

LIQUID AND PLASTIC LIMIT TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 197.6-199.1

Sample Number: 701-18

Material Description: Gray SILT with sand

USCS: ML

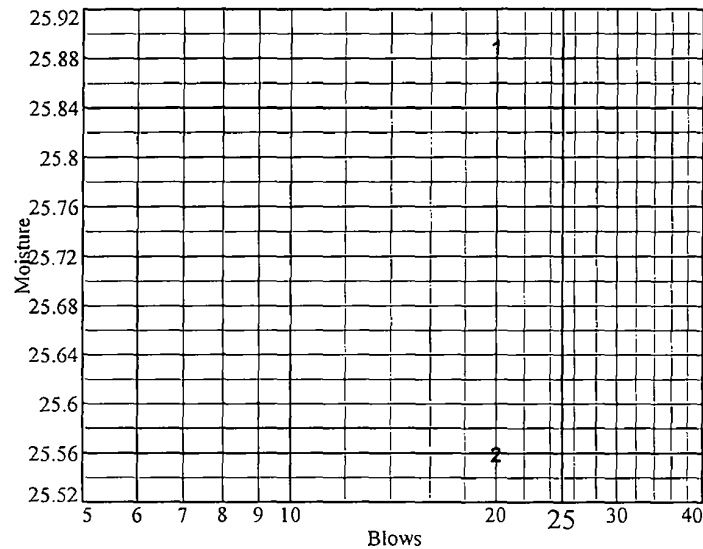
AASHTO: A-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.94	32.33				
Dry+Tare	28.59	28.90				
Tare	15.65	15.48				
# Blows	20	20				
Moisture	25.9	25.6				



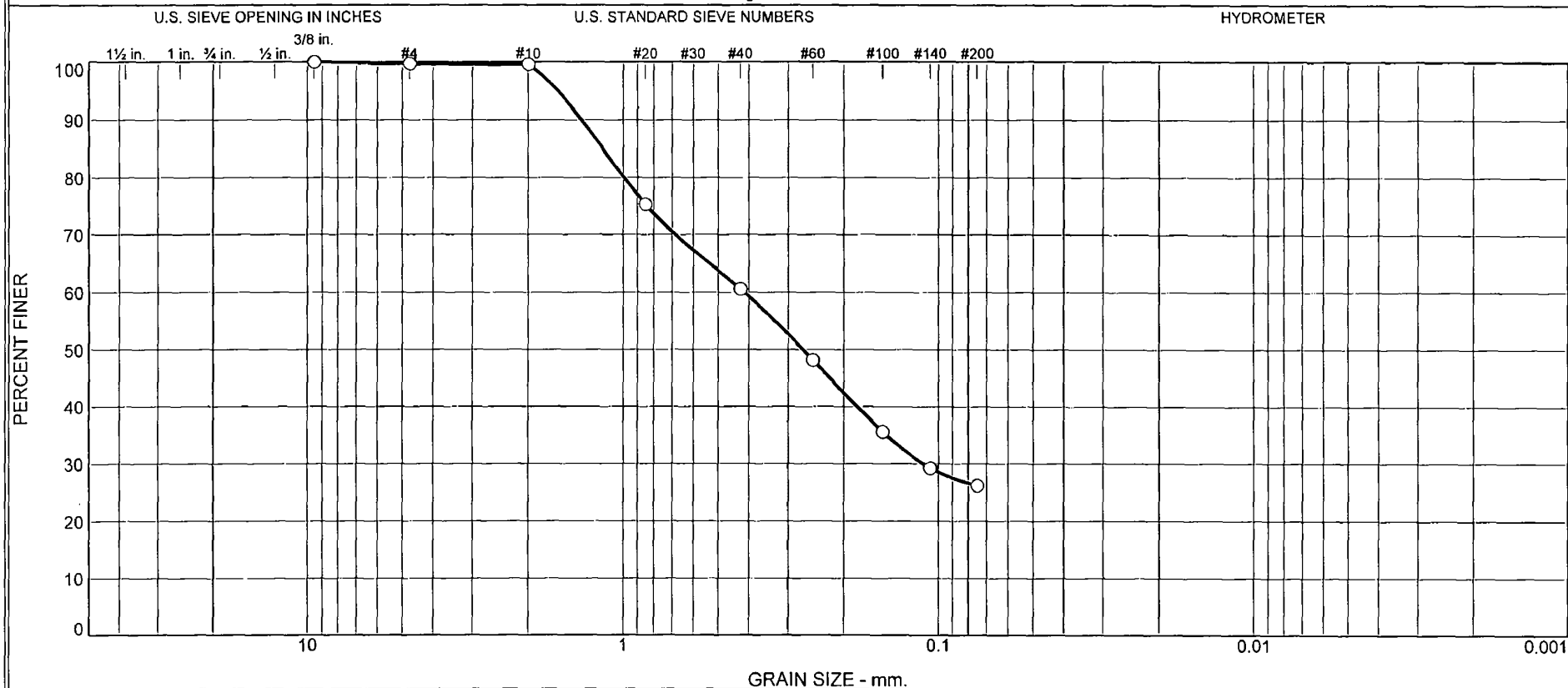
Liquid Limit= 25
 Plastic Limit= 22
 Plasticity Index= 3
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.85	23.62			
Dry+Tare	21.49	22.16			
Tare	15.52	15.48			
Moisture	22.8	21.9			

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	39	35	26	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-701(DH)	701-19	207.6-209.1	4/8/08	SM	Gray Silty SAND	ND	29	24

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

Tested By: CS

Checked By: LBJ

DSC 7-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 207.6-209.1

Sample Number: 701-19

Material Description: Gray Silty SAND

Date: 4/8/08

Natural Moisture: ND

Liquid Limit: 29

Plastic Limit: 24

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
247.93	0.00	0.00	3/8"	0.00	100
			#4	0.82	100
			#10	1.07	100
100.23	0.00	0.00	#20	24.44	75
			#40	39.26	61
			#60	51.73	48
			#100	64.49	36
			#140	70.81	29
			#200	73.89	26

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	39	35	74			26

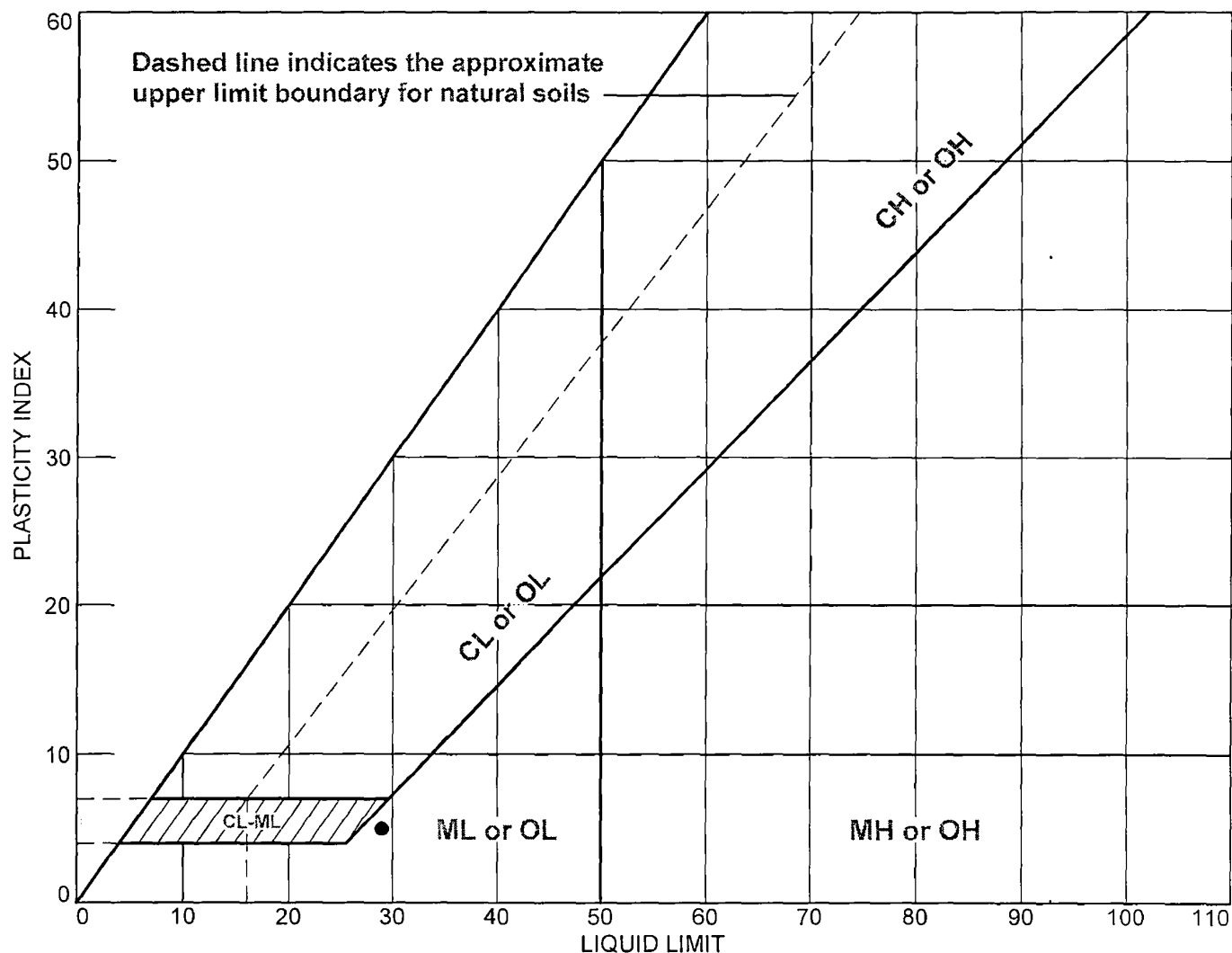
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1121	0.2687	0.4135	0.9958	1.1624	1.3580	1.6138

Fineness Modulus

1.60

MACTEC Engineering and Consulting, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-701(DH)	701-19	207.6-209.1	ND	24	29	5	SM

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Turkey Point COL

Project No.: 6468071950

Figure

Tested By: CS

Checked By: LBJ

DSC 7-2-08

LIQUID AND PLASTIC LIMIT TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 207.6-209.1

Sample Number: 701-19

Material Description: Gray Silty SAND

USCS: SM

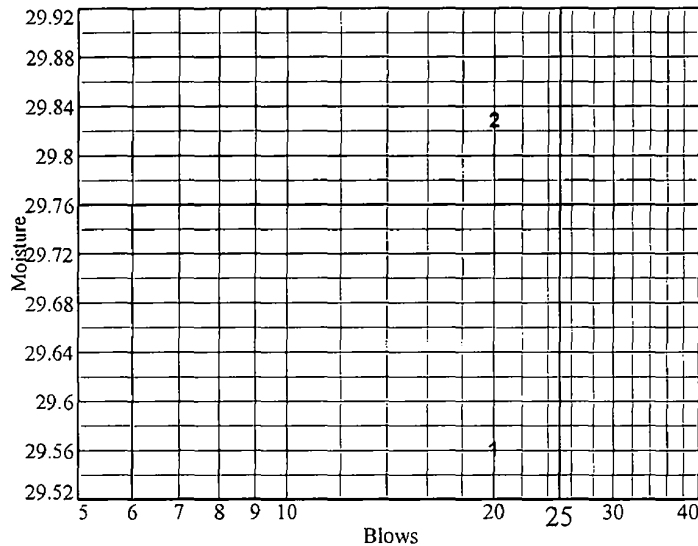
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.36	36.00				
Dry+Tare	28.52	31.29				
Tare	15.53	15.50				
# Blows	20	20				
Moisture	29.6	29.8				



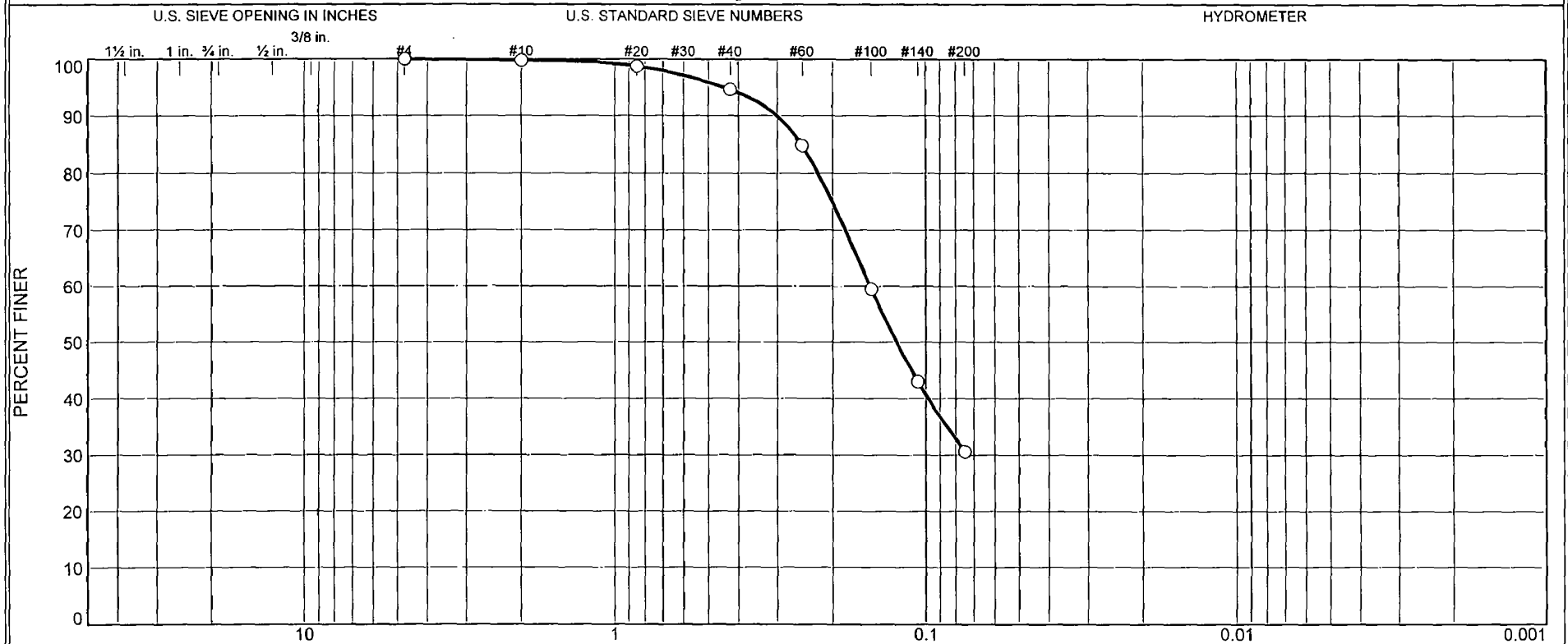
Liquid Limit= 29
 Plastic Limit= 24
 Plasticity Index= 5
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	23.13	24.14		
Dry+Tare	21.71	22.47		
Tare	15.65	15.53		
Moisture	23.4	24.1		

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	5	64	31	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-701(DH)	701-20	217.5-219.0	4/8/08	SM	Olive Silty SAND	ND	25	22

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

Tested By: CS

Checked By: LBJ

DSC 7-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 217.5-219.0

Sample Number: 701-20

Material Description: Olive Silty SAND

Date: 4/8/08

Natural Moisture: ND

Liquid Limit: 25

Plastic Limit: 22

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
321.75	0.00	0.00	#4	0.00	100
			#10	0.74	100
102.28	0.00	0.00	#20	1.04	99
			#40	5.29	95
			#60	15.28	85
			#100	41.26	60
			#140	58.21	43
			#200	70.91	31

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	5	64	69			31

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.1242	0.1513	0.2219	0.2510	0.3003	0.4450

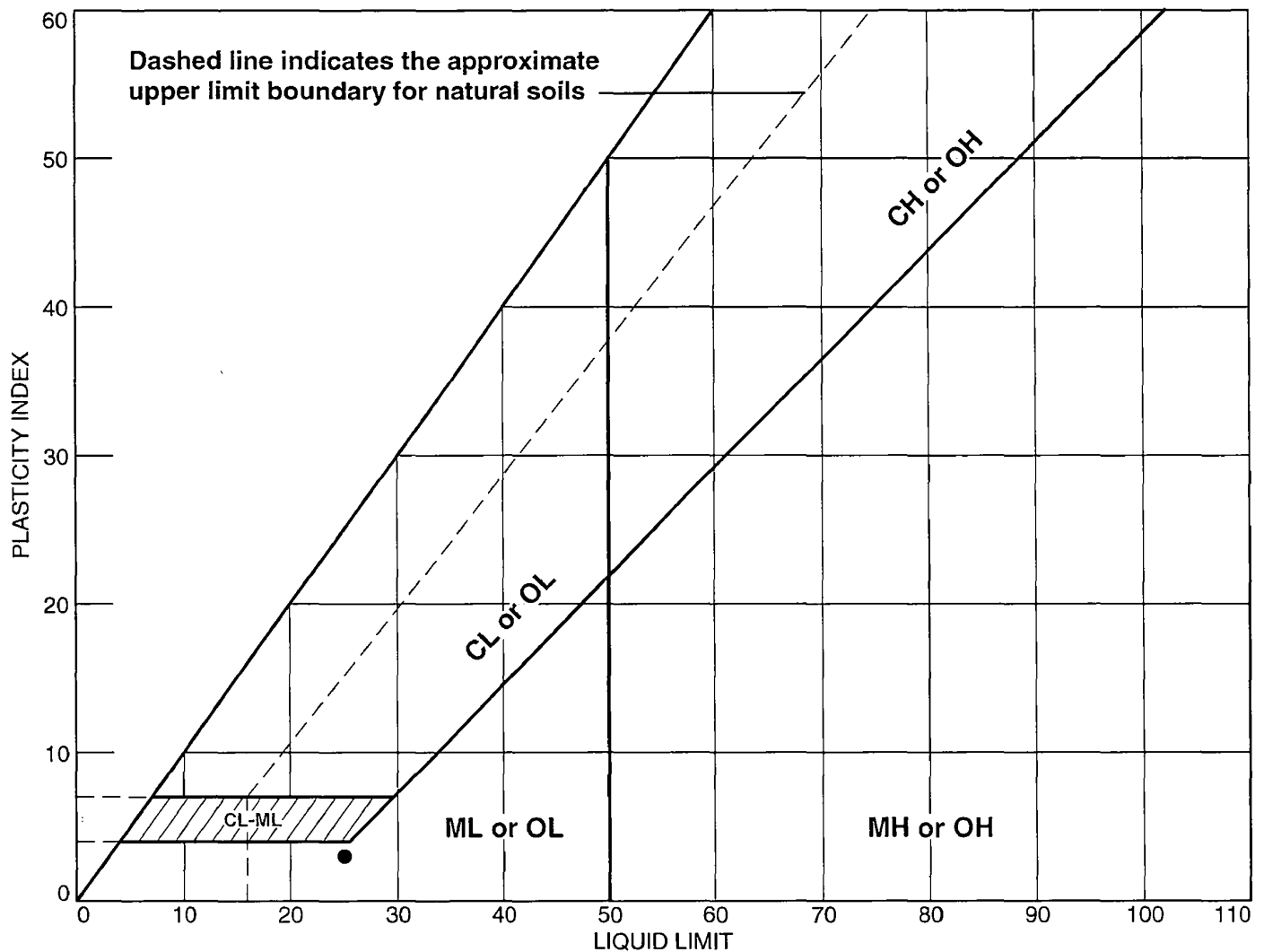
Fineness

Modulus

0.54

MACTEC Engineering and Consulting, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-701(DH)	701-20	217.5-219.0	ND	22	25	3	SM

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Turkey Point COL

Project No.: 6468071950

Figure

Tested By: CS

Checked By: LBJ

ZHU 7-25-08

LIQUID AND PLASTIC LIMIT TEST DATA

7/28/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 217.5-219.0

Sample Number: 701-20

Material Description: Olive Silty SAND

USCS: SM

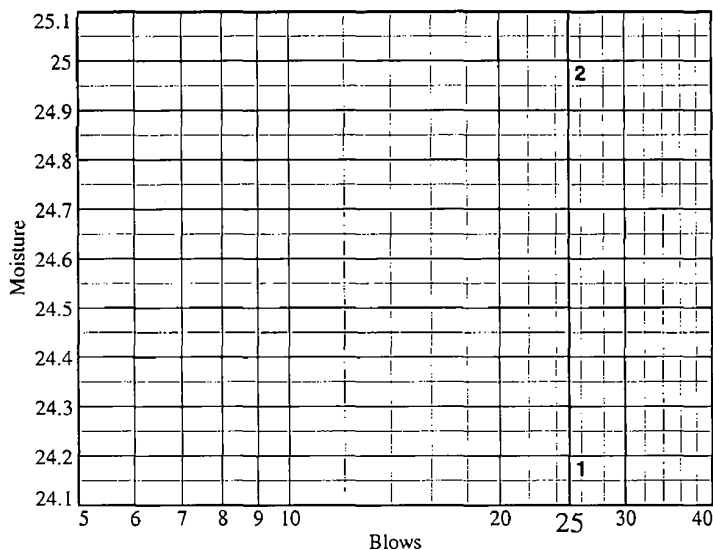
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.30	29.36				
Dry+Tare	28.22	26.59				
Tare	15.48	15.50				
# Blows	26	26				
Moisture	24.2	25.0				



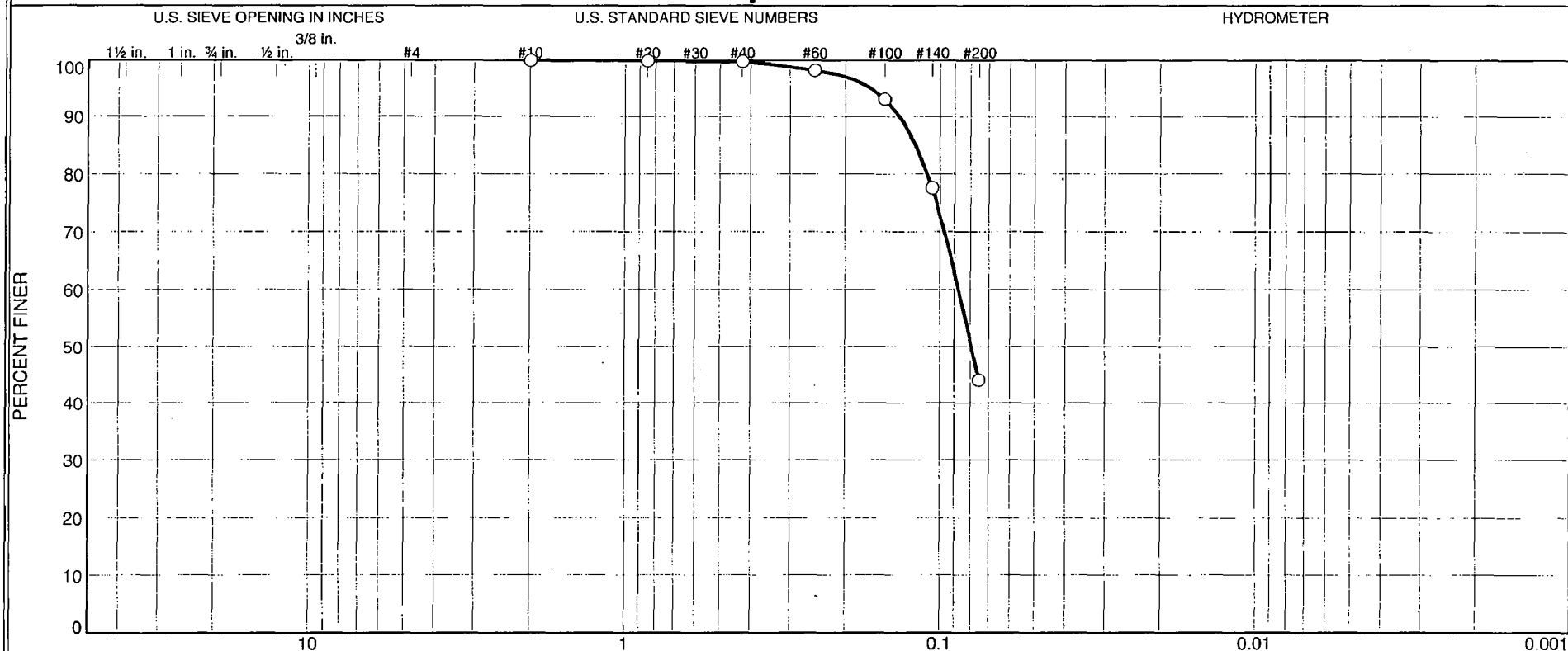
Liquid Limit= 25
 Plastic Limit= 22
 Plasticity Index= 3
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	22.77	26.41		
Dry+Tare	21.52	24.48		
Tare	15.75	15.51		
Moisture	21.7	21.5		

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	56	44	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-701(DH)	701-22	237.5-239.0	4/9/08	SC-SM	Olive Gray Silty Clayey SAND	ND	21	17

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ ND = NOT DETERMINED
Project Turkey Point COL			
Project No. 6468071950	Figure	Raleigh, North Carolina	

ZHU 7/22/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/22/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 237.5-239.0

Sample Number: 701-22

Material Description: Olive Gray Silty Clayey SAND

Date: 4/9/08

Natural Moisture: ND

Liquid Limit: 21

Plastic Limit: 17

USCS Class.: SC-SM

Testing Remarks: ND = NOT DETERMINED

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
310.25	0.00	0.00	#10	0.00	100
99.74	0.00	0.00	#20	0.07	100
			#40	0.19	100
			#60	1.75	98
			#100	6.91	93
			#140	22.32	78
			#200	55.85	44

Fractional Components

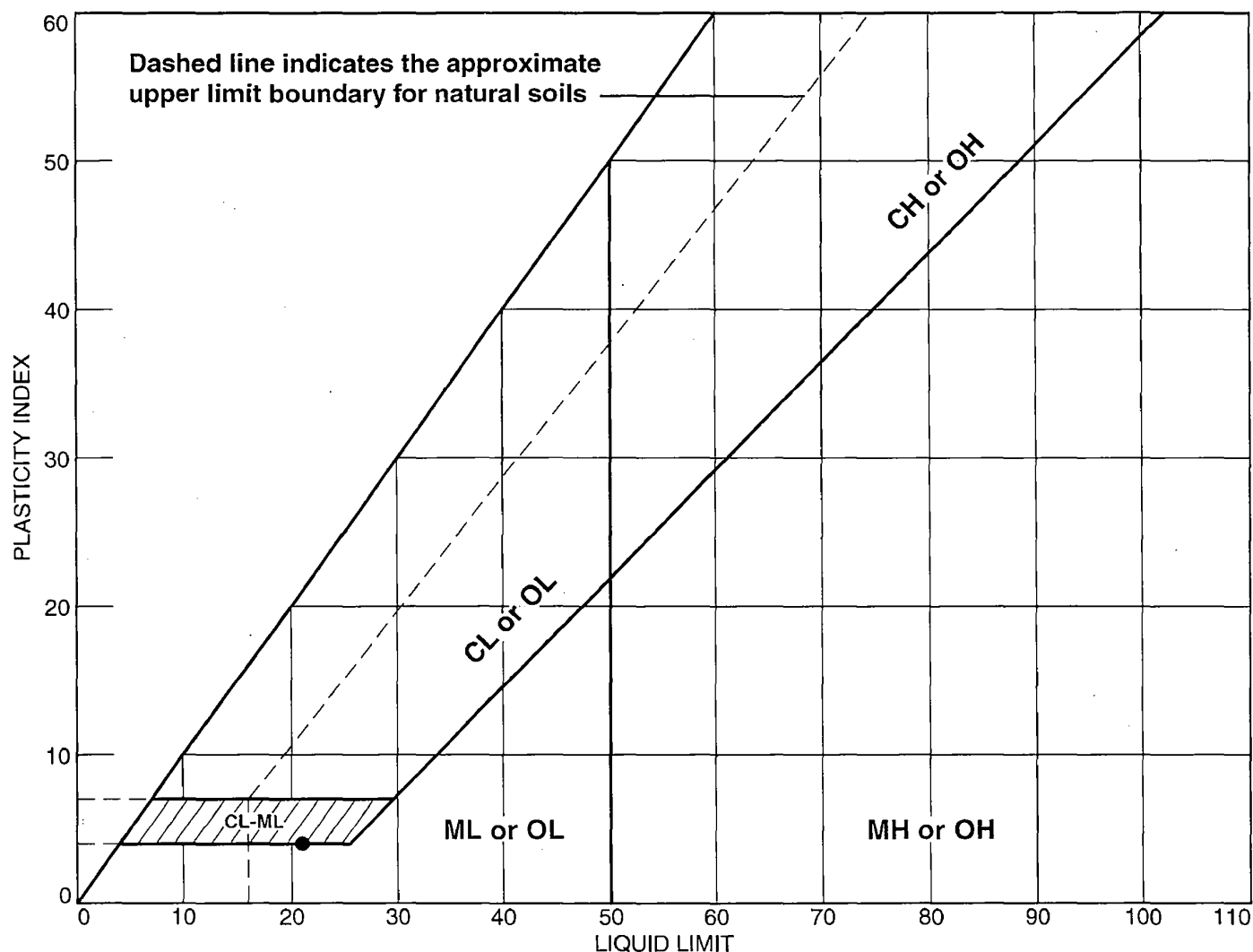
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	56	56			44

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0792	0.0871	0.1097	0.1195	0.1346	0.1653

Fineness Modulus
0.08

MACTEC Engineering and Consulting, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-701(DH)	701-22	237.5-239.0	ND	17	21	4	SC-SM

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Turkey Point COL

Project No.: 6468071950

ZHU 7/22/08

Figure

Tested By: CS

Checked By: LBJ

LIQUID AND PLASTIC LIMIT TEST DATA

7/22/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 237.5-239.0

Sample Number: 701-22

Material Description: Olive Gray Silty Clayey SAND

USCS: SC-SM

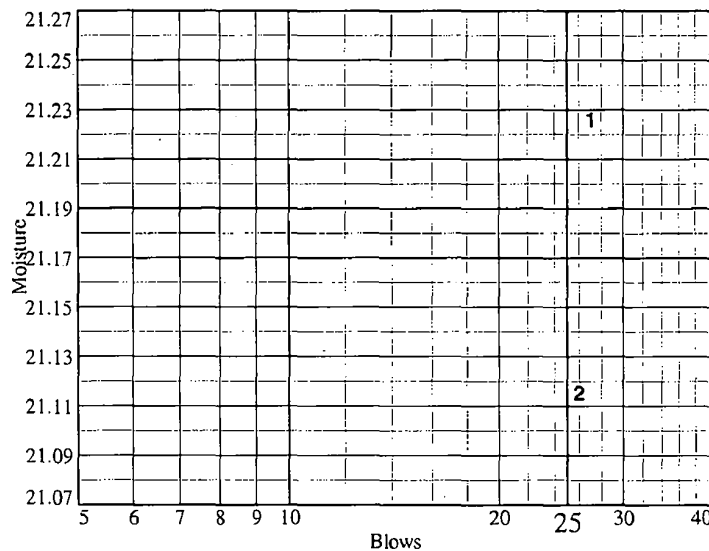
AASHTO: A-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.20	30.60				
Dry+Tare	28.43	27.95				
Tare	15.38	15.40				
# Blows	27	26				
Moisture	21.2	21.1				



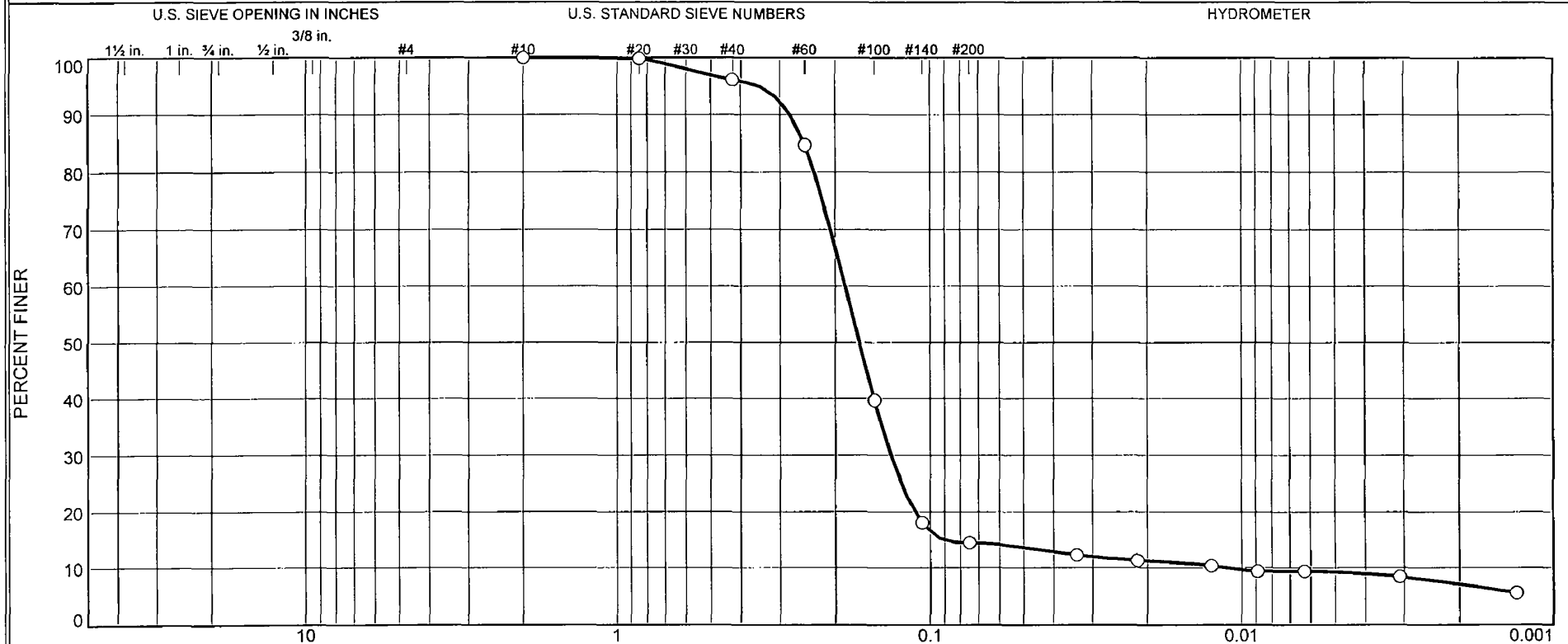
Liquid Limit= 21
 Plastic Limit= 17
 Plasticity Index= 4
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.85	24.08			
Dry+Tare	20.29	22.80			
Tare	11.19	15.53			
Moisture	17.1	17.6			

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.9	81.6	5.3	9.2

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-701(DH)	701-28	297.5-299.0	4/10/08	SM	Olive Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 297.5-299.0

Sample Number: 701-28

Material Description: Olive Gray Silty SAND (Visual)

Date: 4/10/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
399.56	0.00	0.00	#10	0.00	100.0
104.12	0.00	0.00	#20	0.14	99.9
			#40	4.03	96.1
			#60	16.01	84.6
			#100	62.84	39.6
			#140	85.33	18.0
			#200	89.06	14.5

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =104.11

Hygroscopic moisture correction:

Moist weight and tare = 29.72

Dry weight and tare = 29.62

Tare weight = 15.52

Hygroscopic moisture =0.7%

Table of composite correction values:

Temp., deg. C: 11.6 29.4

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.6	18.0	12.8	0.0132	19.0	13.2	0.0338	12.3
5.00	21.6	17.0	11.8	0.0132	18.0	13.3	0.0215	11.3
15.00	21.6	16.0	10.8	0.0132	17.0	13.5	0.0125	10.3
30.00	21.6	15.0	9.8	0.0132	16.0	13.7	0.0089	9.4
60.00	21.6	15.0	9.8	0.0132	16.0	13.7	0.0063	9.4
250.00	21.6	14.0	8.8	0.0132	15.0	13.8	0.0031	8.4
1440.00	21.7	11.0	5.8	0.0132	12.0	14.3	0.0013	5.6

MACTEC Engineering and Consulting, Inc.

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	3.9	81.6	85.5	5.3	9.2	14.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0112	0.0907	0.1117	0.1329	0.1678	0.1860	0.2334	0.2516	0.2792	0.3493

Fineness Modulus	C _u	C _c
0.70	16.58	8.46

MACTEC Engineering and Consulting, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME: FPL COL PROJECT (TURKEY POINT)

PROJECT NUMBER: 6468051950

DATE: 8/15/08

SAMPLE IDENTIFICATION: B-701DH-28,(297.5-299.0)

(A) Mass of oven-dried soil, grams:	75.34
(B) Mass of pycnometer filled with water at test temperature (T), grams:	672.40
(C) Mass of pycnometer, water and soil, grams:	719.64
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.4
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.681
(F) <i>Correction factor:</i>	0.99970
(G x F) SPECIFIC GRAVITY @ 20°C:	2.680

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Silty SAND (SM) (Visual)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

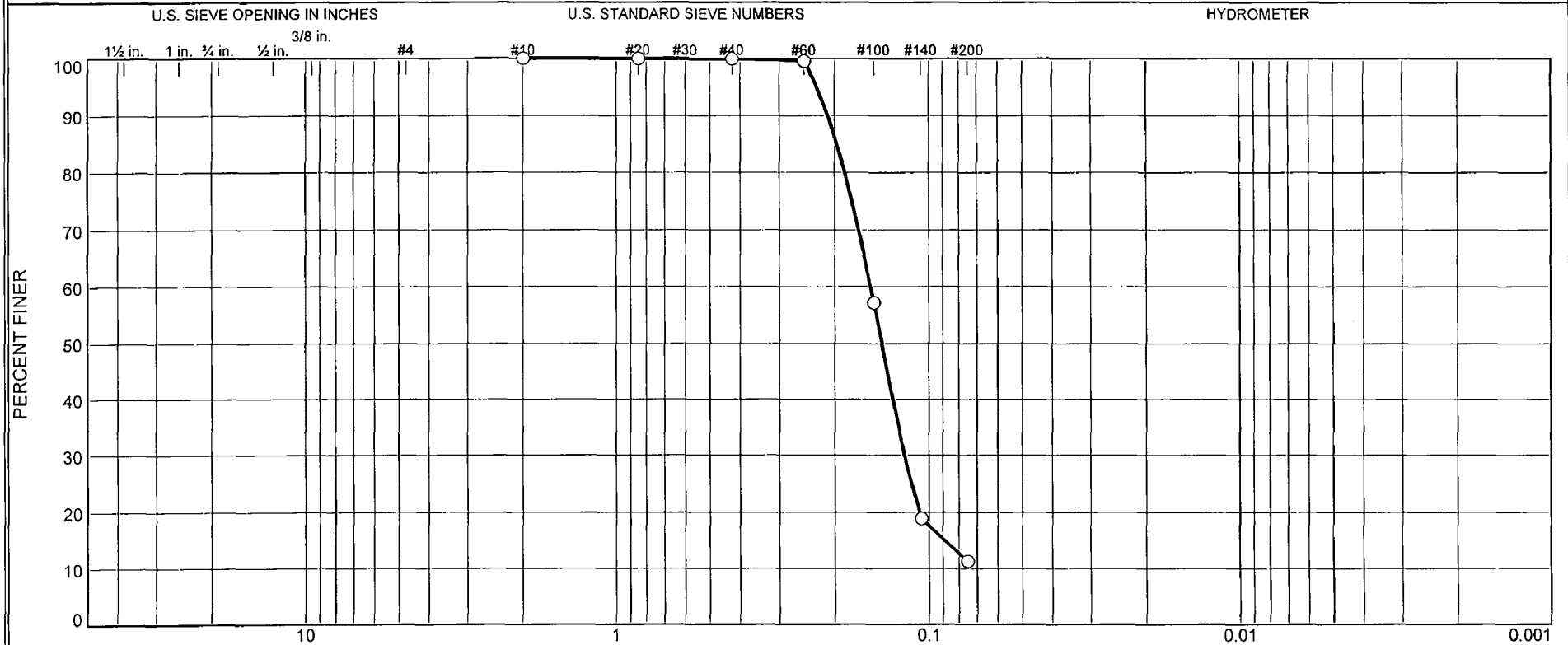
THERMOMETER : 5.1.01

PYCNO METER : P-8

TESTED BY: CS

REVIEWED BY: Brian Johnson

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 347.5-348.9

Sample Number: 701-33

Material Description: Gray Poorly Graded SAND with silt

Date: 4/15/08

Natural Moisture: ND

Liquid Limit: NV

Plastic Limit: NP

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
371.63	0.00	0.00	#10	0.00	100
98.54	0.00	0.00	#20	0.04	100
			#40	0.09	100
			#60	0.49	100
			#100	42.19	57
			#140	79.90	19
			#200	87.40	11

Fractional Components

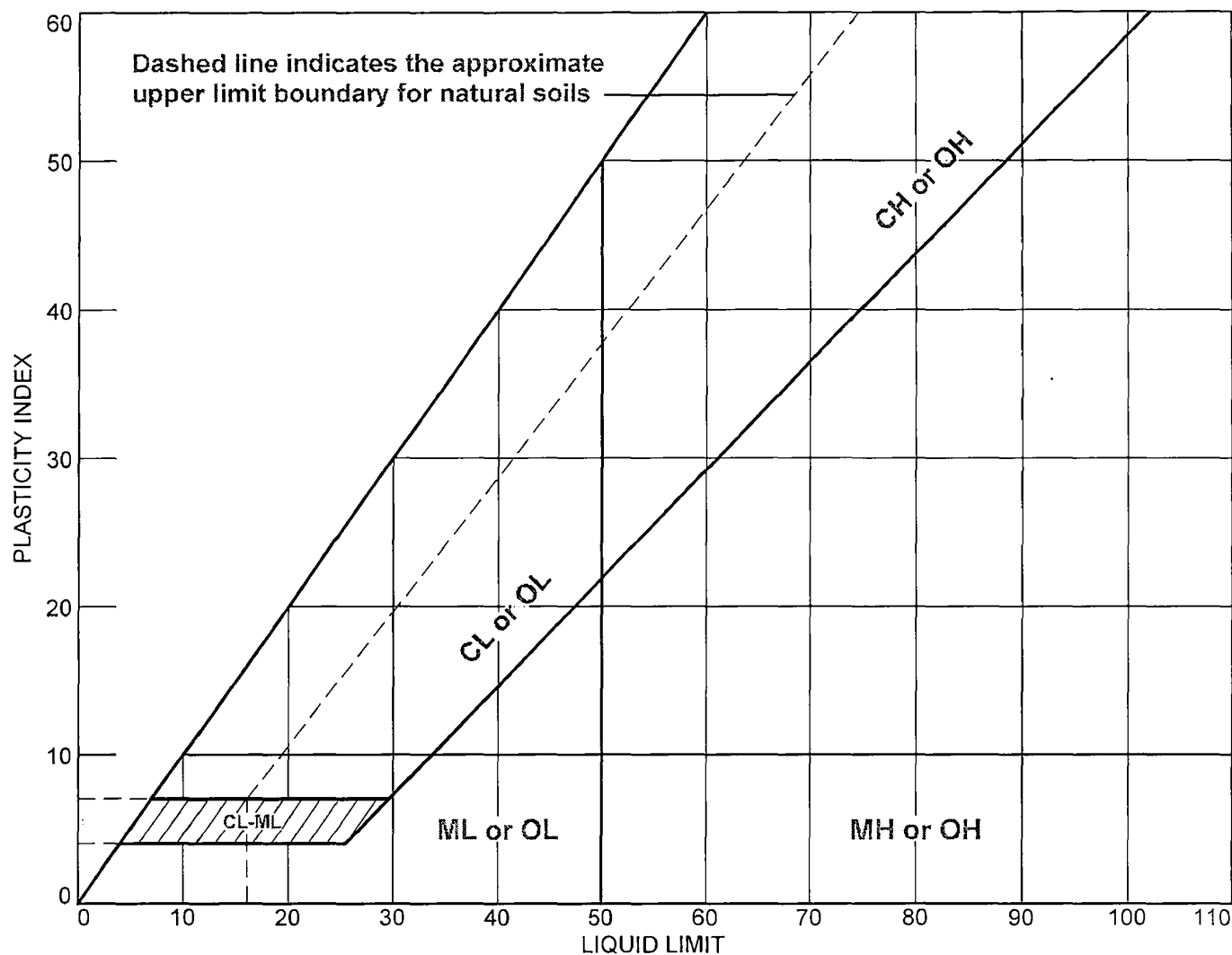
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	89	89			11

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0887	0.1076	0.1198	0.1415	0.1536	0.1855	0.1965	0.2096	0.2267

Fineness Modulus
0.43

MACTEC Engineering and Consulting, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-701(DH)	701-33	347.5-348.9	ND	NP	NV	NP	SP-SM

MACTEC Engineering and Consulting, Inc.

Client: Bechtel

Project: Turkey Point COL

Raleigh, North Carolina

Project No.: 6468071950

Figure

Tested By: CS

Checked By: LBJ

DSC 7-2-08

LIQUID AND PLASTIC LIMIT TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 347.5-348.9

Sample Number: 701-33

Material Description: Gray Poorly Graded SAND with silt

USCS: SP-SM

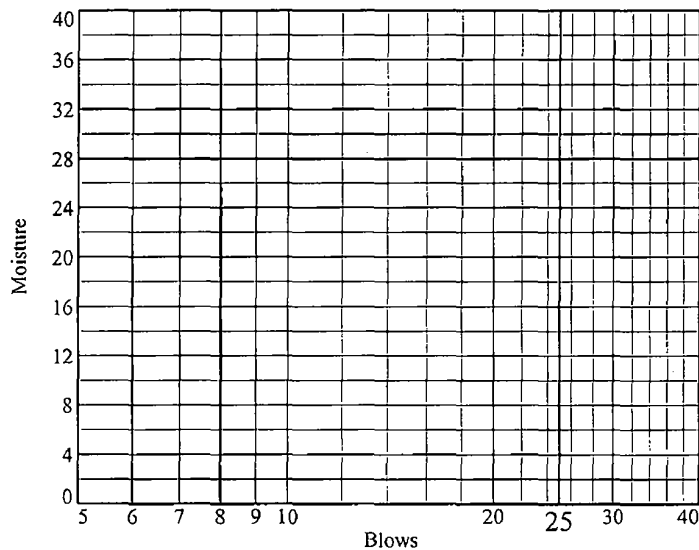
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare						
Dry+Tare						
Tare						
# Blows						
Moisture						



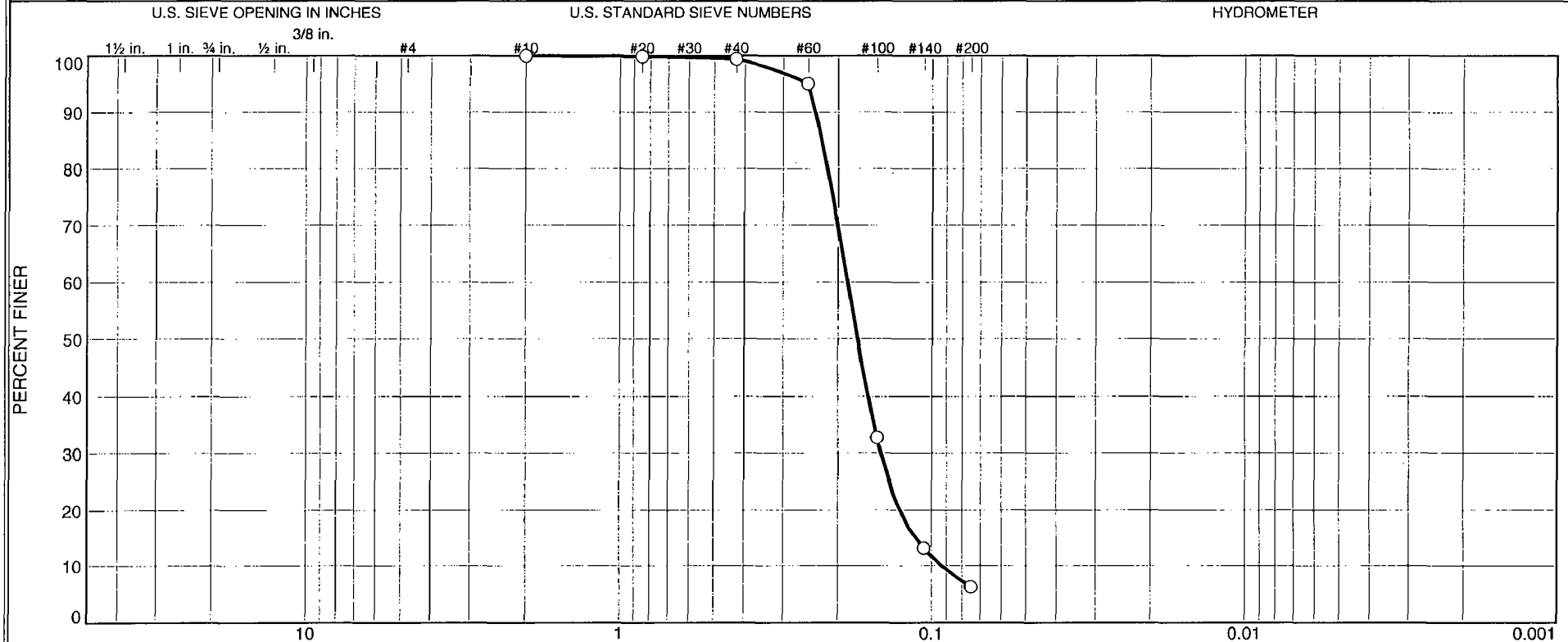
Liquid Limit= NV
 Plastic Limit= NP
 Plasticity Index= NP
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare				
Dry+Tare				
Tare				
Moisture				

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	93	6	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-701(DH)	701-38	397.5-398.8	4/17/08	SP-SM	Light Gray Poorly Graded SAND with silt	ND	NV	NP

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

7/2/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 397.5-398.8

Sample Number: 701-38

Material Description: Light Gray Poorly Graded SAND with silt

Date: 4/17/08

Natural Moisture: ND

Liquid Limit: NV

Plastic Limit: NP

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
318.31	0.00	0.00	#10	0.00	100
101.11	0.00	0.00	#20	0.09	100
			#40	0.55	99
			#60	4.96	95
			#100	67.99	33
			#140	87.83	13
			#200	94.81	6

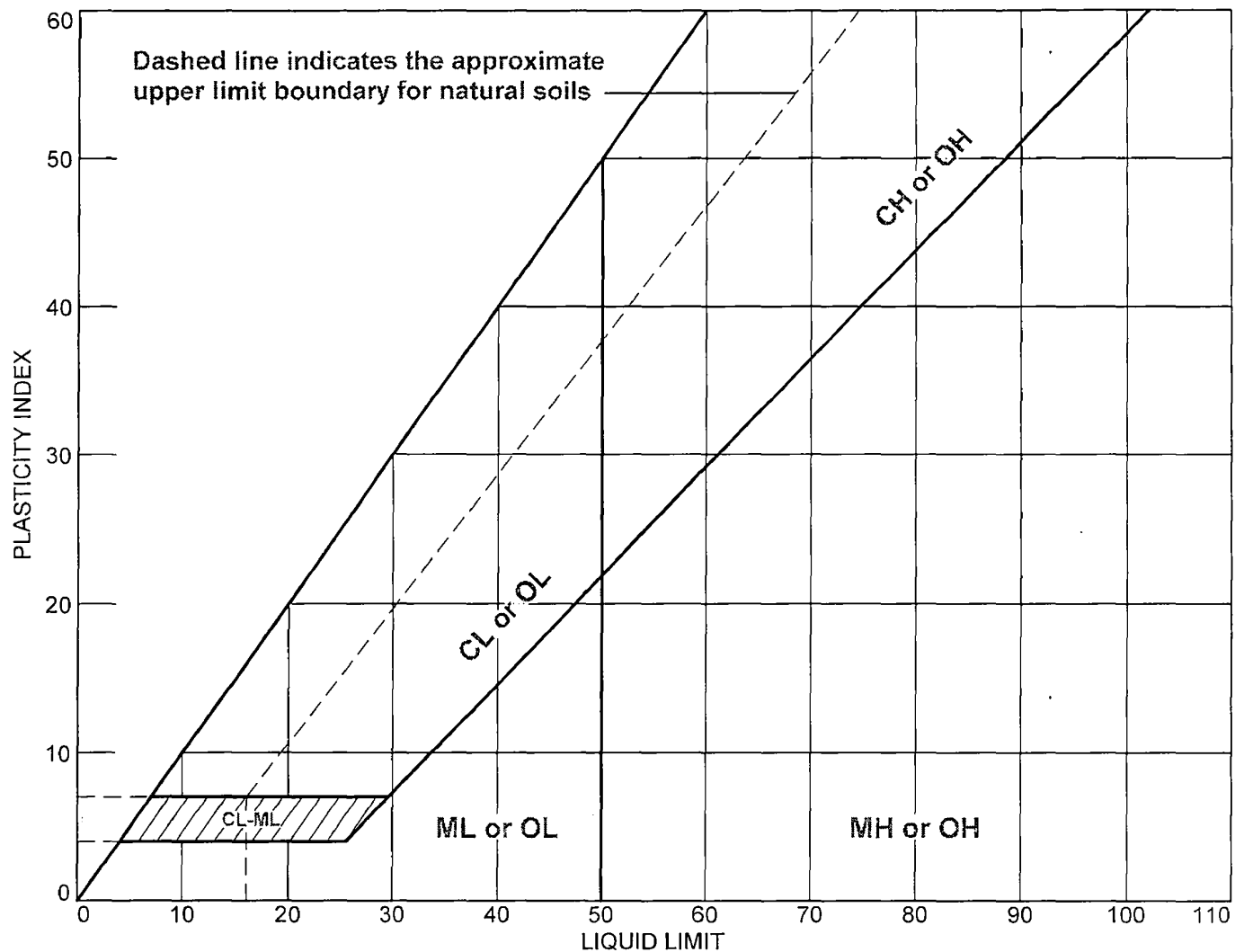
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	1	93	94			6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0931	0.1126	0.1265	0.1457	0.1732	0.1863	0.2161	0.2254	0.2361	0.2497

Fineness Modulus	C _u	C _c
0.71	2.00	1.22

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-701(DH)	701-38	397.5-398.8	ND	NP	NV	NP	SP-SM

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Turkey Point COL

Project No.: 6468071950

Figure

Tested By: CS

Checked By: LBJ

DSC 7-2-08

LIQUID AND PLASTIC LIMIT TEST DATA

7/2/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 397.5-398.8

Sample Number: 701-38

Material Description: Light Gray Poorly Graded SAND with silt

USCS: SP-SM

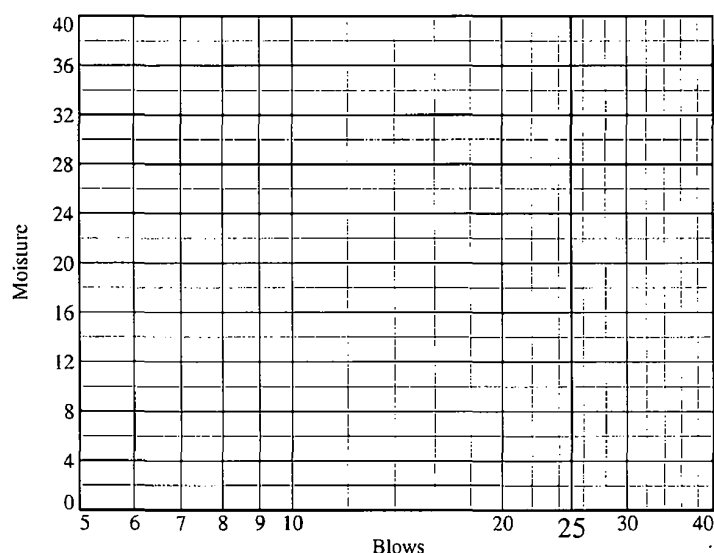
AASHTO: A-3

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare						
Dry+Tare						
Tare						
# Blows						
Moisture						



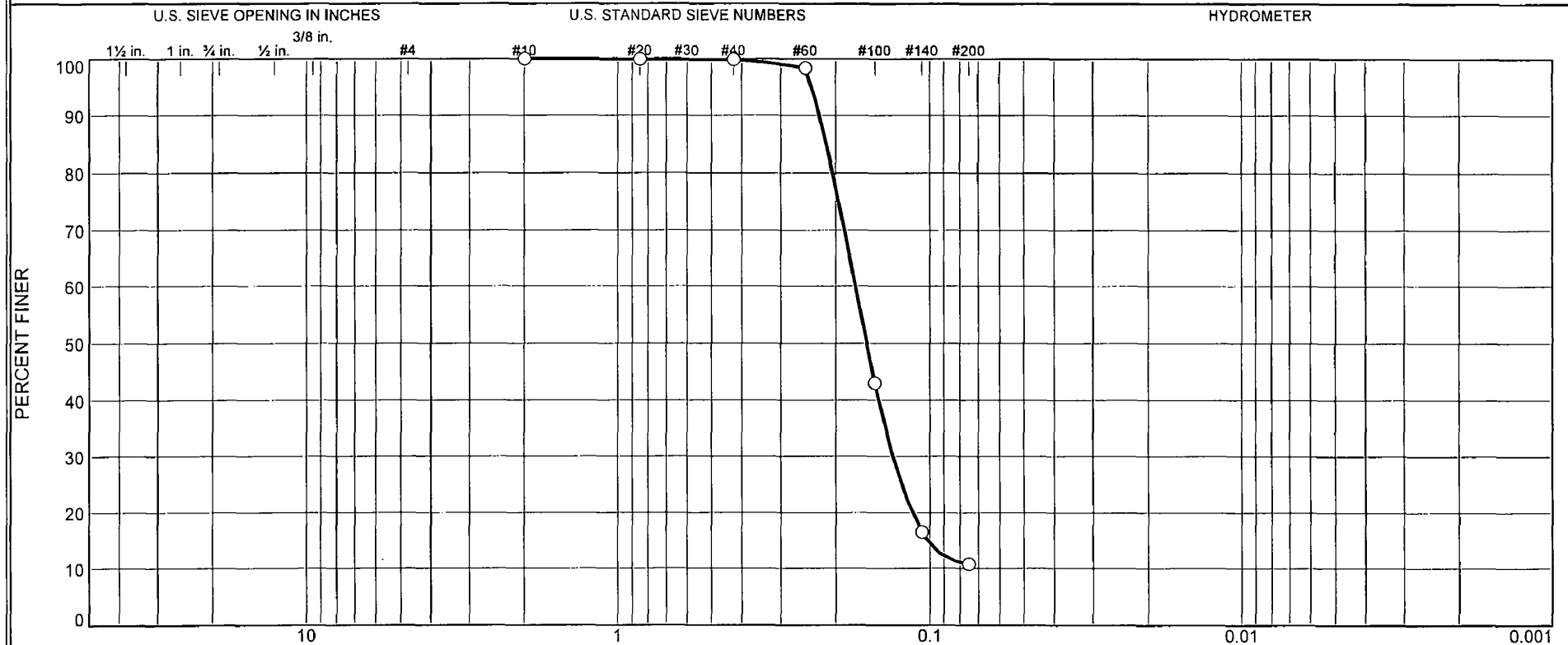
Liquid Limit= NV
 Plastic Limit= NP
 Plasticity Index= NP
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare				
Dry+Tare				
Tare				
Moisture				

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	89	11	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-701(DH)	701-39	407.5-409.0	4/17/08	SP-SM	Olive Poorly Graded SAND with Silt	ND	NV	NP

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 407.5-409.0

Sample Number: 701-39

Material Description: Olive Poorly Graded SAND with Silt

Date: 4/17/08

Natural Moisture: ND

Liquid Limit: NV

Plastic Limit: NP

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
335.22	0.00	0.00	#10	0.00	100
105.09	0.00	0.00	#20	0.08	100
			#40	0.16	100
			#60	1.69	98
			#100	59.88	43
			#140	87.76	16
			#200	93.78	11

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	89	89			11

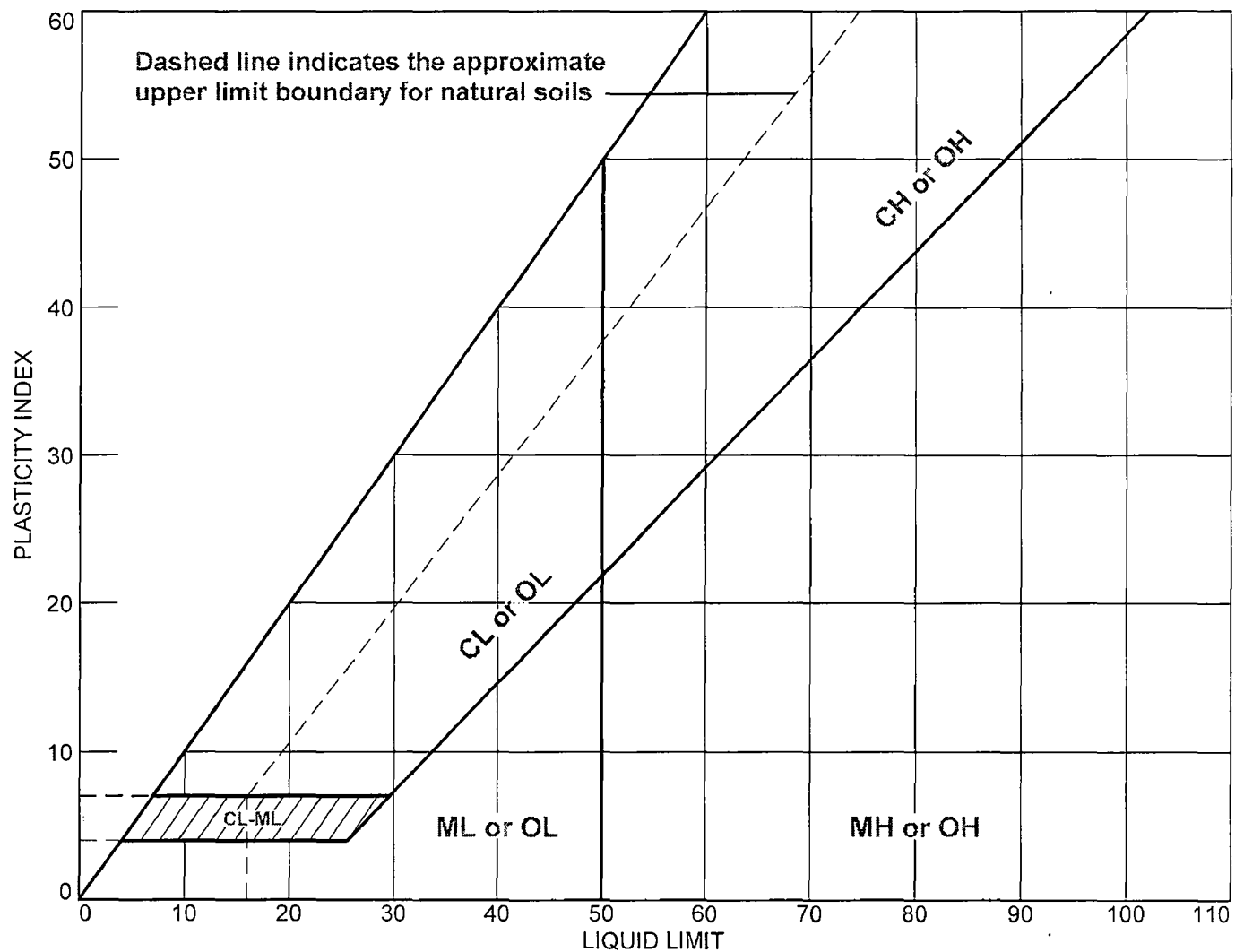
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.1018	0.1139	0.1312	0.1595	0.1731	0.2042	0.2137	0.2247	0.2381

Fineness Modulus

0.58

MACTEC Engineering and Consulting, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-701(DH)	701-39	407.5-409.0	ND	NP	NV	NP	SP-SM

MACTEC Engineering and Consulting, Inc.

Client: Bechtel

Project: Turkey Point COL

Raleigh, North Carolina

Project No.: 6468071950

Figure

Tested By: CS

Checked By: LBJ

DSC 7-2-08

LIQUID AND PLASTIC LIMIT TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 407.5-409.0

Sample Number: 701-39

Material Description: Olive Poorly Graded SAND with Silt

USCS: SP-SM

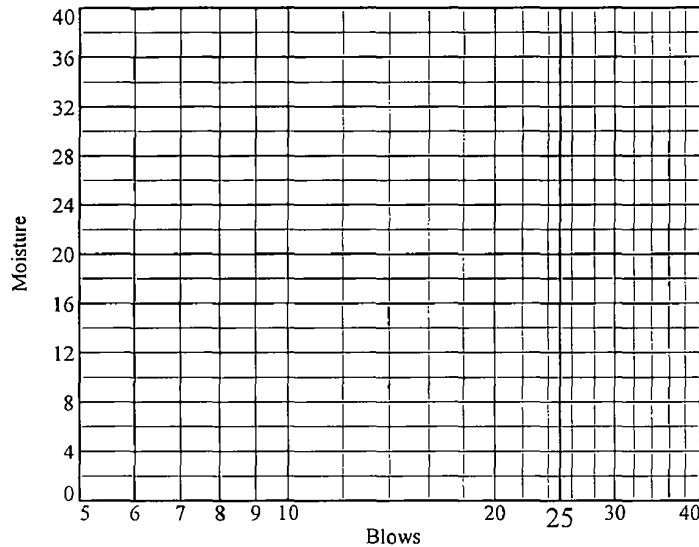
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare						
Dry+Tare						
Tare						
# Blows						
Moisture						



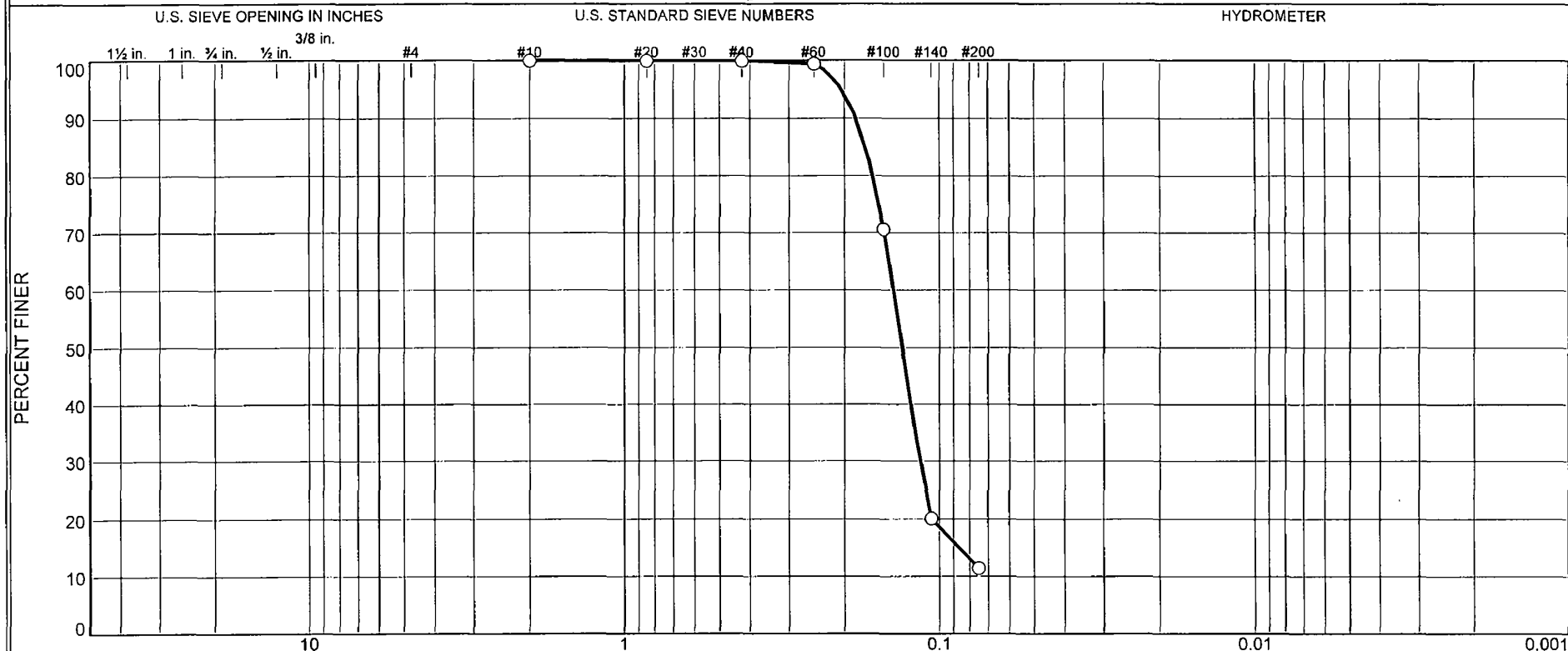
Liquid Limit= NV
 Plastic Limit= NP
 Plasticity Index= NP
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare				
Dry+Tare				
Tare				
Moisture				

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	89	11	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-701(DH)	701-41	427.5-428.9	4-18-08	SP-SM	Olive Poorly Graded SAND with Silt	ND	NV	NP

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 427.5-428.9

Sample Number: 701-41

Material Description: Olive Poorly Graded SAND with Silt

Date: 4-18-08

Natural Moisture: ND

Liquid Limit: NV

Plastic Limit: NP

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
316.41	0.00	0.00	#10	0.00	100
105.28	0.00	0.00	#20	0.05	100
			#40	0.08	100
			#60	0.63	99
			#100	30.95	71
			#140	84.07	20
			#200	93.25	11

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	89	89			11

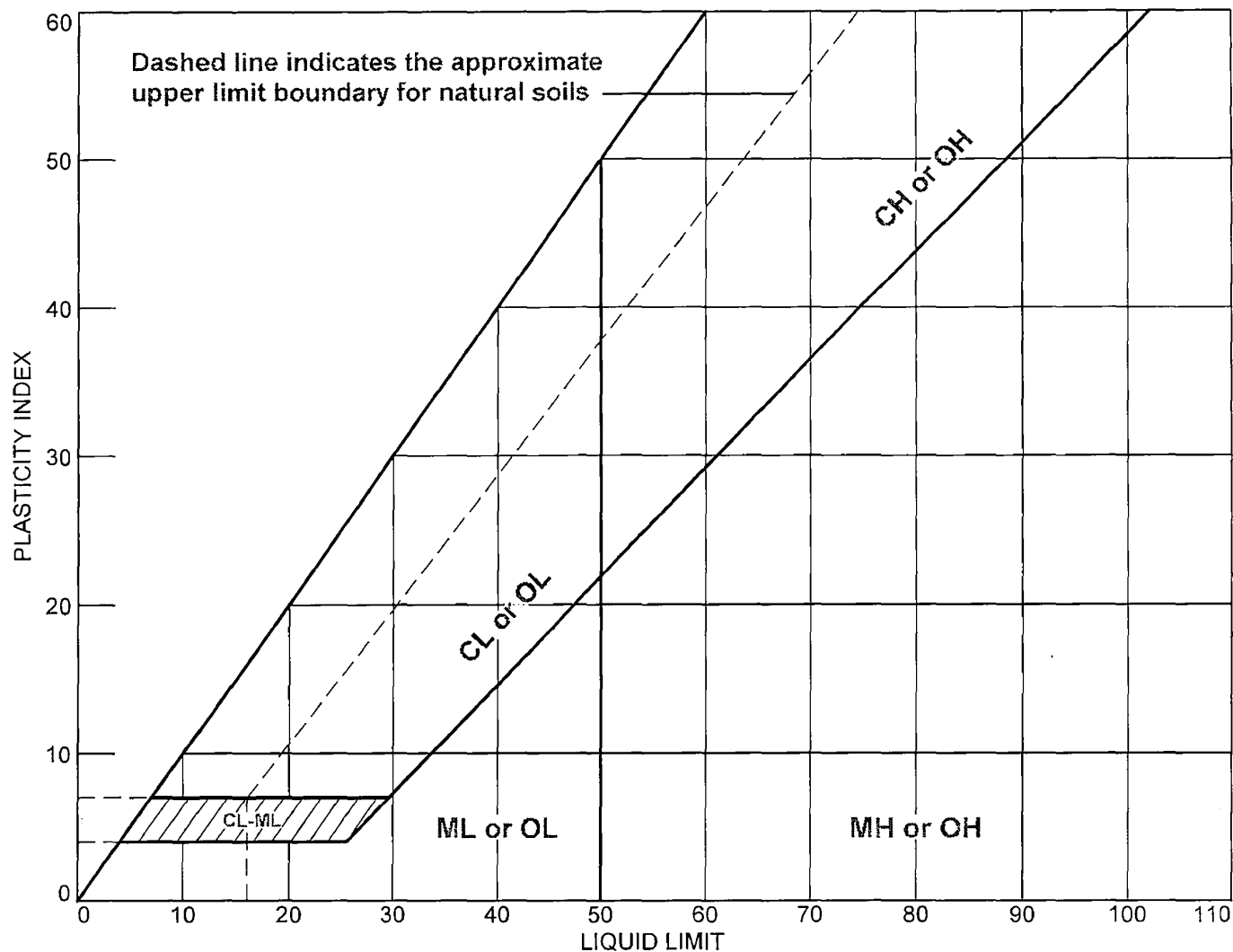
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0864	0.1054	0.1151	0.1310	0.1395	0.1626	0.1717	0.1840	0.2037

Fineness Modulus

0.30

MACTEC Engineering and Consulting, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-701(DH)	701-41	427.5-428.9	ND	NP	NV	NP	SP-SM

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Turkey Point COL

Project No.: 6468071950

Figure

Tested By: CS

Checked By: LBJ

DSC 7-2-08

LIQUID AND PLASTIC LIMIT TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-701(DH)

Depth: 427.5-428.9

Sample Number: 701-41

Material Description: Olive Poorly Graded SAND with Silt

USCS: SP-SM

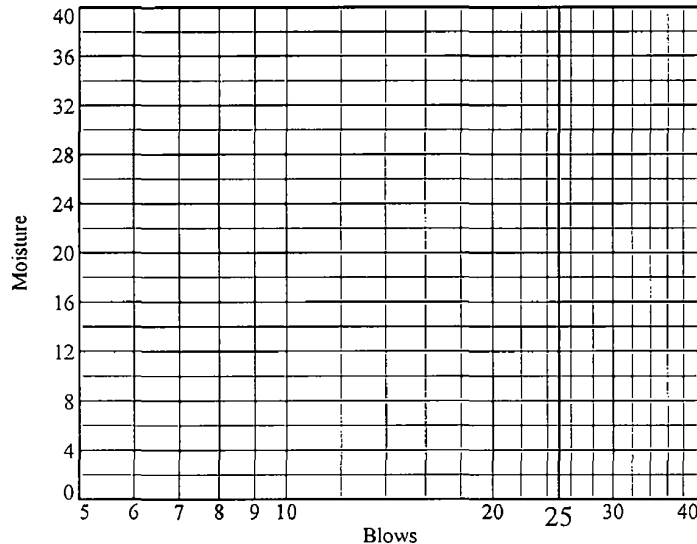
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare						
Dry+Tare						
Tare						
# Blows						
Moisture						



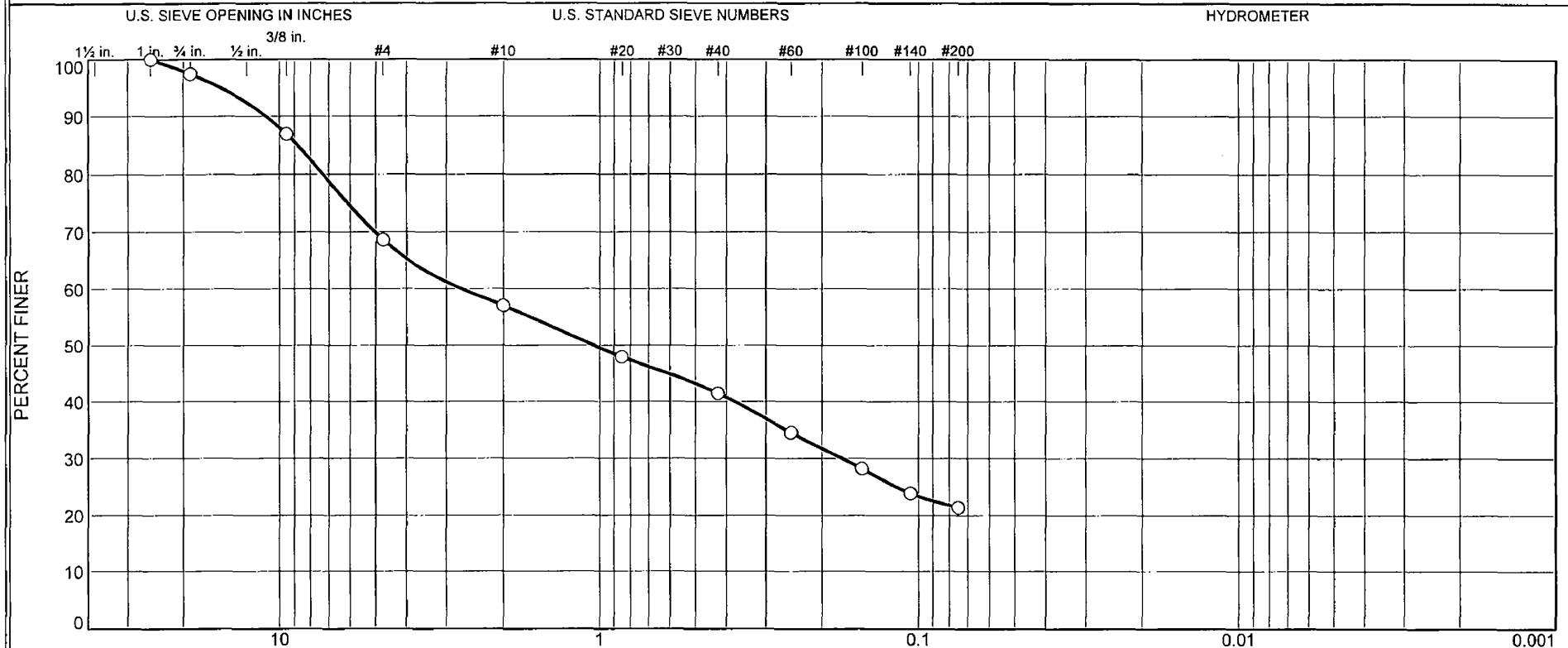
Liquid Limit= NV
 Plastic Limit= NP
 Plasticity Index= NP
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare				
Dry+Tare				
Tare				
Moisture				

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



GRAIN SIZE - mm.						
% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
3	28	12	16	20	21	

[illegible]

Client Bechtel

Project Turkey Point COL

Project No. 6468071950

Figure N/A

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
ND = Not Determined

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-702

Depth: 5.1-6.6

Sample Number: 702-3

Material Description: Pale Brown Silty sand (Visual)

Date: 2/26/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
379.49	0.00	0.00	1	0.00	100
			3/4	9.66	97
			3/8"	49.78	87
			#4	119.19	69
			#10	163.07	57
99.88	0.00	0.00	#20	15.97	48
			#40	27.29	41
			#60	39.41	35
			#100	50.46	28
			#140	58.04	24
			#200	62.42	21

Fractional Components

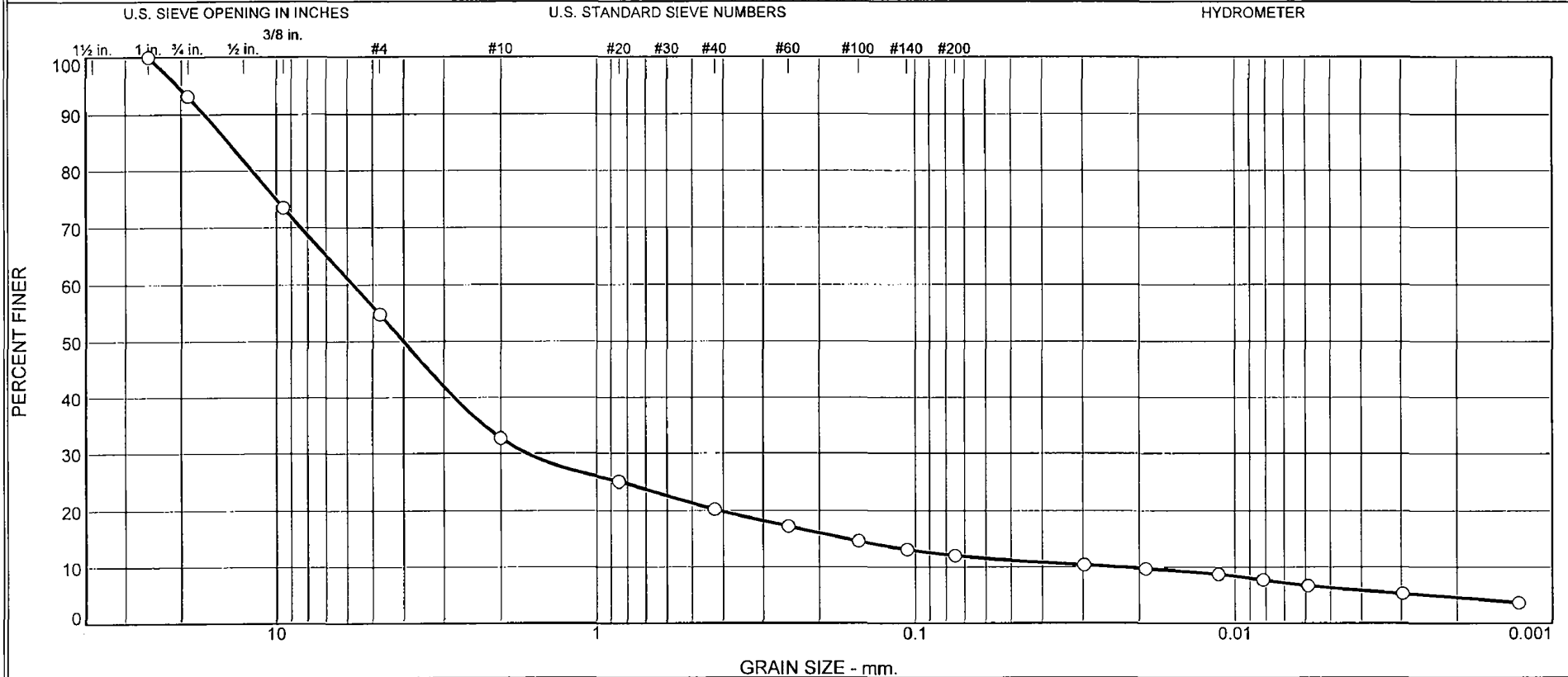
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	3	28	31	12	16	20	48			21

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1728	1.0461	2.6916	7.3156	8.8138	11.0421	15.2331

Fineness Modulus
3.27

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
6.8	38.4	22.1	12.5	8.1	5.8	6.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-702	702-7	14.7-16.2	2/26/08	GP-GM	Pale Brown Poorly graded Silty GRAVEL (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY ND = Not Determined Specific Gravity is assumed
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-702

Depth: 14.7-16.2

Sample Number: 702-7

Material Description: Pale Brown Poorly graded Silty GRAVEL (Visual)

Date: 2/26/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GP-GM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

ND = Not Determined

Specific Gravity is assumed

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
596.87	0.00	0.00	1	0.00	100.0
			3/4	40.87	93.2
			3/8"	158.22	73.5
			#4	269.90	54.8
			#10	401.50	32.7
96.23	0.00	0.00	#20	22.56	25.1
			#40	36.80	20.2
			#60	45.59	17.2
			#100	53.20	14.6
			#140	57.54	13.2
			#200	60.78	12.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 32.7

Weight of hydrometer sample = 96.23

Hygroscopic moisture correction:

Moist weight and tare = 29.02

Dry weight and tare = 28.98

Tare weight = 15.47

Hygroscopic moisture = 0.3%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.7

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	36.0	30.9	0.0131	37.0	10.2	0.0297	10.4
5.00	21.9	34.0	28.9	0.0131	35.0	10.6	0.0191	9.8
15.00	21.9	31.0	25.9	0.0131	32.0	11.0	0.0113	8.7
30.00	21.9	28.0	22.9	0.0131	29.0	11.5	0.0081	7.7
60.00	21.8	25.0	19.9	0.0131	26.0	12.0	0.0059	6.7
250.00	21.5	21.0	15.8	0.0132	22.0	12.7	0.0030	5.3
1440.00	21.4	16.0	10.8	0.0132	17.0	13.5	0.0013	3.6

MACTEC Engineering and Consulting, Inc.

Fractional Components

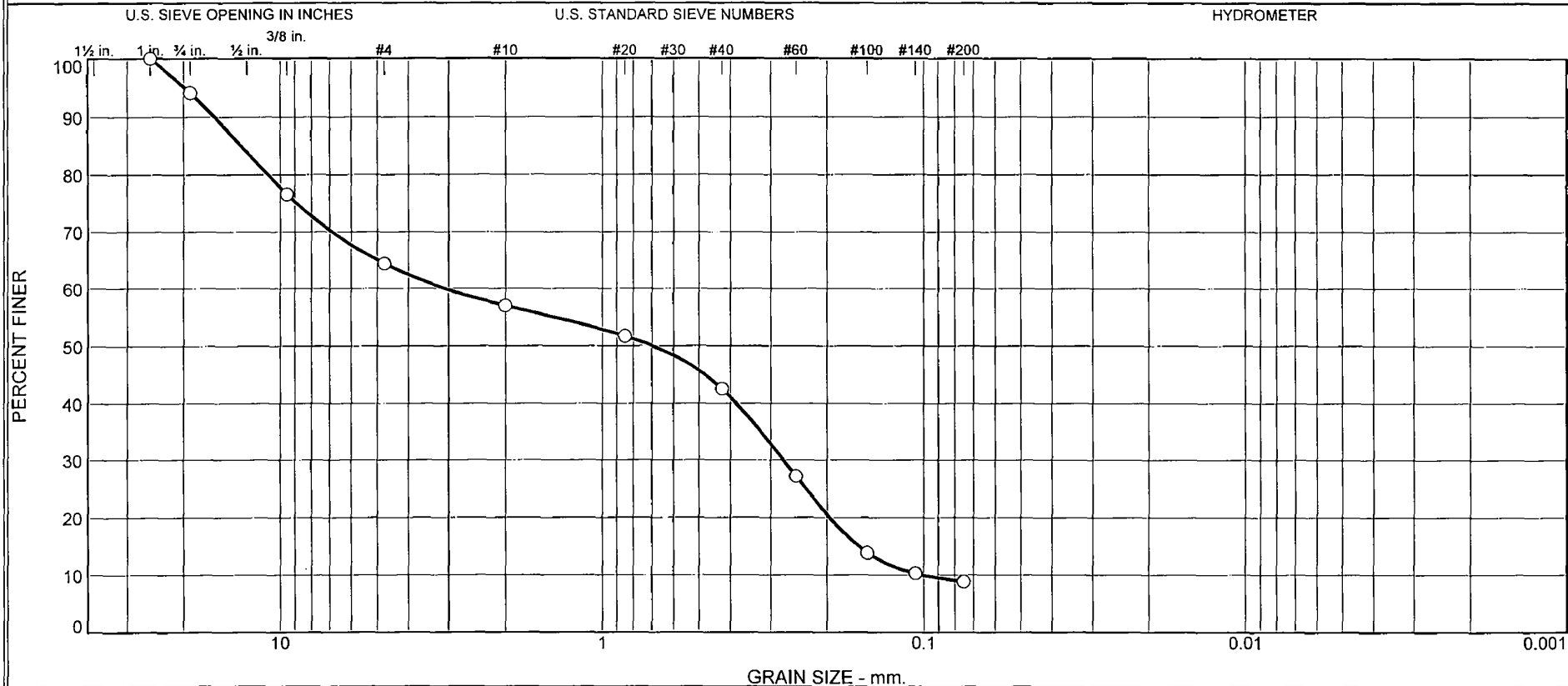
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	6.8	38.4	45.2	22.1	12.5	8.1	42.7	5.8	6.3	12.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0223	0.1618	0.4110	1.6577	4.0099	5.7596	11.9307	14.1582	16.9065	20.5185

Fineness Modulus	C _u	C _c
4.60	257.76	21.35

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



GRAIN SIZE - mm.						
% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
6	30	7	15	33	9	

[illegible]

Client	Bechtel
Project	Turkey Point COL

MACTEC Engineering and Consulting, Inc.

○ SIEVE ANALYSIS ONLY
ND = Not Determined

Project No. 6468071950

Figure N/A

Raleigh, North Carolina

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-702

Depth: 31.0-32.5

Sample Number: 702-10

Material Description: Light Gray Poorly graded Silty SAND (Visual)

Date: 2/27/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
455.59	0.00	0.00	1	0.00	100
			3/4	26.75	94
			3/8"	106.57	77
			#4	162.22	64
			#10	196.03	57
100.66	0.00	0.00	#20	9.39	52
			#40	25.57	42
			#60	52.72	27
			#100	76.10	14
			#140	82.50	10
			#200	84.98	9

Fractional Components

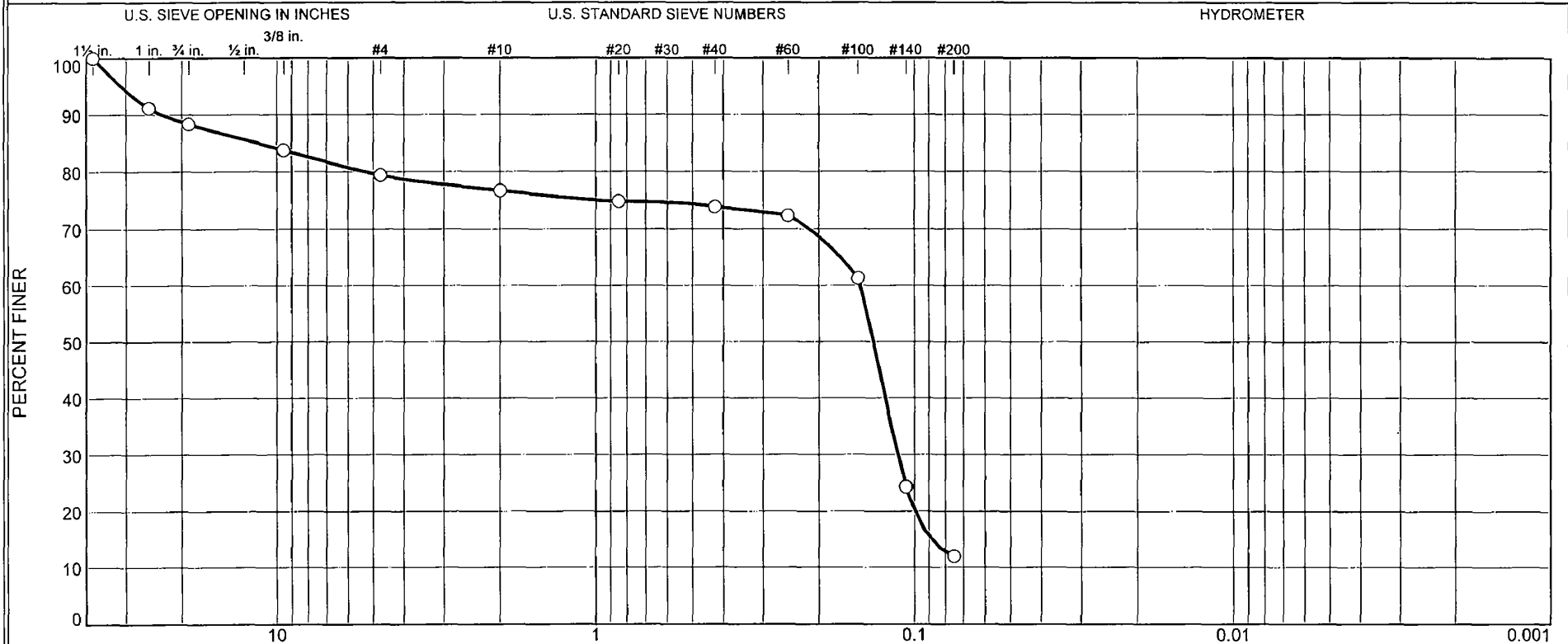
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	6	30	36	7	15	33	55			9

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.1007	0.1592	0.1965	0.2739	0.6968	3.0853	10.9384	13.2447	16.0446	19.8172

Fineness Modulus	C _u	C _c
3.58	30.63	0.24

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
12	9	2	3	62	12	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-702	702-12	119.2-120.7	3/4/08	SP-SM	Pale Brown Poorly graded SAND with Silt and Gravel (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	☐ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-702

Depth: 119.2-120.7

Sample Number: 702-12

Material Description: Pale Brown Poorly graded SAND with Silt and Gravel (Visual)

Date: 3/4/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
459.21	0.00	0.00	1.5	0.00	100
			1	40.56	91
			3/4	53.69	88
			3/8"	74.64	84
			#4	94.48	79
			#10	106.90	77
101.69	0.00	0.00	#20	2.51	75
			#40	3.81	74
			#60	5.80	72
			#100	20.39	61
			#140	69.45	24
			#200	85.85	12

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	12	9	21	2	3	62	67			12

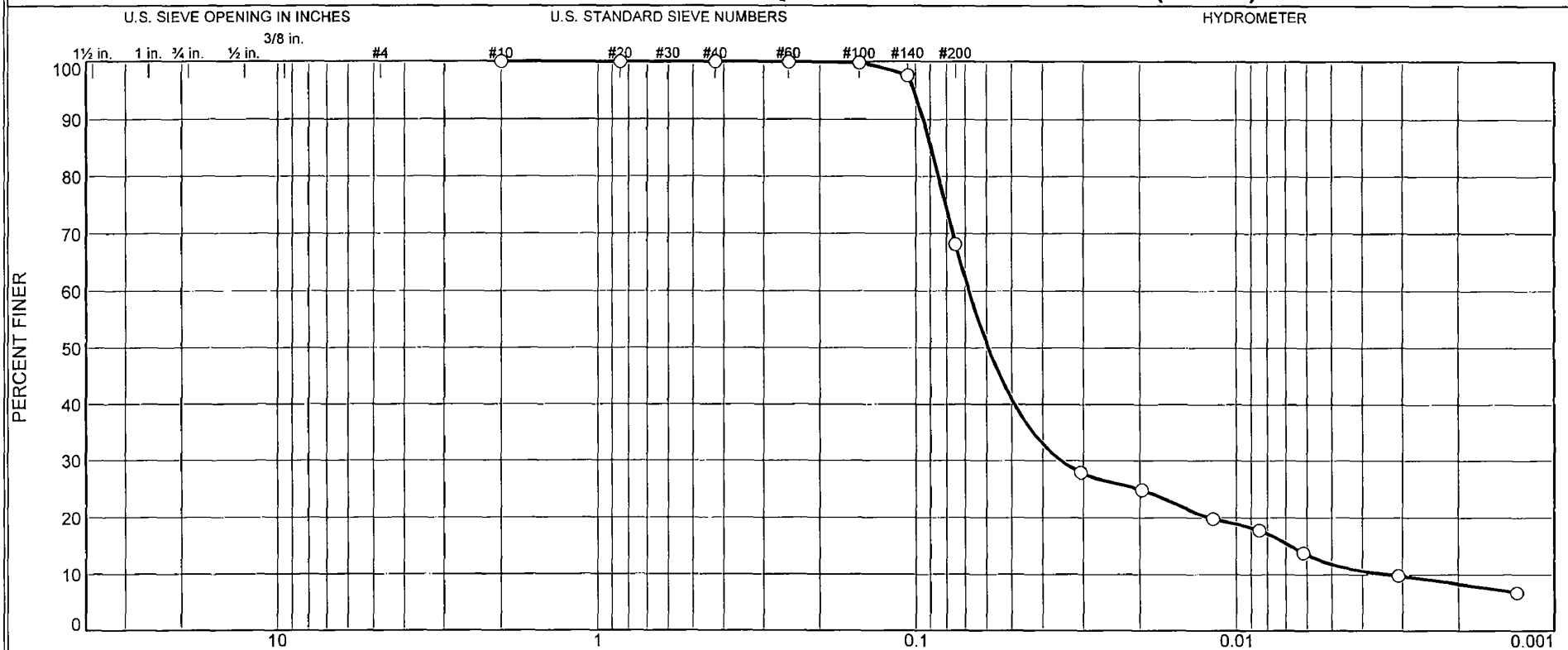
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0888	0.0997	0.1126	0.1342	0.1477	5.3046	11.5651	23.2001	31.0201

Fineness Modulus

1.87

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-702

Depth: 176.2-177.7

Sample Number: 702-21

Material Description: Greenish Gray SILT with sand (Visual)

Date: 3/5/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ML

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

ND = Not Determined

Specific Gravity is assumed

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
283.17	0.00	0.00	#10	0.00	100.0
99.30	0.00	0.00	#20	0.03	100.0
			#40	0.05	99.9
			#60	0.07	99.9
			#100	0.21	99.8
			#140	2.41	97.6
			#200	31.61	68.2

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =99.30

Hygroscopic moisture correction:

Moist weight and tare = 25.93

Dry weight and tare = 25.86

Tare weight = 11.07

Hygroscopic moisture =0.5%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.6	33.0	27.8	0.0132	34.0	10.7	0.0305	27.8
5.00	21.6	30.0	24.8	0.0132	31.0	11.2	0.0197	24.8
15.00	21.5	25.0	19.8	0.0132	26.0	12.0	0.0118	19.8
30.00	21.5	23.0	17.8	0.0132	24.0	12.4	0.0085	17.8
60.00	21.4	19.0	13.8	0.0132	20.0	13.0	0.0062	13.8
250.00	21.4	15.0	9.8	0.0132	16.0	13.7	0.0031	9.8
1440.00	21.4	12.0	6.8	0.0132	13.0	14.2	0.0013	6.8

MACTEC Engineering and Consulting, Inc.

Fractional Components

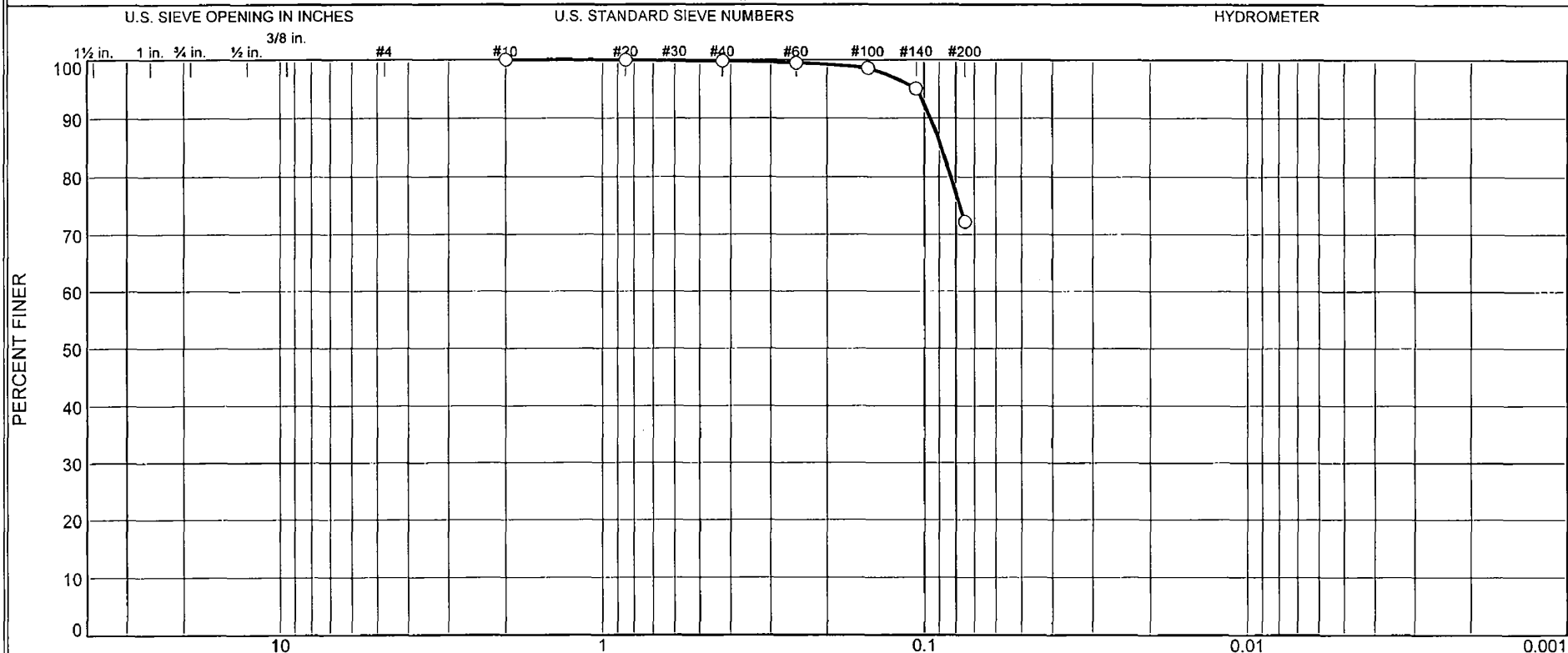
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	31.7	31.8	56.4	11.8	68.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0033	0.0068	0.0121	0.0353	0.0592	0.0682	0.0848	0.0894	0.0946	0.1013

Fineness Modulus	C _u	C _c
0.00	20.49	5.48

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	28	72	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-702	702-23	196.2-197.7	3/6/08	ML	Greenish Gray SILT with sand	ND	22	20

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-702

Depth: 196.2-197.7

Sample Number: 702-23

Material Description: Greenish Gray SILT with sand

Date: 3/6/08

Natural Moisture: ND

Liquid Limit: 22

Plastic Limit: 20

USCS Class.: ML

Testing Remarks: SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
330.84	0.00	0.00	#10	0.00	100
97.40	0.00	0.00	#20	0.03	100
			#40	0.22	100
			#60	0.52	99
			#100	1.38	99
			#140	4.84	95
			#200	27.06	72

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	28	28			72

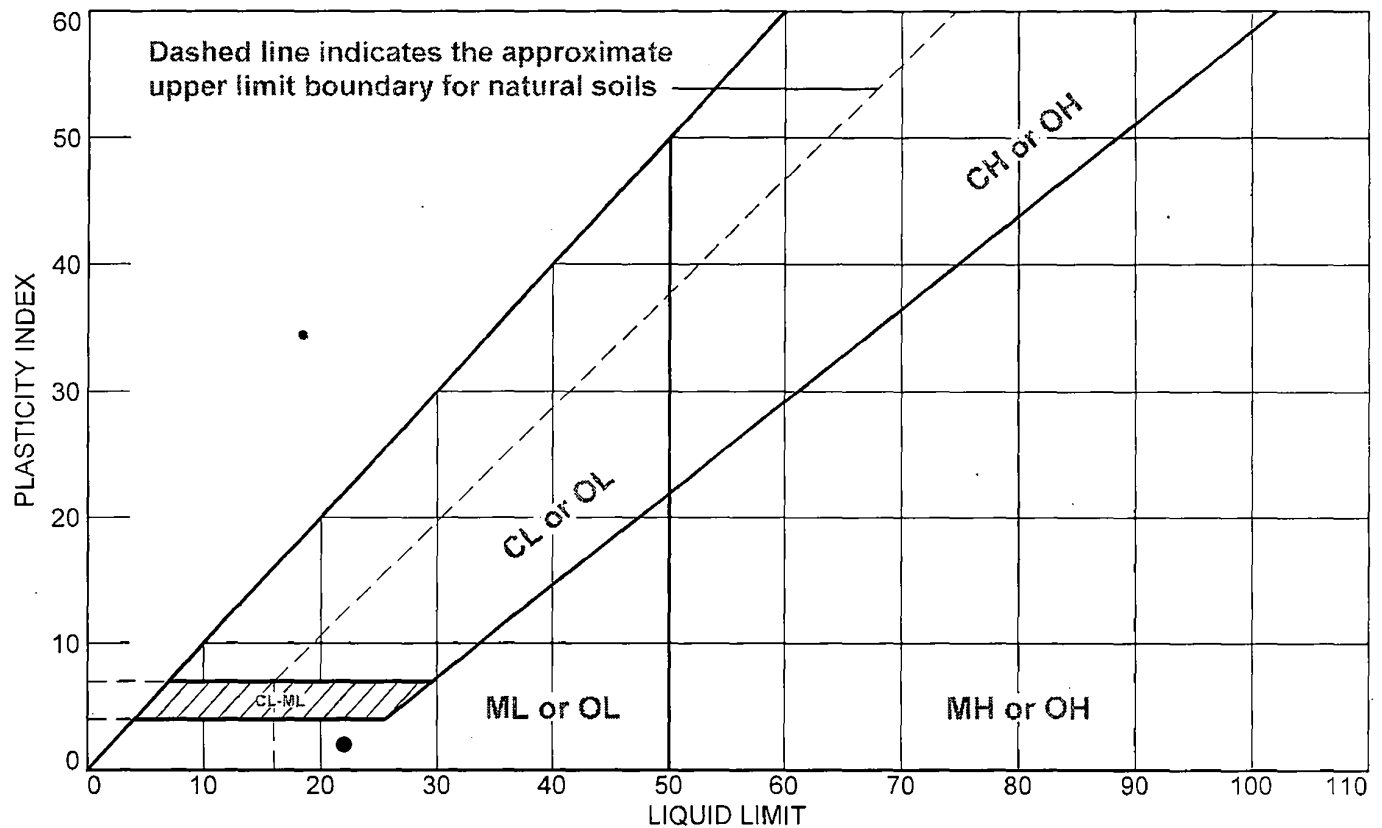
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0828	0.0886	0.0956	0.1059

Fineness Modulus

0.02

MACTEC Engineering and Consulting, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-702	702-23	196.2-197.7	ND	20	22	2	ML

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Turkey Point COL

Project No.: 6468071950

Figure

Tested By: CS

Checked By: LBJ

ZHU 7/23/08

LIQUID AND PLASTIC LIMIT TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-702

Depth: 196.2-197.7

Sample Number: 702-23

Material Description: Greenish Gray SILT with sand

USCS: ML

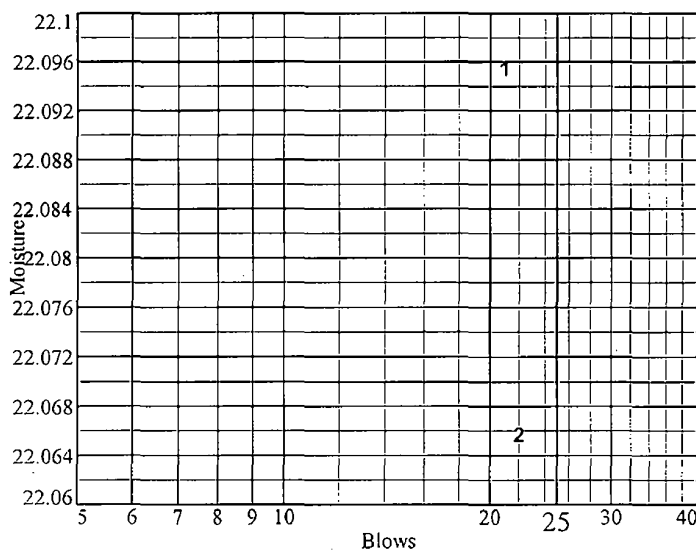
AASHTO: A-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.63	33.69				
Dry+Tare	29.53	30.40				
Tare	15.50	15.49				
# Blows	21	22				
Moisture	22.1	22.1				



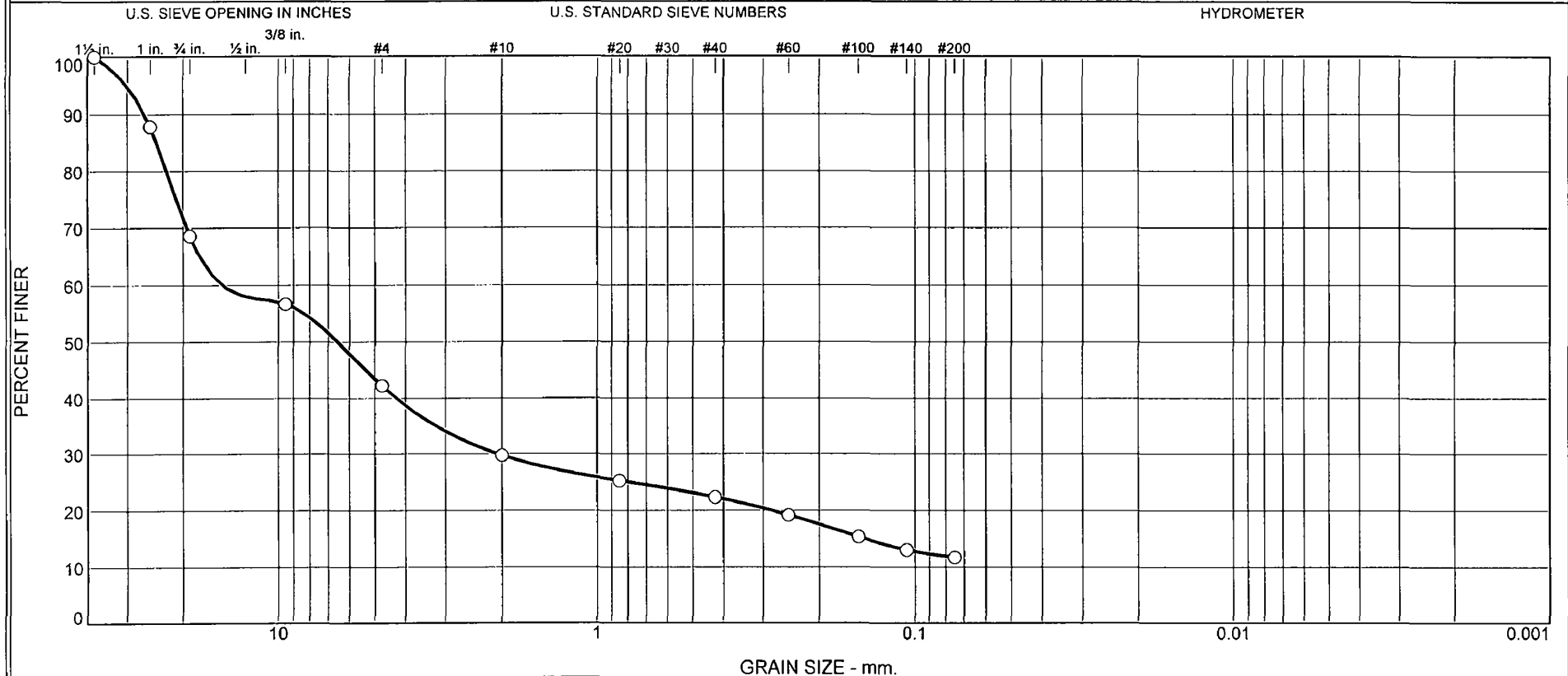
Liquid Limit= 22
 Plastic Limit= 20
 Plasticity Index= 2
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.56	23.69			
Dry+Tare	21.39	22.36			
Tare	15.50	15.49			
Moisture	19.9	19.4			

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
31	27	12	8	10	12	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-703	703-3	5.2-6.7	2/22/08	GP-GM	White Poorly Graded GRAVEL with sand and silt (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-703

Depth: 5.2-6.7

Sample Number: 703-3

Material Description: White Poorly Graded GRAVEL with sand and silt (Visual)

Date: 2/22/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GP-GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
490.76	0.00	0.00	1.5	0.00	100
			1	59.86	88
			3/4	154.12	69
			3/8"	212.60	57
			#4	283.64	42
			#10	344.99	30
101.54	0.00	0.00	#20	15.45	25
			#40	25.18	22
			#60	36.00	19
			#100	49.12	15
			#140	57.01	13
			#200	61.53	12

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	31	27	58	12	8	10	30			12

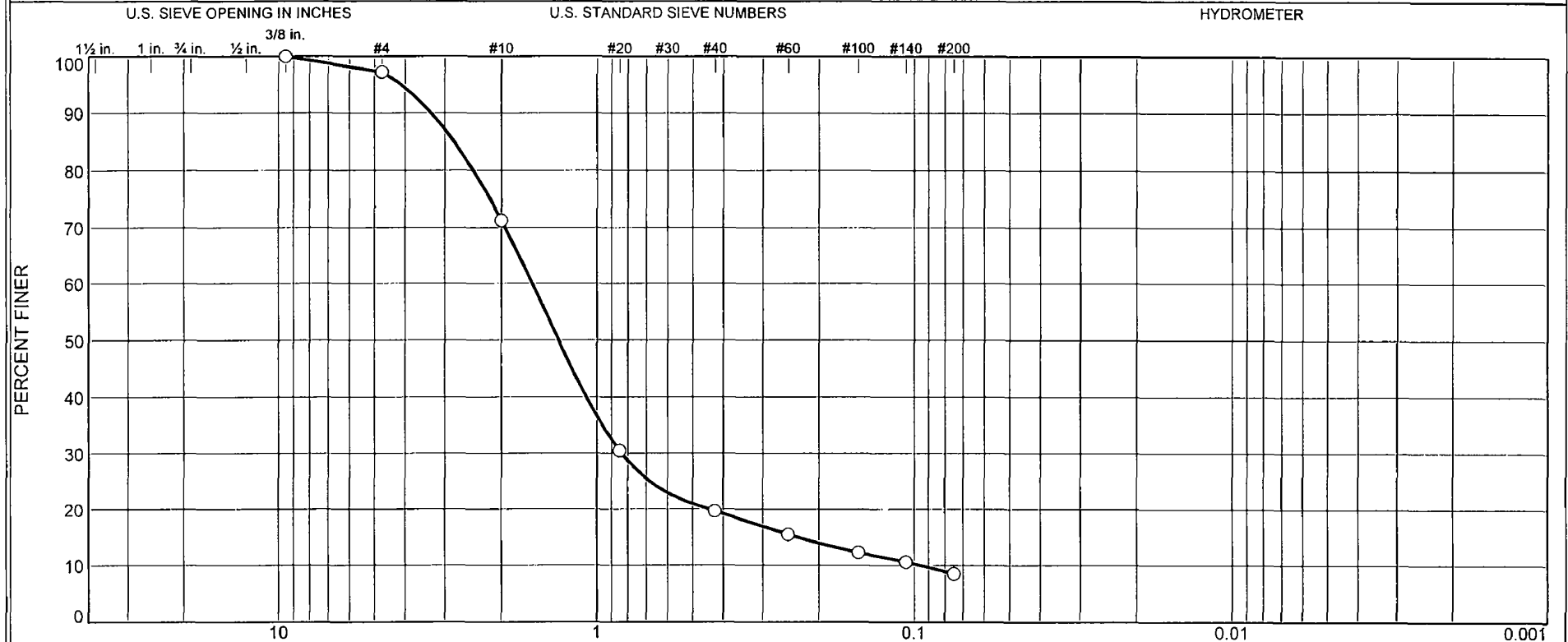
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.1435	0.2826	2.0725	6.5368	15.0368	22.5629	24.2660	26.4700	30.0697

Fineness Modulus

5.15

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	3	26	51	11	9	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-703	703-6	12.3-13.8	2/22/08	SP-SM	White Poorly Graded SAND with silt (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined Calcite Equivalent = 89% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-703

Depth: 12.3-13.8

Sample Number: 703-6

Material Description: White Poorly Graded SAND with silt (Visual)

Date: 2/22/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Calcite Equivalent = 89% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
212.82	0.00	0.00	3/8"	0.00	100
			#4	5.95	97
			#10	61.18	71
100.28	0.00	0.00	#20	57.40	30
			#40	72.60	20
			#60	78.50	15
			#100	83.05	12
			#140	85.42	11
			#200	88.31	9

Fractional Components

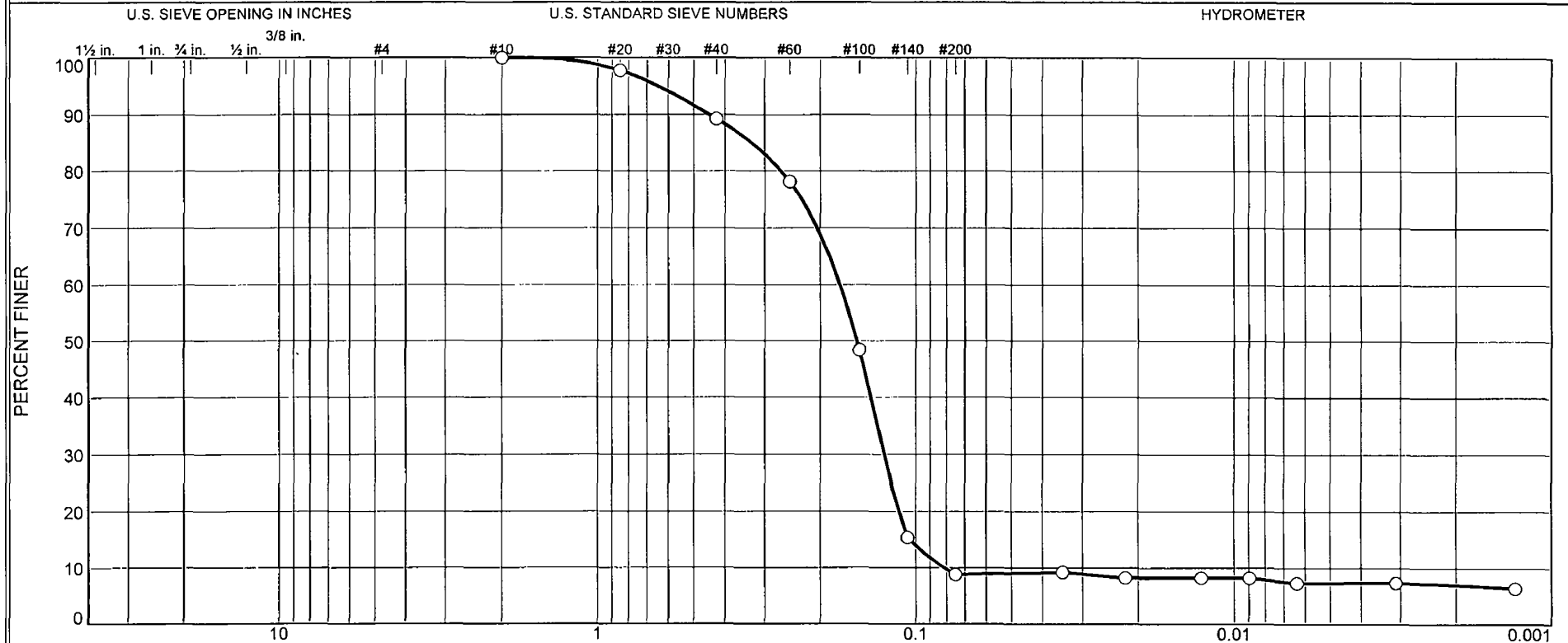
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	3	3	26	51	11	88			9

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0958	0.2343	0.4437	0.8376	1.3219	1.5988	2.4516	2.8141	3.3184	4.1315

Fineness Modulus	C _u	C _c
3.28	16.69	4.58

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	10.8	80.4	1.5	7.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-703	703-9	118.6-120.1	3/9/08	SP-SM	White Poorly Graded SAND with silt (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined Calcite Equivalent = 12% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-703

Depth: 118.6-120.1

Sample Number: 703-9

Material Description: White Poorly Graded SAND with silt (Visual)

Date: 3/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Calcite Equivalent = 12% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
280.38	0.00	0.00	#10	0.00	100.0
100.92	0.00	0.00	#20	2.26	97.8
			#40	10.85	89.2
			#60	22.11	78.1
			#100	52.17	48.3
			#140	85.41	15.4
			#200	92.03	8.8

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 100.92

Hygroscopic moisture correction:

Moist weight and tare = 29.30

Dry weight and tare = 29.26

Tare weight = 15.55

Hygroscopic moisture = 0.3%

Table of composite correction values:

Temp., deg. C: 11.2 28.4

Comp. corr.: -8.0 -4.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	15.0	9.4	0.0132	16.0	13.7	0.0345	9.2
5.00	21.5	14.0	8.4	0.0132	15.0	13.8	0.0220	8.3
15.00	21.5	14.0	8.4	0.0132	15.0	13.8	0.0127	8.3
30.00	21.5	14.0	8.4	0.0132	15.0	13.8	0.0090	8.3
60.00	21.7	13.0	7.4	0.0132	14.0	14.0	0.0064	7.3
250.00	21.9	13.0	7.5	0.0131	14.0	14.0	0.0031	7.4
1440.00	21.9	12.0	6.5	0.0131	13.0	14.2	0.0013	6.4

MACTEC Engineering and Consulting, Inc.

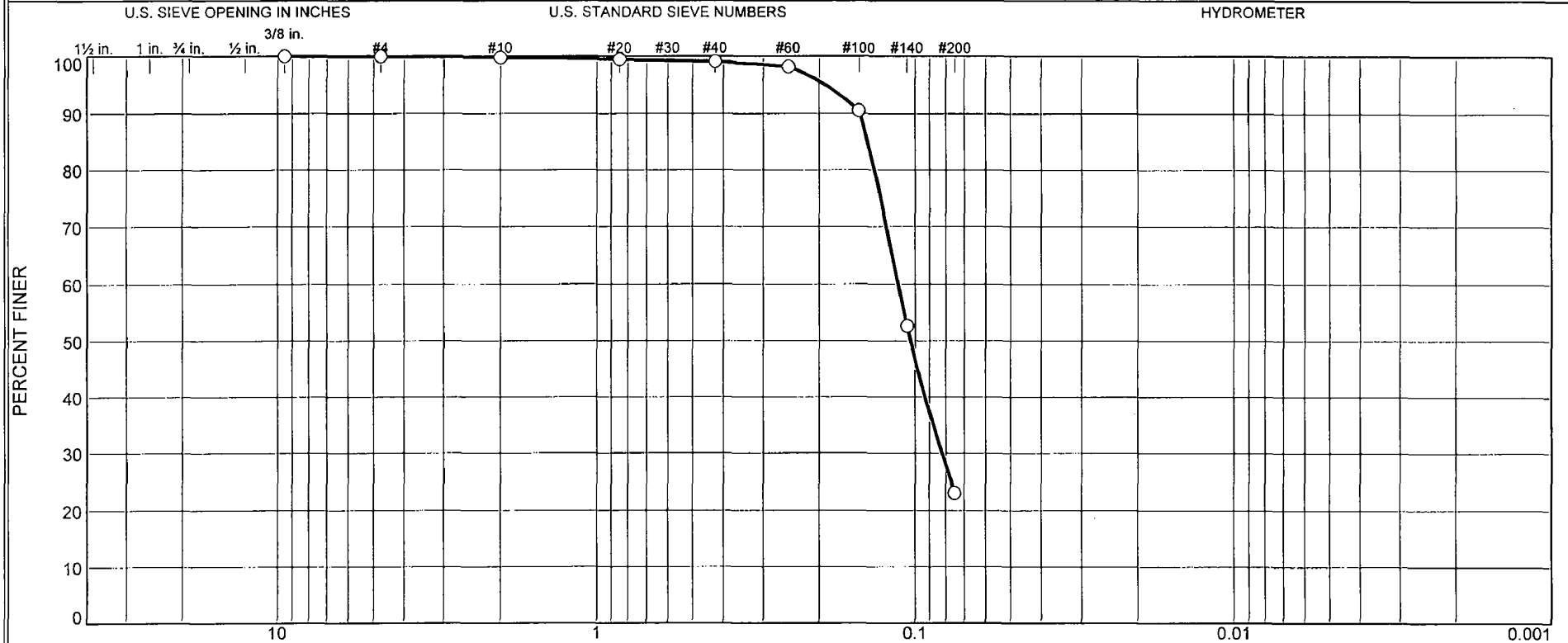
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	10.8	80.4	91.2	1.5	7.3	8.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0815	0.1044	0.1129	0.1256	0.1527	0.1727	0.2663	0.3293	0.4468	0.6445

Fineness Modulus	C _u	C _c
0.75	2.12	1.12

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	76	23	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-703	703-10	123.8-125.3	3/9/08	SM	Light Olive Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY Specific Gravity = 2.662 (ASTM D 854-06) ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-703

Depth: 123.8-125.3

Sample Number: 703-10

Material Description: Light Olive Gray Silty SAND (Visual)

Date: 3/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

Specific Gravity = 2.662 (ASTM D 854-06)

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
266.08	0.00	0.00	3/8"	0.00	100
			#4	0.17	100
			#10	0.57	100
100.11	0.00	0.00	#20	0.35	99
			#40	0.73	99
			#60	1.62	98
			#100	9.29	91
			#140	47.29	53
			#200	76.99	23

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	1	76	77			23

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0823	0.1034	0.1131	0.1341	0.1408	0.1490	0.1913

Fineness Modulus
0.12

MACTEC Engineering and Consulting, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME: FPL COL PROJECT (TURKEY POINT)

PROJECT NUMBER: 6468051950

DATE: 4/6/08

SAMPLE IDENTIFICATION: B-703-10

(A) Mass of oven-dried soil, grams:	75.03
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.74
(C) Mass of pycnometer, water and soil, grams:	702.59
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.4
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.663
(F) <i>Correction factor:</i>	0.99970
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.662

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Silty SAND (SM) - Visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

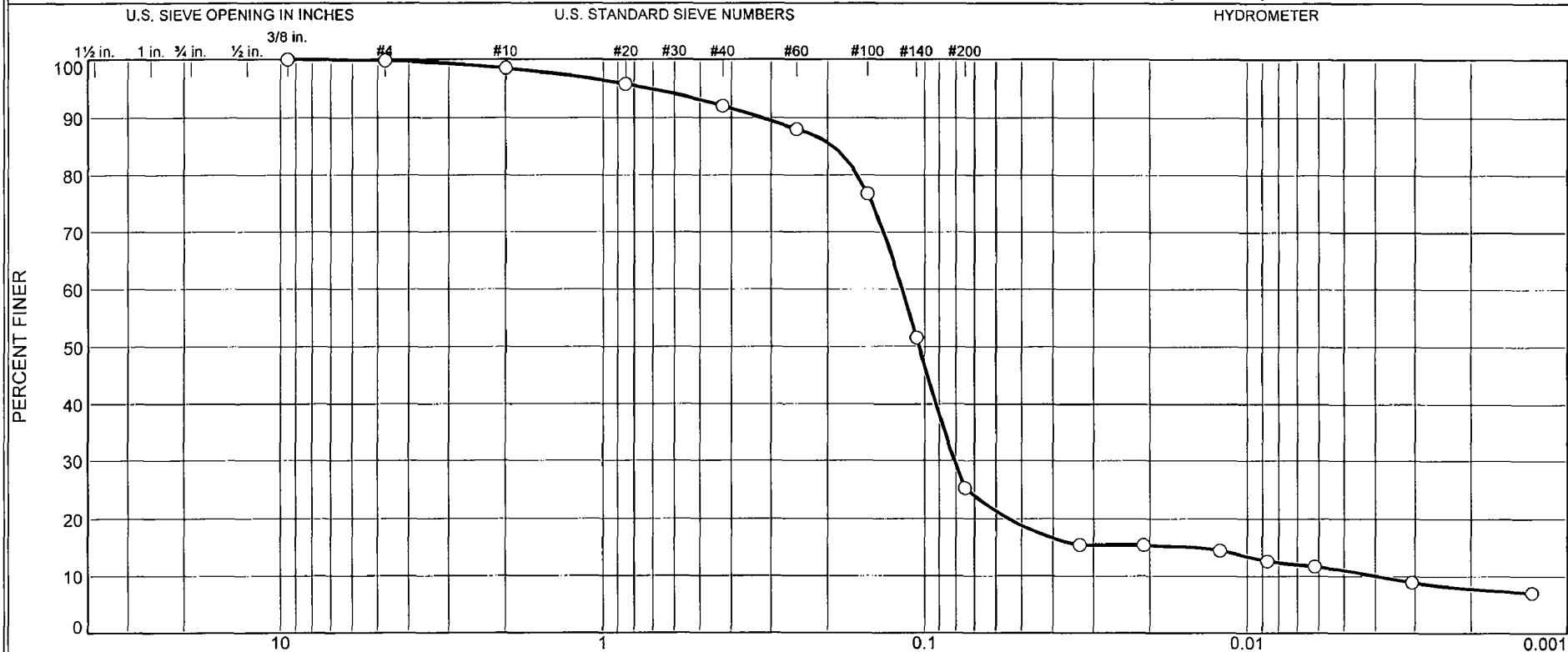
PYCNO METER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

DSC 7-2-08

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.2	1.3	6.5	66.8	14.2	11.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-703	703-12	133.5-135.0	2/25/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-703

Depth: 133.5-135.0

Sample Number: 703-12

Material Description: Greenish Gray Silty SAND (Visual)

Date: 2/25/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
259.82	0.00	0.00	3/8"	0.00	100.0
			#4	0.42	99.8
			#10	3.86	98.5
104.13	0.00	0.00	#20	2.88	95.8
			#40	6.85	92.0
			#60	11.13	88.0
			#100	23.00	76.8
			#140	49.56	51.6
			#200	77.49	25.2

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 98.5

Weight of hydrometer sample = 104.13

Hygroscopic moisture correction:

Moist weight and tare = 29.60

Dry weight and tare = 29.53

Tare weight = 15.41

Hygroscopic moisture = 0.5%

Table of composite correction values:

Temp., deg. C: 11.2 28.4

Comp. corr.: -8.0 -4.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	22.0	16.4	0.0132	23.0	12.5	0.0330	15.4
5.00	21.5	22.0	16.4	0.0132	23.0	12.5	0.0209	15.4
15.00	21.5	21.0	15.4	0.0132	22.0	12.7	0.0121	14.5
30.00	21.7	19.0	13.4	0.0132	20.0	13.0	0.0087	12.6
60.00	21.7	18.0	12.4	0.0132	19.0	13.2	0.0062	11.7
250.00	22.1	15.0	9.5	0.0131	16.0	13.7	0.0031	9.0
1440.00	22.0	13.0	7.5	0.0131	14.0	14.0	0.0013	7.1

MACTEC Engineering and Consulting, Inc.

Fractional Components

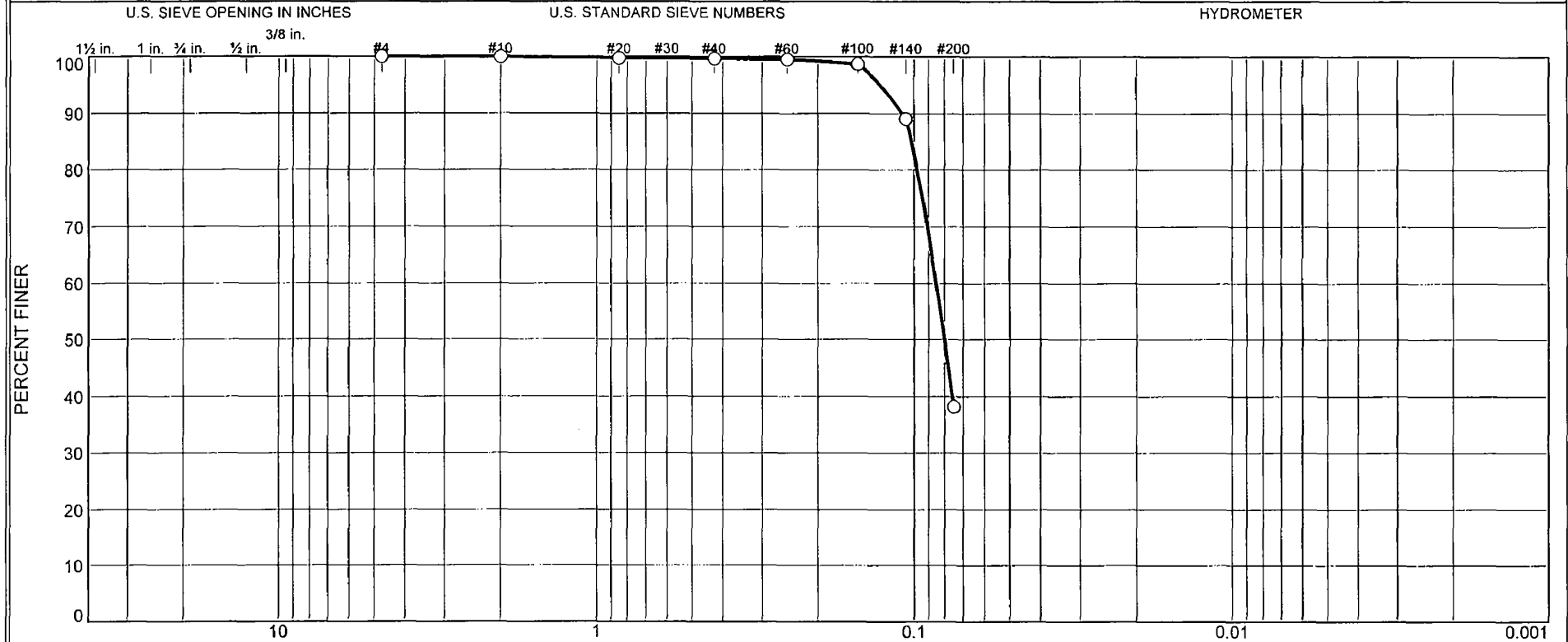
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	1.3	6.5	66.8	74.6	14.2	11.0	25.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0039	0.0144	0.0549	0.0809	0.1040	0.1173	0.1611	0.1921	0.3236	0.7119

Fineness Modulus	C _u	C _c
0.44	29.74	14.16

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	62	38	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-703	703-14	143.5-145.0	2/25/08	SC-SM	Greenish Gray Silty, Clayey SAND	ND	24	19

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-703

Depth: 143.5-145.0

Sample Number: 703-14

Material Description: Greenish Gray Silty, Clayey SAND

Date: 2/25/08

Natural Moisture: ND

Liquid Limit: 24

Plastic Limit: 19

USCS Class.: SC-SM

Testing Remarks: SIEVE ANALYSIS AND ATTERBERG LIMITS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
324.39	0.00	0.00	#4	0.00	100
			#10	0.12	100
99.73	0.00	0.00	#20	0.19	100
			#40	0.28	100
			#60	0.42	100
			#100	1.26	99
			#140	10.90	89
			#200	61.59	38

Fractional Components

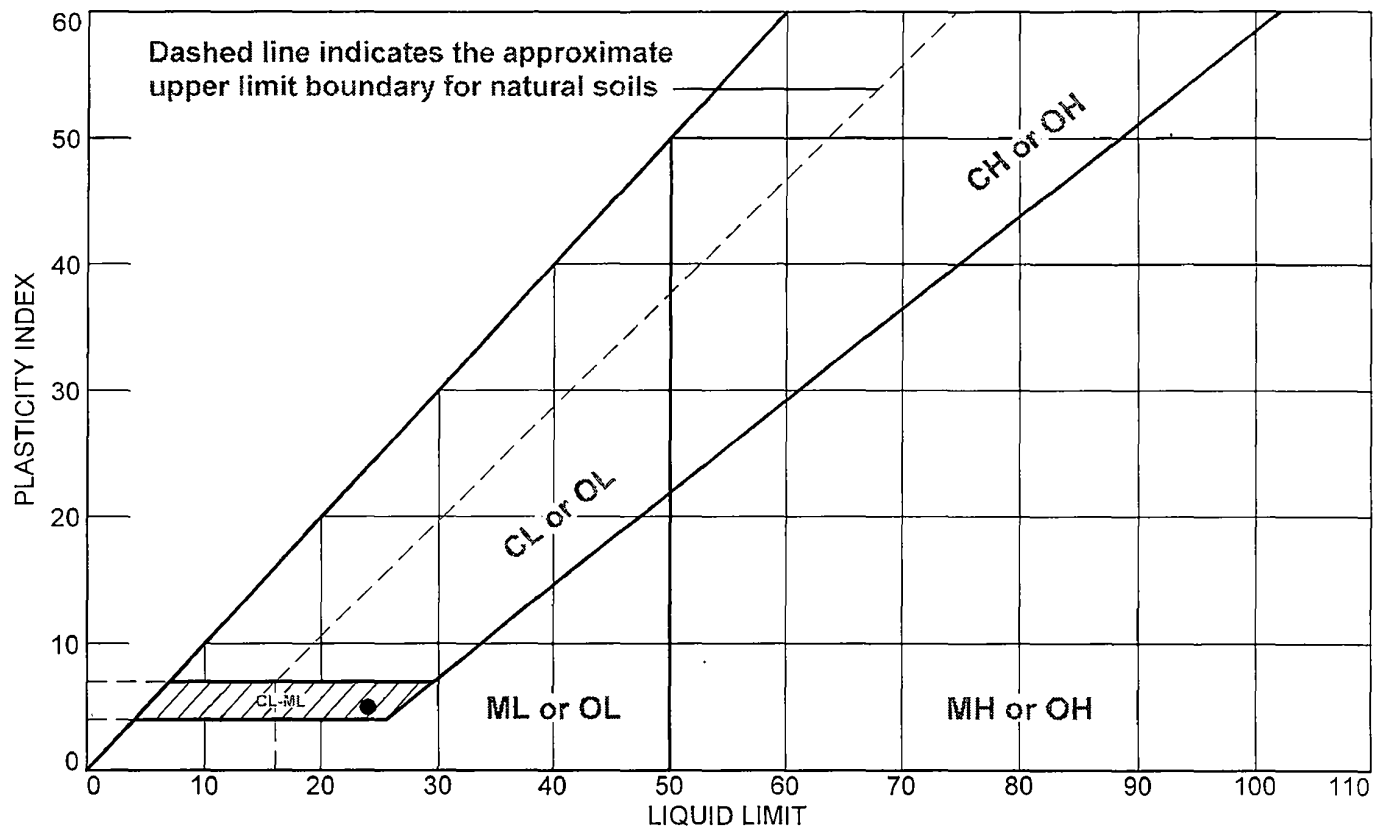
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	62	62			38

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0802	0.0851	0.0974	0.1017	0.1087	0.1271

Fineness Modulus
0.02

MACTEC Engineering and Consulting, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-703	703-14	143.5-145.0	ND	19	24	5	SC-SM

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Turkey Point COL

Project No.: 6468071950

Figure

Tested By: CS

Checked By: LBJ

DSC 7-2-08

LIQUID AND PLASTIC LIMIT TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-703

Depth: 143.5-145.0

Sample Number: 703-14

Material Description: Greenish Gray Silty, Clayey SAND

USCS: SC-SM

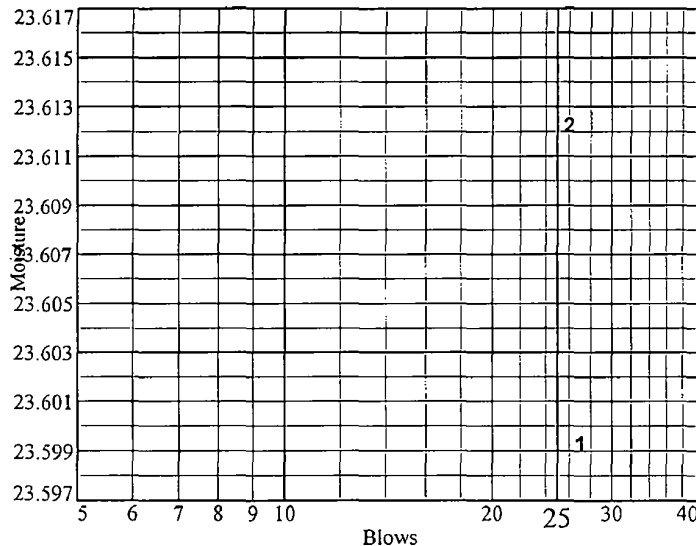
AASHTO: A-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.06	30.17				
Dry+Tare	27.28	27.32				
Tare	15.50	15.25				
# Blows	27	26				
Moisture	23.6	23.6				



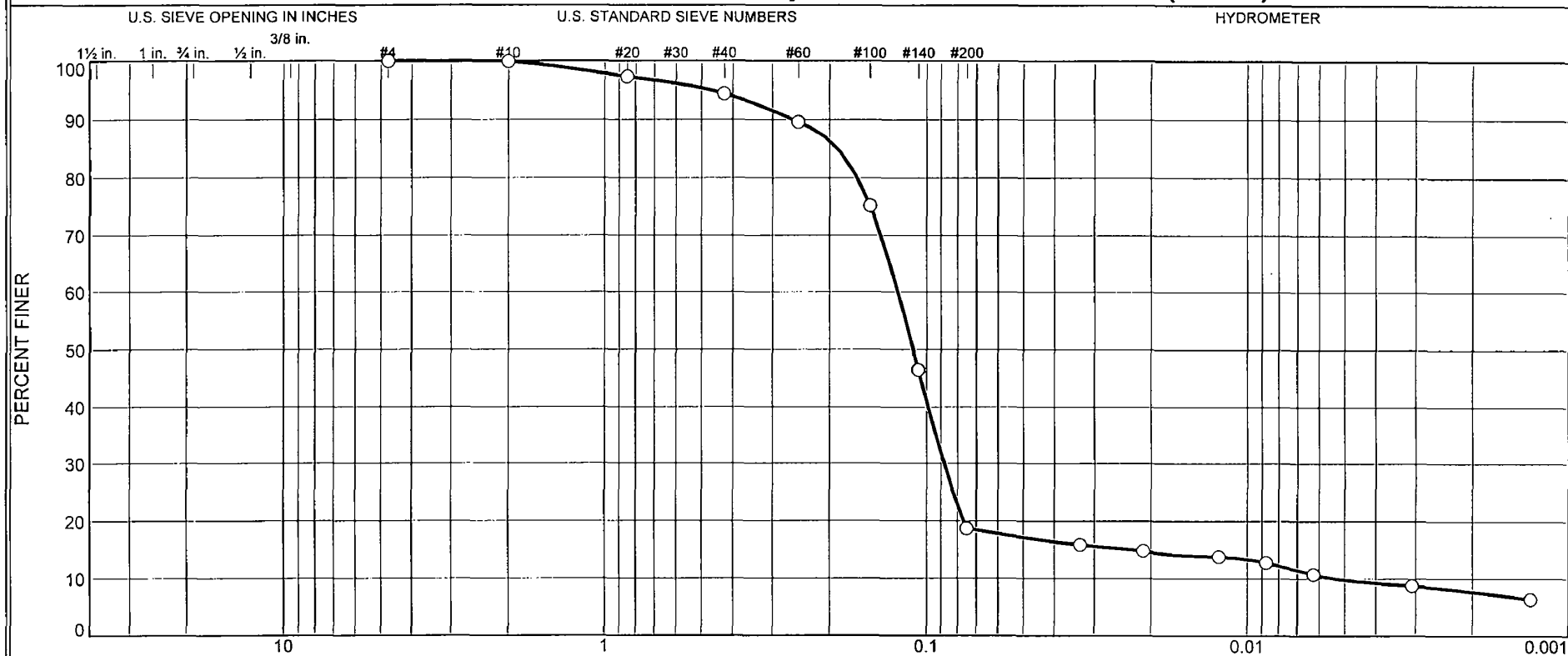
Liquid Limit= 24
 Plastic Limit= 19
 Plasticity Index= 5
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.08	23.86			
Dry+Tare	21.88	22.56			
Tare	15.44	15.62			
Moisture	18.6	18.7			

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	5.4	75.8	8.9	9.8

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-703	703-15	148.5-150.0	2/25/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed Calcite Equivalent = 20% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-703

Depth: 148.5-150.0

Sample Number: 703-15

Material Description: Greenish Gray Silty SAND (Visual)

Date: 2/25/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

Calcite Equivalent = 20% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
223.31	0.00	0.00	#4	0.00	100.0
			#10	0.12	99.9
98.42	0.00	0.00	#20	2.56	97.3
			#40	5.39	94.5
			#60	10.23	89.6
			#100	24.36	75.2
			#140	52.69	46.4
			#200	79.96	18.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.9

Weight of hydrometer sample =98.42

Hygroscopic moisture correction:

Moist weight and tare = 29.68

Dry weight and tare = 29.32

Tare weight = 15.48

Hygroscopic moisture =2.6%

Table of composite correction values:

Temp., deg. C: 11.2 28.4

Comp. corr.: -8.0 -4.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.6	21.0	15.4	0.0132	22.0	12.7	0.0332	15.9
5.00	21.6	20.0	14.4	0.0132	21.0	12.9	0.0211	14.9
15.00	21.6	19.0	13.4	0.0132	20.0	13.0	0.0123	13.8
30.00	21.6	18.0	12.4	0.0132	19.0	13.2	0.0087	12.8
60.00	21.7	16.0	10.4	0.0132	17.0	13.5	0.0062	10.8
250.00	22.1	14.0	8.5	0.0131	15.0	13.8	0.0031	8.8
1440.00	20.9	12.0	6.3	0.0133	13.0	14.2	0.0013	6.4

MACTEC Engineering and Consulting, Inc.

Fractional Components

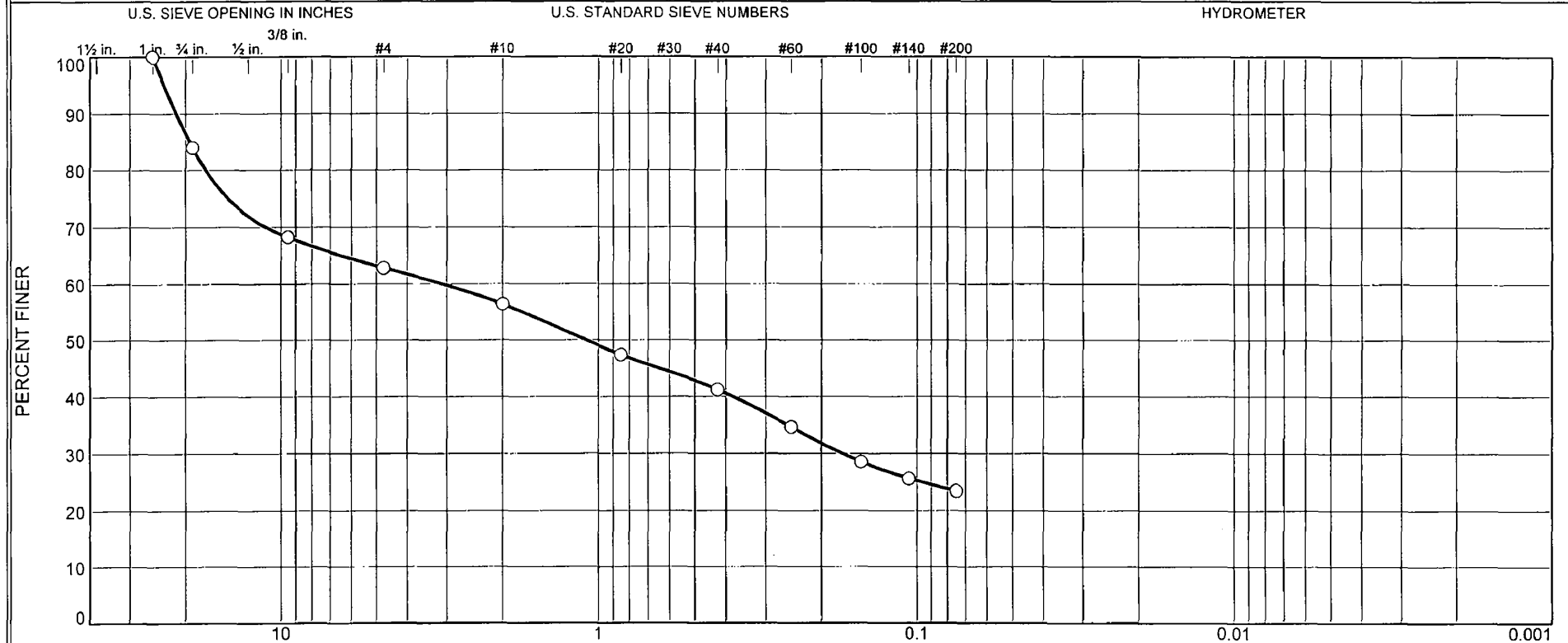
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	5.4	75.8	81.3	8.9	9.8	18.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0053	0.0226	0.0767	0.0882	0.1101	0.1229	0.1642	0.1893	0.2603	0.4625

Fineness Modulus	C _u	C _c
0.39	23.30	12.00

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
16	21	7	15	18	23	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-704(DH)	704-4	7.4-8.9	3/9/08	SM	White Silty SAND with gravel (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-704(DH)

Depth: 7.4-8.9

Sample Number: 704-4

Material Description: White Silty SAND with gravel (Visual)

Date: 3/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
291.47	0.00	0.00	1	0.00	100
			3/4	46.60	84
			3/8"	92.52	68
			#4	108.32	63
			#10	126.92	56
100.14	0.00	0.00	#20	16.17	47
			#40	27.05	41
			#60	38.66	35
			#100	49.52	29
			#140	54.72	26
			#200	58.57	23

Fractional Components

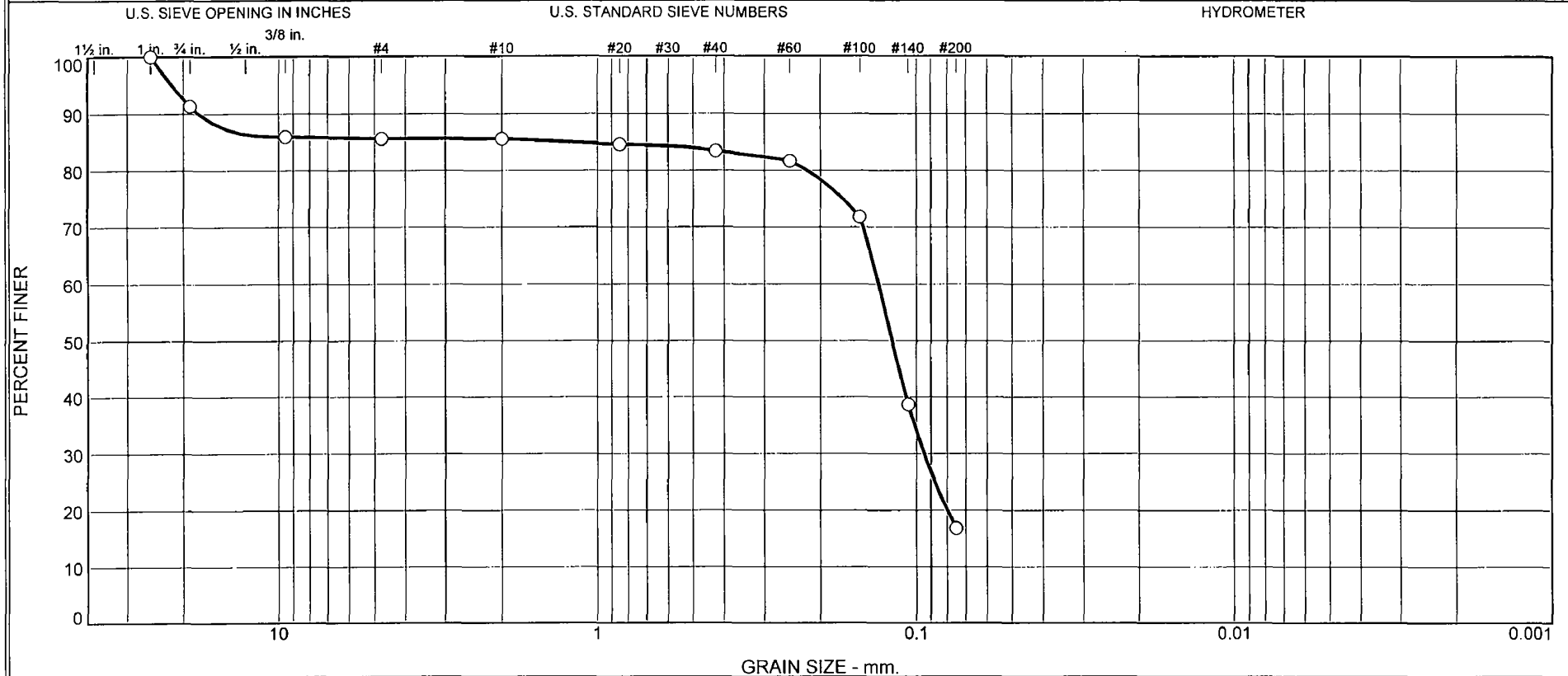
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	16	21	37	7	15	18	40			23

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1719	1.1002	3.0994	17.3022	19.4530	21.4161	23.3649

Fineness Modulus
3.66

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
9	5	0	3	66	17	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-704(DH)	704-10	28.5-30.0	2/25/08	SM	White Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-704(DH)

Depth: 28.5-30.0

Sample Number: 704-10

Material Description: White Silty SAND (Visual)

Date: 2/25/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
322.24	0.00	0.00	1	0.00	100
			3/4	27.77	91
			3/8"	45.37	86
			#4	46.35	86
			#10	46.54	86
102.76	0.00	0.00	#20	1.16	85
			#40	2.52	83
			#60	4.56	82
			#100	16.55	72
			#140	56.38	39
			#200	82.50	17

Fractional Components

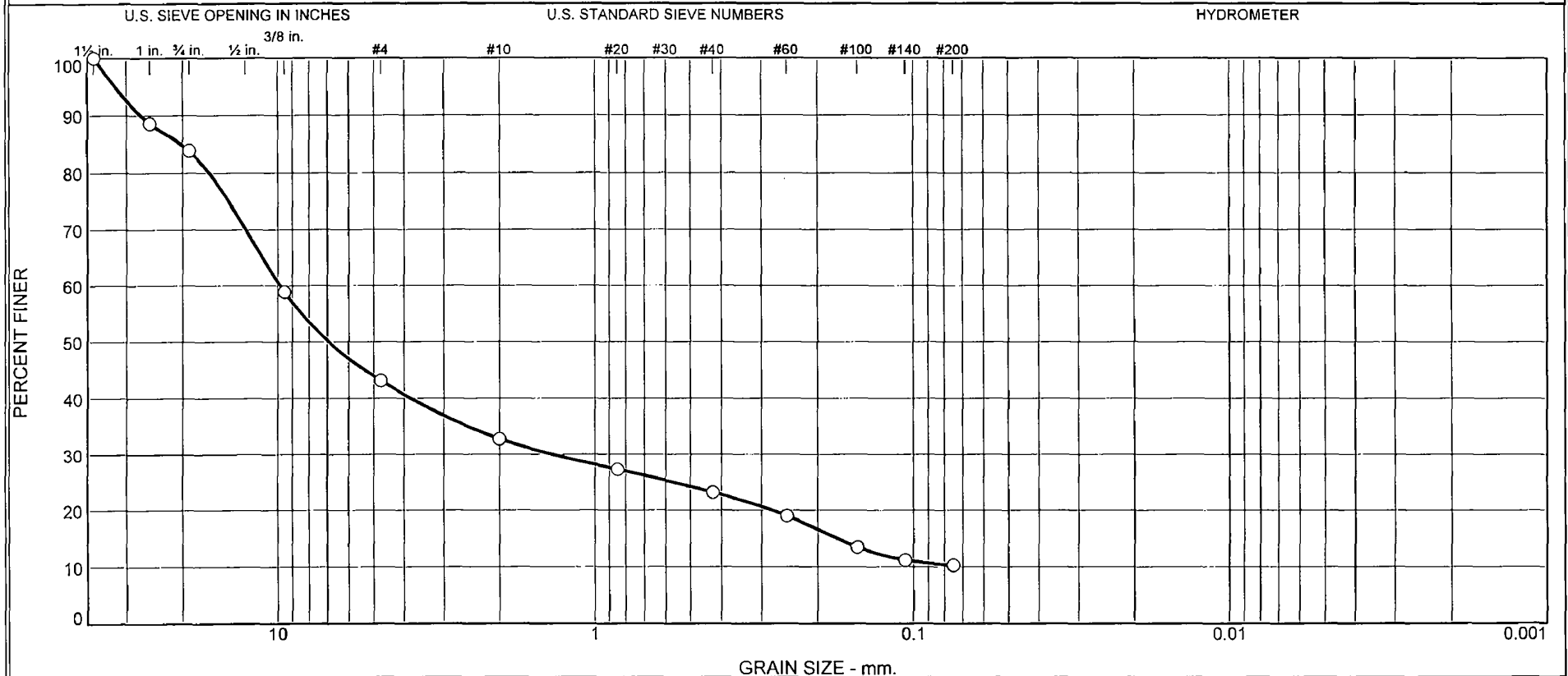
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	9	5	14	0	3	66	69			17

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0798	0.0948	0.1191	0.1312	0.2196	1.2157	17.8530	21.7543

Fineness Modulus
1.28

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
16	41	10	10	13	10	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-704(DH)	704-15	123.0-124.5	2/27/08	GW-GM	White Well Graded GRAVEL with silt and sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY (OVEN DRY METHOD) ND = Not Determined Calcite Equivalent = 12% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

Tested By: CS

Volume 3, Rev 2 - 10/6/2008

Checked By: LBJ

DSC 7-2-08

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DCN# TUR512

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-704(DH)

Depth: 123.0-124.5

Sample Number: 704-15

Material Description: White Well Graded GRAVEL with silt and sand (Visual)

Date: 2/27/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GW-GM

Testing Remarks: SIEVE ANALYSIS ONLY (OVEN DRY METHOD)

ND = Not Determined

Calcite Equivalent = 12% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare =253.96

Tare Wt. =0.00

Minus #200 from wash =0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
253.96	0.00	0.00	1.5	0.00	100
			1	28.98	89
			3/4	40.69	84
			3/8"	104.38	59
			#4	144.41	43
			#10	170.71	33
			#20	184.60	27
			#40	195.10	23
			#60	205.79	19
			#100	219.71	13
			#140	225.53	11
			#200	227.86	10

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	16	41	57	10	10	13	33			10

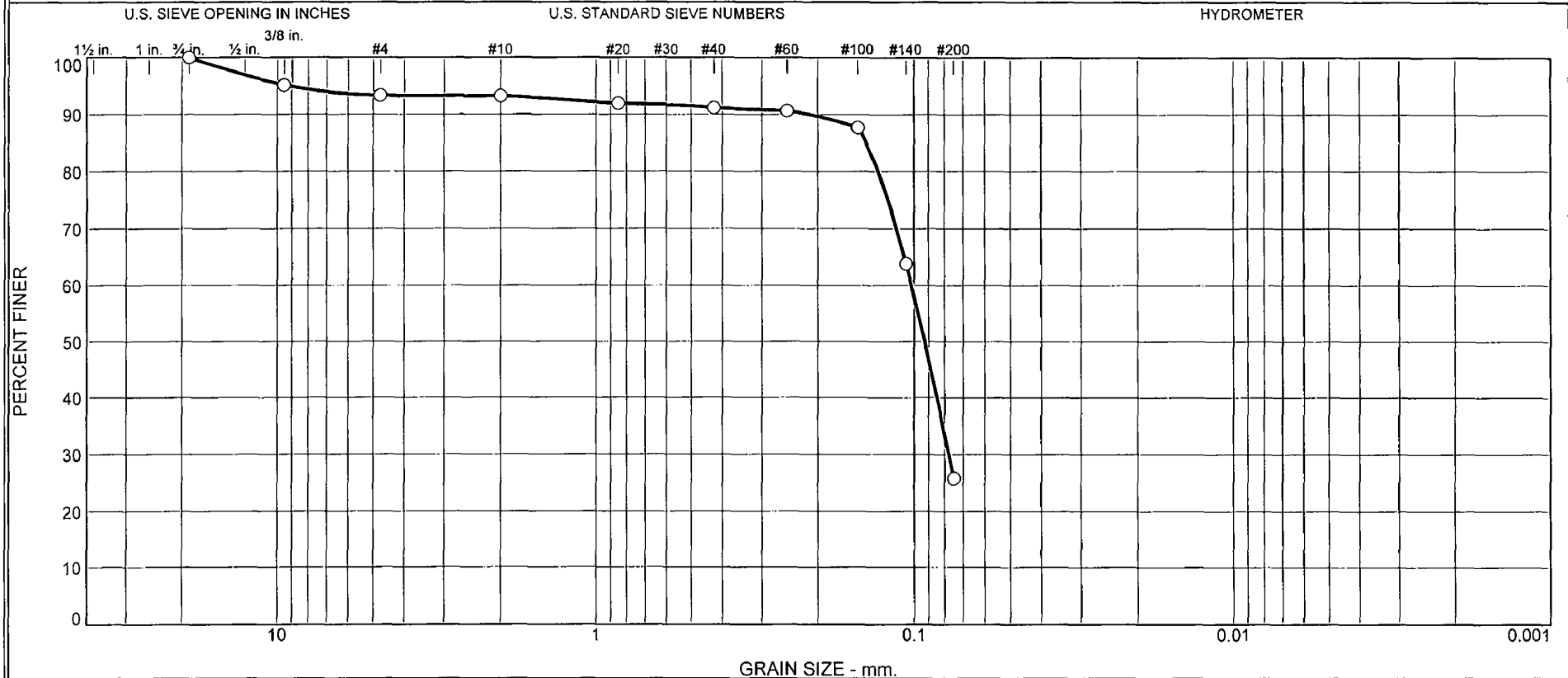
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.1744	0.2786	1.3654	6.9467	9.8227	16.4476	20.0982	27.1817	32.6269

Fineness Modulus

4.91

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	7	0	2	65	26	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-704(DH)	704-16	128.0-129.5	2/27/08	SM	Pale Yellow Silty SAND(Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-704(DH)

Depth: 128.0-129.5

Sample Number: 704-16

Material Description: Pale Yellow Silty SAND(Visual)

Date: 2/27/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
281.32	0.00	0.00	3/4	0.00	100
			3/8"	13.57	95
			#4	18.78	93
			#10	19.01	93
103.81	0.00	0.00	#20	1.44	92
			#40	2.33	91
			#60	2.88	91
			#100	6.22	88
			#140	32.71	64
			#200	75.10	26

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	7	7	0	2	65	67			26

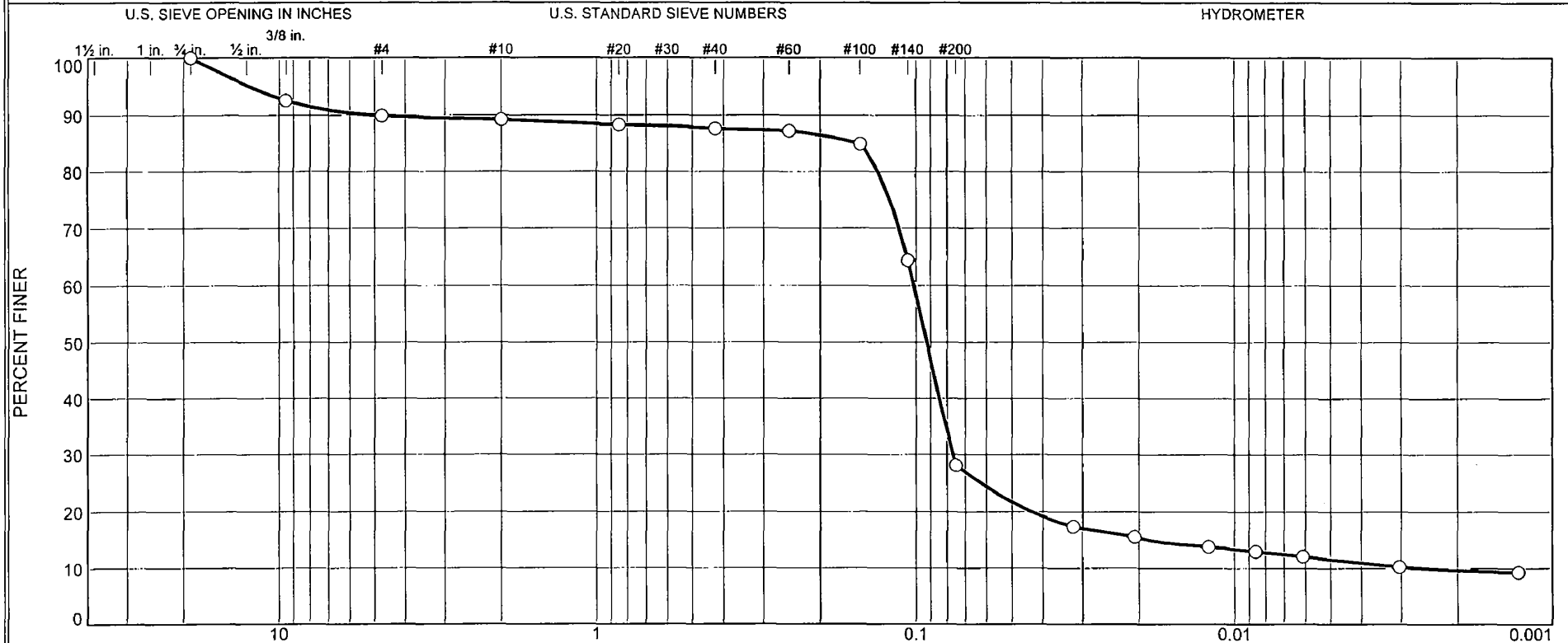
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0777	0.0926	0.1019	0.1294	0.1411	0.2138	9.1898

Fineness Modulus

0.56

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-704(DH)

Depth: 133.0-134.5

Sample Number: 704-17

Material Description: Pale Yellow Silty SAND (Visual)

Date: 2/27/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
208.81	0.00	0.00	3/4	0.00	100.0
			3/8"	15.52	92.6
			#4	21.09	89.9
			#10	22.53	89.2
102.78	0.00	0.00	#20	1.05	88.3
			#40	1.84	87.6
			#60	2.28	87.2
			#100	4.88	85.0
			#140	28.53	64.4
			#200	70.44	28.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 89.2

Weight of hydrometer sample = 102.78

Hygroscopic moisture correction:

Moist weight and tare = 27.79

Dry weight and tare = 27.62

Tare weight = 11.13

Hygroscopic moisture = 1.0%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.1	25.0	20.0	0.0131	26.0	12.0	0.0321	17.3
5.00	22.1	23.0	18.0	0.0131	24.0	12.4	0.0206	15.6
15.00	22.1	21.0	16.0	0.0131	22.0	12.7	0.0120	13.8
30.00	22.1	20.0	15.0	0.0131	21.0	12.9	0.0086	13.0
60.00	22.1	19.0	14.0	0.0131	20.0	13.0	0.0061	12.1
250.00	21.8	17.0	11.9	0.0131	18.0	13.3	0.0030	10.3
1440.00	21.2	16.0	10.7	0.0132	17.0	13.5	0.0013	9.3

MACTEC Engineering and Consulting, Inc.

Fractional Components

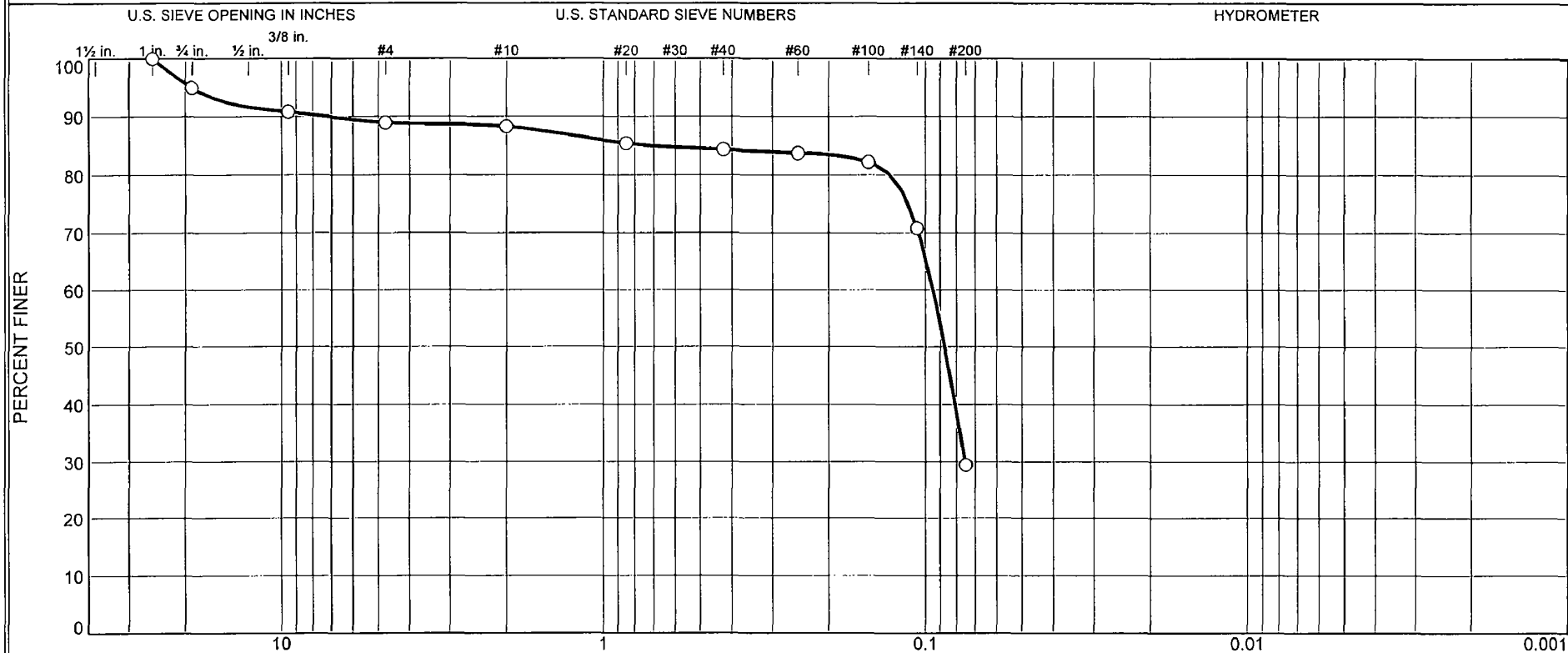
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	10.1	10.1	0.7	1.6	59.5	61.8	16.5	11.6	28.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0026	0.0186	0.0434	0.0767	0.0925	0.1014	0.1318	0.1506	5.0619	12.4410

Fineness Modulus	C _u	C _c
0.79	39.55	22.62

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
5	6	1	4	55	29	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-704(DH)	704-18	138.0-139.5	2/27/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	☐ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-704(DH)

Depth: 138.0-139.5

Sample Number: 704-18

Material Description: Greenish Gray Silty SAND (Visual)

Date: 2/27/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
253.80	0.00	0.00	1	0.00	100
			3/4	12.88	95
			3/8"	23.45	91
			#4	28.12	89
			#10	29.77	88
103.93	0.00	0.00	#20	3.41	85
			#40	4.62	84
			#60	5.32	84
			#100	7.11	82
			#140	20.52	71
			#200	69.25	29

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	5	6	11	1	4	55	60			29

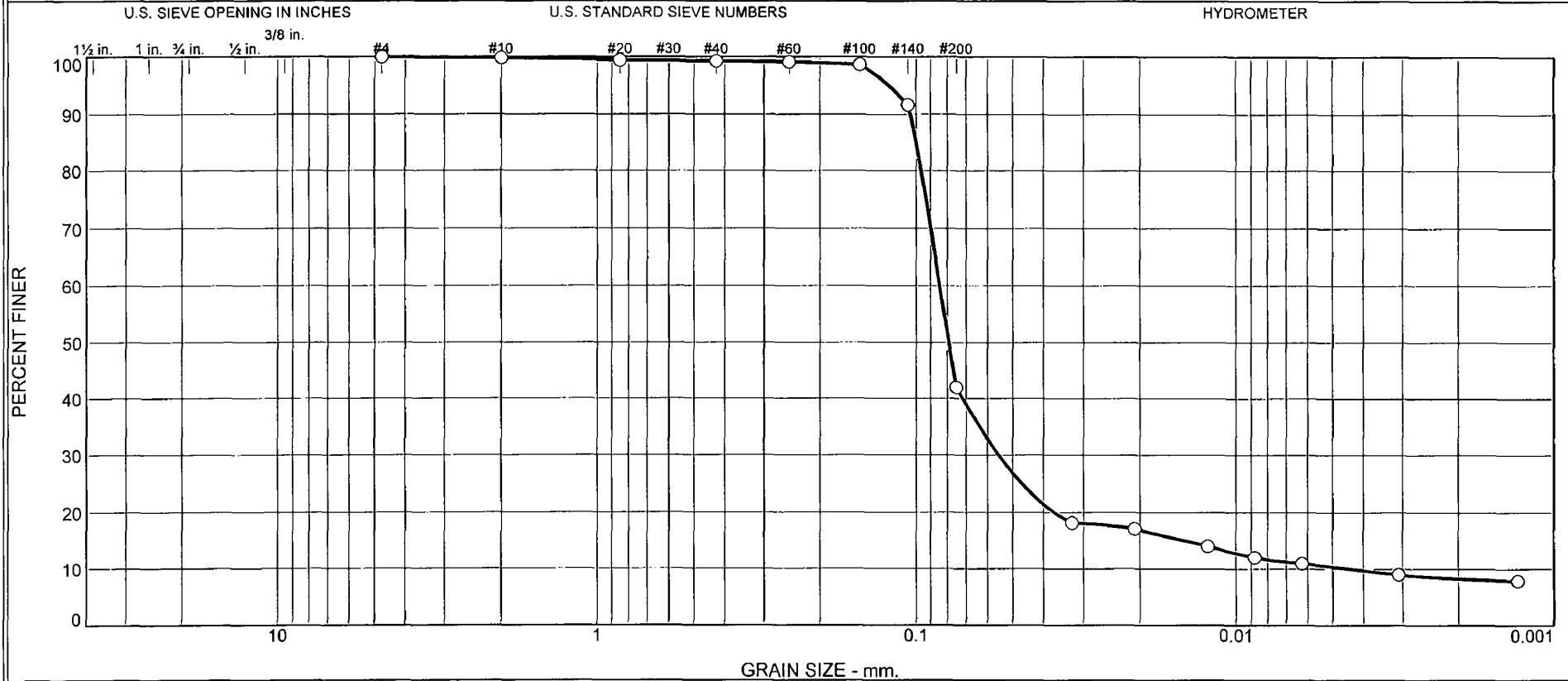
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0753	0.0871	0.0947	0.1283	0.7217	7.3156	19.1507

Fineness Modulus

0.99

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.5	57.3	31.6	10.4

[illegible]

Client Bechtel

Project Turkey Point COL

Project No. 6468071950

Figure N/A

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS AND HYDROMETER ONLY
Specific Gravity is assumed
ND = Not Determined
Calcite Equivalent = 18% (ASTM D 4373-02)

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-704(DH)

Depth: 150.0-151.5

Sample Number: 704-21

Material Description: Greenish Gray Silty SAND(Visual)

Date: 2/27/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Calcite Equivalent = 18% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
246.47	0.00	0.00	#4	0.00	100.0
			#10	0.50	99.8
98.77	0.00	0.00	#20	0.37	99.4
			#40	0.53	99.3
			#60	0.65	99.1
			#100	1.15	98.6
			#140	8.09	91.6
			#200	57.21	42.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.8

Weight of hydrometer sample =98.77

Hygroscopic moisture correction:

Moist weight and tare = 27.30

Dry weight and tare = 27.15

Tare weight = 15.43

Hygroscopic moisture =1.3%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.0	23.0	17.9	0.0131	24.0	12.4	0.0326	18.2
5.00	22.0	22.0	16.9	0.0131	23.0	12.5	0.0208	17.1
15.00	21.9	19.0	13.9	0.0131	20.0	13.0	0.0122	14.1
30.00	21.9	17.0	11.9	0.0131	18.0	13.3	0.0088	12.1
60.00	21.8	16.0	10.9	0.0131	17.0	13.5	0.0062	11.0
250.00	21.9	14.0	8.9	0.0131	15.0	13.8	0.0031	9.0
1440.00	21.5	13.0	7.8	0.0132	14.0	14.0	0.0013	7.9

MACTEC Engineering and Consulting, Inc.

Fractional Components

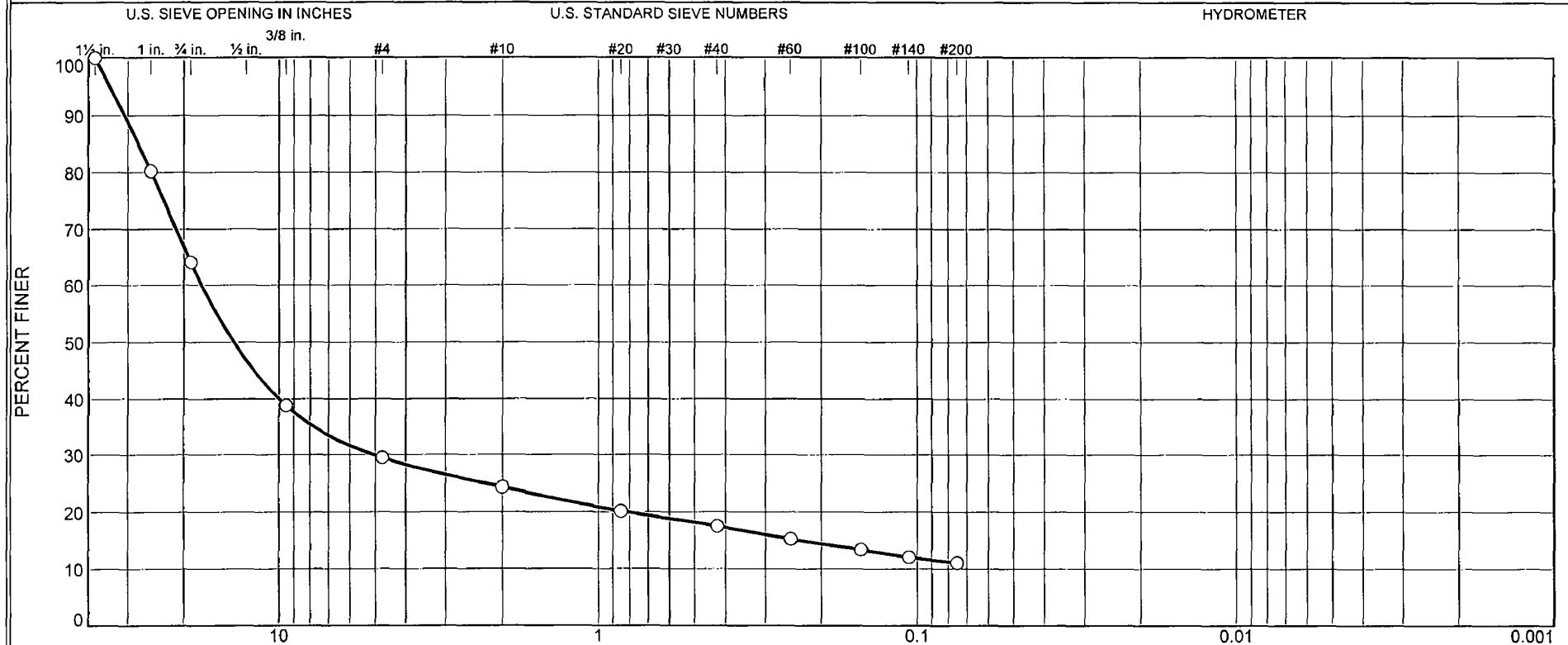
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	0.5	57.3	58.0	31.6	10.4	42.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0044	0.0143	0.0371	0.0554	0.0793	0.0845	0.0961	0.0998	0.1042	0.1214

Fineness Modulus	C _u	C _c
0.03	19.26	8.26

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
36	35	5	6	7	11	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-705	705-4	7.5-9.0	2/22/08	GP-GM	White Poorly Graded GRAVEL with silt and sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY (OVEN DRY METHOD) ND = Not Determined Calcite Equivalent = 92% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 7.5-9.0

Sample Number: 705-4

Material Description: White Poorly Graded GRAVEL with silt and sand (Visual)

Date: 2/22/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GP-GM

Testing Remarks: SIEVE ANALYSIS ONLY (OVEN DRY METHOD)

ND = Not Determined

Calcite Equivalent = 92% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare =242.96

Tare Wt. = 0.00

Minus #200 from wash = 0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
242.96	0.00	0.00	1.5	0.00	100
			1	47.99	80
			3/4	87.26	64
			3/8"	148.64	39
			#4	171.41	29
			#10	183.98	24
			#20	194.00	20
			#40	200.41	18
			#60	205.88	15
			#100	210.41	13
			#140	213.63	12
			#200	216.07	11

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	36	35	71	5	6	7	18			11

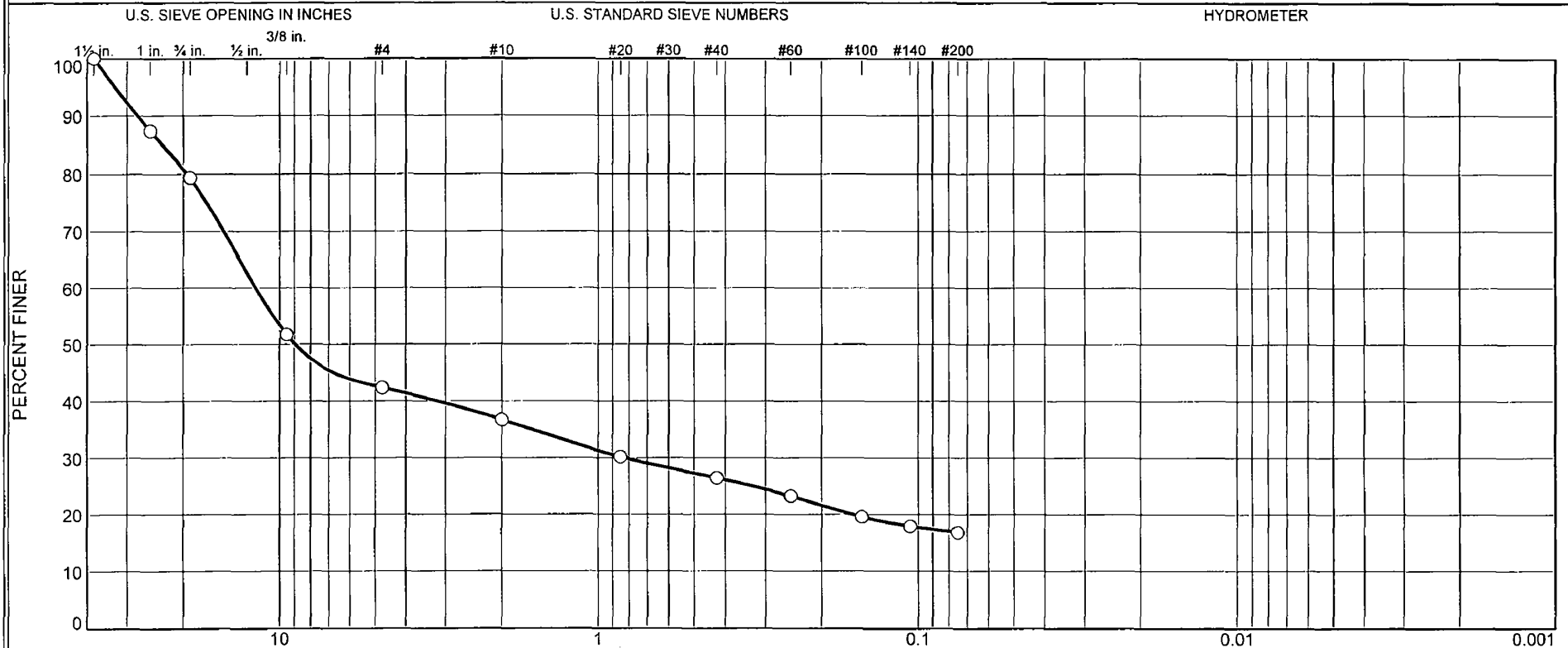
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.2336	0.8190	5.0813	13.9260	17.5803	25.2852	27.7923	30.7405	34.1739

Fineness Modulus

5.73

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
21	37	5	11	9	17	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-705	705-8	18.5-20.0	2/22/08	GM	White Silty GRAVEL with sand(Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 18.5-20.0

Sample Number: 705-8

Material Description: White Silty GRAVEL with sand(Visual)

Date: 2/22/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
395.62	0.00	0.00	1.5	0.00	100
			1	49.97	87
			3/4	81.72	79
			3/8"	191.05	52
			#4	228.22	42
			#10	250.46	37
100.75	0.00	0.00	#20	17.87	30
			#40	28.06	26
			#60	36.95	23
			#100	47.12	20
			#140	51.69	18
			#200	54.72	17

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	21	37	58	5	11	9	25			17

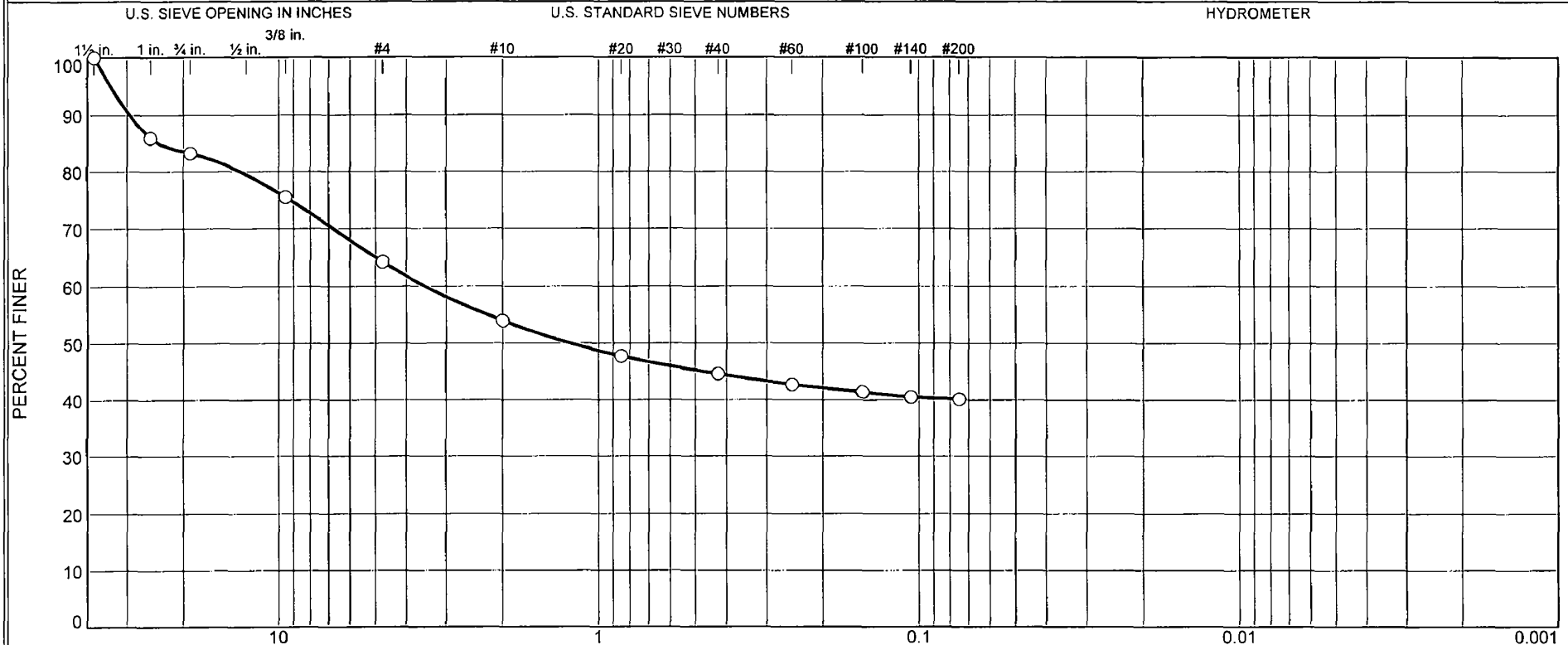
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.1613	0.8256	8.9664	11.9134	19.4407	23.2323	27.8508	32.7092

Fineness Modulus

4.84

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
17	19	10	9	5	40	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-705	705-11	33.5-35.0	2/22/08	GM	White Silty GRAVEL with sand(Visual)	ND	ND	ND

Client Bechtel	MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY(OVEN DRY METHOD) ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950 Figure N/A			

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 33.5-35.0

Sample Number: 705-11

Material Description: White Silty GRAVEL with sand(Visual)

Date: 2/22/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY(OVEN DRY METHOD)

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare =292.50

Tare Wt. =0.00

Minus #200 from wash =0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
292.50	0.00	0.00	1.5	0.00	100
			1	41.03	86
			3/4	48.94	83
			3/8"	71.61	76
			#4	104.57	64
			#10	134.68	54
			#20	152.89	48
			#40	162.10	45
			#60	167.59	43
			#100	171.52	41
			#140	173.99	41
			#200	175.20	40

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	17	19	36	10	9	5	24			40

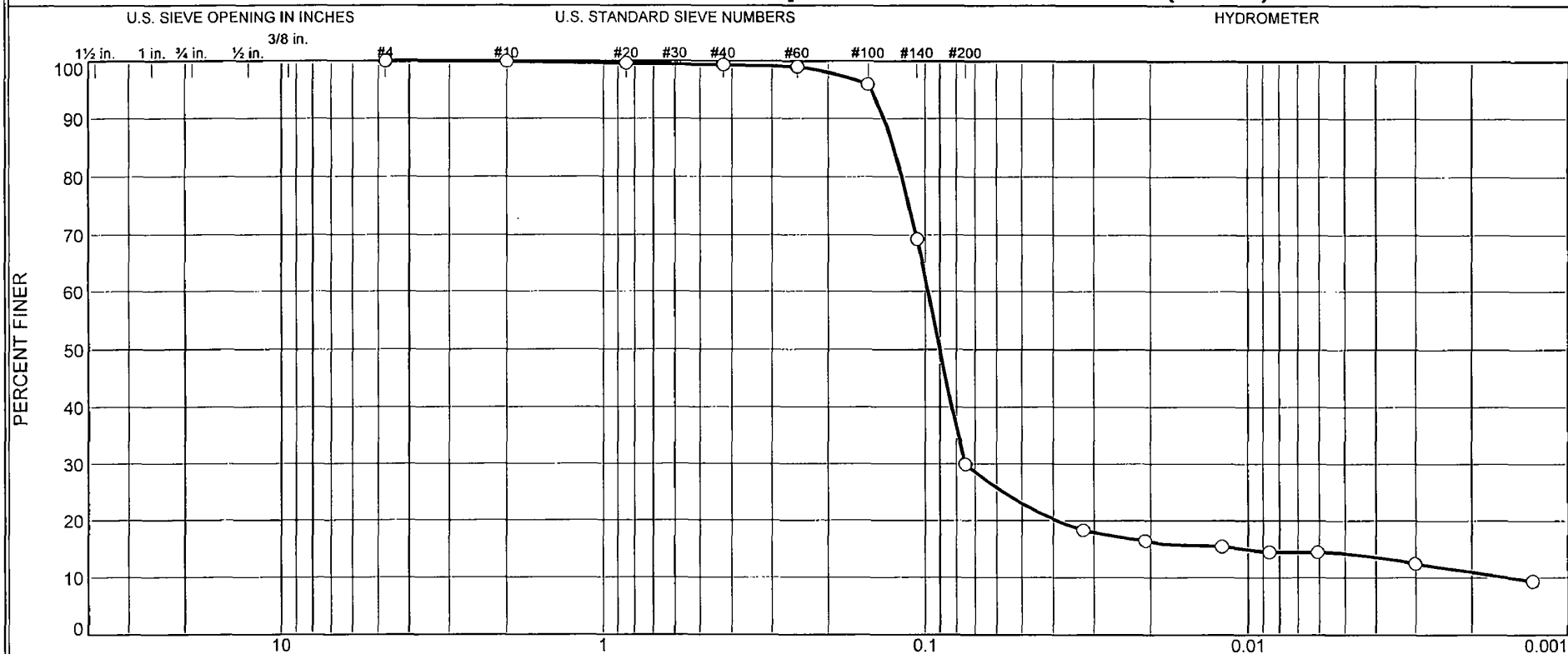
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				1.2246	3.4957	13.2239	23.9204	29.5235	33.7813

Fineness Modulus

3.41

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.7	69.3	15.8	14.2

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-705	705-14	128.5-130.0	2/24/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel
 Project Turkey Point COL
 Project No. 6468071950 Figure N/A

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS AND HYDROMETER ONLY
 Specific Gravity is assumed
 ND = Not Determined
 Calcite Equivalent = 20% (ASTM D 4373-02)

Tested By: CS

Volume 3, Rev 2 - 10/6/2008

Checked By: LBJ

PSC 7-2-08

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DCN# TUR512

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 128.5-130.0

Sample Number: 705-14

Material Description: Greenish Gray Silty SAND (Visual)

Date: 2/24/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Calcite Equivalent = 20% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
277.41	0.00	0.00	#4	0.00	100.0
			#10	0.09	100.0
102.71	0.00	0.00	#20	0.36	99.6
			#40	0.65	99.3
			#60	0.98	99.0
			#100	4.11	96.0
			#140	31.55	69.3
			#200	71.93	30.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 102.71

Hygroscopic moisture correction:

Moist weight and tare = 28.04

Dry weight and tare = 27.98

Tare weight = 15.89

Hygroscopic moisture = 0.5%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	24.0	18.9	0.0131	25.0	12.2	0.0324	18.3
5.00	22.0	22.0	16.9	0.0131	23.0	12.5	0.0208	16.4
15.00	22.0	21.0	15.9	0.0131	22.0	12.7	0.0121	15.4
30.00	21.9	20.0	14.9	0.0131	21.0	12.9	0.0086	14.4
60.00	21.9	20.0	14.9	0.0131	21.0	12.9	0.0061	14.4
250.00	21.8	18.0	12.9	0.0131	19.0	13.2	0.0030	12.5
1440.00	21.1	15.0	9.7	0.0133	16.0	13.7	0.0013	9.4

MACTEC Engineering and Consulting, Inc.

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.7	69.3	70.0	15.8	14.2	30.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0015	0.0105	0.0392	0.0750	0.0902	0.0979	0.1179	0.1250	0.1340	0.1467

Fineness Modulus	C _u	C _c
0.06	63.37	37.24

MACTEC Engineering and Consulting, Inc.

U.S. SIEVE OPENING IN INCHES

U.S. STANDARD SIEVE NUMBERS

HYDROMETER

PERCENT FINER

GRAIN SIZE - mm.

Grain Size (mm)	Percent Finer (%)
1.5	100
0.85	100
0.425	98
0.25	96
0.15	95
0.075	75
0.06	30

	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	4	67	29	

[illegible]

Client Bechtel		MACTEC Engineering and Consulting, Inc. Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY Specific Gravity = 2.666 (ASTM D854-06) ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		

DSC 7-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 138.5-140.0

Sample Number: 705-16

Material Description: Greenish Gray Silty SAND(Visual)

Date: 2/22/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

Specific Gravity = 2.666 (ASTM D854-06)

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
316.12	0.00	0.00	#10	0.00	100
99.58	0.00	0.00	#20	2.75	97
			#40	4.46	96
			#60	5.38	95
			#100	8.06	92
			#140	25.46	74
			#200	70.29	29

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	4	67	71			29

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0753	0.0864	0.0931	0.1134	0.1228	0.1389	0.3228

Fineness Modulus
0.19

MACTEC Engineering and Consulting, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME: FPL COL PROJECT (TURKEY POINT)

PROJECT NUMBER: 6468051950

DATE: 4/17/08

SAMPLE IDENTIFICATION: B-705-16,(138.5-140.0)

(A) Mass of oven-dried soil, grams:	74.49
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.53
(C) Mass of pycnometer, water and soil, grams:	703.09
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.667
(F)	Correction factor: 0.99972
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.666

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Silty SAND (SM)- Visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

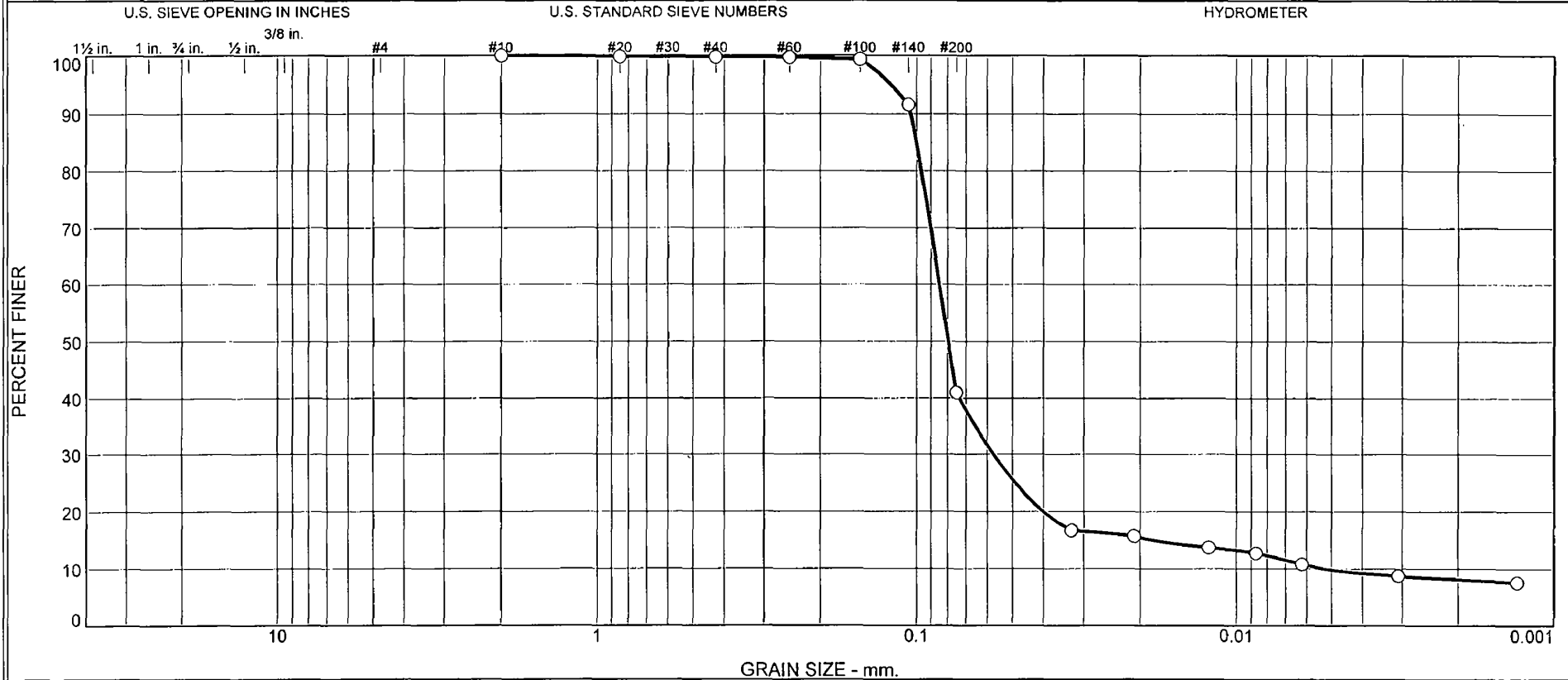
PYCNOMETER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

DSC 7-2-08

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	58.8	31.2	9.8

[illegible]

Client	Bechtel
Project	Turkey Point COL

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS AND HYDROMETER ONLY
Specific Gravity is assumed
ND = Not Determined

Project No. 6468071950

Figure N/A

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 148.5-150.0

Sample Number: 705-18

Material Description: Greenish Gray Silty SAND (Visual)

Date: 2/24/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
478.45	0.00	0.00	#10	0.00	100.0
101.54	0.00	0.00	#20	0.14	99.9
			#40	0.22	99.8
			#60	0.29	99.7
			#100	0.64	99.4
			#140	8.56	91.6
			#200	59.89	41.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 101.54

Hygroscopic moisture correction:

Moist weight and tare = 28.91

Dry weight and tare = 28.78

Tare weight = 15.76

Hygroscopic moisture = 1.0%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = [6.294964 - 0.164 \times R_m]$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.2	22.0	17.0	0.0131	23.0	12.5	0.0327	16.7
5.00	22.2	21.0	16.0	0.0131	22.0	12.7	0.0208	15.7
15.00	22.2	19.0	14.0	0.0131	20.0	13.0	0.0122	13.8
30.00	22.2	18.0	13.0	0.0131	19.0	13.2	0.0087	12.8
60.00	22.2	16.0	11.0	0.0131	17.0	13.5	0.0062	10.8
250.00	21.9	14.0	8.9	0.0131	15.0	13.8	0.0031	8.8
1440.00	21.2	13.0	7.7	0.0132	14.0	14.0	0.0013	7.6

MACTEC Engineering and Consulting, Inc.

Fractional Components

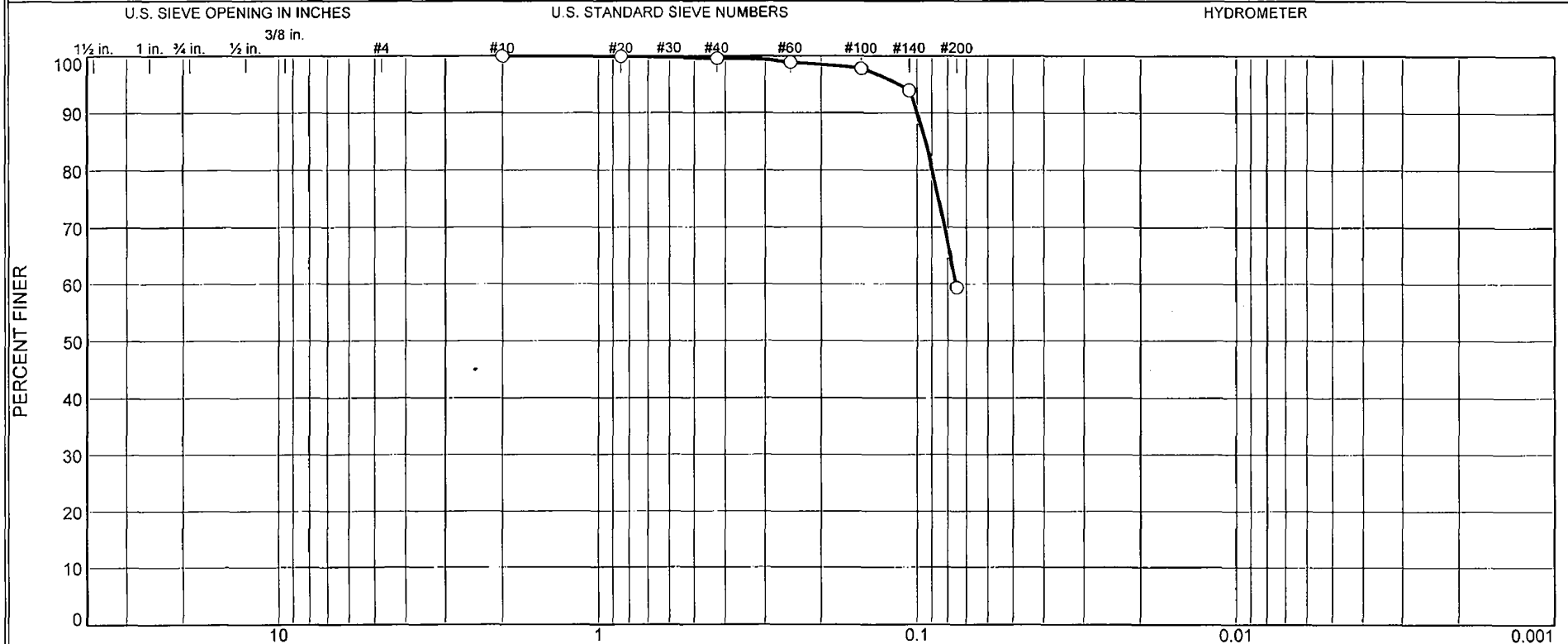
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	58.8	59.0	31.2	9.8	41.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0052	0.0181	0.0402	0.0574	0.0797	0.0849	0.0964	0.1000	0.1043	0.1197

Fineness Modulus	C _u	C _c
0.01	16.26	7.44

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	41	59	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-705	705-23	173.5-175.0	2/24/08	ML	Greenish Gray Sandy SILT (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY (OVEN DRY METHOD) ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 173.5-175.0

Sample Number: 705-23

Material Description: Greenish Gray Sandy SILT (Visual)

Date: 2/24/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ML

Testing Remarks: SIEVE ANALYSIS ONLY (OVEN DRY METHOD)

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 94.61

Tare Wt. = 0.00

Minus #200 from wash = 0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
94.61	0.00	0.00	#10	0.00	100
			#20	0.05	100
			#40	0.40	100
			#60	1.04	99
			#100	2.06	98
			#140	5.74	94
			#200	38.42	59

Fractional Components

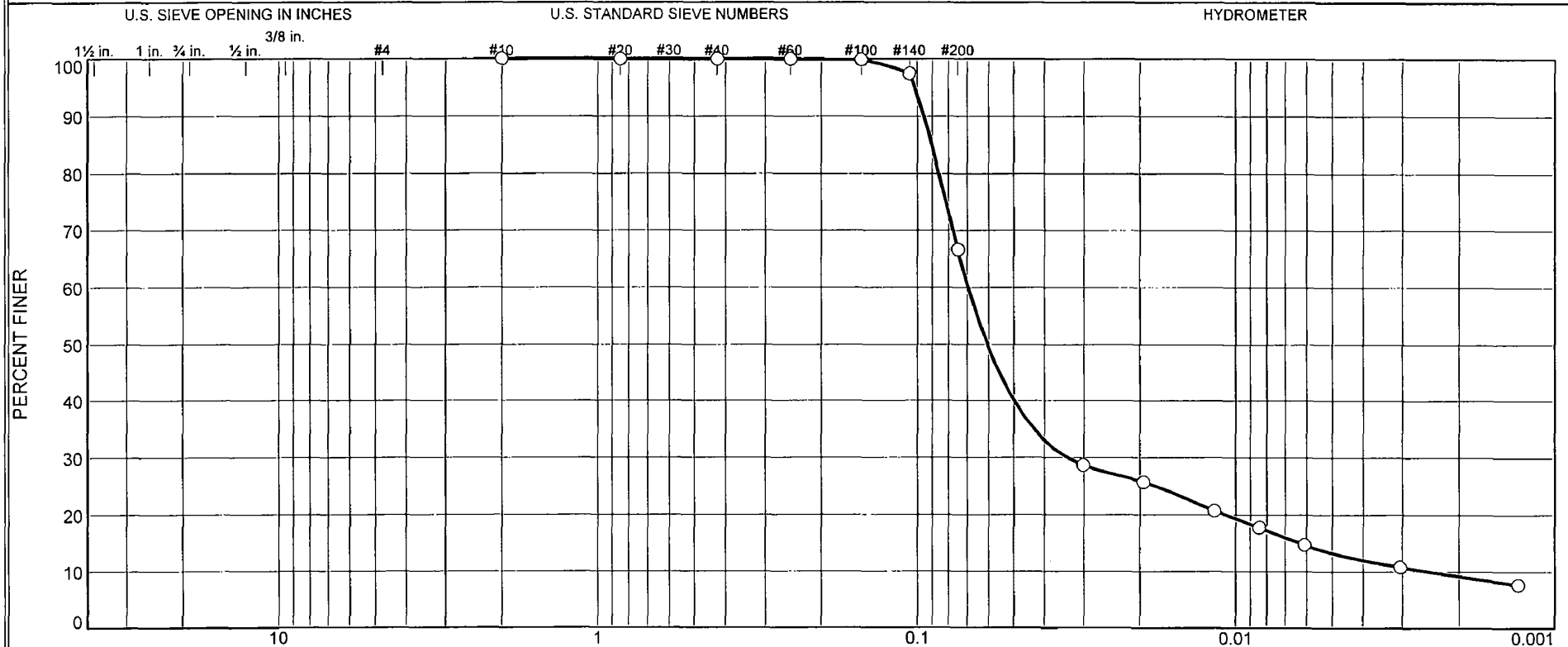
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	41	41			59

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
					0.0754	0.0895	0.0941	0.0998	0.1143

Fineness Modulus
0.03

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	33.4	53.3	13.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-705	705-24	178.5-180	2/24/08	ML	Greenish Gray Sandy SILT (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined Calcite Equivalent = 24% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 178.5-180

Sample Number: 705-24

Material Description: Greenish Gray Sandy SILT (Visual)

Date: 2/24/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ML

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Calcite Equivalent = 24% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
232.19	0.00	0.00	#10	0.00	100.0
100.38	0.00	0.00	#20	0.02	100.0
			#40	0.05	100.0
			#60	0.06	99.9
			#100	0.18	99.8
			#140	2.59	97.4
			#200	33.49	66.6

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 100.38

Hygroscopic moisture correction:

Moist weight and tare = 27.90

Dry weight and tare = 27.80

Tare weight = 15.64

Hygroscopic moisture = 0.8%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	34.0	28.9	0.0131	35.0	10.6	0.0302	28.7
5.00	21.9	31.0	25.9	0.0131	32.0	11.0	0.0195	25.7
15.00	21.8	26.0	20.9	0.0131	27.0	11.9	0.0117	20.7
30.00	21.9	23.0	17.9	0.0131	24.0	12.4	0.0084	17.8
60.00	21.7	20.0	14.9	0.0132	21.0	12.9	0.0061	14.8
250.00	21.9	16.0	10.9	0.0131	17.0	13.5	0.0031	10.8
1440.00	21.3	13.0	7.7	0.0132	14.0	14.0	0.0013	7.7

MACTEC Engineering and Consulting, Inc.

Fractional Components

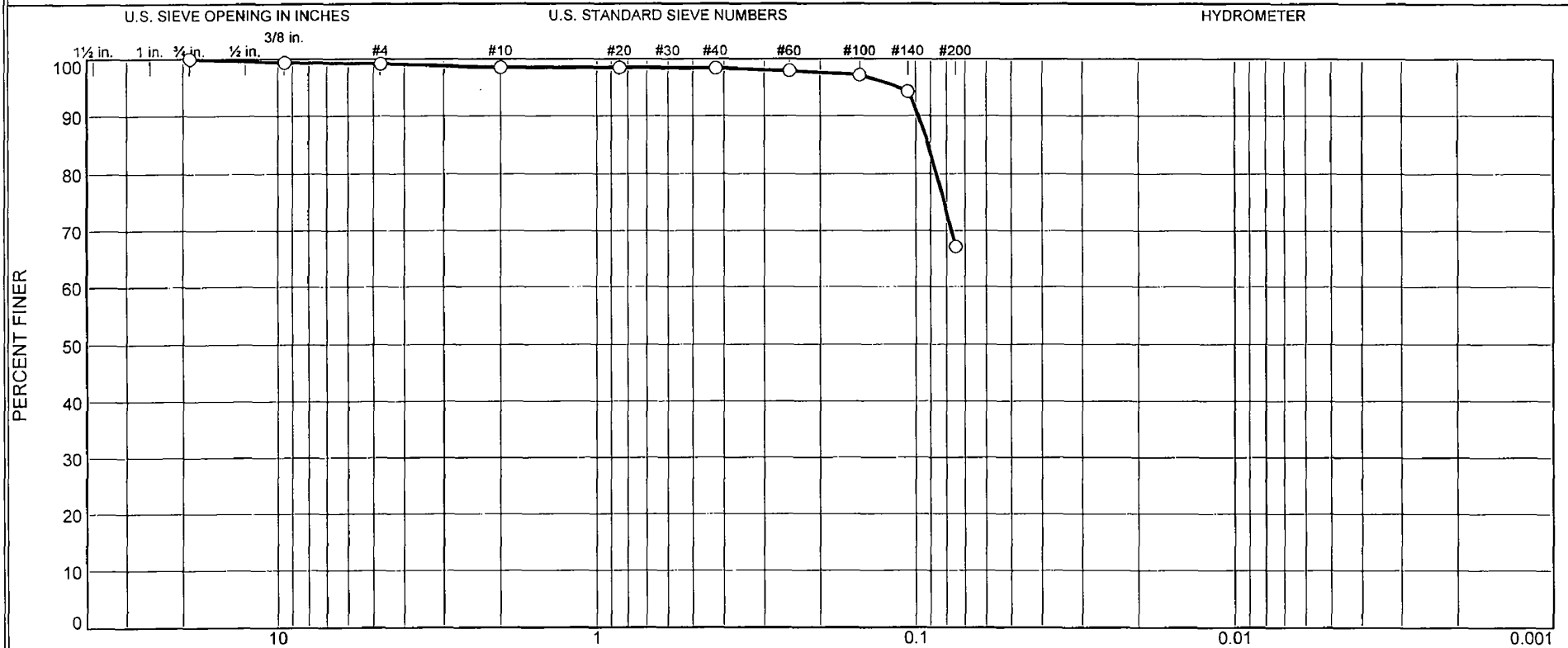
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.0	33.4	33.4	53.3	13.3	66.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0025	0.0063	0.0108	0.0338	0.0606	0.0696	0.0857	0.0902	0.0953	0.1017

Fineness Modulus	C _u	C _c
0.00	28.21	6.67

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	1	1	0	31	67	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-705	705-27	193.5-195.0	2/24/08	ML	Greenish Gray Sandy SILT (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

Raleigh, North Carolina

Tested By: CS

Volume 3, Rev 2 - 10/6/2008

Checked By: LBJ

DSC 7-2-08

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DCN# TUR512

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-705

Depth: 193.5-195.0

Sample Number: 705-27

Material Description: Greenish Gray Sandy SILT (Visual)

Date: 2/24/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ML

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
445.79	0.00	0.00	3/4	0.00	100
			3/8"	2.77	99
			#4	3.79	99
			#10	6.69	98
102.07	0.00	0.00	#20	0.02	98
			#40	0.14	98
			#60	0.63	98
			#100	1.40	97
			#140	4.44	94
			#200	32.49	67

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	1	1	1	0	31	32			67

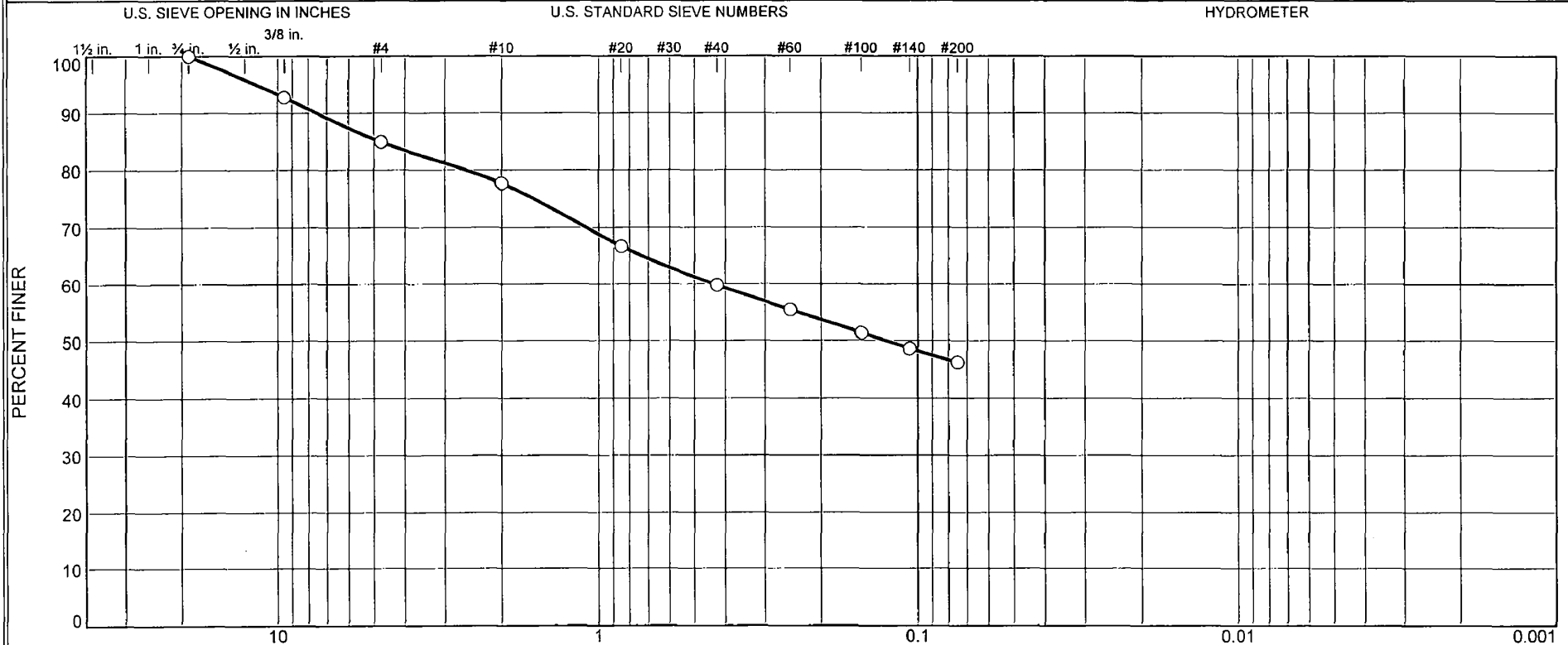
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0861	0.0914	0.0980	0.1141

Fineness
Modulus

0.11

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	15	7	18	14	46	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-706	706-2	3.1-4.6	2/9/08	SM	Pale Yellow Silty SAND with gravel (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined Calcite Equivalent = 86% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-706

Depth: 3.1-4.6

Sample Number: 706-2

Material Description: Pale Yellow Silty SAND with gravel (Visual)

Date: 2/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Calcite Equivalent = 86% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
304.39	0.00	0.00	3/4	0.00	100
			3/8"	22.00	93
			#4	46.00	85
			#10	67.99	78
102.07	0.00	0.00	#20	14.42	67
			#40	23.43	60
			#60	29.20	55
			#100	34.56	51
			#140	38.17	49
			#200	41.30	46

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	15	15	7	18	14	39			46

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.1266	0.4332	2.5791	4.8062	7.5314	11.6504

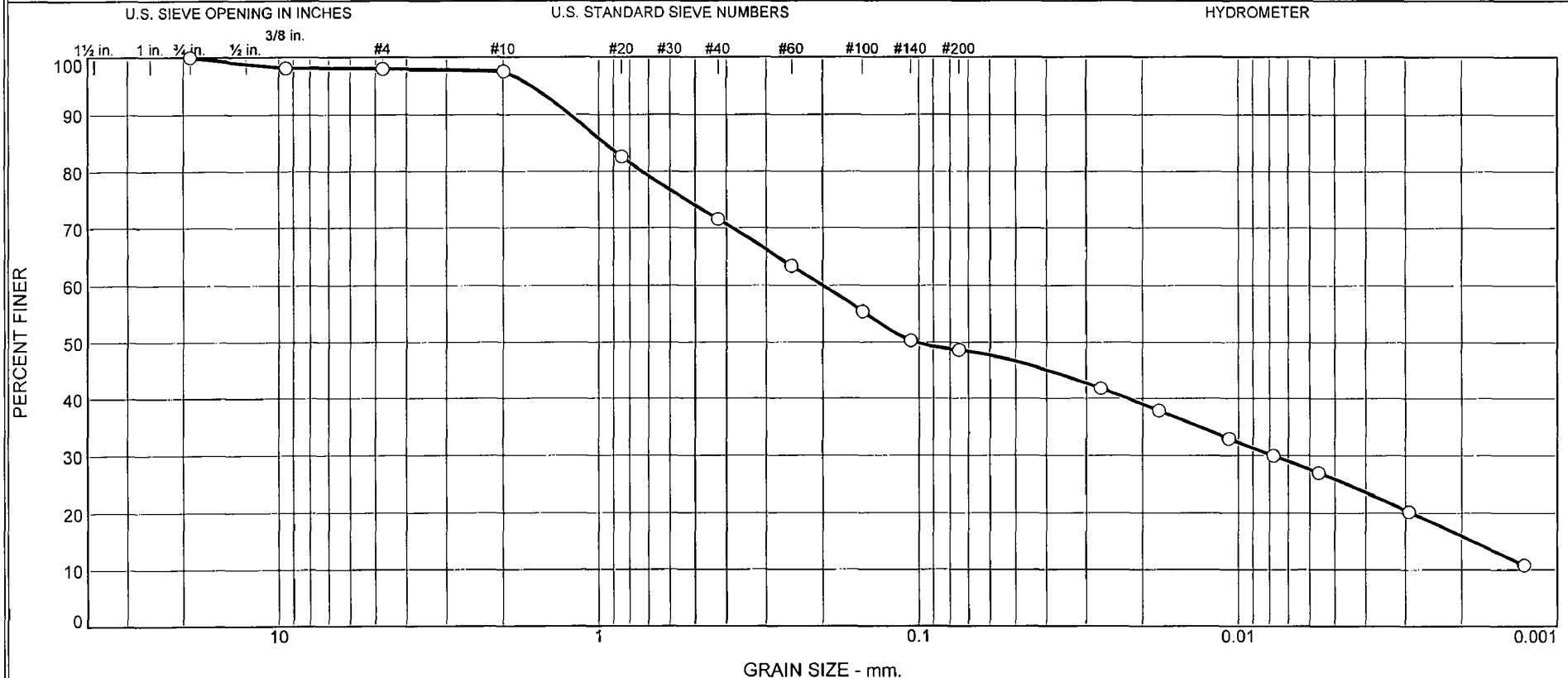
Fineness

Modulus

2.01

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-706

Depth: 8-9.5

Sample Number: 706-4

Material Description: Pale Yellow Clayey SAND (Visual)

Date: 2/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SC

Testing Remarks: SIEVE ANALYSIS AND HYROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
347.11	0.00	0.00	3/4	0.00	100.0
			3/8"	6.39	98.2
			#4	6.89	98.0
			#10	8.57	97.5
97.85	0.00	0.00	#20	14.97	82.6
			#40	26.03	71.6
			#60	34.26	63.4
			#100	42.25	55.4
			#140	47.42	50.3
			#200	49.07	48.6

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 97.5

Weight of hydrometer sample = 97.85

Hygroscopic moisture correction:

Moist weight and tare = 28.07

Dry weight and tare = 28.03

Tare weight = 15.52

Hygroscopic moisture = 0.3%

Table of composite correction values:

Temp., deg. C: 11.2 28.4

Comp. corr.: -8.0 -4.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.9	48.0	42.3	0.0133	49.0	8.3	0.0270	41.8
5.00	20.9	44.0	38.3	0.0133	45.0	8.9	0.0178	37.8
15.00	20.9	39.0	33.3	0.0133	40.0	9.7	0.0107	32.9
30.00	20.9	36.0	30.3	0.0133	37.0	10.2	0.0078	29.9
60.00	21.0	33.0	27.3	0.0133	34.0	10.7	0.0056	27.0
240.00	21.7	26.0	20.4	0.0132	27.0	11.9	0.0029	20.2
1440.00	21.6	16.5	10.9	0.0132	17.5	13.4	0.0013	10.8

MACTEC Engineering and Consulting, Inc.

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.0	2.0	0.5	25.9	23.0	49.4	22.7	25.9	48.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0018	0.0029	0.0078	0.1029	0.2002	0.7336	0.9621	1.2349	1.6344

Fineness Modulus
1.19

MACTEC Engineering and Consulting, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME: FPL COL PROJECT (TURKEY POINT)

PROJECT NUMBER: 6468051950

DATE: 8/15/08

SAMPLE IDENTIFICATION: B-706-7, B-706-5

(A) Mass of oven-dried soil, grams:	106.63
(B) Mass of pycnometer filled with water at test temperature (T), grams:	672.35
(C) Mass of pycnometer, water and soil, grams:	739.89
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.8
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.728
(F) <i>Correction factor:</i>	0.99961
(G x F) SPECIFIC GRAVITY @ 20°C:	2.727

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

Samples Combined for Testing

REMARKS: Estimated % Passing # 4 : 100

Poorly Graded Silty SAND (Visual Description by Lab Technician)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

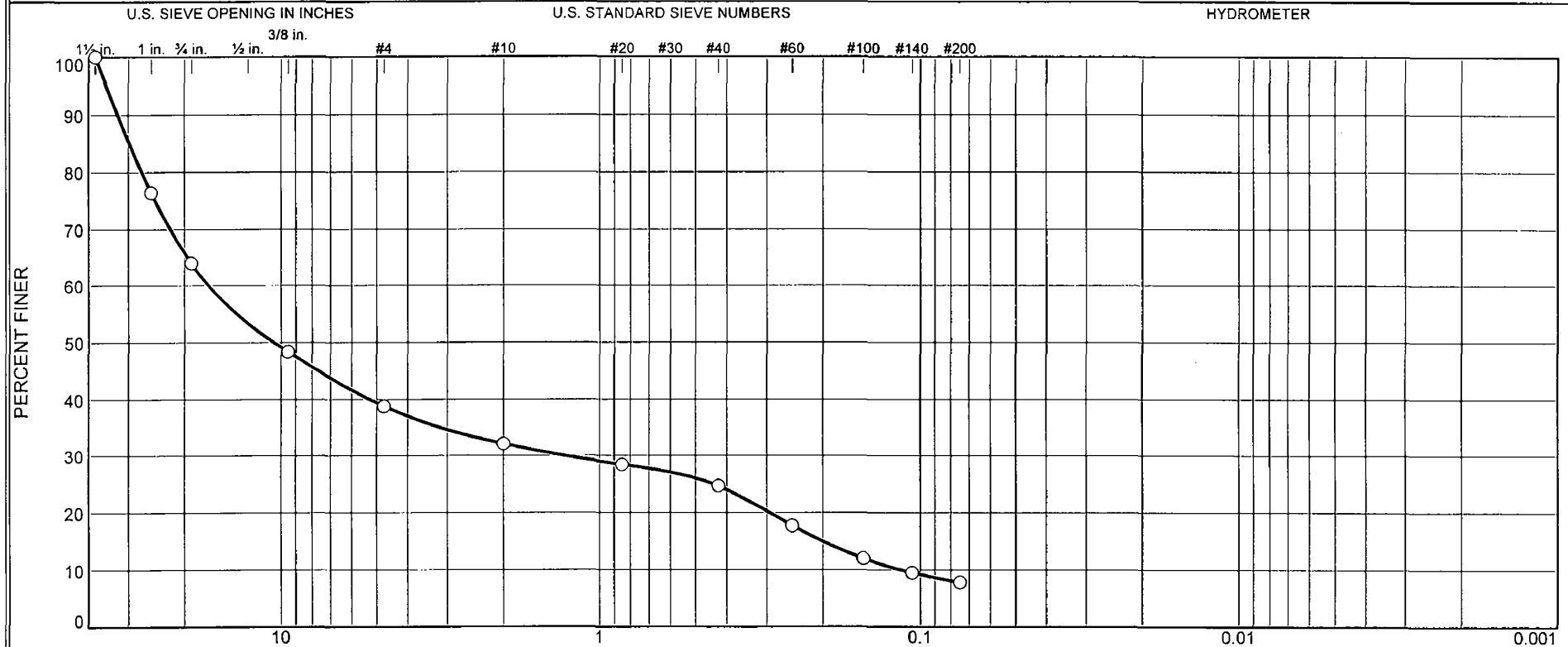
PYCNOMETER : P-8

TESTED BY: CS

REVIEWED BY: Brian Johnson

ZHU 8/19/08

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
36	25	7	7	17	8	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-706	706-6	12.9-14.4	2/9/08	GP-GM	Pale Yellow Poorly Graded GRAVEL with silt and sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY (OVEN DRY METHOD) ND = Not Determined Calcite Equivalent = 92% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-706

Depth: 12.9-14.4

Sample Number: 706-6

Material Description: Pale Yellow Poorly Graded GRAVEL with silt and sand (Visual)

Date: 2/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GP-GM

Testing Remarks: SIEVE ANALYSIS ONLY (OVEN DRY METHOD)

ND = Not Determined

Calcite Equivalent = 92% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 238.67

Tare Wt. = 0.00

Minus #200 from wash = 0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
238.67	0.00	0.00	1.5	0.00	100
			1.00	56.30	76
			3/4	86.00	64
			3/8"	123.21	48
			#4	146.12	39
			#10	162.04	32
			#20	170.96	28
			#40	180.00	25
			#60	196.36	18
			#100	210.00	12
			#140	216.00	9
			#200	220.00	8

Fractional Components

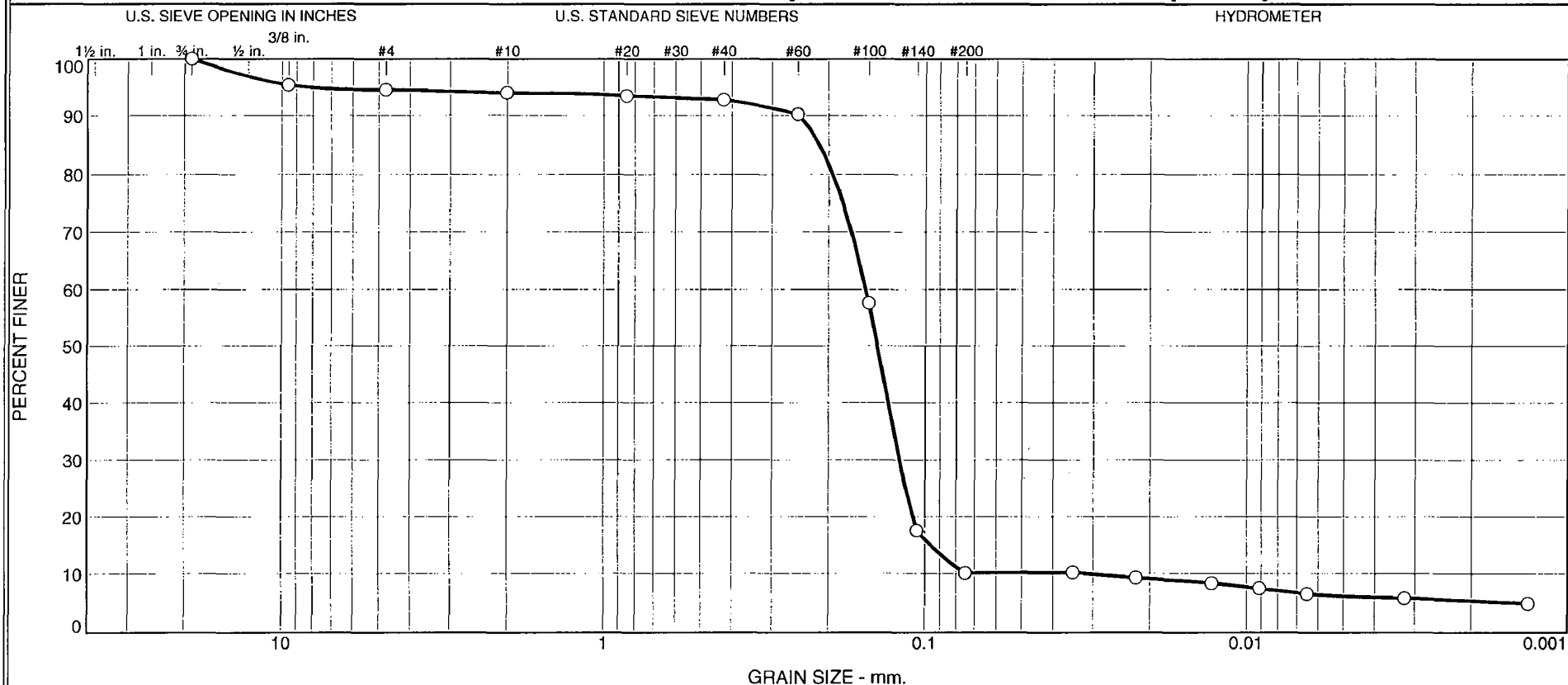
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	36	25	61	7	7	17	31			8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.1151	0.2009	0.2949	1.2938	10.5531	16.8463	27.1902	29.7246	32.3556	35.1310

Fineness Modulus	C _u	C _c
5.27	146.36	0.86

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.5	0.5	1.2	82.7	3.9	6.2

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-706	706-9	115.8-117.3	3/19/08	SP-SM	White Poorly Graded SAND with silt (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity = 2.656 (ASTM D854-06) ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

7/2/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-706

Depth: 115.8-117.3

Sample Number: 706-9

Material Description: White Poorly Graded SAND with silt (Visual)

Date: 3/19/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity = 2.656 (ASTM D854-06)

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
409.07	0.00	0.00	3/4	0.00	100.0
			3/8"	18.73	95.4
			#4	22.35	94.5
			#10	24.47	94.0
104.27	0.00	0.00	#20	0.61	93.5
			#40	1.35	92.8
			#60	4.14	90.3
			#100	40.32	57.7
			#140	84.78	17.6
			#200	93.06	10.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 94.0

Weight of hydrometer sample = 104.27

Hygroscopic moisture correction:

Moist weight and tare = 29.55

Dry weight and tare = 29.51

Tare weight = 15.40

Hygroscopic moisture = 0.3%

Table of composite correction values:

Temp., deg. C: 11.2 28.4

Comp. corr.: -8.0 -4.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.656

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.2	17.0	11.3	0.0134	18.0	13.3	0.0347	10.2
5.00	21.1	16.0	10.3	0.0134	17.0	13.5	0.0221	9.3
15.00	21.1	15.0	9.3	0.0134	16.0	13.7	0.0128	8.4
30.00	21.1	14.0	8.3	0.0134	15.0	13.8	0.0091	7.5
60.00	21.1	13.0	7.3	0.0134	14.0	14.0	0.0065	6.6
240.00	21.9	12.0	6.5	0.0133	13.0	14.2	0.0032	5.9
1440.00	21.7	11.0	5.4	0.0133	12.0	14.3	0.0013	4.9

MACTEC Engineering and Consulting, Inc.

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	5.5	5.5	0.5	1.2	82.7	84.4	3.9	6.2	10.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0311	0.0962	0.1092	0.1202	0.1408	0.1532	0.1943	0.2137	0.2471	8.3078

Fineness Modulus	C _u	C _c
0.80	4.93	3.03

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME: FPL COL PROJECT (TURKEY POINT)

PROJECT NUMBER: 6468051950

DATE: 3/28/08

SAMPLE IDENTIFICATION: B-706-9

(A) Mass of oven-dried soil, grams:	74.16
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.79
(C) Mass of pycnometer, water and soil, grams:	702.03
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	20.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.656
(F)	Correction factor: 0.99981
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.656

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: % Passing # 4 : 94.5%

Poorly Graded SAND with silt (SP-SM) - visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

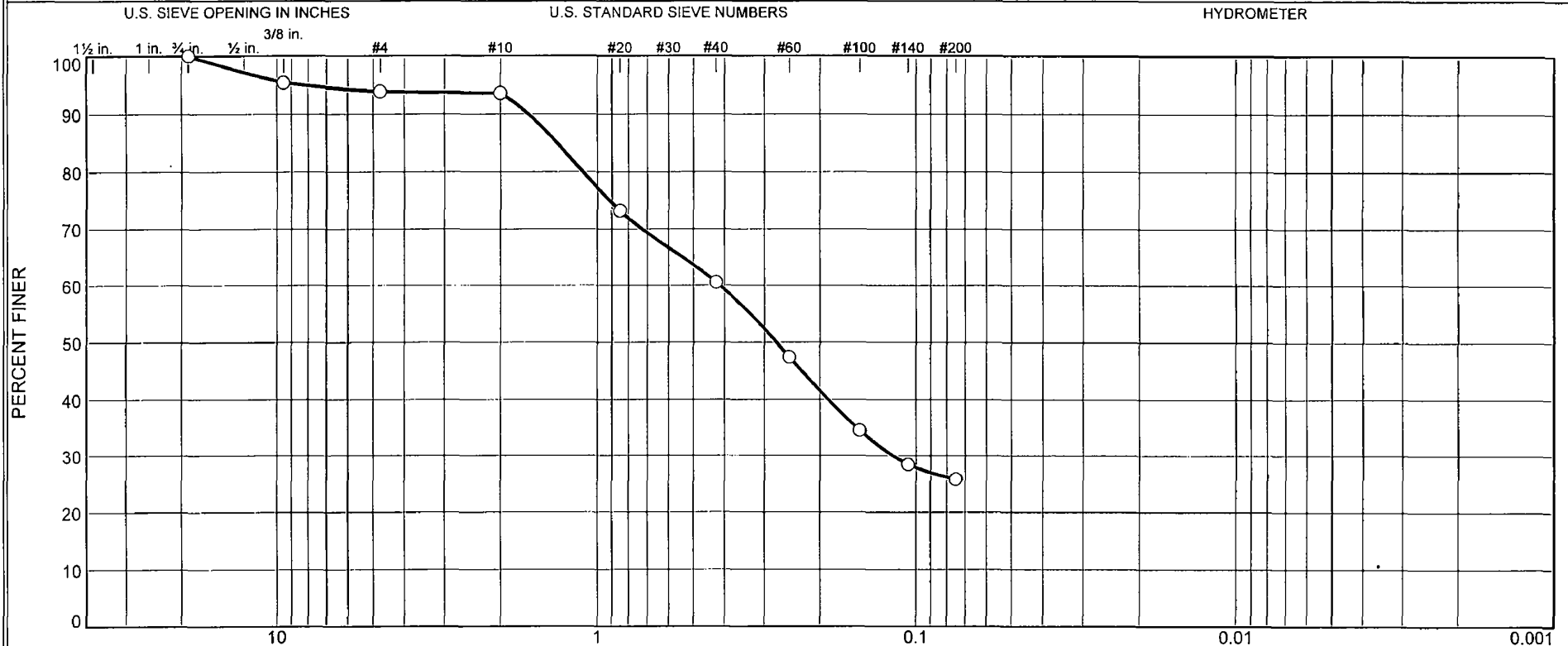
PYCNOMETER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

DSC 7-2-08

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	6	0	33	35	26	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-706	706-11	125.9-127.4	2/12/08	SM	Pale Yellow Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined Calcite Equivalent = 21% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-706

Depth: 125.9-127.4

Sample Number: 706-11

Material Description: Pale Yellow Silty SAND (Visual)

Date: 2/12/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Calcite Equivalent = 21% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
370.20	0.00	0.00	3/4	0.00	100
			3/8"	17.04	95
			#4	22.81	94
			#10	23.86	94
99.59	0.00	0.00	#20	21.66	73
			#40	35.10	61
			#60	49.09	47
			#100	62.84	35
			#140	69.31	28
			#200	72.12	26

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	6	6	0	33	35	68			26

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1185	0.2750	0.4132	1.1099	1.3343	1.6370	8.3164

Fineness Modulus

1.82

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.8	0.4	6.0	42.8	34.0	15.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-706	706-13	135.4-136.9	2/13/08	SM	Light Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-706

Depth: 135.4-136.9

Sample Number: 706-13

Material Description: Light Gray Silty SAND (Visual)

Date: 2/13/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
360.27	0.00	0.00	3/4	0.00	100.0
			3/8"	4.71	98.7
			#4	6.40	98.2
			#10	8.03	97.8
101.79	0.00	0.00	#20	3.43	94.5
			#40	6.23	91.8
			#60	8.64	89.5
			#100	14.76	83.6
			#140	36.97	62.3
			#200	50.81	49.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =97.8

Weight of hydrometer sample =101.79

Hygroscopic moisture correction:

Moist weight and tare = 28.29

Dry weight and tare = 28.25

Tare weight = 15.64

Hygroscopic moisture =0.3%

Table of composite correction values:

Temp., deg. C: 11.2 28.4

Comp. corr.: -8.0 -4.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.8	33.5	27.7	0.0133	34.5	10.6	0.0307	26.4
5.00	20.8	31.0	25.2	0.0133	32.0	11.0	0.0198	24.0
15.00	20.8	28.0	22.2	0.0133	29.0	11.5	0.0117	21.2
30.00	20.8	26.0	20.2	0.0133	27.0	11.9	0.0084	19.3
60.00	21.0	23.0	17.3	0.0133	24.0	12.4	0.0060	16.5
240.00	21.8	18.0	12.5	0.0131	19.0	13.2	0.0031	11.9
1440.00	21.7	13.0	7.4	0.0132	14.0	14.0	0.0013	7.1

MACTEC Engineering and Consulting, Inc.

Fractional Components

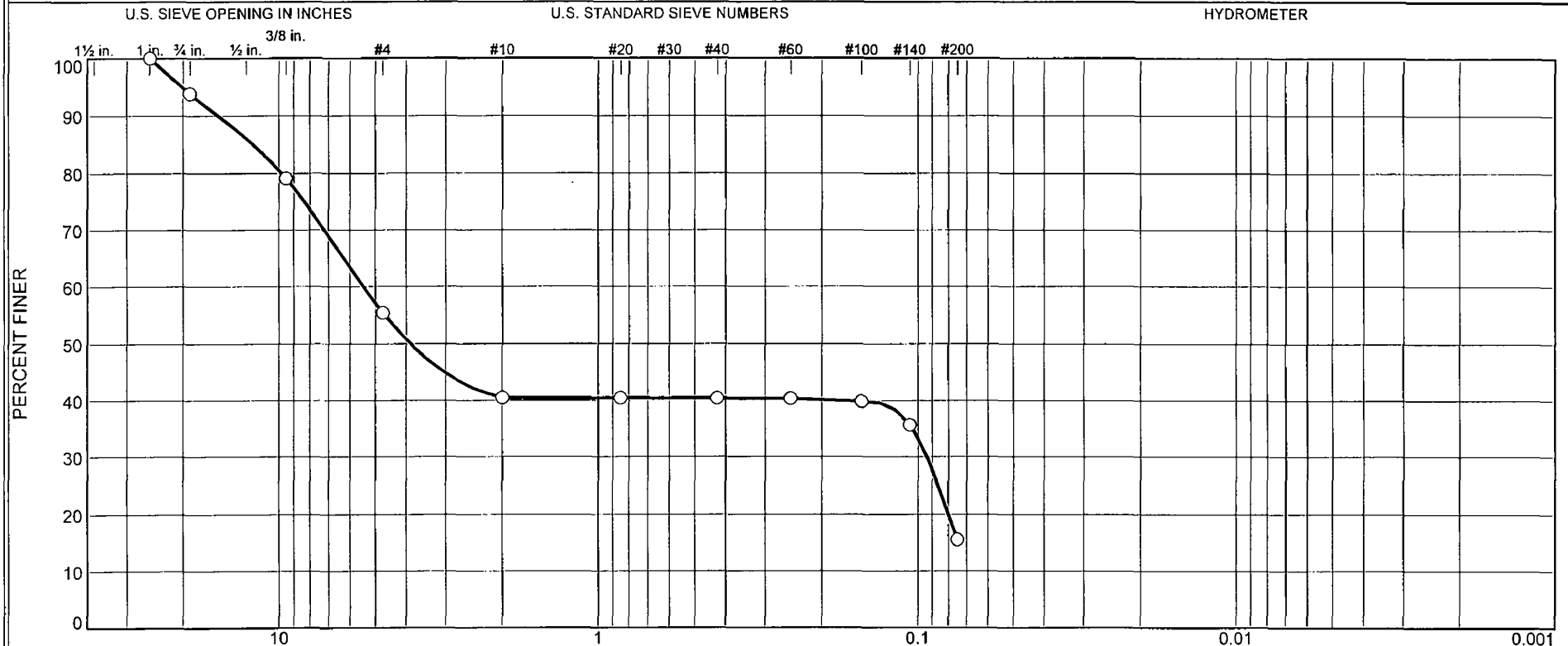
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.8	1.8	0.4	6.0	42.8	49.2	34.0	15.0	49.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0022	0.0050	0.0094	0.0381	0.0776	0.1016	0.1400	0.1655	0.2682	0.9709

Fineness Modulus	C _u	C _c
0.42	45.91	6.47

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
6	39	15	0	24	16	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-706	706-15	145.4-146.9	2/13/08	GM	Light Olive Gray Silty GRAVEL with sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined Calcite Equivalent = 17% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-706

Depth: 145.4-146.9

Sample Number: 706-15

Material Description: Light Olive Gray Silty GRAVEL with sand (Visual)

Date: 2/13/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Calcite Equivalent = 17% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
319.39	0.00	0.00	1	0.00	100
			3/4	19.65	94
			3/8"	66.60	79
			#4	142.24	55
			#10	190.08	40
98.87	0.00	0.00	#20	0.13	40
			#40	0.22	40
			#60	0.36	40
			#100	1.61	40
			#140	11.82	36
			#200	60.82	16

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	6	39	45	15	0	24	39			16

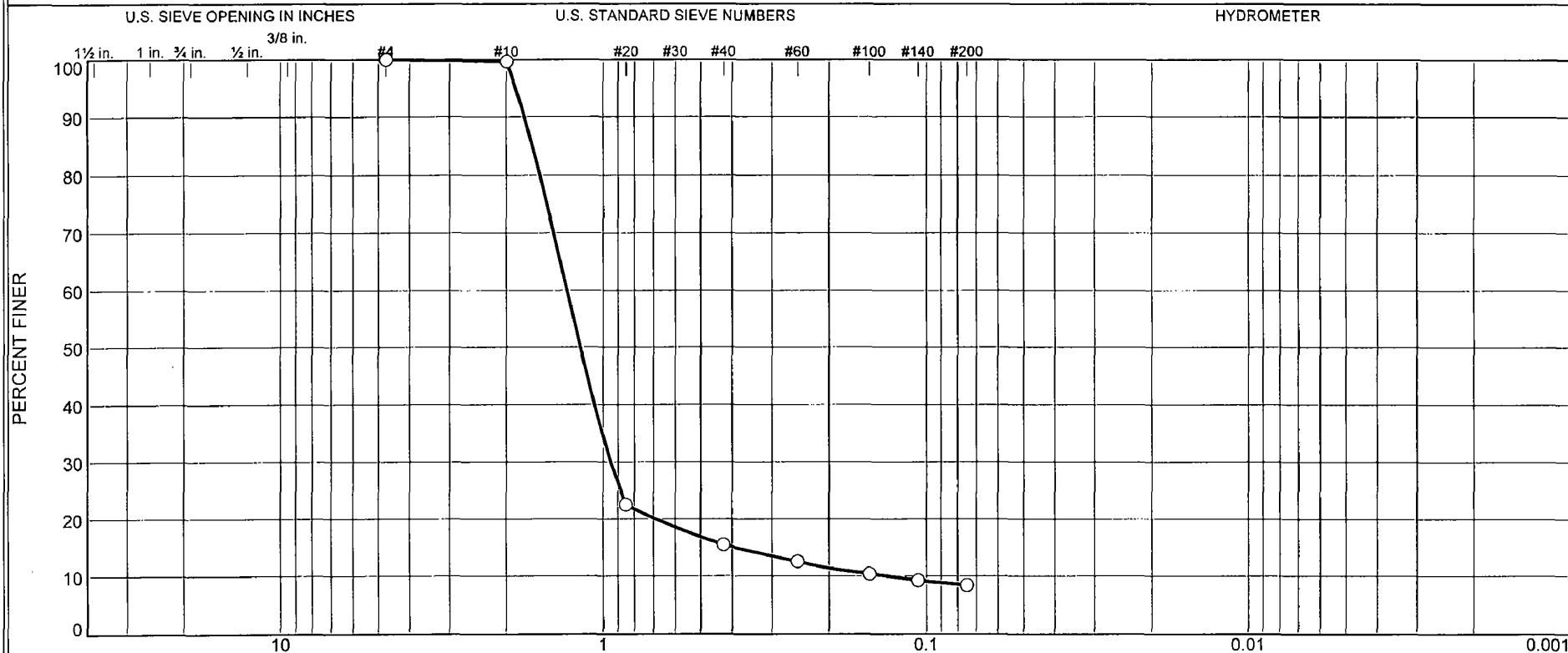
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0800	0.0937	3.8870	5.4565	9.8175	12.0637	15.5624	20.1590

Fineness Modulus

3.69

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	85	7	8	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-707	707-6	12.5-14.0	2/19/08	SP-SM	White Poorly Graded SAND with silt (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined Calcite Equivalent = 92% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-707

Depth: 12.5-14.0

Sample Number: 707-6

Material Description: White Poorly Graded SAND with silt (Visual)

Date: 2/19/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Calcite Equivalent = 92% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
213.96	0.00	0.00	#4	0.00	100
			#10	0.73	100
51.74	0.00	0.00	#20	40.05	23
			#40	43.71	15
			#60	45.23	13
			#100	46.34	10
			#140	46.93	9
			#200	47.37	8

Fractional Components

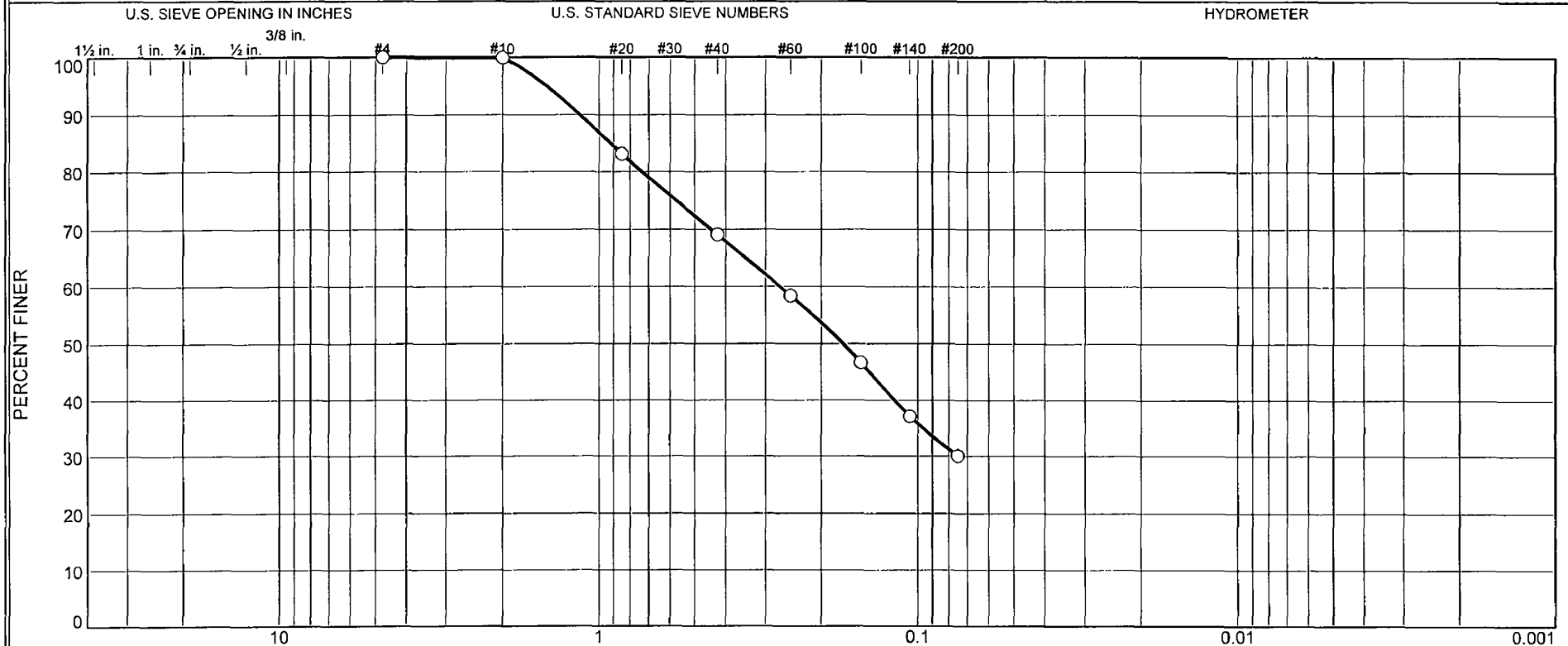
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	85	7	92			8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.1328	0.3937	0.6893	0.9498	1.1797	1.2981	1.5750	1.6598	1.7558	1.8687

Fineness Modulus	C _u	C _c
3.08	9.78	5.23

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	31	39	30	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-707	707-10	108.8-110.3	1/19/08	SM	White Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-707

Depth: 108.8-110.3

Sample Number: 707-10

Material Description: White Silty SAND (Visual)

Date: 1/19/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
379.98	0.00	0.00	#4	0.00	100
			#10	0.40	100
99.71	0.00	0.00	#20	16.68	83
			#40	30.75	69
			#60	41.36	58
			#100	53.11	47
			#140	62.63	37
			#200	69.66	30

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	31	39	70			30

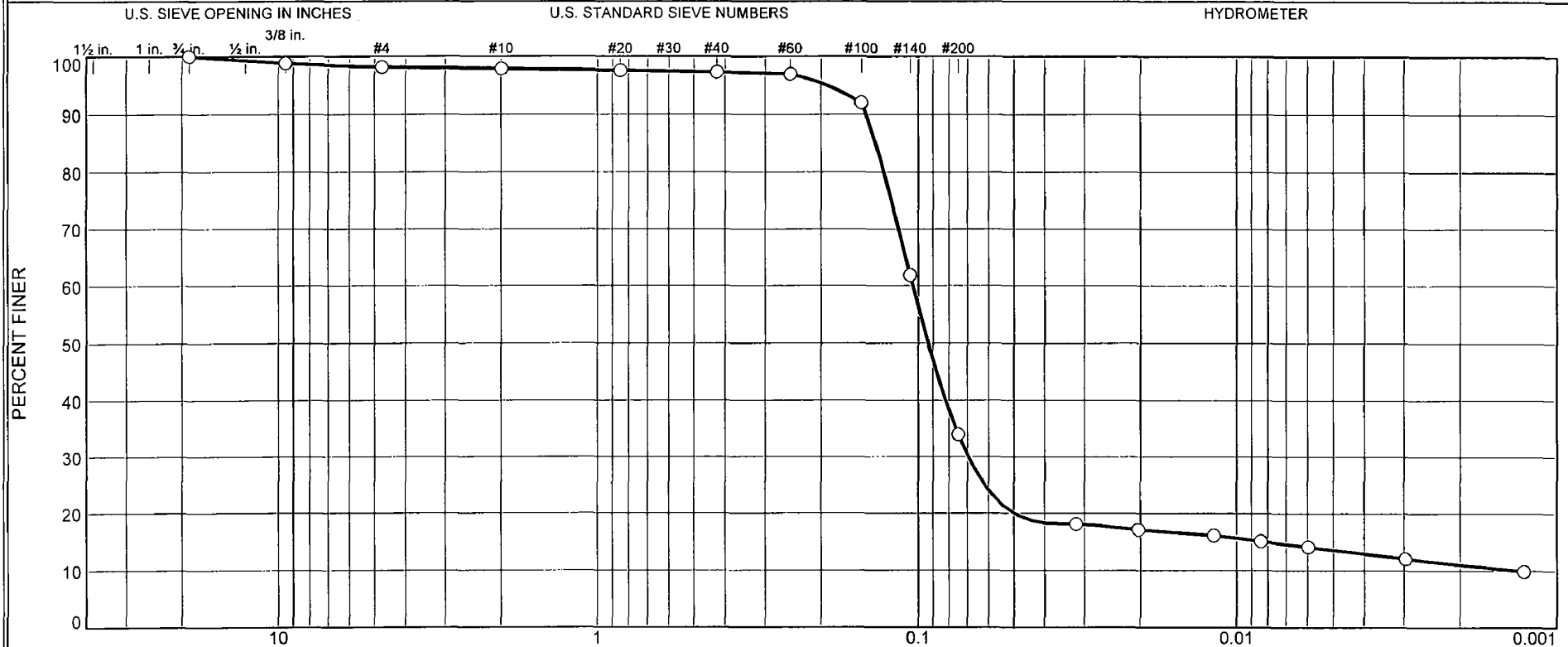
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.1706	0.2695	0.7336	0.9215	1.1475	1.4539

Fineness Modulus

1.25

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.9	0.2	0.6	63.3	20.4	13.6

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-707	707-14	125.3-126.8	2/20/08	SM	Light Brownish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined Calcite Equivalent = 20% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-707

Depth: 125.3-126.8

Sample Number: 707-14

Material Description: Light Brownish Gray Silty SAND (Visual)

Date: 2/20/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Calcite Equivalent = 20% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
378.77	0.00	0.00	3/4	0.00	100.0
			3/8"	4.42	98.8
			#4	7.05	98.1
			#10	8.09	97.9
99.55	0.00	0.00	#20	0.33	97.5
			#40	0.61	97.3
			#60	0.96	96.9
			#100	5.99	92.0
			#140	36.64	61.8
			#200	65.00	34.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 97.9

Weight of hydrometer sample = 99.55

Hygroscopic moisture correction:

Moist weight and tare = 27.93

Dry weight and tare = 27.85

Tare weight = 15.66

Hygroscopic moisture = 0.7%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.9	23.0	18.5	0.0128	24.0	12.4	0.0319	18.1
5.00	23.9	22.0	17.5	0.0128	23.0	12.5	0.0203	17.1
15.00	23.9	21.0	16.5	0.0128	22.0	12.7	0.0118	16.1
30.00	23.9	20.0	15.5	0.0128	21.0	12.9	0.0084	15.1
60.00	23.9	19.0	14.5	0.0128	20.0	13.0	0.0060	14.2
250.00	23.6	17.0	12.4	0.0129	18.0	13.3	0.0030	12.1
1440.00	22.6	15.0	10.1	0.0130	16.0	13.7	0.0013	9.9

MACTEC Engineering and Consulting, Inc.

Fractional Components

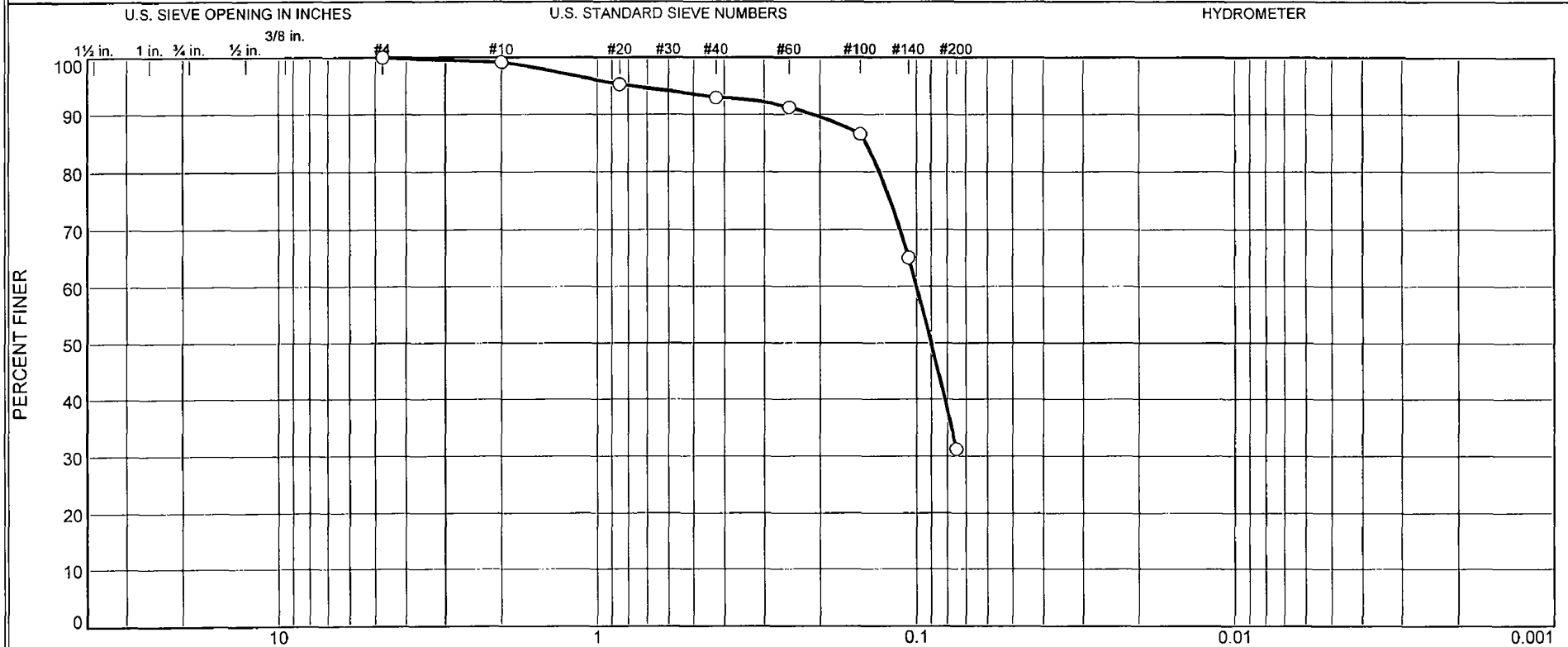
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.9	1.9	0.2	0.6	63.3	64.1	20.4	13.6	34.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0013	0.0080	0.0499	0.0697	0.0932	0.1040	0.1280	0.1356	0.1452	0.1934

Fineness Modulus	C _u	C _c
0.21	78.36	35.23

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	1	6	62	31	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-707	707-16	135.5-137	2/21/08	SM	Light Brownish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-707

Depth: 135.5-137

Sample Number: 707-16

Material Description: Light Brownish Gray Silty SAND (Visual)

Date: 2/21/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
442.75	0.00	0.00	#4	0.00	100
			#10	3.70	99
99.79	0.00	0.00	#20	3.87	95
			#40	6.25	93
			#60	7.98	91
			#100	12.74	87
			#140	34.27	65
			#200	68.34	31

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	1	6	62	69			31

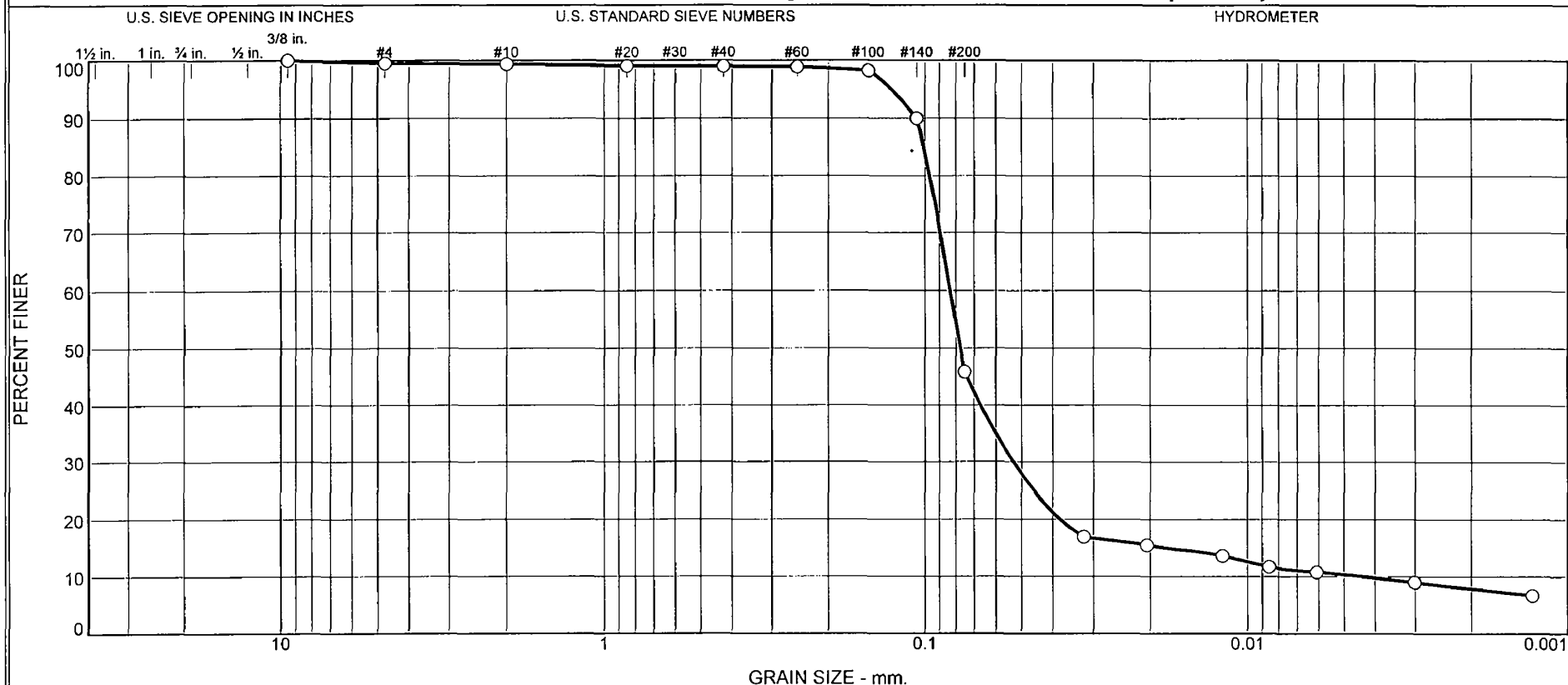
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0900	0.1000	0.1305	0.1443	0.2110	0.7804

Fineness Modulus

0.31

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.5	0.1	0.5	53.0	35.5	10.4

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-707	707-18	145.5-147.0	2/21/08	SM	Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel
Project Turkey Point COL

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS AND HYDROMETER ONLY
Specific Gravity is assumed
ND = Not Determined
Calcite Equivalent = 18% (ASTM D 4373-02)

Project No. 6468071950 Figure N/A

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-707

Depth: 145.5-147.0

Sample Number: 707-18

Material Description: Gray Silty SAND (Visual)

Date: 2/21/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Calcite Equivalent = 18% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
307.92	0.00	0.00	3/8"	0.00	100.0
			#4	1.53	99.5
			#10	2.00	99.4
104.36	0.00	0.00	#20	0.36	99.0
			#40	0.43	98.9
			#60	0.54	98.8
			#100	1.20	98.2
			#140	9.82	90.0
			#200	56.19	45.9

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.4

Weight of hydrometer sample =104.36

Hygroscopic moisture correction:

Moist weight and tare = 29.42

Dry weight and tare = 29.37

Tare weight = 15.62

Hygroscopic moisture =0.4%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.8	22.5	17.9	0.0128	23.5	12.4	0.0320	16.9
5.00	23.8	21.0	16.4	0.0128	22.0	12.7	0.0204	15.5
15.00	23.8	19.0	14.4	0.0128	20.0	13.0	0.0120	13.6
30.00	23.8	17.0	12.4	0.0128	18.0	13.3	0.0086	11.7
60.00	23.9	16.0	11.5	0.0128	17.0	13.5	0.0061	10.8
250.00	24.2	14.0	9.5	0.0128	15.0	13.8	0.0030	9.0
1440.00	22.6	12.0	7.1	0.0130	13.0	14.2	0.0013	6.7

MACTEC Engineering and Consulting, Inc.

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.5	0.5	0.1	0.5	53.0	53.6	35.5	10.4	45.9

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0043	0.0177	0.0380	0.0531	0.0775	0.0834	0.0964	0.1007	0.1060	0.1267

Fineness Modulus	C _u	C _c
0.06	19.46	7.90

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
2	20	10	17	26	25	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-708(DH)	708-3	5.0-6.5	3/7/08	SM	Very Pale Brown Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

ZHU 7/23/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-708(DH)

Depth: 5.0-6.5

Sample Number: 708-3

Material Description: Very Pale Brown Silty SAND (Visual)

Date: 3/7/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
441.00	0.00	0.00	1	0.00	100
			3/4	9.16	98
			3/8"	50.16	89
			#4	96.21	78
			#10	139.92	68
102.00	0.00	0.00	#20	14.74	58
			#40	26.52	51
			#60	39.99	42
			#100	52.22	33
			#140	60.48	28
			#200	65.13	25

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	2	20	22	10	17	26	53			25

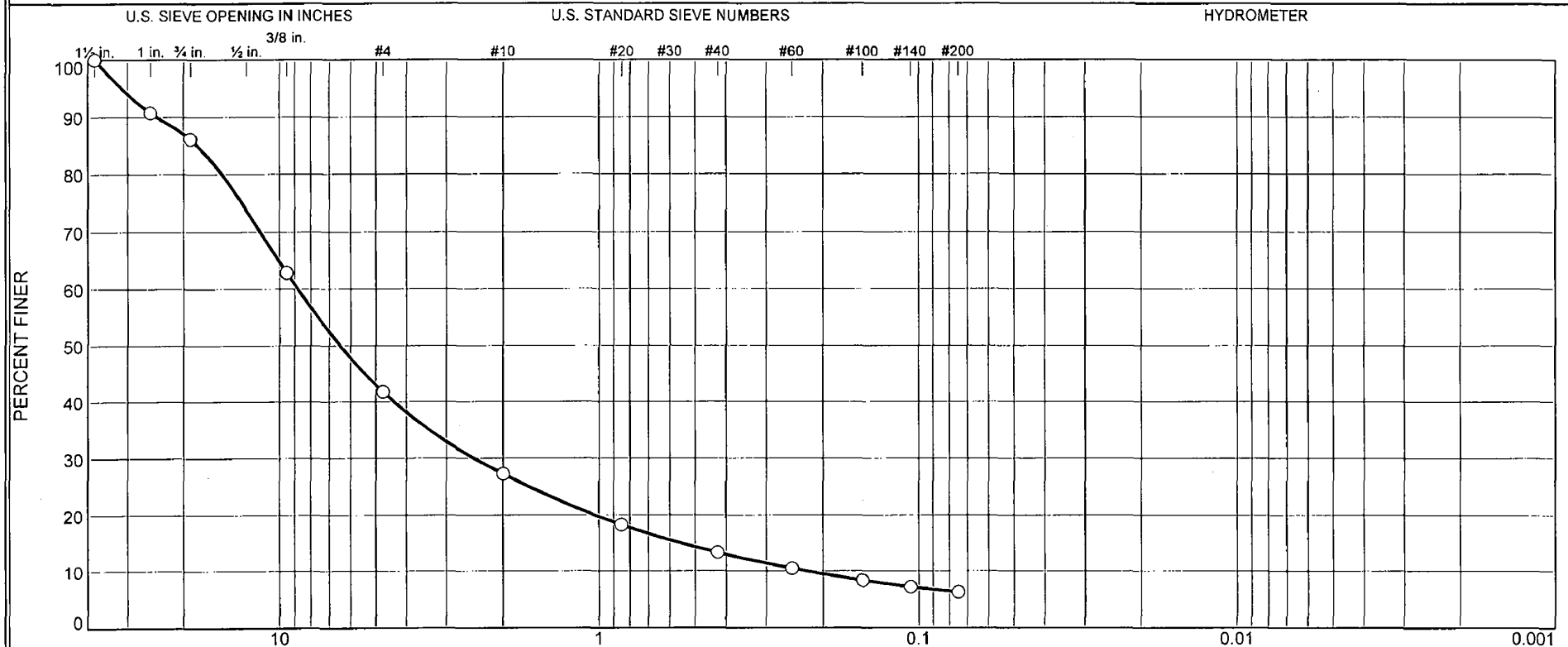
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1232	0.4105	0.9839	5.4210	7.5637	10.3973	14.6604

Fineness Modulus

2.70

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel			% Sand			% Fines	
Coarse	Fine		Coarse	Medium	Fine	Silt	Clay
14	44		15	14	7	6	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-708(DH)	708-6	13.0-14.5	3/7/08	GP-GM	Light Gray Poorly Graded GRAVEL with silt and sand (Visual)	ND	ND	ND

Client Bechtel	MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950 Figure			

ZHU 7/23/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-708(DH)

Depth: 13.0-14.5

Sample Number: 708-6

Material Description: Light Gray Poorly Graded GRAVEL with silt and sand (Visual)

Date: 3/7/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GP-GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
413.99	0.00	0.00	1.5	0.00	100
			1	38.41	91
			3/4	57.44	86
			3/8"	153.71	63
			#4	241.10	42
			#10	301.20	27
94.74	0.00	0.00	#20	31.25	18
			#40	48.47	13
			#60	58.30	10
			#100	65.78	8
			#140	69.78	7
			#200	72.98	6

Fractional Components

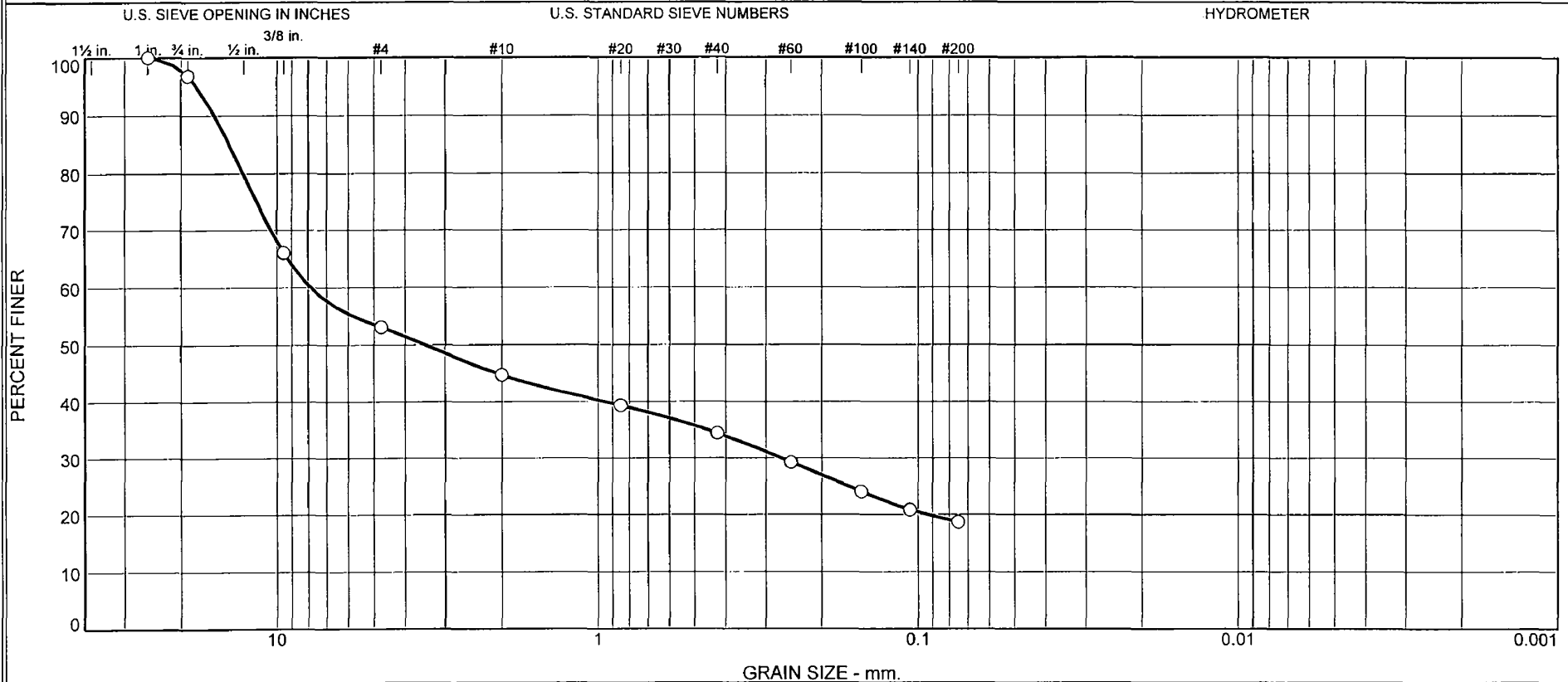
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	14	44	58	15	14	7	36			6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.2254	0.5543	1.0321	2.4683	6.4770	8.8001	15.1601	18.0972	24.2877	31.2246

Fineness Modulus	C _u	C _c
5.23	39.04	3.07

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
3	44	8	11	15	19	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-711	711-3	5.0-6.5	3/4/08	GM	White Silty GRAVEL with sand (Visual)	ND	ND	ND

Client Bechtel
 Project Turkey Point COL
 Project No. 6468071950 Figure N/A

MACTEC Engineering and Consulting, Inc.
 Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
 ND = Not Determined
 Calcite Equivalent = 95% (ASTM D 4373-02)

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-711

Depth: 5.0-6.5

Sample Number: 711-3

Material Description: White Silty GRAVEL with sand (Visual)

Date: 3/4/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Calcite Equivalent = 95% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
392.20	0.00	0.00	1.0	0.00	100
			3/4	12.62	97
			3/8"	133.20	66
			#4	183.87	53
			#10	216.83	45
97.54	0.00	0.00	#20	11.77	39
			#40	22.52	34
			#60	33.66	29
			#100	45.08	24
			#140	52.06	21
			#200	56.79	19

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	3	44	47	8	11	15	34			19

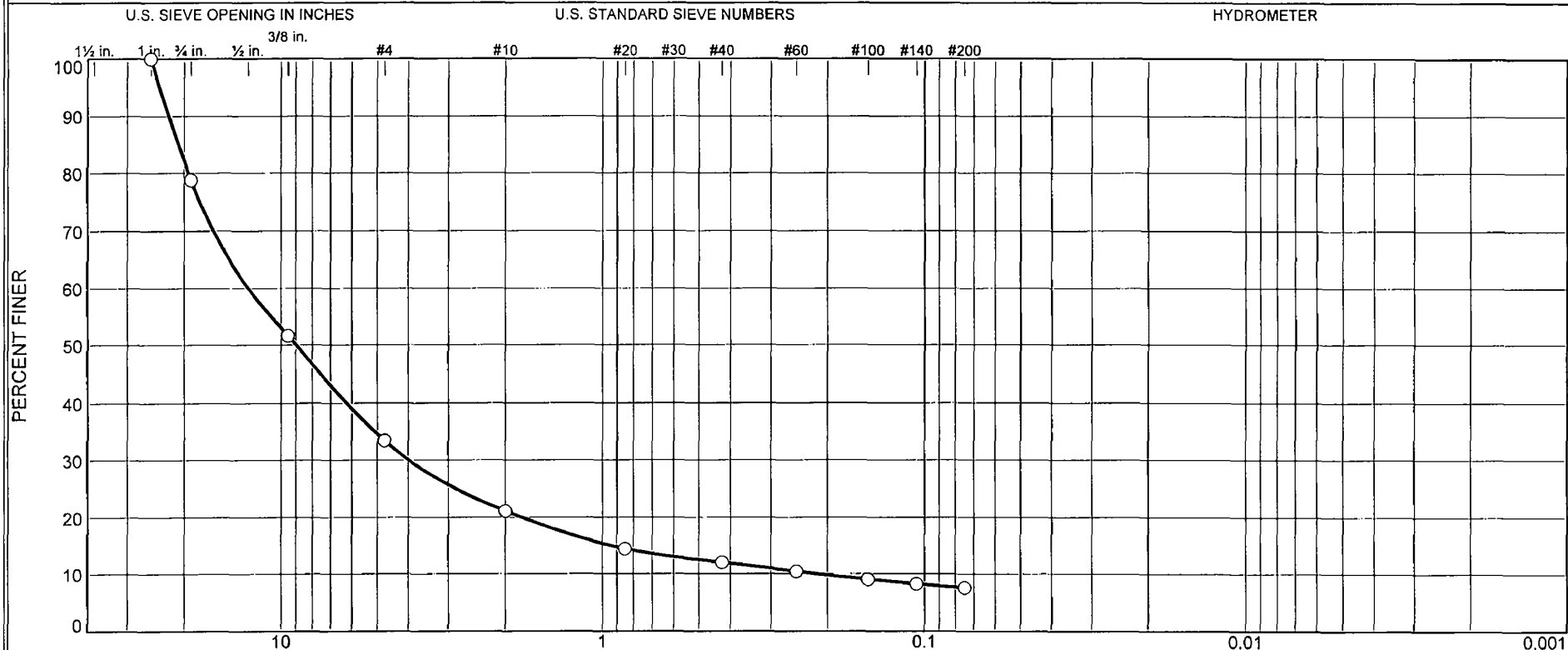
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0940	0.2682	3.4676	7.8375	12.7781	14.1009	15.6855	17.8752

Fineness Modulus

4.04

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
21	46	12	9	4	8	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-711	711-5	9.9-11.4	3/4/08	GP-GM	White Poorly Graded GRAVEL with silt and sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY (OVEN DRY METHOD) ND = Not Determined
Project Turkey Point COL				
Project No. 6468071950	Figure N/A			

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-711

Depth: 9.9-11.4

Sample Number: 711-5

Material Description: White Poorly Graded GRAVEL with silt and sand (Visual)

Date: 3/4/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GP-GM

Testing Remarks: SIEVE ANALYSIS ONLY (OVEN DRY METHOD)

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
239.77	0.00	0.00	1	0.00	100
			3/4	50.78	79
			3/8"	115.94	52
			#4	159.69	33
			#10	189.13	21
			#20	205.11	14
			#40	210.90	12
			#60	214.74	10
			#100	218.04	9
			#140	219.98	8
			#200	221.64	8

Fractional Components

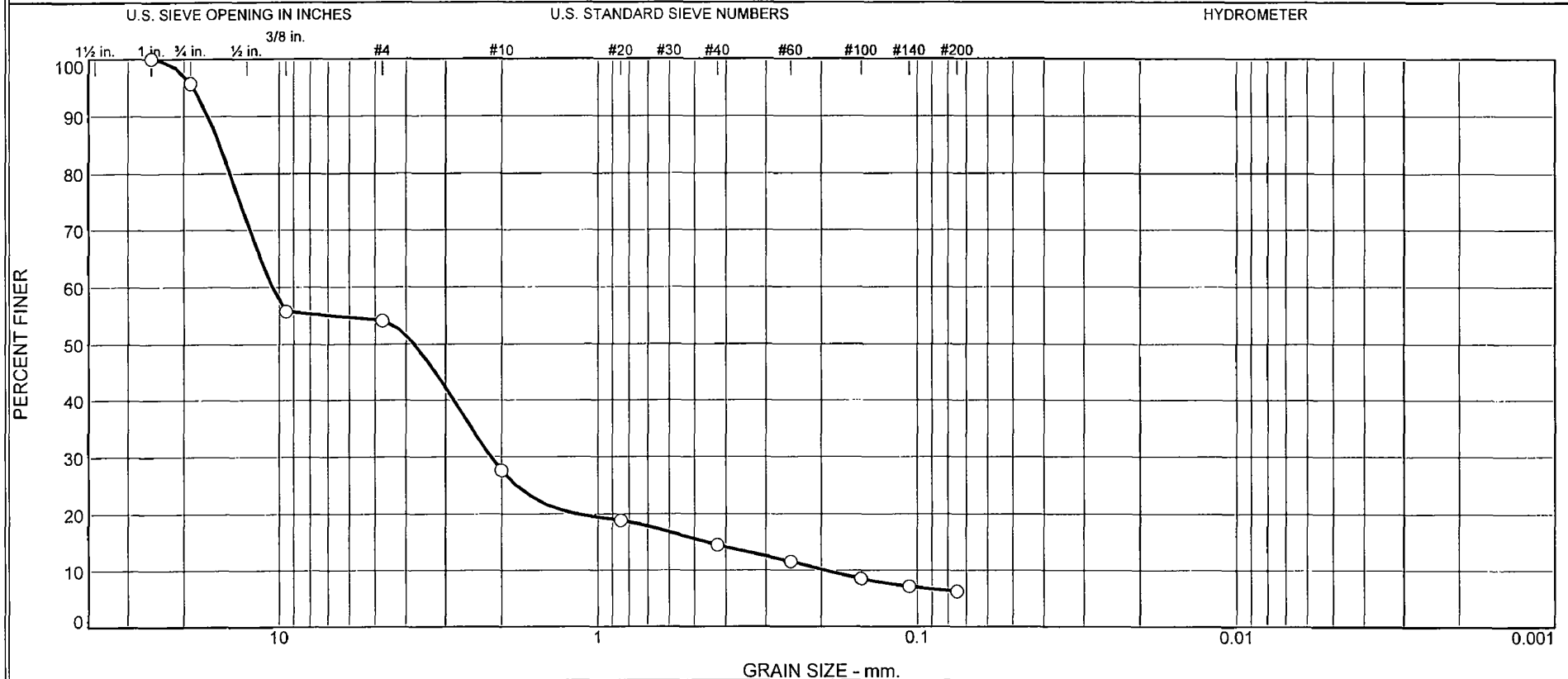
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	21	46	67	12	9	4	25			8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.2144	0.9387	1.7809	3.9888	8.9813	12.6534	19.4022	20.8695	22.3332	23.8324

Fineness Modulus	C _u	C _c
5.64	59.02	5.87

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
4	42	26	13	9	6	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-711	711-9	24.0-25.5	3/4/08	SW-SM	White Well Graded SAND with silt and gravel(Visual)	ND	ND	ND

Client Bechtel	MACTEC Engineering and Consulting, Inc.		Raleigh, North Carolina		○ SIEVE ANALYSIS ONLY (OVEN DRY METHOD) ND = Not Determined			
Project Turkey Point COL								
Project No. 6468071950	Figure	N/A						

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-711

Depth: 24.0-25.5

Sample Number: 711-9

Material Description: White Well Graded SAND with silt and gravel(Visual)

Date: 3/4/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SW-SM

Testing Remarks: SIEVE ANALYSIS ONLY (OVEN DRY METHOD)

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
222.59	0.00	0.00	1	0.00	100
			3/4	9.52	96
			3/8"	98.39	56
			#4	102.02	54
			#10	161.03	28
			#20	180.73	19
			#40	190.31	15
			#60	196.87	12
			#100	203.65	9
			#140	206.61	7
			#200	208.62	6

Fractional Components

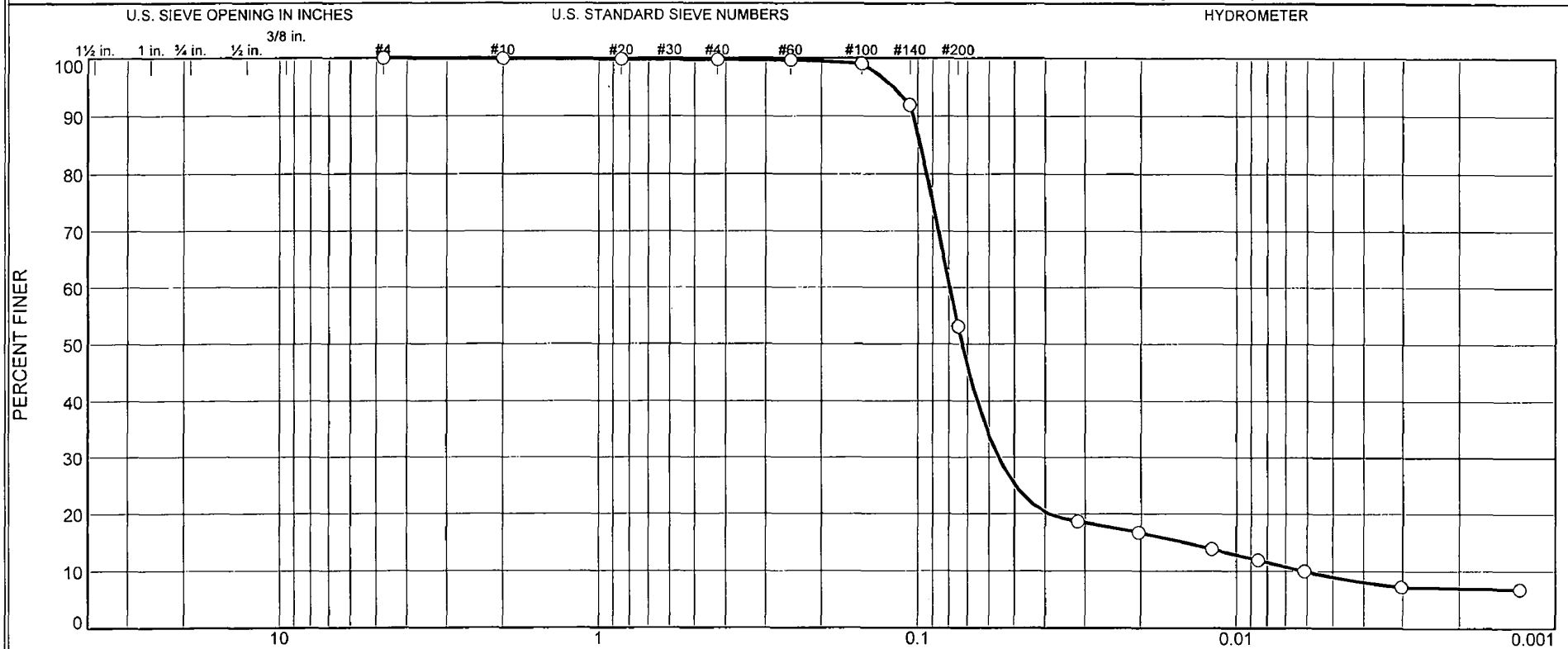
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	4	42	46	26	13	9	48			6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.1944	0.4593	1.1680	2.1602	3.7758	10.4898	14.3142	15.4388	16.7893	18.6724

Fineness Modulus	C _u	C _c
5.03	53.95	2.29

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



GRAIN SIZE - mm.

% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.2	46.6	44.1	9.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-711	711-11	120.5-122.0	3/6/08	ML	White Sandy SILT (Visual)	ND	ND	ND

Client Bechtel	MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined Calcite Equivalent = 11% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-711

Depth: 120.5-122.0

Sample Number: 711-11

Material Description: White Sandy SILT (Visual)

Date: 3/6/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ML

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Calcite Equivalent = 11% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
335.96	0.00	0.00	#4	0.00	100.0
			#10	0.26	99.9
103.63	0.00	0.00	#20	0.13	99.8
			#40	0.21	99.7
			#60	0.28	99.7
			#100	0.92	99.0
			#140	8.31	91.9
			#200	48.60	53.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.9

Weight of hydrometer sample =103.63

Hygroscopic moisture correction:

Moist weight and tare = 28.18

Dry weight and tare = 28.10

Tare weight = 15.45

Hygroscopic moisture =0.6%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.8	24.0	19.4	0.0128	25.0	12.2	0.0317	18.6
5.00	23.8	22.0	17.4	0.0128	23.0	12.5	0.0203	16.7
15.00	23.9	19.0	14.5	0.0128	20.0	13.0	0.0119	13.9
30.00	23.9	17.0	12.5	0.0128	18.0	13.3	0.0085	12.0
60.00	23.9	15.0	10.5	0.0128	16.0	13.7	0.0061	10.0
250.00	24.4	12.0	7.6	0.0127	13.0	14.2	0.0030	7.3
1440.00	22.6	12.0	7.1	0.0130	13.0	14.2	0.0013	6.8

MACTEC Engineering and Consulting, Inc.

Fractional Components

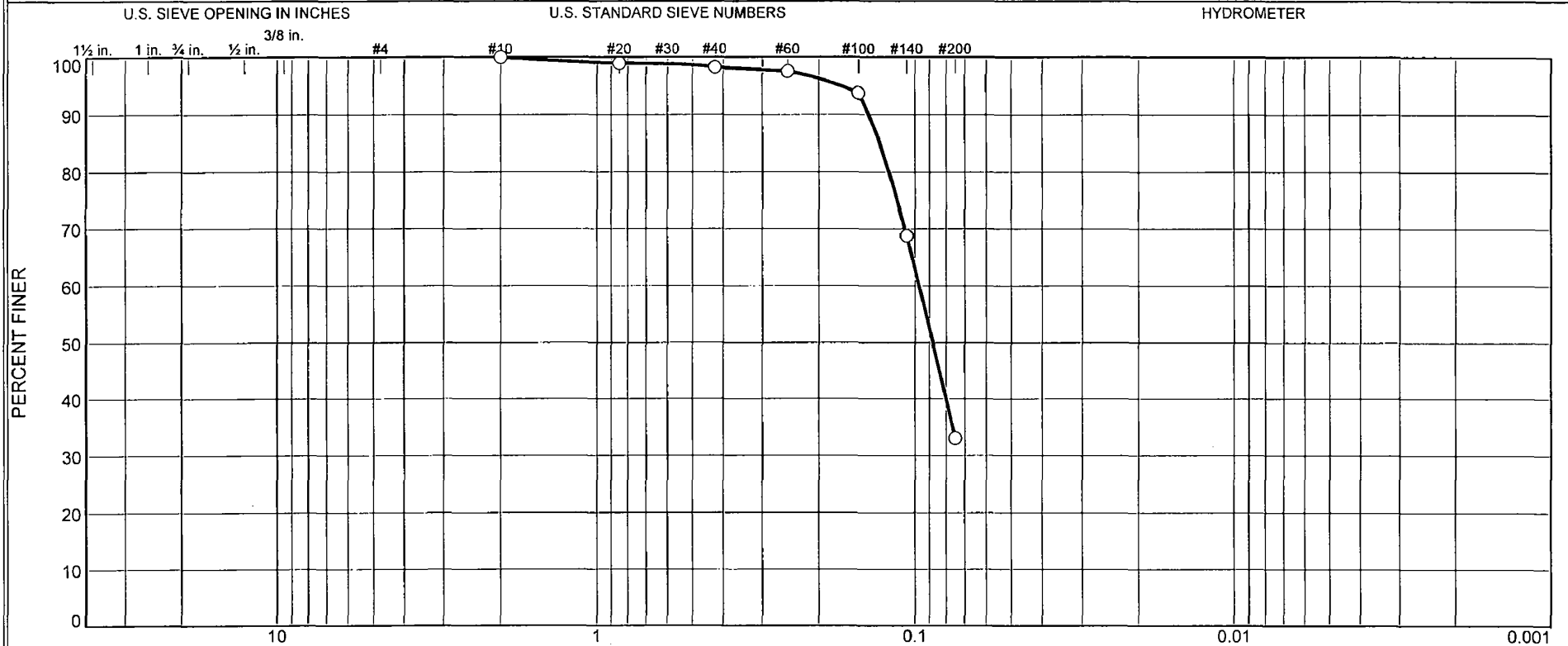
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	0.2	46.6	46.9	44.1	9.0	53.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0061	0.0146	0.0391	0.0560	0.0729	0.0796	0.0937	0.0981	0.1034	0.1196

Fineness Modulus	C _u	C _c
0.02	13.10	6.48

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	2	65	33	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-711	711-12	130.2-131.7	3/6/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-711

Depth: 130.2-131.7

Sample Number: 711-12

Material Description: Greenish Gray Silty SAND (Visual)

Date: 3/6/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBj

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
275.99	0.00	0.00	#10	0.00	100
97.89	0.00	0.00	#20	1.03	99
			#40	1.73	98
			#60	2.40	98
			#100	6.09	94
			#140	30.61	69
			#200	65.55	33

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	2	65	67			33

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0879	0.0969	0.1205	0.1287	0.1391	0.1703

Fineness Modulus
0.10

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
4.2	8.3	1.1	2.0	66.0	8.5	9.9

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-711	711-14	150.2-151.7	3/6/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-711

Depth: 150.2-151.7

Sample Number: 711-14

Material Description: Greenish Gray Silty SAND (Visual)

Date: 3/6/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
313.83	0.00	0.00	1	0.00	100.0
			3/4	13.29	95.8
			3/8"	32.92	89.5
			#4	39.21	87.5
			#10	42.78	86.4
100.79	0.00	0.00	#20	1.45	85.1
			#40	2.31	84.4
			#60	4.40	82.6
			#100	17.48	71.4
			#140	62.49	32.8
			#200	79.26	18.4

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =86.4

Weight of hydrometer sample =100.79

Hygroscopic moisture correction:

Moist weight and tare = 28.00

Dry weight and tare = 27.97

Tare weight = 15.59

Hygroscopic moisture =0.2%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.5	22.0	17.4	0.0129	23.0	12.5	0.0322	14.7
5.00	23.5	21.0	16.4	0.0129	22.0	12.7	0.0205	13.9
15.00	23.5	19.0	14.4	0.0129	20.0	13.0	0.0120	12.2
30.00	23.6	18.0	13.4	0.0129	19.0	13.2	0.0085	11.4
60.00	23.7	17.0	12.4	0.0129	18.0	13.3	0.0061	10.5
250.00	23.3	14.0	9.3	0.0129	15.0	13.8	0.0030	7.9
1440.00	22.6	12.0	7.1	0.0130	13.0	14.2	0.0013	6.0

MACTEC Engineering and Consulting, Inc.

Fractional Components

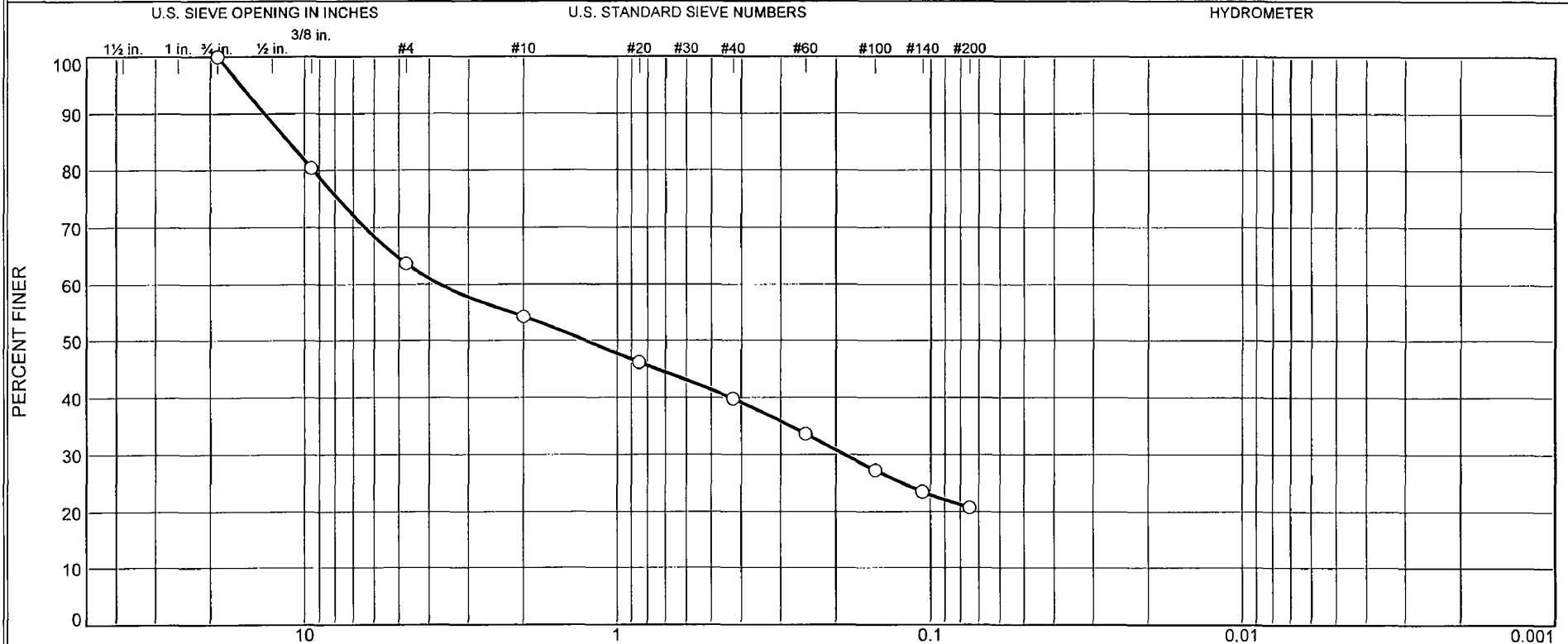
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	4.2	8.3	12.5	1.1	2.0	66.0	69.1	8.5	9.9	18.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0052	0.0462	0.0820	0.1024	0.1238	0.1345	0.2120	0.7661	10.3888	17.9573

Fineness Modulus	C _u	C _c
1.16	25.98	15.07

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	36	10	14	19	21	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-715	715-3	5.0-6.5	4/8/08	SM	White Silty SAND with gravel (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-715

Depth: 5.0-6.5

Sample Number: 715-3

Material Description: White Silty SAND with gravel (Visual)

Date: 4/8/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
332.64	0.00	0.00	3/4	0.00	100
			3/8"	65.28	80
			#4	120.81	64
			#10	152.13	54
99.81	0.00	0.00	#20	14.96	46
			#40	26.61	40
			#60	38.02	34
			#100	49.75	27
			#140	56.63	23
			#200	61.63	21

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	36	36	10	14	19	43			21

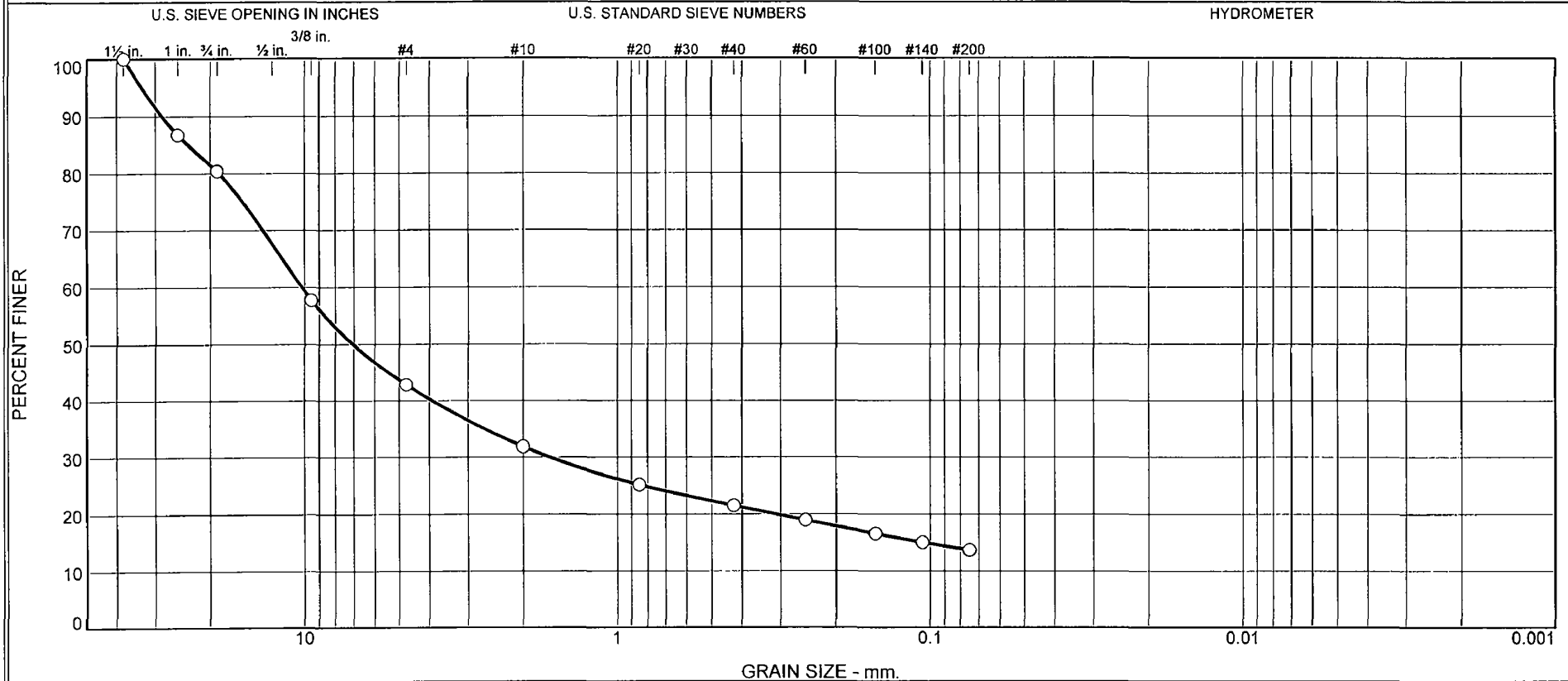
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1881	1.2696	3.7029	9.3966	11.2440	13.4218	15.9963

Fineness
Modulus

3.45

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
20	37	11	10	8	14	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-715	715-5	10.0-11.5	4/8/08	GM	White Silty GRAVEL with sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY (OVEN DRY METHOD) ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-715

Depth: 10.0-11.5

Sample Number: 715-5

Material Description: White Silty GRAVEL with sand (Visual)

Date: 4/8/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY (OVEN DRY METHOD)

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare =344.17

Tare Wt. =0.00

Minus #200 from wash =0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
344.17	0.00	0.00	1.5	0.00	100
			1	45.62	87
			3/4	67.23	80
			3/8"	145.23	58
			#4	196.61	43
			#10	234.70	32
			#20	257.60	25
			#40	270.10	22
			#60	278.90	19
			#100	287.10	17
			#140	292.30	15
			#200	297.00	14

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	20	37	57	11	10	8	29			14

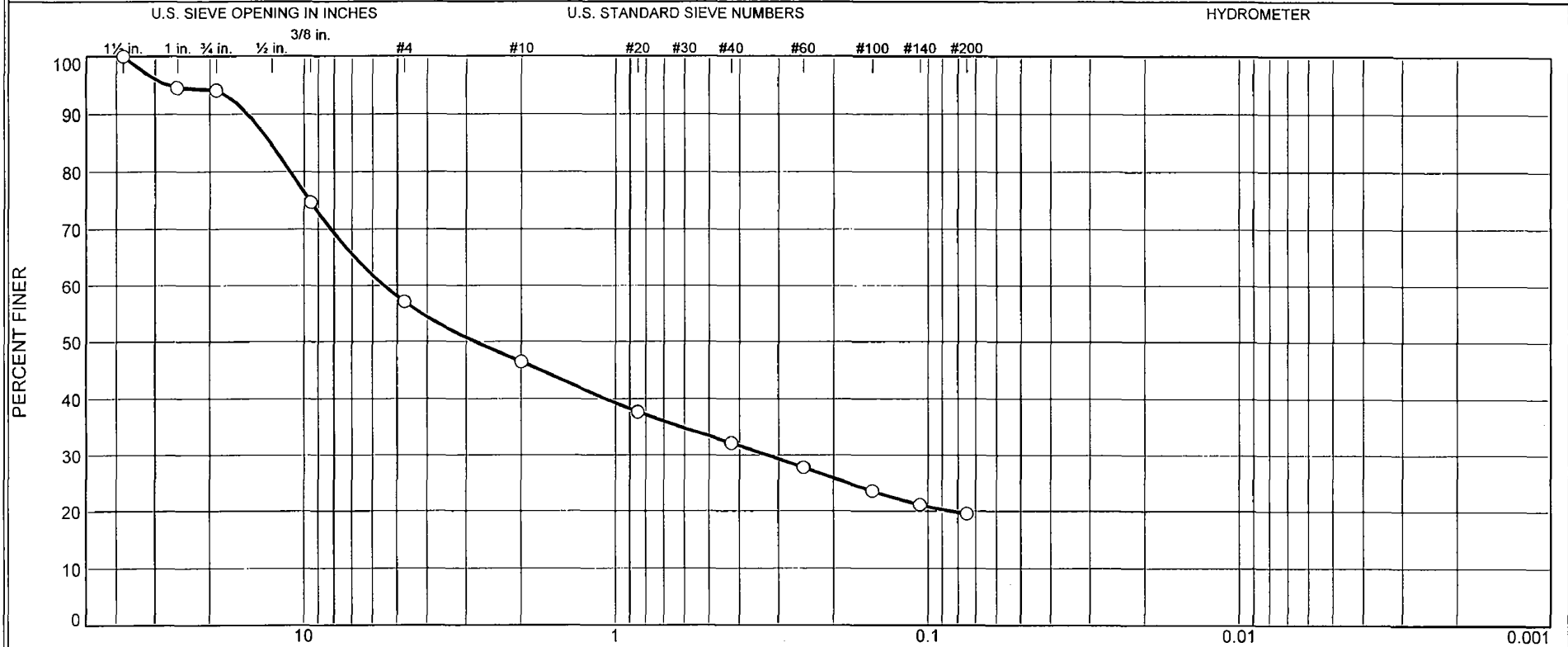
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.1042	0.3103	1.6513	7.0405	10.2066	18.6949	23.5416	28.5452	33.1818

Fineness Modulus

4.98

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
6	37	11	14	12	20	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-715	715-8	21.7-23.2	4/8/08	GM	White Silty GRAVEL with sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL				
Project No. 6468071950	Figure N/A			

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-715

Depth: 21.7-23.2

Sample Number: 715-8

Material Description: White Silty GRAVEL with sand (Visual)

Date: 4/8/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
444.79	0.00	0.00	1.5	0.00	100
			1	24.41	95
			3/4	26.48	94
			3/8"	112.24	75
			#4	190.68	57
			#10	238.00	46
101.09	0.00	0.00	#20	19.19	38
			#40	31.19	32
			#60	40.62	28
			#100	49.86	24
			#140	55.21	21
			#200	58.68	20

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	6	37	43	11	14	12	37			20

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0846	0.3250	2.8154	5.5132	11.0742	12.8019	15.1328	27.4238

Fineness Modulus
3.97

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
13	8	3	5	61	10	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-715	715-10	118.4-119.9	4/9/08	SP-SM	Light Gray Poorly Graded SAND with silt and gravel (Visual)	ND	ND	ND

Client Bechtel	MACTEC, Inc. Raleigh, North Carolina	☐ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL		
Project No. 6468071950 Figure		

GRAIN SIZE DISTRIBUTION TEST DATA

5/22/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-715

Depth: 118.4-119.9

Sample Number: 715-10

Material Description: Light Gray Poorly Graded SAND with silt and gravel (Visual)

Date: 4/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
434.69	0.00	0.00	1.5	0.00	100
			1	46.75	89
			3/4	56.25	87
			3/8"	76.56	82
			#4	91.10	79
			#10	104.37	76
99.79	0.00	0.00	#20	3.04	74
			#40	5.94	71
			#60	12.62	66
			#100	50.38	38
			#140	80.36	15
			#200	86.11	10

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	13	8	21	3	5	61	69			10

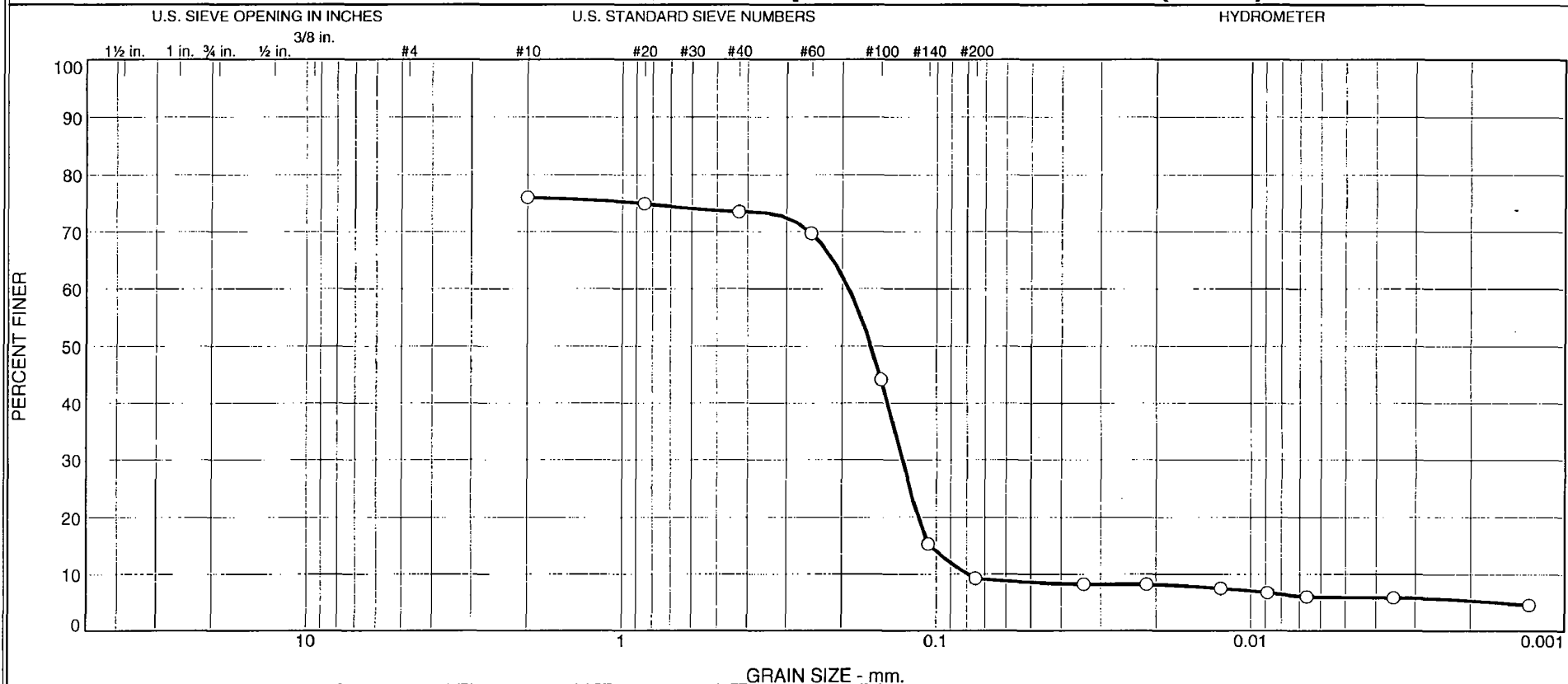
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.1065	0.1173	0.1356	0.1791	0.2134	6.0171	13.7000	26.5586	32.4833

Fineness
Modulus

2.20

MACTEC, Inc.

Particle Size Distribution Report/ ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0			2.5	64.2	3.4	5.9

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-715	715-10	118.4-119.9	4/9/08	SP-SM	Light Gray Poorly Graded SAND with silt and gravel	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY ND = Not Determined Specific Gravity is assumed Test conducted on material passing #10 sieve which was 76% of total sample from previous sieve test.
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

7/2/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-715

Depth: 118.4-119.9

Sample Number: 715-10

Material Description: Light Gray Poorly Graded SAND with silt and gravel

Date: 4/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

ND = Not Determined

Specific Gravity is assumed

Test conducted on material passing #10 sieve which was 76% of total sample from previous sieve test.

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
200.42	0.00	0.00	#10	48.10	76.0
100.41	0.00	0.00	#20	1.45	74.9
			#40	3.35	73.5
			#60	8.29	69.7
			#100	42.00	44.2
			#140	80.15	15.3
			#200	88.16	9.3

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 76.0

Weight of hydrometer sample = 100.71

Hygroscopic moisture correction:

Moist weight and tare = 28.08

Dry weight and tare = 28.04

Tare weight = 15.55

Hygroscopic moisture = 0.3%

Table of composite correction values:

Temp., deg. C: 11.6 29.4

Comp. corr.: -8.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	R _m	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.4	16.0	11.0	0.0131	17.0	13.5	0.0339	8.3
5.00	22.4	16.0	11.0	0.0131	17.0	13.5	0.0215	8.3
15.00	22.4	15.0	10.0	0.0131	16.0	13.7	0.0125	7.5
30.00	22.4	14.0	9.0	0.0131	15.0	13.8	0.0089	6.8
54.00	22.4	13.0	8.0	0.0131	14.0	14.0	0.0066	6.0
196.00	21.7	13.0	7.8	0.0132	14.0	14.0	0.0035	5.9
1440.00	22.5	11.0	6.1	0.0130	12.0	14.3	0.0013	4.5

MACTEC Engineering and Consulting, Inc.

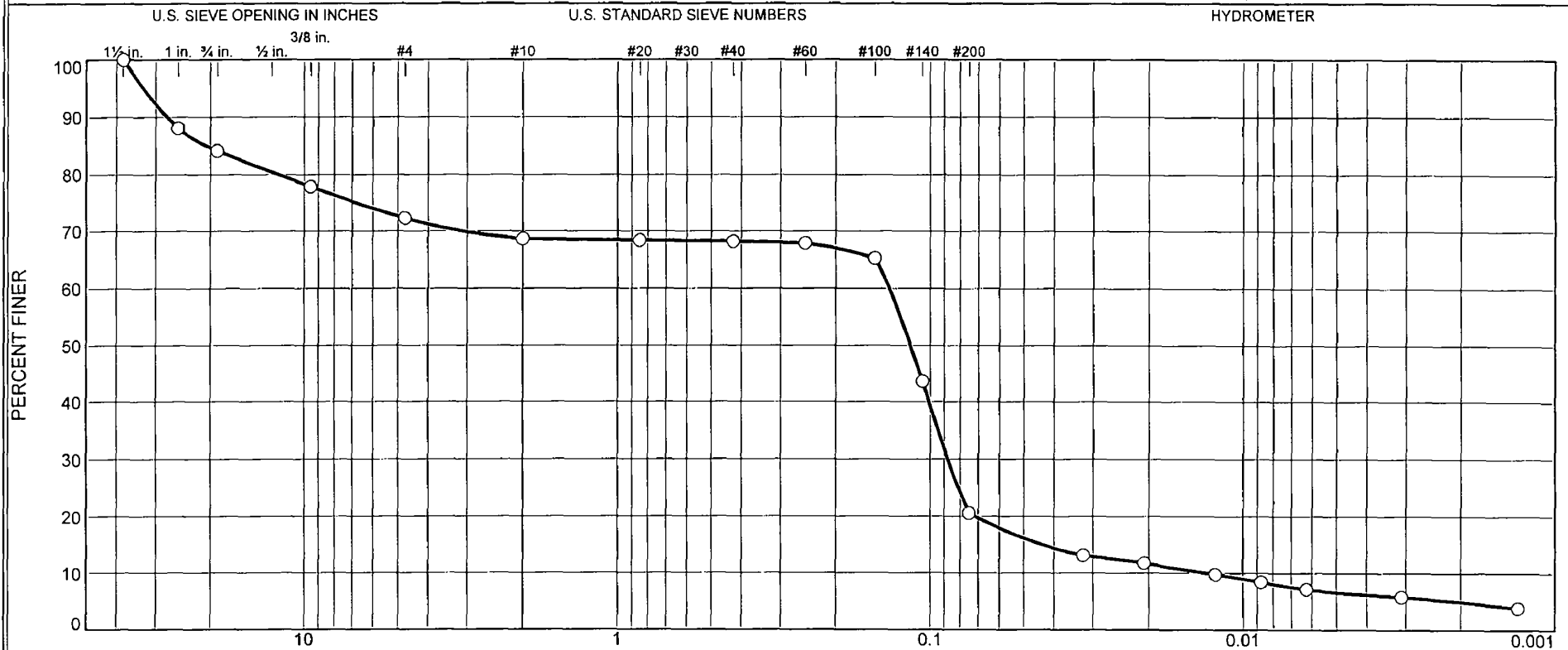
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
					2.5	64.2		3.4	5.9	9.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0792	0.1044	0.1139	0.1282	0.1615	0.1900				

Fineness Modulus	C _u	C _c
1.34	2.40	1.09

Particle Size Distribution Report/ ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
15.8	11.9	3.7	0.4	47.6	14.0	6.6

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-715	715-11	128.1-129.6	4/10/08	SM	Greenish Gray Silty SAND with gravel (Visual)	ND	ND	ND

Client Bechtel
 Project Turkey Point COL
 Project No. 6468071950
 Figure N/A

MACTEC Engineering and Consulting, Inc.
 Raleigh, North Carolina

○ SIEVE ANALYSIS AND HYDROMETER ONLY
 Specific Gravity is assumed
 ND = Not Determined

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-715

Depth: 128.1-129.6

Sample Number: 715-11

Material Description: Greenish Gray Silty SAND with gravel (Visual)

Date: 4/10/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
339.45	0.00	0.00	1.5	0.00	100.0
			1	40.47	88.1
			3/4	53.53	84.2
			3/8"	75.10	77.9
			#4	94.16	72.3
			#10	106.51	68.6
102.89	0.00	0.00	#20	0.40	68.4
			#40	0.67	68.2
			#60	1.12	67.9
			#100	5.00	65.3
			#140	37.40	43.7
			#200	72.05	20.6

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 68.6

Weight of hydrometer sample = 102.89

Hygroscopic moisture correction:

Moist weight and tare = 23.74

Dry weight and tare = 23.69

Tare weight = 11.23

Hygroscopic moisture = 0.4%

Table of composite correction values:

Temp., deg. C: 11.6 29.4

Comp. corr.: -8.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.6	25.0	19.8	0.0132	26.0	12.0	0.0323	13.1
5.00	21.7	23.0	17.8	0.0132	24.0	12.4	0.0207	11.8
15.00	21.5	20.0	14.8	0.0132	21.0	12.9	0.0122	9.8
30.00	21.5	18.0	12.8	0.0132	19.0	13.2	0.0087	8.5
60.00	21.6	16.0	10.8	0.0132	17.0	13.5	0.0063	7.2
250.00	21.6	14.0	8.8	0.0132	15.0	13.8	0.0031	5.8
1440.00	21.6	11.0	5.8	0.0132	12.0	14.3	0.0013	3.8

MACTEC Engineering and Consulting, Inc.

Fractional Components

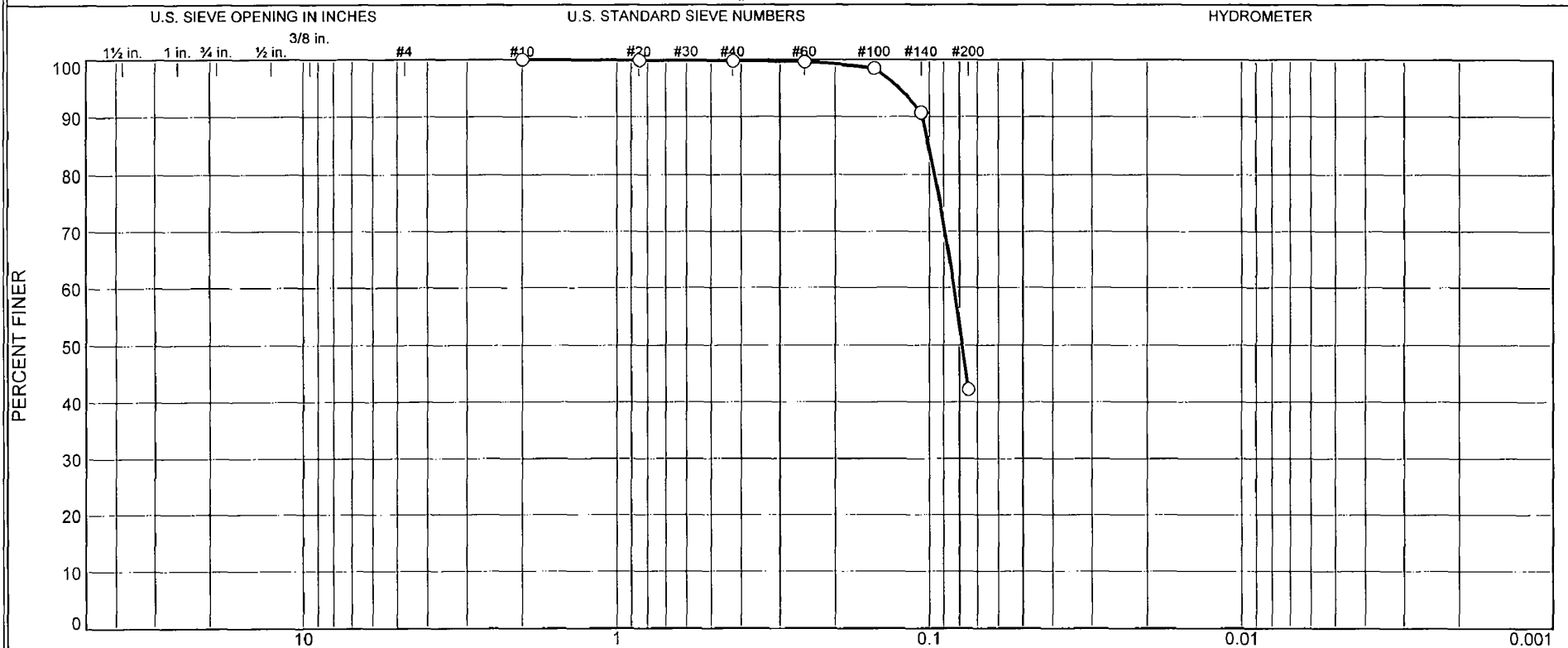
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	15.8	11.9	27.7	3.7	0.4	47.6	51.7	14.0	6.6	20.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0130	0.0435	0.0717	0.0879	0.1154	0.1343	12.1029	20.5525	27.6341	32.8059

Fineness Modulus	C _u	C _c
2.27	10.36	4.44

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	58	42	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-715	715-13	148.6-150.1	4/10/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

7/2/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-715

Depth: 148.6-150.1

Sample Number: 715-13

Material Description: Greenish Gray Silty SAND (Visual)

Date: 4/10/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
347.21	0.00	0.00	#10	0.00	100
102.01	0.00	0.00	#20	0.12	100
			#40	0.22	100
			#60	0.39	100
			#100	1.57	98
			#140	9.48	91
			#200	58.96	42

Fractional Components

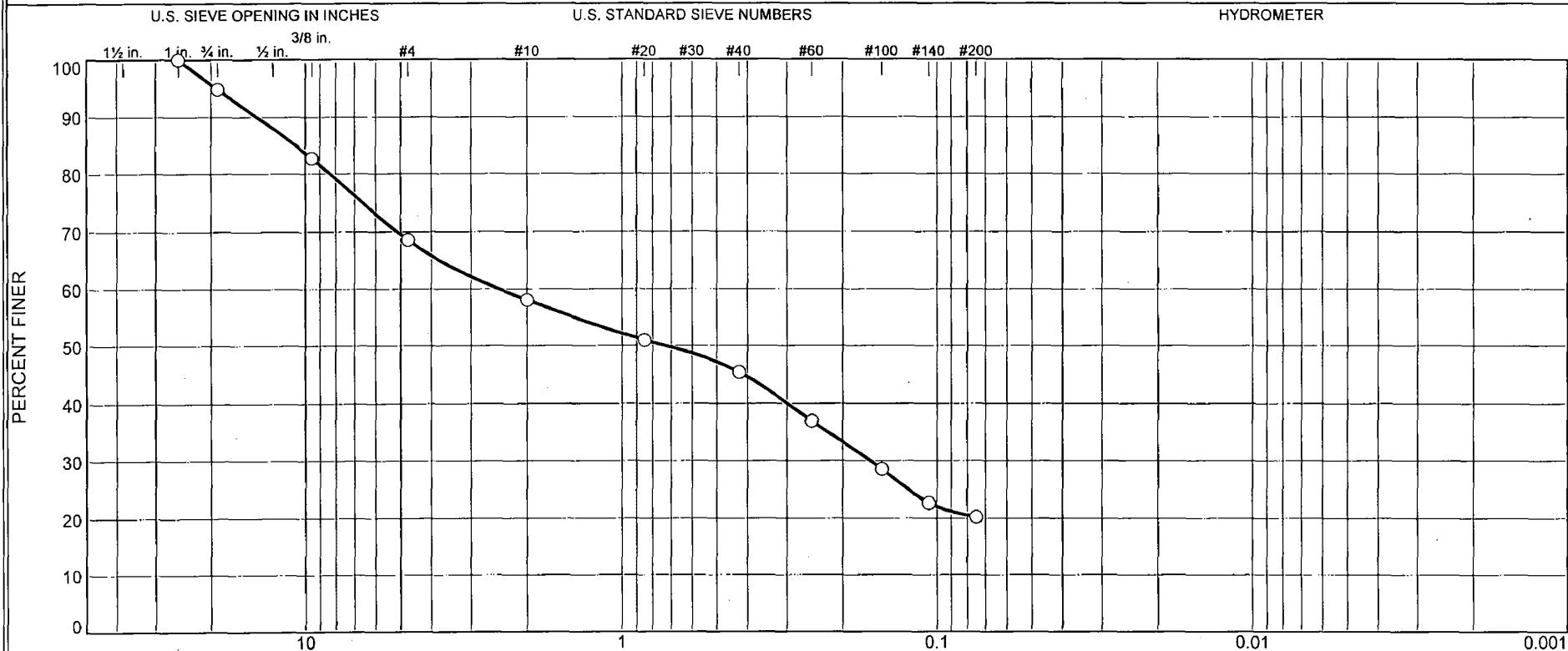
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	58	58			42

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0785	0.0834	0.0957	0.0998	0.1051	0.1245

Fineness Modulus
0.02

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
5	26	11	13	25	20	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-720 (DH)	720-3	5.0-7.5	5/4/08	SM	White Silty SAND with gravel (Visual)	ND	ND	ND

Client Bechtel	MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950			

ZHU 7/23/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-720 (DH)

Depth: 5.0-7.5

Sample Number: 720-3

Material Description: White Silty SAND with gravel (Visual)

Date: 5/4/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
351.28	0.00	0.00	1	0.00	100
			3/4	18.01	95
			3/8"	60.73	83
			#4	110.39	69
			#10	147.25	58
98.77	0.00	0.00	#20	12.13	51
			#40	21.57	45
			#60	35.94	37
			#100	50.28	29
			#140	60.23	23
			#200	64.38	20

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	5	26	31	11	13	25	49			20

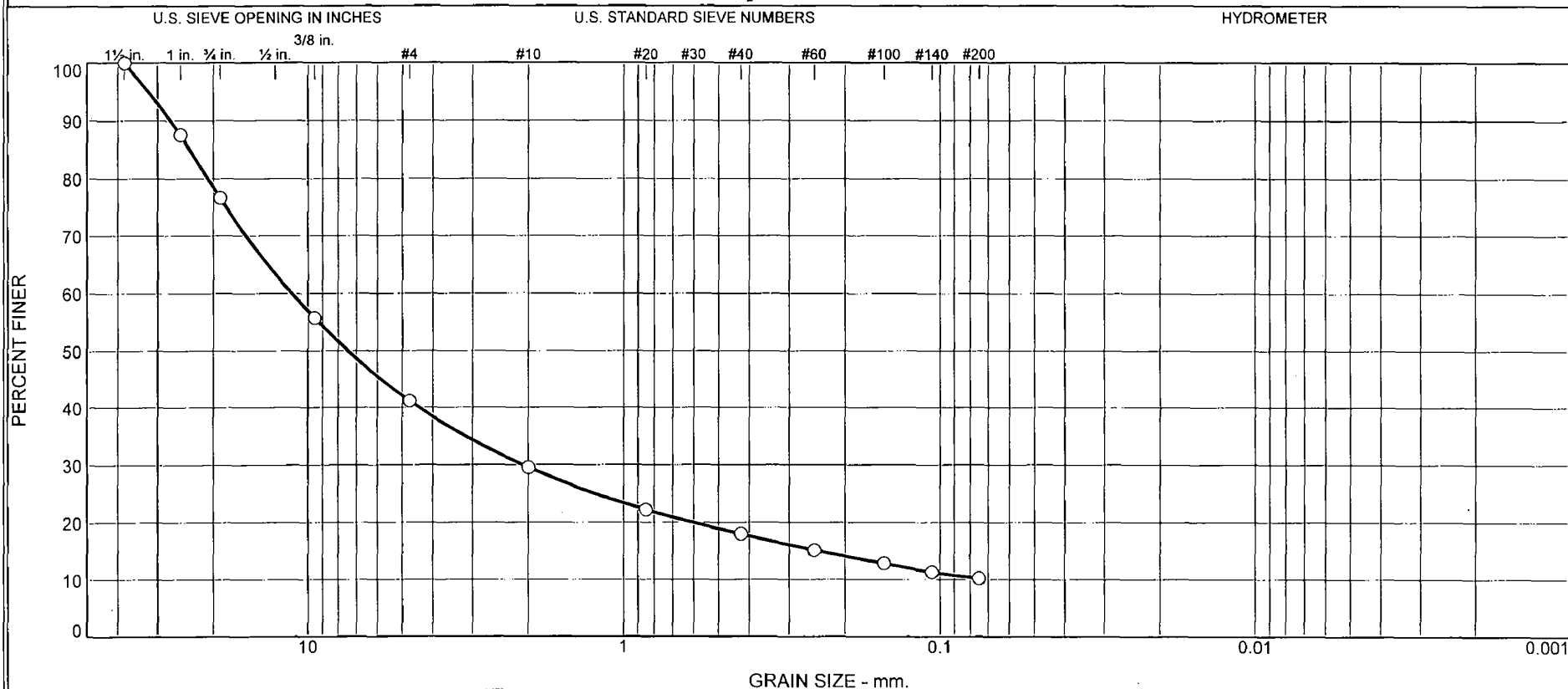
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1632	0.7332	2.4465	8.3366	10.7413	14.2912	19.1898

Fineness Modulus

3.24

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
23	36	11	12	8	10	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-720 (DH)	720-6	13.5-15.0	5/4/08	GP-GM	White Poorly Graded GRAVEL with silt and sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure	Raleigh, North Carolina	

ZHU 7/23/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-720 (DH)

Depth: 13.5-15.0

Sample Number: 720-6

Material Description: White Poorly Graded GRAVEL with silt and sand (Visual)

Date: 5/4/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GP-GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
390.43	0.00	0.00	1.5	0.00	100
			1	48.59	88
			3/4	91.16	77
			3/8"	172.77	56
			#4	229.75	41
			#10	275.00	30
97.01	0.00	0.00	#20	24.17	22
			#40	38.04	18
			#60	47.28	15
			#100	54.85	13
			#140	59.92	11
			#200	63.43	10

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	23	36	59	11	12	8	31			10

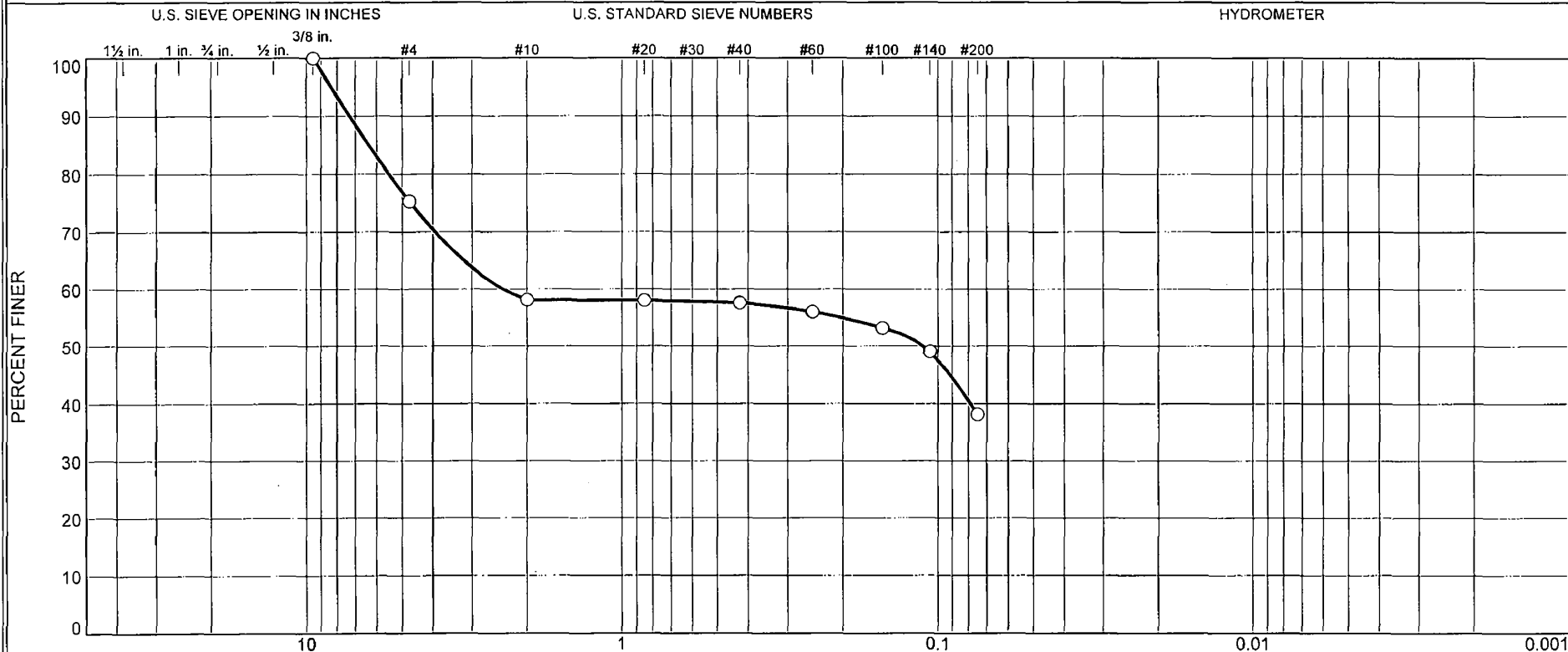
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.2420	0.6041	2.0841	7.4513	11.2361	20.8019	23.6925	27.2714	32.0059

Fineness
Modulus

5.22

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	25	17	0	20	38	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-720 (DH)	720-8	23.5-25.0	5/4/08	SM	White Silty SAND with gravel (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

ZHU 7/23/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-720 (DH)

Depth: 23.5-25.0

Sample Number: 720-8

Material Description: White Silty SAND with gravel (Visual)

Date: 5/4/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
245.20	0.00	0.00	3/8"	0.00	100
			#4	60.51	75
			#10	102.66	58
95.55	0.00	0.00	#20	0.17	58
			#40	0.84	58
			#60	3.49	56
			#100	8.12	53
			#140	14.99	49
			#200	32.91	38

Fractional Components

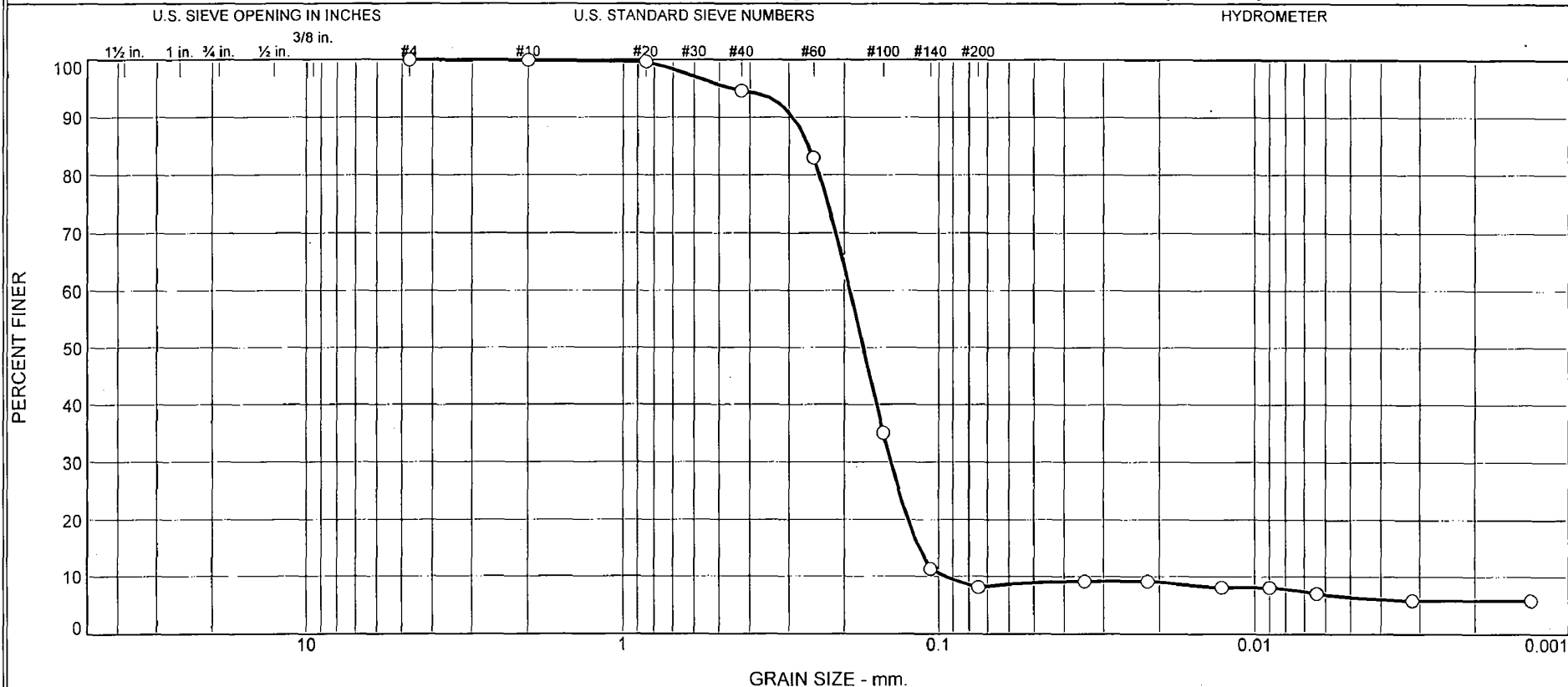
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	25	25	17	0	20	37			38

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.1114	2.3896	5.4982	6.3576	7.2994	8.3463

Fineness Modulus
2.39

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	5.2	86.7	1.6	6.4

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-720 (DH)	720-10	118.4-119.9	4/7/08	SP-SM	Light Gray Poorly Graded SAND with silt (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-720 (DH)

Depth: 118.4-119.9

Sample Number: 720-10

Material Description: Light Gray Poorly Graded SAND with silt (Visual)

Date: 4/7/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
359.26	0.00	0.00	#4	0.00	100.0
			#10	0.20	99.9
97.18	0.00	0.00	#20	0.26	99.7
			#40	5.13	94.7
			#60	16.53	82.9
			#100	63.06	35.1
			#140	86.23	11.3
			#200	89.36	8.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.9

Weight of hydrometer sample =97.17

Hygroscopic moisture correction:

Moist weight and tare = 28.63

Dry weight and tare = 28.51

Tare weight = 15.51

Hygroscopic moisture =0.9%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	14.0	8.9	0.0131	15.0	13.8	0.0345	9.1
5.00	21.9	14.0	8.9	0.0131	15.0	13.8	0.0218	9.1
15.00	21.7	13.0	7.9	0.0132	14.0	14.0	0.0127	8.1
30.00	21.7	13.0	7.9	0.0132	14.0	14.0	0.0090	8.1
60.00	21.6	12.0	6.8	0.0132	13.0	14.2	0.0064	7.0
250.00	21.1	11.0	5.7	0.0133	12.0	14.3	0.0032	5.8
1440.00	21.1	11.0	5.7	0.0133	12.0	14.3	0.0013	5.8

MACTEC Engineering and Consulting, Inc.

Fractional Components

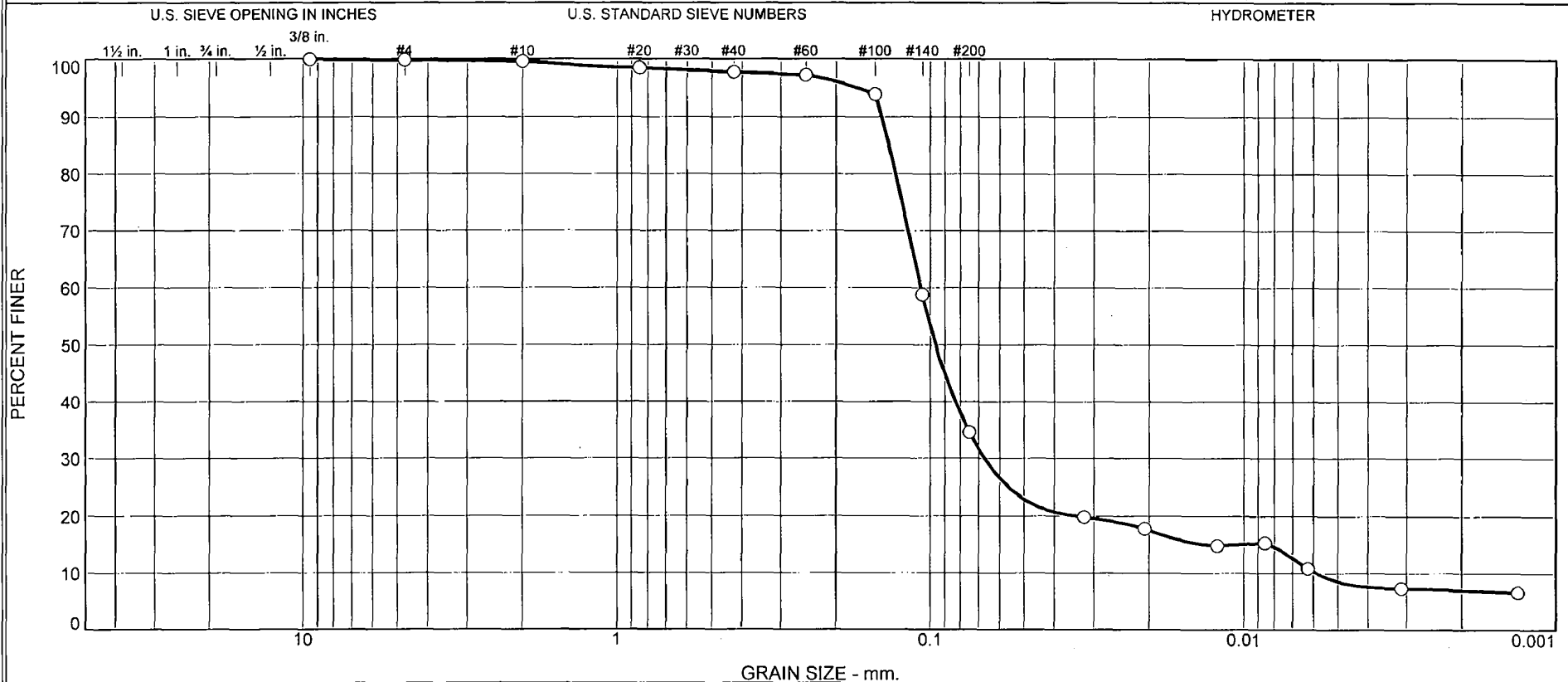
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	5.2	86.7	92.0	1.6	6.4	8.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0951	0.1152	0.1250	0.1419	0.1739	0.1916	0.2393	0.2590	0.2913	0.4527

Fineness Modulus	C _u	C _c
0.77	2.02	1.11

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.1	0.3	1.8	63.3	26.0	8.5

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-720 (DH)	720-12	138.4-139.9	4/7/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-720 (DH)

Depth: 138.4-139.9

Sample Number: 720-12

Material Description: Greenish Gray Silty SAND (Visual)

Date: 4/7/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
283.17	0.00	0.00	3/8"	0.00	100.0
			#4	0.39	99.9
			#10	1.08	99.6
99.35	0.00	0.00	#20	1.12	98.5
			#40	1.84	97.8
			#60	2.36	97.3
			#100	5.70	93.9
			#140	40.71	58.8
			#200	64.91	34.5

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.6

Weight of hydrometer sample =99.21

Hygroscopic moisture correction:

Moist weight and tare = 28.64

Dry weight and tare = 28.60

Tare weight = 15.29

Hygroscopic moisture =0.3%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	25.0	19.9	0.0131	26.0	12.0	0.0322	19.8
5.00	21.8	23.0	17.9	0.0131	24.0	12.4	0.0207	17.8
15.00	21.8	20.0	14.9	0.0131	21.0	12.9	0.0122	14.8
30.00	21.8	20.5	15.4	0.0131	21.5	12.8	0.0086	15.3
60.00	21.8	16.0	10.9	0.0131	17.0	13.5	0.0062	10.8
250.00	21.8	12.5	7.4	0.0131	13.5	14.1	0.0031	7.4
1440.00	20.9	12.0	6.6	0.0133	13.0	14.2	0.0013	6.6

MACTEC Engineering and Consulting, Inc.

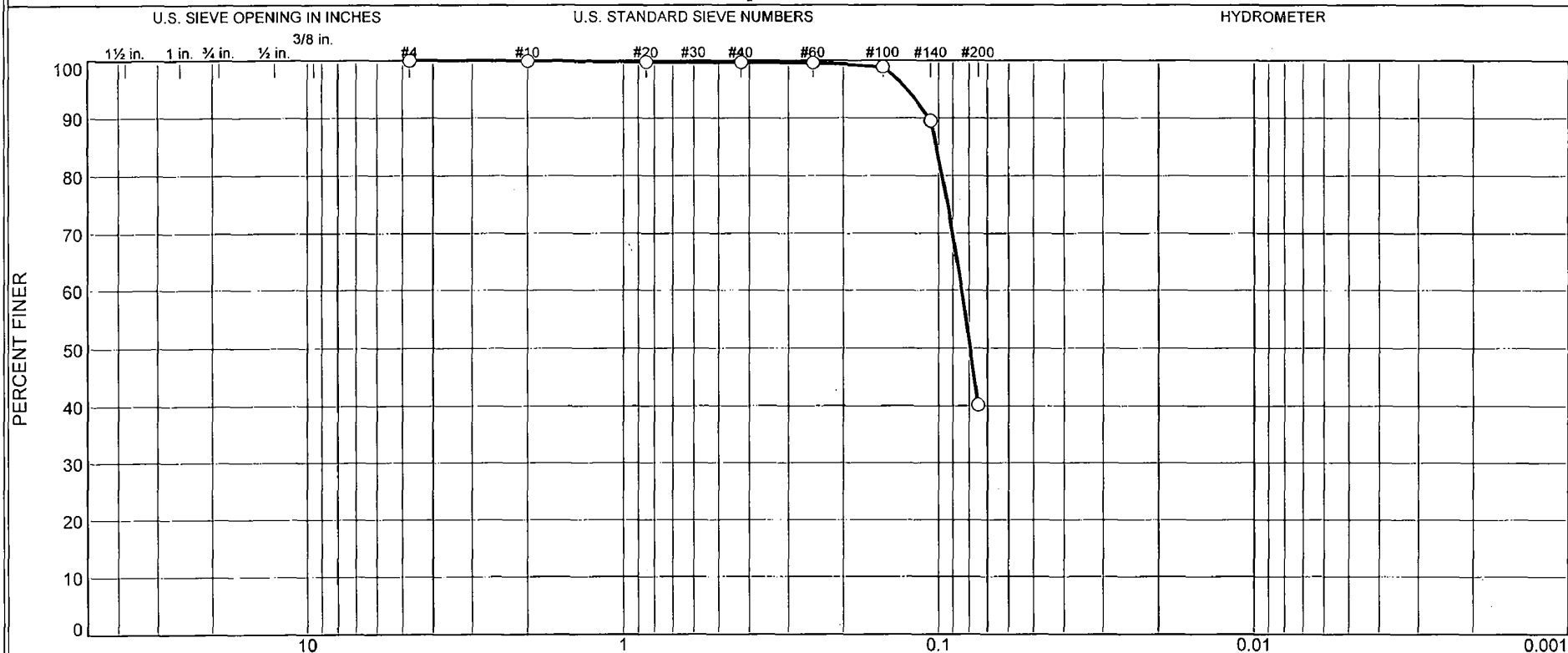
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	0.3	1.8	63.3	65.4	26.0	8.5	34.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0059	0.0082	0.0339	0.0671	0.0962	0.1073	0.1287	0.1350	0.1425	0.1704

Fineness Modulus	C _u	C _c
0.12	18.32	7.17

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	60	40	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-720 (DH)	720-13	148.4-149.9	4/7/08	SM	Greenish Gray Silty SAND (Visual)	ND	NV	

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

ZHU 7/23/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-720 (DH)

Depth: 148.4-149.9

Sample Number: 720-13

Material Description: Greenish Gray Silty SAND (Visual)

Date: 4/7/08

Natural Moisture: ND

Liquid Limit: NV

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
367.28	0.00	0.00	#4	0.00	100
			#10	0.09	100
95.48	0.00	0.00	#20	0.18	100
			#40	0.26	100
			#60	0.34	100
			#100	1.04	99
			#140	10.03	89
			#200	57.11	40

Fractional Components

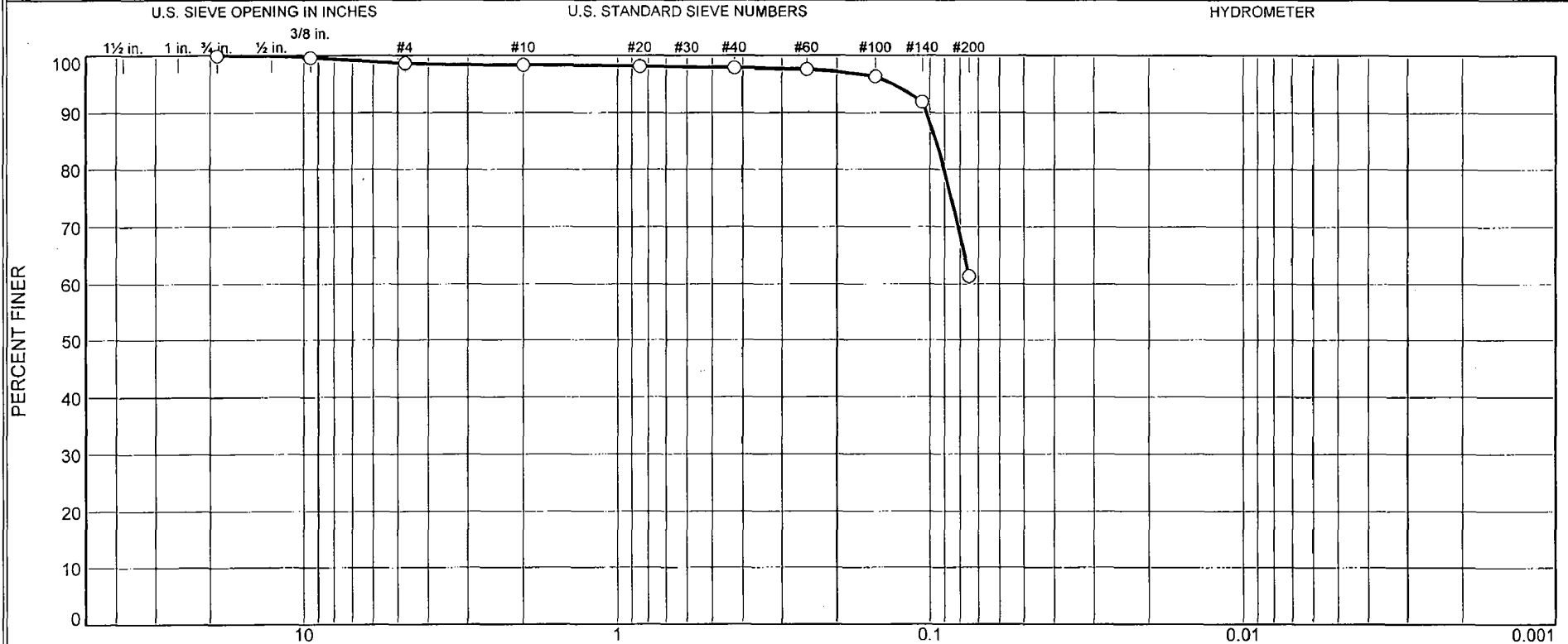
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	0	60	60			40

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0794	0.0844	0.0969	0.1012	0.1075	0.1257

Fineness
Modulus

0.02

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	1	1	0	37	61	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-720 (DH)	720-14	158.4-159.9	4/7/08	ML	Greenish Gray Sandy SILT (Visual)	ND	ND	ND

Client Bechtel	MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	☐ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		

ZHU 7/23/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-720 (DH)

Depth: 158.4-159.9

Sample Number: 720-14

Material Description: Greenish Gray Sandy SILT (Visual)

Date: 4/7/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ML

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
325.84	0.00	0.00	3/4	0.00	100
			3/8"	1.17	100
			#4	4.36	99
			#10	5.30	98
97.32	0.00	0.00	#20	0.25	98
			#40	0.48	98
			#60	0.74	98
			#100	1.97	96
			#140	6.42	92
			#200	36.62	61

Fractional Components

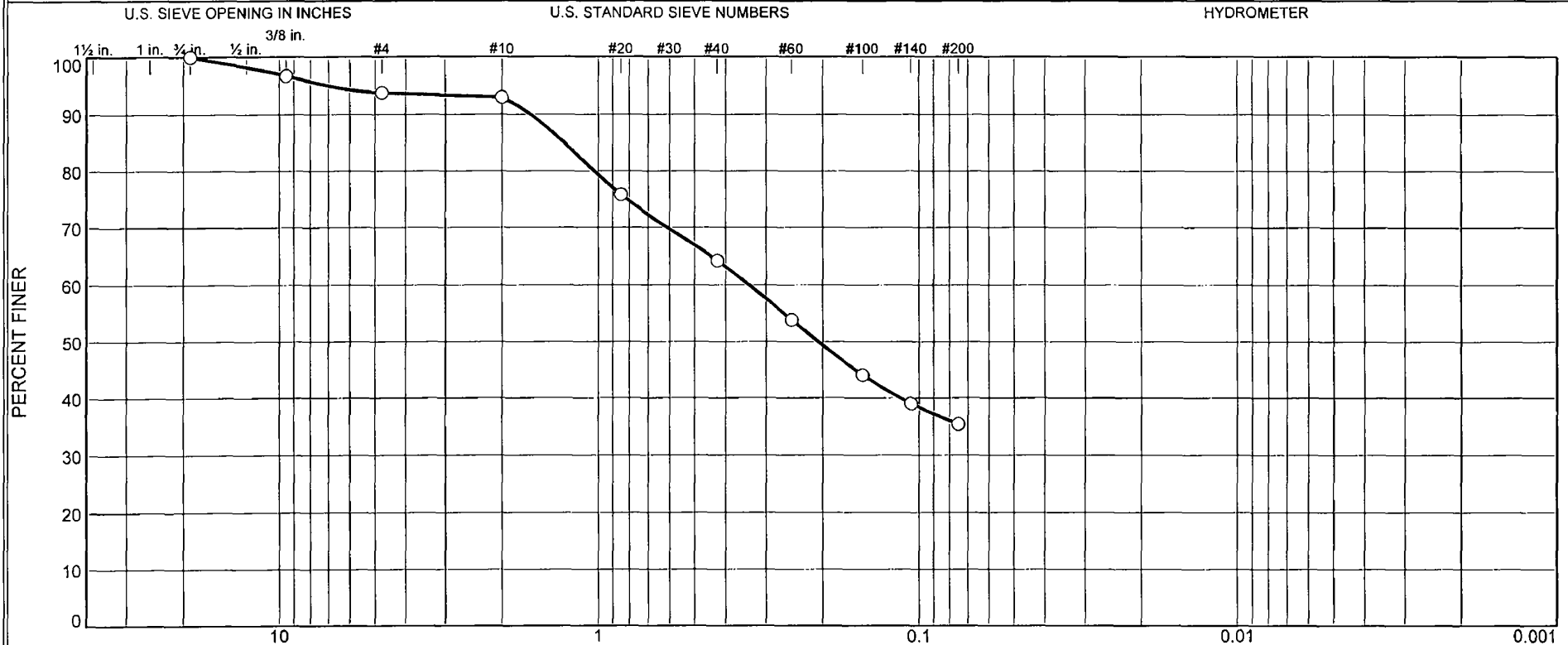
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	1	1	1	0	37	38			61

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0900	0.0954	0.1024	0.1312

Fineness Modulus
0.13

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	6	1	29	29	35	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-730	730-3	3.9-5.4	2/9/08	SM	Black Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	☐ SIEVE ANALYSIS ONLY ND = Not Determined Calcite Equivalent = 91% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-730

Depth: 3.9-5.4

Sample Number: 730-3

Material Description: Black Silty SAND (Visual)

Date: 2/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Calcite Equivalent = 91% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
321.83	0.00	0.00	3/4	0.00	100
			3/8"	10.44	97
			#4	20.05	94
			#10	22.66	93
103.72	0.00	0.00	#20	19.08	76
			#40	32.05	64
			#60	43.60	54
			#100	54.56	44
			#140	60.23	39
			#200	64.26	35

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	6	6	1	29	29	59			35

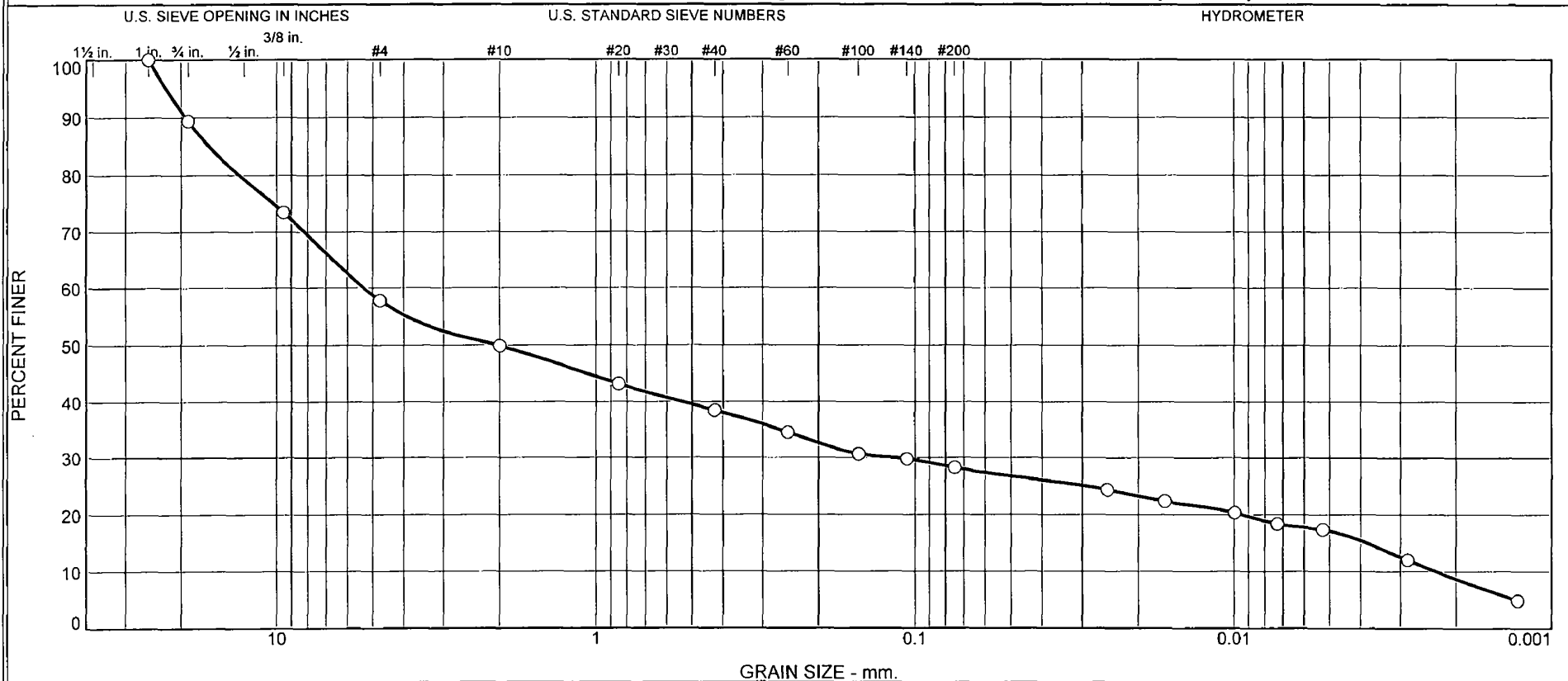
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.2064	0.3383	1.0287	1.2792	1.6314	6.9961

Fineness Modulus

1.62

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
10.6	31.6	7.9	11.4	10.3	11.0	17.2

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-730	730-5	8.6-10.1	2/9/08	GM	White Silty GRAVEL with sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS AND HYDROMETER ONLY Specific Gravity is assumed ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-730

Depth: 8.6-10.1

Sample Number: 730-5

Material Description: White Silty GRAVEL with sand (Visual)

Date: 2/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
424.24	0.00	0.00	1	0.00	100.0
			3/4	45.09	89.4
			3/8"	112.52	73.5
			#4	179.06	57.8
			#10	212.75	49.9
100.27	0.00	0.00	#20	13.49	43.1
			#40	22.91	38.5
			#60	30.78	34.5
			#100	38.57	30.7
			#140	40.35	29.8
			#200	43.46	28.2

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =49.9

Weight of hydrometer sample =100.27

Hygroscopic moisture correction:

Moist weight and tare = 23.18

Dry weight and tare = 23.16

Tare weight = 11.05

Hygroscopic moisture =0.2%

Table of composite correction values:

Temp., deg. C: 11.2 28.4

Comp. corr.: -8.0 -4.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.2	55.0	49.3	0.0132	56.0	7.1	0.0250	24.3
5.00	21.1	51.0	45.3	0.0133	52.0	7.8	0.0165	22.3
15.00	21.1	47.0	41.3	0.0133	48.0	8.4	0.0099	20.3
30.00	21.1	43.0	37.3	0.0133	44.0	9.1	0.0073	18.4
60.00	21.1	41.0	35.3	0.0133	42.0	9.4	0.0053	17.4
240.00	21.8	30.0	24.5	0.0131	31.0	11.2	0.0028	12.0
1440.00	21.6	15.5	9.9	0.0132	16.5	13.6	0.0013	4.9

MACTEC Engineering and Consulting, Inc.

Fractional Components

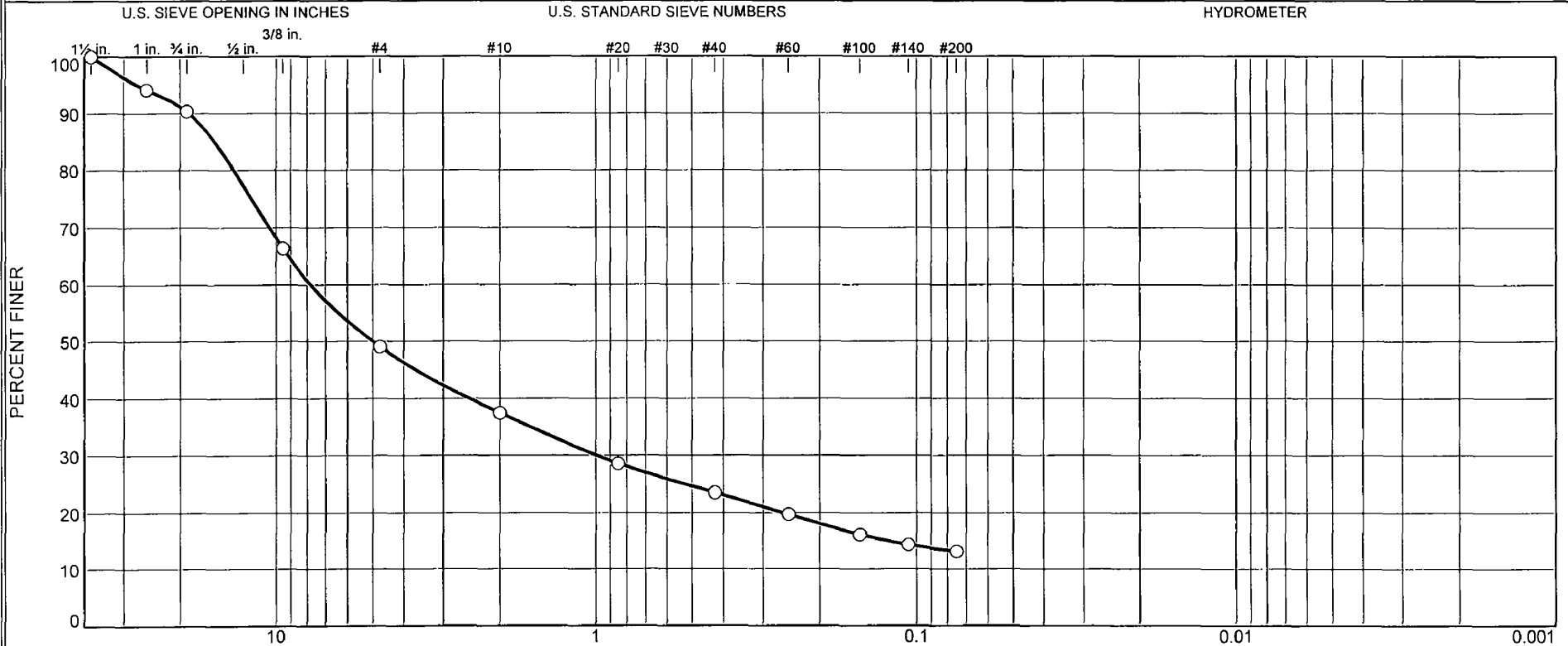
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	10.6	31.6	42.2	7.9	11.4	10.3	29.6	11.0	17.2	28.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0023	0.0038	0.0094	0.1152	2.0466	5.3322	13.1386	16.3649	19.4203	22.3330

Fineness Modulus	C _u	C _c
3.75	2313.73	1.08

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
10	41	12	14	10	13	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-730	730-8	19.6-21.1	2/10/08	GM	Pale Yellow Silty GRAVEL with sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined Calcite Equivalent = 89% (ASTM D 4373-02)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-730

Depth: 19.6-21.1

Sample Number: 730-8

Material Description: Pale Yellow Silty GRAVEL with sand (Visual)

Date: 2/10/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Calcite Equivalent = 89% (ASTM D 4373-02)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
447.80	0.00	0.00	1.5	0.00	100
			1	26.07	94
			3/4	42.89	90
			3/8"	150.50	66
			#4	228.20	49
			#10	279.94	37
99.94	0.00	0.00	#20	23.74	29
			#40	37.32	23
			#60	47.42	20
			#100	56.92	16
			#140	61.64	14
			#200	64.93	13

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	10	41	51	12	14	10	36			13

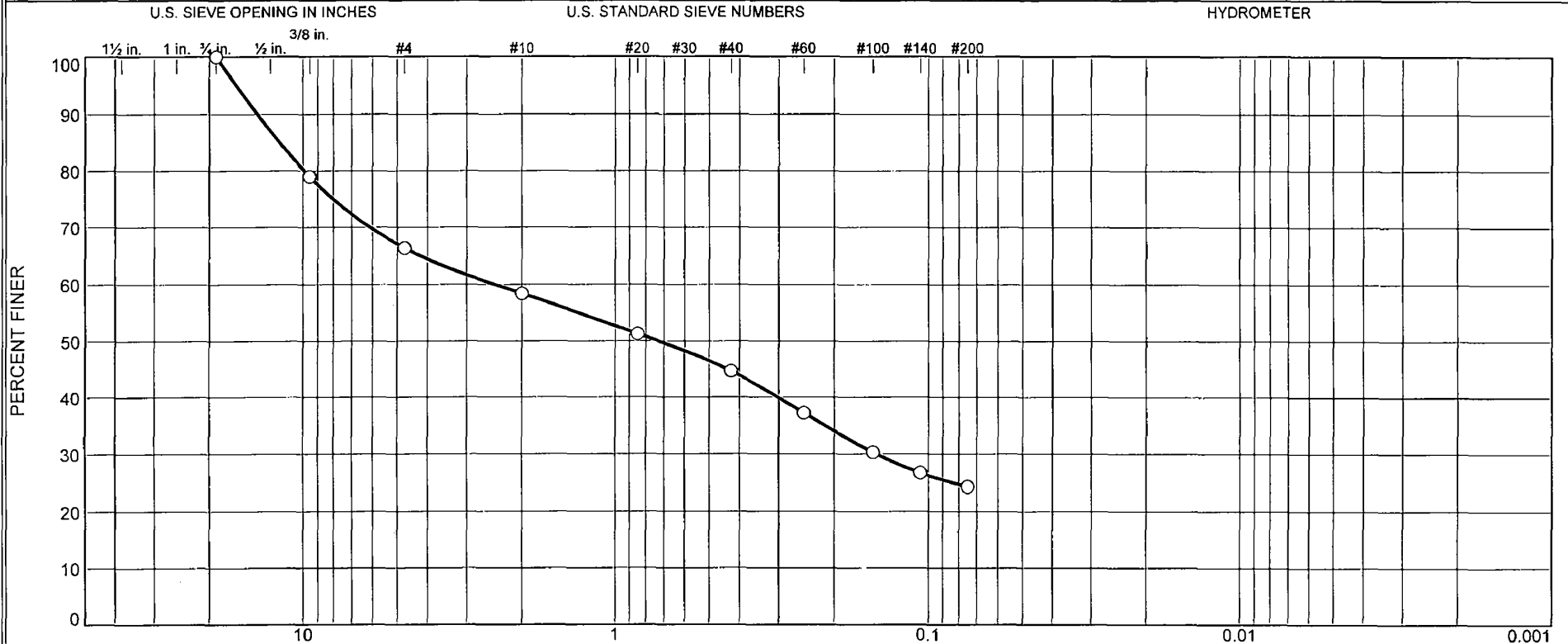
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.1219	0.2605	0.9937	5.0146	7.7905	13.5596	15.5913	18.6664	27.1993

Fineness Modulus

4.60

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	34	8	13	21	24	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-737	737-3	5.0-6.5	4/3/08	SM	White Silty SAND with gravel (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-737

Depth: 5.0-6.5

Sample Number: 737-3

Material Description: White Silty SAND with gravel (Visual)

Date: 4/3/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
464.85	0.00	0.00	3/4	0.00	100
			3/8"	97.76	79
			#4	156.38	66
			#10	193.33	58
102.83	0.00	0.00	#20	12.51	51
			#40	24.17	45
			#60	37.37	37
			#100	49.52	30
			#140	55.85	27
			#200	60.06	24

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	34	34	8	13	21	42			24

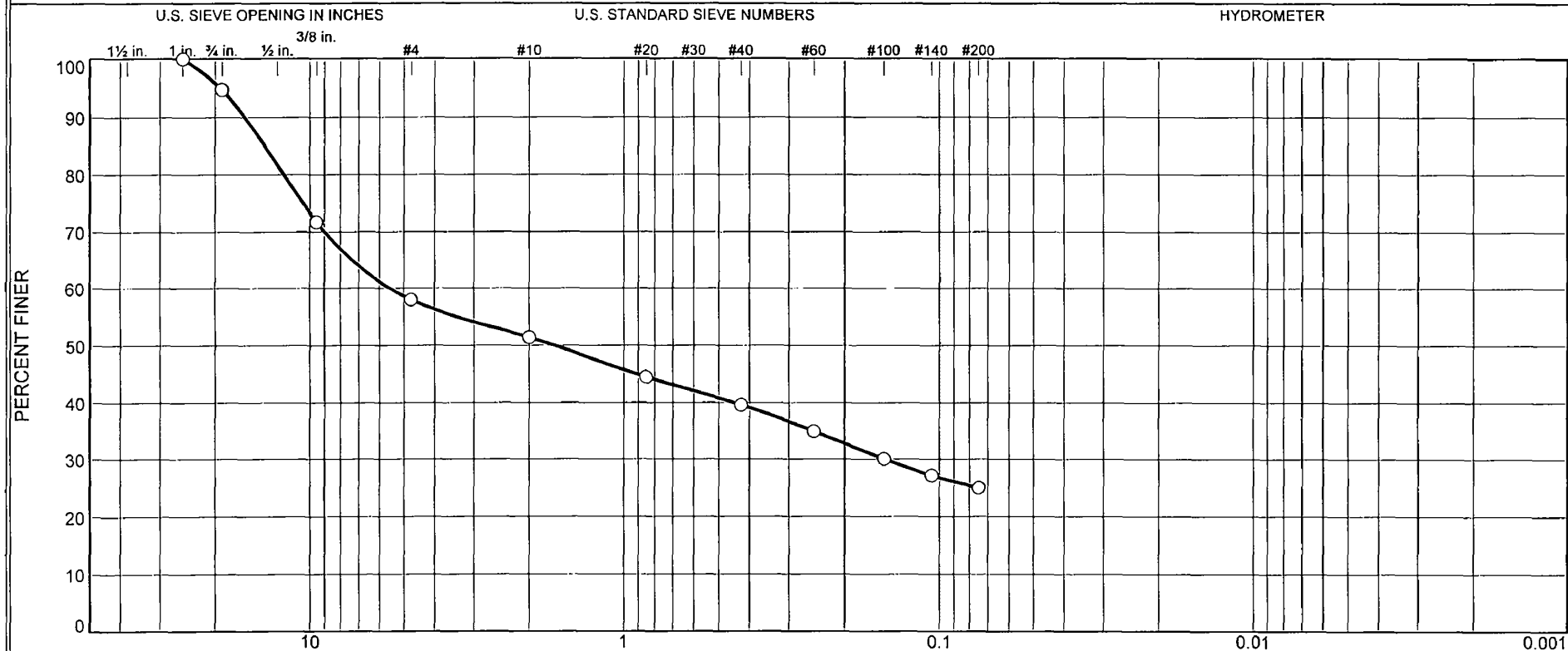
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1465	0.7271	2.4498	9.9189	11.8829	14.0042	16.3640

Fineness Modulus

3.22

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
5	37	7	11	15	25	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-737	737-5	10.0-11.5	4/3/08	GM	White Silty GRAVEL with sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	☐ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-737

Depth: 10.0-11.5

Sample Number: 737-5

Material Description: White Silty GRAVEL with sand (Visual)

Date: 4/3/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
278.97	0.00	0.00	1	0.00	100
			3/4	14.67	95
			3/8"	78.89	72
			#4	117.20	58
			#10	135.63	51
95.47	0.00	0.00	#20	12.87	44
			#40	21.94	40
			#60	30.56	35
			#100	39.62	30
			#140	45.06	27
			#200	49.18	25

Fractional Components

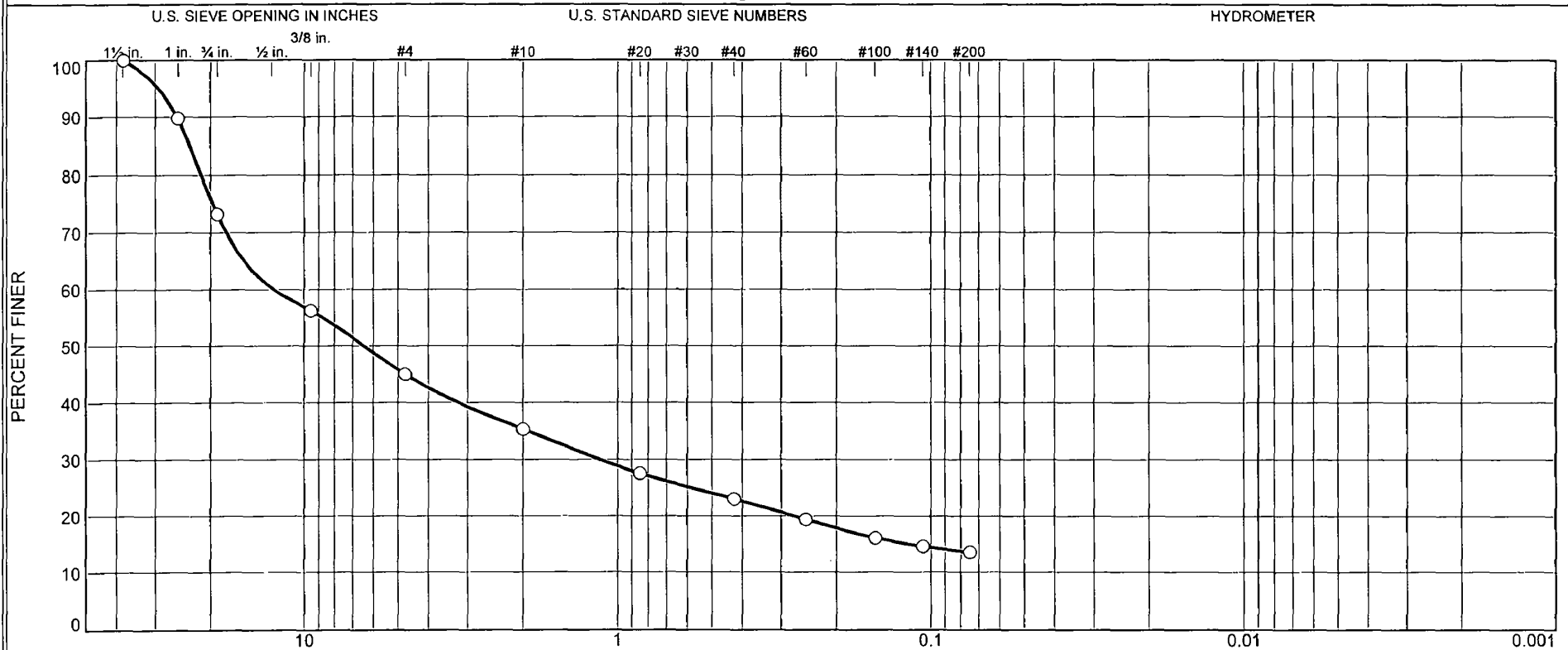
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	5	37	42	7	11	15	33			25

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1491	1.6655	5.5594	12.1248	13.9183	16.1158	19.2591

Fineness Modulus
3.67

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
27	28	10	12	9	14	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-737	737-8	18.6-20.1	5/9/08	GM	White Silty GRAVEL with sand (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

Tested By: CS

Volume 3, Rev 2 - 10/6/2008

Checked By: LBJ

DSC 7-2-08

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DCN# TUR512

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-737

Depth: 18.6-20.1

Sample Number: 737-8

Material Description: White Silty GRAVEL with sand (Visual)

Date: 5/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: GM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
549.92	0.00	0.00	1.5	0.00	100
			1	56.44	90
			3/4	147.33	73
			3/8"	240.50	56
			#4	302.80	45
			#10	355.70	35
98.23	0.00	0.00	#20	21.64	28
			#40	34.16	23
			#60	44.29	19
			#100	53.49	16
			#140	57.61	15
			#200	60.58	14

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	27	28	55	10	12	9	31			14

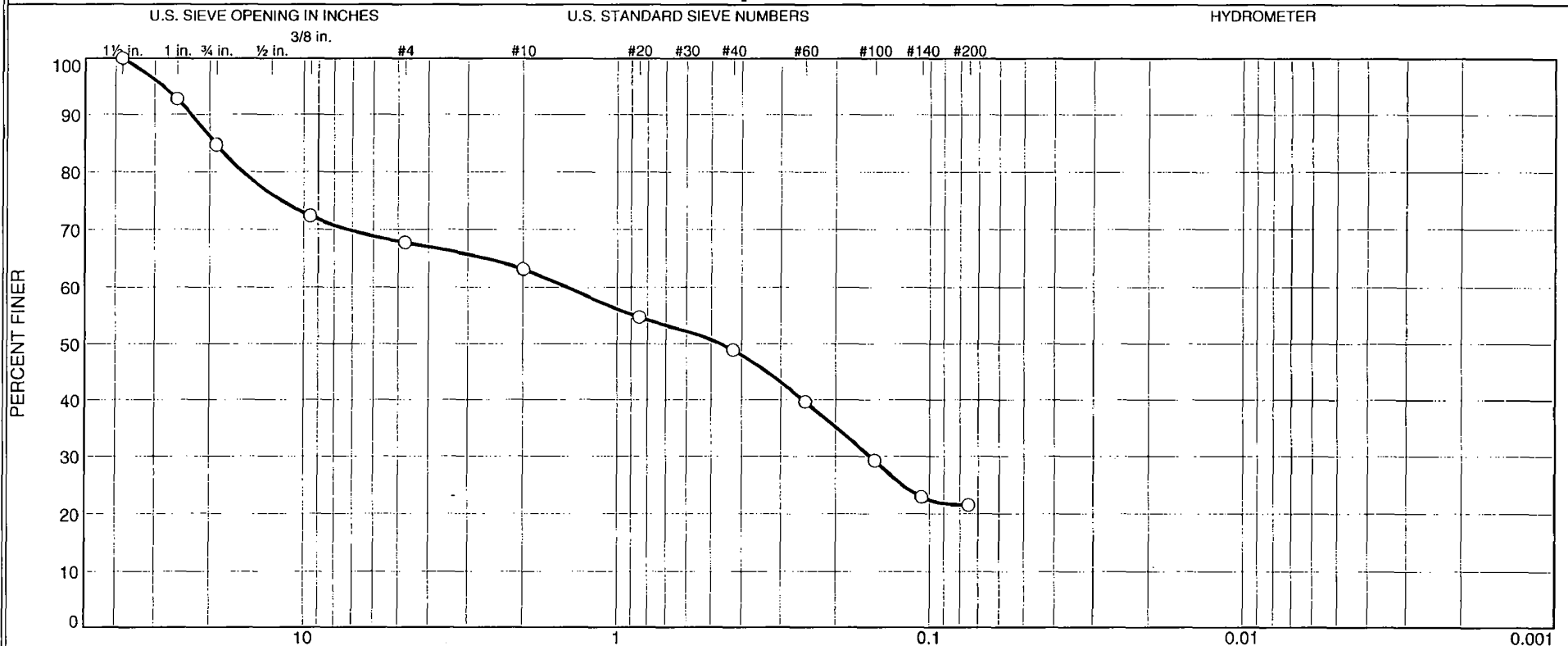
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.1180	0.2723	1.1412	6.4466	12.5128	21.4110	23.2596	25.5416	29.2301

Fineness
Modulus

4.96

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel			% Sand			% Fines	
Coarse	Fine		Coarse	Medium	Fine	Silt	Clay
15	17		5	14	27	22	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-737	737-14B	112.7-113.3	5/9/08	SM	Light Gray Silty SAND with gravel (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL				
Project No. 6468071950	Figure N/A			

GRAIN SIZE DISTRIBUTION TEST DATA

7/2/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-737

Depth: 112.7-113.3

Sample Number: 737-14B

Material Description: Light Gray Silty SAND with gravel (Visual)

Date: 5/9/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
301.78	0.00	0.00	1.5	0.00	100
			1	21.75	93
			3/4	46.13	85
			3/8"	83.54	72
			#4	97.27	68
			#10	111.23	63
99.29	0.00	0.00	#20	13.23	55
			#40	22.36	49
			#60	36.89	40
			#100	53.28	29
			#140	63.23	23
			#200	65.39	22

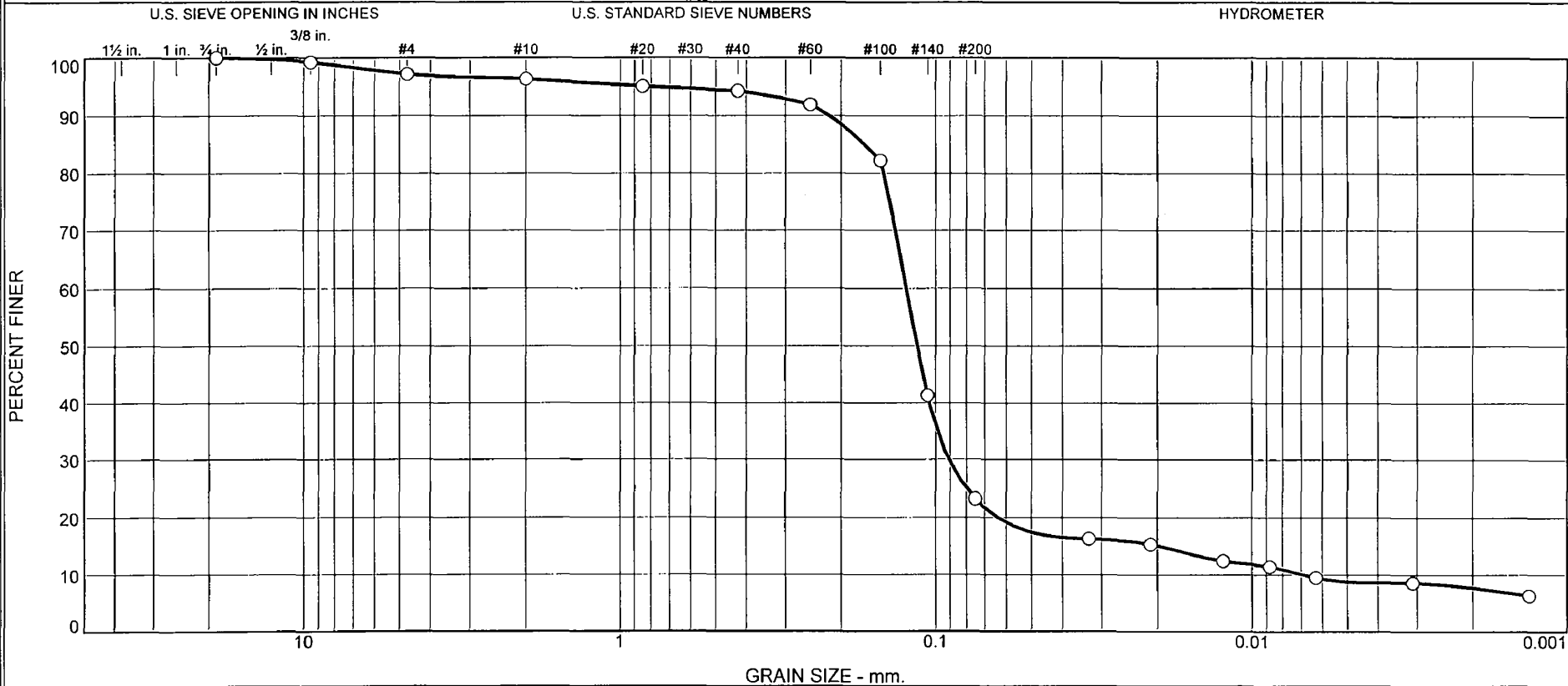
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	15	17	32	5	14	27	46			22

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1553	0.4657	1.4439	15.6922	19.2489	22.8935	28.0299

Fineness Modulus
3.28

Particle Size Distribution Report/ ASTM D 422-63(2007)e1



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.8	0.8	2.1	71.1	14.4	8.8

[illegible]

Project Turkey Point COL

Figure N/A

Raleigh, North Carolina

○ SIEVE ANALYSIS AND HYDROMETER ONLY
Specific Gravity is assumed
ND = Not Determined

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-737

Depth: 121.8-123.3

Sample Number: 737-15

Material Description: Pale Brown Silty SAND (Visual)

Date: 4/5/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY

Specific Gravity is assumed

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
261.01	0.00	0.00	3/4	0.00	100.0
			3/8"	1.89	99.3
			#4	7.29	97.2
			#10	9.46	96.4
99.27	0.00	0.00	#20	1.28	95.1
			#40	2.13	94.3
			#60	4.56	91.9
			#100	14.56	82.2
			#140	56.69	41.3
			#200	75.36	23.2

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =96.4

Weight of hydrometer sample =99.27

Hygroscopic moisture correction:

Moist weight and tare = 28.59

Dry weight and tare = 28.48

Tare weight = 15.67

Hygroscopic moisture =0.9%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.700

Hydrometer type =152H

Hydrometer effective depth equation: $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.6	22.0	16.8	0.0132	23.0	12.5	0.0330	16.3
5.00	21.6	21.0	15.8	0.0132	22.0	12.7	0.0210	15.3
15.00	21.6	18.0	12.8	0.0132	19.0	13.2	0.0124	12.4
30.00	21.7	17.0	11.9	0.0132	18.0	13.3	0.0088	11.5
60.00	21.7	15.0	9.9	0.0132	16.0	13.7	0.0063	9.5
250.00	21.8	14.0	8.9	0.0131	15.0	13.8	0.0031	8.6
1440.00	20.7	12.0	6.6	0.0133	13.0	14.2	0.0013	6.4

MACTEC Engineering and Consulting, Inc.

Fractional Components

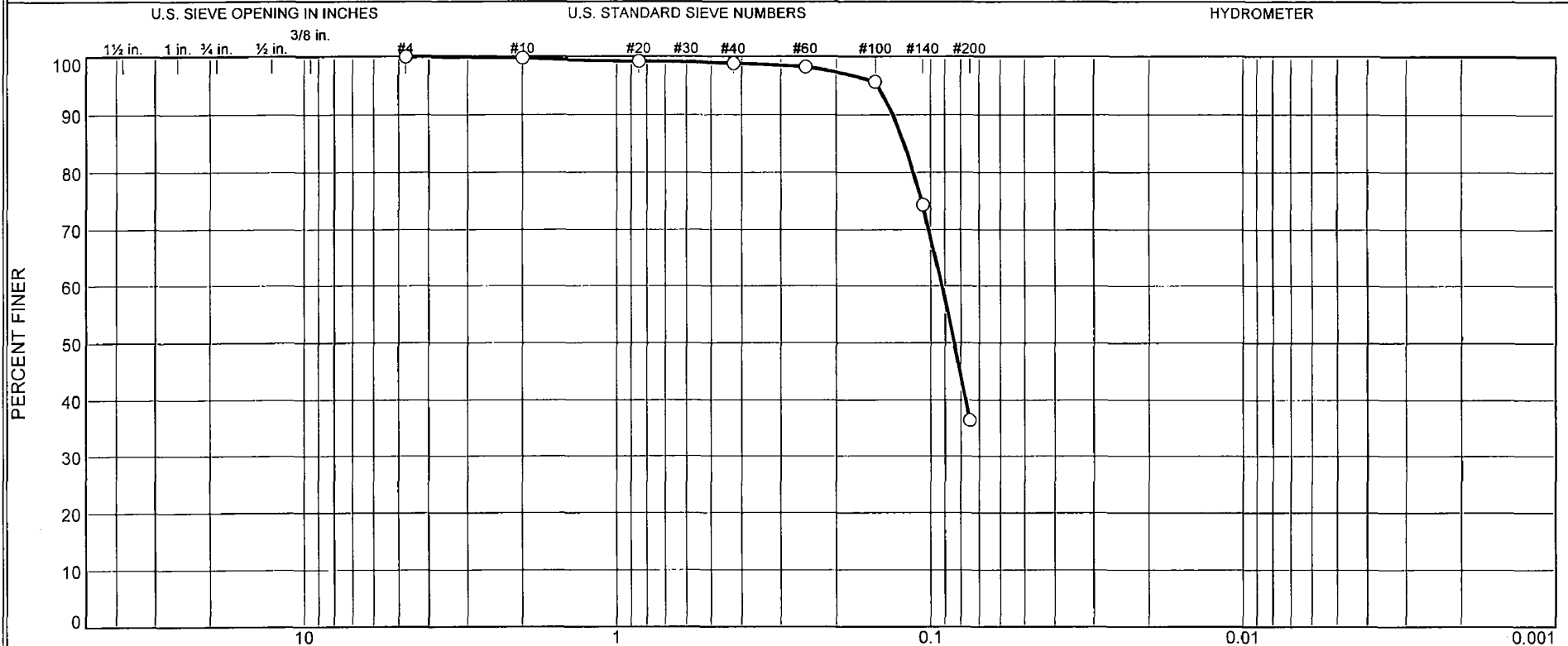
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.8	2.8	0.8	2.1	71.1	74.0	14.4	8.8	23.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0068	0.0196	0.0636	0.0910	0.1145	0.1239	0.1464	0.1678	0.2172	0.7668

Fineness Modulus	C _u	C _c
0.42	18.18	9.79

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	63	36	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-737	737-17	141.8-143.3	4/5/08	SM	Greenish Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

GRAIN SIZE DISTRIBUTION TEST DATA

6/24/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Boring B-737

Depth: 141.8-143.3

Sample Number: 737-17

Material Description: Greenish Gray Silty SAND (Visual)

Date: 4/5/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
329.12	0.00	0.00	#4	0.00	100
			#10	0.75	100
102.52	0.00	0.00	#20	0.62	99
			#40	0.95	99
			#60	1.60	98
			#100	4.26	96
			#140	26.11	74
			#200	65.08	36

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	0	0	0	1	63	64			36

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0841	0.0919	0.1133	0.1212	0.1316	0.1472

Fineness Modulus
0.08

MACTEC Engineering and Consulting, Inc.

Soil Laboratory Test- Test Pits

GRAIN SIZE DISTRIBUTION TEST DATA

7/22/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Test Pit TP-601

Depth: 3.2-5.0

Sample Number: 601-1

Material Description: Pale Brown Poorly graded SAND with Silt and Gravel (Visual)

Date: 5/1/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Test performed on material as obtained from the field.

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
375.84	0.00	0.00	3/4	0.00	100
			3/8"	64.99	83
			#4	156.27	58
			#10	259.30	31
102.33	0.00	0.00	#20	15.20	26
			#40	27.02	23
			#60	39.75	19
			#100	52.87	15
			#140	59.59	13
			#200	63.62	12

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	42	42	27	8	11	46			12

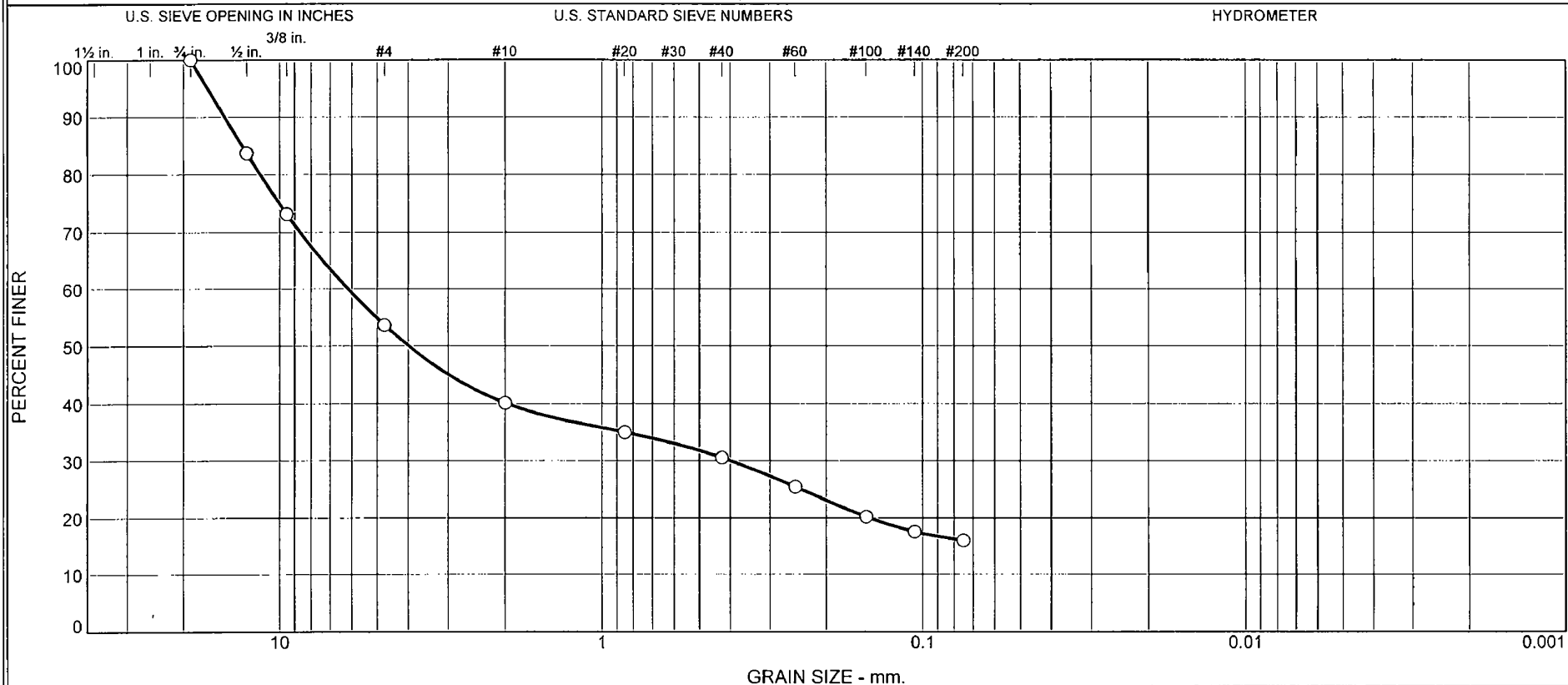
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.1503	0.2863	1.8796	3.8024	4.9518	8.7189	10.3097	12.4378	15.2972

Fineness Modulus

4.37

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	46	14	9	15	16	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Test Pit TP-601	601-1-BC	NA	5/15/08	SP-SM	Processed Material- Before Compaction	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ Test performed on material as prepared according to ASTM D 1557-07 before compaction(BC)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A		
		Raleigh, North Carolina	

ZHU 7/22/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/22/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Test Pit TP-601

Depth: NA

Sample Number: 601-1-BC

Material Description: Processed Material- Before Compaction

Date: 5/15/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM

Testing Remarks: Test performed on material as prepared according to ASTM D 1557-07 before compaction(BC)

Tested by: AWH

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
6308.30	0.00	0.00	3/4	0.00	100
			1/2	1028.80	84
			3/8	1692.50	73
			#4	2925.50	54
			#10	3780.40	40
434.30	0.00	0.00	#20	55.50	35
			#40	103.60	31
			#60	159.10	25
			#100	215.50	20
			#140	244.60	18
			#200	261.00	16

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	46	46	14	9	15	38			16

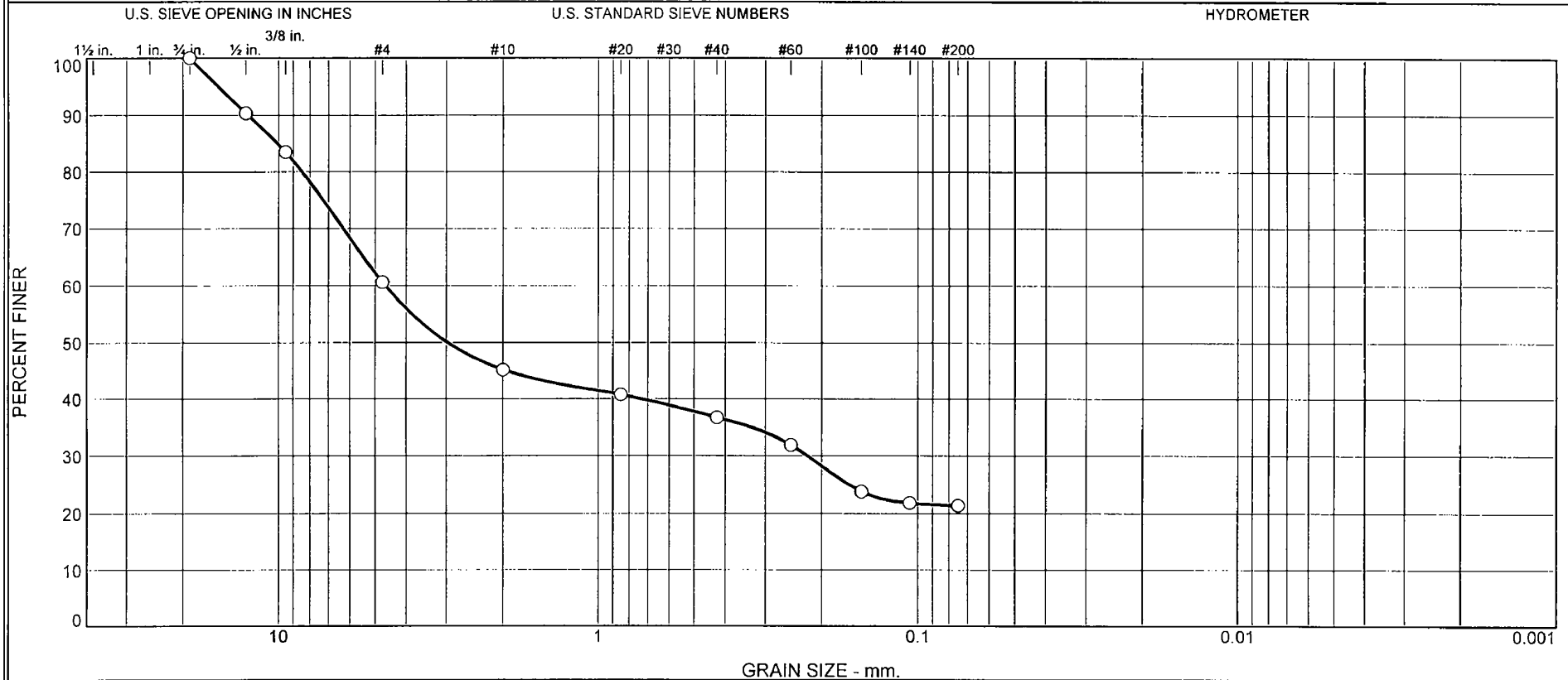
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.1469	0.4002	3.9926	6.1701	11.5240	13.1357	14.9032	16.8608

Fineness Modulus

4.14

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	39	16	8	16	21	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Test Pit TP-601	601-1-AC	NA	5/20/08	SP-SM	Processed Material-After Compaction	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ Test performed on material used for ASTM D-1557-07 after compaction(AC)
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

ZHU 7/22/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/22/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Test Pit TP-601

Depth: NA

Sample Number: 601-1-AC

Material Description: Processed Material-After Compaction

Date: 5/20/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SP-SM.

Testing Remarks: Test performed on material used for ASTM D-1557-07 after compaction(AC)

Tested by: AWH

Checked by: LBJ

Sieve Test Data:

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
12647.90	0.00	0.00	3/4	0.00	100
			1/2	1219.10	90
			3/8	2079.20	84
			#4	4978.90	61
			#10	6933.90	45
523.70	0.00	0.00	#20	51.78	41
			#40	98.57	37
			#60	153.78	32
			#100	247.80	24
			#140	270.60	22
			#200	275.70	21

Fractional Components

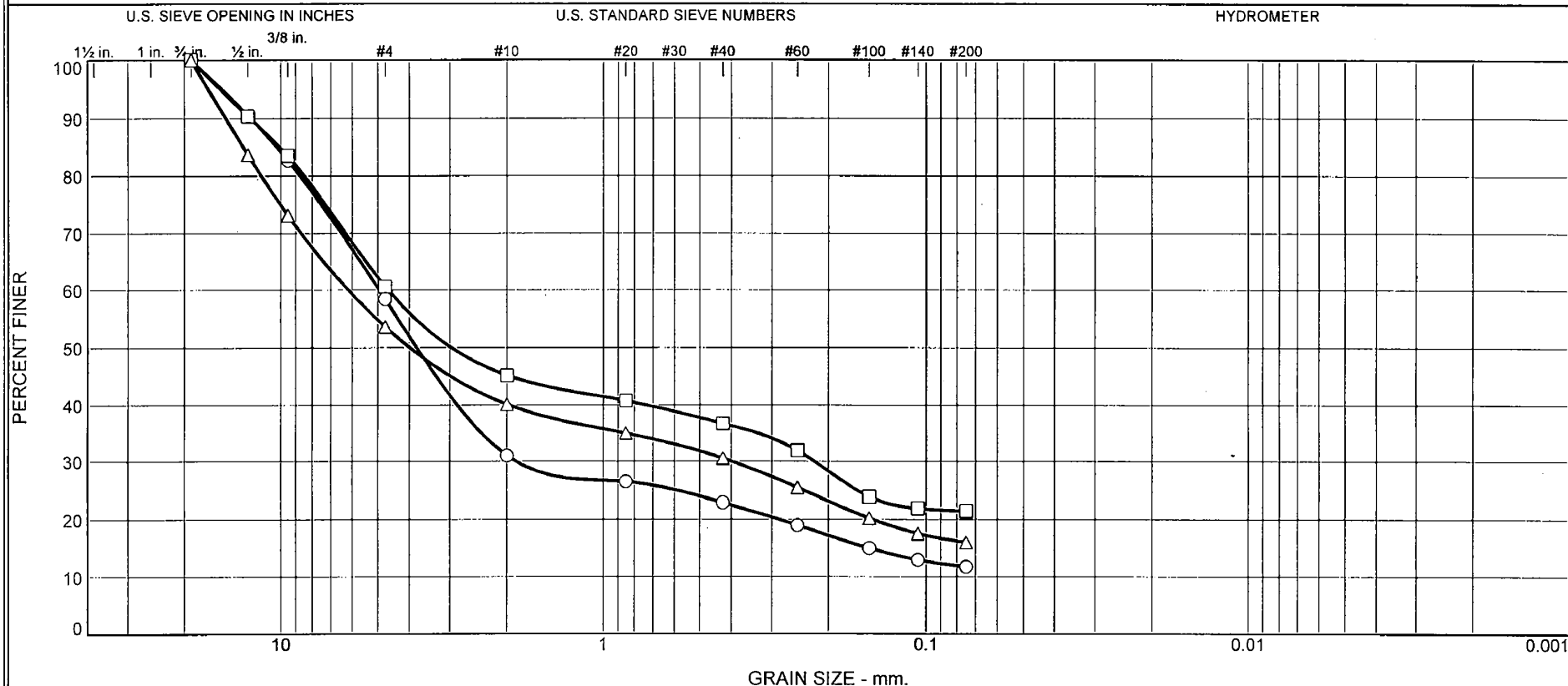
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	39	39	16	8	16	40			21

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.2216	2.9710	4.6489	8.4410	10.0639	12.4973	15.4988

Fineness Modulus
3.70

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1 Method A



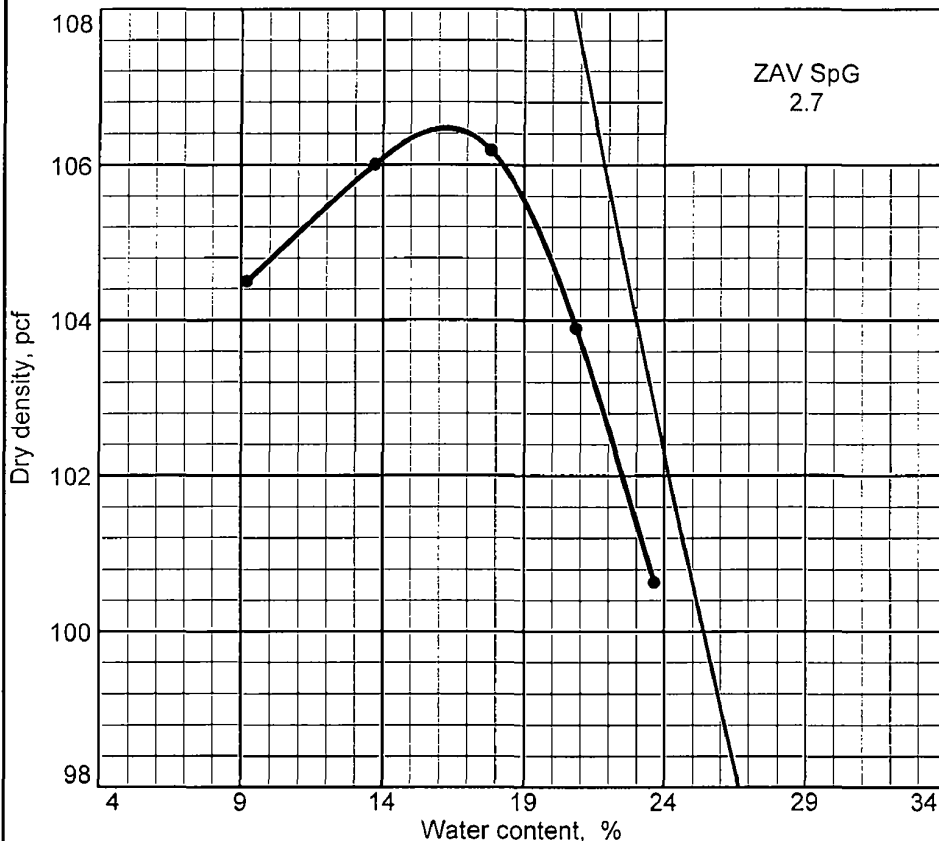
% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	42	27	8	11	12	
0	39	16	8	16	21	
0	46	14	9	15	16	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Test Pit TP-601	601-1	3.2-5.0	5/1/08	SP-SM	Pale Brown Poorly graded SAND with Silt and Gravel (Visual)	ND	ND	ND
Test Pit TP-601	601-1-AC	NA	5/20/08	SP-SM	Processed Material-After Compaction	ND	ND	ND
Test Pit TP-601	601-1-BC	NA	5/15/08	SP-SM	Processed Material- Before Compaction	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined Test performed on material as obtained from the field. □ Test performed on material used for ASTM D-1557-07 after compaction(AC) △ Test performed on processed material before compaction
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

ZHU 7/23/08

COMPACTION TEST REPORT



Curve No.
TP-601

Test Specification:

ASTM D 1557-07 Method C Modified

Preparation Method DRY
 Hammer Wt. 10.0
 Hammer Drop 18 mechanical
 Number of Layers 5
 Blows per Layer 56
 Mold Size .07501 cu.ft.

Test Performed on Material
 Passing 3/4 in. Sieve

NM ND LL ND PI ND
 Sp.G. (ASTM D 854) ND
 %>3/4 in. 0.0 %<No.200 12
 USCS SP-SM AASHTO ND
 Date Sampled 5/1/08
 Date Tested 5/16/08
 Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	9830.1	9985.7	10001.0	9962.5	9611.3	
WM	5729.3	5729.3	5729.3	5729.3	5729.3	
WW + T #1	574.00	588.60	615.80	615.00	522.20	
WD + T #1	505.60	500.60	510.70	498.70	478.80	
TARE #1	6.80	6.90	6.70	7.00	6.80	
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	13.7	17.8	20.9	23.7	9.2	
DRY DENSITY	106.0	106.2	103.9	100.6	104.5	

TEST RESULTS

Maximum dry density = 106.5 pcf

Optimum moisture = 16.3 %

Project No. 6468071950 Client: Bechtel

Project: Turkey Point COL

● Source: Test Pit TP-601 Sample No.: 601-1 Elev./Depth: 3.2-5.0

MACTEC Engineering and Consulting, Inc.

Raleigh, North Carolina

Material Description

Pale Brown Poorly graded SAND with Silt and Gravel (Visual)

Remarks:

Checked by: LBJ

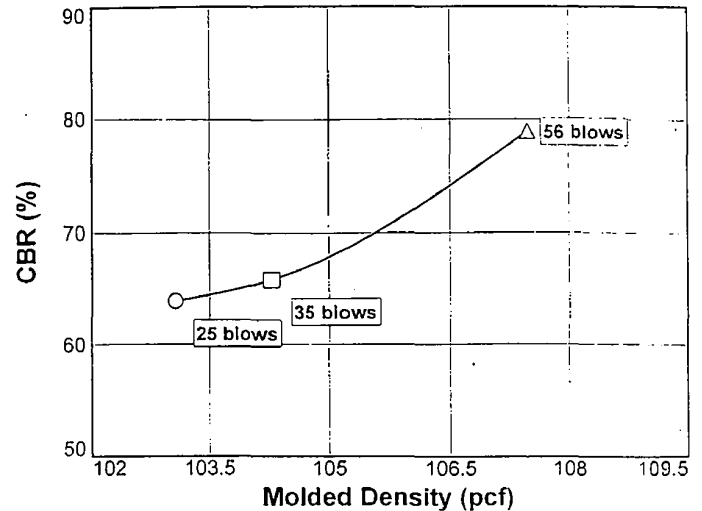
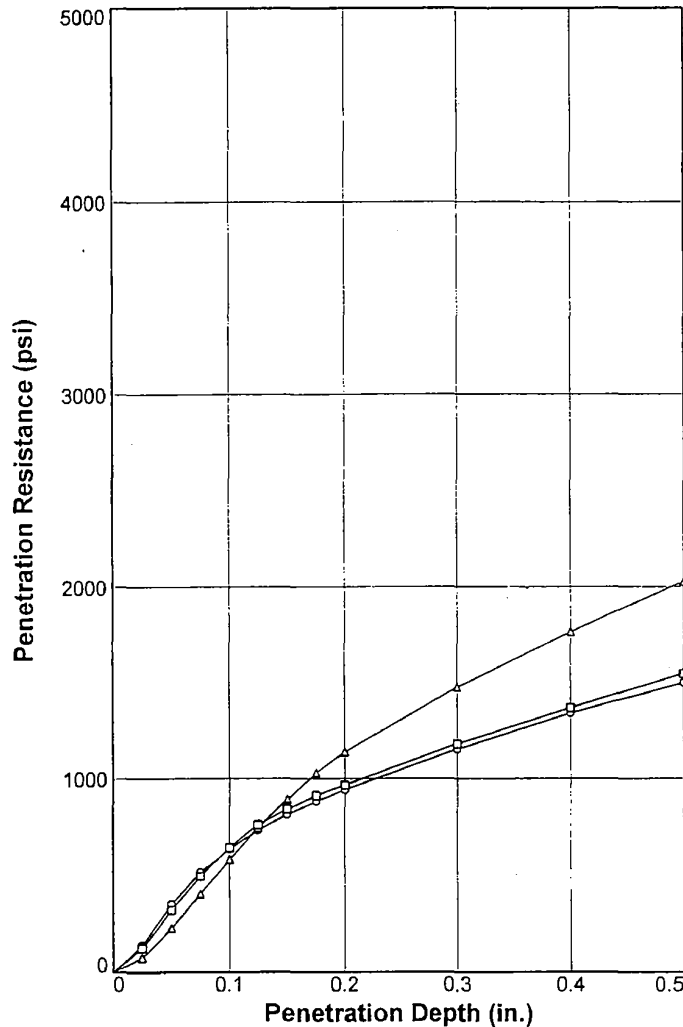
Title: LAB MANAGER

Figure N/A

ZHU 7/22/08

BEARING RATIO TEST REPORT

ASTM D 1883 -07



Points for 0.2" Penetrations are Plotted

	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	103.0	96.7	15.9	103.0	96.8	19.6	66.5	63.9	0.008	10.0	0
2 △	107.5	100.9	16.9	107.5	100.9	17.4	67.3	78.9	0.014	10.0	0
3 □	104.5	98.1	16.5	104.5	97.9	18.2	69.1	65.8	0.010	10.0	0
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Pale Brown Poorly graded SAND with Silt and Gravel (Visual)							SP-SM	106.5	16.3	ND	ND

Project No: 6468071950
Project: Turkey Point COL
Source of Sample: Test Pit TP-601 **Depth:** 3.2-5.0
Sample Number: 601-1
Date: 5/1/08

Test Description/Remarks:

ASTM D 1883-07

Sample was prepared in accordance with ASTM D- 1557-07

BEARING RATIO TEST REPORT

MACTEC Engineering and Consulting, Inc.

Figure 4/4

ZHU 7/22/08

BEARING RATIO TESTING RESULTS (ASTM D 1883-99)

Date: 5/1/08
Project No.: 6468071950
Project: Turkey Point COL
Location: Test Pit TP-601
Depth: 3.2-5.0 **Sample Number:** 601-1
Material Description: Pale Brown Poorly graded SAND with Silt and Gravel (Visual)
USCS Classification: SP-SM
Liquid Limit: ND **Plasticity Index:** ND

Test Description: ASTM D 1883-07
Maximum Dry Density: 106.5 **Optimum Moisture Content:** 16.3
Testing Remarks: Sample was prepared in accordance with ASTM D- 1557-07

Sample 1 (25 Blows, Surcharge: 10.0 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 281.9 Wt. Soil+Tare, gms. 244.2 Wt. Tare, gms. 6.9 Moisture, % 15.9

Unit Weight

Wt. Mold+Soil, gms. 12318 Wt. Mold, gms. 8251 Ht. Soil, in. 4.588 Density, pcf 103.0

Swell Data

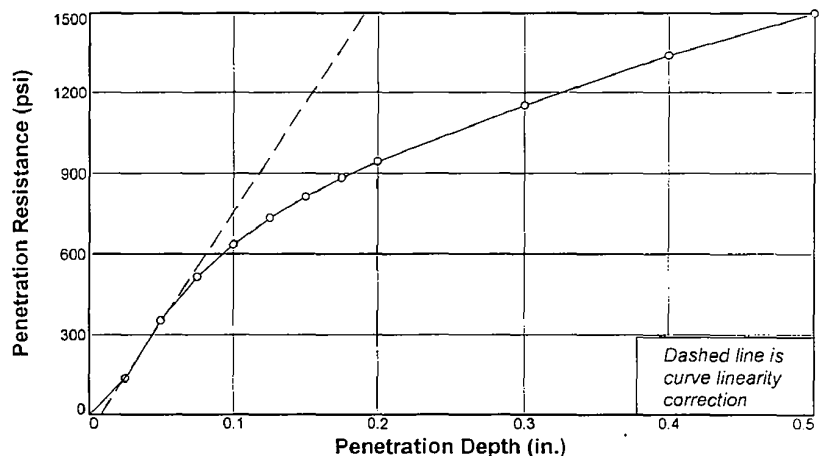
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	10	0.0
96	10	0.0

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	455.1	380.7	6.8	19.9
Middle	485.4	407.3	6.8	19.5
Bottom	485.4	407.3	6.8	19.5

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	140	138.9	
0.05	355	352.3	
0.075	520	516.1	
0.1	640	635.2	66.5
0.125	740	734.4	
0.15	820	813.8	
0.175	890	883.3	
0.2	950	942.8	63.9
0.3	1160	1151.3	61.3
0.4	1350	1339.8	58.8
0.5	1510	1498.6	57.6



Sample 2**(56 Blows, Surcharge: 10.0 lbs.)****Water Content**

Wt. Wet Soil+Tare, gms. 332

Wt. Soil+Tare, gms. 284.9

Wt. Tare, gms. 6.9

Moisture, % 16.9

Unit Weight

Wt. Mold+Soil, gms. 12492

Wt. Mold, gms. 8217

Ht. Soil, in. 4.583

Density, pcf 107.5

Swell Data

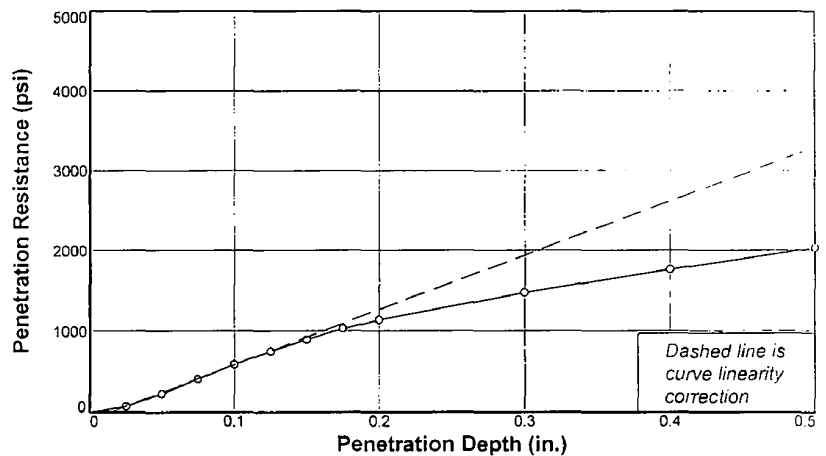
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	0	0.0
96	-0.006	0.0

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	415.2	353.0	6.7	18.0
Middle	494.2	422.8	6.8	17.2
Bottom	494.2	422.8	6.8	17.2

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	75	74.2	
0.05	230	227.4	
0.075	410	405.4	
0.1	590	583.5	67.3
0.125	755	746.6	
0.15	905	895.0	
0.175	1040	1028.5	
0.2	1150	1137.2	78.9
0.3	1490	1473.5	79.7
0.4	1785	1765.2	78.3
0.5	2050	2027.2	78.0

**Sample 3****(35 Blows, Surcharge: 10.0 lbs.)****Water Content**

Wt. Wet Soil+Tare, gms. 317.7

Wt. Soil+Tare, gms. 273.8

Wt. Tare, gms. 7.1

Moisture, % 16.5

Unit Weight

Wt. Mold+Soil, gms. 12338.0

Wt. Mold, gms. 8206.0

Ht. Soil, in. 4.584

Density, pcf 104.5

Swell Data

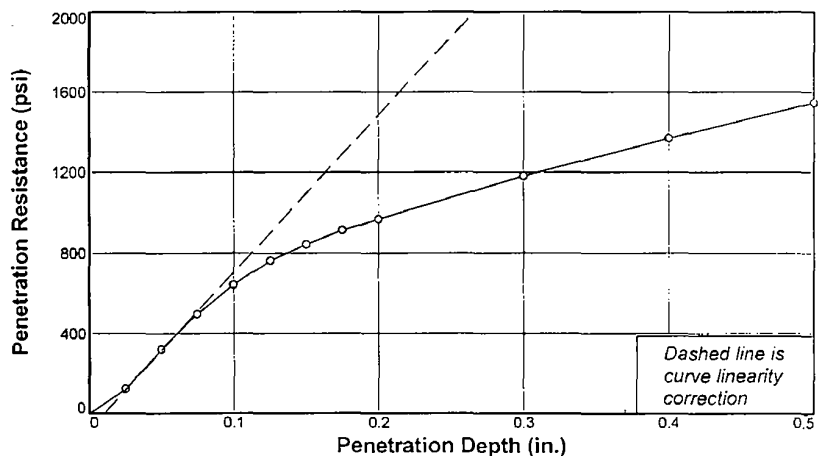
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	0	0.0
96	-0.003	0.0

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	409.7	344.0	6.9	19.5
Middle	471.1	401.7	6.8	17.6
Bottom	471.1	401.7	6.8	17.6

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	125	123.9	
0.05	325	322.2	
0.075	500	495.8	
0.1	650	644.5	69.1
0.125	770	763.5	
0.15	850	842.8	
0.175	920	912.2	
0.2	975	966.7	65.8
0.3	1190	1179.9	63.1
0.4	1380	1368.3	60.2
0.5	1560	1546.7	59.5





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RALEIGH, NORTH CAROLINA

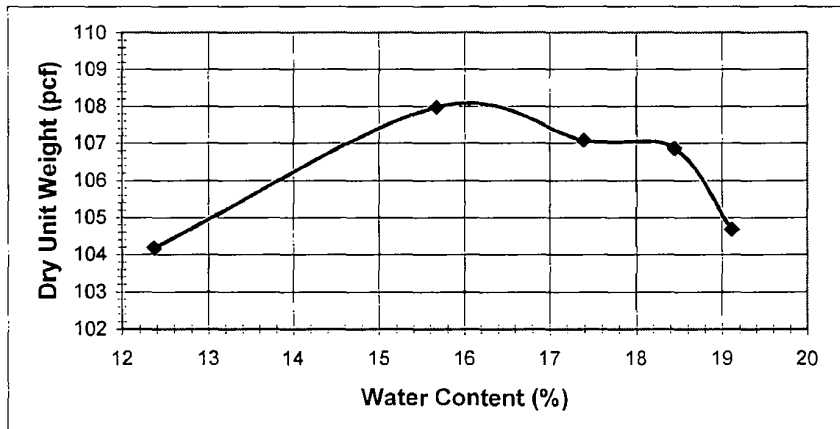
Limerock Bearing Ratio (FM 5-515)

Sample: TP-601
Number of Layers: 5
Blows / layer: 56
Volume of Mold, ft³: 0.075200

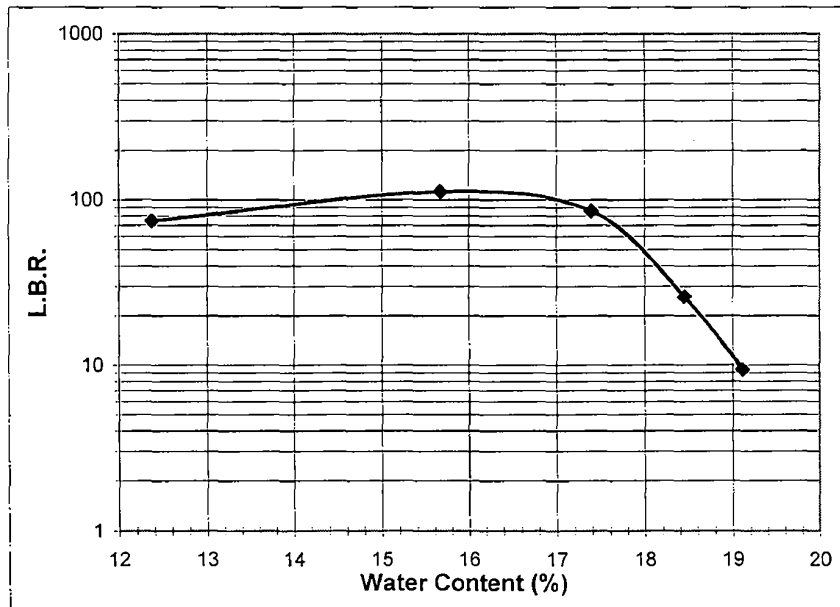
Project Name: Turkey Point COL
Project No: 6468-07-1950
Date: 6/7/2008

$w_{opt} (\%) = 16.3$
 $\gamma_{max} (pcf) = 108.0$

Sample No.	1	2	3	4	5
Weight of Dish, g	6.9	14.6	14.5	13.7	17.1
Weight of sample + Dish, g	560.1	689.3	589.6	618.5	687
Weight of Dry sample + Dish, g	499.2	597.9	504.4	524.3	579.5
w%	12.4	15.7	17.4	18.4	19.1
Weight of Mold + Soil, g	12229.7	11247.3	12535.7	12540.9	12498.7
Weight of Mold, g	8236.3	6986.9	8248.1	8223.1	8245.8
Wet unit weight, pcf	117.1	124.9	125.7	126.6	124.7
Dry unit weight, pcf	104.2	108.0	107.1	106.9	104.7
Corrected Stress Corresponding to 0.1 inch penetration, psi	596.4	896.80	683.60	208.70	75.20
L.B.R at 0.1 inch penetration (stress/800x100)	74.6	112.1	85.5	26.1	9.4



L.B.R. = 112
Modified Proctor = 108 PCF
Optimum Moisture = 16%



SUBMITTED BY:



MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

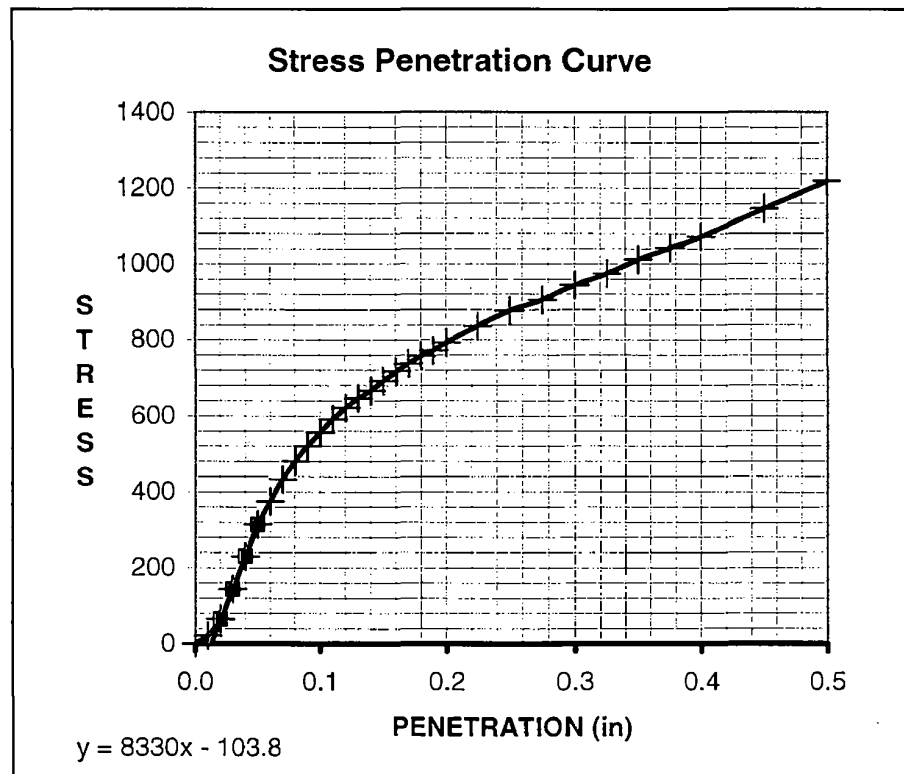
REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-515

PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-601 (1-Mold 2.1.52)
DATE: 6/24/08

Penetration (inches)	Stress (psi)
0.000	0
0.010	21
0.020	65
0.030	143
0.040	229
0.050	314
0.060	374
0.070	432
0.080	480
0.090	520
0.100	556
0.110	591
0.120	621
0.130	646
0.140	667
0.150	692
0.160	717
0.170	737
0.180	757
0.190	773
0.200	793
0.225	837
0.250	877
0.275	906
0.300	944
0.325	975
0.350	1011
0.375	1042
0.400	1072
0.450	1146
0.500	1219

MAXIMUM DRY DENSITY (pcf): 108.0
OPTIMUM MOISTURE (%): 16.3

COMPACTED VALUES	
WET UNIT WEIGHT (pcf):	117.1
DRY UNIT WEIGHT (pcf):	104.2
INITIAL MOISTURE (%):	12.4
PERCENT MDD:	96.5



At 0.10 inches of Penetration:

	UNCORRECTED	CORRECTED
STRESS (psi)	555.6	596.4
LBR (%)	69.4	74.6

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs.

SUBMITTED BY:



MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

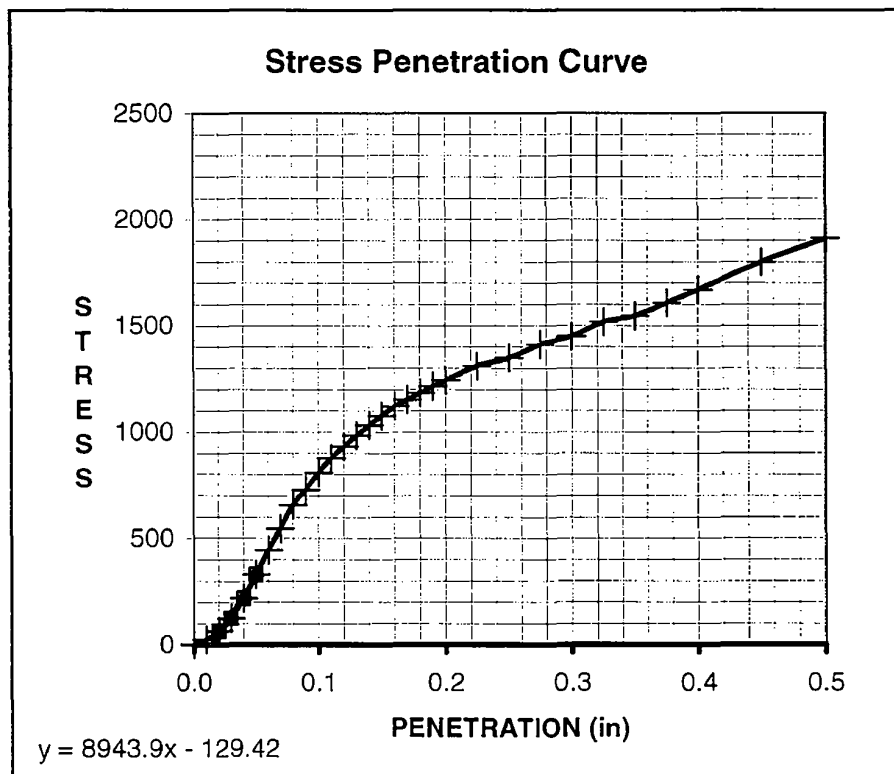
REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-515

PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-601 (2-Mold 2.1.45)
DATE: 6/24/08

Penetration (inches)	Stress (psi)
0.000	0
0.010	24
0.020	63
0.030	124
0.040	219
0.050	329
0.060	445
0.070	545
0.080	656
0.090	727
0.100	808
0.110	877
0.120	931
0.130	983
0.140	1032
0.150	1076
0.160	1121
0.170	1150
0.180	1184
0.190	1214
0.200	1242
0.225	1310
0.250	1348
0.275	1411
0.300	1449
0.325	1517
0.350	1545
0.375	1606
0.400	1669
0.450	1798
0.500	1911

MAXIMUM DRY DENSITY (pcf): 108.0
OPTIMUM MOISTURE (%): 16.3

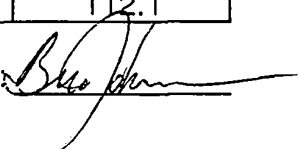
COMPACTED VALUES	
WET UNIT WEIGHT (pcf):	124.9
DRY UNIT WEIGHT (pcf):	108.0
INITIAL MOISTURE (%):	15.7
PERCENT MDD:	100.0



At 0.10 inches of Penetration:

	UNCORRECTED	CORRECTED
STRESS (psi)	807.9	896.8
LBR (%)	101.0	112.1

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs.

SUBMITTED BY: 



MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-515

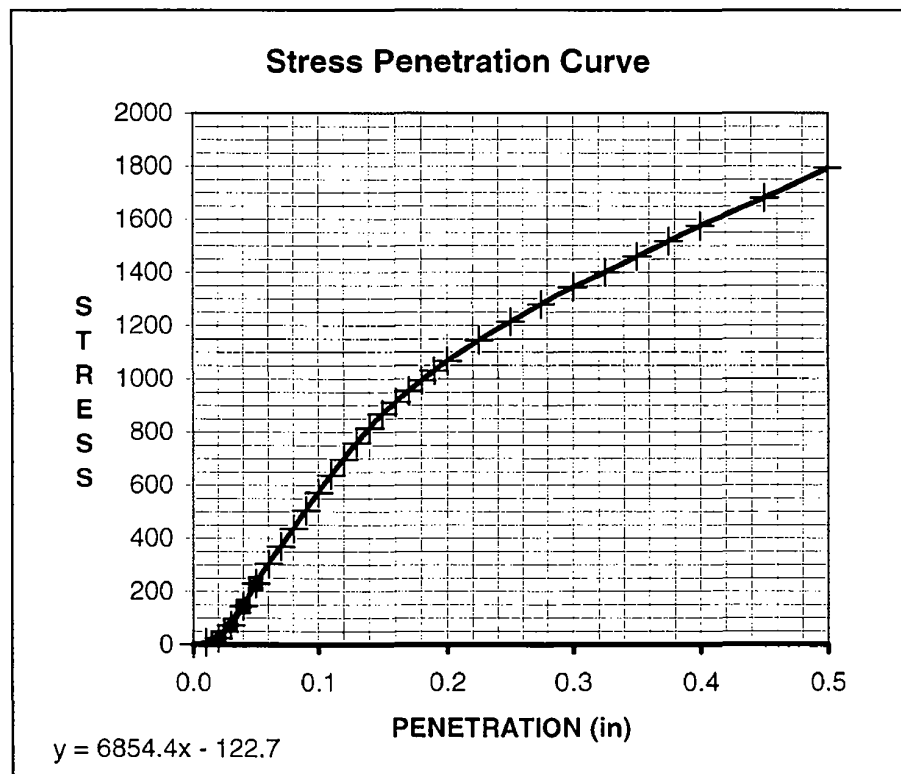
PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-601 (3-Mold 2.1.48)
DATE: 6/24/08

MAXIMUM DRY DENSITY (pcf): 108.0
OPTIMUM MOISTURE (%): 16.3

Penetration (inches)	Stress (psi)
0.000	0
0.010	9
0.020	24
0.030	73
0.040	143
0.050	229
0.060	304
0.070	369
0.080	434
0.090	505
0.100	571
0.110	636
0.120	697
0.130	757
0.140	813
0.150	867
0.160	911
0.170	954
0.180	993
0.190	1028
0.200	1065
0.225	1143
0.250	1214
0.275	1280
0.300	1343
0.325	1400
0.350	1459
0.375	1517
0.400	1575
0.450	1679
0.500	1793

COMPACTED VALUES

WET UNIT WEIGHT (pcf):	125.7
DRY UNIT WEIGHT (pcf):	107.1
INITIAL MOISTURE (%):	17.4
PERCENT MDD:	99.2



At 0.10 inches of Penetration:

	UNCORRECTED	CORRECTED
STRESS (psi)	570.7	683.6
LBR (%)	71.3	85.5

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs.

SUBMITTED BY:



MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

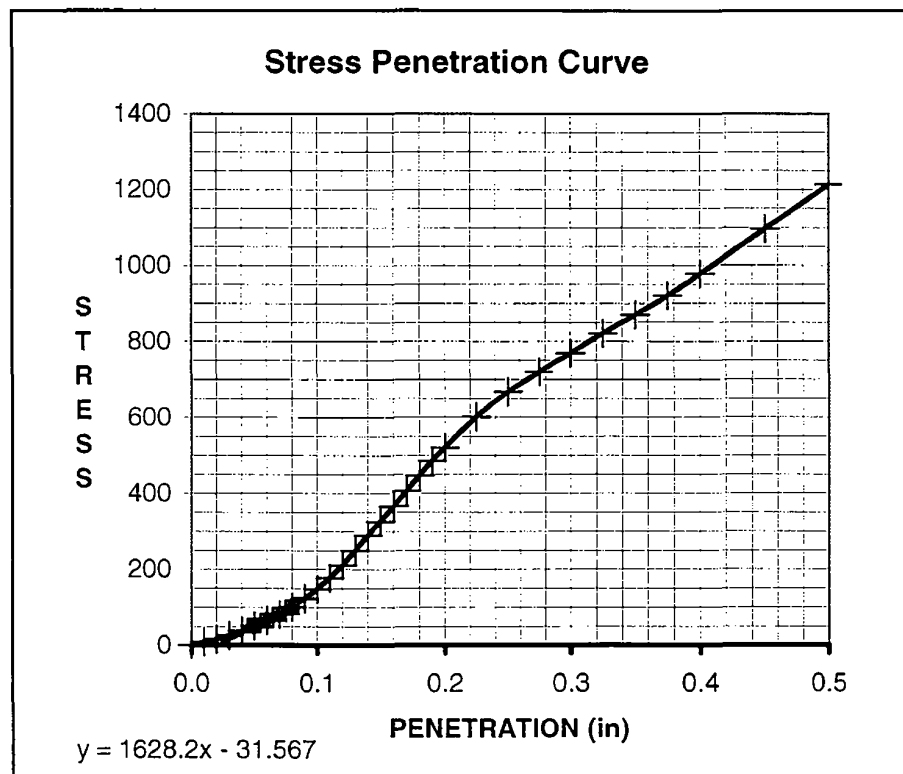
REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-515

PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-601 (4-Mold 2.1.52, @ 7.5%)
DATE: 6/24/08

Penetration (inches)	Stress (psi)
0.000	0.0
0.010	8.5
0.020	15.7
0.030	25.1
0.040	37.6
0.050	51.2
0.060	64.8
0.070	80.9
0.080	100.2
0.090	122.9
0.100	147.3
0.110	176.9
0.120	210.7
0.130	249.3
0.140	289.0
0.150	326.1
0.160	365.6
0.170	406.2
0.180	446.6
0.190	485.0
0.200	520.2
0.225	601.1
0.250	666.6
0.275	719.1
0.300	767.6
0.325	821.0
0.350	869.5
0.375	920.7
0.400	977.2
0.450	1096.0
0.500	1212.7

MAXIMUM DRY DENSITY (pcf): 108.0
OPTIMUM MOISTURE (%): 16.3

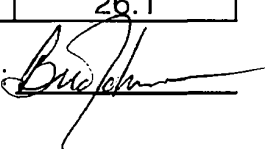
COMPACTED VALUES	
WET UNIT WEIGHT (pcf):	126.6
DRY UNIT WEIGHT (pcf):	106.9
INITIAL MOISTURE (%):	18.4
PERCENT MDD:	99.0



At 0.10 inches of Penetration:

	UNCORRECTED	CORRECTED
STRESS (psi)	147.3	208.7
LBR (%)	18.4	26.1

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs

SUBMITTED BY: 



MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

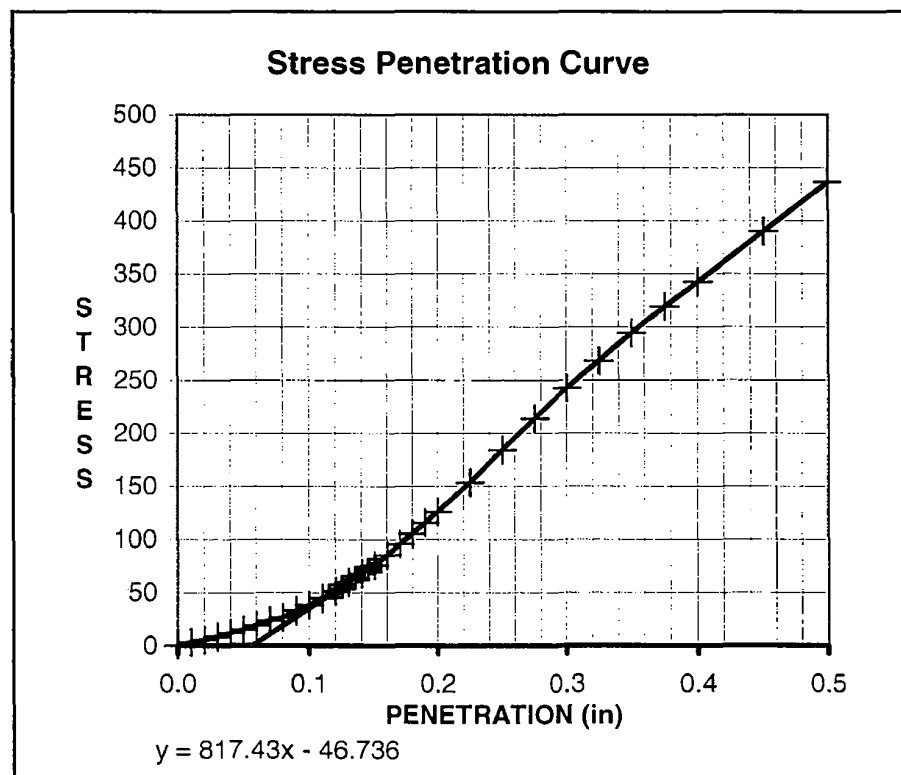
REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-515

PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-601 (5-Mold 2.1.53, @ 8.5% added water)
DATE: 6/24/08

Penetration (inches)	Stress (psi)
0.000	0.0
0.010	3.2
0.020	5.3
0.030	8.5
0.040	11.7
0.050	14.9
0.060	19.2
0.070	23.4
0.080	26.6
0.090	33.0
0.100	38.3
0.110	44.7
0.120	51.2
0.130	59.6
0.140	68.0
0.150	75.7
0.160	85.0
0.170	95.4
0.180	105.3
0.190	115.6
0.200	126.0
0.225	153.4
0.250	184.1
0.275	213.7
0.300	242.2
0.325	267.9
0.350	294.3
0.375	319.0
0.400	342.3
0.450	389.9
0.500	436.5

MAXIMUM DRY DENSITY (pcf): 108.0
OPTIMUM MOISTURE (%): 16.3

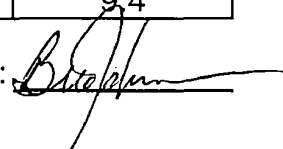
COMPACTED VALUES	
WET UNIT WEIGHT (pcf):	124.7
DRY UNIT WEIGHT (pcf):	104.7
INITIAL MOISTURE (%):	19.1
PERCENT MDD:	96.9



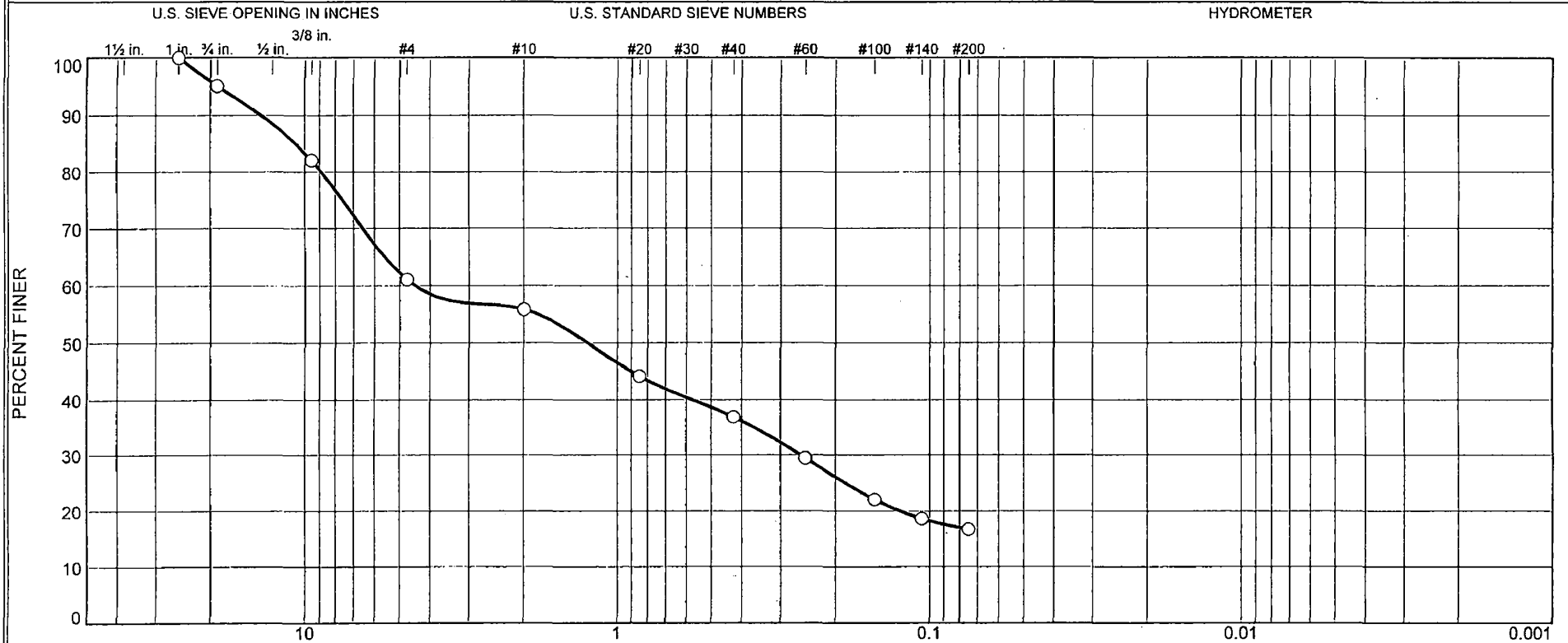
At 0.10 inches of Penetration:

	UNCORRECTED	CORRECTED
STRESS (psi)	38.3	75.2
LBR (%)	4.8	9.4

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs

SUBMITTED BY: 

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
5	34	5	19	20	17	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Test Pit TP-701	701-1	3.0-4.5	5/1/08	SM	Pale Brown Silty SAND with Gravel (Visual)	ND	ND	ND

Client Bechtel		MACTEC Engineering and Consulting, Inc.	○ SIEVE ANALYSIS ONLY ND = Not Determined Test performed on material as obtained from the field.
Project Turkey Point COL			
Project No. 6468071950	Figure N/A	Raleigh, North Carolina	

ZHU 7/22/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/22/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Test Pit TP-701

Depth: 3.0-4.5

Sample Number: 701-1

Material Description: Pale Brown Silty SAND with Gravel (Visual)

Date: 5/1/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

ND = Not Determined

Test performed on material as obtained from the field.

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
393.55	0.00	0.00	1	0.00	100
			3/4	19.39	95
			3/8"	70.38	82
			#4	153.17	61
			#10	173.92	56
102.54	0.00	0.00	#20	21.36	44
			#40	34.72	37
			#60	48.40	29
			#100	61.92	22
			#140	68.30	19
			#200	71.81	17

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	5	34	39	5	19	20	44			17

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.1241	0.2589	1.2458	4.4768	8.8567	10.6753	13.7971	18.9636

Fineness
Modulus

3.61

MACTEC Engineering and Consulting, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME: FPL COL PROJECT (TURKEY POINT)

PROJECT NUMBER: 6468051950

DATE: 8/15/08

SAMPLE IDENTIFICATION: TP-701,(3.0-4.5)

(A) Mass of oven-dried soil, grams:	103.87
(B) Mass of pycnometer filled with water at test temperature (T), grams:	675.74
(C) Mass of pycnometer, water and soil, grams:	741.63
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.7
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.735
(F) <i>Correction factor:</i>	0.99963
(G x F) SPECIFIC GRAVITY @ 20°C:	2.734

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Poorly Graded Silty SAND (SP-SM) (Visual)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

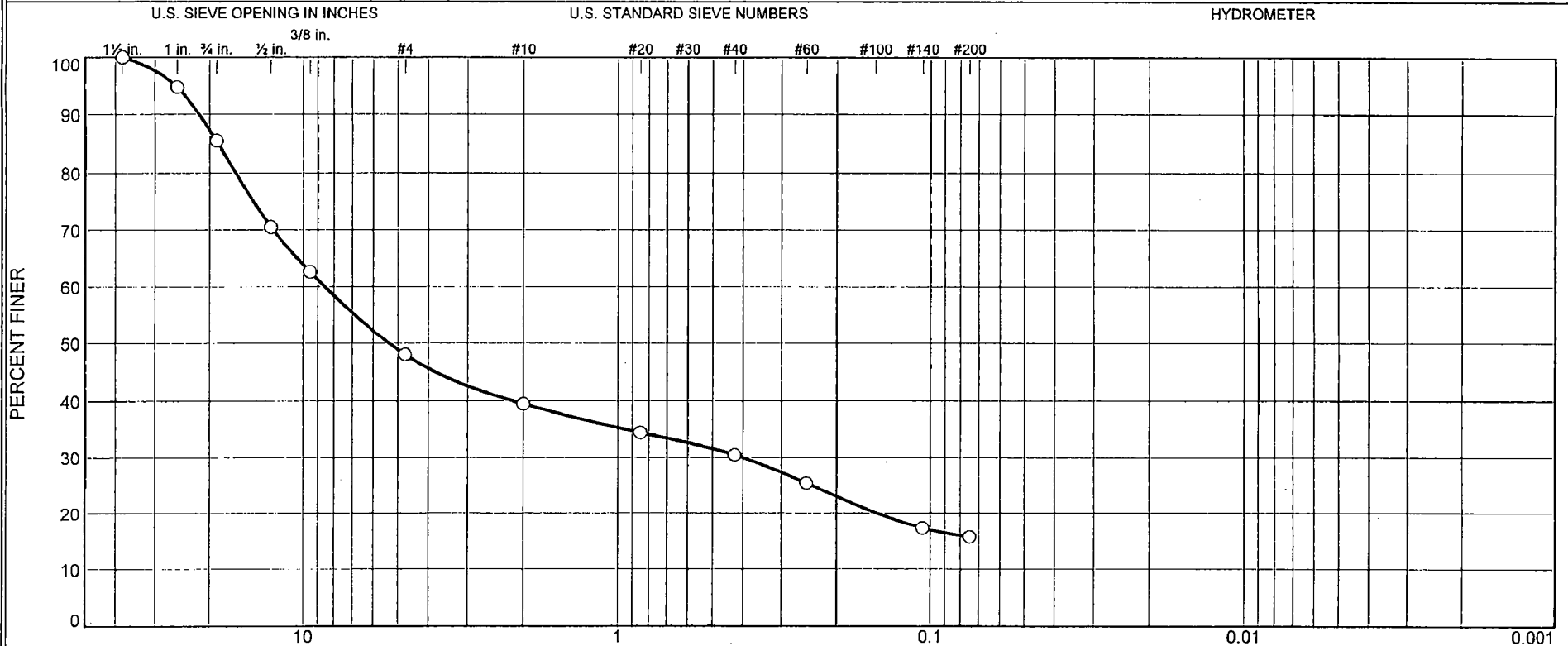
THERMOMETER : 5.1.01

PYCNO METER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
14	38	9	9	14	16	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Test Pit TP-701	701-1-BC	NA	5/28/08	SM	Processed Material Before Compaction	ND	ND	ND

Client Bechtel	MACTEC Engineering and Consulting, Inc.		○ Grainsize test performed on material as prepared according to ASTM D 1557-07 before compaction.					
Project Turkey Point COL								
Project No. 6468071950								
Figure N/A	Raleigh, North Carolina							

ZHU 7/22/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/22/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Test Pit TP-701

Depth: NA

Sample Number: 701-1-BC

Material Description: Processed Material Before Compaction

Date: 5/28/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: Grainsize test performed on material as prepared according to ASTM D 1557-07 before compaction.

Tested by: AWH

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
10470.00	0.00	0.00	1.5	0.00	100
			1"	552.00	95
			3/4"	1518.00	86
			1/2"	3090.00	70
			3/8"	3914.00	63
			#4	5446.00	48
767.30	0.00	0.00	#10	135.90	39
			#20	217.70	34
			#40	280.70	30
			#60	361.00	25
			#140	490.20	17
			#200	515.40	16

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	14	38	52	9	9	14	32			16

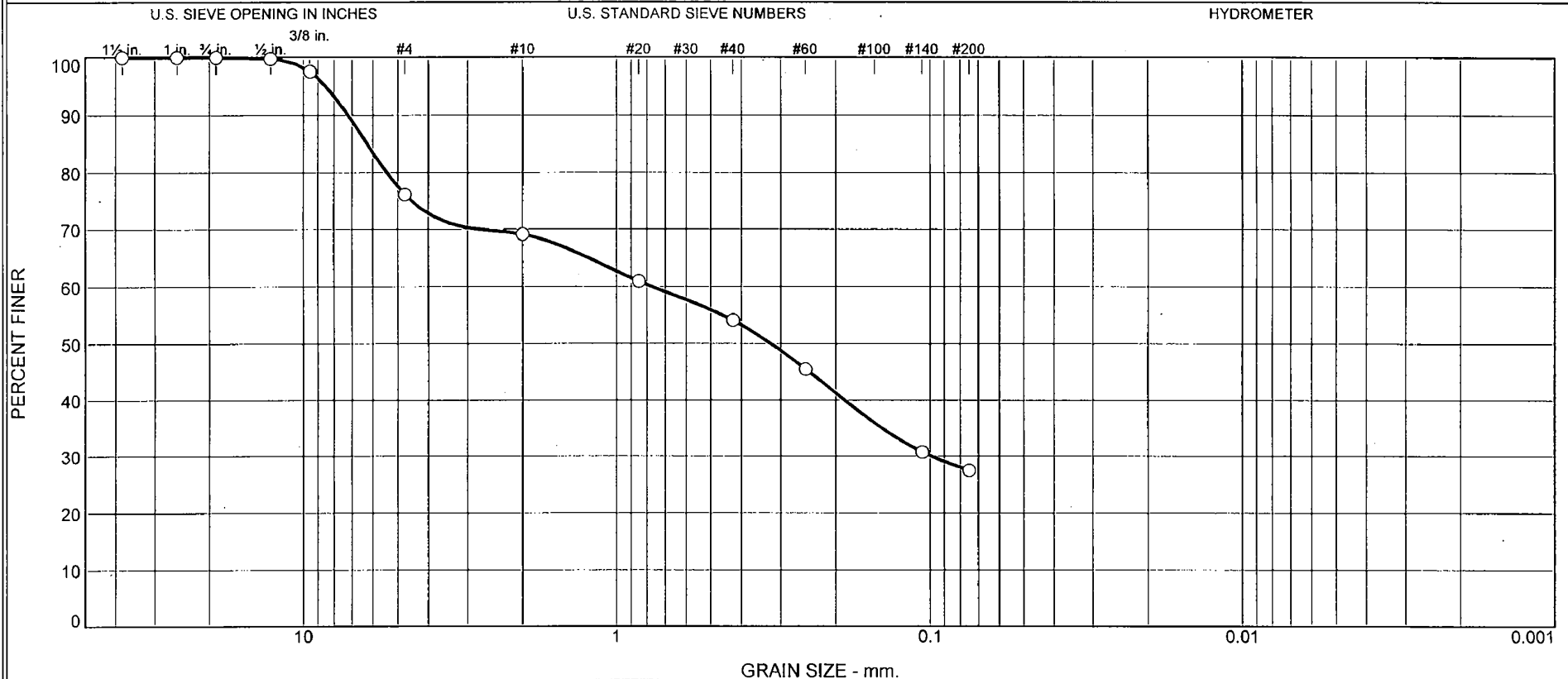
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.1488	0.4023	5.3517	8.5519	16.5085	18.7986	21.5918	25.7001

Fineness
Modulus

4.47

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	24	7	15	27	27	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Test Pit TP-701	701-1-AC	NA	5/30/08	SM	Processed Material After Compaction	ND	ND	ND

Client Bechtel	MACTEC Engineering and Consulting, Inc.	Raleigh, North Carolina	Grainsize test performed on material used for ASTM D 1557-07 after compaction.
Project Turkey Point COL			
Project No. 6468071950			

ZHU 7/23/08

GRAIN SIZE DISTRIBUTION TEST DATA

7/23/2008

Client: Bechtel

Project: Turkey Point COL

Project Number: 6468071950

Location: Test Pit TP-701

Depth: NA

Sample Number: 701-1-AC

Material Description: Processed Material After Compaction

Date: 5/30/08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: Grainsize test performed on material used for ASTM D 1557-07 after compaction.

Tested by: AWH

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
4391.90	0.00	0.00	1.5"	0.00	100
			1"	0.00	100
			3/4"	0.00	100
			1/2"	9.80	100
			3/8"	106.70	98
			#4	1048.00	76
879.00	0.00	0.00	#10	81.11	69
			#20	175.54	61
			#40	254.50	54
			#60	353.70	46
			#140	524.30	31
			#200	561.90	27

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	0	24	24	7	15	27	49			27

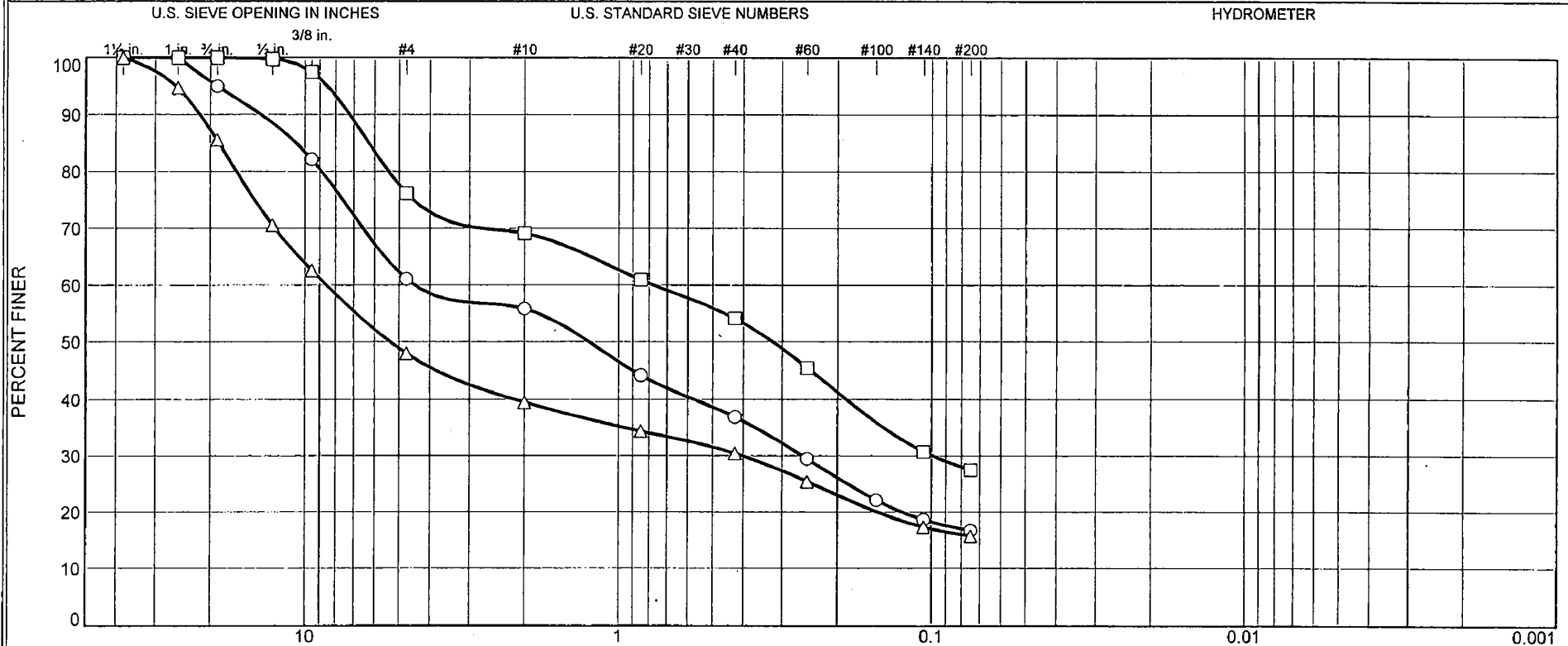
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0994	0.3221	0.7720	5.4203	6.2632	7.2136	8.4814

Fineness Modulus

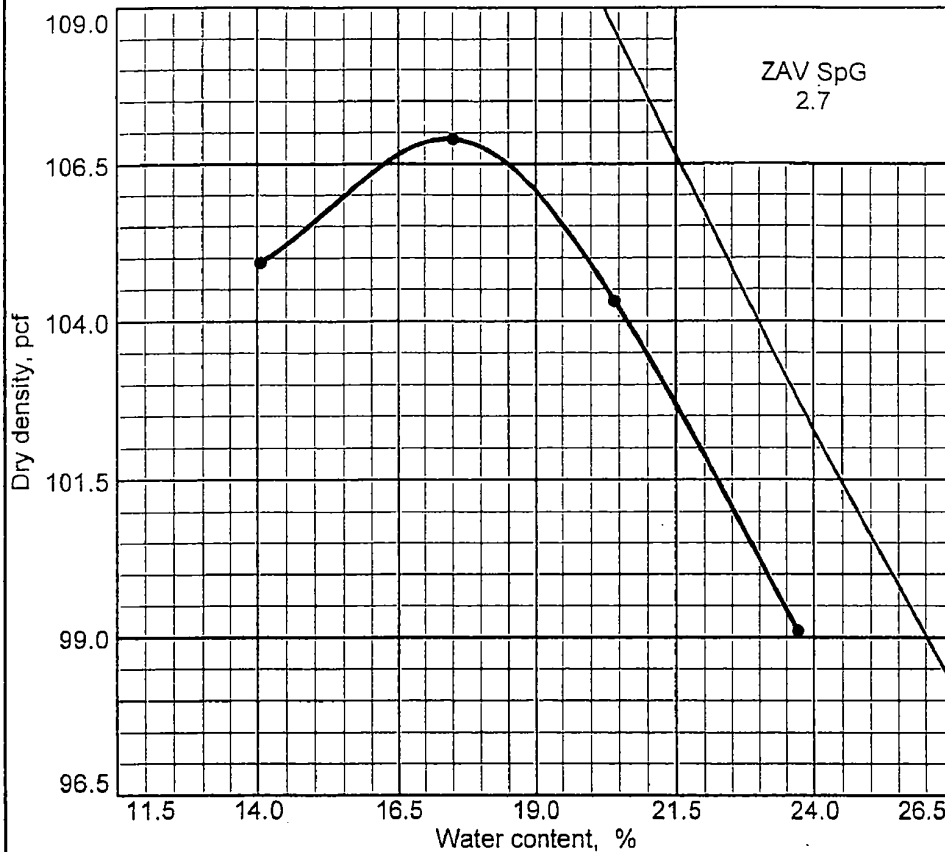
2.50

MACTEC Engineering and Consulting, Inc.

Particle Size Distribution Report/ ASTM D 6913-04e1 Method A



COMPACTION TEST REPORT



Curve No.
TP 701

Test Specification:

ASTM D 1557-07 Method B Modified

Preparation Method Dry

Hammer Wt. 10.0

Hammer Drop 18 mechanical

Number of Layers 5

Blows per Layer 25

Mold Size .03334 cu.ft.

Test Performed on Material

Passing 3/8 in. Sieve

NM ND LL ND PI ND

Sp.G. (ASTM D 854) ND

%>3/8 in. 18.0 %<No.200 17

USCS SM AASHTO ND

Date Sampled 5/1/08

Date Tested 5/29/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6020.3	6110.1	6110.2	6064.4		
WM	4210.4	4210.4	4210.4	4210.4		
WW + T #1	482.70	516.80	502.70	625.60		
WD + T #1	424.20	440.80	418.60	507.10		
TARE #1	8.10	6.80	6.80	7.30		
WW + T #2	N/A	N/A	N/A	N/A		
WD + T #2	N/A	N/A	N/A	N/A		
TARE #2	N/A	N/A	N/A	N/A		
MOISTURE	14.1	17.5	20.4	23.7		
DRY DENSITY	104.9	106.9	104.3	99.1		

TEST RESULTS

Maximum dry density = 106.9 pcf

Optimum moisture = 17.4 %

Project No. 6468071950 Client: Bechtel

Project: Turkey Point COL

● Source: Test Pit TP-701 Sample No.: 701-1 Elev./Depth: 3.0-4.5

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Pale Brown Silty SAND with gravel (Visual)

Remarks:

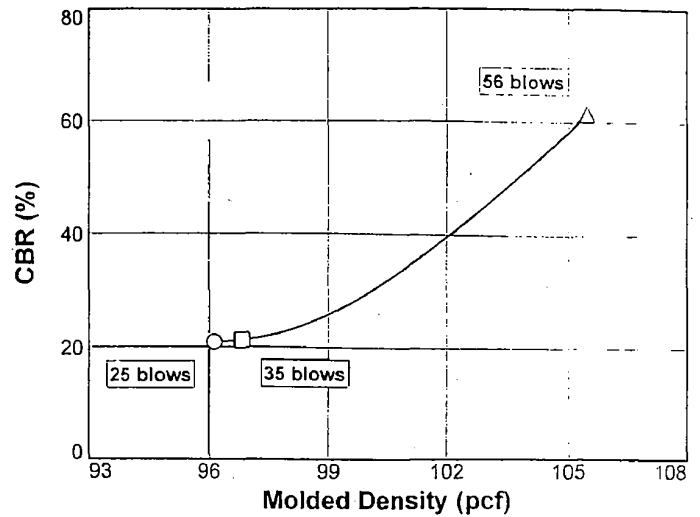
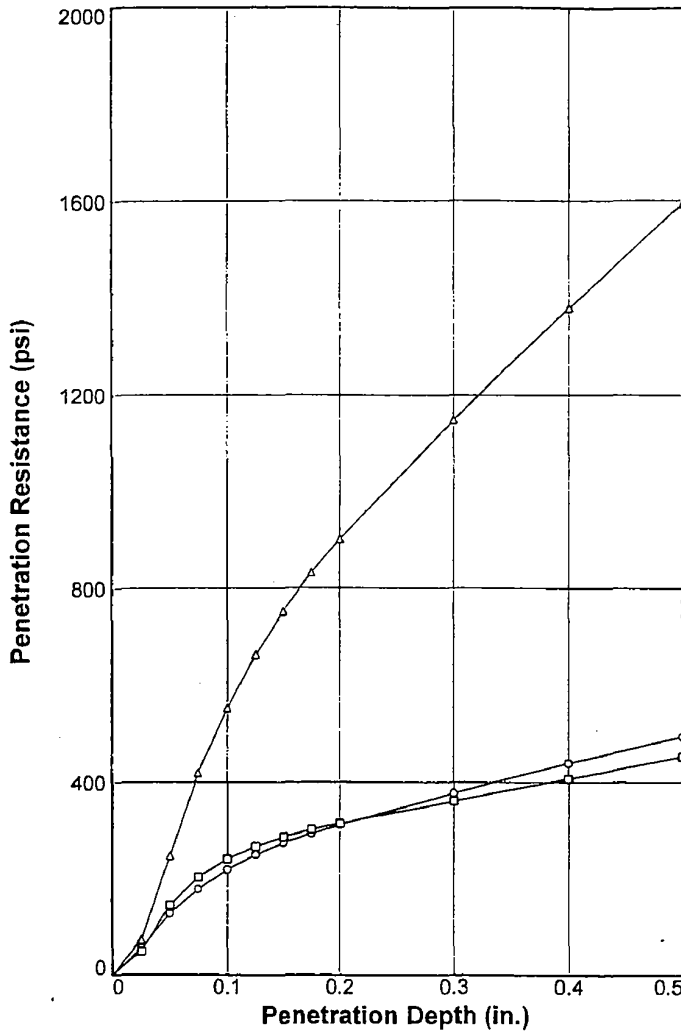
Checked by: LBJ

Title: Lab Manager

Figure N/A
Zhu 7/22/08
DCN# TUR512

BEARING RATIO TEST REPORT

ASTM D 1883 -07



Points for 0.2" Penetrations are Plotted

	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	96.1	89.9	16.2	96.1	89.9	23.1	22.2	20.9	0.003	10.0	0
2 △	105.5	98.7	16.4	105.5	98.7	20.0	58.9	61.4	0.008	10.02	0
3 □	96.8	90.6	16.5	96.8	90.6	22.9	24.9	21.2	0.008	10.02	0

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Pale Brown Silty SAND with Gravel (Visual)	SM	106.9	17.4	ND	ND

Project No: 6468071950

Project: Turkey Point COL

Source of Sample: Test Pit TP-701

Depth: 3.0-4.5

Sample Number: 701-1

Date: 5/1/08

Test Description/Remarks:

Prepared in accordance with
ASTM D 1557-07

BEARING RATIO TEST REPORT

MACTEC Engineering and Consulting, Inc.

Figure N/A

ZHU 7/22/08

BEARING RATIO TESTING RESULTS

(ASTM D 1883-99) 07
7/22/08

Date: 5/1/08
Project No.: 6468071950
Project: Turkey Point COL
Location: Test Pit TP-701
Depth: 3.0-4.5 Sample Number: 701-1
Material Description: Pale Brown Silty SAND with Gravel (Visual)
USCS Classification: SM
Liquid Limit: ND Plasticity Index: ND

Test Description: Prepared in accordance with ASTM D 1557-07
Maximum Dry Density: 106.9 Optimum Moisture Content: 17.4
Testing Remarks:

Sample 1 (25 Blows, Surcharge: 10.0 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 265.0 Wt. Soil+Tare, gms. 228.9 Wt. Tare, gms. 6.7 Moisture, % 16.2

Unit Weight

Wt. Mold+Soil, gms. 10815.8 Wt. Mold, gms. 7006.2 Ht. Soil, in. 4.593 Density, pcf 96.1

Swell Data

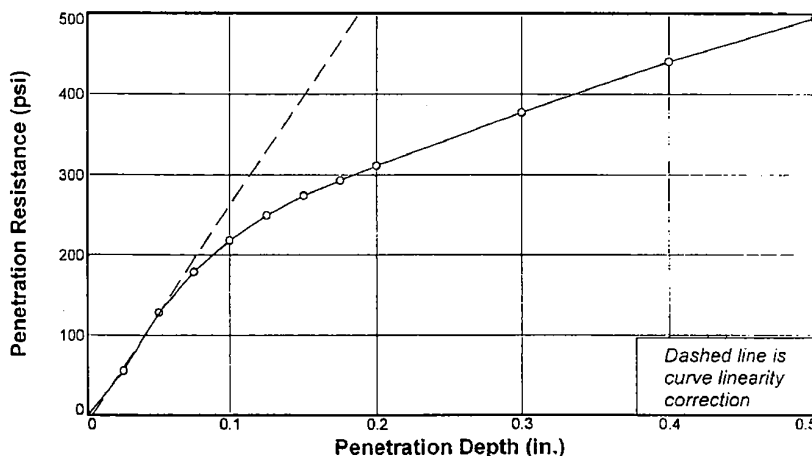
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	.1	0.0
96	.22	0.0

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	482.1	386.7	6.9	25.1
Middle	428.8	352.3	6.9	22.1
Bottom	428.8	352.3	6.9	22.1

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	55	55.6	
0.05	127	128.4	
0.075	177	179.0	
0.1	216	218.4	22.2
0.125	247	249.8	
0.15	271	274.1	
0.175	290	293.3	
0.2	308	311.5	20.9
0.3	373	377.2	19.9
0.4	435	439.9	19.2
0.5	489	494.5	19.0



Sample 2 (56 Blows, Surcharge 10.02 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 289.3

Wt. Soil+Tare, gms. 249.5

Wt. Tare, gms. 6.9

Moisture, % 16.4

Unit Weight

Wt. Mold+Soil, gms. 12434

Wt. Mold, gms. 8253.8

Ht. Soil, in. 4.587

Density, pcf 105.5

Swell Data

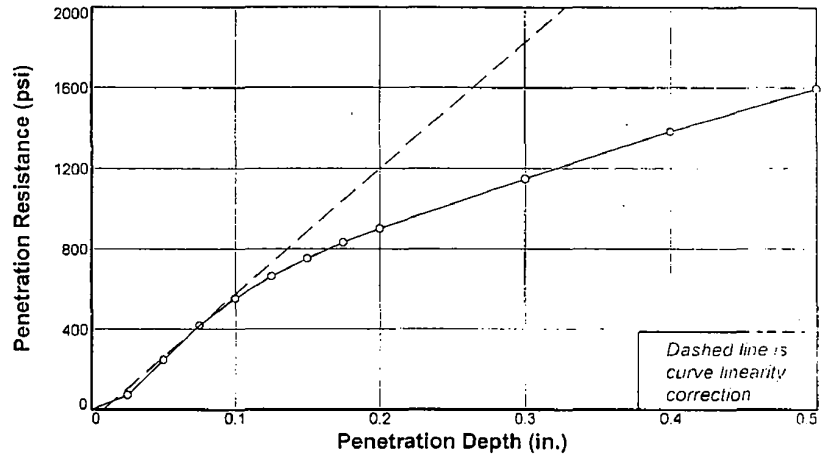
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	.1	0.0
96	.22	0.0

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	522.0	429.5	9.4	22.0
Middle	484.4	408.1	6.9	19.0
Bottom	484.4	408.1	6.9	19.0

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	75	74.3	
0.05	250	247.6	
0.075	424	420.0	
0.1	560	554.7	58.9
0.125	670	663.7	
0.15	760	752.8	
0.175	840	832.1	
0.2	910	901.4	61.4
0.3	1160	1149.1	61.4
0.4	1395	1381.8	60.8
0.5	1610	1594.8	61.3



Sample 3 (35 Blows, Surcharge 10.02 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 365.9

Wt. Soil+Tare, gms. 315.1

Wt. Tare, gms. 7.0

Moisture, % 16.5

Unit Weight

Wt. Mold+Soil, gms. 10837.8

Wt. Mold, gms. 6990.9

Ht. Soil, in. 4.595

Density, pcf 96.8

Swell Data

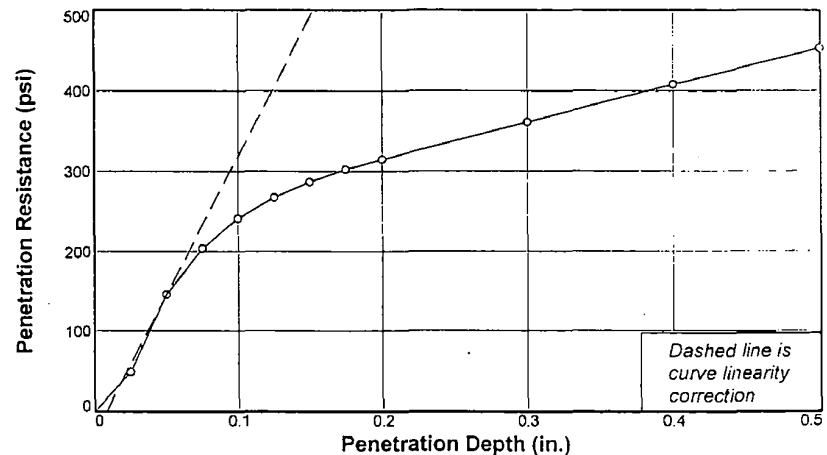
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	.1	0.0
96	.30	0.0

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	584.7	467	6.9	25.6
Middle	467.4	385.7	6.7	21.6
Bottom	467.4	385.7	6.7	21.6

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	48	48.5	
0.05	144	145.6	
0.075	201	203.3	
0.1	238	240.7	24.9
0.125	264	267.0	
0.15	283	286.2	
0.175	299	302.4	
0.2	311	314.5	21.2
0.3	357	361.1	19.2
0.4	403	407.6	17.9
0.5	448	453.1	17.4





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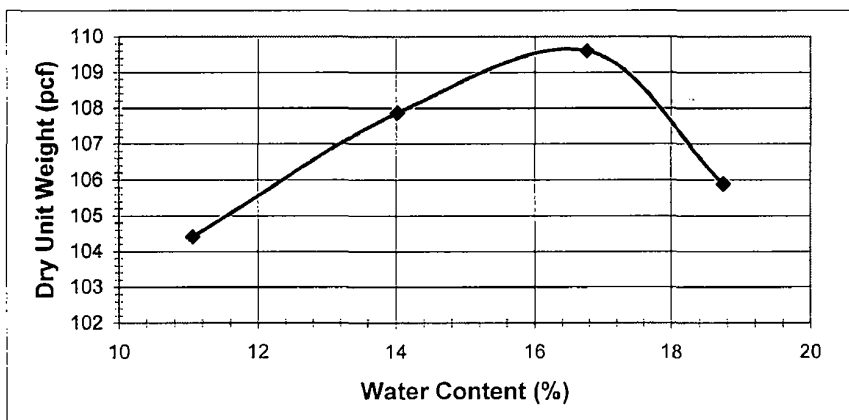
Limerock Bearing Ratio (FM 5-515)

Sample: TP-701
Number of Layers: 5
Blows / layer: 56
Volume of Mold, ft³: 0.075200

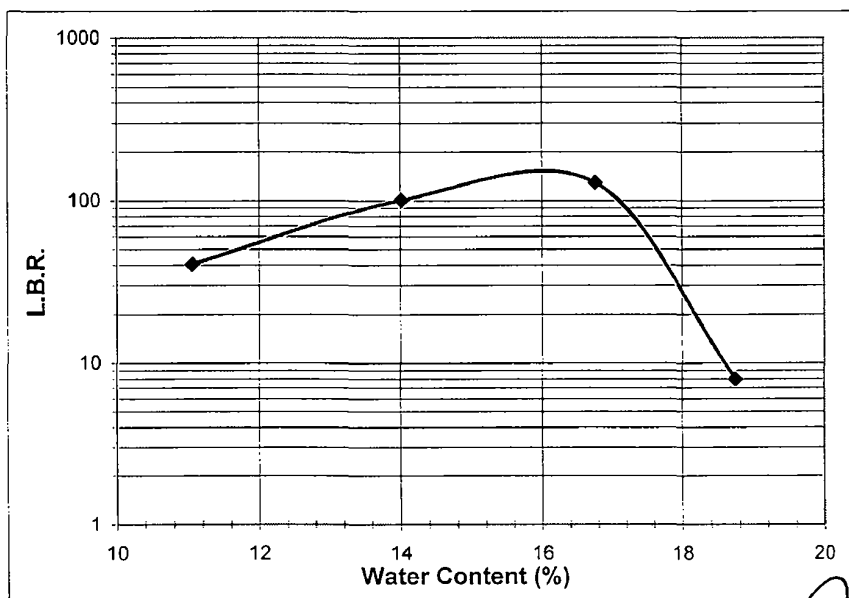
Project Name: Turkey Point COL
Project No: 6468-07-1950
Date: 6/24/2008

$w_{opt} (\%) = 17.4$
 $\gamma_{max} (pcf) = 106.9$

Sample No.	1	2	3	4	5
Weight of Dish, g	6.7	6.8	6.6	7.1	
Weight of sample + Dish, g	268.8	541.2	507.4	510	
Weight of Dry sample + Dish, g	242.7	475.5	435.5	430.6	
w%	11.1	14.0	16.8	18.7	
Weight of Mold + Soil, g	10948.2	11217.9	12626.3	12543.9	
Weight of Mold, g	6992.6	7023	8260.9	8254.5	
Wet unit weight, pcf	116.0	123.0	128.0	125.7	
Dry unit weight, pcf	104.4	107.9	109.6	105.9	
Corrected Stress Corresponding to 0.1 inch penetration, psi	323.6	807.0	1033.1	63.7	
L.B.R at 0.1 inch penetration (stress/800x100)	40.5	100.9	129.1	8.0	



L.B.R. = 129
Modified Proctor = 107
Optimum Moisture = 17%



SUBMITTED BY: *Bu*



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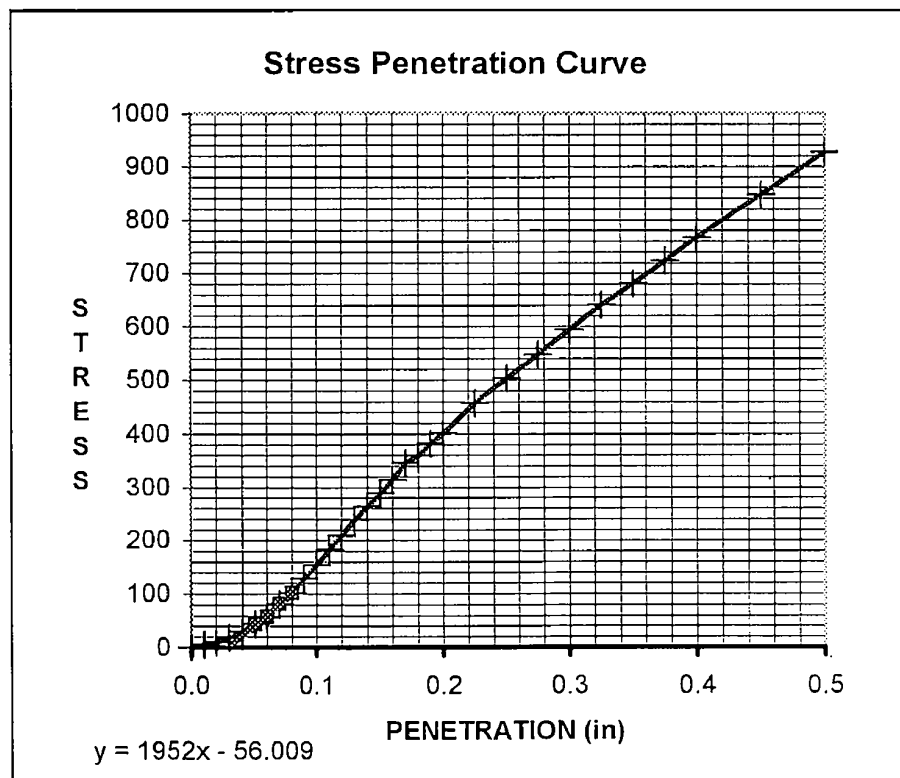
REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-15

PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-701 (Sample 1- Mold 2.1.42)
DATE: 6/24/08

Penetration (inches)	Stress (psi)
0.000	0
0.010	6
0.020	11
0.030	19
0.040	30
0.050	44
0.060	58
0.070	81
0.080	101
0.090	129
0.100	153
0.110	183
0.120	209
0.130	239
0.140	264
0.150	289
0.160	314
0.170	346
0.180	359
0.190	381
0.200	401
0.225	457
0.250	503
0.275	547
0.300	594
0.325	640
0.350	682
0.375	724
0.400	768
0.450	847
0.500	928

MAXIMUM DRY DENSITY (pcf): 106.9
OPTIMUM MOISTURE (%): 17.4

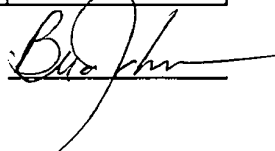
COMPACTED VALUES	
WET UNIT WEIGHT (pcf):	116.0
DRY UNIT WEIGHT (pcf):	104.4
INITIAL MOISTURE (%):	11.1
PERCENT MDD:	97.7



At 0.10 inches of Penetration:

	UNCORRECTED	CORRECTED
STRESS (psi)	153.4	232.6
LBR (%)	19.2	29.1

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs.

SUBMITTED BY: 



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RALEIGH, NORTH CAROLINA

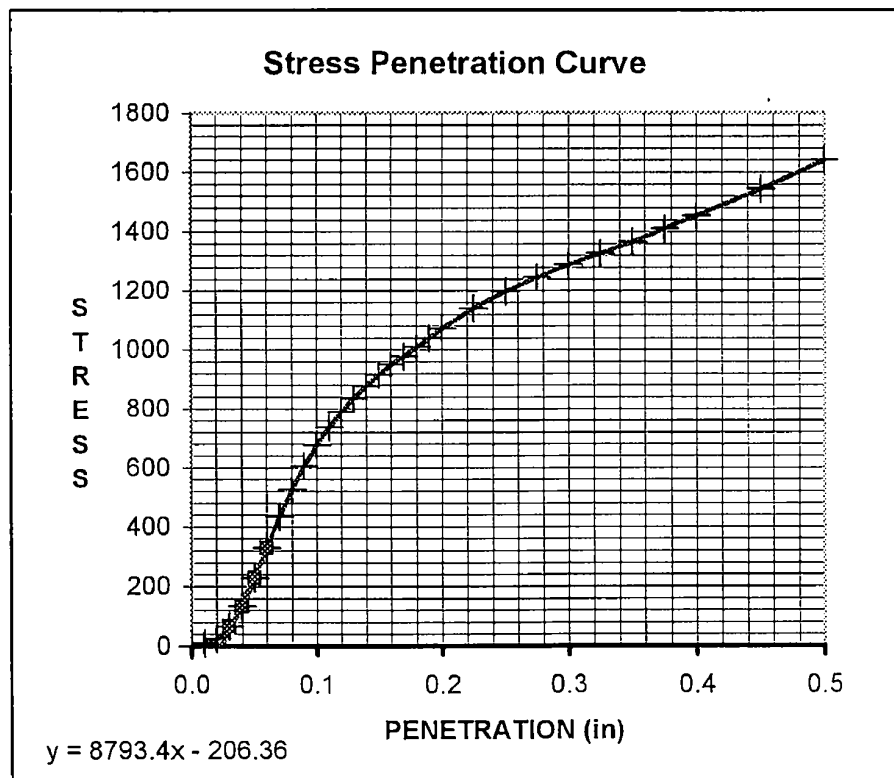
REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-15

PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-701 (Sample 2-Mold 2.1.43)
DATE: 6/24/08

Penetration (inches)	Stress (psi)
0.000	0
0.010	11
0.020	27
0.030	67
0.040	133
0.050	228
0.060	329
0.070	434
0.080	525
0.090	606
0.100	677
0.110	737
0.120	788
0.130	833
0.140	877
0.150	916
0.160	949
0.170	978
0.180	1009
0.190	1039
0.200	1072
0.225	1140
0.250	1199
0.275	1247
0.300	1290
0.325	1328
0.350	1366
0.375	1411
0.400	1454
0.450	1545
0.500	1641

MAXIMUM DRY DENSITY (pcf): 106.9
OPTIMUM MOISTURE (%): 17.4

COMPACTED VALUES	
WET UNIT WEIGHT (pcf):	123.0
DRY UNIT WEIGHT (pcf):	107.9
INITIAL MOISTURE (%):	14.0
PERCENT MDD:	100.9



At 0.10 inches of Penetration:

	UNCORRECTED	CORRECTED
STRESS (psi)	676.7	807.0
LBR (%)	84.6	100.9

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs.

SUBMITTED BY:



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RALEIGH, NORTH CAROLINA

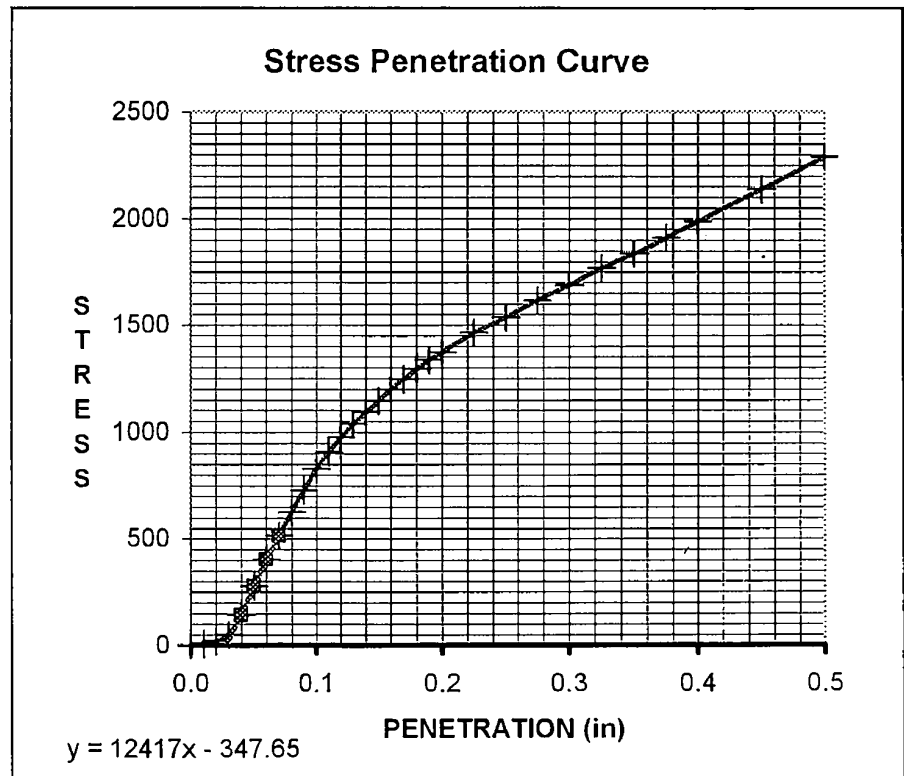
REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-15

PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-701 (3-Mold 2.1.48)
DATE: 6/24/08

Penetration (inches)	Stress (psi)
0.000	0
0.010	9
0.020	21
0.030	50
0.040	143
0.050	279
0.060	404
0.070	515
0.080	626
0.090	727
0.100	828
0.110	906
0.120	975
0.130	1038
0.140	1091
0.150	1145
0.160	1199
0.170	1247
0.180	1295
0.190	1338
0.200	1371
0.225	1464
0.250	1535
0.275	1616
0.300	1689
0.325	1768
0.350	1837
0.375	1911
0.400	1985
0.450	2139
0.500	2292

MAXIMUM DRY DENSITY (pcf): 106.9
OPTIMUM MOISTURE (%): 17.4

COMPACTED VALUES	
WET UNIT WEIGHT (pcf):	128.0
DRY UNIT WEIGHT (pcf):	109.6
INITIAL MOISTURE (%):	16.8
PERCENT MDD:	102.5



At 0.10 inches of Penetration:

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs.

	UNCORRECTED	CORRECTED
STRESS (psi)	828.1	1033.1
LBR (%)	103.5	129.1

SUBMITTED BY:



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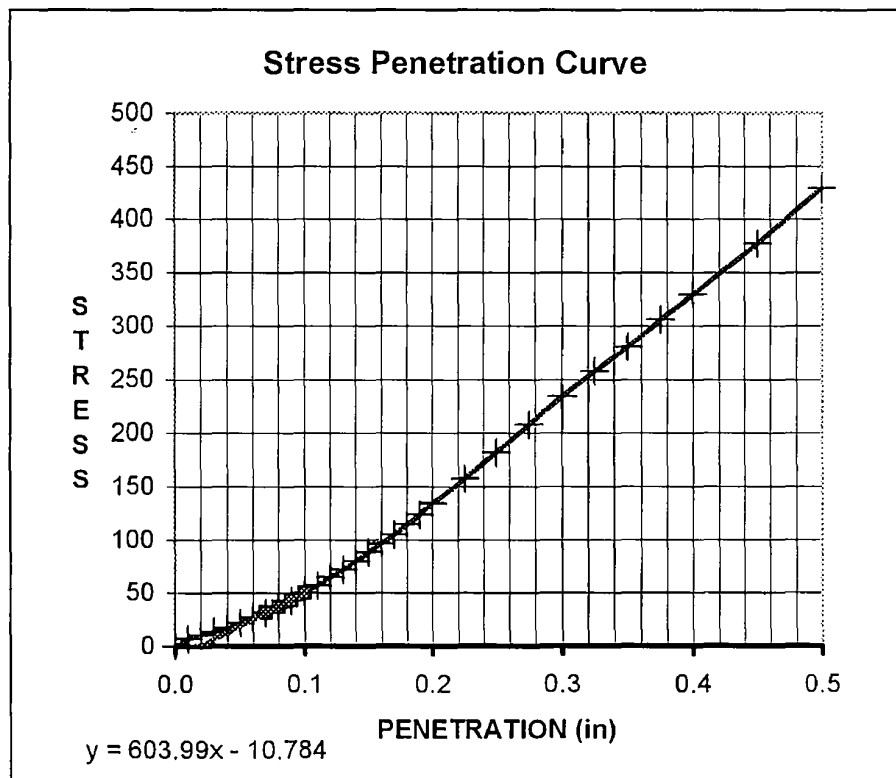
REPORT OF LIMEROCK BEARING RATIO OF LABORATORY COMPACTED SOILS
Performed in General Accordance with FM 5-15

PROJECT NAME: TURKEY POINT COL
MACTEC PROJECT NUMBER: 6468-07-1950
SAMPLE IDENTIFICATION: TP-701 (Sample 4-Mold 2.1.51)
DATE: 6/24/08

Penetration (inches)	Stress (psi)
0.000	0.0
0.010	7.4
0.020	10.6
0.030	13.8
0.040	17.0
0.050	22.3
0.060	26.6
0.070	31.9
0.080	37.2
0.090	42.9
0.100	50.2
0.110	57.5
0.120	65.3
0.130	72.6
0.140	79.8
0.150	88.1
0.160	97.1
0.170	105.3
0.180	114.6
0.190	123.9
0.200	134.2
0.225	157.5
0.250	182.0
0.275	207.6
0.300	234.1
0.325	257.8
0.350	280.1
0.375	305.9
0.400	329.2
0.450	377.3
0.500	429.4

MAXIMUM DRY DENSITY (pcf): 106.9
OPTIMUM MOISTURE (%): 17.4

COMPACTED VALUES	
WET UNIT WEIGHT (pcf):	125.8
DRY UNIT WEIGHT (pcf):	105.9
INITIAL MOISTURE (%):	18.7
PERCENT MDD:	99.1



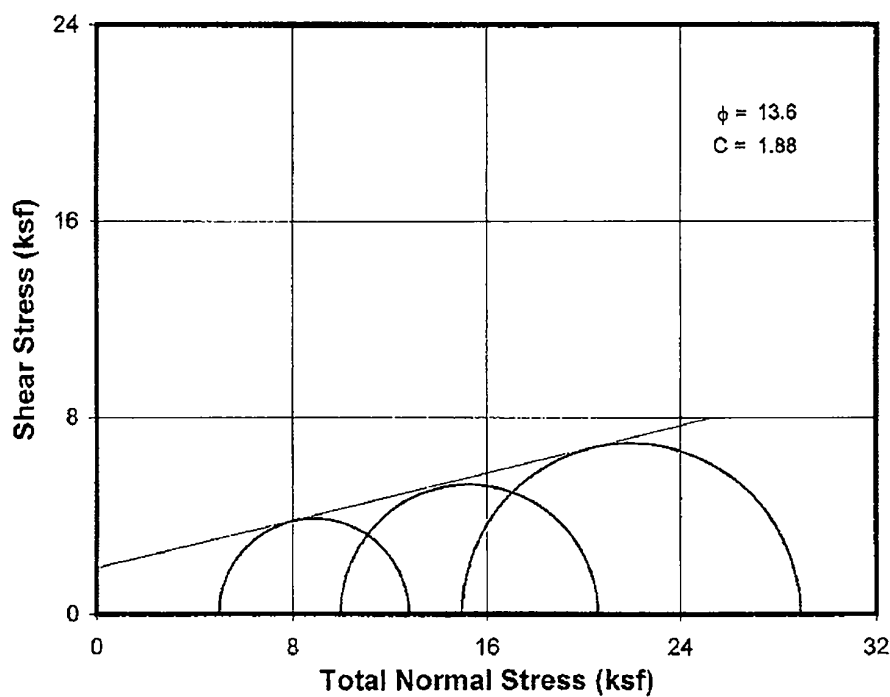
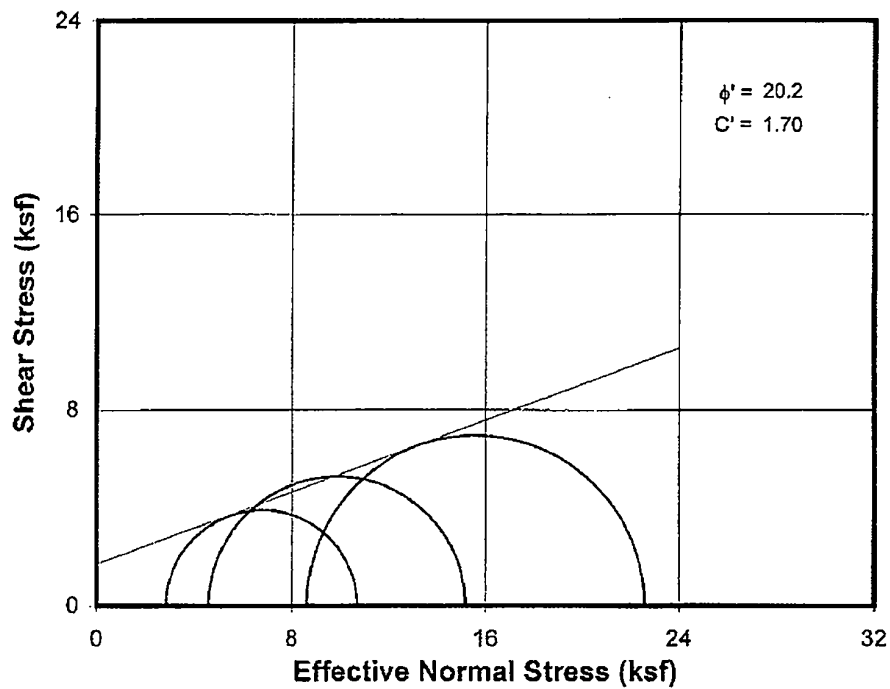
At 0.10 inches of Penetration:

REMARKS: SOAKED SPECIMEN
SURCHARGE WEIGHT = 20 lbs

	UNCORRECTED	CORRECTED
STRESS (psi)	50.2	63.7
LBR (%)	6.3	8.0

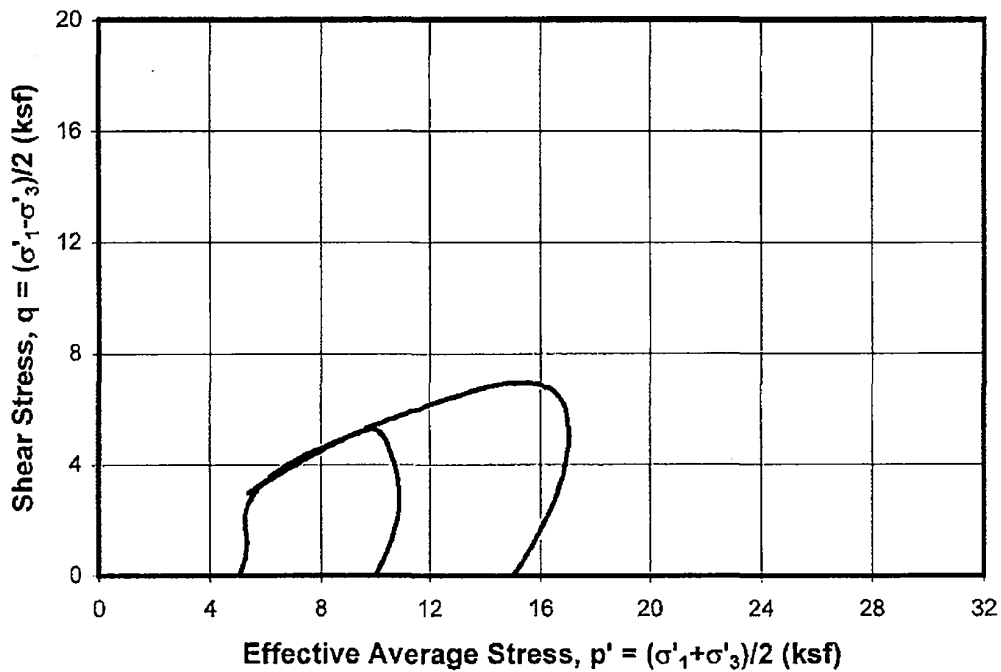
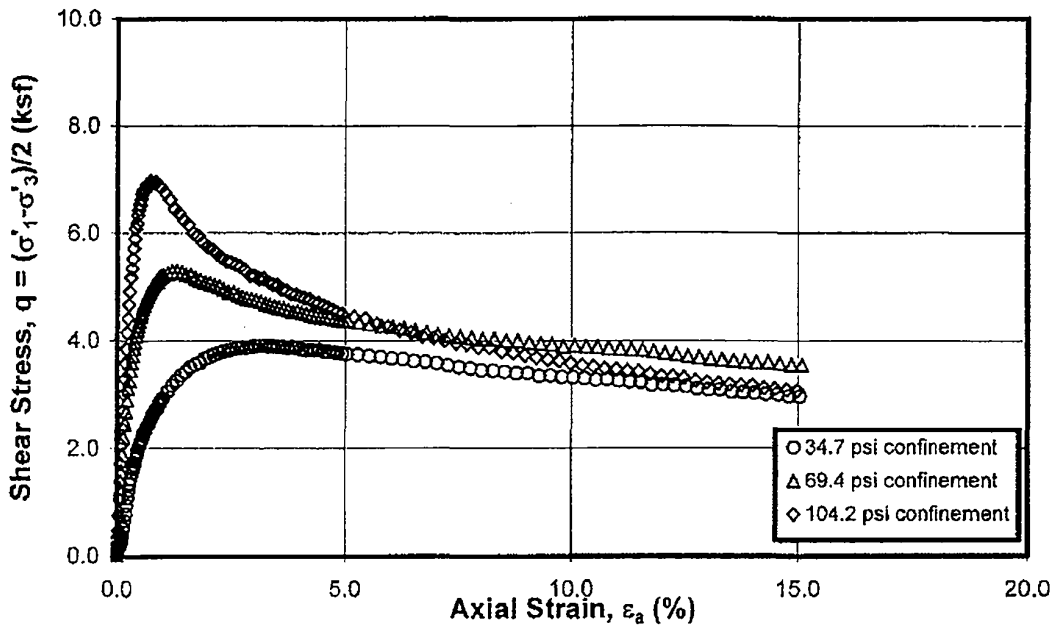
SUBMITTED BY:

Soil Strength Test



UNDRAINED TRIAXIAL COMPRESSION TEST
 Isotropically Consolidated- Mohr's Circles
 Sample: UD12 - Depth: 178.9 - 179.70 ft
 Boring B630

Reviewed By: J.M.



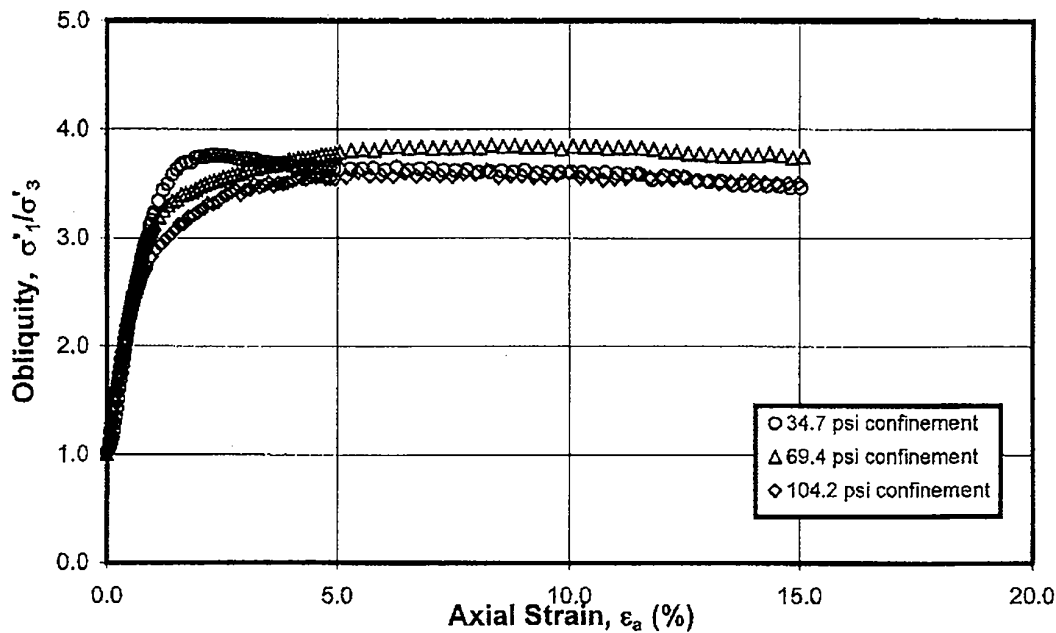
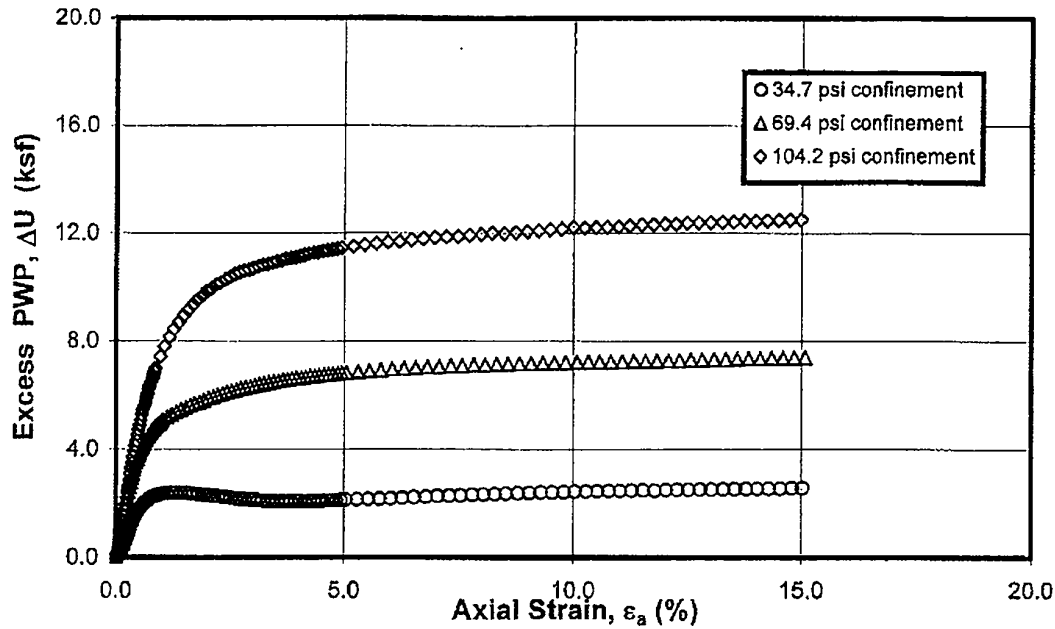
UNDRAINED TRIAXIAL COMPRESSION TEST

Isotropically Consolidated

Sample: UD12 - Depth: 178.9 - 179.70 ft

Boring B630

Reviewed By: J.M.



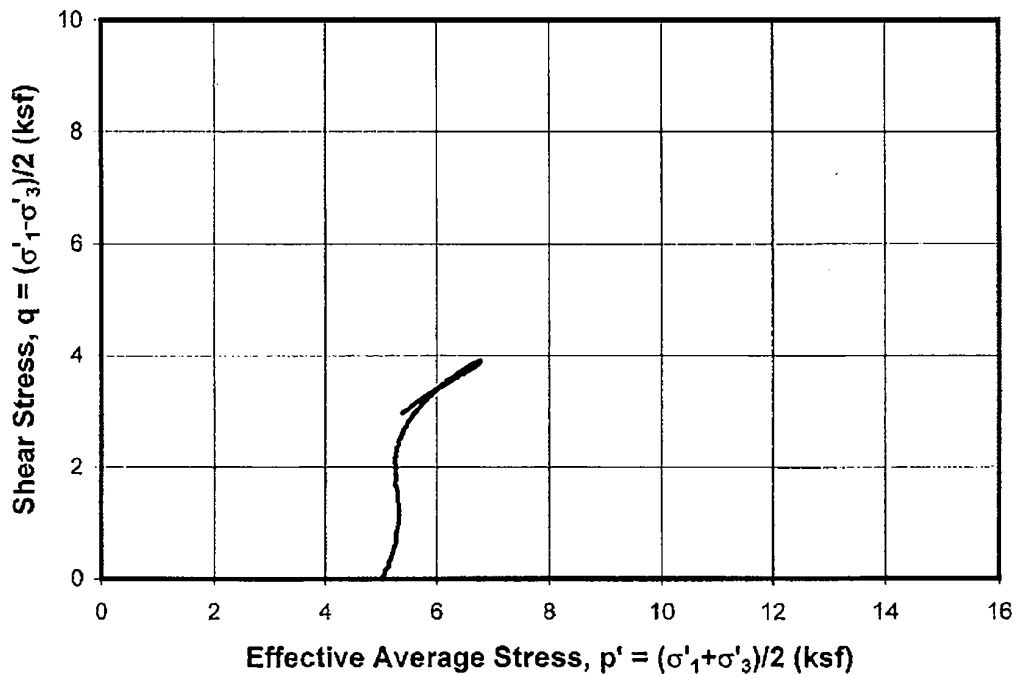
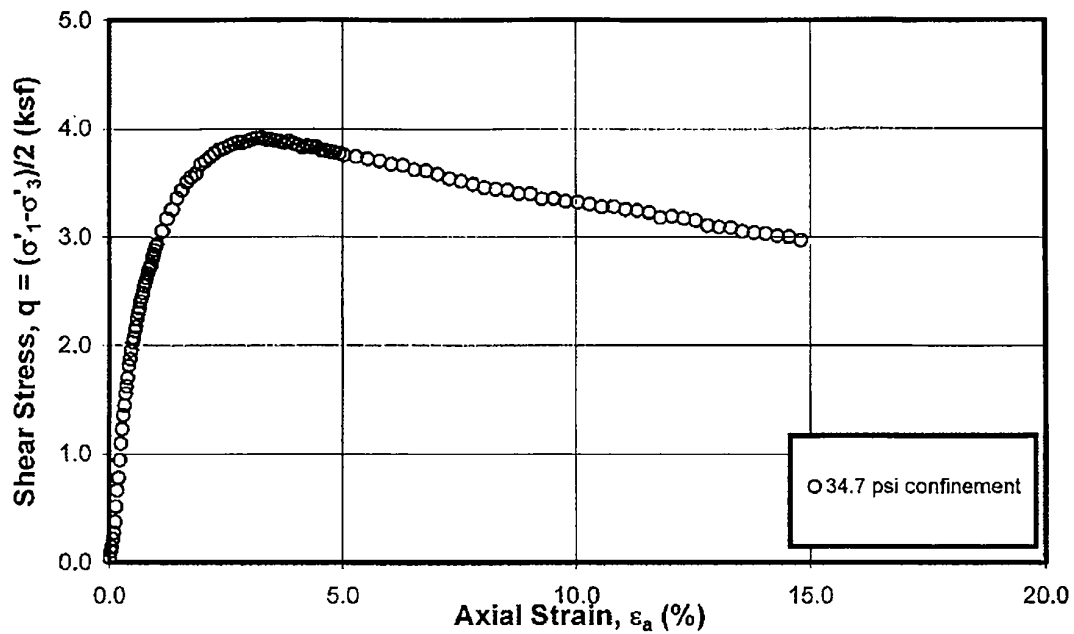
UNDRAINED TRIAXIAL COMPRESSION TEST

Isotropically Consolidated

Sample: UD12 - Depth: 178.9 - 179.70 ft

Boring B630

Reviewed By: J.M.



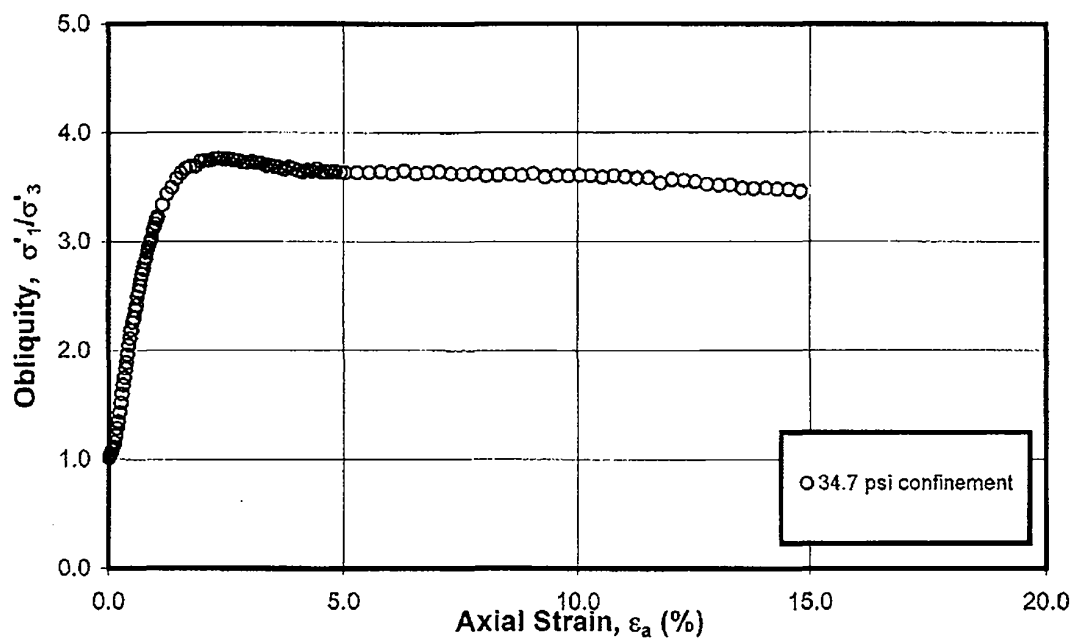
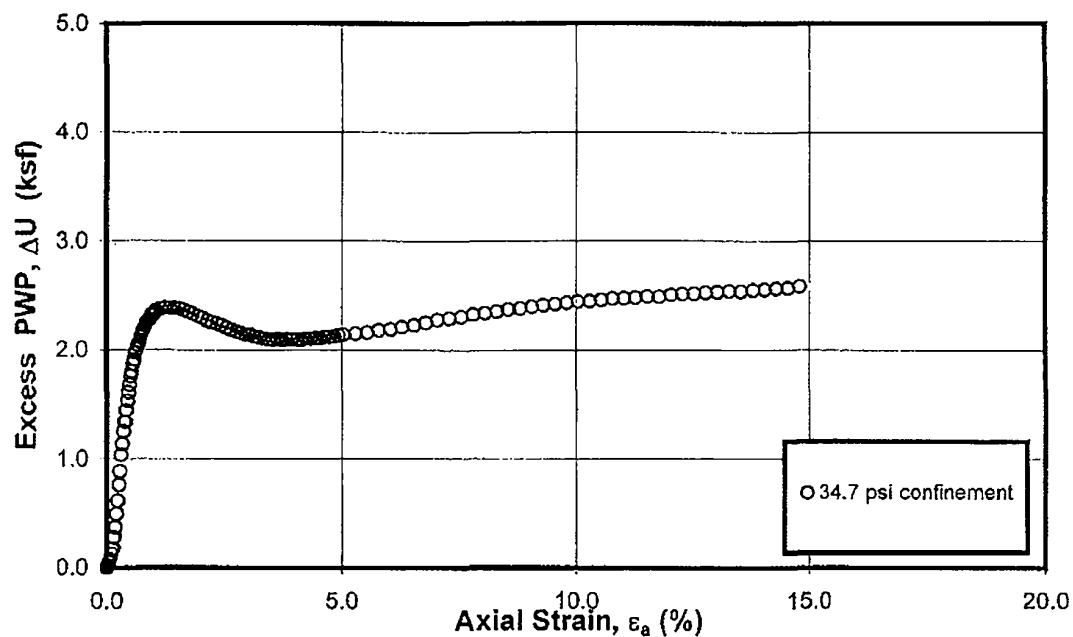
UNDRAINED TRIAXIAL COMPRESSION TEST

Isotropically Consolidated

Sample: UD12a - Depth: 178.90 ft

Boring B630

Reviewed By: JM



UNDRAINED TRIAXIAL COMPRESSION TEST

Isotropically Consolidated

Sample: UD12a - Depth: 178.90 ft

Boring B630

Reviewed By: JM

TRIAXIAL TEST (ASTM D 4767): Specimen Setup / Take Down

Project Number: 0411-08-1701 Test Type: CIU Triaxial Cell No.: TRX 4 File Name: B630_UD12a
 Task No.: NA Test Stress(es), σ'_c or $\sigma'_{v,c}$ = 5.00, NA, NA & NA ksf
 Project Name: Turkey Point COL $k(\sigma'_{h,c} / \sigma'_{v,c})$ = 1.00 Induced OCR = 1.00 $K_{ua}(\sigma'_{d,ua} / 2\sigma'_{v,c})$ = NA

Assig. Remarks: Specific Gravity: 2.700 ☐ Meas.; ☒ Assumed

☒ Tube	☐ Field Extruded	☐ Liner	☐ Remolded	☐ Tamping	Constant Effort: Blows/Tamps per Layer =
Boring No.: B630	☐ Reconstituted			Impact/Rammer	Rammer Wgt.(lbf)= No. Layers =
Sample No.: UD12	Compostite No.:			Pluviated:	Tamper Force (lbf)= Drop (in.) =
Depth (ft): 178.90	Specimen No.: a			Kneading	Undercompaction: U_{ni} (%) = Dia. (in.) =
☐ Spec. Selection by X-ray;	☐ Geomarine Sample			Ref. Effort =	% Comp. = $\pm$ Opt. =

Type	☒ Isotropic	☐ K_0 stress path	☒ Used automated system: Drained Axial Strain Rate, $\epsilon_{a,rate}$ (%/h) = ?Value
Consolidation:	☐ Anisotropic	☐ 45° stress path	Remarks:
Loading	☒ Static	☒ Undrained	☒ Comp.
Conditions:	☐ Post Cyclic	☐ Drained	☐ Ext.
		☒ Strain	☐ Stress
		☒ Constant Cell Pressure	☐ Cyclic (Hz)
		☐ Variable Cell Pressure	Rate: ☐ 0.1; ☐ 1; Other:

Water Content (WC);	Initial - Trimming Location			Final, W_{at} (see below)
	Top ($W_{0.1}$)	Bottom ($W_{0.2}$)	Sides ($W_{0.3}$)	
Container No	4084	5025	1102	5010
Mass Moist Soil + Cont. (g)	46.02	45.08	92.40	97.73
Mass Dry Soil + Container (g)	42.35	41.69	78.75	81.39
Mass Container (g)	30.26	30.79	31.55	30.82
Water Content, $W_{0,n}$ (%)	30.36	31.10	28.92	32.31
Avg. Initial WC, $W_{0,avg}$ (%)	30.13	Final (W_{at});	☒ Slice ;	Whole Spec.
See attached data sheet(s) for additional water contents				

SOIL MASSES:		Initial	Final
Moist + Tare (etc.) (g)		438.50	442.86
Tare (etc.) (g)		0.00	0.00
Mass Moist Spec., M_n (g)		438.50	442.86
Excess Dry Soil (soil not included in final mass measurement)			
Container No		NA	
Mass Dry Soil + Cont. (g)		NA	
Mass Container (g)		NA	
Mass Excess Dry Soil, M_{des} (g)		0.00	

Specimen Dimensions, (mm)					
Height		Dia., X indicates with membrane			
Initial (H_0)	Final (H_{at})	Initial (D_0)	Final (D_{at})		
GB	100.000	74.000	1 T	51.00	53.00
1	15.46	17.65	2 M	51.50	60.00
2	15.16	17.66	3 B	51.00	70.00
3	15.47	17.70	1 T		
4	15.13	17.67	2 M		
5	15.56	17.60	3 B		
Avg	115.36	91.66	Avg.	51.17	61.00

Measuring Devices:	$A_0 = \pi D^2 / 400$ (cm ²)	20.56
PI Tape: ☒ Dia	V_0 (cm ³)	237.19
Calipers: ☐ Ht.; ☐ Dia	$A_{atb,m} = \pi (D'_{at})^2 / 400$ (cm ²)	28.99
Dial Comparator: ☒ Ht.; ☐ Dia	$A_{atw,m} = (d_{min} - 2\Delta d) d_{max} \pi / 400$ (cm ²)	NA
Remarks:	$D'_{at} = (D_T + 2D_M + D_B) / 4$ (mm)	60.75

Estimated Initial Unit Weight			
Total, γ_{to} (lb/ft ³) =	115.41	Dry, $\gamma_{d,o}$ (lb/ft ³) =	88.69
Membrane / Filter Paper / Apparatus			
Membrane (mm):		Top	Bottom
Number:	Thickness:	0.72	0.50
= 1	Single; ☒ Double	0.72	0.51
Circumference ($C_{rm,o}$)		148.0	149.0
Total Thickness		Dia. ($C_{rm,o} / \pi$)	
Average:		0.31	47.27
Filter Paper: Top + Bottom: ☐ Yes; ☒ No			
Filter Strips: ☒ Yes; ☐ No Number = 8			
Type of Filter Strips ☐ Vertical: ¼ in. & Whatman #54			
☒ Spiral: ¼ in. & Whatman #1			

Apparatus:	Mass Top Cap, M_{tc} =	53.4 g,	0.12 lbf
Mass Displ. System, M_{ds} (cap, dial, piston, etc.) =	NA g,	NA lbf	
Top Cap Attached:	Piston Dia. (in.)	Load Cell:	
☐ Yes; ☒ No;	☒ ½; ☐ ¾;	☐ External; ☒ Internal	
Top Cap - Rotation	Fixed, <1°; ☒ Limited, <5°;	Unlimited, >5°	
With:	Frictionless End Caps;	Lat. Movement Top Cap	
	Internal LVDT Jacket		

☐ Photo Taken.	Failure Mode: NA - Not Applicable
Failure Sketch	GB - Gage Block
$\epsilon_a =$	Other Remarks:
20% →	
	
☒ Bulge	
☒ Wedge	
☐ Parabolic	
Wedge/Bulge Ht. =	
NA (mm)	Final Visual Classification: Sandy Silt (ML), greenish gray

Trimmed / Reconstituted By: VR Set Up By: TP Taken Down By: TP
 Date: 7/25/2008 Date: 7/25/2008 Date: 7/31/2008
 Prelim. Calc. By: TP Final Calc. By: TP Reviewed By: JM.

☐ See more detailed sketch on attached sheet. Remarks: NA = Not Applicable