

GRAIN SIZE DISTRIBUTION TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2335

Depth: 4.0-8.0

Sample Number: Bulk 2

Material Description: Pale Yellow Sandy Lean CLAY

Date: 1/20/08

Natural Moisture: 11.2

Liquid Limit: 37

Plastic Limit: 14

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.674 (ASTM D854-06)

Organic content = 3.9% (ASTM D2974-07)

Natural Moisture and Organic Content were obtained from Jar Sample S-3,6'

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
391.95	0.00	0.00	#4	0.00	100.0
			#10	0.01	100.0
48.99	0.00	0.00	#20	0.03	99.9
			#40	0.25	99.5
			#60	2.16	95.6
			#100	9.17	81.3
			#140	16.62	66.1
			#200	22.74	53.6

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 48.99

Hygroscopic moisture correction:

Moist weight and tare = 29.23

Dry weight and tare = 28.95

Tare weight = 15.88

Hygroscopic moisture = 2.1%

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 = 2.674

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	21.3	25.0	20.0	0.0133	26.0	12.0	0.0327	41.4
5.00	21.3	24.0	19.0	0.0133	25.0	12.2	0.0208	39.3
15.00	21.4	23.0	18.0	0.0133	24.0	12.4	0.0121	37.3
30.00	21.4	22.0	17.0	0.0133	23.0	12.5	0.0086	35.3
60.00	21.4	21.0	16.0	0.0133	22.0	12.7	0.0061	33.2
249.00	21.4	20.0	15.0	0.0133	21.0	12.9	0.0030	31.1
1440.00	20.9	19.0	13.8	0.0134	20.0	13.0	0.0013	28.7

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	0.5	45.9	46.4	21.3	32.3	53.6

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0020	0.0652	0.0911	0.1454	0.1655	0.1938	0.2414

Fineness Modulus
0.21

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**: Clayey Low Plasticity (above the lower boundary line, below the upper boundary line, and to the left of the vertical line at LL = 50).
- CH or OH**: Clayey High Plasticity (above the upper boundary line).
- ML or OL**: Silty Low Plasticity (below the lower boundary line, to the left of the vertical line at LL = 50).
- MH or OH**: Silty High Plasticity (below the lower boundary line, to the right of the vertical line at LL = 50).

A dashed line indicates the approximate upper limit boundary for natural soils. A point is plotted at LL ≈ 38 and PI ≈ 23, which is classified as **CL or OL**.

DCN# EXE812

LIQUID AND PLASTIC LIMIT TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2335

Depth: 4.0-8.0

Sample Number: Bulk 2

Material Description: Pale Yellow Sandy Lean CLAY

USCS: CL

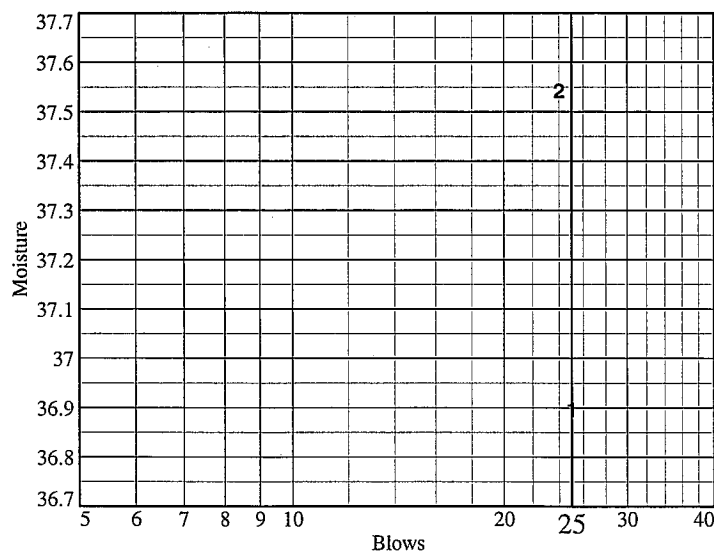
AASHTO: A-6(9)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.64	35.16				
Dry+Tare	28.74	29.78				
Tare	15.46	15.45				
# Blows	25	24				
Moisture	36.9	37.5				



Liquid Limit= 37
 Plastic Limit= 14
 Plasticity Index= 23
 Natural Moisture= 11.2
 Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	24.04	18.47			
Dry+Tare	23.02	17.54			
Tare	15.59	11.13			
Moisture	13.7	14.5			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
240.99	217.68	9.16	11.2

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: 2/24/08

SAMPLE IDENTIFICATION: TP-2335 BULK 2,4-8'

(A) Mass of oven-dried soil, grams:	50.23
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.70
(C) Mass of pycnometer, water and soil, grams:	687.15
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.675
(F) <i>Correction factor:</i>	0.99972
(G x F) SPECIFIC GRAVITY @ 20°C:	2.674

MATERIAL TESTED:

☒ X

- # 4

☐

- # 10

PREPARATION METHOD:

☒ X

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-3

TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 3-4-08

Particle Size Distribution Report / ASTM D 6913-04e1

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% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.5	73.7	24.8	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-2335	Bulk 3	8.0-10.0	1/20/08	SM	Pale Yellow Silty SAND(Visual)	7.3	ND	ND

Client Bechtel
 Project Exelon Texas COL (Victoria)
 Project No. 6468071777

MACTEC, Inc.
Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
 Specific Gravity = 2.656 (ASTM D854-06)
 ND = Not Determined
 Natural Moisture was obtained from Jar Sample S-4,10'

Tested By: CS

Checked By: LBJ

DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: TP-2335

Depth: 8.0-10.0

Sample Number: Bulk 3

Material Description: Pale Yellow Silty SAND(Visual)

Date: 1/20/08

Natural Moisture: 7.3

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: SM

Testing Remarks: SIEVE ANALYSIS ONLY

Specific Gravity = 2.656 (ASTM D854-06)

ND = Not Determined

Natural Moisture was 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
342.27	0.00	0.00	#10	0.00	100.0
101.08	0.00	0.00	#20	0.72	99.3
			#40	1.55	98.5
			#60	8.96	91.1
			#100	50.36	50.2
			#140	68.71	32.0
			#200	76.04	24.8

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 101.09

Hygroscopic moisture correction:

Moist weight and tare = 28.27

Dry weight and tare = 28.12

Tare weight = 15.53

Hygroscopic moisture = 1.2%

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 = 2.656

Hydrometer type = 152H

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

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	1.5	73.7	75.2			24.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0989	0.1496	0.1691	0.2126	0.2269	0.2449	0.3141

Fineness Modulus
0.57

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: 2/25/08

SAMPLE IDENTIFICATION: TP-2335 BULK 3,8-10'

(A) Mass of oven-dried soil, grams:	75.03
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.53
(C) Mass of pycnometer, water and soil, grams:	703.32
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.657
(F) Correction factor:	0.99972
(G x F) SPECIFIC GRAVITY @ 20°C:	2.656

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

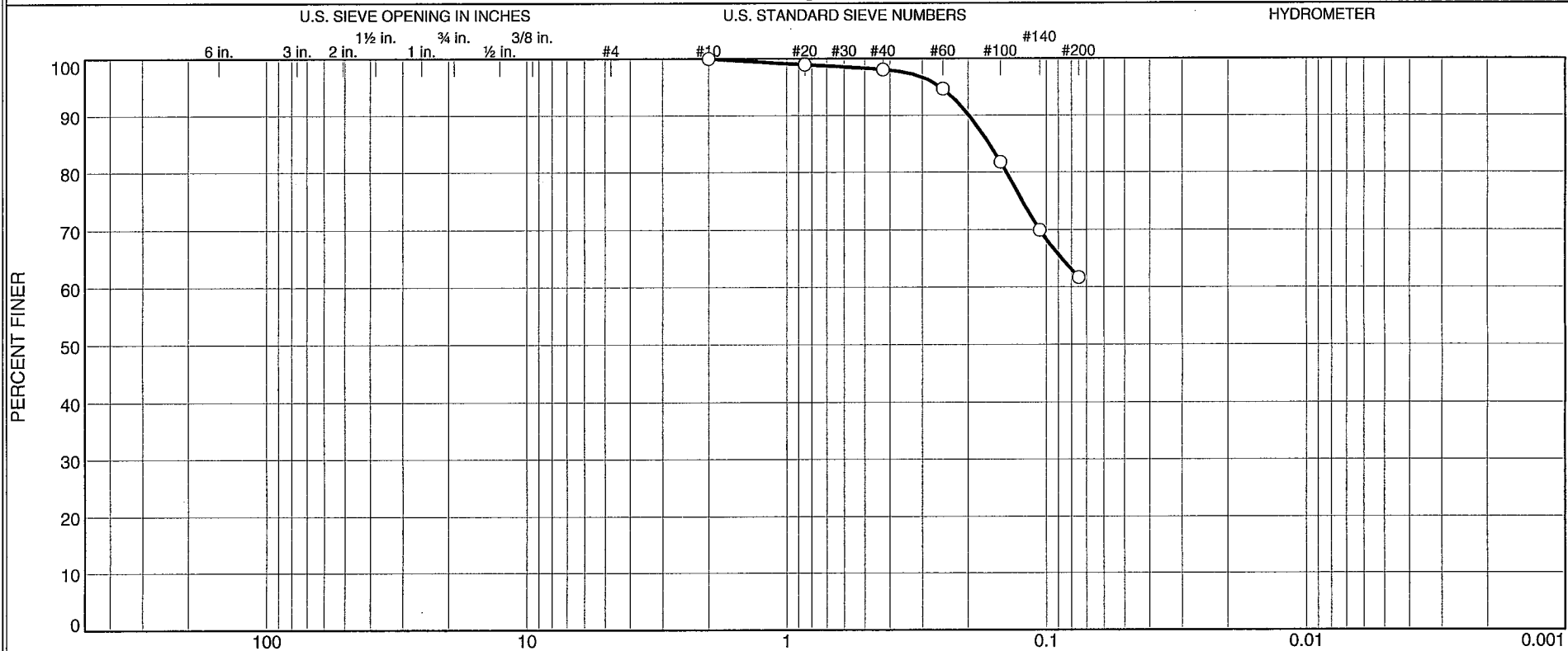
TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 3-4-08

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



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.9	36.4	61.7	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-2337	Bulk 1	4.0-5.0	1/20/08	CL	Gray Sandy Lean CLAY (Visual)	18.7	ND	ND

Client Bechtel		MACTEC, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY Specific Gravity = 2.663 (ASTM D854-06) Organic Content = 3.1 % (ASTM D2974-07), 4' Natural Moisture and Organic Content were obtained from Jar Sample S-2,4'
Project Exelon Texas COL (Victoria Reservoir)				
Project No. 6468071777	Figure <i>NA</i>			

Tested By: CS

Checked By: LBJ

DSC 3-4-08

GRAIN SIZE DISTRIBUTION TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2337

Depth: 4.0-5.0

Sample Number: Bulk 1

Material Description: Gray Sandy Lean CLAY (Visual)

Date: 1/20/08

Natural Moisture: 18.7

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: CL

Testing Remarks: SIEVE ANALYSIS ONLY

Specific Gravity = 2.663 (ASTM D854-06)

Organic Content = 3.1 % (ASTM D2974-07), 4'

Natural Moisture and Organic Content were obtained from Jar Sample S-2,4'

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
269.49	0.00	0.00	#10	0.00	100.0
99.91	0.00	0.00	#20	1.03	99.0
			#40	1.89	98.1
			#60	5.25	94.7
			#100	18.26	81.7
			#140	30.02	70.0
			#200	38.27	61.7

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	1.9	36.4	38.3			61.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.1427	0.1659	0.1980	0.2544

Fineness Modulus
0.24

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: 2/13/08

SAMPLE IDENTIFICATION: TP-2337 BULK 1,4-5'

(A) Mass of oven-dried soil, grams:	51.46
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.50
(C) Mass of pycnometer, water and soil, grams:	688.64
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.6
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.664
(F) <i>Correction factor:</i>	0.99966
(G x F) SPECIFIC GRAVITY @ 20°C:	2.663

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Sandy Lean CLAY (CL)-Visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-6

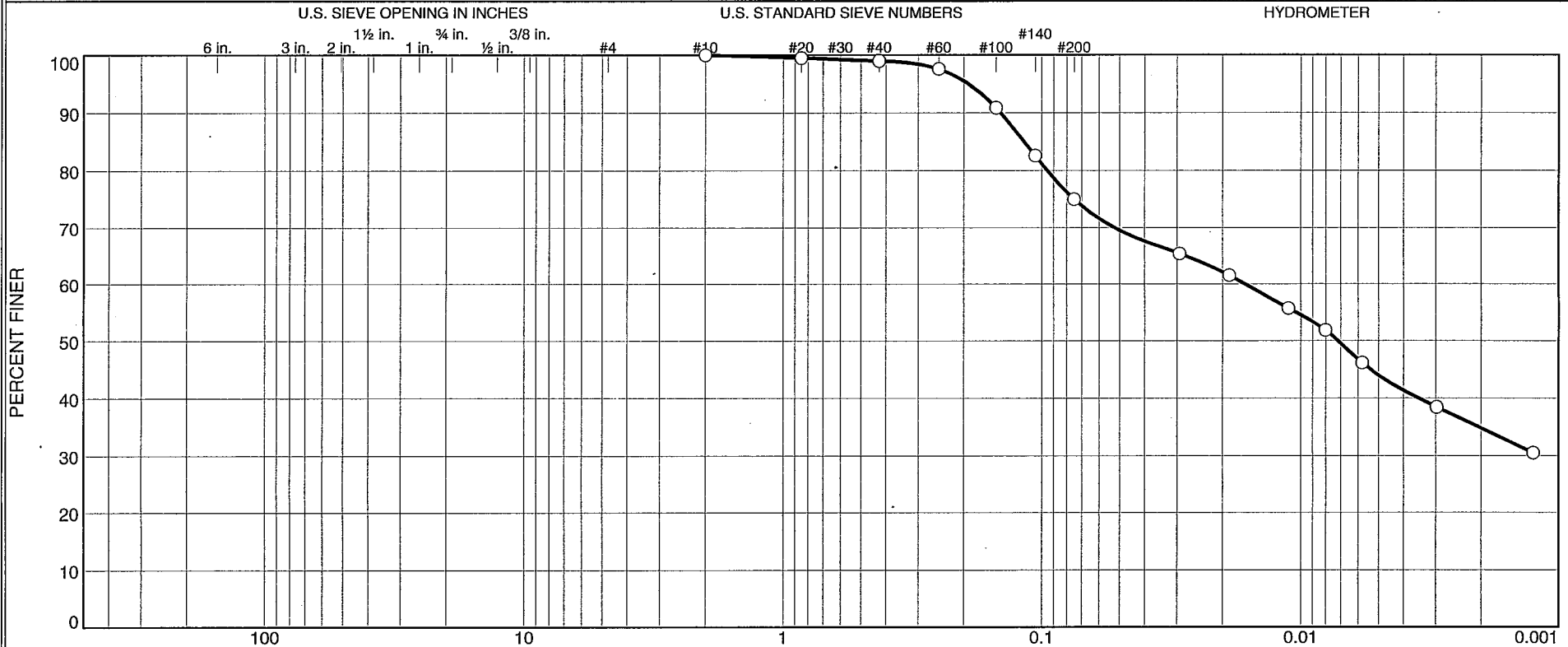
TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 3-4-08

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	1.0	24.0	31.0	44.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-2337	Bulk 2	10.0'	1/20/08	CL	Light Gray with Brownish Yellow Lean CLAY with sand	17.2	41	16

Client Bechtel	MACTEC, Inc. Raleigh, North Carolina	Specific Gravity = 2.686 (ASTM D854-06) Natural Moisture was obtained from Jar Sample S-4,10'
Project Exelon Texas COL (Victoria Reservoir)		
Project No. 6468071777		

Tested By: CS Checked By: LBJ DSC 3-4-08

GRAIN SIZE DISTRIBUTION TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2337

Depth: 10.0'

Sample Number: Bulk 2

Material Description: Light Gray with Brownish Yellow Lean CLAY with sand

Date: 1/20/08

Natural Moisture: 17.2

Liquid Limit: 41

Plastic Limit: 16

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.686 (ASTM D854-06)

Natural Moisture was 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
278.54	0.00	0.00	#10	0.00	100.0
53.00	0.00	0.00	#20	0.27	99.5
			#40	0.54	99.0
			#60	1.28	97.6
			#100	4.84	90.9
			#140	9.25	82.5
			#200	13.25	75.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 53.00

Hygroscopic moisture correction:

Moist weight and tare = 28.16

Dry weight and tare = 27.81

Tare weight = 15.53

Hygroscopic moisture = 2.9%

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 = 2.686

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	21.3	39.0	34.0	0.0133	40.0	9.7	0.0293	65.4
5.00	21.3	37.0	32.0	0.0133	38.0	10.1	0.0188	61.5
15.00	21.2	34.0	28.9	0.0133	35.0	10.6	0.0112	55.7
30.00	21.2	32.0	26.9	0.0133	33.0	10.9	0.0080	51.8
60.00	21.4	29.0	24.0	0.0133	30.0	11.4	0.0058	46.2
240.00	21.4	25.0	20.0	0.0133	26.0	12.0	0.0030	38.5
1440.00	21.0	21.0	15.9	0.0133	22.0	12.7	0.0013	30.5

MACTEC, Inc.

Fractional Components

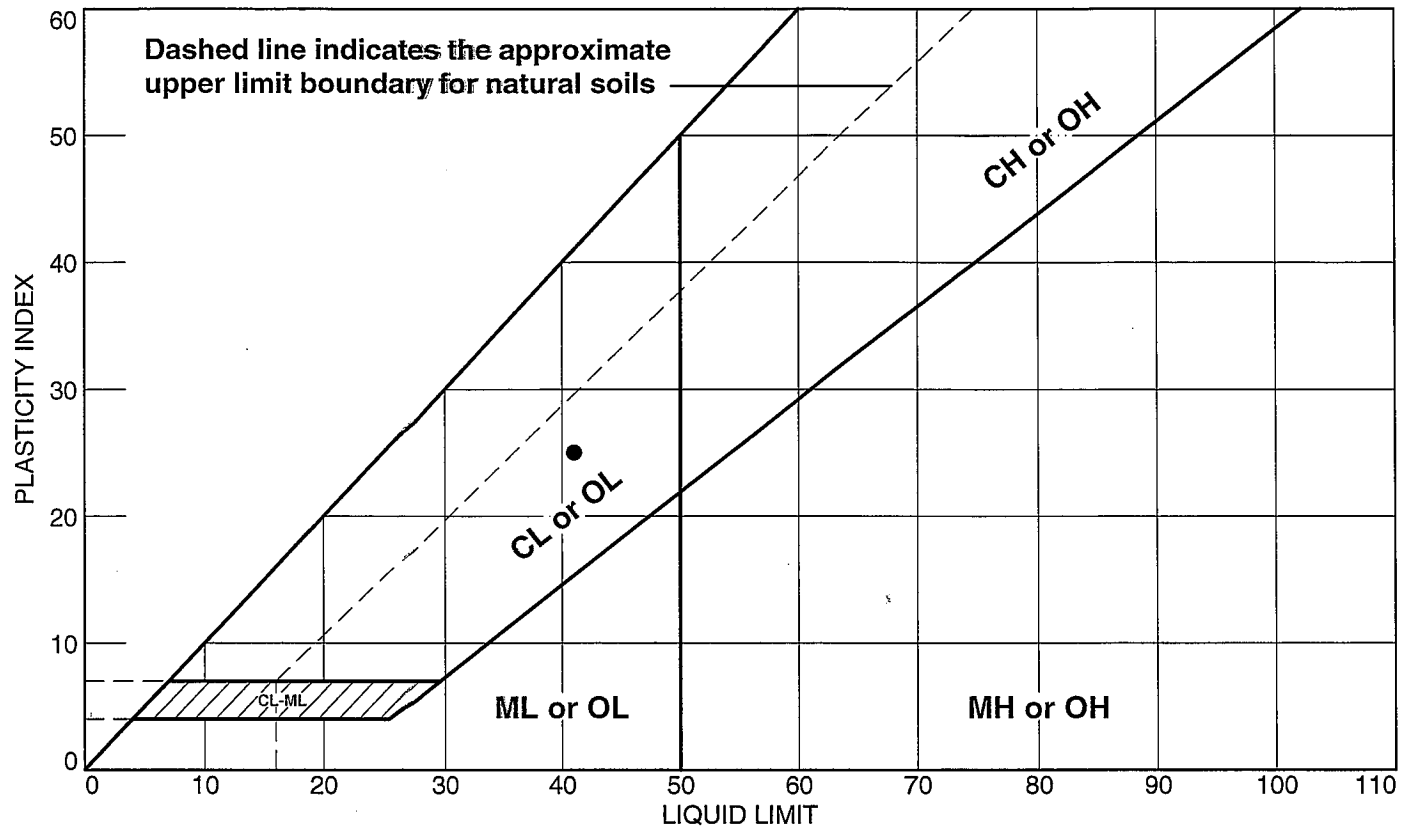
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.0	24.0	25.0	31.0	44.0	75.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0072	0.0164	0.0953	0.1169	0.1440	0.1917

Fineness Modulus
0.12

MACTEC, 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
•	TP-2337	Bulk 2	10.0'	17.2	16	41	25	CL

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-2337

Depth: 10.0'

Sample Number: Bulk 2

Material Description: Light Gray with Brownish Yellow Lean CLAY with sand

USCS: CL

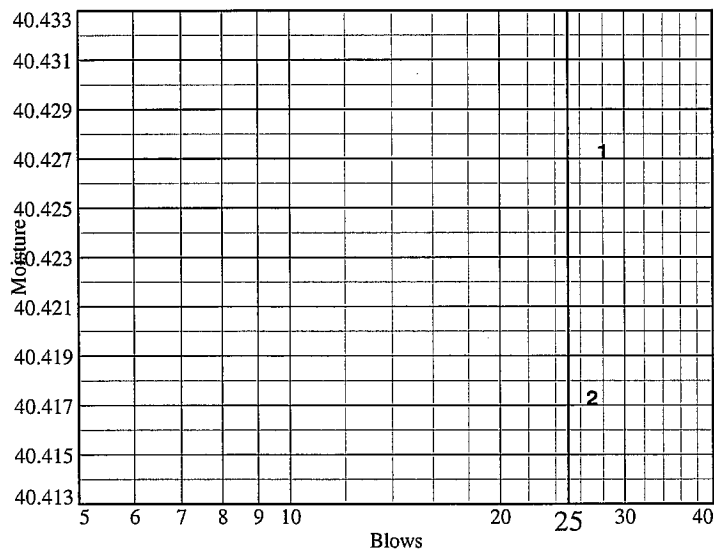
AASHTO: A-7-6(17)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.59	33.63				
Dry+Tare	27.67	28.40				
Tare	15.50	15.46				
# Blows	28	27				
Moisture	40.4	40.4				



Liquid Limit= 41
 Plastic Limit= 16
 Plasticity Index= 25
 Natural Moisture= 17.2
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	22.82	21.93		
Dry+Tare	21.82	21.07		
Tare	15.48	15.59		
Moisture	15.8	15.7		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
231.07	198.53	9.66	17.2

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: 2/27/08

SAMPLE IDENTIFICATION: TP-2337 BULK 2,10'

(A) Mass of oven-dried soil, grams:	49.36
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.43
(C) Mass of pycnometer, water and soil, grams:	687.42
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.2
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.687
(F) Correction factor:	0.99952
(G x F) SPECIFIC GRAVITY @ 20°C:	2.686

MATERIAL TESTED:

☒ X

- # 4

☐

- # 10

PREPARATION METHOD:

☒ X

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

PYCNOMETER : P-6

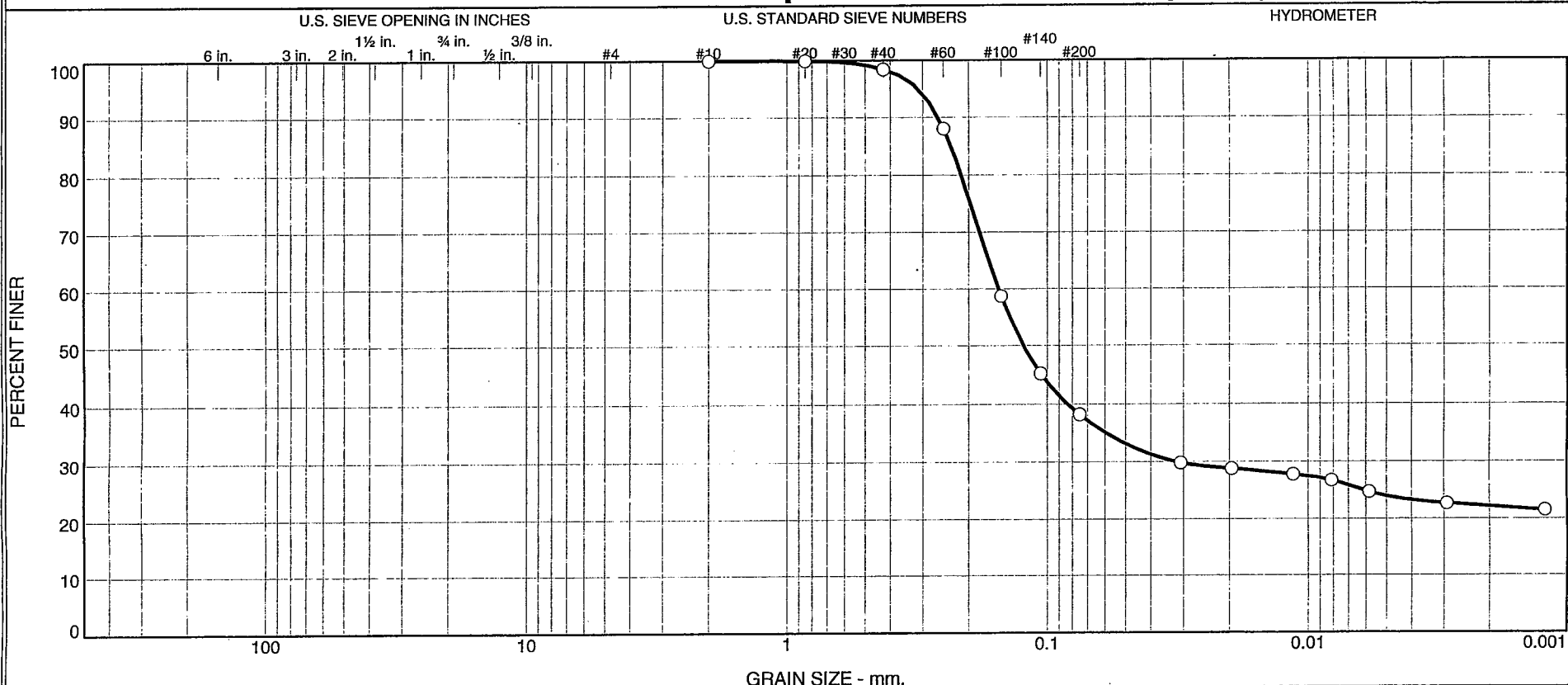
TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 3-4-08

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	1.5	60.3	14.3	23.9

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-2351	Bulk 2	3.5-10.0	1/21/08	SC	Pale Yellow Clayey SAND	13.0	29	13

Client Bechtel		MACTEC, Inc.	○ Specific gravity = 2.664 (ASTM D854-06) Organic Content = 1.1% (ASTM D2974-07) Natural Moisture and Organic Content were obtained from Jar Sample S-2,4'
Project Exelon Texas COL (Victoria Reservoir)			
Project No. 6468071777	Figure <i>NA</i>	Raleigh, North Carolina	

Tested By: CS

Checked By: LBJ

DSC 3-4-08

GRAIN SIZE DISTRIBUTION TEST DATA

3/4/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: TP-2351

Depth: 3.5-10.0

Sample Number: Bulk 2

Material Description: Pale Yellow Clayey SAND

Date: 1/21/08

Natural Moisture: 13.0

Liquid Limit: 29

Plastic Limit: 13

USCS Class.: SC

Testing Remarks: Specific gravity = 2.664 (ASTM D854-06)

Organic Content = 1.1% (ASTM D2974-07)

Natural Moisture and Organic Content were obtained from Jar Sample S-2,4'

Tested by: CS

Checked by: LBJ

Sieve Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
315.72	0.00	0.00	#10	0.00	100.0
98.01	0.00	0.00	#20	0.06	99.9
			#40	1.48	98.5
			#60	11.73	88.0
			#100	40.48	58.7
			#140	53.73	45.2
			#200	60.53	38.2

Hydrometer Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 98.01

Hygroscopic moisture correction:

Moist weight and tare = 29.42

Dry weight and tare = 29.24

Tare weight = 15.59

Hygroscopic moisture = 1.3%

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 = 2.664

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	21.3	34.0	29.0	0.0134	35.0	10.6	0.0307	29.8
5.00	21.3	33.0	28.0	0.0134	34.0	10.7	0.0196	28.8
15.00	21.3	32.0	27.0	0.0134	33.0	10.9	0.0114	27.8
30.00	21.3	31.0	26.0	0.0134	32.0	11.0	0.0081	26.8
60.00	21.3	29.0	24.0	0.0134	30.0	11.4	0.0058	24.7
245.00	21.4	27.0	22.0	0.0134	28.0	11.7	0.0029	22.7
1440.00	21.0	26.0	20.9	0.0134	27.0	11.9	0.0012	21.5

MACTEC, Inc.

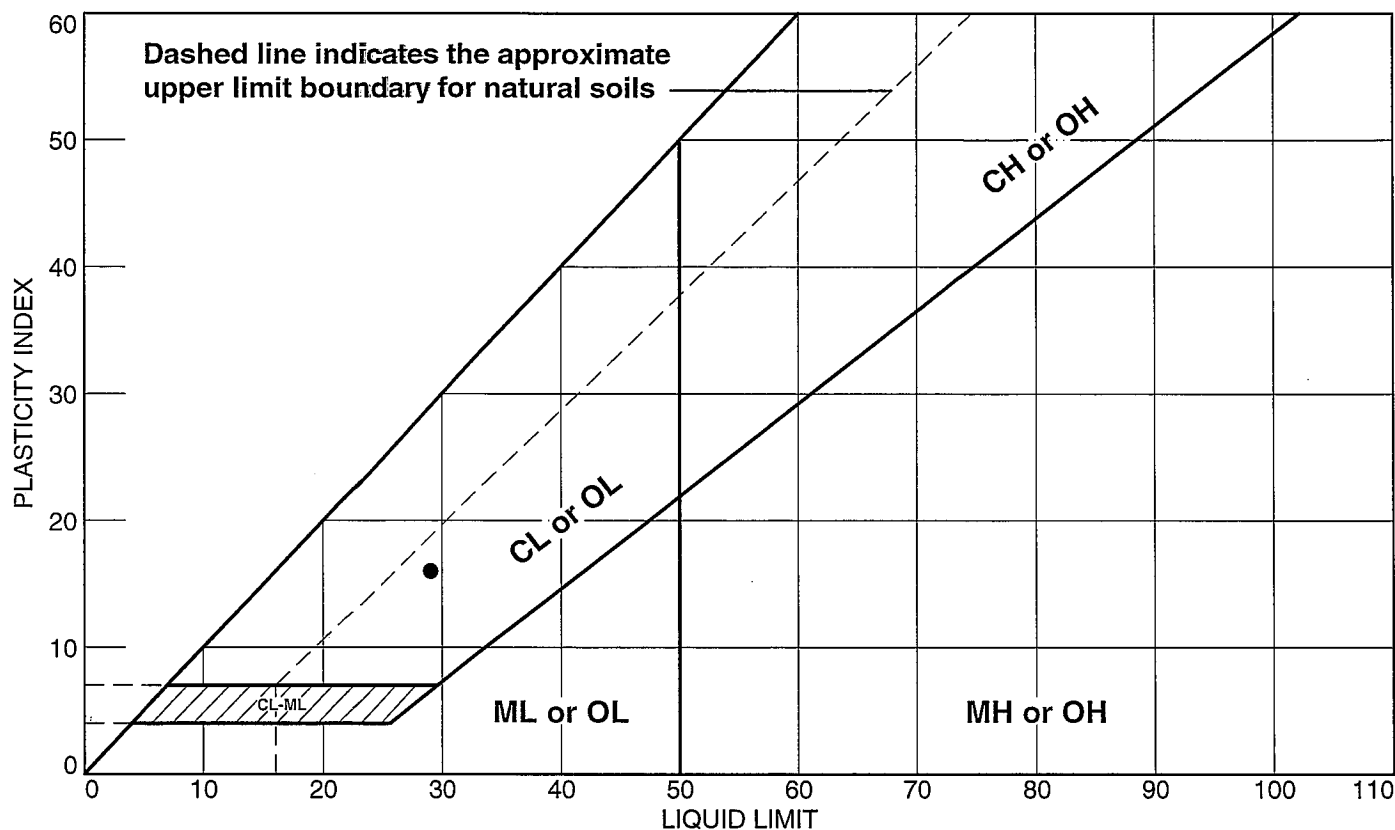
Gravel Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.5	60.3	61.8	14.3	23.9	38.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0319	0.1233	0.1537	0.2140	0.2345	0.2624	0.3129

Fineness Modulus
0.48

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-2351	Bulk 2	3.5-10.0	13.0	13	29	16	SC

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-2351

Depth: 3.5-10.0

Sample Number: Bulk 2

Material Description: Pale Yellow Clayey SAND

USCS: SC

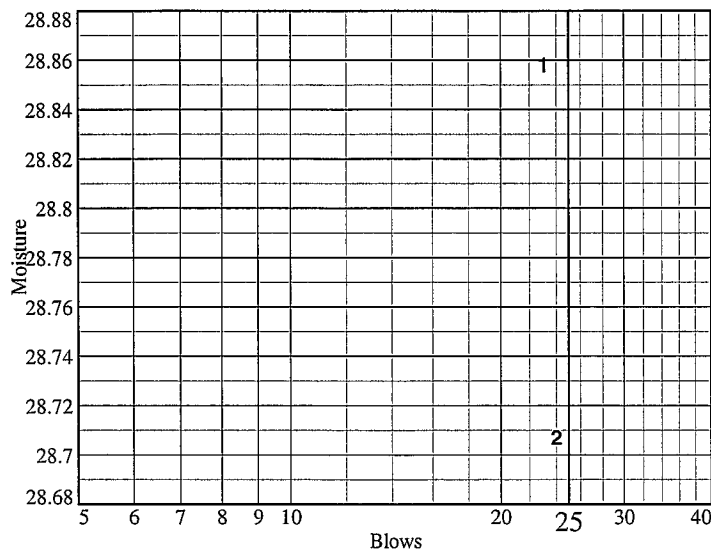
AASHTO: A-6(2)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	36.01	35.75				
Dry+Tare	31.41	31.22				
Tare	15.47	15.44				
# Blows	23	24				
Moisture	28.9	28.7				



Liquid Limit= 29
 Plastic Limit= 13
 Plasticity Index= 16
 Natural Moisture= 13.0
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	22.95	22.62		
Dry+Tare	22.09	21.75		
Tare	15.46	15.45		
Moisture	13.0	13.8		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
253.80	225.76	9.31	13.0

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: 2/27/08

SAMPLE IDENTIFICATION: TP-2351 BULK 2, 3.5-10'

(A) Mass of oven-dried soil, grams:	75.13
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.70
(C) Mass of pycnometer, water and soil, grams:	702.64
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.665
(F) <i>Correction factor:</i>	0.99972
(G x F) SPECIFIC GRAVITY @ 20°C:	2.664

MATERIAL TESTED:

☒ X
- # 4

☐
- # 10

PREPARATION METHOD:

☒ X
DRY

☐
WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100
Clayey SAND (SC)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-3

TESTED BY: CS

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

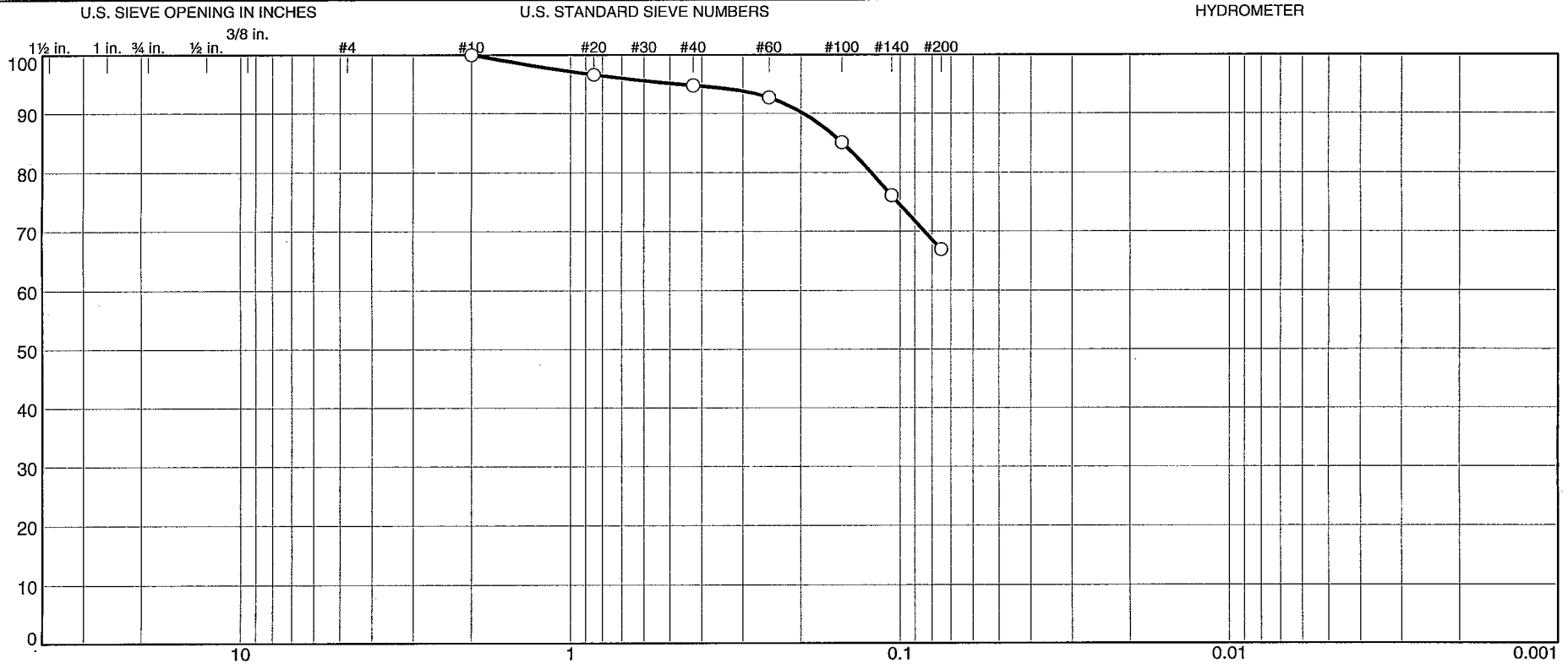
REVIEWED BY: Brian Johnson

DSC 3-4-08

Particle Size Distribution Report / ASTM D 6913-04e1

Volume 3 Rev. 1 - 9/2/2008

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% Gravel		% Sand			% Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	5.2	27.9	66.9	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
TP-2352	Bulk 1	4.0-5.0	1/31/08	CL	Dark Gray with Brownish Yellow Sandy Lean CLAY (Visual)	17.0	ND	ND

Client Bechtel		MACTEC, Inc.	Raleigh, North Carolina	○ SIEVE ANALYSIS ONLY Specific Gravity = 2.664 (ASTM D854-06) Organic Content = 1.4% (ASTM D2974-07) ND = Not Determined Natural Moisture and Organic Content were obtained from Jar Sample S-2,4-5'
Project Exelon Texas COL (Victoria)				
Project No. 6468071777	Figure <i>NA</i>			

Tested By: CS Checked By: LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: TP-2352

Depth: 4.0-5.0

Sample Number: Bulk 1

Material Description: Dark Gray with Brownish Yellow Sandy Lean CLAY (Visual)

Date: 1/31/08

Natural Moisture: 17.0

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: CL

Testing Remarks: SIEVE ANALYSIS ONLY

Specific Gravity = 2.664 (ASTM D854-06)

Organic Content = 1.4% (ASTM D2974-07)

ND = Not Determined

Natural Moisture and Organic Content were obtained from Jar Sample S-2,4-5'

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
457.77	0.00	0.00	#10	0.00	100.0
101.34	0.00	0.00	#20	3.42	96.6
			#40	5.29	94.8
			#60	7.37	92.7
			#100	15.12	85.1
			#140	24.16	76.2
			#200	33.54	66.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	5.2	27.9	33.1			66.9

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
						0.1222	0.1495	0.1962	0.4722

Fineness Modulus
0.28

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: 2/26/08

SAMPLE IDENTIFICATION: TP-2352 BULK 1,4-5'

(A) Mass of oven-dried soil, grams:	50.29
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.53
(C) Mass of pycnometer, water and soil, grams:	687.95
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.665
(F) <i>Correction factor:</i>	0.99972
(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) - 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 3-4-08

Organic Content – Test Pits



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777
 Tested By CS
 Test Date 2/19/2008

Project Name Exelon COL
 Reviewed By LBJ DSC
 Review Date 2/29/2008 3-4-08

Boring No.	TP-2310	TP-2310	TP-2310	TP-2310
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	0.0-1.0	5	7.5	10.0
A) Tare No.	SS	F-1	80	JJ
B) Tare Weight, grams	6.88	9.21	6.67	6.78
C) Wet Soil + Tare, grams	237.96	232.61	157.75	254.28
D) Dry Soil + Tare, grams	204.16	205.69	137.87	235.23
E) Weight of Dry Soil, grams [D - B]	197.28	196.48	131.20	228.45
F) Weight of Moisture, grams [C - D]	33.80	26.92	19.88	19.05
G) Moisture Content, % [F * 100 / E]	17.1	13.7	15.2	8.3
(based on oven-dried weight)				
H) Tare No.	9	H		
I) Weight of Tare, grams	53.88	52.09		
J) Weight of Over-Dried Soil + Tare, grams	174.25	172.53		
K) Weight of Oven- Dried Soil, grams [J - I]	120.37	120.44		
L) Weight of Ignited Soil + Tare, grams	172.26	171.52		
M) Ash, grams [L - I]	118.38	119.43		
N) Ash Content, % [M *100 / K]	98.3	99.2		
O) Organic Matter, % [100 - N]	1.7	0.8		

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 2/19/2008

Project Name Exelon COL
Reviewed By LBJ DSC
Review Date 2/29/2008 3-4-08

Boring No.	TP-2314	TP-2314	TP-2314	TP-2314
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	0.0-1.0	5.0	7.0	10.0
A) Tare No.	511	JP-16	305	317
B) Tare Weight, grams	9.51	6.80	9.51	9.34
C) Wet Soil + Tare, grams	205.77	183.25	242.76	207.10
D) Dry Soil + Tare, grams	177.40	153.77	205.35	170.49
E) Weight of Dry Soil, grams [D - B]	167.89	146.97	195.84	161.15
F) Weight of Moisture, grams [C - D]	28.37	29.48	37.41	36.61
G) Moisture Content, % [F * 100 / E]	16.9	20.1	19.1	22.7
(based on oven-dried weight)				
H) Tare No.	S	Q		
I) Weight of Tare, grams	53.45	51.15		
J) Weight of Over-Dried Soil + Tare, grams	167.45	158.35		
K) Weight of Oven- Dried Soil, grams [J - I]	114.00	107.20		
L) Weight of Ignited Soil + Tare, grams	165.92	151.18		
M) Ash, grams [L - I]	112.47	100.03		
N) Ash Content, % [M *100 / K]	98.7	93.3		
O) Organic Matter, % [100 - N]	1.3	6.7		

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 2/19/2008

Project Name Exelon COL
 Reviewed By LBJ D SC
 Review Date 2/29/2008 3-4-08

Boring No.	TP-2317	TP-2317	TP-2317	TP-2317
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	1.0	3.5-5.0	5.0-8.0	8.0-10.0
A) Tare No.	84	H	81	519
B) Tare Weight, grams	6.63	6.54	6.68	9.16
C) Wet Soil + Tare, grams	182.39	208.21	151.37	202.36
D) Dry Soil + Tare, grams	156.17	175.89	131.00	178.74
E) Weight of Dry Soil, grams [D - B]	149.54	169.35	124.32	169.58
F) Weight of Moisture, grams [C - D]	26.22	32.32	20.37	23.62
G) Moisture Content, % [F * 100 / E]	17.5	19.1	16.4	13.9
(based on oven-dried weight)				
H) Tare No.	H	S		
I) Weight of Tare, grams	52.13	53.41		
J) Weight of Over-Dried Soil + Tare, grams	146.31	162.46		
K) Weight of Oven- Dried Soil, grams [J - I]	94.18	109.05		
L) Weight of Ignited Soil + Tare, grams	142.61	160.13		
M) Ash, grams [L - I]	90.48	106.72		
N) Ash Content, % [M *100 / K]	96.1	97.9		
O) Organic Matter, % [100 - N]	3.9	2.1		

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 2/19/2008

Project Name Exelon COL
Reviewed By LBJ DSC
Review Date 2/29/2008 3-4-08

Boring No.	TP-2319	TP-2319	TP-2319	TP-2319
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	1.0	3.5-5.0	6.5	10.0
A) Tare No.	Orange	T	LL	JP-23
B) Tare Weight, grams	9.19	6.74	6.80	6.74
C) Wet Soil + Tare, grams	257.13	207.41	174.25	188.03
D) Dry Soil + Tare, grams	228.50	184.24	154.95	171.87
E) Weight of Dry Soil, grams [D - B]	219.31	177.50	148.15	165.13
F) Weight of Moisture, grams [C - D]	28.63	23.17	19.30	16.16
G) Moisture Content, % $[F * 100 / E]$	13.1	13.1	13.0	9.8
(based on oven-dried weight)				
H) Tare No.	S	Q		
I) Weight of Tare, grams	53.46	51.18		
J) Weight of Over-Dried Soil + Tare, grams	148.70	157.62		
K) Weight of Oven- Dried Soil, grams [J - I]	95.24	106.44		
L) Weight of Ignited Soil + Tare, grams	147.70	154.75		
M) Ash, grams [L - I]	94.24	103.57		
N) Ash Content, % $[M * 100 / K]$	99.0	97.3		
O) Organic Matter, % $[100 - N]$	1.0	2.7		

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 2/19/2008

Project Name Exelon COL
 Reviewed By LBJ DSC
 Review Date 3/1/2008 3-4-08

Boring No.	TP-2320	TP-2320	TP-2320	TP-2320
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	1.0	4.0	5.0-10.0	10.0
A) Tare No.	B	2B	B-1	319
B) Tare Weight, grams	6.67	9.39	9.24	9.26
C) Wet Soil + Tare, grams	214.17	114.37	183.27	160.85
D) Dry Soil + Tare, grams	177.86	100.53	164.63	148.00
E) Weight of Dry Soil, grams [D - B]	171.19	91.14	155.39	138.74
F) Weight of Moisture, grams [C - D]	36.31	13.84	18.64	12.85
G) Moisture Content, % $[F * 100 / E]$	21.2	15.2	12.0	9.3
(based on oven-dried weight)				
H) Tare No.	9	H	N	
I) Weight of Tare, grams	53.89	52.07	55.58	
J) Weight of Over-Dried Soil + Tare, grams	146.58	138.74	143.91	
K) Weight of Oven- Dried Soil, grams [J - I]	92.69	86.67	88.33	
L) Weight of Ignited Soil + Tare, grams	144.03	137.13	141.58	
M) Ash, grams [L - I]	90.14	85.06	86.00	
N) Ash Content, % $[M * 100 / K]$	97.2	98.1	97.4	
O) Organic Matter, % $[100 - N]$	2.8	1.9	2.6	

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 2/19/2008

Project Name Exelon COL
Reviewed By LBJ DSC
Review Date 3/1/2008 3-4-08

Boring No.	TP-2321	TP-2321	TP-2321	TP-2321
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	1.0	4.0	7.0	10.0
A) Tare No.	DIP	HH	JP-12	VV
B) Tare Weight, grams	9.17	6.82	6.73	6.77
C) Wet Soil + Tare, grams	208.49	202.51	176.61	166.84
D) Dry Soil + Tare, grams	162.25	176.58	153.15	146.99
E) Weight of Dry Soil, grams [D - B]	153.08	169.76	146.42	140.22
F) Weight of Moisture, grams [C - D]	46.24	25.93	23.46	19.85
G) Moisture Content, % [F * 100 / E]	30.2	15.3	16.0	14.2
(based on oven-dried weight)				
H) Tare No.	G	L		
I) Weight of Tare, grams	53.10	51.53		
J) Weight of Over-Dried Soil + Tare, grams	153.41	167.36		
K) Weight of Oven- Dried Soil, grams [J - I]	100.31	115.83		
L) Weight of Ignited Soil + Tare, grams	146.52	163.20		
M) Ash, grams [L - I]	93.42	111.67		
N) Ash Content, % [M *100 / K]	93.1	96.4		
O) Organic Matter, % [100 - N]	6.9	3.6		

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

Project Name Exelon COL

Tested By CS

Reviewed By LBJ

DSC

Test Date 2/19/2008

Review Date 3/1/2008

3-4-08

Boring No.	TP-2332	TP-2332	TP-2332	TP-2332	TP-2332
Sample No.	S-1	S-5	S-2	S-3	S-4
Sample Depth, Ft.	2.0	2.5	5.0	7.0	10.0
A) Tare No.	SS	BB	JP-11	L	P
B) Tare Weight, grams	6.90	9.47	6.95	9.17	6.85
C) Wet Soil + Tare, grams	244.81	135.37	133.40	171.92	159.85
D) Dry Soil + Tare, grams	216.65	115.35	119.37	155.92	148.94
E) Weight of Dry Soil, grams [D - B]	209.75	105.88	112.42	146.75	142.09
F) Weight of Moisture, grams [C - D]	28.16	20.02	14.03	16.00	10.91
G) Moisture Content, % $[F * 100 / E]$	13.4	18.9	12.5	10.9	7.7
(based on oven-dried weight)					
H) Tare No.	R	N	R		
I) Weight of Tare, grams	52.49	55.59	52.49		
J) Weight of Over-Dried Soil + Tare	154.09	162.21	155.94		
K) Weight of Oven- Dried Soil, gram	101.60	106.62	103.45		
L) Weight of Ignited Soil + Tare, gra	153.10	158.60	154.00		
M) Ash, grams [L - I]	100.61	103.01	101.51		
N) Ash Content, % $[M * 100 / K]$	99.0	96.6	98.1		
O) Organic Matter, % $[100 - N]$	1.0	3.4	1.9		

Remarks: Furnace temperature set @ 440° C

Equipment used:

oven: 5.1.16 muffle furna 5.1.17
scales: 3.1.19



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777

Project Name Exelon COL

Tested By CS

Reviewed By LBJ

DSC

Test Date 2/19/2008

Review Date 3/1/2008

3-4-08

Boring No.	TP-2334	TP-2334	TP-2334	TP-2334
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	1.0	2.0-5.0	7.0	10.0
A) Tare No.	Purple	516	I	JP-15
B) Tare Weight, grams	9.33	9.44	9.10	6.87
C) Wet Soil + Tare, grams	198.96	174.67	138.32	188.22
D) Dry Soil + Tare, grams	171.81	153.34	121.28	167.39
E) Weight of Dry Soil, grams [D - B]	162.48	143.90	112.18	160.52
F) Weight of Moisture, grams [C - D]	27.15	21.33	17.04	20.83
G) Moisture Content, % $[F * 100 / E]$	16.7	14.8	15.2	13.0
(based on oven-dried weight)				
H) Tare No.	H	Q		
I) Weight of Tare, grams	52.08	51.14		
J) Weight of Over-Dried Soil + Tare	148.71	147.42		
K) Weight of Oven- Dried Soil, gram	96.63	96.28		
L) Weight of Ignited Soil + Tare, gram	146.80	143.27		
M) Ash, grams [L - I]	94.72	92.13		
N) Ash Content, % $[M * 100 / K]$	98.0	95.7		
O) Organic Matter, % $[100 - N]$	2.0	4.3		

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 2/19/2008

Project Name Exelon COL
 Reviewed By LBJ DSC
 Review Date 3/1/2008 3-4-08

Boring No.	TP-2335	TP-2335	TP-2335	TP-2335
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	2.0	4.0	6.0	10.0
A) Tare No.	81	514	DIP	2B
B) Tare Weight, grams	6.67	9.18	9.16	9.38
C) Wet Soil + Tare, grams	212.94	186.25	240.99	225.48
D) Dry Soil + Tare, grams	174.66	163.34	217.68	210.80
E) Weight of Dry Soil, grams [D - B]	167.99	154.16	208.52	201.42
F) Weight of Moisture, grams [C - D]	38.28	22.91	23.31	14.68
G) Moisture Content, % $[F * 100 / E]$	22.8	14.9	11.2	7.3
(based on oven-dried weight)				
H) Tare No.	S	9	9	
I) Weight of Tare, grams	53.43	53.88	53.88	
J) Weight of Over-Dried Soil + Tare	154.32	154.87	157.70	
K) Weight of Oven- Dried Soil, gram	100.89	100.99	103.82	
L) Weight of Ignited Soil + Tare, gram	152.11	152.78	153.67	
M) Ash, grams [L - I]	98.68	98.90	99.79	
N) Ash Content, % $[M * 100 / K]$	97.8	97.9	96.1	
O) Organic Matter, % $[100 - N]$	2.2	2.1	3.9	

Remarks: Furnace temperature set @ 440° C

Equipment used:

oven: 5.1.16 muffle furna 5.1.17
 scales: 3.1.19



ORGANIC CONTENT TEST REPORT

(ASTM D2974-07)

Project No. 6468071777
Tested By CS
Test Date 2/19/2008

Project Name Exelon COL
Reviewed By LBJ DSC
Review Date 3/1/2008 3-4-08

Boring No.	TP-2337	TP-2337	TP-2337	TP-2337
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	1.0	4.0	7.0	10.0
A) Tare No.	P	JP-11	JP-15	BB
B) Tare Weight, grams	6.83	6.88	6.88	9.66
C) Wet Soil + Tare, grams	234.57	235.03	214.28	231.07
D) Dry Soil + Tare, grams	194.36	199.09	182.92	198.53
E) Weight of Dry Soil, grams [D - B]	187.53	192.21	176.04	188.87
F) Weight of Moisture, grams [C - D]	40.21	35.94	31.36	32.54
G) Moisture Content, % [F * 100 / E]	21.4	18.7	17.8	17.2
(based on oven-dried weight)				
H) Tare No.	Q	S	Q	
I) Weight of Tare, grams	51.15	53.42	51.15	
J) Weight of Over-Dried Soil + Tare, grams	150.55	142.39	151.55	
K) Weight of Oven- Dried Soil, grams [J - I]	99.40	88.97	100.40	
L) Weight of Ignited Soil + Tare, grams	147.54	139.60	147.22	
M) Ash, grams [L - I]	96.39	86.18	96.07	
N) Ash Content, % [M *100 / K]	97.0	96.9	95.7	
O) Organic Matter, % [100 - N]	3.0	3.1	4.3	

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 2/19/2008

Project Name Exelon COL
Reviewed By LBJ DSC
Review Date 3/1/2008 3-4-08

Boring No.	TP-2351	TP-2351	TP-2351	TP-2351
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	1.0	4.0	6.0	3.5-10.0
A) Tare No.	305	CHIP	VV	JJ
B) Tare Weight, grams	9.66	9.31	6.75	6.80
C) Wet Soil + Tare, grams	239.30	253.80	214.64	239.74
D) Dry Soil + Tare, grams	184.74	225.76	199.86	224.63
E) Weight of Dry Soil, grams [D - B]	175.08	216.45	193.11	217.83
F) Weight of Moisture, grams [C - D]	54.56	28.04	14.78	15.11
G) Moisture Content, % [F * 100 / E]	31.2	13.0	7.7	6.9
(based on oven-dried weight)				
H) Tare No.	H	9		
I) Weight of Tare, grams	52.10	53.86		
J) Weight of Over-Dried Soil + Tare, grams	145.13	148.73		
K) Weight of Oven- Dried Soil, grams [J - I]	93.03	94.87		
L) Weight of Ignited Soil + Tare, grams	139.84	147.72		
M) Ash, grams [L - I]	87.74	93.86		
N) Ash Content, % [M *100 / K]	94.3	98.9		
O) Organic Matter, % [100 - N]	5.7	1.1		

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 2/19/2008

Project Name Exelon COL
Reviewed By LBJ DSC
Review Date 3/1/2008 3-4-08

Boring No.	TP-2352	TP-2352	TP-2352	TP-2352
Sample No.	S-1	S-2	S-3	S-4
Sample Depth, Ft.	1.0	4.0-5.0	7.0	10.0
A) Tare No.	JP-23	80	LL	BB
B) Tare Weight, grams	6.74	6.66	6.78	9.66
C) Wet Soil + Tare, grams	159.46	181.11	232.78	231.07
D) Dry Soil + Tare, grams	131.45	155.72	155.28	198.53
E) Weight of Dry Soil, grams [D - B]	124.71	149.06	148.50	188.87
F) Weight of Moisture, grams [C - D]	28.01	25.39	77.50	32.54
G) Moisture Content, % $[F * 100 / E]$	22.5	17.0	21.9	17.2
(based on oven-dried weight)				
H) Tare No.	Q	S	H	
I) Weight of Tare, grams	51.16	53.42	52.04	
J) Weight of Over-Dried Soil + Tare, grams	125.52	161.26	151.63	
K) Weight of Oven- Dried Soil, grams [J - I]	74.36	107.84	99.59	
L) Weight of Ignited Soil + Tare, grams	123.79	159.77	148.26	
M) Ash, grams [L - I]	72.63	106.35	96.22	
N) Ash Content, % $[M * 100 / K]$	97.7	98.6	96.6	
O) Organic Matter, % $[100 - N]$	2.3	1.4	3.4	

Remarks: Furnace temperature set @ 440° C

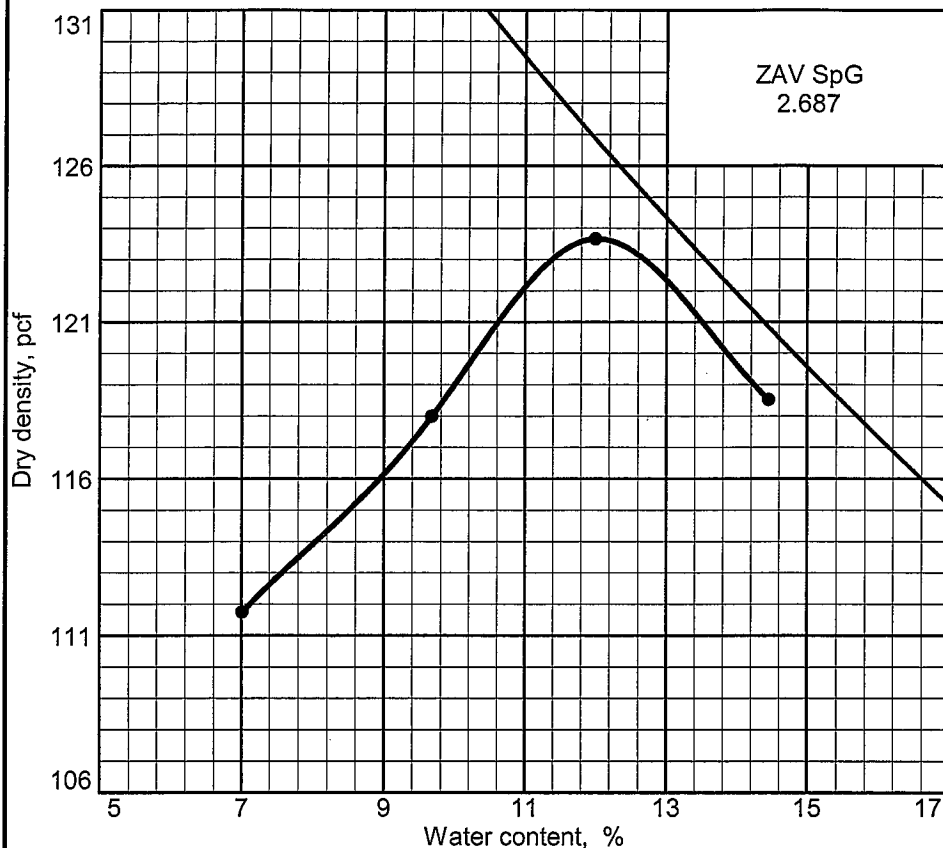
Equipment used:

oven: 5.1.16
scales: 3.1.19

muffle furnace 5.1.17

Modified Proctor Compaction Tests – Test Pits

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP- 2310 B1

Test Specification:

ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.

Test Performed on Material

Passing No.4 Sieve

NM 13.7 LL 33 PI 18

Sp.G. (ASTM D 854) 2.687

%>No.4 0.0 %<No.200 57.6

USCS CL AASHTO A-6(7)

Date Sampled 1/23/08

Date Tested 2/28/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6006.7	6154.7	6291.6	6248.6		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	545.30	556.60	617.90	690.40		
WD + T #1	510.00	508.10	552.40	604.10		
TARE #1	6.60	6.90	6.70	7.00		
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	7.0	9.7	12.0	14.5		
DRY DENSITY	111.7	118.0	123.7	118.5		

TEST RESULTS

Maximum dry density = 123.5 pcf

Optimum moisture = 12.0 %

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

● Source: TP-2310 Sample No.: Bulk-1 Elev./Depth: 5.0'

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Pale Yellow Sandy Lean CLAY

Remarks:

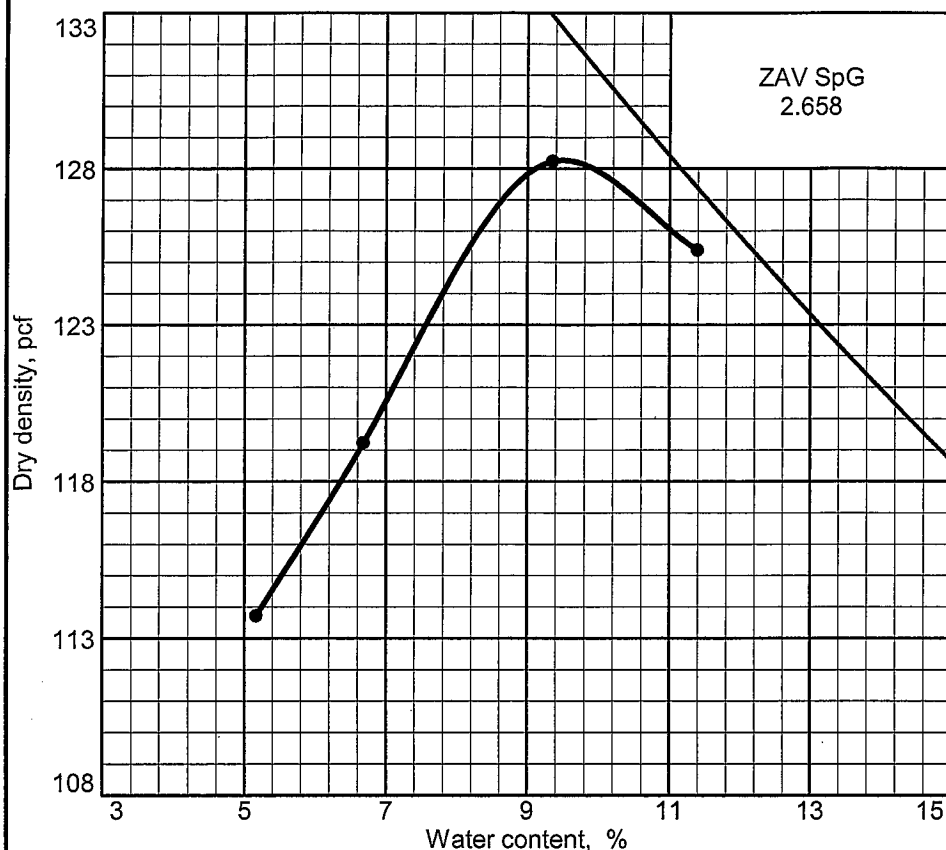
Natural Moisture obtained from Jar Sample S-2,5'

Checked by: LBJ

Title: LAB MANAGER

Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2310 B2

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 Sieve

NM 8.3 LL 24 PI 7
Sp.G. (ASTM D 854) 2.658
%>No.4 0.0 %<No.200 28.9
USCS SC-SM AASHTO A-2-4(0)
Date Sampled 1/23/08
Date Tested 2/28/08
Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6005.2	6119.7	6315.7	6307.3		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	547.60	530.50	557.70	701.20		
WD + T #1	521.00	497.70	510.60	630.20		
TARE #1	6.30	6.80	7.10	6.90		
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	5.2	6.7	9.4	11.4		
DRY DENSITY	113.7	119.2	128.2	125.4		

TEST RESULTS

Maximum dry density = 128.5 pcf
Optimum moisture = 9.5 %

Material Description

Olive Yellow Silty, Clayey SAND

Remarks:

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

Project No. 6468071777 Client: Bechtel
Project: Exelon Texas COL (Victoria)

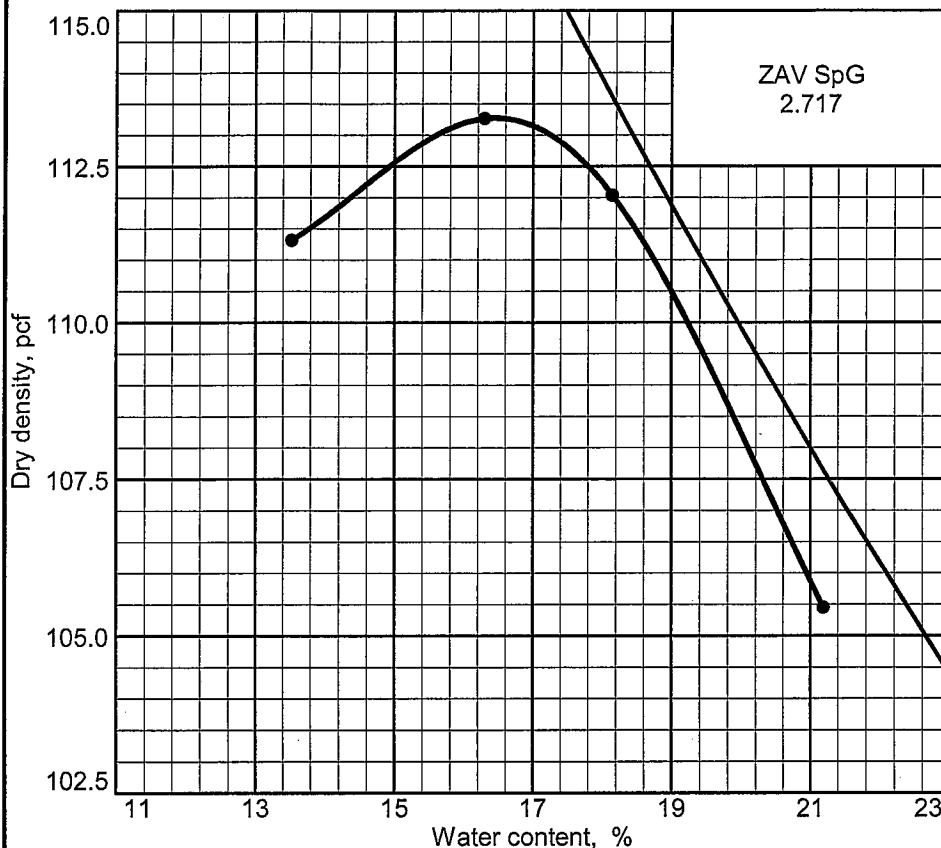
● Source: TP-2310 Sample No.: Bulk-2 Elev./Depth: 10.0'

MACTEC, Inc.
Raleigh, North Carolina

Checked by: LBJ
Title: LAB MANAGER

DSC
4-2-08
Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2314 B2

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 **Sieve**
NM 22.7 **LL** 54 **PI** 31
Sp.G. (ASTM D 854) 2.717
%>No.4 0.0 **%<No.200** 95.7
USCS CH **AASHTO** A-7-6(33)
Date Sampled 1/22/08
Date Tested 2/28/08
Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6107.3	6187.8	6197.4	6128.7		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	543.80	577.10	760.70	604.70		
WD + T #1	479.80	497.20	644.90	500.10		
TARE #1	6.80	6.90	6.70	6.60		
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	13.5	16.3	18.1	21.2		
DRY DENSITY	111.3	113.3	112.0	105.4		

TEST RESULTS

Maximum dry density = 113.5 pcf
 Optimum moisture = 16.5 %

Project No. 6468071777 **Client:** Bechtel
Project: Exelon Texas COL (Victoria)

● **Source:** TP-2314 **Sample No.:** Bulk-2 **Elev./Depth:** 5.0-10.0'

MACTEC, Inc.
Raleigh, North Carolina

Material Description

Light Yellowish Brown Fat CLAY

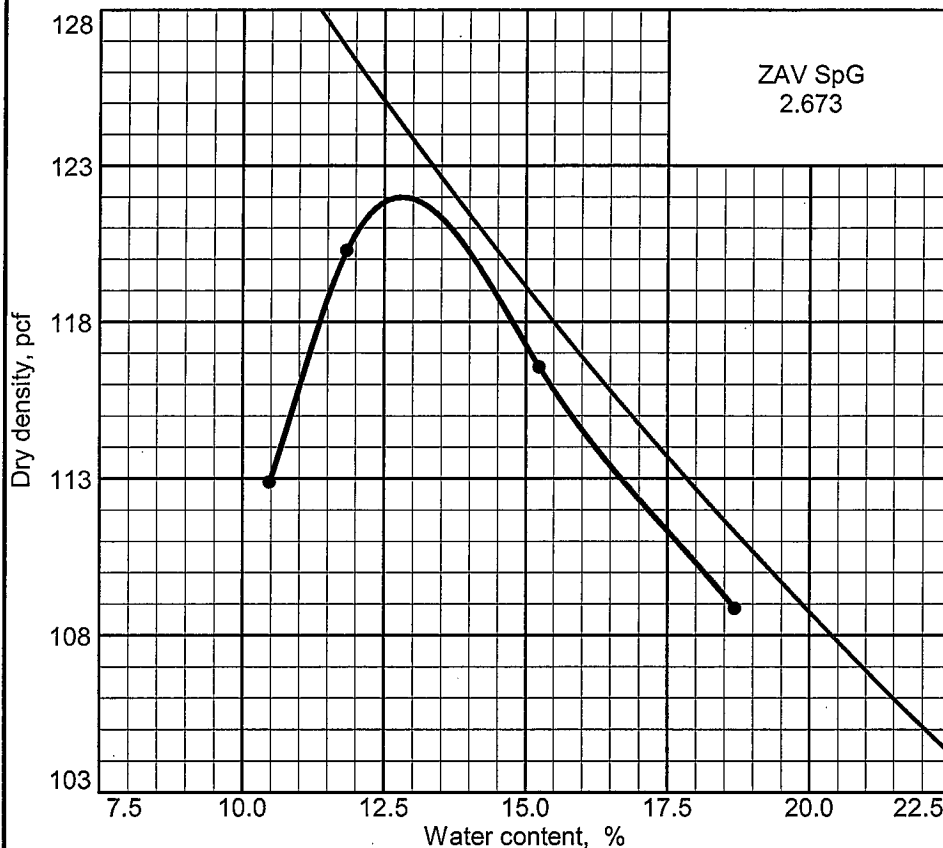
Remarks:

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

Checked by: LBJ
Title: LAB MANAGER

DSC
 4-2-08
 Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2317 B1

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method DRY
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 Sieve

NM 19.1 LL 48 PI 24
Sp.G. (ASTM D 854) 2.673

%>No.4 0.0 %<No.200 69.0

USCS CL AASHTO A-7-6(16)

Date Sampled 1/22/08

Date Tested 2/28/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6082.4	6229.8	6226.8	6149.7		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	685.80	829.40	695.10	631.90		
WD + T #1	621.40	742.30	604.10	533.50		
TARE #1	6.70	6.80	6.90	6.80		
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	10.5	11.8	15.2	18.7		
DRY DENSITY	112.9	120.3	116.6	108.9		

TEST RESULTS

Maximum dry density = 122.0 pcf

Optimum moisture = 13.0 %

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

● Source: TP-2317 Sample No.: Bulk-1 Elev./Depth: 3.0-5.0'

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Gray Sandy Lean CLAY

Remarks:

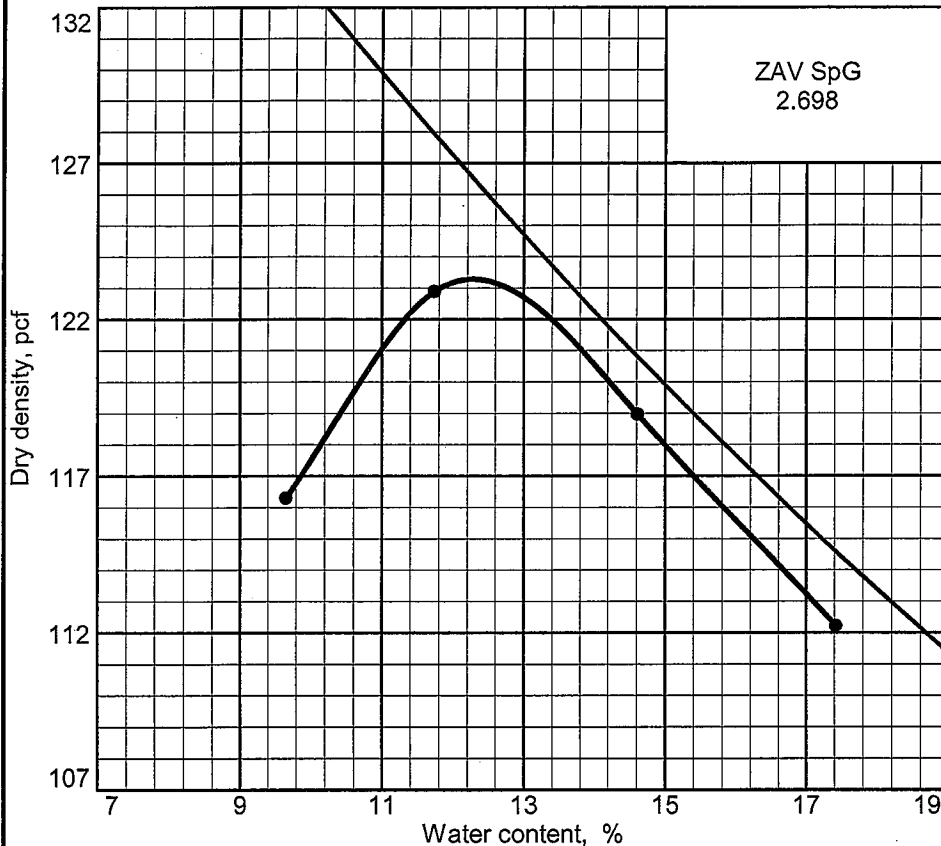
Natural Moisture obtained from Jar Sample S-2,3.5-5.0'

Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2317 B2

Test Specification:

ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.

Test Performed on Material

Passing No.4 Sieve

NM 16.4 LL 45 PI 28

Sp.G. (ASTM D 854) 2.698

%>No.4 0.0 %<No.200 79.5

USCS CL AASHTO A-7-6(22)

Date Sampled 1/22/08

Date Tested 2/28/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6124.6	6271.8	6257.4	6188.5		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	572.80	822.50	685.40	680.50		
WD + T #1	522.90	736.80	598.90	580.60		
TARE #1	6.20	6.70	7.00	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	9.7	11.7	14.6	17.4		
DRY DENSITY	116.3	122.9	119.0	112.2		

TEST RESULTS

Maximum dry density = 123.5 pcf

Optimum moisture = 12.5 %

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

● Source: TP-2317

Sample No.: Bulk-2

Elev./Depth: 5.0-10.0

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Pale Yellow Lean CLAY with sand

Remarks:

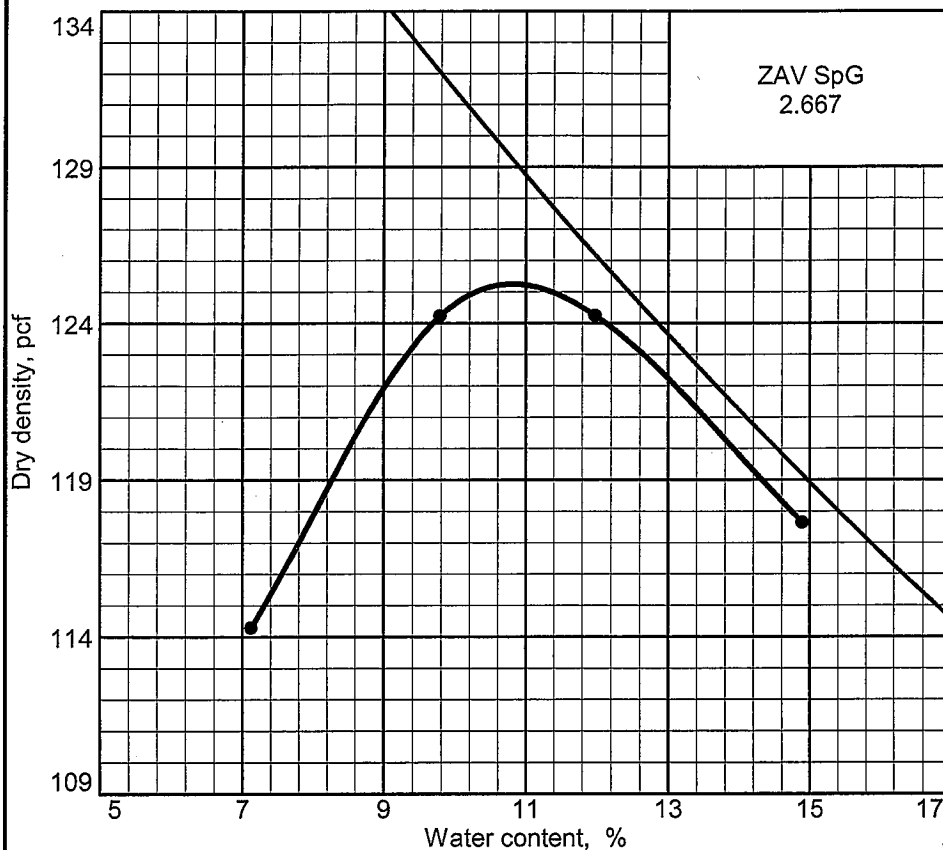
Natural Moisture obtained from Jar Sample S-3 5.0-8.0'

Checked by: LBJ

Title: LAB MANAGER

Figure N/A

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2319 B2

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 **Sieve**

NM 13.0 **LL** 32 **PI** 10
Sp.G. (ASTM D 854) 2.667

%>No.4 0.0 **%<No.200** 47.3

USCS SC **AASHTO** A-4(2)

Date Sampled 1/20/08

Date Tested 2/28/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6047.8	6257.9	6299.1	6239.5		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	683.90	579.90	767.00	731.90		
WD + T #1	638.90	528.80	685.70	637.90		
TARE #1	7.10	6.70	7.00	6.70		
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	7.1	9.8	12.0	14.9		
DRY DENSITY	114.3	124.2	124.2	117.6		

TEST RESULTS

Maximum dry density = 125.0 pcf

Optimum moisture = 11.0 %

Project No. 6468071777 **Client:** Bechtel

Project: Exelon Texas COL (Victoria)

● **Source:** TP-2319 **Sample No.:** Bulk-2 **Elev./Depth:** 3.0-10'

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Light Brownish Gray Clayey SAND

Remarks:

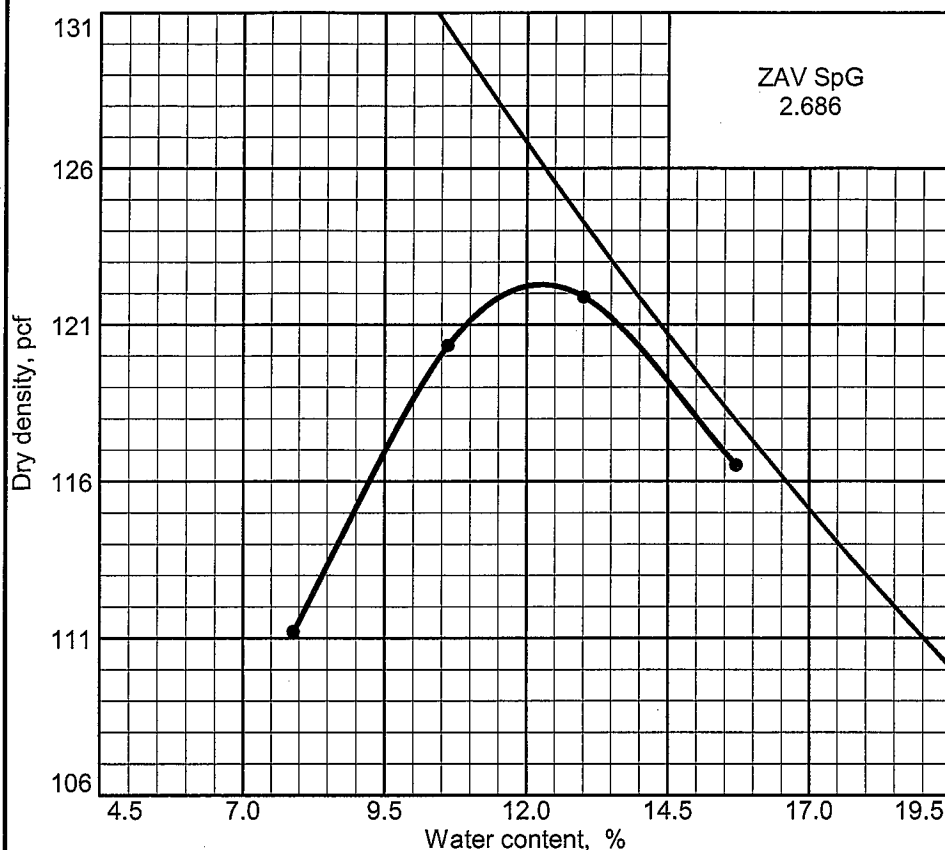
Natural Moisture obtained from Jar Sample S-3,6.5'

Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
Figure N/A

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2320 B1

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.
 Test Performed on Material
 Passing No.4 Sieve
 NM 12.0 LL 42 PI 25
 Sp.G. (ASTM D 854) 2.686
 %>No.4 0.0 %<No.200 61.8
 USCS CL AASHTO A-7-6(13)
 Date Sampled 1/19/08
 Date Tested 2/28/08
 Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6011.2	6208.6	6278.3	6234.2		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	534.10	637.90	656.80	686.10		
WD + T #1	495.50	577.30	581.90	593.90		
TARE #1	7.00	6.50	6.40	6.70		
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	7.9	10.6	13.0	15.7		
DRY DENSITY	111.2	120.3	121.9	116.5		

TEST RESULTS

Maximum dry density = 122.5 pcf

Optimum moisture = 12.5 %

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

● Source: TP-2320

Sample No.: Bulk 1

Elev./Depth: 5.0'

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Light Brownish Gray Sandy Lean CLAY

Remarks:

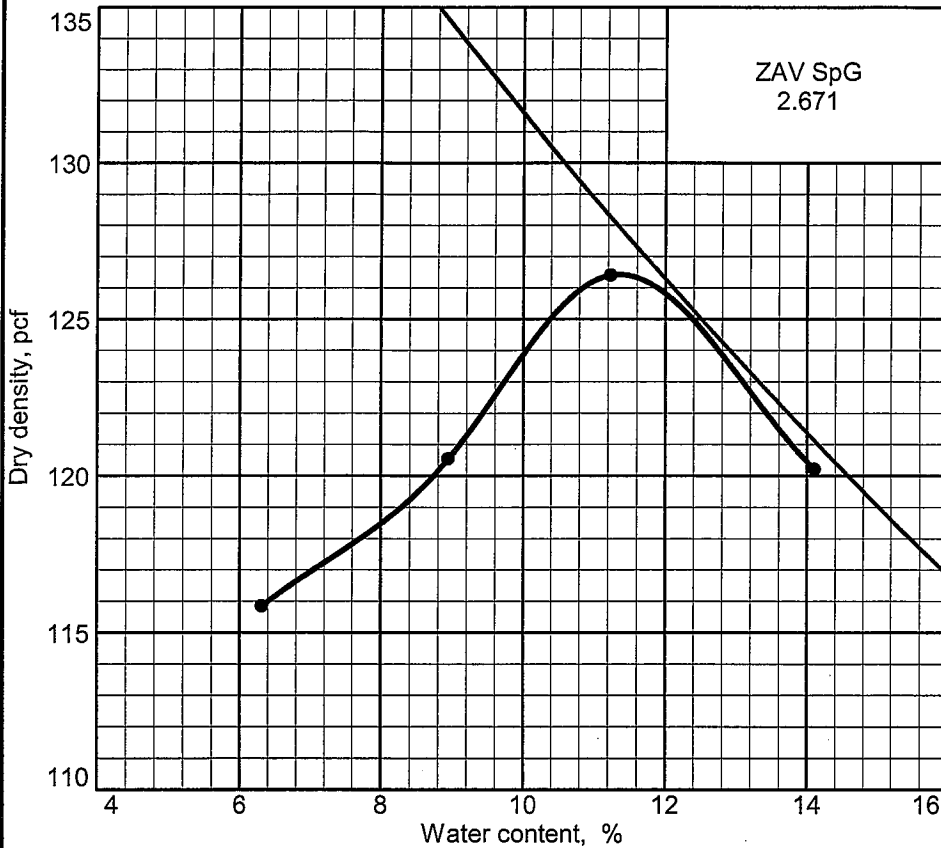
Natural Moisture obtained from Jar Sample S-3,5-10'

Checked by: LBJ

Title: LAB MANAGER

Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2320 B2

Test Specification:

ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.

Test Performed on Material
 Passing No.4 Sieve

NM 9.3 LL 41 PI 25
 Sp.G. (ASTM D 854) 2.671
 %>No.4 0.0 %<No.200 70.4
 USCS CL AASHTO A-7-6(15)
 Date Sampled 1/19/08
 Date Tested 2/28/08
 Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6058.9	6181.7	6321.4	6269.7		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	744.50	642.70	846.30	613.90		
WD + T #1	700.70	590.50	761.50	538.90		
TARE #1	6.90	6.80	6.80	7.20		
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	6.3	8.9	11.2	14.1		
DRY DENSITY	115.8	120.5	126.4	120.2		

TEST RESULTS

Maximum dry density = 126.5 pcf

Optimum moisture = 11.5 %

Project No. 6468071777 Client: Bechtel
 Project: Exelon Texas COL (Victoria)

● Source: TP-2320 Sample No.: Bulk 2 Elev./Depth: 5.0-10.0'

MACTEC, Inc.
Raleigh, North Carolina

Material Description

Olive Yellow Sandy Lean CLAY

Remarks:

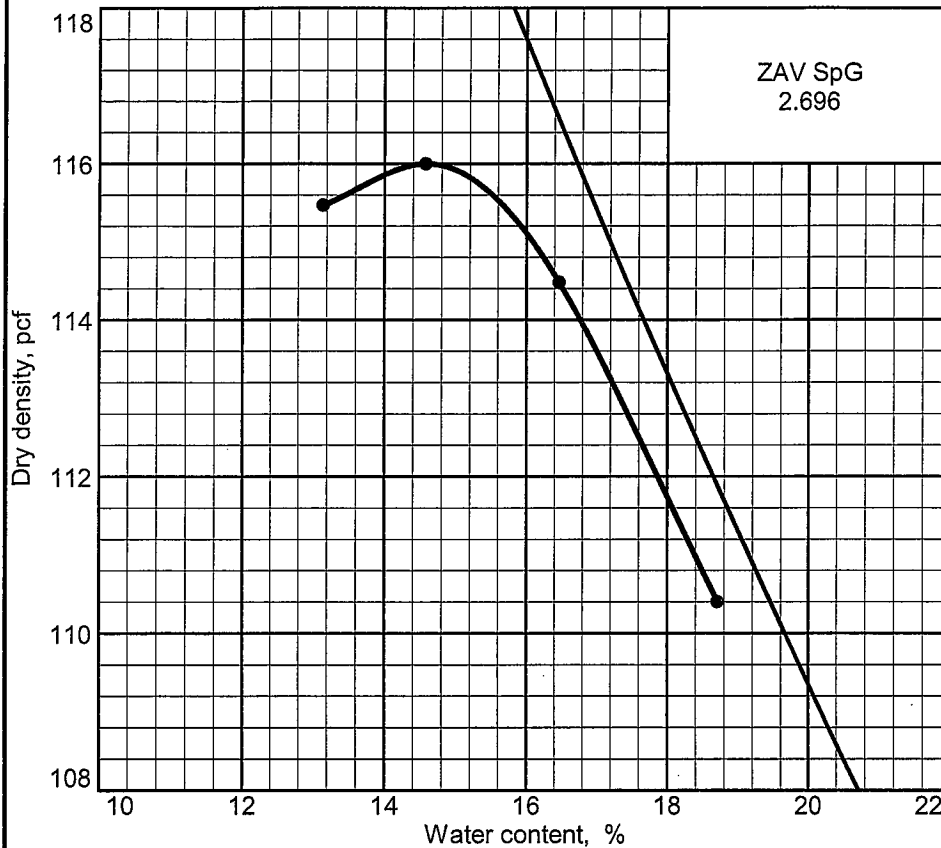
Natural Moisture obtained from Jar Sample S-4,10'

Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2321 B1

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 **Sieve**

NM 15.3 **LL** 51 **PI** 31
Sp.G. (ASTM D 854) 2.696

%>No.4 0.0 **%<No.200** 72.0

USCS CH **AASHTO** A-7-6(21)

Date Sampled 1/30/08

Date Tested 2/28/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6171.6	6205.7	6211.9	6177.7		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	806.30	649.90	698.50	623.70		
WD + T #1	713.40	568.10	600.70	526.50		
TARE #1	6.90	7.10	6.70	6.90		
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	13.1	14.6	16.5	18.7		
DRY DENSITY	115.5	116.0	114.5	110.4		

TEST RESULTS

Maximum dry density = 116.0 pcf

Optimum moisture = 14.5 %

Project No. 6468071777 **Client:** Bechtel

Project: Exelon Texas COL (Victoria)

● **Source:** TP-2321

Sample No.: Bulk 1

Elev./Depth: 4.0-5.0'

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Dark Gray Fat CLAY with sand

Remarks:

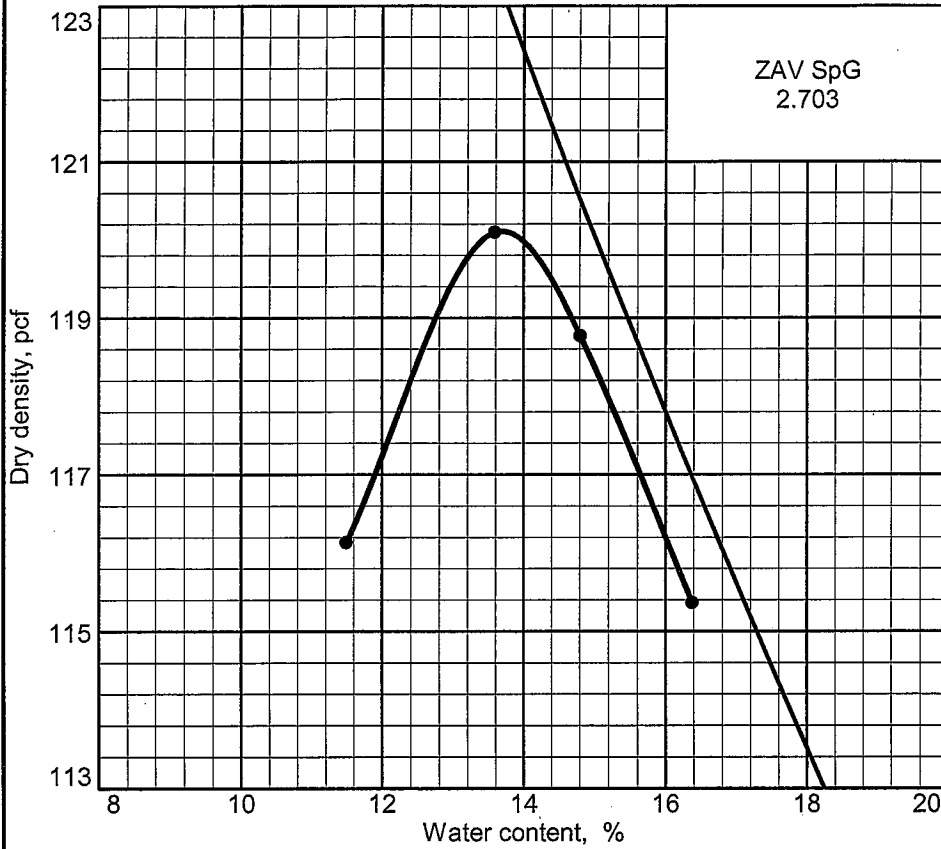
Natural Moisture obtained from Jar Sample S-2,4'

Checked by: LBJ

Title: LAB MANAGER

Figure **NA**

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2321 B2

Test Specification:

ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.

Test Performed on Material
 Passing No.4 Sieve

NM 16.0 LL 49 PI 30
 Sp.G. (ASTM D 854) 2.703

%>No.4 0.0 %<No.200 81.0

USCS CL AASHTO A-7-6(24)

Date Sampled 1/30/08

Date Tested 2/27/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6154.1	6258.3	6257.5	6225.9		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	662.10	885.40	516.20	582.40		
WD + T #1	594.80	780.60	450.50	501.40		
TARE #1	9.40	9.20	6.90	6.80		
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	11.5	13.6	14.8	16.4		
DRY DENSITY	116.1	120.1	118.8	115.4		

TEST RESULTS

Maximum dry density = 120.0 pcf

Optimum moisture = 13.5 %

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

● Source: TP-2321 Sample No.: Bulk 2 Elev./Depth: 6.5-10.0

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Yellow Lean CLAY with sand

Remarks:

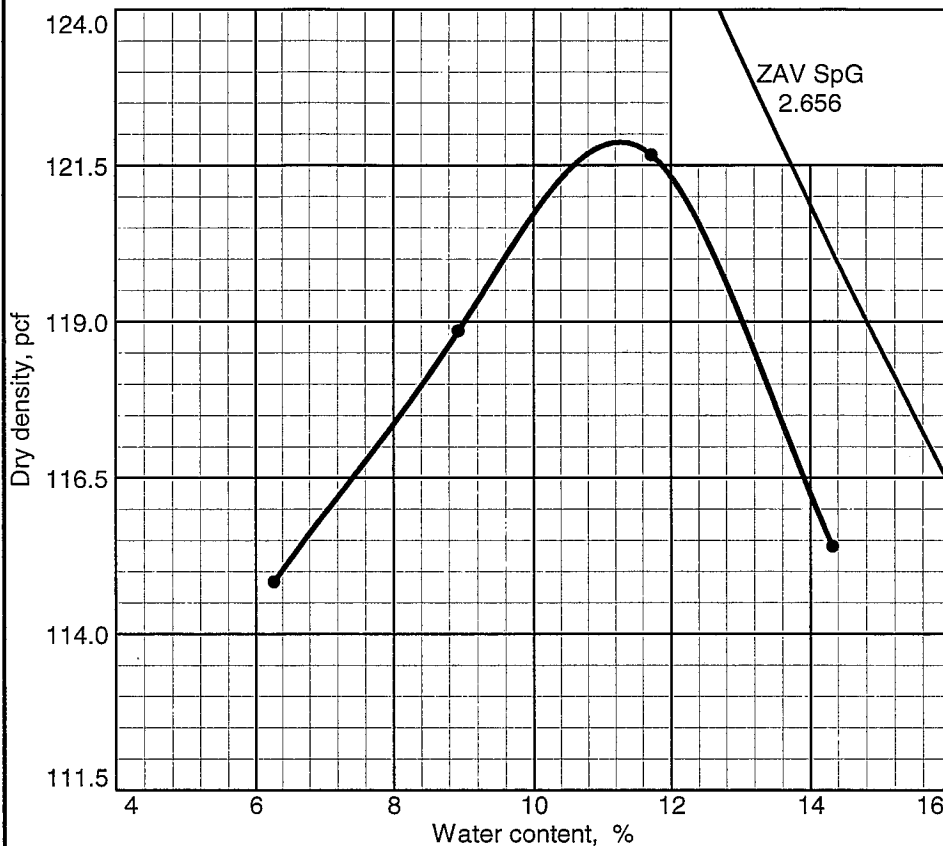
Natural Moisture obtained from Jar Sample S-3,7'

Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02e1



Curve No.
TP 2332 B2

Test Specification:

ASTM D 1557-02e1 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.
 Number of Layers five
 Blows per Layer 25
 Mold Size .03333 cu.ft.

Test Performed on Material
 Passing No.4 Sieve

NM 10.9 LL ND PI ND

Sp.G. (ASTM D 854) 2.656

%>No.4 0.0 %<No.200 20.0

USCS SM AASHTO ND

Date Sampled 1/22/08

Date Tested 2/27/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6042.0	6153.7	6251.0	6190.9		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	518.40	768.40	763.40	693.10		
WD + T #1	488.20	706.00	684.00	607.10		
TARE #1	6.70	7.00	6.70	6.70		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	6.3	8.9	11.7	14.3		
DRY DENSITY	114.8	118.8	121.7	115.4		

TEST RESULTS

Maximum dry density = 122 pcf

Optimum moisture = 11 %

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

● Source: TP-2332

Sample No.: Bulk 2

Elev./Depth: 3.0-10.0

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Very Pale Brown Silty SAND (Visual)

Remarks:

ND = Not Determined
 Natural Moisture was obtained from Jar
 Sample S-3,7'

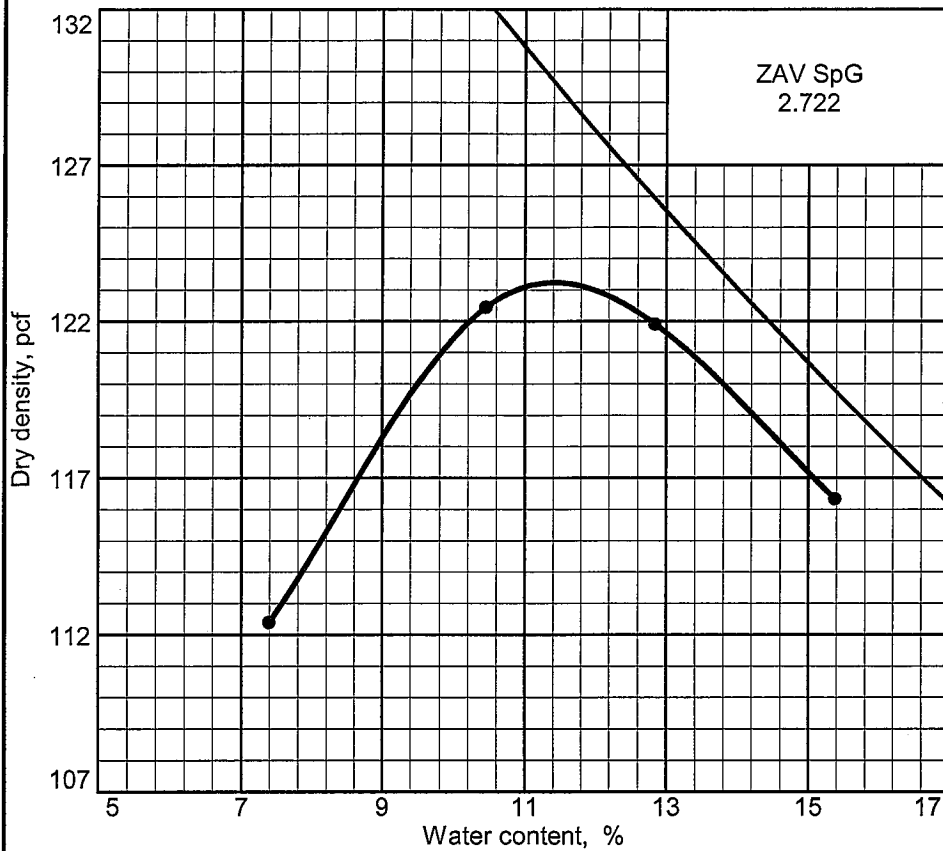
Checked by: LBJ

Title: LAB MANAGER

ZHU

Figure **4-12-08**
NR

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2334 B1

Test Specification:

ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.

Test Performed on Material

Passing No.4 Sieve

NM 14.8 LL 44 PI 31

Sp.G. (ASTM D 854) 2.722

%>No.4 0.0 %<No.200 68.0

USCS CL AASHTO A-7-6(18)

Date Sampled 1/20/08

Date Tested 2/27/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6021.8	6240.7	6275.6	6225.2		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	578.90	606.80	827.30	701.20		
WD + T #1	539.50	550.00	733.90	608.60		
TARE #1	6.60	6.60	6.60	6.40		
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	7.4	10.5	12.8	15.4		
DRY DENSITY	112.4	122.4	121.9	116.3		

TEST RESULTS

Maximum dry density = 123.0 pcf

Optimum moisture = 11.5 %

Project No. 6468071777 **Client:** Bechtel

Project: Exelon Texas COL (Victoria)

● **Source:** TP-2334

Sample No.: Bulk 1

Elev./Depth: 2.0-5.0

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Light Brownish Gray Sandy Lean CLAY

Remarks:

Natural Moisture obtained from Jar Sample S-2, 2-5'

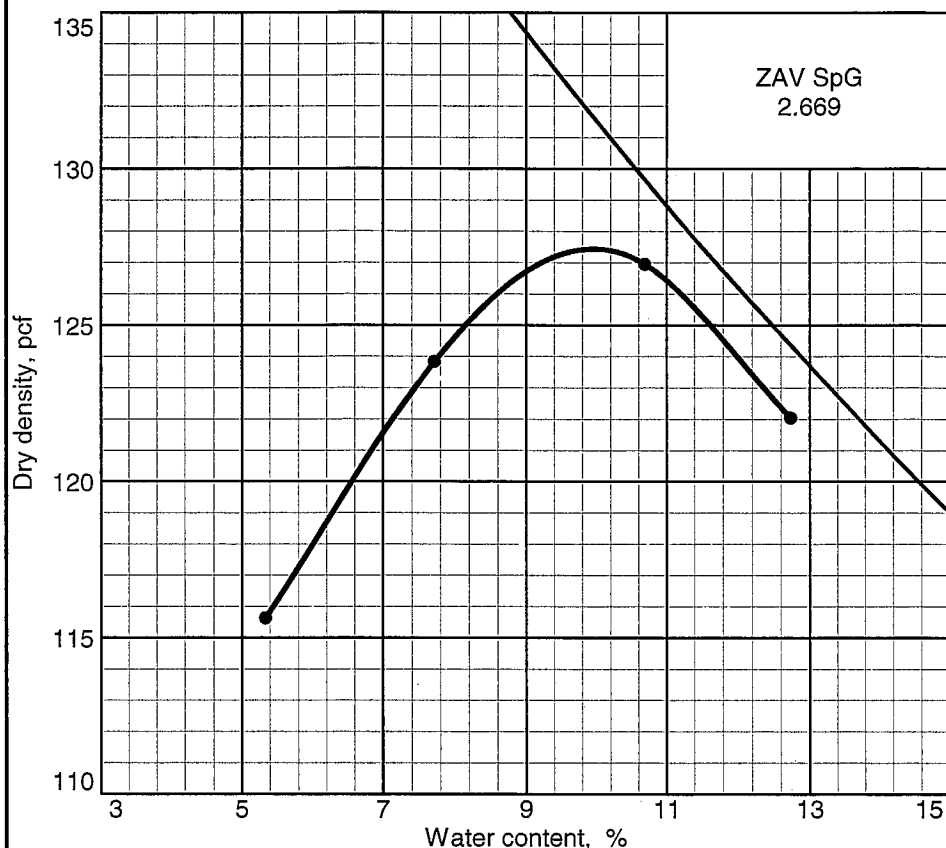
Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
NA

Figure

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2334 B2

Test Specification:

ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.

Test Performed on Material

Passing No.4 Sieve
 NM 15.2 LL 31 PI 19
 Sp.G. (ASTM D 854) 2.669
 %>No.4 0.0 %<No.200 47.4
 USCS SC AASHTO A-6(5)
 Date Sampled 1/20/08
 Date Tested 2/27/08
 Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6038.3	6212.7	6320.0	6275.7		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	686.00	533.20	855.70	864.50		
WD + T #1	651.60	495.50	773.70	767.60		
TARE #1	6.50	6.80	6.50	6.60		
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	5.3	7.7	10.7	12.7		
DRY DENSITY	115.6	123.8	126.9	122.0		

TEST RESULTS

Maximum dry density = 127.5 pcf

Optimum moisture = 10.0 %

Material Description

Light Pale Brown Clayey SAND

Remarks:

Natural Moisture was obtained from Jar Sample S-3,7'

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

• Source: TP-2334

Sample No.: Bulk 2

Elev./Depth: 5.0-10.0

MACTEC, Inc.

Raleigh, North Carolina

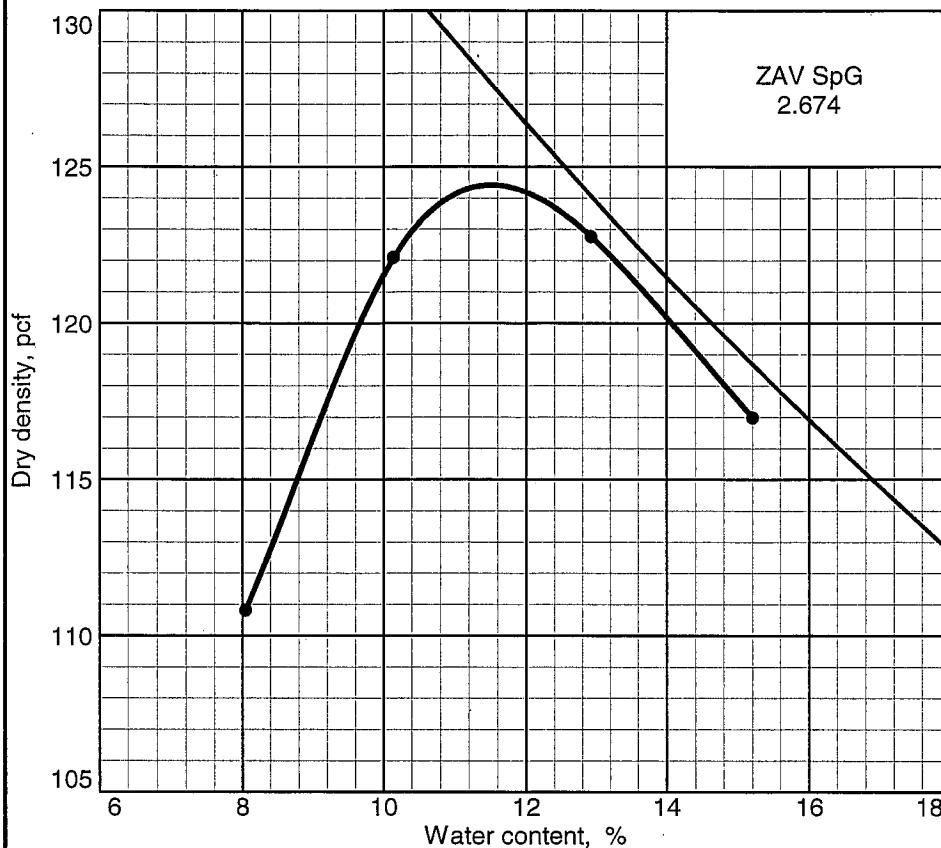
Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08

Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2335 B2

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 Sieve

NM 11.2 LL 37 PI 23

Sp.G. (ASTM D 854) 2.674

%>No.4 0.0 %<No.200 53.6

USCS CL AASHTO A-6(9)

Date Sampled 1/20/08

Date Tested 2/26/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6007.3	6229.1	6291.6	6233.5		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	558.70	670.40	554.70	530.40		
WD + T #1	517.60	609.30	492.00	461.30		
TARE #1	6.80	6.80	6.80	6.80		
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	8.0	10.1	12.9	15.2		
DRY DENSITY	110.8	122.1	122.8	117.0		

TEST RESULTS

Maximum dry density = 124.5 pcf

Optimum moisture = 11.5 %

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

• Source: TP-2335

Sample No.: Bulk 2

Elev./Depth: 4.0-8.0

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Pale Yellow Sandy Lean CLAY

Remarks:

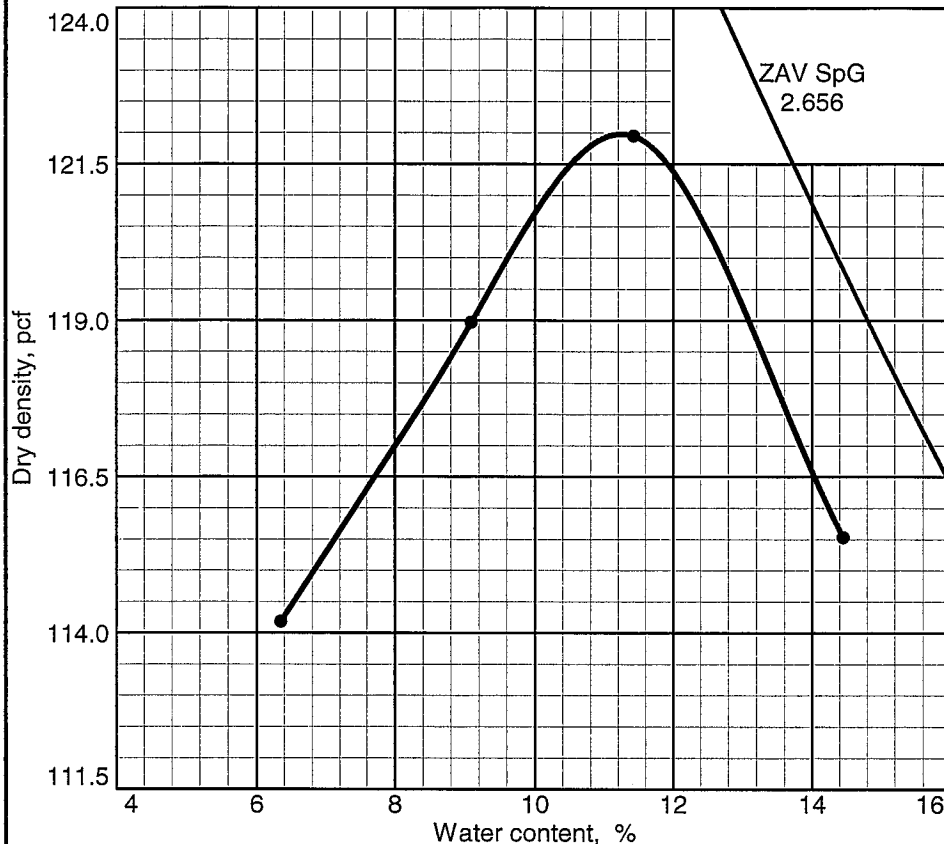
Natural Moisture was obtained from Jar Sample S-3,6'

Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2335 B3

Test Specification:

ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.

Test Performed on Material

Passing No.4 Sieve
 NM 7.3 LL ND PI ND
 Sp.G. (ASTM D 854) 2.656
 %>No.4 0.0 %<No.200 24.8
 USCS SM AASHTO
 Date Sampled 1/20/08
 Date Tested 2/27/08
 Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6032.8	6158.5	6250.3	6195.3		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	740.90	936.10	837.90	842.60		
WD + T #1	697.10	858.70	752.70	737.10		
TARE #1	6.90	7.00	6.80	7.00		
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	6.3	9.1	11.4	14.5		
DRY DENSITY	114.2	119.0	122.0	115.5		

TEST RESULTS

Maximum dry density = 122.0 pcf

Optimum moisture = 11.0 %

Material Description

Pale Yellow Silty SAND(Visual)

Remarks:

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

Project No. 6468071777 **Client:** Bechtel

Project: Exelon Texas COL (Victoria)

• **Source:** TP-2335

Sample No.: Bulk 3

Elev./Depth: 8.0-10.0

MACTEC, Inc.

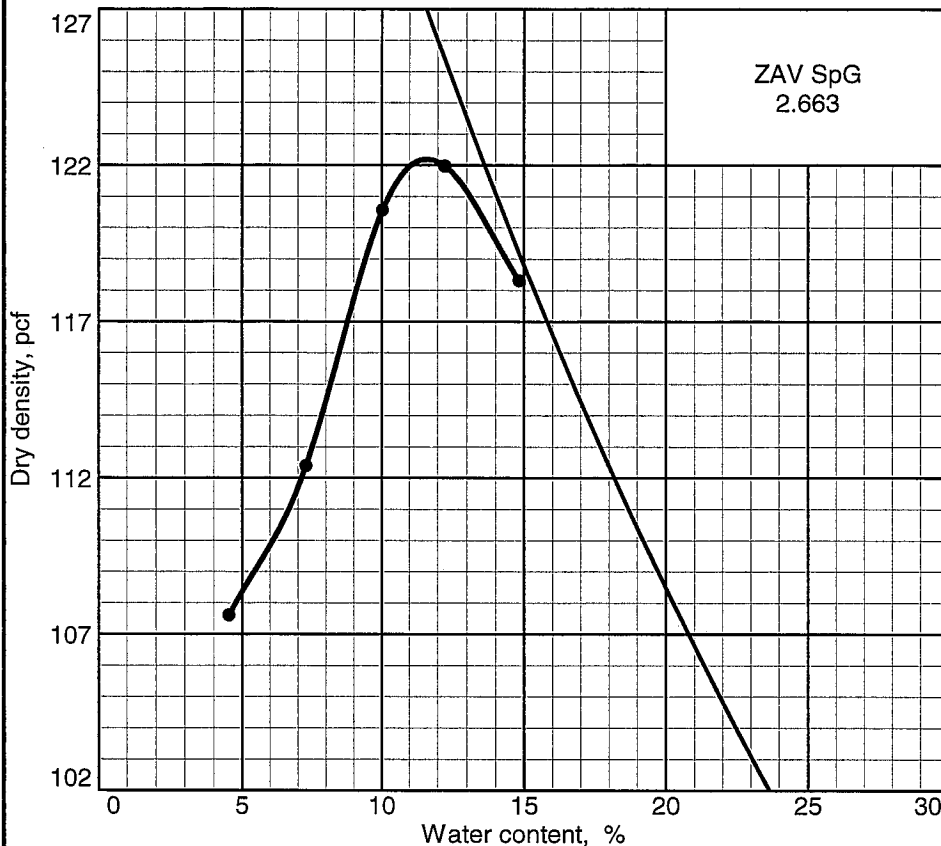
Raleigh, North Carolina

Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2337 B1

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 **Sieve**

NM 18.7 **LL** ND **PI** ND

Sp.G. (ASTM D 854) 2.663

%>No.4 0.0 **%<No.200** 61.7

USCS CL **AASHTO** ND

Date Sampled 1/20/08

Date Tested 2/27/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	5898.3	6019.9	6201.7	6265.6	6249.8	
WM	4205.9	4205.9	4205.9	4205.9	4205.9	
WW + T #1	580.70	577.00	531.10	688.00	638.80	
WD + T #1	555.80	538.30	483.30	613.70	557.40	
TARE #1	6.60	6.80	6.60	6.80	8.30	
WW + T #2	N/A	N/A	N/A	N/A	N/A	
WD + T #2	N/A	N/A	N/A	N/A	N/A	
TARE #2	N/A	N/A	N/A	N/A	N/A	
MOISTURE	4.5	7.3	10.0	12.2	14.8	
DRY DENSITY	107.6	112.4	120.6	122.0	118.3	

TEST RESULTS

Maximum dry density = 122.0 pcf

Optimum moisture = 11.5 %

Material Description

Gray Sandy Lean CLAY (Visual)

Remarks:

ND = Not Determined
Natural Moisture was obtained from Jar Sample S-2,4'

Project No. 6468071777 **Client:** Bechtel

Project: Exelon Texas COL (Victoria)

● **Source:** TP-2337

Sample No.: Bulk 1

Elev./Depth: 4.0-5.0

MACTEC, Inc.

Raleigh, North Carolina

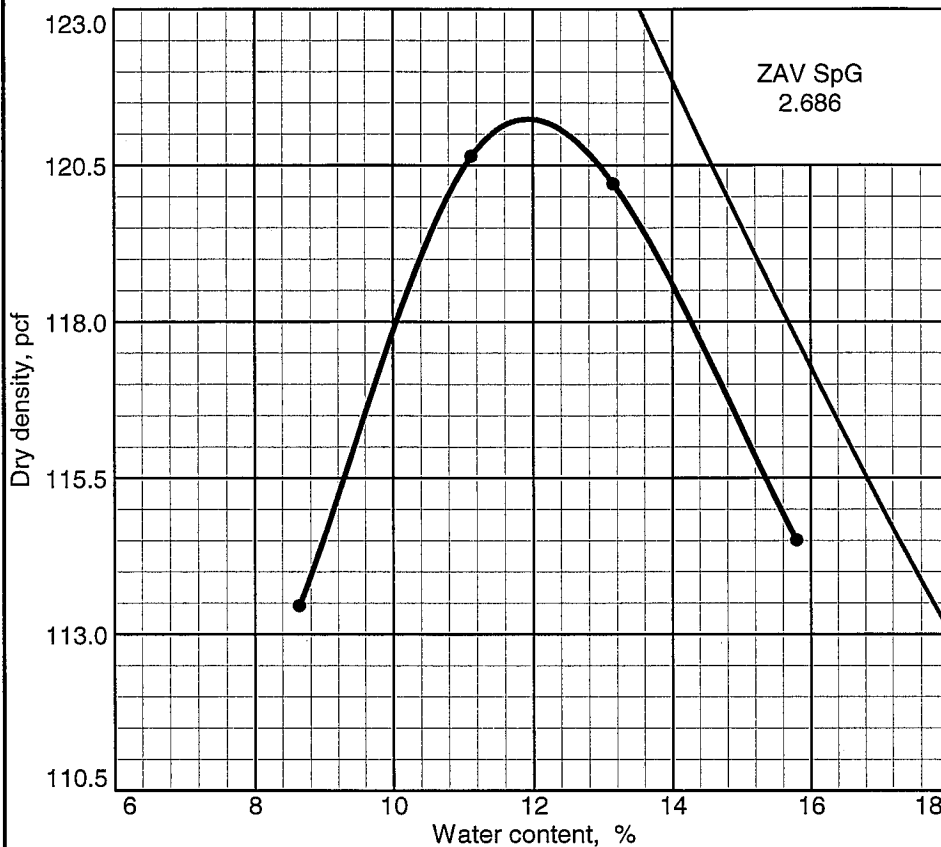
Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08

Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2337 B2

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 **Sieve**

NM 17.2 **LL** 41 **PI** 25

Sp.G. (ASTM D 854) 2.686

%>No.4 0.0 **%<No.200** 75.0

USCS CL **AASHTO** A-7-6(17)

Date Sampled 1/20/08

Date Tested 2/27/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6060.3	6222.9	6252.2	6200.8		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	579.20	609.20	709.10	711.50		
WD + T #1	533.70	548.90	627.50	615.40		
TARE #1	6.80	6.70	6.80	7.00		
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	8.6	11.1	13.1	15.8		
DRY DENSITY	113.5	120.6	120.2	114.5		

TEST RESULTS

Maximum dry density = 121.0 pcf

Optimum moisture = 12.0 %

Project No. 6468071777 **Client:** Bechtel

Project: Exelon Texas COL (Victoria)

● **Source:** TP-2337

Sample No.: Bulk 2

Elev./Depth: 10.0'

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Light Gray with Brownish Yellow Lean
CLAY with sand

Remarks:

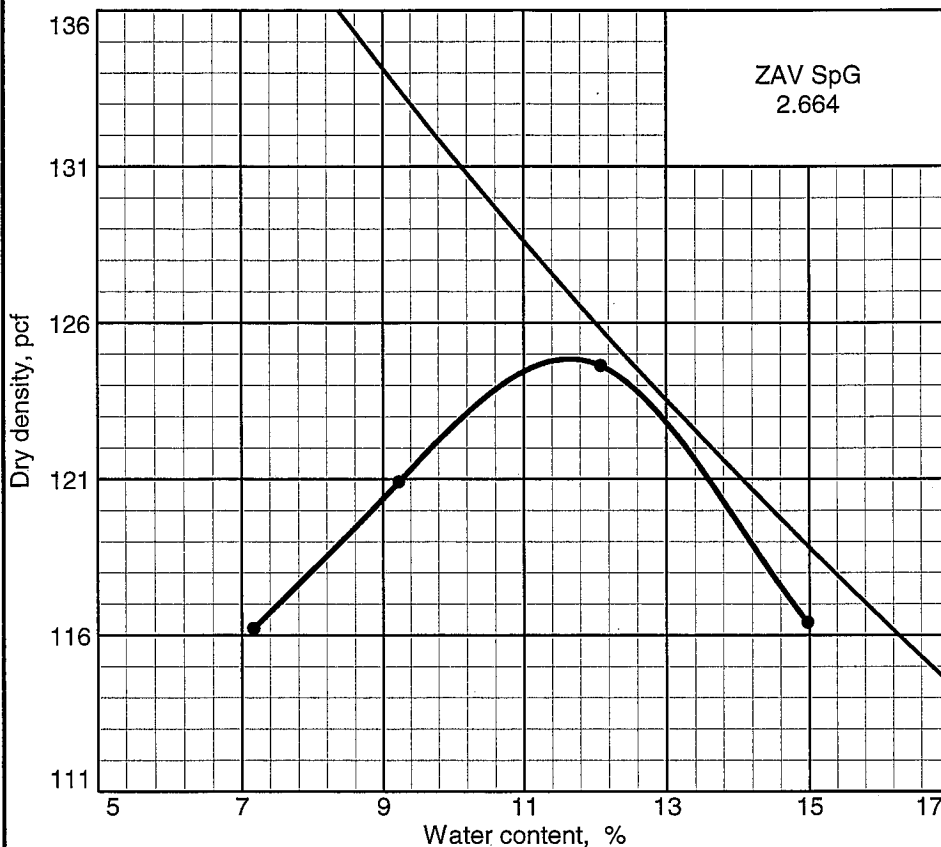
Natural Moisture was obtained from Jar
Sample S-4,10'

Checked by: LBJ

Title: LAB MANAGER

DSC
42-08

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2351 B2

Test Specification:
ASTM D 1557-02 Method A Modified

Preparation Method Dry
Hammer Wt. 10 lb.
Hammer Drop 18 in.(mechanical)
Number of Layers five
Blows per Layer 25
Mold Size .03317 cu.ft.

Test Performed on Material
Passing No.4 Sieve

NM 13.0 LL 29 PI 16

Sp.G. (ASTM D 854) 2.664

%>No.4 0.0 %<No.200 38.2

USCS SC AASHTO A-6(2)

Date Sampled 1/21/08

Date Tested 2/27/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	6079.7	6193.0	6307.6	6219.6		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	577.10	578.60	583.80	615.20		
WD + T #1	539.00	530.30	521.60	536.30		
TARE #1	7.30	7.10	7.00	9.50		
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	7.2	9.2	12.1	15.0		
DRY DENSITY	116.2	120.9	124.6	116.4		

TEST RESULTS

Maximum dry density = 125.0 pcf

Optimum moisture = 11.5 %

Project No. 6468071777 Client: Bechtel

Project: Exelon Texas COL (Victoria)

• Source: TP-2351 Sample No.: Bulk 2 Elev./Depth: 3.5-10.0

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Pale Yellow Clayey SAND

Remarks:

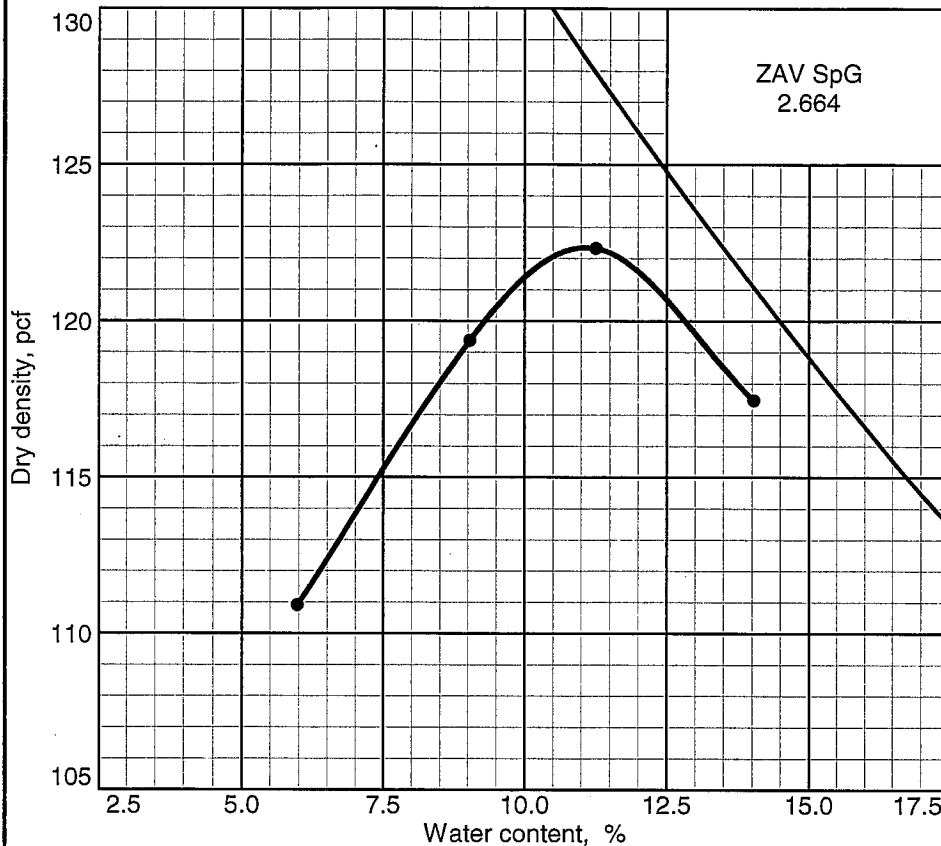
Natural Moisture was obtained from Jar Sample S-2,4'

Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
Figure NA

COMPACTION TEST REPORT/ ASTM D-1557-02



Curve No.
TP 2352 B1

Test Specification:

ASTM D 1557-02 Method A Modified

Preparation Method Dry
 Hammer Wt. 10 lb.
 Hammer Drop 18 in.(mechanical)
 Number of Layers five
 Blows per Layer 25
 Mold Size .03317 cu.ft.

Test Performed on Material

Passing No.4 Sieve

NM 17.0 LL ND PI ND

Sp.G. (ASTM D 854) 2.664

%>No.4 0.0 %<No.200 66.9

USCS CL AASHTO ND

Date Sampled 1/31/08

Date Tested 2/27/08

Tested By AWH

TESTING DATA

	1	2	3	4	5	6
WM + WS	5974.2	6164.1	6253.5	6221.0		
WM	4205.9	4205.9	4205.9	4205.9		
WW + T #1	611.80	613.00	788.50	698.90		
WD + T #1	577.70	562.80	709.40	613.80		
TARE #1	6.80	6.80	6.70	7.20		
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	6.0	9.0	11.3	14.0		
DRY DENSITY	110.9	119.4	122.3	117.5		

TEST RESULTS

Maximum dry density = 122.5 pcf

Optimum moisture = 11.0 %

Project No. 6468071777 **Client:** Bechtel

Project: Exelon Texas COL (Victoria)

● **Source:** TP-2352

Sample No.: Bulk 1

Elev./Depth: 4.0-5.0

MACTEC, Inc.

Raleigh, North Carolina

Material Description

Dark Gray with Brownish Yellow Sandy Lean
CLAY (Visual)

Remarks:

ND = Not Determined
 Natural Moisture was obtained from Jar
 Sample S-2,4-5'

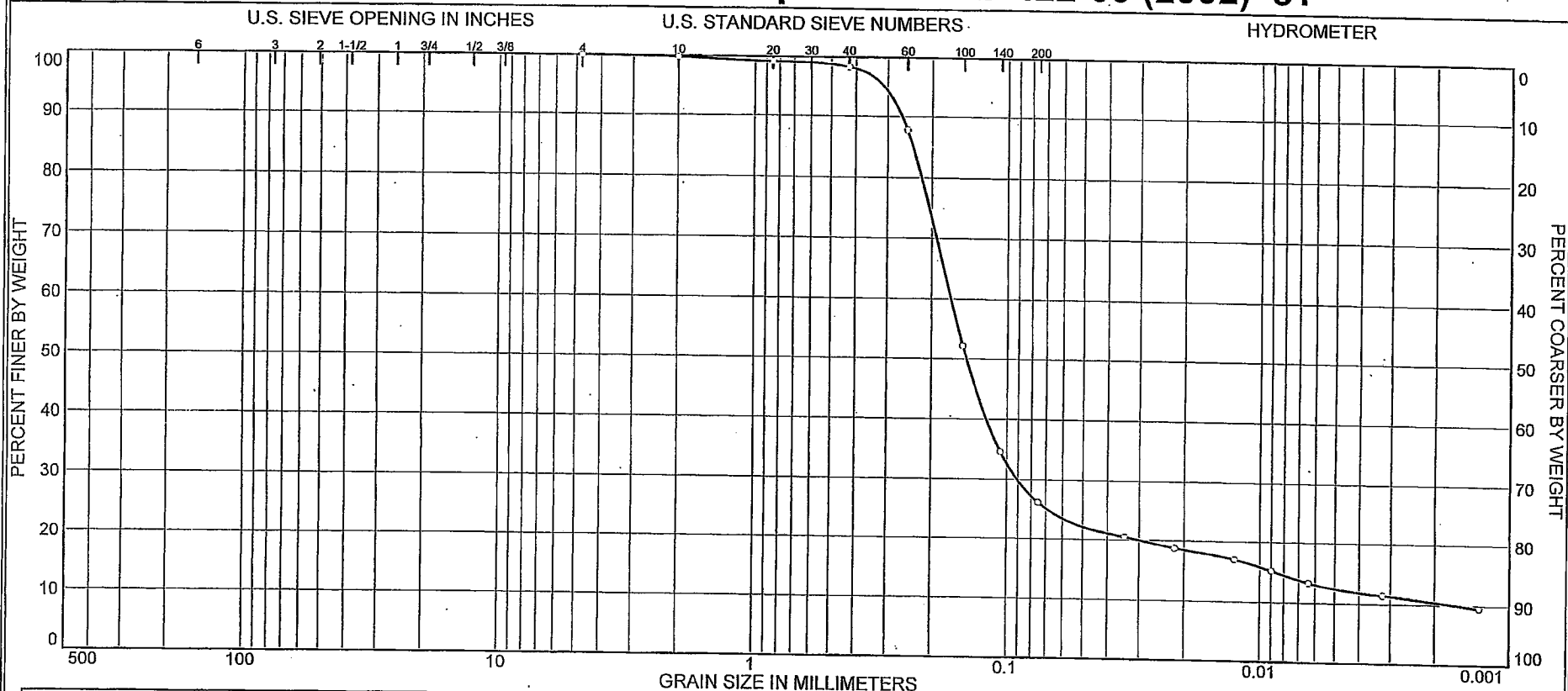
Checked by: LBJ

Title: LAB MANAGER

DSC
4-2-08
Figure 1A

Soil Index Test Results –Undisturbed Samples

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



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.2	1.4	72.2	13.9	12.3

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2302UD	UD-3	13.5-16 Ft	2/5/08	SM	Pale Yellow Silty SAND	17.4	NV	NP

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777

Lab No. 8343

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: BH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.67 (ASTM D 854-06)

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2302UD
Sample No.: UD-3
Elev. or Depth: 13.5-16 Ft Sample Length(in./cm.): ID#8343
Location: B-2302UD
Description: Pale Yellow Silty SAND
Date: 2/5/08 PL: NP LL: NV PI: NP
USCS Classification: SM AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.67 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	70.65	
Tare =	15.94	
Dry sample weight =	54.71	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.09	99.8
# 20	0.44	99.2
# 40	0.85	98.4
# 60	6.74	87.7
# 100	26.15	52.2
# 140	35.77	34.6
# 200	40.35	26.2

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 26.2
Weight of hydrometer sample: 14.36
Calculated biased weight= 54.81
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.667
Specific gravity correction factor= 0.996
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	23.1	16.0	11.3	0.0131	16.0	13.7	0.0342	20.5
5.00	23.1	15.0	10.3	0.0131	15.0	13.8	0.0217	18.7
15.00	23.1	14.0	9.3	0.0131	14.0	14.0	0.0126	16.9
30.00	23.1	13.0	8.3	0.0131	13.0	14.2	0.0090	15.1
60.00	23.1	12.0	7.3	0.0131	12.0	14.3	0.0064	13.2
240.00	23.1	11.0	6.3	0.0131	11.0	14.5	0.0032	11.4
1440.00	22.8	10.0	5.2	0.0131	10.0	14.7	0.0013	9.5

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES = % GRAVEL =

% SAND = 73.8 (% coarse = 0.2 % medium = 1.4 % fine = 72.2)

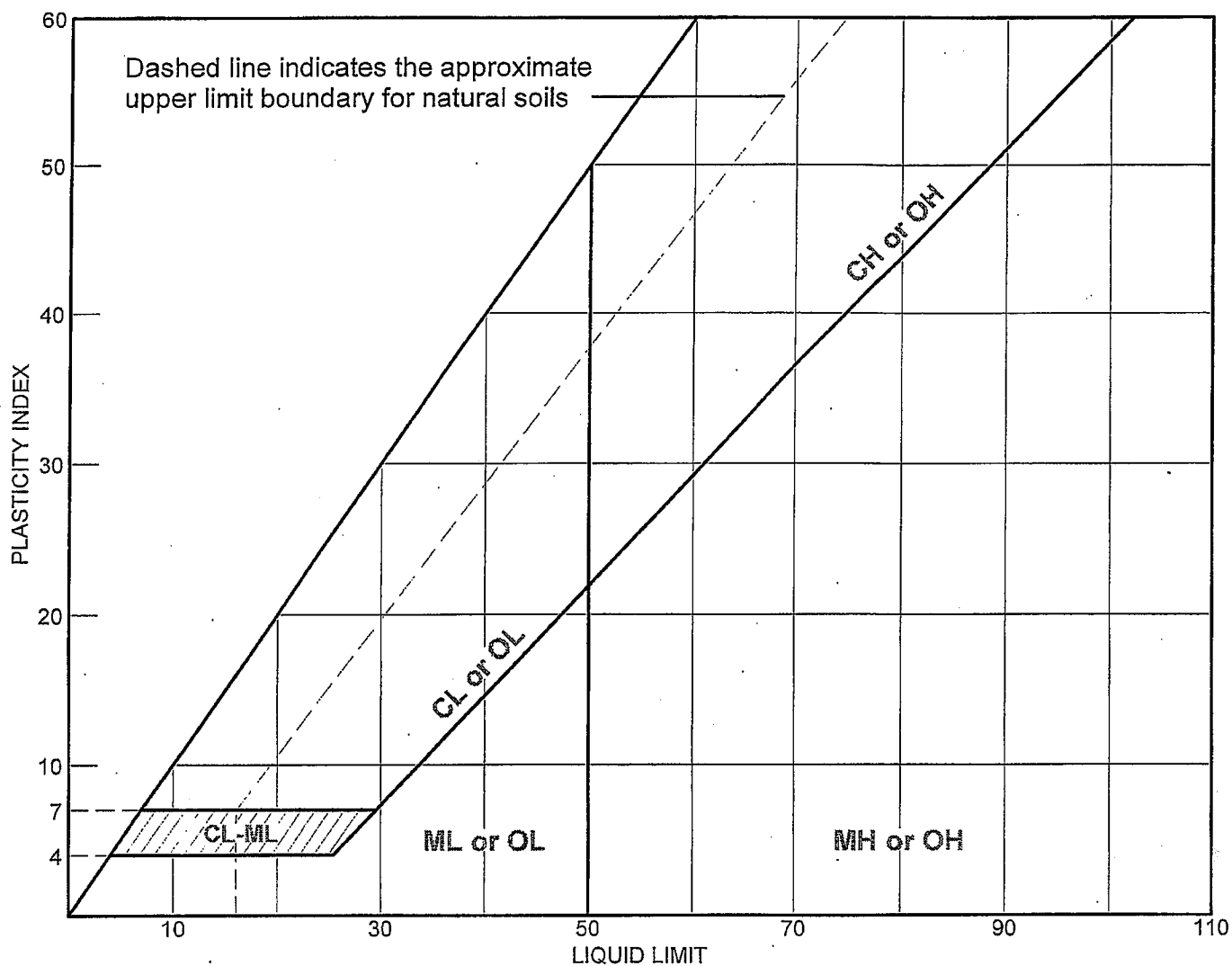
% SILT = 13.9 % CLAY = 12.3

D₈₅= 0.24 D₆₀= 0.17 D₅₀= 0.15

D₃₀= 0.09 D₁₅= 0.01 D₁₀= 0.00

C_c= 29.9973 C_u= 101.765

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
•	B-2302UD	UD-3	13.5-16 Ft	17.4	NP	NV	NP	SM

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8343

LIQUID AND PLASTIC LIMIT TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2302UD
Sample No.: UD-3
Elev. or Depth: 13.5-16 Ft
Location: B-2302UD
Description: Pale Yellow Silty SAND
Water Content: 17.4 USCS: SM
Sample Length(in./cm.): ID#8343

AASHTO:

Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/7/08

SAMPLE IDENTIFICATION: B-2302UD, UD-3 @ 13.5-16.0 Ft.

(A) Mass of oven-dried soil, grams:	37.55
(B) Mass of pycnometer filled with water at test temperature (T), grams:	343.05
(C) Mass of pycnometer, water and soil, grams:	366.53
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.1
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.669
(F) <i>Correction factor:</i>	0.99931
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.667

MATERIAL TESTED:

☐
- # 4

☒
- # 10

PREPARATION METHOD:

☒
DRY

☐
WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100
Silty SAND (SM).

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER: 2052

TESTED BY: EH

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

REVIEWED BY: Harry Johnson

KAW 4.15.08

HYDROMETER



KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2302UD
Sample No.: UD-7
Elev. or Depth: 59-60.2 Ft Sample Length(in./cm.): ID#8344
Location: B-2302UD
Description: Light Gray Silty, Clayey SAND
Date: 2/6/08 PL: 16 LL: 22 PI: 6
USCS Classification: SC-SM AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.71 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	206.00	
Tare =	93.17	
Dry sample weight =	112.83	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.51	99.5
# 10	1.03	99.1
# 20	1.64	98.5
# 40	2.38	97.9
# 60	4.46	96.0
# 100	29.48	73.9
# 140	61.02	45.9
# 200	75.55	33.0

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 33.0
Weight of hydrometer sample: 37.28
Calculated biased weight= 112.97
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.71
Specific gravity correction factor= 0.987
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.8	28.0	23.2	0.0130	28.0	11.7	0.0313	20.3
5.00	22.8	26.0	21.2	0.0130	26.0	12.0	0.0201	18.5
15.00	22.8	23.5	18.7	0.0130	23.5	12.4	0.0118	16.3
30.00	22.8	21.5	16.7	0.0130	21.5	12.8	0.0085	14.6
60.00	22.8	20.0	15.2	0.0130	20.0	13.0	0.0060	13.3
300.00	22.8	17.5	12.7	0.0130	17.5	13.4	0.0027	11.1
1440.00	23.1	17.0	12.3	0.0129	17.0	13.5	0.0012	10.7

Fractional Components

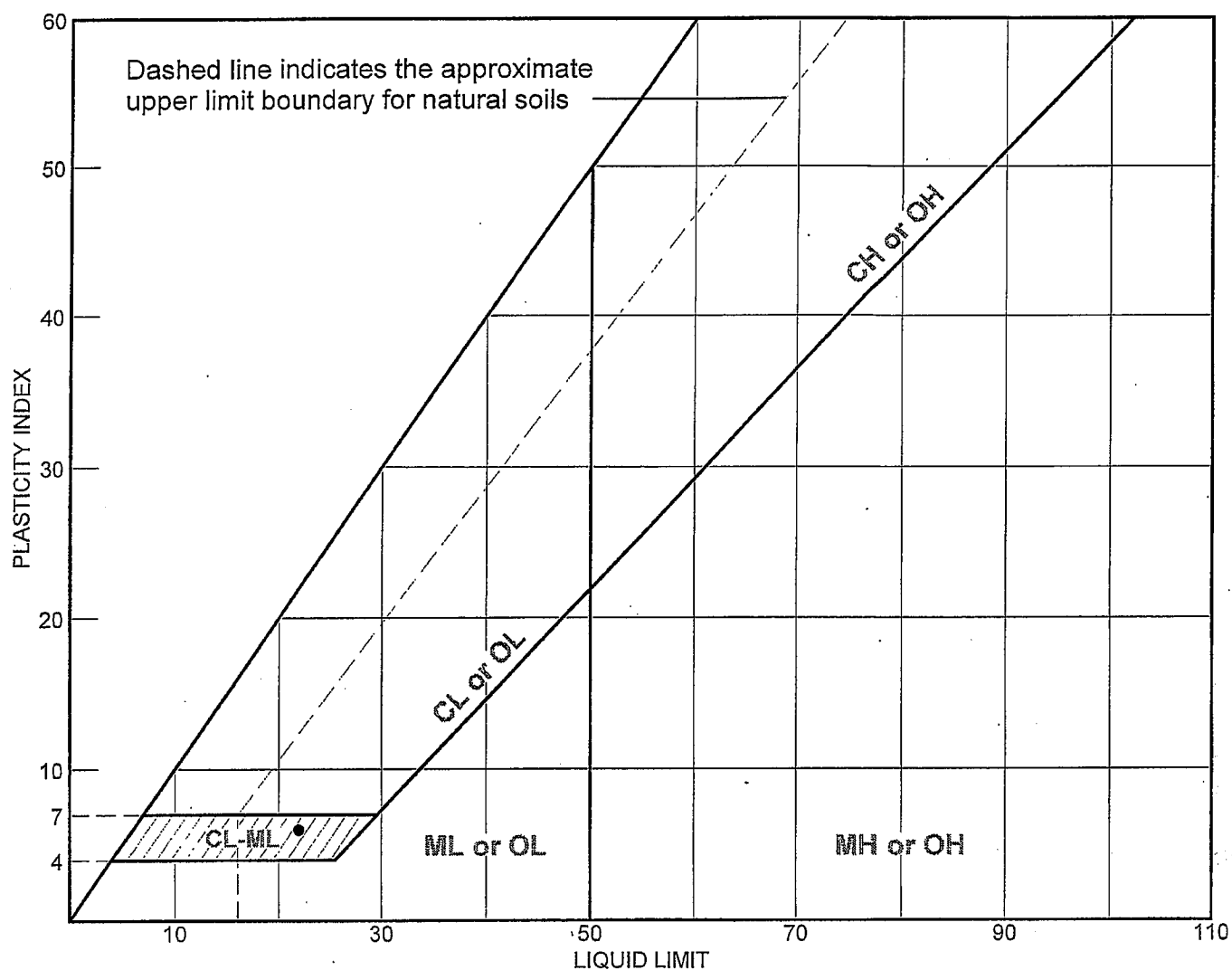
Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES = % GRAVEL = 0.5 (% coarse = % fine = 0.5)
 % SAND = 66.5 (% coarse = 0.4 % medium = 1.2 % fine = 64.9)
 % SILT = 20.3 % CLAY = 12.7

D₈₅= 0.18 D₆₀= 0.13 D₅₀= 0.11
 D₃₀= 0.07 D₁₅= 0.01

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
•	B-2302UD	UD-7	59-60.2 Ft	20.1	16	22	6	SC-SM

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8344

LIQUID AND PLASTIC LIMIT TEST DATA

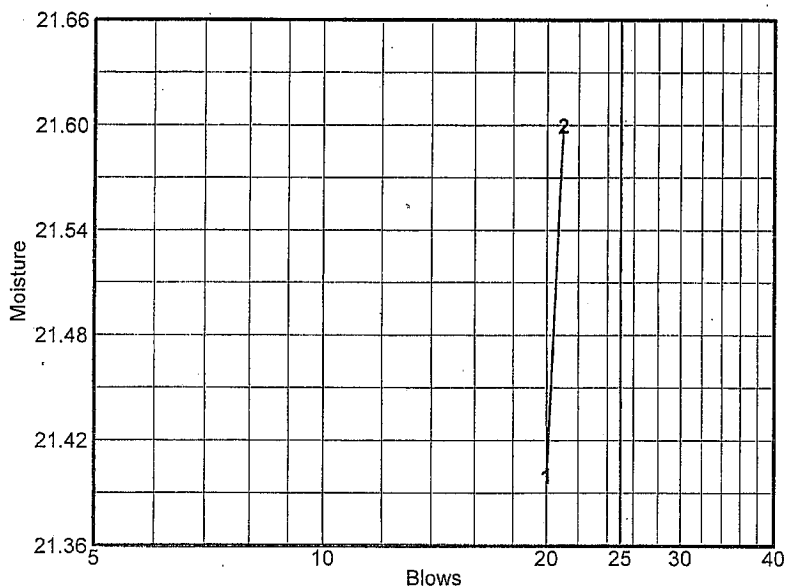
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2302UD
 Sample No.: UD-7
 Elev. or Depth: 59-60.2 Ft Sample Length(in./cm.): ID#8344
 Location: B-2302UD
 Description: Light Gray Silty, Clayey SAND
 Water Content: 20.1 USCS: SC-SM AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.03	30.12				
Dry+Tare	27.52	28.43				
Tare	20.48	20.6				
# Blows	20	21				
Moisture	21.4	21.6				



Liquid Limit= 22
 Plastic Limit= 16
 Plasticity Index= 6

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.7	28.06			
Dry+Tare	26.65	27.02			
Tare	19.99	20.4			
Moisture	15.8	15.7			

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/7/08

SAMPLE IDENTIFICATION: B-2302UD, UD-7 @ 59-60.2 Ft.

(A) Mass of oven-dried soil, grams:	37.28
(B) Mass of pycnometer filled with water at test temperature (T), grams:	341.20
(C) Mass of pycnometer, water and soil, grams:	364.72
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.709
(F) Correction factor:	0.99912
(G x F) SPECIFIC GRAVITY @ 20°C:	2.707

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Silty Clayey SAND (SC-SM)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER: 2057

TESTED BY: EH

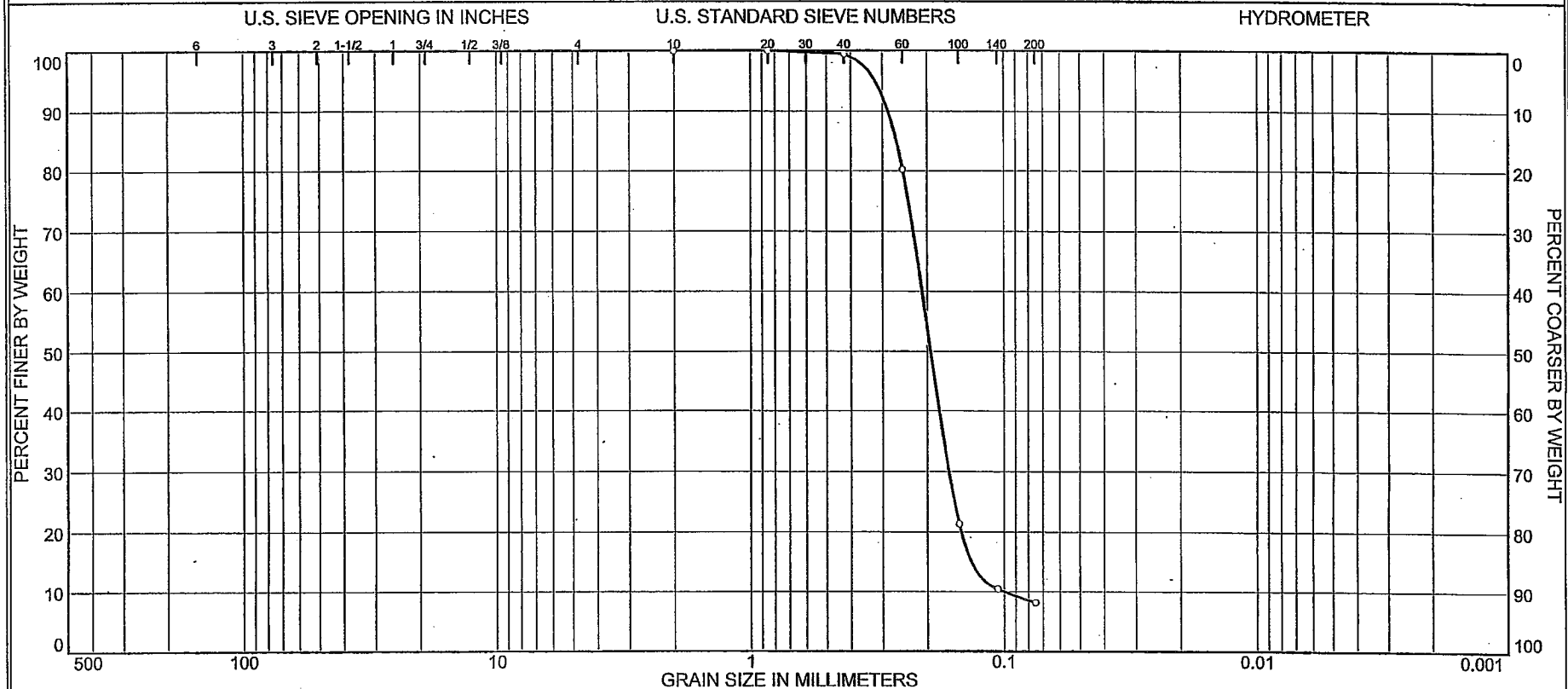
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY:

Harry Johnson

KAW 4.15.08

Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.5	91.4	8.1	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2302UD	UD-9	63.5-66 Ft	2/6/08	SP-SM	Very Pale Brown Poorly Graded SAND with Silt (Visual)	21.2	ND	ND

Client Bechtel		MACTEC ENGINEERING AND CONSULTING, INC.	○ Tested by: EH Reviewed by: HJ 
Project Exelon Texas COL (Victoria)			Sieve Analysis Only
			NM value from average of strength tests performed.
			Specific Gravity = 2.68 (ASTM D 854-06)
Project No. 6468-07-1777	Lab No. 8345		ND = Not Determined

KAW 4.15.08

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Source: B-2302UD
Sample No.: UD-9
Elev. or Depth: 63.5-66 Ft
Location: B-2302UD
Description: Very Pale Brown Poorly Graded SAND with Silt (Visual)
Date: 2/6/08 PL: ND LL: ND PI: ND
USCS Classification: SP-SM AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

Mechanical Analysis Data

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.00	100.0
# 40	0.64	99.5
# 60	28.00	80.2
# 100	111.46	21.3
# 140	126.90	10.4
# 200	130.17	8.1

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 91.9 (% coarse = % medium = 0.5 % fine = 91.4)
% FINES = 8.1

D85= 0.26 D60= 0.21 D50= 0.19
D30= 0.16 D15= 0.13 D10= 0.10
C_u= 1.2877 C_u= 2.0848

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/7/08

SAMPLE IDENTIFICATION: B-2302UD, UD-9 @ 63.5-66.0 Ft.

(A) Mass of oven-dried soil, grams:	37.78
(B) Mass of pycnometer filled with water at test temperature (T), grams:	342.95
(C) Mass of pycnometer, water and soil, grams:	366.66
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.4
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.685
(F) Correction factor:	0.99899
(G x F) SPECIFIC GRAVITY @ 20°C:	2.682

MATERIAL TESTED:

☐
- # 4

☒
- # 10

PREPARATION METHOD:

☒
DRY

☐
WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Poorly Graded SAND with Silt (SP-SM) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER: 2052

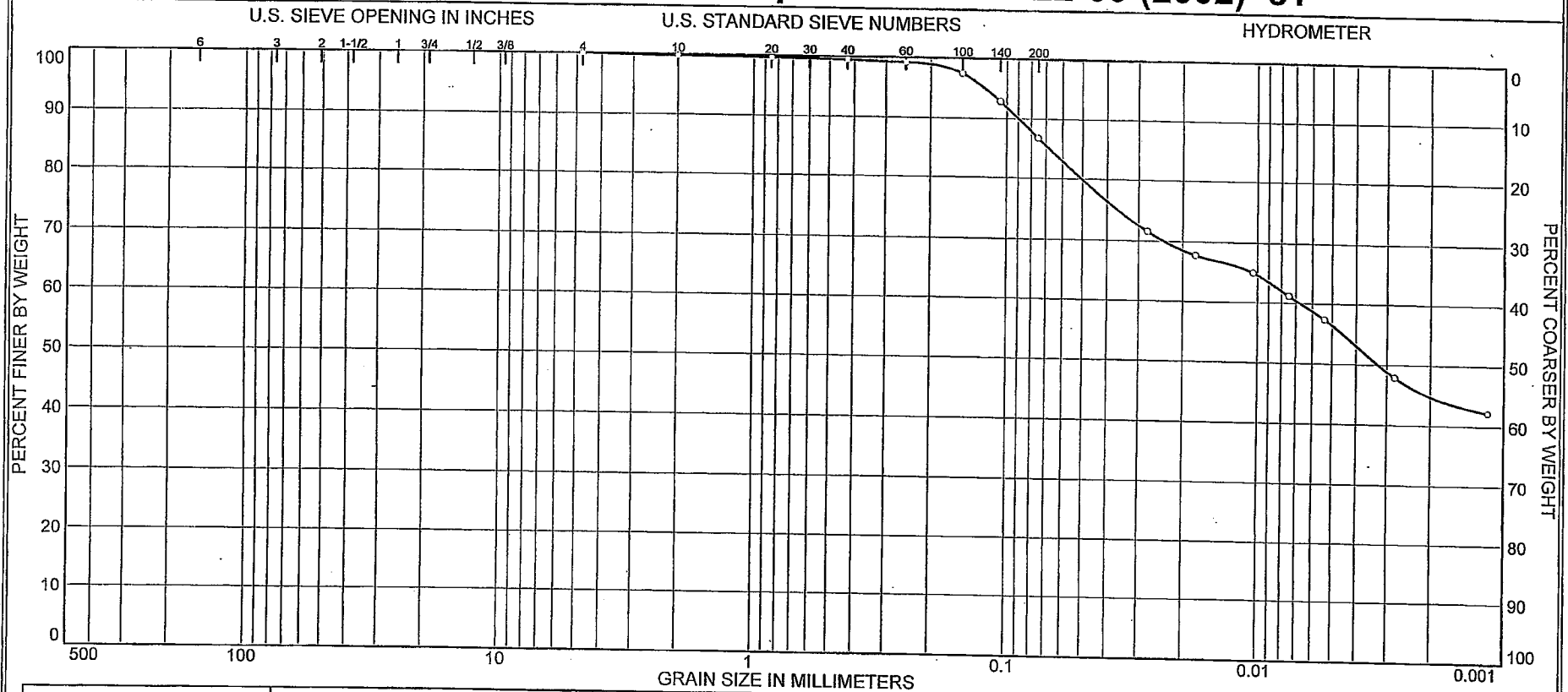
TESTED BY: EH

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

REVIEWED BY: Harry Johnson *HJ*

KAW 4.15.08

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



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.2	0.3	12.7	30.3	56.5

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2302UD	UD-10	66-68.5 Ft	2/6/08	CH	Light Gray Fat CLAY	22.5	50	22

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777

Lab No. 8346

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.74 (ASTM D 854-06)

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2302UD
Sample No.: UD-10
Elev. or Depth: 66-68.5 Ft Sample Length(in./cm.): ID#8346
Location: B-2302UD
Description: Light Gray Fat CLAY
Date: 2/6/08 PL: 22 LL: 50 PI: 28
USCS Classification: CH AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.74 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	140.60	
Tare =	88.90	
Dry sample weight =	51.70	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.09	99.8
# 20	0.17	99.7
# 40	0.25	99.5
# 60	0.39	99.2
# 100	1.27	97.5
# 140	3.66	92.9
# 200	6.82	86.8

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 86.8
Weight of hydrometer sample: 44.88
Calculated biased weight= 51.71
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.74
Specific gravity correction factor= 0.980
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	23.1	42.5	37.8	0.0128	42.5	9.3	0.0276	71.6
5.00	23.1	40.5	35.8	0.0128	40.5	9.7	0.0178	67.8
15.00	23.1	39.0	34.3	0.0128	39.0	9.9	0.0104	65.0
30.00	23.1	37.0	32.3	0.0128	37.0	10.2	0.0075	61.2
60.00	23.1	35.0	30.3	0.0128	35.0	10.6	0.0054	57.4
240.00	23.1	30.0	25.3	0.0128	30.0	11.4	0.0028	47.9
1440.00	23.1	27.0	22.3	0.0128	27.0	11.9	0.0012	42.2

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

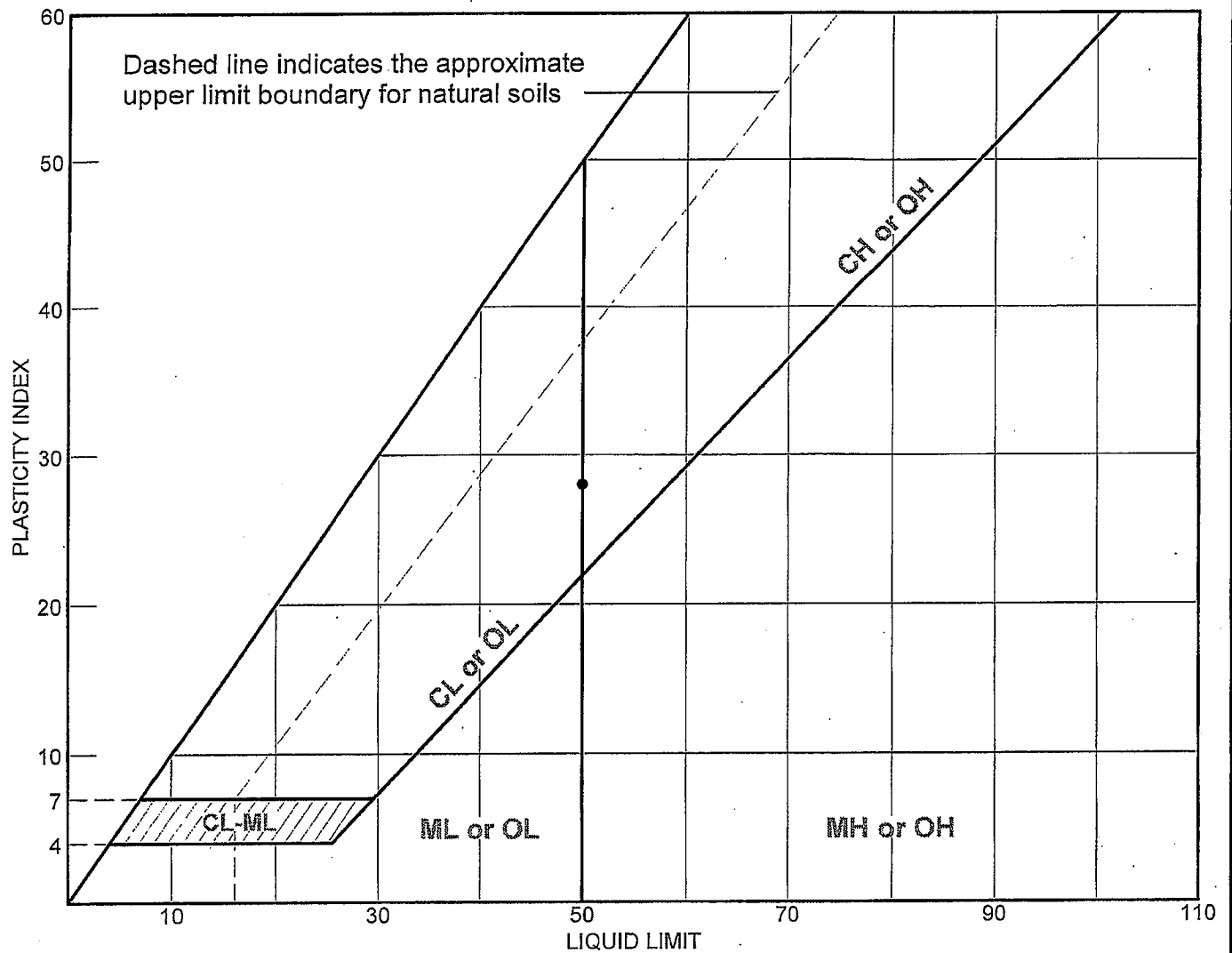
% COBBLES = % GRAVEL =

% SAND = 13.2 (% coarse = 0.2 % medium = 0.3 % fine = 12.7)

% SILT = 30.3 % CLAY = 56.5

D₈₅= 0.07 D₆₀= 0.01 D₅₀= 0.00

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
•	B-2302UD	UD-10	66-68.5 Ft	22.5	22	50	28	CH

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8346

LIQUID AND PLASTIC LIMIT TEST DATA

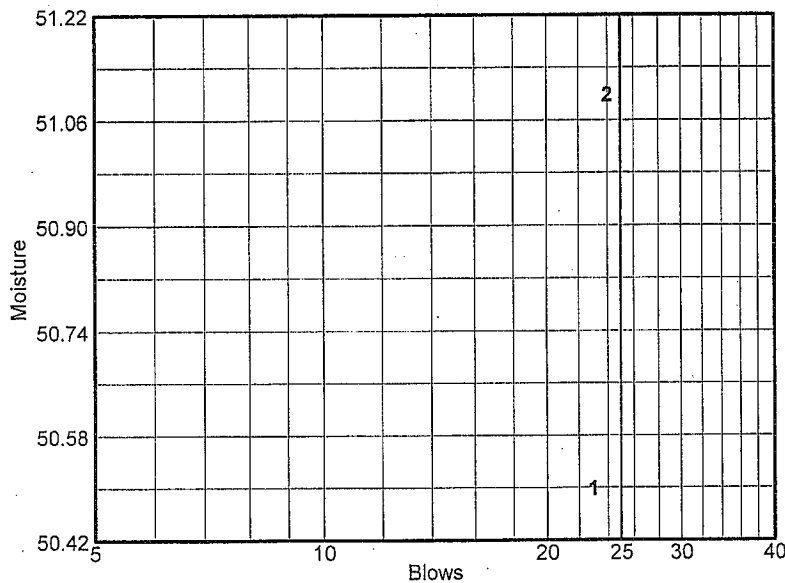
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2302UD
 Sample No.: UD-10
 Elev. or Depth: 66-68.5 Ft
 Location: B-2302UD
 Description: Light Gray Fat CLAY
 Water Content: 22.5 USCS: CH AASHTO:
 Sample Length(in./cm.): ID#8346

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.92	30.50				
Dry+Tare	26.00	27.13				
Tare	20.22	20.53				
# Blows	23	24				
Moisture	50.5	51.1				



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

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	27.98	27.29		
Dry+Tare	26.65	26.06		
Tare	20.61	20.25		
Moisture	22.0	21.2		

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/8/08

SAMPLE IDENTIFICATION: B-2302UD, UD-10 @ 66-68.5Ft.

(A) Mass of oven-dried soil, grams:	37.40
(B) Mass of pycnometer filled with water at test temperature (T), grams:	341.15
(C) Mass of pycnometer, water and soil, grams:	364.89
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.738
(F)	Correction factor: 0.99904
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.735

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER: 2055

TESTED BY: EH

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

REVIEWED BY: Harry Johnson

KAW 4.15.08

Client Bechtel		MACTEC ENGINEERING AND CONSULTING, INC.	☐ Tested by: EH Reviewed by: HJ ☒
Project Exelon Texas COL (Victoria)			NM value from first strength test performed. Specific Gravity = 2.74 (ASTM D 854-06)
Project No. 6468-07-1777	Lab No. 8576		

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2302UD
Sample No.: UD-11
Elev. or Depth: 69.5-71.5 Ft Sample Length(in./cm.): ID#8576
Location: B-2302UD
Description: Light Gray Mottled Light Yellowish Brown Fat CLAY
Date: 2/6/08 PL: 25 LL: 59 PI: 34
USCS Classification: CH AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.74 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	143.97	
Tare =	93.15	
Dry sample weight =	50.82	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.17	99.7
# 10	0.18	99.6
# 20	0.21	99.6
# 40	0.28	99.4
# 60	0.72	98.6
# 100	2.60	94.9
# 140	5.22	89.7
# 200	7.45	85.3

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 85.3
Weight of hydrometer sample: 43.37
Calculated biased weight= 50.84
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.74
Specific gravity correction factor= 0.980
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	23.1	44.0	39.3	0.0128	44.0	9.1	0.0273	75.7
5.00	23.1	43.0	38.3	0.0128	43.0	9.2	0.0174	73.8
15.00	23.1	41.5	36.8	0.0128	41.5	9.5	0.0102	70.9
30.00	23.1	40.5	35.8	0.0128	40.5	9.7	0.0073	69.0
60.00	23.1	38.0	33.3	0.0128	38.0	10.1	0.0052	64.2
240.00	23.1	36.0	31.3	0.0128	36.0	10.4	0.0027	60.3
1440.00	23.1	32.0	27.3	0.0128	32.0	11.0	0.0011	52.6

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

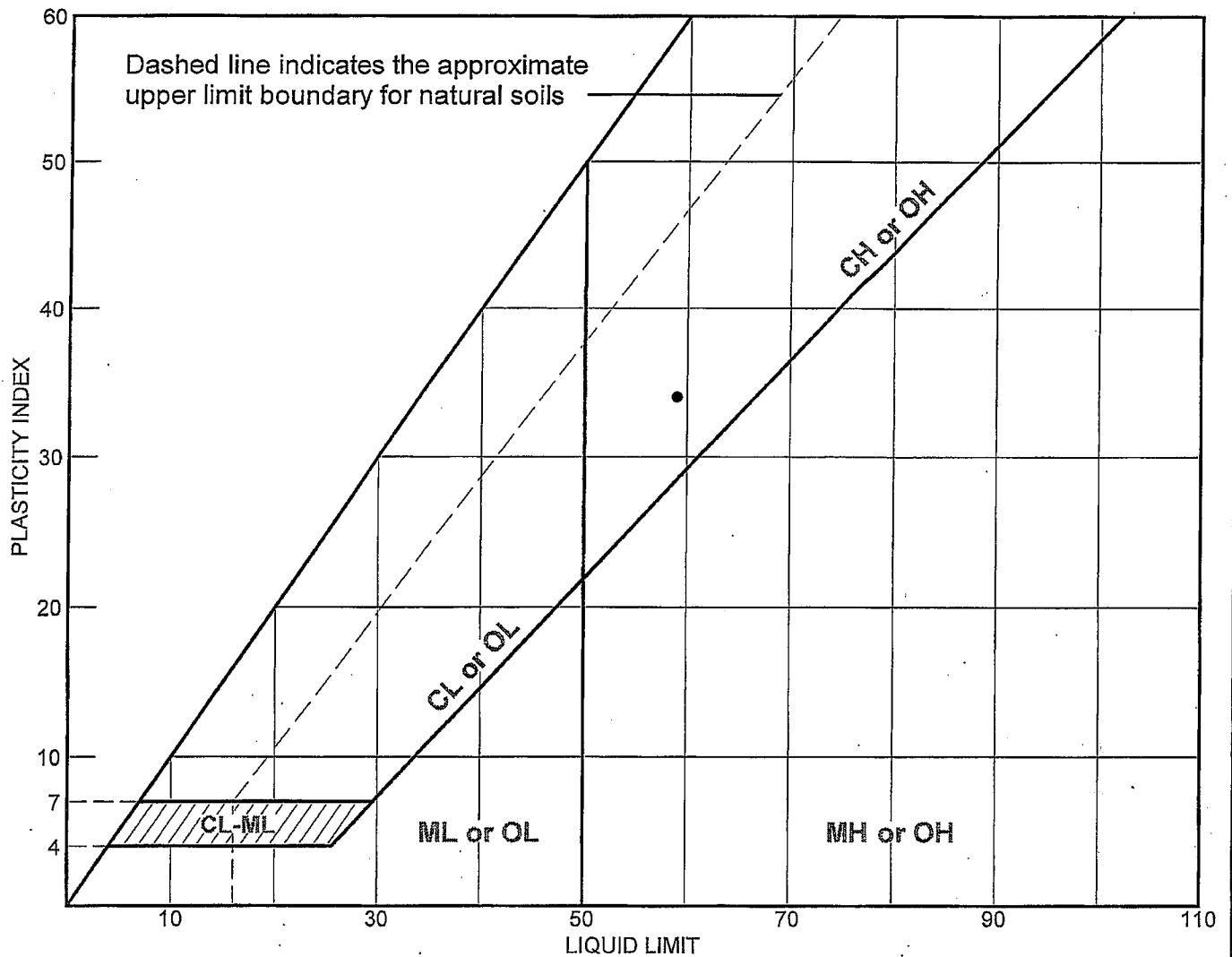
% COBBLES = % GRAVEL = 0.3 (% coarse = % fine = 0.3)

% SAND = 14.4 (% coarse = 0.1 % medium = 0.2 % fine = 14.1)

% SILT = 21.7 % CLAY = 63.6

D₈₅= 0.07 D₆₀= 0.00

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
•	B-2302UD	UD-11	69.5-71.5 Ft	24.2	25	59	34	CH

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8576

LIQUID AND PLASTIC LIMIT TEST DATA

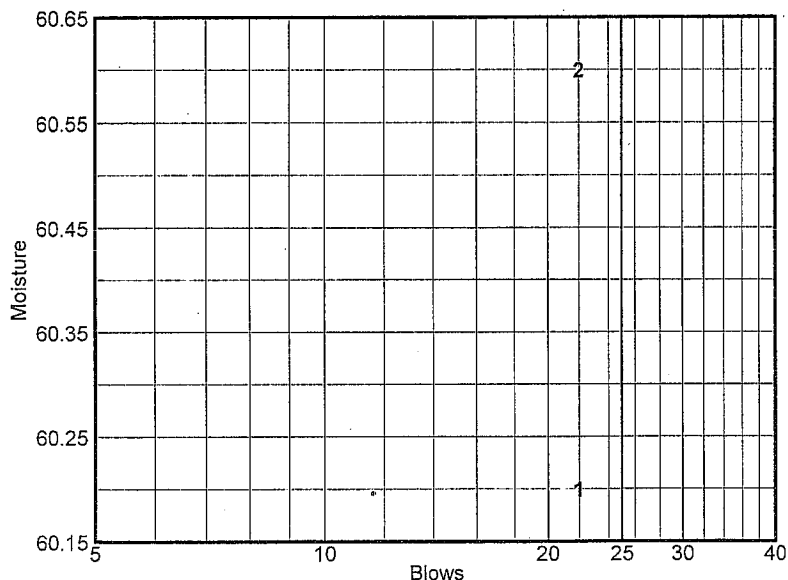
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2302UD
 Sample No.: UD-11
 Elev. or Depth: 69.5-71.5 Ft Sample Length(in./cm.): ID#8576
 Location: B-2302UD
 Description: Light Gray Mottled Light Yellowish Brown Fat CLAY
 Water Content: 24.2 USCS: CH AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.38	33.25				
Dry+Tare	29.03	28.83				
Tare	21.81	21.54				
# Blows	22	22				
Moisture	60.2	60.6				



Liquid Limit= 59
 Plastic Limit= 25
 Plasticity Index= 34

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	30.37	29.42			
Dry+Tare	28.62	27.73			
Tare	21.76	21.03			
Moisture	25.5	25.2			

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/8/08

SAMPLE IDENTIFICATION: B-2302UD, UD-11 @ 69.5-71.5 Ft.

(A) Mass of oven-dried soil, grams:	37.20
(B) Mass of pycnometer filled with water at test temperature (T), grams:	365.95
(C) Mass of pycnometer, water and soil, grams:	389.59
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.743
(F)	Correction factor: 0.99912
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.741

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER: 2193

TESTED BY: EH

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

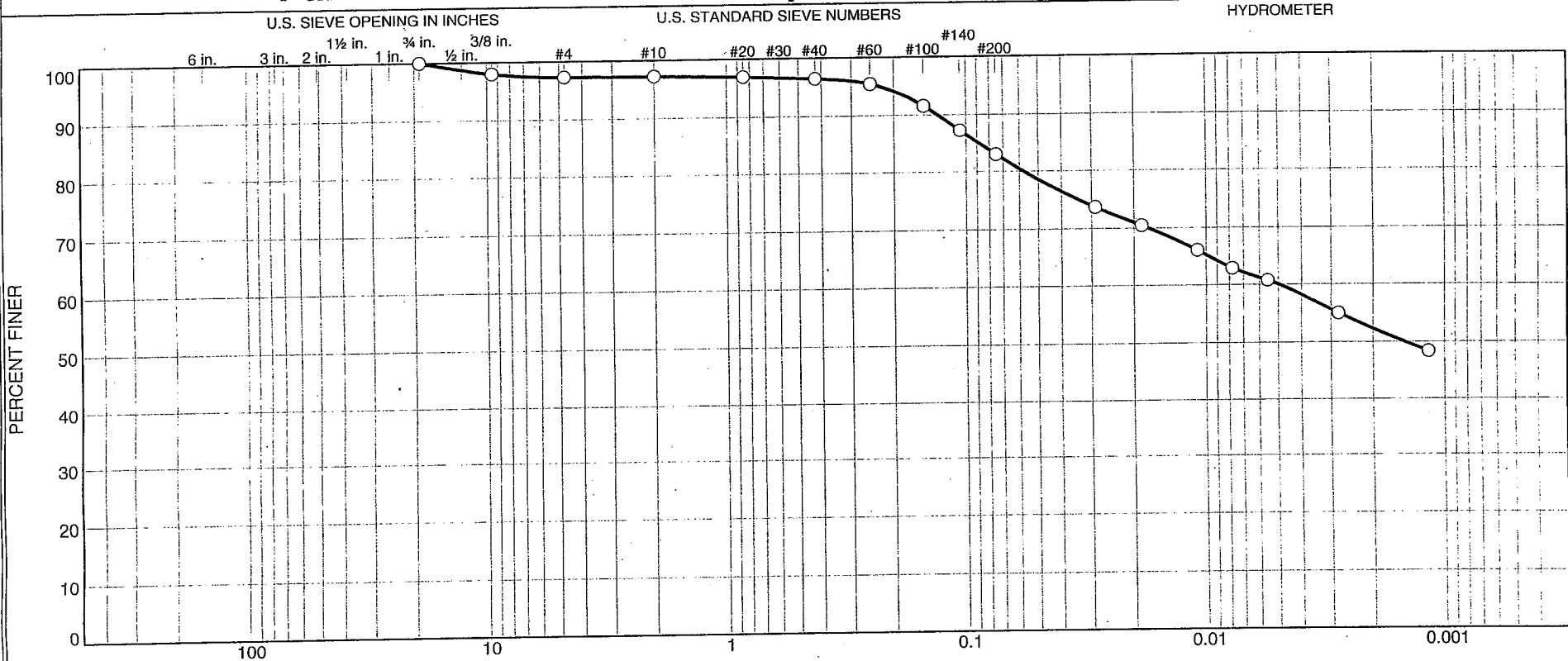
REVIEWED BY:

Harry Johnson



KAW 4.13.08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel *		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.7	0.0	0.8	13.5	22.9	60.1

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B2302UD	UD-12	78.5-80.5	2/6/08	CH	Light Gray Fat CLAY with sand	20.9	64	21

Client Bechtel	MACTEC, Inc. Raleigh, North Carolina	○ Specific Gravity = 2.676 (ASTM D854-06) NM obtained from consolidation test specimen
Project Exelon Texas COL (Victoria Reservoir)		
Project No. 6468071777		
Figure <i>NA</i>		

KAW 5/8/08

GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2302UD

Depth: 78.5-80.5

Sample Number: UD-12

Material Description: Light Gray Fat CLAY with sand

Date: 2/6/08

Natural Moisture: 20.9

Liquid Limit: 64

Plastic Limit: 21

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.676 (ASTM D854-06)

NM obtained from consolidation test specimen

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
160.11	0.00	0.00	3/4	0.00	100.0
			3/8"	3.18	98.0
			#4	4.29	97.3
			#10	4.39	97.3
47.69	0.00	0.00	#20	0.16	96.9
			#40	0.39	96.5
			#60	0.89	95.4
			#100	2.75	91.6
			#140	4.89	87.3
			#200	7.00	83.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 97.3

Weight of hydrometer sample = 47.69

Hygroscopic moisture correction:

Moist weight and tare = 28.21

Dry weight and tare = 27.41

Tare weight = 15.50

Hygroscopic moisture = 6.7%

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 = 2.676

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	39.0	34.1	0.0131	40.0	9.7	0.0290	73.7
5.00	22.5	37.5	32.6	0.0131	38.5	10.0	0.0186	70.5
15.00	22.5	35.5	30.6	0.0131	36.5	10.3	0.0109	66.2
30.00	22.6	34.0	29.1	0.0131	35.0	10.6	0.0078	63.0
60.00	22.6	33.0	28.1	0.0131	34.0	10.7	0.0055	60.8
240.00	23.8	30.0	25.4	0.0129	31.0	11.2	0.0028	55.0
1440.00	23.5	27.0	22.4	0.0130	28.0	11.7	0.0012	48.4

MACTEC, Inc.

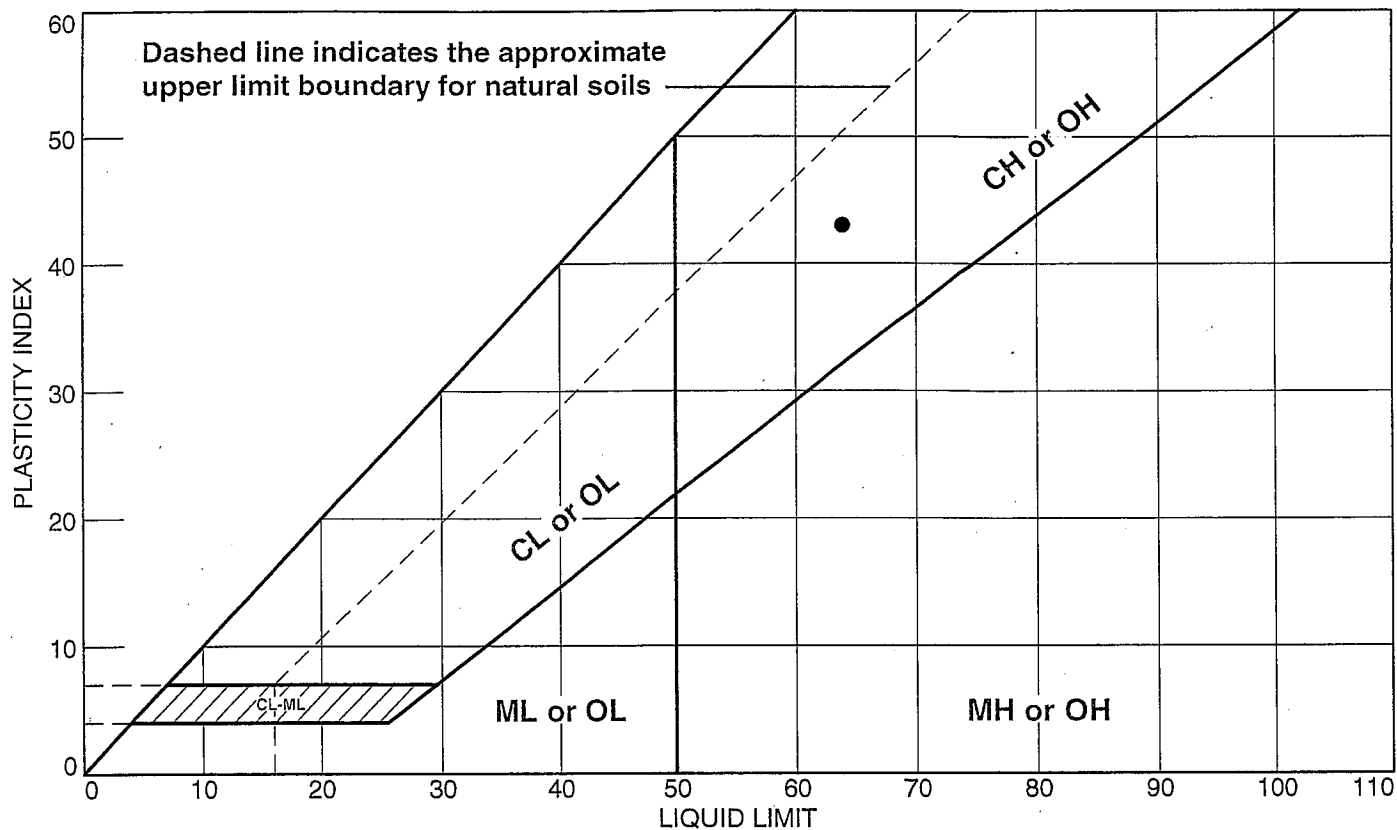
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.7	2.7	0.0	0.8	13.5	14.3	22.9	60.1	83.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0015	0.0049	0.0574	0.0886	0.1306	0.2274

Fineness Modulus
0.26

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 B2302UD	UD-12	78.5-80.5	20.9	21	64	43	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure N/A

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/9/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2302UD

Depth: 78.5-80.5

Sample Number: UD-12

Material Description: Light Gray Fat CLAY with sand

USCS: CH

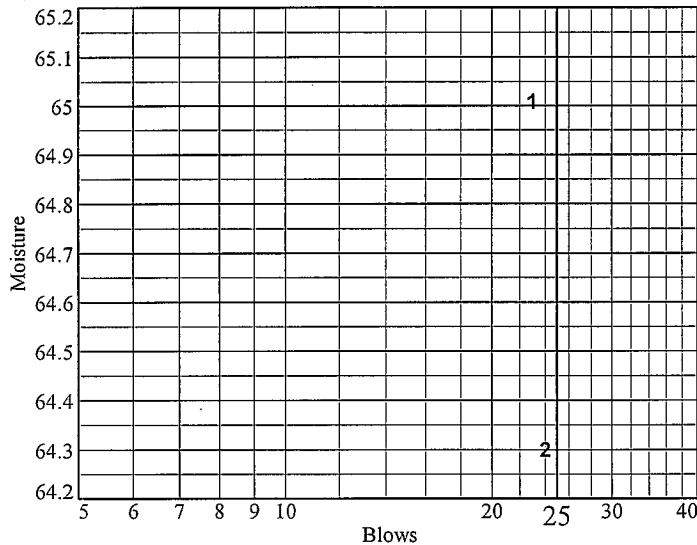
AASHTO: A-7-6(38)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.87	18.92				
Dry+Tare	20.60	15.93				
Tare	15.57	11.28				
# Blows	23	24				
Moisture	65.0	64.3				



Liquid Limit= 64
 Plastic Limit= 21
 Plasticity Index= 43
 Natural Moisture= 20.9
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.57	22.71			
Dry+Tare	20.49	21.48			
Tare	15.50	15.57			
Moisture	21.6	20.8			

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 RESERVOIR)

PROJECT NUMBER: 6468071777

DATE: 4/11/08

SAMPLE IDENTIFICATION: B-2302UD UD-12

(A) Mass of oven-dried soil, grams:	50.04
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.52
(C) Mass of pycnometer, water and soil, grams:	687.87
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.4
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.677
(F) Correction factor:	0.99970
(G x F) SPECIFIC GRAVITY @ 20°C:	2.676

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 97.3%

Fat CLAY with sand (CH)

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNO METER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Client <u>Bechtel</u>		MACTEC ENGINEERING AND CONSULTING, INC.	☐ Tested by: EH Reviewed by: HJ <u>HJ</u>
Project <u>Exelon Texas COL (Victoria)</u>			Sieve Analysis Only NM value from average of strength tests performed. Specific Gravity = 2.71 (ASTM D 854-06) ND = Not Determined
Project No. <u>6468-07-1777</u>	Lab No. <u>8347</u>		

KAW 4-15-08

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Source: B-2302UD
Sample No.: UD-14
Elev. or Depth: 108.5-111 Ft
Location: B-2302UD
Description: Yellow Silty SAND (Visual)
Date: 2/7/08 PL: ND LL: ND PI: ND
USCS Classification: SM AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
 NM value from average of strength tests performed.
 Specific Gravity = 2.71 (ASTM D 854-06)
 ND = Not Determined

	Initial
Dry sample and tare=	271.96
Tare =	98.07
Dry sample weight =	173.89
Tare for cumulative weight retained=	.00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.92	99.5
# 20	2.97	98.3
# 40	12.87	92.6
# 60	59.74	65.6
# 100	114.25	34.3
# 140	129.15	25.7
# 200	134.85	22.5

```
Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES =                % GRAVEL =
% SAND = 77.5    (% coarse = 0.5    % medium = 6.9    % fine = 70.1)
% FINES = 22.5
```

D85= 0.36 D60= 0.23 D50= 0.20
D30= 0.13

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/9/08

SAMPLE IDENTIFICATION: B-2302UD, UD-14 @108.5-111 Ft.

(A) Mass of oven-dried soil, grams:	37.55
(B) Mass of pycnometer filled with water at test temperature (T), grams:	363.60
(C) Mass of pycnometer, water and soil, grams:	387.33
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.4
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.717
(F)	Correction factor: 0.99899
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.714

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Silty SAND (SM) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER: 2184

TESTED BY: EH

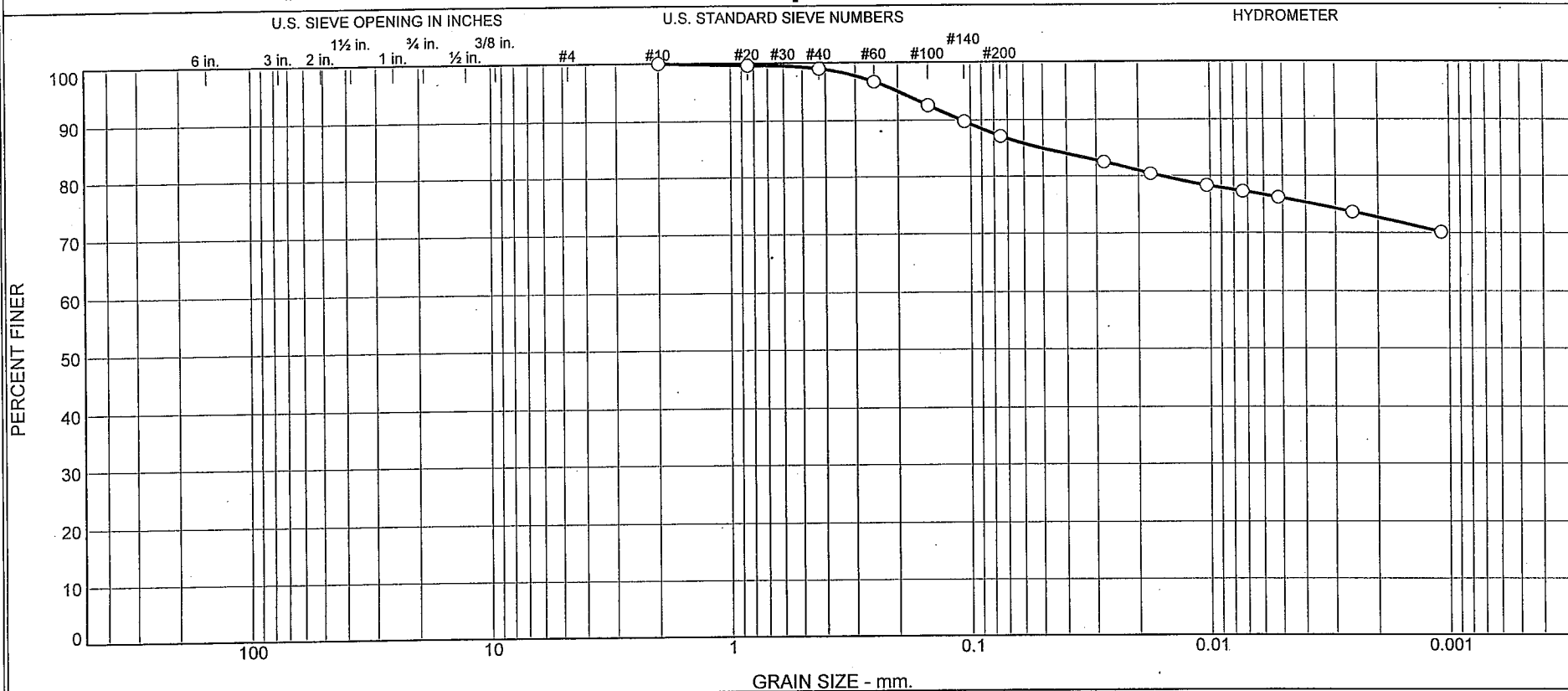
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson

HJ

KAW 4.15.08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.0	11.9	11.0	76.1

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B2302UD	UD-16	120.5-122.5	2/7/08	CH	Very Pale Brown Fat CLAY	25.5	76	16

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA***MACTEC, Inc.****Raleigh, North Carolina**

○ Specific Gravity = 2.715 (ASTM D854-06)
 NM obtained from consolidation test specimen

KAW 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2302UD

Depth: 120.5-122.5

Sample Number: UD-16

Material Description: Very Pale Brown Fat CLAY

Date: 2/7/08

Natural Moisture: 25.5

Liquid Limit: 76

Plastic Limit: 16

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.715 (ASTM D854-06)

NM obtained from consolidation test specimen

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
156.85	0.00	0.00	#10	0.00	100.0
48.54	0.00	0.00	#20	0.19	99.6
			#40	0.49	99.0
			#60	1.62	96.7
			#100	3.62	92.5
			#140	4.97	89.8
			#200	6.24	87.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 48.54

Hygroscopic moisture correction:

Moist weight and tare = 28.84

Dry weight and tare = 28.21

Tare weight = 15.51

Hygroscopic moisture = 5.0%

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 = 2.715

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	21.3	44.0	38.7	0.0132	45.0	8.9	0.0278	82.6
5.00	21.3	43.0	37.7	0.0132	44.0	9.1	0.0177	80.5
15.00	21.3	42.0	36.7	0.0132	43.0	9.2	0.0103	78.3
30.00	21.4	41.5	36.3	0.0132	42.5	9.3	0.0073	77.3
60.00	21.4	41.0	35.8	0.0132	42.0	9.4	0.0052	76.3
250.00	22.4	39.5	34.5	0.0130	40.5	9.7	0.0026	73.6
1440.00	21.9	38.0	32.9	0.0131	39.0	9.9	0.0011	70.1

MACTEC, Inc.

Fractional Components

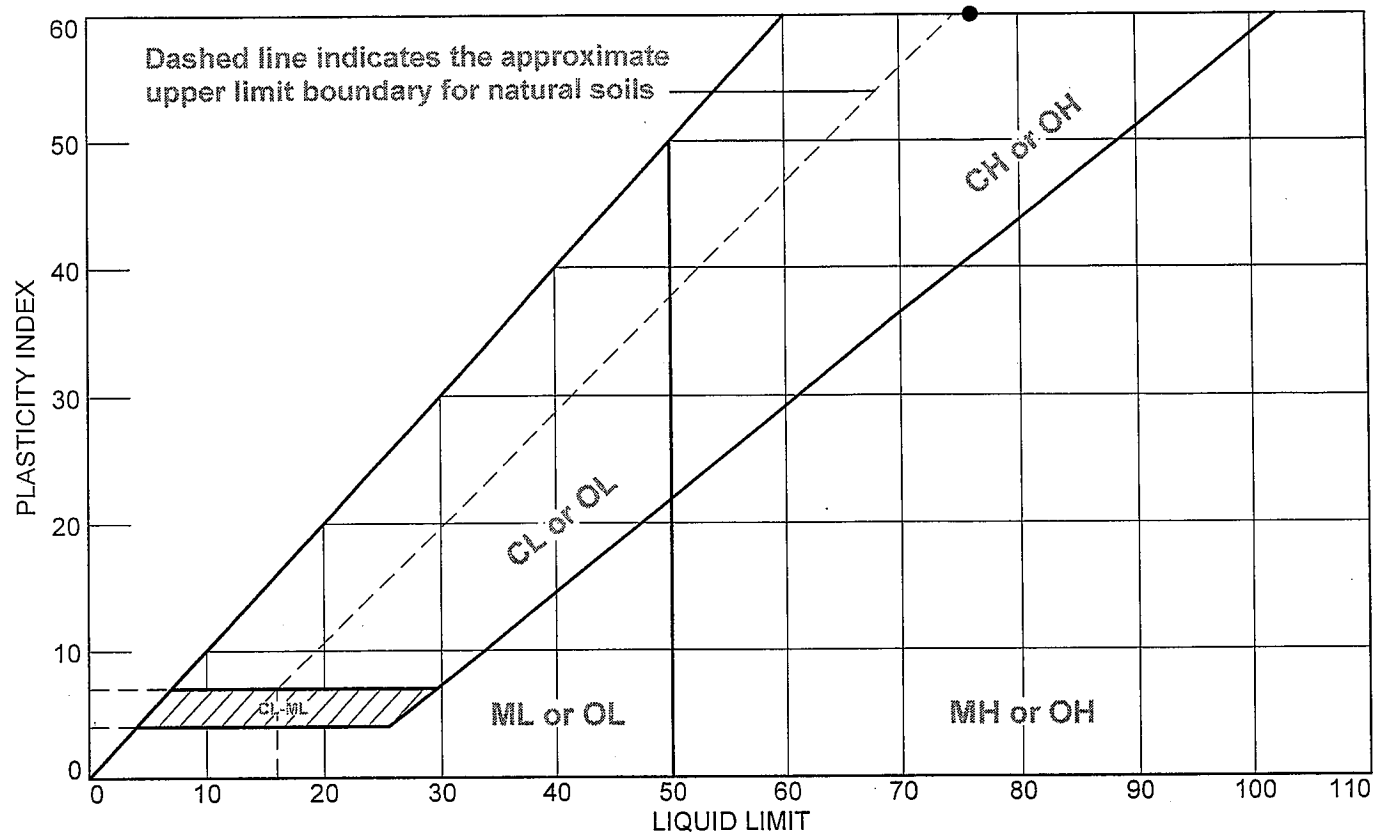
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.0	11.9	12.9	11.0	76.1	87.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0160	0.0504	0.1093	0.2006

Fineness Modulus
0.11

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 B2302UD	UD-16	120.5-122.5	25.5	16	76	60	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure **NX**

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelón Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2302UD

Depth: 120.5-122.5

Sample Number: UD-16

Material Description: Very Pale Brown Fat CLAY

USCS: CH

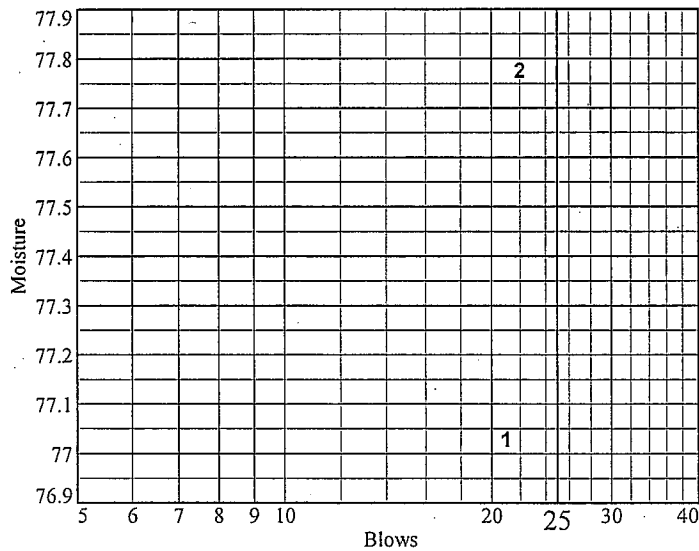
AASHTO: A-7-6(56)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	20.01	24.13				
Dry+Tare	16.12	20.35				
Tare	11.07	15.49				
# Blows	21	22				
Moisture	77.0	77.8				



Liquid Limit= 76
 Plastic Limit= 16
 Plasticity Index= 60
 Natural Moisture= 25.5
 Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.66	21.60			
Dry+Tare	20.79	20.77			
Tare	15.57	15.55			
Moisture	16.7	15.9			

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: 4/18/08

SAMPLE IDENTIFICATION: B-2302UD UD-16

(A) Mass of oven-dried soil, grams:	52.69
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.68
(C) Mass of pycnometer, water and soil, grams:	688.97
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.716
(F) Correction factor:	0.99959
(G x F) SPECIFIC GRAVITY @ 20°C:	2.715

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100%

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

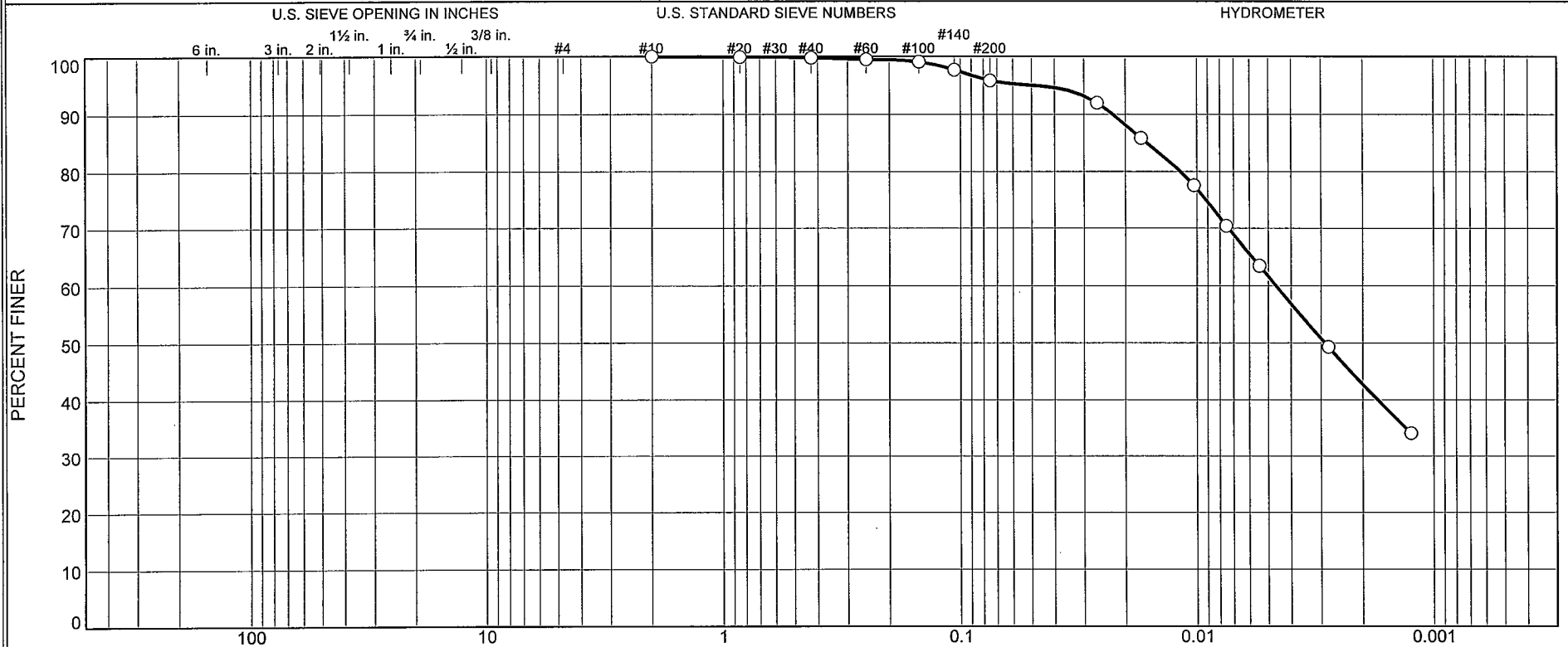
PYCNOMETER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	4.0	34.1	61.7

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2302UD	UD-19	145.5-147.3	2/7/08	CL	Pale Brown Lean CLAY	19.4	49	15

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure NA

MACTEC, Inc.
Raleigh, North Carolina

○ Specific Gravity = 2.688 (ASTM D854-06)
 ND = Not determined
 NM determined from consolidation test specimen

KAW 5/12/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/12/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2302UD

Depth: 145.5-147.3

Sample Number: UD-19

Material Description: Pale Brown Lean CLAY

Date: 2/7/08

Natural Moisture: 19.4

Liquid Limit: 49

Plastic Limit: 15

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.688 (ASTM D854-06)

ND = Not determined

NM determined from consolidation test specimen

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
379.08	0.00	0.00	#10	0.00	100.0
50.41	0.00	0.00	#20	0.05	99.9
			#40	0.12	99.8
			#60	0.26	99.5
			#100	0.47	99.1
			#140	1.17	97.7
			#200	2.11	95.8

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 50.41

Hygroscopic moisture correction:

Moist weight and tare = 28.30

Dry weight and tare = 27.76

Tare weight = 15.43

Hygroscopic moisture = 4.4%

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 = 2.688

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	21.5	50.0	44.8	0.0132	51.0	7.9	0.0264	92.0
5.00	21.5	47.0	41.8	0.0132	48.0	8.4	0.0172	85.8
15.00	21.5	43.0	37.8	0.0132	44.0	9.1	0.0103	77.6
30.00	21.5	39.5	34.3	0.0132	40.5	9.7	0.0075	70.4
60.00	21.9	36.0	30.9	0.0132	37.0	10.2	0.0054	63.5
250.00	22.3	29.0	24.0	0.0131	30.0	11.4	0.0028	49.3
1440.00	20.7	22.0	16.6	0.0134	23.0	12.5	0.0012	34.0

MACTEC, Inc.

Fractional Components

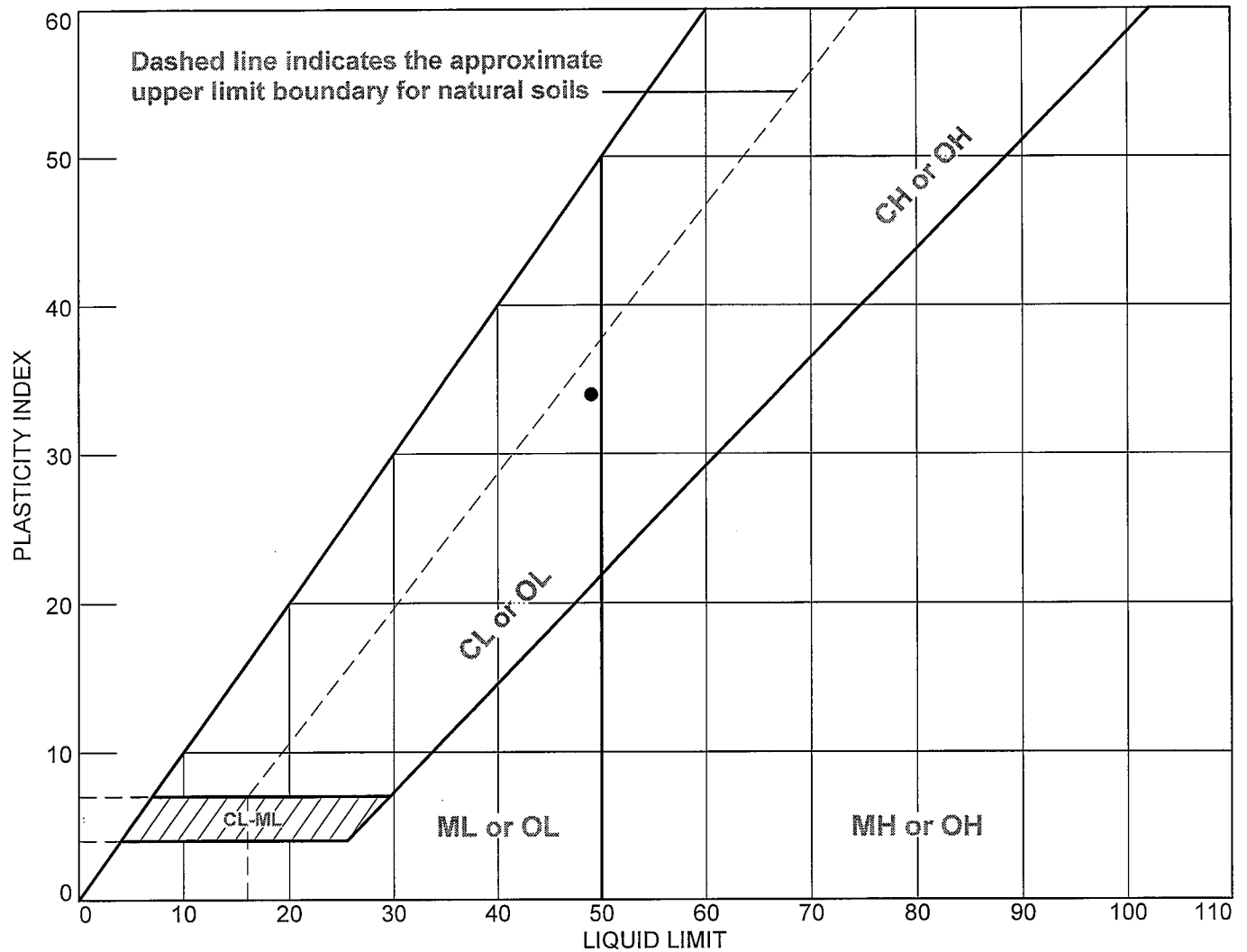
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	4.0	4.2	34.1	61.7	95.8

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0029	0.0046	0.0117	0.0163	0.0226	0.0511

Fineness Modulus
0.02

MACTEC, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2302UD	UD-19	145.5-147.3	19.4	15	49	34	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure NA

KAW 5/12/09

Tested By: CS

Checked By: LBJ

LIQUID AND PLASTIC LIMIT TEST DATA

5/12/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2302UD

Depth: 145.5-147.3

Sample Number: UD-19

Material Description: Pale Brown Lean CLAY

USCS: CL

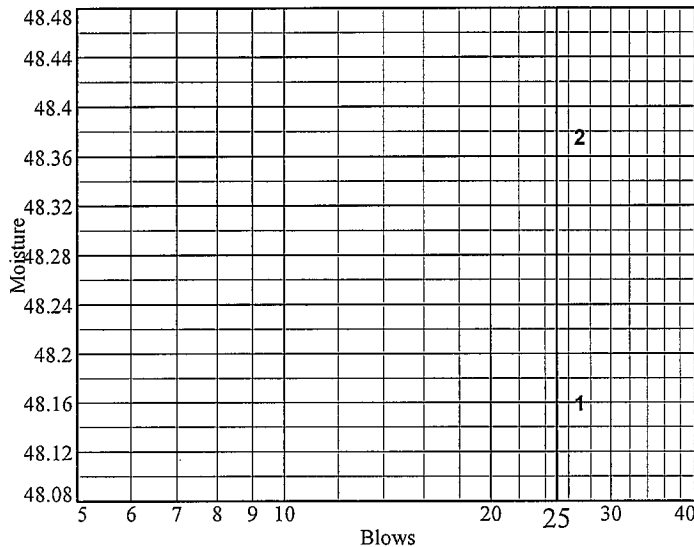
AASHTO: A-7-6(34)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.02	36.03				
Dry+Tare	25.31	29.33				
Tare	15.53	15.48				
# Blows	27	27				
Moisture	48.2	48.4				



Liquid Limit= 49
 Plastic Limit= 15
 Plasticity Index= 34
 Natural Moisture= 19.4
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.34	23.90			
Dry+Tare	22.30	22.23			
Tare	15.56	11.29			
Moisture	15.4	15.3			

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: 5/7/08

SAMPLE IDENTIFICATION: B-2302UD UD-19

(A) Mass of oven-dried soil, grams:	50.13
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.75
(C) Mass of pycnometer, water and soil, grams:	687.24
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.689
(F) <i>Correction factor:</i>	0.99972
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.688

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100%

Lean CLAY (CL)

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNO METER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/12/08

Client Bechtel		MACTEC ENGINEERING AND CONSULTING, INC.	☐ Tested by: EH Reviewed by: HJ HJ
Project Exelon Texas COL (Victoria)			Sieve Analysis Only NM value from average of strength tests performed. Specific Gravity = 2.74 (ASTM D 854-06) ND = Not Determined
Project No. 6468-07-1777	Lab No. 8348		

KAW 4.15.08

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Source: B-2304UD
Sample No.: UD-2
Elev. or Depth: 11-13.3 Ft Sample Length(in./cm.): ID#8348
Location: B-2304UD
Description: Light Yellowish Brown Sandy SILT (Visual)
Date: 1/30/08 PL: ND LL: ND PI: ND
USCS Classification: ML AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
 NM value from average of strength tests performed.
 Specific Gravity = 2.74 (ASTM D 854-06)
 ND = Not Determined

	Initial
Dry sample and tare=	262.57
Tare =	113.89
Dry sample weight =	148.68
Tare for cumulative weight retained=	.00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.44	99.7
# 10	0.81	99.5
# 20	1.00	99.3
# 40	1.18	99.2
# 60	2.53	98.3
# 100	17.81	88.0
# 140	41.14	72.3
# 200	64.17	56.8

```
Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES =          % GRAVEL = 0.3      (% coarse =          % fine = 0.3)
% SAND = 42.9      (% coarse = 0.2      % medium = 0.3      % fine = 42.4)
% FINES = 56.8
```

$D_{85} = 0.14$ $D_{60} = 0.08$

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/7/08

SAMPLE IDENTIFICATION: B-2304UD, UD-2 @ 11-13.3 Ft.

(A) Mass of oven-dried soil, grams:	37.32
(B) Mass of pycnometer filled with water at test temperature (T), grams:	365.95
(C) Mass of pycnometer, water and soil, grams:	389.64
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.7
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.738
(F)	Correction factor: 0.99892
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.735

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Sandy SILT (ML) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2193

TESTED BY: EH

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

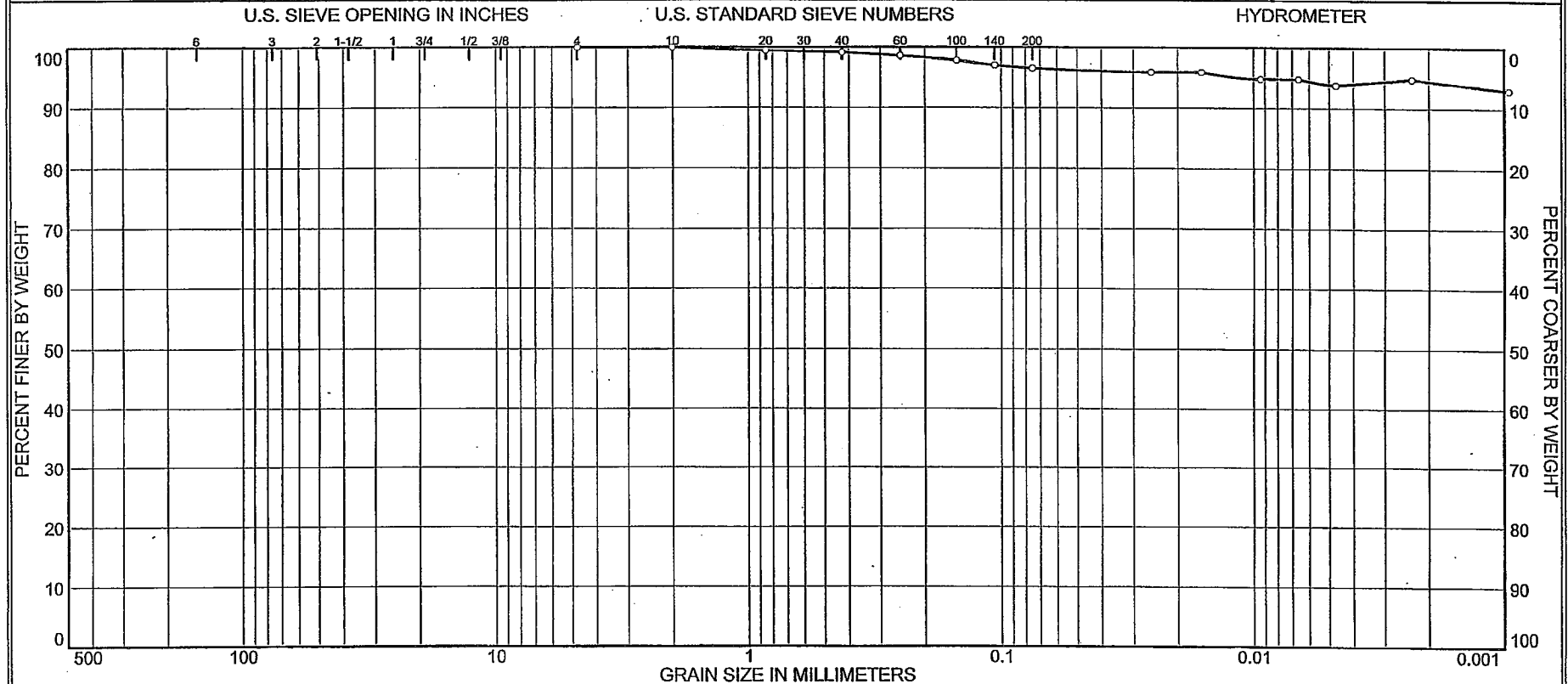
REVIEWED BY:

Harry Johnson

HJ

KAW 4-15-08

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



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.9	2.6	2.6	93.9

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2304UD	UD-7	73.5-75.5 Ft	1/31/08	MH	Mottled Brownish Yellow and Pale Yellow Elastic SILT	27.6	69	34

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777

Lab No. 8349

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.78 (ASTM D 854-06)

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2304UD
Sample No.: UD-7
Elev. or Depth: 73.5-75.5 Ft Sample Length(in./cm.): ID#8349
Location: B-2304UD
Description: Mottled Brownish Yellow and Pale Yellow Elastic SILT
Date: 1/31/08 PL: 34 LL: 69 PI: 35
USCS Classification: MH AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.78 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	61.70	
Tare =	15.31	
Dry sample weight =	46.39	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.26	99.4
# 40	0.42	99.1
# 60	0.65	98.6
# 100	1.04	97.8
# 140	1.37	97.0
# 200	1.61	96.5

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 96.5
Weight of hydrometer sample: 44.78
Calculated biased weight= 46.40
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.777
Specific gravity correction factor= 0.973
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.8	50.5	45.7	0.0127	50.5	8.0	0.0254	95.9
5.00	22.8	50.5	45.7	0.0127	50.5	8.0	0.0161	95.9
15.00	22.8	50.0	45.2	0.0127	50.0	8.1	0.0093	94.8
30.00	22.8	50.0	45.2	0.0127	50.0	8.1	0.0066	94.8
60.00	22.8	49.5	44.7	0.0127	49.5	8.2	0.0047	93.8
240.00	22.8	50.0	45.2	0.0127	50.0	8.1	0.0023	94.8
1440.00	23.3	49.0	44.3	0.0126	49.0	8.3	0.0010	93.0

Fractional Components

Gravel/Sand based on #4

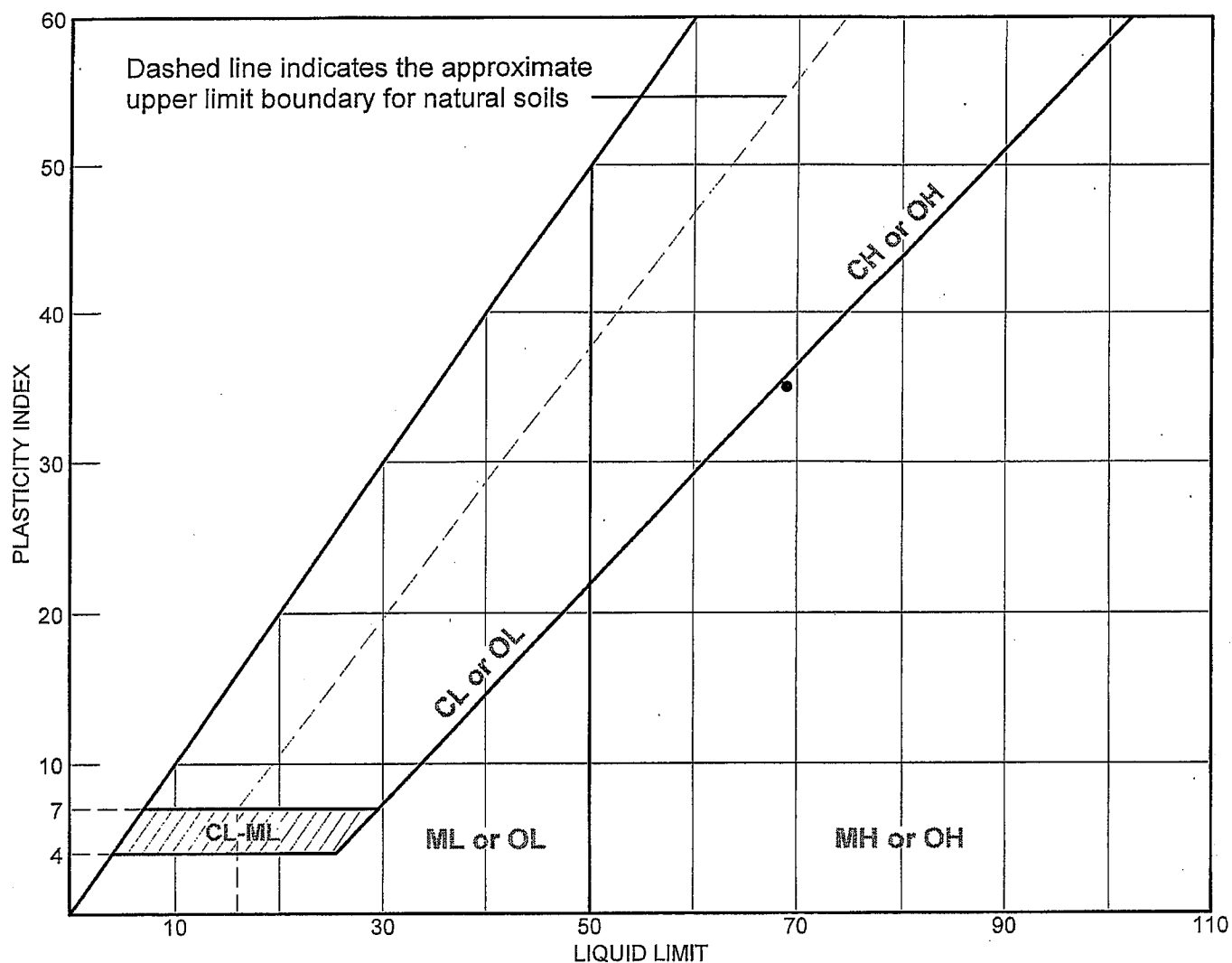
Sand/Fines based on #200

% COBBLES = % GRAVEL =

% SAND = 3.5 (% coarse = 0.0 % medium = 0.9 % fine = 2.6)

% SILT = 2.6 % CLAY = 93.9 (% CLAY COLLOIDS = 93.1)

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
•	B-2304UD	UD-7	73.5-75.5 Ft	27.6	34	69	35	MH

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8349

LIQUID AND PLASTIC LIMIT TEST DATA

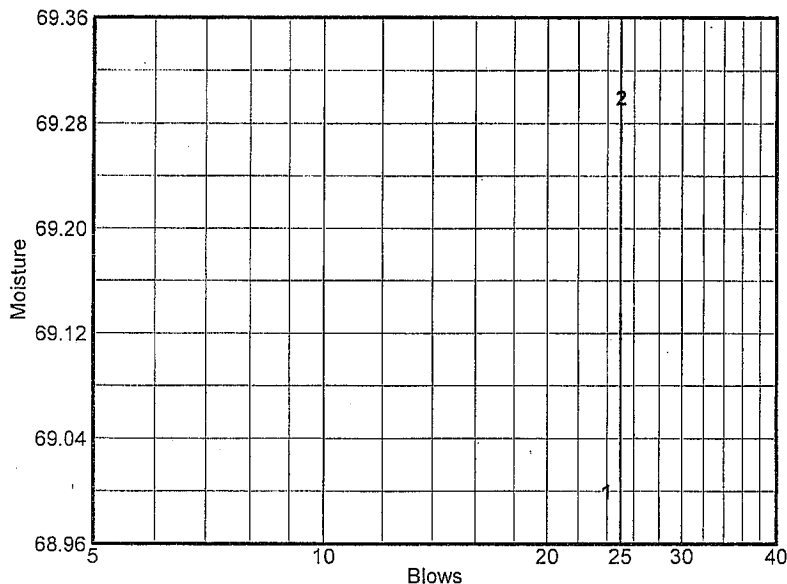
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2304UD
 Sample No.: UD-7
 Elev. or Depth: 73.5-75.5 Ft Sample Length(in./cm.): ID#8349
 Location: B-2304UD
 Description: Mottled Brownish Yellow and Pale Yellow Elastic SILT
 Water Content: 27.6 USCS: MH AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.20	30.88				
Dry+Tare	26.63	26.73				
Tare	20.01	20.74				
# Blows	24	25				
Moisture	69.0	69.3				



Liquid Limit= 69
 Plastic Limit= 34
 Plasticity Index= 35

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	29.26	27.25			
Dry+Tare	27.06	25.42			
Tare	20.50	20.03			
Moisture	33.5	34.0			

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/7/08

SAMPLE IDENTIFICATION: B-2304UD, UD-7 @ 73.5-75.5 Ft.

(A) Mass of oven-dried soil, grams:	36.70
(B) Mass of pycnometer filled with water at test temperature (T), grams:	341.30
(C) Mass of pycnometer, water and soil, grams:	364.79
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.778
(F) Correction factor:	0.99952
(G x F) SPECIFIC GRAVITY @ 20°C:	2.777

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Elastic SILT (MH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2055

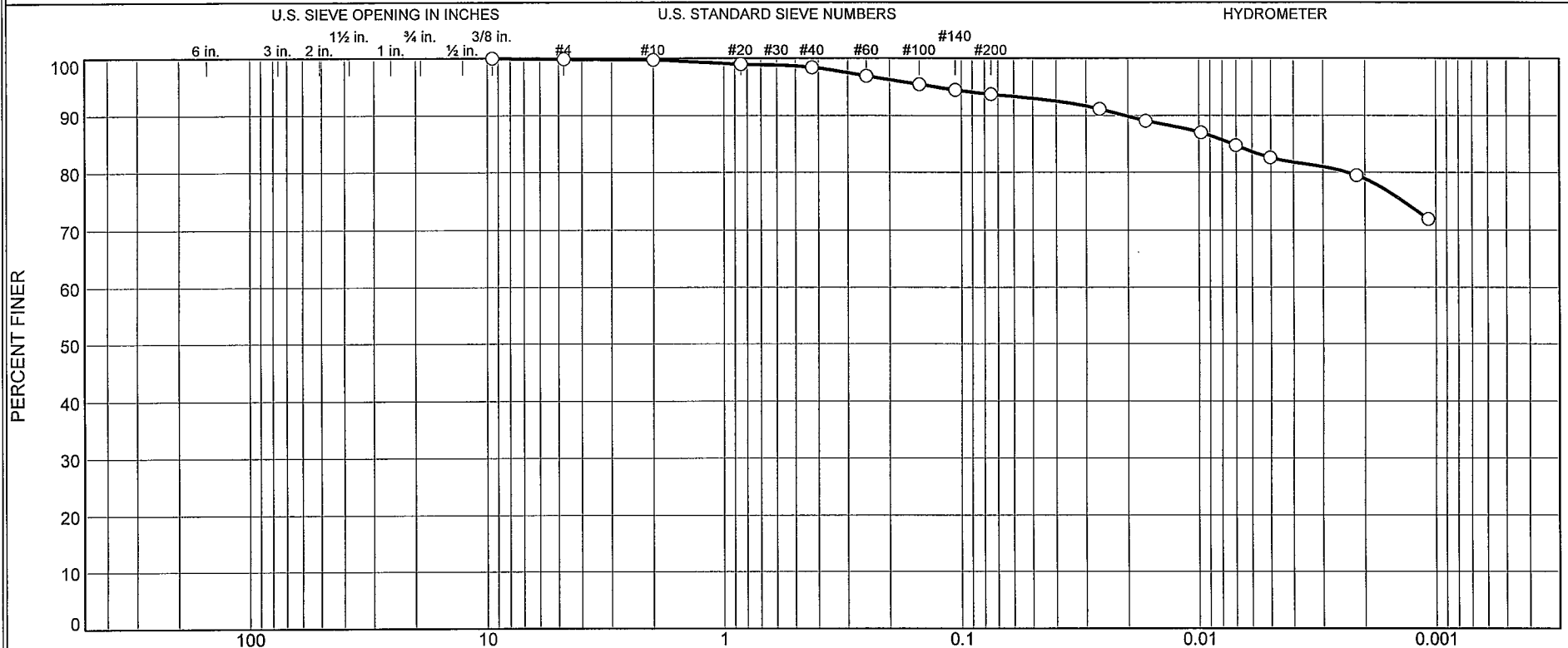
TESTED BY: EH

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

REVIEWED BY: Harry Johnson

FAW 4.15.08

Particle Size Distribution Report / ASTM D422-63(2002)e1



GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 83.5-85.5

Sample Number: UD-8

Material Description: Mottled Brownish Yellow and Pale Yellow Fat CLAY

Date: 1/3/08

Natural Moisture: 30.2

Liquid Limit: 61

Plastic Limit: 26

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.712 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
257.49	0.00	0.00	3/8"	0.00	100.0
			#4	0.35	99.9
			#10	0.69	99.7
50.46	0.00	0.00	#20	0.39	99.0
			#40	0.66	98.4
			#60	1.41	96.9
			#100	2.16	95.5
			#140	2.65	94.5
			#200	3.03	93.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.7

Weight of hydrometer sample =50.46

Hygroscopic moisture correction:

Moist weight and tare = 27.39

Dry weight and tare = 26.67

Tare weight = 15.42

Hygroscopic moisture =6.4%

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 =2.712

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	22.0	49.0	43.9	0.0131	50.0	8.1	0.0263	91.1
5.00	22.0	48.0	42.9	0.0131	49.0	8.3	0.0168	89.1
15.00	22.0	47.0	41.9	0.0131	48.0	8.4	0.0098	87.0
30.00	21.7	46.0	40.9	0.0131	47.0	8.6	0.0070	84.7
60.00	21.6	45.0	39.8	0.0131	46.0	8.8	0.0050	82.6
330.00	21.6	43.5	38.3	0.0131	44.5	9.0	0.0022	79.5
1440.00	21.1	40.0	34.7	0.0132	41.0	9.6	0.0011	72.0

MACTEC, Inc.

Fractional Components

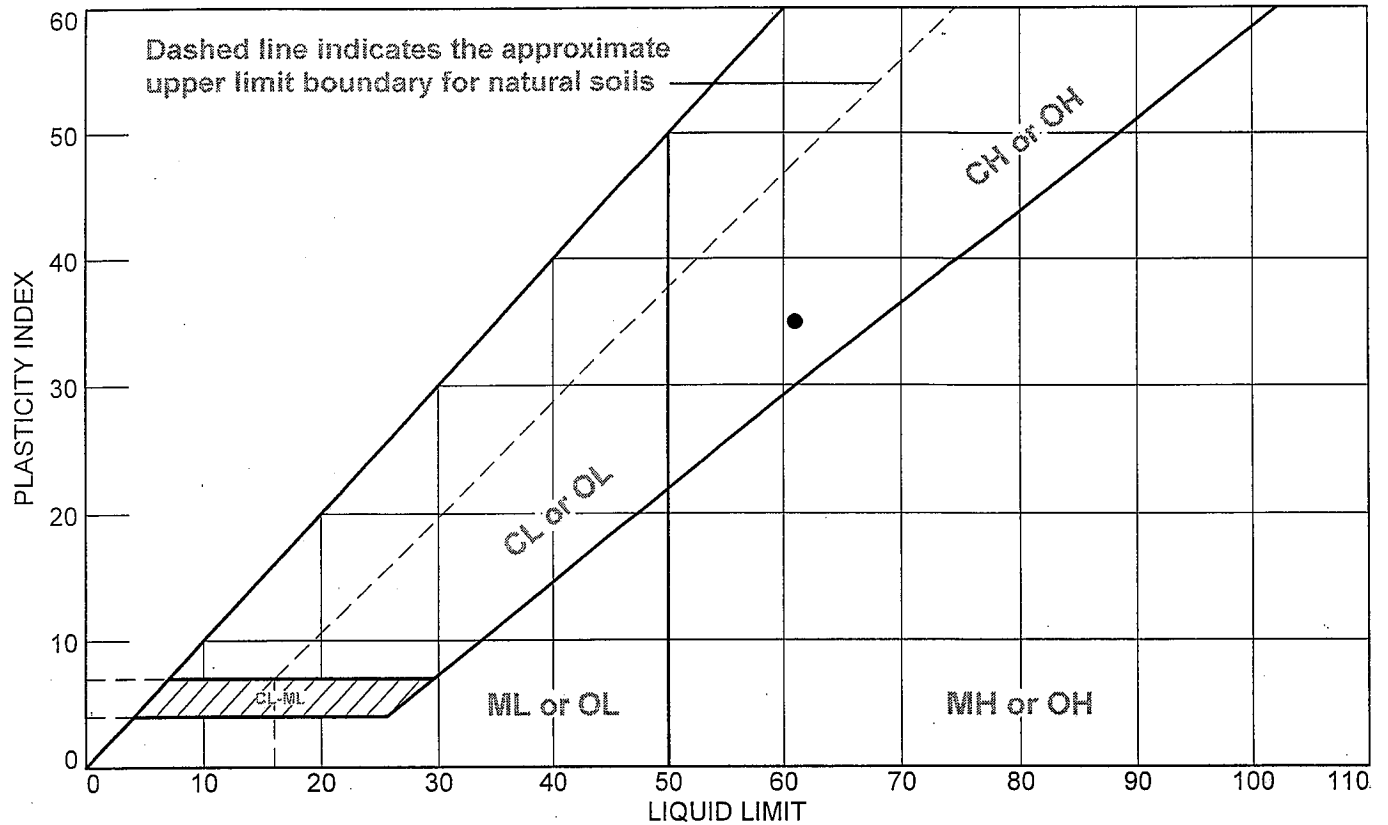
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	0.2	1.3	4.7	6.2	11.1	82.6	93.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0024	0.0073	0.0206	0.1277

Fineness Modulus
0.09

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 B2304UD	UD-8	83.5-85.5	30.2	26	61	35	CH

MACTEC, Inc. Raleigh, North Carolina		Client: Bechtel Project: Exelon Texas COL (Victoria Reservoir) Project No.: 6468071777	Figure <i>NA</i>
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Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 83.5-85.5

Sample Number: UD-8

Material Description: Mottled Brownish Yellow and Pale Yellow Fat CLAY

USCS: CH

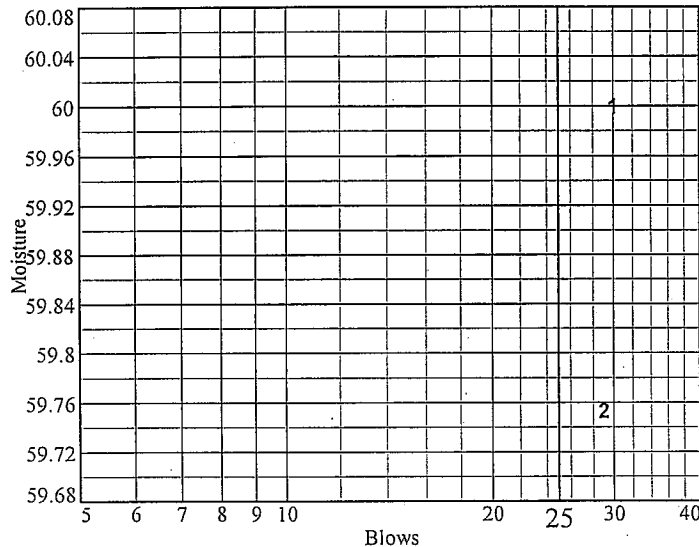
AASHTO: A-7-6(38)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.51	23.27				
Dry+Tare	21.76	20.36				
Tare	15.51	15.49				
# Blows	30	29				
Moisture	60.0	59.8				



Liquid Limit= 61
 Plastic Limit= 26
 Plasticity Index= 35
 Natural Moisture= 30.2
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.02	22.40			
Dry+Tare	20.66	21.00			
Tare	15.50	15.55			
Moisture	26.4	25.7			

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: 4/16/08

SAMPLE IDENTIFICATION: B-2304UD, UD-8

(A) Mass of oven-dried soil, grams:	47.08
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.59
(C) Mass of pycnometer, water and soil, grams:	686.31
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	20.8
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.712
(F)	Correction factor: 0.99983
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.712

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 99.9

Fat CLAY (CH)

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

KAW 5/8/08

Client <u>Bechtel</u>		MACTEC ENGINEERING AND CONSULTING, INC.	☐ Tested by: EH Reviewed by: HJ <u>HJ</u>
Project <u>Exelon Texas COL (Victoria)</u>			NM value from first strength test performed. Specific Gravity = 2.74 (ASTM D 854-06)
Project No. <u>6468-07-1777</u>	Lab No. <u>8350</u>		

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2304UD
Sample No.: UD-9
Elev. or Depth: 98.5-101.0 Ft Sample Length(in./cm.): ID#8350
Location: B-2304UD
Description: Mottled Pale Yellow and Yellow Fat CLAY with Sand
Date: 1/31/08 PL: 25 LL: 62 PI: 37
USCS Classification: CH AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.74 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	64.24	
Tare =	15.28	
Dry sample weight =	48.96	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.09	99.8
# 40	0.27	99.4
# 60	0.62	98.7
# 100	2.92	94.0
# 140	6.11	87.5
# 200	7.99	83.7

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 83.7
Weight of hydrometer sample: 40.97
Calculated biased weight= 48.95
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.741
Specific gravity correction factor= 0.980
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.8	44.5	39.7	0.0128	44.5	9.0	0.0272	79.5
5.00	22.8	42.0	37.2	0.0128	42.0	9.4	0.0176	74.5
15.00	22.8	40.5	35.7	0.0128	40.5	9.7	0.0103	71.5
30.00	22.8	39.0	34.2	0.0128	39.0	9.9	0.0074	68.5
60.00	22.8	38.0	33.2	0.0128	38.0	10.1	0.0053	66.5
240.00	22.2	39.0	34.1	0.0129	39.0	9.9	0.0026	68.2
1440.00	23.3	37.0	32.3	0.0128	37.0	10.2	0.0011	64.8

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES =

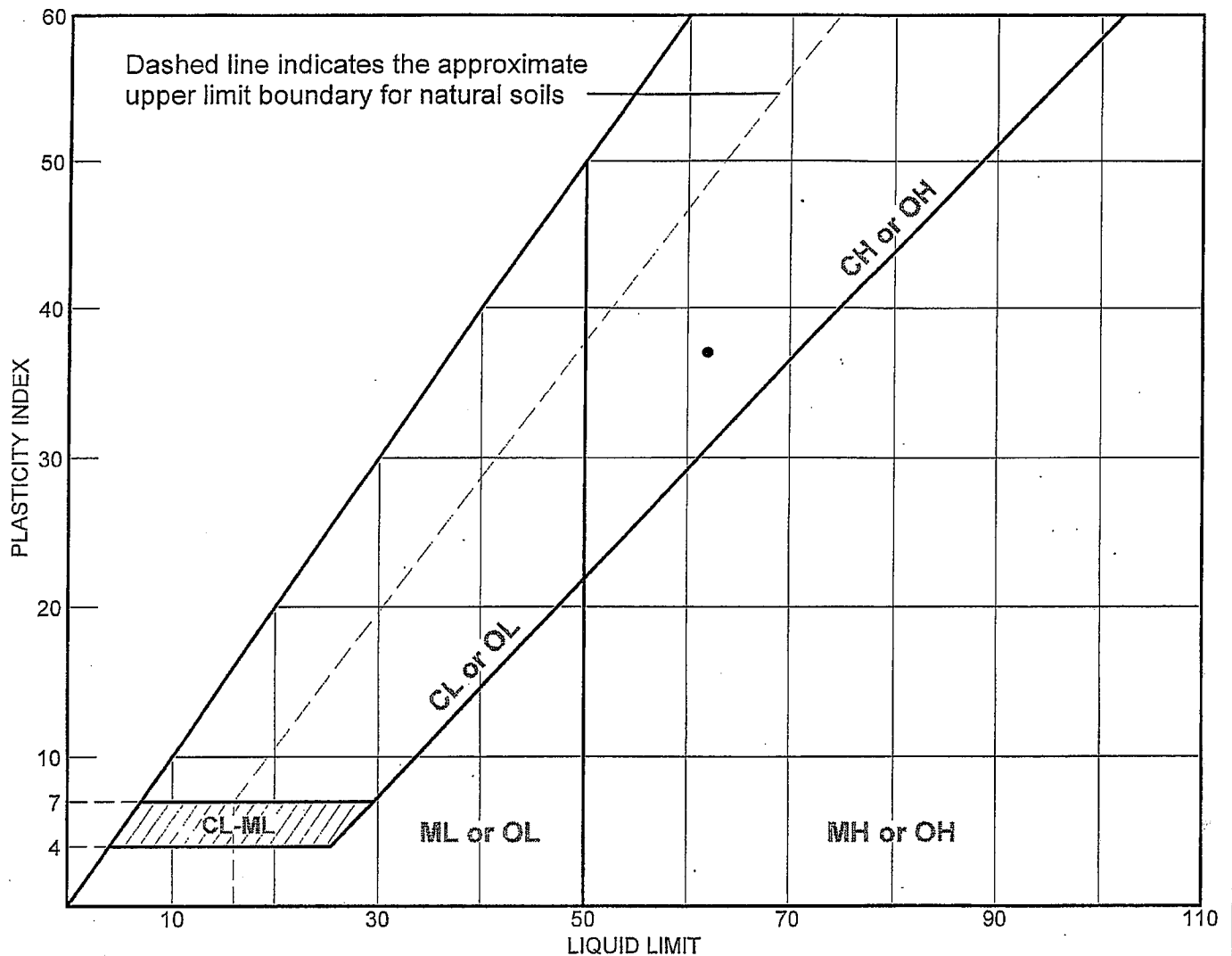
% GRAVEL =

% SAND = 16.3 (% coarse = 0.0 % medium = 0.6 % fine = 15.7)

% SILT = 17.1 % CLAY = 66.6

D₈₅ = 0.09

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
•	B-2304UD	UD-9	98.5-101.0 Ft	22.8	25	62	37	CH

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8350

LIQUID AND PLASTIC LIMIT TEST DATA

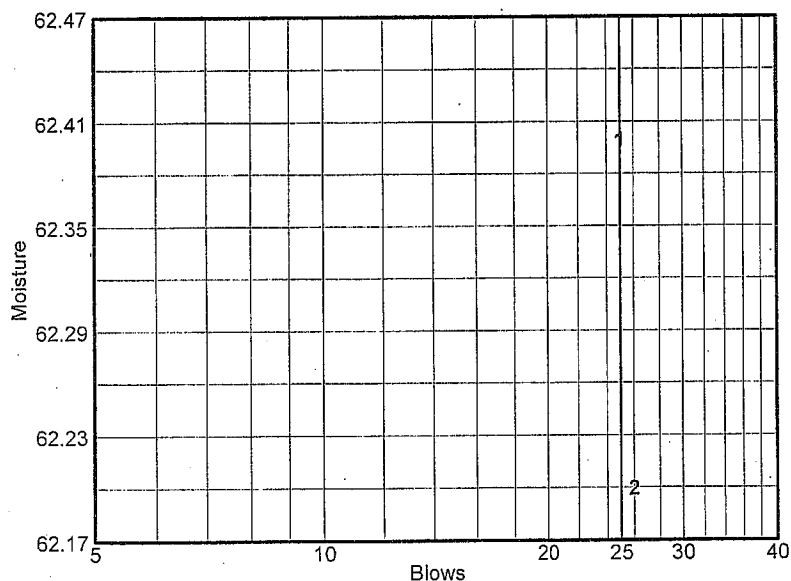
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2304UD
Sample No.: UD-9
Elev. or Depth: 98.5-101.0 Ft Sample Length(in./cm.): ID#8350
Location: B-2304UD
Description: Mottled Pale Yellow and Yellow Fat CLAY with Sand
Water Content: 22.8 USCS: CH AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.47	31.05				
Dry+Tare	27.40	27.25				
Tare	20.88	21.14				
# Blows	25	26				
Moisture	62.4	62.2				



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

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	28.40	28.53			
Dry+Tare	26.78	26.91			
Tare	20.21	20.24			
Moisture	24.7	24.3			

MACTEC ENGINEERING AND CONSULTING, INC.

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: 3/4/08

SAMPLE IDENTIFICATION: B-2304UD, UD-9 @ 98.5-101.0 Ft.

(A) Mass of oven-dried soil, grams:	36.77
(B) Mass of pycnometer filled with water at test temperature (T), grams:	363.80
(C) Mass of pycnometer, water and soil, grams:	387.16
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.742
(F) Correction factor:	0.99952
(G x F) SPECIFIC GRAVITY @ 20°C:	2.741

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY with Sand (CH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2184

TESTED BY: EH

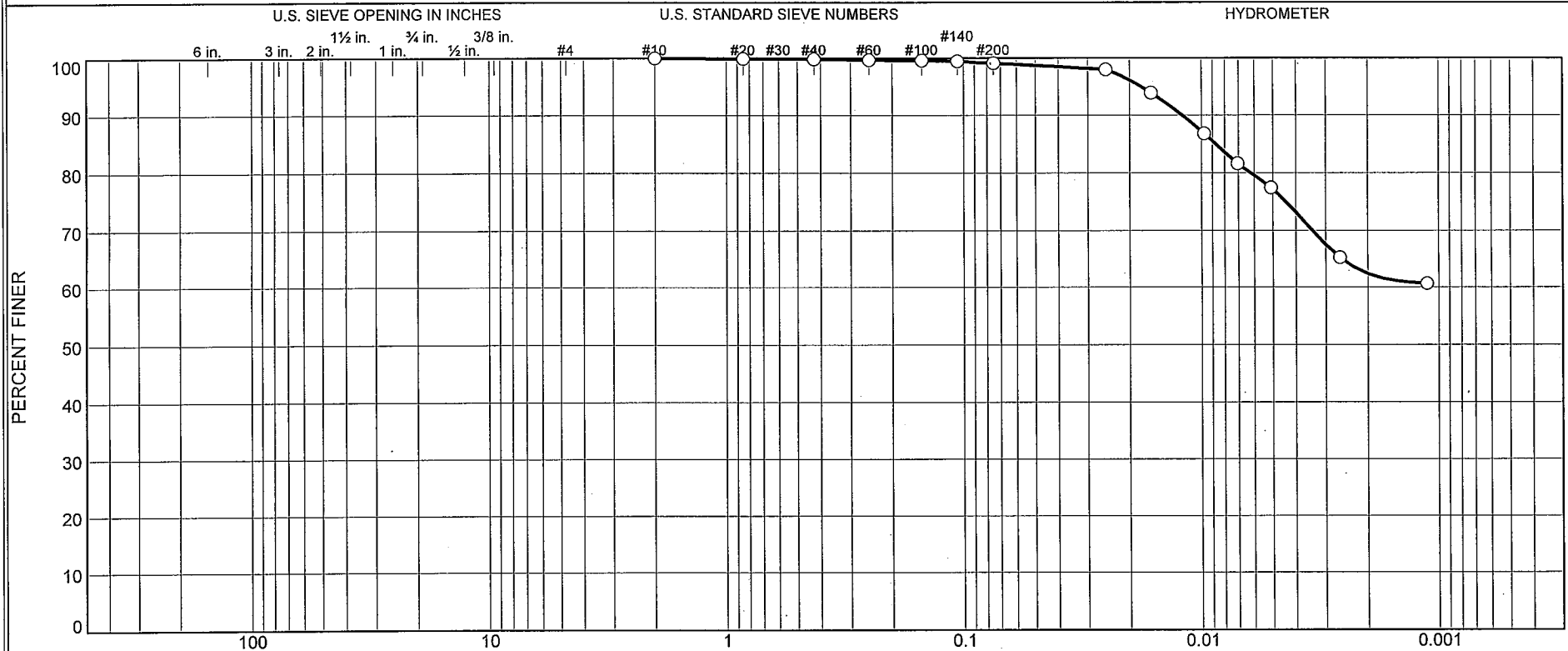
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson

HJ

KAW 4.15.08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	0.7	21.9	77.2

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B2304UD	UD-11	111.0-112.5	2/1/08	CH	Mottled Pale Yellow and Yellow Fat CLAY	22.2	77	19

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA***MACTEC, Inc.****Raleigh, North Carolina**

○ Specific Gravity = 2.719 (ASTM D854-06)
 NM is average of values from consolidation and triaxial test specimens

KAW 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 111.0-112.5

Sample Number: UD-11

Material Description: Mottled Pale Yellow and Yellow Fat CLAY

Date: 2/1/08

Natural Moisture: 22.2

Liquid Limit: 77

Plastic Limit: 19

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.719 (ASTM D854-06)

NM is average of values from consolidation and triaxial test specimens

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
200.13	0.00	0.00	#10	0.00	100.0
49.44	0.00	0.00	#20	0.05	99.9
			#40	0.09	99.8
			#60	0.16	99.7
			#100	0.20	99.6
			#140	0.27	99.5
			#200	0.44	99.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =49.45

Hygroscopic moisture correction:

Moist weight and tare = 28.74

Dry weight and tare = 28.39

Tare weight = 15.49

Hygroscopic moisture =2.7%

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 =2.719

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	53.0	47.9	0.0131	54.0	7.4	0.0252	98.0
5.00	21.9	51.0	45.9	0.0131	52.0	7.8	0.0163	93.9
15.00	21.9	47.5	42.4	0.0131	48.5	8.3	0.0097	86.8
30.00	21.9	45.0	39.9	0.0131	46.0	8.8	0.0071	81.6
60.00	21.7	43.0	37.9	0.0131	44.0	9.1	0.0051	77.4
250.00	21.9	37.0	31.9	0.0131	38.0	10.1	0.0026	65.3
1440.00	21.0	35.0	29.7	0.0132	36.0	10.4	0.0011	60.7

MACTEC, Inc.

Fractional Components

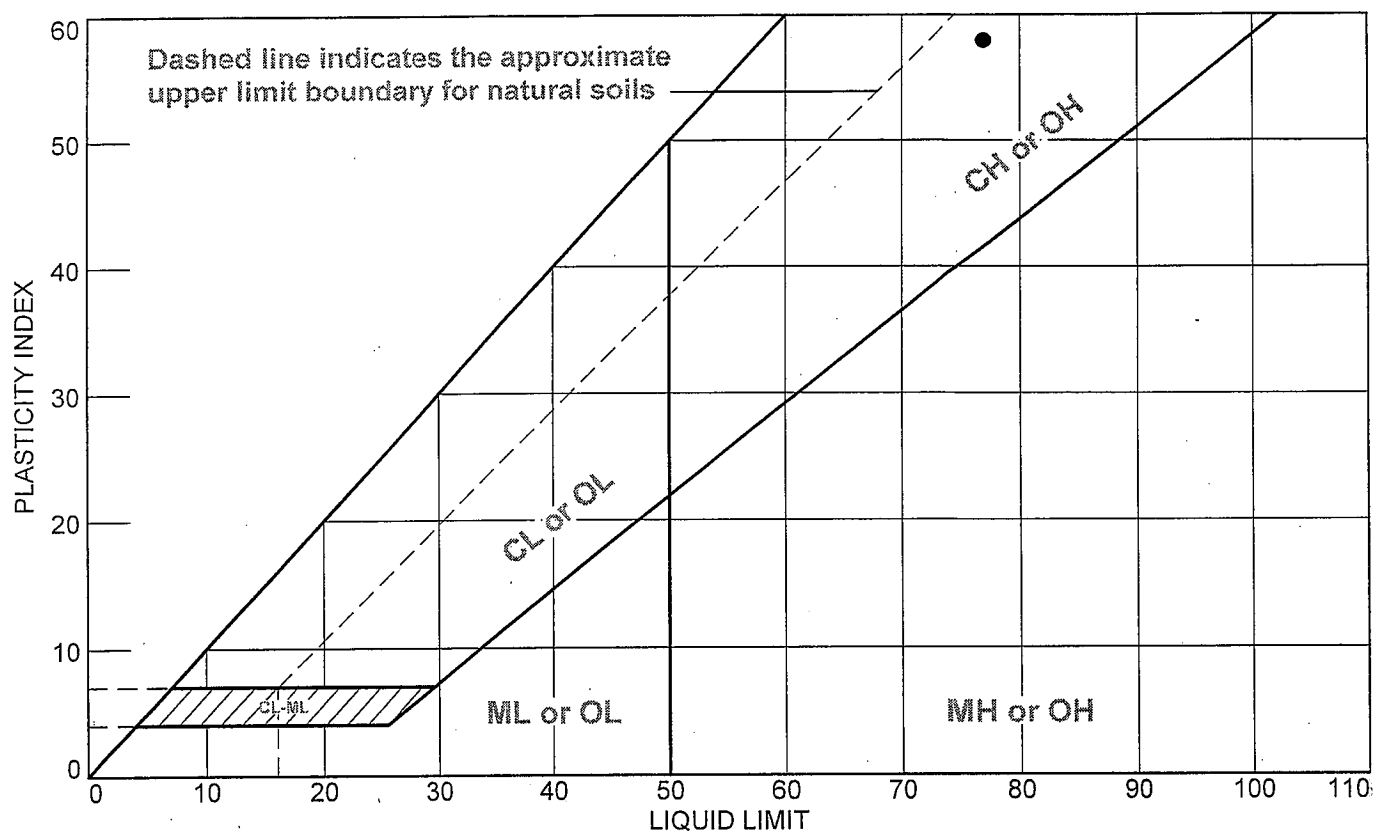
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.9	21.9	77.2	99.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0062	0.0088	0.0120	0.0179

Fineness Modulus
0.01

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 B2304UD	UD-11	111.0-112.5	22.2	19	77	58	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

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 111.0-112.5

Sample Number: UD-11

Material Description: Mottled Pale Yellow and Yellow Fat CLAY

USCS: CH

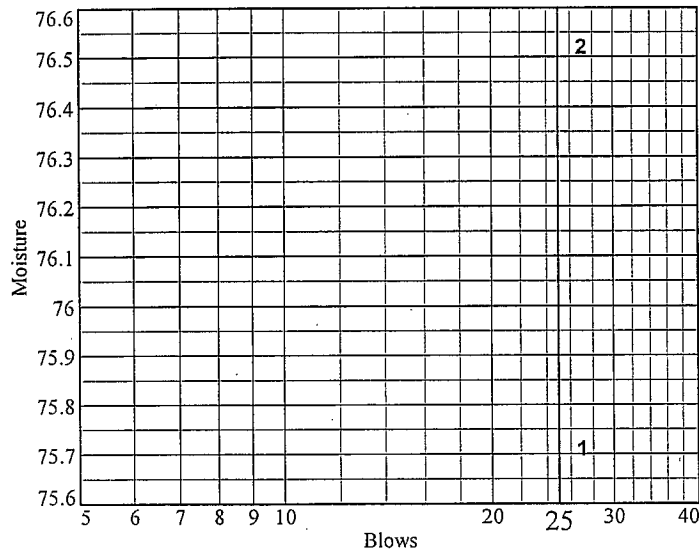
AASHTO: A-7-6(65)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.71	23.59				
Dry+Tare	20.25	20.07				
Tare	15.68	15.47				
# Blows	27	27				
Moisture	75.7	76.5				



Liquid Limit= 77
 Plastic Limit= 19
 Plasticity Index= 58
 Natural Moisture= 22.2
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.50	17.45			
Dry+Tare	21.36	16.48			
Tare	15.52	11.20			
Moisture	19.5	18.4			

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: 4/6/08

SAMPLE IDENTIFICATION: B-2304UD, UD-11

(A) Mass of oven-dried soil, grams:	48.65
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.81
(C) Mass of pycnometer, water and soil, grams:	686.57
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	20.6
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.719
(F) <i>Correction factor:</i>	0.99987
(G x F) SPECIFIC GRAVITY @ 20°C:	2.719

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

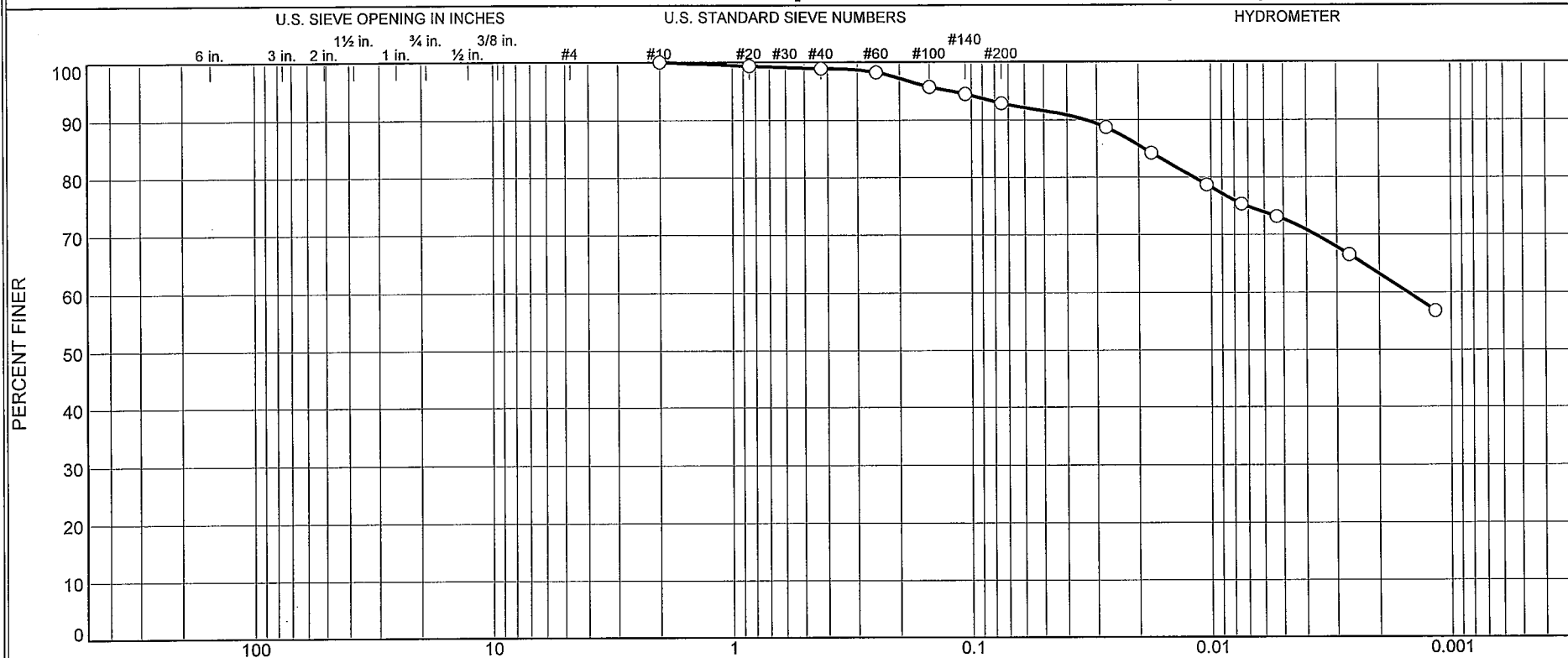
PYCNOMETER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.1	6.0	20.2	72.7

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B2304UD	UD-13	121-123	2/1/08	CH	Mottled Pale Yellow and Yellow Fat CLAY	19.8	62	18

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure NA

MACTEC, Inc.
Raleigh, North Carolina

○ Specific Gravity = 2.708 (ASTM D854-06)
 NM is average of values obtained from consolidation and triaxial test specimens

KAW 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 121-123

Sample Number: UD-13

Material Description: Mottled Pale Yellow and Yellow Fat CLAY

Date: 2/1/08

Natural Moisture: 19.8

Liquid Limit: 62

Plastic Limit: 18

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.708 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
179.63	0.00	0.00	#10	0.00	100.0
46.68	0.00	0.00	#20	0.30	99.4
			#40	0.51	98.9
			#60	0.83	98.2
			#100	1.99	95.7
			#140	2.57	94.5
			#200	3.32	92.9

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 46.68

Hygroscopic moisture correction:

Moist weight and tare = 29.03

Dry weight and tare = 28.37

Tare weight = 15.43

Hygroscopic moisture = 5.1%

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 = 2.708

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	45.0	39.9	0.0131	46.0	8.8	0.0274	88.7
5.00	21.9	43.0	37.9	0.0131	44.0	9.1	0.0177	84.3
15.00	21.9	40.5	35.4	0.0131	41.5	9.5	0.0104	78.7
30.00	21.9	39.0	33.9	0.0131	40.0	9.7	0.0075	75.4
60.00	21.9	38.0	32.9	0.0131	39.0	9.9	0.0053	73.2
250.00	22.0	35.0	29.9	0.0131	36.0	10.4	0.0027	66.5
1440.00	20.7	31.0	25.6	0.0133	32.0	11.0	0.0012	56.9

MACTEC, Inc.

Fractional Components

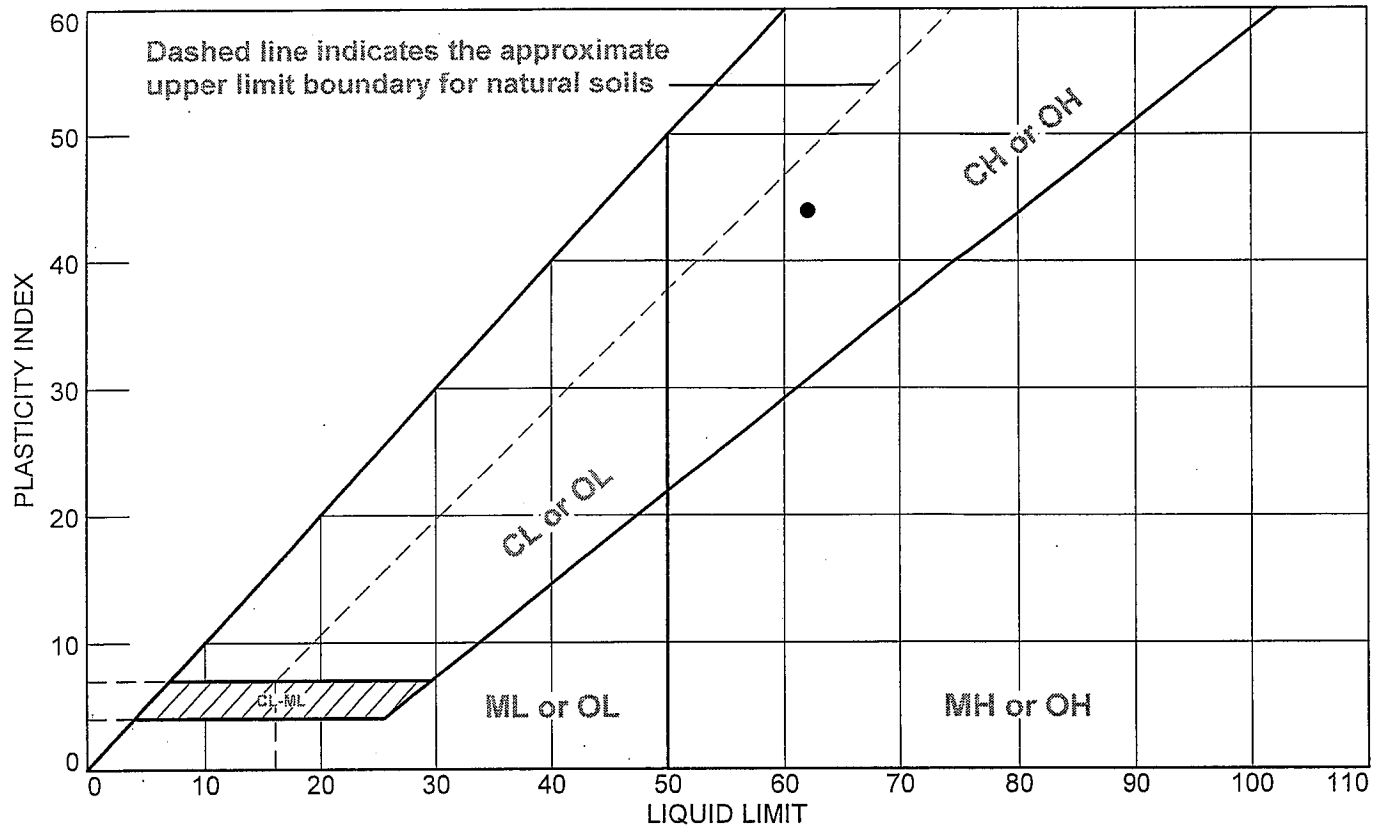
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.1	6.0	7.1	20.2	72.7	92.9

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
					0.0015	0.0118	0.0189	0.0332	0.1220

Fineness Modulus
0.07

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 B2304UD	UD-13	121-123	19.8	18	62	44	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure 1A

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 121-123

Sample Number: UD-13

Material Description: Mottled Pale Yellow and Yellow Fat CLAY

USCS: CH

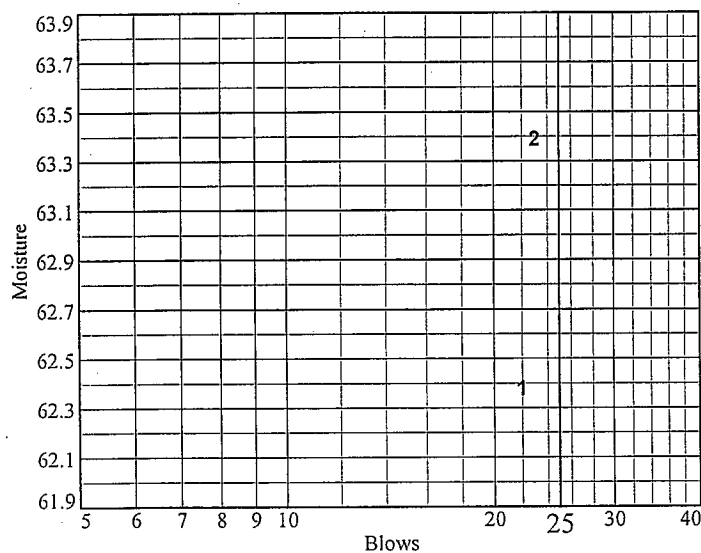
AASHTO: A-7-6(44)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.03	22.77				
Dry+Tare	20.73	19.93				
Tare	15.44	15.45				
# Blows	22	23				
Moisture	62.4	63.4				



Liquid Limit= 62
 Plastic Limit= 18
 Plasticity Index= 44
 Natural Moisture= 19.8
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.76	22.01			
Dry+Tare	20.83	21.02			
Tare	15.56	15.63			
Moisture	17.6	18.4			

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: 4/14/08

SAMPLE IDENTIFICATION: B-2304UD, UD-13

(A) Mass of oven-dried soil, grams:	49.87
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.75
(C) Mass of pycnometer, water and soil, grams:	687.21
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.709
(F) <i>Correction factor:</i>	0.99972
(G x F) SPECIFIC GRAVITY @ 20°C:	2.708

MATERIAL TESTED:

☒ X
- # 4

☐
- # 10

PREPARATION METHOD:

☒ X
DRY

☐
WET (dispersed)

REMARKS: Estimated % Passing # 4 : 99.9

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

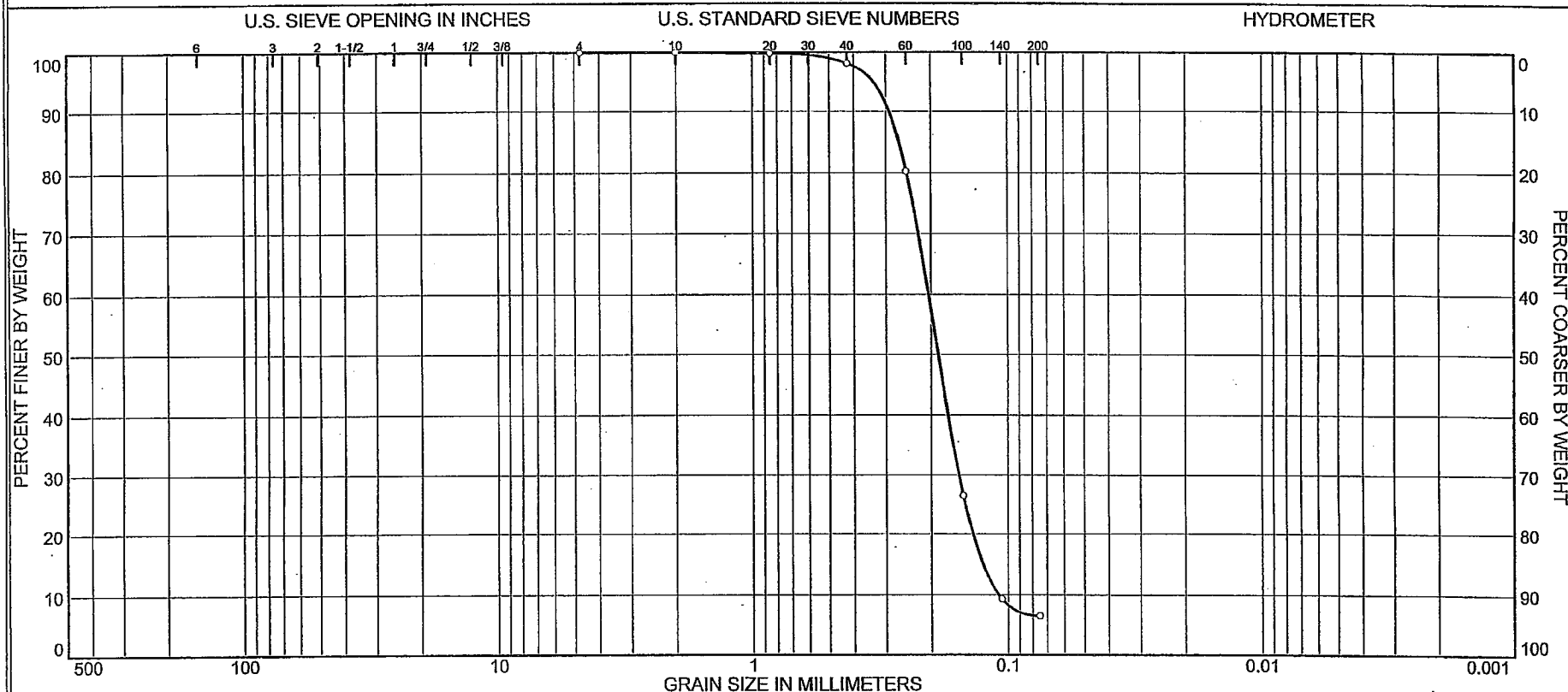
PYCNO METER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report ASTM D6913-04 e1

[illegible]

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777

Lab No. 8351

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

○ Tested by: EH	Reviewed by: HJ	HS
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Sieve Analysis Only
 NM value from average of strength tests performed.
 Specific Gravity = 2.68 (ASTM D 854-06)
 ND = Not Determined

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2304UD
Sample No.: UD-15
Elev. or Depth: 141-143.5 Ft Sample Length(in./cm.): ID#8351
Location: B-2304UD
Description: Pale Brown Poorly Graded SAND with Silt (Visual)
Date: 2/2/08 PL: ND LL: ND PI: ND
USCS Classification: SP-SM AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from average of strength tests performed.
Specific Gravity = 2.68 (ASTM D 854-06)
ND = Not Determined

Mechanical Analysis Data

	Initial	
Dry sample and tare=	215.90	
Tare =	87.87	
Dry sample weight =	128.03	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.05	100.0
# 20	0.30	99.8
# 40	2.41	98.1
# 60	25.24	80.3
# 100	94.07	26.5
# 140	116.06	9.3
# 200	119.67	6.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 93.5 (% coarse = 0.0 % medium = 1.9 % fine = 91.6)
% FINES = 6.5

D₈₅= 0.27 D₆₀= 0.20 D₅₀= 0.19
D₃₀= 0.16 D₁₅= 0.13 D₁₀= 0.11
C_c= 1.0882 C_u= 1.8737

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/7/08

SAMPLE IDENTIFICATION: B-2304UD, UD-15 @ 141-143.5 Ft.

(A) Mass of oven-dried soil, grams:	37.60
(B) Mass of pycnometer filled with water at test temperature (T), grams:	339.40
(C) Mass of pycnometer, water and soil, grams:	362.96
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.678
(F)	Correction factor: 0.99904
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.675

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Poorly Graded SAND with Silt (SP-SM) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2053

TESTED BY: EH

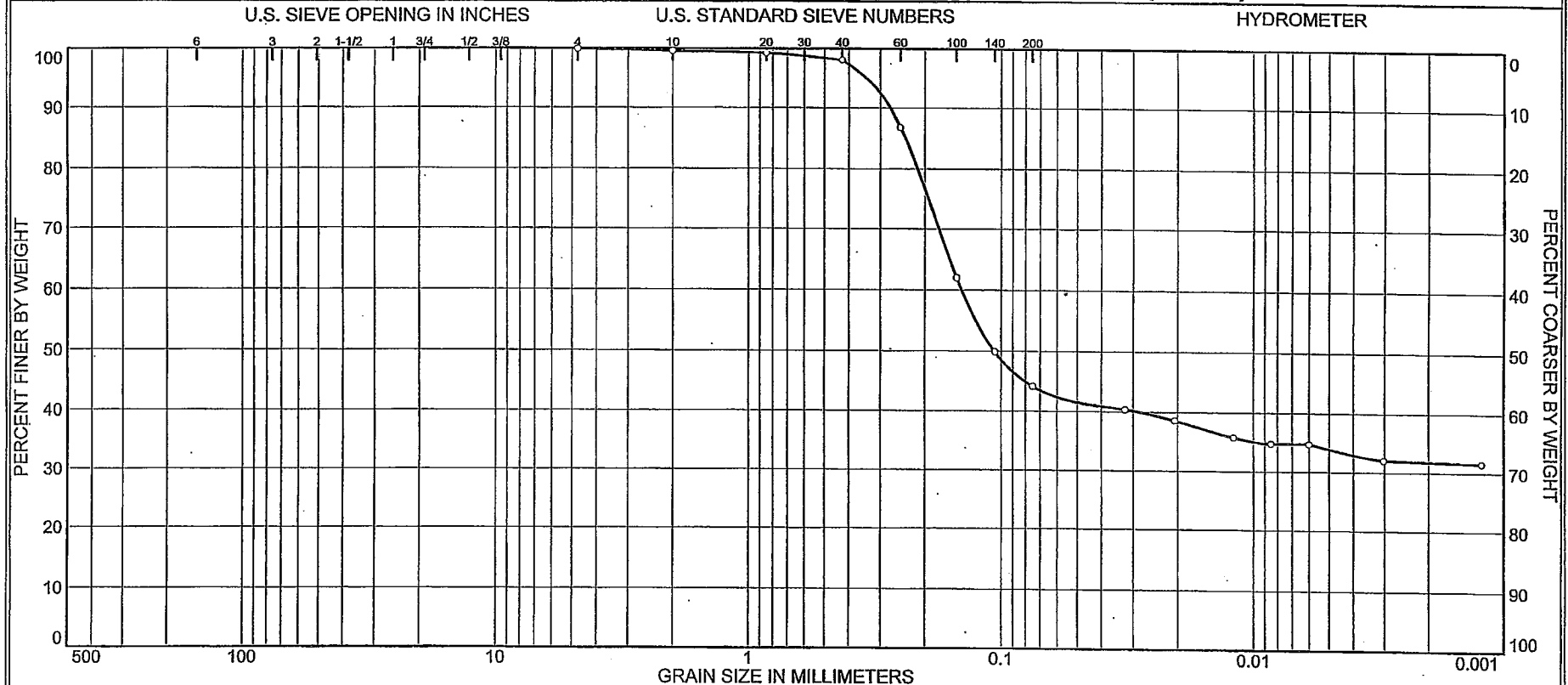
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson

HJ

KAW 4-15-08

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



GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-2
Elev. or Depth: 5.5-7.5 Ft Sample Length(in./cm.): ID#8352
Location: B-2319UD
Description: Grayish Brown Clayey SAND
Date: 2/2/08 PL: 15.5 LL: 36.6 PI: 21.1
USCS Classification: SC AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.73 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	68.56	
Tare =	15.77	
Dry sample weight =	52.79	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.22	99.6
# 20	0.36	99.3
# 40	0.98	98.1
# 60	6.93	86.9
# 100	20.05	62.0
# 140	26.47	49.9
# 200	29.48	44.2

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 44.2
Weight of hydrometer sample: 23.31
Calculated biased weight= 52.74
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.726
Specific gravity correction factor= 0.983
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	20.6	27.0	21.7	0.0132	27.0	11.9	0.0323	40.4
5.00	20.6	26.0	20.7	0.0132	26.0	12.0	0.0205	38.6
15.00	20.6	24.5	19.2	0.0132	24.5	12.3	0.0120	35.8
30.00	20.6	24.0	18.7	0.0132	24.0	12.4	0.0085	34.8
60.00	20.6	24.0	18.7	0.0132	24.0	12.4	0.0060	34.8
240.00	20.8	22.5	17.2	0.0132	22.5	12.6	0.0030	32.1
1440.00	21.7	22.0	16.9	0.0131	22.0	12.7	0.0012	31.6

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

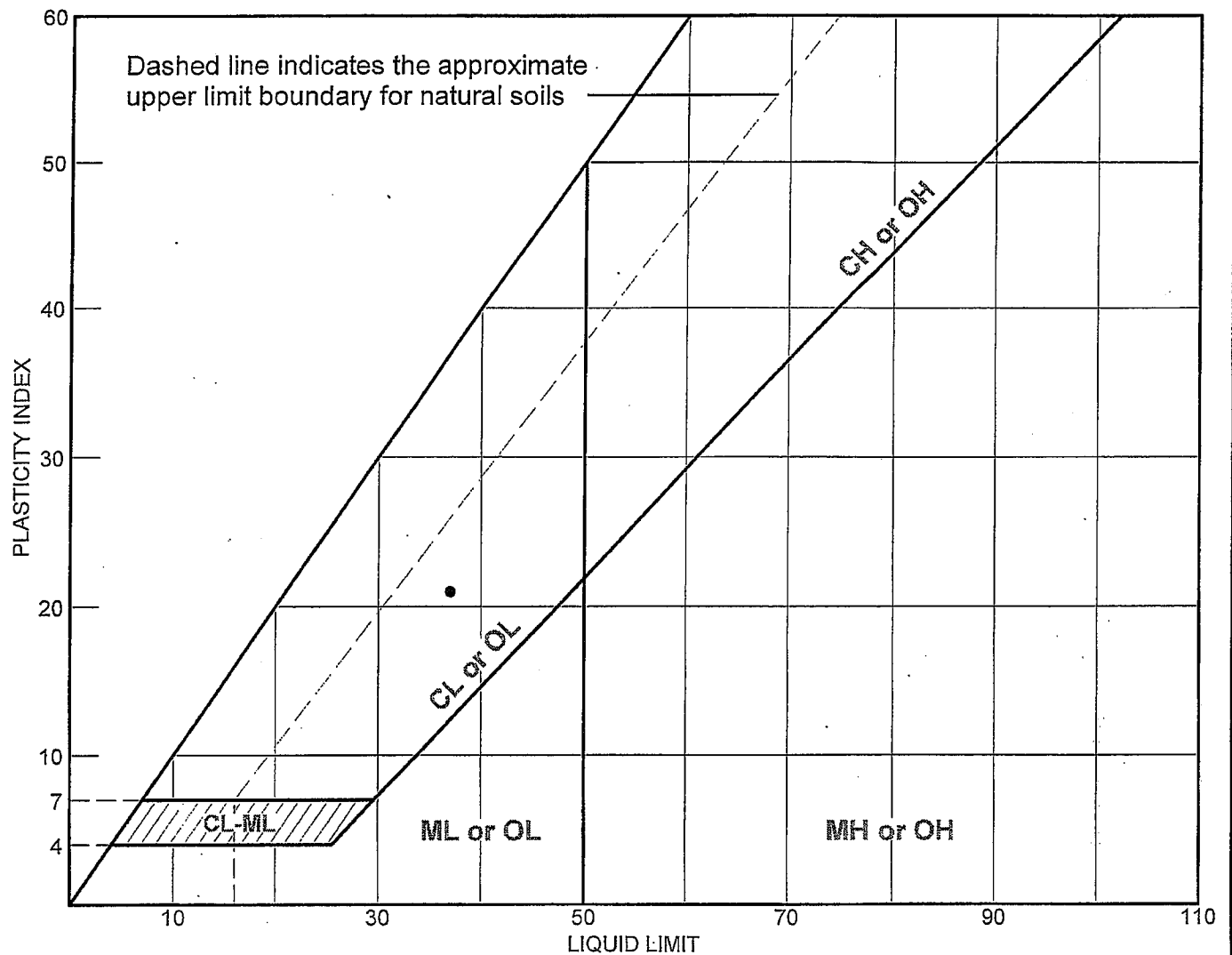
% COBBLES = % GRAVEL =

% SAND = 55.8 (% coarse = 0.4 % medium = 1.5 % fine = 53.9)

% SILT = 10.2 % CLAY = 34.0

D₈₅= 0.24 D₆₀= 0.14 D₅₀= 0.11

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
•	B-2319UD	UD-2	5.5-7.5 Ft	13.7	16	37	21	SC

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8352

LIQUID AND PLASTIC LIMIT TEST DATA

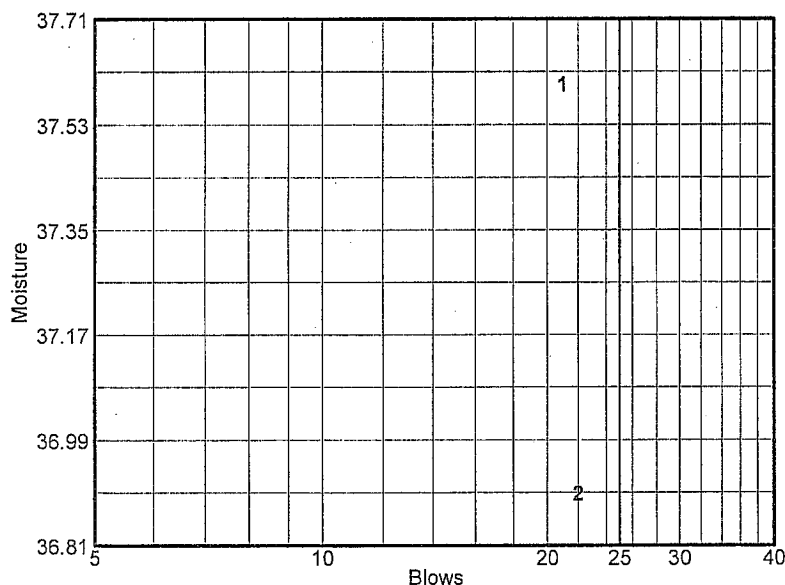
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
 Sample No.: UD-2
 Elev. or Depth: 5.5-7.5 Ft Sample Length(in./cm.): ID#8352
 Location: B-2319UD
 Description: Grayish Brown Clayey SAND
 Water Content: 13.7 USCS: SC AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.65	33.08				
Dry+Tare	30.01	29.62				
Tare	20.32	20.25				
# Blows	21	22				
Moisture	37.6	36.9				



Liquid Limit= 37
 Plastic Limit= 16
 Plasticity Index= 21

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	27.95	31.36		
Dry+Tare	26.84	29.95		
Tare	19.69	20.83		
Moisture	15.5	15.5		

MACTEC ENGINEERING AND CONSULTING, INC.

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: 3/4/08

SAMPLE IDENTIFICATION: B-2319UD, UD-2 @ 5.5-7.5 Ft.

(A) Mass of oven-dried soil, grams:	36.24
(B) Mass of pycnometer filled with water at test temperature (T), grams:	343.10
(C) Mass of pycnometer, water and soil, grams:	366.05
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.727
(F) <i>Correction factor:</i>	0.99952
(G x F) SPECIFIC GRAVITY @ 20°C:	2.726

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100
Clayey SAND (SC)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2052

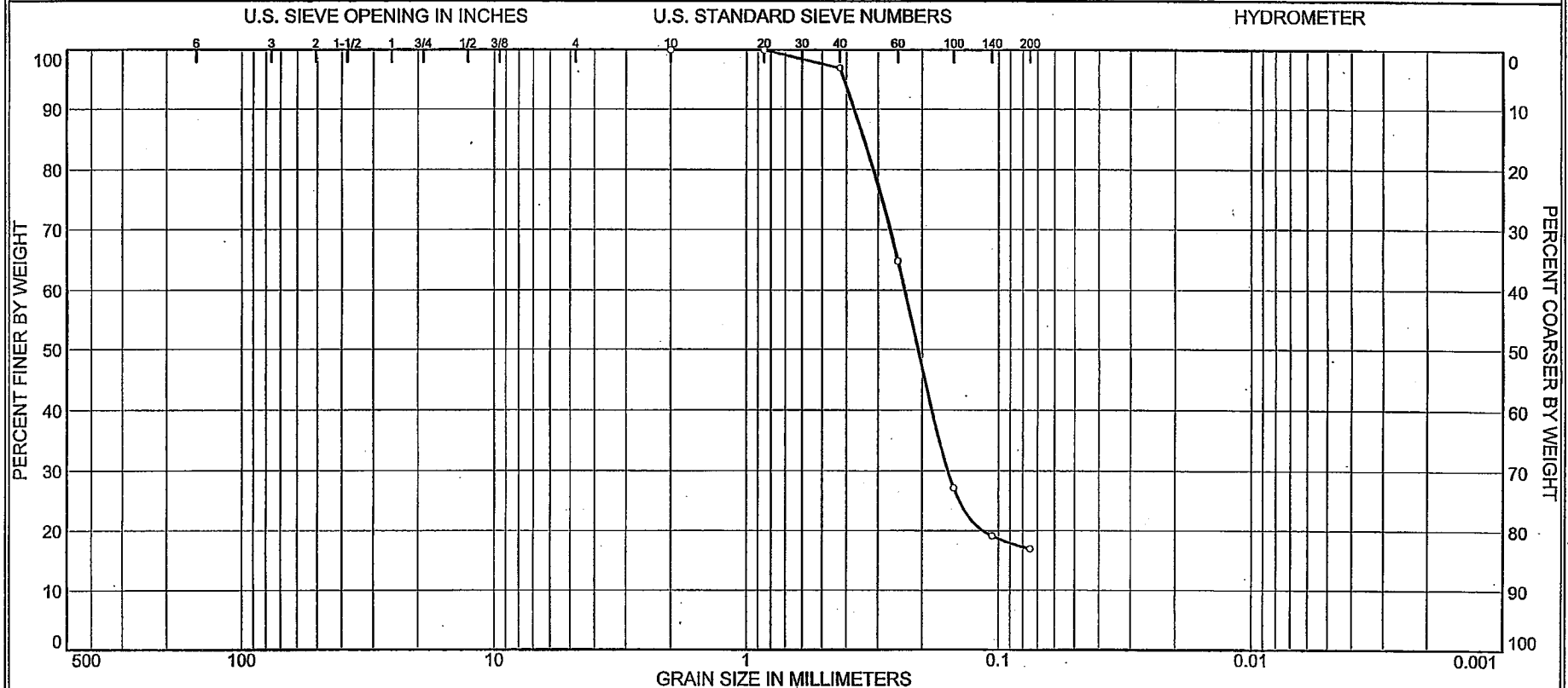
TESTED BY: EH

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

REVIEWED BY: Harry Johnson

KAW 4.15.08

Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	3.0	80.1	16.9	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2319UD	UD-3	11-13 Ft (Bottom)	2/2/08	SM	Pale Yellow Silty SAND (Visual)	6.1	ND	ND

Client	Bechtel
Project	Exelon Texas COL (Victoria)
Project No.	6468-07-1777
Lab No.	8353

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: EH *EH* Reviewed by: HJ *HJ*
 Sieve Analysis Only
 NM value from strength test performed.
 Specific Gravity = 2.72 (ASTM D 854-06)
 ND = Not Determined

KAW 5/9/08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-3
Elev. or Depth: 11-13 Ft (Bottom) Sample Length(in./cm.): ID#8353
Location: B-2319UD
Description: Pale Yellow Silty SAND (Visual)
Date: 2/2/08 Natural Moisture: 6.1
Liquid Limit: ND Plastic Limit: ND USCS Class.: SM
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)
ND = Not Determined

Mechanical Analysis Data

 Initial
Dry sample and tare= 215.43
Tare = 111.18
Dry sample weight = 104.25
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.00	100.0
# 40	3.10	97.0
# 60	36.70	64.8
# 100	75.94	27.2
# 140	84.30	19.1
# 200	86.62	16.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 83.1 (% coarse = % medium = 3.0 % fine = 80.1)
% FINES = 16.9

D₈₅= 0.34 D₆₀= 0.24 D₅₀= 0.21
D₃₀= 0.16

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/8/08

SAMPLE IDENTIFICATION: B-2319UD, UD-3 @11-13 (bottom) Ft.

(A) Mass of oven-dried soil, grams:	37.51
(B) Mass of pycnometer filled with water at test temperature (T), grams:	366.15
(C) Mass of pycnometer, water and soil, grams:	389.89
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.724
(F) Correction factor:	0.99912
(G x F) SPECIFIC GRAVITY @ 20°C:	2.722

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing #4 : 100

Silty SAND (SM) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2192

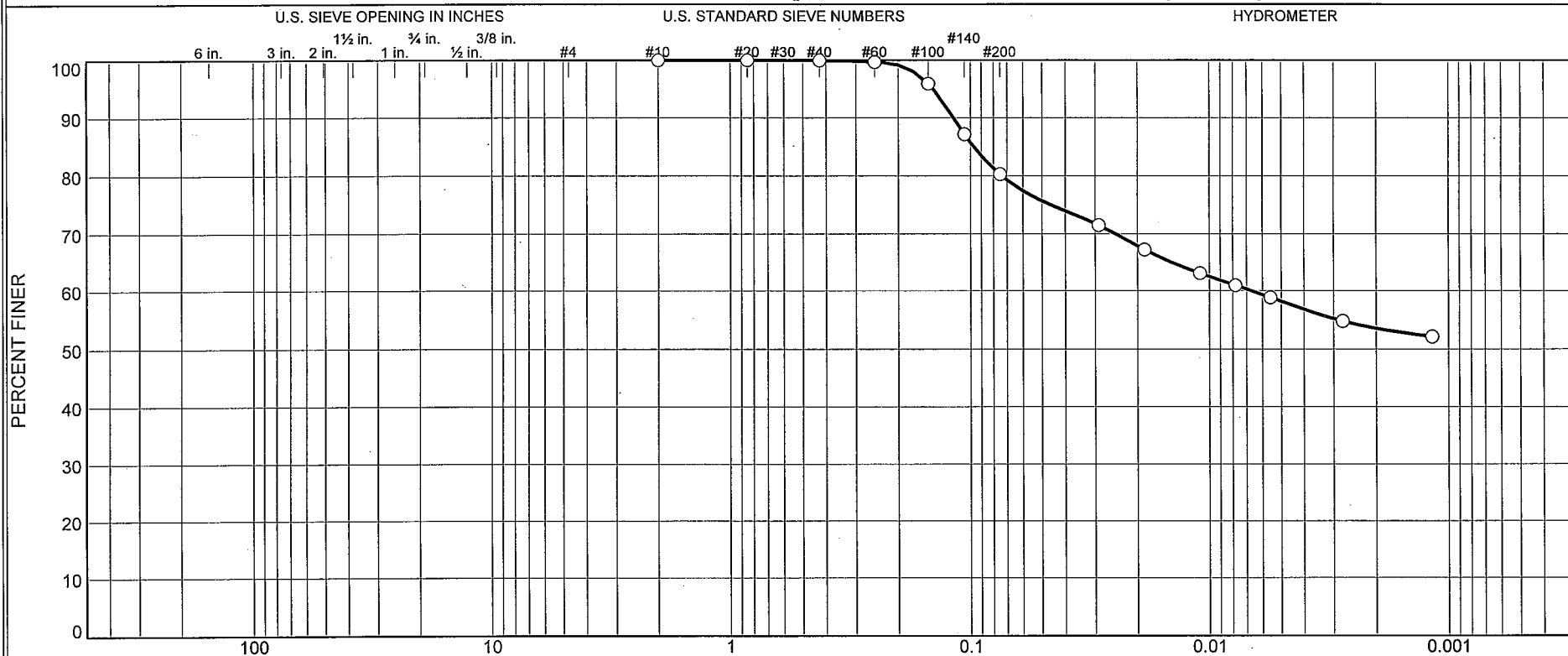
TESTED BY: EH *EH*

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

REVIEWED BY: Harry Johnson *HJ*

KAW 5/9/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	19.6	22.1	58.2

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2319UD	UD-4	25.0-27.0	2/2/08	CH	Light Yellowish Brown Fat CLAY with sand	20.3	61	16

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.716 (ASTM D854-06)
 NM is average of values obtained from consolidation and triaxial test specimens

KAW 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2319UD

Depth: 25.0-27.0

Sample Number: UD-4

Material Description: Light Yellowish Brown Fat CLAY with sand

Date: 2/2/08

Natural Moisture: 20.3

Liquid Limit: 61

Plastic Limit: 16

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.716 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
258.57	0.00	0.00	#10	0.00	100.0
48.33	0.00	0.00	#20	0.00	100.0
			#40	0.03	99.9
			#60	0.15	99.7
			#100	1.98	95.9
			#140	6.22	87.1
			#200	9.53	80.3

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 48.33

Hygroscopic moisture correction:

Moist weight and tare = 29.22

Dry weight and tare = 28.72

Tare weight = 15.56

Hygroscopic moisture = 3.8%

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 = 2.716

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	39.0	33.8	0.0132	40.0	9.7	0.0290	71.5
5.00	21.4	37.0	31.8	0.0132	38.0	10.1	0.0187	67.3
15.00	21.5	35.0	29.8	0.0131	36.0	10.4	0.0109	63.1
30.00	21.5	34.0	28.8	0.0131	35.0	10.6	0.0078	61.0
60.00	21.5	33.0	27.8	0.0131	34.0	10.7	0.0056	58.8
250.00	21.8	31.0	25.9	0.0131	32.0	11.0	0.0028	54.8
1440.00	20.9	30.0	24.6	0.0132	31.0	11.2	0.0012	52.1

MACTEC, Inc.

Fractional Components

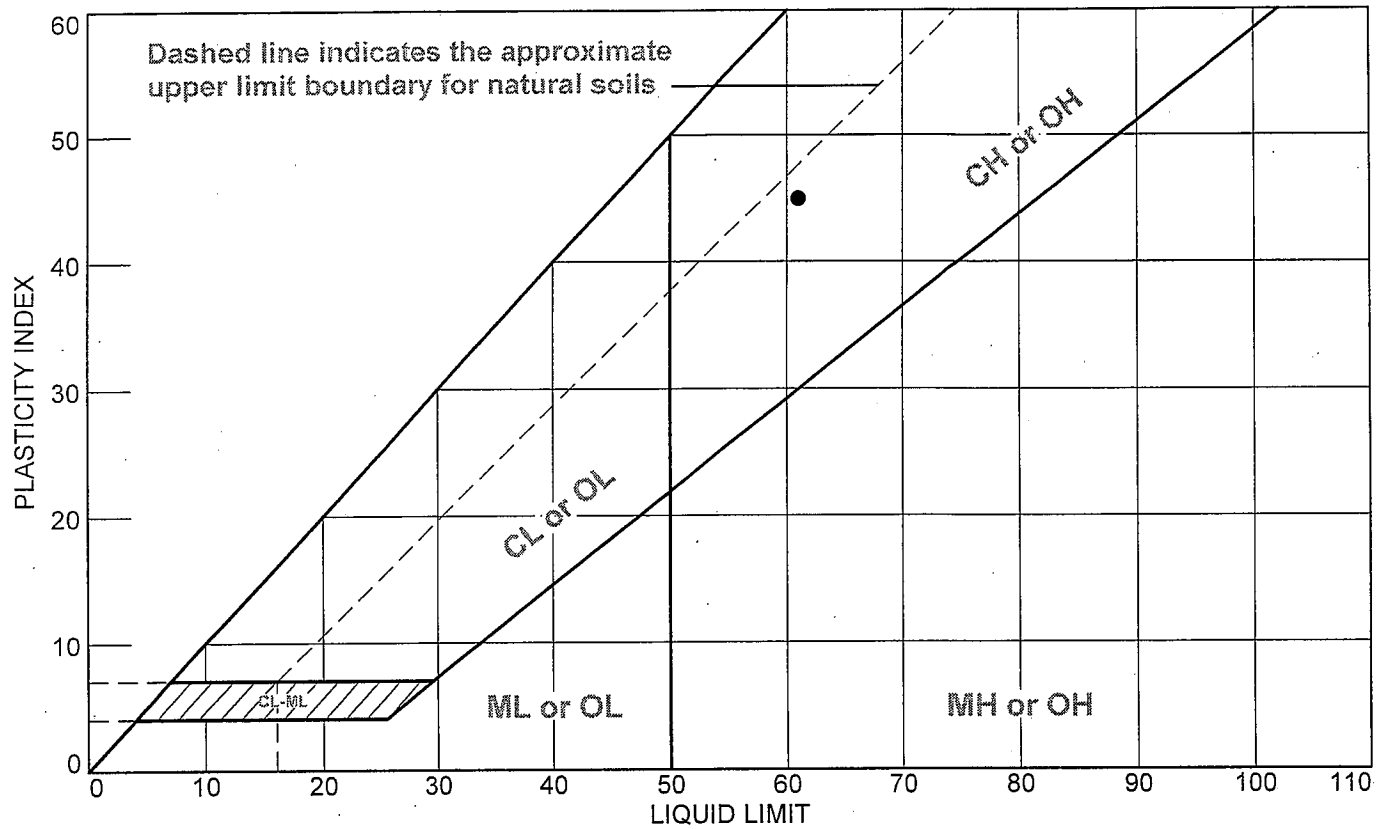
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	19.6	19.7	22.1	58.2	80.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
					0.0067	0.0736	0.0969	0.1181	0.1436

Fineness Modulus
0.04

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-2319UD	UD-4	25.0-27.0	20.3	16	61	45	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure **NA**

KAW 5/8/08

Tested By: CS

Checked By: LBJ

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2319UD

Depth: 25.0-27.0

Sample Number: UD-4

Material Description: Light Yellowish Brown Fat CLAY with sand

USCS: CH

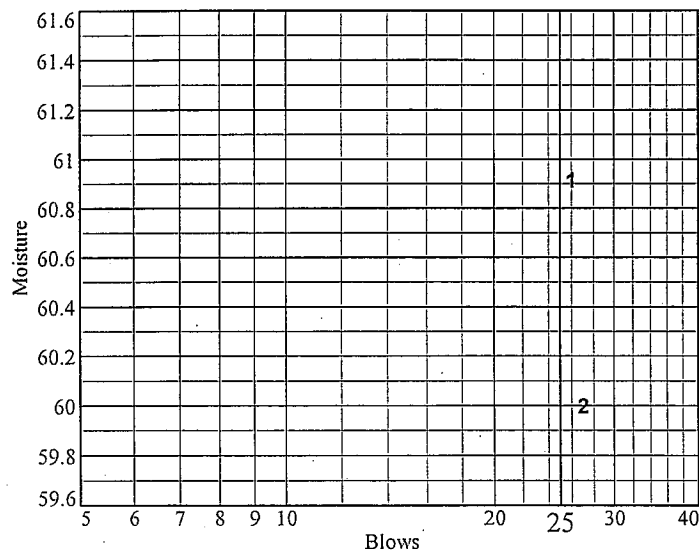
AASHTO: A-7-6(36)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.65	24.28				
Dry+Tare	21.19	20.98				
Tare	15.51	15.48				
# Blows	26	27				
Moisture	60.9	60.0				



Liquid Limit= 61
 Plastic Limit= 16
 Plasticity Index= 45
 Natural Moisture= 20.3
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.67	21.99			
Dry+Tare	21.68	21.09			
Tare	15.47	15.28			
Moisture	15.9	15.5			

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: 3/12/08

SAMPLE IDENTIFICATION: B-2319UD UD-4

(A) Mass of oven-dried soil, grams:	49.34
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.71
(C) Mass of pycnometer, water and soil, grams:	686.89
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.6
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.717
(F) Correction factor:	0.99966
(G x F) SPECIFIC GRAVITY @ 20°C:	2.716

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY with sand (CH)

EQUIPMENT USED

SCALES :3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

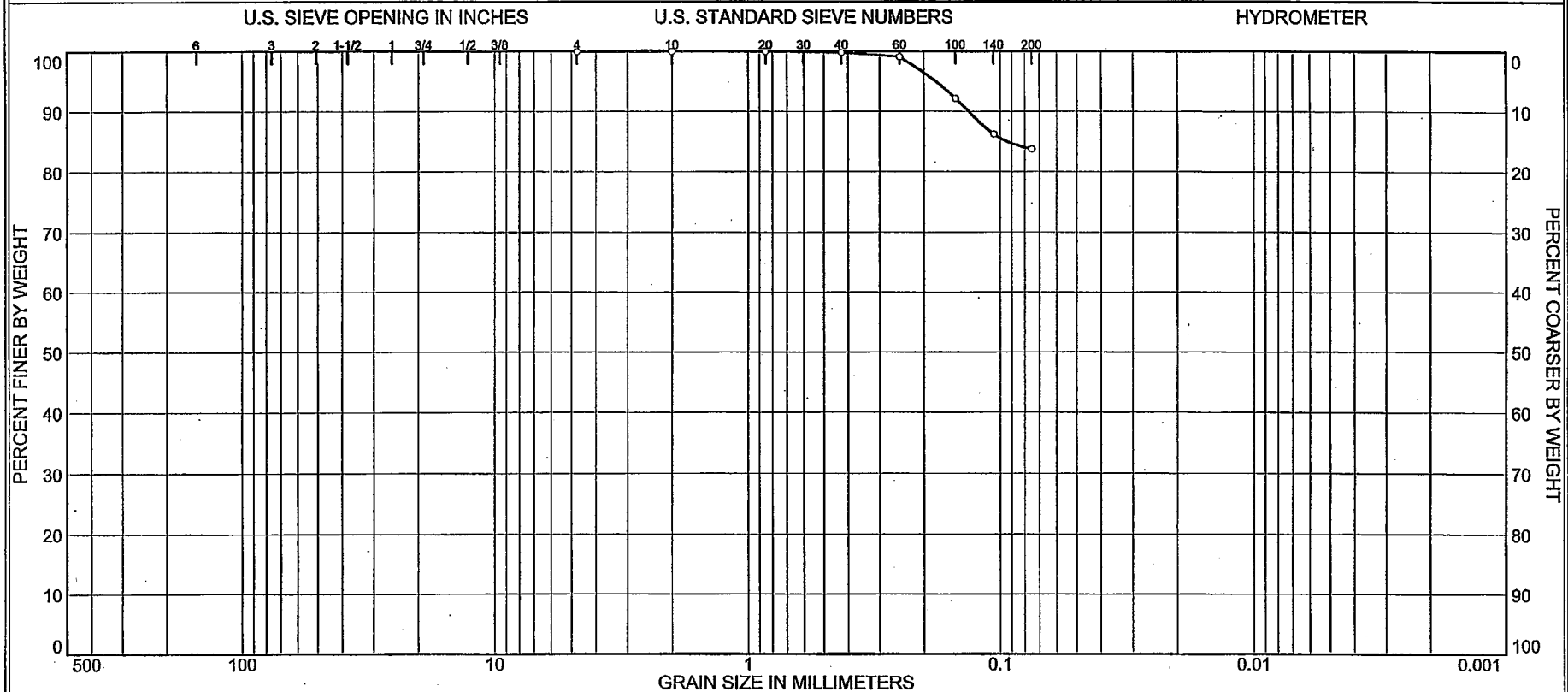
PYCNO METER :P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.2	16.0	83.8	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2319UD	UD-5	35-37 Ft	2/2/08	ML	Brownish Yellow Sandy SILT (Visual) with Sand ZHU 5/12/08	18.8	ND	ND

Client Bechtel
 Project Exelon Texas COL (Victoria)
 Project No. 6468-07-1777 Lab No. 8354

**MACTEC ENGINEERING
 AND
 CONSULTING, INC.**

Tested by: EH *EH* Reviewed by: HJ *HJ*
 Sieve Analysis Only
 NM Value from strength test performed.
 Specific Gravity = 2.72 (ASTM D 854-06)
 ND = Not Determined

KAW 5/9/08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-5
Elev. or Depth: 35-37 Ft Sample Length(in./cm.): ID#8354
Location: B-2319UD *with Sand* *z#4 5/2/08*
Description: Brownish Yellow ~~Sandy~~ SILT (Visual)
Date: 2/2/08 Natural Moisture: 18.8
Liquid Limit: ND Plastic Limit: ND USCS Class.: ML
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM Value from strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)
ND = Not Determined

Mechanical Analysis Data

 Initial
Dry sample and tare= 192.25
Tare = 109.04
Dry sample weight = 83.21
Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.03	100.0
# 40	0.15	99.8
# 60	0.76	99.1
# 100	6.49	92.2
# 140	11.40	86.3
# 200	13.52	83.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 16.2 (% coarse = 0.0 % medium = 0.2 % fine = 16.0)
% FINES = 83.8

D₈₅ = 0.09

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/14/08

SAMPLE IDENTIFICATION: B-2319UD, UD-5 @ 35-37 Ft.

(A) Mass of oven-dried soil, grams:	37.31
(B) Mass of pycnometer filled with water at test temperature (T), grams:	339.40
(C) Mass of pycnometer, water and soil, grams:	363.02
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.725
(F) <i>Correction factor:</i>	0.99904
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.723

MATERIAL TESTED:

☐
- # 4

☒
- # 10

PREPARATION METHOD:

☒
DRY

☐
WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

~~Sandy~~ SILT (ML) - Visual

with Sand
ZHU 5/12/08

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2053

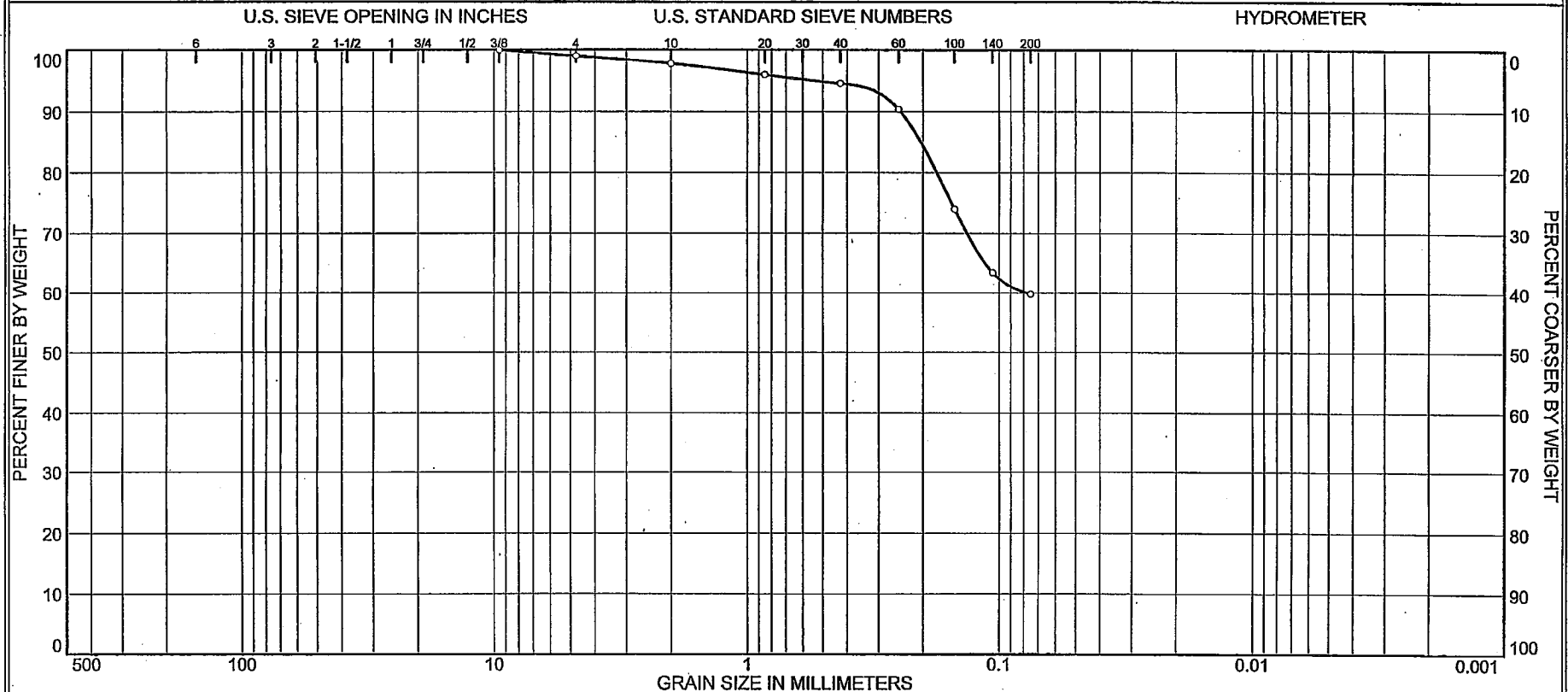
TESTED BY: EH *EH*

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

REVIEWED BY: Harry Johnson *HJ*

KAW 5/9/08

Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.0	1.2	3.2	34.8	59.8	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2319UD	UD-6	55-57 Ft (Top)	2/3/08	ML	Light Yellowish Brown Sandy SILT (Visual)	30.7	ND	ND

Client	Bechtel
Project	Exelon Texas COL (Victoria)
Project No.	6468-07-1777
Lab No.	8355

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: EHEP Reviewed by: HJ

Sieve Analysis Only
NM Value from strength test performed
Specific Gravity = 2.71 (ASTM D 854-06)
ND = Not Determined

KAW5/9/08

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Source: B-2319UD
Sample No.: UD-6
Elev. or Depth: 55-57 Ft (Top) Sample Length(in./cm.): ID#8355
Location: B-2319
Description: Light Yellowish Brown Sandy SILT (Visual)
Date: 2/3/08 Natural Moisture: 30.7
Liquid Limit: ND Plastic Limit: ND USCS Class.: ML
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM Value from strength test performed
Specific Gravity = 2.71 (ASTM D 854-06)
ND = Not Determined

	Initial
Dry sample and tare=	193.22
Tare =	113.25
Dry sample weight =	79.97
Tare for cumulative weight retained=	.00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.83	99.0
# 10	1.74	97.8
# 20	3.20	96.0
# 40	4.28	94.6
# 60	7.64	90.4
# 100	20.79	74.0
# 140	29.27	63.4
# 200	32.13	59.8

```
Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES =          % GRAVEL = 1.0    (% coarse =          % fine = 1.0)
% SAND = 39.2    (% coarse = 1.2    % medium = 3.2    % fine = 34.8)
% FINES = 59.8
```

$D_{85} = 0.20$ $D_{60} = 0.08$

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/9/08

SAMPLE IDENTIFICATION: B-2319UD, UD-6 @ 55-57 (Top) Ft.

(A) Mass of oven-dried soil, grams:	37.47
(B) Mass of pycnometer filled with water at test temperature (T), grams:	343.00
(C) Mass of pycnometer, water and soil, grams:	366.63
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.707
(F) Correction factor:	0.99904
(G x F) SPECIFIC GRAVITY @ 20°C:	2.705

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 99.0

Sandy SILT (ML) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2052

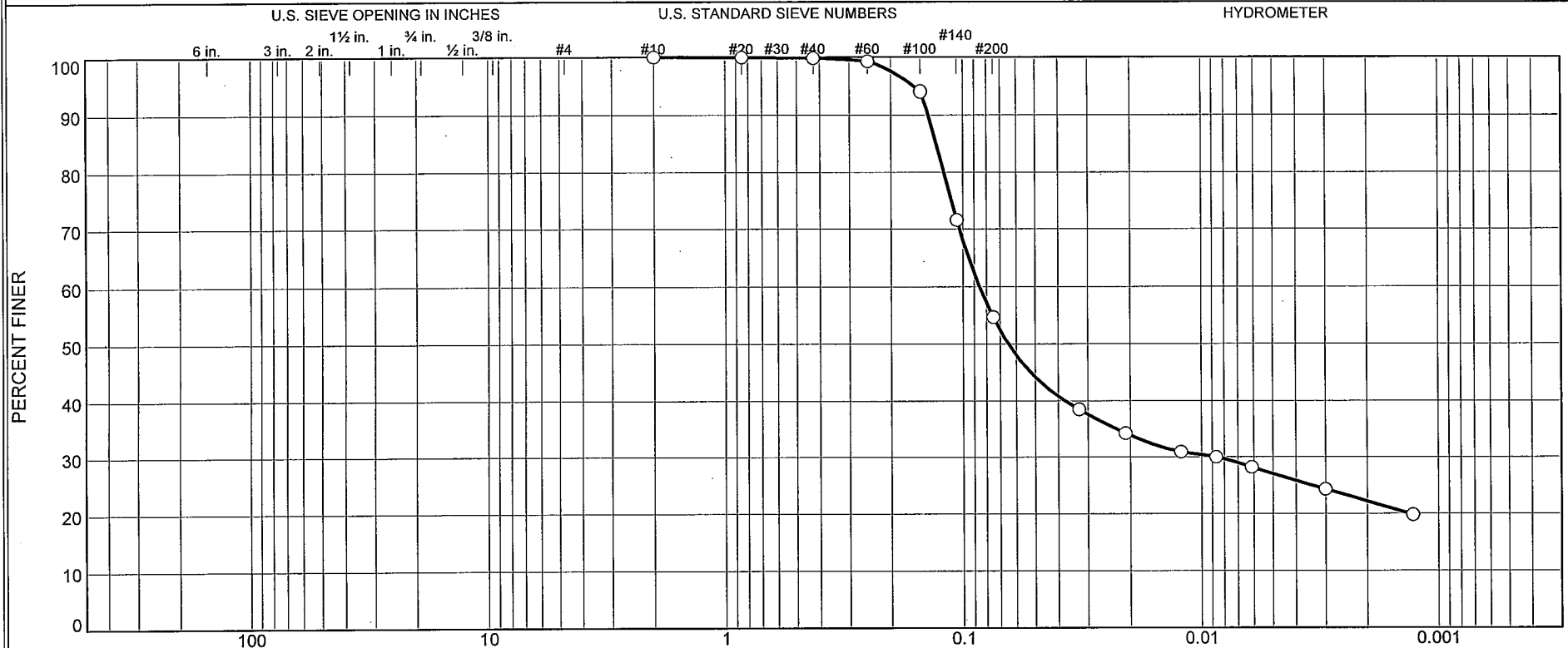
TESTED BY: EH *EH*

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

REVIEWED BY: Harry Johnson *HJ*

KAW 5/9/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	45.1	27.7	27.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2319UD	UD-7	65.0-67.0	2/3/08	CL	Light Yellowish Brown Sandy Lean CLAY	19.5	39	17

Client Bechtel
Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.662 (ASTM D854-06)
NM is average of values obtained from consolidation and triaxial test specimens

KAW 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2319UD

Depth: 65.0-67.0

Sample Number: UD-7

Material Description: Light Yellowish Brown Sandy Lean CLAY

Date: 2/3/08

Natural Moisture: 19.5

Liquid Limit: 39

Plastic Limit: 17

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.662 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
189.77	0.00	0.00	#10	0.00	100.0
48.67	0.00	0.00	#20	0.03	99.9
			#40	0.08	99.8
			#60	0.35	99.3
			#100	2.91	94.0
			#140	13.84	71.6
			#200	22.05	54.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 48.67

Hygroscopic moisture correction:

Moist weight and tare = 28.84

Dry weight and tare = 28.40

Tare weight = 15.49

Hygroscopic moisture = 3.4%

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 = 2.662

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	22.8	23.0	18.2	0.0131	24.0	12.4	0.0327	38.5
5.00	22.8	21.0	16.2	0.0131	22.0	12.7	0.0209	34.2
15.00	22.6	19.5	14.6	0.0132	20.5	12.9	0.0122	30.9
30.00	22.8	19.0	14.2	0.0131	20.0	13.0	0.0087	30.0
60.00	23.3	18.0	13.3	0.0131	19.0	13.2	0.0061	28.2
250.00	23.9	16.0	11.5	0.0130	17.0	13.5	0.0030	24.3
1440.00	23.5	14.0	9.4	0.0130	15.0	13.8	0.0013	19.8

MACTEC, Inc.

Fractional Components

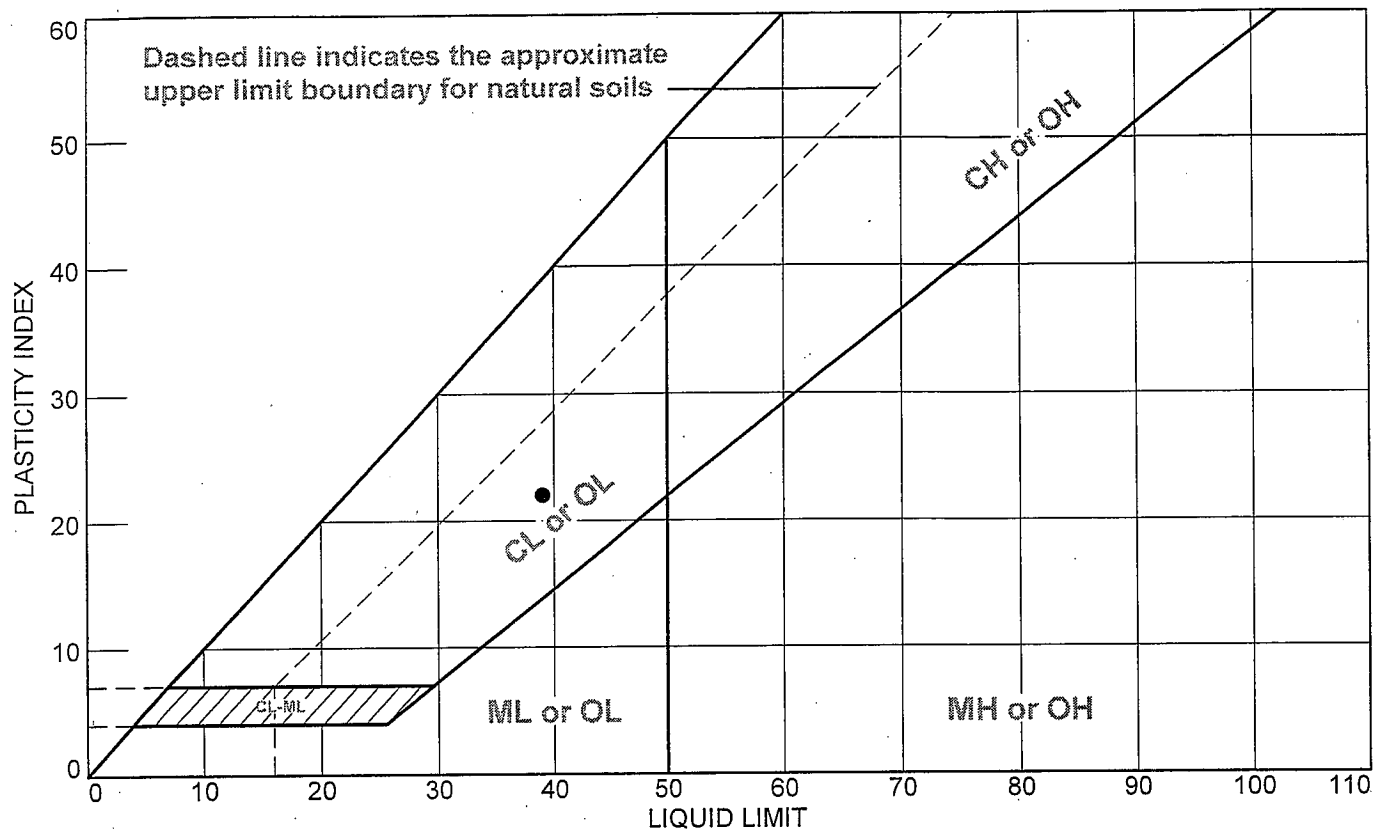
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	45.1	45.3	27.7	27.0	54.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
		0.0013	0.0086	0.0647	0.0856	0.1198	0.1286	0.1390	0.1607

Fineness Modulus
0.07

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-2319UD	UD-7	65.0-67.0	19.5	17	39	22	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure *NA*

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2319UD

Depth: 65.0-67.0

Sample Number: UD-7

Material Description: Light Yellowish Brown Sandy Lean CLAY

USCS: CL

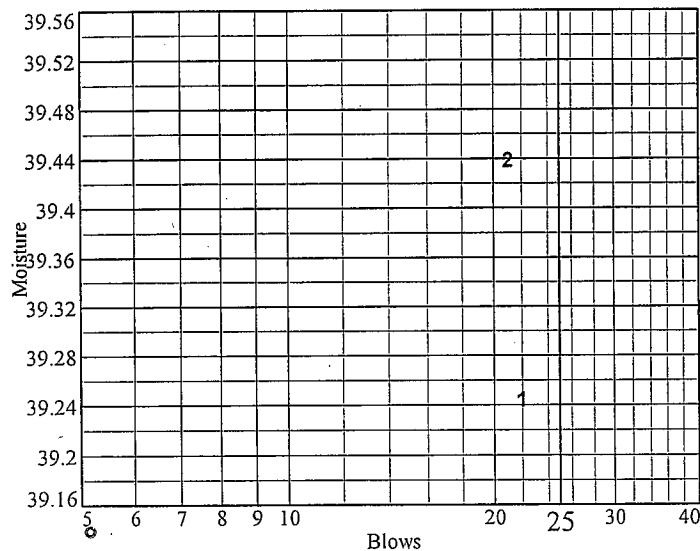
AASHTO: A-6(9)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.95	22.93				
Dry+Tare	21.56	20.82				
Tare	15.47	15.47				
# Blows	22	21				
Moisture	39.2	39.4				



Liquid Limit= 39
 Plastic Limit= 17
 Plasticity Index= 22
 Natural Moisture= 19.5
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.55	19.36			
Dry+Tare	21.53	18.17			
Tare	15.57	11.10			
Moisture	17.1	16.8			

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: 4/11/08

SAMPLE IDENTIFICATION: B-2319UD UD-7

(A) Mass of oven-dried soil, grams:	53.08
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.74
(C) Mass of pycnometer, water and soil, grams:	688.89
(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

Sandy Lean CLAY (CL)

EQUIPMENT USED

SCALES :3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

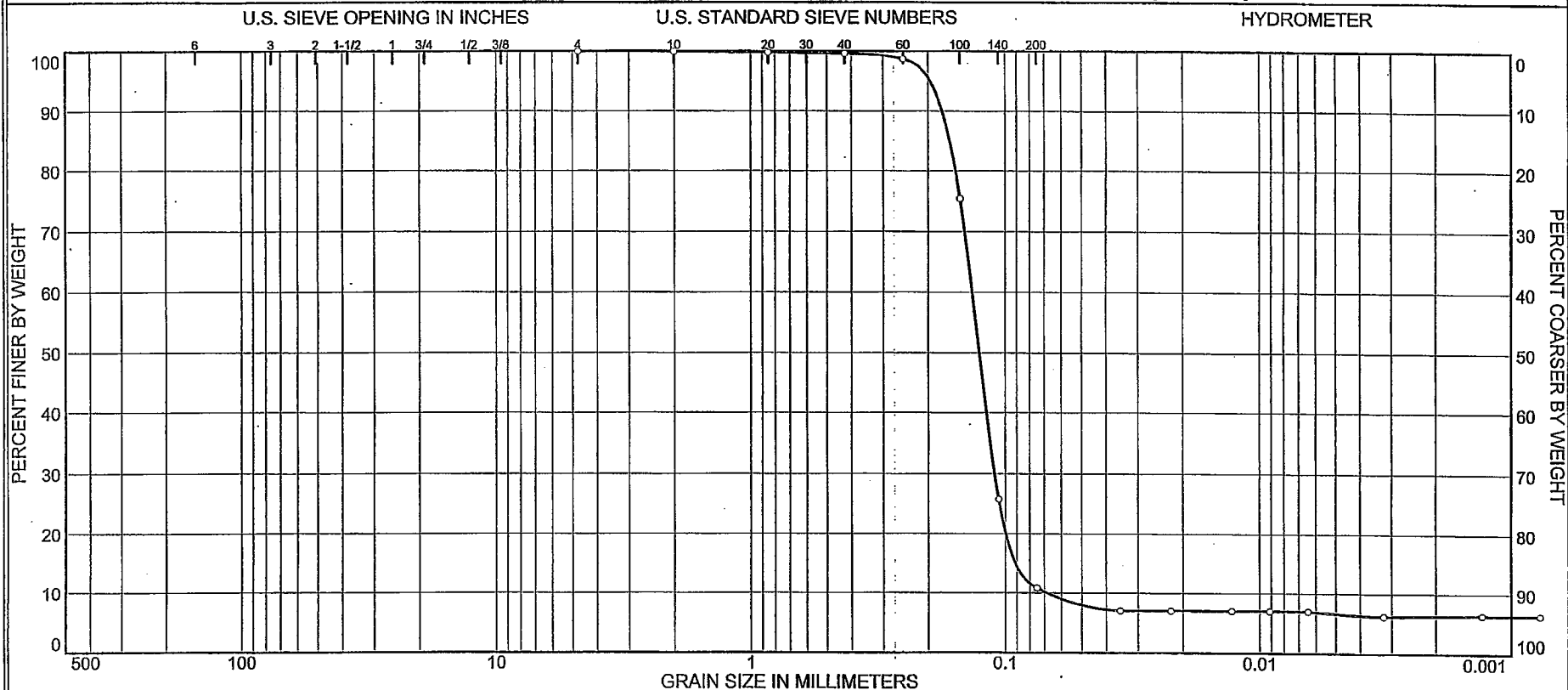
PYCNO METER :P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

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



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.4	88.8	4.2	6.6

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2319UD	UD-8	75-77 Ft	2/3/08	SP-SM	Light Gray Poorly Graded SAND with Silt	24.6	NV	NP

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777

Lab No. 8356

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.73 (ASTM D 854-06)

KAW 4.15.08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-8
Elev. or Depth: 75-77 Ft Sample Length(in./cm.): ID#8356
Location: B-2319UD
Description: Light Gray Poorly Graded SAND with Silt
Date: 2/3/08 PL: NP LL: NV PI: NP
USCS Classification: SP-SM AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.73 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	73.40	
Tare =	16.59	
Dry sample weight =	56.81	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.10	99.8
# 40	0.21	99.6
# 60	0.75	98.7
# 100	13.99	75.4
# 140	42.19	25.7
# 200	50.69	10.8

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 10.8
Weight of hydrometer sample: 6.12
Calculated biased weight= 56.67
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.734
Specific gravity correction factor= 0.982
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0353	7.0
5.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0223	7.0
15.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0129	7.0
30.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0091	7.0
60.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0064	7.0
240.00	22.2	8.5	3.6	0.0130	8.5	14.9	0.0032	6.2
1440.00	22.8	8.5	3.7	0.0129	8.5	14.9	0.0013	6.4
4216.00	22.8	8.5	3.7	0.0129	8.5	14.9	0.0008	6.4

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES = % GRAVEL =

% SAND = 89.2 (% coarse = 0.0 % medium = 0.4 % fine = 88.8)

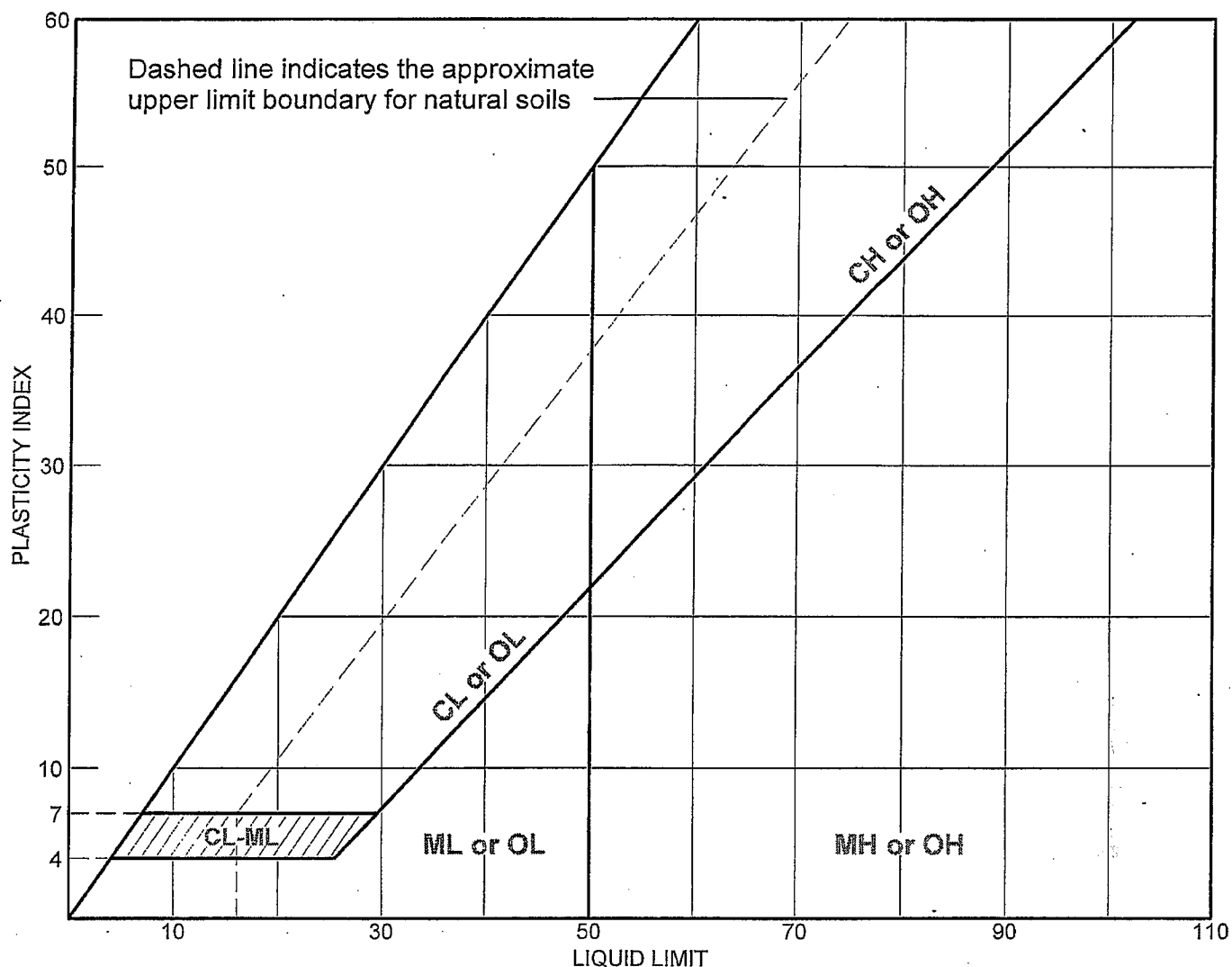
% SILT = 4.2 % CLAY = 6.6 (% CLAY COLLOIDS = 6.4)

D₈₅= 0.16 D₆₀= 0.13 D₅₀= 0.13

D₃₀= 0.11 D₁₅= 0.09 D₁₀= 0.07

C_c= 1.3063 C_u= 1.9535

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
•	B-2319UD	UD-8	75-77 Ft	24.6	NP	NV	NP	SP-SM

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8356

LIQUID AND PLASTIC LIMIT TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-8
Elev. or Depth: 75-77 Ft Sample Length(in./cm.): ID#8356
Location: B-2319UD
Description: Light Gray Poorly Graded SAND with Silt
Water Content: 24.6 USCS: SP-SM AASHTO:

Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP

MACTEC ENGINEERING AND CONSULTING, INC.

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: 3/4/08

SAMPLE IDENTIFICATION: B-2319UD, UD-8 @ 75-77 Ft.

(A) Mass of oven-dried soil, grams:	37.30
(B) Mass of pycnometer filled with water at test temperature (T), grams:	366.05
(C) Mass of pycnometer, water and soil, grams:	389.71
(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) Correction factor:	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

SAND with Silt (SP-SM)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2193

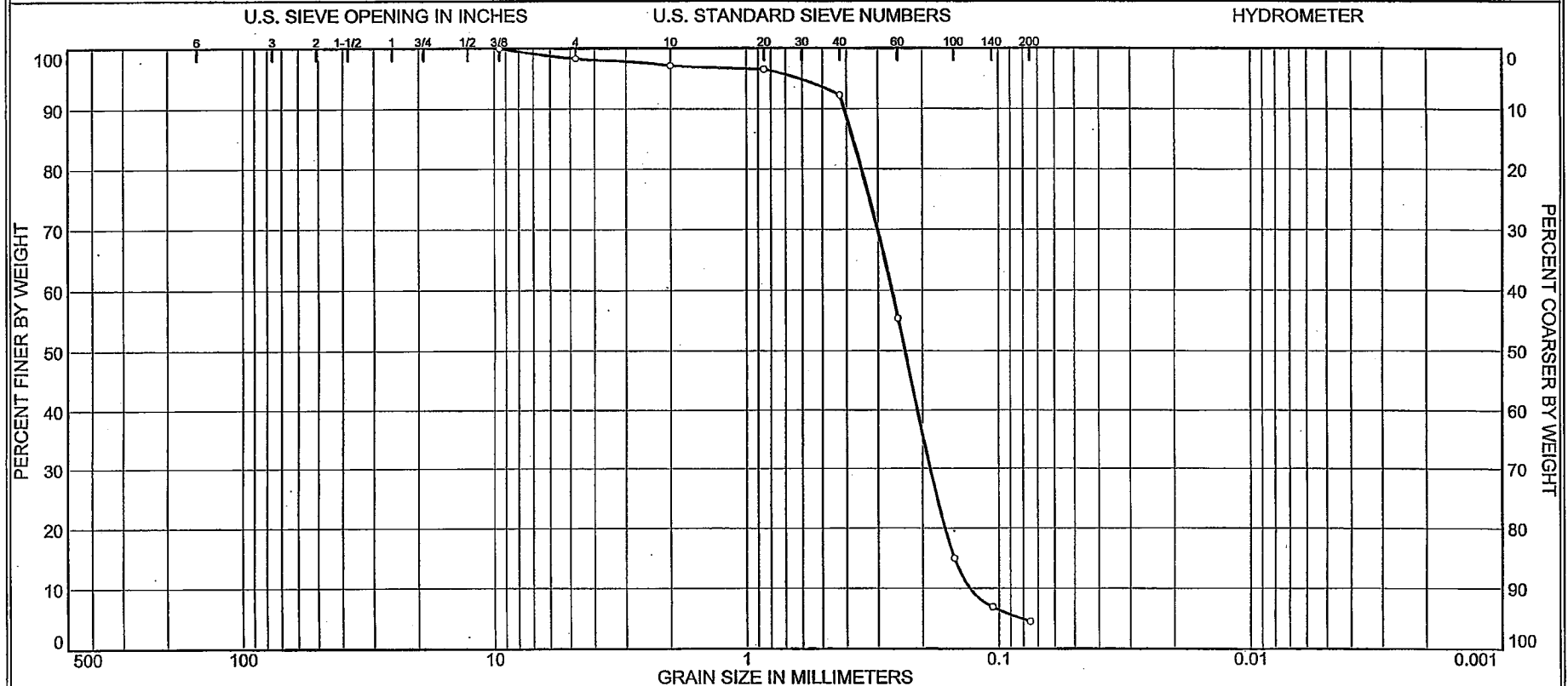
TESTED BY: EH

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

REVIEWED BY: Harry Johnson

KAW 4-15-08

Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.7	1.2	4.8	87.8	4.5	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2319UD	UD-10	95-97 Ft (Bottom)	2/3/08	SP	Mottled Light Gray and Brownish Yellow Poorly Graded SAND (Visual)	19.3	ND	ND

Client Bechtel	
Project Exelon Texas COL (Victoria)	
Project No. 6468-07-1777	Lab No. 8357

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: EH *EH* Reviewed by: HJ *HJ*
 Sieve Analysis Only
 NM value from strength test performed.
 Specific Gravity = 2.72 (ASTM D 854-06)
 ND = Not Determined

Kaw 5/9/08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-10
Elev. or Depth: 95-97 Ft (Bottom) **Sample Length(in./cm.):** ID#8357
Location: B-2319UD
Description: Mottled Light Gray and Brownish Yellow Poorly Graded SAND (Visual)
Date: 2/3/08 **Natural Moisture:** 19.3
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SP
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)
ND = Not Determined

Mechanical Analysis Data

	Initial	
Dry sample and tare=	168.95	
Tare =	88.23	
Dry sample weight =	80.72	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	1.35	98.3
# 10	2.34	97.1
# 20	2.79	96.5
# 40	6.18	92.3
# 60	35.98	55.4
# 100	68.62	15.0
# 140	75.13	6.9
# 200	77.06	4.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL = 1.7 (% coarse = % fine = 1.7)
% SAND = 93.8 (% coarse = 1.2 % medium = 4.8 % fine = 87.8)
% FINES = 4.5

D₈₅= 0.38 D₆₀= 0.26 D₅₀= 0.23
D₃₀= 0.19 D₁₅= 0.15 D₁₀= 0.13
C_c= 1.0114 C_u= 2.0246

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/8/08

SAMPLE IDENTIFICATION: B-2319UD, UD-10 @ 95-97 (bottom) Ft.

(A) Mass of oven-dried soil, grams:	37.62
(B) Mass of pycnometer filled with water at test temperature (T), grams:	339.40
(C) Mass of pycnometer, water and soil, grams:	363.20
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.6
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.722
(F) Correction factor:	0.99919
(G x F) SPECIFIC GRAVITY @ 20°C:	2.720

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 98

Poorly Graded SAND (SP) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2053

TESTED BY: EH *EH*

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

REVIEWED BY: Harry Johnson *HJ*

KAW 5/9/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	2.1	27.8	19.1	51.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2321UD	UD-1	3.5-5.2'	2/3/08	CL	Dark Gray Sandy Lean CLAY	17.4	42	13

Client <u>Bechtel</u>		MACTEC, Inc. Raleigh, North Carolina	○ Specific Gravity = 2.709 (ASTM D854-06) NM obtained from consolidation test specimen
Project <u>Exelon Texas COL (Victoria Reservoir)</u>			
Project No. <u>6468071777</u>	Figure <u>NA</u>		

KAW 5/8/08

Tested By: CS Checked By: LBj

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 3.5-5.2'

Sample Number: UD-1

Material Description: Dark Gray Sandy Lean CLAY

Date: 2/3/08

Natural Moisture: 17.4

Liquid Limit: 42

Plastic Limit: 13

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.709 (ASTM D854-06)

NM obtained from consolidation test specimen

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
228.19	0.00	0.00	#10	0.00	100.0
47.97	0.00	0.00	#20	0.48	99.0
			#40	1.00	97.9
			#60	2.55	94.7
			#100	7.10	85.2
			#140	11.94	75.1
			#200	14.36	70.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =47.97

Hygroscopic moisture correction:

Moist weight and tare = 28.99

Dry weight and tare = 28.44

Tare weight = 15.50

Hygroscopic moisture =4.3%

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 =2.709

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	21.7	35.0	29.9	0.0131	36.0	10.4	0.0299	64.0
5.00	21.7	34.0	28.9	0.0131	35.0	10.6	0.0191	61.9
15.00	21.7	32.0	26.9	0.0131	33.0	10.9	0.0112	57.6
30.00	21.7	31.0	25.9	0.0131	32.0	11.0	0.0080	55.5
60.00	21.7	29.5	24.4	0.0131	30.5	11.3	0.0057	52.2
250.00	22.3	26.5	21.5	0.0130	27.5	11.8	0.0028	46.2
1440.00	21.9	24.0	18.9	0.0131	25.0	12.2	0.0012	40.6

MACTEC, Inc.

Fractional Components

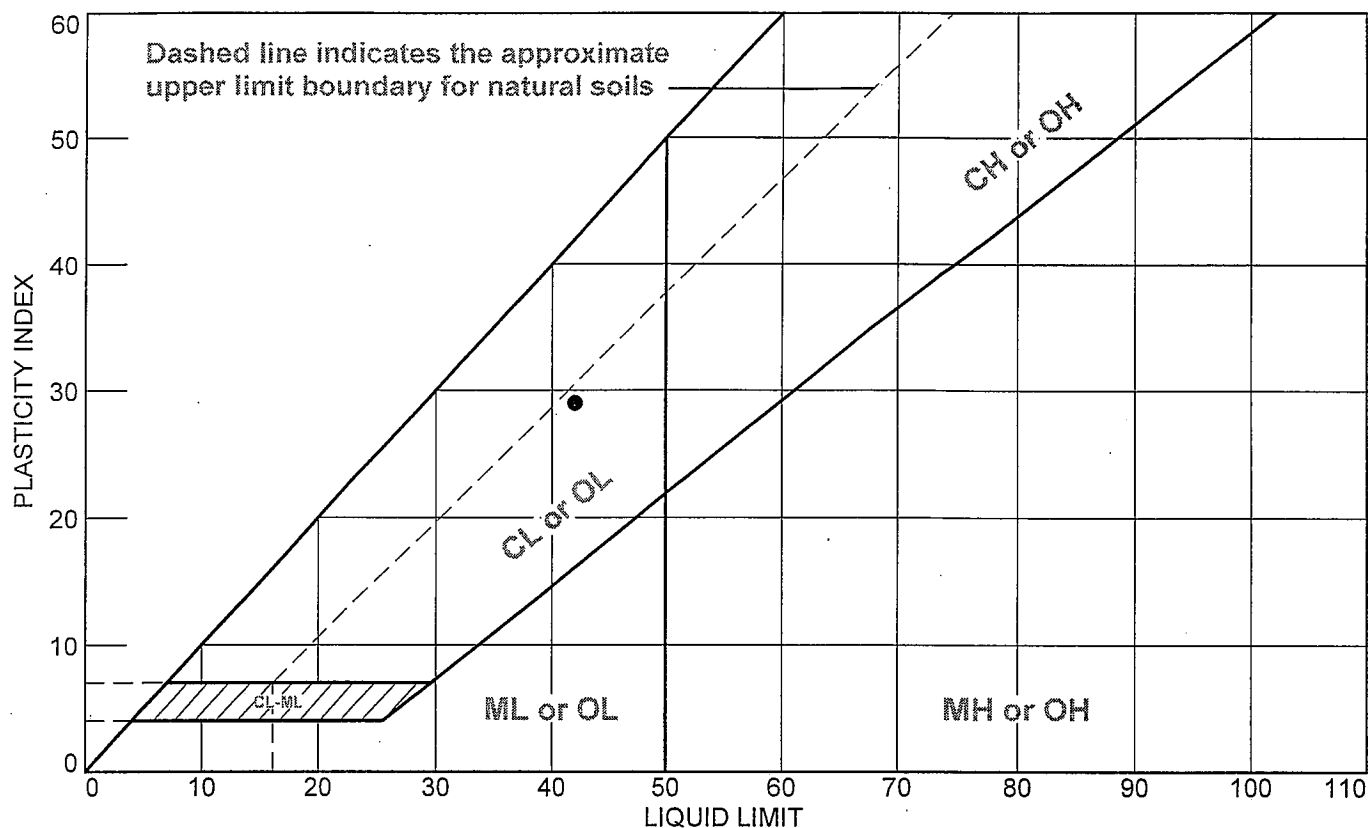
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.1	27.8	29.9	19.1	51.0	70.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0045	0.0150	0.1263	0.1489	0.1833	0.2577

Fineness Modulus
0.21

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-2321UD	UD-1	3.5-5.2'	17.4	13	42	29	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure **NA**

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 3.5-5.2'

Sample Number: UD-1

Material Description: Dark Gray Sandy Lean CLAY

USCS: CL

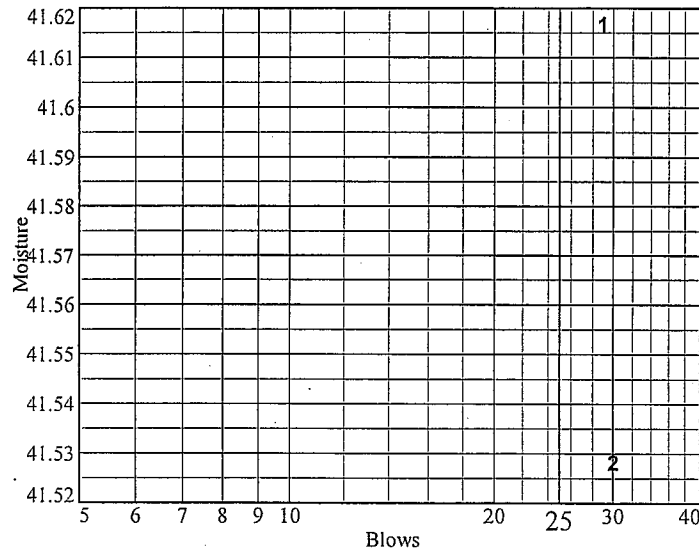
AASHTO: A-7-6(18)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.03	19.67				
Dry+Tare	22.25	17.17				
Tare	15.57	11.15				
# Blows	29	30				
Moisture	41.6	41.5				



Liquid Limit= 42
 Plastic Limit= 13
 Plasticity Index= 29
 Natural Moisture= 17.4
 Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.73	21.92			
Dry+Tare	21	21.18			
Tare	15.46	15.46			
Moisture	13.2	12.9			

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: 4/20/08

SAMPLE IDENTIFICATION: B-2321UD, UD-1

(A) Mass of oven-dried soil, grams:	48.42
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.48
(C) Mass of pycnometer, water and soil, grams:	687.03
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.8
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.710
(F) Correction factor:	0.99961
(G x F) SPECIFIC GRAVITY @ 20°C:	2.709

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

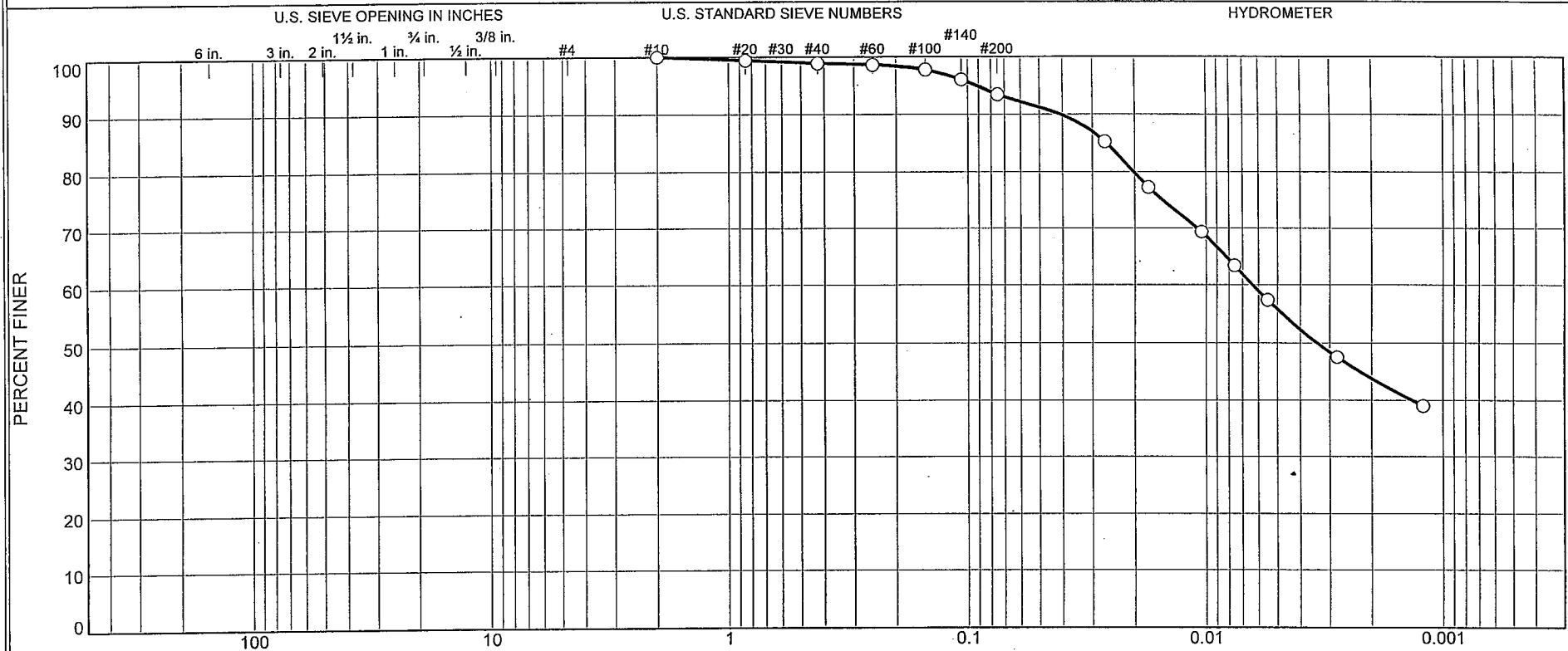
PYCNO METER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.1	5.4	37.7	55.8

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2321UD	UD-3	10.0-11.7	2/3/08	CH	Mottled Very Pale Brown and Brownish Yellow Fat CLAY	17.1	51	16

Client Bechtel		MACTEC, Inc. Raleigh, North Carolina	Specific Gravity = 2.711 (ASTM D854-06) NM is average of values obtained from consolidation and triaxial test specimens
Project Exelon Texas COL (Victoria Reservoir)			
Project No. 6468071777	Figure <i>NA</i>		

KAW 5/8/08

GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 10.0-11.7

Sample Number: UD-3

Material Description: Mottled Very Pale Brown and Brownish Yellow Fat CLAY

Date: 2/3/08

Natural Moisture: 17.1

Liquid Limit: 51

Plastic Limit: 16

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.711 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
290.54	0.00	0.00	#10	0.00	100.0
50.30	0.00	0.00	#20	0.30	99.4
			#40	0.55	98.9
			#60	0.70	98.6
			#100	1.13	97.8
			#140	1.99	96.0
			#200	3.27	93.5

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =50.30

Hygroscopic moisture correction:

Moist weight and tare = 28.24

Dry weight and tare = 28.08

Tare weight = 15.15

Hygroscopic moisture =1.2%

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 =2.711

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	48.0	42.9	0.0131	49.0	8.3	0.0266	85.2
5.00	21.9	44.0	38.9	0.0131	45.0	8.9	0.0175	77.3
15.00	21.9	40.0	34.9	0.0131	41.0	9.6	0.0105	69.3
30.00	21.9	37.0	31.9	0.0131	38.0	10.1	0.0076	63.4
60.00	21.9	34.0	28.9	0.0131	35.0	10.6	0.0055	57.4
250.00	21.9	29.0	23.9	0.0131	30.0	11.4	0.0028	47.5
1440.00	20.9	25.0	19.6	0.0133	26.0	12.0	0.0012	39.0

MACTEC, Inc.

Fractional Components

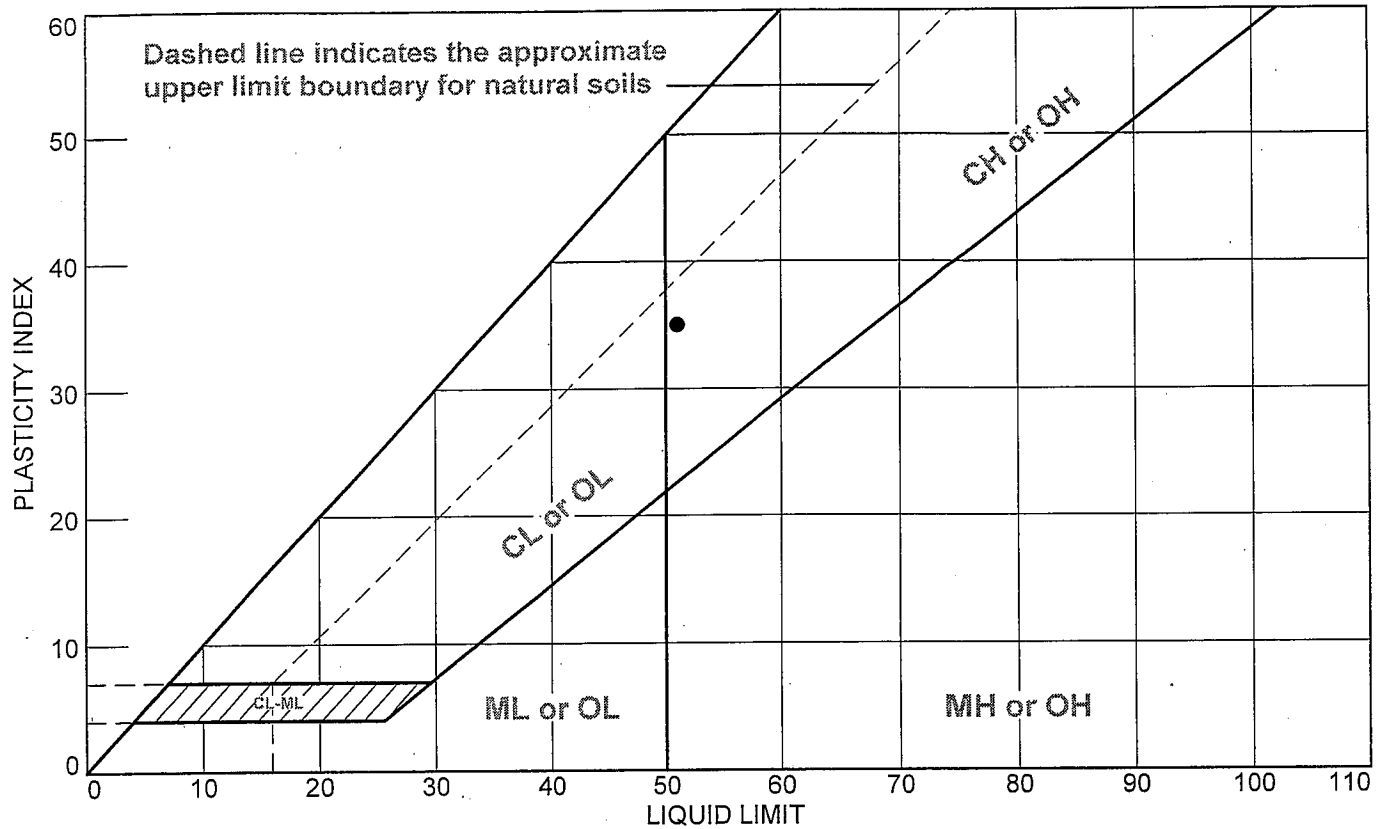
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.1	5.4	6.5	37.7	55.8	93.5

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0034	0.0063	0.0202	0.0263	0.0408	0.0919

Fineness Modulus
0.05

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-2321UD	UD-3	10.0-11.7	17.1	16	51	35	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure *NA*

KAW 5/8/08

Tested By: CS

Checked By: LBJ

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 10.0-11.7

Sample Number: UD-3

Material Description: Mottled Very Pale Brown and Brownish Yellow Fat CLAY

USCS: CH

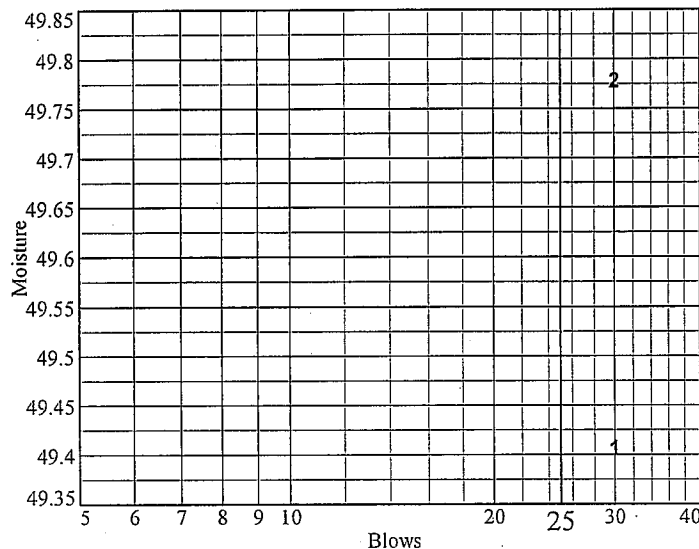
AASHTO: A-7-6(35)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.15	22.23				
Dry+Tare	20.65	19.98				
Tare	15.59	15.46				
# Blows	30	30				
Moisture	49.4	49.8				



Liquid Limit= 51
 Plastic Limit= 16
 Plasticity Index= 35
 Natural Moisture= 17.1
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.80	22.20			
Dry+Tare	21.84	21.30			
Tare	15.78	15.53			
Moisture	15.8	15.6			

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: 3/12/08

SAMPLE IDENTIFICATION: B-2321UD, UD-3

(A) Mass of oven-dried soil, grams:	51.60
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.55
(C) Mass of pycnometer, water and soil, grams:	689.12
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.1
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.712
(F) Correction factor:	0.99977
(G x F) SPECIFIC GRAVITY @ 20°C:	2.711

MATERIAL TESTED:

☒ X

- # 4

☐

- # 10

PREPARATION METHOD:

☒ X

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

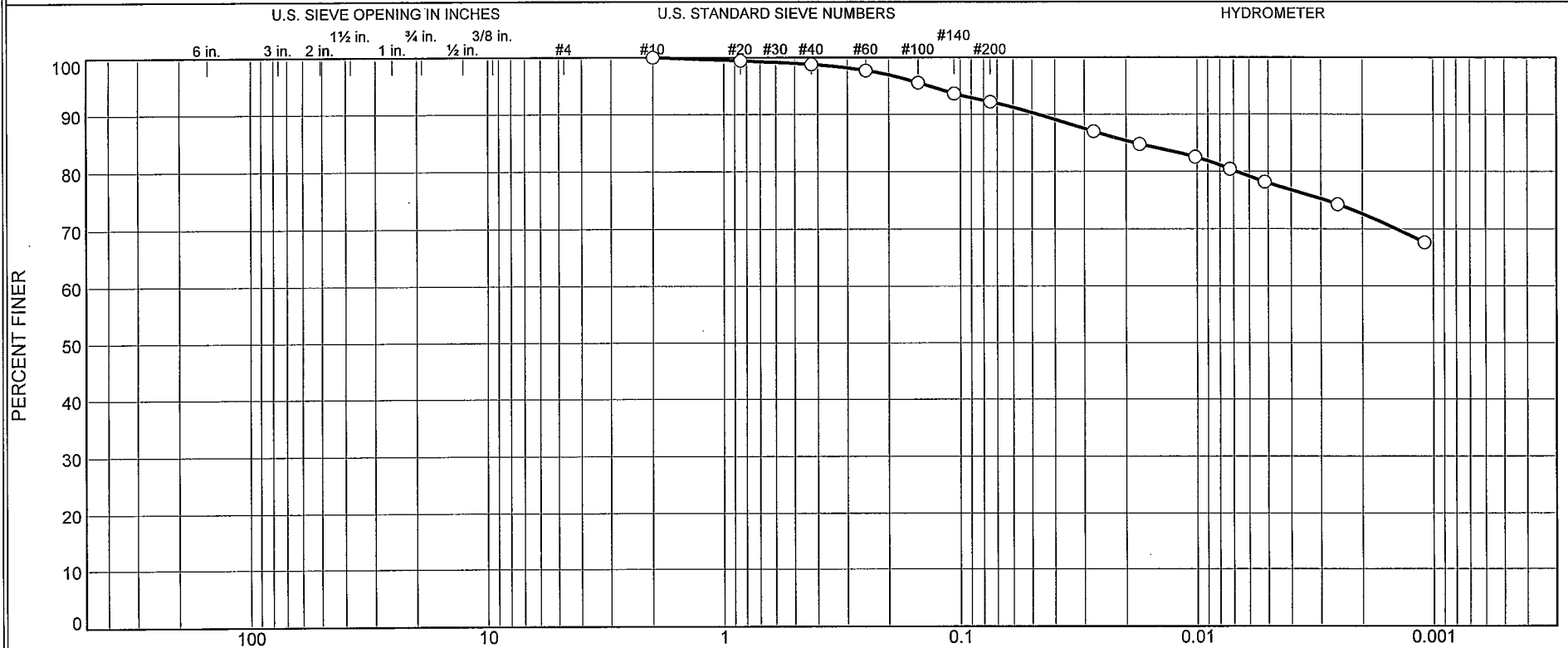
PYCNO METER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

Kaw 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.2	6.6	14.2	78.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2321UD	UD-4	13.5-15.2	2/3/08	CH	Mottled Brownish Yellow and Light Gray Fat CLAY	21.8	81	22

Client Bechtel
Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA*

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.720 (ASTM D854-06)
NM obtained from consolidation test specimen

KAW 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 13.5-15.2

Sample Number: UD-4

Material Description: Mottled Brownish Yellow and Light Gray Fat CLAY

Date: 2/3/08

Natural Moisture: 21.8

Liquid Limit: 81

Plastic Limit: 22

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.720 (ASTM D854-06)

NM obtained from consolidation test specimen

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
165.10	0.00	0.00	#10	0.00	100.0
47.23	0.00	0.00	#20	0.27	99.4
			#40	0.57	98.8
			#60	1.07	97.7
			#100	2.08	95.6
			#140	2.99	93.7
			#200	3.67	92.2

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =47.23

Hygroscopic moisture correction:

Moist weight and tare = 27.29

Dry weight and tare = 26.53

Tare weight = 15.46

Hygroscopic moisture =6.9%

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 =2.720

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	22.3	44.0	39.0	0.0130	45.0	8.9	0.0274	86.9
5.00	22.3	43.0	38.0	0.0130	44.0	9.1	0.0175	84.7
15.00	22.4	42.0	37.0	0.0130	43.0	9.2	0.0102	82.5
30.00	22.6	41.0	36.1	0.0129	42.0	9.4	0.0072	80.4
60.00	22.6	40.0	35.1	0.0129	41.0	9.6	0.0052	78.2
250.00	23.5	38.0	33.4	0.0128	39.0	9.9	0.0025	74.3
1440.00	23.5	35.0	30.4	0.0128	36.0	10.4	0.0011	67.6

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	1.2	6.6	7.8	14.2	78.0	92.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0068	0.0187	0.0474	0.1350

Fineness Modulus
0.07

MACTEC, Inc.

Dashed line indicates the approximate upper limit boundary for natural soils

CL or OL

CH or OH

MH or OH

CL-ML

PLASTICITY INDEX

LIQUID LIMIT

SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2321UD	UD-4	13.5-152	21.8	22	81	59	CH

Figure NA

KAW 5/8108

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 13.5-152

Sample Number: UD-4

Material Description: Mottled Brownish Yellow and Light Gray Fat CLAY

USCS: CH

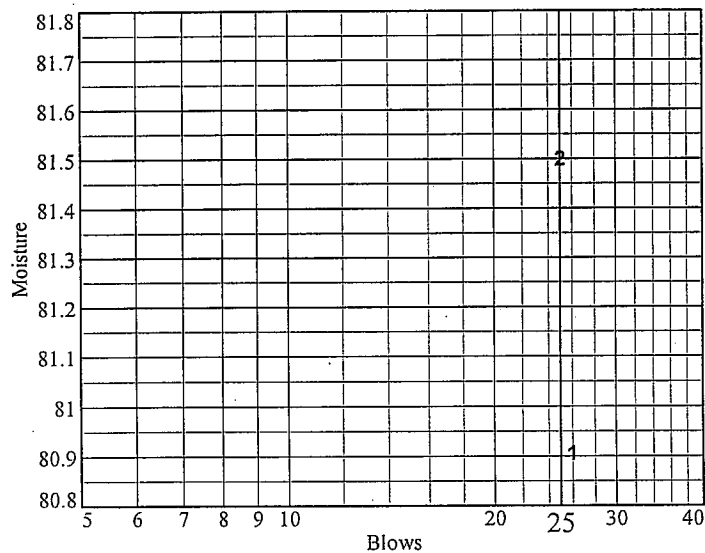
AASHTO: A-7-6(61)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.18	22.24				
Dry+Tare	19.79	19.20				
Tare	15.60	15.47				
# Blows	26	25				
Moisture	80.9	81.5				



Liquid Limit= 81
 Plastic Limit= 22
 Plasticity Index= 59
 Natural Moisture= 21.8
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.85	22.59			
Dry+Tare	20.69	21.39			
Tare	15.50	15.80			
Moisture	22.4	21.5			

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: 4/7/08

SAMPLE IDENTIFICATION: B-2321UD, UD-4

(A) Mass of oven-dried soil, grams:	50.10
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.71
(C) Mass of pycnometer, water and soil, grams:	687.40
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.6
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.721
(F) Correction factor:	0.99966
(G x F) SPECIFIC GRAVITY @ 20°C:	2.720

MATERIAL TESTED:

☒ X

- # 4

☐

- # 10

PREPARATION METHOD:

☒ X

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

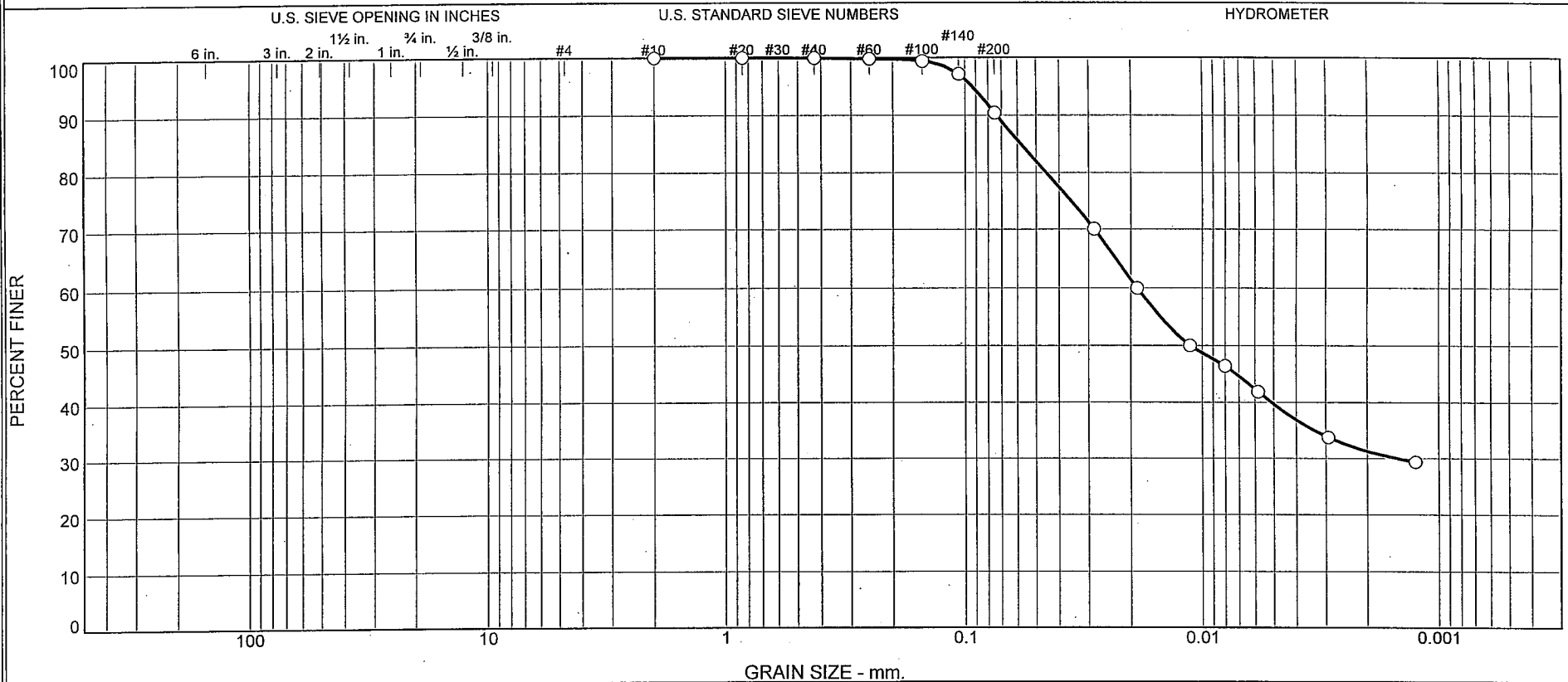
PYCNO METER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	9.5	50.7	39.7

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2321UD	UD-5	17.0-18.7	2/3/08	CL	Mottled Brownish Yellow and Light Gray Lean CLAY	19.1	40	15

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA*

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.717 (ASTM D854-06)
 NM is average of values obtained from consolidation and triaxial test specimens

KAW 5/8/08

Tested By: CS

Checked By: lbj

GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 17.0-18.7

Sample Number: UD-5

Material Description: Mottled Brownish Yellow and Light Gray Lean CLAY

Date: 2/3/08

Natural Moisture: 19.1

Liquid Limit: 40

Plastic Limit: 15

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.717 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
332.26	0.00	0.00	#10	0.00	100.0
50.19	0.00	0.00	#20	0.00	100.0
			#40	0.03	99.9
			#60	0.10	99.8
			#100	0.30	99.4
			#140	1.43	97.2
			#200	4.82	90.4

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =50.11

Hygroscopic moisture correction:

Moist weight and tare = 29.43

Dry weight and tare = 29.19

Tare weight = 15.78

Hygroscopic moisture =1.8%

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 =2.717

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	22.2	40.0	35.0	0.0130	41.0	9.6	0.0285	70.0
5.00	22.2	35.0	30.0	0.0130	36.0	10.4	0.0188	60.0
15.00	22.2	30.0	25.0	0.0130	31.0	11.2	0.0113	50.0
30.00	22.9	28.0	23.2	0.0129	29.0	11.5	0.0080	46.4
60.00	21.9	26.0	20.9	0.0131	27.0	11.9	0.0058	41.9
250.00	21.8	22.0	16.9	0.0131	23.0	12.5	0.0029	33.8
1440.00	21.0	20.0	14.7	0.0132	21.0	12.9	0.0012	29.4

MACTEC, Inc.

Fractional Components

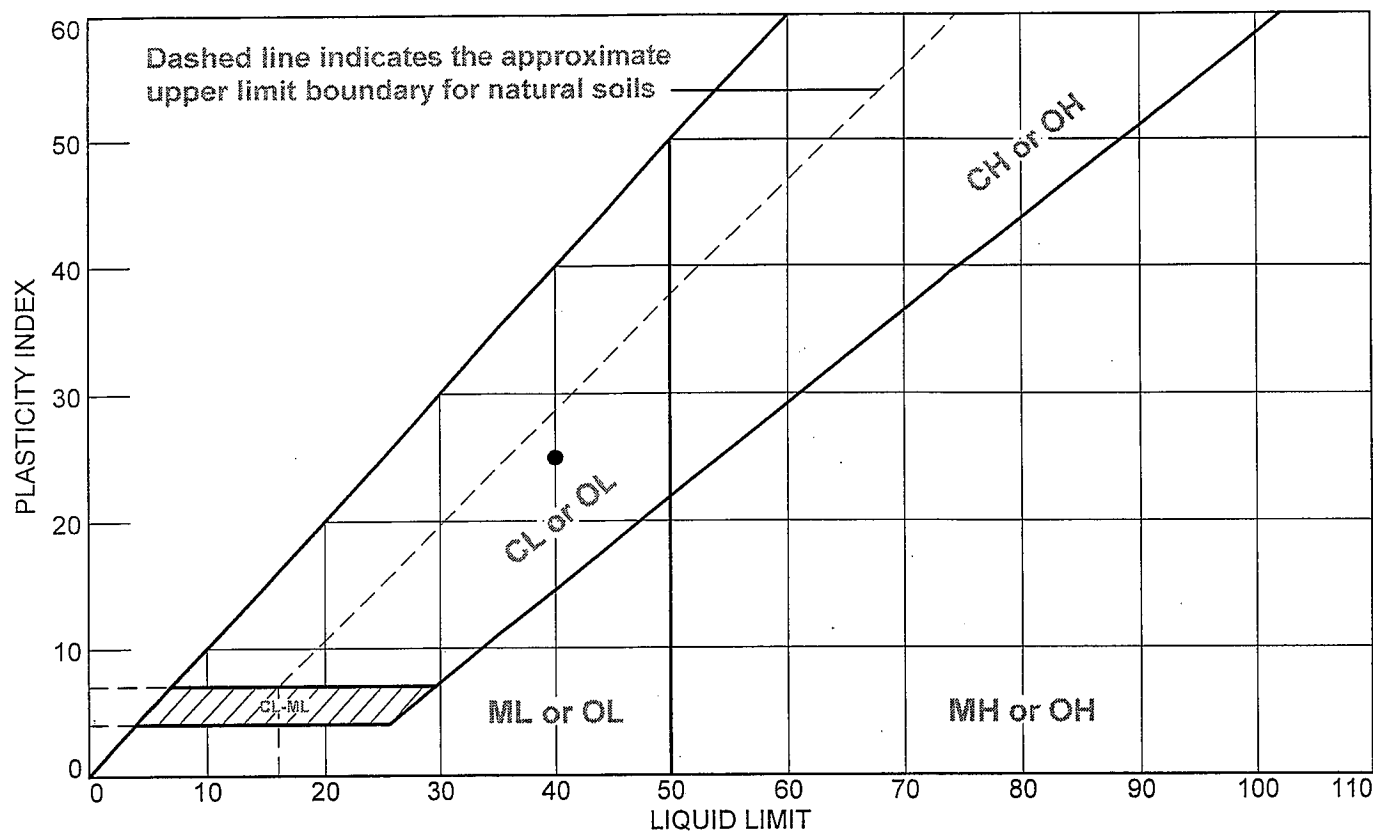
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	9.5	9.6	50.7	39.7	90.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0015	0.0112	0.0187	0.0454	0.0581	0.0736	0.0931

Fineness Modulus
0.01

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-2321UD	UD-5	17.0-18.7	19.1	15	40	25	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure NA

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 17.0-18.7

Sample Number: UD-5

Material Description: Mottled Brownish Yellow and Light Gray Lean CLAY

USCS: CL

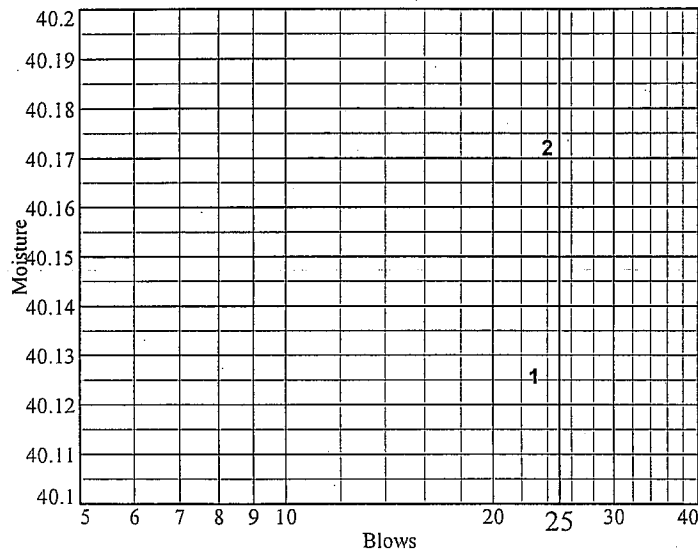
AASHTO: A-6(22)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.57	25.24				
Dry+Tare	23.38	22.44				
Tare	15.43	15.47				
# Blows	23	24				
Moisture	40.1	40.2				



Liquid Limit= 40
 Plastic Limit= 15
 Plasticity Index= 25
 Natural Moisture= 19.1
 Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	21.91	22.64		
Dry+Tare	21.12	21.68		
Tare	15.49	15.43		
Moisture	14.0	15.4		

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: 3/12/08

SAMPLE IDENTIFICATION: B-2321UD, UD-5

(A) Mass of oven-dried soil, grams:	52.10
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.50
(C) Mass of pycnometer, water and soil, grams:	689.43
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.6
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.718
(F) <i>Correction factor:</i>	0.99966
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.717

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Lean CLAY (CL)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

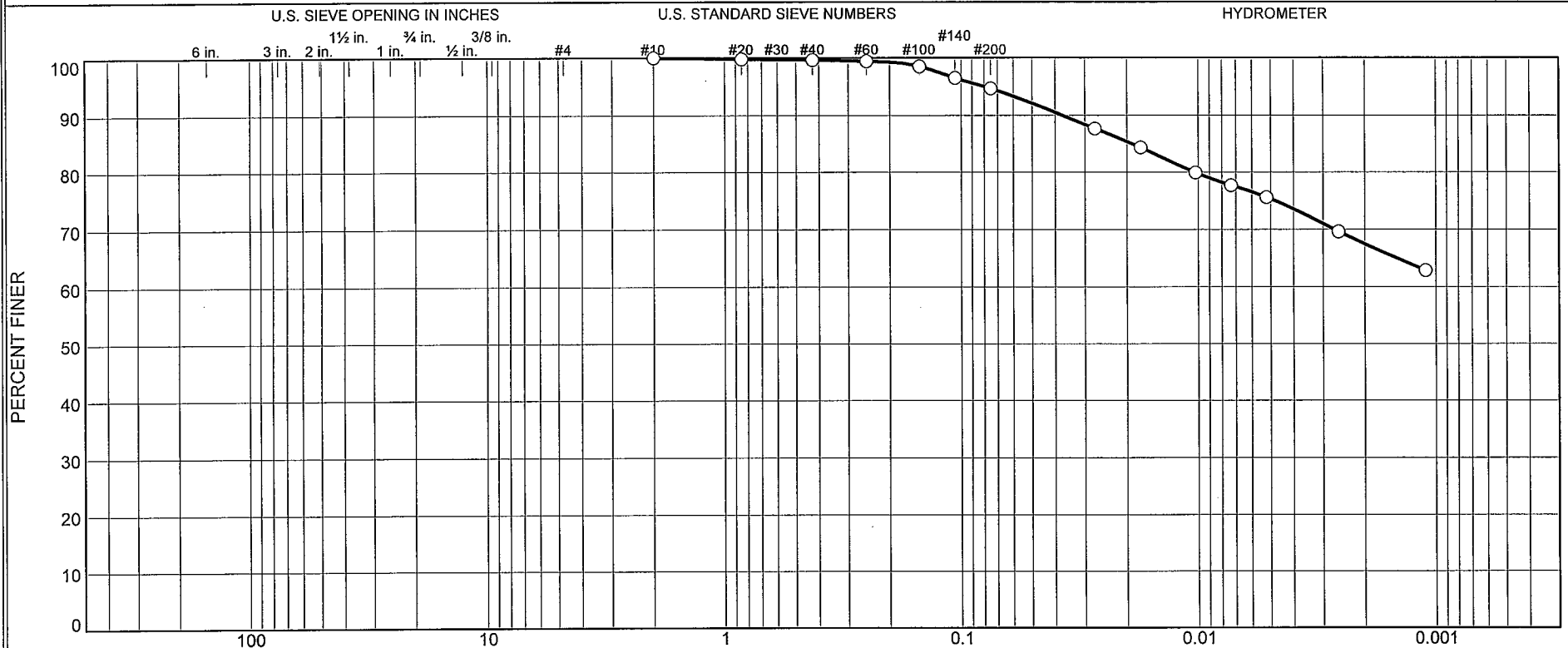
PYCNO METER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.4	4.9	19.4	75.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2321UD	UD-6	28.50-30.20	2/3/08	CH	Mottled Brownish Yellow and Light Gray Fat CLAY	23.9	75	20

Client Bechtel
Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA*

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.719 (ASTM D854-06)
NM obtained from consolidation test specimen

KAW 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 28.50-30.20

Sample Number: UD-6

Material Description: Mottled Brownish Yellow and Light Gray Fat CLAY

Date: 2/3/08

Natural Moisture: 23.9

Liquid Limit: 75

Plastic Limit: 20

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.719 (ASTM D854-06)

NM obtained from consolidation test specimen

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
257.12	0.00	0.00	#10	0.00	100.0
47.56	0.00	0.00	#20	0.10	99.8
			#40	0.18	99.6
			#60	0.29	99.4
			#100	0.70	98.5
			#140	1.65	96.5
			#200	2.53	94.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 47.56

Hygroscopic moisture correction:

Moist weight and tare = 24.89

Dry weight and tare = 23.99

Tare weight = 11.09

Hygroscopic moisture = 7.0%

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 = 2.719

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	44.5	39.6	0.0130	45.5	8.8	0.0272	87.7
5.00	22.5	43.0	38.1	0.0130	44.0	9.1	0.0175	84.3
15.00	22.5	41.0	36.1	0.0130	42.0	9.4	0.0103	79.9
30.00	22.5	40.0	35.1	0.0130	41.0	9.6	0.0073	77.7
60.00	22.7	39.0	34.1	0.0129	40.0	9.7	0.0052	75.6
250.00	23.8	36.0	31.4	0.0128	37.0	10.2	0.0026	69.6
1440.00	23.6	33.0	28.4	0.0128	34.0	10.7	0.0011	62.9

MACTEC, Inc.

Fractional Components

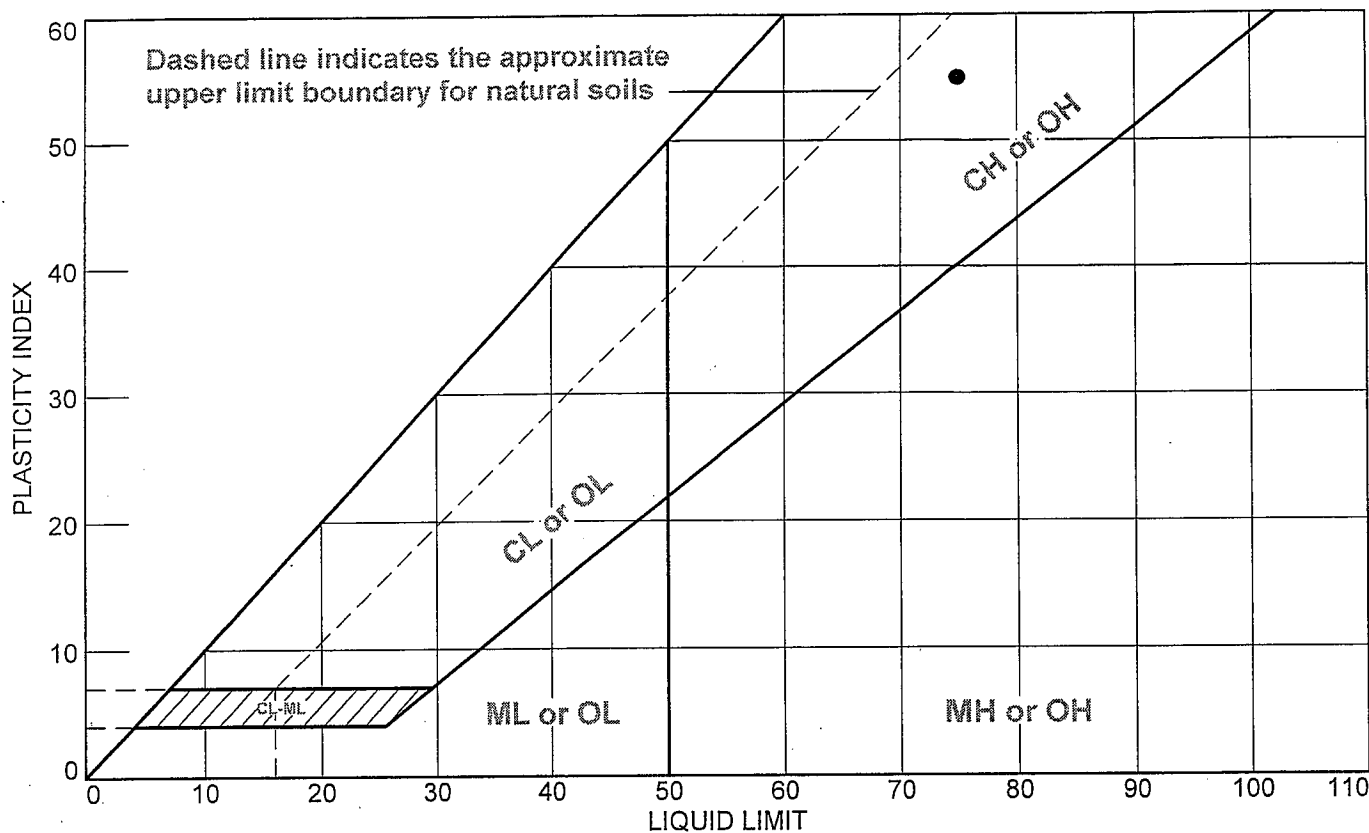
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	4.9	5.3	19.4	75.3	94.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0104	0.0190	0.0373	0.0796

Fineness Modulus
0.02

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-2321UD	UD-6	28.50-30.20	23.9	20	75	55	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

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 28.50-30.20

Sample Number: UD-6

Material Description: Mottled Brownish Yellow and Light Gray Fat CLAY

USCS: CH

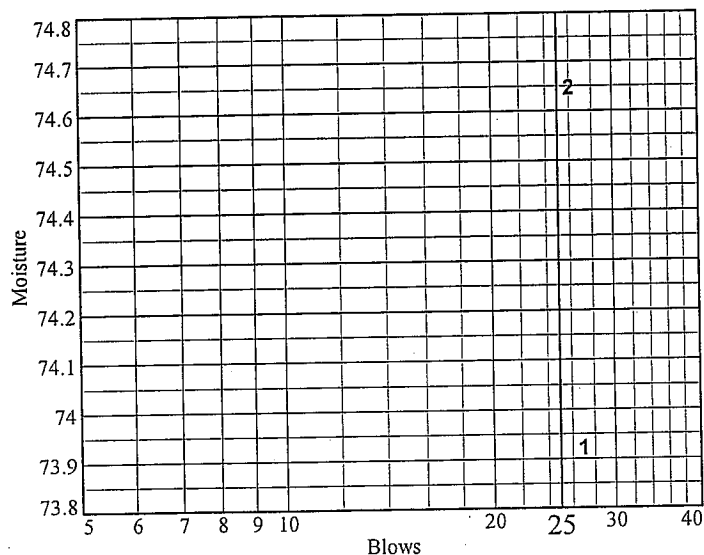
AASHTO: A-7-6(58)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.11	23.18				
Dry+Tare	19.85	20.00				
Tare	15.44	15.74				
# Blows	27	26				
Moisture	73.9	74.6				



Liquid Limit= 75
 Plastic Limit= 20
 Plasticity Index= 55
 Natural Moisture= 23.9
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.54	21.64			
Dry+Tare	20.53	20.58			
Tare	15.46	15.42			
Moisture	19.9	20.5			

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: 4/7/08

SAMPLE IDENTIFICATION: B-2321UD, UD-6

(A) Mass of oven-dried soil, grams:	49.32
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.50
(C) Mass of pycnometer, water and soil, grams:	687.69
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.6
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.720
(F) <i>Correction factor:</i>	0.99966
(G x F) SPECIFIC GRAVITY @ 20°C:	2.719

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

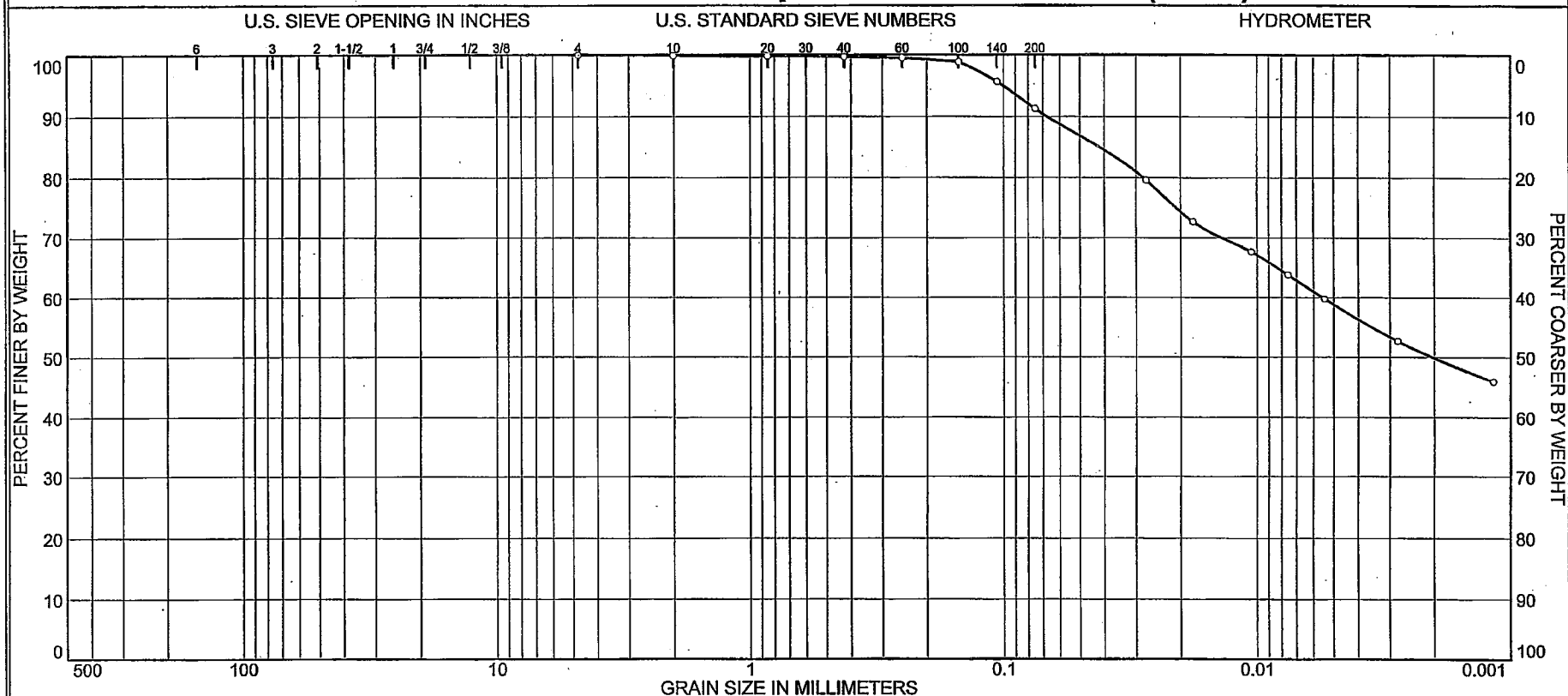
PYCNO METER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

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



GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2321UD
Sample No.: UD-7
Elev. or Depth: 38.5-40.2 Ft Sample Length(in./cm.): ID#8358
Location: B-2321UD
Description: Very Pale Brown Mottled Brownish Yellow Fat CLAY
Date: 2/3/08 PL: 23 LL: 60 PI: 37
USCS Classification: CH AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.78 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	192.62	
Tare =	142.53	
Dry sample weight =	50.09	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.03	99.9
# 20	0.11	99.8
# 40	0.16	99.7
# 60	0.23	99.5
# 100	0.57	98.9
# 140	2.13	95.7
# 200	4.37	91.3

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 91.3
Weight of hydrometer sample: 45.72
Calculated biased weight= 50.08
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.7
Specific gravity correction factor= 0.989
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, Actual deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	23.1	45.0	40.3	0.0129	45.0	8.9	0.0273	79.6
5.00	23.1	41.5	36.8	0.0129	41.5	9.5	0.0178	72.7
15.00	23.1	39.0	34.3	0.0129	39.0	9.9	0.0105	67.7
30.00	23.1	37.0	32.3	0.0129	37.0	10.2	0.0076	63.8
60.00	23.1	35.0	30.3	0.0129	35.0	10.6	0.0054	59.8
240.00	22.8	31.5	26.7	0.0130	31.5	11.1	0.0028	52.7
1440.00	23.1	28.0	23.3	0.0129	28.0	11.7	0.0012	46.0

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

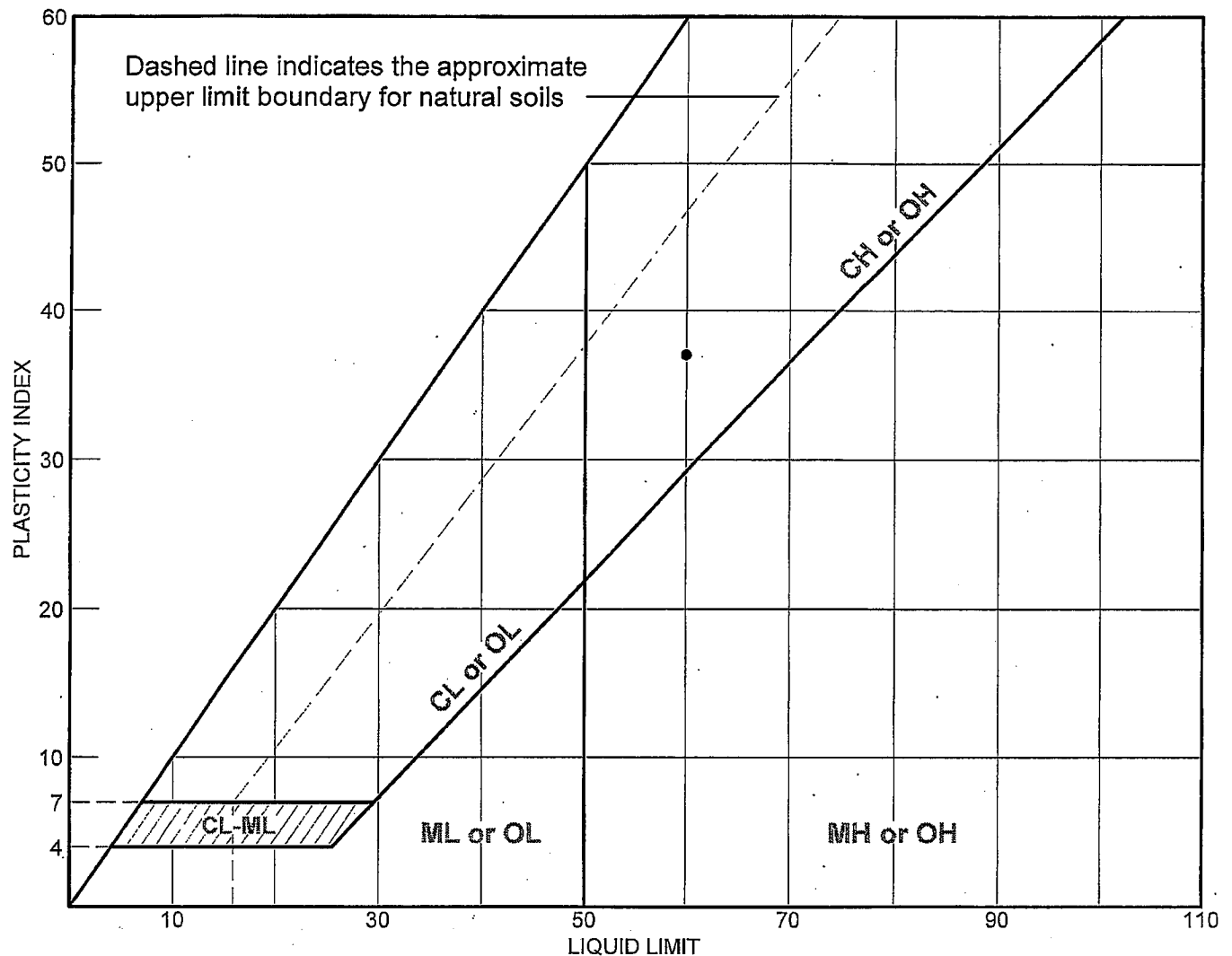
% COBBLES = % GRAVEL =

% SAND = 8.7 (% coarse = 0.1 % medium = 0.2 % fine = 8.4)

% SILT = 32.5 % CLAY = 58.8

D₈₅= 0.04 D₆₀= 0.01 D₅₀= 0.00

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
•	B-2321UD	UD-7	38.5-40.2 Ft	21.3	23	60	37	CH

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8358

Kaw 5/9/08

LIQUID AND PLASTIC LIMIT TEST DATA

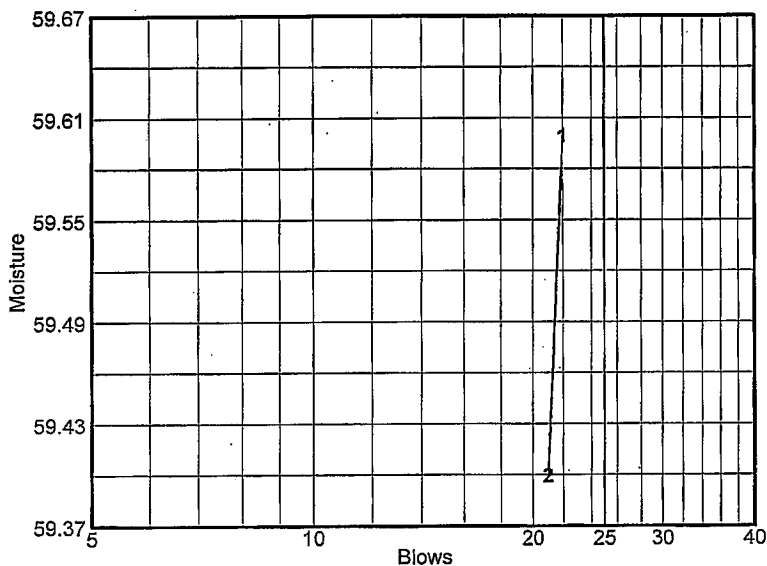
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2321UD
Sample No.: UD-7
Elev. or Depth: 38.5-40.2 Ft Sample Length(in./cm.): ID#8358
Location: B-2321UD
Description: Very Pale Brown Mottled Brownish Yellow Fat CLAY
Water Content: 21.3 USCS: CH AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.34	31.22				
Dry+Tare	27.82	27.19				
Tare	20.24	20.4				
# Blows	22	21				
Moisture	59.6	59.4				



Liquid Limit= 60
Plastic Limit= 23
Plasticity Index= 37

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	29.59	28.18		
Dry+Tare	28.09	26.81		
Tare	21.37	20.83		
Moisture	22.3	22.9		

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/7/08

SAMPLE IDENTIFICATION: B-2321UD, UD-7 @ 38.5-40.2 Ft.

(A) Mass of oven-dried soil, grams:	37.59
(B) Mass of pycnometer filled with water at test temperature (T), grams:	341.05
(C) Mass of pycnometer, water and soil, grams:	365.14
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	25.3
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.784
(F) Correction factor:	0.99876
(G x F) SPECIFIC GRAVITY @ 20°C:	2.781

MATERIAL TESTED:

☐ - # 4

☒ - # 10

PREPARATION METHOD:

☒ DRY

☐ WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2055

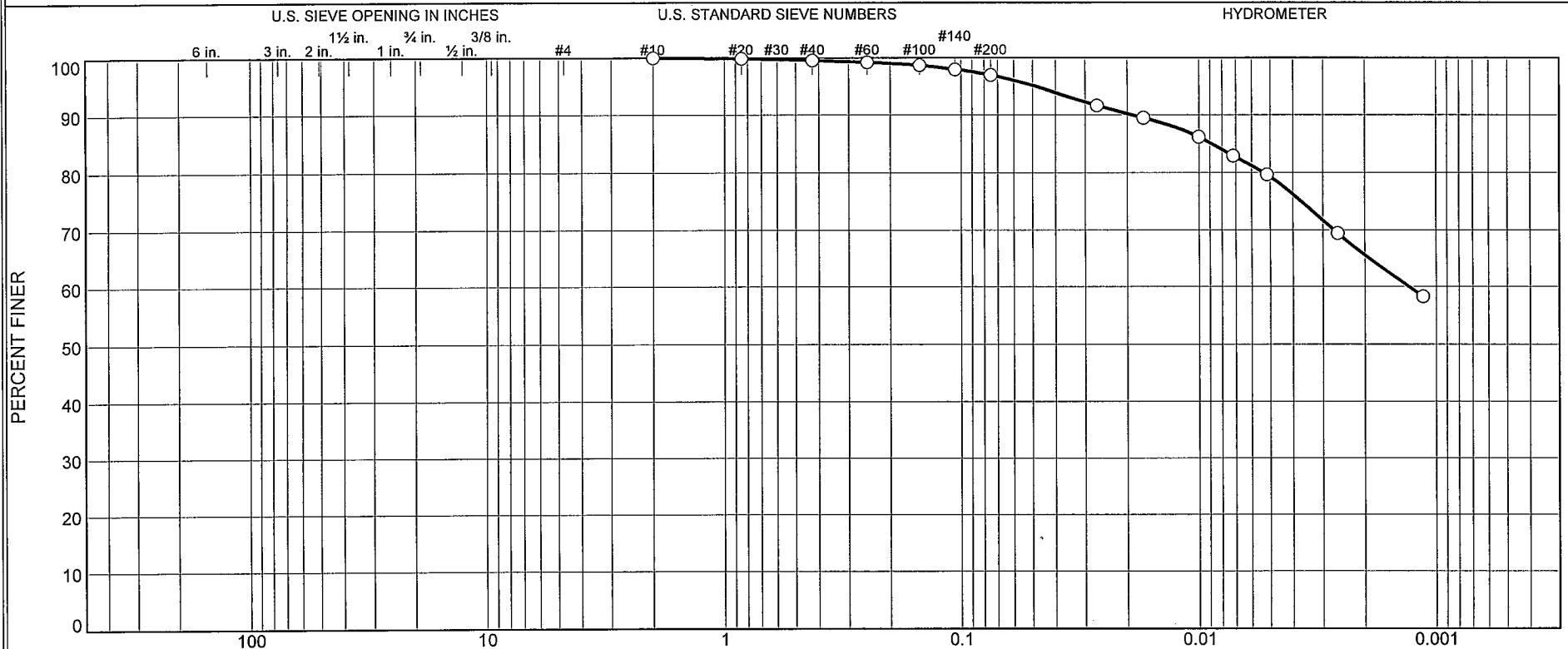
TESTED BY: EH

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

REVIEWED BY: Harry Johnson

KAW 5/9/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	2.5	17.6	79.4

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2321UD	UD-8	48.5-50.2	2/4/08	CH	Mottled Light Yellowish Brown and Light Gray Fat CLAY	28.5	64	16

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA*

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.721 (ASTM D854-06)
 NM obtained from consolidation test specimen

Kaw 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 48.5-50.2

Sample Number: UD-8

Material Description: Mottled Light Yellowish Brown and Light Gray Fat CLAY

Date: 2/4/08

Natural Moisture: 28.5

Liquid Limit: 64

Plastic Limit: 16

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.721 (ASTM D854-06)

NM obtained from consolidation test specimen

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
171.70	0.00	0.00	#10	0.00	100.0
47.97	0.00	0.00	#20	0.07	99.9
			#40	0.22	99.5
			#60	0.38	99.2
			#100	0.63	98.7
			#140	0.97	98.0
			#200	1.44	97.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =47.97

Hygroscopic moisture correction:

Moist weight and tare = 23.04

Dry weight and tare = 22.42

Tare weight = 11.23

Hygroscopic moisture =5.5%

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 =2.721

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	47.5	42.3	0.0131	48.5	8.3	0.0268	91.6
5.00	21.5	46.5	41.3	0.0131	47.5	8.5	0.0171	89.5
15.00	21.5	45.0	39.8	0.0131	46.0	8.8	0.0100	86.2
30.00	21.5	43.5	38.3	0.0131	44.5	9.0	0.0072	83.0
60.00	21.5	42.0	36.8	0.0131	43.0	9.2	0.0051	79.7
250.00	22.4	37.0	32.0	0.0130	38.0	10.1	0.0026	69.4
1440.00	21.9	32.0	26.9	0.0131	33.0	10.9	0.0011	58.3

MACTEC, Inc.

Fractional Components

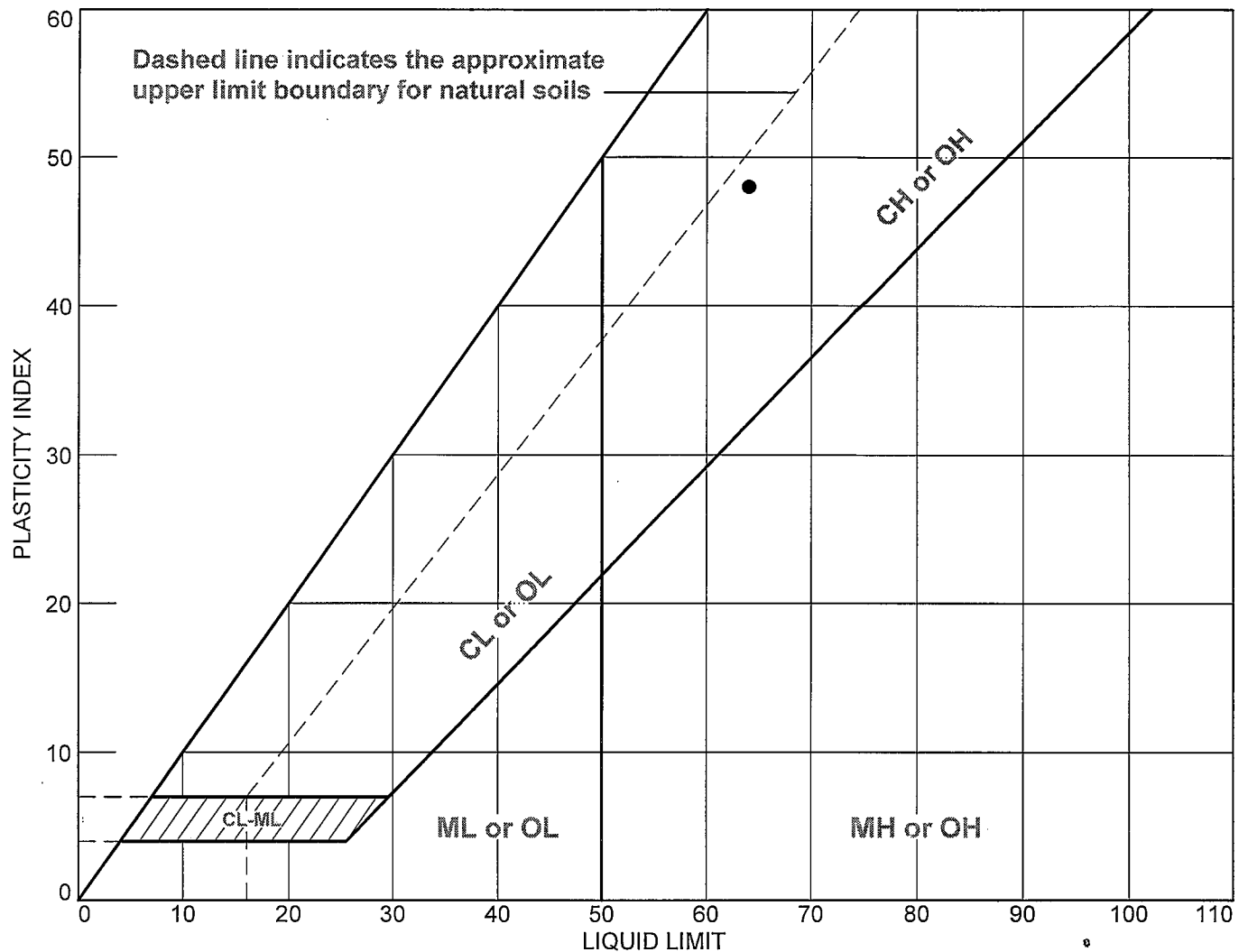
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	2.5	3.0	17.6	79.4	97.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
					0.0013	0.0053	0.0088	0.0192	0.0489

Fineness Modulus
0.02

MACTEC, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2321UD	UD-8	48.5-50.2	28.5	16	64	48	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure *N/A*

Tested By: CS

Checked By: LBj

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 48.5-50.2

Sample Number: UD-8

Material Description: Mottled Light Yellowish Brown and Light Gray Fat CLAY

USCS: CH

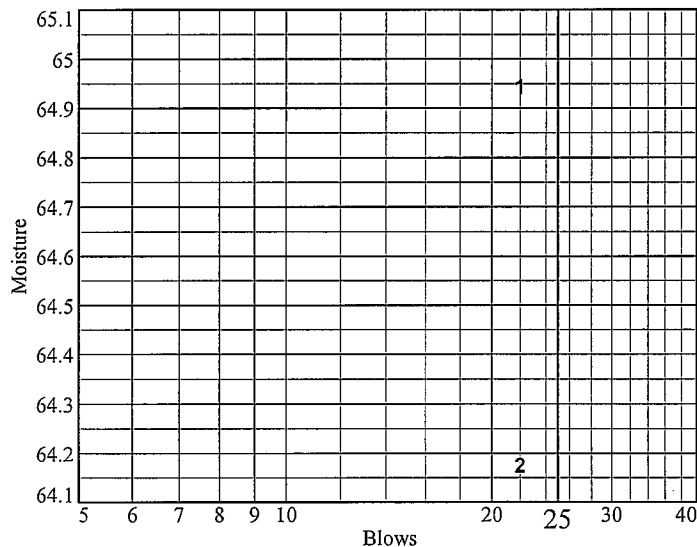
AASHTO: A-7-6(51)

Tested by: CS

Checked by: LBj

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.42	22.94				
Dry+Tare	20.90	20.02				
Tare	15.48	15.47				
# Blows	22	22				
Moisture	64.9	64.2				



Liquid Limit= 64
 Plastic Limit= 16
 Plasticity Index= 48
 Natural Moisture= 28.5
 Liquidity Index= 0.3

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.31	23.12			
Dry+Tare	20.46	22.07			
Tare	15.26	15.47			
Moisture	16.3	15.9			

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: 4/15/08

SAMPLE IDENTIFICATION: B-2321UD, UD-8

(A) Mass of oven-dried soil, grams:	47.93
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.47
(C) Mass of pycnometer, water and soil, grams:	686.79
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.722
(F)	Correction factor: 0.99959
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.721

MATERIAL TESTED:

☒ X
- # 4

☐
- # 10

PREPARATION METHOD:

☒ X
DRY

☐
WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100
Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

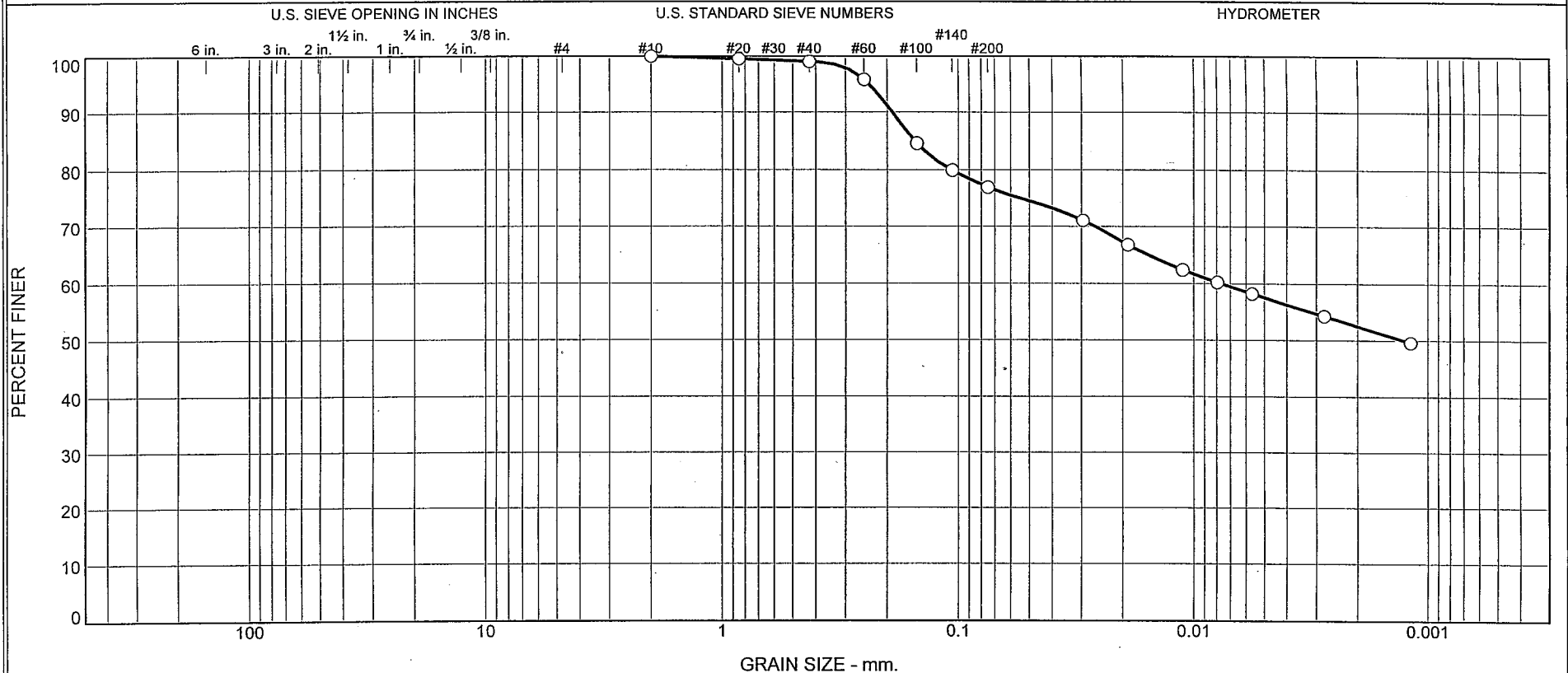
PYCNO METER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.0	22.0	19.4	57.6

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2321UD	UD-9	58.5-61.0	2/4/08	CL	Mottled Very Pale Brown and Brownish Yellow Lean CLAY with sand	19.6	49	14

Client Bechtel	MACTEC, Inc. Raleigh, North Carolina	○ Specific Gravity = 2.675 (ASTM D854-06) NM is average of values obtained from consolidation and triaxial test specimens
Project Exelon Texas COL (Victoria Reservoir)		
Project No. 6468071777		

Figure *NA*

KAW 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 58.5-61.0

Sample Number: UD-9

Material Description: Mottled Very Pale Brown and Brownish Yellow Lean CLAY with sand

Date: 2/4/08

Natural Moisture: 19.6

Liquid Limit: 49

Plastic Limit: 14

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.675 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
247.27	0.00	0.00	#10	0.00	100.0
48.22	0.00	0.00	#20	0.23	99.5
			#40	0.47	99.0
			#60	2.02	95.8
			#100	7.45	84.5
			#140	9.68	79.9
			#200	11.11	77.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =48.21

Hygroscopic moisture correction:

Moist weight and tare = 28.45

Dry weight and tare = 27.84

Tare weight = 15.56

Hygroscopic moisture =5.0%

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 =2.675

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	38.0	32.8	0.0133	39.0	9.9	0.0295	71.1
5.00	21.6	36.0	30.8	0.0133	37.0	10.2	0.0190	66.7
15.00	21.6	34.0	28.8	0.0133	35.0	10.6	0.0111	62.4
30.00	21.6	33.0	27.8	0.0133	34.0	10.7	0.0079	60.3
60.00	21.9	32.0	26.9	0.0132	33.0	10.9	0.0056	58.3
250.00	22.6	30.0	25.1	0.0131	31.0	11.2	0.0028	54.4
1440.00	21.9	28.0	22.9	0.0132	29.0	11.5	0.0012	49.6

MACTEC, Inc.

Fractional Components

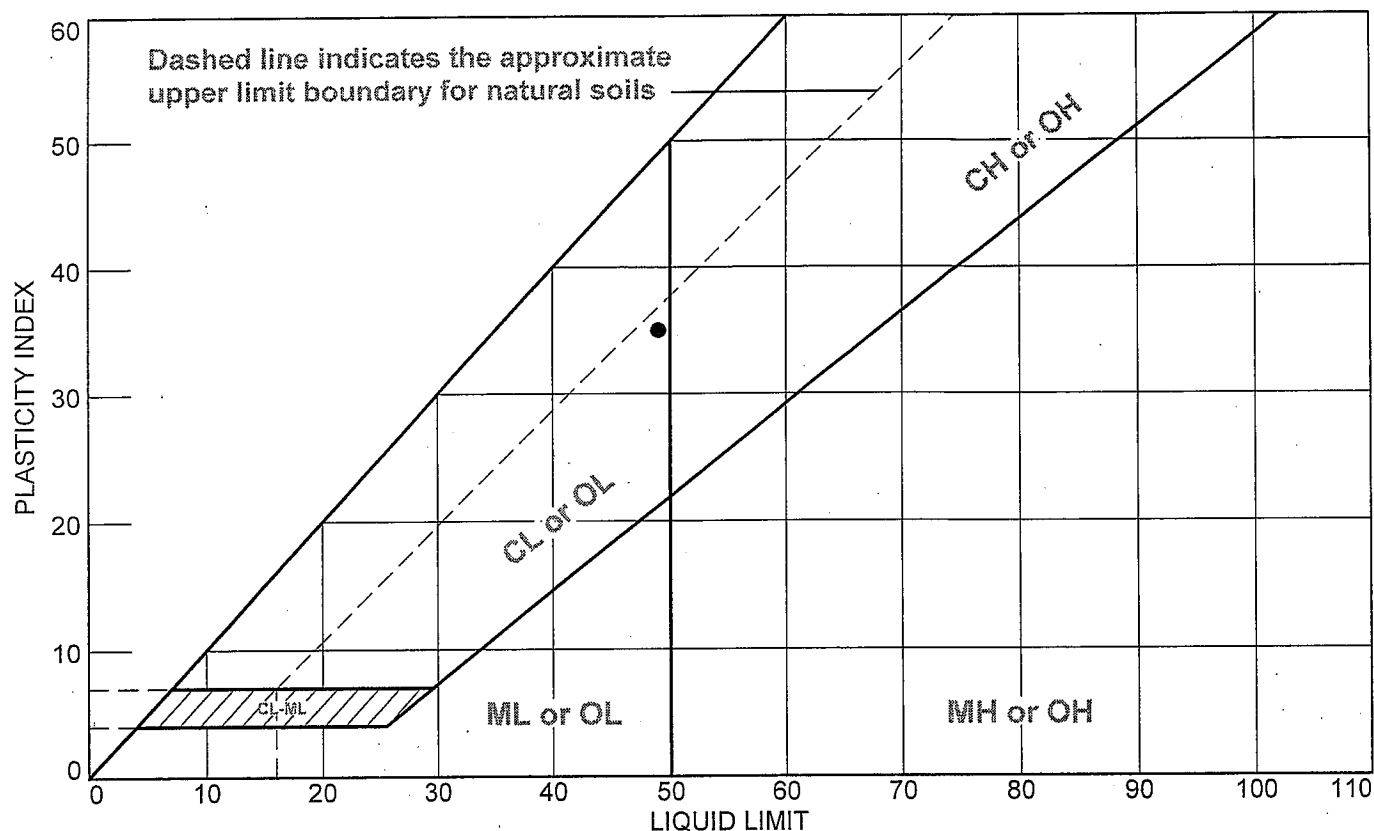
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.0	22.0	23.0	19.4	57.6	77.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0013	0.0076	0.1068	0.1535	0.1908	0.2387

Fineness Modulus
0.19

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-2321UD	UD-9	58.5-61.0	19.6	14	49	35	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure *NA*

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 58.5-61.0

Sample Number: UD-9

Material Description: Mottled Very Pale Brown and Brownish Yellow Lean CLAY with sand

USCS: CL

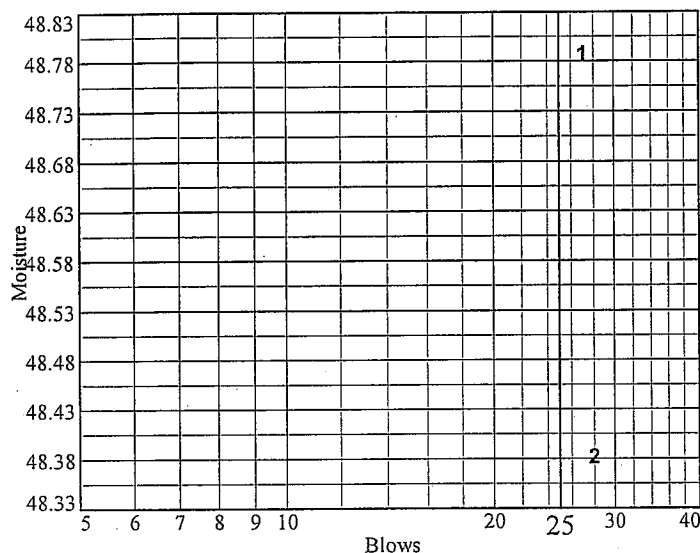
AASHTO: A-7-6(26)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.65	26.00				
Dry+Tare	21.63	22.71				
Tare	15.44	15.91				
# Blows	27	28				
Moisture	48.8	48.4				



Liquid Limit= 49
 Plastic Limit= 14
 Plasticity Index= 35
 Natural Moisture= 19.6
 Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.44	22.27			
Dry+Tare	21.60	21.39			
Tare	15.54	15.48			
Moisture	13.9	14.9			

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: 4/13/08

SAMPLE IDENTIFICATION: B-2321UD, UD-9

(A) Mass of oven-dried soil, grams:	49.67
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.47
(C) Mass of pycnometer, water and soil, grams:	687.58
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.676
(F) <i>Correction factor:</i>	0.99959
(G x F) SPECIFIC GRAVITY @ 20°C:	2.675

MATERIAL TESTED:

☒ X
- # 4

☐
- # 10

PREPARATION METHOD:

☒ X
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

PYCNOMETER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.7	38.2	21.7	38.4

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2321UD	UD-10	63.0-65.5	2/4/08	CL	Light Olive Gray Sandy Lean CLAY	13.7	36	14

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.665 (ASTM D854-06)
 NM obtained from consolidation test specimen

Kaw 5/8/08

Tested By: CS

Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 63.0-65.5

Sample Number: UD-10

Material Description: Light Olive Gray Sandy Lean CLAY

Date: 2/4/08

Natural Moisture: 13.7

Liquid Limit: 36

Plastic Limit: 14

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.665 (ASTM D854-06)

NM obtained from consolidation test specimen

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
207.71	0.00	0.00	#10	0.00	100.0
49.18	0.00	0.00	#20	0.32	99.3
			#40	0.85	98.3
			#60	2.98	93.9
			#100	10.51	78.6
			#140	16.94	65.6
			#200	19.64	60.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 49.18

Hygroscopic moisture correction:

Moist weight and tare = 27.76

Dry weight and tare = 27.36

Tare weight = 15.57

Hygroscopic moisture = 3.4%

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 = 2.665

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	21.7	30.0	24.9	0.0133	31.0	11.2	0.0315	52.1
5.00	21.7	28.0	22.9	0.0133	29.0	11.5	0.0202	47.9
15.00	21.7	26.0	20.9	0.0133	27.0	11.9	0.0118	43.7
30.00	21.7	25.0	19.9	0.0133	26.0	12.0	0.0084	41.6
60.00	21.6	24.0	18.8	0.0133	25.0	12.2	0.0060	39.5
250.00	22.4	22.0	17.0	0.0132	23.0	12.5	0.0030	35.7
1440.00	21.9	20.0	14.9	0.0133	21.0	12.9	0.0013	31.2

MACTEC, Inc.

Fractional Components

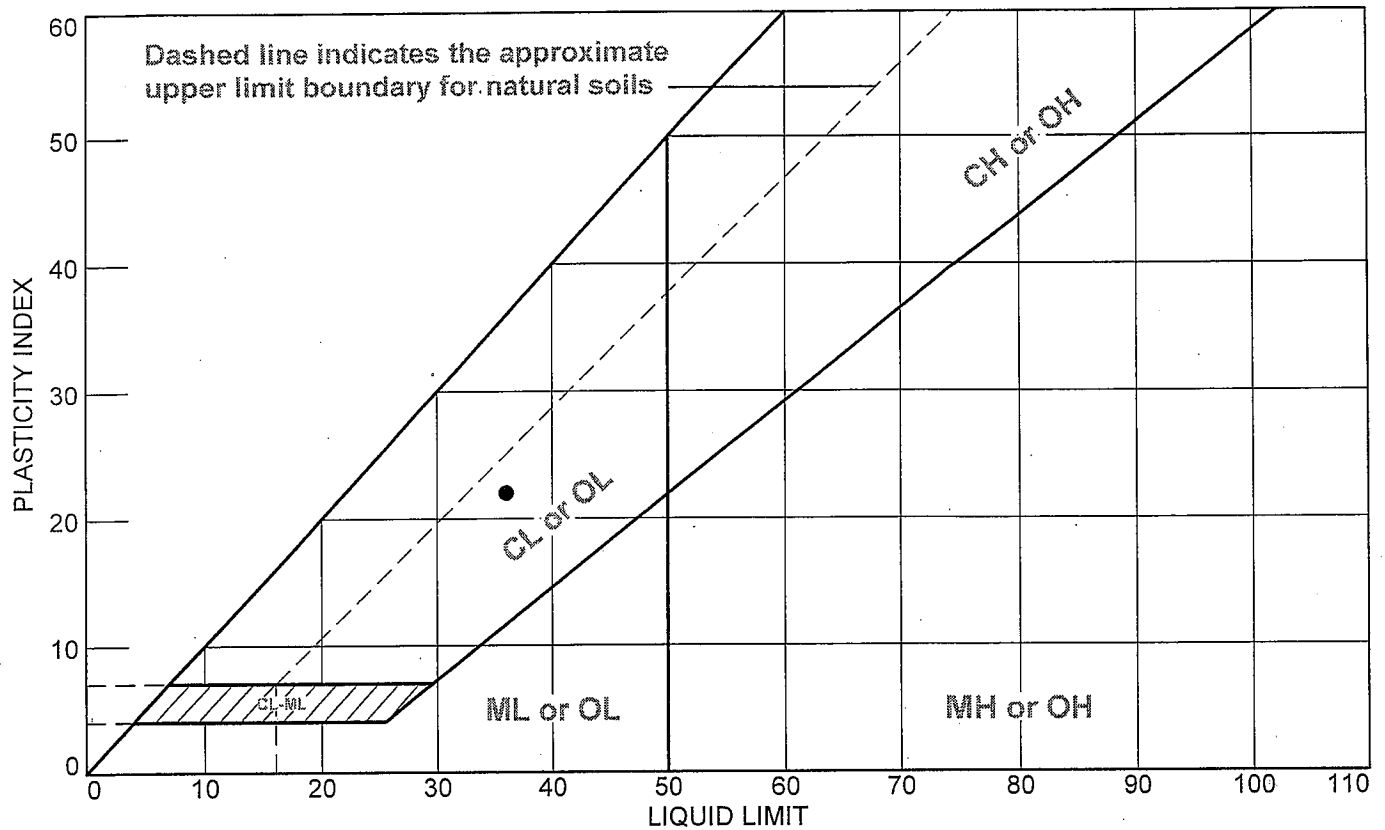
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.7	38.2	39.9	21.7	38.4	60.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0253	0.0745	0.1553	0.1782	0.2100	0.2667

Fineness Modulus
0.26

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-2321UD	UD-10	63.0-65.5	13.7	14	36	22	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure *NA*

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 63.0-65.5

Sample Number: UD-10

Material Description: Light Olive Gray Sandy Lean CLAY

USCS: CL

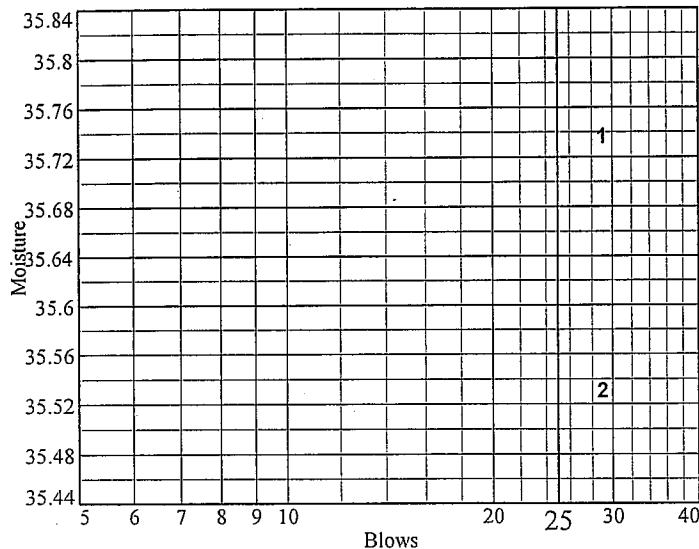
AASHTO: A-6(10)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.97	22.90				
Dry+Tare	21.74	20.96				
Tare	15.50	15.50				
# Blows	29	29				
Moisture	35.7	35.5				



Liquid Limit= 36
 Plastic Limit= 14
 Plasticity Index= 22
 Natural Moisture= 13.7
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.52	21.81			
Dry+Tare	21.66	21.05			
Tare	15.54	15.51			
Moisture	14.1	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: 4/13/08

SAMPLE IDENTIFICATION: B-2321UD, UD-10

(A) Mass of oven-dried soil, grams:	50.69
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.68
(C) Mass of pycnometer, water and soil, grams:	687.36
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.666
(F)	Correction factor: 0.99959
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.665

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-3

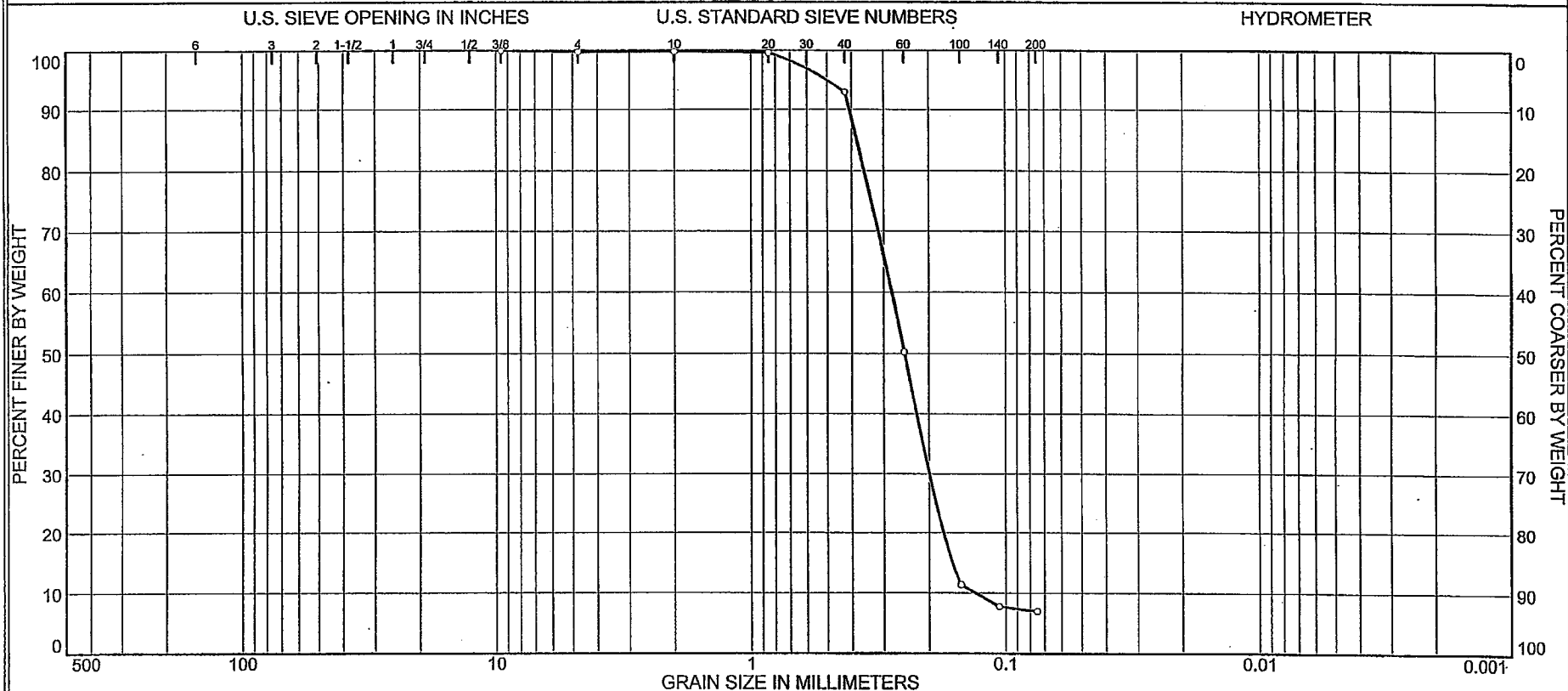
TESTED BY: CS

REVIEWED BY:

Brian Johnson

KAW 5/8/08

Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.2	0.0	6.9	85.9	7.0	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2321UD	UD-12	93-95.7 Ft	2/4/08	SP-SM	Light Yellowish Brown Poorly Graded SAND with Silt (Visual)	22.7	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777

Lab No. 8359

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from average of strength tests performed.
Specific Gravity = 2.69 (ASTM D 854-06)
ND = Not Determined

KAW 4.15.08

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Source: B-2321UD
Sample No.: UD-12
Elev. or Depth: 93-95.7 Ft Sample Length(in./cm.): 8359
Location: B-2321UD
Description: Light Yellowish Brown Poorly Graded SAND with Silt (Visual)
Date: 2/4/08 Natural Moisture: 22.7
Liquid Limit: ND Plastic Limit: NP USCS Class.: SP-SM
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
 NM value from average of strength tests performed.
 Specific Gravity = 2.69 (ASTM D 854-06)
 ND = Not Determined

	Initial
Dry sample and tare=	267.16
Tare =	109.35
Dry sample weight =	157.81
Tare for cumulative weight retained=	.00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.33	99.8
# 10	0.34	99.8
# 20	0.60	99.6
# 40	11.17	92.9
# 60	78.36	50.3
# 100	139.90	11.3
# 140	145.48	7.8
# 200	146.76	7.0

```
Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES =          % GRAVEL = 0.2      (% coarse =          % fine = 0.2)
% SAND = 92.8      (% coarse = 0.0      % medium = 6.9      % fine = 85.9)
% FINES = 7.0
```

D₈₅= 0.38 D₆₀= 0.28 D₅₀= 0.25
D₃₀= 0.20 D₁₅= 0.16 D₁₀= 0.13
C_u= 1.0811 C_u= 2.1191

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/10/08

SAMPLE IDENTIFICATION: B-2321UD, UD-12 @ 93-95.7 Ft.

(A) Mass of oven-dried soil, grams:	37.36
(B) Mass of pycnometer filled with water at test temperature (T), grams:	341.20
(C) Mass of pycnometer, water and soil, grams:	364.66
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.688
(F) Correction factor:	0.99904
(G x F) SPECIFIC GRAVITY @ 20°C:	2.685

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Poorly Graded SAND with Silt (SP-SM) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2057

TESTED BY: EH

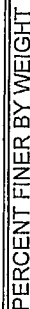
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson



KAW 4-15-08

HYDROMETER



Client Bechtel		MACTEC ENGINEERING AND CONSULTING, INC.	☐ Tested by: EH <i>EH</i> Reviewed by: HJ <i>HJ</i> NM value from first test performed. Specific Gravity = 2.75 (ASTM D 854-06)
Project Exelon Texas COL (Victoria)			
Project No. 6468-07-1777	Lab No. 8360		

ZHU 5/9/08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2321UD
Sample No.: UD-14
Elev. or Depth: 128.5-130.25 Ft Sample Length(in./cm.): ID#8360
Location: B-2321UD
Description: Pale Yellow Fat CLAY with sand
Date: 2/5/08 PL: 27 LL: 58 PI: 31
USCS Classification: CH AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first test performed.
Specific Gravity = 2.75 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	70.02	
Tare =	16.57	
Dry sample weight =	53.45	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	2.22	95.8
# 10	3.89	92.7
# 20	4.79	91.0
# 40	5.20	90.3
# 60	5.64	89.4
# 100	7.01	86.9
# 140	8.96	83.2
# 200	10.35	80.6

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 80.6
Weight of hydrometer sample: 43.10
Calculated biased weight= 53.47
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.74
Specific gravity correction factor= 0.980
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.8	46.5	41.7	0.0128	46.5	8.7	0.0267	76.4
5.00	22.8	45.5	40.7	0.0128	45.5	8.8	0.0171	74.6
15.00	22.8	43.5	38.7	0.0128	43.5	9.2	0.0100	70.9
30.00	22.8	41.5	36.7	0.0128	41.5	9.5	0.0072	67.3
60.00	22.8	39.0	34.2	0.0128	39.0	9.9	0.0052	62.7
240.00	22.8	35.0	30.2	0.0128	35.0	10.6	0.0027	55.4
1440.00	22.8	31.0	26.2	0.0128	31.0	11.2	0.0011	48.0

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

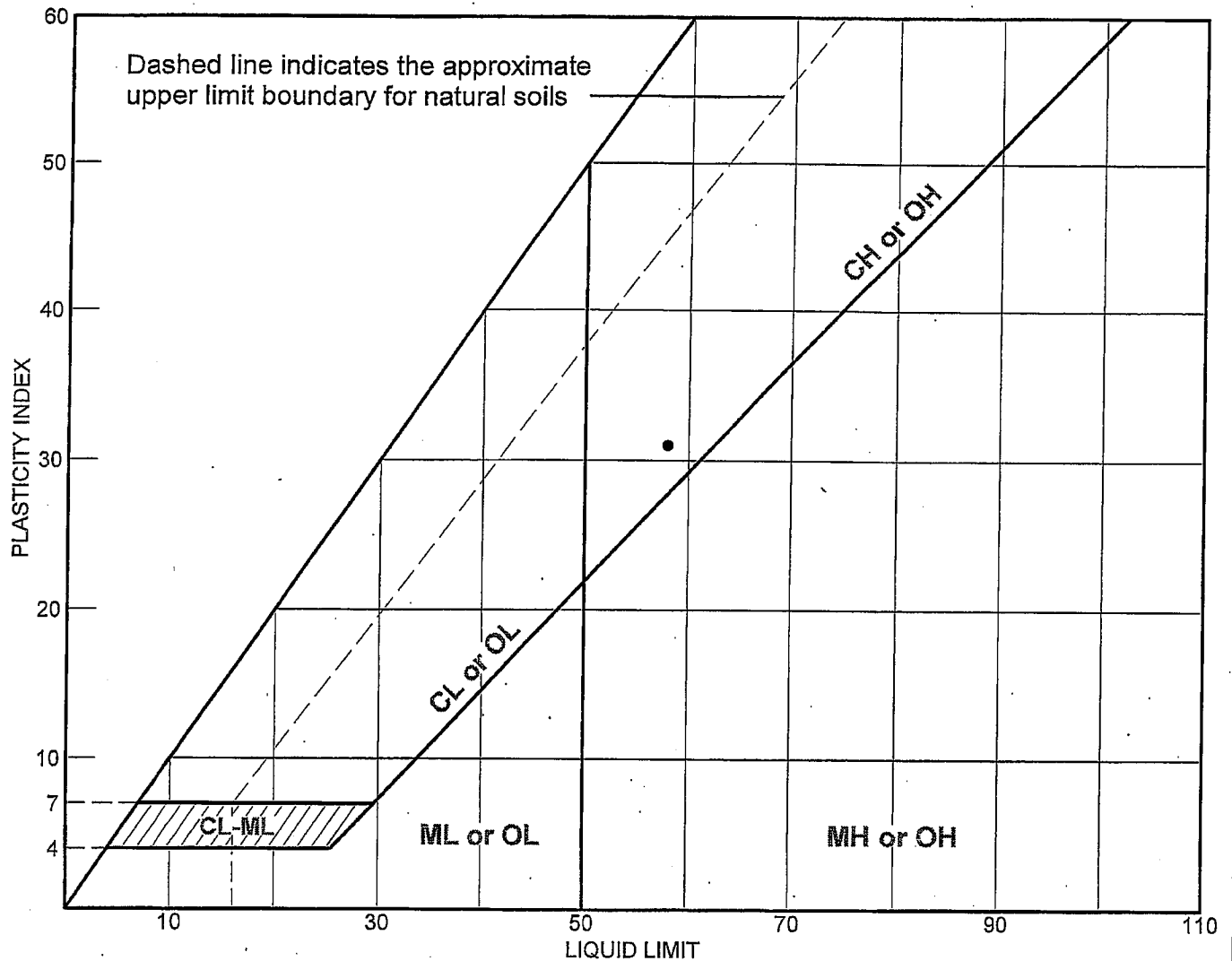
% COBBLES = % GRAVEL = 4.2 (% coarse = % fine = 4.2)

% SAND = 15.2 (% coarse = 3.1 % medium = 2.4 % fine = 9.7)

% SILT = 18.5 % CLAY = 62.1

D₈₅= 0.13 D₆₀= 0.00 D₅₀= 0.00

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
•	B-2321UD	UD-14	128.5-130.25	25.0	27	58	31	CH

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8360

ZHU 5/9/08

LIQUID AND PLASTIC LIMIT TEST DATA

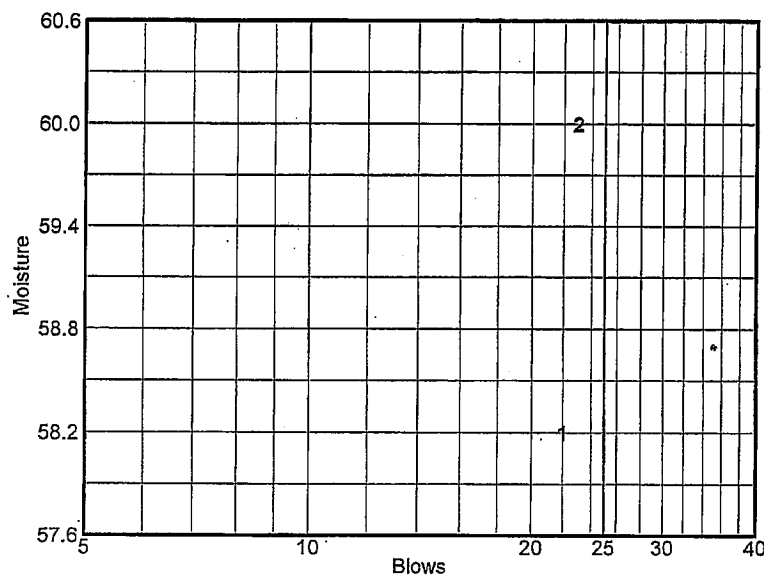
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2321UD
 Sample No.: UD-14
 Elev. or Depth: 128.5-130.25 Ft Sample Length(in./cm.): ID#8360
 Location: B-2321UD
 Description: Pale Yellow Fat CLAY with sand
 Water Content: 25.0 USCS: CH AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.16	29.23				
Dry+Tare	27.16	25.65				
Tare	20.29	19.68				
# Blows	22	23				
Moisture	58.2	60.0				



Liquid Limit= 58
 Plastic Limit= 27
 Plasticity Index= 31

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.57	27.85			
Dry+Tare	26.08	26.34			
Tare	20.60	20.88			
Moisture	27.2	27.7			

MACTEC ENGINEERING AND CONSULTING, INC.

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: 646807.1777

DATE: 4/18/08

SAMPLE IDENTIFICATION: B-2321UD, UD-14 @ 128.5-130.25 Ft.

(A) Mass of oven-dried soil, grams:	37.37
(B) Mass of pycnometer filled with water at test temperature (T), grams:	338.35
(C) Mass of pycnometer, water and soil, grams:	362.16
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.6
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.756
(F) Correction factor:	0.99919
(G x F) SPECIFIC GRAVITY @ 20°C:	2.754

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 96

Fat CLAY with Sand (CH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

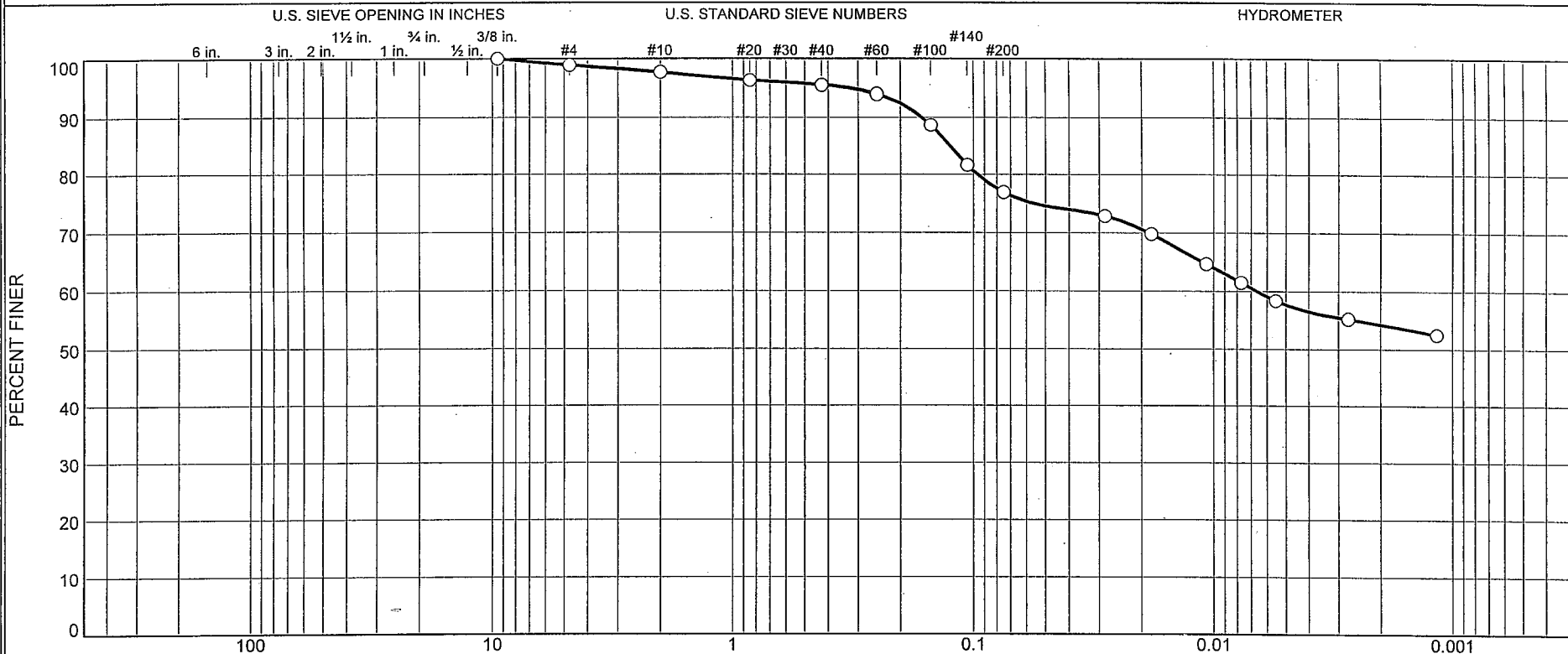
PYCNO METER : 2054

TESTED BY: EH *EH*

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

REVIEWED BY: Harry Johnson *HJ*

Particle Size Distribution Report / ASTM D422-63(2002)e1



GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 130.5-132.5

Sample Number: UD-15

Material Description: Pale Yellow Fat CLAY with sand

Date: 2/5/08

Natural Moisture: 20.6

Liquid Limit: 61

Plastic Limit: 17

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.712 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
249.22	0.00	0.00	3/8"	0.00	100.0
			#4	2.80	98.9
			#10	5.85	97.7
48.86	0.00	0.00	#20	0.70	96.3
			#40	1.11	95.4
			#60	1.87	93.9
			#100	4.51	88.6
			#140	8.02	81.6
			#200	10.35	77.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =97.7

Weight of hydrometer sample =48.86

Hygroscopic moisture correction:

Moist weight and tare = 29.83

Dry weight and tare = 29.25

Tare weight = 15.61

Hygroscopic moisture =4.3%

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 =2.712

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	40.5	35.5	0.0131	41.5	9.5	0.0284	72.9
5.00	22.1	39.0	34.0	0.0131	40.0	9.7	0.0182	69.8
15.00	22.1	36.5	31.5	0.0131	37.5	10.1	0.0107	64.7
30.00	22.0	35.0	29.9	0.0131	36.0	10.4	0.0077	61.5
60.00	21.9	33.5	28.4	0.0131	34.5	10.6	0.0055	58.4
250.00	21.9	32.0	26.9	0.0131	33.0	10.9	0.0027	55.3
1440.00	20.8	31.0	25.6	0.0133	32.0	11.0	0.0012	52.6

MACTEC, Inc.

Fractional Components

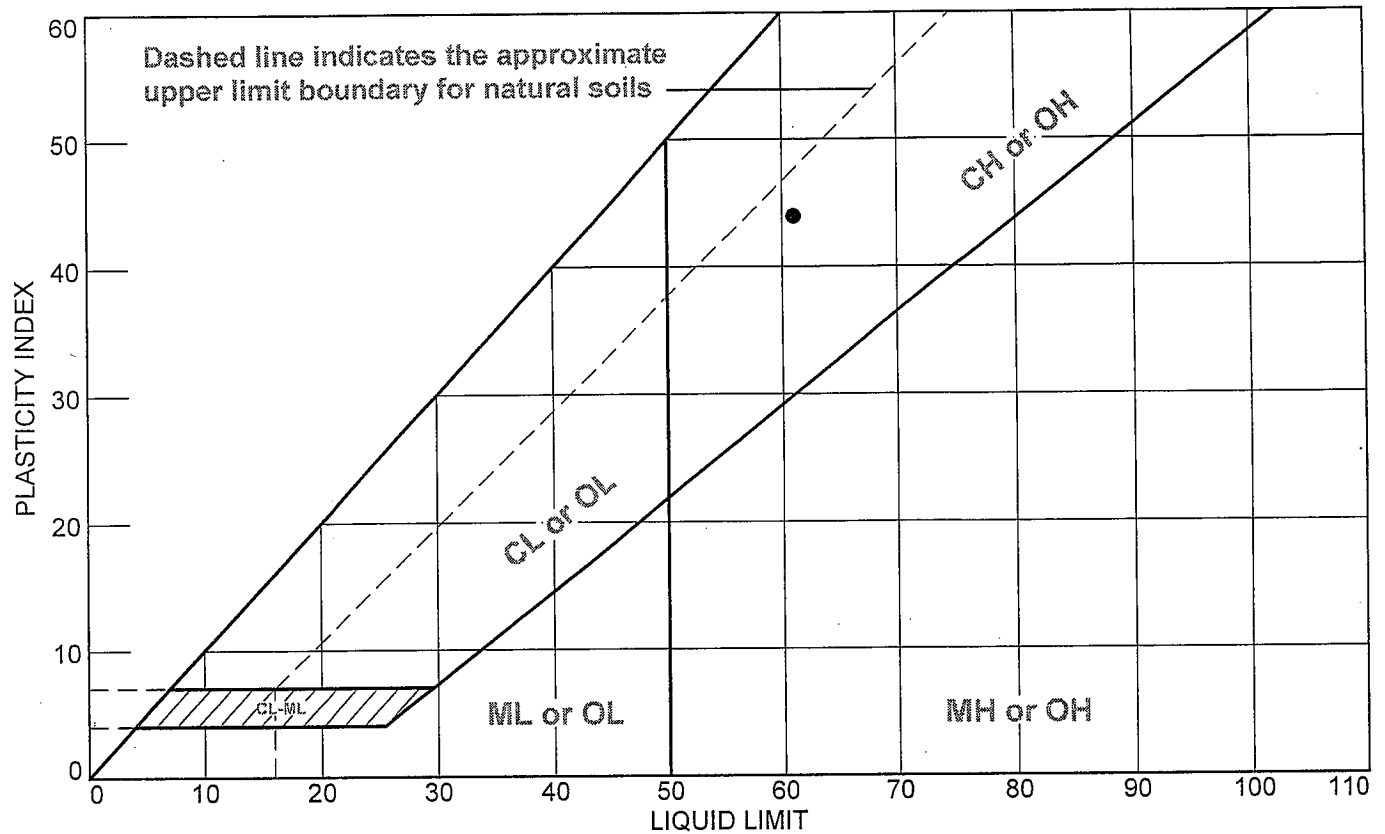
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.1	1.1	1.2	2.3	18.4	21.9	19.3	57.7	77.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
					0.0066	0.0963	0.1251	0.1631	0.3368

Fineness Modulus
0.27

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-2321UD	UD-15	130.5-132.5	20.6	17	61	44	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

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2321UD

Depth: 130.5-132.5

Sample Number: UD-15

Material Description: Pale Yellow Fat CLAY with sand

USCS: CH

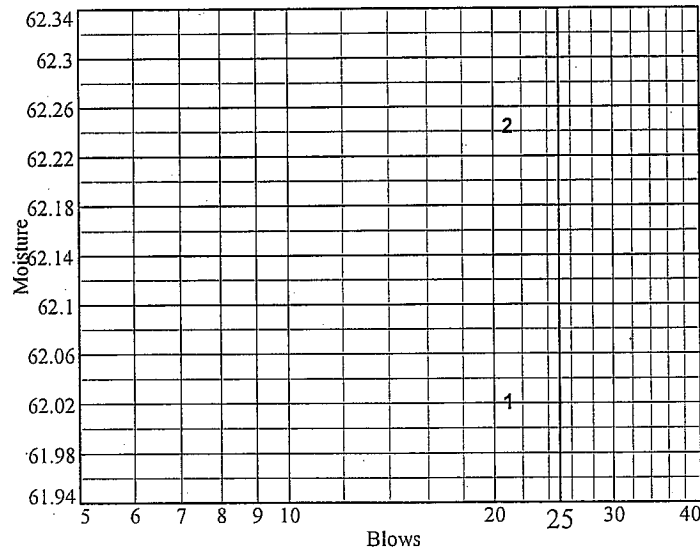
AASHTO: A-7-6(34)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.17	23.51				
Dry+Tare	22.12	20.46				
Tare	15.59	15.56				
# Blows	21	21				
Moisture	62.0	62.2				



Liquid Limit= 61
 Plastic Limit= 17
 Plasticity Index= 44
 Natural Moisture= 20.6
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	16.34	22.72			
Dry+Tare	15.56	21.71			
Tare	11.06	15.70			
Moisture	17.3	16.8			

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: 4/13/08

SAMPLE IDENTIFICATION: B-2321UD, UD-15

(A) Mass of oven-dried soil, grams:	48.26
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.75
(C) Mass of pycnometer, water and soil, grams:	686.22
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.713
(F)	Correction factor: 0.99972
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.712

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY with sand (CH)

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

KAW 5/8/08

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2352UD
Sample No.: UD-1
Elev. or Depth: 3.5-5.2 Ft Sample Length(in./cm.): ID#8361
Location: B-2352UD
Description: Pale Brown Sandy Lean CLAY
Date: 2/1/08 PL: 19 LL: 46 PI: 27
USCS Classification: CL AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.70 (ASTM D 854-06)
Organic Content = 1.0% (ASTM D2974-07a)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	68.05	
Tare =	16.62	
Dry sample weight =	51.43	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.45	99.1
# 20	1.68	96.7
# 40	2.31	95.5
# 60	3.22	93.7
# 100	7.43	85.6
# 140	12.38	75.9
# 200	16.28	68.3

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 68.3
Weight of hydrometer sample: 35.15
Calculated biased weight= 51.46
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.703
Specific gravity correction factor= 0.988
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	20.6	36.0	30.7	0.0133	36.0	10.4	0.0304	58.9
5.00	20.6	33.5	28.2	0.0133	33.5	10.8	0.0196	54.1
15.00	20.6	31.5	26.2	0.0133	31.5	11.1	0.0115	50.3
30.00	20.6	30.0	24.7	0.0133	30.0	11.4	0.0082	47.4
60.00	20.6	29.0	23.7	0.0133	29.0	11.5	0.0058	45.5
240.00	20.8	25.5	20.2	0.0133	25.5	12.1	0.0030	38.8
1440.00	21.7	23.0	17.9	0.0132	23.0	12.5	0.0012	34.4

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

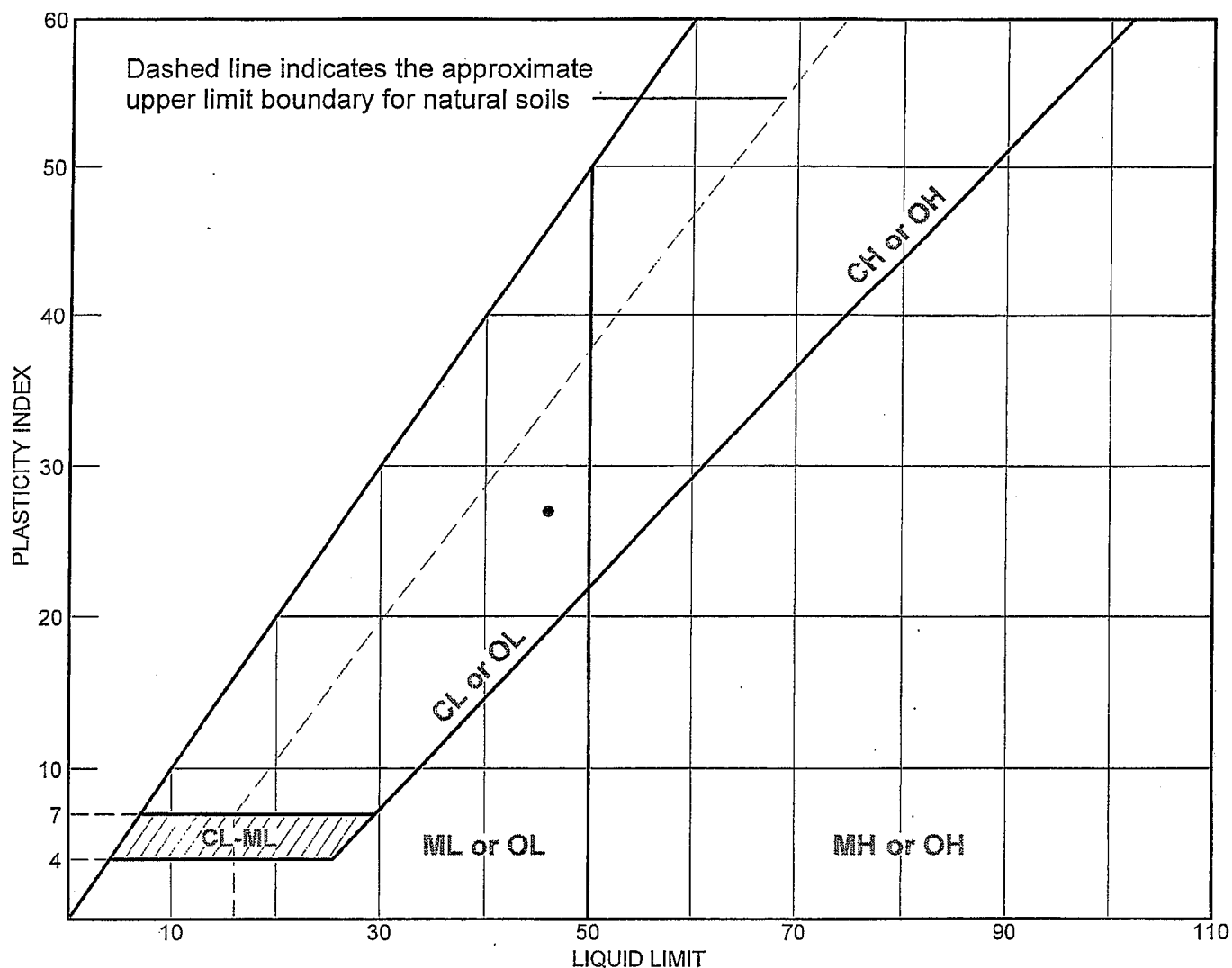
% COBBLES = % GRAVEL =

% SAND = 31.7 (% coarse = 0.9 % medium = 3.6 % fine = 27.2)

% SILT = 24.1 % CLAY = 44.2

D₈₅= 0.15 D₆₀= 0.03 D₅₀= 0.01

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
•	B-2352UD	UD-1	3.5-5.2 Ft	17.3	19	46	27	CL

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8361

LIQUID AND PLASTIC LIMIT TEST DATA

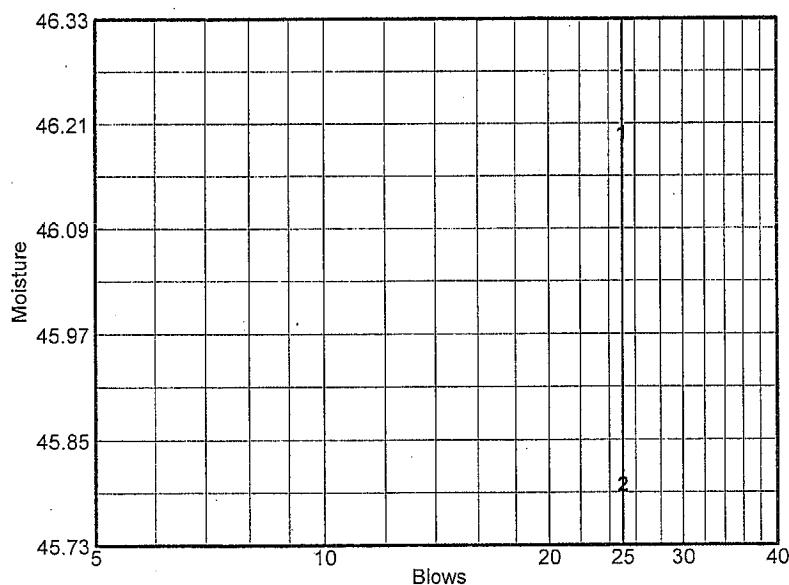
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2352UD
 Sample No.: UD-1
 Elev. or Depth: 3.5-5.2 Ft Sample Length(in./cm.): ID#8361
 Location: B-2352UD
 Description: Pale Brown Sandy Lean CLAY
 Water Content: 17.3 USCS: CL AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.03	32.20				
Dry+Tare	29.09	28.47				
Tare	20.57	20.32				
# Blows	25	25				
Moisture	46.2	45.8				



Liquid Limit= 46
 Plastic Limit= 19
 Plasticity Index= 27

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	29.41	28.91		
Dry+Tare	27.93	27.58		
Tare	20.21	20.59		
Moisture	19.2	19.0		

MACTEC ENGINEERING AND CONSULTING, INC.

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: 3/4/08

SAMPLE IDENTIFICATION: B-2352UD, UD-1 @ 3.5-5.2 Ft.

(A) Mass of oven-dried soil, grams:	36.20
(B) Mass of pycnometer filled with water at test temperature (T), grams:	341.45
(C) Mass of pycnometer, water and soil, grams:	364.26
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.7
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.704
(F) Correction factor:	0.99963
(G x F) SPECIFIC GRAVITY @ 20°C:	2.703

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Lean CLAY (CL)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2057

TESTED BY: EH

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

REVIEWED BY: Harry Johnson



KAW 4.15.08



ORGANIC CONTENT

(ASTM D2974-07a)

Project No. 6468-07-1777
Tested By HJ
Test Date 3/10/2008

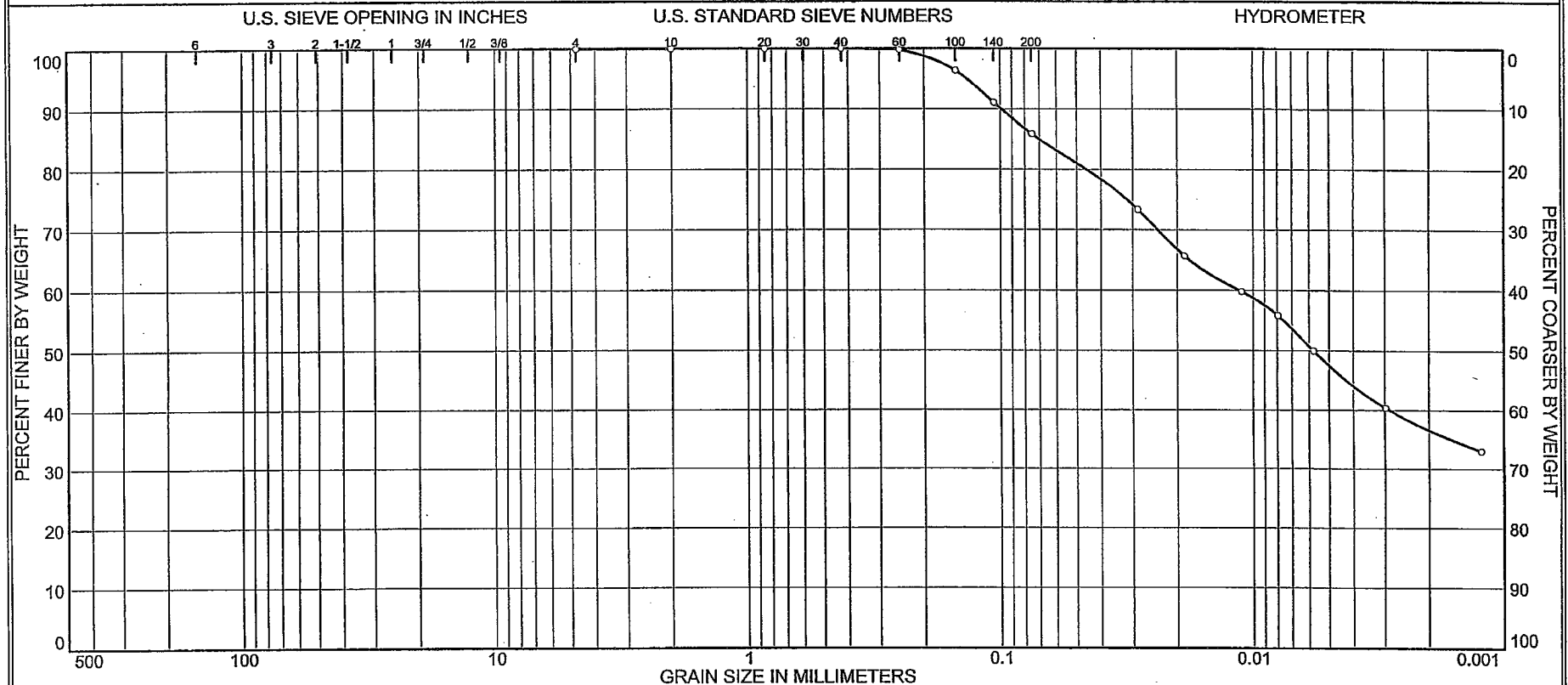
Project Name Exelon Texas COL (Victoria)
Reviewed By JW
Review Date 4/14/08

Boring No.	B-2352UD			
Sample No.	UD-1			
Sample Depth, Ft.	3.5-5.2 Ft			
Lab No.	8361			
A) Tare No.	X			
B) Tare Weight, grams	109.80			
C) Wet Soil + Tare, grams	238.41			
D) Dry Soil + Tare, grams	235.26			
E) Weight of Dry Soil, grams [D - B]	125.46			
F) Weight of Moisture, grams [C - D]	3.15			
G) Moisture Content, % [F * 100 / E]	2.5			
(based on over-dried weight)				
H) Tare No.	X			
I) Weight of Tare, grams	109.80			
J) Weight of Over-Dried Soil + Tare, grams	235.26			
K) Weight of Oven- Dried Soil, grams [J - I]	125.46			
L) Weight of Ignited Soil + Tare, grams	234.01			
M) Ash, grams [L - I]	124.21			
N) Ash Content, % [M * 100 / K]	99.0			
O) Organic Matter, % [100 - N]	1.0			

KAW 4.15.08

Remarks:

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



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.0	14.1	38.4	47.5

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2352UD	UD-3	11.5-13.2 Ft	2/1/08	CL	Yellowish Brown Lean CLAY	18.4	39	18

Client Bechtel	MACTEC ENGINEERING AND CONSULTING, INC.		Tested by: EH Reviewed by: HJ	
Project Exelon Texas COL (Victoria)			NM value from first strength test performed. Specific Gravity = 2.71 (ASTM D 854-06)	
Project No. 6468-07-1777 Lab No. 8362				

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2352UD
Sample No.: UD-3
Elev. or Depth: 11.5-13.2 Ft Sample Length(in./cm.): ID#8362
Location: B-2352UD
Description: Yellowish Brown Lean CLAY
Date: 2/1/08 PL: 18 LL: 39 PI: 21
USCS Classification: CL AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.71 (ASTM D 854-06)

Mechanical Analysis Data

Sieve	Cumul. Wt. retained	Percent finer
Initial		
Dry sample and tare=	66.32	
Tare =	15.64	
Dry sample weight =	50.68	
Tare for cumulative weight retained= .00		
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.00	100.0
# 40	0.00	100.0
# 60	0.12	99.8
# 100	1.89	96.3
# 140	4.52	91.1
# 200	7.15	85.9

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 85.9
Weight of hydrometer sample: 43.53
Calculated biased weight= 50.68
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.708
Specific gravity correction factor= 0.987
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, Actual deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	20.6	43.0	37.7	0.0133	43.0	9.2	0.0286	73.4
5.00	20.6	39.0	33.7	0.0133	39.0	9.9	0.0187	65.6
15.00	20.6	36.0	30.7	0.0133	36.0	10.4	0.0111	59.8
30.00	20.6	34.0	28.7	0.0133	34.0	10.7	0.0080	55.9
60.00	20.6	31.0	25.7	0.0133	31.0	11.2	0.0058	50.0
240.00	20.8	26.0	20.7	0.0133	26.0	12.0	0.0030	40.4
1440.00	21.7	22.0	16.9	0.0131	22.0	12.7	0.0012	33.0

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

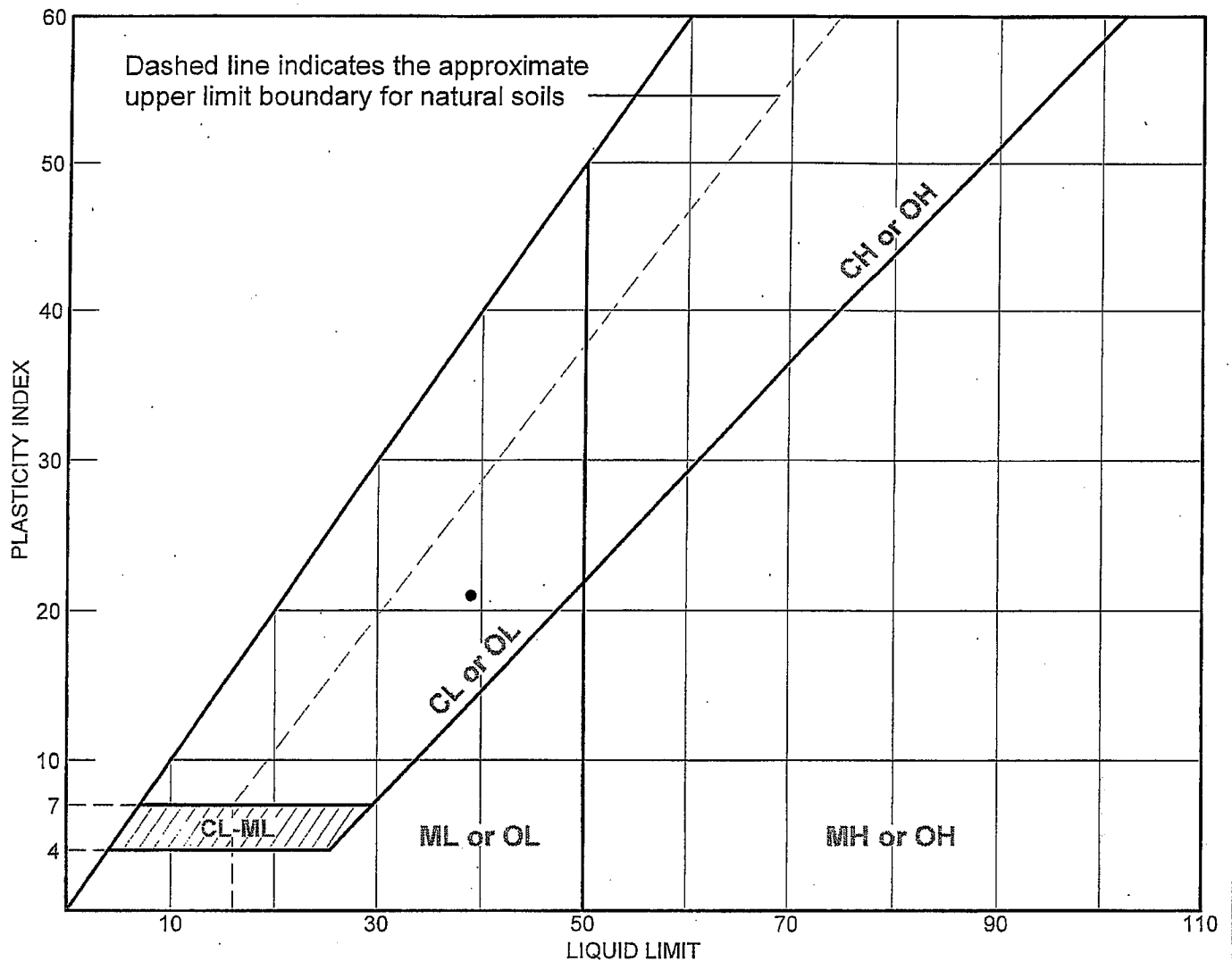
% COBBLES = % GRAVEL =

% SAND = 14.1 (% coarse = 0.0 % medium = 0.0 % fine = 14.1)

% SILT = 38.4 % CLAY = 47.5

D₈₅= 0.07 D₆₀= 0.01 D₅₀= 0.01

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
•	B-2352UD	UD-3	11.5-13.2 Ft	18.4	18	39	21	CL

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8362

LIQUID AND PLASTIC LIMIT TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2352UD
Sample No.: UD-3
Elev. or Depth: 11.5-13.2 Ft Sample Length(in./cm.): ID#8362
Location: B-2352UD
Description: Yellowish Brown Lean CLAY
Water Content: 18.4 USCS: CL AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.73	32.77				
Dry+Tare	29.33	29.35				
Tare	20.78	20.75				
# Blows	22	23				
Moisture	39.8	39.8				

Liquid Limit= 39
Plastic Limit= 18
Plasticity Index= 21

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	31.61	30.29			
Dry+Tare	29.99	28.83			
Tare	20.90	20.56			
Moisture	17.8	17.7			

MACTEC ENGINEERING AND CONSULTING, INC.

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: 3/4/08

SAMPLE IDENTIFICATION: B-2352UD, UD-3 @11.5-13.2 Ft.

(A) Mass of oven-dried soil, grams:	36.47
(B) Mass of pycnometer filled with water at test temperature (T), grams:	339.50
(C) Mass of pycnometer, water and soil, grams:	362.51
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$
(F)	Correction factor:
(G x F)	SPECIFIC GRAVITY @ 20°C:

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Lean CLAY (CL)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2053

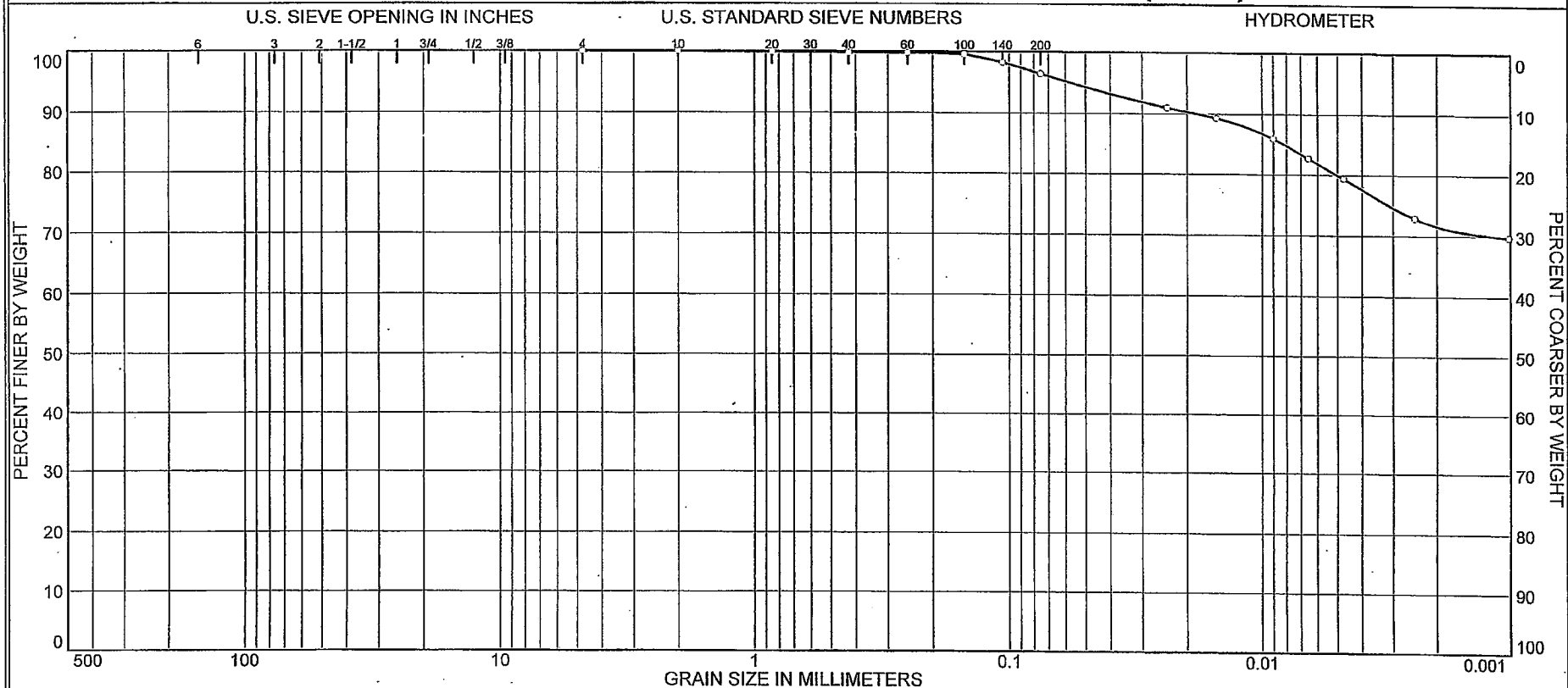
TESTED BY: EH

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

REVIEWED BY: Harry Johnson

KAW 4.15.08

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



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.2	3.3	16.5	80.0

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2352UD	UD-5	24-25.7 F	2/1/08	CH	Brownish Yellow Fat CLAY	28.0	67	29

Client Bechtel		MACTEC ENGINEERING AND CONSULTING, INC.	○ Tested by: EH Reviewed by: HJ  NM value from first strength test performed. Specific Gravity = 2.67 (ASTM D 854-06)
Project Exelon Texas COL (Victoria)			
Project No. 6468-07-1777	Lab No. 8363		

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2352UD
Sample No.: UD-5
Elev. or Depth: 24-25.7 F Sample Length(in./cm.): ID#8363
Location: B-2352UD
Description: Brownish Yellow Fat CLAY
Date: 2/1/08 PL: 29 LL: 67 PI: 38
USCS Classification: CH AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.67 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	76.16	
Tare =	16.04	
Dry sample weight =	60.12	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.09	99.9
# 40	0.12	99.8
# 60	0.13	99.8
# 100	0.23	99.6
# 140	1.02	98.3
# 200	2.13	96.5

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 96.5
Weight of hydrometer sample: 57.99
Calculated biased weight= 60.09
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.671
Specific gravity correction factor= 0.995
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.7	60.0	54.9	0.0133	60.0	6.5	0.0239	91.0
5.00	21.7	59.0	53.9	0.0133	59.0	6.6	0.0153	89.3
15.00	21.7	57.0	51.9	0.0133	57.0	6.9	0.0090	86.0
30.00	21.7	55.0	49.9	0.0133	55.0	7.3	0.0065	82.7
60.00	21.7	53.0	47.9	0.0133	53.0	7.6	0.0047	79.4
240.00	22.0	49.0	44.0	0.0132	49.0	8.3	0.0025	72.9
1440.00	22.5	47.0	42.1	0.0131	47.0	8.6	0.0010	69.8

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

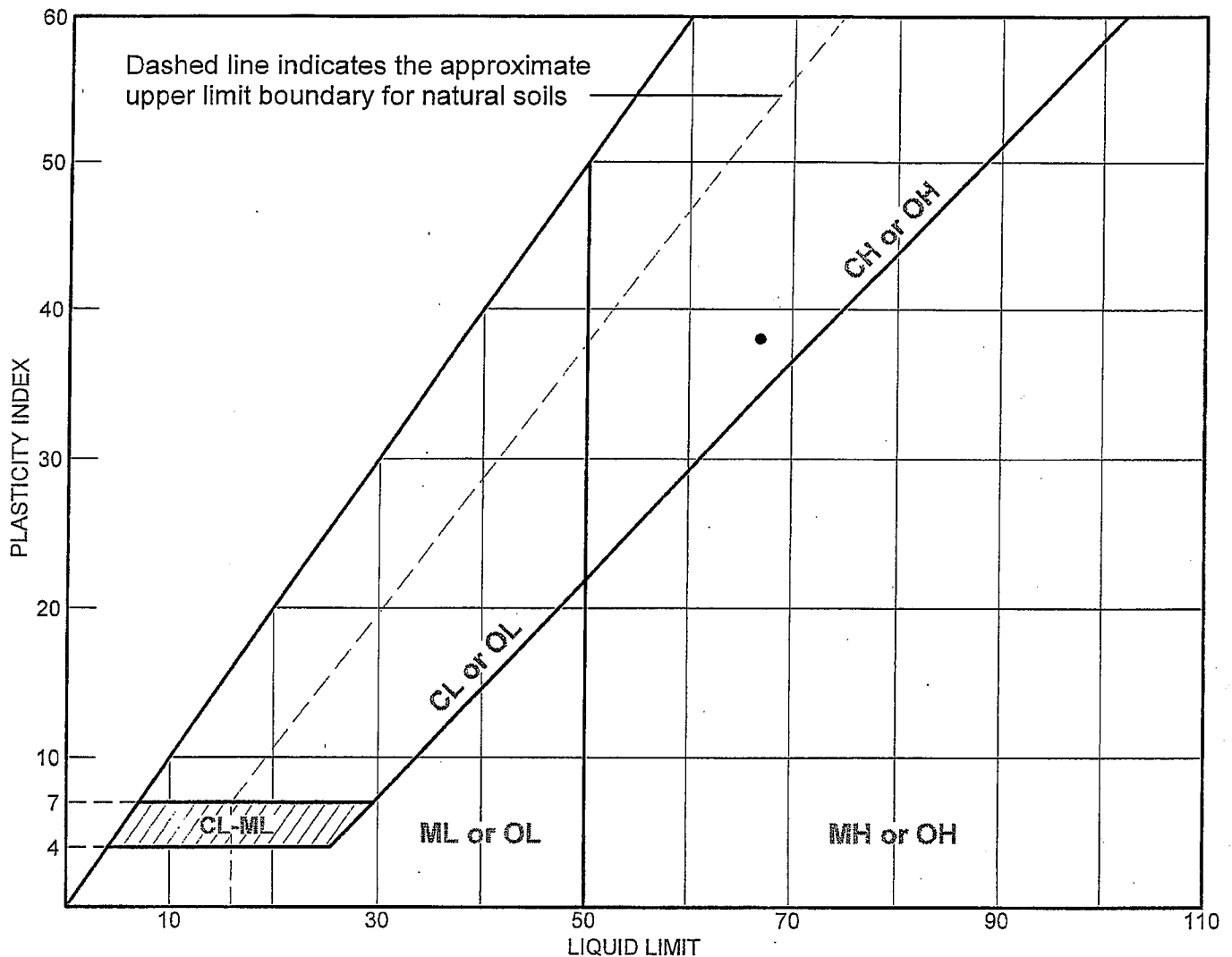
% COBBLES = % GRAVEL =

% SAND = 3.5 (% coarse = 0.0 % medium = 0.2 % fine = 3.3)

% SILT = 16.5 % CLAY = 80.0

D₈₅ = 0.01

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
•	B-2352UD	UD-5	24-25.7 F	28.0.	29	67	38	CH

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8363

LIQUID AND PLASTIC LIMIT TEST DATA

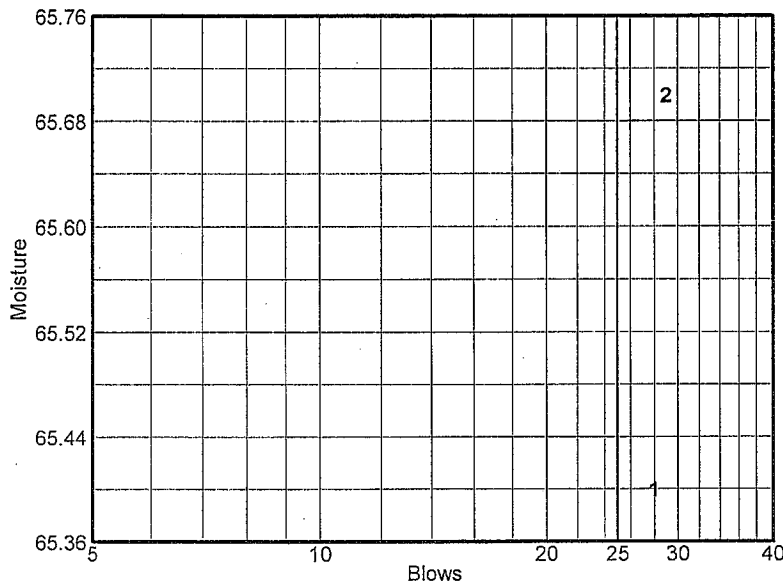
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2352UD
 Sample No.: UD-5
 Elev. or Depth: 24-25.7 F Sample Length(in./cm.): ID#8363
 Location: B-2352UD
 Description: Brownish Yellow Fat CLAY
 Water Content: 28.0. USCS: CH AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.13	30.77				
Dry+Tare	26.84	26.90				
Tare	20.28	21.01				
# Blows	28	29				
Moisture	65.4	65.7				



Liquid Limit= 67
 Plastic Limit= 29
 Plasticity Index= 38

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	26.51	27.56		
Dry+Tare	25.04	26.04		
Tare	20.03	20.77		
Moisture	29.3	28.8		

MACTEC ENGINEERING AND CONSULTING, INC.

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: 3/12/08

SAMPLE IDENTIFICATION: B-2352UD, UD-5 @ 24-25.7 Ft.

(A) Mass of oven-dried soil, grams:	37.51
(B) Mass of pycnometer filled with water at test temperature (T), grams:	343.40
(C) Mass of pycnometer, water and soil, grams:	366.88
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.7
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.674
(F) Correction factor:	0.99892
(G x F) SPECIFIC GRAVITY @ 20°C:	2.671

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNO METER : 2052

TESTED BY: EH

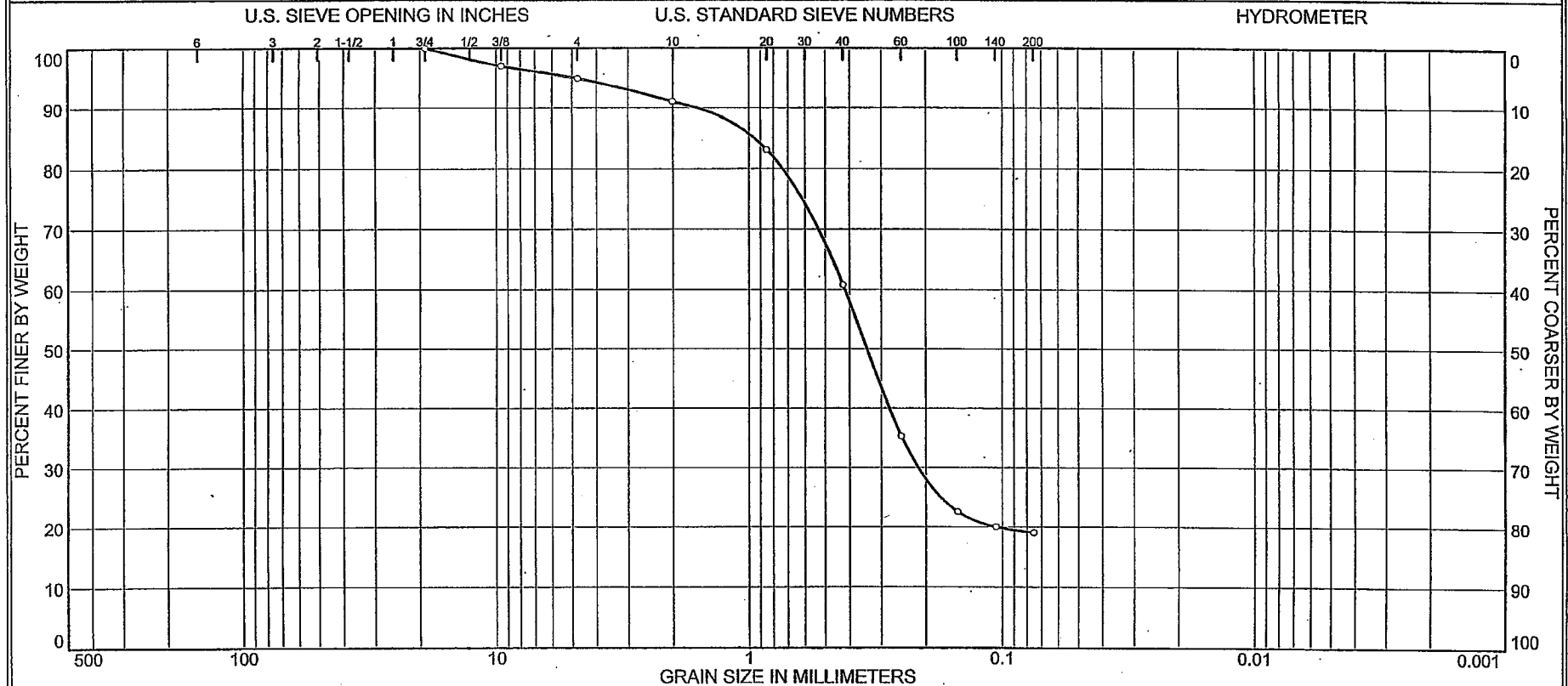
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson



KAW 4.15.08

Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.1	3.8	30.3	41.8	19.0	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2352UD	UD-8	68-69.35 Ft	2/1/08	SM	Light Gray Silty SAND (Visual)	14.4	ND	ND

Client Bechtel	MACTEC ENGINEERING AND CONSULTING, INC.		Tested by: EH Reviewed by: HJ <i>HJ</i>	
Project Exelon Texas COL (Victoria)			Sieve Analysis Only NM value from average of strength tests performed. Specific Gravity = 2.68 (ASTM D 854-06) ND = Not Determined.	
Project No. 6468-07-1777 Lab No. 8365				

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2352UD
Sample No.: UD-8
Elev. or Depth: 68-69.35 Ft Sample Length(in./cm.): ID#8365
Location: B-2352UD
Description: Light Gray Silty SAND (Visual)
Date: 2/1/08 PL: ND LL: ND PI: ND
USCS Classification: SM AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from average of strength tests performed.
Specific Gravity = 2.68 (ASTM D 854-06)
ND = Not Determined.

Mechanical Analysis Data

	Initial	
Dry sample and tare=	265.45	
Tare =	96.46	
Dry sample weight =	168.99	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
0.75 inch	0.00	100.0
.375 inch	5.09	97.0
# 4	8.58	94.9
# 10	15.04	91.1
# 20	28.60	83.1
# 40	66.19	60.8
# 60	109.33	35.3
# 100	130.74	22.6
# 140	135.24	20.0
# 200	136.90	19.0

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL = 5.1 (% coarse = % fine = 5.1)
% SAND = 75.9 (% coarse = 3.8 % medium = 30.3 % fine = 41.8)
% FINES = 19.0

D₈₅= 0.95 D₆₀= 0.42 D₅₀= 0.34
D₃₀= 0.21

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/7/08

SAMPLE IDENTIFICATION: B-2352UD, UD-8 @ 68-69.35 Ft.

(A) Mass of oven-dried soil, grams:	37.26
(B) Mass of pycnometer filled with water at test temperature (T), grams:	338.33
(C) Mass of pycnometer, water and soil, grams:	361.70
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.4
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.683
(F) <i>Correction factor:</i>	0.99899
(G x F) SPECIFIC GRAVITY @ 20°C:	2.680

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 95

Silty SAND (SM) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2054

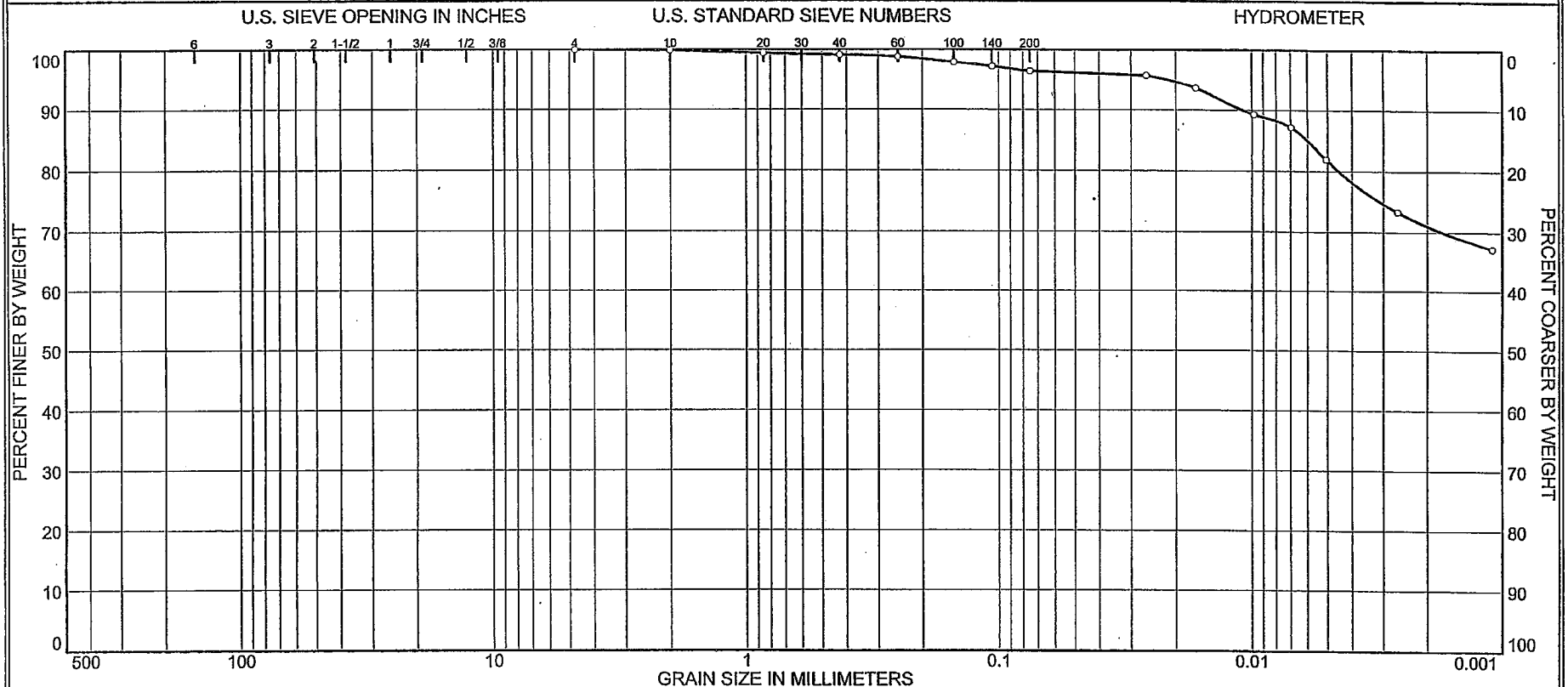
TESTED BY: EH

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

REVIEWED BY: Harry Johnson

KAW 4-15-08

Particle Size Distribution Report ASTM D6913-04 e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	0.1	0.8	2.7	14.7	81.7

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	B-2359UD	UD-3	30.8-32.8 Ft	1/22/08	CH	Light Gray Mottled Brownish Yellow Fat CLAY	30.2	66	30

Client Bechtel		MACTEC ENGINEERING AND CONSULTING, INC.	○ Tested by: EH Reviewed by: HJ <i>HJ</i> NM value from first strength test performed. Specific Gravity = 2.78 (ASTM D 854-06)
Project Exelon Texas COL (Victoria)			
Project No. 6468-07-1777	Lab No. 8558		

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2359UD
Sample No.: UD-3
Elev. or Depth: 30.8-32.8 Ft Sample Length(in./cm.): ID#8558
Location: B-2359UD
Description: Light Gray Mottled Brownish Yellow Fat CLAY
Date: 1/22/08 Natural Moisture: 30.2
Liquid Limit: 66 Plastic Limit: 30 USCS Class.: CH
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.78 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	188.32	
Tare =	141.52	
Dry sample weight =	46.80	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.06	99.9
# 20	0.30	99.4
# 40	0.42	99.1
# 60	0.57	98.8
# 100	0.96	97.9
# 140	1.33	97.2
# 200	1.67	96.4

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 96.4
Weight of hydrometer sample: 45.13
Calculated biased weight= 46.82
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.7
Specific gravity correction factor= 0.989
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	23.1	50.0	45.3	0.0129	50.0	8.1	0.0260	95.7
5.00	23.1	49.0	44.3	0.0129	49.0	8.3	0.0166	93.6
15.00	23.1	47.0	42.3	0.0129	47.0	8.6	0.0098	89.3
30.00	23.1	46.0	41.3	0.0129	46.0	8.8	0.0070	87.2
60.00	23.1	43.5	38.8	0.0129	43.5	9.2	0.0051	81.9
240.00	22.8	39.5	34.7	0.0130	39.5	9.8	0.0026	73.3
1440.00	23.1	36.5	31.8	0.0129	36.5	10.3	0.0011	67.2

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

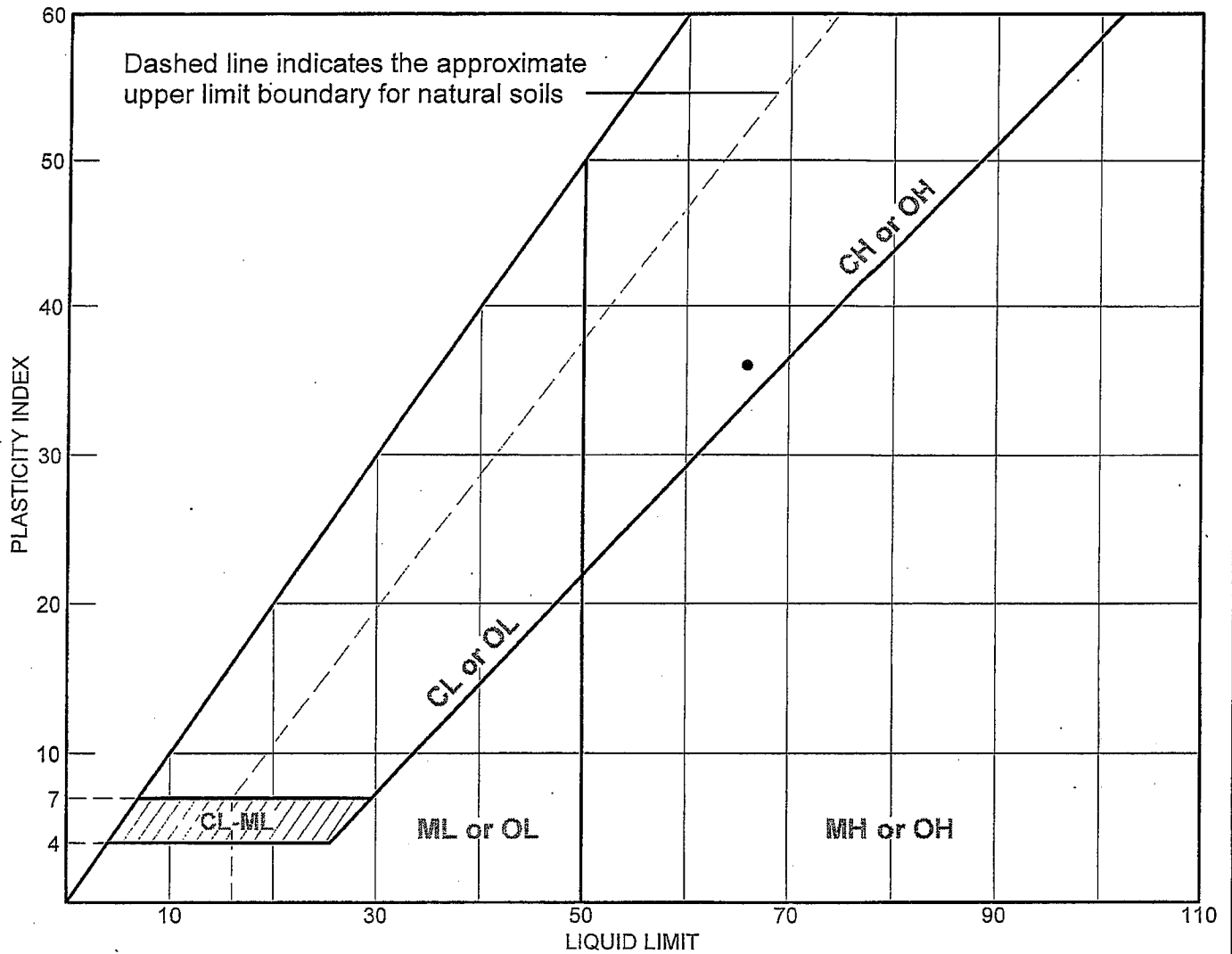
% COBBLES = % GRAVEL =

% SAND = 3.6 (% coarse = 0.1 % medium = 0.8 % fine = 2.7)

% SILT = 14.7 % CLAY = 81.7

D₈₅ = 0.01

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
•	B-2359UD	UD-3	30.8-32.8 Ft	30.2	30	66	36	CH

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777

Lab No. 8558

LIQUID AND PLASTIC LIMIT TEST DATA

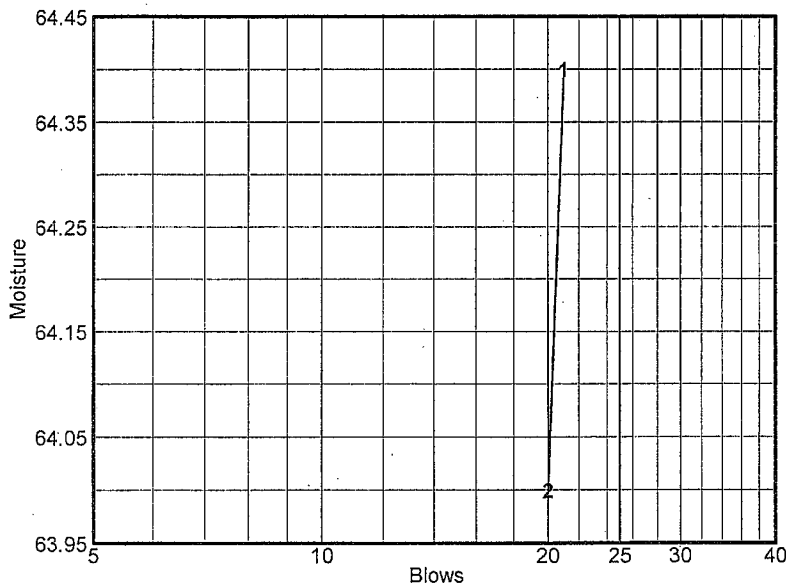
Client: Bechtel
 Project: Exelon Texas COL (Victoria)
 Project Number: 6468-07-1777

Sample Data

Source: B-2359UD
 Sample No.: UD-3
 Elev. or Depth: 30.8-32.8 Ft Sample Length(in./cm.): ID#8558
 Location: B-2359UD
 Description: Light Gray Mottled Brownish Yellow Fat CLAY
 Water Content: 30.2 USCS: CH AASHTO:

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.35	29.62				
Dry+Tare	25.67	26.26				
Tare	19.96	21.01				
# Blows	21	20				
Moisture	64.4	64.0				



Liquid Limit= 66
 Plastic Limit= 30
 Plasticity Index= 36

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.59	27.75			
Dry+Tare	26.04	25.99			
Tare	20.78	20.06			
Moisture	29.5	29.7			

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/8/08

SAMPLE IDENTIFICATION: B-2359UD, UD-3 @ 30.8-32.8 Ft.

(A) Mass of oven-dried soil, grams:	37.36
(B) Mass of pycnometer filled with water at test temperature (T), grams:	346.70
(C) Mass of pycnometer, water and soil, grams:	370.64
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.4
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.784
(F) Correction factor:	0.99899
(G x F) SPECIFIC GRAVITY @ 20°C:	2.781

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2197

TESTED BY: EH

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

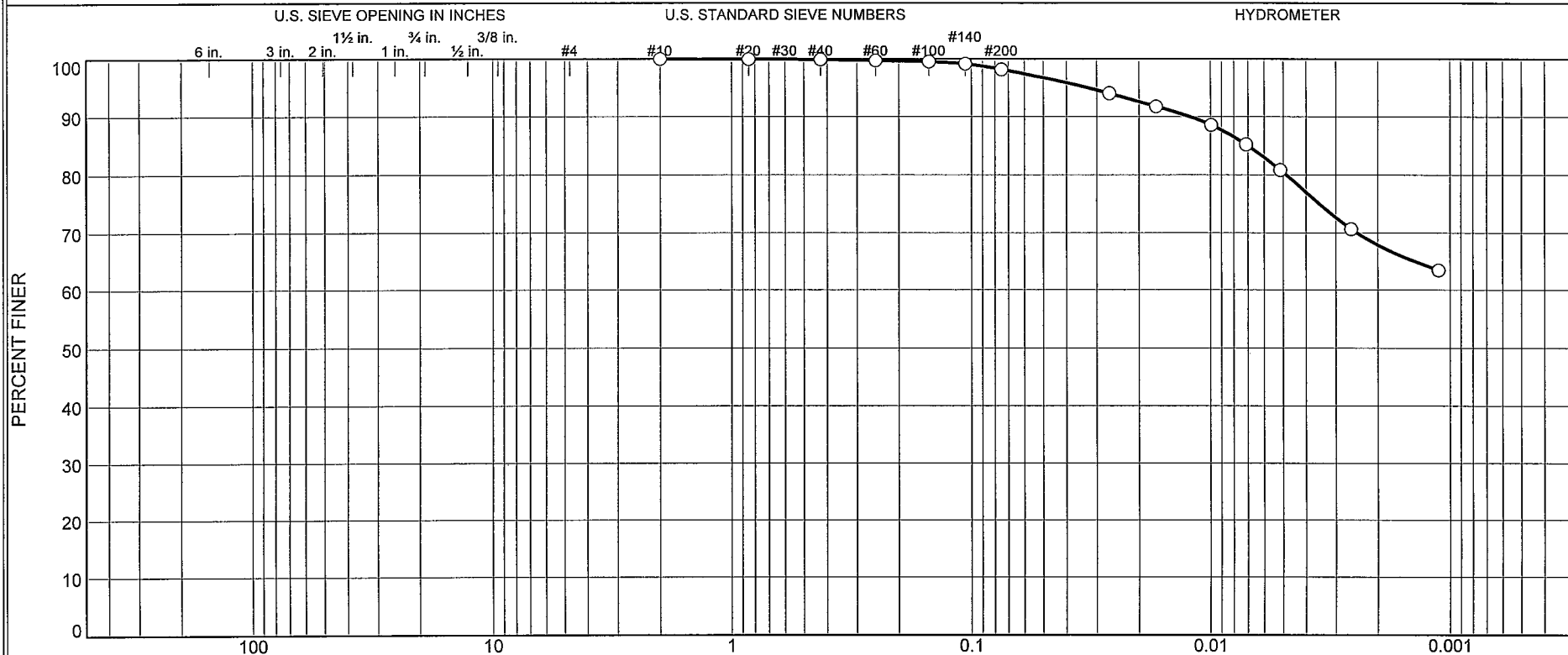
REVIEWED BY:

Harry Johnson

HJ

KAW 4/15/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	1.7	17.7	80.5

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359UD	UD-4	35.0-36.7	1/22/08	CH	Light Gray Fat CLAY	21.6	68	17

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA*
MACTEC, Inc.
Raleigh, North Carolina

 Specific Gravity = 2.726 (ASTM D854-06)
 NM obtained from consolidation test specimen

KAW 5/8/08
Tested By: CSChecked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359UD

Depth: 35.0-36.7

Sample Number: UD-4

Material Description: Light Gray Fat CLAY

Date: 1/22/08

Natural Moisture: 21.6

Liquid Limit: 68

Plastic Limit: 17

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.726 (ASTM D854-06)

NM obtained from consolidation test specimen

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
172.75	0.00	0.00	#10	0.00	100.0
47.71	0.00	0.00	#20	0.02	100.0
			#40	0.05	99.9
			#60	0.13	99.7
			#100	0.23	99.5
			#140	0.40	99.2
			#200	0.86	98.2

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =47.71

Hygroscopic moisture correction:

Moist weight and tare = 28.54

Dry weight and tare = 27.76

Tare weight = 15.79

Hygroscopic moisture =6.5%

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 =2.726

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	48.0	42.8	0.0131	49.0	8.3	0.0266	94.0
5.00	21.5	47.0	41.8	0.0131	48.0	8.4	0.0170	91.8
15.00	21.6	45.5	40.3	0.0131	46.5	8.7	0.0099	88.5
30.00	21.6	44.0	38.8	0.0131	45.0	8.9	0.0071	85.2
60.00	21.6	42.0	36.8	0.0131	43.0	9.2	0.0051	80.9
250.00	22.9	37.0	32.2	0.0129	38.0	10.1	0.0026	70.7
1440.00	21.9	34.0	28.9	0.0130	35.0	10.6	0.0011	63.5

MACTEC, Inc.

Fractional Components

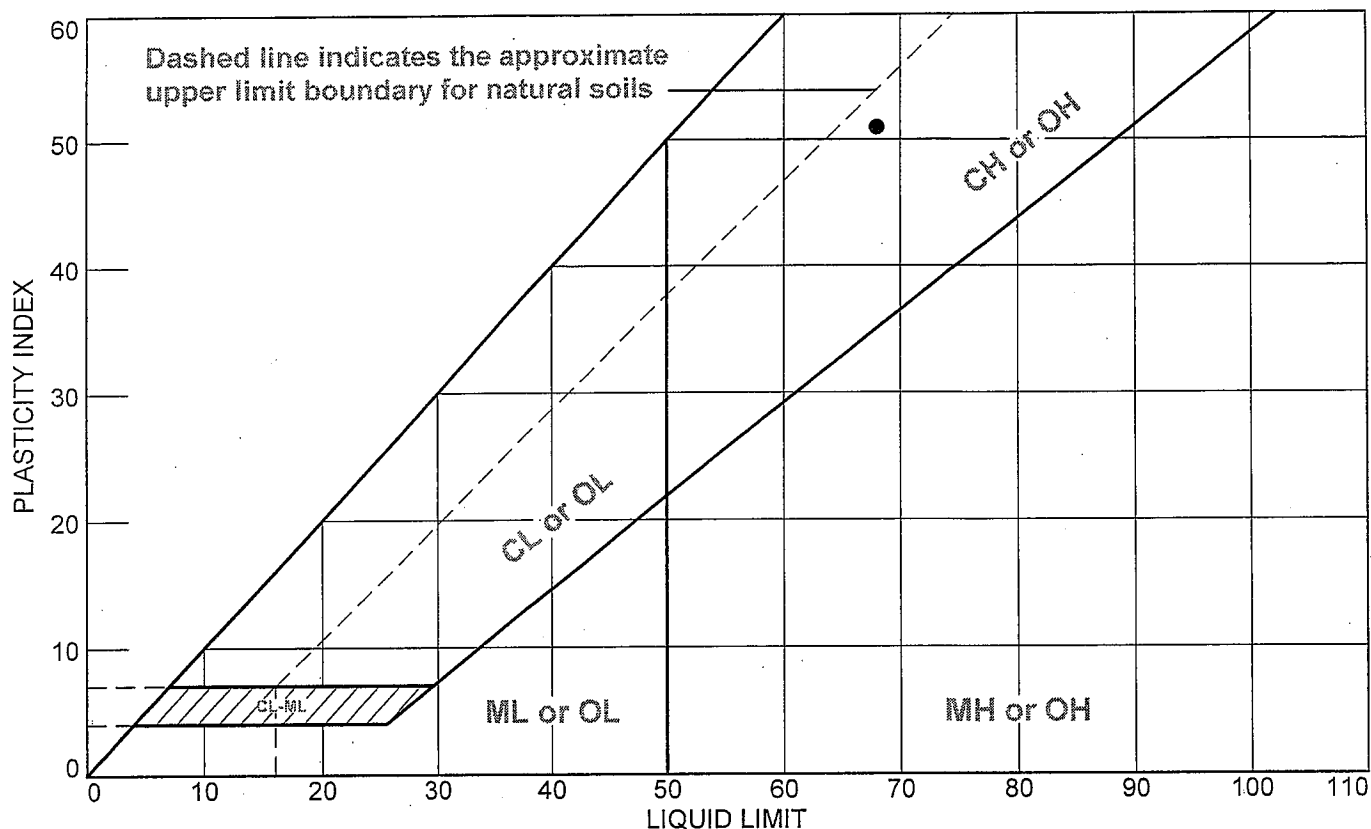
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	1.7	1.8	17.7	80.5	98.2

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0048	0.0070	0.0122	0.0328

Fineness Modulus
0.01

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-2359UD	UD-4	35.0-36.7	21.6	17	68	51	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

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359UD

Depth: 35.0-36.7

Sample Number: UD-4

Material Description: Light Gray Fat CLAY

USCS: CH

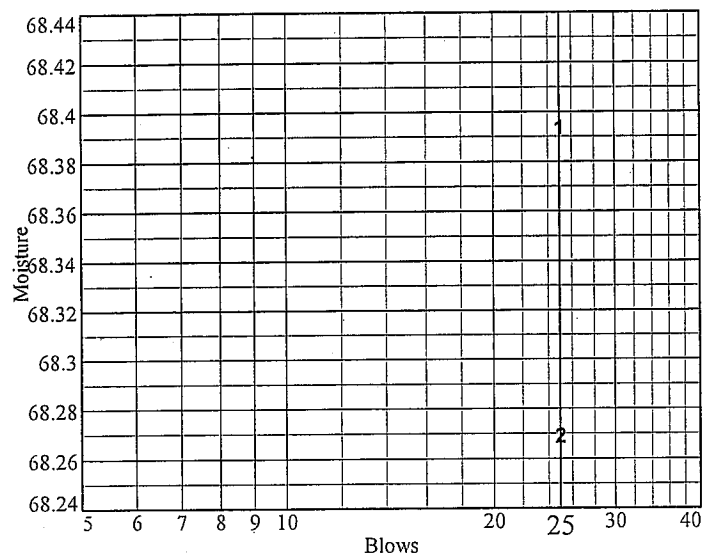
AASHTO: A-7-6(55)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.23	24.28				
Dry+Tare	21.27	20.73				
Tare	15.48	15.53				
# Blows	25	25				
Moisture	68.4	68.3				



Liquid Limit= 68
 Plastic Limit= 17
 Plasticity Index= 51
 Natural Moisture= 21.6
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.85	22.04			
Dry+Tare	16.88	21.06			
Tare	11.10	15.47			
Moisture	16.8	17.5			

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: 4/17/08

SAMPLE IDENTIFICATION: B-2359UD, UD-4

(A) Mass of oven-dried soil, grams:	50.10
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.50
(C) Mass of pycnometer, water and soil, grams:	688.23
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.6
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.727
(F) <i>Correction factor:</i>	0.99966
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.726

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CL)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

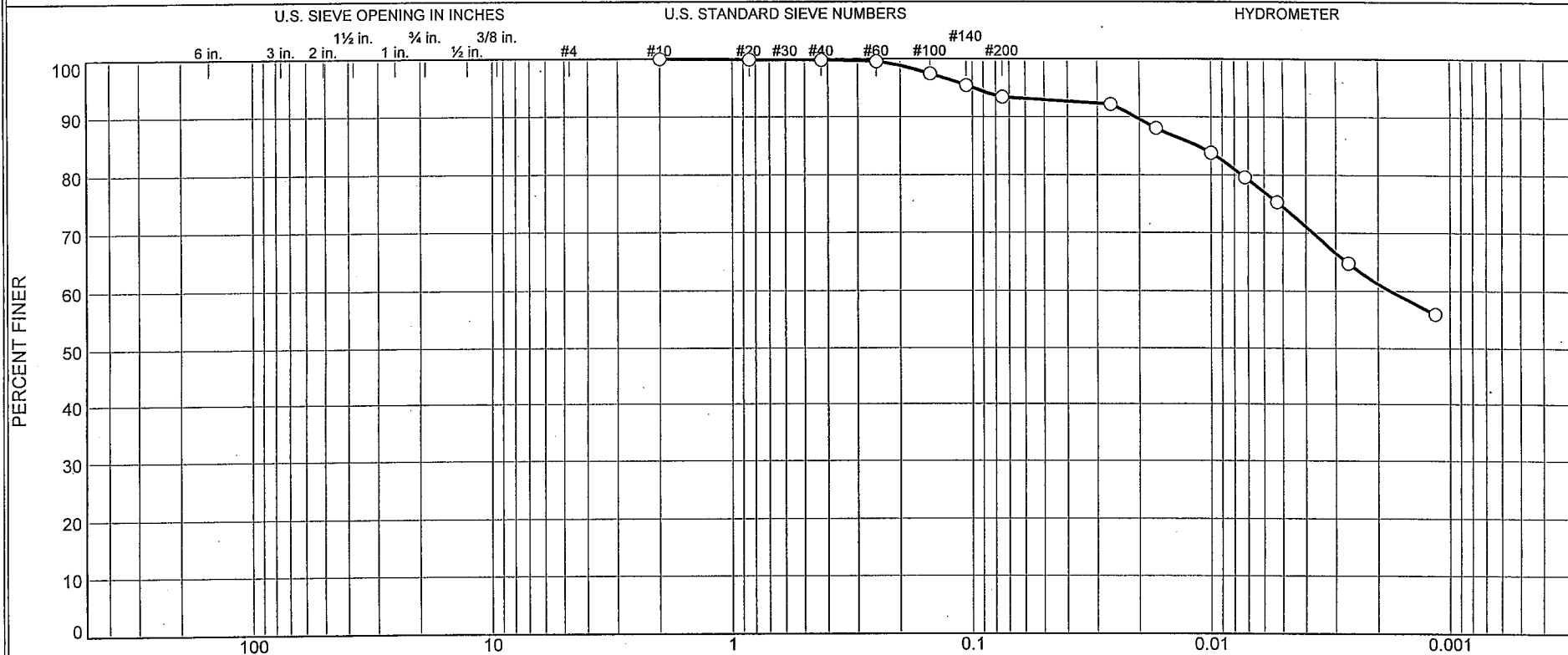
PYCNO METER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	6.4	18.9	74.5

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359UD	UD-5	40.0-41.7	1/22/08	CH	Pale Brown Fat CLAY	20.2	65	18

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA***MACTEC, Inc.****Raleigh, North Carolina**

○ Specific Gravity = 2.707 (ASTM D854-06)
 NM is average of values obtained from consolidation and triaxial test specimens

KAW 5/8/08Tested By: CSChecked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359UD

Depth: 40.0-41.7

Sample Number: UD-5

Material Description: Pale Brown Fat CLAY

Date: 1/22/08

Natural Moisture: 20.2

Liquid Limit: 65

Plastic Limit: 18

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.707 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
232.24	0.00	0.00	#10	0.00	100.0
49.12	0.00	0.00	#20	0.05	99.9
			#40	0.08	99.8
			#60	0.21	99.6
			#100	1.24	97.5
			#140	2.24	95.4
			#200	3.23	93.4

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 49.12

Hygroscopic moisture correction:

Moist weight and tare = 27.39

Dry weight and tare = 26.88

Tare weight = 15.44

Hygroscopic moisture = 4.5%

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 = 2.707

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	49.0	43.9	0.0131	50.0	8.1	0.0264	92.2
5.00	21.9	47.0	41.9	0.0131	48.0	8.4	0.0170	88.0
15.00	21.9	45.0	39.9	0.0131	46.0	8.8	0.0100	83.8
30.00	21.9	43.0	37.9	0.0131	44.0	9.1	0.0072	79.6
58.00	21.8	41.0	35.9	0.0131	42.0	9.4	0.0053	75.4
250.00	21.7	36.0	30.9	0.0131	37.0	10.2	0.0027	64.8
1440.00	21.0	32.0	26.7	0.0133	33.0	10.9	0.0012	56.0

MACTEC, Inc.

Fractional Components

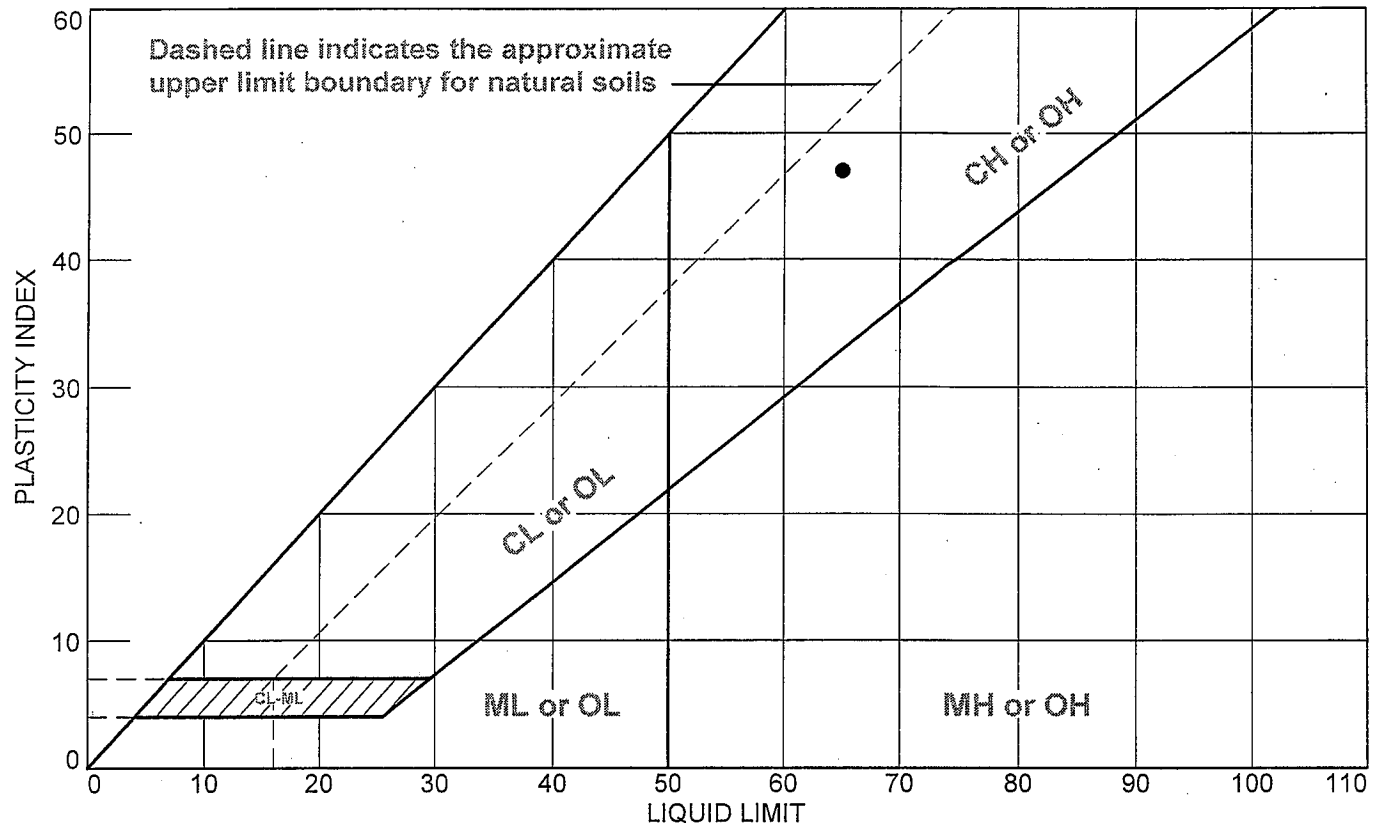
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	6.4	6.6	18.9	74.5	93.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
					0.0018	0.0074	0.0114	0.0207	0.0992

Fineness Modulus
0.03

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-2359UD	UD-5	40.0-41.7	20.2	18	65	47	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

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359UD

Depth: 40.0-41.7

Sample Number: UD-5

Material Description: Pale Brown Fat CLAY

USCS: CH

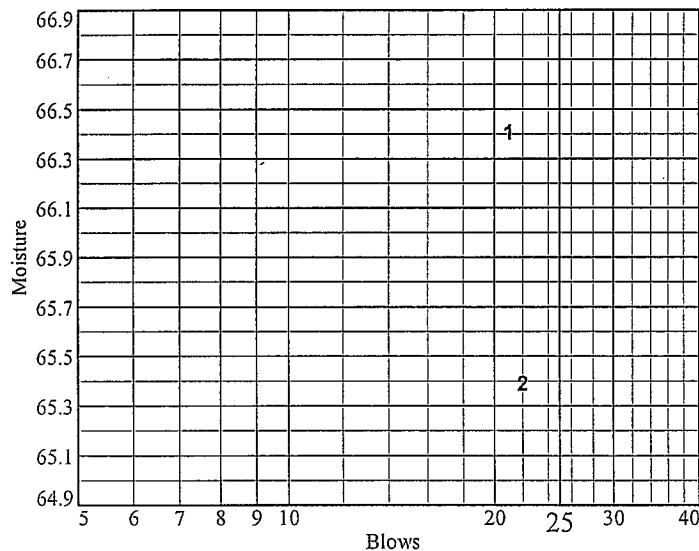
AASHTO: A-7-6(48)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.14	23.45				
Dry+Tare	20.70	20.20				
Tare	15.52	15.23				
# Blows	21	22				
Moisture	66.4	65.4				



Liquid Limit= 65
 Plastic Limit= 18
 Plasticity Index= 47
 Natural Moisture= 20.2
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.01	22.19			
Dry+Tare	21.03	21.18			
Tare	15.64	15.53			
Moisture	18.2	17.9			

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: 4/14/08

SAMPLE IDENTIFICATION: B-2359UD UD-5

(A) Mass of oven-dried soil, grams:	48.88
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.53
(C) Mass of pycnometer, water and soil, grams:	687.36
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature: $A / [B - (C - A)]$	2.708
(F) <i>Correction factor:</i>	0.99972
(G x F) SPECIFIC GRAVITY @ 20°C:	2.707

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

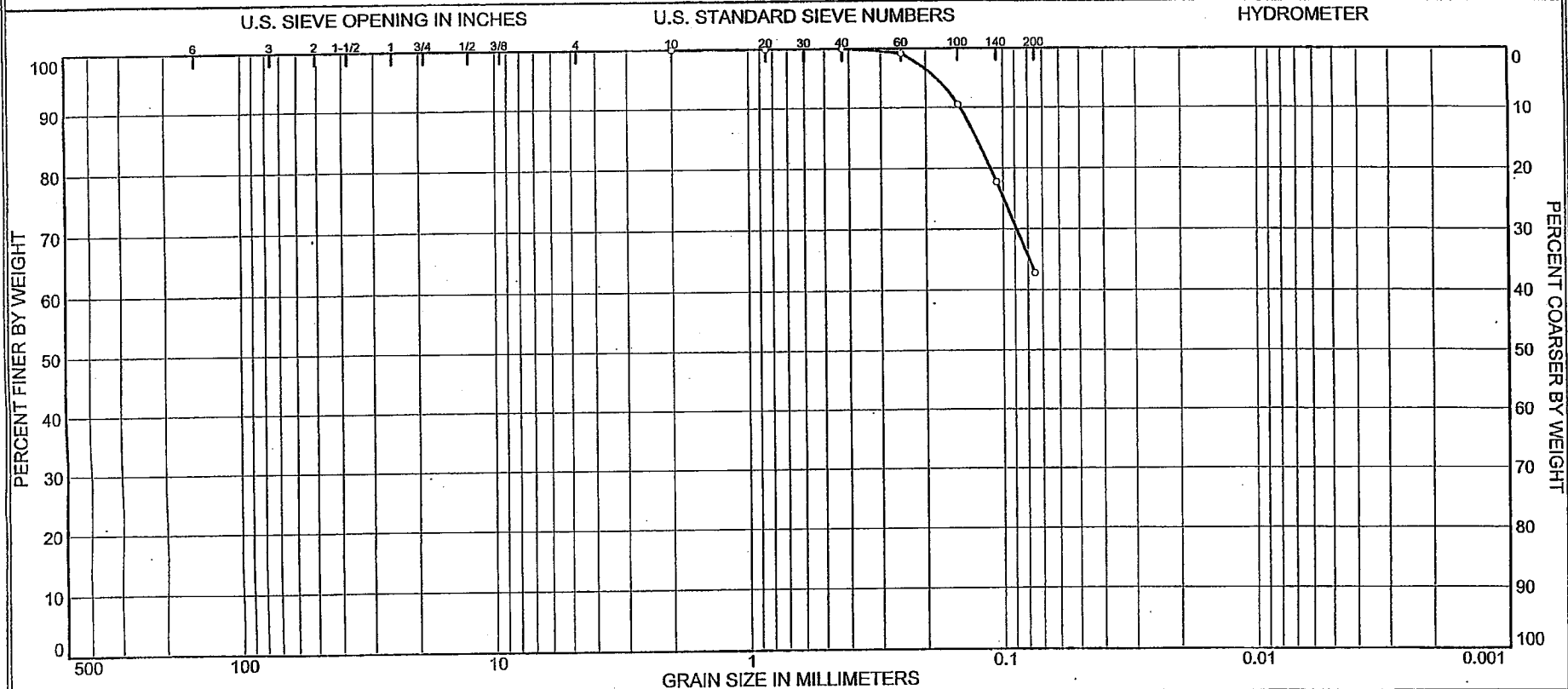
PYCNOMETER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.0	37.2	62.8	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2359UD	UD-7	55-56.7 Ft	1/29/08	ML	Light Gray Sandy SILT (Visual)	14.3	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777

Lab No. 8559

**MACTEC ENGINEERING
AND
CONSULTING, INC.**

Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from average of strength tests performed.
Specific Gravity = 2.65 (ASTM D 854-06)
ND = Not Determined.

KAW 4-15-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2359UD
Sample No.: UD-7
Elev. or Depth: 55-56.7 Ft **Sample Length(in./cm.):** ID#8559
Location: B-2359UD
Description: Light Gray Sandy SILT (Visual)
Date: 1/29/08 **PL:** ND **LL:** ND **PI:** ND
USCS Classification: ML **AASHTO Classification:**
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from average of strength tests performed.
Specific Gravity = 2.65 (ASTM D 854-06)
ND = Not Determined.

Mechanical Analysis Data

	Initial	
Dry sample and tare=	258.65	
Tare =	89.55	
Dry sample weight =	169.10	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 20	0.00	100.0
# 40	0.08	100.0
# 60	1.39	99.2
# 100	16.07	90.5
# 140	37.63	77.7
# 200	62.95	62.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = % GRAVEL =
% SAND = 37.2 (% coarse = % medium = 0.0 % fine = 37.2)
% FINES = 62.8

D₈₅ = 0.13

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/8/08

SAMPLE IDENTIFICATION: B-2359UD, UD-7 @ 55-56.7 Ft.

(A) Mass of oven-dried soil, grams:	37.54
(B) Mass of pycnometer filled with water at test temperature (T), grams:	338.35
(C) Mass of pycnometer, water and soil, grams:	361.75
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.655
(F) Correction factor:	0.99904
(G x F) SPECIFIC GRAVITY @ 20°C:	2.652

MATERIAL TESTED:

☐

- # 4

☒

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Sandy SILT (ML) - Visual

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2054

TESTED BY: EH

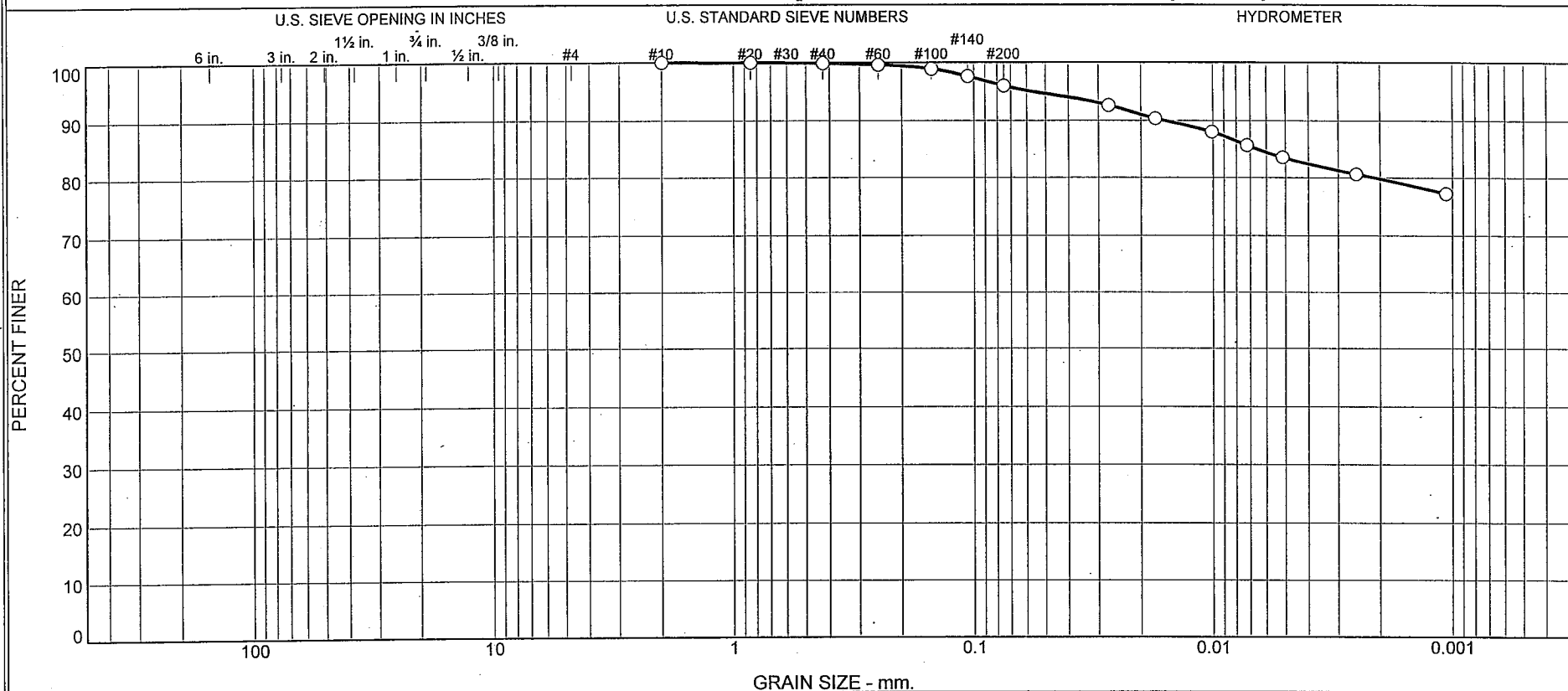
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson

HJ

KAW 4-15-08

Particle Size Distribution Report / ASTM D422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	3.9	12.6	83.4

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359UD	UD-10	70.0-71.5	1/29/08	CH	Mottled Light Gray and Yellowish Brown Fat CLAY	16.7	95	34

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA*
MACTEC, Inc.
Raleigh, North Carolina

○ Specific Gravity = 2.720 (ASTM D 854-06)
 NM is average of values obtained from consolidation and triaxial test specimens

KAW s/8/08

 Tested By: CS

 Checked By: LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359UD

Depth: 70.0-71.5

Sample Number: UD-10

Material Description: Mottled Light Gray and Yellowish Brown Fat CLAY

Date: 1/29/08

Natural Moisture: 16.7

Liquid Limit: 95

Plastic Limit: 34

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.720 (ASTM D 854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
139.88	0.00	0.00	#10	0.00	100.0
46.29	0.00	0.00	#20	0.02	100.0
			#40	0.06	99.9
			#60	0.19	99.6
			#100	0.51	98.9
			#140	1.09	97.6
			#200	1.86	96.0

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 46.29

Hygroscopic moisture correction:

Moist weight and tare = 28.68

Dry weight and tare = 27.58

Tare weight = 15.24

Hygroscopic moisture = 8.9%

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 = 2.720

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	22.2	45.0	40.0	0.0130	46.0	8.8	0.0272	92.7
5.00	22.2	44.0	39.0	0.0130	45.0	8.9	0.0174	90.3
15.00	22.2	43.0	38.0	0.0130	44.0	9.1	0.0101	88.0
30.00	22.2	42.0	37.0	0.0130	43.0	9.2	0.0072	85.7
60.00	22.5	41.0	36.1	0.0130	42.0	9.4	0.0051	83.6
250.00	23.4	39.5	34.8	0.0128	40.5	9.7	0.0025	80.7
1440.00	23.5	38.0	33.4	0.0128	39.0	9.9	0.0011	77.3

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	0.1	3.9	4.0	12.6	83.4	96.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0021	0.0065	0.0161	0.0570

Fineness Modulus
0.01

MACTEC, Inc.

Dashed line indicates the approximate upper limit boundary for natural soils

CL or OL

CH or OH

ML or OL

MH or OH

MACTEC, Inc. Raleigh, North Carolina	Client: Bechtel Project: Exelon Texas COL (Victoria Reservoir) Project No.: 6468071777	Figure NA
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DCN# EXE812

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359UD

Depth: 70.0-71.5

Sample Number: UD-10

Material Description: Mottled Light Gray and Yellowish Brown Fat CLAY

USCS: CH

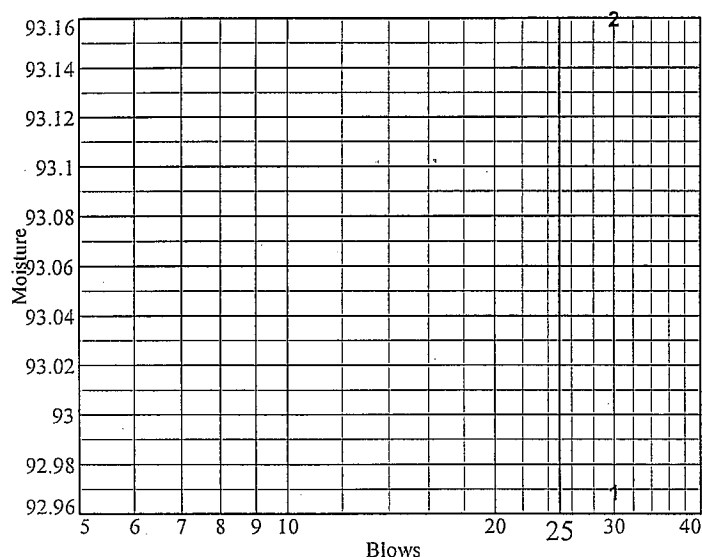
AASHTO: A-7-5(70)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.02	21.42				
Dry+Tare	19.45	18.56				
Tare	15.61	15.49				
# Blows	30	30				
Moisture	93.0	93.2				



Liquid Limit= 95
 Plastic Limit= 34
 Plasticity Index= 61
 Natural Moisture= 16.7
 Liquidity Index= -0.3

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.78	22.77			
Dry+Tare	20.97	20.92			
Tare	15.51	15.48			
Moisture	33.2	34.0			

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: 4/19/08

SAMPLE IDENTIFICATION: B-2359UD UD-10

(A) Mass of oven-dried soil, grams:	49.67
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.89
(C) Mass of pycnometer, water and soil, grams:	687.30
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	20.0
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.720
(F)	Correction factor: 1.00000
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.720

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

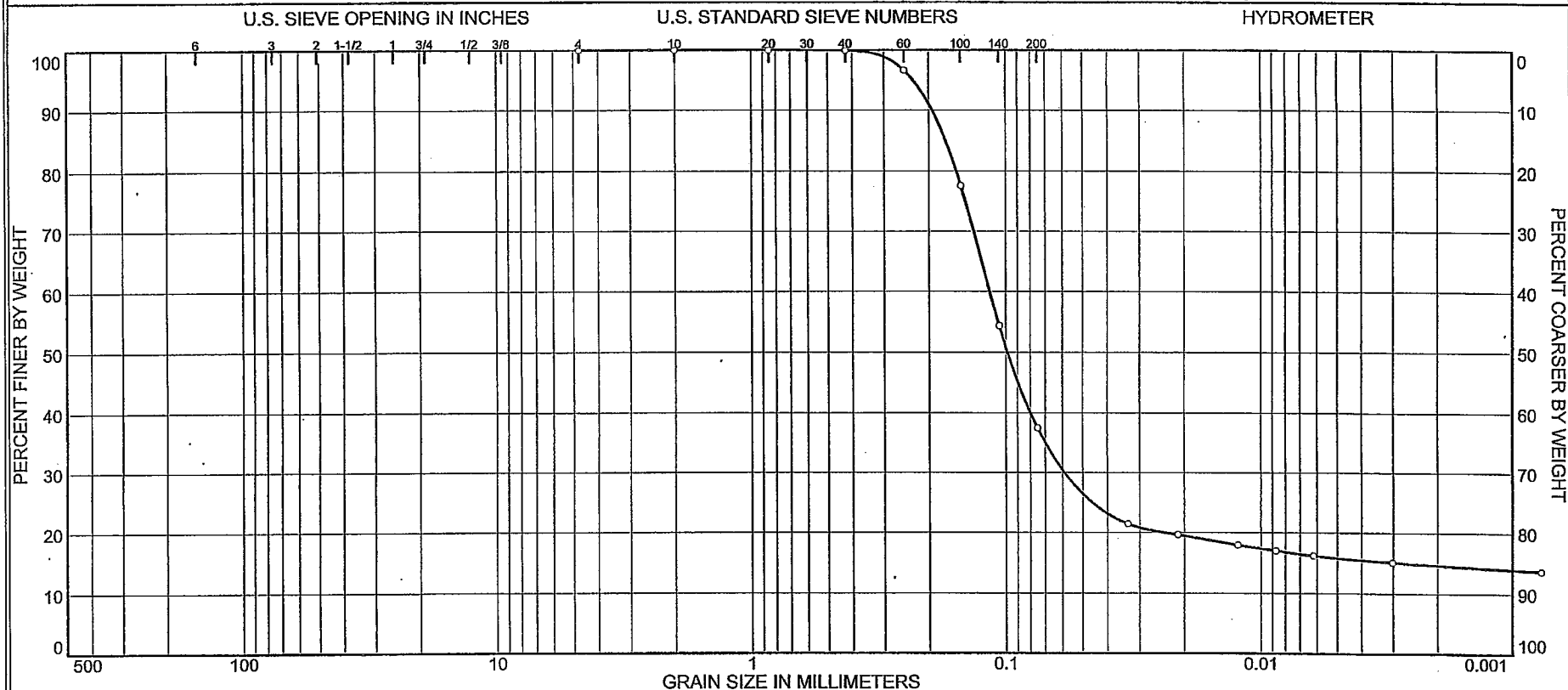
PYCNOMETER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

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



GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2359UD
Sample No.: UD-11
Elev. or Depth: 77-78.7 Ft Sample Length(in./cm.): ID#8366
Location: B-2359UD
Description: Light Gray Silty, Clayey SAND
Date: 1/29/08 PL: 19 LL: 23 PI: 4
USCS Classification: SC-SM AASHTO Classification:
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)

Mechanical Analysis Data

	Initial	
Dry sample and tare=	72.90	
Tare =	16.23	
Dry sample weight =	56.67	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.00	100.0
# 40	0.08	99.9
# 60	1.95	96.6
# 100	12.67	77.6
# 140	25.91	54.3
# 200	35.44	37.5

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 37.5
Weight of hydrometer sample: 21.33
Calculated biased weight= 56.88
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.724
Specific gravity correction factor= 0.984
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm