

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 218.3-219.8

Sample Number: SS-34

Material Description: Pinkish Gray Lean CLAY with sand

Date: 12/01/07

Natural Moisture: 22.0

Liquid Limit: 48

Plastic Limit: 16

USCS Class.: CL

Testing Remarks: 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
238.81	0.00	0.00	#10	0.00	100.0
53.05	0.00	0.00	#20	0.32	99.4
			#40	0.65	98.8
			#60	1.06	98.0
			#100	3.62	93.2
			#140	8.59	83.8
			#200	15.00	71.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 53.05

Hygroscopic moisture correction:

Moist weight and tare = 27.70

Dry weight and tare = 27.31

Tare weight = 15.50

Hygroscopic moisture = 3.3%

Table of composite correction values:

Temp., deg. C: 12.2 27.1

Comp. corr.: -7.0 -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	21.8	37.0	32.6	0.0131	38.0	10.1	0.0295	62.7
5.00	21.8	35.5	31.1	0.0131	36.5	10.3	0.0189	59.8
15.00	21.6	34.0	29.5	0.0132	35.0	10.6	0.0111	56.9
30.00	21.6	33.0	28.5	0.0132	34.0	10.7	0.0079	54.9
60.00	21.7	31.5	27.1	0.0132	32.5	11.0	0.0056	52.1
240.00	21.7	29.0	24.6	0.0132	30.0	11.4	0.0029	47.3
1440.00	22.3	25.0	20.7	0.0131	26.0	12.0	0.0012	39.9

MACTEC, 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	1.2	27.1	28.3	20.6	51.1	71.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0043	0.0193	0.0954	0.1098	0.1301	0.1678

Fineness Modulus
0.10

MACTEC, Inc.

Figure 2: Plasticity Chart (U.S. Customary Units)

The chart plots Plasticity Index (PI) on the y-axis (0 to 60) against Liquid Limit (LL) on the x-axis (0 to 110). The regions are defined as follows:

- CL or OL** (shaded region): $0 < PI < 7$ and $0 < LL < 25$
- CH or OH** (top right region): $PI > 7$ and $LL > 25$
- MH or OH** (bottom right region): $PI < 7$ and $LL > 25$
- ML or OL** (bottom left region): $0 < PI < 7$ and $LL < 25$

A dashed line indicates the approximate upper limit boundary for natural soils. A data point is plotted at $LL = 48$ and $PI = 32$.

DCN# EXE805

LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 218.3-219.8

Sample Number: SS-34

Material Description: Pinkish Gray Lean CLAY with sand

USCS: CL

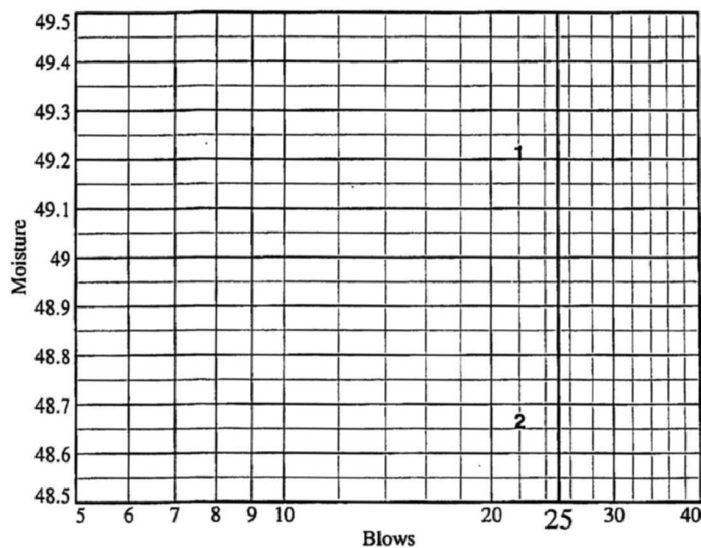
AASHTO: A-7-6(21)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.78	26.81				
Dry+Tare	24.40	21.70				
Tare	15.50	11.20				
# Blows	22	22				
Moisture	49.2	48.7				



Liquid Limit= 48
 Plastic Limit= 16
 Plasticity Index= 32
 Natural Moisture= 22.0
 Liquidity Index= 0.2

Plastic Limit Data

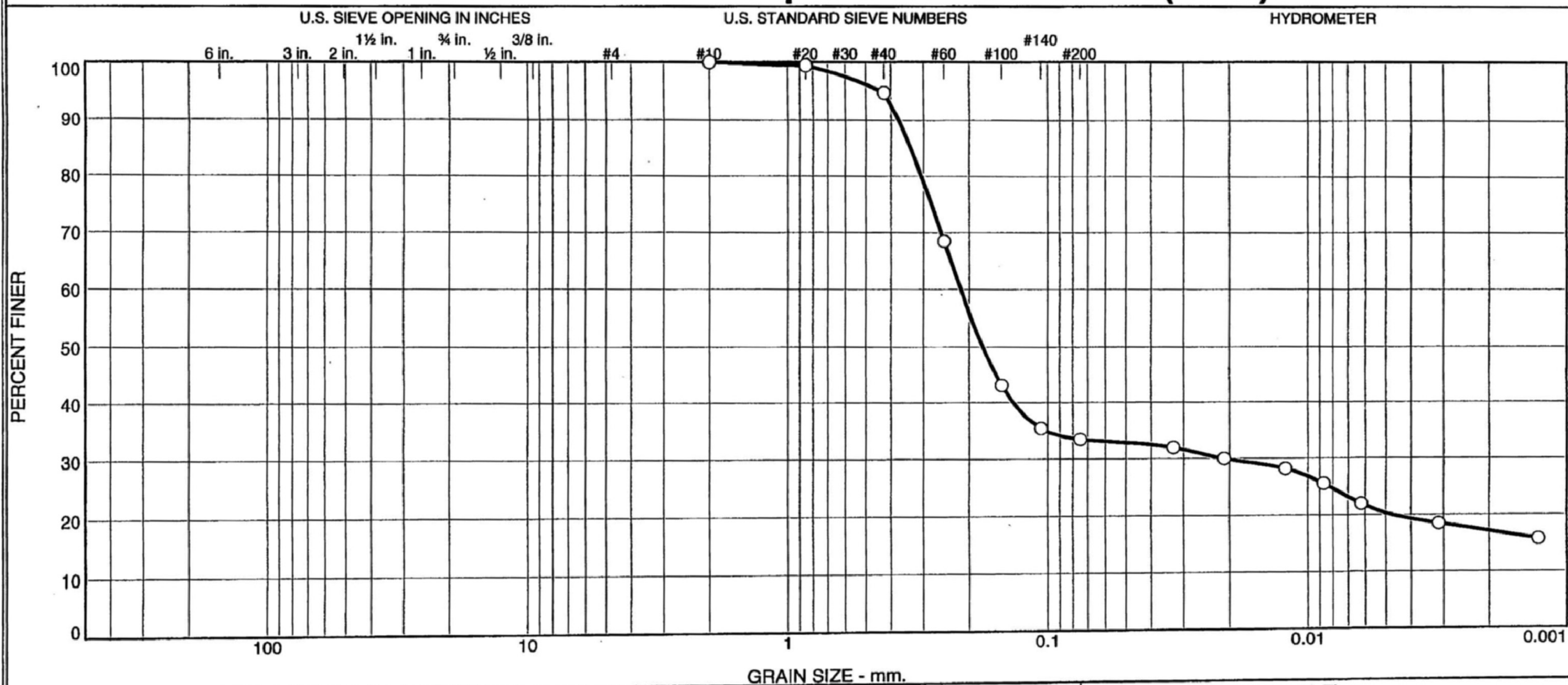
Run No.	1	2	3	4
Wet+Tare	24.38	23.96		
Dry+Tare	23.17	22.79		
Tare	15.66	15.49		
Moisture	16.1	16.0		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
145.40	120.43	6.80	22.0

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	5.3	61.2	13.2	20.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2182A	SS-35	238.3-239.8	12/01/07	SC-SM	Light Gray Silty, Clayey SAND	14.1	18	11

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777

Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific gravity is assumed

Tested By: CS

Checked By: LBJ

DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 238.3-239.8

Sample Number: SS-35

Material Description: Light Gray Silty, Clayey SAND

Date: 12/01/07

Natural Moisture: 14.1

Liquid Limit: 18

Plastic Limit: 11

USCS Class.: SC-SM

Testing Remarks: 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
281.96	0.00	0.00	#10	0.00	100.0
55.15	0.00	0.00	#20	0.32	99.4
			#40	2.91	94.7
			#60	17.35	68.5
			#100	31.40	43.1
			#140	35.59	35.5
			#200	36.67	33.5

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 55.15

Hygroscopic moisture correction:

Moist weight and tare = 28.40

Dry weight and tare = 28.25

Tare weight = 15.60

Hygroscopic moisture = 1.2%

Table of composite correction values:

Temp., deg. C: 12.2 27.1

Comp. corr.: -7.0 -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	22.0	17.6	0.0131	23.0	12.5	0.0329	31.9
5.00	21.6	21.0	16.5	0.0132	22.0	12.7	0.0210	30.0
15.00	21.6	20.0	15.5	0.0132	21.0	12.9	0.0122	28.2
30.00	21.9	18.5	14.1	0.0131	19.5	13.1	0.0087	25.6
60.00	21.9	16.5	12.1	0.0131	17.5	13.4	0.0062	22.0
240.00	22.2	14.5	10.2	0.0131	15.5	13.8	0.0031	18.5
1440.00	22.2	13.0	8.7	0.0131	14.0	14.0	0.0013	15.8

MACTEC, Inc.

Fractional Components

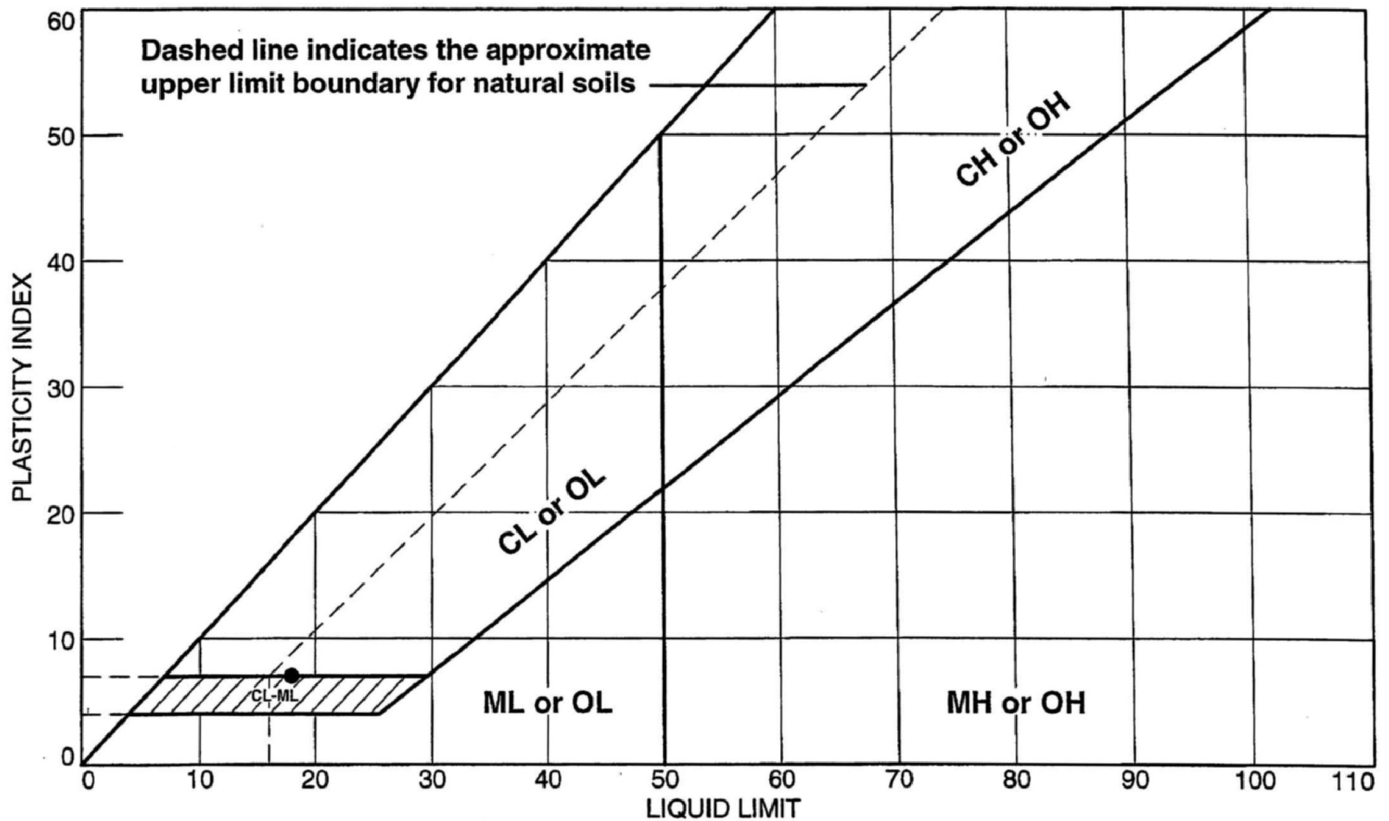
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	5.3	61.2	66.5	13.2	20.3	33.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0047	0.0211	0.1775	0.2153	0.3055	0.3359	0.3739	0.4377

Fineness Modulus
0.81

MACTEC, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2182A	SS-35	238.3-239.8	14.1	11	18	7	SC-SM

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project No.: 6468071777

Figure NA

Tested By: CS

Checked By: LBJ

DSC 1-25-08

LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 238.3-239.8

Sample Number: SS-35

Material Description: Light Gray Silty, Clayey SAND

USCS: SC-SM

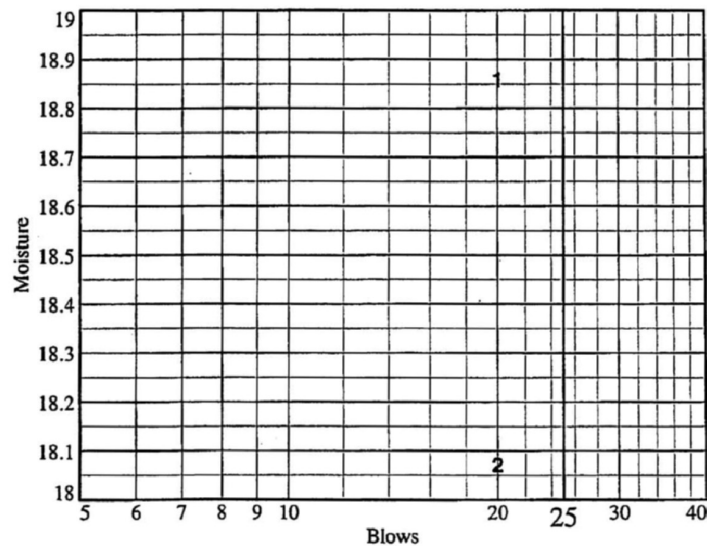
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.21	36.17				
Dry+Tare	30.40	33.00				
Tare	15.50	15.46				
# Blows	20	20				
Moisture	18.9	18.1				



Liquid Limit= 18
 Plastic Limit= 11
 Plasticity Index= 7
 Natural Moisture= 14.1
 Liquidity Index= 0.4

Plastic Limit Data

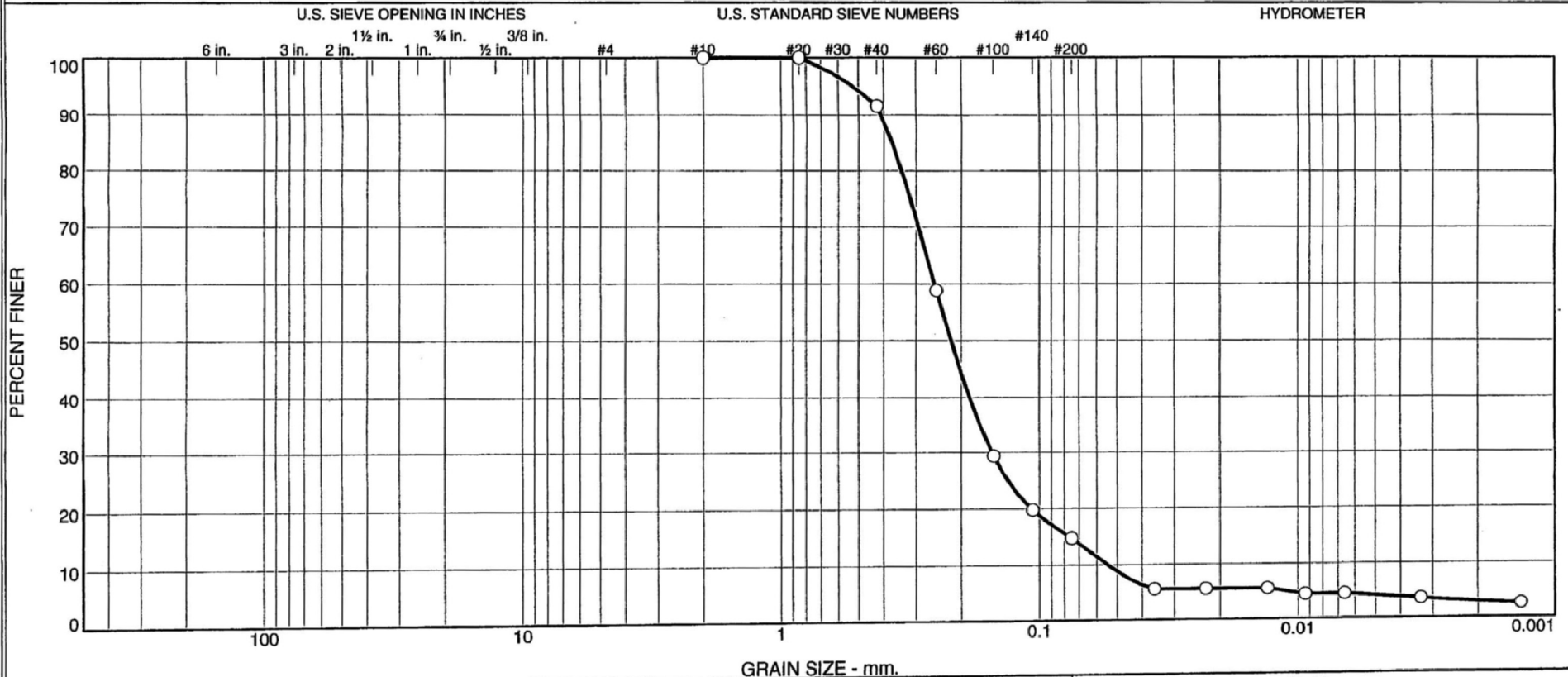
Run No.	1	2	3	4	
Wet+Tare	24.80	21.49			
Dry+Tare	23.86	20.45			
Tare	15.27	11.10			
Moisture	10.9	11.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
125.26	110.60	6.70	14.1

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	8.4	76.9	10.5	4.2

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2182A	SS-36	258.3-259.8	12/01/07	SM	Light Gray Silty SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777

Figure NA

MACTEC, Inc.
Raleigh, North Carolina

○ SIEVE ANALYSIS AND HYDROMETER ONLY.
 Specific gravity = 2.653.(ASTM D 854-06)
 ND = Not determined.
 Organic Content = 1.5% (ASTM D 2974-07)

Tested By: CS

Checked By: LBJ DSC 3-13-08

GRAIN SIZE DISTRIBUTION TEST DATA

3/12/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 258.3-259.8

Sample Number: SS-36

Material Description: Light Gray Silty SAND (Visual)

Date: 12/01/07

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY.

Specific gravity = 2.653.(ASTM D 854-06)

ND = Not determined.

Organic Content = 1.5% (ASTM D 2974-07)

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
240.92	0.00	0.00	#10	0.00	100.0
102.00	0.00	0.00	#20	0.01	100.0
			#40	8.58	91.6
			#60	41.98	58.8
			#100	72.01	29.4
			#140	81.80	19.8
			#200	86.96	14.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 101.9

Hygroscopic moisture correction:

Moist weight and tare = 30.20

Dry weight and tare = 30.05

Tare weight = 15.50

Hygroscopic moisture = 1.0%

Table of composite correction values:

Temp., deg. C:	12.2	27.1
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.653

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	10.0	5.6	0.0133	11.0	14.5	0.0358	5.6
5.00	21.9	10.0	5.6	0.0133	11.0	14.5	0.0227	5.6
15.00	21.9	10.0	5.6	0.0133	11.0	14.5	0.0131	5.6
30.00	21.7	9.0	4.6	0.0134	10.0	14.7	0.0093	4.5
60.00	21.8	9.0	4.6	0.0133	10.0	14.7	0.0066	4.5
236.00	22.1	8.0	3.7	0.0133	9.0	14.8	0.0033	3.6
1440.00	22.0	7.0	2.6	0.0133	8.0	15.0	0.0014	2.6

MACTEC, 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	8.4	76.9	85.3	10.5	4.2	14.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0543	0.0764	0.1071	0.1522	0.2192	0.2542	0.3413	0.3713	0.4097	0.5270

Fineness Modulus	C _u	C _c
1.02	4.68	1.68

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: EXELON COL PROJECT [VICTORIA]

PROJECT NUMBER: 6468071777

DATE: 12/22/07

SAMPLE IDENTIFICATION: B-2182A SS-36

(A) Mass of oven-dried soil, grams:	76.30
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.69
(C) Mass of pycnometer, water and soil, grams:	704.24
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.4
(G) Specific Gravity at observed temperature: $A / [A + (B - C)]$	2.654
(F) <i>Correction factor:</i>	0.99947
(G x F) SPECIFIC GRAVITY @ 20°C:	2.653

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-5

TESTED BY: CS

\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Brian Johnson

DSC 1-25-08

Checked By: LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 278.3-279.8

Sample Number: SS-37

Material Description: Light Gray Clayey SAND (Visual)

Date: 12/02/07

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SC

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
180.75	0.00	0.00	#10	0.00	100.0
101.46	0.00	0.00	#20	0.33	99.7
			#40	3.08	97.0
			#60	10.88	89.3
			#100	60.44	40.4
			#140	82.21	19.0
			#200	87.01	14.2

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 101.45

Hygroscopic moisture correction:

Moist weight and tare = 29.30

Dry weight and tare = 29.28

Tare weight = 15.50

Hygroscopic moisture = 0.1%

Table of composite correction values:

Temp., deg. C: 12.2 27.1

Comp. corr.: -7.0 -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	22.5	16.0	11.8	0.0130	17.0	13.5	0.0339	11.5
5.00	22.5	15.0	10.8	0.0130	16.0	13.7	0.0216	10.5
15.00	22.4	14.0	9.7	0.0131	15.0	13.8	0.0125	9.5
30.00	22.4	14.0	9.7	0.0131	15.0	13.8	0.0089	9.5
60.00	22.4	13.0	8.7	0.0131	14.0	14.0	0.0063	8.5
240.00	22.5	13.0	8.8	0.0130	14.0	14.0	0.0031	8.6
1440.00	22.4	12.0	7.7	0.0131	13.0	14.2	0.0013	7.6

MACTEC, Inc.

Fractional Components

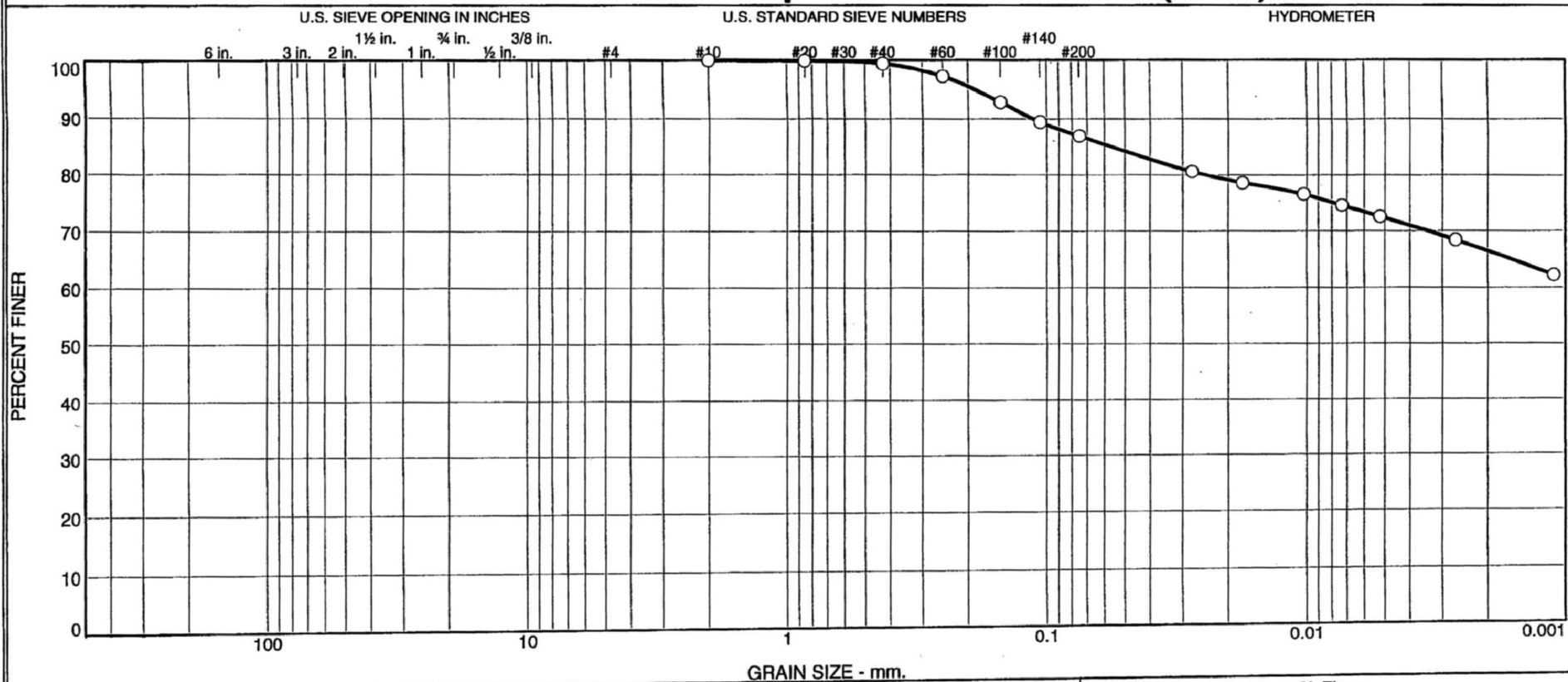
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	3.0	82.8	85.8	5.7	8.5	14.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0175	0.0859	0.1091	0.1317	0.1654	0.1818	0.2215	0.2351	0.2598	0.3577

Fineness Modulus	C _u	C _c
0.69	10.40	5.46

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.6	12.4	14.7	72.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2182A	SS-38	298.3-299.8	12/02/07	CH	Pinkish Gray Fat CLAY	27.4	67	24

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777

Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific gravity is assumed

Tested By: CS

Checked By: LBJ

DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 298.3-299.8

Sample Number: SS-38

Material Description: Pinkish Gray Fat CLAY

Date: 12/02/07

Natural Moisture: 27.4

Liquid Limit: 67

Plastic Limit: 24

USCS Class.: CH

Testing Remarks: 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
247.85	0.00	0.00	#10	0.00	100.0
50.40	0.00	0.00	#20	0.05	99.9
			#40	0.31	99.4
			#60	1.39	97.2
			#100	3.62	92.8
			#140	5.31	89.5
			#200	6.56	87.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 50.4

Hygroscopic moisture correction:

Moist weight and tare = 28.80

Dry weight and tare = 28.37

Tare weight = 15.60

Hygroscopic moisture = 3.4%

Table of composite correction values:

Temp., deg. C: 12.2 27.1

Comp. corr.: -7.0 -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	22.4	44.0	39.7	0.0131	45.0	8.9	0.0276	80.6
5.00	22.4	43.0	38.7	0.0131	44.0	9.1	0.0176	78.6
15.00	22.4	42.0	37.7	0.0131	43.0	9.2	0.0102	76.5
30.00	22.5	41.0	36.8	0.0130	42.0	9.4	0.0073	74.6
60.00	22.5	40.0	35.8	0.0130	41.0	9.6	0.0052	72.5
237.00	22.5	38.0	33.8	0.0130	39.0	9.9	0.0027	68.5
1440.00	22.3	35.0	30.7	0.0131	36.0	10.4	0.0011	62.3

MACTEC, Inc.

Fractional Components

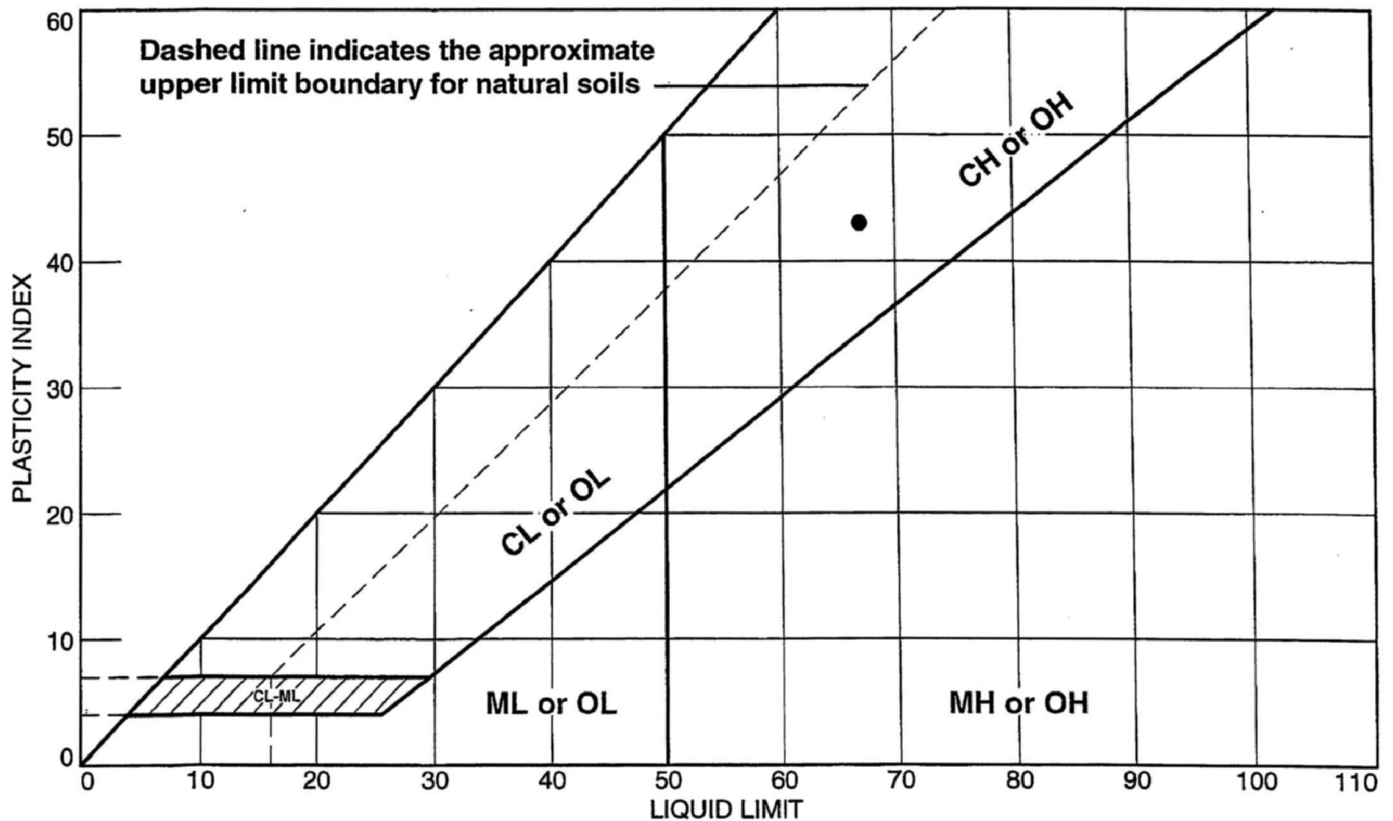
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	12.4	13.0	14.7	72.3	87.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0245	0.0558	0.1127	0.1882

Fineness Modulus
0.09

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LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2182A	SS-38	298.3-299.8	27.4	24	67	43	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project No.: 6468071777

Figure NA

Tested By: CS

Checked By: LBJ

DSC 1-25-08