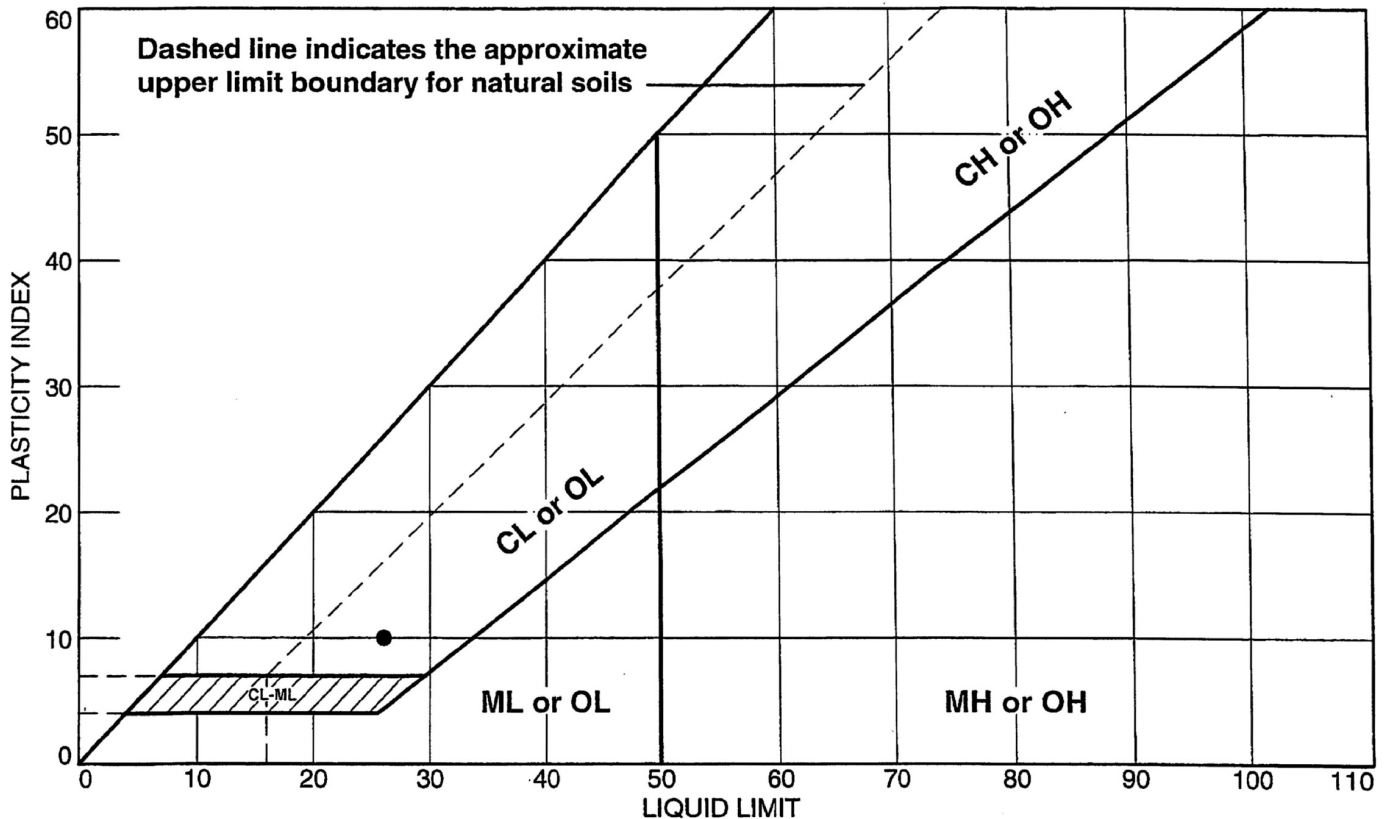


LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2182A	SS-20	83.5-85	17.3	16	26	10	SC

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project No.: 6468071777

Figure NA

Tested By: CS

Checked By: LBJ

DSC 1-25-08

LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 83.5-85

Sample Number: SS-20

Material Description: Light Gray Clayey SAND

USCS: SC

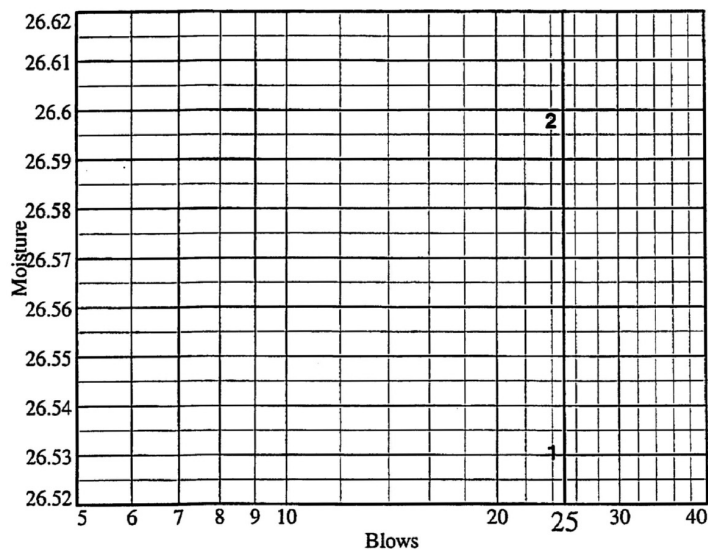
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.99	33.88				
Dry+Tare	25.39	30.01				
Tare	15.59	15.46				
# Blows	24	24				
Moisture	26.5	26.6				



Liquid Limit= 26
 Plastic Limit= 16
 Plasticity Index= 10
 Natural Moisture= 17.3
 Liquidity Index= 0.1

Plastic Limit Data

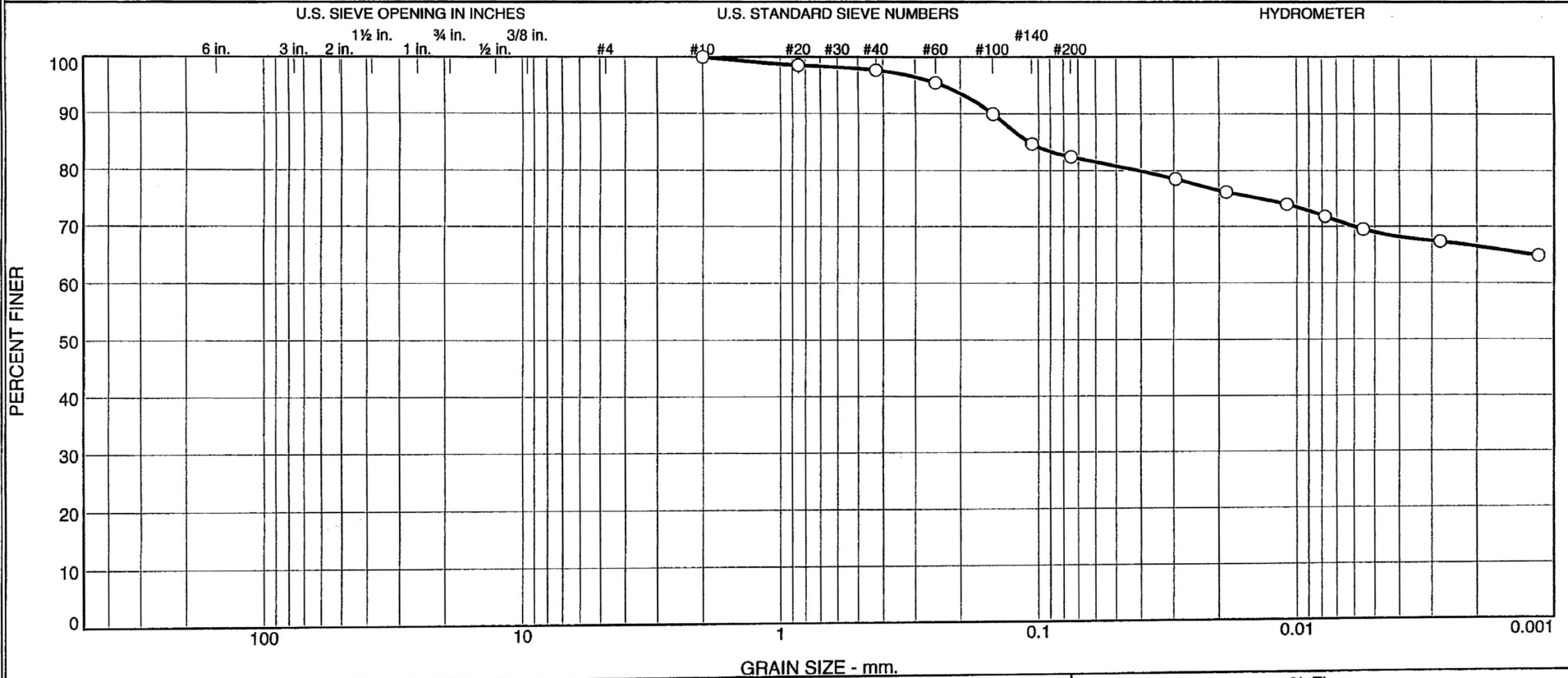
Run No.	1	2	3	4
Wet+Tare	24.56	22.67		
Dry+Tare	23.30	21.65		
Tare	15.48	15.45		
Moisture	16.1	16.5		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
161.11	138.78	9.42	17.3

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	2.3	15.3	13.4	69.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2182A	SS-21	88.5-90	11/29/07	CH	Pale Brown Fat CLAY with sand	29.7	75	23

Client Bechtel	MACTEC, Inc. Raleigh, North Carolina	○ Specific Gravity = 2.664 (ASTM D-854-06) Organic Content = 2.0% (ASTM D 2974-07)
Project Exelon Texas COL (Victoria)		
Project No. 6468071777		
Figure NA		

GRAIN SIZE DISTRIBUTION TEST DATA

3/12/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 88.5-90

Sample Number: SS-21

Material Description: Pale Brown Fat CLAY with sand

Date: 11/29/07

Natural Moisture: 29.7

Liquid Limit: 75

Plastic Limit: 23

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.664 (ASTM D-854-06)

Organic Content = 2.0% (ASTM D 2974-07)

Tested by: CS

Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
243.43	0.00	0.00	#10	0.00	100.0
46.97	0.00	0.00	#20	0.67	98.6
			#40	1.09	97.7
			#60	2.16	95.4
			#100	4.71	90.0
			#140	7.16	84.8
			#200	8.26	82.4

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 46.97

Hygroscopic moisture correction:

Moist weight and tare = 27.72

Dry weight and tare = 26.89

Tare weight = 15.36

Hygroscopic moisture = 7.2%

Table of composite correction values:

Temp., deg. C: 12.2 27.1

Comp. corr.: -7.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.664

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	R _m	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	39.0	34.5	0.0133	40.0	9.7	0.0294	78.5
5.00	21.5	38.0	33.5	0.0133	39.0	9.9	0.0188	76.2
15.00	21.6	37.0	32.5	0.0133	38.0	10.1	0.0109	74.0
30.00	21.7	36.0	31.6	0.0133	37.0	10.2	0.0078	71.8
60.00	21.7	35.0	30.6	0.0133	36.0	10.4	0.0055	69.5
240.00	21.9	34.0	29.6	0.0133	35.0	10.6	0.0028	67.4
1440.00	21.6	33.0	28.5	0.0133	34.0	10.7	0.0011	64.9

MACTEC, Inc.

Fractional Components

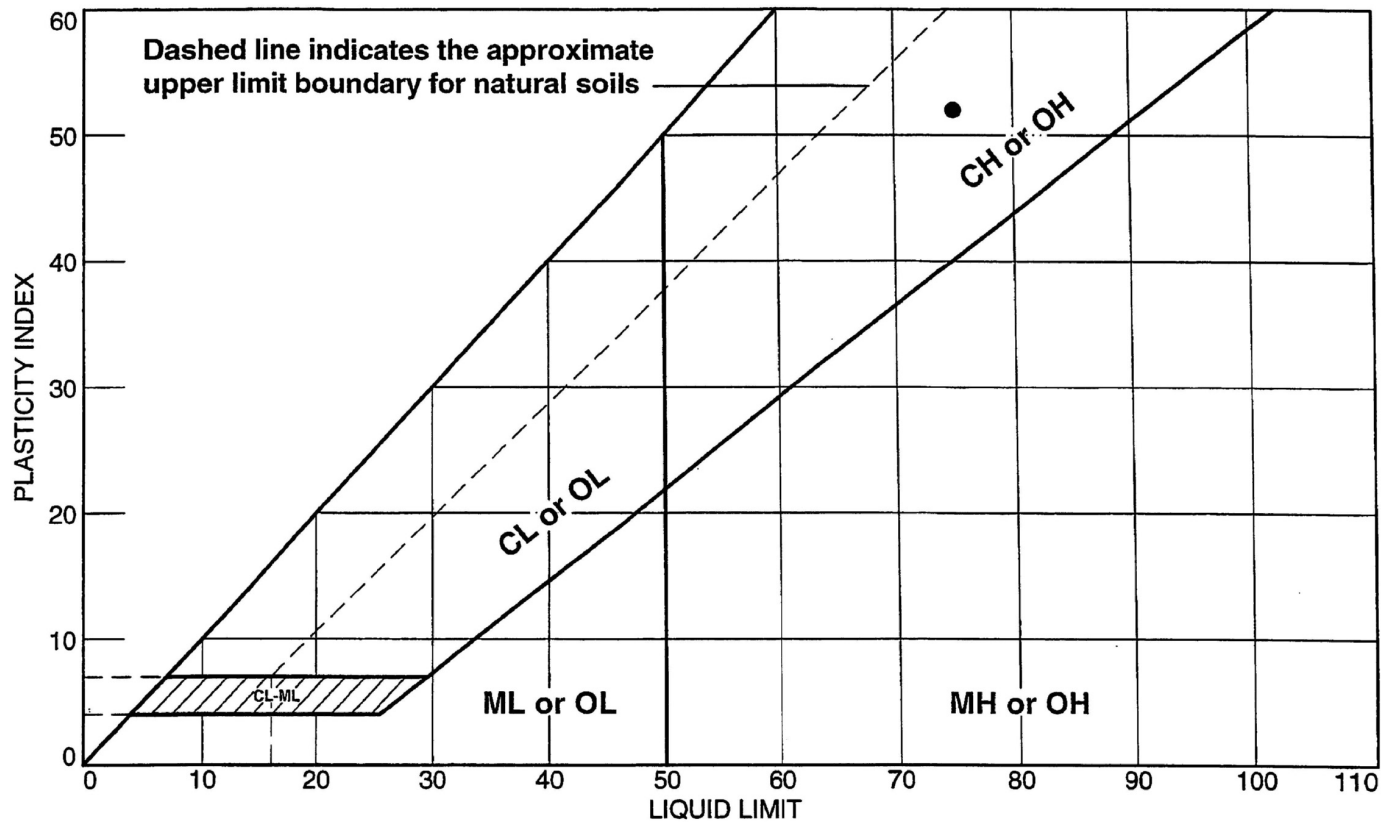
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.3	15.3	17.6	13.4	69.0	82.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
						0.0411	0.1082	0.1503	0.2365

Fineness Modulus
0.16

MACTEC, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2182A	SS-21	88.5-90	29.7	23	75	52	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project No.: 6468071777

Figure NA

Tested By: CS

Checked By: LBJ

DSC 1-25-08

LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 88.5-90

Sample Number: SS-21

Material Description: Pale Brown Fat CLAY with sand

USCS: CH

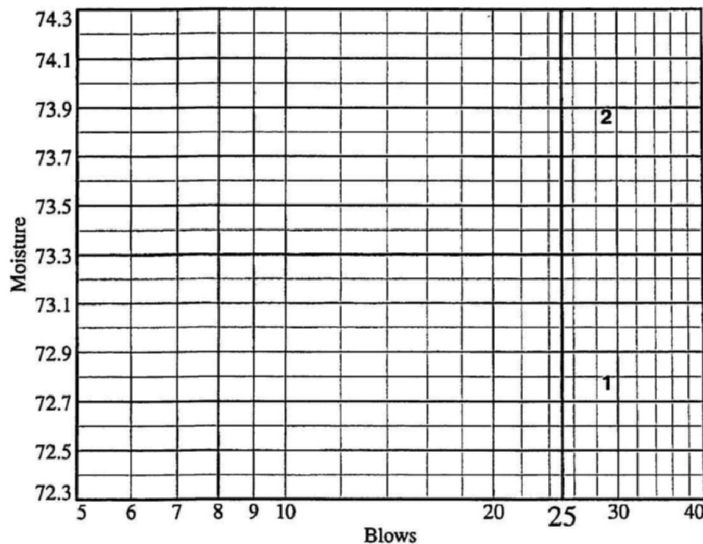
AASHTO: A-7-6(46)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.21	29.73				
Dry+Tare	21.12	23.71				
Tare	15.50	15.56				
# Blows	29	29				
Moisture	72.8	73.9				



Liquid Limit= 75
 Plastic Limit= 23
 Plasticity Index= 52
 Natural Moisture= 29.7
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	22.84	23.01		
Dry+Tare	21.50	21.59		
Tare	15.70	15.49		
Moisture	23.1	23.3		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
148.63	116.14	6.82	29.7

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: 12/17/07

SAMPLE IDENTIFICATION: B-2182A SS-21

(A) Mass of oven-dried soil, grams:	54.67
(B) Mass of pycnometer filled with water at test temperature (T), grams:	654.80
(C) Mass of pycnometer, water and soil, grams:	688.96
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.2
(G) Specific Gravity at observed temperature:	$A / [A + (B - C)]$ 2.666
(F) <i>Correction factor:</i>	0.99929
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.664

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-5

TESTED BY: CS

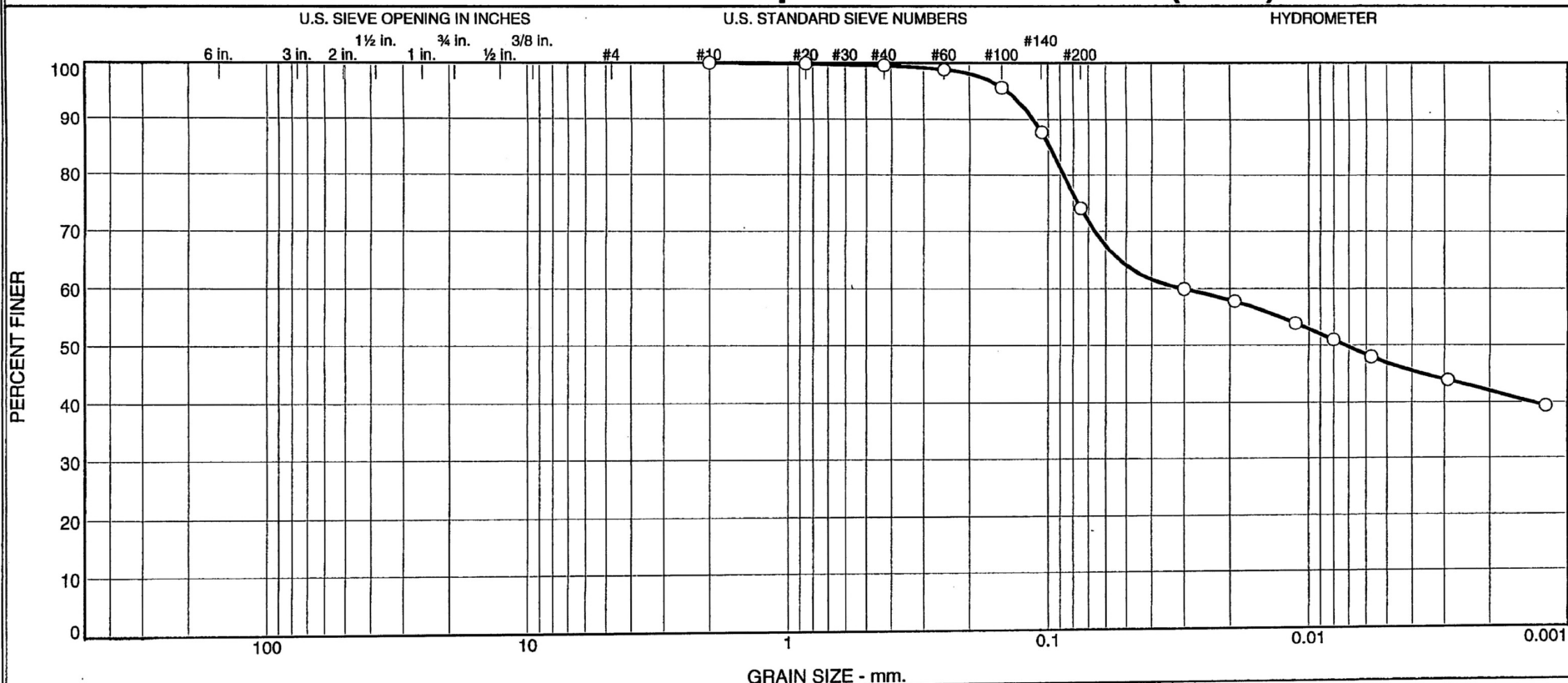
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY:

Brian Johnson

DSC 1-25-08

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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	25.4	27.2	46.9

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2182A	SS-22	93.5-95	11/29/07	CL	Pale Brown Lean CLAY with sand	14.3	26	14

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

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 93.5-95

Sample Number: SS-22

Material Description: Pale Brown Lean CLAY with sand

Date: 11/29/07

Natural Moisture: 14.3

Liquid Limit: 26

Plastic Limit: 14

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
264.17	0.00	0.00	#10	0.00	100.0
49.53	0.00	0.00	#20	0.07	99.9
			#40	0.24	99.5
			#60	0.59	98.8
			#100	2.17	95.6
			#140	6.07	87.7
			#200	12.84	74.1

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 49.53

Hygroscopic moisture correction:

Moist weight and tare = 33.10

Dry weight and tare = 32.97

Tare weight = 21.20

Hygroscopic moisture = 1.1%

Table of composite correction values:

Temp., deg. C: 12.2 27.1

Comp. corr.: -7.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.3	34.0	29.7	0.0131	35.0	10.6	0.0300	60.0
5.00	22.1	33.0	28.7	0.0131	34.0	10.7	0.0192	57.8
15.00	22.2	31.0	26.7	0.0131	32.0	11.0	0.0112	53.9
30.00	22.4	29.5	25.2	0.0131	30.5	11.3	0.0080	50.9
60.00	22.4	28.0	23.7	0.0131	29.0	11.5	0.0057	47.9
240.00	22.4	26.0	21.7	0.0131	27.0	11.9	0.0029	43.9
1440.00	21.5	24.0	19.5	0.0132	25.0	12.2	0.0012	39.4

MACTEC, Inc.

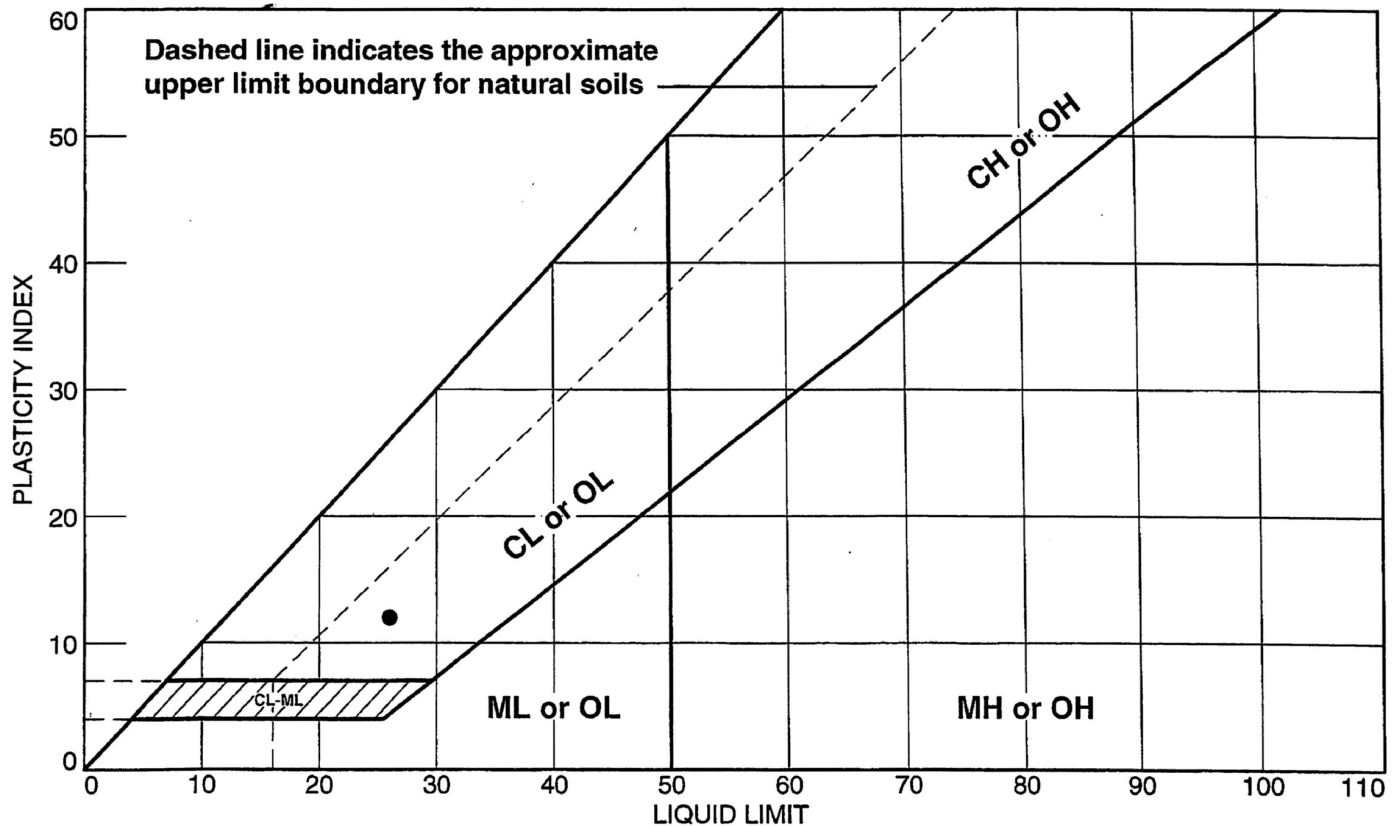
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	25.4	25.9	27.2	46.9	74.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.0072	0.0302	0.0870	0.0984	0.1139	0.1437

Fineness Modulus
0.06

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	Boring B-2182A	SS-22	93.5-95	14.3	14	26	12	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project No.: 6468071777

Figure NA

Tested By: CS

Checked By: LBJ

DSC 1-25-08

LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 93.5-95

Sample Number: SS-22

Material Description: Pale Brown Lean CLAY with sand

USCS: CL

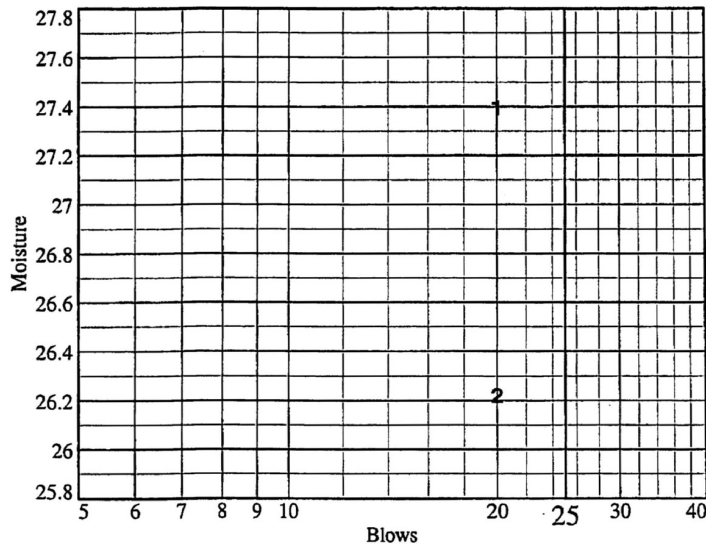
AASHTO: A-6(6)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.98	31.15				
Dry+Tare	22.98	27.93				
Tare	15.68	15.65				
# Blows	20	20				
Moisture	27.4	26.2				



Liquid Limit= 26
 Plastic Limit= 14
 Plasticity Index= 12
 Natural Moisture= 14.3
 Liquidity Index= 0.0

Plastic Limit Data

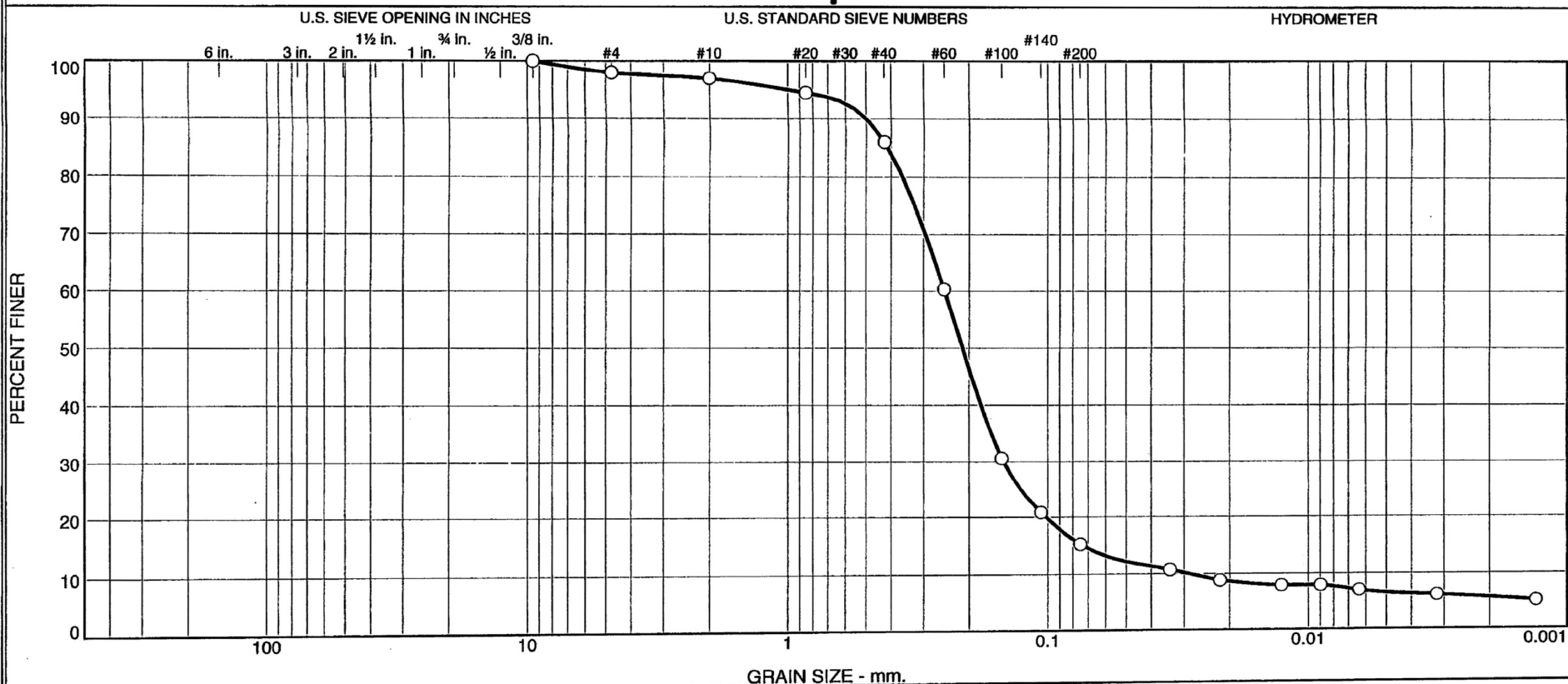
Run No.	1	2	3	4
Wet+Tare	22.57	25.84		
Dry+Tare	21.69	24.56		
Tare	15.54	15.66		
Moisture	14.3	14.4		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
129.83	114.47	6.73	14.3

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.0	1.0	11.0	70.7	8.8	6.5

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2182A	SS-23	98.5-100	11/29/07	SM	Pinkish Gray Silty SAND	ND	NV	NP

Client Bechtel

Project Exelon Texas COL (Victoria)

MACTEC, Inc.

 ○ Specific Gravity is assumed
 ND = Not Determined.

Project No. 6468071777

Figure **NA**
Raleigh, North Carolina

Tested By: CS

Checked By: LBJ ZHU 4/30/08

GRAIN SIZE DISTRIBUTION TEST DATA

4/9/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 98.5-100

Sample Number: SS-23

Material Description: Pinkish Gray Silty SAND

Date: 11/29/07

Natural Moisture: ND

Liquid Limit: NV

Plastic Limit: NP

USCS Class.: SM

Testing Remarks: Specific Gravity is assumed

ND = Not Determined.

Tested by: CS

Checked by: LBJ

Siege Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
316.92	0.00	0.00	3/8"	0.00	100.0
			#4	6.30	98.0
			#10	9.60	97.0
105.32	0.00	0.00	#20	2.73	94.5
			#40	11.89	86.0
			#60	39.79	60.3
			#100	72.04	30.6
			#140	82.70	20.8
			#200	88.72	15.3

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 97.0

Weight of hydrometer sample = 105.32

Hygroscopic moisture correction:

Moist weight and tare = 31.96

Dry weight and tare = 31.90

Tare weight = 20.15

Hygroscopic moisture = 0.5%

Table of composite correction values:

Temp., deg. C: 12.2 27.1

Comp. corr.: -7.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

Hydrometer type = 152H

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.5	16.0	11.8	0.0130	17.0	13.5	0.0339	10.8
5.00	22.2	14.0	9.7	0.0131	15.0	13.8	0.0218	8.9
15.00	22.2	13.0	8.7	0.0131	14.0	14.0	0.0126	7.9
30.00	22.2	13.0	8.7	0.0131	14.0	14.0	0.0089	7.9
60.00	22.1	12.0	7.7	0.0131	13.0	14.2	0.0064	7.0
240.00	22.2	11.0	6.7	0.0131	12.0	14.3	0.0032	6.1
1440.00	21.6	10.0	5.5	0.0132	11.0	14.5	0.0013	5.1

MACTEC, Inc.

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.0	2.0	1.0	11.0	70.7	82.7	8.8	6.5	15.3

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0284	0.0732	0.1016	0.1477	0.2123	0.2486	0.3614	0.4117	0.4987	1.0065

Fineness Modulus	C _u	C _c
1.15	8.77	3.09

MACTEC, Inc.

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

This chart is used to classify soils based on their Liquid Limit (LL) and Plasticity Index (PI). The y-axis represents the Plasticity Index (0 to 60), and the x-axis represents the Liquid Limit (0 to 110). The chart is divided into several regions:

- CL or OL** (Shaded region): Clay of low plasticity.
- CH or OH** (Top right region): Clay of high plasticity.
- ML or OL** (Bottom left region): Silt of low plasticity.
- MH or OH** (Bottom right region): Silt of high plasticity.

A dashed line indicates the approximate upper limit boundary for natural soils. The chart also shows the A-line and U-line boundaries for the liquid limit and plasticity index.

DCN# EXE805

LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 98.5-100

Sample Number: SS-23

Material Description: Pinkish Gray Silty SAND

USCS: SM

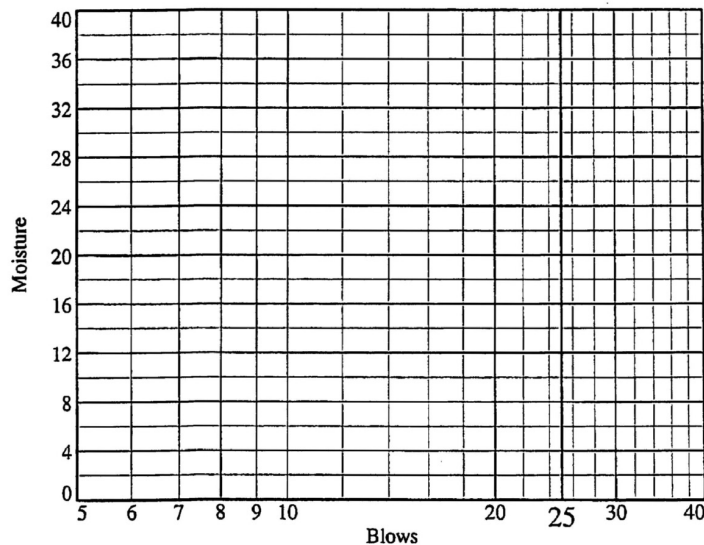
AASHTO: A-2-4(0)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare						
Dry+Tare						
Tare						
# Blows						
Moisture						



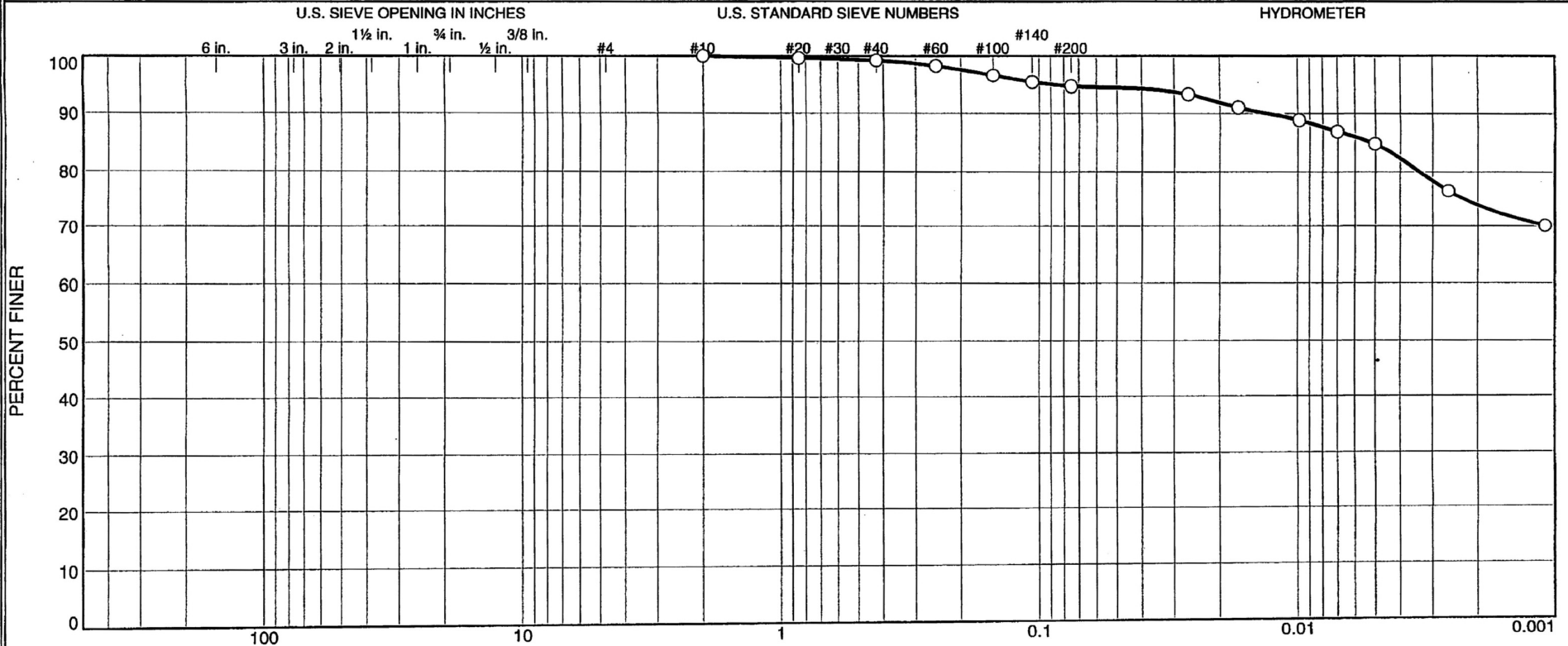
Liquid Limit= NV
 Plastic Limit= NP
 Plasticity Index= NP
 Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare				
Dry+Tare				
Tare				
Moisture				

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	0.8	4.6	9.8	84.8

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2182A	SS-24	108.2-109.7	11/29/07	CH	Pale Brown Fat CLAY	27.6	77	25

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

Tested By: CS

Checked By: LBJ ZHU 4/30/08

GRAIN SIZE DISTRIBUTION TEST DATA

4/9/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project Number: 6468071777

Location: Boring B-2182A

Depth: 108.2-109.7

Sample Number: SS-24

Material Description: Pale Brown Fat CLAY

Date: 11/29/07

Natural Moisture: 27.6

Liquid Limit: 77

Plastic Limit: 25

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
191.92	0.00	0.00	#10	0.00	100.0
50.58	0.00	0.00	#20	0.18	99.6
			#40	0.41	99.2
			#60	0.89	98.2
			#100	1.75	96.5
			#140	2.34	95.4
			#200	2.71	94.6

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 50.58

Hygroscopic moisture correction:

Moist weight and tare = 33.00

Dry weight and tare = 32.22

Tare weight = 21.00

Hygroscopic moisture = 7.0%

Table of composite correction values:

Temp., deg. C: 12.2 27.1

Comp. corr.: -7.0 -3.0

Meniscus correction only = 1.0

Specific gravity of solids = 2.700

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	49.0	44.6	0.0131	50.0	8.1	0.0264	93.3
5.00	21.6	48.0	43.5	0.0132	49.0	8.3	0.0169	91.0
15.00	21.6	47.0	42.5	0.0132	48.0	8.4	0.0099	88.9
30.00	21.8	46.0	41.6	0.0131	47.0	8.6	0.0070	86.9
60.00	21.8	45.0	40.6	0.0131	46.0	8.8	0.0050	84.8
240.00	21.9	41.0	36.6	0.0131	42.0	9.4	0.0026	76.5
1440.00	21.6	38.0	33.5	0.0132	39.0	9.9	0.0011	70.1

MACTEC, Inc.