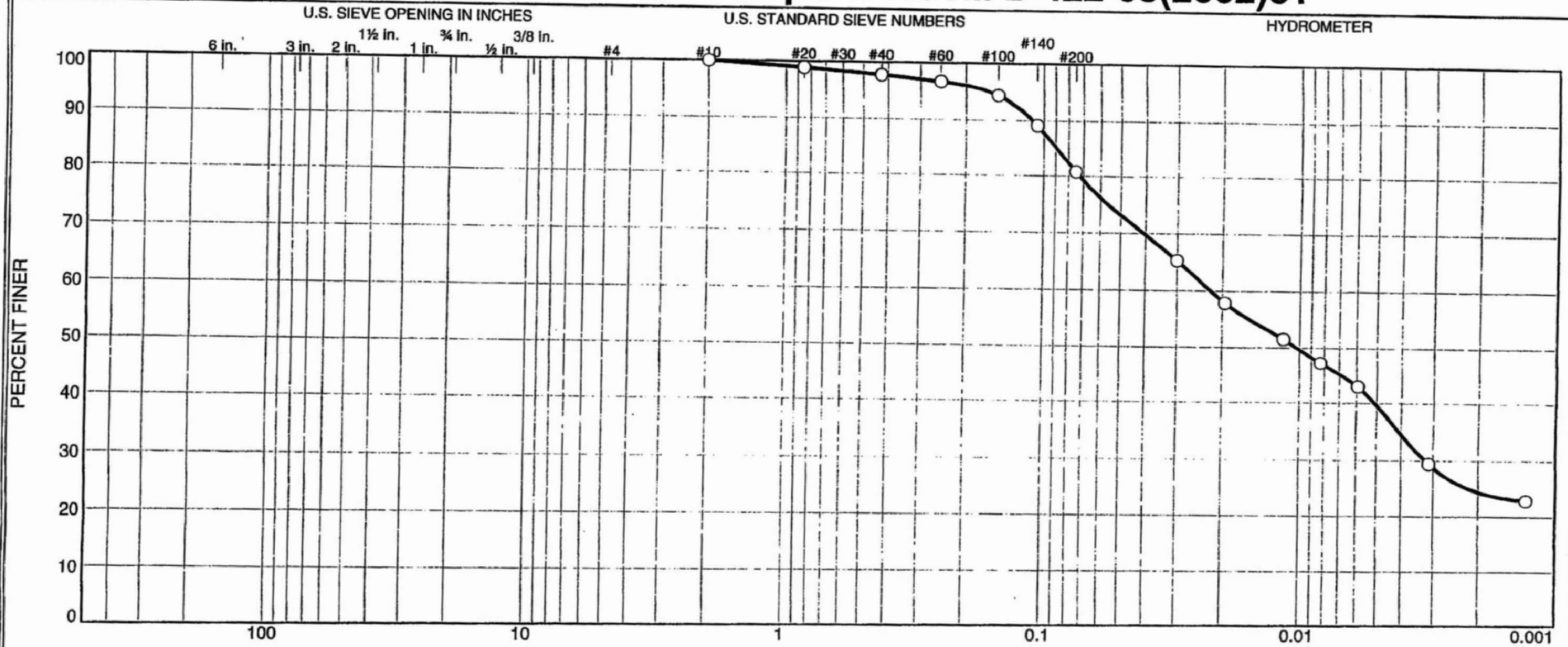


Particle Size Distribution Report / ASTM D 422-63(2002)e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	2.2	17.1	41.0	39.7

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2352	SS-28	148.5-150.0	1-4-08	CL	Light Yellowish Brown Lean CLAY with sand	21.5	36	14

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure NA

MACTEC, Inc.

Raleigh, North Carolina

Specific Gravity = 2.670 (ASTM D854-06)

Checked By: DSC 2-28-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/19/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2352

Depth: 148.5-150.0

Sample Number: SS-28

Material Description: Light Yellowish Brown Lean CLAY with sand

Date: 1-4-08

Natural Moisture: 21.5

Liquid Limit: 36

Plastic Limit: 14

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.670 (ASTM D854-06)

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
228.74	0.00	0.00	#10	0.00	100.0
48.05	0.00	0.00	#20	0.54	98.9
			#40	1.07	97.8
			#60	1.58	96.7
			#100	2.72	94.3
			#140	5.19	89.2
			#200	9.25	80.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 48.05

Hygroscopic moisture correction:

Moist weight and tare = 28.60

Dry weight and tare = 28.24

Tare weight = 15.47

Hygroscopic moisture = 2.8%

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 = 2.670

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	35.5	30.7	0.0132	36.5	10.3	0.0301	65.3
5.00	21.9	32.0	27.2	0.0132	33.0	10.9	0.0195	57.9
15.00	21.9	29.0	24.2	0.0132	30.0	11.4	0.0115	51.5
30.00	21.9	27.0	22.2	0.0132	28.0	11.7	0.0083	47.2
60.00	21.9	25.0	20.2	0.0132	26.0	12.0	0.0059	43.0
240.00	20.9	19.0	13.8	0.0134	20.0	13.0	0.0031	29.4
1440.00	20.7	16.0	10.8	0.0134	17.0	13.5	0.0013	22.9

MACTEC, Inc.

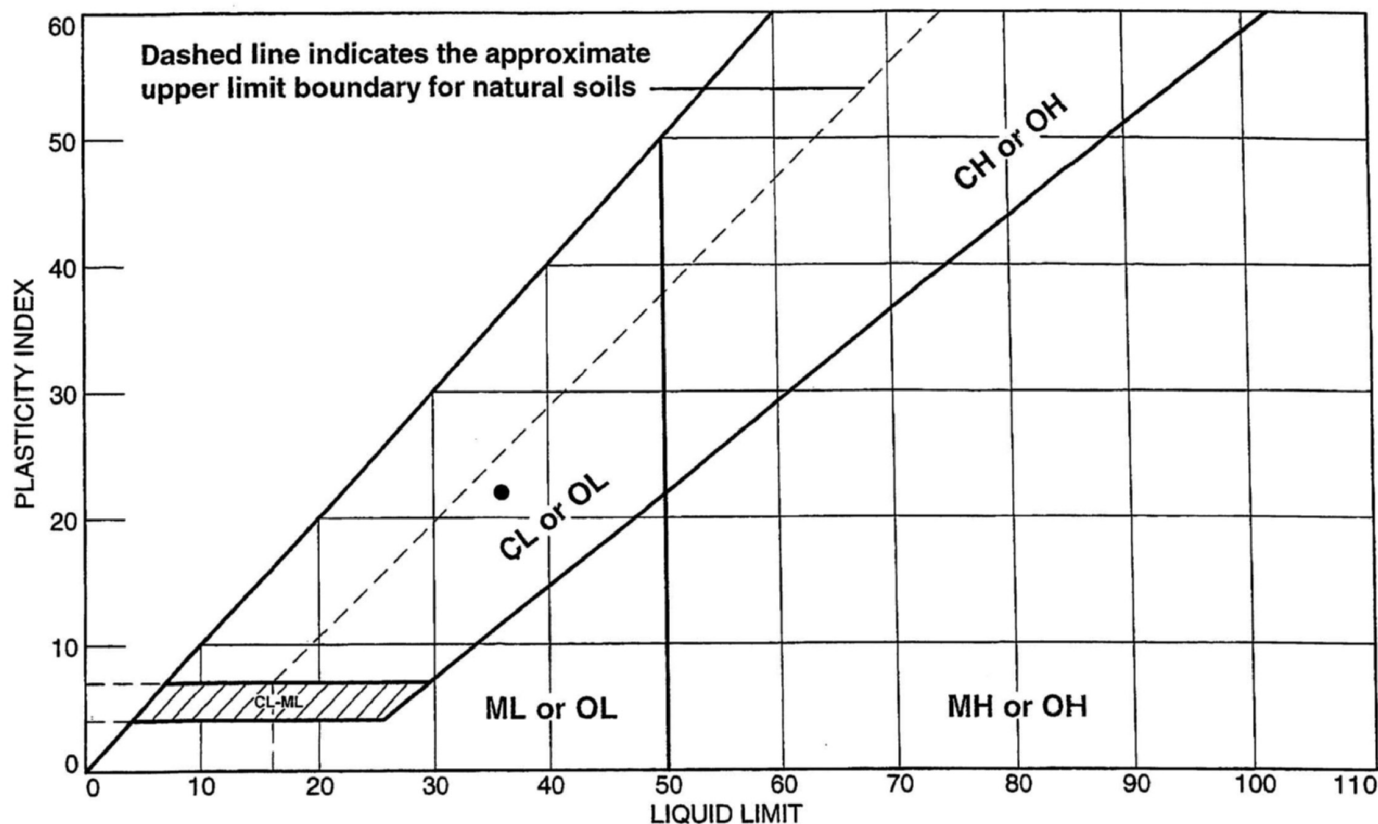
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.2	17.1	19.3	41.0	39.7	80.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0032	0.0103	0.0222	0.0726	0.0889	0.1102	0.1625

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 B-2352	SS-28	148.5-150.0	21.5	14	36	22	CL

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 DSC 2-28-08

LIQUID AND PLASTIC LIMIT TEST DATA

2/19/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2352

Depth: 148.5-150.0

Sample Number: SS-28

Material Description: Light Yellowish Brown Lean CLAY with sand

USCS: CL

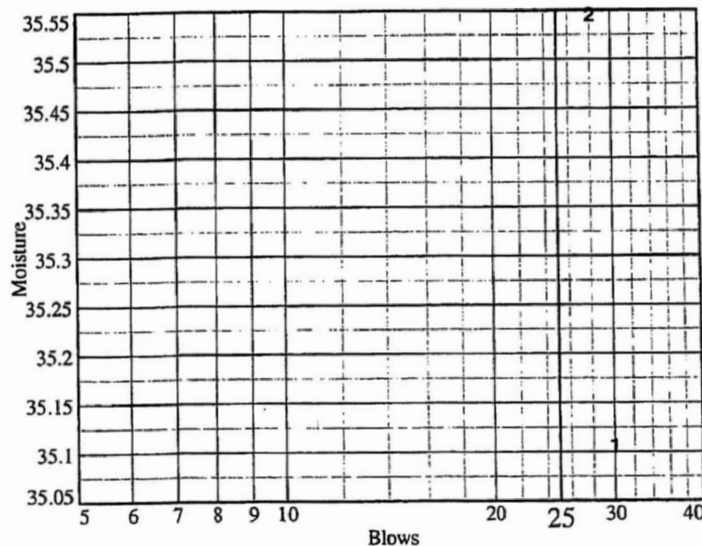
AASHTO: A-6(16)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.37	31.16				
Dry+Tare	28.75	27.09				
Tare	15.59	15.64				
# Blows	30	28				
Moisture	35.1	35.5				



Liquid Limit= 36
 Plastic Limit= 14
 Plasticity Index= 22
 Natural Moisture= 21.5
 Liquidity Index= 0.3

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	24.13	24.53		
Dry+Tare	23.09	23.45		
Tare	15.48	15.49		
Moisture	13.7	13.6		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
158.04	131.78	9.51	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: 2/11/08

SAMPLE IDENTIFICATION: B-2352 SS-28

(A) Mass of oven-dried soil, grams:	74.70
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.54
(C) Mass of pycnometer, water and soil, grams:	702.28
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.1
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.672
(F) Correction factor:	0.99931
(G x F) SPECIFIC GRAVITY @ 20°C:	2.670

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 :100

Lean CLAY with sand (CL)

EQUIPMENT USED

SCALES :3.1.99

OVEN : 5.1.16

THERMOMETER :5.1.01

PYCNOMETER : P-3

TESTED BY: CS

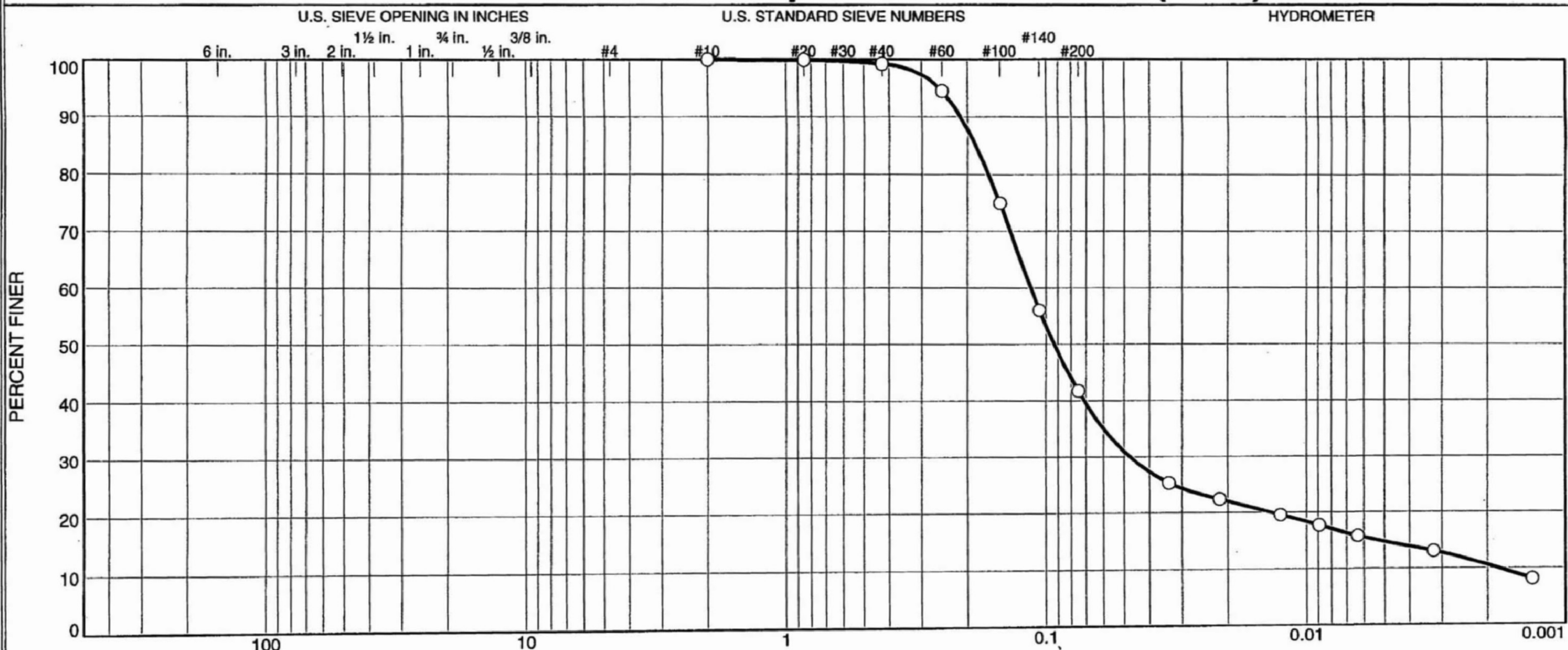
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Brian Johnson

DSC 2-28-08

Boring B-2359

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	0.8	57.5	27.0	14.7

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359	SS-1	0.0-1.5	1-3-08	SM	Dark Brown Silty SAND	9.1	21	20

Client Bechtel		MACTEC, Inc.	Raleigh, North Carolina	○ Specific Gravity is assumed Organic Content = 2.1% (ASTM D2974-07)
Project Exelon Texas COL (Victoria Reservoir)				
Project No. 6468071777				
Figure NA				

Tested By: CS

Checked By: LBJ

DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 0.0-1.5

Sample Number: SS-1

Material Description: Dark Brown Silty SAND

Date: 1-3-08

Natural Moisture: 9.1

Liquid Limit: 21

Plastic Limit: 20

USCS Class.: SM

Testing Remarks: Specific Gravity is assumed

Organic Content = 2.1% (ASTM D2974-07)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
190.26	0.00	0.00	#10	0.00	100.0
51.73	0.00	0.00	#20	0.05	99.9
			#40	0.39	99.2
			#60	2.85	94.5
			#100	12.99	74.9
			#140	22.72	56.1
			#200	30.16	41.7

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 51.73

Hygroscopic moisture correction:

Moist weight and tare = 27.95

Dry weight and tare = 27.94

Tare weight = 15.45

Hygroscopic moisture = 0.1%

Table of composite correction values:

Temp., deg. C: 12.9 29.9

Comp. corr.: -8.0 -2.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.0	18.0	13.2	0.0131	19.0	13.2	0.0337	25.3
5.00	22.0	16.5	11.7	0.0131	17.5	13.4	0.0215	22.4
15.00	22.0	15.0	10.2	0.0131	16.0	13.7	0.0125	19.5
30.00	22.1	14.0	9.2	0.0131	15.0	13.8	0.0089	17.7
60.00	22.1	13.0	8.2	0.0131	14.0	14.0	0.0063	15.8
240.00	20.9	12.0	6.8	0.0133	13.0	14.2	0.0032	13.1
1440.00	20.7	9.5	4.3	0.0133	10.5	14.6	0.0013	8.1

MACTEC, Inc.

Gravel (Sample 602)

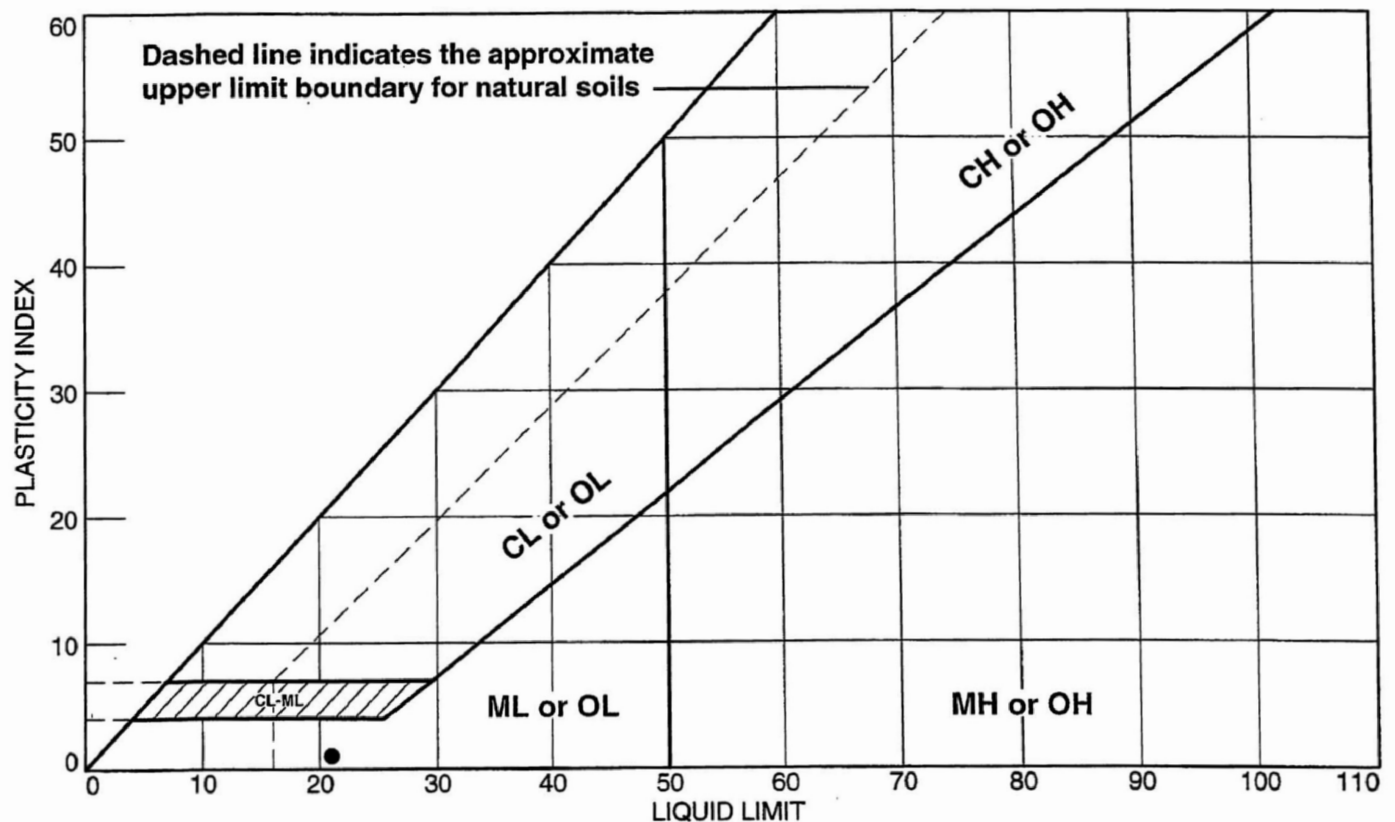
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.8	57.5	58.3	27.0	14.7	41.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0018	0.0053	0.0137	0.0476	0.0931	0.1143	0.1662	0.1860	0.2127	0.2561

Fineness Modulus	C _u	C _c
0.28	63.00	10.91

MACTEC, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2359	SS-1	0.0-1.5	9.1	20	21	1	SM

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure NA

Tested By: CS

Checked By: LBJ

DSC 2-27-08

LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 0.0-1.5

Sample Number: SS-1

Material Description: Dark Brown Silty SAND

USCS: SM

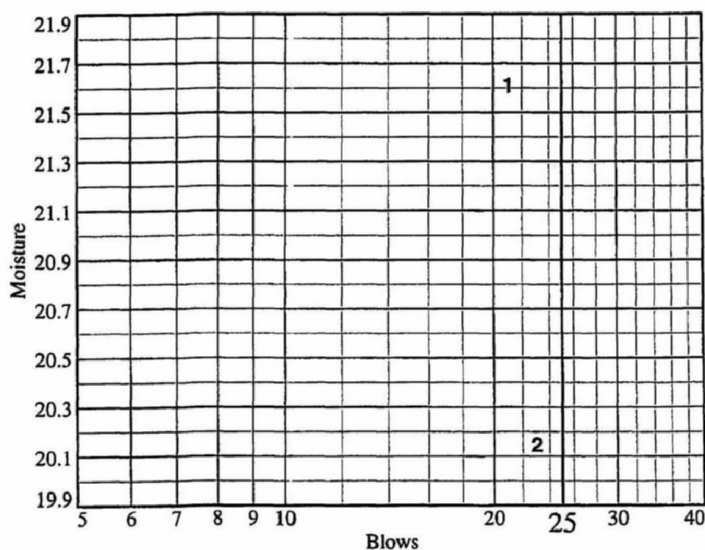
AASHTO: A-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.93	33.19				
Dry+Tare	29.90	30.23				
Tare	15.88	15.54				
# Blows	21	23				
Moisture	21.6	20.1				



Liquid Limit= 21
 Plastic Limit= 20
 Plasticity Index= 1
 Natural Moisture= 9.1
 Liquidity Index= -10.9

Plastic Limit Data

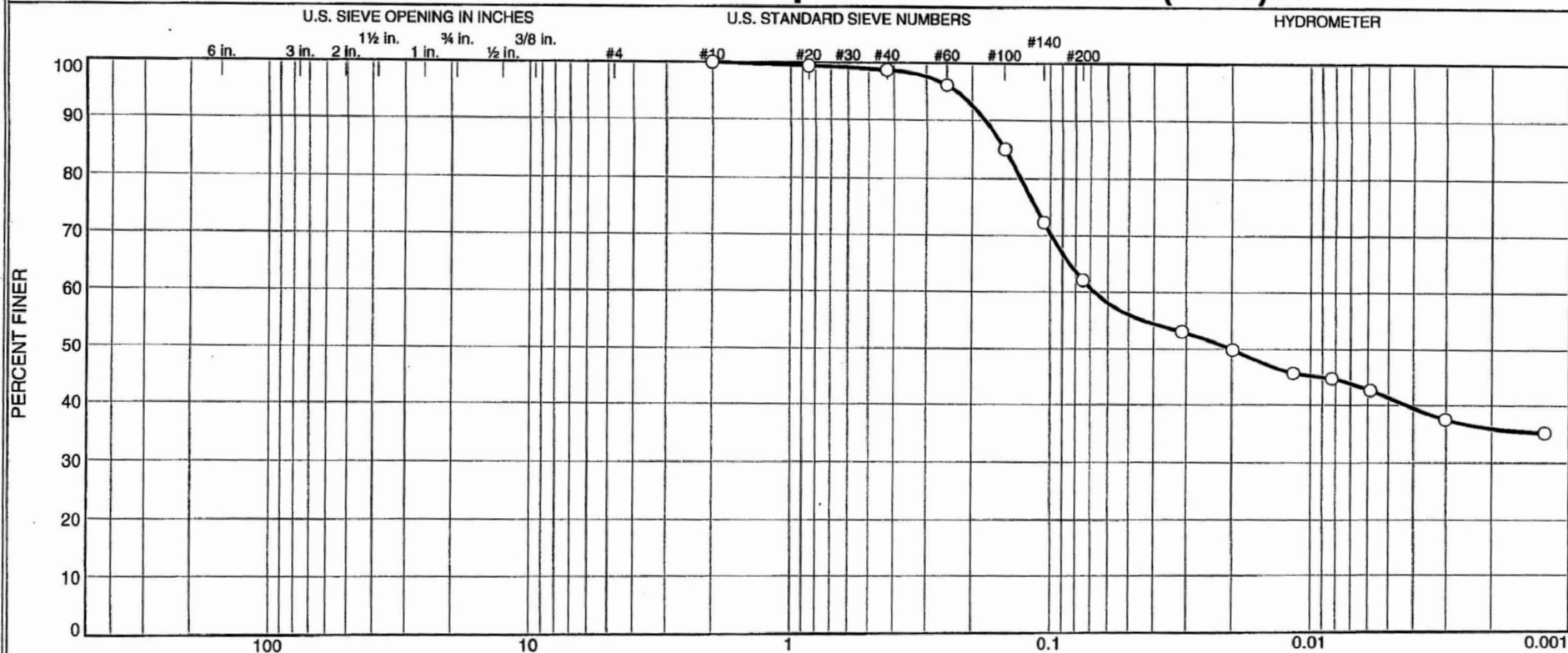
Run No.	1	2	3	4
Wet+Tare	36.69	37.69		
Dry+Tare	33.12	34.00		
Tare	15.50	15.49		
Moisture	20.3	19.9		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
114.33	105.40	7.05	9.1

MACTEC, Inc.

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	36.7	20.8	41.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359	SS-2	3.5-5.0	1-3-08	CL	Reddish Yellow Sandy Lean CLAY	18.7	44	16

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure NA

MACTEC, Inc.

Raleigh, North Carolina

Organic Content = 1.7% (ASTM 2974-07)
Specific Gravity is assumed

Tested By: CS

Checked By: LBJ

DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 3.5-5.0

Sample Number: SS-2

Material Description: Reddish Yellow Sandy Lean CLAY

Date: 1-3-08

Natural Moisture: 18.7

Liquid Limit: 44

Plastic Limit: 16

USCS Class.: CL

Testing Remarks: Organic Content = 1.7% (ASTM 2974-07)

Specific Gravity is assumed

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
211.28	0.00	0.00	#10	0.00	100.0
48.67	0.00	0.00	#20	0.28	99.4
			#40	0.60	98.8
			#60	1.89	96.1
			#100	7.27	85.1
			#140	13.48	72.3
			#200	18.44	62.1

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 = 27.44

Dry weight and tare = 27.01

Tare weight = 15.49

Hygroscopic moisture = 3.7%

Table of composite correction values:

Temp., deg. C: 12.9 29.9

Comp. corr.: -8.0 -2.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	30.0	25.2	0.0131	31.0	11.2	0.0311	53.1
5.00	21.9	28.5	23.7	0.0131	29.5	11.5	0.0199	49.9
15.00	21.9	26.5	21.7	0.0131	27.5	11.8	0.0116	45.7
30.00	22.0	26.0	21.2	0.0131	27.0	11.9	0.0082	44.7
60.00	22.0	25.0	20.2	0.0131	26.0	12.0	0.0059	42.6
240.00	20.9	23.0	17.8	0.0133	24.0	12.4	0.0030	37.6
1440.00	20.6	22.0	16.7	0.0133	23.0	12.5	0.0012	35.2

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	1.2	36.7	37.9	20.8	41.3	62.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0201	0.0676	0.1301	0.1497	0.1779	0.2294

Fineness Modulus
0.18

Dashed line indicates the approximate upper limit boundary for natural soils

CH or OH

CL or OL

CL-ML

ML or OL

MH or OH

PLASTICITY INDEX

LIQUID LIMIT

DCN# EXE808

LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 3.5-5.0

Sample Number: SS-2

Material Description: Reddish Yellow Sandy Lean CLAY

USCS: CL

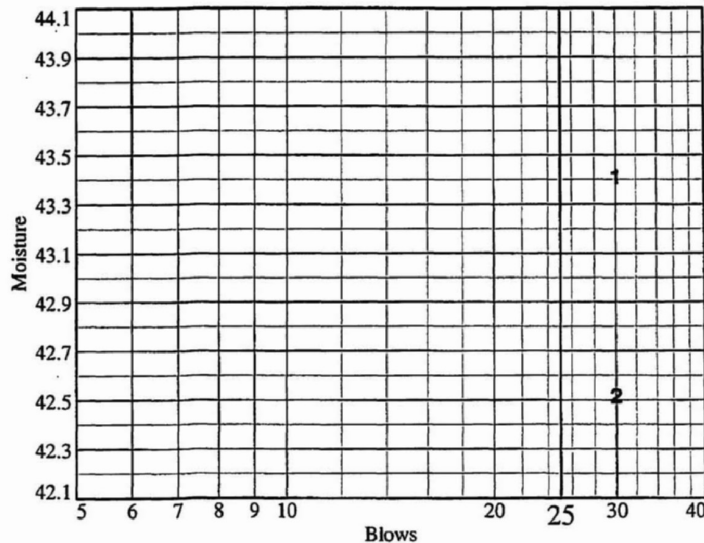
AASHTO: A-7-6(14)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.21	27.37				
Dry+Tare	27.84	22.51				
Tare	15.47	11.08				
# Blows	30	30				
Moisture	43.4	42.5				



Liquid Limit=	44
Plastic Limit=	16
Plasticity Index=	28
Natural Moisture=	18.7
Liquidity Index=	0.1

Plastic Limit Data

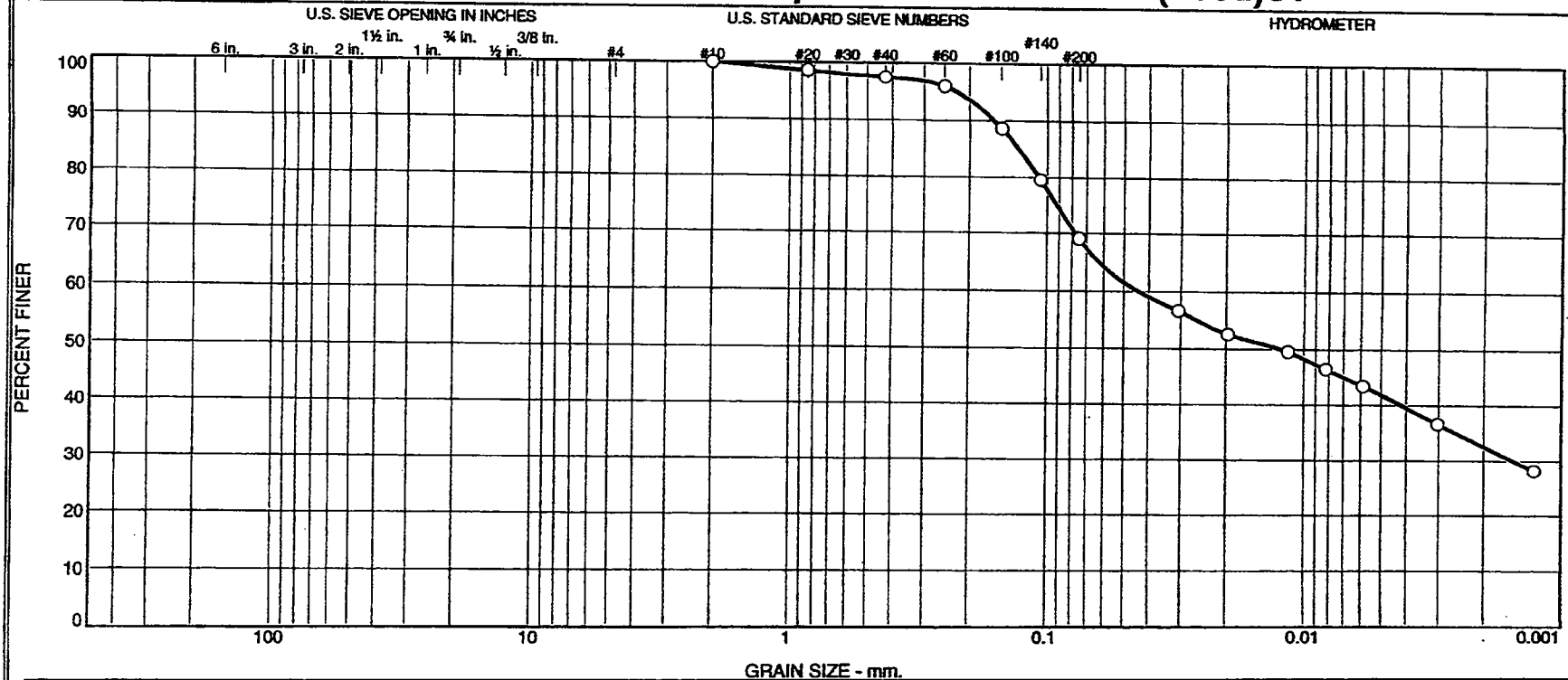
Run No.	1	2	3	4
Wet+Tare	22.63	24.70		
Dry+Tare	21.67	23.48		
Tare	15.60	15.53		
Moisture	15.8	15.3		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
114.08	97.21	6.87	18.7

MACTEC, Inc.

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	2.5	28.4	27.2	41.9

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359	SS-3	6-7.5	1-3-08	CL	Light Yellowish Brown Sandy Lean CLAY	19.0	38	13

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure NA

MACTEC, Inc.

Raleigh, North Carolina

Specific Gravity = 2.680 (ASTM D854-06)
Organic Content = 1.5% (ASTM D2974-07)

Tested By: CS

Checked By: LBJ

DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 6-7.5

Sample Number: SS-3

Material Description: Light Yellowish Brown Sandy Lean CLAY

Date: 1-3-08

Natural Moisture: 19.0

Liquid Limit: 38

Plastic Limit: 13

USCS Class.: CL

Testing Remarks: Specific Gravity = 2.680 (ASTM D854-06)

Organic Content = 1.5% (ASTM D2974-07)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
225.15	0.00	0.00	#10	0.00	100.0
50.17	0.00	0.00	#20	0.71	98.6
			#40	1.26	97.5
			#60	2.05	95.9
			#100	5.67	88.7
			#140	10.25	79.6
			#200	15.52	69.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 50.17

Hygroscopic moisture correction:

Moist weight and tare = 28.16

Dry weight and tare = 27.75

Tare weight = 15.58

Hygroscopic moisture = 3.4%

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 = 2.680

Hydrometer type = 152H

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.0	32.5	27.7	0.0132	33.5	10.8	0.0307	56.7
5.00	22.0	30.5	25.7	0.0132	31.5	11.1	0.0197	52.6
15.00	22.0	29.0	24.2	0.0132	30.0	11.4	0.0115	49.5
30.00	22.0	27.5	22.7	0.0132	28.5	11.6	0.0082	46.5
60.00	22.0	26.0	21.2	0.0132	27.0	11.9	0.0059	43.4
240.00	21.2	23.0	17.9	0.0133	24.0	12.4	0.0030	36.7
1440.00	20.8	19.0	13.8	0.0134	20.0	13.0	0.0013	28.2

MACTEC, Inc.

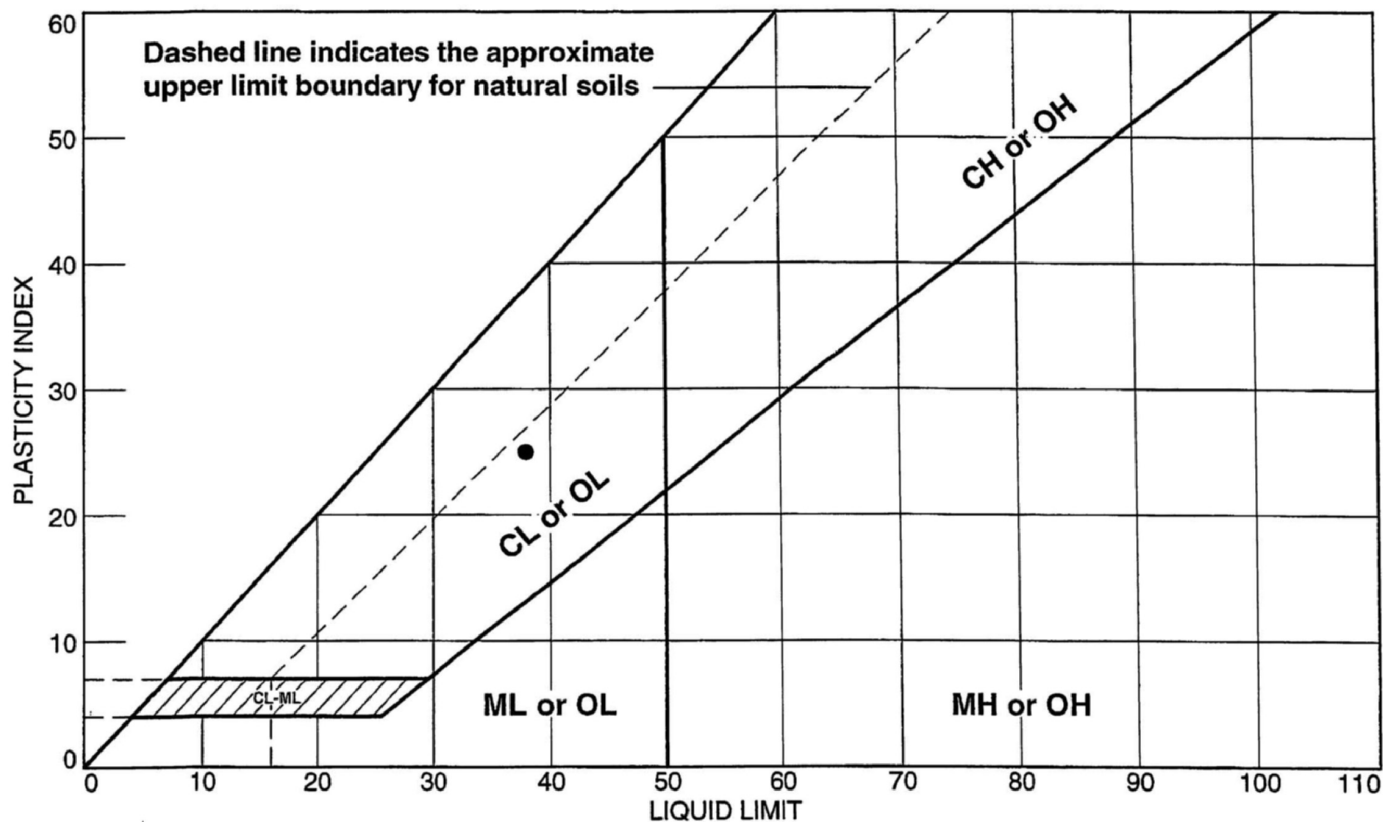
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.5	28.4	30.9	27.2	41.9	69.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0015	0.0123	0.0438	0.1075	0.1284	0.1598	0.2248

Fineness Modulus
0.17

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2359	SS-3	6-7.5	19.0	13	38	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 2-27-08

LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 6-7.5

Sample Number: SS-3

Material Description: Light Yellowish Brown Sandy Lean CLAY

USCS: CL

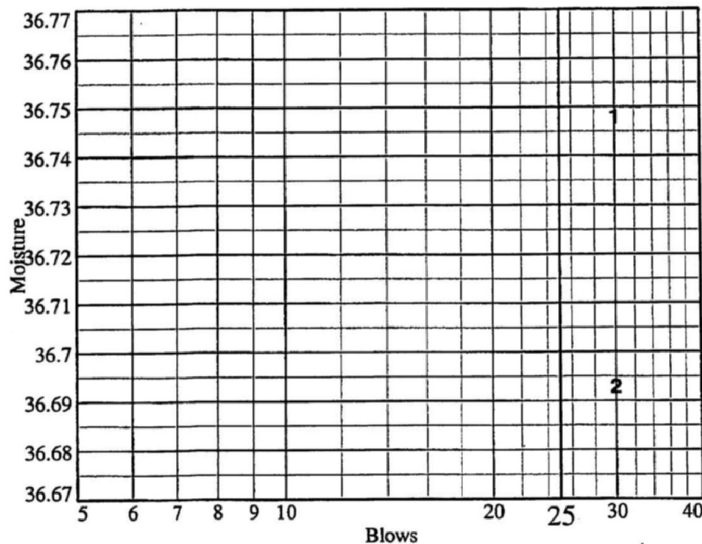
AASHTO: A-6(15)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.25	36.27				
Dry+Tare	26.34	30.70				
Tare	15.70	15.52				
# Blows	30	30				
Moisture	36.7	36.7				



Liquid Limit= 38
 Plastic Limit= 13
 Plasticity Index= 25
 Natural Moisture= 19.0
 Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	24.68	24.38		
Dry+Tare	23.59	23.38		
Tare	15.28	15.65		
Moisture	13.1	12.9		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
176.88	149.74	6.99	19.0

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: 2/13/08

SAMPLE IDENTIFICATION: B-2359 SS-3

(A) Mass of oven-dried soil, grams:	52.03
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.74
(C) Mass of pycnometer, water and soil, grams:	688.36
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.4
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.681
(F) Correction factor:	0.99970
(G x F) SPECIFIC GRAVITY @ 20°C:	2.680

MATERIAL TESTED:

☒

- # 4

☐

- # 10

PREPARATION METHOD:

☒

DRY

☐

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100

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 2-27-08

DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/26/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 8.5-10.0

Sample Number: SS-4

Material Description: Light Yellowish Brown Lean CLAY with sand

Date: 1-3-08

Natural Moisture: 19.1

Liquid Limit: 32

Plastic Limit: 12

USCS Class.: CL

Testing Remarks: Specific Gravity is assumed

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
245.33	0.00	0.00	#10	0.00	100.0
51.68	0.00	0.00	#20	0.83	98.4
			#40	1.53	97.0
			#60	2.29	95.6
			#100	6.04	88.3
			#140	9.79	81.1
			#200	12.23	76.3

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 51.68

Hygroscopic moisture correction:

Moist weight and tare = 28.96

Dry weight and tare = 28.55

Tare weight = 15.54

Hygroscopic moisture = 3.2%

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 = 2.700

Hydrometer type = 152H

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	39.0	34.0	0.0132	40.0	9.7	0.0291	67.2
5.00	21.5	37.0	32.0	0.0132	38.0	10.1	0.0187	63.2
15.00	21.7	33.0	28.1	0.0132	34.0	10.7	0.0111	55.5
30.00	21.7	30.0	25.1	0.0132	31.0	11.2	0.0080	49.6
60.00	21.7	28.0	23.1	0.0132	29.0	11.5	0.0058	45.6
240.00	22.4	20.5	15.9	0.0131	21.5	12.8	0.0030	31.3
1440.00	21.8	12.0	7.1	0.0131	13.0	14.2	0.0013	14.1

MACTEC, Inc.

Fractional Components

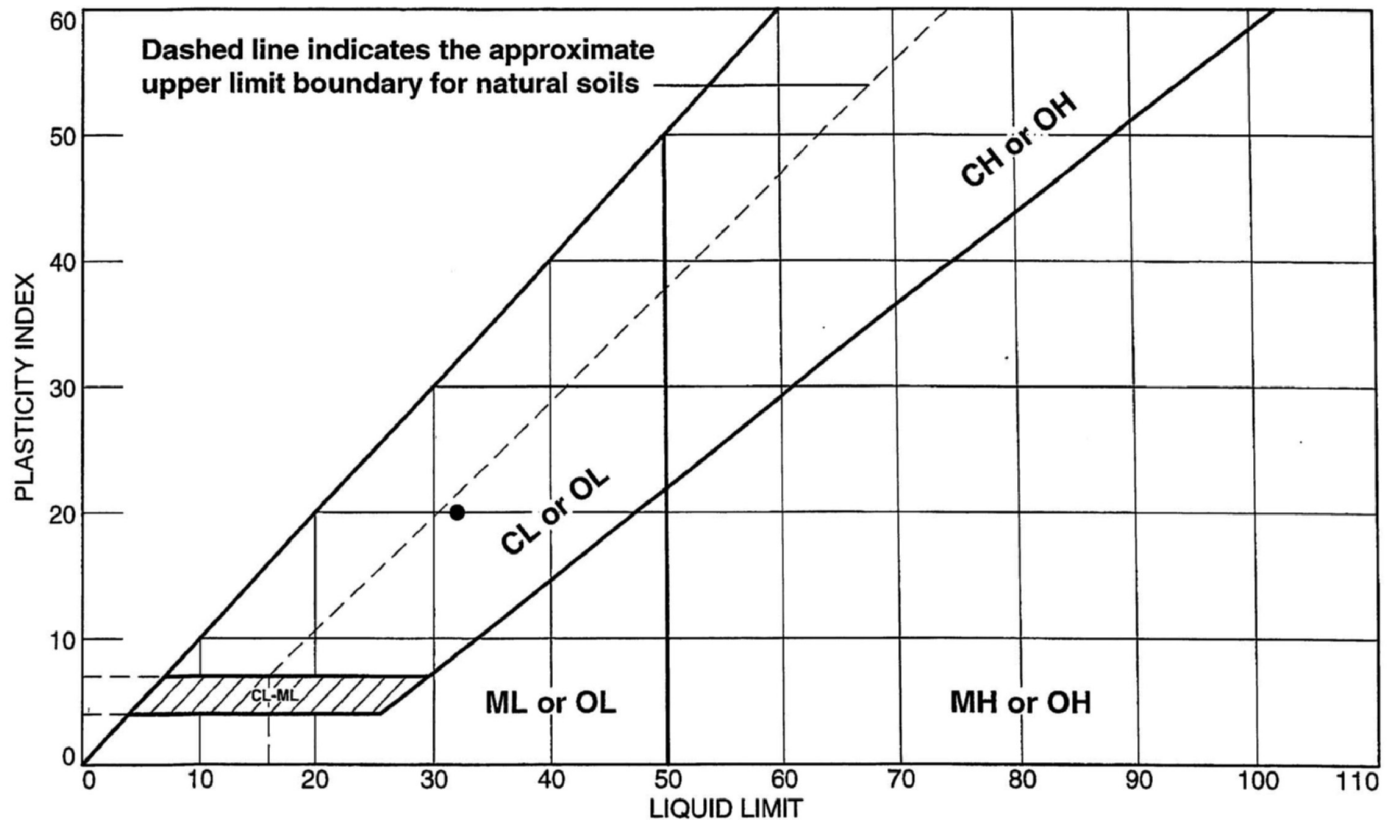
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	3.0	20.7	23.7	33.1	43.2	76.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
	0.0014	0.0018	0.0029	0.0083	0.0146	0.0996	0.1285	0.1636	0.2336

Fineness Modulus
0.18

MACTEC, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2359	SS-4	8.5-10.0	19.1	12	32	20	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 2-27-08

LIQUID AND PLASTIC LIMIT TEST DATA

2/26/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 8.5-10.0

Sample Number: SS-4

Material Description: Light Yellowish Brown Lean CLAY with sand

USCS: CL

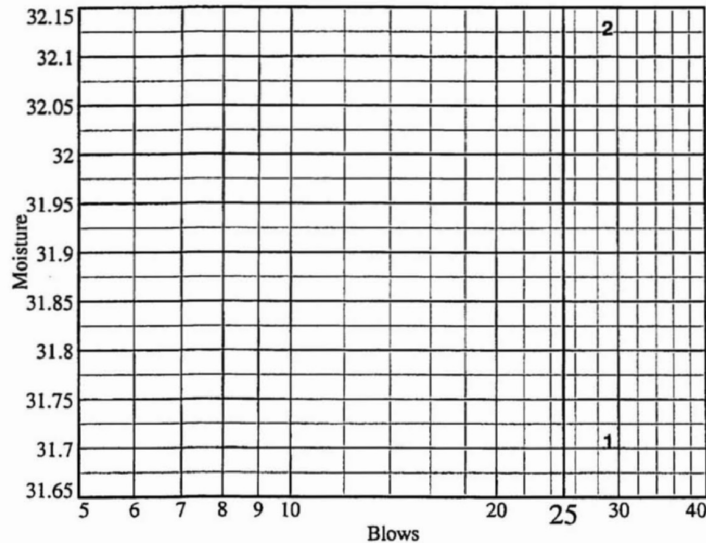
AASHTO: A-6(13)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.40	36.99				
Dry+Tare	29.85	31.74				
Tare	15.50	15.40				
# Blows	29	29				
Moisture	31.7	32.1				



Liquid Limit= 32
 Plastic Limit= 12
 Plasticity Index= 20
 Natural Moisture= 19.1
 Liquidity Index= 0.4

Plastic Limit Data

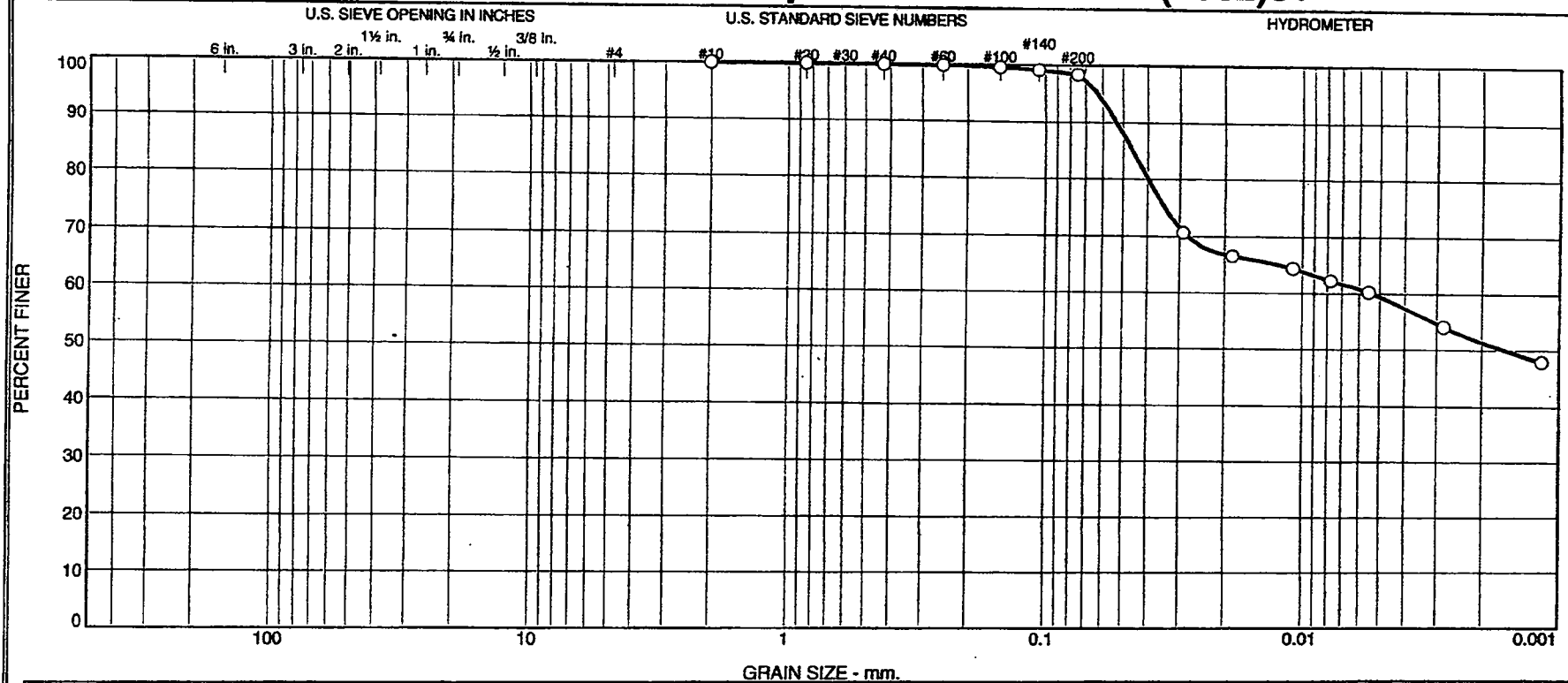
Run No.	1	2	3	4
Wet+Tare	23.93	24.13		
Dry+Tare	23.03	23.23		
Tare	15.50	15.57		
Moisture	12.0	11.7		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
139.44	118.11	6.66	19.1

MACTEC, Inc.

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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	1.5	38.9	59.5

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359	SS-5	11.0-12.5	1-3-08	CH	Light Greenish Gray Fat CLAY	17.7	51	17

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure N/A

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS

Checked By: I.R.I.

DSC 2-27-08

GRAIN SIZE DISTRIBUTION TEST DATA

2/26/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 11.0-12.5

Sample Number: SS-5

Material Description: Light Greenish Gray Fat CLAY

Date: 1-3-08

Natural Moisture: 17.7

Liquid Limit: 51

Plastic Limit: 17

USCS Class.: CH

Testing Remarks: Specific Gravity is assumed

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
256.63	0.00	0.00	#10	0.00	100.0
49.73	0.00	0.00	#20	0.02	100.0
			#40	0.04	99.9
			#60	0.07	99.9
			#100	0.23	99.5
			#140	0.43	99.1
			#200	0.80	98.4

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 49.73

Hygroscopic moisture correction:

Moist weight and tare = 26.61

Dry weight and tare = 26.18

Tare weight = 15.69

Hygroscopic moisture = 4.1%

Table of composite correction values:

Temp., deg. C: 12.9 29.8

Comp. corr.: -8.0 -2.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	39.0	34.2	0.0131	40.0	9.7	0.0290	70.7
5.00	21.8	37.0	32.2	0.0131	38.0	10.1	0.0187	66.6
15.00	21.7	36.0	31.1	0.0132	37.0	10.2	0.0109	64.4
30.00	21.6	35.0	30.1	0.0132	36.0	10.4	0.0078	62.3
60.00	21.7	34.0	29.1	0.0132	35.0	10.6	0.0055	60.3
240.00	21.8	31.0	26.2	0.0131	32.0	11.0	0.0028	54.2
1451.00	21.9	28.0	23.2	0.0131	29.0	11.5	0.0012	48.0

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	0.1	1.5	1.6	38.9	59.5	98.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0016	0.0053	0.0399	0.0459	0.0530	0.0627

Fineness Modulus
0.01

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

The chart shows the relationship between Plasticity Index (Y-axis) and Liquid Limit (X-axis). The regions are defined as follows:

- CL or OL** (Shaded region, low plasticity clays)
- CH or OH** (High plasticity clays)
- MH or OH** (High plasticity silts)
- ML or OL** (Low plasticity silts)

A dashed line indicates the approximate upper limit boundary for natural soils. A data point is plotted at Liquid Limit = 52 and Plasticity Index = 34, which falls within the **CH or OH** region.

DCN# EXE808

LIQUID AND PLASTIC LIMIT TEST DATA

2/26/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 11.0-12.5

Sample Number: SS-5

Material Description: Light Greenish Gray Fat CLAY

USCS: CH

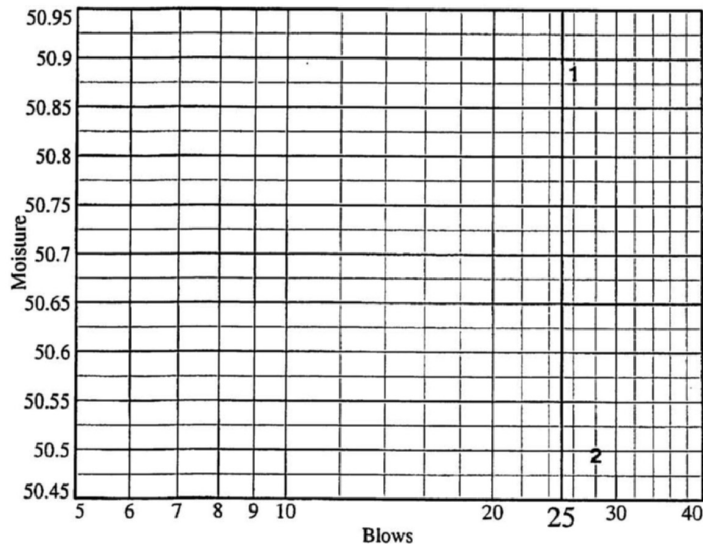
AASHTO: A-7-6(36)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.36	29.07				
Dry+Tare	28.04	24.49				
Tare	15.62	15.42				
# Blows	26	28				
Moisture	50.9	50.5				



Liquid Limit= 51
 Plastic Limit= 17
 Plasticity Index= 34
 Natural Moisture= 17.7
 Liquidity Index= 0.0

Plastic Limit Data

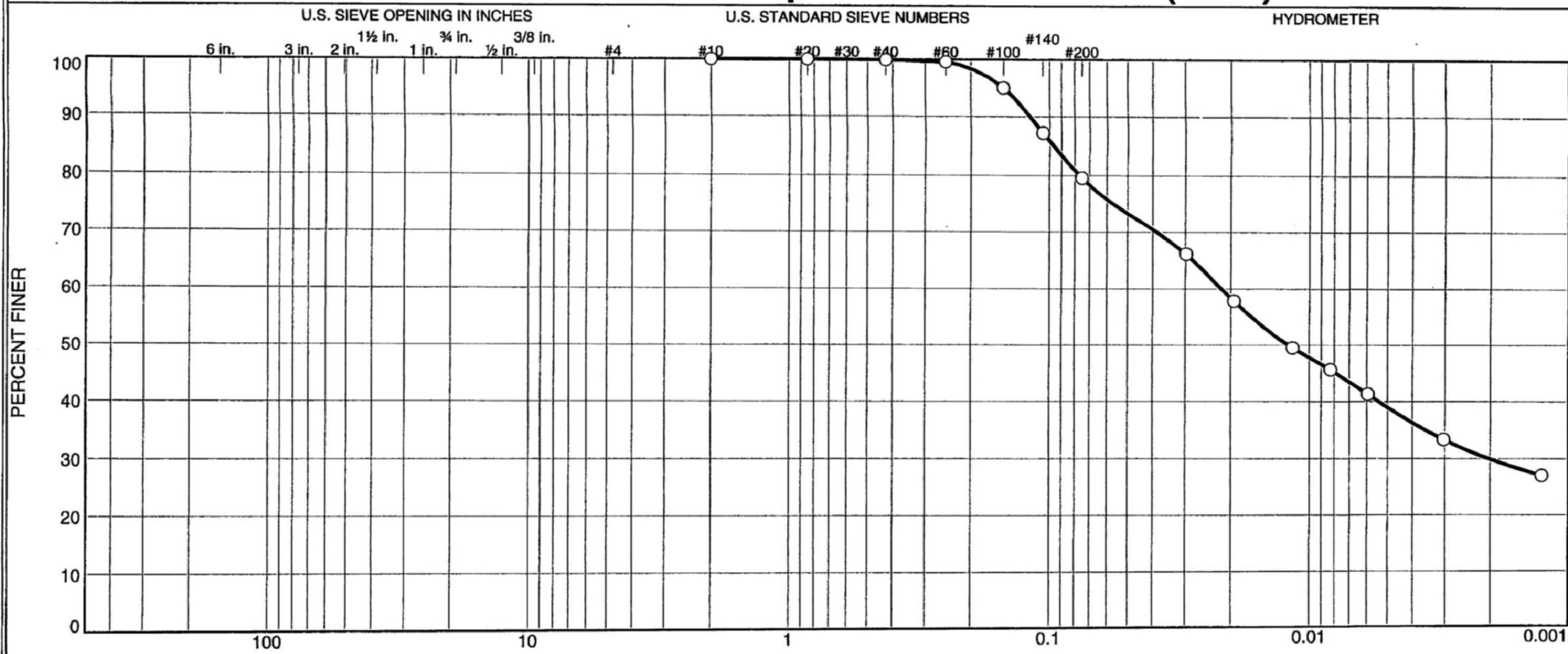
Run No.	1	2	3	4
Wet+Tare	23.66	24.22		
Dry+Tare	22.45	23.01		
Tare	15.46	15.60		
Moisture	17.3	16.3		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
117.69	101.04	6.80	17.7

MACTEC, Inc.

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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	20.3	40.6	39.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2359	SS-6	13.5-15.0	1-3-08	CL	Brownish Yellow Lean CLAY with sand	15.9	37	15

Client Bechtel	MACTEC, Inc. Raleigh, North Carolina	○ Specific Gravity is assumed
Project Exelon Texas COL (Victoria Reservoir)		
Project No. 6468071777		

Figure *NA*

GRAIN SIZE DISTRIBUTION TEST DATA

2/26/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B-2359

Depth: 13.5-15.0

Sample Number: SS-6

Material Description: Brownish Yellow Lean CLAY with sand

Date: 1-3-08

Natural Moisture: 15.9

Liquid Limit: 37

Plastic Limit: 15

USCS Class.: CL

Testing Remarks: Specific Gravity is assumed

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
234.73	0.00	0.00	#10	0.00	100.0
48.99	0.00	0.00	#20	0.00	100.0
			#40	0.04	99.9
			#60	0.21	99.6
			#100	2.52	94.9
			#140	6.18	87.4
			#200	10.00	79.6

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 = 27.92

Dry weight and tare = 27.57

Tare weight = 15.54

Hygroscopic moisture = 2.9%

Table of composite correction values:

Temp., deg. C: 12.9 29.8

Comp. corr.: -8.0 -2.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.9	37.0	31.8	0.0133	38.0	10.1	0.0298	66.1
5.00	20.9	33.0	27.8	0.0133	34.0	10.7	0.0195	57.8
15.00	20.9	29.0	23.8	0.0133	30.0	11.4	0.0116	49.5
30.00	21.2	27.0	21.9	0.0132	28.0	11.7	0.0083	45.6
60.00	21.0	25.0	19.9	0.0133	26.0	12.0	0.0059	41.3
240.00	21.5	21.0	16.1	0.0132	22.0	12.7	0.0030	33.3
1440.00	21.4	18.0	13.0	0.0132	19.0	13.2	0.0013	27.0

MACTEC, Inc.