 5

DATE DRILLED: August 13, 1997
 EQUIPMENT USED: 24" - Diameter Bucket

ELEVATION: 278

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD.PEN.TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
278	0	-	-	0		4	SM SW
275	3	1.4	121	0		3	
270	5	1.9	128	0		7	
265	10	3.3	103	0		2	
260	15	6.3	114	0		4	
255	20	29.5	97	0		1	ML
250	25	37.4	85	0		<1	
245	25	35.1	87	0		<1	
240	30	14.0	109	10		9	SW
235	30	25.7	100	100		11	
230	33	23.0	104	175		19	

3 1/2" Asphalt Paving
 ARTIFICIAL FILL (af) - SILTY SAND - fine, light grey -
 ALLUVIUM (Qal)
 SAND - well graded, about 40% Gravel, few Cobbles
 (to 5" in size), light grey

* Number of blows required to drive the Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

CLAYEY SILT - dark grey

SAN PEDRO FORMATION (Qsp)
 SAND - well graded, lenses of Silty Sand and Clayey Silt, dark grey
 SILT - bedded, lenses of fine Sand, dark grey

(BORING TERMINATED AT A DEPTH OF 33' DUE TO DIFFICULT DRILLING BELOW WATER).

NOTE: Water seepage encountered during drilling at a depth of 22'. Water level measured at a depth of 22' 30 minutes after completion of drilling. Raveling from 2' to 8' (to 3 1/2" in diameter) and from 8' to 17' (to 2 1/2" in diameter).

Note: The log of subsurface conditions shown herein applies only at the specific boring location and at the time indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL 

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD.PEN.TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
275	5	1.4	116	50		2	SM
		1.7	103	75		1	SW
270	10	1.6	117	10		5	
		1.8	115	0		6	
265	15	2.7	99	0		5	
		4.1	114	0		8	
260	20	30.3	94	0		4	
		22.1	104	0		6	
255	25	7.8	118	0		1	SM
		18.3	114	0		2	
250	30	10.7	117	0		145 +	SW
245	35						
240	40	8.6	136	0		70	

BORING 6

DATE DRILLED: August 19, 1997
 EQUIPMENT USED: 24"-Diameter Bucket to 30'
 10"-Dia. Hollow Stem Auger to 42'
 ELEVATION: 278

4" Asphalt Paving - 6" Brick floor
 ARTIFICIAL FILL (af)
 SILTY SAND - fine to coarse, brown
 ALLUVIUM (Qal)
 SAND - well graded, about 40% Gravel, and
 Cobbles (to 5" in size), light brownish grey

Thin layers of Sandy Silt

SILTY SAND - fine, lenses of Sandy Silt, few Gravel, grey

SAND - well graded, about 15% Gravel and Cobbles, grey

* Number of blows required to drive the Crandall sampler 12 inches using a 1600 pound hammer falling 12 inches.
 + Number of blows required to drive the Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

Note: The log of subsurface conditions shown herein applies only at the specific boring location and at the time being recorded. It is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

LAW/CRANDALL 

BORING 7

DATE DRILLED: August 18, 1997
 EQUIPMENT USED: 8" - Diameter Hollow Stem Auger
 ELEVATION: 278

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD. PEN. TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
275	5	13.4	109	0		13 for 6"	ML
		--	--	0		50 for 6"	
270	10	2.9	105	0		73 for 11"	SW
265	15	3.5	110	0		75 for 11"	
260	20	1.9	98	0		50 for 4"	
255	25	37.4	82	0		26	
		30.1	92	0		62	
250	30	24.3	97	0		69	
		26.8	97	0		73	
245	35	29.7	94	0		75	
240	40	21.7	99	0		32	

5" Asphalt Paving
 ARTIFICIAL FILL (af)
 SANDY SILT - some Clay, some pieces of brick, brown

Pieces of concrete
 Sample not recovered

ALLUVIUM (Qal)
 SAND - well graded, about 30% Gravel and Cobbles (to 6" size), light brown

* Number of blows required to drive the Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

SAN PEDRO FORMATION (Qsp)
 SILT - bedded, lenses of Sand, dark grey

More Clay

NOTE: Water seepage encountered during drilling at a depth of 20'. Water level measured at a depth of 36' 5 minutes after completion of drilling.

END OF BORING AT 40'.

Note: The log of subsurface conditions shown herein applies only at the specific boring location and time. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL

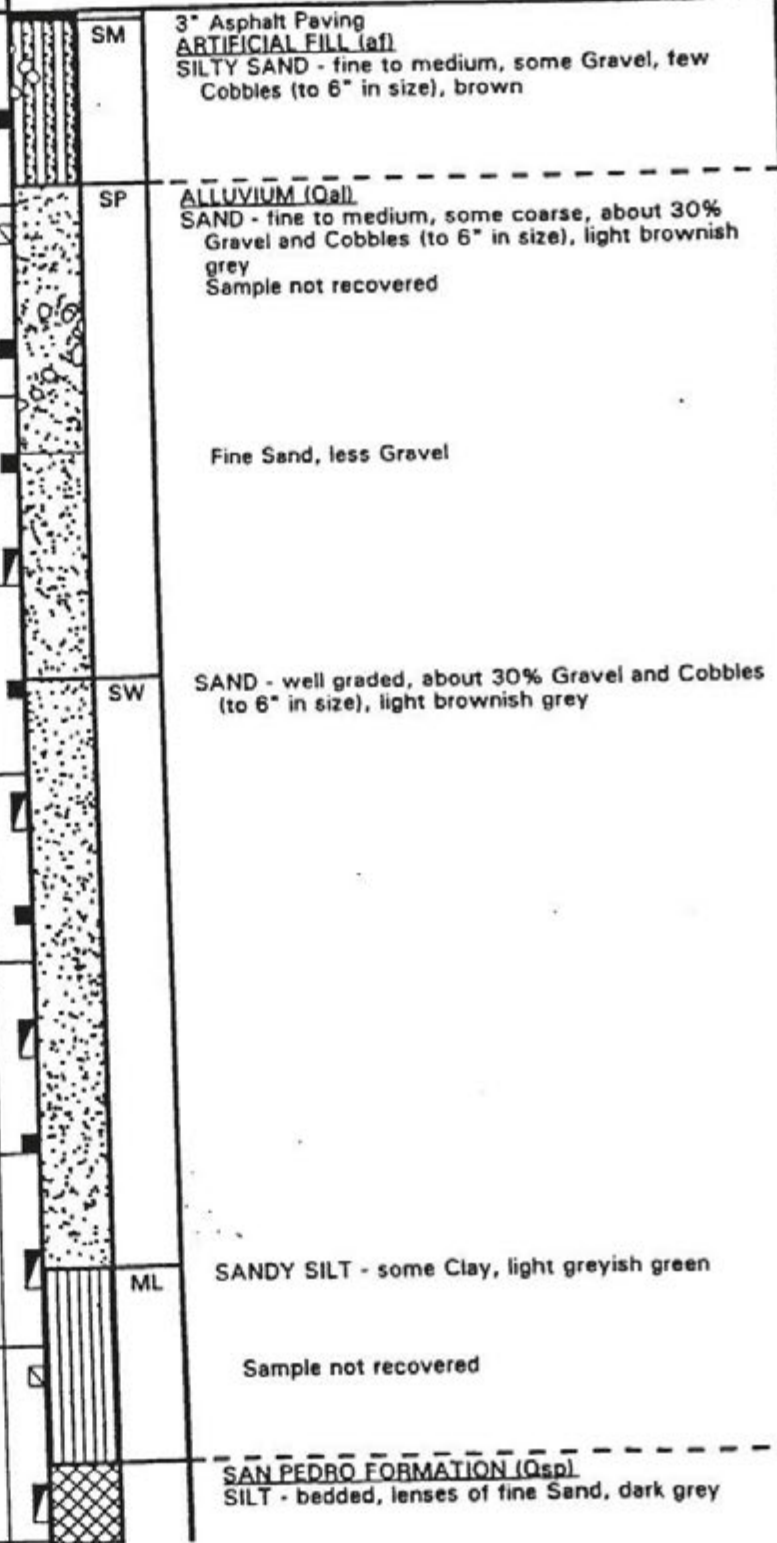


FIGURE A-1.7

BORING 8

DATE DRILLED: August 18, 1997
 EQUIPMENT USED: 8" - Diameter Hollow Stem Auger
 ELEVATION: 278

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD. PEN. TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
275		8.2	108	0		51	SM
	5	-	-	0		39	SP
270		1.6	108	0		58	
	10	4.4	92	0		50 for 9"	
265				0	64 for 9"		
	15			0			
260		1.7	115	0		50 for 6"	SW
	20			0	73 for 9"		
255		8.7	123	0		50 for 9"	
	25			0	50 for 4"		
250		13.3	117	0		57	
	30			0			
245				0	85 for 10"		ML
	35	-	-			48	
240				0		32	
40							



3" Asphalt Paving
ARTIFICIAL FILL (af)
 SILTY SAND - fine to medium, some Gravel, few
 Cobbles (to 6" in size), brown

ALLUVIUM (Qal)
 SAND - fine to medium, some coarse, about 30%
 Gravel and Cobbles (to 6" in size), light brownish
 grey
 Sample not recovered

Fine Sand, less Gravel

SAND - well graded, about 30% Gravel and Cobbles
 (to 6" in size), light brownish grey

SANDY SILT - some Clay, light greyish green

Sample not recovered

SAN PEDRO FORMATION (Qsp)
 SILT - bedded, lenses of fine Sand, dark grey

Note: The log of subsurface conditions shown herein applies only at the location and time indicated.
 It is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING FIGURE)

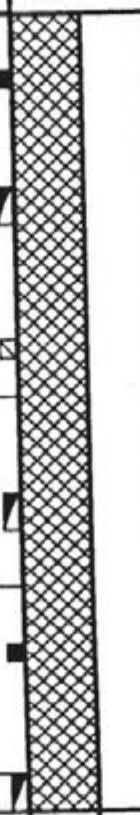
LOG OF BORING

LAW/CRANDALL

BORING 8 (Continued)

DATE DRILLED: August 18, 1997
 EQUIPMENT USED: 8" - Diameter Hollow Stem Auger
 ELEVATION: 278

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD.PEN.TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
235		26.3	99	0		72	■
	45			0	54		▼
230		--	--	0		64	☒
	50						
225				0	75		▼
	55						
220		26.1	95	0		69	■
	60			0	50 for 6"		▼



Sample not recovered

END OF BORING AT 61'.

NOTE: Water seepage encountered during drilling at a depth of 23'. Water level measured at a depth of 38' 5 minutes after completion of drilling.

Note: The log of subsurface conditions shown herein represents only the conditions encountered at the locations and times shown. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

LAW/CRANDALL



FIGURE A 1.8b

BORING 9

DATE DRILLED: August 18, 1997
 EQUIPMENT USED: 8" - Diameter Hollow Stem Auger
 ELEVATION: 278

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD.PEN.TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.	DESCRIPTION
278	0						SM	3" Asphalt Paving ARTIFICIAL FILL (aft) SILTY SAND - fine to coarse, some Gravel, grey and brown
275	5	12.6	106	0		34		
270	10	16.4	104	0		25		
265	15	-	-	0		50 for 6"	SW	ALLUVIUM (Qa) SAND - well graded, some Gravel and Cobbles (to 6" in size), light brownish grey Sample not recovered
260	20	2.6	-	0		75 for 11"		About 50% Gravel, some Cobbles (to 10" in size)
255	25	4.2	108	0		55	SP	SAND - fine, some Gravel, brown
250	30	-	-	0		50 for 3"		Sample not recovered
245	35	-	-	0		50 for 6"	SW	SAND - well graded, about 30% Gravel and Cobbles (to 6" in size), light grey Sample not recovered
240	40	3.9	107	0		53		
		11.6	120	0		58		Layer of fine to medium Sand
		8.2	125	0		40		
		-	-	0		17		Sample not recovered
		-	-	0		29		Sample not recovered

Note: The log of subsurface conditions shown herein is only at the time the boring was made and is not warranted to be representative of subsurface conditions at other locations and times.

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

LAW/CRANDALL



FIGURE A-1.9a

BORING 10

DATE DRILLED: August 19, 1997
 EQUIPMENT USED: 8" - Diameter Hollow Stem Auger
 ELEVATION: 279

It is not warranted to be representative of subsurface conditions at other locations and times.

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD.PEN.TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.	DESCRIPTION
279	0						SM	3" Asphalt Paving
279	0						SP	ARTIFICIAL FILL (af) SILTY SAND - fine to coarse, some Gravel, some pieces of brick, brown
275	5	8.9	110	50		32		
275	5	2.0	86	10		16		ALLUVIUM (Qa) SAND - fine to medium, about 15% Gravel, light brown
270	10	3.2	103	10		19		
270	10			0	55		SW	SAND - well graded, about 20% Gravel and Cobbles, grey
265	15	4.8	121	0		55		
265	15			0	60			
260	20	2.3	110	0		55		About 40% Gravel and Cobbles (to 6" in size)
260	20			0	50			
255	25	13.4	117	0		49		
255	25			0	95			
250	30	-	-	-	-	37		Sample not recovered
245	35	10.7	128	0		55		
245	35			0	70		SP-SM	SAND and SILTY SAND - fine to coarse, about 10% Gravel, grey
240	40							

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

LAW/CRANDALL 

BORING 10 (Continued)

DATE DRILLED: August 19, 1997
 EQUIPMENT USED: 8" - Diameter Hollow Stem Auger
 ELEVATION: 279

It is not warranted to be representative of subsurface conditions at other locations and times.

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	O.V.A.*** (ppm)	"N" VALUE STD.PEN.TEST	BLOW COUNT* (blows/ft.)	SAMPLE LOC.
235	45	18.5	110	0		75	SW
230	50	--	--	50	100 for 9"		
225	55			0	54	65	
220	60			0	97		

SAND - well graded, about 10% Gravel and Cobbles, grey

Sample not recovered

END OF BORING AT 60 1/2'.

NOTE: Water seepage encountered during drilling at a depth of 23'. Water level measured at a depth of 35 1/2' 5 minutes after completion of drilling.

LOG OF BORING

LAW/CRANDALL 

Existing Geotechnical Boring Logs
J Byer, 1998

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LOG OF BORING 1

PROJECT: JB:17776-B CATELLUS

DATE LOGGED: 6/4/98 BY: JWB

BORING TYPE: 8 Inch Hollow-Stem

SURFACE: 5 Inch AC Pavement

REPORT DATE: 7/9/98

ELEVATION: 276.4

Moisture Content %	Dry Density (pcf)	Blow Count	Sample Type	Symbol USCS	Description
					4 Inches Asphalt
26.0	96.9	15*	R	SC	FILL: Clayey Sand, dark brown, moist, dense, some debris, asphalt, concrete, brick
				SC	ALLUVIUM: Clayey Sand, dark brown, moist, medium dense, porous, grades to sand, light brown, moist, dense
6.2	119.5	43	R	SM	Silty Sand, light and dark brown, moist, medium dense with round granite cobbles
3.1	—	43	R		Silty Sand, light brown, moist, dense Gravelly layers with coarse sand
33.6	80.9	9	R		Sandy Silt, gray green, moist, firm, some peat
4.6	112.3	40	R	SG	Gravelly Sand, light brown, moist, dense
36.7	83.5	25	R	ML	<u>Water at 16 Feet</u> Clayey Silt, light bluish gray, saturated, soft
				SG	Gravelly Sand, gray, saturated, dense
9.8	118.4	50	R		
10.6	114.7	43	R	GW	Sandy Gravel, gray, saturated, dense, rounded granite clasts
					*140 Pound hammer, 30 Inch drop
12.0	125.9	45	R		

LOG OF BORING 1 (Continued)

PROJECT: JB:17776-B CATELLUS

DATE LOGGED: 6/4/98 BY: JWB

BORING TYPE: 8 Inch Hollow-Stem

SURFACE: Asphalt Parking Lot

REPORT DATE: 7/9/98

ELEVATION: 276.4

Depth (feet)	Moisture Content %	Dry Density (pcf)	Blow Count	Sample Type	Symbol USCS	
26	31.2	93.0	50	R		<p>BEDROCK: Siltstone, blue gray, saturated, bedded, with layers of fine grained sandstone, soft to very firm</p> <p>Hydrogen Sulfide odor</p> <p>Siltstone with sandstone interbeds, firmer</p> <p>slow drilling</p> <p>Siltstone continues</p> <p><i>End at 50 Feet; Water at 16 Feet.</i> Boring developed as 2 inch diameter monitoring well, sand to 15 feet, bentonite plug to top.</p>
28.2	96.4	50/9	R			
29.9	94.3	50/11	R			
34.6	87.1	50/9	R			
50						

LOG OF BORING 2

PROJECT: JB:17776-B CATELLUS

DATE LOGGED: 6/4/98 BY: JWB

BORING TYPE: 8 Inch Hollow-Stem

SURFACE: 5 Inch AC Pavement

REPORT DATE: 7/9/98

ELEVATION: 276.4

Depth (feet)	Moisture Content %	Dry Density (pcf)	Blow Count	Sample Type	Symbol USCS	Description
0					SM	FILL: Silty Sand, dark brown, moist, dense, with rock fragments and brick
5					SG	ALLUVIUM: Gravelly Sand, light brown, moist, dense
10					SW	grades to fine grained sand with gravel
15					GW	Gravel and Cobble layer, 4 feet thick, hard drilling
20					SW	
23						Water at 23 Feet
25						

LOG OF BORING 2 (Continued)

PROJECT: JB17776-B CATELLUS

DATE LOGGED: 6/4/98 BY: JWB

BORING TYPE: 8 Inch Hollow-Stem

SURFACE: 5 Inch AC Pavement

REPORT DATE: 7/9/98 ELEVATION: 276.4

Depth (feet)	Moisture Content %	Dry Density (pcf)	Blow Count	Sample Type	Symbol USCS	
26						
30						
32					ML	WEATHERED BEDROCK: Clayey Silt, greenish gray, saturated, soft to firm
35						
36						BEDROCK: Siltstone, blue gray, very moist, bedded, fine sandstone layers
38						End at 38 Feet; Water at 23 Feet; Fill to 6 Feet.