

APPENDIX A

LOGS OF BORINGS AND CPT SOUNDINGS

LOGS OF BORINGS BY NEBLETT AND ASSOCIATES, INC.

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/7/08
 DATE FINISHED 10/7/08
 DRILLER JDC Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1267
 GW DEPTH (FT)
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-1
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SATURATION (%)	Other Tests
UNDOCUMENTED ARTIFICIAL FILL (afu):										
5	1262	R	27/50	SW	Gravelly sand, brown (10YR, 5/3), slightly moist, dense, subangular to round.		5.2	118.4		
		R	45/50	SW	Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, subangular to round.		3.7			
		R	37/50	SC	Clayey sand, dark yellowish brown (10YR, 4/6), moist, very dense, slightly plastic, occasional fine gravel, subrounded.		10.3	113.7		
10	1257	R	66	GW	Cobbly gravels, yellowish brown (10YR, 5/4), slightly moist, dense, clasts to cobble.		8.3	128.4		
VERY YOUNG LACUSTRINE DEPOSITS (QI):										
15	1252	R	28/50	SW	Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, subangular to round.		5.5	121.8		
20	1247	R	37/47	SW	Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, subangular to round.		4.4	127.7		
25	1242	R	63	SW	Coarse sand, yellowish brown (10YR, 5/4), slightly moist, dense, occasional fine gravel.		6.2	108.6		
30	1237	R	21/50	SW	Coarse sand, brown (10YR, 5/3), slightly moist, dense, occasional fine gravel.		6.3	115.1		
35	1232	R	66	SM	Silty sand, dark yellowish brown (10YR, 4/4), moist, dense, fine-grained, massive.		22.3	106.8		
SAMPLE TYPES: ☒ RING (DRIVE) SAMPLE ☒ SPT (SPLIT SPOON) SAMPLE ☒ BULK SAMPLE ☐ TUBE SAMPLE						☒ Water Seepage ☒ Groundwater DS - Direct Shear GS - Grain Size Analysis EI - Expansion Index CONS - Consolidation	NEBLETT & ASSOCIATES, INC. 4911 WARNER AVENUE, SUITE 218 HUNTINGTON BEACH, CA 92649 714-840-8286 PLATE A-1			

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/7/08
 DATE FINISHED 10/7/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV. (FT) 1267
 GW DEPTH (FT)
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-1
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT- URATION (%)	Other Tests
		R	41		SM	Silty sand, dark yellowish brown (10YR, 4/4), moist, medium dense, fine-grained, massive, occasional fine gravel to gravel.	13.3	120.0		
45	1222	R	45		SM	Silty sand, dark yellowish brown (10YR, 4/4), moist, dense, fine-grained, massive, increase in clays, occasional fine gravel to gravel.	20.2	106.2		
50	1217	R			SM	Silty sand, dark yellowish brown (10YR, 4/4), moist, dense, fine grained with occasional clays, massive, occasional fine gravel to gravel.	18.3	103.9		
Total Depth 51 feet. No groundwater encountered. Boring backfilled with cuttings.										

SAMPLE TYPES:

- ☒ RING (DRIVE) SAMPLE
☒ SPT (SPLIT SPOON) SAMPLE
☒ BULK SAMPLE ☐ TUBE SAMPLE

- ☒ Water Seepage
☒ Groundwater
 DS - Direct Shear
 GS - Grain Size Analysis
 EI - Expansion Index
 CONS - Consolidation

NEBLETT & ASSOCIATES, INC.

4911 WARNER AVENUE, SUITE 218
 HUNTINGTON BEACH, CA 92649

714-840-8286

PLATE A-2

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/7/08
 DATE FINISHED 10/7/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1262
 GW DEPTH (FT)
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-2
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT- URATION (%)	Other Tests
UNDOCUMENTED ARTIFICIAL FILL (afu):										
5	1257	S	23		SM	Silty sand, dark yellowish brown (10YR, 4/4), slightly moist, medium dense, predominately fine- to medium-grained, occasional gravel.	4.3	125.4		
		R	14/50		SM	Silty sand, dark yellowish brown (10YR, 4/4), slightly moist, dense, predominately fine- to medium-grained, occasional gravel.	3.9			
10	1252	S	73		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, subangular to subrounded.	6.1	127.3		
		R	59		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, dense, subangular to subrounded, occasional gravel.	5.5			
VERY YOUNG LACUSTRINE DEPOSITS (QI):										
15	1247	S	22		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, medium dense, subangular to subrounded.	3.4	120.5		
20	1242	R	52		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, dense, subangular to rounded.	8.5			
25	1237	S	54		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, subangular to subrounded.	6.7			
30	1232	R	59		SW	Coarse sand, dark yellowish brown (10YR, 4/4), moist, dense, subangular to subrounded, occasional fine gravel to gravel.	8.4	116.7		
35	1227	S	54		SW	Coarse sand, dark yellowish brown (10YR, 4/4), moist, very dense, subangular to subrounded, occasional fine gravel to gravel.	10.1			
SAMPLE TYPES: ☒ RING (DRIVE) SAMPLE ☒ SPT (SPLIT SPOON) SAMPLE ☒ BULK SAMPLE ☐ TUBE SAMPLE						 Water Seepage  Groundwater DS - Direct Shear GS - Grain Size Analysis EI - Expansion Index CONS - Consolidation	NEBLETT & ASSOCIATES, INC. 4911 WARNER AVENUE, SUITE 218 HUNTINGTON BEACH, CA 92649 714-840-8286 PLATE A-3			

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/7/08
 DATE FINISHED 10/7/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1262
 GW DEPTH (FT)
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-2
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT- URATION (%)	Other Tests
45 										

SAMPLE TYPES:

- ☒ RING (DRIVE) SAMPLE
☒ SPT (SPLIT SPOON) SAMPLE
☒ BULK SAMPLE ☐ TUBE SAMPLE

 Water Seepage
 Groundwater
 DS - Direct Shear
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NEBLETT & ASSOCIATES, INC.

4911 WARNER AVENUE, SUITE 218
 HUNTINGTON BEACH, CA 92649

714-840-8286

PLATE A-4

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/7/08
 DATE FINISHED 10/7/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1270
 GW DEPTH (FT)
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-3
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT- URATION (%)	Other Tests
						<u>VERY YOUNG FAN DEPOSITS (Qyfa):</u>				
5	1265	S	11		SM	Silty sand, dark yellowish brown (10YR, 4/4), slightly moist, loose, massive, occasionally coarse-grained to fine gravel.	4.6			
		R	23		SM	Silty sand, dark yellowish brown (10YR, 4/4), slightly moist, medium dense, massive, occasionally coarse-grained to fine gravel.	4.1	104.2		
		S	19		SM	Silty sand, dark yellowish brown (10YR, 4/4), slightly moist, medium dense, massive, occasionally coarse-grained to fine gravel.	4.7			
10	1260	R	19		SM	Silty sand, dark yellowish brown (10YR, 4/4), slightly moist, medium dense, massive, predominately fine- to medium-grained.	4.8	108.6		
15	1255	S	23		SM	<u>VERY YOUNG LACUSTRINE DEPOSITS (Ql):</u> Silty sand, pale brown (10YR, 6/3), slightly moist, medium dense, massive, predominately fine- to medium-grained.	6.9			
20	1250	R	61		SM	Silty sand, pale brown (10YR, 6/3), slightly moist, dense, massive, predominately fine- to medium-grained, occasionally coarse-grained to fine gravel.	5.9	117.5		
25	1245	S	55		SM	Silty sand, pale brown (10YR, 6/3), slightly moist, very dense, massive, predominately fine- to medium-grained, occasionally coarse-grained to fine gravel.	10.1			
30	1240	R	38/50		SM	Silty sand, pale brown (10YR, 6/3), slightly moist, very dense, massive, predominately fine- to medium-grained, occasionally coarse-grained to fine gravel.	6.7	122.6		
35	1235	S	42		SM	Silty sand, pale brown (10YR, 6/3), slightly moist, dense, massive, predominately fine- to medium-grained, occasionally coarse-grained to fine gravel.	12.7			
SAMPLE TYPES: ☒ RING (DRIVE) SAMPLE ☒ SPT (SPLIT SPOON) SAMPLE ☐ BULK SAMPLE ☐ TUBE SAMPLE						☒ Water Seepage ☒ Groundwater DS - Direct Shear GS - Grain Size Analysis EI - Expansion Index CONS - Consolidation	NEBLETT & ASSOCIATES, INC. 4911 WARNER AVENUE, SUITE 218 HUNTINGTON BEACH, CA 92649 714-840-8286 PLATE A-5			

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/7/08
 DATE FINISHED 10/7/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1270
 GW DEPTH (FT)
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-3
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT- URATION (%)	Other Tests
		R	84		SM	Silty sand, pale brown (10YR, 6/3), slightly moist, very dense, massive, predominantly fine- to medium-grained, trace clays, medium plasticity.	14.9	121.5		
45	1225	S	55		SM	Silty sand, pale brown (10YR, 6/3), slightly moist, very dense, massive, predominantly fine- to medium-grained, occasionally coarse-grained to fine gravel.	13.0			
50	1220	R	50 for 6"			Silty sand, pale brown (10YR, 6/3), slightly moist, very dense, massive, predominantly fine- to medium-grained, occasionally coarse-grained to fine gravel.	15.1	116.9		
Total Depth 51 feet. No groundwater encountered. Boring backfilled with cuttings.										
SAMPLE TYPES: ☒ RING (DRIVE) SAMPLE ☒ SPT (SPLIT SPOON) SAMPLE ☒ BULK SAMPLE ☐ TUBE SAMPLE						☒ Water Seepage ☒ Groundwater DS - Direct Shear GS - Grain Size Analysis EI - Expansion Index CONS - Consolidation	NEBLETT & ASSOCIATES, INC. 4911 WARNER AVENUE, SUITE 218 HUNTINGTON BEACH, CA 92649 714-840-8286 PLATE A-6			

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/7/08
 DATE FINISHED 10/7/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1262
 GW DEPTH (FT) 42.0
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-4
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT- URATION (%)	Other Tests
						<u>VERY YOUNG FAN DEPOSITS (Qyfa):</u>				
5	1257	R	40		SM	Silty sand, brownish yellow (10YR, 6/6), dry, medium dense, very fine-grained.	1.6	110.3		
		S	33		SM	Silty sand, brownish yellow (10YR, 6/6), dry, dense, very fine-grained.	2.1			
		R	40		SW	<u>VERY YOUNG LACUSTRINE DEPOSITS (Ql):</u> Coarse sand, light brownish gray (10YR, 6/2), dry, medium dense, predominantly coarse-grained, subangular to subrounded.	2.2	117.2		
10	1252	S	39/50		SW	Gravelly sand, grayish brown (10YR, 5/2), slightly moist, very dense, subangular to subrounded.	2.5			
15	1247	R	57		SW	Gravelly sand, grayish brown (10YR, 5/2), slightly moist, dense, subangular to subrounded.	3.8	117.5		
20	1242	S	50 for 6"		SW	Gravelly sand, grayish brown (10YR, 5/2), slightly moist, very dense, subangular to subrounded.	4.0			
25	1237	R	57		SC	Clayey silt, dark grayish brown (2.5Y, 4/2), moist, stiff to hard, micaceous, massive.	16.0	111.6		
30	1232	S	58		SC	Clayey silt, dark grayish brown (2.5Y, 4/2), moist, stiff to hard, micaceous, trace clays, massive.	21.8			
35	1227	R	77		SM	Silty sand, dark grayish brown (2.5Y, 4/2), moist, dense, fine-grained, massive.	11.9	125.6		
SAMPLE TYPES: ☒ RING (DRIVE) SAMPLE ☒ SPT (SPLIT SPOON) SAMPLE ☒ BULK SAMPLE ☐ TUBE SAMPLE						 Water Seepage  Groundwater DS - Direct Shear GS - Grain Size Analysis EI - Expansion Index CONS - Consolidation	NEBLETT & ASSOCIATES, INC. 4911 WARNER AVENUE, SUITE 218 HUNTINGTON BEACH, CA 92649 714-840-8286 PLATE A-7			

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/7/08
 DATE FINISHED 10/7/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1262
 GW DEPTH (FT) 42.0
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-4
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT- URATION (%)	Other Tests
		S	26		SM	Silty sand, dark grayish brown (2.5Y, 4/2), moist, medium dense, fine-grained, massive. ▼ @ 42 feet, Water encountered.	15.4			
45	1217	R	60		SW	Gravelly sand, dark grayish brown (2.5Y 4/2), wet, dense, clasts to coarse gravel, subrounded to rounded.	12.2	122.8		
50	1212	S	46		SW	Gravelly sand, dark grayish brown (2.5Y, 4/2), wet, dense, clasts to coarse gravel, subrounded to rounded. Total Depth 51 feet. Groundwater encountered at 42 feet. Boring backfilled with cuttings.	14.9			

SAMPLE TYPES:

- ☒ RING (DRIVE) SAMPLE
☒ SPT (SPLIT SPOON) SAMPLE
☒ BULK SAMPLE ☐ TUBE SAMPLE

▼ Water Seepage
 ▼ Groundwater
 DS - Direct Shear
 GS - Grain Size Analysis
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NEBLETT & ASSOCIATES, INC.

4911 WARNER AVENUE, SUITE 218
 HUNTINGTON BEACH, CA 92649

714-840-8286

PLATE A-8

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/8/08
 DATE FINISHED 10/8/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1270
 GW DEPTH (FT) 40.0
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-5
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
						<u>VERY YOUNG FAN DEPOSITS (Qyfa):</u>				
5	1265	R	18		SM	Silty sand, brown (10YR 4/3), slightly moist, medium dense, predominantly fine-grained, massive.	7.8	108.8		
		S	9		SM	Silty sand, brown (10YR, 4/3), slightly moist, loose, predominantly fine-grained, masive.	6.0			
		R	37		SM	<u>VERY YOUNG LACUSTRINE DEPOSITS (Ql):</u> Silty sand with gravel, brown (10YR, 5/3), slightly moist, medium dense, occasional fine gravel.	2.3	108.9		
10	1260	S	34		SW	Silty sand with gravel, brown (10YR 5/3), slightly moist, dense, occasional fine gravel.	2.3			
15	1255	R	15/50		SW	Gravelly sand, brown (10YR, 4/3), moist, very dense, coarse gravel, subangular to subrounded	3.1	126.7		
20	1250	S	27/50		SM	Gravelly sand, brown (10Yr, 4/3), moist, very dense, coarse gravel, subangular to subrounded.	9.1			
25	1245	R	68		SM	Silty sand, dark yellowish brown (10YR 4/4), moist, dense, fine- to medium-grained, occasional fine gravel.	6.7	123.5		
30	1240	S	24		SM	Silty sand, dark yellowish brown (10YR, 4/4), moist, medium dense, fine- to medium-grained, occasional fine gravel.	14.9			
35	1235	R	85		SM	Silty sand, dark yellowish brown (10YR, 4/4), moist, very dense, fine- to medium-grained, occasional fine-gravel, trace of clay.	5.8	124.7		
SAMPLE TYPES: ☒ RING (DRIVE) SAMPLE ☒ SPT (SPLIT SPOON) SAMPLE ☒ BULK SAMPLE ☐ TUBE SAMPLE						 Water Seepage  Groundwater DS - Direct Shear GS - Grain Size Analysis EI - Expansion Index CONS - Consolidation	NEBLETT & ASSOCIATES, INC. 4911 WARNER AVENUE, SUITE 218 HUNTINGTON BEACH, CA 92649 714-840-8286 PLATE A-9			

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/8/08
 DATE FINISHED 10/8/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1270
 GW DEPTH (FT) 40.0
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-5
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT- URATION (%)	Other Tests
		S	33		SW	@ 40 feet, Water encountered. Gravelly sand, grayish brown (10YR, 5/3), wet, medium dense, clasts to gravel, subangular to subrounded.	15.5			
45	1225	R	63		SW	Gravelly sand, grayish brown (10YR, 5/2), wet, dense, clasts to gravel, subangular to subrounded.	12.7	120.7		
50	1220	S	37/50		SW	Gravelly sand, grayish brown (10YR, 5/2), wet, very dense, clasts to gravel, subangular to subrounded.	18.8			
Total Depth 51 feet. Groundwater encountered at 40 feet. Boring backfilled with cuttings.										

SAMPLE TYPES:
☒ RING (DRIVE) SAMPLE
☒ SPT (SPLIT SPOON) SAMPLE
☐ BULK SAMPLE ☐ TUBE SAMPLE

 Water Seepage
 Groundwater
 DS - Direct Shear
 GS - Grain Size Analysis
 EI - Expansion Index
 CONS - Consolidation

NEBLETT & ASSOCIATES, INC.
 4911 WARNER AVENUE, SUITE 218
 HUNTINGTON BEACH, CA 92649 714-840-8286
 PLATE A-10

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/8/08
 DATE FINISHED 10/8/08
 DRILLER JDC Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV.(FT) 1273
 GW DEPTH (FT) 40.0
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-6
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
						ASPHALT: 4 inches thick BASE: 6 inches thick CERTIFIED ARTIFICIAL FILL BY OTHERS (Caf-others):				
5	1268	S	19		SM	Silty sand, dark yellowish brown (10YR, 4/4), moist, medium dense, predominately fine- to medium-grained, massive.	9.9			
		R	20		SM	Silty sand, dark yellowish brown (10YR, 4/4), moist, medium dense, predominately fine- to medium-grained, massive.	10.6	120.8		
		S	16		SM	Silty sand, brown (10YR, 5/3), moist, medium dense, predominately fine- to medium-grained, occasional fine gravel, massive.	3.0			
10	1263	R	84		SW	YOUNGER FAN DEPOSITS (Qyf): Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, prominent fine-gravel to gravel-sized clasts, subangular to subrounded.	3.5	141.5		
15	1258	S	85		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, prominent fine-gravel to gravel-sized clasts, subangular to subrounded.	3.0			
20	1253	R	38/50		SW	VERY YOUNG LACUSTRINE DEPOSITS (Ql): Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, clasts to cobble-sized.	3.3	124.9		
25	1248	S	50 for 6"		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, clasts to cobble-sized.	4.2			
30	1243	R	19/50		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, very dense, clasts to cobble-sized, local clay interbeds.	13.0	96.3		
35	1238	S	21/50		SW	Gravelly sand, brown (10YR, 5/3), slightly moist, vey dense, prominent fine-gravel to gravel-sized clasts, subangular to subrounded.	13.3			

SAMPLE TYPES:

- ☒ RING (DRIVE) SAMPLE
☒ SPT (SPLIT SPOON) SAMPLE
☒ BULK SAMPLE ☐ TUBE SAMPLE

- ☒ Water Seepage
☒ Groundwater
 DS - Direct Shear
 GS - Grain Size Analysis
 EI - Expansion Index
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NEBLETT & ASSOCIATES, INC.

4911 WARNER AVENUE, SUITE 218
 HUNTINGTON BEACH, CA 92649

714-840-8286

PLATE A-11

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 690-000-03
 DATE STARTED 10/8/08
 DATE FINISHED 10/8/08
 DRILLER JDK Drilling
 TYPE OF DRILL RIG Hollowstem Auger

PROJECT NAME JIC - CP Diamond Development
 GROUND ELEV. (FT) 1273
 GW DEPTH (FT) 40.0
 DRIVE WT. 140 lbs
 DROP 30"

BORING DESIG. NB-6
 LOGGED BY CAG
 NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
		R	58		SW	@ 40 feet, Water encountered. Gravelly sand, brown (10YR, 5/3), slightly moist, dense, prominent fine-gravel to gravel-sized clasts, subangular to subrounded.	13.1	115.6		
45	1228	S	35		SW	Gravelly sand, dark yellowish brown (10YR, 4/4), slightly moist, dense, fine-gravel to gravel-sized clasts, subangular to subrounded.	16.8			
50	1223	R	36		SM	Silty sand with clay, dark yellowish brown (10YR, 4/4), moist, medium dense, predominately fine- to medium-grained, massive. Total Depth 51 feet. Groundwater encountered at 40 feet. Boring backfilled with cuttings.	16.9	114.4		

SAMPLE TYPES:

- ☒ RING (DRIVE) SAMPLE
☒ SPT (SPLIT SPOON) SAMPLE
☒ BULK SAMPLE ☐ TUBE SAMPLE

- ☒ Water Seepage
☒ Groundwater
 DS - Direct Shear
 GS - Grain Size Analysis
 EI - Expansion Index
 CONS - Consolidation

NEBLETT & ASSOCIATES, INC.
 4911 WARNER AVENUE, SUITE 218
 HUNTINGTON BEACH, CA 92649 714-840-8286
 PLATE A-12

LOGS OF CPT SOUNDINGS BY NEBLETT AND ASSOCIATES, INC.



GREGG DRILLING & TESTING, INC.
GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION SERVICES

October 14, 2008

Neblett & Associates
Attn: James Culotta
4911 Warner Avenue, Suite 218
Huntington Beach, CA 92648

Subject: CPT Site Investigation
Diamond Development
Lake Elsinore, CA
GREGG Project Number: 08-0461SH

Dear Mr. Culotta:

The following report presents the results of GREGG Drilling & Testing's Cone Penetration Test investigation for the above referenced site. The following testing services were performed:

1	Cone Penetration Tests	(CPTU)	☒
2	Pore Pressure Dissipation Tests	(PPD)	☒
3	Seismic Cone Penetration Tests	(SCPTU)	☐
4	Resistivity Cone Penetration Tests	(RCPTU)	☐
5	UVOST Laser Induced Fluorescence	(UVOST)	☐
6	Groundwater Sampling	(GWS)	☐
7	Soil Sampling	(SS)	☐
8	Vapor Sampling	(VS)	☐
9	Vane Shear Testing	(VST)	☐
10	SPT Energy Calibration	(SPTE)	☐

A list of reference papers providing additional background on the specific tests conducted is provided in the bibliography following the text of the report. If you would like a copy of any of these publications or should you have any questions or comments regarding the contents of this report, please do not hesitate to contact our office at (562) 427-6899.

Sincerely,
GREGG Drilling & Testing, Inc.

Peter Robertson
Technical Operations



-Table 1-

2726 Walnut Ave • Signal Hill, California 90755 • (562) 427-6899 • FAX (562) 427-3314
OTHER OFFICES: SAN FRANCISCO • HOUSTON • SOUTH CAROLINA
www.freggdrilling.com



Cone Penetration Testing Procedure (CPT)

Gregg Drilling carries out all Cone Penetration Tests (CPT) using an integrated electronic cone system, *Figure CPT*. The soundings were conducted using a 20 ton capacity cone with a tip area of 15 cm² and a friction sleeve area of 225 cm². The cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.80.

The cone takes measurements of cone bearing (q_c), sleeve friction (f_s) and penetration pore water pressure (u_2) at 5-cm intervals during penetration to provide a nearly continuous hydrogeologic log. CPT data reduction and interpretation is performed in real time facilitating on-site decision making. The above mentioned parameters are stored on disk for further analysis and reference. All CPT soundings are performed in accordance with revised (2002) ASTM standards (D 5778-95).

The cone also contains a porous filter element located directly behind the cone tip (u_2), *Figure CPT*. It consists of porous plastic and is 5.0mm thick. The filter element is used to obtain penetration pore pressure as the cone is advanced as well as Pore Pressure Dissipation Tests (PPDT's) during appropriate pauses in penetration. It should be noted that prior to penetration, the element is fully saturated with silicon oil under vacuum pressure to ensure accurate and fast dissipation.

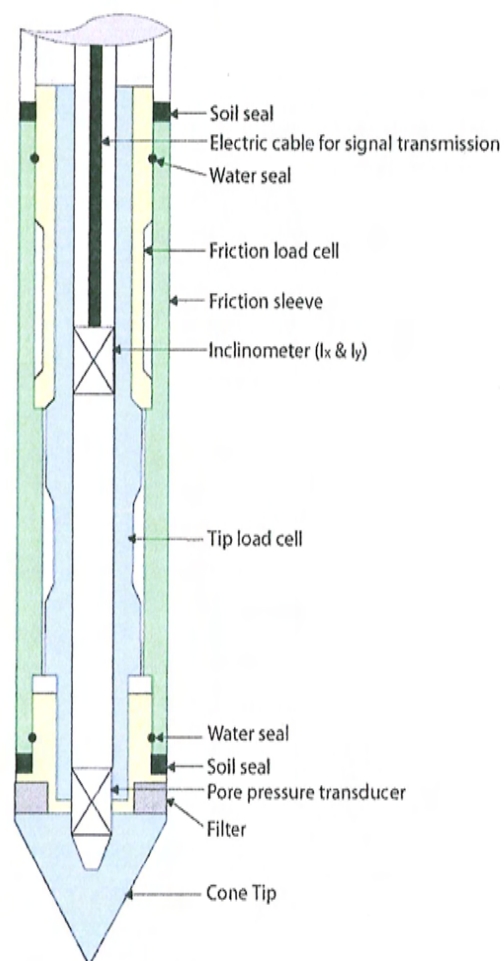


Figure CPT

When the soundings are complete, the test holes are grouted using a Gregg support rig. The grouting procedures generally consist of pushing a hollow CPT rod with a "knock out" plug to the termination depth of the test hole. Grout is then pumped under pressure as the tremie pipe is pulled from the hole. Disruption or further contamination to the site is therefore minimized.



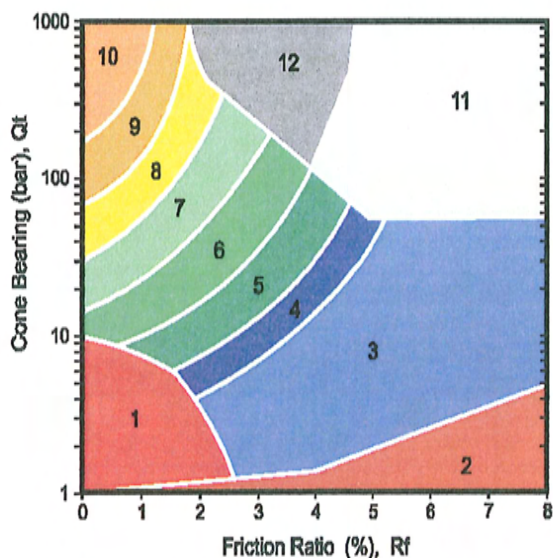
Cone Penetration Test Data & Interpretation

The Cone Penetration Test (CPT) data collected from your site are presented in graphical form in the attached report. The plots include interpreted Soil Behavior Type (SBT) based on the charts described by Robertson (1990). Typical plots display SBT based on the non-normalized charts of Robertson et al (1986). For CPT soundings extending greater than 50 feet, we recommend the use of the normalized charts of Robertson (1990) which can be displayed as SBT_n, upon request. The report also includes spreadsheet output of computer calculations of basic interpretation in terms of SBT and SBT_n and various geotechnical parameters using current published correlations based on the comprehensive review by Lunne, Robertson and Powell (1997), as well as recent updates by Professor Robertson. The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed. Gregg Drilling & Testing Inc. do not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the software and do not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used in the software.

Some interpretation methods require input of the groundwater level to calculate vertical effective stress. An estimate of the in-situ groundwater level has been made based on field observations and/or CPT results, but should be verified by the user.

A summary of locations and depths is available in Table 1. Note that all penetration depths referenced in the data are with respect to the existing ground surface.

Note that it is not always possible to clearly identify a soil type based solely on q_t , f_s , and u_2 . In these situations, experience, judgment, and an assessment of the pore pressure dissipation data should be used to infer the correct soil behavior type.



(After Robertson, et al., 1986)

ZONE	SBT
1	Sensitive, fine grained
2	Organic materials
3	Clay
4	Silty clay to clay
5	Clayey silt to silty clay
6	Sandy silt to clayey silt
7	Silty sand to sandy silt
8	Sand to silty sand
9	Sand
10	Gravely sand to sand
11	Very stiff fine grained*
12	Sand to clayey sand*

*over consolidated or cemented

Figure SBT



Pore Pressure Dissipation Tests (PPDT)

Pore Pressure Dissipation Tests (PPDT's) conducted at various intervals measured hydrostatic water pressures and determined the approximate depth of the ground water table. A PPDT is conducted when the cone is halted at specific intervals determined by the field representative. The variation of the penetration pore pressure (u) with time is measured behind the tip of the cone and recorded by a computer system.

Pore pressure dissipation data can be interpreted to provide estimates of:

- Equilibrium piezometric pressure
- Phreatic Surface
- In situ horizontal coefficient of consolidation (c_h)
- In situ horizontal coefficient of permeability (k_h)

In order to correctly interpret the equilibrium piezometric pressure and/or the phreatic surface, the pore pressure must be monitored until such time as there is no variation in pore pressure with time, *Figure PPDT*. This time is commonly referred to as t_{100} , the point at which 100% of the excess pore pressure has dissipated.

A complete reference on pore pressure dissipation tests is presented by Robertson et al. 1992.

A summary of the pore pressure dissipation tests is summarized in Table 1.

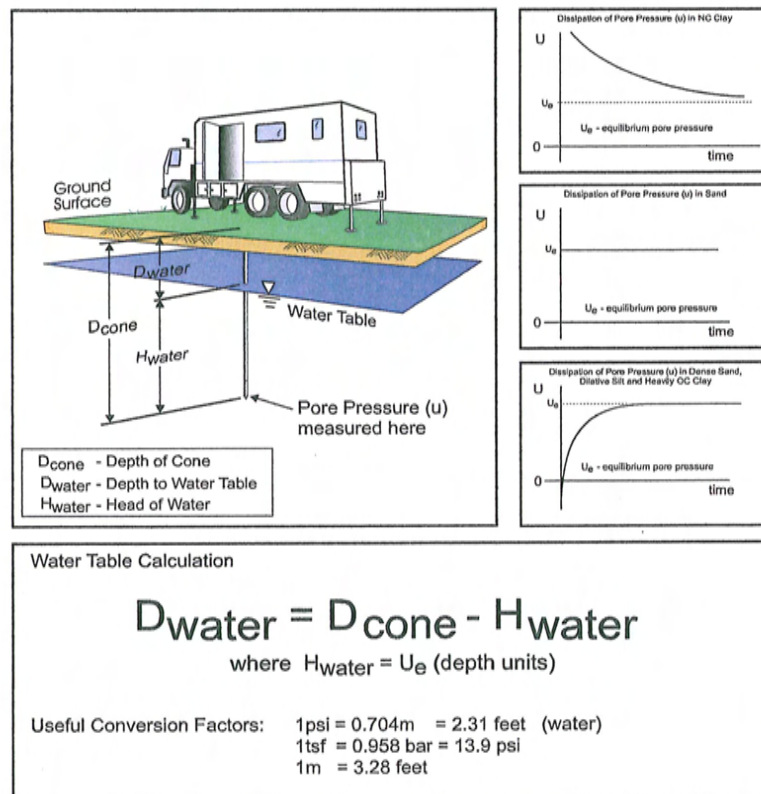


Figure PPDT



Bibliography

Lunne, T., Robertson, P.K. and Powell, J.J.M., "Cone Penetration Testing in Geotechnical Practice"
E & FN Spon. ISBN 0 419 23750, 1997

Robertson, P.K., "Soil Classification using the Cone Penetration Test", Canadian Geotechnical Journal, Vol. 27,
1990 pp. 151-158.

Mayne, P.W., "NHI (2002) Manual on Subsurface Investigations: Geotechnical Site Characterization", available
through www.ce.gatech.edu/~geosys/Faculty/Mayne/papers/index.html, Section 5.3, pp. 107-112.

Robertson, P.K., R.G. Campanella, D. Gillespie and A. Rice, "Seismic CPT to Measure In-Situ Shear Wave Velocity",
Journal of Geotechnical Engineering ASCE, Vol. 112, No. 8, 1986
pp. 791-803.

Robertson, P.K., Sully, J., Woeller, D.J., Lunne, T., Powell, J.J.M., and Gillespie, D.J., "Guidelines for Estimating
Consolidation Parameters in Soils from Piezocone Tests", Canadian Geotechnical Journal, Vol. 29, No. 4,
August 1992, pp. 539-550.

Robertson, P.K., T. Lunne and J.J.M. Powell, "Geo-Environmental Application of Penetration Testing", Geotechnical
Site Characterization, Robertson & Mayne (editors), 1998 Balkema, Rotterdam, ISBN 90 5410 939 4 pp 35-47.

Campanella, R.G. and I. Weemeees, "Development and Use of An Electrical Resistivity Cone for Groundwater
Contamination Studies", Canadian Geotechnical Journal, Vol. 27 No. 5, 1990 pp. 557-567.

DeGroot, D.J. and A.J. Lutenegeger, "Reliability of Soil Gas Sampling and Characterization Techniques", International
Site Characterization Conference - Atlanta, 1998.

Woeller, D.J., P.K. Robertson, T.J. Boyd and Dave Thomas, "Detection of Polyaromatic Hydrocarbon Contaminants
Using the UVIF-CPT", 53rd Canadian Geotechnical Conference Montreal, QC October pp. 733-739, 2000.

Zemo, D.A., T.A. Delfino, J.D. Gallinatti, V.A. Baker and L.R. Hilpert, "Field Comparison of Analytical Results from
Discrete-Depth Groundwater Samplers" BAT EnviroProbe and QED HydroPunch, Sixth national Outdoor Action
Conference, Las Vegas, Nevada Proceedings, 1992, pp 299-312.

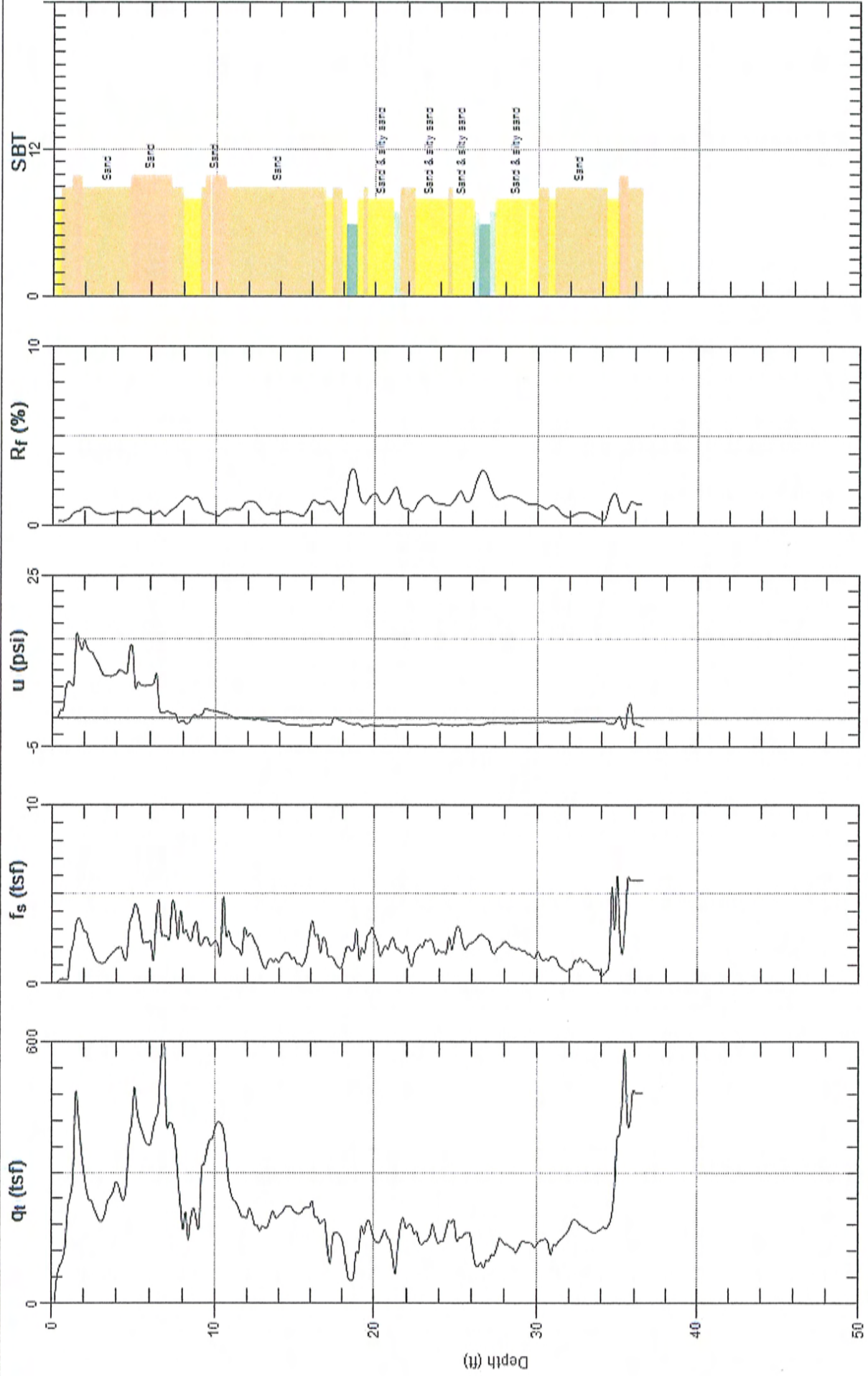
Copies of ASTM Standards are available through www.astm.org



NEBLETT & ASSOCIATES

Site: DIAMOND DEV.
Sounding: CPT-01

Engineer: J. CULOTTA
Date: 10/10/2008 07:53



Max. Depth: 36.581 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



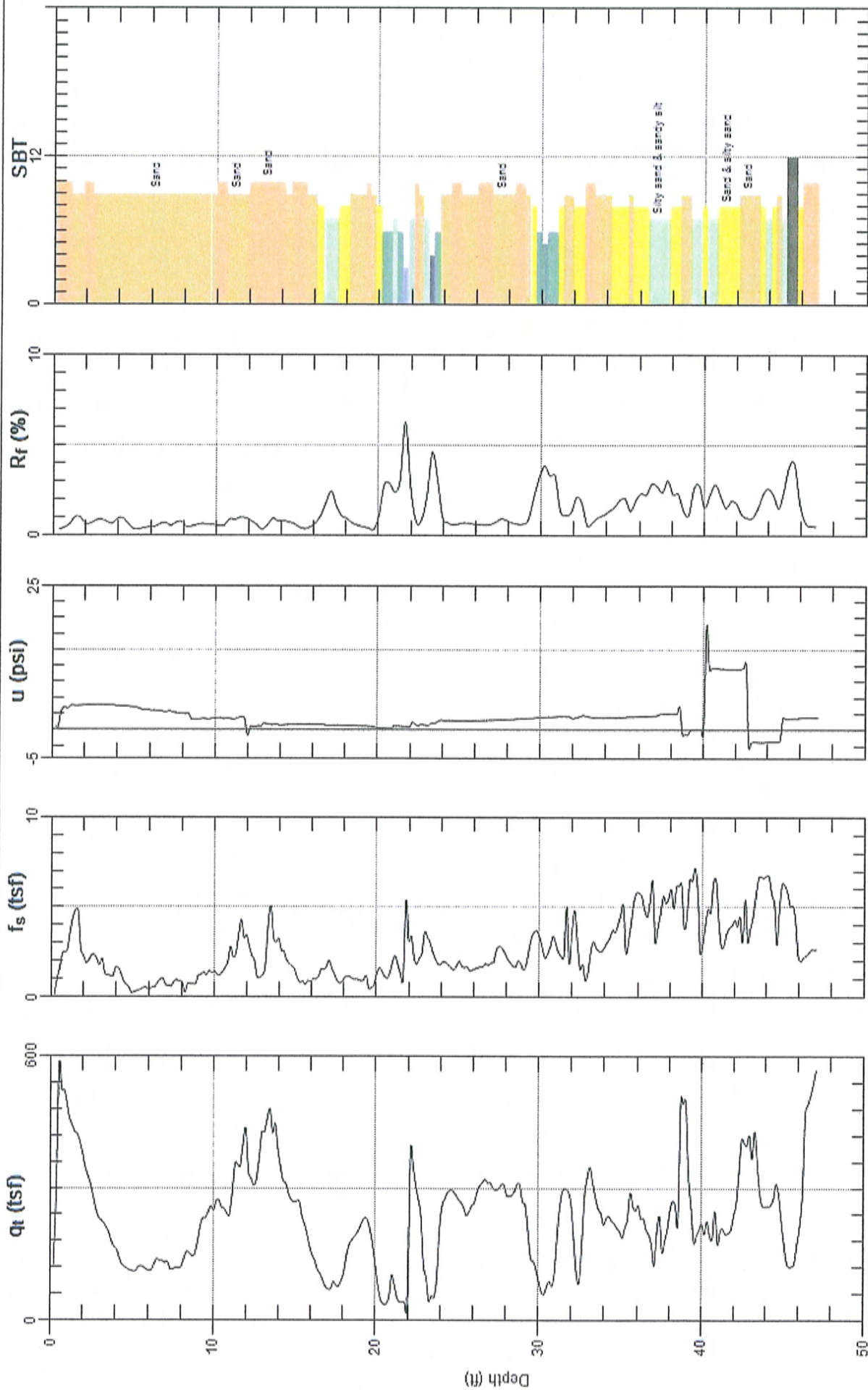
NEBLETT & ASSOCIATES

Site: DIAMOND DEV.

Sounding: CPT-02

Engineer: J. CULOTTA

Date: 10/10/2008 08:25



Max. Depth: 47.080 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



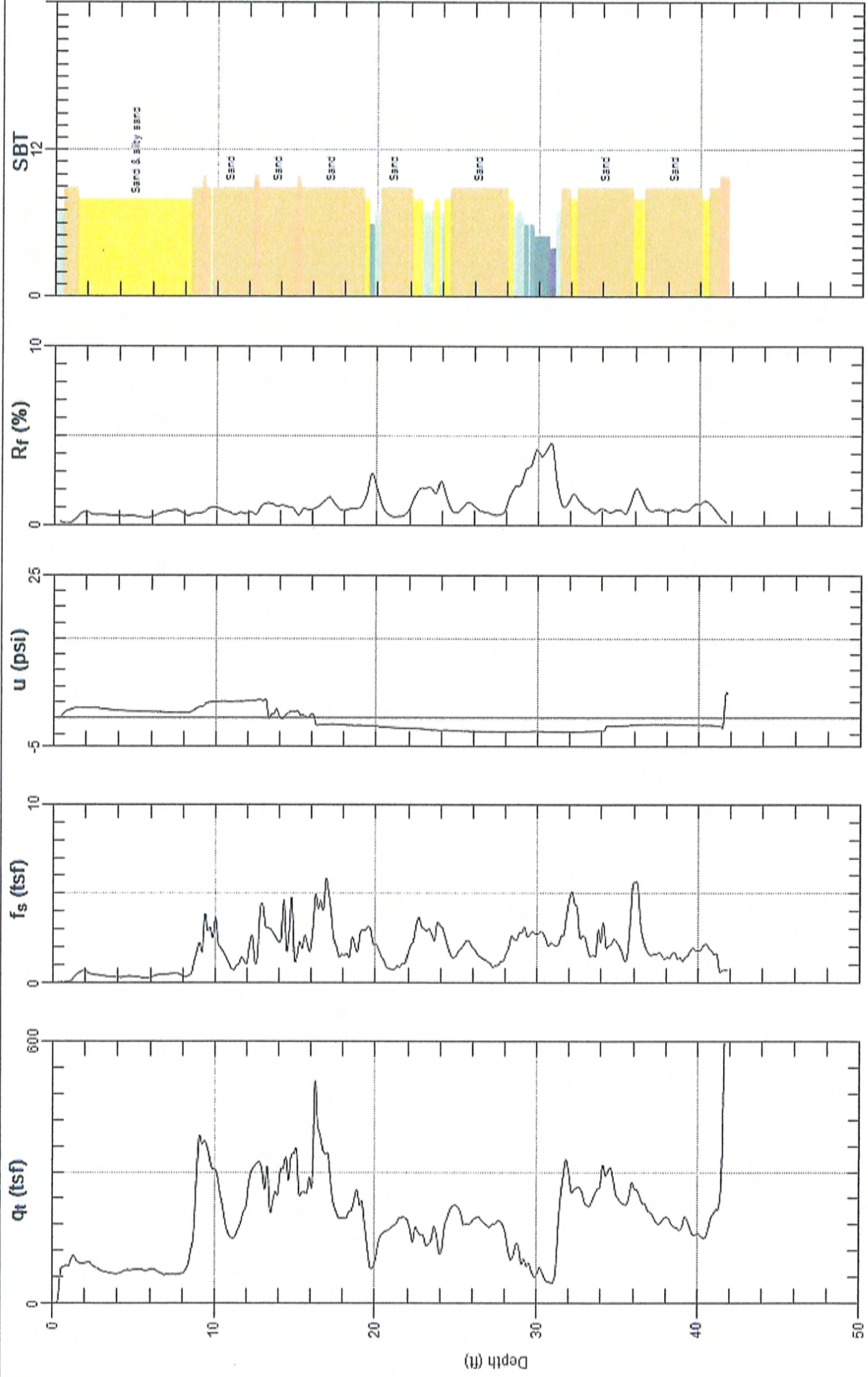
NEBLETT & ASSOCIATES

Site: DIAMOND DEV.

Engineer: J. CULOTTA

Sounding: CPT-03

Date: 10/10/2008 09:30



Max. Depth: 41.831 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



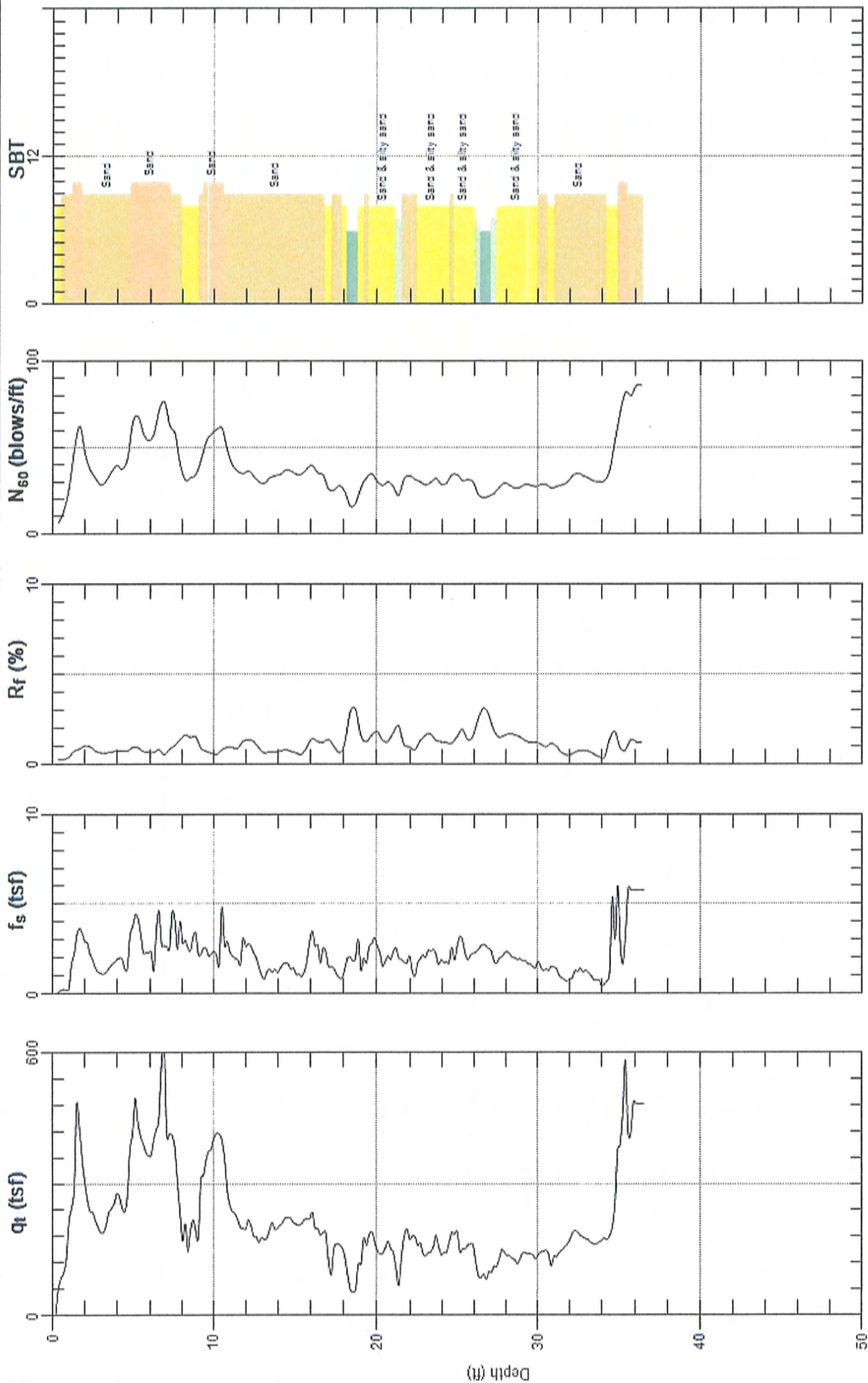
NEBLETT & ASSOCIATES

Site: DIAMOND DEV.

Sounding: CPT-01

Engineer: J. CULOTTA

Date: 10/10/2008 07:53



Max. Depth: 36.581 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



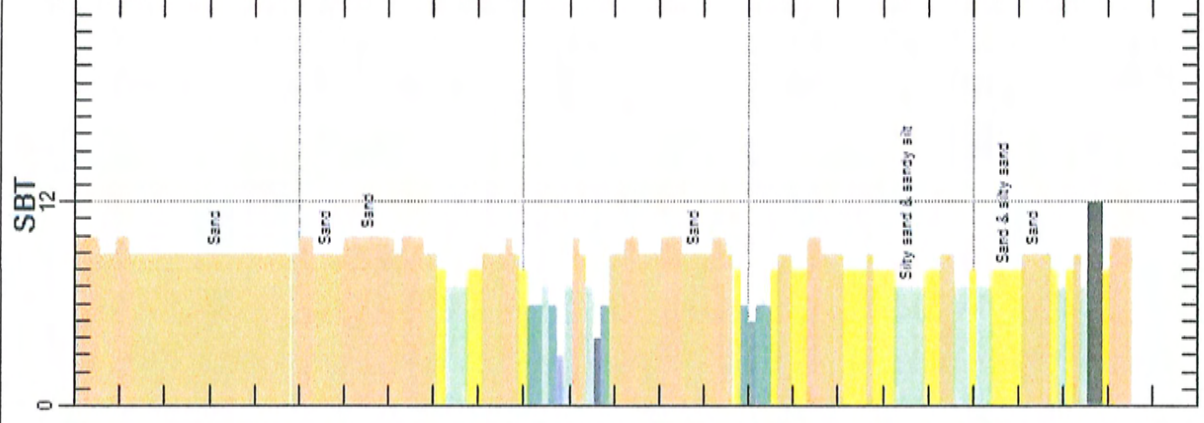
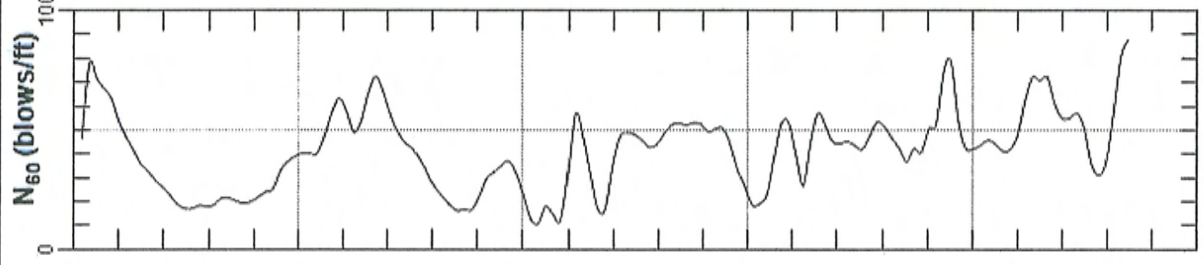
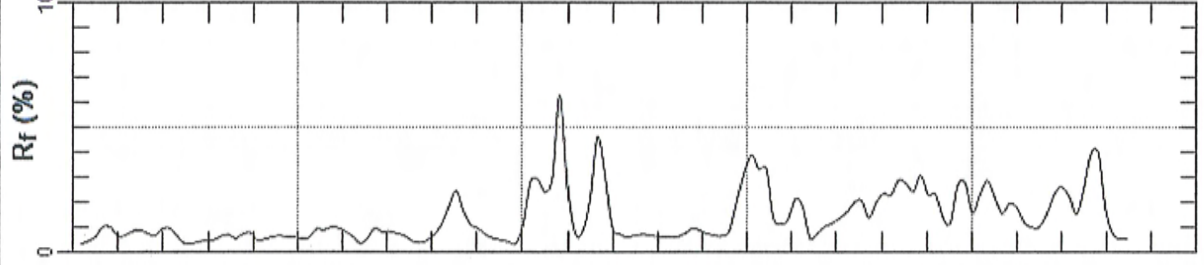
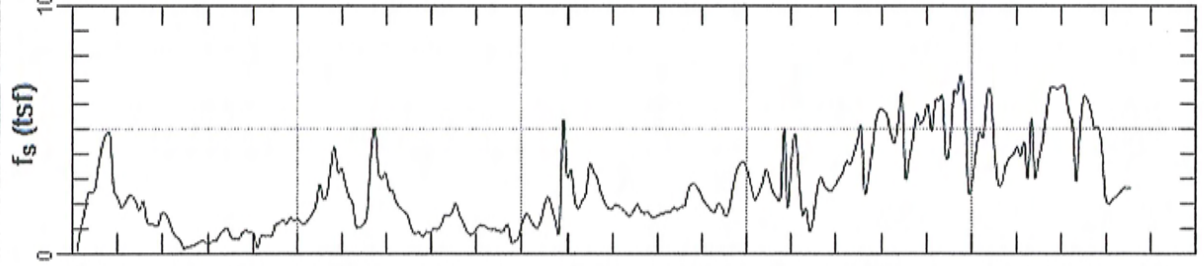
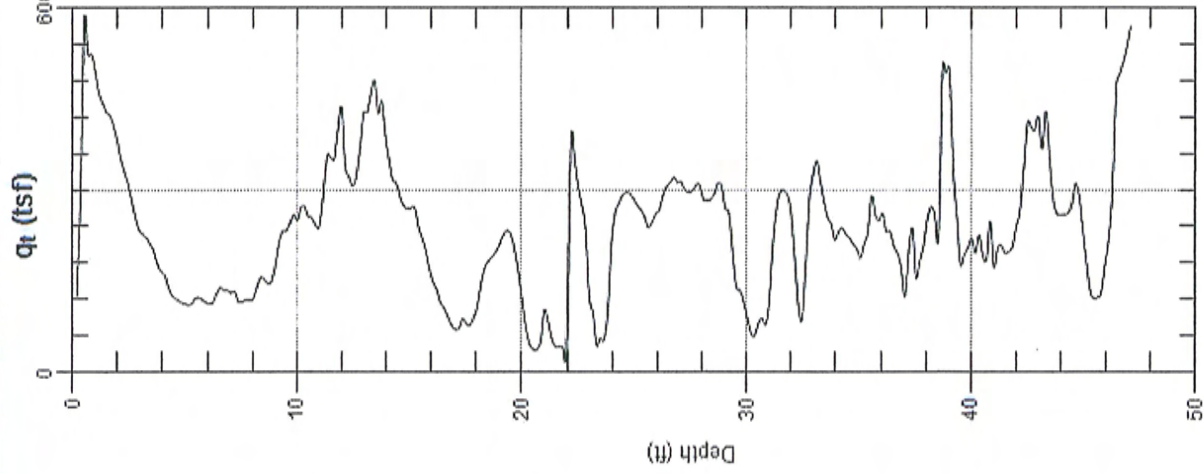
NEBLETT & ASSOCIATES

Site: DIAMOND DEV.

Sounding: CPT-02

Engineer: J. CULOTTA

Date: 10/10/2008 08:25



Max. Depth: 47.080 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



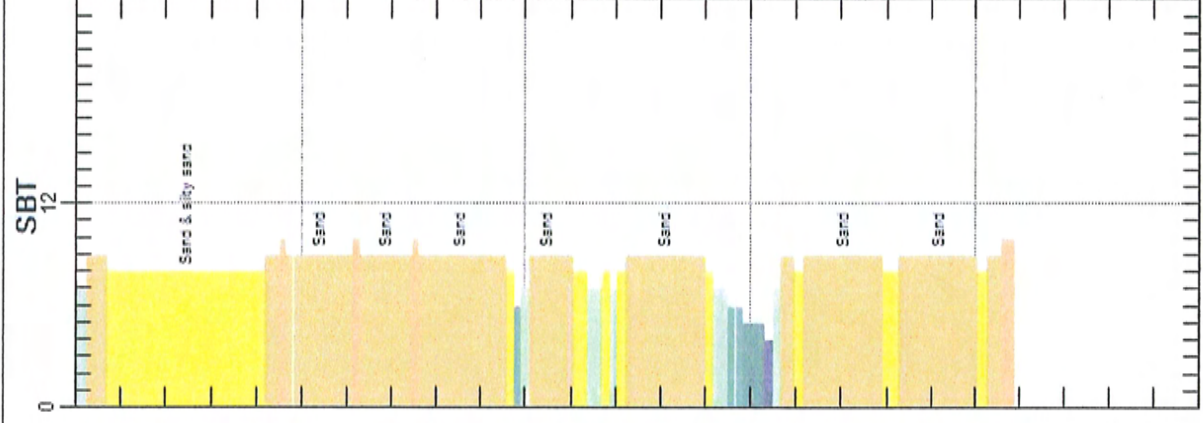
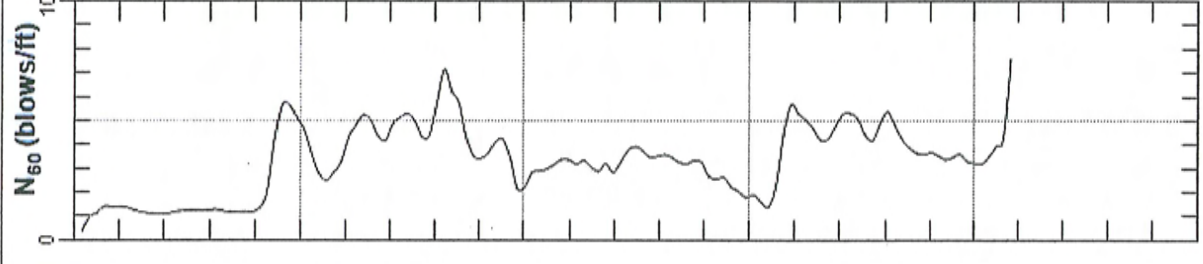
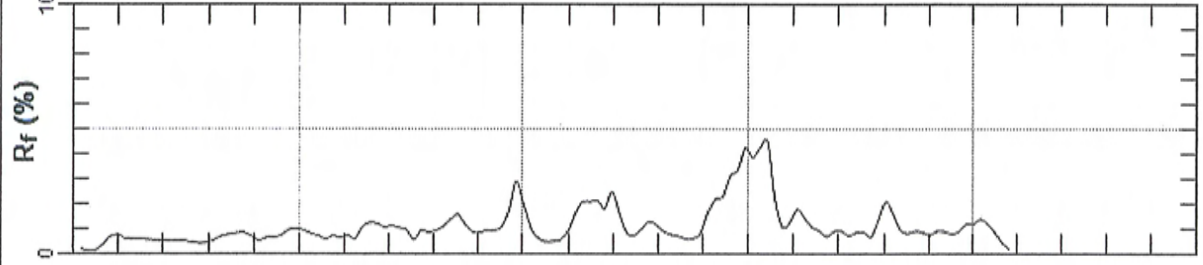
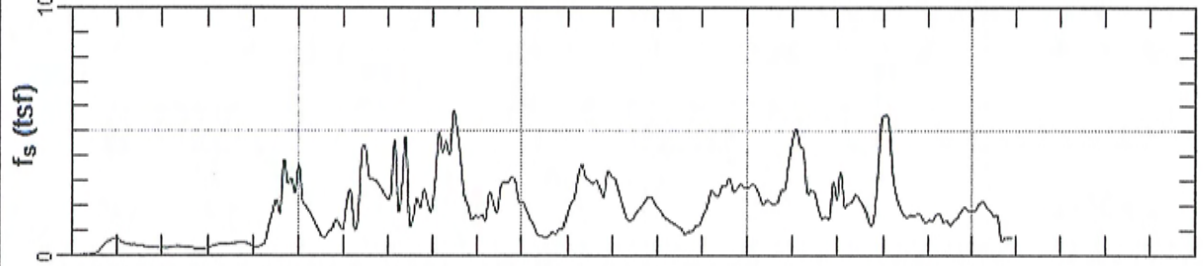
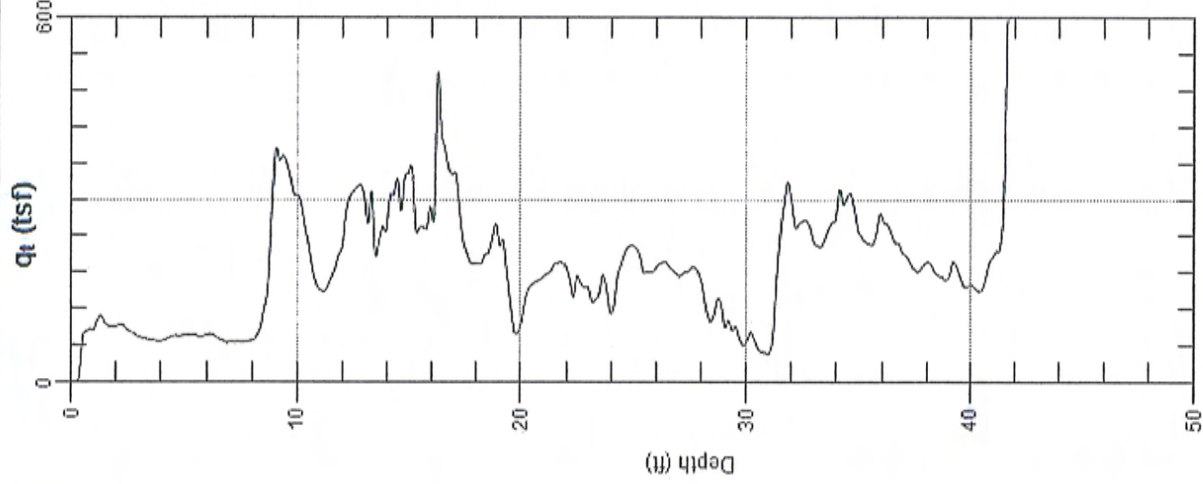
NEBLETT & ASSOCIATES

Site: DIAMOND DEV.

Engineer: J. CULOTTA

Sounding: CPT-03

Date: 10/10/2008 09:30



Max. Depth: 41.831 (ft)
Avg. Interval: 0.328 (ft)

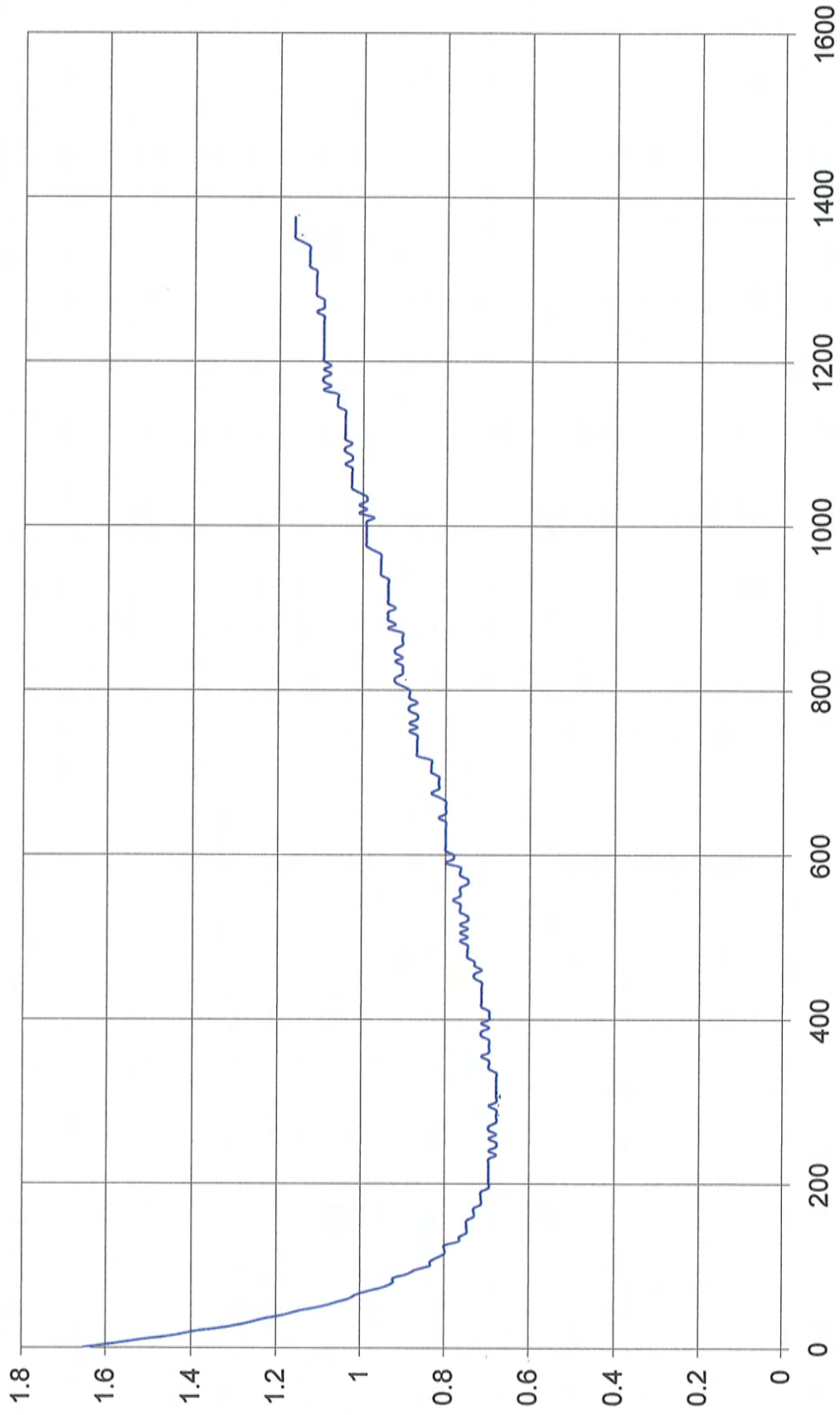
SBT: Soil Behavior Type (Robertson 1990)



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: CPT-02
Depth: 47.08
Site: DIAMOND
Engineer: J. CULOTTA

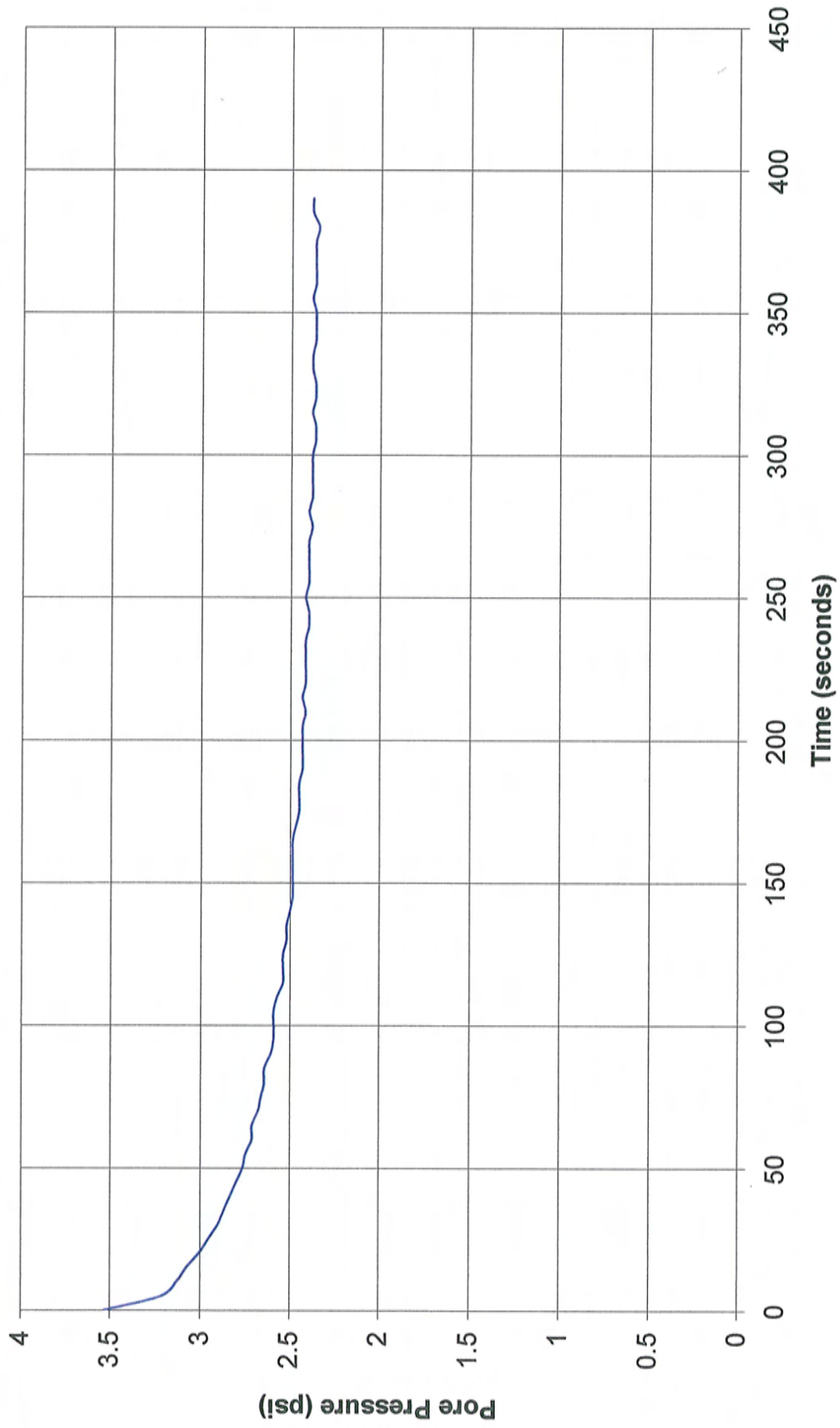




GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: CPT-03
Depth: 42.159
Site: DIAMOND
Engineer: J. CULOTTA



LOGS OF BORINGS BY SOUTH COAST GEOLOGIC SERVICES, INC.

ADDRESS: Railroad Canyon
Lake Elsinore, California

SUBSURFACE EXPLORATION LOG

P.N.: 90069.1

TH-1

EXPLORATION DATE: 11/08/90

LOGGED BY: T.R.

SURFACE ELEVATION: 0.0 ±

GROUNDWATER(▼): None Observed

EQUIPMENT: Hollow St. Fl. Auger

SAMPLE TYPE: S = SPLIT SPOON *T = THIN WALL D = DRIVE B = BULK SC = SAND CONE

GEOLOGIC SYMBOL: B = BEDDING J = JOINT SP = SLIDE PLANE A = SEEPAGE

LABORATORY TEST: DS = DIRECT SHEAR C = CONSOLIDATION EI = EXPANSION M = MAX. DEN.

GEOLOGIC CLASSIFICATION				ENGINEERING CLASSIFICATION		SAMPLE DATA			TEST DATA						
DEPTH	ELEVATION	GEOLOGIC PROFILE	GEOLOGIC DESCRIPTION	SOIL SYMBOL	ENGINEERING DESCRIPTION	DEPTH	SAMPLE	SAMPLE TYPE	PENETRATION RESISTANCE BLOWS/FOOT	MOISTURE CONTENT % OF DRY WEIGHT	DRY DENSITY (pcf)	OTHER			
0			Alluvium		Silty SAND, with clay, brown to very fine grained, isolated rootlets, isolated pores, isolated gravel and caliche mottling with depth, damp to moist, medium dense										
5	-5														
10	-10							Sandy SILT, with clay, brown, isolated gravel, isolated pores, moist, medium dense	10		T	21	15.0	107.1	
15	-15							SAND, tan to light brown, medium to fine grained, small cobbles from 16 to 19 feet, damp to moist, dense	15		S	41	7.2		
20	-20							Sandy GRAVEL, to gravelly sand, tan, moist, dense	20		T	56	8.2	112.6	
25	-25							Gravelly SAND, medium to coarse grained with pebbles and rock fragments, tan to light grey, damp to moist, dense	25		S	37	7.2		
30	-30								30		T	57	5.3	112.8	
35	-35							Silty SAND, with gravel, brown, isolated pebbles, damp to moist, very dense	35		S	54	11.0		
40	-40								40						
45	-45							Gravelly SAND, tan to light grey, pebbles to small cobbles, damp to dense to very dense	45		T	79/3	7.3	118.6	
50	-50								50		S	82	6.6		

Total Depth: 50 Feet

Total Depth: 50 Feet

January 1991

SOUTH COAST GEOLOGIC SERVICES, INC.

FIGURE

2

ADDRESS: Railroad Canyon
Lake Elsinore, California

SUBSURFACE EXPLORATION LOG

P.N.: 90069.1

TH-2

EXPLORATION DATE: 11/08/90

LOGGED BY: T.R.

SURFACE ELEVATION: 0.0 ±

GROUNDWATER(▼): None Observed

EQUIPMENT: Hollow St. Fl. Auger

SAMPLE TYPE: S = SPLIT SPOON *T = THIN WALL D = DRIVE B = BULK SC = SAND CONE

GEOLOGIC SYMBOL: B = BEDDING J = JOINT SP = SLIDE PLANE A = SEEPAGE

LABORATORY TEST: DS = DIRECT SHEAR C = CONSOLIDATION EI = EXPANSION M = MAX. DEN.

GEOLOGIC CLASSIFICATION				ENGINEERING CLASSIFICATION		SAMPLE DATA			TEST DATA			
DEPTH	ELEVATION	GEOLOGIC PROFILE	GEOLOGIC DESCRIPTION	SOIL SYMBOL	ENGINEERING DESCRIPTION	DEPTH	SAMPLE	SAMPLE TYPE	PENETRATION RESISTANCE BLOWS/FOOT	MOISTURE CONTENT % OF DRY WEIGHT	DRY DENSITY (pcf)	OTHER
0	0		Alluvium		Silty SAND, with clay, brown, fine grained, isolated pores, isolated rootlets, isolated coarse grained sand and gravels, dry to damp, medium dense	0						
5	-5				Sandy SILT, with clay, reddish brown to light brown, fine to medium grained, dry to damp, medium dense	5		T	95	9.9	121.1	
10	-10				Gravelly SAND,reddish brown to light brown, medium grained, abundant cobbles between 16 and 33 feet, damp becoming moist with depth, dense becoming very dense with depth	10		S	23	4.1		
15	-15					15		T	33	4.2	106.6	
20	-20					20		S	27	3.7		
25	-25					25		T	74/6			
30	-30					30		S	50/5	3.6		
35	-35					35		S	50/6	4.9		
40	-40					40		S	27/6	8.5		
Total Depth: 40 Feet												

Total Depth: 40 Feet

ADDRESS: Railroad Canyon Lake Elsinore, California				SUBSURFACE EXPLORATION LOG							
P.N.: 90069.1				TH-4							
EXPLORATION DATE: 11/08/90		LOGGED BY: T.R.		SURFACE ELEVATION: 0.0 ±							
GROUNDWATER(▼): None Observed			EQUIPMENT: Hollow St. Fl. Auger								
SAMPLE TYPE: S= SPLIT SPOON *T= THIN WALL D= DRIVE B= BULK SC= SAND CONE											
GEOLOGIC SYMBOL: B= BEDDING J= JOINT SP= SLIDE PLANE A= SEEPAGE											
LABORATORY TEST: DS= DIRECT SHEAR C= CONSOLIDATION EI= EXPANSION M= MAX. DEN.											
GEOLOGIC CLASSIFICATION			ENGINEERING CLASSIFICATION		SAMPLE DATA		TEST DATA				
DEPTH	ELEVATION	GEOLOGIC PROFILE	SOIL SYMBOL	ENGINEERING DESCRIPTION	DEPTH	SAMPLE	SAMPLE TYPE	PENETRATION RESISTANCE BLOWS/FOOT	MOISTURE CONTENT % OF DRY WEIGHT	DRY DENSITY (pcf)	OTHER
0	0			Alluvium							
5	-5			Silty SAND, with clay, fine to coarse, gravel, pores, rootlets, rock fragments, damp to dry, high dry strength	5	T	52/3	6.5	123.7		
10	-10			SAND, light brown fine to medium grained, gravels, cobbles from 10 to 15 feet, dry, dense to very dense	10	S	100/4"	3.1			
15	-15			SAND, light tan/grey, medium grained, isolated small pebbles, slightly micaceous, damp to dry, very dense	15	S	46	4.6			
20	-20			SAND, light tan/grey, medium grained, isolated small pebbles, slightly micaceous, damp to dry, very dense	20	S	46	4.6			
25	-25			Silty SAND, gravel, rock fragments, moist, very dense	25	T	53/6	8.4	113.3		
30	-30			Silty SAND, gravel, rock fragments, moist, very dense	30	T	53/6	8.4	113.3		
35	-35			Clayey SAND, with gravel, brown, fine to medium grained, rock fragments, moist, very dense	35	S	56	9.3			
40	-40			Clayey SAND, with gravel, brown, fine to medium grained, rock fragments, moist, very dense	40	S	56	9.3			
45	-45			Clayey SAND, with gravel, brown, fine to medium grained, rock fragments, moist, very dense	45	S	50/6	10.2			
Total Depth: 45 Feet											
January 1991				SOUTH COAST GEOLOGIC SERVICES, INC.				FIGURE 5			

LOGS OF BORINGS BY PACIFIC SOILS ENGINEERING, INC.

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. **PSE-3**

SHEET 2 OF 2

DATE OBSERVED **6/21/93**

METHOD OF DRILLING **24" Bucket Auger**

LOGGED BY **SES**

GROUND ELEVATION **1270.0**

WORK ORDER No. **101872-GP**

Depth (ft.)	Sample	Blows/ft.	Group Syb.	Unit Dry Weight (lbs/ft ³)	Moisture (%)	Description and Remarks
25	R	6		116.4	7.3	@ 25.0 ft., sand lens, gray, very moist, medium dense @ 25.5 ft., gravelly sand, coarse gravel Total Depth 26.0 ft. No Water, No Caving
30						
35						
40						
45						
50						

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. **PSE-4**

SHEET 1 OF 1

DATE OBSERVED **6/21/93**

METHOD OF DRILLING **24" Bucket Auger**

LOGGED BY **SES**

GROUND ELEVATION **1266.0**

WORK ORDER No. **101872-GP**

Depth (ft.)	Sample	Blows/ft.	Group Syb.	Unit Dry Weight (lbs/ft ³)	Moisture (%)	Description and Remarks
0						ALLUVIUM (Qal): Sandy silt, light brown, slightly moist, loose
						@ 3.0 ft., becomes very moist to moist
5	R B	P/6" 1/6"		117.9	10.5	@ 4.0 ft., silty sand, reddish brown, slightly moist to moist, medium dense, trace coarse pebbles
						@ 7.5 ft., gravelly sand, brown, moist, medium dense, gravel to 3", trace fine cobbles
						@ 9.0 ft., cobbles to 6", coarser sand
10						@ 12.0 ft., cobbles to 10"
						@ 13.0 ft., thin finer grained lens
						@ 14.0 ft., becomes tan, trace cobbles
15						@ 17.0 ft., silty sand, light brown, moist to very moist, medium dense, trace pebbles
20	R	1		113.7	12.9	@ 20.0 ft., trace clay
						@ 22.0 ft., fine sand lens, very moist to wet
						@ 24.5 ft., gravel increases
25	R	2		112.0	5.4	Total Depth 25.0 ft. No Water, No Caving

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. **PSE-13**

SHEET 1 OF 2

DATE OBSERVED **6/25/93**

METHOD OF DRILLING **24" Bucket Auger**

LOGGED BY **TJM**

GROUND ELEVATION **1267.0**

WORK ORDER No. **101872-GP**

Depth (ft.)	Sample	Blows/ft.	Group Syb.	Unit Dry Weight (lbs/ft ³)	Moisture (%)	Description and Remarks
0						ALLUVIUM (Qal): Brown silty very fine to fine grained mica sand, damp to moist, very loose to loose, porous, friable, uncemented, occasional roots
5	R	P/6" 1/6"		111.5	9.0	@ 5.0 ft., continuous lithology since surface
	B					@ 6.0 ft., brown to gray-brown medium to coarse grained mica sand, moist, moderately dense, abundant very coarse grained ??? fragments, some silt and fine grained sand, abundant subrounded pebbles, occasional cobbles
10						@ 10.0 ft., continuous lithology since 6.0 ft.
15						@ 15.0 ft., continuous lithology since 6.0 ft.
						@ 18.0 ft., slight color change to green-gray, continuous lithology since 6.0 ft.
20						
25						@ 24.0 ft., green-brown clayey fine to coarse grained sand, moist to wet, moderately dense, occasional pebbles, common gravel

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. **PSE-13**

SHEET 2 OF 2

DATE OBSERVED **6/25/93**

METHOD OF DRILLING **24" Bucket Auger**

LOGGED BY **TJM**

GROUND ELEVATION **1267.0**

WORK ORDER No. **101872-GP**

Depth (ft.)	Sample	Blows/ft.	Group Syb.	Unit Dry Weight (lbs/ft ³)	Moisture (%)	Description and Remarks
25						
						@ 28.0 ft., continuous lithology since 24.0 ft.
30						@ 30.0 ft., abundant pebbles and cobbles, occasional boulder
35						@ 35.0 ft., continuous lithology since 24.0 ft.
						@ 39.0 ft., water
40						
						Total Depth 42.0 ft. Water at 32' 10" on 7/7/93, Caving at 39.0 ft.
45						
50						