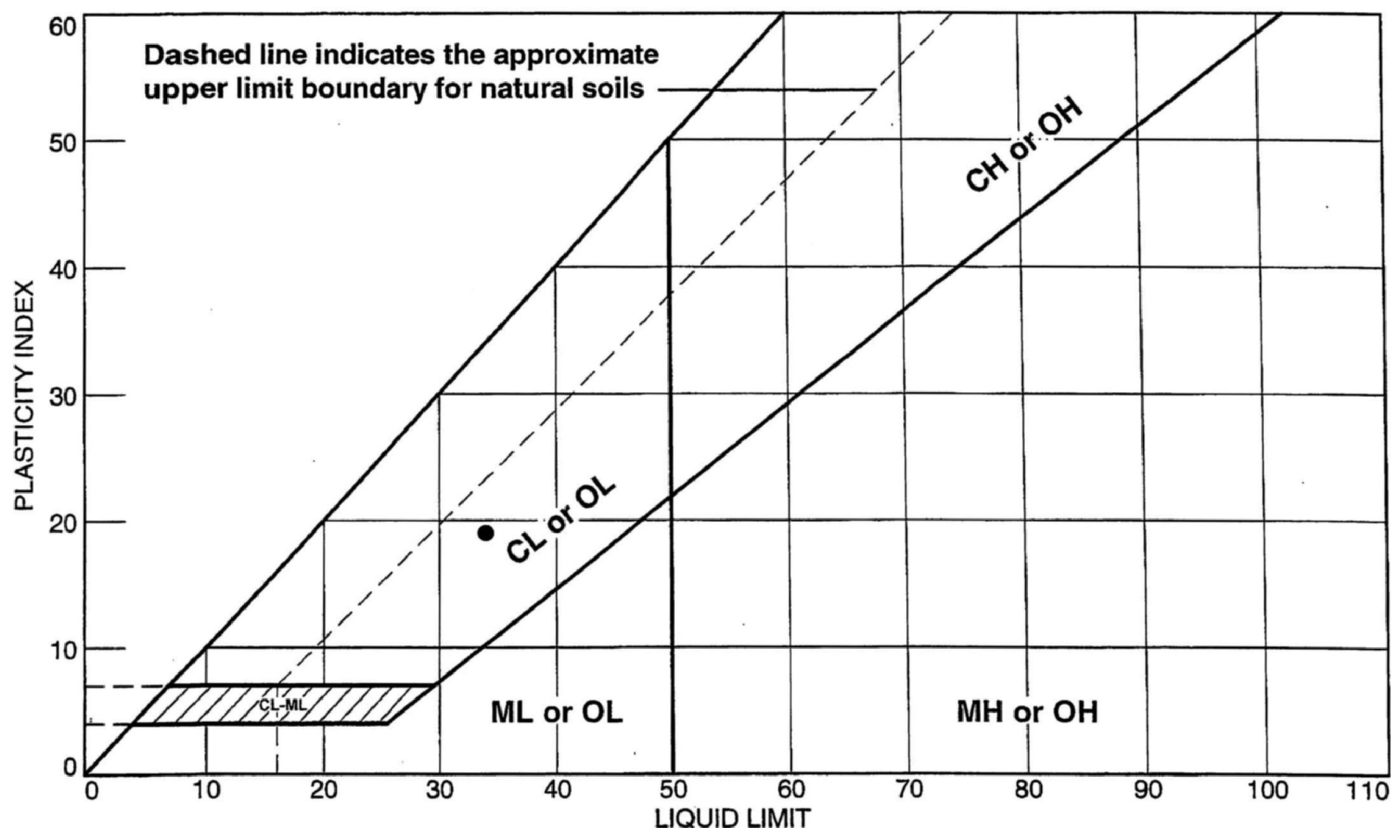


LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2251	SS-19	78.5-80'	18.3	15	34	19	CL

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-2251

Depth: 78.5-80'

Sample Number: SS-19

Material Description: Gray Sandy Lean CLAY

USCS: CL

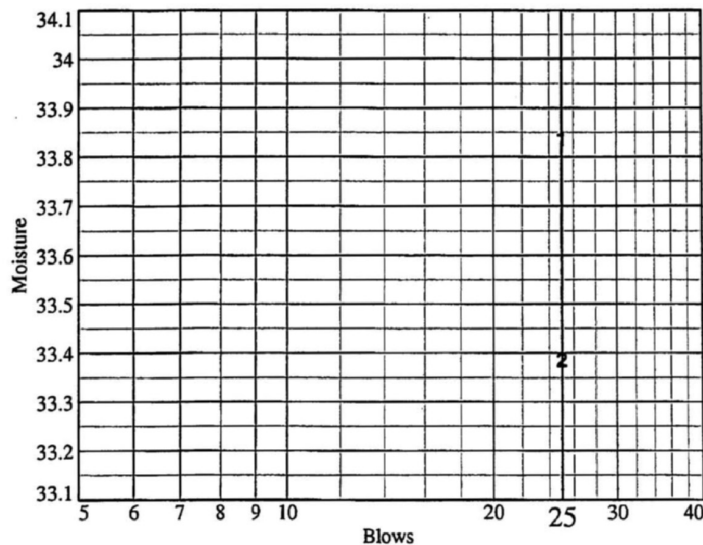
AASHTO: A-6(8)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.36	23.76				
Dry+Tare	22.12	21.69				
Tare	15.50	15.49				
# Blows	25	25				
Moisture	33.8	33.4				



Liquid Limit= 34
 Plastic Limit= 15
 Plasticity Index= 19
 Natural Moisture= 18.3
 Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	30.69	30.63		
Dry+Tare	28.69	28.56		
Tare	15.50	15.39		
Moisture	15.2	15.7		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
169.80	144.60	6.90	18.3

MACTEC, 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: EXELON COL PROJECT [VICTORIA]

PROJECT NUMBER: 6468071777

DATE: 1/9/08

SAMPLE IDENTIFICATION: B-2251 SS-19

(A) Mass of oven-dried soil, grams:	49.40
(B) Mass of pycnometer filled with water at test temperature (T), grams:	654.84
(C) Mass of pycnometer, water and soil, grams:	685.71
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.9
(G) Specific Gravity at observed temperature:	$A / [A + (B - C)]$ 2.666
(F) <i>Correction factor:</i>	0.99936
(G x F) SPECIFIC GRAVITY @ 20°C:	2.664

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100%

Sandy Lean CLAY (CL)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNO METER : P-5

TESTED BY: CS

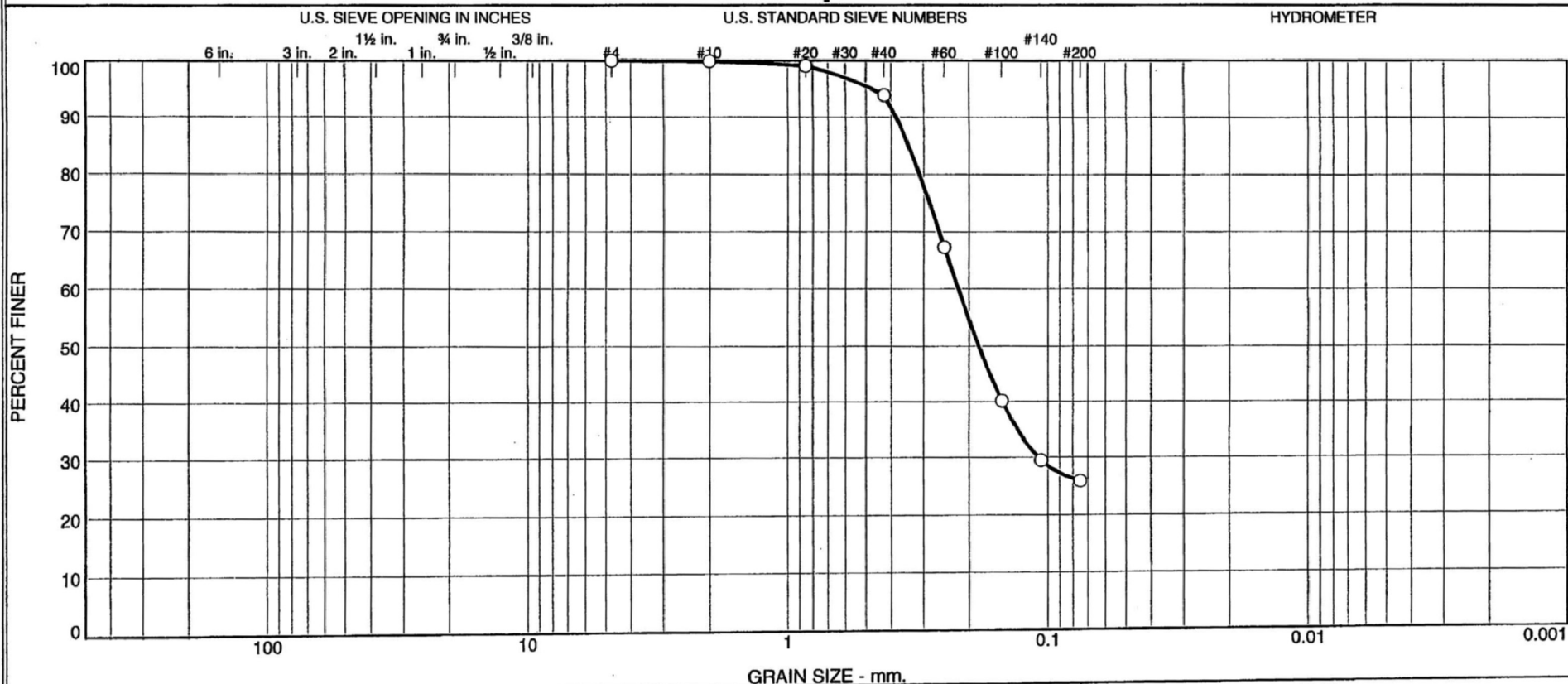
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY:

Brian Johnson

DSC 1-25-08

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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	6.0	68.0	25.9	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2251	SS-20	83.5-85'	12-03-07	SC	Light Brownish Gray Clayey SAND (Visual)	ND	ND	ND

Client Bechtel	MACTEC, Inc. Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY ND = Not Determined
Project Exelon Texas COL (Victoria)		
Project No. 6468071777		
Figure NA		

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-2251

Depth: 83.5-85'

Sample Number: SS-20

Material Description: Light Brownish Gray Clayey SAND (Visual)

Date: 12-03-07

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SC

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
234.52	0.00	0.00	#4	0.00	100.0
			#10	0.23	99.9
104.15	0.00	0.00	#20	0.84	99.1
			#40	6.30	93.9
			#60	33.91	67.4
			#100	62.31	40.1
			#140	73.38	29.5
			#200	77.16	25.9

Fractional Components

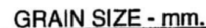
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	6.0	68.0	74.1			25.9

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1087	0.1843	0.2205	0.3112	0.3425	0.3822	0.4762

Fineness Modulus
0.86

MACTEC, Inc.

HYDROMETER



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-2251

Depth: 88.5-90'

Sample Number: SS-21

Material Description: Gray Clayey SAND (Visual)

Date: 12-03-07

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SC

Testing Remarks: SIEVE ANALYSIS ONLY

Specific Gravity = 2.654 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
134.90	0.00	0.00	#4	0.00	100.0
			#10	0.31	99.8
101.97	0.00	0.00	#20	1.25	98.5
			#40	2.04	97.8
			#60	4.17	95.7
			#100	25.85	74.5
			#140	67.74	33.5
			#200	83.11	18.5

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	2.0	79.3	81.5			18.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0807	0.1016	0.1227	0.1326	0.1593	0.1707	0.1882	0.2328

Fineness Modulus
0.32

MACTEC, 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: EXELON COL PROJECT [VICTORIA]

PROJECT NUMBER: 6468071777

DATE: 1/9/08

SAMPLE IDENTIFICATION: B-2251 SS-21

(A) Mass of oven-dried soil, grams:	75.89
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.65
(C) Mass of pycnometer, water and soil, grams:	703.96
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.8
(G) Specific Gravity at observed temperature: $A / [A + (B - C)]$	2.655
(F) <i>Correction factor:</i>	0.99938
(G x F) SPECIFIC GRAVITY @ 20°C:	2.654

MATERIAL TESTED:

☒ X

- # 4

☐

- # 10

PREPARATION METHOD:

☒ X

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100%

Clayey SAND (SC) - visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-6

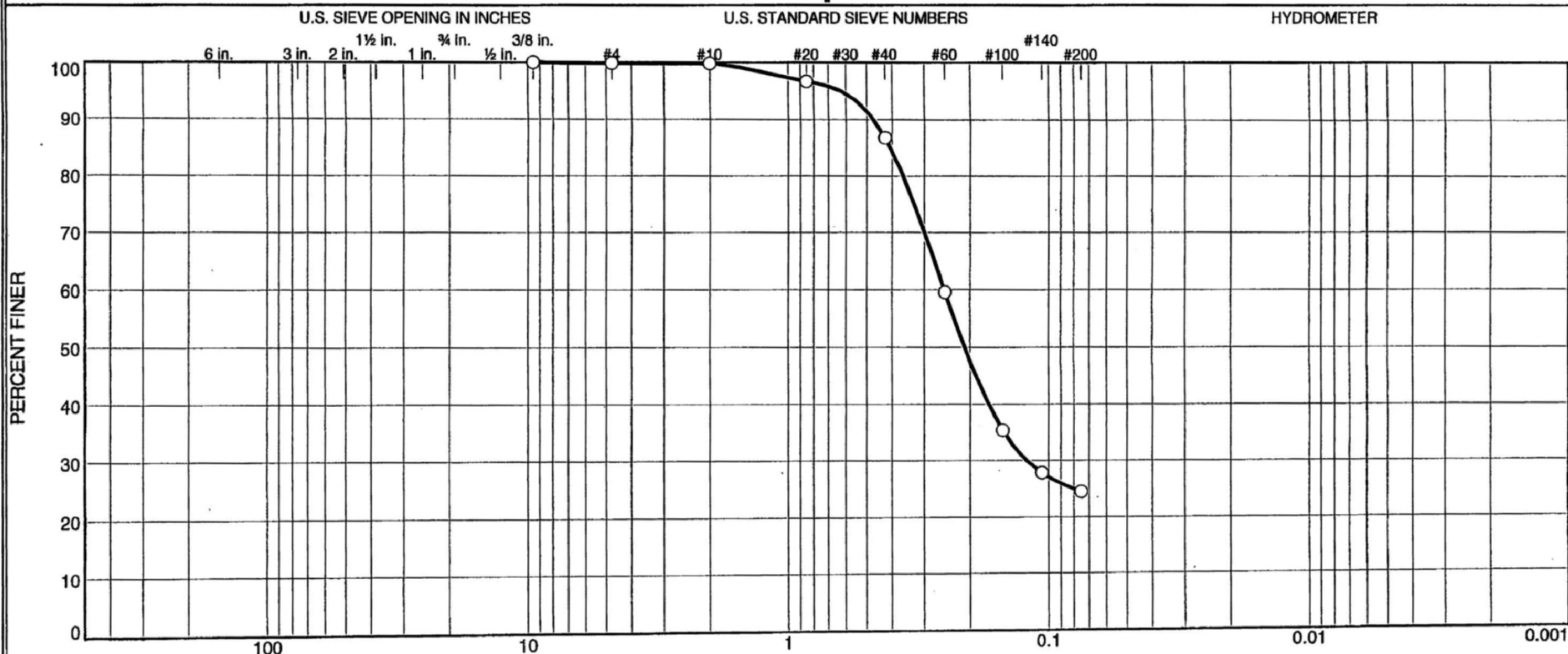
TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 1-25-08

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



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.0	12.9	62.4	24.5	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2251	SS-22	93.5-95'	12-03-07	SC	Gray Clayey SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777

Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
ND = Not Determined

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2251

Depth: 93.5-95'

Sample Number: SS-22

Material Description: Gray Clayey SAND (Visual)

Date: 12-03-07

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SC

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
186.74	0.00	0.00	3/8	0.00	100.0
			#4	0.29	99.8
			#10	0.32	99.8
103.23	0.00	0.00	#20	3.20	96.7
			#40	13.42	86.9
			#60	41.61	59.6
			#100	66.70	35.3
			#140	74.39	27.9
			#200	77.89	24.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	0.0	12.9	62.4	75.3			24.5

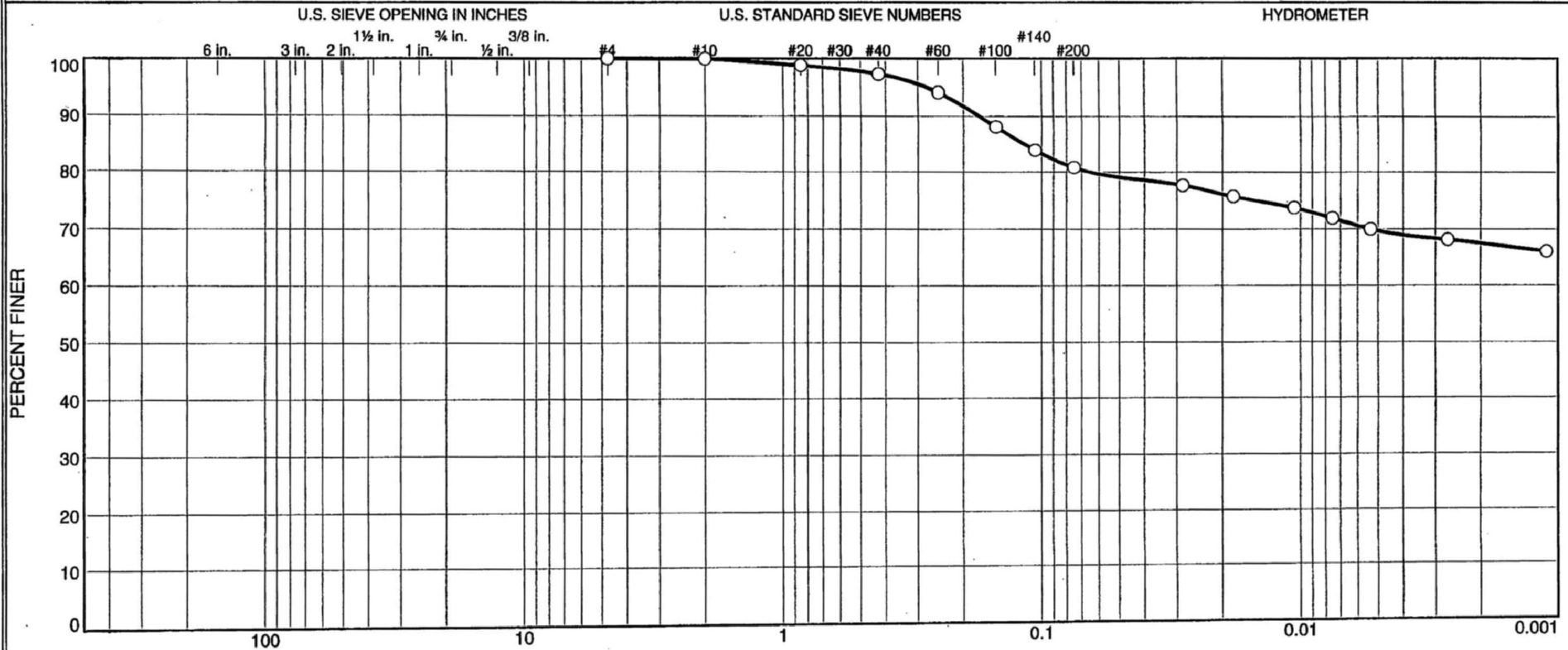
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.1212	0.2100	0.2518	0.3620	0.4049	0.4698	0.6263

Fineness Modulus

1.02

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63-04(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	2.6	16.5	11.1	69.7

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2251	SS-23	98.5-100'	12-03-07	CL	Greenish Gray Lean CLAY with sand	13.6	33	14

Client Bechtel	MACTEC, Inc. Raleigh, North Carolina	Specific Gravity = 2.654 (ASTM D854-06) Organic content = 2.2% (ASTM D2794-07)
Project Exelon Texas COL (Victoria)		
Project No. 6468071777		

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2251

Depth: 98.5-100'

Sample Number: SS-23

Material Description: Greenish Gray Lean CLAY with sand

Date: 12-03-07

Natural Moisture: 13.6

Liquid Limit: 33

Plastic Limit: 14

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.654 (ASTM D854-06)

Organic content = 2.2% (ASTM D2794-07)

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
190.20	0.00	0.00	#4	0.00	100.0
			#10	0.13	99.9
51.54	0.00	0.00	#20	0.59	98.8
			#40	1.37	97.3
			#60	2.99	94.1
			#100	6.08	88.1
			#140	8.25	83.9
			#200	9.87	80.8

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 99.9

Weight of hydrometer sample = 51.54

Hygroscopic moisture correction:

Moist weight and tare = 29.81

Dry weight and tare = 29.53

Tare weight = 15.53

Hygroscopic moisture = 2.0%

Table of composite correction values:

Temp., deg. C: 12.3 27.3

Comp. corr.: -7.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.654

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	21.0	44.0	39.3	0.0135	45.0	8.9	0.0284	77.7
5.00	21.0	43.0	38.3	0.0135	44.0	9.1	0.0181	75.7
15.00	21.0	42.0	37.3	0.0135	43.0	9.2	0.0106	73.7
30.00	21.3	41.0	36.4	0.0134	42.0	9.4	0.0075	71.9
60.00	21.4	40.0	35.4	0.0134	41.0	9.6	0.0053	70.0
240.00	21.7	39.0	34.5	0.0133	40.0	9.7	0.0027	68.2
1440.00	21.5	38.0	33.5	0.0134	39.0	9.9	0.0011	66.1

MACTEC, Inc.

Fractonal 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	2.6	16.5	19.2	11.1	69.7	80.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0654	0.1164	0.1734	0.2770

Fineness Modulus
0.19

MACTEC, Inc.

Dashed line indicates the approximate upper limit boundary for natural soils

CH or OH

CL or OL

ML or OL

MH or OH

CL-ML

PLASTICITY INDEX

LIQUID LIMIT

MACTEC, Inc. Raleigh, North Carolina	Client: Bechtel Project: Exelon Texas COL (Victoria)
	Project No.: 6468071777

DSC 1-25-00

LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2251

Depth: 98.5-100'

Sample Number: SS-23

Material Description: Greenish Gray Lean CLAY with sand

USCS: CL

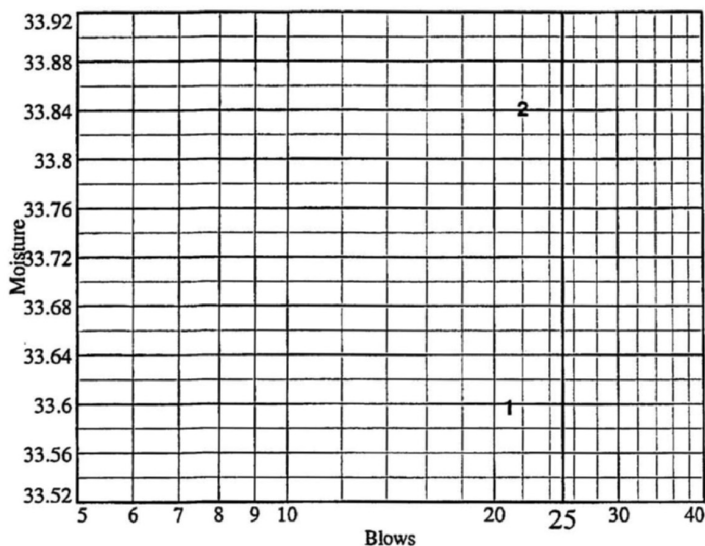
AASHTO: A-6(14)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.93	24.25				
Dry+Tare	21.81	22.03				
Tare	15.50	15.47				
# Blows	21	22				
Moisture	33.6	33.8				



Liquid Limit= 33
 Plastic Limit= 14
 Plasticity Index= 19
 Natural Moisture= 13.6
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	28.24	28.72		
Dry+Tare	26.66	27.11		
Tare	15.53	15.67		
Moisture	14.2	14.1		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
160.06	142.03	9.45	13.6

MACTEC, 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: EXELON COL PROJECT [VICTORIA]

PROJECT NUMBER: 6468071777

DATE: 1/8/08

SAMPLE IDENTIFICATION: B-2251 SS-23

(A) Mass of oven-dried soil, grams:	52.64
(B) Mass of pycnometer filled with water at test temperature (T), grams:	654.79
(C) Mass of pycnometer, water and soil, grams:	687.61
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.3
(G) Specific Gravity at observed temperature:	$A / [A + (B - C)]$ 2.656
(F)	Correction factor: 0.99926
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.654

MATERIAL TESTED:

☒ - # 4

☐ - # 10

PREPARATION METHOD:

☒ DRY

☐ WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100%

Lean CLAY with sand (CL)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNO METER : P-5

TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 1-25-08