

LIQUID AND PLASTIC LIMIT TEST DATA

2/26/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 109.8-111.3

Sample Number: SS-24

Material Description: Brownish Yellow Fat CLAY

USCS: CH

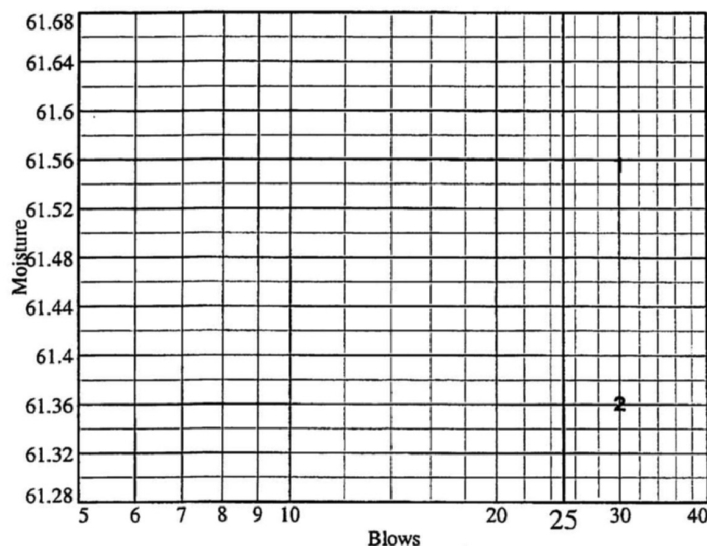
AASHTO: A-7-6(43)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.13	30.21				
Dry+Tare	19.83	24.62				
Tare	11.22	15.51				
# Blows	30	30				
Moisture	61.6	61.4				



Liquid Limit= 63
 Plastic Limit= 19
 Plasticity Index= 44
 Natural Moisture= 26.6
 Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	24.30	23.61			
Dry+Tare	22.89	22.30			
Tare	15.55	15.47			
Moisture	19.2	19.2			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
122.64	98.81	9.16	26.6

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: 2/14/08

SAMPLE IDENTIFICATION: B-2359 SS-24

(A) Mass of oven-dried soil, grams:	49.13
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.65
(C) Mass of pycnometer, water and soil, grams:	686.51
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.689
(F) Correction factor:	0.99952
(G x F) SPECIFIC GRAVITY @ 20°C:	2.688

MATERIAL TESTED:

☒ X
- # 4

☐
- # 10

PREPARATION METHOD:

☒ X
DRY

☐
WET (dispersed)

REMARKS: Estimated % Passing # 4 :

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNO METER : P-3

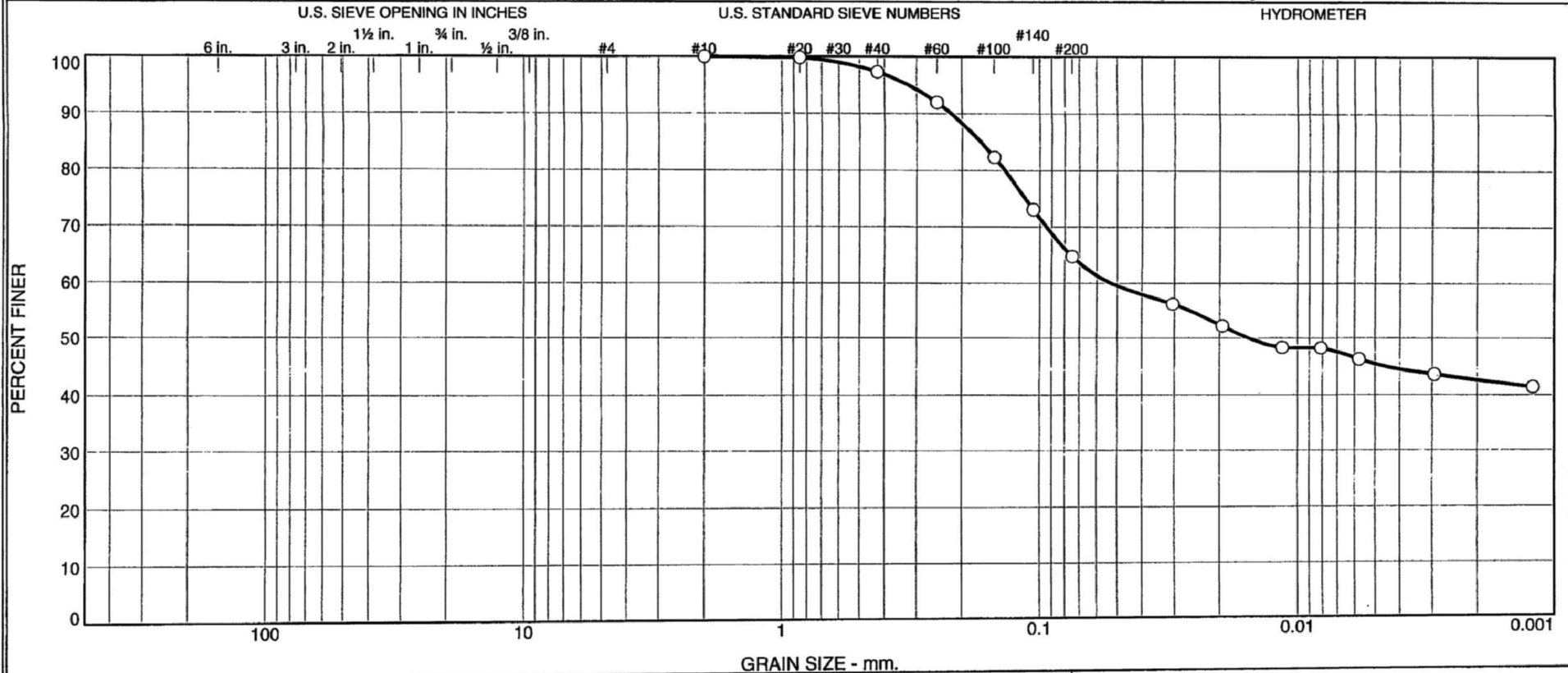
TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 2-27-08

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	2.7	32.5	19.5	45.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359	SS-25	119.8-121.3	1-3-08	CH	Greenish Gray Sandy Fat CLAY	21.0	54	18

Client Bechtel		MACTEC, Inc. Raleigh, North Carolina	☐ Specific Gravity is assumed
Project Exelon Texas COL (Victoria Reservoir)			
Project No. 6468071777	Figure <i>N4</i>		

GRAIN SIZE DISTRIBUTION TEST DATA

2/26/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 119.8-121.3

Sample Number: SS-25

Material Description: Greenish Gray Sandy Fat CLAY

Date: 1-3-08

Natural Moisture: 21.0

Liquid Limit: 54

Plastic Limit: 18

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
263.33	0.00	0.00	#10	0.00	100.0
52.10	0.00	0.00	#20	0.10	99.8
			#40	1.40	97.3
			#60	4.20	91.9
			#100	9.18	82.4
			#140	14.02	73.1
			#200	18.34	64.8

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 52.10

Hygroscopic moisture correction:

Moist weight and tare = 28.81

Dry weight and tare = 28.18

Tare weight = 15.77

Hygroscopic moisture = 5.1%

Table of composite correction values:

Temp., deg. C: 12.9 29.9

Comp. corr.: -8.0 -2.0

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	33.0	28.2	0.0131	34.0	10.7	0.0304	56.2
5.00	21.9	31.0	26.2	0.0131	32.0	11.0	0.0195	52.2
15.00	21.9	29.0	24.2	0.0131	30.0	11.4	0.0114	48.2
30.00	21.8	29.0	24.1	0.0131	30.0	11.4	0.0081	48.1
60.00	21.8	28.0	23.1	0.0131	29.0	11.5	0.0058	46.2
240.00	20.9	27.0	21.8	0.0133	28.0	11.7	0.0029	43.5
1440.00	20.7	26.0	20.8	0.0133	27.0	11.9	0.0012	41.4

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Fractional Components

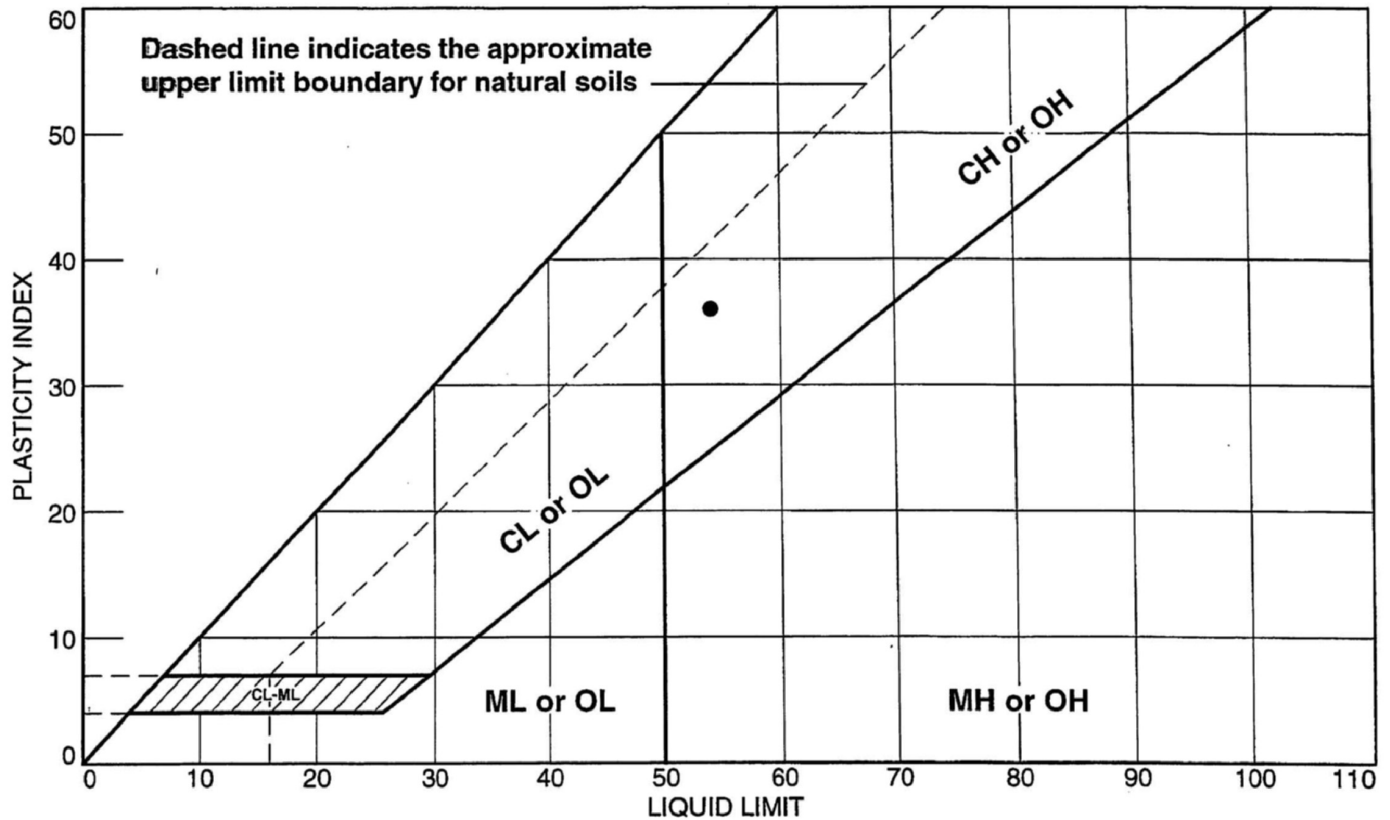
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.7	32.5	35.2	19.5	45.3	64.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0155	0.0528	0.1366	0.1681	0.2196	0.3227

Fineness Modulus
0.24

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-2359	SS-25	119.8-121.3	21.0	18	54	36	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure *NA*

Tested By: CS

Checked By: LBJ

DSC 2-27-08

LIQUID AND PLASTIC LIMIT TEST DATA

2/26/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 119.8-121.3

Sample Number: SS-25

Material Description: Greenish Gray Sandy Fat CLAY

USCS: CH

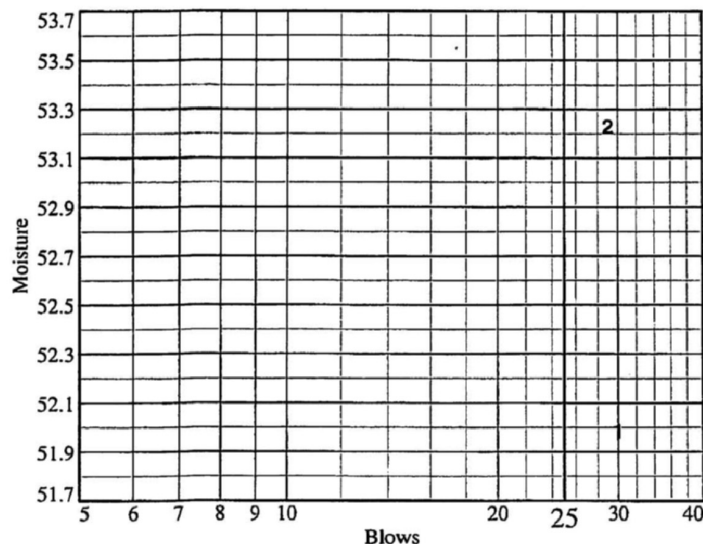
AASHTO: A-7-6(21)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.05	32.63				
Dry+Tare	26.42	26.70				
Tare	15.59	15.56				
# Blows	30	29				
Moisture	52.0	53.2				



Liquid Limit= 54
 Plastic Limit= 18
 Plasticity Index= 36
 Natural Moisture= 21.0
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	24.70	24.37		
Dry+Tare	23.26	22.98		
Tare	15.42	15.45		
Moisture	18.4	18.5		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
105.42	88.27	6.79	21.0

MACTEC, Inc.

DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2359

Depth: 129.8-131.3

Sample Number: SS-26

Material Description: Light Gray Clayey SAND (Visual)

Date: 1-04-08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SC

Testing Remarks: Specific Gravity is assumed

SIEVE ANALYSIS AND HYDROMETER 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
225.53	0.00	0.00	3/8"	0.00	100.0
			#4	0.75	99.7
			#10	1.89	99.2
97.16	0.00	0.00	#20	0.42	98.7
			#40	0.80	98.3
			#60	1.77	97.4
			#100	23.17	75.5
			#140	54.22	43.8
			#200	69.96	27.8

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 99.2

Weight of hydrometer sample = 97.16

Hygroscopic moisture correction:

Moist weight and tare = 27.80

Dry weight and tare = 27.62

Tare weight = 15.50

Hygroscopic moisture = 1.5%

Table of composite correction values:

Temp., deg. C: 12.8 27.3

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	22.6	24.0	19.7	0.0130	25.0	12.2	0.0322	20.2
5.00	22.6	22.0	17.7	0.0130	23.0	12.5	0.0206	18.1
15.00	22.6	21.0	16.7	0.0130	22.0	12.7	0.0120	17.1
30.00	22.5	20.0	15.7	0.0130	21.0	12.9	0.0085	16.1
60.00	22.5	18.0	13.7	0.0130	19.0	13.2	0.0061	14.0
240.00	22.5	17.0	12.7	0.0130	18.0	13.3	0.0031	13.0
294.00	22.8	17.0	12.8	0.0130	18.0	13.3	0.0028	13.1

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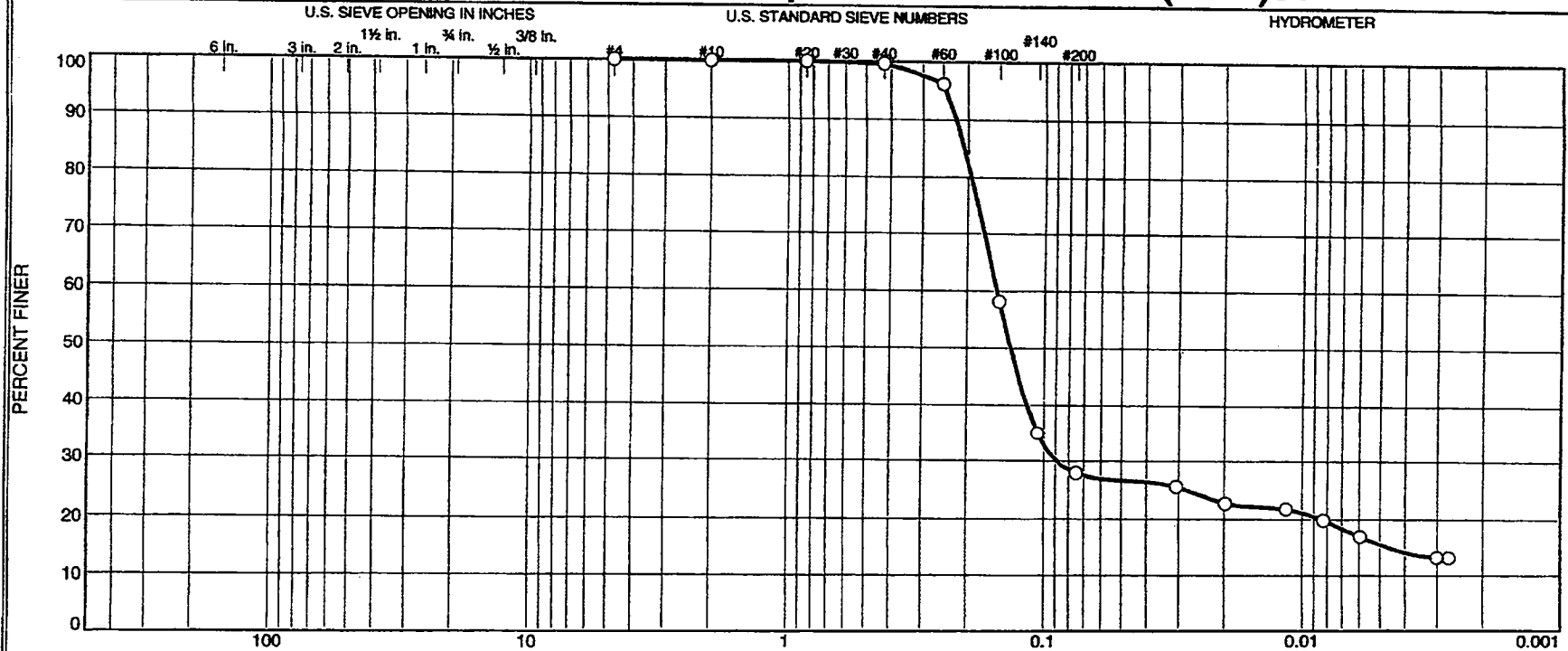
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.3	0.3	0.5	0.9	70.5	71.9	14.1	13.7	27.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0072	0.0307	0.0811	0.1141	0.1268	0.1591	0.1719	0.1900	0.2207

Fineness Modulus
0.30

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

[illegible][illegible]

Client	Bechtel
Project	Exelon Texas COL (Victoria)

Project No. 6468071777

Figure *NA*

MACTEC, Inc.

Raleigh, North Carolina

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

Tested By: CS

Checked By: LBJ DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2359

Depth: 139.8-141.3

Sample Number: SS-27

Material Description: Pale Brown Clayey SAND (Visual)

Date: 1-04-08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SC

Testing Remarks: Specific Gravity is assumed

SIEVE ANALYSIS AND HYDROMETER 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
253.72	0.00	0.00	#4	0.00	100.0
			#10	0.09	100.0
103.57	0.00	0.00	#20	0.03	99.9
			#40	0.31	99.7
			#60	3.96	96.1
			#100	43.26	58.2
			#140	67.35	35.0
			#200	74.60	28.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 103.57

Hygroscopic moisture correction:

Moist weight and tare = 29.40

Dry weight and tare = 29.29

Tare weight = 15.50

Hygroscopic moisture = 0.8%

Table of composite correction values:

Temp., deg. C: 12.8 27.3

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	31.0	26.7	0.0130	32.0	11.0	0.0306	25.7
5.00	22.5	28.0	23.7	0.0130	29.0	11.5	0.0198	22.8
15.00	22.5	27.0	22.7	0.0130	28.0	11.7	0.0115	21.8
30.00	22.5	25.0	20.7	0.0130	26.0	12.0	0.0083	19.9
60.00	22.6	22.0	17.7	0.0130	23.0	12.5	0.0059	17.0
245.00	23.0	18.0	13.8	0.0130	19.0	13.2	0.0030	13.3
303.00	22.9	18.0	13.8	0.0130	19.0	13.2	0.0027	13.3

MACTEC, Inc.

Fractional Components

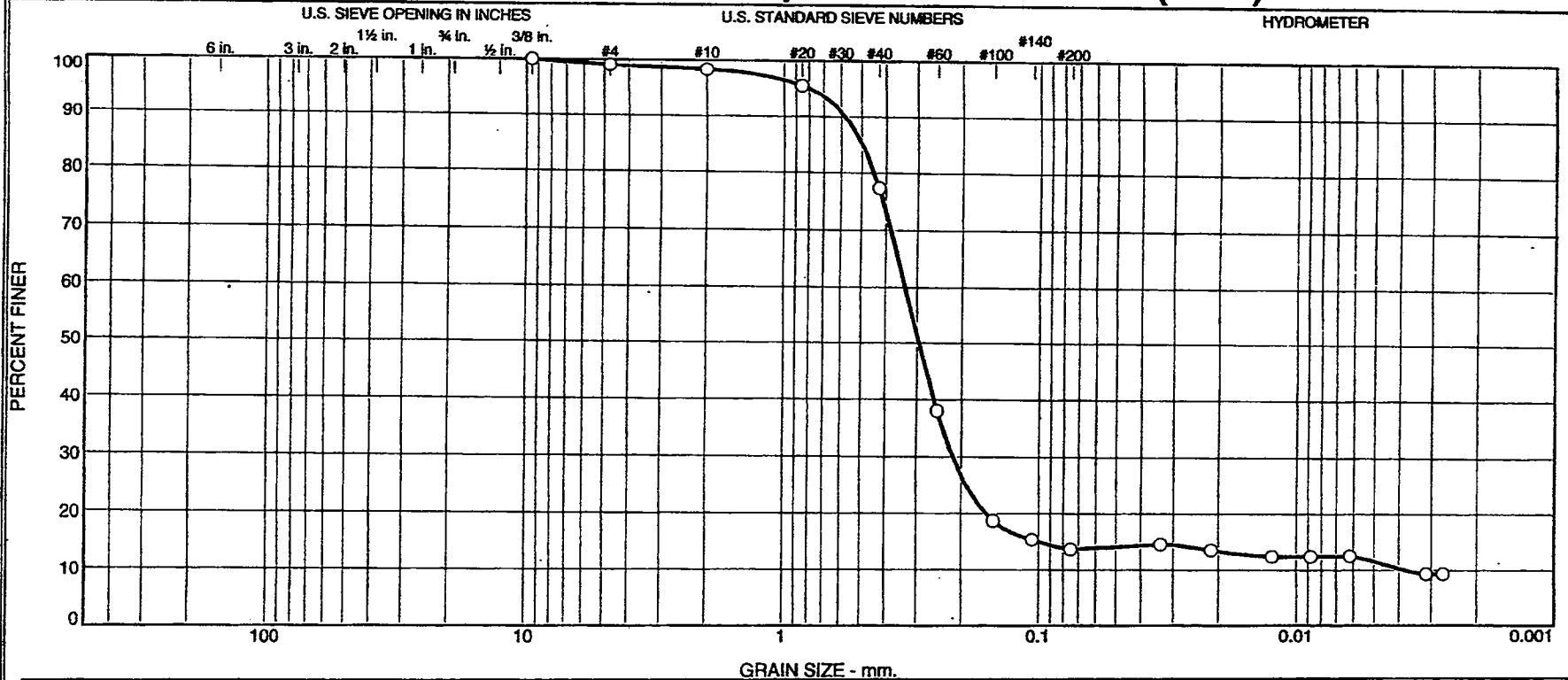
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	71.7	72.0	12.4	15.6	28.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0046	0.0084	0.0896	0.1354	0.1532	0.1940	0.2071	0.2228	0.2437

Fineness Modulus
0.44

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	0.9	0.8	20.9	63.7	2.1	11.6

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359	SS-28	149.8-151.3	1-04-08	SC	Light Brownish Gray Clayey SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777

Figure *NA*

MACTEC, Inc.

Raleigh, North Carolina

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

Tested By: CS

Checked By: I.R.I

DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2359

Depth: 149.8-151.3

Sample Number: SS-28

Material Description: Light Brownish Gray Clayey SAND (Visual)

Date: 1-04-08

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SC

Testing Remarks: Specific Gravity is assumed

SIEVE ANALYSIS AND HYDROMETER 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
233.96	0.00	0.00	3/8"	0.00	100.0
			#4	2.20	99.1
			#10	3.87	98.3
95.33	0.00	0.00	#20	2.78	95.5
			#40	20.33	77.4
			#60	58.39	38.1
			#100	77.18	18.7
			#140	80.36	15.4
			#200	82.05	13.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 98.3

Weight of hydrometer sample = 95.33

Hygroscopic moisture correction:

Moist weight and tare = 28.20

Dry weight and tare = 27.60

Tare weight = 15.60

Hygroscopic moisture = 5.0%

Table of composite correction values:

Temp., deg. C: 12.8 27.3

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	18.0	13.7	0.0130	19.0	13.2	0.0335	14.6
5.00	22.5	17.0	12.7	0.0130	18.0	13.3	0.0213	13.6
15.00	22.4	16.0	11.6	0.0131	17.0	13.5	0.0124	12.5
30.00	22.4	16.0	11.6	0.0131	17.0	13.5	0.0088	12.5
60.00	22.6	16.0	11.7	0.0130	17.0	13.5	0.0062	12.5
240.00	22.8	13.0	8.8	0.0130	14.0	14.0	0.0031	9.4
324.00	22.8	13.0	8.8	0.0130	14.0	14.0	0.0027	9.4

MACTEC, Inc.

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.9	0.9	0.8	20.9	63.7	85.4	2.1	11.6	13.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0038	0.0985	0.1605	0.2162	0.2946	0.3341	0.4451	0.4950	0.5761	0.7979

Fineness Modulus	C _u	C _c
1.44	88.61	37.12

MACTEC, Inc.

Organic Content – Split Spoon Samples



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777
Tested By CS
Test Date 1/29/2008

Project Name Exelon COL
Reviewed By LBJ
Review Date 2/6/2008

Boring No.	B-2302A	B-2302A	B-2302A	
Sample No.	SS-1	SS-2B	SS-3	
Sample Depth, Ft.	0.0-1.5	3.5-5.0	6.0-7.5	
A) Tare No.	2B	309	JP11	
B) Tare Weight, grams	9.26	9.39	6.81	
C) Wet Soil + Tare, grams	109.65	191.04	141.23	
D) Dry Soil + Tare, grams	99.44	164.22	121.14	
E) Weight of Dry Soil, grams [D - B]	90.18	154.83	114.33	
F) Weight of Moisture, grams [C - D]	10.21	26.82	20.09	
G) Moisture Content, % [F * 100 / E]	11.3	17.3	17.6	
(based on oven-dried weight)				
H) Tare No.	G	S	L	
I) Weight of Tare, grams	53.08	53.41	51.50	
J) Weight of Over-Dried Soil + Tare, grams	143.00	154.25	165.86	
K) Weight of Oven- Dried Soil, grams [J - I]	89.92	100.84	114.36	
L) Weight of Ignited Soil + Tare, grams	141.09	152.48	164.37	
M) Ash, grams [L - I]	88.01*	99.07	112.87	
N) Ash Content, % [M *100 / K]	97.9	98.2	98.7	
O) Organic Matter, % [100 - N]	2.1	1.8	1.3	

Remarks: Furnace temperature set @ 440° C

Equipment used:

KAW 5/12/08

oven: 5.1.16
scales: 3.1.19

muffle furnace 5.1.17



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777
Tested By CS
Test Date 1/30/2007

Project Name Exelon COL
Reviewed By LBJ DSC
Review Date 2/8/2008 2-28-08

Boring No.	B-2304	B-2304	B-2304	
Sample No.	SS-1	SS-2	SS-3	
Sample Depth, Ft.	0.0-1.5	3.5-5.0	6.0-7.5	
A) Tare No.	309	JP-7	L	
B) Tare Weight, grams	9.50	6.80	7.08	
C) Wet Soil + Tare, grams	84.30	195.01	119.69	
D) Dry Soil + Tare, grams	72.49	165.01	101.86	
E) Weight of Dry Soil, grams [D - B]	62.99	158.21	94.78	
F) Weight of Moisture, grams [C - D]	11.81	30.00	17.83	
G) Moisture Content, % [F * 100 / E]	18.7	19.0	18.8	
(based on oven-dried weight)				
H) Tare No.	N	S	L	
I) Weight of Tare, grams	55.57	53.43	51.56	
J) Weight of Over-Dried Soil + Tare, grams	118.84	158.36	146.24	
K) Weight of Oven- Dried Soil, grams [J - I]	63.27	104.93	94.68	
L) Weight of Ignited Soil + Tare, grams	116.86	156.54	145.12	
M) Ash, grams [L - I]	61.29	103.11	93.56	
N) Ash Content, % [M *100 / K]	96.9	98.3	98.8	
O) Organic Matter, % [100 - N]	3.1	1.7	1.2	

Remarks: Furnace temperature set @ 440° C

Equipment used:

oven: 5.1.16
scales: 3.1.19

muffle furnace 5.1.17

 ORIGINAL



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777
Tested By CS
Test Date 2/1/2008

Project Name Exelon COL
Reviewed By LBJ DSC
Review Date 2/14/2008 2-28-08

Boring No.	B-2319	B-2319	B-2319	
Sample No.	SS-1	SS-2	SS-3	
Sample Depth, Ft.	0.0-1.5	3.5-5.0	6.0-7.5	
A) Tare No.	77	JP-22	ORANGE	
B) Tare Weight, grams	6.65	6.76	9.16	
C) Wet Soil + Tare, grams	129.13	145.11	177.24	
D) Dry Soil + Tare, grams	110.28	127.17	155.13	
E) Weight of Dry Soil, grams [D - B]	103.63	120.41	145.97	
F) Weight of Moisture, grams [C - D]	18.85	17.94	22.11	
G) Moisture Content, % [F * 100 / E]	18.2	14.9	15.1	
(based on oven-dried weight)				
H) Tare No.	G	L	H	
I) Weight of Tare, grams	53.07	51.57	52.10	
J) Weight of Over-Dried Soil + Tare, grams	156.88	168.27	146.98	
K) Weight of Oven-Dried Soil, grams [J - I]	103.81	116.70	94.88	
L) Weight of Ignited Soil + Tare, grams	153.94	166.44	145.13	
M) Ash, grams [L - I]	100.87	114.87	93.03	
N) Ash Content, % [M * 100 / K]	97.2	98.4	98.1	
O) Organic Matter, % [100 - N]	2.8	1.6	1.9	

Remarks: Furnace temperature set @ 440° C

Equipment used:

oven: 5.1.16
scales: 3.1.19

muffle furnace 5.1.17



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777

Tested By CS

Test Date 2/1/2008

Project Name Exelon COL

Reviewed By LBJ DSC

Review Date 2/18/2008 2-28-08

Boring No.	B-2321	B-2321	B-2321	
Sample No.	SS-1	SS-2	SS-3	
Sample Depth, Ft.	0.0-1.5	3.5-5.0	6.0-7.5	
A) Tare No.	84	H	XY	
B) Tare Weight, grams	6.63	6.53	7.02	
C) Wet Soil + Tare, grams	138.33	200.89	128.56	
D) Dry Soil + Tare, grams	116.93	165.13	109.80	
E) Weight of Dry Soil, grams [D - B]	110.30	158.60	102.78	
F) Weight of Moisture, grams [C - D]	21.40	35.76	18.76	
G) Moisture Content, % [F * 100 / E]	19.4	22.5	18.3	
(based on oven-dried weight)				
H) Tare No.	G	L	H	
I) Weight of Tare, grams	53.06	51.51	52.00	
J) Weight of Over-Dried Soil + Tare, grams	146.66	159.06	155.36	
K) Weight of Oven- Dried Soil, grams [J - I]	93.60	107.55	103.36	
L) Weight of Ignited Soil + Tare, grams	141.65	156.86	153.68	
M) Ash, grams [L - I]	88.59	105.35	101.68	
N) Ash Content, % [M *100 / K]	94.6	98.0	98.4	
O) Organic Matter, % [100 - N]	5.4	2.0	1.6	

Remarks: Furnace temperature set @ 440° C

Equipment used:

oven: 5.1.16

scales: 3.1.19

muffle furnace 5.1.17



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777

Tested By CS

Test Date 2/7/2008

Project Name Exelon COL

Reviewed By LBJ

Review Date 2/18/2008

Boring No.	B-2352	B-2352	B-2352	
Sample No.	SS-1	SS-2	SS-3	
Sample Depth, Ft.	0.0-1.5	3.5-5.0	6.0-7.5	
A) Tare No.	TT	XY	2B	
B) Tare Weight, grams	6.69	6.89	9.30	
C) Wet Soil + Tare, grams	101.28	124.12	182.79	
D) Dry Soil + Tare, grams	83.73	107.18	155.28	
E) Weight of Dry Soil, grams [D - B]	77.04	100.29	145.98	
F) Weight of Moisture, grams [C - D]	17.55	16.94	27.51	
G) Moisture Content, % $[F * 100 / E]$	22.8	16.9	18.8	
(based on oven-dried weight)				
H) Tare No.	L	Q	G	
I) Weight of Tare, grams	51.50	51.13	53.00	
J) Weight of Over-Dried Soil + Tare, grams	128.21	151.38	144.58	
K) Weight of Oven- Dried Soil, grams [J - I]	76.71	100.25	91.58	
L) Weight of Ignited Soil + Tare, grams	124.15	149.59	142.89	
M) Ash, grams [L - I]	72.65	98.46	89.89	
N) Ash Content, % $[M * 100 / K]$	94.7	98.2	98.2	
O) Organic Matter, % $[100 - N]$	5.3	1.8	1.8	

Remarks: Furnace temperature set @ 440° C

Equipment used:

oven: 5.1.16

muffle furnace 5.1.17

scales: 3.1.19



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777
Tested By CS
Test Date 2/18/2008

Project Name Exelon COL
Reviewed By LBJ
Review Date 2/19/2008

Boring No.	B-2359	B-2359	B-2359	
Sample No.	SS-1	SS-2	SS-3	
Sample Depth, Ft.	0.0-1.5	3.5-5.0	6.0-7.5	
A) Tare No.	55	QQ	V	
B) Tare Weight, grams	7.05	6.87	6.99	
C) Wet Soil + Tare, grams	114.33	114.08	176.88	
D) Dry Soil + Tare, grams	105.40	97.21	149.74	
E) Weight of Dry Soil, grams [D - B]	98.35	90.34	142.75	
F) Weight of Moisture, grams [C - D]	8.93	16.87	27.14	
G) Moisture Content, % [F * 100 / E] (based on oven-dried weight)	9.1	18.7	19.0	
H) Tare No.	G	L	Q	
I) Weight of Tare, grams	53.10	51.53	51.13	
J) Weight of Over-Dried Soil + Tare, grams	151.36	141.34	160.19	
K) Weight of Oven- Dried Soil, grams [J - I]	98.26	89.81	109.06	
L) Weight of Ignited Soil + Tare, grams	149.32	139.83	158.60	
M) Ash, grams [L - I]	96.22	88.30	107.47	
N) Ash Content, % [M *100 / K]	97.9	98.3	98.5	
O) Organic Matter, % [100 - N]	2.1	1.7	1.5	

Remarks: Furnace temperature set @ 440° C

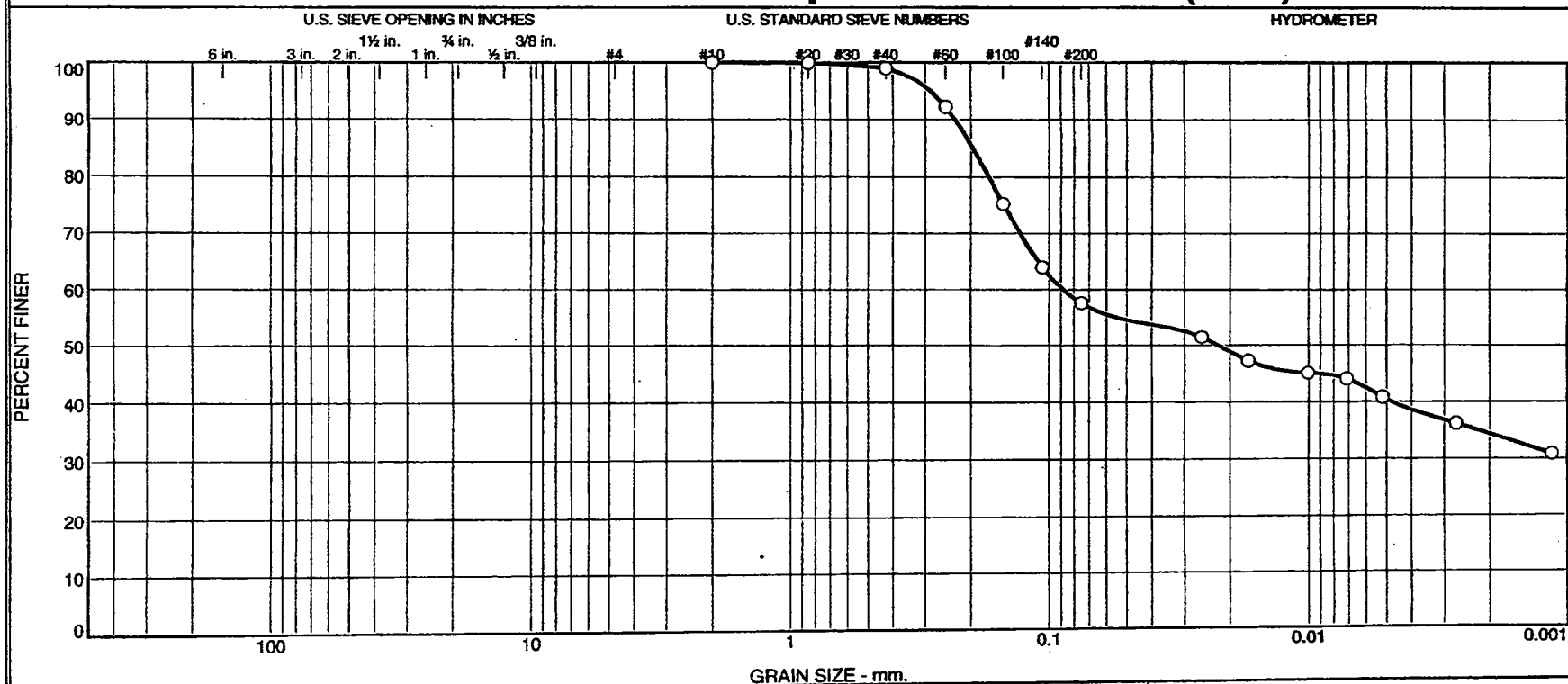
Equipment used:

oven: 5.1.16
scales: 3.1.19

muffle furnace 5.1.17

Soil Index Test Results – Test Pits

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



GRAIN SIZE DISTRIBUTION TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2310

Depth: 5.0'

Sample Number: Bulk-1

Material Description: Pale Yellow Sandy Lean CLAY

Date: 1/23/08

Natural Moisture: 13.7

Liquid Limit: 33

Plastic Limit: 15

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.687 (ASTM D854-06)

Organic Content = 0.8% (ASTM D2974-07)-S-2,5'

Natural Moisture and Organic Content were obtained from Jar Sample S-2, 5'

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
350.27	0.00	0.00	#10	0.00	100.0
94.98	0.00	0.00	#20	0.10	99.9
			#40	0.91	99.0
			#60	7.39	92.2
			#100	23.45	75.3
			#140	34.20	64.0
			#200	40.25	57.6

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 94.98

Hygroscopic moisture correction:

Moist weight and tare = 30.08

Dry weight and tare = 29.63

Tare weight = 15.13

Hygroscopic moisture = 3.1%

Table of composite correction values:

Temp., deg. C: 12.9 29.9

Comp. corr.: -8.0 -2.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.687

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	53.0	47.8	0.0133	54.0	7.4	0.0257	51.5
5.00	20.9	49.0	43.8	0.0133	50.0	8.1	0.0170	47.2
15.00	20.9	47.0	41.8	0.0133	48.0	8.4	0.0100	45.0
30.00	21.1	46.0	40.9	0.0133	47.0	8.6	0.0071	44.0
60.00	21.1	43.0	37.9	0.0133	44.0	9.1	0.0052	40.8
240.00	20.5	39.0	33.7	0.0134	40.0	9.7	0.0027	36.3
1440.00	20.5	34.0	28.7	0.0134	35.0	10.6	0.0011	30.9

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	1.0	41.4	42.4	17.2	40.4	57.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0222	0.0882	0.1705	0.1962	0.2299	0.2859

Fineness Modulus
0.29

MACTEC, Inc.

LIQUID AND PLASTIC LIMIT TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2310

Depth: 5.0'

Sample Number: Bulk-1

Material Description: Pale Yellow Sandy Lean CLAY

USCS: CL

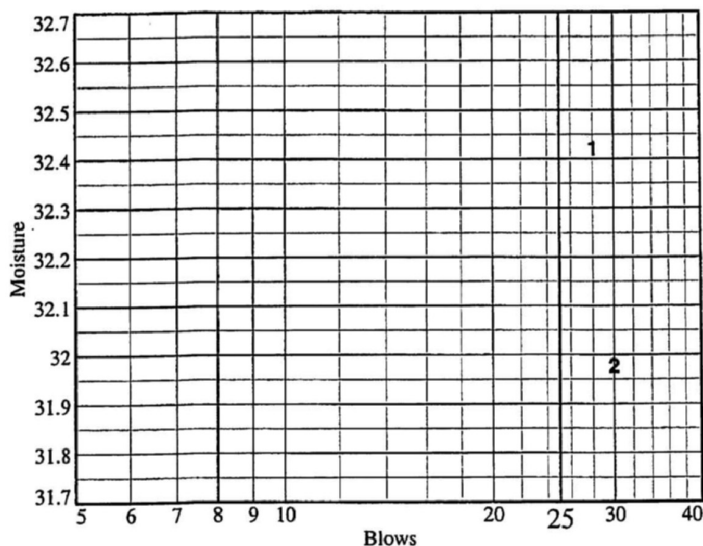
AASHTO: A-6(7)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.44	30.12				
Dry+Tare	29.81	26.58				
Tare	15.53	15.51				
# Blows	28	30				
Moisture	32.4	32.0				



Liquid Limit= 33
 Plastic Limit= 15
 Plasticity Index= 18
 Natural Moisture= 13.7
 Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	22.48	22.71		
Dry+Tare	21.54	21.76		
Tare	15.50	15.49		
Moisture	15.6	15.2		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
232.61	205.69	9.21	13.7

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: 2/18/08

SAMPLE IDENTIFICATION: TP-2310, BULK 1,5'

(A) Mass of oven-dried soil, grams:	75.36
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.47
(C) Mass of pycnometer, water and soil, grams:	703.79
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.9
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.688
(F) <i>Correction factor:</i>	0.99959
(G x F) SPECIFIC GRAVITY @ 20°C:	2.687

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-6

TESTED BY: CS

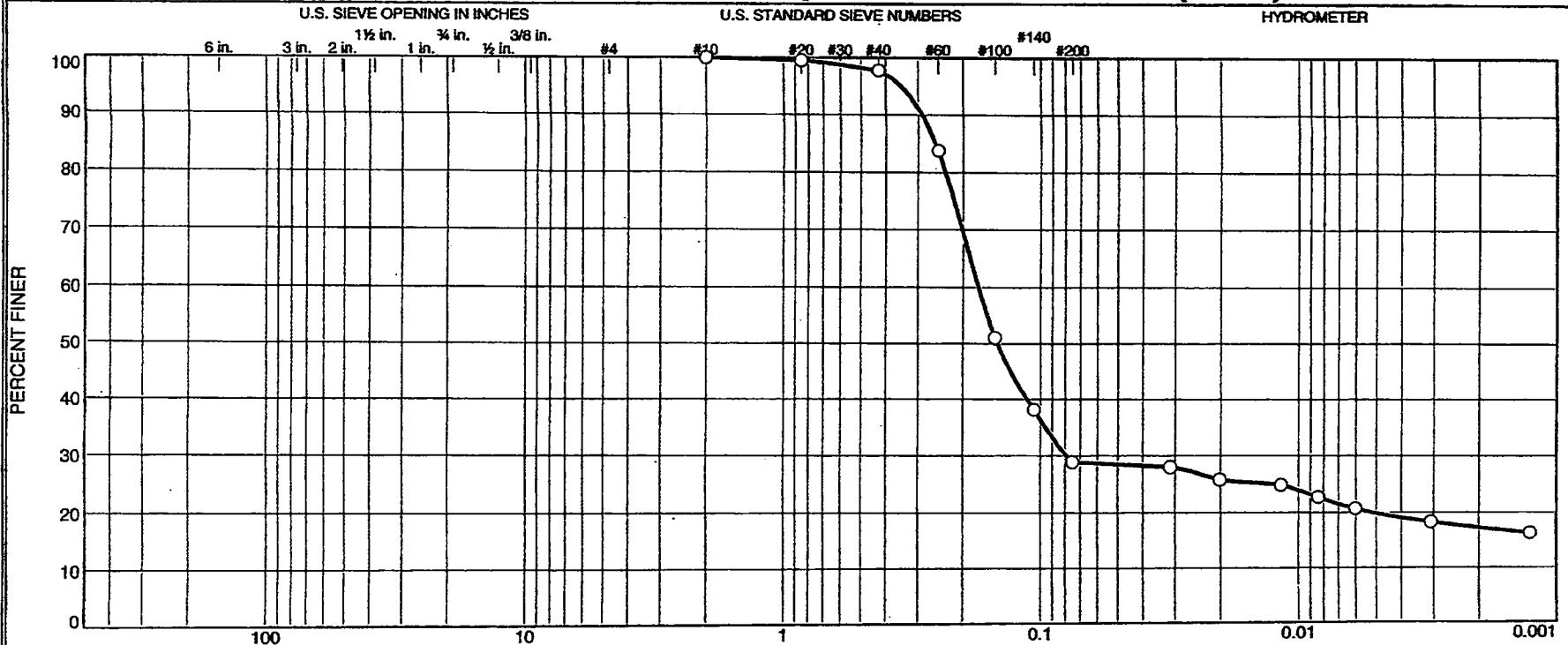
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REVIEWED BY:

Brian Johnson

DSC 3-4-08

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



GRAIN SIZE DISTRIBUTION TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2310

Depth: 10.0'

Sample Number: Bulk-2

Material Description: Olive Yellow Silty, Clayey SAND

Date: 1/23/08

Natural Moisture: 8.3

Liquid Limit: 24

Plastic Limit: 17

USCS Class.: SC-SM

Testing Remarks: Specific Gravity = 2.658 (ASTM D854-06)

Natural Moisture obtained from Jar Sample S-4, 10'

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
305.94	0.00	0.00	#10	0.00	100.0
96.91	0.00	0.00	#20	0.44	99.5
			#40	2.17	97.8
			#60	15.74	83.8
			#100	47.50	51.0
			#140	59.95	38.1
			#200	68.88	28.9

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 96.91

Hygroscopic moisture correction:

Moist weight and tare = 28.46

Dry weight and tare = 28.32

Tare weight = 15.83

Hygroscopic moisture = 1.1%

Table of composite correction values:

Temp., deg. C: 12.9 29.9

Comp. corr.: -8.0 -2.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.658

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	21.1	32.0	26.9	0.0134	33.0	10.9	0.0313	28.0
5.00	21.1	30.0	24.9	0.0134	31.0	11.2	0.0201	25.9
15.00	21.3	29.0	24.0	0.0134	30.0	11.4	0.0117	25.0
30.00	21.1	27.0	21.9	0.0134	28.0	11.7	0.0084	22.8
60.00	21.1	25.0	19.9	0.0134	26.0	12.0	0.0060	20.7
240.00	20.4	23.0	17.6	0.0135	24.0	12.4	0.0031	18.4
1440.00	20.6	21.0	15.7	0.0135	22.0	12.7	0.0013	16.4

MACTEC, Inc.

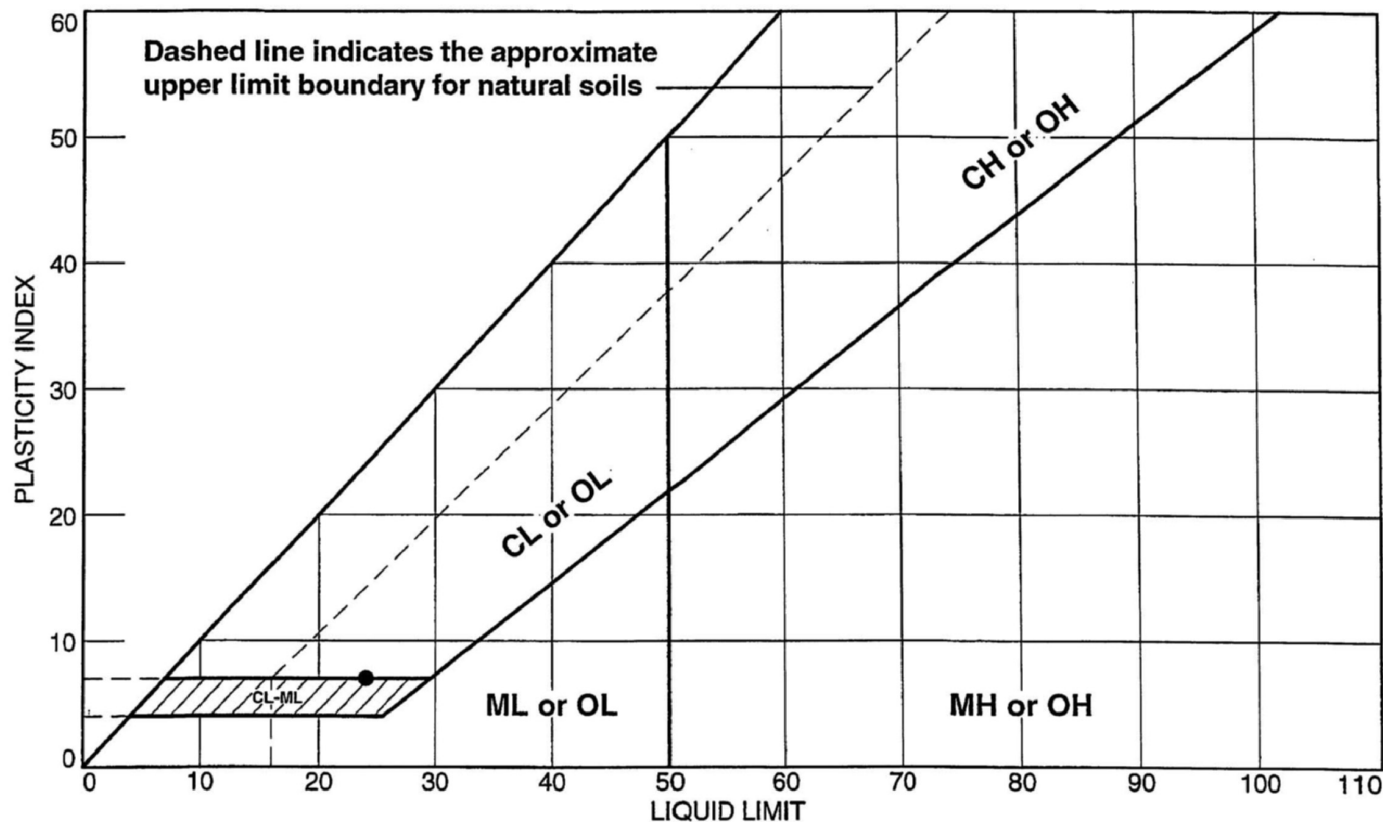
Fractural Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.2	68.9	71.1	9.0	19.9	28.9

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0051	0.0791	0.1471	0.1741	0.2340	0.2561	0.2881	0.3468

Fineness Modulus
0.59

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
•	TP-2310	Bulk-2	10.0'	8.3	17	24	7	SC-SM

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure NA

Tested By: CS

Checked By: LBJ

DSC 3-4-08

LIQUID AND PLASTIC LIMIT TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2310

Depth: 10.0'

Sample Number: Bulk-2

Material Description: Olive Yellow Silty, Clayey SAND

USCS: SC-SM

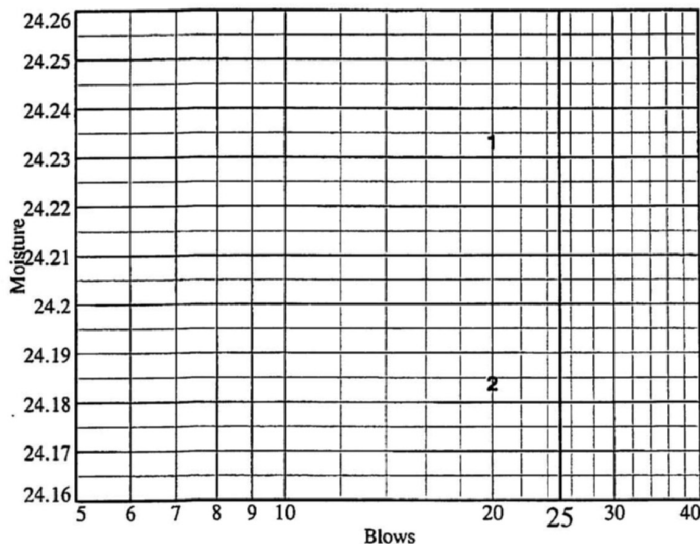
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.67	34.43				
Dry+Tare	28.51	30.80				
Tare	15.47	15.79				
# Blows	20	20				
Moisture	24.2	24.2				



Liquid Limit= 24
 Plastic Limit= 17
 Plasticity Index= 7
 Natural Moisture= 8.3
 Liquidity Index= -1.2

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	22.25	23.87		
Dry+Tare	21.31	22.65		
Tare	15.65	15.49		
Moisture	16.6	17.0		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
254.28	235.23	6.78	8.3

MACTEC, Inc.