ATTACHMENT J

Addendum to the Subsurface Investigation and Laboratory Testing Data Report Summary

Data
Report
Addendum

Volume 1 of 1

Subsections Include The Following
Survey Report
Boring Logs
CPT Report
Table 6 Lab Testing Summary
Unconsolidated Undrained Triaxial Tests
Consolidation Tests
Compression Tests

Survey Report

SURVCON INC.
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SURVEY REPORT FOR AS-BUILT GEOSPATIAL LOCATIONS OF GEOTECHNICAL BORINGS AND CONE PENETRATION TESTS AT THE SOUTH TEXAS PROJECT NUCLEAR GENERATING STATION, MATAGORDA COUNTY, TEXAS

Introduction

SURVCON INC. performed a stake-out and as-built survey for the geospatial locations of 13 geotechnical borings and 12 geotechnical cone penetration tests (CPT's) specified by MACTEC Engineering and Consulting Inc. at the South Texas Project Nuclear Power Generating Plant (STP) in Matagorda County, Texas. Over a period between: July, 2007 to August, 2007, SURVCON INC. established horizontal coordinates and vertical elevations for the center point of each position. The methodologies and horizontal and vertical datums adhered to are as follows.

Horizontal and Vertical Control

Horizontal and vertical control for the as-built geospatial locations of the borings and CPT's are referenced to the (previously established by others) STP site coordinate system. Positional data for three independent STP site horizontal monuments and the three independent STP site vertical monuments were released to SURVCON INC. from Mike Svetlik of STP Maintenance Engineering Department. The STP site coordinate system is based on the North American Datum of 1927 (NAD27) for horizontal coordinates and the National Geodetic Vertical Datum of 1929 (NGVD29) for vertical elevations. All six monuments were located in the field. A differential level loop between all monuments and GPS rapid static observations between the horizontal monuments were performed in order to establish the internal accuracy of the STP site coordinate system. Once it was determined that the STP site coordinate system was within the specifications outlined by MACTEC, in the *Engineering Specification for Subsurface Investigation and Laboratory Testing for South Texas Project Units 3 & 4 Matagorda County, Texas*, published by Bechtel Corporation 2006, the monuments were used to perform a site calibration with the GPS equipment. The site calibration enabled data to be collected relative to the STP site coordinate system. The control coordinates for the horizontal and vertical STP coordinate system are as follows:

Horizontal Control:

Description	Northing NAD27 US Feet	Easting NAD27 US Feet	Elevation NGVD29 US Feet
HN	364,000.23	2,944,759.94	27.25
HL	364,000.23	2,945,360.08	26.75
HE-1	361,564.92	2,941,664.84	31.88

Vertical Control

Description	Northing NAD27 US Feet	Easting NAD27 US Feet	Elevation NGVD29 US Feet
HF-VERT	361,564.92	2,943,999.89	28.04
VP-VERT	363,899.79	2,942,899.50	38.78
VE-1 VERT	361,574.65	2,941,665.86	32.09

Methodology

Accuracy standards specified in the *Engineering Specification for Subsurface Investigation and Laboratory Testing for South Texas Project Units 3 & 4 Matagorda County, Texas*, published by Bechtel Corporation 2006, were achieved by collecting spatial data using Real Time Kinematic-Global Positioning Satellite (RTK-GPS) techniques. The Leica GPS System 1200 was used to collect all field data and observations, and Leica Geomatics Office Version 2.0 was used to process all GPS data. As stated in requirement 2.2 of aforementioned publication, all data collected for the spatial locations of geotechnical borings and CPT's were done so in a manner to achieve accuracy in the horizontal component to met or exceeded a third order accuracy of 1:5,000 and all data collected for the spatial locations of geotechnical borings and CPT's in the vertical component met or exceeded an accuracy of 0.1 feet.

Two observations were made on each geotechnical spatial location using RTK-GPS methods. The RTK-GPS observations were made at different time periods and different days to ensure independent satellite geometry for each respective boring and CPT. The independent observations were then processed through Leica Geomatics Office and a least squares adjustment and error analysis were performed in order to check the accuracy of the collected geospatial locations of the geotechnical borings and CPT's.

The processed averaged coordinate values for the geotechnical borings and CPT's and their standard deviations are as follows:

BORINGS OR CPT'S	NORTHING (A)	EASTING (A)	ELEVATION (A)	NORTHING (B)	EASTING (B)	ELEVATION (C)	DELTA - X	DELTA - Y	DELTA - Z
B-443	363182.01	2942133.49	30.62	363182.07	2942133.52	30.61	0.06	0.03	-0.02
B-444	363057.98	2942133.50	29.98	363058.01	2942133.44	30.04	0.03	-0.06	0.06
B-445	363058.02	2942240.48	31.38	363057.98	2942240.46	31.29	-0.04	-0.02	-0.10
B-940	363443.68	2941391.11	28.59	363471.37	2941379.59	29.66	27.69	-11.52	1.07
B-941	363077.73	2941410.59	29.78	363077.66	2941410.59	29.79	-0.07	0.00	0.01
B-942	362952.50	2941575.54	30.97	362952.54	2941575.55	31.06	0.04	0.00	0.10
B-943	362952.52	2941801.52	31.44	362952.49	2941801.53	31.60	-0.03	0.01	0.16
B-944	362952.52	2942205.51	30.12	362952.56	2942205.48	30.13	0.04	-0.03	0.01
B-945	362952.50	2942411.46	29.61	362952.52	2942411.49	29.59	0.02	0.03	-0.02
B-946	362952.47	2942589.50	30.98	362952.55	2942589.45	30.92	0.09	-0.05	-0.06
B-947	363044.54	2942784.80	31.44	363044.6	2942784.81	31.47	0.07	0.01	0.02
B-948	363227.49	2942967.91	31.33	363227.49	2942967.91	31.33	0.00	0.00	0.00
B-949	363604.32	2941778.93	28.68	363604.39	2941778.94	28.65	0.07	0.01	-0.03
C-405 S	363119.99	2942240.52	31.51	363120.01	2942240.55	31.45	0.03	0.04	-0.07
C-940	363174.73	2941370.42	28.66	363174.7	2941370.36	28.77	-0.03	-0.06	0.11
C-941	362952.50	2941462.49	31.83	362952.48	2941462.49	31.78	-0.02	0.00	-0.04
C-942	362952.52	2941688.52	30.31	362952.51	2941688.53	30.40	-0.01	0.01	0.09
C-943	362952.52	2941914.48	30.75	362952.51	2941914.54	30.67	-0.01	0.06	-0.08
C-944	362952.51	2942102.52	30.06	362952.54	2942102.48	30.20	0.03	-0.04	0.14
C-945	362952.52	2942308.51	31.45	362952.58	2942308.52	31.48	0.06	0.01	0.03
C-946	362952.53	2942692.96	31.99	362952.58	2942692.93	32.05	0.05	-0.03	0.06
C-947	363127.30	2942867.72	30.69	363127.31	2942867.72	30.79	0.01	0.00	0.10
C-948	363648.99	2941886.80	29.84	363649.03	2941886.78	29.78	0.05	-0.02	-0.06
C-948A	363653.52	2941885.60	29.88	363653.43	2941885.60	29.92	-0.09	-0.01	0.04
C-949	363375.81	2941999.98	27.67	363375.79	2941999.95	27.76	-0.02	-0.03	0.09

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Lastly, a comparison of the planned locations of the geotechnical borings and CPT's to the as-built collected coordinates was made to check the accuracies of the geospatial locations of the borings and CPT's. All locations except B-940 fell within tolerance of the third order horizontal and 0.1 feet vertical expectancies. B-940 was moved to another position by the on-site supervisor to clear utilities in the vicinity. Those locations along with all other determined geospatial locations for all borings are reflected in the final coordinates as follows:

BORINGS OR CPT'S	PLANNED NORTHING	PLANNED EASTING	FINAL AS-BUILT NORTHING	FINAL AS-BUILT EASTING	FINAL AS-BUILT ELEVATION	X-DIFF	Y-DIFF
B-443	363182.00	2942133.50	363182.04	2942133.51	30.61	0.04	0.01
B-444	363058.00	2942133.50	363058.00	2942133.47	30.01	0.00	-0.03
B-445	363058.00	2942240.50	363057.99	2942240.47	31.34	-0.01	-0.03
B-940	363443.70	2941391.10	363471.37	2941379.59	29.66	27.67	-11.51
B-941	363077.70	2941410.60	363077.70	2941410.59	29.79	0.00	-0.01
B-942	362952.50	2941575.50	362952.52	2941575.55	31.02	0.02	0.05
B-943	362952.50	2941801.50	362952.50	2941801.53	31.52	0.00	0.03
B-944	362952.50	2942205.50	362952.54	2942205.50	30.13	0.04	0.00
B-945	362952.50	2942411.50	362952.51	2942411.48	29.60	0.01	-0.02
B-946	362952.50	2942589.50	362952.51	2942589.48	30.95	0.01	-0.02
B-947	363044.50	2942784.80	363044.57	2942784.81	31.46	0.07	0.01
B-948	363227.50	2942967.90	363227.49	2942967.91	31.33	-0.01	0.01
B-949	363604.30	2941778.90	363604.36	2941778.94	28.67	0.06	0.04
C-405S	363120.00	2942240.50	363120.00	2942240.54	31.48	0.00	0.04
C-940	363174.70	2941370.40	363174.72	2941370.39	28.72	0.02	-0.01
C-941	362952.50	2941462.50	362952.49	2941462.49	31.81	-0.01	-0.01
C-942	362952.50	2941688.50	362952.51	2941688.53	30.36	0.01	0.03
C-943	362952.50	2941914.50	362952.51	2941914.51	30.71	0.01	0.01
C-944	362952.50	2942102.50	362952.53	2942102.50	30.13	0.03	0.00
C-945	362952.50	2942308.50	362952.55	2942308.52	31.46	0.05	0.02
C-946	362952.50	2942692.90	362952.55	2942692.95	32.02	0.05	0.05
C-947	363127.30	2942867.70	363127.31	2942867.72	30.71	0.01	0.02
C-948	363649.00	2941886.80	363649.01	2941886.79	29.81	0.01	-0.01
C-948A	NA	NA	363653.48	2941885.60	29.90	NA	NA
C-949	363375.80	2942000.00	363375.80	2941999.97	27.72	0.00	-0.03

Conclusion

The geospatial locations for all geotechnical borings and CPT's on the STP site as defined by MACTEC Inc. were as-built located within accuracies as defined by the *Engineering Specification for Subsurface Investigation and Laboratory Testing for South Texas Project Units 3 & 4 Matagorda County, Texas.*

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September 21, 2007
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Revised: July 2, 2008

STATE OF TEXAS REGISTERED ADAM SALAZAR III 5965 PROFESSIONAL LAND SURVEYOR

07/02/2008

Boring Logs

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-443

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 6 inches/4 inches	Boring Location RADWASTE BUILDING N 363182.01 E 2942133.49		Total Depth 200 feet
Drilling Contractor and Rig JEDI Drilling / CME 75	Elevation at boring 30.61 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon/UD	Sample Driving Hammer/Drop 139.2 / 29.5 inches	No. of Samples 61	Date Started 7/30/07
	Borehole Inclination 0	Logged by A. Osorio/M. Cooke	Date Completed 8/5/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5.28.08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1	5 7 11	12/18					SP-SM	FILL; yellowish brown (10YR 5/6); silt, SAND (SP-SM) -dry; firm; poorly graded; fine to medium; tan CLAY on tip of spoon at 1.5 feet.	FILL to 0.5 feet
2–3	X	SS 2	2 3 4	12/18					CH	BEAUMONT; greenish gray (Gley 1 10Y-6/1); CLAY (CH) - moist; firm; high plasticity.	4 inch O.D. Solid Stem Augers to 12.0 feet
4	X	SS 3	2 3 4	10/18						BEAUMONT; greenish gray (Gley 1 10Y-6/1); CLAY (CH) - dry; firm; high plasticity; medium to high toughness; some black ferrous sulfate nodules.	
5	X	SS 4	2 4 6	18/18							
6–7	X	SS 5	2 5 7	18/18					CL-ML	BEAUMONT; light olive brown (2.5YR-5/3); CLAY (CH) - dry; stiff; high plasticity; high toughness; some black nodules.	
8	X	SS 6	3 4 7	18/18						Gradiational contact to silty CLAY at 6.0 feet.	
9–10	X	SS 7	2 5 6	8/18					ML	BEAUMONT; light gray (2.5Y-7/1); silt, CLAY (CL-ML) - dry; stiff; low plasticity; low toughness; reddish orange mottles; trace fine sand.	
11	X	SS 8	3 6 7	18/18					SM	BEAUMONT; light gray (2.5Y-7/1); silt, CLAY (CL-ML) - dry; stiff; low plasticity; low toughness; reddish orange mottles; trace fine sand.	
12–13	X	SS 9	2 4 12	18/18						BEAUMONT; light gray (2.5Y-7/1); sand, SILT (ML) - moist; stiff; nonplastic; little fine sand.	Wet Spoon at 12.0 feet Water level measuered to 12 feet at time of drilling Switch to Mud Rotary 4 inch Nominal Drag Bit at 12.0 feet
14	X	SS 10	2 3 6	18/18						BEAUMONT; brown (7.5YR-5/4); silt, SAND (SM) - moist to wet; firm; fine; little silt; quartz; trace mica (muscovite).	
15–18									CH	BEAUMONT; brown (7.5YR-5/4); silt, SAND (SM) - moist to wet; firm; fine; little silt; quartz; trace mica (muscovite). 3 inch seam of clay SAND (SC) at 13.0 feet.	
19	X	SS 11	2 3 5	18/18						BEAUMONT; brown (7.5YR-5/4); silt SAND (SM) - moist to wet; loose; fine; little silt; quartz; trace mica (muscovite). Strong brown CLAY at 14.75 feet.	
20–23										BEAUMONT; strong brown (7.5YR-4/6); CLAY (CH) - dry; firm; high plasticity; high toughness; greenish gray mottles.	
24	X	SS 12	2 3 7	18/18					CL-ML	BEAUMONT; strong brown (7.5YR-4/6); sand, silt CLAY (CL-ML) - wet; stiff; nonplastic; little to some fine sand; reddish brown silty SAND on tip of spoon at 25 feet.	
25–28									SM		
29	X	SS 13	4 7 8	10/18						BEAUMONT; reddish brown (5YR-5/4); silt, SAND (SM) - wet; firm; fine; poorly graded; little to some silt; quartz; trace mica (muscovite).	
30–33											
34	X	SS 14	3 5 9	16/18						BEAUMONT; reddish brown (5YR-5/4); silt, SAND (SM) - wet; firm; fine; poorly graded; little to some silt; quartz; mica (muscovite).	
35–38											
39–40	X	SS 15	5 5 6	12/18						BEAUMONT; strong brown (7.5YR 5/6); silt, SAND	

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

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SOIL LOG - Boring No. B-443

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40 41 42 43									SM	(SM) - wet; firm; fine; poorly graded; little to some silt; quartz; mica (muscovite).	
44 45 46 47 48	X	SS 16	6 6 6	18/18					CH	BEAUMONT; strong brown (7.5YR-4/6); CLAY (CH) - moist to dry; stiff; high plasticity; high toughness; blocky texture; some light brownish tan striations	Moderately Difficult Drilling 45 to 48.5 feet.
49 50 51 52 53	X	SS 17	3 3 4	18/18						BEAUMONT; gray (7.5YR-5/1); CLAY (CH) - moist; firm; high plasticity; high toughness; firm; scattered shell hash.	
54 55 56 57 58	X	SS 18	4 6 7	18/18						BEAUMONT; greenish gray (Gley 1 6/1); CLAY (CH) - moist; stiff; high plasticity; high toughness; some gravel; presence of some calcite nodules.	
59 60 61 62 63	X	SS 19	8 11 13	18/18					CL	BEAUMONT; brown (7.5 YR 5.4) mottled with greenish gray (Gley 1 6/1); silt, CLAY (CL) - moist; very stiff; high plasticity; high toughness; some gravel; presence of some calcite deposits.	
64 65 66 67 68	X	SS 20	5 8 7	18/18	20.4	97.1	39/25			BEAUMONT; brown (7.5YR-5.4); mottled with greenish gray (Gley 1 6/1); silt; CLAY (CL) - moist; stiff; high plasticity; high toughness; some gravel; some calcite deposits.	
69 70 71 72 73	X	SS 21	7 7 8	18/18						BEAUMONT; brown (7.5YR-5/4) mottled with greenish gray (Gley 1 6/1) silt; CLAY (CL) - moist; stiff; high plasticity; high toughness; presence of some silty clay materials from 69 to 69.25 feet with medium toughness and plasticity.	
74 75 76 77 78	X	SS 22	23 49 47	12/18	16.8	10.0			SP-SM	BEAUMONT; reddish brown (5YR-4/4); silt, SAND (SP-SM) - moist; very dense; non plastic; fine to medium grained; poorly graded; color transition to yellowish brown (10YR-5/4) at about 74.5 feet bgs.	
79 80	X	SS 23	21 34 26	15/18					SP	BEAUMONT; yellowish brown (10YR-5/4); SAND (SP) - moist; very dense; nonplastic; poorly graded;	

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SOIL LOG - Boring No. B-443

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
80									SP	some black stripes at about 79 to 79.5 feet bgs.	
81											
82											
83											
84	X	SS 24	8 13 13	18/18	26.6	98.3	52/34		CH	BEAUMONT; brown (7.5YR-4/4); CLAY (CH) - moist; very stiff; high plasticity; high toughness; some calcite deposits.	
85											
86											
87		UD 1		25.5/24	22.7		61/37			BEAUMONT; brown (7.5YR-4/4); CLAY (CH) - moist; high plasticity; high toughness.	
88											
89	X	SS 25	7 11 14	20.5/18						BEAUMONT; brown (7.5YR-4/4); CLAY (CH) - moist; very stiff; high plasticity; high toughness; some calcite deposits.	
90											
91											
92		UD 2		0/24						POOR RECOVERY; sample obtained on side of tube appeared to be a brown CLAY (CH).	
93											
94		UD 2A		27.5/24	25.7		55/31			BEAUMONT; brown (7.5YR-4/4); CLAY (CH) - moist; high plasticity; high toughness.	
95											
96											
97		UD 3		24/24	25.6		62/37			BEAUMONT; brown (7.5YR-4/4); CLAY (CH) - moist; high plasticity; high toughness.	
98											
99	X	SS 26	7 10 12	18/18						BEAUMONT; brown (7.5YR-4/4); CLAY (CH) - moist; very stiff; high plasticity; high toughness; some calcite deposits.	
100											
101											
102		UD 4		24/24	29.1		55/30			BEAUMONT; brown (7.5YR-4/4) mottled with some greenish gray (Gley 1-6/1); CLAY (CH) - moist; high plasticity; high toughness.	
103											
104	X	SS 27	3 10 20	18/18	25	55.8				BEAUMONT; brown (7.5YR-4/4); mottled with	
105									ML	some dark gray (7.5YR-4/1); CLAY (CH) - moist; very stiff; high plasticity; high toughness, grading to sand.	
106		UD 5		2/7					SM	BEAUMONT; gray (7/5YR-5/1); sand SILT (ML) - moist; very stiff; nonplastic; mostly medium grained sand; poorly graded.	
107											
108		UD 5A		0/14.5						BEAUMONT; brown (7.5YR-5/4); silt SAND (SM) - moist; nonplastic; with some silt; fine grained sand. NO RECOVERY	
109											
110	X	SS 28	14 8 5	18/18	21.7	43.8			CH	BEAUMONT; brown (7.5YR-5/4); silt, SAND (SM) - moist; firm; nonplastic; poorly graded; with gravel up to about 1" in diameter.	Switch to 6 inch Drag Bit Reamed Hole to 112 feet
111											
112											
113		UD 6		12/24	26.7		63/36			BEAUMONT; brown (7.5YR-5/4); mottled with some greenish gray Gley1-6/1; CLAY (CH) - moist; stiff; high plasticity; high toughness.	
114											
115	X	SS 29	7 12 12	18/18	25	96.7				BEAUMONT; greenish gray (Gley1-6/1); CLAY (CH) - moist; high plasticity; high toughness.	
116										BEAUMONT; greenish gray (Gley1-6/1); CLAY (CH) - moist; very stiff; high plasticity; high toughness.	
117											
118											
119	X	SS 30	10 10 14	18/18						BEAUMONT; greenish gray (Gley1-6/1) mottled	
120											

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-443

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
120									CH	with brown (10YR-5/6); CLAY (CH) - moist; very stiff; high plasticity; high toughness.	
121											
122		UD 7		5/24						BEAUMONT; yellowish brown (10YR-5/6); mottled with greenish gray (Gley1-6/1); CLAY (CH) - moist; high plasticity; high toughness.	
123									CL		
124		UD 7A		24/24	23.4		48/29			BEAUMONT; yellowish brown (10YR-5/6); mottled with greenish gray (Gley1-6/1); silt, CLAY (CL) - moist; high plasticity; high toughness.	
125											
126											
127		UD 8		0/24						NO RECOVERY IN SHELBY TUBE	
128											
129	X	SS 31	10 13 18	18/18	23.9	99.0			CH	BEAUMONT; reddish brown (5YR-4/4) with slight mottling of greenish gray (Gley 1-6/1); CLAY (CH) - moist; high plasticity; high toughness.	
130											
131											
132		UD 9		0/24						NO RECOVERY IN SHELBY TUBE	
133											
134		UD 9A		22/24	16.3		52/18			BEAUMONT; reddish brown (5YR-4/4) with slight mottling of greenish gray (Gley 1-6/1); CLAY (CH) - moist; high plasticity; high toughness.	
135	X	SS 32	8 14 18	18/18	16.3	72.3			ML		
136										BEAUMONT; greenish gray (Gley1-6/1) with slight yellowish brown (10YR-5/8); sand, SILT (ML) to CLAY (CH) - moist; hard; high toughness; presence of calcite deposits.	
137											
138											
139	X	SS 33	10 13 14	18/18					CH		UD-10 Not Performed Replaced by SS-32 and SS-33 as directed by BECHTEL
140										BEAUMONT; greenish gray (Gley1-6/1) with slight yellowish brown (10YR-5/8); CLAY (CH) - moist; very stiff; high plasticity; high toughness; presence of calcite deposits; strong reaction to HCl.	
141											
142		UD 11		12.5/24			61/42			BEAUMONT; greenish gray (Gley1-6/1); mottled with brown (10YR-5/3); CLAY (CH) - moist; high plasticity; high toughness.	
143											
144	X	SS 34	19 25 20	16.5/18	20.1	64.2	26/9		CL	BEAUMONT; greenish gray (Gley1-6/1); sandy lean CLAY (CL) - moist; hard; medium plasticity; high to medium toughness; fine grained sand; some hard dense sand at bottom of shoe.	
145											
146											
147											
148											
149	X	SS 35	15 28 22	14/18	20.2	41.8			SM	BEAUMONT; yellowish brown (10YR5/8); silt, SAND (SM); moist, dense, nonplastic, poorly graded; fine grained sand; some gray dense sand at about 149.5 feet bgs (~2 inches thick).	
150											
151											
152		UD 12		0/24						NO RECOVERY	
153											
154		UD 13		3/24						BEAUMONT; yellowish brown (10YR 5/6); silt, SAND with clay (SM); moist; firm; poorly graded; fine; some fines; quartz.	Begin Logging by Matt Cooke 8/4/07
155											
156									CH		Difficult Drilling with Pitcher Sampler for UD-14 156 to 158 feet
157		UD 14		13.5/24	24.2		67/43			BEAUMONT; strong brown (7.5YR 5/6); CLAY (CH); moist to dry; high plasticity; greenish gray mottles.	
158											
159	X	SS 36	19 24 25	18/18	18.5	92.4			ML	BEAUMONT; strong brown (7.5YR 5/6); sand, SILT	Difficult Drilling 158.5 to 163.5 feet
160											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-443

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
160										(ML); moist; hard; low plasticity; little fine sand.	
161											
162											
163											
164	X	SS 37	13 19 22	18/18	26.2	96.7	24/3			BEAUMONT; strong brown (7.5YR 4/6); sand, SILT (ML); moist; hard; nonplastic; some fine sand.	
165											
166											
167									CH		
168											
169	X	SS 38	9 14 15	18/18	21.7	99.5	54/37			BEAUMONT; strong brown (7.5YR 4/6); silt, CLAY (CH); moist; very stiff; low plasticity; little fine sand; blocky texture.	
170											
171											
172											
173		UD 15		14.5/24	25.7		51/31			BEAUMONT; strong brown (7.5YR 4/6); silt CLAY (CH); moist; low plasticity; little fine sand; blocky texture.	Pitcher Sampler Used for UD-15
174											Switch Back to 4 inch Drag Bit at 174 feet
175											
176											
177											
178											
179	X	SS 39	9 14 14	18/18	20.0	94.8			CL	BEAUMONT; strong brown (7.5YR 4/6); CLAY (CL); dry; very stiff; high plasticity; medium toughness; very stiff; trace fine sand; blocky texture.	Difficult Drilling 178.5 to 183.5 feet
180											
181											
182											
183											
184	X	SS 40	10 16 19	18/18					CH	BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; hard; high plasticity; medium toughness; blocky texture; yellowish brown mottles.	
185											
186											
187											
188											
189	X	SS 41	7 12 14	18/18	29.5		72/43			BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; very stiff; high plasticity; medium toughness; blocky texture; yellowish brown mottles.	Difficult Drilling 188.5 to 193.5 feet
190											
191											
192											
193											
194	X	SS 42	7 38 50/3"	18/18						TOP 15 inches of sample SS-42 = BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; hard; high plasticity; medium toughness; blocky texture; yellowish brown mottles.	
195									SP-SM		Difficult Drilling to 195 to 198.5 feet
196											
197									CL	BOTTOM 3 inches of SS-42 = BEAUMONT; yellowish brown (10YR 5/4); silt, SAND (SP-SM); wet; very dense; fine; poorly graded; few fines; quartz.	
198											
199	X	SS 43	8 16 17	14/18	19.3	81.2	29/16			BEAUMONT; brown (10YR 5/3); silt, sand, CLAY	
200											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-443

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (Inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
200										(CL), moist; hard; some fine sand.	
201										Boring Terminated at 200 ft bgs	
202											
203											
204											
205											
206											
207											
208											
209											
210											
211											
212											
213											
214											
215											
216											
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218											
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238											
239											
240											

STP SOIL STP2007.GPJ WLA.GDT 5/20/08

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-444

Type and Diameter of Boring: Solid Stem Auger/Mud Rotary / 4 inches	Boring Location: RADWASTE BUILDING N 363057.98 E 2942133.5		Total Depth: 100 feet
Drilling Contractor and Rig: JEDI Drilling / CME 75	Elevation at boring: 30.01 feet	Ground Water Depth: See Remarks	Depth to Bedrock: Not Encountered
Sampling Method: Split Spoon/UD	Sample Driving Hammer/Drop: 139.2 / 29.5 inches	No. of Samples: 27	Date Started: 7/23/07
	Borehole Inclination: 0	Logged by: A. Osorio/M. Cooke	Date Completed: 7/24/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5-28-08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1	5 3 3	7/18					SM	FILL; yellowish brown (10 YR 5/8) SAND (SM) with gravel; moist; loose; non plastic; medium grained sand with gravel	
2–3	X	SS 2	2 4 5	16.5/18					CH	BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; stiff; high plasticity; high toughness; presence of few black ferrous sulfate nodules.	
4	X	SS 3	2 4 5	21/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; stiff; high plasticity; high toughness; presence of black ferrous sulfate nodules; some fine gravel; roots	
5–6	X	SS 4	2 5 5	21/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; presence of fine gravel	
7	X	SS 5	2 3 4	4/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; presence of fine gravel	
8–9	X	SS 6	2 3 5	18/18						BEAUMONT; yellowish red (5 YR, 5/6); CLAY (CH); dry; firm; high plasticity; high toughness; presence of gravel and sulfate nodules	
10	X	SS 7	3 5 6	16.5/18						BEAUMONT; yellowish red (5YR, 5/6); CLAY (CH); dry; stiff; high plasticity; high toughness; presence of calcite nodules; black ferrous sulfate nodules and gravel.	
11–12	X	SS 8	3 5 7	19/18						BEAUMONT; yellowish red (5 YR 5/6); mottled with greenish gray (Gley 1, 6/1); CLAY (CH); dry; stiff; high plasticity; high toughness; presence of calcite nodules; black ferrous sulfate; gravel	Auger to 15 feet begin mud rotary 7:30 am 7/24/07 Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
13	X	SS 9	3 6 6	23/18						BEAUMONT; red (5 YR, 5/6); mottled with some greenish gray (Gley 1, 6/1); CLAY (CH); dry; stiff; high plasticity; high toughness; presence of calcite nodules; black ferrous sulfate; gravel	
14–15	X	SS 10	2 6 9	18.5/18	21.6					BEAUMONT; yellowish red (5 YR, 5/6); mottled with some greenish gray (Gley 1, 6/1); CLAY (CH); dry; stiff; high plasticity; high toughness; presence of calcite nodules; black ferrous sulfate; some fine gravel.	difficult drilling at 22 feet
19–20	X	SS 11	3 3 3	24/18					CL-ML	BEAUMONT; strong brown (7.5 YR 4/6); silt; CLAY (CL-ML); moist; firm; medium plasticity; some silt; medium toughness	
24–25	X	SS 12	5 4 8	12/18					SM	BEAUMONT; strong brown (7.5 YR, 5/6); silt; SAND (SM); moist; firm; non to low plasticity; some silt; fine grained sand.	
29–30	X	SS 13	7 7 8	12/18					SP-SM	BEAUMONT; dark yellowish brown (10 YR 4/6); silt; SAND (SP-SM); moist; firm; non plastic; with some silt; poorly graded; fine sand and quartz.	
34–35	X	SS 14	4 8 10	13.5/18						BEAUMONT; dark yellowish brown (10 YR 4/6); silt SAND (SP-SM); moist; firm; non plastic; some silt; poorly graded fine grained sand	
39–40	X	SS 15	10 14 13	15/18						BEAUMONT; yellowish brown (10 YR 5/6); silt SAND (SP-SM); moist; very firm; non plastic; trace	

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-444

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40–43									SP-SM	silt; poorly graded fine grained sand	
44–45	X	SS 16	5 6 6	24.5 / 18					CH	BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH); moist; stiff; high plasticity; high toughness; presence of some calcite	
46–48											difficult drilling at 46 feet
49–50	X	SS 17	3 2 4	26 / 18						BEAUMONT; dark greenish gray (Gley 1, 4/1); mottled with trace yellowish red (5 YR 4/6); CLAY (CH); moist; firm; high plasticity; high toughness; trace silt; presence of pieces of shells	
51–53											
54–55	X	SS 18	5 5 8	24 / 18						BEAUMONT; greenish gray (Gley 2, 5/1); CLAY (CH); moist; stiff; high plasticity; high toughness	
56–58											
59–60	X	SS 19	5 7 8	17 / 18					SC-SM	BEAUMONT; strong brown (7.5 YR 5/6); silt, CLAY, SAND (SC-SM); moist; firm; low to medium plasticity; with silt; medium and fine grained sand; some gravel	
61–63											
64–65	X	SS 20	4 6 8	19.5 / 18	20.7		26/11		CL	BEAUMONT; strong brown (7.5 YR 4/6); silt; sand CLAY (CL); moist; stiff; medium plasticity; some silt; some gravel; presence of calcite nodules	
66–68											
69–70	X	SS 21	13 28 29	18 / 18	20.9	54.3			ML	BEAUMONT; strong brown (7.5 YR 5/6); sand, SILT (ML); moist; very dense; non plastic; some silt; fine grained sand	
71–73											
74–75	X	SS 22	28 43 32	16 / 18	19.8	15.8			SM	BEAUMONT; brown (7.5 YR 4/4); silt; SAND (SM); moist; very dense; non plastic; some silt; poorly graded medium grained sand	
76–78											
79–80	X	SS 23	14 28 32	15 / 18					SP-SM	BEAUMONT; brown (10 YR 5/3) silt; SAND (SP-SM); moist; very dense; non plastic; trace silt;	

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-444

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
80									SP-SM	poorly graded medium grained sand	
81											
82											
83											
84	X	SS 24	8 9 12	18/18	24.2		50/28		CH	BEAUMONT; brown (7.5 YR 4/4); CLAY (CH); moist; very stiff; high plasticity; high toughness; slight mottling of greenish gray (Gley 1 6/1) at about 84.5 ft	
85											
86											
87											
88											
89	X	SS 25	9 10 11	20.5/18	25.6					BEAUMONT; brown (7.5 YR 4/4); CLAY (CH); moist; very stiff; high plasticity; high toughness	
90											
91											
92											
93											
94	X	SS 26	7 10 12	21/18	30.0	99.2				BEAUMONT; brown (7.5 YR 4/4); CLAY (CH); moist; very stiff; high plasticity; high toughness	
95											
96											
97											
98											
99	X	SS 27	7 9 11	24/18	33.2					BEAUMONT; brown (7.5 YR 4/4); CLAY (CH); moist; very stiff; high plasticity; high toughness	
100										Boring Terminated at 100 ft bgs	
101											
102											
103											
104											
105											
106											
107											
108											
109											
110											
111											
112											
113											
114											
115											
116											
117											
118											
119											
120											

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-445

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches	Boring Location RADWASTE BUILDING N 363058.02 E 2942240.48		Total Depth 100 feet
Drilling Contractor and Rig JEDI Drilling / CME 75	Elevation at boring 31.34 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon	Sample Driving Hammer/Drop 139.2 / 29.5 inches	No. of Samples 27	Date Started 8/6/07
	Borehole Inclination 0	Logged by M. Cooke	Date Completed 8/7/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5.28.08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1	2 1 3	2/18					CH	SURFACE = grass and thin layer of topsoil, scattered gravel	4 inch O.D. Solid Stem Augers to 15 feet.
1–2	X	SS 2	2 4 7	12/18						BEAUMONT; black (7.5YR 2.5/1); CLAY (CH); dry; soft; high plasticity; scattered small to medium sized roots.	
2–3	X	SS 3	3 4 6	12/18						BEAUMONT; black (7.5YR 2.5/1); CLAY (CH); dry; stiff; high plasticity; small roots.	
3–4	X	SS 4	2 4 6	15/18						BEAUMONT; brown (7.5YR 4/4); CLAY (CH); dry; stiff; high plasticity.	
4–5	X	SS 5	2 5 9	14/18						BEAUMONT; greenish gray (Gley1 10Y 5/1); CLAY (CH); dry; stiff; high plasticity; brown staining; black nodules; white calcareous nodules.	
5–6	X	SS 6	2 6 6	18/18						BEAUMONT; greenish gray (Gley1 10Y 5/1); CLAY (CH); dry, stiff, mixed with some brown 7.5YR 4/4; large calcareous nodules.	
6–7	X	SS 7	3 2 5	18/18						BEAUMONT; brown (7.5YR 5/4); CLAY (CH); moist; stiff; abundant calcareous nodules; little fine sand; gravel sized calcareous nodules.	
7–8	X	SS 8	3 4 5	18/18						BEAUMONT; brown (7.5YR 5/4); CLAY (CH); moist; firm, abundant calcareous nodules; little sand; gravel sized calcareous nodules.	
8–9	X	SS 9	3 4 6	18/18						BEAUMONT; brown (7.5YR 5/4); CLAY (CH); moist; stiff, abundant calcareous nodules; little fine sand; gravel sized calcareous nodules.	
9–10	X	SS 10	2 5 6	14/18						BEAUMONT; yellowish red (5YR 4/6); CLAY (CH); dry; stiff; high plasticity; blocky texture; white calcareous nodules.	Switched to Mud Rotary 4 inch nominal drag bit at 15 feet.
10–11										BEAUMONT; yellowish red (5YR 4/6); CLAY (CH); dry; stiff; high plasticity; blocky texture; white calcareous nodules.	Groundwater not encountered prior to filling hole with drilling fluid.
11–12										BEAUMONT; yellowish red (5YR 4/6); CLAY (CH); dry; stiff; high plasticity; greenish gray mottles; blocky texture.	Groundwater not measured.
12–13	X	SS 11	3 4 7	11/18							SPT Energy Test Performed SS-11
13–14											
14–15											
15–16											
16–17											
17–18											
18–19											
19–20											
20–21											
21–22											
22–23											
23–24	X	SS 12	2 1 3	12/18					SM	BEAUMONT; brown (7.5YR 5/4); silt, SAND (SM); wet; very loose; poorly graded; fine; quartz; little fines.	SPT Energy Test Performed SS-12
24–25											
25–26											
26–27											
27–28											
28–29	X	SS 13	12 12 7	12/18						BEAUMONT; brown (7.5YR 5/4); silt, SAND (SM); wet; firm; poorly graded; fine; quartz; little fines.	SPT Energy Test Performed SS-13
29–30											
30–31											
31–32											
32–33											
33–34	X	SS 14	2 3 4	15/18						BEAUMONT; brown (7.5YR 5/4); silt, SAND (SM); wet; loose; poorly graded; fine; little silt; quartz; muscovite.	
34–35											
35–36											
36–37											
37–38											
38–39	X	SS 15	6 7 7	14/18						BEAUMONT; brown (7.5YR 5/4); silt, SAND (SM);	
39–40											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

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SOIL LOG - Boring No. B-445

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SM	wet; firm; poorly graded; fine; little silt; quartz; muscovite.	
41											
42											
43											
44	X	SS 16	4 3 6	18/18					CH	BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; stiff; high plasticity; blocky texture.	
45											
46											
47											
48											
49	X	SS 17	2 2 2	18/18					CL-ML	BEAUMONT; dark gray (7.5YR 4/1); silt, CLAY (CL-ML); moist; soft; medium plastic; trace fine sand.	
50											
51											
52											
53											
54	X	SS 18	3 4 5	18/18						BEAUMONT; greenish gray (10GY 5/1); silt CLAY (CL-ML); dry; stiff; medium plastic; trace fine sand.	Moderately difficult drilling 53.5 to 58.5 feet
55											
56											
57											
58											
59	X	SS 19	6 9 10	18/18						BEAUMONT; greenish gray (10GY 5/1); silt, CLAY (CL-ML); dry; very stiff; medium plastic; trace fine sand.	
60											
61											
62											
63											
64	X	SS 20	7 6 9	14/18					SM	BEAUMONT; brown (7.5YR 5.3); silt, SAND (SM); wet; firm; poorly graded; fine; quartz; muscovite; few heavy minerals; brown clay on tip of spoon; little fines.	
65											
66											
67											
68											
69	X	SS 21	8 20 28	15/18	21.3	13.8				BEAUMONT; brown (7.5YR 5.3); silt SAND (SM); wet; dense; poorly graded; fine; quartz; muscovite; few heavy minerals; brown clay on tip of spoon; little fines, some light gray clayey mottles.	
70											
71											
72											
73											
74	X	SS 22	39 40 35	14/18	18.2	23.6				BEAUMONT; brown (7.5YR 5/3); silt, SAND (SM); wet to moist; very dense; poorly graded; fine; few fines; quartz; muscovite; few heavy black minerals	
75											
76											
77											
78											
79	X	SS 23	13 26 26	13/18	21.6	10.4			SP-SM	BEAUMONT; brown (7.5YR 5/3); silt; SAND (SP-SM); moist to wet; very dense; poorly graded;	
80											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-445

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
80									SP-SM	fine; quartz; muscovite; some heavy dark minerals; subrounded.	
81											
82											
83											
84	X	SS 24	18 42 37	12/18	17.8					BEAUMONT; brown (7.5YR 5/3); silt; SAND (SP-SM); moist to wet; very dense; poorly graded; fine; quartz; muscovite; some heavy dark minerals; subrounded.	
85											
86											
87											
88											
89	X	SS 25	6 9 12	18/18	28.5		58/39		CH	BEAUMONT; brown (7.5YR 5.4); CLAY (CH); dry; very stiff; high plasticity; blocky texture; greenish gray mottles.	Difficult drilling 88.5 to 93.5 feet.
90											
91											
92											
93											
94	X	SS 26	7 11 14	18/18	26.7		52/31			BEAUMONT; brown (7.5YR 5/4); CLAY (CH); dry; very stiff; high plasticity; blocky texture.	
95											
96											
97											
98											
99	X	SS 27	6 10 12	18/18	29.5					BEAUMONT; brown (7.5YR 5/4); CLAY (CH); dry; very stiff; high plasticity; blocky texture.	
100										Boring Terminated at 100 ft bgs	
101											
102											
103											
104											
105											
106											
107											
108											
109											
110											
111											
112											
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119											
120											

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-940

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 6 inches/4 inches	Boring Location PUMP HOUSE N 363443.68 E 2941391.11		Total Depth 125 feet
Drilling Contractor and Rig LEWIS ENV / Mobile B-57	Elevation at boring 29.66 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon/UD	Sample Driving Hammer/Drop 139.92 / 29.75	No. of Samples 40	Date Started 8/1/07
	Borehole Inclination 0	Logged by M. Cooke	Date Completed 8/3/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5.28.08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1	4 3 1	8/18					GM	CRUSHED STONE AT SURFACE (old road bed near RR Tracks)	Begin drilling 8/1/07 at 1245 using 4 inch O.D. solid stem augers to 15 feet.
1–3	X	SS 2	1 2 3	12/18					CH	FILL; dark gray (7.5YR 4/1); silty, sandy, GRAVEL (GM); moist; very loose; poorly graded; subrounded to subangular; road fill.	
3–4	X	SS 3	1 2 3	14/18						BEAUMONT; very dark gray (7.5YR 3/1); CLAY (CH); moist; firm; high plasticity; high toughness.	
4–5	X	SS 4	2 2 3	18/18						BEAUMONT; very dark gray (7.5YR 3/1); CLAY (CH); moist; firm; high plasticity; high toughness.	
5–7	X	SS 5	2 2 2	18/18						BEAUMONT; brown (7.5YR 4/2); CLAY (CH); moist; firm; high plasticity; high toughness	
7–9	X	SS 6	2 1 3	3/18						BEAUMONT; yellowish red (5YR 4/6); CLAY (CH); dry; soft; medium to high plasticity; medium toughness; blocky texture	
9–11	X	SS 7	2 3 6	12/18						BEAUMONT; yellowish red (5YR 4/6); CLAY (CH); dry; soft; medium to high plasticity; medium toughness; blocky texture	
11–13	X	SS 8	4 4 7	14/18					CL	BEAUMONT; yellowish red (5YR 4/6); CLAY (CH); dry; stiff; high plasticity; medium toughness; tan mottles; blocky texture; light gray calcareous nodules.	
13–14	X	SS 9	3 4 6	13/18						BEAUMONT; yellowish red (5YR 4/6); silt, CLAY (CL); dry; stiff; medium plastic; low toughness; tan mottles; blocky texture; calcareous nodules.	
14–15	X	SS 10	3 4 7	13/18						BEAUMONT; yellowish red (5YR 4/6); silt, CLAY (CL); dry; stiff; medium plastic; low toughness; tan mottles; blocky texture; calcareous nodules.	Switch to mud rotary at 15 feet. 6 inch nominal drag bit. Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
15–18										BEAUMONT; yellowish red (5YR 4/6); silt, CLAY (CL); dry; stiff; medium plastic; low toughness; tan mottles; blocky texture; calcareous nodules.	
18–19										BEAUMONT; yellowish red (5YR 4/6); silt, CLAY (CL); dry; stiff; medium plastic; low toughness; tan mottles; blocky texture; calcareous nodules.	
19–20	X	SS 11	3 4 5	14/18					SM	BEAUMONT; brown (7.5YR 5.4); silt, SAND (SM); wet; loose; fine; some silt; quartz; trace muscovite; poorly graded	
20–23											
23–24	X	SS 12	7 9 10	0/18						NO RECOVERY; firm	
24–28											Moderately difficult drilling 25 to 28.5 feet.
28–29	X	SS 13	7 6 7	8/18						BEAUMONT; strong brown (7.5YR 5.8); silt, SAND (SM); wet; firm; fine; poorly graded; quartz; trace muscovite.	
29–31											
31–32		UD 1		8/24						BEAUMONT; strong brown (7.5YR 5.8); silt, SAND (SM); wet; fine; poorly graded; quartz; trace muscovite; some fines.	Pitcher Sampler Used UD-1
32–33											
33–34		UD 2		10.5/24						BEAUMONT; strong brown (7.5YR 5.8); silt, SAND (SM); wet; firm; fine; poorly graded; quartz; trace muscovite; some fines.	Pitcher Sampler Used UD-2
34–36	X	SS 14	7 3 4	9/18						BEAUMONT; strong brown (7.5YR 5.8); silt, SAND (SM); wet; loose; fine; poorly graded; quartz; trace muscovite; some fines.	Obtained additional SPT sample 35.5 to 37.0 feet as instructed by BECTHEL rep. G. Lefevre
36–39											Moderately difficult drilling 35.5 to 38.5 feet
39–40	X	SS 15	7 7 8	9/18	24.9	52.9			ML	BEAUMONT; strong brown (7.5YR 5.8); sand, SILT (ML); wet; stiff; fine; poorly graded; quartz; trace	

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-940

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									ML	muscovite; some fines.	
41											
42		UD 3		16/24	28.4		67/41		CH	BEAUMONT; strong brown (7.5YR 5/8); sand SILT (ML); wet; fine; poorly graded; quartz; trace muscovite; some fines.	
43											
44	X	SS 16	4 6 10	18/18	27.0	99.7	62/41			BEAUMONT; strong brown (7.5YR 5/8); CLAY (CH); moist; dry; high plasticity; medium toughness; greenish gray staining.	
45											
46										BEAUMONT; strong brown (7.5YR 5/8); CLAY (CH); moist; very stiff; high plasticity; medium toughness; greenish gray staining.	
47		UD 4		24/24	32.1		61/38				Switch to 4 inch nominal drag bit at 45 feet.
48										BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); moist; high plasticity; medium toughness.	
49	X	SS 17	4 4 5	18/18	35.4	98.9				BEAUMONT; greenish gray (Gley 1 10Y 5/1); silt, CLAY (CH); moist; stiff; medium to low plasticity; low toughness; some brown mottles.	
50											
51											
52											
53											
54	X	SS 18	5 7 10	18/18						BEAUMONT; greenish gray (Gley 1 10Y 5/1); silt, CLAY (CH); moist; very stiff; medium to low plasticity; low toughness; some brown mottles; scattered black nodules	
55											
56											
57		UD 5		24/24	27.0		50/32			BEAUMONT; greenish gray (Gley 1 10Y 5/1); silt, CLAY (CH); moist; medium to low plasticity; low toughness; some brown mottles; scattered black nodules; strong brown at bottom of tube	
58											
59	X	SS 19	6 9 11	18/18	22.2	99.0				BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; very stiff; high plasticity; medium toughness; blocky texture; scattered calcareous nodules	
60											
61											
62											
63											
64	X	SS 20	6 10 13	18/18						BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; very stiff; high plasticity; medium toughness; scattered calcareous nodules; black staining or nodules.	
65											
66											
67		UD 6		24/24	25.1		54/33			BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; high plasticity; medium toughness; scattered calcareous nodules; black staining or nodules.	
68											
69	X	SS 21	6 8 10	18/18	26.5	99.1				BEAUMONT; yellowish red (5YR 4/6); CLAY (CH); dry; very stiff; high plasticity; medium toughness; scattered calcareous nodules; black staining or nodules.	
70											
71											
72											
73											
74	X	SS 22	5 9 11	18/18						BEAUMONT; reddish brown (5YR 5/4); CLAY (CH); dry; very stiff; high plasticity; medium toughness; scattered calcareous nodules; black staining or nodules.	
75											
76											
77		UD 7		22.5/24	22.1		55/34			BEAUMONT; brown (7.5YR 5/4); CLAY (CH); moist; high plasticity; medium toughness.	
78											
79	X	SS 23	5 8 12	18/18	25.3	96.9				BEAUMONT; brown (7.5YR 5/4); CLAY (CH);	
80											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-940

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
80									CH	moist; very stiff, high plasticity; medium toughness; scattered calcareous nodules.	
81											Moderately difficult drilling ~81 to 83.5 feet.
82											
83											
84	X	SS 24	6 8 10	18/18						BEAUMONT; brown (7.5YR 5/4); CLAY (CH); moist; very stiff, high plasticity; medium toughness; scattered calcareous nodules.	
85											
86											
87											
88											
89	X	SS 25	4 7 9	18/18						BEAUMONT; brown (7.5YR 5/4); CLAY (CH); moist; very stiff, high plasticity; medium toughness; scattered calcareous nodules.	
90											
91											
92		UD 8		24/24	24.4		61/39			BEAUMONT; brown (7.5YR 5.4);CLAY (CH); dry; high plasticity; medium toughness; white calcareous nodules.	
93											
94	X	SS 26	4 8 11	18/18	23.4	90.5				BEAUMONT; brown (7.5YR 5.4);CLAY (CH); dry; very stiff; high plasticity; medium toughness; white calcareous nodules; scattered small shell fragments.	
95											
96											
97											
98											
99	X	SS 27	9 14 21	18/18	21.1	86.6			ML	BEAUMONT; brown (7.5YR 5.4); sand, SILT (ML); moist; hard; non-plastic;some fine sand; occassional cemented sand nodules.	
100											Difficult drilling 100 to 103.5 feet
101											
102											
103											
104	X	SS 28	6 8 11	18/18	20.3		46/33		CL	BEAUMONT; greenish gray (Gley 1 10Y 6/1); silt, CLAY with sand (CL); dry; very stiff; medium plastic; medium toughness; reddish brown staining.	
105											
106											
107											
108											
109	X	SS 29	5 7 10	18/18					CH	BEAUMONT; greenish gray (Gley 1 10Y 6/1); CLAY (CH); dry; very stiff; medium plastic; calcareous nodules; brownish red mottling.	
110											
111											
112											
113											
114	X	SS 30	7 9 12	18/18	24.2		60/44			BEAUMONT; greenish gray (Gley 1 10Y 6/1); CLAY (CH); dry; very stiff; medium plastic; calcareous nodules more abundant; brownish red mottling.	
115											
116											
117											
118											
119	X	SS 31	13 15 20	18/18						BEAUMONT; greenish gray (Gley 1 10Y 6/1);	
120											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-940

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (Inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
120									CH	CLAY (CH); dry; hard; medium plastic; calcareous nodules more abundant; brownish red mottling.	
121											
122											
123											
124	X	SS 32	5 8 12	18/18	21.4		40/26		CL	BEAUMONT; greenish gray (Gley 1 10Y 6/1) and brown; silt CLAY (CL); dry; very stiff; medium plastic; calcareous nodules.	
125										Boring Terminated at 125 ft bgs	
126											
127											
128											
129											
130											
131											
132											
133											
134											
135											
136											
137											
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STP SOIL STP2007.GPJ WLA.GDT 5/20/08

Project Name :STP COL PROJECT Project Number: 6234-07-4257	MACTEC	SOIL LOG - Boring No. B-941	
Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches	Boring Location RSW Tunnel N 363077.73 E 2941410.59		Total Depth 50 feet
Drilling Contractor and Rig LEWIS ENV / Mobile B-57	Elevation at boring 29.79 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon	Sample Driving Hammer/Drop 139.92 / 29.75 inches	No. of Samples 17	Date Started 8/3/07
	Borehole Inclination 0	Logged by M. Cooke/A. Osorio	Date Completed 8/4/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5·28·08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1	1 1 2	2/18					CH	Surface grass and thin veneer of topsoil BEAUMONT; very dark gray (7.5 YR 3/1); CLAY (CH); dry; soft; high plasticity; medium toughness; white and black nodules	
2–3	X	SS 2	1 2 5	12/18	23.3					BEAUMONT; very dark gray (7.5 YR 3/1); CLAY (CH); dry; firm; high plasticity; medium toughness; white and black nodules	
4	X	SS 3	2 3 5	8/18						BEAUMONT; very dark gray (7.5 YR 3/1); CLAY (CH); dry; firm; high plasticity; medium toughness; white and black nodules	
5–6	X	SS 4	2 4 5	12/18	23.5					BEAUMONT; very dark gray (7.5 YR 3/1); CLAY (CH); dry; stiff; high plasticity; medium toughness; white and black nodules	
7	X	SS 5	2 3 4	18/18						BEAUMONT; very dark gray (7.5 YR 3/1); CLAY (CH); dry; stiff; high plasticity; medium toughness; white and black nodules	
8–9	X	SS 6	2 3 5	18/18	27.8					BEAUMONT; brown (7.5 YR 5/4); CLAY (CH); dry; firm; high plasticity; medium toughness; blocky texture; calcareous nodules	
10	X	SS 7	2 4 4	16/18						BEAUMONT; brown (7.5 YR 5/4); CLAY (CH); dry; firm; high plasticity; medium toughness; blocky texture; calcareous nodules	
11–12	X	SS 8	3 5 7	18/18	29.6					BEAUMONT; brown (7.5 YR 5/4); CLAY (CH); dry; firm; high plasticity; medium toughness; blocky texture; calcareous nodules	
13	X	SS 9	3 5 7	18/18						BEAUMONT; brown (7.5 YR 5/4); CLAY (CH); dry; firm; high plasticity; medium toughness; blocky texture; calcareous nodules	
14–15	X	SS 10	3 6 8	18/18	20.5					BEAUMONT; brown (7.5 YR 5/4); CLAY (CH); dry; stiff; high plasticity; medium toughness; blocky texture; calcareous nodules; tan; mottles	
16–17									SM	BEAUMONT; brown (7.5 YR 5/4); CLAY (CH); dry; stiff; high plasticity; medium toughness; blocky texture; calcareous nodules; tan; mottles	Switch from 4 inch solid stem auger to 4 inch bit mud rotary Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
18–19	X	SS 11	3 5 6	14/18	26.7					BEAUMONT; brown (7.5 YR 5/4); CLAY (CH); dry; stiff; high plasticity; medium toughness; blocky texture; calcareous nodules; tan; mottles	
20–23										BEAUMONT; brown (7.5 YR 5/4); silt, SAND (SM); wet; firm; fine with some silt; poorly graded; quartz, trace mica (muscovite)	
24–25	X	SS 12	3 2 3	10/18						BEAUMONT; brown (7.5 YR 5/4); silt, SAND (SM); wet; loose; fine with some silt; poorly graded; quartz, trace mica (muscovite)	
26–28											
29–30	X	SS 13	4 7 10	10/18						BEAUMONT; brown (7.5 YR 5/4); silt, SAND (SM); wet; firm; fine with some silt; poorly graded; quartz, trace mica (muscovite); slightly lower fines content (little)	End drilling 8/3/07 Start drilling 8/4/07
31–33									SP-SM		
34–35	X	SS 14	13 10 23	12/18						BEAUMONT; yellowish brown (10 YR 5/4); silt; SAND (SP-SM); moist; dense; non plastic; some to trace silt; and poorly fine grained	
36–38											
39–40	X	SS 15	11 12 16	8.5/18						BEAUMONT; brown (7.5 YR 5/4); silt; SAND (SP-SM); moist; very firm; non plastic; trace silt;	

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

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SOIL LOG - Boring No. B-941

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SP-SM	poorly graded, fine grained	
41											
42											
43											
44	X	SS 16	15 11 11	14/18						BEAUMONT; brown (7.5 YR 5/4); silt; SAND (SP-SM); moist; very firm; non plastic; trace silt; poorly graded fine grained sand	
45									CH	BEAUMONT; reddish brown (5 YR 4/4); sand; CLAY (CH); moist; very stiff; medium plasticity; medium toughness; some fine grained	
46											
47											
48											
49	X	SS 17	3 4 6	18/18						BEAUMONT; brown (10 YR 4/3); CLAY (CH); moist; stiff; high plasticity; high toughness; some mottling of greenish gray (Gley 1, 6/1); at about 48.5 ft to 49 ft bgs	
50										Boring Terminated at 50 ft bgs	
51											
52											
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STP SOIL STP2007.GPJ WLA.GDT 5/20/08

Project Name :STP COL PROJECT

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Project Number: 6234-07-4257

SOIL LOG - Boring No. B-942

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches	Boring Location RSW Tunnel N 362952.5 E 2941575.54		Total Depth 50 feet
Drilling Contractor and Rig LEWIS ENV / Mobile 57 ATV	Elevation at boring 31.02 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon/UD	Sample Driving Hammer/Drop 139.2 / 29.5 inches	No. of Samples 17	Date Started 8/4/07
	Borehole Inclination 0	Logged by A. Osorio/M. Cooke	Date Completed 8/4/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5-28-08

Depth (feet)	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Soil Type (USCS)	Lithology	Remarks
0–1	SS 1	3 2 1	9/18				SP	BEAUMONT; surface grass; organics; some gravel BEAUMONT; yellowish brown (10 YR 5/8); SAND with gravel (SP); moist; very loose; non plastic; medium grained	
2	SS 2	2 3 4	18/18				CH	BEAUMONT; black (Gley 1, 2.5/1); CLAY (CH); moist; firm; high plasticity; high toughness	
3–4	SS 3	2 2 4	18/18					BEAUMONT; black (Gley 1, 2.5/1); CLAY (CH); moist; firm; high plasticity; high toughness	
5	SS 4	2 2 4	15/18	28.4				BEAUMONT; black (Gley 1, 2.5/1); CLAY (CH); moist; firm; high plasticity; high toughness; some fine grained at 5.5 ft bgs	
6–7	SS 5	2 3 5	18/18					BEAUMONT; dark greenish gray (Gley 1 4/6); with some yellowish brown (10 Y 5/8) CLAY (CH); moist; firm; high plasticity; high toughness; with fine gravel	
8–9	SS 6	2 4 5	18/18					BEAUMONT; dark yellowish brown (10 YR 4/6); CLAY (CH); moist; stiff; high plasticity; high toughness; with some fine gravel; presence of calcite deposits	
10	SS 7	2 2 5	18/18					BEAUMONT; dark yellowish brown (10 YR 4/6); CLAY (CH); moist; firm; high plasticity; high toughness; with trace gravel; presence of calcite deposits	
11–12	SS 8	2 4 6	18/18	28.8				BEAUMONT; dark yellowish brown (10 YR 4/6); mottling with trace black (Gley 1, 2.5/1); CLAY (CH); moist; stiff; high plasticity; high toughness; some calcite deposits; presence of few ferrous sulfate nodules.	
13	SS 9	3 6 6	18/18					BEAUMONT; dark yellowish brown (10 YR 4/6); mottling with trace black (Gley 1, 2.5/1); CLAY (CH); moist; stiff; high plasticity; high toughness; some calcite deposits; presence of few ferrous sulfate nodules.	
14–15	SS 10	2 5 8	18/18					BEAUMONT; dark yellowish brown (10 YR 4/6); mottling with trace black (Gley 1, 2.5/1); CLAY (CH); moist; stiff; high plasticity; high toughness; some calcite deposits; presence of few ferrous sulfate nodules.	
19–20	SS 11	2 3 5	18/18	27.6				BEAUMONT; dark yellowish brown (10 YR 4/6); mottling with trace black (Gley 1, 2.5/1); CLAY (CH); moist; stiff; high plasticity; high toughness; some calcite deposits; presence of few ferrous sulfate nodules.	
24–25	SS 12	2 7 8	18/18	27			CL-ML	BEAUMONT; dark yellowish brown (10 YR, 4/6), CLAY (CH); moist; firm; high plasticity; high toughness; some calcite deposits	Auger to 25 feet Switch to mud rotary Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
26–28								BEAUMONT; strong brown (7.5 YR 4/6); silt, CLAY (CL-ML); moist; stiff; low to medium plasticity; with silt; medium toughness	
29–30	SS 13	2 4 6	12/18				SP-SM	BEAUMONT; strong brown (7.5 YR 4/6); silt; SAND (SP-SM); moist; loose; non plastic; some silt; poorly graded; fine sand	
34–35	SS 14	4 5 7	13/18					BEAUMONT; strong brown (7.5 YR 4/6); silt; SAND (SP-SM); moist; firm; non plastic; some silt; poorly graded; fine grained sand	
39–40	SS 15	6 21 29	18/18					BEAUMONT; strong brown (7.5 YR 4/6) silt, SAND (SP-SM); moist; dense; non plastic; trace silt; pooly	

STP SOIL STP2007.GPJ WLA.GDT 4/24/08

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

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SOIL LOG - Boring No. B-942

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SP-SM	graded; fine grained sand; some quartz	
41											
42											
43											
44	X	SS 16	4 6 7	18/18	22.2				CL	BEAUMONT; strong brown (7.5 YR 4/6); sand; CLAY; (CL); moist; stiff; medium plasticity; with sand; medium toughness	
45											
46											
47											
48											
49	X	SS 17	3 3 3	18/18	53.4				CH	BEAUMONT; strong brown (7.5 YR 4/6); with greenish gray (Gley 1 6/1) (from 49.8 to 50 ft bgs) CLAY (CH); moist; firm; high plasticity; high toughness	
50										Boring Terminated at 50 ft bgs	
51											
52											
53											
54											
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56											
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Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-943

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches	Boring Location RSW Tunnel N 362952.52 E 2941801.52		Total Depth 50 feet
Drilling Contractor and Rig LEWIS ENV / Mobile B-57	Elevation at boring 31.52 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon	Sample Driving Hammer/Drop 139.92 / 29.75 inches	No. of Samples 17	Date Started 7/24/07
	Borehole Inclination 0	Logged by M. Cooke/A. Osorio	Date Completed 7/24/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5.28.08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1	3 3 3	6/18					CH	Topsoil mixed with gravel to 0.5 ft	Begin drilling 7/24/07 Begin with 4 inch OD solid stem auger
1–2	X	SS 2	2 2 4	18/18						BEAUMONT; very dark grayish brown (10 YR 3/2); CLAY (CH) moist; soft; high plasticity; scattered small roots	
3–4	X	SS 3	2 3 4	12/18	28.0					BEAUMONT; black (10 YR 2/1); CLAY (CH); moist; firm; high plasticity; medium toughnes; some small oxidized roots	
5–6	X	SS 4	2 3 5	16/18						BEAUMONT; black (10 YR 2/1); CLAY (CH); moist; firm; high plasticity; medium toughnes; some small oxidized roots; some reddish ferrous sulfate nodules	
7–8	X	SS 5	2 2 3	14.5/18						BEAUMONT; black (10 YR 2/1); CLAY (CH); moist; firm; high plasticity; medium toughnes; some small oxidized roots; some reddish ferrous sulfate nodules	
8–9	X	SS 6	3 3 5	18/18	26.7					BEAUMONT; dark yellowish brown (10 YR 4/6); fat CLAY (CH); moist; firm; high plasticity; medium to low toughness, high dry strength, some white light gray caliche nodules	
10–11	X	SS 7	2 4 5	17.5/18						BEAUMONT, yellowish red (5 YR 4/6); CLAY (CH); moist; firm; high plasticity; medium to low toughness, high dry strength, some white light gray caliche nodules	Lost shoe in hole Attempt to retrieve with tube
11–12	X	SS 8	2 3 3	16/18						BEAUMONT, yellowish red (5 YR 4/6); CLAY (CH); moist; stiff; high plasticity; medium to low toughness, high dry strength, some white light gray caliche nodules	Drill with augers to attempt to push lost shoe into sidewall using 4 inch nominal side-discharge drag bit.
13–14	X	SS 9	3 5 6	15/18	26.1					BEAUMONT, yellowish red (5 YR 4/6); CLAY (CH); moist; firm; high plasticity; medium to low toughness, high dry strength, some white light gray caliche nodules	Shoe pushed into sidewall by augers
14–15	X	SS 10	2 5 8	15/18						No recovery, stiff	Switch to mud rotary at 20 feet
19–20	X	SS 11	2 3 6	18/18	25.3					BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH), moist to dry; stiff; high plasticity; medium to high toughness, some tan mottles/striations	Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
24–25	X	SS 12	2 3 3	0/18						No recovery; firm	
29–30	X	SS 13	7 4 6	12/18	24.9				SM	BEAUMONT; dark yellowish brown (10 YR 4/6); silt, SAND (SM); wet, loose, fine, little silt, poorly graded, some light tan layers, quartz sand, trace mica	
34–35	X	SS 14	4 6 12	14/18						BEAUMONT; dark yellowish brown (10 YR 4/6); silt, SAND (SM); wet, firm, little silt, fine, poorly graded quartz sand, trace mica	
39–40	X	SS 15	23 33 49	18/18	22.6				SP-SM	BEAUMONT; yellowish brown (10 YR 5/6); silt, SAND (SP-SM); moist to wet, very dense, fine, few	

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-943

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SP-SM	silt, poorly graded; quartz sand, trace mica, subrounded sand grains	
41											
42											
43											
44	X	SS 16	10 12 19	12 18						BEAUMONT; yellowish brown (10 YR 5/6); silt, SAND (SP-SM); moist to wet, dense, fine, few, silt, poorly graded, quartz sand, trace mica, subrounded sand grains	
45											
46											
47											
48											
49	X	SS 17	8 4 7	18 18					CH	BEAUMONT; yellowish brown (10 YR 5/6); silt, SAND (SP-SM); moist to wet; firm; fine, few silt, quartz sand, trace mica, subrounded sand grains, dark gray contact at 49 ft.	
50										BEAUMONT; red (2.5 YR 4/6); CLAY (CH); moist to dry; stiff; high plasticity; moderate toughness; trace sand	
51										Boring Terminated at 50 ft bgs	
52											
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54											
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STP SOIL STP2007.GPJ WLA.GDT 5/20/08

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-944

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches	Boring Location RSW Tunnel N 362952.52 E 2942205.51		Total Depth 100 feet
Drilling Contractor and Rig JEDI Drilling / CME 75	Elevation at boring 30.13 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon/UD	Sample Driving Hammer/Drop 139.2 / 29.5 inches	No. of Samples 27	Date Started 7/18/07
	Borehole Inclination 0	Logged by A. Osorio/M. Cooke	Date Completed 7/19/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5-28-08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0										Surface grass	Start drilling with 4 inch diameter augers
1	X	SS 1	WOH 2 3	13/18					ML	BEAUMONT; dark gray, (2.5 Y) SILT (ML); moist; firm; low plasticity; mostly silt; some gravel; some roots; medium toughness	
2	X	SS 2	2 3 4	16/18					CH	BEAUMONT; black (Gley 1, 2.5/N); CLAY (CH); moist; firm; high plasticity; high toughness	
3	X	SS 3	2 3 5	16/18						BEAUMONT; black (Gley 1, 2.5/N); CLAY (CH); moist; firm; high plasticity; high toughness; presence of calcite nodules; strong reaction with HCL	
4	X	SS 4	3 3 4	17/18						BEAUMONT; black (Gley 1, 2.5/N); CLAY (CH); moist; firm; high plasticity; high toughness; presence of black roots	
5	X	SS 5	2 5 7	18/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; presence of black roots; some gravel	
6	X	SS 6	5 7 9	18/18	18.6					BEAUMONT; dark yellowish brown (10 YR 3/6); mottled with greenish gray (Gley 1, 6/1); CLAY (CH); moist; stiff; high plasticity; high toughness	
7	X	SS 7	5 5 6	18/18						BEAUMONT; dark yellowish brown (10 YR 3/6); mottled with greenish gray (Gley 1) CLAY (CH); moist; very stiff; high plasticity; high toughness	
8	X	SS 8	WOH 2 5	18/18					SP-SM	BEAUMONT; dark yellowish brown (10 YR 3/6); mottled with greenish gray (Gley 1, 6/1); CLAY (CH); moist; stiff; high plasticity; high toughness	
9	X	SS 9	1 4 9	12/18	23.8					BEAUMONT; dark yellowish brown (10 YR 3/6); mottled with greenish gray (Gley 1) CLAY (CH); moist; very stiff; high plasticity; high toughness	Change to mud rotary at 12 feet Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
10											
11	X	SS 10	3 5 7	18/18					CH	BEAUMONT; dark yellowish brown (10 YR 3/6); mottled with greenish gray (Gley 1) silt; CLAY (CH); moist; stiff; high to medium plasticity; high to medium toughness; presence of sandy material starting at 10 ft bgs	
12											
13											
14										BEAUMONT; dark yellowish brown (10 YR 4/6); silt; SAND (SP-SM); moist; very loose; non plastic; poorly graded; medium grained sand	
15	X	SS 11	5 6 6	10/18					CL-ML	BEAUMONT; strong brown (7.5 YR 4/6); silt; SAND (SP-SM); moist; firm; low plasticity; poorly graded fine to medium grained	
16										BEAUMONT; strong brown (7.5 YR 4/6); silt; SAND (SP-SM); moist; firm; low plasticity, poorly graded	
17										BEAUMONT; yellowish red (5YR 4/6); CLAY (CH); moist; stiff; high toughness; high plasticity	
18	X	SS 12	4 4 6	17/18	25.9	39.1			SM	BEAUMONT; strong brown (7.5 YR 4/6); sand, silt, CLAY (CL-ML); moist; stiff; low plasticity; high to medium silt; presence of calcite nodules	
19										BEAUMONT; strong brown (7.5 YR 4/6); silt, SAND (SM); moist; loose; non to low plasticity; low silt; fine grained	
20											
21											
22											
23	X	SS 13	5 6 9	15/18						BEAUMONT; strong brown (7.5 YR 4/6); silt, SAND (SM); moist; firm; non plastic; fine grained	
24											
25											
26											
27											
28	X	SS 14	5 7 10	17/18						BEAUMONT; brown (10 YR 5/3); silt, SAND (SM); moist; firm; non plastic; some silt	
29											
30											
31											
32											
33	X	SS 15	17 30 34	16.5/18	21.1	5.3			SP-SM	BEAUMONT; brown (10 YR 5/3); silt, SAND (SP-SM); moist; very dense; non plastic; trace silt;	
34											
35											
36											
37											
38											
39											
40											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-944

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40 41 42 43									SP-SM	poorly graded; fine grained sand	
44 45	X	SS 16	4 5 5	18/18	29.1		61/42		CH	BEAUMONT; reddish brown (5 YR) CLAY (CH); moist; stiff; high plasticity; high toughness	
46 47 48											
49 50	X	SS 17	2 3 4	17/18						BEAUMONT; dark greenish gray, brown (2.5 Y 4/2); CLAY (CH); moist; firm; high plasticity; high toughness; pieces of shell	photo taken
51 52 53											
54 55	X	SS 18	4 5 7	23/18						BEAUMONT; greenish gray (Gley 1, 5/1); CLAY (CH); moist; stiff; high plasticity; high toughness	
56 57 58											
59 60	X	SS 19	5 6 9	20.5/18	17.9					BEAUMONT; brown (7.5 YR 4/4); CLAY (CH); moist; very stiff; high plasticity; medium to high toughness; some gravel	
61 62 63											
64 65	X	SS 20	5 6 9	20/18						BEAUMONT; brown (7.5 YR 4/4); silt CLAY (CH); moist; stiff; high plasticity; high toughness; presence of some calcite nodules, strong reaction to HCl	photo taken
66 67 68											
69 70	X	SS 21	13 21 27	12/18					SM	BEAUMONT; brown (10 YR 5/3); silt; SAND (SM); moist; dense; non plastic; fine grained sand	photo taken
71 72 73											
74 75	X	SS 22	26 32 24	16.5/18						BEAUMONT; brown (7.5 YR 4/4); with trace greenish gray (Gley 1, 5/1); silt; SAND (SM); moist; very dense; non plastic; fine grained sand	
76 77 78											
79 80	X	SS 23	25 34 36	15/18						BEAUMONT; brown (10 YR 5/3); mottled with trace silt; black (Gley 1, 2.5/N) SAND (SM); moist; very	

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-944

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
80									SM	dense; non plastic; fine and medium grained sand	
81											
82											
83											
84	X	SS 24	7 11 14	22/18	22.3		49/34		CL	BEAUMONT; brown (7.5 YR 4/4); silt; CLAY (CL); moist; very stiff; high plasticity; high toughness; presence of calcite nodules	End drilling 7/18/07 Start drilling 07/19/07
85											
86											
87											
88											
89	X	SS 25	8 11 14	22/18					CH	BEAUMONT; brown (7.5 YR 4/4); CLAY (CH); moist; very stiff; high plasticity; high toughness; presence of calcite nodules and black ferrous sulfate nodules	
90											
91											
92											
93											
94	X	SS 26	7 10 12	21/18						BEAUMONT; greenish gray (Gley 1, 6/1); silt; CLAY (CH); moist; very stiff; high plasticity; high toughness; presence of calcite nodules; and black ferrous sulfate nodules; with fine gravel	
95											
96											
97											
98											
99	X	SS 27	10 16 18	21/18	21.5	86.9				BEAUMONT; reddish brown (5 YR 5/4); mottled with Gley 1, 6/1) greenish gray; CLAY (CH); moist; hard; high plasticity; high toughness; presence of fine gravel; calcite nodules; and ferrous sulfate nodules	
100										Boring Terminated at 100 ft.bgs	
101											
102											
103											
104											
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107											
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117											
118											
119											
120											

STP SOIL STP2007.GPJ WLA.GDT 5/20/08

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-945

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches	Boring Location RSW Tunnel N 362952.5 E 2942411.46		Total Depth 50 feet
Drilling Contractor and Rig JEDI Drilling / CME 75	Elevation at boring 29.6 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon/UD	Sample Driving Hammer/Drop 139.2 / 29.5 inches	No. of Samples 17	Date Started 7/23/07
	Borehole Inclination 0	Logged by A. Osorio/M. Cooke	Date Completed 7/23/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5-28-08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1A	5 1 1	15/12					CL	FILL; surface grass; brown (7.5 YR 5/2); sand, CLAY (CL); moist; soft; medium plasticity; medium toughness; some gravel and roots	
1–2	X	SS 1B	1 2 3	6/6					CH	BEAUMONT; dark greenish gray (Gley 1 4/1); CLAY (CH); moist; soft; high plasticity; high toughness presence of some fine gravel and roots	
2–3	X	SS 2	2 2 3	15/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; some fine gravel	
3–4	X	SS 3	2 2 3	18/18	29.5					BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; some fine gravel	
4–5	X	SS 4	2 2 3	20/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; some fine gravel	
5–6	X	SS 5	2 3 3	21/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; some fine gravel	
6–7	X	SS 6	2 3 3	21/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; some fine gravel	
7–8	X	SS 7	3 4 6	20.5/18						BEAUMONT; dark greenish gray (Gley 1, 4/1); CLAY (CH); moist; firm; high plasticity; high toughness; some fine gravel	
8–9	X	SS 8	2 3 4	18/18	23.7					BEAUMONT; yellowish red (5 YR 5/6) CLAY (CH); moist; firm; high plasticity; high toughness; some fine gravel; presence of calcite nodules/stringers	
9–10	X	SS 9	3 5 6	23.5/18					CL	BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH); moist; stiff; high plasticity; high toughness; some gravel; presence of calcite nodules; highly reactive to HCl	Water level at 14.5 feet at time of drilling Switch from Auger to Mud Rotary at 15 feet
10–11	X	SS 10	7 7 9	20/18					CH	BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH); moist; firm; high toughness; high plasticity; transition to silt CLAY (CL) at about 11.5 ft bgs; medium plasticity; medium toughness	
11–12	X	SS 11	3 4 4	12/18						BEAUMONT; yellowish red (5YR 5/6); silt, CLAY (CL); moist; stiff; medium plasticity; medium toughness; some fine grained calcite nodules	
12–13										BEAUMONT; yellowish red (5 YR 5/6); silt, CLAY (CH); moist; very stiff; high plasticity; high toughness; some silt; presence of calcite nodules	
13–14	X	SS 12	2 5 4	0/18					SM	BEAUMONT; yellowish red (5 YR 5/6); silt; CLAY (CH); moist; firm; high plasticity; high toughness; presence of calcite nodules	
14–15	X	SS 12A	2 5 7	12/18	28					BEAUMONT; strong brown (7.5 YR 5/6); silt; SAND (SM); moist; firm; non plastic; some silt; fine grained sand	
15–16	X	SS 13	7 6 5	18					SP-SM	BEAUMONT; brown (7.5 YR 5/4); silt; SAND (SP-SM); moist; firm; non plastic; little silt; poorly graded; fine grained sand	
16–17	X	SS 14	14.5 10 16	16/18	23.3					BEAUMONT; brown (7.5 YR 5/4); silt; SAND (SP-SM); moist; very firm; non plastic; little silt; poorly graded; fine grained sand	
17–18	X	SS 15	11 17 10	12/18	24					BEAUMONT; brown (7.5 YR 5/4); silt; SAND (SP-SM); moist; very firm; non plastic; little silt;	

STP SOIL STP2007.GPJ WLA.GDT 4/24/08

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-945

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SP-SM	poorly graded fine grained sand	
41											
42											
43											
44	X	SS 16A	23 25	17 18						BEAUMONT; brown (7.5 YR 4/4); silt SAND (SP-SM); moist; dense; non plastic; little silt; poorly graded; fine sand	
45	X	SS 16B	14	3 6					CH	BEAUMONT; brown (7.5 YR 4/4); CLAY (CH); moist; hard; high plasticity; high toughness; some silt	
46											
47											
48											
49	X	SS 17	4 6 6	24.5 18	32					BEAUMONT; brown (7.5 YR 4/4); CLAY (CH); moist; stiff; high plasticity; high toughness at about 49.5 ft bgs; 3 inch layer of silty CLAY (CL-ML); was encountered interminal with the CH layer	
50										Boring Terminated at 50 ft	
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STP SOIL STP2007.GPJ WLA.GDT 5/20/08

Project Name :STP COL PROJECT Project Number: 6234-07-4257	MACTEC	SOIL LOG - Boring No. B-946	
Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches	Boring Location RSW Tunnel N 362952.47 E 2942589.5		Total Depth 50 feet
Drilling Contractor and Rig JEDI Drilling / CME 75	Elevation at boring 30.95 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon/UD	Sample Driving Hammer/Drop 139.2 / 29.5 inches	No. of Samples 17	Date Started 7/19/07
	Borehole Inclination 0	Logged by A. Osorio/M. Cooke	Date Completed 7/20/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5.28.08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1	2 2 3	21/18					CH	Surface Grass BEAUMONT; black (Gley 1, 2.5 N); CLAY (CH); moist; firm; high plasticity; high toughness; presence of roots; some fine gravel	
1–2	X	SS 2	2 3 5	18/18	27.5					BEAUMONT; black (Gley 1 2.5 N); CLAY (CH); moist; firm; high plasticity; high toughness; presence of roots	
2–3	X	SS 3	2 3 4	16/18						BEAUMONT; black (Gley 1 2.5 N); CLAY (CH); moist; firm; high plastiticy; high toughness	
3–4	X	SS 4	2 4 4	19/18						BEAUMONT; black (Gley 1 2.5 N); CLAY (CH); moist; firm; high plasticity; high toughness; at about 5.5 ft change color to strong bornw (7.5 YR 4/6); silt; CLAY (CH)	
4–5	X	SS 5	3 3 5	18.5/18	28.8					BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH); moist; firm; high plasticity; high toughness; presence of some calcite nodules	
5–6	X	SS 6	3 4 6	19.2/18						BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH); moist; stiff; high plasticity; medium to high toughness; some calcite nodules	
6–7	X	SS 7	3 4 5	17.5/18						BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH); moist; stiff; high plasticity; medium toughness	
7–8	X	SS 8	3 3 4	25/18	22.4					BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH); wet; firm; high plasticity; medium silt; medium toughness; some calcite present	
8–9	X	SS 9	4 6 8	20/18						BEAUMONT; yellowish red (5 YR 5/6); CLAY (CH); moist; stiff; high plasticity; high toughness; presence of calcite nodules	Auger to 15 feet Change to mud rotary at 15 feet Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
9–10	X	SS 10	5 7 10	14/18						BEAUMONT; reddish brown (5 YR 4/4); CLAY (CH); moist; very stiff; high plasticity; some silt; some fine gravel; presence of some calcite nodules and ferrous sulfate nodules.	
10–11											
11–12											
12–13											
13–14											
14–15											
15–16											
16–17											
17–18											
18–19											
19–20	X	SS 11	4 2 2	12/18	22.9					BEAUMONT; strong brown (7.5 YR 4/6); CLAY (CH); moist; soft; high plasticity; medium to high toughness; some silt	
20–21											
21–22											
22–23											
23–24											
24–25	X	SS 12	3 12 10	12/18					SM	BEAUMONT; strong brown (7.5 YR 4/6); silt; SAND (SM); moist; very firm; low plasticity; some silt; fine grained	
25–26											
26–27											
27–28											
28–29											
29–30	X	SS 13	3 5 5	15/18	26.3					BEAUMONT; strong brown (7.5 YR 4/6); silt; SAND (SM); moist; loose; non plastic; fine grained	
30–31											
31–32											
32–33											
33–34											
34–35	X	SS 14	9 16 14	14/18					SP-SM	BEAUMONT; yellowish brown (10 YR 5/4); silt; SAND (SP-SM); moist; very firm; non plastic; poorly graded; fine and some medium grained sand	
35–36											
36–37											
37–38											
38–39											
39–40	X	SS 15	9 11 13	16/18	17.1					BEAUMONT; yellowish brown (10 YR 5/4); silt; SAND (SP-SM); moist; very firm; non plastic;	

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

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SOIL LOG - Boring No. B-946

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (Inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SP-SM	poorly graded; fine and some medium grained sand	
41											
42											
43											
44	X	SS 16	15 15 12	8.5 18						BEAUMONT; dark yellowish brown (10 YR 4/6); silt; SAND (SP-SM); moist; very firm; non plastic; poorly graded; fine and grades some to medium gravel at about 44.5 ft bgs; cemented sand	
45											
46											
47											
48											
49	X	SS 17	5 7 5	18 18					ML CH	BEAUMONT; brown (10 YR 4/3); sand, SILT (ML); moist; stiff; high plasticity; medium toughness; high silt content; trace fine sand	
50										BEAUMONT; dark greenish gray (Gley 1 4/1); mottling with brown (10 YR 4/3): CLAY (CH); moist; stiff; high plasticity; high toughness; presence of pieces of shells	
51										Boring Terminated at 50 ft bgs	
52											
53											
54											
55											
56											
57											
58											
59											
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80											

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-947

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches	Boring Location RSW Tunnel N 363044.54 E 2942784.8		Total Depth 50 feet
Drilling Contractor and Rig JEDI Drilling / CME 75	Elevation at boring 31.46 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon/UD	Sample Driving Hammer/Drop 139.2 / 29.5 inches	No. of Samples 17	Date Started 7/20/07
	Borehole Inclination 0	Logged by A. Osorio/M. Cooke	Date Completed 7/20/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5.28.08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0									ML	Surface grass	
1		SS 1	3 4 3	16/18					CH	FILL; sand SILT (ML); yellowish brown (10 YR 5/8); moist; firm; with gravel; roots; medium plasticity;	SS1A = 12 inches SS1B = 4 inches
2		SS 2	2 3 6	18/18	25.8					BEAUMONT; black (Gley 1); silt; CLAY (CH); moist; firm; high plasticity; high toughness; some gravel	
3		SS 3	2 3 4	17/18						BEAUMONT; black (Gley 1); silt; CLAY (CH); moist; stiff; high plasticity; high toughness; some roots	
4		SS 4	2 4 6	18/18	27.6						
5		SS 5	2 3 3	18/18					CL-ML	BEAUMONT; black (Gley 1); silt; CLAY (CH); moist; firm; high plasticity; high toughness; some roots	
6		SS 6	3 3 4	21/18	26.2					BEAUMONT; black (Gley 1); silt; CLAY (CH); moist; stiff; high plasticity; high toughness; some fine gravel	
7		SS 7	2 2 4	18/18						BEAUMONT; reddish brown (5 YR 5/4); silt; CLAY (CL-ML); moist; firm; medium plasticity; some silt; medium toughness; presence of black ferrous sulfate stringers	
8		SS 8	2 2 3	28.5/18	27.1						
9		SS 9	3 3 6	20/18						BEAUMONT; reddish brown (5 YR 5/4); silt; CLAY (CL-ML); moist; firm; medium plasticity; some silt; medium toughness; presence of black ferrous sulfate stringers	
10		SS 10	2 4 8	16/18	26.0				CH		
11										BEAUMONT; reddish brown (5 YR 5/4); silt; CLAY (CL-ML); moist; firm; medium plasticity; some silt; medium toughness	Auger top 15 feet Change to Mud Rotary at 15 feet Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
12											
13										BEAUMONT; reddish brown (5 YR 5/4); silt; CLAY (CL-ML); moist; firm; medium plasticity; with silt; medium toughness	
14											
15											
16											
17											
18											
19		SS 11	1 2 3	0/18					SM	BEAUMONT; reddish brown (5 YR 5/4); silt; CLAY (CL-ML); moist; firm; medium plasticity; with silt; medium toughness	
20		SS 11A	2 4 7	24/18	22.5					BEAUMONT; reddish brown (5 YR 5/4); CLAY (CH) moist; stiff; high plasticity; high toughness; presence of some fine rounded gravel; some calcite nodules	
21											
22											
23											
24		SS 12	4 8 10	13/18						BEAUMONT; strong brown (7.5 YR) silt; SAND (SM); moist; firm; fine grained; low plasticity; some silt	
25											
26										BEAUMONT; strong brown (7.5 YR); silt; SAND (SM); moist; firm; non plastic; lesser silt than above	
27											
28											
29		SS 13	16 14 12	12.5/18						BEAUMONT; brown (7.5 YR); silt; SAND (SM); moist; very firm; non plastic; fine grained	
30											
31											
32											
33											
34		SS 14	6 7 10	13/18						BEAUMONT; brown (7.5 YR); silt; sand (SM); moist; firm; non plastic; fine grained	
35											
36											
37											
38											
39		SS 15	11 17 24	18/18						BEAUMONT; brown (7.5 YR) silt; SAND (SM); moist; dense; non plastic; fine grained	
40											

STP SOIL STP2007.GPJ WLA.GDT 4/24/08

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-947

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SM		
41											
42											
43											
44	X	SS 16	12 26 23	18 18						BEAUMONT; brown (7.5 YR) silt; SAND (SM) moist; dense; non plastic; fine grained	
45											
46											
47											
48											
49	X	SS 17	5 8 13	18 18					CH	BEAUMONT; strong brown (7.5 YR 4/6); CLAY (CH); moist; very stiff; high plasticity; high toughness; some mottling of greenish gray (Gley 1) at about 49.5 ft bgs	
50										Boring Terminated at 50 ft bgs	
51											
52											
53											
54											
55											
56											
57											
58											
59											
60											
61											
62											
63											
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67											
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71											
72											
73											
74											
75											
76											
77											
78											
79											
80											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-948

Type and Diameter of Boring: Solid Stem Auger/Mud Rotary / 4 inches	Boring Location: RSW Tunnel, N 363227.49 E 2942967.91		Total Depth: 100 feet
Drilling Contractor and Rig: JEDI Drilling / CME 75	Elevation at boring: 31.33 feet	Ground Water Depth: See Remarks	Depth to Bedrock: Not Encountered
Sampling Method: Split Spoon/UD	Sample Driving Hammer/Drop: 139.2 / 29.5 inches	No. of Samples: 27	Date Started: 7/21/07
	Borehole Inclination: 0	Logged by: A. Osorio/M. Cooke	Date Completed: 7/22/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5.28.08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0–1	X	SS 1	2 3 4	18/18					CL-ML	BEAUMONT; reddish brown (5 YR 4/4); mottled with reddish gray (5 YR 5/2), silt; CLAY (CL-ML); wet; firm; mixed with ground; some roots	Auger top 15 feet Mud rotary at 15 feet Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
2	X	SS 2	2 4 4	17/18					CH	BEAUMONT; black (Gley 1, 2.5/N); CLAY (CH); moist; firm; high plasticity; high toughness; some fine roots present	
3–4	X	SS 3	2 4 4	18/18	29.5					BEAUMONT; black (Gley 1, 2.5/N); CLAY (CH); moist; firm; high plasticity; high toughness; precense of some fine roots.	
5–6	X	SS 4	3 4 5	18/18						BEAUMONT; black (Gley 1, 2.5/N); CLAY (CH); moist; firm; high plasticity; high toughness; presence of some fine roots, presence of 6-inch layer of brown silty clay (CL-ML) at about 3.5 ft bgs	
7	X	SS 5	2 4 5	18/18						BEAUMONT; greenish black (Gley 1, 2.5/1); CLAY (CH); moist; stiff; high plasticity; high toughness; presence of fine gravel	
8–9	X	SS 6	2 4 7	12.5/18					CL	BEAUMONT; reddish brown (5 YR 4/4); CLAY (CH); moist; stiff; high plasticity; high toughness; presence of calcite nodules; highly reactive to HCl	
10	X	SS 7	3 3 4	18/18						BEAUMONT; reddish brown (5 YR 4/4); mottled with some greenish gray (Gley 1 5/1); CLAY (CH); moist; stiff; high plasticity; high toughness; high calcite nodules; black ferrous sulfate stringers	
11	X	SS 8	2 2 4	24/18						BEAUMONT; yellowish red (5 YR 4/6); silt, CLAY (CL); moist; firm; medium plasticity; some silt; medium roughness; presence of calcite nodules; high reaction to HCl	
12–13	X	SS 9	9 5 5	14/18						BEAUMONT; reddish brown (5 YR 5/4); silt; CLAY; (CL); wet; firm; medium plasticity; with silt; medium toughness; some calcite nodules	
14–15	X	SS 10	3 3 6	18/18	23.6		36/16			BEAUMONT; reddish brown (5YR 5/4); silt CLAY (CL); moist; stiff; medium plasticity; medium toughness; some calcite nodules	
16–18										BEAUMONT; reddish brown (5 YR 5/4); silt; CLAY (CL); moist; stiff; medium to high plasticity; with silt; medium toughness; some calcite nodules	
19–20	X	SS 11	2 2 2	18/18					SM	BEAUMONT; brown (7.5 YR 4/4); silt; SAND (SM); moist; very loose; low plasticity; with silt; fine grained	
21–23										BEAUMONT; strong brown (7.5 YR 4/6); sand, SILT (ML); moist; firm; low plasticity; with silt; fine grained	
24–25	X	SS 12	6 7 9	21/18	25.2	78.5			ML	BEAUMONT; strong brown (7.5 YR 4/6); silt; SAND (SP-SM); moist; very firm; non plastic; poorly graded; fine grained	
26–28											
29–30	X	SS 13	13 15 13	13/18					SP-SM	BEAUMONT; yellowish brown (10 YR 5/4); silt SAND (SP-SM); moist; very firm; non plastic; poorly graded fine grained sand	
31–33											
34–35	X	SS 14	9 13 13	17/18						BEAUMONT; yellowish brown (10 YR 5/4); silt SAND (SP-SM); moist; dense; non plastic; poorly	
36–38											
39–40	X	SS 15	19 20 16	16/18	21.4	5.6					

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-948

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SP-SM	graded; fine sand	
41											
42											
43											
44	X	SS 16A	31 15 12	18/18						BEAUMONT; strong brown (7.5 YR 4/6); silt, SAND (SP-SM); moist; very firm; non plastic; poorly graded fine and medium grained sand	
45									CL	BEAUMONT; strong brown (7.5 YR 4/6); silt, CLAY (CL); moist; stiff; medium plasticity; medium toughness	
46											
47											
48											
49	X	SS 17	5 12 11	18/18					CL-ML	BEAUMONT; strong brown (7.5 YR 4/6); silt; CLAY (CL-ML); moist; very stiff; medium plasticity; medium toughness; presence of 3 inch silty sand layer at about 49 ft bgs to 49.3 ft bgs	
50											
51											
52											
53											
54	X	SS 18	6 7 9	24/18	24.1		49/33		CL	BEAUMONT; greenish gray (Gley 1, 6/1); CLAY (CL); moist; very stiff; high plasticity; high toughness; presence of calcite nodules	
55											
56											
57											
58											
59	X	SS 19	10 9 10	18/18	20.2	68.3				BEAUMONT; strong brown (7.5 YR 4/6); mottled with some greenish gray sand, CLAY (CL); moist; medium plasticity; medium grained sand; some gravel	
60											
61											
62											
63											
64	X	SS 20	16 21 22	5/18					SP-SM	BEAUMONT; yellowish brown (10 YR 5/4); silt, SAND (SP-SM); moist; dense; non plastic; some silt; poorly graded medium grained sand	
65											
66											
67											
68											
69	X	SS 21	19 23 20	17/18					SP	BEAUMONT; dark yellowish brown (10 YR 4/6); SAND (SP); moist; dense; non plastic; poorly graded; medium grained sand	
70											
71											
72											
73											
74	X	SS 22	16 30 28	12/18						BEAUMONT; dark yellowish brown (10 YR 4/6); SAND (SP); moist; very dense; non plastic; poorly graded; medium grained sand	
75											
76											
77											
78											
79	X	SS 23	21 35 34	17/18						BEAUMONT; dark yellowish brown (10 YR 4/6); SAND (SP); moist; very dense; non plastic; poorly	
80											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-948

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (Inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
80									SP	graded; medium grained sand	
81											
82											
83											
84	X	SS 24A	20 21 17	16 18						BEAUMONT; brown (10 YR 4/3); SAND (SP); moist; dense; non plastic; poorly graded; medium grained sand	
85	X	SS 24B		6 6					CH	BEAUMONT; brown (10 YR 4/3); CLAY (CH); moist; hard; high plasticity; high toughness	
86											
87											
88											
89	X	SS 25	9 11 16	21 18	23.4					BEAUMONT; brown (10 YR 4/3); CLAY (CH); moist; very stiff; high plasticity; high toughness	
90											
91											
92											
93											
94	X	SS 26	7 9 12	23 18	22.8					BEAUMONT; brown (10 YR 4/3); CLAY (CH); moist; very stiff; high plasticity; high toughness	
95											
96											
97											
98											
99	X	SS 27	13 27 26	15.5 18					SP	BEAUMONT; gray (7.5 YR 5/1); SAND (SP); moist; very dense; non plastic; fine grained sand	
100										Boring Terminated at 100 ft	
101											
102											
103											
104											
105											
106											
107											
108											
109											
110											
111											
112											
113											
114											
115											
116											
117											
118											
119											
120											

STP SOIL STP2007.GPJ WLA.GDT 5/20/08

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-949

Type and Diameter of Boring Solid Stem Auger/Mud Rotary / 4 inches/6 inches	Boring Location PUMP HOUSE N 363604.32 E 2941778.93		Total Depth 125 feet
Drilling Contractor and Rig LEWIS ENV / Mobile B57	Elevation at boring 28.67 feet	Ground Water Depth See Remarks	Depth to Bedrock Not Encountered
Sampling Method Split Spoon	Sample Driving Hammer/Drop 139.92 / 29.75 inches	No. of Samples 40	Date Started 7/24/07
	Borehole Inclination 0	Logged by M. Cooke	Date Completed 8/1/07

Reviewed by / Date MJH 5-25-08

Reviewed by / Date KAW 5·28·08

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
0										TOPSOIL - top 2 inches	
1	X	SS 1	2 2 2	18/18					CH	BEAUMONT; black (10YR 2/1); CLAY (CH); moist; soft; high plasticity; medium toughness; small roots; scattered caliche nodules.	Begin drilling with 4 inch O.D. Solid Stem Augers
2	X	SS 2	2 2 3	14/18						BEAUMONT; black (10YR 2/1); CLAY (CH); moist; soft; high plasticity; medium toughness; small roots; scattered caliche nodules.	
3	X	SS 3	2 3 4	14/18						BEAUMONT; pale brown (10YR 6/3); CLAY with sand (CH); dry to moist; firm, high plasticity; trace sand; medium to high toughness; abundance of caliche	
4	X	SS 4	2 2 4	14/18						BEAUMONT; brown (7.5YR5/4); CLAY with sand (CH); dry to moist; firm, high plasticity; trace sand; medium to high toughness; abundance of caliche	
5	X	SS 5	2 4 6	16/18						BEAUMONT; yellowish red (5YR 5/6); CLAY with sand (CH); dry to moist; firm, high plasticity; trace sand; medium to high toughness; abundance of caliche; thin tan laminations	
6	X	SS 6	4 4 6	14/18						BEAUMONT; yellowish red (5YR 5/6); CLAY with sand (CH); dry to moist; firm, high plasticity; trace sand; medium to high toughness; abundance of caliche; thin tan laminations	
7	X	SS 7	2 2 5	18/18						BEAUMONT; yellowish red (5YR 5/6); CLAY with sand (CH); dry to moist; firm, high plasticity; trace sand; medium to high toughness; abundance of caliche; thin tan laminations; firm; light gray laminations	
8	X	SS 8	3 4 8	18/18						BEAUMONT; yellowish red (5YR 5/6); CLAY with sand (CH); dry to moist; firm, high plasticity; trace sand; medium to high toughness; abundance of caliche; thin tan laminations	Switch to Mud Rotary at 15 feet 4 inch drag bit Groundwater not encountered prior to filling hole with drilling fluid. Groundwater not measured.
9	X	SS 9	3 6 8	14/18						BEAUMONT; yellowish red (5YR 5/6); CLAY with sand (CH); dry to moist; stiff, high plasticity; trace sand; medium to high toughness; abundance of caliche; thin tan laminations	
10	X	SS 10	3 4 8	15/18						BEAUMONT; yellowish red (5YR 5/6); CLAY with sand (CH); dry to moist; stiff, high plasticity; trace sand; medium to high toughness; abundance of caliche; thin tan laminations	
11											
12											
13											
14											
15											
16											
17											
18											
19	X	SS 11	5 3 6	18/18					ML	BEAUMONT; yellowish red (5YR 5/6); CLAY with sand (CH); dry to moist; stiff, high plasticity; trace sand; medium to high toughness; abundance of caliche; thin tan laminations	Install 8 inch I.D. PVC casing to 5 feet Ream borehole to 18.5 feet with 6 inch drag bit
20											
21											
22									SM	BEAUMONT; yellowish red (5YR 5/6); CLAY with sand (CH); dry to moist; stiff, high plasticity; trace sand; medium to high toughness; abundance of caliche; thin tan laminations	
23											
24	X	SS 12	5 5 7	12/18						BEAUMONT; reddish brown (2.5YR 5/3); CLAY (CH); moist to dry; stiff, high plasticity; medium toughness; few fine to medium sand	Some difficult drilling 25 to 28.5 feet Likely cemented sand layers based on SS-13 Cemented sand layers
25											
26											
27											
28										BEAUMONT; strong brown (7.5YR 5/6); sand; SILT (ML); moist; stiff; nonplastic; some fine sand Estimated contact; likely gradational	
29	X	SS 13	7 6 5	12/18	21.9	52.6			ML	BEAUMONT; brown (7.5YR 4/4); silt, SAND (SM) wet; firm; fine; little silt; subrounded; quartz; trace mica (muscovite)	Difficult drilling 28.5 to 33.5 feet
30											
31										BEAUMONT; brown; (7.YR 4/4); sand; SILT (ML); wet; fine; little silt; stiff; strongly cemented gravel sized sandstone fragments; likely cemented layers broken by the SPT sampler	
32											
33											
34	X	SS 14	12 9 12	14/18					SM	Cemented sand layers 30 to 33.5 based on rig chatter BEAUMONT; brown (7.5YR 5/4); silt, SAND (SM); wet; very firm; fine; little silt; poorly graded; quartz sand (subrounded); trace mica.	
35											
36											
37											
38											
39	X	SS 15	12 17 21	14/18	21.2	10.2			SP-SM	BEAUMONT; brown (7.5YR 4/4); silt, SAND (SP-SM); moist to wet; dense; poorly graded; fine;	
40											

Project Name :STP COL PROJECT

MACTEC

Project Number: 6234-07-4257

SOIL LOG - Boring No. B-949

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
40									SP-SM	few silt; subrounded; quartz; trace mica.	
41										Estimated contact at 41.5 feet.	
42									CH		
43											
44	X	SS 16	4 4 7	18/18						BEAUMONT; brown (7.5YR 4/3); CLAY (CH); moist to dry; stiff; high plasticity; high toughness; blocky texture; some tan vertical and horizontal laminations	
45											
46											
47											
48											
49	X	SS 17	5 5 9	18/18	27.3		51/33			BEAUMONT; greenish gray (Gley 1 5GY 6/1); CLAY (CH); dry; stiff; highly plastic; high toughness; some reddish brown iron oxide staining	SPT Energy Test performed SS-17
50											
51										BEAUMONT; greenish gray (Gley 1 5GY 6/1); CLAY (CH); dry; high plasticity	
52		UD 1		26/24							UD-1 THICK WALLED (14 gauge) TUBE USED
53											
54		UD 2		21/24	32.3		65/36			BEAUMONT; greenish gray (Gley 1 5GY 6/1); CLAY (CH); dry; highly plastic	UD-2 obtained from 53.5 to 55.5 feet to replace UD-1
55											
56	X	SS 18	7 7 12	18/18	31.1	97.4				BEAUMONT; greenish gray (Gley 1 5GY 6/1); CLAY (CH); dry; very stiff; highly plastic; high toughness; some reddish brown iron oxide staining; some scattered hard white caliche nodules	SPT Energy Test performed SS-18
57											
58											
59	X	SS 19	8 9 19	18/18	22.0		53/37			BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; very stiff; highly plastic; high toughness; some black MN staining; blocky texture	SPT Energy Test performed SS-19
60											
61										BEAUMONT: strong brown (7.5YR 4/6); CLAY (CH); dry; highly plastic; high toughness; blocky texture	
62		UD 3		22/24	23.3		54/31				
63											End Drilling 7/25/07 at 63 feet Water level at 2 feet Begin Drilling 7/26/07 Heavy AM rainfall
64	X	SS 20	6 8 13	18/18						BEAUMONT: strong brown (7.5YR 4/6); CLAY (CH); dry; very stiff; highly plastic; high toughness; blocky texture	
65											
66											
67											
68											
69	X	SS 21	6 8 13	18/18	28.4					BEAUMONT: strong brown (7.5YR 4/6); CLAY (CH); dry; very stiff; highly plastic; high toughness; blocky texture	
70											
71											
72		UD 4		16/24	24.9		56/32			BEAUMONT: strong brown (7.5YR 4/6); CLAY (CH); dry; highly plastic; high toughness; blocky texture	
73											
74	X	SS 22	6 9 12	18/18	27.4	99.4				BEAUMONT; strong brown (7.5YR 4/6); CLAY (CH); dry; very stiff; highly plastic; high toughness; some light green and tan mottles.	
75											
76											
77											
78											
79	X	SS 23	9 8 12	18/18	25.0		52/33			BEAUMONT; strong brown (7.5YR 5/6); CLAY	
80											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-949

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 inches	Recovery (inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
80									CH	(CH); dry; very stiff; high plasticity; high to medium toughness	
81											
82		UD 5		0/24						NO RECOVERY	NO RECOVERY UD-5 Attempt another UD at 83.5 to 85.5 feet
83											
84		UD 6		22.5/24	24.0		68/43			BEAUMONT; strong brown (7.5YR 5/6); CLAY (CH); dry; high plasticity; high toughness	
85											
86											
87											
88											
89	X	SS 24	6 9 13	18/18	26.1	99.4				BEAUMONT; strong brown (7.5YR 5/6); CLAY (CH); dry; very stiff; high plasticity; high toughness	
90											
91											
92		UD 7		24/24	28.1		60/36			BEAUMONT: brown (7.5YR 4/3); CLAY (CH); dry; medium plastic; medium toughness; blocky texture	
93											
94	X	SS 25	9 7 10	18/18					CL-ML	BEAUMONT: brown (7.5YR 4/3); silt, CLAY (CL-ML); dry; very stiff; medium plastic; medium toughness; blocky texture	
95											
96											
97											
98											
99	X	SS 26	20 22 34	13/18					SM	BEAUMONT: light brown (7.5YR 6/4); silt; SAND (SM); wet to moist; very dense; poorly graded, fine to medium; few silt; subrounded; quartz; mica; trace dark minerals.	
100											
101											
102		UD 8		16.5/24	18.6	19.2				BEAUMONT: light brown (7.5YR 6/4); silt; SAND (SM); wet to moist; poorly graded, fine to medium; few silt; subrounded; quartz; mica; trace dark minerals.	
103											
104	X	SS 27	6 8 16	10/18						BEAUMONT; brown (7.5YR 5/4); silt; SAND (SM); wet to moist; very firm; fine to medium; few silt; subrounded; quartz; mica; trace dark minerals.	
105											
106											
107										Cemented/gravely layers	
108											
109	X	SS 28	11 6 4	14/18						BEAUMONT; brown (7.5YR 5/4); silt, SAND (SM); wet; loose; medium to coarse; poorly graded; quartz; cemented sand and calcareous nodules	
110									CH	BEAUMONT; brown (7.5YR 4/3); CLAY (CH); moist; firm; high plasticity; high toughness; trace fine to medium sand	
111									CL	BEAUMONT; brown (7.5YR 4/3); sandy lean CLAY (CL) wet; medium to coarse; poorly graded; little gravel; some sand; 1" diameter subrounded gravel in bottom of tube	
112		UD 9		8/24	13.7	54.6	27/17				
113											
114		UD 10		4.5/24						BEAUMONT; brown (7.5YR 4/3); sand lean CLAY (CL) wet; medium to coarse; poorly graded; little gravel; some sand; 1" diameter subrounded gravel in bottom of tube; very coarse sand and gravel Pitcher sampler refusal at 115 feet.	
115											
116											
117											
118											
119	X	SS 29	9 14 17	18/18	21.6		48/31			BEAUMONT; yellowish red (5YR 4/6); silt, CLAY	
120											

Project Name :STP COL PROJECT

Project Number: 6234-07-4257

MACTEC

SOIL LOG - Boring No. B-949

Depth (feet)	Sample	Sample Type & No.	Uncorrected Blows/6 Inches	Recovery (Inches)	Water Content	Fines Content	Atterberg Limits	Lithology	Soil Type (USCS)	Lithology	Remarks
120									CL	(CL); dry; hard; low plasticity; low toughness; greenish gray mottles	
121											
122											
123											
124	X	SS 30	10 12 18	18/18	19.4	90.6	39/28			BEAUMONT; yellowish red (5YR 4/6); silt, CLAY (CL); dry; very stiff; low plasticity; low toughness; greenish gray mottles; some fine sand at bottom of interval	
125										Boring Terminated at 125 feet bgs	
126											
127											
128											
129											
130											
131											
132											
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SPT Energy Measurement Reports

MACTEC

engineering and constructing a better tomorrow

September 10, 2007

Memorandum to File DCN STP424
From: Steve Kiser SAL 9-10-07
Reviewed By: Kathryn White KAW 9/17/07

Subject: **Report of SPT Energy – Lewis Environmental Mobile B57 Rig (Hammer Serial No. 216265-45) Automatic Hammer**
WORK INSTRUCTION DCN STP424
South Texas Project (STP) COL Site
Wadsworth, Texas
MACTEC Project No. 6234-07-4257

Steve Kiser, of MACTEC Engineering and Consulting, Inc. (MACTEC), performed energy measurements on the drill rigs at the subject site per the referenced Work Instructions. This memorandum summarizes the field testing activities and presents the results of the energy measurements.

SPT Energy Field Measurements

SPT energy measurements were made on July 25, 2007, during drilling of Boring B-949 at the referenced site. The testing was performed from approximately 2:55 to 6:45 PM under an overcast sky with intermittent rain showers and a temperature of about 85 degrees Fahrenheit. The boring was drilled with personnel and equipment from Lewis Environmental Drilling, Inc. The drilling equipment consisted of a Mobile B-57 model ATV-mounted drill rig with an SPT automatic hammer. The hammer was operated from a winch line and was not permanently attached to the drill rig. The drilling tools consisted of NW-J-sized drilling rods and a 2-foot long split tube sampler. Mud rotary drilling techniques were used to advance the boring below the depth at which groundwater was encountered at the time of energy testing. The drill rig operator during sampling was Mr. Danny Gonzalez. Energy measurements were recorded during sampling at the depth intervals shown in Table 1.

The energy measurements were performed with a Pile Driving Analyzer (PDA) model PAK (Serial No. 1430), and calibrated accelerometers (Serial Nos. P5094 and P5992) and strain gages (Serial Nos. NW #146/1 and NW#146/2). An NW-sized steel drill rod, 2 feet long and instrumented with dedicated strain gages, was inserted at the top of the drill rod string immediately below the SPT hammer. The inserted rod was also instrumented with two piezoresistive accelerometers that were bolted to the outside of the rod. The instrumented rod insert had a cross-sectional area of approximately 1.49 square inches and an outside diameter of approximately 2.625 inches at the gage location. The drill rods included in the drill rod string were hollow rods in 5 to 10 foot long sections, with an outside and inside diameter of approximately 2.625 and 2.25 inches, respectively. The recommended operation rate of the hammer is not known. Due to the closed hammer system, the hammer lubrication condition and anvil dimensions could not be observed.

Calibration Records

The calibration records for all the above are filed in DCN STP850.

DCN: STP326
12 Pages Total

Calculations for EFV

The work was done in general accordance with ASTM D 4633-05. The strain and acceleration signals were converted to force and velocity by the PDA, and the data was interpreted by the PDA according to the Case Method equation. The maximum energy transmitted to the drill rod string (as measured at the location of the strain gages and accelerometers) was calculated by the PDA using the EFV method equation, as shown below:

$$EFV = \int F(t) * V(t) * dt$$

Where: EFV = Transferred energy (EFV equation), or Energy of FV
F(t) = Calculated force at time t
V(t) = Calculated velocity at time t

The EFV method of energy calculation is recommended in ASTM Standard D4633-05. The EFV equation, integrated over the complete wave event, measures the total energy content of the event using both force and velocity measurements. The EFV values associated with each blow analyzed are tabulated in the attached PDIPLOT tables and are also shown graphically in the PDIPLOT charts.

Calculations for ETR

The ratio of the measured transferred energy (EFV) to the theoretical potential energy of the SPT system (140 lb weight with the specified 30 inch fall) is the ETR. The ETR values (as percent of the theoretical value) are shown in Table 1.

Comparison of ETR to Typical Energy Transfer Ratio Range

Based on a research report published by the Florida Department of Transportation (FDOT) (Report WPI No. 0510859, 1999), the average ETR measured for automatic hammers is 79.6%. The standard deviation was 7.9%; therefore, the range of ETRs within one standard deviation of the average was reported to be 71.7% to 87.5%. This range of ETRs was also consistent with other research that was cited in the FDOT research paper; however, maximum ETR values of up to 98% were reported in the literature. The ETR values shown in Table 1 are generally within the range of typical values for automatic hammers as reported in the literature.

Discussion

Based on the field testing results, observations from the SPT energy measurements are summarized below:

- The data obtained by the PDA are consistent between individual hammer blows and between the sample depths tested. In general, the first and last one (and sometimes two) hammer blow records recorded by the PDA produced poor quality data (which is relatively common) and, as such, the record(s) was(were) not used in the data reduction.

- The average energy transferred from the hammer to the drill rods for each individual depth interval using the EFV method ranged from 290 foot-pounds to

301 foot-pounds. These average energy transfers correspond to energy transfer ratios (ETR) of 83% to 86% of the theoretical energy (350 foot-pounds) of the SPT hammer.

- The average at each depth interval was calculated as the transferred energy for each analyzed blow of the depth intervals divided by the total number of hammer blows analyzed. The overall average energy transfer of the SPT system (for all the depth intervals tested) was 295.5 foot-pounds, with an average ETR of 84.4%.

Attachments: Page 4 Table 1 - Summary of SPT Energy Measurements – 1 Page
Page 5 Work Instruction – DCN SPT424 – 1 Page
Page 6 Record of SPT Energy Measurement – 1 Page
Pages 7 - 12 PDIPLOT Output – 6 Pages

TABLE 1
SUMMARY OF SPT ENERGY MEASUREMENTS (ASTM D4633-05)
South Texas Project (STP) COL Site
Wadsworth, Texas
MACTEC Project No. 6234-07-4257

Rig Serial No.	Rig Owner	Rig Operator	Boring No. Tested	Date Tested	Sample Depth (feet)	SPT Blow Count (blows per six inches)	No. of Blows Analyzed	Average Measured Energy (Average EFV) (ft-lbs)[a]	Energy Transfer Ratio (%)[b] (Average ETR)
216265-45 (Mobile B-57 ATV)	Lewis Environmental	Danny Gonzalez	B-949	7/25/2007	48.5 - 50.0	5 - 5 - 9	19	298	85.1%
					55.5 - 57.0	7 - 7 - 12	26	301	86.0%
					58.5 - 60.0	8 - 9 - 19	35	290	82.9%
							Average for Rig:	**295.5**	**84.4%**

[a]Measured Energy is energy based on the EFV method, as outlined in ASTM D4633-05, for each blow recorded by the PDA. In some cases, the initial and final one to two blows produced poor quality data, and were not used to calculate the Average Measured Energy.
EFV = EMX * 1000 lbs/kip, where EMX equals the maximum transferred energy measured by the PDA (see attached PDA data).
[b]Energy Transfer Ratio is the Measured Energy divided by the theoretical SPT energy of 350 foot-pounds (140 pound hammer falling 2.5 feet).
The average ETR values may differ slightly and insignificantly from those in the PDIPLOT tables due to roundoff.

Prepared By: [signature] Date: 9-10-07	Checked By: [signature] Date: 9/17/07

Work Instructions – SPT Energy LEDI Mobile B-57 (Gonzales)
(Hammer #2, Rig Serial Number 216265-45)
STP COL Project
Project No. 6234074257

Issued To: Steve Kiser

Location: STP COL Project Field Office Date: 7/25/07

Issued By: Matthew F. Cooke, Site Coordinator

Valid From: 7/25/07 To: 7/25/07

Task Description: Measurement of energy transferred to the drill string rods from a Standard Penetration Test (SPT) automatic hammer mounted on a drill rig. Testing will be performed using a Pile Driving Analyzer (PDA) model PAK at various depth intervals below a depth of approximately 10 feet below the ground surface for the above referenced rig drilling SPT borings at the STP COL Site.

Applicable Technical Procedures or Plans, or other reference: ASTM D4633-05 Standard Test Method for Energy Measurement for Dynamic Penetrometers.

Specific Instructions (note attachments where necessary): Obtain energy measurements with the PDA at various depth intervals below a depth of about 10 feet below the ground surface in general accordance with ASTM D4633-05. Perform energy measurement testing for the above referenced drill rig.

Report Format: Written report documenting results of field testing in general accordance with ASTM D4633-05, to include completed Summary of Daily Observations and Testing, Record of SPT Energy Measurement sheet(s), and PDIPLOT output data.

Specific Quality Assurance Procedures Applicable: None

Hold Points or Witness Points: None

Records: All records generated shall be considered QA Records.

Reviewed and Approved By (Note: Only One Signature is Required to Issue):

Project Manager: Date:

Project Principal: Date:

Site Coordinator: Date: 7/25/07

No. of Pages: 1 DCN: STP424

MACTEC

2801 YORKMONT ROAD, SUITE 100 □ CHARLOTTE, NC 28208
Telephone: (704) 357-8600 / Facsimile: (704) 357-8638

RECORD OF SPT ENERGY MEASUREMENT

GENERAL INFORMATION		DRILL RIG DATA	
PROJECT:	South Texas Project	MAKE:	MOBILE
LOCATION:	Wadsworth, Texas	MODEL:	B-57 ATV
PROJECT NO.:	6234-07-4257	SERIAL NO.:	216265-45
DATE:	7-25-07	HAMMER TYPE:	AUTOMATIC (SERIAL # 02)
WEATHER:	OVERCAST; WARM; ISOLATED RAIN	ROPE CONDITION:	N/A
INSPECTOR:	Steve Kiser	ROD SIZE:	NW-J
DRILLING COMPANY:	LEWIS	NO. OF SHEAVES:	N/A

BORING DATA

BORING NUMBER:	B-949		
DEPTH DRILLED:	150' PLANNED		
TIME DRIVEN:	2:40 PM		
RIG OPERATOR:	DANNY GONZALEZ		
HAMMER OPERATOR:	N.R.		
PDA PAK SERIAL NO.:	1430	1430	1430
INSTR. ROD AREA:	1.49 in²		
ACCEL. SERIAL NOS.:	P5094 / P5992		
STRAIN SERIAL NOS.:	146 NW 1/2		

SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)	DEPTH cont. (feet)	SPT N-VALUE (bpf)	SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)	DEPTH cont. (feet)	SPT N-VALUE (bpf)	SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)	DEPTH cont. (feet)	SPT N-VALUE (bpf)
48.5/50	5-5-9										
55.5/57'	7-7-12										
58.5/60'	8-9-19										

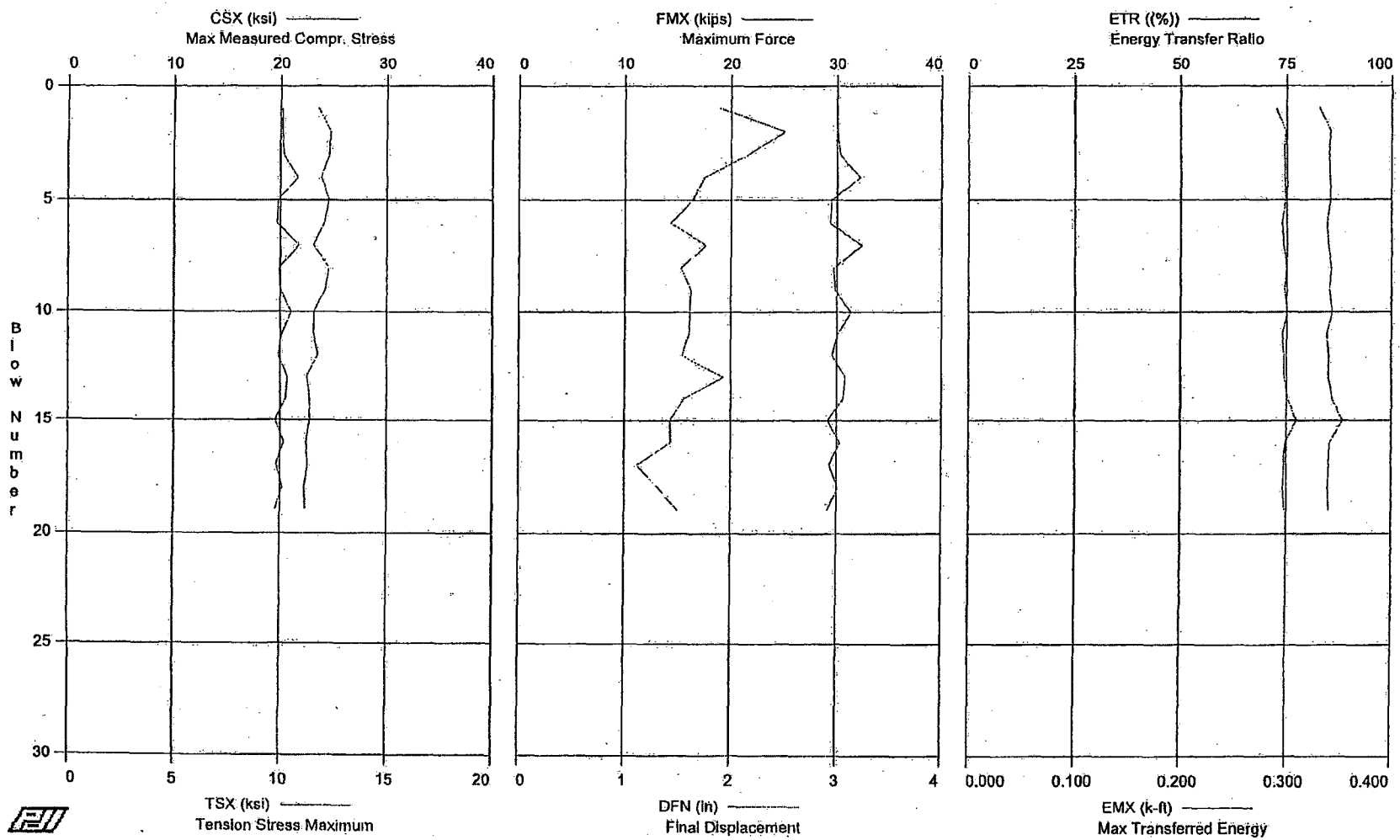
REMARKS:

MACTEC Engineering and Consulting, Inc. - Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 27-Aug-2007

Test date: 25-Jul-2007

STP COL Project - Boring B-949; 48.5' - 50' Sample



MACTEC Engineering and Consulting, Inc.
Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 27-Aug-2007

STP COL Project - Boring B-949; 48.5' - 50' Sample
OP: S. Kiser

Rig Serial No. 216265-45 (Lewis Mobile B57 ATV)
Test date: 25-Jul-2007

AR: 1.49 in^2
LE: 54.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft3
EM: 30,000.0 ksi
JC: 0.60

FMX: Maximum Force
VMX: Maximum Velocity
CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
BPM: Blows per Minute

DFN: Final Displacement
E2E: Energy of FV at 2L/c
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	FMX kips	VMX f/s	CSX ksi	TSX ksi	BPM **	DFN in	E2E k-ft	ETR (%)	EMX k-ft
1	0.00	30	10.2	20.18	11.78	0.0	1.90	0.290	82.8	0.290
2	0.00	30	10.6	20.17	12.34	0.0	2.50	0.299	85.4	0.299
3	0.00	30	10.4	20.34	12.30	0.0	2.16	0.298	85.2	0.298
4	0.00	32	10.5	21.63	11.91	19.2	1.75	0.298	85.3	0.298
5	0.00	30	10.3	19.81	12.28	19.1	1.64	0.299	85.5	0.299
6	0.00	29	10.1	19.69	12.07	0.0	1.43	0.296	84.7	0.296
7	0.00	32	10.3	21.73	11.55	19.1	1.77	0.296	84.9	0.297
8	0.00	30	10.1	19.93	12.29	19.1	1.53	0.299	85.7	0.300
9	0.00	30	10.2	20.02	12.10	0.0	1.62	0.297	85.2	0.298
10	0.00	31	10.3	21.06	11.60	0.0	1.62	0.300	86.0	0.301
11	0.00	30	10.0	20.18	11.57	0.0	1.61	0.295	84.6	0.296
12	0.00	30	10.1	19.85	11.77	0.0	1.54	0.297	85.2	0.298
13	0.00	31	10.1	20.69	11.26	0.0	1.93	0.297	85.0	0.298
14	0.00	31	10.0	20.53	11.38	0.0	1.56	0.300	85.9	0.301
15	0.00	29	10.0	19.56	11.40	0.0	1.43	0.299	88.5	0.310
16	0.00	30	10.0	20.34	11.21	0.0	1.43	0.298	85.3	0.299
17	0.00	29	10.1	19.68	11.31	0.0	1.12	0.298	85.2	0.298
18	0.00	30	9.9	20.23	11.13	0.0	1.32	0.297	84.9	0.297
19	0.00	29	10.1	19.52	11.17	0.0	1.50	0.297	85.0	0.298
	Average	30	10.2	20.27	11.71	19.1	1.65	0.297	85.3	0.298

Total number of blows analyzed: 19

Time Summary

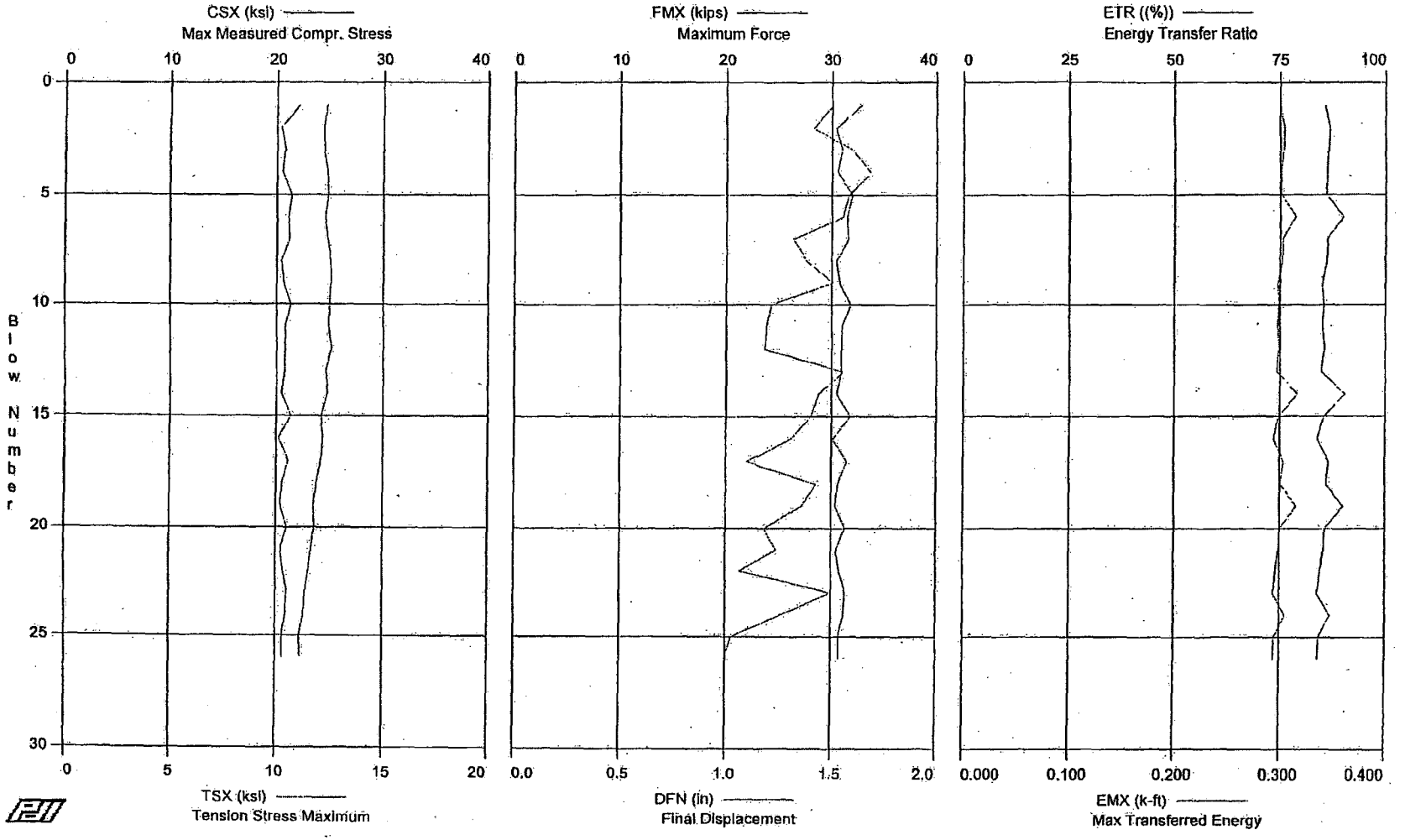
Drive 58 seconds 2:54:37 PM - 2:55:35 PM (7/25/2007) BN 1 - 19

MACTEC Engineering and Consulting, Inc. - Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 27-Aug-2007

Test date: 25-Jul-2007

STP COL Project - Boring B-949; 55.5' - 57' Sample



MACTEC Engineering and Consulting, Inc.
Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 27-Aug-2007

STP COL Project - Boring B-949; 55.5' - 57' Sample
OP: S. Kiser

Rig Serial No. 216265-45 (Lewis Mobile B57 ATV)
Test date: 25-Jul-2007

AR: 1.49 in^2
LE: 61.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft3
EM: 30,000.0 ksi
JC: 0.60

FMX: Maximum Force
VMX: Maximum Velocity
CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
BPM: Blows per Minute

DFN: Final Displacement
E2E: Energy of FV at 2L/c
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	FMX kips	VMX f/s	CSX ksi	TSX ksi	BPM **	DFN in	E2E k-ft	ETR (%)	EMX k-ft
1	0.00	33	10.7	22.04	12.33	0.0	1.50	0.299	85.6	0.300
2	0.00	30	10.8	20.41	12.21	0.0	1.41	0.303	86.8	0.304
3	0.00	31	10.8	20.78	12.23	0.0	1.60	0.302	86.5	0.303
4	0.00	31	10.7	20.51	12.39	0.0	1.68	0.301	86.1	0.301
5	0.00	32	10.6	21.45	12.43	0.0	1.58	0.300	86.0	0.301
6	0.00	31	10.5	21.09	12.28	0.0	1.55	0.305	90.1	0.315
7	0.00	32	10.5	21.19	12.39	0.0	1.32	0.301	86.2	0.302
8	0.00	30	10.4	20.44	12.54	0.0	1.38	0.301	86.2	0.302
9	0.00	31	10.3	20.63	12.57	0.0	1.51	0.297	85.1	0.298
10	0.00	32	10.5	21.35	12.50	0.0	1.21	0.299	85.4	0.299
11	0.00	31	10.4	20.80	12.46	0.0	1.19	0.298	85.2	0.298
12	0.00	31	10.5	20.77	12.58	0.0	1.18	0.299	85.6	0.299
13	0.00	31	10.4	20.76	12.32	0.0	1.56	0.297	84.9	0.297
14	0.00	31	10.4	20.48	12.41	0.0	1.44	0.301	90.5	0.317
15	0.00	32	10.5	21.33	12.10	0.0	1.40	0.297	85.5	0.299
16	0.00	30	10.3	20.22	12.19	0.0	1.31	0.293	84.0	0.294
17	0.00	31	10.5	21.14	12.10	0.0	1.10	0.300	86.8	0.304
18	0.00	31	10.3	20.54	11.89	0.0	1.43	0.296	86.0	0.301
19	0.00	30	10.3	20.40	11.78	0.0	1.36	0.300	90.2	0.316
20	0.00	31	10.4	21.02	11.80	0.0	1.18	0.298	85.7	0.300
21	0.00	30	10.3	20.46	11.67	0.0	1.24	0.299	85.5	0.299
22	0.00	31	10.4	20.66	11.56	0.0	1.07	0.296	84.7	0.296
23	0.00	31	10.5	21.04	11.39	0.0	1.50	0.293	84.0	0.294
24	0.00	31	10.5	20.93	11.31	0.0	1.26	0.297	87.0	0.305
25	0.00	31	10.4	20.64	11.12	0.0	1.03	0.295	84.4	0.295
26	0.00	31	10.3	20.64	11.14	0.0	0.99	0.293	84.1	0.294
	Average	31	10.5	20.84	12.07	**	1.35	0.298	86.1	0.301

Total number of blows analyzed: 26

Time Summary

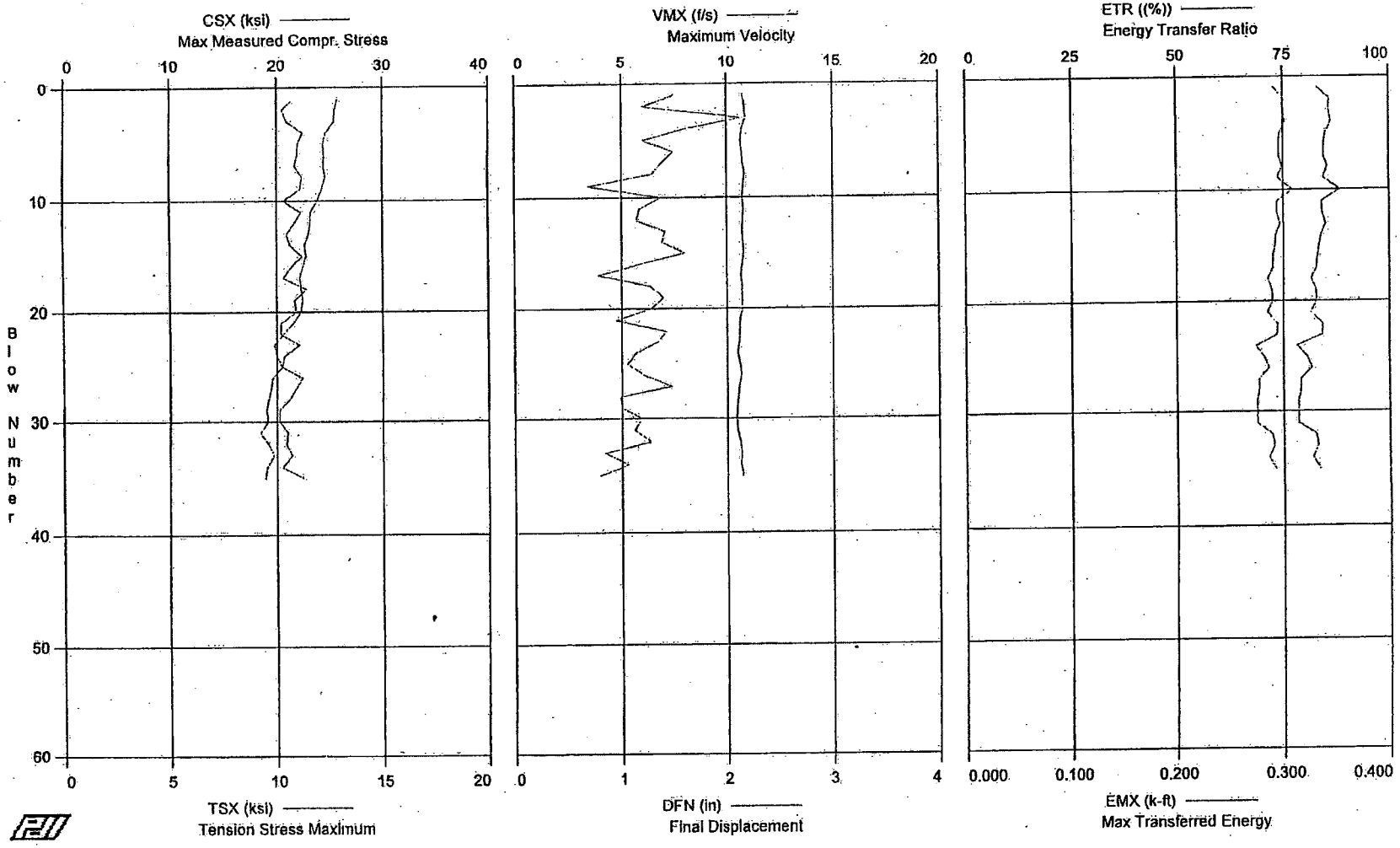
Drive 1 minute 22 seconds 6:17:42 PM - 6:19:04 PM (7/25/2007) BN 1 - 26

PDIPLOT Ver. 2005.2 - Printed: 27-Aug-2007

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 25-Jul-2007

STP COL Project - Boring B-949; 58.5' - 60' Sample



MACTEC Engineering and Consulting, Inc.
Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 27-Aug-2007

STP COL Project - Boring B-949; 58.5' - 60' Sample
OP: S. Kiser

Rig Serial No. 216265-45 (Lewis Mobile B57 ATV)
Test date: 25-Jul-2007

AR: 1.49 in^2
LE: 64.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft3
EM: 30,000.0 ksi
JC: 0.60

FMX: Maximum Force
VMX: Maximum Velocity
CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
BPM: Blows per Minute

DFN: Final Displacement
E2E: Energy of FV at 2L/c
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	FMX kips	VMX f/s	CSX ksi	TSX ksi	BPM **	DFN in	E2E k-ft	ETR (%)	EMX k-ft
1	0.00	32	10.7	21.59	12.91	0.0	1.51	0.290	83.0	0.291
2	0.00	31	10.9	20.50	12.77	0.0	1.20	0.300	85.9	0.301
3	0.00	31	10.9	20.97	12.75	0.0	2.13	0.299	85.7	0.300
4	0.00	33	10.7	22.47	12.34	0.0	1.58	0.301	86.2	0.302
5	0.00	33	10.7	21.98	12.20	0.0	1.21	0.297	85.0	0.297
6	0.00	33	10.7	21.93	12.26	0.0	1.49	0.295	84.6	0.296
7	0.00	32	10.8	21.68	12.23	0.0	1.39	0.295	84.5	0.296
8	0.00	33	10.8	22.44	12.31	0.0	1.29	0.298	85.4	0.299
9	0.00	33	10.8	22.22	12.15	0.0	0.69	0.295	84.4	0.295
10	0.00	31	10.7	20.63	11.95	0.0	1.38	0.298	88.4	0.309
11	0.00	33	10.8	22.31	11.61	0.0	1.17	0.293	83.9	0.294
12	0.00	32	10.7	21.65	11.60	0.0	1.15	0.294	84.1	0.294
13	0.00	31	10.7	20.90	11.51	0.0	1.41	0.296	85.0	0.297
14	0.00	32	10.8	21.25	11.32	0.0	1.39	0.293	83.8	0.293
15	0.00	33	10.8	22.40	11.38	0.0	1.60	0.291	83.3	0.292
16	0.00	32	10.7	21.31	11.23	0.0	1.16	0.290	82.9	0.290
17	0.00	31	10.7	20.64	11.09	0.0	0.78	0.289	82.8	0.290
18	0.00	34	10.7	22.81	11.15	20.9	1.27	0.285	81.5	0.285
19	0.00	32	10.7	21.67	11.22	0.0	1.40	0.288	82.6	0.289
20	0.00	33	10.7	21.81	11.14	0.0	1.28	0.289	82.8	0.290
21	0.00	30	10.6	20.40	10.77	0.0	0.95	0.284	81.4	0.285
22	0.00	30	10.6	20.38	10.28	0.0	1.43	0.283	84.2	0.295
23	0.00	33	10.6	22.18	9.89	0.0	1.34	0.282	84.1	0.294
24	0.00	31	10.5	20.68	9.99	0.0	1.14	0.273	78.2	0.274
25	0.00	31	10.6	20.51	10.25	0.0	1.06	0.281	80.5	0.282
26	0.00	33	10.7	22.39	9.79	20.5	1.22	0.285	81.7	0.286
27	0.00	32	10.6	21.78	9.72	19.5	1.48	0.276	79.0	0.277
28	0.00	32	10.5	21.18	9.61	19.4	0.99	0.276	79.0	0.277
29	0.00	30	10.5	20.24	9.51	0.0	1.00	0.274	78.5	0.275
30	0.00	30	10.4	20.24	9.58	0.0	1.19	0.274	78.5	0.275
31	0.00	31	10.5	21.03	9.23	0.0	1.12	0.274	78.5	0.275
32	0.00	31	10.6	20.88	9.62	0.0	1.28	0.288	82.6	0.289
33	0.00	32	10.7	21.44	9.87	0.0	0.84	0.290	83.0	0.291
34	0.00	31	10.6	20.51	9.53	0.0	1.07	0.286	81.8	0.286
35	0.00	34	10.7	22.52	9.45	0.0	0.78	0.291	83.4	0.292
	Average	32	10.7	21.41	10.98	20.1	1.24	0.288	82.9	0.290

Total number of blows analyzed: 35

Time Summary

Drive 1 minute 54 seconds 6:42:33 PM - 6:44:27 PM (7/25/2007) BN 1 - 35

MACTEC

engineering and constructing a better tomorrow

September 10, 2007

Memorandum to File DCN STP425
From: Steve Kiser SL 9-10-07
Reviewed By: Kathryn White KAW 9/17/07

Subject: **Report of SPT Energy – Jedi Drilling CME 75 Truck Rig (Serial No. 165447) Automatic Hammer**
WORK INSTRUCTION DCN STP425
South Texas Project (STP) COL Site
Wadsworth, Texas
MACTEC Project No. 6234-07-4257

Kyle Miller, of MACTEC Engineering and Consulting, Inc. (MACTEC), performed energy measurements on the drill rig at the subject site per the referenced Work Instruction. This memorandum summarizes the field testing activities and presents the results of the energy measurements.

SPT Energy Field Measurements

SPT energy measurements were made on August 6, 2007, during drilling of Boring B-445 at the referenced site. The testing was performed from approximately 4:10 to 5:05 PM under sunny skies and a temperature of about 95 degrees Fahrenheit. The boring was drilled with personnel and equipment from Jedi Drilling. The drilling equipment consisted of a CME 75 model truck-mounted drill rig with an SPT automatic hammer. The drilling tools consisted of NW-J-sized drilling rods and a 2-foot long split tube sampler. Mud rotary drilling techniques were used to advance the boring below the depth at which groundwater was encountered at the time of energy testing. The drill rig operator during sampling was Mr. Oscar Garcia. Energy measurements were recorded during sampling at the depth intervals shown in Table 1.

The energy measurements were performed with a Pile Driving Analyzer (PDA) model PAK (Serial No. 1430), and calibrated accelerometers (Serial Nos. P5992 and P5094) and strain gages (Serial Nos. NW #146/1 and NW#146/2). An NW-sized steel drill rod, 2 feet long and instrumented with dedicated strain gages, was inserted at the top of the drill rod string immediately below the SPT hammer. The inserted rod was also instrumented with two piezoresistive accelerometers that were bolted to the outside of the rod. The instrumented rod insert had a cross-sectional area of approximately 1.49 square inches and an outside diameter of approximately 2.625 inches at the gage location. The drill rods included in the drill rod string were hollow rods in 5 to 10 foot long sections, with an outside and inside diameter of approximately 2.625 and 2.25 inches, respectively. The recommended operation rate of the hammer is not known. Due to the closed hammer system, the hammer lubrication condition and anvil dimensions could not be observed.

Calibration Records

The calibration records for all the above are filed in DCN STP850.

DCN: STP325
12 Pages Total

Calculations for EFV

The work was done in general accordance with ASTM D 4633-05. The strain and acceleration signals were converted to force and velocity by the PDA, and the data was interpreted by the PDA according to the Case Method equation. The maximum energy transmitted to the drill rod string (as measured at the location of the strain gages and accelerometers) was calculated by the PDA using the EFV method equation, as shown below:

$$EFV = \int F(t) * V(t) * dt$$

Where: EFV = Transferred energy (EFV equation), or Energy of FV
F(t) = Calculated force at time t
V(t) = Calculated velocity at time t

The EFV method of energy calculation is recommended in ASTM Standard D4633-05. The EFV equation, integrated over the complete wave event, measures the total energy content of the event using both force and velocity measurements. The EFV values associated with each blow analyzed are tabulated in the attached PDIPLOT tables and are also shown graphically in the PDIPLOT charts.

Calculations for ETR

The ratio of the measured transferred energy (EFV) to the theoretical potential energy of the SPT system (140 lb weight with the specified 30 inch fall) is the ETR. The ETR values (as percent of the theoretical value) are shown in Table 1.

Comparison of ETR to Typical Energy Transfer Ratio Range

Based on a research report published by the Florida Department of Transportation (FDOT) (Report WPI No. 0510859, 1999), the average ETR measured for automatic hammers is 79.6%. The standard deviation was 7.9%; therefore, the range of ETRs within one standard deviation of the average was reported to be 71.7% to 87.5%. This range of ETRs was also consistent with other research that was cited in the FDOT research paper. The ETR values shown in Table 1 are generally within the range of typical values for automatic hammers as reported in the literature.

Discussion

Based on the field testing results, observations from the SPT energy measurements are summarized below:

- The data obtained by the PDA are consistent between individual hammer blows and between the sample depths tested. In general, the first and last one (and sometimes two) hammer blow records recorded by the PDA produced poor quality data (which is relatively common) and, as such, the record(s) was(were) not used in the data reduction.

- The average energy transferred from the hammer to the drill rods for each individual depth interval using the EFV method ranged from 263 foot-pounds to 276 foot-pounds. These average energy transfers correspond to energy transfer

ratios (ETR) of 75% to 79% of the theoretical energy (350 foot-pounds) of the SPT hammer.

- The average at each depth interval was calculated as the transferred energy for each analyzed blow of the depth intervals divided by the total number of hammer blows analyzed. The overall average energy transfer of the SPT system (for all the depth intervals tested) was 272.2 foot-pounds, with an average ETR of 77.8%.

Attachments: Page 4 Table 1 - Summary of SPT Energy Measurements – 1 Page
Page 5 Work Instructions – SPT Energy – 1 Page
Page 6 Record of SPT Energy Measurement – 1 Page
Pages 7-12 PDIPLOT Output – 6 Pages

TABLE 1
SUMMARY OF SPT ENERGY MEASUREMENTS (ASTM D4633-05)
South Texas Project (STP) COL Site
Wadsworth, Texas
MACTEC Project No. 6234-07-4257

Rig Serial No.	Rig Owner	Rig Operator	Boring No. Tested	Date Tested	Sample Depth (feet)	SPT Blow Count (blows per six inches)	No. of Blows Analyzed	Average Measured Energy (Average EFV) (ft-lbs)[a]	Energy Transfer Ratio (%)[b] (Average ETR)
165447 (CME 75 Truck)	Jedi Drilling	Oscar Garcia	B-445	8/6/2007	18.5 - 20.0	3 - 4 - 7	14	263	75.1%
					23.5 - 25.0	2 - 1 - 3	6	273	78.0%
					28.5 - 30.0	12 - 12 - 7	32	276	78.9%
							Average for Rig:	**272.2**	**77.8%**

[a]Measured Energy is energy based on the EFV method, as outlined in ASTM D4633-05, for each blow recorded by the PDA. In some cases, the initial and final one to two blows produced poor quality data, and were not used to calculate the Average Measured Energy.
EFV = EMX * 1000 lbs/kip, where EMX equals the maximum transferred energy measured by the PDA (see attached PDA data).
[b]Energy Transfer Ratio is the Measured Energy divided by the theoretical SPT energy of 350 foot-pounds (140 pound hammer falling 2.5 feet). The average ETR values may differ slightly and insignificantly from those in the PDIPLOT tables due to roundoff.

Prepared By: [signature] Date: 9-10-07	Checked By: [signature] Date: 9/17/07

Work Instructions – SPT Energy JEDI CME-75 (Garcia) (Hammer and Rig Number 165447)
STP COL Project
Project No. 6234074257

mfc 8/6/07

Issued To: Steve Kiser / Kyle Miller

Location: STP COL Project Field Office Date: 7/25/07

Issued By: Matthew F. Cooke, Site Coordinator

Valid From: 7/25/07 To: 7/25/07

Task Description: Measurement of energy transferred to the drill string rods from a Standard Penetration Test (SPT) automatic hammer mounted on a drill rig. Testing will be performed using a Pile Driving Analyzer (PDA) model PAK at various depth intervals below a depth of approximately 10 feet below the ground surface for the above referenced rig drilling SPT borings at the STP COL Site.

Applicable Technical Procedures or Plans, or other reference: ASTM D4633-05 Standard Test Method for Energy Measurement for Dynamic Penetrometers.

Specific Instructions (note attachments where necessary): Obtain energy measurements with the PDA at various depth intervals below a depth of about 10 feet below the ground surface in general accordance with ASTM D4633-05. Perform energy measurement testing for the above referenced drill rig.

Report Format: Written report documenting results of field testing in general accordance with ASTM D4633-05, to include completed Summary of Daily Observations and Testing, Record of SPT Energy Measurement sheet(s), and PDIPLOT output data.

Specific Quality Assurance Procedures Applicable: None

Hold Points or Witness Points: None

Records: All records generated shall be considered QA Records.

Reviewed and Approved By (Note: Only One Signature is Required to Issue):

Project Manager: Date:

Project Principal: Date:

Site Coordinator: Date: 7/25/07

No. of Pages: 1 DCN: STP425

MACTEC

2801 YORKMONT ROAD, SUITE 100 □ CHARLOTTE, NC 28208
Telephone: (704) 357-8600 / Facsimile: (704) 357-8638

RECORD OF SPT ENERGY MEASUREMENT

GENERAL INFORMATION		DRILL RIG DATA	
PROJECT:	South Texas Project	MAKE:	CME-75
LOCATION:	Wadsworth, Texas	MODEL:	CME-75
PROJECT NO.:	6234-07-4257	SERIAL NO.:	165447
DATE:	8/6/2007	HAMMER TYPE:	Automatic
WEATHER:	SUNNY ~95°F	ROPE CONDITION:	N/A
INSPECTOR: mfc 8/6	~~Steve Kiser~~ Kyle Miller	ROD SIZE:	NWJ
DRILLING COMPANY:	JEDI	NO. OF SHEAVES:	N/A

BORING DATA			
BORING NUMBER:	B-445		
DEPTH DRILLED:	~~18.5 ft~~ 18.5ft to 30.0ft		
TIME DRIVEN:	~~3:44 PM~~ ~2 hours		
RIG OPERATOR:	Oscar Garcia		
HAMMER OPERATOR:	Automatic		
PDA PAK SERIAL NO.:	1430	1430	1430
INSTR. ROD AREA:	1.49 IN^2		
ACCEL. SERIAL NOS.:	5094 / 5992		
STRAIN SERIAL NOS.:	146 NW1 146 NW2		

SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)	DEPTH cont. (feet)	SPT N-VALUE (bpf)	SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)	DEPTH cont. (feet)	SPT N-VALUE (bpf)	SAMPLE DEPTH (feet)	SPT N-VALUE (bpf)	DEPTH cont. (feet)	SPT N-VALUE (bpf)
18.5	3-4-7										
23.5	2-1-3										
28.5	12-12-7										

REMARKS:

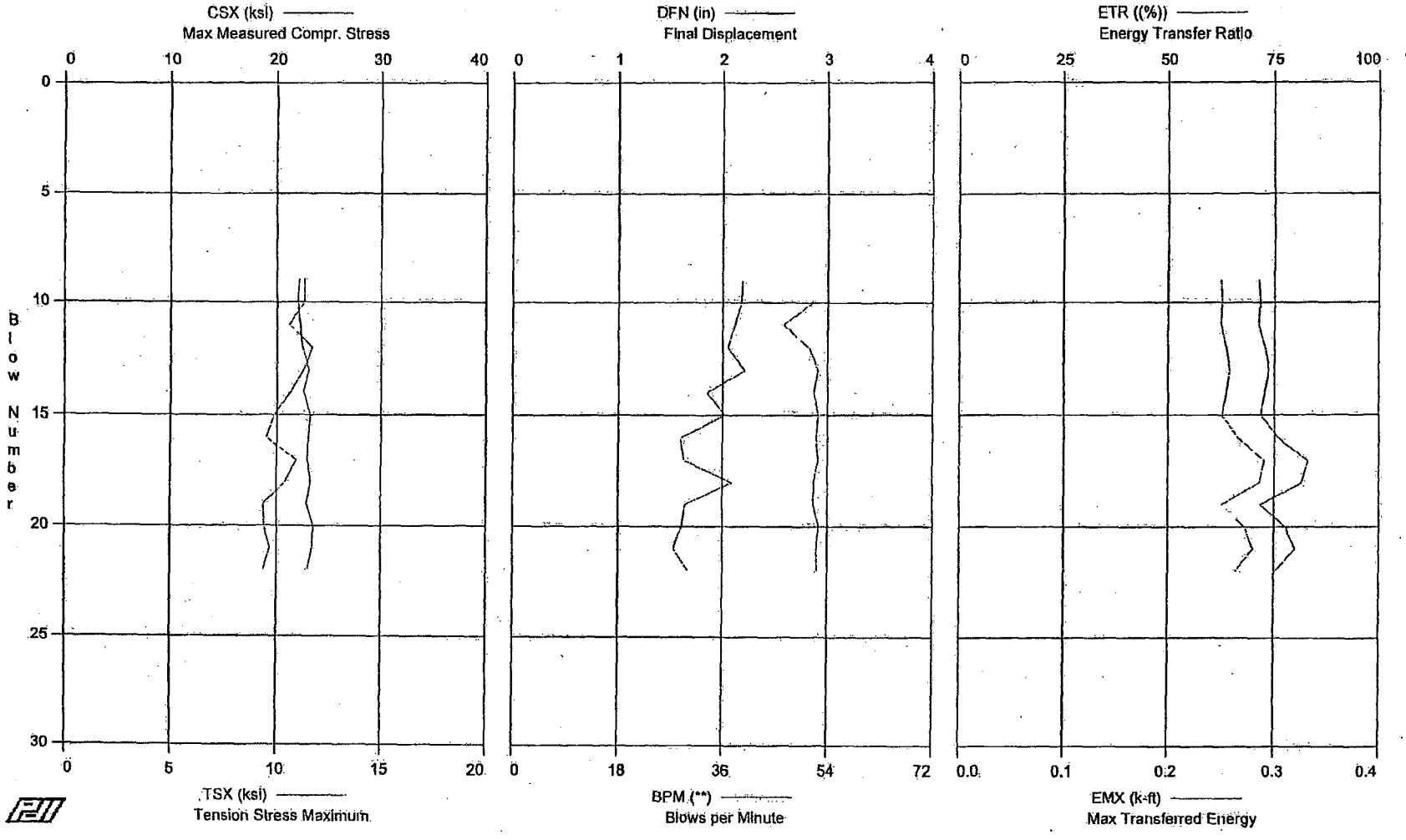
NONE	NONE	NONE

PDIPLOT Ver. 2005.2 - Printed: 4-Sep-2007

MACTEC Engineering and Consulting, Inc. - Case Method Results

Test date: 6-Aug-2007

STP COL Project - Boring B-445; 18.5' - 20' Sample



MACTEC Engineering and Consulting, Inc.
Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 4-Sep-2007

STP COL Project - Boring B-445; 18.5' - 20' Sample
OP: K. Miller

Rig Serial No. 165447 (Jedi CME 75 Truck)
Test date: 6-Aug-2007

AR: 1.49 in^2
LE: 25.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft3
EM: 30,000.0 ksi
JC: 0.60

FMX: Maximum Force
VMX: Maximum Velocity
CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
BPM: Blows per Minute

DFN: Final Displacement
E2E: Energy of FV at 2L/c
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	FMX kips	VMX f/s	CSX ksi	TSX ksi	BPM **	DFN in	E2E k-ft	ETR (%)	EMX k-ft
9	0.00	33	11.5	22.14	11.32	0.0	2.19	0.248	71.4	0.250
10	0.00	33	11.8	21.96	11.32	51.4	2.18	0.246	71.7	0.251
11	0.00	33	11.3	22.20	10.58	46.4	2.12	0.247	71.3	0.250
12	0.00	33	11.5	22.41	11.68	50.8	2.05	0.254	72.9	0.255
13	0.00	34	11.7	23.08	11.29	52.4	2.21	0.256	73.8	0.258
14	0.00	34	11.6	22.53	10.64	51.5	1.85	0.253	72.7	0.255
15	0.00	35	11.4	23.22	9.89	52.4	2.02	0.249	71.8	0.251
16	0.00	34	11.5	23.00	9.51	52.0	1.59	0.264	75.9	0.266
17	0.00	34	11.6	22.95	10.93	52.4	1.63	0.273	83.0	0.291
18	0.00	35	11.9	23.28	10.41	51.6	2.09	0.269	81.6	0.286
19	0.00	34	11.2	22.89	9.40	51.6	1.64	0.249	71.8	0.251
20	0.00	35	11.7	23.51	9.41	52.4	1.61	0.270	77.7	0.272
21	0.00	35	11.9	23.45	9.70	52.1	1.53	0.278	80.0	0.280
22	0.00	34	11.6	22.95	9.38	52.1	1.67	0.262	75.4	0.264
	Average	34	11.6	22.83	10.39	51.5	1.88	0.258	75.1	0.263

Total number of blows analyzed: 14

Time Summary

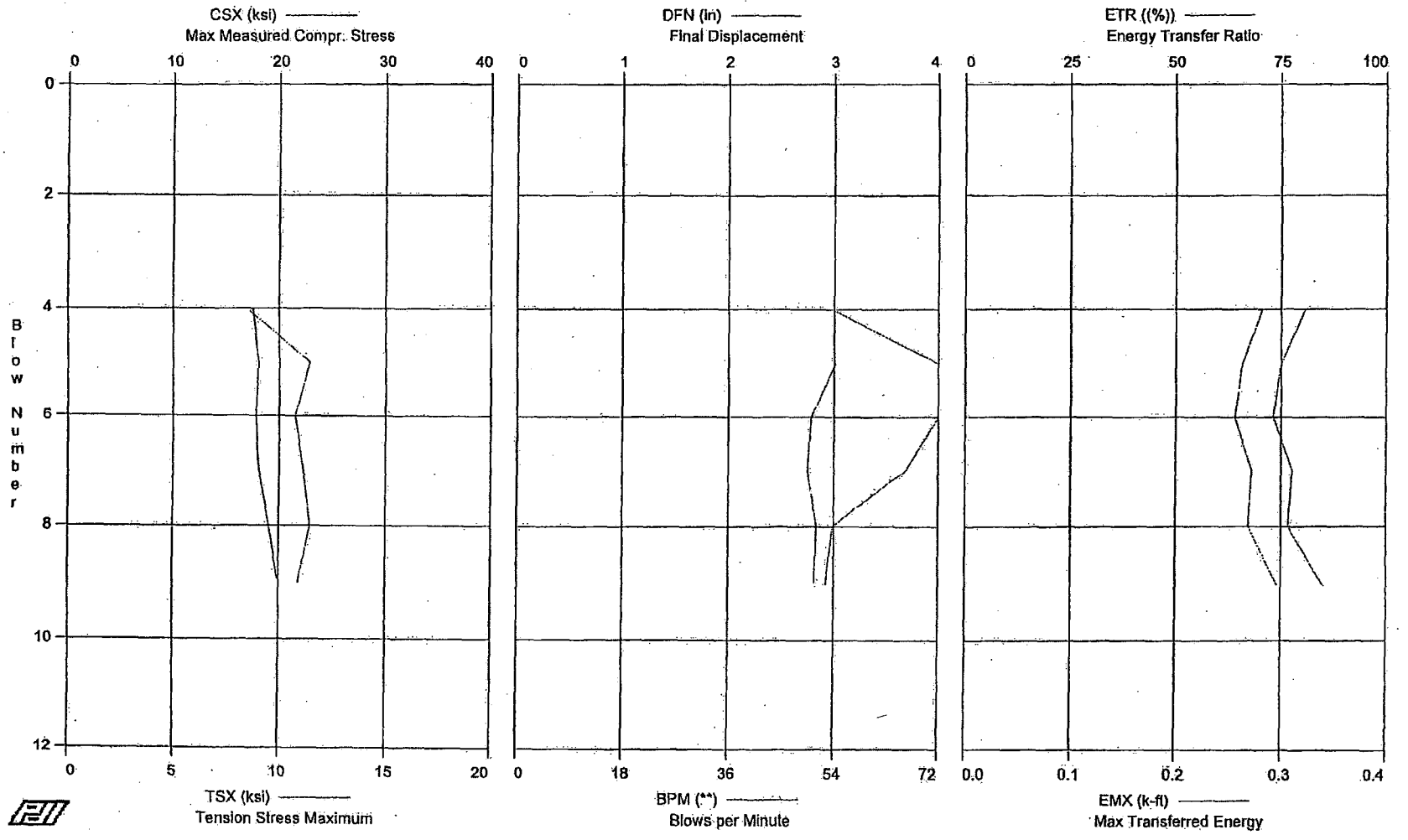
Drive 15 seconds 4:12:53 PM - 4:13:08 PM (8/6/2007) BN 9 - 22

MACTEC Engineering and Consulting, Inc. - Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 4-Sep-2007

Test date: 6-Aug-2007

STP COL Project - Boring B-445; 23.5' - 25' Sample



MACTEC Engineering and Consulting, Inc.
Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 4-Sep-2007

STP COL Project - Boring B-445; 23.5' - 25' Sample
OP: K. Miller

Rig Serial No. 165447 (Jedi CME 75 Truck)
Test date: 6-Aug-2007

AR: 1.49 in^2
LE: 29.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft3
EM: 30,000.0 ksi
JC: 0.60

FMX: Maximum Force
VMX: Maximum Velocity
CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
BPM: Blows per Minute

DFN: Final Displacement
E2E: Energy of FV at 2L/c
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	FMX kips	VMX f/s	CSX ksi	TSX ksi	BPM **	DFN in	E2E k-ft	ETR (%)	EMX k-ft
4	0.00	26	14.7	17.54	8.48	0.0	2.98	0.275	* 80.7	0.282
5	0.00	27	14.2	18.07	11.47	54.3	4.59	0.256	75.0	0.263
6	0.00	27	13.9	17.82	10.77	50.1	4.90	0.249	73.1	0.256
7	0.00	27	12.8	18.04	11.13	49.5	3.69	0.266	77.7	0.272
8	0.00	28	11.7	19.07	11.48	51.1	2.99	0.263	76.7	0.269
9	0.00	30	13.4	19.93	10.91	50.6	2.92	0.291	84.7	0.296
	Average	27	13.5	18.41	10.71	51.1	3.88	0.267	78.0	0.273

Total number of blows analyzed: 6

Time Summary

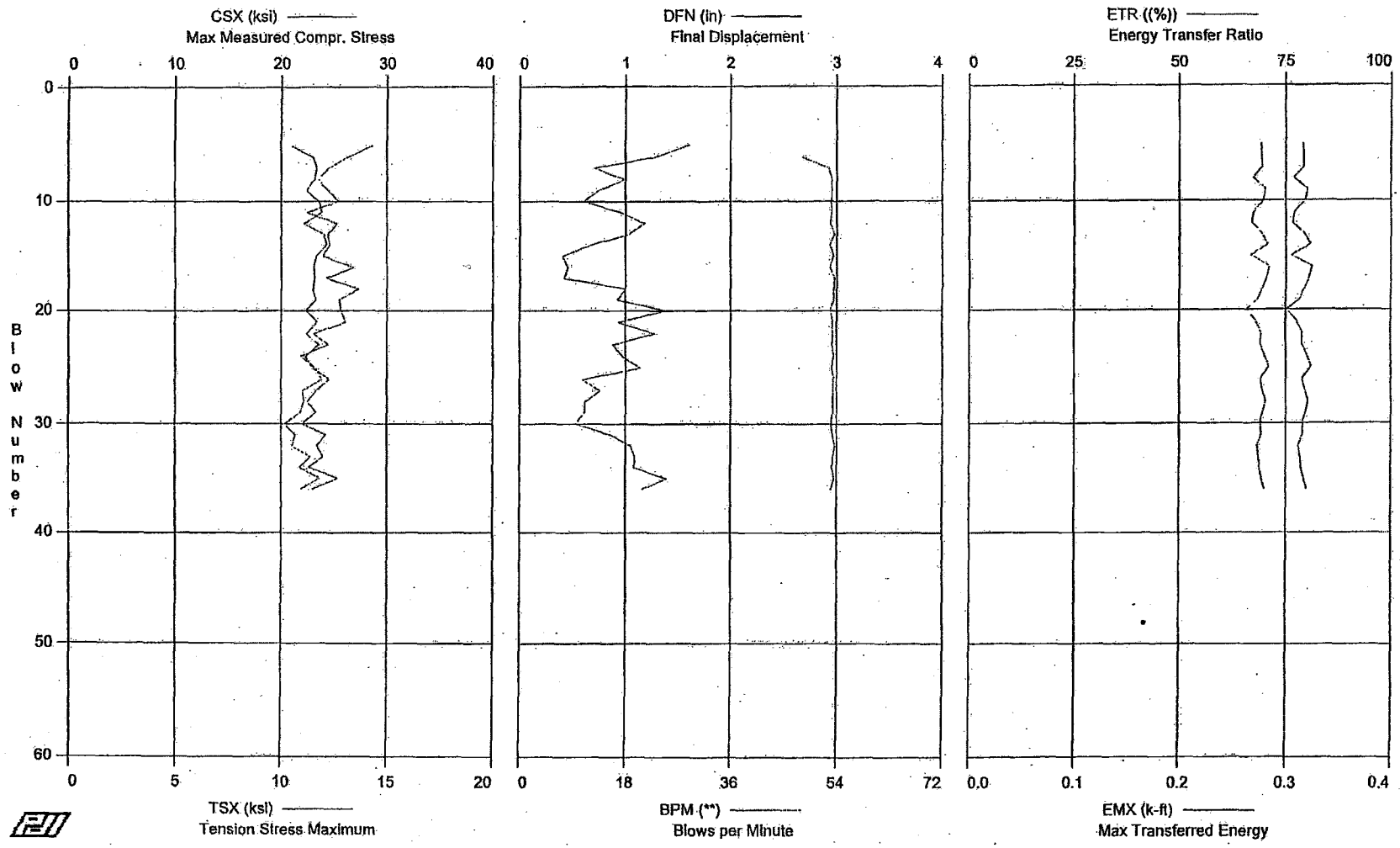
Drive 6 seconds 4:26:44 PM - 4:26:50 PM (8/6/2007) BN 4 - 9

MACTEC Engineering and Consulting, Inc. - Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 4-Sep-2007

Test date: 6-Aug-2007

STP COL Project - Boring B-445; 28.5' - 30' Sample



MACTEC Engineering and Consulting, Inc.
Case Method Results

PDIPLOT Ver. 2005.2 - Printed: 4-Sep-2007

STP COL Project - Boring B-445; 28.5' - 30' Sample
OP: K. Miller

Rig Serial No. 165447 (Jedi CME 75 Truck)
Test date: 6-Aug-2007

AR: 1.49 in^2
LE: 35.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft3
EM: 30,000.0 ksi
JC: 0.60

FMX: Maximum Force
VMX: Maximum Velocity
CSX: Max Measured Compr. Stress
TSX: Tension Stress Maximum
BPM: Blows per Minute

DFN: Final Displacement
E2E: Energy of FV at 2L/c
ETR: Energy Transfer Ratio
EMX: Max Transferred Energy

BL#	depth ft	FMX kips	VMX f/s	CSX ksi	TSX ksi	BPM **	DFN in	E2E k-ft	ETR (%)	EMX k-ft
5	0.00	31	12.1	21.06	14.30	0.0	1.61	0.276	79.2	0.277
6	0.00	34	11.6	23.04	13.13	48.2	1.28	0.276	79.2	0.277
7	0.00	35	11.5	23.37	12.27	52.6	0.71	0.277	79.3	0.278
8	0.00	34	11.3	23.15	11.76	53.1	0.99	0.268	76.8	0.269
9	0.00	33	11.5	22.44	12.23	53.2	0.75	0.280	80.3	0.281
10	0.00	35	11.8	23.63	12.75	53.1	0.60	0.277	79.6	0.279
11	0.00	36	11.3	23.85	11.21	53.2	0.96	0.269	77.1	0.270
12	0.00	33	10.7	22.18	12.65	52.9	1.18	0.267	76.6	0.268
13	0.00	36	11.5	24.03	12.21	53.6	1.02	0.277	79.3	0.277
14	0.00	36	11.7	24.34	12.33	52.9	0.67	0.282	80.9	0.283
15	0.00	35	11.2	23.35	11.98	53.5	0.40	0.266	76.3	0.267
16	0.00	34	10.7	23.12	13.43	52.8	0.46	0.282	81.1	0.284
17	0.00	35	10.4	23.18	12.14	53.6	0.42	0.281	80.5	0.282
18	0.00	34	10.6	22.98	13.68	53.5	1.01	0.276	79.4	0.278
19	0.00	35	10.6	23.33	12.76	53.6	0.92	0.273	78.3	0.274
20	0.00	33	10.3	22.38	12.84	52.9	1.39	0.262	75.2	0.263
21	0.00	35	10.5	23.43	13.05	53.3	0.94	0.270	77.6	0.272
22	0.00	33	10.8	22.42	11.54	53.4	1.28	0.274	79.0	0.277
23	0.00	35	10.3	23.59	12.25	53.2	0.88	0.275	78.9	0.276
24	0.00	33	10.9	22.32	10.93	53.5	0.97	0.278	80.0	0.280
25	0.00	34	11.3	22.95	11.63	53.1	1.14	0.282	81.1	0.284
26	0.00	37	10.6	24.57	11.93	53.5	0.59	0.275	78.9	0.276
27	0.00	35	10.7	23.32	11.02	53.4	0.76	0.277	79.5	0.278
28	0.00	33	11.0	22.48	11.07	53.3	0.61	0.279	80.2	0.281
29	0.00	35	11.3	23.28	10.91	53.3	0.61	0.277	79.6	0.278
30	0.00	33	11.2	21.98	10.16	53.1	0.53	0.274	79.0	0.276
31	0.00	36	11.0	24.24	10.67	53.3	0.87	0.275	79.0	0.277
32	0.00	35	11.4	23.36	10.51	53.7	1.05	0.271	78.0	0.273
33	0.00	36	11.0	23.95	11.38	53.3	1.09	0.272	78.3	0.274
34	0.00	34	11.5	22.67	10.88	53.2	1.09	0.274	78.7	0.275
35	0.00	38	11.4	25.38	11.84	53.6	1.40	0.275	79.2	0.277
36	0.00	34	11.8	23.01	10.93	53.0	1.16	0.278	79.9	0.280
	Average	35	11.1	23.20	11.95	53.1	0.92	0.275	78.9	0.276

Total number of blows analyzed: 32

Time Summary

Drive 35 seconds 5:03:48 PM - 5:04:23 PM (8/6/2007) BN 5 - 36

CPT Report

GREGG IN SITU, INC.

GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION SERVICES

August 6, 2007

MACTEC
Attn: Matt Cook
2801 Yorkmont Rd., Suite 100
Charlotte, North Carolina 28208

Subject: CPT Site Investigation
South Texas Project
Bay City, Texas
GREGG Project Number: 07-011SC

Dear Mr. Cook:

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	UVIF Cone Penetration Tests	(UVIFCPTU)	☐
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 (925) 313-5800.

Sincerely,
GREGG Drilling & Testing, Inc.

Peter Robertson
Technical Operations

1112 Pasture Lane • Columbia, South Carolina 29201 • (803) 253-7633 • FAX (803) 253-7634
OTHER OFFICES: LOS ANGELES • SAN FRANCISCO • HOUSTON
www.greggdrilling.com

Cone Penetration Test Sounding Summary

-Table 1-

CPT Sounding Identification	Date	Termination Depth (Feet)	Depth of Groundwater Samples (Feet)	Depth of Soil Samples (Feet)	Depth of Pore Pressure Dissipation Tests (Feet)
CPT-405s	7/23/07	75.3	-	-	75.3
CPT-940	7/21/07	50.0	-	-	-
CPT-941	7/20/07	50.0	-	-	-
CPT-942	7/20/07	50.0	-	-	-
CPT-943	7/20/07	50.0	-	-	-
CPT-944	7/23/07	74.1	-	-	-
CPT-945	7/20/07	50.0	-	-	-
CPT-946	7/20/07	50.0	-	-	-
CPT-947	7/19/07	50.0	-	-	-
CPT-948	7/21/07	37.6	-	-	-
CPT-948a	7/23/07	36.4	-	-	-
CPT-949	7/20/07	50.0	-	-	-

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 cm^2 and a friction sleeve area of 225 cm^2. 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.

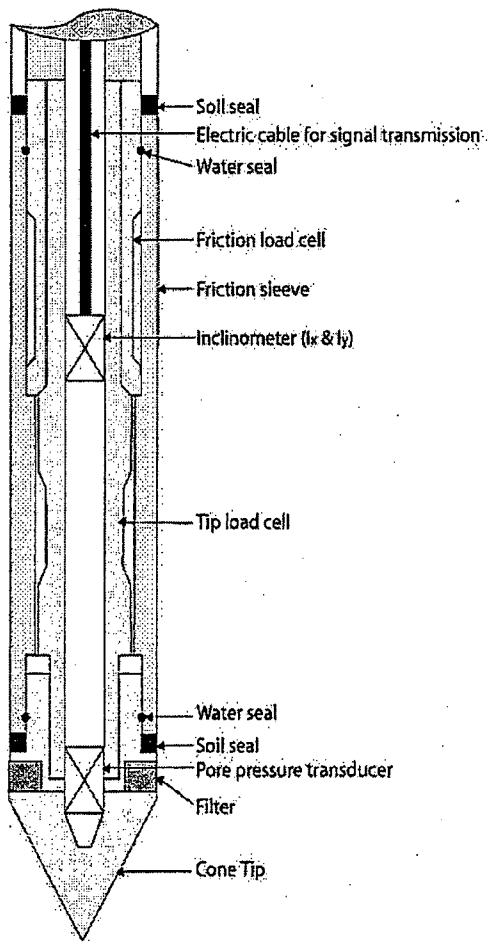


Figure CPT

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.

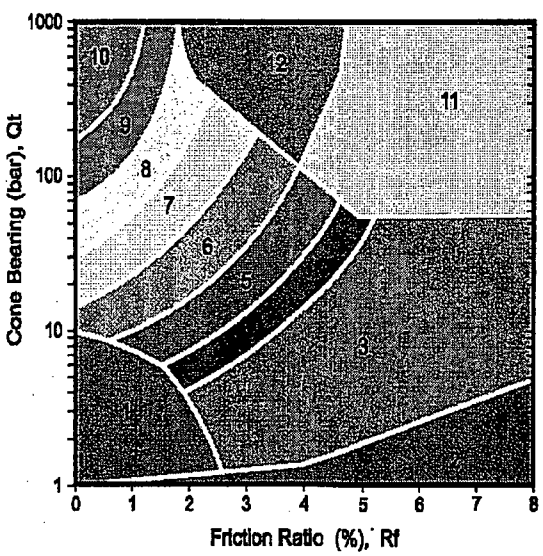
Cone Penetration Test Data & Interpretation

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 SBTn, upon request. The report also includes spreadsheet output of computer calculations of basic interpretation in terms of SBT and SBTn 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)

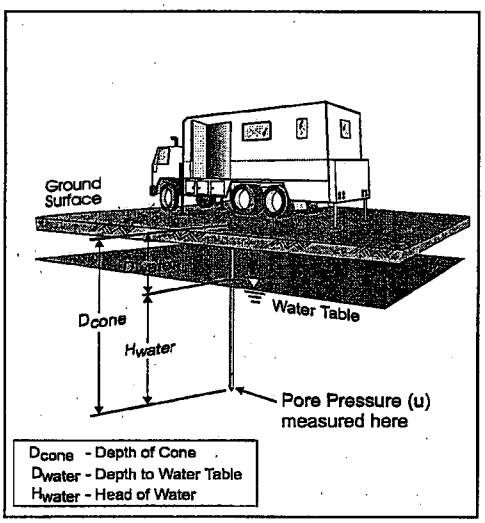
Pore Pressure Dissipation Tests (PPDT's) conducted at various intervals measured hydrostatic water pressures and determined the approximate depth of the ground water table. A PPDT is conducted when the cone is halted at specific intervals determined by the field representative. The variation of the penetration 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:

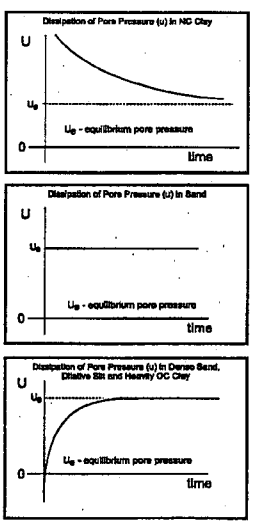
- Equilibrium piezometric pressure
- Phreatic Surface
- In situ horizontal coefficient of consolidation (c_h)
- In situ horizontal coefficient of permeability (k_h)

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.





Water Table Calculation

$$D_{water} = D_{cone} - H_{water}$$

where $H_{water} = U_e$ (depth units)

Useful Conversion Factors: 1psi = 0.704m = 2.31 feet (water)
1tsf = 0.958 bar = 13.9 psi
1m = 3.28 feet

Figure PPDT

Seismic Cone Penetrometer Testing
(SCPTu)

Gregg Drilling uses a modified CPT cone that contains a built in seismometer to measure compression and shear wave velocities in addition to the standard piezocone parameters (q_c, f_s, and u_2). Therefore, four independent readings are compiled with depth in a single sounding. The standard CPT parameters are recorded continuously while the seismic test is usually performed at 5-foot intervals.

Gregg generates shear waves by striking a seismic beam coupled to the ground surface by a hydraulic cylinder under the CPT rig, *Figure SCPTu*. Compression waves are generated by striking an auger in the ground. The sledgehammer that strikes the beam/auger acts as a trigger, initiating the recording of the seismic wave trace. Before measurements are taken, the rods are decoupled from the CPT rig to prevent energy transmission down the rods.

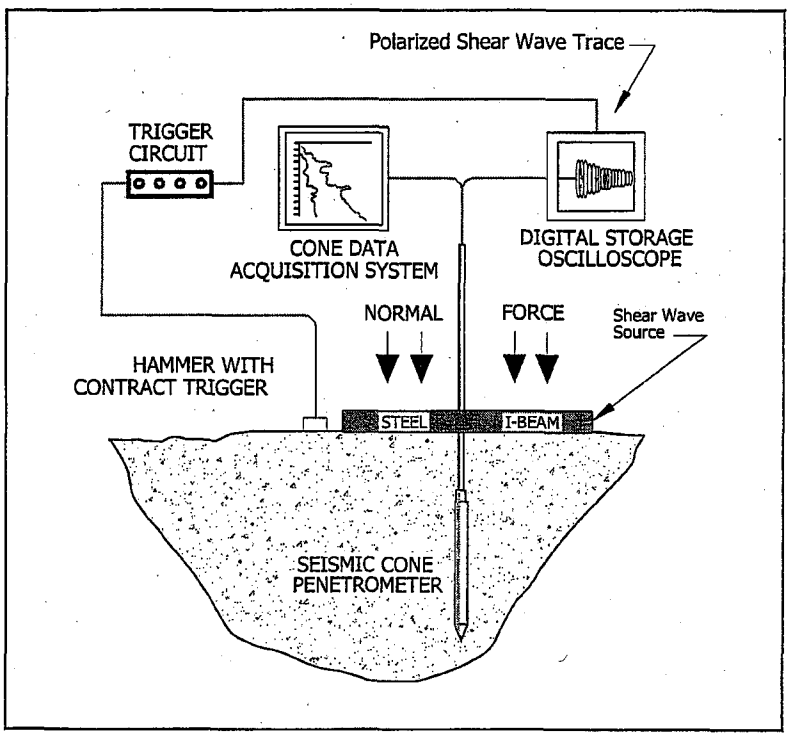


Figure SCPTu

Geophones in the body of the piezocone recognize the arriving waves generated at the ground surface, *Figure Seismic*. Any waves received by the geophones on the cone penetrometer are sent back up to the truck to be displayed on an oscilloscope. On site software then plots the wave amplitude versus time to calculate wave velocities.

At least two waves are recorded for each test depth so the operator can check consistency of the waveforms. Shear wave data is sampled at a frequency of 20 kHz (20,000 samples per second) and compression wave data is sampled at 50 kHz (50,000 samples per second). To maintain a desired signal resolution, the input sensitivity (gain) is increased with depth.

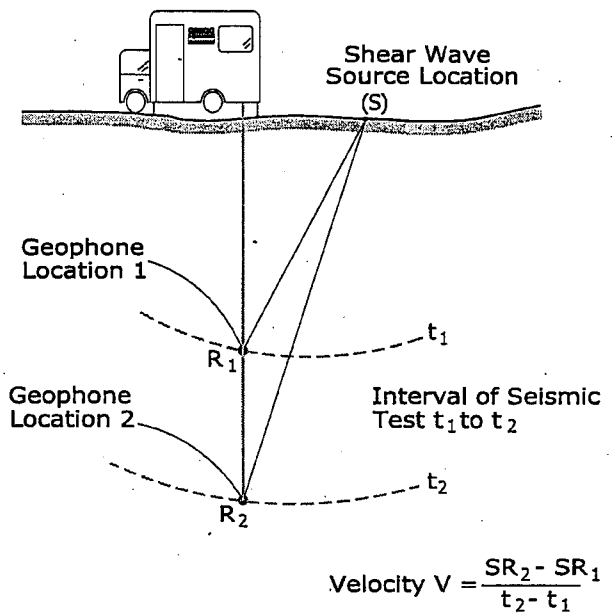


Figure Seismic

Offset distances of the beam from the cone and the location of the geophone are all taken into account in calculations.

The shear wave velocity (V_s) provides information about small-strain stiffness while the penetration data provides information about large-strain strength. From interval shear wave velocity (V_s) and the mass density (ρ) of a soil layer, the dynamic shear modulus (G_o) of the soil can be calculated in a specific depth interval. The dynamic shear modulus (G_0) is a key parameter for the analysis of soil behavior in response to dynamic loading from earthquakes, vibrating machine foundations, waves and wind.

A summary of the data collected including the depth and location identification is displayed in Table 1 and graphical formats and can be found with the corresponding CPT plot.

For a detailed reference on seismic CPT, refer to Robertson et. al., 1986.

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

GREGG MACTEC

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Sounding: C-405s

Engineer: M.COOK
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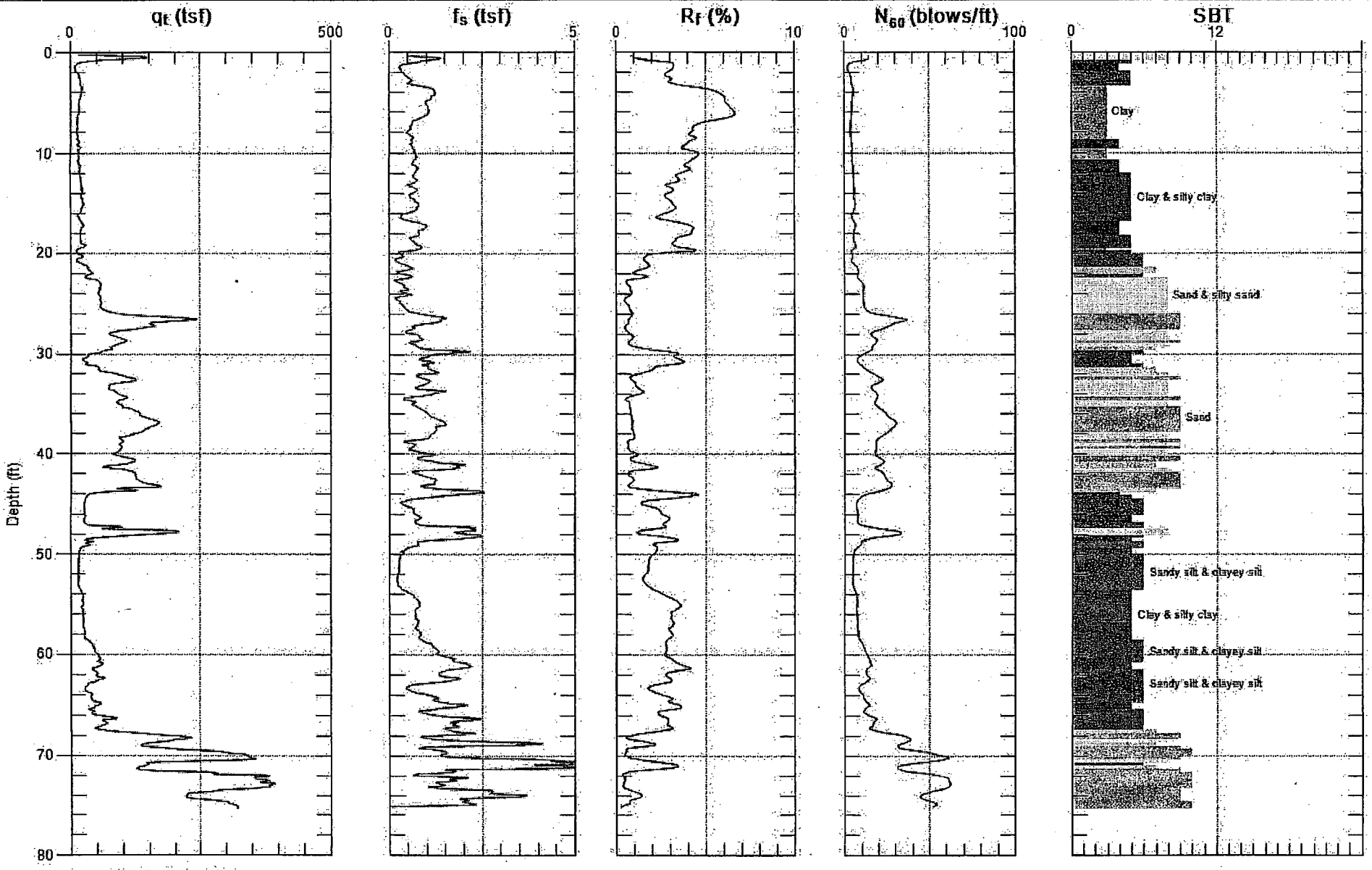

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Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

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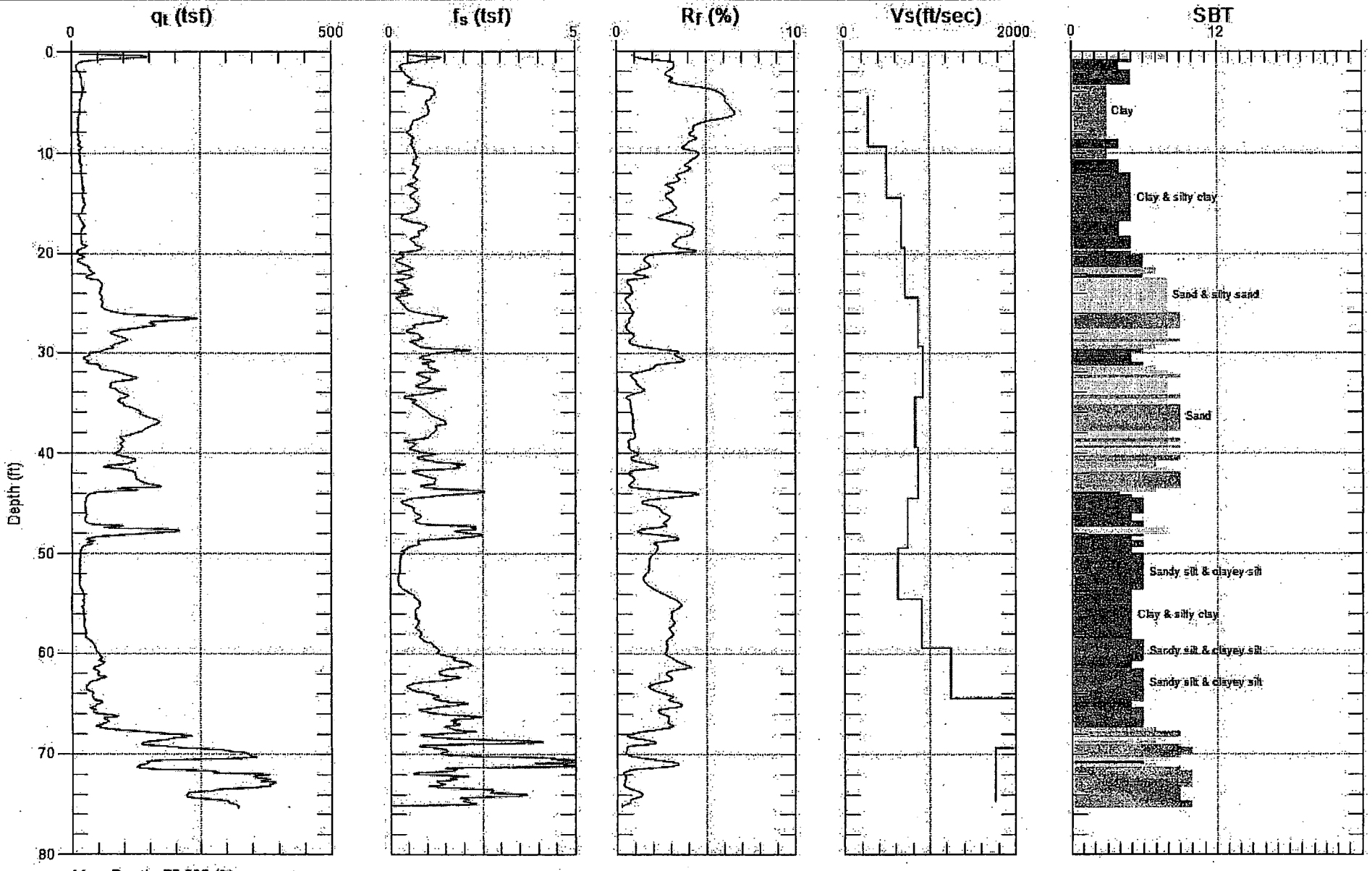
Sounding: C-405s

Engineer: M.COOK
Date: 7/23/2007 11:53



Max. Depth: 75.295 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

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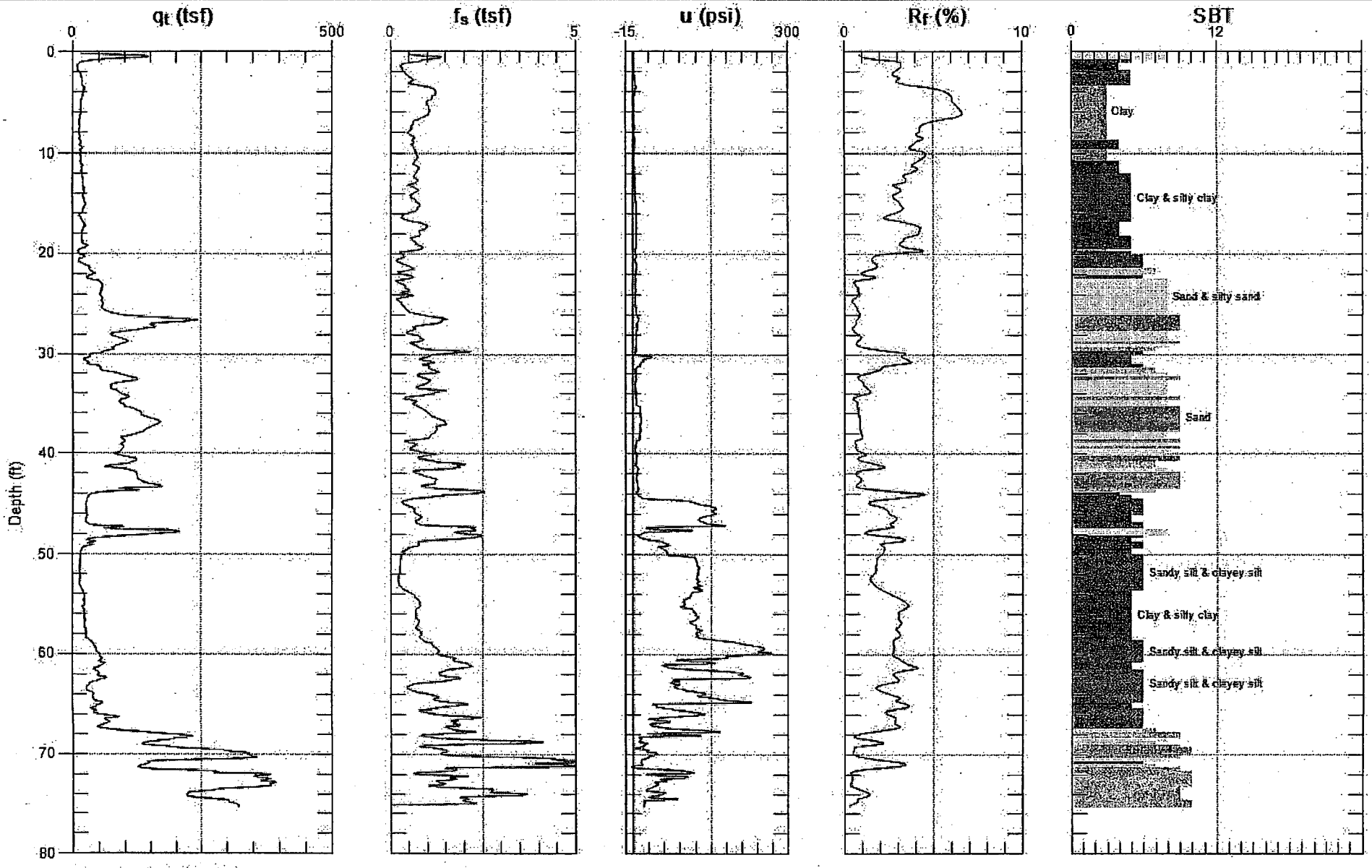
Sounding: C-405s

Engineer: M.COOK
Date: 7/23/2007 11:53



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SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

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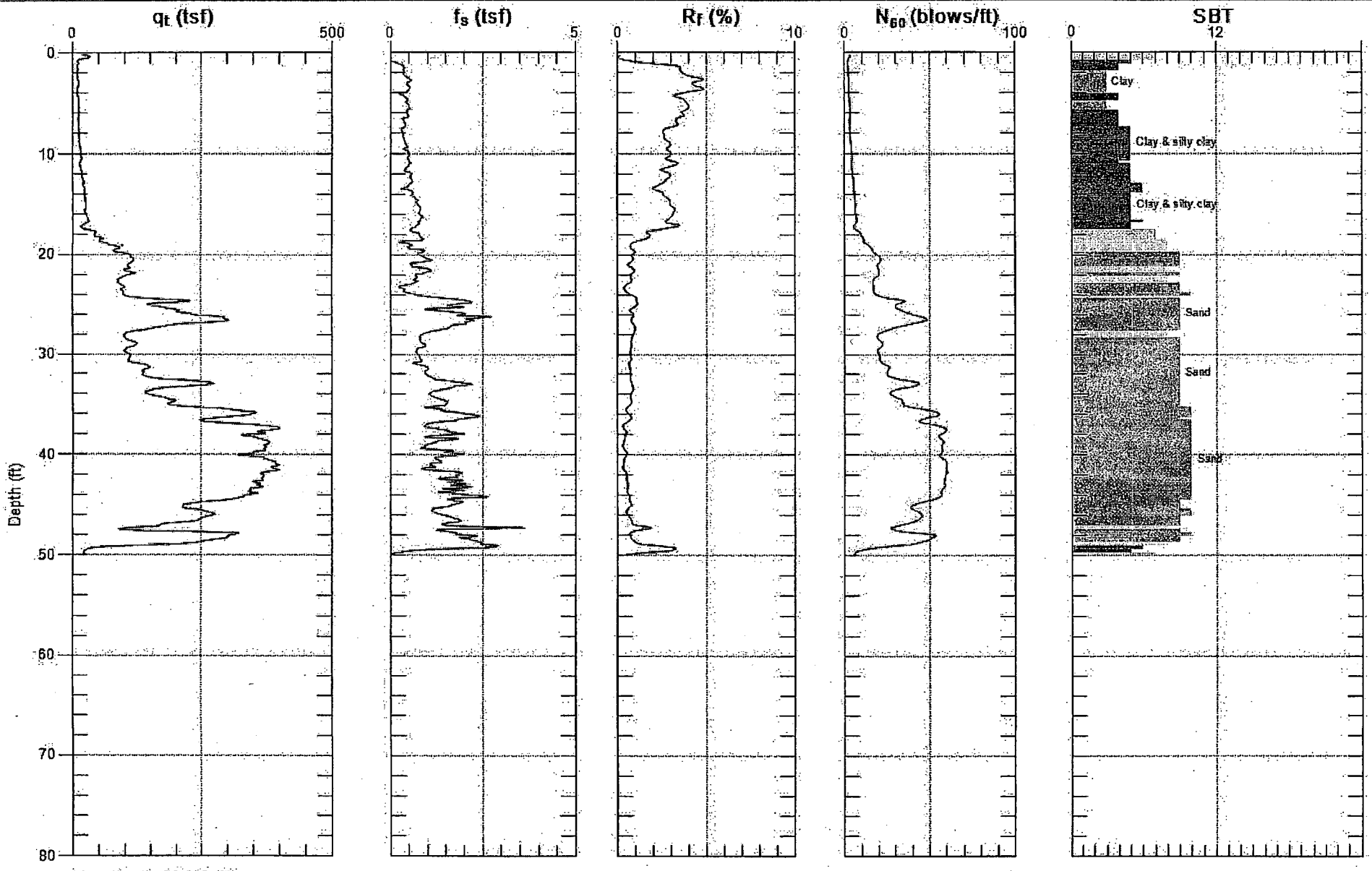

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SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

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Sounding: C-940

Engineer: M.COOK
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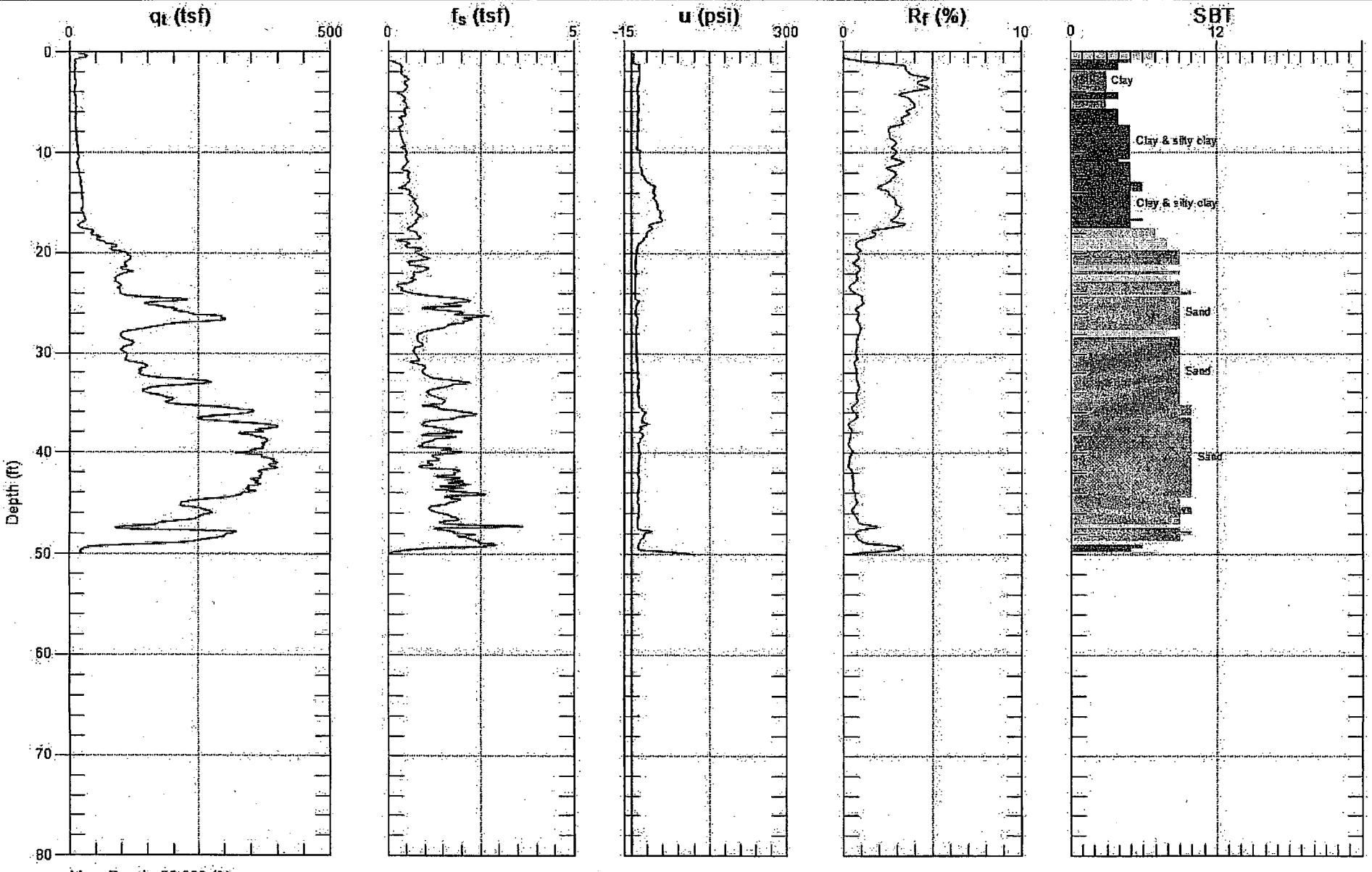

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SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

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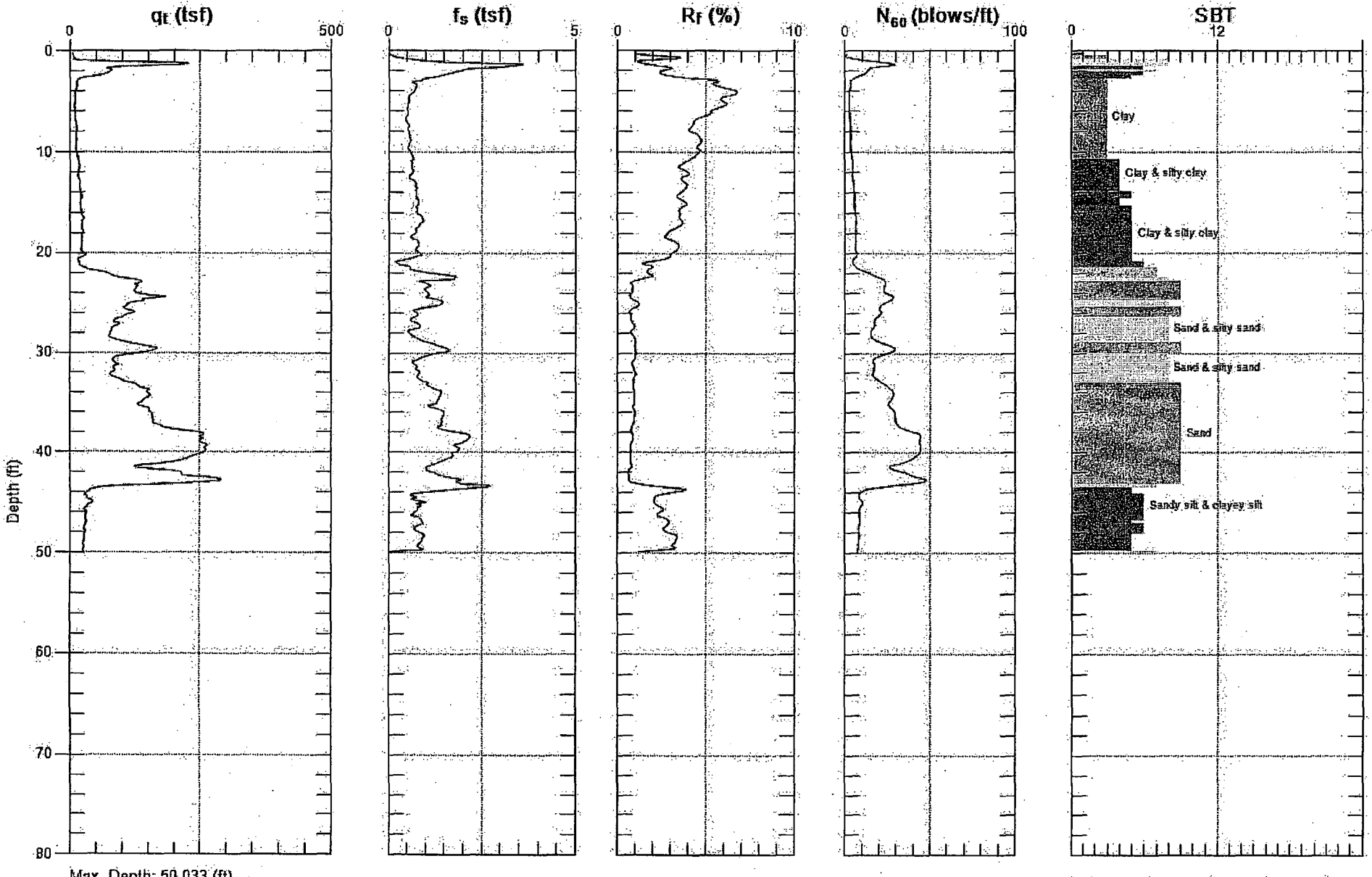

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SBT: Soil Behavior Type (Robertson 1990)

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MACTEC

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Sounding: C-941

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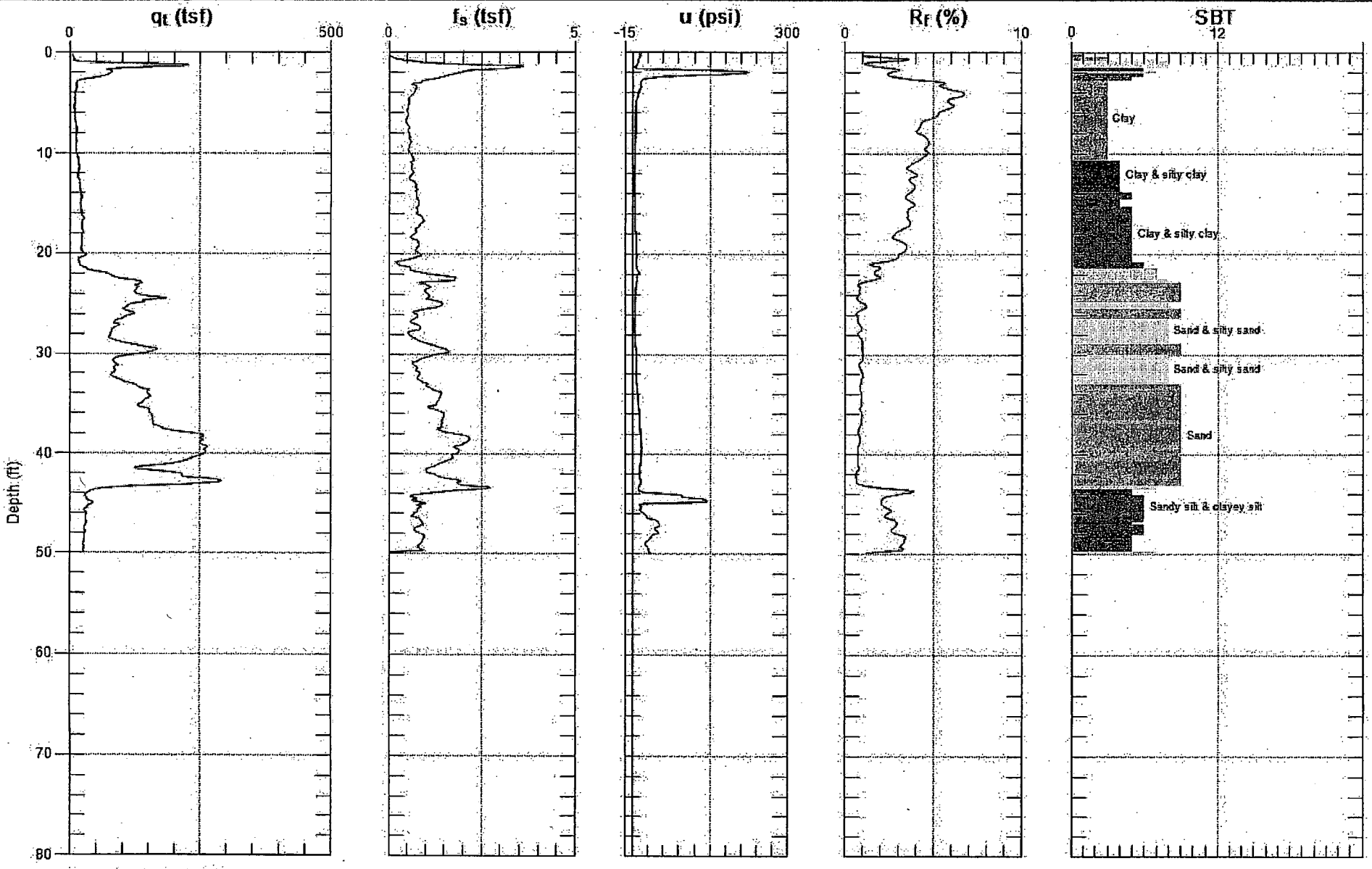

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SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

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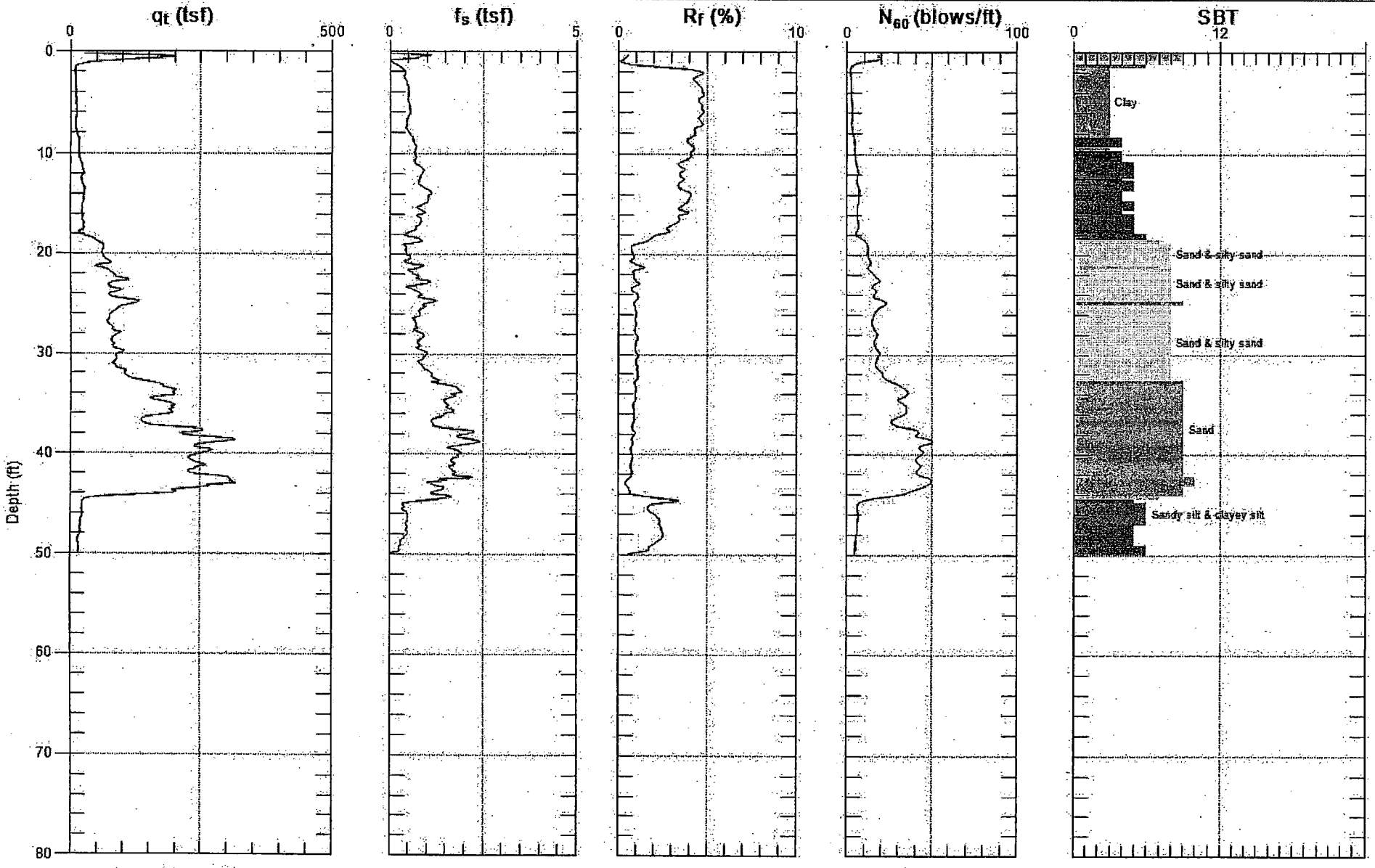
Sounding: C-942

Engineer: M.COOK
Date: 7/20/2007 01:41



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SBT: Soil Behavior Type (Robertson 1990)

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Engineer: M.COOK
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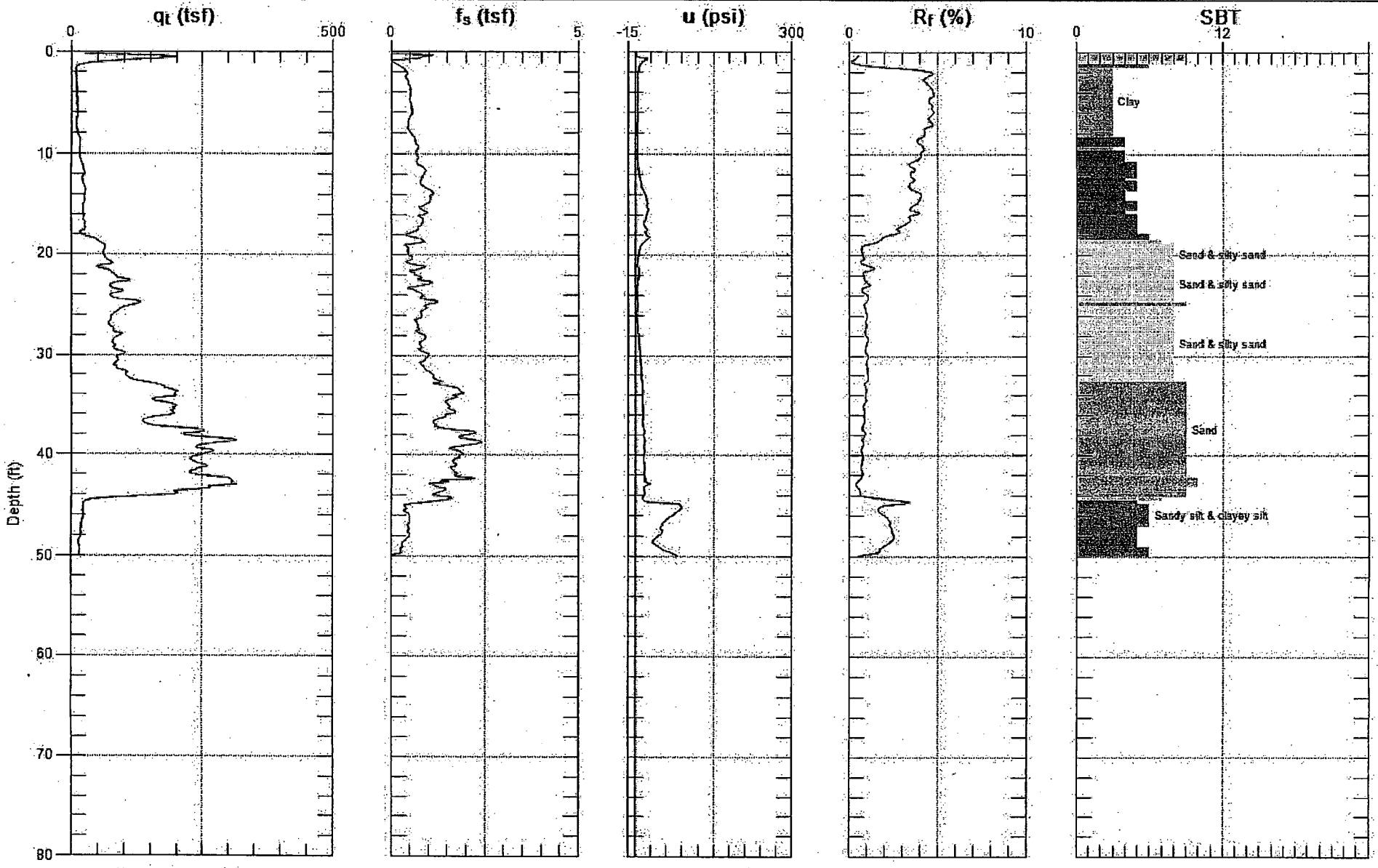

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SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

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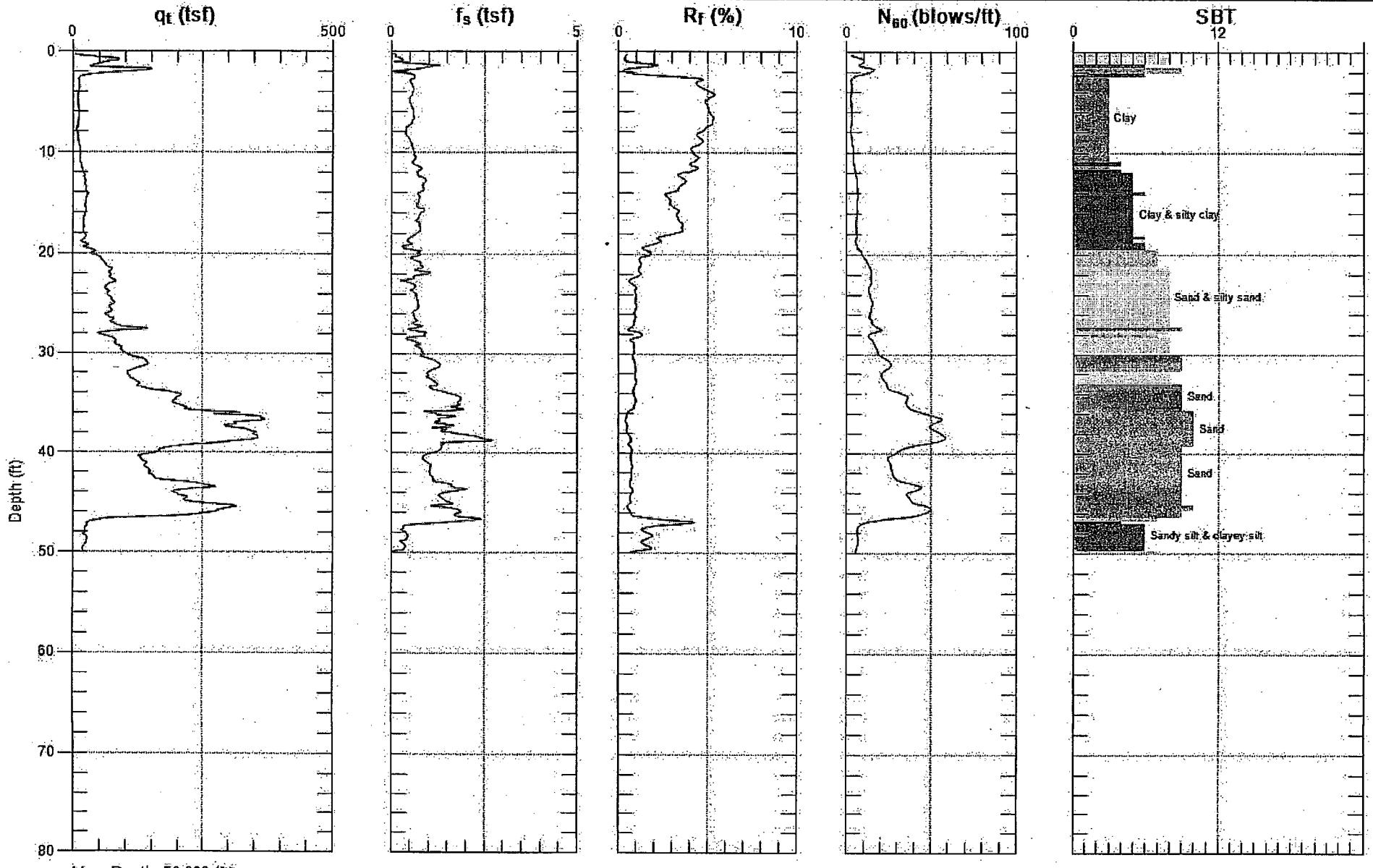
Sounding: C-943

Engineer: M.COOK
Date: 7/20/2007 11:02



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SBT: Soil Behavior Type (Robertson 1990)

GREGG

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Engineer: M.COOK
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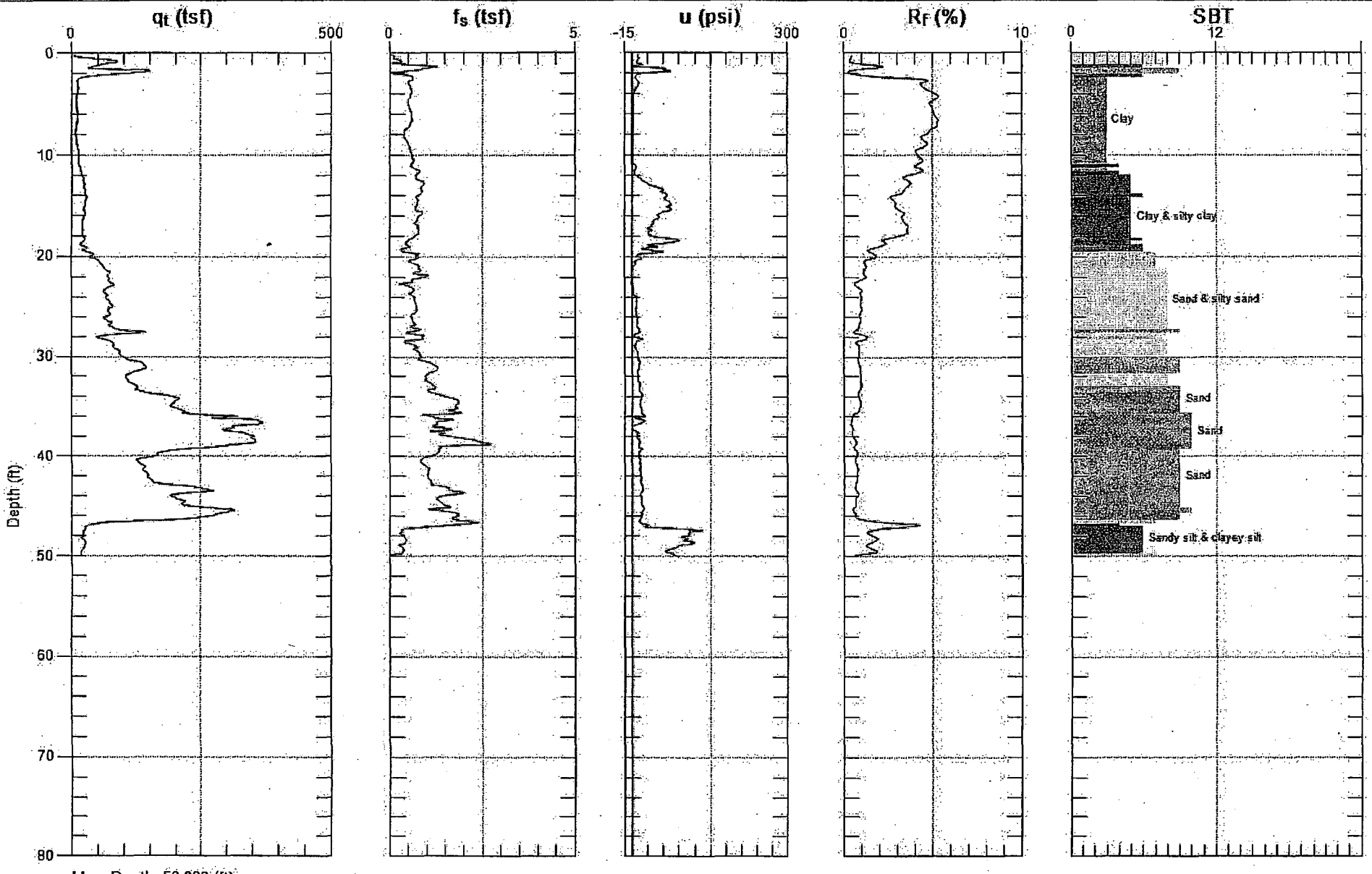

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SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

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Engineer: M.COOK
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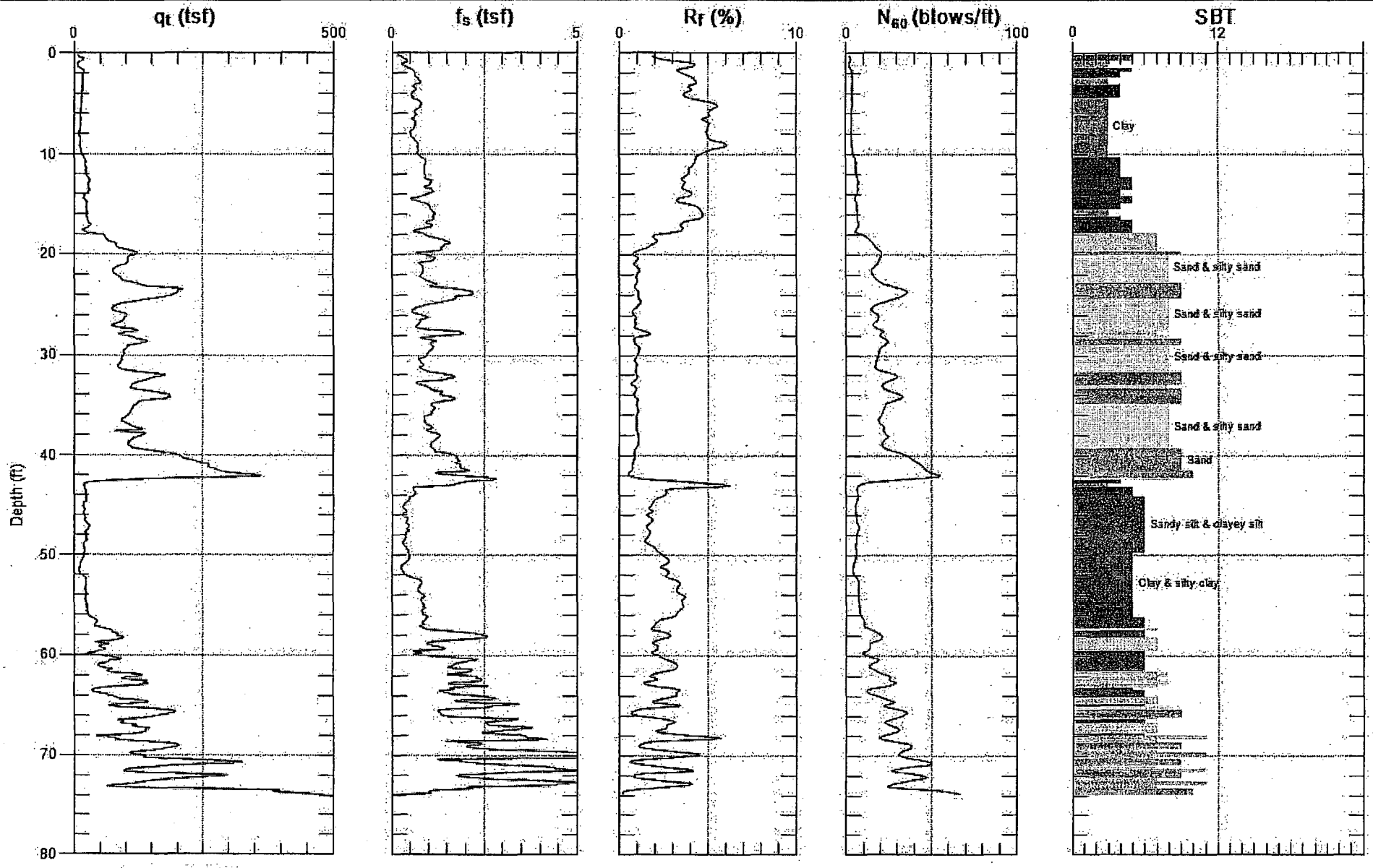


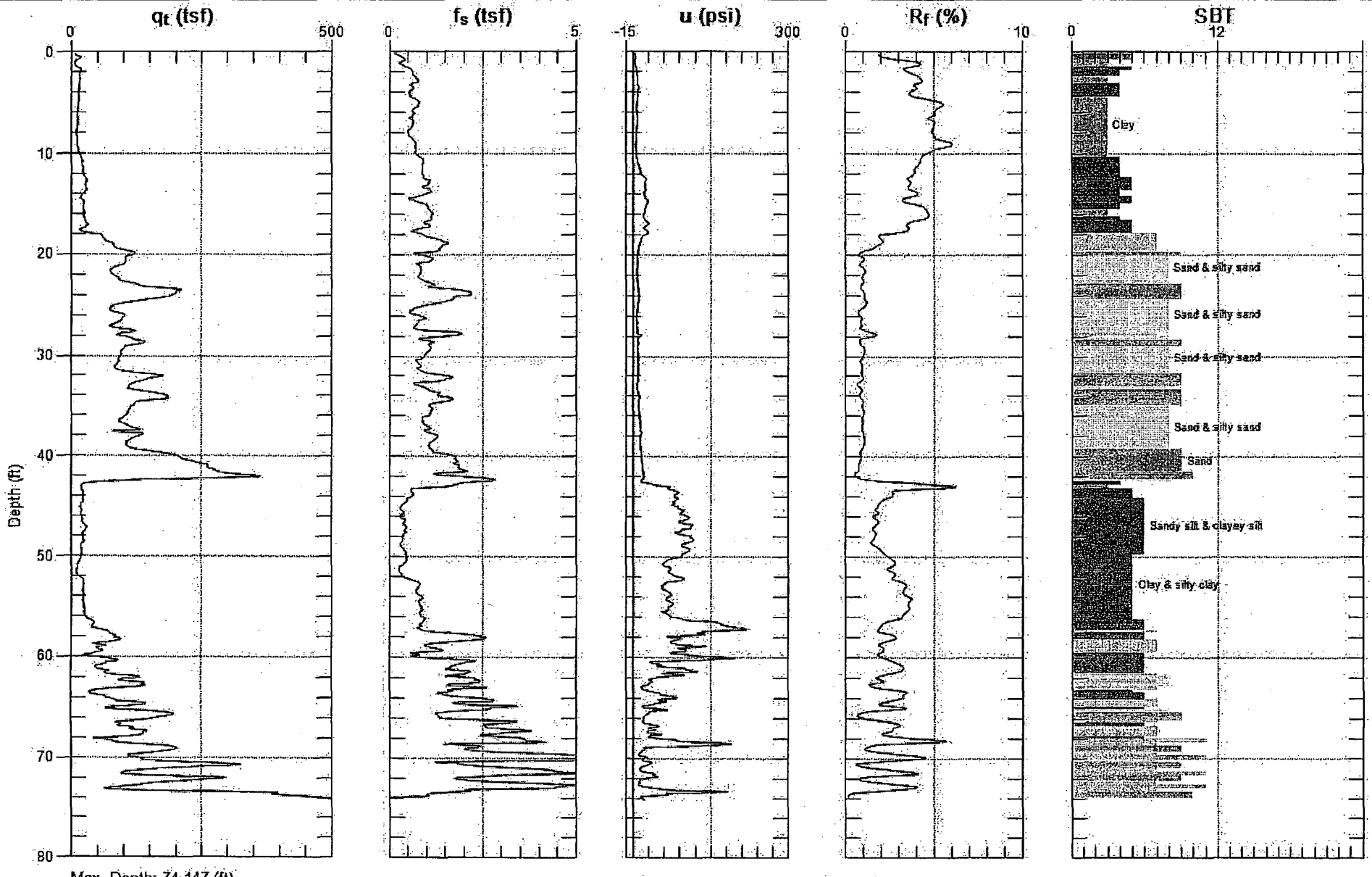
Max. Depth: 74.147 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

Site: SOUTH TEXAS PROJ. Engineer: M.COOK

Sounding: C-944 Date: 7/23/2007 10:04



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SBT: Soil Behavior Type (Robertson 1990)

GREGG

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Engineer: M.COOK
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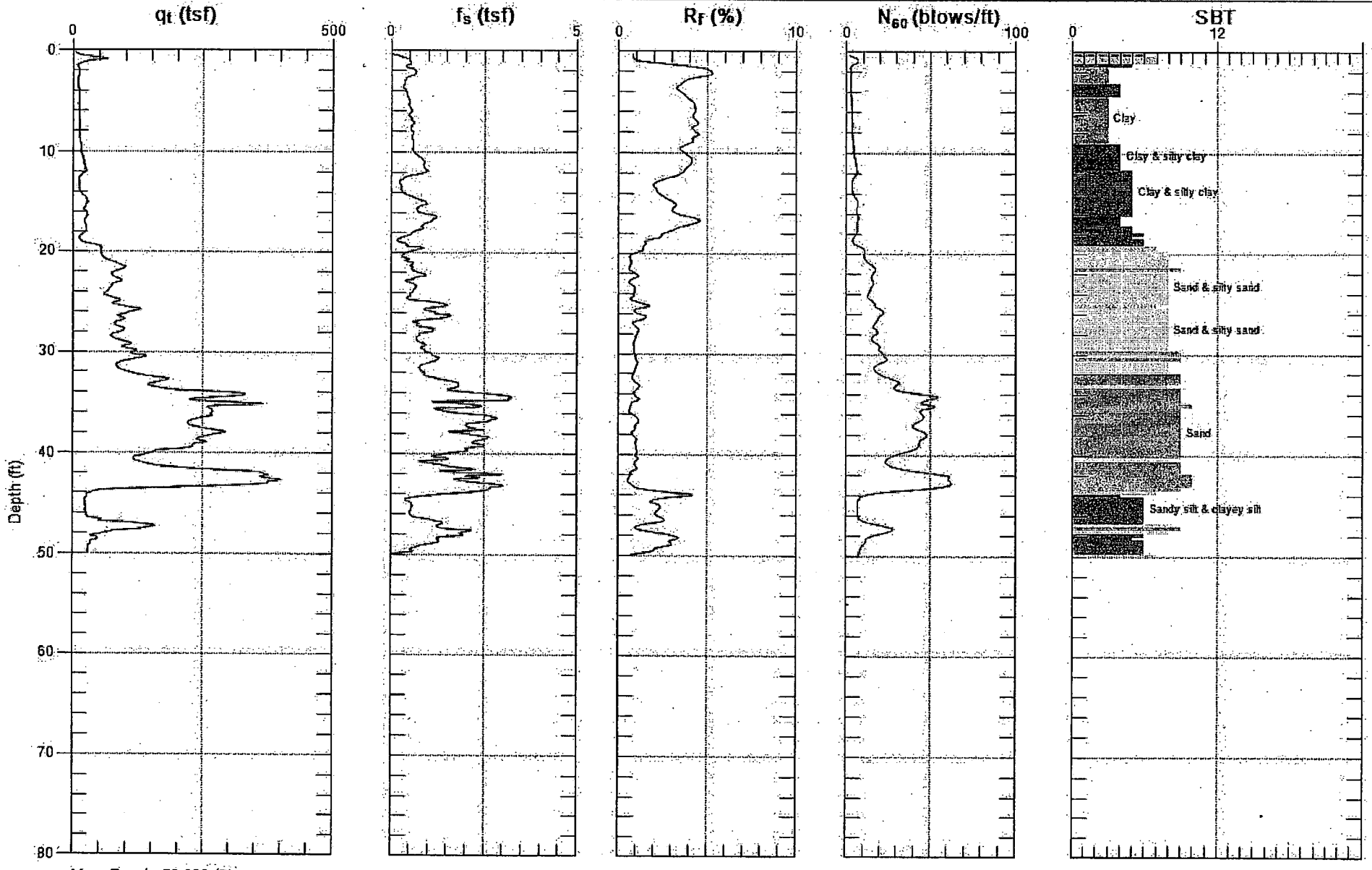

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SBT: Soil Behavior Type (Robertson 1990)

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Engineer: M.COOK
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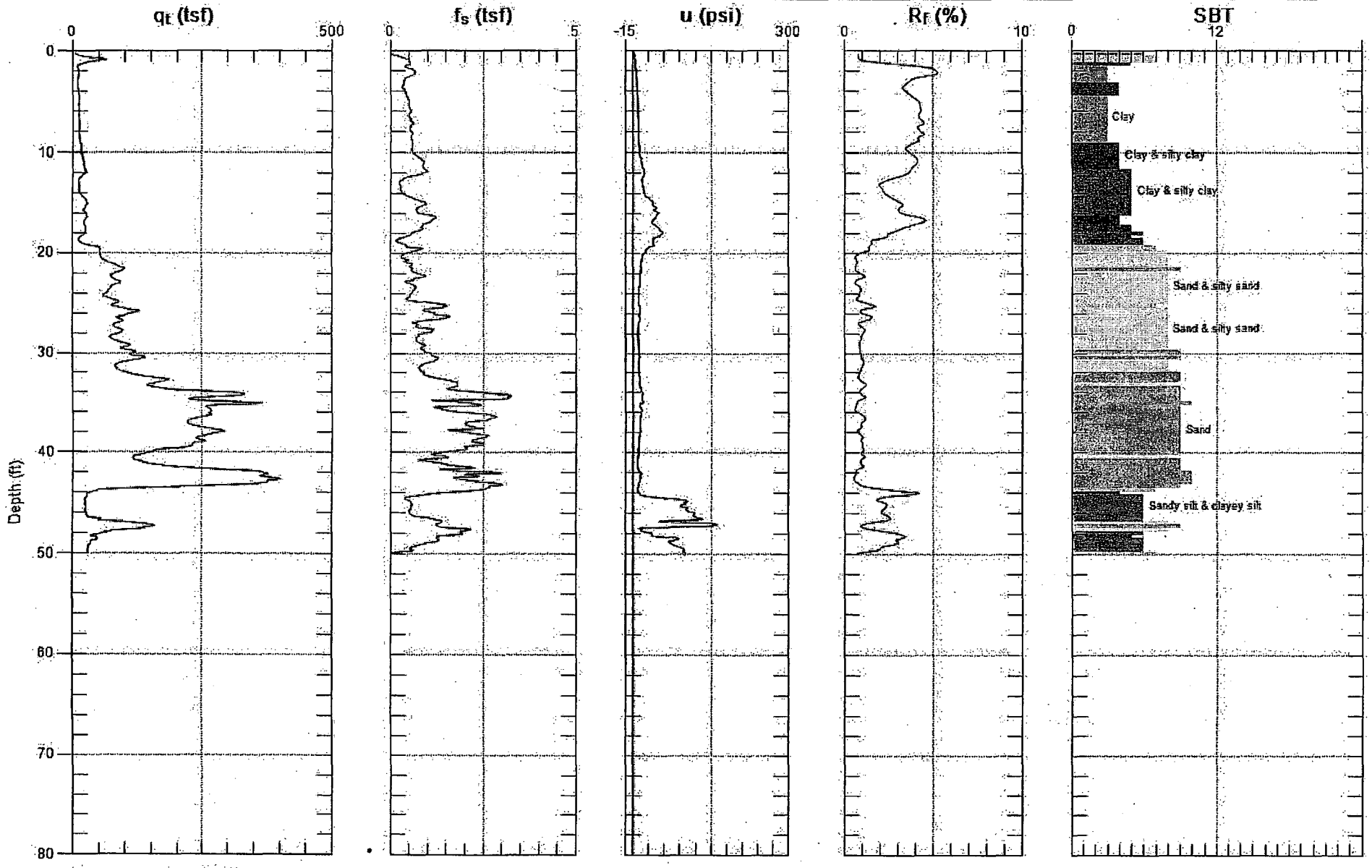

Max. Depth: 50.033 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

Site: SOUTH TEXAS PROJ.
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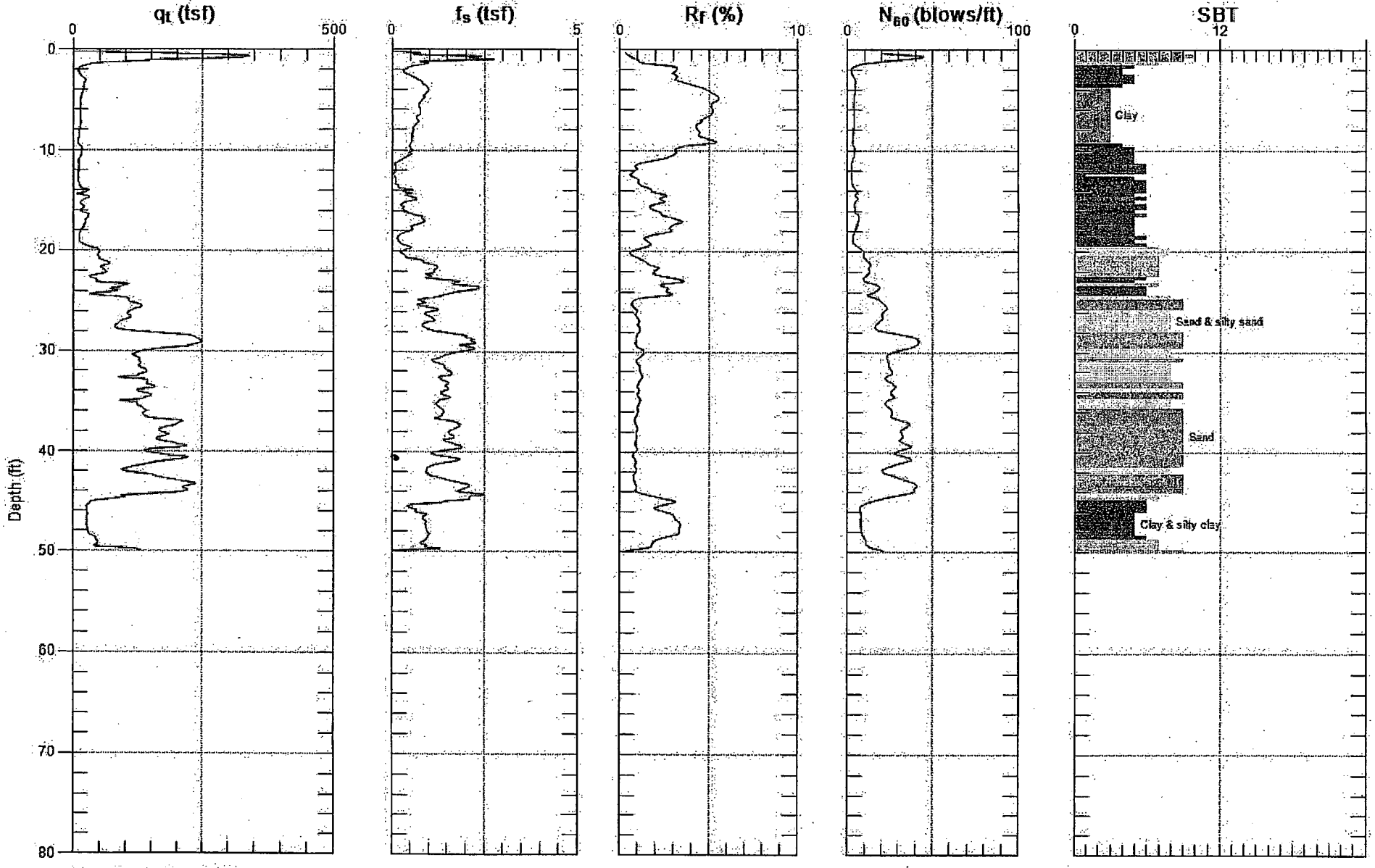
Engineer: M.COOK
Date: 7/20/2007 08:49



Max. Depth: 50.033 (ft)
Avg. Interval: 0.328 (ft)

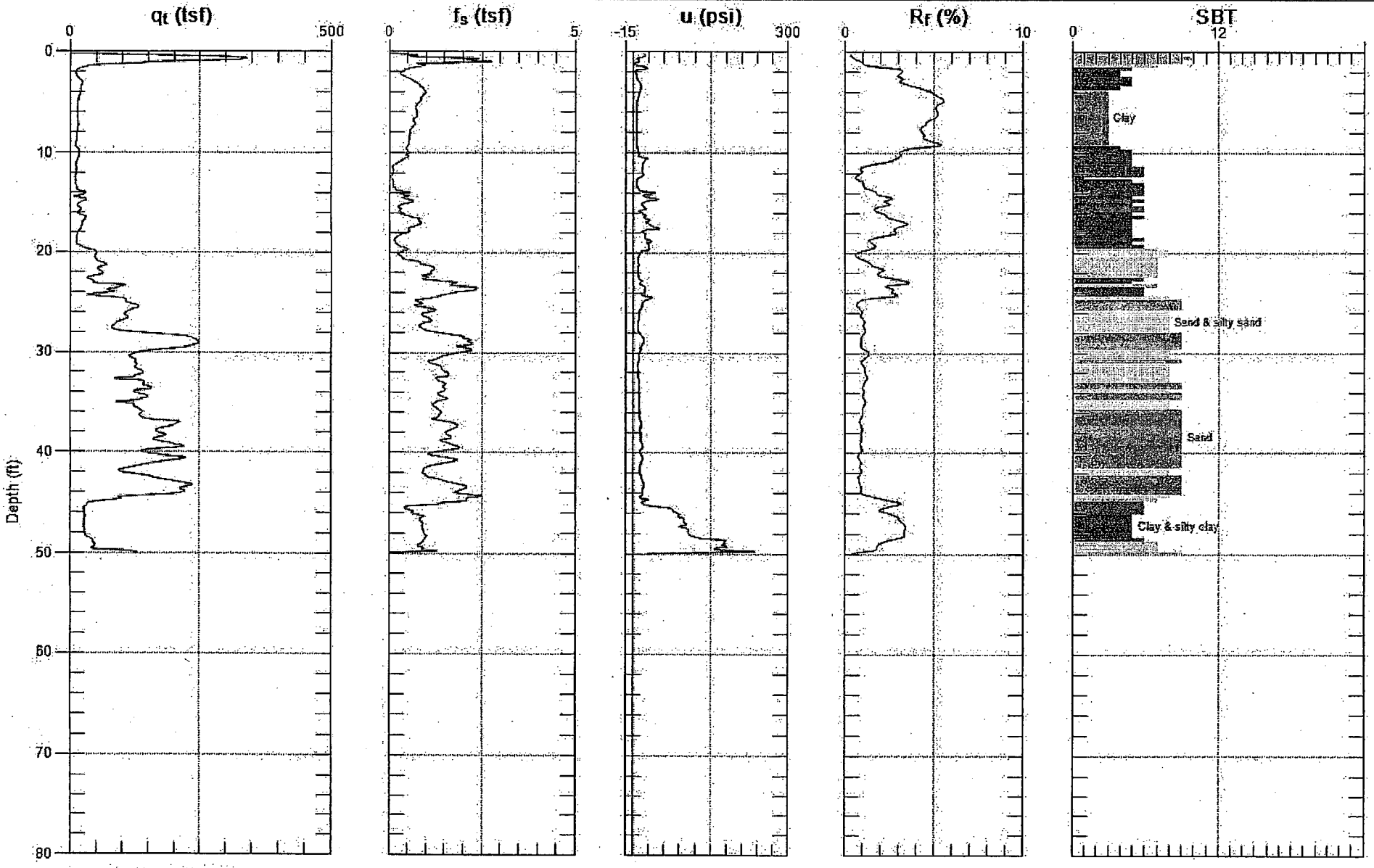
SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

Site: SOUTH TEXAS PROJ.
Sounding: C-946

Engineer: M.COOK
Date: 7/20/2007 08:49



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Avg. Interval: 0.328 (ft)

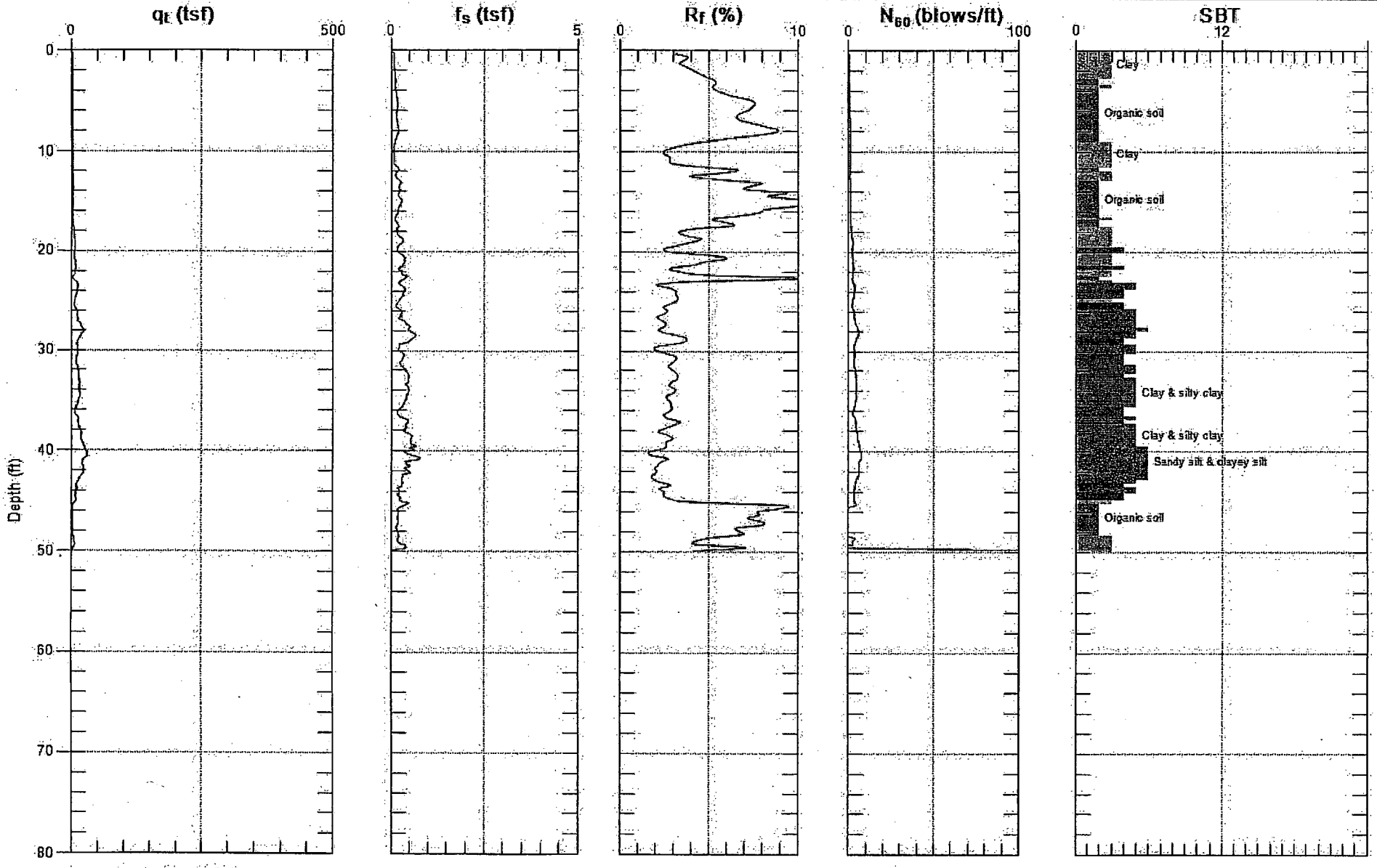
SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

Site: SOUTH TEXAS PROJ.
Sounding: C-947

Engineer: M.COOK
Date: 7/19/2007 02:38



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SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

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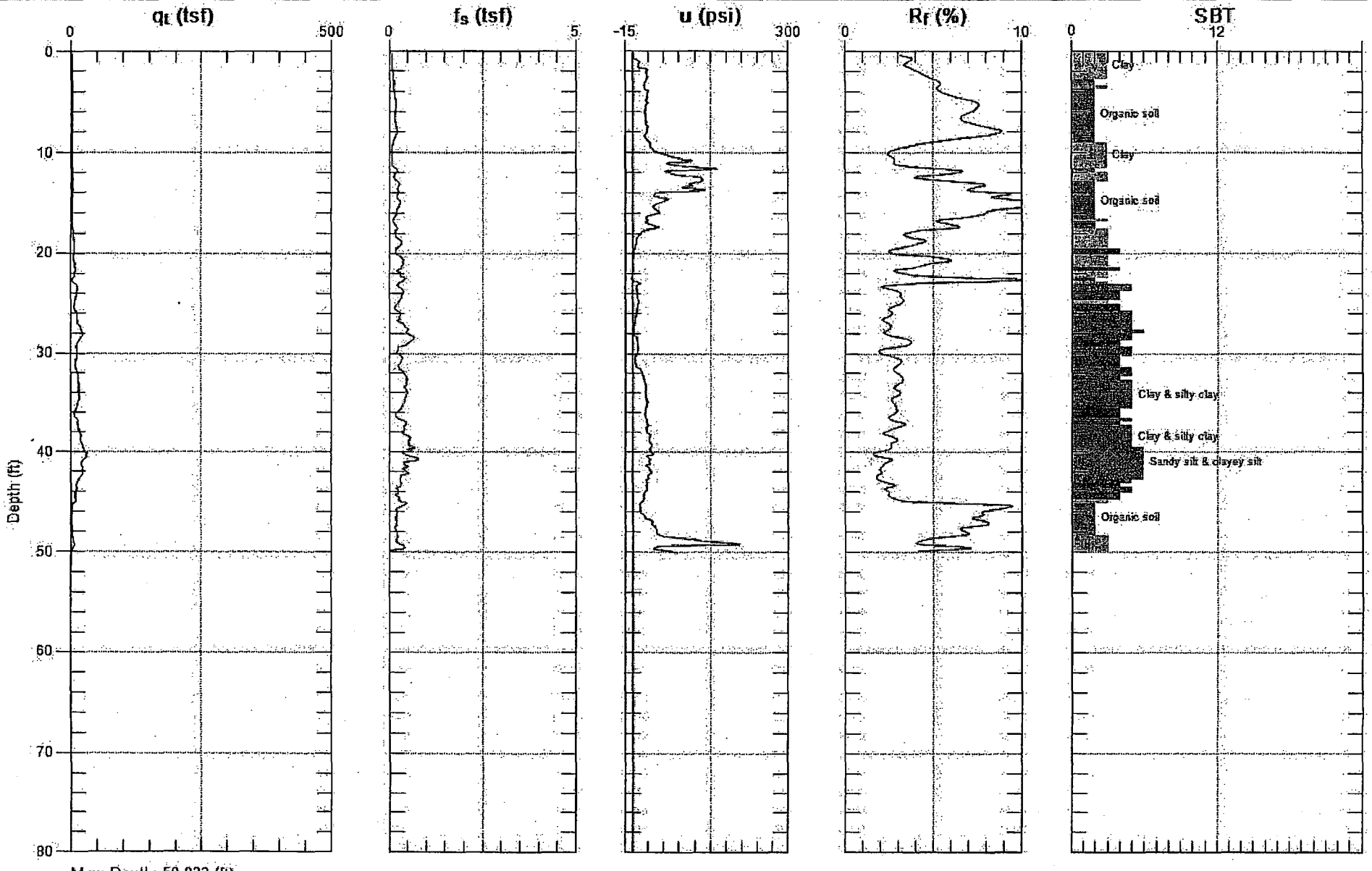
Sounding: C-947

Engineer: M.COOK
Date: 7/19/2007 02:38



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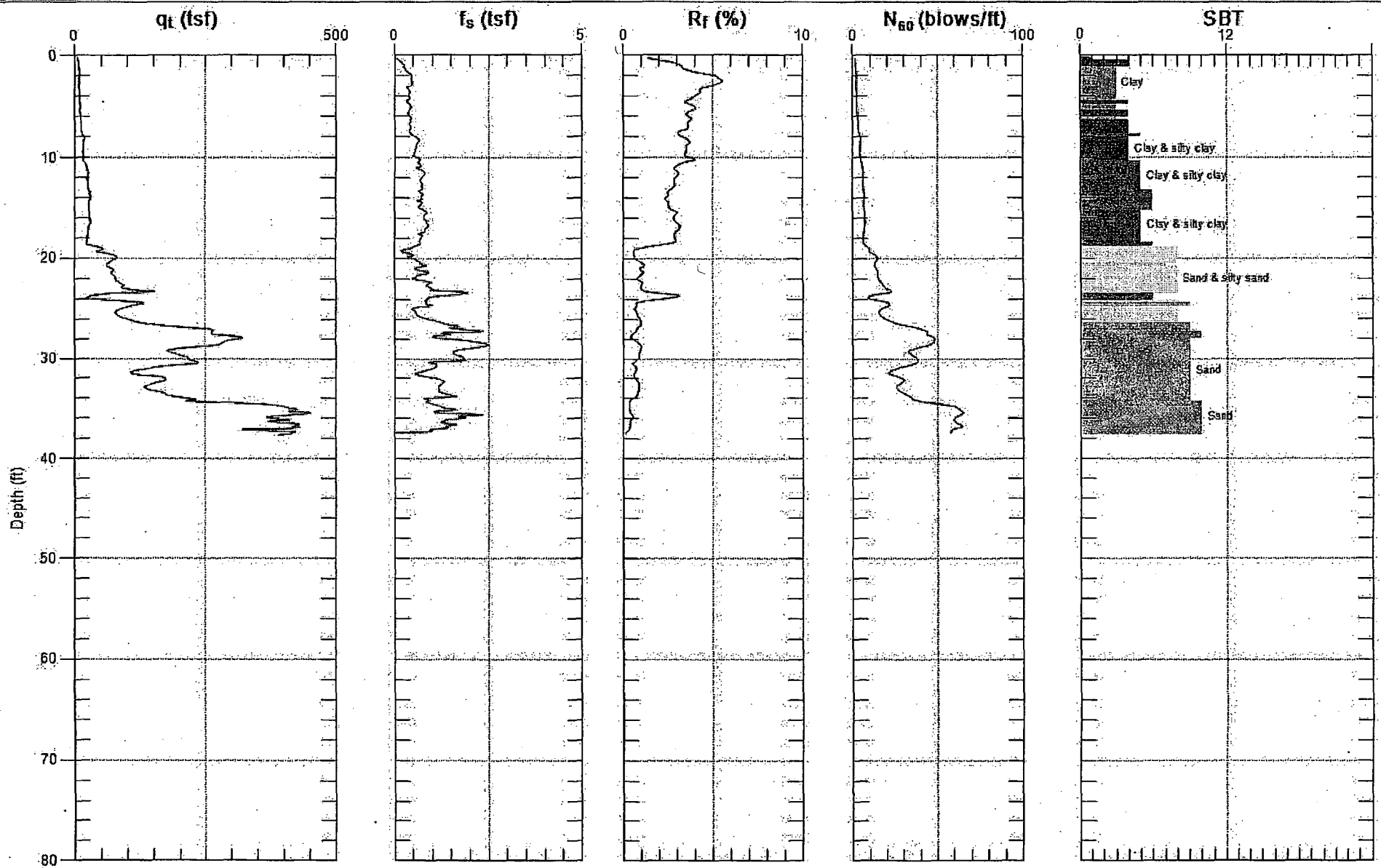
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

Site: SOUTH TEXAS PROJ.
Sounding: C-948A

Engineer: M.COOK
Date: 7/23/2007 04:45



Max. Depth: 37.566 (ft)
Avg. Interval: 0.328 (ft)

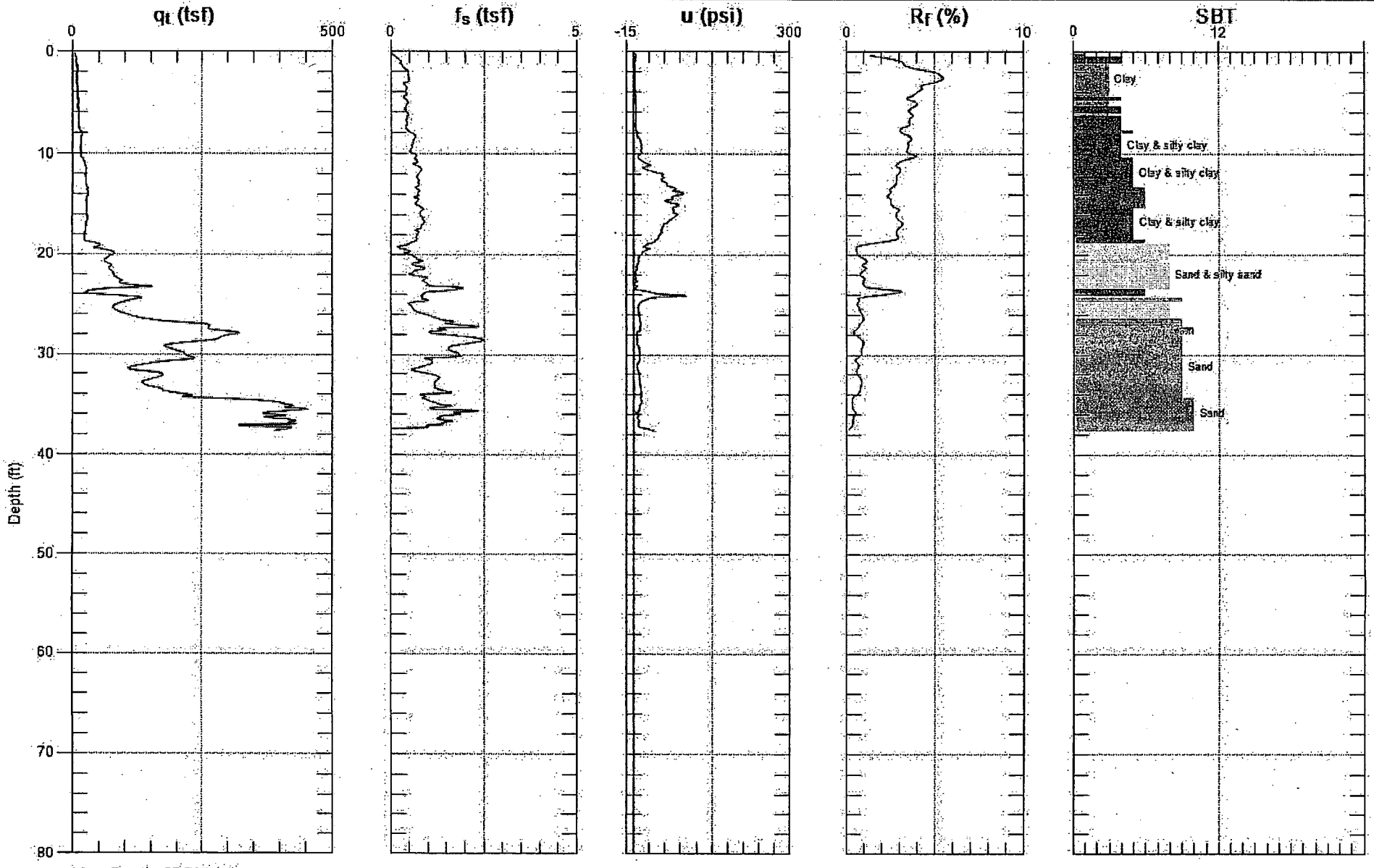
SBT: Soil Behavior Type (Robertson 1990)

GREGG

MACTEC

Site: SOUTH TEXAS PROJ.
Sounding: C-948A

Engineer: M.COOK
Date: 7/23/2007 04:45



Max. Depth: 37.566 (ft)
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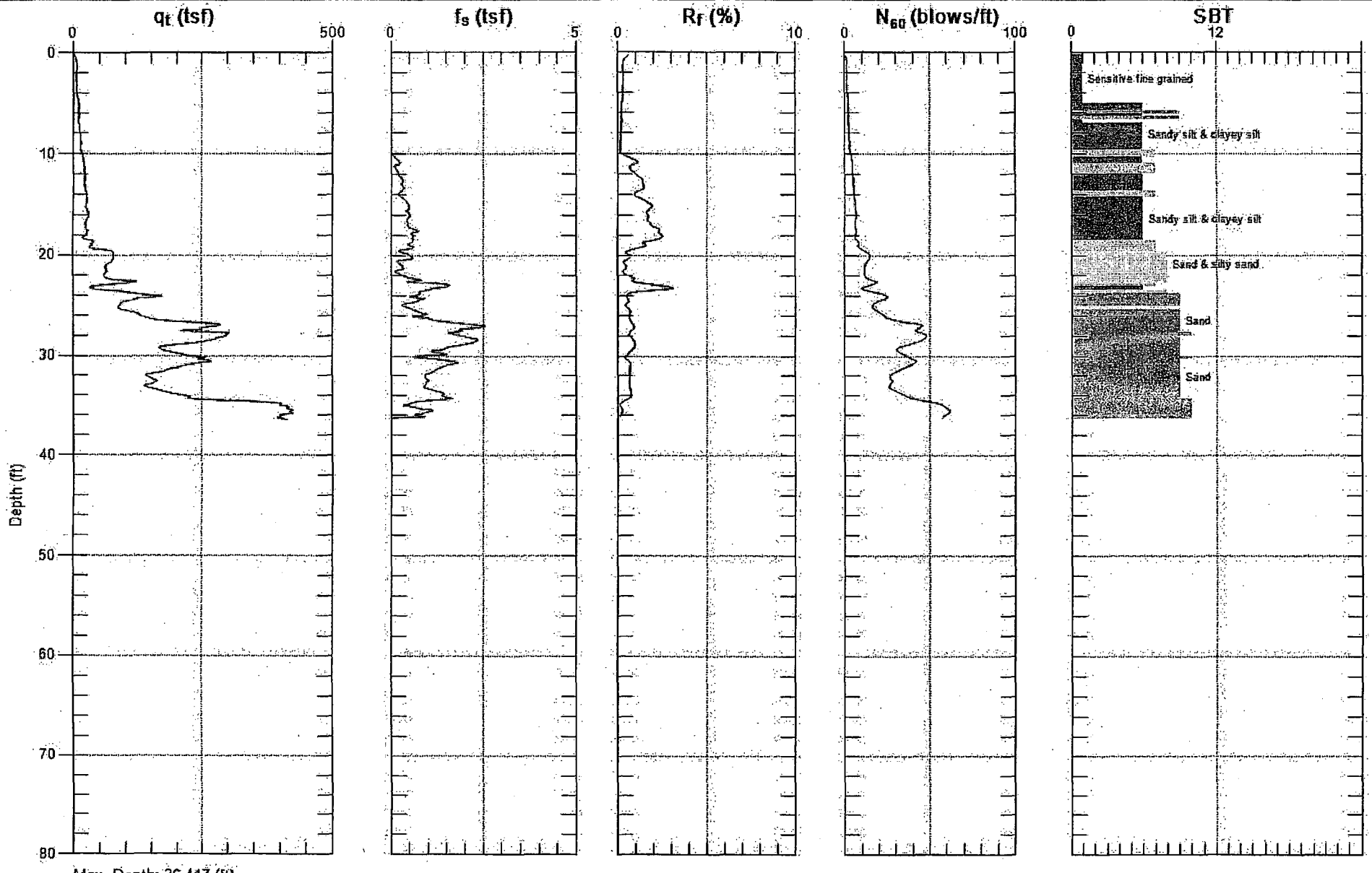
SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

Site: SOUTH TEXAS PROJ.
Sounding: C-948

Engineer: M.COOK
Date: 7/21/2007 08:11



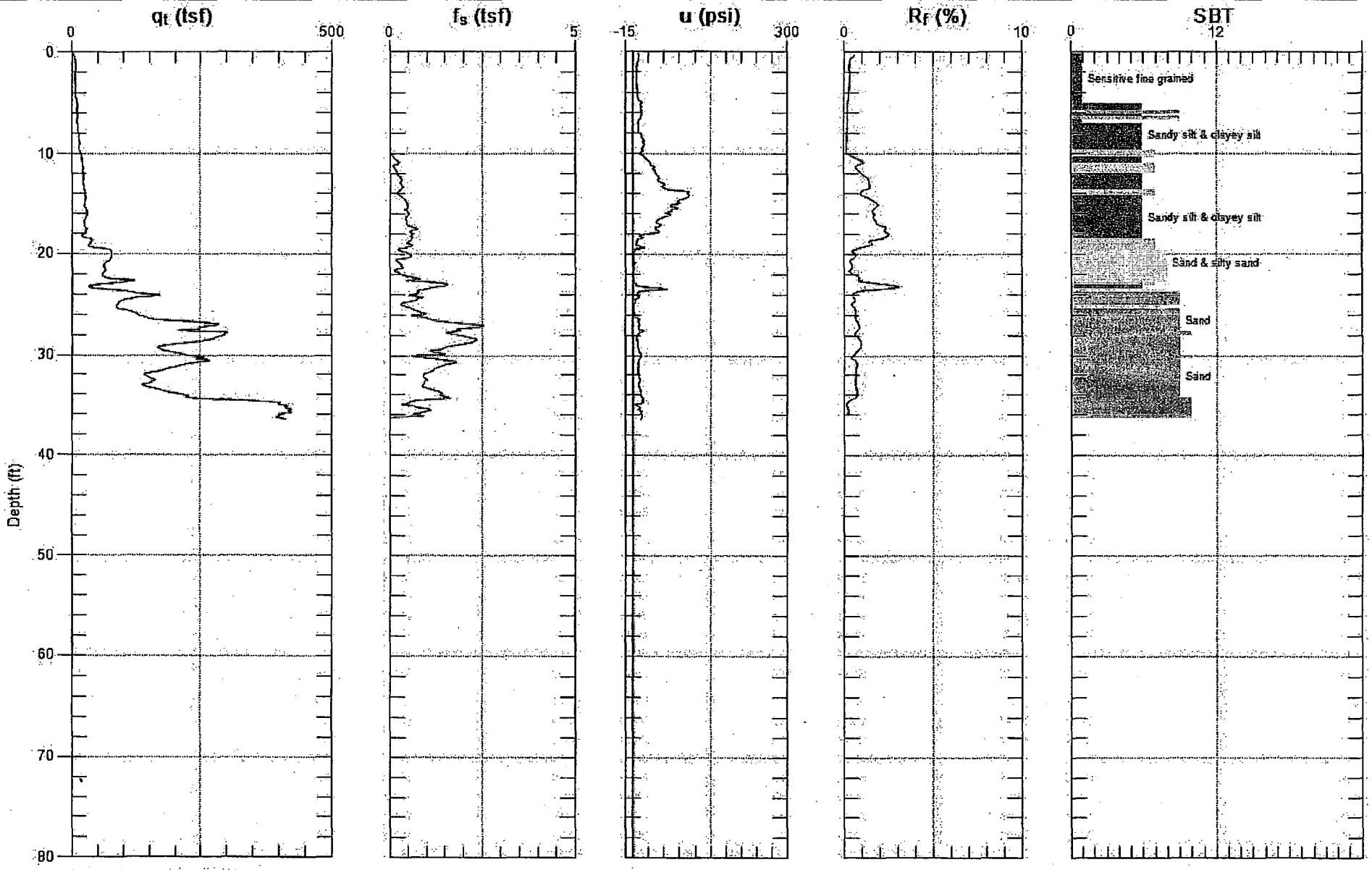
Max. Depth: 36.417 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

Site: SOUTH TEXAS PROJ.
Sounding: C-948

Engineer: M.COOK
Date: 7/21/2007 08:11



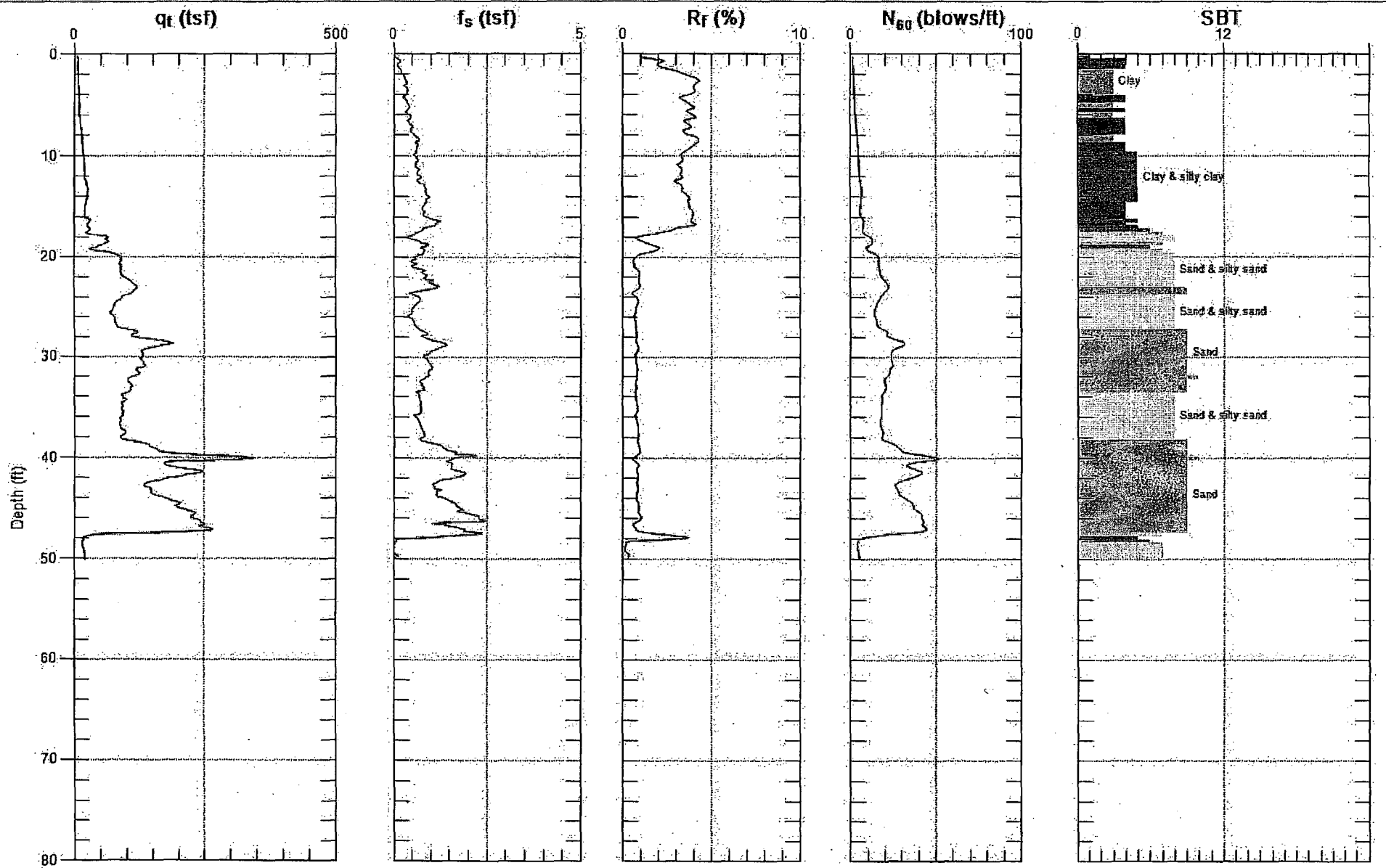
Max. Depth: 36.417 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

Site: SOUTH TEXAS PROJ.
Sounding: C-949

Engineer: M.COOK
Date: 7/20/2007 04:01



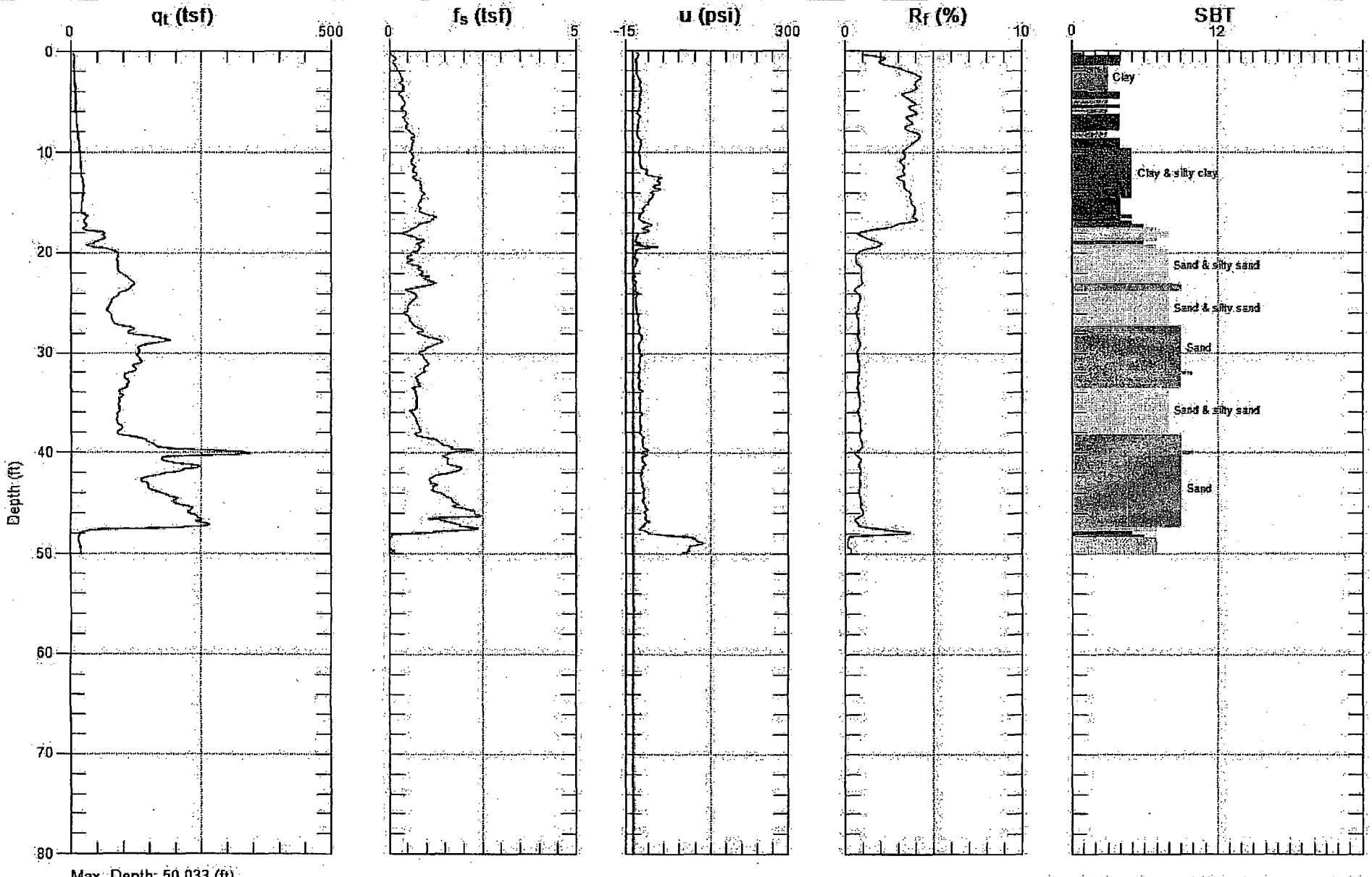
Max. Depth: 50.033 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG MACTEC

Site: SOUTH TEXAS PROJ.
Sounding: C-949

Engineer: M.COOK
Date: 7/20/2007 04:01

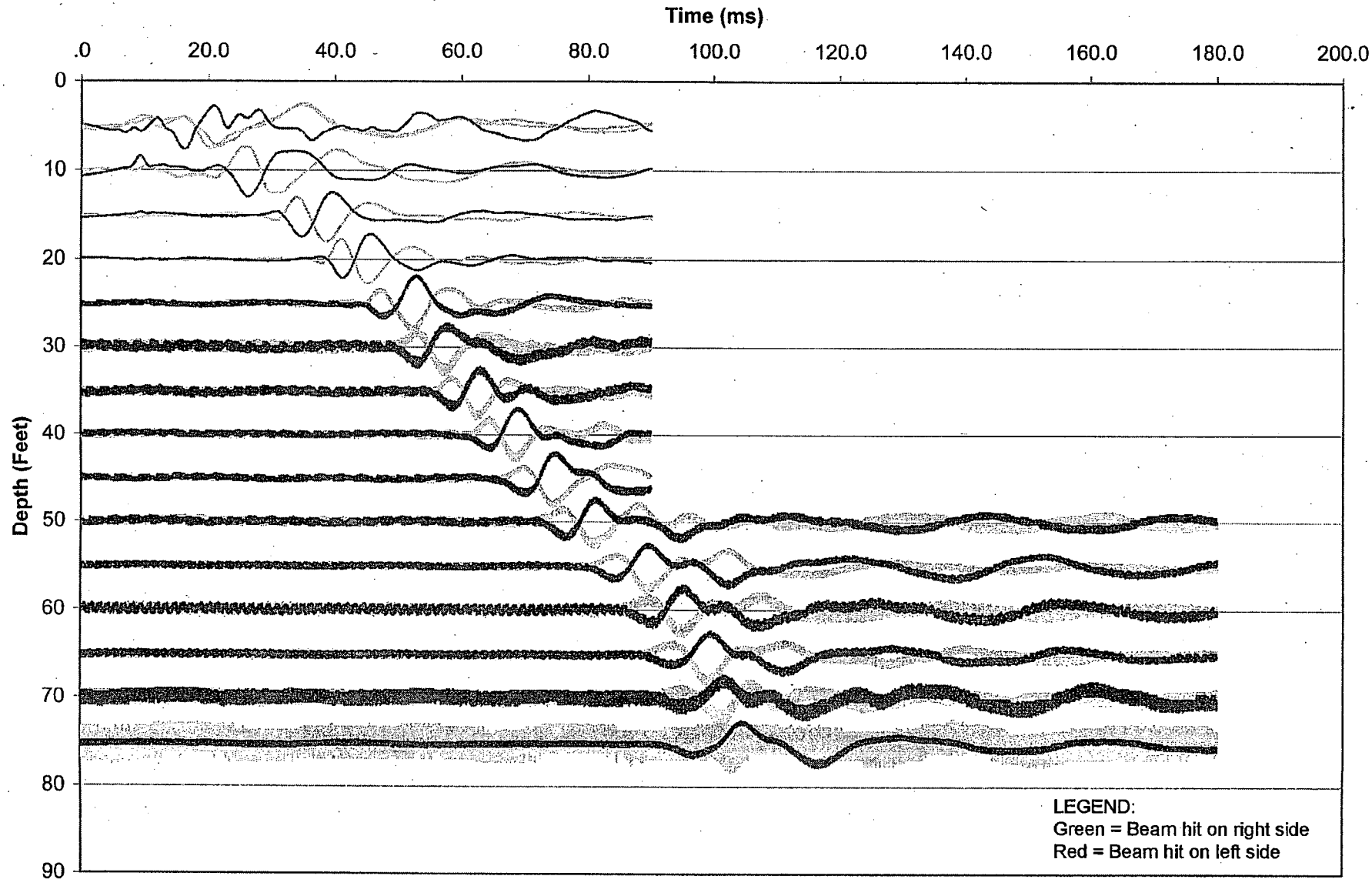


Max. Depth: 50.033 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

Waveforms for Sounding c-405s



Shear Wave Velocity Calculations

SOUTH TEXAS PROJECT
MACTEC

Geophone Offset: 0.66 Feet
Source Offset: 9.17 Feet

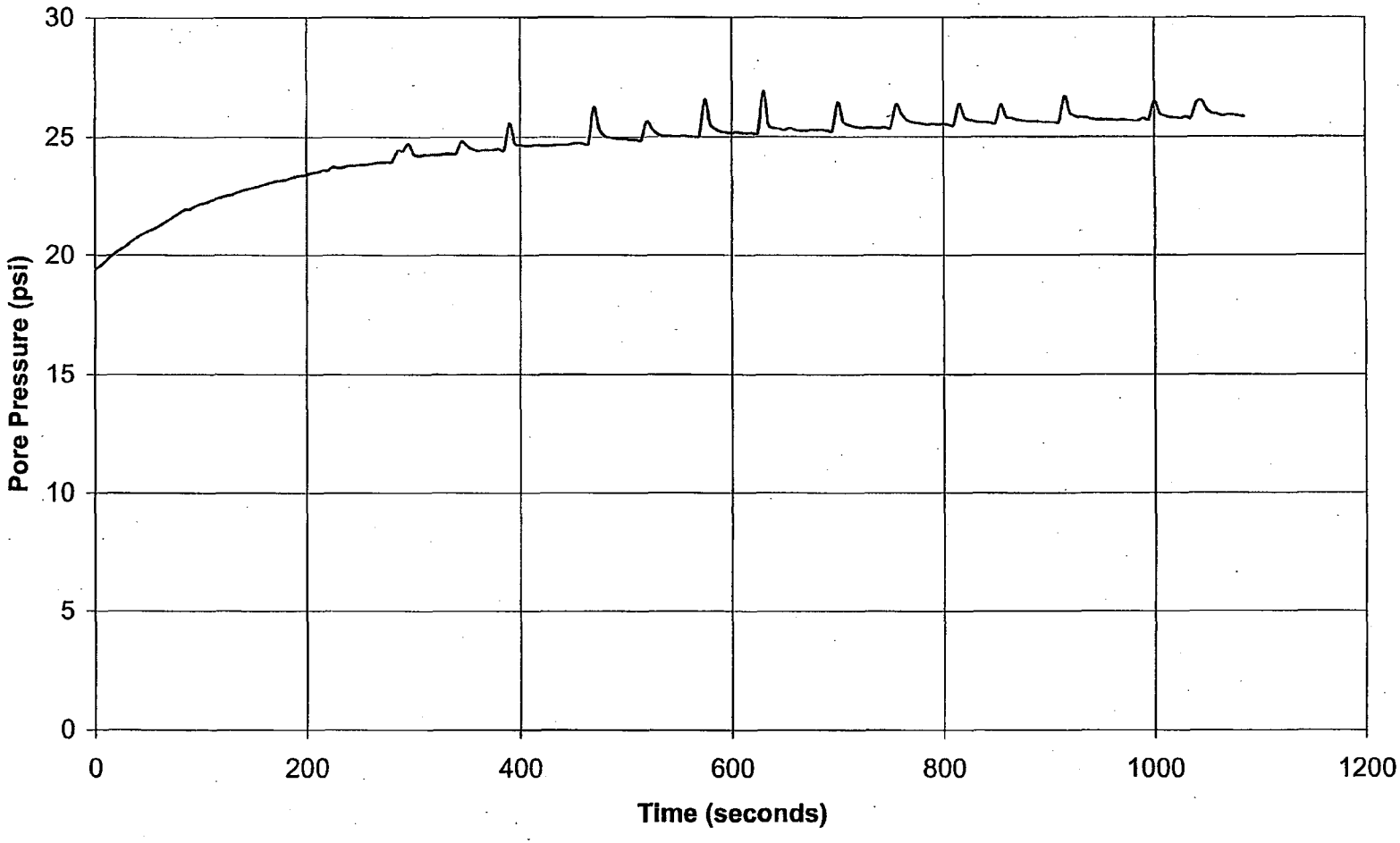
7/23/2007
C-405s

Test Depth (Feet)	Geophone Depth (Feet)	Waveform Ray Path (Feet)	Incremental Distance (Feet)	Characteristic Arrival Time (ms)	Incremental Time Interval (ms)	Interval Velocity (Ft/Sec)	Interval Depth (Feet)
5.09	4.43	10.18	10.18	18.1000			
10.01	9.35	13.09	2.91	28.4000	10.3000	282.7	6.89
15.09	14.43	17.10	4.00	36.5000	8.1000	494.4	11.89
20.01	19.35	21.42	4.32	43.0000	6.5000	664.1	16.89
25.10	24.44	26.10	4.69	49.6500	6.6500	704.7	21.90
30.02	29.36	30.76	4.66	55.0500	5.4000	862.3	26.90
35.10	34.44	35.64	4.89	60.4000	5.3500	913.3	31.90
40.03	39.37	40.42	4.78	66.2000	5.8000	823.4	36.91
45.11	44.45	45.39	4.97	72.0000	5.8000	856.4	41.91
50.03	49.37	50.22	4.83	78.6000	6.6000	731.8	46.91
55.12	54.46	55.22	5.01	86.7000	8.1000	618.2	51.92
60.04	59.38	60.08	4.86	92.1000	5.4000	899.7	56.92
65.12	64.46	65.11	5.03	96.1500	4.0500	1242.1	61.92
70.05	69.39	69.99	4.88	98.2000	2.0500	2378.4	66.93
75.30	74.64	75.20	5.21	101.1500	2.9500	1765.2	72.01

GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: c-405s
Depth: 75.295
Site: S. TEXAS PROJ.
Engineer: M.COOK



GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-405s
Site:	SOUTH TEXAS PROJ.	Date:	7/23/2007
Engineer:	M.COOK	Time:	11:53 AM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	16.372	0.509	1.653		16.39	3.11
0.100	0.328	124.480	0.576	0.246		124.48	0.46
0.150	0.492	145.245	1.334	0.668		145.25	0.92
0.200	0.656	77.930	1.239	-0.246		77.93	1.59
0.250	0.820	36.673	0.875	0.176		36.67	2.39
0.300	0.984	17.764	0.754	0.176		17.77	4.24
0.350	1.148	12.688	0.392	0.176		12.69	3.09
0.400	1.312	8.868	0.297	0.809		8.88	3.35
0.450	1.476	8.813	0.278	1.407		8.83	3.15
0.500	1.640	10.014	0.314	1.231		10.03	3.13
0.550	1.804	10.615	0.328	1.266		10.63	3.09
0.600	1.969	13.097	0.368	1.513		13.11	2.81
0.650	2.133	15.581	0.409	1.688		15.60	2.62
0.700	2.297	16.836	0.441	2.427		16.86	2.62
0.750	2.461	17.300	0.500	2.743		17.33	2.89
0.800	2.625	18.064	0.572	2.920		18.10	3.16
0.850	2.789	18.828	0.610	3.060		18.86	3.23
0.900	2.953	19.291	0.572	3.166		19.33	2.96
0.950	3.117	19.428	0.494	3.658		19.47	2.54
1.000	3.281	19.128	0.717	4.010		19.17	3.74
1.050	3.445	22.211	0.946	5.874		22.27	4.25
1.100	3.609	21.993	1.141	5.100		22.05	5.18
1.150	3.773	22.266	1.195	4.467		22.31	5.36
1.200	3.937	21.638	1.221	3.869		21.68	5.63
1.250	4.101	20.711	1.214	3.130		20.74	5.85
1.300	4.265	19.919	1.218	2.814		19.95	6.11
1.350	4.429	19.510	1.126	2.392		19.54	5.76
1.400	4.593	18.664	1.128	2.110		18.69	6.04
1.450	4.757	17.081	1.090	0.915		17.09	6.38
1.500	4.921	16.918	0.972	0.774		16.93	5.74
1.550	5.085	16.454	0.989	0.739		16.46	6.01
1.600	5.249	15.553	0.997	1.548		15.57	6.40
1.650	5.413	16.508	1.038	1.513		16.52	6.28
1.700	5.577	16.399	1.040	1.407		16.41	6.34
1.750	5.741	15.908	1.043	1.407		15.92	6.55
1.800	5.906	15.853	1.064	1.442		15.87	6.71
1.850	6.070	16.290	1.044	1.336		16.30	6.40
1.900	6.234	15.144	1.028	1.372		15.16	6.78

1.950	6.398	14.271	0.943	1.301	14.29	6.60
2.000	6.562	13.698	0.834	1.301	13.71	6.08
2.050	6.726	13.425	0.768	1.336	13.44	5.71
2.100	6.890	13.097	0.622	1.372	13.11	4.74
2.150	7.054	13.016	0.629	1.407	13.03	4.83
2.200	7.218	13.261	0.608	2.462	13.29	4.58
2.250	7.382	14.053	0.569	2.427	14.08	4.04
2.300	7.546	13.480	0.565	2.322	13.51	4.18
2.350	7.710	12.579	0.576	2.216	12.60	4.57
2.400	7.874	11.679	0.510	2.075	11.70	4.36
2.450	8.038	11.897	0.458	2.040	11.92	3.84
2.500	8.202	13.316	0.525	2.040	13.34	3.94
2.550	8.366	14.135	0.607	1.934	14.16	4.29
2.600	8.530	13.589	0.648	3.201	13.62	4.76
2.650	8.694	13.507	0.583	3.130	13.54	4.31
2.700	8.858	15.826	0.623	3.166	15.86	3.93
2.750	9.022	15.417	0.610	2.462	15.44	3.95
2.800	9.186	12.524	0.559	2.286	12.55	4.45
2.850	9.350	18.746	0.628	2.462	18.77	3.35
2.900	9.514	18.964	0.617	2.181	18.99	3.25
2.950	9.678	14.489	0.670	2.075	14.51	4.62
3.000	9.843	16.317	0.669	2.110	16.34	4.09
3.050	10.007	14.953	0.697	2.145	14.98	4.65
3.100	10.171	15.362	0.723	2.216	15.39	4.70
3.150	10.335	16.781	0.732	2.145	16.80	4.36
3.200	10.499	16.863	0.715	2.145	16.89	4.23
3.250	10.663	15.362	0.657	2.075	15.38	4.27
3.300	10.827	15.662	0.651	2.075	15.68	4.15
3.350	10.991	16.563	0.614	2.005	16.58	3.70
3.400	11.155	21.174	0.708	2.145	21.20	3.34
3.450	11.319	17.627	0.762	2.638	17.66	4.32
3.500	11.483	18.964	0.763	2.427	18.99	4.02
3.550	11.647	18.091	0.738	2.357	18.12	4.07
3.600	11.811	17.955	0.712	2.322	17.98	3.96
3.650	11.975	20.383	0.684	2.462	20.41	3.35
3.700	12.139	19.319	0.644	2.462	19.35	3.33
3.750	12.303	19.510	0.640	2.568	19.54	3.28
3.800	12.467	20.192	0.697	2.638	20.22	3.45
3.850	12.631	20.765	0.755	2.673	20.79	3.63
3.900	12.795	20.629	0.706	2.708	20.66	3.42
3.950	12.959	20.601	0.647	2.743	20.63	3.14
4.000	13.123	21.584	0.481	2.884	21.62	2.23
4.050	13.287	21.856	0.622	2.884	21.89	2.84
4.100	13.451	22.429	0.685	3.623	22.47	3.05
4.150	13.615	22.075	0.757	3.552	22.11	3.42
4.200	13.780	23.821	0.709	3.764	23.86	2.97
4.250	13.944	21.666	0.636	3.658	21.71	2.93
4.300	14.108	21.311	0.567	3.764	21.35	2.66
4.350	14.272	21.529	0.547	3.869	21.57	2.54
4.400	14.436	22.184	0.611	4.080	22.23	2.75
4.450	14.600	22.320	0.680	4.185	22.37	3.04

4.500	14.764	23.657	0.692	5.241	23.71	2.92
4.550	14.928	24.203	0.764	5.557	24.26	3.15
4.600	15.092	26.031	0.794	5.663	26.09	3.04
4.650	15.256	23.848	0.782	5.909	23.91	3.27
4.700	15.420	22.511	0.736	5.909	22.57	3.26
4.750	15.584	21.693	0.733	6.014	21.76	3.37
4.800	15.748	21.038	0.657	5.979	21.10	3.11
4.850	15.912	19.046	0.520	6.050	19.11	2.72
4.900	16.076	15.171	0.351	5.839	15.23	2.30
4.950	16.240	13.343	0.342	5.592	13.40	2.55
5.000	16.404	16.890	0.310	6.014	16.95	1.83
5.050	16.568	17.191	0.402	5.979	17.26	2.33
5.100	16.732	18.500	0.551	6.120	18.57	2.97
5.150	16.896	21.747	0.801	6.401	21.82	3.67
5.200	17.060	22.702	0.916	6.366	22.77	4.02
5.250	17.224	25.185	1.016	6.366	25.25	4.02
5.300	17.388	22.348	0.977	6.964	22.42	4.36
5.350	17.552	20.328	0.921	6.507	20.40	4.52
5.400	17.717	19.510	0.789	6.366	19.58	4.03
5.450	17.881	19.155	0.785	6.261	19.22	4.08
5.500	18.045	19.100	0.819	6.085	19.17	4.27
5.550	18.209	19.155	0.769	5.944	19.22	4.00
5.600	18.373	18.500	0.589	5.979	18.56	3.17
5.650	18.537	18.227	0.571	6.190	18.29	3.12
5.700	18.701	19.619	0.625	6.261	19.69	3.17
5.750	18.865	19.346	0.688	6.261	19.41	3.54
5.800	19.029	21.174	0.702	6.436	21.24	3.30
5.850	19.193	30.097	0.806	6.859	30.17	2.67
5.900	19.357	25.649	0.887	6.014	25.71	3.45
5.950	19.521	16.699	0.828	4.643	16.75	4.94
6.000	19.685	11.951	0.633	4.185	12.00	5.28
6.050	19.849	11.051	0.289	4.010	11.09	2.60
6.100	20.013	12.388	0.296	4.150	12.43	2.38
6.150	20.177	20.792	0.370	6.296	20.86	1.77
6.200	20.341	24.285	0.374	5.874	24.35	1.54
6.250	20.505	15.199	0.209	3.201	15.23	1.37
6.300	20.669	11.897	0.169	2.743	11.93	1.42
6.350	20.833	13.316	0.244	4.432	13.36	1.83
6.400	20.997	20.301	0.328	6.050	20.37	1.61
6.450	21.161	25.567	0.469	6.472	25.64	1.83
6.500	21.325	33.317	0.548	6.577	33.39	1.64
6.550	21.490	32.334	0.617	5.698	32.40	1.90
6.600	21.654	35.009	0.477	5.346	35.07	1.36
6.650	21.818	38.583	0.224	5.100	38.64	0.58
6.700	21.982	42.894	0.304	5.135	42.95	0.71
6.750	22.146	33.780	0.540	4.572	33.83	1.60
6.800	22.310	28.760	0.604	4.502	28.81	2.10
6.850	22.474	30.217	0.474	4.818	30.27	1.57
6.900	22.638	48.106	0.159	4.924	48.16	0.33
6.950	22.802	54.382	0.213	5.030	54.44	0.39
7.000	22.966	56.947	0.327	4.924	57.00	0.57

7.050	23.130	58.665	0.412	4.783	58.72	0.70
7.100	23.294	57.465	0.391	4.643	57.52	0.68
7.150	23.458	56.128	0.471	4.572	56.18	0.84
7.200	23.622	56.510	0.505	5.100	56.57	0.89
7.250	23.786	55.364	0.294	4.818	55.42	0.53
7.300	23.950	53.127	0.448	4.537	53.18	0.84
7.350	24.114	55.064	0.603	4.220	55.11	1.09
7.400	24.278	57.520	0.307	3.939	57.56	0.53
7.450	24.442	57.792	0.180	3.939	57.83	0.31
7.500	24.606	55.882	0.221	3.623	55.92	0.40
7.550	24.770	58.556	0.309	3.517	58.59	0.53
7.600	24.934	59.511	0.287	3.412	59.55	0.48
7.650	25.098	58.065	0.356	3.306	58.10	0.61
7.700	25.262	56.510	0.396	6.120	56.58	0.70
7.750	25.427	58.829	0.420	6.050	58.89	0.71
7.800	25.591	62.977	0.473	6.120	63.04	0.75
7.850	25.755	70.863	0.541	6.401	70.93	0.76
7.900	25.919	81.968	0.723	6.788	82.04	0.88
7.950	26.083	101.423	0.955	7.527	101.50	0.94
8.000	26.247	147.291	1.254	9.145	147.39	0.85
8.050	26.411	214.497	1.534	11.185	214.62	0.71
8.100	26.575	243.448	1.385	11.325	243.57	0.57
8.150	26.739	199.190	1.374	8.511	199.28	0.69
8.200	26.903	156.323	1.149	6.859	156.40	0.73
8.250	27.067	154.086	0.833	7.210	154.16	0.54
8.300	27.231	161.289	0.616	7.456	161.37	0.38
8.350	27.395	139.788	0.690	8.301	139.88	0.49
8.400	27.559	121.151	0.564	7.175	121.23	0.47
8.450	27.723	94.110	0.472	5.909	94.17	0.50
8.500	27.887	77.057	0.471	5.663	77.12	0.61
8.550	28.051	75.037	0.722	5.416	75.10	0.96
8.600	28.215	83.960	0.805	5.487	84.02	0.96
8.650	28.379	92.228	0.816	6.366	92.30	0.88
8.700	28.543	103.633	0.897	6.718	103.71	0.86
8.750	28.707	107.835	0.739	6.648	107.91	0.68
8.800	28.871	100.468	0.547	6.366	100.54	0.54
8.850	29.035	91.273	0.669	6.085	91.34	0.73
8.900	29.199	82.050	0.733	5.557	82.11	0.89
8.950	29.364	76.865	0.813	5.311	76.92	1.06
9.000	29.528	79.921	1.113	5.276	79.98	1.39
9.050	29.692	60.712	2.159	5.346	60.77	3.55
9.100	29.856	57.465	1.732	4.608	57.51	3.01
9.150	30.020	33.262	1.182	5.135	33.32	3.55
9.200	30.184	34.872	1.064	32.499	35.22	3.02
9.250	30.348	29.251	0.869	31.443	29.59	2.94
9.300	30.512	22.402	0.800	19.098	22.61	3.54
9.350	30.676	25.540	1.092	19.942	25.76	4.24
9.400	30.840	32.744	1.192	15.335	32.91	3.62
9.450	31.004	27.423	0.863	13.260	27.57	3.13
9.500	31.168	49.061	1.039	13.506	49.21	2.11
9.550	31.332	54.409	1.035	6.014	54.47	1.90

9.600	31.496	53.427	1.089	5.065	53.48	2.04
9.650	31.660	58.393	1.240	4.572	58.44	2.12
9.700	31.824	76.947	1.304	4.959	77.00	1.69
9.750	31.988	92.310	0.790	4.994	92.36	0.86
9.800	32.152	102.487	0.735	5.241	102.54	0.72
9.850	32.316	113.320	0.840	5.346	113.38	0.74
9.900	32.480	125.653	0.997	5.592	125.71	0.79
9.950	32.644	123.007	1.092	5.381	123.07	0.89
10.000	32.808	99.322	1.027	4.748	99.37	1.03
10.050	32.972	80.740	0.961	4.326	80.79	1.19
10.100	33.136	74.983	0.810	4.432	75.03	1.08
10.150	33.301	75.092	0.697	4.432	75.14	0.93
10.200	33.465	73.564	0.854	4.572	73.61	1.16
10.250	33.629	83.878	1.503	4.854	83.93	1.79
10.300	33.793	88.817	1.217	4.994	88.87	1.37
10.350	33.957	92.855	1.155	5.100	92.91	1.24
10.400	34.121	101.641	0.878	5.206	101.70	0.86
10.450	34.285	109.827	0.458	5.241	109.88	0.42
10.500	34.449	104.234	0.405	5.100	104.29	0.39
10.550	34.613	93.046	0.613	6.120	93.11	0.66
10.600	34.777	89.854	0.715	5.874	89.92	0.80
10.650	34.941	93.183	0.603	5.874	93.25	0.65
10.700	35.105	99.622	0.676	6.085	99.69	0.68
10.750	35.269	100.686	0.760	13.154	100.83	0.75
10.800	35.433	114.903	0.841	13.400	115.05	0.73
10.850	35.597	121.097	0.922	13.541	121.24	0.76
10.900	35.761	129.719	0.976	13.893	129.87	0.75
10.950	35.925	133.539	1.034	14.033	133.69	0.77
11.000	36.089	131.793	1.077	13.928	131.94	0.82
11.050	36.253	138.423	1.133	14.421	138.58	0.82
11.100	36.417	147.346	1.245	14.913	147.51	0.84
11.150	36.581	159.325	1.352	15.581	159.49	0.85
11.200	36.745	167.511	1.475	15.686	167.68	0.88
11.250	36.909	169.421	1.490	15.194	169.59	0.88
11.300	37.073	163.336	1.491	13.893	163.49	0.91
11.350	37.238	155.969	1.234	13.506	156.11	0.79
11.400	37.402	148.519	1.260	13.576	148.67	0.85
11.450	37.566	141.534	1.263	15.089	141.70	0.89
11.500	37.730	137.987	1.221	13.858	138.14	0.88
11.550	37.894	129.310	1.180	13.471	129.46	0.91
11.600	38.058	119.050	1.100	12.662	119.19	0.92
11.650	38.222	105.898	1.078	12.310	106.03	1.02
11.700	38.386	94.028	1.029	11.853	94.16	1.09
11.750	38.550	97.139	0.766	12.240	97.27	0.79
11.800	38.714	101.205	0.391	7.034	101.28	0.39
11.850	38.878	97.903	0.568	5.804	97.97	0.58
11.900	39.042	93.646	0.700	5.206	93.70	0.75
11.950	39.206	97.821	0.651	5.170	97.88	0.67
12.000	39.370	99.186	0.562	5.065	99.24	0.57
12.050	39.534	95.530	0.541	4.115	95.57	0.57
12.100	39.698	93.019	0.704	4.010	93.06	0.76

12.150	39.862	88.872	0.897	5.592	88.93	1.01
12.200	40.026	81.286	1.241	5.276	81.34	1.53
12.250	40.190	93.510	0.937	8.054	93.60	1.00
12.300	40.354	107.781	0.753	6.823	107.85	0.70
12.350	40.518	121.288	0.798	6.331	121.36	0.66
12.400	40.682	123.580	1.141	5.804	123.64	0.92
12.450	40.846	115.885	1.323	5.311	115.94	1.14
12.500	41.011	103.661	2.009	5.030	103.72	1.94
12.550	41.175	74.410	1.798	4.150	74.45	2.41
12.600	41.339	63.059	1.877	8.828	63.15	2.97
12.650	41.503	96.594	1.523	10.341	96.71	1.57
12.700	41.667	111.110	0.704	8.863	111.21	0.63
12.750	41.831	121.970	0.625	8.160	122.06	0.51
12.800	41.995	123.989	0.775	7.632	124.07	0.62
12.850	42.159	123.662	0.907	7.281	123.74	0.73
12.900	42.323	125.817	1.072	6.999	125.89	0.85
12.950	42.487	126.335	1.237	6.964	126.41	0.98
13.000	42.651	130.811	1.229	7.105	130.89	0.94
13.050	42.815	136.349	1.196	7.492	136.43	0.88
13.100	42.979	146.909	1.192	8.019	147.00	0.81
13.150	43.143	164.700	0.861	8.828	164.80	0.52
13.200	43.307	166.828	0.933	8.934	166.92	0.56
13.250	43.471	89.063	1.382	10.200	89.17	1.55
13.300	43.635	127.291	2.343	8.899	127.39	1.84
13.350	43.799	62.622	2.543	6.648	62.69	4.06
13.400	43.963	39.101	2.017	6.648	39.17	5.15
13.450	44.127	31.762	1.432	9.497	31.86	4.49
13.500	44.291	30.370	1.057	15.757	30.54	3.46
13.550	44.455	28.296	0.620	25.183	28.57	2.17
13.600	44.619	26.959	0.435	93.099	27.96	1.56
13.650	44.783	25.922	0.306	115.116	27.17	1.13
13.700	44.948	24.476	0.350	123.733	25.81	1.36
13.750	45.112	23.712	0.432	143.078	25.26	1.71
13.800	45.276	24.421	0.581	155.986	26.11	2.23
13.850	45.440	24.967	0.639	160.523	26.70	2.39
13.900	45.604	25.213	0.645	152.820	26.86	2.40
13.950	45.768	24.940	0.637	154.860	26.61	2.39
14.000	45.932	26.440	0.692	159.538	28.16	2.46
14.050	46.096	27.423	0.779	144.485	28.98	2.69
14.100	46.260	26.359	0.836	131.401	27.78	3.01
14.150	46.424	24.858	0.793	127.110	26.23	3.02
14.200	46.588	23.903	0.694	127.497	25.28	2.75
14.250	46.752	24.394	0.695	137.169	25.88	2.69
14.300	46.916	27.696	0.749	144.485	29.26	2.56
14.350	47.080	39.893	1.026	174.802	41.78	2.46
14.400	47.244	98.340	2.248	44.703	98.82	2.27
14.450	47.408	63.441	2.191	31.478	63.78	3.44
14.500	47.572	174.523	2.309	113.885	175.75	1.31
14.550	47.736	208.494	1.754	29.333	208.81	0.84
14.600	47.900	174.414	2.039	18.149	174.61	1.17
14.650	48.064	123.880	2.494	9.250	123.98	2.01

14.700	48.228	74.846	2.340	11.572	74.97	3.12
14.750	48.392	40.356	1.914	20.400	40.58	4.72
14.800	48.556	28.542	1.147	37.528	28.95	3.96
14.850	48.720	43.085	0.762	56.697	43.70	1.74
14.900	48.885	28.842	0.769	62.289	29.51	2.61
14.950	49.049	38.228	0.780	68.163	38.96	2.00
15.000	49.213	24.340	0.607	48.607	24.86	2.44
15.050	49.377	19.510	0.474	55.430	20.11	2.36
15.100	49.541	17.791	0.438	60.917	18.45	2.37
15.150	49.705	16.153	0.314	64.540	16.85	1.86
15.200	49.869	15.908	0.400	65.314	16.61	2.41
15.250	50.033	15.062	0.321	69.112	15.81	2.03
15.300	50.197	15.117	0.292	114.308	16.35	1.79
15.350	50.361	14.571	0.286	119.830	15.87	1.80
15.400	50.525	14.162	0.278	120.427	15.46	1.80
15.450	50.689	14.080	0.271	122.045	15.40	1.76
15.500	50.853	13.916	0.266	123.135	15.25	1.74
15.550	51.017	13.671	0.275	122.080	14.99	1.83
15.600	51.181	14.162	0.258	124.156	15.50	1.66
15.650	51.345	13.725	0.255	127.321	15.10	1.69
15.700	51.509	13.507	0.262	124.754	14.85	1.76
15.750	51.673	13.534	0.267	125.246	14.89	1.79
15.800	51.837	13.561	0.253	124.331	14.90	1.70
15.850	52.001	13.780	0.235	124.226	15.12	1.55
15.900	52.165	13.944	0.228	123.276	15.28	1.49
15.950	52.329	14.080	0.221	123.909	15.42	1.43
16.000	52.493	13.480	0.210	121.447	14.79	1.42
16.050	52.657	13.862	0.215	126.653	15.23	1.41
16.100	52.822	13.370	0.225	123.241	14.70	1.53
16.150	52.986	12.879	0.234	124.226	14.22	1.65
16.200	53.150	13.780	0.243	130.803	15.19	1.60
16.250	53.314	14.926	0.306	116.523	16.18	1.89
16.300	53.478	16.536	0.345	130.029	17.94	1.92
16.350	53.642	18.446	0.430	130.135	19.85	2.17
16.400	53.806	20.083	0.499	114.202	21.32	2.34
16.450	53.970	21.447	0.588	111.142	22.65	2.60
16.500	54.134	21.884	0.664	110.896	23.08	2.88
16.550	54.298	22.320	0.653	107.695	23.48	2.78
16.600	54.462	22.266	0.726	100.696	23.35	3.11
16.650	54.626	20.438	0.762	97.249	21.49	3.55
16.700	54.790	22.320	0.803	96.792	23.37	3.44
16.750	54.954	22.757	0.785	99.324	23.83	3.29
16.800	55.118	22.102	0.813	97.707	23.16	3.51
16.850	55.282	18.637	0.770	91.130	19.62	3.92
16.900	55.446	21.120	0.721	111.283	22.32	3.23
16.950	55.610	21.502	0.674	115.855	22.75	2.96
17.000	55.774	21.338	0.688	117.227	22.60	3.04
17.050	55.938	21.556	0.698	120.814	22.86	3.05
17.100	56.102	21.174	0.697	119.794	22.47	3.10
17.150	56.266	21.938	0.689	126.231	23.30	2.96
17.200	56.430	22.702	0.700	122.080	24.02	2.91

17.250	56.594	23.439	0.769	118.211	24.72	3.11
17.300	56.759	23.330	0.774	109.067	24.51	3.16
17.350	56.923	21.938	0.754	112.690	23.16	3.26
17.400	57.087	22.539	0.742	120.005	23.84	3.11
17.450	57.251	22.620	0.701	121.377	23.93	2.93
17.500	57.415	23.275	0.694	121.905	24.59	2.82
17.550	57.579	24.885	0.763	133.089	26.32	2.90
17.600	57.743	25.977	0.829	125.105	27.33	3.03
17.650	57.907	25.158	0.818	120.498	26.46	3.09
17.700	58.071	24.312	0.846	124.472	25.66	3.30
17.750	58.235	24.967	0.776	121.693	26.28	2.95
17.800	58.399	25.595	0.808	135.094	27.05	2.99
17.850	58.563	30.479	0.882	160.171	32.21	2.74
17.900	58.727	33.917	0.933	191.263	35.98	2.59
17.950	58.891	37.300	1.103	206.844	39.53	2.79
18.000	59.055	39.538	1.137	222.390	41.94	2.71
18.050	59.219	40.547	1.170	243.739	43.18	2.71
18.100	59.383	42.376	1.247	253.200	45.11	2.76
18.150	59.547	43.331	1.295	250.386	46.04	2.81
18.200	59.711	43.576	1.323	242.121	46.19	2.86
18.250	59.875	46.878	1.265	268.534	49.78	2.54
18.300	60.039	50.780	1.333	208.145	53.03	2.51
18.350	60.203	51.080	1.522	178.777	53.01	2.87
18.400	60.367	56.237	1.753	177.511	58.15	3.01
18.450	60.531	54.272	1.693	83.849	55.18	3.07
18.500	60.696	50.343	1.779	128.270	51.73	3.44
18.550	60.860	61.012	2.051	156.795	62.71	3.27
18.600	61.024	58.584	2.117	63.872	59.27	3.57
18.650	61.188	53.181	2.194	62.570	53.86	4.07
18.700	61.352	43.058	1.942	76.287	43.88	4.43
18.750	61.516	40.793	1.583	120.955	42.10	3.76
18.800	61.680	45.650	1.422	184.193	47.64	2.98
18.850	61.844	49.825	1.316	212.014	52.11	2.53
18.900	62.008	47.260	1.336	203.151	49.45	2.70
18.950	62.172	48.870	1.472	221.159	51.26	2.87
19.000	62.336	63.113	1.891	213.421	65.42	2.89
19.050	62.500	54.272	1.721	84.060	55.18	3.12
19.100	62.664	47.615	1.466	89.125	48.58	3.02
19.150	62.828	35.063	0.961	71.926	35.84	2.68
19.200	62.992	32.607	0.616	88.773	33.57	1.84
19.250	63.156	29.660	0.505	78.784	30.51	1.66
19.300	63.320	26.659	0.451	82.336	27.55	1.64
19.350	63.484	27.177	0.536	95.596	28.21	1.90
19.400	63.648	28.269	0.607	106.675	29.42	2.06
19.450	63.812	36.427	0.779	133.159	37.87	2.06
19.500	63.976	40.875	1.025	138.787	42.37	2.42
19.550	64.140	37.109	1.209	124.718	38.46	3.14
19.600	64.304	38.419	1.309	147.439	40.01	3.27
19.650	64.469	39.211	1.163	169.527	41.04	2.83
19.700	64.633	41.721	1.297	189.997	43.77	2.96
19.750	64.797	55.064	1.593	223.620	57.48	2.77

19.800	64.961	55.773	2.089	51.843	56.33	3.71
19.850	65.125	46.059	1.852	44.421	46.54	3.98
19.900	65.289	44.258	1.417	46.040	44.76	3.17
19.950	65.453	34.626	1.141	71.785	35.40	3.22
20.000	65.617	44.258	0.795	95.807	45.29	1.76
20.050	65.781	39.729	0.941	118.282	41.01	2.29
20.100	65.945	44.477	1.177	137.450	45.96	2.56
20.150	66.109	67.970	1.586	115.257	69.21	2.29
20.200	66.273	87.562	2.446	65.138	88.27	2.77
20.250	66.437	61.885	2.190	29.825	62.21	3.52
20.300	66.601	65.242	1.644	56.274	65.85	2.50
20.350	66.765	69.798	1.792	70.589	70.56	2.54
20.400	66.929	63.796	1.704	35.312	64.18	2.66
20.450	67.093	56.210	1.875	34.222	56.58	3.31
20.500	67.257	46.250	1.488	48.537	46.77	3.18
20.550	67.421	58.256	1.645	77.377	59.09	2.78
20.600	67.585	80.058	1.743	133.863	81.50	2.14
20.650	67.749	124.808	2.306	162.352	126.56	1.82
20.700	67.913	161.589	1.604	27.152	161.88	0.99
20.750	68.077	210.268	0.852	128.833	211.66	0.40
20.800	68.241	232.042	1.003	18.254	232.24	0.43
20.850	68.406	199.217	1.436	16.953	199.40	0.72
20.900	68.570	185.219	2.687	13.119	185.36	1.45
20.950	68.734	152.858	4.076	11.993	152.99	2.66
21.000	68.898	137.305	3.595	26.555	137.59	2.61
21.050	69.062	138.041	1.346	21.314	138.27	0.97
21.100	69.226	178.643	0.790	18.958	178.85	0.44
21.150	69.390	211.496	1.228	4.010	211.54	0.58
21.200	69.554	280.639	1.474	27.258	280.93	0.52
21.250	69.718	302.114	1.525	25.957	302.39	0.50
21.300	69.882	337.777	1.385	45.617	338.27	0.41
21.350	70.046	339.523	1.435	42.417	339.98	0.42
21.400	70.210	345.799	2.341	28.700	346.11	0.68
21.450	70.374	349.428	4.332	28.137	349.73	1.24
21.500	70.538	255.591	4.417	15.933	255.76	1.73
21.550	70.702	152.640	5.927	15.159	152.80	3.88
21.600	70.866	148.219	3.926	14.631	148.38	2.65
21.650	71.030	139.542	4.749	17.093	139.73	3.40
21.700	71.194	127.946	5.386	-1.477	127.93	4.21
21.750	71.358	128.846	1.727	5.135	128.90	1.34
21.800	71.522	162.763	1.784	72.102	163.54	1.09
21.850	71.686	270.653	1.554	104.178	271.78	0.57
21.900	71.850	275.346	0.746	110.755	276.54	0.27
21.950	72.014	379.061	0.767	25.253	379.33	0.20
22.000	72.178	351.829	2.083	100.063	352.91	0.59
22.050	72.343	356.795	1.608	96.898	357.84	0.45
22.100	72.507	381.053	1.788	52.265	381.62	0.47
22.150	72.671	363.999	1.279	64.153	364.69	0.35
22.200	72.835	391.776	1.342	41.502	392.22	0.34
22.250	72.999	380.753	1.457	48.044	381.27	0.38
22.300	73.163	380.944	1.047	41.608	381.39	0.27

22.350	73.327	346.017	1.522	35.031	346.40	0.44
22.400	73.491	288.416	2.679	26.906	288.71	0.93
22.450	73.655	270.243	2.753	26.027	270.52	1.02
22.500	73.819	228.195	2.784	59.721	228.84	1.22
22.550	73.983	222.547	3.691	55.395	223.15	1.65
22.600	74.147	220.364	3.267	45.477	220.86	1.48
22.650	74.311	227.988	1.940	31.373	228.33	0.85
22.700	74.475	263.995	2.111	84.552	264.91	0.80
22.750	74.639	299.767	1.961	25.464	300.04	0.65
22.800	74.803	302.196	2.150	22.369	302.44	0.71
22.850	74.967	314.147	2.152	20.927	314.37	0.68
22.900	75.131	320.013	0.020	19.977	320.23	0.01
22.950	75.295	320.805	0.020	20.012	321.02	0.01

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC		
Site:	SOUTH TEXAS PROJ.		
Engineer:	M.COOK		
Sounding:	C-405s		
Date:	7/23/2007		
Time:	11:53 AM		

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_M for clays:	15	
OCR number, k_{OCR}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	95.366	0.806	0.856		95.37	0.85	8	121	0.020	0.000	0.020	>1000	0.85	0.00
0.200	0.656	86.616	1.149	0.199		86.62	1.33	8	121	0.040	0.000	0.040	>1000	1.33	0.00
0.300	0.984	22.375	0.674	0.176		22.38	3.01	5	115	0.058	0.000	0.058	381.65	3.02	0.00
0.400	1.312	10.123	0.322	0.797		10.13	3.18	4	115	0.077	0.000	0.077	130.11	3.21	0.01
0.500	1.640	9.814	0.307	1.301		9.83	3.12	4	115	0.096	0.000	0.096	101.30	3.15	0.01
0.600	1.969	13.098	0.368	1.489		13.11	2.81	5	115	0.115	0.000	0.115	113.16	2.83	0.01
0.700	2.297	16.572	0.450	2.286		16.60	2.71	5	115	0.134	0.000	0.134	123.17	2.73	0.01
0.800	2.625	18.064	0.561	2.908		18.10	3.10	5	115	0.152	0.000	0.152	117.69	3.12	0.01
0.900	2.953	19.182	0.559	3.295		19.22	2.91	5	115	0.171	0.000	0.171	111.21	2.93	0.01
1.000	3.281	20.256	0.719	4.514		20.30	3.54	5	115	0.190	0.000	0.190	105.83	3.57	0.02
1.100	3.609	22.157	1.094	5.147		22.21	4.93	3	111	0.208	0.000	0.208	105.62	4.97	0.02
1.200	3.937	21.538	1.210	3.822		21.58	5.61	3	111	0.227	0.000	0.227	94.23	5.67	0.01
1.300	4.265	20.047	1.186	2.779		20.08	5.91	3	111	0.245	0.000	0.245	80.98	5.98	0.01
1.400	4.593	18.418	1.115	1.806		18.44	6.05	3	111	0.263	0.000	0.263	69.06	6.13	0.01
1.500	4.921	16.818	1.017	0.809		16.83	6.04	3	111	0.281	0.000	0.281	58.79	6.15	0.00
1.600	5.249	16.172	1.008	1.267		16.19	6.23	3	111	0.300	0.000	0.300	53.00	6.35	0.01
1.700	5.577	16.272	1.040	1.442		16.29	6.39	3	111	0.318	0.000	0.318	50.22	6.51	0.01
1.800	5.906	16.017	1.050	1.395		16.03	6.55	3	111	0.336	0.000	0.336	46.68	6.69	0.01
1.900	6.234	15.235	1.005	1.336		15.25	6.59	3	111	0.355	0.000	0.355	42.01	6.75	0.01
2.000	6.562	13.798	0.848	1.313		13.81	6.14	3	111	0.373	0.000	0.373	36.05	6.31	0.01
2.100	6.890	13.179	0.673	1.372		13.19	5.10	3	111	0.391	0.000	0.391	32.74	5.26	0.01
2.200	7.218	13.443	0.602	2.099		13.47	4.47	3	111	0.409	0.000	0.409	31.90	4.61	0.01
2.300	7.546	13.371	0.570	2.322		13.40	4.26	3	111	0.428	0.000	0.428	30.33	4.40	0.01
2.400	7.874	12.052	0.515	2.110		12.07	4.26	3	111	0.446	0.000	0.446	26.08	4.43	0.01
2.500	8.202	13.116	0.530	2.005		13.14	4.03	3	111	0.464	0.000	0.464	27.30	4.18	0.01
2.600	8.530	13.744	0.613	2.755		13.77	4.45	3	111	0.482	0.000	0.482	27.55	4.61	0.01
2.700	8.858	14.917	0.605	2.919		14.95	4.05	4	115	0.501	0.000	0.501	28.82	4.19	0.01
2.800	9.186	15.562	0.599	2.403		15.59	3.84	4	115	0.520	0.000	0.520	28.97	3.98	0.01
2.900	9.514	17.400	0.638	2.239		17.42	3.66	4	115	0.539	0.000	0.539	31.34	3.78	0.01
3.000	9.843	15.253	0.679	2.110		15.28	4.44	3	111	0.557	0.000	0.557	26.42	4.61	0.01
3.100	10.171	15.699	0.717	2.169		15.72	4.56	3	111	0.575	0.005	0.570	26.57	4.74	0.01

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	7	1.17	658.11	3.00E-2	14.2	103.7	137	56	381	227			
0.200	0.656	6	1.35	422.52	3.00E-4	13.6	70.4	110	54	346	277			
0.300	0.984	8	1.92	114.22	3.00E-6	4.3	18.1	57	47	90				
0.400	1.312	8	2.19	54.35	3.00E-6	2.2	8.0	39	42	41				
0.500	1.640	5	2.26	47.61	3.00E-6	2.1	7.1	37	41	39	180			
0.600	1.969	5	2.19	53.84	3.00E-6	2.8	8.4	39	41	52	210			
0.700	2.297	5	2.16	60.30	3.00E-6	3.5	9.8	42	42	66	239			
0.800	2.625	5	2.21	62.34	3.00E-6	3.9	10.2	42	41	72	257			
0.900	2.953	5	2.21	61.02	3.00E-6	4.1	10.2	42	41	77	273			
1.000	3.281	8	2.29	62.62	3.00E-6	4.5	10.6	42	41	81				
1.100	3.609	9	2.40	67.92	1.00E-8	5.2	11.6					1.47	7.04	31.7
1.200	3.937	9	2.48	64.19	1.00E-8	5.2	11.2					1.42	6.28	28.3
1.300	4.265	9	2.53	57.71	1.00E-8	5.0	10.3					1.32	5.40	24.3
1.400	4.593	9	2.59	51.13	1.00E-8	4.7	9.4					1.21	4.60	20.7
1.500	4.921	3	2.63	44.96	1.00E-9	4.4	8.5				496	1.10	3.92	17.6
1.600	5.249	3	2.67	41.68	1.00E-9	4.3	8.1				477	1.06	3.53	15.9
1.700	5.577	3	2.70	40.29	1.00E-9	4.4	8.0				479	1.06	3.35	15.1
1.800	5.906	3	2.73	38.22	1.00E-9	4.4	7.8				471	1.05	3.11	14.0
1.900	6.234	3	2.76	35.10	1.00E-9	4.2	7.3				447	0.99	2.80	12.6
2.000	6.562	3	2.78	30.59	1.00E-9	3.9	6.5				403	0.90	2.40	10.8
2.100	6.890	3	2.75	27.76	1.00E-9	3.7	6.0				384	0.85	2.18	9.8
2.200	7.218	4	2.72	27.01	3.00E-8	3.7	5.9				392	0.87	2.13	9.6
2.300	7.546	4	2.72	25.89	3.00E-8	3.6	5.7				389	0.86	2.02	9.1
2.400	7.874	3	2.77	22.72	1.00E-9	3.4	5.2				349	0.78	1.74	7.8
2.500	8.202	4	2.74	23.76	3.00E-8	3.6	5.5				380	0.84	1.82	8.2
2.600	8.530	3	2.77	24.27	1.00E-9	3.8	5.7				399	0.89	1.84	8.3
2.700	8.858	4	2.73	25.31	3.00E-8	4.1	5.9				433	0.96	1.92	8.6
2.800	9.186	4	2.71	25.51	3.00E-8	4.2	6.0				452	1.00	1.93	8.7
2.900	9.514	4	2.67	27.54	3.00E-8	4.6	6.5				507	1.13	2.09	9.4
3.000	9.843	3	2.78	23.89	1.00E-9	4.3	5.9				442	0.98	1.76	7.9
3.100	10.171	3	2.79	24.13	1.00E-9	4.4	6.0				454	1.01	1.77	8.0

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tn}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	16.335	0.701	2.122		16.36	4.29	3	111	0.594	0.015	0.578	27.27	4.45	0.01
3.300	10.827	15.862	0.641	2.052		15.88	4.03	4	115	0.612	0.026	0.587	26.03	4.20	0.01
3.400	11.155	18.455	0.695	2.263		18.48	3.76	4	115	0.631	0.036	0.595	29.98	3.89	0.01
3.500	11.483	18.227	0.754	2.474		18.25	4.13	4	115	0.650	0.046	0.604	29.15	4.29	0.01
3.600	11.811	18.810	0.711	2.380		18.84	3.78	4	115	0.669	0.056	0.612	29.66	3.92	0.01
3.700	12.139	19.737	0.656	2.497		19.76	3.32	5	115	0.688	0.067	0.621	30.72	3.44	0.01
3.800	12.467	20.156	0.697	2.626		20.18	3.45	5	115	0.706	0.077	0.630	30.94	3.58	0.01
3.900	12.795	20.665	0.703	2.708		20.69	3.40	5	115	0.725	0.087	0.638	31.29	3.52	0.01
4.000	13.123	21.347	0.583	2.837		21.38	2.73	5	115	0.744	0.097	0.647	31.91	2.83	0.01
4.100	13.451	22.120	0.688	3.353		22.16	3.11	5	115	0.763	0.108	0.655	32.65	3.22	0.01
4.200	13.780	22.521	0.701	3.658		22.56	3.11	5	115	0.782	0.118	0.664	32.81	3.22	0.01
4.300	14.108	21.502	0.583	3.764		21.54	2.71	5	115	0.800	0.128	0.672	30.85	2.81	0.01
4.400	14.436	22.011	0.613	4.045		22.05	2.78	5	115	0.819	0.138	0.681	31.19	2.89	0.01
4.500	14.764	23.393	0.712	4.994		23.45	3.04	5	115	0.838	0.149	0.689	32.79	3.15	0.01
4.600	15.092	24.694	0.780	5.710		24.76	3.15	5	115	0.857	0.159	0.698	34.24	3.26	0.01
4.700	15.420	22.684	0.750	5.944		22.75	3.30	5	115	0.876	0.169	0.707	30.95	3.43	0.01
4.800	15.748	20.592	0.637	6.014		20.66	3.08	5	115	0.894	0.179	0.715	27.63	3.22	0.01
4.900	16.076	15.853	0.404	5.827		15.92	2.54	5	115	0.913	0.189	0.724	20.73	2.70	0.02
5.000	16.404	15.808	0.351	5.862		15.87	2.21	5	115	0.932	0.200	0.732	20.40	2.35	0.01
5.100	16.732	19.146	0.585	6.167		19.21	3.04	5	115	0.951	0.210	0.741	24.65	3.20	0.01
5.200	17.060	23.211	0.911	6.378		23.28	3.91	4	115	0.970	0.220	0.749	29.77	4.08	0.01
5.300	17.388	22.620	0.971	6.612		22.69	4.28	4	115	0.988	0.230	0.758	28.63	4.48	0.01
5.400	17.717	19.664	0.832	6.378		19.73	4.21	4	115	1.007	0.241	0.767	24.43	4.44	0.01
5.500	18.045	19.137	0.791	6.097		19.20	4.12	4	115	1.026	0.251	0.775	23.45	4.35	0.01
5.600	18.373	18.627	0.643	6.038		18.69	3.44	5	115	1.045	0.261	0.784	22.52	3.64	0.01
5.700	18.701	19.064	0.628	6.237		19.13	3.28	5	115	1.064	0.271	0.792	22.81	3.48	0.01
5.800	19.029	23.539	0.732	6.519		23.61	3.10	5	115	1.082	0.282	0.801	28.13	3.25	0.01
5.900	19.357	24.148	0.840	5.839		24.21	3.47	5	115	1.101	0.292	0.809	28.55	3.64	0.01
6.000	19.685	13.234	0.583	4.279		13.28	4.39	3	111	1.119	0.302	0.817	14.88	4.80	0.00
6.100	20.013	14.744	0.318	4.819		14.80	2.15	5	115	1.138	0.312	0.826	16.54	2.33	0.00
6.200	20.341	20.092	0.318	5.124		20.15	1.58	6	115	1.157	0.323	0.834	22.76	1.67	0.00
6.300	20.669	13.471	0.207	3.459		13.51	1.53	6	115	1.176	0.333	0.843	14.63	1.68	-0.01
6.400	20.997	19.728	0.347	5.651		19.79	1.75	6	115	1.195	0.343	0.852	21.83	1.87	0.00
6.500	21.325	30.406	0.545	6.249		30.47	1.79	6	115	1.213	0.353	0.860	34.02	1.86	0.00
6.600	21.654	35.309	0.439	5.381		35.37	1.24	7	118	1.233	0.364	0.869	39.27	1.29	0.00
6.700	21.982	38.419	0.356	4.936		38.47	0.93	7	118	1.252	0.374	0.878	42.38	0.96	0.00
6.800	22.310	30.919	0.539	4.631		30.97	1.74	6	115	1.271	0.384	0.887	33.49	1.82	0.00
6.900	22.638	44.235	0.282	4.924		44.29	0.64	8	121	1.291	0.394	0.897	47.96	0.66	0.00
7.000	22.966	56.665	0.317	4.912		56.72	0.56	8	121	1.311	0.404	0.906	61.15	0.57	0.00
7.100	23.294	57.419	0.425	4.666		57.47	0.74	8	121	1.330	0.415	0.916	61.31	0.76	0.00
7.200	23.622	56.001	0.423	4.830		56.05	0.76	8	121	1.350	0.425	0.925	59.12	0.77	0.00
7.300	23.950	54.518	0.448	4.525		54.57	0.82	8	121	1.370	0.435	0.935	56.90	0.84	0.00
7.400	24.278	56.792	0.363	4.033		56.84	0.64	8	121	1.390	0.445	0.945	58.70	0.66	0.00
7.500	24.606	57.410	0.237	3.693		57.45	0.41	8	121	1.410	0.456	0.954	58.73	0.42	0.00
7.600	24.934	58.711	0.317	3.412		58.75	0.54	8	121	1.430	0.466	0.964	59.47	0.55	0.00
7.700	25.262	57.801	0.391	5.159		57.86	0.68	8	121	1.449	0.476	0.973	57.95	0.69	0.00
7.800	25.591	64.223	0.478	6.190		64.29	0.74	8	121	1.469	0.486	0.983	63.91	0.76	0.00
7.900	25.919	84.751	0.740	6.905		84.83	0.87	8	121	1.489	0.497	0.993	83.96	0.89	0.00
8.000	26.247	154.404	1.248	9.286		154.50	0.81	9	124	1.509	0.507	1.003	152.59	0.82	0.00
8.100	26.575	219.045	1.431	10.340		219.16	0.65	9	124	1.530	0.517	1.013	214.87	0.66	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	4	2.76	24.70	3.00E-8	4.5	6.1				473	1.05	1.82	8.2
3.300	10.827	4	2.76	23.63	3.00E-8	4.4	5.9				458	1.02	1.74	7.8
3.400	11.155	4	2.69	26.97	3.00E-8	4.9	6.6				535	1.19	2.00	9.0
3.500	11.483	4	2.73	26.45	3.00E-8	5.0	6.6				528	1.17	1.94	8.7
3.600	11.811	4	2.70	26.84	3.00E-8	5.1	6.6				545	1.21	1.98	8.9
3.700	12.139	4	2.65	27.65	3.00E-8	5.2	6.8				572	1.27	2.05	9.2
3.800	12.467	4	2.66	27.97	3.00E-8	5.3	6.9				584	1.30	2.06	9.3
3.900	12.795	4	2.65	28.32	3.00E-8	5.4	7.0				599	1.33	2.09	9.4
4.000	13.123	4	2.58	28.66	3.00E-8	5.4	6.9				619	1.38	2.13	9.6
4.100	13.451	4	2.61	29.54	3.00E-8	5.7	7.2				642	1.43	2.18	9.8
4.200	13.780	4	2.61	29.75	3.00E-8	5.8	7.3				653	1.45	2.19	9.8
4.300	14.108	4	2.59	27.99	3.00E-8	5.5	6.9				622	1.38	2.06	9.3
4.400	14.436	4	2.59	28.38	3.00E-8	5.6	7.0				637	1.42	2.08	9.4
4.500	14.764	4	2.60	29.95	3.00E-8	6.0	7.4				678	1.51	2.19	9.8
4.600	15.092	4	2.60	31.34	3.00E-8	6.3	7.8				717	1.59	2.28	10.3
4.700	15.420	4	2.65	28.57	3.00E-8	5.9	7.3				656	1.46	2.06	9.3
4.800	15.748	4	2.66	25.63	3.00E-8	5.4	6.6				593	1.32	1.84	8.3
4.900	16.076	4	2.71	19.37	3.00E-8	4.3	5.2				450	1.00	1.38	6.2
5.000	16.404	4	2.68	19.04	3.00E-8	4.2	5.1				448	1.00	1.36	6.1
5.100	16.732	4	2.70	23.10	3.00E-8	5.2	6.2				548	1.22	1.64	7.4
5.200	17.060	4	2.71	27.98	3.00E-8	6.3	7.5				669	1.49	1.98	8.9
5.300	17.388	4	2.75	27.08	3.00E-8	6.2	7.4				651	1.45	1.91	8.6
5.400	17.717	3	2.80	23.25	1.00E-9	5.6	6.6				562	1.25	1.63	7.3
5.500	18.045	3	2.80	22.38	1.00E-9	5.5	6.4				545	1.21	1.56	7.0
5.600	18.373	4	2.77	21.45	3.00E-8	5.2	6.0				529	1.18	1.50	6.8
5.700	18.701	4	2.75	21.73	3.00E-8	5.3	6.1				542	1.20	1.52	6.8
5.800	19.029	4	2.66	26.65	3.00E-8	6.2	7.1				676	1.50	1.88	8.4
5.900	19.357	4	2.69	27.17	3.00E-8	6.5	7.4				693	1.54	1.90	8.6
6.000	19.685	3	2.98	14.51	1.00E-9	4.2	4.8				365	0.81	0.99	4.5
6.100	20.013	4	2.75	15.87	3.00E-8	4.1	4.6				410	0.91	1.10	5.0
6.200	20.341	4	2.56	21.58	3.00E-8	5.0	5.7				570	1.27	1.52	6.8
6.300	20.669	4	2.72	14.06	3.00E-8	3.7	4.1				370	0.82	0.98	4.4
6.400	20.997	4	2.60	20.85	3.00E-8	5.0	5.6				558	1.24	1.46	6.6
6.500	21.325	5	2.44	32.24	3.00E-6	7.2	8.0	30	34	122	545			
6.600	21.654	5	2.30	37.00	3.00E-6	7.8	8.7	33	35	141	575			
6.700	21.982	5	2.20	39.83	3.00E-6	8.2	9.0	34	36	154	593			
6.800	22.310	5	2.44	31.99	3.00E-6	7.3	8.0	30	34	124	553			
6.900	22.638	6	2.07	45.10	3.00E-4	8.9	9.7	36	37	177	626			
7.000	22.966	6	1.95	57.40	3.00E-4	10.9	11.8	40	38	227	682			
7.100	23.294	6	2.01	57.95	3.00E-4	11.3	12.2	41	38	230	687			
7.200	23.622	6	2.03	56.15	3.00E-4	11.1	11.9	40	38	224	684			
7.300	23.950	6	2.06	54.33	3.00E-4	11.0	11.7	39	37	218	680			
7.400	24.278	6	1.99	56.13	3.00E-4	11.1	11.8	40	38	227	692			
7.500	24.606	6	1.90	56.23	3.00E-4	10.9	11.5	40	38	230	697			
7.600	24.934	6	1.95	57.26	3.00E-4	11.3	11.9	40	38	235	704			
7.700	25.262	6	2.01	56.10	3.00E-4	11.4	11.9	40	38	231	703			
7.800	25.591	6	2.00	62.09	3.00E-4	12.6	13.1	42	38	257	731			
7.900	25.919	6	1.94	81.79	3.00E-4	16.3	16.8	48	40	339	804			
8.000	26.247	6	1.71	148.71	3.00E-4	27.4	28.1	65	43	618	985			
8.100	26.575	6	1.54	210.23	3.00E-4	36.6	37.4	78	44	877	1111			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	169.866	1.119	7.527		169.95	0.66	9	124	1.550	0.527	1.023	164.62	0.66	0.00
8.300	27.231	151.721	0.713	7.656		151.80	0.47	9	124	1.571	0.538	1.033	145.42	0.47	0.00
8.400	27.559	118.350	0.575	7.128		118.43	0.49	9	124	1.591	0.548	1.043	112.00	0.49	0.00
8.500	27.887	82.068	0.555	5.663		82.13	0.68	8	121	1.611	0.558	1.053	76.48	0.69	0.00
8.600	28.215	83.742	0.781	5.756		83.80	0.93	8	121	1.631	0.568	1.062	77.35	0.95	0.00
8.700	28.543	101.232	0.817	6.577		101.30	0.81	8	121	1.650	0.578	1.072	92.96	0.82	0.00
8.800	28.871	99.859	0.652	6.366		99.93	0.65	9	124	1.671	0.589	1.082	90.80	0.66	0.00
8.900	29.199	83.396	0.738	5.651		83.46	0.88	8	121	1.691	0.599	1.092	74.90	0.90	0.00
9.000	29.528	72.499	1.362	5.311		72.56	1.88	7	118	1.710	0.609	1.101	64.36	1.92	0.00
9.100	29.856	50.480	1.691	5.030		50.53	3.35	6	115	1.729	0.619	1.109	43.99	3.46	-0.01
9.200	30.184	32.462	1.038	23.026		32.71	3.17	5	115	1.748	0.630	1.118	27.70	3.35	0.03
9.300	30.512	25.731	0.920	23.494		25.98	3.54	5	115	1.766	0.640	1.127	21.50	3.80	0.04
9.400	30.840	28.569	1.049	16.179		28.74	3.65	5	115	1.785	0.650	1.135	23.75	3.89	0.02
9.500	31.168	43.631	0.979	10.927		43.75	2.24	6	115	1.804	0.660	1.144	36.68	2.33	0.00
9.600	31.496	55.410	1.121	5.217		55.47	2.02	7	118	1.823	0.671	1.153	46.54	2.09	-0.01
9.700	31.824	75.883	1.111	4.842		75.94	1.46	7	118	1.843	0.681	1.162	63.77	1.50	0.00
9.800	32.152	102.706	0.788	5.194		102.76	0.77	8	121	1.862	0.691	1.171	86.14	0.78	0.00
9.900	32.480	120.660	0.976	5.440		120.72	0.81	9	124	1.883	0.701	1.182	100.58	0.82	0.00
10.000	32.808	101.023	1.027	4.818		101.08	1.02	8	121	1.903	0.712	1.191	83.26	1.04	0.00
10.100	33.136	76.938	0.823	4.397		76.99	1.07	8	121	1.923	0.722	1.201	62.51	1.10	-0.01
10.200	33.465	77.511	1.018	4.619		77.56	1.31	8	121	1.942	0.732	1.210	62.48	1.35	-0.01
10.300	33.793	88.517	1.292	4.983		88.57	1.46	8	121	1.962	0.742	1.220	70.99	1.49	0.00
10.400	34.121	101.441	0.830	5.182		101.50	0.82	8	121	1.982	0.752	1.230	80.94	0.83	0.00
10.500	34.449	102.369	0.492	5.487		102.43	0.48	9	124	2.002	0.763	1.240	81.01	0.49	0.00
10.600	34.777	92.028	0.644	5.956		92.09	0.70	8	121	2.022	0.773	1.249	72.10	0.71	0.00
10.700	35.105	97.830	0.680	8.371		97.92	0.69	8	121	2.042	0.783	1.259	76.16	0.71	0.00
10.800	35.433	112.229	0.841	13.365		112.37	0.75	9	124	2.062	0.793	1.269	86.93	0.76	0.00
10.900	35.761	128.118	0.977	13.822		128.27	0.76	9	124	2.083	0.804	1.279	98.65	0.77	0.00
11.000	36.089	134.585	1.081	14.127		134.74	0.80	9	124	2.103	0.814	1.289	102.88	0.82	0.00
11.100	36.417	148.365	1.243	14.972		148.53	0.84	9	124	2.124	0.824	1.299	112.67	0.85	0.00
11.200	36.745	165.419	1.439	15.487		165.59	0.87	9	124	2.144	0.834	1.310	124.81	0.88	0.00
11.300	37.073	162.909	1.405	14.198		163.06	0.86	9	124	2.164	0.845	1.320	121.92	0.87	0.00
11.400	37.402	148.674	1.252	14.057		148.83	0.84	9	124	2.185	0.855	1.330	110.28	0.85	0.00
11.500	37.730	136.277	1.221	14.139		136.43	0.90	9	124	2.205	0.865	1.340	100.18	0.91	0.00
11.600	38.058	118.086	1.119	12.814		118.22	0.95	8	121	2.225	0.875	1.350	85.96	0.96	0.00
11.700	38.386	99.022	0.958	12.134		99.15	0.97	8	121	2.245	0.886	1.359	71.30	0.99	0.00
11.800	38.714	98.749	0.575	8.359		98.84	0.58	9	124	2.265	0.896	1.369	70.53	0.60	0.00
11.900	39.042	96.457	0.640	5.393		96.51	0.66	8	121	2.285	0.906	1.379	68.34	0.68	-0.01
12.000	39.370	97.512	0.585	4.783		97.56	0.60	9	124	2.305	0.916	1.389	68.58	0.61	-0.01
12.100	39.698	92.474	0.714	4.572		92.52	0.77	8	121	2.325	0.927	1.399	64.49	0.79	-0.01
12.200	40.026	87.889	1.025	6.307		87.96	1.17	8	121	2.345	0.937	1.408	60.80	1.20	-0.01
12.300	40.354	107.526	0.829	7.069		107.60	0.77	9	124	2.365	0.947	1.418	74.20	0.79	0.00
12.400	40.682	120.251	1.087	5.815		120.31	0.90	9	124	2.386	0.957	1.428	82.56	0.92	0.00
12.500	41.011	97.985	1.710	4.830		98.04	1.74	7	118	2.405	0.967	1.438	66.53	1.79	-0.01
12.600	41.339	78.021	1.733	7.773		78.10	2.22	7	118	2.424	0.978	1.447	52.32	2.29	-0.01
12.700	41.667	109.891	0.951	9.121		109.99	0.86	8	121	2.444	0.988	1.456	73.85	0.88	0.00
12.800	41.995	123.207	0.769	7.691		123.29	0.62	9	124	2.464	0.998	1.466	82.40	0.64	0.00
12.900	42.323	125.271	1.072	7.081		125.35	0.86	9	124	2.485	1.008	1.476	83.21	0.87	0.00
13.000	42.651	131.165	1.221	7.187		131.24	0.93	9	124	2.505	1.019	1.487	86.60	0.95	0.00
13.100	42.979	149.319	1.083	8.113		149.41	0.72	9	124	2.526	1.029	1.497	98.14	0.74	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.63	161.86	3.00E-4	29.3	29.8	68	43	680	1024			
8.300	27.231	6	1.59	143.69	3.00E-4	25.7	26.0	64	43	607	989			
8.400	27.559	6	1.69	111.23	3.00E-4	20.8	20.9	56	41	474	914			
8.500	27.887	6	1.91	76.32	3.00E-4	15.6	15.6	47	39	329	811			
8.600	28.215	6	1.98	77.47	3.00E-4	16.4	16.3	47	39	335	819			
8.700	28.543	6	1.88	93.48	3.00E-4	19.0	18.9	52	40	405	875			
8.800	28.871	6	1.84	91.70	3.00E-4	18.5	18.3	51	40	400	874			
8.900	29.199	6	1.98	75.83	3.00E-4	16.3	16.0	47	39	334	825			
9.000	29.528	5	2.24	65.18	3.00E-6	15.7	15.4	43	38	290	790			
9.100	29.856	4	2.54	44.48	3.00E-8	12.5	12.2				1464	3.25	2.93	13.2
9.200	30.184	4	2.68	27.99	3.00E-8	8.6	8.4				929	2.06	1.85	8.3
9.300	30.512	4	2.79	21.71	3.00E-8	7.3	7.1				727	1.61	1.43	6.4
9.400	30.840	4	2.77	24.02	3.00E-8	8.0	7.7				809	1.80	1.58	7.1
9.500	31.168	5	2.48	37.39	3.00E-6	10.5	10.1	33	35	175	676			
9.600	31.496	5	2.37	47.67	3.00E-6	12.7	12.2	37	36	222	733			
9.700	31.824	5	2.17	65.83	3.00E-6	16.0	15.3	43	38	304	817			
9.800	32.152	6	1.90	89.93	3.00E-4	19.4	18.5	51	40	411	906			
9.900	32.480	6	1.85	105.53	3.00E-4	22.5	21.3	55	41	483	958			
10.000	32.808	6	1.98	87.27	3.00E-4	19.7	18.6	50	40	404	906			
10.100	33.136	5	2.10	65.46	3.00E-6	15.7	14.7	43	38	308	829			
10.200	33.465	5	2.15	65.46	3.00E-6	16.2	15.1	43	38	310	834			
10.300	33.793	5	2.14	74.63	3.00E-6	18.4	17.1	46	39	354	874			
10.400	34.121	6	1.93	86.10	3.00E-4	19.5	18.1	50	39	406	917			
10.500	34.449	6	1.81	86.99	3.00E-4	18.7	17.3	50	39	410	922			
10.600	34.777	6	1.94	77.19	3.00E-4	17.7	16.3	47	39	368	892			
10.700	35.105	6	1.92	81.89	3.00E-4	18.6	17.1	48	39	392	913			
10.800	35.433	6	1.89	93.93	3.00E-4	21.2	19.3	52	40	449	958			
10.900	35.761	6	1.85	107.20	3.00E-4	23.8	21.6	55	41	513	1004			
11.000	36.089	6	1.85	112.19	3.00E-4	25.0	22.6	57	41	539	1023			
11.100	36.417	6	1.83	123.44	3.00E-4	27.3	24.7	59	41	594	1060			
11.200	36.745	6	1.80	137.43	3.00E-4	30.2	27.2	63	42	662	1102			
11.300	37.073	6	1.81	134.67	3.00E-4	29.8	26.7	62	42	652	1099			
11.400	37.402	6	1.83	121.99	3.00E-4	27.5	24.5	59	41	595	1069			
11.500	37.730	6	1.88	110.80	3.00E-4	25.7	22.8	56	41	546	1041			
11.600	38.058	6	1.95	94.89	3.00E-4	22.8	20.2	52	40	473	995			
11.700	38.386	6	2.02	78.52	3.00E-4	19.6	17.3	47	39	397	940			
11.800	38.714	6	1.90	78.62	3.00E-4	18.7	16.5	47	39	395	942			
11.900	39.042	6	1.94	76.15	3.00E-4	18.6	16.3	47	39	386	936			
12.000	39.370	6	1.92	76.80	3.00E-4	18.6	16.2	47	39	390	942			
12.100	39.698	6	2.00	71.93	3.00E-4	18.2	15.8	45	38	370	928			
12.200	40.026	5	2.13	67.26	3.00E-6	18.2	15.8	44	38	352	914			
12.300	40.354	6	1.95	83.59	3.00E-4	20.8	17.9	49	39	430	980			
12.400	40.682	6	1.95	93.25	3.00E-4	23.2	20.0	52	40	481	1020			
12.500	41.011	5	2.21	73.59	3.00E-6	21.0	18.0	46	38	392	955			
12.600	41.339	5	2.36	57.18	3.00E-6	17.8	15.2	40	37	312	887			
12.700	41.667	6	1.98	83.85	3.00E-4	21.5	18.3	49	39	440	996			
12.800	41.995	6	1.86	94.93	3.00E-4	23.0	19.5	52	40	493	1037			
12.900	42.323	6	1.94	95.43	3.00E-4	24.1	20.4	52	40	501	1045			
13.000	42.651	6	1.94	99.51	3.00E-4	25.3	21.3	53	40	525	1064			
13.100	42.979	6	1.84	114.37	3.00E-4	27.6	23.2	57	41	598	1113			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	140.197	1.059	9.321		140.30	0.75	9	124	2.546	1.039	1.507	91.42	0.77	0.00
13.300	43.635	92.992	2.089	8.582		93.08	2.24	7	118	2.565	1.049	1.516	59.71	2.31	0.00
13.400	43.963	44.495	1.997	7.598		44.58	4.48	4	115	2.584	1.060	1.524	27.55	4.76	-0.01
13.500	44.291	30.143	1.036	16.812		30.32	3.42	5	115	2.603	1.070	1.533	18.08	3.74	0.01
13.600	44.619	27.059	0.454	77.799		27.90	1.63	6	115	2.622	1.080	1.542	16.40	1.79	0.18
13.700	44.948	24.703	0.363	127.309		26.08	1.39	6	115	2.640	1.090	1.550	15.12	1.55	0.34
13.800	45.276	24.367	0.551	153.196		26.02	2.12	6	115	2.659	1.101	1.559	14.99	2.36	0.43
13.900	45.604	25.040	0.640	156.068		26.73	2.40	6	115	2.678	1.111	1.567	15.34	2.66	0.42
14.000	45.932	26.268	0.703	152.961		27.92	2.52	6	115	2.697	1.121	1.576	16.01	2.79	0.39
14.100	46.260	26.213	0.803	134.332		27.66	2.90	5	115	2.716	1.131	1.584	15.75	3.22	0.34
14.200	46.588	24.385	0.727	130.592		25.80	2.82	5	115	2.734	1.141	1.593	14.48	3.15	0.36
14.300	46.916	30.661	0.823	152.152		32.30	2.55	6	115	2.753	1.152	1.602	18.45	2.79	0.33
14.400	47.244	67.225	1.822	83.661		68.13	2.67	6	115	2.772	1.162	1.610	40.59	2.79	0.07
14.500	47.572	148.819	2.085	58.232		149.45	1.39	8	121	2.792	1.172	1.620	90.55	1.42	0.02
14.600	47.900	168.929	2.096	18.911		169.13	1.24	8	121	2.812	1.182	1.629	102.08	1.26	0.00
14.700	48.228	79.694	2.249	13.741		79.84	2.82	6	115	2.831	1.193	1.638	47.02	2.92	0.00
14.800	48.556	37.328	1.274	38.208		37.74	3.38	5	115	2.849	1.203	1.646	21.19	3.65	0.04
14.900	48.885	36.718	0.770	62.383		37.39	2.06	6	115	2.868	1.213	1.655	20.86	2.23	0.09
15.000	49.213	27.359	0.620	57.400		27.98	2.22	6	115	2.887	1.223	1.664	15.08	2.47	0.12
15.100	49.541	17.818	0.409	60.296		18.47	2.21	5	115	2.906	1.234	1.672	9.31	2.63	0.20
15.200	49.869	15.708	0.345	66.322		16.42	2.10	5	115	2.924	1.244	1.681	8.03	2.56	0.26
15.300	50.197	14.917	0.300	101.083		16.01	1.87	6	115	2.943	1.254	1.689	7.73	2.29	0.46
15.400	50.525	14.271	0.278	120.767		15.58	1.79	6	115	2.962	1.264	1.698	7.43	2.21	0.59
15.500	50.853	13.889	0.271	122.420		15.21	1.78	6	115	2.981	1.275	1.706	7.17	2.21	0.62
15.600	51.181	13.853	0.263	124.519		15.20	1.73	6	115	3.000	1.285	1.715	7.11	2.15	0.63
15.700	51.509	13.589	0.261	125.774		14.95	1.75	6	115	3.018	1.295	1.723	6.92	2.19	0.65
15.800	51.837	13.625	0.252	124.601		14.97	1.68	6	115	3.037	1.305	1.732	6.89	2.11	0.64
15.900	52.165	13.935	0.228	123.804		15.27	1.49	6	115	3.056	1.315	1.741	7.02	1.87	0.62
16.000	52.493	13.807	0.215	124.003		15.15	1.42	6	115	3.075	1.326	1.749	6.90	1.78	0.63
16.100	52.822	13.370	0.225	124.707		14.72	1.53	6	115	3.094	1.336	1.758	6.61	1.93	0.66
16.200	53.150	13.862	0.261	123.851		15.20	1.72	6	115	3.112	1.346	1.766	6.84	2.16	0.63
16.300	53.478	16.636	0.360	125.562		17.99	2.00	6	115	3.131	1.356	1.775	8.37	2.42	0.52
16.400	53.806	19.992	0.506	118.493		21.27	2.38	5	115	3.150	1.367	1.783	10.16	2.79	0.40
16.500	54.134	21.884	0.635	109.911		23.07	2.75	5	115	3.169	1.377	1.792	11.11	3.19	0.33
16.600	54.462	21.675	0.714	101.880		22.77	3.13	5	115	3.188	1.387	1.801	10.88	3.64	0.30
16.700	54.790	21.838	0.783	97.788		22.89	3.42	5	115	3.206	1.397	1.809	10.88	3.98	0.29
16.800	55.118	21.165	0.789	96.054		22.20	3.56	5	115	3.225	1.408	1.818	10.44	4.16	0.29
16.900	55.446	20.420	0.722	106.089		21.57	3.35	5	115	3.244	1.418	1.826	10.03	3.94	0.34
17.000	55.774	21.465	0.687	117.965		22.74	3.02	5	115	3.263	1.428	1.835	10.62	3.53	0.36
17.100	56.102	21.556	0.695	122.280		22.88	3.04	5	115	3.282	1.438	1.843	10.63	3.55	0.38
17.200	56.430	22.693	0.719	122.174		24.01	3.00	5	115	3.300	1.449	1.852	11.18	3.47	0.35
17.300	56.759	22.902	0.766	113.323		24.13	3.17	5	115	3.319	1.459	1.860	11.18	3.68	0.32
17.400	57.087	22.366	0.732	118.024		23.64	3.10	5	115	3.338	1.469	1.869	10.86	3.61	0.35
17.500	57.415	23.593	0.719	125.457		24.95	2.88	5	115	3.357	1.479	1.878	11.50	3.33	0.35
17.600	57.743	25.340	0.803	126.231		26.70	3.01	5	115	3.376	1.489	1.886	12.37	3.44	0.33
17.700	58.071	24.812	0.813	122.221		26.13	3.11	5	115	3.394	1.500	1.895	12.00	3.58	0.32
17.800	58.399	27.014	0.822	138.986		28.51	2.88	5	115	3.413	1.510	1.903	13.19	3.27	0.34
17.900	58.727	33.899	0.973	186.093		35.91	2.71	6	115	3.432	1.520	1.912	16.99	2.99	0.37
18.000	59.055	39.128	1.137	224.324		41.55	2.74	6	115	3.451	1.530	1.920	19.84	2.98	0.38
18.100	59.383	42.085	1.237	249.108		44.78	2.76	6	115	3.470	1.541	1.929	21.41	3.00	0.40

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	6	1.87	106.46	3.00E-4	26.3	22.0	55	40	561	1093			
13.300	43.635	5	2.32	66.43	3.00E-6	20.8	17.4	44	38	372	955			
13.400	43.963	3	2.78	29.19	1.00E-9	12.5	10.4				1260	2.80	1.84	8.3
13.500	44.291	3	2.85	19.03	1.00E-9	8.8	7.3				832	1.85	1.21	5.4
13.600	44.619	4	2.69	17.57	3.00E-8	7.3	6.0				758	1.69	1.09	4.9
13.700	44.948	4	2.69	16.23	3.00E-8	6.6	5.5				703	1.56	1.01	4.5
13.800	45.276	4	2.79	15.91	3.00E-8	6.9	5.7				701	1.56	1.00	4.5
13.900	45.604	4	2.81	16.26	3.00E-8	7.2	5.9				721	1.60	1.02	4.6
14.000	45.932	4	2.81	16.98	3.00E-8	7.5	6.2				757	1.68	1.07	4.8
14.100	46.260	3	2.85	16.63	1.00E-9	7.7	6.3				748	1.66	1.05	4.7
14.200	46.588	3	2.88	15.26	1.00E-9	7.2	5.9				692	1.54	0.97	4.3
14.300	46.916	4	2.76	19.74	3.00E-8	8.5	6.9				887	1.97	1.23	5.5
14.400	47.244	4	2.50	44.95	3.00E-8	16.4	13.3				1961	4.36	2.71	12.2
14.500	47.572	6	2.04	106.41	3.00E-4	29.8	24.1	55	40	598	1143			
14.600	47.900	6	1.97	121.39	3.00E-4	32.8	26.5	59	41	677	1194			
14.700	48.228	4	2.46	52.51	3.00E-8	19.1	15.3				2310	5.13	3.13	14.1
14.800	48.556	4	2.79	22.70	3.00E-8	10.5	8.4				1047	2.33	1.41	6.4
14.900	48.885	4	2.66	22.75	3.00E-8	9.7	7.7				1036	2.30	1.39	6.3
15.000	49.213	4	2.80	16.15	3.00E-8	7.8	6.2				753	1.67	1.01	4.5
15.100	49.541	3	2.99	9.72	1.00E-9	5.7	4.5				467	1.04	0.62	2.8
15.200	49.869	3	3.04	8.34	1.00E-9	5.1	4.1				405	0.90	0.54	2.4
15.300	50.197	3	3.03	8.04	1.00E-9	4.9	3.8				392	0.87	0.52	2.3
15.400	50.525	3	3.03	7.72	1.00E-9	4.7	3.7				378	0.84	0.50	2.2
15.500	50.853	3	3.05	7.44	1.00E-9	4.6	3.6				367	0.82	0.48	2.2
15.600	51.181	3	3.04	7.39	1.00E-9	4.6	3.6				366	0.81	0.47	2.1
15.700	51.509	3	3.06	7.18	1.00E-9	4.5	3.5				358	0.80	0.46	2.1
15.800	51.837	3	3.05	7.15	1.00E-9	4.5	3.5				358	0.80	0.46	2.1
15.900	52.165	3	3.02	7.33	1.00E-9	4.5	3.5				366	0.81	0.47	2.1
16.000	52.493	3	3.01	7.21	1.00E-9	4.5	3.5				362	0.80	0.46	2.1
16.100	52.822	3	3.05	6.88	1.00E-9	4.4	3.4				349	0.77	0.44	2.0
16.200	53.150	3	3.06	7.11	1.00E-9	4.6	3.6				363	0.81	0.46	2.1
16.300	53.478	3	3.01	8.77	1.00E-9	5.4	4.1				446	0.99	0.56	2.5
16.400	53.806	3	2.97	10.71	1.00E-9	6.3	4.8				544	1.21	0.68	3.0
16.500	54.134	3	2.97	11.70	1.00E-9	6.9	5.3				597	1.33	0.74	3.3
16.600	54.462	3	3.02	11.40	1.00E-9	7.0	5.4				588	1.31	0.73	3.3
16.700	54.790	3	3.04	11.36	1.00E-9	7.2	5.5				591	1.31	0.73	3.3
16.800	55.118	3	3.06	10.86	1.00E-9	7.0	5.4				569	1.27	0.70	3.1
16.900	55.446	3	3.06	10.44	1.00E-9	6.8	5.2				550	1.22	0.67	3.0
17.000	55.774	3	3.02	11.14	1.00E-9	6.9	5.3				584	1.30	0.71	3.2
17.100	56.102	3	3.02	11.16	1.00E-9	7.0	5.3				588	1.31	0.71	3.2
17.200	56.430	3	2.99	11.79	1.00E-9	7.2	5.5				621	1.38	0.75	3.4
17.300	56.759	3	3.01	11.76	1.00E-9	7.4	5.6				624	1.39	0.75	3.4
17.400	57.087	3	3.01	11.42	1.00E-9	7.2	5.4				609	1.35	0.72	3.3
17.500	57.415	3	2.97	12.18	1.00E-9	7.4	5.6				648	1.44	0.77	3.4
17.600	57.743	3	2.96	13.14	1.00E-9	7.9	5.9				700	1.56	0.82	3.7
17.700	58.071	3	2.98	12.71	1.00E-9	7.8	5.8				682	1.52	0.80	3.6
17.800	58.399	3	2.92	14.12	1.00E-9	8.2	6.1				753	1.67	0.88	4.0
17.900	58.727	4	2.81	18.55	3.00E-8	9.7	7.2				974	2.17	1.13	5.1
18.000	59.055	4	2.76	21.90	3.00E-8	10.8	8.1				1143	2.54	1.32	6.0
18.100	59.383	4	2.73	23.76	3.00E-8	11.5	8.5				1239	2.75	1.43	6.4

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
18.200	59.711	44.595	1.294	253.680		47.33	2.73	6	115	3.488	1.551	1.937	22.63	2.95	0.38
18.300	60.039	49.579	1.373	218.485		51.94	2.64	6	115	3.507	1.561	1.946	24.89	2.84	0.29
18.400	60.367	53.863	1.656	146.712		55.45	2.99	6	115	3.526	1.571	1.955	26.56	3.19	0.17
18.500	60.696	55.209	1.841	122.971		56.54	3.26	6	115	3.545	1.582	1.963	26.99	3.47	0.14
18.600	61.024	57.592	2.121	94.412		58.61	3.62	5	115	3.564	1.592	1.972	27.92	3.85	0.09
18.700	61.352	45.677	1.906	86.604		46.61	4.09	5	115	3.582	1.602	1.980	21.73	4.43	0.11
18.800	61.680	45.423	1.440	172.387		47.28	3.05	6	115	3.601	1.612	1.989	21.96	3.30	0.25
18.900	62.008	48.652	1.375	212.108		50.94	2.70	6	115	3.620	1.623	1.997	23.69	2.90	0.29
19.000	62.336	55.418	1.695	172.880		57.29	2.96	6	115	3.639	1.633	2.006	26.74	3.16	0.20
19.100	62.664	45.650	1.383	81.704		46.53	2.97	6	115	3.658	1.643	2.015	21.28	3.22	0.10
19.200	62.992	32.443	0.694	79.828		33.31	2.08	6	115	3.676	1.653	2.023	14.65	2.34	0.14
19.300	63.320	27.832	0.497	85.572		28.76	1.73	6	115	3.695	1.664	2.032	12.34	1.98	0.18
19.400	63.648	30.624	0.641	111.810		31.83	2.01	6	115	3.714	1.674	2.040	13.78	2.28	0.23
19.500	63.976	38.137	1.004	132.221		39.56	2.54	6	115	3.733	1.684	2.049	17.49	2.80	0.22
19.600	64.304	38.246	1.227	147.228		39.84	3.08	6	115	3.752	1.694	2.057	17.54	3.40	0.25
19.700	64.633	45.332	1.351	194.381		47.43	2.85	6	115	3.770	1.704	2.066	21.13	3.09	0.28
19.800	64.961	52.299	1.845	106.628		53.45	3.45	5	115	3.789	1.715	2.074	23.94	3.71	0.12
19.900	65.289	41.648	1.470	54.082		42.23	3.48	5	115	3.808	1.725	2.083	18.45	3.83	0.06
20.000	65.617	39.538	0.959	95.291		40.57	2.36	6	115	3.827	1.735	2.092	17.57	2.61	0.14
20.100	65.945	50.725	1.235	123.663		52.06	2.37	6	115	3.846	1.745	2.100	22.96	2.56	0.15
20.200	66.273	72.472	2.074	70.073		73.23	2.83	6	115	3.864	1.756	2.109	32.89	2.99	0.05
20.300	66.601	65.642	1.875	52.229		66.21	2.83	6	115	3.883	1.766	2.117	29.44	3.01	0.03
20.400	66.929	63.268	1.790	46.708		63.77	2.81	6	115	3.902	1.776	2.126	28.16	2.99	0.03
20.500	67.257	53.572	1.669	53.379		54.15	3.08	6	115	3.921	1.786	2.134	23.53	3.32	0.04
20.600	67.585	87.707	1.898	124.531		89.05	2.13	7	118	3.940	1.797	2.143	39.71	2.23	0.08
20.700	67.913	165.555	1.587	106.112		166.70	0.95	9	124	3.960	1.807	2.154	75.57	0.98	0.04
20.800	68.241	213.842	1.097	54.680		214.43	0.51	9	124	3.981	1.817	2.164	97.26	0.52	0.01
20.900	68.570	179.098	2.733	14.022		179.25	1.52	8	121	4.001	1.827	2.173	80.64	1.56	0.00
21.000	68.898	142.735	3.006	19.954		142.95	2.10	7	118	4.020	1.838	2.182	63.66	2.16	0.00
21.100	69.226	176.060	1.121	14.761		176.22	0.64	9	124	4.040	1.848	2.193	78.53	0.65	0.00
21.200	69.554	264.750	1.409	19.075		264.96	0.53	10	127	4.061	1.858	2.203	118.42	0.54	0.00
21.300	69.882	326.471	1.448	37.997		326.88	0.44	10	127	4.082	1.868	2.214	145.81	0.45	0.00
21.400	70.210	344.917	2.703	33.085		345.27	0.78	9	124	4.102	1.878	2.224	153.41	0.79	0.00
21.500	70.538	252.553	4.892	19.743		252.77	1.94	8	121	4.122	1.889	2.234	111.32	1.97	0.00
21.600	70.866	146.800	4.867	15.628		146.97	3.31	6	115	4.141	1.899	2.242	63.70	3.41	-0.01
21.700	71.194	132.111	3.954	6.917		132.19	2.99	7	118	4.160	1.909	2.251	56.87	3.09	-0.01
21.800	71.522	187.421	1.688	60.472		188.07	0.90	9	124	4.181	1.919	2.261	81.32	0.92	0.01
21.900	71.850	308.353	1.022	80.062		309.22	0.33	10	127	4.202	1.930	2.272	134.25	0.34	0.01
22.000	72.178	362.562	1.486	74.071		363.36	0.41	10	127	4.223	1.940	2.283	157.34	0.41	0.01
22.100	72.507	367.282	1.558	71.105		368.05	0.42	10	127	4.243	1.950	2.293	158.64	0.43	0.01
22.200	72.835	378.843	1.359	51.233		379.40	0.36	10	127	4.264	1.960	2.304	162.82	0.36	0.00
22.300	73.163	369.238	1.342	41.561		369.69	0.36	10	127	4.285	1.971	2.315	157.87	0.37	0.00
22.400	73.491	301.559	2.318	29.321		301.88	0.77	9	124	4.306	1.981	2.325	128.00	0.78	0.00
22.500	73.819	240.328	3.076	47.048		240.84	1.28	9	124	4.326	1.991	2.335	101.30	1.30	0.01
22.600	74.147	223.633	2.966	44.082		224.11	1.32	9	124	4.346	2.001	2.345	93.72	1.35	0.01
22.700	74.475	263.917	2.004	47.130		264.43	0.76	9	124	4.367	2.012	2.355	110.42	0.77	0.01
22.800	74.803	305.370	2.088	22.920		305.62	0.68	10	127	4.388	2.022	2.366	127.33	0.69	0.00
22.900	75.131	318.322	0.731	20.305		318.54	0.23	10	127	4.408	2.032	2.376	132.19	0.23	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
18.200	59.711	4	2.71	25.23	3.00E-8	12.1	8.9				1315	2.92	1.51	6.8
18.300	60.039	4	2.66	27.99	3.00E-8	13.1	9.7				1453	3.23	1.66	7.5
18.400	60.367	4	2.68	29.84	3.00E-8	14.3	10.5				1558	3.46	1.77	8.0
18.500	60.696	4	2.69	30.24	3.00E-8	14.8	10.9				1590	3.53	1.80	8.1
18.600	61.024	4	2.71	31.19	3.00E-8	15.6	11.4				1651	3.67	1.86	8.4
18.700	61.352	3	2.83	23.75	1.00E-9	13.2	9.7				1291	2.87	1.45	6.5
18.800	61.680	4	2.75	24.42	3.00E-8	12.5	9.1				1310	2.91	1.46	6.6
18.900	62.008	4	2.69	26.66	3.00E-8	13.0	9.5				1420	3.15	1.58	7.1
19.000	62.336	4	2.67	30.22	3.00E-8	14.7	10.7				1609	3.58	1.78	8.0
19.100	62.664	4	2.75	23.69	3.00E-8	12.6	9.2				1286	2.86	1.42	6.4
19.200	62.992	4	2.80	16.16	3.00E-8	9.2	6.7				889	1.98	0.98	4.4
19.300	63.320	4	2.82	13.56	3.00E-8	8.0	5.8				752	1.67	0.82	3.7
19.400	63.648	4	2.81	15.18	3.00E-8	8.8	6.3				844	1.87	0.92	4.1
19.500	63.976	4	2.78	19.41	3.00E-8	10.7	7.7				1075	2.39	1.17	5.2
19.600	64.304	4	2.83	19.28	3.00E-8	11.1	7.9				1083	2.41	1.17	5.3
19.700	64.633	4	2.74	23.66	3.00E-8	12.5	8.9				1310	2.91	1.41	6.3
19.800	64.961	4	2.75	26.78	3.00E-8	14.5	10.3				1490	3.31	1.60	7.2
19.900	65.289	3	2.85	20.25	1.00E-9	12.2	8.7				1153	2.56	1.23	5.5
20.000	65.617	4	2.76	19.63	3.00E-8	11.0	7.8				1102	2.45	1.17	5.3
20.100	65.945	4	2.66	26.20	3.00E-8	13.4	9.5				1446	3.21	1.53	6.9
20.200	66.273	4	2.59	38.18	3.00E-8	18.4	13.0				2081	4.62	2.19	9.9
20.300	66.601	4	2.62	33.92	3.00E-8	17.0	12.0				1870	4.15	1.96	8.8
20.400	66.929	4	2.64	32.40	3.00E-8	16.5	11.6				1796	3.99	1.88	8.4
20.500	67.257	4	2.73	26.59	3.00E-8	14.6	10.3				1507	3.35	1.57	7.1
20.600	67.585	5	2.44	47.69	3.00E-6	20.8	14.6	37	35	356	1056			
20.700	67.913	6	2.00	99.87	3.00E-4	32.6	22.8	53	39	667	1304			
20.800	68.241	6	1.75	135.74	3.00E-4	38.4	26.9	62	40	858	1420			
20.900	68.570	5	2.11	104.47	3.00E-6	36.7	25.6	55	39	717	1340			
21.000	68.898	5	2.28	79.58	3.00E-6	31.5	21.9	48	38	572	1244			
21.100	69.226	6	1.88	107.17	3.00E-4	33.2	23.0	55	39	705	1336			
21.200	69.554	6	1.69	168.99	3.00E-4	46.5	32.3	69	41	1060	1533			
21.300	69.882	6	1.57	210.91	3.00E-4	55.1	38.1	78	43	1308	1647			
21.400	70.210	6	1.70	219.30	3.00E-4	60.9	42.0	79	43	1381	1680			
21.500	70.538	5	2.08	146.62	3.00E-6	51.2	35.3	65	41	1011	1516			
21.600	70.866	4	2.42	77.82	3.00E-8	34.4	23.6				4285	9.52	4.25	19.1
21.700	71.194	5	2.42	69.49	3.00E-6	31.0	21.3	45	38	529	1225			
21.800	71.522	6	1.96	110.58	3.00E-4	36.3	24.8	56	39	752	1379			
21.900	71.850	6	1.54	196.72	3.00E-4	51.5	35.1	75	42	1237	1631			
22.000	72.178	6	1.52	231.09	3.00E-4	60.3	41.0	81	43	1453	1723			
22.100	72.507	6	1.53	233.55	3.00E-4	61.2	41.5	82	43	1472	1733			
22.200	72.835	6	1.48	240.26	3.00E-4	62.1	42.1	83	43	1518	1754			
22.300	73.163	6	1.49	233.49	3.00E-4	60.8	41.1	82	43	1479	1741			
22.400	73.491	6	1.76	184.49	3.00E-4	54.3	36.6	73	42	1208	1630			
22.500	73.819	6	1.98	138.77	3.00E-4	46.9	31.6	63	41	963	1514			
22.600	74.147	6	2.02	127.51	3.00E-4	44.3	29.7	60	40	896	1480			
22.700	74.475	6	1.81	158.31	3.00E-4	48.3	32.4	67	41	1058	1566			
22.800	74.803	6	1.73	186.36	3.00E-4	54.4	36.4	73	42	1222	1646			
22.900	75.131	6	1.47	198.10	3.00E-4	52.0	34.7	75	42	1274	1672			

GREGG DRILLING & TESTING, INC.

Top Layer (ft)	Bottom Layer (ft)	Vs (ft/s)
4.43	9.35	282.70
9.35	14.43	494.44
14.43	19.35	664.14
19.35	24.44	704.74
24.44	29.36	862.26
29.36	34.44	913.33
34.44	39.37	823.35
39.37	44.45	856.44
44.45	49.37	731.76
49.37	54.46	618.22
54.46	59.38	899.72
59.38	64.46	1242.06
64.46	69.39	2378.36
69.39	74.64	1765.16

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-940
Site:	SOUTH TEXAS PROJ.	Date:	7/21/2007
Engineer:	M.COOK	Time:	12:24 PM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	20.438	0.020	3.588		20.48	0.10
0.100	0.328	33.398	0.020	3.306		33.43	0.06
0.150	0.492	29.115	0.020	2.955		29.15	0.07
0.200	0.656	13.862	0.020	2.181		13.89	0.14
0.250	0.820	9.441	0.020	2.462		9.47	0.21
0.300	0.984	12.088	0.150	2.955		12.12	1.24
0.350	1.148	10.123	0.254	3.271		10.16	2.50
0.400	1.312	9.305	0.345	14.244		9.46	3.65
0.450	1.476	10.069	0.386	14.456		10.23	3.78
0.500	1.640	11.706	0.355	14.068		11.86	2.99
0.550	1.804	9.441	0.355	14.491		9.60	3.70
0.600	1.969	9.796	0.348	14.666		9.95	3.50
0.650	2.133	9.769	0.352	14.807		9.93	3.55
0.700	2.297	9.987	0.387	15.018		10.15	3.81
0.750	2.461	10.042	0.463	14.842		10.20	4.54
0.800	2.625	10.642	0.533	14.491		10.80	4.94
0.850	2.789	11.269	0.558	14.279		11.42	4.88
0.900	2.953	11.597	0.465	14.068		11.75	3.96
0.950	3.117	11.488	0.443	13.717		11.64	3.81
1.000	3.281	11.269	0.477	12.099		11.40	4.18
1.050	3.445	10.396	0.527	11.712		10.52	5.01
1.100	3.609	10.342	0.502	11.184		10.46	4.80
1.150	3.773	9.932	0.466	10.974		10.05	4.64
1.200	3.937	9.632	0.424	10.938		9.75	4.35
1.250	4.101	9.605	0.243	11.220		9.73	2.50
1.300	4.265	10.642	0.360	11.009		10.76	3.35
1.350	4.429	11.269	0.398	13.154		11.41	3.49
1.400	4.593	12.115	0.450	12.556		12.25	3.67
1.450	4.757	12.306	0.461	12.169		12.44	3.71
1.500	4.921	11.379	0.406	12.099		11.51	3.53
1.550	5.085	11.188	0.474	12.064		11.32	4.19
1.600	5.249	11.379	0.491	12.205		11.51	4.27
1.650	5.413	13.589	0.491	12.240		13.72	3.58
1.700	5.577	11.788	0.541	12.275		11.92	4.54
1.750	5.741	11.597	0.432	12.451		11.73	3.68
1.800	5.906	13.098	0.452	12.240		13.23	3.42
1.850	6.070	12.306	0.439	12.169		12.44	3.53
1.900	6.234	13.261	0.481	11.677		13.39	3.59

1.950	6.398	11.488	0.466	11.360	11.61	4.01
2.000	6.562	11.024	0.308	11.360	11.15	2.76
2.050	6.726	11.051	0.346	11.466	11.17	3.10
2.100	6.890	11.297	0.378	12.416	11.43	3.31
2.150	7.054	11.433	0.391	12.169	11.56	3.38
2.200	7.218	11.651	0.397	12.099	11.78	3.37
2.250	7.382	11.897	0.392	11.853	12.03	3.26
2.300	7.546	11.924	0.290	11.782	12.05	2.41
2.350	7.710	12.524	0.298	11.888	12.65	2.36
2.400	7.874	12.552	0.325	12.205	12.68	2.56
2.450	8.038	12.552	0.331	11.325	12.67	2.61
2.500	8.202	12.634	0.342	10.974	12.75	2.68
2.550	8.366	13.289	0.333	10.657	13.40	2.48
2.600	8.530	13.698	0.360	10.516	13.81	2.61
2.650	8.694	13.643	0.370	10.481	13.76	2.69
2.700	8.858	13.398	0.400	10.622	13.51	2.96
2.750	9.022	13.971	0.414	10.657	14.09	2.94
2.800	9.186	14.871	0.438	10.833	14.99	2.92
2.850	9.350	15.390	0.462	10.551	15.50	2.98
2.900	9.514	15.553	0.348	10.129	15.66	2.22
2.950	9.678	16.017	0.464	9.883	16.12	2.88
3.000	9.843	16.945	0.472	16.882	17.13	2.76
3.050	10.007	15.635	0.511	14.526	15.79	3.24
3.100	10.171	16.590	0.504	14.772	16.75	3.01
3.150	10.335	18.337	0.455	15.510	18.50	2.46
3.200	10.499	18.009	0.477	16.425	18.19	2.62
3.250	10.663	16.317	0.492	16.038	16.49	2.98
3.300	10.827	14.789	0.561	15.370	14.95	3.75
3.350	10.991	14.789	0.500	14.983	14.95	3.34
3.400	11.155	15.089	0.481	15.335	15.25	3.15
3.450	11.319	15.799	0.422	16.038	15.97	2.64
3.500	11.483	16.890	0.407	17.761	17.08	2.38
3.550	11.647	17.518	0.383	18.852	17.72	2.16
3.600	11.811	18.719	0.535	18.922	18.92	2.83
3.650	11.975	17.736	0.587	19.731	17.95	3.27
3.700	12.139	19.155	0.536	18.887	19.36	2.77
3.750	12.303	18.582	0.540	23.319	18.83	2.87
3.800	12.467	20.847	0.550	25.359	21.12	2.60
3.850	12.631	21.666	0.595	25.605	21.94	2.71
3.900	12.795	22.047	0.588	28.208	22.35	2.63
3.950	12.959	21.802	0.517	33.905	22.17	2.33
4.000	13.123	20.874	0.479	36.402	21.27	2.25
4.050	13.287	21.775	0.464	44.070	22.25	2.09
4.100	13.451	22.975	0.313	43.753	23.45	1.33
4.150	13.615	23.302	0.557	41.960	23.76	2.34
4.200	13.780	23.848	0.599	41.608	24.30	2.47
4.250	13.944	22.730	0.604	41.502	23.18	2.61
4.300	14.108	23.302	0.561	43.859	23.78	2.36
4.350	14.272	23.766	0.646	44.844	24.25	2.66
4.400	14.436	24.421	0.677	41.256	24.87	2.72
4.450	14.600	24.012	0.750	43.331	24.48	3.06

4.500	14.764	24.503	0.696	46.075	25.00	2.78
4.550	14.928	24.885	0.725	47.657	25.40	2.85
4.600	15.092	25.540	0.746	48.150	26.06	2.86
4.650	15.256	25.267	0.798	50.154	25.81	3.09
4.700	15.420	24.803	0.808	48.818	25.33	3.19
4.750	15.584	23.657	0.805	49.979	24.20	3.33
4.800	15.748	23.466	0.775	54.129	24.05	3.22
4.850	15.912	25.649	0.753	55.676	26.25	2.87
4.900	16.076	26.249	0.825	55.290	26.85	3.07
4.950	16.240	27.041	0.887	54.234	27.63	3.21
5.000	16.404	29.169	0.828	53.566	29.75	2.78
5.050	16.568	29.824	0.805	57.013	30.44	2.64
5.100	16.732	31.516	0.753	58.736	32.15	2.34
5.150	16.896	25.049	0.776	48.431	25.57	3.03
5.200	17.060	20.028	0.710	36.262	20.42	3.48
5.250	17.224	16.645	0.676	34.433	17.02	3.97
5.300	17.388	18.691	0.572	38.056	19.10	2.99
5.350	17.552	30.260	0.539	39.673	30.69	1.76
5.400	17.717	43.986	0.597	34.503	44.36	1.35
5.450	17.881	44.613	0.782	30.529	44.94	1.74
5.500	18.045	42.158	0.782	27.997	42.46	1.84
5.550	18.209	44.749	0.818	28.665	45.06	1.82
5.600	18.373	59.894	0.869	27.610	60.19	1.44
5.650	18.537	53.045	0.848	23.319	53.30	1.59
5.700	18.701	53.809	0.245	22.756	54.05	0.45
5.750	18.865	66.988	0.505	18.922	67.19	0.75
5.800	19.029	71.026	0.590	14.033	71.18	0.83
5.850	19.193	89.772	0.471	12.837	89.91	0.52
5.900	19.357	90.672	0.520	11.220	90.79	0.57
5.950	19.521	80.276	0.900	10.165	80.39	1.12
6.000	19.685	81.777	0.881	9.883	81.88	1.08
6.050	19.849	100.414	0.737	9.707	100.52	0.73
6.100	20.013	113.538	0.798	9.074	113.64	0.70
6.150	20.177	112.201	0.902	8.300	112.29	0.80
6.200	20.341	119.132	0.975	8.160	119.22	0.82
6.250	20.505	118.259	1.119	7.878	118.34	0.95
6.300	20.669	116.785	0.910	7.702	116.87	0.78
6.350	20.833	111.383	0.545	7.351	111.46	0.49
6.400	20.997	107.672	0.585	6.893	107.75	0.54
6.450	21.161	107.508	0.596	7.386	107.59	0.55
6.500	21.325	111.765	0.967	6.893	111.84	0.86
6.550	21.490	100.332	1.090	6.683	100.40	1.09
6.600	21.654	104.888	1.025	7.949	104.97	0.98
6.650	21.818	122.570	0.902	9.320	122.67	0.74
6.700	21.982	109.691	0.685	8.195	109.78	0.62
6.750	22.146	100.250	0.708	7.456	100.33	0.71
6.800	22.310	93.292	0.710	6.999	93.37	0.76
6.850	22.474	88.735	0.632	6.718	88.81	0.71
6.900	22.638	89.145	0.735	6.577	89.22	0.82
6.950	22.802	88.244	0.633	6.436	88.31	0.72
7.000	22.966	93.646	0.515	6.331	93.71	0.55

7.050	23.130	98.695	0.269	6.085	98.76	0.27
7.100	23.294	101.177	0.266	5.944	101.24	0.26
7.150	23.458	93.565	0.391	6.823	93.64	0.42
7.200	23.622	97.521	0.352	6.401	97.59	0.36
7.250	23.786	98.558	0.459	5.909	98.62	0.47
7.300	23.950	97.958	0.631	5.557	98.02	0.64
7.350	24.114	102.406	0.869	5.487	102.47	0.85
7.400	24.278	119.296	1.283	5.733	119.36	1.07
7.450	24.442	166.310	1.773	6.401	166.38	1.07
7.500	24.606	226.449	2.118	7.737	226.53	0.93
7.550	24.770	206.503	2.182	14.526	206.66	1.06
7.600	24.934	150.729	1.771	11.677	150.86	1.17
7.650	25.098	149.583	1.562	9.778	149.69	1.04
7.700	25.262	170.649	1.975	9.320	170.75	1.16
7.750	25.427	187.020	0.967	8.406	187.11	0.52
7.800	25.591	206.803	1.206	7.914	206.89	0.58
7.850	25.755	201.864	1.719	7.245	201.94	0.85
7.900	25.919	227.213	2.038	7.210	227.29	0.90
7.950	26.083	238.264	1.827	6.999	238.34	0.77
8.000	26.247	289.152	2.723	8.125	289.24	0.94
8.050	26.411	291.608	2.057	11.149	291.73	0.71
8.100	26.575	301.786	2.276	11.360	301.91	0.75
8.150	26.739	286.042	2.048	9.637	286.15	0.72
8.200	26.903	225.521	2.049	10.516	225.63	0.91
8.250	27.067	193.814	1.704	10.305	193.93	0.88
8.300	27.231	173.868	1.611	9.320	173.97	0.93
8.350	27.395	156.542	1.542	9.144	156.64	0.98
8.400	27.559	139.515	1.275	8.511	139.61	0.91
8.450	27.723	115.639	1.072	8.089	115.73	0.93
8.500	27.887	104.070	0.927	7.949	104.16	0.89
8.550	28.051	99.813	0.826	7.949	99.90	0.83
8.600	28.215	99.622	0.797	7.984	99.71	0.80
8.650	28.379	101.587	0.798	8.125	101.67	0.78
8.700	28.543	105.707	0.796	8.230	105.80	0.75
8.750	28.707	116.622	0.813	8.476	116.71	0.70
8.800	28.871	125.189	0.867	8.793	125.28	0.69
8.850	29.035	123.743	0.936	8.723	123.84	0.76
8.900	29.199	118.013	0.933	8.723	118.11	0.79
8.950	29.364	106.117	0.756	8.617	106.21	0.71
9.000	29.528	103.388	0.727	8.687	103.48	0.70
9.050	29.692	99.813	0.699	9.250	99.91	0.70
9.100	29.856	105.352	0.703	9.215	105.45	0.67
9.150	30.020	112.228	0.737	9.250	112.33	0.66
9.200	30.184	111.655	0.776	9.250	111.75	0.69
9.250	30.348	110.810	0.799	9.356	110.91	0.72
9.300	30.512	109.063	0.826	9.391	109.16	0.76
9.350	30.676	108.654	0.834	9.461	108.76	0.77
9.400	30.840	117.904	0.607	9.778	118.01	0.51
9.450	31.004	139.706	0.775	10.129	139.82	0.55
9.500	31.168	146.091	0.931	10.622	146.21	0.64
9.550	31.332	151.084	1.015	10.551	151.20	0.67

9.600	31.496	141.288	1.010	10.446	141.40	0.71
9.650	31.660	135.122	0.938	10.411	135.23	0.69
9.700	31.824	138.642	0.929	10.481	138.76	0.67
9.750	31.988	135.858	0.964	10.551	135.97	0.71
9.800	32.152	139.078	1.024	10.727	139.19	0.74
9.850	32.316	149.911	1.118	10.974	150.03	0.75
9.900	32.480	175.151	1.231	11.430	175.27	0.70
9.950	32.644	231.115	1.597	12.451	231.25	0.69
10.000	32.808	263.449	1.934	12.873	263.59	0.73
10.050	32.972	271.908	2.199	13.049	272.05	0.81
10.100	33.136	240.065	1.783	12.486	240.20	0.74
10.150	33.301	192.614	1.668	11.818	192.74	0.87
10.200	33.465	162.408	1.462	12.416	162.54	0.90
10.250	33.629	149.884	1.223	11.395	150.01	0.82
10.300	33.793	141.207	1.099	10.974	141.33	0.78
10.350	33.957	145.627	1.042	10.974	145.75	0.71
10.400	34.121	157.469	1.112	11.255	157.59	0.71
10.450	34.285	176.133	1.214	11.607	176.26	0.69
10.500	34.449	185.901	1.337	12.099	186.03	0.72
10.550	34.613	199.163	1.486	12.556	199.30	0.75
10.600	34.777	194.633	1.555	12.521	194.77	0.80
10.650	34.941	184.537	1.495	12.486	184.67	0.81
10.700	35.105	195.261	1.447	12.873	195.40	0.74
10.750	35.269	237.254	0.924	13.822	237.40	0.39
10.800	35.433	294.746	1.378	14.912	294.91	0.47
10.850	35.597	314.884	1.378	20.329	315.10	0.44
10.900	35.761	351.529	1.794	19.309	351.74	0.51
10.950	35.925	348.855	2.085	25.992	349.14	0.60
11.000	36.089	334.830	2.392	24.831	335.10	0.71
11.050	36.253	298.048	2.281	22.967	298.30	0.76
11.100	36.417	260.993	1.887	20.610	261.22	0.72
11.150	36.581	246.641	1.776	19.344	246.85	0.72
11.200	36.745	260.475	1.278	19.344	260.68	0.49
11.250	36.909	308.035	1.021	20.575	308.26	0.33
11.300	37.073	359.715	0.942	30.704	360.05	0.26
11.350	37.238	391.449	0.929	24.163	391.71	0.24
11.400	37.402	398.352	1.265	15.194	398.52	0.32
11.450	37.566	379.034	1.545	19.239	379.24	0.41
11.500	37.730	357.860	1.614	16.108	358.03	0.45
11.550	37.894	371.011	1.996	13.893	371.16	0.54
11.600	38.058	325.853	1.256	19.731	326.07	0.39
11.650	38.222	350.137	0.947	21.666	350.37	0.27
11.700	38.386	359.578	1.831	20.048	359.79	0.51
11.750	38.550	374.067	1.331	16.531	374.25	0.36
11.800	38.714	379.689	1.223	15.757	379.86	0.32
11.850	38.878	377.915	1.070	14.631	378.07	0.28
11.900	39.042	369.374	0.924	11.536	369.50	0.25
11.950	39.206	373.440	0.941	12.240	373.57	0.25
12.000	39.370	369.674	0.851	12.626	369.81	0.23
12.050	39.534	371.339	1.699	12.556	371.47	0.46
12.100	39.698	349.974	1.466	13.893	350.12	0.42

12.150	39.862	348.391	1.990	14.596	348.55	0.57
12.200	40.026	320.150	1.698	17.621	320.34	0.53
12.250	40.190	365.909	1.228	14.912	366.07	0.34
12.300	40.354	368.883	1.234	14.385	369.04	0.33
12.350	40.518	379.307	1.331	14.842	379.47	0.35
12.400	40.682	391.885	1.363	13.611	392.03	0.35
12.450	40.846	390.439	1.091	13.154	390.58	0.28
12.500	41.011	398.270	1.085	12.099	398.40	0.27
12.550	41.175	383.945	1.206	13.611	384.09	0.31
12.600	41.339	387.874	0.843	13.506	388.02	0.22
12.650	41.503	397.452	1.074	10.938	397.57	0.27
12.700	41.667	375.623	1.848	12.943	375.76	0.49
12.750	41.831	363.098	1.900	11.923	363.23	0.52
12.800	41.995	368.501	1.772	11.149	368.62	0.48
12.850	42.159	367.983	1.800	11.114	368.10	0.49
12.900	42.323	365.418	1.300	12.556	365.55	0.36
12.950	42.487	366.673	1.941	12.486	366.81	0.53
13.000	42.651	348.391	1.573	15.264	348.56	0.45
13.050	42.815	362.771	2.045	13.260	362.91	0.56
13.100	42.979	356.277	1.652	13.822	356.43	0.46
13.150	43.143	366.618	2.197	13.365	366.76	0.60
13.200	43.307	344.080	1.411	12.521	344.22	0.41
13.250	43.471	344.598	2.006	12.626	344.73	0.58
13.300	43.635	340.697	1.293	11.958	340.83	0.38
13.350	43.799	357.969	1.766	11.677	358.10	0.49
13.400	43.963	333.984	2.241	11.888	334.11	0.67
13.450	44.127	331.310	2.615	11.220	331.43	0.79
13.500	44.291	317.612	1.617	11.466	317.74	0.51
13.550	44.455	300.667	1.677	11.607	300.79	0.56
13.600	44.619	261.321	1.952	12.240	261.45	0.75
13.650	44.783	234.007	1.827	11.114	234.13	0.78
13.700	44.948	215.971	1.642	10.763	216.09	0.76
13.750	45.112	213.952	1.545	13.470	214.10	0.72
13.800	45.276	215.698	1.198	13.260	215.84	0.56
13.850	45.440	242.930	1.118	13.541	243.08	0.46
13.900	45.604	257.637	1.127	13.400	257.78	0.44
13.950	45.768	268.606	1.236	13.189	268.75	0.46
14.000	45.932	275.564	1.396	12.908	275.70	0.51
14.050	46.096	260.666	1.602	12.416	260.80	0.61
14.100	46.260	251.361	1.711	12.064	251.49	0.68
14.150	46.424	246.695	1.870	11.818	246.82	0.76
14.200	46.588	235.044	1.893	11.430	235.17	0.80
14.250	46.752	199.517	1.501	10.763	199.63	0.75
14.300	46.916	173.159	1.417	10.446	173.27	0.82
14.350	47.080	166.092	1.941	11.430	166.22	1.17
14.400	47.244	123.061	3.624	10.868	123.18	2.94
14.450	47.408	89.308	1.414	10.727	89.42	1.58
14.500	47.572	134.658	1.457	17.691	134.85	1.08
14.550	47.736	305.224	1.781	38.126	305.64	0.58
14.600	47.900	314.229	1.788	25.886	314.51	0.57
14.650	48.064	300.094	2.353	23.529	300.35	0.78

14.700	48.228	299.439	1.884	23.459	299.69	0.63
14.750	48.392	285.032	2.169	21.666	285.27	0.76
14.800	48.556	259.684	2.267	16.706	259.86	0.87
14.850	48.720	243.530	2.469	15.510	243.70	1.01
14.900	48.885	208.303	2.464	14.526	208.46	1.18
14.950	49.049	127.782	2.902	12.873	127.92	2.27
15.000	49.213	57.792	2.589	11.607	57.92	4.47
15.050	49.377	33.044	1.332	12.028	33.17	4.02
15.100	49.541	24.722	0.563	16.249	24.90	2.26
15.150	49.705	21.502	0.294	56.450	22.11	1.33
15.200	49.869	21.447	0.020	102.068	22.55	0.09
15.250	50.033	20.656	0.020	122.221	21.98	0.09

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC
Site:	SOUTH TEXAS PROJ.
Engineer:	M.COOK
Sounding:	C-940
Date:	7/21/2007
Time:	12:24 PM

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{ocr}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth (m)	Depth (ft)	q_c (tsf)	f_s (tsf)	u (psi)	Other	q_t (tsf)	R_f (%)	SBT	Unit Weight, γ (pcf)	Total Overburden Stress, σ_v (tsf)	Insitu pore pressure, u_o (tsf)	Effective overburden stress, σ'_v (tsf)	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
0.100	0.328	27.650	0.020	3.283		27.69	0.07	7	118	0.019	0.000	0.019	>1000	0.07	0.01
0.200	0.656	17.473	0.020	2.533		17.50	0.11	7	118	0.039	0.000	0.039	451.92	0.11	0.01
0.300	0.984	10.551	0.141	2.896		10.58	1.34	5	115	0.057	0.000	0.057	183.24	1.34	0.02
0.400	1.312	9.832	0.328	10.657		9.95	3.30	4	115	0.076	0.000	0.076	129.49	3.33	0.08
0.500	1.640	10.405	0.365	14.338		10.56	3.46	4	115	0.095	0.000	0.095	110.13	3.49	0.10
0.600	1.969	9.669	0.352	14.655		9.83	3.58	3	111	0.113	0.000	0.113	85.73	3.62	0.11
0.700	2.297	9.933	0.401	14.889		10.09	3.97	3	111	0.132	0.000	0.132	75.71	4.02	0.11
0.800	2.625	10.651	0.518	14.537		10.81	4.79	3	111	0.150	0.000	0.150	71.12	4.86	0.10
0.900	2.953	11.451	0.489	14.021		11.60	4.21	3	111	0.168	0.000	0.168	68.01	4.27	0.09
1.000	3.281	11.051	0.482	12.509		11.19	4.31	3	111	0.186	0.000	0.186	59.01	4.38	0.08
1.100	3.609	10.223	0.498	11.290		10.35	4.82	3	111	0.205	0.000	0.205	49.54	4.91	0.08
1.200	3.937	9.723	0.378	11.044		9.84	3.84	3	111	0.223	0.000	0.223	43.15	3.93	0.08
1.300	4.265	10.505	0.334	11.794		10.63	3.14	4	115	0.242	0.000	0.242	42.98	3.21	0.08
1.400	4.593	11.897	0.436	12.626		12.03	3.63	4	115	0.261	0.000	0.261	45.18	3.71	0.08
1.500	4.921	11.624	0.447	12.111		11.76	3.80	3	111	0.279	0.000	0.279	41.16	3.89	0.08
1.600	5.249	12.052	0.485	12.170		12.18	3.98	3	111	0.297	0.000	0.297	40.01	4.08	0.07
1.700	5.577	12.325	0.488	12.322		12.46	3.92	3	111	0.315	0.000	0.315	38.50	4.02	0.07
1.800	5.906	12.334	0.441	12.287		12.47	3.54	4	115	0.334	0.000	0.334	36.31	3.63	0.07
1.900	6.234	12.352	0.462	11.735		12.48	3.70	4	115	0.353	0.000	0.353	34.35	3.81	0.07
2.000	6.562	11.188	0.373	11.395		11.31	3.30	4	115	0.372	0.000	0.372	29.42	3.41	0.08
2.100	6.890	11.260	0.372	12.017		11.39	3.26	4	115	0.391	0.000	0.391	28.16	3.38	0.08
2.200	7.218	11.660	0.393	12.040		11.79	3.34	4	115	0.409	0.000	0.409	27.80	3.46	0.08
2.300	7.546	12.115	0.327	11.841		12.24	2.67	5	115	0.428	0.000	0.428	27.59	2.76	0.07
2.400	7.874	12.543	0.318	11.806		12.67	2.51	5	115	0.447	0.000	0.447	27.35	2.60	0.07
2.500	8.202	12.825	0.335	10.985		12.94	2.59	5	115	0.466	0.000	0.466	26.79	2.69	0.06
2.600	8.530	13.543	0.354	10.551		13.66	2.59	5	115	0.485	0.000	0.485	27.19	2.69	0.06
2.700	8.858	13.671	0.395	10.587		13.79	2.86	5	115	0.503	0.000	0.503	26.39	2.97	0.06
2.800	9.186	14.744	0.438	10.680		14.86	2.95	5	115	0.522	0.000	0.522	27.46	3.05	0.05
2.900	9.514	15.653	0.425	10.188		15.76	2.69	5	115	0.541	0.000	0.541	28.14	2.79	0.05
3.000	9.843	16.199	0.482	13.764		16.35	2.95	5	115	0.560	0.000	0.560	28.21	3.06	0.06
3.100	10.171	16.854	0.490	14.936		17.02	2.88	5	115	0.579	0.005	0.573	28.67	2.98	0.07

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	7	0.32	193.51	3.00E-2	3.3	24.5	74	52	111	149			
0.200	0.656	7	0.86	86.36	3.00E-2	2.4	12.5	50	48	70	161			
0.300	0.984	6	1.81	49.51	3.00E-4	1.9	8.3	38	44	42	155			
0.400	1.312	8	2.21	54.44	3.00E-6	2.1	7.8	39	42	40				
0.500	1.640	8	2.27	52.00	3.00E-6	2.3	7.6	39	41	42				
0.600	1.969	5	2.35	45.17	3.00E-6	2.2	6.7	36	40	39	190			
0.700	2.297	4	2.42	43.50	3.00E-8	2.3	6.6				299	0.66	5.05	22.7
0.800	2.625	4	2.50	44.34	3.00E-8	2.6	6.9				320	0.71	4.74	21.3
0.900	2.953	4	2.47	42.89	3.00E-8	2.8	6.9				343	0.76	4.53	20.4
1.000	3.281	4	2.52	39.18	3.00E-8	2.7	6.5				330	0.73	3.93	17.7
1.100	3.609	4	2.61	35.12	3.00E-8	2.6	6.0				304	0.68	3.30	14.9
1.200	3.937	4	2.58	30.73	3.00E-8	2.5	5.4				289	0.64	2.88	12.9
1.300	4.265	4	2.52	30.35	3.00E-8	2.6	5.4				312	0.69	2.87	12.9
1.400	4.593	4	2.55	32.85	3.00E-8	3.0	6.0				353	0.78	3.01	13.6
1.500	4.921	4	2.59	30.93	3.00E-8	3.0	5.8				344	0.77	2.74	12.3
1.600	5.249	4	2.62	30.75	3.00E-8	3.1	5.9				357	0.79	2.67	12.0
1.700	5.577	4	2.62	30.03	3.00E-8	3.2	5.8				364	0.81	2.57	11.6
1.800	5.906	4	2.61	28.55	3.00E-8	3.2	5.6				364	0.81	2.42	10.9
1.900	6.234	4	2.64	27.61	3.00E-8	3.2	5.6				364	0.81	2.29	10.3
2.000	6.562	4	2.66	24.02	3.00E-8	3.0	5.0				328	0.73	1.96	8.8
2.100	6.890	4	2.67	23.30	3.00E-8	3.0	4.9				330	0.73	1.88	8.4
2.200	7.218	4	2.68	23.27	3.00E-8	3.1	5.0				341	0.76	1.85	8.3
2.300	7.546	4	2.62	22.92	3.00E-8	3.1	4.9				354	0.79	1.84	8.3
2.400	7.874	4	2.61	22.84	3.00E-8	3.2	5.0				367	0.81	1.82	8.2
2.500	8.202	4	2.62	22.65	3.00E-8	3.3	5.0				374	0.83	1.79	8.0
2.600	8.530	4	2.62	23.15	3.00E-8	3.5	5.2				395	0.88	1.81	8.2
2.700	8.858	4	2.66	22.83	3.00E-8	3.6	5.2				398	0.89	1.76	7.9
2.800	9.186	4	2.65	23.90	3.00E-8	3.9	5.5				430	0.96	1.83	8.2
2.900	9.514	4	2.62	24.50	3.00E-8	4.0	5.7				457	1.01	1.88	8.4
3.000	9.843	4	2.64	24.85	3.00E-8	4.2	5.8				474	1.05	1.88	8.5
3.100	10.171	4	2.63	25.32	3.00E-8	4.4	5.9				493	1.10	1.91	8.6

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	17.554	0.475	15.991		17.73	2.68	5	115	0.597	0.015	0.582	29.44	2.77	0.07
3.300	10.827	15.298	0.518	15.464		15.47	3.35	4	115	0.616	0.026	0.590	25.15	3.49	0.07
3.400	11.155	15.226	0.468	15.452		15.39	3.04	5	115	0.635	0.036	0.599	24.64	3.17	0.07
3.500	11.483	16.736	0.404	17.550		16.93	2.39	5	115	0.654	0.046	0.608	26.78	2.48	0.07
3.600	11.811	17.991	0.502	19.168		18.20	2.76	5	115	0.673	0.056	0.616	28.45	2.86	0.08
3.700	12.139	18.491	0.554	20.646		18.71	2.96	5	115	0.691	0.067	0.625	28.85	3.08	0.08
3.800	12.467	20.365	0.562	24.761		20.63	2.72	5	115	0.710	0.077	0.633	31.46	2.82	0.09
3.900	12.795	21.838	0.567	29.239		22.15	2.56	5	115	0.729	0.087	0.642	33.38	2.64	0.09
4.000	13.123	21.484	0.487	38.126		21.90	2.22	6	115	0.748	0.097	0.650	32.52	2.30	0.13
4.100	13.451	22.684	0.445	43.261		23.15	1.92	6	115	0.766	0.108	0.659	33.97	1.99	0.13
4.200	13.780	23.293	0.587	41.690		23.74	2.47	6	115	0.785	0.118	0.667	34.40	2.56	0.13
4.300	14.108	23.266	0.604	43.402		23.73	2.54	5	115	0.804	0.128	0.676	33.92	2.63	0.13
4.400	14.436	24.066	0.691	43.144		24.53	2.82	5	115	0.823	0.138	0.685	34.63	2.91	0.13
4.500	14.764	24.467	0.724	45.688		24.96	2.90	5	115	0.842	0.149	0.693	34.80	3.00	0.13
4.600	15.092	25.231	0.756	48.654		25.76	2.94	5	115	0.860	0.159	0.702	35.48	3.04	0.13
4.700	15.420	24.576	0.804	49.650		25.11	3.20	5	115	0.879	0.169	0.710	34.12	3.32	0.14
4.800	15.748	24.257	0.778	53.261		24.83	3.13	5	115	0.898	0.179	0.719	33.30	3.25	0.15
4.900	16.076	26.313	0.822	55.067		26.91	3.05	5	115	0.917	0.189	0.727	35.73	3.16	0.15
5.000	16.404	28.678	0.840	54.938		29.27	2.87	5	115	0.936	0.200	0.736	38.50	2.96	0.13
5.100	16.732	28.796	0.778	54.727		29.39	2.65	6	115	0.954	0.210	0.744	38.19	2.74	0.13
5.200	17.060	20.574	0.721	39.709		21.00	3.43	5	115	0.973	0.220	0.753	26.60	3.60	0.13
5.300	17.388	21.865	0.596	37.387		22.27	2.67	5	115	0.992	0.230	0.762	27.94	2.80	0.12
5.400	17.717	39.620	0.639	34.902		40.00	1.60	7	118	1.011	0.241	0.771	50.58	1.64	0.06
5.500	18.045	43.840	0.794	29.064		44.15	1.80	7	118	1.031	0.251	0.780	55.30	1.84	0.04
5.600	18.373	52.563	0.845	26.531		52.85	1.60	7	118	1.050	0.261	0.789	65.66	1.63	0.03
5.700	18.701	57.947	0.533	21.666		58.18	0.92	8	121	1.070	0.271	0.798	71.53	0.93	0.02
5.800	19.029	75.929	0.522	15.264		76.09	0.69	8	121	1.090	0.282	0.808	92.82	0.70	0.01
5.900	19.357	86.907	0.630	11.407		87.03	0.72	8	121	1.110	0.292	0.818	105.08	0.73	0.01
6.000	19.685	87.489	0.839	9.918		87.60	0.96	8	121	1.129	0.302	0.827	104.52	0.97	0.00
6.100	20.013	108.718	0.812	9.027		108.82	0.75	9	124	1.150	0.312	0.837	128.57	0.75	0.00
6.200	20.341	116.531	0.999	8.113		116.62	0.86	9	124	1.170	0.323	0.848	136.21	0.87	0.00
6.300	20.669	115.476	0.858	7.644		115.56	0.74	9	124	1.190	0.333	0.858	133.35	0.75	0.00
6.400	20.997	108.854	0.575	7.210		108.93	0.53	9	124	1.211	0.343	0.868	124.13	0.53	0.00
6.500	21.325	106.535	0.884	6.987		106.61	0.83	8	121	1.231	0.353	0.877	120.10	0.84	0.00
6.600	21.654	109.263	1.006	7.984		109.35	0.92	8	121	1.251	0.364	0.887	121.87	0.93	0.00
6.700	21.982	110.837	0.765	8.324		110.93	0.69	9	124	1.271	0.374	0.897	122.23	0.70	0.00
6.800	22.310	94.092	0.683	7.058		94.17	0.73	8	121	1.291	0.384	0.907	102.43	0.74	0.00
6.900	22.638	88.708	0.667	6.577		88.78	0.75	8	121	1.311	0.394	0.916	95.45	0.76	0.00
7.000	22.966	93.528	0.472	6.284		93.60	0.50	9	124	1.331	0.404	0.926	99.59	0.51	0.00
7.100	23.294	97.812	0.309	6.284		97.88	0.32	9	124	1.351	0.415	0.937	103.06	0.32	0.00
7.200	23.622	96.548	0.401	6.378		96.62	0.41	9	124	1.372	0.425	0.947	100.60	0.42	0.00
7.300	23.950	99.641	0.653	5.651		99.70	0.65	10	127	1.393	0.435	0.957	102.69	0.66	0.00
7.400	24.278	129.337	1.308	5.874		129.40	1.01	8	121	1.412	0.445	0.967	132.36	1.02	0.00
7.500	24.606	199.754	2.024	9.555		199.86	1.01	9	124	1.433	0.456	0.977	203.07	1.02	0.00
7.600	24.934	168.938	1.838	11.994		169.07	1.09	9	124	1.453	0.466	0.987	169.78	1.10	0.00
7.700	25.262	169.084	1.501	9.168		169.18	0.89	9	124	1.473	0.476	0.997	168.15	0.90	0.00
7.800	25.591	198.562	1.297	7.855		198.65	0.65	9	124	1.494	0.486	1.007	195.69	0.66	0.00
7.900	25.919	222.447	1.861	7.151		222.52	0.84	9	124	1.514	0.497	1.018	217.18	0.84	0.00
8.000	26.247	273.008	2.202	8.758		273.10	0.81	9	124	1.535	0.507	1.028	264.24	0.81	0.00
8.100	26.575	293.145	2.127	10.715		293.26	0.73	9	124	1.555	0.517	1.038	281.06	0.73	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	4	2.60	25.94	3.00E-8	4.5	6.1				514	1.14	1.96	8.8
3.300	10.827	4	2.72	22.69	3.00E-8	4.2	5.6				445	0.99	1.68	7.5
3.400	11.155	4	2.70	22.21	3.00E-8	4.1	5.4				443	0.98	1.64	7.4
3.500	11.483	4	2.60	23.83	3.00E-8	4.3	5.7				488	1.08	1.79	8.0
3.600	11.811	4	2.62	25.46	3.00E-8	4.7	6.1				526	1.17	1.90	8.5
3.700	12.139	4	2.64	25.96	3.00E-8	4.8	6.3				541	1.20	1.92	8.7
3.800	12.467	4	2.58	28.15	3.00E-8	5.2	6.7				598	1.33	2.10	9.4
3.900	12.795	4	2.55	29.79	3.00E-8	5.4	7.0				643	1.43	2.23	10.0
4.000	13.123	4	2.52	28.98	3.00E-8	5.3	6.7				634	1.41	2.17	9.8
4.100	13.451	5	2.46	30.13	3.00E-6	5.4	6.9	29	34	93	455			
4.200	13.780	4	2.53	30.88	3.00E-8	5.7	7.2				689	1.53	2.29	10.3
4.300	14.108	4	2.54	30.60	3.00E-8	5.8	7.2				688	1.53	2.26	10.2
4.400	14.436	4	2.56	31.42	3.00E-8	6.0	7.5				711	1.58	2.31	10.4
4.500	14.764	4	2.57	31.69	3.00E-8	6.2	7.6				724	1.61	2.32	10.4
4.600	15.092	4	2.57	32.39	3.00E-8	6.3	7.8				747	1.66	2.37	10.6
4.700	15.420	4	2.60	31.37	3.00E-8	6.3	7.7				727	1.62	2.27	10.2
4.800	15.748	4	2.61	30.70	3.00E-8	6.2	7.5				718	1.60	2.22	10.0
4.900	16.076	4	2.58	32.91	3.00E-8	6.6	8.0				780	1.73	2.38	10.7
5.000	16.404	4	2.53	35.39	3.00E-8	7.1	8.5				850	1.89	2.57	11.6
5.100	16.732	4	2.51	35.12	3.00E-8	7.1	8.4				853	1.90	2.55	11.5
5.200	17.060	4	2.71	25.02	3.00E-8	5.6	6.6				601	1.34	1.77	8.0
5.300	17.388	4	2.62	26.11	3.00E-8	5.7	6.7				638	1.42	1.86	8.4
5.400	17.717	5	2.28	45.86	3.00E-6	8.7	10.2	36	37	160	575			
5.500	18.045	5	2.28	50.33	3.00E-6	9.7	11.2	38	37	177	597			
5.600	18.373	5	2.19	59.50	3.00E-6	11.1	12.9	41	38	211	636			
5.700	18.701	6	2.01	64.09	3.00E-4	11.4	13.2	43	39	233	659			
5.800	19.029	6	1.84	82.44	3.00E-4	14.1	16.1	49	40	304	724			
5.900	19.357	6	1.81	93.59	3.00E-4	15.9	18.1	52	41	348	760			
6.000	19.685	6	1.89	94.12	3.00E-4	16.5	18.7	52	41	350	765			
6.100	20.013	6	1.75	115.25	3.00E-4	19.5	21.9	57	42	435	825			
6.200	20.341	6	1.77	122.95	3.00E-4	21.0	23.5	59	42	466	848			
6.300	20.669	6	1.73	120.77	3.00E-4	20.6	22.9	59	42	462	849			
6.400	20.997	6	1.67	112.62	3.00E-4	19.0	21.0	57	42	436	836			
6.500	21.325	6	1.80	110.36	3.00E-4	19.5	21.4	56	42	426	833			
6.600	21.654	6	1.82	112.68	3.00E-4	20.1	22.0	57	42	437	843			
6.700	21.982	6	1.74	113.13	3.00E-4	19.9	21.6	57	42	444	850			
6.800	22.310	6	1.82	95.61	3.00E-4	17.3	18.7	52	41	377	808			
6.900	22.638	6	1.85	89.65	3.00E-4	16.5	17.8	51	40	355	795			
7.000	22.966	6	1.74	93.56	3.00E-4	16.7	17.9	52	41	374	812			
7.100	23.294	6	1.63	96.97	3.00E-4	16.8	17.9	53	41	392	827			
7.200	23.622	6	1.69	95.33	3.00E-4	17.0	18.0	52	41	386	826			
7.300	23.950	6	1.79	98.12	3.00E-4	18.2	19.1	53	41	399	838			
7.400	24.278	6	1.82	127.16	3.00E-4	23.8	24.9	60	42	518	917			
7.500	24.606	6	1.69	195.39	3.00E-4	35.1	36.6	75	44	799	1064			
7.600	24.934	6	1.77	164.44	3.00E-4	30.5	31.6	69	43	676	1010			
7.700	25.262	6	1.71	163.46	3.00E-4	29.9	30.8	68	43	677	1014			
7.800	25.591	6	1.57	190.95	3.00E-4	33.5	34.4	74	44	795	1073			
7.900	25.919	6	1.61	212.99	3.00E-4	38.1	38.8	78	44	890	1118			
8.000	26.247	6	1.54	260.42	3.00E-4	45.6	46.3	86	45	1092	1201			
8.100	26.575	6	1.49	278.36	3.00E-4	48.2	48.7	89	46	1173	1234			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tn}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	235.126	1.934	10.153		235.24	0.82	9	124	1.575	0.527	1.048	222.96	0.83	0.00
8.300	27.231	174.741	1.619	9.590		174.84	0.93	9	124	1.596	0.538	1.058	163.73	0.93	0.00
8.400	27.559	137.232	1.296	8.581		137.32	0.94	9	124	1.616	0.548	1.068	127.04	0.96	0.00
8.500	27.887	106.507	0.942	7.996		106.59	0.88	8	121	1.636	0.558	1.078	97.38	0.90	0.00
8.600	28.215	100.341	0.807	8.019		100.43	0.80	8	121	1.656	0.568	1.087	90.83	0.82	0.00
8.700	28.543	107.972	0.802	8.277		108.06	0.74	9	124	1.676	0.578	1.098	96.93	0.75	0.00
8.800	28.871	121.851	0.872	8.664		121.94	0.72	9	124	1.696	0.589	1.108	108.56	0.73	0.00
8.900	29.199	115.958	0.875	8.688		116.05	0.75	9	124	1.717	0.599	1.118	102.28	0.77	0.00
9.000	29.528	103.106	0.727	8.851		103.20	0.70	9	124	1.737	0.609	1.128	89.95	0.72	0.00
9.100	29.856	105.798	0.713	9.238		105.90	0.67	9	124	1.758	0.619	1.138	91.50	0.68	0.00
9.200	30.184	111.564	0.771	9.285		111.66	0.69	9	124	1.778	0.630	1.148	95.70	0.70	0.00
9.300	30.512	109.509	0.820	9.403		109.61	0.75	9	124	1.798	0.640	1.158	93.07	0.76	0.00
9.400	30.840	122.088	0.739	9.789		122.19	0.60	9	124	1.819	0.650	1.168	103.02	0.61	0.00
9.500	31.168	145.627	0.907	10.434		145.74	0.62	9	124	1.839	0.660	1.179	122.09	0.63	0.00
9.600	31.496	142.498	0.988	10.469		142.61	0.69	9	124	1.859	0.671	1.189	118.40	0.70	0.00
9.700	31.824	136.541	0.944	10.481		136.65	0.69	9	124	1.880	0.681	1.199	112.42	0.70	0.00
9.800	32.152	141.616	1.035	10.751		141.73	0.73	9	124	1.900	0.691	1.209	115.66	0.74	0.00
9.900	32.480	185.392	1.315	11.618		185.52	0.71	9	124	1.920	0.701	1.219	150.60	0.72	0.00
10.000	32.808	255.491	1.910	12.791		255.63	0.75	9	124	1.941	0.712	1.229	206.38	0.75	0.00
10.100	33.136	234.862	1.883	12.451		235.00	0.80	9	124	1.961	0.722	1.239	188.03	0.81	0.00
10.200	33.465	168.302	1.451	11.876		168.43	0.86	9	124	1.982	0.732	1.249	133.21	0.87	0.00
10.300	33.793	145.573	1.121	11.114		145.69	0.77	9	124	2.002	0.742	1.260	114.07	0.78	0.00
10.400	34.121	159.743	1.123	11.279		159.86	0.70	9	124	2.022	0.752	1.270	124.31	0.71	0.00
10.500	34.449	187.066	1.346	12.087		187.20	0.72	9	124	2.043	0.763	1.280	144.66	0.73	0.00
10.600	34.777	192.778	1.512	12.521		192.91	0.78	9	124	2.063	0.773	1.290	147.95	0.79	0.00
10.700	35.105	205.684	1.289	13.060		205.83	0.63	9	124	2.083	0.783	1.300	156.71	0.63	0.00
10.800	35.433	282.295	1.227	16.354		282.47	0.43	10	127	2.104	0.793	1.311	213.89	0.44	0.00
10.900	35.761	338.423	1.752	21.877		338.66	0.52	10	127	2.125	0.804	1.321	254.67	0.52	0.00
11.000	36.089	327.244	2.253	24.597		327.51	0.69	10	127	2.146	0.814	1.332	244.25	0.69	0.00
11.100	36.417	268.561	1.981	20.974		268.79	0.74	9	124	2.166	0.824	1.342	198.64	0.74	0.00
11.200	36.745	271.717	1.358	19.754		271.93	0.50	10	127	2.187	0.834	1.353	199.39	0.50	0.00
11.300	37.073	353.066	0.964	25.147		353.34	0.27	10	127	2.208	0.845	1.364	257.52	0.27	0.00
11.400	37.402	389.612	1.246	19.532		389.82	0.32	10	127	2.229	0.855	1.374	282.06	0.32	0.00
11.500	37.730	369.302	1.718	16.413		369.48	0.47	10	127	2.250	0.865	1.385	265.18	0.47	0.00
11.600	38.058	349.000	1.400	18.430		349.20	0.40	10	127	2.271	0.875	1.395	248.61	0.40	0.00
11.700	38.386	361.261	1.370	19.415		361.47	0.38	10	127	2.292	0.886	1.406	255.44	0.38	0.00
11.800	38.714	377.224	1.208	15.640		377.39	0.32	10	127	2.313	0.896	1.417	264.75	0.32	0.00
11.900	39.042	373.576	0.978	12.802		373.71	0.26	10	127	2.333	0.906	1.427	260.18	0.26	0.00
12.000	39.370	371.484	1.164	12.474		371.62	0.31	10	127	2.354	0.916	1.438	256.78	0.32	0.00
12.100	39.698	356.568	1.718	13.682		356.72	0.48	10	127	2.375	0.927	1.449	244.59	0.48	0.00
12.200	40.026	344.817	1.639	15.710		344.99	0.47	10	127	2.396	0.937	1.459	234.76	0.48	0.00
12.300	40.354	371.366	1.264	14.713		371.53	0.34	10	127	2.417	0.947	1.470	251.09	0.34	0.00
12.400	40.682	387.210	1.262	13.869		387.36	0.33	10	127	2.438	0.957	1.481	259.97	0.33	0.00
12.500	41.011	390.885	1.127	12.955		391.02	0.29	10	127	2.459	0.967	1.491	260.56	0.29	0.00
12.600	41.339	389.757	1.041	12.685		389.89	0.27	10	127	2.480	0.978	1.502	257.94	0.27	0.00
12.700	41.667	378.724	1.607	11.935		378.85	0.42	10	127	2.501	0.988	1.513	248.81	0.43	0.00
12.800	41.995	366.527	1.824	11.395		366.65	0.50	10	127	2.521	0.998	1.523	239.05	0.50	0.00
12.900	42.323	366.691	1.680	12.052		366.82	0.46	10	127	2.542	1.008	1.534	237.49	0.46	0.00
13.000	42.651	359.278	1.853	13.670		359.43	0.52	10	127	2.563	1.019	1.545	231.05	0.52	0.00
13.100	42.979	361.889	1.965	13.482		362.03	0.54	10	127	2.584	1.029	1.555	231.13	0.55	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.60	221.89	3.00E-4	40.1	40.2	80	45	941	1150			
8.300	27.231	6	1.73	163.73	3.00E-4	31.1	31.1	68	43	699	1045			
8.400	27.559	6	1.82	127.58	3.00E-4	25.2	25.1	60	42	549	967			
8.500	27.887	6	1.89	98.15	3.00E-4	20.1	19.9	53	40	426	892			
8.600	28.215	6	1.89	91.89	3.00E-4	18.9	18.7	51	40	402	877			
8.700	28.543	6	1.85	98.50	3.00E-4	20.0	19.7	53	40	432	901			
8.800	28.871	6	1.80	110.83	3.00E-4	22.2	21.7	56	41	488	941			
8.900	29.199	6	1.83	104.80	3.00E-4	21.4	20.8	55	41	464	929			
9.000	29.528	6	1.86	92.49	3.00E-4	19.2	18.6	51	40	413	896			
9.100	29.856	6	1.84	94.48	3.00E-4	19.6	18.9	52	40	424	906			
9.200	30.184	6	1.83	99.23	3.00E-4	20.6	19.8	53	40	447	925			
9.300	30.512	6	1.86	96.80	3.00E-4	20.5	19.5	53	40	438	922			
9.400	30.840	6	1.77	107.84	3.00E-4	22.1	21.0	56	41	489	959			
9.500	31.168	6	1.72	128.53	3.00E-4	25.8	24.5	61	42	583	1020			
9.600	31.496	6	1.76	124.99	3.00E-4	25.6	24.2	60	41	570	1015			
9.700	31.824	6	1.77	119.06	3.00E-4	24.7	23.2	58	41	547	1004			
9.800	32.152	6	1.78	122.95	3.00E-4	25.7	24.0	59	41	567	1019			
9.900	32.480	6	1.68	161.37	3.00E-4	32.5	30.3	68	43	742	1118			
10.000	32.808	6	1.59	222.44	3.00E-4	43.5	40.3	80	44	1023	1247			
10.100	33.136	6	1.64	203.46	3.00E-4	40.6	37.5	76	44	940	1216			
10.200	33.465	6	1.78	143.78	3.00E-4	30.5	28.1	64	42	674	1091			
10.300	33.793	6	1.80	123.44	3.00E-4	26.6	24.4	59	41	583	1042			
10.400	34.121	6	1.74	135.40	3.00E-4	28.6	26.1	62	42	639	1078			
10.500	34.449	6	1.70	158.58	3.00E-4	33.0	30.0	67	42	749	1139			
10.600	34.777	6	1.72	162.63	3.00E-4	34.2	31.0	68	43	772	1154			
10.700	35.105	6	1.63	173.71	3.00E-4	35.5	32.0	70	43	823	1182			
10.800	35.433	6	1.43	238.07	3.00E-4	45.5	40.9	82	44	1130	1317			
10.900	35.761	6	1.42	284.61	3.00E-4	54.4	48.7	90	45	1355	1403			
11.000	36.089	6	1.52	274.06	3.00E-4	54.3	48.4	88	45	1310	1391			
11.100	36.417	6	1.60	223.73	3.00E-4	45.8	40.7	80	44	1075	1306			
11.200	36.745	6	1.49	225.46	3.00E-4	44.7	39.5	80	44	1088	1314			
11.300	37.073	7	1.25	292.33	3.00E-2	53.9	47.4	91	45	1413	1438			
11.400	37.402	7	1.25	321.44	3.00E-2	59.5	52.2	96	46	1559	1490			
11.500	37.730	6	1.37	303.37	3.00E-4	58.5	51.2	93	45	1478	1467			
11.600	38.058	6	1.36	285.51	3.00E-4	55.0	47.9	90	45	1397	1443			
11.700	38.386	7	1.33	294.47	3.00E-2	56.5	49.0	92	45	1446	1464			
11.800	38.714	7	1.28	306.35	3.00E-2	58.0	50.2	94	45	1510	1489			
11.900	39.042	7	1.23	302.19	3.00E-2	56.8	48.9	93	45	1495	1488			
12.000	39.370	7	1.28	299.36	3.00E-2	57.2	49.1	92	45	1486	1488			
12.100	39.698	6	1.41	286.20	3.00E-4	57.2	48.9	90	45	1427	1472			
12.200	40.026	6	1.42	275.70	3.00E-4	55.5	47.2	89	45	1380	1459			
12.300	40.354	7	1.31	295.96	3.00E-2	57.7	49.0	92	45	1486	1499			
12.400	40.682	7	1.29	307.53	3.00E-2	59.8	50.5	94	45	1549	1524			
12.500	41.011	7	1.26	309.33	3.00E-2	59.8	50.4	94	45	1564	1532			
12.600	41.339	7	1.24	307.32	3.00E-2	59.4	49.8	94	45	1560	1535			
12.700	41.667	6	1.37	297.49	3.00E-4	60.0	50.2	92	45	1515	1524			
12.800	41.995	6	1.43	286.82	3.00E-4	59.1	49.2	91	45	1467	1511			
12.900	42.323	6	1.41	285.94	3.00E-4	58.7	48.8	90	45	1467	1514			
13.000	42.651	6	1.45	279.15	3.00E-4	58.3	48.3	89	45	1438	1507			
13.100	42.979	6	1.46	280.21	3.00E-4	59.0	48.7	89	45	1448	1515			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	351.765	1.871	12.837		351.90	0.53	10	127	2.605	1.039	1.566	223.07	0.54	0.00
13.300	43.635	347.755	1.688	12.087		347.89	0.49	10	127	2.626	1.049	1.576	219.00	0.49	0.00
13.400	43.963	341.088	2.207	11.595		341.21	0.65	10	127	2.647	1.060	1.587	213.32	0.65	0.00
13.500	44.291	316.530	1.970	11.431		316.65	0.62	10	127	2.668	1.070	1.598	196.51	0.63	0.00
13.600	44.619	265.332	1.819	11.654		265.46	0.69	9	124	2.688	1.080	1.608	163.42	0.69	0.00
13.700	44.948	221.310	1.671	11.782		221.44	0.75	9	124	2.708	1.090	1.618	135.18	0.76	0.00
13.800	45.276	224.193	1.287	13.424		224.34	0.57	9	124	2.729	1.101	1.628	136.11	0.58	0.00
13.900	45.604	256.391	1.160	13.377		256.54	0.45	10	127	2.750	1.111	1.639	154.86	0.46	0.00
14.000	45.932	268.279	1.411	12.838		268.42	0.53	10	127	2.770	1.121	1.649	161.05	0.53	0.00
14.100	46.260	252.907	1.728	12.099		253.04	0.68	9	124	2.791	1.131	1.660	150.79	0.69	0.00
14.200	46.588	227.085	1.755	11.337		227.21	0.77	9	124	2.811	1.141	1.670	134.39	0.78	0.00
14.300	46.916	179.589	1.620	10.880		179.71	0.90	9	124	2.832	1.152	1.680	105.29	0.92	0.00
14.400	47.244	126.154	2.326	11.008		126.27	1.84	8	121	2.851	1.162	1.689	73.05	1.88	0.00
14.500	47.572	176.397	1.551	22.181		176.64	0.88	9	124	2.872	1.172	1.700	102.24	0.89	0.00
14.600	47.900	306.516	1.974	29.180		306.83	0.64	10	127	2.893	1.182	1.710	177.72	0.65	0.00
14.700	48.228	294.855	2.135	22.885		295.10	0.72	9	124	2.913	1.193	1.720	169.84	0.73	0.00
14.800	48.556	262.749	2.302	17.961		262.94	0.88	9	124	2.933	1.203	1.730	150.25	0.89	0.00
14.900	48.885	193.205	2.612	14.303		193.36	1.35	8	121	2.953	1.213	1.740	109.42	1.37	0.00
15.000	49.213	72.873	2.274	12.169		73.00	3.12	6	115	2.972	1.223	1.749	40.05	3.25	0.00
15.100	49.541	26.423	0.730	28.242		26.73	2.73	5	115	2.991	1.234	1.757	13.51	3.07	0.03
15.200	49.869	21.202	0.111	93.580		22.21	0.50	7	118	3.010	1.244	1.766	10.87	0.58	0.29

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	6	1.47	271.37	3.00E-4	57.5	47.2	88	45	1408	1504			
13.300	43.635	6	1.45	267.32	3.00E-4	56.5	46.3	87	44	1392	1501			
13.400	43.963	6	1.54	261.26	3.00E-4	57.0	46.5	86	44	1365	1495			
13.500	44.291	6	1.56	241.48	3.00E-4	53.2	43.3	83	44	1267	1462			
13.600	44.619	6	1.64	201.35	3.00E-4	45.9	37.2	76	43	1062	1381			
13.700	44.948	6	1.73	165.16	3.00E-4	39.5	31.9	69	42	886	1303			
13.800	45.276	6	1.66	168.42	3.00E-4	39.0	31.4	69	42	897	1311			
13.900	45.604	6	1.55	192.73	3.00E-4	43.0	34.6	74	43	1026	1374			
14.000	45.932	6	1.58	201.08	3.00E-4	45.4	36.4	76	43	1074	1398			
14.100	46.260	6	1.67	188.07	3.00E-4	44.2	35.3	73	43	1012	1374			
14.200	46.588	6	1.74	166.45	3.00E-4	40.7	32.4	69	42	909	1328			
14.300	46.916	6	1.87	128.53	3.00E-4	33.6	26.7	61	41	719	1230			
14.400	47.244	5	2.19	85.40	3.00E-6	26.8	21.2	49	39	505	1096			
14.500	47.572	6	1.87	125.38	3.00E-4	33.1	26.1	60	41	707	1228			
14.600	47.900	6	1.60	225.94	3.00E-4	52.2	41.1	80	44	1227	1479			
14.700	48.228	6	1.65	216.35	3.00E-4	51.1	40.0	79	43	1180	1463			
14.800	48.556	6	1.74	189.28	3.00E-4	47.0	36.8	74	43	1052	1411			
14.900	48.885	6	1.97	133.54	3.00E-4	37.6	29.3	62	41	773	1276			
15.000	49.213	4	2.55	44.91	3.00E-8	18.2	14.1				2101	4.67	2.67	12.0
15.100	49.541	3	2.90	14.38	1.00E-9	7.9	6.2				712	1.58	0.90	4.1
15.200	49.869	4	2.62	12.07	3.00E-8	5.5	4.2				576	1.28	0.72	3.3

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client: MACTEC
Site: SOUTH TEXAS PROJ.
Engineer: M.COOK

Sounding: C-941
Date: 7/20/2007
Time: 2:31 PM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	3.902	0.020	14.420		4.06	0.49
0.100	0.328	4.939	0.020	13.963		5.09	0.39
0.150	0.492	7.258	0.119	12.837		7.40	1.61
0.200	0.656	9.250	0.237	11.466		9.37	2.53
0.250	0.820	9.605	0.590	10.622		9.72	6.07
0.300	0.984	66.087	0.979	10.059		66.20	1.48
0.350	1.148	207.403	1.855	8.371		207.49	0.89
0.400	1.312	217.281	3.507	7.421		217.36	1.61
0.450	1.476	122.079	3.358	4.502		122.13	2.75
0.500	1.640	72.418	2.880	27.328		72.71	3.96
0.550	1.804	77.875	2.143	185.494		79.88	2.68
0.600	1.969	76.865	1.946	223.831		79.28	2.45
0.650	2.133	71.954	1.745	184.826		73.95	2.36
0.700	2.297	62.622	1.563	97.988		63.68	2.45
0.750	2.461	50.371	1.425	46.638		50.87	2.80
0.800	2.625	27.969	1.218	23.424		28.22	4.32
0.850	2.789	16.863	0.921	17.445		17.05	5.40
0.900	2.953	13.043	0.884	15.510		13.21	6.69
0.950	3.117	13.043	0.628	15.370		13.21	4.75
1.000	3.281	12.579	0.737	14.772		12.74	5.79
1.050	3.445	13.480	0.750	17.058		13.66	5.49
1.100	3.609	12.443	0.733	14.279		12.60	5.82
1.150	3.773	11.297	0.723	12.591		11.43	6.32
1.200	3.937	10.369	0.701	11.466		10.49	6.68
1.250	4.101	9.496	0.669	10.551		9.61	6.96
1.300	4.265	9.004	0.621	9.848		9.11	6.82
1.350	4.429	9.004	0.558	9.180		9.10	6.13
1.400	4.593	9.086	0.541	8.828		9.18	5.89
1.450	4.757	9.387	0.541	5.592		9.45	5.73
1.500	4.921	9.277	0.541	5.592		9.34	5.79
1.550	5.085	9.032	0.544	5.487		9.09	5.98
1.600	5.249	8.486	0.538	5.416		8.54	6.30
1.650	5.413	8.404	0.520	5.346		8.46	6.15
1.700	5.577	8.677	0.514	5.276		8.73	5.89
1.750	5.741	8.950	0.493	5.241		9.01	5.47
1.800	5.906	9.414	0.504	5.205		9.47	5.32
1.850	6.070	10.233	0.531	5.205		10.29	5.16
1.900	6.234	9.823	0.529	5.135		9.88	5.36

1.950	6.398	9.741	0.512	5.065	9.80	5.23
2.000	6.562	9.960	0.475	5.065	10.01	4.74
2.050	6.726	10.205	0.462	5.030	10.26	4.50
2.100	6.890	10.642	0.468	5.100	10.70	4.38
2.150	7.054	11.324	0.475	5.135	11.38	4.17
2.200	7.218	12.006	0.510	5.170	12.06	4.23
2.250	7.382	12.688	0.559	5.170	12.74	4.39
2.300	7.546	13.016	0.541	5.205	13.07	4.14
2.350	7.710	13.152	0.525	5.205	13.21	3.97
2.400	7.874	13.343	0.527	5.170	13.40	3.93
2.450	8.038	13.070	0.552	5.135	13.13	4.21
2.500	8.202	12.524	0.556	5.030	12.58	4.42
2.550	8.366	12.115	0.576	4.889	12.17	4.73
2.600	8.530	12.415	0.555	4.783	12.47	4.45
2.650	8.694	12.661	0.597	4.678	12.71	4.70
2.700	8.858	12.797	0.604	4.572	12.85	4.70
2.750	9.022	12.088	0.584	4.467	12.14	4.81
2.800	9.186	11.924	0.559	4.361	11.97	4.67
2.850	9.350	12.361	0.561	4.291	12.41	4.52
2.900	9.514	12.088	0.531	4.185	12.13	4.38
2.950	9.678	11.733	0.536	4.045	11.78	4.55
3.000	9.843	11.515	0.557	3.834	11.56	4.82
3.050	10.007	12.661	0.597	3.763	12.70	4.70
3.100	10.171	13.671	0.622	3.728	13.71	4.54
3.150	10.335	14.789	0.642	3.693	14.83	4.33
3.200	10.499	15.335	0.662	3.623	15.37	4.31
3.250	10.663	16.017	0.673	3.623	16.06	4.19
3.300	10.827	16.426	0.595	3.588	16.46	3.61
3.350	10.991	16.133	0.633	3.517	16.17	3.91
3.400	11.155	17.818	0.625	3.025	17.85	3.50
3.450	11.319	17.955	0.627	2.955	17.99	3.49
3.500	11.483	17.900	0.615	2.955	17.93	3.43
3.550	11.647	17.764	0.617	2.955	17.80	3.47
3.600	11.811	16.836	0.671	2.919	16.87	3.98
3.650	11.975	15.908	0.654	2.884	15.94	4.10
3.700	12.139	15.444	0.632	2.849	15.47	4.08
3.750	12.303	14.871	0.586	2.813	14.90	3.93
3.800	12.467	15.444	0.551	2.813	15.47	3.56
3.850	12.631	16.972	0.589	2.778	17.00	3.46
3.900	12.795	18.691	0.671	2.778	18.72	3.58
3.950	12.959	17.982	0.708	2.778	18.01	3.93
4.000	13.123	18.418	0.743	2.743	18.45	4.03
4.050	13.287	19.182	0.734	2.884	19.21	3.82
4.100	13.451	18.691	0.728	2.884	18.72	3.89
4.150	13.615	19.455	0.775	2.884	19.49	3.98
4.200	13.780	19.564	0.713	2.884	19.60	3.64
4.250	13.944	20.847	0.750	2.955	20.88	3.59
4.300	14.108	21.884	0.749	2.990	21.92	3.42
4.350	14.272	21.993	0.741	3.025	22.03	3.36
4.400	14.436	22.539	0.767	3.306	22.57	3.40
4.450	14.600	22.375	0.767	3.341	22.41	3.42

4.500	14.764	21.720	0.821	3.341	21.76	3.77
4.550	14.928	20.328	0.802	3.376	20.36	3.94
4.600	15.092	19.837	0.811	3.411	19.87	4.08
4.650	15.256	21.072	0.792	3.482	21.11	3.75
4.700	15.420	21.147	0.749	3.552	21.19	3.54
4.750	15.584	21.693	0.778	3.623	21.73	3.58
4.800	15.748	22.620	0.780	3.728	22.66	3.44
4.850	15.912	22.320	0.762	3.834	22.36	3.41
4.900	16.076	22.566	0.797	3.869	22.61	3.53
4.950	16.240	24.094	0.884	4.009	24.14	3.66
5.000	16.404	26.222	0.912	4.150	26.27	3.47
5.050	16.568	27.941	0.933	4.397	27.99	3.33
5.100	16.732	24.803	0.952	4.326	24.85	3.83
5.150	16.896	23.848	0.902	4.220	23.89	3.78
5.200	17.060	23.766	0.840	4.255	23.81	3.53
5.250	17.224	22.948	0.831	4.291	22.99	3.61
5.300	17.388	22.839	0.800	4.326	22.89	3.50
5.350	17.552	24.039	0.728	4.467	24.09	3.02
5.400	17.717	24.667	0.738	4.643	24.72	2.99
5.450	17.881	25.949	0.745	5.839	26.01	2.86
5.500	18.045	24.803	0.694	5.839	24.87	2.79
5.550	18.209	23.657	0.632	5.944	23.72	2.66
5.600	18.373	23.275	0.589	6.049	23.34	2.52
5.650	18.537	23.275	0.662	6.085	23.34	2.84
5.700	18.701	24.039	0.783	6.155	24.11	3.25
5.750	18.865	24.039	0.787	6.260	24.11	3.26
5.800	19.029	22.948	0.818	6.155	23.01	3.55
5.850	19.193	23.494	0.815	6.085	23.56	3.46
5.900	19.357	22.757	0.779	6.014	22.82	3.41
5.950	19.521	21.802	0.756	5.979	21.87	3.46
6.000	19.685	22.075	0.725	6.049	22.14	3.27
6.050	19.849	24.149	0.795	6.155	24.22	3.28
6.100	20.013	28.132	0.852	7.773	28.22	3.02
6.150	20.177	31.816	0.876	7.878	31.90	2.75
6.200	20.341	25.622	0.728	7.351	25.70	2.83
6.250	20.505	17.791	0.625	6.718	17.86	3.50
6.300	20.669	15.635	0.422	6.507	15.71	2.69
6.350	20.833	17.955	0.199	6.401	18.02	1.10
6.400	20.997	17.464	0.228	6.542	17.53	1.30
6.450	21.161	19.128	0.324	6.929	19.20	1.69
6.500	21.325	23.166	0.544	7.245	23.24	2.34
6.550	21.490	31.079	0.593	7.914	31.16	1.90
6.600	21.654	35.227	0.598	9.426	35.33	1.69
6.650	21.818	54.845	0.848	12.380	54.98	1.54
6.700	21.982	71.708	1.090	10.516	71.82	1.52
6.750	22.146	77.821	1.499	7.667	77.90	1.92
6.800	22.310	84.287	1.792	7.527	84.37	2.12
6.850	22.474	97.548	1.775	8.723	97.64	1.82
6.900	22.638	124.589	1.672	7.808	124.67	1.34
6.950	22.802	137.523	0.864	6.823	137.60	0.63
7.000	22.966	138.423	0.973	6.366	138.49	0.70

7.050	23.130	125.544	1.079	5.522	125.60	0.86
7.100	23.294	131.547	1.139	5.381	131.61	0.87
7.150	23.458	128.737	1.020	4.818	128.79	0.79
7.200	23.622	126.608	0.981	4.713	126.66	0.77
7.250	23.786	124.507	1.008	4.643	124.56	0.81
7.300	23.950	127.400	1.061	4.607	127.45	0.83
7.350	24.114	138.451	1.095	4.467	138.50	0.79
7.400	24.278	162.872	1.079	4.572	162.92	0.66
7.450	24.442	185.383	1.019	4.713	185.43	0.55
7.500	24.606	145.054	1.269	4.643	145.10	0.87
7.550	24.770	142.707	1.414	4.255	142.75	0.99
7.600	24.934	122.761	1.445	4.045	122.80	1.18
7.650	25.098	112.228	1.413	3.834	112.27	1.26
7.700	25.262	109.937	1.294	3.763	109.98	1.18
7.750	25.427	104.097	1.004	3.623	104.14	0.96
7.800	25.591	105.462	0.823	3.552	105.50	0.78
7.850	25.755	115.366	0.668	3.552	115.40	0.58
7.900	25.919	124.235	0.724	3.552	124.27	0.58
7.950	26.083	115.748	0.790	3.411	115.78	0.68
8.000	26.247	106.526	0.770	3.201	106.56	0.72
8.050	26.411	102.842	0.717	3.060	102.88	0.70
8.100	26.575	90.863	0.616	2.884	90.89	0.68
8.150	26.739	86.470	0.590	2.743	86.50	0.68
8.200	26.903	84.478	0.693	2.743	84.51	0.82
8.250	27.067	96.212	0.794	2.778	96.24	0.83
8.300	27.231	91.682	0.844	2.778	91.71	0.92
8.350	27.395	84.642	0.858	2.778	84.67	1.01
8.400	27.559	80.795	0.781	2.813	80.83	0.97
8.450	27.723	80.467	0.567	2.849	80.50	0.70
8.500	27.887	78.776	0.523	2.884	78.81	0.66
8.550	28.051	77.657	0.556	3.517	77.69	0.72
8.600	28.215	76.920	0.619	3.623	76.96	0.80
8.650	28.379	75.965	0.685	3.693	76.00	0.90
8.700	28.543	80.140	0.769	3.834	80.18	0.96
8.750	28.707	89.908	0.858	4.009	89.95	0.95
8.800	28.871	102.951	0.992	4.255	103.00	0.96
8.850	29.035	118.914	1.150	4.572	118.96	0.97
8.900	29.199	134.412	1.280	4.959	134.47	0.95
8.950	29.364	151.985	1.410	5.346	152.04	0.93
9.000	29.528	168.411	1.552	5.697	168.47	0.92
9.050	29.692	162.544	1.624	5.874	162.61	1.00
9.100	29.856	150.675	1.563	6.014	150.74	1.04
9.150	30.020	132.011	1.267	6.049	132.08	0.96
9.200	30.184	108.845	1.107	6.085	108.91	1.02
9.250	30.348	91.627	0.963	6.577	91.70	1.05
9.300	30.512	85.379	0.844	6.612	85.45	0.99
9.350	30.676	82.568	0.772	6.647	82.64	0.93
9.400	30.840	84.560	0.652	6.718	84.63	0.77
9.450	31.004	88.653	0.661	6.647	88.72	0.75
9.500	31.168	94.629	0.715	6.401	94.70	0.76
9.550	31.332	84.670	0.778	6.085	84.74	0.92

9.600	31.496	84.560	0.747	5.909	84.62	0.88
9.650	31.660	87.343	0.753	5.909	87.41	0.86
9.700	31.824	85.597	0.835	5.874	85.66	0.97
9.750	31.988	80.767	0.829	5.839	80.83	1.03
9.800	32.152	78.039	0.815	5.874	78.10	1.04
9.850	32.316	81.423	0.778	6.049	81.49	0.95
9.900	32.480	90.427	0.797	6.366	90.50	0.88
9.950	32.644	98.394	0.856	6.788	98.47	0.87
10.000	32.808	103.770	0.918	6.964	103.85	0.88
10.050	32.972	117.031	1.067	7.351	117.11	0.91
10.100	33.136	126.963	1.013	7.808	127.05	0.80
10.150	33.301	130.974	1.070	8.054	131.06	0.82
10.200	33.465	136.704	1.166	8.476	136.80	0.85
10.250	33.629	151.957	1.265	8.793	152.05	0.83
10.300	33.793	148.437	1.400	8.898	148.53	0.94
10.350	33.957	148.874	1.414	9.109	148.97	0.95
10.400	34.121	153.349	1.396	9.356	153.45	0.91
10.450	34.285	154.331	1.388	9.637	154.44	0.90
10.500	34.449	150.129	1.359	9.848	150.24	0.90
10.550	34.613	143.880	1.346	9.918	143.99	0.93
10.600	34.777	141.671	1.318	10.094	141.78	0.93
10.650	34.941	138.451	1.291	10.376	138.56	0.93
10.700	35.105	131.493	1.265	10.657	131.61	0.96
10.750	35.269	132.120	1.064	11.079	132.24	0.80
10.800	35.433	143.689	1.144	11.430	143.81	0.80
10.850	35.597	153.404	1.304	12.064	153.53	0.85
10.900	35.761	153.131	1.419	12.275	153.26	0.93
10.950	35.925	153.649	1.495	12.416	153.78	0.97
11.000	36.089	158.206	1.485	12.591	158.34	0.94
11.050	36.253	157.987	1.482	12.626	158.12	0.94
11.100	36.417	159.652	1.455	12.697	159.79	0.91
11.150	36.581	158.260	1.432	12.802	158.40	0.90
11.200	36.745	160.798	1.429	12.943	160.94	0.89
11.250	36.909	159.707	1.444	13.049	159.85	0.90
11.300	37.073	161.671	1.404	13.189	161.81	0.87
11.350	37.238	172.668	1.434	13.541	172.81	0.83
11.400	37.402	177.552	1.318	13.752	177.70	0.74
11.450	37.566	187.484	1.355	14.068	187.64	0.72
11.500	37.730	206.339	1.516	14.456	206.50	0.73
11.550	37.894	237.091	1.758	15.335	237.26	0.74
11.600	38.058	254.417	2.028	15.862	254.59	0.80
11.650	38.222	255.700	2.158	15.898	255.87	0.84
11.700	38.386	249.042	2.176	15.721	249.21	0.87
11.750	38.550	255.645	2.169	15.933	255.82	0.85
11.800	38.714	250.597	2.108	15.968	250.77	0.84
11.850	38.878	248.660	2.020	15.933	248.83	0.81
11.900	39.042	251.689	1.957	16.144	251.86	0.78
11.950	39.206	261.839	1.757	16.496	262.02	0.67
12.000	39.370	262.603	1.817	16.706	262.78	0.69
12.050	39.534	256.600	1.893	16.636	256.78	0.74
12.100	39.698	260.284	1.879	16.531	260.46	0.72

12.150	39.862	259.793	1.873	16.496	259.97	0.72
12.200	40.026	255.263	1.711	16.249	255.44	0.67
12.250	40.190	245.904	1.713	15.968	246.08	0.70
12.300	40.354	237.009	1.724	15.757	237.18	0.73
12.350	40.518	229.641	1.642	15.581	229.81	0.71
12.400	40.682	220.037	1.528	15.335	220.20	0.69
12.450	40.846	209.340	1.440	14.983	209.50	0.69
12.500	41.011	193.323	1.318	14.561	193.48	0.68
12.550	41.175	160.307	1.240	13.787	160.46	0.77
12.600	41.339	130.783	1.101	13.154	130.93	0.84
12.650	41.503	126.827	1.018	13.084	126.97	0.80
12.700	41.667	156.951	1.019	13.822	157.10	0.65
12.750	41.831	189.476	1.053	13.893	189.63	0.56
12.800	41.995	213.324	1.246	13.470	213.47	0.58
12.850	42.159	214.797	1.310	13.154	214.94	0.61
12.900	42.323	220.555	1.440	13.224	220.70	0.65
12.950	42.487	267.105	1.667	14.596	267.26	0.62
13.000	42.651	285.905	1.934	15.335	286.07	0.68
13.050	42.815	286.697	1.855	15.651	286.87	0.65
13.100	42.979	258.292	1.867	14.702	258.45	0.72
13.150	43.143	201.809	2.042	13.084	201.95	1.01
13.200	43.307	115.666	2.688	11.572	115.79	2.32
13.250	43.471	67.670	2.574	10.763	67.79	3.80
13.300	43.635	47.369	1.891	12.275	47.50	3.98
13.350	43.799	37.792	1.404	20.153	38.01	3.69
13.400	43.963	34.517	1.018	66.017	35.23	2.89
13.450	44.127	27.860	0.664	95.279	28.89	2.30
13.500	44.291	28.460	0.587	97.636	29.51	1.99
13.550	44.455	31.025	0.752	133.652	32.47	2.32
13.600	44.619	30.506	0.635	141.565	32.03	1.98
13.650	44.783	38.392	0.767	133.370	39.83	1.93
13.700	44.948	44.122	1.003	25.534	44.40	2.26
13.750	45.112	39.784	0.764	13.647	39.93	1.91
13.800	45.276	33.971	0.889	16.460	34.15	2.60
13.850	45.440	33.971	0.796	15.124	34.13	2.33
13.900	45.604	27.368	0.775	13.295	27.51	2.82
13.950	45.768	28.487	0.778	16.355	28.66	2.71
14.000	45.932	31.543	0.700	20.892	31.77	2.20
14.050	46.096	31.052	0.677	24.690	31.32	2.16
14.100	46.260	30.970	0.615	26.801	31.26	1.97
14.150	46.424	30.233	0.785	29.333	30.55	2.57
14.200	46.588	29.606	0.853	43.824	30.08	2.84
14.250	46.752	30.888	0.889	48.853	31.42	2.83
14.300	46.916	30.724	0.908	49.943	31.26	2.90
14.350	47.080	30.915	0.929	52.019	31.48	2.95
14.400	47.244	29.087	0.819	51.280	29.64	2.76
14.450	47.408	27.505	0.735	42.874	27.97	2.63
14.500	47.572	26.959	0.697	43.753	27.43	2.54
14.550	47.736	27.941	0.713	47.798	28.46	2.51
14.600	47.900	29.878	0.807	49.662	30.41	2.65
14.650	48.064	28.378	0.908	39.744	28.81	3.15

14.700	48.228	27.587	0.966	35.945	27.98	3.45
14.750	48.392	27.150	0.956	34.503	27.52	3.47
14.800	48.556	27.805	0.920	32.076	28.15	3.27
14.850	48.720	28.160	0.913	26.730	28.45	3.21
14.900	48.885	26.686	0.885	23.881	26.94	3.28
14.950	49.049	25.595	0.849	23.917	25.85	3.28
15.000	49.213	25.813	0.795	25.816	26.09	3.05
15.050	49.377	27.314	0.802	29.333	27.63	2.90
15.100	49.541	26.631	0.852	29.966	26.95	3.16
15.150	49.705	25.540	0.890	30.388	25.87	3.44
15.200	49.869	26.249	0.020	32.674	26.60	0.08
15.250	50.033	26.413	0.020	35.383	26.80	0.07

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC		
Site:	SOUTH TEXAS PROJ.		
Engineer:	M.COOK		
Sounding:	C-941		
Date:	7/20/2007		
Time:	2:31 PM		

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{ocr}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	5.366	0.053	13.740		5.51	0.96	1	111	0.018	0.000	0.018	300.77	0.96	0.18
0.200	0.656	8.704	0.315	11.642		8.83	3.57	3	111	0.037	0.000	0.037	240.59	3.59	0.10
0.300	0.984	94.365	1.141	9.684		94.47	1.21	8	121	0.056	0.000	0.056	>1000	1.21	0.01
0.400	1.312	182.254	2.907	6.765		182.33	1.59	8	121	0.076	0.000	0.076	>1000	1.59	0.00
0.500	1.640	90.791	2.794	72.441		91.57	3.05	6	115	0.095	0.000	0.095	962.63	3.05	0.06
0.600	1.969	75.565	1.945	198.050		77.70	2.50	7	118	0.114	0.000	0.114	678.54	2.51	0.18
0.700	2.297	61.649	1.578	109.817		62.84	2.51	6	115	0.133	0.000	0.133	470.93	2.52	0.13
0.800	2.625	31.734	1.188	29.169		32.05	3.71	5	115	0.152	0.000	0.152	209.93	3.72	0.07
0.900	2.953	14.316	0.811	16.108		14.49	5.60	3	111	0.170	0.000	0.170	84.13	5.66	0.08
1.000	3.281	13.034	0.705	15.733		13.20	5.34	3	111	0.188	0.000	0.188	69.05	5.42	0.09
1.100	3.609	12.407	0.735	14.643		12.56	5.85	3	111	0.207	0.000	0.207	59.77	5.95	0.09
1.200	3.937	10.387	0.698	11.536		10.51	6.64	3	111	0.225	0.000	0.225	45.71	6.78	0.08
1.300	4.265	9.168	0.616	9.860		9.27	6.64	3	111	0.243	0.000	0.243	37.12	6.82	0.08
1.400	4.593	9.159	0.547	7.867		9.24	5.91	3	111	0.262	0.000	0.262	34.34	6.09	0.06
1.500	4.921	9.232	0.542	5.557		9.29	5.83	3	111	0.280	0.000	0.280	32.20	6.01	0.04
1.600	5.249	8.641	0.534	5.416		8.70	6.14	3	111	0.298	0.000	0.298	28.18	6.36	0.05
1.700	5.577	8.677	0.509	5.288		8.73	5.83	3	111	0.316	0.000	0.316	26.60	6.05	0.05
1.800	5.906	9.532	0.509	5.217		9.59	5.31	3	111	0.335	0.000	0.335	27.65	5.50	0.04
1.900	6.234	9.932	0.524	5.135		9.99	5.25	3	111	0.353	0.000	0.353	27.30	5.44	0.04
2.000	6.562	9.969	0.483	5.053		10.02	4.82	3	111	0.371	0.000	0.371	26.00	5.00	0.04
2.100	6.890	10.724	0.468	5.088		10.78	4.35	3	111	0.390	0.000	0.390	26.67	4.51	0.04
2.200	7.218	12.006	0.515	5.158		12.06	4.27	3	111	0.408	0.000	0.408	28.58	4.42	0.03
2.300	7.546	12.952	0.542	5.193		13.01	4.16	3	111	0.426	0.000	0.426	29.53	4.31	0.03
2.400	7.874	13.188	0.535	5.170		13.24	4.04	3	111	0.444	0.000	0.444	28.81	4.18	0.03
2.500	8.202	12.570	0.561	5.018		12.62	4.45	3	111	0.463	0.000	0.463	26.29	4.62	0.03
2.600	8.530	12.397	0.576	4.783		12.45	4.63	3	111	0.481	0.000	0.481	24.89	4.81	0.03
2.700	8.858	12.515	0.595	4.572		12.56	4.74	3	111	0.499	0.000	0.499	24.17	4.93	0.03
2.800	9.186	12.124	0.568	4.373		12.17	4.67	3	111	0.517	0.000	0.517	22.52	4.87	0.03
2.900	9.514	12.061	0.543	4.174		12.11	4.48	3	111	0.536	0.000	0.536	21.60	4.69	0.03
3.000	9.843	11.970	0.563	3.881		12.01	4.69	3	111	0.554	0.000	0.554	20.68	4.92	0.02
3.100	10.171	13.707	0.620	3.728		13.75	4.51	3	111	0.572	0.005	0.567	23.24	4.71	0.02

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	6	1.56	39.53	3.00E-4	0.9	6.9	34	46	22	85			
0.200	0.656	8	2.08	69.86	3.00E-6	1.8	9.5	45	45	35				
0.300	0.984	6	1.33	386.51	3.00E-4	14.7	63.8	105	53	378	320			
0.400	1.312	8	1.43	641.71	3.00E-6	29.4	109.4	135	54	729				
0.500	1.640	8	1.77	317.59	3.00E-6	16.4	54.8	95	51	366				
0.600	1.969	8	1.74	238.52	3.00E-6	13.5	41.1	83	49	311				
0.700	2.297	8	1.81	185.23	3.00E-6	11.3	31.8	73	48	251				
0.800	2.625	8	2.13	105.65	3.00E-6	6.6	17.3	55	44	128				
0.900	2.953	9	2.51	54.24	1.00E-8	3.5	8.7					0.95	5.61	25.2
1.000	3.281	9	2.54	46.55	1.00E-8	3.2	7.7					0.87	4.60	20.7
1.100	3.609	4	2.62	42.63	3.00E-8	3.2	7.2				371	0.82	3.98	17.9
1.200	3.937	3	2.74	35.06	1.00E-9	2.8	6.2				309	0.69	3.05	13.7
1.300	4.265	3	2.80	29.66	1.00E-9	2.6	5.4				271	0.60	2.47	11.1
1.400	4.593	3	2.79	27.60	1.00E-9	2.6	5.2				269	0.60	2.29	10.3
1.500	4.921	3	2.80	26.32	1.00E-9	2.6	5.1				270	0.60	2.15	9.7
1.600	5.249	3	2.86	23.77	1.00E-9	2.5	4.8				252	0.56	1.88	8.5
1.700	5.577	3	2.86	22.64	1.00E-9	2.6	4.7				253	0.56	1.77	8.0
1.800	5.906	3	2.82	23.38	1.00E-9	2.7	4.9				278	0.62	1.84	8.3
1.900	6.234	3	2.82	23.27	1.00E-9	2.9	4.9				289	0.64	1.82	8.2
2.000	6.562	3	2.81	22.26	1.00E-9	2.9	4.8				290	0.64	1.73	7.8
2.100	6.890	3	2.77	22.73	1.00E-9	3.0	4.9				312	0.69	1.78	8.0
2.200	7.218	4	2.74	24.34	3.00E-8	3.3	5.3				350	0.78	1.91	8.6
2.300	7.546	4	2.73	25.21	3.00E-8	3.5	5.6				377	0.84	1.97	8.9
2.400	7.874	4	2.73	24.77	3.00E-8	3.6	5.6				384	0.85	1.92	8.6
2.500	8.202	3	2.78	23.09	1.00E-9	3.5	5.4				365	0.81	1.75	7.9
2.600	8.530	3	2.81	22.15	1.00E-9	3.6	5.3				359	0.80	1.66	7.5
2.700	8.858	3	2.83	21.71	1.00E-9	3.6	5.3				362	0.80	1.61	7.3
2.800	9.186	3	2.85	20.42	1.00E-9	3.5	5.1				350	0.78	1.50	6.8
2.900	9.514	3	2.85	19.69	1.00E-9	3.5	5.0				347	0.77	1.44	6.5
3.000	9.843	3	2.88	19.04	1.00E-9	3.6	4.9				344	0.76	1.38	6.2
3.100	10.171	3	2.83	21.25	1.00E-9	4.0	5.4				395	0.88	1.55	7.0

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	15.380	0.659	3.646		15.42	4.27	3	111	0.591	0.015	0.575	25.79	4.44	0.02
3.300	10.827	16.192	0.634	3.576		16.23	3.90	4	115	0.609	0.026	0.584	26.77	4.06	0.01
3.400	11.155	17.302	0.628	3.166		17.34	3.62	4	115	0.628	0.036	0.592	28.21	3.76	0.01
3.500	11.483	17.873	0.620	2.955		17.90	3.46	4	115	0.647	0.046	0.601	28.73	3.59	0.01
3.600	11.811	16.836	0.647	2.919		16.87	3.84	4	115	0.666	0.056	0.609	26.59	4.00	0.01
3.700	12.139	15.408	0.624	2.849		15.44	4.04	4	115	0.685	0.067	0.618	23.88	4.23	0.01
3.800	12.467	15.762	0.575	2.801		15.79	3.64	4	115	0.703	0.077	0.626	24.09	3.81	0.01
3.900	12.795	17.882	0.656	2.778		17.91	3.66	4	115	0.722	0.087	0.635	27.07	3.82	0.01
4.000	13.123	18.527	0.728	2.802		18.56	3.92	4	115	0.741	0.097	0.644	27.69	4.09	0.01
4.100	13.451	19.109	0.746	2.884		19.14	3.90	4	115	0.760	0.108	0.652	28.19	4.06	0.01
4.200	13.780	19.955	0.746	2.908		19.99	3.73	4	115	0.779	0.118	0.661	29.07	3.88	0.00
4.300	14.108	21.575	0.747	2.990		21.61	3.46	5	115	0.797	0.128	0.669	31.10	3.59	0.00
4.400	14.436	22.302	0.758	3.224		22.34	3.39	5	115	0.816	0.138	0.678	31.75	3.52	0.00
4.500	14.764	21.474	0.797	3.353		21.51	3.70	4	115	0.835	0.149	0.686	30.12	3.85	0.00
4.600	15.092	20.412	0.802	3.423		20.45	3.92	4	115	0.854	0.159	0.695	28.20	4.09	0.00
4.700	15.420	21.304	0.773	3.552		21.34	3.62	5	115	0.872	0.169	0.703	29.10	3.78	0.00
4.800	15.748	22.211	0.773	3.728		22.25	3.48	5	115	0.891	0.179	0.712	30.00	3.62	0.00
4.900	16.076	22.993	0.814	3.904		23.04	3.54	5	115	0.910	0.189	0.721	30.70	3.68	0.00
5.000	16.404	26.086	0.910	4.185		26.13	3.48	5	115	0.929	0.200	0.729	34.56	3.61	0.00
5.100	16.732	25.531	0.929	4.314		25.58	3.63	5	115	0.948	0.210	0.738	33.39	3.77	0.00
5.200	17.060	23.521	0.858	4.255		23.57	3.64	5	115	0.966	0.220	0.746	30.28	3.79	0.00
5.300	17.388	23.275	0.786	4.361		23.32	3.37	5	115	0.985	0.230	0.755	29.59	3.52	0.00
5.400	17.717	24.885	0.737	4.983		24.94	2.96	5	115	1.004	0.241	0.763	31.35	3.08	0.00
5.500	18.045	24.803	0.690	5.874		24.87	2.78	5	115	1.023	0.251	0.772	30.89	2.90	0.01
5.600	18.373	23.402	0.628	6.026		23.47	2.67	5	115	1.042	0.261	0.781	28.73	2.80	0.01
5.700	18.701	23.784	0.744	6.167		23.85	3.12	5	115	1.060	0.271	0.789	28.88	3.26	0.01
5.800	19.029	23.494	0.807	6.167		23.56	3.42	5	115	1.079	0.282	0.798	28.18	3.59	0.01
5.900	19.357	22.684	0.783	6.026		22.75	3.44	5	115	1.098	0.292	0.806	26.86	3.62	0.01
6.000	19.685	22.675	0.759	6.061		22.74	3.34	5	115	1.117	0.302	0.815	26.54	3.51	0.01
6.100	20.013	28.032	0.841	7.269		28.11	2.99	5	115	1.136	0.312	0.823	32.76	3.12	0.01
6.200	20.341	25.076	0.743	7.316		25.16	2.95	5	115	1.154	0.323	0.832	28.85	3.10	0.01
6.300	20.669	17.127	0.415	6.542		17.20	2.42	5	115	1.173	0.333	0.840	19.07	2.59	0.01
6.400	20.997	18.182	0.250	6.624		18.25	1.37	6	115	1.192	0.343	0.849	20.10	1.47	0.01
6.500	21.325	24.458	0.487	7.363		24.54	1.98	6	115	1.211	0.353	0.858	27.20	2.09	0.01
6.600	21.654	40.384	0.680	9.907		40.49	1.68	7	118	1.230	0.364	0.867	45.30	1.73	0.01
6.700	21.982	68.125	1.146	10.188		68.23	1.68	7	118	1.249	0.374	0.876	76.49	1.71	0.01
6.800	22.310	86.552	1.689	7.972		86.64	1.95	7	118	1.269	0.384	0.885	96.48	1.98	0.00
6.900	22.638	119.887	1.437	7.785		119.97	1.20	8	121	1.289	0.394	0.894	132.69	1.21	0.00
7.000	22.966	133.830	0.972	6.237		133.90	0.73	9	124	1.309	0.404	0.905	146.58	0.73	0.00
7.100	23.294	128.609	1.079	5.240		128.67	0.84	9	124	1.329	0.415	0.915	139.22	0.85	0.00
7.200	23.622	126.617	1.003	4.725		126.67	0.79	9	124	1.350	0.425	0.925	135.51	0.80	0.00
7.300	23.950	130.119	1.055	4.572		130.17	0.81	9	124	1.370	0.435	0.935	137.76	0.82	0.00
7.400	24.278	162.235	1.064	4.584		162.28	0.66	9	124	1.390	0.445	0.945	170.25	0.66	0.00
7.500	24.606	157.715	1.234	4.537		157.76	0.78	9	124	1.411	0.456	0.955	163.69	0.79	0.00
7.600	24.934	125.899	1.424	4.045		125.94	1.13	8	121	1.431	0.466	0.965	129.06	1.14	0.00
7.700	25.262	108.754	1.237	3.740		108.79	1.14	8	121	1.450	0.476	0.974	110.17	1.15	0.00
7.800	25.591	108.308	0.832	3.576		108.35	0.77	9	124	1.471	0.486	0.985	108.56	0.78	0.00
7.900	25.919	118.450	0.727	3.505		118.49	0.61	9	124	1.491	0.497	0.995	117.63	0.62	0.00
8.000	26.247	108.372	0.759	3.224		108.41	0.70	9	124	1.512	0.507	1.005	106.39	0.71	0.00
8.100	26.575	93.392	0.641	2.896		93.42	0.69	8	121	1.531	0.517	1.014	90.59	0.70	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	3	2.78	23.42	1.00E-9	4.3	5.9				445	0.99	1.72	7.7
3.300	10.827	4	2.74	24.20	3.00E-8	4.5	6.0				469	1.04	1.78	8.0
3.400	11.155	4	2.70	25.40	3.00E-8	4.7	6.2				501	1.11	1.88	8.5
3.500	11.483	4	2.68	25.84	3.00E-8	4.8	6.3				518	1.15	1.92	8.6
3.600	11.811	4	2.74	24.20	3.00E-8	4.6	6.1				486	1.08	1.77	8.0
3.700	12.139	3	2.79	21.97	1.00E-9	4.4	5.7				443	0.98	1.59	7.2
3.800	12.467	4	2.76	22.10	3.00E-8	4.4	5.7				453	1.01	1.61	7.2
3.900	12.795	4	2.72	24.74	3.00E-8	4.9	6.3				516	1.15	1.80	8.1
4.000	13.123	4	2.73	25.41	3.00E-8	5.1	6.5				535	1.19	1.85	8.3
4.100	13.451	4	2.72	25.90	3.00E-8	5.2	6.6				551	1.23	1.88	8.5
4.200	13.780	4	2.70	26.69	3.00E-8	5.4	6.8				576	1.28	1.94	8.7
4.300	14.108	4	2.66	28.44	3.00E-8	5.7	7.1				624	1.39	2.07	9.3
4.400	14.436	4	2.65	29.07	3.00E-8	5.8	7.3				646	1.43	2.12	9.5
4.500	14.764	4	2.69	27.80	3.00E-8	5.7	7.1				620	1.38	2.01	9.0
4.600	15.092	4	2.73	26.21	3.00E-8	5.6	6.9				588	1.31	1.88	8.5
4.700	15.420	4	2.69	26.99	3.00E-8	5.7	7.0				614	1.36	1.94	8.7
4.800	15.748	4	2.67	27.82	3.00E-8	5.9	7.2				641	1.42	2.00	9.0
4.900	16.076	4	2.67	28.53	3.00E-8	6.1	7.4				664	1.48	2.05	9.2
5.000	16.404	4	2.62	32.03	3.00E-8	6.8	8.1				756	1.68	2.30	10.4
5.100	16.732	4	2.65	31.09	3.00E-8	6.7	8.0				739	1.64	2.23	10.0
5.200	17.060	4	2.68	28.37	3.00E-8	6.3	7.5				678	1.51	2.02	9.1
5.300	17.388	4	2.67	27.74	3.00E-8	6.2	7.3				670	1.49	1.97	8.9
5.400	17.717	4	2.61	29.29	3.00E-8	6.4	7.5				718	1.60	2.09	9.4
5.500	18.045	4	2.60	28.88	3.00E-8	6.3	7.4				715	1.59	2.06	9.3
5.600	18.373	4	2.61	26.97	3.00E-8	6.0	7.0				673	1.50	1.92	8.6
5.700	18.701	4	2.65	27.27	3.00E-8	6.3	7.2				684	1.52	1.93	8.7
5.800	19.029	4	2.69	26.75	3.00E-8	6.3	7.2				674	1.50	1.88	8.5
5.900	19.357	4	2.71	25.57	3.00E-8	6.1	7.0				650	1.44	1.79	8.1
6.000	19.685	4	2.70	25.31	3.00E-8	6.1	7.0				649	1.44	1.77	8.0
6.100	20.013	4	2.60	31.07	3.00E-8	7.2	8.1				809	1.80	2.18	9.8
6.200	20.341	4	2.64	27.49	3.00E-8	6.5	7.4				720	1.60	1.92	8.7
6.300	20.669	4	2.73	18.32	3.00E-8	4.7	5.3				481	1.07	1.27	5.7
6.400	20.997	4	2.57	19.15	3.00E-8	4.6	5.1				512	1.14	1.34	6.0
6.500	21.325	4	2.55	25.94	3.00E-8	6.1	6.8				700	1.56	1.81	8.2
6.600	21.654	5	2.33	42.72	3.00E-6	9.1	10.0	35	36	162	601			
6.700	21.982	5	2.15	71.64	3.00E-6	14.2	15.6	45	39	273	717			
6.800	22.310	5	2.12	90.54	3.00E-6	17.9	19.5	51	40	347	779			
6.900	22.638	6	1.87	123.45	3.00E-4	22.5	24.5	59	42	480	872			
7.000	22.966	6	1.70	135.89	3.00E-4	23.6	25.5	62	43	536	908			
7.100	23.294	6	1.75	130.08	3.00E-4	23.1	24.9	61	42	515	899			
7.200	23.622	6	1.75	127.24	3.00E-4	22.7	24.3	60	42	507	897			
7.300	23.950	6	1.75	130.02	3.00E-4	23.3	24.8	61	42	521	909			
7.400	24.278	6	1.62	160.90	3.00E-4	27.8	29.4	68	43	649	982			
7.500	24.606	6	1.68	155.72	3.00E-4	27.6	29.1	67	43	631	976			
7.600	24.934	6	1.87	124.01	3.00E-4	23.6	24.7	60	42	504	908			
7.700	25.262	6	1.92	106.45	3.00E-4	20.7	21.6	55	41	435	868			
7.800	25.591	6	1.81	105.11	3.00E-4	19.9	20.6	55	41	433	870			
7.900	25.919	6	1.73	114.23	3.00E-4	21.1	21.8	57	41	474	899			
8.000	26.247	6	1.80	103.93	3.00E-4	19.8	20.3	54	41	434	876			
8.100	26.575	6	1.85	88.93	3.00E-4	17.4	17.7	50	40	374	836			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	89.053	0.692	2.755		89.08	0.78	8	121	1.551	0.527	1.024	85.48	0.79	0.00
8.300	27.231	90.845	0.832	2.778		90.88	0.92	8	121	1.571	0.538	1.034	86.40	0.93	0.00
8.400	27.559	81.968	0.735	2.813		82.00	0.90	8	121	1.591	0.548	1.043	77.08	0.91	0.00
8.500	27.887	78.967	0.549	3.083		79.00	0.69	8	121	1.611	0.558	1.053	73.51	0.71	0.00
8.600	28.215	76.847	0.620	3.611		76.89	0.81	8	121	1.631	0.568	1.062	70.84	0.82	0.00
8.700	28.543	82.004	0.771	3.845		82.05	0.94	8	121	1.650	0.578	1.072	75.00	0.96	0.00
8.800	28.871	103.924	1.000	4.279		103.97	0.96	8	121	1.670	0.589	1.082	94.58	0.98	0.00
8.900	29.199	135.104	1.280	4.959		135.16	0.95	9	124	1.691	0.599	1.092	122.25	0.96	0.00
9.000	29.528	160.980	1.529	5.639		161.04	0.95	9	124	1.711	0.609	1.102	144.60	0.96	0.00
9.100	29.856	148.410	1.485	5.979		148.47	1.00	9	124	1.731	0.619	1.112	131.96	1.01	0.00
9.200	30.184	110.828	1.112	6.237		110.90	1.00	8	121	1.751	0.630	1.122	97.31	1.02	0.00
9.300	30.512	86.525	0.860	6.612		86.60	0.99	8	121	1.771	0.640	1.131	74.99	1.01	0.00
9.400	30.840	85.260	0.695	6.671		85.33	0.81	8	121	1.791	0.650	1.141	73.23	0.83	0.00
9.500	31.168	89.317	0.718	6.378		89.39	0.80	8	121	1.811	0.660	1.150	76.13	0.82	0.00
9.600	31.496	85.524	0.759	5.968		85.59	0.89	8	121	1.831	0.671	1.160	72.20	0.91	0.00
9.700	31.824	84.569	0.806	5.874		84.63	0.95	8	121	1.850	0.681	1.170	70.78	0.97	0.00
9.800	32.152	80.076	0.807	5.921		80.14	1.01	8	121	1.870	0.691	1.179	66.37	1.03	0.00
9.900	32.480	90.081	0.810	6.401		90.15	0.90	8	121	1.890	0.701	1.189	74.24	0.92	0.00
10.000	32.808	106.398	0.947	7.034		106.47	0.89	8	121	1.910	0.712	1.198	87.25	0.91	0.00
10.100	33.136	124.989	1.050	7.738		125.07	0.84	9	124	1.930	0.722	1.209	101.89	0.85	0.00
10.200	33.465	139.878	1.167	8.441		139.97	0.83	9	124	1.951	0.732	1.219	113.25	0.85	0.00
10.300	33.793	149.756	1.360	8.933		149.85	0.91	9	124	1.971	0.742	1.229	120.34	0.92	0.00
10.400	34.121	152.185	1.399	9.367		152.29	0.92	9	124	1.991	0.752	1.239	121.31	0.93	0.00
10.500	34.449	149.447	1.364	9.801		149.55	0.91	9	124	2.012	0.763	1.249	118.12	0.92	0.00
10.600	34.777	141.334	1.318	10.129		141.44	0.93	9	124	2.032	0.773	1.259	110.71	0.95	0.00
10.700	35.105	134.021	1.207	10.704		134.14	0.90	9	124	2.053	0.783	1.269	104.06	0.91	0.00
10.800	35.433	143.071	1.171	11.524		143.20	0.82	9	124	2.073	0.793	1.279	110.30	0.83	0.00
10.900	35.761	153.395	1.406	12.252		153.53	0.92	9	124	2.093	0.804	1.290	117.43	0.93	0.00
11.000	36.089	156.614	1.487	12.544		156.75	0.95	9	124	2.114	0.814	1.300	118.98	0.96	0.00
11.100	36.417	158.633	1.456	12.708		158.77	0.92	9	124	2.134	0.824	1.310	119.58	0.93	0.00
11.200	36.745	159.588	1.435	12.931		159.73	0.90	9	124	2.154	0.834	1.320	119.38	0.91	0.00
11.300	37.073	164.682	1.427	13.260		164.83	0.87	9	124	2.175	0.845	1.330	122.29	0.88	0.00
11.400	37.402	179.235	1.369	13.787		179.38	0.76	9	124	2.195	0.855	1.340	132.21	0.77	0.00
11.500	37.730	210.305	1.543	14.620		210.46	0.73	9	124	2.215	0.865	1.350	154.22	0.74	0.00
11.600	38.058	249.069	1.981	15.698		249.24	0.79	9	124	2.236	0.875	1.360	181.56	0.80	0.00
11.700	38.386	253.462	2.168	15.851		253.63	0.85	9	124	2.256	0.886	1.371	183.41	0.86	0.00
11.800	38.714	251.634	2.099	15.945		251.81	0.83	9	124	2.277	0.896	1.381	180.72	0.84	0.00
11.900	39.042	254.063	1.911	16.191		254.24	0.75	9	124	2.297	0.906	1.391	181.14	0.76	0.00
12.000	39.370	260.347	1.822	16.613		260.53	0.70	9	124	2.317	0.916	1.401	184.31	0.71	0.00
12.100	39.698	258.892	1.882	16.554		259.07	0.73	9	124	2.338	0.927	1.411	181.94	0.73	0.00
12.200	40.026	253.653	1.766	16.238		253.83	0.70	9	124	2.358	0.937	1.421	176.94	0.70	0.00
12.300	40.354	237.518	1.693	15.769		237.69	0.71	9	124	2.378	0.947	1.431	164.40	0.72	0.00
12.400	40.682	219.673	1.537	15.300		219.84	0.70	9	124	2.399	0.957	1.441	150.84	0.71	0.00
12.500	41.011	187.657	1.333	14.444		187.81	0.71	9	124	2.419	0.967	1.452	127.72	0.72	0.00
12.600	41.339	139.306	1.120	13.342		139.45	0.80	9	124	2.439	0.978	1.462	93.73	0.82	0.00
12.700	41.667	157.751	1.030	13.600		157.90	0.65	9	124	2.460	0.988	1.472	105.61	0.66	0.00
12.800	41.995	205.866	1.203	13.506		206.01	0.58	9	124	2.480	0.998	1.482	137.34	0.59	0.00
12.900	42.323	234.152	1.472	13.658		234.30	0.63	9	124	2.501	1.008	1.492	155.35	0.64	0.00
13.000	42.651	279.902	1.819	15.194		280.07	0.65	9	124	2.521	1.019	1.502	184.75	0.66	0.00
13.100	42.979	248.933	1.921	14.479		249.09	0.77	9	124	2.541	1.029	1.512	163.02	0.78	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.90	84.31	3.00E-4	16.9	17.2	49	40	356	826			
8.300	27.231	6	1.94	85.58	3.00E-4	17.5	17.7	49	40	364	834			
8.400	27.559	6	1.98	76.64	3.00E-4	16.0	16.1	47	39	328	808			
8.500	27.887	6	1.93	73.36	3.00E-4	15.1	15.2	46	39	316	801			
8.600	28.215	6	1.98	70.95	3.00E-4	15.0	15.0	45	39	308	796			
8.700	28.543	6	2.00	75.38	3.00E-4	16.1	16.0	46	39	328	816			
8.800	28.871	6	1.92	95.45	3.00E-4	19.9	19.6	52	40	416	885			
8.900	29.199	6	1.83	123.96	3.00E-4	25.0	24.6	60	42	541	969			
9.000	29.528	6	1.78	147.31	3.00E-4	29.2	28.6	65	42	644	1031			
9.100	29.856	6	1.82	134.92	3.00E-4	27.3	26.7	62	42	594	1006			
9.200	30.184	6	1.92	99.69	3.00E-4	21.2	20.6	53	40	444	916			
9.300	30.512	6	2.01	76.96	3.00E-4	17.1	16.5	47	39	346	846			
9.400	30.840	6	1.97	75.48	3.00E-4	16.6	16.0	46	39	341	844			
9.500	31.168	6	1.95	78.76	3.00E-4	17.2	16.5	47	39	358	859			
9.600	31.496	6	2.00	74.86	3.00E-4	16.8	16.0	46	39	342	849			
9.700	31.824	6	2.02	73.57	3.00E-4	16.8	16.0	46	39	339	848			
9.800	32.152	6	2.06	69.12	3.00E-4	16.1	15.3	44	38	321	835			
9.900	32.480	6	1.99	77.74	3.00E-4	17.6	16.6	47	39	361	871			
10.000	32.808	6	1.93	91.86	3.00E-4	20.4	19.1	51	40	426	923			
10.100	33.136	6	1.86	107.94	3.00E-4	23.3	21.8	56	41	500	977			
10.200	33.465	6	1.82	120.61	3.00E-4	25.8	24.0	59	41	560	1017			
10.300	33.793	6	1.83	128.62	3.00E-4	27.6	25.6	61	42	599	1044			
10.400	34.121	6	1.83	130.11	3.00E-4	28.1	25.9	61	42	609	1052			
10.500	34.449	6	1.83	127.11	3.00E-4	27.6	25.4	60	41	598	1049			
10.600	34.777	6	1.86	119.39	3.00E-4	26.4	24.2	58	41	566	1032			
10.700	35.105	6	1.87	112.54	3.00E-4	25.1	22.9	57	41	537	1017			
10.800	35.433	6	1.83	120.01	3.00E-4	26.4	24.0	59	41	573	1042			
10.900	35.761	6	1.84	128.14	3.00E-4	28.4	25.7	61	41	614	1069			
11.000	36.089	6	1.84	130.23	3.00E-4	29.0	26.2	61	41	627	1079			
11.100	36.417	6	1.83	131.44	3.00E-4	29.3	26.3	61	42	635	1087			
11.200	36.745	6	1.83	131.70	3.00E-4	29.4	26.3	61	42	639	1092			
11.300	37.073	6	1.81	135.54	3.00E-4	30.2	26.9	62	42	659	1106			
11.400	37.402	6	1.75	147.69	3.00E-4	32.1	28.5	65	42	718	1141			
11.500	37.730	6	1.68	173.68	3.00E-4	36.9	32.6	70	43	842	1206			
11.600	38.058	6	1.65	205.68	3.00E-4	43.2	38.1	77	44	997	1279			
11.700	38.386	6	1.67	208.24	3.00E-4	44.3	38.9	77	44	1015	1290			
11.800	38.714	6	1.67	205.98	3.00E-4	43.9	38.4	77	44	1007	1290			
11.900	39.042	6	1.64	207.68	3.00E-4	43.9	38.2	77	44	1017	1297			
12.000	39.370	6	1.61	212.08	3.00E-4	44.5	38.7	78	44	1042	1311			
12.100	39.698	6	1.63	210.11	3.00E-4	44.5	38.5	77	44	1036	1312			
12.200	40.026	6	1.62	205.06	3.00E-4	43.6	37.6	77	43	1015	1306			
12.300	40.354	6	1.65	190.98	3.00E-4	41.2	35.4	74	43	951	1280			
12.400	40.682	6	1.68	175.47	3.00E-4	38.4	32.9	71	43	879	1251			
12.500	41.011	6	1.74	148.21	3.00E-4	33.5	28.6	65	42	751	1189			
12.600	41.339	6	1.88	107.66	3.00E-4	26.2	22.3	55	40	558	1079			
12.700	41.667	6	1.78	122.81	3.00E-4	28.6	24.3	59	41	632	1128			
12.800	41.995	6	1.66	162.19	3.00E-4	35.8	30.3	68	42	824	1235			
12.900	42.323	6	1.64	184.48	3.00E-4	40.4	34.0	73	43	937	1292			
13.000	42.651	6	1.59	220.14	3.00E-4	47.5	39.9	79	44	1120	1374			
13.100	42.979	6	1.68	194.09	3.00E-4	43.6	36.5	74	43	996	1325			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	128.382	2.435	11.806		128.51	1.89	7	118	2.561	1.039	1.521	82.78	1.93	0.00
13.300	43.635	50.944	1.956	14.397		51.10	3.83	5	115	2.579	1.049	1.530	31.71	4.03	0.00
13.400	43.963	33.390	1.029	60.483		34.04	3.02	5	115	2.598	1.060	1.539	20.44	3.27	0.10
13.500	44.291	29.115	0.668	108.856		30.29	2.20	6	115	2.617	1.070	1.547	17.89	2.41	0.24
13.600	44.619	33.308	0.718	136.196		34.78	2.06	6	115	2.636	1.080	1.556	20.66	2.23	0.27
13.700	44.948	40.766	0.845	57.517		41.39	2.04	6	115	2.655	1.090	1.564	24.76	2.18	0.08
13.800	45.276	35.909	0.816	15.077		36.07	2.26	6	115	2.673	1.101	1.573	21.23	2.44	0.00
13.900	45.604	29.942	0.783	14.925		30.10	2.60	6	115	2.692	1.111	1.581	17.33	2.86	0.00
14.000	45.932	30.361	0.718	20.646		30.58	2.35	6	115	2.711	1.121	1.590	17.53	2.58	0.01
14.100	46.260	30.752	0.692	26.941		31.04	2.23	6	115	2.730	1.131	1.599	17.71	2.45	0.03
14.200	46.588	30.242	0.842	40.670		30.68	2.75	6	115	2.749	1.141	1.607	17.38	3.02	0.06
14.300	46.916	30.842	0.909	50.272		31.39	2.90	5	115	2.767	1.152	1.616	17.71	3.18	0.09
14.400	47.244	29.169	0.828	48.724		29.70	2.79	6	115	2.786	1.162	1.624	16.57	3.08	0.09
14.500	47.572	27.468	0.715	44.808		27.95	2.56	6	115	2.805	1.172	1.633	15.40	2.84	0.08
14.600	47.900	28.732	0.809	45.735		29.23	2.77	6	115	2.824	1.182	1.641	16.09	3.07	0.08
14.700	48.228	27.705	0.943	36.731		28.10	3.36	5	115	2.843	1.193	1.650	15.31	3.73	0.06
14.800	48.556	27.705	0.930	31.103		28.04	3.32	5	115	2.861	1.203	1.658	15.18	3.69	0.04
14.900	48.885	26.814	0.882	24.843		27.08	3.26	5	115	2.880	1.213	1.667	14.52	3.65	0.02
15.000	49.213	26.241	0.815	26.355		26.53	3.07	5	115	2.899	1.223	1.676	14.10	3.45	0.03
15.100	49.541	26.495	0.848	29.896		26.82	3.16	5	115	2.918	1.234	1.684	14.19	3.55	0.04
15.200	49.869	26.067	0.310	32.815		26.42	1.17	7	118	2.937	1.244	1.693	13.87	1.32	0.05

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	5	2.16	93.77	3.00E-6	26.9	22.5	52	40	514	1065			
13.300	43.635	4	2.68	33.97	3.00E-8	13.6	11.3				1456	3.23	2.11	9.5
13.400	43.963	4	2.77	21.71	3.00E-8	9.3	7.7				943	2.10	1.36	6.1
13.500	44.291	4	2.74	19.09	3.00E-8	8.0	6.6				830	1.84	1.19	5.4
13.600	44.619	4	2.67	22.25	3.00E-8	8.8	7.3				964	2.14	1.38	6.2
13.700	44.948	4	2.60	26.91	3.00E-8	10.4	8.6				1162	2.58	1.65	7.4
13.800	45.276	4	2.68	22.88	3.00E-8	9.6	7.8				1002	2.23	1.42	6.4
13.900	45.604	4	2.79	18.45	3.00E-8	8.5	6.9				822	1.83	1.16	5.2
14.000	45.932	4	2.76	18.74	3.00E-8	8.4	6.9				836	1.86	1.17	5.3
14.100	46.260	4	2.74	18.99	3.00E-8	8.5	6.9				849	1.89	1.18	5.3
14.200	46.588	4	2.80	18.51	3.00E-8	8.6	7.0				838	1.86	1.16	5.2
14.300	46.916	4	2.81	18.86	3.00E-8	8.8	7.1				859	1.91	1.18	5.3
14.400	47.244	4	2.83	17.63	3.00E-8	8.4	6.8				807	1.79	1.10	5.0
14.500	47.572	4	2.83	16.39	3.00E-8	7.9	6.4				754	1.68	1.03	4.6
14.600	47.900	4	2.83	17.12	3.00E-8	8.3	6.7				792	1.76	1.07	4.8
14.700	48.228	3	2.90	16.15	1.00E-9	8.4	6.7				758	1.68	1.02	4.6
14.800	48.556	3	2.90	16.03	1.00E-9	8.4	6.7				755	1.68	1.01	4.6
14.900	48.885	3	2.92	15.31	1.00E-9	8.1	6.5				726	1.61	0.97	4.4
15.000	49.213	3	2.91	14.89	1.00E-9	7.9	6.3				709	1.58	0.94	4.2
15.100	49.541	3	2.92	14.98	1.00E-9	8.0	6.4				717	1.59	0.95	4.3
15.200	49.869	4	2.69	15.14	3.00E-8	7.0	5.5				705	1.57	0.92	4.2

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client: MACTEC
Site: SOUTH TEXAS PROJ.
Engineer: M.COOK

Sounding: C-942
Date: 7/20/2007
Time: 1:41 PM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	27.723	0.020	2.708		27.75	0.07
0.100	0.328	154.277	1.087	0.915		154.29	0.70
0.150	0.492	198.398	0.791	6.401		198.47	0.40
0.200	0.656	152.775	0.691	23.002		153.02	0.45
0.250	0.820	96.839	0.020	17.762		97.03	0.02
0.300	0.984	50.343	0.040	12.943		50.48	0.08
0.350	1.148	28.241	0.116	9.883		28.35	0.41
0.400	1.312	14.816	0.202	7.808		14.90	1.36
0.450	1.476	10.014	0.265	6.858		10.09	2.63
0.500	1.640	8.977	0.343	6.577		9.05	3.79
0.550	1.804	8.841	0.382	5.416		8.90	4.29
0.600	1.969	8.650	0.423	4.994		8.70	4.86
0.650	2.133	8.595	0.427	4.572		8.64	4.94
0.700	2.297	8.841	0.400	4.326		8.89	4.50
0.750	2.461	9.195	0.380	4.220		9.24	4.11
0.800	2.625	9.686	0.406	4.150		9.73	4.17
0.850	2.789	10.205	0.435	4.045		10.25	4.24
0.900	2.953	10.423	0.457	3.939		10.47	4.37
0.950	3.117	10.396	0.459	3.834		10.44	4.40
1.000	3.281	10.450	0.471	3.728		10.49	4.49
1.050	3.445	10.614	0.496	3.623		10.65	4.66
1.100	3.609	10.614	0.505	3.588		10.65	4.74
1.150	3.773	10.750	0.500	3.974		10.79	4.63
1.200	3.937	10.614	0.517	3.869		10.66	4.85
1.250	4.101	10.669	0.505	3.834		10.71	4.72
1.300	4.265	10.450	0.515	3.799		10.49	4.91
1.350	4.429	10.587	0.495	3.799		10.63	4.66
1.400	4.593	10.750	0.498	3.799		10.79	4.61
1.450	4.757	11.187	0.488	3.764		11.23	4.35
1.500	4.921	11.105	0.499	3.764		11.15	4.48
1.550	5.085	10.942	0.518	3.869		10.98	4.72
1.600	5.249	11.023	0.528	3.799		11.06	4.77
1.650	5.413	11.651	0.536	3.904		11.69	4.58
1.700	5.577	11.678	0.533	3.974		11.72	4.55
1.750	5.741	11.269	0.545	3.939		11.31	4.82
1.800	5.906	11.487	0.548	3.974		11.53	4.75
1.850	6.070	11.542	0.551	3.974		11.58	4.76
1.900	6.234	11.433	0.538	3.974		11.48	4.69

1.950	6.398	11.214	0.504	3.974	11.26	4.48
2.000	6.562	10.969	0.492	3.904	11.01	4.47
2.050	6.726	10.396	0.467	3.799	10.44	4.47
2.100	6.890	9.823	0.446	3.658	9.86	4.52
2.150	7.054	9.496	0.464	3.447	9.53	4.87
2.200	7.218	9.577	0.458	3.130	9.61	4.77
2.250	7.382	9.987	0.451	3.095	10.02	4.50
2.300	7.546	10.587	0.435	3.130	10.62	4.10
2.350	7.710	10.969	0.461	3.130	11.00	4.19
2.400	7.874	11.460	0.493	3.095	11.49	4.29
2.450	8.038	12.279	0.533	3.060	12.31	4.33
2.500	8.202	13.070	0.559	3.025	13.10	4.27
2.550	8.366	14.898	0.609	3.482	14.94	4.08
2.600	8.530	16.290	0.625	3.447	16.33	3.83
2.650	8.694	16.917	0.638	3.482	16.95	3.76
2.700	8.858	16.508	0.633	3.447	16.55	3.83
2.750	9.022	16.290	0.660	3.447	16.33	4.04
2.800	9.186	16.972	0.707	3.447	17.01	4.16
2.850	9.350	17.163	0.722	3.376	17.20	4.20
2.900	9.514	16.290	0.701	3.271	16.33	4.29
2.950	9.678	16.263	0.674	3.201	16.30	4.14
3.000	9.843	16.454	0.653	3.166	16.49	3.96
3.050	10.007	16.726	0.669	3.201	16.76	3.99
3.100	10.171	17.463	0.690	3.130	17.50	3.94
3.150	10.335	16.972	0.722	3.130	17.01	4.25
3.200	10.499	18.091	0.689	3.588	18.13	3.80
3.250	10.663	18.909	0.669	3.623	18.95	3.53
3.300	10.827	20.492	0.691	3.728	20.53	3.37
3.350	10.991	22.238	0.715	4.010	22.28	3.21
3.400	11.155	23.057	0.806	4.256	23.10	3.49
3.450	11.319	23.384	0.854	4.608	23.43	3.64
3.500	11.483	24.448	0.900	5.030	24.50	3.67
3.550	11.647	24.476	0.941	5.592	24.54	3.84
3.600	11.811	26.277	0.884	6.155	26.34	3.36
3.650	11.975	27.668	0.887	7.105	27.74	3.20
3.700	12.139	24.094	0.839	7.492	24.17	3.47
3.750	12.303	21.665	0.829	7.773	21.75	3.81
3.800	12.467	21.965	0.821	8.230	22.05	3.72
3.850	12.631	22.375	0.792	10.305	22.49	3.52
3.900	12.795	22.511	0.780	10.200	22.62	3.45
3.950	12.959	23.848	0.787	10.481	23.96	3.28
4.000	13.123	25.103	0.849	10.833	25.22	3.37
4.050	13.287	27.013	0.911	11.853	27.14	3.36
4.100	13.451	28.678	0.988	13.893	28.83	3.43
4.150	13.615	28.596	1.080	15.863	28.77	3.75
4.200	13.780	27.477	1.116	16.742	27.66	4.04
4.250	13.944	26.659	1.124	18.149	26.86	4.19
4.300	14.108	26.413	1.029	19.977	26.63	3.86
4.350	14.272	25.567	1.052	20.400	25.79	4.08
4.400	14.436	26.359	1.041	21.173	26.59	3.92
4.450	14.600	26.877	1.043	21.244	27.11	3.85

4.500	14.764	25.867	1.014	23.424	26.12	3.88
4.550	14.928	24.121	0.914	22.369	24.36	3.75
4.600	15.092	22.757	0.854	21.384	22.99	3.71
4.650	15.256	23.057	0.736	22.826	23.30	3.16
4.700	15.420	23.766	0.798	25.535	24.04	3.32
4.750	15.584	23.439	0.877	23.846	23.70	3.70
4.800	15.748	22.375	0.961	22.193	22.61	4.25
4.850	15.912	23.302	0.906	21.736	23.54	3.85
4.900	16.076	24.066	0.733	20.575	24.29	3.02
4.950	16.240	24.339	0.790	19.661	24.55	3.22
5.000	16.404	23.903	0.837	20.189	24.12	3.47
5.050	16.568	23.139	0.845	17.023	23.32	3.62
5.100	16.732	25.321	0.854	16.003	25.49	3.35
5.150	16.896	26.741	0.813	15.686	26.91	3.02
5.200	17.060	25.185	0.813	16.425	25.36	3.21
5.250	17.224	26.113	0.710	18.641	26.31	2.70
5.300	17.388	26.904	0.724	21.103	27.13	2.67
5.350	17.552	25.813	0.697	22.228	26.05	2.68
5.400	17.717	17.408	0.589	17.656	17.60	3.35
5.450	17.881	17.818	0.471	20.575	18.04	2.61
5.500	18.045	19.782	0.387	21.244	20.01	1.93
5.550	18.209	29.251	0.553	26.308	29.54	1.87
5.600	18.373	41.502	0.770	24.585	41.77	1.84
5.650	18.537	47.806	0.829	19.766	48.02	1.73
5.700	18.701	51.898	0.868	16.636	52.08	1.67
5.750	18.865	56.291	0.667	13.014	56.43	1.18
5.800	19.029	63.140	0.385	10.868	63.26	0.61
5.850	19.193	63.877	0.432	9.074	63.97	0.68
5.900	19.357	64.477	0.460	8.125	64.56	0.71
5.950	19.521	63.959	0.445	7.351	64.04	0.69
6.000	19.685	61.640	0.443	6.683	61.71	0.72
6.050	19.849	61.121	0.456	6.190	61.19	0.75
6.100	20.013	61.776	0.438	5.733	61.84	0.71
6.150	20.177	63.495	0.549	5.170	63.55	0.86
6.200	20.341	64.204	0.548	4.643	64.25	0.85
6.250	20.505	67.397	0.548	4.115	67.44	0.81
6.300	20.669	72.472	0.418	3.728	72.51	0.58
6.350	20.833	77.165	0.432	3.376	77.20	0.56
6.400	20.997	76.511	0.593	3.025	76.54	0.77
6.450	21.161	53.917	0.900	2.603	53.95	1.67
6.500	21.325	49.524	0.830	6.085	49.59	1.67
6.550	21.490	64.395	0.681	6.718	64.47	1.06
6.600	21.654	74.137	0.491	6.225	74.20	0.66
6.650	21.818	76.674	0.625	5.839	76.74	0.81
6.700	21.982	82.350	0.618	5.627	82.41	0.75
6.750	22.146	85.569	0.775	5.346	85.63	0.91
6.800	22.310	87.425	0.792	4.994	87.48	0.91
6.850	22.474	103.551	0.716	4.959	103.60	0.69
6.900	22.638	112.146	0.997	4.713	112.20	0.89
6.950	22.802	87.425	1.103	3.869	87.47	1.26
7.000	22.966	76.347	0.938	3.341	76.38	1.23

7.050	23.130	74.300	0.709	2.884	74.33	0.95
7.100	23.294	75.255	0.450	2.568	75.28	0.60
7.150	23.458	82.896	0.576	2.427	82.92	0.69
7.200	23.622	99.131	0.659	3.060	99.16	0.66
7.250	23.786	91.900	0.776	2.920	91.93	0.84
7.300	23.950	77.384	0.821	2.708	77.41	1.06
7.350	24.114	73.836	0.858	2.743	73.87	1.16
7.400	24.278	76.783	0.766	2.814	76.81	1.00
7.450	24.442	87.916	0.907	3.130	87.95	1.03
7.500	24.606	118.149	1.223	4.537	118.20	1.03
7.550	24.770	132.775	1.189	3.974	132.82	0.90
7.600	24.934	125.026	0.990	3.693	125.07	0.79
7.650	25.098	114.138	0.888	3.517	114.18	0.78
7.700	25.262	99.404	0.959	3.306	99.44	0.96
7.750	25.427	94.083	0.891	3.095	94.12	0.95
7.800	25.591	90.127	0.820	2.920	90.16	0.91
7.850	25.755	85.351	0.783	2.743	85.38	0.92
7.900	25.919	80.413	0.808	2.603	80.44	1.00
7.950	26.083	76.811	0.816	2.532	76.84	1.06
8.000	26.247	75.692	0.797	2.568	75.72	1.05
8.050	26.411	76.074	0.635	2.603	76.10	0.83
8.100	26.575	74.628	0.663	2.708	74.66	0.89
8.150	26.739	71.271	0.689	3.341	71.31	0.97
8.200	26.903	71.954	0.700	3.552	71.99	0.97
8.250	27.067	73.509	0.714	3.764	73.55	0.97
8.300	27.231	78.284	0.701	3.939	78.33	0.89
8.350	27.395	81.149	0.759	4.115	81.19	0.93
8.400	27.559	80.494	0.651	4.220	80.54	0.81
8.450	27.723	83.687	0.730	4.432	83.73	0.87
8.500	27.887	96.784	0.830	5.768	96.85	0.86
8.550	28.051	92.582	0.915	5.944	92.65	0.99
8.600	28.215	86.552	0.921	6.085	86.62	1.06
8.650	28.379	82.350	0.898	6.261	82.42	1.09
8.700	28.543	79.676	0.827	6.366	79.74	1.04
8.750	28.707	78.912	0.759	6.577	78.98	0.96
8.800	28.871	80.631	0.752	6.823	80.70	0.93
8.850	29.035	84.178	0.786	7.069	84.25	0.93
8.900	29.199	81.749	0.828	7.210	81.83	1.01
8.950	29.364	82.868	0.727	7.421	82.95	0.88
9.000	29.528	89.035	0.805	7.738	89.12	0.90
9.050	29.692	102.214	0.913	8.899	102.31	0.89
9.100	29.856	101.941	1.013	9.074	102.04	0.99
9.150	30.020	91.763	1.003	9.039	91.86	1.09
9.200	30.184	86.634	0.963	9.109	86.73	1.11
9.250	30.348	89.417	0.903	9.320	89.52	1.01
9.300	30.512	90.208	0.907	9.497	90.31	1.00
9.350	30.676	86.197	0.770	9.602	86.30	0.89
9.400	30.840	84.833	0.792	9.778	84.94	0.93
9.450	31.004	81.286	0.831	10.165	81.40	1.02
9.500	31.168	86.864	0.867	10.270	86.97	1.00
9.550	31.332	86.252	0.907	10.411	86.36	1.05

9.600	31.496	95.420	0.929	10.692	95.54	0.97
9.650	31.660	106.443	1.043	11.009	106.56	0.98
9.700	31.824	106.280	1.090	11.114	106.40	1.02
9.750	31.988	103.797	1.132	11.149	103.92	1.09
9.800	32.152	107.126	1.116	11.325	107.25	1.04
9.850	32.316	110.564	1.149	11.501	110.69	1.04
9.900	32.480	118.750	1.223	11.818	118.88	1.03
9.950	32.644	132.911	1.343	12.240	133.04	1.01
10.000	32.808	150.211	1.127	12.697	150.35	0.75
10.050	32.972	165.900	1.381	13.084	166.04	0.83
10.100	33.136	176.597	1.634	13.506	176.74	0.92
10.150	33.301	178.343	1.793	13.400	178.49	1.00
10.200	33.465	190.840	1.819	13.682	190.99	0.95
10.250	33.629	203.037	1.868	13.858	203.19	0.92
10.300	33.793	197.825	1.924	13.506	197.97	0.97
10.350	33.957	197.443	1.652	13.541	197.59	0.84
10.400	34.121	197.853	1.764	13.647	198.00	0.89
10.450	34.285	166.992	1.650	13.506	167.14	0.99
10.500	34.449	154.195	1.519	13.014	154.34	0.98
10.550	34.613	162.571	1.449	13.154	162.71	0.89
10.600	34.777	179.707	1.483	13.647	179.85	0.82
10.650	34.941	192.968	1.527	14.033	193.12	0.79
10.700	35.105	200.745	1.576	14.280	200.90	0.78
10.750	35.269	193.432	1.526	14.033	193.58	0.79
10.800	35.433	197.771	1.598	14.244	197.92	0.81
10.850	35.597	190.349	1.709	14.244	190.50	0.90
10.900	35.761	193.623	1.684	14.421	193.78	0.87
10.950	35.925	195.506	1.472	14.631	195.66	0.75
11.000	36.089	175.805	1.457	14.139	175.96	0.83
11.050	36.253	153.485	1.367	14.561	153.64	0.89
11.100	36.417	140.197	1.208	13.787	140.35	0.86
11.150	36.581	136.104	1.139	13.506	136.25	0.84
11.200	36.745	138.532	1.121	13.576	138.68	0.81
11.250	36.909	144.290	1.172	13.823	144.44	0.81
11.300	37.073	155.832	1.186	14.244	155.99	0.76
11.350	37.238	191.522	1.318	15.265	191.69	0.69
11.400	37.402	236.435	1.606	16.320	236.61	0.68
11.450	37.566	253.326	2.092	17.551	253.52	0.83
11.500	37.730	246.613	2.260	16.882	246.80	0.92
11.550	37.894	214.988	2.077	15.722	215.16	0.97
11.600	38.058	219.818	1.842	15.546	219.99	0.84
11.650	38.222	253.435	1.822	16.636	253.61	0.72
11.700	38.386	292.863	2.062	17.938	293.06	0.70
11.750	38.550	314.447	2.327	18.676	314.65	0.74
11.800	38.714	294.719	2.407	17.621	294.91	0.82
11.850	38.878	266.314	2.210	16.425	266.49	0.83
11.900	39.042	246.095	1.943	15.933	246.27	0.79
11.950	39.206	238.373	1.638	16.003	238.55	0.69
12.000	39.370	241.319	1.570	16.460	241.50	0.65
12.050	39.534	267.514	1.757	18.149	267.71	0.66
12.100	39.698	269.670	1.855	17.480	269.86	0.69

12.150	39.862	255.426	1.918	16.601	255.61	0.75
12.200	40.026	249.041	1.825	16.284	249.22	0.73
12.250	40.190	233.297	1.844	15.968	233.47	0.79
12.300	40.354	227.021	1.716	15.827	227.19	0.76
12.350	40.518	228.495	1.662	15.898	228.67	0.73
12.400	40.682	233.761	1.658	16.320	233.94	0.71
12.450	40.846	240.965	1.727	16.707	241.15	0.72
12.500	41.011	252.561	1.744	17.128	252.75	0.69
12.550	41.175	259.492	1.599	17.340	259.68	0.62
12.600	41.339	241.647	1.608	16.953	241.83	0.66
12.650	41.503	238.973	1.657	17.164	239.16	0.69
12.700	41.667	227.813	1.683	16.531	227.99	0.74
12.750	41.831	225.794	1.782	16.355	225.97	0.79
12.800	41.995	236.463	1.689	16.742	236.64	0.71
12.850	42.159	266.505	1.828	17.656	266.70	0.69
12.900	42.323	297.747	2.214	18.747	297.95	0.74
12.950	42.487	304.133	1.350	18.887	304.34	0.44
13.000	42.651	306.998	1.540	18.747	307.20	0.50
13.050	42.815	305.524	1.034	28.559	305.83	0.34
13.100	42.979	313.847	1.134	22.052	314.09	0.36
13.150	43.143	264.486	1.211	16.425	264.66	0.46
13.200	43.307	265.140	1.435	16.355	265.32	0.54
13.250	43.471	233.843	1.453	16.144	234.02	0.62
13.300	43.635	196.270	1.318	17.128	196.45	0.67
13.350	43.799	203.283	1.182	17.410	203.47	0.58
13.400	43.963	187.074	1.134	16.918	187.26	0.61
13.450	44.127	124.016	1.543	14.526	124.17	1.24
13.500	44.291	67.370	1.624	13.084	67.51	2.41
13.550	44.455	38.364	1.371	16.812	38.55	3.56
13.600	44.619	27.232	1.036	25.464	27.51	3.77
13.650	44.783	23.193	0.620	78.749	24.04	2.58
13.700	44.948	22.593	0.377	86.557	23.53	1.60
13.750	45.112	21.911	0.367	89.230	22.87	1.60
13.800	45.276	21.965	0.414	87.155	22.91	1.81
13.850	45.440	21.856	0.342	82.759	22.75	1.50
13.900	45.604	21.310	0.375	79.839	22.17	1.69
13.950	45.768	22.948	0.451	75.759	23.77	1.90
14.000	45.932	23.221	0.482	71.750	24.00	2.01
14.050	46.096	22.893	0.497	65.490	23.60	2.11
14.100	46.260	22.320	0.495	62.430	22.99	2.15
14.150	46.424	21.419	0.499	57.154	22.04	2.26
14.200	46.588	20.656	0.488	55.078	21.25	2.30
14.250	46.752	19.646	0.481	51.245	20.20	2.38
14.300	46.916	19.510	0.435	52.054	20.07	2.17
14.350	47.080	19.919	0.463	47.376	20.43	2.27
14.400	47.244	19.510	0.488	46.884	20.02	2.44
14.450	47.408	18.691	0.479	51.843	19.25	2.49
14.500	47.572	18.773	0.443	50.964	19.32	2.29
14.550	47.736	19.373	0.486	49.627	19.91	2.44
14.600	47.900	18.773	0.494	43.929	19.25	2.57
14.650	48.064	18.254	0.468	40.693	18.69	2.50

14.700	48.228	16.808	0.421	37.071	17.21	2.45
14.750	48.392	15.499	0.387	33.554	15.86	2.44
14.800	48.556	14.489	0.329	32.604	14.84	2.22
14.850	48.720	14.161	0.304	35.840	14.55	2.09
14.900	48.885	15.007	0.294	40.447	15.44	1.90
14.950	49.049	15.635	0.320	45.477	16.13	1.98
15.000	49.213	16.017	0.265	49.908	16.56	1.60
15.050	49.377	15.635	0.256	54.727	16.23	1.58
15.100	49.541	16.235	0.278	66.721	16.96	1.64
15.150	49.705	14.925	0.242	72.594	15.71	1.54
15.200	49.869	15.881	0.020	78.784	16.73	0.12
15.250	50.033	18.254	0.020	76.533	19.08	0.10

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC		
Site:	SOUTH TEXAS PROJ.		
Engineer:	M.COOK		
Sounding:	C-942		
Date:	7/20/2007		
Time:	1:41 PM		

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{ocr}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tt}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	126.799	0.633	3.341		126.84	0.50	9	124	0.020	0.000	0.020	>1000	0.50	0.00
0.200	0.656	149.337	0.501	15.722		149.51	0.33	9	124	0.041	0.000	0.041	>1000	0.33	0.01
0.300	0.984	58.474	0.059	13.529		58.62	0.10	8	121	0.061	0.000	0.061	966.85	0.10	0.02
0.400	1.312	17.690	0.194	8.183		17.78	1.09	6	115	0.079	0.000	0.079	223.01	1.10	0.03
0.500	1.640	9.277	0.330	6.284		9.35	3.53	3	111	0.098	0.000	0.098	94.71	3.57	0.05
0.600	1.969	8.695	0.411	4.994		8.75	4.69	3	111	0.116	0.000	0.116	74.48	4.76	0.04
0.700	2.297	8.877	0.402	4.373		8.92	4.51	3	111	0.134	0.000	0.134	65.50	4.58	0.04
0.800	2.625	9.695	0.407	4.138		9.74	4.18	3	111	0.152	0.000	0.152	62.88	4.25	0.03
0.900	2.953	10.341	0.450	3.939		10.38	4.34	3	111	0.171	0.000	0.171	59.82	4.41	0.03
1.000	3.281	10.487	0.475	3.728		10.53	4.52	3	111	0.189	0.000	0.189	54.69	4.60	0.03
1.100	3.609	10.659	0.500	3.728		10.70	4.68	3	111	0.207	0.000	0.207	50.62	4.77	0.03
1.200	3.937	10.678	0.507	3.892		10.72	4.73	3	111	0.226	0.000	0.226	46.52	4.83	0.03
1.300	4.265	10.569	0.505	3.811		10.61	4.76	3	111	0.244	0.000	0.244	42.51	4.87	0.03
1.400	4.593	10.841	0.494	3.787		10.88	4.54	3	111	0.262	0.000	0.262	40.52	4.65	0.03
1.500	4.921	11.078	0.502	3.799		11.12	4.51	3	111	0.280	0.000	0.280	38.66	4.63	0.03
1.600	5.249	11.205	0.527	3.857		11.25	4.69	3	111	0.299	0.000	0.299	36.66	4.82	0.03
1.700	5.577	11.533	0.538	3.939		11.58	4.65	3	111	0.317	0.000	0.317	35.52	4.78	0.03
1.800	5.906	11.433	0.548	3.962		11.48	4.78	3	111	0.335	0.000	0.335	33.23	4.92	0.03
1.900	6.234	11.396	0.531	3.974		11.44	4.64	3	111	0.353	0.000	0.353	31.36	4.79	0.03
2.000	6.562	10.860	0.488	3.892		10.90	4.47	3	111	0.372	0.000	0.372	28.32	4.63	0.03
2.100	6.890	9.905	0.459	3.635		9.94	4.62	3	111	0.390	0.000	0.390	24.50	4.80	0.03
2.200	7.218	9.687	0.458	3.224		9.72	4.71	3	111	0.408	0.000	0.408	22.81	4.91	0.02
2.300	7.546	10.514	0.449	3.118		10.55	4.26	3	111	0.427	0.000	0.427	23.73	4.44	0.02
2.400	7.874	11.569	0.496	3.095		11.60	4.27	3	111	0.445	0.000	0.445	25.08	4.44	0.02
2.500	8.202	13.416	0.567	3.189		13.45	4.22	3	111	0.463	0.000	0.463	28.04	4.37	0.02
2.600	8.530	16.035	0.624	3.470		16.07	3.88	4	115	0.482	0.000	0.482	32.35	4.00	0.02
2.700	8.858	16.572	0.644	3.459		16.61	3.88	4	115	0.501	0.000	0.501	32.17	4.00	0.02
2.800	9.186	16.808	0.696	3.423		16.85	4.13	4	115	0.520	0.000	0.520	31.42	4.27	0.02
2.900	9.514	16.572	0.699	3.283		16.61	4.21	3	111	0.538	0.000	0.538	29.88	4.35	0.01
3.000	9.843	16.481	0.665	3.189		16.52	4.03	4	115	0.557	0.000	0.557	28.67	4.17	0.01
3.100	10.171	17.054	0.694	3.154		17.09	4.06	4	115	0.575	0.005	0.570	28.96	4.20	0.01

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	7	0.97	863.94	3.00E-2	17.9	128.9	157	57	507	252			
0.200	0.656	7	0.75	720.01	3.00E-2	19.8	101.1	143	55	598	335			
0.300	0.984	7	0.53	231.32	3.00E-2	7.4	30.7	81	51	234	280			
0.400	1.312	6	1.69	63.37	3.00E-4	3.1	11.3	43	45	71	206			
0.500	1.640	5	2.32	46.71	3.00E-6	2.1	6.8	37	40	37	178			
0.600	1.969	9	2.48	43.06	1.00E-8	2.1	6.3					0.58	4.97	22.3
0.700	2.297	4	2.50	39.85	3.00E-8	2.2	6.1				264	0.59	4.37	19.7
0.800	2.625	4	2.49	39.16	3.00E-8	2.4	6.2				288	0.64	4.19	18.9
0.900	2.953	4	2.52	38.86	3.00E-8	2.5	6.3				306	0.68	3.99	17.9
1.000	3.281	4	2.56	37.15	3.00E-8	2.6	6.2				310	0.69	3.65	16.4
1.100	3.609	4	2.59	35.70	3.00E-8	2.7	6.1				315	0.70	3.37	15.2
1.200	3.937	4	2.62	33.87	3.00E-8	2.8	6.0				315	0.70	3.10	14.0
1.300	4.265	4	2.65	31.86	3.00E-8	2.8	5.8				311	0.69	2.83	12.8
1.400	4.593	4	2.65	30.80	3.00E-8	2.8	5.7				319	0.71	2.70	12.2
1.500	4.921	4	2.66	29.93	3.00E-8	2.9	5.7				325	0.72	2.58	11.6
1.600	5.249	4	2.69	29.04	3.00E-8	3.0	5.7				328	0.73	2.44	11.0
1.700	5.577	4	2.70	28.53	3.00E-8	3.1	5.7				338	0.75	2.37	10.7
1.800	5.906	4	2.73	27.24	3.00E-8	3.1	5.6				334	0.74	2.22	10.0
1.900	6.234	3	2.74	26.03	1.00E-9	3.1	5.4				333	0.74	2.09	9.4
2.000	6.562	3	2.76	23.87	1.00E-9	3.0	5.1				316	0.70	1.89	8.5
2.100	6.890	3	2.82	21.17	1.00E-9	2.8	4.7				287	0.64	1.63	7.3
2.200	7.218	3	2.85	20.01	1.00E-9	2.8	4.6				279	0.62	1.52	6.8
2.300	7.546	3	2.81	20.70	1.00E-9	3.0	4.7				304	0.67	1.58	7.1
2.400	7.874	3	2.79	21.92	1.00E-9	3.3	5.0				335	0.74	1.67	7.5
2.500	8.202	4	2.75	24.41	3.00E-8	3.7	5.6				390	0.87	1.87	8.4
2.600	8.530	4	2.68	27.88	3.00E-8	4.3	6.3				468	1.04	2.16	9.7
2.700	8.858	4	2.68	27.93	3.00E-8	4.4	6.4				483	1.07	2.14	9.7
2.800	9.186	4	2.70	27.63	3.00E-8	4.5	6.5				490	1.09	2.09	9.4
2.900	9.514	4	2.73	26.56	3.00E-8	4.5	6.3				482	1.07	1.99	9.0
3.000	9.843	4	2.73	25.64	3.00E-8	4.5	6.2				479	1.06	1.91	8.6
3.100	10.171	4	2.73	26.00	3.00E-8	4.7	6.3				495	1.10	1.93	8.7

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	17.991	0.693	3.447		18.03	3.85	4	115	0.594	0.015	0.579	30.12	3.98	0.01
3.300	10.827	20.546	0.692	3.787		20.59	3.36	5	115	0.613	0.026	0.587	34.01	3.46	0.01
3.400	11.155	22.893	0.792	4.291		22.94	3.45	5	115	0.632	0.036	0.596	37.44	3.55	0.01
3.500	11.483	24.103	0.898	5.077		24.16	3.72	5	115	0.651	0.046	0.604	38.89	3.82	0.01
3.600	11.811	26.140	0.904	6.284		26.21	3.45	5	115	0.669	0.056	0.613	41.66	3.54	0.02
3.700	12.139	24.476	0.852	7.457		24.56	3.47	5	115	0.688	0.067	0.622	38.40	3.57	0.02
3.800	12.467	22.002	0.814	8.769		22.10	3.68	4	115	0.707	0.077	0.630	33.95	3.81	0.03
3.900	12.795	22.911	0.786	10.329		23.02	3.42	5	115	0.726	0.087	0.639	34.91	3.53	0.03
4.000	13.123	25.321	0.849	11.056		25.44	3.34	5	115	0.745	0.097	0.647	38.16	3.44	0.03
4.100	13.451	28.096	0.993	13.870		28.25	3.52	5	115	0.763	0.108	0.656	41.91	3.61	0.03
4.200	13.780	27.577	1.107	16.918		27.76	3.99	4	115	0.782	0.118	0.664	40.61	4.10	0.04
4.300	14.108	26.213	1.068	19.509		26.42	4.04	4	115	0.801	0.128	0.673	38.08	4.17	0.05
4.400	14.436	26.268	1.045	20.939		26.49	3.95	4	115	0.820	0.138	0.681	37.68	4.07	0.05
4.500	14.764	25.622	0.990	22.346		25.86	3.83	5	115	0.839	0.149	0.690	36.27	3.96	0.06
4.600	15.092	23.312	0.835	22.193		23.55	3.54	5	115	0.857	0.159	0.699	32.49	3.68	0.06
4.700	15.420	23.421	0.804	24.069		23.68	3.39	5	115	0.876	0.169	0.707	32.25	3.52	0.07
4.800	15.748	23.039	0.915	22.592		23.28	3.93	4	115	0.895	0.179	0.716	31.28	4.09	0.06
4.900	16.076	23.902	0.810	20.657		24.13	3.36	5	115	0.914	0.189	0.724	32.05	3.49	0.06
5.000	16.404	23.794	0.824	18.958		24.00	3.43	5	115	0.933	0.200	0.733	31.48	3.57	0.05
5.100	16.732	25.067	0.837	16.237		25.24	3.32	5	115	0.951	0.210	0.741	32.77	3.45	0.04
5.200	17.060	26.013	0.779	16.917		26.20	2.97	5	115	0.970	0.220	0.750	33.64	3.09	0.04
5.300	17.388	26.277	0.710	20.657		26.50	2.68	5	115	0.989	0.230	0.758	33.63	2.78	0.05
5.400	17.717	20.346	0.586	20.153		20.56	2.85	5	115	1.008	0.241	0.767	25.50	2.99	0.06
5.500	18.045	22.284	0.470	22.709		22.53	2.09	6	115	1.027	0.251	0.776	27.72	2.19	0.06
5.600	18.373	39.520	0.717	23.553		39.77	1.80	6	115	1.045	0.261	0.784	49.39	1.85	0.04
5.700	18.701	51.998	0.788	16.472		52.18	1.51	7	118	1.065	0.271	0.793	64.43	1.54	0.02
5.800	19.029	61.103	0.495	10.985		61.22	0.81	8	121	1.084	0.282	0.803	74.90	0.82	0.01
5.900	19.357	64.104	0.446	8.183		64.19	0.69	8	121	1.104	0.292	0.812	77.65	0.71	0.00
6.000	19.685	62.240	0.448	6.741		62.31	0.72	8	121	1.124	0.302	0.822	74.43	0.73	0.00
6.100	20.013	62.131	0.481	5.698		62.19	0.77	8	121	1.144	0.312	0.832	73.40	0.79	0.00
6.200	20.341	65.032	0.548	4.643		65.08	0.84	8	121	1.164	0.323	0.841	75.98	0.86	0.00
6.300	20.669	72.345	0.466	3.740		72.39	0.64	8	121	1.184	0.333	0.851	83.68	0.65	0.00
6.400	20.997	69.198	0.642	3.001		69.23	0.93	8	121	1.204	0.343	0.860	79.06	0.94	0.00
6.500	21.325	55.945	0.804	5.135		56.00	1.44	7	118	1.223	0.353	0.870	62.99	1.47	0.00
6.600	21.654	71.735	0.599	6.261		71.80	0.83	8	121	1.243	0.364	0.879	80.26	0.85	0.00
6.700	21.982	81.531	0.673	5.604		81.59	0.82	8	121	1.263	0.374	0.889	90.38	0.84	0.00
6.800	22.310	92.182	0.761	5.100		92.24	0.83	8	121	1.282	0.384	0.898	101.24	0.84	0.00
6.900	22.638	101.041	0.939	4.514		101.09	0.93	8	121	1.302	0.394	0.908	109.90	0.94	0.00
7.000	22.966	79.357	0.917	3.365		79.39	1.15	8	121	1.322	0.404	0.918	85.08	1.17	0.00
7.100	23.294	77.484	0.578	2.626		77.51	0.75	8	121	1.342	0.415	0.927	82.15	0.76	0.00
7.200	23.622	91.309	0.670	2.802		91.34	0.73	8	121	1.362	0.425	0.937	96.05	0.75	0.00
7.300	23.950	81.040	0.818	2.790		81.07	1.01	8	121	1.382	0.435	0.946	84.20	1.03	0.00
7.400	24.278	79.512	0.844	2.896		79.54	1.06	8	121	1.401	0.445	0.956	81.74	1.08	0.00
7.500	24.606	112.947	1.106	3.880		112.99	0.98	8	121	1.421	0.456	0.966	115.54	0.99	0.00
7.600	24.934	123.980	1.022	3.728		124.02	0.82	9	124	1.442	0.466	0.976	125.62	0.83	0.00
7.700	25.262	102.542	0.913	3.306		102.58	0.89	8	121	1.461	0.476	0.985	102.62	0.90	0.00
7.800	25.591	89.854	0.831	2.919		89.89	0.92	8	121	1.481	0.486	0.995	88.85	0.94	0.00
7.900	25.919	80.858	0.802	2.626		80.89	0.99	8	121	1.501	0.497	1.005	79.02	1.01	0.00
8.000	26.247	76.192	0.749	2.568		76.22	0.98	8	121	1.521	0.507	1.014	73.66	1.00	0.00
8.100	26.575	73.991	0.662	2.884		74.02	0.89	8	121	1.541	0.517	1.024	70.80	0.91	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	4	2.70	26.98	3.00E-8	4.8	6.5				523	1.16	2.01	9.0
3.300	10.827	4	2.62	30.12	3.00E-8	5.3	7.1				599	1.33	2.27	10.2
3.400	11.155	4	2.59	33.12	3.00E-8	5.8	7.8				669	1.49	2.50	11.2
3.500	11.483	4	2.60	34.56	3.00E-8	6.2	8.2				705	1.57	2.59	11.7
3.600	11.811	4	2.56	36.87	3.00E-8	6.6	8.6				766	1.70	2.78	12.5
3.700	12.139	4	2.59	34.24	3.00E-8	6.2	8.1				716	1.59	2.56	11.5
3.800	12.467	4	2.65	30.63	3.00E-8	5.8	7.5				642	1.43	2.26	10.2
3.900	12.795	4	2.61	31.44	3.00E-8	5.9	7.6				669	1.49	2.33	10.5
4.000	13.123	4	2.58	34.28	3.00E-8	6.4	8.2				741	1.65	2.54	11.4
4.100	13.451	4	2.56	37.67	3.00E-8	7.1	9.0				824	1.83	2.79	12.6
4.200	13.780	4	2.61	36.86	3.00E-8	7.1	9.0				809	1.80	2.71	12.2
4.300	14.108	4	2.64	34.77	3.00E-8	6.8	8.6				769	1.71	2.54	11.4
4.400	14.436	4	2.63	34.47	3.00E-8	6.8	8.5				770	1.71	2.51	11.3
4.500	14.764	4	2.64	33.28	3.00E-8	6.7	8.3				751	1.67	2.42	10.9
4.600	15.092	4	2.65	29.94	3.00E-8	6.1	7.5				681	1.51	2.17	9.7
4.700	15.420	4	2.64	29.75	3.00E-8	6.1	7.5				684	1.52	2.15	9.7
4.800	15.748	4	2.69	29.11	3.00E-8	6.2	7.5				672	1.49	2.09	9.4
4.900	16.076	4	2.64	29.71	3.00E-8	6.2	7.5				696	1.55	2.14	9.6
5.000	16.404	4	2.65	29.28	3.00E-8	6.2	7.5				692	1.54	2.10	9.4
5.100	16.732	4	2.63	30.48	3.00E-8	6.5	7.8				729	1.62	2.18	9.8
5.200	17.060	4	2.59	31.23	3.00E-8	6.6	7.9				757	1.68	2.24	10.1
5.300	17.388	4	2.56	31.21	3.00E-8	6.6	7.8				765	1.70	2.24	10.1
5.400	17.717	4	2.67	23.98	3.00E-8	5.4	6.3				587	1.30	1.70	7.6
5.500	18.045	4	2.56	25.85	3.00E-8	5.6	6.5				645	1.43	1.85	8.3
5.600	18.373	5	2.32	45.18	3.00E-6	8.9	10.3	36	37	159	577			
5.700	18.701	5	2.18	58.44	3.00E-6	11.0	12.7	41	38	209	634			
5.800	19.029	6	1.96	66.99	3.00E-4	11.8	13.6	44	39	245	672			
5.900	19.357	6	1.91	69.50	3.00E-4	12.2	13.9	45	39	257	685			
6.000	19.685	6	1.93	67.07	3.00E-4	11.9	13.5	44	39	249	681			
6.100	20.013	6	1.95	66.57	3.00E-4	12.0	13.5	44	39	249	683			
6.200	20.341	6	1.96	69.27	3.00E-4	12.6	14.1	44	39	260	696			
6.300	20.669	6	1.86	76.14	3.00E-4	13.5	15.1	47	40	290	724			
6.400	20.997	6	1.97	72.79	3.00E-4	13.5	14.9	46	39	277	716			
6.500	21.325	5	2.17	58.92	3.00E-6	11.8	13.0	41	38	224	670			
6.600	21.654	6	1.94	74.39	3.00E-4	13.8	15.1	46	39	287	730			
6.700	21.982	6	1.90	83.96	3.00E-4	15.4	16.8	49	40	326	765			
6.800	22.310	6	1.86	94.29	3.00E-4	17.2	18.7	52	41	369	800			
6.900	22.638	6	1.86	102.85	3.00E-4	18.9	20.4	54	41	404	827			
7.000	22.966	6	2.01	80.49	3.00E-4	15.7	16.8	48	40	318	766			
7.100	23.294	6	1.91	77.71	3.00E-4	14.7	15.7	47	40	310	763			
7.200	23.622	6	1.85	91.06	3.00E-4	17.0	18.0	51	40	365	808			
7.300	23.950	6	1.98	80.53	3.00E-4	15.8	16.7	48	40	324	779			
7.400	24.278	6	2.00	78.55	3.00E-4	15.6	16.5	47	40	318	777			
7.500	24.606	6	1.86	111.04	3.00E-4	21.1	22.1	56	41	452	876			
7.600	24.934	6	1.78	121.06	3.00E-4	22.5	23.4	59	42	496	907			
7.700	25.262	6	1.87	99.52	3.00E-4	19.2	19.9	53	41	410	854			
7.800	25.591	6	1.93	86.63	3.00E-4	17.2	17.8	50	40	360	820			
7.900	25.919	6	1.99	77.42	3.00E-4	15.9	16.3	47	39	324	794			
8.000	26.247	6	2.02	72.46	3.00E-4	15.1	15.4	45	39	305	781			
8.100	26.575	6	2.00	69.89	3.00E-4	14.6	14.8	45	39	296	776			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	72.245	0.701	3.552		72.28	0.97	8	121	1.561	0.527	1.033	68.44	0.99	0.00
8.300	27.231	77.647	0.725	3.939		77.69	0.93	8	121	1.581	0.538	1.043	72.97	0.95	0.00
8.400	27.559	81.777	0.713	4.256		81.82	0.87	8	121	1.600	0.548	1.053	76.21	0.89	0.00
8.500	27.887	91.018	0.825	5.381		91.08	0.91	8	121	1.620	0.558	1.062	84.22	0.92	0.00
8.600	28.215	87.161	0.911	6.097		87.23	1.04	8	121	1.640	0.568	1.072	79.85	1.06	0.00
8.700	28.543	80.313	0.828	6.401		80.38	1.03	8	121	1.660	0.578	1.081	72.80	1.05	0.00
8.800	28.871	81.240	0.766	6.823		81.31	0.94	8	121	1.680	0.589	1.091	72.99	0.96	0.00
8.900	29.199	82.932	0.780	7.233		83.01	0.94	8	121	1.700	0.599	1.101	73.88	0.96	0.00
9.000	29.528	91.372	0.815	8.019		91.46	0.89	8	121	1.719	0.609	1.110	80.83	0.91	0.00
9.100	29.856	98.639	0.976	9.004		98.74	0.99	8	121	1.739	0.619	1.120	86.62	1.01	0.00
9.200	30.184	89.271	0.956	9.156		89.37	1.07	8	121	1.759	0.630	1.129	77.57	1.09	0.00
9.300	30.512	88.607	0.860	9.473		88.71	0.97	8	121	1.779	0.640	1.139	76.32	0.99	0.00
9.400	30.840	84.105	0.798	9.848		84.21	0.95	8	121	1.799	0.650	1.149	71.75	0.97	0.00
9.500	31.168	84.801	0.868	10.282		84.91	1.02	8	121	1.819	0.660	1.158	71.74	1.05	0.00
9.600	31.496	96.038	0.960	10.704		96.15	1.00	8	121	1.838	0.671	1.168	80.76	1.02	0.00
9.700	31.824	105.507	1.088	11.091		105.63	1.03	8	121	1.858	0.681	1.177	88.13	1.05	0.00
9.800	32.152	107.162	1.132	11.325		107.28	1.06	8	121	1.878	0.691	1.187	88.80	1.07	0.00
9.900	32.480	120.742	1.238	11.853		120.87	1.02	8	121	1.898	0.701	1.197	99.42	1.04	0.00
10.000	32.808	149.674	1.284	12.674		149.81	0.86	9	124	1.918	0.712	1.207	122.55	0.87	0.00
10.100	33.136	173.613	1.603	13.330		173.76	0.92	9	124	1.939	0.722	1.217	141.19	0.93	0.00
10.200	33.465	190.740	1.827	13.647		190.89	0.96	9	124	1.959	0.732	1.227	153.97	0.97	0.00
10.300	33.793	199.435	1.815	13.635		199.58	0.91	9	124	1.979	0.742	1.237	159.72	0.92	0.00
10.400	34.121	187.429	1.689	13.565		187.58	0.90	9	124	2.000	0.752	1.247	148.78	0.91	0.00
10.500	34.449	161.253	1.539	13.225		161.40	0.95	9	124	2.020	0.763	1.257	126.75	0.97	0.00
10.600	34.777	178.415	1.486	13.611		178.56	0.83	9	124	2.041	0.773	1.268	139.26	0.84	0.00
10.700	35.105	195.715	1.543	14.115		195.87	0.79	9	124	2.061	0.783	1.278	151.69	0.80	0.00
10.800	35.433	193.851	1.611	14.174		194.00	0.83	9	124	2.081	0.793	1.288	149.03	0.84	0.00
10.900	35.761	193.159	1.622	14.432		193.32	0.84	9	124	2.102	0.804	1.298	147.32	0.85	0.00
11.000	36.089	174.932	1.432	14.444		175.09	0.82	9	124	2.122	0.814	1.308	132.23	0.83	0.00
11.100	36.417	143.262	1.238	13.951		143.41	0.86	9	124	2.142	0.824	1.318	107.17	0.88	0.00
11.200	36.745	139.642	1.144	13.635		139.79	0.82	9	124	2.163	0.834	1.328	103.61	0.83	0.00
11.300	37.073	163.881	1.225	14.444		164.04	0.75	9	124	2.183	0.845	1.338	120.93	0.76	0.00
11.400	37.402	227.094	1.672	16.379		227.27	0.74	9	124	2.203	0.855	1.349	166.89	0.74	0.00
11.500	37.730	238.309	2.143	16.718		238.49	0.90	9	124	2.224	0.865	1.359	173.89	0.91	0.00
11.600	38.058	229.414	1.914	15.968		229.59	0.83	9	124	2.244	0.875	1.369	166.09	0.84	0.00
11.700	38.386	286.915	2.070	17.750		287.11	0.72	9	124	2.265	0.886	1.379	206.56	0.73	0.00
11.800	38.714	291.827	2.315	17.574		292.02	0.79	9	124	2.285	0.896	1.389	208.58	0.80	0.00
11.900	39.042	250.261	1.930	16.120		250.43	0.77	9	124	2.305	0.906	1.399	177.34	0.78	0.00
12.000	39.370	249.069	1.655	16.871		249.25	0.66	9	124	2.326	0.916	1.409	175.21	0.67	0.00
12.100	39.698	264.203	1.843	17.410		264.39	0.70	9	124	2.346	0.927	1.419	184.61	0.70	0.00
12.200	40.026	245.921	1.862	16.284		246.10	0.76	9	124	2.366	0.937	1.430	170.49	0.76	0.00
12.300	40.354	229.604	1.741	15.898		229.78	0.76	9	124	2.387	0.947	1.440	157.94	0.77	0.00
12.400	40.682	234.407	1.682	16.308		234.58	0.72	9	124	2.407	0.957	1.450	160.14	0.72	0.00
12.500	41.011	251.006	1.690	17.058		251.19	0.67	9	124	2.427	0.967	1.460	170.39	0.68	0.00
12.600	41.339	246.704	1.621	17.152		246.89	0.66	9	124	2.448	0.978	1.470	166.28	0.66	0.00
12.700	41.667	230.860	1.707	16.683		231.04	0.74	9	124	2.468	0.988	1.480	154.42	0.75	0.00
12.800	41.995	242.921	1.766	16.918		243.10	0.73	9	124	2.489	0.998	1.490	161.45	0.73	0.00
12.900	42.323	289.462	1.797	18.430		289.66	0.62	10	127	2.509	1.008	1.501	191.31	0.63	0.00
13.000	42.651	305.552	1.308	22.064		305.79	0.43	10	127	2.530	1.019	1.512	200.62	0.43	0.00
13.100	42.979	294.619	1.126	22.345		294.86	0.38	10	127	2.551	1.029	1.522	192.02	0.39	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	2.04	67.82	3.00E-4	14.4	14.6	44	39	289	772			
8.300	27.231	6	2.00	72.56	3.00E-4	15.3	15.4	46	39	311	794			
8.400	27.559	6	1.97	76.06	3.00E-4	15.9	16.0	47	39	327	810			
8.500	27.887	6	1.95	84.35	3.00E-4	17.5	17.5	49	40	364	842			
8.600	28.215	6	2.00	80.26	3.00E-4	17.2	17.1	48	39	349	832			
8.700	28.543	6	2.03	73.41	3.00E-4	16.0	15.8	46	39	322	813			
8.800	28.871	6	2.01	73.87	3.00E-4	16.0	15.8	46	39	325	818			
8.900	29.199	6	2.00	75.02	3.00E-4	16.3	16.0	46	39	332	826			
9.000	29.528	6	1.96	82.42	3.00E-4	17.7	17.3	49	39	366	856			
9.100	29.856	6	1.96	88.62	3.00E-4	19.1	18.6	50	40	395	880			
9.200	30.184	6	2.02	79.55	3.00E-4	17.7	17.1	48	39	357	854			
9.300	30.512	6	2.00	78.56	3.00E-4	17.4	16.8	47	39	355	854			
9.400	30.840	6	2.01	74.07	3.00E-4	16.6	16.0	46	39	337	842			
9.500	31.168	6	2.03	74.26	3.00E-4	16.9	16.2	46	39	340	847			
9.600	31.496	6	1.99	83.98	3.00E-4	18.8	17.9	49	39	385	885			
9.700	31.824	6	1.97	92.00	3.00E-4	20.5	19.4	51	40	423	916			
9.800	32.152	6	1.97	92.99	3.00E-4	20.8	19.7	52	40	429	923			
9.900	32.480	6	1.92	104.63	3.00E-4	23.1	21.7	55	41	483	963			
10.000	32.808	6	1.80	130.04	3.00E-4	27.4	25.6	61	42	599	1037			
10.100	33.136	6	1.78	150.55	3.00E-4	31.5	29.3	66	42	695	1093			
10.200	33.465	6	1.76	164.92	3.00E-4	34.4	31.9	69	43	764	1131			
10.300	33.793	6	1.73	171.96	3.00E-4	35.6	32.9	70	43	798	1151			
10.400	34.121	6	1.75	160.64	3.00E-4	33.7	31.0	68	43	750	1130			
10.500	34.449	6	1.82	136.87	3.00E-4	29.7	27.2	63	42	646	1078			
10.600	34.777	6	1.75	151.50	3.00E-4	32.0	29.3	66	42	714	1118			
10.700	35.105	6	1.71	166.04	3.00E-4	34.6	31.5	69	43	783	1156			
10.800	35.433	6	1.73	163.55	3.00E-4	34.5	31.3	68	43	776	1155			
10.900	35.761	6	1.74	162.21	3.00E-4	34.5	31.1	68	43	773	1157			
11.000	36.089	6	1.76	145.86	3.00E-4	31.6	28.4	65	42	700	1122			
11.100	36.417	6	1.85	117.97	3.00E-4	26.7	23.9	58	41	574	1053			
11.200	36.745	6	1.85	114.45	3.00E-4	26.0	23.2	57	41	559	1046			
11.300	37.073	6	1.77	134.77	3.00E-4	29.6	26.3	62	42	656	1107			
11.400	37.402	6	1.66	188.18	3.00E-4	39.5	35.0	73	43	909	1237			
11.500	37.730	6	1.70	196.13	3.00E-4	42.1	37.1	75	43	954	1260			
11.600	38.058	6	1.70	188.10	3.00E-4	40.4	35.5	73	43	918	1247			
11.700	38.386	6	1.58	235.81	3.00E-4	48.6	42.6	82	44	1148	1347			
11.800	38.714	6	1.61	238.98	3.00E-4	49.9	43.5	83	44	1168	1358			
11.900	39.042	6	1.65	203.74	3.00E-4	43.4	37.7	76	43	1002	1293			
12.000	39.370	6	1.61	202.21	3.00E-4	42.6	36.9	76	43	997	1294			
12.100	39.698	6	1.61	213.82	3.00E-4	45.2	39.0	78	44	1058	1323			
12.200	40.026	6	1.66	197.84	3.00E-4	42.8	36.8	75	43	984	1295			
12.300	40.354	6	1.68	183.49	3.00E-4	40.3	34.5	72	43	919	1269			
12.400	40.682	6	1.66	187.03	3.00E-4	40.8	34.9	73	43	938	1280			
12.500	41.011	6	1.63	200.15	3.00E-4	43.2	36.7	76	43	1005	1313			
12.600	41.339	6	1.63	195.99	3.00E-4	42.4	36.0	75	43	988	1308			
12.700	41.667	6	1.68	181.83	3.00E-4	40.5	34.2	72	43	924	1283			
12.800	41.995	6	1.66	191.12	3.00E-4	42.3	35.7	74	43	972	1308			
12.900	42.323	6	1.56	227.85	3.00E-4	48.8	40.9	81	44	1159	1390			
13.000	42.651	6	1.45	239.79	3.00E-4	49.6	41.5	83	44	1223	1418			
13.100	42.979	6	1.43	230.32	3.00E-4	47.6	39.7	81	44	1179	1404			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	254.490	1.366	16.308		254.67	0.54	9	124	2.572	1.039	1.532	164.51	0.54	0.00
13.300	43.635	211.132	1.318	16.894		211.31	0.62	9	124	2.592	1.049	1.543	135.31	0.63	0.00
13.400	43.963	171.458	1.286	16.285		171.63	0.75	9	124	2.612	1.060	1.553	108.86	0.76	0.00
13.500	44.291	76.583	1.513	14.807		76.74	1.97	7	118	2.632	1.070	1.562	47.45	2.04	0.00
13.600	44.619	29.596	1.009	40.342		30.03	3.36	5	115	2.650	1.080	1.570	17.44	3.68	0.07
13.700	44.948	22.566	0.455	84.845		23.48	1.94	6	115	2.669	1.090	1.579	13.18	2.18	0.24
13.800	45.276	21.911	0.374	86.381		22.84	1.64	6	115	2.688	1.101	1.587	12.70	1.86	0.25
13.900	45.604	22.038	0.389	79.452		22.90	1.70	6	115	2.707	1.111	1.596	12.65	1.93	0.23
14.000	45.932	23.021	0.477	71.000		23.79	2.00	6	115	2.726	1.121	1.605	13.13	2.26	0.19
14.100	46.260	22.211	0.497	61.691		22.88	2.17	6	115	2.744	1.131	1.613	12.48	2.47	0.16
14.200	46.588	20.574	0.489	54.492		21.16	2.31	6	115	2.763	1.141	1.622	11.35	2.66	0.15
14.300	46.916	19.692	0.460	50.225		20.23	2.27	6	115	2.782	1.152	1.630	10.71	2.63	0.14
14.400	47.244	19.373	0.477	48.701		19.90	2.40	5	115	2.801	1.162	1.639	10.43	2.79	0.14
14.500	47.572	18.946	0.469	50.811		19.49	2.41	5	115	2.820	1.172	1.647	10.12	2.81	0.15
14.600	47.900	18.800	0.483	44.750		19.28	2.50	5	115	2.838	1.182	1.656	9.93	2.94	0.12
14.700	48.228	16.854	0.425	37.106		17.25	2.47	5	115	2.857	1.193	1.664	8.65	2.95	0.10
14.800	48.556	14.716	0.340	33.999		15.08	2.25	5	115	2.876	1.203	1.673	7.30	2.79	0.10
14.900	48.885	14.934	0.306	40.588		15.37	1.99	5	115	2.895	1.213	1.682	7.42	2.45	0.14
15.000	49.213	15.762	0.280	50.037		16.30	1.72	6	115	2.914	1.223	1.690	7.92	2.09	0.18
15.100	49.541	15.598	0.259	64.681		16.30	1.59	6	115	2.932	1.234	1.699	7.87	1.94	0.26
15.200	49.869	16.353	0.094	75.970		17.17	0.55	6	115	2.951	1.244	1.707	8.33	0.66	0.30

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	6	1.58	197.97	3.00E-4	43.0	35.8	75	43	1019	1340			
13.300	43.635	6	1.68	162.58	3.00E-4	37.0	30.7	68	42	845	1262			
13.400	43.963	6	1.81	129.35	3.00E-4	31.4	25.9	61	41	687	1180			
13.500	44.291	5	2.36	53.02	3.00E-6	17.5	14.4	39	36	307	904			
13.600	44.619	3	2.86	18.39	1.00E-9	8.7	7.1				821	1.83	1.16	5.2
13.700	44.948	4	2.82	13.97	3.00E-8	6.5	5.3				624	1.39	0.88	4.0
13.800	45.276	4	2.80	13.51	3.00E-8	6.2	5.1				605	1.34	0.85	3.8
13.900	45.604	4	2.81	13.46	3.00E-8	6.3	5.1				606	1.35	0.84	3.8
14.000	45.932	4	2.83	13.93	3.00E-8	6.7	5.4				632	1.40	0.88	3.9
14.100	46.260	4	2.87	13.19	3.00E-8	6.6	5.3				604	1.34	0.83	3.7
14.200	46.588	3	2.92	11.92	1.00E-9	6.3	5.1				552	1.23	0.76	3.4
14.300	46.916	3	2.94	11.23	1.00E-9	6.1	4.9				524	1.16	0.71	3.2
14.400	47.244	3	2.96	10.91	1.00E-9	6.1	4.9				513	1.14	0.70	3.1
14.500	47.572	3	2.98	10.58	1.00E-9	6.0	4.8				500	1.11	0.67	3.0
14.600	47.900	3	2.99	10.36	1.00E-9	6.0	4.8				493	1.10	0.66	3.0
14.700	48.228	3	3.05	8.96	1.00E-9	5.5	4.4				432	0.96	0.58	2.6
14.800	48.556	3	3.09	7.51	1.00E-9	5.0	4.0				366	0.81	0.49	2.2
14.900	48.885	3	3.06	7.68	1.00E-9	5.0	3.9				374	0.83	0.49	2.2
15.000	49.213	3	3.00	8.27	1.00E-9	5.0	4.0				402	0.89	0.53	2.4
15.100	49.541	3	2.98	8.24	1.00E-9	4.9	3.9				401	0.89	0.52	2.4
15.200	49.869	4	2.75	9.02	3.00E-8	4.5	3.6				427	0.95	0.56	2.5

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-943
Site:	SOUTH TEXAS PROJ.	Date:	7/20/2007
Engineer:	M.COOK	Time:	11:02 AM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	6.167	0.020	11.958		6.30	0.32
0.100	0.328	7.968	0.128	9.954		8.08	1.59
0.150	0.492	44.122	0.110	12.697		44.26	0.25
0.200	0.656	81.531	0.275	10.235		81.64	0.34
0.250	0.820	87.480	0.310	8.934		87.58	0.35
0.300	0.984	64.341	0.091	9.250		64.44	0.14
0.350	1.148	51.053	0.664	19.696		51.27	1.30
0.400	1.312	40.165	1.269	-0.703		40.16	3.16
0.450	1.476	39.074	0.954	60.952		39.73	2.40
0.500	1.640	140.879	0.772	58.736		141.51	0.55
0.550	1.804	141.807	0.380	72.242		142.59	0.27
0.600	1.969	99.595	0.020	21.279		99.82	0.02
0.650	2.133	54.218	0.433	8.336		54.31	0.80
0.700	2.297	25.704	0.612	6.296		25.77	2.37
0.750	2.461	15.280	0.617	6.472		15.35	4.02
0.800	2.625	10.942	0.609	8.547		11.03	5.52
0.850	2.789	11.024	0.495	11.431		11.15	4.44
0.900	2.953	11.460	0.499	12.451		11.59	4.30
0.950	3.117	12.224	0.529	11.044		12.34	4.29
1.000	3.281	12.443	0.565	9.672		12.55	4.50
1.050	3.445	12.715	0.565	7.034		12.79	4.42
1.100	3.609	12.552	0.585	5.381		12.61	4.64
1.150	3.773	11.788	0.594	3.939		11.83	5.02
1.200	3.937	11.433	0.583	2.638		11.46	5.09
1.250	4.101	10.751	0.556	1.794		10.77	5.16
1.300	4.265	10.232	0.568	1.266		10.25	5.54
1.350	4.429	9.877	0.527	0.880		9.89	5.33
1.400	4.593	9.850	0.491	0.985		9.86	4.98
1.450	4.757	9.823	0.481	1.020		9.83	4.89
1.500	4.921	10.123	0.490	1.478		10.14	4.83
1.550	5.085	10.642	0.509	1.548		10.66	4.78
1.600	5.249	10.560	0.531	1.583		10.58	5.02
1.650	5.413	10.696	0.535	1.653		10.71	4.99
1.700	5.577	11.024	0.549	2.040		11.05	4.97
1.750	5.741	11.433	0.579	2.040		11.46	5.05
1.800	5.906	12.115	0.594	1.653		12.13	4.90
1.850	6.070	11.515	0.597	1.337		11.53	5.18
1.900	6.234	11.542	0.581	2.075		11.56	5.02

1.950	6.398	11.460	0.599	1.794	11.48	5.22
2.000	6.562	11.215	0.617	1.653	11.23	5.49
2.050	6.726	11.297	0.590	1.442	11.31	5.22
2.100	6.890	10.778	0.562	1.301	10.79	5.21
2.150	7.054	10.341	0.550	1.091	10.35	5.31
2.200	7.218	10.014	0.532	0.915	10.02	5.31
2.250	7.382	9.605	0.490	0.774	9.61	5.10
2.300	7.546	8.786	0.413	0.563	8.79	4.70
2.350	7.710	8.104	0.392	0.282	8.11	4.84
2.400	7.874	7.859	0.392	0.211	7.86	4.99
2.450	8.038	8.459	0.381	0.493	8.46	4.50
2.500	8.202	8.786	0.384	0.633	8.79	4.37
2.550	8.366	9.523	0.406	0.703	9.53	4.26
2.600	8.530	10.096	0.451	0.422	10.10	4.47
2.650	8.694	10.178	0.479	0.247	10.18	4.70
2.700	8.858	10.533	0.496	0.106	10.53	4.71
2.750	9.022	10.997	0.517	0.422	11.00	4.70
2.800	9.186	11.842	0.543	0.563	11.85	4.58
2.850	9.350	12.524	0.538	0.457	12.53	4.29
2.900	9.514	14.080	0.564	0.387	14.08	4.00
2.950	9.678	14.516	0.572	0.739	14.52	3.94
3.000	9.843	14.435	0.590	1.899	14.46	4.08
3.050	10.007	14.353	0.622	2.251	14.38	4.33
3.100	10.171	15.144	0.600	1.970	15.17	3.96
3.150	10.335	14.353	0.635	1.864	14.37	4.42
3.200	10.499	14.162	0.648	2.005	14.18	4.57
3.250	10.663	14.407	0.637	2.181	14.43	4.41
3.300	10.827	13.616	0.589	2.638	13.64	4.32
3.350	10.991	14.298	0.569	6.050	14.36	3.96
3.400	11.155	16.181	0.603	7.246	16.26	3.71
3.450	11.319	16.563	0.702	5.909	16.63	4.22
3.500	11.483	16.999	0.795	4.783	17.05	4.66
3.550	11.647	18.009	0.803	4.010	18.05	4.45
3.600	11.811	18.255	0.735	3.447	18.29	4.02
3.650	11.975	18.173	0.689	5.522	18.23	3.78
3.700	12.139	21.584	0.717	10.833	21.70	3.30
3.750	12.303	23.412	0.710	16.742	23.59	3.01
3.800	12.467	21.638	0.805	17.973	21.83	3.69
3.850	12.631	23.002	0.894	24.198	23.26	3.84
3.900	12.795	24.148	0.929	29.896	24.47	3.80
3.950	12.959	24.448	0.905	33.906	24.81	3.65
4.000	13.123	23.002	0.844	44.774	23.49	3.59
4.050	13.287	23.439	0.830	52.898	24.01	3.46
4.100	13.451	25.649	0.847	59.264	26.29	3.22
4.150	13.615	25.376	0.882	54.903	25.97	3.40
4.200	13.780	24.121	0.851	63.344	24.81	3.43
4.250	13.944	26.058	0.771	65.455	26.76	2.88
4.300	14.108	28.760	0.707	65.173	29.46	2.40
4.350	14.272	27.805	0.730	60.601	28.46	2.57
4.400	14.436	26.713	0.771	64.188	27.41	2.81
4.450	14.600	25.677	0.759	70.167	26.43	2.87

4.500	14.764	24.694	0.740	73.368	25.49	2.90
4.550	14.928	24.940	0.746	73.860	25.74	2.90
4.600	15.092	24.285	0.701	65.736	24.99	2.80
4.650	15.256	23.111	0.685	72.805	23.90	2.87
4.700	15.420	23.657	0.688	74.212	24.46	2.81
4.750	15.584	24.339	0.877	59.194	24.98	3.51
4.800	15.748	25.076	0.878	54.340	25.66	3.42
4.850	15.912	25.076	0.828	47.517	25.59	3.24
4.900	16.076	23.384	0.771	51.703	23.94	3.22
4.950	16.240	22.702	0.748	50.190	23.24	3.22
5.000	16.404	21.966	0.746	41.854	22.42	3.33
5.050	16.568	21.010	0.718	39.111	21.43	3.35
5.100	16.732	20.628	0.669	41.502	21.08	3.17
5.150	16.896	20.383	0.757	36.543	20.78	3.64
5.200	17.060	20.601	0.764	36.719	21.00	3.64
5.250	17.224	21.174	0.759	28.630	21.48	3.53
5.300	17.388	21.665	0.783	37.353	22.07	3.55
5.350	17.552	21.665	0.768	30.142	21.99	3.49
5.400	17.717	20.765	0.784	32.182	21.11	3.71
5.450	17.881	20.492	0.716	33.237	20.85	3.43
5.500	18.045	21.584	0.674	42.804	22.05	3.06
5.550	18.209	24.339	0.597	72.770	25.12	2.38
5.600	18.373	24.858	0.520	91.130	25.84	2.01
5.650	18.537	22.184	0.466	79.558	23.04	2.02
5.700	18.701	18.064	0.435	55.712	18.67	2.33
5.750	18.865	16.617	0.486	30.142	16.94	2.87
5.800	19.029	25.813	0.561	47.939	26.33	2.13
5.850	19.193	30.397	0.355	18.817	30.60	1.16
5.900	19.357	20.710	0.318	38.443	21.13	1.51
5.950	19.521	31.270	0.426	58.948	31.91	1.34
6.000	19.685	41.011	0.793	20.329	41.23	1.92
6.050	19.849	42.703	0.694	9.532	42.81	1.62
6.100	20.013	34.326	0.792	12.908	34.47	2.30
6.150	20.177	45.568	0.728	18.712	45.77	1.59
6.200	20.341	52.062	0.520	8.195	52.15	1.00
6.250	20.505	55.637	0.565	4.256	55.68	1.01
6.300	20.669	56.564	0.673	6.894	56.64	1.19
6.350	20.833	60.985	0.785	3.482	61.02	1.29
6.400	20.997	62.922	0.791	0.985	62.93	1.26
6.450	21.161	64.014	0.792	0.668	64.02	1.24
6.500	21.325	68.025	0.846	-0.246	68.02	1.24
6.550	21.490	75.256	0.704	-0.739	75.25	0.94
6.600	21.654	74.737	0.669	-0.914	74.73	0.90
6.650	21.818	70.753	1.031	-1.512	70.74	1.46
6.700	21.982	70.180	0.950	-0.633	70.17	1.35
6.750	22.146	73.536	0.672	-0.985	73.53	0.91
6.800	22.310	71.326	0.586	-1.371	71.31	0.82
6.850	22.474	73.536	0.620	-1.653	73.52	0.84
6.900	22.638	80.194	0.268	-1.653	80.18	0.33
6.950	22.802	82.405	0.436	-1.653	82.39	0.53
7.000	22.966	73.345	0.582	0.563	73.35	0.79

7.050	23.130	67.534	0.645	0.317	67.54	0.96
7.100	23.294	63.522	0.642	0.317	63.53	1.01
7.150	23.458	62.349	0.615	0.493	62.35	0.99
7.200	23.622	65.623	0.522	1.126	65.64	0.80
7.250	23.786	70.480	0.612	1.759	70.50	0.87
7.300	23.950	66.578	0.653	8.336	66.67	0.98
7.350	24.114	66.933	0.674	7.984	67.02	1.01
7.400	24.278	70.944	0.667	8.230	71.03	0.94
7.450	24.442	74.437	0.684	8.160	74.53	0.92
7.500	24.606	74.901	0.694	8.019	74.99	0.93
7.550	24.770	76.756	0.718	8.230	76.84	0.93
7.600	24.934	80.904	0.721	8.019	80.99	0.89
7.650	25.098	75.910	0.726	6.823	75.98	0.96
7.700	25.262	70.753	0.730	6.823	70.83	1.03
7.750	25.427	70.480	0.726	7.386	70.56	1.03
7.800	25.591	74.164	0.690	7.949	74.25	0.93
7.850	25.755	75.010	0.595	7.808	75.09	0.79
7.900	25.919	71.517	0.578	7.914	71.60	0.81
7.950	26.083	61.476	0.606	10.692	61.59	0.98
8.000	26.247	66.851	0.607	9.039	66.95	0.91
8.050	26.411	69.362	0.629	9.074	69.46	0.91
8.100	26.575	77.984	0.657	9.778	78.09	0.84
8.150	26.739	76.156	0.695	8.934	76.25	0.91
8.200	26.903	72.118	0.571	8.723	72.21	0.79
8.250	27.067	80.549	0.646	10.024	80.66	0.80
8.300	27.231	87.807	0.842	14.069	87.96	0.96
8.350	27.395	108.245	0.670	12.979	108.39	0.62
8.400	27.559	143.280	0.454	14.491	143.44	0.32
8.450	27.723	93.428	0.680	5.592	93.49	0.73
8.500	27.887	62.840	0.931	2.920	62.87	1.48
8.550	28.051	49.197	0.871	7.492	49.28	1.77
8.600	28.215	60.466	0.903	20.681	60.69	1.49
8.650	28.379	72.609	0.482	9.954	72.72	0.66
8.700	28.543	78.421	0.423	8.125	78.51	0.54
8.750	28.707	82.868	0.591	6.436	82.94	0.71
8.800	28.871	81.204	0.691	4.819	81.26	0.85
8.850	29.035	81.286	0.762	4.748	81.34	0.94
8.900	29.199	84.669	0.644	6.120	84.74	0.76
8.950	29.364	92.992	0.742	7.949	93.08	0.80
9.000	29.528	92.828	0.800	11.114	92.95	0.86
9.050	29.692	92.337	0.813	10.341	92.45	0.88
9.100	29.856	96.020	0.825	10.798	96.14	0.86
9.150	30.020	101.696	0.865	11.325	101.82	0.85
9.200	30.184	107.590	0.784	11.712	107.72	0.73
9.250	30.348	115.012	0.881	12.381	115.15	0.77
9.300	30.512	132.284	1.043	16.179	132.46	0.79
9.350	30.676	138.860	1.172	13.963	139.01	0.84
9.400	30.840	140.633	1.218	13.295	140.78	0.87
9.450	31.004	144.508	1.300	12.908	144.65	0.90
9.500	31.168	142.953	1.297	12.451	143.09	0.91
9.550	31.332	133.266	1.267	11.607	133.39	0.95

9.600	31.496	121.861	1.167	10.798	121.98	0.96
9.650	31.660	114.657	1.057	10.692	114.77	0.92
9.700	31.824	105.216	0.992	10.306	105.33	0.94
9.750	31.988	104.970	0.954	10.868	105.09	0.91
9.800	32.152	105.980	0.994	10.446	106.09	0.94
9.850	32.316	109.008	0.937	11.079	109.13	0.86
9.900	32.480	109.800	1.039	10.939	109.92	0.95
9.950	32.644	116.703	1.107	14.913	116.86	0.95
10.000	32.808	121.288	1.167	13.998	121.44	0.96
10.050	32.972	127.017	1.223	14.069	127.17	0.96
10.100	33.136	126.772	1.226	13.260	126.92	0.97
10.150	33.301	123.716	1.028	12.838	123.85	0.83
10.200	33.465	136.895	1.063	15.018	137.06	0.78
10.250	33.629	149.720	1.221	18.535	149.92	0.81
10.300	33.793	178.398	1.395	18.571	178.60	0.78
10.350	33.957	194.660	1.549	18.043	194.85	0.79
10.400	34.121	207.976	1.729	17.797	208.17	0.83
10.450	34.285	203.665	1.843	15.722	203.83	0.90
10.500	34.449	198.125	1.857	15.053	198.29	0.94
10.550	34.613	197.089	1.850	14.913	197.25	0.94
10.600	34.777	191.249	1.797	14.807	191.41	0.94
10.650	34.941	191.932	1.772	15.511	192.10	0.92
10.700	35.105	200.745	1.839	17.164	200.93	0.92
10.750	35.269	211.741	1.592	17.938	211.93	0.75
10.800	35.433	219.218	1.793	18.114	219.41	0.82
10.850	35.597	216.871	1.883	18.641	217.07	0.87
10.900	35.761	257.855	0.900	21.279	258.08	0.35
10.950	35.925	321.077	1.187	23.917	321.34	0.37
11.000	36.089	272.180	1.218	4.256	272.23	0.45
11.050	36.253	353.603	1.721	19.169	353.81	0.49
11.100	36.417	360.642	1.334	23.249	360.89	0.37
11.150	36.581	368.637	1.281	17.867	368.83	0.35
11.200	36.745	356.331	1.273	9.391	356.43	0.36
11.250	36.909	312.046	1.165	-0.316	312.04	0.37
11.300	37.073	314.965	1.475	-0.035	314.96	0.47
11.350	37.238	292.481	1.662	0.387	292.49	0.57
11.400	37.402	305.333	1.092	6.999	305.41	0.36
11.450	37.566	330.955	1.478	12.451	331.09	0.45
11.500	37.730	339.059	1.332	8.230	339.15	0.39
11.550	37.894	353.357	1.611	13.717	353.51	0.46
11.600	38.058	346.754	1.877	8.547	346.85	0.54
11.650	38.222	354.175	2.239	13.471	354.32	0.63
11.700	38.386	355.322	2.376	13.998	355.47	0.67
11.750	38.550	353.521	2.548	14.421	353.68	0.72
11.800	38.714	323.233	2.663	13.400	323.38	0.82
11.850	38.878	292.727	1.418	13.436	292.87	0.48
11.900	39.042	268.142	1.408	13.049	268.28	0.52
11.950	39.206	221.401	1.332	19.696	221.61	0.60
12.000	39.370	194.033	1.365	15.159	194.20	0.70
12.050	39.534	174.660	1.320	13.752	174.81	0.76
12.100	39.698	165.300	1.283	13.365	165.44	0.78

12.150	39.862	166.528	1.201	14.069	166.68	0.72
12.200	40.026	156.787	1.014	13.647	156.93	0.65
12.250	40.190	136.349	0.898	13.260	136.49	0.66
12.300	40.354	125.244	0.844	15.335	125.41	0.67
12.350	40.518	129.964	0.844	14.948	130.13	0.65
12.400	40.682	130.674	0.869	14.491	130.83	0.66
12.450	40.846	134.740	0.923	14.878	134.90	0.68
12.500	41.011	141.861	0.982	15.159	142.02	0.69
12.550	41.175	140.006	1.064	14.491	140.16	0.76
12.600	41.339	136.295	1.057	14.315	136.45	0.77
12.650	41.503	140.633	1.038	15.300	140.80	0.74
12.700	41.667	145.518	1.046	15.546	145.69	0.72
12.750	41.831	147.018	1.009	15.335	147.18	0.69
12.800	41.995	147.100	1.036	15.898	147.27	0.70
12.850	42.159	146.964	1.036	17.234	147.15	0.70
12.900	42.323	153.594	1.079	16.531	153.77	0.70
12.950	42.487	155.804	1.114	15.863	155.98	0.71
13.000	42.651	160.116	1.118	16.249	160.29	0.70
13.050	42.815	186.420	1.144	18.079	186.62	0.61
13.100	42.979	225.084	1.398	19.415	225.29	0.62
13.150	43.143	246.750	1.603	20.119	246.97	0.65
13.200	43.307	261.020	1.590	19.344	261.23	0.61
13.250	43.471	272.644	1.734	19.274	272.85	0.64
13.300	43.635	229.996	2.008	17.867	230.19	0.87
13.350	43.799	201.182	1.699	14.596	201.34	0.84
13.400	43.963	190.403	1.413	17.516	190.59	0.74
13.450	44.127	200.308	1.298	17.445	200.50	0.65
13.500	44.291	202.655	1.274	17.375	202.84	0.63
13.550	44.455	218.508	1.332	18.465	218.71	0.61
13.600	44.619	215.861	1.401	17.305	216.05	0.65
13.650	44.783	211.823	1.434	17.656	212.01	0.68
13.700	44.948	222.929	1.536	19.063	223.13	0.69
13.750	45.112	257.146	1.624	22.545	257.39	0.63
13.800	45.276	299.767	1.065	21.807	300.00	0.35
13.850	45.440	315.020	1.422	20.470	315.24	0.45
13.900	45.604	295.019	1.741	16.777	295.20	0.59
13.950	45.768	280.639	1.832	19.626	280.85	0.65
14.000	45.932	272.617	1.856	16.742	272.80	0.68
14.050	46.096	251.470	1.713	17.938	251.66	0.68
14.100	46.260	224.348	1.708	15.898	224.52	0.76
14.150	46.424	172.640	1.922	13.823	172.79	1.11
14.200	46.588	76.842	2.399	14.421	77.00	3.12
14.250	46.752	50.098	2.133	19.239	50.31	4.24
14.300	46.916	34.735	1.622	31.197	35.07	4.62
14.350	47.080	27.341	1.010	26.273	27.62	3.66
14.400	47.244	26.659	0.458	84.658	27.57	1.66
14.450	47.408	25.322	0.327	133.933	26.77	1.22
14.500	47.572	22.539	0.350	110.474	23.73	1.47
14.550	47.736	21.802	0.289	108.223	22.97	1.26
14.600	47.900	22.648	0.385	109.278	23.83	1.62
14.650	48.064	23.193	0.405	93.873	24.21	1.67

14.700	48.228	18.009	0.430	107.414	19.17	2.24
14.750	48.392	24.094	0.458	98.938	25.16	1.82
14.800	48.556	25.486	0.427	118.282	26.76	1.60
14.850	48.720	26.386	0.391	112.971	27.61	1.42
14.900	48.885	24.858	0.254	91.868	25.85	0.98
14.950	49.049	23.739	0.323	86.592	24.67	1.31
15.000	49.213	23.521	0.362	78.362	24.37	1.49
15.050	49.377	20.628	0.396	67.213	21.35	1.85
15.100	49.541	18.609	0.350	64.012	19.30	1.81
15.150	49.705	17.627	0.331	76.604	18.45	1.79
15.200	49.869	18.009	0.020	80.086	18.87	0.11
15.250	50.033	19.673	0.020	89.512	20.64	0.10

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC
Site:	SOUTH TEXAS PROJ.
Engineer:	M.COOK
Sounding:	C-943
Date:	7/20/2007
Time:	11:02 AM

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{ocr}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	19.419	0.086	11.536		19.54	0.44	7	118	0.019	0.000	0.019	>1000	0.44	0.04
0.200	0.656	71.044	0.232	10.622		71.16	0.33	8	121	0.039	0.000	0.039	>1000	0.33	0.01
0.300	0.984	67.625	0.355	12.627		67.76	0.52	8	121	0.059	0.000	0.059	>1000	0.52	0.01
0.400	1.312	43.431	0.962	26.648		43.72	2.20	6	115	0.078	0.000	0.078	560.94	2.21	0.04
0.500	1.640	107.253	0.702	63.977		107.94	0.65	9	124	0.098	0.000	0.098	>1000	0.65	0.04
0.600	1.969	98.540	0.278	33.952		98.91	0.28	9	124	0.119	0.000	0.119	833.48	0.28	0.02
0.700	2.297	31.734	0.554	7.035		31.81	1.74	6	115	0.137	0.000	0.137	230.64	1.75	0.02
0.800	2.625	12.415	0.574	8.817		12.51	4.59	3	111	0.156	0.000	0.156	79.40	4.64	0.05
0.900	2.953	11.569	0.508	11.642		11.70	4.34	3	111	0.174	0.000	0.174	66.26	4.41	0.07
1.000	3.281	12.461	0.553	9.250		12.56	4.40	3	111	0.192	0.000	0.192	64.37	4.47	0.05
1.100	3.609	12.352	0.581	5.451		12.41	4.68	3	111	0.210	0.000	0.210	57.98	4.76	0.03
1.200	3.937	11.324	0.578	2.790		11.35	5.09	3	111	0.229	0.000	0.229	48.65	5.19	0.02
1.300	4.265	10.287	0.550	1.313		10.30	5.34	3	111	0.247	0.000	0.247	40.71	5.47	0.01
1.400	4.593	9.850	0.500	0.962		9.86	5.07	3	111	0.265	0.000	0.265	36.17	5.21	0.01
1.500	4.921	10.196	0.493	1.349		10.21	4.83	3	111	0.284	0.000	0.284	35.01	4.97	0.01
1.600	5.249	10.633	0.525	1.595		10.65	4.93	3	111	0.302	0.000	0.302	34.29	5.07	0.01
1.700	5.577	11.051	0.554	1.911		11.07	5.01	3	111	0.320	0.000	0.320	33.59	5.16	0.01
1.800	5.906	11.688	0.590	1.677		11.71	5.04	3	111	0.338	0.000	0.338	33.60	5.19	0.01
1.900	6.234	11.506	0.592	1.735		11.52	5.14	3	111	0.357	0.000	0.357	31.32	5.30	0.01
2.000	6.562	11.324	0.602	1.630		11.34	5.31	3	111	0.375	0.000	0.375	29.25	5.49	0.01
2.100	6.890	10.805	0.567	1.278		10.82	5.24	3	111	0.393	0.000	0.393	26.52	5.44	0.01
2.200	7.218	9.987	0.524	0.927		10.00	5.24	3	111	0.411	0.000	0.411	23.30	5.47	0.01
2.300	7.546	8.832	0.432	0.540		8.84	4.88	3	111	0.430	0.000	0.430	19.57	5.13	0.00
2.400	7.874	8.141	0.388	0.329		8.14	4.77	3	111	0.448	0.000	0.448	17.18	5.05	0.00
2.500	8.202	8.923	0.390	0.610		8.93	4.37	3	111	0.466	0.000	0.466	18.15	4.61	0.01
2.600	8.530	9.932	0.445	0.457		9.94	4.48	3	111	0.485	0.000	0.485	19.51	4.71	0.00
2.700	8.858	10.569	0.497	0.258		10.57	4.70	3	111	0.503	0.000	0.503	20.03	4.94	0.00
2.800	9.186	11.788	0.533	0.481		11.79	4.52	3	111	0.521	0.000	0.521	21.63	4.73	0.00
2.900	9.514	13.707	0.558	0.528		13.71	4.07	3	111	0.539	0.000	0.539	24.42	4.24	0.00
3.000	9.843	14.435	0.595	1.630		14.45	4.11	3	111	0.558	0.000	0.558	24.92	4.28	0.01
3.100	10.171	14.617	0.619	2.028		14.64	4.23	3	111	0.576	0.005	0.571	24.84	4.40	0.01

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	7	0.98	136.56	3.00E-2	2.7	20.3	62	51	78	133			
0.200	0.656	7	0.76	349.39	3.00E-2	9.5	49.2	100	53	285	258			
0.300	0.984	7	1.03	270.96	3.00E-2	9.7	41.0	88	51	271	291			
0.400	1.312	8	1.72	162.15	3.00E-6	7.7	28.5	68	49	175				
0.500	1.640	7	1.12	334.63	3.00E-2	15.8	51.7	98	51	432	403			
0.600	1.969	7	0.87	278.96	3.00E-2	13.5	40.3	89	50	396	417			
0.700	2.297	6	1.83	93.60	3.00E-4	5.9	16.3	52	45	127	300			
0.800	2.625	9	2.45	48.65	1.00E-8	3.0	7.7					0.82	5.29	23.8
0.900	2.953	4	2.49	42.54	3.00E-8	2.8	6.9				346	0.77	4.42	19.9
1.000	3.281	4	2.50	42.63	3.00E-8	3.0	7.1				371	0.82	4.29	19.3
1.100	3.609	4	2.55	40.23	3.00E-8	3.1	6.9				366	0.81	3.87	17.4
1.200	3.937	4	2.63	35.67	3.00E-8	2.9	6.3				334	0.74	3.24	14.6
1.300	4.265	3	2.70	31.25	1.00E-9	2.8	5.7				302	0.67	2.71	12.2
1.400	4.593	3	2.72	28.37	1.00E-9	2.7	5.4				288	0.64	2.41	10.9
1.500	4.921	4	2.72	27.73	3.00E-8	2.8	5.3				298	0.66	2.33	10.5
1.600	5.249	3	2.73	27.59	1.00E-9	2.9	5.4				310	0.69	2.29	10.3
1.700	5.577	3	2.74	27.42	1.00E-9	3.0	5.5				323	0.72	2.24	10.1
1.800	5.906	3	2.74	27.70	1.00E-9	3.2	5.7				341	0.76	2.24	10.1
1.900	6.234	3	2.77	26.30	1.00E-9	3.2	5.5				335	0.74	2.09	9.4
2.000	6.562	3	2.80	25.01	1.00E-9	3.2	5.4				329	0.73	1.95	8.8
2.100	6.890	3	2.83	23.02	1.00E-9	3.1	5.1				313	0.70	1.77	8.0
2.200	7.218	3	2.87	20.60	1.00E-9	3.0	4.7				288	0.64	1.55	7.0
2.300	7.546	3	2.91	17.58	1.00E-9	2.7	4.2				252	0.56	1.30	5.9
2.400	7.874	3	2.95	15.66	1.00E-9	2.5	3.9				231	0.51	1.15	5.2
2.500	8.202	3	2.90	16.44	1.00E-9	2.7	4.1				254	0.56	1.21	5.4
2.600	8.530	3	2.89	17.68	1.00E-9	3.0	4.4				284	0.63	1.30	5.9
2.700	8.858	3	2.89	18.26	1.00E-9	3.2	4.6				302	0.67	1.34	6.0
2.800	9.186	3	2.85	19.65	1.00E-9	3.5	4.9				338	0.75	1.44	6.5
2.900	9.514	3	2.78	21.97	1.00E-9	3.9	5.4				395	0.88	1.63	7.3
3.000	9.843	4	2.78	22.52	3.00E-8	4.1	5.6				417	0.93	1.66	7.5
3.100	10.171	3	2.79	22.40	1.00E-9	4.1	5.6				422	0.94	1.64	7.4

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_d	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	14.307	0.640	2.017		14.33	4.47	3	111	0.594	0.015	0.579	23.73	4.66	0.01
3.300	10.827	14.107	0.598	3.623		14.15	4.23	3	111	0.612	0.026	0.587	23.07	4.42	0.02
3.400	11.155	15.681	0.625	6.402		15.75	3.97	4	115	0.631	0.036	0.595	25.40	4.13	0.03
3.500	11.483	17.190	0.767	4.901		17.24	4.45	3	111	0.650	0.046	0.603	27.50	4.62	0.02
3.600	11.811	18.146	0.742	4.326		18.19	4.08	4	115	0.668	0.056	0.612	28.64	4.24	0.01
3.700	12.139	21.056	0.705	11.032		21.18	3.33	5	115	0.687	0.067	0.620	33.02	3.44	0.04
3.800	12.467	22.684	0.803	19.638		22.90	3.51	5	115	0.706	0.077	0.629	35.28	3.62	0.06
3.900	12.795	23.866	0.909	29.333		24.18	3.76	5	115	0.725	0.087	0.638	36.79	3.88	0.09
4.000	13.123	23.630	0.860	43.859		24.10	3.57	5	115	0.744	0.097	0.646	36.15	3.68	0.13
4.100	13.451	24.821	0.853	55.688		25.42	3.36	5	115	0.762	0.108	0.655	37.67	3.46	0.16
4.200	13.780	25.185	0.835	61.234		25.85	3.23	5	115	0.781	0.118	0.663	37.79	3.33	0.17
4.300	14.108	27.541	0.736	63.743		28.23	2.61	6	115	0.800	0.128	0.672	40.83	2.68	0.16
4.400	14.436	26.732	0.753	64.985		27.43	2.75	5	115	0.819	0.138	0.680	39.12	2.83	0.17
4.500	14.764	25.104	0.748	72.465		25.89	2.89	5	115	0.838	0.149	0.689	36.36	2.99	0.20
4.600	15.092	24.112	0.711	70.800		24.88	2.86	5	115	0.856	0.159	0.698	34.44	2.96	0.21
4.700	15.420	23.702	0.750	68.737		24.44	3.07	5	115	0.875	0.169	0.706	33.38	3.18	0.20
4.800	15.748	24.830	0.861	53.684		25.41	3.39	5	115	0.894	0.179	0.715	34.31	3.51	0.15
4.900	16.076	23.721	0.782	49.803		24.26	3.22	5	115	0.913	0.189	0.723	32.28	3.35	0.15
5.000	16.404	21.893	0.737	43.718		22.36	3.30	5	115	0.931	0.200	0.732	29.29	3.44	0.14
5.100	16.732	20.674	0.715	39.052		21.10	3.39	5	115	0.950	0.210	0.740	27.21	3.55	0.13
5.200	17.060	20.719	0.760	33.964		21.09	3.60	5	115	0.969	0.220	0.749	26.86	3.78	0.11
5.300	17.388	21.501	0.770	32.042		21.85	3.52	5	115	0.988	0.230	0.757	27.54	3.69	0.10
5.400	17.717	20.974	0.756	31.854		21.32	3.55	5	115	1.007	0.241	0.766	26.52	3.72	0.10
5.500	18.045	22.138	0.662	49.604		22.67	2.92	5	115	1.025	0.251	0.775	27.95	3.06	0.15
5.600	18.373	23.794	0.528	81.153		24.67	2.14	6	115	1.044	0.261	0.783	30.17	2.23	0.24
5.700	18.701	18.955	0.462	55.137		19.55	2.36	5	115	1.063	0.271	0.792	23.35	2.50	0.20
5.800	19.029	24.276	0.467	32.299		24.62	1.90	6	115	1.082	0.282	0.800	29.42	1.99	0.09
5.900	19.357	27.459	0.366	38.736		27.88	1.31	6	115	1.101	0.292	0.809	33.11	1.37	0.09
6.000	19.685	38.328	0.638	29.603		38.65	1.65	7	118	1.120	0.302	0.818	45.88	1.70	0.05
6.100	20.013	40.866	0.738	13.717		41.01	1.80	7	118	1.139	0.312	0.827	48.22	1.85	0.02
6.200	20.341	51.089	0.604	10.388		51.20	1.18	7	118	1.159	0.323	0.836	59.86	1.21	0.01
6.300	20.669	57.729	0.674	4.877		57.78	1.17	7	118	1.178	0.333	0.845	66.98	1.19	0.00
6.400	20.997	62.640	0.789	1.712		62.66	1.26	7	118	1.197	0.343	0.854	71.95	1.28	0.00
6.500	21.325	69.098	0.781	-0.106		69.10	1.13	8	121	1.217	0.353	0.864	78.58	1.15	-0.01
6.600	21.654	73.582	0.801	-1.055		73.57	1.09	8	121	1.237	0.364	0.873	82.82	1.11	-0.01
6.700	21.982	71.490	0.884	-1.043		71.48	1.24	8	121	1.257	0.374	0.883	79.52	1.26	-0.01
6.800	22.310	72.799	0.626	-1.336		72.78	0.86	8	121	1.277	0.384	0.893	80.11	0.88	-0.01
6.900	22.638	78.712	0.441	-1.653		78.69	0.56	8	121	1.296	0.394	0.902	85.78	0.57	-0.01
7.000	22.966	74.428	0.554	-0.258		74.43	0.74	8	121	1.316	0.404	0.912	80.18	0.76	-0.01
7.100	23.294	64.468	0.634	0.376		64.47	0.98	8	121	1.336	0.415	0.921	68.52	1.00	-0.01
7.200	23.622	66.151	0.583	1.126		66.16	0.88	8	121	1.356	0.425	0.931	69.61	0.90	-0.01
7.300	23.950	67.997	0.646	6.026		68.06	0.95	8	121	1.376	0.435	0.941	70.89	0.97	0.00
7.400	24.278	70.771	0.675	8.125		70.86	0.95	8	121	1.396	0.445	0.950	73.10	0.97	0.00
7.500	24.606	75.365	0.699	8.136		75.45	0.93	8	121	1.416	0.456	0.960	77.13	0.94	0.00
7.600	24.934	77.857	0.722	7.691		77.94	0.93	8	121	1.435	0.466	0.969	78.91	0.94	0.00
7.700	25.262	72.381	0.727	7.011		72.46	1.00	8	121	1.455	0.476	0.979	72.52	1.02	0.00
7.800	25.591	73.218	0.670	7.714		73.30	0.91	8	121	1.475	0.486	0.989	72.65	0.93	0.00
7.900	25.919	69.334	0.593	8.805		69.43	0.85	8	121	1.495	0.497	0.998	68.05	0.87	0.00
8.000	26.247	65.896	0.614	9.602		66.00	0.93	8	121	1.515	0.507	1.008	63.98	0.95	0.00
8.100	26.575	74.501	0.660	9.262		74.60	0.89	8	121	1.535	0.517	1.018	71.81	0.90	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	3	2.82	21.73	1.00E-9	4.1	5.6				412	0.92	1.58	7.1
3.300	10.827	3	2.81	21.14	1.00E-9	4.0	5.4				406	0.90	1.54	6.9
3.400	11.155	4	2.76	23.12	3.00E-8	4.4	5.8				454	1.01	1.69	7.6
3.500	11.483	3	2.77	25.13	1.00E-9	4.8	6.4				498	1.11	1.83	8.3
3.600	11.811	4	2.73	26.06	3.00E-8	5.0	6.5				526	1.17	1.91	8.6
3.700	12.139	4	2.63	29.61	3.00E-8	5.5	7.1				615	1.37	2.20	9.9
3.800	12.467	4	2.62	31.69	3.00E-8	5.9	7.6				666	1.48	2.35	10.6
3.900	12.795	4	2.63	33.18	3.00E-8	6.2	8.0				704	1.56	2.45	11.0
4.000	13.123	4	2.62	32.64	3.00E-8	6.1	7.8				701	1.56	2.41	10.8
4.100	13.451	4	2.58	33.95	3.00E-8	6.3	8.0				740	1.64	2.51	11.3
4.200	13.780	4	2.57	34.10	3.00E-8	6.4	8.0				752	1.67	2.52	11.3
4.300	14.108	4	2.48	36.50	3.00E-8	6.7	8.4				823	1.83	2.72	12.2
4.400	14.436	4	2.51	35.22	3.00E-8	6.6	8.2				798	1.77	2.61	11.7
4.500	14.764	4	2.55	33.00	3.00E-8	6.3	7.8				751	1.67	2.42	10.9
4.600	15.092	4	2.57	31.40	3.00E-8	6.1	7.5				721	1.60	2.30	10.3
4.700	15.420	4	2.60	30.64	3.00E-8	6.1	7.4				707	1.57	2.23	10.0
4.800	15.748	4	2.62	31.64	3.00E-8	6.4	7.8				735	1.63	2.29	10.3
4.900	16.076	4	2.63	29.86	3.00E-8	6.1	7.4				700	1.56	2.15	9.7
5.000	16.404	4	2.66	27.28	3.00E-8	5.8	7.0				643	1.43	1.95	8.8
5.100	16.732	4	2.70	25.49	3.00E-8	5.6	6.6				604	1.34	1.81	8.2
5.200	17.060	4	2.72	25.28	3.00E-8	5.6	6.7				604	1.34	1.79	8.1
5.300	17.388	4	2.70	25.93	3.00E-8	5.8	6.9				626	1.39	1.84	8.3
5.400	17.717	4	2.72	25.05	3.00E-8	5.7	6.7				609	1.35	1.77	8.0
5.500	18.045	4	2.65	26.28	3.00E-8	5.8	6.8				649	1.44	1.86	8.4
5.600	18.373	4	2.53	28.14	3.00E-8	5.9	6.8				709	1.58	2.01	9.1
5.700	18.701	4	2.65	22.06	3.00E-8	5.0	5.8				555	1.23	1.56	7.0
5.800	19.029	5	2.51	27.52	3.00E-6	5.9	6.8	28	33	98	495			
5.900	19.357	5	2.38	30.71	3.00E-6	6.3	7.2	30	34	112	518			
6.000	19.685	5	2.32	42.51	3.00E-6	8.6	9.8	35	36	155	580			
6.100	20.013	5	2.32	44.84	3.00E-6	9.2	10.4	36	37	164	594			
6.200	20.341	5	2.14	55.10	3.00E-6	10.6	11.9	40	38	205	642			
6.300	20.669	5	2.09	61.72	3.00E-6	11.8	13.2	42	38	231	670			
6.400	20.997	5	2.09	66.54	3.00E-6	12.8	14.2	44	39	251	691			
6.500	21.325	6	2.03	72.71	3.00E-4	13.8	15.2	46	39	276	717			
6.600	21.654	6	2.00	76.83	3.00E-4	14.5	15.9	47	40	294	735			
6.700	21.982	6	2.05	74.28	3.00E-4	14.3	15.7	46	39	286	730			
6.800	22.310	6	1.95	74.75	3.00E-4	14.1	15.3	46	39	291	737			
6.900	22.638	6	1.82	79.90	3.00E-4	14.5	15.7	48	40	315	760			
7.000	22.966	6	1.91	75.34	3.00E-4	14.2	15.3	46	39	298	748			
7.100	23.294	6	2.04	65.01	3.00E-4	12.9	13.8	43	39	258	716			
7.200	23.622	6	2.01	66.22	3.00E-4	13.0	13.9	43	39	265	724			
7.300	23.950	6	2.02	67.74	3.00E-4	13.5	14.3	44	39	272	734			
7.400	24.278	6	2.01	70.10	3.00E-4	14.0	14.7	45	39	283	746			
7.500	24.606	6	1.98	74.20	3.00E-4	14.7	15.5	46	39	302	765			
7.600	24.934	6	1.98	76.20	3.00E-4	15.2	15.8	47	39	312	775			
7.700	25.262	6	2.03	70.39	3.00E-4	14.4	15.0	45	39	290	759			
7.800	25.591	6	2.00	70.74	3.00E-4	14.4	14.9	45	39	293	765			
7.900	25.919	6	2.01	66.52	3.00E-4	13.7	14.1	44	38	278	753			
8.000	26.247	6	2.05	62.82	3.00E-4	13.2	13.5	42	38	264	743			
8.100	26.575	6	2.00	70.71	3.00E-4	14.6	14.9	45	39	298	777			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	76.274	0.637	9.227		76.37	0.83	8	121	1.554	0.527	1.027	72.84	0.85	0.00
8.300	27.231	92.200	0.719	12.357		92.33	0.78	8	121	1.574	0.538	1.037	87.55	0.79	0.00
8.400	27.559	114.984	0.601	11.021		115.10	0.52	9	124	1.595	0.548	1.047	108.43	0.53	0.00
8.500	27.887	68.488	0.827	5.335		68.55	1.21	8	121	1.614	0.558	1.056	63.36	1.24	0.00
8.600	28.215	60.757	0.752	12.709		60.89	1.23	7	118	1.634	0.568	1.066	55.62	1.27	0.01
8.700	28.543	77.966	0.499	8.172		78.05	0.64	8	121	1.654	0.578	1.075	71.06	0.65	0.00
8.800	28.871	81.786	0.681	5.334		81.84	0.83	8	121	1.673	0.589	1.085	73.91	0.85	0.00
8.900	29.199	86.316	0.716	6.272		86.38	0.83	8	121	1.693	0.599	1.094	77.39	0.85	0.00
9.000	29.528	92.719	0.785	9.801		92.82	0.85	8	121	1.713	0.609	1.104	82.53	0.86	0.00
9.100	29.856	96.684	0.834	10.821		96.80	0.86	8	121	1.733	0.619	1.114	85.37	0.88	0.00
9.200	30.184	108.099	0.843	11.806		108.23	0.78	9	124	1.753	0.630	1.124	94.75	0.79	0.00
9.300	30.512	128.719	1.032	14.174		128.87	0.80	9	124	1.774	0.640	1.134	112.10	0.81	0.00
9.400	30.840	141.334	1.230	13.389		141.48	0.87	9	124	1.794	0.650	1.144	122.11	0.88	0.00
9.500	31.168	140.242	1.288	12.322		140.38	0.92	9	124	1.814	0.660	1.154	120.06	0.93	0.00
9.600	31.496	123.261	1.164	11.032		123.38	0.94	9	124	1.835	0.671	1.164	104.40	0.96	0.00
9.700	31.824	108.281	1.001	10.622		108.40	0.92	8	121	1.855	0.681	1.174	90.77	0.94	0.00
9.800	32.152	106.653	0.962	10.798		106.77	0.90	8	121	1.874	0.691	1.183	88.64	0.92	0.00
9.900	32.480	111.837	1.028	12.310		111.97	0.92	8	121	1.894	0.701	1.193	92.27	0.93	0.00
10.000	32.808	121.669	1.166	14.327		121.82	0.96	8	121	1.914	0.712	1.203	99.71	0.97	0.00
10.100	33.136	125.835	1.159	13.389		125.98	0.92	9	124	1.935	0.722	1.213	102.28	0.93	0.00
10.200	33.465	136.777	1.104	15.464		136.94	0.81	9	124	1.955	0.732	1.223	110.39	0.82	0.00
10.300	33.793	174.259	1.388	18.383		174.46	0.80	9	124	1.975	0.742	1.233	139.89	0.80	0.00
10.400	34.121	202.100	1.707	17.187		202.29	0.84	9	124	1.996	0.752	1.243	161.12	0.85	0.00
10.500	34.449	199.626	1.850	15.229		199.79	0.93	9	124	2.016	0.763	1.253	157.81	0.94	0.00
10.600	34.777	193.423	1.806	15.077		193.59	0.93	9	124	2.036	0.773	1.263	151.62	0.94	0.00
10.700	35.105	201.473	1.734	16.871		201.65	0.86	9	124	2.057	0.783	1.274	156.73	0.87	0.00
10.800	35.433	215.943	1.756	18.231		216.14	0.81	9	124	2.077	0.793	1.284	166.76	0.82	0.00
10.900	35.761	265.268	1.323	21.279		265.50	0.50	10	127	2.098	0.804	1.294	203.51	0.50	0.00
11.000	36.089	315.620	1.375	15.781		315.79	0.44	10	127	2.119	0.814	1.305	240.37	0.44	0.00
11.100	36.417	360.961	1.445	20.095		361.18	0.40	10	127	2.140	0.824	1.316	272.91	0.40	0.00
11.200	36.745	345.671	1.240	8.981		345.77	0.36	10	127	2.161	0.834	1.326	259.09	0.36	0.00
11.300	37.073	306.497	1.434	0.012		306.50	0.47	10	127	2.181	0.845	1.337	227.63	0.47	0.00
11.400	37.402	309.590	1.411	6.612		309.66	0.46	10	127	2.202	0.855	1.348	228.17	0.46	0.00
11.500	37.730	341.124	1.474	11.466		341.25	0.43	10	127	2.223	0.865	1.358	249.62	0.43	0.00
11.600	38.058	351.429	1.909	11.912		351.56	0.54	10	127	2.244	0.875	1.369	255.19	0.55	0.00
11.700	38.386	354.339	2.388	13.963		354.49	0.67	10	127	2.265	0.886	1.379	255.33	0.68	0.00
11.800	38.714	323.160	2.210	13.752		323.31	0.68	10	127	2.286	0.896	1.390	230.93	0.69	0.00
11.900	39.042	260.757	1.386	15.394		260.92	0.53	10	127	2.307	0.906	1.401	184.62	0.54	0.00
12.000	39.370	196.698	1.339	16.202		196.87	0.68	9	124	2.327	0.916	1.411	137.89	0.69	0.00
12.100	39.698	168.829	1.268	13.729		168.98	0.75	9	124	2.348	0.927	1.421	117.26	0.76	0.00
12.200	40.026	153.221	1.038	13.659		153.37	0.68	9	124	2.368	0.937	1.431	105.51	0.69	0.00
12.300	40.354	130.519	0.862	14.514		130.68	0.66	9	124	2.388	0.947	1.441	89.01	0.67	0.00
12.400	40.682	131.793	0.879	14.772		131.95	0.67	9	124	2.409	0.957	1.451	89.25	0.68	0.00
12.500	41.011	138.869	0.990	14.843		139.03	0.71	9	124	2.429	0.967	1.462	93.46	0.72	0.00
12.600	41.339	138.978	1.053	14.702		139.14	0.76	9	124	2.449	0.978	1.472	92.88	0.77	0.00
12.700	41.667	144.390	1.031	15.394		144.56	0.71	9	124	2.470	0.988	1.482	95.89	0.73	0.00
12.800	41.995	147.027	1.027	16.156		147.20	0.70	9	124	2.490	0.998	1.492	97.00	0.71	0.00
12.900	42.323	152.121	1.076	16.543		152.30	0.71	9	124	2.510	1.008	1.502	99.72	0.72	0.00
13.000	42.651	167.447	1.125	16.730		167.63	0.67	9	124	2.531	1.019	1.512	109.18	0.68	0.00
13.100	42.979	219.418	1.382	19.204		219.63	0.63	9	124	2.551	1.029	1.522	142.60	0.64	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.98	71.99	3.00E-4	14.9	15.1	45	39	305	785			
8.300	27.231	6	1.89	86.79	3.00E-4	17.4	17.6	50	40	369	839			
8.400	27.559	6	1.72	107.88	3.00E-4	20.4	20.5	56	41	460	906			
8.500	27.887	5	2.12	63.32	3.00E-6	14.1	14.1	43	38	274	765			
8.600	28.215	5	2.17	55.75	3.00E-6	12.8	12.8	40	37	244	737			
8.700	28.543	6	1.92	71.53	3.00E-4	14.9	14.8	45	39	312	803			
8.800	28.871	6	1.97	74.65	3.00E-4	15.9	15.7	46	39	327	818			
8.900	29.199	6	1.95	78.45	3.00E-4	16.7	16.4	47	39	346	836			
9.000	29.528	6	1.94	83.98	3.00E-4	17.8	17.4	49	40	371	858			
9.100	29.856	6	1.93	87.20	3.00E-4	18.5	18.0	50	40	387	873			
9.200	30.184	6	1.87	97.25	3.00E-4	20.2	19.6	53	40	433	909			
9.300	30.512	6	1.81	115.62	3.00E-4	23.6	22.8	57	41	515	966			
9.400	30.840	6	1.81	126.47	3.00E-4	25.9	24.9	60	42	566	1000			
9.500	31.168	6	1.83	124.77	3.00E-4	25.9	24.8	60	42	562	1000			
9.600	31.496	6	1.88	108.75	3.00E-4	23.2	22.1	56	41	494	961			
9.700	31.824	6	1.93	94.75	3.00E-4	20.7	19.7	52	40	434	923			
9.800	32.152	6	1.93	92.84	3.00E-4	20.4	19.3	52	40	427	920			
9.900	32.480	6	1.92	96.99	3.00E-4	21.3	20.1	53	40	448	938			
10.000	32.808	6	1.90	105.23	3.00E-4	23.1	21.6	55	41	487	967			
10.100	33.136	6	1.88	108.42	3.00E-4	23.7	22.1	56	41	504	981			
10.200	33.465	6	1.82	117.74	3.00E-4	25.2	23.4	58	41	548	1011			
10.300	33.793	6	1.74	150.33	3.00E-4	31.1	28.8	66	42	698	1099			
10.400	34.121	6	1.71	174.06	3.00E-4	35.7	33.0	71	43	809	1158			
10.500	34.449	6	1.74	170.86	3.00E-4	35.7	32.8	70	43	799	1156			
10.600	34.777	6	1.76	164.64	3.00E-4	34.8	31.9	69	43	774	1147			
10.700	35.105	6	1.72	171.16	3.00E-4	35.8	32.6	70	43	807	1166			
10.800	35.433	6	1.69	183.19	3.00E-4	37.9	34.4	72	43	865	1196			
10.900	35.761	6	1.48	225.08	3.00E-4	43.5	39.3	80	44	1062	1285			
11.000	36.089	6	1.39	266.94	3.00E-4	50.3	45.3	87	45	1263	1365			
11.100	36.417	7	1.32	304.31	3.00E-2	56.3	50.5	93	46	1445	1431			
11.200	36.745	7	1.31	290.06	3.00E-2	53.8	48.0	91	45	1383	1414			
11.300	37.073	6	1.43	255.87	3.00E-4	49.4	44.0	86	45	1226	1362			
11.400	37.402	6	1.42	257.49	3.00E-4	49.8	44.1	86	45	1239	1371			
11.500	37.730	6	1.37	282.81	3.00E-4	54.1	47.7	90	45	1365	1419			
11.600	38.058	6	1.43	290.25	3.00E-4	56.7	49.9	91	45	1406	1437			
11.700	38.386	6	1.49	291.54	3.00E-4	58.4	51.1	91	45	1418	1445			
11.800	38.714	6	1.53	264.70	3.00E-4	53.9	47.0	87	45	1293	1405			
11.900	39.042	6	1.53	212.43	3.00E-4	43.5	37.8	78	44	1044	1311			
12.000	39.370	6	1.70	158.41	3.00E-4	34.7	30.0	67	42	787	1197			
12.100	39.698	6	1.78	134.19	3.00E-4	30.6	26.4	62	41	676	1140			
12.200	40.026	6	1.79	121.03	3.00E-4	27.9	24.0	59	41	613	1106			
12.300	40.354	6	1.85	101.91	3.00E-4	24.2	20.8	54	40	523	1051			
12.400	40.682	6	1.85	102.50	3.00E-4	24.5	20.9	54	40	528	1057			
12.500	41.011	6	1.85	107.66	3.00E-4	25.8	22.0	55	40	556	1078			
12.600	41.339	6	1.87	107.12	3.00E-4	26.0	22.0	55	40	557	1081			
12.700	41.667	6	1.84	111.21	3.00E-4	26.7	22.6	56	40	578	1097			
12.800	41.995	6	1.83	112.95	3.00E-4	27.1	22.9	57	40	589	1107			
12.900	42.323	6	1.82	116.55	3.00E-4	28.0	23.5	58	41	609	1122			
13.000	42.651	6	1.78	128.61	3.00E-4	30.3	25.4	61	41	671	1161			
13.100	42.979	6	1.67	170.53	3.00E-4	38.3	31.9	70	42	879	1273			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	260.138	1.642	19.579		260.35	0.63	9	124	2.572	1.039	1.532	168.22	0.64	0.00
13.300	43.635	234.607	1.814	17.246		234.79	0.77	9	124	2.592	1.049	1.543	150.53	0.78	0.00
13.400	43.963	197.298	1.470	16.519		197.48	0.74	9	124	2.612	1.060	1.553	125.50	0.75	0.00
13.500	44.291	207.157	1.301	17.762		207.35	0.63	9	124	2.633	1.070	1.563	130.99	0.64	0.00
13.600	44.619	215.397	1.389	17.809		215.59	0.64	9	124	2.653	1.080	1.573	135.38	0.65	0.00
13.700	44.948	230.633	1.531	19.755		230.85	0.66	9	124	2.673	1.090	1.583	144.13	0.67	0.00
13.800	45.276	290.644	1.370	21.607		290.88	0.47	10	127	2.694	1.101	1.594	180.83	0.48	0.00
13.900	45.604	296.893	1.665	18.958		297.10	0.56	10	127	2.715	1.111	1.604	183.49	0.57	0.00
14.000	45.932	268.242	1.800	18.102		268.44	0.67	9	124	2.735	1.121	1.614	164.57	0.68	0.00
14.100	46.260	216.153	1.781	15.886		216.32	0.82	9	124	2.756	1.131	1.625	131.46	0.83	0.00
14.200	46.588	99.860	2.151	15.828		100.03	2.15	7	118	2.775	1.141	1.634	59.53	2.21	0.00
14.300	46.916	37.391	1.588	25.570		37.67	4.22	4	115	2.794	1.152	1.642	21.24	4.55	0.02
14.400	47.244	26.441	0.598	81.621		27.32	2.19	6	115	2.813	1.162	1.651	14.85	2.44	0.19
14.500	47.572	23.221	0.322	117.543		24.49	1.31	6	115	2.832	1.172	1.659	13.05	1.49	0.34
14.600	47.900	22.548	0.360	103.791		23.67	1.52	6	115	2.850	1.182	1.668	12.48	1.73	0.30
14.700	48.228	21.765	0.431	100.075		22.85	1.89	6	115	2.869	1.193	1.677	11.92	2.16	0.30
14.800	48.556	25.322	0.425	110.064		26.51	1.60	6	115	2.888	1.203	1.685	14.02	1.80	0.28
14.900	48.885	24.994	0.323	97.144		26.04	1.24	6	115	2.907	1.213	1.694	13.66	1.39	0.25
15.000	49.213	22.629	0.360	77.389		23.47	1.54	6	115	2.926	1.223	1.702	12.07	1.75	0.21
15.100	49.541	18.955	0.359	69.276		19.70	1.82	6	115	2.944	1.234	1.711	9.80	2.14	0.22
15.200	49.869	18.436	0.124	82.067		19.32	0.64	7	118	2.964	1.244	1.720	9.51	0.76	0.29

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	6	1.61	202.44	3.00E-4	44.5	37.0	76	43	1041	1350			
13.300	43.635	6	1.71	180.41	3.00E-4	41.5	34.3	72	43	939	1307			
13.400	43.963	6	1.76	150.00	3.00E-4	35.5	29.3	65	42	790	1237			
13.500	44.291	6	1.70	158.15	3.00E-4	36.5	30.0	67	42	829	1260			
13.600	44.619	6	1.69	164.05	3.00E-4	37.9	31.1	68	42	862	1279			
13.700	44.948	6	1.68	175.50	3.00E-4	40.4	33.0	71	42	923	1311			
13.800	45.276	6	1.51	221.92	3.00E-4	48.1	39.2	80	44	1164	1420			
13.900	45.604	6	1.55	225.94	3.00E-4	49.8	40.4	80	44	1188	1433			
14.000	45.932	6	1.64	203.29	3.00E-4	46.3	37.5	76	43	1074	1388			
14.100	46.260	6	1.77	160.22	3.00E-4	39.0	31.5	68	42	865	1294			
14.200	46.588	5	2.31	67.81	3.00E-6	22.3	17.9	44	38	400	1003			
14.300	46.916	3	2.85	22.55	1.00E-9	10.9	8.8				1046	2.32	1.42	6.4
14.400	47.244	4	2.80	15.88	3.00E-8	7.5	6.0				735	1.63	0.99	4.5
14.500	47.572	4	2.74	14.10	3.00E-8	6.4	5.1				650	1.44	0.87	3.9
14.600	47.900	4	2.79	13.40	3.00E-8	6.4	5.1				625	1.39	0.83	3.7
14.700	48.228	4	2.85	12.68	3.00E-8	6.4	5.1				599	1.33	0.79	3.6
14.800	48.556	4	2.75	15.15	3.00E-8	7.0	5.6				709	1.57	0.93	4.2
14.900	48.885	4	2.70	14.87	3.00E-8	6.7	5.3				694	1.54	0.91	4.1
15.000	49.213	4	2.80	12.97	3.00E-8	6.4	5.1				616	1.37	0.80	3.6
15.100	49.541	3	2.92	10.35	1.00E-9	5.8	4.5				503	1.12	0.65	2.9
15.200	49.869	4	2.72	10.36	3.00E-8	5.0	3.9				491	1.09	0.63	2.9

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client: MACTEC
Site: SOUTH TEXAS PROJ.
Engineer: M.COOK

Sounding: C-944
Date: 7/23/2007
Time: 10:04 AM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	8.622	0.129	2.673		8.65	1.49
0.100	0.328	9.114	0.226	3.482		9.15	2.47
0.150	0.492	18.991	0.322	4.924		19.04	1.69
0.200	0.656	16.208	0.385	4.326		16.25	2.37
0.250	0.820	10.450	0.423	3.306		10.49	4.03
0.300	0.984	7.340	0.319	2.532		7.37	4.33
0.350	1.148	6.930	0.266	2.462		6.96	3.82
0.400	1.312	7.313	0.354	4.185		7.36	4.81
0.450	1.476	11.351	0.437	4.608		11.40	3.83
0.500	1.640	18.336	0.553	5.944		18.40	3.01
0.550	1.804	18.718	0.602	6.788		18.79	3.20
0.600	1.969	17.490	0.622	6.683		17.56	3.54
0.650	2.133	16.317	0.625	6.823		16.39	3.81
0.700	2.297	16.072	0.635	7.281		16.15	3.93
0.750	2.461	16.535	0.692	7.984		16.62	4.16
0.800	2.625	17.381	0.724	8.476		17.47	4.14
0.850	2.789	17.299	0.764	8.582		17.39	4.39
0.900	2.953	16.563	0.771	8.688		16.66	4.63
0.950	3.117	15.553	0.597	8.511		15.64	3.82
1.000	3.281	15.471	0.571	8.652		15.56	3.67
1.050	3.445	15.444	0.631	11.185		15.56	4.05
1.100	3.609	15.526	0.653	11.607		15.65	4.17
1.150	3.773	15.444	0.604	9.426		15.55	3.89
1.200	3.937	15.280	0.545	8.688		15.37	3.54
1.250	4.101	14.598	0.516	8.617		14.69	3.51
1.300	4.265	14.762	0.572	8.511		14.85	3.85
1.350	4.429	14.980	0.547	8.617		15.07	3.63
1.400	4.593	15.007	0.677	8.265		15.10	4.48
1.450	4.757	15.117	0.744	8.934		15.21	4.89
1.500	4.921	14.707	0.796	7.562		14.79	5.38
1.550	5.085	14.243	0.793	7.246		14.32	5.54
1.600	5.249	13.970	0.777	7.034		14.05	5.53
1.650	5.413	13.670	0.751	6.894		13.74	5.46
1.700	5.577	13.070	0.673	6.718		13.14	5.12
1.750	5.741	12.552	0.622	6.929		12.63	4.93
1.800	5.906	12.743	0.616	7.351		12.82	4.80
1.850	6.070	12.524	0.667	7.421		12.60	5.29
1.900	6.234	12.333	0.622	7.421		12.41	5.01

1.950	6.398	12.415	0.614	7.914	12.50	4.91
2.000	6.562	13.015	0.542	8.265	13.10	4.14
2.050	6.726	12.661	0.631	8.230	12.75	4.95
2.100	6.890	12.279	0.641	8.546	12.37	5.18
2.150	7.054	12.552	0.638	8.090	12.64	5.05
2.200	7.218	12.715	0.626	7.773	12.80	4.89
2.250	7.382	11.951	0.608	7.281	12.03	5.05
2.300	7.546	11.324	0.584	6.929	11.40	5.12
2.350	7.710	11.078	0.520	6.648	11.15	4.66
2.400	7.874	10.560	0.505	6.331	10.63	4.75
2.450	8.038	9.741	0.513	6.577	9.81	5.23
2.500	8.202	10.532	0.524	6.296	10.60	4.94
2.550	8.366	11.624	0.568	6.472	11.69	4.86
2.600	8.530	12.333	0.622	6.331	12.40	5.02
2.650	8.694	12.197	0.661	5.874	12.26	5.39
2.700	8.858	11.624	0.693	5.487	11.68	5.93
2.750	9.022	11.242	0.720	5.100	11.30	6.37
2.800	9.186	11.488	0.703	4.959	11.54	6.09
2.850	9.350	12.661	0.701	5.170	12.72	5.51
2.900	9.514	13.998	0.705	5.522	14.06	5.02
2.950	9.678	14.516	0.730	5.733	14.58	5.01
3.000	9.843	14.680	0.676	5.804	14.74	4.59
3.050	10.007	15.826	0.726	5.768	15.89	4.57
3.100	10.171	17.927	0.771	6.683	18.00	4.28
3.150	10.335	19.319	0.824	6.753	19.39	4.25
3.200	10.499	20.710	0.891	7.667	20.79	4.29
3.250	10.663	21.529	0.918	8.723	21.62	4.25
3.300	10.827	22.156	0.900	8.054	22.24	4.05
3.350	10.991	20.656	0.894	9.426	20.76	4.31
3.400	11.155	21.420	0.877	11.395	21.54	4.07
3.450	11.319	22.484	0.871	10.974	22.60	3.85
3.500	11.483	22.566	0.880	12.802	22.70	3.88
3.550	11.647	22.075	0.868	13.400	22.22	3.91
3.600	11.811	22.348	0.885	14.209	22.50	3.93
3.650	11.975	22.402	0.874	14.350	22.56	3.87
3.700	12.139	22.702	0.918	17.515	22.89	4.01
3.750	12.303	25.977	0.900	21.736	26.21	3.43
3.800	12.467	27.477	0.928	24.022	27.74	3.35
3.850	12.631	29.606	1.082	25.288	29.88	3.62
3.900	12.795	29.005	1.045	22.475	29.25	3.57
3.950	12.959	26.959	1.051	22.932	27.21	3.86
4.000	13.123	26.768	1.000	23.002	27.02	3.70
4.050	13.287	27.150	0.865	22.404	27.39	3.16
4.100	13.451	28.214	1.063	23.248	28.47	3.73
4.150	13.615	29.196	1.091	24.409	29.46	3.70
4.200	13.780	26.086	1.122	20.575	26.31	4.26
4.250	13.944	24.066	0.991	21.596	24.30	4.08
4.300	14.108	21.338	0.859	21.596	21.57	3.98
4.350	14.272	19.073	0.736	23.882	19.33	3.81
4.400	14.436	17.327	0.518	22.580	17.57	2.95
4.450	14.600	20.792	0.644	28.594	21.10	3.05

4.500	14.764	24.066	0.759	27.575	24.36	3.12
4.550	14.928	23.848	0.925	27.645	24.15	3.83
4.600	15.092	23.057	1.000	25.042	23.33	4.29
4.650	15.256	23.030	1.038	24.198	23.29	4.46
4.700	15.420	22.866	1.029	23.459	23.12	4.45
4.750	15.584	23.466	1.079	22.510	23.71	4.55
4.800	15.748	24.366	1.125	23.389	24.62	4.57
4.850	15.912	24.285	1.164	21.208	24.51	4.75
4.900	16.076	24.066	1.132	20.470	24.29	4.66
4.950	16.240	23.684	1.110	18.922	23.89	4.65
5.000	16.404	24.694	1.136	21.384	24.92	4.56
5.050	16.568	25.267	1.101	23.424	25.52	4.31
5.100	16.732	26.686	0.941	26.555	26.97	3.49
5.150	16.896	28.732	0.958	31.584	29.07	3.30
5.200	17.060	32.552	1.090	27.715	32.85	3.32
5.250	17.224	28.432	1.062	23.108	28.68	3.70
5.300	17.388	26.815	0.867	20.470	27.04	3.21
5.350	17.552	17.081	0.682	25.218	17.35	3.93
5.400	17.717	19.291	0.602	28.067	19.59	3.07
5.450	17.881	27.341	0.832	29.368	27.66	3.01
5.500	18.045	55.309	0.928	21.454	55.54	1.67
5.550	18.209	58.665	1.019	18.360	58.86	1.73
5.600	18.373	61.421	1.217	16.531	61.60	1.98
5.650	18.537	63.659	1.400	15.335	63.82	2.19
5.700	18.701	68.570	1.477	14.807	68.73	2.15
5.750	18.865	78.257	1.585	13.119	78.40	2.02
5.800	19.029	81.586	1.416	12.486	81.72	1.73
5.850	19.193	82.541	1.414	11.009	82.66	1.71
5.900	19.357	85.679	1.328	10.622	85.79	1.55
5.950	19.521	98.531	1.355	9.953	98.64	1.37
6.000	19.685	113.347	1.149	9.496	113.45	1.01
6.050	19.849	123.416	0.680	9.532	123.52	0.55
6.100	20.013	121.997	0.923	8.793	122.09	0.76
6.150	20.177	108.163	1.061	9.144	108.26	0.98
6.200	20.341	105.543	1.168	8.688	105.64	1.11
6.250	20.505	104.834	1.134	8.546	104.93	1.08
6.300	20.669	105.816	1.064	8.476	105.91	1.00
6.350	20.833	104.124	0.736	8.160	104.21	0.71
6.400	20.997	101.314	0.792	8.019	101.40	0.78
6.450	21.161	89.417	0.834	8.511	89.51	0.93
6.500	21.325	81.395	0.846	7.632	81.48	1.04
6.550	21.490	76.511	0.856	7.492	76.59	1.12
6.600	21.654	74.983	0.846	7.492	75.06	1.13
6.650	21.818	76.783	0.834	7.562	76.86	1.09
6.700	21.982	80.249	0.814	7.667	80.33	1.01
6.750	22.146	85.924	0.768	7.702	86.01	0.89
6.800	22.310	92.145	0.824	7.562	92.23	0.89
6.850	22.474	92.309	0.890	7.281	92.39	0.96
6.900	22.638	97.903	0.987	7.667	97.99	1.01
6.950	22.802	114.657	1.124	8.160	114.75	0.98
7.000	22.966	127.781	1.208	8.195	127.87	0.94

7.050	23.130	137.441	1.031	8.441	137.53	0.75
7.100	23.294	178.179	1.476	9.567	178.28	0.83
7.150	23.458	210.404	1.886	10.165	210.51	0.90
7.200	23.622	200.718	2.137	9.918	200.83	1.06
7.250	23.786	200.936	2.176	10.059	201.04	1.08
7.300	23.950	194.223	2.155	10.200	194.33	1.11
7.350	24.114	186.720	1.752	10.340	186.83	0.94
7.400	24.278	166.501	1.724	9.848	166.61	1.03
7.450	24.442	146.009	1.656	10.903	146.13	1.13
7.500	24.606	124.944	1.452	9.567	125.05	1.16
7.550	24.770	102.296	1.213	9.215	102.40	1.18
7.600	24.934	88.189	0.957	9.109	88.29	1.08
7.650	25.098	78.311	0.792	8.476	78.40	1.01
7.700	25.262	76.156	0.656	8.265	76.25	0.86
7.750	25.427	73.864	0.581	7.492	73.94	0.79
7.800	25.591	78.502	0.551	7.069	78.58	0.70
7.850	25.755	92.145	0.592	6.683	92.22	0.64
7.900	25.919	102.978	0.777	6.542	103.05	0.75
7.950	26.083	103.196	0.916	6.260	103.26	0.89
8.000	26.247	98.067	0.987	6.260	98.13	1.01
8.050	26.411	97.576	0.780	6.542	97.65	0.80
8.100	26.575	94.438	0.785	6.753	94.51	0.83
8.150	26.739	86.143	0.744	7.492	86.22	0.86
8.200	26.903	77.902	0.728	6.542	77.97	0.93
8.250	27.067	74.164	0.660	6.753	74.24	0.89
8.300	27.231	89.199	0.685	7.562	89.28	0.77
8.350	27.395	115.448	0.957	7.702	115.53	0.83
8.400	27.559	123.961	1.731	7.597	124.04	1.40
8.450	27.723	99.322	1.933	7.386	99.40	1.94
8.500	27.887	87.289	1.796	15.863	87.46	2.05
8.550	28.051	103.933	1.235	12.275	104.07	1.19
8.600	28.215	115.857	0.795	8.688	115.95	0.69
8.650	28.379	123.306	0.990	8.476	123.40	0.80
8.700	28.543	141.779	1.208	9.004	141.88	0.85
8.750	28.707	139.788	1.070	10.727	139.90	0.76
8.800	28.871	125.271	1.055	7.984	125.36	0.84
8.850	29.035	105.843	1.101	8.898	105.94	1.04
8.900	29.199	103.388	1.118	8.828	103.48	1.08
8.950	29.364	100.577	1.080	8.863	100.67	1.07
9.000	29.528	96.239	1.026	9.391	96.34	1.06
9.050	29.692	96.129	0.994	9.109	96.23	1.03
9.100	29.856	97.685	0.944	9.320	97.79	0.97
9.150	30.020	95.911	0.938	9.356	96.01	0.98
9.200	30.184	92.500	0.894	9.391	92.60	0.97
9.250	30.348	92.227	0.720	9.602	92.33	0.78
9.300	30.512	92.910	0.743	8.723	93.00	0.80
9.350	30.676	89.854	0.777	10.094	89.96	0.86
9.400	30.840	88.653	0.833	9.637	88.76	0.94
9.450	31.004	84.696	0.848	9.567	84.80	1.00
9.500	31.168	84.233	0.756	9.707	84.34	0.90
9.550	31.332	87.589	0.795	9.532	87.69	0.91

9.600	31.496	98.612	0.905	9.039	98.71	0.92
9.650	31.660	120.987	1.031	9.391	121.09	0.85
9.700	31.824	153.840	1.366	9.039	153.94	0.89
9.750	31.988	176.651	1.605	9.391	176.75	0.91
9.800	32.152	161.390	1.704	9.320	161.49	1.06
9.850	32.316	148.028	1.517	9.496	148.13	1.02
9.900	32.480	139.951	1.302	9.742	140.06	0.93
9.950	32.644	126.908	0.712	8.406	127.00	0.56
10.000	32.808	117.385	0.694	7.246	117.46	0.59
10.050	32.972	112.010	0.824	8.054	112.10	0.74
10.100	33.136	112.228	0.951	7.386	112.31	0.85
10.150	33.301	109.090	1.041	7.632	109.17	0.95
10.200	33.465	126.908	1.095	8.336	127.00	0.86
10.250	33.629	150.047	1.346	9.637	150.15	0.90
10.300	33.793	170.321	1.301	9.918	170.43	0.76
10.350	33.957	184.919	1.326	10.059	185.03	0.72
10.400	34.121	183.227	1.586	13.260	183.37	0.86
10.450	34.285	186.502	1.705	10.974	186.62	0.91
10.500	34.449	152.885	1.639	10.446	153.00	1.07
10.550	34.613	127.618	1.324	10.446	127.73	1.04
10.600	34.777	124.098	1.114	10.763	124.21	0.90
10.650	34.941	120.796	1.065	9.813	120.90	0.88
10.700	35.105	115.639	1.115	10.587	115.75	0.96
10.750	35.269	113.702	1.160	11.009	113.82	1.02
10.800	35.433	112.337	1.126	11.149	112.46	1.00
10.850	35.597	109.336	1.092	11.290	109.46	1.00
10.900	35.761	109.227	1.079	11.466	109.35	0.99
10.950	35.925	106.143	1.064	11.536	106.27	1.00
11.000	36.089	101.805	0.890	11.642	101.93	0.87
11.050	36.253	99.022	0.881	11.747	99.15	0.89
11.100	36.417	92.528	0.893	13.400	92.67	0.96
11.150	36.581	91.654	0.892	12.099	91.78	0.97
11.200	36.745	99.677	0.911	12.345	99.81	0.91
11.250	36.909	104.997	0.975	12.416	105.13	0.93
11.300	37.073	113.019	1.064	12.662	113.16	0.94
11.350	37.238	121.014	1.104	12.873	121.15	0.91
11.400	37.402	131.356	0.946	13.049	131.50	0.72
11.450	37.566	79.321	1.010	16.284	79.50	1.27
11.500	37.730	132.420	1.183	15.300	132.59	0.89
11.550	37.894	136.431	1.298	13.400	136.58	0.95
11.600	38.058	125.762	1.298	13.049	125.90	1.03
11.650	38.222	118.231	1.232	13.084	118.37	1.04
11.700	38.386	113.756	1.176	13.225	113.90	1.03
11.750	38.550	106.853	1.117	13.189	107.00	1.04
11.800	38.714	106.498	1.066	13.471	106.64	1.00
11.850	38.878	104.506	1.060	13.471	104.65	1.01
11.900	39.042	108.081	1.056	13.787	108.23	0.98
11.950	39.206	115.339	1.095	13.998	115.49	0.95
12.000	39.370	134.385	1.162	14.491	134.54	0.86
12.050	39.534	156.405	1.169	14.807	156.56	0.75
12.100	39.698	179.080	1.457	15.194	179.24	0.81

12.150	39.862	198.016	1.671	16.073	198.19	0.84
12.200	40.026	205.574	1.764	15.686	205.74	0.86
12.250	40.190	209.640	1.764	15.792	209.81	0.84
12.300	40.354	219.463	1.784	16.249	219.64	0.81
12.350	40.518	233.707	1.840	16.636	233.89	0.79
12.400	40.682	242.466	1.721	16.847	242.65	0.71
12.450	40.846	260.447	1.857	17.305	260.63	0.71
12.500	41.011	260.311	1.856	18.008	260.51	0.71
12.550	41.175	261.812	1.861	18.113	262.01	0.71
12.600	41.339	274.582	1.986	18.500	274.78	0.72
12.650	41.503	279.793	2.050	18.641	279.99	0.73
12.700	41.667	297.775	1.230	19.204	297.98	0.41
12.750	41.831	330.764	1.427	20.189	330.98	0.43
12.800	41.995	360.397	2.038	21.208	360.63	0.57
12.850	42.159	289.862	2.646	18.887	290.07	0.91
12.900	42.323	147.782	2.795	15.792	147.95	1.89
12.950	42.487	75.501	2.247	16.284	75.68	2.97
13.000	42.651	32.962	1.884	33.097	33.32	5.65
13.050	42.815	22.184	1.753	44.035	22.66	7.74
13.100	42.979	18.691	1.495	71.082	19.46	7.68
13.150	43.143	20.956	0.687	67.213	21.68	3.17
13.200	43.307	20.519	0.595	80.085	21.38	2.78
13.250	43.471	21.529	0.601	87.929	22.48	2.67
13.300	43.635	23.384	0.642	83.321	24.28	2.64
13.350	43.799	22.675	0.642	79.277	23.53	2.73
13.400	43.963	21.802	0.608	81.035	22.68	2.68
13.450	44.127	22.484	0.502	86.662	23.42	2.14
13.500	44.291	21.802	0.478	82.336	22.69	2.11
13.550	44.455	23.302	0.471	77.835	24.14	1.95
13.600	44.619	22.293	0.410	81.246	23.17	1.77
13.650	44.783	17.545	0.354	76.568	18.37	1.93
13.700	44.948	17.627	0.333	86.346	18.56	1.79
13.750	45.112	16.726	0.285	85.994	17.65	1.61
13.800	45.276	18.609	0.315	98.621	19.67	1.60
13.850	45.440	19.946	0.361	94.928	20.97	1.72
13.900	45.604	18.691	0.407	90.461	19.67	2.07
13.950	45.768	17.081	0.325	98.199	18.14	1.79
14.000	45.932	19.210	0.276	107.625	20.37	1.35
14.050	46.096	20.410	0.303	107.695	21.57	1.40
14.100	46.260	20.928	0.423	99.008	22.00	1.92
14.150	46.424	20.410	0.425	88.667	21.37	1.99
14.200	46.588	19.701	0.397	94.330	20.72	1.92
14.250	46.752	23.302	0.385	114.870	24.54	1.57
14.300	46.916	25.185	0.441	112.232	26.40	1.67
14.350	47.080	28.978	0.469	110.579	30.17	1.55
14.400	47.244	27.559	0.440	93.345	28.57	1.54
14.450	47.408	27.504	0.402	92.712	28.51	1.41
14.500	47.572	22.893	0.473	82.020	23.78	1.99
14.550	47.736	21.092	0.384	92.431	22.09	1.74
14.600	47.900	21.365	0.385	109.876	22.55	1.71
14.650	48.064	21.692	0.349	112.655	22.91	1.52

14.700	48.228	22.184	0.384	116.629	23.44	1.64
14.750	48.392	22.811	0.355	114.132	24.04	1.48
14.800	48.556	23.875	0.342	105.515	25.01	1.37
14.850	48.720	20.219	0.295	95.807	21.25	1.39
14.900	48.885	17.381	0.309	94.225	18.40	1.68
14.950	49.049	17.354	0.331	103.334	18.47	1.79
15.000	49.213	17.872	0.384	109.735	19.06	2.01
15.050	49.377	19.073	0.404	108.328	20.24	2.00
15.100	49.541	19.973	0.459	102.490	21.08	2.18
15.150	49.705	19.973	0.436	94.506	20.99	2.08
15.200	49.869	18.418	0.469	95.315	19.45	2.41
15.250	50.033	18.200	0.477	85.361	19.12	2.49
15.300	50.197	17.709	0.471	70.237	18.47	2.55
15.350	50.361	16.781	0.481	65.067	17.48	2.75
15.400	50.525	15.362	0.443	60.811	16.02	2.77
15.450	50.689	13.643	0.404	57.365	14.26	2.83
15.500	50.853	11.924	0.356	58.314	12.55	2.84
15.550	51.017	11.160	0.268	71.680	11.93	2.25
15.600	51.181	10.723	0.268	72.875	11.51	2.33
15.650	51.345	10.096	0.253	68.901	10.84	2.33
15.700	51.509	9.114	0.269	68.831	9.86	2.73
15.750	51.673	9.932	0.320	75.443	10.75	2.98
15.800	51.837	10.942	0.323	78.222	11.79	2.74
15.850	52.001	13.670	0.379	92.782	14.67	2.58
15.900	52.165	18.637	0.483	97.988	19.70	2.45
15.950	52.329	21.774	0.615	90.778	22.75	2.70
16.000	52.493	22.102	0.760	66.228	22.82	3.33
16.050	52.657	22.702	0.802	60.249	23.35	3.43
16.100	52.822	22.893	0.814	55.184	23.49	3.47
16.150	52.986	22.730	0.771	56.732	23.34	3.30
16.200	53.150	22.184	0.767	55.360	22.78	3.37
16.250	53.314	21.720	0.723	62.043	22.39	3.23
16.300	53.478	21.310	0.707	68.057	22.05	3.21
16.350	53.642	22.238	0.732	71.222	23.01	3.18
16.400	53.806	23.630	0.797	74.528	24.43	3.26
16.450	53.970	23.248	0.860	67.037	23.97	3.59
16.500	54.134	22.402	0.903	64.118	23.09	3.91
16.550	54.298	22.075	0.823	64.681	22.77	3.61
16.600	54.462	21.256	0.774	73.016	22.04	3.51
16.650	54.626	22.075	0.810	77.799	22.92	3.53
16.700	54.790	23.739	0.818	75.232	24.55	3.33
16.750	54.954	23.357	0.867	68.444	24.10	3.60
16.800	55.118	23.657	0.855	67.670	24.39	3.51
16.850	55.282	24.121	0.907	68.831	24.86	3.65
16.900	55.446	24.721	0.836	55.536	25.32	3.30
16.950	55.610	23.766	0.801	63.731	24.45	3.28
17.000	55.774	24.912	0.834	67.846	25.64	3.25
17.050	55.938	26.140	0.844	73.966	26.94	3.13
17.100	56.102	27.368	0.961	91.763	28.36	3.39
17.150	56.266	32.170	0.944	102.631	33.28	2.84
17.200	56.430	38.419	0.913	148.318	40.02	2.28

17.250	56.594	41.857	0.874	166.537	43.66	2.00
17.300	56.759	40.957	0.816	171.215	42.81	1.91
17.350	56.923	37.764	0.871	186.128	39.77	2.19
17.400	57.087	36.782	0.748	207.688	39.03	1.92
17.450	57.251	48.133	0.851	215.918	50.46	1.69
17.500	57.415	63.740	1.001	149.338	65.35	1.53
17.550	57.579	71.026	1.523	124.120	72.37	2.10
17.600	57.743	73.454	2.109	137.134	74.94	2.81
17.650	57.907	83.987	2.402	66.931	84.71	2.84
17.700	58.071	82.323	2.589	94.049	83.34	3.11
17.750	58.235	94.956	2.447	82.442	95.85	2.55
17.800	58.399	85.706	1.952	73.473	86.50	2.26
17.850	58.563	69.662	1.329	76.217	70.49	1.89
17.900	58.727	41.339	0.972	93.064	42.34	2.30
17.950	58.891	65.105	0.985	141.284	66.63	1.48
18.000	59.055	47.505	1.160	87.612	48.45	2.39
18.050	59.219	50.179	1.389	102.771	51.29	2.71
18.100	59.383	59.948	1.361	98.973	61.02	2.23
18.150	59.547	46.932	0.594	72.629	47.72	1.24
18.200	59.711	39.429	0.802	106.394	40.58	1.98
18.250	59.875	22.293	0.605	137.591	23.78	2.54
18.300	60.039	52.335	1.024	196.714	54.46	1.88
18.350	60.203	76.320	1.793	139.033	77.82	2.30
18.400	60.367	89.990	2.295	43.929	90.46	2.54
18.450	60.531	66.578	2.051	36.016	66.97	3.06
18.500	60.696	64.969	1.840	53.496	65.55	2.81
18.550	60.860	47.424	1.668	48.537	47.95	3.48
18.600	61.024	45.868	1.619	96.335	46.91	3.45
18.650	61.188	52.526	1.537	104.178	53.65	2.86
18.700	61.352	71.981	2.130	122.784	73.31	2.91
18.750	61.516	64.750	2.110	57.998	65.38	3.23
18.800	61.680	72.800	1.943	99.289	73.87	2.63
18.850	61.844	119.132	1.514	61.199	119.79	1.26
18.900	62.008	131.165	2.243	40.623	131.60	1.70
18.950	62.172	100.468	2.292	30.951	100.80	2.27
19.000	62.336	94.438	2.432	37.246	94.84	2.56
19.050	62.500	139.897	2.328	32.041	140.24	1.66
19.100	62.664	135.422	1.628	28.489	135.73	1.20
19.150	62.828	143.335	1.686	17.340	143.52	1.17
19.200	62.992	106.389	2.621	16.707	106.57	2.46
19.250	63.156	62.431	1.632	19.415	62.64	2.61
19.300	63.320	40.820	1.688	35.207	41.20	4.10
19.350	63.484	34.844	1.293	49.662	35.38	3.65
19.400	63.648	39.347	1.517	55.290	39.94	3.80
19.450	63.812	61.967	1.627	76.463	62.79	2.59
19.500	63.976	66.496	2.300	81.492	67.38	3.41
19.550	64.140	81.558	2.736	49.099	82.09	3.33
19.600	64.304	87.807	2.710	64.645	88.51	3.06
19.650	64.469	131.984	1.734	45.793	132.48	1.31
19.700	64.633	142.789	2.051	34.749	143.16	1.43
19.750	64.797	110.809	3.414	16.355	110.99	3.08

19.800	64.961	67.424	2.766	28.278	67.73	4.08
19.850	65.125	82.759	2.637	65.911	83.47	3.16
19.900	65.289	144.672	1.855	34.679	145.05	1.28
19.950	65.453	179.516	1.282	32.428	179.87	0.71
20.000	65.617	195.779	1.273	26.132	196.06	0.65
20.050	65.781	189.258	1.316	21.877	189.49	0.69
20.100	65.945	168.929	1.348	20.083	169.15	0.80
20.150	66.109	151.302	1.727	19.837	151.52	1.14
20.200	66.273	125.326	3.322	18.500	125.53	2.65
20.250	66.437	85.897	3.191	20.189	86.12	3.71
20.300	66.601	96.239	2.573	39.674	96.67	2.66
20.350	66.765	89.772	2.582	49.099	90.30	2.86
20.400	66.929	119.214	2.644	28.981	119.53	2.21
20.450	67.093	113.320	3.395	42.558	113.78	2.98
20.500	67.257	145.681	3.778	29.439	146.00	2.59
20.550	67.421	138.123	3.131	28.524	138.43	2.26
20.600	67.585	138.860	2.863	53.883	139.44	2.05
20.650	67.749	130.537	2.444	31.197	130.87	1.87
20.700	67.913	101.669	3.369	34.609	102.04	3.30
20.750	68.077	42.648	3.600	77.870	43.49	8.28
20.800	68.241	75.692	3.676	91.481	76.68	4.79
20.850	68.406	79.758	4.091	161.543	81.50	5.02
20.900	68.570	113.975	1.514	188.871	116.01	1.31
20.950	68.734	172.204	2.351	131.119	173.62	1.35
21.000	68.898	194.087	2.389	29.227	194.40	1.23
21.050	69.062	202.382	2.023	24.198	202.64	1.00
21.100	69.226	191.276	2.165	18.113	191.47	1.13
21.150	69.390	171.358	2.800	13.928	171.51	1.63
21.200	69.554	146.172	4.270	10.938	146.29	2.92
21.250	69.718	111.546	5.099	11.360	111.67	4.57
21.300	69.882	113.920	5.408	26.660	114.21	4.74
21.350	70.046	139.023	5.921	17.410	139.21	4.25
21.400	70.210	137.659	5.693	18.993	137.86	4.13
21.450	70.374	187.702	1.461	35.242	188.08	0.78
21.500	70.538	265.059	1.845	32.920	265.41	0.70
21.550	70.702	324.570	2.030	26.449	324.86	0.62
21.600	70.866	268.824	2.672	16.917	269.01	0.99
21.650	71.030	192.859	3.635	13.365	193.00	1.88
21.700	71.194	152.776	4.379	13.893	152.93	2.86
21.750	71.358	111.192	4.441	18.289	111.39	3.99
21.800	71.522	98.967	5.208	40.623	99.41	5.24
21.850	71.686	105.652	3.267	38.724	106.07	3.08
21.900	71.850	201.782	2.423	48.712	202.31	1.20
21.950	72.014	293.327	1.784	22.052	293.57	0.61
22.000	72.178	261.293	1.952	13.893	261.44	0.75
22.050	72.343	213.679	2.626	12.064	213.81	1.23
22.100	72.507	161.426	3.832	12.873	161.57	2.37
22.150	72.671	137.604	4.952	10.411	137.72	3.60
22.200	72.835	116.812	4.543	20.540	117.03	3.88
22.250	72.999	82.459	4.214	45.723	82.95	5.08
22.300	73.163	68.352	2.149	80.683	69.22	3.10

22.350	73.327	170.102	2.158	183.490	172.08	1.25
22.400	73.491	381.707	1.258	71.398	382.48	0.33
22.450	73.655	385.446	0.997	66.650	386.17	0.26
22.500	73.819	437.317	1.006	19.907	437.53	0.23
22.550	73.983	479.720	0.020	16.425	479.90	0.00
22.600	74.147	498.847	0.020	22.017	499.08	0.00

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC
Site:	SOUTH TEXAS PROJ.
Engineer:	M.COOK
Sounding:	C-944
Date:	7/23/2007
Time:	10:04 AM

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{OCR}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	12.242	0.226	3.693		12.28	1.84	5	115	0.019	0.000	0.019	652.42	1.84	0.02
0.200	0.656	15.216	0.377	4.185		15.26	2.47	5	115	0.038	0.000	0.038	404.96	2.47	0.02
0.300	0.984	8.240	0.336	2.767		8.27	4.06	3	111	0.056	0.000	0.056	147.02	4.09	0.02
0.400	1.312	8.531	0.352	3.752		8.57	4.11	3	111	0.074	0.000	0.074	114.61	4.15	0.03
0.500	1.640	16.135	0.531	5.780		16.20	3.28	5	115	0.093	0.000	0.093	173.28	3.30	0.03
0.600	1.969	17.508	0.616	6.765		17.58	3.51	4	115	0.112	0.000	0.112	156.35	3.53	0.03
0.700	2.297	16.308	0.651	7.363		16.39	3.97	4	115	0.131	0.000	0.131	124.54	4.00	0.03
0.800	2.625	17.072	0.727	8.347		17.16	4.23	3	111	0.149	0.000	0.149	114.33	4.27	0.04
0.900	2.953	16.472	0.711	8.594		16.56	4.29	3	111	0.167	0.000	0.167	98.14	4.33	0.04
1.000	3.281	15.489	0.600	9.449		15.59	3.85	4	115	0.186	0.000	0.186	82.88	3.89	0.04
1.100	3.609	15.471	0.629	10.739		15.59	4.04	4	115	0.205	0.000	0.205	75.16	4.09	0.05
1.200	3.937	15.107	0.555	8.910		15.20	3.65	4	115	0.223	0.000	0.223	67.03	3.70	0.04
1.300	4.265	14.780	0.545	8.582		14.87	3.66	4	115	0.242	0.000	0.242	60.39	3.73	0.04
1.400	4.593	15.035	0.656	8.605		15.13	4.34	3	111	0.261	0.000	0.261	57.06	4.41	0.04
1.500	4.921	14.689	0.778	7.914		14.77	5.26	3	111	0.279	0.000	0.279	51.99	5.36	0.04
1.600	5.249	13.961	0.774	7.058		14.04	5.51	3	111	0.297	0.000	0.297	46.25	5.63	0.04
1.700	5.577	13.097	0.682	6.847		13.17	5.18	3	111	0.315	0.000	0.315	40.76	5.30	0.04
1.800	5.906	12.606	0.635	7.234		12.68	5.01	3	111	0.334	0.000	0.334	37.02	5.14	0.04
1.900	6.234	12.424	0.634	7.585		12.51	5.07	3	111	0.352	0.000	0.352	34.54	5.22	0.04
2.000	6.562	12.697	0.596	8.136		12.78	4.66	3	111	0.370	0.000	0.370	33.54	4.80	0.05
2.100	6.890	12.497	0.637	8.289		12.59	5.06	3	111	0.388	0.000	0.388	31.40	5.22	0.05
2.200	7.218	12.406	0.624	7.715		12.49	5.00	3	111	0.407	0.000	0.407	29.71	5.16	0.05
2.300	7.546	11.451	0.571	6.953		11.53	4.95	3	111	0.425	0.000	0.425	26.12	5.14	0.05
2.400	7.874	10.460	0.513	6.519		10.53	4.87	3	111	0.443	0.000	0.443	22.75	5.08	0.05
2.500	8.202	10.632	0.535	6.448		10.70	5.00	3	111	0.462	0.000	0.462	22.19	5.22	0.05
2.600	8.530	12.051	0.617	6.226		12.12	5.09	3	111	0.480	0.000	0.480	24.26	5.30	0.04
2.700	8.858	11.688	0.691	5.487		11.75	5.89	3	111	0.498	0.000	0.498	22.58	6.15	0.04
2.800	9.186	11.797	0.708	5.076		11.85	5.97	3	111	0.516	0.000	0.516	21.95	6.25	0.03
2.900	9.514	13.725	0.712	5.475		13.78	5.17	3	111	0.535	0.000	0.535	24.78	5.37	0.03
3.000	9.843	15.007	0.711	5.768		15.07	4.72	3	111	0.553	0.000	0.553	26.25	4.90	0.03
3.100	10.171	17.691	0.774	6.401		17.76	4.36	3	111	0.571	0.005	0.566	30.37	4.50	0.03

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	8	1.62	86.96	3.00E-6	2.1	15.8	50	49	49				
0.200	0.656	8	1.83	92.28	3.00E-6	2.8	14.9	51	47	61				
0.300	0.984	8	2.25	57.75	3.00E-6	1.8	7.8	41	43	33				
0.400	1.312	8	2.32	52.04	3.00E-6	1.9	7.2	39	41	34				
0.500	1.640	8	2.13	73.42	3.00E-6	3.3	11.3	46	43	65				
0.600	1.969	8	2.18	73.13	3.00E-6	3.7	11.4	46	43	70				
0.700	2.297	8	2.28	65.48	3.00E-6	3.6	10.2	43	42	66				
0.800	2.625	9	2.33	64.26	1.00E-8	3.8	10.2					1.13	7.62	34.3
0.900	2.953	9	2.37	58.53	1.00E-8	3.8	9.5					1.09	6.54	29.4
1.000	3.281	4	2.38	51.22	3.00E-8	3.6	8.5				462	1.03	5.53	24.9
1.100	3.609	4	2.43	48.75	3.00E-8	3.6	8.3				461	1.03	5.01	22.5
1.200	3.937	4	2.43	44.52	3.00E-8	3.6	7.7				449	1.00	4.47	20.1
1.300	4.265	4	2.46	41.56	3.00E-8	3.5	7.4				439	0.98	4.03	18.1
1.400	4.593	4	2.53	41.21	3.00E-8	3.7	7.5				446	0.99	3.80	17.1
1.500	4.921	4	2.62	39.54	3.00E-8	3.8	7.4				435	0.97	3.47	15.6
1.600	5.249	4	2.67	36.32	3.00E-8	3.7	7.0				412	0.92	3.08	13.9
1.700	5.577	4	2.69	32.59	3.00E-8	3.5	6.4				386	0.86	2.72	12.2
1.800	5.906	4	2.71	30.11	3.00E-8	3.4	6.1				371	0.82	2.47	11.1
1.900	6.234	3	2.74	28.60	1.00E-9	3.4	5.9				365	0.81	2.30	10.4
2.000	6.562	4	2.72	27.87	3.00E-8	3.5	5.8				372	0.83	2.24	10.1
2.100	6.890	3	2.77	26.69	1.00E-9	3.5	5.7				366	0.81	2.09	9.4
2.200	7.218	3	2.78	25.54	1.00E-9	3.5	5.6				362	0.81	1.98	8.9
2.300	7.546	3	2.82	22.85	1.00E-9	3.3	5.2				333	0.74	1.74	7.8
2.400	7.874	3	2.86	20.25	1.00E-9	3.1	4.7				303	0.67	1.52	6.8
2.500	8.202	3	2.88	19.93	1.00E-9	3.2	4.8				307	0.68	1.48	6.7
2.600	8.530	3	2.85	21.77	1.00E-9	3.5	5.2				349	0.78	1.62	7.3
2.700	8.858	3	2.92	20.68	1.00E-9	3.6	5.2				337	0.75	1.51	6.8
2.800	9.186	3	2.93	20.25	1.00E-9	3.6	5.2				340	0.76	1.46	6.6
2.900	9.514	3	2.85	22.56	1.00E-9	4.0	5.6				397	0.88	1.65	7.4
3.000	9.843	3	2.80	23.80	1.00E-9	4.3	5.9				436	0.97	1.75	7.9
3.100	10.171	4	2.73	27.26	3.00E-8	4.8	6.6				516	1.15	2.02	9.1

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	20.519	0.878	7.714		20.60	4.26	4	115	0.590	0.015	0.575	34.83	4.39	0.03
3.300	10.827	21.447	0.904	8.734		21.54	4.20	4	115	0.609	0.026	0.583	35.90	4.32	0.03
3.400	11.155	21.520	0.881	10.598		21.63	4.07	4	115	0.628	0.036	0.592	35.51	4.19	0.03
3.500	11.483	22.375	0.873	12.392		22.51	3.88	4	115	0.646	0.046	0.600	36.42	3.99	0.04
3.600	11.811	22.275	0.876	13.986		22.43	3.90	4	115	0.665	0.056	0.609	35.75	4.02	0.04
3.700	12.139	23.694	0.897	17.867		23.89	3.76	4	115	0.684	0.067	0.617	37.58	3.87	0.05
3.800	12.467	27.687	0.970	23.682		27.94	3.47	5	115	0.703	0.077	0.626	43.52	3.56	0.06
3.900	12.795	28.523	1.059	23.565		28.78	3.68	5	115	0.722	0.087	0.634	44.22	3.78	0.06
4.000	13.123	26.959	0.972	22.779		27.21	3.57	5	115	0.740	0.097	0.643	41.16	3.67	0.06
4.100	13.451	28.187	1.006	23.354		28.44	3.54	5	115	0.759	0.108	0.652	42.48	3.64	0.06
4.200	13.780	26.449	1.068	22.193		26.69	4.00	4	115	0.778	0.118	0.660	39.25	4.12	0.06
4.300	14.108	21.492	0.862	22.358		21.73	3.97	4	115	0.797	0.128	0.669	31.31	4.12	0.07
4.400	14.436	19.064	0.633	25.019		19.33	3.27	5	115	0.816	0.138	0.677	27.34	3.42	0.09
4.500	14.764	22.902	0.776	27.938		23.20	3.34	5	115	0.834	0.149	0.686	32.62	3.47	0.08
4.600	15.092	23.312	0.988	25.628		23.59	4.19	4	115	0.853	0.159	0.694	32.74	4.34	0.07
4.700	15.420	23.121	1.049	23.389		23.37	4.49	4	115	0.872	0.169	0.703	32.01	4.66	0.07
4.800	15.748	24.039	1.123	22.369		24.28	4.62	3	111	0.890	0.179	0.711	32.90	4.80	0.06
4.900	16.076	24.012	1.135	20.200		24.23	4.69	3	111	0.909	0.189	0.719	32.43	4.87	0.05
5.000	16.404	24.548	1.116	21.243		24.78	4.50	4	115	0.927	0.200	0.728	32.78	4.68	0.06
5.100	16.732	26.895	1.000	27.188		27.19	3.68	5	115	0.946	0.210	0.736	35.65	3.81	0.07
5.200	17.060	29.905	1.037	27.469		30.20	3.43	5	115	0.965	0.220	0.745	39.26	3.55	0.06
5.300	17.388	24.109	0.870	22.932		24.36	3.57	5	115	0.984	0.230	0.753	31.03	3.72	0.06
5.400	17.717	21.238	0.705	27.551		21.54	3.28	5	115	1.003	0.241	0.762	26.95	3.44	0.08
5.500	18.045	47.105	0.926	23.061		47.35	1.96	7	118	1.022	0.251	0.771	60.10	2.00	0.03
5.600	18.373	61.248	1.212	16.742		61.43	1.97	7	118	1.041	0.261	0.780	77.42	2.01	0.02
5.700	18.701	70.162	1.487	14.420		70.32	2.12	7	118	1.060	0.271	0.789	87.77	2.15	0.01
5.800	19.029	80.795	1.472	12.205		80.93	1.82	7	118	1.080	0.282	0.798	100.04	1.84	0.01
5.900	19.357	88.917	1.366	10.528		89.03	1.53	7	118	1.099	0.292	0.807	108.93	1.55	0.01
6.000	19.685	111.765	1.061	9.660		111.87	0.95	8	121	1.119	0.302	0.817	135.58	0.96	0.00
6.100	20.013	117.859	0.888	9.156		117.96	0.75	9	124	1.139	0.312	0.827	141.26	0.76	0.00
6.200	20.341	106.180	1.121	8.793		106.27	1.05	8	121	1.159	0.323	0.837	125.65	1.07	0.00
6.300	20.669	104.925	0.978	8.394		105.02	0.93	8	121	1.179	0.333	0.846	122.71	0.94	0.00
6.400	20.997	98.285	0.787	8.230		98.37	0.80	8	121	1.199	0.343	0.856	113.55	0.81	0.00
6.500	21.325	82.441	0.845	7.878		82.53	1.02	8	121	1.219	0.353	0.865	93.95	1.04	0.00
6.600	21.654	76.092	0.845	7.515		76.17	1.11	8	121	1.239	0.364	0.875	85.64	1.13	0.00
6.700	21.982	80.985	0.805	7.644		81.07	0.99	8	121	1.258	0.374	0.885	90.22	1.01	0.00
6.800	22.310	90.126	0.827	7.515		90.21	0.92	8	121	1.278	0.384	0.894	99.45	0.93	0.00
6.900	22.638	101.623	1.000	7.703		101.71	0.98	8	121	1.298	0.394	0.904	111.09	1.00	0.00
7.000	22.966	126.626	1.121	8.265		126.72	0.88	9	124	1.318	0.404	0.914	137.20	0.89	0.00
7.100	23.294	175.341	1.464	9.391		175.44	0.83	9	124	1.339	0.415	0.924	188.41	0.84	0.00
7.200	23.622	204.019	2.066	10.047		204.13	1.01	9	124	1.359	0.425	0.934	217.05	1.02	0.00
7.300	23.950	193.960	2.028	10.200		194.07	1.04	9	124	1.379	0.435	0.944	204.05	1.05	0.00
7.400	24.278	166.410	1.711	10.364		166.52	1.03	9	124	1.400	0.445	0.954	173.00	1.04	0.00
7.500	24.606	124.416	1.440	9.895		124.52	1.16	8	121	1.420	0.456	0.964	127.69	1.17	0.00
7.600	24.934	89.599	0.987	8.933		89.70	1.10	8	121	1.440	0.466	0.974	90.64	1.12	0.00
7.700	25.262	76.110	0.676	8.078		76.20	0.89	8	121	1.459	0.476	0.983	76.01	0.90	0.00
7.800	25.591	81.504	0.575	7.081		81.58	0.70	8	121	1.479	0.486	0.993	80.68	0.72	0.00
7.900	25.919	99.440	0.762	6.495		99.51	0.77	8	121	1.499	0.497	1.002	97.77	0.78	0.00
8.000	26.247	99.613	0.894	6.354		99.68	0.90	8	121	1.519	0.507	1.012	96.99	0.91	0.00
8.100	26.575	92.719	0.770	6.929		92.79	0.83	8	121	1.539	0.517	1.022	89.32	0.84	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	4	2.68	31.06	3.00E-8	5.5	7.4				600	1.33	2.32	10.4
3.300	10.827	4	2.67	32.02	3.00E-8	5.7	7.6				628	1.40	2.39	10.8
3.400	11.155	4	2.66	31.72	3.00E-8	5.7	7.6				630	1.40	2.37	10.7
3.500	11.483	4	2.64	32.51	3.00E-8	5.8	7.7				656	1.46	2.43	10.9
3.600	11.811	4	2.65	32.04	3.00E-8	5.8	7.7				653	1.45	2.38	10.7
3.700	12.139	4	2.62	33.63	3.00E-8	6.1	8.0				696	1.55	2.51	11.3
3.800	12.467	4	2.55	38.62	3.00E-8	6.9	9.0				817	1.82	2.90	13.1
3.900	12.795	4	2.56	39.44	3.00E-8	7.2	9.2				842	1.87	2.95	13.3
4.000	13.123	4	2.57	36.89	3.00E-8	6.8	8.7				794	1.76	2.74	12.3
4.100	13.451	4	2.56	38.12	3.00E-8	7.1	9.0				830	1.85	2.83	12.7
4.200	13.780	4	2.62	35.64	3.00E-8	6.8	8.7				777	1.73	2.62	11.8
4.300	14.108	4	2.70	28.78	3.00E-8	5.8	7.3				628	1.40	2.09	9.4
4.400	14.436	4	2.68	25.16	3.00E-8	5.1	6.4				556	1.23	1.82	8.2
4.500	14.764	4	2.63	29.88	3.00E-8	6.0	7.4				671	1.49	2.17	9.8
4.600	15.092	4	2.70	30.31	3.00E-8	6.3	7.7				682	1.52	2.18	9.8
4.700	15.420	4	2.73	29.81	3.00E-8	6.3	7.7				675	1.50	2.13	9.6
4.800	15.748	4	2.73	30.70	3.00E-8	6.6	8.0				702	1.56	2.19	9.9
4.900	16.076	4	2.73	30.35	3.00E-8	6.6	8.0				700	1.55	2.16	9.7
5.000	16.404	4	2.72	30.69	3.00E-8	6.7	8.0				716	1.59	2.19	9.8
5.100	16.732	4	2.63	33.12	3.00E-8	7.0	8.4				787	1.75	2.38	10.7
5.200	17.060	4	2.58	36.36	3.00E-8	7.6	9.0				877	1.95	2.62	11.8
5.300	17.388	4	2.67	29.07	3.00E-8	6.4	7.6				701	1.56	2.07	9.3
5.400	17.717	4	2.69	25.37	3.00E-8	5.7	6.7				616	1.37	1.80	8.1
5.500	18.045	5	2.27	54.49	3.00E-6	10.4	12.1	39	38	189	608			
5.600	18.373	5	2.20	69.93	3.00E-6	13.0	15.2	45	39	246	666			
5.700	18.701	5	2.18	79.46	3.00E-6	14.8	17.1	48	40	281	700			
5.800	19.029	5	2.09	90.25	3.00E-6	16.5	19.0	51	41	324	736			
5.900	19.357	6	2.01	98.05	3.00E-4	17.6	20.1	53	41	356	763			
6.000	19.685	6	1.80	120.60	3.00E-4	20.4	23.2	59	42	447	826			
6.100	20.013	6	1.72	125.61	3.00E-4	20.9	23.7	60	42	472	844			
6.200	20.341	6	1.85	113.42	3.00E-4	19.8	22.2	57	42	425	819			
6.300	20.669	6	1.83	111.11	3.00E-4	19.3	21.6	56	42	420	819			
6.400	20.997	6	1.81	103.23	3.00E-4	18.0	20.0	54	41	393	804			
6.500	21.325	6	1.94	86.53	3.00E-4	15.9	17.5	50	40	330	761			
6.600	21.654	6	2.00	79.47	3.00E-4	14.9	16.4	48	40	305	744			
6.700	21.982	6	1.95	83.87	3.00E-4	15.6	17.1	49	40	324	762			
6.800	22.310	6	1.89	92.60	3.00E-4	17.0	18.5	51	41	361	793			
6.900	22.638	6	1.87	103.82	3.00E-4	19.1	20.6	54	41	407	828			
7.000	22.966	6	1.77	128.27	3.00E-4	22.9	24.7	61	42	507	894			
7.100	23.294	6	1.65	176.18	3.00E-4	30.4	32.6	71	44	702	1000			
7.200	23.622	6	1.67	204.19	3.00E-4	35.6	37.9	76	44	817	1056			
7.300	23.950	6	1.70	193.16	3.00E-4	34.2	36.2	74	44	776	1042			
7.400	24.278	6	1.74	164.84	3.00E-4	29.8	31.4	69	43	666	994			
7.500	24.606	6	1.88	122.69	3.00E-4	23.4	24.5	59	42	498	905			
7.600	24.934	6	1.97	87.68	3.00E-4	17.5	18.2	50	40	359	814			
7.700	25.262	6	1.98	73.82	3.00E-4	14.8	15.4	46	39	305	773			
7.800	25.591	6	1.90	78.54	3.00E-4	15.4	15.9	47	39	326	794			
7.900	25.919	6	1.85	95.49	3.00E-4	18.5	19.0	52	40	398	851			
8.000	26.247	6	1.90	95.18	3.00E-4	18.8	19.3	52	40	399	854			
8.100	26.575	6	1.90	88.01	3.00E-4	17.6	17.9	50	40	371	836			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	79.403	0.711	6.929		79.48	0.89	8	121	1.559	0.527	1.031	75.56	0.91	0.00
8.300	27.231	92.937	0.767	7.339		93.02	0.82	8	121	1.578	0.538	1.041	87.85	0.84	0.00
8.400	27.559	112.910	1.540	7.562		112.99	1.36	8	121	1.598	0.548	1.051	106.04	1.38	0.00
8.500	27.887	96.848	1.655	11.841		96.98	1.71	7	118	1.618	0.558	1.060	90.00	1.74	0.00
8.600	28.215	114.365	1.007	9.813		114.47	0.88	8	121	1.637	0.568	1.069	105.53	0.89	0.00
8.700	28.543	134.958	1.089	9.402		135.06	0.81	9	124	1.658	0.578	1.079	123.60	0.82	0.00
8.800	28.871	123.634	1.075	9.203		123.73	0.87	9	124	1.678	0.589	1.089	112.03	0.88	0.00
8.900	29.199	103.269	1.100	8.863		103.37	1.06	8	121	1.698	0.599	1.099	92.50	1.08	0.00
9.000	29.528	97.648	1.033	9.121		97.75	1.06	8	121	1.718	0.609	1.109	86.62	1.08	0.00
9.100	29.856	96.575	0.959	9.262		96.68	0.99	8	121	1.738	0.619	1.118	84.90	1.01	0.00
9.200	30.184	93.546	0.851	9.450		93.65	0.91	8	121	1.758	0.630	1.128	81.47	0.93	0.00
9.300	30.512	91.664	0.747	9.473		91.77	0.81	8	121	1.777	0.640	1.137	79.11	0.83	0.00
9.400	30.840	87.734	0.819	9.766		87.84	0.93	8	121	1.797	0.650	1.147	75.01	0.95	0.00
9.500	31.168	85.506	0.800	9.602		85.61	0.93	8	121	1.817	0.660	1.157	72.44	0.95	0.00
9.600	31.496	102.396	0.910	9.321		102.50	0.89	8	121	1.837	0.671	1.166	86.31	0.90	0.00
9.700	31.824	150.493	1.334	9.274		150.59	0.89	9	124	1.857	0.681	1.176	126.43	0.90	0.00
9.800	32.152	162.023	1.609	9.402		162.12	0.99	9	124	1.878	0.691	1.187	135.05	1.00	0.00
9.900	32.480	138.296	1.177	9.215		138.40	0.85	9	124	1.898	0.701	1.197	114.06	0.86	0.00
10.000	32.808	118.768	0.743	7.902		118.85	0.63	9	124	1.918	0.712	1.207	96.90	0.64	0.00
10.100	33.136	111.109	0.939	7.691		111.19	0.84	8	121	1.938	0.722	1.216	89.82	0.86	0.00
10.200	33.465	128.682	1.161	8.535		128.77	0.90	9	124	1.959	0.732	1.227	103.39	0.92	0.00
10.300	33.793	168.429	1.324	9.871		168.54	0.79	9	124	1.979	0.742	1.237	134.68	0.80	0.00
10.400	34.121	184.883	1.539	11.431		185.01	0.83	9	124	1.999	0.752	1.247	146.78	0.84	0.00
10.500	34.449	155.668	1.556	10.622		155.78	1.00	9	124	2.020	0.763	1.257	122.34	1.01	0.00
10.600	34.777	124.171	1.168	10.341		124.28	0.94	9	124	2.040	0.773	1.267	96.48	0.96	0.00
10.700	35.105	116.712	1.113	10.470		116.83	0.95	8	121	2.060	0.783	1.277	89.90	0.97	0.00
10.800	35.433	111.792	1.126	11.149		111.91	1.01	8	121	2.080	0.793	1.286	85.39	1.03	0.00
10.900	35.761	108.235	1.078	11.431		108.36	1.00	8	121	2.100	0.804	1.296	82.00	1.01	0.00
11.000	36.089	102.323	0.945	11.642		102.45	0.92	8	121	2.119	0.814	1.305	76.85	0.94	0.00
11.100	36.417	94.401	0.889	12.415		94.54	0.94	8	121	2.139	0.824	1.315	70.26	0.96	0.00
11.200	36.745	98.776	0.926	12.287		98.91	0.94	8	121	2.159	0.834	1.325	73.04	0.96	0.00
11.300	37.073	113.010	1.048	12.650		113.15	0.93	8	121	2.179	0.845	1.334	83.17	0.94	0.00
11.400	37.402	110.564	1.020	14.069		110.72	0.92	8	121	2.199	0.855	1.344	80.75	0.94	0.00
11.500	37.730	116.057	1.164	14.995		116.22	1.00	8	121	2.219	0.865	1.353	84.23	1.02	0.00
11.600	38.058	126.808	1.276	13.178		126.95	1.01	8	121	2.238	0.875	1.363	91.49	1.02	0.00
11.700	38.386	112.947	1.175	13.166		113.09	1.04	8	121	2.258	0.886	1.373	80.74	1.06	0.00
11.800	38.714	105.952	1.081	13.377		106.10	1.02	8	121	2.278	0.896	1.382	75.11	1.04	0.00
11.900	39.042	109.309	1.070	13.752		109.46	0.98	8	121	2.298	0.906	1.392	76.99	1.00	0.00
12.000	39.370	135.376	1.142	14.432		135.53	0.84	9	124	2.318	0.916	1.402	95.02	0.86	0.00
12.100	39.698	177.834	1.432	15.358		178.00	0.80	9	124	2.339	0.927	1.412	124.39	0.82	0.00
12.200	40.026	204.410	1.733	15.850		204.58	0.85	9	124	2.359	0.937	1.422	142.18	0.86	0.00
12.300	40.354	220.937	1.796	16.226		221.11	0.81	9	124	2.379	0.947	1.432	152.70	0.82	0.00
12.400	40.682	245.540	1.806	16.929		245.72	0.73	9	124	2.400	0.957	1.443	168.68	0.74	0.00
12.500	41.011	260.857	1.858	17.809		261.05	0.71	9	124	2.420	0.967	1.453	178.04	0.72	0.00
12.600	41.339	272.062	1.966	18.418		272.26	0.72	9	124	2.440	0.978	1.463	184.46	0.73	0.00
12.700	41.667	302.777	1.569	19.345		302.99	0.52	10	127	2.461	0.988	1.473	203.96	0.52	0.00
12.800	41.995	327.008	2.037	20.095		327.22	0.62	10	127	2.482	0.998	1.484	218.82	0.63	0.00
12.900	42.323	171.048	2.563	16.988		171.23	1.50	8	121	2.502	1.008	1.494	112.96	1.52	0.00
13.000	42.651	43.549	1.961	31.139		43.89	4.47	4	115	2.521	1.019	1.502	27.53	4.74	0.03
13.100	42.979	20.610	1.312	60.777		21.27	6.17	3	111	2.539	1.029	1.510	12.40	7.00	0.18

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.98	74.79	3.00E-4	15.5	15.7	46	39	318	797			
8.300	27.231	6	1.91	87.24	3.00E-4	17.7	17.8	50	40	372	842			
8.400	27.559	6	1.98	105.74	3.00E-4	22.1	22.2	55	41	452	901			
8.500	27.887	5	2.10	90.04	3.00E-6	19.8	19.8	51	40	388	859			
8.600	28.215	6	1.86	106.01	3.00E-4	21.4	21.2	55	41	458	911			
8.700	28.543	6	1.78	124.72	3.00E-4	24.5	24.3	60	42	540	965			
8.800	28.871	6	1.84	113.49	3.00E-4	22.9	22.6	57	41	495	940			
8.900	29.199	6	1.96	93.94	3.00E-4	20.0	19.6	52	40	413	888			
9.000	29.528	6	1.98	88.24	3.00E-4	19.1	18.6	50	40	391	874			
9.100	29.856	6	1.97	86.80	3.00E-4	18.8	18.3	50	40	387	874			
9.200	30.184	6	1.96	83.60	3.00E-4	18.1	17.5	49	39	375	867			
9.300	30.512	6	1.94	81.49	3.00E-4	17.6	17.0	48	39	367	864			
9.400	30.840	6	2.00	77.43	3.00E-4	17.2	16.5	47	39	351	854			
9.500	31.168	6	2.01	75.00	3.00E-4	16.9	16.1	46	39	342	849			
9.600	31.496	6	1.93	89.84	3.00E-4	19.6	18.7	51	40	410	904			
9.700	31.824	6	1.80	132.63	3.00E-4	27.5	26.1	62	42	602	1030			
9.800	32.152	6	1.81	142.17	3.00E-4	29.7	28.1	64	42	648	1059			
9.900	32.480	6	1.83	120.48	3.00E-4	25.5	24.0	59	41	554	1007			
10.000	32.808	6	1.80	102.82	3.00E-4	21.7	20.3	54	40	475	960			
10.100	33.136	6	1.91	95.24	3.00E-4	21.1	19.7	52	40	445	942			
10.200	33.465	6	1.87	110.17	3.00E-4	24.1	22.4	56	41	515	991			
10.300	33.793	6	1.75	144.88	3.00E-4	30.2	27.9	64	42	674	1087			
10.400	34.121	6	1.73	158.59	3.00E-4	33.0	30.4	67	43	740	1125			
10.500	34.449	6	1.85	131.91	3.00E-4	28.9	26.5	61	42	623	1065			
10.600	34.777	6	1.91	104.05	3.00E-4	23.6	21.6	55	40	497	990			
10.700	35.105	6	1.94	97.10	3.00E-4	22.4	20.4	53	40	467	973			
10.800	35.433	6	1.97	92.34	3.00E-4	21.7	19.7	51	40	448	961			
10.900	35.761	6	1.98	88.88	3.00E-4	21.1	19.1	50	40	433	953			
11.000	36.089	6	1.98	83.54	3.00E-4	20.0	18.0	49	39	410	938			
11.100	36.417	6	2.02	76.41	3.00E-4	18.7	16.8	47	39	378	915			
11.200	36.745	6	2.01	79.73	3.00E-4	19.5	17.4	48	39	396	932			
11.300	37.073	6	1.96	91.35	3.00E-4	21.9	19.5	51	40	453	977			
11.400	37.402	6	1.97	88.90	3.00E-4	21.5	19.1	50	39	443	972			
11.500	37.730	6	1.97	92.94	3.00E-4	22.6	20.0	52	40	465	990			
11.600	38.058	6	1.95	101.45	3.00E-4	24.4	21.5	54	40	508	1022			
11.700	38.386	6	2.00	89.42	3.00E-4	22.2	19.5	51	39	452	986			
11.800	38.714	6	2.02	83.28	3.00E-4	21.0	18.4	49	39	424	967			
11.900	39.042	6	2.00	85.73	3.00E-4	21.5	18.7	49	39	438	980			
12.000	39.370	6	1.89	107.13	3.00E-4	25.5	22.2	55	40	542	1055			
12.100	39.698	6	1.78	141.96	3.00E-4	32.3	27.9	64	42	712	1158			
12.200	40.026	6	1.75	163.24	3.00E-4	36.7	31.6	68	42	818	1215			
12.300	40.354	6	1.71	176.47	3.00E-4	39.2	33.7	71	43	884	1250			
12.400	40.682	6	1.65	196.70	3.00E-4	42.6	36.5	75	43	983	1298			
12.500	41.011	6	1.63	208.61	3.00E-4	44.9	38.3	77	44	1044	1328			
12.600	41.339	6	1.62	216.88	3.00E-4	46.7	39.7	79	44	1089	1349			
12.700	41.667	6	1.49	240.69	3.00E-4	49.8	42.2	83	44	1212	1402			
12.800	41.995	6	1.52	259.15	3.00E-4	54.3	45.9	86	44	1309	1442			
12.900	42.323	6	1.99	129.40	3.00E-4	33.6	28.2	61	41	685	1164			
13.000	42.651	3	2.78	29.11	1.00E-9	12.2	10.3				1241	2.76	1.84	8.3
13.100	42.979	3	3.15	12.61	1.00E-9	7.3	6.1				562	1.25	0.83	3.7

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	21.001	0.628	78.409		21.85	2.87	5	115	2.558	1.039	1.519	12.70	3.25	0.24
13.300	43.635	22.529	0.628	83.509		23.43	2.68	5	115	2.577	1.049	1.527	13.65	3.01	0.24
13.400	43.963	22.320	0.584	82.325		23.21	2.52	5	115	2.596	1.060	1.536	13.42	2.83	0.24
13.500	44.291	22.529	0.484	82.278		23.42	2.07	6	115	2.614	1.070	1.545	13.47	2.32	0.23
13.600	44.619	21.047	0.412	78.550		21.90	1.88	6	115	2.633	1.080	1.553	12.40	2.14	0.24
13.700	44.948	17.299	0.324	82.969		18.20	1.78	6	115	2.652	1.090	1.562	9.95	2.08	0.31
13.800	45.276	18.427	0.320	93.181		19.43	1.65	6	115	2.671	1.101	1.570	10.68	1.91	0.33
13.900	45.604	18.573	0.364	94.529		19.59	1.86	6	115	2.690	1.111	1.579	10.71	2.16	0.34
14.000	45.932	18.900	0.301	104.506		20.03	1.50	6	115	2.708	1.121	1.587	10.91	1.74	0.37
14.100	46.260	20.583	0.384	98.457		21.65	1.77	6	115	2.727	1.131	1.596	11.85	2.03	0.31
14.200	46.588	21.138	0.402	99.289		22.21	1.81	6	115	2.746	1.141	1.604	12.13	2.07	0.31
14.300	46.916	25.822	0.432	112.560		27.04	1.60	6	115	2.765	1.152	1.613	15.05	1.78	0.29
14.400	47.244	28.014	0.437	98.879		29.08	1.50	6	115	2.784	1.162	1.622	16.22	1.66	0.23
14.500	47.572	23.830	0.420	89.054		24.79	1.69	6	115	2.802	1.172	1.630	13.49	1.91	0.24
14.600	47.900	21.383	0.373	104.987		22.52	1.66	6	115	2.821	1.182	1.639	12.02	1.89	0.32
14.700	48.228	22.229	0.363	114.472		23.47	1.55	6	115	2.840	1.193	1.647	12.52	1.76	0.34
14.800	48.556	22.302	0.331	105.151		23.44	1.41	6	115	2.859	1.203	1.656	12.43	1.61	0.31
14.900	48.885	18.318	0.312	97.789		19.37	1.61	6	115	2.877	1.213	1.664	9.91	1.89	0.35
15.000	49.213	18.100	0.373	107.132		19.26	1.94	6	115	2.896	1.223	1.673	9.78	2.28	0.40
15.100	49.541	19.673	0.433	101.775		20.77	2.08	6	115	2.915	1.234	1.682	10.62	2.42	0.34
15.200	49.869	18.864	0.461	91.727		19.85	2.32	5	115	2.934	1.244	1.690	10.01	2.72	0.32
15.300	50.197	17.563	0.476	73.555		18.36	2.59	5	115	2.953	1.254	1.699	9.07	3.09	0.26
15.400	50.525	15.262	0.443	61.081		15.92	2.78	5	115	2.971	1.264	1.707	7.59	3.42	0.24
15.500	50.853	12.242	0.343	62.453		12.92	2.65	5	115	2.990	1.275	1.716	5.79	3.45	0.32
15.600	51.181	10.660	0.263	71.152		11.43	2.30	5	115	3.009	1.285	1.724	4.88	3.12	0.46
15.700	51.509	9.714	0.281	71.058		10.48	2.68	5	115	3.028	1.295	1.733	4.30	3.77	0.51
15.800	51.837	11.515	0.341	82.149		12.40	2.75	5	115	3.047	1.305	1.741	5.37	3.64	0.49
15.900	52.165	18.027	0.492	93.849		19.04	2.59	5	115	3.065	1.315	1.750	9.13	3.08	0.34
16.000	52.493	22.193	0.726	72.418		22.97	3.16	5	115	3.084	1.326	1.759	11.31	3.65	0.20
16.100	52.822	22.775	0.796	57.388		23.39	3.40	5	115	3.103	1.336	1.767	11.48	3.92	0.14
16.200	53.150	22.211	0.754	58.045		22.84	3.30	5	115	3.122	1.346	1.776	11.10	3.82	0.14
16.300	53.478	21.756	0.721	67.107		22.48	3.21	5	115	3.141	1.356	1.784	10.84	3.73	0.18
16.400	53.806	23.039	0.796	70.929		23.80	3.35	5	115	3.159	1.367	1.793	11.52	3.86	0.18
16.500	54.134	22.575	0.862	65.279		23.28	3.70	5	115	3.178	1.377	1.801	11.16	4.29	0.17
16.600	54.462	21.802	0.802	71.832		22.58	3.55	5	115	3.197	1.387	1.810	10.71	4.14	0.20
16.700	54.790	23.057	0.832	73.825		23.85	3.49	5	115	3.216	1.397	1.818	11.35	4.03	0.19
16.800	55.118	23.712	0.876	68.315		24.45	3.58	5	115	3.235	1.408	1.827	11.61	4.13	0.17
16.900	55.446	24.203	0.848	62.699		24.88	3.41	5	115	3.253	1.418	1.836	11.78	3.92	0.14
17.000	55.774	24.939	0.826	68.514		25.68	3.22	5	115	3.272	1.428	1.844	12.15	3.69	0.16
17.100	56.102	28.559	0.916	89.453		29.53	3.10	5	115	3.291	1.438	1.853	14.16	3.49	0.19
17.200	56.430	37.482	0.910	139.162		38.98	2.34	6	115	3.310	1.449	1.861	19.17	2.55	0.24
17.300	56.759	40.193	0.854	174.627		42.08	2.03	6	115	3.329	1.459	1.870	20.72	2.20	0.29
17.400	57.087	40.893	0.823	203.245		43.09	1.91	6	115	3.347	1.469	1.878	21.16	2.07	0.33
17.500	57.415	60.966	1.125	163.125		62.73	1.79	7	118	3.367	1.479	1.887	31.45	1.90	0.17
17.600	57.743	76.156	2.011	109.395		77.34	2.60	6	115	3.386	1.489	1.896	39.00	2.72	0.09
17.700	58.071	87.089	2.479	81.141		87.96	2.82	6	115	3.404	1.500	1.905	44.40	2.93	0.05
17.800	58.399	83.441	1.909	77.377		84.28	2.27	7	118	3.424	1.510	1.914	42.25	2.36	0.05
17.900	58.727	58.702	1.095	103.522		59.82	1.83	7	118	3.443	1.520	1.923	29.32	1.94	0.11
18.000	59.055	54.263	1.178	110.556		55.46	2.12	7	118	3.462	1.530	1.932	26.91	2.27	0.12
18.100	59.383	52.353	1.115	91.458		53.34	2.09	7	118	3.482	1.541	1.941	25.69	2.24	0.10

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	3	2.93	13.23	1.00E-9	6.4	5.4				579	1.29	0.85	3.8
13.300	43.635	3	2.89	14.30	1.00E-9	6.7	5.6				626	1.39	0.91	4.1
13.400	43.963	3	2.88	14.08	1.00E-9	6.6	5.5				618	1.37	0.89	4.0
13.500	44.291	4	2.83	14.22	3.00E-8	6.5	5.4				624	1.39	0.90	4.0
13.600	44.619	4	2.84	13.09	3.00E-8	6.1	5.0				578	1.28	0.83	3.7
13.700	44.948	4	2.91	10.42	3.00E-8	5.2	4.3				466	1.04	0.66	3.0
13.800	45.276	4	2.87	11.25	3.00E-8	5.4	4.5				503	1.12	0.71	3.2
13.900	45.604	4	2.89	11.25	3.00E-8	5.6	4.6				507	1.13	0.71	3.2
14.000	45.932	4	2.84	11.55	3.00E-8	5.5	4.5				520	1.15	0.73	3.3
14.100	46.260	4	2.84	12.55	3.00E-8	6.0	4.9				568	1.26	0.79	3.6
14.200	46.588	4	2.84	12.86	3.00E-8	6.1	5.0				584	1.30	0.81	3.6
14.300	46.916	4	2.72	16.20	3.00E-8	7.0	5.7				728	1.62	1.00	4.5
14.400	47.244	4	2.68	17.57	3.00E-8	7.5	6.0				789	1.75	1.08	4.9
14.500	47.572	4	2.78	14.44	3.00E-8	6.7	5.4				660	1.47	0.90	4.0
14.600	47.900	4	2.82	12.81	3.00E-8	6.1	4.9				591	1.31	0.80	3.6
14.700	48.228	4	2.79	13.41	3.00E-8	6.3	5.0				619	1.38	0.83	3.8
14.800	48.556	4	2.77	13.36	3.00E-8	6.2	5.0				617	1.37	0.83	3.7
14.900	48.885	4	2.89	10.49	3.00E-8	5.5	4.4				495	1.10	0.66	3.0
15.000	49.213	3	2.94	10.29	1.00E-9	5.6	4.4				491	1.09	0.65	2.9
15.100	49.541	3	2.92	11.20	1.00E-9	6.0	4.8				536	1.19	0.71	3.2
15.200	49.869	3	2.97	10.49	1.00E-9	5.9	4.7				508	1.13	0.67	3.0
15.300	50.197	3	3.04	9.42	1.00E-9	5.8	4.5				462	1.03	0.60	2.7
15.400	50.525	3	3.13	7.78	1.00E-9	5.3	4.2				389	0.86	0.51	2.3
15.500	50.853	3	3.23	5.85	1.00E-9	4.6	3.6				298	0.66	0.39	1.7
15.600	51.181	3	3.27	4.91	1.00E-9	4.1	3.2				253	0.56	0.33	1.5
15.700	51.509	3	3.36	4.30	1.00E-9	4.0	3.1				224	0.50	0.29	1.3
15.800	51.837	3	3.27	5.40	1.00E-9	4.4	3.4				281	0.62	0.36	1.6
15.900	52.165	3	3.04	9.51	1.00E-9	5.9	4.6				479	1.07	0.61	2.7
16.000	52.493	3	3.00	11.85	1.00E-9	7.1	5.5				597	1.33	0.75	3.4
16.100	52.822	3	3.02	12.01	1.00E-9	7.4	5.7				609	1.35	0.77	3.4
16.200	53.150	3	3.02	11.61	1.00E-9	7.2	5.6				591	1.31	0.74	3.3
16.300	53.478	3	3.02	11.33	1.00E-9	7.1	5.4				580	1.29	0.72	3.3
16.400	53.806	3	3.01	12.07	1.00E-9	7.4	5.7				619	1.38	0.77	3.5
16.500	54.134	3	3.05	11.63	1.00E-9	7.4	5.7				603	1.34	0.74	3.3
16.600	54.462	3	3.05	11.15	1.00E-9	7.2	5.5				581	1.29	0.71	3.2
16.700	54.790	3	3.03	11.88	1.00E-9	7.5	5.7				619	1.38	0.76	3.4
16.800	55.118	3	3.03	12.16	1.00E-9	7.7	5.9				636	1.41	0.77	3.5
16.900	55.446	3	3.01	12.38	1.00E-9	7.8	5.9				649	1.44	0.79	3.5
17.000	55.774	3	2.98	12.83	1.00E-9	7.9	6.0				672	1.49	0.81	3.6
17.100	56.102	3	2.91	15.13	1.00E-9	8.7	6.5				787	1.75	0.94	4.2
17.200	56.430	4	2.73	21.15	3.00E-8	10.2	7.7				1070	2.38	1.28	5.8
17.300	56.759	4	2.66	23.14	3.00E-8	10.6	8.0				1163	2.58	1.38	6.2
17.400	57.087	4	2.64	23.74	3.00E-8	10.7	8.0				1192	2.65	1.41	6.3
17.500	57.415	5	2.48	36.33	3.00E-6	14.7	11.0	32	34	251	901			
17.600	57.743	4	2.50	44.89	3.00E-8	18.6	13.9				2219	4.93	2.60	11.7
17.700	58.071	4	2.48	51.33	3.00E-8	21.0	15.7				2537	5.64	2.96	13.3
17.800	58.399	5	2.44	49.31	3.00E-6	19.7	14.7	38	36	337	998			
17.900	58.727	5	2.51	33.84	3.00E-6	14.3	10.6	31	34	239	892			
18.000	59.055	4	2.58	30.70	3.00E-8	13.7	10.2				1560	3.47	1.79	8.1
18.100	59.383	4	2.59	29.27	3.00E-8	13.3	9.8				1496	3.32	1.71	7.7

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
18.200	59.711	36.218	0.667	105.538		37.36	1.79	6	115	3.500	1.551	1.949	17.37	1.97	0.18
18.300	60.039	50.316	1.141	157.779		52.02	2.19	6	115	3.519	1.561	1.958	24.77	2.35	0.20
18.400	60.367	77.629	2.046	72.993		78.42	2.61	6	115	3.538	1.571	1.967	38.08	2.73	0.05
18.500	60.696	59.657	1.853	46.016		60.15	3.08	6	115	3.557	1.582	1.975	28.65	3.27	0.03
18.600	61.024	48.606	1.608	83.017		49.50	3.25	6	115	3.576	1.592	1.984	23.15	3.50	0.10
18.700	61.352	63.086	1.926	94.987		64.11	3.00	6	115	3.594	1.602	1.992	30.38	3.18	0.09
18.800	61.680	85.561	1.856	72.829		86.35	2.15	7	118	3.614	1.612	2.001	41.34	2.24	0.04
18.900	62.008	116.922	2.016	44.258		117.40	1.72	8	121	3.634	1.623	2.011	56.57	1.77	0.01
19.000	62.336	111.601	2.351	33.413		111.96	2.10	7	118	3.653	1.633	2.020	53.62	2.17	0.01
19.100	62.664	139.551	1.881	25.957		139.83	1.34	8	121	3.673	1.643	2.030	67.08	1.38	0.00
19.200	62.992	104.052	1.980	17.821		104.24	1.90	7	118	3.692	1.653	2.039	49.32	1.97	0.00
19.300	63.320	46.032	1.538	34.761		46.41	3.31	5	115	3.711	1.664	2.047	20.85	3.60	0.02
19.400	63.648	45.386	1.479	60.472		46.04	3.21	6	115	3.730	1.674	2.056	20.58	3.50	0.06
19.500	63.976	70.007	2.221	69.018		70.75	3.14	6	115	3.748	1.684	2.064	32.46	3.31	0.05
19.600	64.304	100.450	2.393	53.179		101.02	2.37	7	118	3.768	1.694	2.074	46.90	2.46	0.02
19.700	64.633	128.527	2.400	32.299		128.88	1.86	7	118	3.787	1.704	2.083	60.06	1.92	0.00
19.800	64.961	86.997	2.939	36.848		87.40	3.36	6	115	3.806	1.715	2.091	39.97	3.52	0.01
19.900	65.289	135.649	1.925	44.339		136.13	1.41	8	121	3.826	1.725	2.101	62.98	1.45	0.01
20.000	65.617	188.184	1.290	26.812		188.47	0.68	9	124	3.846	1.735	2.111	87.46	0.70	0.00
20.100	65.945	169.830	1.464	20.599		170.05	0.86	9	124	3.866	1.745	2.121	78.35	0.88	0.00
20.200	66.273	120.842	2.747	19.509		121.05	2.27	7	118	3.886	1.756	2.130	55.00	2.34	0.00
20.300	66.601	90.636	2.782	36.321		91.03	3.06	6	115	3.905	1.766	2.139	40.74	3.19	0.01
20.400	66.929	107.435	2.874	40.213		107.87	2.66	7	118	3.924	1.776	2.148	48.40	2.76	0.01
20.500	67.257	132.375	3.435	33.507		132.74	2.59	7	118	3.943	1.786	2.157	59.71	2.67	0.00
20.600	67.585	135.840	2.813	37.868		136.25	2.06	7	118	3.963	1.797	2.166	61.08	2.13	0.01
20.700	67.913	91.618	3.138	47.892		92.14	3.41	6	115	3.981	1.807	2.174	40.54	3.56	0.02
20.800	68.241	66.033	3.789	110.298		67.22	5.64	11	131	4.003	1.817	2.186	28.93	5.99	0.10
20.900	68.570	121.979	2.652	160.511		123.71	2.14	7	118	4.022	1.827	2.195	54.54	2.22	0.08
21.000	68.898	189.558	2.254	61.515		190.22	1.19	9	124	4.042	1.838	2.205	84.44	1.21	0.01
21.100	69.226	188.339	2.329	18.746		188.54	1.24	9	124	4.063	1.848	2.215	83.29	1.26	0.00
21.200	69.554	143.025	4.056	12.075		143.16	2.83	7	118	4.082	1.858	2.224	62.53	2.92	-0.01
21.300	69.882	121.496	5.476	18.477		121.70	4.50	11	131	4.103	1.868	2.235	52.61	4.66	0.00
21.400	70.210	154.795	4.358	23.882		155.05	2.81	7	118	4.123	1.878	2.244	67.25	2.89	0.00
21.500	70.538	259.110	1.779	31.537		259.45	0.69	9	124	4.143	1.889	2.254	113.25	0.70	0.00
21.600	70.866	262.084	2.779	18.910		262.29	1.06	9	124	4.164	1.899	2.265	113.98	1.08	0.00
21.700	71.194	152.276	4.152	15.182		152.44	2.72	7	118	4.183	1.909	2.274	65.21	2.80	-0.01
21.800	71.522	105.270	4.305	32.545		105.62	4.08	11	131	4.204	1.919	2.285	44.39	4.25	0.00
21.900	71.850	200.254	2.491	36.496		200.65	1.24	9	124	4.225	1.930	2.295	85.59	1.27	0.00
22.000	72.178	256.100	2.121	16.003		256.27	0.83	9	124	4.245	1.940	2.305	109.34	0.84	0.00
22.100	72.507	170.903	3.803	11.783		171.03	2.22	7	118	4.264	1.950	2.314	72.06	2.28	-0.01
22.200	72.835	112.292	4.570	25.558		112.57	4.06	11	131	4.286	1.960	2.325	46.57	4.22	0.00
22.300	73.163	106.971	2.840	103.299		108.09	2.63	7	118	4.305	1.971	2.334	44.46	2.74	0.05
22.400	73.491	312.418	1.471	107.179		313.58	0.47	10	127	4.326	1.981	2.345	131.87	0.48	0.02
22.500	73.819	434.161	0.674	34.327		434.53	0.16	10	127	4.347	1.991	2.356	182.61	0.16	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
18.200	59.711	4	2.70	19.43	3.00E-8	9.7	7.2				1016	2.26	1.16	5.2
18.300	60.039	4	2.62	28.14	3.00E-8	13.0	9.5				1455	3.23	1.65	7.4
18.400	60.367	4	2.51	44.13	3.00E-8	19.0	14.0				2246	4.99	2.54	11.4
18.500	60.696	4	2.66	32.36	3.00E-8	15.7	11.5				1698	3.77	1.91	8.6
18.600	61.024	4	2.75	25.73	3.00E-8	13.4	9.8				1378	3.06	1.54	6.9
18.700	61.352	4	2.63	34.54	3.00E-8	16.4	11.9				1816	4.03	2.03	9.1
18.800	61.680	5	2.43	48.88	3.00E-6	20.2	14.7	37	36	345	1022			
18.900	62.008	5	2.26	69.22	3.00E-6	25.6	18.5	44	37	470	1134			
19.000	62.336	5	2.34	64.74	3.00E-6	25.2	18.2	43	37	448	1118			
19.100	62.664	5	2.13	84.37	3.00E-6	28.9	20.9	49	38	559	1205			
19.200	62.992	5	2.33	59.72	3.00E-6	23.5	16.9	41	37	417	1095			
19.300	63.320	4	2.79	23.10	3.00E-8	13.0	9.3				1281	2.85	1.39	6.3
19.400	63.648	4	2.79	22.83	3.00E-8	12.8	9.2				1269	2.82	1.37	6.2
19.500	63.976	4	2.62	37.25	3.00E-8	18.1	12.9				2010	4.47	2.16	9.7
19.600	64.304	5	2.41	56.15	3.00E-6	23.5	16.8	40	36	404	1089			
19.700	64.633	5	2.26	74.25	3.00E-6	28.1	20.0	46	38	516	1183			
19.800	64.961	4	2.57	46.46	3.00E-8	21.9	15.6				2508	5.57	2.66	12.0
19.900	65.289	5	2.17	79.59	3.00E-6	28.5	20.3	48	38	545	1208			
20.000	65.617	6	1.86	117.98	3.00E-4	35.2	24.9	58	40	754	1349			
20.100	65.945	6	1.96	103.77	3.00E-4	32.9	23.2	54	39	680	1306			
20.200	66.273	5	2.35	67.25	3.00E-6	27.5	19.4	44	37	484	1167			
20.300	66.601	4	2.54	47.93	3.00E-8	22.5	15.8				2614	5.81	2.72	12.2
20.400	66.929	5	2.44	58.19	3.00E-6	25.4	17.8	41	37	431	1127			
20.500	67.257	5	2.36	73.07	3.00E-6	30.3	21.2	46	38	531	1209			
20.600	67.585	5	2.29	76.04	3.00E-6	30.0	21.0	47	38	545	1221			
20.700	67.913	4	2.57	47.54	3.00E-8	23.1	16.1				2645	5.88	2.70	12.2
20.800	68.241	3	2.83	32.07	1.00E-9	19.1	13.3				1897	4.21	1.93	8.7
20.900	68.570	5	2.34	67.45	3.00E-6	27.6	19.1	44	37	495	1188			
21.000	68.898	6	2.02	112.11	3.00E-4	37.6	26.0	57	40	761	1373			
21.100	69.226	6	2.04	110.37	3.00E-4	37.6	26.0	56	40	754	1371			
21.200	69.554	5	2.38	76.96	3.00E-6	32.9	22.7	47	38	573	1252			
21.300	69.882	4	2.57	62.01	3.00E-8	30.7	21.1				3528	7.84	3.51	15.8
21.400	70.210	5	2.35	83.45	3.00E-6	35.2	24.2	49	38	620	1290			
21.500	70.538	6	1.77	160.48	3.00E-4	46.8	32.1	68	41	1038	1534			
21.600	70.866	6	1.89	157.57	3.00E-4	49.4	33.8	67	41	1049	1542			
21.700	71.194	5	2.35	81.22	3.00E-6	34.6	23.6	48	38	610	1288			
21.800	71.522	4	2.60	52.31	3.00E-8	26.9	18.3				3043	6.76	2.96	13.3
21.900	71.850	6	2.03	115.17	3.00E-4	39.8	27.0	57	40	803	1416			
22.000	72.178	6	1.83	154.27	3.00E-4	47.3	32.1	66	41	1025	1539			
22.100	72.507	5	2.26	92.22	3.00E-6	37.3	25.2	51	39	684	1347			
22.200	72.835	4	2.58	55.30	3.00E-8	28.4	19.2				3248	7.22	3.10	14.0
22.300	73.163	5	2.46	54.31	3.00E-6	25.6	17.2	39	36	432	1159			
22.400	73.491	6	1.62	196.32	3.00E-4	53.6	36.0	75	42	1254	1656			
22.500	73.819	7	1.28	272.48	3.00E-2	66.8	44.8	88	44	1738	1849			

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-945
Site:	SOUTH TEXAS PROJ.	Date:	7/20/2007
Engineer:	M.COOK	Time:	10:06 AM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	5.103	0.020	1.758		5.12	0.39
0.100	0.328	7.668	0.020	2.356		7.69	0.26
0.150	0.492	18.746	0.212	3.271		18.78	1.13
0.200	0.656	42.267	0.323	1.336		42.28	0.76
0.250	0.820	65.351	0.481	3.341		65.39	0.74
0.300	0.984	37.846	0.496	4.185		37.89	1.31
0.350	1.148	22.757	0.531	5.135		22.81	2.33
0.400	1.312	14.053	0.517	4.713		14.10	3.67
0.450	1.476	8.759	0.400	4.291		8.81	4.54
0.500	1.640	9.878	0.426	4.678		9.93	4.29
0.550	1.804	11.078	0.590	4.853		11.13	5.30
0.600	1.969	12.852	0.656	6.295		12.92	5.08
0.650	2.133	12.715	0.661	6.401		12.78	5.17
0.700	2.297	11.788	0.640	6.507		11.86	5.40
0.750	2.461	11.297	0.552	6.542		11.37	4.86
0.800	2.625	10.969	0.428	6.612		11.04	3.88
0.850	2.789	10.615	0.392	6.753		10.69	3.67
0.900	2.953	9.905	0.377	7.491		9.99	3.78
0.950	3.117	10.151	0.363	7.773		10.23	3.55
1.000	3.281	10.233	0.352	7.702		10.32	3.41
1.050	3.445	10.205	0.348	7.808		10.29	3.38
1.100	3.609	10.178	0.316	8.089		10.27	3.08
1.150	3.773	10.778	0.355	8.125		10.87	3.27
1.200	3.937	11.597	0.400	9.144		11.70	3.42
1.250	4.101	11.460	0.418	8.723		11.55	3.62
1.300	4.265	11.379	0.416	8.898		11.48	3.63
1.350	4.429	11.297	0.430	9.039		11.39	3.77
1.400	4.593	11.651	0.442	9.074		11.75	3.76
1.450	4.757	11.651	0.472	9.004		11.75	4.02
1.500	4.921	11.542	0.486	9.109		11.64	4.18
1.550	5.085	11.788	0.495	9.179		11.89	4.16
1.600	5.249	11.242	0.485	9.179		11.34	4.28
1.650	5.413	11.051	0.481	9.391		11.15	4.31
1.700	5.577	11.433	0.497	9.672		11.54	4.31
1.750	5.741	12.279	0.515	9.567		12.38	4.16
1.800	5.906	12.224	0.553	9.567		12.33	4.49
1.850	6.070	12.333	0.539	9.356		12.43	4.33
1.900	6.234	12.006	0.506	9.531		12.11	4.18

1.950	6.398	11.597	0.478	9.742	11.70	4.08
2.000	6.562	12.006	0.503	9.813	12.11	4.15
2.050	6.726	12.388	0.545	9.883	12.49	4.36
2.100	6.890	12.388	0.520	10.165	12.50	4.16
2.150	7.054	12.634	0.585	10.340	12.75	4.59
2.200	7.218	13.125	0.618	10.727	13.24	4.67
2.250	7.382	13.207	0.556	10.798	13.32	4.17
2.300	7.546	12.770	0.541	10.903	12.89	4.20
2.350	7.710	13.016	0.525	10.868	13.13	4.00
2.400	7.874	12.715	0.527	11.009	12.83	4.11
2.450	8.038	12.333	0.579	10.903	12.45	4.65
2.500	8.202	12.388	0.592	10.903	12.51	4.73
2.550	8.366	13.398	0.554	11.009	13.52	4.10
2.600	8.530	13.070	0.546	11.044	13.19	4.14
2.650	8.694	13.207	0.563	11.044	13.33	4.22
2.700	8.858	13.643	0.579	11.079	13.76	4.21
2.750	9.022	14.407	0.591	11.290	14.53	4.07
2.800	9.186	15.471	0.592	11.466	15.59	3.80
2.850	9.350	16.726	0.577	11.712	16.85	3.42
2.900	9.514	17.081	0.591	12.240	17.21	3.43
2.950	9.678	16.508	0.573	12.275	16.64	3.44
3.000	9.843	15.690	0.579	12.345	15.82	3.66
3.050	10.007	16.072	0.599	12.240	16.20	3.70
3.100	10.171	17.491	0.667	12.521	17.63	3.78
3.150	10.335	17.900	0.725	12.732	18.04	4.02
3.200	10.499	19.782	0.794	16.214	19.96	3.98
3.250	10.663	19.510	0.830	15.651	19.68	4.22
3.300	10.827	22.266	0.898	16.179	22.44	4.00
3.350	10.991	21.611	0.902	16.390	21.79	4.14
3.400	11.155	21.829	0.868	16.952	22.01	3.94
3.450	11.319	22.020	0.868	17.550	22.21	3.91
3.500	11.483	23.330	0.885	18.465	23.53	3.76
3.550	11.647	24.449	0.911	19.766	24.66	3.69
3.600	11.811	24.258	0.990	19.942	24.47	4.05
3.650	11.975	27.750	0.909	20.822	27.97	3.25
3.700	12.139	19.728	0.750	19.872	19.94	3.76
3.750	12.303	17.518	0.522	19.520	17.73	2.94
3.800	12.467	15.117	0.375	17.199	15.30	2.45
3.850	12.631	12.224	0.334	15.827	12.39	2.69
3.900	12.795	11.733	0.251	16.496	11.91	2.11
3.950	12.959	12.388	0.229	17.128	12.57	1.82
4.000	13.123	12.961	0.245	17.973	13.16	1.86
4.050	13.287	12.879	0.270	18.641	13.08	2.06
4.100	13.451	13.070	0.281	19.028	13.28	2.12
4.150	13.615	13.234	0.271	19.836	13.45	2.02
4.200	13.780	13.125	0.293	20.434	13.35	2.20
4.250	13.944	14.107	0.317	20.962	14.33	2.21
4.300	14.108	16.426	0.375	22.369	16.67	2.25
4.350	14.272	18.909	0.481	22.791	19.16	2.51
4.400	14.436	22.948	0.600	30.318	23.28	2.58
4.450	14.600	24.994	0.702	31.690	25.34	2.77

4.500	14.764	27.450	0.821	36.437	27.84	2.95
4.550	14.928	28.187	0.939	38.865	28.61	3.28
4.600	15.092	28.651	0.954	36.965	29.05	3.28
4.650	15.256	24.858	0.802	39.849	25.29	3.17
4.700	15.420	25.076	0.734	45.231	25.56	2.87
4.750	15.584	22.020	0.689	39.146	22.44	3.07
4.800	15.748	21.093	0.713	42.839	21.56	3.31
4.850	15.912	25.731	0.736	48.853	26.26	2.80
4.900	16.076	27.204	0.925	45.371	27.69	3.34
4.950	16.240	28.023	1.165	44.562	28.50	4.09
5.000	16.404	28.542	1.224	42.487	29.00	4.22
5.050	16.568	25.404	1.161	39.779	25.83	4.49
5.100	16.732	23.930	1.105	37.739	24.34	4.54
5.150	16.896	22.730	1.065	35.523	23.11	4.61
5.200	17.060	22.184	0.916	38.865	22.60	4.05
5.250	17.224	23.930	0.859	43.718	24.40	3.52
5.300	17.388	24.994	0.818	46.884	25.50	3.21
5.350	17.552	25.376	0.869	49.768	25.91	3.35
5.400	17.717	24.722	0.769	51.491	25.28	3.04
5.450	17.881	24.749	0.610	57.400	25.37	2.40
5.500	18.045	23.139	0.566	55.430	23.74	2.38
5.550	18.209	19.919	0.515	51.034	20.47	2.52
5.600	18.373	15.717	0.392	43.824	16.19	2.42
5.650	18.537	12.934	0.256	39.181	13.36	1.92
5.700	18.701	12.115	0.173	38.372	12.53	1.38
5.750	18.865	14.435	0.192	38.794	14.85	1.29
5.800	19.029	17.955	0.322	38.337	18.37	1.75
5.850	19.193	29.142	0.441	40.940	29.58	1.49
5.900	19.357	45.104	0.441	31.654	45.45	0.97
5.950	19.521	52.826	0.856	27.997	53.13	1.61
6.000	19.685	54.491	0.725	24.409	54.75	1.32
6.050	19.849	52.035	0.576	25.183	52.31	1.10
6.100	20.013	54.054	0.400	19.801	54.27	0.74
6.150	20.177	53.672	0.350	18.430	53.87	0.65
6.200	20.341	54.382	0.278	17.656	54.57	0.51
6.250	20.505	56.264	0.348	17.128	56.45	0.62
6.300	20.669	59.566	0.497	16.777	59.75	0.83
6.350	20.833	66.224	0.387	16.460	66.40	0.58
6.400	20.997	74.601	0.573	16.038	74.77	0.77
6.450	21.161	83.769	0.587	15.300	83.93	0.70
6.500	21.325	89.281	0.508	14.631	89.44	0.57
6.550	21.490	99.868	0.586	14.948	100.03	0.59
6.600	21.654	97.821	0.543	14.561	97.98	0.55
6.650	21.818	92.228	0.593	14.385	92.38	0.64
6.700	21.982	82.050	0.719	13.506	82.20	0.87
6.750	22.146	74.928	0.872	13.084	75.07	1.16
6.800	22.310	74.137	0.939	12.802	74.28	1.26
6.850	22.474	76.347	0.657	12.802	76.49	0.86
6.900	22.638	81.914	0.611	13.470	82.06	0.74
6.950	22.802	90.836	0.405	13.049	90.98	0.45
7.000	22.966	92.664	0.489	13.154	92.81	0.53

7.050	23.130	81.995	0.610	12.451	82.13	0.74
7.100	23.294	74.956	0.666	12.134	75.09	0.89
7.150	23.458	74.601	0.671	11.536	74.73	0.90
7.200	23.622	71.163	0.643	11.290	71.28	0.90
7.250	23.786	68.789	0.596	11.149	68.91	0.86
7.300	23.950	67.179	0.572	11.009	67.30	0.85
7.350	24.114	62.131	0.515	10.798	62.25	0.83
7.400	24.278	59.784	0.524	10.727	59.90	0.87
7.450	24.442	66.524	0.466	10.692	66.64	0.70
7.500	24.606	77.275	0.423	10.692	77.39	0.55
7.550	24.770	87.971	0.613	10.692	88.09	0.70
7.600	24.934	89.581	1.124	10.727	89.70	1.25
7.650	25.098	79.321	1.377	10.200	79.43	1.73
7.700	25.262	76.920	1.512	12.908	77.06	1.96
7.750	25.427	93.401	1.328	13.611	93.55	1.42
7.800	25.591	108.081	0.942	13.260	108.22	0.87
7.850	25.755	128.764	0.911	14.068	128.92	0.71
7.900	25.919	119.623	1.169	13.013	119.76	0.98
7.950	26.083	106.171	1.185	11.747	106.30	1.11
8.000	26.247	99.186	1.581	11.044	99.31	1.59
8.050	26.411	85.297	1.532	12.697	85.43	1.79
8.100	26.575	91.655	1.327	13.928	91.81	1.45
8.150	26.739	98.967	0.866	11.958	99.10	0.87
8.200	26.903	90.536	0.582	11.536	90.66	0.64
8.250	27.067	81.859	0.736	10.621	81.97	0.90
8.300	27.231	79.076	0.681	10.129	79.19	0.86
8.350	27.395	82.214	0.762	9.777	82.32	0.93
8.400	27.559	91.354	1.136	10.235	91.46	1.24
8.450	27.723	98.203	1.118	10.059	98.31	1.14
8.500	27.887	94.902	1.092	9.707	95.01	1.15
8.550	28.051	88.299	0.773	9.531	88.40	0.87
8.600	28.215	75.583	0.777	9.356	75.68	1.03
8.650	28.379	72.363	0.707	9.320	72.46	0.98
8.700	28.543	74.655	0.674	9.391	74.76	0.90
8.750	28.707	80.631	0.686	9.531	80.73	0.85
8.800	28.871	90.645	0.744	9.777	90.75	0.82
8.850	29.035	103.552	0.833	10.024	103.66	0.80
8.900	29.199	111.819	0.934	10.165	111.93	0.83
8.950	29.364	101.041	0.834	9.988	101.15	0.82
9.000	29.528	93.892	0.816	9.883	94.00	0.87
9.050	29.692	109.145	0.896	10.551	109.26	0.82
9.100	29.856	121.451	0.918	10.692	121.57	0.76
9.150	30.020	112.911	1.099	10.411	113.02	0.97
9.200	30.184	111.710	1.095	10.938	111.83	0.98
9.250	30.348	137.495	1.194	12.943	137.63	0.87
9.300	30.512	137.113	1.280	10.903	137.23	0.93
9.350	30.676	117.358	1.220	10.481	117.47	1.04
9.400	30.840	104.343	1.137	10.200	104.45	1.09
9.450	31.004	90.972	0.972	10.024	91.08	1.07
9.500	31.168	84.233	0.839	10.129	84.34	0.99
9.550	31.332	82.296	0.780	10.235	82.41	0.95

9.600	31.496	84.233	0.771	10.411	84.35	0.91
9.650	31.660	89.090	0.795	10.586	89.20	0.89
9.700	31.824	95.120	0.831	10.798	95.24	0.87
9.750	31.988	106.389	0.913	11.079	106.51	0.86
9.800	32.152	118.286	0.874	11.290	118.41	0.74
9.850	32.316	133.512	0.992	11.642	133.64	0.74
9.900	32.480	157.087	1.198	12.767	157.22	0.76
9.950	32.644	183.009	1.421	12.978	183.15	0.78
10.000	32.808	176.979	1.643	12.591	177.11	0.93
10.050	32.972	164.263	1.801	12.310	164.40	1.10
10.100	33.136	149.147	1.799	11.923	149.28	1.21
10.150	33.301	143.471	1.805	12.591	143.61	1.26
10.200	33.465	160.853	1.671	14.350	161.01	1.04
10.250	33.629	177.770	1.524	15.089	177.93	0.86
10.300	33.793	213.461	1.887	15.757	213.63	0.88
10.350	33.957	303.014	2.476	18.394	303.21	0.82
10.400	34.121	330.109	2.974	18.570	330.31	0.90
10.450	34.285	320.695	3.249	18.254	320.89	1.01
10.500	34.449	270.789	3.155	17.726	270.98	1.16
10.550	34.613	228.550	3.021	17.093	228.73	1.32
10.600	34.777	234.607	1.144	17.410	234.80	0.49
10.650	34.941	313.819	1.897	20.224	314.04	0.60
10.700	35.105	364.435	2.271	14.491	364.59	0.62
10.750	35.269	280.448	2.377	12.767	280.59	0.85
10.800	35.433	257.064	1.242	14.350	257.22	0.48
10.850	35.597	264.813	1.341	16.214	264.99	0.51
10.900	35.761	266.723	1.519	18.148	266.92	0.57
10.950	35.925	267.951	1.847	15.335	268.12	0.69
11.000	36.089	263.531	2.518	15.581	263.70	0.95
11.050	36.253	266.614	2.711	14.526	266.77	1.02
11.100	36.417	251.525	2.846	13.787	251.67	1.13
11.150	36.581	237.718	2.684	13.365	237.86	1.13
11.200	36.745	224.484	2.572	13.119	224.63	1.15
11.250	36.909	220.910	2.094	13.013	221.05	0.95
11.300	37.073	221.237	2.023	13.049	221.38	0.91
11.350	37.238	226.094	2.034	13.787	226.24	0.90
11.400	37.402	242.275	2.226	13.260	242.42	0.92
11.450	37.566	258.237	2.479	13.295	258.38	0.96
11.500	37.730	283.013	1.573	13.611	283.16	0.56
11.550	37.894	292.318	1.944	13.787	292.47	0.66
11.600	38.058	273.490	2.208	13.541	273.64	0.81
11.650	38.222	261.402	2.613	12.415	261.54	1.00
11.700	38.386	247.787	2.559	11.888	247.92	1.03
11.750	38.550	236.981	2.371	11.430	237.10	1.00
11.800	38.714	243.175	2.214	11.501	243.30	0.91
11.850	38.878	256.382	2.213	11.536	256.51	0.86
11.900	39.042	235.317	2.494	11.149	235.44	1.06
11.950	39.206	230.515	2.461	11.009	230.63	1.07
12.000	39.370	228.359	2.004	10.692	228.47	0.88
12.050	39.534	211.332	2.055	10.129	211.44	0.97
12.100	39.698	166.283	1.961	9.602	166.39	1.18

12.150	39.862	154.877	1.590	10.094	154.99	1.03
12.200	40.026	145.327	1.316	10.094	145.44	0.90
12.250	40.190	134.385	1.100	9.953	134.49	0.82
12.300	40.354	118.532	1.458	9.707	118.64	1.23
12.350	40.518	116.458	1.510	9.144	116.56	1.30
12.400	40.682	116.976	0.784	8.828	117.07	0.67
12.450	40.846	127.700	0.971	9.074	127.80	0.76
12.500	41.011	138.696	1.297	8.828	138.79	0.93
12.550	41.175	153.185	1.511	8.758	153.28	0.99
12.600	41.339	179.380	1.843	8.933	179.48	1.03
12.650	41.503	216.599	2.258	9.285	216.70	1.04
12.700	41.667	282.467	1.314	10.235	282.58	0.47
12.750	41.831	352.184	2.139	12.099	352.31	0.61
12.800	41.995	365.472	2.984	16.671	365.65	0.82
12.850	42.159	376.032	2.013	14.385	376.19	0.54
12.900	42.323	360.970	2.392	13.717	361.12	0.66
12.950	42.487	378.788	1.725	14.561	378.95	0.46
13.000	42.651	400.371	1.928	12.626	400.51	0.48
13.050	42.815	376.251	2.264	13.189	376.39	0.60
13.100	42.979	373.358	2.792	11.395	373.48	0.75
13.150	43.143	332.811	3.004	10.868	332.93	0.90
13.200	43.307	265.222	2.666	10.200	265.33	1.00
13.250	43.471	171.249	2.657	9.250	171.35	1.55
13.300	43.635	85.215	2.489	8.969	85.31	2.92
13.350	43.799	44.777	2.094	9.320	44.88	4.67
13.400	43.963	35.991	1.454	11.958	36.12	4.03
13.450	44.127	28.787	1.042	12.662	28.92	3.60
13.500	44.291	27.395	0.647	25.359	27.67	2.34
13.550	44.455	26.850	0.412	55.923	27.45	1.50
13.600	44.619	23.193	0.415	88.667	24.15	1.72
13.650	44.783	22.839	0.528	105.444	23.98	2.20
13.700	44.948	23.493	0.556	98.973	24.56	2.26
13.750	45.112	23.030	0.579	96.546	24.07	2.41
13.800	45.276	23.330	0.571	91.094	24.31	2.35
13.850	45.440	24.230	0.560	104.248	25.36	2.21
13.900	45.604	24.230	0.542	101.329	25.32	2.14
13.950	45.768	23.275	0.507	104.143	24.40	2.08
14.000	45.932	23.412	0.514	118.633	24.69	2.08
14.050	46.096	25.240	0.547	116.242	26.50	2.06
14.100	46.260	26.195	0.633	117.262	27.46	2.31
14.150	46.424	31.161	0.956	125.105	32.51	2.94
14.200	46.588	54.191	1.139	129.748	55.59	2.05
14.250	46.752	51.080	1.377	51.034	51.63	2.67
14.300	46.916	104.425	1.354	142.479	105.96	1.28
14.350	47.080	140.251	1.242	161.015	141.99	0.87
14.400	47.244	155.614	1.258	137.204	157.10	0.80
14.450	47.408	140.006	1.468	20.786	140.23	1.05
14.500	47.572	127.755	2.154	17.691	127.95	1.68
14.550	47.736	81.832	1.942	16.214	82.01	2.37
14.600	47.900	64.614	1.850	32.393	64.96	2.85
14.650	48.064	52.199	1.920	35.875	52.59	3.65

14.700	48.228	33.917	1.339	39.181	34.34	3.90
14.750	48.392	45.896	1.232	84.869	46.81	2.63
14.800	48.556	47.560	1.273	83.110	48.46	2.63
14.850	48.720	35.882	1.265	68.619	36.62	3.45
14.900	48.885	34.080	1.061	70.624	34.84	3.05
14.950	49.049	33.808	0.820	74.950	34.62	2.37
15.000	49.213	29.769	0.677	84.165	30.68	2.21
15.050	49.377	29.878	0.538	94.295	30.90	1.74
15.100	49.541	28.678	0.542	97.249	29.73	1.82
15.150	49.705	28.105	0.571	95.526	29.14	1.96
15.200	49.869	29.087	0.020	100.661	30.17	0.07
15.250	50.033	29.033	0.020	98.304	30.09	0.07

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC
Site:	SOUTH TEXAS PROJ.
Engineer:	M.COOK
Sounding:	C-945
Date:	7/20/2007
Time:	10:06 AM

Units:	Imperial
Data averaging interval:	0.100 meters
Assumed depth of water:	10.003 feet
Net area ratio of cone:	0.85
Unit weight of water:	62.4 lb/ft^3
Relative density constant, C_{DR}:	350
Young's modulus for sands, α:	4
Small strain shear modulus number, S_G (sands):	180
Small strain shear modulus number, C_G (clays):	30
N_{kt} for clays:	15
OCR number, k_{OCR}:	0.3

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	10.506	0.084	2.462		10.53	0.80	6	115	0.019	0.000	0.019	559.32	0.80	0.02
0.200	0.656	42.121	0.339	2.649		42.15	0.80	7	118	0.038	0.000	0.038	>1000	0.80	0.00
0.300	0.984	41.985	0.503	4.220		42.03	1.20	7	118	0.057	0.000	0.057	730.79	1.20	0.01
0.400	1.312	15.190	0.483	4.713		15.24	3.17	5	115	0.076	0.000	0.076	198.92	3.18	0.02
0.500	1.640	9.905	0.472	4.607		9.95	4.74	3	111	0.095	0.000	0.095	104.33	4.79	0.03
0.600	1.969	12.215	0.636	5.850		12.28	5.18	3	111	0.113	0.000	0.113	107.87	5.23	0.03
0.700	2.297	11.933	0.618	6.483		12.00	5.15	3	111	0.131	0.000	0.131	90.59	5.20	0.04
0.800	2.625	10.960	0.457	6.636		11.03	4.15	3	111	0.149	0.000	0.149	72.88	4.20	0.04
0.900	2.953	10.224	0.377	7.339		10.30	3.66	3	111	0.168	0.000	0.168	60.47	3.72	0.05
1.000	3.281	10.196	0.354	7.761		10.28	3.45	4	115	0.186	0.000	0.186	54.15	3.51	0.06
1.100	3.609	10.387	0.340	8.007		10.47	3.24	4	115	0.205	0.000	0.205	50.04	3.31	0.06
1.200	3.937	11.278	0.391	8.664		11.37	3.44	4	115	0.224	0.000	0.224	49.77	3.51	0.06
1.300	4.265	11.379	0.421	8.887		11.47	3.67	4	115	0.243	0.000	0.243	46.26	3.75	0.06
1.400	4.593	11.533	0.448	9.039		11.63	3.85	3	111	0.261	0.000	0.261	43.55	3.94	0.06
1.500	4.921	11.660	0.484	9.097		11.76	4.12	3	111	0.279	0.000	0.279	41.09	4.22	0.06
1.600	5.249	11.360	0.487	9.250		11.46	4.25	3	111	0.298	0.000	0.298	37.51	4.36	0.06
1.700	5.577	11.588	0.498	9.543		11.69	4.26	3	111	0.316	0.000	0.316	36.01	4.38	0.06
1.800	5.906	12.279	0.536	9.497		12.38	4.33	3	111	0.334	0.000	0.334	36.05	4.45	0.06
1.900	6.234	11.979	0.508	9.543		12.08	4.20	3	111	0.352	0.000	0.352	33.28	4.33	0.06
2.000	6.562	11.997	0.509	9.813		12.10	4.20	3	111	0.371	0.000	0.371	31.65	4.34	0.06
2.100	6.890	12.470	0.550	10.129		12.58	4.37	3	111	0.389	0.000	0.389	31.34	4.51	0.06
2.200	7.218	12.989	0.586	10.622		13.10	4.47	3	111	0.407	0.000	0.407	31.17	4.62	0.06
2.300	7.546	12.998	0.541	10.856		13.11	4.12	3	111	0.426	0.000	0.426	29.82	4.26	0.06
2.400	7.874	12.688	0.544	10.927		12.81	4.25	3	111	0.444	0.000	0.444	27.85	4.40	0.06
2.500	8.202	12.706	0.575	10.938		12.82	4.48	3	111	0.462	0.000	0.462	26.75	4.65	0.06
2.600	8.530	13.225	0.554	11.032		13.34	4.15	3	111	0.480	0.000	0.480	26.78	4.31	0.06
2.700	8.858	13.752	0.578	11.138		13.87	4.16	3	111	0.499	0.000	0.499	26.82	4.32	0.06
2.800	9.186	15.535	0.587	11.489		15.66	3.75	4	115	0.517	0.000	0.517	29.26	3.87	0.05
2.900	9.514	16.772	0.580	12.076		16.90	3.43	4	115	0.536	0.000	0.536	30.52	3.55	0.05
3.000	9.843	16.090	0.584	12.287		16.22	3.60	4	115	0.555	0.000	0.555	28.23	3.73	0.06
3.100	10.171	17.154	0.664	12.498		17.29	3.84	4	115	0.574	0.005	0.569	29.40	3.97	0.05

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	7	1.33	74.55	3.00E-2	1.6	12.3	46	49	42	107			
0.200	0.656	7	1.20	209.69	3.00E-2	6.3	33.4	77	51	169	215			
0.300	0.984	6	1.43	170.26	3.00E-4	6.8	29.1	70	50	168	246			
0.400	1.312	8	2.08	75.76	3.00E-6	3.1	11.5	47	44	61				
0.500	1.640	9	2.39	53.74	1.00E-8	2.3	7.7					0.66	6.96	31.3
0.600	1.969	9	2.41	59.18	1.00E-8	2.9	8.7					0.81	7.19	32.4
0.700	2.297	9	2.46	53.20	1.00E-8	2.8	8.1					0.79	6.04	27.2
0.800	2.625	4	2.45	43.95	3.00E-8	2.6	6.9				326	0.73	4.86	21.9
0.900	2.953	4	2.46	37.90	3.00E-8	2.4	6.1				304	0.68	4.03	18.1
1.000	3.281	4	2.48	35.13	3.00E-8	2.5	5.9				303	0.67	3.61	16.2
1.100	3.609	4	2.48	33.35	3.00E-8	2.5	5.7				308	0.68	3.34	15.0
1.200	3.937	4	2.50	34.21	3.00E-8	2.7	6.0				334	0.74	3.32	14.9
1.300	4.265	4	2.54	33.05	3.00E-8	2.8	5.9				337	0.75	3.08	13.9
1.400	4.593	4	2.58	32.08	3.00E-8	2.9	5.9				341	0.76	2.90	13.1
1.500	4.921	4	2.62	31.20	3.00E-8	3.0	5.9				344	0.77	2.74	12.3
1.600	5.249	4	2.66	29.28	3.00E-8	3.0	5.6				335	0.74	2.50	11.3
1.700	5.577	4	2.67	28.58	3.00E-8	3.1	5.6				341	0.76	2.40	10.8
1.800	5.906	4	2.67	28.97	3.00E-8	3.3	5.8				361	0.80	2.40	10.8
1.900	6.234	4	2.69	27.16	3.00E-8	3.2	5.6				352	0.78	2.22	10.0
2.000	6.562	4	2.71	26.21	3.00E-8	3.2	5.5				352	0.78	2.11	9.5
2.100	6.890	4	2.72	26.29	3.00E-8	3.4	5.6				366	0.81	2.09	9.4
2.200	7.218	4	2.73	26.43	3.00E-8	3.6	5.7				381	0.85	2.08	9.4
2.300	7.546	4	2.72	25.41	3.00E-8	3.5	5.6				381	0.85	1.99	8.9
2.400	7.874	4	2.75	24.10	3.00E-8	3.5	5.4				371	0.82	1.86	8.4
2.500	8.202	3	2.78	23.48	1.00E-9	3.6	5.4				371	0.82	1.78	8.0
2.600	8.530	4	2.76	23.52	3.00E-8	3.7	5.5				386	0.86	1.79	8.0
2.700	8.858	4	2.76	23.70	3.00E-8	3.8	5.6				401	0.89	1.79	8.0
2.800	9.186	4	2.70	25.68	3.00E-8	4.2	6.0				454	1.01	1.95	8.8
2.900	9.514	4	2.66	26.75	3.00E-8	4.4	6.2				491	1.09	2.03	9.2
3.000	9.843	4	2.70	25.10	3.00E-8	4.3	6.0				470	1.04	1.88	8.5
3.100	10.171	4	2.70	26.28	3.00E-8	4.6	6.3				501	1.11	1.96	8.8

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	19.064	0.783	14.866		19.22	4.07	4	115	0.593	0.015	0.577	32.28	4.20	0.06
3.300	10.827	21.129	0.877	16.073		21.30	4.12	4	115	0.611	0.026	0.586	35.33	4.24	0.05
3.400	11.155	21.820	0.879	16.964		22.00	4.00	4	115	0.630	0.036	0.594	35.97	4.11	0.06
3.500	11.483	23.266	0.888	18.594		23.47	3.78	4	115	0.649	0.046	0.603	37.85	3.89	0.06
3.600	11.811	25.486	0.937	20.177		25.70	3.64	5	115	0.668	0.056	0.611	40.95	3.74	0.06
3.700	12.139	21.665	0.727	20.071		21.88	3.32	5	115	0.687	0.067	0.620	34.19	3.43	0.07
3.800	12.467	14.953	0.410	17.515		15.14	2.71	5	115	0.705	0.077	0.629	22.97	2.84	0.08
3.900	12.795	12.115	0.271	16.484		12.29	2.21	5	115	0.724	0.087	0.637	18.16	2.35	0.10
4.000	13.123	12.743	0.248	17.914		12.94	1.92	5	115	0.743	0.097	0.646	18.89	2.03	0.10
4.100	13.451	13.061	0.274	19.168		13.27	2.07	5	115	0.762	0.108	0.654	19.12	2.19	0.10
4.200	13.780	13.489	0.294	20.411		13.71	2.14	5	115	0.781	0.118	0.663	19.51	2.27	0.10
4.300	14.108	16.481	0.391	22.041		16.72	2.34	5	115	0.799	0.128	0.671	23.71	2.46	0.09
4.400	14.436	22.284	0.594	28.266		22.59	2.63	5	115	0.818	0.138	0.680	32.02	2.73	0.09
4.500	14.764	26.877	0.821	35.664		27.26	3.01	5	115	0.837	0.149	0.688	38.38	3.11	0.09
4.600	15.092	27.232	0.898	38.560		27.65	3.25	5	115	0.856	0.159	0.697	38.44	3.35	0.10
4.700	15.420	23.985	0.742	41.409		24.43	3.04	5	115	0.875	0.169	0.706	33.39	3.15	0.12
4.800	15.748	22.948	0.713	43.613		23.42	3.04	5	115	0.893	0.179	0.714	31.54	3.16	0.13
4.900	16.076	26.986	0.942	46.262		27.49	3.43	5	115	0.912	0.189	0.723	36.77	3.54	0.12
5.000	16.404	27.323	1.183	42.276		27.78	4.26	4	115	0.931	0.200	0.731	36.72	4.41	0.11
5.100	16.732	24.021	1.110	37.680		24.43	4.55	4	115	0.950	0.210	0.740	31.74	4.73	0.11
5.200	17.060	22.948	0.947	39.369		23.37	4.05	4	115	0.969	0.220	0.748	29.94	4.23	0.12
5.300	17.388	24.767	0.849	46.790		25.27	3.36	5	115	0.987	0.230	0.757	32.08	3.49	0.13
5.400	17.717	24.949	0.749	52.886		25.52	2.94	5	115	1.006	0.241	0.765	32.02	3.06	0.15
5.500	18.045	22.602	0.564	54.621		23.19	2.43	6	115	1.025	0.251	0.774	28.64	2.54	0.17
5.600	18.373	16.190	0.388	44.680		16.67	2.33	5	115	1.044	0.261	0.783	19.97	2.48	0.19
5.700	18.701	13.161	0.207	38.782		13.58	1.52	6	115	1.063	0.271	0.791	15.82	1.65	0.20
5.800	19.029	20.511	0.318	39.357		20.94	1.52	6	115	1.081	0.282	0.800	24.83	1.60	0.13
5.900	19.357	42.357	0.579	33.530		42.72	1.36	7	118	1.101	0.292	0.809	51.46	1.39	0.05
6.000	19.685	53.117	0.719	25.863		53.40	1.35	7	118	1.120	0.302	0.818	63.92	1.38	0.03
6.100	20.013	53.254	0.442	21.138		53.48	0.83	8	121	1.140	0.312	0.827	63.25	0.84	0.02
6.200	20.341	54.773	0.325	17.738		54.96	0.59	8	121	1.160	0.323	0.837	64.27	0.60	0.02
6.300	20.669	60.685	0.411	16.788		60.87	0.67	8	121	1.180	0.333	0.847	70.49	0.69	0.01
6.400	20.997	74.865	0.516	15.933		75.04	0.69	8	121	1.199	0.343	0.856	86.23	0.70	0.01
6.500	21.325	90.973	0.560	14.960		91.13	0.61	8	121	1.219	0.353	0.866	103.84	0.62	0.01
6.600	21.654	96.639	0.574	14.631		96.80	0.59	9	124	1.240	0.364	0.876	109.08	0.60	0.01
6.700	21.982	83.069	0.728	13.658		83.22	0.87	8	121	1.259	0.374	0.886	92.54	0.89	0.01
6.800	22.310	75.137	0.823	12.896		75.28	1.09	8	121	1.279	0.384	0.895	82.66	1.11	0.01
6.900	22.638	83.032	0.558	13.107		83.17	0.67	8	121	1.299	0.394	0.905	90.48	0.68	0.01
7.000	22.966	88.498	0.501	12.885		88.64	0.57	8	121	1.319	0.404	0.914	95.49	0.57	0.01
7.100	23.294	77.184	0.649	12.040		77.31	0.84	8	121	1.339	0.415	0.924	82.22	0.85	0.01
7.200	23.622	71.518	0.637	11.325		71.64	0.89	8	121	1.359	0.425	0.934	75.27	0.91	0.01
7.300	23.950	66.033	0.561	10.985		66.15	0.85	8	121	1.378	0.435	0.943	68.67	0.87	0.01
7.400	24.278	62.813	0.502	10.739		62.93	0.80	8	121	1.398	0.445	0.953	64.57	0.82	0.01
7.500	24.606	77.257	0.501	10.692		77.37	0.65	8	121	1.418	0.456	0.962	78.91	0.66	0.00
7.600	24.934	85.624	1.038	10.540		85.74	1.21	8	121	1.438	0.466	0.972	86.72	1.23	0.00
7.700	25.262	83.214	1.406	12.240		83.35	1.69	7	118	1.457	0.476	0.981	83.46	1.72	0.00
7.800	25.591	110.082	1.060	13.646		110.23	0.96	8	121	1.477	0.486	0.991	109.76	0.97	0.00
7.900	25.919	118.186	1.088	12.943		118.33	0.92	8	121	1.497	0.497	1.000	116.78	0.93	0.00
8.000	26.247	96.885	1.433	11.829		97.01	1.48	8	121	1.517	0.507	1.010	94.55	1.50	0.00
8.100	26.575	91.973	1.242	12.861		92.11	1.35	8	121	1.537	0.517	1.020	88.83	1.37	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	4	2.69	28.87	3.00E-8	5.1	6.9				559	1.24	2.15	9.7
3.300	10.827	4	2.67	31.53	3.00E-8	5.6	7.5				621	1.38	2.36	10.6
3.400	11.155	4	2.65	32.11	3.00E-8	5.7	7.6				641	1.42	2.40	10.8
3.500	11.483	4	2.62	33.70	3.00E-8	6.0	8.0				685	1.52	2.52	11.4
3.600	11.811	4	2.58	36.35	3.00E-8	6.5	8.5				751	1.67	2.73	12.3
3.700	12.139	4	2.61	30.59	3.00E-8	5.6	7.3				636	1.41	2.28	10.3
3.800	12.467	4	2.69	20.87	3.00E-8	4.0	5.2				433	0.96	1.53	6.9
3.900	12.795	4	2.72	16.62	3.00E-8	3.3	4.3				347	0.77	1.21	5.4
4.000	13.123	4	2.67	17.19	3.00E-8	3.4	4.3				366	0.81	1.26	5.7
4.100	13.451	4	2.69	17.48	3.00E-8	3.5	4.4				375	0.83	1.27	5.7
4.200	13.780	4	2.69	17.89	3.00E-8	3.6	4.6				388	0.86	1.30	5.9
4.300	14.108	4	2.64	21.66	3.00E-8	4.3	5.4				478	1.06	1.58	7.1
4.400	14.436	4	2.57	29.04	3.00E-8	5.6	7.0				653	1.45	2.13	9.6
4.500	14.764	4	2.55	34.80	3.00E-8	6.7	8.3				793	1.76	2.56	11.5
4.600	15.092	4	2.57	35.05	3.00E-8	6.9	8.5				804	1.79	2.56	11.5
4.700	15.420	4	2.60	30.63	3.00E-8	6.1	7.5				707	1.57	2.23	10.0
4.800	15.748	4	2.62	29.08	3.00E-8	5.9	7.2				676	1.50	2.10	9.5
4.900	16.076	4	2.60	33.91	3.00E-8	6.9	8.3				797	1.77	2.45	11.0
5.000	16.404	4	2.67	34.20	3.00E-8	7.2	8.7				805	1.79	2.45	11.0
5.100	16.732	4	2.73	29.84	3.00E-8	6.6	7.9				704	1.57	2.12	9.5
5.200	17.060	4	2.72	28.16	3.00E-8	6.2	7.4				672	1.49	2.00	9.0
5.300	17.388	4	2.64	30.00	3.00E-8	6.5	7.6				729	1.62	2.14	9.6
5.400	17.717	4	2.60	29.90	3.00E-8	6.4	7.5				735	1.63	2.13	9.6
5.500	18.045	4	2.59	26.77	3.00E-8	5.7	6.7				665	1.48	1.91	8.6
5.600	18.373	4	2.70	18.91	3.00E-8	4.4	5.1				469	1.04	1.33	6.0
5.700	18.701	4	2.69	14.99	3.00E-8	3.5	4.1				376	0.83	1.05	4.7
5.800	19.029	5	2.52	23.23	3.00E-6	5.0	5.8	26	32	84	469			
5.900	19.357	5	2.23	47.16	3.00E-6	9.1	10.4	37	37	171	597			
6.000	19.685	5	2.15	58.45	3.00E-6	11.1	12.6	41	38	214	646			
6.100	20.013	6	2.02	57.55	3.00E-4	10.6	12.0	41	38	214	649			
6.200	20.341	6	1.94	58.39	3.00E-4	10.5	11.8	41	38	220	657			
6.300	20.669	6	1.94	64.32	3.00E-4	11.7	13.0	43	39	243	683			
6.400	20.997	6	1.87	78.70	3.00E-4	14.0	15.6	47	40	300	735			
6.500	21.325	6	1.77	94.69	3.00E-4	16.5	18.2	52	41	365	787			
6.600	21.654	6	1.75	99.85	3.00E-4	17.3	19.0	53	41	387	806			
6.700	21.982	6	1.90	85.87	3.00E-4	15.8	17.2	50	40	333	769			
6.800	22.310	6	2.00	77.43	3.00E-4	14.8	16.1	47	40	301	746			
6.900	22.638	6	1.84	84.48	3.00E-4	15.4	16.7	49	40	333	774			
7.000	22.966	6	1.78	89.33	3.00E-4	16.1	17.3	51	40	355	794			
7.100	23.294	6	1.94	77.76	3.00E-4	14.8	15.9	47	40	309	761			
7.200	23.622	6	1.98	71.62	3.00E-4	14.0	14.9	45	39	287	745			
7.300	23.950	6	2.00	65.65	3.00E-4	13.0	13.8	43	39	265	728			
7.400	24.278	6	2.01	61.99	3.00E-4	12.4	13.1	42	38	252	718			
7.500	24.606	6	1.89	75.79	3.00E-4	14.6	15.3	47	39	309	772			
7.600	24.934	6	2.02	83.92	3.00E-4	16.9	17.7	49	40	343	801			
7.700	25.262	5	2.12	81.26	3.00E-6	17.2	17.9	48	40	333	796			
7.800	25.591	6	1.87	106.70	3.00E-4	20.6	21.3	55	41	441	877			
7.900	25.919	6	1.84	113.93	3.00E-4	21.9	22.5	57	41	473	901			
8.000	26.247	6	2.05	92.90	3.00E-4	19.4	19.9	52	40	388	846			
8.100	26.575	6	2.04	87.59	3.00E-4	18.4	18.7	50	40	368	834			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_u	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	90.454	0.728	11.372		90.58	0.80	8	121	1.556	0.527	1.029	86.49	0.82	0.00
8.300	27.231	81.050	0.726	10.176		81.16	0.89	8	121	1.576	0.538	1.039	76.61	0.91	0.00
8.400	27.559	90.590	1.005	10.024		90.70	1.11	8	121	1.596	0.548	1.048	84.99	1.13	0.00
8.500	27.887	93.801	0.994	9.766		93.91	1.06	8	121	1.616	0.558	1.058	87.23	1.08	0.00
8.600	28.215	78.748	0.752	9.402		78.85	0.95	8	121	1.636	0.568	1.068	72.32	0.97	0.00
8.700	28.543	75.883	0.689	9.414		75.98	0.91	8	121	1.656	0.578	1.077	69.00	0.93	0.00
8.800	28.871	91.609	0.754	9.777		91.71	0.82	8	121	1.676	0.589	1.087	82.85	0.84	0.00
8.900	29.199	105.471	0.867	10.059		105.58	0.82	8	121	1.695	0.599	1.096	94.75	0.83	0.00
9.000	29.528	101.359	0.849	10.141		101.47	0.84	8	121	1.715	0.609	1.106	90.19	0.85	0.00
9.100	29.856	114.502	0.971	10.551		114.62	0.85	9	124	1.736	0.619	1.116	101.13	0.86	0.00
9.200	30.184	120.705	1.129	11.431		120.83	0.93	8	121	1.755	0.630	1.126	105.77	0.95	0.00
9.300	30.512	130.655	1.231	11.442		130.78	0.94	9	124	1.776	0.640	1.136	113.57	0.95	0.00
9.400	30.840	104.224	1.110	10.235		104.33	1.06	8	121	1.796	0.650	1.146	89.51	1.08	0.00
9.500	31.168	85.834	0.864	10.129		85.94	1.00	8	121	1.815	0.660	1.155	72.83	1.03	0.00
9.600	31.496	85.206	0.782	10.411		85.32	0.92	8	121	1.835	0.671	1.165	71.68	0.94	0.00
9.700	31.824	96.866	0.846	10.821		96.98	0.87	8	121	1.855	0.681	1.174	81.01	0.89	0.00
9.800	32.152	119.396	0.926	11.337		119.52	0.78	9	124	1.876	0.691	1.184	99.32	0.79	0.00
9.900	32.480	157.869	1.204	12.462		158.00	0.76	9	124	1.896	0.701	1.195	130.68	0.77	0.00
10.000	32.808	174.750	1.622	12.626		174.89	0.93	9	124	1.916	0.712	1.205	143.58	0.94	0.00
10.100	33.136	152.294	1.802	12.275		152.43	1.18	8	121	1.936	0.722	1.214	123.93	1.20	0.00
10.200	33.465	160.698	1.667	14.010		160.85	1.04	9	124	1.956	0.732	1.224	129.77	1.05	0.00
10.300	33.793	231.415	1.962	16.413		231.59	0.85	9	124	1.977	0.742	1.235	185.99	0.85	0.00
10.400	34.121	317.939	2.900	18.406		318.14	0.91	9	124	1.997	0.752	1.245	253.99	0.92	0.00
10.500	34.449	273.345	3.142	17.691		273.54	1.15	9	124	2.018	0.763	1.255	216.38	1.16	0.00
10.600	34.777	258.992	2.021	18.242		259.19	0.78	9	124	2.038	0.773	1.265	203.29	0.79	0.00
10.700	35.105	319.567	2.182	15.827		319.74	0.68	10	127	2.059	0.783	1.276	249.04	0.69	0.00
10.800	35.433	267.442	1.653	14.444		267.60	0.62	9	124	2.079	0.793	1.286	206.51	0.62	0.00
10.900	35.761	266.496	1.569	16.566		266.67	0.59	9	124	2.100	0.804	1.296	204.17	0.59	0.00
11.000	36.089	266.032	2.359	15.147		266.20	0.89	9	124	2.120	0.814	1.306	202.21	0.89	0.00
11.100	36.417	251.952	2.747	13.893		252.10	1.09	9	124	2.140	0.824	1.316	189.93	1.10	0.00
11.200	36.745	227.704	2.450	13.166		227.85	1.08	9	124	2.161	0.834	1.326	170.17	1.09	0.00
11.300	37.073	222.747	2.050	13.283		222.89	0.92	9	124	2.181	0.845	1.336	165.16	0.93	0.00
11.400	37.402	242.202	2.246	13.447		242.35	0.93	9	124	2.201	0.855	1.346	178.35	0.94	0.00
11.500	37.730	277.856	1.999	13.564		278.00	0.72	9	124	2.222	0.865	1.357	203.29	0.72	0.00
11.600	38.058	275.737	2.255	13.248		275.88	0.82	9	124	2.242	0.875	1.367	200.21	0.82	0.00
11.700	38.386	248.723	2.514	11.911		248.85	1.01	9	124	2.262	0.886	1.377	179.10	1.02	0.00
11.800	38.714	245.513	2.266	11.489		245.64	0.92	9	124	2.283	0.896	1.387	175.45	0.93	0.00
11.900	39.042	240.738	2.389	11.231		240.86	0.99	9	124	2.303	0.906	1.397	170.75	1.00	0.00
12.000	39.370	223.402	2.173	10.610		223.52	0.97	9	124	2.324	0.916	1.407	157.18	0.98	0.00
12.100	39.698	177.497	1.869	9.942		177.60	1.05	9	124	2.344	0.927	1.417	123.65	1.07	0.00
12.200	40.026	144.863	1.335	10.047		144.97	0.92	9	124	2.364	0.937	1.427	99.90	0.94	0.00
12.300	40.354	123.125	1.356	9.601		123.23	1.10	8	121	2.384	0.947	1.437	84.09	1.12	0.00
12.400	40.682	120.378	1.088	9.015		120.48	0.90	9	124	2.404	0.957	1.447	81.58	0.92	0.00
12.500	41.011	139.860	1.260	8.887		139.96	0.90	9	124	2.425	0.967	1.457	94.37	0.92	0.00
12.600	41.339	183.055	1.871	8.992		183.15	1.02	9	124	2.445	0.978	1.467	123.14	1.04	0.00
12.700	41.667	283.750	1.904	10.540		283.86	0.67	9	124	2.466	0.988	1.478	190.44	0.68	0.00
12.800	41.995	364.563	2.379	14.385		364.72	0.65	10	127	2.486	0.998	1.488	243.39	0.66	0.00
12.900	42.323	371.930	2.043	14.221		372.08	0.55	10	127	2.507	1.008	1.499	246.56	0.55	0.00
13.000	42.651	385.137	1.972	13.459		385.28	0.51	10	127	2.528	1.019	1.510	253.55	0.52	0.00
13.100	42.979	360.807	2.687	11.817		360.93	0.74	10	127	2.549	1.029	1.520	235.75	0.75	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.91	85.49	3.00E-4	17.2	17.4	49	40	362	832			
8.300	27.231	6	1.98	76.05	3.00E-4	15.8	15.9	47	39	325	804			
8.400	27.559	6	2.00	84.68	3.00E-4	17.8	17.9	49	40	363	837			
8.500	27.887	6	1.98	87.23	3.00E-4	18.3	18.3	50	40	376	850			
8.600	28.215	6	2.01	72.58	3.00E-4	15.6	15.5	46	39	315	804			
8.700	28.543	6	2.02	69.48	3.00E-4	15.0	14.9	45	39	304	796			
8.800	28.871	6	1.93	83.77	3.00E-4	17.5	17.3	49	40	367	850			
8.900	29.199	6	1.88	96.20	3.00E-4	19.8	19.5	52	40	422	894			
9.000	29.528	6	1.90	91.89	3.00E-4	19.2	18.8	51	40	406	885			
9.100	29.856	6	1.87	103.50	3.00E-4	21.4	20.9	54	41	458	924			
9.200	30.184	6	1.88	108.62	3.00E-4	22.7	22.0	56	41	483	943			
9.300	30.512	6	1.85	117.13	3.00E-4	24.3	23.5	58	41	523	971			
9.400	30.840	6	1.97	92.41	3.00E-4	20.3	19.5	51	40	417	903			
9.500	31.168	6	2.03	75.33	3.00E-4	17.0	16.3	46	39	344	849			
9.600	31.496	6	2.01	74.41	3.00E-4	16.8	16.0	46	39	341	850			
9.700	31.824	6	1.95	84.51	3.00E-4	18.7	17.8	49	39	388	889			
9.800	32.152	6	1.85	104.35	3.00E-4	22.2	21.0	55	41	478	956			
9.900	32.480	6	1.75	138.30	3.00E-4	28.3	26.7	63	42	632	1052			
10.000	32.808	6	1.77	152.41	3.00E-4	31.6	29.6	66	42	700	1091			
10.100	33.136	6	1.89	131.39	3.00E-4	28.8	26.9	61	42	610	1045			
10.200	33.465	6	1.84	138.39	3.00E-4	29.8	27.7	63	42	643	1067			
10.300	33.793	6	1.66	200.68	3.00E-4	40.3	37.3	76	44	926	1208			
10.400	34.121	6	1.59	275.48	3.00E-4	54.1	49.8	89	45	1273	1347			
10.500	34.449	6	1.71	234.76	3.00E-4	48.4	44.5	82	44	1094	1284			
10.600	34.777	6	1.61	222.27	3.00E-4	44.3	40.5	80	44	1037	1265			
10.700	35.105	6	1.51	273.44	3.00E-4	52.8	48.1	88	45	1279	1360			
10.800	35.433	6	1.54	227.65	3.00E-4	44.7	40.5	81	44	1070	1285			
10.900	35.761	6	1.53	225.95	3.00E-4	44.4	40.1	80	44	1067	1287			
11.000	36.089	6	1.65	224.49	3.00E-4	46.1	41.5	80	44	1065	1290			
11.100	36.417	6	1.73	210.51	3.00E-4	45.0	40.3	78	44	1008	1270			
11.200	36.745	6	1.76	188.92	3.00E-4	41.1	36.7	73	43	911	1231			
11.300	37.073	6	1.73	184.49	3.00E-4	39.6	35.3	73	43	892	1225			
11.400	37.402	6	1.70	200.26	3.00E-4	42.8	37.9	76	44	969	1263			
11.500	37.730	6	1.59	230.18	3.00E-4	47.2	41.6	81	44	1112	1325			
11.600	38.058	6	1.63	227.55	3.00E-4	47.5	41.8	81	44	1104	1325			
11.700	38.386	6	1.73	202.86	3.00E-4	44.3	38.8	76	44	995	1283			
11.800	38.714	6	1.71	199.78	3.00E-4	43.4	37.9	76	43	983	1281			
11.900	39.042	6	1.74	194.60	3.00E-4	43.0	37.4	75	43	963	1276			
12.000	39.370	6	1.76	179.44	3.00E-4	40.2	34.9	72	43	894	1247			
12.100	39.698	6	1.86	140.39	3.00E-4	33.1	28.6	63	42	710	1158			
12.200	40.026	6	1.89	113.43	3.00E-4	27.4	23.6	57	41	580	1085			
12.300	40.354	6	2.00	94.81	3.00E-4	24.2	20.8	52	40	493	1030			
12.400	40.682	6	1.96	92.61	3.00E-4	23.3	19.9	51	40	482	1025			
12.500	41.011	6	1.91	107.96	3.00E-4	26.6	22.6	56	40	560	1080			
12.600	41.339	6	1.85	142.04	3.00E-4	34.1	28.9	64	42	733	1184			
12.700	41.667	6	1.59	225.05	3.00E-4	48.2	40.8	80	44	1135	1373			
12.800	41.995	6	1.50	288.66	3.00E-4	60.2	50.7	91	45	1459	1496			
12.900	42.323	6	1.45	293.46	3.00E-4	60.3	50.7	92	45	1488	1510			
13.000	42.651	6	1.42	302.85	3.00E-4	61.9	51.8	93	45	1541	1531			
13.100	42.979	6	1.55	282.58	3.00E-4	60.5	50.5	90	45	1444	1502			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	256.427	2.776	10.106		256.54	1.08	9	124	2.569	1.039	1.530	165.95	1.09	0.00
13.300	43.635	100.414	2.413	9.180		100.51	2.40	7	118	2.589	1.049	1.539	63.61	2.46	0.00
13.400	43.963	36.518	1.530	11.313		36.64	4.18	4	115	2.608	1.060	1.548	21.99	4.50	-0.01
13.500	44.291	27.677	0.700	31.315		28.02	2.50	6	115	2.626	1.070	1.557	16.31	2.76	0.05
13.600	44.619	24.294	0.452	83.345		25.19	1.79	6	115	2.645	1.080	1.565	14.41	2.00	0.22
13.700	44.948	23.121	0.554	100.321		24.20	2.29	6	115	2.664	1.090	1.574	13.69	2.57	0.28
13.800	45.276	23.530	0.570	97.296		24.58	2.32	6	115	2.683	1.101	1.582	13.84	2.60	0.27
13.900	45.604	23.912	0.536	103.240		25.03	2.14	6	115	2.702	1.111	1.591	14.03	2.40	0.28
14.000	45.932	23.976	0.523	113.006		25.20	2.07	6	115	2.720	1.121	1.599	14.05	2.33	0.31
14.100	46.260	27.532	0.712	119.536		28.82	2.47	6	115	2.739	1.131	1.608	16.22	2.73	0.29
14.200	46.588	45.477	1.157	101.962		46.58	2.48	6	115	2.758	1.141	1.616	27.11	2.64	0.14
14.300	46.916	98.585	1.324	118.176		99.86	1.33	8	121	2.778	1.152	1.626	59.70	1.36	0.08
14.400	47.244	145.290	1.323	106.335		146.44	0.90	9	124	2.798	1.162	1.636	87.79	0.92	0.05
14.500	47.572	116.531	1.855	18.230		116.73	1.59	8	121	2.818	1.172	1.646	69.21	1.63	0.00
14.600	47.900	66.215	1.904	28.161		66.52	2.86	6	115	2.837	1.182	1.654	38.49	2.99	0.01
14.700	48.228	44.004	1.497	53.308		44.58	3.36	5	115	2.856	1.193	1.663	25.09	3.59	0.06
14.800	48.556	43.113	1.257	78.866		43.96	2.86	6	115	2.874	1.203	1.671	24.58	3.06	0.11
14.900	48.885	34.590	1.049	71.398		35.36	2.97	6	115	2.893	1.213	1.680	19.33	3.23	0.12
15.000	49.213	31.152	0.678	84.470		32.06	2.12	6	115	2.912	1.223	1.689	17.26	2.33	0.17
15.100	49.541	28.887	0.550	95.690		29.92	1.84	6	115	2.931	1.234	1.697	15.90	2.04	0.21
15.200	49.869	28.742	0.204	98.164		29.80	0.68	7	118	2.950	1.244	1.706	15.74	0.76	0.22

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	6	1.77	196.65	3.00E-4	46.4	38.6	75	43	1026	1343			
13.300	43.635	5	2.32	71.09	3.00E-6	22.5	18.7	45	38	402	985			
13.400	43.963	3	2.83	23.20	1.00E-9	10.6	8.7				1021	2.27	1.47	6.6
13.500	44.291	4	2.80	17.29	3.00E-8	7.9	6.5				762	1.69	1.09	4.9
13.600	44.619	4	2.77	15.35	3.00E-8	6.8	5.6				676	1.50	0.96	4.3
13.700	44.948	4	2.85	14.46	3.00E-8	6.7	5.5				646	1.44	0.91	4.1
13.800	45.276	4	2.85	14.63	3.00E-8	6.9	5.6				657	1.46	0.92	4.2
13.900	45.604	4	2.82	14.89	3.00E-8	6.9	5.6				670	1.49	0.94	4.2
14.000	45.932	4	2.81	14.94	3.00E-8	6.9	5.6				674	1.50	0.94	4.2
14.100	46.260	4	2.80	17.28	3.00E-8	7.8	6.4				783	1.74	1.08	4.9
14.200	46.588	4	2.62	29.60	3.00E-8	11.7	9.5				1315	2.92	1.81	8.1
14.300	46.916	5	2.17	69.13	3.00E-6	20.7	16.7	44	38	399	1001			
14.400	47.244	6	1.93	105.08	3.00E-4	27.9	22.4	55	40	586	1139			
14.500	47.572	5	2.17	80.47	3.00E-6	24.5	19.7	48	39	467	1058			
14.600	47.900	4	2.54	42.69	3.00E-8	16.4	13.1				1910	4.25	2.57	11.5
14.700	48.228	4	2.73	27.14	3.00E-8	12.0	9.6				1252	2.78	1.67	7.5
14.800	48.556	4	2.69	26.76	3.00E-8	11.5	9.2				1233	2.74	1.64	7.4
14.900	48.885	4	2.79	20.77	3.00E-8	9.8	7.7				974	2.16	1.29	5.8
15.000	49.213	4	2.74	18.69	3.00E-8	8.6	6.8				875	1.94	1.15	5.2
15.100	49.541	4	2.74	17.24	3.00E-8	7.9	6.3				810	1.80	1.06	4.8
15.200	49.869	5	2.53	17.60	3.00E-6	7.1	5.6	22	30	119	680			

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-946
Site:	SOUTH TEXAS PROJ.	Date:	7/20/2007
Engineer:	M.COOK	Time:	8:49 AM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	2.000	0.020	19.977		2.22	0.90
0.100	0.328	143.853	0.739	23.178		144.10	0.51
0.150	0.492	300.285	0.641	18.254		300.48	0.21
0.200	0.656	338.322	2.350	6.401		338.39	0.69
0.250	0.820	293.900	2.087	10.692		294.02	0.71
0.300	0.984	173.895	2.733	10.270		174.01	1.57
0.350	1.148	123.852	0.848	-0.316		123.85	0.68
0.400	1.312	51.707	0.978	6.613		51.78	1.89
0.450	1.476	29.578	0.789	22.369		29.82	2.65
0.500	1.640	17.954	0.556	25.254		18.23	3.05
0.550	1.804	12.061	0.419	5.311		12.12	3.46
0.600	1.969	10.833	0.346	4.748		10.88	3.18
0.650	2.133	10.287	0.292	4.994		10.34	2.82
0.700	2.297	11.570	0.333	5.804		11.63	2.86
0.750	2.461	13.588	0.422	6.226		13.66	3.09
0.800	2.625	15.826	0.533	7.140		15.90	3.35
0.850	2.789	19.373	0.619	8.019		19.46	3.18
0.900	2.953	24.585	0.687	11.114		24.71	2.78
0.950	3.117	23.030	0.771	13.260		23.17	3.33
1.000	3.281	21.993	0.823	14.456		22.15	3.72
1.050	3.445	21.474	0.832	14.878		21.63	3.85
1.100	3.609	20.683	0.925	14.421		20.84	4.44
1.150	3.773	20.219	0.939	13.506		20.36	4.61
1.200	3.937	20.137	0.985	12.592		20.27	4.86
1.250	4.101	19.482	0.978	11.431		19.61	4.99
1.300	4.265	18.255	0.923	10.727		18.37	5.02
1.350	4.429	16.645	0.894	10.024		16.75	5.34
1.400	4.593	15.635	0.843	9.004		15.73	5.36
1.450	4.757	15.335	0.872	8.230		15.42	5.65
1.500	4.921	14.789	0.830	6.859		14.86	5.58
1.550	5.085	14.707	0.780	6.683		14.78	5.28
1.600	5.249	14.216	0.746	6.648		14.29	5.22
1.650	5.413	14.216	0.721	6.542		14.29	5.05
1.700	5.577	14.025	0.717	6.507		14.10	5.09
1.750	5.741	14.134	0.726	6.436		14.20	5.11
1.800	5.906	14.353	0.749	6.472		14.42	5.19
1.850	6.070	14.516	0.753	6.542		14.59	5.16
1.900	6.234	14.544	0.744	6.542		14.61	5.09

1.950	6.398	14.134	0.751	6.577	14.21	5.29
2.000	6.562	14.107	0.725	6.507	14.18	5.11
2.050	6.726	13.998	0.651	6.613	14.07	4.63
2.100	6.890	14.189	0.659	6.718	14.26	4.62
2.150	7.054	14.871	0.684	6.683	14.94	4.58
2.200	7.218	14.953	0.705	6.542	15.02	4.69
2.250	7.382	15.335	0.656	6.401	15.40	4.26
2.300	7.546	14.817	0.633	6.542	14.89	4.25
2.350	7.710	14.080	0.589	6.577	14.15	4.16
2.400	7.874	13.397	0.558	6.472	13.47	4.14
2.450	8.038	12.579	0.576	6.753	12.65	4.55
2.500	8.202	12.443	0.549	6.120	12.51	4.39
2.550	8.366	12.279	0.538	6.577	12.35	4.36
2.600	8.530	12.224	0.535	6.753	12.30	4.35
2.650	8.694	11.842	0.539	6.718	11.91	4.52
2.700	8.858	10.860	0.525	6.366	10.93	4.80
2.750	9.022	9.686	0.541	6.226	9.75	5.55
2.800	9.186	9.577	0.518	6.226	9.64	5.37
2.850	9.350	9.523	0.494	6.436	9.59	5.15
2.900	9.514	12.906	0.457	7.281	12.98	3.52
2.950	9.678	16.235	0.482	8.371	16.33	2.95
3.000	9.843	17.518	0.508	9.215	17.62	2.88
3.050	10.007	16.563	0.563	9.813	16.67	3.38
3.100	10.171	16.344	0.448	9.954	16.45	2.72
3.150	10.335	16.126	0.529	10.516	16.24	3.26
3.200	10.499	15.499	0.437	26.203	15.78	2.77
3.250	10.663	13.970	0.363	22.510	14.21	2.55
3.300	10.827	12.006	0.284	20.083	12.22	2.32
3.350	10.991	10.532	0.199	18.289	10.73	1.85
3.400	11.155	10.396	0.134	17.727	10.59	1.27
3.450	11.319	10.614	0.081	17.199	10.80	0.75
3.500	11.483	11.488	0.096	17.199	11.67	0.82
3.550	11.647	11.106	0.106	16.637	11.29	0.94
3.600	11.811	10.860	0.109	16.812	11.04	0.99
3.650	11.975	11.187	0.109	18.395	11.39	0.96
3.700	12.139	10.778	0.086	19.344	10.99	0.78
3.750	12.303	9.004	0.033	14.034	9.16	0.36
3.800	12.467	8.868	0.050	9.285	8.97	0.56
3.850	12.631	10.068	0.083	6.823	10.14	0.82
3.900	12.795	10.723	0.115	6.929	10.80	1.07
3.950	12.959	9.805	0.106	6.155	9.87	1.07
4.000	13.123	9.741	0.120	6.120	9.81	1.22
4.050	13.287	11.897	0.095	6.929	11.97	0.79
4.100	13.451	12.497	0.160	7.808	12.58	1.27
4.150	13.615	13.397	0.179	11.360	13.52	1.32
4.200	13.780	15.035	0.237	13.611	15.18	1.56
4.250	13.944	28.432	0.553	40.940	28.87	1.92
4.300	14.108	28.350	0.301	24.093	28.61	1.05
4.350	14.272	18.664	0.546	19.239	18.87	2.89
4.400	14.436	7.176	0.375	31.760	7.52	4.99
4.450	14.600	27.695	0.500	47.869	28.21	1.77

4.500	14.764	29.769	0.641	28.348	30.08	2.13
4.550	14.928	21.720	0.621	19.696	21.93	2.83
4.600	15.092	16.399	0.392	15.194	16.56	2.37
4.650	15.256	14.325	0.299	19.169	14.53	2.06
4.700	15.420	15.280	0.235	20.681	15.50	1.52
4.750	15.584	20.055	0.335	23.917	20.31	1.65
4.800	15.748	20.492	0.286	10.587	20.61	1.39
4.850	15.912	15.008	0.343	16.742	15.19	2.26
4.900	16.076	14.544	0.323	18.430	14.74	2.19
4.950	16.240	22.675	0.505	23.987	22.93	2.20
5.000	16.404	29.824	0.612	20.435	30.04	2.04
5.050	16.568	28.651	0.825	23.741	28.91	2.85
5.100	16.732	28.569	0.797	32.006	28.91	2.76
5.150	16.896	24.557	0.861	23.706	24.81	3.47
5.200	17.060	23.821	0.864	27.961	24.12	3.58
5.250	17.224	23.057	0.790	32.604	23.41	3.37
5.300	17.388	21.474	0.664	39.111	21.90	3.03
5.350	17.552	20.574	0.516	48.677	21.10	2.45
5.400	17.717	19.919	0.535	25.324	20.19	2.65
5.450	17.881	16.590	0.540	16.249	16.77	3.22
5.500	18.045	14.817	0.447	23.565	15.07	2.97
5.550	18.209	13.752	0.310	21.877	13.99	2.22
5.600	18.373	12.443	0.228	22.651	12.69	1.80
5.650	18.537	11.297	0.191	22.932	11.54	1.65
5.700	18.701	11.542	0.138	29.263	11.86	1.16
5.750	18.865	12.470	0.158	34.679	12.84	1.23
5.800	19.029	11.078	0.181	26.308	11.36	1.59
5.850	19.193	11.624	0.225	29.861	11.95	1.88
5.900	19.357	18.582	0.292	29.298	18.90	1.55
5.950	19.521	25.185	0.433	30.248	25.51	1.70
6.000	19.685	34.790	0.508	29.580	35.11	1.45
6.050	19.849	46.305	0.372	15.265	46.47	0.80
6.100	20.013	50.289	0.292	13.893	50.44	0.58
6.150	20.177	49.961	0.237	12.521	50.10	0.47
6.200	20.341	48.051	0.328	10.059	48.16	0.68
6.250	20.505	47.233	0.361	9.532	47.34	0.76
6.300	20.669	49.361	0.424	8.969	49.46	0.86
6.350	20.833	50.698	0.725	8.617	50.79	1.43
6.400	20.997	56.864	0.847	8.793	56.96	1.49
6.450	21.161	67.206	0.862	10.516	67.32	1.28
6.500	21.325	69.716	1.086	9.918	69.82	1.56
6.550	21.490	60.275	1.208	8.090	60.36	2.00
6.600	21.654	52.280	1.239	8.582	52.37	2.37
6.650	21.818	56.182	1.173	8.301	56.27	2.08
6.700	21.982	61.121	1.127	8.723	61.22	1.84
6.750	22.146	63.277	1.144	8.934	63.37	1.81
6.800	22.310	56.837	0.910	9.532	56.94	1.60
6.850	22.474	38.883	1.065	9.637	38.99	2.73
6.900	22.638	31.461	0.913	11.466	31.58	2.89
6.950	22.802	41.339	1.326	17.305	41.53	3.19
7.000	22.966	45.704	1.814	13.119	45.85	3.96

7.050	23.130	48.488	1.710	12.802	48.63	3.52
7.100	23.294	103.360	1.696	19.239	103.57	1.64
7.150	23.458	96.512	2.299	22.651	96.76	2.38
7.200	23.622	87.671	2.353	21.279	87.90	2.68
7.250	23.786	71.053	2.219	21.561	71.29	3.11
7.300	23.950	85.433	1.824	21.701	85.67	2.13
7.350	24.114	62.731	1.644	15.300	62.90	2.61
7.400	24.278	32.935	1.414	18.430	33.13	4.27
7.450	24.442	55.500	1.308	35.172	55.88	2.34
7.500	24.606	97.903	1.056	30.248	98.23	1.08
7.550	24.770	107.754	0.713	23.038	108.00	0.66
7.600	24.934	107.481	0.815	18.923	107.69	0.76
7.650	25.098	111.601	0.893	17.621	111.79	0.80
7.700	25.262	125.762	0.679	16.601	125.94	0.54
7.750	25.427	132.884	0.818	16.847	133.07	0.61
7.800	25.591	131.192	1.084	14.983	131.35	0.83
7.850	25.755	120.605	1.250	12.627	120.74	1.04
7.900	25.919	113.183	1.154	11.466	113.31	1.02
7.950	26.083	108.436	0.910	10.939	108.55	0.84
8.000	26.247	104.779	0.888	10.270	104.89	0.85
8.050	26.411	110.045	0.977	10.727	110.16	0.89
8.100	26.575	112.010	1.079	10.516	112.12	0.96
8.150	26.739	105.925	1.141	9.778	106.03	1.08
8.200	26.903	97.112	1.131	9.285	97.21	1.16
8.250	27.067	89.854	0.914	8.969	89.95	1.02
8.300	27.231	87.589	0.827	8.758	87.68	0.94
8.350	27.395	82.077	0.821	8.828	82.17	1.00
8.400	27.559	79.594	0.880	8.582	79.69	1.10
8.450	27.723	83.823	0.977	8.899	83.92	1.16
8.500	27.887	100.031	1.131	9.883	100.14	1.13
8.550	28.051	132.229	1.414	11.466	132.35	1.07
8.600	28.215	173.868	1.692	14.139	174.02	0.97
8.650	28.379	216.707	2.004	17.270	216.89	0.92
8.700	28.543	234.198	1.989	19.028	234.40	0.85
8.750	28.707	237.963	2.185	20.119	238.18	0.92
8.800	28.871	245.222	2.132	20.540	245.44	0.87
8.850	29.035	247.595	2.209	19.239	247.80	0.89
8.900	29.199	243.257	2.220	17.234	243.44	0.91
8.950	29.364	231.524	1.842	15.370	231.69	0.80
9.000	29.528	220.528	2.102	13.858	220.68	0.95
9.050	29.692	184.346	2.235	15.476	184.51	1.21
9.100	29.856	154.686	2.103	12.838	154.82	1.36
9.150	30.020	132.475	1.804	11.501	132.60	1.36
9.200	30.184	122.652	1.603	10.692	122.77	1.31
9.250	30.348	114.930	1.418	10.095	115.04	1.23
9.300	30.512	118.941	1.349	10.552	119.05	1.13
9.350	30.676	126.090	1.223	10.974	126.21	0.97
9.400	30.840	127.317	1.074	9.954	127.42	0.84
9.450	31.004	126.717	1.127	9.145	126.82	0.89
9.500	31.168	130.319	1.301	9.145	130.42	1.00
9.550	31.332	127.508	1.409	8.758	127.60	1.10

9.600	31.496	126.172	1.421	8.793	126.27	1.13
9.650	31.660	131.192	1.439	9.074	131.29	1.10
9.700	31.824	139.024	1.491	9.462	139.13	1.07
9.750	31.988	142.134	1.594	9.743	142.24	1.12
9.800	32.152	140.115	1.602	9.743	140.22	1.14
9.850	32.316	126.608	1.608	9.356	126.71	1.27
9.900	32.480	122.706	1.292	9.250	122.81	1.05
9.950	32.644	87.016	1.298	11.572	87.14	1.49
10.000	32.808	136.704	1.355	10.341	136.82	0.99
10.050	32.972	143.771	1.472	10.481	143.88	1.02
10.100	33.136	143.144	1.535	10.587	143.26	1.07
10.150	33.301	143.062	1.459	10.692	143.18	1.02
10.200	33.465	156.814	1.475	11.431	156.94	0.94
10.250	33.629	156.050	1.524	11.396	156.17	0.98
10.300	33.793	129.883	1.488	10.130	129.99	1.14
10.350	33.957	124.152	1.334	10.270	124.26	1.07
10.400	34.121	135.504	1.326	11.009	135.62	0.98
10.450	34.285	150.238	1.400	11.748	150.36	0.93
10.500	34.449	149.829	1.559	11.537	149.95	1.04
10.550	34.613	138.014	1.522	11.044	138.13	1.10
10.600	34.777	130.237	1.308	10.868	130.35	1.00
10.650	34.941	90.699	1.254	12.275	90.83	1.38
10.700	35.105	121.260	1.181	10.587	121.37	0.97
10.750	35.269	124.180	1.213	10.727	124.30	0.98
10.800	35.433	124.971	1.252	11.009	125.09	1.00
10.850	35.597	132.775	1.316	11.501	132.90	0.99
10.900	35.761	137.441	1.381	11.748	137.57	1.00
10.950	35.925	140.852	1.409	12.064	140.98	1.00
11.000	36.089	137.632	1.396	11.923	137.76	1.01
11.050	36.253	134.466	1.345	11.818	134.59	1.00
11.100	36.417	136.868	1.323	12.134	137.00	0.97
11.150	36.581	143.689	1.163	12.592	143.82	0.81
11.200	36.745	164.618	1.354	13.752	164.77	0.82
11.250	36.909	208.112	1.645	15.265	208.28	0.79
11.300	37.073	205.957	1.803	15.159	206.12	0.87
11.350	37.238	201.263	1.852	15.018	201.43	0.92
11.400	37.402	192.696	1.820	14.456	192.85	0.94
11.450	37.566	174.632	1.739	13.506	174.78	0.99
11.500	37.730	167.374	1.621	13.471	167.52	0.97
11.550	37.894	166.446	1.532	13.717	166.59	0.92
11.600	38.058	173.322	1.545	14.209	173.48	0.89
11.650	38.222	185.356	1.617	14.948	185.52	0.87
11.700	38.386	177.661	1.682	14.667	177.82	0.95
11.750	38.550	163.991	1.624	13.963	164.14	0.99
11.800	38.714	161.971	1.385	14.104	162.12	0.85
11.850	38.878	172.285	1.496	15.053	172.45	0.87
11.900	39.042	190.431	1.634	17.129	190.62	0.86
11.950	39.206	202.573	1.732	17.691	202.76	0.85
12.000	39.370	218.890	1.881	18.676	219.09	0.86
12.050	39.534	204.674	1.878	16.988	204.86	0.92
12.100	39.698	159.761	1.651	13.998	159.91	1.03

12.150	39.862	140.088	1.325	12.943	140.23	0.94
12.200	40.026	142.271	1.103	13.365	142.42	0.77
12.250	40.190	164.318	1.097	14.983	164.48	0.67
12.300	40.354	184.510	1.337	16.672	184.69	0.72
12.350	40.518	219.736	1.645	18.535	219.94	0.75
12.400	40.682	214.470	1.839	17.938	214.66	0.86
12.450	40.846	191.468	1.755	15.968	191.64	0.92
12.500	41.011	166.528	1.495	14.526	166.68	0.90
12.550	41.175	149.529	1.252	13.893	149.68	0.84
12.600	41.339	134.739	1.081	13.330	134.88	0.80
12.650	41.503	116.949	0.975	12.697	117.09	0.83
12.700	41.667	102.296	0.933	12.134	102.43	0.91
12.750	41.831	94.765	0.939	12.029	94.89	0.99
12.800	41.995	103.060	0.911	13.049	103.20	0.88
12.850	42.159	126.717	0.998	14.807	126.88	0.79
12.900	42.323	151.930	1.008	15.863	152.10	0.66
12.950	42.487	160.934	1.229	15.405	161.10	0.76
13.000	42.651	175.287	1.393	17.621	175.48	0.79
13.050	42.815	195.015	1.542	18.360	195.21	0.79
13.100	42.979	211.332	1.727	19.344	211.54	0.82
13.150	43.143	231.142	1.948	20.435	231.36	0.84
13.200	43.307	235.535	2.093	20.329	235.75	0.89
13.250	43.471	218.481	2.081	18.782	218.68	0.95
13.300	43.635	211.550	1.977	18.008	211.74	0.93
13.350	43.799	219.572	1.871	18.465	219.77	0.85
13.400	43.963	218.890	1.773	18.465	219.09	0.81
13.450	44.127	199.599	2.148	17.481	199.79	1.08
13.500	44.291	146.473	2.493	14.421	146.63	1.70
13.550	44.455	95.229	2.135	14.174	95.38	2.24
13.600	44.619	99.786	2.095	28.946	100.10	2.09
13.650	44.783	75.965	2.060	18.254	76.16	2.70
13.700	44.948	45.159	1.469	17.305	45.35	3.24
13.750	45.112	33.426	1.288	22.299	33.67	3.83
13.800	45.276	31.952	0.574	40.518	32.39	1.77
13.850	45.440	26.822	0.419	69.218	27.57	1.52
13.900	45.604	26.495	0.474	76.533	27.32	1.73
13.950	45.768	25.949	0.661	78.187	26.79	2.47
14.000	45.932	26.795	0.608	85.678	27.72	2.19
14.050	46.096	27.095	0.735	89.723	28.06	2.62
14.100	46.260	27.832	0.951	85.467	28.76	3.31
14.150	46.424	28.350	0.861	95.842	29.39	2.93
14.200	46.588	26.168	0.836	98.902	27.24	3.07
14.250	46.752	25.922	0.831	97.988	26.98	3.08
14.300	46.916	26.222	0.908	101.154	27.31	3.32
14.350	47.080	26.631	0.927	103.264	27.75	3.34
14.400	47.244	25.513	0.890	90.250	26.49	3.36
14.450	47.408	25.485	0.916	101.435	26.58	3.45
14.500	47.572	26.577	0.918	107.344	27.74	3.31
14.550	47.736	27.559	0.933	106.218	28.71	3.25
14.600	47.900	27.532	0.940	107.484	28.69	3.28
14.650	48.064	27.941	0.971	109.454	29.12	3.33

14.700	48.228	28.923	1.026	117.227	30.19	3.40
14.750	48.392	31.543	0.983	131.225	32.96	2.98
14.800	48.556	39.647	0.961	177.335	41.56	2.31
14.850	48.720	41.802	0.928	175.893	43.70	2.12
14.900	48.885	43.194	0.889	177.405	45.11	1.97
14.950	49.049	45.541	0.807	172.939	47.41	1.70
15.000	49.213	46.468	0.780	180.641	48.42	1.61
15.050	49.377	43.876	0.943	157.780	45.58	2.07
15.100	49.541	42.375	0.901	167.487	44.18	2.04
15.150	49.705	98.394	1.266	231.429	100.89	1.25
15.200	49.869	129.064	0.020	45.828	129.56	0.02
15.250	50.033	124.453	0.020	30.916	124.79	0.02

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC
Site:	SOUTH TEXAS PROJ.
Engineer:	M.COOK
Sounding:	C-946
Date:	7/20/2007
Time:	8:49 AM

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{ocr}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	148.713	0.467	20.470		148.93	0.31	9	124	0.020	0.000	0.020	>1000	0.31	0.01
0.200	0.656	310.836	1.693	11.782		310.96	0.54	10	127	0.041	0.000	0.041	>1000	0.54	0.00
0.300	0.984	197.216	1.889	6.882		197.29	0.96	9	124	0.062	0.000	0.062	>1000	0.96	0.00
0.400	1.312	68.379	0.872	9.555		68.48	1.27	7	118	0.081	0.000	0.081	845.18	1.27	0.01
0.500	1.640	19.864	0.588	17.645		20.05	2.93	5	115	0.100	0.000	0.100	200.10	2.95	0.06
0.600	1.969	11.060	0.352	5.018		11.11	3.17	4	115	0.119	0.000	0.119	92.77	3.20	0.03
0.700	2.297	11.815	0.349	5.675		11.88	2.94	4	115	0.137	0.000	0.137	85.48	2.97	0.03
0.800	2.625	16.262	0.525	7.128		16.34	3.21	5	115	0.156	0.000	0.156	103.66	3.24	0.03
0.900	2.953	22.329	0.692	10.798		22.45	3.08	5	115	0.175	0.000	0.175	127.32	3.11	0.03
1.000	3.281	22.166	0.809	14.198		22.32	3.62	5	115	0.194	0.000	0.194	114.22	3.65	0.05
1.100	3.609	20.792	0.899	14.268		20.95	4.29	4	115	0.213	0.000	0.213	97.57	4.33	0.05
1.200	3.937	19.946	0.967	12.510		20.08	4.82	3	111	0.231	0.000	0.231	86.01	4.87	0.05
1.300	4.265	18.127	0.932	10.727		18.24	5.11	3	111	0.249	0.000	0.249	72.25	5.18	0.04
1.400	4.593	15.872	0.870	9.086		15.97	5.45	3	111	0.267	0.000	0.267	58.74	5.54	0.04
1.500	4.921	14.944	0.827	7.257		15.02	5.51	3	111	0.286	0.000	0.286	51.60	5.61	0.04
1.600	5.249	14.380	0.749	6.624		14.45	5.18	3	111	0.304	0.000	0.304	46.56	5.29	0.03
1.700	5.577	14.125	0.721	6.495		14.20	5.08	3	111	0.322	0.000	0.322	43.06	5.20	0.03
1.800	5.906	14.334	0.743	6.483		14.40	5.16	3	111	0.340	0.000	0.340	41.31	5.28	0.03
1.900	6.234	14.398	0.749	6.554		14.47	5.18	3	111	0.359	0.000	0.359	39.34	5.31	0.03
2.000	6.562	14.080	0.709	6.566		14.15	5.01	3	111	0.377	0.000	0.377	36.54	5.15	0.03
2.100	6.890	14.353	0.665	6.671		14.42	4.61	3	111	0.395	0.000	0.395	35.49	4.74	0.03
2.200	7.218	15.053	0.682	6.542		15.12	4.51	3	111	0.414	0.000	0.414	35.57	4.63	0.03
2.300	7.546	14.744	0.626	6.507		14.81	4.23	3	111	0.432	0.000	0.432	33.31	4.35	0.03
2.400	7.874	13.352	0.574	6.601		13.42	4.28	3	111	0.450	0.000	0.450	28.82	4.43	0.04
2.500	8.202	12.434	0.554	6.483		12.50	4.43	3	111	0.468	0.000	0.468	25.70	4.61	0.04
2.600	8.530	12.115	0.537	6.683		12.19	4.41	3	111	0.487	0.000	0.487	24.04	4.59	0.04
2.700	8.858	10.796	0.535	6.437		10.87	4.92	3	111	0.505	0.000	0.505	20.52	5.16	0.04
2.800	9.186	9.595	0.518	6.296		9.66	5.36	3	111	0.523	0.000	0.523	17.47	5.66	0.05
2.900	9.514	12.888	0.478	7.363		12.97	3.68	4	115	0.542	0.000	0.542	22.93	3.84	0.04
3.000	9.843	16.772	0.518	9.133		16.87	3.07	5	115	0.561	0.000	0.561	29.08	3.17	0.04
3.100	10.171	16.344	0.513	10.094		16.45	3.12	5	115	0.580	0.005	0.574	27.64	3.23	0.05

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth (m)	Depth (ft)	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT} (ft/sec)	SPT N_{60} (blows/ft)	SPT $(N_1)_{60}$ (blows/ft)	Relative Density, D_r (%)	Friction Angle, φ' (degrees)	Young's modulus, E_s (tsf)	Small strain shear modulus, G_o (tsf)	Undrained shear strength, s_u (tsf)	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
0.100	0.328	7	0.82	1014.48	3.00E-2	20.1	144.9	170	57	596	265			
0.200	0.656	7	1.04	1488.27	3.00E-2	44.6	226.1	206	57	1244	429			
0.300	0.984	7	1.20	772.45	3.00E-2	29.7	123.0	149	55	789	422			
0.400	1.312	6	1.43	233.75	3.00E-4	11.0	39.9	82	50	274	325			
0.500	1.640	8	2.05	82.38	3.00E-6	4.0	13.0	49	44	80				
0.600	1.969	5	2.29	47.53	3.00E-6	2.4	7.3	37	40	44	201			
0.700	2.297	5	2.29	45.79	3.00E-6	2.6	7.3	36	40	48	216			
0.800	2.625	5	2.26	56.86	3.00E-6	3.6	9.3	40	41	65	251			
0.900	2.953	5	2.19	69.67	3.00E-6	4.7	11.7	45	42	90	289			
1.000	3.281	8	2.27	67.51	3.00E-6	4.9	11.4	44	41	89				
1.100	3.609	9	2.38	62.29	1.00E-8	4.8	10.7					1.38	6.50	29.3
1.200	3.937	9	2.45	58.13	1.00E-8	4.7	10.2					1.32	5.73	25.8
1.300	4.265	9	2.52	51.29	1.00E-8	4.5	9.2					1.20	4.82	21.7
1.400	4.593	4	2.60	43.84	3.00E-8	4.1	8.1				471	1.05	3.92	17.6
1.500	4.921	4	2.64	39.70	3.00E-8	3.9	7.5				442	0.98	3.44	15.5
1.600	5.249	4	2.65	36.42	3.00E-8	3.8	7.0				424	0.94	3.10	14.0
1.700	5.577	4	2.67	34.29	3.00E-8	3.7	6.8				416	0.92	2.87	12.9
1.800	5.906	4	2.69	33.44	3.00E-8	3.8	6.8				422	0.94	2.75	12.4
1.900	6.234	4	2.70	32.33	3.00E-8	3.9	6.7				423	0.94	2.62	11.8
2.000	6.562	4	2.71	30.42	3.00E-8	3.8	6.4				413	0.92	2.44	11.0
2.100	6.890	4	2.70	29.65	3.00E-8	3.9	6.3				421	0.94	2.37	10.6
2.200	7.218	4	2.69	29.90	3.00E-8	4.0	6.4				441	0.98	2.37	10.7
2.300	7.546	4	2.69	28.23	3.00E-8	4.0	6.2				431	0.96	2.22	10.0
2.400	7.874	4	2.74	24.94	3.00E-8	3.7	5.6				389	0.86	1.92	8.6
2.500	8.202	3	2.79	22.65	1.00E-9	3.5	5.3				361	0.80	1.71	7.7
2.600	8.530	3	2.81	21.43	1.00E-9	3.5	5.1				351	0.78	1.60	7.2
2.700	8.858	3	2.90	18.74	1.00E-9	3.2	4.7				311	0.69	1.37	6.2
2.800	9.186	3	2.98	16.29	1.00E-9	3.0	4.3				274	0.61	1.16	5.2
2.900	9.514	4	2.78	20.61	3.00E-8	3.6	5.1				373	0.83	1.53	6.9
3.000	9.843	4	2.64	25.63	3.00E-8	4.4	6.0				489	1.09	1.94	8.7
3.100	10.171	4	2.67	24.58	3.00E-8	4.3	5.9				476	1.06	1.84	8.3

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	15.198	0.443	19.743		15.41	2.87	5	115	0.598	0.015	0.583	25.41	2.99	0.09
3.300	10.827	12.169	0.282	20.294		12.39	2.28	5	115	0.617	0.026	0.591	19.90	2.40	0.12
3.400	11.155	10.514	0.138	17.738		10.71	1.29	5	115	0.636	0.036	0.600	16.78	1.37	0.12
3.500	11.483	11.069	0.094	17.012		11.25	0.84	6	115	0.655	0.046	0.609	17.42	0.89	0.11
3.600	11.811	11.051	0.108	17.281		11.24	0.96	6	115	0.674	0.056	0.617	17.12	1.02	0.11
3.700	12.139	10.323	0.076	17.258		10.51	0.72	6	115	0.692	0.067	0.626	15.69	0.77	0.12
3.800	12.467	9.313	0.055	10.047		9.42	0.59	1	111	0.711	0.077	0.634	13.75	0.64	0.07
3.900	12.795	10.199	0.101	6.636		10.27	0.99	5	115	0.729	0.087	0.642	14.85	1.06	0.04
4.000	13.123	10.481	0.107	6.401		10.55	1.01	6	115	0.748	0.097	0.651	15.06	1.09	0.04
4.100	13.451	12.597	0.145	8.699		12.69	1.14	6	115	0.767	0.108	0.659	18.08	1.21	0.04
4.200	13.780	18.955	0.323	21.970		19.19	1.68	6	115	0.786	0.118	0.668	27.56	1.75	0.08
4.300	14.108	25.149	0.467	28.091		25.45	1.83	6	115	0.805	0.128	0.677	36.43	1.89	0.08
4.400	14.436	17.845	0.474	32.956		18.20	2.60	5	115	0.823	0.138	0.685	25.37	2.73	0.13
4.500	14.764	26.395	0.587	31.971		26.74	2.20	6	115	0.842	0.149	0.694	37.34	2.27	0.08
4.600	15.092	17.481	0.437	18.020		17.68	2.47	5	115	0.861	0.159	0.702	23.95	2.60	0.07
4.700	15.420	16.553	0.290	21.256		16.78	1.73	6	115	0.880	0.169	0.711	22.37	1.82	0.09
4.800	15.748	18.518	0.321	17.082		18.70	1.72	6	115	0.899	0.179	0.719	24.75	1.80	0.06
4.900	16.076	17.409	0.390	19.720		17.62	2.22	5	115	0.917	0.189	0.728	22.95	2.34	0.07
5.000	16.404	27.050	0.647	22.721		27.30	2.37	6	115	0.936	0.200	0.736	35.79	2.46	0.05
5.100	16.732	27.259	0.828	26.484		27.55	3.00	5	115	0.955	0.210	0.745	35.69	3.11	0.06
5.200	17.060	23.812	0.838	28.090		24.12	3.48	5	115	0.974	0.220	0.754	30.71	3.62	0.08
5.300	17.388	21.702	0.657	40.131		22.14	2.97	5	115	0.993	0.230	0.762	27.74	3.11	0.13
5.400	17.717	19.028	0.530	30.083		19.35	2.74	5	115	1.011	0.241	0.771	23.80	2.89	0.10
5.500	18.045	15.053	0.432	20.564		15.28	2.83	5	115	1.030	0.251	0.779	18.28	3.04	0.09
5.600	18.373	12.497	0.243	22.487		12.74	1.91	5	115	1.049	0.261	0.788	14.84	2.08	0.12
5.700	18.701	11.770	0.162	28.958		12.08	1.34	6	115	1.068	0.271	0.796	13.83	1.47	0.16
5.800	19.029	11.724	0.188	30.283		12.05	1.56	5	115	1.087	0.282	0.805	13.62	1.71	0.17
5.900	19.357	18.464	0.317	29.802		18.79	1.69	6	115	1.105	0.292	0.814	21.73	1.79	0.10
6.000	19.685	35.427	0.438	25.031		35.70	1.23	7	118	1.125	0.302	0.823	42.03	1.27	0.04
6.100	20.013	48.852	0.300	13.893		49.00	0.61	8	121	1.145	0.312	0.832	57.51	0.63	0.01
6.200	20.341	48.415	0.309	10.704		48.53	0.64	8	121	1.164	0.323	0.842	56.27	0.65	0.01
6.300	20.669	49.097	0.503	9.039		49.19	1.02	7	118	1.184	0.333	0.851	56.43	1.05	0.01
6.400	20.997	58.256	0.811	9.309		58.36	1.39	7	118	1.203	0.343	0.860	66.46	1.42	0.01
6.500	21.325	65.732	1.052	9.508		65.84	1.60	7	118	1.222	0.353	0.869	74.35	1.63	0.01
6.600	21.654	56.246	1.207	8.324		56.34	2.14	7	118	1.242	0.364	0.878	62.74	2.19	0.00
6.700	21.982	60.193	1.148	8.653		60.29	1.90	7	118	1.261	0.374	0.887	66.53	1.94	0.00
6.800	22.310	52.999	1.040	9.368		53.10	1.96	7	118	1.280	0.384	0.896	57.82	2.01	0.01
6.900	22.638	37.228	1.101	12.803		37.37	2.95	6	115	1.299	0.394	0.905	39.86	3.05	0.01
7.000	22.966	45.177	1.617	14.409		45.33	3.57	5	115	1.318	0.404	0.913	48.19	3.67	0.01
7.100	23.294	82.787	1.902	18.231		82.98	2.29	7	118	1.337	0.415	0.923	88.51	2.33	0.01
7.200	23.622	85.079	2.290	21.830		85.31	2.68	6	115	1.356	0.425	0.931	90.17	2.73	0.01
7.300	23.950	73.072	1.896	19.521		73.28	2.59	6	115	1.375	0.435	0.940	76.53	2.64	0.01
7.400	24.278	50.389	1.455	22.967		50.64	2.87	6	115	1.394	0.445	0.948	51.93	2.96	0.02
7.500	24.606	87.052	1.026	29.486		87.37	1.17	8	121	1.413	0.456	0.958	89.75	1.19	0.02
7.600	24.934	108.945	0.807	19.861		109.16	0.74	9	124	1.434	0.466	0.968	111.30	0.75	0.01
7.700	25.262	123.416	0.797	17.023		123.60	0.64	9	124	1.454	0.476	0.978	124.89	0.65	0.01
7.800	25.591	128.227	1.051	14.819		128.39	0.82	9	124	1.475	0.486	0.988	128.43	0.83	0.00
7.900	25.919	114.075	1.105	11.677		114.20	0.97	8	121	1.494	0.497	0.998	112.96	0.98	0.00
8.000	26.247	107.753	0.925	10.645		107.87	0.86	8	121	1.514	0.507	1.007	105.57	0.87	0.00
8.100	26.575	109.327	1.066	10.340		109.44	0.97	8	121	1.534	0.517	1.017	106.10	0.99	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	4	2.67	22.69	3.00E-8	4.0	5.4				444	0.99	1.69	7.6
3.300	10.827	4	2.70	17.89	3.00E-8	3.3	4.4				353	0.78	1.33	6.0
3.400	11.155	4	2.62	14.94	3.00E-8	2.7	3.6				302	0.67	1.12	5.0
3.500	11.483	5	2.52	15.28	3.00E-6	2.7	3.6	21	30	45	348			
3.600	11.811	5	2.55	15.15	3.00E-6	2.8	3.6	21	30	45	350			
3.700	12.139	5	2.53	13.88	3.00E-6	2.6	3.3	20	29	42	344			
3.800	12.467	5	2.55	12.23	3.00E-6	2.3	3.0	19	29	38	333			
3.900	12.795	4	2.61	13.39	3.00E-8	2.6	3.4				286	0.64	0.99	4.5
4.000	13.123	4	2.61	13.62	3.00E-8	2.7	3.4				294	0.65	1.00	4.5
4.100	13.451	5	2.57	16.28	3.00E-6	3.2	4.0	22	30	51	372			
4.200	13.780	5	2.50	24.66	3.00E-6	4.6	5.8	27	33	77	429			
4.300	14.108	5	2.43	32.37	3.00E-6	5.9	7.4	30	35	102	474			
4.400	14.436	4	2.65	23.28	3.00E-8	4.7	5.8				521	1.16	1.69	7.6
4.500	14.764	5	2.47	33.57	3.00E-6	6.3	7.8	31	35	107	486			
4.600	15.092	4	2.65	22.10	3.00E-8	4.6	5.6				504	1.12	1.60	7.2
4.700	15.420	4	2.59	20.53	3.00E-8	4.2	5.1				477	1.06	1.49	6.7
4.800	15.748	4	2.55	22.67	3.00E-8	4.6	5.6				534	1.19	1.65	7.4
4.900	16.076	4	2.64	21.30	3.00E-8	4.5	5.5				501	1.11	1.53	6.9
5.000	16.404	4	2.50	32.80	3.00E-8	6.6	7.9				791	1.76	2.39	10.7
5.100	16.732	4	2.57	33.03	3.00E-8	6.9	8.2				798	1.77	2.38	10.7
5.200	17.060	4	2.66	28.76	3.00E-8	6.3	7.5				694	1.54	2.05	9.2
5.300	17.388	4	2.65	26.01	3.00E-8	5.7	6.7				634	1.41	1.85	8.3
5.400	17.717	4	2.68	22.43	3.00E-8	5.1	6.0				550	1.22	1.59	7.1
5.500	18.045	4	2.79	17.43	3.00E-8	4.2	5.0				427	0.95	1.22	5.5
5.600	18.373	4	2.77	14.15	3.00E-8	3.5	4.0				351	0.78	0.99	4.5
5.700	18.701	4	2.71	13.15	3.00E-8	3.2	3.7				330	0.73	0.92	4.1
5.800	19.029	4	2.75	13.01	3.00E-8	3.2	3.7				329	0.73	0.91	4.1
5.900	19.357	4	2.59	20.54	3.00E-8	4.7	5.4				530	1.18	1.45	6.5
6.000	19.685	5	2.27	38.87	3.00E-6	7.8	8.8	33	36	143	566			
6.100	20.013	6	1.99	52.30	3.00E-4	9.6	10.8	39	38	196	631			
6.200	20.341	6	2.01	51.47	3.00E-4	9.5	10.7	38	37	194	632			
6.300	20.669	5	2.12	52.21	3.00E-6	10.1	11.3	39	37	197	637			
6.400	20.997	5	2.14	61.82	3.00E-6	12.1	13.5	42	38	233	677			
6.500	21.325	5	2.15	69.42	3.00E-6	13.7	15.1	45	39	263	707			
6.600	21.654	5	2.29	59.26	3.00E-6	12.4	13.7	41	38	225	673			
6.700	21.982	5	2.23	62.86	3.00E-6	13.0	14.2	42	38	241	691			
6.800	22.310	5	2.29	54.96	3.00E-6	11.7	12.7	40	38	212	665			
6.900	22.638	4	2.53	38.43	3.00E-8	9.2	9.9				1082	2.40	2.66	12.0
7.000	22.966	4	2.53	46.56	3.00E-8	11.1	12.0				1320	2.93	3.21	14.5
7.100	23.294	5	2.20	84.57	3.00E-6	17.6	18.9	49	40	332	779			
7.200	23.622	5	2.24	86.57	3.00E-6	18.5	19.7	50	40	341	788			
7.300	23.950	5	2.28	73.79	3.00E-6	16.1	17.1	46	39	293	752			
7.400	24.278	5	2.44	50.47	3.00E-6	11.9	12.6	38	37	203	667			
7.500	24.606	6	2.00	86.30	3.00E-4	17.1	18.0	50	40	349	802			
7.600	24.934	6	1.80	106.89	3.00E-4	19.9	20.8	55	41	437	867			
7.700	25.262	6	1.72	120.30	3.00E-4	21.9	22.8	59	42	494	907			
7.800	25.591	6	1.77	124.46	3.00E-4	23.2	24.0	60	42	514	922			
7.900	25.919	6	1.86	110.12	3.00E-4	21.3	22.0	56	41	457	889			
8.000	26.247	6	1.85	103.34	3.00E-4	20.1	20.6	54	41	431	875			
8.100	26.575	6	1.89	104.33	3.00E-4	20.6	21.0	55	41	438	882			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_g	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	97.630	1.062	9.344		97.73	1.09	8	121	1.554	0.527	1.027	93.69	1.10	0.00
8.300	27.231	86.507	0.854	8.852		86.60	0.99	8	121	1.574	0.538	1.036	82.06	1.00	0.00
8.400	27.559	81.831	0.893	8.770		81.93	1.09	8	121	1.594	0.548	1.046	76.81	1.11	0.00
8.500	27.887	105.361	1.174	10.083		105.47	1.11	8	121	1.613	0.558	1.055	98.40	1.13	0.00
8.600	28.215	174.268	1.703	14.292		174.42	0.98	9	124	1.634	0.568	1.066	162.16	0.99	0.00
8.700	28.543	229.623	2.059	18.806		229.83	0.90	9	124	1.654	0.578	1.076	212.12	0.90	0.00
8.800	28.871	243.593	2.175	19.966		243.81	0.89	9	124	1.674	0.589	1.086	223.00	0.90	0.00
8.900	29.199	240.792	2.090	17.281		240.98	0.87	9	124	1.695	0.599	1.096	218.34	0.87	0.00
9.000	29.528	212.133	2.060	14.901		212.29	0.97	9	124	1.715	0.609	1.106	190.39	0.98	0.00
9.100	29.856	157.169	2.047	13.272		157.31	1.30	8	121	1.735	0.619	1.116	139.45	1.32	0.00
9.200	30.184	123.352	1.608	10.763		123.47	1.30	8	121	1.755	0.630	1.125	108.17	1.32	0.00
9.300	30.512	119.987	1.330	10.540		120.10	1.11	8	121	1.775	0.640	1.135	104.27	1.12	0.00
9.400	30.840	126.708	1.141	10.024		126.82	0.90	9	124	1.795	0.650	1.145	109.19	0.91	0.00
9.500	31.168	128.181	1.279	9.016		128.28	1.00	8	121	1.815	0.660	1.155	109.53	1.01	0.00
9.600	31.496	128.291	1.423	8.875		128.39	1.11	8	121	1.835	0.671	1.164	108.70	1.12	0.00
9.700	31.824	137.450	1.508	9.426		137.55	1.10	8	121	1.855	0.681	1.174	115.61	1.11	0.00
9.800	32.152	136.286	1.601	9.614		136.39	1.17	8	121	1.874	0.691	1.183	113.67	1.19	0.00
9.900	32.480	112.110	1.399	10.059		112.22	1.25	8	121	1.894	0.701	1.193	92.48	1.27	0.00
10.000	32.808	122.497	1.375	10.798		122.61	1.12	8	121	1.914	0.712	1.203	100.36	1.14	0.00
10.100	33.136	143.326	1.489	10.587		143.44	1.04	9	124	1.935	0.722	1.213	116.68	1.05	0.00
10.200	33.465	151.975	1.486	11.173		152.10	0.98	9	124	1.955	0.732	1.223	122.78	0.99	0.00
10.300	33.793	136.695	1.449	10.599		136.81	1.06	8	121	1.975	0.742	1.232	109.40	1.07	0.00
10.400	34.121	136.631	1.353	11.009		136.75	0.99	9	124	1.995	0.752	1.243	108.45	1.00	0.00
10.500	34.449	146.027	1.494	11.443		146.15	1.02	9	124	2.015	0.763	1.253	115.06	1.04	0.00
10.600	34.777	119.650	1.361	11.396		119.77	1.14	8	121	2.035	0.773	1.262	93.27	1.16	0.00
10.700	35.105	112.046	1.216	11.196		112.17	1.08	8	121	2.055	0.783	1.272	86.57	1.10	0.00
10.800	35.433	127.309	1.260	11.079		127.43	0.99	8	121	2.075	0.793	1.282	97.81	1.01	0.00
10.900	35.761	137.023	1.369	11.771		137.15	1.00	9	124	2.095	0.804	1.292	104.56	1.01	0.00
11.000	36.089	137.650	1.383	11.935		137.78	1.00	9	124	2.116	0.814	1.302	104.21	1.02	0.00
11.100	36.417	138.341	1.277	12.181		138.47	0.92	9	124	2.136	0.824	1.312	103.92	0.94	0.00
11.200	36.745	172.140	1.387	13.870		172.29	0.81	9	124	2.156	0.834	1.322	128.69	0.82	0.00
11.300	37.073	205.111	1.767	15.147		205.27	0.86	9	124	2.177	0.845	1.332	152.46	0.87	0.00
11.400	37.402	189.530	1.804	14.327		189.69	0.95	9	124	2.197	0.855	1.342	139.68	0.96	0.00
11.500	37.730	169.484	1.631	13.565		169.63	0.96	9	124	2.218	0.865	1.352	123.79	0.97	0.00
11.600	38.058	175.041	1.565	14.291		175.20	0.89	9	124	2.238	0.875	1.363	126.94	0.90	0.00
11.700	38.386	175.669	1.641	14.526		175.83	0.93	9	124	2.258	0.886	1.373	126.44	0.95	0.00
11.800	38.714	166.082	1.502	14.373		166.24	0.90	9	124	2.279	0.896	1.383	118.57	0.92	0.00
11.900	39.042	188.430	1.621	16.624		188.61	0.86	9	124	2.299	0.906	1.393	133.75	0.87	0.00
12.000	39.370	208.712	1.830	17.785		208.90	0.88	9	124	2.319	0.916	1.403	147.24	0.89	0.00
12.100	39.698	168.174	1.618	14.643		168.33	0.96	9	124	2.340	0.927	1.413	117.46	0.97	0.00
12.200	40.026	148.892	1.175	13.764		149.04	0.79	9	124	2.360	0.937	1.423	103.06	0.80	0.00
12.300	40.354	189.521	1.360	16.730		189.70	0.72	9	124	2.380	0.947	1.433	130.68	0.73	0.00
12.400	40.682	208.558	1.746	17.480		208.75	0.84	9	124	2.401	0.957	1.444	142.94	0.85	0.00
12.500	41.011	169.175	1.501	14.796		169.33	0.89	9	124	2.421	0.967	1.454	114.82	0.90	0.00
12.600	41.339	133.739	1.103	13.307		133.88	0.82	9	124	2.442	0.978	1.464	89.79	0.84	0.00
12.700	41.667	104.670	0.949	12.287		104.80	0.91	8	121	2.461	0.988	1.473	69.46	0.93	0.00
12.800	41.995	108.181	0.949	13.295		108.32	0.88	8	121	2.481	0.998	1.483	71.37	0.90	0.00
12.900	42.323	146.527	1.078	15.358		146.69	0.74	9	124	2.502	1.008	1.493	96.57	0.75	0.00
13.000	42.651	177.079	1.388	17.129		177.26	0.78	9	124	2.522	1.019	1.503	116.24	0.79	0.00
13.100	42.979	212.496	1.739	19.380		212.71	0.82	9	124	2.542	1.029	1.513	138.87	0.83	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.96	92.55	3.00E-4	18.9	19.2	51	40	391	852			
8.300	27.231	6	1.98	81.38	3.00E-4	16.9	17.1	48	40	346	821			
8.400	27.559	6	2.03	76.47	3.00E-4	16.3	16.4	47	39	328	809			
8.500	27.887	6	1.95	98.30	3.00E-4	20.3	20.4	53	41	422	882			
8.600	28.215	6	1.75	162.69	3.00E-4	31.3	31.2	68	43	698	1047			
8.700	28.543	6	1.64	213.88	3.00E-4	39.7	39.3	78	44	919	1151			
8.800	28.871	6	1.62	225.90	3.00E-4	41.9	41.3	80	45	975	1178			
8.900	29.199	6	1.62	222.21	3.00E-4	41.3	40.6	80	44	964	1177			
9.000	29.528	6	1.70	194.51	3.00E-4	37.4	36.6	75	44	849	1132			
9.100	29.856	6	1.88	142.64	3.00E-4	29.6	28.8	64	42	629	1027			
9.200	30.184	6	1.96	110.88	3.00E-4	23.9	23.2	56	41	494	950			
9.300	30.512	6	1.93	107.33	3.00E-4	23.0	22.2	55	41	480	944			
9.400	30.840	6	1.86	113.01	3.00E-4	23.6	22.7	57	41	507	964			
9.500	31.168	6	1.88	113.69	3.00E-4	24.1	23.1	57	41	513	970			
9.600	31.496	6	1.92	113.12	3.00E-4	24.4	23.3	57	41	514	973			
9.700	31.824	6	1.89	120.81	3.00E-4	26.0	24.7	59	41	550	999			
9.800	32.152	6	1.92	119.09	3.00E-4	26.0	24.6	58	41	546	999			
9.900	32.480	6	2.00	96.92	3.00E-4	22.1	20.8	53	40	449	938			
10.000	32.808	6	1.95	105.75	3.00E-4	23.6	22.1	55	41	490	969			
10.100	33.136	6	1.87	123.73	3.00E-4	26.9	25.1	59	41	574	1024			
10.200	33.465	6	1.84	130.85	3.00E-4	28.2	26.2	61	42	608	1047			
10.300	33.793	6	1.90	116.67	3.00E-4	25.9	24.0	58	41	547	1013			
10.400	34.121	6	1.88	116.14	3.00E-4	25.7	23.7	58	41	547	1016			
10.500	34.449	6	1.87	123.72	3.00E-4	27.4	25.2	59	41	585	1042			
10.600	34.777	6	1.97	100.09	3.00E-4	23.3	21.3	53	40	479	977			
10.700	35.105	6	1.99	93.12	3.00E-4	21.9	20.0	52	40	449	958			
10.800	35.433	6	1.92	105.93	3.00E-4	24.3	22.1	55	40	510	1003			
10.900	35.761	6	1.90	113.75	3.00E-4	25.9	23.5	57	41	549	1030			
11.000	36.089	6	1.90	113.72	3.00E-4	26.1	23.5	57	41	551	1034			
11.100	36.417	6	1.88	113.94	3.00E-4	26.0	23.4	57	41	554	1039			
11.200	36.745	6	1.77	142.61	3.00E-4	31.1	27.8	64	42	689	1120			
11.300	37.073	6	1.73	169.98	3.00E-4	36.6	32.6	70	43	821	1191			
11.400	37.402	6	1.79	155.65	3.00E-4	34.5	30.6	67	42	759	1163			
11.500	37.730	6	1.83	137.98	3.00E-4	31.3	27.7	63	42	679	1123			
11.600	38.058	6	1.80	142.27	3.00E-4	32.0	28.2	64	42	701	1138			
11.700	38.386	6	1.82	142.04	3.00E-4	32.3	28.3	64	42	703	1142			
11.800	38.714	6	1.83	133.50	3.00E-4	30.7	26.8	62	41	665	1124			
11.900	39.042	6	1.77	151.77	3.00E-4	34.1	29.7	66	42	754	1175			
12.000	39.370	6	1.75	168.00	3.00E-4	37.4	32.5	69	43	836	1218			
12.100	39.698	6	1.85	133.30	3.00E-4	31.3	27.1	62	41	673	1137			
12.200	40.026	6	1.84	117.42	3.00E-4	27.6	23.8	58	41	596	1094			
12.300	40.354	6	1.73	150.83	3.00E-4	33.8	29.0	66	42	759	1188			
12.400	40.682	6	1.75	165.33	3.00E-4	37.4	32.0	69	42	835	1230			
12.500	41.011	6	1.83	132.11	3.00E-4	31.3	26.7	61	41	677	1150			
12.600	41.339	6	1.90	102.98	3.00E-4	25.3	21.5	54	40	536	1065			
12.700	41.667	6	2.02	78.97	3.00E-4	20.7	17.6	47	39	419	984			
12.800	41.995	6	2.00	81.49	3.00E-4	21.3	18.0	48	39	433	997			
12.900	42.323	6	1.84	112.32	3.00E-4	27.2	22.9	57	40	587	1106			
13.000	42.651	6	1.80	136.29	3.00E-4	32.3	27.1	62	41	709	1180			
13.100	42.979	6	1.75	164.16	3.00E-4	38.1	31.9	68	42	851	1257			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	228.386	2.041	19.849		228.60	0.89	9	124	2.563	1.039	1.524	148.36	0.90	0.00
13.300	43.635	216.534	1.976	18.418		216.73	0.91	9	124	2.583	1.049	1.534	139.63	0.92	0.00
13.400	43.963	212.687	1.931	18.137		212.88	0.91	9	124	2.603	1.060	1.544	136.21	0.92	0.00
13.500	44.291	147.100	2.259	15.359		147.27	1.53	8	121	2.623	1.070	1.553	93.11	1.56	0.00
13.600	44.619	90.327	2.097	20.458		90.55	2.32	7	118	2.643	1.080	1.562	56.26	2.39	0.00
13.700	44.948	51.517	1.606	19.286		51.72	3.10	6	115	2.661	1.090	1.571	31.23	3.27	0.01
13.800	45.276	30.733	0.760	44.012		31.21	2.44	6	115	2.680	1.101	1.580	18.06	2.67	0.07
13.900	45.604	26.422	0.518	74.646		27.23	1.90	6	115	2.699	1.111	1.588	15.44	2.11	0.17
14.000	45.932	26.613	0.668	84.529		27.53	2.43	6	115	2.718	1.121	1.597	15.54	2.69	0.20
14.100	46.260	27.759	0.849	90.344		28.73	2.95	5	115	2.737	1.131	1.605	16.20	3.27	0.21
14.200	46.588	26.813	0.843	97.577		27.87	3.02	5	115	2.755	1.141	1.614	15.56	3.36	0.23
14.300	46.916	26.258	0.889	100.802		27.35	3.25	5	115	2.774	1.152	1.622	15.15	3.62	0.25
14.400	47.244	25.876	0.911	98.316		26.94	3.38	5	115	2.793	1.162	1.631	14.80	3.77	0.25
14.500	47.572	26.540	0.922	104.999		27.67	3.33	5	115	2.812	1.172	1.640	15.16	3.71	0.26
14.600	47.900	27.677	0.948	107.719		28.84	3.29	5	115	2.831	1.182	1.648	15.78	3.64	0.25
14.700	48.228	29.469	0.993	119.302		30.76	3.23	5	115	2.849	1.193	1.657	16.85	3.56	0.27
14.800	48.556	37.664	0.957	161.484		39.41	2.43	6	115	2.868	1.203	1.665	21.94	2.62	0.29
14.900	48.885	43.512	0.875	175.412		45.41	1.93	7	118	2.887	1.213	1.674	25.40	2.06	0.27
15.000	49.213	45.295	0.843	170.453		47.14	1.79	7	118	2.907	1.223	1.683	26.27	1.91	0.25
15.100	49.541	61.548	1.037	185.565		63.55	1.63	7	118	2.926	1.234	1.692	35.82	1.71	0.20
15.200	49.869	117.304	0.435	102.724		118.41	0.37	9	124	2.946	1.244	1.703	67.82	0.38	0.05

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	6	1.75	175.87	3.00E-4	41.0	34.2	71	43	914	1291			
13.300	43.635	6	1.78	165.55	3.00E-4	39.2	32.6	69	42	867	1271			
13.400	43.963	6	1.78	161.86	3.00E-4	38.6	32.0	68	42	852	1266			
13.500	44.291	5	2.06	107.47	3.00E-6	29.6	24.5	55	40	589	1122			
13.600	44.619	5	2.35	62.94	3.00E-6	20.5	16.9	42	37	362	956			
13.700	44.948	4	2.63	33.84	3.00E-8	13.4	11.0				1472	3.27	2.08	9.4
13.800	45.276	4	2.76	19.29	3.00E-8	8.5	7.0				856	1.90	1.20	5.4
13.900	45.604	4	2.75	16.52	3.00E-8	7.3	6.0				736	1.64	1.03	4.6
14.000	45.932	4	2.81	16.51	3.00E-8	7.6	6.2				744	1.65	1.04	4.7
14.100	46.260	3	2.85	17.15	1.00E-9	8.1	6.6				780	1.73	1.08	4.9
14.200	46.588	3	2.87	16.44	1.00E-9	7.9	6.4				753	1.67	1.04	4.7
14.300	46.916	3	2.90	15.96	1.00E-9	7.9	6.4				737	1.64	1.01	4.5
14.400	47.244	3	2.92	15.57	1.00E-9	7.9	6.3				724	1.61	0.99	4.4
14.500	47.572	3	2.91	15.99	1.00E-9	8.0	6.4				746	1.66	1.01	4.5
14.600	47.900	3	2.89	16.69	1.00E-9	8.3	6.6				780	1.73	1.05	4.7
14.700	48.228	3	2.86	17.89	1.00E-9	8.7	6.9				837	1.86	1.12	5.1
14.800	48.556	4	2.69	23.88	3.00E-8	10.1	8.0				1096	2.44	1.46	6.6
14.900	48.885	4	2.57	28.10	3.00E-8	11.0	8.7				1276	2.83	1.69	7.6
15.000	49.213	4	2.54	29.23	3.00E-8	11.2	8.9				1327	2.95	1.75	7.9
15.100	49.541	5	2.40	40.68	3.00E-6	14.3	11.3	34	35	254	872			
15.200	49.869	6	1.82	83.82	3.00E-4	21.6	17.0	49	38	474	1076			

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-947
Site:	SOUTH TEXAS PROJ.	Date:	7/19/2007
Engineer:	M.COOK	Time:	2:38 PM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	2.000	0.044	-0.534		1.99	2.21
0.100	0.328	2.000	0.075	0.915		2.01	3.73
0.150	0.492	2.000	0.066	1.297		2.01	3.28
0.200	0.656	2.000	0.077	1.144		2.01	3.83
0.250	0.820	2.000	0.088	6.866		2.07	4.24
0.300	0.984	2.000	0.069	11.749		2.13	3.24
0.350	1.148	2.000	0.070	12.512		2.14	3.28
0.400	1.312	2.000	0.068	11.062		2.12	3.21
0.450	1.476	2.000	0.073	10.147		2.11	3.46
0.500	1.640	2.000	0.083	11.368		2.12	3.91
0.550	1.804	2.000	0.087	27.923		2.30	3.78
0.600	1.969	2.000	0.094	26.245		2.28	4.12
0.650	2.133	2.000	0.099	25.253		2.27	4.36
0.700	2.297	2.000	0.103	26.703		2.29	4.50
0.750	2.461	2.000	0.104	27.618		2.30	4.53
0.800	2.625	2.000	0.112	27.618		2.30	4.87
0.850	2.789	2.000	0.117	26.474		2.29	5.12
0.900	2.953	2.000	0.121	23.880		2.26	5.36
0.950	3.117	2.000	0.122	22.354		2.24	5.44
1.000	3.281	2.000	0.121	21.515		2.23	5.42
1.050	3.445	2.000	0.117	21.438		2.23	5.24
1.100	3.609	2.000	0.112	22.583		2.24	4.99
1.150	3.773	2.000	0.119	22.888		2.25	5.30
1.200	3.937	2.000	0.122	29.602		2.32	5.26
1.250	4.101	2.000	0.128	27.160		2.29	5.58
1.300	4.265	2.000	0.134	26.703		2.29	5.86
1.350	4.429	2.000	0.139	26.398		2.29	6.08
1.400	4.593	2.000	0.146	26.169		2.28	6.40
1.450	4.757	2.000	0.160	25.863		2.28	7.02
1.500	4.921	2.000	0.167	24.795		2.27	7.36
1.550	5.085	2.000	0.175	28.229		2.30	7.59
1.600	5.249	2.000	0.174	25.558		2.28	7.64
1.650	5.413	2.000	0.169	23.804		2.26	7.49
1.700	5.577	2.000	0.169	24.414		2.26	7.47
1.750	5.741	2.000	0.166	24.032		2.26	7.35
1.800	5.906	2.000	0.164	23.117		2.25	7.29
1.850	6.070	2.000	0.159	22.964		2.25	7.07
1.900	6.234	2.000	0.149	24.109		2.26	6.59

1.950	6.398	2.000	0.149	24.185	2.26	6.59
2.000	6.562	2.000	0.148	23.956	2.26	6.55
2.050	6.726	2.000	0.147	24.261	2.26	6.50
2.100	6.890	2.000	0.148	25.253	2.27	6.51
2.150	7.054	2.000	0.162	25.482	2.28	7.12
2.200	7.218	2.000	0.166	24.566	2.27	7.33
2.250	7.382	2.000	0.178	27.847	2.30	7.74
2.300	7.546	2.000	0.191	28.152	2.30	8.29
2.350	7.710	2.000	0.192	27.008	2.29	8.38
2.400	7.874	2.000	0.208	27.389	2.30	9.06
2.450	8.038	2.000	0.210	27.237	2.29	9.15
2.500	8.202	2.000	0.195	25.558	2.28	8.57
2.550	8.366	2.000	0.172	22.278	2.24	7.68
2.600	8.530	2.000	0.155	24.032	2.26	6.86
2.650	8.694	2.000	0.143	25.940	2.28	6.27
2.700	8.858	2.000	0.124	28.839	2.31	5.36
2.750	9.022	2.000	0.111	32.501	2.35	4.72
2.800	9.186	2.000	0.098	33.951	2.37	4.14
2.850	9.350	2.000	0.084	32.577	2.35	3.57
2.900	9.514	2.000	0.076	34.866	2.38	3.20
2.950	9.678	2.000	0.068	38.681	2.42	2.81
3.000	9.843	2.000	0.064	41.351	2.45	2.62
3.050	10.007	2.000	0.056	51.575	2.56	2.19
3.100	10.171	2.000	0.065	64.392	2.70	2.41
3.150	10.335	2.000	0.073	70.953	2.77	2.64
3.200	10.499	2.000	0.088	88.730	2.96	2.97
3.250	10.663	2.000	0.080	97.046	3.05	2.62
3.300	10.827	2.000	0.088	114.899	3.24	2.72
3.350	10.991	2.000	0.084	67.978	2.73	3.07
3.400	11.155	2.000	0.075	75.378	2.81	2.67
3.450	11.319	2.000	0.089	98.038	3.06	2.91
3.500	11.483	2.000	0.149	128.097	3.38	4.40
3.550	11.647	2.178	0.190	160.065	3.91	4.86
3.600	11.811	2.000	0.211	68.054	2.73	7.71
3.650	11.975	2.000	0.216	70.877	2.77	7.81
3.700	12.139	2.000	0.150	77.743	2.84	5.28
3.750	12.303	2.000	0.130	101.013	3.09	4.21
3.800	12.467	2.000	0.119	130.157	3.41	3.49
3.850	12.631	2.000	0.140	133.743	3.44	4.06
3.900	12.795	2.000	0.190	135.422	3.46	5.49
3.950	12.959	2.126	0.242	124.664	3.47	6.97
4.000	13.123	2.000	0.282	110.245	3.19	8.84
4.050	13.287	2.000	0.256	115.204	3.24	7.89
4.100	13.451	2.000	0.241	95.596	3.03	7.95
4.150	13.615	2.000	0.212	124.359	3.34	6.34
4.200	13.780	2.644	0.241	135.574	4.11	5.87
4.250	13.944	2.000	0.252	54.092	2.58	9.75
4.300	14.108	2.000	0.235	42.648	2.46	9.55
4.350	14.272	2.000	0.214	40.817	2.44	8.77
4.400	14.436	2.000	0.195	50.659	2.55	7.66
4.450	14.600	2.034	0.234	68.970	2.78	8.42

4.500	14.764	2.072	0.279	61.874	2.74	10.18
4.550	14.928	2.008	0.303	55.237	2.60	11.63
4.600	15.092	2.000	0.285	46.005	2.50	11.41
4.650	15.256	2.000	0.265	39.596	2.43	10.92
4.700	15.420	2.000	0.250	39.596	2.43	10.30
4.750	15.584	2.000	0.217	44.021	2.48	8.77
4.800	15.748	2.000	0.204	47.760	2.52	8.11
4.850	15.912	2.000	0.197	52.032	2.56	7.69
4.900	16.076	2.000	0.199	42.419	2.46	8.10
4.950	16.240	2.000	0.179	29.983	2.32	7.70
5.000	16.404	2.000	0.155	25.787	2.28	6.80
5.050	16.568	2.000	0.125	27.008	2.29	5.45
5.100	16.732	2.000	0.117	28.610	2.31	5.07
5.150	16.896	2.000	0.112	24.490	2.26	4.95
5.200	17.060	2.000	0.145	32.654	2.35	6.16
5.250	17.224	2.000	0.160	39.902	2.43	6.58
5.300	17.388	2.252	0.202	49.896	2.79	7.24
5.350	17.552	3.497	0.211	31.509	3.84	5.50
5.400	17.717	4.040	0.157	20.447	4.26	3.68
5.450	17.881	4.659	0.160	15.259	4.82	3.32
5.500	18.045	4.914	0.169	14.343	5.07	3.33
5.550	18.209	5.158	0.167	10.300	5.27	3.17
5.600	18.373	5.290	0.186	8.240	5.38	3.46
5.650	18.537	5.552	0.248	6.103	5.62	4.41
5.700	18.701	6.254	0.327	5.569	6.31	5.18
5.750	18.865	7.813	0.325	6.866	7.89	4.12
5.800	19.029	7.974	0.325	5.722	8.04	4.04
5.850	19.193	7.700	0.298	4.272	7.75	3.85
5.900	19.357	7.523	0.246	3.280	7.56	3.25
5.950	19.521	7.088	0.181	2.823	7.12	2.54
6.000	19.685	6.979	0.185	2.289	7.00	2.64
6.050	19.849	7.220	0.162	1.449	7.24	2.24
6.100	20.013	6.967	0.164	0.686	6.97	2.35
6.150	20.177	5.989	0.236	0.686	6.00	3.94
6.200	20.341	5.607	0.312	0.381	5.61	5.56
6.250	20.505	5.916	0.343	-0.153	5.91	5.80
6.300	20.669	6.202	0.397	-0.687	6.19	6.41
6.350	20.833	6.287	0.361	-0.611	6.28	5.75
6.400	20.997	8.895	0.392	0.381	8.90	4.40
6.450	21.161	7.946	0.355	-0.611	7.94	4.47
6.500	21.325	8.118	0.331	-0.153	8.12	4.08
6.550	21.490	9.226	0.347	0.610	9.23	3.76
6.600	21.654	10.266	0.219	0.458	10.27	2.13
6.650	21.818	8.794	0.215	-0.534	8.79	2.45
6.700	21.982	7.735	0.308	-0.916	7.73	3.99
6.750	22.146	7.965	0.295	-1.145	7.95	3.71
6.800	22.310	8.411	0.318	-1.068	8.40	3.79
6.850	22.474	5.439	0.441	-2.594	5.41	8.15
6.900	22.638	3.123	0.405	-1.908	3.10	13.05
6.950	22.802	2.986	0.351	2.746	3.02	11.64
7.000	22.966	6.214	0.283	14.801	6.37	4.44

7.050	23.130	10.599	0.221	9.537	10.70	2.07
7.100	23.294	12.761	0.238	7.324	12.84	1.85
7.150	23.458	13.283	0.310	6.256	13.35	2.32
7.200	23.622	12.853	0.358	7.782	12.94	2.77
7.250	23.786	12.588	0.390	7.706	12.67	3.08
7.300	23.950	11.875	0.378	7.934	11.96	3.16
7.350	24.114	11.265	0.354	8.392	11.36	3.12
7.400	24.278	11.175	0.331	8.240	11.26	2.94
7.450	24.442	10.674	0.347	8.621	10.77	3.22
7.500	24.606	9.495	0.292	8.697	9.59	3.05
7.550	24.770	7.341	0.262	11.215	7.46	3.51
7.600	24.934	7.986	0.245	10.376	8.10	3.03
7.650	25.098	6.989	0.209	9.231	7.09	2.95
7.700	25.262	6.011	0.166	8.850	6.11	2.72
7.750	25.427	5.571	0.144	8.316	5.66	2.54
7.800	25.591	6.429	0.144	7.629	6.51	2.21
7.850	25.755	8.442	0.208	7.400	8.52	2.44
7.900	25.919	10.358	0.278	6.943	10.43	2.66
7.950	26.083	11.688	0.319	6.866	11.76	2.71
8.000	26.247	11.624	0.295	5.417	11.68	2.53
8.050	26.411	11.901	0.260	4.730	11.95	2.18
8.100	26.575	12.201	0.293	4.043	12.24	2.39
8.150	26.739	12.609	0.209	3.357	12.65	1.65
8.200	26.903	13.219	0.289	3.280	13.25	2.18
8.250	27.067	12.142	0.380	1.907	12.16	3.12
8.300	27.231	16.770	0.405	2.441	16.80	2.41
8.350	27.395	18.757	0.430	2.060	18.78	2.29
8.400	27.559	19.095	0.511	1.907	19.12	2.67
8.450	27.723	20.508	0.500	1.831	20.53	2.44
8.500	27.887	22.788	0.449	1.907	22.81	1.97
8.550	28.051	24.255	0.488	1.983	24.28	2.01
8.600	28.215	23.804	0.600	1.449	23.82	2.52
8.650	28.379	20.531	0.665	7.324	20.61	3.23
8.700	28.543	18.235	0.662	7.171	18.31	3.62
8.750	28.707	16.775	0.615	7.629	16.86	3.65
8.800	28.871	15.128	0.560	8.087	15.22	3.68
8.850	29.035	12.756	0.495	8.392	12.85	3.85
8.900	29.199	11.253	0.435	8.926	11.35	3.83
8.950	29.364	10.663	0.240	9.613	10.77	2.23
9.000	29.528	11.227	0.233	9.918	11.33	2.06
9.050	29.692	11.251	0.237	9.003	11.35	2.09
9.100	29.856	11.723	0.201	8.697	11.82	1.70
9.150	30.020	12.451	0.243	6.943	12.53	1.94
9.200	30.184	12.000	0.306	5.264	12.06	2.54
9.250	30.348	11.723	0.349	4.501	11.77	2.96
9.300	30.512	11.220	0.357	4.272	11.27	3.17
9.350	30.676	10.771	0.336	4.349	10.82	3.11
9.400	30.840	10.270	0.320	4.730	10.32	3.10
9.450	31.004	9.427	0.300	5.035	9.48	3.16
9.500	31.168	8.829	0.238	5.569	8.89	2.68
9.550	31.332	8.924	0.258	6.409	8.99	2.87

9.600	31.496	10.438	0.277	13.809	10.59	2.62
9.650	31.660	12.118	0.326	16.174	12.29	2.65
9.700	31.824	12.938	0.372	17.624	13.13	2.83
9.750	31.988	12.938	0.401	17.853	13.13	3.05
9.800	32.152	13.590	0.428	18.539	13.79	3.10
9.850	32.316	14.329	0.457	19.836	14.54	3.14
9.900	32.480	14.469	0.475	20.675	14.69	3.23
9.950	32.644	14.377	0.477	21.286	14.61	3.27
10.000	32.808	14.384	0.465	21.972	14.62	3.18
10.050	32.972	14.778	0.460	23.041	15.03	3.06
10.100	33.136	15.792	0.473	24.109	16.05	2.95
10.150	33.301	15.461	0.411	24.185	15.72	2.61
10.200	33.465	15.449	0.420	25.177	15.72	2.67
10.250	33.629	15.612	0.462	25.329	15.89	2.91
10.300	33.793	15.324	0.470	23.651	15.58	3.02
10.350	33.957	14.790	0.489	23.804	15.05	3.25
10.400	34.121	15.308	0.469	24.414	15.57	3.01
10.450	34.285	15.622	0.446	24.872	15.89	2.81
10.500	34.449	16.664	0.446	25.787	16.94	2.63
10.550	34.613	16.635	0.410	26.016	16.92	2.42
10.600	34.777	15.733	0.423	26.092	16.01	2.64
10.650	34.941	13.715	0.403	28.152	14.02	2.87
10.700	35.105	13.151	0.373	26.855	13.44	2.78
10.750	35.269	12.815	0.354	26.398	13.10	2.70
10.800	35.433	11.700	0.339	25.482	11.98	2.83
10.850	35.597	10.070	0.309	24.795	10.34	2.99
10.900	35.761	8.541	0.255	24.109	8.80	2.90
10.950	35.925	7.253	0.208	23.804	7.51	2.77
11.000	36.089	6.403	0.179	23.041	6.65	2.69
11.050	36.253	6.315	0.173	23.422	6.57	2.63
11.100	36.417	7.438	0.187	24.109	7.70	2.43
11.150	36.581	10.351	0.242	25.558	10.63	2.28
11.200	36.745	13.427	0.342	26.626	13.71	2.49
11.250	36.909	13.661	0.445	26.016	13.94	3.19
11.300	37.073	12.572	0.450	26.092	12.85	3.50
11.350	37.238	12.702	0.444	30.670	13.03	3.41
11.400	37.402	13.966	0.387	26.169	14.25	2.72
11.450	37.566	14.741	0.410	25.711	15.02	2.73
11.500	37.730	15.331	0.418	26.016	15.61	2.68
11.550	37.894	15.636	0.321	26.626	15.92	2.02
11.600	38.058	17.276	0.367	28.686	17.59	2.09
11.650	38.222	19.461	0.452	33.951	19.83	2.28
11.700	38.386	19.518	0.536	32.425	19.87	2.70
11.750	38.550	18.476	0.574	31.128	18.81	3.05
11.800	38.714	17.878	0.545	30.746	18.21	2.99
11.850	38.878	18.535	0.525	31.814	18.88	2.78
11.900	39.042	20.527	0.543	33.798	20.89	2.60
11.950	39.206	21.569	0.524	35.934	21.96	2.39
12.000	39.370	23.308	0.591	35.934	23.70	2.49
12.050	39.534	23.799	0.697	33.417	24.16	2.88
12.100	39.698	24.983	0.505	32.348	25.33	1.99

12.150	39.862	26.230	0.631	33.493	26.59	2.37
12.200	40.026	27.489	0.362	36.163	27.88	1.30
12.250	40.190	31.485	0.404	39.291	31.91	1.27
12.300	40.354	29.583	0.516	27.313	29.88	1.73
12.350	40.518	31.369	0.700	29.449	31.69	2.21
12.400	40.682	27.111	0.786	33.340	27.47	2.86
12.450	40.846	23.048	0.706	31.051	23.38	3.02
12.500	41.011	21.486	0.401	31.814	21.83	1.84
12.550	41.175	21.224	0.414	33.111	21.58	1.92
12.600	41.339	20.784	0.445	25.329	21.06	2.11
12.650	41.503	22.544	0.516	29.754	22.87	2.26
12.700	41.667	22.507	0.382	32.348	22.86	1.67
12.750	41.831	22.712	0.438	32.806	23.07	1.90
12.800	41.995	22.686	0.464	36.621	23.08	2.01
12.850	42.159	23.768	0.535	32.272	24.12	2.22
12.900	42.323	21.935	0.324	29.831	22.26	1.46
12.950	42.487	19.258	0.335	29.297	19.57	1.71
13.000	42.651	15.709	0.300	31.128	16.05	1.87
13.050	42.815	15.367	0.295	25.787	15.65	1.89
13.100	42.979	13.694	0.307	27.695	13.99	2.19
13.150	43.143	11.811	0.321	26.779	12.10	2.65
13.200	43.307	9.744	0.298	25.711	10.02	2.97
13.250	43.471	9.954	0.294	26.169	10.24	2.87
13.300	43.635	11.019	0.180	27.313	11.31	1.59
13.350	43.799	10.693	0.228	26.626	10.98	2.08
13.400	43.963	9.087	0.240	22.812	9.33	2.57
13.450	44.127	8.158	0.238	21.362	8.39	2.84
13.500	44.291	8.609	0.162	20.981	8.84	1.83
13.550	44.455	7.894	0.214	19.760	8.11	2.64
13.600	44.619	8.224	0.272	22.964	8.47	3.21
13.650	44.783	9.254	0.232	19.684	9.47	2.45
13.700	44.948	9.337	0.296	18.081	9.53	3.11
13.750	45.112	6.549	0.474	14.648	6.71	7.07
13.800	45.276	3.768	0.411	12.512	3.90	10.53
13.850	45.440	2.734	0.334	13.504	2.88	11.60
13.900	45.604	2.670	0.226	14.114	2.82	8.01
13.950	45.768	2.460	0.185	14.267	2.61	7.08
14.000	45.932	2.327	0.191	14.114	2.48	7.70
14.050	46.096	2.351	0.215	16.403	2.53	8.50
14.100	46.260	2.443	0.212	20.523	2.66	7.96
14.150	46.424	2.391	0.185	23.346	2.64	7.00
14.200	46.588	2.242	0.185	24.566	2.51	7.38
14.250	46.752	2.256	0.186	32.348	2.61	7.14
14.300	46.916	2.022	0.206	37.765	2.43	8.48
14.350	47.080	2.000	0.201	37.002	2.40	8.38
14.400	47.244	2.000	0.193	36.926	2.40	8.05
14.450	47.408	2.000	0.181	39.749	2.43	7.45
14.500	47.572	2.000	0.142	42.724	2.46	5.77
14.550	47.736	2.060	0.160	44.555	2.54	6.30
14.600	47.900	2.200	0.178	45.624	2.69	6.61
14.650	48.064	2.223	0.196	45.242	2.71	7.23

14.700	48.228	2.358	0.213	48.523	2.88	7.39
14.750	48.392	2.734	0.210	58.517	3.37	6.24
14.800	48.556	3.353	0.223	88.043	4.30	5.18
14.850	48.720	3.034	0.180	117.035	4.30	4.19
14.900	48.885	2.672	0.188	135.345	4.13	4.55
14.950	49.049	2.913	0.196	179.901	4.86	4.04
15.000	49.213	5.110	0.268	198.746	7.26	3.69
15.050	49.377	7.405	0.398	66.223	8.12	4.90
15.100	49.541	4.406	0.409	42.038	4.86	8.42
15.150	49.705	2.986	0.357	43.793	3.46	10.32
15.200	49.869	2.367	0.020	70.648	3.13	0.64
15.250	50.033	2.084	0.020	85.373	3.01	0.67

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC		
Site:	SOUTH TEXAS PROJ.		
Engineer:	M.COOK		
Sounding:	C-947		
Date:	7/19/2007		
Time:	2:38 PM		

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{OCR}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	2.000	0.062	0.559		2.01	3.07	3	111	0.018	0.000	0.018	108.77	3.10	0.02
0.200	0.656	2.000	0.077	3.102		2.03	3.79	3	111	0.037	0.000	0.037	54.64	3.86	0.11
0.300	0.984	2.000	0.076	10.376		2.11	3.58	3	111	0.055	0.000	0.055	37.52	3.68	0.36
0.400	1.312	2.000	0.070	11.240		2.12	3.32	3	111	0.073	0.000	0.073	28.02	3.43	0.40
0.500	1.640	2.000	0.081	16.479		2.18	3.72	3	111	0.091	0.000	0.091	22.84	3.88	0.57
0.600	1.969	2.000	0.093	26.474		2.29	4.08	3	111	0.110	0.000	0.110	19.85	4.29	0.88
0.700	2.297	2.000	0.102	26.525		2.29	4.46	3	111	0.128	0.000	0.128	16.87	4.73	0.88
0.800	2.625	2.000	0.111	27.237		2.29	4.84	3	111	0.146	0.000	0.146	14.69	5.17	0.91
0.900	2.953	2.000	0.120	24.236		2.26	5.31	2	80	0.159	0.000	0.159	13.20	5.71	0.83
1.000	3.281	2.000	0.120	21.769		2.24	5.37	2	80	0.172	0.000	0.172	11.97	5.82	0.76
1.100	3.609	2.000	0.116	22.303		2.24	5.18	3	111	0.191	0.000	0.191	10.76	5.66	0.78
1.200	3.937	2.000	0.123	26.550		2.29	5.38	2	80	0.204	0.000	0.204	10.23	5.90	0.92
1.300	4.265	2.000	0.134	26.754		2.29	5.84	2	80	0.217	0.000	0.217	9.56	6.45	0.93
1.400	4.593	2.000	0.148	26.143		2.28	6.50	2	80	0.230	0.000	0.230	8.93	7.23	0.92
1.500	4.921	2.000	0.167	26.296		2.28	7.33	2	80	0.243	0.000	0.243	8.41	8.20	0.93
1.600	5.249	2.000	0.173	25.864		2.28	7.58	2	80	0.256	0.000	0.256	7.91	8.53	0.92
1.700	5.577	2.000	0.168	24.083		2.26	7.43	2	80	0.269	0.000	0.269	7.40	8.44	0.87
1.800	5.906	2.000	0.163	23.371		2.25	7.24	2	80	0.282	0.000	0.282	6.99	8.27	0.85
1.900	6.234	2.000	0.152	23.753		2.26	6.75	2	80	0.295	0.000	0.295	6.65	7.77	0.87
2.000	6.562	2.000	0.148	24.134		2.26	6.55	2	80	0.308	0.000	0.308	6.34	7.58	0.89
2.100	6.890	2.000	0.152	24.999		2.27	6.71	2	80	0.321	0.000	0.321	6.07	7.82	0.92
2.200	7.218	2.000	0.169	25.965		2.28	7.40	2	80	0.334	0.000	0.334	5.82	8.67	0.96
2.300	7.546	2.000	0.187	27.669		2.30	8.13	2	80	0.347	0.000	0.347	5.62	9.58	1.02
2.400	7.874	2.000	0.203	27.211		2.29	8.86	2	80	0.360	0.000	0.360	5.37	10.52	1.01
2.500	8.202	2.000	0.192	25.024		2.27	8.47	2	80	0.373	0.000	0.373	5.08	10.14	0.95
2.600	8.530	2.000	0.157	24.083		2.26	6.93	2	80	0.386	0.000	0.386	4.85	8.36	0.93
2.700	8.858	2.000	0.126	29.093		2.31	5.44	2	80	0.399	0.000	0.399	4.79	6.58	1.09
2.800	9.186	2.000	0.098	33.010		2.36	4.14	3	111	0.418	0.000	0.418	4.64	5.04	1.23
2.900	9.514	2.000	0.076	35.375		2.38	3.19	3	111	0.436	0.000	0.436	4.46	3.91	1.31
3.000	9.843	2.000	0.063	43.869		2.47	2.53	3	111	0.454	0.000	0.454	4.45	3.10	1.56
3.100	10.171	2.000	0.065	62.307		2.67	2.42	3	111	0.473	0.005	0.467	4.71	2.94	2.04

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	5	2.23	29.42	3.00E-6	0.4	3.3	29	41	8	61			
0.200	0.656	4	2.50	24.26	3.00E-8	0.5	2.6				60	0.13	3.64	16.4
0.300	0.984	4	2.60	20.11	3.00E-8	0.5	2.3				62	0.14	2.50	11.3
0.400	1.312	4	2.68	16.93	3.00E-8	0.5	2.0				61	0.14	1.87	8.4
0.500	1.640	4	2.78	15.51	3.00E-8	0.6	1.9				63	0.14	1.52	6.9
0.600	1.969	3	2.85	14.60	1.00E-9	0.6	1.8				65	0.15	1.32	6.0
0.700	2.297	3	2.94	13.34	1.00E-9	0.6	1.8				65	0.14	1.12	5.1
0.800	2.625	3	3.01	12.30	1.00E-9	0.6	1.7				64	0.14	0.98	4.4
0.900	2.953	3	3.07	11.54	1.00E-9	0.7	1.7				63	0.14	0.88	4.0
1.000	3.281	3	3.11	10.74	1.00E-9	0.7	1.7				62	0.14	0.80	3.6
1.100	3.609	3	3.14	9.86	1.00E-9	0.7	1.6				62	0.14	0.72	3.2
1.200	3.937	3	3.16	9.54	1.00E-9	0.7	1.6				62	0.14	0.68	3.1
1.300	4.265	3	3.21	9.14	1.00E-9	0.7	1.6				62	0.14	0.64	2.9
1.400	4.593	3	3.27	8.77	1.00E-9	0.8	1.6				62	0.14	0.60	2.7
1.500	4.921	3	3.32	8.41	1.00E-9	0.8	1.7				61	0.14	0.56	2.5
1.600	5.249	3	3.35	7.91	1.00E-9	0.8	1.7				61	0.13	0.53	2.4
1.700	5.577	3	3.37	7.40	1.00E-9	0.8	1.7				60	0.13	0.49	2.2
1.800	5.906	3	3.39	6.99	1.00E-9	0.8	1.6				59	0.13	0.47	2.1
1.900	6.234	3	3.39	6.65	1.00E-9	0.8	1.6				59	0.13	0.44	2.0
2.000	6.562	3	3.40	6.34	1.00E-9	0.8	1.6				59	0.13	0.42	1.9
2.100	6.890	3	3.42	6.07	1.00E-9	0.9	1.6				58	0.13	0.40	1.8
2.200	7.218	3	3.46	5.82	1.00E-9	0.9	1.6				58	0.13	0.39	1.7
2.300	7.546	2	3.50	5.62	3.00E-7	0.9	1.6				59	0.13	0.37	1.7
2.400	7.874	2	3.54	5.37	3.00E-7	1.0	1.7				58	0.13	0.36	1.6
2.500	8.202	2	3.55	5.08	3.00E-7	1.0	1.6				57	0.13	0.34	1.5
2.600	8.530	2	3.51	4.85	3.00E-7	0.9	1.6				56	0.12	0.32	1.5
2.700	8.858	3	3.45	4.79	1.00E-9	0.9	1.5				57	0.13	0.32	1.4
2.800	9.186	3	3.40	4.64	1.00E-9	0.9	1.4				58	0.13	0.31	1.4
2.900	9.514	3	3.35	4.46	1.00E-9	0.8	1.3				58	0.13	0.30	1.3
3.000	9.843	3	3.30	4.45	1.00E-9	0.8	1.2				61	0.13	0.30	1.3
3.100	10.171	3	3.27	4.66	1.00E-9	0.8	1.2				66	0.15	0.31	1.4

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	2.000	0.080	85.576		2.92	2.75	3	111	0.491	0.015	0.475	5.12	3.30	2.53
3.300	10.827	2.000	0.084	93.308		3.01	2.79	3	111	0.509	0.026	0.483	5.17	3.36	2.68
3.400	11.155	2.000	0.083	80.465		2.87	2.88	3	111	0.527	0.036	0.491	4.77	3.53	2.46
3.500	11.483	2.059	0.143	128.733		3.45	4.14	3	111	0.546	0.046	0.499	5.81	4.91	3.18
3.600	11.811	2.059	0.206	99.665		3.14	6.56	2	80	0.559	0.056	0.502	5.13	7.98	2.76
3.700	12.139	2.000	0.165	83.211		2.90	5.70	3	111	0.577	0.067	0.510	4.55	7.12	2.55
3.800	12.467	2.000	0.130	121.638		3.31	3.91	3	111	0.595	0.077	0.518	5.24	4.77	3.19
3.900	12.795	2.042	0.191	131.276		3.46	5.51	3	111	0.614	0.087	0.526	5.41	6.70	3.29
4.000	13.123	2.042	0.260	116.704		3.30	7.87	2	80	0.627	0.097	0.529	5.06	9.72	3.10
4.100	13.451	2.000	0.236	111.720		3.21	7.37	2	80	0.640	0.108	0.532	4.82	9.21	3.09
4.200	13.780	2.215	0.235	104.675		3.35	7.03	2	80	0.653	0.118	0.535	5.03	8.73	2.76
4.300	14.108	2.000	0.234	45.852		2.50	9.36	2	80	0.666	0.128	0.538	3.40	12.77	1.73
4.400	14.436	2.011	0.214	53.482		2.59	8.28	2	80	0.679	0.138	0.540	3.53	11.22	1.94
4.500	14.764	2.038	0.272	62.027		2.71	10.04	2	80	0.692	0.149	0.543	3.71	13.49	2.14
4.600	15.092	2.003	0.284	46.946		2.51	11.33	2	80	0.705	0.159	0.546	3.30	15.75	1.78
4.700	15.420	2.000	0.244	41.071		2.44	9.99	2	80	0.718	0.169	0.549	3.14	14.14	1.62
4.800	15.748	2.000	0.206	47.938		2.52	8.18	2	80	0.731	0.179	0.552	3.24	11.53	1.83
4.900	16.076	2.000	0.192	41.478		2.45	7.83	2	80	0.744	0.189	0.555	3.07	11.25	1.64
5.000	16.404	2.000	0.153	27.593		2.30	6.66	2	80	0.757	0.200	0.557	2.76	9.93	1.16
5.100	16.732	2.000	0.118	26.703		2.29	5.16	3	111	0.775	0.210	0.565	2.68	7.80	1.13
5.200	17.060	2.000	0.139	32.349		2.35	5.92	2	80	0.788	0.220	0.568	2.75	8.90	1.35
5.300	17.388	2.583	0.191	40.436		3.02	6.33	2	80	0.801	0.230	0.571	3.88	8.61	1.21
5.400	17.717	4.065	0.176	22.405		4.31	4.09	3	111	0.820	0.241	0.579	6.02	5.05	0.39
5.500	18.045	4.910	0.165	13.301		5.05	3.27	3	111	0.838	0.251	0.587	7.18	3.92	0.17
5.600	18.373	5.333	0.200	8.214		5.42	3.69	3	111	0.856	0.261	0.595	7.67	4.39	0.07
5.700	18.701	6.540	0.300	6.179		6.61	4.54	3	111	0.875	0.271	0.603	9.50	5.23	0.03
5.800	19.029	7.829	0.316	5.620		7.89	4.01	3	111	0.893	0.282	0.611	11.45	4.52	0.02
5.900	19.357	7.437	0.242	3.458		7.47	3.23	3	111	0.911	0.292	0.619	10.60	3.68	-0.01
6.000	19.685	7.096	0.176	2.187		7.12	2.47	4	115	0.930	0.302	0.628	9.86	2.84	-0.02
6.100	20.013	6.725	0.187	0.940		6.74	2.78	4	115	0.949	0.312	0.636	9.09	3.24	-0.04
6.200	20.341	5.837	0.297	0.305		5.84	5.09	3	111	0.967	0.323	0.644	7.56	6.09	-0.06
6.300	20.669	6.135	0.367	-0.484		6.13	5.99	3	111	0.985	0.333	0.652	7.88	7.13	-0.07
6.400	20.997	7.709	0.369	-0.280		7.71	4.79	3	111	1.004	0.343	0.661	10.15	5.51	-0.05
6.500	21.325	8.430	0.344	-0.051		8.43	4.08	3	111	1.022	0.353	0.669	11.08	4.65	-0.05
6.600	21.654	9.429	0.260	0.178		9.43	2.76	4	115	1.041	0.364	0.677	12.39	3.10	-0.04
6.700	21.982	8.165	0.273	-0.865		8.16	3.34	3	111	1.059	0.374	0.685	10.36	3.84	-0.06
6.800	22.310	7.272	0.351	-1.602		7.25	4.84	3	111	1.077	0.384	0.693	8.91	5.69	-0.08
6.900	22.638	3.849	0.399	-0.585		3.84	10.38	2	80	1.090	0.394	0.696	3.96	14.49	-0.16
7.000	22.966	6.600	0.285	9.028		6.70	4.26	3	111	1.108	0.404	0.704	7.94	5.10	0.04
7.100	23.294	12.214	0.256	7.706		12.30	2.08	5	115	1.127	0.415	0.713	15.68	2.29	0.01
7.200	23.622	12.908	0.353	7.248		12.99	2.72	5	115	1.146	0.425	0.721	16.42	2.98	0.01
7.300	23.950	11.909	0.374	8.011		12.00	3.12	4	115	1.165	0.435	0.730	14.84	3.45	0.01
7.400	24.278	11.038	0.344	8.418		11.13	3.09	4	115	1.184	0.445	0.738	13.47	3.46	0.02
7.500	24.606	9.170	0.300	9.511		9.27	3.24	4	115	1.202	0.456	0.747	10.81	3.72	0.03
7.600	24.934	7.439	0.239	10.274		7.55	3.16	3	111	1.221	0.466	0.755	8.38	3.77	0.04
7.700	25.262	6.190	0.173	8.799		6.29	2.75	4	115	1.240	0.476	0.763	6.61	3.43	0.03
7.800	25.591	6.814	0.165	7.782		6.90	2.40	4	115	1.258	0.486	0.772	7.31	2.93	0.01
7.900	25.919	10.163	0.268	7.070		10.24	2.62	5	115	1.277	0.497	0.781	11.48	2.99	0.00
8.000	26.247	11.738	0.291	5.671		11.80	2.47	5	115	1.296	0.507	0.789	13.31	2.77	-0.01
8.100	26.575	12.237	0.254	4.043		12.28	2.07	5	115	1.315	0.517	0.798	13.75	2.32	-0.02

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	3	3.26	5.07	1.00E-9	0.8	1.1				73	0.16	0.34	1.5
3.300	10.827	3	3.26	5.12	1.00E-9	0.8	1.1				75	0.17	0.34	1.6
3.400	11.155	3	3.30	4.77	1.00E-9	0.8	1.2				70	0.16	0.32	1.4
3.500	11.483	3	3.31	5.81	1.00E-9	0.8	1.2				87	0.19	0.39	1.7
3.600	11.811	3	3.48	5.13	1.00E-9	0.9	1.4				77	0.17	0.34	1.5
3.700	12.139	3	3.49	4.55	1.00E-9	0.9	1.3				70	0.15	0.30	1.4
3.800	12.467	3	3.34	5.24	1.00E-9	0.8	1.2				82	0.18	0.35	1.6
3.900	12.795	3	3.42	5.41	1.00E-9	0.9	1.3				85	0.19	0.36	1.6
4.000	13.123	2	3.54	5.06	3.00E-7	1.0	1.4				80	0.18	0.34	1.5
4.100	13.451	2	3.54	4.82	3.00E-7	1.0	1.4				77	0.17	0.32	1.4
4.200	13.780	2	3.51	5.03	3.00E-7	1.0	1.5				81	0.18	0.34	1.5
4.300	14.108	2	3.75	3.40	3.00E-7	1.2	1.7				55	0.12	0.23	1.0
4.400	14.436	2	3.70	3.53	3.00E-7	1.1	1.6				57	0.13	0.24	1.1
4.500	14.764	2	3.73	3.71	3.00E-7	1.2	1.7				60	0.13	0.25	1.1
4.600	15.092	2	3.81	3.30	3.00E-7	1.3	1.8				54	0.12	0.22	1.0
4.700	15.420	2	3.80	3.14	3.00E-7	1.3	1.8				52	0.12	0.21	0.9
4.800	15.748	2	3.74	3.24	3.00E-7	1.2	1.6				54	0.12	0.22	1.0
4.900	16.076	2	3.75	3.07	3.00E-7	1.2	1.7				51	0.11	0.20	0.9
5.000	16.404	2	3.75	2.76	3.00E-7	1.2	1.7				46	0.10	0.18	0.8
5.100	16.732	2	3.70	2.68	3.00E-7	1.1	1.6				45	0.10	0.18	0.8
5.200	17.060	2	3.73	2.75	3.00E-7	1.2	1.6				47	0.10	0.18	0.8
5.300	17.388	2	3.60	3.88	3.00E-7	1.3	1.8				67	0.15	0.26	1.2
5.400	17.717	3	3.31	6.02	1.00E-9	1.6	2.2				105	0.23	0.40	1.8
5.500	18.045	3	3.18	7.02	1.00E-9	1.8	2.4				126	0.28	0.48	2.2
5.600	18.373	3	3.19	7.51	1.00E-9	1.9	2.6				137	0.30	0.51	2.3
5.700	18.701	3	3.16	9.27	1.00E-9	2.3	3.1				172	0.38	0.63	2.9
5.800	19.029	3	3.05	10.98	1.00E-9	2.6	3.4				210	0.47	0.76	3.4
5.900	19.357	3	3.03	10.13	1.00E-9	2.4	3.2				197	0.44	0.71	3.2
6.000	19.685	3	2.99	9.38	1.00E-9	2.3	2.9				186	0.41	0.66	3.0
6.100	20.013	3	3.05	8.74	1.00E-9	2.2	2.9				174	0.39	0.61	2.7
6.200	20.341	3	3.28	7.53	1.00E-9	2.3	2.9				146	0.32	0.50	2.3
6.300	20.669	3	3.30	7.88	1.00E-9	2.4	3.1				154	0.34	0.53	2.4
6.400	20.997	3	3.15	9.92	1.00E-9	2.7	3.4				201	0.45	0.68	3.0
6.500	21.325	3	3.07	10.73	1.00E-9	2.8	3.6				222	0.49	0.74	3.3
6.600	21.654	3	2.93	11.78	1.00E-9	2.9	3.6				252	0.56	0.83	3.7
6.700	21.982	3	3.05	10.01	1.00E-9	2.7	3.3				213	0.47	0.69	3.1
6.800	22.310	3	3.20	8.79	1.00E-9	2.7	3.3				185	0.41	0.59	2.7
6.900	22.638	2	3.73	3.96	3.00E-7	2.3	2.8				83	0.18	0.26	1.2
7.000	22.966	3	3.21	7.85	1.00E-9	2.4	3.0				168	0.37	0.53	2.4
7.100	23.294	4	2.77	14.71	3.00E-8	3.4	4.2				335	0.74	1.05	4.7
7.200	23.622	4	2.82	15.52	3.00E-8	3.7	4.5				355	0.79	1.09	4.9
7.300	23.950	3	2.89	14.18	1.00E-9	3.6	4.3				325	0.72	0.99	4.5
7.400	24.278	3	2.93	12.93	1.00E-9	3.4	4.0				298	0.66	0.90	4.0
7.500	24.606	3	3.02	10.49	1.00E-9	3.0	3.5				242	0.54	0.72	3.2
7.600	24.934	3	3.12	8.22	1.00E-9	2.6	3.0				190	0.42	0.56	2.5
7.700	25.262	3	3.18	6.53	1.00E-9	2.2	2.6				151	0.34	0.44	2.0
7.800	25.591	3	3.10	7.17	1.00E-9	2.3	2.7				169	0.38	0.49	2.2
7.900	25.919	3	2.95	11.11	1.00E-9	3.1	3.7				269	0.60	0.77	3.4
8.000	26.247	4	2.88	12.81	3.00E-8	3.5	4.0				315	0.70	0.89	4.0
8.100	26.575	4	2.82	13.19	3.00E-8	3.5	4.0				329	0.73	0.92	4.1

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_u	Normalized Friction raio, F_f	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	12.657	0.293	2.848		12.69	2.31	5	115	1.334	0.527	0.806	14.08	2.58	-0.03
8.300	27.231	15.890	0.405	2.136		15.91	2.55	5	115	1.352	0.538	0.815	17.87	2.78	-0.03
8.400	27.559	19.453	0.480	1.933		19.47	2.47	5	115	1.371	0.548	0.823	21.99	2.65	-0.02
8.500	27.887	22.517	0.479	1.907		22.54	2.13	6	115	1.390	0.558	0.832	25.42	2.27	-0.02
8.600	28.215	22.863	0.584	3.585		22.90	2.55	5	115	1.409	0.568	0.840	25.57	2.72	-0.01
8.700	28.543	18.514	0.647	7.375		18.59	3.48	5	115	1.428	0.578	0.849	20.22	3.77	0.00
8.800	28.871	14.886	0.557	8.036		14.97	3.72	4	115	1.446	0.589	0.858	15.77	4.12	0.00
8.900	29.199	11.557	0.390	8.977		11.65	3.35	4	115	1.465	0.599	0.866	11.76	3.83	0.00
9.000	29.528	11.047	0.237	9.511		11.15	2.12	5	115	1.484	0.609	0.875	11.05	2.45	0.01
9.100	29.856	11.808	0.227	8.214		11.90	1.91	5	115	1.503	0.619	0.883	11.77	2.18	0.00
9.200	30.184	12.058	0.299	5.569		12.12	2.47	5	115	1.522	0.630	0.892	11.88	2.82	-0.02
9.300	30.512	11.238	0.347	4.374		11.29	3.08	4	115	1.540	0.640	0.900	10.82	3.56	-0.03
9.400	30.840	10.156	0.319	4.705		10.21	3.12	4	115	1.559	0.650	0.909	9.51	3.68	-0.04
9.500	31.168	9.060	0.265	5.671		9.12	2.91	4	115	1.578	0.660	0.918	8.22	3.52	-0.03
9.600	31.496	10.493	0.287	12.131		10.62	2.70	5	115	1.597	0.671	0.926	9.75	3.18	0.02
9.700	31.824	12.665	0.366	17.217		12.85	2.85	5	115	1.615	0.681	0.935	12.02	3.26	0.05
9.800	32.152	13.619	0.429	18.743		13.82	3.10	5	115	1.634	0.691	0.943	12.92	3.52	0.05
9.900	32.480	14.392	0.470	20.599		14.61	3.21	4	115	1.653	0.701	0.952	13.62	3.62	0.06
10.000	32.808	14.513	0.467	22.100		14.75	3.17	5	115	1.672	0.712	0.960	13.62	3.57	0.07
10.100	33.136	15.344	0.448	23.778		15.60	2.87	5	115	1.691	0.722	0.969	14.36	3.22	0.07
10.200	33.465	15.507	0.431	24.897		15.78	2.73	5	115	1.709	0.732	0.977	14.39	3.06	0.08
10.300	33.793	15.242	0.474	24.261		15.50	3.06	5	115	1.728	0.742	0.986	13.97	3.44	0.07
10.400	34.121	15.240	0.468	24.363		15.50	3.02	5	115	1.747	0.752	0.995	13.83	3.40	0.07
10.500	34.449	16.307	0.434	25.558		16.58	2.62	5	115	1.766	0.763	1.003	14.77	2.93	0.07
10.600	34.777	15.361	0.412	26.753		15.65	2.63	5	115	1.785	0.773	1.012	13.70	2.97	0.08
10.700	35.105	13.227	0.377	27.135		13.52	2.79	5	115	1.803	0.783	1.020	11.48	3.21	0.10
10.800	35.433	11.528	0.334	25.558		11.80	2.83	5	115	1.822	0.793	1.029	9.70	3.35	0.10
10.900	35.761	8.621	0.257	24.236		8.88	2.90	4	115	1.841	0.804	1.037	6.79	3.65	0.13
11.000	36.089	6.657	0.187	23.422		6.91	2.70	4	115	1.860	0.814	1.046	4.83	3.70	0.17
11.100	36.417	8.035	0.201	24.363		8.30	2.42	4	115	1.879	0.824	1.055	6.09	3.13	0.14
11.200	36.745	12.480	0.343	26.067		12.76	2.69	5	115	1.897	0.834	1.063	10.22	3.16	0.10
11.300	37.073	12.978	0.446	27.593		13.28	3.36	4	115	1.916	0.845	1.072	10.60	3.93	0.10
11.400	37.402	13.803	0.414	27.517		14.10	2.93	5	115	1.935	0.855	1.080	11.26	3.40	0.09
11.500	37.730	15.236	0.383	26.118		15.52	2.47	5	115	1.954	0.865	1.089	12.46	2.82	0.07
11.600	38.058	17.458	0.380	29.754		17.78	2.14	5	115	1.973	0.875	1.097	14.40	2.40	0.08
11.700	38.386	19.152	0.521	32.501		19.50	2.67	5	115	1.991	0.886	1.106	15.83	2.97	0.08
11.800	38.714	18.296	0.548	31.229		18.63	2.94	5	115	2.010	0.896	1.114	14.92	3.30	0.08
11.900	39.042	20.210	0.531	33.849		20.58	2.58	5	115	2.029	0.906	1.123	16.52	2.86	0.08
12.000	39.370	22.892	0.604	35.095		23.27	2.60	5	115	2.048	0.916	1.132	18.76	2.85	0.08
12.100	39.698	25.004	0.611	33.086		25.36	2.41	6	115	2.067	0.927	1.140	20.43	2.62	0.06
12.200	40.026	28.401	0.466	36.316		28.79	1.62	6	115	2.085	0.937	1.149	23.25	1.74	0.06
12.300	40.354	30.812	0.540	32.018		31.16	1.73	6	115	2.104	0.947	1.157	25.11	1.86	0.05
12.400	40.682	27.176	0.731	31.280		27.51	2.66	6	115	2.123	0.957	1.166	21.78	2.88	0.05
12.500	41.011	21.919	0.507	31.992		22.26	2.28	6	115	2.142	0.967	1.174	17.14	2.52	0.07
12.600	41.339	21.517	0.458	29.398		21.83	2.10	6	115	2.161	0.978	1.183	16.63	2.33	0.06
12.700	41.667	22.588	0.445	31.636		22.93	1.94	6	115	2.179	0.988	1.191	17.42	2.15	0.06
12.800	41.995	23.055	0.479	33.900		23.42	2.05	6	115	2.198	0.998	1.200	17.69	2.26	0.07
12.900	42.323	21.654	0.398	30.467		21.98	1.81	6	115	2.217	1.008	1.209	16.35	2.01	0.06
13.000	42.651	16.778	0.310	28.737		17.09	1.81	6	115	2.236	1.019	1.217	12.20	2.09	0.07
13.100	42.979	13.624	0.308	26.754		13.91	2.21	5	115	2.255	1.029	1.226	9.51	2.64	0.08

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	4	2.84	13.55	3.00E-8	3.7	4.2				341	0.76	0.94	4.2
8.300	27.231	4	2.77	17.14	3.00E-8	4.4	5.1				437	0.97	1.19	5.4
8.400	27.559	4	2.69	20.99	3.00E-8	5.2	5.9				543	1.21	1.47	6.6
8.500	27.887	4	2.60	24.15	3.00E-8	5.7	6.5				634	1.41	1.69	7.6
8.600	28.215	4	2.64	24.43	3.00E-8	6.0	6.7				645	1.43	1.70	7.7
8.700	28.543	4	2.81	19.57	3.00E-8	5.3	5.9				515	1.14	1.35	6.1
8.800	28.871	3	2.92	15.39	1.00E-9	4.5	5.0				406	0.90	1.05	4.7
8.900	29.199	3	3.00	11.55	1.00E-9	3.7	4.1				306	0.68	0.78	3.5
9.000	29.528	3	2.91	10.80	1.00E-9	3.3	3.7				290	0.64	0.74	3.3
9.100	29.856	4	2.86	11.49	3.00E-8	3.5	3.8				312	0.69	0.78	3.5
9.200	30.184	3	2.92	11.65	1.00E-9	3.7	4.0				318	0.71	0.79	3.6
9.300	30.512	3	3.01	10.67	1.00E-9	3.6	3.9				292	0.65	0.72	3.2
9.400	30.840	3	3.07	9.41	1.00E-9	3.4	3.7				259	0.58	0.63	2.9
9.500	31.168	3	3.11	8.15	1.00E-9	3.1	3.3				226	0.50	0.55	2.5
9.600	31.496	3	3.02	9.64	1.00E-9	3.4	3.6				271	0.60	0.65	2.9
9.700	31.824	3	2.95	11.86	1.00E-9	3.9	4.2				337	0.75	0.80	3.6
9.800	32.152	3	2.95	12.76	1.00E-9	4.2	4.5				366	0.81	0.86	3.9
9.900	32.480	3	2.94	13.46	1.00E-9	4.4	4.7				389	0.86	0.91	4.1
10.000	32.808	3	2.93	13.47	1.00E-9	4.5	4.7				392	0.87	0.91	4.1
10.100	33.136	3	2.89	14.20	1.00E-9	4.6	4.8				417	0.93	0.96	4.3
10.200	33.465	3	2.87	14.24	1.00E-9	4.6	4.8				422	0.94	0.96	4.3
10.300	33.793	3	2.91	13.86	1.00E-9	4.6	4.8				413	0.92	0.93	4.2
10.400	34.121	3	2.91	13.73	1.00E-9	4.6	4.8				413	0.92	0.92	4.1
10.500	34.449	4	2.85	14.66	3.00E-8	4.8	4.9				445	0.99	0.98	4.4
10.600	34.777	3	2.88	13.63	1.00E-9	4.6	4.7				416	0.92	0.91	4.1
10.700	35.105	3	2.96	11.44	1.00E-9	4.1	4.2				351	0.78	0.77	3.4
10.800	35.433	3	3.03	9.68	1.00E-9	3.8	3.8				299	0.67	0.65	2.9
10.900	35.761	3	3.18	6.78	1.00E-9	3.1	3.1				211	0.47	0.45	2.0
11.000	36.089	3	3.31	4.83	1.00E-9	2.6	2.7				152	0.34	0.32	1.4
11.100	36.417	3	3.19	6.09	1.00E-9	2.9	2.9				193	0.43	0.41	1.8
11.200	36.745	3	3.00	10.22	1.00E-9	4.0	4.0				326	0.72	0.68	3.1
11.300	37.073	3	3.04	10.61	1.00E-9	4.3	4.2				341	0.76	0.71	3.2
11.400	37.402	3	2.99	11.28	1.00E-9	4.4	4.3				365	0.81	0.75	3.4
11.500	37.730	3	2.90	12.50	1.00E-9	4.6	4.5				407	0.90	0.83	3.7
11.600	38.058	4	2.81	14.48	3.00E-8	5.0	4.9				474	1.05	0.96	4.3
11.700	38.386	4	2.83	15.93	3.00E-8	5.5	5.4				525	1.17	1.06	4.8
11.800	38.714	3	2.88	15.02	1.00E-9	5.4	5.3				499	1.11	0.99	4.5
11.900	39.042	4	2.81	16.66	3.00E-8	5.8	5.6				556	1.24	1.10	5.0
12.000	39.370	4	2.76	18.96	3.00E-8	6.4	6.2				637	1.41	1.25	5.6
12.100	39.698	4	2.71	20.71	3.00E-8	6.8	6.5				699	1.55	1.36	6.1
12.200	40.026	4	2.56	23.68	3.00E-8	7.1	6.8				801	1.78	1.55	7.0
12.300	40.354	4	2.55	25.62	3.00E-8	7.7	7.4				872	1.94	1.67	7.5
12.400	40.682	4	2.71	22.16	3.00E-8	7.4	7.0				762	1.69	1.45	6.5
12.500	41.011	4	2.76	17.43	3.00E-8	6.1	5.8				604	1.34	1.14	5.1
12.600	41.339	4	2.75	16.94	3.00E-8	6.0	5.6				590	1.31	1.11	5.0
12.700	41.667	4	2.72	17.79	3.00E-8	6.1	5.8				622	1.38	1.16	5.2
12.800	41.995	4	2.72	18.08	3.00E-8	6.3	5.9				637	1.41	1.18	5.3
12.900	42.323	4	2.72	16.74	3.00E-8	5.9	5.5				593	1.32	1.09	4.9
13.000	42.651	4	2.84	12.45	3.00E-8	4.9	4.5				446	0.99	0.81	3.7
13.100	42.979	3	2.98	9.65	1.00E-9	4.3	4.0				350	0.78	0.63	2.9

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	10.503	0.304	26.220		10.79	2.82	4	115	2.273	1.039	1.234	6.90	3.58	0.10
13.300	43.635	10.555	0.234	26.703		10.84	2.16	5	115	2.292	1.049	1.243	6.88	2.74	0.10
13.400	43.963	9.313	0.235	23.600		9.57	2.46	5	115	2.311	1.060	1.251	5.80	3.24	0.09
13.500	44.291	8.220	0.205	20.701		8.44	2.42	4	115	2.330	1.070	1.260	4.85	3.35	0.07
13.600	44.619	8.457	0.239	20.803		8.68	2.76	4	115	2.349	1.080	1.269	4.99	3.78	0.07
13.700	44.948	8.380	0.334	17.471		8.57	3.90	3	111	2.367	1.090	1.277	4.86	5.39	0.03
13.800	45.276	4.350	0.406	13.555		4.50	9.04	2	80	2.380	1.101	1.279	1.65	19.20	-0.06
13.900	45.604	2.621	0.248	13.962		2.77	8.96	2	80	2.393	1.111	1.282	0.30	65.50	-0.28
14.000	45.932	2.379	0.197	14.928		2.54	7.75	2	80	2.406	1.121	1.285	0.10	146.42	-0.34
14.100	46.260	2.395	0.204	20.091		2.61	7.81	2	80	2.419	1.131	1.288	0.15	105.75	1.63
14.200	46.588	2.296	0.185	26.753		2.59	7.17	2	80	2.432	1.141	1.291	0.12	121.01	5.12
14.300	46.916	2.093	0.198	35.705		2.48	7.98	2	80	2.445	1.152	1.293	0.03	596.98	42.86
14.400	47.244	2.000	0.192	37.892		2.41	7.96	2	80	2.458	1.162	1.296	-0.04	-391.27	-31.97
14.500	47.572	2.020	0.161	42.343		2.48	6.50	2	80	2.471	1.172	1.299	0.00	2672.60	311.50
14.600	47.900	2.161	0.178	45.140		2.65	6.72	2	80	2.484	1.182	1.302	0.13	108.41	12.59
14.700	48.228	2.438	0.206	50.761		2.99	6.91	2	80	2.497	1.193	1.305	0.37	42.18	5.03
14.800	48.556	3.040	0.204	87.865		3.99	5.12	3	111	2.516	1.203	1.313	1.12	13.87	3.48
14.900	48.885	2.873	0.188	144.094		4.43	4.24	3	111	2.534	1.213	1.321	1.43	9.92	4.83
15.000	49.213	5.143	0.287	148.290		6.74	4.26	3	111	2.552	1.223	1.329	3.15	6.85	2.26
15.100	49.541	4.932	0.388	50.685		5.48	7.08	3	111	2.570	1.234	1.337	2.18	13.34	0.83
15.200	49.869	2.479	0.132	66.605		3.20	4.14	3	111	2.589	1.244	1.345	0.45	21.71	5.83

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	3	3.17	6.94	1.00E-9	3.8	3.5				255	0.57	0.46	2.1
13.300	43.635	3	3.11	6.95	1.00E-9	3.6	3.3				257	0.57	0.46	2.1
13.400	43.963	3	3.21	5.83	1.00E-9	3.4	3.2				218	0.48	0.39	1.7
13.500	44.291	3	3.29	4.86	1.00E-9	3.2	2.9				183	0.41	0.32	1.5
13.600	44.619	3	3.30	4.99	1.00E-9	3.3	3.0				190	0.42	0.33	1.5
13.700	44.948	3	3.40	4.86	1.00E-9	3.6	3.2				186	0.41	0.32	1.5
13.800	45.276	2	4.10	1.65	3.00E-7	4.5	4.1				64	0.14	0.11	0.5
13.900	45.604	2	5.02	0.30	3.00E-7	-3.2	-2.9				11	0.03	0.02	0.1
14.000	45.932	2	5.59	0.10	3.00E-7	-1.2	-1.1				4	0.01	0.01	0.0
14.100	46.260	2	5.38	0.15	3.00E-7	-1.6	-1.4				6	0.01	0.01	0.0
14.200	46.588	2	5.50	0.12	3.00E-7	-1.3	-1.2				5	0.01	0.01	0.0
14.300	46.916	2	6.45	0.03	3.00E-7	-0.6	-0.5				1	0.00	0.00	0.0
14.400	47.244	1			3.00E-8						-1	0.00	0.00	0.0
14.500	47.572	2	7.43	0.00	3.00E-7	-0.4	-0.3				0	0.00	0.00	0.0
14.600	47.900	2	5.45	0.13	3.00E-7	-1.3	-1.2				5	0.01	0.01	0.0
14.700	48.228	2	4.82	0.37	3.00E-7	-5.6	-5.0				15	0.03	0.02	0.1
14.800	48.556	2	4.16	1.12	3.00E-7	3.5	3.1				44	0.10	0.07	0.3
14.900	48.885	2	3.99	1.43	3.00E-7	2.4	2.1				57	0.13	0.10	0.4
15.000	49.213	2	3.61	3.15	3.00E-7	2.7	2.4				126	0.28	0.21	0.9
15.100	49.541	2	3.91	2.18	3.00E-7	3.7	3.3				87	0.19	0.15	0.7
15.200	49.869	2	4.59	0.45	3.00E-7	146.7	130.1				18	0.04	0.03	0.1

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-948
Site:	SOUTH TEXAS PROJ.	Date:	7/21/2007
Engineer:	M.COOK	Time:	8:11 AM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	2.592	0.020	9.391		2.69	0.74
0.100	0.328	3.438	0.020	10.622		3.55	0.56
0.150	0.492	4.421	0.020	11.009		4.54	0.44
0.200	0.656	5.648	0.020	9.532		5.75	0.35
0.250	0.820	6.412	0.020	11.431		6.54	0.31
0.300	0.984	6.330	0.020	9.778		6.44	0.31
0.350	1.148	6.958	0.020	6.858		7.03	0.28
0.400	1.312	7.231	0.020	9.039		7.33	0.27
0.450	1.476	7.122	0.020	5.416		7.18	0.28
0.500	1.640	7.586	0.020	6.858		7.66	0.26
0.550	1.804	7.258	0.020	6.964		7.33	0.27
0.600	1.969	6.876	0.020	7.210		6.95	0.29
0.650	2.133	6.303	0.020	6.472		6.37	0.31
0.700	2.297	6.085	0.020	6.331		6.15	0.33
0.750	2.461	6.276	0.020	6.366		6.34	0.32
0.800	2.625	6.439	0.020	6.331		6.51	0.31
0.850	2.789	6.521	0.020	5.909		6.58	0.30
0.900	2.953	6.631	0.020	5.768		6.69	0.30
0.950	3.117	6.822	0.020	6.648		6.89	0.29
1.000	3.281	7.013	0.020	7.140		7.09	0.28
1.050	3.445	7.149	0.020	7.210		7.23	0.28
1.100	3.609	6.876	0.020	7.316		6.96	0.29
1.150	3.773	7.313	0.020	9.180		7.41	0.27
1.200	3.937	7.477	0.020	9.039		7.57	0.26
1.250	4.101	7.695	0.020	8.898		7.79	0.26
1.300	4.265	7.640	0.020	7.843		7.72	0.26
1.350	4.429	8.186	0.020	8.582		8.28	0.24
1.400	4.593	8.868	0.020	10.270		8.98	0.22
1.450	4.757	9.168	0.020	11.185		9.29	0.22
1.500	4.921	10.014	0.020	18.219		10.21	0.20
1.550	5.085	10.696	0.020	13.893		10.85	0.18
1.600	5.249	11.051	0.020	14.772		11.21	0.18
1.650	5.413	10.887	0.020	16.496		11.07	0.18
1.700	5.577	10.587	0.020	15.511		10.75	0.19
1.750	5.741	10.096	0.020	16.496		10.27	0.19
1.800	5.906	10.287	0.020	16.460		10.46	0.19
1.850	6.070	10.778	0.020	17.199		10.96	0.18
1.900	6.234	10.806	0.020	16.496		10.98	0.18

1.950	6.398	11.160	0.020	15.194	11.32	0.18
2.000	6.562	10.533	0.020	14.807	10.69	0.19
2.050	6.726	9.823	0.020	11.185	9.94	0.20
2.100	6.890	10.014	0.020	10.341	10.13	0.20
2.150	7.054	10.369	0.020	8.969	10.47	0.19
2.200	7.218	11.979	0.020	11.395	12.10	0.17
2.250	7.382	12.170	0.020	9.918	12.28	0.16
2.300	7.546	11.597	0.020	10.868	11.71	0.17
2.350	7.710	12.006	0.020	10.833	12.12	0.16
2.400	7.874	12.388	0.020	11.220	12.51	0.16
2.450	8.038	13.452	0.020	14.737	13.61	0.15
2.500	8.202	14.926	0.020	18.570	15.13	0.13
2.550	8.366	13.288	0.020	16.390	13.47	0.15
2.600	8.530	13.288	0.020	19.380	13.50	0.15
2.650	8.694	13.479	0.020	22.088	13.72	0.15
2.700	8.858	15.199	0.020	18.817	15.40	0.13
2.750	9.022	15.771	0.020	22.721	16.02	0.12
2.800	9.186	14.189	0.020	21.736	14.42	0.14
2.850	9.350	14.216	0.020	19.837	14.43	0.14
2.900	9.514	14.435	0.020	16.812	14.62	0.14
2.950	9.678	14.871	0.020	20.294	15.09	0.13
3.000	9.843	16.344	0.020	15.511	16.51	0.12
3.050	10.007	17.218	0.020	13.400	17.36	0.12
3.100	10.171	17.955	0.083	19.942	18.17	0.46
3.150	10.335	19.319	0.107	22.896	19.57	0.55
3.200	10.499	19.455	0.147	25.429	19.73	0.75
3.250	10.663	19.810	0.201	30.248	20.14	1.00
3.300	10.827	20.355	0.251	33.272	20.71	1.21
3.350	10.991	20.683	0.230	34.644	21.06	1.09
3.400	11.155	20.546	0.092	35.699	20.93	0.44
3.450	11.319	22.075	0.121	42.733	22.54	0.54
3.500	11.483	21.911	0.155	38.689	22.33	0.69
3.550	11.647	21.147	0.180	42.100	21.60	0.83
3.600	11.811	21.829	0.197	42.523	22.29	0.88
3.650	11.975	22.184	0.212	43.507	22.65	0.94
3.700	12.139	21.720	0.215	45.899	22.22	0.97
3.750	12.303	21.283	0.274	48.924	21.81	1.26
3.800	12.467	22.020	0.289	50.929	22.57	1.28
3.850	12.631	21.966	0.320	46.884	22.47	1.42
3.900	12.795	20.874	0.296	50.119	21.42	1.38
3.950	12.959	20.874	0.279	58.314	21.50	1.30
4.000	13.123	21.666	0.301	61.797	22.33	1.35
4.050	13.287	21.856	0.353	56.345	22.46	1.57
4.100	13.451	22.702	0.341	61.128	23.36	1.46
4.150	13.615	23.412	0.282	70.378	24.17	1.17
4.200	13.780	24.257	0.248	107.132	25.41	0.98
4.250	13.944	23.875	0.188	104.354	25.00	0.75
4.300	14.108	24.148	0.230	109.173	25.33	0.91
4.350	14.272	25.295	0.296	107.062	26.45	1.12
4.400	14.436	25.622	0.360	102.244	26.73	1.35
4.450	14.600	25.431	0.410	92.149	26.43	1.55

4.500	14.764	25.622	0.427	85.889	26.55	1.61
4.550	14.928	24.721	0.470	91.094	25.70	1.83
4.600	15.092	24.394	0.475	75.126	25.21	1.88
4.650	15.256	23.657	0.478	73.790	24.45	1.95
4.700	15.420	25.240	0.496	87.472	26.18	1.89
4.750	15.584	27.887	0.393	74.212	28.69	1.37
4.800	15.748	28.023	0.482	74.669	28.83	1.67
4.850	15.912	29.224	0.504	62.922	29.90	1.69
4.900	16.076	29.224	0.517	72.910	30.01	1.72
4.950	16.240	28.487	0.481	63.766	29.18	1.65
5.000	16.404	27.395	0.437	57.259	28.01	1.56
5.050	16.568	25.867	0.437	49.838	26.41	1.65
5.100	16.732	24.339	0.459	46.215	24.84	1.85
5.150	16.896	24.176	0.448	45.969	24.67	1.82
5.200	17.060	24.694	0.459	53.215	25.27	1.82
5.250	17.224	24.503	0.497	53.003	25.08	1.98
5.300	17.388	24.503	0.609	42.417	24.96	2.44
5.350	17.552	29.196	0.737	43.859	29.67	2.48
5.400	17.717	26.522	0.599	49.451	27.06	2.21
5.450	17.881	26.659	0.542	49.099	27.19	1.99
5.500	18.045	24.203	0.640	22.545	24.45	2.62
5.550	18.209	18.855	0.569	12.943	18.99	3.00
5.600	18.373	22.920	0.625	20.224	23.14	2.70
5.650	18.537	38.119	0.589	9.602	38.22	1.54
5.700	18.701	40.056	0.551	7.527	40.14	1.37
5.750	18.865	36.045	0.462	8.160	36.13	1.28
5.800	19.029	36.345	0.541	5.557	36.41	1.49
5.850	19.193	31.516	0.620	10.235	31.63	1.96
5.900	19.357	40.575	0.457	22.369	40.82	1.12
5.950	19.521	69.880	0.233	5.311	69.94	0.33
6.000	19.685	77.002	0.287	3.482	77.04	0.37
6.050	19.849	77.739	0.470	2.110	77.76	0.60
6.100	20.013	77.302	0.534	1.688	77.32	0.69
6.150	20.177	78.175	0.581	1.724	78.19	0.74
6.200	20.341	77.466	0.528	1.759	77.48	0.68
6.250	20.505	76.020	0.213	1.548	76.04	0.28
6.300	20.669	74.191	0.206	1.231	74.20	0.28
6.350	20.833	67.179	0.243	5.206	67.24	0.36
6.400	20.997	63.768	0.317	3.341	63.80	0.50
6.450	21.161	62.649	0.312	2.251	62.67	0.50
6.500	21.325	63.195	0.350	1.266	63.21	0.55
6.550	21.490	64.969	0.186	0.317	64.97	0.29
6.600	21.654	65.678	0.125	-0.563	65.67	0.19
6.650	21.818	62.867	0.223	-1.055	62.86	0.35
6.700	21.982	59.539	0.290	-1.407	59.52	0.49
6.750	22.146	60.439	0.395	-1.301	60.42	0.65
6.800	22.310	64.860	0.585	-0.809	64.85	0.90
6.850	22.474	78.339	0.801	0.246	78.34	1.02
6.900	22.638	121.151	0.450	2.286	121.18	0.37
6.950	22.802	99.377	1.236	0.879	99.39	1.24
7.000	22.966	62.758	1.549	5.698	62.82	2.47

7.050	23.130	37.082	1.503	6.401	37.15	4.05
7.100	23.294	31.816	1.177	29.474	32.13	3.66
7.150	23.458	51.653	1.005	65.067	52.36	1.92
7.200	23.622	95.120	0.760	25.007	95.39	0.80
7.250	23.786	114.057	0.774	10.270	114.17	0.68
7.300	23.950	135.285	0.724	8.582	135.38	0.53
7.350	24.114	171.249	0.507	8.441	171.34	0.30
7.400	24.278	127.427	0.889	12.275	127.56	0.70
7.450	24.442	117.522	0.731	5.839	117.59	0.62
7.500	24.606	98.285	0.684	4.115	98.33	0.70
7.550	24.770	92.719	0.425	3.869	92.76	0.46
7.600	24.934	91.054	0.284	2.955	91.09	0.31
7.650	25.098	87.207	0.374	1.794	87.23	0.43
7.700	25.262	87.070	0.504	1.196	87.08	0.58
7.750	25.427	95.038	0.602	1.231	95.05	0.63
7.800	25.591	107.835	0.726	1.688	107.85	0.67
7.850	25.755	120.141	0.833	2.251	120.17	0.69
7.900	25.919	126.990	0.975	2.743	127.02	0.77
7.950	26.083	130.865	0.592	3.025	130.90	0.45
8.000	26.247	143.280	0.942	4.220	143.33	0.66
8.050	26.411	153.049	1.082	13.225	153.19	0.71
8.100	26.575	187.839	1.290	9.637	187.94	0.69
8.150	26.739	243.994	1.738	11.818	244.12	0.71
8.200	26.903	283.450	2.243	12.732	283.59	0.79
8.250	27.067	273.108	2.544	11.607	273.23	0.93
8.300	27.231	248.305	2.276	10.833	248.42	0.92
8.350	27.395	248.005	1.854	11.993	248.13	0.75
8.400	27.559	208.440	1.919	21.525	208.67	0.92
8.450	27.723	295.565	1.553	13.682	295.71	0.53
8.500	27.887	296.902	1.721	10.200	297.01	0.58
8.550	28.051	294.501	1.956	7.456	294.58	0.66
8.600	28.215	279.711	2.171	6.401	279.78	0.78
8.650	28.379	272.999	2.353	6.823	273.07	0.86
8.700	28.543	258.264	2.286	7.632	258.35	0.88
8.750	28.707	237.472	2.184	8.195	237.56	0.92
8.800	28.871	204.974	1.945	8.195	205.06	0.95
8.850	29.035	178.207	1.680	8.617	178.30	0.94
8.900	29.199	166.937	1.486	9.426	167.04	0.89
8.950	29.364	170.457	1.404	10.446	170.57	0.82
9.000	29.528	178.561	1.095	11.290	178.68	0.61
9.050	29.692	196.052	1.269	12.064	196.18	0.65
9.100	29.856	209.258	1.487	16.320	209.43	0.71
9.150	30.020	225.030	0.634	13.576	225.18	0.28
9.200	30.184	256.546	0.910	15.018	256.71	0.35
9.250	30.348	241.756	1.308	11.360	241.88	0.54
9.300	30.512	267.706	1.632	10.657	267.82	0.61
9.350	30.676	247.350	1.814	9.778	247.46	0.73
9.400	30.840	227.158	1.582	9.461	227.26	0.70
9.450	31.004	212.123	1.445	10.481	212.24	0.68
9.500	31.168	202.273	1.329	9.848	202.38	0.66
9.550	31.332	183.882	1.211	9.320	183.98	0.66

9.600	31.496	179.516	1.170	9.848	179.62	0.65
9.650	31.660	165.546	1.092	9.848	165.65	0.66
9.700	31.824	144.453	0.969	9.285	144.55	0.67
9.750	31.988	141.015	0.905	10.341	141.13	0.64
9.800	32.152	147.509	0.915	11.185	147.63	0.62
9.850	32.316	152.367	0.946	11.747	152.49	0.62
9.900	32.480	161.316	1.020	12.979	161.46	0.63
9.950	32.644	157.033	0.941	11.923	157.16	0.60
10.000	32.808	151.220	0.939	11.501	151.34	0.62
10.050	32.972	136.759	0.890	11.009	136.88	0.65
10.100	33.136	142.762	0.884	11.325	142.88	0.62
10.150	33.301	153.976	1.008	12.908	154.12	0.65
10.200	33.465	167.702	1.149	13.963	167.85	0.68
10.250	33.629	179.571	1.303	14.421	179.73	0.72
10.300	33.793	191.904	1.408	14.772	192.06	0.73
10.350	33.957	213.515	1.359	16.073	213.69	0.64
10.400	34.121	226.203	1.450	16.179	226.38	0.64
10.450	34.285	223.693	1.612	19.731	223.91	0.72
10.500	34.449	282.986	1.020	18.993	283.19	0.36
10.550	34.613	360.124	0.611	18.676	360.33	0.17
10.600	34.777	400.071	0.538	19.626	400.28	0.13
10.650	34.941	398.134	0.334	3.728	398.17	0.08
10.700	35.105	416.143	0.612	9.637	416.25	0.15
10.750	35.269	411.204	0.769	13.752	411.35	0.19
10.800	35.433	423.210	1.105	9.180	423.31	0.26
10.850	35.597	416.552	1.032	17.938	416.75	0.25
10.900	35.761	422.664	0.843	14.702	422.82	0.20
10.950	35.925	400.289	0.649	17.164	400.47	0.16
11.000	36.089	399.907	0.893	17.656	400.10	0.22
11.050	36.253	394.368	0.020	17.516	394.56	0.01
11.100	36.417	413.141	0.020	15.651	413.31	0.00

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Units:	Imperial
Site:	SOUTH TEXAS PROJ.	Data averaging interval:	0.100 meters
Engineer:	M.COOK	Assumed depth of water:	10.003 feet
Sounding:	C-948	Net area ratio of cone:	0.85
Date:	7/21/2007	Unit weight of water:	62.4 lb/ft^3
Time:	8:11 AM	Relative density constant, C_{DR}:	350
		Young's modulus for sands, α:	4
		Small strain shear modulus number, S_G (sands):	180
		Small strain shear modulus number, C_G (clays):	30
		N_{kt} for clays:	15
		OCR number, k_{OCR}:	0.3

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	3.484	0.020	10.341		3.60	0.56	1	111	0.018	0.000	0.018	195.74	0.56	0.21
0.200	0.656	5.494	0.020	10.657		5.61	0.36	1	111	0.037	0.000	0.037	152.46	0.36	0.14
0.300	0.984	6.567	0.020	9.356		6.67	0.30	1	111	0.055	0.000	0.055	120.62	0.30	0.10
0.400	1.312	7.104	0.020	7.104		7.18	0.28	1	111	0.073	0.000	0.073	97.23	0.28	0.07
0.500	1.640	7.322	0.020	6.413		7.39	0.27	1	111	0.091	0.000	0.091	79.89	0.27	0.06
0.600	1.969	6.812	0.020	6.882		6.89	0.29	1	111	0.110	0.000	0.110	61.81	0.30	0.07
0.700	2.297	6.221	0.020	6.390		6.29	0.32	1	111	0.128	0.000	0.128	48.17	0.32	0.07
0.800	2.625	6.412	0.020	6.202		6.48	0.31	1	111	0.146	0.000	0.146	43.32	0.32	0.07
0.900	2.953	6.658	0.020	6.108		6.72	0.30	1	111	0.164	0.000	0.164	39.88	0.30	0.07
1.000	3.281	6.995	0.020	6.999		7.07	0.28	1	111	0.183	0.000	0.183	37.69	0.29	0.07
1.100	3.609	7.113	0.020	7.902		7.20	0.28	1	111	0.201	0.000	0.201	34.81	0.29	0.08
1.200	3.937	7.495	0.020	9.039		7.59	0.26	1	111	0.219	0.000	0.219	33.62	0.27	0.09
1.300	4.265	7.840	0.020	8.441		7.93	0.25	1	111	0.238	0.000	0.238	32.39	0.26	0.08
1.400	4.593	8.741	0.020	10.012		8.85	0.23	1	111	0.256	0.000	0.256	33.59	0.23	0.08
1.500	4.921	9.959	0.020	14.432		10.12	0.20	1	111	0.274	0.000	0.274	35.90	0.20	0.11
1.600	5.249	10.878	0.020	15.054		11.04	0.18	6	115	0.293	0.000	0.293	36.69	0.19	0.10
1.700	5.577	10.523	0.020	16.168		10.70	0.19	6	115	0.312	0.000	0.312	33.32	0.19	0.11
1.800	5.906	10.387	0.020	16.718		10.57	0.19	9	124	0.332	0.000	0.332	30.82	0.20	0.12
1.900	6.234	10.915	0.020	16.296		11.09	0.18	6	115	0.351	0.000	0.351	30.61	0.19	0.11
2.000	6.562	10.505	0.020	13.729		10.65	0.19	9	124	0.371	0.000	0.371	27.70	0.19	0.10
2.100	6.890	10.069	0.020	10.165		10.18	0.20	1	111	0.390	0.000	0.390	25.13	0.20	0.07
2.200	7.218	11.506	0.020	10.094		11.62	0.17	6	115	0.408	0.000	0.408	27.45	0.18	0.06
2.300	7.546	11.924	0.020	10.540		12.04	0.17	6	115	0.427	0.000	0.427	27.19	0.17	0.07
2.400	7.874	12.615	0.020	12.263		12.75	0.16	6	115	0.446	0.000	0.446	27.59	0.16	0.07
2.500	8.202	13.889	0.020	16.566		14.07	0.14	6	115	0.465	0.000	0.465	29.27	0.15	0.09
2.600	8.530	13.352	0.020	19.286		13.56	0.15	6	115	0.483	0.000	0.483	27.05	0.15	0.11
2.700	8.858	14.816	0.020	21.209		15.05	0.13	6	115	0.502	0.000	0.502	28.95	0.14	0.10
2.800	9.186	14.725	0.020	21.431		14.96	0.13	6	115	0.521	0.000	0.521	27.70	0.14	0.11
2.900	9.514	14.507	0.020	18.981		14.71	0.14	6	115	0.540	0.000	0.540	26.25	0.14	0.10
3.000	9.843	16.144	0.020	16.402		16.32	0.12	7	118	0.559	0.000	0.559	28.19	0.13	0.07
3.100	10.171	18.164	0.070	18.746		18.37	0.38	7	118	0.579	0.005	0.573	31.03	0.39	0.08

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	6	1.52	25.72	3.00E-4	0.6	4.4	27	44	14	74			
0.200	0.656	6	1.50	28.33	3.00E-4	0.9	4.9	28	43	22	108			
0.300	0.984	6	1.56	27.46	3.00E-4	1.1	4.8	28	41	27	131			
0.400	1.312	6	1.63	25.56	3.00E-4	1.2	4.6	27	40	29	148			
0.500	1.640	6	1.70	24.53	3.00E-4	1.3	4.4	26	39	30	161			
0.600	1.969	6	1.82	22.41	3.00E-4	1.3	3.9	25	38	28	167			
0.700	2.297	6	1.93	20.14	3.00E-4	1.2	3.4	24	36	25	171			
0.800	2.625	6	1.97	19.58	3.00E-4	1.2	3.4	24	36	26	180			
0.900	2.953	6	2.00	19.20	3.00E-4	1.3	3.3	23	35	27	190			
1.000	3.281	6	2.01	19.07	3.00E-4	1.4	3.3	23	35	28	200			
1.100	3.609	6	2.04	18.55	3.00E-4	1.4	3.3	23	34	29	207			
1.200	3.937	6	2.05	18.58	3.00E-4	1.5	3.3	23	34	30	217			
1.300	4.265	6	2.06	18.52	3.00E-4	1.6	3.3	23	34	32	227			
1.400	4.593	6	2.03	19.50	3.00E-4	1.7	3.5	24	34	35	241			
1.500	4.921	6	1.99	21.03	3.00E-4	1.9	3.8	25	35	40	258			
1.600	5.249	6	1.97	21.90	3.00E-4	2.1	4.0	25	35	44	271			
1.700	5.577	6	2.01	20.72	3.00E-4	2.1	3.8	24	34	43	274			
1.800	5.906	6	2.05	19.88	3.00E-4	2.1	3.7	24	34	42	279			
1.900	6.234	6	2.04	20.15	3.00E-4	2.2	3.8	24	34	44	289			
2.000	6.562	5	2.09	18.90	3.00E-6	2.1	3.6	23	33	43	290			
2.100	6.890	5	2.14	17.70	3.00E-6	2.1	3.4	22	32	41	290			
2.200	7.218	5	2.09	19.36	3.00E-6	2.3	3.8	24	33	46	308			
2.300	7.546	5	2.09	19.50	3.00E-6	2.4	3.8	24	33	48	317			
2.400	7.874	6	2.07	20.05	3.00E-4	2.6	3.9	24	33	51	327			
2.500	8.202	6	2.04	21.42	3.00E-4	2.8	4.2	25	33	56	343			
2.600	8.530	6	2.08	20.26	3.00E-4	2.7	4.0	24	33	54	343			
2.700	8.858	6	2.04	21.81	3.00E-4	3.0	4.3	25	33	60	360			
2.800	9.186	6	2.06	21.25	3.00E-4	3.0	4.2	25	33	60	364			
2.900	9.514	5	2.08	20.51	3.00E-6	2.9	4.1	24	33	59	366			
3.000	9.843	6	2.05	22.14	3.00E-4	3.2	4.4	25	33	65	383			
3.100	10.171	5	2.14	25.04	3.00E-6	3.8	5.1	27	34	73	402			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction ratio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	19.528	0.152	26.191		19.81	0.77	6	115	0.597	0.015	0.582	33.02	0.79	0.10
3.300	10.827	20.283	0.227	32.721		20.64	1.10	6	115	0.616	0.026	0.590	33.91	1.14	0.12
3.400	11.155	21.101	0.148	37.692		21.51	0.69	7	118	0.635	0.036	0.599	34.82	0.71	0.13
3.500	11.483	21.711	0.152	41.174		22.16	0.69	7	118	0.655	0.046	0.609	35.33	0.71	0.14
3.600	11.811	21.720	0.196	42.710		22.18	0.89	7	118	0.674	0.056	0.618	34.82	0.91	0.14
3.700	12.139	21.729	0.234	46.110		22.23	1.05	6	115	0.693	0.067	0.626	34.39	1.09	0.15
3.800	12.467	21.756	0.294	48.912		22.28	1.32	6	115	0.712	0.077	0.635	33.99	1.36	0.16
3.900	12.795	21.238	0.298	51.772		21.80	1.37	6	115	0.730	0.087	0.643	32.75	1.42	0.17
4.000	13.123	21.465	0.311	58.819		22.10	1.41	6	115	0.749	0.097	0.652	32.75	1.46	0.19
4.100	13.451	22.657	0.325	62.617		23.33	1.39	6	115	0.768	0.108	0.660	34.17	1.44	0.20
4.200	13.780	23.848	0.239	93.955		24.86	0.96	7	118	0.787	0.118	0.670	35.96	0.99	0.28
4.300	14.108	24.439	0.238	106.863		25.59	0.93	7	118	0.807	0.128	0.679	36.52	0.96	0.31
4.400	14.436	25.449	0.355	100.485		26.53	1.34	6	115	0.825	0.138	0.687	37.41	1.38	0.28
4.500	14.764	25.258	0.436	89.711		26.23	1.66	6	115	0.844	0.149	0.696	36.48	1.72	0.25
4.600	15.092	24.257	0.474	80.003		25.12	1.89	6	115	0.863	0.159	0.704	34.44	1.96	0.23
4.700	15.420	25.595	0.456	78.491		26.44	1.72	6	115	0.882	0.169	0.713	35.86	1.78	0.21
4.800	15.748	28.378	0.460	70.601		29.14	1.58	6	115	0.901	0.179	0.721	39.14	1.63	0.17
4.900	16.076	28.978	0.501	66.533		29.70	1.69	6	115	0.919	0.189	0.730	39.42	1.74	0.16
5.000	16.404	27.250	0.452	56.954		27.86	1.62	6	115	0.938	0.200	0.739	36.46	1.68	0.14
5.100	16.732	24.794	0.448	47.341		25.31	1.77	6	115	0.957	0.210	0.747	32.59	1.84	0.13
5.200	17.060	24.458	0.468	50.729		25.01	1.87	6	115	0.976	0.220	0.756	31.80	1.95	0.14
5.300	17.388	26.067	0.614	46.426		26.57	2.31	6	115	0.995	0.230	0.764	33.46	2.40	0.12
5.400	17.717	27.459	0.626	47.470		27.97	2.24	6	115	1.013	0.241	0.773	34.88	2.32	0.12
5.500	18.045	23.239	0.584	28.196		23.54	2.48	6	115	1.032	0.251	0.781	28.81	2.59	0.08
5.600	18.373	26.631	0.594	14.256		26.79	2.22	6	115	1.051	0.261	0.790	32.58	2.31	0.03
5.700	18.701	38.073	0.534	8.430		38.16	1.40	7	118	1.070	0.271	0.799	46.43	1.44	0.01
5.800	19.029	34.635	0.541	7.984		34.72	1.56	7	118	1.090	0.282	0.808	41.62	1.61	0.01
5.900	19.357	47.324	0.437	12.638		47.46	0.92	7	118	1.109	0.292	0.817	56.72	0.94	0.01
6.000	19.685	74.874	0.330	3.634		74.91	0.44	8	121	1.129	0.302	0.827	89.24	0.45	0.00
6.100	20.013	77.739	0.528	1.841		77.76	0.68	8	121	1.149	0.312	0.836	91.60	0.69	0.00
6.200	20.341	77.220	0.441	1.677		77.24	0.57	8	121	1.169	0.323	0.846	89.92	0.58	0.00
6.300	20.669	72.463	0.221	2.662		72.49	0.30	8	121	1.188	0.333	0.856	83.34	0.31	0.00
6.400	20.997	64.532	0.291	3.599		64.57	0.45	8	121	1.208	0.343	0.865	73.24	0.46	0.00
6.500	21.325	63.604	0.283	1.278		63.62	0.44	8	121	1.228	0.353	0.875	71.32	0.45	0.00
6.600	21.654	64.505	0.178	-0.434		64.50	0.28	8	121	1.248	0.364	0.884	71.52	0.28	-0.01
6.700	21.982	60.948	0.303	-1.254		60.93	0.50	8	121	1.268	0.374	0.894	66.74	0.51	-0.01
6.800	22.310	67.879	0.594	-0.621		67.87	0.87	8	121	1.288	0.384	0.904	73.69	0.89	-0.01
6.900	22.638	99.622	0.829	1.137		99.63	0.83	8	121	1.307	0.394	0.913	107.67	0.84	0.00
7.000	22.966	66.406	1.429	4.326		66.45	2.15	7	118	1.327	0.404	0.922	70.61	2.19	0.00
7.100	23.294	40.184	1.228	33.647		40.55	3.03	6	115	1.346	0.415	0.931	42.11	3.13	0.05
7.200	23.622	86.943	0.846	33.448		87.30	0.97	8	121	1.365	0.425	0.940	91.38	0.98	0.02
7.300	23.950	140.197	0.668	9.098		140.30	0.48	9	124	1.386	0.435	0.951	146.13	0.48	0.00
7.400	24.278	138.733	0.709	8.852		138.83	0.51	9	124	1.406	0.445	0.961	143.04	0.52	0.00
7.500	24.606	102.842	0.613	4.608		102.89	0.60	9	124	1.426	0.456	0.971	104.51	0.60	0.00
7.600	24.934	90.327	0.361	2.873		90.36	0.40	9	124	1.447	0.466	0.981	90.64	0.41	0.00
7.700	25.262	89.772	0.493	1.407		89.79	0.55	8	121	1.467	0.476	0.991	89.16	0.56	0.00
7.800	25.591	107.671	0.720	1.723		107.69	0.67	9	124	1.487	0.486	1.001	106.13	0.68	0.00
7.900	25.919	125.999	0.800	2.673		126.03	0.63	9	124	1.507	0.497	1.011	123.19	0.64	0.00
8.000	26.247	142.398	0.872	6.823		142.47	0.61	9	124	1.528	0.507	1.021	138.05	0.62	0.00
8.100	26.575	194.961	1.370	11.560		195.09	0.70	9	124	1.548	0.517	1.031	187.70	0.71	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	5	2.25	27.31	3.00E-6	4.2	5.7	28	34	79	414			
3.300	10.827	5	2.32	28.54	3.00E-6	4.6	6.1	29	34	83	422			
3.400	11.155	5	2.21	28.86	3.00E-6	4.5	6.0	29	34	86	430			
3.500	11.483	5	2.20	29.40	3.00E-6	4.6	6.1	29	35	89	437			
3.600	11.811	5	2.26	29.41	3.00E-6	4.7	6.2	29	34	89	439			
3.700	12.139	5	2.31	29.37	3.00E-6	4.8	6.3	29	34	89	441			
3.800	12.467	5	2.37	29.42	3.00E-6	5.0	6.4	29	34	89	444			
3.900	12.795	5	2.39	28.55	3.00E-6	4.9	6.3	29	34	87	442			
4.000	13.123	5	2.39	28.69	3.00E-6	5.0	6.3	29	34	88	446			
4.100	13.451	5	2.38	29.96	3.00E-6	5.2	6.6	29	34	93	456			
4.200	13.780	5	2.27	31.18	3.00E-6	5.2	6.6	30	34	99	468			
4.300	14.108	5	2.25	31.75	3.00E-6	5.3	6.7	30	35	102	475			
4.400	14.436	5	2.33	32.99	3.00E-6	5.7	7.1	31	35	106	483			
4.500	14.764	5	2.40	32.55	3.00E-6	5.9	7.2	30	35	105	483			
4.600	15.092	5	2.45	31.04	3.00E-6	5.8	7.1	30	34	100	478			
4.700	15.420	5	2.42	32.26	3.00E-6	6.0	7.3	30	35	106	488			
4.800	15.748	5	2.36	35.11	3.00E-6	6.5	7.9	32	35	117	506			
4.900	16.076	5	2.38	35.54	3.00E-6	6.7	8.0	32	35	119	511			
5.000	16.404	5	2.39	33.04	3.00E-6	6.3	7.6	31	35	111	503			
5.100	16.732	5	2.46	29.82	3.00E-6	5.9	7.0	29	34	101	489			
5.200	17.060	5	2.48	29.25	3.00E-6	5.9	7.0	29	34	100	489			
5.300	17.388	4	2.52	30.99	3.00E-8	6.4	7.5				767	1.70	2.23	10.0
5.400	17.717	5	2.50	32.32	3.00E-6	6.7	7.8	30	34	112	511			
5.500	18.045	4	2.59	26.99	3.00E-8	5.9	6.9				675	1.50	1.92	8.6
5.600	18.373	4	2.52	30.40	3.00E-8	6.5	7.6				772	1.72	2.17	9.8
5.700	18.701	5	2.27	42.54	3.00E-6	8.4	9.6	35	36	153	573			
5.800	19.029	5	2.34	38.48	3.00E-6	7.8	9.0	33	36	139	557			
5.900	19.357	5	2.09	51.62	3.00E-6	9.6	11.0	38	37	190	621			
6.000	19.685	6	1.75	79.54	3.00E-4	13.4	15.2	48	40	300	726			
6.100	20.013	6	1.84	82.61	3.00E-4	14.4	16.2	49	40	311	738			
6.200	20.341	6	1.81	81.31	3.00E-4	14.1	15.8	48	40	309	739			
6.300	20.669	6	1.70	75.25	3.00E-4	12.8	14.2	46	40	290	726			
6.400	20.997	6	1.83	66.99	3.00E-4	11.9	13.2	44	39	258	701			
6.500	21.325	6	1.84	65.59	3.00E-4	11.8	13.0	43	39	254	700			
6.600	21.654	6	1.75	65.77	3.00E-4	11.6	12.7	43	39	258	706			
6.700	21.982	6	1.89	62.12	3.00E-4	11.5	12.5	42	38	244	695			
6.800	22.310	6	1.98	69.22	3.00E-4	13.3	14.4	44	39	271	723			
6.900	22.638	6	1.84	100.91	3.00E-4	18.5	19.9	54	41	399	825			
7.000	22.966	5	2.25	67.61	3.00E-6	14.5	15.5	44	39	266	723			
7.100	23.294	4	2.52	40.86	3.00E-8	9.9	10.5				1176	2.61	2.81	12.6
7.200	23.622	6	1.94	87.06	3.00E-4	16.7	17.7	50	40	349	797			
7.300	23.950	6	1.59	138.51	3.00E-4	23.8	25.1	63	43	561	937			
7.400	24.278	6	1.61	136.30	3.00E-4	23.7	24.9	62	42	555	937			
7.500	24.606	6	1.76	100.43	3.00E-4	18.5	19.4	54	41	412	851			
7.600	24.934	6	1.72	87.44	3.00E-4	16.1	16.7	50	40	361	818			
7.700	25.262	6	1.80	86.54	3.00E-4	16.4	17.0	50	40	359	819			
7.800	25.591	6	1.79	103.46	3.00E-4	19.6	20.1	54	41	431	873			
7.900	25.919	6	1.72	120.54	3.00E-4	22.4	22.9	59	42	504	923			
8.000	26.247	6	1.67	135.65	3.00E-4	24.9	25.3	62	42	570	965			
8.100	26.575	6	1.61	185.29	3.00E-4	33.3	33.7	73	44	780	1075			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	266.851	2.175	12.052		266.98	0.81	9	124	1.569	0.527	1.041	254.91	0.82	0.00
8.300	27.231	256.473	2.225	11.478		256.60	0.87	9	124	1.589	0.538	1.051	242.56	0.87	0.00
8.400	27.559	250.670	1.775	15.733		250.84	0.71	9	124	1.609	0.548	1.061	234.80	0.71	0.00
8.500	27.887	295.656	1.743	10.446		295.77	0.59	10	127	1.630	0.558	1.072	274.35	0.59	0.00
8.600	28.215	282.404	2.160	6.893		282.48	0.76	9	124	1.650	0.568	1.082	259.49	0.77	0.00
8.700	28.543	256.245	2.274	7.550		256.33	0.89	9	124	1.671	0.578	1.092	233.12	0.89	0.00
8.800	28.871	206.884	1.936	8.336		206.97	0.94	9	124	1.691	0.589	1.102	186.20	0.94	0.00
8.900	29.199	171.867	1.523	9.496		171.97	0.89	9	124	1.712	0.599	1.113	153.02	0.89	0.00
9.000	29.528	181.690	1.256	11.267		181.81	0.69	9	124	1.732	0.609	1.123	160.39	0.70	0.00
9.100	29.856	210.113	1.130	13.987		210.26	0.54	9	124	1.752	0.619	1.133	184.06	0.54	0.00
9.200	30.184	241.111	0.951	13.318		241.25	0.39	10	127	1.773	0.630	1.144	209.42	0.40	0.00
9.300	30.512	252.271	1.585	10.598		252.39	0.63	9	124	1.794	0.640	1.154	217.22	0.63	0.00
9.400	30.840	228.877	1.614	9.907		228.98	0.70	9	124	1.814	0.650	1.164	195.20	0.71	0.00
9.500	31.168	199.426	1.328	9.883		199.53	0.67	9	124	1.834	0.660	1.174	168.41	0.67	0.00
9.600	31.496	176.315	1.158	9.672		176.42	0.66	9	124	1.855	0.671	1.184	147.43	0.66	0.00
9.700	31.824	150.338	0.989	9.825		150.44	0.66	9	124	1.875	0.681	1.194	124.41	0.67	0.00
9.800	32.152	146.964	0.922	11.091		147.08	0.63	9	124	1.895	0.691	1.204	120.56	0.64	0.00
9.900	32.480	156.905	0.969	12.216		157.04	0.62	9	124	1.916	0.701	1.214	127.73	0.62	0.00
10.000	32.808	148.337	0.923	11.478		148.46	0.62	9	124	1.936	0.712	1.225	119.66	0.63	0.00
10.100	33.136	144.499	0.927	11.747		144.63	0.64	9	124	1.956	0.722	1.235	115.55	0.65	0.00
10.200	33.465	167.083	1.153	13.764		167.23	0.69	9	124	1.977	0.732	1.245	132.76	0.70	0.00
10.300	33.793	194.997	1.357	15.089		195.16	0.70	9	124	1.997	0.742	1.255	153.92	0.70	0.00
10.400	34.121	221.137	1.474	17.328		221.32	0.67	9	124	2.018	0.752	1.265	173.36	0.67	0.00
10.500	34.449	288.934	1.081	19.133		289.14	0.37	10	127	2.038	0.763	1.276	225.05	0.38	0.00
10.600	34.777	386.110	0.494	14.010		386.26	0.13	10	127	2.059	0.773	1.286	298.68	0.13	0.00
10.700	35.105	408.494	0.572	9.039		408.59	0.14	10	127	2.080	0.783	1.297	313.42	0.14	0.00
10.800	35.433	416.989	0.969	13.623		417.14	0.23	10	127	2.101	0.793	1.308	317.39	0.23	0.00
10.900	35.761	413.168	0.841	16.601		413.35	0.20	10	127	2.122	0.804	1.318	311.94	0.20	0.00
11.000	36.089	398.188	0.521	17.445		398.38	0.13	10	127	2.143	0.814	1.329	298.16	0.13	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.55	252.86	3.00E-4	44.8	45.2	85	45	1068	1197			
8.300	27.231	6	1.59	241.78	3.00E-4	43.6	43.7	83	45	1026	1185			
8.400	27.559	6	1.54	235.17	3.00E-4	41.8	41.8	82	45	1003	1180			
8.500	27.887	6	1.43	276.16	3.00E-4	47.7	47.4	89	46	1183	1251			
8.600	28.215	6	1.53	262.43	3.00E-4	47.0	46.5	87	45	1130	1236			
8.700	28.543	6	1.61	236.87	3.00E-4	43.8	43.1	82	45	1025	1200			
8.800	28.871	6	1.69	189.94	3.00E-4	36.4	35.7	74	44	828	1121			
8.900	29.199	6	1.74	156.68	3.00E-4	30.7	30.0	67	43	688	1057			
9.000	29.528	6	1.65	165.18	3.00E-4	31.5	30.6	69	43	727	1080			
9.100	29.856	6	1.54	190.45	3.00E-4	35.1	33.9	74	44	841	1137			
9.200	30.184	6	1.41	217.71	3.00E-4	38.7	37.2	79	44	965	1194			
9.300	30.512	6	1.53	226.81	3.00E-4	42.0	40.2	81	44	1010	1216			
9.400	30.840	6	1.59	204.72	3.00E-4	38.9	37.1	76	44	916	1180			
9.500	31.168	6	1.63	177.39	3.00E-4	34.3	32.6	71	43	798	1131			
9.600	31.496	6	1.67	155.82	3.00E-4	30.7	29.1	67	43	706	1088			
9.700	31.824	6	1.73	131.76	3.00E-4	26.8	25.2	61	42	602	1035			
9.800	32.152	6	1.72	128.20	3.00E-4	26.1	24.5	61	42	588	1030			
9.900	32.480	6	1.70	136.50	3.00E-4	27.7	25.8	62	42	628	1056			
10.000	32.808	6	1.73	128.24	3.00E-4	26.4	24.5	61	42	594	1039			
10.100	33.136	6	1.75	124.21	3.00E-4	25.9	24.0	60	41	579	1033			
10.200	33.465	6	1.72	143.46	3.00E-4	29.6	27.3	64	42	669	1087			
10.300	33.793	6	1.67	167.39	3.00E-4	34.0	31.2	69	43	781	1148			
10.400	34.121	6	1.62	189.55	3.00E-4	37.9	34.7	74	43	885	1200			
10.500	34.449	6	1.37	247.12	3.00E-4	45.8	41.7	84	45	1157	1315			
10.600	34.777	7	1.05	329.32	3.00E-2	55.6	50.4	97	46	1545	1453			
10.700	35.105	7	1.04	347.01	3.00E-2	58.7	53.0	100	46	1634	1484			
10.800	35.433	7	1.13	352.84	3.00E-2	61.5	55.3	100	46	1669	1499			
10.900	35.761	7	1.11	348.18	3.00E-2	60.6	54.3	100	46	1653	1498			
11.000	36.089	7	1.05	334.14	3.00E-2	57.4	51.2	98	46	1594	1484			

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-948A
Site:	SOUTH TEXAS PROJ.	Date:	7/23/2007
Engineer:	M.COOK	Time:	4:45 PM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	4.011	0.020	3.130		4.04	0.49
0.100	0.328	5.485	0.068	3.904		5.53	1.23
0.150	0.492	6.112	0.127	3.271		6.15	2.07
0.200	0.656	6.685	0.174	2.813		6.72	2.59
0.250	0.820	7.422	0.224	3.552		7.46	3.00
0.300	0.984	7.668	0.274	2.813		7.70	3.56
0.350	1.148	8.213	0.245	-0.211		8.21	2.98
0.400	1.312	8.404	0.294	1.512		8.42	3.49
0.450	1.476	8.759	0.310	1.723		8.78	3.53
0.500	1.640	9.059	0.353	1.583		9.08	3.89
0.550	1.804	9.359	0.425	1.583		9.38	4.53
0.600	1.969	8.977	0.469	1.336		8.99	5.22
0.650	2.133	8.595	0.458	1.407		8.61	5.32
0.700	2.297	8.404	0.451	1.583		8.42	5.36
0.750	2.461	8.568	0.460	1.758		8.59	5.36
0.800	2.625	8.650	0.479	1.688		8.67	5.53
0.850	2.789	8.568	0.477	1.442		8.58	5.56
0.900	2.953	8.404	0.460	1.477		8.42	5.46
0.950	3.117	8.322	0.335	1.196		8.33	4.02
1.000	3.281	8.704	0.363	1.583		8.72	4.16
1.050	3.445	8.895	0.411	2.216		8.92	4.61
1.100	3.609	9.769	0.422	1.758		9.79	4.31
1.150	3.773	9.932	0.397	2.145		9.96	3.99
1.200	3.937	10.014	0.402	2.708		10.04	4.00
1.250	4.101	10.178	0.415	2.708		10.21	4.07
1.300	4.265	10.096	0.416	2.603		10.12	4.11
1.350	4.429	10.205	0.322	3.271		10.24	3.14
1.400	4.593	10.533	0.354	3.552		10.57	3.35
1.450	4.757	10.642	0.405	2.813		10.67	3.79
1.500	4.921	11.379	0.438	3.271		11.41	3.84
1.550	5.085	10.969	0.451	3.517		11.01	4.10
1.600	5.249	10.615	0.422	3.376		10.65	3.96
1.650	5.413	10.260	0.406	3.588		10.30	3.94
1.700	5.577	10.696	0.384	3.974		10.74	3.58
1.750	5.741	11.351	0.384	4.678		11.40	3.37
1.800	5.906	11.460	0.399	4.185		11.51	3.47
1.850	6.070	11.597	0.441	4.115		11.64	3.79
1.900	6.234	11.733	0.468	4.185		11.78	3.97

1.950	6.398	11.460	0.420	4.150	11.50	3.65
2.000	6.562	11.542	0.435	4.502	11.59	3.75
2.050	6.726	11.379	0.386	3.904	11.42	3.38
2.100	6.890	11.951	0.419	3.517	11.99	3.49
2.150	7.054	11.242	0.428	3.306	11.28	3.80
2.200	7.218	11.379	0.429	2.990	11.41	3.76
2.250	7.382	12.333	0.392	3.271	12.37	3.17
2.300	7.546	12.961	0.402	3.447	13.00	3.09
2.350	7.710	14.162	0.426	4.080	14.21	3.00
2.400	7.874	15.826	0.481	5.030	15.88	3.03
2.450	8.038	17.682	0.578	6.858	17.76	3.26
2.500	8.202	18.309	0.635	6.014	18.37	3.46
2.550	8.366	17.109	0.656	7.104	17.19	3.82
2.600	8.530	16.454	0.621	10.270	16.56	3.75
2.650	8.694	16.808	0.594	12.345	16.94	3.51
2.700	8.858	16.781	0.577	12.134	16.91	3.41
2.750	9.022	16.399	0.585	15.510	16.57	3.53
2.800	9.186	15.635	0.541	13.506	15.78	3.43
2.850	9.350	15.581	0.567	14.596	15.74	3.60
2.900	9.514	15.526	0.529	15.229	15.69	3.37
2.950	9.678	15.499	0.531	12.837	15.64	3.40
3.000	9.843	15.881	0.492	15.194	16.05	3.07
3.050	10.007	16.399	0.635	12.591	16.53	3.84
3.100	10.171	15.390	0.681	9.531	15.49	4.40
3.150	10.335	16.863	0.640	7.914	16.95	3.78
3.200	10.499	20.001	0.638	11.501	20.13	3.17
3.250	10.663	21.611	0.680	15.264	21.78	3.12
3.300	10.827	22.129	0.707	21.454	22.36	3.16
3.350	10.991	22.648	0.590	27.047	22.94	2.57
3.400	11.155	24.449	0.692	32.709	24.80	2.79
3.450	11.319	24.367	0.754	16.988	24.55	3.07
3.500	11.483	26.659	0.815	21.560	26.89	3.03
3.550	11.647	25.977	0.812	31.267	26.31	3.09
3.600	11.811	25.295	0.770	41.959	25.75	2.99
3.650	11.975	24.722	0.736	56.274	25.33	2.91
3.700	12.139	23.848	0.702	53.953	24.43	2.87
3.750	12.303	24.312	0.687	58.174	24.94	2.75
3.800	12.467	24.831	0.717	53.215	25.41	2.82
3.850	12.631	24.858	0.753	54.269	25.44	2.96
3.900	12.795	25.267	0.718	59.791	25.91	2.77
3.950	12.959	25.213	0.737	63.520	25.90	2.85
4.000	13.123	25.731	0.751	63.695	26.42	2.84
4.050	13.287	26.932	0.661	76.709	27.76	2.38
4.100	13.451	29.033	0.684	81.633	29.91	2.29
4.150	13.615	27.396	0.768	76.111	28.22	2.72
4.200	13.780	28.951	0.729	93.310	29.96	2.43
4.250	13.944	28.787	0.715	94.119	29.80	2.40
4.300	14.108	29.906	0.744	78.538	30.75	2.42
4.350	14.272	28.132	0.620	73.051	28.92	2.14
4.400	14.436	26.768	0.746	74.528	27.57	2.71
4.450	14.600	26.140	0.720	60.284	26.79	2.69

4.500	14.764	26.631	0.684	70.870	27.40	2.50
4.550	14.928	26.413	0.649	85.713	27.34	2.37
4.600	15.092	27.177	0.728	83.602	28.08	2.59
4.650	15.256	27.723	0.810	75.935	28.54	2.84
4.700	15.420	26.495	0.871	75.619	27.31	3.19
4.750	15.584	27.150	0.826	76.744	27.98	2.95
4.800	15.748	27.041	0.779	76.146	27.86	2.80
4.850	15.912	27.314	0.774	84.763	28.23	2.74
4.900	16.076	27.914	0.785	80.437	28.78	2.73
4.950	16.240	28.351	0.858	76.779	29.18	2.94
5.000	16.404	28.651	0.837	72.524	29.43	2.84
5.050	16.568	29.142	0.890	67.037	29.87	2.98
5.100	16.732	27.177	0.902	65.172	27.88	3.24
5.150	16.896	26.386	0.868	57.997	27.01	3.21
5.200	17.060	26.249	0.816	56.837	26.86	3.04
5.250	17.224	25.458	0.810	55.360	26.06	3.11
5.300	17.388	25.840	0.797	53.636	26.42	3.02
5.350	17.552	25.213	0.661	52.652	25.78	2.56
5.400	17.717	24.285	0.758	54.340	24.87	3.05
5.450	17.881	23.630	0.708	50.787	24.18	2.93
5.500	18.045	23.575	0.703	48.466	24.10	2.92
5.550	18.209	23.412	0.669	47.833	23.93	2.80
5.600	18.373	23.739	0.693	46.461	24.24	2.86
5.650	18.537	23.002	0.691	40.060	23.43	2.95
5.700	18.701	25.158	0.592	39.216	25.58	2.31
5.750	18.865	43.522	0.503	27.610	43.82	1.15
5.800	19.029	52.990	0.410	22.721	53.24	0.77
5.850	19.193	50.807	0.192	18.711	51.01	0.38
5.900	19.357	41.284	0.240	31.619	41.63	0.58
5.950	19.521	60.985	0.414	23.213	61.24	0.68
6.000	19.685	74.928	0.505	18.078	75.12	0.67
6.050	19.849	80.249	0.361	15.300	80.41	0.45
6.100	20.013	80.767	0.519	14.139	80.92	0.64
6.150	20.177	72.363	0.606	9.531	72.47	0.84
6.200	20.341	68.570	0.682	9.004	68.67	0.99
6.250	20.505	63.332	0.700	8.687	63.43	1.10
6.300	20.669	61.885	0.855	9.531	61.99	1.38
6.350	20.833	63.550	0.642	8.195	63.64	1.01
6.400	20.997	71.708	0.548	6.823	71.78	0.76
6.450	21.161	76.047	0.689	5.276	76.10	0.91
6.500	21.325	72.145	0.901	5.241	72.20	1.25
6.550	21.490	71.108	0.854	5.662	71.17	1.20
6.600	21.654	73.864	0.625	3.095	73.90	0.85
6.650	21.818	78.203	0.584	2.743	78.23	0.75
6.700	21.982	79.130	0.495	1.969	79.15	0.63
6.750	22.146	79.158	0.730	1.829	79.18	0.92
6.800	22.310	84.096	0.962	4.220	84.14	1.14
6.850	22.474	88.653	0.878	2.743	88.68	0.99
6.900	22.638	95.066	0.850	6.331	95.13	0.89
6.950	22.802	90.809	0.929	2.145	90.83	1.02
7.000	22.966	95.093	0.987	1.829	95.11	1.04

7.050	23.130	120.687	1.031	5.839	120.75	0.85
7.100	23.294	152.831	1.868	4.185	152.88	1.22
7.150	23.458	71.381	1.816	1.583	71.40	2.54
7.200	23.622	39.129	1.445	20.857	39.35	3.67
7.250	23.786	26.877	0.973	34.995	27.25	3.57
7.300	23.950	26.440	0.878	53.390	27.02	3.25
7.350	24.114	64.068	0.820	98.902	65.14	1.26
7.400	24.278	120.469	0.841	44.808	120.95	0.70
7.450	24.442	131.738	0.846	27.187	132.03	0.64
7.500	24.606	114.193	0.993	18.430	114.39	0.87
7.550	24.770	101.396	0.650	12.662	101.53	0.64
7.600	24.934	90.891	0.473	10.973	91.01	0.52
7.650	25.098	82.705	0.532	8.969	82.80	0.64
7.700	25.262	78.803	0.566	7.984	78.89	0.72
7.750	25.427	78.748	0.580	8.125	78.84	0.74
7.800	25.591	81.695	0.614	8.617	81.79	0.75
7.850	25.755	87.261	0.692	9.039	87.36	0.79
7.900	25.919	97.658	0.829	9.918	97.77	0.85
7.950	26.083	107.835	1.015	8.828	107.93	0.94
8.000	26.247	116.704	1.118	10.727	116.82	0.96
8.050	26.411	132.229	1.275	10.763	132.35	0.96
8.100	26.575	153.704	1.429	11.184	153.82	0.93
8.150	26.739	180.745	1.693	12.556	180.88	0.94
8.200	26.903	227.677	1.470	12.837	227.82	0.65
8.250	27.067	262.521	1.894	13.682	262.67	0.72
8.300	27.231	263.258	2.346	11.747	263.38	0.89
8.350	27.395	261.484	1.307	11.747	261.61	0.50
8.400	27.559	266.369	1.470	12.380	266.50	0.55
8.450	27.723	298.185	1.056	7.667	298.27	0.35
8.500	27.887	320.477	1.095	5.487	320.54	0.34
8.550	28.051	304.542	1.616	7.140	304.62	0.53
8.600	28.215	290.845	2.030	5.768	290.91	0.70
8.650	28.379	283.805	2.326	5.662	283.87	0.82
8.700	28.543	277.965	2.502	5.451	278.02	0.90
8.750	28.707	253.189	2.395	5.839	253.25	0.95
8.800	28.871	218.154	2.146	6.014	218.22	0.98
8.850	29.035	190.267	1.820	6.436	190.34	0.96
8.900	29.199	176.106	1.602	9.813	176.21	0.91
8.950	29.364	183.719	1.547	9.602	183.82	0.84
9.000	29.528	191.905	1.567	10.024	192.01	0.82
9.050	29.692	203.064	1.675	10.200	203.17	0.82
9.100	29.856	214.525	1.812	10.727	214.64	0.84
9.150	30.020	214.934	1.840	10.375	215.05	0.86
9.200	30.184	223.393	1.809	11.149	223.51	0.81
9.250	30.348	234.798	0.926	11.430	234.92	0.39
9.300	30.512	227.349	1.085	10.763	227.47	0.48
9.350	30.676	186.201	1.105	9.742	186.31	0.59
9.400	30.840	160.034	1.106	7.597	160.12	0.69
9.450	31.004	140.852	0.985	6.612	140.92	0.70
9.500	31.168	120.906	0.832	6.190	120.97	0.69
9.550	31.332	109.473	0.698	6.436	109.54	0.64

9.600	31.496	109.773	0.552	7.281	109.85	0.50
9.650	31.660	126.554	0.672	8.406	126.64	0.53
9.700	31.824	163.390	0.887	10.481	163.50	0.54
9.750	31.988	172.586	1.121	10.200	172.70	0.65
9.800	32.152	173.350	1.256	10.516	173.46	0.72
9.850	32.316	164.645	1.312	10.270	164.76	0.80
9.900	32.480	151.957	1.260	10.129	152.07	0.83
9.950	32.644	141.698	1.216	10.868	141.82	0.86
10.000	32.808	133.621	1.164	11.255	133.74	0.87
10.050	32.972	137.060	1.160	11.536	137.18	0.85
10.100	33.136	142.407	1.188	12.380	142.54	0.83
10.150	33.301	156.869	1.174	12.837	157.01	0.75
10.200	33.465	171.358	1.305	13.365	171.50	0.76
10.250	33.629	174.332	1.469	13.858	174.48	0.84
10.300	33.793	190.813	1.606	14.385	190.97	0.84
10.350	33.957	214.197	0.815	14.772	214.36	0.38
10.400	34.121	230.651	0.925	14.596	230.81	0.40
10.450	34.285	215.234	0.843	12.205	215.37	0.39
10.500	34.449	310.381	0.942	13.998	310.53	0.30
10.550	34.613	371.857	1.041	15.581	372.03	0.28
10.600	34.777	396.715	1.201	15.721	396.88	0.30
10.650	34.941	408.366	1.319	11.958	408.50	0.32
10.700	35.105	424.629	1.624	10.763	424.75	0.38
10.750	35.269	409.921	1.145	10.657	410.04	0.28
10.800	35.433	450.469	1.186	10.481	450.58	0.26
10.850	35.597	420.836	2.331	9.953	420.94	0.55
10.900	35.761	377.560	1.714	4.115	377.60	0.45
10.950	35.925	368.146	1.879	8.300	368.24	0.51
11.000	36.089	410.849	1.384	8.898	410.95	0.34
11.050	36.253	369.238	1.314	6.190	369.30	0.36
11.100	36.417	406.565	1.255	8.406	406.66	0.31
11.150	36.581	429.486	1.644	10.657	429.60	0.38
11.200	36.745	415.434	1.362	8.371	415.52	0.33
11.250	36.909	425.802	1.398	9.109	425.90	0.33
11.300	37.073	320.259	0.967	7.808	320.34	0.30
11.350	37.238	414.424	0.950	14.068	414.58	0.23
11.400	37.402	413.578	0.020	29.579	413.90	0.00
11.450	37.566	389.730	0.020	38.865	390.15	0.01

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC
Site:	SOUTH TEXAS PROJ.
Engineer:	M.COOK
Sounding:	C-948A
Date:	7/23/2007
Time:	4:45 PM

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{ocr}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tn}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	5.203	0.072	3.435		5.24	1.37	1	111	0.018	0.000	0.018	285.72	1.37	0.05
0.200	0.656	6.740	0.175	3.212		6.77	2.58	4	115	0.037	0.000	0.037	181.74	2.60	0.03
0.300	0.984	7.768	0.248	2.051		7.79	3.18	4	115	0.056	0.000	0.056	138.43	3.20	0.02
0.400	1.312	8.459	0.283	1.008		8.47	3.34	3	111	0.074	0.000	0.074	113.23	3.37	0.01
0.500	1.640	9.059	0.363	1.630		9.08	4.00	3	111	0.092	0.000	0.092	97.21	4.04	0.01
0.600	1.969	8.977	0.451	1.442		8.99	5.01	3	111	0.111	0.000	0.111	80.24	5.07	0.01
0.700	2.297	8.522	0.456	1.583		8.54	5.34	3	111	0.129	0.000	0.129	65.21	5.43	0.01
0.800	2.625	8.595	0.472	1.629		8.61	5.48	3	111	0.147	0.000	0.147	57.49	5.58	0.01
0.900	2.953	8.431	0.424	1.372		8.45	5.02	3	111	0.166	0.000	0.166	50.03	5.12	0.01
1.000	3.281	8.640	0.370	1.665		8.66	4.27	3	111	0.184	0.000	0.184	46.11	4.36	0.01
1.100	3.609	9.532	0.410	2.040		9.55	4.29	3	111	0.202	0.000	0.202	46.28	4.38	0.02
1.200	3.937	10.041	0.405	2.520		10.07	4.02	3	111	0.220	0.000	0.220	44.70	4.11	0.02
1.300	4.265	10.160	0.364	2.861		10.19	3.77	3	111	0.239	0.000	0.239	41.71	3.86	0.02
1.400	4.593	10.460	0.360	3.212		10.49	3.43	4	115	0.257	0.000	0.257	39.77	3.52	0.02
1.500	4.921	10.997	0.431	3.200		11.03	3.91	3	111	0.276	0.000	0.276	39.01	4.01	0.02
1.600	5.249	10.615	0.426	3.494		10.65	4.00	3	111	0.294	0.000	0.294	35.24	4.12	0.02
1.700	5.577	10.769	0.391	4.080		10.81	3.62	4	115	0.313	0.000	0.313	33.57	3.73	0.03
1.800	5.906	11.469	0.408	4.326		11.52	3.54	4	115	0.332	0.000	0.332	33.73	3.65	0.03
1.900	6.234	11.597	0.443	4.150		11.64	3.81	3	111	0.350	0.000	0.350	32.28	3.92	0.03
2.000	6.562	11.460	0.414	4.185		11.51	3.60	4	115	0.369	0.000	0.369	30.21	3.71	0.03
2.100	6.890	11.524	0.411	3.576		11.56	3.55	4	115	0.387	0.000	0.387	28.84	3.68	0.02
2.200	7.218	11.651	0.416	3.189		11.69	3.56	4	115	0.406	0.000	0.406	27.77	3.69	0.02
2.300	7.546	13.152	0.407	3.599		13.19	3.08	4	115	0.425	0.000	0.425	30.04	3.19	0.02
2.400	7.874	15.890	0.495	5.323		15.95	3.10	5	115	0.444	0.000	0.444	34.93	3.19	0.02
2.500	8.202	17.700	0.623	6.659		17.77	3.51	4	115	0.463	0.000	0.463	37.42	3.60	0.03
2.600	8.530	16.790	0.624	9.906		16.90	3.69	4	115	0.481	0.000	0.481	34.10	3.80	0.04
2.700	8.858	16.663	0.585	13.330		16.81	3.48	4	115	0.500	0.000	0.500	32.60	3.59	0.06
2.800	9.186	15.872	0.564	14.537		16.03	3.52	4	115	0.519	0.000	0.519	29.88	3.64	0.07
2.900	9.514	15.535	0.542	14.221		15.69	3.46	4	115	0.538	0.000	0.538	28.17	3.58	0.07
3.000	9.843	15.926	0.553	13.541		16.07	3.44	4	115	0.557	0.000	0.557	27.88	3.56	0.06
3.100	10.171	16.217	0.652	10.012		16.33	3.99	4	115	0.575	0.005	0.570	27.62	4.14	0.05

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	6	1.69	40.12	3.00E-4	0.9	7.0	34	46	21	84			
0.200	0.656	5	2.03	50.55	3.00E-6	1.3	7.2	38	44	27	116			
0.300	0.984	8	2.18	51.13	3.00E-6	1.6	7.1	38	42	31				
0.400	1.312	8	2.25	48.73	3.00E-6	1.8	7.0	37	41	34				
0.500	1.640	9	2.35	48.36	1.00E-8	2.1	7.0					0.60	6.48	29.2
0.600	1.969	9	2.48	45.89	1.00E-8	2.2	6.7					0.59	5.35	24.1
0.700	2.297	4	2.56	40.74	3.00E-8	2.1	6.1				252	0.56	4.35	19.6
0.800	2.625	4	2.61	37.99	3.00E-8	2.2	5.9				254	0.56	3.83	17.2
0.900	2.953	4	2.62	34.12	3.00E-8	2.2	5.5				248	0.55	3.34	15.0
1.000	3.281	4	2.59	31.69	3.00E-8	2.2	5.3				254	0.56	3.07	13.8
1.100	3.609	4	2.59	32.47	3.00E-8	2.4	5.6				281	0.62	3.09	13.9
1.200	3.937	4	2.58	31.80	3.00E-8	2.5	5.6				295	0.66	2.98	13.4
1.300	4.265	4	2.59	30.22	3.00E-8	2.6	5.4				299	0.66	2.78	12.5
1.400	4.593	4	2.57	29.13	3.00E-8	2.6	5.4				307	0.68	2.65	11.9
1.500	4.921	4	2.62	29.55	3.00E-8	2.8	5.6				323	0.72	2.60	11.7
1.600	5.249	4	2.66	27.46	3.00E-8	2.8	5.3				311	0.69	2.35	10.6
1.700	5.577	4	2.64	26.34	3.00E-8	2.8	5.2				315	0.70	2.24	10.1
1.800	5.906	4	2.64	26.71	3.00E-8	3.0	5.3				336	0.75	2.25	10.1
1.900	6.234	4	2.67	26.14	3.00E-8	3.1	5.3				339	0.75	2.15	9.7
2.000	6.562	4	2.68	24.75	3.00E-8	3.0	5.2				334	0.74	2.01	9.1
2.100	6.890	4	2.69	23.94	3.00E-8	3.1	5.1				335	0.75	1.92	8.7
2.200	7.218	4	2.70	23.34	3.00E-8	3.1	5.1				338	0.75	1.85	8.3
2.300	7.546	4	2.63	24.99	3.00E-8	3.4	5.4				383	0.85	2.00	9.0
2.400	7.874	4	2.59	28.95	3.00E-8	4.0	6.2				465	1.03	2.33	10.5
2.500	8.202	4	2.60	31.39	3.00E-8	4.5	6.8				519	1.15	2.49	11.2
2.600	8.530	4	2.64	29.16	3.00E-8	4.4	6.5				492	1.09	2.27	10.2
2.700	8.858	4	2.64	28.08	3.00E-8	4.4	6.3				489	1.09	2.17	9.8
2.800	9.186	4	2.67	26.10	3.00E-8	4.2	6.0				465	1.03	1.99	9.0
2.900	9.514	4	2.69	24.85	3.00E-8	4.2	5.8				455	1.01	1.88	8.5
3.000	9.843	4	2.69	24.75	3.00E-8	4.3	5.9				465	1.03	1.86	8.4
3.100	10.171	4	2.74	24.85	3.00E-8	4.5	6.1				473	1.05	1.84	8.3

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tn}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	19.492	0.653	11.560		19.62	3.33	5	115	0.594	0.015	0.579	32.87	3.43	0.04
3.300	10.827	22.129	0.659	21.255		22.36	2.95	5	115	0.613	0.026	0.587	37.03	3.03	0.07
3.400	11.155	23.821	0.679	25.581		24.10	2.82	5	115	0.632	0.036	0.596	39.38	2.89	0.08
3.500	11.483	25.668	0.794	23.272		25.92	3.06	5	115	0.651	0.046	0.604	41.81	3.14	0.06
3.600	11.811	25.331	0.773	43.167		25.80	3.00	5	115	0.669	0.056	0.613	41.00	3.07	0.12
3.700	12.139	24.294	0.708	56.134		24.90	2.84	5	115	0.688	0.067	0.622	38.96	2.93	0.16
3.800	12.467	24.667	0.719	55.219		25.26	2.85	5	115	0.707	0.077	0.630	38.97	2.93	0.16
3.900	12.795	25.113	0.736	59.193		25.75	2.86	5	115	0.726	0.087	0.639	39.19	2.94	0.17
4.000	13.123	25.959	0.716	67.975		26.69	2.68	5	115	0.745	0.097	0.647	40.09	2.76	0.18
4.100	13.451	27.787	0.704	78.151		28.63	2.46	6	115	0.763	0.108	0.656	42.50	2.53	0.20
4.200	13.780	28.378	0.737	87.847		29.33	2.51	6	115	0.782	0.118	0.664	42.97	2.58	0.22
4.300	14.108	28.942	0.693	81.903		29.83	2.32	6	115	0.801	0.128	0.673	43.14	2.39	0.20
4.400	14.436	27.013	0.695	69.288		27.76	2.50	6	115	0.820	0.138	0.681	39.54	2.58	0.18
4.500	14.764	26.395	0.684	72.289		27.18	2.52	6	115	0.839	0.149	0.690	38.17	2.60	0.19
4.600	15.092	27.104	0.729	81.750		27.99	2.60	6	115	0.857	0.159	0.699	38.84	2.69	0.21
4.700	15.420	27.123	0.836	76.099		27.94	2.99	5	115	0.876	0.169	0.707	38.28	3.09	0.20
4.800	15.748	27.168	0.793	79.218		28.02	2.83	5	115	0.895	0.179	0.716	37.91	2.92	0.20
4.900	16.076	27.860	0.806	80.660		28.73	2.80	5	115	0.914	0.189	0.724	38.41	2.90	0.20
5.000	16.404	28.715	0.862	72.113		29.49	2.92	5	115	0.933	0.200	0.733	38.97	3.02	0.17
5.100	16.732	27.568	0.887	63.402		28.25	3.14	5	115	0.951	0.210	0.741	36.83	3.25	0.16
5.200	17.060	26.031	0.831	56.731		26.64	3.12	5	115	0.970	0.220	0.750	34.23	3.24	0.15
5.300	17.388	25.504	0.756	53.883		26.09	2.90	5	115	0.989	0.230	0.758	33.09	3.01	0.15
5.400	17.717	24.376	0.709	52.593		24.94	2.84	5	115	1.008	0.241	0.767	31.21	2.96	0.15
5.500	18.045	23.539	0.693	49.029		24.07	2.88	5	115	1.027	0.251	0.776	29.71	3.01	0.14
5.600	18.373	23.384	0.684	44.785		23.87	2.87	5	115	1.045	0.261	0.784	29.10	3.00	0.13
5.700	18.701	30.561	0.595	35.629		30.95	1.92	6	115	1.064	0.271	0.793	37.69	1.99	0.08
5.800	19.029	49.106	0.368	23.014		49.35	0.75	8	121	1.084	0.282	0.802	60.16	0.76	0.03
5.900	19.357	51.025	0.282	24.514		51.29	0.55	8	121	1.104	0.292	0.812	61.81	0.56	0.03
6.000	19.685	72.054	0.427	18.864		72.26	0.59	8	121	1.124	0.302	0.822	86.59	0.60	0.01
6.100	20.013	77.793	0.495	12.990		77.93	0.64	8	121	1.143	0.312	0.831	92.39	0.65	0.01
6.200	20.341	68.088	0.663	9.074		68.19	0.97	8	121	1.163	0.323	0.841	79.72	0.99	0.00
6.300	20.669	62.922	0.732	8.804		63.02	1.16	7	118	1.183	0.333	0.850	72.76	1.18	0.00
6.400	20.997	70.435	0.626	6.765		70.51	0.89	8	121	1.202	0.343	0.859	80.64	0.90	0.00
6.500	21.325	73.100	0.815	5.393		73.16	1.11	8	121	1.222	0.353	0.869	82.78	1.13	0.00
6.600	21.654	74.392	0.688	3.833		74.43	0.92	8	121	1.242	0.364	0.879	83.30	0.94	0.00
6.700	21.982	78.830	0.603	2.180		78.85	0.76	8	121	1.262	0.374	0.888	87.35	0.78	0.00
6.800	22.310	83.969	0.857	2.931		84.00	1.02	8	121	1.282	0.384	0.898	92.13	1.04	0.00
6.900	22.638	91.509	0.886	3.740		91.55	0.97	8	121	1.302	0.394	0.907	99.45	0.98	0.00
7.000	22.966	102.196	0.982	3.271		102.23	0.96	8	121	1.322	0.404	0.917	110.03	0.97	0.00
7.100	23.294	114.966	1.572	3.869		115.01	1.37	8	121	1.341	0.415	0.927	122.66	1.38	0.00
7.200	23.622	45.796	1.411	19.145		46.00	3.07	6	115	1.360	0.425	0.935	47.73	3.16	0.02
7.300	23.950	39.128	0.890	62.429		39.80	2.24	6	115	1.379	0.435	0.944	40.71	2.32	0.11
7.400	24.278	105.425	0.836	56.966		106.04	0.79	8	121	1.399	0.445	0.953	109.76	0.80	0.03
7.500	24.606	115.776	0.830	19.426		115.99	0.72	9	124	1.419	0.456	0.964	118.90	0.72	0.01
7.600	24.934	91.664	0.552	10.868		91.78	0.60	8	121	1.439	0.466	0.973	92.84	0.61	0.00
7.700	25.262	80.085	0.559	8.359		80.18	0.70	8	121	1.459	0.476	0.983	80.10	0.71	0.00
7.800	25.591	82.568	0.629	8.594		82.66	0.76	8	121	1.479	0.486	0.992	81.81	0.77	0.00
7.900	25.919	97.585	0.845	9.262		97.68	0.87	8	121	1.499	0.497	1.002	96.00	0.88	0.00
8.000	26.247	118.923	1.136	10.106		119.03	0.95	8	121	1.518	0.507	1.012	116.17	0.97	0.00
8.100	26.575	155.559	1.466	11.501		155.68	0.94	9	124	1.539	0.517	1.022	150.87	0.95	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	4	2.63	29.06	3.00E-8	5.1	6.8				571	1.27	2.19	9.9
3.300	10.827	4	2.55	32.41	3.00E-8	5.5	7.4				652	1.45	2.47	11.1
3.400	11.155	4	2.52	34.38	3.00E-8	5.9	7.8				704	1.56	2.63	11.8
3.500	11.483	4	2.52	36.65	3.00E-8	6.3	8.4				758	1.68	2.79	12.5
3.600	11.811	4	2.52	36.06	3.00E-8	6.2	8.2				754	1.68	2.73	12.3
3.700	12.139	4	2.52	34.39	3.00E-8	6.0	7.8				726	1.61	2.60	11.7
3.800	12.467	4	2.53	34.51	3.00E-8	6.1	7.9				737	1.64	2.60	11.7
3.900	12.795	4	2.52	34.81	3.00E-8	6.2	8.0				751	1.67	2.61	11.8
4.000	13.123	4	2.50	35.59	3.00E-8	6.3	8.1				778	1.73	2.67	12.0
4.100	13.451	5	2.45	37.60	3.00E-6	6.6	8.4	33	36	115	488			
4.200	13.780	5	2.46	38.16	3.00E-6	6.8	8.5	33	36	117	494			
4.300	14.108	5	2.43	38.31	3.00E-6	6.8	8.6	33	36	119	498			
4.400	14.436	5	2.48	35.47	3.00E-6	6.5	8.1	32	35	111	489			
4.500	14.764	4	2.50	34.41	3.00E-8	6.4	8.0				790	1.76	2.54	11.5
4.600	15.092	4	2.50	35.13	3.00E-8	6.6	8.1				814	1.81	2.59	11.7
4.700	15.420	4	2.55	34.92	3.00E-8	6.8	8.3				812	1.80	2.55	11.5
4.800	15.748	4	2.53	34.62	3.00E-8	6.7	8.2				814	1.81	2.53	11.4
4.900	16.076	4	2.53	35.15	3.00E-8	6.9	8.3				835	1.85	2.56	11.5
5.000	16.404	4	2.53	35.79	3.00E-8	7.1	8.5				857	1.90	2.60	11.7
5.100	16.732	4	2.57	34.05	3.00E-8	7.0	8.3				819	1.82	2.46	11.0
5.200	17.060	4	2.60	31.81	3.00E-8	6.6	7.9				770	1.71	2.28	10.3
5.300	17.388	4	2.59	30.79	3.00E-8	6.5	7.7				753	1.67	2.21	9.9
5.400	17.717	4	2.60	29.15	3.00E-8	6.2	7.3				718	1.60	2.08	9.4
5.500	18.045	4	2.62	27.87	3.00E-8	6.1	7.1				691	1.54	1.98	8.9
5.600	18.373	4	2.63	27.38	3.00E-8	6.1	7.0				685	1.52	1.94	8.7
5.700	18.701	5	2.43	34.93	3.00E-6	7.2	8.3	32	35	124	533			
5.800	19.029	6	2.02	54.06	3.00E-4	9.7	11.2	39	38	197	625			
5.900	19.357	6	1.94	55.45	3.00E-4	9.8	11.2	40	38	205	636			
6.000	19.685	6	1.83	77.40	3.00E-4	13.3	15.1	47	40	289	716			
6.100	20.013	6	1.82	82.98	3.00E-4	14.3	16.2	49	40	312	737			
6.200	20.341	6	1.98	72.77	3.00E-4	13.3	14.9	46	39	273	707			
6.300	20.669	6	2.06	67.05	3.00E-4	12.7	14.2	44	39	252	691			
6.400	20.997	6	1.96	74.13	3.00E-4	13.6	15.1	46	39	282	720			
6.500	21.325	6	2.01	76.67	3.00E-4	14.4	15.9	47	40	293	732			
6.600	21.654	6	1.96	77.25	3.00E-4	14.4	15.8	47	40	298	739			
6.700	21.982	6	1.89	81.09	3.00E-4	14.9	16.2	48	40	315	756			
6.800	22.310	6	1.95	86.16	3.00E-4	16.2	17.6	50	40	336	775			
6.900	22.638	6	1.91	93.24	3.00E-4	17.4	18.8	52	41	366	800			
7.000	22.966	6	1.87	103.46	3.00E-4	19.2	20.6	54	41	409	833			
7.100	23.294	6	1.94	116.16	3.00E-4	22.1	23.6	58	42	460	870			
7.200	23.622	4	2.48	46.30	3.00E-8	11.1	11.8				1339	2.98	3.18	14.3
7.300	23.950	5	2.44	39.52	3.00E-6	9.3	9.8	34	35	159	614			
7.400	24.278	6	1.82	104.76	3.00E-4	19.4	20.4	55	41	424	854			
7.500	24.606	6	1.76	113.86	3.00E-4	20.9	21.9	57	41	464	883			
7.600	24.934	6	1.81	89.41	3.00E-4	16.8	17.5	51	40	367	820			
7.700	25.262	6	1.90	77.64	3.00E-4	15.2	15.7	47	39	321	786			
7.800	25.591	6	1.91	79.64	3.00E-4	15.7	16.2	48	40	331	797			
7.900	25.919	6	1.89	93.80	3.00E-4	18.4	18.9	52	40	391	845			
8.000	26.247	6	1.85	113.91	3.00E-4	22.1	22.6	57	41	476	906			
8.100	26.575	6	1.76	148.44	3.00E-4	28.0	28.5	65	43	623	994			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	223.648	1.686	13.025		223.79	0.75	9	124	1.559	0.527	1.032	215.38	0.76	0.00
8.300	27.231	262.421	1.849	12.392		262.55	0.70	9	124	1.579	0.538	1.042	250.47	0.71	0.00
8.400	27.559	275.346	1.278	10.598		275.46	0.46	10	127	1.600	0.548	1.053	260.18	0.47	0.00
8.500	27.887	307.735	1.256	6.765		307.81	0.41	10	127	1.621	0.558	1.063	287.98	0.41	0.00
8.600	28.215	293.064	1.991	6.190		293.13	0.68	9	124	1.642	0.568	1.073	271.57	0.68	0.00
8.700	28.543	271.653	2.408	5.651		271.71	0.89	9	124	1.662	0.578	1.083	249.24	0.89	0.00
8.800	28.871	220.537	2.120	6.096		220.60	0.96	9	124	1.682	0.589	1.094	200.18	0.97	0.00
8.900	29.199	183.364	1.656	8.617		183.46	0.90	9	124	1.703	0.599	1.104	164.67	0.91	0.00
9.000	29.528	192.896	1.596	9.942		193.00	0.83	9	124	1.723	0.609	1.114	171.73	0.83	0.00
9.100	29.856	210.841	1.776	10.434		210.95	0.84	9	124	1.743	0.619	1.124	186.13	0.85	0.00
9.200	30.184	224.375	1.525	10.985		224.49	0.68	9	124	1.764	0.630	1.134	196.39	0.68	0.00
9.300	30.512	216.116	1.039	10.645		216.23	0.48	9	124	1.784	0.640	1.144	187.41	0.48	0.00
9.400	30.840	162.362	1.065	7.984		162.45	0.66	9	124	1.805	0.650	1.154	139.16	0.66	0.00
9.500	31.168	123.744	0.838	6.413		123.81	0.68	9	124	1.825	0.660	1.165	104.75	0.69	0.00
9.600	31.496	115.267	0.641	7.374		115.35	0.56	9	124	1.845	0.671	1.175	96.63	0.56	0.00
9.700	31.824	154.177	0.893	9.696		154.28	0.58	9	124	1.866	0.681	1.185	128.65	0.59	0.00
9.800	32.152	170.194	1.230	10.329		170.31	0.72	9	124	1.886	0.691	1.195	140.95	0.73	0.00
9.900	32.480	152.767	1.263	10.422		152.88	0.83	9	124	1.906	0.701	1.205	125.29	0.84	0.00
10.000	32.808	137.460	1.180	11.220		137.58	0.86	9	124	1.927	0.712	1.215	111.64	0.87	0.00
10.100	33.136	145.445	1.174	12.251		145.58	0.81	9	124	1.947	0.722	1.225	117.22	0.82	0.00
10.200	33.465	167.520	1.316	13.353		167.66	0.78	9	124	1.967	0.732	1.235	134.12	0.79	0.00
10.300	33.793	193.114	1.297	14.338		193.27	0.67	9	124	1.988	0.742	1.246	153.57	0.68	0.00
10.400	34.121	220.027	0.861	13.858		220.18	0.39	9	124	2.008	0.752	1.256	173.75	0.39	0.00
10.500	34.449	299.157	0.942	13.928		299.31	0.31	10	127	2.029	0.763	1.266	234.76	0.32	0.00
10.600	34.777	392.313	1.187	14.420		392.47	0.30	10	127	2.050	0.773	1.277	305.74	0.30	0.00
10.700	35.105	414.305	1.363	11.126		414.43	0.33	10	127	2.071	0.783	1.288	320.25	0.33	0.00
10.800	35.433	427.075	1.554	10.364		427.19	0.36	10	127	2.092	0.793	1.298	327.44	0.37	0.00
10.900	35.761	388.847	1.975	7.456		388.93	0.51	10	127	2.113	0.804	1.309	295.53	0.51	0.00
11.000	36.089	382.744	1.526	7.796		382.83	0.40	10	127	2.133	0.814	1.320	288.50	0.40	0.00
11.100	36.417	401.763	1.404	8.418		401.85	0.35	10	127	2.154	0.824	1.330	300.48	0.35	0.00
11.200	36.745	423.574	1.468	9.379		423.68	0.35	10	127	2.175	0.834	1.341	314.35	0.35	0.00
11.300	37.073	386.828	1.105	10.328		386.94	0.29	10	127	2.196	0.845	1.351	284.68	0.29	0.00
11.400	37.402	405.911	0.330	27.504		406.21	0.08	10	127	2.217	0.855	1.362	296.58	0.08	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.58	212.69	3.00E-4	37.9	38.4	78	44	895	1125			
8.300	27.231	6	1.51	248.55	3.00E-4	43.5	43.8	84	45	1050	1191			
8.400	27.559	6	1.38	259.50	3.00E-4	43.7	43.8	86	45	1102	1214			
8.500	27.887	7	1.31	288.67	3.00E-2	47.8	47.7	91	46	1231	1264			
8.600	28.215	6	1.48	273.52	3.00E-4	48.0	47.7	88	45	1173	1248			
8.700	28.543	6	1.59	252.22	3.00E-4	46.1	45.6	85	45	1087	1220			
8.800	28.871	6	1.68	203.43	3.00E-4	38.6	38.0	76	44	882	1142			
8.900	29.199	6	1.72	168.01	3.00E-4	32.6	31.9	69	43	734	1077			
9.000	29.528	6	1.68	176.08	3.00E-4	33.8	33.0	71	43	772	1099			
9.100	29.856	6	1.66	191.76	3.00E-4	36.7	35.6	74	44	844	1135			
9.200	30.184	6	1.58	203.32	3.00E-4	38.0	36.7	76	44	898	1163			
9.300	30.512	6	1.50	194.89	3.00E-4	35.7	34.3	75	44	865	1151			
9.400	30.840	6	1.69	145.18	3.00E-4	28.5	27.3	64	42	650	1050			
9.500	31.168	6	1.79	109.41	3.00E-4	22.6	21.5	56	41	495	962			
9.600	31.496	6	1.77	101.38	3.00E-4	20.9	19.8	54	40	461	942			
9.700	31.824	6	1.68	135.94	3.00E-4	27.0	25.5	62	42	617	1041			
9.800	32.152	6	1.71	149.41	3.00E-4	30.1	28.3	65	42	681	1079			
9.900	32.480	6	1.79	132.95	3.00E-4	27.8	26.0	62	42	612	1044			
10.000	32.808	6	1.83	118.67	3.00E-4	25.4	23.7	58	41	550	1010			
10.100	33.136	6	1.80	125.25	3.00E-4	26.6	24.7	60	41	582	1033			
10.200	33.465	6	1.75	144.20	3.00E-4	30.0	27.8	64	42	671	1085			
10.300	33.793	6	1.66	166.47	3.00E-4	33.6	31.0	69	43	773	1141			
10.400	34.121	6	1.48	189.28	3.00E-4	36.0	33.1	74	43	881	1195			
10.500	34.449	7	1.31	256.82	3.00E-2	46.6	42.6	86	45	1197	1327			
10.600	34.777	7	1.21	335.88	3.00E-2	59.2	53.9	98	46	1570	1457			
10.700	35.105	7	1.22	353.28	3.00E-2	62.6	56.7	100	46	1658	1488			
10.800	35.433	7	1.23	362.70	3.00E-2	64.9	58.6	102	46	1709	1507			
10.900	35.761	6	1.36	328.69	3.00E-4	61.5	55.3	97	46	1556	1465			
11.000	36.089	7	1.30	322.18	3.00E-2	59.4	53.2	96	46	1531	1461			
11.100	36.417	7	1.25	336.91	3.00E-2	61.4	54.8	98	46	1607	1489			
11.200	36.745	7	1.24	353.87	3.00E-2	64.4	57.2	101	46	1695	1519			
11.300	37.073	7	1.22	321.74	3.00E-2	58.6	51.8	96	46	1548	1478			
11.400	37.402	7	1.01	336.51	3.00E-2	57.8	50.9	98	46	1625	1506			

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC	Sounding:	C-949
Site:	SOUTH TEXAS PROJ.	Date:	7/20/2007
Engineer:	M.COOK	Time:	4:01 PM

Col 1 Depth (m)	Col 2 Depth (ft)	Col 3 q_c (tsf)	Col 4 f_s (tsf)	Col 5 u (psi)	Col 6 Other	Col 7 q_t (tsf)	Col 8 R_f (%)
0.050	0.164	5.403	0.020	6.542		5.47	0.37
0.100	0.328	6.631	0.045	11.114		6.75	0.67
0.150	0.492	6.795	0.120	9.285		6.90	1.74
0.200	0.656	6.876	0.176	8.371		6.97	2.53
0.250	0.820	6.795	0.170	4.643		6.85	2.48
0.300	0.984	6.494	0.104	5.311		6.55	1.59
0.350	1.148	6.331	0.104	4.994		6.38	1.63
0.400	1.312	6.385	0.138	6.683		6.46	2.14
0.450	1.476	6.412	0.172	5.874		6.48	2.66
0.500	1.640	6.467	0.204	6.331		6.54	3.12
0.550	1.804	6.767	0.208	6.155		6.83	3.04
0.600	1.969	6.958	0.247	7.456		7.04	3.51
0.650	2.133	7.177	0.273	6.120		7.24	3.77
0.700	2.297	6.958	0.293	6.120		7.02	4.17
0.750	2.461	7.286	0.304	8.476		7.38	4.12
0.800	2.625	7.777	0.339	9.461		7.88	4.30
0.850	2.789	7.831	0.351	11.325		7.95	4.41
0.900	2.953	7.695	0.347	13.682		7.84	4.42
0.950	3.117	8.050	0.275	14.983		8.21	3.35
1.000	3.281	8.186	0.353	12.486		8.32	4.24
1.050	3.445	8.759	0.376	11.888		8.89	4.23
1.100	3.609	9.305	0.382	15.370		9.47	4.03
1.150	3.773	9.386	0.376	14.842		9.55	3.94
1.200	3.937	8.622	0.353	16.707		8.80	4.01
1.250	4.101	8.622	0.305	16.144		8.80	3.47
1.300	4.265	9.250	0.261	13.260		9.39	2.78
1.350	4.429	9.305	0.319	13.823		9.45	3.37
1.400	4.593	9.850	0.350	11.537		9.97	3.51
1.450	4.757	10.205	0.361	15.229		10.37	3.48
1.500	4.921	10.560	0.401	14.139		10.71	3.74
1.550	5.085	10.642	0.427	12.029		10.77	3.96
1.600	5.249	10.287	0.432	13.998		10.44	4.14
1.650	5.413	10.314	0.409	12.556		10.45	3.91
1.700	5.577	10.205	0.350	12.627		10.34	3.38
1.750	5.741	9.960	0.350	11.220		10.08	3.47
1.800	5.906	10.123	0.389	11.290		10.24	3.80
1.850	6.070	10.778	0.463	8.652		10.87	4.26
1.900	6.234	11.379	0.470	7.316		11.46	4.10

1.950	6.398	11.351	0.449	12.345	11.48	3.91
2.000	6.562	12.088	0.379	14.667	12.25	3.09
2.050	6.726	12.115	0.421	12.345	12.25	3.44
2.100	6.890	11.679	0.423	10.130	11.79	3.59
2.150	7.054	11.897	0.473	10.763	12.01	3.94
2.200	7.218	12.443	0.509	10.094	12.55	4.06
2.250	7.382	13.261	0.468	9.250	13.36	3.50
2.300	7.546	13.425	0.469	9.743	13.53	3.47
2.350	7.710	14.517	0.471	9.426	14.62	3.22
2.400	7.874	14.762	0.536	8.828	14.86	3.61
2.450	8.038	14.680	0.557	7.562	14.76	3.77
2.500	8.202	15.089	0.630	7.808	15.17	4.15
2.550	8.366	14.980	0.683	8.441	15.07	4.53
2.600	8.530	15.280	0.673	9.461	15.38	4.38
2.650	8.694	15.199	0.583	11.466	15.32	3.80
2.700	8.858	14.980	0.653	16.531	15.16	4.31
2.750	9.022	15.799	0.642	13.647	15.95	4.03
2.800	9.186	16.235	0.612	15.722	16.40	3.73
2.850	9.350	17.545	0.633	15.616	17.71	3.57
2.900	9.514	17.245	0.595	12.662	17.38	3.42
2.950	9.678	17.163	0.610	12.908	17.30	3.53
3.000	9.843	17.873	0.545	10.270	17.98	3.03
3.050	10.007	18.064	0.587	10.587	18.18	3.23
3.100	10.171	18.555	0.621	11.220	18.68	3.33
3.150	10.335	18.855	0.661	12.381	18.99	3.48
3.200	10.499	19.100	0.660	12.486	19.23	3.43
3.250	10.663	19.128	0.599	13.049	19.27	3.11
3.300	10.827	19.019	0.600	12.275	19.15	3.13
3.350	10.991	19.673	0.593	13.154	19.82	2.99
3.400	11.155	19.782	0.653	14.174	19.94	3.28
3.450	11.319	19.864	0.710	14.807	20.02	3.55
3.500	11.483	20.246	0.657	17.656	20.44	3.21
3.550	11.647	20.192	0.649	27.504	20.49	3.17
3.600	11.811	20.983	0.647	26.343	21.27	3.04
3.650	11.975	21.147	0.751	26.273	21.43	3.50
3.700	12.139	20.929	0.744	26.379	21.21	3.51
3.750	12.303	21.011	0.651	38.618	21.43	3.04
3.800	12.467	22.593	0.658	56.380	23.20	2.84
3.850	12.631	24.367	0.717	49.099	24.90	2.88
3.900	12.795	23.357	0.844	47.130	23.87	3.54
3.950	12.959	24.230	0.836	52.511	24.80	3.37
4.000	13.123	25.267	0.860	50.964	25.82	3.33
4.050	13.287	26.386	0.879	39.779	26.82	3.28
4.100	13.451	25.322	0.853	41.537	25.77	3.31
4.150	13.615	24.885	0.868	53.531	25.46	3.41
4.200	13.780	25.240	0.871	41.010	25.68	3.39
4.250	13.944	24.394	0.946	34.714	24.77	3.82
4.300	14.108	23.930	0.949	40.834	24.37	3.89
4.350	14.272	24.585	0.877	37.704	24.99	3.51
4.400	14.436	23.575	0.891	38.583	23.99	3.71
4.450	14.600	23.057	0.866	31.619	23.40	3.70

4.500	14.764	22.157	0.837	30.494	22.49	3.72
4.550	14.928	21.202	0.807	27.997	21.50	3.75
4.600	15.092	20.547	0.777	29.157	20.86	3.72
4.650	15.256	20.383	0.774	22.228	20.62	3.75
4.700	15.420	20.629	0.838	22.228	20.87	4.02
4.750	15.584	20.492	0.825	16.671	20.67	3.99
4.800	15.748	20.874	0.807	20.154	21.09	3.83
4.850	15.912	21.038	0.849	18.606	21.24	4.00
4.900	16.076	21.856	0.972	14.948	22.02	4.41
4.950	16.240	32.034	1.115	11.677	32.16	3.47
5.000	16.404	30.915	1.260	12.451	31.05	4.06
5.050	16.568	28.978	1.151	10.481	29.09	3.96
5.100	16.732	25.677	1.136	15.405	25.84	4.40
5.150	16.896	26.222	1.005	20.857	26.45	3.80
5.200	17.060	28.542	0.811	32.991	28.90	2.81
5.250	17.224	30.206	0.784	36.051	30.60	2.56
5.300	17.388	27.477	0.726	24.937	27.75	2.62
5.350	17.552	23.848	0.605	18.219	24.04	2.52
5.400	17.717	30.451	0.566	29.509	30.77	1.84
5.450	17.881	58.365	0.447	28.137	58.67	0.76
5.500	18.045	65.323	0.364	11.290	65.44	0.56
5.550	18.209	60.876	0.509	7.843	60.96	0.83
5.600	18.373	64.532	0.687	7.738	64.62	1.06
5.650	18.537	65.269	0.734	5.662	65.33	1.12
5.700	18.701	57.165	0.939	4.608	57.21	1.64
5.750	18.865	46.714	0.875	5.346	46.77	1.87
5.800	19.029	43.440	0.742	14.315	43.59	1.70
5.850	19.193	29.960	0.815	5.416	30.02	2.71
5.900	19.357	42.103	0.836	46.884	42.61	1.96
5.950	19.521	64.314	0.804	16.812	64.50	1.25
6.000	19.685	77.411	0.788	6.788	77.48	1.02
6.050	19.849	84.588	0.659	5.170	84.64	0.78
6.100	20.013	92.228	0.570	5.241	92.28	0.62
6.150	20.177	90.345	0.607	4.432	90.39	0.67
6.200	20.341	91.327	0.484	2.708	91.36	0.53
6.250	20.505	89.472	0.492	2.497	89.50	0.55
6.300	20.669	86.989	0.640	7.527	87.07	0.74
6.350	20.833	89.826	0.502	6.788	89.90	0.56
6.400	20.997	90.890	0.515	5.662	90.95	0.57
6.450	21.161	89.963	0.663	4.115	90.01	0.74
6.500	21.325	90.318	0.853	3.201	90.35	0.94
6.550	21.490	89.717	0.771	1.934	89.74	0.86
6.600	21.654	91.245	0.807	2.181	91.27	0.88
6.650	21.818	90.945	0.900	1.477	90.96	0.99
6.700	21.982	94.820	0.878	1.970	94.84	0.93
6.750	22.146	100.768	0.828	2.251	100.79	0.82
6.800	22.310	105.844	1.064	2.743	105.87	1.00
6.850	22.474	110.073	0.932	2.532	110.10	0.85
6.900	22.638	112.938	1.047	1.231	112.95	0.93
6.950	22.802	117.686	1.119	5.206	117.74	0.95
7.000	22.966	122.215	1.223	4.045	122.26	1.00

7.050	23.130	120.333	1.091	3.025	120.37	0.91
7.100	23.294	114.903	0.864	3.130	114.94	0.75
7.150	23.458	114.248	0.616	3.834	114.29	0.54
7.200	23.622	109.555	0.429	3.658	109.59	0.39
7.250	23.786	101.805	0.545	2.708	101.83	0.54
7.300	23.950	92.337	0.660	9.532	92.44	0.71
7.350	24.114	92.119	0.718	6.753	92.19	0.78
7.400	24.278	88.762	0.723	5.557	88.82	0.81
7.450	24.442	83.141	0.706	4.818	83.19	0.85
7.500	24.606	78.857	0.643	4.326	78.90	0.81
7.550	24.770	77.193	0.605	4.326	77.24	0.78
7.600	24.934	77.029	0.561	4.713	77.08	0.73
7.650	25.098	75.665	0.530	4.713	75.72	0.70
7.700	25.262	73.482	0.498	4.854	73.53	0.68
7.750	25.427	71.790	0.502	4.994	71.84	0.70
7.800	25.591	69.280	0.500	5.135	69.34	0.72
7.850	25.755	69.989	0.489	5.768	70.05	0.70
7.900	25.919	74.028	0.396	6.507	74.10	0.53
7.950	26.083	77.302	0.444	6.788	77.38	0.57
8.000	26.247	77.848	0.519	10.235	77.96	0.67
8.050	26.411	78.585	0.537	8.863	78.68	0.68
8.100	26.575	78.885	0.556	8.969	78.98	0.70
8.150	26.739	80.058	0.564	8.617	80.15	0.70
8.200	26.903	82.077	0.604	8.934	82.17	0.74
8.250	27.067	84.178	0.644	9.285	84.28	0.76
8.300	27.231	96.157	0.676	10.974	96.28	0.70
8.350	27.395	115.148	0.767	12.556	115.28	0.67
8.400	27.559	121.888	0.872	11.888	122.02	0.71
8.450	27.723	113.620	0.910	10.376	113.73	0.80
8.500	27.887	109.172	0.748	10.763	109.29	0.68
8.550	28.051	115.175	0.836	11.958	115.30	0.73
8.600	28.215	139.979	0.937	15.933	140.15	0.67
8.650	28.379	163.527	1.079	16.249	163.70	0.66
8.700	28.543	179.544	1.246	16.320	179.72	0.69
8.750	28.707	188.466	1.391	15.898	188.64	0.74
8.800	28.871	172.094	1.408	12.732	172.23	0.82
8.850	29.035	154.277	1.298	11.255	154.40	0.84
8.900	29.199	139.406	1.170	10.798	139.52	0.84
8.950	29.364	130.347	1.036	10.798	130.46	0.79
9.000	29.528	128.628	0.965	11.360	128.75	0.75
9.050	29.692	131.575	0.965	12.169	131.71	0.73
9.100	29.856	130.565	0.812	11.818	130.69	0.62
9.150	30.020	131.957	0.825	12.345	132.09	0.62
9.200	30.184	125.462	0.896	18.747	125.66	0.71
9.250	30.348	129.337	0.921	13.682	129.48	0.71
9.300	30.512	132.830	0.943	13.365	132.97	0.71
9.350	30.676	132.666	0.987	12.627	132.80	0.74
9.400	30.840	136.077	1.006	12.837	136.22	0.74
9.450	31.004	134.194	1.052	12.521	134.33	0.78
9.500	31.168	120.578	1.026	10.692	120.69	0.85
9.550	31.332	119.323	0.956	11.853	119.45	0.80

9.600	31.496	123.116	0.941	12.627	123.25	0.76
9.650	31.660	125.872	0.935	12.662	126.01	0.74
9.700	31.824	120.851	0.957	12.064	120.98	0.79
9.750	31.988	110.319	0.877	10.692	110.43	0.79
9.800	32.152	103.933	0.820	10.833	104.05	0.79
9.850	32.316	103.060	0.743	11.712	103.19	0.72
9.900	32.480	103.248	0.714	8.195	103.34	0.69
9.950	32.644	106.608	0.776	13.471	106.75	0.73
10.000	32.808	110.591	0.754	12.732	110.73	0.68
10.050	32.972	111.355	0.826	12.029	111.48	0.74
10.100	33.136	107.290	0.797	11.079	107.41	0.74
10.150	33.301	109.200	0.841	11.923	109.33	0.77
10.200	33.465	106.417	0.635	11.325	106.54	0.60
10.250	33.629	98.831	0.662	10.939	98.95	0.67
10.300	33.793	91.928	0.700	18.254	92.13	0.76
10.350	33.957	93.128	0.697	13.471	93.27	0.75
10.400	34.121	94.465	0.697	12.802	94.60	0.74
10.450	34.285	101.014	0.718	13.049	101.15	0.71
10.500	34.449	95.802	0.741	11.642	95.93	0.77
10.550	34.613	90.890	0.737	11.712	91.02	0.81
10.600	34.777	93.428	0.733	12.591	93.56	0.78
10.650	34.941	93.428	0.728	12.381	93.56	0.78
10.700	35.105	90.727	0.735	12.345	90.86	0.81
10.750	35.269	91.109	0.735	12.908	91.25	0.81
10.800	35.433	93.456	0.727	13.189	93.60	0.78
10.850	35.597	92.364	0.723	12.979	92.50	0.78
10.900	35.761	93.865	0.546	13.154	94.01	0.58
10.950	35.925	92.310	0.607	12.908	92.45	0.66
11.000	36.089	87.289	0.650	18.535	87.49	0.74
11.050	36.253	89.199	0.665	13.963	89.35	0.74
11.100	36.417	88.872	0.696	12.943	89.01	0.78
11.150	36.581	87.671	0.708	12.802	87.81	0.81
11.200	36.745	87.507	0.727	13.119	87.65	0.83
11.250	36.909	89.117	0.739	13.506	89.26	0.83
11.300	37.073	88.817	0.764	13.365	88.96	0.86
11.350	37.238	93.101	0.782	14.315	93.26	0.84
11.400	37.402	98.667	0.818	14.702	98.83	0.83
11.450	37.566	98.422	0.822	14.421	98.58	0.83
11.500	37.730	94.165	0.841	13.787	94.31	0.89
11.550	37.894	89.690	0.814	13.541	89.84	0.91
11.600	38.058	89.526	0.707	14.139	89.68	0.79
11.650	38.222	97.276	0.735	15.511	97.44	0.75
11.700	38.386	118.150	0.913	19.344	118.36	0.77
11.750	38.550	134.685	1.131	18.219	134.88	0.84
11.800	38.714	143.744	1.254	17.023	143.93	0.87
11.850	38.878	145.627	1.306	16.390	145.80	0.90
11.900	39.042	155.313	1.370	18.395	155.51	0.88
11.950	39.206	160.498	1.438	17.656	160.69	0.89
12.000	39.370	164.182	1.680	18.324	164.38	1.02
12.050	39.534	187.839	1.647	22.193	188.08	0.88
12.100	39.698	248.742	2.215	29.227	249.06	0.89

12.150	39.862	318.540	1.784	19.133	318.75	0.56
12.200	40.026	342.388	1.612	15.546	342.56	0.47
12.250	40.190	287.297	1.514	27.152	287.59	0.53
12.300	40.354	187.320	1.432	17.128	187.50	0.76
12.350	40.518	173.923	1.574	16.812	174.10	0.90
12.400	40.682	174.660	1.548	17.410	174.85	0.89
12.450	40.846	185.438	1.546	18.254	185.64	0.83
12.500	41.011	203.446	1.546	21.596	203.68	0.76
12.550	41.175	230.351	1.632	23.284	230.60	0.71
12.600	41.339	245.413	1.833	18.008	245.61	0.75
12.650	41.503	236.681	1.936	19.626	236.89	0.82
12.700	41.667	213.106	1.876	15.124	213.27	0.88
12.750	41.831	206.175	1.738	16.988	206.36	0.84
12.800	41.995	180.908	1.565	17.164	181.09	0.86
12.850	42.159	169.693	1.305	15.124	169.86	0.77
12.900	42.323	149.474	1.180	13.119	149.62	0.79
12.950	42.487	138.478	1.095	16.320	138.65	0.79
13.000	42.651	134.549	1.053	15.511	134.72	0.78
13.050	42.815	136.431	1.116	15.616	136.60	0.82
13.100	42.979	146.309	1.102	18.184	146.51	0.75
13.150	43.143	147.100	1.291	17.023	147.28	0.88
13.200	43.307	148.246	1.164	16.742	148.43	0.78
13.250	43.471	147.646	1.175	19.485	147.86	0.79
13.300	43.635	153.758	1.146	22.299	154.00	0.74
13.350	43.799	164.182	1.195	18.852	164.39	0.73
13.400	43.963	174.032	1.365	19.098	174.24	0.78
13.450	44.127	181.427	1.449	19.239	181.63	0.80
13.500	44.291	189.530	1.515	20.329	189.75	0.80
13.550	44.455	203.692	1.627	21.103	203.92	0.80
13.600	44.619	199.217	1.685	18.043	199.41	0.84
13.650	44.783	195.097	1.691	18.817	195.30	0.87
13.700	44.948	199.354	1.765	19.591	199.57	0.88
13.750	45.112	209.750	1.861	22.052	209.99	0.89
13.800	45.276	221.646	1.699	24.163	221.91	0.77
13.850	45.440	231.715	1.932	23.073	231.96	0.83
13.900	45.604	230.624	2.114	28.629	230.93	0.92
13.950	45.768	224.266	2.284	21.666	224.50	1.02
14.000	45.932	223.175	2.281	22.017	223.41	1.02
14.050	46.096	234.607	2.318	24.585	234.87	0.99
14.100	46.260	241.129	2.412	24.444	241.39	1.00
14.150	46.424	242.848	1.119	23.073	243.10	0.46
14.200	46.588	250.324	1.338	24.092	250.58	0.53
14.250	46.752	239.410	1.529	31.092	239.75	0.64
14.300	46.916	255.754	1.710	22.932	256.00	0.67
14.350	47.080	264.240	1.902	22.721	264.49	0.72
14.400	47.244	247.841	1.905	18.852	248.04	0.77
14.450	47.408	174.878	2.369	14.421	175.03	1.35
14.500	47.572	57.274	2.152	11.818	57.40	3.75
14.550	47.736	29.251	1.446	26.977	29.54	4.89
14.600	47.900	18.691	0.844	30.071	19.02	4.44
14.650	48.064	17.791	0.114	56.767	18.40	0.62

14.700	48.228	16.399	0.075	92.958	17.40	0.43
14.750	48.392	15.308	0.050	118.388	16.59	0.30
14.800	48.556	14.953	0.020	121.482	16.27	0.12
14.850	48.720	14.844	0.020	125.316	16.20	0.12
14.900	48.885	15.881	0.020	137.274	17.36	0.12
14.950	49.049	17.491	0.020	127.954	18.87	0.11
15.000	49.213	18.609	0.020	111.599	19.81	0.10
15.050	49.377	19.073	0.020	109.806	20.26	0.10
15.100	49.541	19.510	0.052	107.132	20.67	0.25
15.150	49.705	19.782	0.131	109.278	20.96	0.62
15.200	49.869	20.137	0.020	99.641	21.21	0.09
15.250	50.033	20.083	0.020	89.863	21.05	0.09

GREGG DRILLING & TESTING, INC.

CONE PENETRATION TEST DATA

Client:	MACTEC		
Site:	SOUTH TEXAS PROJ.		
Engineer:	M.COOK		
Sounding:	C-949		
Date:	7/20/2007		
Time:	4:01 PM		

Units:	Imperial	
Data averaging interval:	0.100	meters
Assumed depth of water:	10.003	feet
Net area ratio of cone:	0.85	
Unit weight of water:	62.4	lb/ft^3
Relative density constant, C_{DR}:	350	
Young's modulus for sands, α:	4	
Small strain shear modulus number, S_G (sands):	180	
Small strain shear modulus number, C_G (clays):	30	
N_{kt} for clays:	15	
OCR number, k_{ocr}:	0.3	

Interpretation based on Lunne, Robertson and Powell, 1997

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
0.100	0.328	6.276	0.062	8.980		6.37	0.97	1	111	0.018	0.000	0.018	347.75	0.97	0.10
0.200	0.656	6.822	0.155	7.433		6.90	2.25	4	115	0.037	0.000	0.037	185.19	2.26	0.08
0.300	0.984	6.540	0.126	4.983		6.59	1.91	4	115	0.056	0.000	0.056	117.02	1.93	0.05
0.400	1.312	6.376	0.138	5.850		6.44	2.14	4	115	0.075	0.000	0.075	85.24	2.17	0.07
0.500	1.640	6.549	0.195	6.120		6.61	2.94	3	111	0.093	0.000	0.093	70.17	2.98	0.07
0.600	1.969	6.967	0.243	6.577		7.04	3.45	3	111	0.111	0.000	0.111	62.29	3.50	0.07
0.700	2.297	7.140	0.290	6.905		7.21	4.02	3	111	0.129	0.000	0.129	54.72	4.09	0.07
0.800	2.625	7.631	0.331	9.754		7.74	4.28	3	111	0.148	0.000	0.148	51.36	4.37	0.09
0.900	2.953	7.859	0.324	13.330		8.00	4.05	3	111	0.166	0.000	0.166	47.20	4.14	0.12
1.000	3.281	8.332	0.335	13.119		8.47	3.95	3	111	0.184	0.000	0.184	44.97	4.04	0.11
1.100	3.609	9.150	0.378	14.033		9.30	4.06	3	111	0.203	0.000	0.203	44.91	4.15	0.11
1.200	3.937	8.877	0.345	15.898		9.05	3.81	3	111	0.221	0.000	0.221	39.97	3.90	0.13
1.300	4.265	9.059	0.295	14.409		9.21	3.20	4	115	0.240	0.000	0.240	37.45	3.29	0.12
1.400	4.593	9.787	0.343	13.530		9.93	3.46	4	115	0.258	0.000	0.258	37.43	3.55	0.10
1.500	4.921	10.469	0.396	13.799		10.62	3.73	3	111	0.277	0.000	0.277	37.37	3.83	0.10
1.600	5.249	10.414	0.423	12.861		10.55	4.01	3	111	0.295	0.000	0.295	34.77	4.12	0.09
1.700	5.577	10.160	0.370	12.134		10.29	3.59	4	115	0.314	0.000	0.314	31.79	3.71	0.09
1.800	5.906	10.287	0.401	10.387		10.40	3.85	3	111	0.332	0.000	0.332	30.32	3.98	0.07
1.900	6.234	11.169	0.461	9.438		11.27	4.09	3	111	0.350	0.000	0.350	31.17	4.22	0.06
2.000	6.562	11.851	0.416	13.119		11.99	3.47	4	115	0.369	0.000	0.369	31.49	3.58	0.08
2.100	6.890	11.897	0.439	11.079		12.02	3.65	4	115	0.388	0.000	0.388	29.97	3.78	0.07
2.200	7.218	12.534	0.483	10.036		12.64	3.82	4	115	0.407	0.000	0.407	30.08	3.95	0.06
2.300	7.546	13.734	0.469	9.473		13.84	3.39	4	115	0.426	0.000	0.426	31.52	3.50	0.05
2.400	7.874	14.653	0.521	8.605		14.75	3.54	4	115	0.444	0.000	0.444	32.19	3.65	0.04
2.500	8.202	14.916	0.623	7.937		15.00	4.15	3	111	0.463	0.000	0.463	31.43	4.29	0.04
2.600	8.530	15.153	0.646	9.789		15.26	4.24	3	111	0.481	0.000	0.481	30.73	4.37	0.05
2.700	8.858	15.326	0.626	13.881		15.48	4.04	4	115	0.500	0.000	0.500	29.97	4.18	0.07
2.800	9.186	16.526	0.629	14.995		16.69	3.77	4	115	0.518	0.000	0.518	31.19	3.89	0.07
2.900	9.514	17.318	0.613	13.729		17.47	3.51	4	115	0.537	0.000	0.537	31.51	3.62	0.06
3.000	9.843	17.700	0.581	11.255		17.82	3.26	5	115	0.556	0.000	0.556	31.05	3.36	0.05
3.100	10.171	18.491	0.623	11.396		18.61	3.35	5	115	0.575	0.005	0.570	31.67	3.45	0.05

GREGG

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
0.100	0.328	6	1.52	45.70	3.00E-4	1.0	7.9	36	47	25	90			
0.200	0.656	6	1.98	48.85	3.00E-4	1.3	7.1	37	44	28	116			
0.300	0.984	5	2.06	38.84	3.00E-6	1.3	5.7	33	41	26	131			
0.400	1.312	5	2.19	35.04	3.00E-6	1.4	5.1	32	40	26	144			
0.500	1.640	5	2.35	34.84	3.00E-6	1.5	5.0	32	39	26	156			
0.600	1.969	4	2.43	34.52	3.00E-8	1.6	5.1				208	0.46	4.15	18.7
0.700	2.297	4	2.52	33.35	3.00E-8	1.8	5.0				213	0.47	3.65	16.4
0.800	2.625	4	2.56	33.05	3.00E-8	1.9	5.1				228	0.51	3.42	15.4
0.900	2.953	4	2.57	31.33	3.00E-8	2.0	5.0				235	0.52	3.15	14.2
1.000	3.281	4	2.58	30.66	3.00E-8	2.1	5.0				249	0.55	3.00	13.5
1.100	3.609	4	2.59	31.41	3.00E-8	2.3	5.3				273	0.61	2.99	13.5
1.200	3.937	4	2.60	28.70	3.00E-8	2.3	5.0				265	0.59	2.66	12.0
1.300	4.265	4	2.57	26.99	3.00E-8	2.3	4.8				269	0.60	2.50	11.2
1.400	4.593	4	2.59	27.70	3.00E-8	2.5	5.0				290	0.64	2.50	11.2
1.500	4.921	4	2.62	28.32	3.00E-8	2.7	5.3				310	0.69	2.49	11.2
1.600	5.249	4	2.66	27.16	3.00E-8	2.7	5.2				308	0.68	2.32	10.4
1.700	5.577	4	2.66	25.11	3.00E-8	2.7	4.9				299	0.67	2.12	9.5
1.800	5.906	4	2.70	24.51	3.00E-8	2.8	4.9				302	0.67	2.02	9.1
1.900	6.234	4	2.70	25.52	3.00E-8	3.0	5.2				328	0.73	2.08	9.4
2.000	6.562	4	2.65	25.61	3.00E-8	3.1	5.3				349	0.77	2.10	9.4
2.100	6.890	4	2.68	24.85	3.00E-8	3.2	5.2				349	0.78	2.00	9.0
2.200	7.218	4	2.70	25.25	3.00E-8	3.4	5.4				367	0.82	2.01	9.0
2.300	7.546	4	2.65	26.31	3.00E-8	3.6	5.7				402	0.89	2.10	9.5
2.400	7.874	4	2.65	27.13	3.00E-8	3.8	5.9				429	0.95	2.15	9.7
2.500	8.202	4	2.71	27.08	3.00E-8	4.0	6.1				436	0.97	2.10	9.4
2.600	8.530	4	2.72	26.74	3.00E-8	4.1	6.1				443	0.99	2.05	9.2
2.700	8.858	4	2.71	26.23	3.00E-8	4.2	6.0				449	1.00	2.00	9.0
2.800	9.186	4	2.68	27.27	3.00E-8	4.4	6.3				485	1.08	2.08	9.4
2.900	9.514	4	2.66	27.60	3.00E-8	4.6	6.4				508	1.13	2.10	9.5
3.000	9.843	4	2.64	27.29	3.00E-8	4.6	6.4				518	1.15	2.07	9.3
3.100	10.171	4	2.64	27.98	3.00E-8	4.8	6.6				541	1.20	2.11	9.5

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
3.200	10.499	19.028	0.640	12.639		19.16	3.34	5	115	0.594	0.015	0.578	32.12	3.45	0.05
3.300	10.827	19.273	0.597	12.826		19.41	3.08	5	115	0.612	0.026	0.587	32.04	3.18	0.05
3.400	11.155	19.773	0.652	14.045		19.92	3.27	5	115	0.631	0.036	0.595	32.41	3.38	0.05
3.500	11.483	20.101	0.672	19.989		20.32	3.31	5	115	0.650	0.046	0.604	32.57	3.42	0.07
3.600	11.811	20.774	0.682	26.707		21.06	3.24	5	115	0.669	0.056	0.612	33.30	3.35	0.09
3.700	12.139	21.029	0.715	30.423		21.36	3.35	5	115	0.688	0.067	0.621	33.29	3.46	0.10
3.800	12.467	22.657	0.675	48.032		23.18	2.91	5	115	0.706	0.077	0.630	35.69	3.01	0.15
3.900	12.795	23.985	0.799	49.580		24.52	3.26	5	115	0.725	0.087	0.638	37.29	3.36	0.15
4.000	13.123	25.294	0.858	47.751		25.81	3.33	5	115	0.744	0.097	0.647	38.76	3.42	0.13
4.100	13.451	25.531	0.867	44.949		26.02	3.33	5	115	0.763	0.108	0.655	38.54	3.43	0.12
4.200	13.780	24.840	0.895	43.085		25.30	3.54	5	115	0.782	0.118	0.664	36.94	3.65	0.12
4.300	14.108	24.303	0.924	37.751		24.71	3.74	5	115	0.800	0.128	0.672	35.56	3.86	0.11
4.400	14.436	23.739	0.878	35.969		24.13	3.64	5	115	0.819	0.138	0.681	34.23	3.77	0.11
4.500	14.764	22.139	0.837	30.037		22.46	3.72	4	115	0.838	0.149	0.689	31.36	3.87	0.09
4.600	15.092	20.711	0.786	26.461		21.00	3.74	4	115	0.857	0.159	0.698	28.85	3.90	0.09
4.700	15.420	20.501	0.812	20.376		20.72	3.92	4	115	0.876	0.169	0.707	28.09	4.09	0.07
4.800	15.748	20.801	0.827	18.477		21.00	3.94	4	115	0.894	0.179	0.715	28.11	4.11	0.06
4.900	16.076	24.976	0.979	15.077		25.14	3.89	4	115	0.913	0.189	0.724	33.47	4.04	0.04
5.000	16.404	30.642	1.175	11.536		30.77	3.82	5	115	0.932	0.200	0.732	40.74	3.94	0.02
5.100	16.732	26.959	1.097	15.581		27.13	4.05	4	115	0.951	0.210	0.741	35.33	4.19	0.03
5.200	17.060	28.323	0.867	29.966		28.65	3.03	5	115	0.970	0.220	0.749	36.93	3.13	0.07
5.300	17.388	27.177	0.705	26.402		27.46	2.57	6	115	0.988	0.230	0.758	34.93	2.66	0.06
5.400	17.717	37.555	0.539	25.288		37.83	1.43	7	118	1.008	0.241	0.767	48.00	1.46	0.04
5.500	18.045	61.521	0.440	15.757		61.69	0.71	8	121	1.028	0.251	0.777	78.11	0.73	0.01
5.600	18.373	63.559	0.643	7.081		63.64	1.01	8	121	1.047	0.261	0.786	79.60	1.03	0.00
5.700	18.701	56.383	0.849	5.205		56.44	1.50	7	118	1.067	0.271	0.795	69.62	1.53	0.00
5.800	19.029	40.038	0.811	8.359		40.13	2.02	6	115	1.086	0.282	0.804	48.57	2.08	0.01
5.900	19.357	45.459	0.818	23.037		45.71	1.79	7	118	1.105	0.292	0.813	54.86	1.83	0.03
6.000	19.685	75.438	0.750	9.590		75.54	0.99	8	121	1.125	0.302	0.823	90.47	1.01	0.01
6.100	20.013	89.054	0.612	4.948		89.11	0.69	8	121	1.145	0.312	0.832	105.70	0.70	0.00
6.200	20.341	90.381	0.528	3.212		90.42	0.58	8	121	1.164	0.323	0.842	106.02	0.59	0.00
6.300	20.669	88.762	0.545	5.604		88.82	0.61	8	121	1.184	0.333	0.851	102.93	0.62	0.00
6.400	20.997	90.226	0.560	5.522		90.29	0.62	8	121	1.204	0.343	0.861	103.46	0.63	0.00
6.500	21.325	89.999	0.762	3.083		90.03	0.85	8	121	1.224	0.353	0.871	102.01	0.86	0.00
6.600	21.654	90.636	0.826	1.864		90.66	0.91	8	121	1.244	0.364	0.880	101.58	0.92	0.00
6.700	21.982	95.511	0.869	1.899		95.53	0.91	8	121	1.264	0.374	0.890	105.94	0.92	0.00
6.800	22.310	105.562	0.941	2.509		105.59	0.89	8	121	1.283	0.384	0.899	115.97	0.90	0.00
6.900	22.638	113.566	1.033	2.990		113.60	0.91	8	121	1.303	0.394	0.909	123.53	0.92	0.00
7.000	22.966	120.078	1.144	4.092		120.12	0.95	8	121	1.323	0.404	0.919	129.32	0.96	0.00
7.100	23.294	116.495	0.857	3.330		116.53	0.74	9	124	1.343	0.415	0.929	124.02	0.74	0.00
7.200	23.622	108.536	0.530	3.400		108.57	0.49	9	124	1.364	0.425	0.939	114.19	0.49	0.00
7.300	23.950	95.420	0.641	6.331		95.49	0.67	8	121	1.384	0.435	0.949	99.21	0.68	0.00
7.400	24.278	88.007	0.716	5.709		88.07	0.81	8	121	1.404	0.445	0.958	90.46	0.83	0.00
7.500	24.606	79.730	0.651	4.490		79.78	0.82	8	121	1.423	0.456	0.968	80.97	0.83	0.00
7.600	24.934	76.629	0.565	4.584		76.68	0.74	8	121	1.443	0.466	0.977	76.98	0.75	0.00
7.700	25.262	73.646	0.510	4.854		73.70	0.69	8	121	1.463	0.476	0.987	73.19	0.71	0.00
7.800	25.591	70.353	0.497	5.299		70.41	0.71	8	121	1.483	0.486	0.997	69.17	0.72	0.00
7.900	25.919	73.773	0.443	6.354		73.84	0.60	8	121	1.503	0.497	1.006	71.90	0.61	0.00
8.000	26.247	77.912	0.500	8.629		78.00	0.64	8	121	1.523	0.507	1.016	75.30	0.65	0.00
8.100	26.575	79.176	0.552	8.816		79.27	0.70	8	121	1.542	0.517	1.025	75.81	0.71	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
3.200	10.499	4	2.63	28.44	3.00E-8	5.0	6.7				557	1.24	2.14	9.6
3.300	10.827	4	2.61	28.34	3.00E-8	5.0	6.7				564	1.25	2.14	9.6
3.400	11.155	4	2.63	28.82	3.00E-8	5.1	6.8				579	1.29	2.16	9.7
3.500	11.483	4	2.63	29.05	3.00E-8	5.2	6.9				590	1.31	2.17	9.8
3.600	11.811	4	2.61	29.73	3.00E-8	5.4	7.0				612	1.36	2.22	10.0
3.700	12.139	4	2.62	29.85	3.00E-8	5.4	7.1				620	1.38	2.22	10.0
3.800	12.467	4	2.56	31.78	3.00E-8	5.7	7.4				674	1.50	2.38	10.7
3.900	12.795	4	2.58	33.39	3.00E-8	6.1	7.8				714	1.59	2.49	11.2
4.000	13.123	4	2.57	34.78	3.00E-8	6.4	8.2				752	1.67	2.58	11.6
4.100	13.451	4	2.58	34.69	3.00E-8	6.4	8.2				758	1.68	2.57	11.6
4.200	13.780	4	2.61	33.50	3.00E-8	6.4	8.0				736	1.63	2.46	11.1
4.300	14.108	4	2.64	32.46	3.00E-8	6.3	7.9				717	1.59	2.37	10.7
4.400	14.436	4	2.64	31.34	3.00E-8	6.2	7.7				699	1.55	2.28	10.3
4.500	14.764	4	2.68	28.92	3.00E-8	5.9	7.3				649	1.44	2.09	9.4
4.600	15.092	4	2.71	26.77	3.00E-8	5.6	6.9				604	1.34	1.92	8.7
4.700	15.420	4	2.73	26.19	3.00E-8	5.6	6.9				595	1.32	1.87	8.4
4.800	15.748	4	2.73	26.27	3.00E-8	5.7	6.9				603	1.34	1.87	8.4
4.900	16.076	4	2.67	31.13	3.00E-8	6.6	8.0				727	1.62	2.23	10.0
5.000	16.404	4	2.60	37.68	3.00E-8	7.8	9.4				895	1.99	2.72	12.2
5.100	16.732	4	2.66	32.98	3.00E-8	7.1	8.5				785	1.75	2.36	10.6
5.200	17.060	4	2.56	34.19	3.00E-8	7.1	8.4				830	1.85	2.46	11.1
5.300	17.388	4	2.53	32.33	3.00E-8	6.7	7.9				794	1.76	2.33	10.5
5.400	17.717	5	2.26	43.40	3.00E-6	8.2	9.7	35	36	151	564			
5.500	18.045	6	1.91	68.63	3.00E-4	11.7	13.7	44	39	247	666			
5.600	18.373	6	1.99	70.82	3.00E-4	12.5	14.5	45	39	255	676			
5.700	18.701	5	2.15	63.06	3.00E-6	11.8	13.6	42	39	226	652			
5.800	19.029	5	2.35	44.90	3.00E-6	9.1	10.5	36	37	161	584			
5.900	19.357	5	2.28	50.58	3.00E-6	10.0	11.4	38	37	183	612			
6.000	19.685	6	1.95	81.63	3.00E-4	14.5	16.5	48	40	302	727			
6.100	20.013	6	1.79	94.79	3.00E-4	16.2	18.3	52	41	356	771			
6.200	20.341	6	1.75	95.30	3.00E-4	16.2	18.2	52	41	362	777			
6.300	20.669	6	1.78	93.15	3.00E-4	16.1	17.9	52	41	355	776			
6.400	20.997	6	1.78	94.12	3.00E-4	16.3	18.1	52	41	361	783			
6.500	21.325	6	1.86	93.74	3.00E-4	16.8	18.5	52	41	360	785			
6.600	21.654	6	1.88	93.90	3.00E-4	17.1	18.7	52	41	363	790			
6.700	21.982	6	1.87	98.31	3.00E-4	17.9	19.5	53	41	382	806			
6.800	22.310	6	1.83	107.93	3.00E-4	19.5	21.2	56	41	422	837			
6.900	22.638	6	1.82	115.43	3.00E-4	20.9	22.5	57	42	454	861			
7.000	22.966	6	1.81	121.39	3.00E-4	22.1	23.7	59	42	480	880			
7.100	23.294	6	1.76	116.73	3.00E-4	21.0	22.4	58	42	466	874			
7.200	23.622	6	1.68	107.73	3.00E-4	19.0	20.2	55	41	434	857			
7.300	23.950	6	1.81	94.46	3.00E-4	17.5	18.5	52	41	382	824			
7.400	24.278	6	1.89	86.73	3.00E-4	16.6	17.5	50	40	352	805			
7.500	24.606	6	1.93	78.05	3.00E-4	15.3	16.0	47	39	319	781			
7.600	24.934	6	1.93	74.49	3.00E-4	14.7	15.2	46	39	307	773			
7.700	25.262	6	1.93	71.12	3.00E-4	14.1	14.6	45	39	295	766			
7.800	25.591	6	1.95	67.51	3.00E-4	13.6	14.0	44	39	282	757			
7.900	25.919	6	1.90	70.39	3.00E-4	14.0	14.3	45	39	295	771			
8.000	26.247	6	1.90	74.01	3.00E-4	14.8	15.1	46	39	312	788			
8.100	26.575	6	1.92	74.82	3.00E-4	15.1	15.3	46	39	317	795			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
8.200	26.903	82.104	0.604	8.945		82.20	0.73	8	121	1.562	0.527	1.035	77.92	0.75	0.00
8.300	27.231	98.494	0.696	10.938		98.61	0.71	8	121	1.582	0.538	1.045	92.89	0.72	0.00
8.400	27.559	116.885	0.850	11.607		117.01	0.73	9	124	1.602	0.548	1.055	109.43	0.74	0.00
8.500	27.887	112.656	0.831	11.032		112.77	0.74	9	124	1.623	0.558	1.065	104.39	0.75	0.00
8.600	28.215	139.560	0.951	14.713		139.72	0.68	9	124	1.643	0.568	1.075	128.45	0.69	0.00
8.700	28.543	177.179	1.239	16.156		177.35	0.70	9	124	1.664	0.578	1.085	161.92	0.71	0.00
8.800	28.871	171.612	1.366	13.295		171.76	0.80	9	124	1.684	0.589	1.095	155.29	0.80	0.00
8.900	29.199	141.343	1.168	10.950		141.46	0.83	9	124	1.704	0.599	1.105	126.44	0.84	0.00
9.000	29.528	130.183	0.989	11.442		130.31	0.76	9	124	1.725	0.609	1.115	115.27	0.77	0.00
9.100	29.856	131.366	0.867	12.111		131.50	0.66	9	124	1.745	0.619	1.126	115.28	0.67	0.00
9.200	30.184	128.919	0.881	14.925		129.08	0.68	9	124	1.765	0.630	1.136	112.10	0.69	0.00
9.300	30.512	131.611	0.950	13.225		131.75	0.72	9	124	1.786	0.640	1.146	113.43	0.73	0.00
9.400	30.840	134.312	1.015	12.662		134.45	0.75	9	124	1.806	0.650	1.156	114.75	0.77	0.00
9.500	31.168	124.698	1.011	11.689		124.82	0.81	9	124	1.826	0.660	1.166	105.48	0.82	0.00
9.600	31.496	122.770	0.944	12.381		122.90	0.77	9	124	1.847	0.671	1.176	102.92	0.78	0.00
9.700	31.824	119.014	0.923	11.806		119.14	0.77	9	124	1.867	0.681	1.186	98.85	0.79	0.00
9.800	32.152	105.771	0.813	11.079		105.89	0.77	10	127	1.888	0.691	1.197	86.89	0.78	0.00
9.900	32.480	104.305	0.744	11.126		104.43	0.71	9	124	1.908	0.701	1.207	84.93	0.73	0.00
10.000	32.808	109.518	0.785	12.744		109.66	0.72	9	124	1.929	0.712	1.217	88.50	0.73	0.00
10.100	33.136	109.282	0.821	11.677		109.41	0.75	9	124	1.949	0.722	1.227	87.55	0.76	0.00
10.200	33.465	104.816	0.713	11.396		104.94	0.68	9	124	1.970	0.732	1.237	83.21	0.69	0.00
10.300	33.793	94.629	0.686	14.221		94.78	0.72	8	121	1.989	0.742	1.247	74.41	0.74	0.00
10.400	34.121	96.202	0.704	13.107		96.34	0.73	8	121	2.009	0.752	1.257	75.07	0.75	0.00
10.500	34.449	95.902	0.732	12.134		96.03	0.76	8	121	2.029	0.763	1.266	74.24	0.78	0.00
10.600	34.777	92.582	0.733	12.228		92.71	0.79	8	121	2.049	0.773	1.276	71.06	0.81	0.00
10.700	35.105	91.755	0.733	12.545		91.89	0.80	8	121	2.069	0.783	1.286	69.87	0.82	0.00
10.800	35.433	92.310	0.728	13.025		92.45	0.79	8	121	2.089	0.793	1.295	69.77	0.81	0.00
10.900	35.761	92.846	0.625	13.014		92.99	0.67	8	121	2.108	0.804	1.305	69.65	0.69	0.00
11.000	36.089	89.599	0.641	15.135		89.76	0.71	8	121	2.128	0.814	1.314	66.68	0.73	0.00
11.100	36.417	88.581	0.690	13.236		88.72	0.78	8	121	2.148	0.824	1.324	65.39	0.80	0.00
11.200	36.745	88.098	0.725	13.142		88.24	0.82	8	121	2.168	0.834	1.334	64.54	0.84	0.00
11.300	37.073	90.345	0.762	13.729		90.49	0.84	8	121	2.188	0.845	1.343	65.75	0.86	0.00
11.400	37.402	96.730	0.807	14.479		96.89	0.83	8	121	2.208	0.855	1.353	69.99	0.85	0.00
11.500	37.730	94.092	0.826	13.916		94.24	0.88	8	121	2.227	0.865	1.362	67.54	0.90	0.00
11.600	38.058	92.164	0.752	14.397		92.32	0.81	8	121	2.247	0.875	1.372	65.65	0.83	0.00
11.700	38.386	116.704	0.926	17.691		116.89	0.79	9	124	2.268	0.886	1.382	82.94	0.81	0.00
11.800	38.714	141.352	1.230	17.211		141.54	0.87	9	124	2.288	0.896	1.392	100.02	0.88	0.00
11.900	39.042	153.813	1.371	17.480		154.00	0.89	9	124	2.308	0.906	1.402	108.17	0.90	0.00
12.000	39.370	170.840	1.588	19.391		171.05	0.93	9	124	2.329	0.916	1.412	119.45	0.94	0.00
12.100	39.698	251.707	1.882	23.518		251.96	0.75	9	124	2.349	0.927	1.423	175.46	0.75	0.00
12.200	40.026	316.075	1.637	20.610		316.30	0.52	10	127	2.370	0.937	1.433	219.03	0.52	0.00
12.300	40.354	216.180	1.507	20.364		216.40	0.70	9	124	2.390	0.947	1.443	148.27	0.70	0.00
12.400	40.682	178.007	1.556	17.492		178.20	0.87	9	124	2.411	0.957	1.453	120.94	0.89	0.00
12.500	41.011	206.412	1.575	21.045		206.64	0.76	9	124	2.431	0.967	1.464	139.52	0.77	0.00
12.600	41.339	237.482	1.800	20.306		237.70	0.76	9	124	2.451	0.978	1.474	159.63	0.77	0.00
12.700	41.667	218.654	1.850	17.246		218.84	0.85	9	124	2.472	0.988	1.484	145.81	0.86	0.00
12.800	41.995	185.592	1.536	16.425		185.77	0.83	9	124	2.492	0.998	1.494	122.68	0.84	0.00
12.900	42.323	152.548	1.193	14.854		152.71	0.78	9	124	2.513	1.008	1.504	99.86	0.79	0.00
13.000	42.651	136.486	1.088	15.816		136.66	0.80	9	124	2.533	1.019	1.514	88.57	0.81	0.00
13.100	42.979	143.280	1.170	16.941		143.46	0.82	9	124	2.553	1.029	1.524	92.44	0.83	0.00

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
8.200	26.903	6	1.92	77.20	3.00E-4	15.7	15.8	47	39	329	807			
8.300	27.231	6	1.85	92.37	3.00E-4	18.3	18.4	51	40	394	860			
8.400	27.559	6	1.80	109.26	3.00E-4	21.3	21.4	56	41	468	913			
8.500	27.887	6	1.82	104.68	3.00E-4	20.7	20.6	55	41	451	905			
8.600	28.215	6	1.72	129.42	3.00E-4	24.8	24.6	61	42	559	975			
8.700	28.543	6	1.65	163.95	3.00E-4	30.7	30.4	68	43	709	1059			
8.800	28.871	6	1.70	157.89	3.00E-4	30.3	29.8	67	43	687	1051			
8.900	29.199	6	1.78	128.99	3.00E-4	25.7	25.1	61	42	566	988			
9.000	29.528	6	1.79	118.08	3.00E-4	23.7	23.1	58	41	521	964			
9.100	29.856	6	1.75	118.64	3.00E-4	23.6	22.9	58	41	526	970			
9.200	30.184	6	1.77	115.81	3.00E-4	23.3	22.5	58	41	516	967			
9.300	30.512	6	1.78	117.63	3.00E-4	23.9	23.0	58	41	527	977			
9.400	30.840	6	1.79	119.46	3.00E-4	24.5	23.4	58	41	538	986			
9.500	31.168	6	1.84	110.09	3.00E-4	23.1	22.0	56	41	499	965			
9.600	31.496	6	1.83	107.85	3.00E-4	22.7	21.5	56	41	492	963			
9.700	31.824	6	1.85	103.92	3.00E-4	22.1	20.9	54	41	477	955			
9.800	32.152	6	1.89	91.55	3.00E-4	20.0	18.8	51	40	424	921			
9.900	32.480	6	1.88	89.85	3.00E-4	19.6	18.4	51	40	418	920			
10.000	32.808	6	1.87	94.02	3.00E-4	20.5	19.1	52	40	439	937			
10.100	33.136	6	1.88	93.28	3.00E-4	20.6	19.1	52	40	438	939			
10.200	33.465	6	1.88	88.99	3.00E-4	19.7	18.2	50	40	420	929			
10.300	33.793	6	1.93	79.62	3.00E-4	18.2	16.7	48	39	379	900			
10.400	34.121	6	1.93	80.58	3.00E-4	18.5	16.9	48	39	385	907			
10.500	34.449	6	1.95	79.88	3.00E-4	18.5	16.9	48	39	384	909			
10.600	34.777	6	1.97	76.59	3.00E-4	18.0	16.4	47	39	371	900			
10.700	35.105	6	1.98	75.50	3.00E-4	17.9	16.3	46	39	368	900			
10.800	35.433	6	1.98	75.62	3.00E-4	18.0	16.3	46	39	370	904			
10.900	35.761	6	1.94	75.90	3.00E-4	17.9	16.1	47	39	372	908			
11.000	36.089	6	1.97	72.73	3.00E-4	17.4	15.6	46	38	359	900			
11.100	36.417	6	2.00	71.40	3.00E-4	17.4	15.6	45	38	355	898			
11.200	36.745	6	2.02	70.59	3.00E-4	17.4	15.5	45	38	353	899			
11.300	37.073	6	2.02	72.11	3.00E-4	17.9	15.9	45	38	362	909			
11.400	37.402	6	1.99	77.12	3.00E-4	19.0	16.8	47	39	388	932			
11.500	37.730	6	2.02	74.48	3.00E-4	18.6	16.4	46	38	377	925			
11.600	38.058	6	2.01	72.64	3.00E-4	18.2	16.0	46	38	369	921			
11.700	38.386	6	1.92	92.70	3.00E-4	22.3	19.5	51	40	468	999			
11.800	38.714	6	1.88	112.52	3.00E-4	26.5	23.1	57	41	566	1067			
11.900	39.042	6	1.86	122.28	3.00E-4	28.7	24.9	59	41	616	1100			
12.000	39.370	6	1.83	135.71	3.00E-4	31.6	27.3	62	42	684	1142			
12.100	39.698	6	1.65	203.36	3.00E-4	43.6	37.6	76	43	1008	1303			
12.200	40.026	6	1.47	254.92	3.00E-4	51.6	44.3	85	44	1265	1409			
12.300	40.354	6	1.68	172.51	3.00E-4	37.9	32.4	70	43	866	1244			
12.400	40.682	6	1.81	139.43	3.00E-4	32.7	27.9	63	42	713	1169			
12.500	41.011	6	1.73	162.71	3.00E-4	36.7	31.2	68	42	827	1231			
12.600	41.339	6	1.68	187.63	3.00E-4	41.6	35.2	73	43	951	1293			
12.700	41.667	6	1.74	170.90	3.00E-4	39.1	33.0	70	43	875	1261			
12.800	41.995	6	1.79	143.48	3.00E-4	33.8	28.5	64	42	743	1196			
12.900	42.323	6	1.85	116.46	3.00E-4	28.4	23.8	58	41	611	1123			
13.000	42.651	6	1.90	103.09	3.00E-4	25.8	21.6	54	40	547	1085			
13.100	42.979	6	1.89	107.99	3.00E-4	27.0	22.5	56	40	574	1105			

Col 1i	Col 2i	Col 3i	Col 4i	Col 5i	Col 6i	Col 7i	Col 8i	Col 9i	Col 10i	Col 11i	Col 12i	Col 13i	Col 14i	Col 15i	Col 16i
Depth	Depth	q_c	f_s	u	Other	q_t	R_f	SBT	Unit Weight, γ	Total Overburden Stress, σ_v	Insitu pore pressure, u_o	Effective overburden stress, σ'_v	Normalized cone resistance, Q_{tl}	Normalized Friction raio, F_r	Normalized pore pressure ratio, B_q
(m)	(ft)	(tsf)	(tsf)	(psi)		(tsf)	(%)		(pcf)	(tsf)	(tsf)	(tsf)			
13.200	43.307	147.664	1.210	17.750		147.86	0.82	9	124	2.574	1.039	1.535	94.68	0.83	0.00
13.300	43.635	155.195	1.172	20.212		155.41	0.75	9	124	2.594	1.049	1.545	98.94	0.77	0.00
13.400	43.963	173.214	1.336	19.063		173.42	0.77	9	124	2.614	1.060	1.555	109.86	0.78	0.00
13.500	44.291	191.550	1.530	20.224		191.77	0.80	9	124	2.635	1.070	1.565	120.86	0.81	0.00
13.600	44.619	199.335	1.668	19.321		199.54	0.84	9	124	2.655	1.080	1.575	125.01	0.85	0.00
13.700	44.948	201.400	1.772	20.153		201.62	0.88	9	124	2.675	1.090	1.585	125.50	0.89	0.00
13.800	45.276	221.037	1.831	23.096		221.29	0.83	9	124	2.696	1.101	1.595	137.02	0.84	0.00
13.900	45.604	228.868	2.110	24.456		229.13	0.92	9	124	2.716	1.111	1.605	141.03	0.93	0.00
14.000	45.932	227.349	2.294	22.756		227.60	1.01	9	124	2.737	1.121	1.616	139.19	1.02	0.00
14.100	46.260	239.528	1.950	24.034		239.79	0.81	9	124	2.757	1.131	1.626	145.81	0.82	0.00
14.200	46.588	244.194	1.329	26.086		244.48	0.54	9	124	2.777	1.141	1.636	147.76	0.55	0.00
14.300	46.916	253.135	1.714	25.582		253.41	0.68	9	124	2.798	1.152	1.646	152.26	0.68	0.00
14.400	47.244	228.986	2.059	18.665		229.19	0.90	9	124	2.818	1.162	1.656	136.69	0.91	0.00
14.500	47.572	87.134	1.989	17.739		87.33	2.28	7	118	2.837	1.172	1.665	50.74	2.35	0.00
14.600	47.900	21.911	0.801	37.938		22.32	3.59	5	115	2.856	1.182	1.674	11.63	4.12	0.08
14.700	48.228	16.499	0.080	89.371		17.46	0.46	6	115	2.875	1.193	1.682	8.67	0.55	0.36
14.800	48.556	15.035	0.030	121.729		16.35	0.18	7	118	2.894	1.203	1.691	7.96	0.22	0.56
14.900	48.885	16.072	0.020	130.181		17.48	0.11	7	118	2.914	1.213	1.700	8.57	0.14	0.56
15.000	49.213	18.391	0.020	116.453		19.65	0.10	7	118	2.933	1.223	1.709	9.78	0.12	0.43
15.100	49.541	19.455	0.068	108.739		20.63	0.33	7	118	2.952	1.234	1.719	10.29	0.38	0.37
15.200	49.869	20.001	0.057	99.594		21.08	0.27	7	118	2.971	1.244	1.728	10.48	0.31	0.33

Col 1i	Col 2i	Col 17i	Col 18i	Col 19i	Col 20i	Col 21i	Col 22i	Col 23i	Col 24i	Col 25i	Col 26i	Col 27i	Col 28i	Col 29i
Depth	Depth	Soil Behavior Type (normalized) SBT_n	SBTn Index, I_c	Normalized Cone resistance, Q_{tn}	Estimated permeability, k_{SBT}	SPT N_{60}	SPT $(N_1)_{60}$	Relative Density, D_r	Friction Angle, φ'	Young's modulus, E_s	Small strain shear modulus, G_o	Undrained shear strength, s_u	Undrained strength ratio, s_u/σ'_v	Over consolidation ratio, OCR
(m)	(ft)				(ft/sec)	(blows/ft)	(blows/ft)	(%)	(degrees)	(tsf)	(tsf)	(tsf)		
13.200	43.307	6	1.88	111.01	3.00E-4	27.8	23.1	56	40	591	1119			
13.300	43.635	6	1.84	116.82	3.00E-4	28.8	23.8	58	41	622	1140			
13.400	43.963	6	1.81	130.56	3.00E-4	31.8	26.2	61	41	694	1185			
13.500	44.291	6	1.79	144.44	3.00E-4	34.8	28.7	64	42	767	1228			
13.600	44.619	6	1.79	149.82	3.00E-4	36.3	29.7	65	42	798	1247			
13.700	44.948	6	1.80	150.62	3.00E-4	36.8	30.1	66	42	806	1254			
13.800	45.276	6	1.76	165.86	3.00E-4	39.8	32.4	69	42	885	1296			
13.900	45.604	6	1.78	170.76	3.00E-4	41.5	33.7	70	42	917	1314			
14.000	45.932	6	1.81	168.35	3.00E-4	41.6	33.7	69	42	910	1314			
14.100	46.260	6	1.73	178.63	3.00E-4	42.7	34.4	71	43	959	1340			
14.200	46.588	6	1.62	183.72	3.00E-4	41.9	33.7	72	43	978	1351			
14.300	46.916	6	1.66	189.29	3.00E-4	44.1	35.4	74	43	1014	1370			
14.400	47.244	6	1.78	167.81	3.00E-4	41.5	33.2	69	42	917	1328			
14.500	47.572	5	2.38	57.58	3.00E-6	20.0	16.0	41	37	349	965			
14.600	47.900	3	3.02	12.09	1.00E-9	7.1	5.7				584	1.30	0.78	3.5
14.700	48.228	4	2.71	9.43	3.00E-8	4.5	3.5				438	0.97	0.58	2.6
14.800	48.556	1	2.63	8.75	3.00E-8	3.9	3.1				404	0.90	0.53	2.4
14.900	48.885	1	2.56	9.52	3.00E-8	4.0	3.2				437	0.97	0.57	2.6
15.000	49.213	9	2.50	10.99	1.00E-8	4.5	3.5					1.11	0.65	2.9
15.100	49.541	5	2.59	11.42	3.00E-6	4.9	3.9	18	27	83	603			
15.200	49.869	5	2.55	11.71	3.00E-6	5.0	3.9	18	27	84	608			

Table 6
Laboratory Testing Summary

TABLE 6

LABORATORY TESTING SUMMARY

STP COL PROJECT

MACTEC ENGINEERING AND CONSULTING, INC.

PROJECT #6234-07-4257

Prepared By: KRG 10/5/07 Reviewed By: KAW 10/5/07

| SAMPLE INFORMATION | | | | | | PHYSICAL PROPERTIES | | | | | |

TABLE 6

LABORATORY TESTING SUMMARY

STP COL PROJECT

MACTEC ENGINEERING AND CONSULTING, INC.

PROJECT #6234-07-4257

Prepared By: KAR 10/5/07 Reviewed By: KAW 10/5/07

SAMPLE INFORMATION						PHYSICAL PROPERTIES																																									
						Grain Size (Passing %)					Natural Moisture Content (%) at e_o					Atterberg Limits				Dry Density (pcf) at e_o						Void Ratio					Triaxial Tests						Consolidation		Direct Shear				Chemical Analysis			Compaction		
Boring Number	Sample Number	Sample Top Depth, feet	Sample Bottom Depth, feet	USCS Symbol	USCS Material Description	Gravel	Sand	Silt	Clay	Fines	Physical Properties	Triaxial, Direct Shear, Unconfined or Add'l Classification 1	2	3	Consolidation	Average	Liquid Limit, LL	Plastic Limit, PL	Plasticity Index, PI	Specific Gravity, Gs	Triaxial, Direct Shear, Unconfined or Add'l Classification 1	2	3	Consolidation	Average	Wet Density (pcf)	Triaxial, Direct Shear, or Unconfined 1	2	3	Consolidation	Average	Test Type (1)	σ_c (ksf)	C' (ksf)	φ' (degree)	C (ksf)	φ (degree)	P_c (ksf)	P_v (ksf)	OCR	C_c	C_r	τ (psf) max.	σ (psi)	Relative Displacement at Max Shear (%)	pH	Chloride (mg/kg)	Sulfate (mg/kg)	Optimum Moisture (%)	Maximum Density (pcf)	CBR (%)
B-444	SS-20	63.5	65	CL	Lean Clay						20.7					20.7	26	15	11																														
B-444	SS-21	68.5	70	ML	Sandy Silt	0.0	45.7			54.3	20.9					20.9																																	
B-444	SS-22	73.5	70	SM	Silty Sand	0.0	84.2			15.8	19.6					19.6																																	
B-444	SS-24	83.5	85	CH	Fat Clay						24.2					24.2	50	22	28																														
B-444	SS-25	88.5	90								25.6					25.6																																	
B-444	SS-26	93.5	95	CH	Fat Clay	0.0	0.8	15.9	83.3	99.2	30.0					30.0																																	
B-444	SS-27	98.5	100								33.2					33.2																																	
B-445	SS-21	68.5	70	SM	Silty Sand	0.0	86.2	9.7	4.1	13.8	21.3					21.3																																	
B-445	SS-22	73.5	75	SM	Silty Sand	0.0	76.4			23.6	18.2					18.2																																	
B-445	SS-23	78.5	80	SP-SM	Poorly Graded Sand with Silt	0.0	89.6			10.4	21.6					21.6																																	
B-445	SS-24	83.5	85								17.8					17.8																																	
B-445	SS-25	88.5	90	CH	Fat Clay						28.5					28.5	58	19	39																														
B-445	SS-26	93.5	95	CH	Fat Clay						26.7					26.7	52	21	31																														
B-445	SS-27	98.5	100	CH							29.5					29.5																																	
B-940	SS-13	28.5	30																																											8.4	43.20	7.30			
B-940	SS-14	35.5	37																																											8.8	36.10	19.30			
B-940	SS-15	38.5	40	ML	Sandy Silt	0.0	47.1			52.9	24.9					24.9																																	
B-940	UD-3	41	43	CH	Fat Clay							28.4				28.4	67	26	41		98.2	96.4			95.3	122.7	0.752				0.752	UNC	5.0			2.5	0.0												
B-940	SS-16	43.5	45	CH	Fat Clay	0.0	0.3			99.7	27.0					27.0	52	21	41																														
B-940	UD-4	48	48	CH	Fat Clay						31.6				32.6	32.1	61	23	38	2.77	89.5			89.0	98.2	117.5				0.949	0.949							3.130	17.5	5.8	0.365	0.003							
B-940	SS-17	48.5	50	CH	Fat Clay	0.0	1.1	11.0	87.9	98.9	35.4					35.4																																	
B-940	UD-5	58	58	CH	Fat Clay							27.0				27.0	50	18	32	2.78	97.7				97.7	124.1	0.783				0.783	UU	4.0			2.0	0.0												
B-940	SS-18	58.5	60	CH	Fat Clay	0.0	1.0	28.5	70.5	99.0	22.2					22.2																																	
B-940	UD-6	66	68	CH	Fat Clay						23.8				26.5	23.1	54	21	33	2.70	102.8			98.9	100.8	128.2				0.749	0.749							4.300	18.3	4.3	0.345	0.027							
B-940	SS-21	68.5	70	CH	Fat Clay	0.0	0.9	14.5	84.6	99.1	26.5					26.5																																	
B-940	UD-7	76	78	CH	Fat Clay							22.1				22.1	55	21	34		104.9				104.9	128.1	0.608				0.608	UU	8.7			4.3	0.0												
B-940	SS-23	78.5	80	CH	Fat Clay	0.0	2.1	22.4	74.5	96.9	25.3					25.3																																	
B-940	UD-8	91	93	CH	Fat Clay							24.4				24.4	61	22	39		102.3	102.2			102.3	127.2	0.648				0.648	UNC	4.8			2.4	0.0												
B-940	SS-26	93.5	95	CH	Fat Clay	0.0	8.5	20.5	70.9	92.5	23.4					23.4																																	
B-940	SS-27	98.5	100	ML	Sandy Silt	0.0	13.4	71.3	15.3	86.6	21.1					21.1																																	

TABLE 6

LABORATORY TESTING SUMMARY

STP COL PROJECT

MACTEC ENGINEERING AND CONSULTING, INC.

PROJECT #6234-07-4257

Prepared By: KAA 10/5/07 Reviewed By: KAW 10/5/07

SAMPLE INFORMATION						PHYSICAL PROPERTIES																																										
						Grain Size (Passing %)					Natural Moisture Content (%) at e_o					Atterberg Limits				Dry Density (pcf) at e_o						Void Ratio				Triaxial Tests						Consolidation					Direct Shear			Chemical Analysis			Compaction		
Boring Number	Sample Number	Sample Top Depth, feet	Sample Bottom Depth, feet	USCS Symbol	USCS Material Description	Gravel	Sand	Silt	Clay	Fines	Physical Properties	Triaxial, Direct Shear, Unconfined or Atterberg Classification 1	2	3	Consolidation	Average	Liquid Limit, LL	Plastic Limit, PL	Plasticity Index, PI	Specific Gravity, Gs	Triaxial, Direct Shear, Unconfined or Atterberg Classification 1	2	3	Consolidation	Average	Wet Density (pcf)	Triaxial, Direct Shear, or Unconfined 1	2	3	Consolidation	Average	Test Type (1)	σ_m (ksf)	C' (ksf)	φ' (degrees)	C (ksf)	φ (degrees)	P_c (ksf)	P_o (ksf)	OCR	C_c	C_r	τ (psi) max.	σ (psi)	Relative Displacement at Max. Shear (%)	pH	Chloride (mg/kg)	Sulfate (mg/kg)	Optimum Moisture (%)	Maximum Density (pcf)	CBR (%)
B-940	SS-28	103.5	105	CL	Lean Clay with Sand						20.3					20.3	46	13	33																															
B-940	SS-30	113.5	115	CH	Fat Clay						24.2					24.2	60	16	44																															
B-940	SS-32	123.5	125	CL	Lean Clay						21.4					21.4	40	14	26																															
B-941	SS-2	1.5	3								23.3					23.3																																	
B-941	SS-4	4.5	6								23.5					23.5																																	
B-941	SS-6	7.5	9								27.8					27.8																																	
B-941	SS-8	10.5	12								29.8					29.8																																	
B-941	SS-10	13.5	15								20.5					20.5																																	
B-941	SS-11	18.5	20								26.7					26.7																																	
B-942	SS-4	4.5	6								28.4					28.4																																	
B-942	SS-8	10.5	12								28.8					28.8																																	
B-942	SS-11	18.5	20								27.8					27.8																																	
B-942	SS-12	23.5	25								27.3					27.3																																	
B-942	SS-16	43.5	45								22.2					22.2																																	
B-942	SS-17	48.5	50								53.4					53.4																																	
B-943	SS-3	3	4.5								28.0					28.0																																	
B-943	SS-6	7.5	9								28.7					28.7																																	
B-943	SS-8	12	12.5								28.1					28.1																																	
B-943	SS-11	18.5	20								25.3					25.3																																	
B-943	SS-13	28.5	30								24.9					24.9																																	
B-943	SS-15	38.5	40								22.6					22.6																																	
B-944	SS-6	7.5	9								18.6					18.6																																	
B-944	SS-8	12	13.5								23.8					23.8																																	
B-944	SS-12	23.5	25	SM	Silty Sand	0.0	60.9			39.1	25.9					25.9																																	
B-944	SS-15	38.5	40	SP-SM	Poorly Graded Sand with Silt	0.0	94.7			5.3	21.1					21.1																																	
B-944	SS-18	43.5	45	CH	Fat Clay						29.1	61	19	42																																			
B-944	SS-19	48.5	50								17.9					17.9																																	
B-944	SS-24	83.5	85	CL	Lean Clay						22.3	49	15	34																																			
B-944	SS-27	98.5	100	CH	Fat Clay	0.0	13.1	18.3	68.6	86.9	21.5					21.5																																	
B-945	SS-4	4.5	6								29.5					29.5																																	

TABLE 6

LABORATORY TESTING SUMMARY

STP COL PROJECT

MACTEC ENGINEERING AND CONSULTING, INC.

PROJECT #8234-07-4257

Prepared By: KRR 10/5/07 Reviewed By: KAW 10/5/07

SAMPLE INFORMATION						PHYSICAL PROPERTIES																																												
						Grain Size (Passing %)					Natural Moisture Content (%) at e_o						Attarberg Limits				Dry Density (pcf) at e_o						Void Ratio					Triaxial Tests						Consolidation						Direct Shear			Chemical Analysis			Compaction		
Boring Number	Sample Number	Sample Top Depth, feet	Sample Bottom Depth, feet	USCS Symbol	USCS Material Description	Gravel	Sand	Silt	Clay	Fines	Physical Properties	Triaxial, Direct Shear, Unconfined or Add'l Classification 1	2	3	Consolidation	Average	Liquid Limit, LL	Plastic Limit, PL	Plasticity Index, PI	Specific Gravity, Gs	Triaxial, Direct Shear, Unconfined or Add'l Classification 1	2	3	Consolidation	Average	Wet Density (pcf)	Triaxial, Direct Shear, or Unconfined 1	2	3	Consolidation	Average	Test Type (1)	σ_3 (ksf)	C' (ksf)	φ' (degree)	C (ksf)	φ (degree)	P_c (ksf)	P_o (ksf)	OCR	C_c	C_r	τ (psf) max.	σ (psf)	Relative Displacement at Max Shear (%)	pH	Chloride (mg/kg)	Sulfide (mg/kg)	Optimum Moisture (%)	Maximum Density (pcf)	CBR (%)
B-945	SS-8	10.5	12								23.7					23.7																																			
B-945	SS-12A	25	26.5								28.0					28.0																																			
B-945	SS-14	33.5	35								23.3					23.3																																			
B-945	SS-15	38.5	40								24.0					24.0																																			
B-945	SS-17	48.5	50								32.0					32.0																																			
B-946	SS-2	1.5	3								27.5					27.5																																			
B-946	SS-5	5	7.5								28.8					28.8																																			
B-946	SS-8	10.5	12								22.4					22.4																																			
B-946	SS-11	18.5	20								22.9					22.9																																			
B-946	SS-13	28.5	30								26.3					26.3																																			
B-946	SS-15	38.5	40								17.1					17.1																																			
B-947	SS-2	1.5	3								25.8					25.8																																			
B-947	SS-4	4.5	6								27.6					27.6																																			
B-947	SS-6	7.5	9								26.2					26.2																																			
B-947	SS-8	10.5	12								27.1					27.1																																			
B-947	SS-10	13.5	15								26.0					26.0																																			
B-947	SS-11A	20	21.5								22.5					22.5																																			
B-948	SS-3	3	4.5								20.5					20.5																																			
B-948	SS-10	12.5	15	CL	Lean Clay						23.6					23.6	38	20	18																																	
B-948	SS-12	23.5	25	ML	Sandy Silt	0.0	21.5			78.5	25.2					25.2																																			
B-948	SS-15	38.5	40	SP-SM	Poorly Graded Sand with Silt	0.0	94.4			5.6	21.4					21.4																																			
B-948	SS-18	53.5	55	CL	Lean Clay						24.1					24.1	49	16	33																																	
B-948	SS-19	58.5	60	CL	Sandy Lean Clay	0.0	31.7	37.0	31.3	68.3	20.2					20.2																																			
B-948	SS-25	88.5	90								23.4					23.4																																			
B-948	SS-28	93.5	95								22.8					22.8																																			
B-949	SS-13	25.5	30	ML	Sandy Silt	0.8	47.4			52.8	21.8					21.8																																			
B-949	SS-14	33.5	35																																												9.1	48.70	8.20			
B-949	SS-15	38.5	40	SP-SM	Poorly Graded Sand with Silt	0.0	89.8			10.2	21.2					21.2																																			
B-949	SS-16	43.5	45	CH	Fat Clay																																										8.7	48.40	22.70			
B-949	SS-17	48.5	50	CH	Fat Clay						27.3					27.3	51	16	35																																	
B-949	UD-2	53.5	55.5	CH	Fat Clay						32.8				32.5	32.3	65	29	36	2.77	91.1			87.3	89.2	119.0				0.880	0.880							3.580	8.5	2.4	0.286	0.030								

TABLE 6

LABORATORY TESTING SUMMARY

STP COL PROJECT

MACTEC ENGINEERING AND CONSULTING, INC.

PROJECT #6234-07-4257

Prepared By: KRR 10/5/07 Reviewed By: KAW 10/5/07

| SAMPLE INFORMATION | | | | | | PHYSICAL PROPERTIES | | | | | |

Moisture Content

MACTEC

Summary of Laboratory Testing
ASTM D 2216-05 (Moisture Content)
South Texas Project COL - 6234-07-4257

Boring #	Sample #	Depth (ft)	Moisture Content (%)
B-443	20	63.5-65	20.4
B-443	22	73.5-75	16.8
B-443	24	83.5-85	26.6
B-443	27	103.5-105	25.0
B-443	28	110-111.5	21.7
B-443	29	114-115.5	25.0
B-443	31	126.5-130	23.9
B-443	32	135-136.5	16.1
B-443	34	143.5-145	20.1
B-443	35	148.5-150	20.2
B-443	36	158.5-160	18.5
B-443	37	163.5-165	26.2
B-443	38	168.5-170	21.7
B-443	39	178.5-180	20.0
B-443	41	188.5-190	29.5
B-443	43	198.5-200	19.3
B-444	10	13.5-15	21.6
B-444	20	53.5-65	20.7
B-444	21	68.5-70	20.9
B-444	22	73.5-75	19.8
B-444	24	83.5-85	24.2
B-444	25	88.5-90	25.6
B-444	26	93.5-95	30.0
B-444	27	98.5-100	33.2

Reviewed by: MH 9-17-07

KAW 9/25/07

MACTEC

Summary of Laboratory Testing
ASTM D 2216-05 (Moisture Content)
South Texas Project COL - 6234-07-4257

Boring #	Sample #	Depth (ft)	Moisture Content (%)
B-445	21	68.5-70.0	21.3
B-445	22	73.5-75	18.2
B-445	23	78.5-80.0	21.6
B-445	24	83.5-85	17.8
B-445	25	88.5-90	28.5
B-445	26	93.5-95	26.7
B-445	27	98.5-100	29.5
B-940	15	38.5-40	24.9
B-940	16	43.5-45	27.0
B-940	17	48.5-50	35.4
B-940	19	58.5-60	22.2
B-940	21	68.5-70	26.5
B-940	23	78.5-80	25.3
B-940	26	93.5-95	23.4
B-940	27	98.5-100	21.1
B-940	28	103.5-105	20.3
B-940	30	113.5-115	24.2
B-940	32	123.5-125	21.4
B-941	2	1.5-3	23.3
B-941	4	4.5-6	23.5
B-941	6	7.5-9	27.8
B-941	8	10.5-12	29.6
B-941	10	13.5-15	20.5
B-941	11	18.5-20	26.7

Reviewed by: MK 9-17-02

KAW 1014107

MACTEC

Summary of Laboratory Testing
ASTM D 2216-05 (Moisture Content)
South Texas Project COL - 6234-07-4257

Boring #	Sample #	Depth (ft)	Moisture Content (%)
B-942	4	4.5-6	28.4
B-942	8	10.5-12	28.8
B-942	11	18.5-20	27.6
B-942	12	23.5-25	27.0
B-942	16	43.5-45	22.2
B-942	17	48.5-50	53.4
B-943	3	3-4.5	28.0
B-943	6	7.5-9	26.7
B-943	9	12-13.5	26.1
B-943	11	18.5-20	25.3
B-943	13	28.5-30	24.9
B-943	15	38.5-40	22.6
B-944	6	7.5-9	18.6
B-944	9	12-13.5	23.8
B-944	12	23.5-25	25.9
B-944	15	38.5-40	21.1
B-944	16	43.5-45	29.1
B-944	19	58.5-60	17.9
B-944	24	83.5-85	22.3
B-944	27	98.5-100	21.5
B-945	4	4.5-6	29.5
B-945	8	10.5-12	23.7
B-945	12A	25-26.5	28.0
B-945	14	33.5-35	23.3
B-945	15	38.5-40	24.0
B-945	17	48.5-50	32.0

Reviewed by: MA 9-17-07

KAW 10/4/07

MACTEC

Summary of Laboratory Testing
ASTM D 2216-05 (Moisture Content)
South Texas Project COL - 6234-07-4257

Boring #	Sample #	Depth (ft)	Moisture Content (%)
B-946	2	1.5-3	27.5
B-946	5	6-7.5	28.8
B-946	8	10.5-12	22.4
B-946	11	18.5-20	22.9
B-946	13	28.5-30	26.3
B-946	15	38.5-40	17.1
B-947	2	1.5-3	25.8
B-947	4	4.5-6	27.6
B-947	6	7.5-9	26.2
B-947	8	10.5-12	27.1
B-947	10	13.5-15	26.0
B-947	11A	20-21.5	22.5
B-948	3	3-4.5	29.5
B-948	10	13.5-15	23.6
B-948	12	23.5-25	25.2
B-948	15	38.5-40	21.4
B-948	18	53.5-55	24.1
B-948	19	58.5-60	20.2
B-948	25	88.5-90	23.4
B-948	26	93.5-95	22.8

Reviewed by: MA 9-17-07

KAW 10/4/07

MACTEC

Summary of Laboratory Testing
ASTM D 2216-05 (Moisture Content)
South Texas Project COL - 6234-07-4257

Boring #	Sample #	Depth (ft)	Moisture Content (%)
B-949	13	28.5-30	21.9
B-949	15	38.5-40	21.2
B-949	17	48.5-50	27.3
B-949	18	55.5-57	31.1
B-949	19	58.5-60	22.0
B-949	21	68.5-70	28.4
B-949	22	73.5-75	27.4
B-949	23	78.5-80	25.0
B-949	24	88.5-90	26.1
B-949	29	118.5-120	21.6
B-949	30	123.5-125	19.4
B-949	UD-8	101-103	18.6
B-949	UD-9	111-113	13.7

Reviewed by: MA 9-17-07 KAW 10/4/07

MACTEC

Summary of Laboratory Testing

ASTM D 2216-05 (Moisture Content)

ASTM D 5084-03 Sections 5.7-5.9, 8.1, 11.3.2 (Dry Unit Weight)

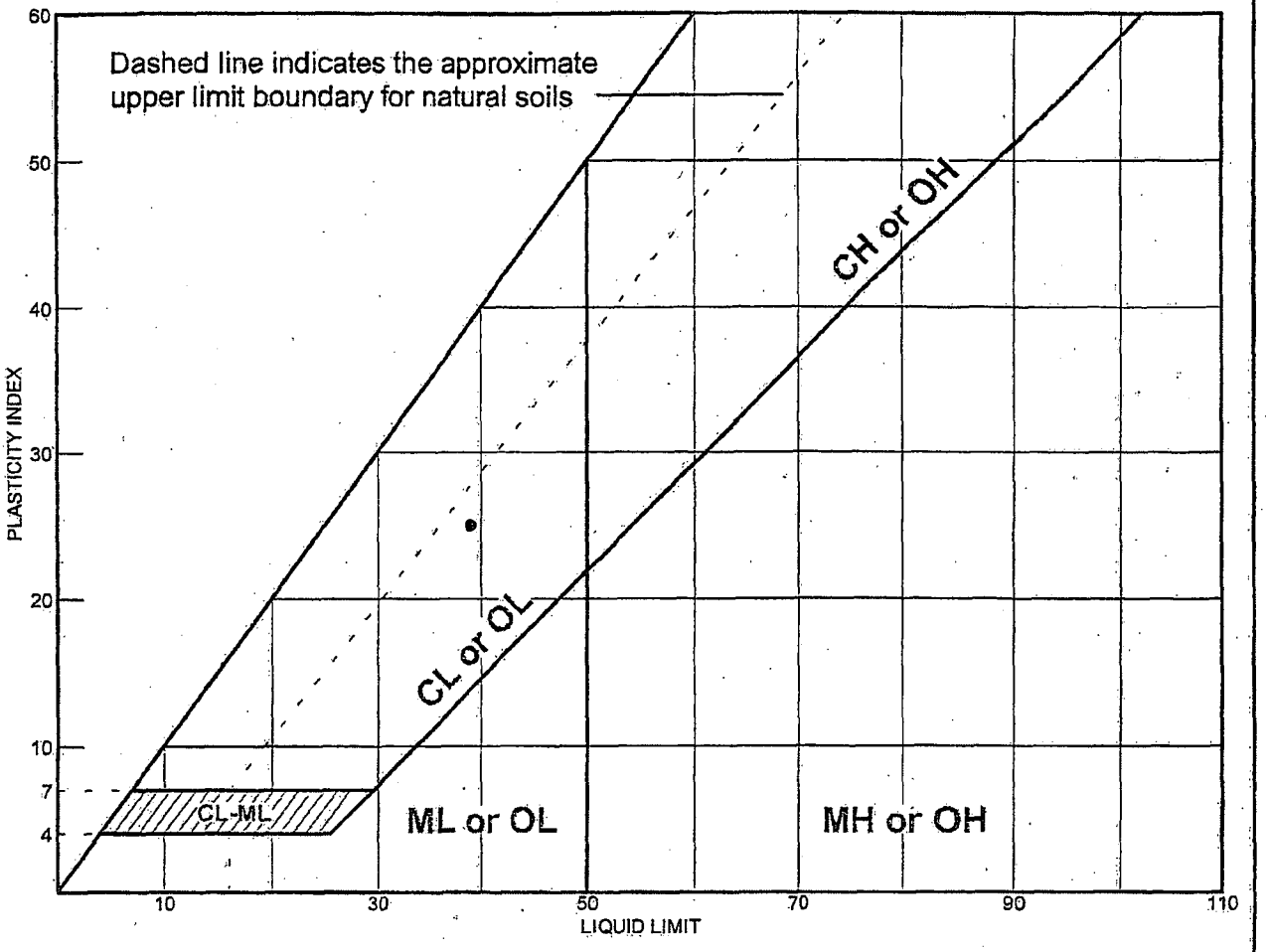
South Texas Project COL - 6234-07-4257

Boring #	Sample #	Depth (ft)	Moisture Content (%)	Dry Unit WT (pcf)
B-443	UD-1	86-88	22.7	100.4
B-443	UD-2A	93-95	26.3	99.0
B-443	UD-3	96-98	25.5	100.2
B-443	UD-3	96-98	26.0	99.4
B-443	UD-4	101-103	29.1	92.6
B-443	UD-6	112-114	26.7	97.8
B-443	UD-7A	123-125	23.4	103.9
B-443	UD-9A	133-135	16.1	115.7
B-443	UD-14	156-158	24.2	102.7
B-443	UD-15	172-174	25.7	101.1
B-940	UD-3	41-43	28.4	96.4
B-940	UD-4	46-48	31.6	89.5
B-940	UD-5	56-58	27.0	97.7
B-940	UD-6	66-68	23.6	102.9
B-940	UD-7	76-78	22.1	105.0
B-940	UD-8	91-93	24.4	102.2
B-949	UD-2	53.5-55.5	32.0	91.1
B-949	UD-3	61-63	23.3	105.3
B-949	UD-4	71-73	25.0	99.8
B-949	UD-6	83.5-85.5	23.4	102.7
B-949	UD-7	91-93	28.1	94.8

Reviewed by: KAW 10/4/07

Atterberg Limits

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Lean clay	39	14	25	99.8	97.1	CL

Project No. 6234074257 **Client:** Bechtel

Project: South Texas Project Units 3 & 4 Subsurface Investigation

● **Source:** B-443 **Sample No.:** SS-20 **Elev./Depth:** 63.5-65

Remarks:

● Tested by: JA

Reveiwed by: MH MH 10-5-07

MACTEC, INC.

Charlotte, North Carolina

KAW 10/5/07

Figure

LIQUID AND PLASTIC LIMIT TEST DATA

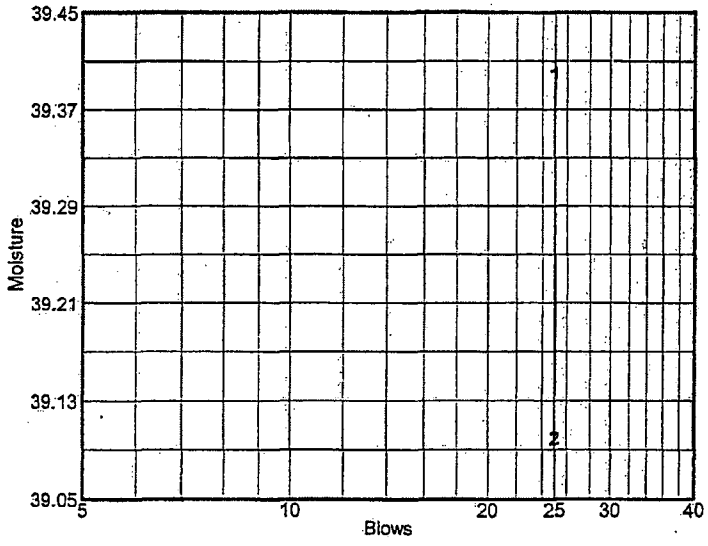
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-443
Sample No.: SS-20
Elev. or Depth: 63.5-65 **Sample Length(in./cm.):**
Location:
Description: Lean clay
%<#40: 99.8 **%<#200:** 97.1 **USCS:** CL **AASHTO:**
Testing Remarks: Tested by: JA
Reveiwed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.50	24.66				
Dry+Tare	22.17	20.82				
Tare	11.19	11.01				
# Blows	25	25				
Moisture	39.4	39.1				

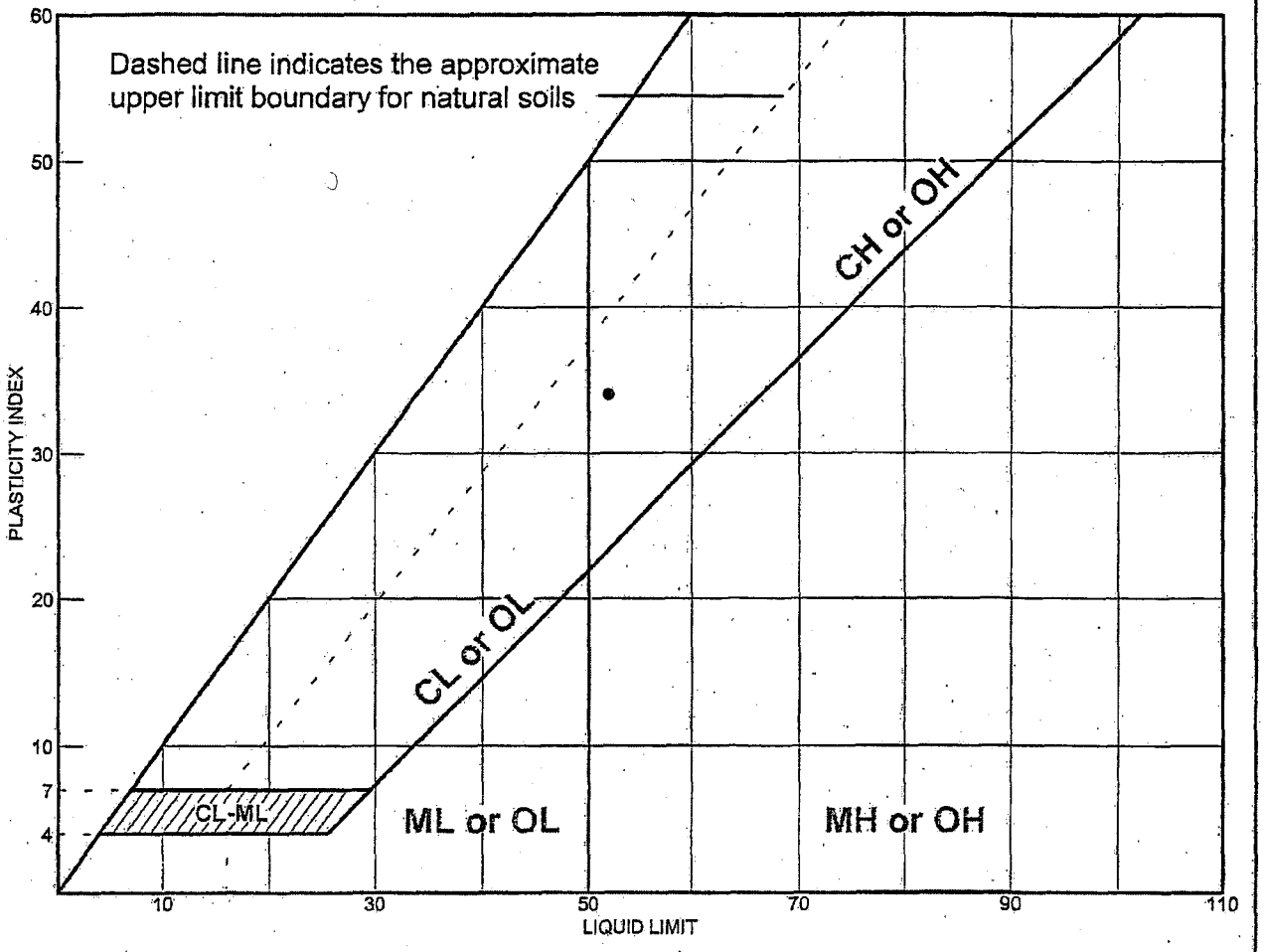


Liquid Limit= 39
Plastic Limit= 14
Plasticity Index= 25

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.20	17.49			
Dry+Tare	16.43	16.68			
Tare	10.92	10.94			
Moisture	14.0	14.1			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat clay	52	18	34	99.5	98.3	CH

Project No. 6234074257 **Client:** Bechtel

Project: South Texas Project Units 3 & 4 Subsurface Investigation

● **Source:** B-443 **Sample No.:** SS-24 **Elev./Depth:** 83.5-85

Remarks:

● Tested by: JA

Reviewed by: MH MA 10-5-07

MACTEC, INC.

Charlotte, North Carolina

KAW 10/5/07

Figure

LIQUID AND PLASTIC LIMIT TEST DATA

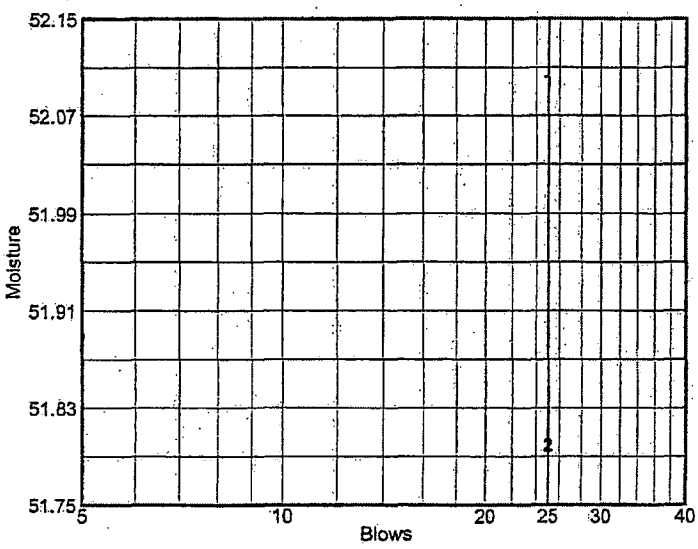
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-443
Sample No.: SS-24
Elev. or Depth: 83.5-85 **Sample Length(in./cm.):**
Location:
Description: Fat clay
%<#40: 99.5 **%<#200:** 98.3 **USCS:** CH **AASHTO:**
Testing Remarks: Tested by: JA
Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.10	22.36				
Dry+Tare	21.07	18.49				
Tare	11.42	11.02				
# Blows	25	25				
Moisture	52.1	51.8				

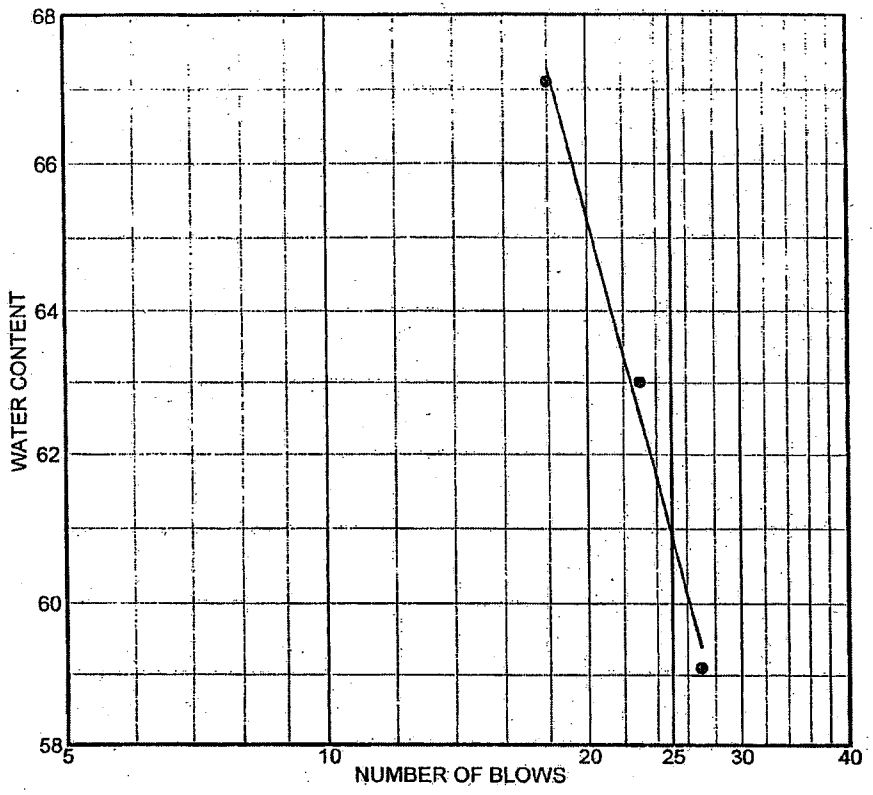


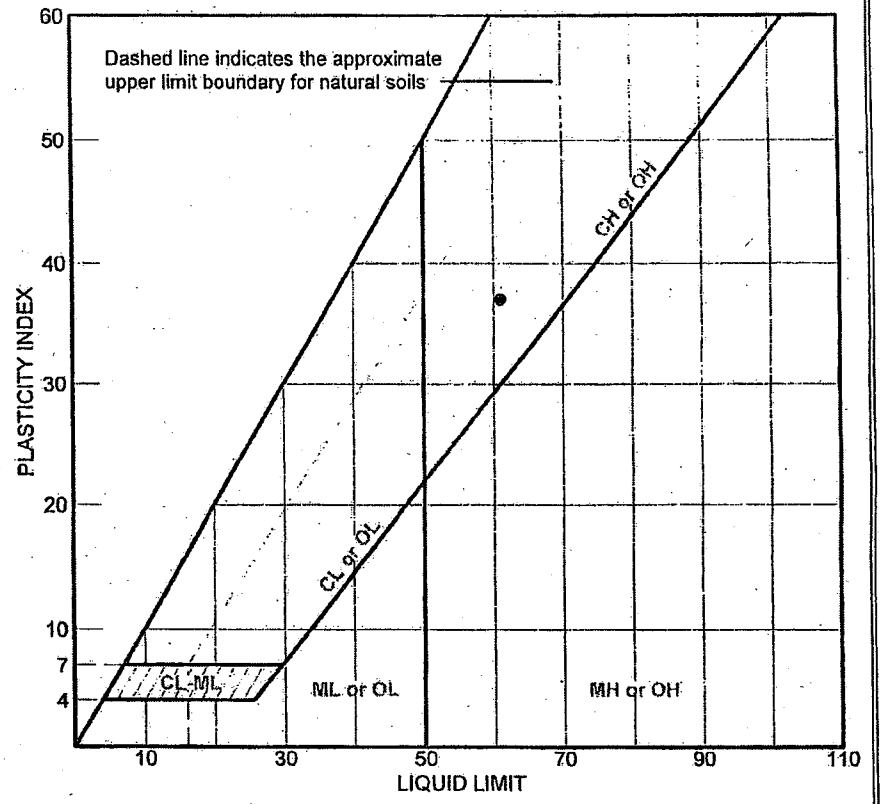
Liquid Limit= 52
Plastic Limit= 18
Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.45	18.24			
Dry+Tare	16.41	17.23			
Tare	10.64	11.49			
Moisture	18.0	17.6			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-1	86-88 Ft.	9/14/07	CH	Fat Clay	22.7	61	37

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7928

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

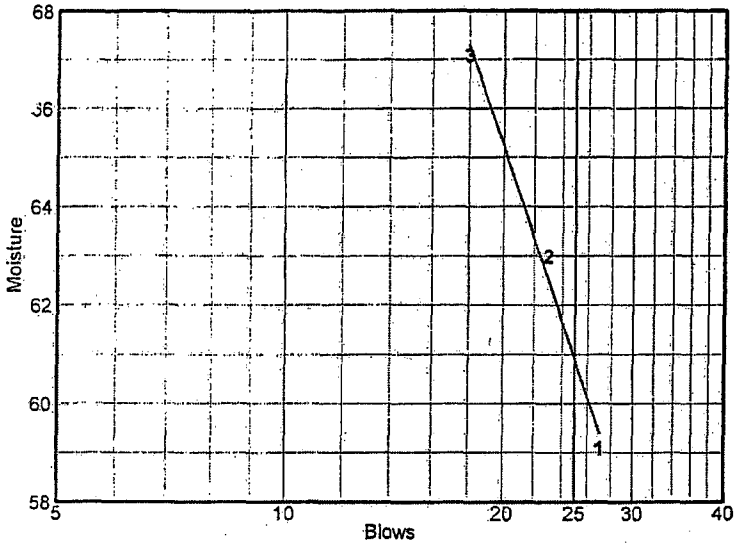
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-1
Elev. or Depth: 86-88 Ft. **Sample Length(in./cm.):** 7928
Location: B-443
Description: Fat Clay
Date: 9/14/07 **Natural Moisture:** 22.7
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.5	25.98	28.07			
Dry+Tare	26.00	23.29	24.6			
Tare	20.08	19.02	19.43			
# Blows	27	23	18			
Moisture	59.1	63.0	67.1			

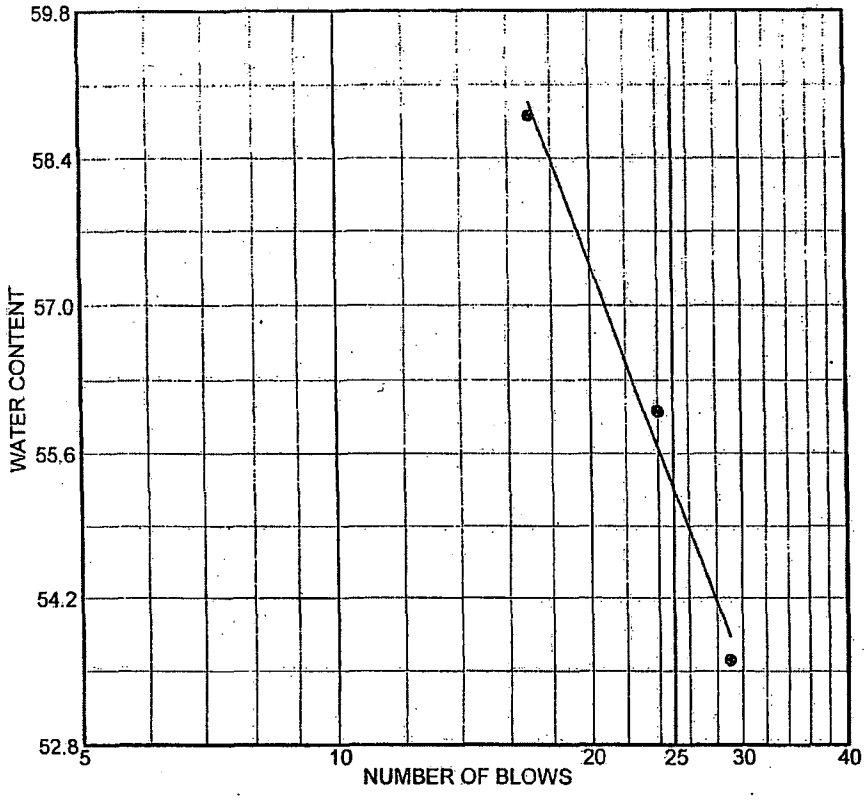


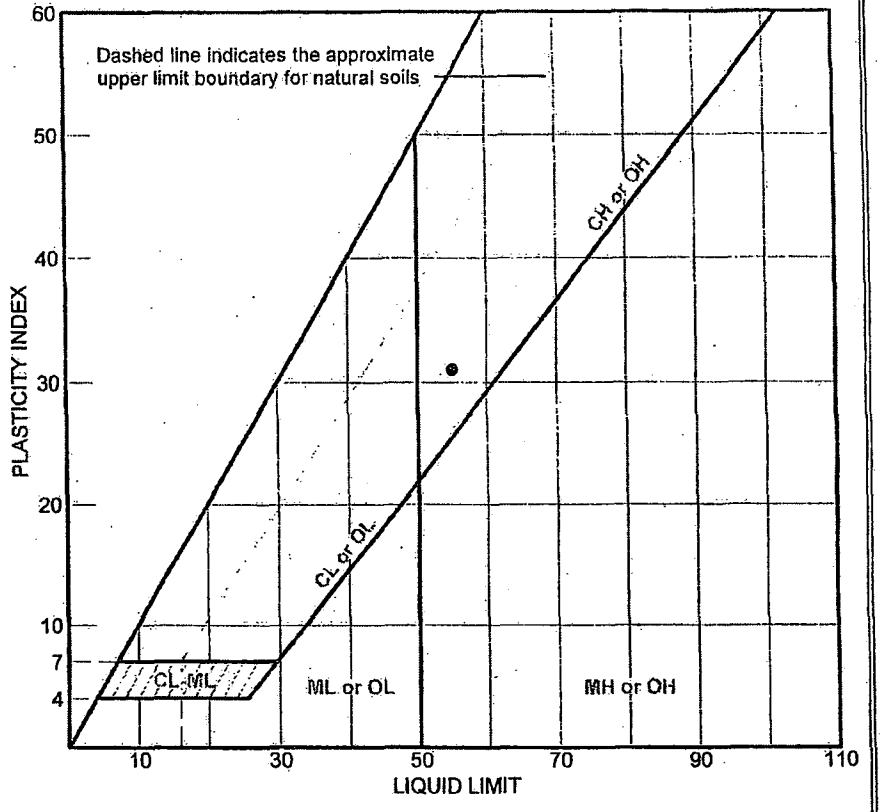
Liquid Limit= 61
Plastic Limit= 24
Plasticity Index= 37

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.43	26.39			
Dry+Tare	25.02	25.02			
Tare	19.22	19.39			
Moisture	24.3	24.3			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-2A	93-95 Ft.	9/14/07	CH	Fat Clay	26.3	55	31

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7929

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

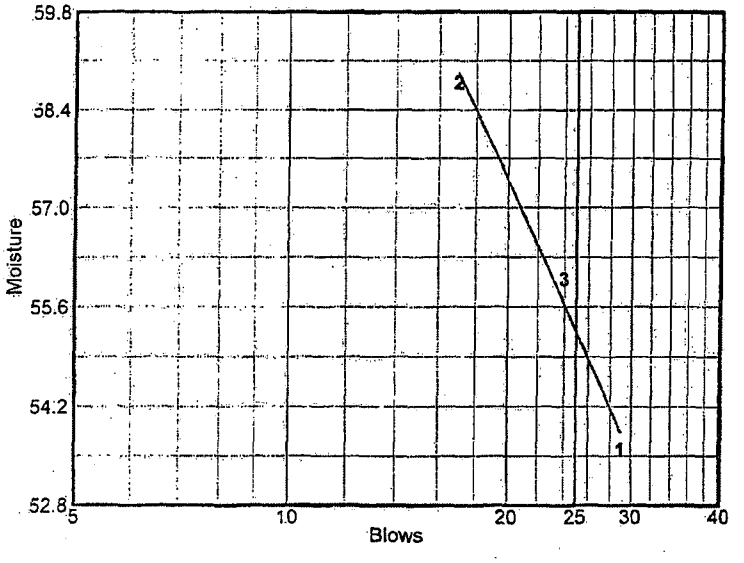
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-2A
Elev. or Depth: 93-95 Ft. **Sample Length(in./cm.):** 7929
Location: B-443
Description: Fat Clay
Date: 9/14/07 **Natural Moisture:** 26.3
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.54	27.36	18.49			
Dry+Tare	24.06	24.29	16.26			
Tare	19.43	19.07	12.28			
# Blows	29	17	24			
Moisture	53.6	58.8	56.0			

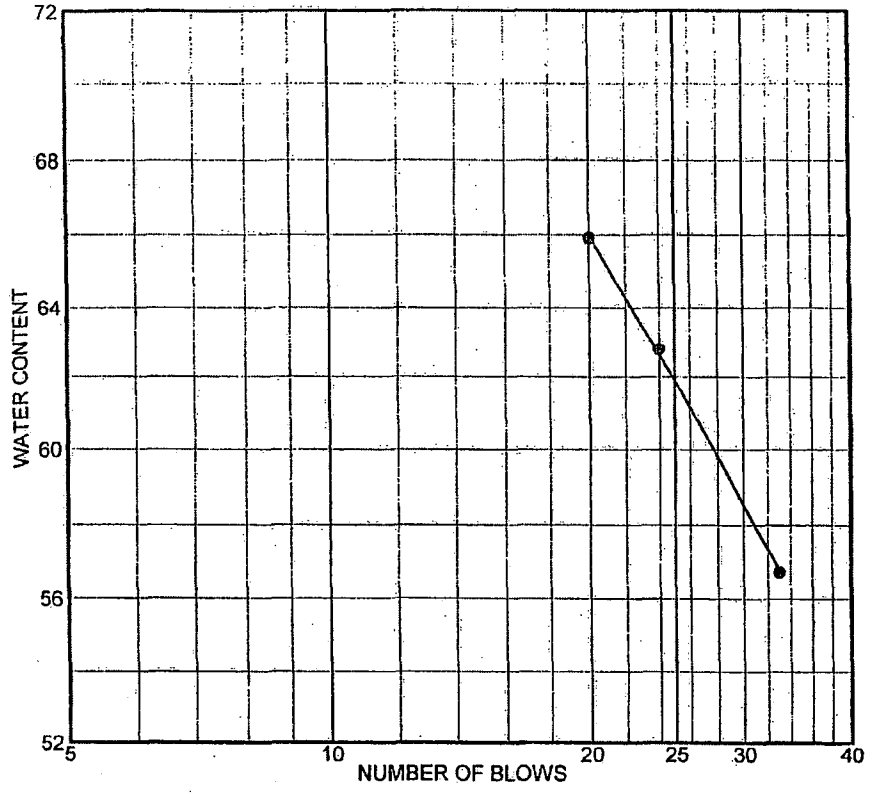


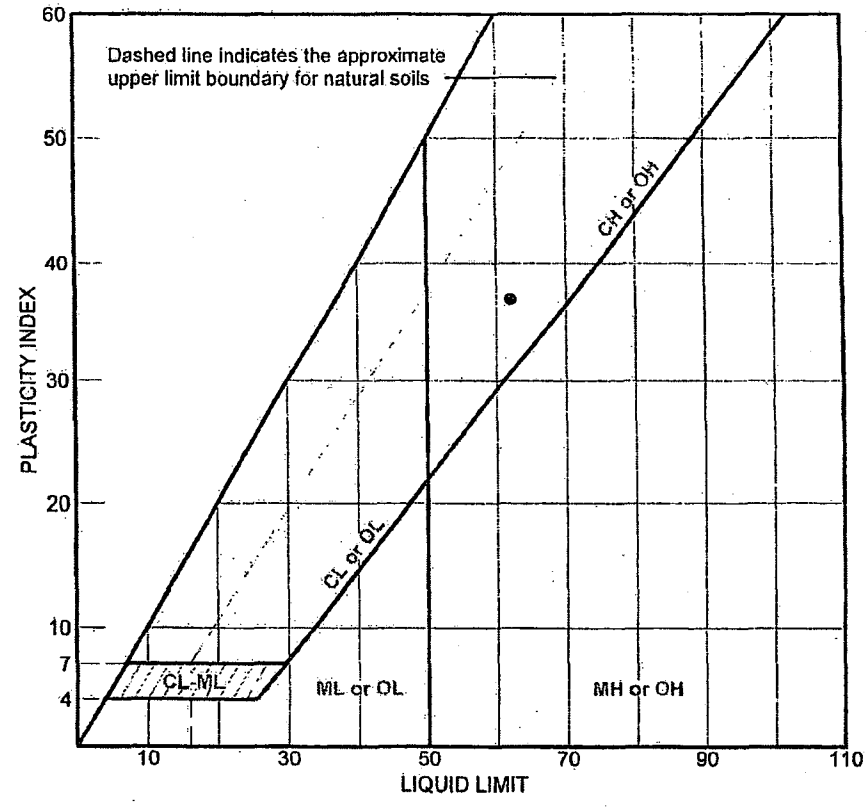
Liquid Limit= 55
Plastic Limit= 24
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.19	26.07			
Dry+Tare	24.99	24.62			
Tare	19.9	18.49			
Moisture	23.6	23.7			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-3	96-98 Ft.	9/6/07	CH	Fat Clay	26.0	62	37

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7930

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

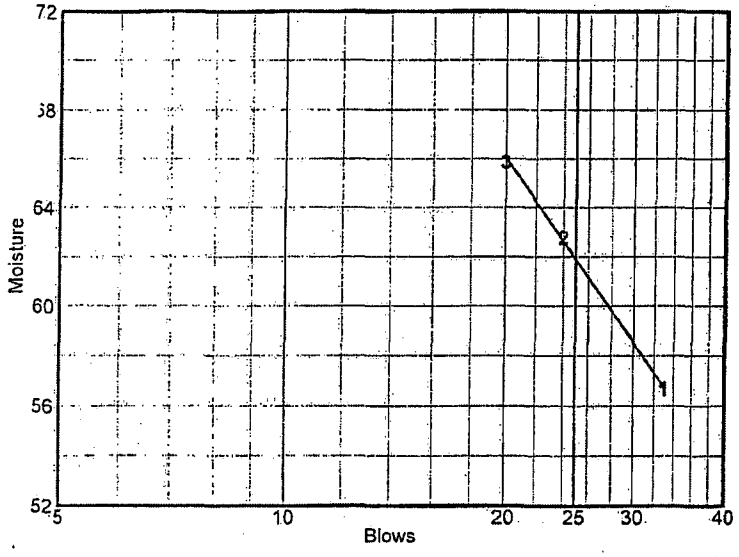
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-3
Elev. or Depth: 96-98 Ft. **Sample Length(in./cm.):** 7930
Location: B-443
Description: Fat Clay
Date: 9/6/07 **Natural Moisture:** 26.0
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.04	32.13	29.83			
Dry+Tare	27.91	27.48	26.50			
Tare	20.63	20.07	21.45			
# Blows	33	24	20			
Moisture	56.7	62.8	65.9			

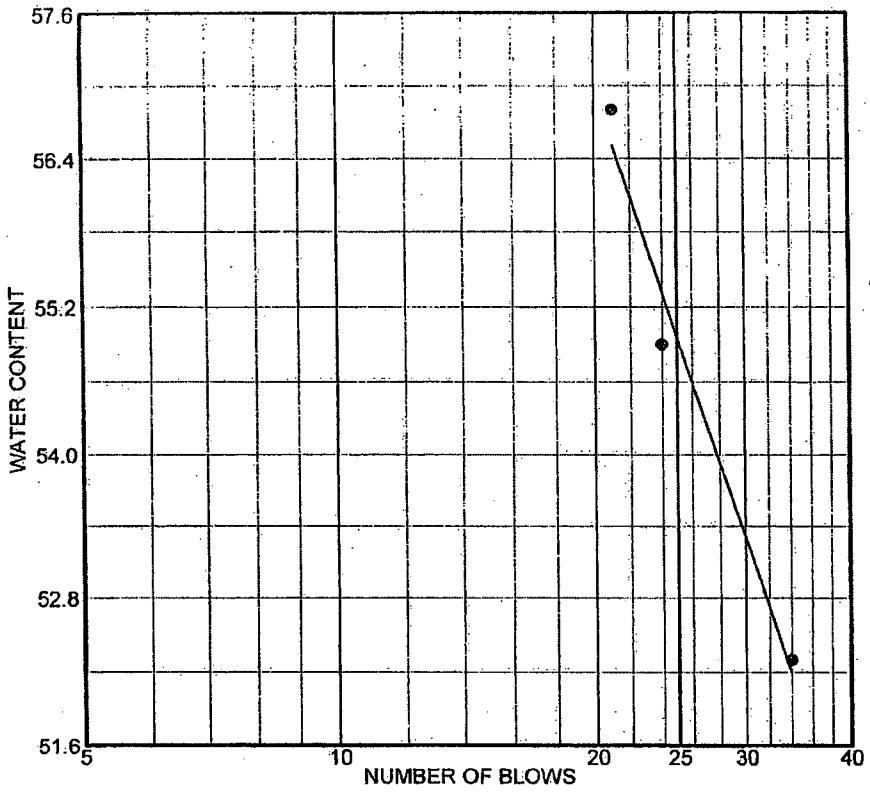


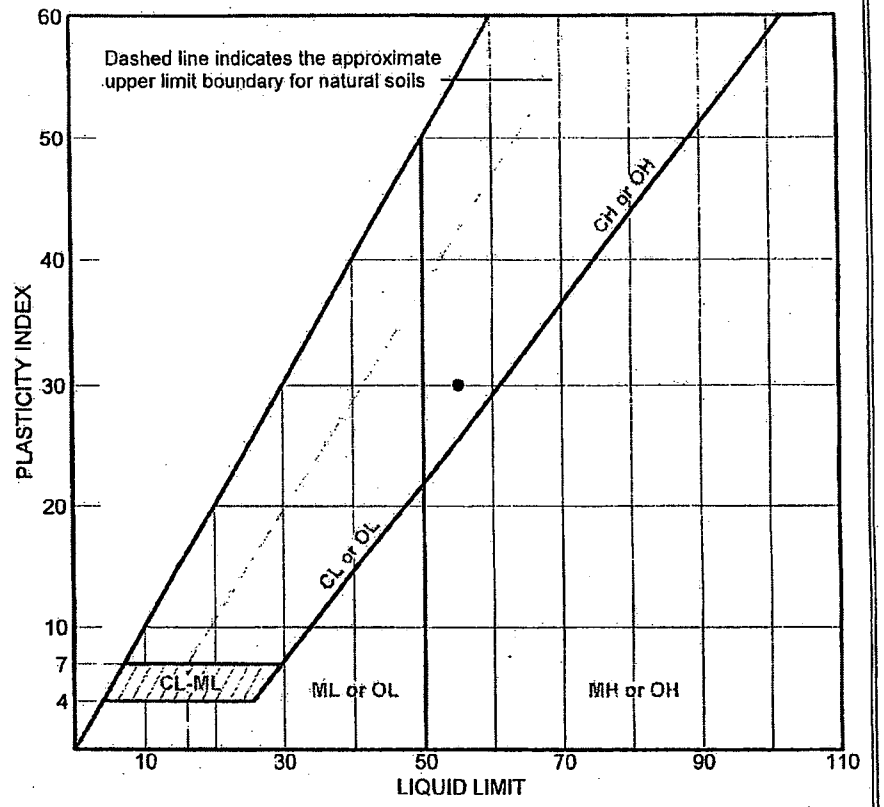
Liquid Limit= 62
Plastic Limit= 25
Plasticity Index= 37

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	28.42	28.74			
Dry+Tare	27.07	27.37			
Tare	21.64	21.77			
Moisture	24.9	24.5			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-4	101-103 Ft.	9/13/07	CH	Fat Clay	29.1	55	30

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7931

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/27/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

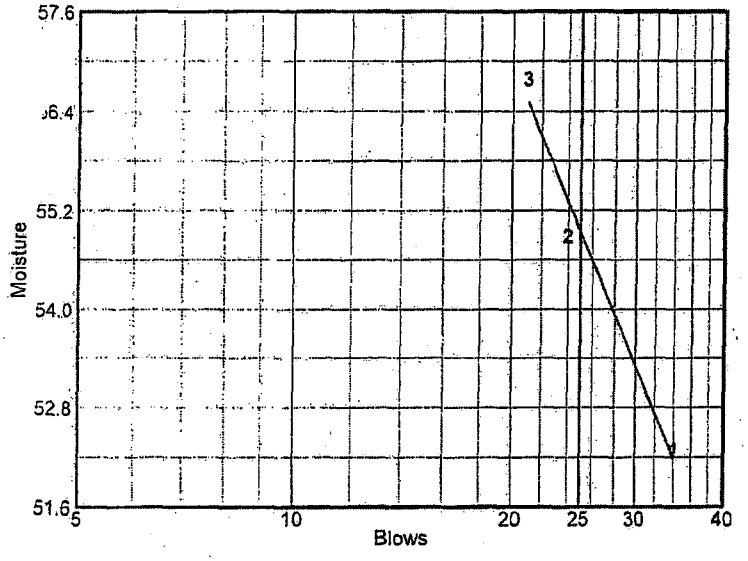
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-4
Elev. or Depth: 101-103 Ft. **Sample Length(in./cm.):** 7931
Location: B-443
Description: Fat Clay
Date: 9/13/07 **Natural Moisture:** 29.1
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.95	28.76	29.80			
Dry+Tare	27.59	25.55	26.23			
Tare	21.17	19.70	19.95			
# Blows	34	24	21			
Moisture	52.3	54.9	56.8			

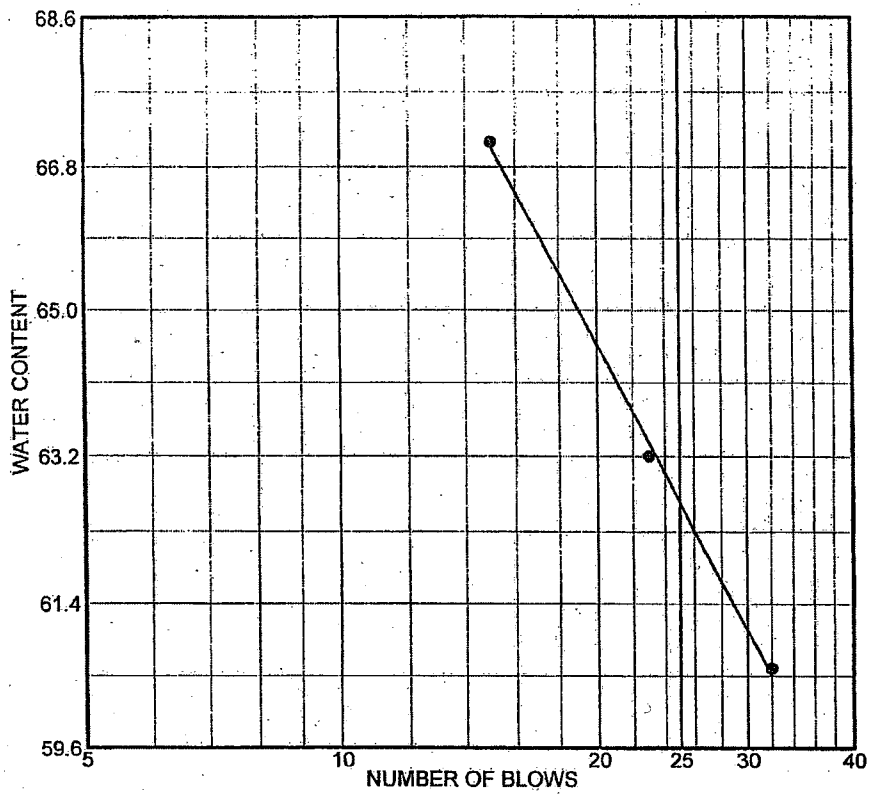


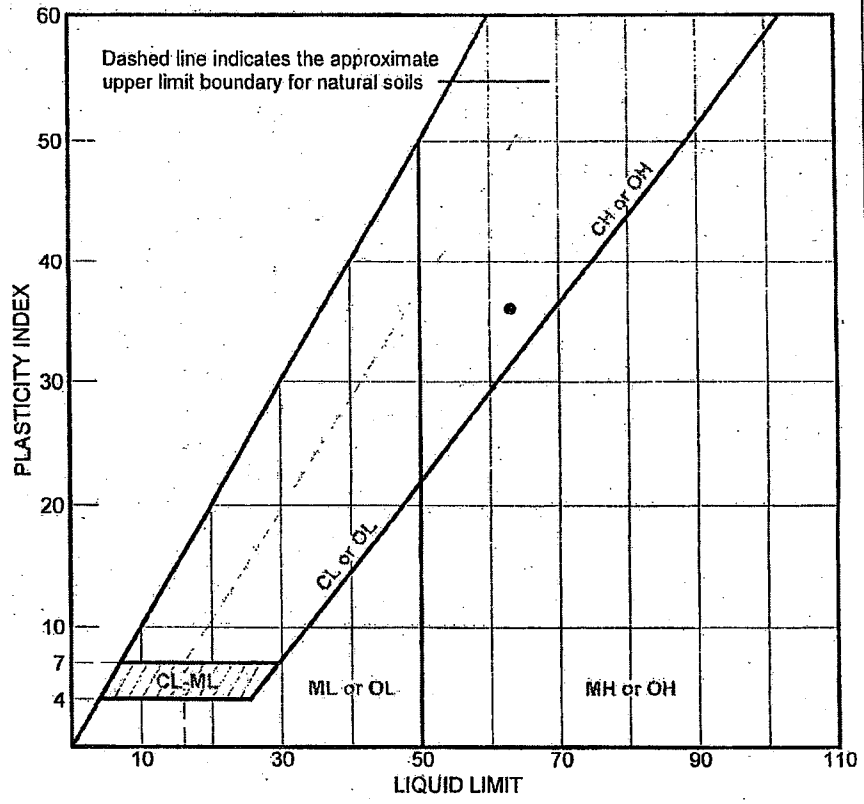
Liquid Limit= 55
Plastic Limit= 25
Plasticity Index= 30

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	28.17	26.36			
Dry+Tare	26.76	25.11			
Tare	21.04	20.04			
Moisture	24.7	24.7			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-6	112-114 Ft.	9/14/07	CH	Fat Clay	26.7	63	36

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7932

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/28/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

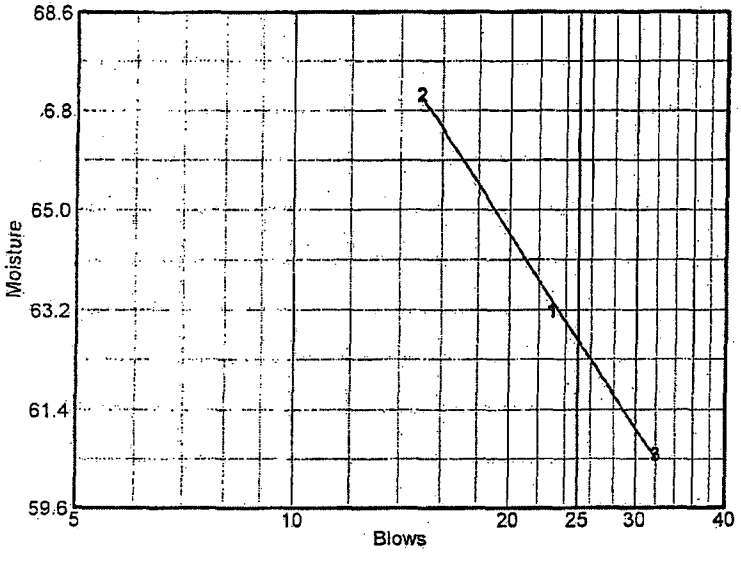
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-6
Elev. or Depth: 112-114 Ft. **Sample Length(in./cm.):** 7932
Location: B-443
Description: Fat Clay
Date: 9/14/07 **Natural Moisture:** 26.7
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.64	28.57	26.97			
Dry+Tare	24.51	24.85	24.08			
Tare	19.56	19.31	19.31			
# Blows	23	15	32			
Moisture	63.2	67.1	60.6			

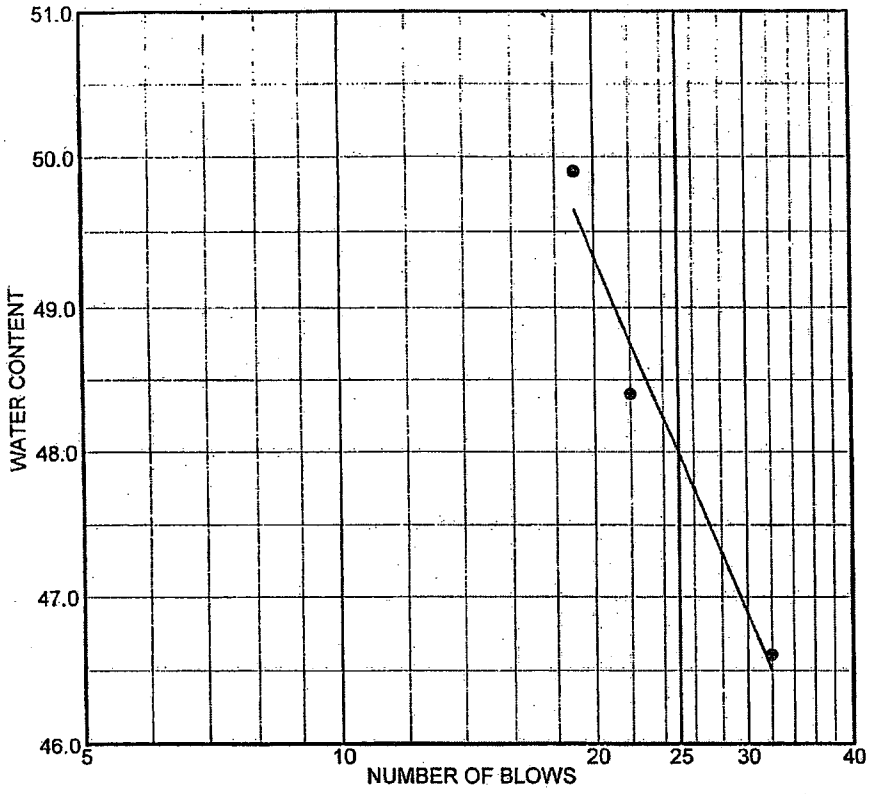


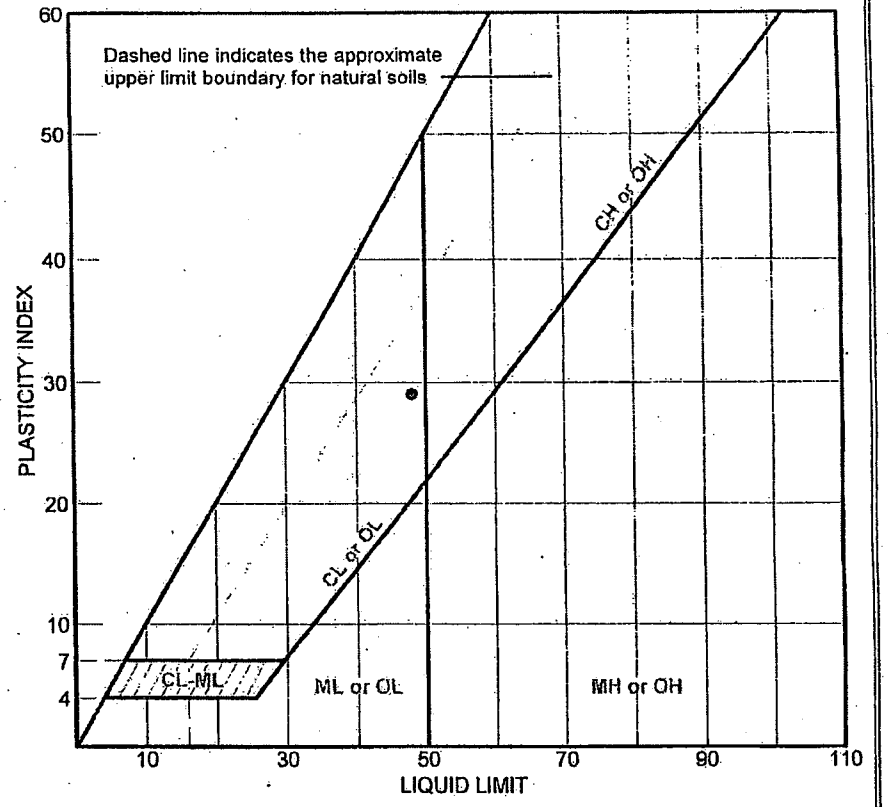
Liquid Limit= 63
Plastic Limit= 27
Plasticity Index= 36

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.79	26.47			
Dry+Tare	25.25	25.02			
Tare	19.58	19.67			
Moisture	27.2	27.1			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-7A	123-125 Ft.	9/13/07	CL	Lean Clay	23.4	48	29

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7933

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/28/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

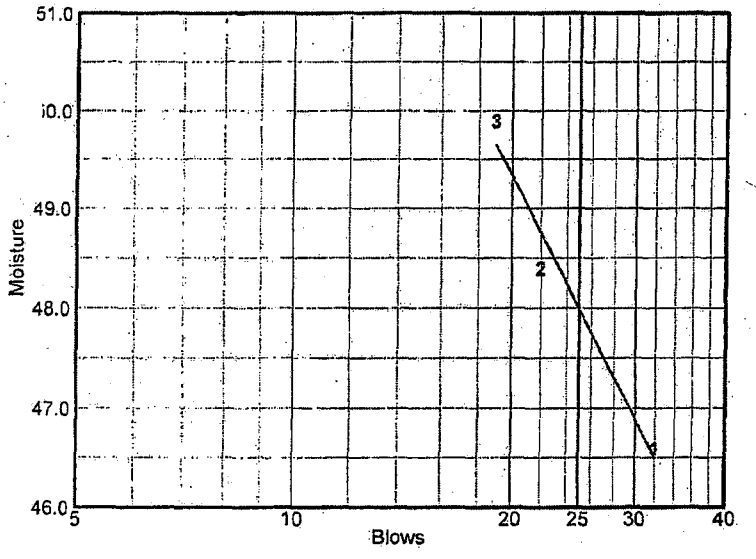
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-7A
Elev. or Depth: 123-125 Ft. **Sample Length(in./cm.):** 7933
Location: B-443
Description: Lean Clay
Date: 9/13/07 **Natural Moisture:** 23.4
USCS Class.: CL **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.31	32.48	30.09			
Dry+Tare	27.91	28.76	27.01			
Tare	20.61	21.08	20.84			
# Blows	32	22	19			
Moisture	46.6	48.4	49.9			

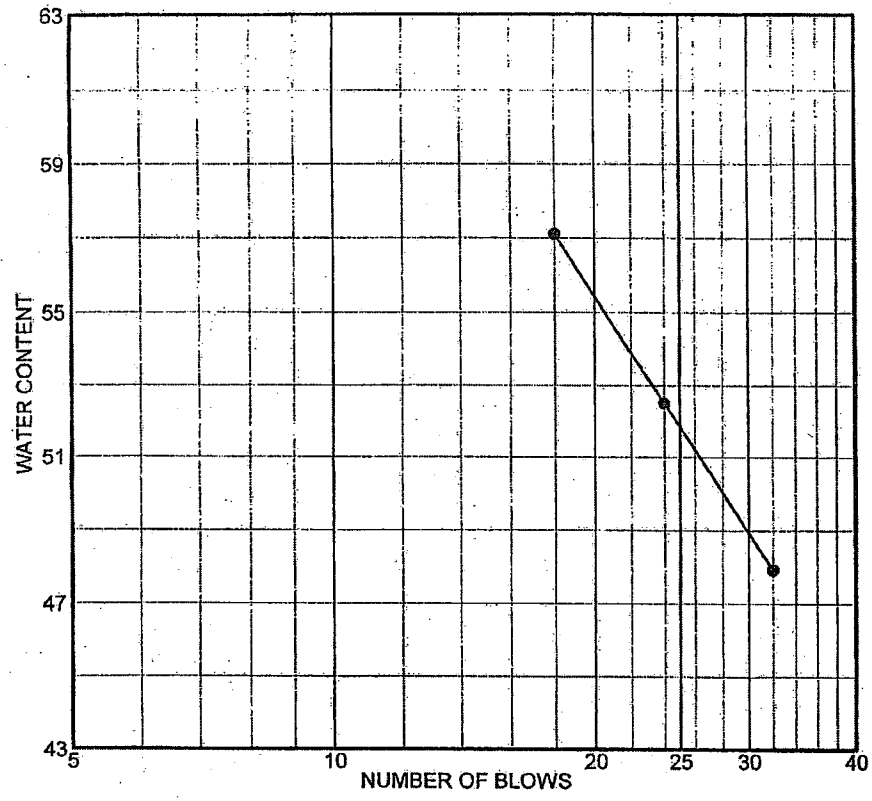


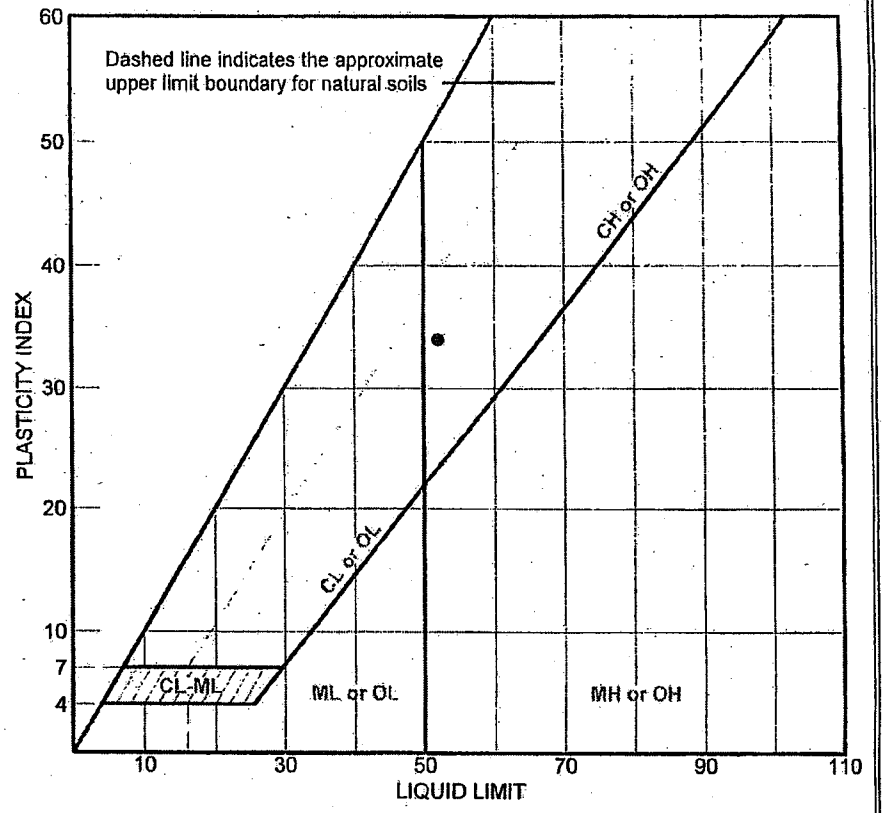
Liquid Limit= 48
Plastic Limit= 19
Plasticity Index= 29

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	28.43	28.56			
Dry+Tare	27.24	27.27			
Tare	21.14	20.51			
Moisture	19.5	19.1			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-9A	133-135 Ft.	9/6/07	CH	Fat Clay	16.1	52	34

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7934

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

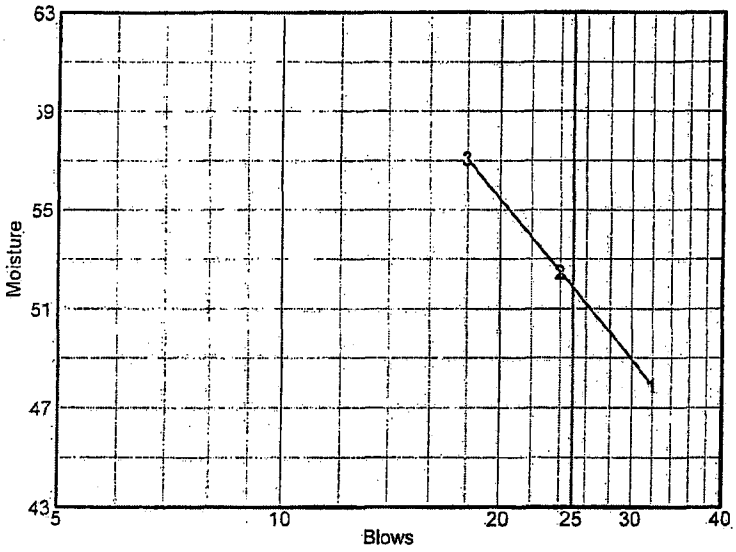
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-9A
Elev. or Depth: 133-135 Ft. **Sample Length(in./cm.):** 7934
Location: B-443
Description: Fat Clay
Date: 9/6/07 **Natural Moisture:** 16.1
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.27	27	27.8			
Dry+Tare	24.09	24.35	24.71			
Tare	19.54	19.3	19.3			
# Blows	32	24	18			
Moisture	47.9	52.5	57.1			

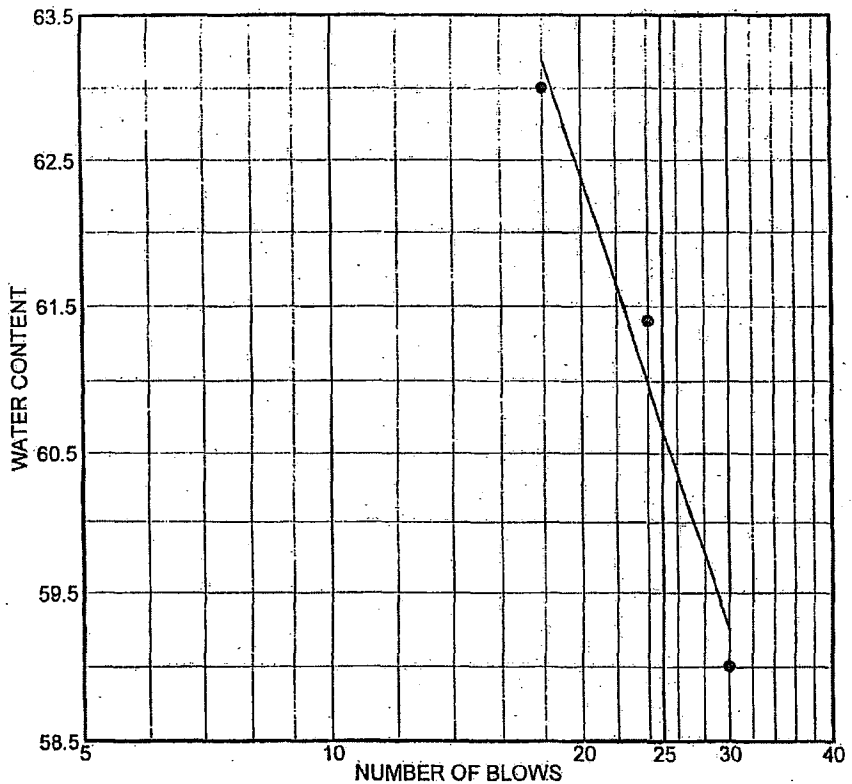


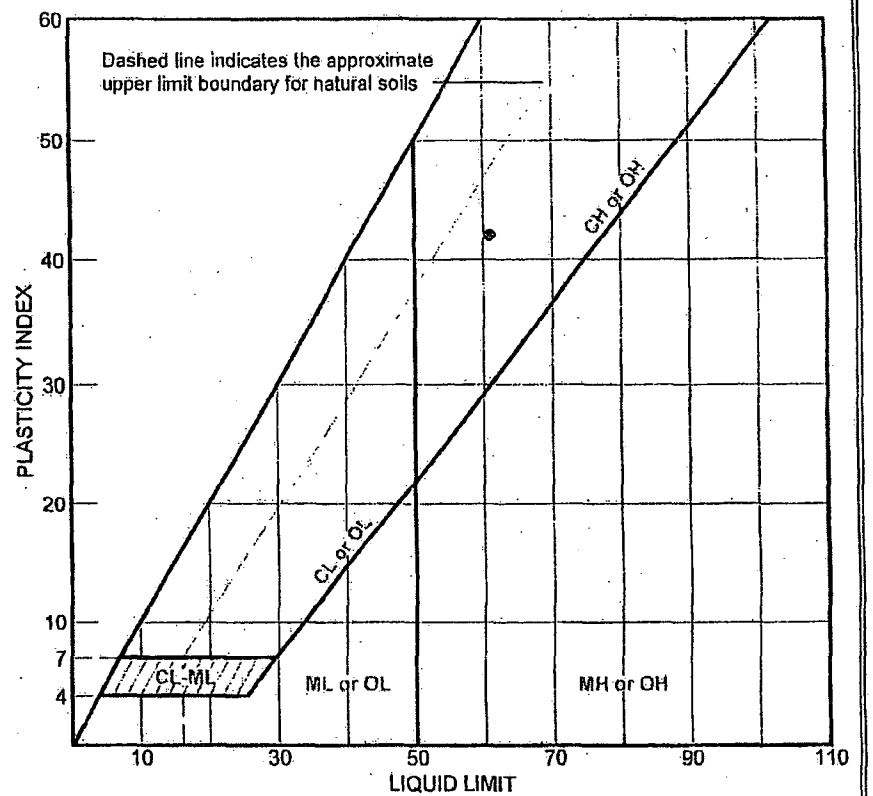
Liquid Limit= 52
Plastic Limit= 18
Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.52	30.50			
Dry+Tare	26.50	29.17			
Tare	20.60	21.67			
Moisture	17.3	17.7			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-11	141-143 Ft.	9/17/07	CH	Fat Clay		61	42

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7935

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

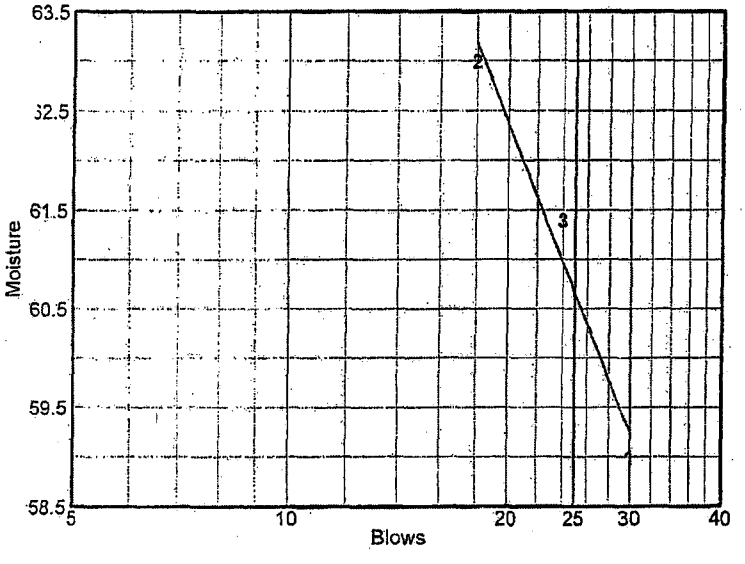
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-11
Elev. or Depth: 141-143 Ft. **Sample Length(in./cm.):** 7.935
Location: B-443
Description: Fat Clay
Date: 9/17/07 **Natural Moisture:**
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.64	28.41	26.81			
Dry+Tare	26.52	25.13	23.83			
Tare	21.23	19.92	18.98			
# Blows	30	18	24			
Moisture	59.0	63.0	61.4			

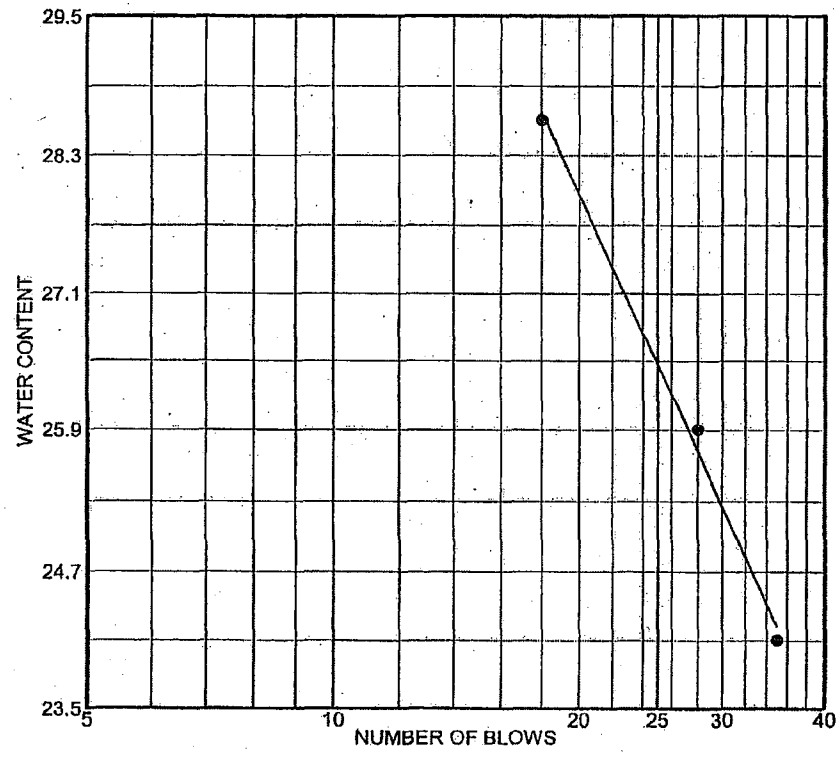


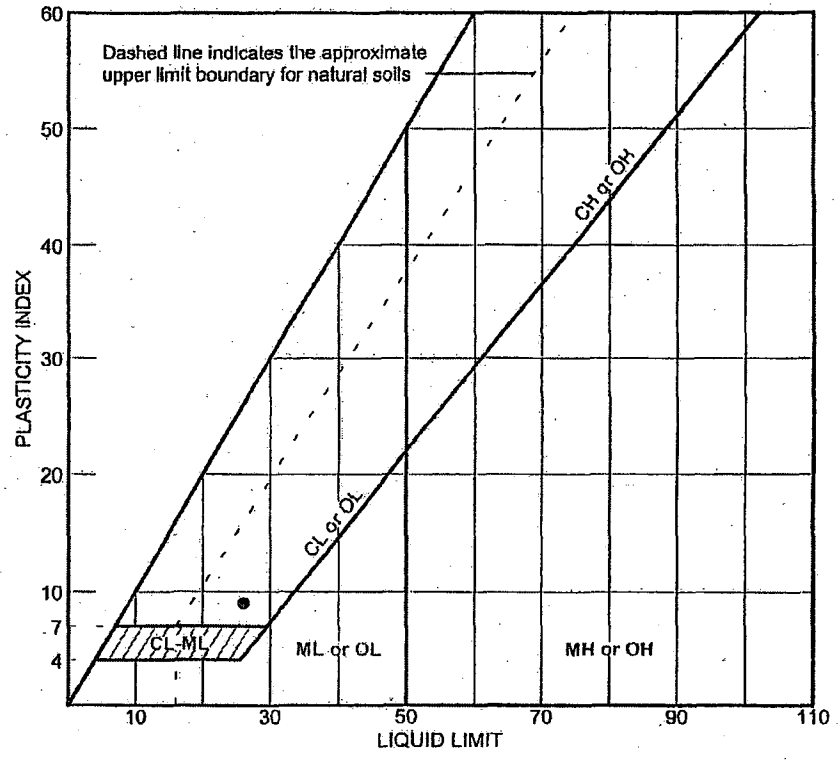
Liquid Limit= 61
Plastic Limit= 19
Plasticity Index= 42

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.07	27.06			
Dry+Tare	25.71	25.91			
Tare	18.51	19.91			
Moisture	18.9	19.2			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	SS-34	143.5-145	9-8-07	CL	Sandy lean clay	20.1	26	9

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

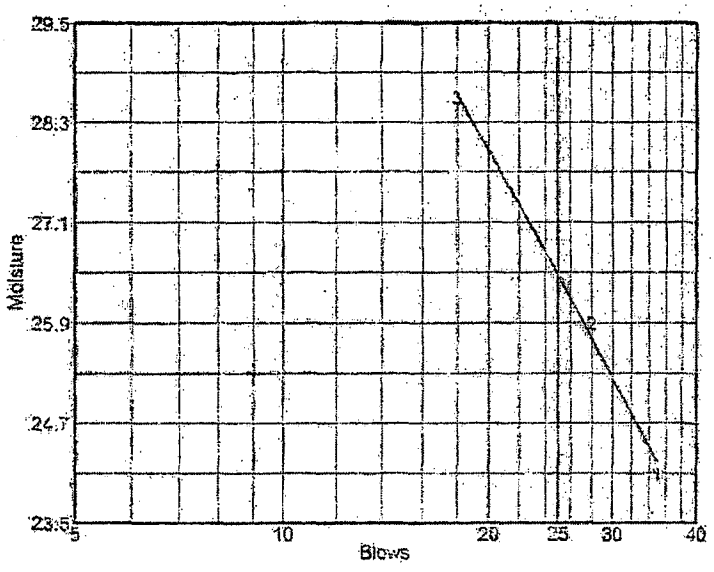
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-34
Elev. or Depth: 143.5-145 Sample Length(in./cm.):
Location:
Description: Sandy lean clay
%<#40: 99.0 %<#200: 64.2 USCS: CL AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	35.56	40.98	43.03			
Dry+Tare	30.84	34.81	36.10			
Tare	11.29	11.02	11.89			
# Blows	35	28	18			
Moisture	24.1	25.9	28.6			

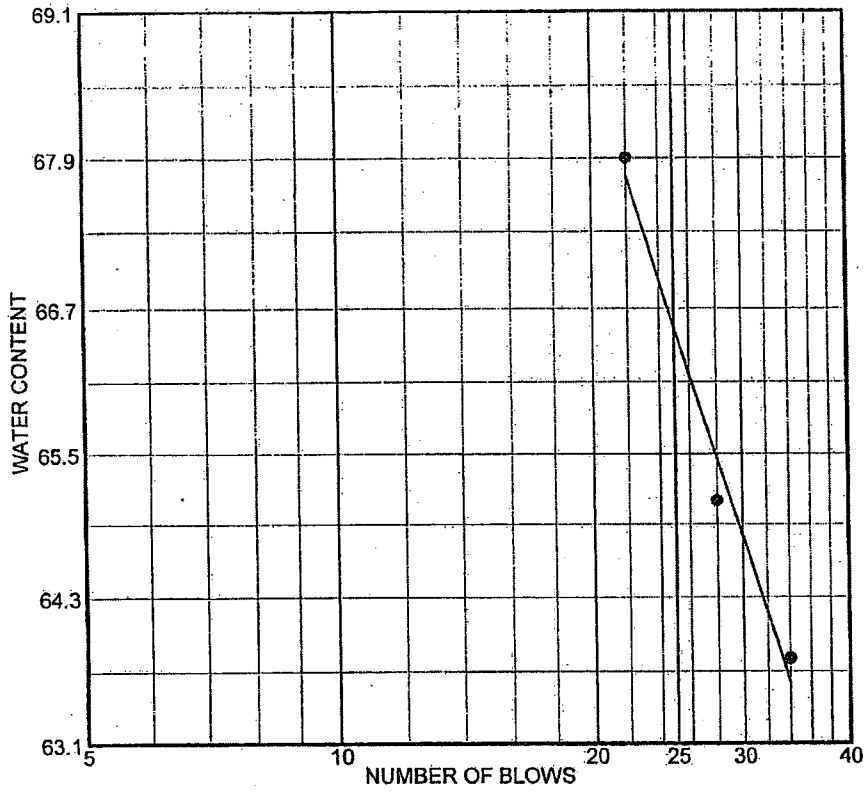


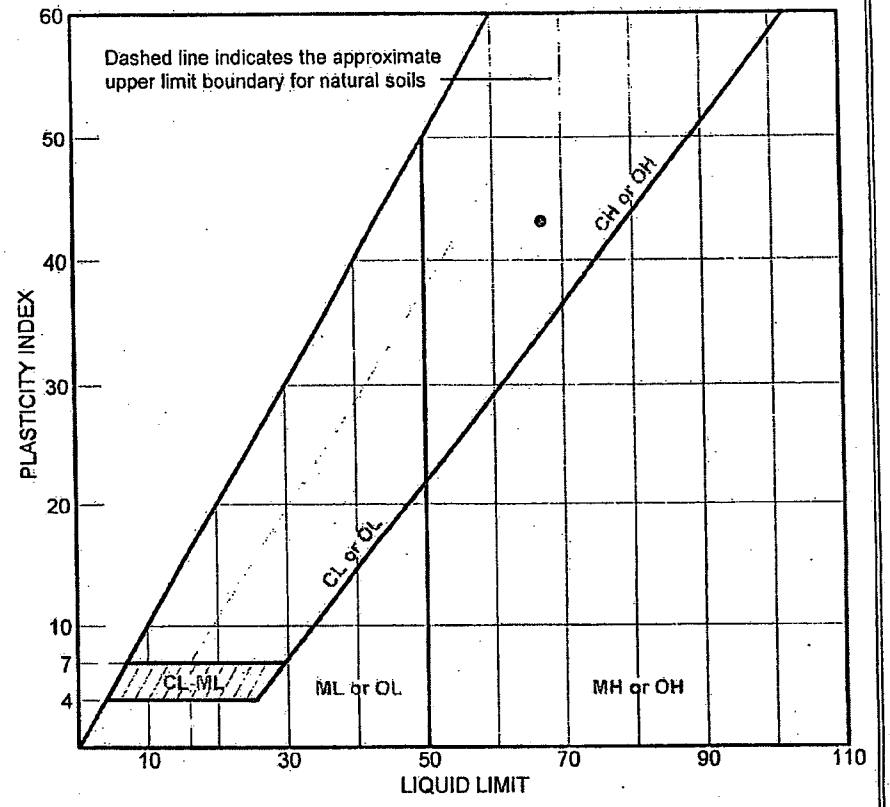
Liquid Limit= 26
Plastic Limit= 17
Plasticity Index= 9

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	20.21	20.38			
Dry+Tare	18.94	18.97			
Tare	10.78	10.92			
Moisture	15.6	17.5			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-14	156-158 Ft.	9/17/07	CH	Fat Clay	24.2	67	43

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7936

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

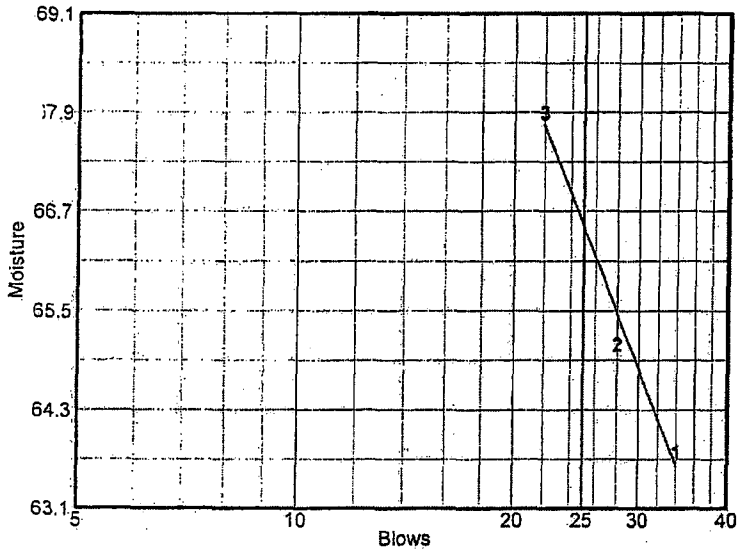
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-14
Elev. or Depth: 156-158 Ft. **Sample Length(in./cm.):** 7936
Location: B-443
Description: Fat Clay
Date: 9/17/07 **Natural Moisture:** 24.2
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.6	29.55	30.44			
Dry+Tare	25.24	25.8	26.46			
Tare	19.97	20.04	20.6			
# Blows	34	28	22			
Moisture	63.8	65.1	67.9			

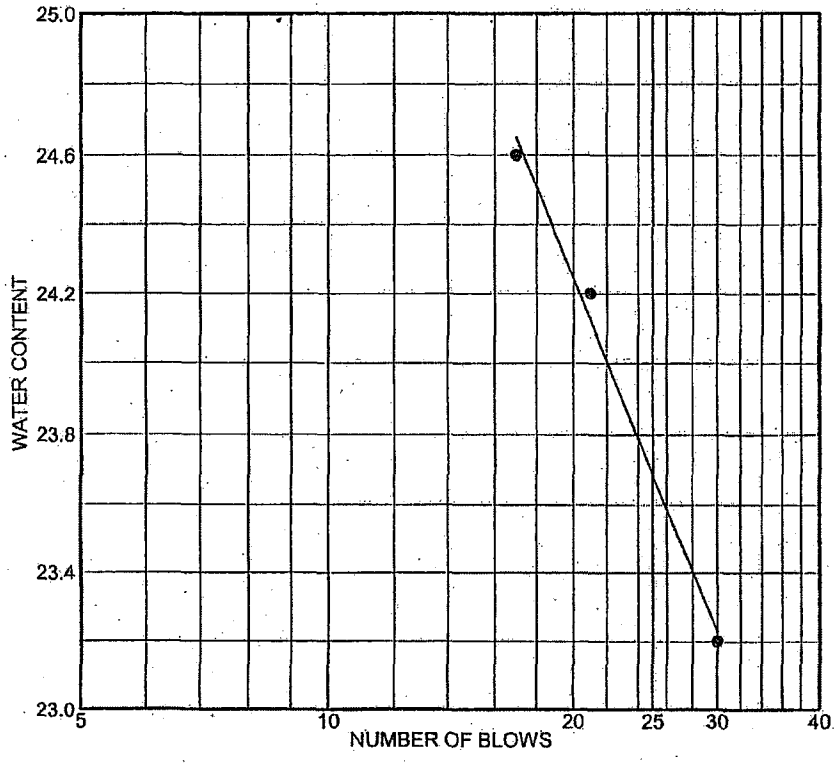


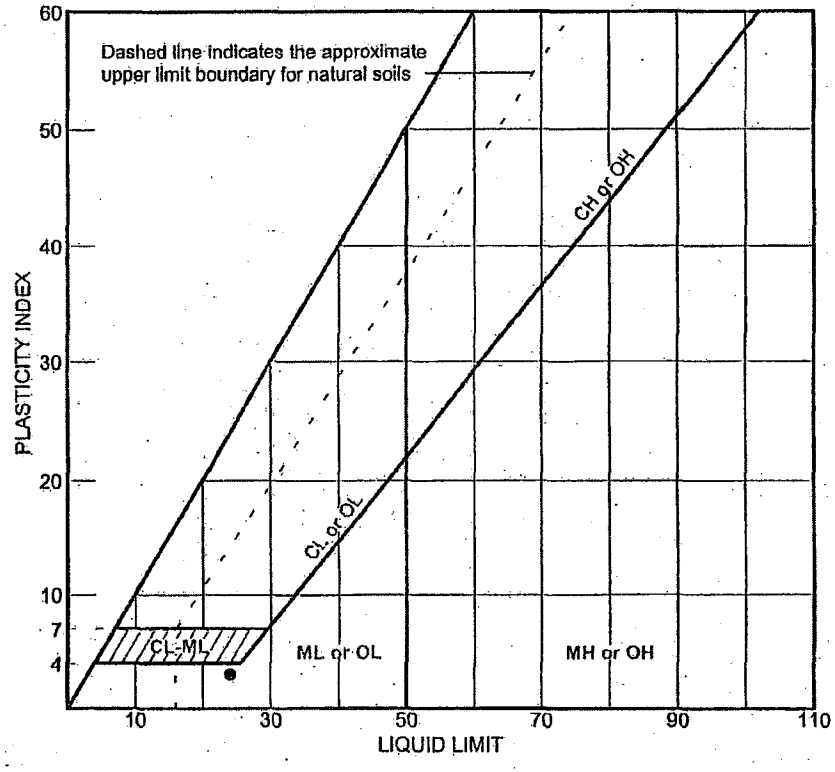
Liquid Limit= 67
Plastic Limit= 24
Plasticity Index= 43

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.71	25.76			
Dry+Tare	25.29	24.59			
Tare	19.31	19.67			
Moisture	23.7	23.8			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	SS-37	163.5-165	9-8-07	ML	Silt	26.2	24	3

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

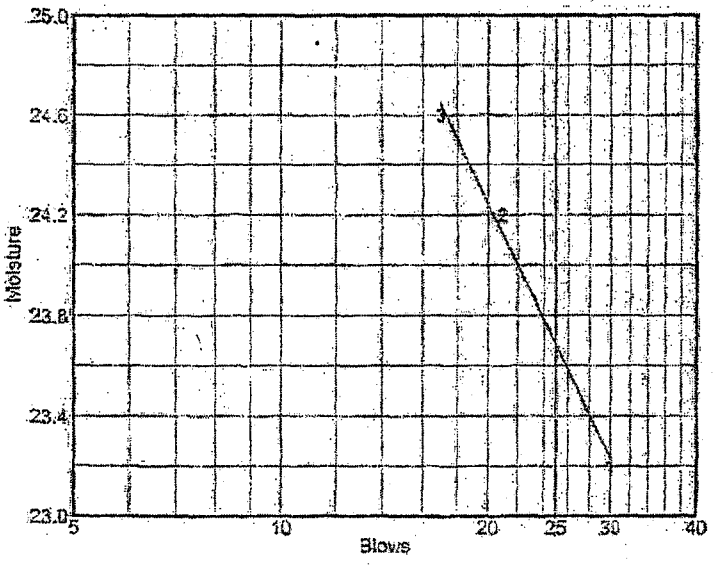
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-37
Elev. or Depth: 163.5-165 Sample Length(in./cm.):
Location:
Description: Silt
%<#40: 99.9 %<#200: 96.7 USCS: ML AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.35	39.77	30.69			
Dry+Tare	30.02	34.14	26.78			
Tare	11.39	10.84	10.88			
# Blows	30	21	17			
Moisture	23.2	24.2	24.6			

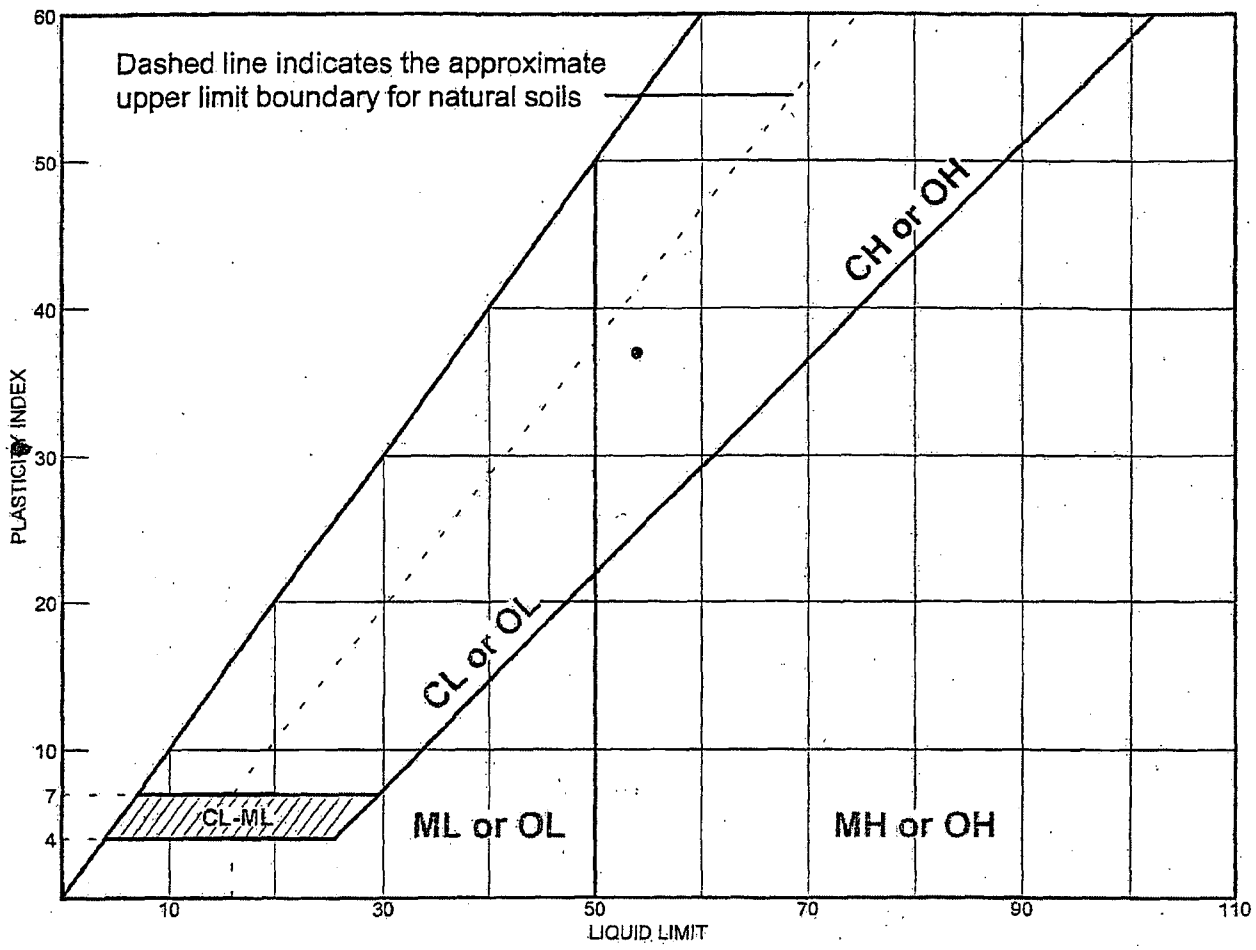


Liquid Limit= 24
Plastic Limit= 21
Plasticity Index= 3

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.03	22.18			
Dry+Tare	20.11	20.31			
Tare	10.98	11.55			
Moisture	21.0	21.3			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat clay	54	17	37	99.7	99.5	CH

Project No. 6234074257 **Client:** Bechtel

Project: South Texas Project Units 3 & 4 Subsurface Investigation

● **Source:** B-443 **Sample No.:** SS-38 **Elev./Depth:** 168.5-170

Remarks:

● Tested by: JA

Reviewed by: MH MA 10-5-07

MACTEC, INC.

Charlotte, North Carolina

KAW 10/5/07

Figure

LIQUID AND PLASTIC LIMIT TEST DATA

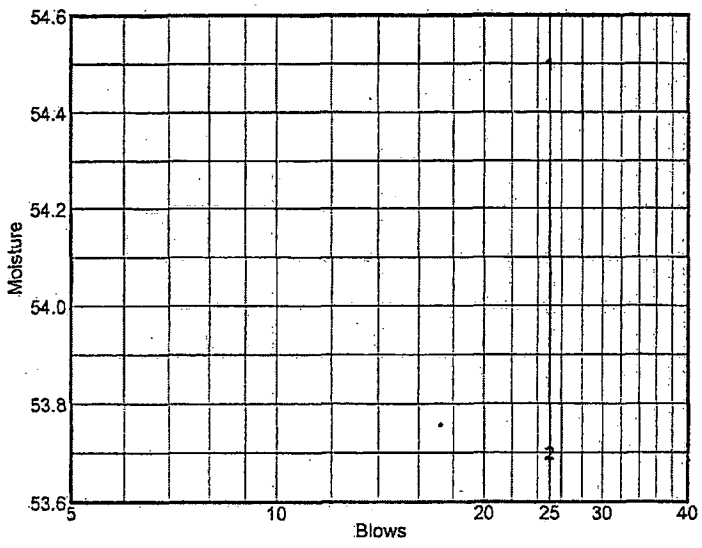
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-443
Sample No.: SS-38
Elev. or Depth: 168.5-170 **Sample Length(in./cm.):**
Location:
Description: Fat clay
%<#40: 99.7 **%<#200:** 99.5 **USCS:** CH **AASHTO:**
Testing Remarks: Tested by: JA
Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.75	24.81				
Dry+Tare	19.24	19.91				
Tare	10.97	10.78				
# Blows	25	25				
Moisture	54.5	53.7				

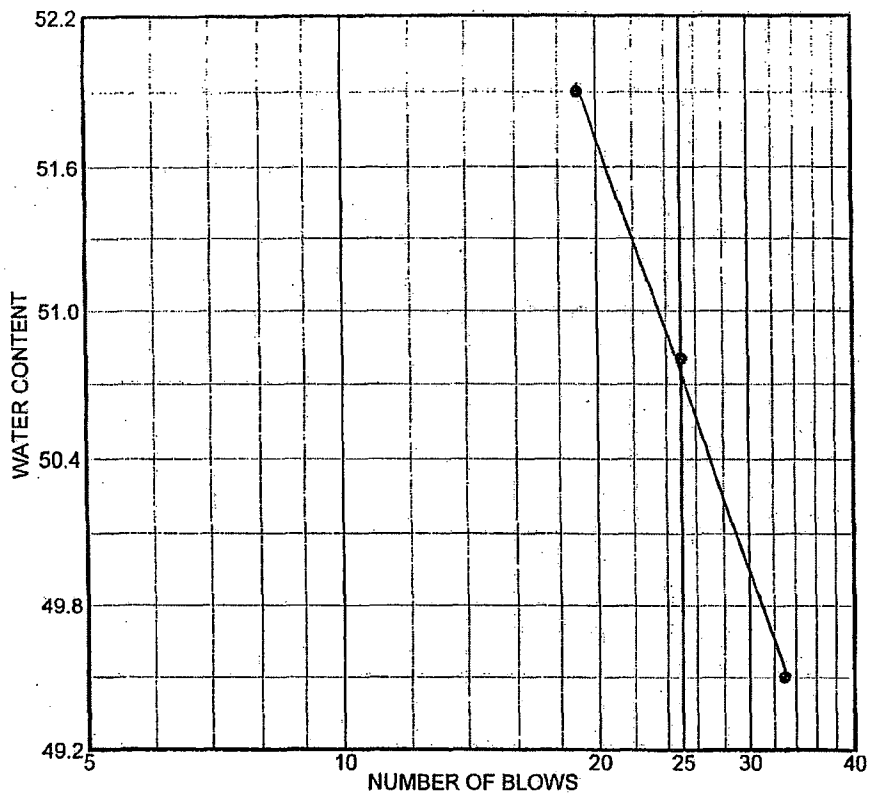


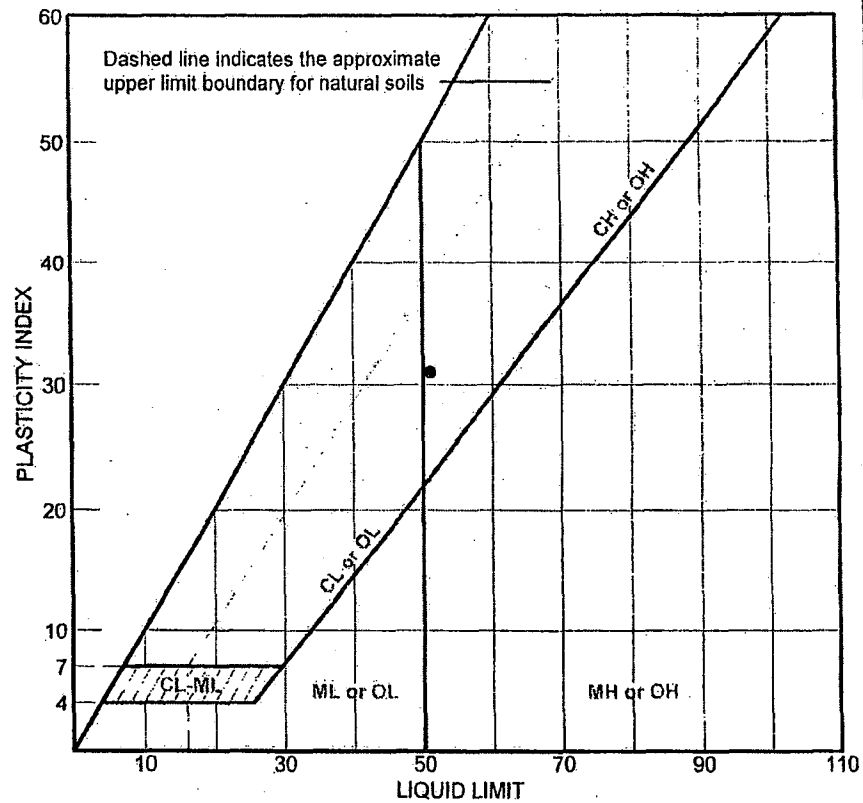
Liquid Limit= 54
Plastic Limit= 17
Plasticity Index= 37

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.17	17.65			
Dry+Tare	16.27	16.77			
Tare	11.01	11.63			
Moisture	17.1	17.1			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	UD-15	172-174 Ft.	9/17/07	CH	Fat Clay	25.7	51	31

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7937

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

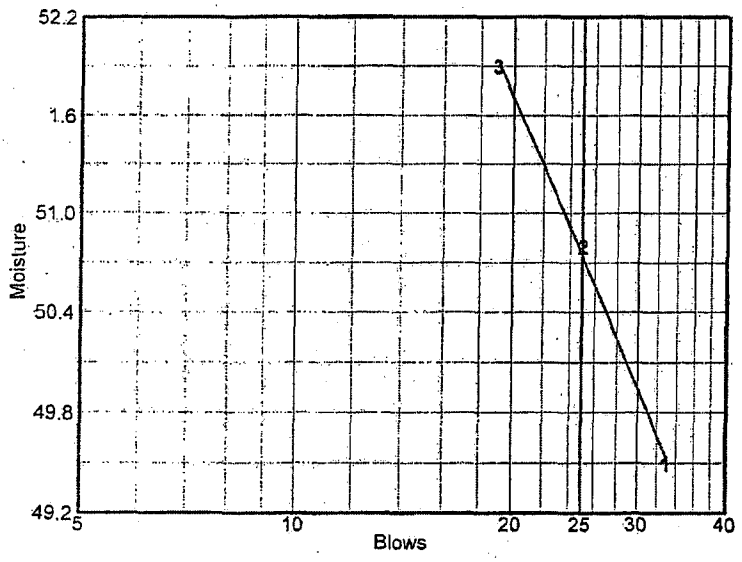
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: UD-15
Elev. or Depth: 172-174 Ft. **Sample Length(in./cm.):** 7937
Location: B-443
Description: Fat Clay
Date: 9/17/07 **Natural Moisture:** 25.7
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.55	29.39	28.8			
Dry+Tare	26.26	26.19	25.6			
Tare	19.61	19.89	19.44			
# Blows	33	25	19			
Moisture	49.5	50.8	51.9			

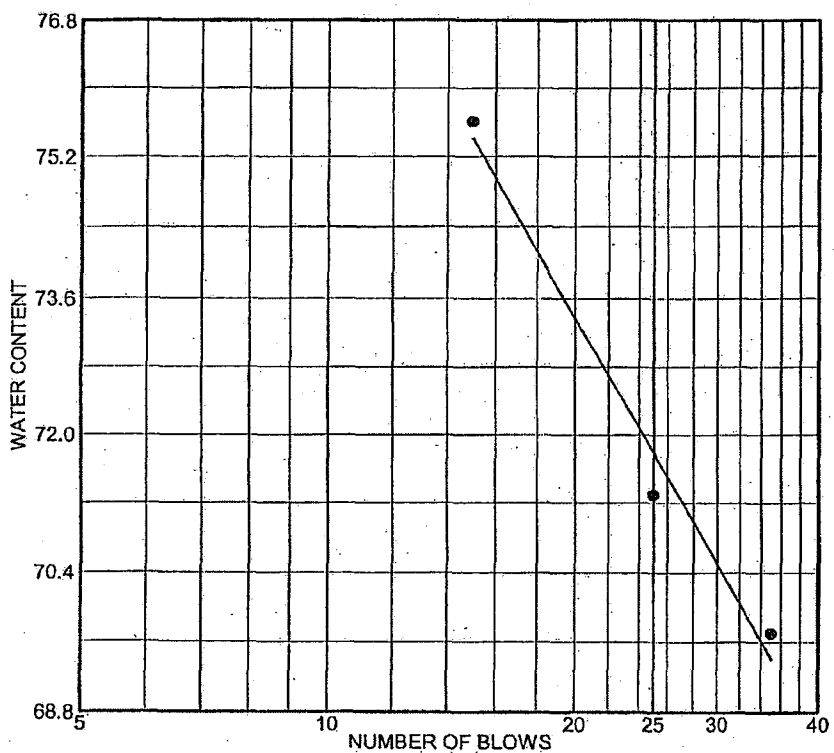


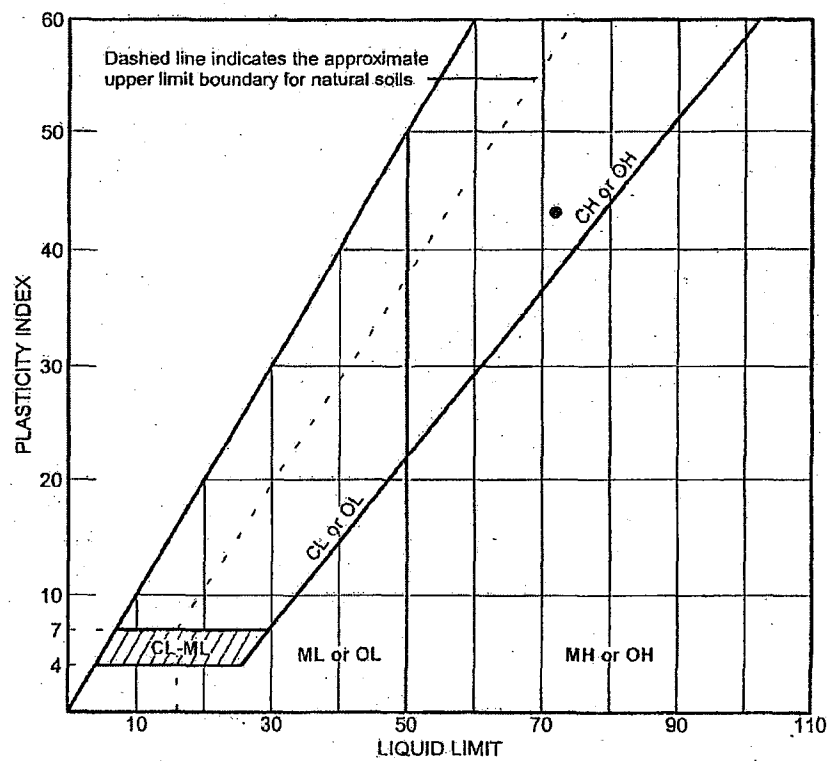
Liquid Limit= 51
Plastic Limit= 20
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.28	26.76			
Dry+Tare	26.11	25.49			
Tare	20.09	19.03			
Moisture	19.4	19.7			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-443	SS-41	188.5-190	9-13-07	CH	Fat Clay	29.5	72	43

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH MH 9-26-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

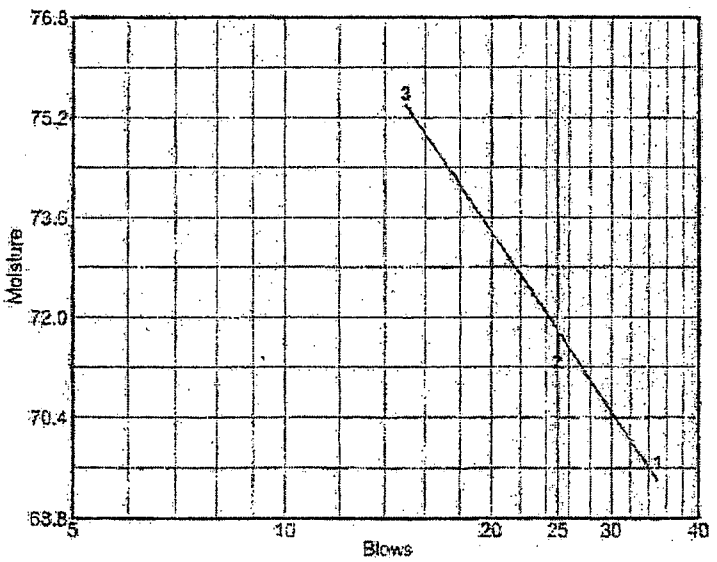
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-41
Elev. or Depth: 188.5-190 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.89	28.43	26.51			
Dry+Tare	20.55	21.41	19.77			
Tare	11.45	11.56	10.86			
# Blows	35	25	15			
Moisture	69.7	71.3	75.6			

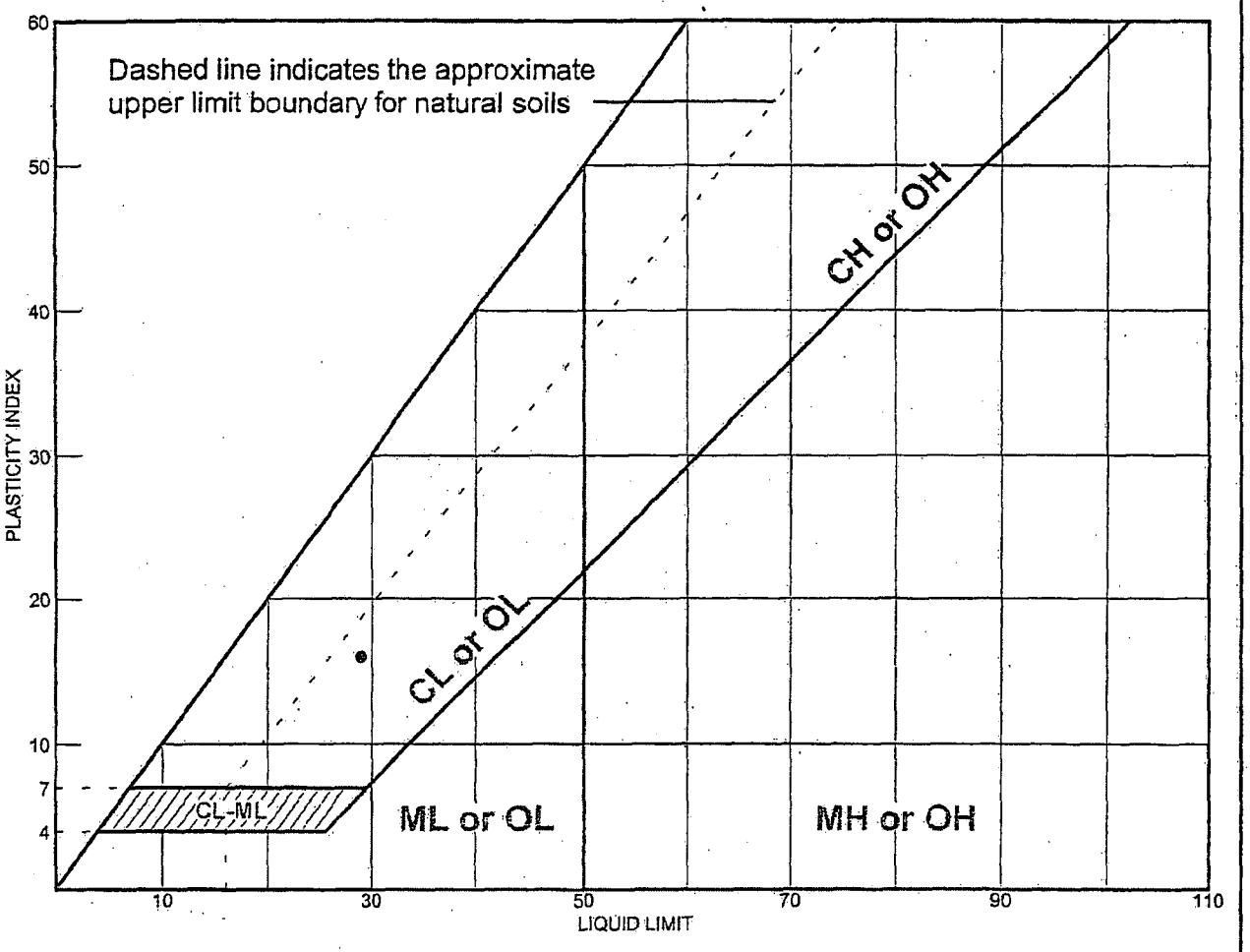


Liquid Limit= 72
Plastic Limit= 29
Plasticity Index= 43

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.30	26.27			
Dry+Tare	24.77	23.99			
Tare	16.12	16.20			
Moisture	29.2	29.3			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Lean clay with sand	29	13	16	99.9	81.2	CL

Project No. 6234074257 **Client:** Bechtel

Project: South Texas Project Units 3 & 4 Subsurface Investigation

● **Source:** B-443 **Sample No.:** SS-43 **Elev./Depth:** 198.5-200

Remarks:

● Tested by: JA

Reviewed by: MH MA 10-5-07

MACTEC, INC.

Charlotte, North Carolina

KAW 10/5/07

Figure

LIQUID AND PLASTIC LIMIT TEST DATA

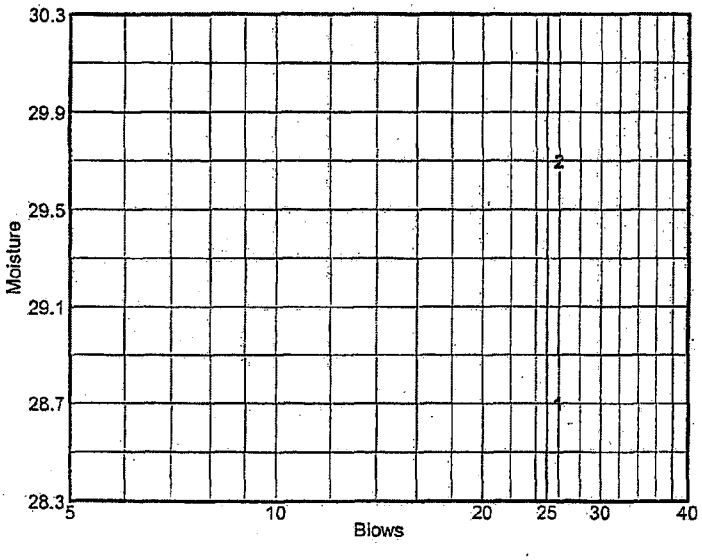
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-443
Sample No.: SS-43
Elev. or Depth: 198.5-200 **Sample Length(in./cm.):**
Location:
Description: Lean clay with sand
%<#40: 99.9 **%<#200:** 81.2 **USCS:** CL **AASHTO:**
Testing Remarks: Tested by: JA
Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.26	30.34				
Dry+Tare	23.71	25.89				
Tare	11.32	10.91				
# Blows	26	26				
Moisture	28.7	29.7				

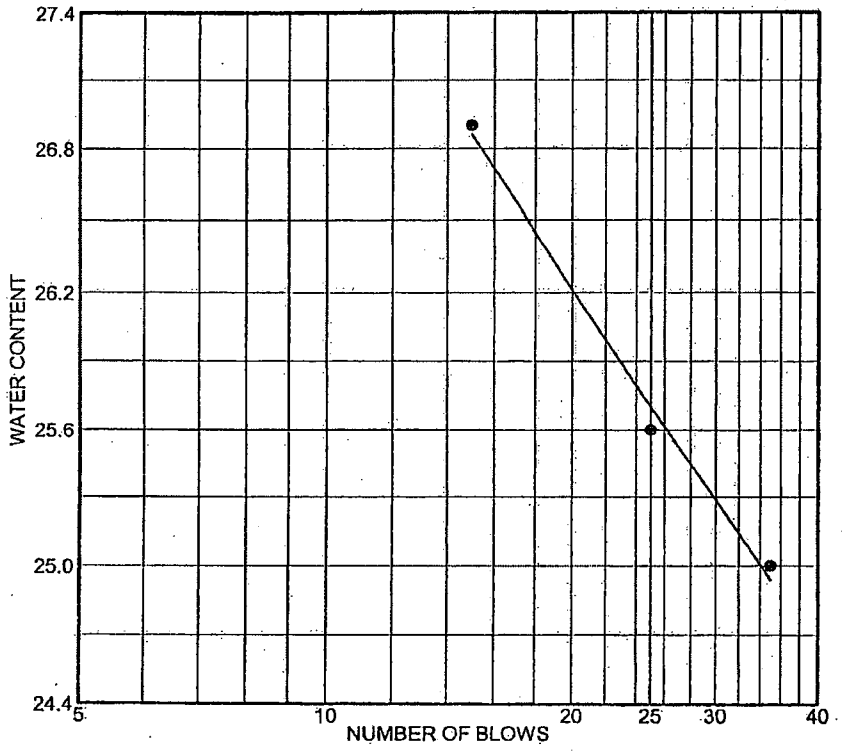


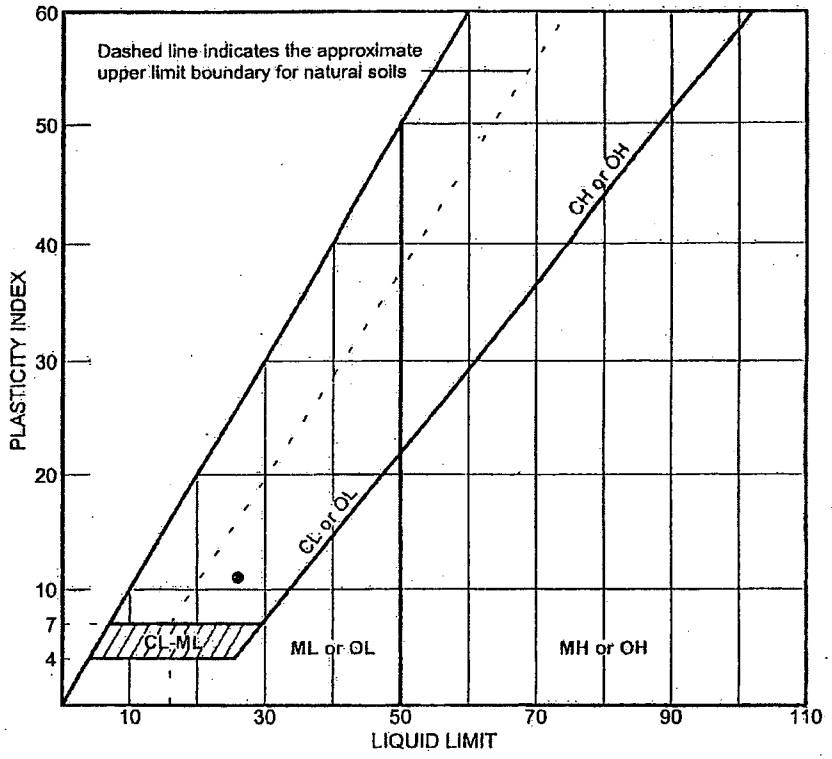
Liquid Limit= 29
Plastic Limit= 13
Plasticity Index= 16

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	18.46	18.50			
Dry+Tare	17.60	17.65			
Tare	10.89	10.91			
Moisture	12.8	12.6			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-444	SS-20	63.5-65	9-14-07	CL	Lean Clay	20.7	26	11

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested: JA Reviewed by: MH MA 9-26-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

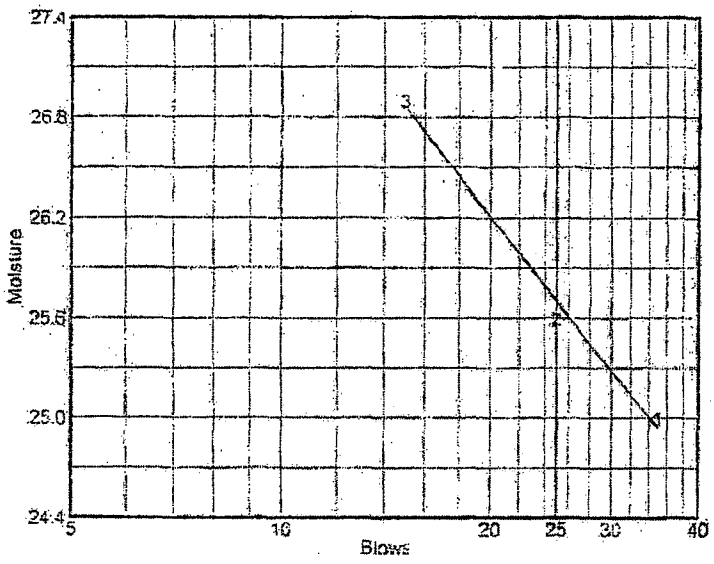
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-444
Sample No.: SS-20
Elev. or Depth: 63.5-65 Sample Length(in./cm.):
Location:
Description: Lean Clay
%<#40: %<#200: USCS: AASHTO:
Testing Remarks: Tested: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	42.01	42.18	42.67			
Dry+Tare	35.76	35.80	36.08			
Tare	10.78	10.87	11.54			
# Blows	35	25	15			
Moisture	25.0	25.6	26.9			

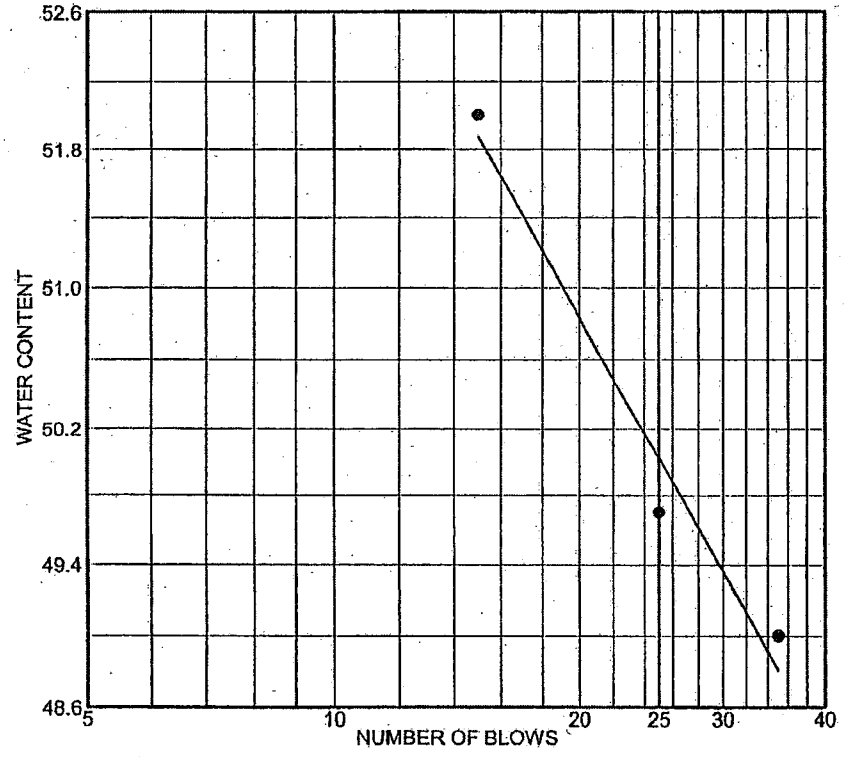


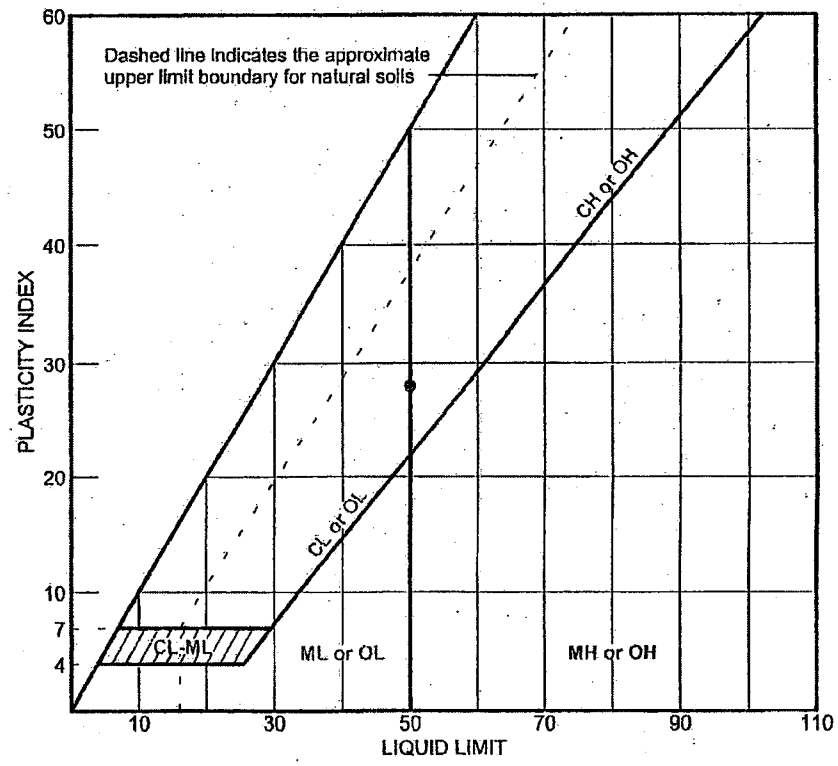
Liquid Limit= 26
Plastic Limit= 15
Plasticity Index= 11

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	20.50	20.13			
Dry+Tare	19.23	18.92			
Tare	10.86	10.87			
Moisture	15.2	15.0			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-444	SS-24	83.5-85	9-14-07	CH	Fat Clay	24.2	50	28

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH MH 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

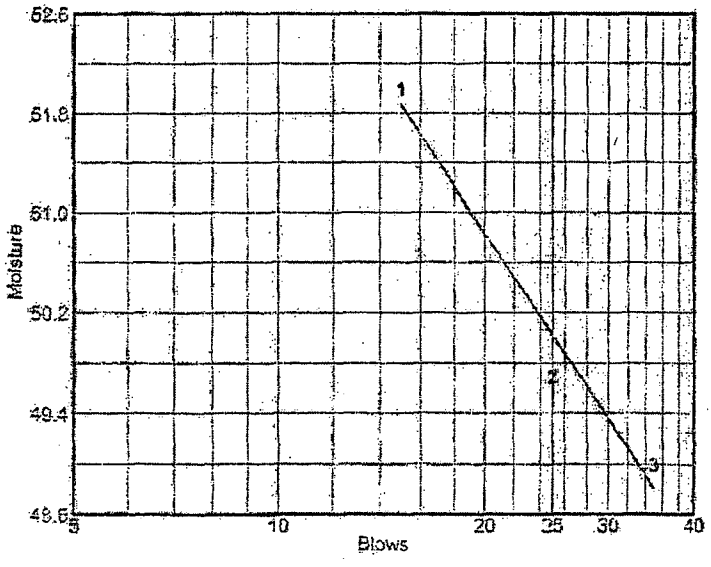
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-444
Sample No.: SS-24
Elev. or Depth: 83.5-85 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	39.12	37.73	38.52			
Dry+Tare	29.41	28.84	29.64			
Tare	10.73	10.95	11.51			
# Blows	15	25	35			
Moisture	52.0	49.7	49.0			

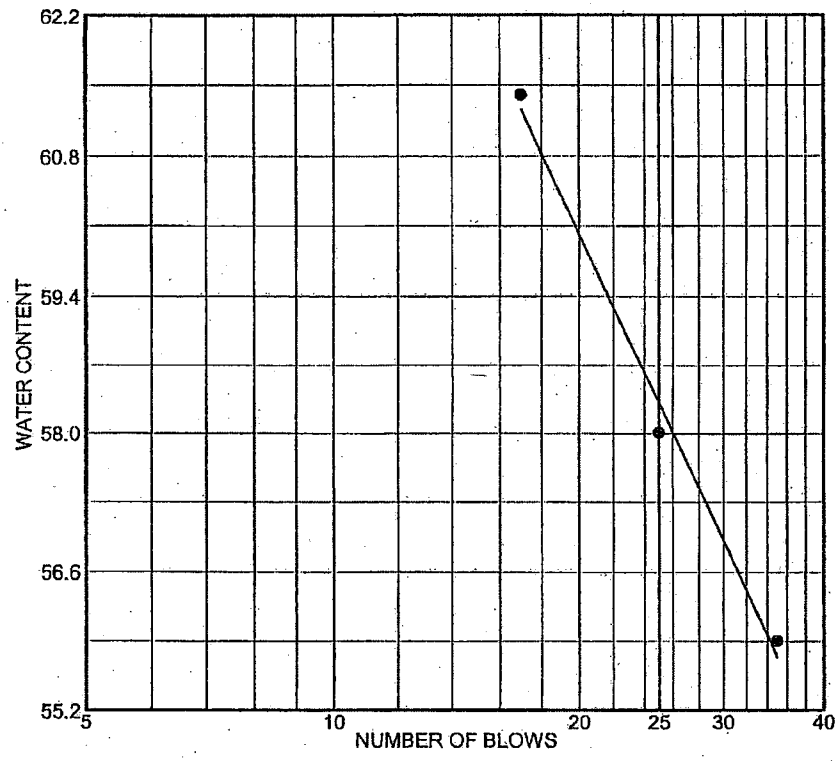


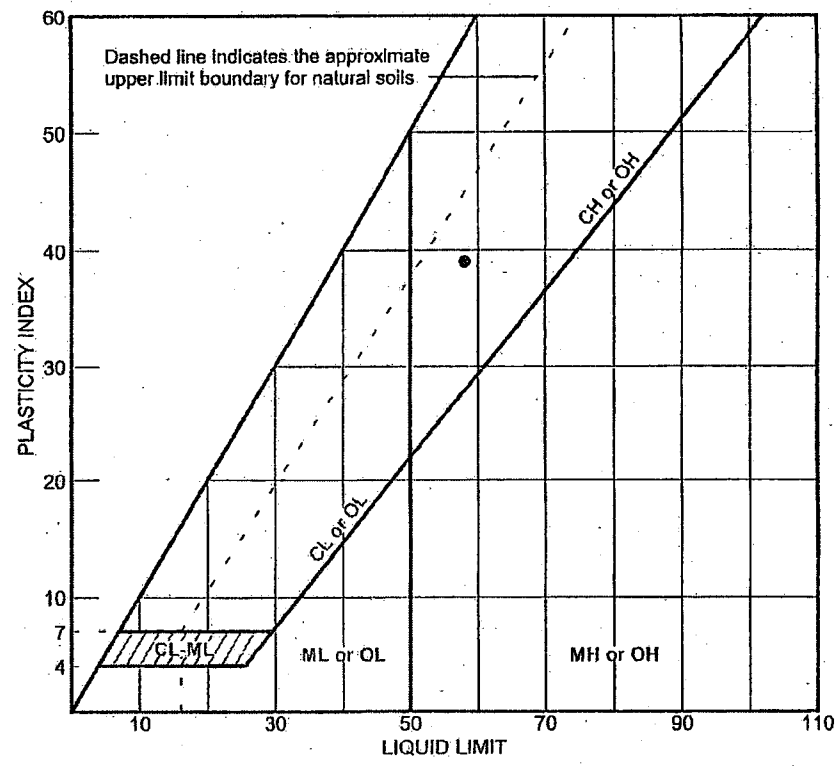
Liquid Limit= 50
Plastic Limit= 22
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	20.73	20.79		
Dry+Tare	18.98	19.04		
Tare	10.91	10.95		
Moisture	21.7	21.6		

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-445	SS-25	88.5-90	9-14-07	CH	Fat Clay	28.5	58	39

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH MH 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

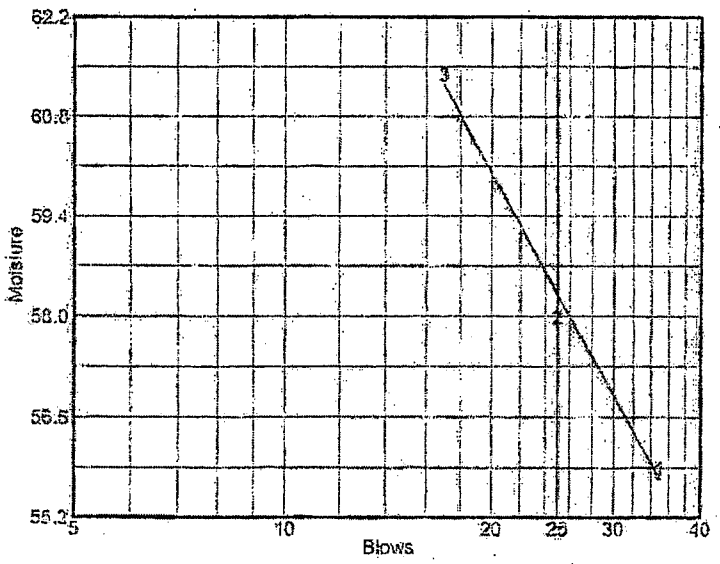
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-445
Sample No.: SS-25
Elev. or Depth: 88.5-90 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.61	27.76	27.47			
Dry+Tare	20.61	21.51	21.17			
Tare	11.66	10.73	10.91			
# Blows	35	25	17			
Moisture	55.9	58.0	61.4			

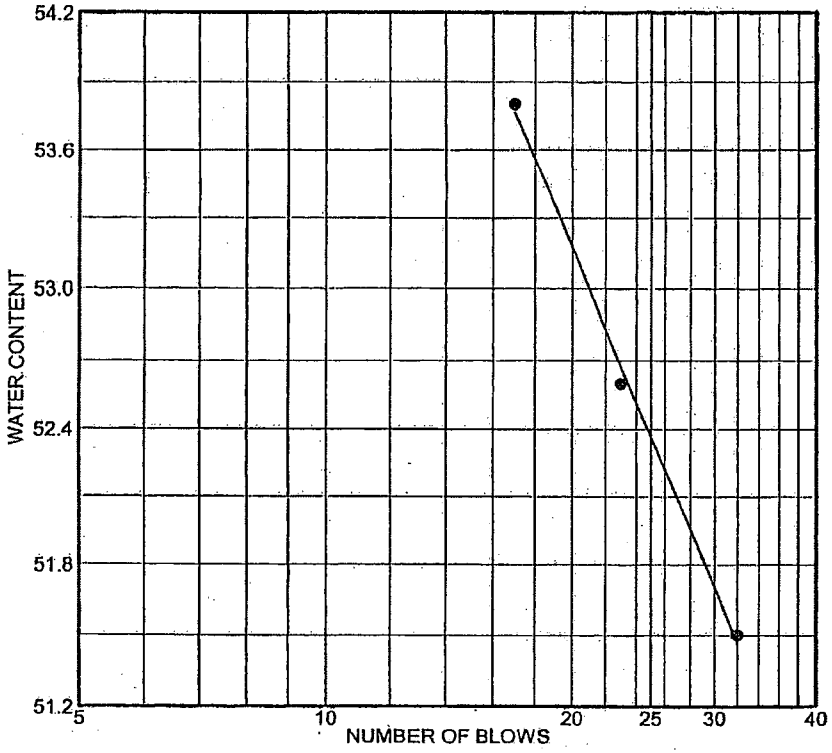


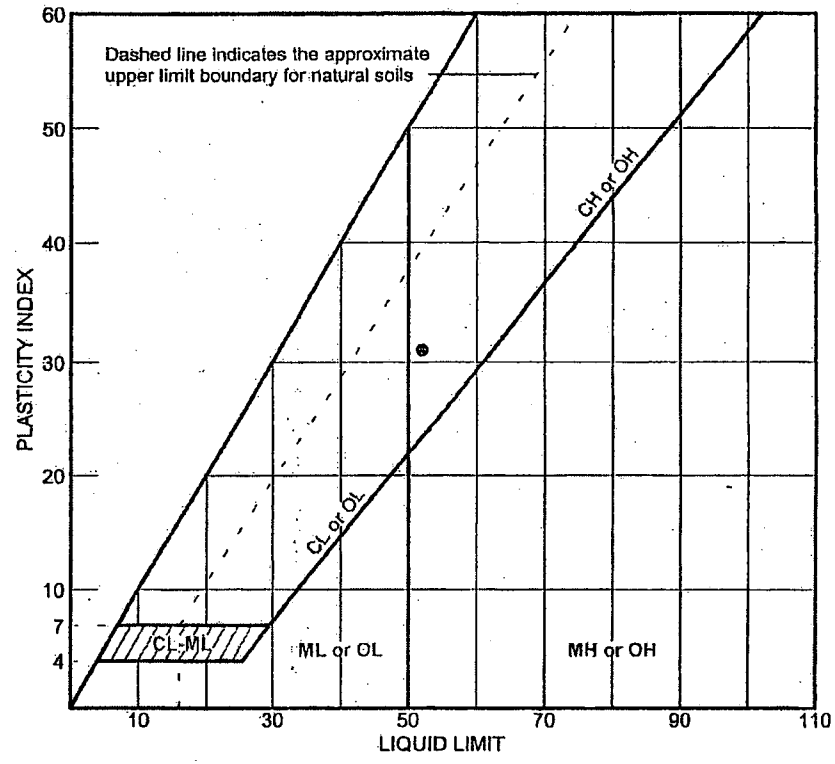
Liquid Limit= 58
Plastic Limit= 19
Plasticity Index= 39

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	18.19	18.50		
Dry+Tare	17.13	17.32		
Tare	11.46	11.04		
Moisture	18.9	18.8		

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-445	SS-26	93.5-95	9-14-07	CH	Fat Clay	26.7	52	31

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

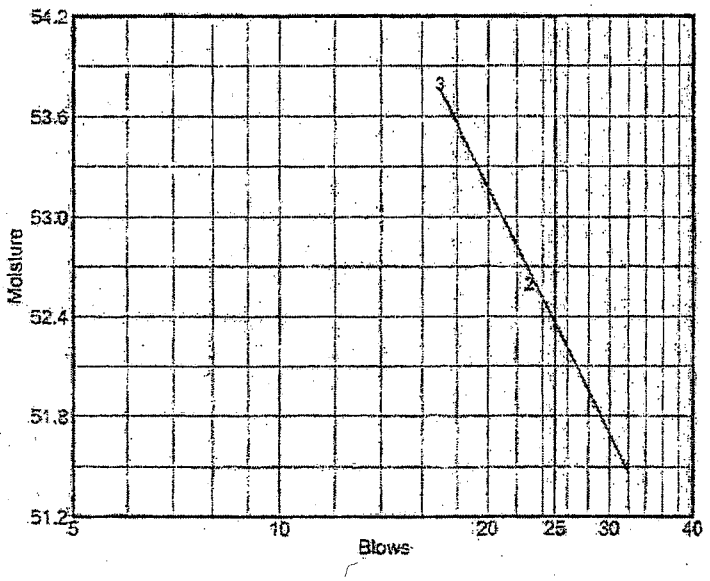
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-445
Sample No.: SS-26
Elev. or Depth: 93.5-95 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.50	29.45	30.08			
Dry+Tare	23.76	23.26	23.52			
Tare	10.66	11.49	11.61			
# Blows	32	23	17			
Moisture	51.5	52.6	53.8			

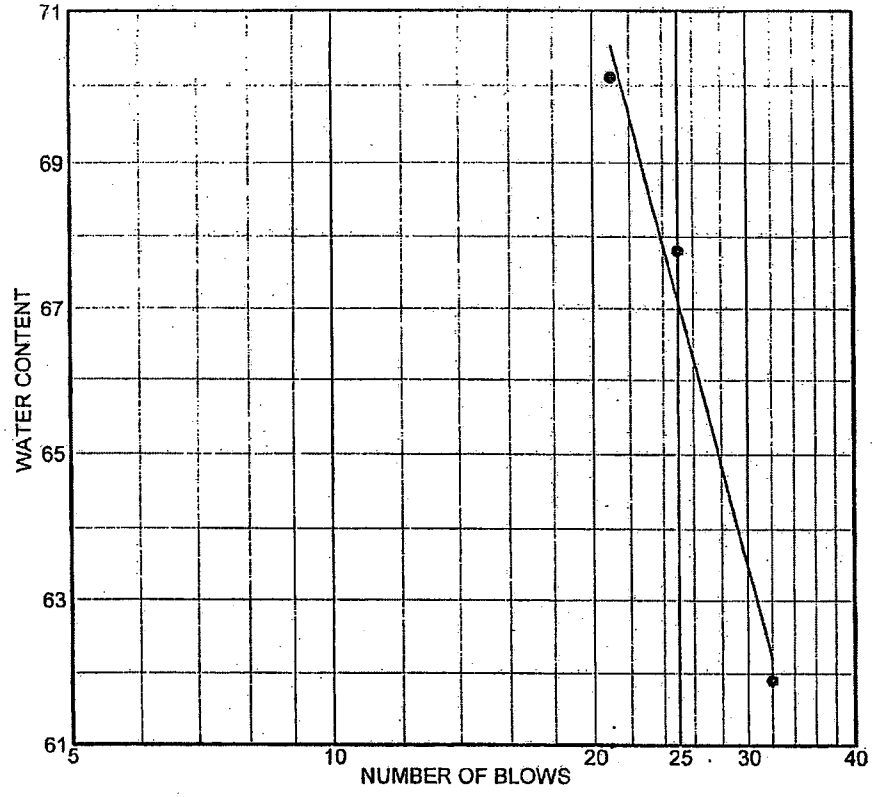


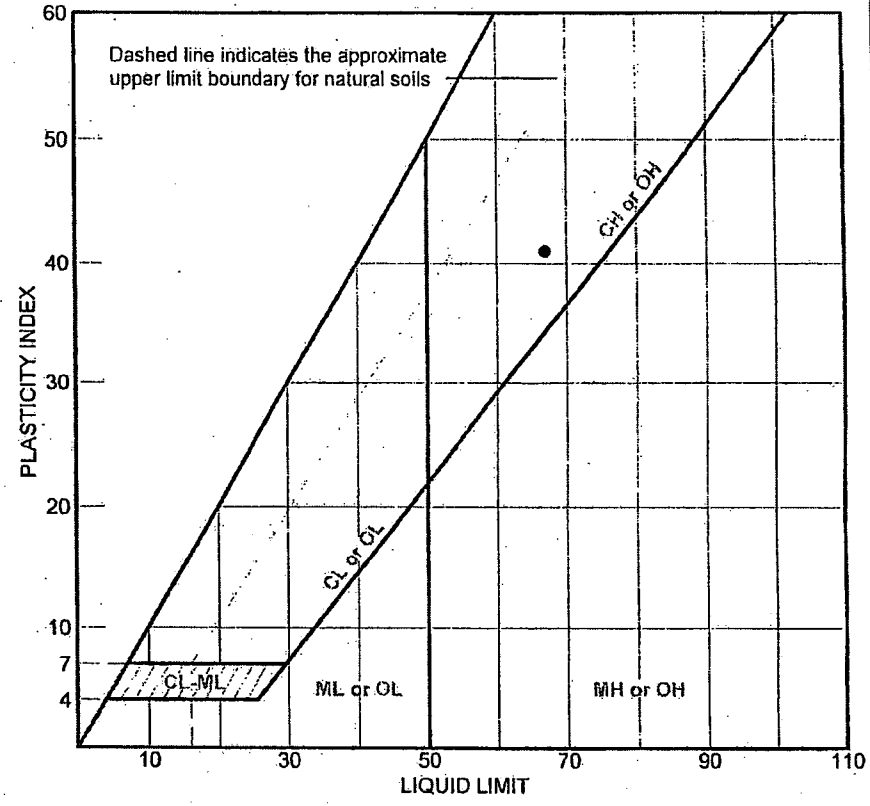
Liquid Limit= 52
Plastic Limit= 21
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.73	17.79			
Dry+Tare	16.54	16.60			
Tare	11.03	10.99			
Moisture	21.6	21.2			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	UD-3	41-43 Ft.	9/14/07	CH	Fat Clay	28.4	67	41

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7917

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

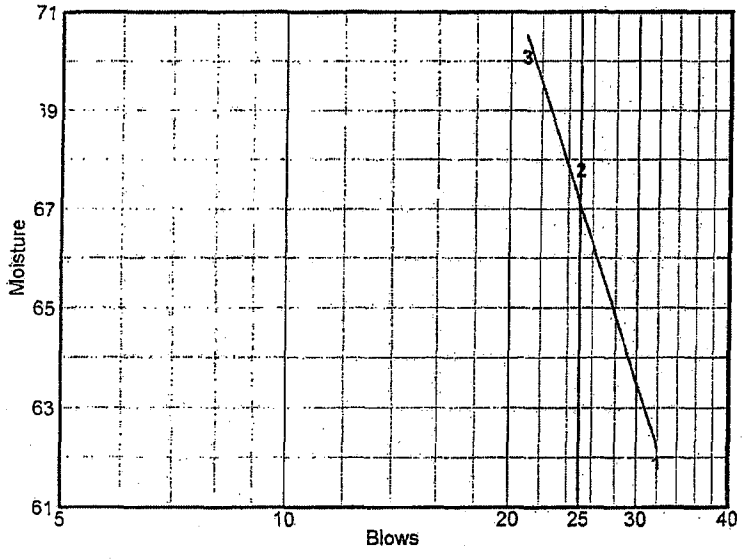
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: UD-3
Elev. or Depth: 41-43 Ft. **Sample Length(in./cm.):** 7917
Location: B-940
Description: Fat Clay
Date: 9/14/07 **Natural Moisture:** 28.4
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.81	29.53	28.45			
Dry+Tare	24.90	26.04	25.19			
Tare	20.20	20.89	20.54			
# Blows	32	25	21			
Moisture	61.9	67.8	70.1			

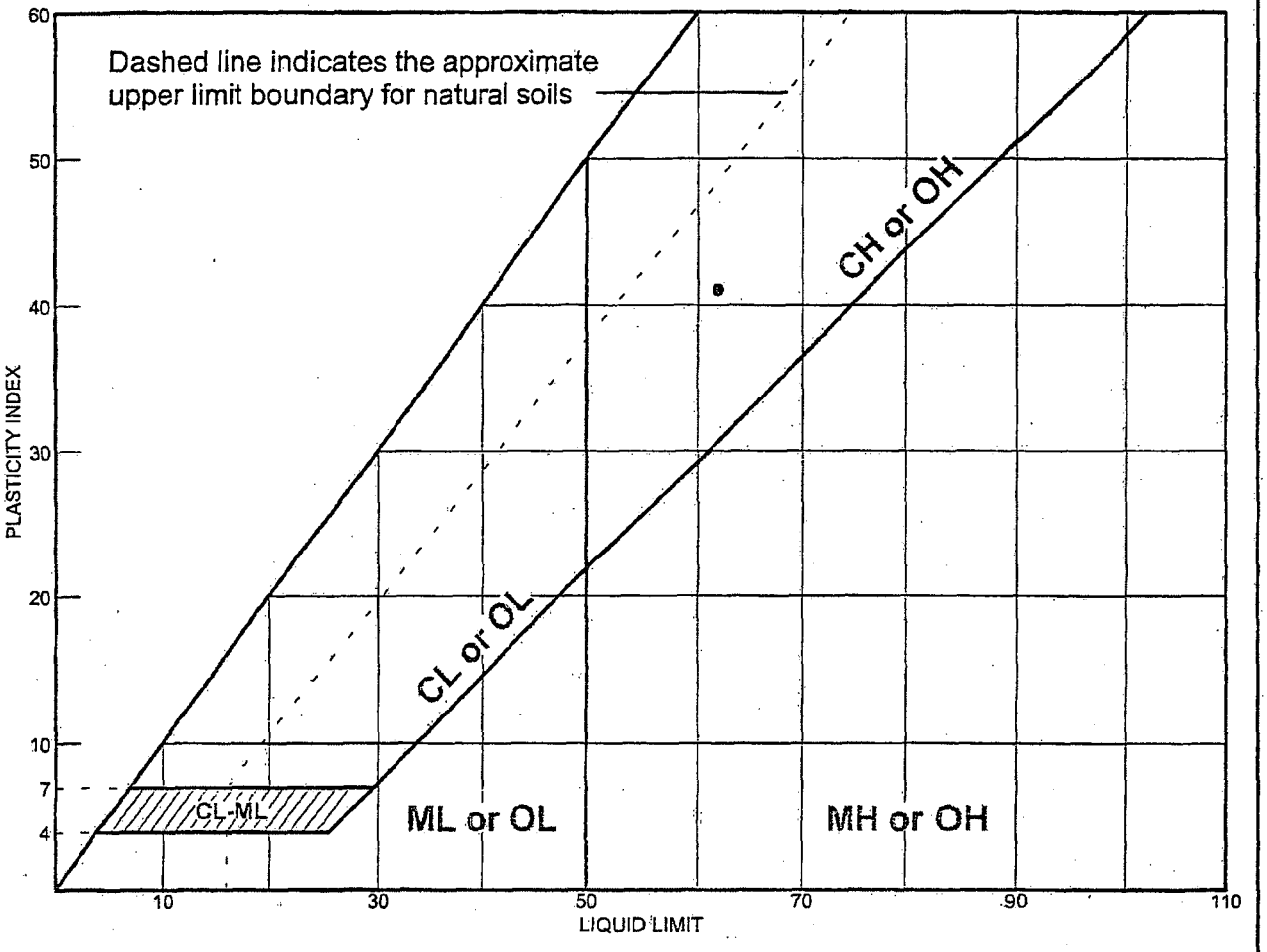


Liquid Limit= 67
Plastic Limit= 26
Plasticity Index= 41

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.79	28.56			
Dry+Tare	25.49	27.18			
Tare	20.38	21.78			
Moisture	25.4	25.6			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat clay	62	21	41	99.8	99.7	CH

Project No. 6234074257 **Client:** Bechtel

Project: South Texas Project Units 3 & 4 Subsurface Investigation

● **Source:** B-940 **Sample No.:** SS-16 **Elev./Depth:** 43.5-45

Remarks:

● Tested by: JA

Reviewed by: MH MH 10-5-07

MACTEC, INC.

Charlotte, North Carolina

KAW 10/5/07

Figure

LIQUID AND PLASTIC LIMIT TEST DATA

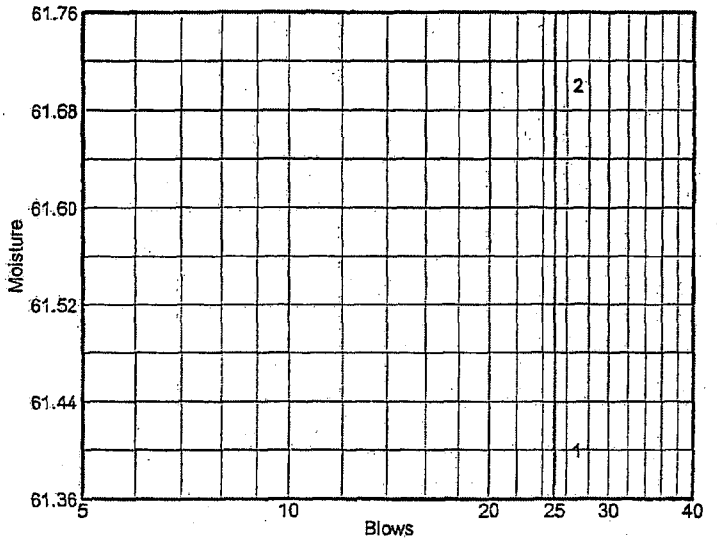
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-940
Sample No.: SS-16
Elev. or Depth: 43.5-45 **Sample Length(in./cm.):**
Location:
Description: Fat clay
%<#40: 99.8 **%<#200:** 99.7 **USCS:** CH **AASHTO:**
Testing Remarks: Tested by: JA
Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.48	24.30				
Dry+Tare	19.51	19.47				
Tare	11.41	11.64				
# Blows	27	27				
Moisture	61.4	61.7				

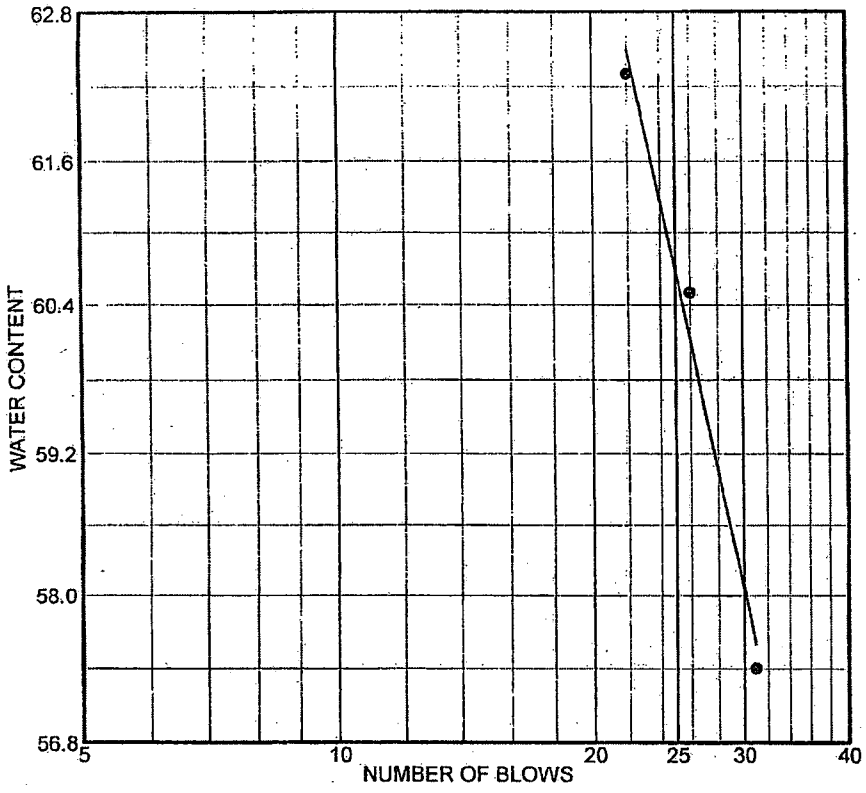


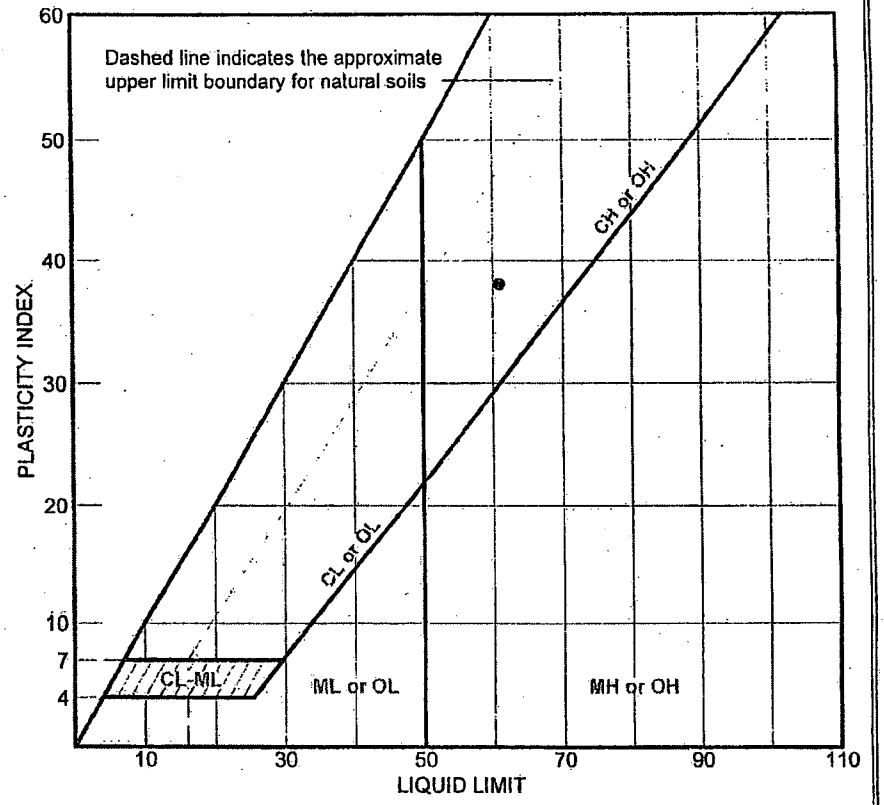
Liquid Limit= 62
Plastic Limit= 21
Plasticity Index= 41

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	16.68	17.56			
Dry+Tare	15.67	16.40			
Tare	10.98	10.88			
Moisture	21.5	21.0			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	UD-4	46-48 Ft.	9/06/07	CH	Fat Clay	31.6	61	38

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7918

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/27/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

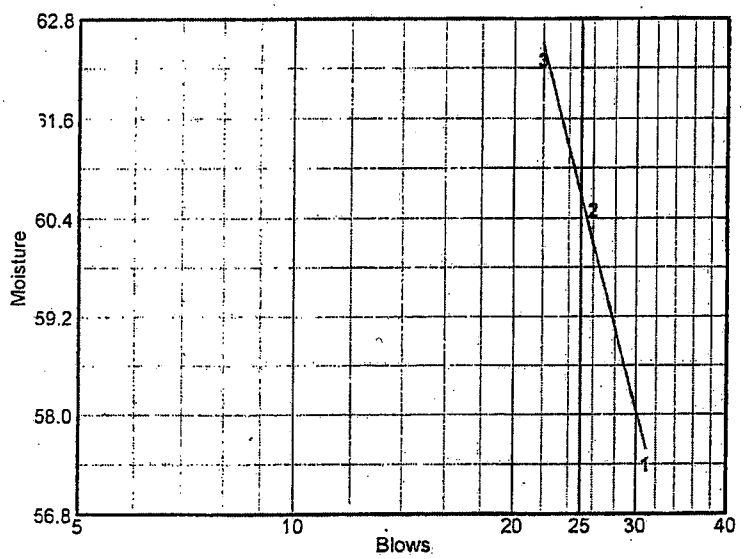
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: UD-4
Elev. or Depth: 46-48 Ft. **Sample Length(in./cm.):** 7918
Location: B-940
Description: Fat Clay
Date: 9/06/07 **Natural Moisture:** 31.6
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.00	30.11	27.57			
Dry+Tare	26.56	26.37	24.75			
Tare	20.57	20.19	20.22			
# Blows	31	26	22			
Moisture	57.4	60.5	62.3			

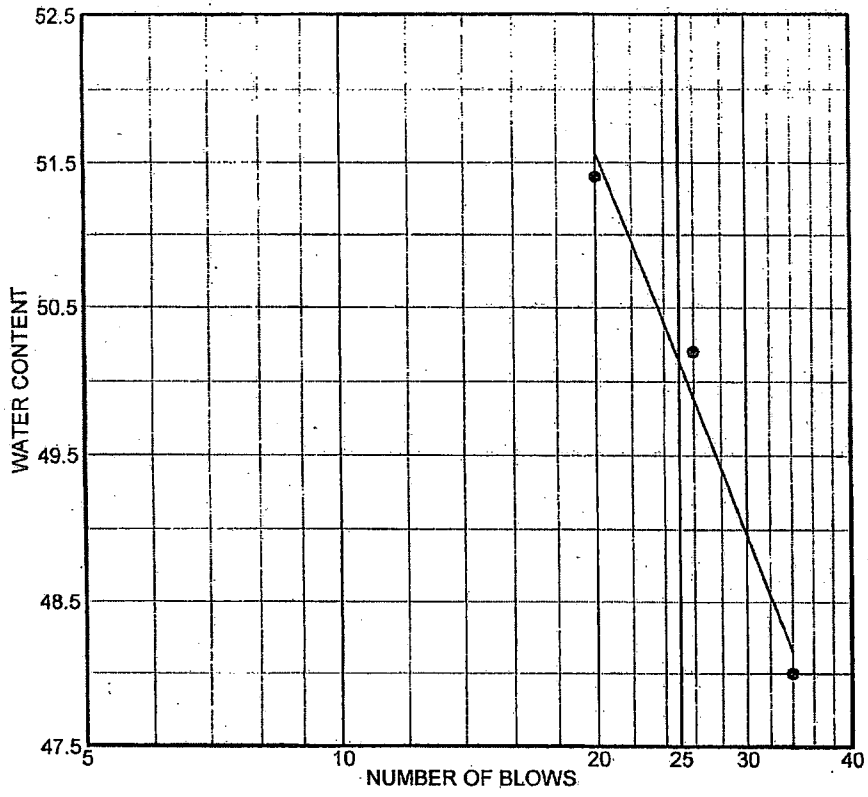


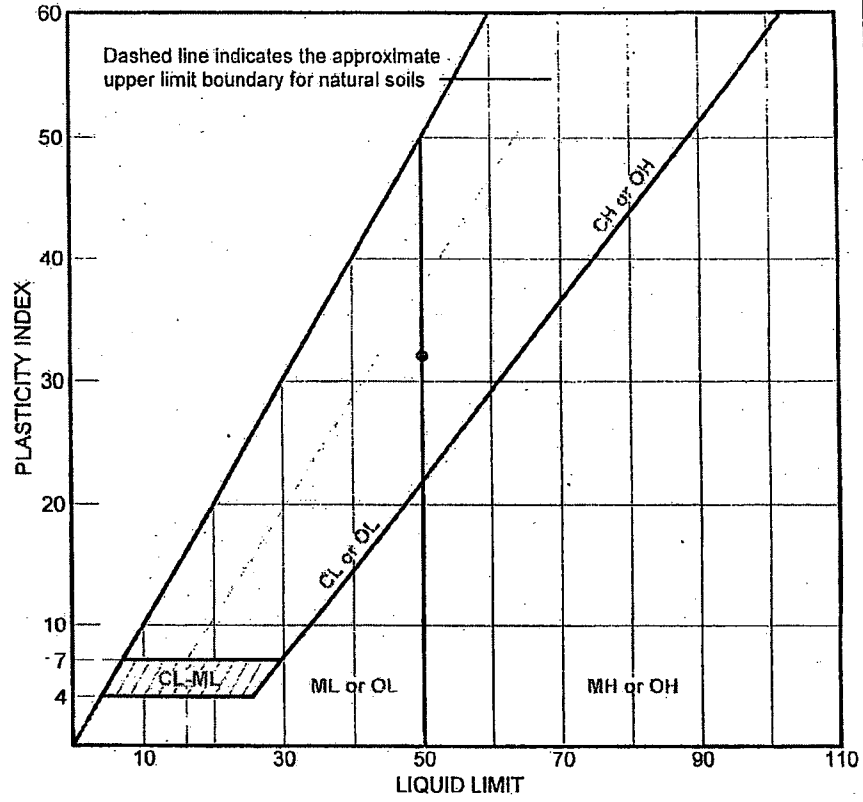
Liquid Limit= 61
Plastic Limit= 23
Plasticity Index= 38

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.52	26.43			
Dry+Tare	25.34	25.28			
Tare	20.24	20.25			
Moisture	23.1	22.9			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	UD-5	56-58 Ft.	9/14/07	CH	Fat Clay	27.0	50	32

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7919

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

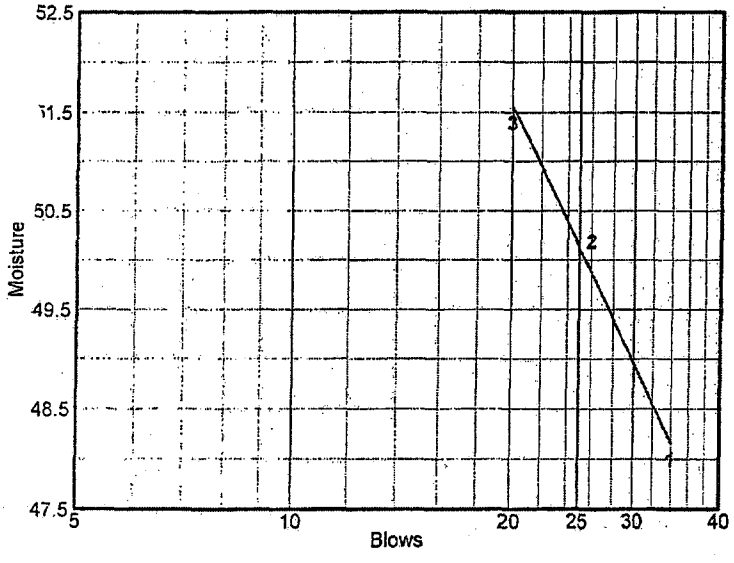
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: UD-5
Elev. or Depth: 56-58 Ft. **Sample Length(in./cm.):** 7919
Location: B-940
Description: Fat Clay
Date: 9/14/07 **Natural Moisture:** 27.0
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.25	29.78	30.81			
Dry+Tare	27.20	26.63	27.40			
Tare	20.84	20.35	20.76			
# Blows	34	26	20			
Moisture	48.0	50.2	51.4			

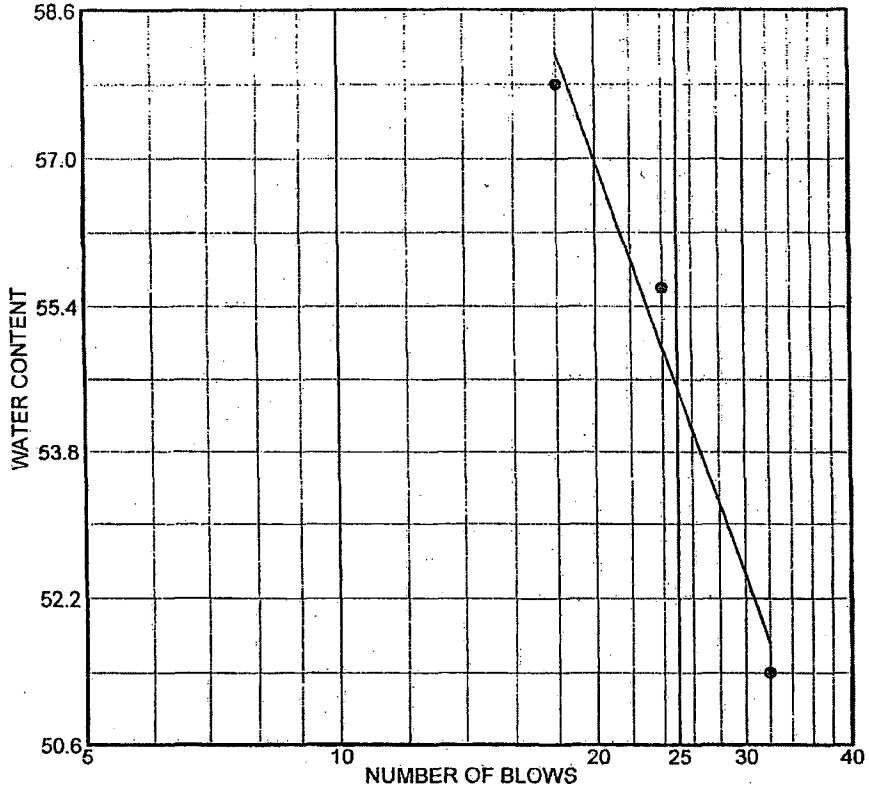


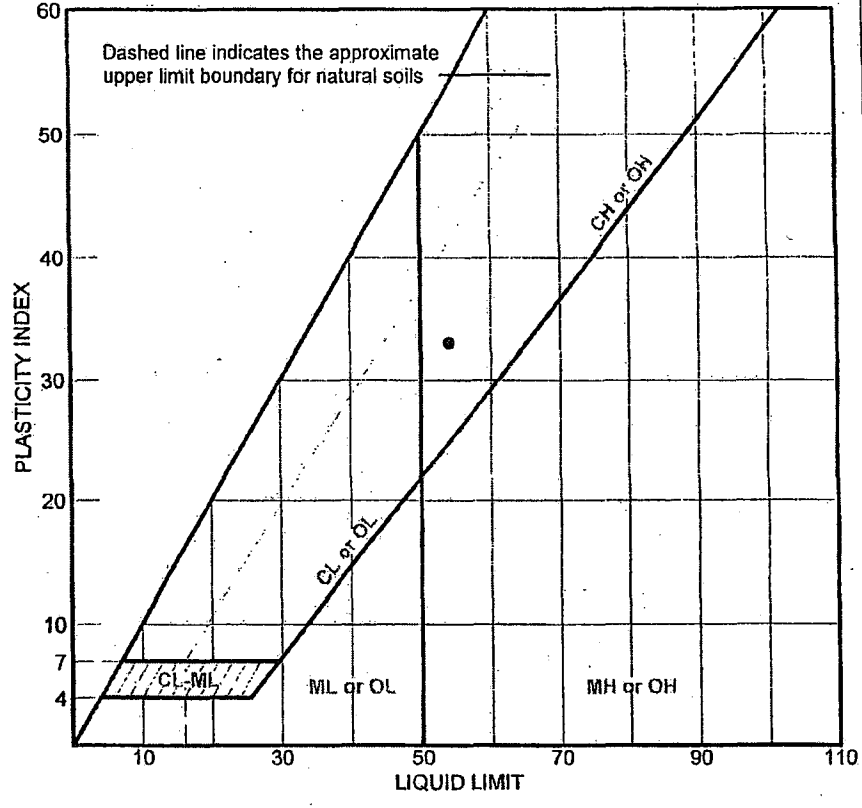
Liquid Limit= 50
Plastic Limit= 18
Plasticity Index= 32

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.51	26.43			
Dry+Tare	26.52	25.47			
Tare	21.02	20.16			
Moisture	18.0	18.1			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	UD-6	66-68 Ft.	9/06/07	CH	Fat Clay	23.6	54	33

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7920

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

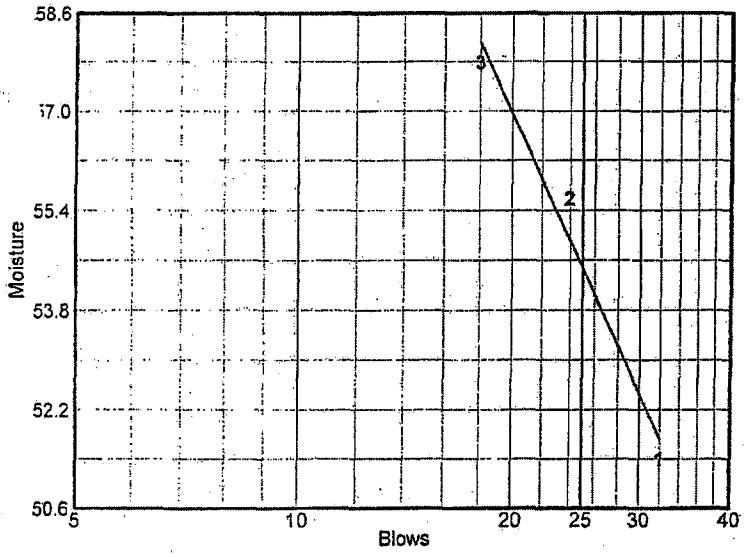
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: UD-6
Elev. or Depth: 66-68 Ft. **Sample Length(in./cm.):** 7920
Location: B-940
Description: Fat Clay
Date: 9/06/07 **Natural Moisture:** 23.6
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.20	29.66	28.65			
Dry+Tare	29.73	26.26	25.47			
Tare	21.04	20.15	19.97			
# Blows	32	24	18			
Moisture	51.4	55.6	57.8			

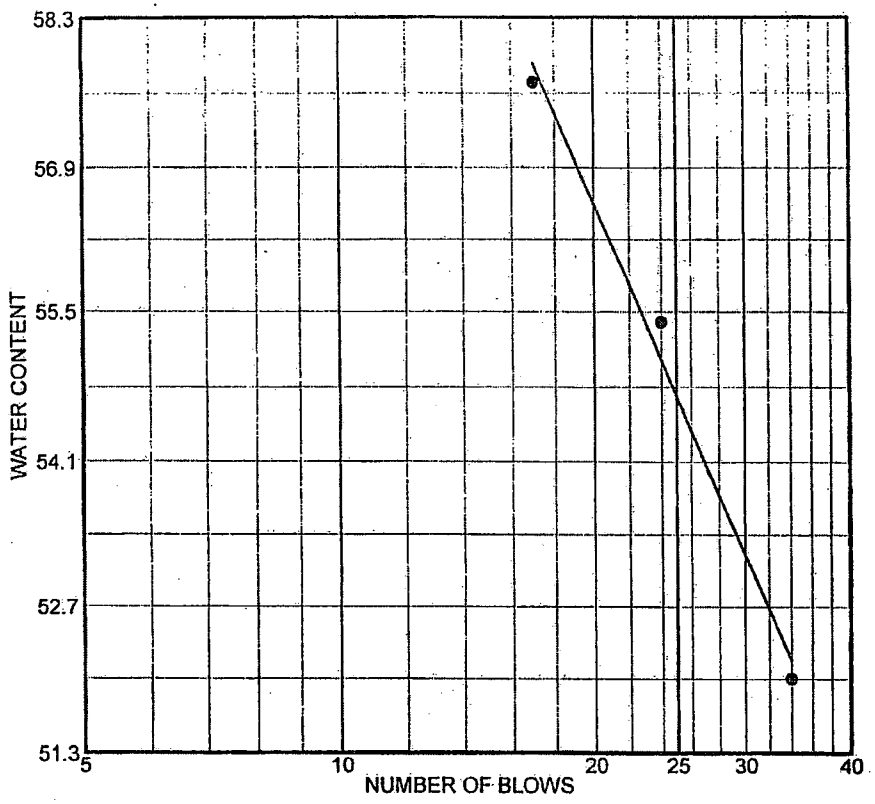


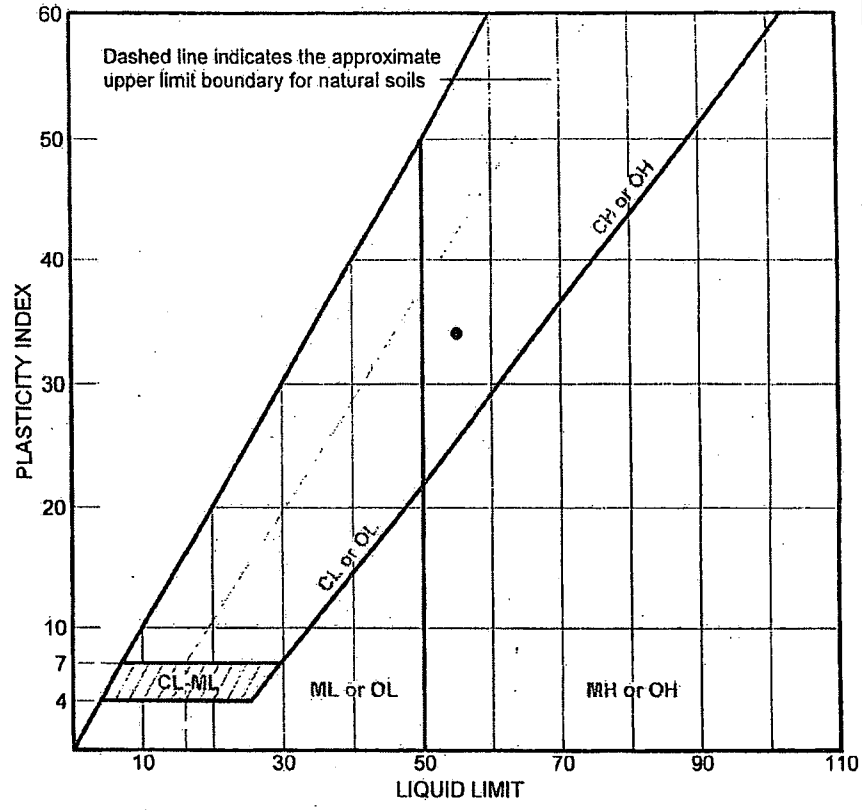
Liquid Limit= 54
Plastic Limit= 21
Plasticity Index= 33

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.11	27.33			
Dry+Tare	26.01	26.10			
Tare	20.86	20.32			
Moisture	21.4	21.3			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	UD-7	76-78 Ft.	9/13/07	CH	Fat Clay	22.1	55	34

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7921

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/27/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

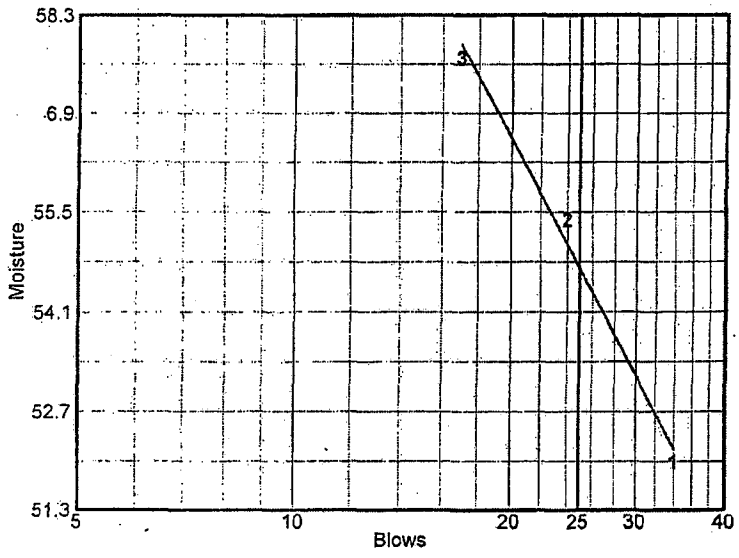
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: UD-7
Elev. or Depth: 76-78 Ft. **Sample Length(in./cm.):** 7921
Location: B-940
Description: Fat Clay
Date: 9/13/07 **Natural Moisture:** 22.1
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.67	29.81	31.02			
Dry+Tare	26.90	26.35	27.12			
Tare	21.57	20.11	20.36			
# Blows	34	24	17			
Moisture	52.0	55.4	57.7			

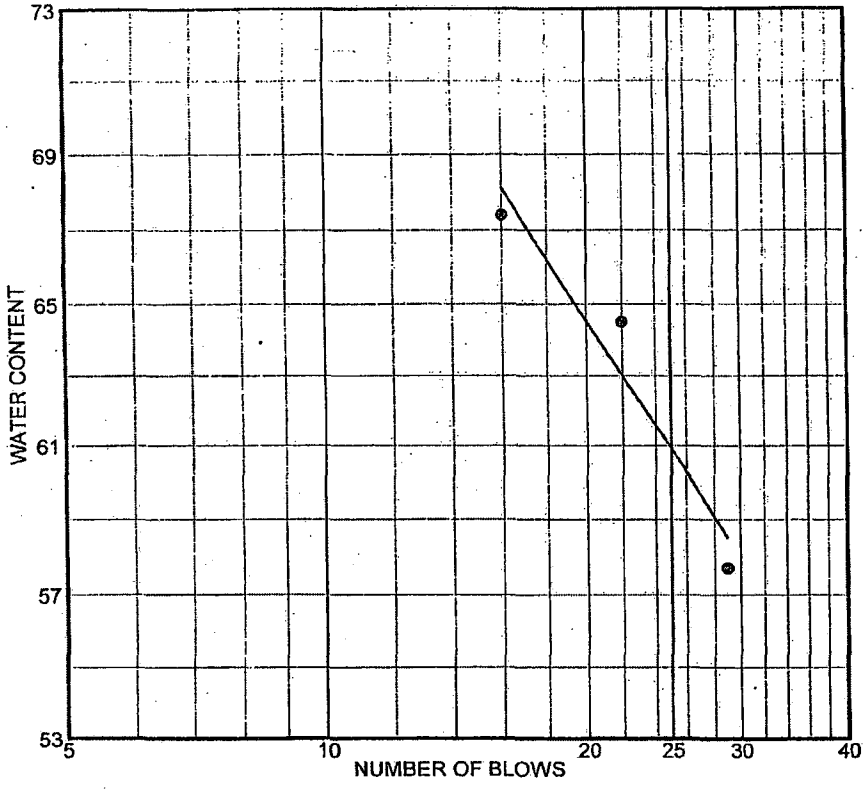


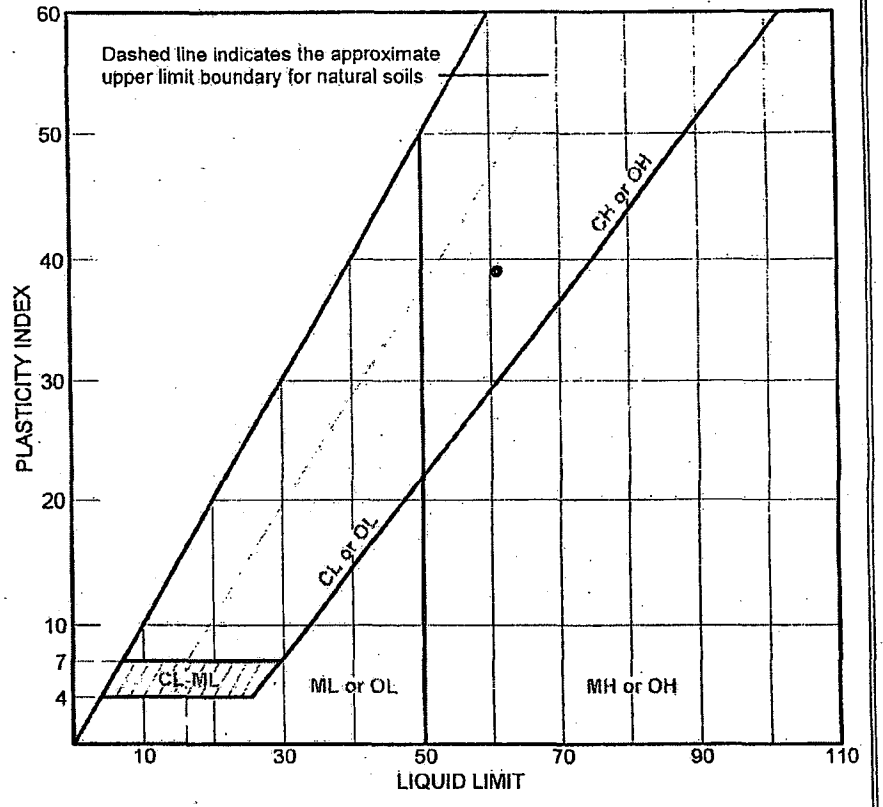
Liquid Limit= 55
Plastic Limit= 21
Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	28.55	27.93			
Dry+Tare	27.39	26.75			
Tare	21.97	21.20			
Moisture	21.4	21.3			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	UD-8	91-93 Ft.	9/13/07	CH	Fat Clay	24.4	61	39

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7922

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAM 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

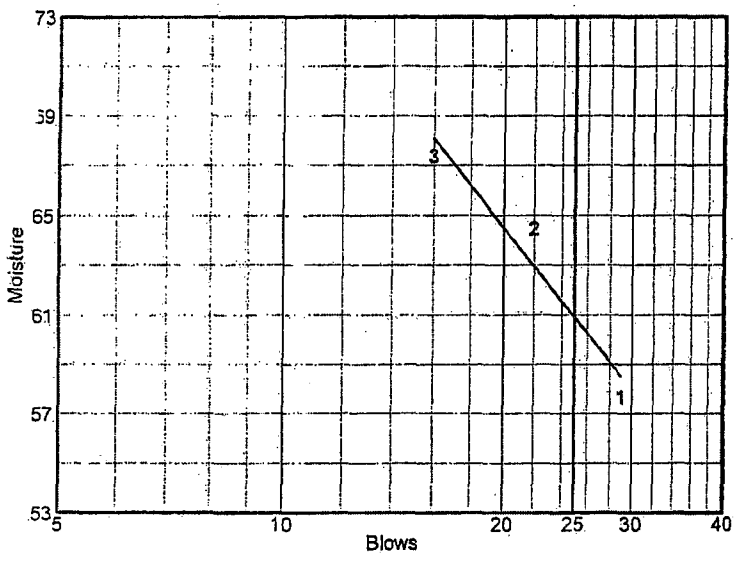
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: UD-8
Elev. or Depth: 91-93 Ft. **Sample Length(in./cm.):** 7922
Location: B-940
Description: Fat Clay
Date: 9/13/07 **Natural Moisture:** 24.4
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.31	26.66	27.44			
Dry+Tare	23.84	23.92	24.28			
Tare	19.56	19.67	19.59			
# Blows	29	22	16			
Moisture	57.7	64.5	67.4			

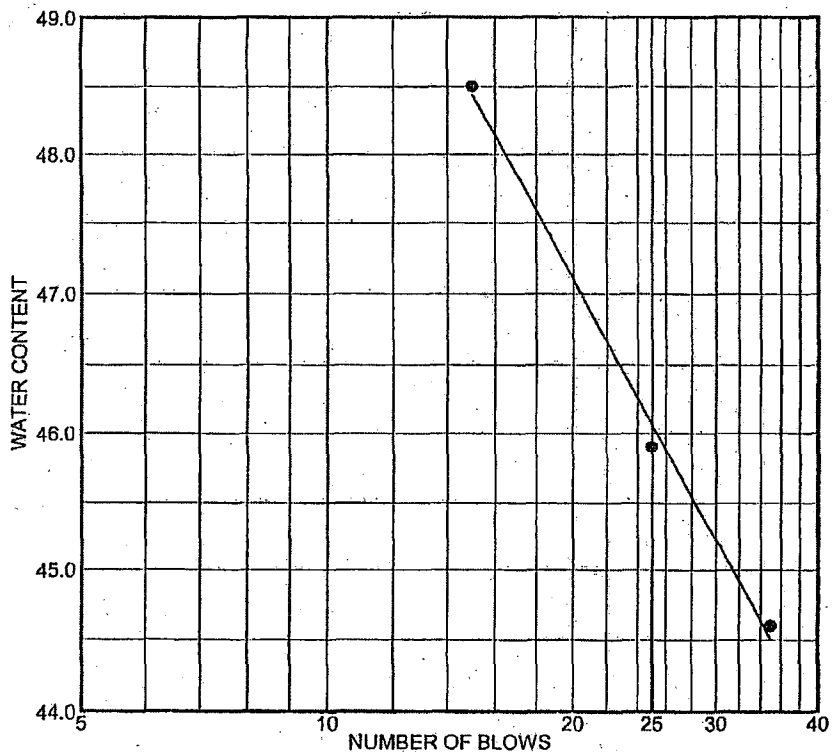


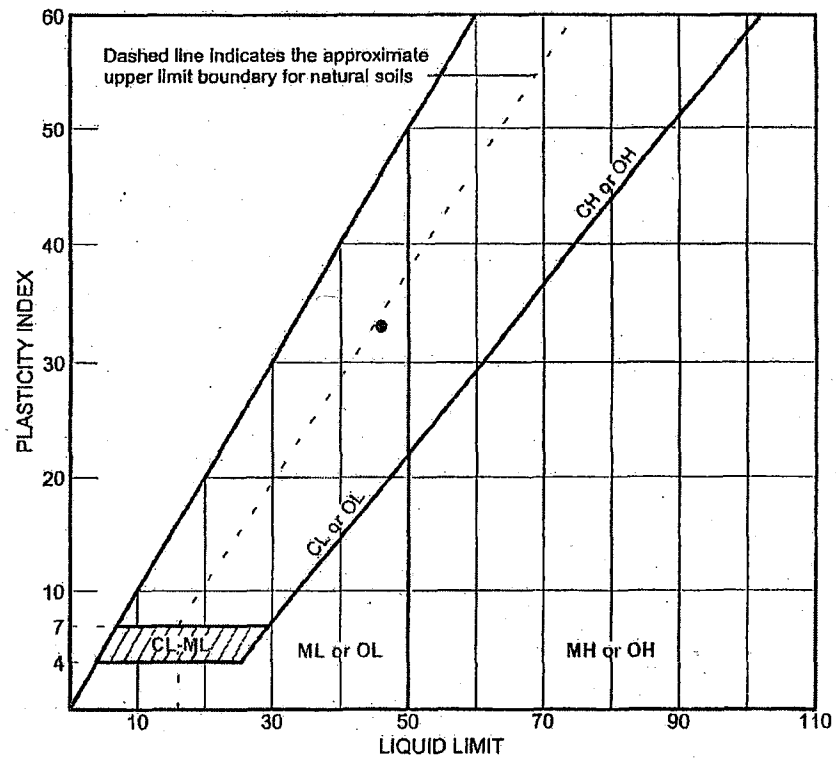
Liquid Limit= 61
Plastic Limit= 22
Plasticity Index= 39

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.92	26.84			
Dry+Tare	26.53	25.62			
Tare	20.14	20.08			
Moisture	21.8	22.0			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	SS-28	103.5-105	9-14-07	CL	Lean Clay with Sand	20.3	46	33

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH 9-24-07

KAN 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

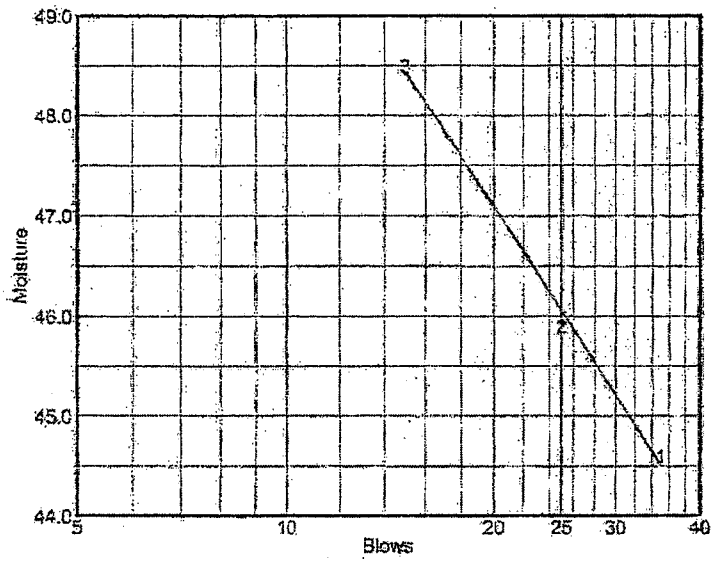
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
roject Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-28
Elev. or Depth: 103.5-105 Sample Length(in./cm.):
Location:
Description: Lean Clay with Sand
%<#40: %<#200: USCS: CL AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.31	32.91	36.86			
Dry+Tare	28.73	27.68	30.12			
Tare	16.22	16.29	16.23			
# Blows	35	25	15			
Moisture	44.6	45.9	48.5			

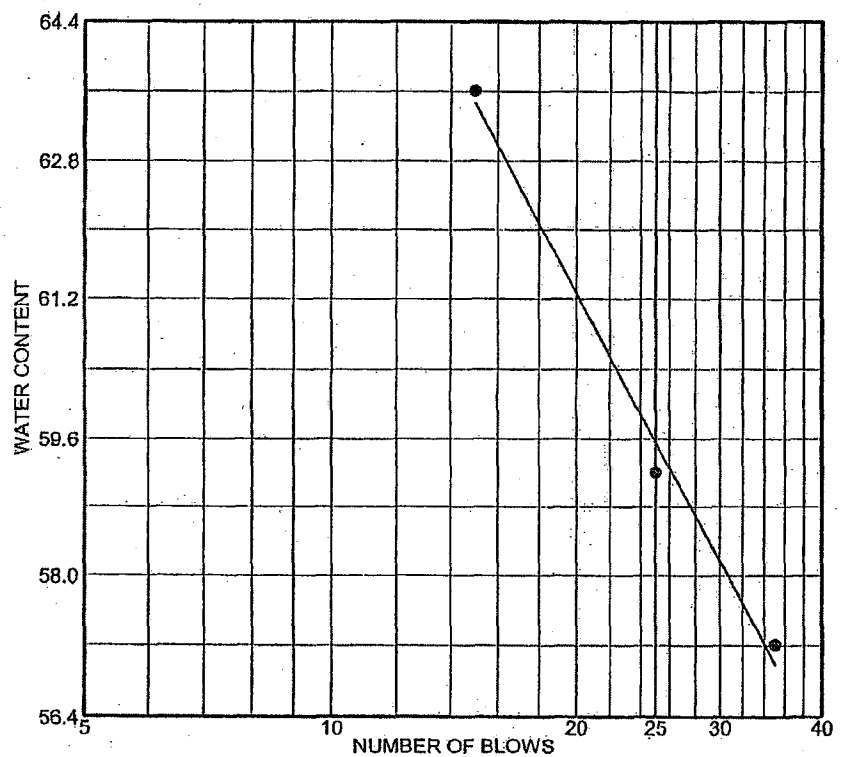


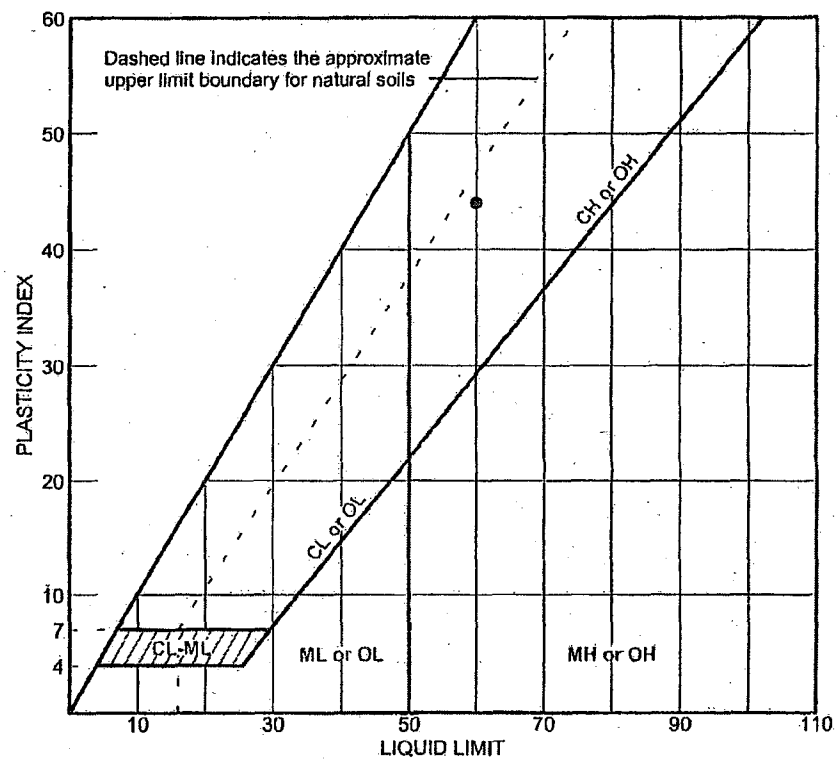
Liquid Limit= 46
Plastic Limit= 13
Plasticity Index= 33

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	18.40	18.50			
Dry+Tare	17.73	17.79			
Tare	12.42	12.31			
Moisture	12.6	13.0			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	SS-30	113.5-115	9-13-07	CH	Fat Clay	24.2	60	44

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH NS 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

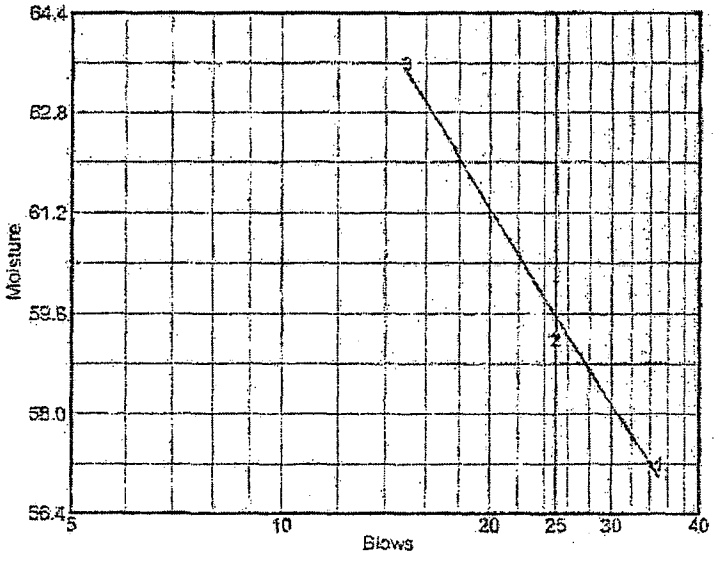
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
roject Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-30
Elev. or Depth: 113.5-115 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.47	27.94	25.48			
Dry+Tare	21.03	21.77	19.81			
Tare	11.52	11.34	10.89			
# Blows	35	25	15			
Moisture	57.2	59.2	63.6			

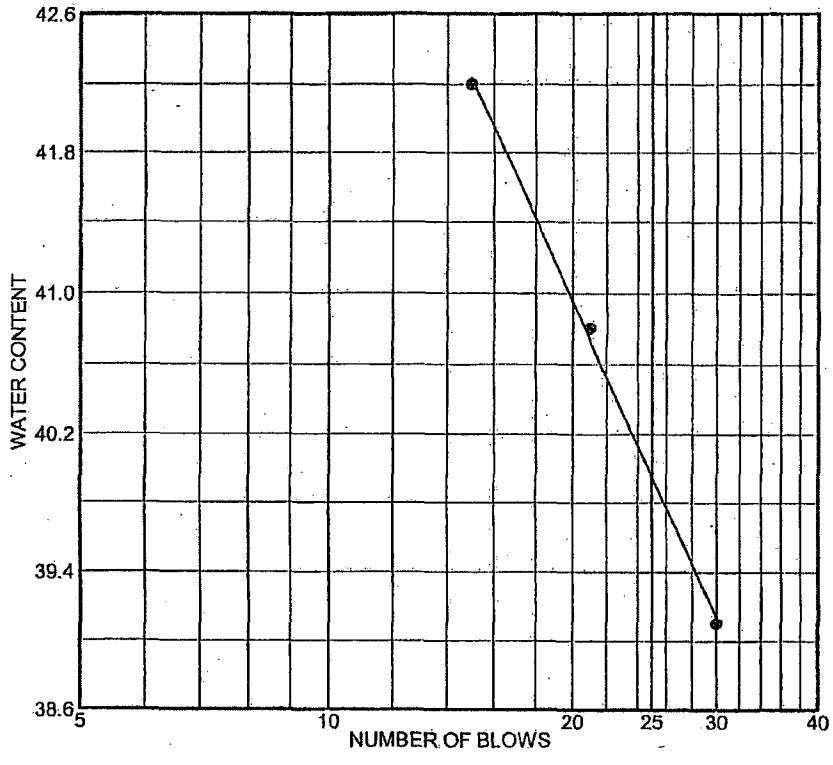


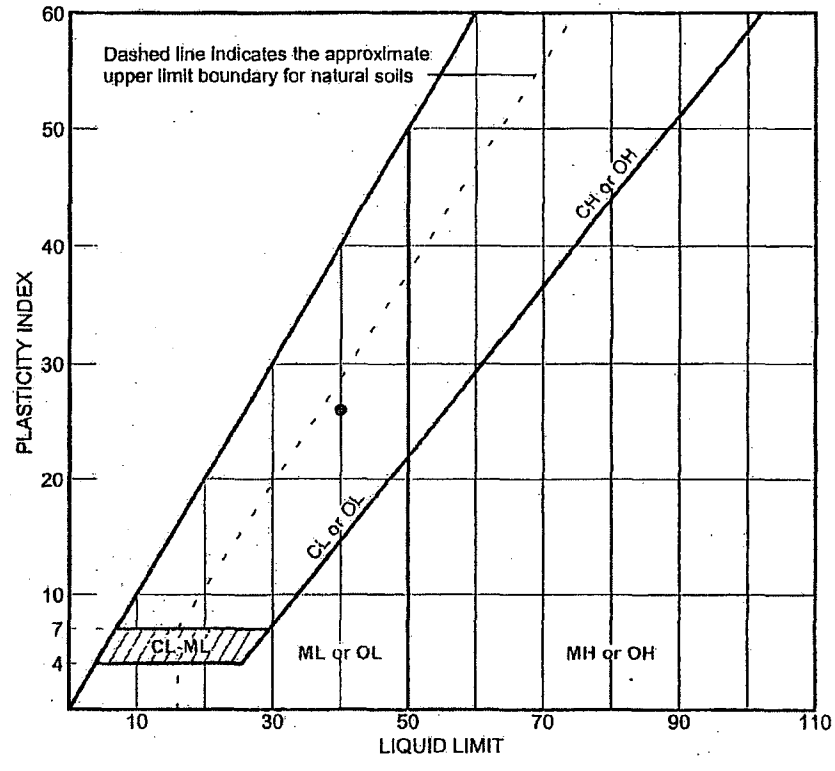
Liquid Limit= 60
Plastic Limit= 16
Plasticity Index= 44

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.43	17.18			
Dry+Tare	16.53	16.32			
Tare	10.94	10.97			
Moisture	16.1	16.1			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-940	SS-32	123.5-125	9-13-07	CL	Lean Clay	24.1	40	26

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH 9-28-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

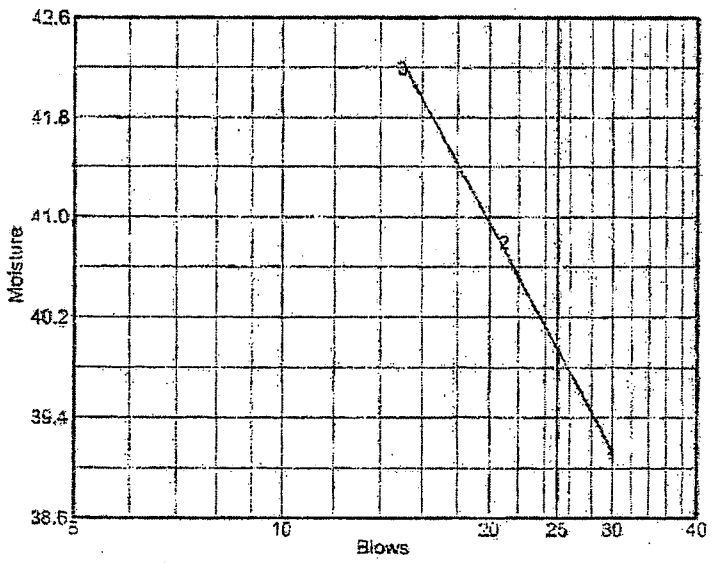
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
roject Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-32
Elev. or Depth: 123.5-125 Sample Length(in./cm.):
Location:
Description: Lean Clay
%<#40: %<#200: USCS: CL AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.20	27.07	28.28			
Dry+Tare	23.30	22.38	23.15			
Tare	10.76	10.88	10.98			
# Blows	30	21	15			
Moisture	39.1	40.8	42.2			

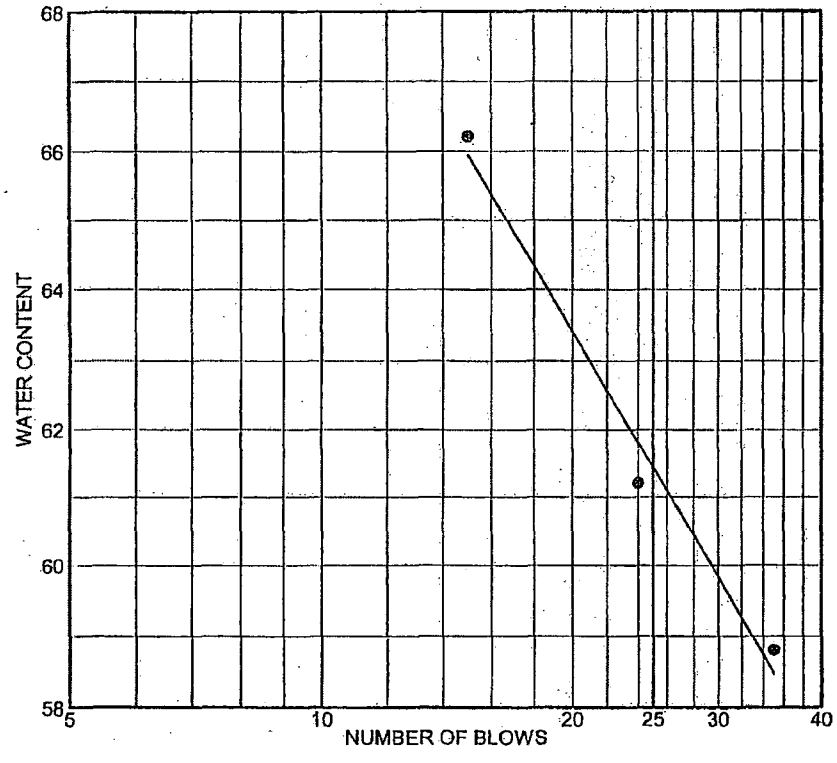


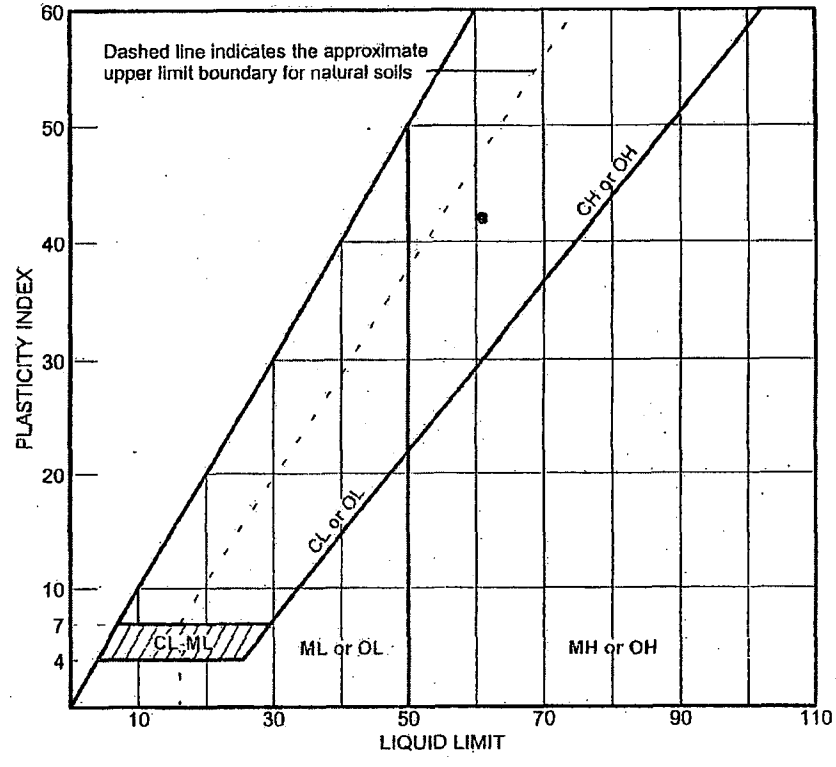
Liquid Limit= 40
Plastic Limit= 14
Plasticity Index= 26

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	18.14	18.03			
Dry+Tare	17.24	17.28			
Tare	10.83	11.59			
Moisture	14.0	13.2			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-944	SS-16	43.5-45	9-14-07	CH	Fat Clay	29.1	61	42

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

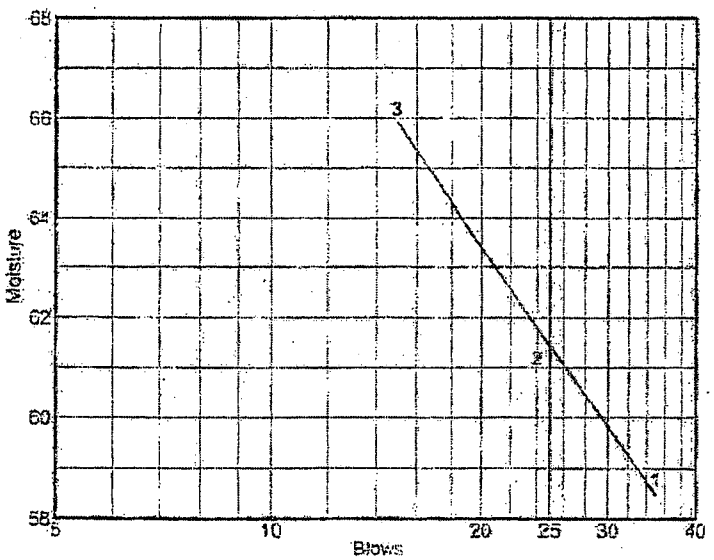
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-944
Sample No.: SS-16
Elev. or Depth: 43.5-45 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.36	33.10	32.58			
Dry+Tare	27.00	26.70	26.06			
Tare	16.18	16.24	16.21			
# Blows	35	24	15			
Moisture	58.8	61.2	66.2			

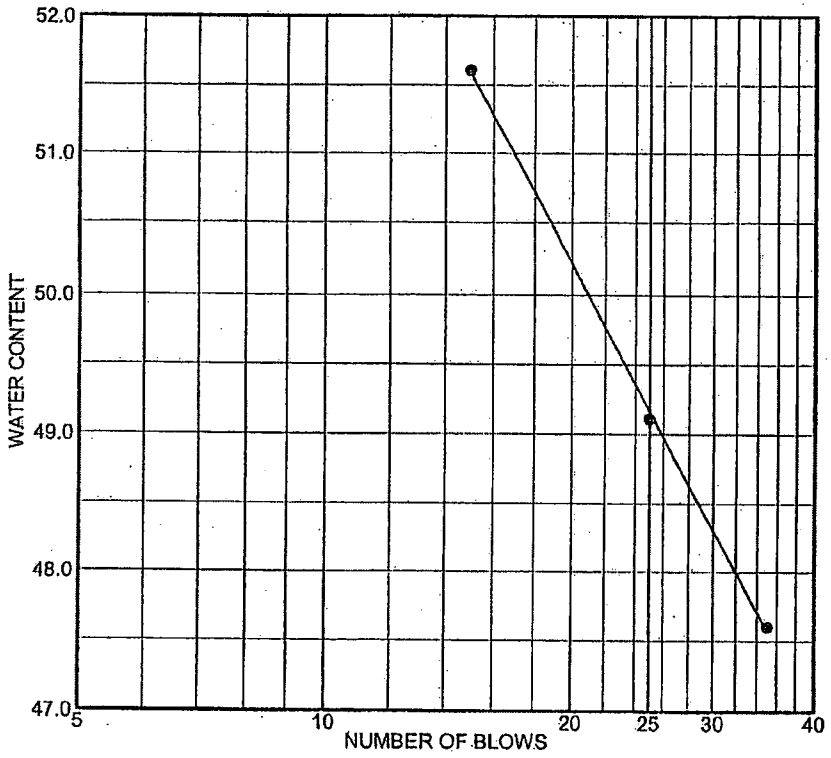


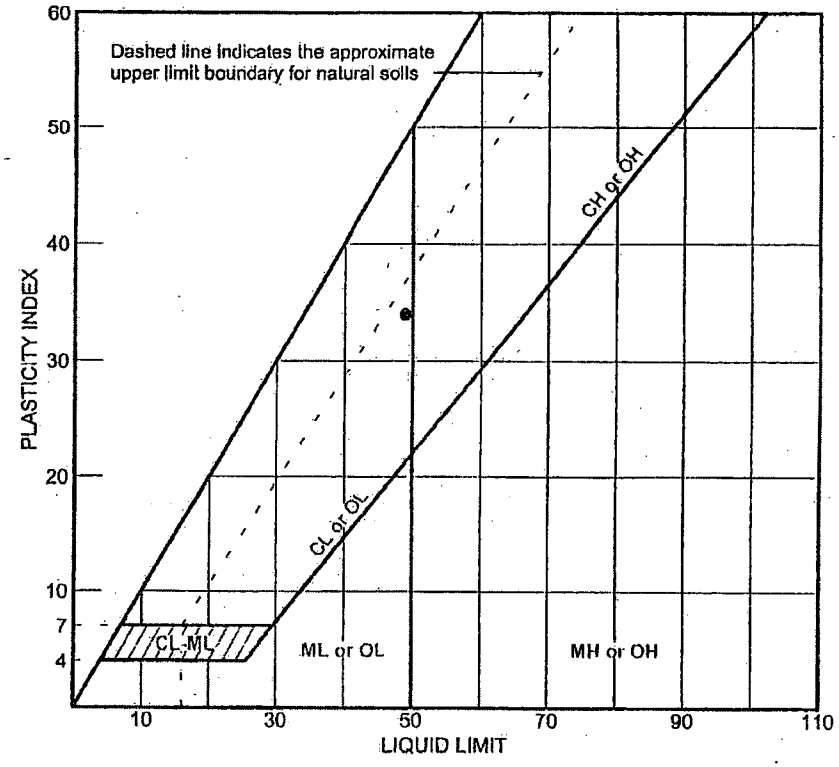
Liquid Limit= 61
Plastic Limit= 19
Plasticity Index= 42

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	18.58	17.91		
Dry+Tare	17.59	16.91		
Tare	12.45	11.79		
Moisture	19.3	19.5		

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-944	SS-24	83.5-85	9-14-07	CL	Lean Clay	22.3	49	34

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

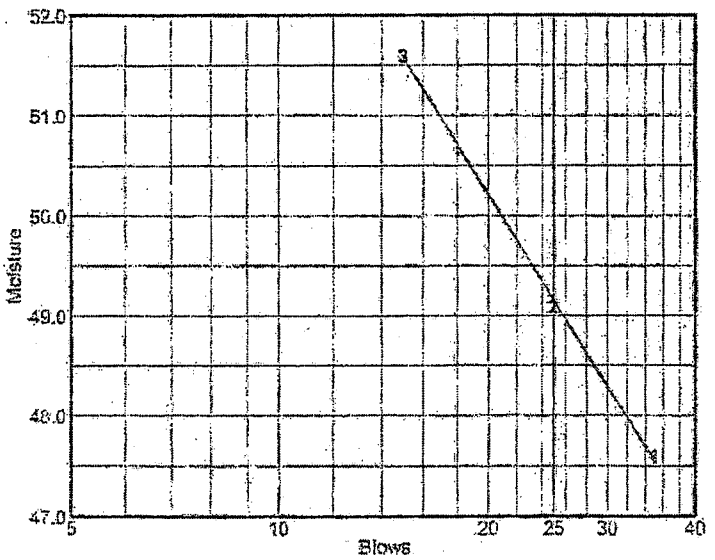
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-944
Sample No.: SS-24
Elev. or Depth: 83.5-85 Sample Length(in./cm.):
Location:
Description: Lean Clay
%<#40: %<#200: USCS: CL AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.79	34.07	34.65			
Dry+Tare	28.89	28.20	28.37			
Tare	16.49	16.24	16.21			
# Blows	35	25	15			
Moisture	47.6	49.1	51.6			

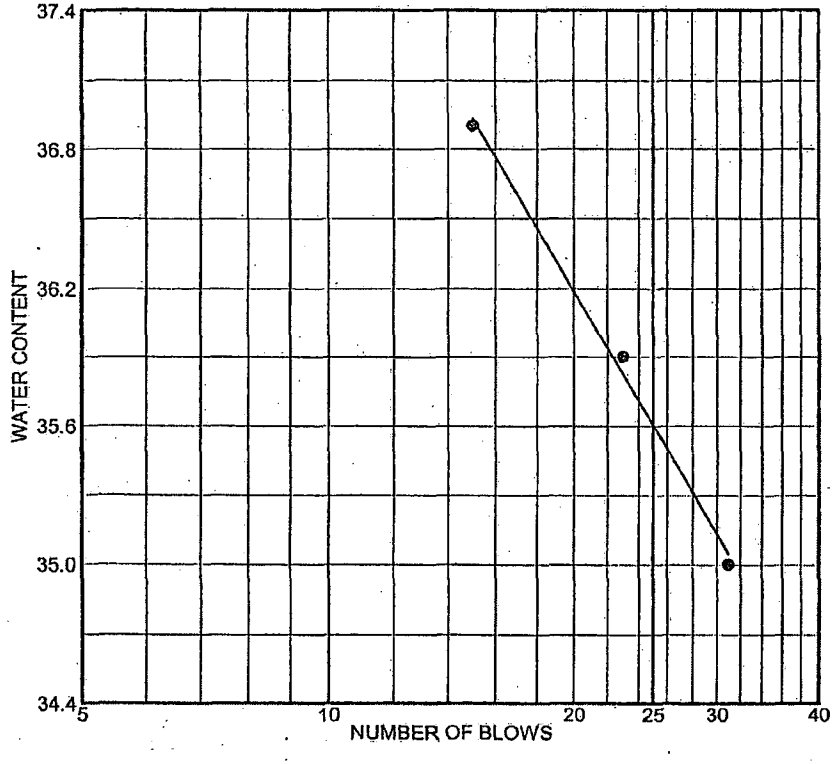


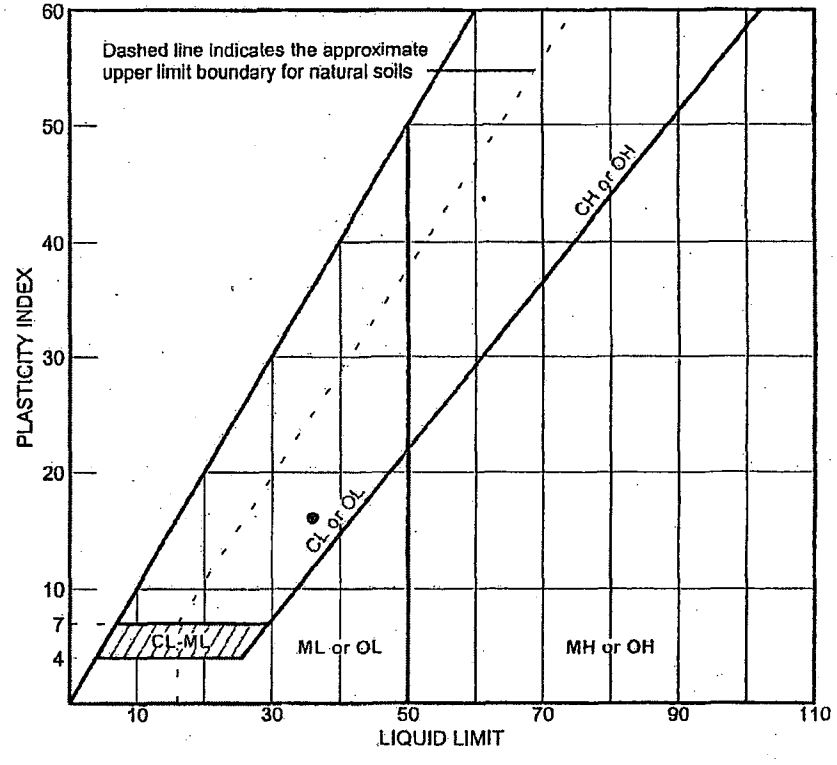
Liquid Limit= 49
Plastic Limit= 15
Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.96	18.15			
Dry+Tare	17.17	17.32			
Tare	11.73	11.69			
Moisture	14.5	14.7			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-948	SS-10	13.5-15	9-14-07	CL	Lean Clay	23.6	36	16

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

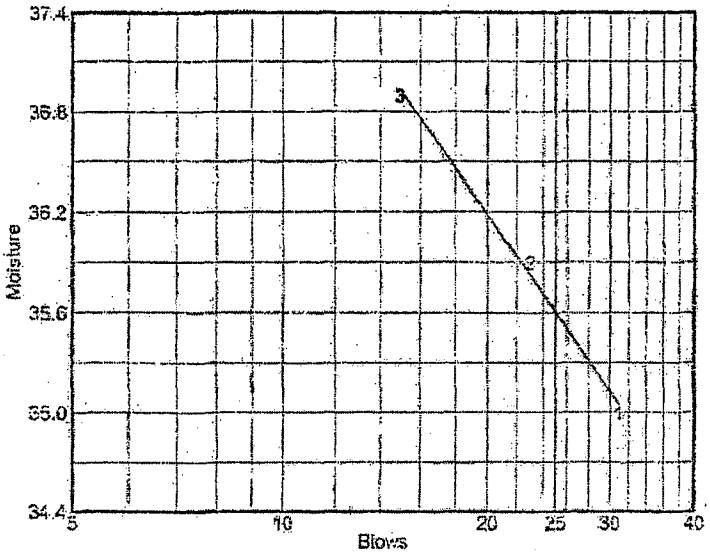
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-948
Sample No.: SS-10
Elev. or Depth: 13.5-15 Sample Length(in./cm.):
Location:
Description: Lean Clay
%<#40: %<#200: USCS: CL AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	48.78	51.28	51.03			
Dry+Tare	40.33	42.00	41.62			
Tare	16.19	16.15	16.14			
# Blows	31	23	15			
Moisture	35.0	35.9	36.9			

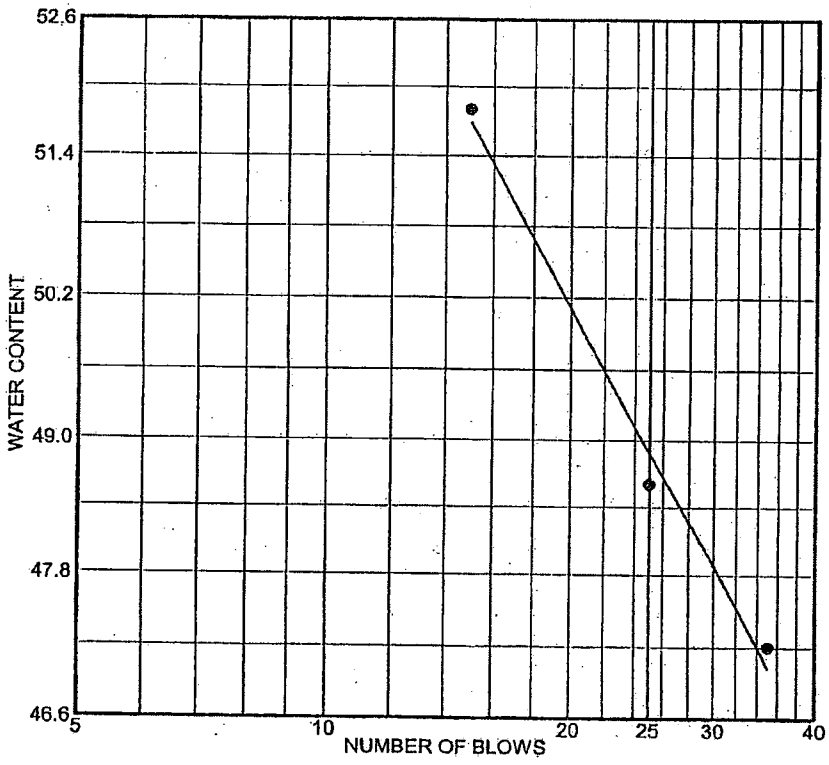


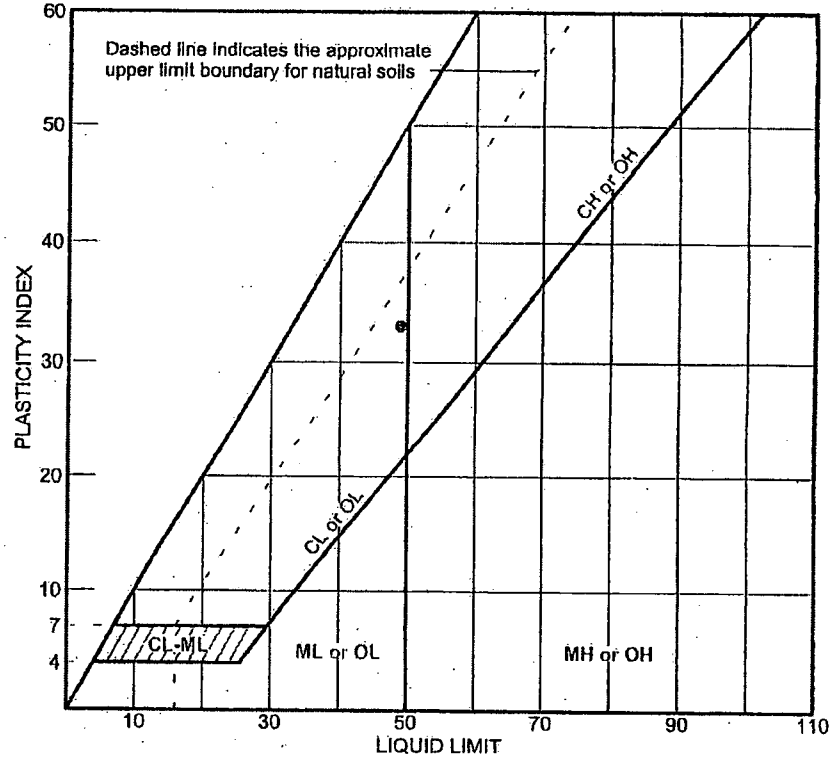
Liquid Limit= 35
Plastic Limit= 20
Plasticity Index= 16

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.09	19.77			
Dry+Tare	20.53	18.45			
Tare	12.56	11.78			
Moisture	19.6	19.8			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-948	SS-18	53.5-55	9-14-07	CL	Lean Clay	24.1	49	33

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH AA 9-21-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

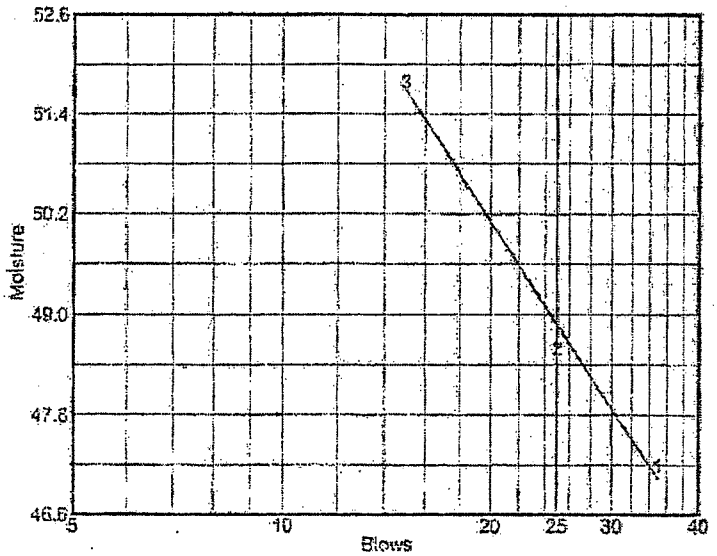
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-948
Sample No.: SS-18
Elev. or Depth: 53.5-55 Sample Length(in./cm.):
Location:
Description: Lean Clay
%<#40: %<#200: USCS: CL AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.64	35.55	36.92			
Dry+Tare	28.07	29.24	29.85			
Tare	16.27	16.26	16.21			
# Blows	35	25	15			
Moisture	47.2	48.6	51.8			

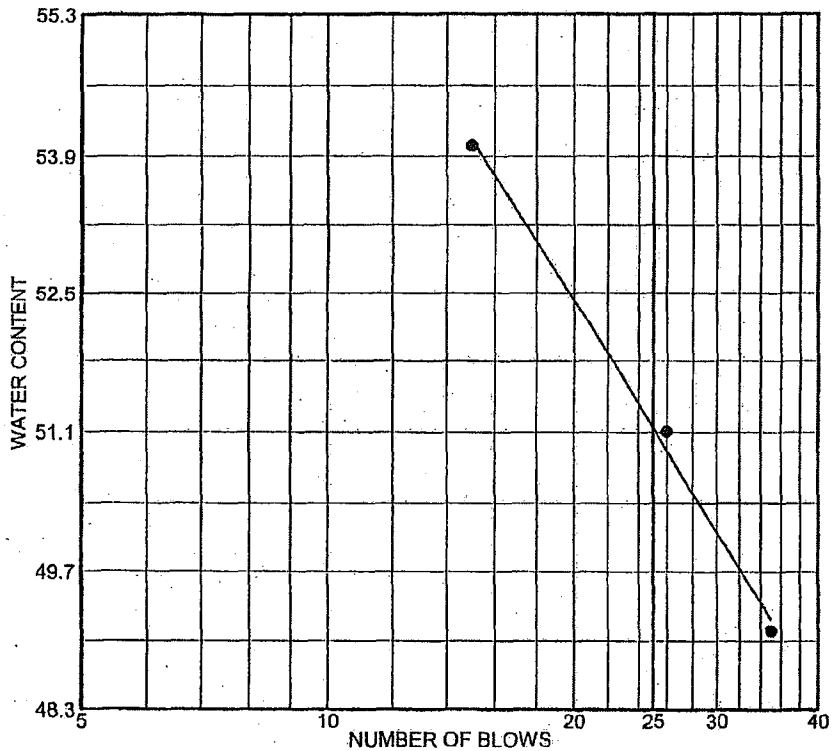


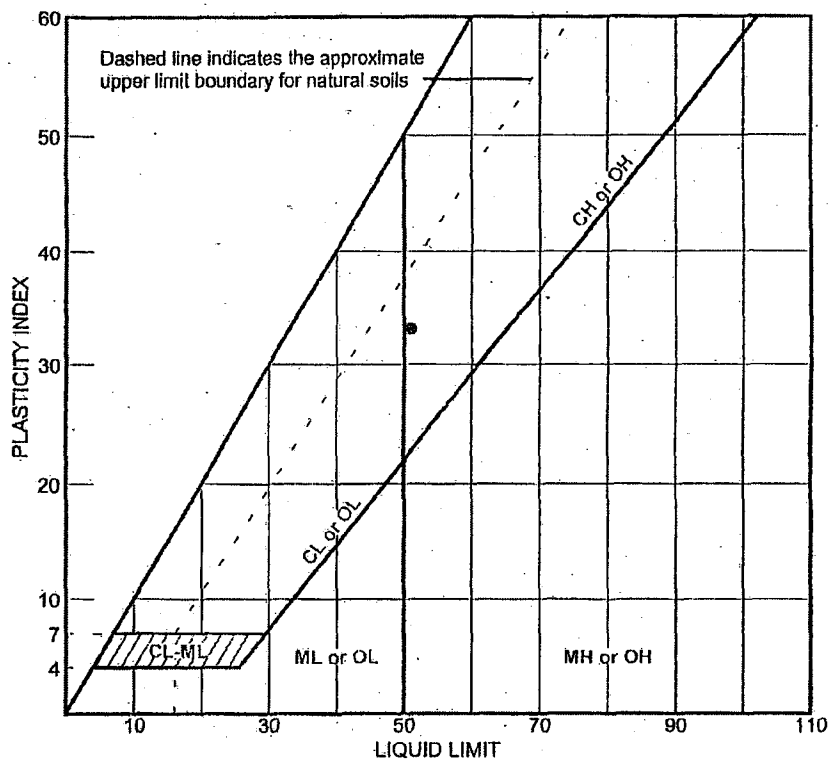
Liquid Limit= 49
Plastic Limit= 16
Plasticity Index= 33

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	18.59	18.07			
Dry+Tare	17.65	17.21			
Tare	11.67	11.79			
Moisture	15.7	15.9			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	SS-17	48.5-50	9-14-07	CH	Fat Clay	27.3	51	33

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

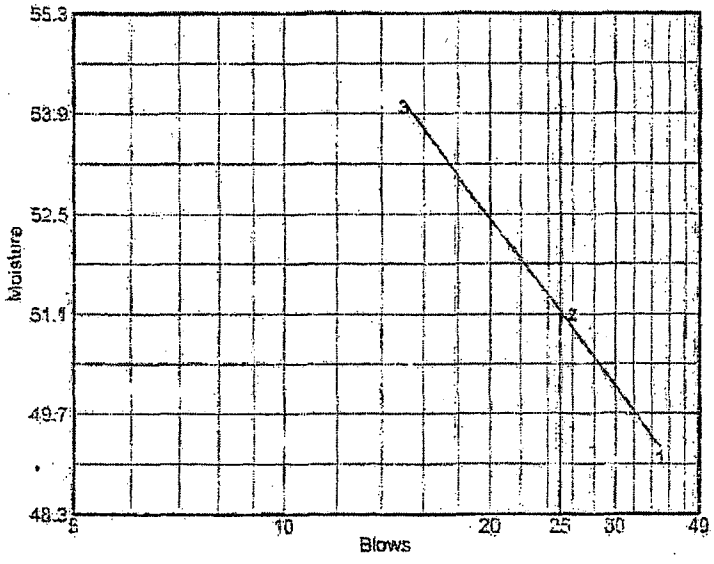
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: SS-17
Elev. or Depth: 48.5-50 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.09	30.91	27.98			
Dry+Tare	22.42	24.17	21.94			
Tare	10.88	10.98	10.75			
# Blows	35	26	15			
Moisture	49.1	51.1	54.0			

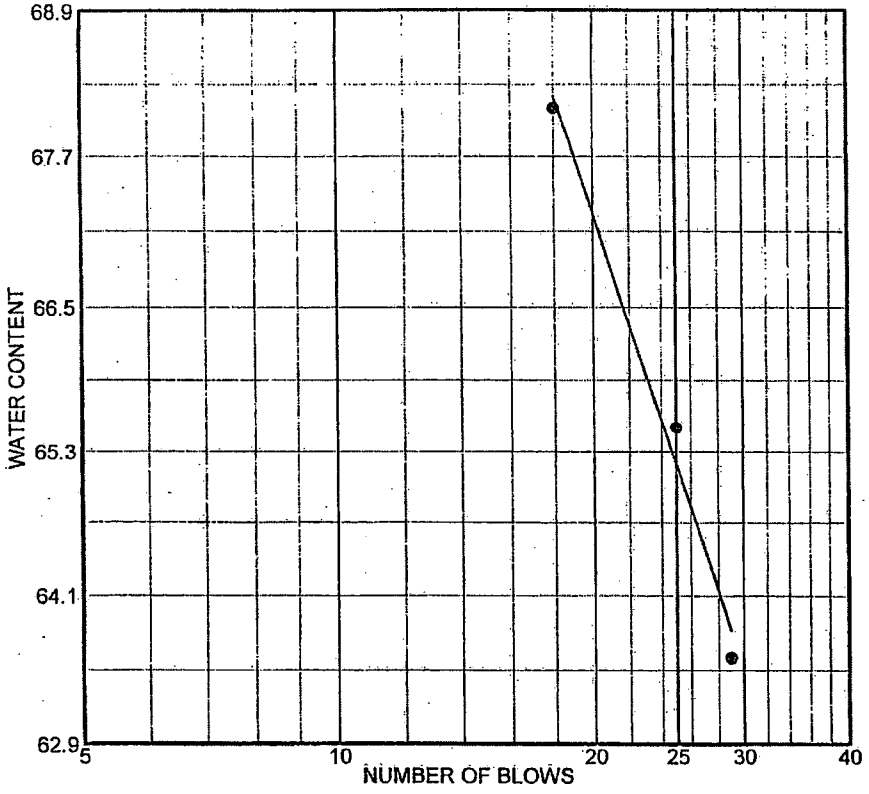


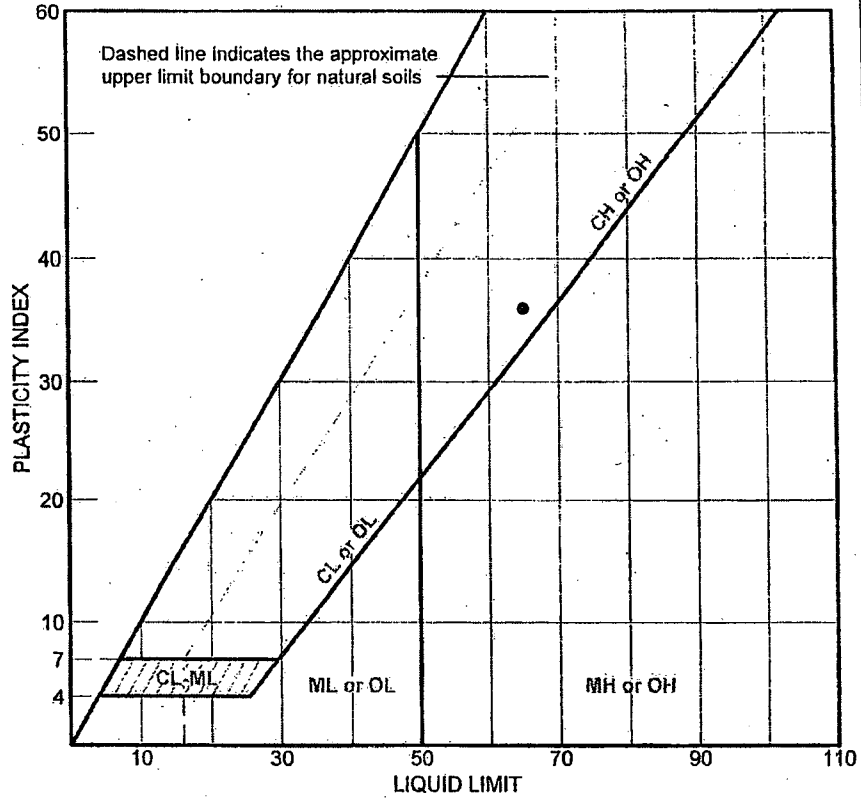
Liquid Limit= 51
Plastic Limit= 18
Plasticity Index= 33

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	18.00	17.92			
Dry+Tare	17.05	17.01			
Tare	11.81	11.72			
Moisture	18.1	17.2			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	UD-2	53.5-55.5 Ft.	9/06/07	CH	Fat Clay	32.0	65	36

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7923

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

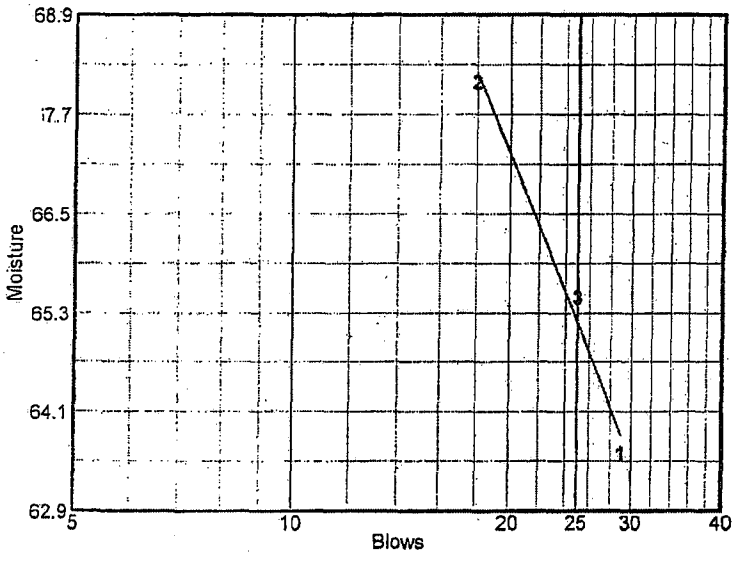
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: UD-2
Elev. or Depth: 53.5-55.5 Ft. **Sample Length(in./cm.):** 7923
Location: B-949
Description: Fat Clay
Date: 9/06/07 **Natural Moisture:** 32.0
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.90	30.23	32.13			
Dry+Tare	27.50	26.33	28.03			
Tare	20.58	20.60	21.77			
# Blows	29	18	25			
Moisture	63.6	68.1	65.5			

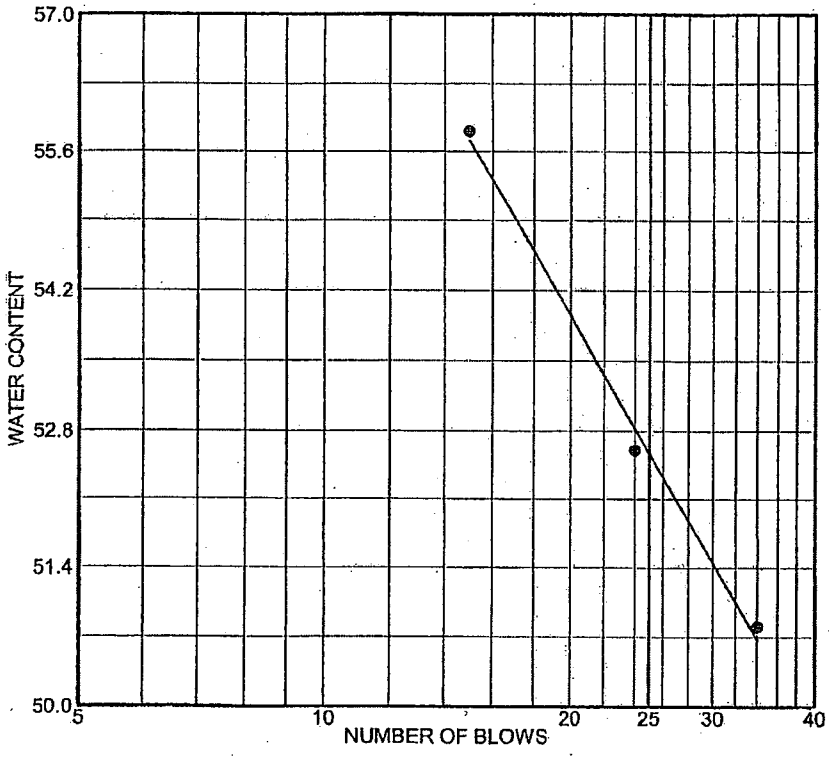


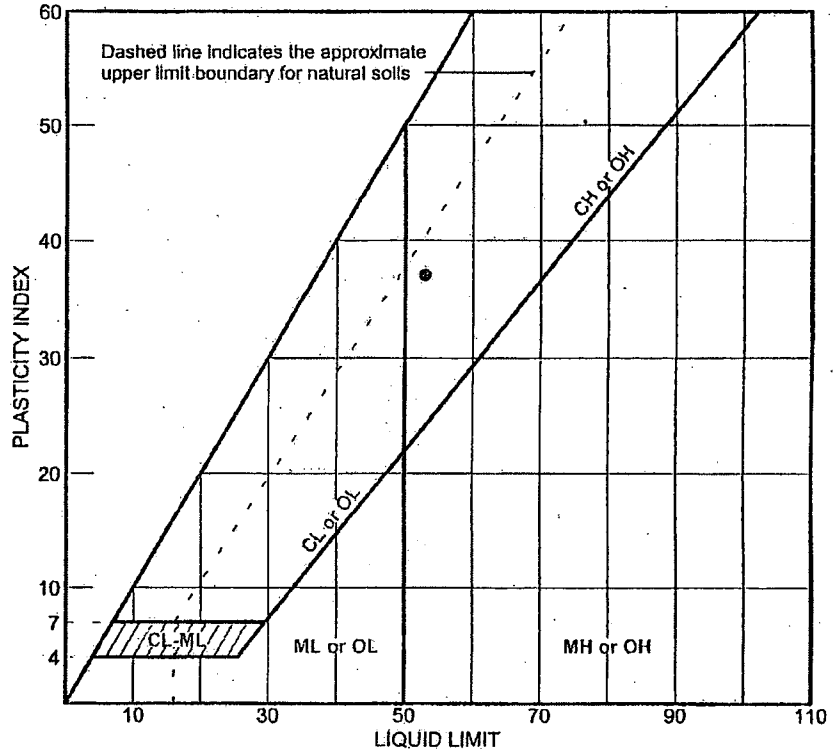
Liquid Limit= 65
Plastic Limit= 29
Plasticity Index= 36

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	28.10	26.73			
Dry+Tare	26.63	25.28			
Tare	21.40	20.32			
Moisture	28.1	29.2			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	SS-19	58.5-60	9-14-07	CH	Fat Clay	22.0	53	37

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH AJ 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

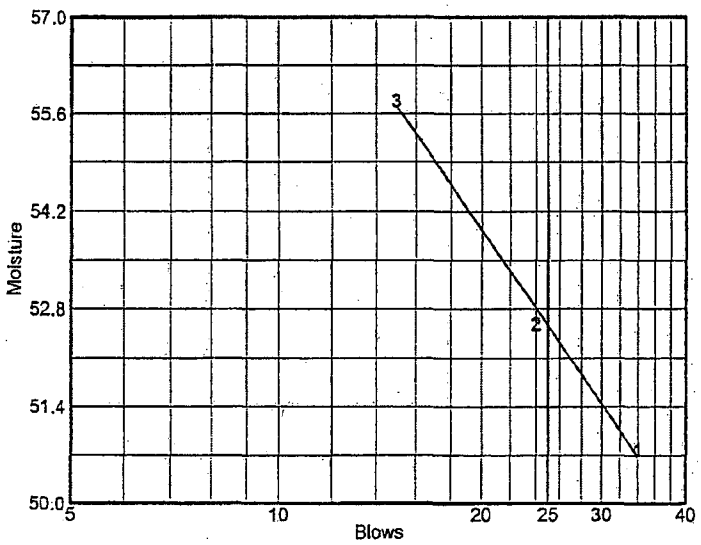
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-949
Sample No.: SS-19
Elev. or Depth: 58.5-60 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.85	34.08	32.82			
Dry+Tare	28.56	27.92	26.83			
Tare	16.19	16.21	16.10			
# Blows	34	24	15			
Moisture	50.8	52.6	55.8			

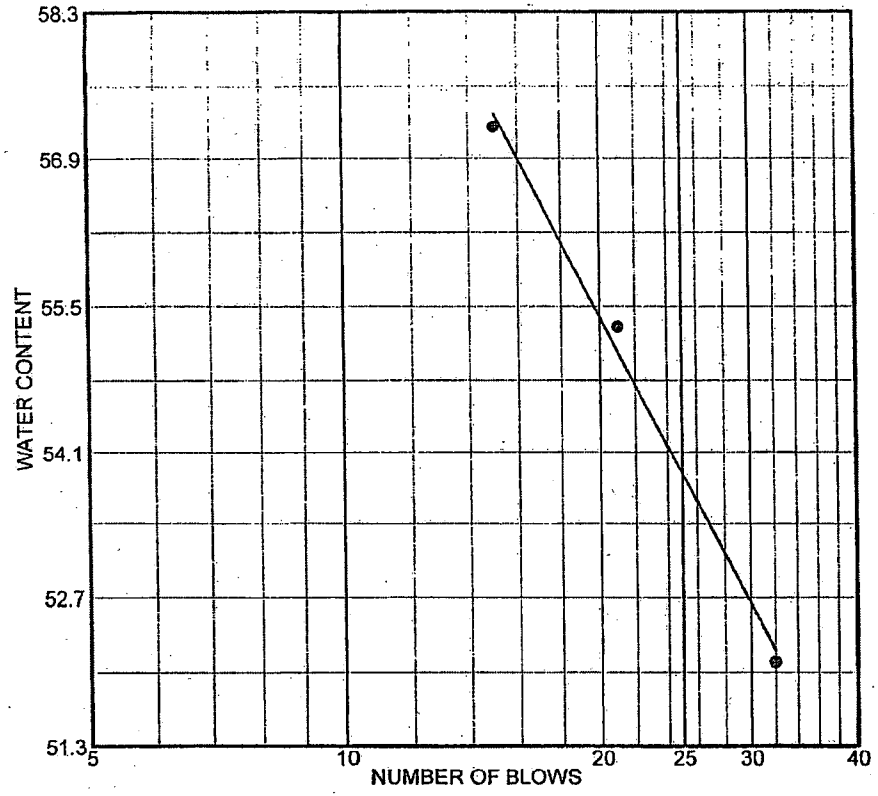


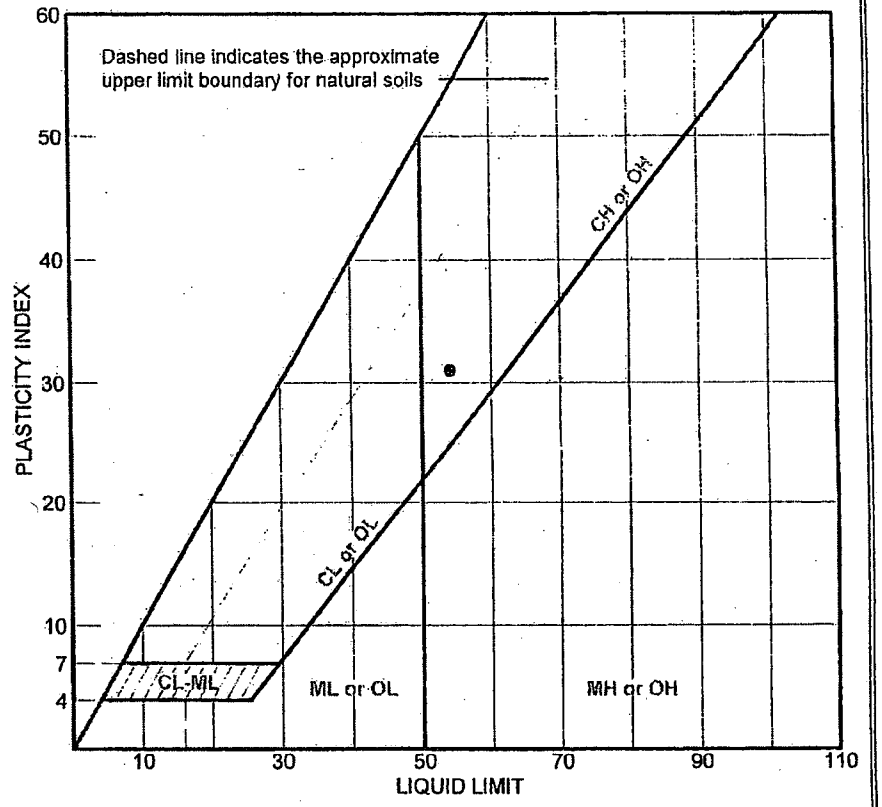
Liquid Limit= 53
Plastic Limit= 16
Plasticity Index= 37

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	18.26	18.44			
Dry+Tare	17.45	17.51			
Tare	12.19	11.72			
Moisture	15.4	16.1			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	UD-3	61-63 Ft.	9/13/07	CH	Fat Clay	23.3	54	31

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7924

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

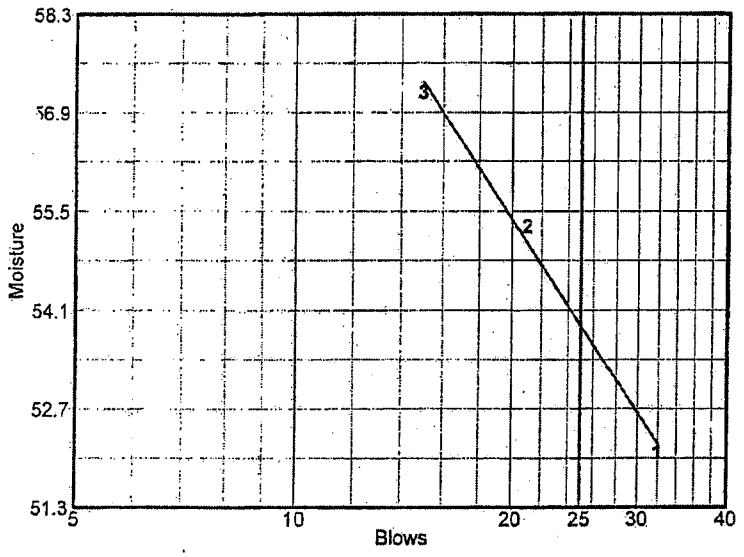
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: UD-3
Elev. or Depth: 61-63 Ft. **Sample Length(in./cm.):** 7924
Location: B-949
Description: Fat Clay
Date: 9/13/07 **Natural Moisture:** 23.3
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.88	31.99	30.51			
Dry+Tare	26.60	28.37	27.27			
Tare	20.30	21.82	21.61			
# Blows	32	21	15			
Moisture	52.1	55.3	57.2			

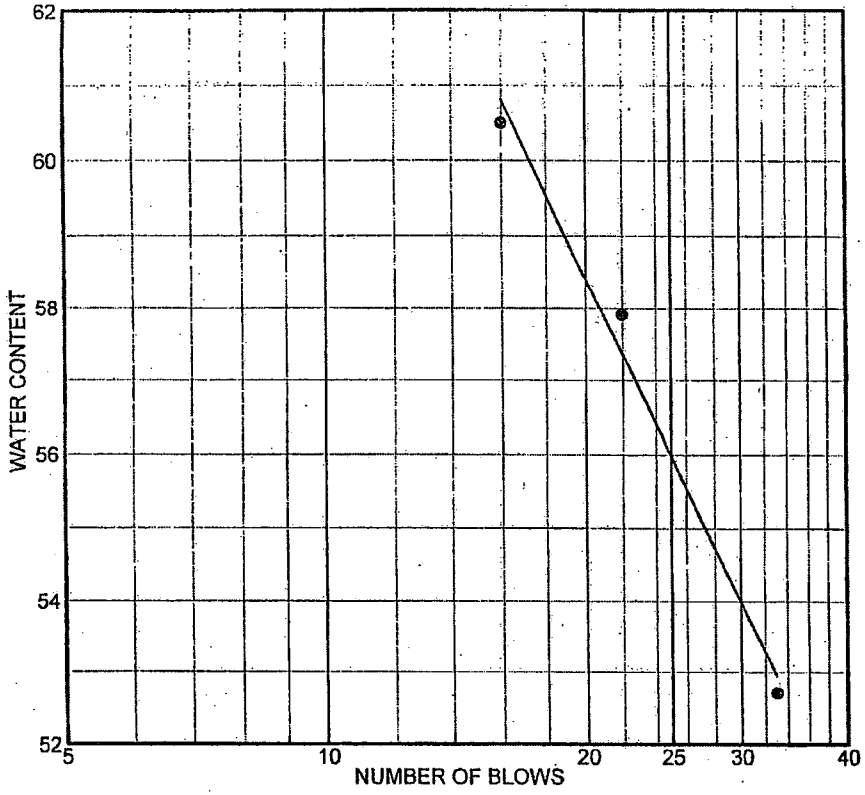


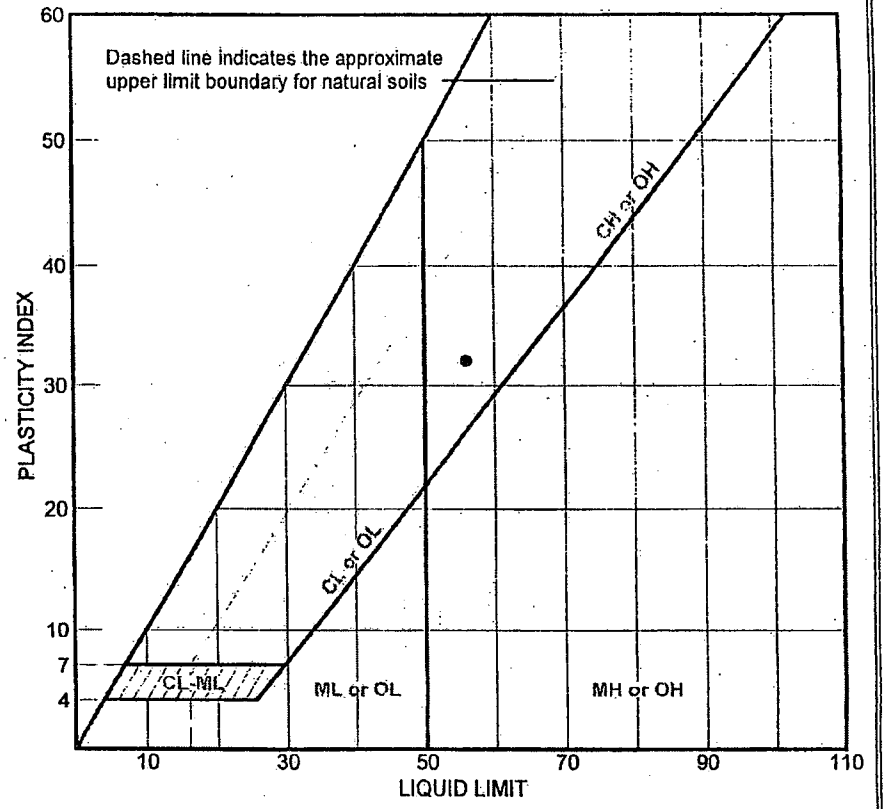
Liquid Limit= 54
Plastic Limit= 23
Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.99	27.86			
Dry+Tare	26.72	26.54			
Tare	21.01	20.75			
Moisture	22.2	22.8			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	UD-4	71-73 Ft.	9/13/07	CH	Fat Clay	25.0	56	32

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7925

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

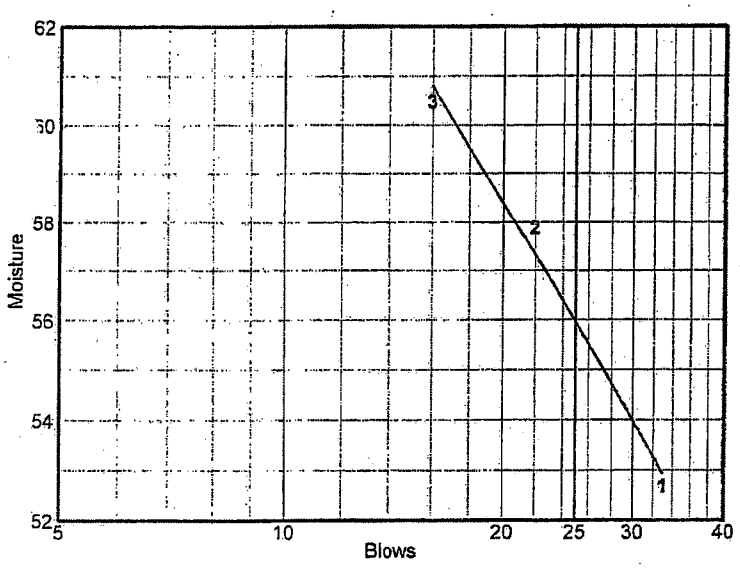
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: UD-4
Elev. or Depth: 71-73 Ft. **Sample Length(in./cm.):** 7925
Location: B-949
Description: Fat Clay
Date: 9/13/07 **Natural Moisture:** 25.0
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.20	30.72	30.46			
Dry+Tare	26.78	26.98	26.82			
Tare	20.29	20.52	20.80			
# Blows	33	22	16			
Moisture	52.7	57.9	60.5			

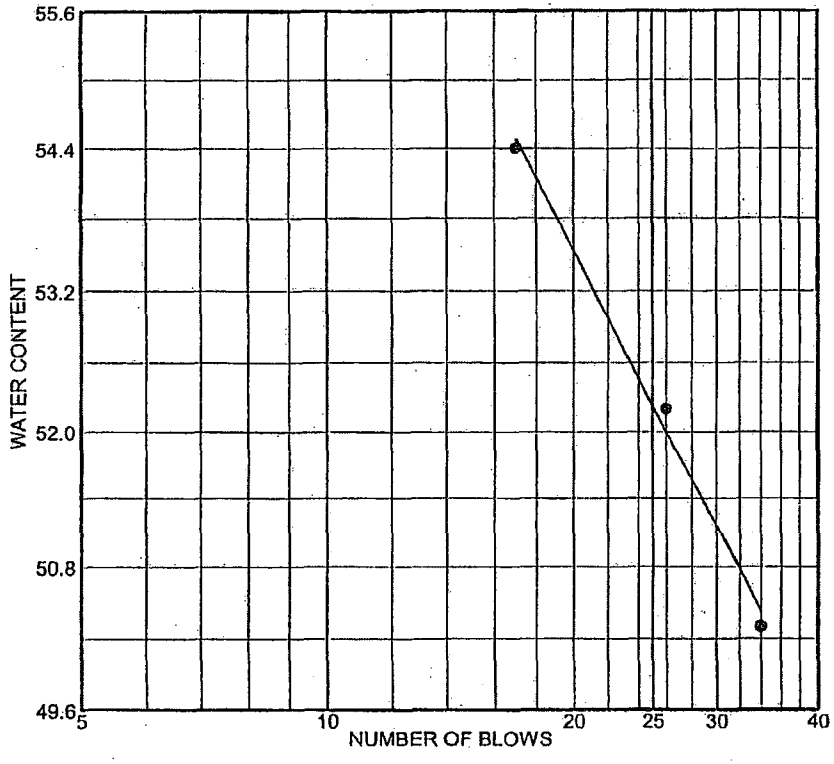


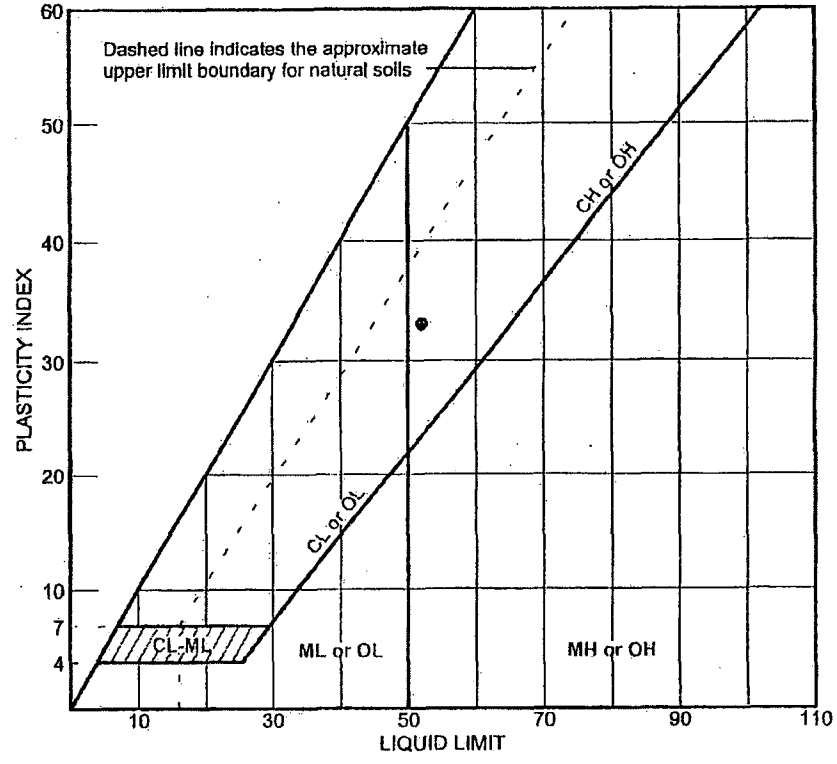
Liquid Limit= 56
Plastic Limit= 24
Plasticity Index= 32

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.75	27.21			
Dry+Tare	26.33	25.84			
Tare	20.48	20.05			
Moisture	24.3	23.7			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	SS-23	78.5-80	9-14-07	CH	Fat Clay	25.0	52	33

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

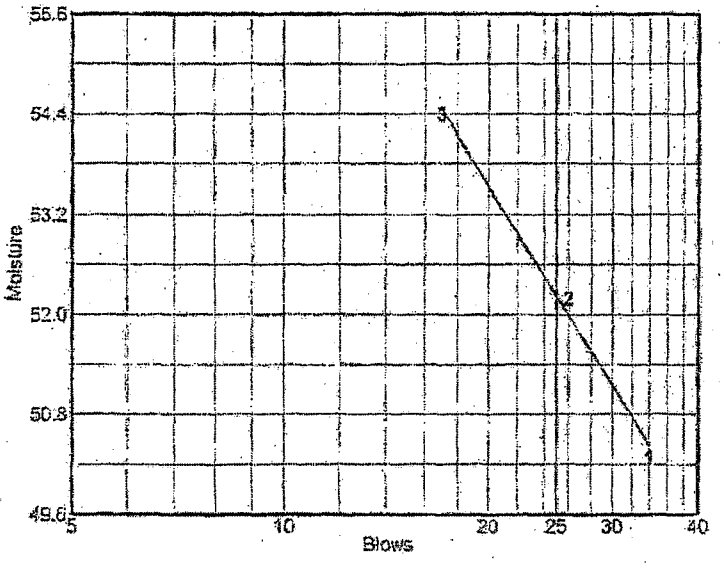
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: SS-23
Elev. or Depth: 78.5-80 Sample Length(in./cm.):
Location:
Description: Fat Clay
%<#40: %<#200: USCS: CH AASHTO:
Testing Remarks: Tested by: JA Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.10	34.97	27.81			
Dry+Tare	23.60	28.55	22.04			
Tare	10.67	16.25	11.43			
# Blows	34	26	17			
Moisture	50.3	52.2	54.4			

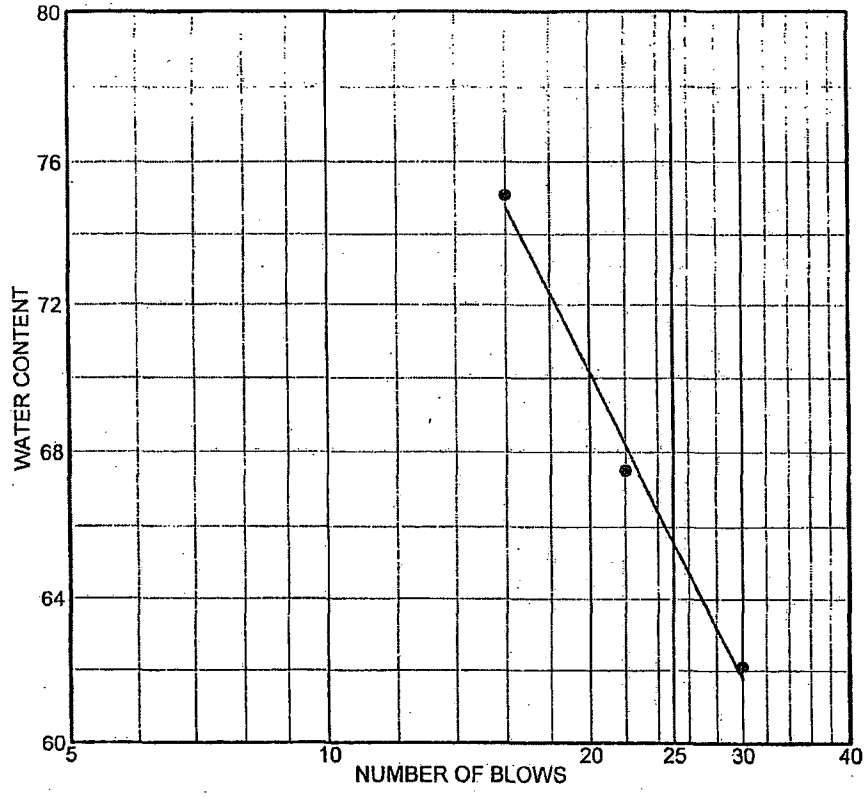


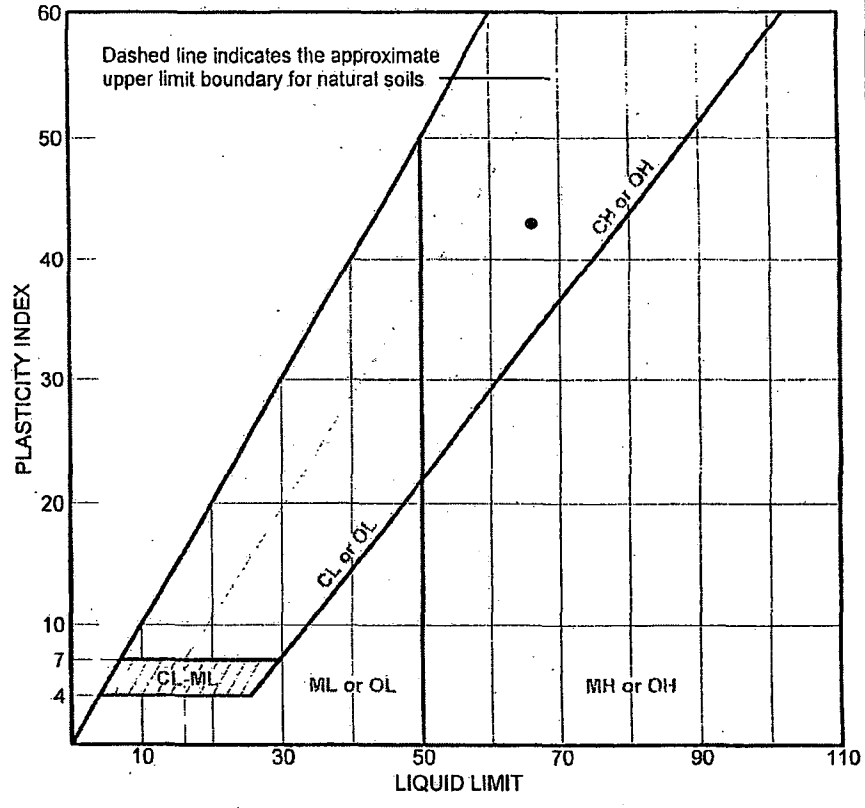
Liquid Limit= 52
Plastic Limit= 19
Plasticity Index= 33

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	18.49	18.39			
Dry+Tare	17.49	17.38			
Tare	12.28	12.13			
Moisture	19.2	19.2			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	UD-6	83.5-85.5 Ft.	9/6/07	CH	Fat Clay	23.4	66	43

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7926

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

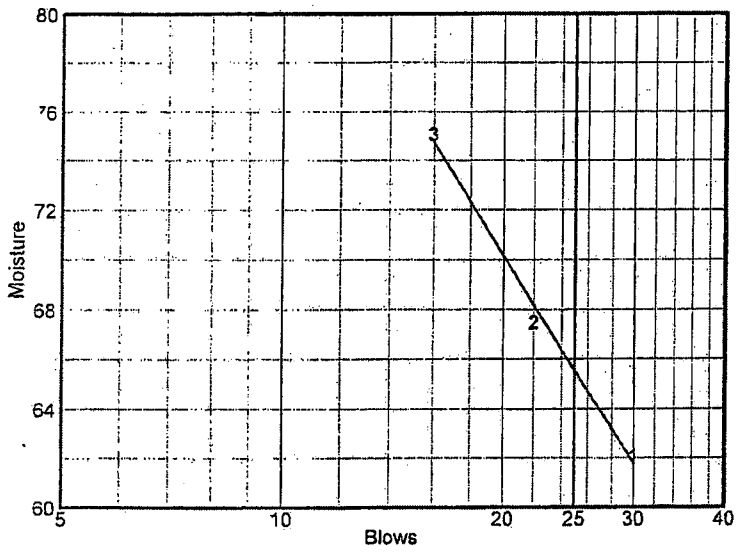
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: UD-6
Elev. or Depth: 83.5-85.5 Ft. **Sample Length(in./cm.):** 7926
Location: B-949
Description: Fat Clay
Date: 9/6/07 **Natural Moisture:** 23.4
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	17.65	18	18.49			
Dry+Tare	15.7	15.67	15.83			
Tare	12.56	12.22	12.29			
# Blows	30	22	16			
Moisture	62.1	67.5	75.1			

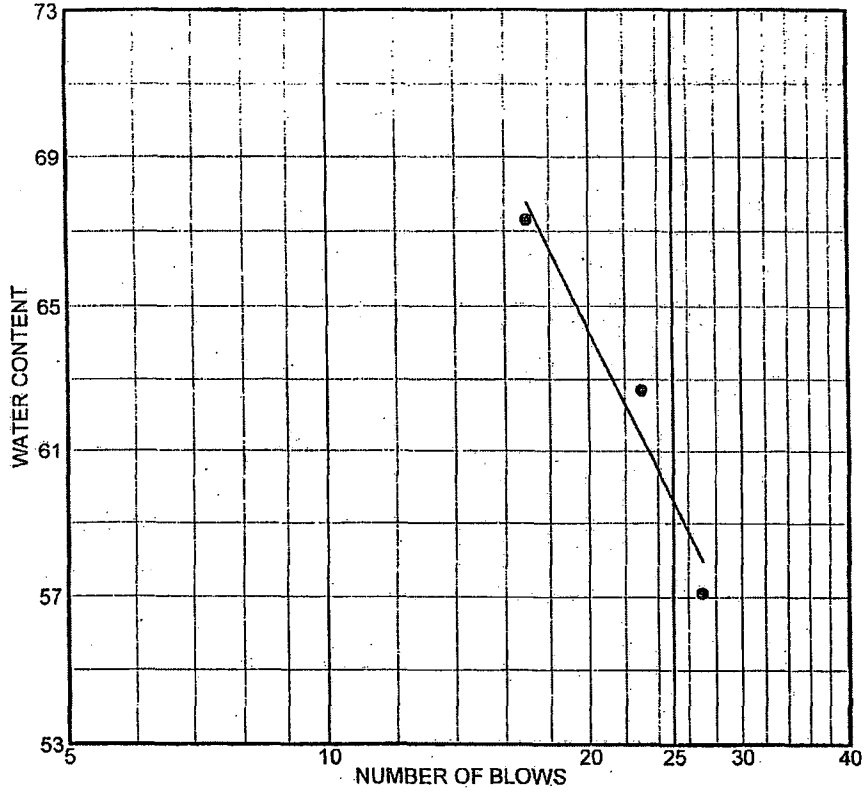


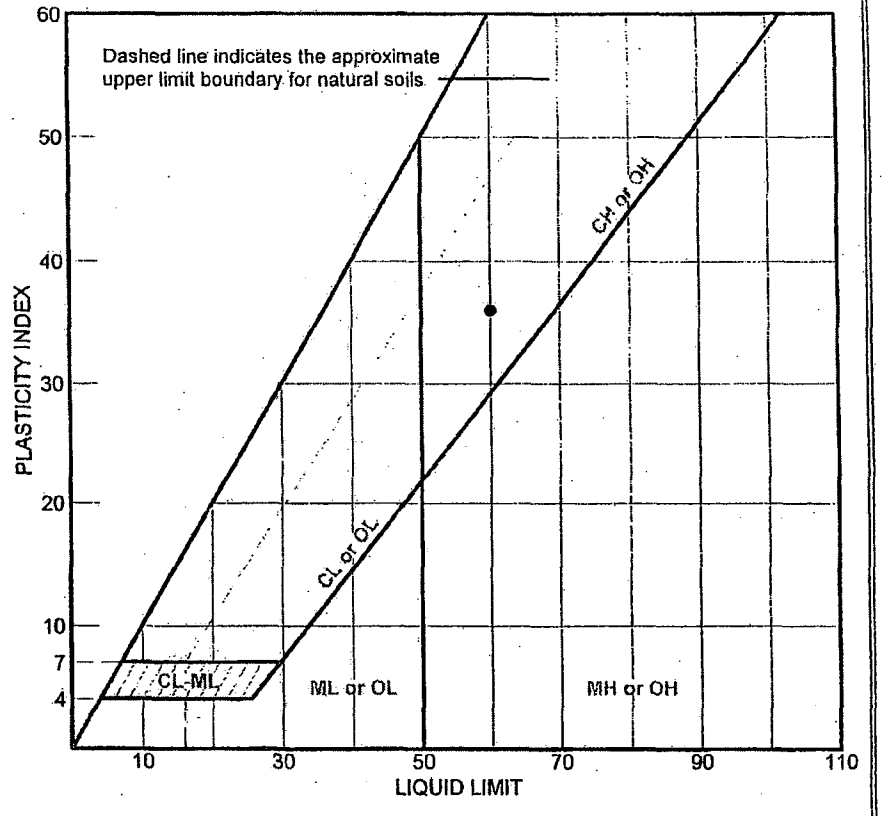
Liquid Limit= 66
Plastic Limit= 23
Plasticity Index= 43

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.92	26.75			
Dry+Tare	25.68	25.47			
Tare	20.26	19.89			
Moisture	22.9	22.9			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D 4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	UD-7	91-93 Ft.	9/14/07	CH	Fat Clay	28.1	60	36

Client Bechtel Power Corporation

Project Bechtel/STP/COL

Project No. 6234-07-4257 | Lab no. 7927

MACTEC ENGINEERING AND CONSULTING, INC.

● Tested by: EH Reviewed by: HJ

HJ 9/24/07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

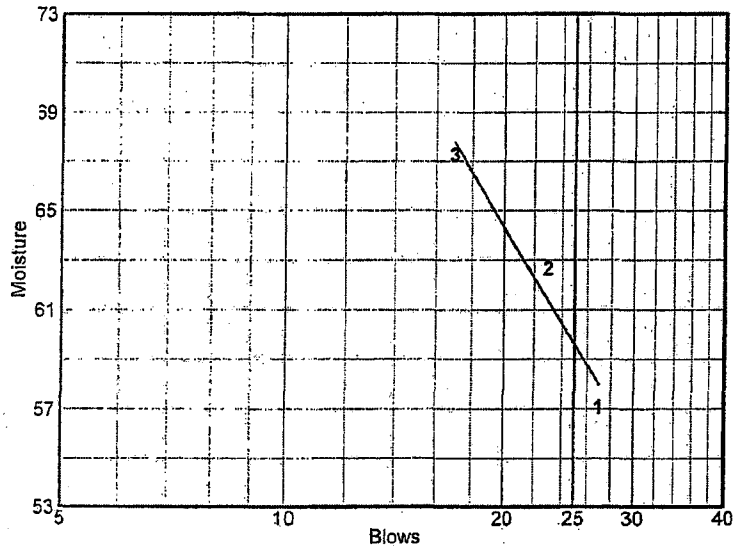
Client: Bechtel Power Corporation
Project: Bechtel/STP/COL
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: UD-7
Elev. or Depth: 91-93 Ft. **Sample Length(in./cm.):** 7927
Location: B-949
Description: Fat Clay
Date: 9/14/07 **Natural Moisture:** 28.1
USCS Class.: CH **AASHTO Class.:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	19.26	19.43	19.14			
Dry+Tare	16.74	16.71	16.44			
Tare	12.33	12.37	12.43			
# Blows	27	23	17			
Moisture	57.1	62.7	67.3			

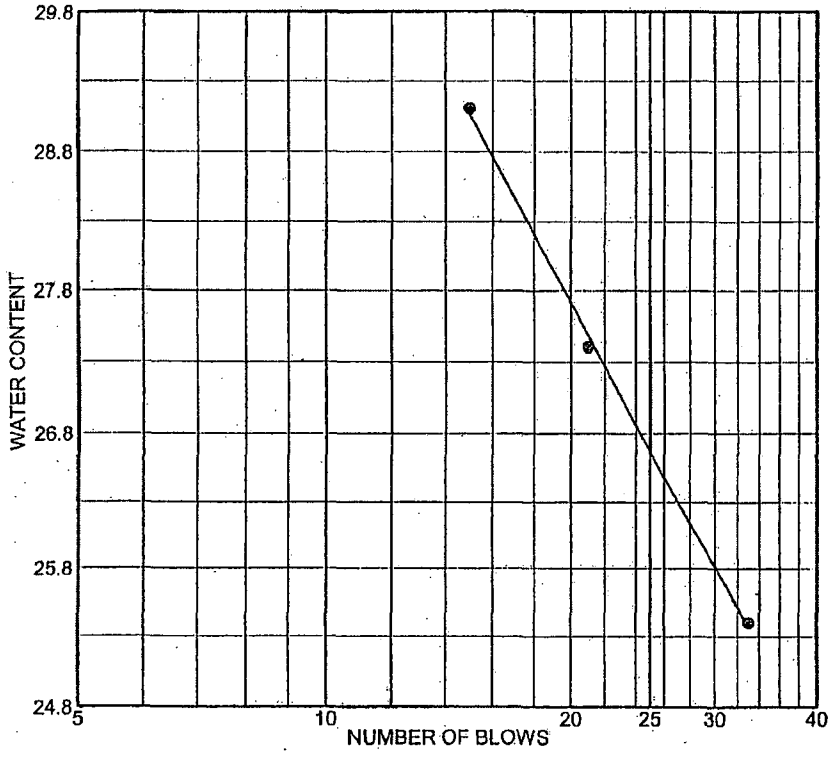


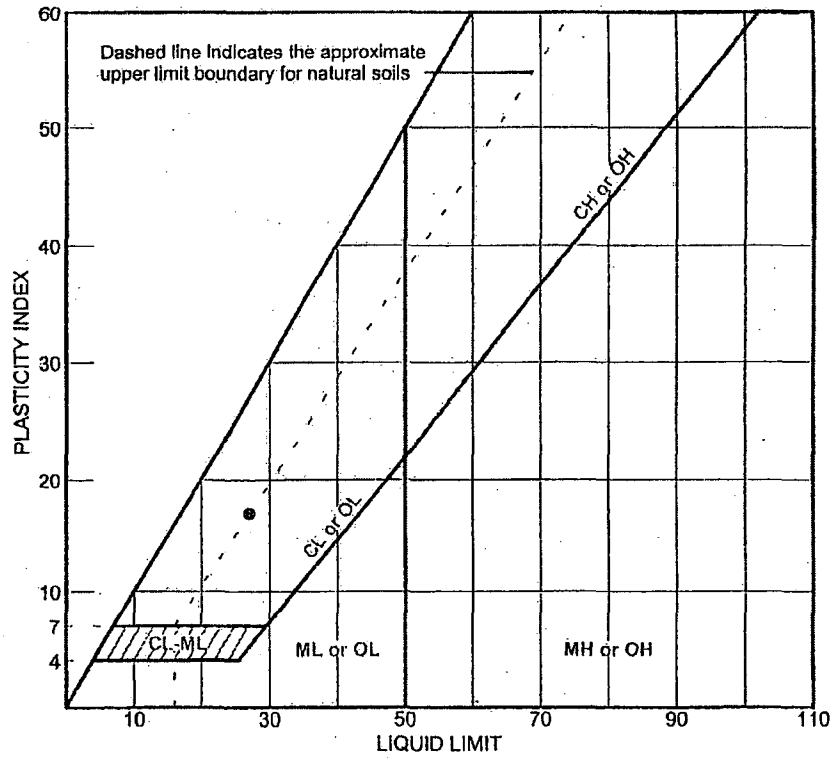
Liquid Limit= 60
Plastic Limit= 24
Plasticity Index= 36

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.92	28.39			
Dry+Tare	26.57	26.98			
Tare	21.01	21.10			
Moisture	24.3	24.0			

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318-05)





	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PI
●	B-949	UD-9	111-113	9-11-07	CL	Sandy lean clay	13.7	27	17

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

● Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

LIQUID AND PLASTIC LIMIT TEST DATA

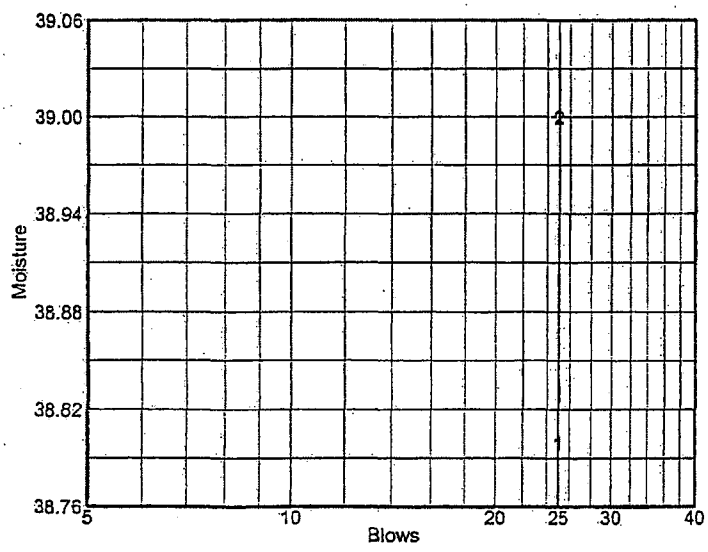
Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-949
Sample No.: SS-30
Elev. or Depth: 123.5-125 **Sample Length(in./cm.):**
Location:
Description: Lean clay
%<#40: 99.4 **%<#200:** 90.6 **USCS:** CL **AASHTO:**
Testing Remarks: Tested by: JA
Reviewed by: MH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.23	26.77				
Dry+Tare	22.80	22.25				
Tare	11.38	10.65				
# Blows	25	25				
Moisture	38.8	39.0				



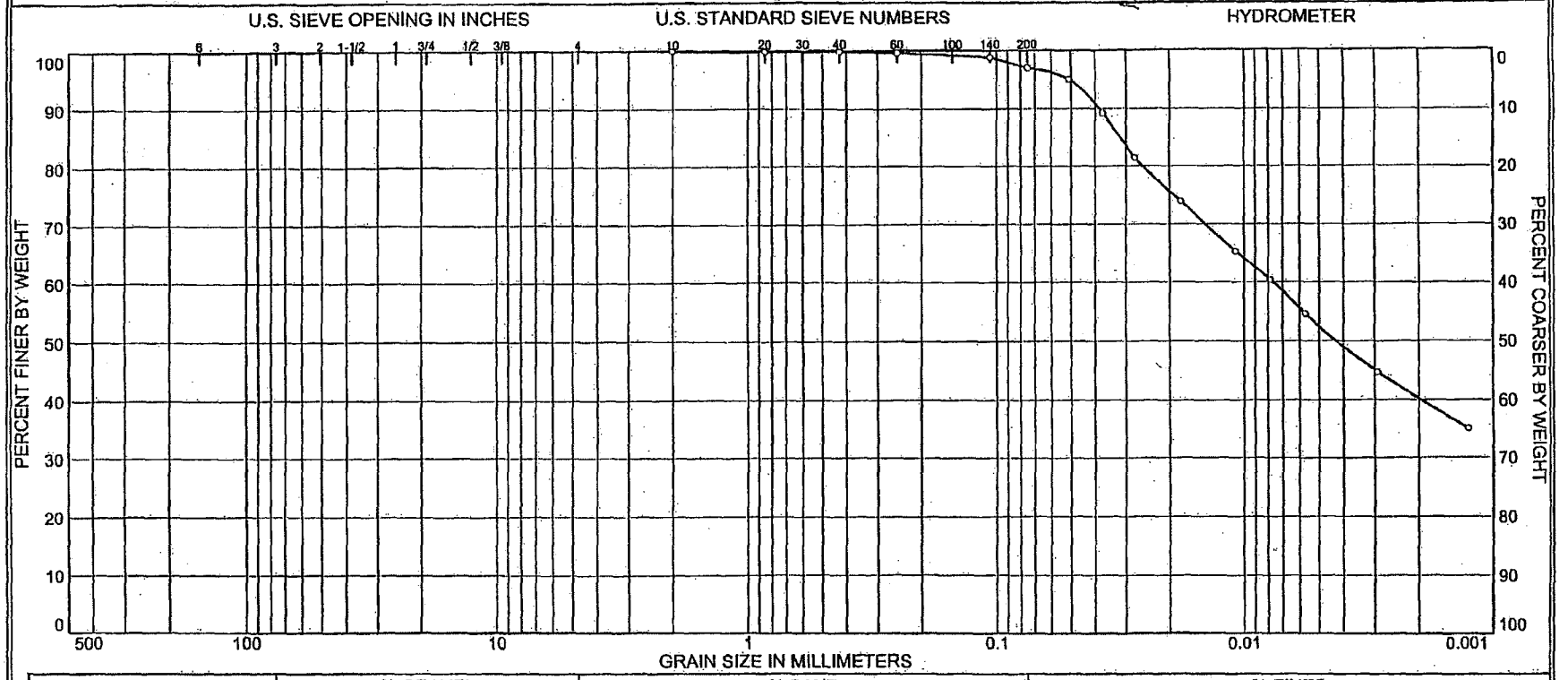
Liquid Limit= 39
Plastic Limit= 11
Plasticity Index= 28

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.10	17.12			
Dry+Tare	16.49	16.47			
Tare	10.88	10.72			
Moisture	10.9	11.3			

Grain Size

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.2	2.7	44.7	52.4

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-20	63.5-65	9-10-07	CL	Lean clay	20.4	39	14

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MH 9-23-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
ject Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-20
Elev. or Depth: 63.5-65 Sample Length(in./cm.):
Location:
Description: Lean clay
Date: 9-10-07 Natural Moisture: 20.4
Liquid Limit: 39 Plastic Limit: 14 USCS Class.: CL
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	91.78
Tare =	0.00
Dry sample weight =	91.78

Sample split on number 10 sieve
Split sample data:
Sample and tare = 52.31 Tare = .00 Sample weight = 52.31
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.08	99.8
# 40	0.13	99.8
# 60	0.19	99.6
# 140	0.65	98.8
# 200	1.53	97.1

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 54.19
Hygroscopic moisture correction:
Moist weight & tare = 29.64
Dry weight & tare = 29.17
Tare = 16.13
Hygroscopic moisture= 3.6 %
Calculated biased weight= 52.30
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
ydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

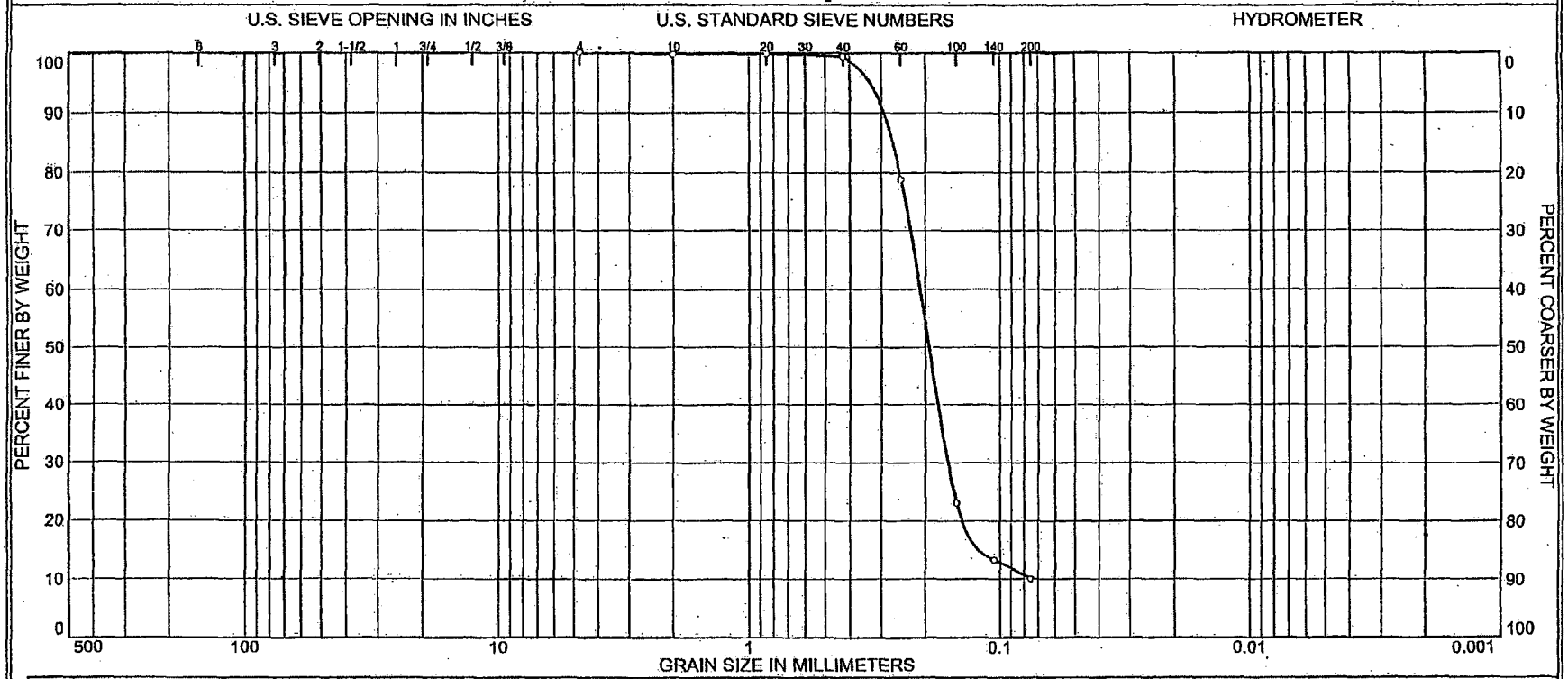
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
0.50	22.5	53.0	49.7	0.0132	54.0	7.4	0.0510	95.0
1.00	22.3	50.0	46.7	0.0133	51.0	7.9	0.0374	89.2
2.00	22.2	46.0	42.6	0.0133	47.0	8.6	0.0275	81.5
5.00	22.2	42.0	38.6	0.0133	43.0	9.2	0.0181	73.9
15.00	22.0	37.5	34.1	0.0133	38.5	10.0	0.0109	65.2
30.00	21.9	35.0	31.6	0.0133	36.0	10.4	0.0078	60.4
60.00	21.7	32.0	28.5	0.0134	33.0	10.9	0.0057	54.6
250.00	21.0	27.0	23.4	0.0135	28.0	11.7	0.0029	44.7
1440.00	20.8	22.0	18.4	0.0135	23.0	12.5	0.0013	35.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 2.9 (% coarse = % medium = 0.2 % fine = 2.7)
% SILT = 44.7 % CLAY = 52.4

D_{85}= 0.03 D_{60}= 0.01 D_{50}= 0.00

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.2	0.4	89.4	10.0	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-22	73.5-75	9-8-07	SP-SM	Poorly Graded Sand with Silt	16.8		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MH 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-22
Elev. or Depth: 73.5-75 **Sample Length(in./cm.):**
Location:
Description: Poorly Graded Sand with Silt
Date: 9-8-07 **Natural Moisture:** 16.8
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	65.70
Tare =	6.67
Dry sample weight =	59.03

Tare for cumulative weight retained= .00

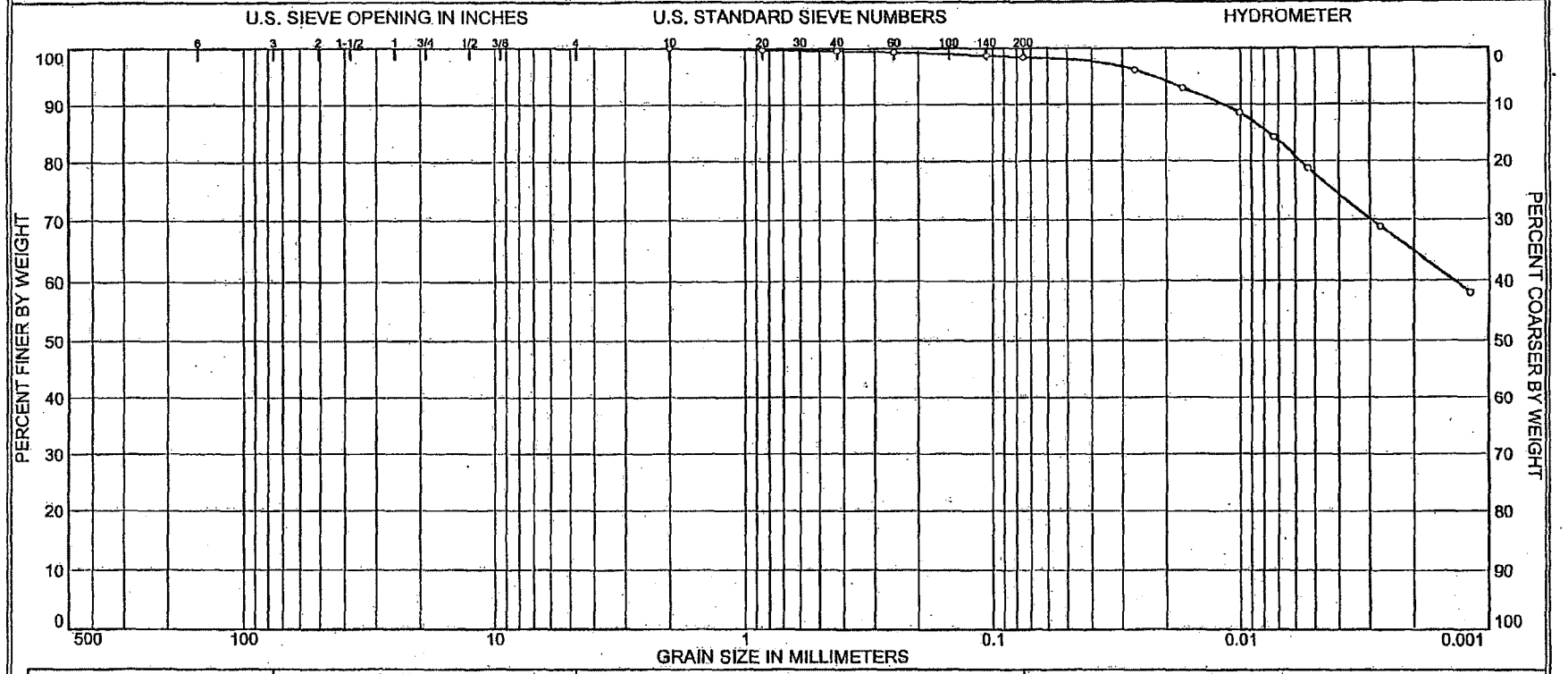
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.10	99.8
# 20	0.13	99.8
# 40	0.33	99.4
# 60	12.52	78.8
# 100	45.47	23.0
# 140	51.18	13.3
# 200	53.14	10.0

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 90.0 (% coarse = 0.2 % medium = 0.4 % fine = 89.4)
% FINES = 10.0

D_{85}= 0.27 D_{60}= 0.21 D_{50}= 0.19
D_{30}= 0.16 D_{15}= 0.12 D_{10}= 0.08
C_c= 1.6807 C_u= 2.8088

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.5	1.2	20.6	77.7

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-24	83.5-85	9-10-07	CH	Fat clay	26.6	52	18

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-25-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-24
Elev. or Depth: 83.5-85 Sample Length(in./cm.):
Location:
Description: Fat clay
Date: 9-10-07 Natural Moisture: 26.6
Liquid Limit: 52 Plastic Limit: 18 USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	91.16
Tare =	0.00
Dry sample weight =	91.16

Sample split on number 10 sieve
Split sample data:
Sample and tare = 47.10 Tare = .00 Sample weight = 47.10
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.15	99.7
# 40	0.22	99.5
# 60	0.31	99.3
# 140	0.65	98.6
# 200	0.78	98.3

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 50.14
Hygroscopic moisture correction:
Moist weight & tare = 29.56
Dry weight & tare = 28.75
Tare = 16.22
Hygroscopic moisture= 6.5 %
Calculated biased weight= 47.10
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

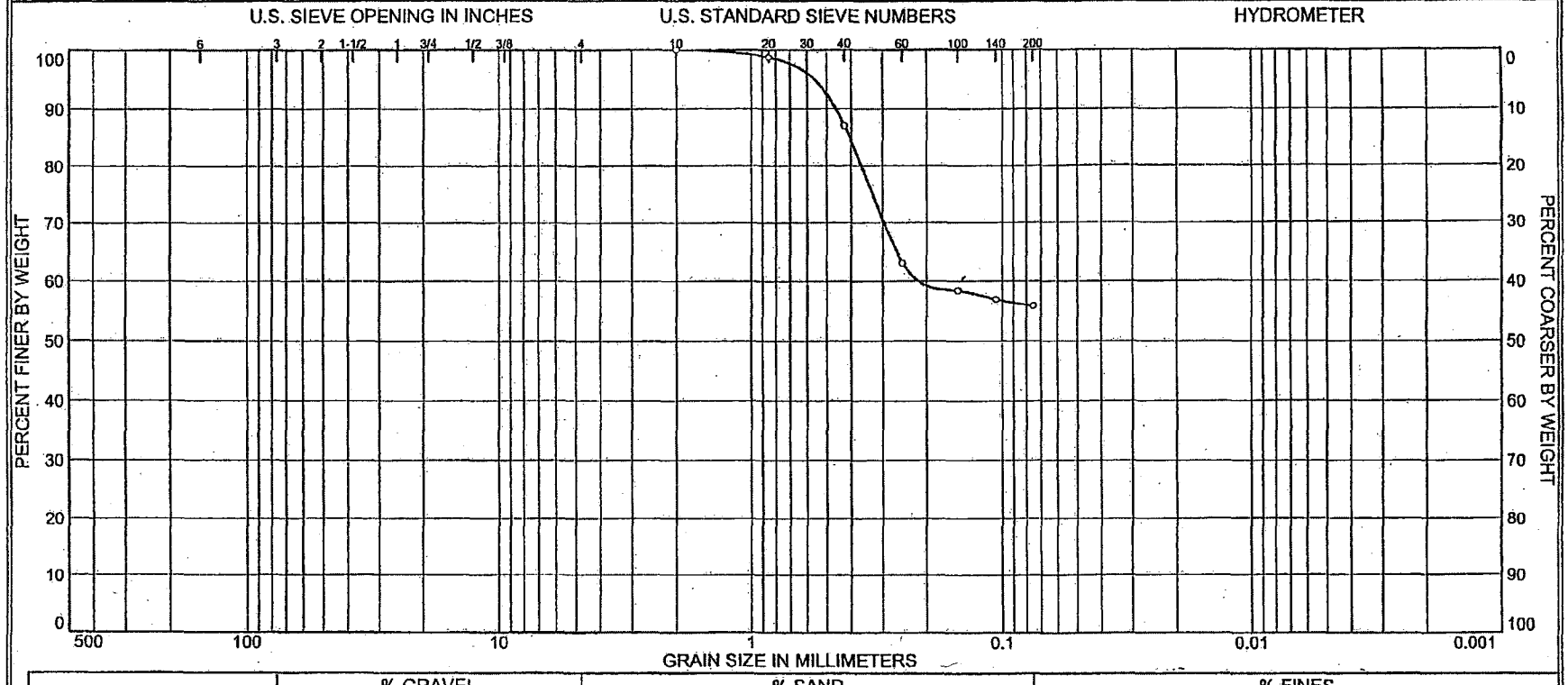
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.5	48.5	45.2	0.0132	49.5	8.2	0.0268	96.0
5.00	22.5	47.0	43.7	0.0132	48.0	8.4	0.0172	92.8
15.00	22.4	45.0	41.7	0.0132	46.0	8.8	0.0101	88.5
30.00	22.3	43.0	39.7	0.0133	44.0	9.1	0.0073	84.2
60.00	21.9	40.5	37.1	0.0133	41.5	9.5	0.0053	78.7
250.00	21.0	36.0	32.4	0.0135	37.0	10.2	0.0027	68.8
1440.00	20.7	31.0	27.3	0.0135	32.0	11.0	0.0012	58.0

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 1.7 (% coarse = % medium = 0.5 % fine = 1.2)
% SILT = 20.6 % CLAY = 77.7

D_{85}= 0.01 D_{60}= 0.00

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	12.9	31.3	55.8	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-27	103.5-105	9-8-07	ML	Sandy Silt	25.0		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MH 9-26-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-27
Elev. or Depth: 103.5-105 **Sample Length(in./cm.):**
Location:
Description: Sandy Silt
Date: 9-8-07 **Natural Moisture:** 25.0
Liquid Limit: **Plastic Limit:** **USCS Class.:** ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	109.20
Tare =	12.28
Dry sample weight =	96.92

Tare for cumulative weight retained= .00

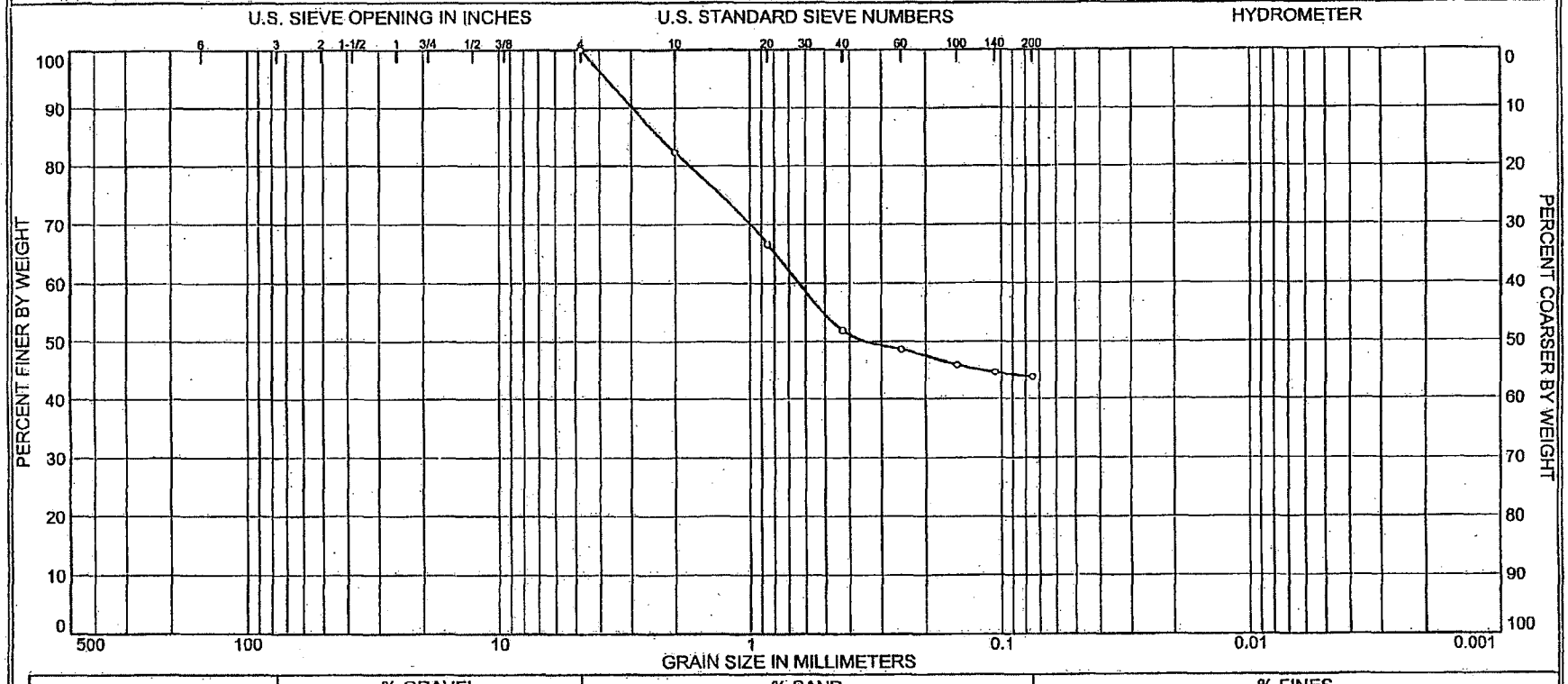
Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	1.30	98.7
# 40	12.49	87.1
# 60	35.77	63.1
# 100	40.33	58.4
# 140	41.78	56.9
# 200	42.81	55.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 44.2 (% coarse = % medium = 12.9 % fine = 31.3)
% FINES = 55.8

D_{85}= 0.40 D_{60}= 0.22

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	17.7	30.4	8.1	43.8	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-28	110-111.5	9-8-07	SM	Silty Sand	21.7		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface

Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-28
Elev. or Depth: 110-111.5 **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: 9-8-07 **Natural Moisture:** 21.7
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	116.22
Tare =	12.54
Dry sample weight =	103.68

Tare for cumulative weight retained= .00

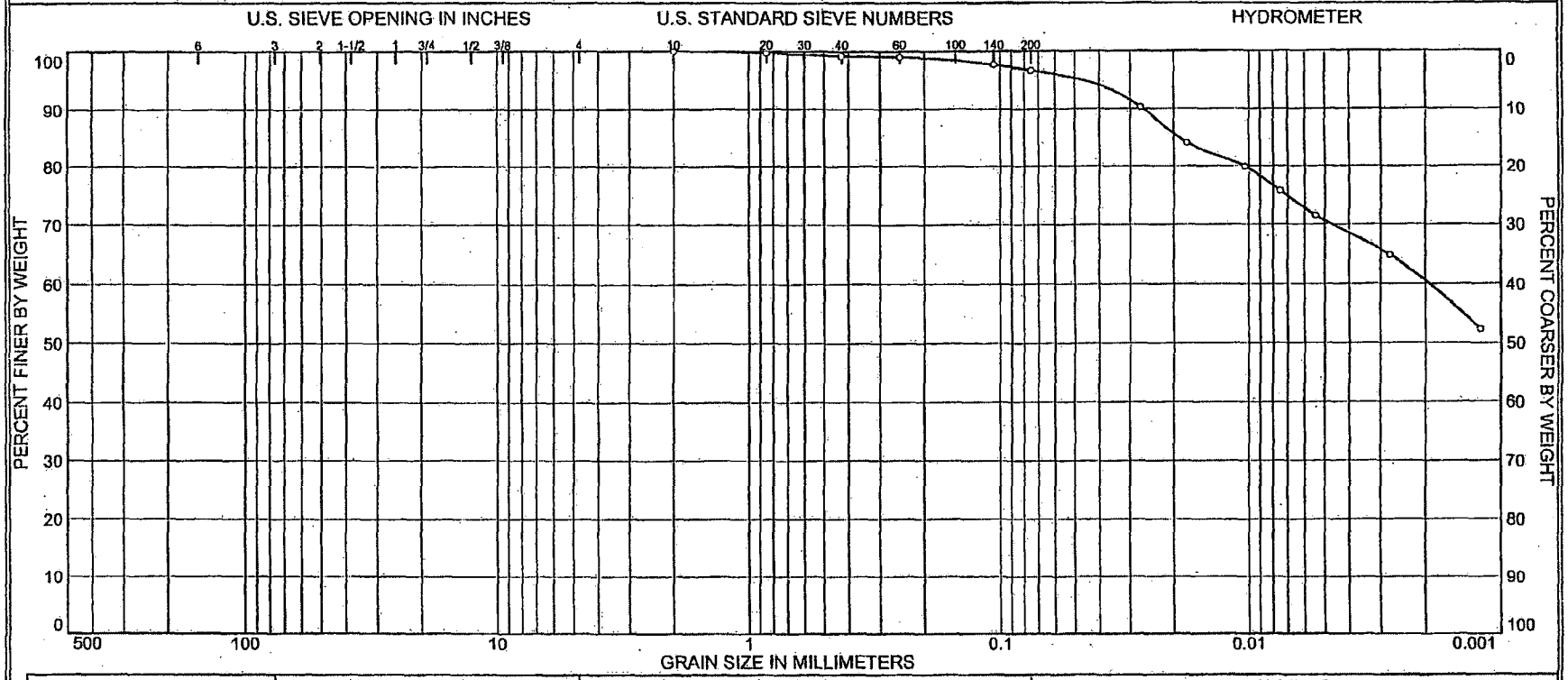
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	18.40	82.3
# 20	34.59	66.6
# 40	49.92	51.9
# 60	53.29	48.6
# 100	56.11	45.9
# 140	57.41	44.6
# 200	58.30	43.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 56.2 (% coarse = 17.7 % medium = 30.4 % fine = 8.1)
% FINES = 43.8

D_{85}= 2.31 D_{60}= 0.64 D_{50}= 0.35

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.8	2.5	26.0	70.7

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-29	114-115.5	9-8-07	CH	Fat Clay	25.0		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MH 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-29
Elev. or Depth: 114-115.5 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-8-07 Natural Moisture: 25.0
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	96.62
Tare =	0.00
Dry sample weight =	96.62

Sample split on number 10 sieve
Split sample data:
Sample and tare = 48.39 Tare = .00 Sample weight = 48.39
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.15	99.7
# 40	0.39	99.2
# 60	0.46	99.0
# 140	1.09	97.7
# 200	1.58	96.7

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 51.18
Hygroscopic moisture correction:
Moist weight & tare = 29.44
Dry weight & tare = 28.72
Tare = 16.25
Hygroscopic moisture= 5.8 %
Calculated biased weight= 48.39
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

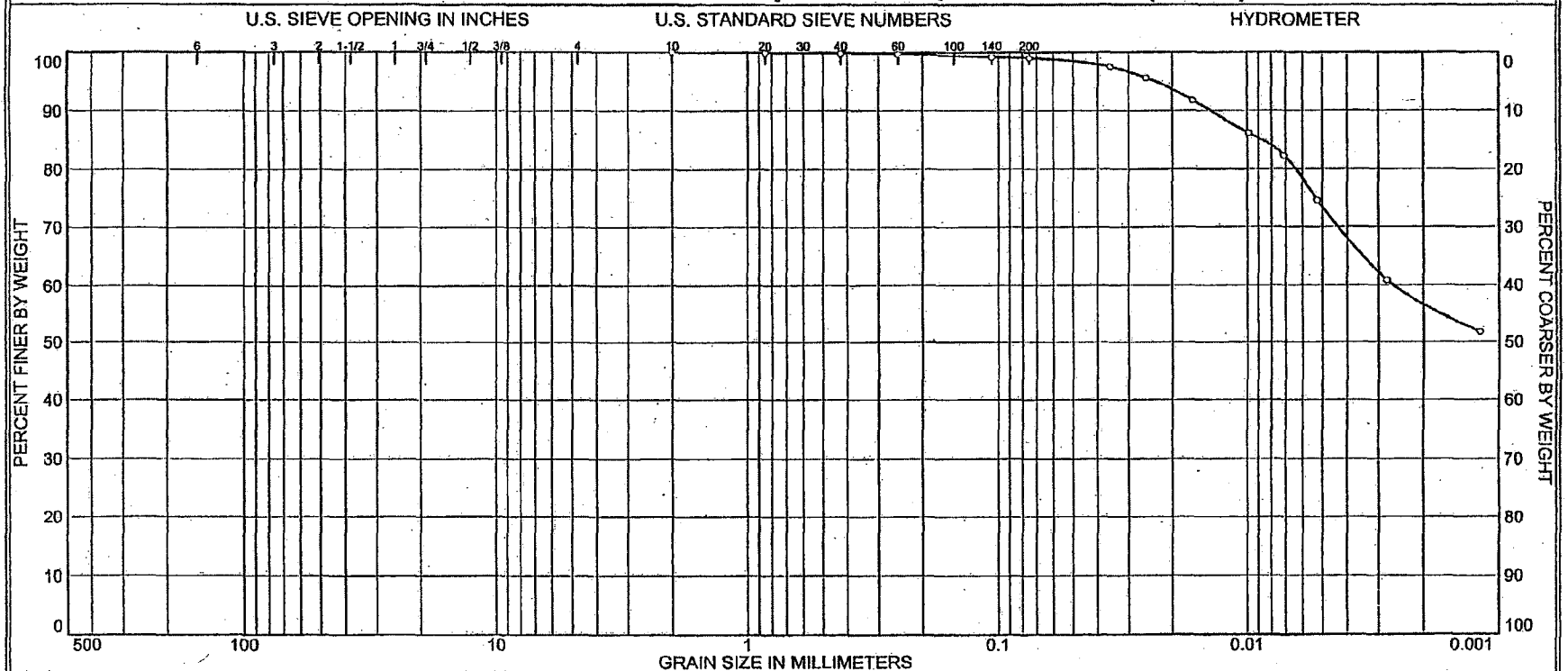
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.5	47.0	43.7	0.0132	48.0	8.4	0.0272	90.3
5.00	22.4	44.0	40.7	0.0132	45.0	8.9	0.0177	84.1
15.00	22.3	42.0	38.7	0.0133	43.0	9.2	0.0104	79.9
30.00	22.1	40.0	36.6	0.0133	41.0	9.6	0.0075	75.7
60.00	22.0	38.0	34.6	0.0133	39.0	9.9	0.0054	71.5
250.00	20.8	35.0	31.4	0.0135	36.0	10.4	0.0028	64.8
1440.00	20.5	29.0	25.3	0.0136	30.0	11.4	0.0012	52.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 3.3 (% coarse = % medium = 0.8 % fine = 2.5)
% SILT = 26.0 % CLAY = 70.7

D_{85}= 0.02 D_{60}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.2	0.8	25.6	73.4

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-31	128.5-130	9-11-07	CH	Fat Clay	23.9		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH

9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-31
Elev. or Depth: 128.5-130 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-11-07 Natural Moisture: 23.9
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	104.42
Tare =	0.00
Dry sample weight =	104.42

Sample split on number 10 sieve
Split sample data:
Sample and tare = 52.84 Tare = .00 Sample weight = 52.84
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.04	99.9
# 40	0.10	99.8
# 60	0.18	99.7
# 140	0.41	99.2
# 200	0.51	99.0

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 55.66
Hygroscopic moisture correction:
Moist weight & tare = 29.44
Dry weight & tare = 28.77
Tare = 16.22
Hygroscopic moisture= 5.3 %
Calculated biased weight= 52.84
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
drometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

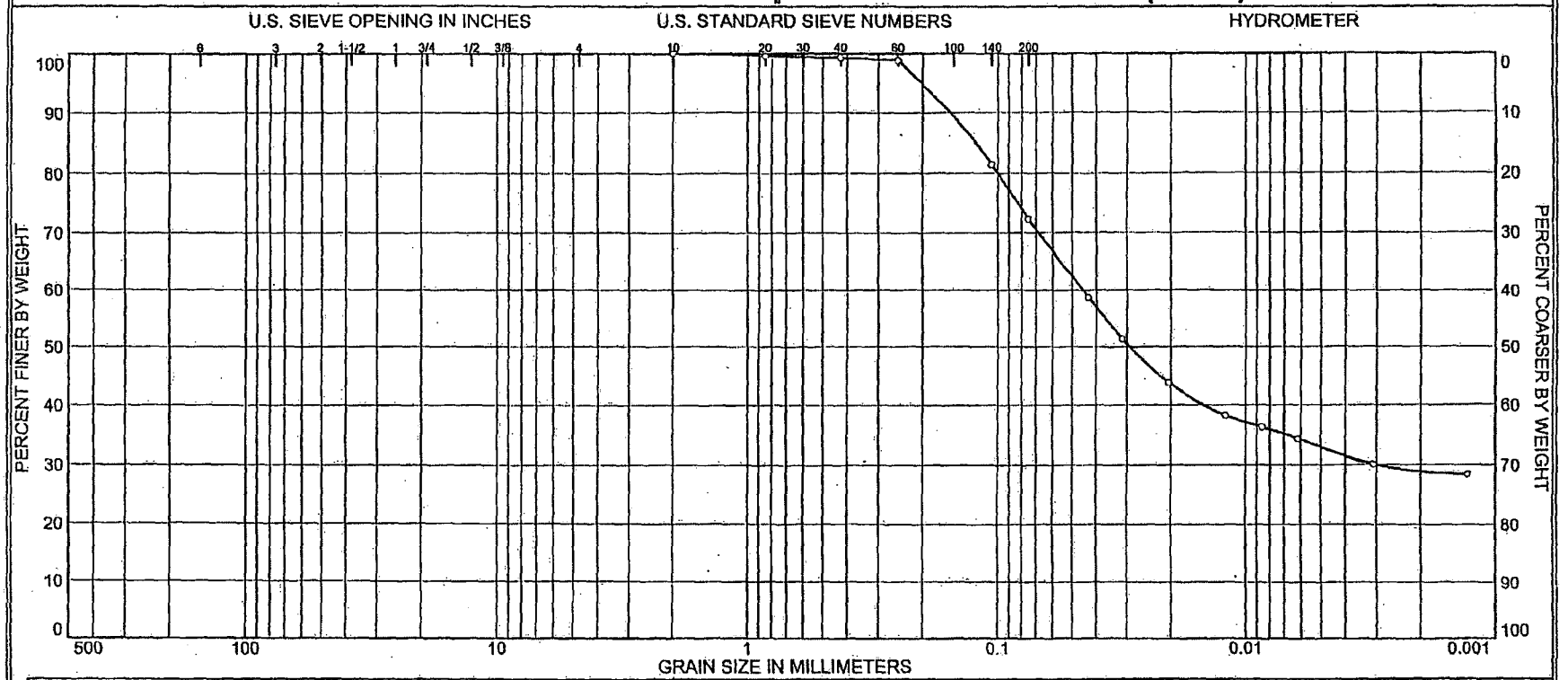
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	21.7	55.0	51.5	0.0134	56.0	7.1	0.0356	97.5
2.00	21.7	54.0	50.5	0.0134	55.0	7.3	0.0255	95.6
5.00	21.6	52.0	48.5	0.0134	53.0	7.6	0.0165	91.8
15.00	21.5	49.0	45.5	0.0134	50.0	8.1	0.0098	86.1
30.00	21.4	47.0	43.5	0.0134	48.0	8.4	0.0071	82.3
60.00	21.2	43.0	39.4	0.0134	44.0	9.1	0.0052	74.6
250.00	19.7	36.0	32.1	0.0137	37.0	10.2	0.0028	60.8
1440.00	20.5	31.0	27.3	0.0136	32.0	11.0	0.0012	51.7

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 1.0 (% coarse = % medium = 0.2 % fine = 0.8)
% SILT = 25.6 % CLAY = 73.4

D_{85}= 0.01 D_{60}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.7	27.0	39.4	32.9

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-32	135-136.5	9-11-07	ML	Sandy Silt	16.1		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-25-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-32
Elev. or Depth: 135-136.5 Sample Length(in./cm.):
Location:
Description: Sandy Silt
Date: 9-11-07 Natural Moisture: 16.1
Liquid Limit: Plastic Limit: USCS Class.: ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	104.24
Tare =	0.00
Dry sample weight =	104.24

Sample split on number 10 sieve
Split sample data:
Sample and tare = 53.78 Tare = .00 Sample weight = 53.78
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.19	99.6
# 40	0.35	99.3
# 60	0.60	98.9
# 140	10.00	81.4
# 200	14.90	72.3

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 55.60
Hygroscopic moisture correction:
Moist weight & tare = 30.49
Dry weight & tare = 30.02
Tare = 16.17
Hygroscopic moisture= 3.4 %
Calculated biased weight= 53.78
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

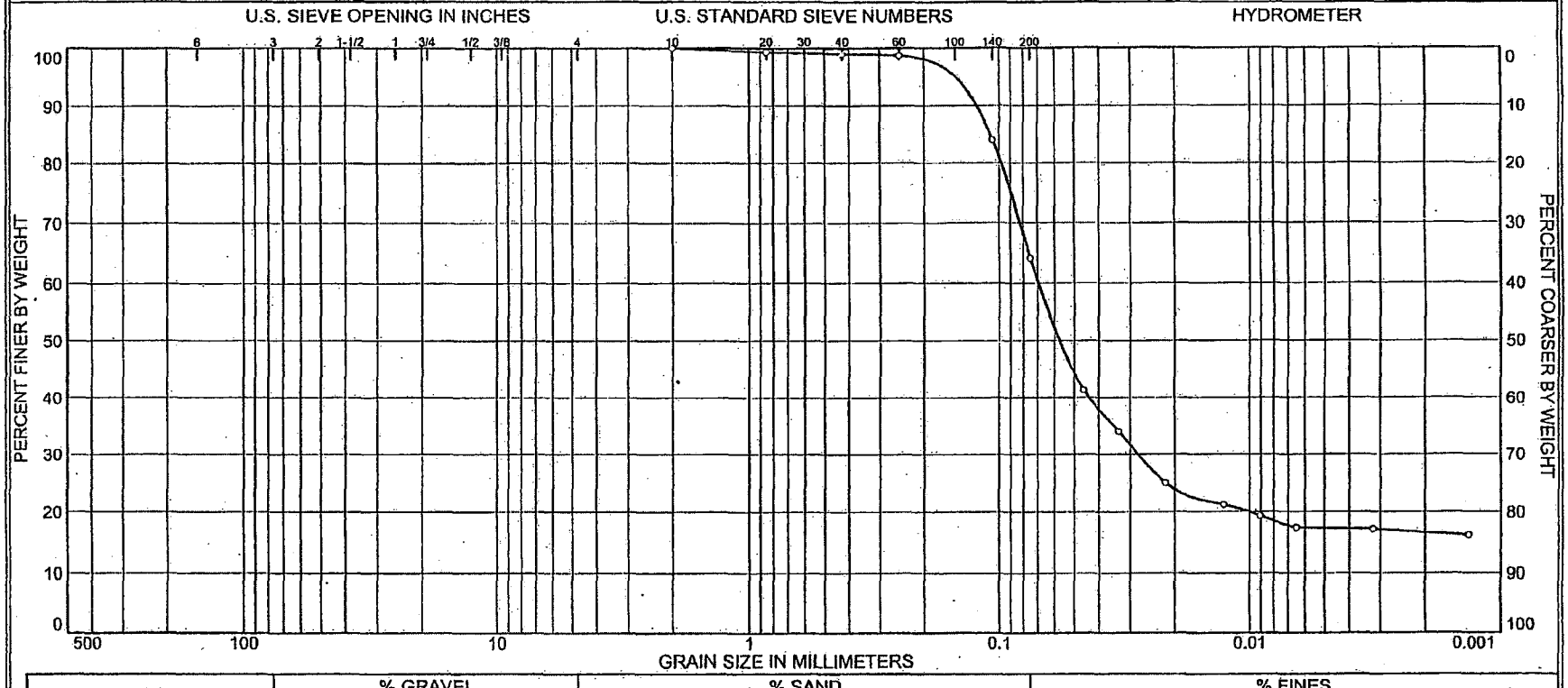
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	21.9	35.0	31.6	0.0133	36.0	10.4	0.0430	58.7
2.00	21.9	31.0	27.6	0.0133	32.0	11.0	0.0313	51.3
5.00	21.9	27.0	23.6	0.0133	28.0	11.7	0.0204	43.8
15.00	21.8	24.0	20.6	0.0133	25.0	12.2	0.0120	38.2
30.00	21.7	23.0	19.5	0.0134	24.0	12.4	0.0086	36.3
60.00	21.2	22.0	18.4	0.0134	23.0	12.5	0.0061	34.3
250.00	20.0	20.0	16.2	0.0136	21.0	12.9	0.0031	30.1
1440.00	20.3	19.0	15.3	0.0136	20.0	13.0	0.0013	28.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 27.7 (% coarse = % medium = 0.7 % fine = 27.0)
% SILT = 39.4 % CLAY = 32.9

D_{85}= 0.12 D_{60}= 0.05 D_{50}= 0.03
D_{30}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	1.0	34.8	47.0	17.2

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-34	143.5-145	9-8-07	CL	Sandy lean clay	20.1	26	17

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-34
Elev. or Depth: 143.5-145 Sample Length(in./cm.):
Location:
Description: Sandy lean clay
Date: 9-8-07 Natural Moisture: 20.1
Liquid Limit: 26 Plastic Limit: 17 USCS Class.: CL
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	156.50
Tare =	0.00
Dry sample weight =	156.50

Sample split on number 10 sieve
Split sample data:
Sample and tare = 54.60 Tare = .00 Sample weight = 54.60
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.37	99.3
# 40	0.56	99.0
# 60	0.69	98.7
# 140	8.76	84.0
# 200	19.54	64.2

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 55.58
Hygroscopic moisture correction:
Moist weight & tare = 30.30
Dry weight & tare = 30.05
Tare = 16.16
Hygroscopic moisture= 1.8 %
Calculated biased weight= 54.60
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

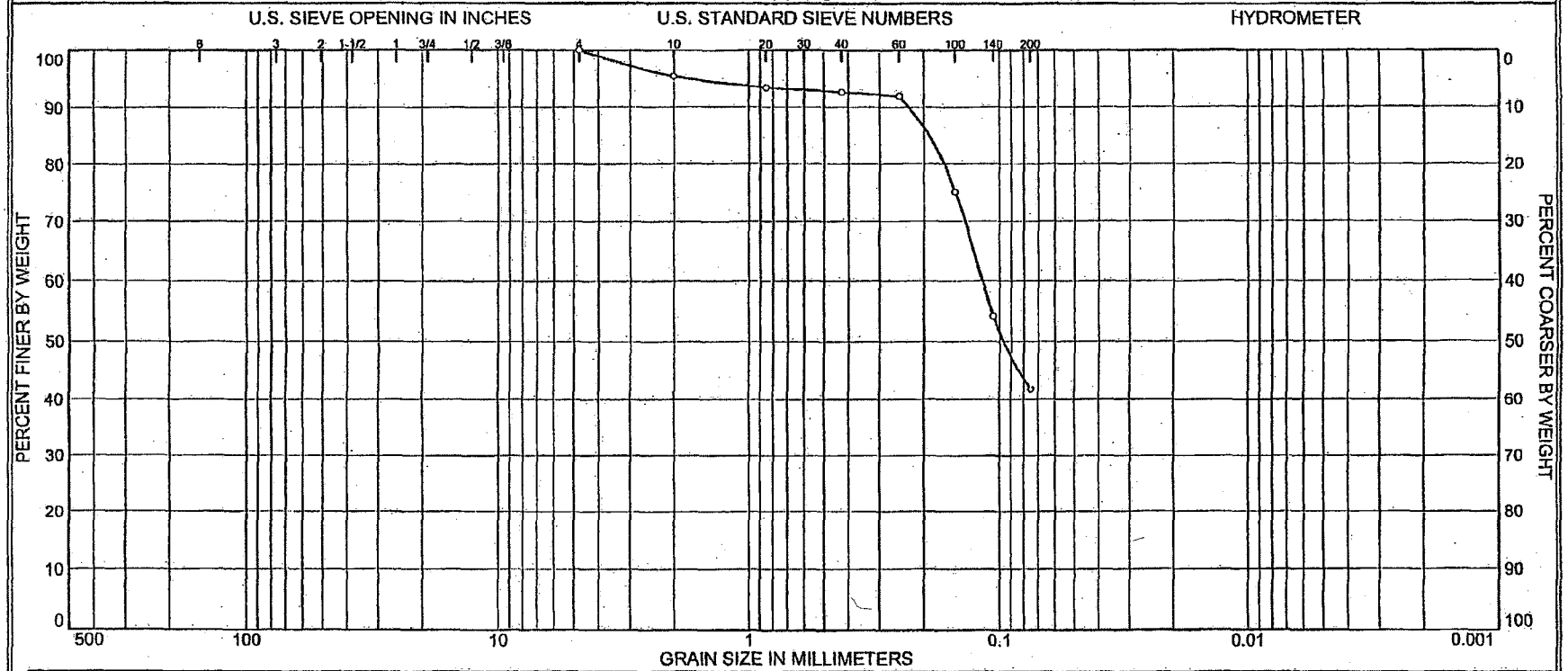
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	21.9	26.0	22.6	0.0133	27.0	11.9	0.0459	41.4
2.00	21.9	22.0	18.6	0.0133	23.0	12.5	0.0334	34.0
5.00	21.9	17.0	13.6	0.0133	18.0	13.3	0.0218	24.9
15.00	21.9	15.0	11.6	0.0133	16.0	13.7	0.0127	21.2
30.00	21.8	14.0	10.6	0.0133	15.0	13.8	0.0091	19.3
60.00	21.3	13.0	9.5	0.0134	14.0	14.0	0.0065	17.3
250.00	20.7	13.0	9.3	0.0135	14.0	14.0	0.0032	17.1
1440.00	20.4	12.5	8.8	0.0136	13.5	14.1	0.0013	16.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 35.8 (% coarse = % medium = 1.0 % fine = 34.8)
% SILT = 47.0 % CLAY = 17.2

D_{85}= 0.11 D_{60}= 0.07 D_{50}= 0.06
D_{30}= 0.03

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	4.6	2.8	50.8	41.8	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-35	143.5-150	9-8-07	SM	Silty Sand	20.2		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface

Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AK 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-35
Elev. or Depth: 143.5-150 **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: 9-8-07 **Natural Moisture:** 20.2
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	133.29
Tare =	12.26
Dry sample weight =	121.03

Tare for cumulative weight retained= .00

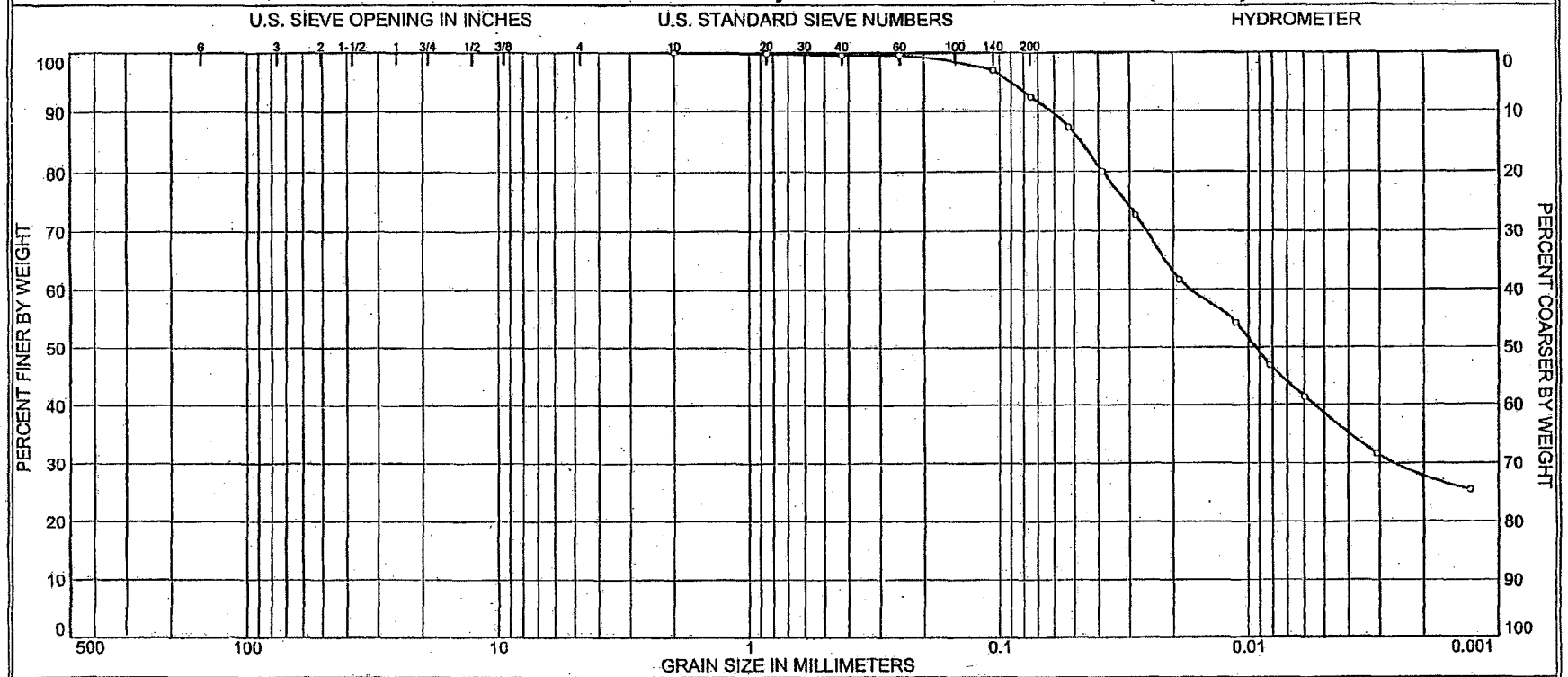
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	5.62	95.4
# 20	8.00	93.4
# 40	8.90	92.6
# 60	9.75	91.9
# 100	30.30	75.0
# 140	55.50	54.1
# 200	70.45	41.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 58.2 (% coarse = 4.6 % medium = 2.8 % fine = 50.8)
% FINES = 41.8

D_{85}= 0.19 D_{60}= 0.12 D_{50}= 0.10

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.4	7.2	53.8	38.6

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-36	158.5-160	9-8-07	ML	Sandy Silt	18.5		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-36
Elev. or Depth: 158.5-160 Sample Length(in./cm.):
Location:
Description: Sandy Silt
Date: 9-8-07 Natural Moisture: 18.5
Liquid Limit: Plastic Limit: USCS Class.: ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	98.15
Tare =	0.00
Dry sample weight =	98.15

Sample split on number 10 sieve
Split sample data:
Sample and tare = 54.50 Tare = .00 Sample weight = 54.50
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.10	99.8
# 40	0.21	99.6
# 60	0.24	99.6
# 140	1.64	97.0
# 200	4.16	92.4

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 55.79
Hygroscopic moisture correction:
Moist weight & tare = 30.87
Dry weight & tare = 30.53
Tare = 16.20
Hygroscopic moisture= 2.4 %
Calculated biased weight= 54.50
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
rdrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

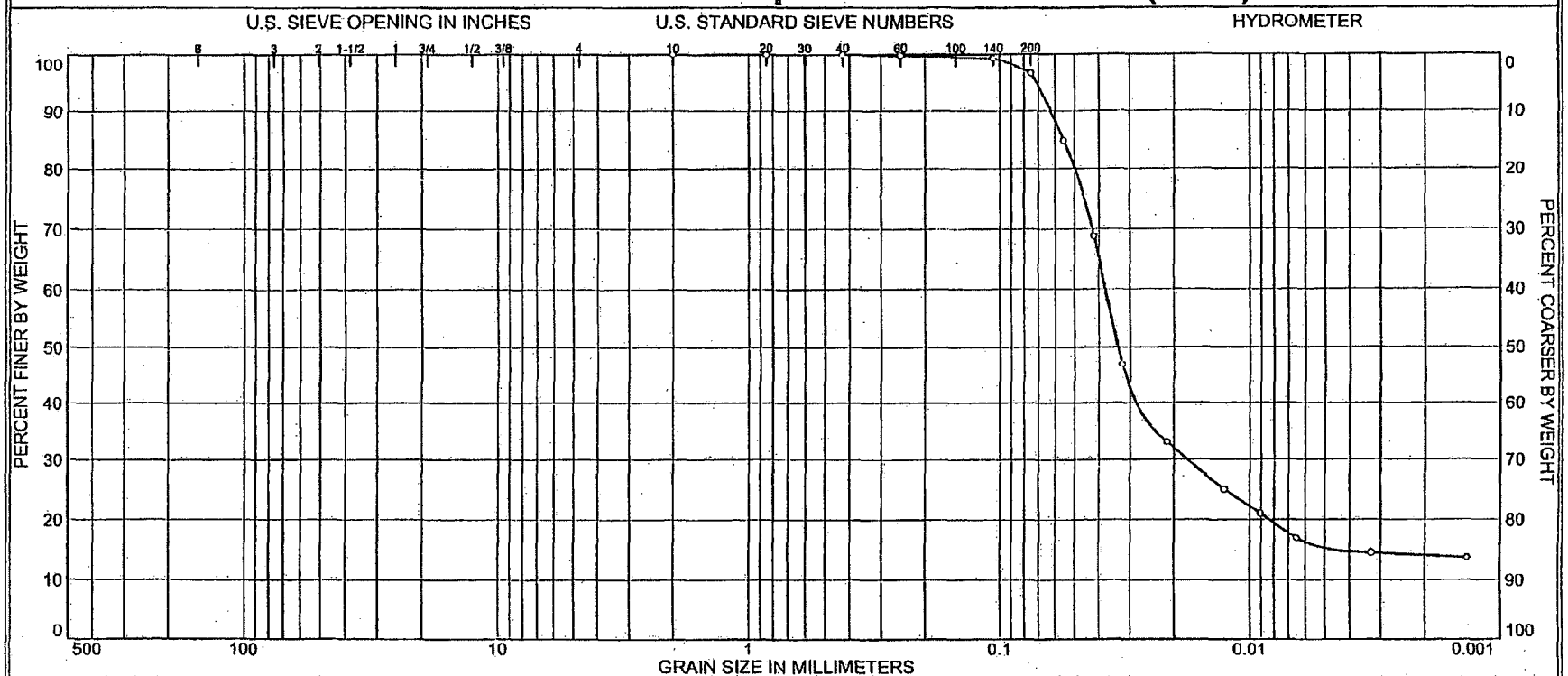
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
0.50	22.0	51.0	47.6	0.0133	52.0	7.8	0.0525	87.3
1.00	22.0	47.0	43.6	0.0133	48.0	8.4	0.0386	80.0
2.00	22.0	43.0	39.6	0.0133	44.0	9.1	0.0284	72.7
5.00	22.0	37.0	33.6	0.0133	38.0	10.1	0.0189	61.7
15.00	21.9	33.0	29.6	0.0133	34.0	10.7	0.0113	54.3
30.00	21.8	29.0	25.6	0.0133	30.0	11.4	0.0082	46.9
60.00	21.5	26.0	22.5	0.0134	27.0	11.9	0.0060	41.3
250.00	20.1	21.0	17.2	0.0136	22.0	12.7	0.0031	31.6
1440.00	20.8	17.5	13.9	0.0135	18.5	13.3	0.0013	25.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 7.6 (% coarse = % medium = 0.4 % fine = 7.2)
% SILT = 53.8 % CLAY = 38.6

D_{85}= 0.05 D_{60}= 0.02 D_{50}= 0.01
D_{30}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	3.2	81.6	15.1

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-37	163.5-165	9-8-07	ML	Silt	26.2	24	21

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-29-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-37
Elev. or Depth: 163.5-165 Sample Length(in./cm.):
Location:
Description: Silt
Date: 9-8-07 Natural Moisture: 26.2
Liquid Limit: 24 Plastic Limit: 21 USCS Class.: ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	138.70
Tare =	0.00
Dry sample weight =	138.70

Sample split on number 10 sieve
Split sample data:
Sample and tare = 50.26 Tare = .00 Sample weight = 50.26
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.05	99.9
# 40	0.07	99.9
# 60	0.09	99.8
# 140	0.33	99.3
# 200	1.65	96.7

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 50.98
Hygroscopic moisture correction:
Moist weight & tare = 29.91
Dry weight & tare = 29.72
Tare = 16.52
Hygroscopic moisture= 1.4 %
Calculated biased weight= 50.26
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

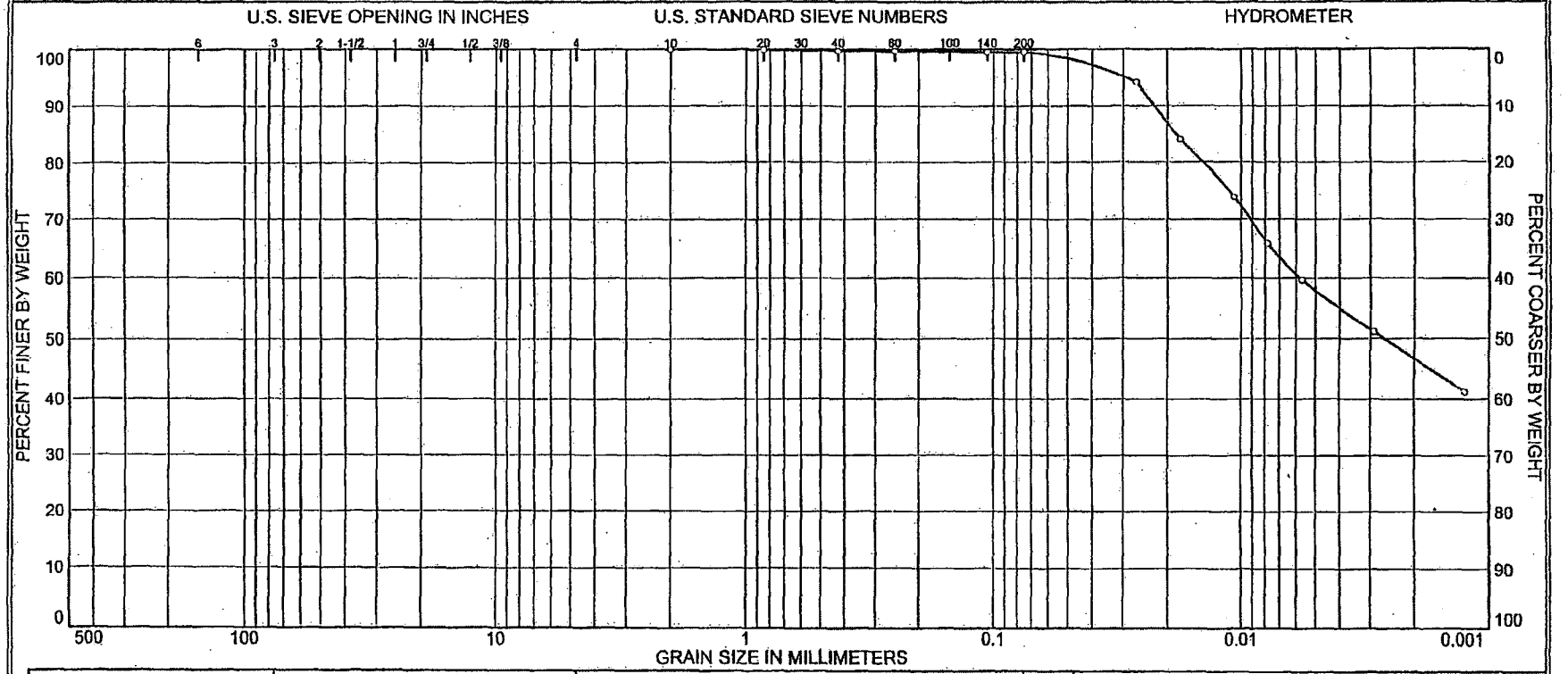
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
0.50	22.0	46.0	42.6	0.0133	47.0	8.6	0.0552	84.8
1.00	22.0	38.0	34.6	0.0133	39.0	9.9	0.0419	68.8
2.00	22.0	27.0	23.6	0.0133	28.0	11.7	0.0322	47.0
5.00	22.0	20.0	16.6	0.0133	21.0	12.9	0.0213	33.0
15.00	21.9	16.0	12.6	0.0133	17.0	13.5	0.0126	25.0
30.00	21.7	14.0	10.5	0.0134	15.0	13.8	0.0091	21.0
60.00	21.5	12.0	8.5	0.0134	13.0	14.2	0.0065	16.9
250.00	20.1	11.0	7.2	0.0136	12.0	14.3	0.0033	14.4
1440.00	20.7	10.5	6.8	0.0135	11.5	14.4	0.0014	13.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 3.3 (% coarse = % medium = 0.1 % fine = 3.2)
% SILT = 81.6 % CLAY = 15.1

D_{85}= 0.06 D_{60}= 0.04 D_{50}= 0.03
D_{30}= 0.02 D_{15}= 0.00

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.3	0.2	41.7	57.8

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-38	168.5-170	9-11-07	CH	Fat clay	21.7	54	17

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-25-07

KAW 10/14/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-38
Elev. or Depth: 168.5-170 Sample Length(in./cm.):
Location:
Description: Fat clay
Date: 9-11-07 Natural Moisture: 21.7
Liquid Limit: 54 Plastic Limit: 17 USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	100.00
Tare =	0.00
Dry sample weight =	100.00

Sample split on number 10 sieve
Split sample data:
Sample and tare = 49.39 Tare = .00 Sample weight = 49.39
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.06	99.9
# 40	0.14	99.7
# 60	0.16	99.7
# 140	0.23	99.5
# 200	0.26	99.5

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 51.17
Hygroscopic moisture correction:
Moist weight & tare = 29.15
Dry weight & tare = 28.71
Tare = 16.48
Hygroscopic moisture= 3.6 %
Calculated biased weight= 49.39
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
ydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

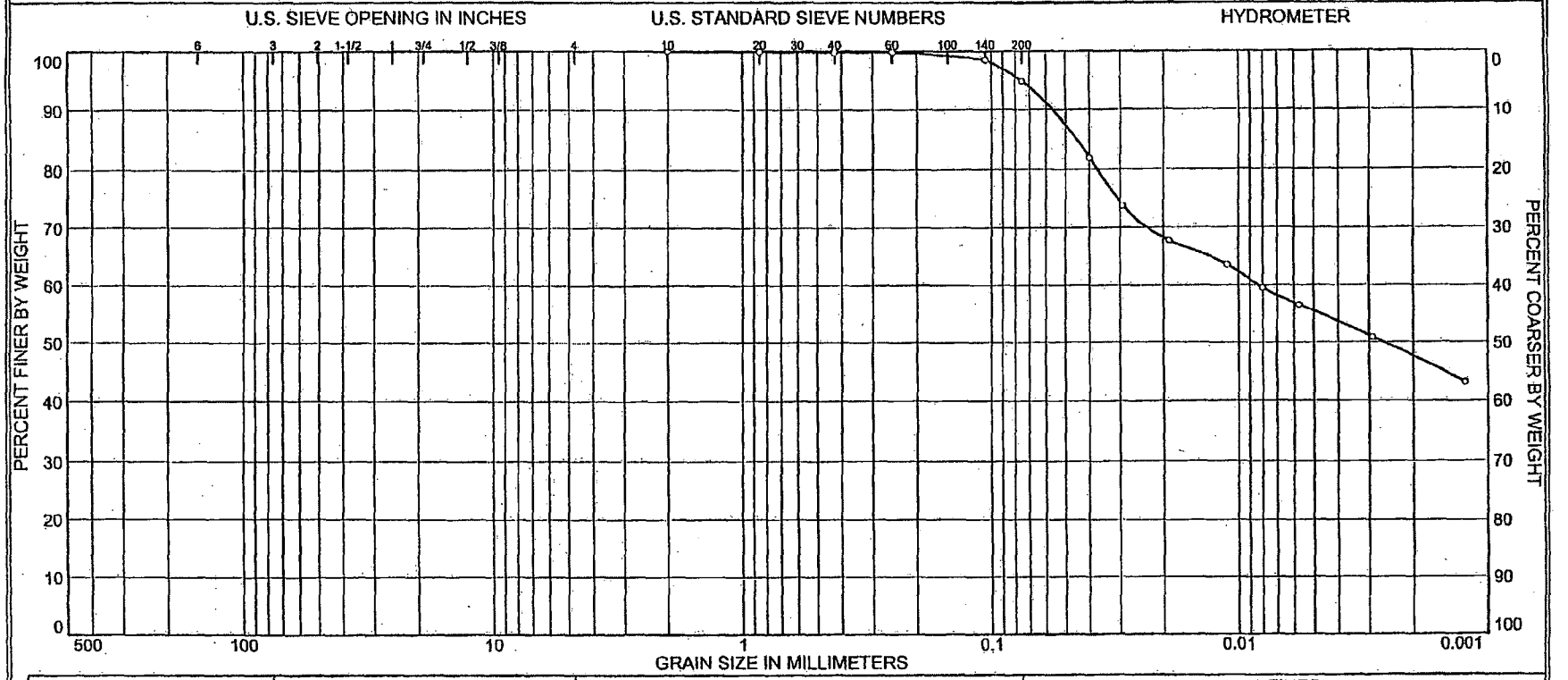
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.7	50.0	46.5	0.0134	51.0	7.9	0.0266	94.2
5.00	21.7	45.0	41.5	0.0134	46.0	8.8	0.0177	84.1
15.00	21.6	40.0	36.5	0.0134	41.0	9.6	0.0107	73.9
30.00	21.6	36.0	32.5	0.0134	37.0	10.2	0.0078	65.8
60.00	21.4	33.0	29.5	0.0134	34.0	10.7	0.0057	59.7
250.00	20.2	29.0	25.2	0.0136	30.0	11.4	0.0029	51.1
1440.00	20.7	24.0	20.3	0.0135	25.0	12.2	0.0012	41.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 0.5 (% coarse = % medium = 0.3 % fine = 0.2)
% SILT = 41.7 % CLAY = 57.8

D_{85}= 0.02 D_{60}= 0.01 D_{50}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.2	5.0	39.4	55.4

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-39	178.5-180	9-11-07	CL	Lean Clay	20.0		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MH 9-25-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-39
Elev. or Depth: 178.5-180 **Sample Length(in./cm.):**
Location:
Description: Lean Clay
Date: 9-11-07 **Natural Moisture:** 20.0
Liquid Limit: **Plastic Limit:** **USCS Class.:** CL
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	100.00
Tare =	0.00
Dry sample weight =	100.00

Sample split on number 10 sieve
Split sample data:
Sample and tare = 49.54 Tare = .00 Sample weight = 49.54
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.07	99.9
# 40	0.10	99.8
# 60	0.11	99.8
# 140	0.70	98.6
# 200	2.59	94.8

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 51.17
Hygroscopic moisture correction:
Moist weight & tare = 28.79
Dry weight & tare = 28.39
Tare = 16.24
Hygroscopic moisture= 3.3 %
Calculated biased weight= 49.54
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

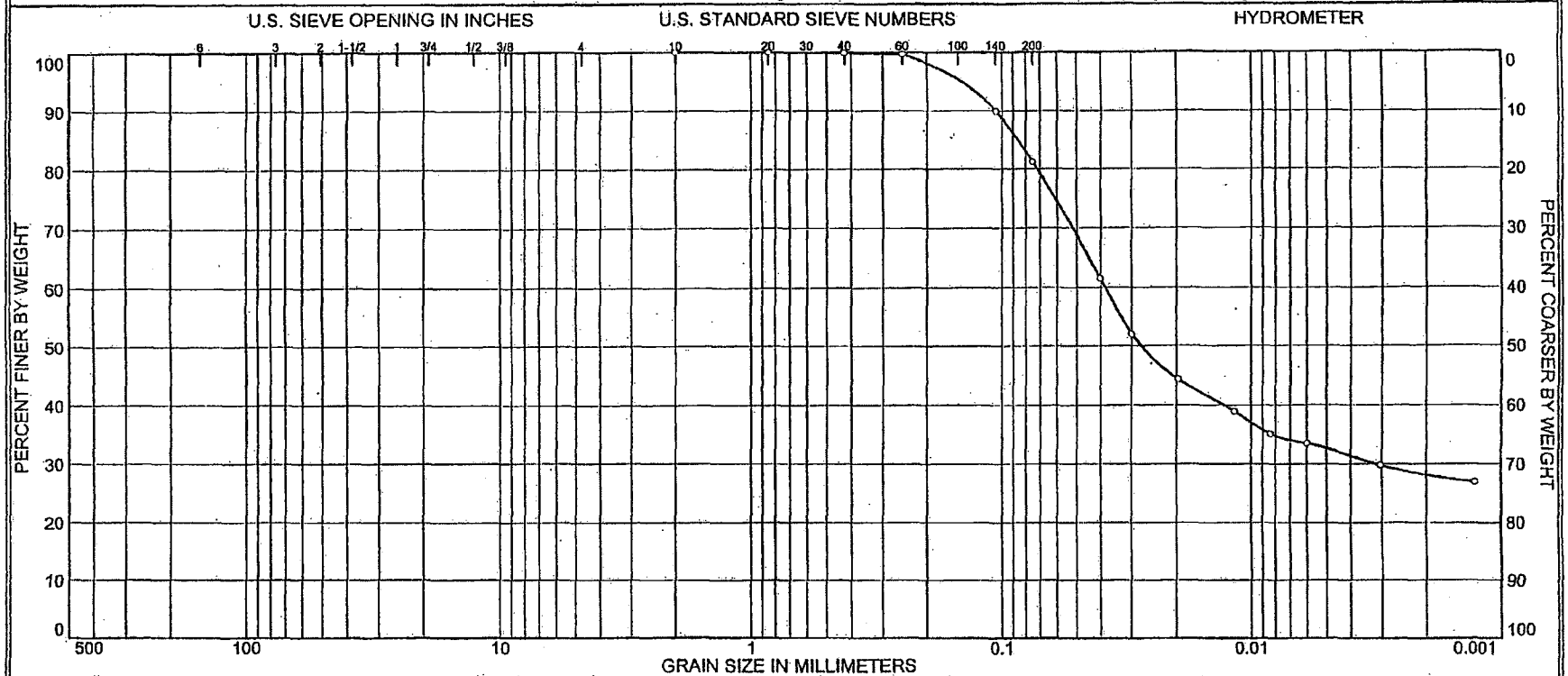
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	21.7	44.0	40.5	0.0134	45.0	8.9	0.0399	81.8
2.00	21.7	40.0	36.5	0.0134	41.0	9.6	0.0292	73.8
5.00	21.7	37.0	33.5	0.0134	38.0	10.1	0.0190	67.7
15.00	21.6	35.0	31.5	0.0134	36.0	10.4	0.0111	63.6
30.00	21.5	33.0	29.5	0.0134	34.0	10.7	0.0080	59.5
60.00	21.4	31.5	28.0	0.0134	32.5	11.0	0.0057	56.5
250.00	20.2	29.0	25.2	0.0136	30.0	11.4	0.0029	50.9
1440.00	20.7	25.0	21.3	0.0135	26.0	12.0	0.0012	43.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 5.2 (% coarse = % medium = 0.2 % fine = 5.0)
% SILT = 39.4 % CLAY = 55.4

D_{85}= 0.05 D_{60}= 0.01 D_{50}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	18.7	48.6	32.6

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-443	SS-43	198.5-200	9-11-07	CL	Lean clay with sand	19.3	29	13

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-25-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-443
Sample No.: SS-43
Elev. or Depth: 198.5-200 Sample Length(in./cm.):
Location:
Description: Lean clay with sand
Date: 9-11-07 Natural Moisture: 19.3
Liquid Limit: 29 Plastic Limit: 13 USCS Class.: CL
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	94.41
Tare =	0.00
Dry sample weight =	94.41

Sample split on number 10 sieve
Split sample data:
Sample and tare = 64.36 Tare = .00 Sample weight = 64.36
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.03	100.0
# 40	0.09	99.9
# 60	0.17	99.7
# 140	6.53	89.9
# 200	12.13	81.2

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 65.92
Hygroscopic moisture correction:
Moist weight & tare = 30.49
Dry weight & tare = 30.15
Tare = 16.14
Hygroscopic moisture= 2.4 %
Calculated biased weight= 64.36
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

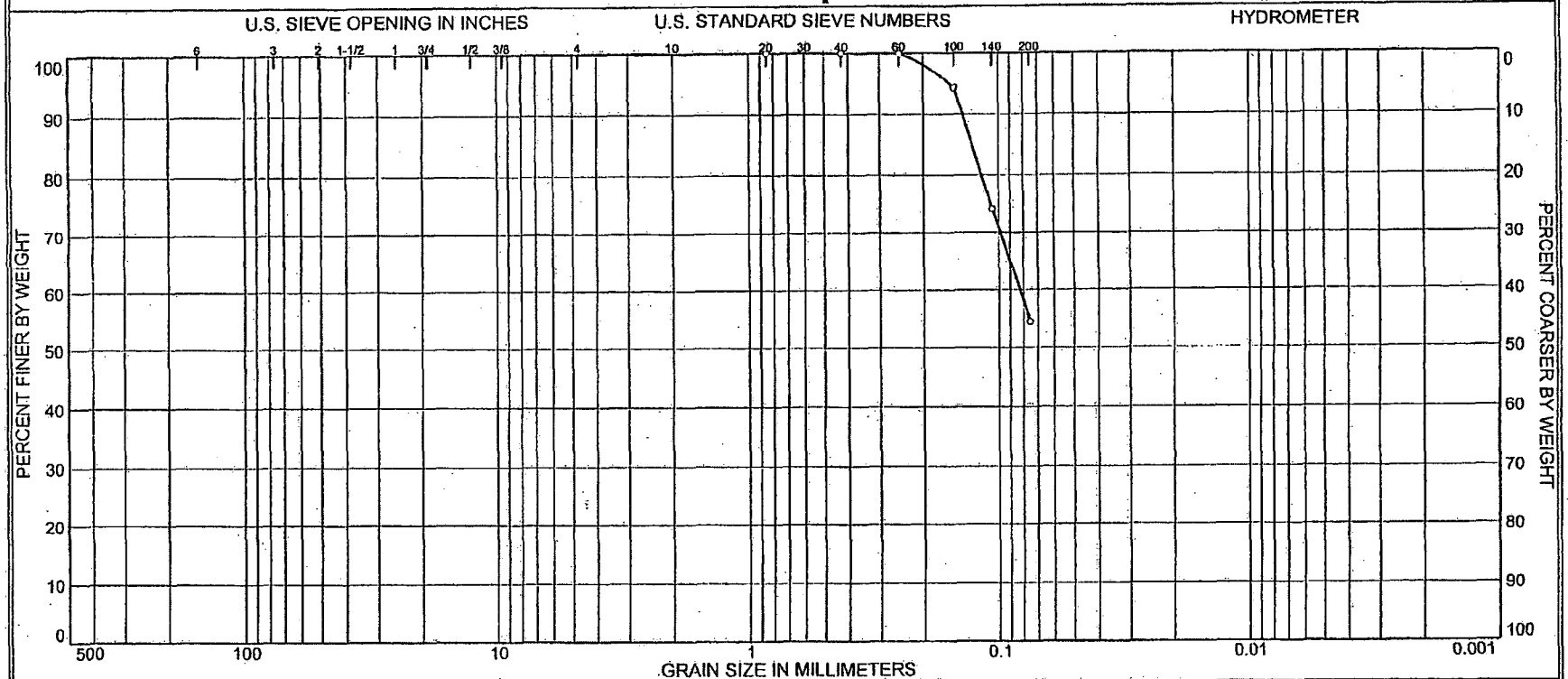
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	21.8	43.0	39.6	0.0133	44.0	9.1	0.0402	61.5
2.00	21.8	37.0	33.6	0.0133	38.0	10.1	0.0299	52.1
5.00	21.8	32.0	28.6	0.0133	33.0	10.9	0.0197	44.4
15.00	21.8	28.5	25.1	0.0133	29.5	11.5	0.0117	38.9
30.00	21.7	26.0	22.5	0.0134	27.0	11.9	0.0084	35.0
60.00	21.5	25.0	21.5	0.0134	26.0	12.0	0.0060	33.4
250.00	19.9	23.0	19.2	0.0137	24.0	12.4	0.0030	29.8
1440.00	20.7	21.0	17.3	0.0135	22.0	12.7	0.0013	26.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 18.8 (% coarse = % medium = 0.1 % fine = 18.7)
% SILT = 48.6 % CLAY = 32.6

D_{85}= 0.09 D_{60}= 0.04 D_{50}= 0.03
D_{30}= 0.00

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.0	45.7	54.3	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-444	SS-21	68.5-70	9-6-07	ML	Sandy Silt	20.9		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234074257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MA 10-5-07

KAW 10/5/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-444
Sample No.: SS-21
Elev. or Depth: 68.5-70 **Sample Length(in./cm.):**
Location:
Description: Sandy Silt
Date: 9-6-07 **Natural Moisture:** 20.9
Liquid Limit: **Plastic Limit:** **USCS Class.:** ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	120.53
Tare =	6.71
Dry sample weight =	113.82

Tare for cumulative weight retained= .00

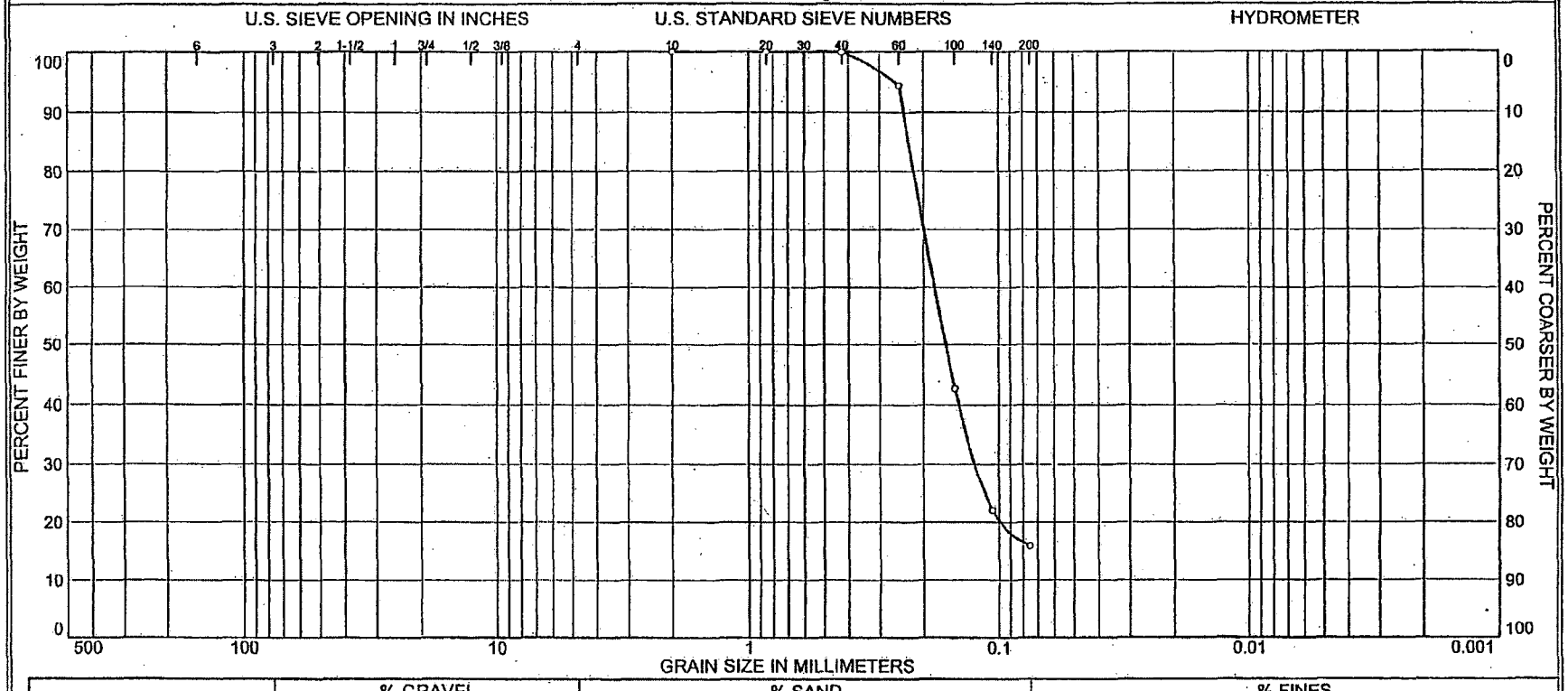
Sieve	Cumul. Wt. retained	Percent finer
# 20	0.00	100.0
# 40	0.04	100.0
# 60	0.16	99.9
# 100	6.44	94.3
# 140	29.41	74.2
# 200	51.98	54.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 45.7 (% coarse = % medium = % fine = 45.7)
% FINES = 54.3

D_{85}= 0.13 D_{60}= 0.08

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	84.1	15.8	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-444	SS-22	73.5-75	9-5-07	SM	Silty Sand	19.8		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234074257 | Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 10-5-07

KAW 10/5/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-444
Sample No.: SS-22
Elev. or Depth: 73.5-75 Sample Length(in./cm.):
Location:
Description: Silty Sand
Date: 9-5-07 Natural Moisture: 19.8
Liquid Limit: Plastic Limit: USCS Class.: SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	111.26
Tare =	6.51
Dry sample weight =	104.75

Tare for cumulative weight retained= .00

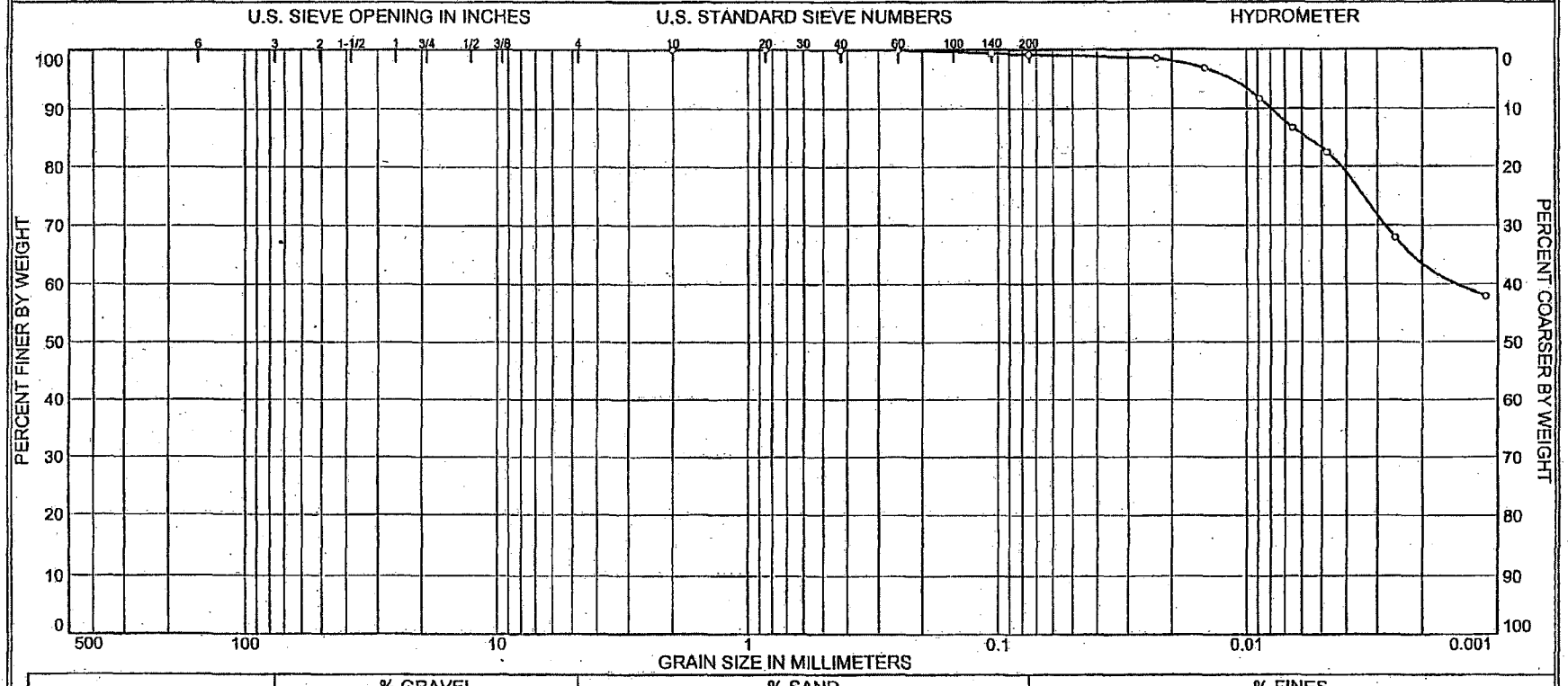
Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.04	100.0
# 40	0.10	99.9
# 60	6.01	94.3
# 100	60.04	42.7
# 140	81.73	22.0
# 200	88.25	15.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 84.2 (% coarse = % medium = 0.1 % fine = 84.1)
% FINES = 15.8

D_{85}= 0.23 D_{60}= 0.18 D_{50}= 0.16
D_{30}= 0.13

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	0.7	15.9	83.3

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-444	SS-26	93.5-95	9-5-07	CH	Fat Clay	30.0		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AD 9-21-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-444
Sample No.: SS-26
Elev. or Depth: 93.5-95 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-5-07 Natural Moisture: 30.0
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	96.98
Tare =	0.00
Dry sample weight =	96.98

Sample split on number 10 sieve
Split sample data:
Sample and tare = 59.37 Tare = .00 Sample weight = 59.37
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.02	100.0
# 40	0.03	99.9
# 60	0.05	99.9
# 140	0.36	99.4
# 200	0.48	99.2

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 62.74
Hygroscopic moisture correction:
Moist weight & tare = 29.00
Dry weight & tare = 28.31
Tare = 16.13
Hygroscopic moisture= 5.7 %
Calculated biased weight= 59.38
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

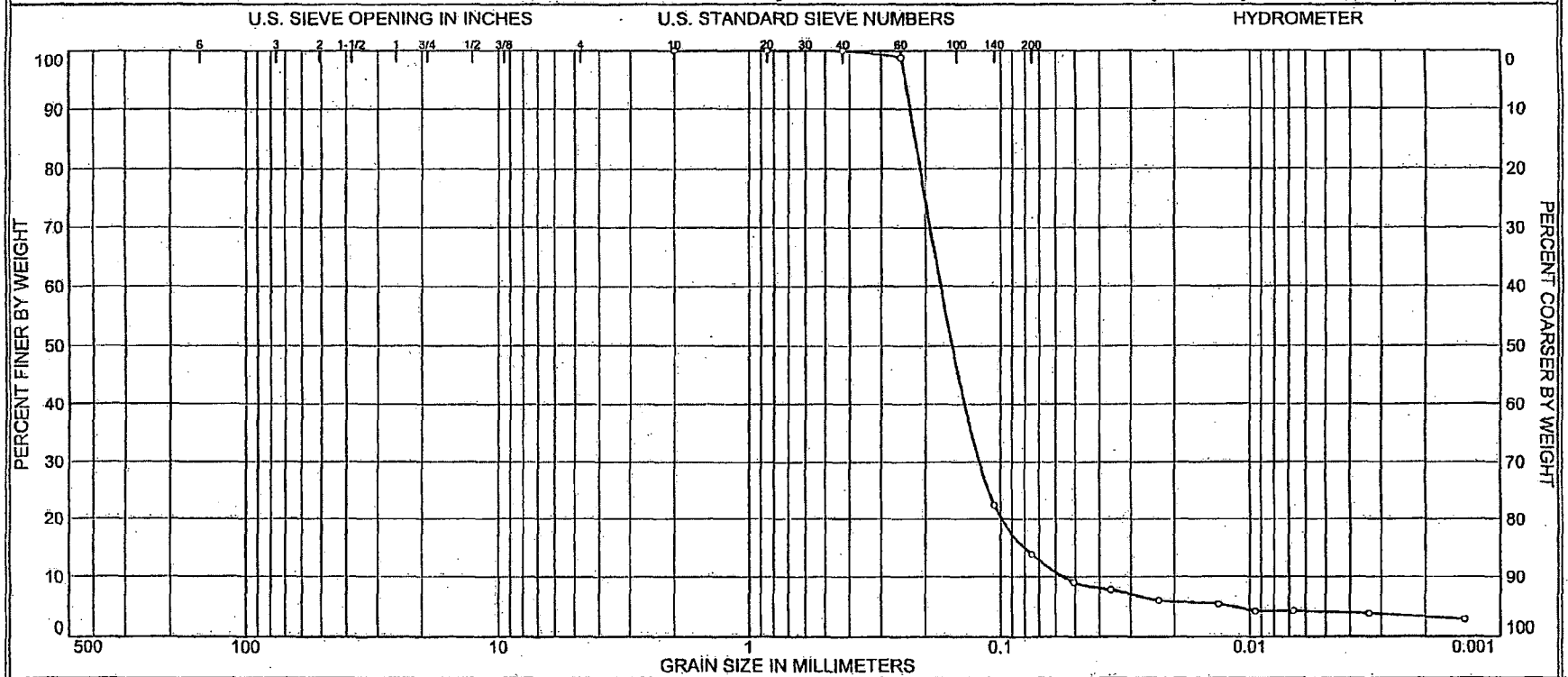
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.8	62.0	58.6	0.0133	63.0	6.0	0.0230	98.6
5.00	21.8	61.0	57.6	0.0133	62.0	6.1	0.0148	96.9
15.00	21.7	58.0	54.5	0.0134	59.0	6.6	0.0089	91.8
30.00	21.4	55.0	51.5	0.0134	56.0	7.1	0.0065	86.7
60.00	21.4	52.5	49.0	0.0134	53.5	7.5	0.0047	82.5
250.00	20.5	44.0	40.3	0.0136	45.0	8.9	0.0026	67.9
1440.00	21.0	38.0	34.4	0.0135	39.0	9.9	0.0011	57.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 0.8 (% coarse = % medium = 0.1 % fine = 0.7)
% SILT = 15.9 % CLAY = 83.3

D_{85}= 0.01 D_{60}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.0	86.2	9.7	4.1

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-445	SS-21	68.5-70	9-11-07	SM	Silty Sand	21.3		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-25-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-445
Sample No.: SS-21
Elev. or Depth: 68.5-70 Sample Length(in./cm.):
Location:
Description: Silty Sand
Date: 9-11-07 Natural Moisture: 21.3
Liquid Limit: Plastic Limit: USCS Class.: SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	97.25
Tare =	0.00
Dry sample weight =	97.25

Sample split on number 10 sieve
Split sample data:
Sample and tare = 83.34 Tare = .00 Sample weight = 83.34
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.00	100.0
# 40	0.00	100.0
# 60	1.02	98.8
# 140	64.68	22.4
# 200	71.81	13.8

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 83.40
Hygroscopic moisture correction:
Moist weight & tare = 30.01
Dry weight & tare = 30.00
Tare = 16.14
Hygroscopic moisture= 0.1 %
Calculated biased weight= 83.34
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
ydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

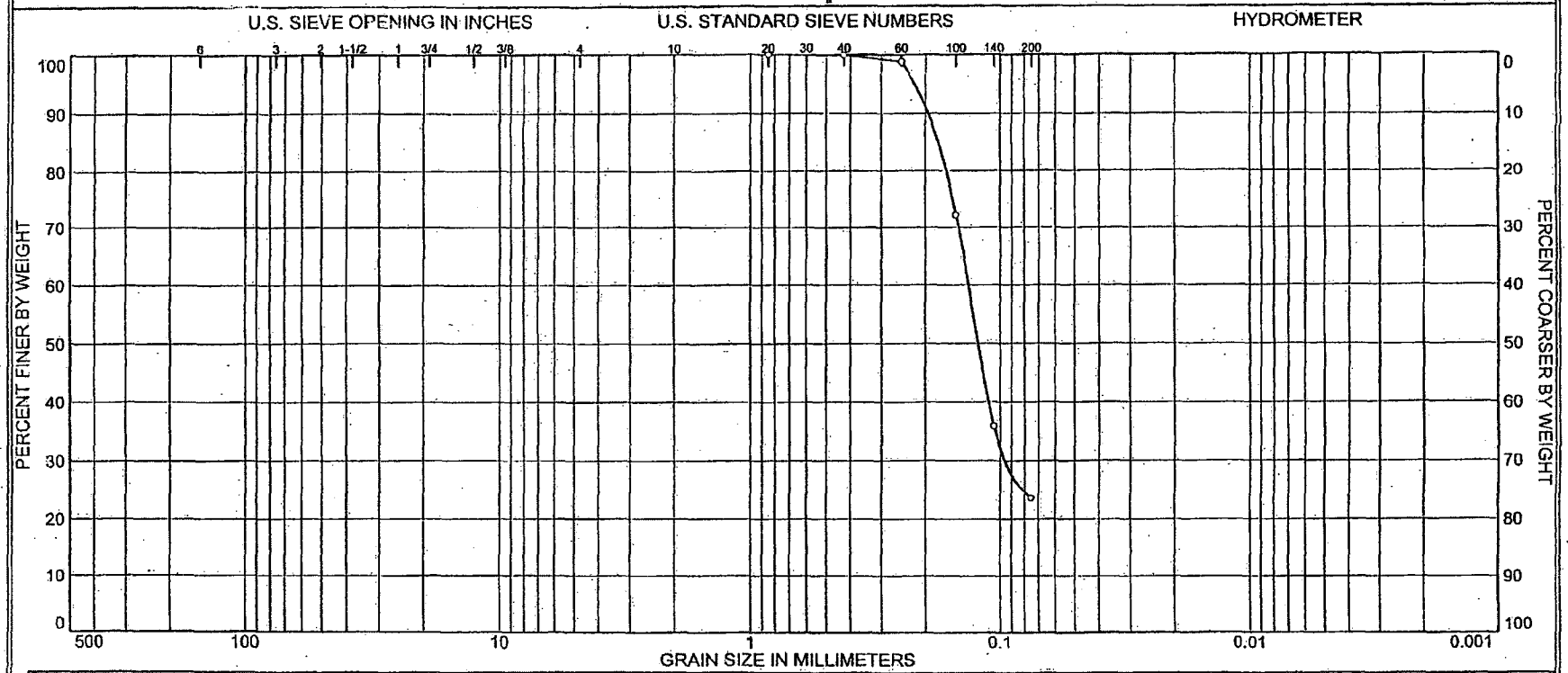
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	21.6	11.0	7.5	0.0134	12.0	14.3	0.0506	9.0
2.00	21.6	10.0	6.5	0.0134	11.0	14.5	0.0360	7.8
5.00	21.6	8.5	5.0	0.0134	9.5	14.7	0.0230	6.0
15.00	21.6	8.0	4.5	0.0134	9.0	14.8	0.0133	5.4
30.00	21.4	7.0	3.5	0.0134	8.0	15.0	0.0095	4.2
60.00	21.4	7.0	3.5	0.0134	8.0	15.0	0.0067	4.2
250.00	19.9	7.0	3.2	0.0137	8.0	15.0	0.0033	3.8
1440.00	20.5	6.0	2.3	0.0136	7.0	15.1	0.0014	2.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 86.2 (% coarse = % medium = 0.0 % fine = 86.2)
% SILT = 9.7 % CLAY = 4.1

D_{85}= 0.22 D_{60}= 0.17 D_{50}= 0.16
D_{30}= 0.12 D_{15}= 0.08 D_{10}= 0.06
C_c= 1.5071 C_u= 3.077

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	76.3	23.6	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-445	SS-22	73.5-75	9-11-07	SM	Silty Sand	18.2		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MA 1-26-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-445
Sample No.: SS-22
Elev. or Depth: 73.5-75 Sample Length(in./cm.):
Location:
Description: Silty Sand
Date: 9-11-07 Natural Moisture: 18.2
Liquid Limit: Plastic Limit: USCS Class.: SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	54.56
Tare =	6.63
Dry sample weight =	47.93

Tare for cumulative weight retained= .00

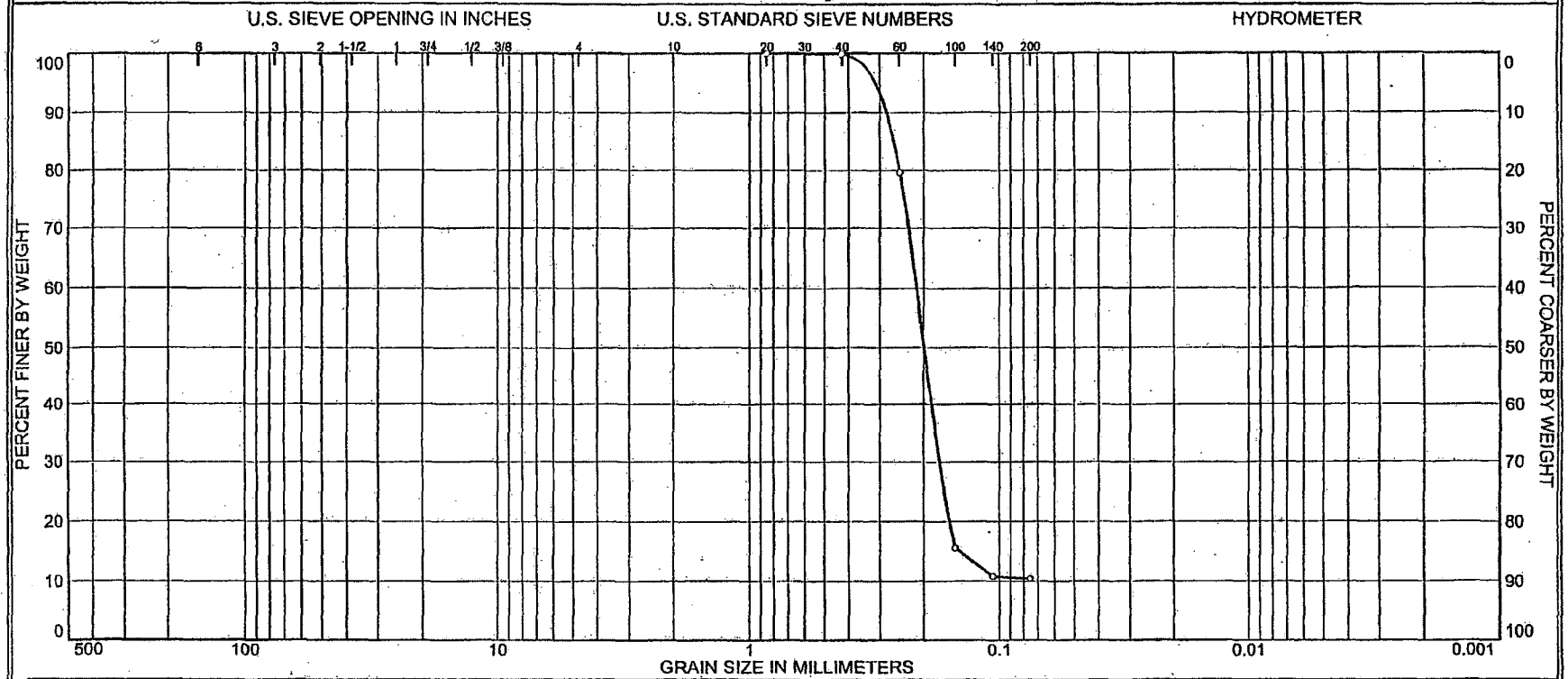
Sieve	Cumul. Wt. retained	Percent finer
# 20	0.00	100.0
# 40	0.03	99.9
# 60	0.58	98.8
# 100	13.34	72.2
# 140	30.73	35.9
# 200	36.62	23.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 76.4 (% coarse = % medium = 0.1 % fine = 76.3)
% FINES = 23.6

D_{85}= 0.18 D_{60}= 0.13 D_{50}= 0.12
D_{30}= 0.10

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	89.5	10.4	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-445	SS-23	78.5-80	9-11-07	SP-SM	Poorly Graded Sand with Silt	21.6		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH JA 9-24-08

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-445
Sample No.: SS-23
Elev. or Depth: 78.5-80 **Sample Length(in./cm.):**
Location:
Description: Poorly Graded Sand with Silt
Date: 9-11-07 **Natural Moisture:** 21.6
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	155.24
Tare =	101.43
Dry sample weight =	53.81

Tare for cumulative weight retained= .00

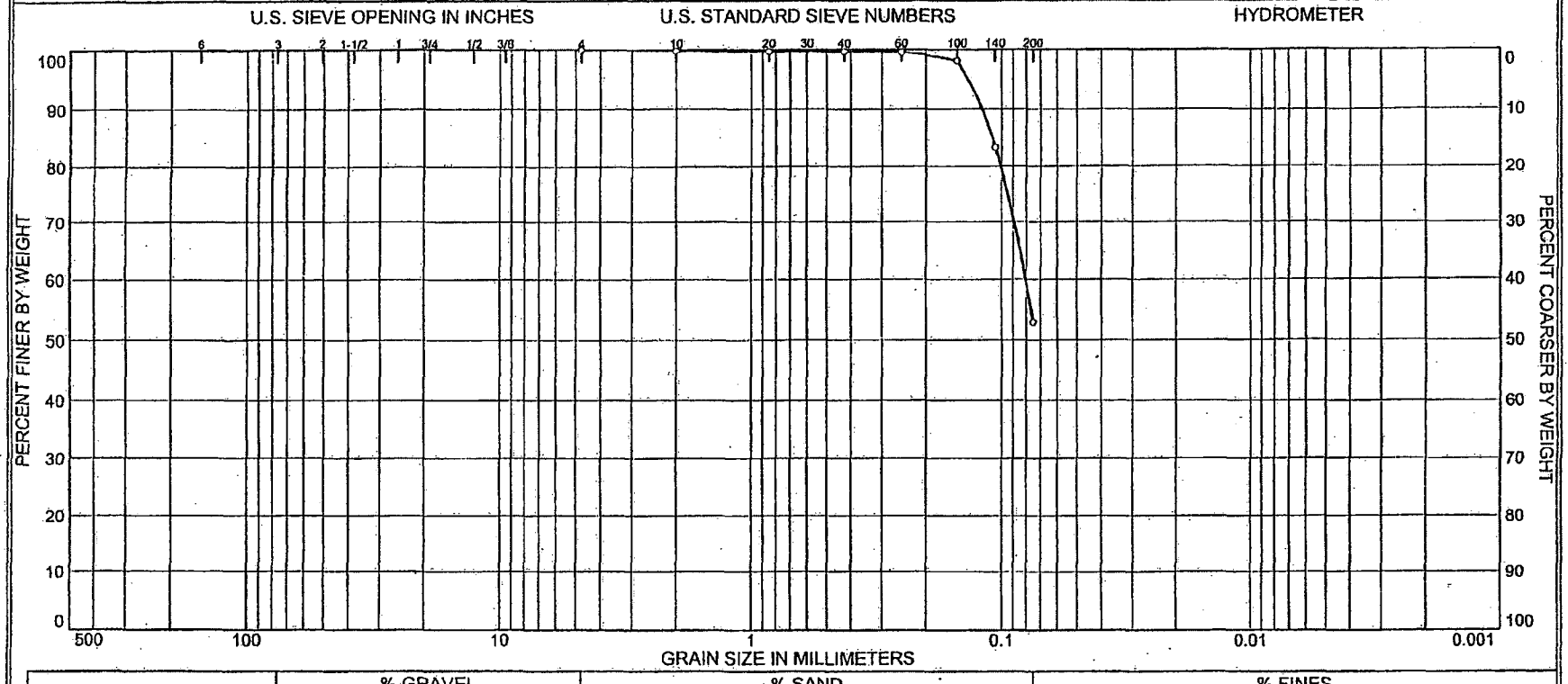
Sieve	Cumul. Wt. retained	Percent finer
# 20	0.00	100.0
# 40	0.03	99.9
# 60	10.98	79.6
# 100	45.45	15.5
# 140	47.98	10.8
# 200	48.19	10.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 89.6 (% coarse = % medium = 0.1 % fine = 89.5)
% FINES = 10.4

D_{85}= 0.26 D_{60}= 0.21 D_{50}= 0.20
D_{30}= 0.17 D_{15}= 0.14

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.2	0.1	46.8	52.9	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-940	SS-15	38.5-40	9-5-07	ML	Sandy Silt	24.9		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MH 9-26-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-15
Elev. or Depth: 38.5-40 Sample Length(in./cm.):
Location:
Description: Sandy Silt
Date: 9-5-07 Natural Moisture: 24.9
Liquid Limit: Plastic Limit: USCS Class.: ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	96.22
Tare =	6.67
Dry sample weight =	89.55

Tare for cumulative weight retained= .00

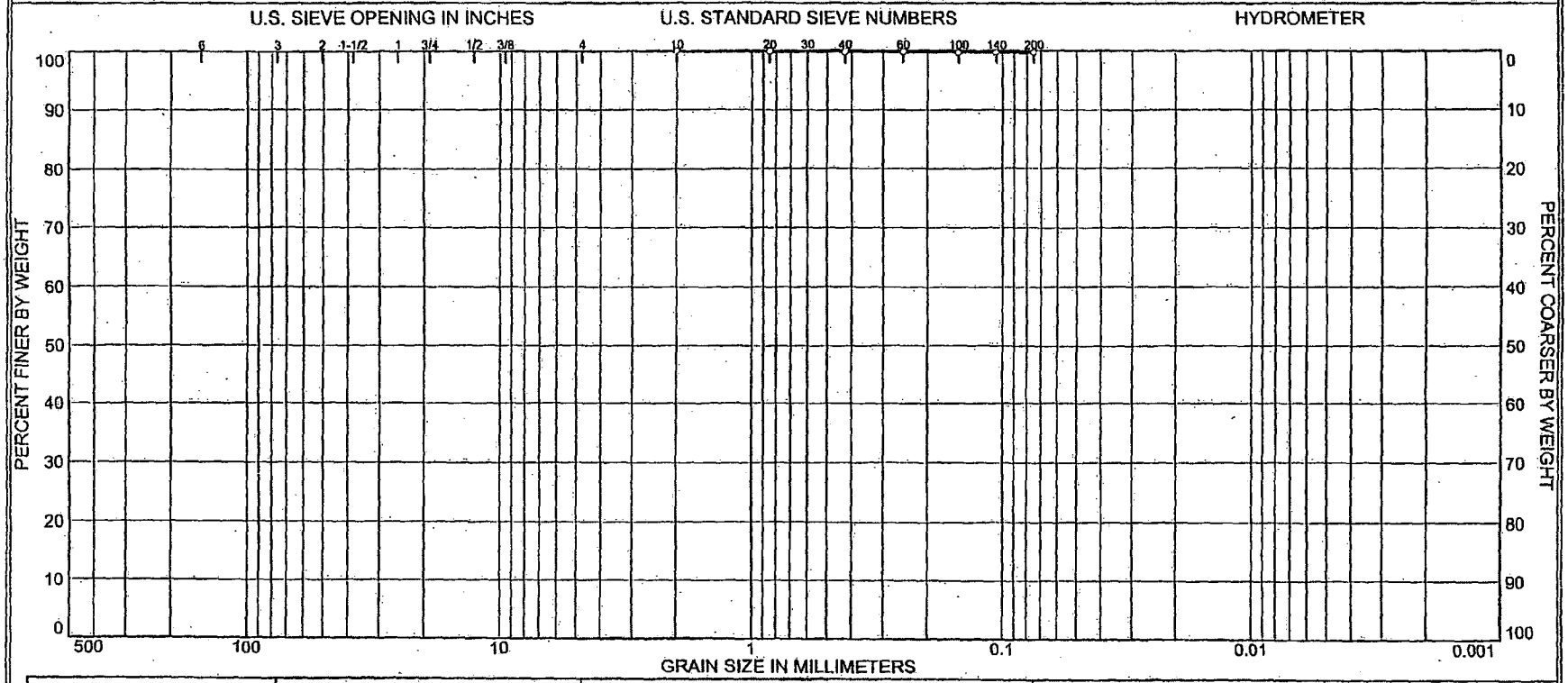
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.20	99.8
# 20	0.23	99.7
# 40	0.27	99.7
# 60	0.33	99.6
# 100	1.73	98.1
# 140	14.97	83.3
# 200	42.17	52.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 47.1 (% coarse = 0.2 % medium = 0.1 % fine = 46.8)
% FINES = 52.9

D_{85}= 0.11 D_{60}= 0.08

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.2	0.1	99.7	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-940	SS-16	43.5-45	9-21-07	CH	Fat clay	27.0	62	21

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-25-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-16
Elev. or Depth: 43.5-45 **Sample Length(in./cm.):**
Location:
Description: Fat clay
Date: 9-21-07 **Natural Moisture:** 27.0
Liquid Limit: 62 **Plastic Limit:** 21 **USCS Class.:** CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	187.65
Tare =	116.58
Dry sample weight =	71.07

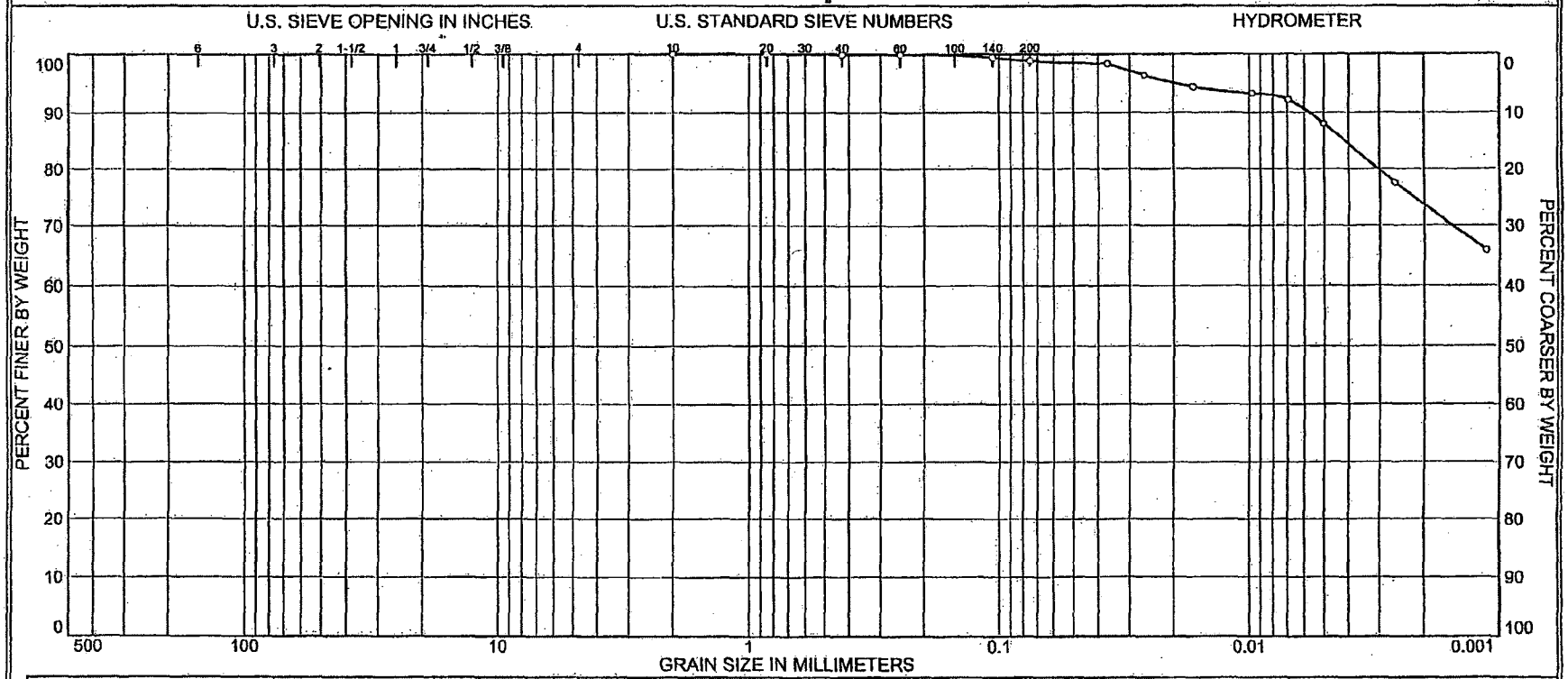
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.05	99.9
# 40	0.13	99.8
# 60	0.16	99.8
# 100	0.19	99.7
# 140	0.22	99.7
# 200	0.23	99.7

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 0.3 (% coarse = % medium = 0.2 % fine = 0.1)
% FINES = 99.7

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	1.0	11.0	87.9

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-940	SS-17	48.5-50	9-5-07	CH	Fat Clay	35.4		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-27-07.

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-17
Elev. or Depth: 48.5-50 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-5-07 Natural Moisture: 35.4
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	91.10
Tare =	0.00
Dry sample weight =	91.10

Sample split on number 10 sieve
Split sample data:
Sample and tare = 49.41 Tare = .00 Sample weight = 49.41
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.00	100.0
# 40	0.03	99.9
# 60	0.07	99.9
# 140	0.28	99.4
# 200	0.53	98.9

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 52.57
Hygroscopic moisture correction:
Moist weight & tare = 29.48
Dry weight & tare = 28.70
Tare = 16.52
Hygroscopic moisture= 6.4 %
Calculated biased weight= 49.41
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

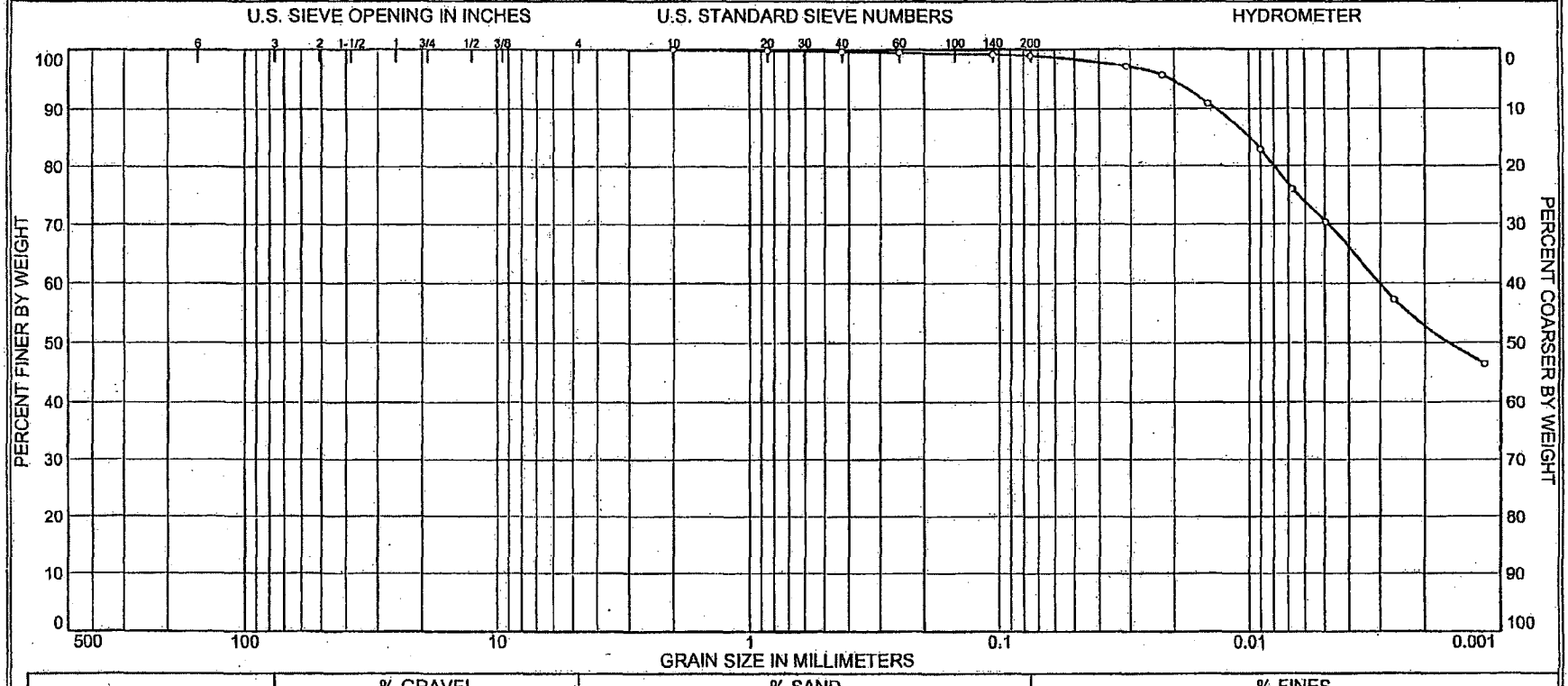
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	22.1	52.0	48.6	0.0133	53.0	7.6	0.0367	98.4
2.00	22.2	51.0	47.6	0.0133	52.0	7.8	0.0262	96.4
5.00	22.1	50.0	46.6	0.0133	51.0	7.9	0.0167	94.4
15.00	22.0	49.5	46.1	0.0133	50.5	8.0	0.0097	93.3
30.00	21.9	49.0	45.6	0.0133	50.0	8.1	0.0069	92.2
60.00	21.5	47.0	43.5	0.0134	48.0	8.4	0.0050	88.0
250.00	20.5	42.0	38.3	0.0136	43.0	9.2	0.0026	77.5
1440.00	21.4	36.0	32.5	0.0134	37.0	10.2	0.0011	65.7

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 1.1 (% coarse = % medium = 0.1 % fine = 1.0)
% SILT = 11.0 % CLAY = 87.9

D_{85}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.3	0.7	28.5	70.5

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-940	SS-19	58.5-60	9-5-07	CH	Fat Clay	22.2		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MH 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-19
Elev. or Depth: 58.5-60 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-5-07 Natural Moisture: 22.2
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	106.48
Tare =	0.00
Dry sample weight =	106.48

Sample split on number 10 sieve
Split sample data:
Sample and tare = 63.39 Tare = .00 Sample weight = 63.39
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.15	99.8
# 40	0.22	99.7
# 60	0.31	99.5
# 140	0.48	99.2
# 200	0.61	99.0

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 66.05
Hygroscopic moisture correction:
Moist weight & tare = 29.90
Dry weight & tare = 29.35
Tare = 16.27
Hygroscopic moisture= 4.2 %
Calculated biased weight= 63.38
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
ydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

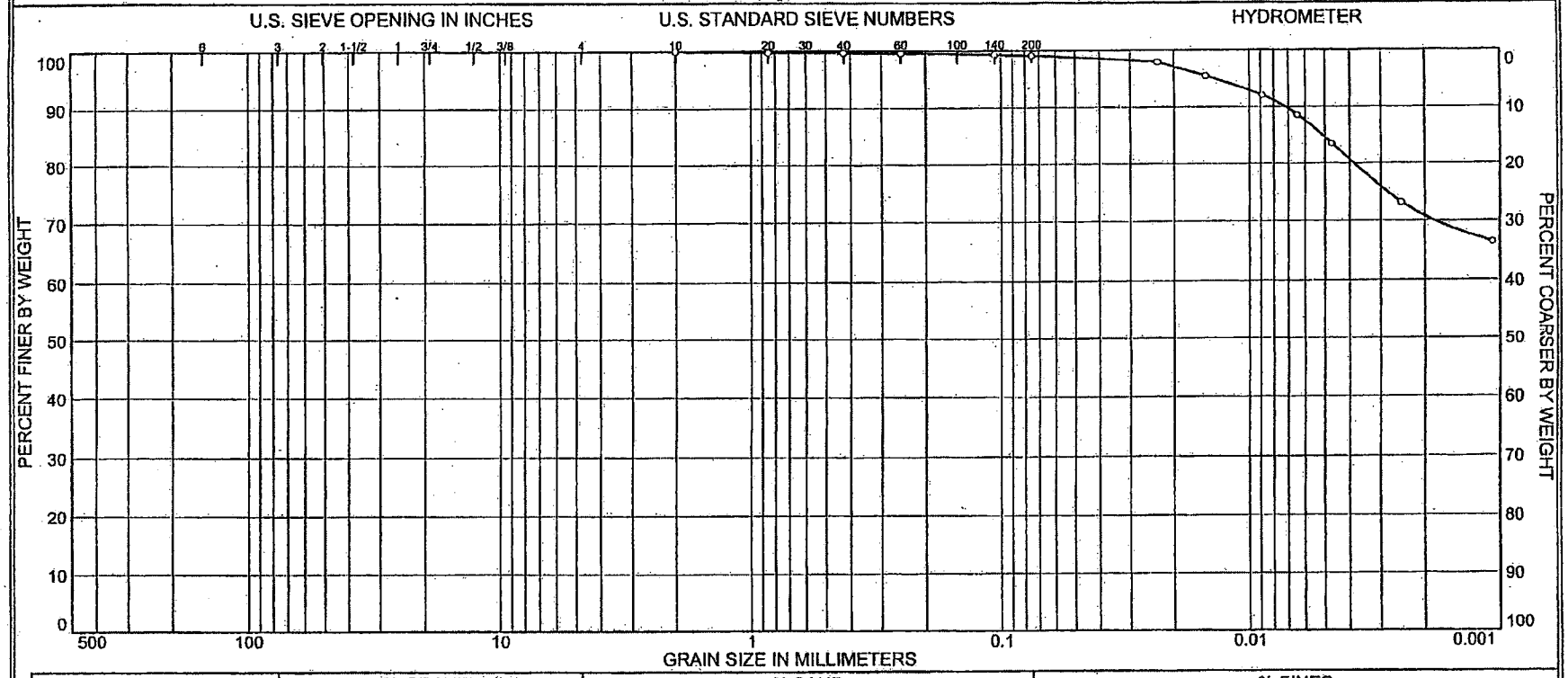
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	22.1	65.0	61.6	0.0133	66.0	5.5	0.0311	97.2
2.00	22.2	64.0	60.6	0.0133	65.0	5.6	0.0223	95.7
5.00	22.2	61.0	57.6	0.0133	62.0	6.1	0.0147	90.9
15.00	22.0	56.0	52.6	0.0133	57.0	6.9	0.0091	83.0
30.00	21.9	51.5	48.1	0.0133	52.5	7.7	0.0067	75.9
60.00	21.7	48.0	44.5	0.0134	49.0	8.3	0.0050	70.3
250.00	20.7	40.0	36.3	0.0135	41.0	9.6	0.0026	57.3
1440.00	21.2	33.0	29.4	0.0134	34.0	10.7	0.0012	46.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 1.0 (% coarse = % medium = 0.3 % fine = 0.7)
% SILT = 28.5 % CLAY = 70.5

D_{85}= 0.01 D_{60}= 0.00 D_{50}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.3	0.6	14.5	84.6

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-940	SS-21	68.5-70	9-5-07	CH	Fat Clay	26.5		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MD 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-21
Elev. or Depth: 68.5-70 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-5-07 Natural Moisture: 26.5
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	93.87
Tare =	0.00
Dry sample weight =	93.87

Sample split on number 10 sieve
Split sample data:
Sample and tare = 59.30 Tare = .00 Sample weight = 59.30
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.13	99.8
# 40	0.17	99.7
# 60	0.23	99.6
# 140	0.41	99.3
# 200	0.53	99.1

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 62.60
Hygroscopic moisture correction:
Moist weight & tare = 30.21
Dry weight & tare = 29.47
Tare = 16.19
Hygroscopic moisture= 5.6 %
Calculated biased weight= 59.30
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

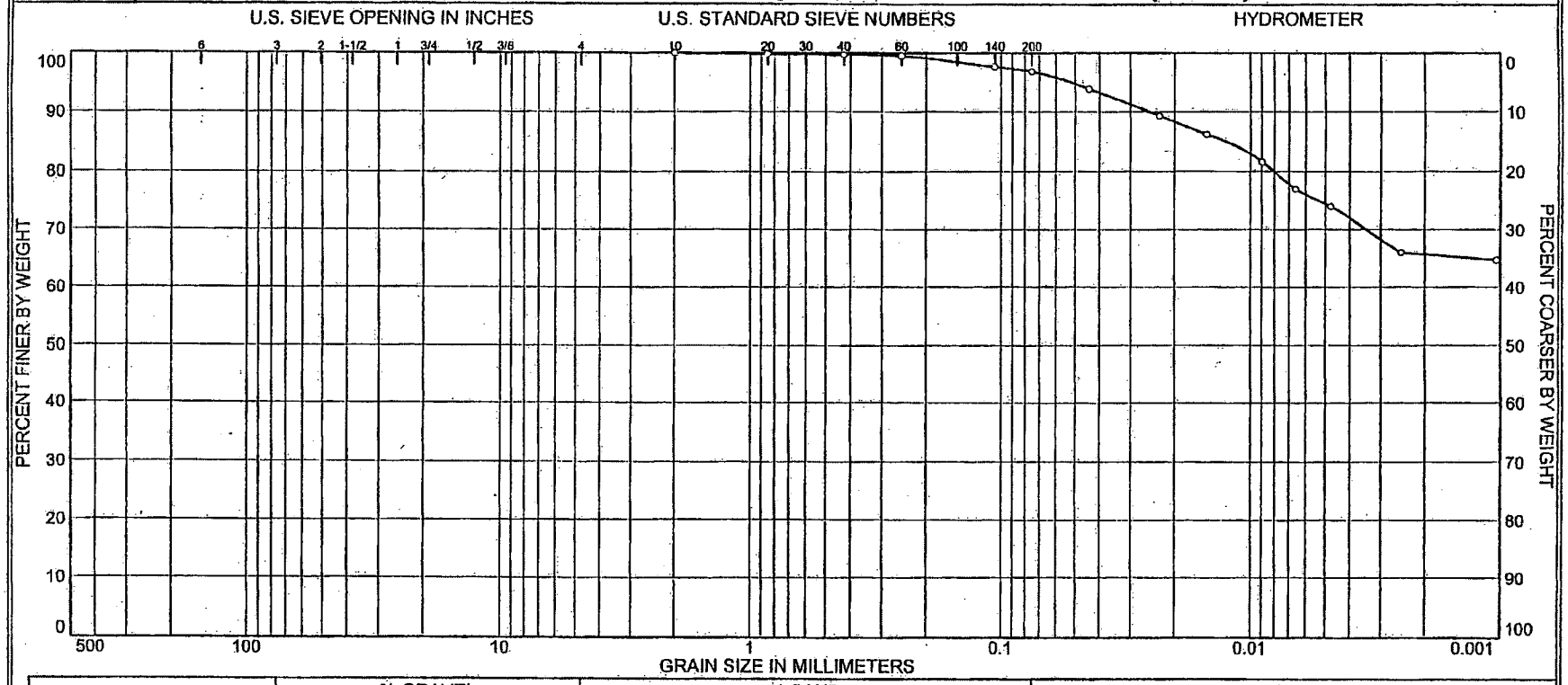
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.9	61.5	58.1	0.0133	62.5	6.0	0.0232	97.9
5.00	21.9	60.0	56.6	0.0133	61.0	6.3	0.0150	95.4
15.00	21.8	58.0	54.6	0.0133	59.0	6.6	0.0089	92.0
30.00	21.7	56.0	52.5	0.0134	57.0	6.9	0.0064	88.6
60.00	21.6	53.0	49.5	0.0134	54.0	7.4	0.0047	83.5
250.00	20.8	47.0	43.4	0.0135	48.0	8.4	0.0025	73.1
1440.00	21.0	43.0	39.4	0.0135	44.0	9.1	0.0011	66.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 0.9 (% coarse = % medium = 0.3 % fine = 0.6)
% SILT = 14.5 % CLAY = 84.6

D_{85}= 0.01

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.3	2.8	22.4	74.5

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-940	SS-23	78.5-80	9-5-07	CH	Fat Clay	25.3		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-23
Elev. or Depth: 78.5-80 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-5-07 Natural Moisture: 25.3
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	83.51
Tare =	0.00
Dry sample weight =	83.51

Sample split on number 10 sieve
Split sample data:
Sample and tare = 65.65 Tare = .00 Sample weight = 65.65
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.11	99.8
# 40	0.21	99.7
# 60	0.33	99.5
# 140	1.51	97.7
# 200	2.03	96.9

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 69.16
Hygroscopic moisture correction:
Moist weight & tare = 30.61
Dry weight & tare = 29.88
Tare = 16.22
Hygroscopic moisture= 5.3 %
Calculated biased weight= 65.65
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

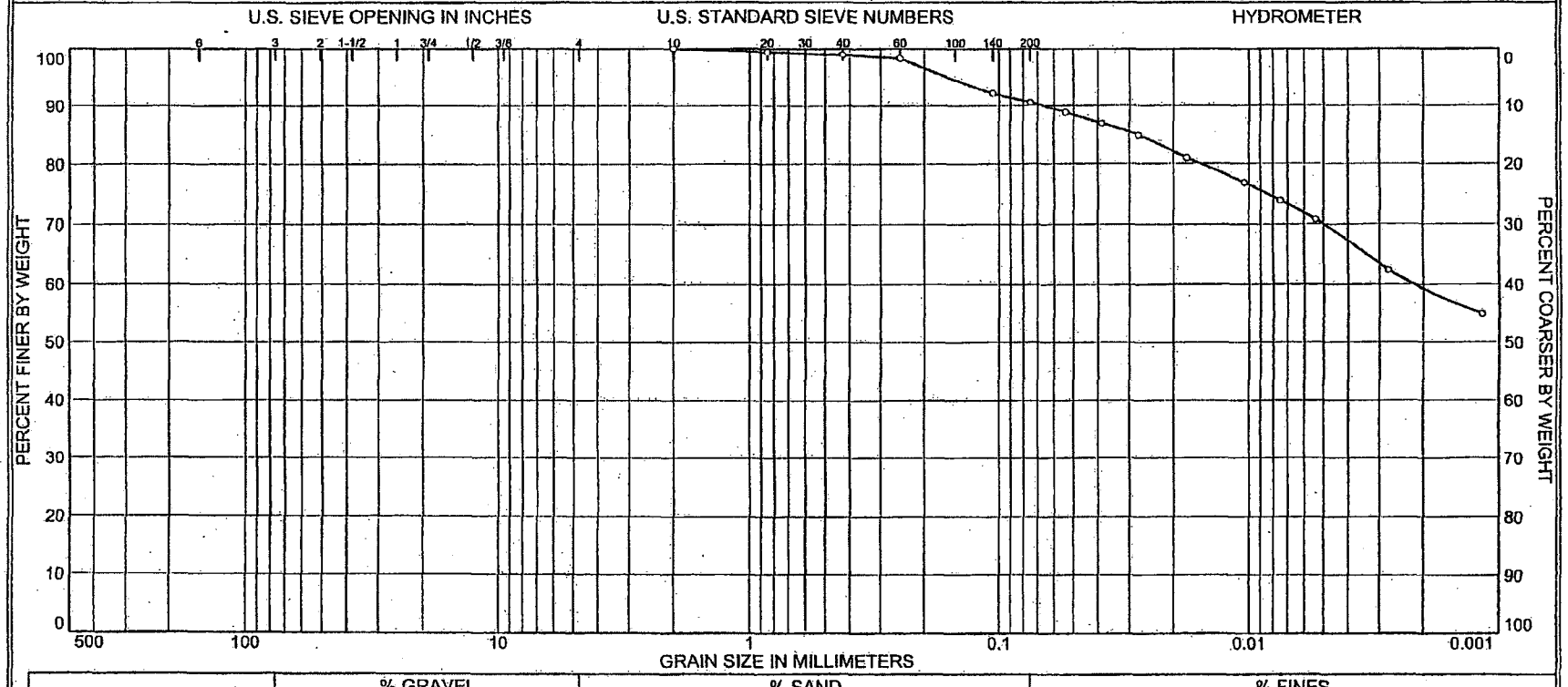
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
0.50	22.1	65.0	61.6	0.0133	66.0	5.5	0.0440	93.9
2.00	22.1	62.0	58.6	0.0133	63.0	6.0	0.0230	89.3
5.00	22.1	60.0	56.6	0.0133	61.0	6.3	0.0149	86.2
15.00	22.0	57.0	53.6	0.0133	58.0	6.8	0.0090	81.6
30.00	21.9	54.0	50.6	0.0133	55.0	7.3	0.0066	77.0
60.00	21.8	52.0	48.6	0.0133	53.0	7.6	0.0048	74.0
250.00	20.8	47.0	43.4	0.0135	48.0	8.4	0.0025	66.0
1440.00	21.4	46.0	42.5	0.0134	47.0	8.6	0.0010	64.7

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 3.1 (% coarse = % medium = 0.3 % fine = 2.8)
% SILT = 22.4 % CLAY = 74.5

D_{85}= 0.01

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	1.0	8.5	20.5	70.0

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-940	SS-26	93.5-95	9-5-07	CH	Fat Clay	23.4		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-26
Elev. or Depth: 93.5-95 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-5-07 Natural Moisture: 23.4
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	100.75
Tare =	0.00
Dry sample weight =	100.75

Sample split on number 10 sieve
Split sample data:
Sample and tare = 50.22 Tare = .00 Sample weight = 50.22
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.30	99.4
# 40	0.51	99.0
# 60	0.79	98.4
# 140	3.90	92.2
# 200	4.76	90.5

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 52.87
Hygroscopic moisture correction:
Moist weight & tare = 31.15
Dry weight & tare = 30.40
Tare = 16.19
Hygroscopic moisture= 5.3 %
Calculated biased weight= 50.22
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

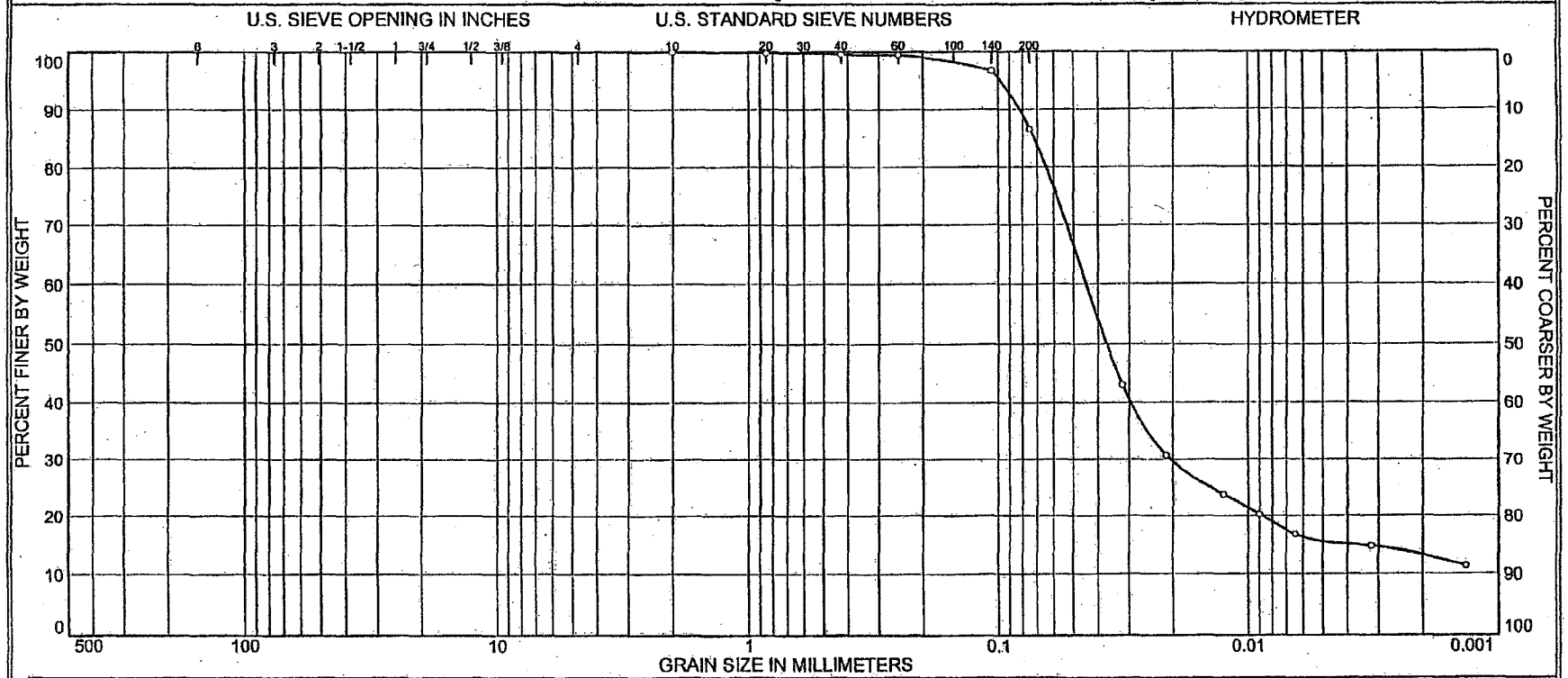
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
0.50	22.3	48.0	44.7	0.0133	49.0	8.3	0.0539	88.9
1.00	22.3	47.0	43.7	0.0133	48.0	8.4	0.0385	86.9
2.00	22.3	46.0	42.7	0.0133	47.0	8.6	0.0275	84.9
5.00	22.3	44.0	40.7	0.0133	45.0	8.9	0.0177	81.0
15.00	22.1	42.0	38.6	0.0133	43.0	9.2	0.0104	76.9
30.00	22.0	40.5	37.1	0.0133	41.5	9.5	0.0075	73.9
60.00	21.9	39.0	35.6	0.0133	40.0	9.7	0.0054	70.8
250.00	20.9	35.0	31.4	0.0135	36.0	10.4	0.0028	62.5
1440.00	21.5	31.0	27.5	0.0134	32.0	11.0	0.0012	54.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 9.5 (% coarse = % medium = 1.0 % fine = 8.5)
% SILT = 20.5 % CLAY = 70.0

D_{85}= 0.03 D_{60}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.5	12.9	71.3	15.3

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-940	SS-27	98.5-100	9-5-07	ML	Sandy Silt	21.1		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-940
Sample No.: SS-27
Elev. or Depth: 98.5-100 Sample Length(in./cm.):
Location:
Description: Sandy Silt
Date: 9-5-07 Natural Moisture: 21.1
Liquid Limit: Plastic Limit: USCS Class.: ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	110.33
Tare =	0.00
Dry sample weight =	110.33

Sample split on number 10 sieve
Split sample data:
Sample and tare = 57.21 Tare = .00 Sample weight = 57.21
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.14	99.8
# 40	0.29	99.5
# 60	0.34	99.4
# 140	1.90	96.7
# 200	7.65	86.6

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 57.77
Hygroscopic moisture correction:
Moist weight & tare = 29.64
Dry weight & tare = 29.51
Tare = 16.18
Hygroscopic moisture= 1.0 %
Calculated biased weight= 57.21
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
rdrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

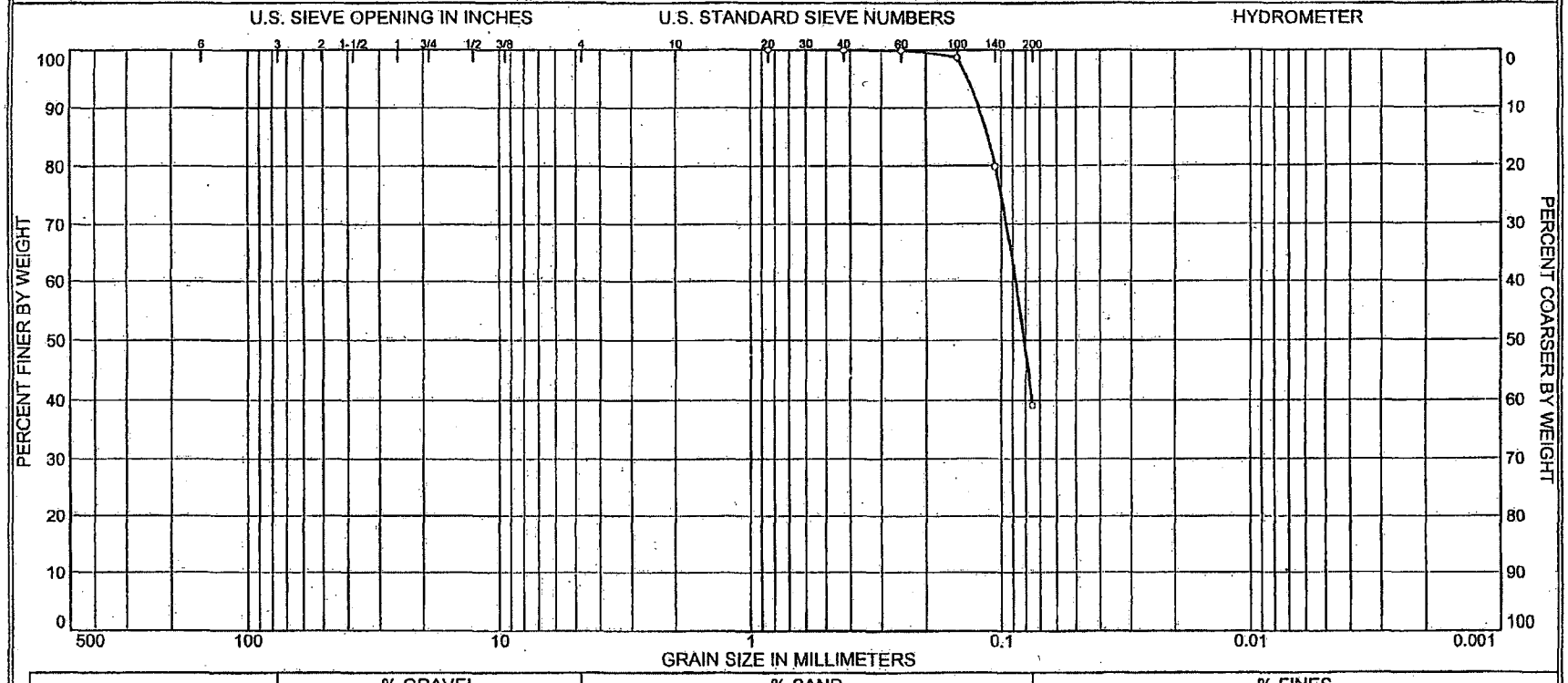
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.1	28.0	24.6	0.0133	29.0	11.5	0.0319	43.0
5.00	21.7	21.0	17.5	0.0134	22.0	12.7	0.0213	30.7
15.00	21.9	17.0	13.6	0.0133	18.0	13.3	0.0126	23.7
30.00	21.7	15.0	11.5	0.0134	16.0	13.7	0.0090	20.2
60.00	21.7	13.0	9.5	0.0134	14.0	14.0	0.0065	16.7
250.00	20.9	12.0	8.4	0.0135	13.0	14.2	0.0032	14.6
1440.00	21.4	10.0	6.5	0.0134	11.0	14.5	0.0013	11.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 13.4 (% coarse = % medium = 0.5 % fine = 12.9)
% SILT = 71.3 % CLAY = 15.3

D_{85}= 0.07 D_{60}= 0.04 D_{50}= 0.04
D_{30}= 0.02 D_{15}= 0.00

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	60.8	39.1	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-944	SS-12	23.5-25	9-6-07	SM	Silty Sand	25.9		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-944
Sample No.: SS-12
Elev. or Depth: 23.5-25 **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: 9-6-07 **Natural Moisture:** 25.9
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	143.66
Tare =	101.96
Dry sample weight =	41.70

Tare for cumulative weight retained= .00

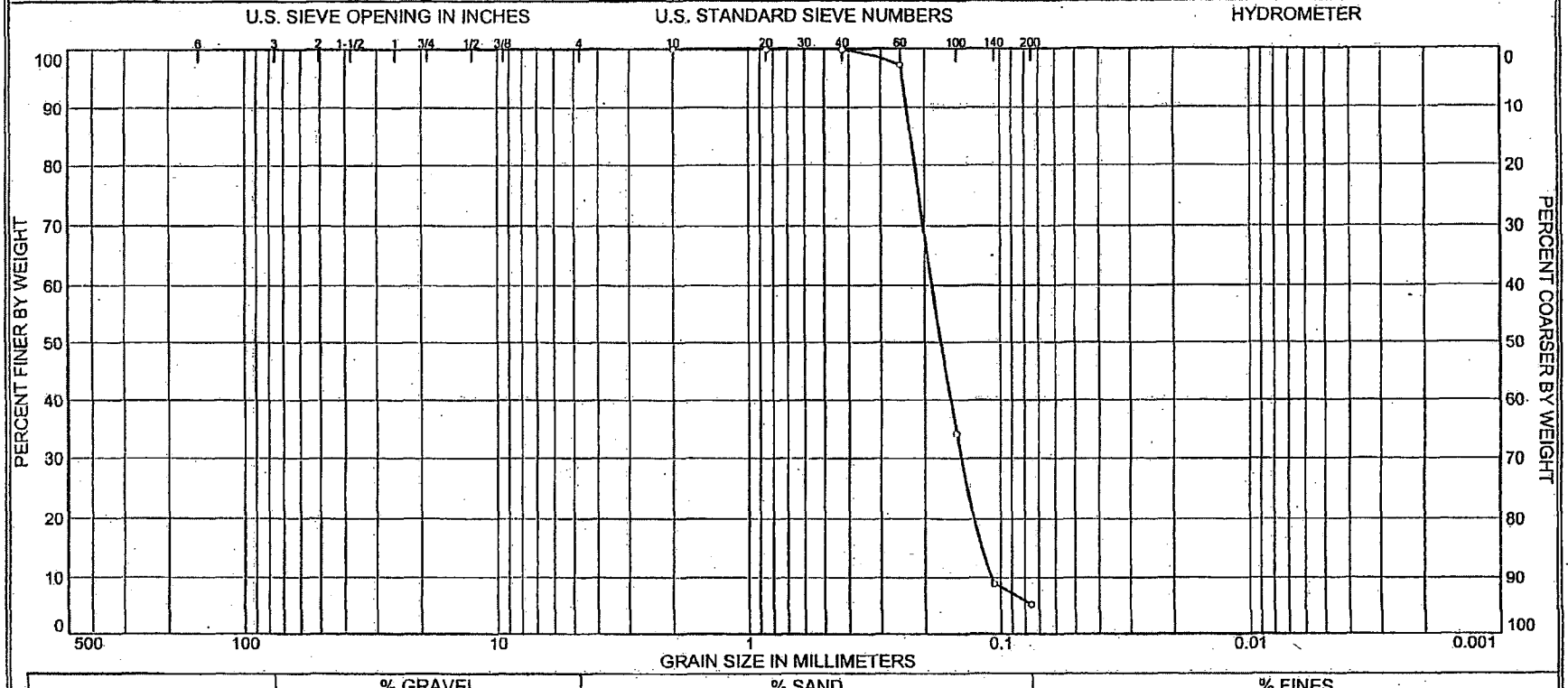
Sieve	Cumul. Wt. retained	Percent finer
# 20	0.00	100.0
# 40	0.03	99.9
# 60	0.06	99.9
# 100	0.54	98.7
# 140	8.41	79.8
# 200	25.38	39.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 60.9 (% coarse = % medium = 0.1 % fine = 60.8)
% FINES = 39.1

D_{85}= 0.11 D_{60}= 0.09 D_{50}= 0.08

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.1	94.6	5.3	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-944	SS-15	38.5-40	9-6-07	SP-SM	Poorly Graded Sand with Silt	21.1		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234074257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MH 10-5-07

KAW 10/5/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234074257

Sample Data

Source: B-944
Sample No.: SS-15
Elev. or Depth: 38.5-40 Sample Length(in./cm.):
Location:
Description: Poorly Graded Sand with Silt
Date: 9-6-07 Natural Moisture: 21.1
Liquid Limit: Plastic Limit: USCS Class.: SP-SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	155.25
Tare =	107.36
Dry sample weight =	47.89

Tare for cumulative weight retained= .00

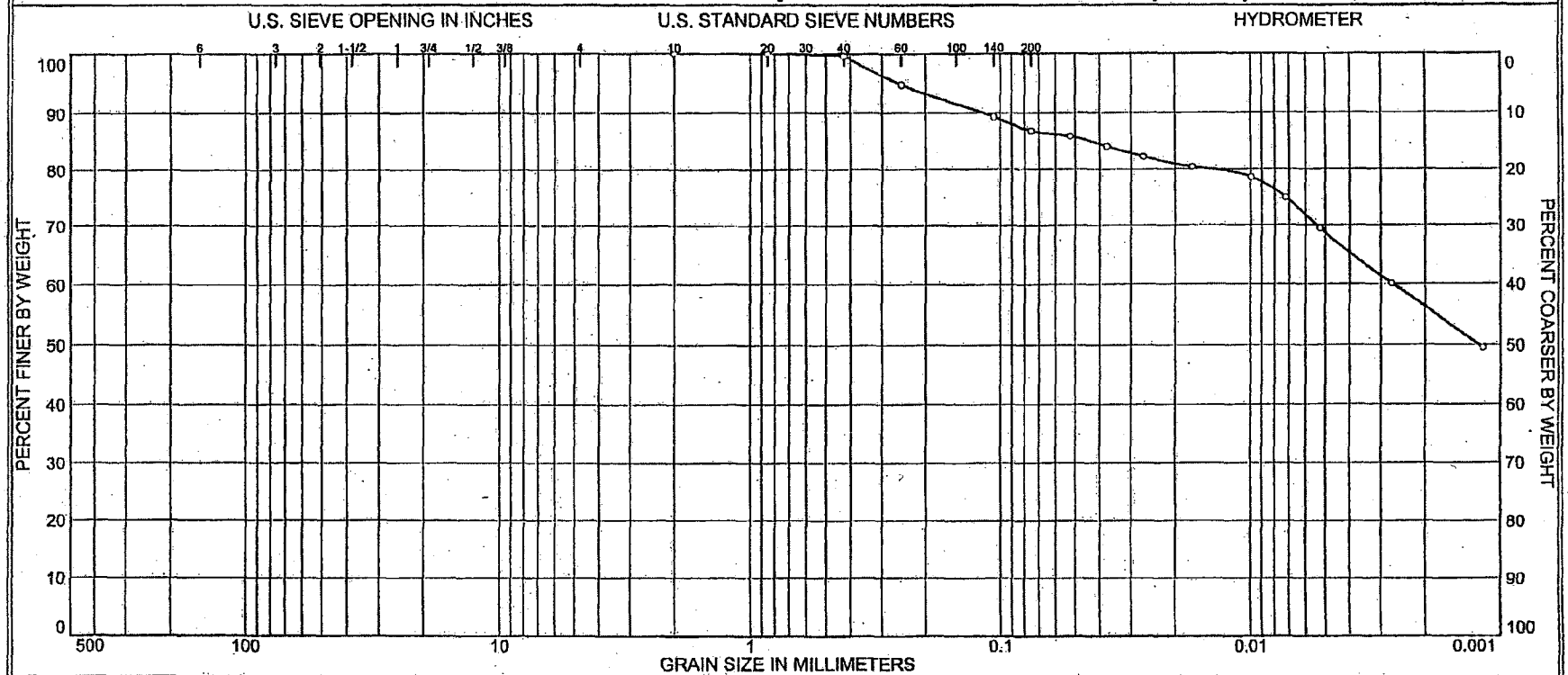
Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.03	99.9
# 40	0.04	99.9
# 60	1.31	97.3
# 100	31.54	34.1
# 140	43.62	8.9
# 200	45.36	5.3

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 94.7 (% coarse = % medium = 0.1 % fine = 94.6)
% FINES = 5.3

D_{85}= 0.23 D_{60}= 0.19 D_{50}= 0.17
D_{30}= 0.14 D_{15}= 0.12 D_{10}= 0.11
C_c= 1.0109 C_u= 1.7273

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.4	12.7	18.3	68.6

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-944	SS-27	98.5-100	9-5-07	CH	Fat Clay	21.5		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-944
Sample No.: SS-27
Elev. or Depth: 98.5-100 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-5-07 Natural Moisture: 21.5
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	87.37
Tare =	0.00
Dry sample weight =	87.37

Sample split on number 10 sieve
Split sample data:
Sample and tare = 55.50 Tare = .00 Sample weight = 55.50
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.02	100.0
# 40	0.22	99.6
# 60	2.90	94.8
# 140	5.95	89.3
# 200	7.25	86.9

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 57.87
Hygroscopic moisture correction:
Moist weight & tare = 30.78
Dry weight & tare = 30.18
Tare = 16.12
Hygroscopic moisture= 4.3 %
Calculated biased weight= 55.50
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

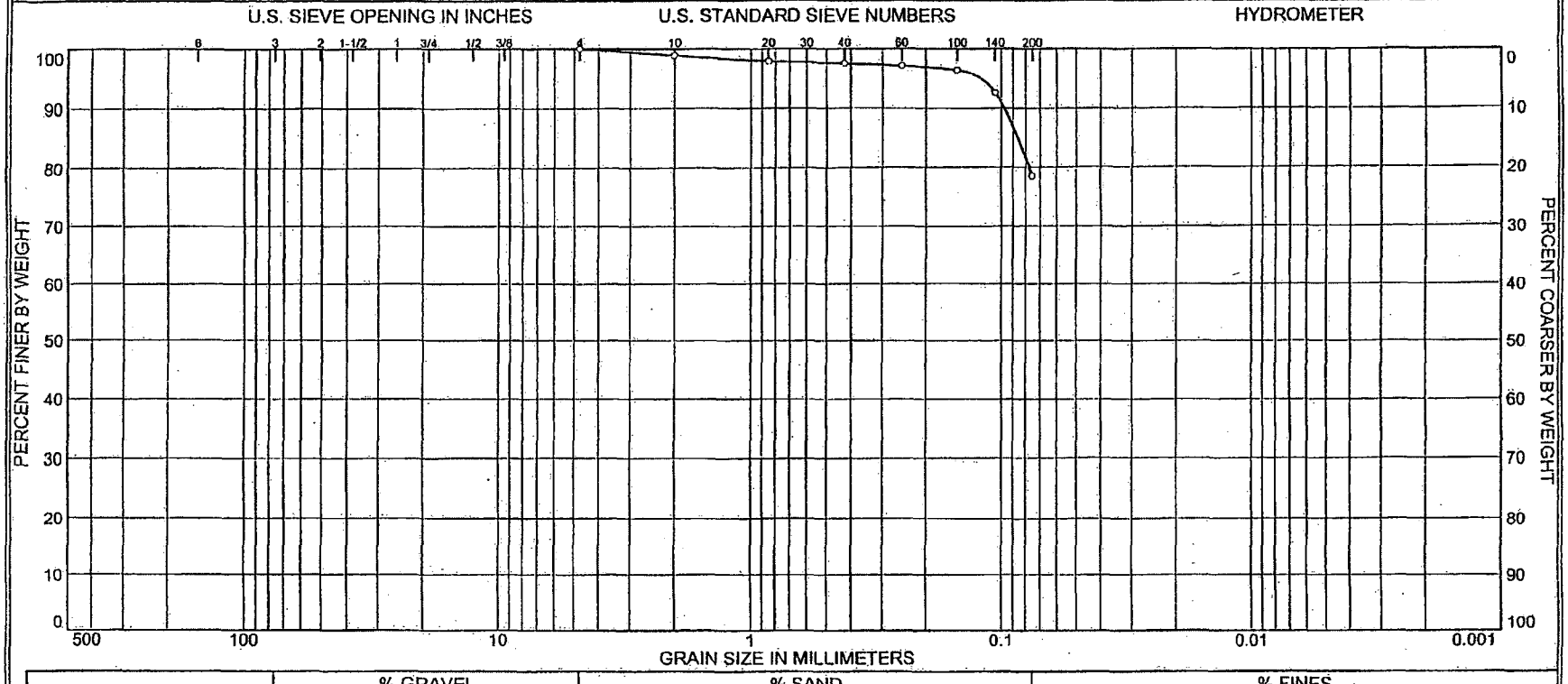
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
0.50	22.3	51.0	47.7	0.0133	52.0	7.8	0.0523	85.9
1.00	22.3	50.0	46.7	0.0133	51.0	7.9	0.0374	84.1
2.00	22.3	49.0	45.7	0.0133	50.0	8.1	0.0267	82.3
5.00	22.1	48.0	44.6	0.0133	49.0	8.3	0.0171	80.4
15.00	22.1	47.0	43.6	0.0133	48.0	8.4	0.0100	78.6
30.00	21.9	45.0	41.6	0.0133	46.0	8.8	0.0072	74.9
60.00	21.7	42.0	38.5	0.0134	43.0	9.2	0.0052	69.4
250.00	20.8	37.0	33.4	0.0135	38.0	10.1	0.0027	60.1
1440.00	21.4	31.0	27.5	0.0134	32.0	11.0	0.0012	49.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 13.1 (% coarse = % medium = 0.4 % fine = 12.7)
% SILT = 18.3 % CLAY = 68.6

D_{85}= 0.04 D_{60}= 0.00 D_{50}= 0.00

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	1.1	1.4	19.0	78.5	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-948	SS-12	23.5-25	9-8-07	ML	Sandy Silt	25.2		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH MA 9-26-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-948
Sample No.: SS-12
Elev. or Depth: 23.5-25 Sample Length(in./cm.):
Location:
Description: Sandy Silt
Date: 9-8-07 Natural Moisture: 25.2
Liquid Limit: Plastic Limit: USCS Class.: ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	50.11
Tare =	6.51
Dry sample weight =	43.60

Tare for cumulative weight retained= .00

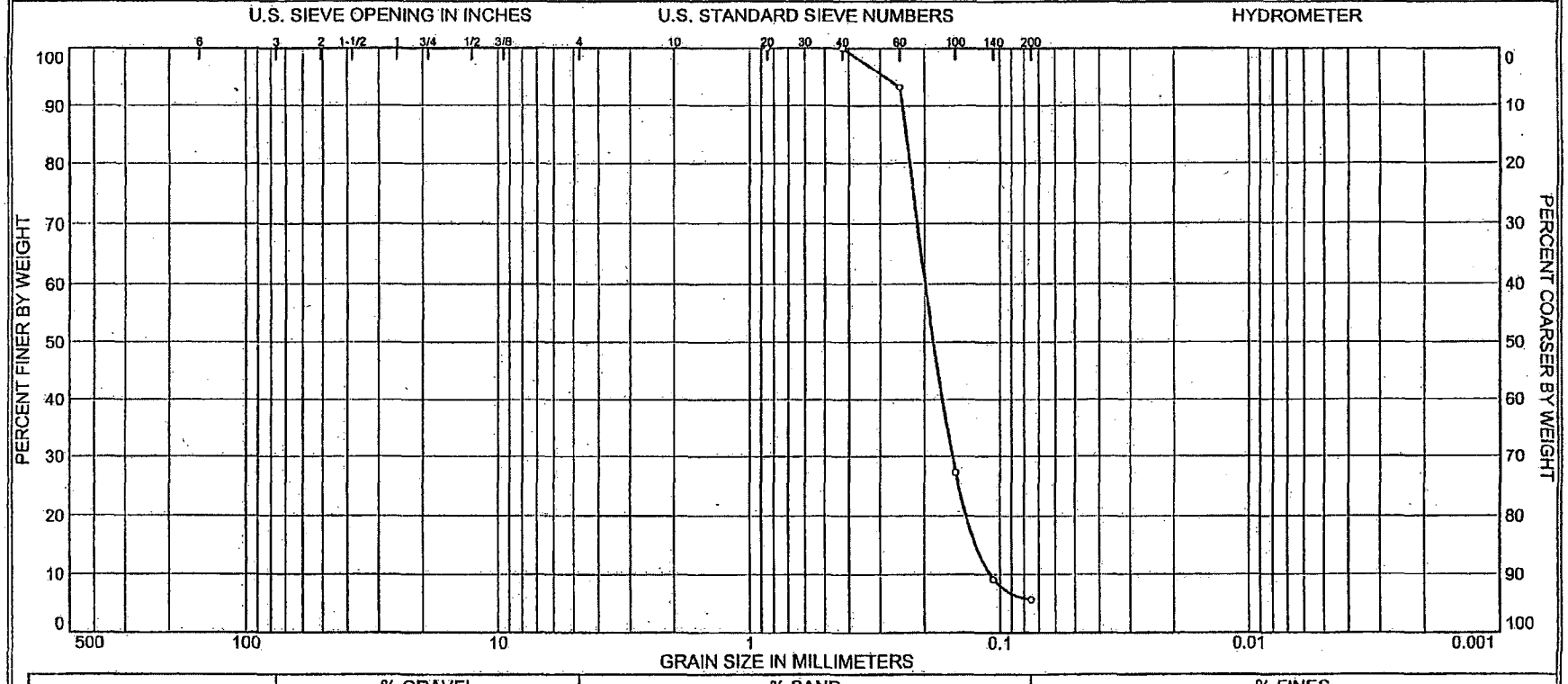
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.50	98.9
# 20	0.90	97.9
# 40	1.10	97.5
# 60	1.26	97.1
# 100	1.62	96.3
# 140	3.28	92.5
# 200	9.36	78.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 21.5 (% coarse = 1.1 % medium = 1.4 % fine = 19.0)
% FINES = 78.5

D_{85}= 0.09

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.0	94.4	5.6	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-948	SS-15	38.5-40	9-11-07	SP-SM	Poorly Graded Sand with Silt	21.4		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-24-07

KAN 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-948
Sample No.: SS-15
Elev. or Depth: 38.5-40 Sample Length(in./cm.):
Location:
Description: Poorly Graded Sand with Silt
Date: 9-11-07 Natural Moisture: 21.4
Liquid Limit: Plastic Limit: USCS Class.: SP-SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	166.30
Tare =	115.00
Dry sample weight =	51.30

Tare for cumulative weight retained= .00

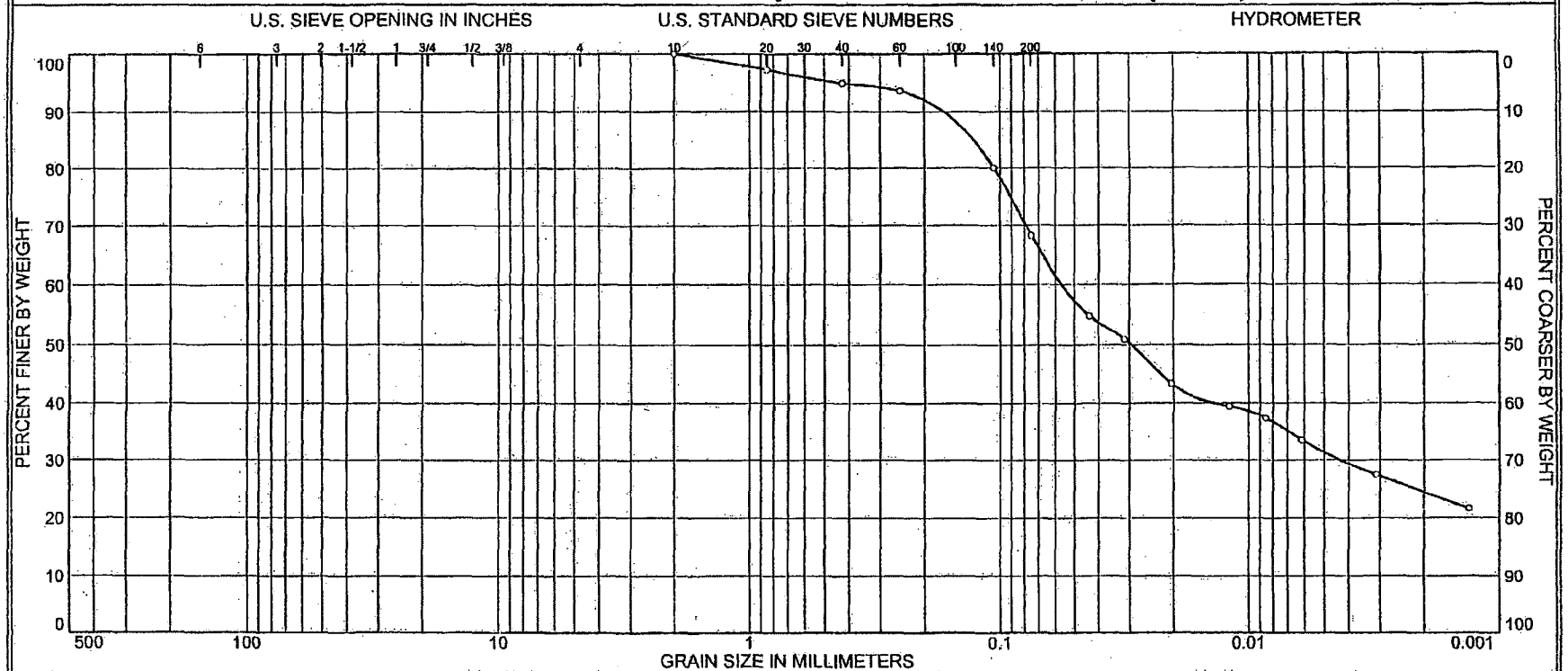
Sieve	Cumul. Wt. retained	Percent finer
# 20	0.00	100.0
# 40	0.01	100.0
# 60	3.50	93.2
# 100	37.36	27.2
# 140	46.61	9.1
# 200	48.42	5.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 94.4 (% coarse = % medium = % fine = 94.4)
% FINES = 5.6

D_{85}= 0.24 D_{60}= 0.20 D_{50}= 0.18
D_{30}= 0.15 D_{15}= 0.13 D_{10}= 0.11
C_c= 1.0952 C_u= 1.815

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	5.0	26.7	37.0	31.3

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-948	SS-19	58.5-60	9-10-07	CL	Sandy Lean Clay	20.2		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-948
Sample No.: SS-19
Elev. or Depth: 58.5-60 Sample Length(in./cm.):
Location:
Description: Sandy Lean Clay
Date: 9-10-07 Natural Moisture: 20.2
Liquid Limit: Plastic Limit: USCS Class.: CL
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	99.20
Tare =	0.00
Dry sample weight =	99.20

Sample split on number 10 sieve
Split sample data:
Sample and tare = 52.41 Tare = .00 Sample weight = 52.41
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	1.41	97.3
# 40	2.63	95.0
# 60	3.29	93.7
# 140	10.50	80.0
# 200	16.59	68.3

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 53.72
Hygroscopic moisture correction:
Moist weight & tare = 29.74
Dry weight & tare = 29.41
Tare = 16.19
Hygroscopic moisture= 2.5 %
Calculated biased weight= 52.41
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

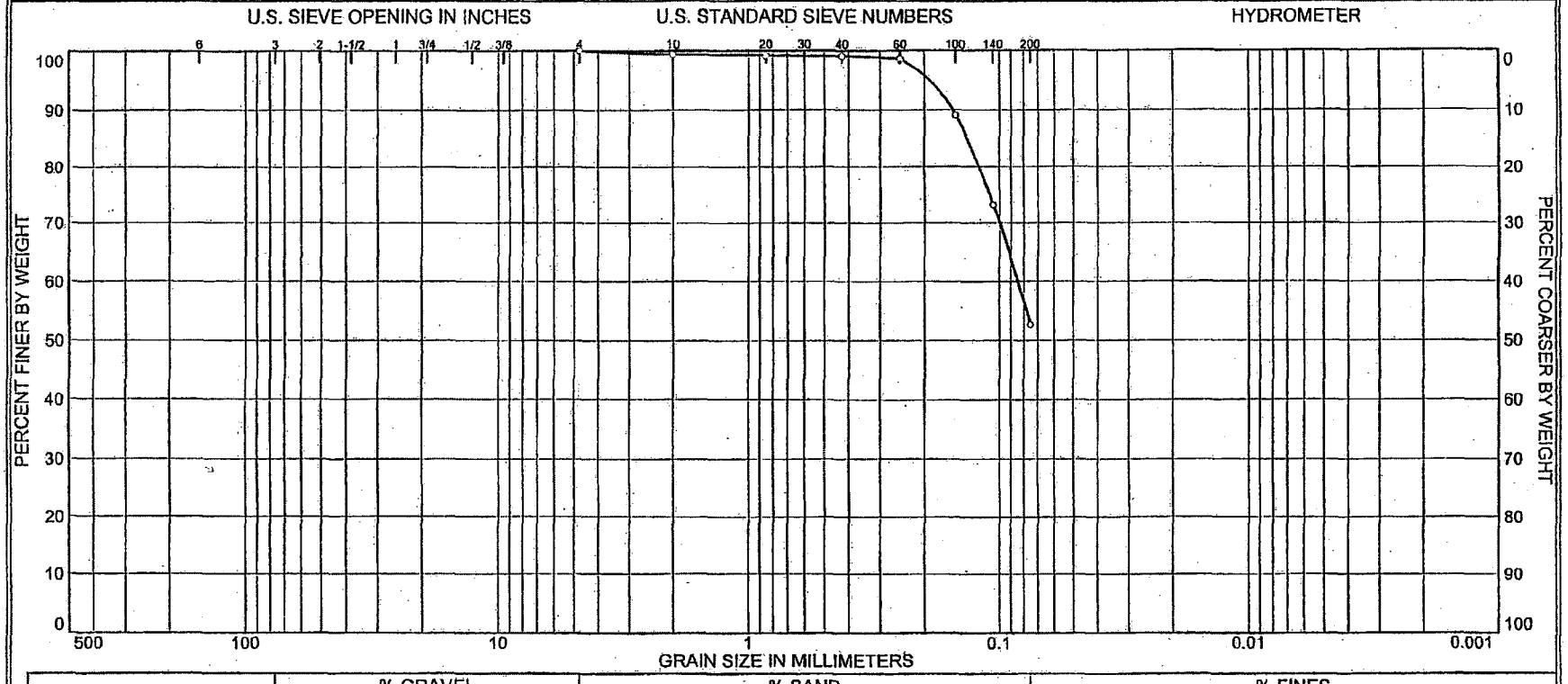
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	22.5	32.0	28.7	0.0132	33.0	10.9	0.0437	54.8
2.00	22.5	30.0	26.7	0.0132	31.0	11.2	0.0313	50.9
5.00	22.5	26.0	22.7	0.0132	27.0	11.9	0.0204	43.3
15.00	22.3	24.0	20.7	0.0133	25.0	12.2	0.0120	39.4
30.00	22.1	23.0	19.6	0.0133	24.0	12.4	0.0085	37.4
60.00	21.9	21.0	17.6	0.0133	22.0	12.7	0.0061	33.5
250.00	20.7	18.0	14.3	0.0135	19.0	13.2	0.0031	27.4
1440.00	20.5	15.0	11.3	0.0136	16.0	13.7	0.0013	21.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 31.7 (% coarse = % medium = 5.0 % fine = 26.7)
% SILT = 37.0 % CLAY = 31.3

D_{85}= 0.13 D_{60}= 0.06 D_{50}= 0.03
D_{30}= 0.00

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.6	0.3	46.5	52.6	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-949	SS-13	28.5-30	9-11-07	ML	Sandy Silt	21.9		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: SS-13
Elev. or Depth: 28.5-30 **Sample Length(in./cm.):**
Location:
Description: Sandy Silt
Date: 9-11-07 **Natural Moisture:** 21.9
Liquid Limit: **Plastic Limit:** **USCS Class.:** ML
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	52.03
Tare =	6.59
Dry sample weight =	45.44

Tare for cumulative weight retained= .00

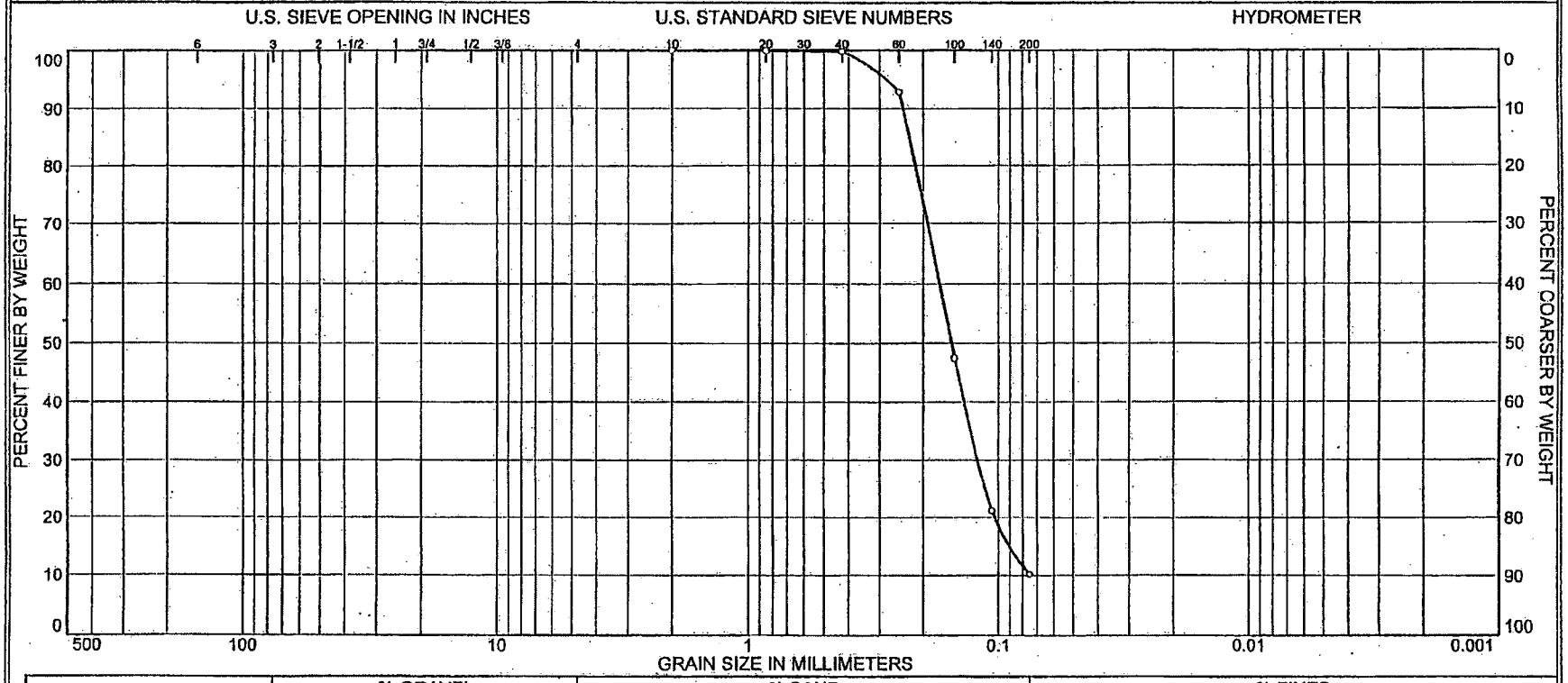
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.27	99.4
# 20	0.36	99.2
# 40	0.42	99.1
# 60	0.59	98.7
# 100	4.95	89.1
# 140	12.19	73.2
# 200	21.55	52.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 47.4 (% coarse = 0.6 % medium = 0.3 % fine = 46.5)
% FINES = 52.6

D_{85}= 0.13 D_{60}= 0.08

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	0.0	0.2	89.6	10.2	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-949	SS-15	38.5-40	9-11-07	SP-SM	Poorly Graded Sand with Silt	21.2		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

○ Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: SS-15
Elev. or Depth: 38.5-40 **Sample Length(in./cm.):**
Location:
Description: Poorly Graded Sand with Silt
Date: 9-11-07 **Natural Moisture:** 21.2
Liquid Limit: **Plastic Limit:** **USCS Class.:** SP-SM
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	149.23
Tare =	107.27
Dry sample weight =	41.96

Tare for cumulative weight retained= .00

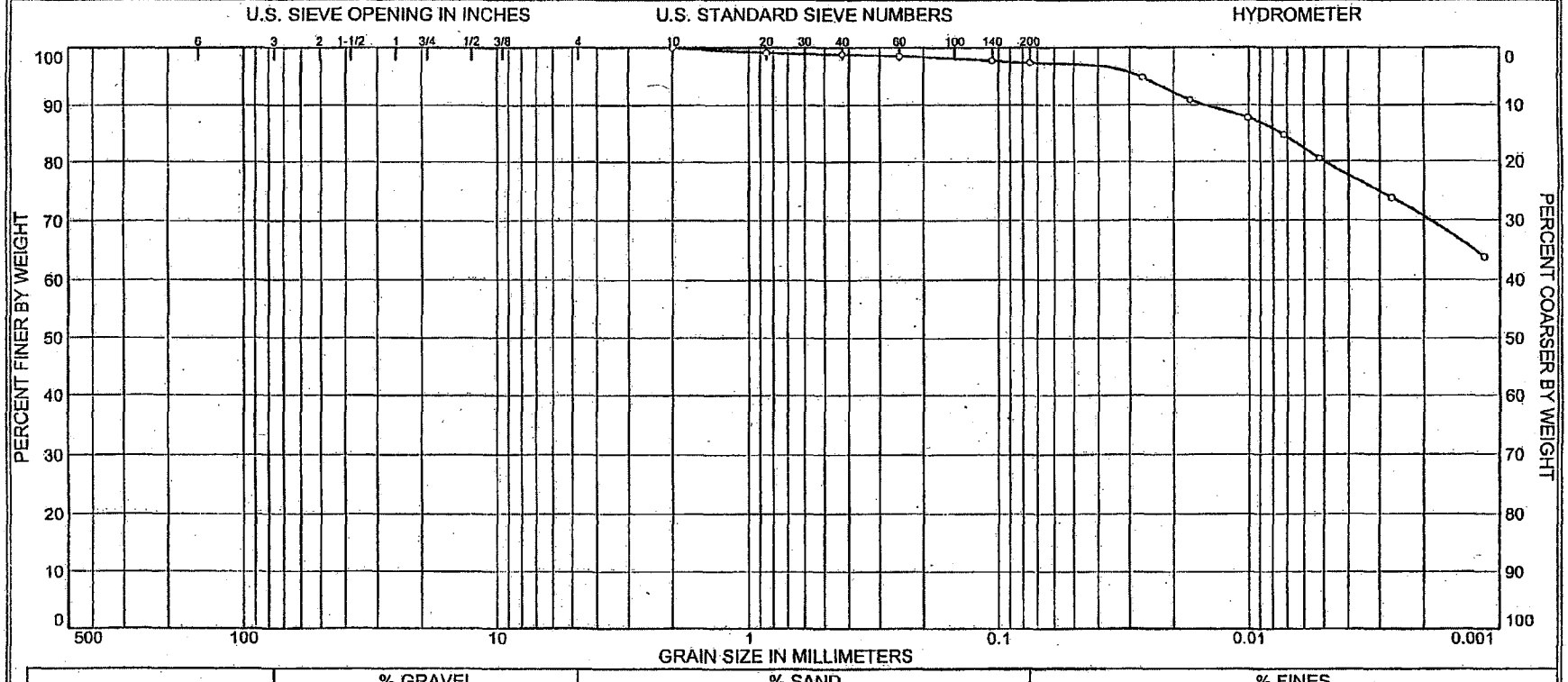
Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.05	99.9
# 40	0.08	99.8
# 60	2.96	92.9
# 100	22.02	47.5
# 140	33.07	21.2
# 200	37.67	10.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 89.8 (% coarse = % medium = 0.2 % fine = 89.6)
% FINES = 10.2

D_{85}= 0.23 D_{60}= 0.17 D_{50}= 0.15
D_{30}= 0.12 D_{15}= 0.09

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	1.1	1.5	17.4	80.0

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-949	SS-18	55.5-57	9-11-07	CH	Fat Clay	31.1		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-24-07

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GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: SS-18
Elev. or Depth: 55.5-57 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-11-07 Natural Moisture: 31.1
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	85.63
Tare =	0.00
Dry sample weight =	85.63

Sample split on number 10 sieve
Split sample data:
Sample and tare = 49.02 Tare = .00 Sample weight = 49.02
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.37	99.2
# 40	0.56	98.9
# 60	0.67	98.6
# 140	1.07	97.8
# 200	1.27	97.4

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 52.35
Hygroscopic moisture correction:
Moist weight & tare = 29.42
Dry weight & tare = 28.58
Tare = 16.21
Hygroscopic moisture= 6.8 %
Calculated biased weight= 49.02
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
drometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

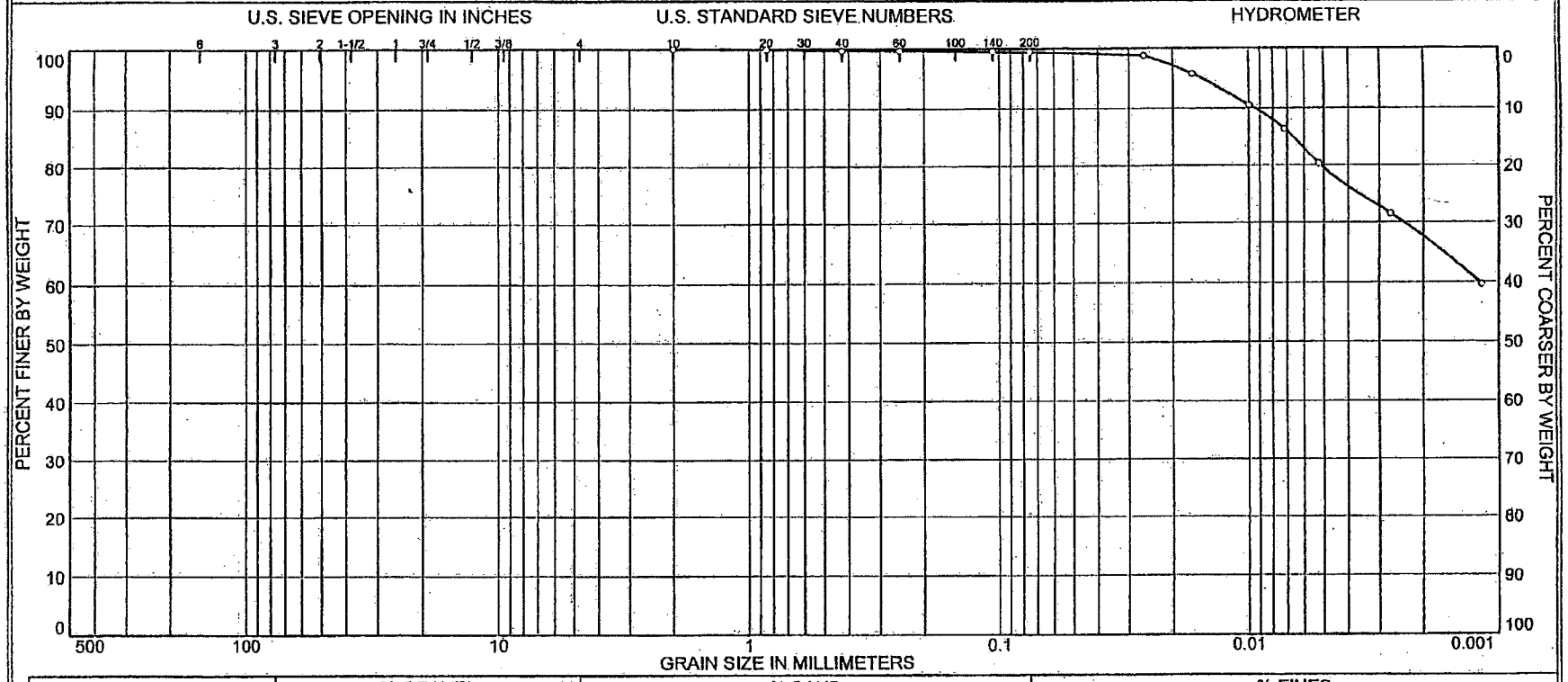
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.7	50.0	46.5	0.0134	51.0	7.9	0.0266	94.9
5.00	21.7	48.0	44.5	0.0134	49.0	8.3	0.0172	90.9
15.00	21.7	46.5	43.0	0.0134	47.5	8.5	0.0101	87.8
30.00	21.7	45.0	41.5	0.0134	46.0	8.8	0.0072	84.7
60.00	21.4	43.0	39.5	0.0134	44.0	9.1	0.0052	80.5
250.00	19.8	40.0	36.2	0.0137	41.0	9.6	0.0027	73.8
1440.00	20.4	35.0	31.3	0.0136	36.0	10.4	0.0012	63.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 2.6 (% coarse = % medium = 1.1 % fine = 1.5)
% SILT = 17.4 % CLAY = 80.0

D_{85}= 0.01

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.3	0.3	19.9	79.5

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-949	SS-22	73.5-75	9-11-07	CH	Fat Clay	27.4		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: SS-22
Elev. or Depth: 73.5-75 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-11-07 Natural Moisture: 27.4
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	88.63
Tare =	0.00
Dry sample weight =	88.63

Sample split on number 10 sieve
Split sample data:
Sample and tare = 49.13 Tare = .00 Sample weight = 49.13
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.07	99.9
# 40	0.13	99.7
# 60	0.16	99.7
# 140	0.23	99.5
# 200	0.28	99.4

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 51.81
Hygroscopic moisture correction:
Moist weight & tare = 30.08
Dry weight & tare = 29.36
Tare = 16.18
Hygroscopic moisture= 5.5 %
Calculated biased weight= 49.13
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
drometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

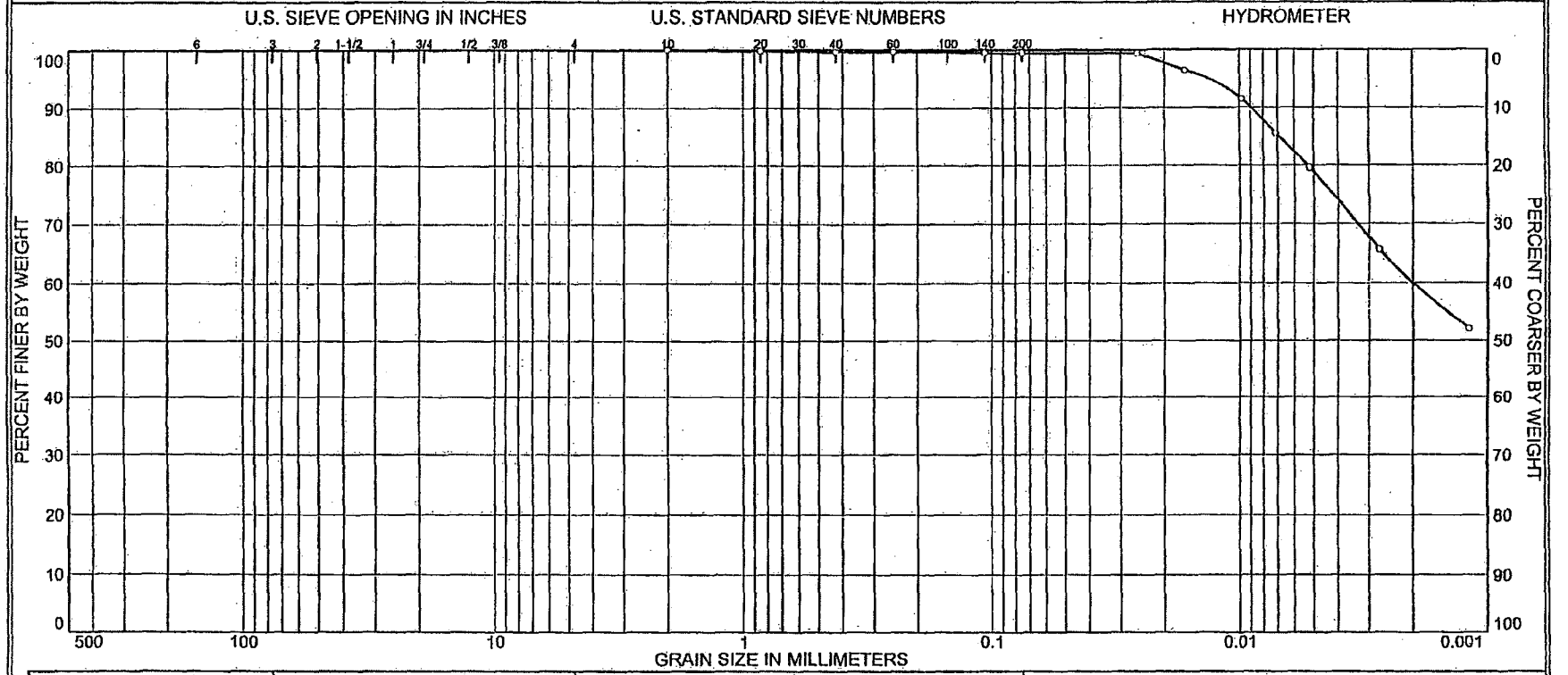
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.6	52.0	48.5	0.0134	53.0	7.6	0.0261	98.8
5.00	21.5	50.5	47.0	0.0134	51.5	7.8	0.0168	95.7
15.00	21.4	48.0	44.5	0.0134	49.0	8.3	0.0100	90.5
30.00	21.3	46.0	42.5	0.0134	47.0	8.6	0.0072	86.4
60.00	21.2	43.0	39.4	0.0134	44.0	9.1	0.0052	80.3
250.00	19.7	39.0	35.1	0.0137	40.0	9.7	0.0027	71.5
1440.00	20.5	33.0	29.3	0.0136	34.0	10.7	0.0012	59.6

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 0.6 (% coarse = % medium = 0.3 % fine = 0.3)
% SILT = 19.9 % CLAY = 79.5

D_{85}= 0.01 D_{60}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	0.0	0.3	0.3	20.6	78.8

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-949	SS-24	88.5-90	9-11-07	CH	Fat Clay	26.1		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

○ Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: SS-24
Elev. or Depth: 88.5-90 Sample Length(in./cm.):
Location:
Description: Fat Clay
Date: 9-11-07 Natural Moisture: 26.1
Liquid Limit: Plastic Limit: USCS Class.: CH
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	89.21
Tare =	0.00
Dry sample weight =	89.21

Sample split on number 10 sieve
Split sample data:
Sample and tare = 50.73 Tare = .00 Sample weight = 50.73
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.09	99.8
# 40	0.13	99.7
# 60	0.17	99.7
# 140	0.27	99.5
# 200	0.29	99.4

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 53.37
Hygroscopic moisture correction:
Moist weight & tare = 31.09
Dry weight & tare = 30.35
Tare = 16.11
Hygroscopic moisture= 5.2 %
Calculated biased weight= 50.73
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
rdrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

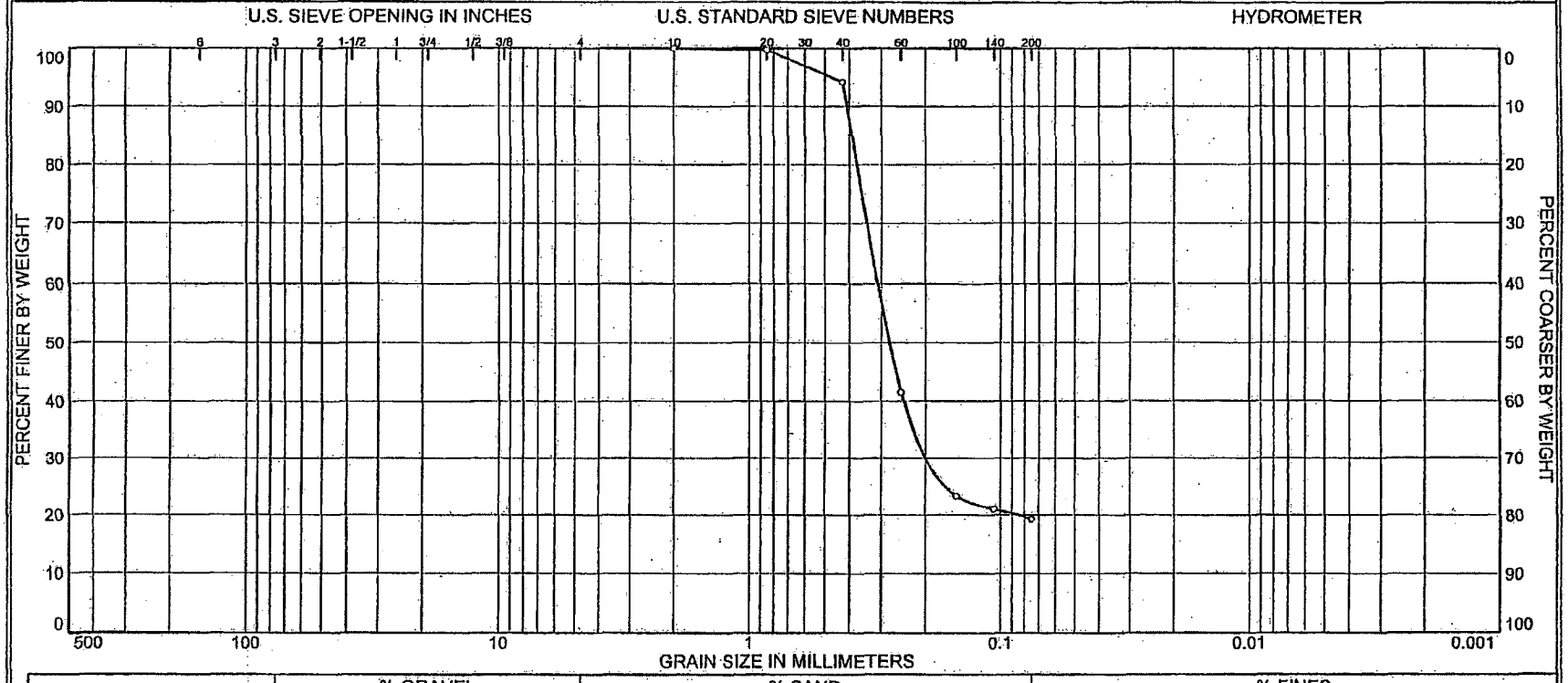
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.2	54.0	50.4	0.0134	55.0	7.3	0.0256	99.4
5.00	21.2	52.5	48.9	0.0134	53.5	7.5	0.0165	96.5
15.00	21.2	50.0	46.4	0.0134	51.0	7.9	0.0098	91.5
30.00	21.2	47.0	43.4	0.0134	48.0	8.4	0.0071	85.6
60.00	20.9	44.0	40.4	0.0135	45.0	8.9	0.0052	79.6
250.00	20.3	37.0	33.3	0.0136	38.0	10.1	0.0027	65.6
1440.00	20.8	30.0	26.4	0.0135	31.0	11.2	0.0012	52.0

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 0.6 (% coarse = % medium = 0.3 % fine = 0.3)
% SILT = 20.6 % CLAY = 78.8

D_{85}= 0.01 D_{60}= 0.00

Particle Size Distribution Report - ASTM D6913-04e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	5.8	75.0	19.2	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-949	UD-8	101-103	9-11-07	SM	Silty Sand	18.6		

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 | Figure

MACTEC, INC.

Charlotte, North Carolina

O Dry Unit Weight= 103.2 pcf (ASTM D5084-03 Section 8)

Tested by: JA Reviewed by: MH AA 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: UD-8
Elev. or Depth: 101-103 **Sample Length(in./cm.):**
Location:
Description: Silty Sand
Date: 9-11-07 **Natural Moisture:** 18.6
Liquid Limit: **Plastic Limit:** **USCS Class.:** SM
Testing Remarks: Dry Unit Weight= 103.2 pcf (ASTM D5084-03 Section 8)

Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	186.31
Tare =	107.08
Dry sample weight =	79.23

Tare for cumulative weight retained= .00

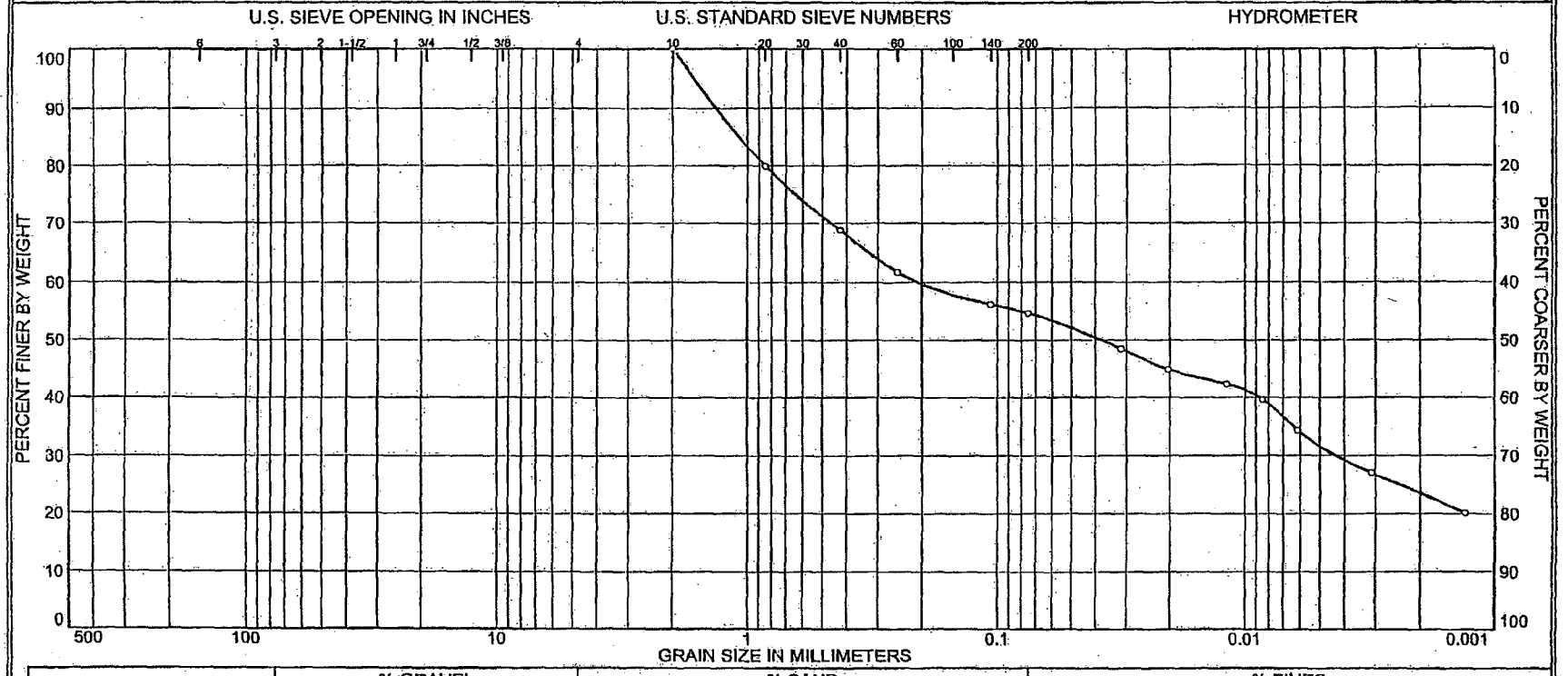
Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.21	99.7
# 40	4.58	94.2
# 60	46.34	41.5
# 100	60.78	23.3
# 140	62.55	21.1
# 200	64.03	19.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 80.8 (% coarse = % medium = 5.8 % fine = 75.0)
% FINES = 19.2

D_{85}= 0.39 D_{60}= 0.31 D_{50}= 0.28
D_{30}= 0.20

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	31.3	14.1	23.1	31.5

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-949	UD-9	111-113	9-11-07	CL	Sandy lean clay	13.7	27	10

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-24-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
oject Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: UD-9
Elev. or Depth: 111-113 Sample Length(in./cm.):
Location:
Description: Sandy lean clay
Date: 9-11-07 Natural Moisture: 13.7
Liquid Limit: 27 Plastic Limit: 10 USCS Class.: CL
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	85.28
Tare =	0.00
Dry sample weight =	85.28

Sample split on number 10 sieve
Split sample data:
Sample and tare = 56.62 Tare = .00 Sample weight = 56.62
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	11.39	79.9
# 40	17.74	68.7
# 60	21.71	61.7
# 140	24.78	56.2
# 200	25.69	54.6

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 57.43
Hygroscopic moisture correction:
Moist weight & tare = 29.64
Dry weight & tare = 29.45
Tare = 16.20
Hygroscopic moisture= 1.4 %
Calculated biased weight= 56.62
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
drometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

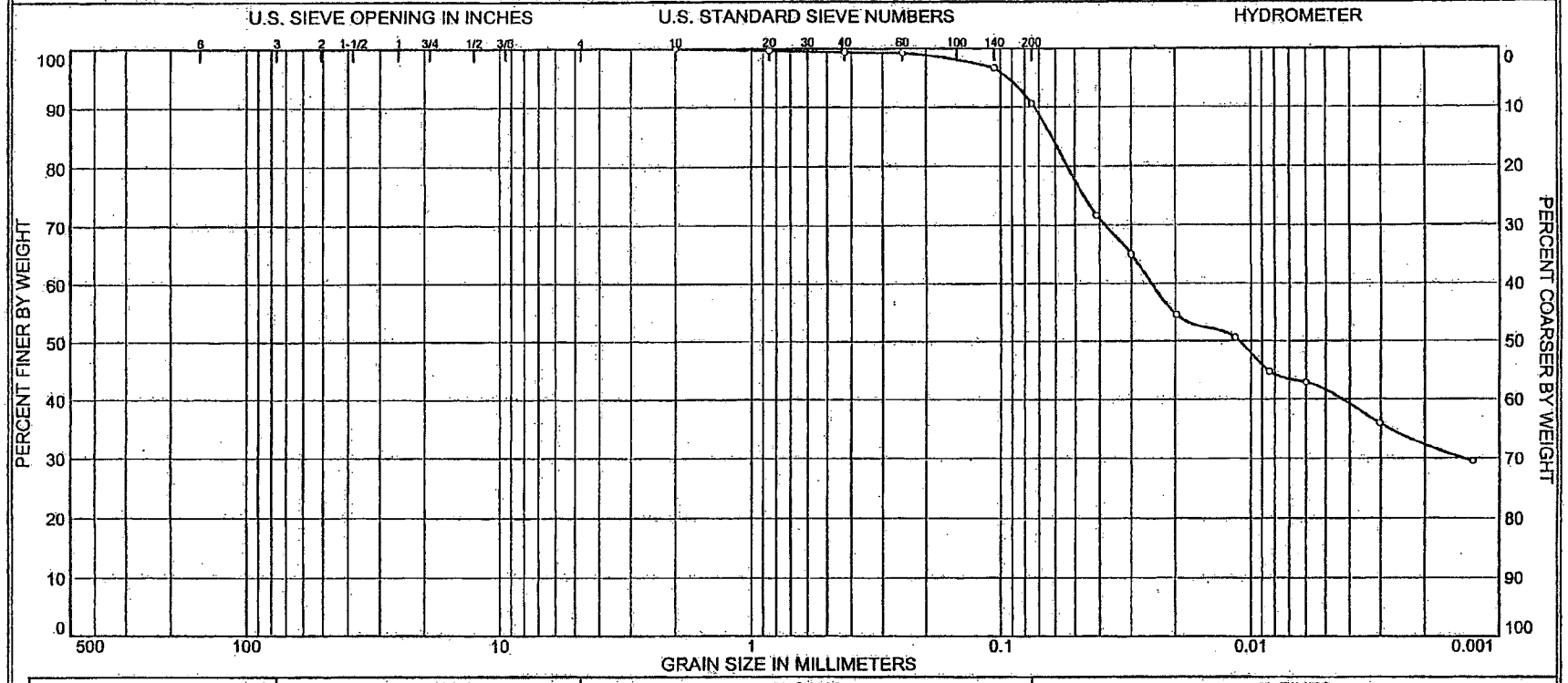
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.3	31.0	27.5	0.0134	32.0	11.0	0.0316	48.5
5.00	21.2	29.0	25.4	0.0134	30.0	11.4	0.0203	44.9
15.00	21.2	27.5	23.9	0.0134	28.5	11.6	0.0118	42.3
30.00	21.2	26.0	22.4	0.0134	27.0	11.9	0.0085	39.6
60.00	21.1	23.0	19.4	0.0135	24.0	12.4	0.0061	34.3
250.00	20.3	19.0	15.3	0.0136	20.0	13.0	0.0031	27.0
1440.00	20.8	15.0	11.4	0.0135	16.0	13.7	0.0013	20.1

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 45.4 (% coarse = % medium = 31.3 % fine = 14.1)
% SILT = 23.1 % CLAY = 31.5

D_{85}= 1.08 D_{60}= 0.21 D_{50}= 0.04
D_{30}= 0.00

Particle Size Distribution Report - ASTM D422-63 (2002)e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.6	8.8	49.0	41.6

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-949	SS-30	123.5-125	9-11-07	CL	Lean clay	19.4	39	11

Client Bechtel

Project South Texas Project Units 3 & 4 Subsurface Investigation

Project No. 6234-07-4257 Figure

MACTEC, INC.

Charlotte, North Carolina

O Tested by: JA Reviewed by: MH 9-25-07

KAW 10/4/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: South Texas Project Units 3 & 4 Subsurface Investigation
Project Number: 6234-07-4257

Sample Data

Source: B-949
Sample No.: SS-30
Elev. or Depth: 123.5-125 Sample Length(in./cm.):
Location:
Description: Lean clay
Date: 9-11-07 Natural Moisture: 19.4
Liquid Limit: 39 Plastic Limit: 11 USCS Class.: CL
Testing Remarks: Tested by: JA Reviewed by: MH

Mechanical Analysis Data

	Initial
Dry sample and tare=	88.12
Tare =	0.00
Dry sample weight =	88.12

Sample split on number 10 sieve
Split sample data:
Sample and tare = 52.22 Tare = .00 Sample weight = 52.22
Cumulative weight retained tare= .00
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.18	99.7
# 40	0.31	99.4
# 60	0.39	99.3
# 140	1.72	96.7
# 200	4.90	90.6

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 100.0
Weight of hydrometer sample: 53.64
Hygroscopic moisture correction:
Moist weight & tare = 28.26
Dry weight & tare = 27.94
Tare = 16.16
Hygroscopic moisture= 2.7 %
Calculated biased weight= 52.22
Table of composite correction values:

Temp, deg C:	14.0	24.0	40.2
Comp. corr:	-5.0	-3.0	0.0

Meniscus correction only= 1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.00	21.3	41.0	37.5	0.0134	42.0	9.4	0.0412	71.7
2.00	21.3	37.5	34.0	0.0134	38.5	10.0	0.0300	65.0
5.00	21.2	32.0	28.4	0.0134	33.0	10.9	0.0198	54.5
15.00	21.2	30.0	26.4	0.0134	31.0	11.2	0.0116	50.6
30.00	21.2	27.0	23.4	0.0134	28.0	11.7	0.0084	44.9
60.00	21.0	26.0	22.4	0.0135	27.0	11.9	0.0060	42.9
250.00	20.4	22.5	18.8	0.0136	23.5	12.4	0.0030	36.0
1440.00	20.9	19.0	15.4	0.0135	20.0	13.0	0.0013	29.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 9.4 (% coarse = % medium = 0.6 % fine = 8.8)
% SILT = 49.0 % CLAY = 41.6

D_{85}= 0.06 D_{60}= 0.02 D_{50}= 0.01
D_{30}= 0.00

Chemical Testing

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

REVISED

COL Projects

Lot #: F7I130255

KATHRYN WHITE

KATHRYN WHITE
MACTEC ENGINEERING & CONSULTIN
1540 N. 107TH EAST AVENUE
TULSA, OK 74116

TESTAMERICA LABORATORIES, INC.

Paul Christi
Project Manager

September 25, 2007

13715 Rider Trail North Earth City, MO 63045 tel 314.298.8566 fax 314.298.8757 www.testamericainc.com

Case Narrative
LOT NUMBER: **F7I130255**

This report contains the analytical results for the seven samples received under chain of custody by STL St. Louis on September 13, 2007. These samples are associated with your COL Projects project.

All applicable quality control procedures met method-specified acceptance criteria except as noted on the following page.

This report is incomplete without the case narrative. All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

pH was measured by SW846-9045D method and not SW846-9045C method as noted in Methods Summary page.

LOT NUMBER F7I130255

Anions by IC (MCAWW 300.0A)

Batch 7267531
The anion matrix spike solution contains all routine anions. Spiking technique, sample preparation and method compliance is demonstrated by the remaining acceptable MS recoveries. Poor matrix spike recovery for Chloride in batch 7267531 is attributed to matrix interference.
Affected Samples:
F7I130255 (1): SS-13 B-940
F7I130255 (2): SS-14 B-940
F7I130255 (3): SS-21 B-443
F7I130255 (4): SS-23 B-443
F7I130255 (5): SS-25 B-443
F7I130255 (6): SS-14 B-949
F7I130255 (7): SS-16 B-949

KAW 10/4/07

METHODS SUMMARY

F7I130255

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Chloride	MCAWW 300.0A	MCAWW 300.0A
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Soil and Waste pH	SW846 9045C	SW846 DI-LEACHA
Sulfate	MCAWW 300.0A	MCAWW 300.0A

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

F7I130255

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
J6Q0F	001	SS-13 B-940	08/01/07	
J6Q07	002	SS-14 B-940	08/01/07	
J6Q09	003	SS-21 B-443	07/31/07	
J6Q1A	004	SS-23 B-443	07/31/07	
J6Q1C	005	SS-25 B-443	07/31/07	
J6Q1D	006	SS-14 B-949	07/25/07	
J6Q1F	007	SS-16 B-949	07/25/07	

KAW 10/4/07

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: SS-13 B-940 KAW 10/4/07

General Chemistry

Lot-Sample #...: F7I130255-001 Work Order #...: J6Q0F Matrix.....: SOLID
Date Sampled...: 08/01/07 Date Received..: 09/13/07
% Moisture.....: 19

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)	8.4	0.10	No Units	SW846 9045C	09/19/07	7262136
		Dilution Factor: 1		Analysis Time..: 00:00		
Chloride	43.2	2.5	mg/kg	MCAWW 300.0A	09/22/07	7267531
		Dilution Factor: 1		Analysis Time..: 05:38		
Percent Moisture	19.5	0.10	%	MCAWW 160.3 MOD	09/17-09/18/07	7260035
		Dilution Factor: 1		Analysis Time..: 00:00		
Sulfate	7.2	6.2	mg/kg	MCAWW 300.0A	09/22/07	7267532
		Dilution Factor: 1		Analysis Time..: 05:38		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: SS-14 B-940 KAW 10/4/07

General Chemistry

Lot-Sample #...: F7I130255-002 Work Order #...: J6Q07 Matrix.....: SOLID
Date Sampled...: 08/01/07 Date Received..: 09/13/07
% Moisture.....: 21

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)	8.8	0.10	No Units	SW846 9045C	09/19/07	7262136
		Dilution Factor: 1		Analysis Time..: 00:00		
Chloride	36.1	2.5	mg/kg	MCAWW 300.0A	09/22/07	7267531
		Dilution Factor: 1		Analysis Time..: 09:49		
Percent Moisture	20.6	0.10	%	MCAWW 160.3 MOD	09/17-09/18/07	7260035
		Dilution Factor: 1		Analysis Time..: 00:00		
Sulfate	15.3	6.3	mg/kg	MCAWW 300.0A	09/22/07	7267532
		Dilution Factor: 1		Analysis Time..: 09:49		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: SS-21 B-443 KAW 10/4/07

General Chemistry

Lot-Sample #...: F7I130255-003 Work Order #...: J6Q09 Matrix.....: SOLID
Date Sampled...: 07/31/07 Date Received..: 09/13/07
% Moisture.....: 18

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)	9.1	0.10	No Units	SW846 9045C	09/19/07	7262136
		Dilution Factor: 1		Analysis Time..: 00:00		
Chloride	37.7	2.5	mg/kg	MCAWW 300.0A	09/22/07	7267531
		Dilution Factor: 1		Analysis Time..: 10:42		
Percent Moisture	18.4	0.10	%	MCAWW 160.3 MOD	09/17-09/18/07	7260035
		Dilution Factor: 1		Analysis Time..: 00:00		
Sulfate	17.2	6.1	mg/kg	MCAWW 300.0A	09/22/07	7267532
		Dilution Factor: 1		Analysis Time..: 10:42		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: SS-23 B-443 KAW 10/4/07

General Chemistry

Lot-Sample #...: F7I130255-004 Work Order #...: J6Q1A Matrix.....: SOLID
Date Sampled...: 07/31/07 Date Received..: 09/13/07
% Moisture.....: 16

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)	9.3	0.10	No Units	SW846 9045C	09/19/07	7262136
		Dilution Factor: 1		Analysis Time..: 00:00		
Chloride	27.0	2.4	mg/kg	MCAWW 300.0A	09/22/07	7267531
		Dilution Factor: 1		Analysis Time..: 11:34		
Percent Moisture	16.1	0.10	%	MCAWW 160.3 MOD	09/17-09/18/07	7260035
		Dilution Factor: 1		Analysis Time..: 00:00		
Sulfate	21.8	6.0	mg/kg	MCAWW 300.0A	09/22/07	7267532
		Dilution Factor: 1		Analysis Time..: 11:34		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: SS-25 B-443 KAW 10/4/07

General Chemistry

Lot-Sample #....: F7I130255-005 Work Order #...: J6Q1C Matrix.....: SOLID
Date Sampled...: 07/31/07 Date Received..: 09/13/07
% Moisture.....: 20

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)	8.9	0.10	No Units	SW846 9045C	09/19/07	7262136
		Dilution Factor: 1		Analysis Time..: 00:00		
Chloride	33.9	2.5	mg/kg	MCAWW 300.0A	09/22-09/23/07	7267531
		Dilution Factor: 1		Analysis Time..: 01:01		
Percent Moisture	20.4	0.10	%	MCAWW 160.3 MOD	09/17-09/18/07	7260035
		Dilution Factor: 1		Analysis Time..: 00:00		
Sulfate	33.1	6.3	mg/kg	MCAWW 300.0A	09/22-09/23/07	7267532
		Dilution Factor: 1		Analysis Time..: 01:01		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: SS-14 B-949 KAW 10/4/07

General Chemistry

Lot-Sample #...: F7I130255-006 Work Order #...: J6Q1D Matrix.....: SOLID
Date Sampled...: 07/25/07 Date Received..: 09/13/07
% Moisture.....: 19

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)	9.1	0.10	No Units	SW846 9045C	09/19/07	7262136
		Dilution Factor: 1		Analysis Time..: 00:00		
Chloride	46.7	2.5	mg/kg	MCAWW 300.0A	09/22-09/23/07	7267531
		Dilution Factor: 1		Analysis Time..: 01:53		
Percent Moisture	19.1	0.10	%	MCAWW 160.3 MOD	09/17-09/18/07	7260035
		Dilution Factor: 1		Analysis Time..: 00:00		
Sulfate	8.3	6.2	mg/kg	MCAWW 300.0A	09/22-09/23/07	7267532
		Dilution Factor: 1		Analysis Time..: 01:53		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

MACTEC Engineering and Consulting Inc

Client Sample ID: SS-16 B-949 KAW 10/4/07

General Chemistry

Lot-Sample #...: F7I130255-007 Work Order #...: J6Q1F Matrix.....: SOLID
Date Sampled...: 07/25/07 Date Received..: 09/13/07
% Moisture.....: 25

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)	8.7	0.10	No Units	SW846 9045C	09/19/07	7262136
		Dilution Factor: 1		Analysis Time..: 00:00		
Chloride	49.4	2.7	mg/kg	MCAWW 300.0A	09/22-09/23/07	7267531
		Dilution Factor: 1		Analysis Time..: 02:45		
Percent Moisture	25.4	0.10	%	MCAWW 160.3 MOD	09/17-09/18/07	7260035
		Dilution Factor: 1		Analysis Time..: 00:00		
Sulfate	22.7	6.7	mg/kg	MCAWW 300.0A	09/22-09/23/07	7267532
		Dilution Factor: 1		Analysis Time..: 02:45		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F7I130255 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride		Work Order #: J7JQW1AA		MB Lot-Sample #:	F7I240000-531	
	ND	2.0	mg/kg	MCAWW 300.0A	09/22/07	7267531
		Dilution Factor: 1				
		Analysis Time..: 06:20				
Sulfate		Work Order #: J7JQX1AA		MB Lot-Sample #:	F7I240000-532	
	ND	5.0	mg/kg	MCAWW 300.0A	09/22/07	7267532
		Dilution Factor: 1				
		Analysis Time..: 06:20				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F7I130255 Matrix.....: SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)		Work Order #: J65Q61AA	LCS Lot-Sample#: F7I190000-136		
	100	(99 - 101)	SW846 9045C	09/19/07	7262136
		Dilution Factor: 1	Analysis Time..: 00:00		
Chloride		Work Order #: J7JQW1AC	LCS Lot-Sample#: F7I240000-531		
	98	(90 - 110)	MCAWW 300.0A	09/22/07	7267531
		Dilution Factor: 1	Analysis Time..: 06:03		
Sulfate		Work Order #: J7JQX1AC	LCS Lot-Sample#: F7I240000-532		
	96	(90 - 110)	MCAWW 300.0A	09/22/07	7267532
		Dilution Factor: 1	Analysis Time..: 06:03		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F7I130255 Matrix.....: SOLID
Date Sampled...: 08/01/07 Date Received..: 09/13/07

Percnt Moisture: 4.8

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride		Work Order #...: J6Q0F1AG		MS Lot-Sample #: F7I130255-001	
	127 N	(90 - 110)	MCAWW 300.0A	09/22/07	7267531
		Dilution Factor: 1	Analysis Time..: 06:38		
Sulfate		Work Order #...: J6Q0F1AJ		MS Lot-Sample #: F7I130255-001	
	90	(90 - 110)	MCAWW 300.0A	09/22/07	7267532
		Dilution Factor: 1	Analysis Time..: 06:38		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F7I130255 **Work Order #...:** J6KK4-SMP J6KK4-DUP **Matrix.....:** SOLID

Date Sampled...: 09/07/07 **Date Received..:** 09/11/07

% Moisture.....: 4.8

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture						SD Lot-Sample #:	F7I110279-002	
	4.8	4.8	%	0.21	(0-30)	MCAWW 160.3 MOD	09/17-09/18/07	7260035

Dilution Factor: 1 Analysis Time..: 00:00

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F7I130255 **Work Order #...:** J6Q0F-SMP J6Q0F-DUP **Matrix.....:** SOLID

Date Sampled...: 08/01/07 **Date Received..:** 09/13/07

% Moisture.....: 19

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride						SD Lot-Sample #:	F7I130255-001	
	43.2	44.1	mg/kg	2.1	(0-20)	MCAWW 300.0A	09/22/07	7267531
			Dilution Factor: 1			Analysis Time..: 06:38		
Sulfate						SD Lot-Sample #:	F7I130255-001	
	7.2	7.8	mg/kg	8.9	(0-20)	MCAWW 300.0A	09/22/07	7267532
			Dilution Factor: 1			Analysis Time..: 06:38		
pH (solid)						SD Lot-Sample #:	F7I130255-001	
	8.4	8.4	No Units	0.83	(0-0.0)	SW846 9045C	09/19/07	7262136
			Dilution Factor: 1			Analysis Time..: 00:00		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

F7I130255 CLIENT ANALYSIS SUMMARY

Storage Loc: 2-113
Date Received: 2007-09-13
Analytical Due Date: 2007-09-25
Report Due Date: 2007-09-27
Report Type: B Standard Report
EDD Code: 00

Project Manager: PMC
Quote #: 71966 SDG:
Project: COL Projects
PO#: 70530
Report to: Lori Johnson
Client: 373886 MACTEC Engineering and Consulting Inc
#SMPS in LOT: 7

Cation Exchange capacity - Run B, Ca, Mg, Na, K, Bicarbonate and Carbonate alkalinity, Chloride and Sulfate.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
1	SS-13			2007-08-01 / 0	J6Q0F	SOLID

SAMPLE COMMENTS:

XX	CX	MCAW W	300.0A	Chloride (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	CY	MCAW W	300.0A	Sulfate (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	OZ	SW846	9045C	pH (9045C) - Non-Aqueous	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	WM	MCAW W	160.3 MOD	Moisture, Percent (160.3)	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: Z	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
2	SS-14			2007-08-01 / 0	J6Q07	SOLID

SAMPLE COMMENTS:

XX	CX	MCAW W	300.0A	Chloride (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	CY	MCAW W	300.0A	Sulfate (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	OZ	SW846	9045C	pH (9045C) - Non-Aqueous	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	WM	MCAW W	160.3 MOD	Moisture, Percent (160.3)	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: Z	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
3	SS-21			2007-07-31 / 0	J6Q09	SOLID

SAMPLE COMMENTS:

XX	CX	MCAW W	300.0A	Chloride (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	CY	MCAW W	300.0A	Sulfate (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	OZ	SW846	9045C	pH (9045C) - Non-Aqueous	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	WM	MCAW W	160.3 MOD	Moisture, Percent (160.3)	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: Z	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
4	SS-23			2007-07-31 / 0	J6Q1A	SOLID

SAMPLE COMMENTS:

XX	CX	MCAW W	300.0A	Chloride (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	CY	MCAW W	300.0A	Sulfate (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	OZ	SW846	9045C	pH (9045C) - Non-Aqueous	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	WM	MCAW W	160.3 MOD	Moisture, Percent (160.3)	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: Z	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
5	SS-25			2007-07-31 / 0	J6Q1C	SOLID

SAMPLE COMMENTS:

XX	CX	MCAW W	300.0A	Chloride (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	CY	MCAW W	300.0A	Sulfate (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	OZ	SW846	9045C	pH (9045C) - Non-Aqueous	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	WM	MCAW W	160.3 MOD	Moisture, Percent (160.3)	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: Z	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A

F7I130255

CLIENT ANALYSIS SUMMARY

Storage Loc: 2-113
Date Received: 2007-09-13
Analytical Due Date: 2007-09-25
Report Due Date: 2007-09-27
Report Type: B Standard Report
EDD Code: 00

Project Manager: PMC
Quote #: 71868 SDG:
Project: COL Projects
PO#: 70530
Report to: Lori Johnson
Client: 373888 MACTEC Engineering and Consulting Inc
#SMPS in LOT: 7

Cation Exchange capacity - Run B, Ca, Mg, Na, K, Bicarbonate and Carbonate alkalinity, Chloride and Sulfate.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
6	SS-14			2007-07-25 / 0	J6Q1D	SOLID

SAMPLE COMMENTS:

XX	CX	MCAW W	300.0A	Chloride (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	CY	MCAW W	300.0A	Sulfate (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	OZ	SW846	9045C	pH (9045C) - Non-Aqueous	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	WM	MCAW W	160.3 MOD	Moisture, Percent (160.3)	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: Z	WRK LOC	06

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	A
7	SS-16			2007-07-25 / 0	J6Q1F	SOLID

SAMPLE COMMENTS:

XX	CX	MCAW W	300.0A	Chloride (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	CY	MCAW W	300.0A	Sulfate (300.0A, Ion Chromatography)	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	OZ	SW846	9045C	pH (9045C) - Non-Aqueous	82	LEACHATE, DI (Routine)	01	STANDARD TEST SET	PROT: B	WRK LOC	06
XX	WM	MCAW W	160.3 MOD	Moisture, Percent (160.3)	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: Z	WRK LOC	06

MACTEC

LABORATORY ASSIGNMENT SHEET / CHAIN OF CUSTODY RECORD

PROJECT NUMBER: 6234-07-4257

PAGE 1 OF 1

LABORATORY RECEIVING ID: SEVERN TRENT LAB

DATE: 9-12-2007

PREPARED BY (NAME / COMPANY): TED HALL/MACTEC

LAB MANAGER: MIKE HAMLETT

MACTEC PROJECT MANAGER:

JOB NAME: STP-SOUTH TEXAS COL PROJECT

DATE REPORT REQUIRED: (Lab Mgr initials required)

ACTUAL DATE OF REPORT: (Lab Mgr initials required)

CLIENT CONTACT:

CLIENT PHONE:

CLIENT FAX:

RETAIN SAMPLES UNTIL:

NOTE: LIST QUANTITY OF EACH TEST FOR EACH SAMPLE BELOW

SAMPLE NUMBER	Boring No.	Sample No.	Sample Depth	WATER CONTENT (ASTM D2216-98)	ATTERBERG LIMITS (ASTM D4318-98)	WASH #200 AND PARTICLE SIZE ANALYSIS (ASTM D1140-97 & D422-63)	HYDROMETER (ASTM D422-63)	UNIT WT. SPS TP-4	SPECIFIC GRAVITY (ASTM D854-98)	CONSOLIDATION METHOD A 24 Hour Load (ASTM D2435-96)	CONSOLIDATION, METHOD B (ASTM D2435-96)	CONSOLIDATION - Overburden Pressure KSF	C-U TRIAXIAL COMPRESSION (ASTM D4767-95)	Confining Pressure KSF	RESONANT COLUMN - TORSIONAL (ASTM D4015-92)	Confining Pressure KSF	CYCLIC TRIAXIAL - STRESS CONTROLLED (ASTM D5296-91)	CYCLIC TRIAXIAL - STRAIN CONTROLLED (ASTM D5296-91)	Confining Pressure KSF	REMOLDING REQUIRED?	Chemical analysis (pH, Chloride, Sulfate)	NAME / ASTM
1	B-040	SS-13	26.5-28																		X	
2	B-040	SS-14	35.5-37																		X	
3	B-443	SS-21	61.5-70																		X	
4	B-443	SS-23	74.5-80																		X	
5	B-443	SS-25	85.5-90																		X	
6	B-040	SS-14	28.5-30																		X	
7	B-040	SS-16	43.5-45																		X	
8																						
9																						
10																						
11																						
12																						
TOTAL NUMBER OF TESTS																						

Special Instructions:

DATE / TIME RELINQUISHED FROM SITE: 9-12-07

RELINQUISHED BY (SIGNATURE OF SITE PERSONNEL): TDH

RELINQUISHED TO (SIGNATURE OF CARRIER): Ted Hall

DATE / TIME RELINQUISHED TO:

RELINQUISHED BY (SIGNATURE OF CARRIER): FED-EX

RECEIVED BY (LABORATORY): [illegible signature] 09-13-07 0915

DATE / TIME RELINQUISHED TO:

RELINQUISHED BY:

RECEIVED BY:

DATE / TIME RELINQUISHED TO:

RELINQUISHED BY:

RECEIVED BY:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F7I130255

- 255 -

Condition Upon Receipt Form

Client: Mactec
Quote No: 71966
COC/RFA No: 6234-07-4257
Initiated By: S
Date: 09.13.07
Time: 0915

Shipping Information

Shipper Name: FedX
Shipping # (s):*
1. 7924 1683 9745
2.
3.
4.
5.
6.
7.
8.
9.
10.

Multiple Packages Y (N)
Sample Temperature (s):**
1. ambient
2.
3.
4.
5.
6.
7.
8.
9.
10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C. If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests-Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	Y (N)	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y N (N/A)	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	Y N (N/A)	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	Y N	If N/A- Was pH taken by original TestAmerica lab?
5.	(Y) N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	(Y) N	Sample received in proper containers?
6.	Y (N)	Was sample received broken?	13.	Y N (N/A)	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
7.	(Y) N	Is sample volume sufficient for analysis?	14.	Y N	Was Internal COC/Workshare received?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:

Corrective Action:
☐ Client Contact Name: Informed by:
☐ Sample(s) processed "as is"
☐ Sample(s) on hold until: If released, notify:
Project Management Review: PChrist Date: 9/14/07

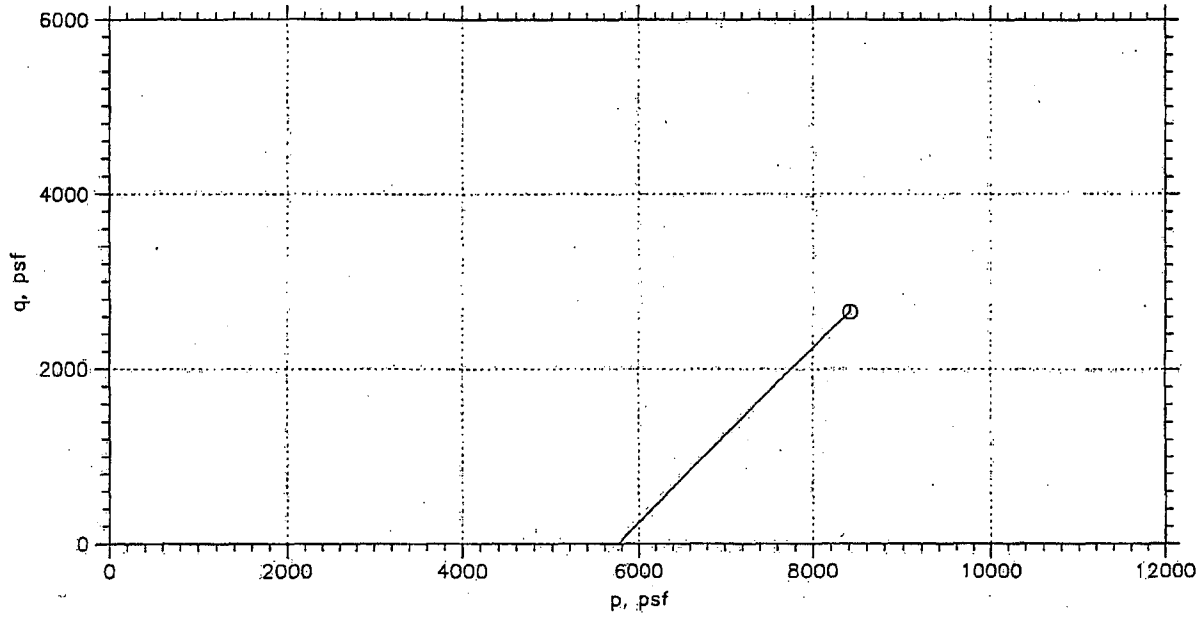
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

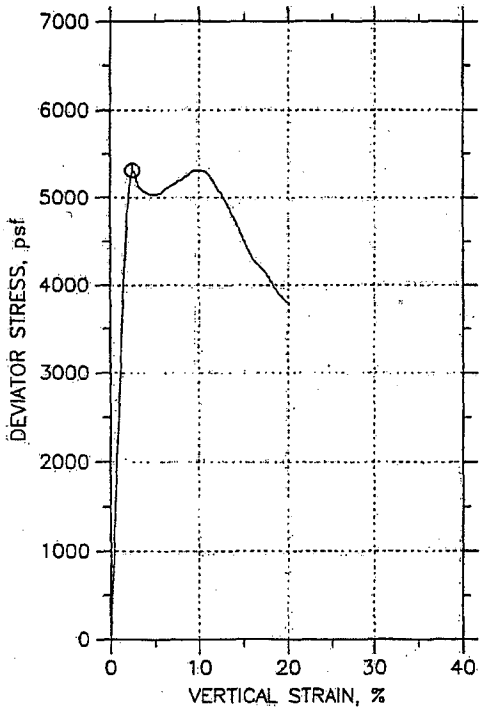
- 255 -

ADMIN-0004, REVISED 08/06/07\\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004 rev11.doc

Unconsolidated Undrained Triaxial Tests

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊙			
Sample No.	UD-1			
Test No.	7928			
Depth	86-88ft.			
Tested by	BM			
Test Date	9/12/07			
Checked by	HJ			
Check Date	9/24/07			
Diameter, in	2.86			
Height, in	6.003			
Water Content, %	22.7			
Dry Density, pcf	100.4			
Saturation, %	87.3			
Void Ratio	0.717			
Confining Stress, psf	5760			
Undrained Strength, psf	2656			
Max. Dev. Stress, psf	5311			
Strain at Failure, %	2.47			
Strain Rate, %/min	1			
Measured Specific Gravity	2.76			
Liquid Limit	61			
Plastic Limit	24			
Plasticity Index	37			

MACTEC

Project: Bechtel/STP/COL

Location: B-443 UD-1

Project No.: 6234074257

Boring No.: B-443

Sample Type: Undisturbed

Description: Fat CLAY (CH)

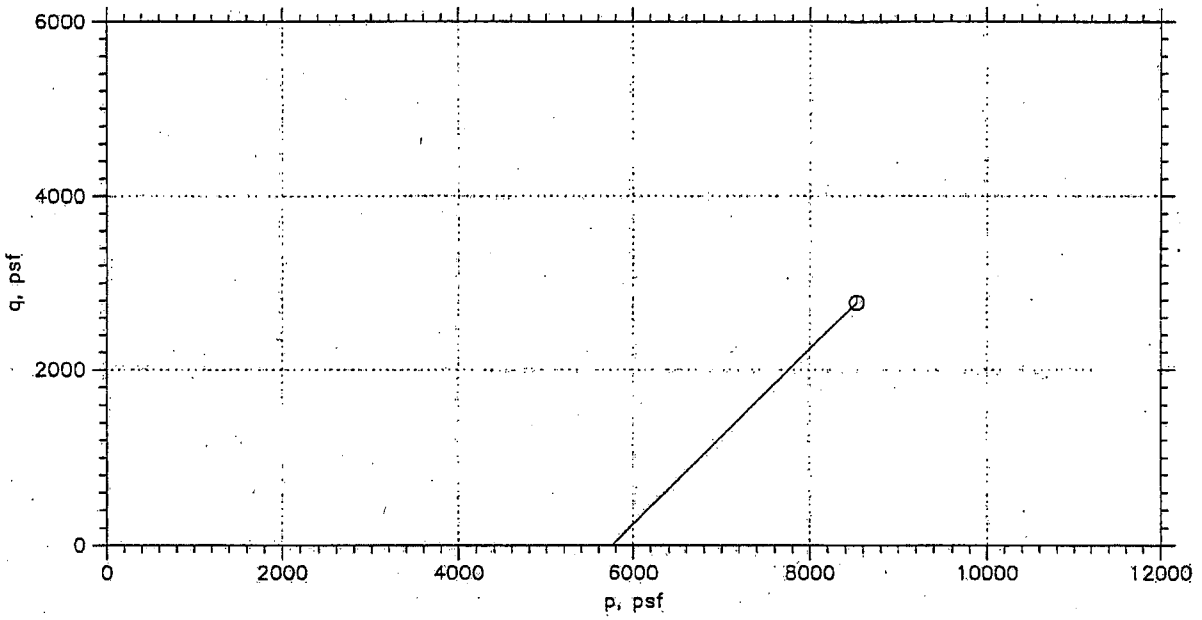
Remarks: UNCONSOLIDATED UNDRAINED TRIAXIAL TEST REPORT By ASTM D2850-03a

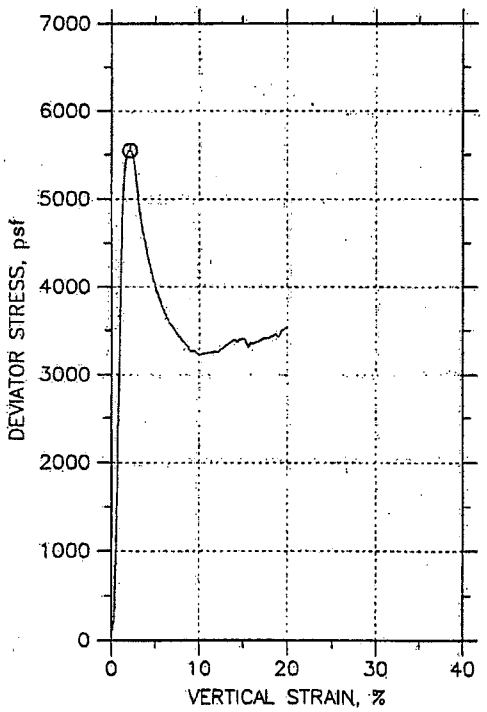
Phase calculations based on start and end of test.

Fri, 21-SEP-2007 15:17:45

KAW 10/4/07

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊙			
Sample No.	UD-3			
Test No.	7930			
Depth	96-98ft.			
Tested by	BM			
Test Date	9/14/07			
Checked by	HJ			
Check Date	9/24/07			
Diameter, in	2.868			
Height, in	5.571			
Water Content, %	26.0			
Dry Density, pcf	99.24			
Saturation, %	100.5			
Void Ratio	0.698			
Confining Stress, psf	5760			
Undrained Strength, psf	2773			
Max. Dev. Stress, psf	5545			
Strain at Failure, %	2.12			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	62			
Plastic Limit	25			
Plasticity Index	37			

MACTEC

Project: Bechtel/STP/COL

Location: B-443 UD-3

Project No.: 6234074257

Boring No.: B-443

Sample Type: Undisturbed

Description: Fat CLAY (CH)

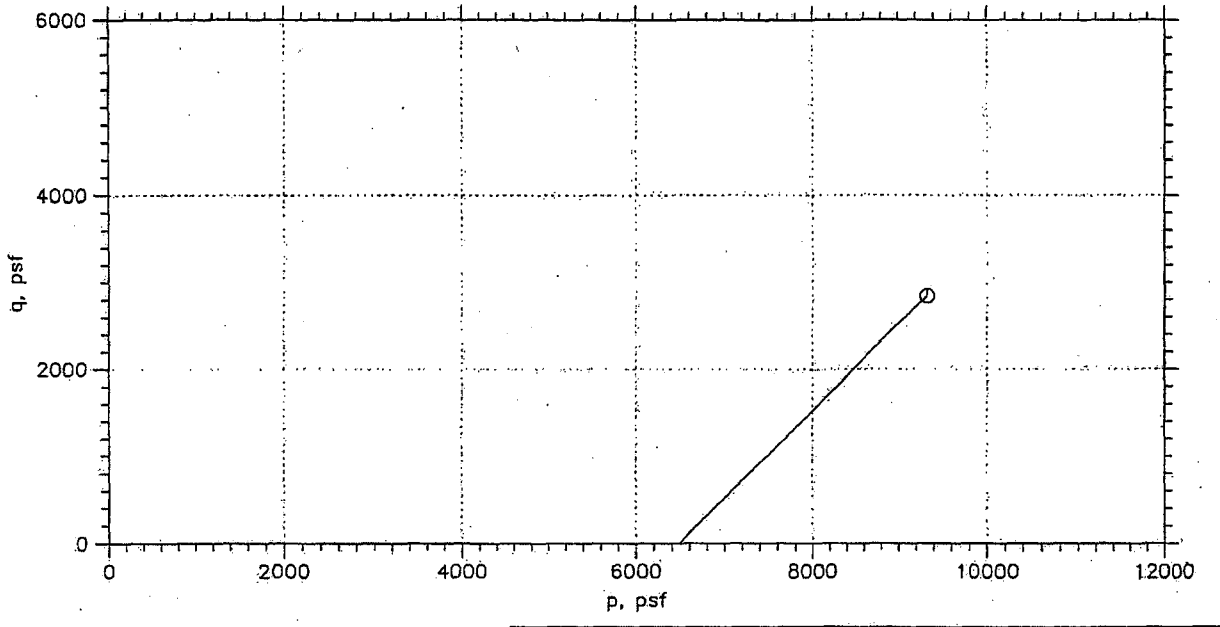
Remarks: UNCONSOLIDATED UNDRAINED TRIAXIAL TEST REPORT By ASTM D2850-03a

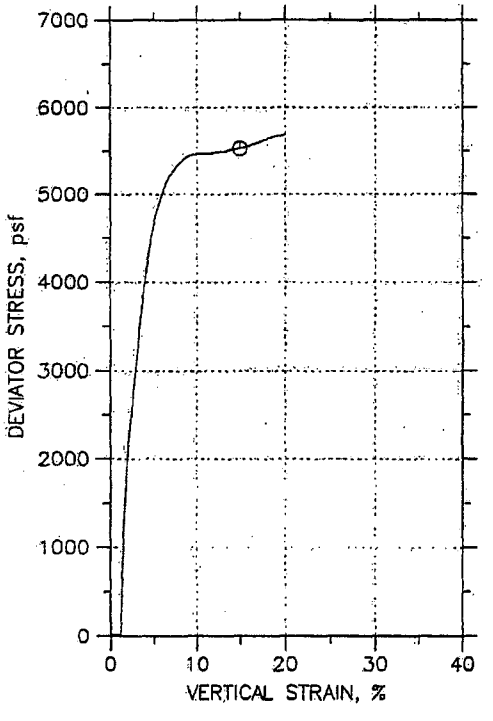
Phase calculations based on start and end of test.

KAW 10/4/07

Fri, 21-SEP-2007 13:58:05

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊙			
Sample No.	UD-4			
Test No.	7931			
Depth	101-103ft			
Tested by	BM			
Test Date	9/13/07			
Checked by	HJ			
Check Date	9/24/07			
Diameter, in	2.832			
Height, in	5.59			
Water Content, %	29.1			
Dry Density, pcf	92.7			
Saturation, %	98.3			
Void Ratio	0.786			
Confining Stress, psf	6480			
Undrained Strength, psf	2764			
Max. Dev. Stress, psf	5527			
Strain at Failure, %	15			
Strain Rate, %/min	1			
Measured Specific Gravity	2.65			
Liquid Limit	55			
Plastic Limit	25			
Plasticity Index	30			

MACTEC

Project: Bechtel/STP/COL

Location: B-443 UD-4

Project No.: 6234074257

Boring No.: B-443

Sample Type: Undisturbed

Description: Fat CLAY (CH)

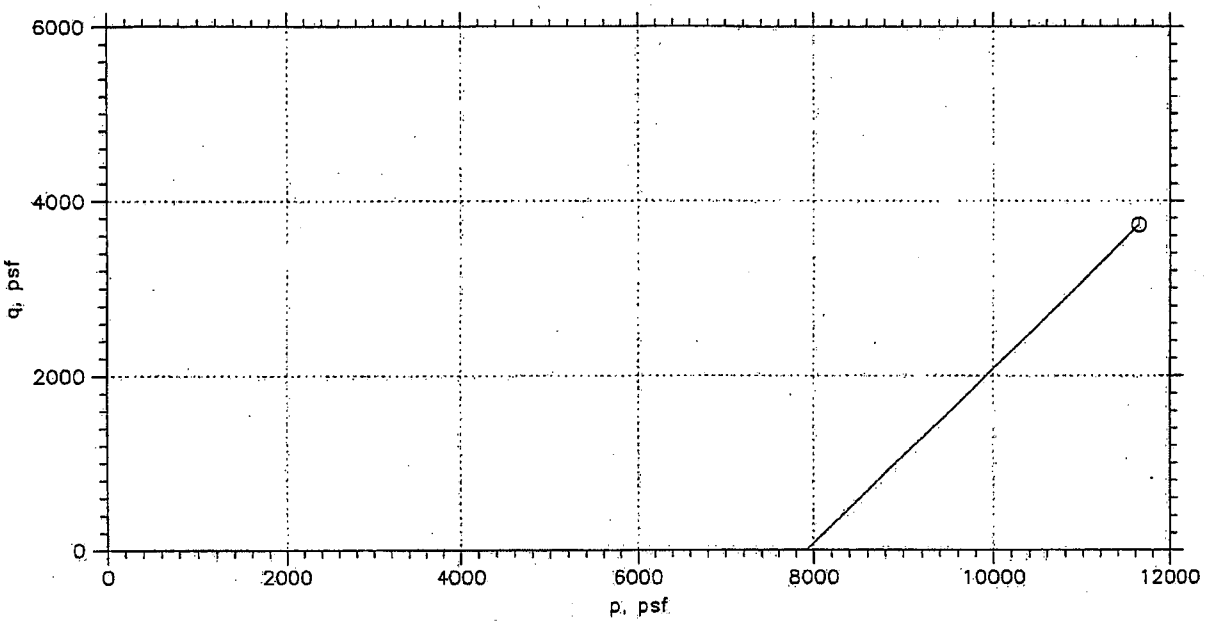
Remarks: UNCONSOLIDATED UNDRAINED TRIAXIAL TEST REPORT By ASTM D2850-03a

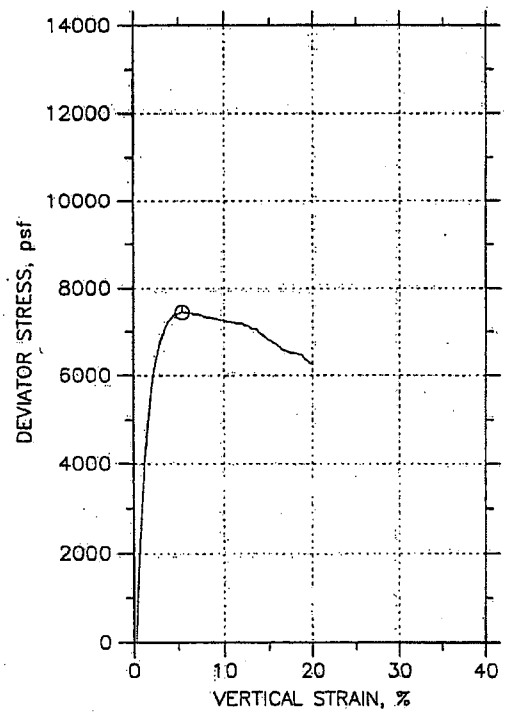
Phase calculations based on start and end of test.

KAW 10/4/07

Fri, 21-SEP-2007 13:58:51

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊙			
Sample No.	UD-7A			
Test No.	7933			
Depth	123-125ft			
Tested by	BM			
Test Date	9/13/07			
Checked by	HJ			
Check Date	9/24/07			
Diameter, in	2.851			
Height, in	5.6			
Water Content, %	23.4			
Dry Density, pcf	103.9			
Saturation, %	101.7			
Void Ratio	0.622			
Confining Stress, psf	7920			
Undrained Strength, psf	3721			
Max. Dev. Stress, psf	7443			
Strain at Failure, %	5.47			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	48			
Plastic Limit	19			
Plasticity Index	29			

MACTEC

Project: Bechtel/STP/COL

Location: B-443 UD-7A

Project No.: 6234074257

Boring No.: B-443

Sample Type: Undisturbed

Description: Lean CLAY (CL)

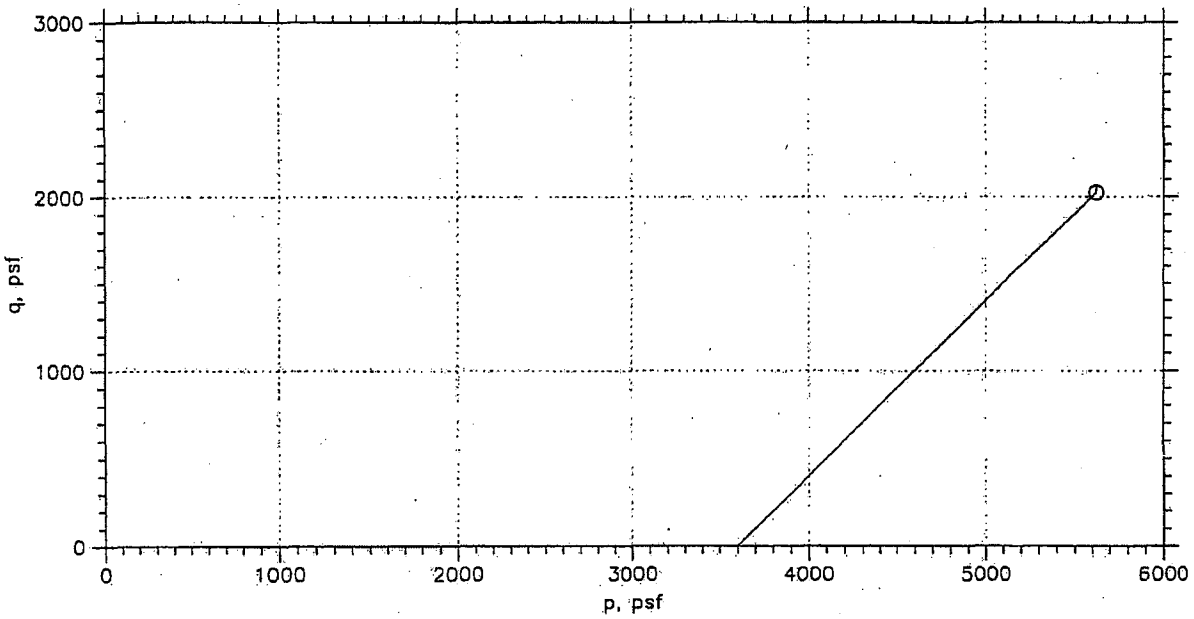
Remarks: UNCONSOLIDATED UNDRAINED TRIAXIAL TEST REPORT By ASTM D2850-03a

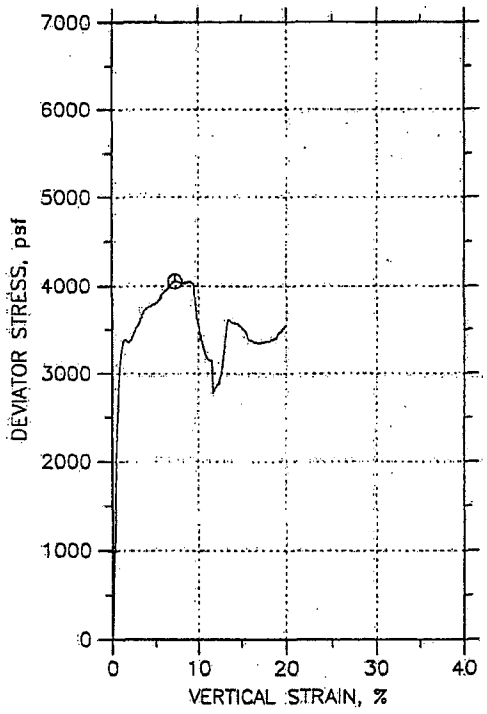
Phase calculations based on start and end of test.

Fri, 21-SEP-2007 13:59:56

KAW 10/4/07

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊙			
Sample No.	UD-5			
Test No.	7919			
Depth	56-58ft.			
Tested by	BM			
Test Date	9/12/07			
Checked by	HJ			
Check Date	9/24/07			
Diameter, in	2.86			
Height, in	6			
Water Content, %	27.0			
Dry Density, pcf	97.68			
Saturation, %	97.5			
Void Ratio	0.763			
Confining Stress, psf	3600			
Undrained Strength, psf	2024			
Max. Dev. Stress, psf	4049			
Strain at Failure, %	7.31			
Strain Rate, %/min	1			
Measured Specific Gravity	2.76			
Liquid Limit	50			
Plastic Limit	18			
Plasticity Index	32			

MACTEC

Project: Bechtel/STP/COL

Location: B-940 UD-5

Project No.: 6234074257

Boring No.: B-940

Sample Type: Undisturbed

Description: Fat CLAY (CH)

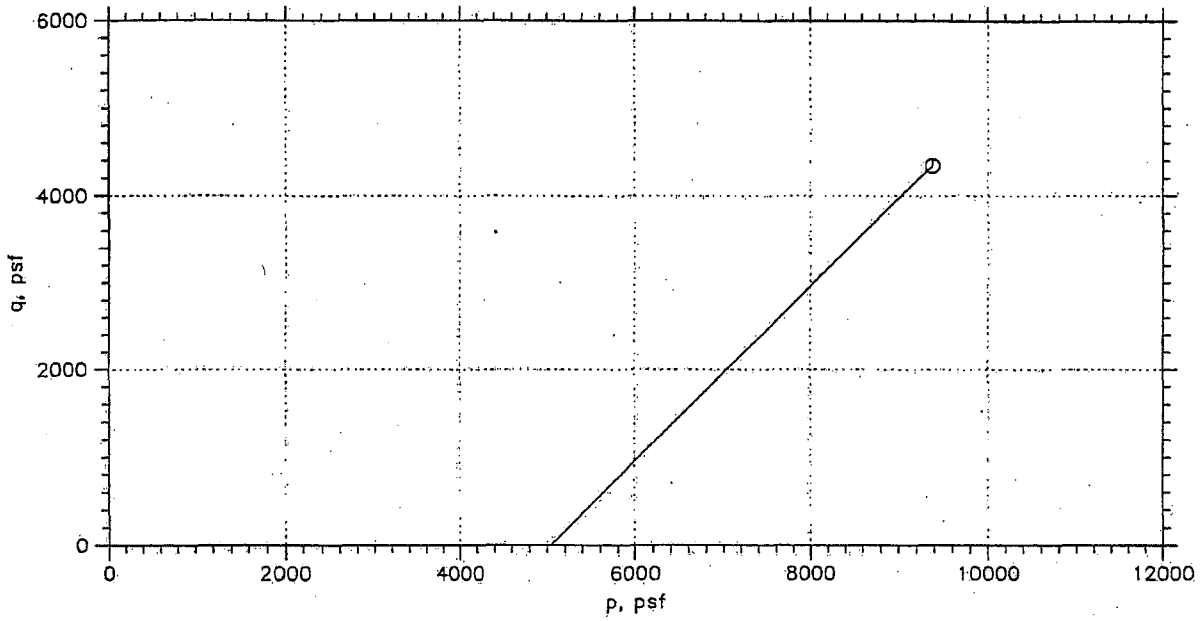
Remarks: UNCONSOLIDATED UNDRAINED TRIAXIAL TEST REPORT By ASTM D2850-03a

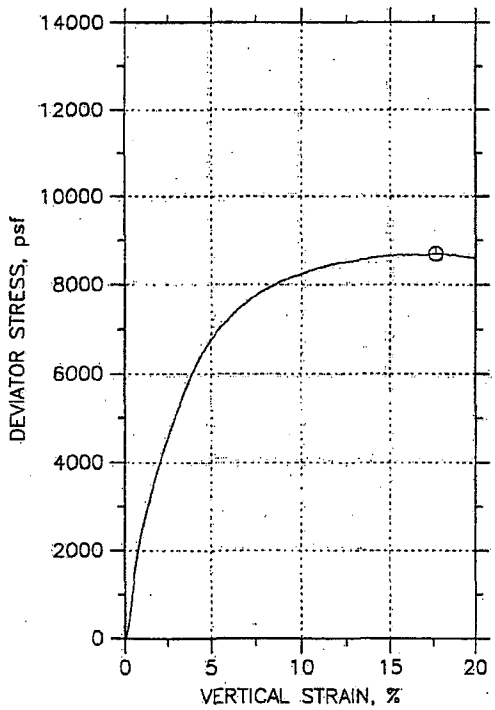
Phase calculations based on start and end of test.

KAW 10/4/07

Fri, 21-SEP-2007 13:52:55

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊙			
Sample No.	UD-7			
Test No.	7921			
Depth	76-78ft.			
Tested by	BM			
Test Date	9/11/07			
Checked by	HJ			
Check Date	9/24/07			
Diameter, in	2.824			
Height, in	5.601			
Water Content, %	22.1			
Dry Density, pcf	104.9			
Saturation, %	98.6			
Void Ratio	0.606			
Confining Stress, psf	5040			
Undrained Strength, psf	4344			
Max. Dev. Stress, psf	8689			
Strain at Failure, %	17.6			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	55			
Plastic Limit	21			
Plasticity Index	34			

MACTEC

Project: Bechtel/STP/COL

Location: B-940 UD-7

Project No.: 6234074257

Boring No.: B-940

Sample Type: Undisturbed

Description: Fat CLAY (CH)

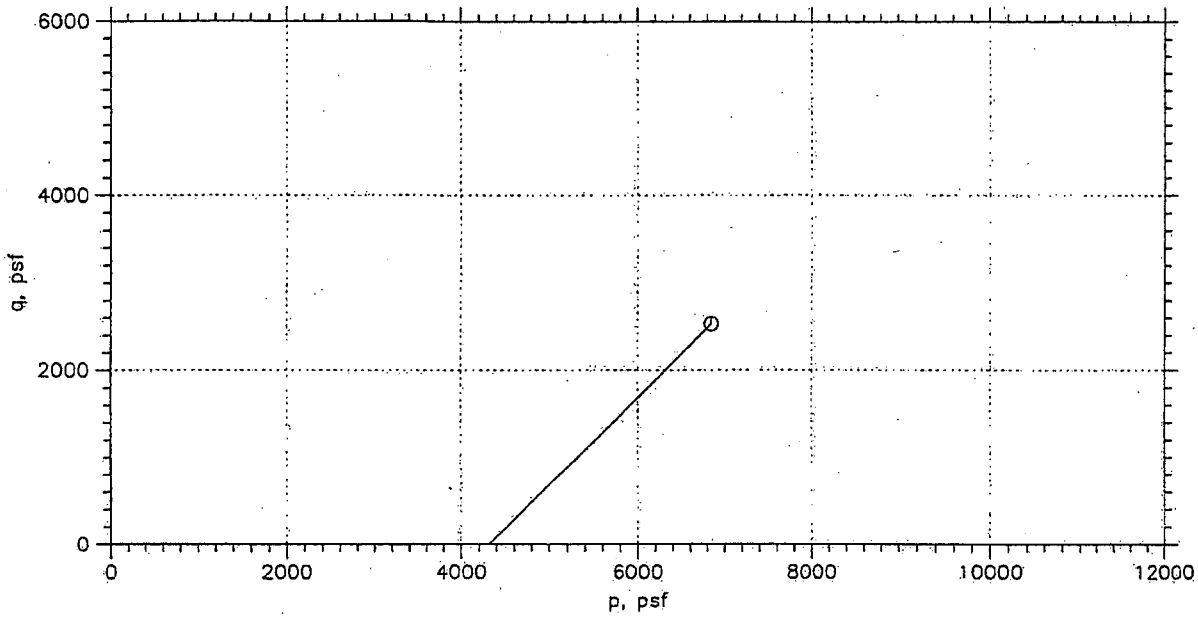
Remarks: UNCONSOLIDATED UNDRAINED TRIAXIAL TEST REPORT By ASTM D2850-03a

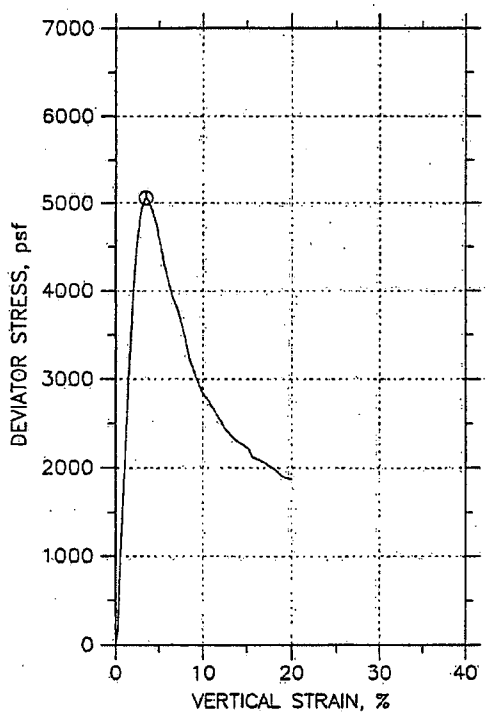
Phase calculations based on start and end of test.

Fri, 21-SEP-2007 13:53:46

KAW 10/4/07

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊙			
Sample No.	UD-3			
Test No.	7924			
Depth	61-63ft.			
Tested by	BM			
Test Date	9/17/07			
Checked by	HJ			
Check Date	9/24/07			
Diameter, in	2.846			
Height, in	5.561			
Water Content, %	23.3			
Dry Density, pcf	105.			
Saturation, %	103.5			
Void Ratio	0.61			
Confining Stress, psf	4320			
Undrained Strength, psf	2530			
Max. Dev. Stress, psf	5059			
Strain at Failure, %	3.47			
Strain Rate, %/min	1			
Measured Specific Gravity	2.71			
Liquid Limit	54			
Plastic Limit	23			
Plasticity Index	31			

MACTEC

Project: Bechtel/STP/COL

Location: B-949 UD-3

Project No.: 6234074257

Boring No.: B-949

Sample Type: Undisturbed

Description: Fat CLAY (CH)

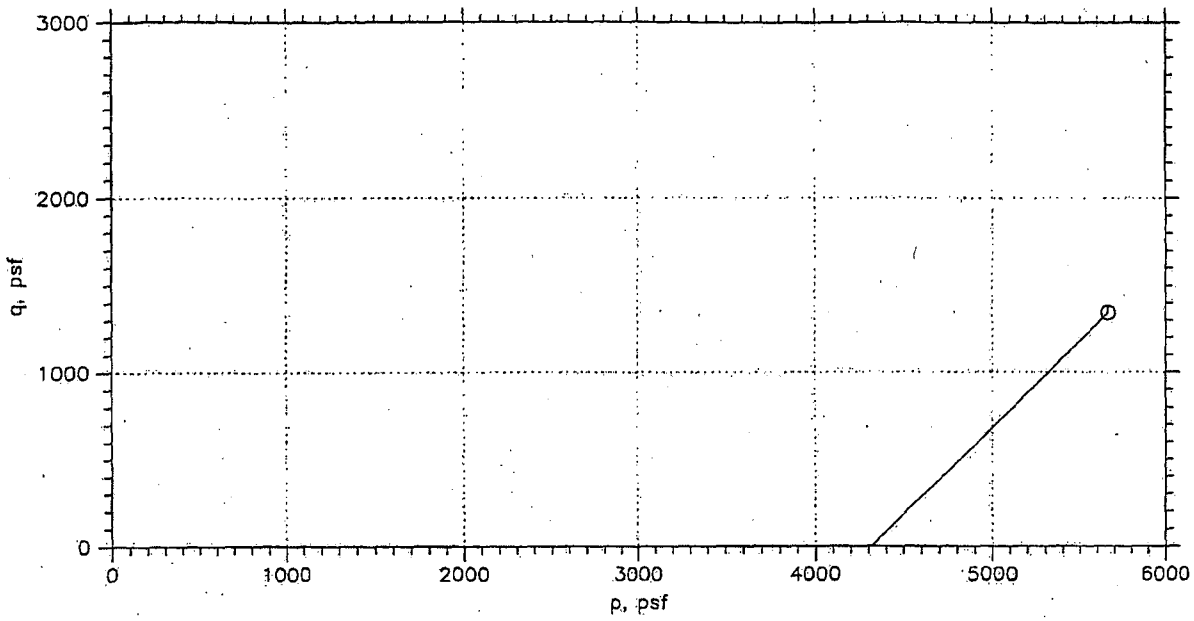
Remarks: UNCONSOLIDATED UNDRAINED TRIAXIAL TEST REPORT By ASTM D2850-03a

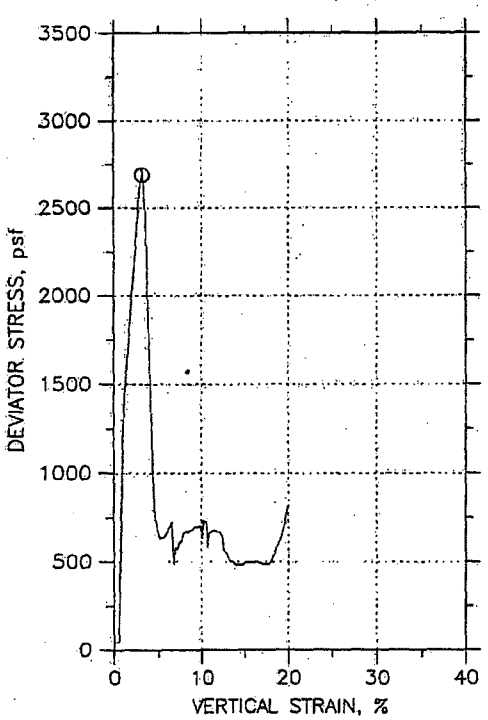
Phase calculations based on start and end of test.

Fri, 21-SEP-2007 13:54:47

KAW 10/4/07

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⦶			
Sample No.	UD-4			
Test No.	7925			
Depth	71-73ft.			
Tested by	BM			
Test Date	9/13/07			
Checked by	HJ			
Check Date	9/24/07			
Diameter, in	2.833			
Height, in	5.601			
Water Content, %	24.9			
Dry Density, pcf	99.69			
Saturation, %	97.5			
Void Ratio	0.691			
Confining Stress, psf	4320			
Undrained Strength, psf	1345			
Max. Dev. Stress, psf	2690			
Strain at Failure, %	3.17			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	56			
Plastic Limit	24			
Plasticity Index	32			

MACTEC

Project: Bechtel/STP/COL

Location: B-949 UD-4

Project No.: 6234074257

Boring No.: B-949

Sample Type: Undisturbed

Description: Fat CLAY (CH)

Remarks: UNCONSOLIDATED UNDRAINED TRIAXIAL TEST REPORT By ASTM D2850-03a

Phase calculations based on start and end of test.

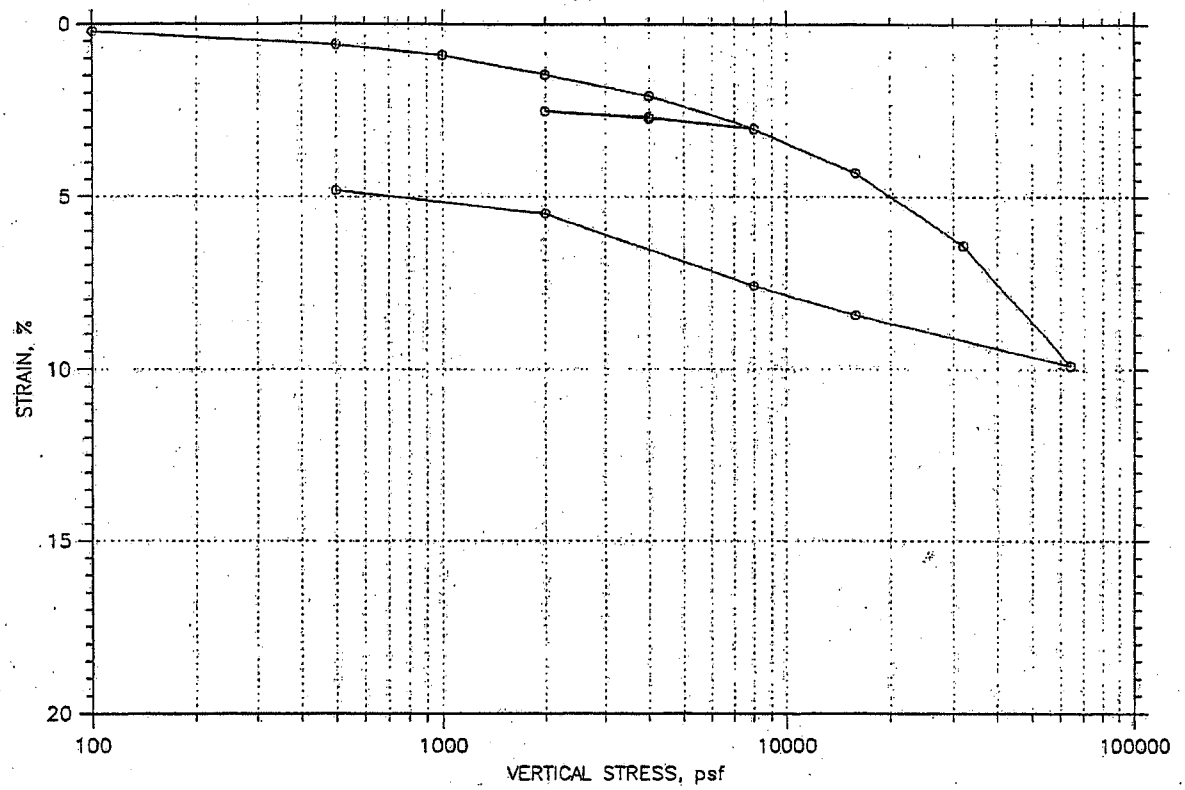
KAW 10/4/07

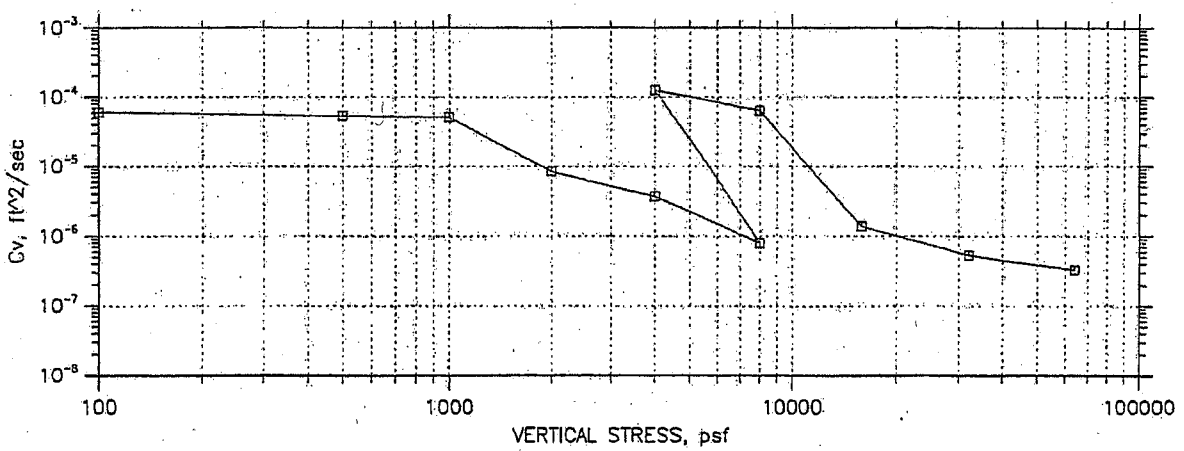
Fri, 21-SEP-2007 13:55:26

Consolidation Tests

CONSOLIDATION TEST DATA

SUMMARY REPORT





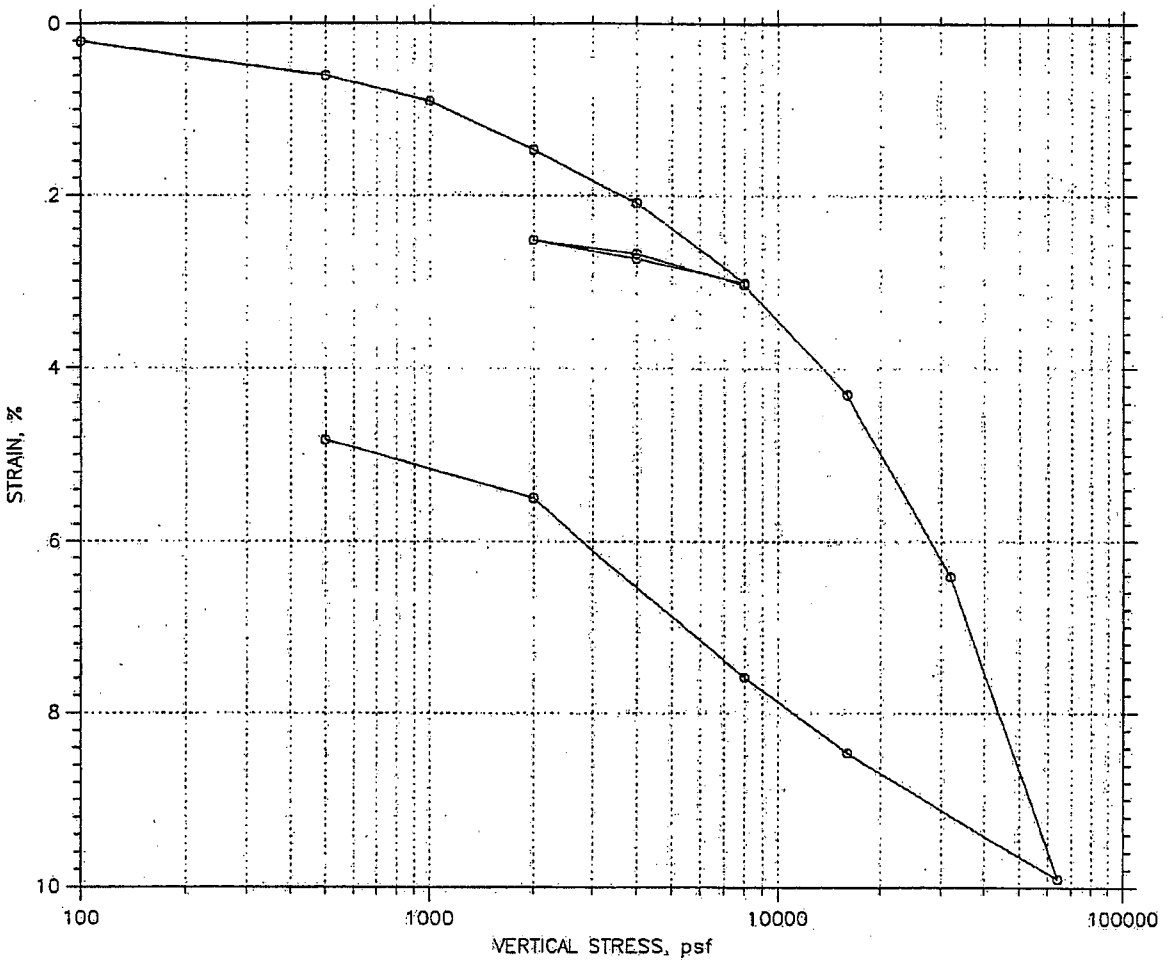
MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD-2A	Project No.: 6234074257
	Boring No.: B-443	Tested By: BM	Checked By: HJ
	Sample No.: UD-2A	Test Date: 9/21/07	Depth: 93-95ft
	Test No.: 7929	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.013	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 10/5/07

Fri, 05-OCT-2007 08:54:01

KAW 10/5/07

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 5920 psf				Water Content, %	25.11	24.82
Preconsolidation Pressure: 2.37e+004 psf				Dry Unit Weight, pcf	99.78	104.8
Compression Index: 0.199				Saturation, %	96.87	108.36
Diameter: 2.499 in		Height: 0.9891 in		Void Ratio	0.71	0.63
LL: 55	PL: 24	PI: 31	GS: 2.73			

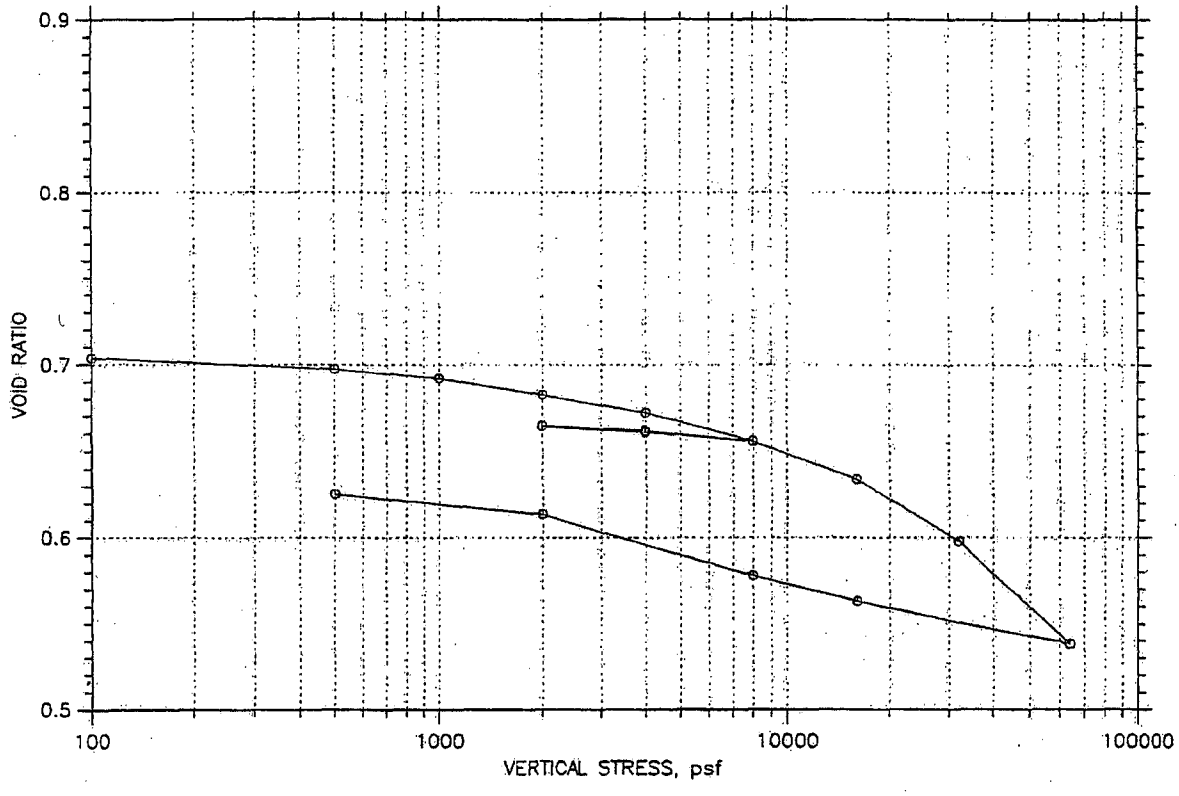
MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD-2A	Project No.: 6234074257
	Boring No.: B-443	Tested By: BM	Checked By: HJ
	Sample No.: UD-2A	Test Date: 9/21/07	Depth: 93-95ft
	Test No.: 7929	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.013	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 10/5/07

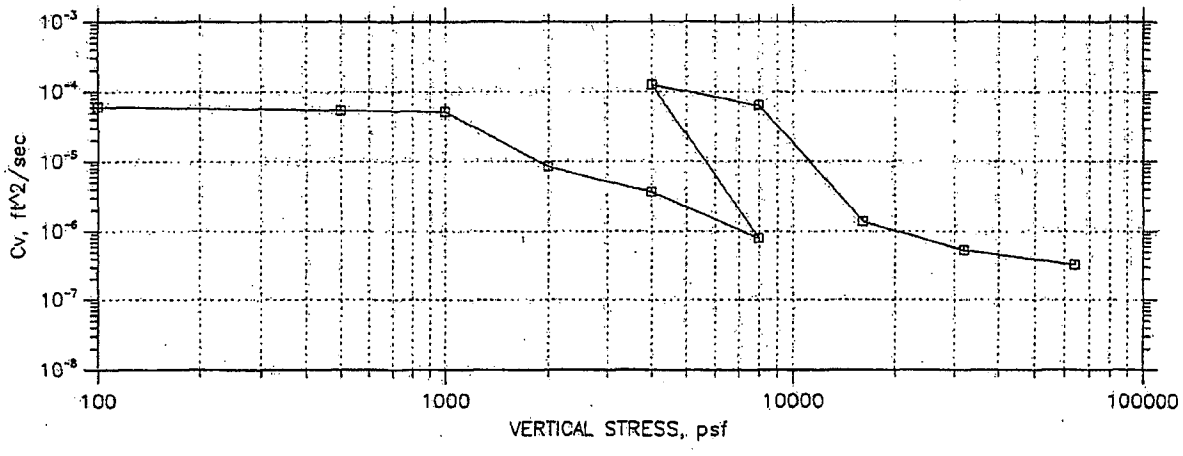
Fri, 05-OCT-2007 08:54:01

KAW 10/5/07

CONSOLIDATION TEST DATA

SUMMARY REPORT



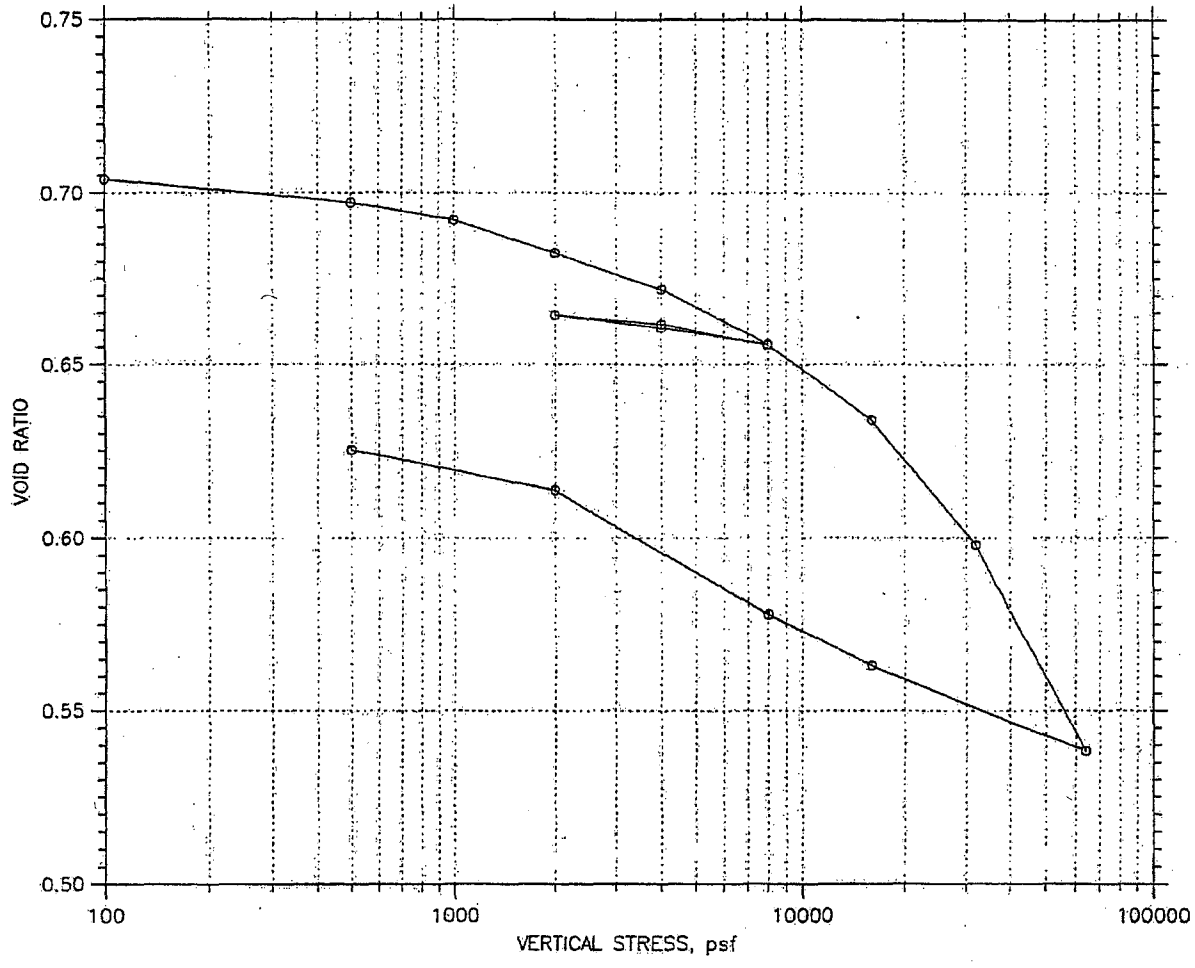


MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD-2A	Project No.: 6234074257
	Boring No.: B-443	Tested By: BM	Checked By: HJ
	Sample No.: UD-2A	Test Date: 9/21/07	Depth: 93-95ft
	Test No.: 7929	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.013	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 10/15/07

Fri, 05-OCT-2007 08:53:31

KAW 10/15/07

CONSOLIDATION TEST DATA
SUMMARY REPORT



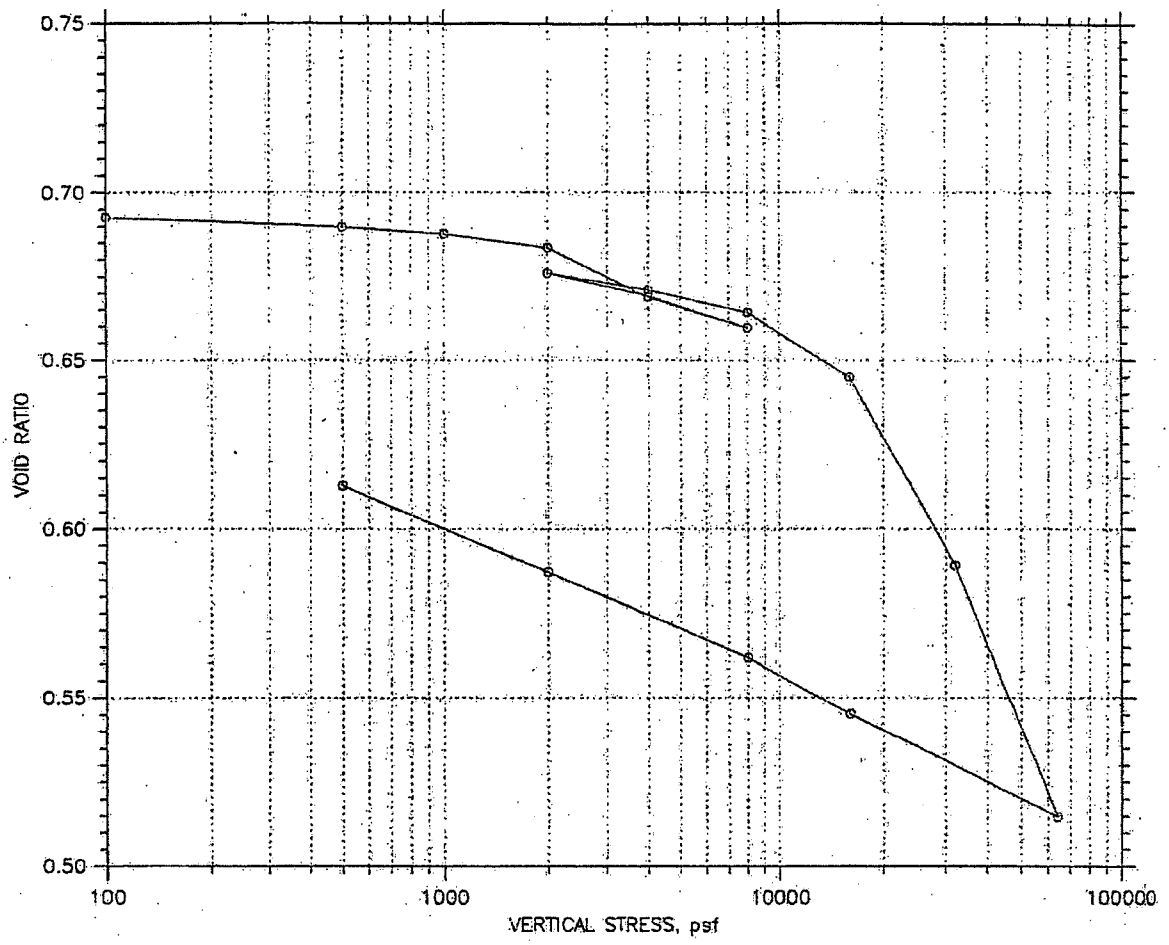
					Before Test	After Test
Overburden Pressure: 5920 psf				Water Content, %	25.11	24.82
Preconsolidation Pressure: 2.37e+004 psf				Dry Unit Weight, pcf	99.78	104.8
Compression Index: 0.199				Saturation, %	96.87	108.36
Diameter: 2.499 in		Height: 0.9891 in		Void Ratio	0.71	0.63
LL: 55	PL: 24	PI: 31	GS: 2.73			

MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD-2A	Project No.: 6234074257
	Boring No.: B-443	Tested By: BM	Checked By: HJ
	Sample No.: UD-2A	Test Date: 9/21/07	Depth: 93-95ft
	Test No.: 7929	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.013	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 10/8/07

Fri, 05-OCT-2007 08:53:31

KAW 10/5/07

CONSOLIDATION TEST DATA
SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 6100 psf				Water Content, %	25.41	21.16
Preconsolidation Pressure: 1.73e+004 psf				Dry Unit Weight, pcf	99.53	104.5
Compression Index: 0.246				Saturation, %	98.93	93.21
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.69	0.61
LL: 62	PL: 25	PI: 37	GS: 2.70			

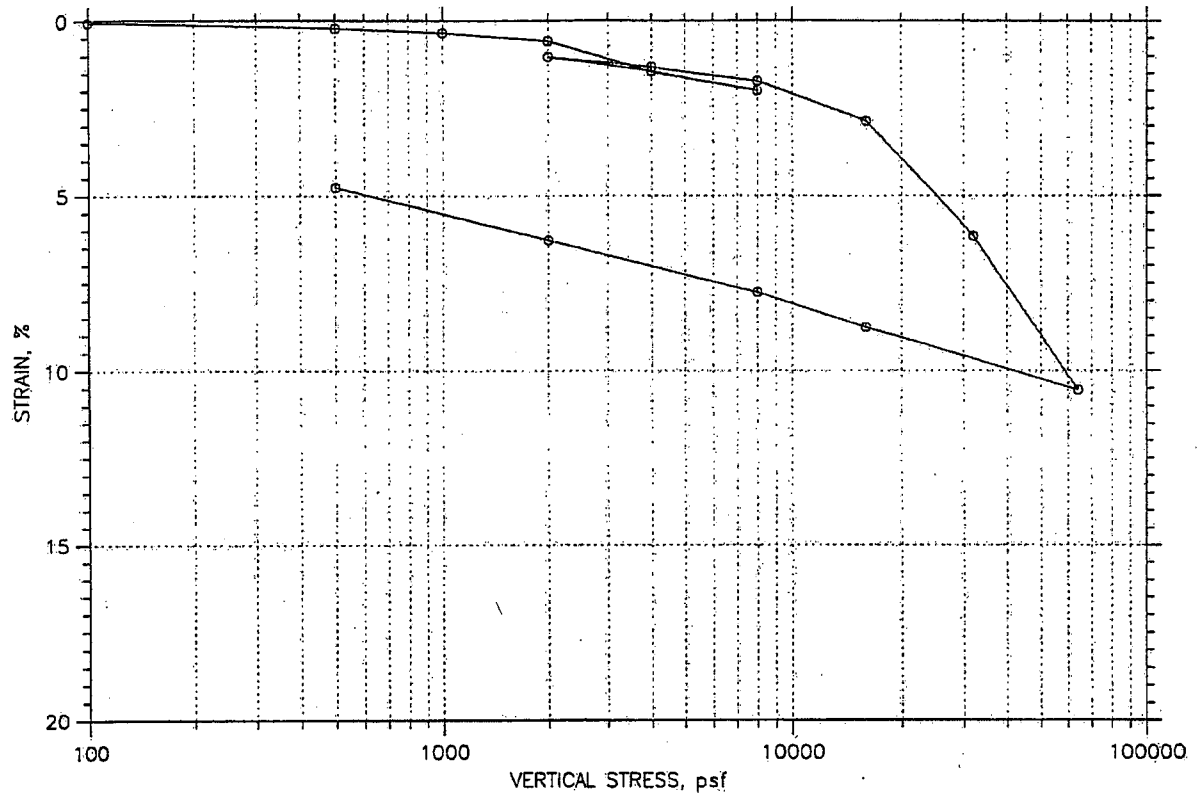
MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD3	Project No.: 6234074257
	Boring No.: B-443	Tested By: JW	Checked By: HJ
	Sample No.: UD-3	Test Date: 9/4/07	Depth: 96-98ft.
	Test No.: 7930	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.020	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

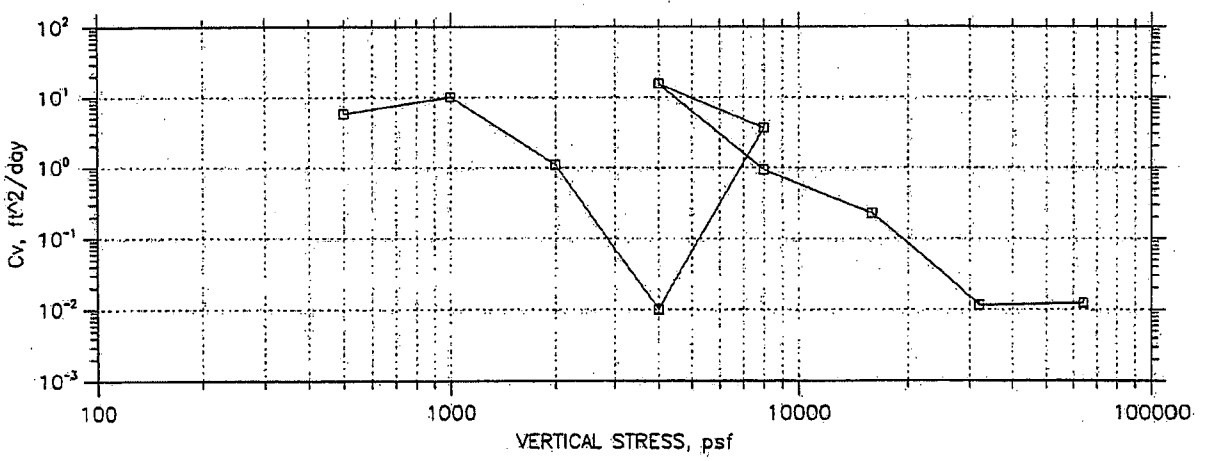
Fri, 05-OCT-2007 14:37:46

KAW 10/4/07

CONSOLIDATION TEST DATA

SUMMARY REPORT





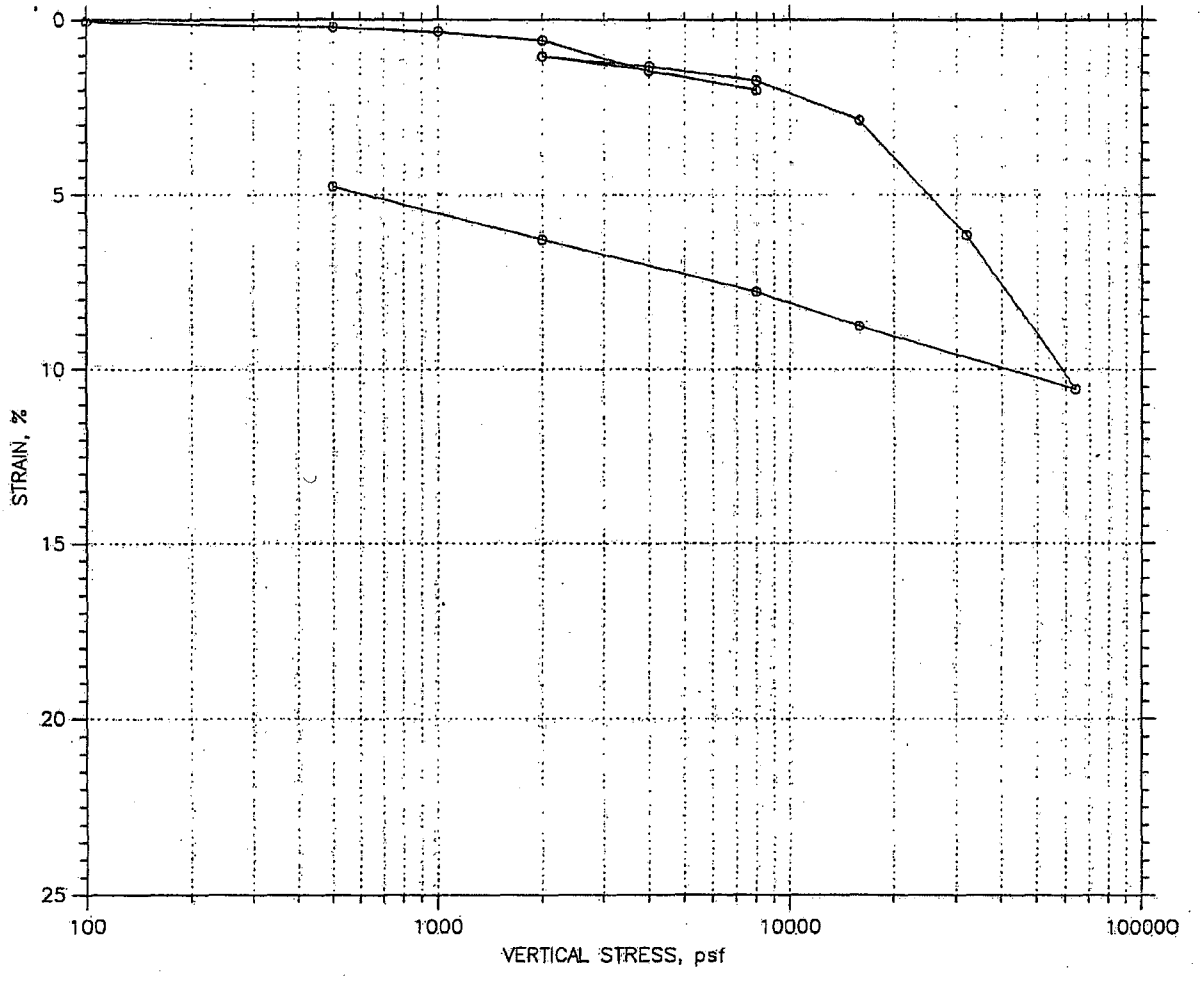
MACTEC	Project: Bechtel/STP/COL	Location: B-443 _UD3	Project No.: 6234074257
	Boring No.: B-443	Tested By: JW	Checked By: HJ
	Sample No.: UD-3	Test Date: 9/4/07	Depth: 96-98ft.
	Test No.: 7930	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.020	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

KAW 10/4/07

Mon, 24-SEP-2007 10:50:49

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 6100 psf				Water Content, %	25.41	21.16
Preconsolidation Pressure: 1.73e+004 psf				Dry Unit Weight, pcf	99.53	104.5
Compression Index: 0.246				Saturation, %	98.93	93.21
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.69	0.61
LL: 62	PL: 25	PI: 37	GS: 2.70			

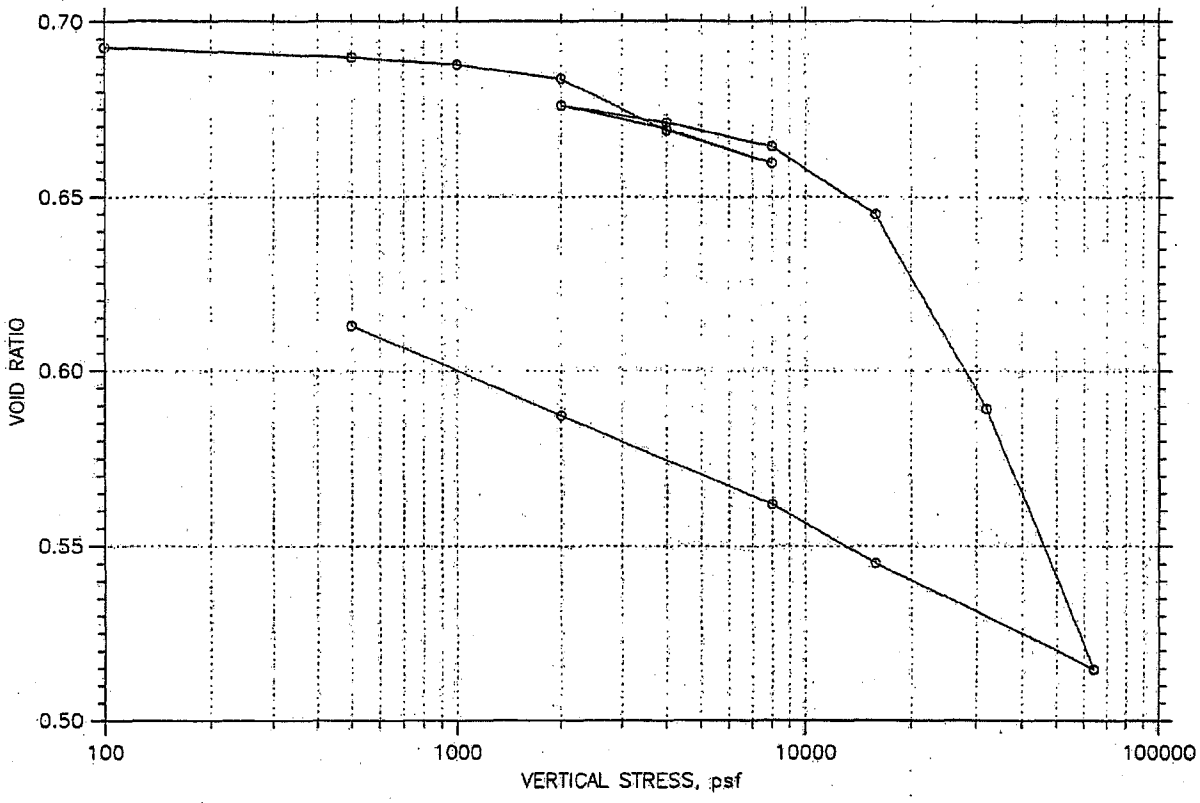
MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD3	Project No.: 6234074257
	Boring No.: B-443	Tested By: JW	Checked By: HJ
	Sample No.: UD-3	Test Date: 9/4/07	Depth: 96-98ft.
	Test No.: 7930	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.020	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

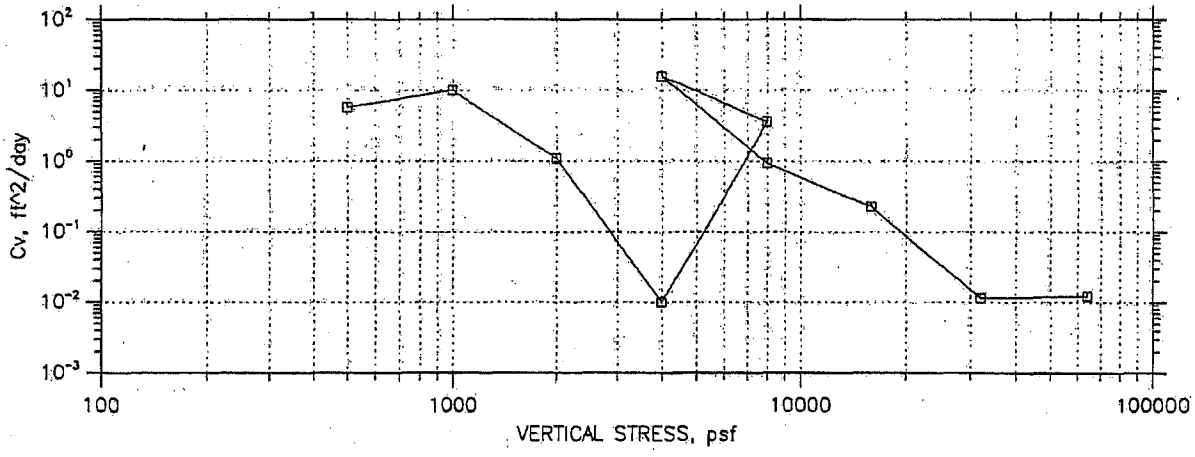
KAW 10/4/07

Mon, 24-SEP-2007 10:50:49

CONSOLIDATION TEST DATA

SUMMARY REPORT





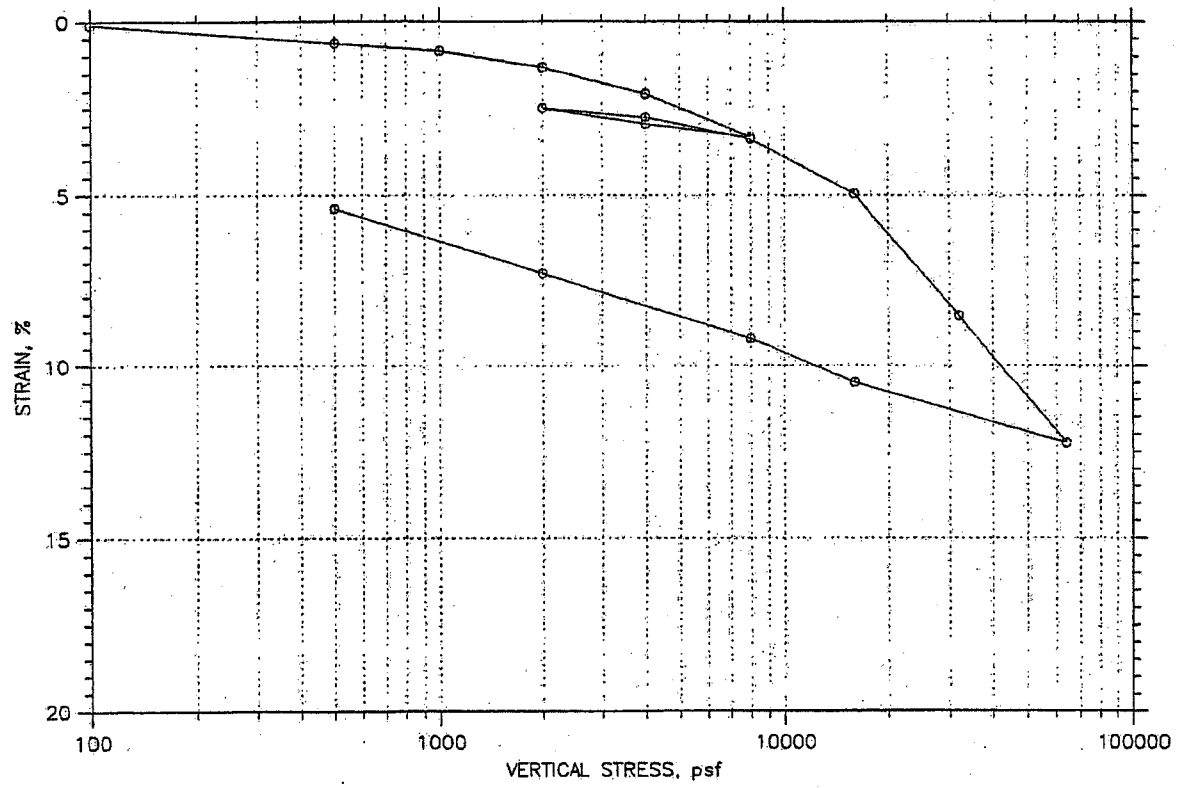
MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD3	Project No.: 6234074257
	Boring No.: B-443	Tested By: JW	Checked By: HJ
	Sample No.: UD-3	Test Date: 9/4/07	Depth: 96-98ft.
	Test No.: 7930	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.020	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

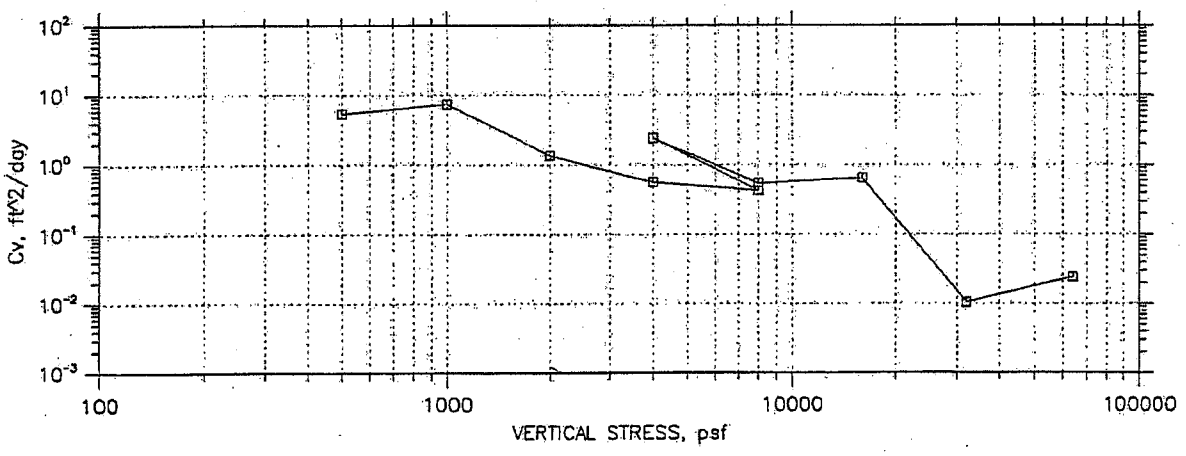
Mon, 24-SEP-2007 10:51:00

KAW 10/4/07

CONSOLIDATION TEST DATA

SUMMARY REPORT



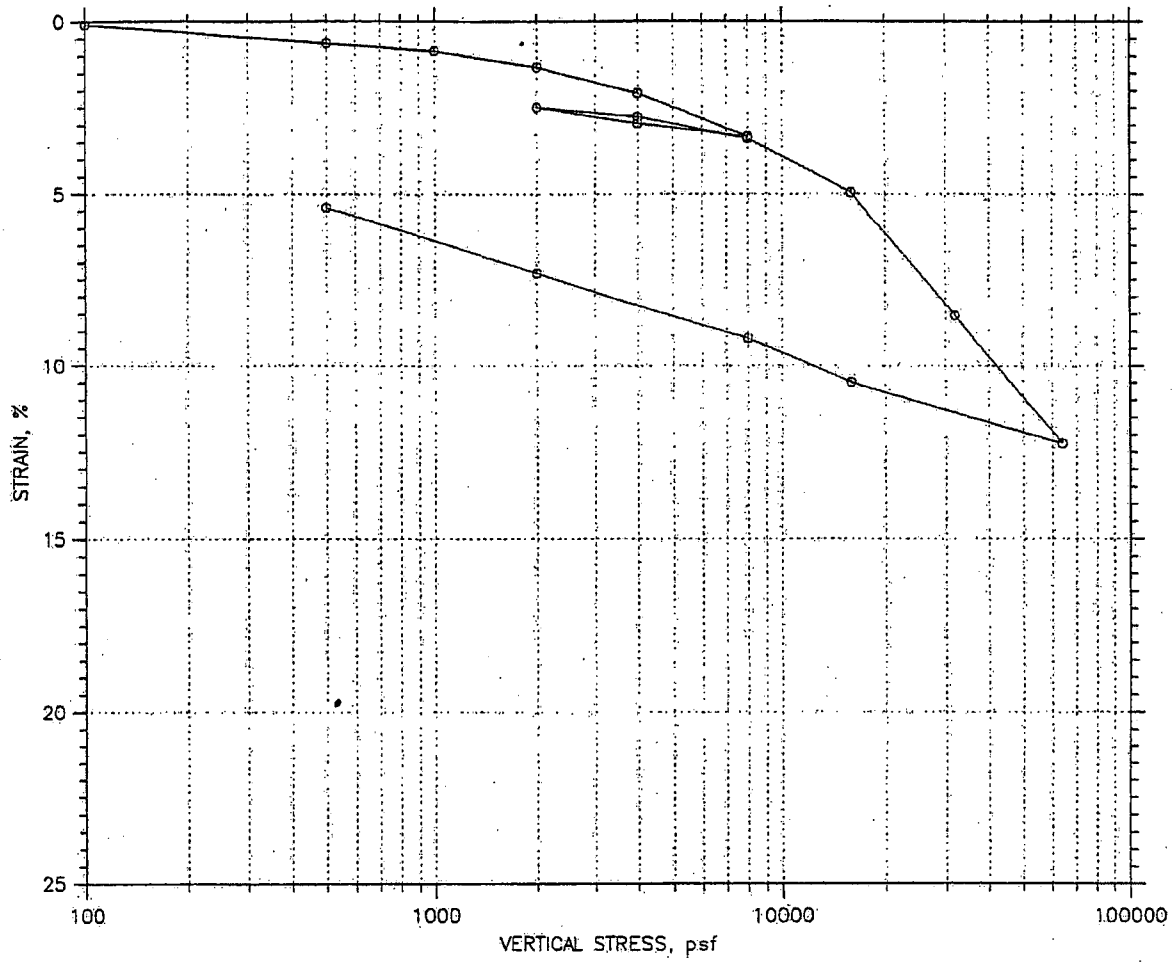


MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD9A	Project No.: 6234074257
	Boring No.: B-443	Tested By: JW	Checked By: HJ
	Sample No.: UD-9A	Test Date: 9/4/07	Depth: 133-135ft
	Test No.: 7934	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.022	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 10/8/07

KAW 10/5/07

Fri, 05-OCT-2007 08:55:07

CONSOLIDATION TEST DATA
SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 8440 psf				Water Content, %	16.55	15.09
Preconsolidation Pressure: 1.78e+004 psf				Dry Unit Weight, pcf	114.2	120.7
Compression Index: 0.183				Saturation, %	93.80	102.66
Diameter: 2.499 in		Height: 1.002 in		Void Ratio	0.48	0.40
LL: 52	PL: 18	PI: 34	GS: 2.70			

MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD9A	Project No.: 6234074257
	Boring No.: B-443	Tested By: JW	Checked By: HJ
	Sample No.: UD-9A	Test Date: 9/4/07	Depth: 133-135ft
	Test No.: 7934	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.022	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	

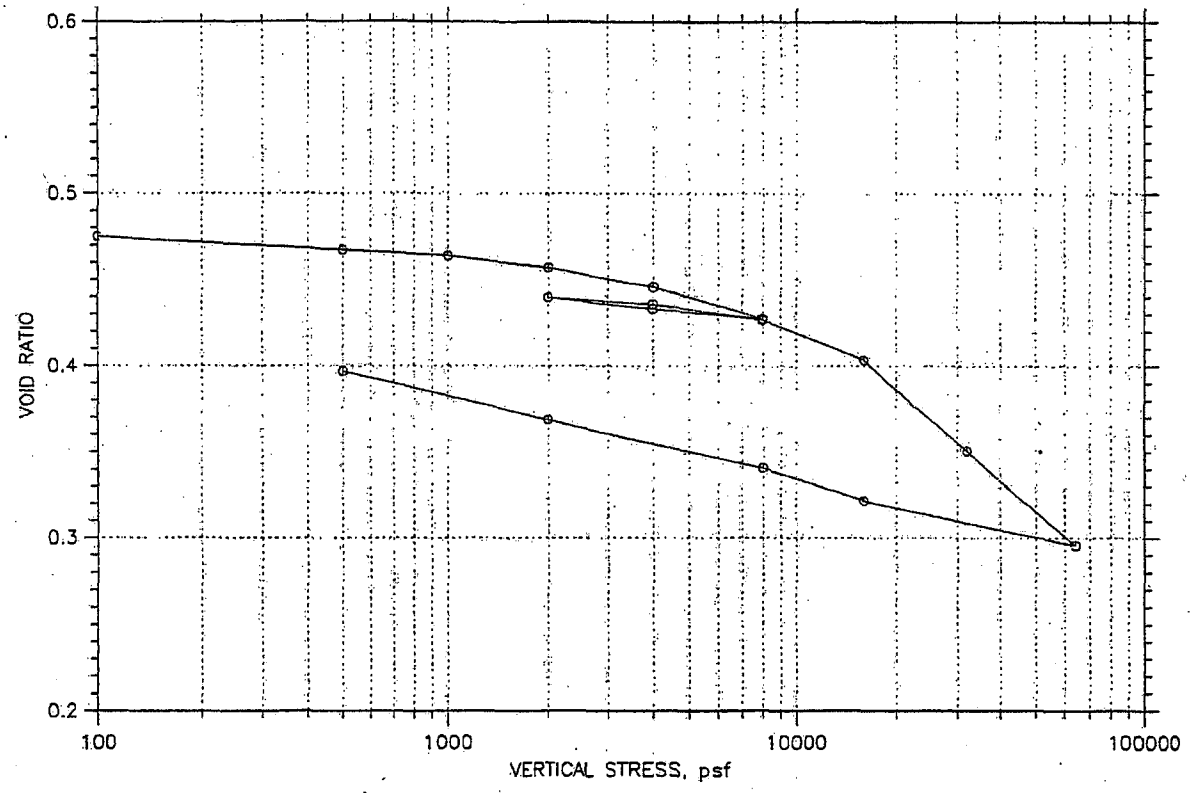
HJ 10/5/07

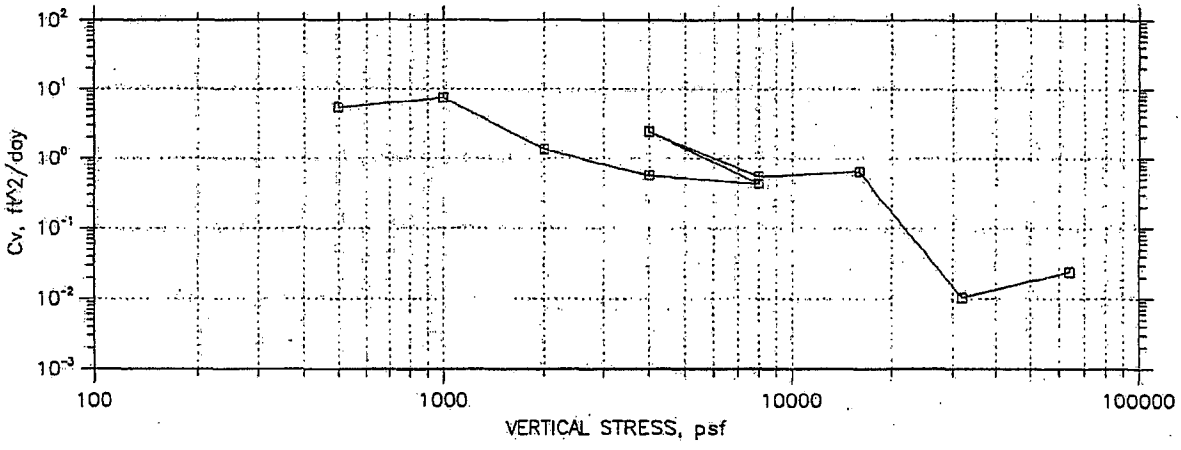
KAW 10/5/07

Fri, 05-OCT-2007 08:55:07

CONSOLIDATION TEST DATA

SUMMARY REPORT





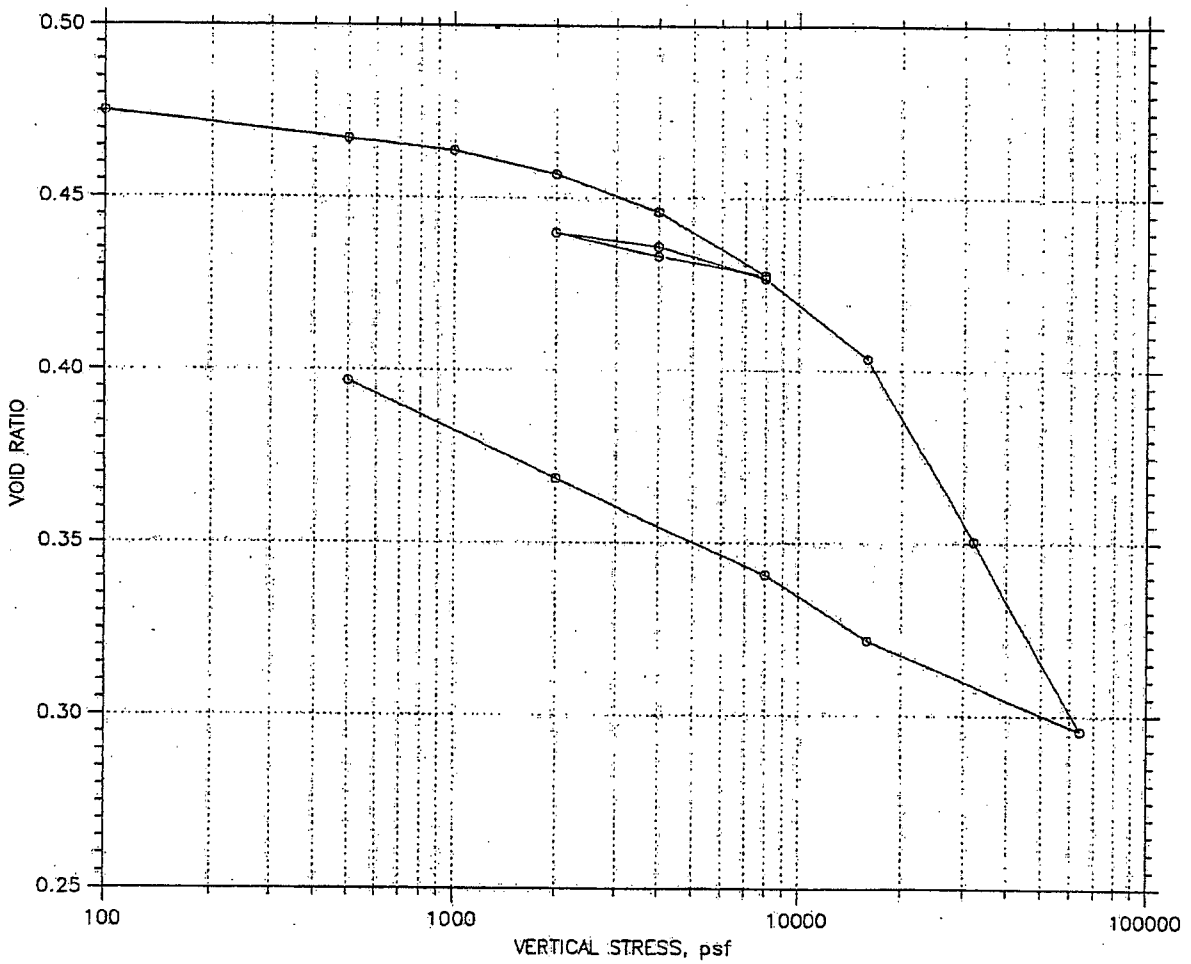
MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD9A	Project No.: 6234074257
	Boring No.: B-443	Tested By: JW	Checked By: HJ
	Sample No.: UD-9A	Test Date: 9/4/07	Depth: 133-135ft
	Test No.: 7934	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.022	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 10/5/07

Fri, 05-OCT-2007 08:55:19

KAW 10/5/07

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 8440 psf				Water Content, %	16.55	15.09
Preconsolidation Pressure: 1.78e+004 psf				Dry Unit Weight, pcf	114.2	120.7
Compression Index: 0.183				Saturation, %	93.80	102.66
Diameter: 2.499 in		Height: 1.002 in		Void Ratio	0.48	0.40
LL: 52	PL: 18	PI: 34	GS: 2.70			

MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD9A	Project No.: 6234074257
	Boring No.: B-443	Tested By: JW	Checked By: HJ
	Sample No.: UD-9A	Test Date: 9/4/07	Depth: 133-135ft
	Test No.: 7934	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.022	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	

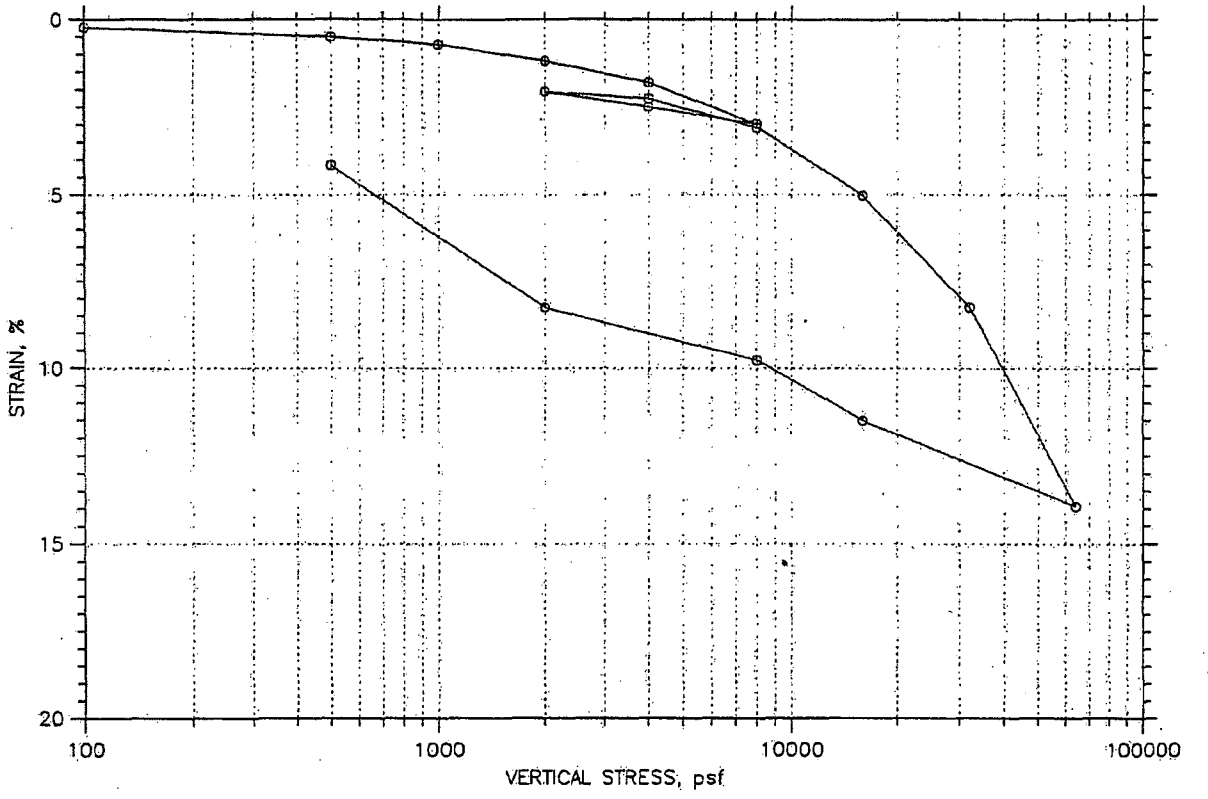
HJ 10/5/07

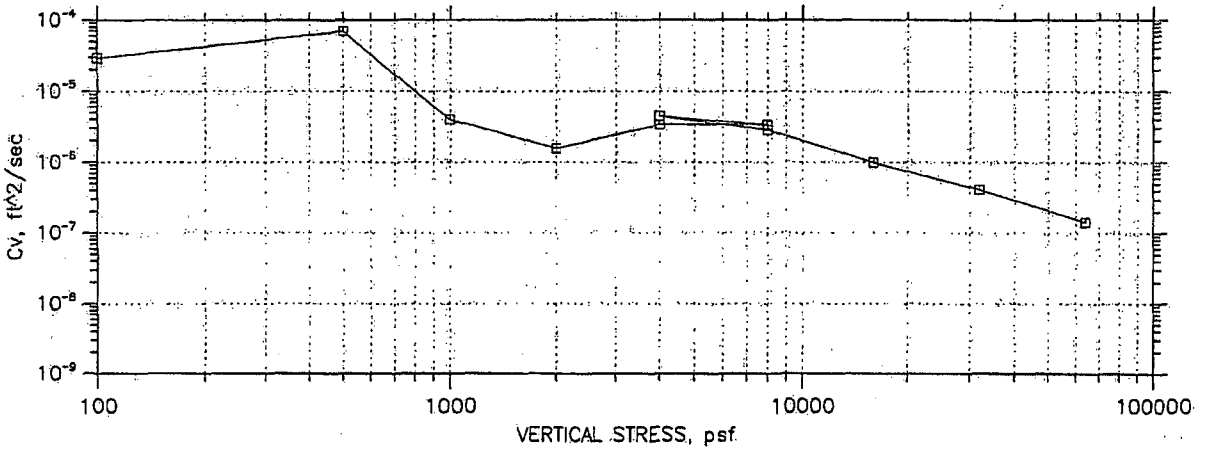
KAW 10/5/07

Fri, 05-OCT-2007 08:55:19

CONSOLIDATION TEST DATA

SUMMARY REPORT

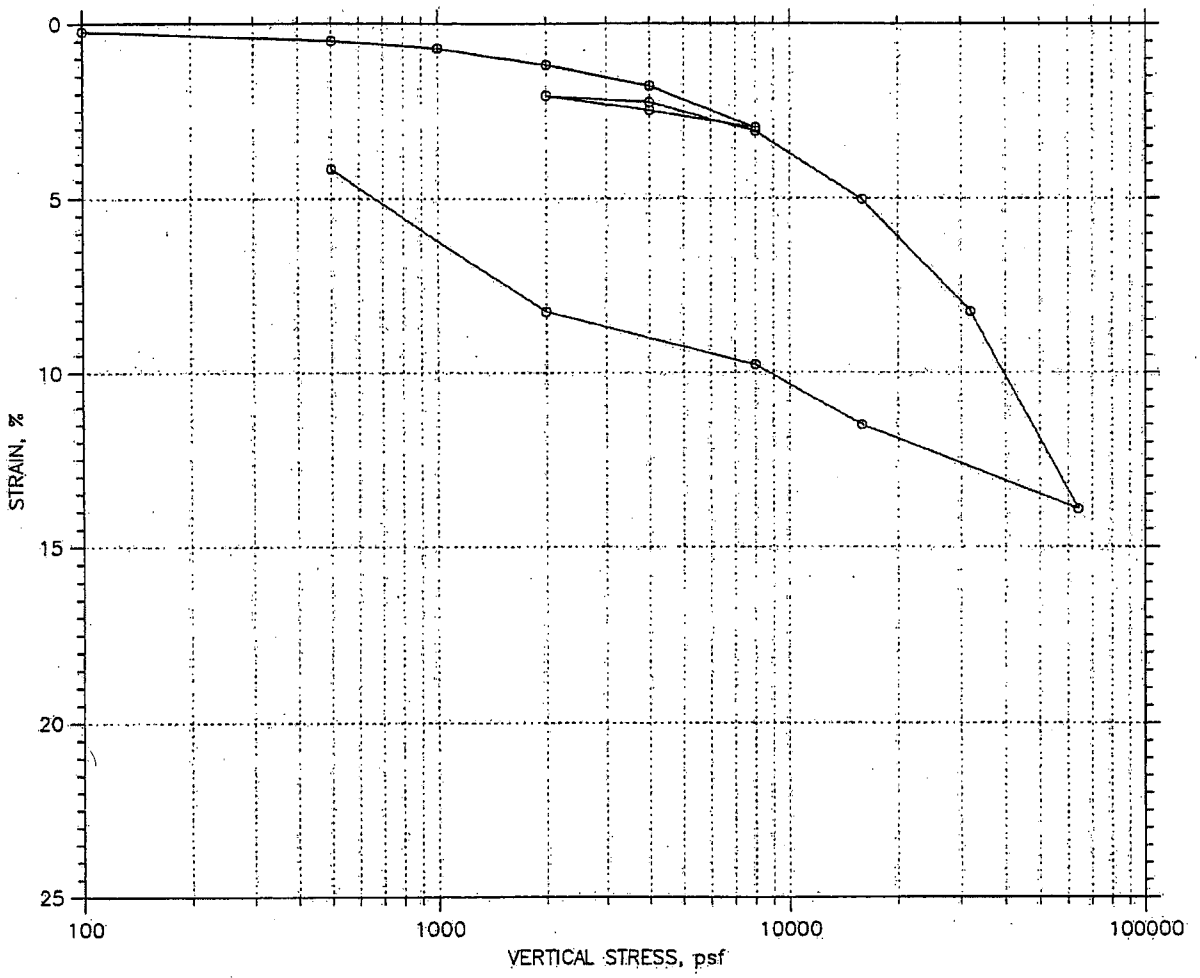




MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-4	Project No.: 6234074257
	Boring No.: B-940	Tested By: HJ	Checked By: JW
	Sample No.: UD-4	Test Date: 9/11/07	Depth: 46-48 Ft.
	Test No.: 7918	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.033	CONSOLIDATION TEST REPORT by ASTM D2435-04 Method B	
			HJ 9/24/07 KAW 10/4/07

Mon, 24-SEP-2007 10:41:42

CONSOLIDATION TEST DATA
SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 3130 psf				Water Content, %	32.55	31.91
Preconsolidation Pressure: 1.75e+004 psf				Dry Unit Weight, pcf	88.96	92.81
Compression Index: 0.365				Saturation, %	95.62	102.53
Diameter: 2.499 in		Height: 1.002 in		Void Ratio	0.94	0.86
LL: 61	PL: 23	PI: 38	GS: 2.77			

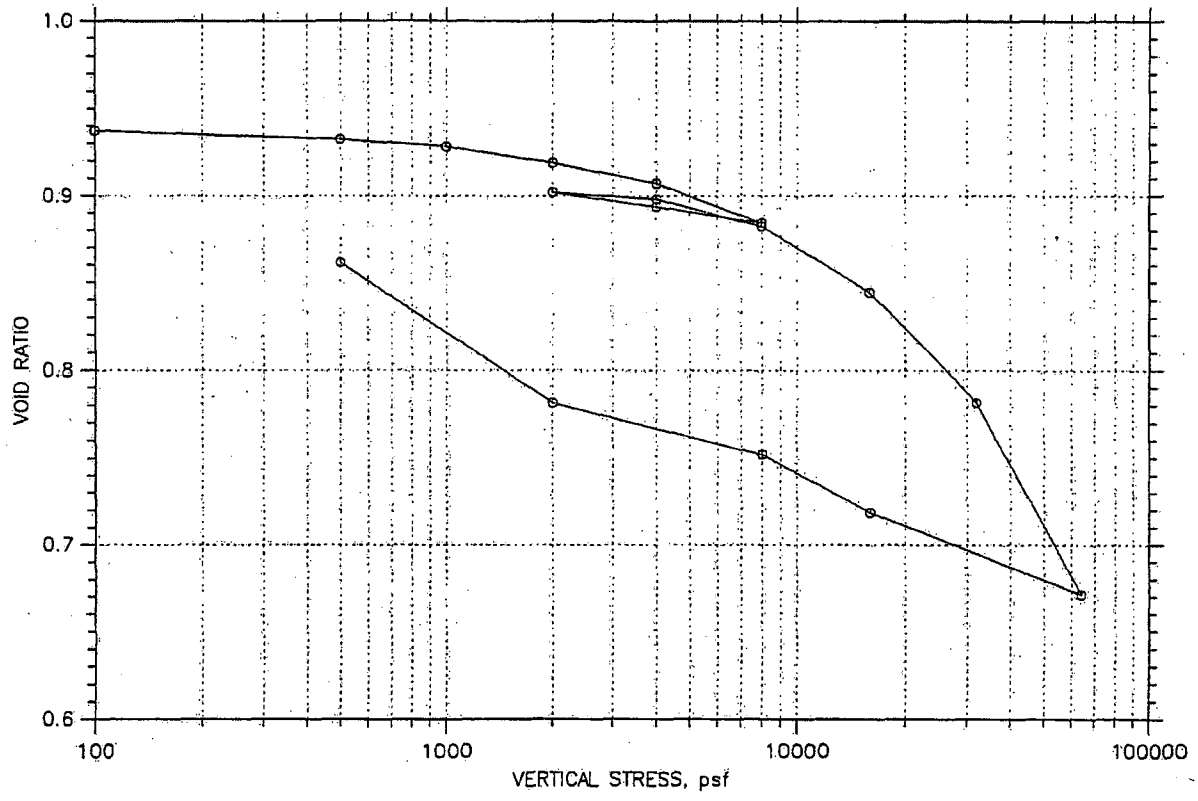
MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-4	Project No.: 6234074257
	Boring No.: B-940	Tested By: HJ	Checked By: JW
	Sample No.: UD-4	Test Date: 9/11/07	Depth: 46-48 Ft.
	Test No.: 7918	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.033	CONSOLIDATION TEST REPORT by ASTM D2435-04 Method B	
			HJ 9/24/07

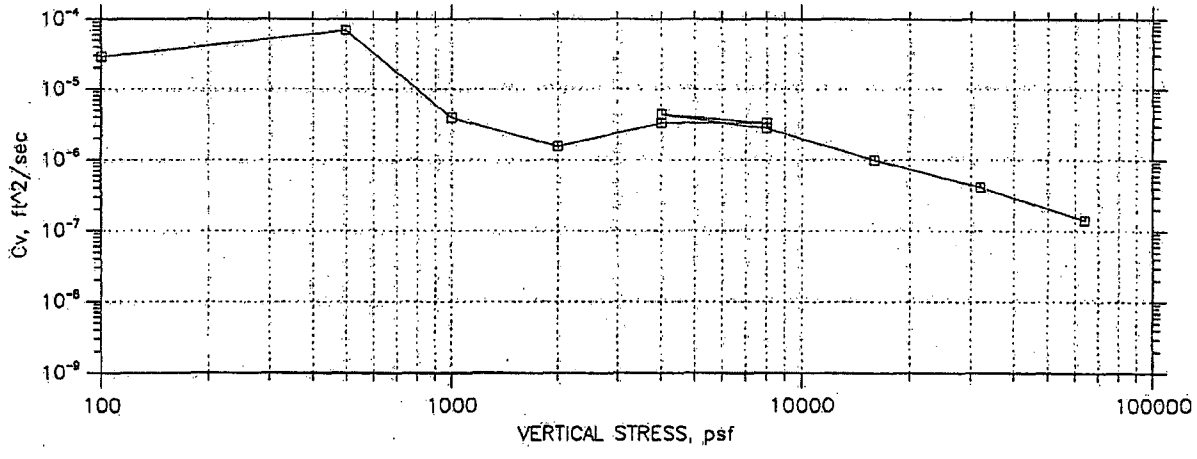
KAW 10/4/07

Mon, 24-SEP-2007 10:41:42

CONSOLIDATION TEST DATA

SUMMARY REPORT



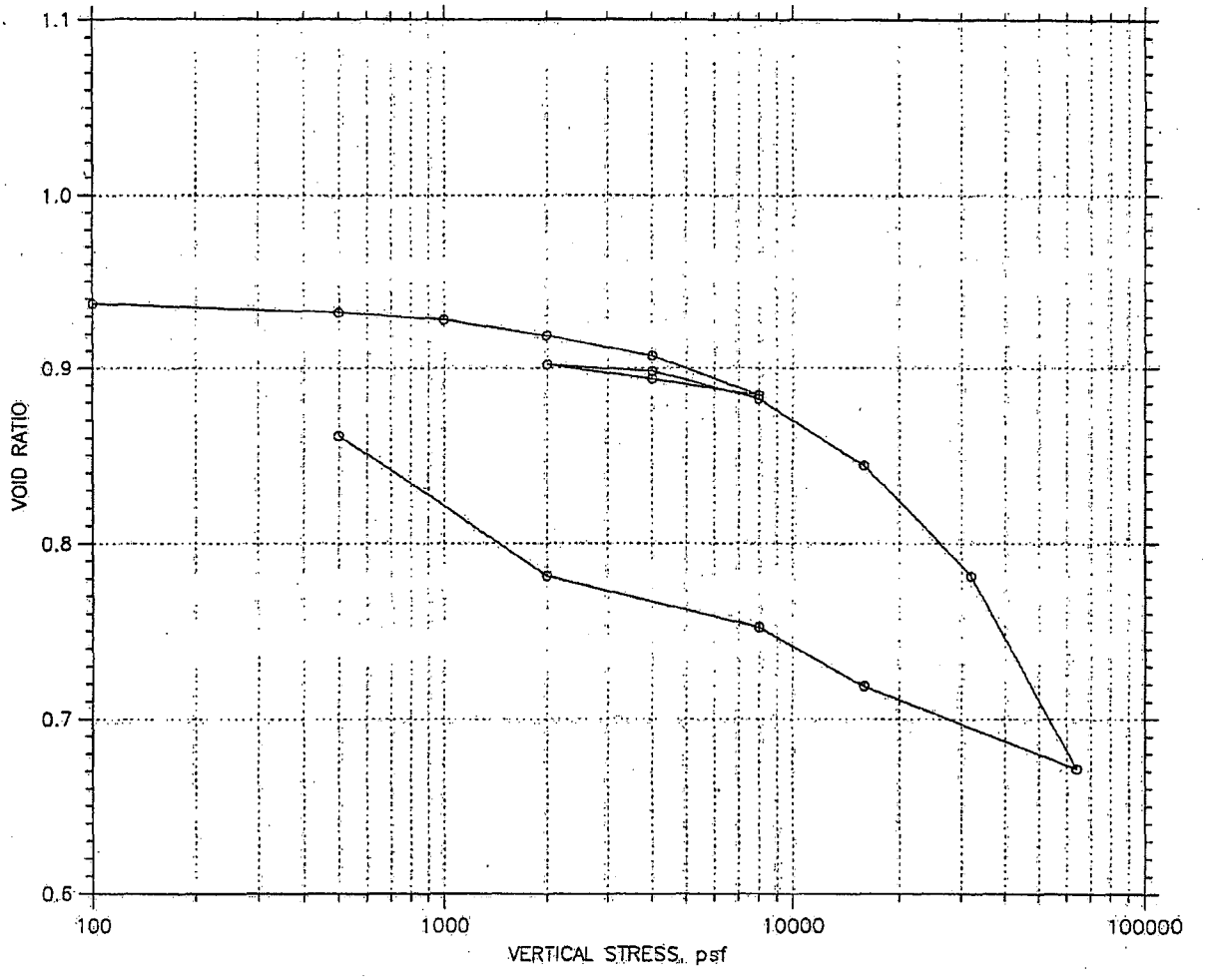


MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-4	Project No.: 6234074257
	Boring No.: B-940	Tested By: HJ	Checked By: JW
	Sample No.: UD-4	Test Date: 9/11/07	Depth: 46-48 Ft.
	Test No.: 7918	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.033	CONSOLIDATION TEST REPORT by ASTM D2435-04 Method B	
			HJ 9/24/07

KAW 10/4/07

Mon, 24-SEP-2007 10:41:52

CONSOLIDATION TEST DATA
SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 3130 psf				Water Content, %	32.55	31.91
Preconsolidation Pressure: 1.75e+004 psf				Dry Unit Weight, pcf	88.96	92.81
Compression Index: 0.365				Saturation, %	95.62	102.53
Diameter: 2.499 in		Height: 1.002 in		Void Ratio	0.94	0.86
LL: 61	PL: 23	PI: 38	GS: 2.77			

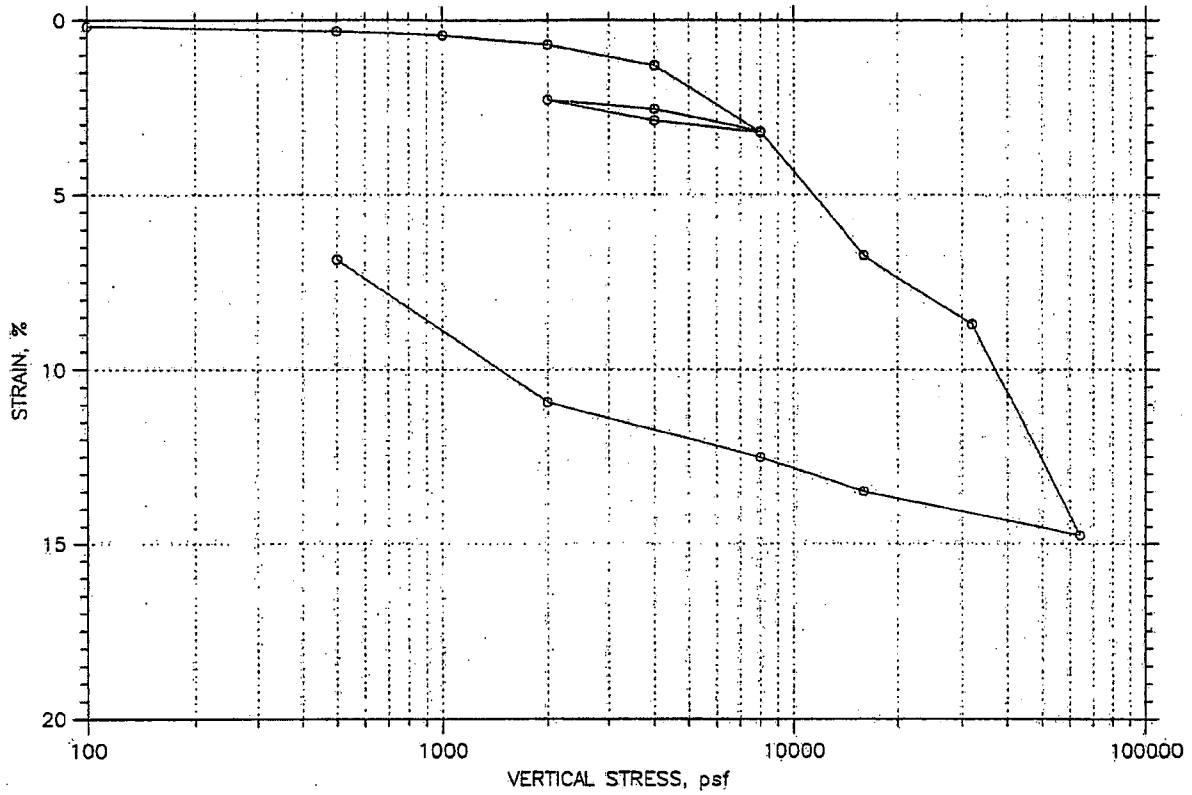
MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-4	Project No.: 6234074257
	Boring No.: B-940	Tested By: HJ	Checked By: JW
	Sample No.: UD-4	Test Date: 9/11/07	Depth: 46-48 Ft.
	Test No.: 7918	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.033	CONSOLIDATION TEST REPORT by ASTM D2435-04 Method B	

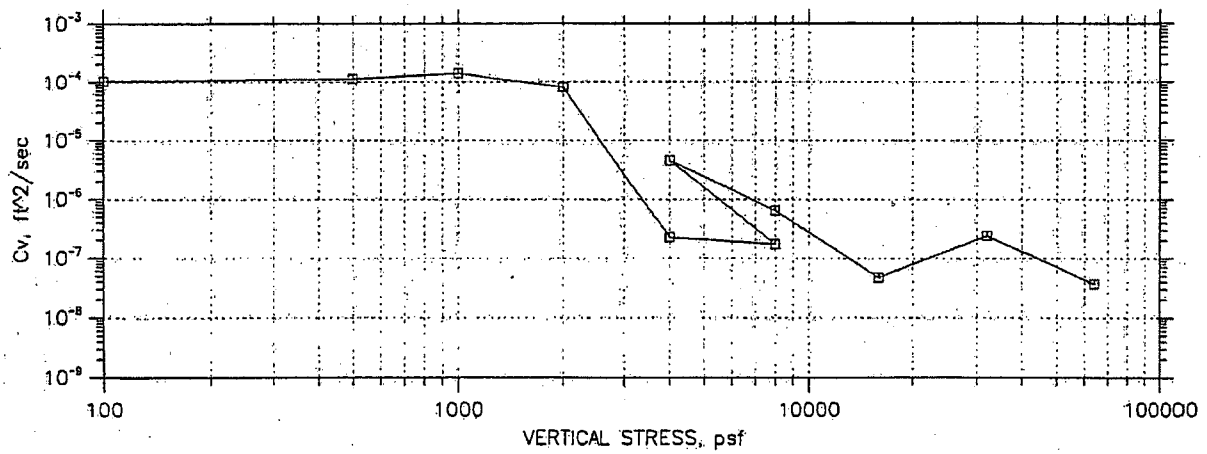
HJ 9/24/07
KAW 10/4/07

Mon, 24-SEP-2007 10:41:52

CONSOLIDATION TEST DATA

SUMMARY REPORT





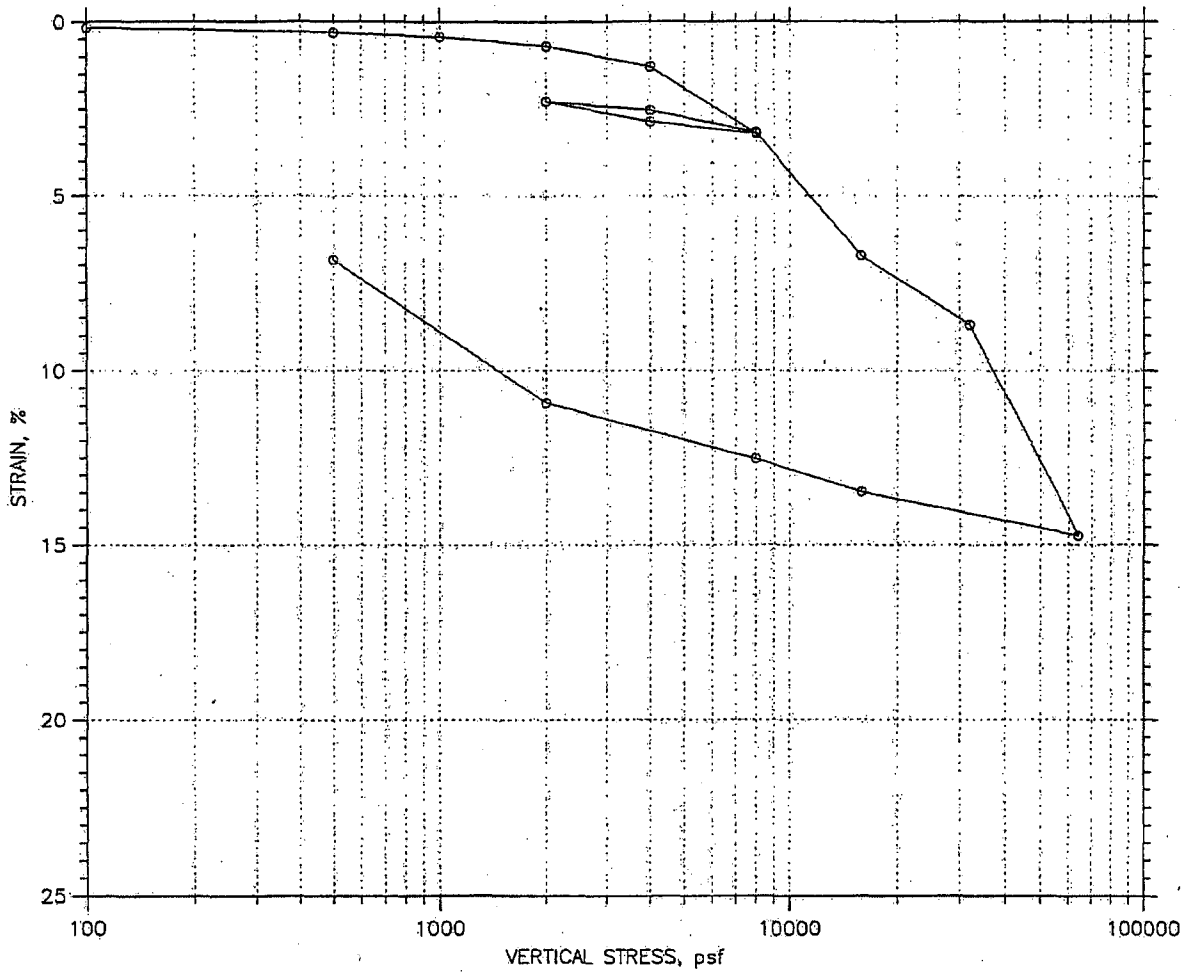
MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-6	Project No.: 6234074257
	Boring No.: B-940	Tested By: HJ	Checked By: JW
	Sample No.: UD-6	Test Date: 9/4/07	Depth: 66-68 ft
	Test No.: 7920	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.027	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/25/07

KAW 10/4/07

Mon, 24-SEP-2007 10:41:16

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 4300 psf				Water Content, %	26.53	23.53
Preconsolidation Pressure: 1.83e+004 psf				Dry Unit Weight, pcf	98.92	106.2
Compression Index: 0.345				Saturation, %	99.19	104.94
Diameter: 2.498 in		Height: 1 in		Void Ratio	0.74	0.62
LL: 54	PL: 21	PI: 33	GS: 2.75			

MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-6	Project No.: 6234074257
	Boring No.: B-940	Tested By: HJ	Checked By: JW
	Sample No.: UD-6	Test Date: 9/4/07	Depth: 66-68 ft
	Test No.: 7920	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.027	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	

HJ 9/24/07
KAW 10/4/07

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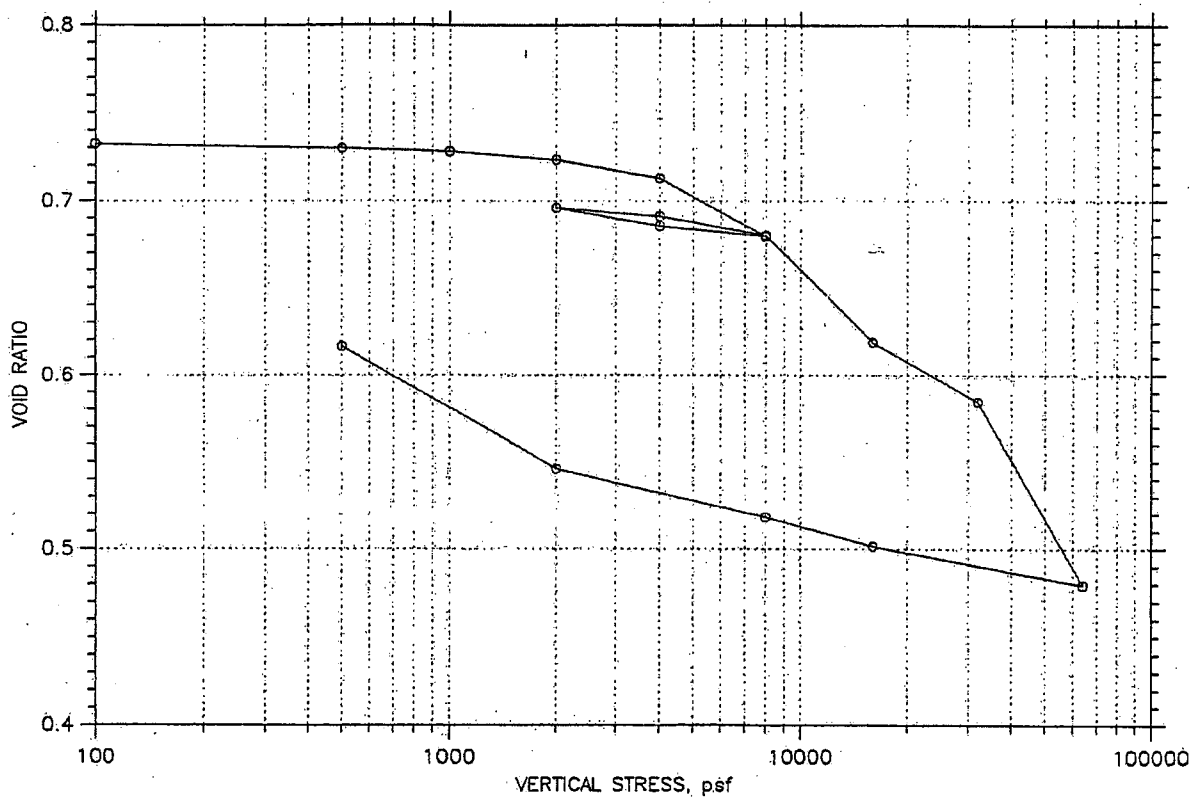
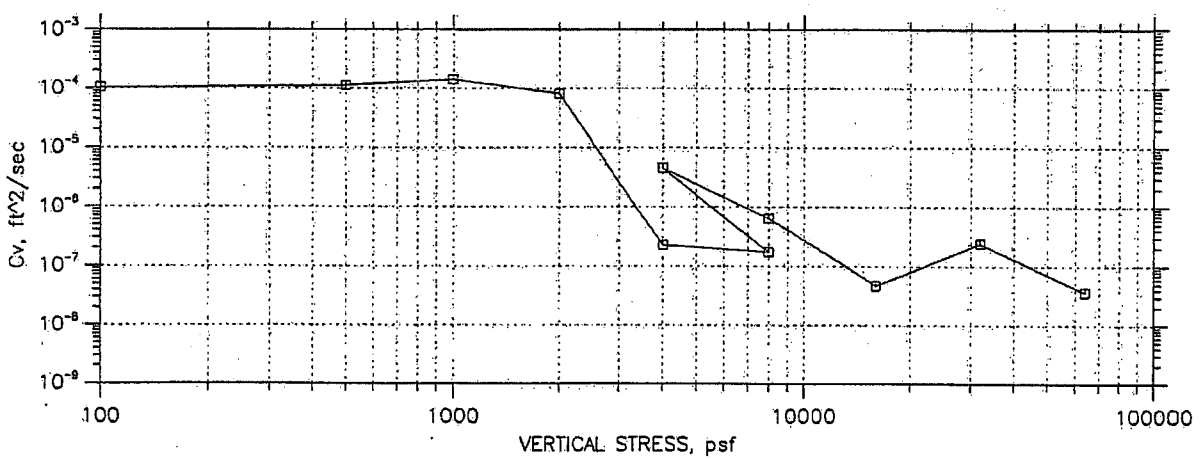
CONSOLIDATION TEST DATA

SUMMARY REPORT





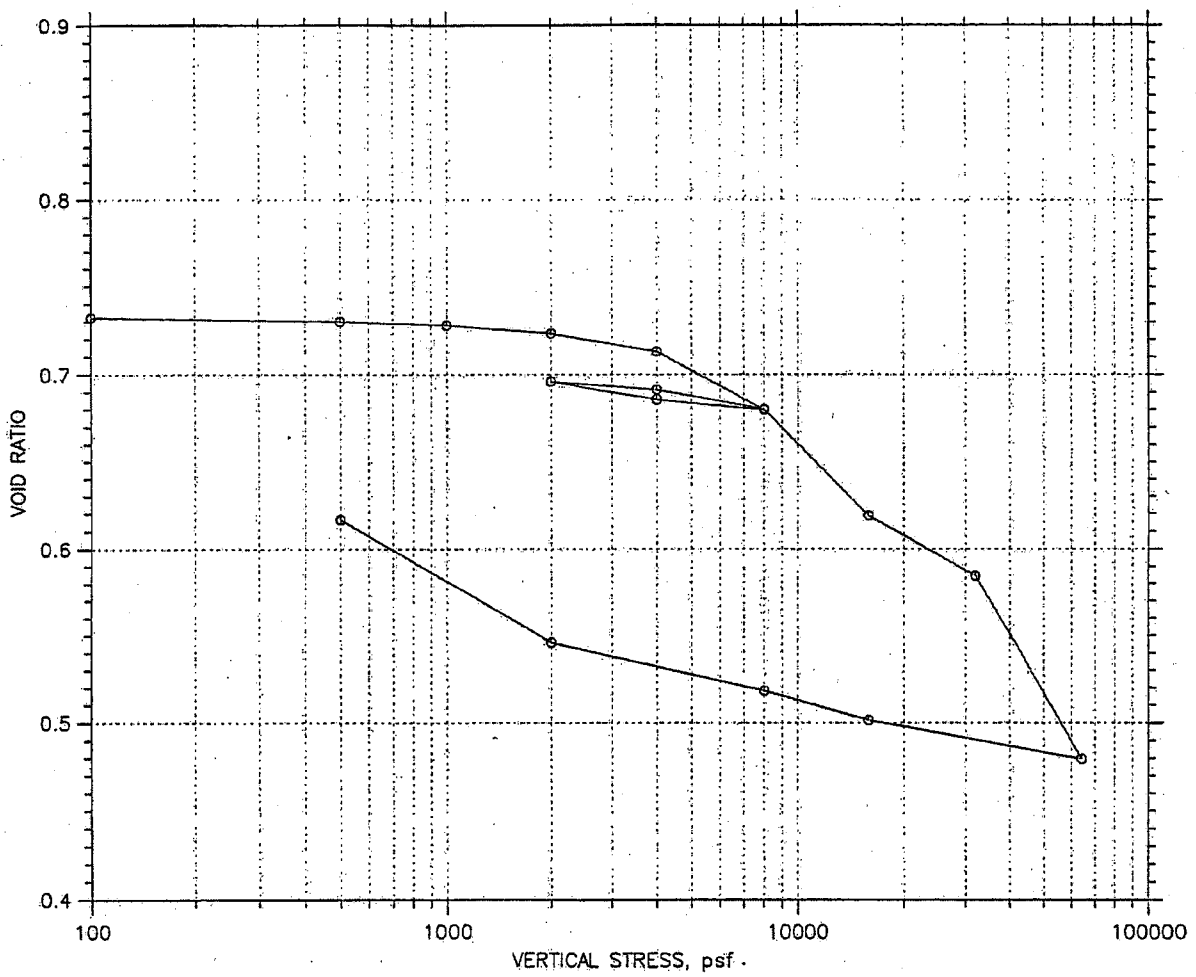
MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-6	Project No.: 6234074257
	Boring No.: B-940	Tested By: HJ	Checked By: JW
	Sample No.: UD-6	Test Date: 9/4/07	Depth: 66-68 ft
	Test No.: 7920	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.027	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

FAW 10/4/07

Mon, 24-SEP-2007 10:41:04

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 4300 psf				Water Content, %	26.53	23.53
Preconsolidation Pressure: 1.83e+004 psf				Dry Unit Weight, pcf	98.92	106.2
Compression Index: 0.345				Saturation, %	99.19	104.94
Diameter: 2.498 in		Height: 1 in		Void Ratio	0.74	0.62
LL: 54	PL: 21	PI: 33	GS: 2.75			

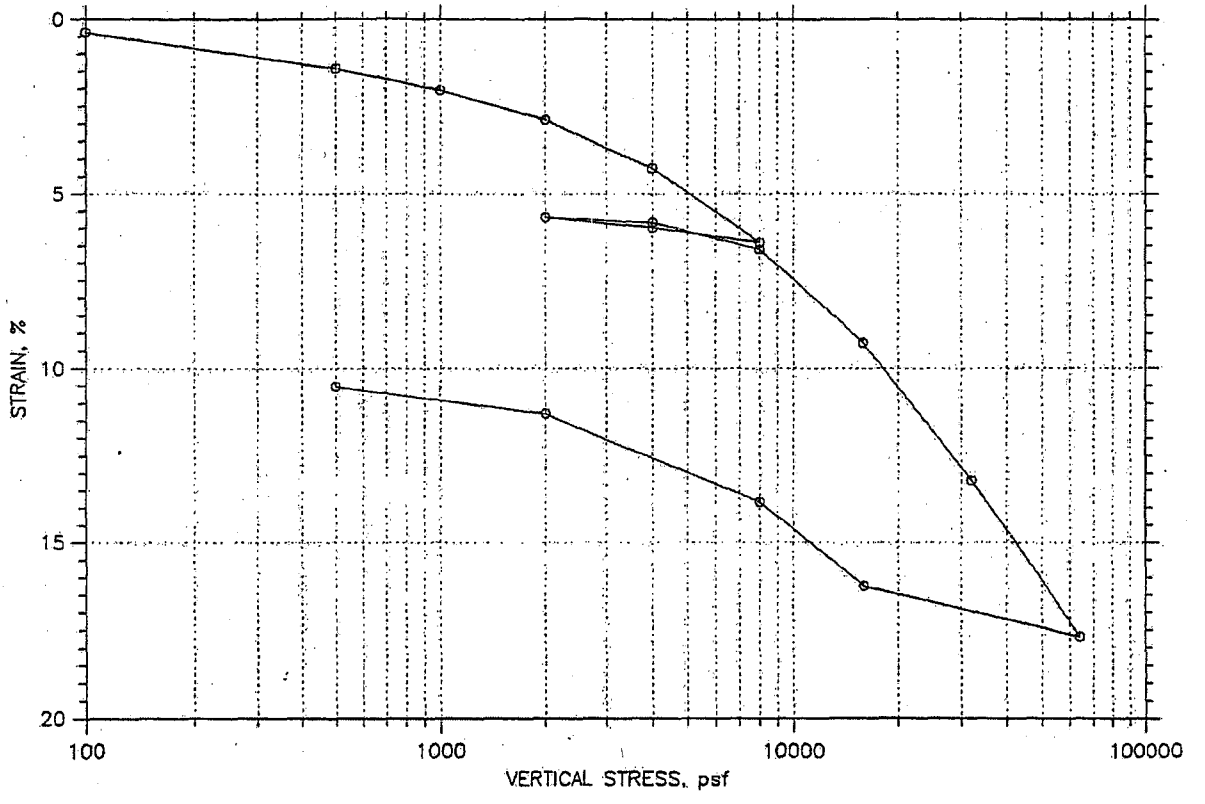
MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-6	Project No.: 6234074257
	Boring No.: B-940	Tested By: HJ	Checked By: JW
	Sample No.: UD-6	Test Date: 9/4/07	Depth: 66-68 ft
	Test No.: 7920	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.027	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

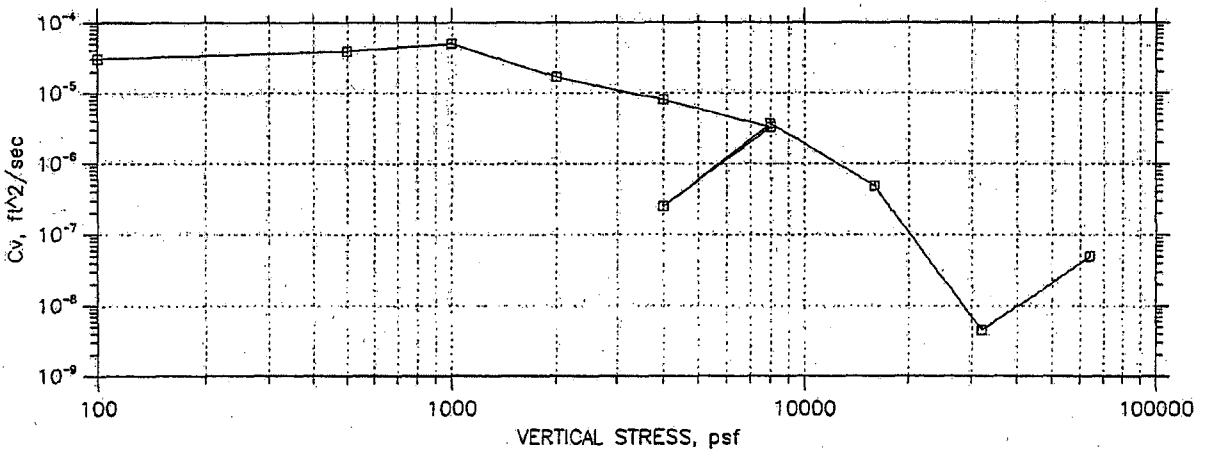
KAW 10/4/07

Mon, 24-SEP-2007 10:41:04

CONSOLIDATION TEST DATA

SUMMARY REPORT



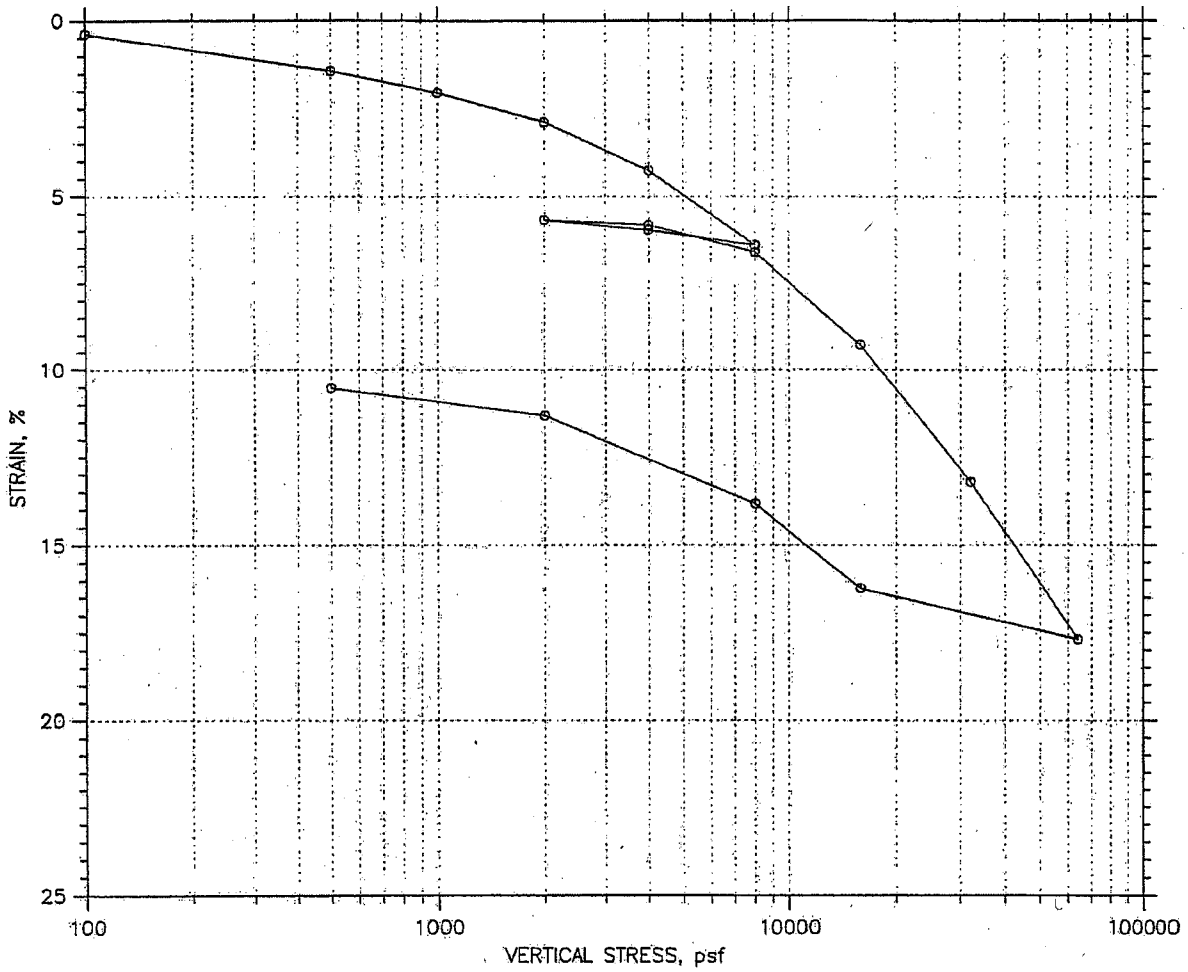


MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-2	Project No.: 6234074257
	Boring No.: B-949	Tested By: JW	Checked By: HJ
	Sample No.: UD-2	Test Date: 9/4/07	Depth: 53.5-55.5ft
	Test No.: 7923	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.030	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

KAW 10/4/07

Mon, 24-SEP-2007 10:40:13

CONSOLIDATION TEST DATA
SUMMARY REPORT



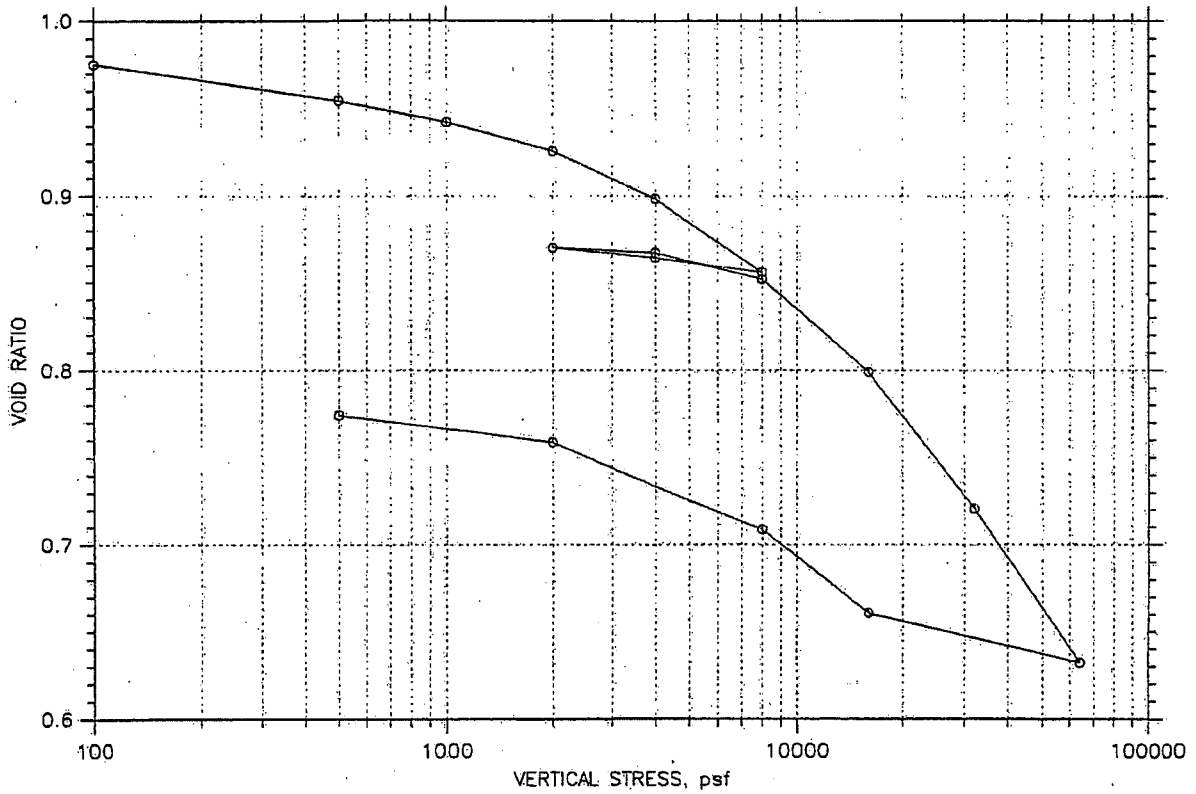
					Before Test	After Test
Overburden Pressure: 3580 psf				Water Content, %	32.51	30.10
Preconsolidation Pressure: 8600 psf				Dry Unit Weight, pcf	87.33	97.61
Compression Index: 0.296				Saturation, %	91.75	107.86
Diameter: 2.499 in		Height: 0.995 in		Void Ratio	0.98	0.77
LL: 65	PL: 29	PI: 36	GS: 2.77			

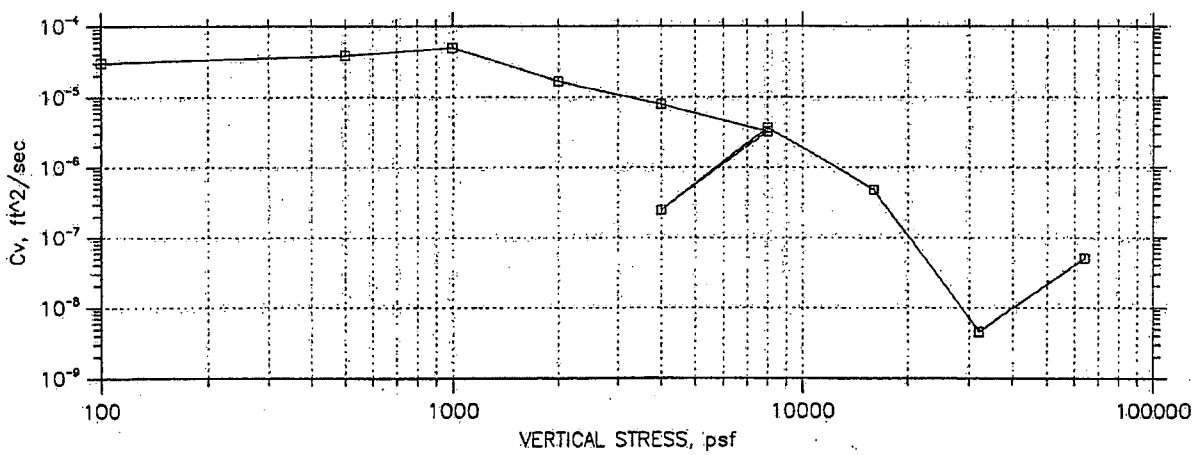
MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-2	Project No.: 6234074257
	Boring No.: B-949	Tested By: JW	Checked By: HJ
	Sample No.: UD-2	Test Date: 9/4/07	Depth: 53.5-55.5ft
	Test No.: 7923	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.030	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
		HJ 9/24/07 KAW 10/4/07	

Mon, 24-SEP-2007 10:40:14

CONSOLIDATION TEST DATA

SUMMARY REPORT



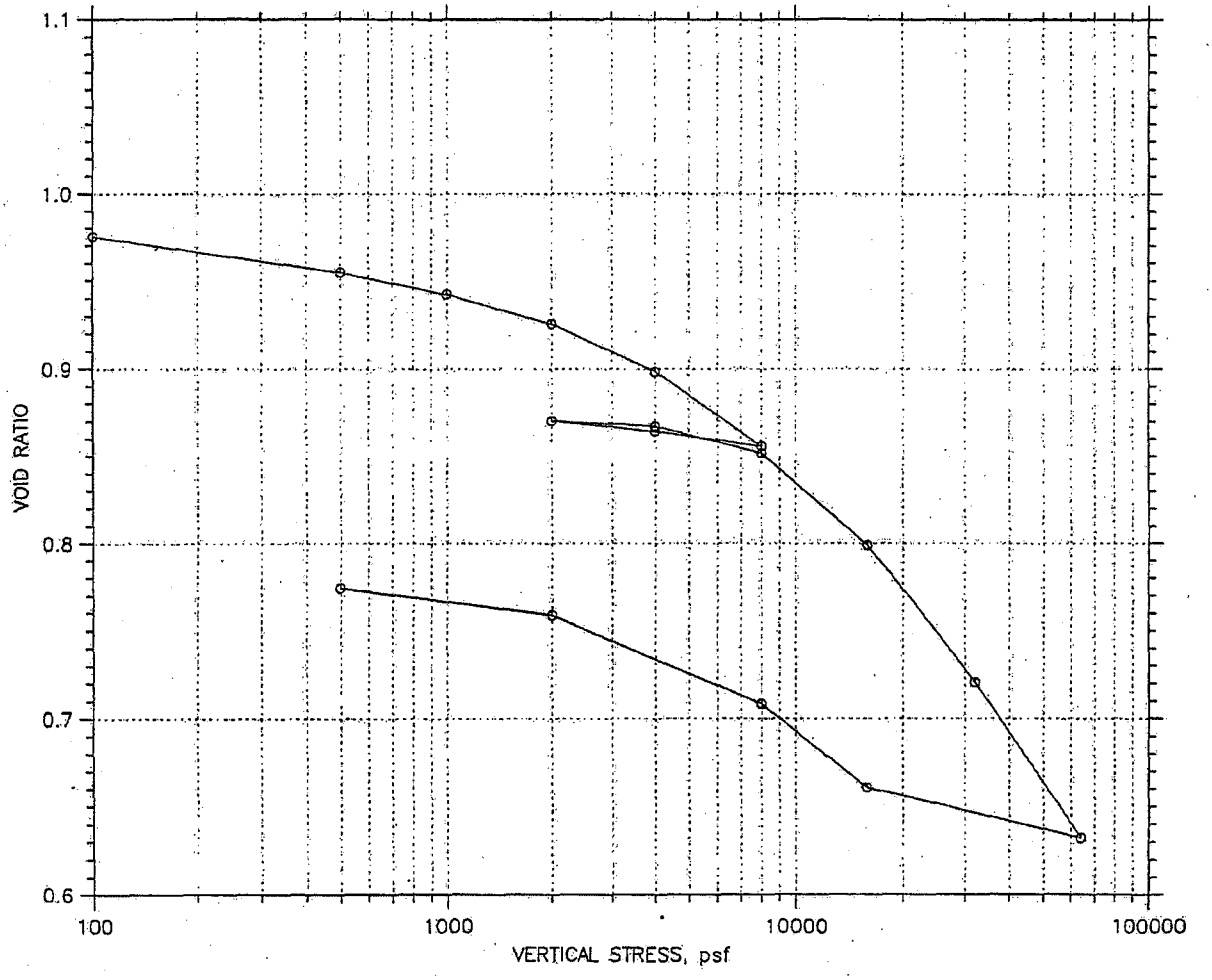


MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-2	Project No.: 6234074257
	Boring No.: B-949	Tested By: JW	Checked By: HJ
	Sample No.: UD-2	Test Date: 9/4/07	Depth: 53.5-55.5ft
	Test No.: 7923	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.030	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

KAW 10/4/07

Mon, 24-SEP-2007 10:40:26

CONSOLIDATION TEST DATA
SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 3580 psf				Water Content, %	32.51	30.10
Preconsolidation Pressure: 8600 psf				Dry Unit Weight, pcf	87.33	97.61
Compression Index: 0.296				Saturation, %	91.75	107.86
Diameter: 2.499 in		Height: 0.995 in		Void Ratio	0.98	0.77
LL: 65	PL: 29	PI: 36	GS: 2.77			

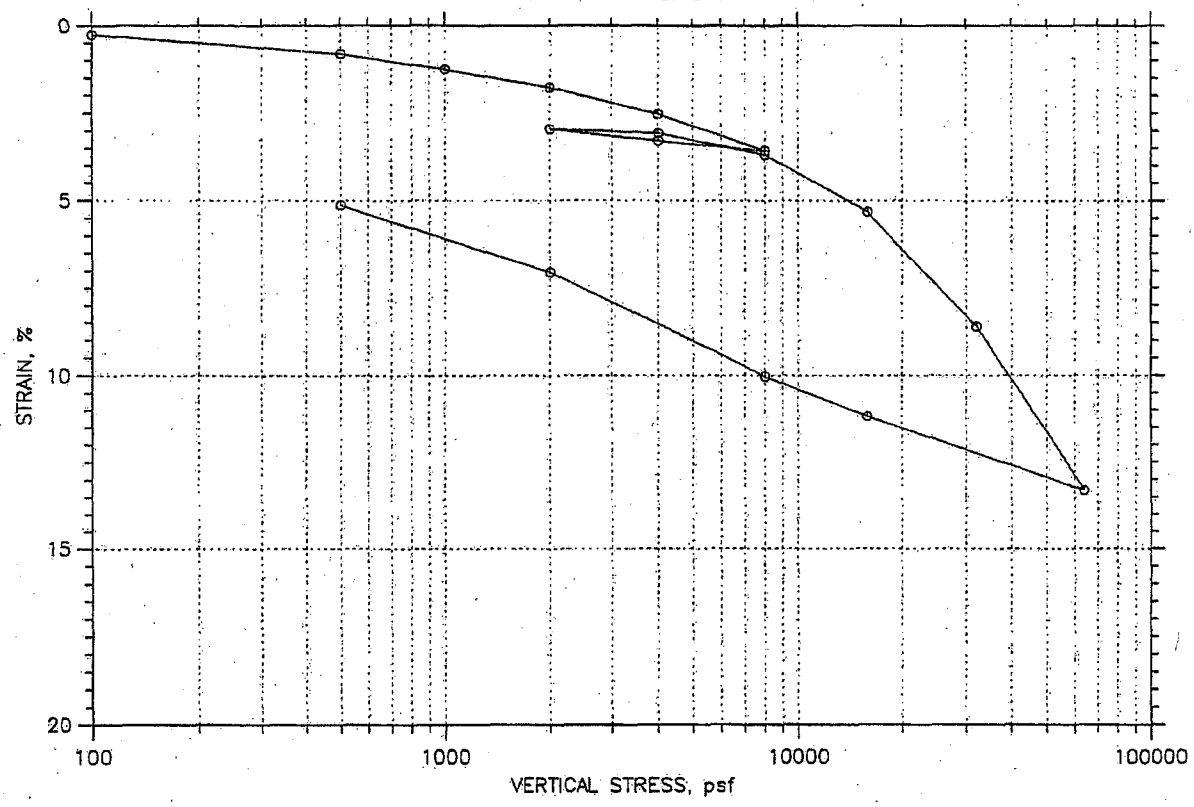
MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-2	Project No.: 6234074257
	Boring No.: B-949	Tested By: JW	Checked By: HJ
	Sample No.: UD-2	Test Date: 9/4/07	Depth: 53.5-55.5ft
	Test No.: 7923	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.030	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

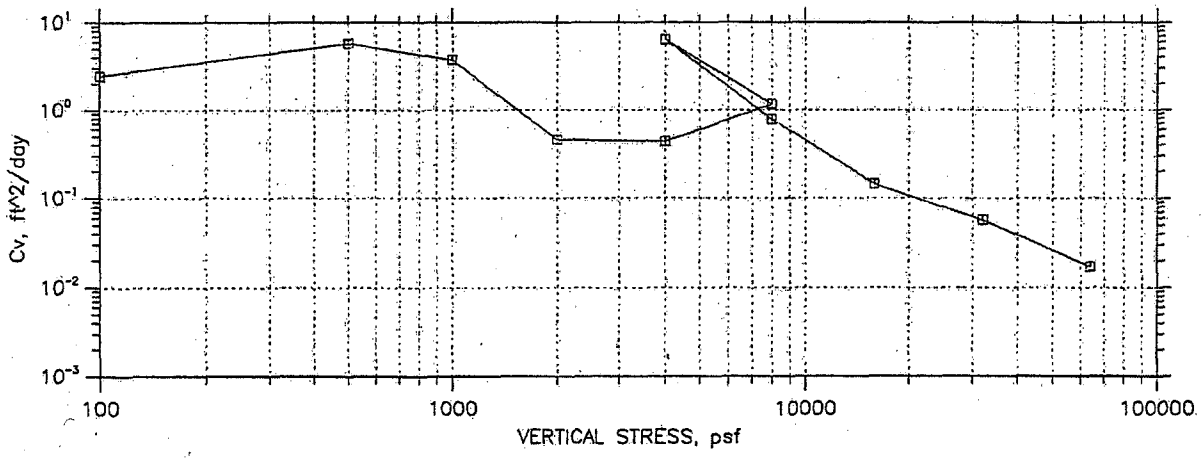
KAW 10/4/07

Mon, 24-SEP-2007 10:40:26

CONSOLIDATION TEST DATA

SUMMARY REPORT





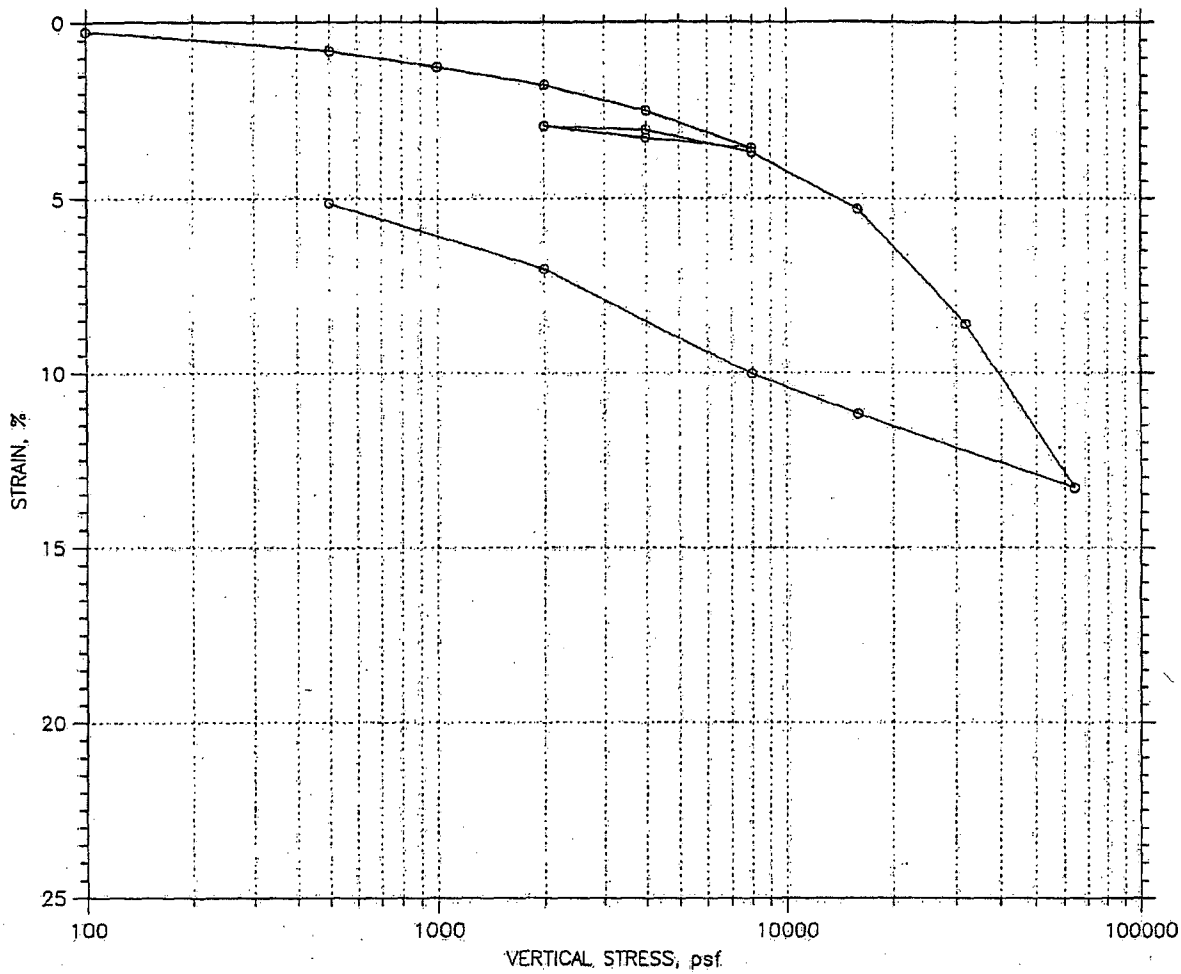
MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-6	Project No.: 6234074257
	Boring No.: B-949	Tested By: JW	Checked By: HJ
	Sample No.: UD-6	Test Date: 9/4/07	Depth: 83.5-85.5ft
	Test No.: 7926	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.020	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

KAW 10/4/07

Mon, 24-SEP-2007 10:50:07

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 5410 psf				Water Content, %	24.62	22.14
Preconsolidation Pressure: 2.09e+004 psf				Dry Unit Weight, pcf	100.4	105.8
Compression Index: 0.262				Saturation, %	97.89	100.85
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.68	0.59
LL: 66	PL: 23	PI: 43	GS: 2.70			

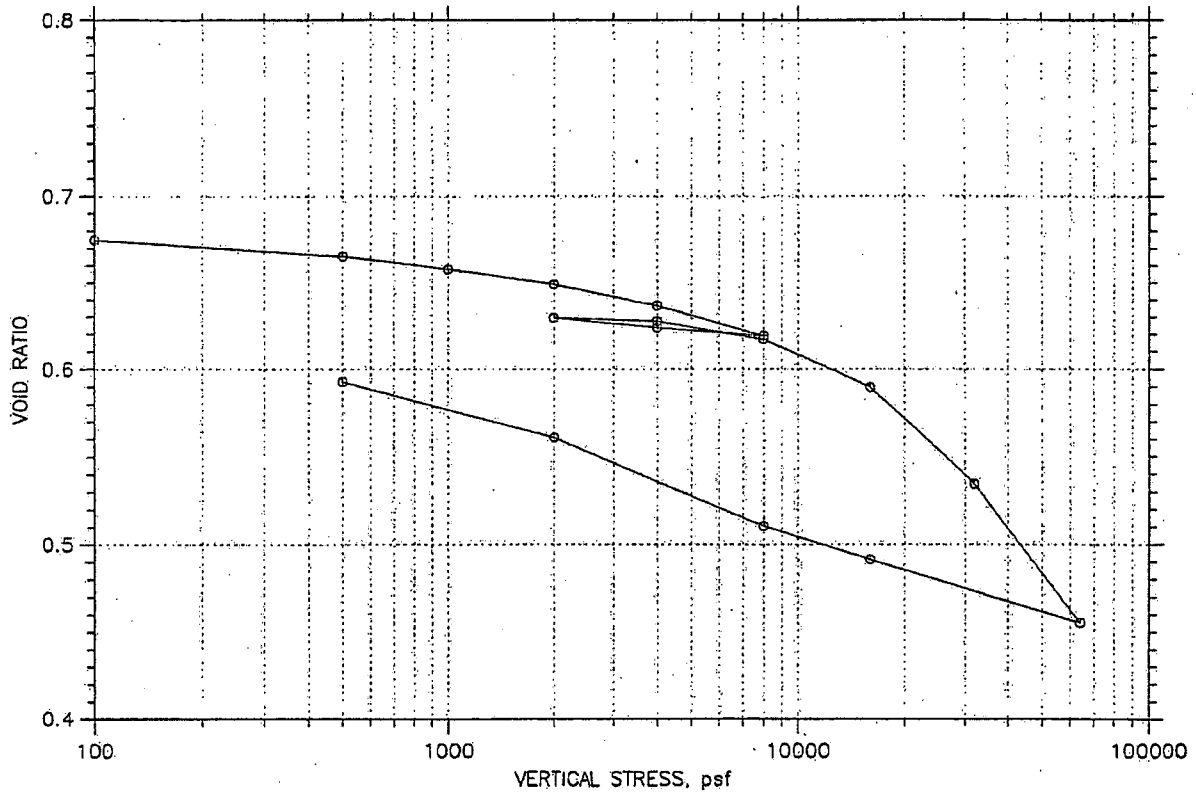
MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-6	Project No.: 6234074257
	Boring No.: B-949	Tested By: JW	Checked By: HJ
	Sample No.: UD-6	Test Date: 9/4/07	Depth: 83.5-85.5ft
	Test No.: 7926	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.020	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			9/24/07

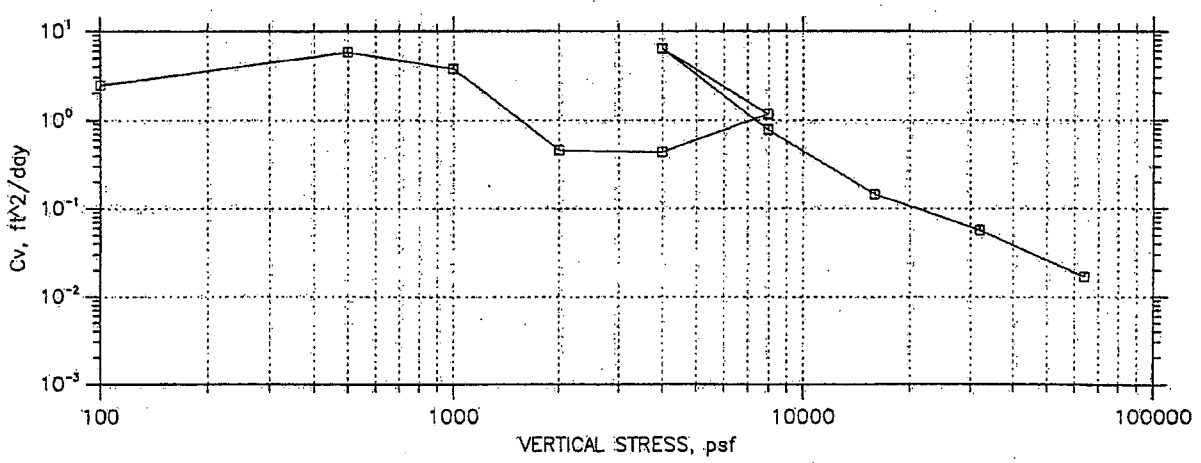
KAW 10/4/07

Mon, 24-SEP-2007 10:50:07

CONSOLIDATION TEST DATA

SUMMARY REPORT



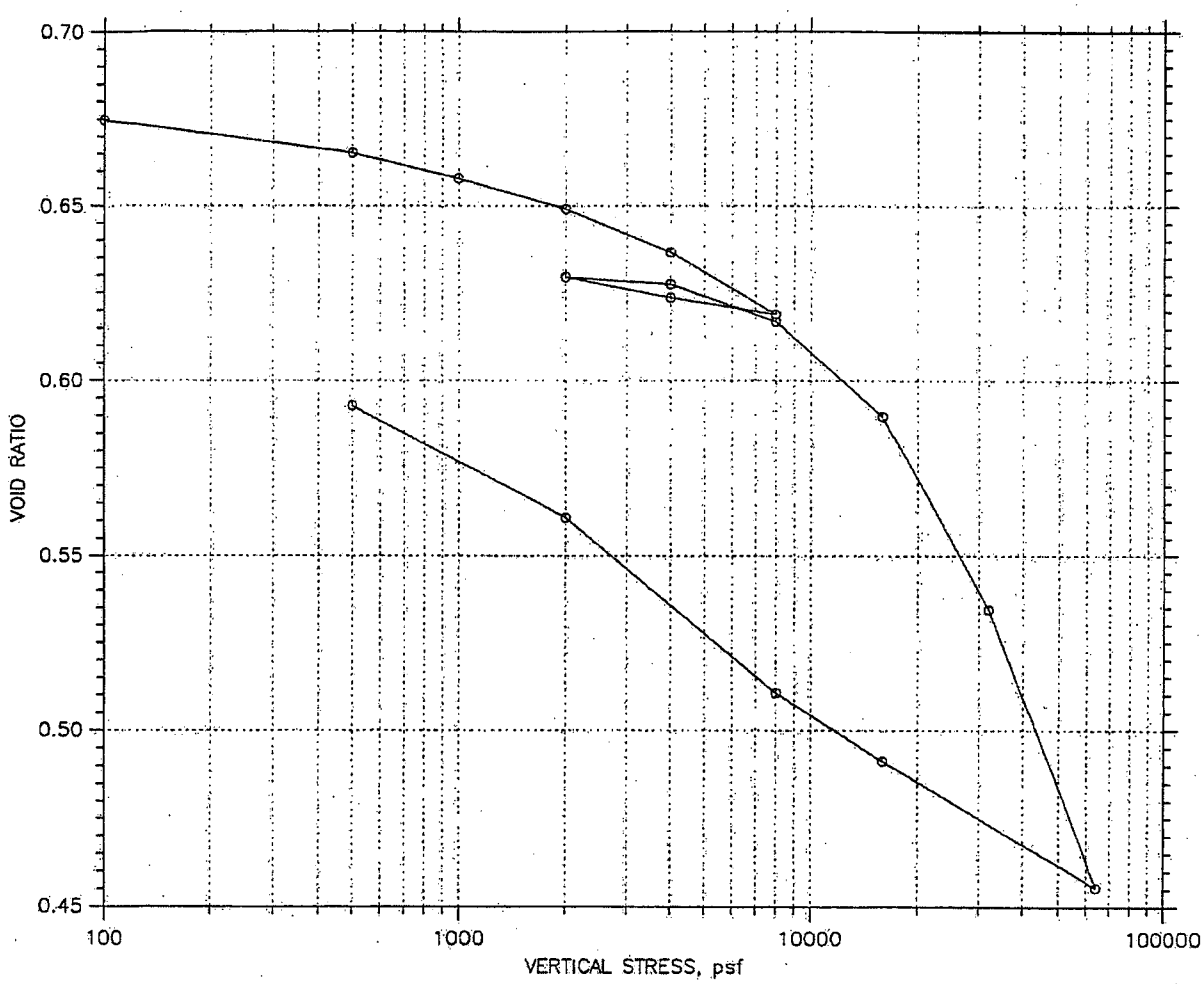


MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-6	Project No.: 6234074257
	Boring No.: B-949	Tested By: JW	Checked By: HJ
	Sample No.: UD-6	Test Date: 9/4/07	Depth: 83.5-85.5ft
	Test No.: 7926	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.020	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

Mon, 24-SEP-2007 10:50:19

KAW 10/4/07

CONSOLIDATION TEST DATA
SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 5410 psf				Water Content, %	24.62	22.14
Preconsolidation Pressure: 2.09e+004 psf				Dry Unit Weight, pcf	100.4	105.8
Compression Index: 0.262				Saturation, %	97.89	100.85
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.68	0.59
LL: 66	PL: 23	PI: 43	GS: 2.70			

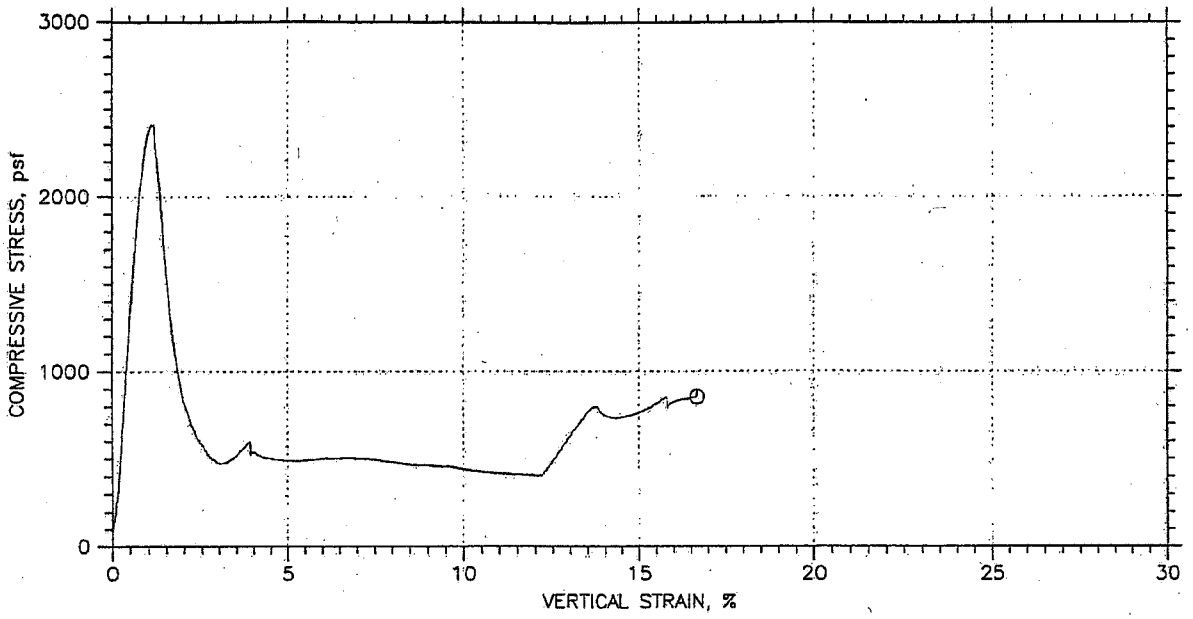
MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-6	Project No.: 6234074257
	Boring No.: B-949	Tested By: JW	Checked By: HJ
	Sample No.: UD-6	Test Date: 9/4/07	Depth: 83.5-85.5ft
	Test No.: 7926	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: Cr= 0.020	CONSOLIDATION TEST REPORT By ASTM D2435-04 Method B	
			HJ 9/24/07

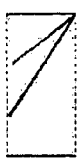
KAW 10/4/07

Mon, 24-SEP-2007 10:50:19

Unconfined Compression Tests

UNCONFINED COMPRESSION TEST REPORT



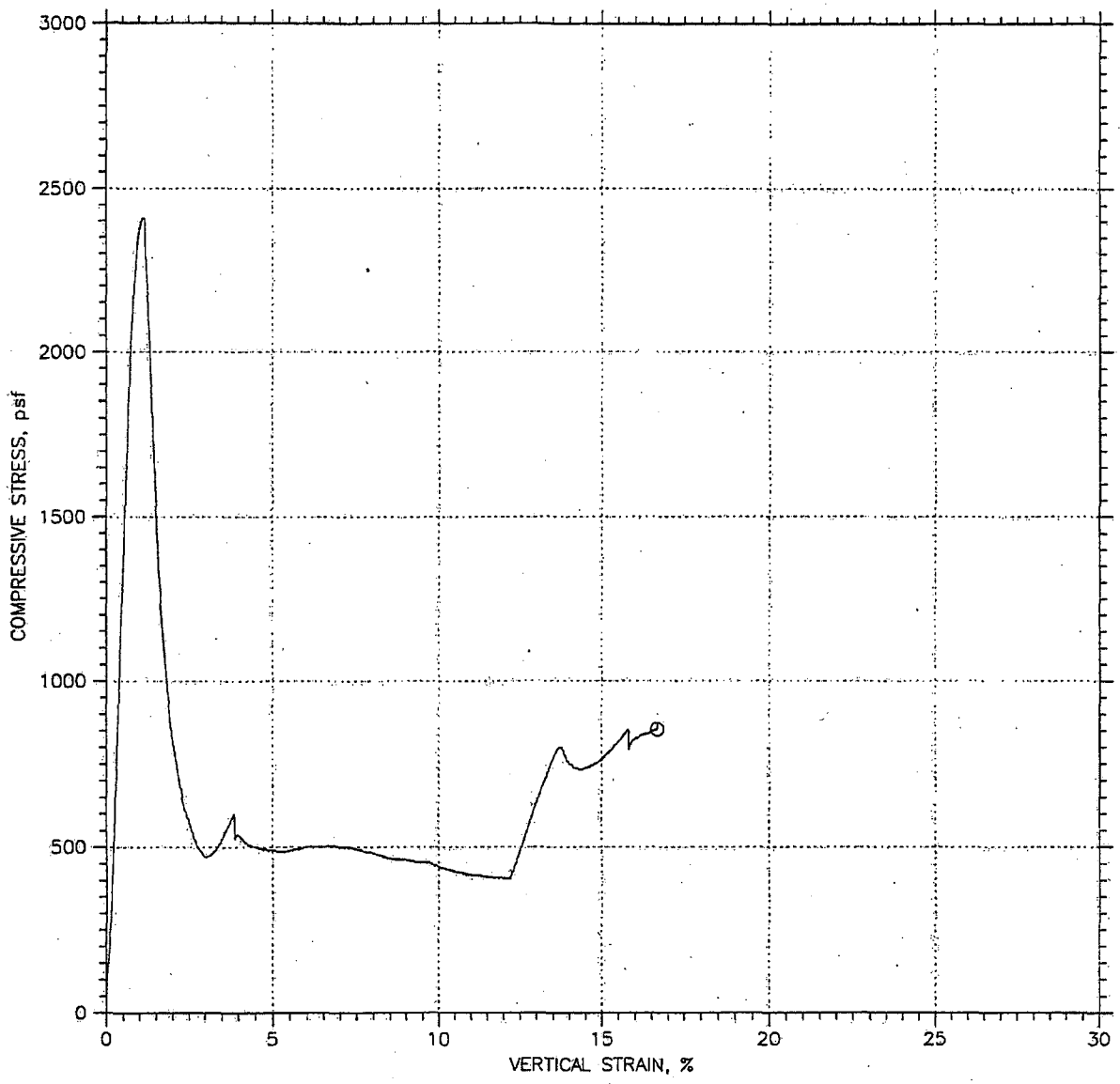
Symbol		⊙			
Test No.		7932			
Initial	Diameter, in	2.868			
	Height, in	5.998			
	Water Content, %	26.71			
	Dry Density, pcf	97.71			
	Saturation, %	99.46			
	Void Ratio	0.725			
Unconfined Compressive Strength, psf		2411			
Undrained Shear Strength, psf		1205			
Time to Failure, min		1.1417			
Strain Rate, %/min		1			
Estimated Specific Gravity		2.70			
Liquid Limit		63			
Plastic Limit		27			
Plasticity Index		36			
Failure Sketch					

MACTEC	Project: Bechtel/STP/COL
	Location: B-443 UD-6
	Project No.: 6234074257
	Boring No.: B-443
	Sample Type: Undisturbed
	Description: Fat CLAY (CH)
	Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1

HJ 9/24/07
KAW 10/4/07

Fri, 21-SEP-2007 15:06:42

UNCONFINED COMPRESSION TEST REPORT

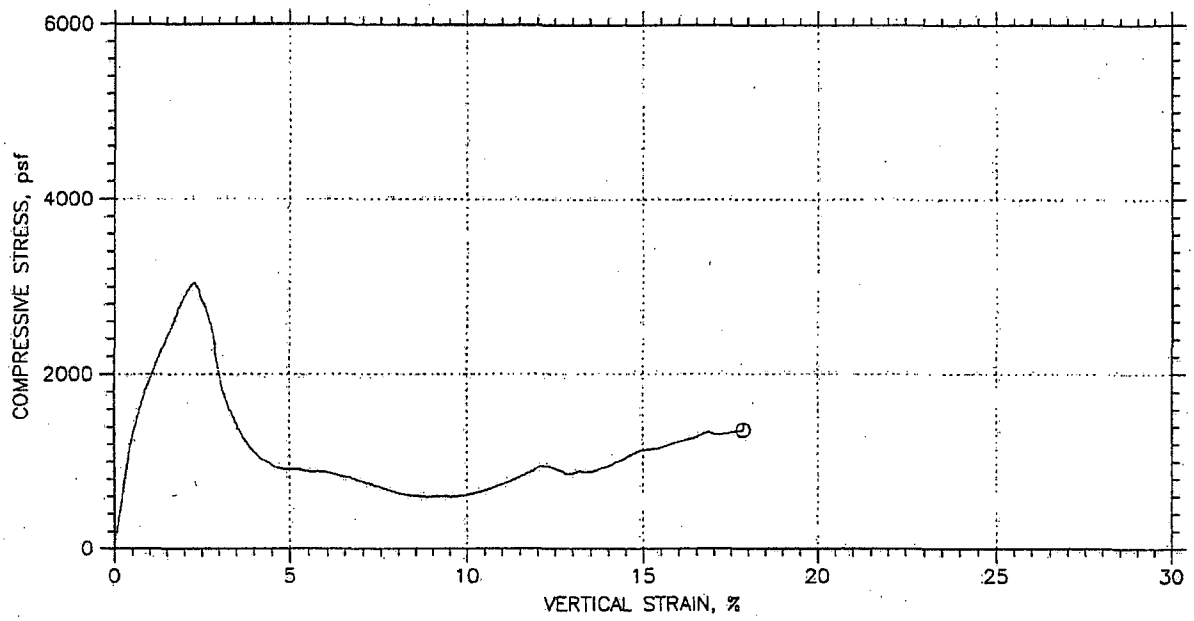


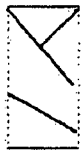
MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD-6	Project No.: 6234074257
	Boring No.: B-443	Tested By: BM	Checked By: HJ
	Sample No.: UD-6	Test Date: 9/12/07	Depth: 112-114ft.
	Test No.: 7932	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1		
			HJ 9/24/07

Fri, 21-SEP-2007 15:06:43

KAW 10/8/07

UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		7936			
Initial	Diameter, in	2.839			
	Height, in	5.6			
	Water Content, %	24.11			
	Dry Density, pcf	102.7			
	Saturation, %	101.47			
	Void Ratio	0.641			
Unconfined Compressive Strength, psf		3042			
Undrained Shear Strength, psf		1521			
Time to Failure, min		2.2084			
Strain Rate, %/min		1			
Estimated Specific Gravity		2.70			
Liquid Limit		67			
Plastic Limit		24			
Plasticity Index		43			
Failure Sketch					

MACTEC

Project: Bechtel/STP/COL

Location: B-443 UD-14

Project No.: 6234074257

Boring No.: B-443

Sample Type: Undisturbed

Description: Fat CLAY (CH)

Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1 lb 9/24/07

Fri, 21-SEP-2007 15:23:13

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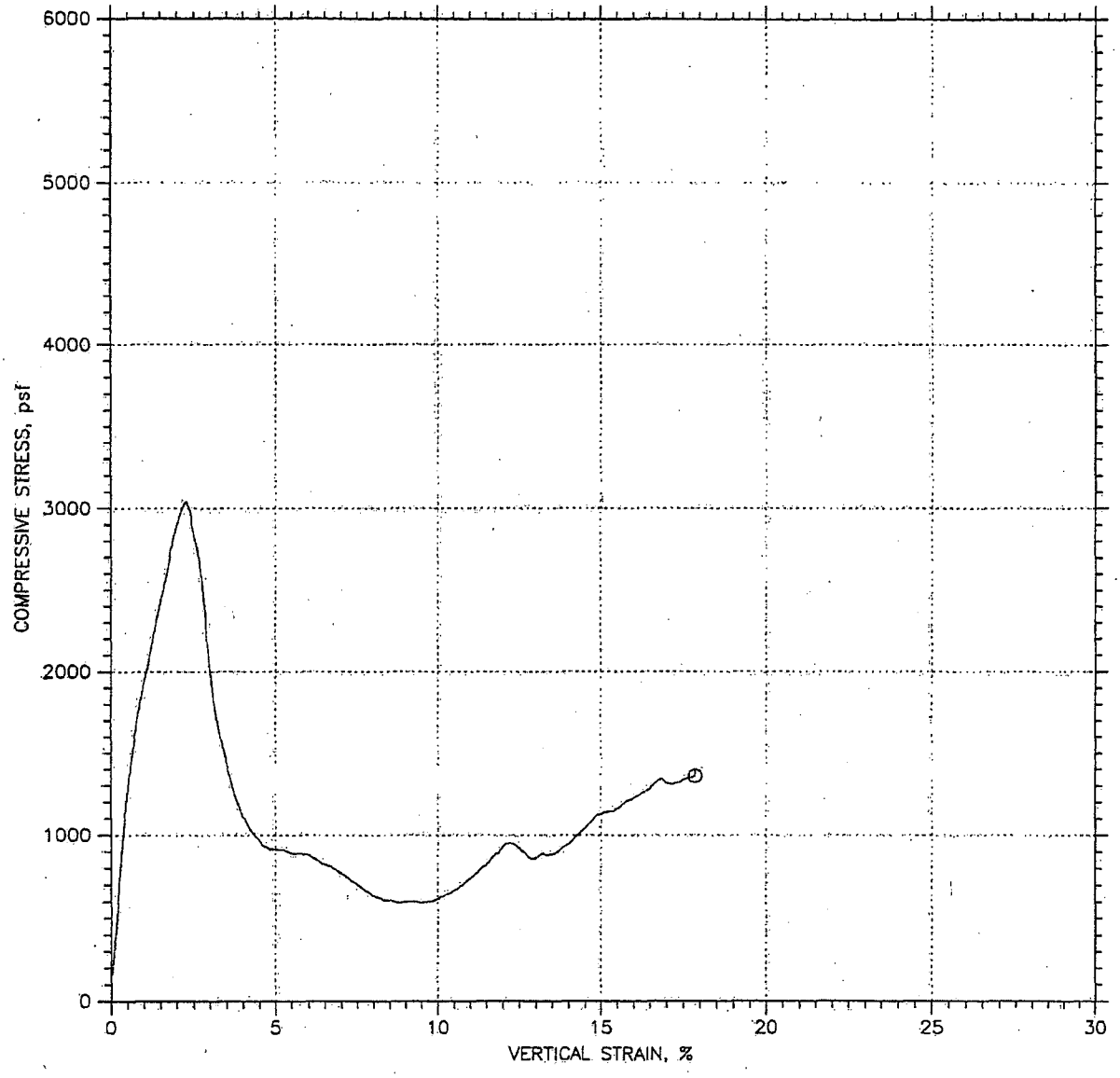
UNCONFINED COMPRESSION TEST REPORT

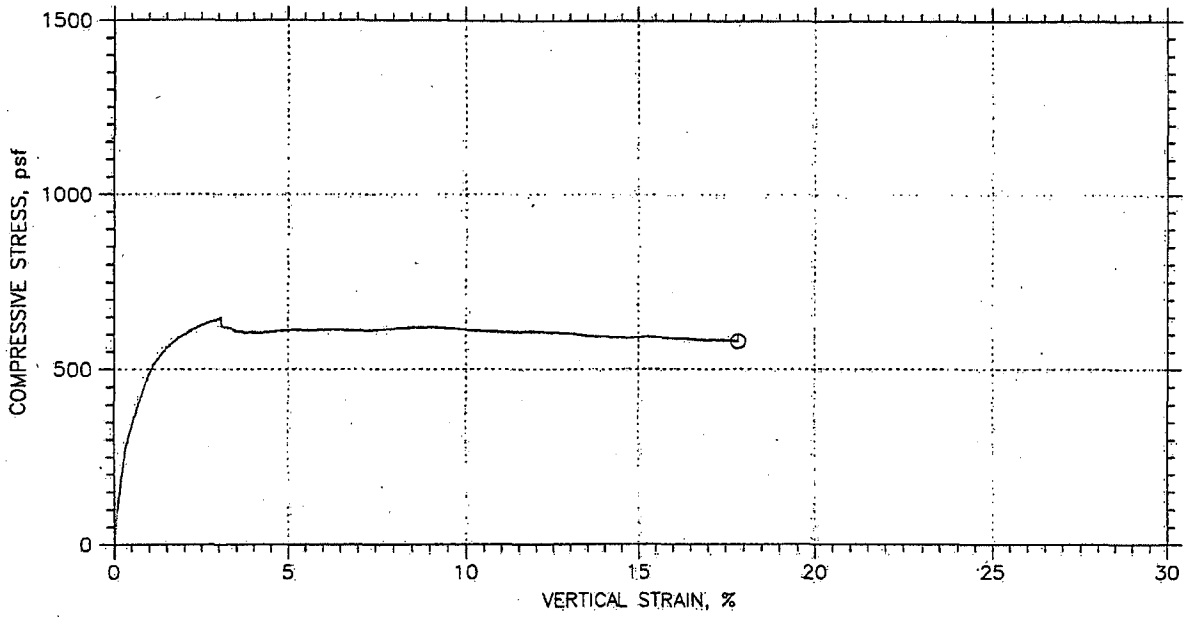


MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD-14	Project No.: 6234074257
	Boring No.: B-443	Tested By: BM	Checked By: HJ
	Sample No.: UD-14	Test Date: 9/11/07	Depth: 156-158ft.
	Test No.: 7936	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1		
			HJ 9/24/07

Fri, 21-SEP-2007 15:23:14

KAW 10/4/07

UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		7937			
Initial	Diameter, in	2.853			
	Height, in	5.601			
	Water Content, %	25.70			
	Dry Density, pcf	101.			
	Saturation, %	103.66			
	Void Ratio	0.669			
Unconfined Compressive Strength, psf		648.6			
Undrained Shear Strength, psf		324.3			
Time to Failure, min		2.9458			
Strain Rate, %/min		1			
Estimated Specific Gravity		2.70			
Liquid Limit		51			
Plastic Limit		20			
Plasticity Index		31			
Failure Sketch					

MACTEC

Project: Bechtel/STP/COL	
Location: B-443 UD-15	
Project No.: 6234074257	
Boring No.: B-443	
Sample Type: Undisturbed	
Description: Fat CLAY (CH)	
Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1	HJ 9/24/07

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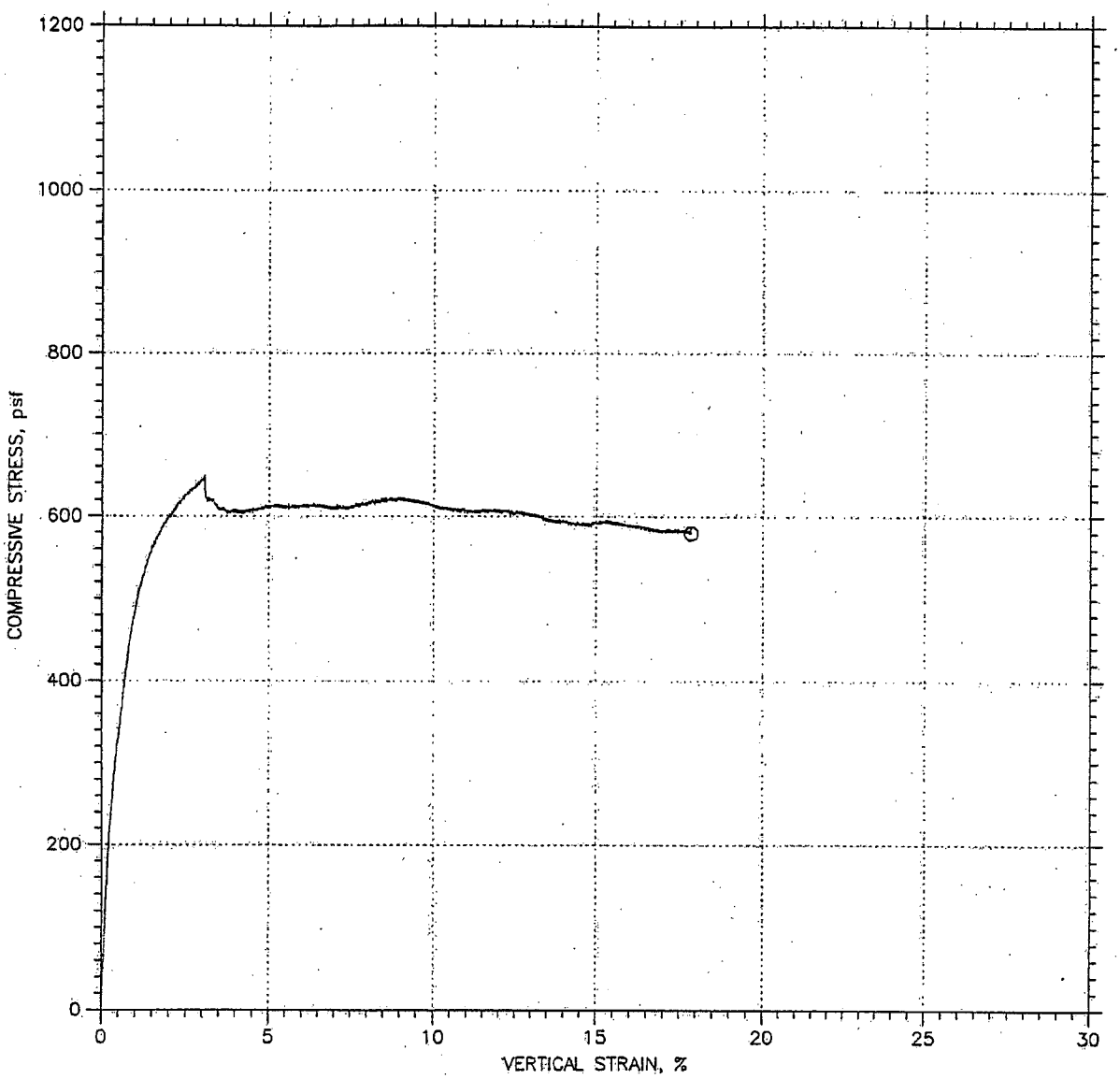
KAW 10/4/07

UNCONFINED COMPRESSION TEST REPORT

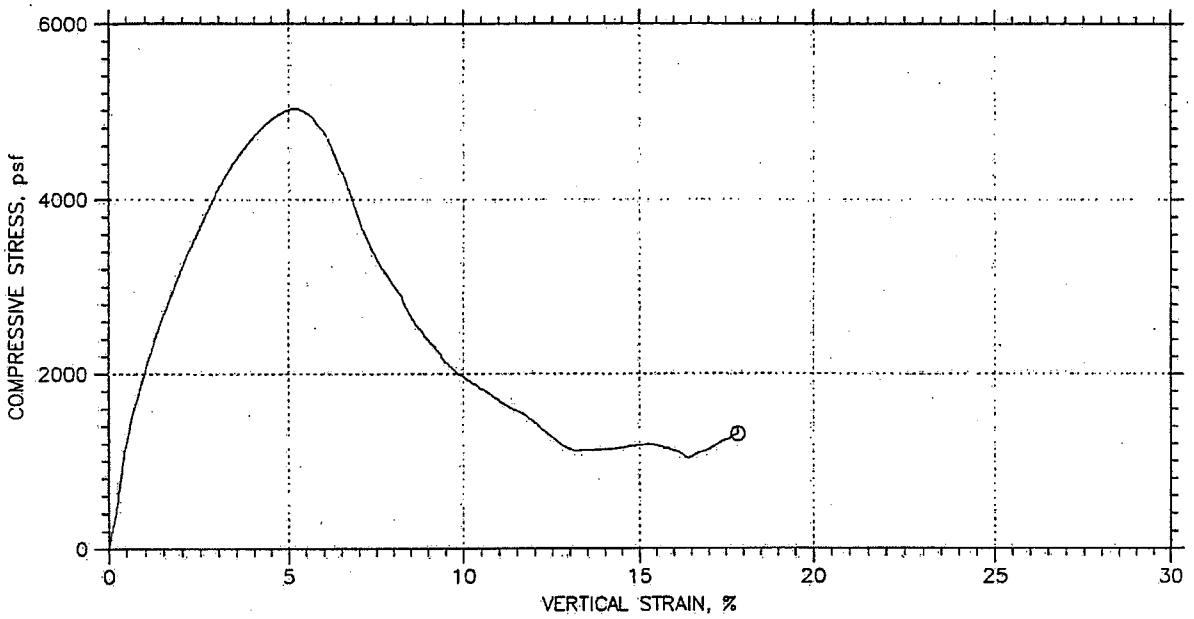


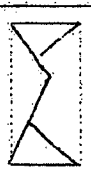
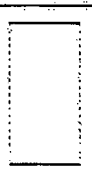
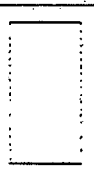
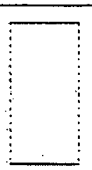
MACTEC	Project: Bechtel/STP/COL	Location: B-443 UD-15	Project No.: 6234074257
	Boring No.: B-443	Tested By: BM	Checked By: HJ
	Sample No.: UD-15	Test Date: 9/13/07	Depth: 172-174ft.
	Test No.: 7937	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1		
			HJ 9/24/07

Fri, 21-SEP-2007 15:07:35

KAW 10/4/07

UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		7917			
Initial	Diameter, in	2.825			
	Height, in	5.606			
	Water Content, %	28.44			
	Dry Density, pcf	96.23			
	Saturation, %	102.18			
	Void Ratio	0.752			
Unconfined Compressive Strength, psf		5024			
Undrained Shear Strength, psf		2512			
Time to Failure, min		5.125			
Strain Rate, %/min		1			
Estimated Specific Gravity		2.70			
Liquid Limit		67			
Plastic Limit		26			
Plasticity Index		41			
Failure Sketch					

MACTEC	Project: Bechtel/STP/COL
	Location: B-940 UD-3
	Project No.: 6234074257
	Boring No.: B-940
	Sample Type: Undisturbed
	Description: Fat CLAY (CH)
	Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1

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Fri, 21-SEP-2007 15:05:00

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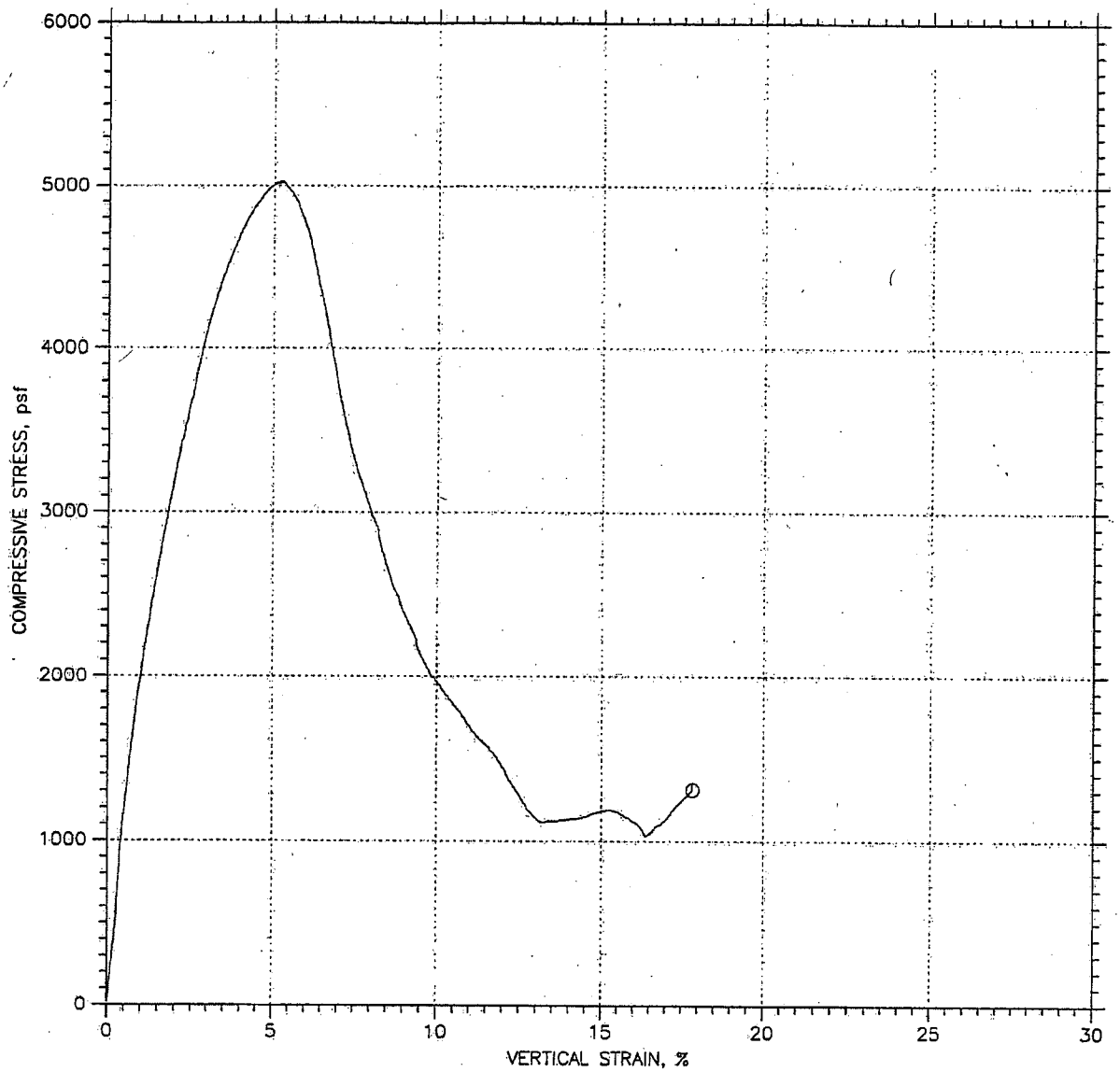
UNCONFINED COMPRESSION TEST REPORT



MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-3	Project No.: 6234074257
	Boring No.: B-940	Tested By: BM	Checked By: HJ
	Sample No.: UD-3	Test Date: 9/11/07	Depth: 41-43ft.
	Test No.: 7917	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1		
			HJ 9/24/07

Fri, 21-SEP-2007 15:05:00

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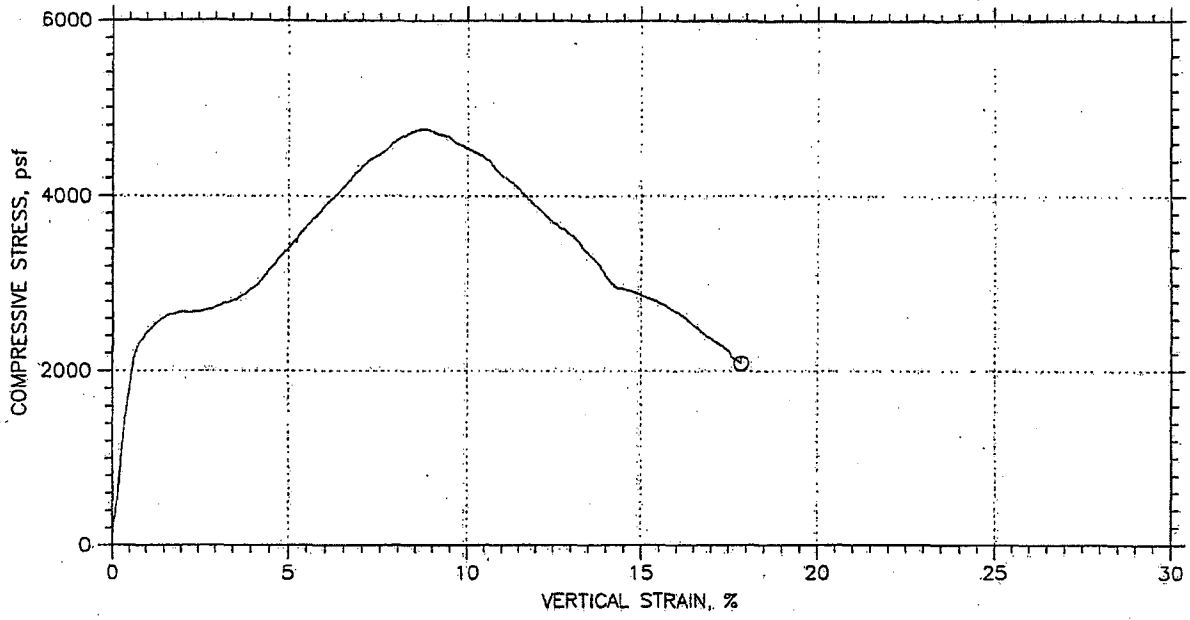
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		7922			
Initial	Diameter, in	2.831			
	Height, in	5.597			
	Water Content, %	24.39			
	Dry Density, pcf	102.3			
	Saturation, %	101.68			
	Void Ratio	0.648			
Unconfined Compressive Strength, psf		4759			
Undrained Shear Strength, psf		2380			
Time to Failure, min		8.5209			
Strain Rate, %/min		1			
Estimated Specific Gravity		2.70			
Liquid Limit		61			
Plastic Limit		22			
Plasticity Index		39			
Failure Sketch					

MACTEC

Project: Bechtel/STP/COL	
Location: B-940 UD-8	
Project No.: 6234074257	
Boring No.: B-940	
Sample Type: Undisturbed	
Description: Fat CLAY (CH)	
Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1	HJ 9/24/07

Fri, 21-SEP-2007 15:05:19

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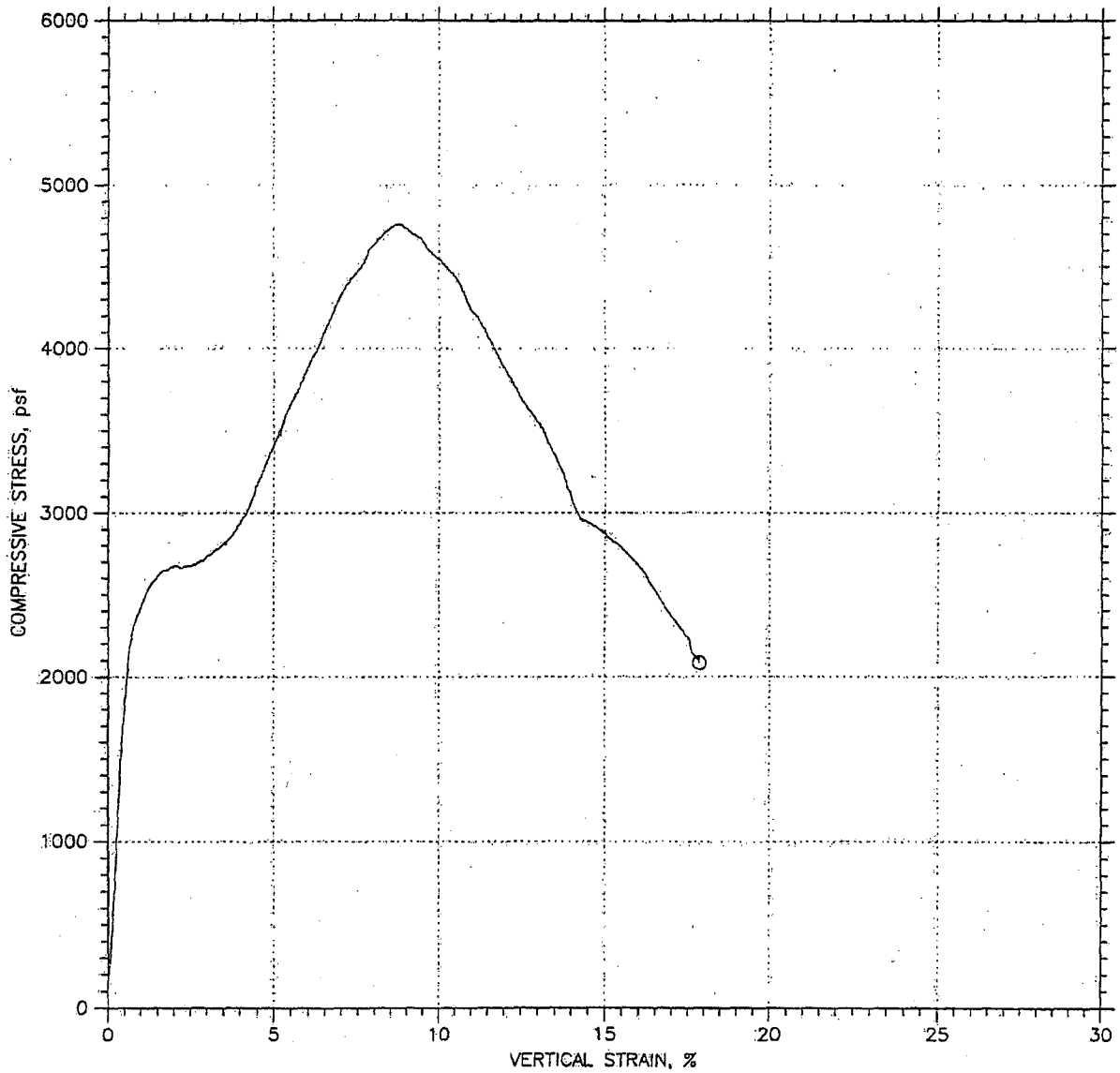
UNCONFINED COMPRESSION TEST REPORT



MACTEC	Project: Bechtel/STP/COL	Location: B-940 UD-8	Project No.: 6234074257
	Boring No.: B-940	Tested By: BM	Checked By: HJ
	Sample No.: UD-8	Test Date: 9/11/07	Depth: 91-93ft.
	Test No.: 7922	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1		
			HJ 9/24/07

Fri, 21-SEP-2007 15:05:19

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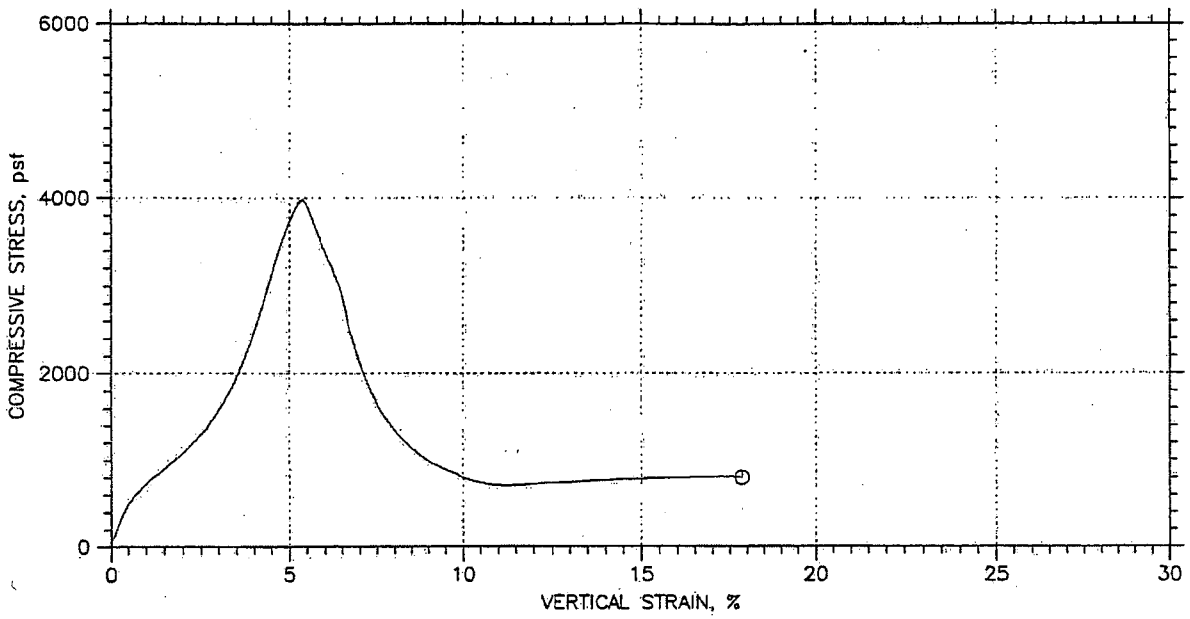
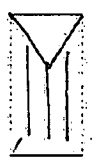
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		7927			
Initial	Diameter, in	2.834			
	Height, in	5.602			
	Water Content, %	28.08			
	Dry Density, pcf	94.56			
	Saturation, %	96.88			
	Void Ratio	0.782			
Unconfined Compressive Strength, psf		3979			
Undrained Shear Strength, psf		1989			
Time to Failure, min		5.2041			
Strain Rate, %/min		1			
Estimated Specific Gravity		2.70			
Liquid Limit		60			
Plastic Limit		24			
Plasticity Index		36			
Failure Sketch					

MACTEC

Project: Bechtel/STP/COL
Location: B-949 UD-7
Project No.: 6234074257
Boring No.: B-949
Sample Type: Undisturbed
Description: Fat CLAY (CH)
Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1

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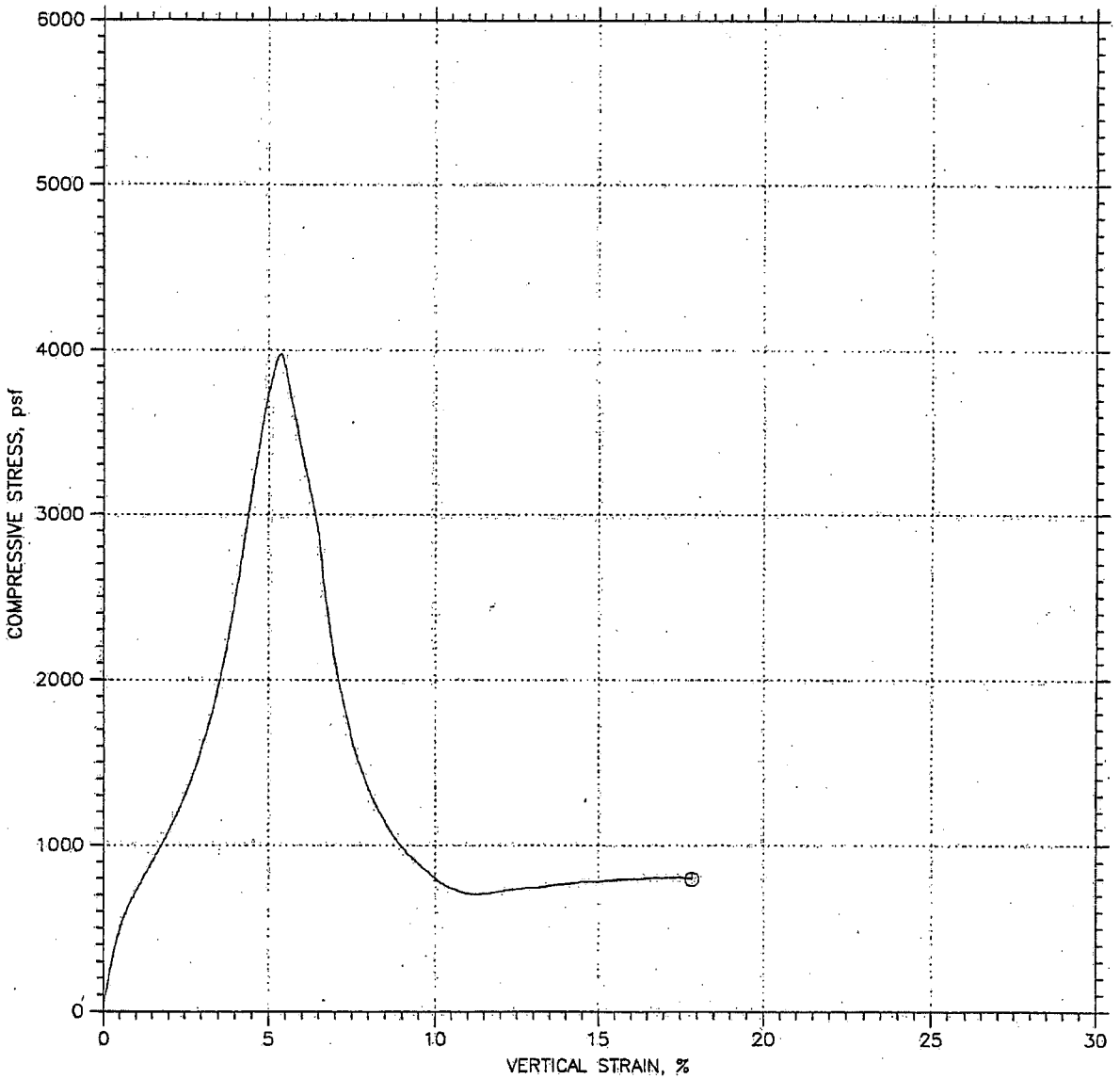
Fri, 21-SEP-2007 15:06:13

UNCONFINED COMPRESSION TEST REPORT



MACTEC	Project: Bechtel/STP/COL	Location: B-949 UD-7	Project No.: 6234074257
	Boring No.: B-949	Tested By: BM	Checked By: HJ
	Sample No.: UD-7	Test Date: 9/11/07	Depth: 91-93ft.
	Test No.: 7927	Sample Type: Undisturbed	Elevation: N/A
	Description: Fat CLAY (CH)		
	Remarks: UNCONFINED COMPRESSION TEST REPORT by ASTM D2166-00e1		
			HJ 9/27/07

Fri, 21-SEP-2007 15:06:14

KAW 10/4/07