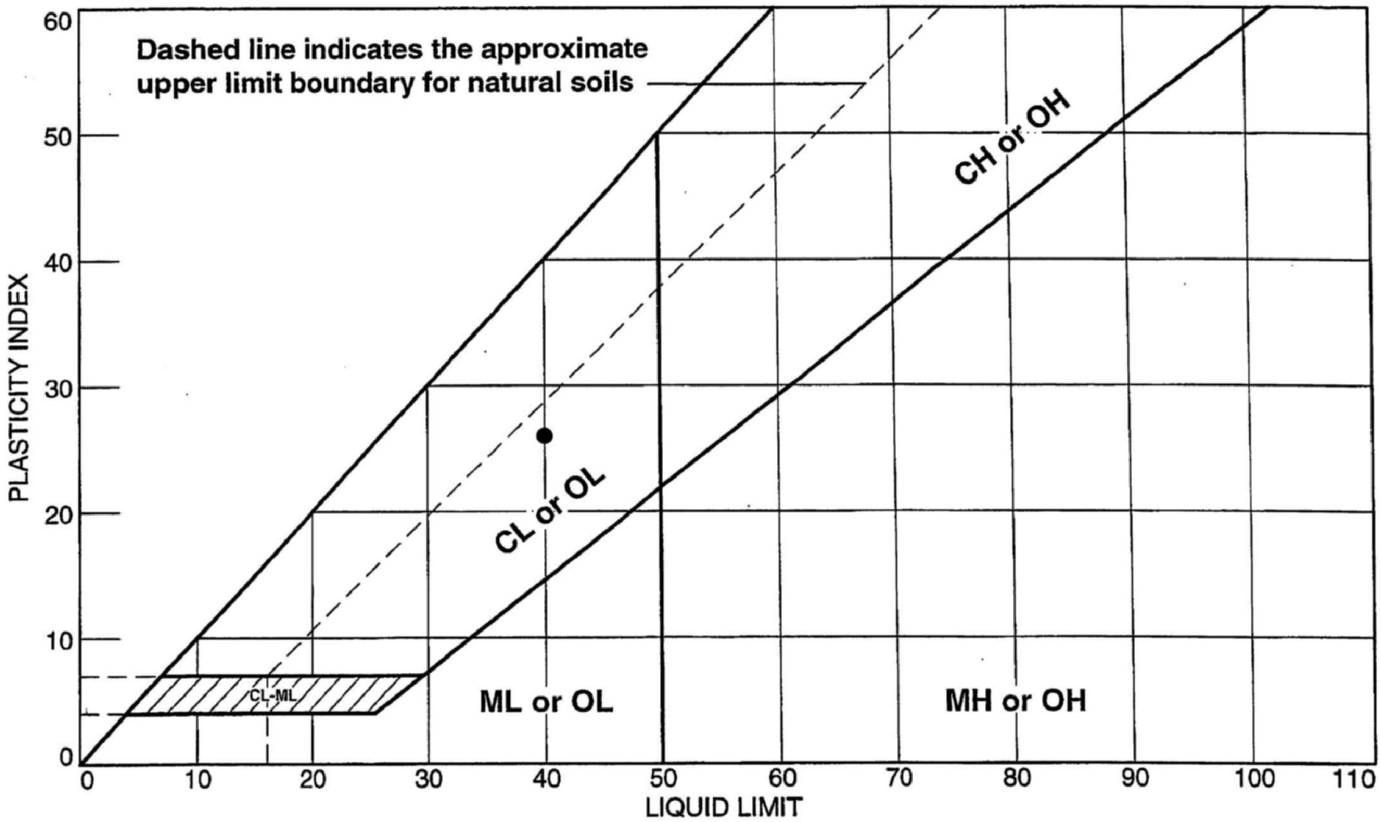
LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2321	SS-1	0.0-1.5	19.4	14	40	26	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 2-27-08

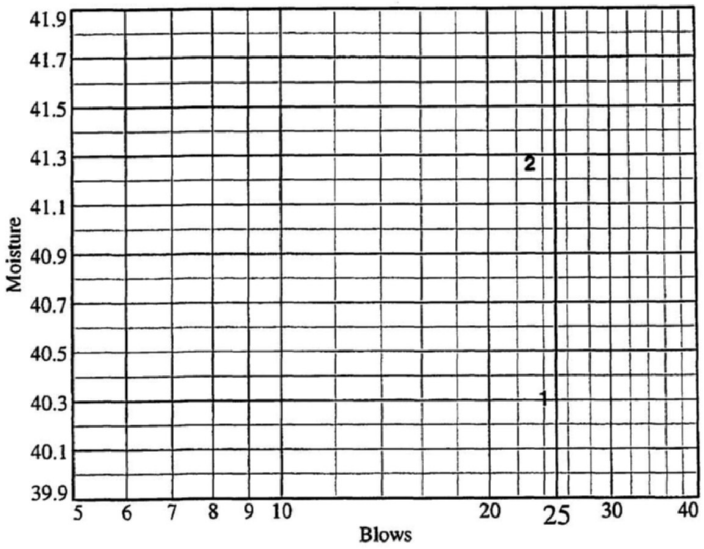
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 0.0-1.5 **Sample Number:** SS-1
Material Description: Black Sandy Lean CLAY
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	32.68	33.73				
Dry+Tare	27.73	28.39				
Tare	15.45	15.45				
# Blows	24	23				
Moisture	40.3	41.3				



Liquid Limit= 40
Plastic Limit= 14
Plasticity Index= 26
Natural Moisture= 19.4
Liquidity Index= 0.2

Plastic Limit Data

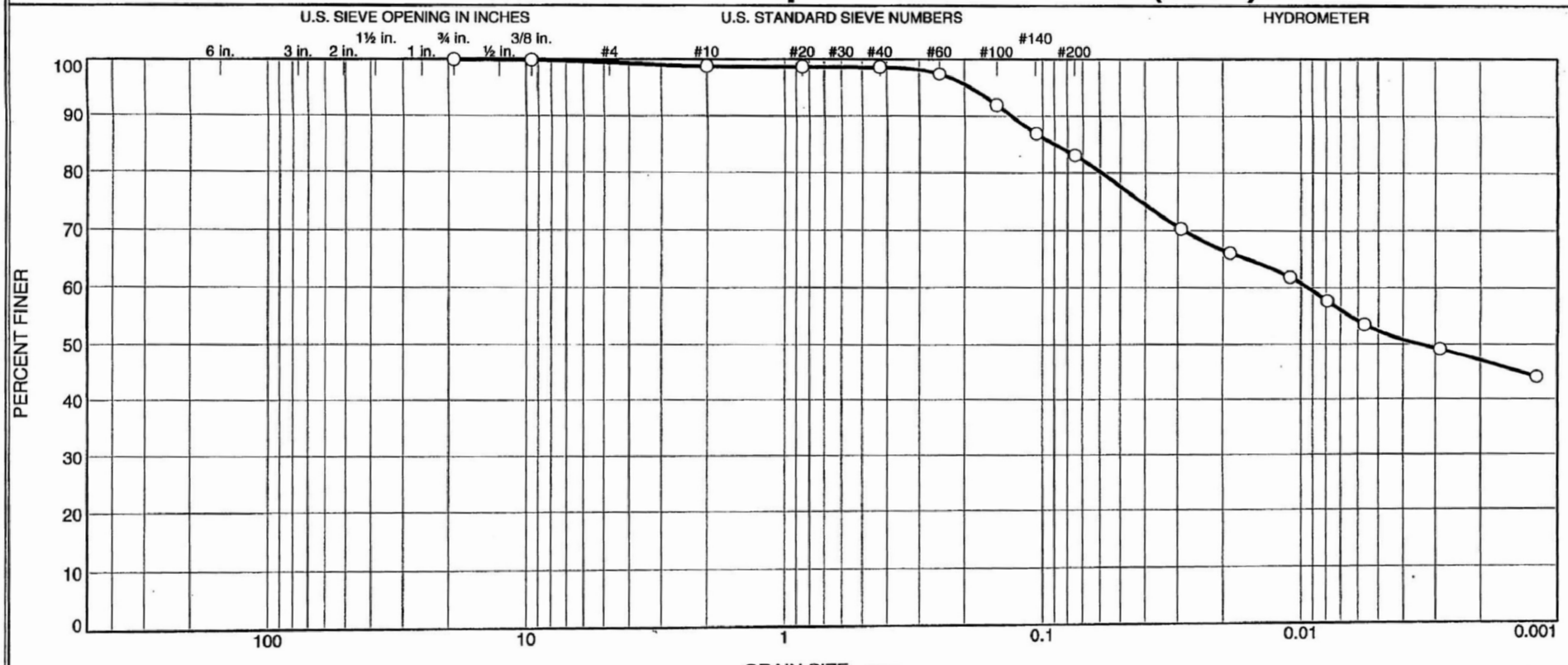
Run No.	1	2	3	4	
Wet+Tare	23.83	26.52			
Dry+Tare	22.77	25.17			
Tare	15.28	15.51			
Moisture	14.2	14.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
138.33	116.93	6.63	19.4

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	0.5	0.7	0.1	15.7	30.7	52.3

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2321	SS-2	3.5-5.0	12-14-07	CL	Light Gray and Black Lean CLAY with sand	22.5	48	15

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 = 2.0% (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-2321
Depth: 3.5-5.0 **Sample Number:** SS-2
Material Description: Light Gray and Black Lean CLAY with sand
Date: 12-14-07 **Natural Moisture:** 22.5
Liquid Limit: 48 **Plastic Limit:** 15 **USCS Class.:** CL
Testing Remarks: Specific Gravity = 2.680 (ASTM D854-06)
Organic Content = 2.0% (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
202.41	0.00	0.00	.75	0.00	100.0
			.375	0.11	99.9
			#10	2.36	98.8
48.01	0.00	0.00	#20	0.06	98.7
			#40	0.08	98.7
			#60	0.68	97.4
			#100	3.34	92.0
			#140	5.77	87.0
			#200	7.68	83.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 98.8
Weight of hydrometer sample =48.01
Hygroscopic moisture correction:
Moist weight and tare = 22.30
Dry weight and tare = 21.94
Tare weight = 9.50
Hygroscopic moisture = 2.9%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
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 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.6	38.0	33.4	0.0131	39.0	9.9	0.0291	70.3
5.00	22.6	36.0	31.4	0.0131	37.0	10.2	0.0187	66.1
15.00	22.6	34.0	29.4	0.0131	35.0	10.6	0.0110	61.9
30.00	22.6	32.0	27.4	0.0131	33.0	10.9	0.0079	57.7
60.00	22.6	30.0	25.4	0.0131	31.0	11.2	0.0057	53.5
240.00	22.4	28.0	23.4	0.0131	29.0	11.5	0.0029	49.1
1440.00	21.3	26.0	21.0	0.0133	27.0	11.9	0.0012	44.1

MACTEC, Inc.

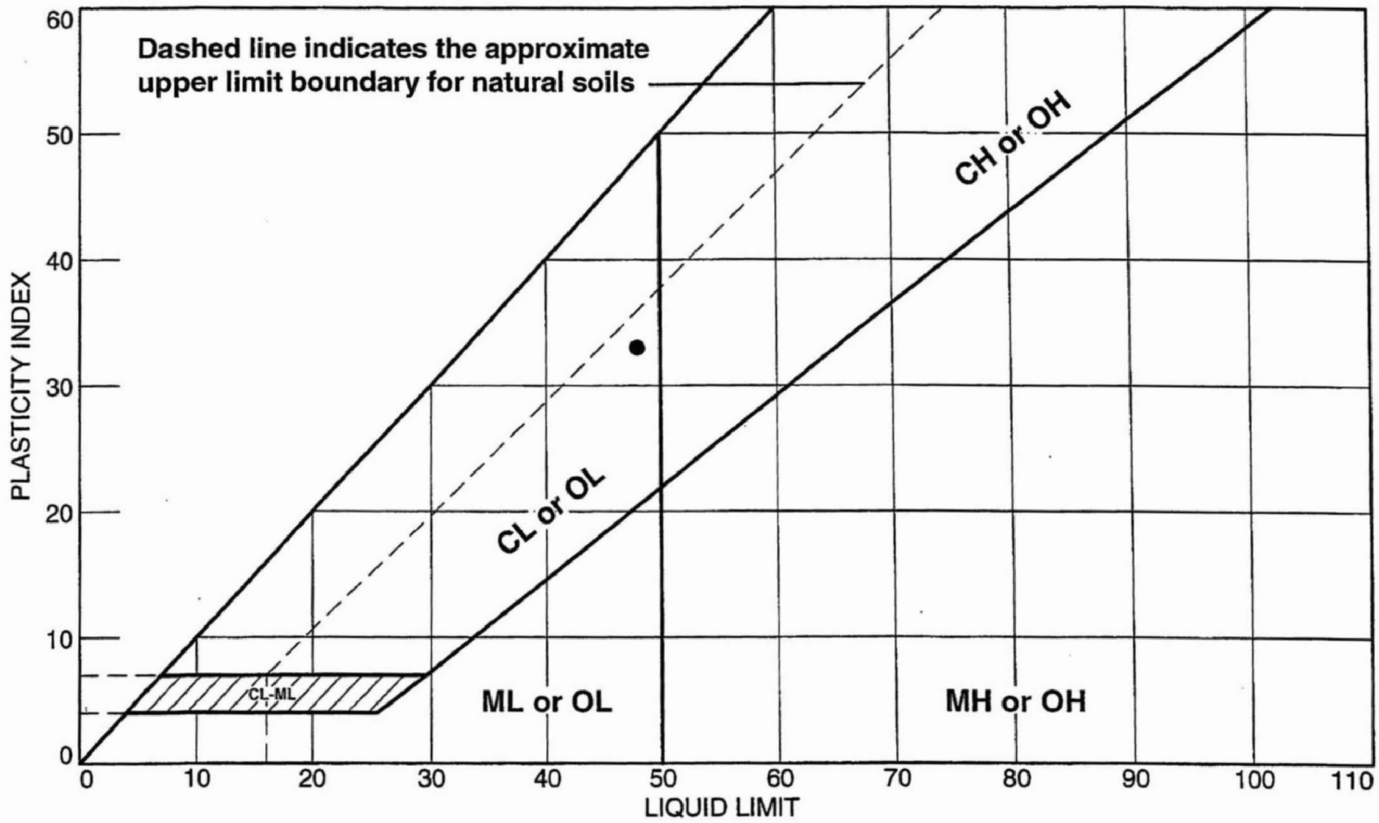
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.5	0.5	0.7	0.1	15.7	16.5	30.7	52.3	83.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0034	0.0094	0.0591	0.0897	0.1313	0.1900

Fineness Modulus
0.14

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-2321	SS-2	3.5-5.0	22.5	15	48	33	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

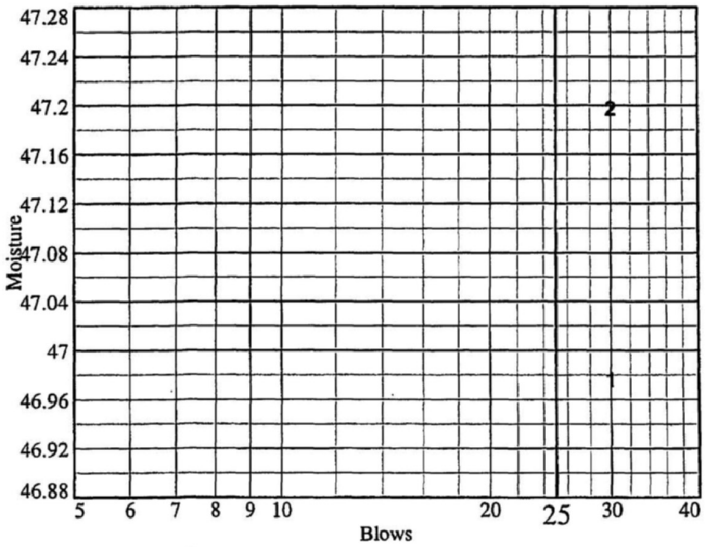
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 3.5-5.0 **Sample Number:** SS-2
Material Description: Light Gray and Black Lean CLAY with sand
USCS: CL **AASHTO:** A-7-6(27)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.24	34.17				
Dry+Tare	26.88	28.19				
Tare	15.47	15.52				
# Blows	30	30				
Moisture	47.0	47.2				



Liquid Limit= 48
Plastic Limit= 15
Plasticity Index= 33
Natural Moisture= 22.5
Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.56	18.28			
Dry+Tare	22.54	17.34			
Tare	15.59	11.08			
Moisture	14.7	15.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
200.89	165.13	6.53	22.5

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

1/20/2008

SAMPLE IDENTIFICATION: B-2321,SS-2

(A) Mass of oven-dried soil, grams:		50.69
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.71
(C) Mass of pycnometer, water and soil, grams:		687.49
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.6
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.681
(F)	***Correction factor:***	0.99966
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.680

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-3

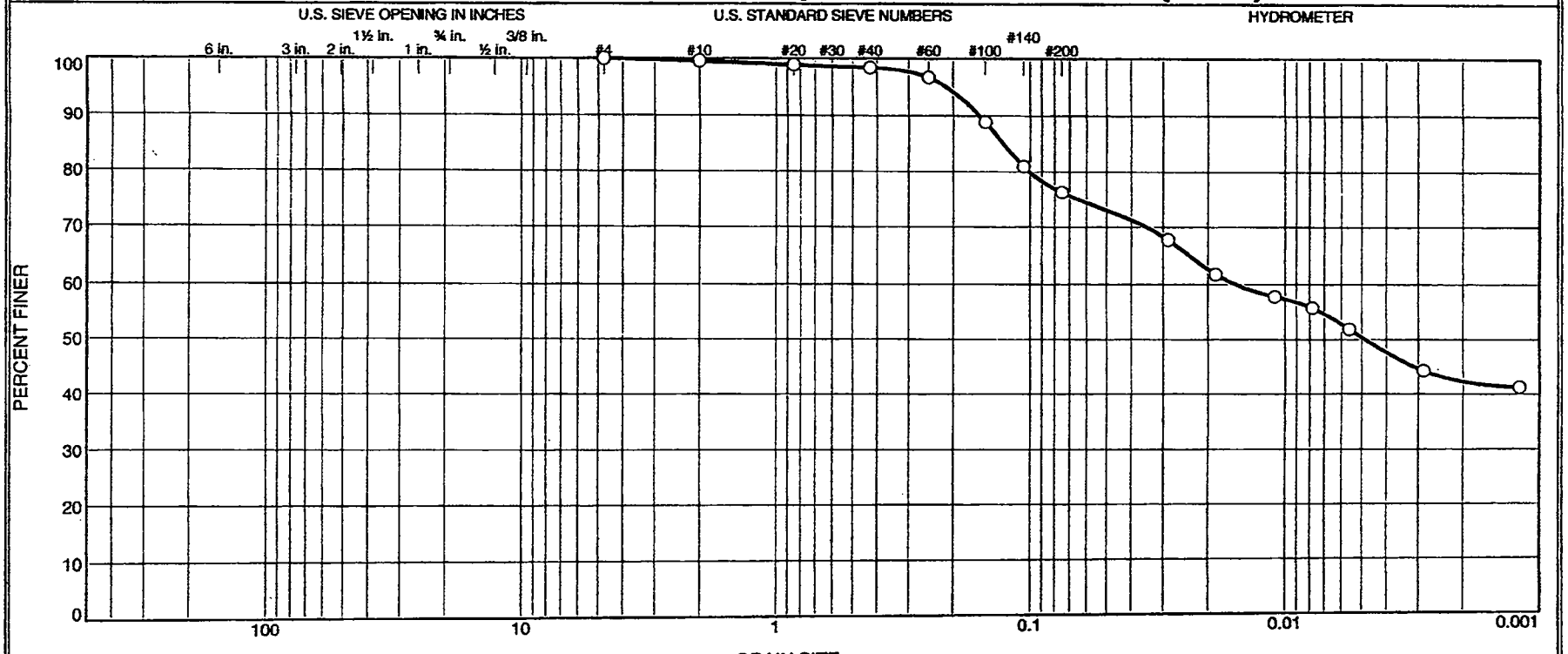
TESTED BY: CS

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

REVIEWED BY: **Brian Johnson**

DSC 2-27-08

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.4	1.2	22.1	25.9	50.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2321	SS-3	6-7.5	12-14-07	CL	Light Brownish Gray Lean CLAY with sand	18.3	47	15

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O Specific Gravity is assumed
Organic Content = 1.6% (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-2321
Depth: 6-7.5 **Sample Number:** SS-3
Material Description: Light Brownish Gray Lean CLAY with sand
Date: 12-14-07 **Natural Moisture:** 18.3
Liquid Limit: 47 **Plastic Limit:** 15 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Organic Content = 1.6% (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
233.49	0.00	0.00	#4	0.00	100.0
			#10	0.99	99.6
50.96	0.00	0.00	#20	0.35	98.9
			#40	0.60	98.4
			#60	1.49	96.7
			#100	5.44	88.9
			#140	9.54	80.9
			#200	11.93	76.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.6
Weight of hydrometer sample =50.96
Hygroscopic moisture correction:
Moist weight and tare = 28.73
Dry weight and tare = 28.52
Tare weight = 15.64
Hygroscopic moisture = 1.6%
Table of composite correction values:

Temp., deg. C:	13.0	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 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	39.0	34.5	0.0130	40.0	9.7	0.0286	67.8
5.00	22.7	36.0	31.5	0.0130	37.0	10.2	0.0186	61.8
15.00	22.7	34.0	29.5	0.0130	35.0	10.6	0.0109	57.9
30.00	22.6	33.0	28.4	0.0130	34.0	10.7	0.0078	55.8
60.00	22.6	31.0	26.4	0.0130	32.0	11.0	0.0056	51.9
240.00	22.9	27.0	22.5	0.0130	28.0	11.7	0.0029	44.3
1440.00	21.4	26.0	21.0	0.0132	27.0	11.9	0.0012	41.2

MACTEC, Inc.

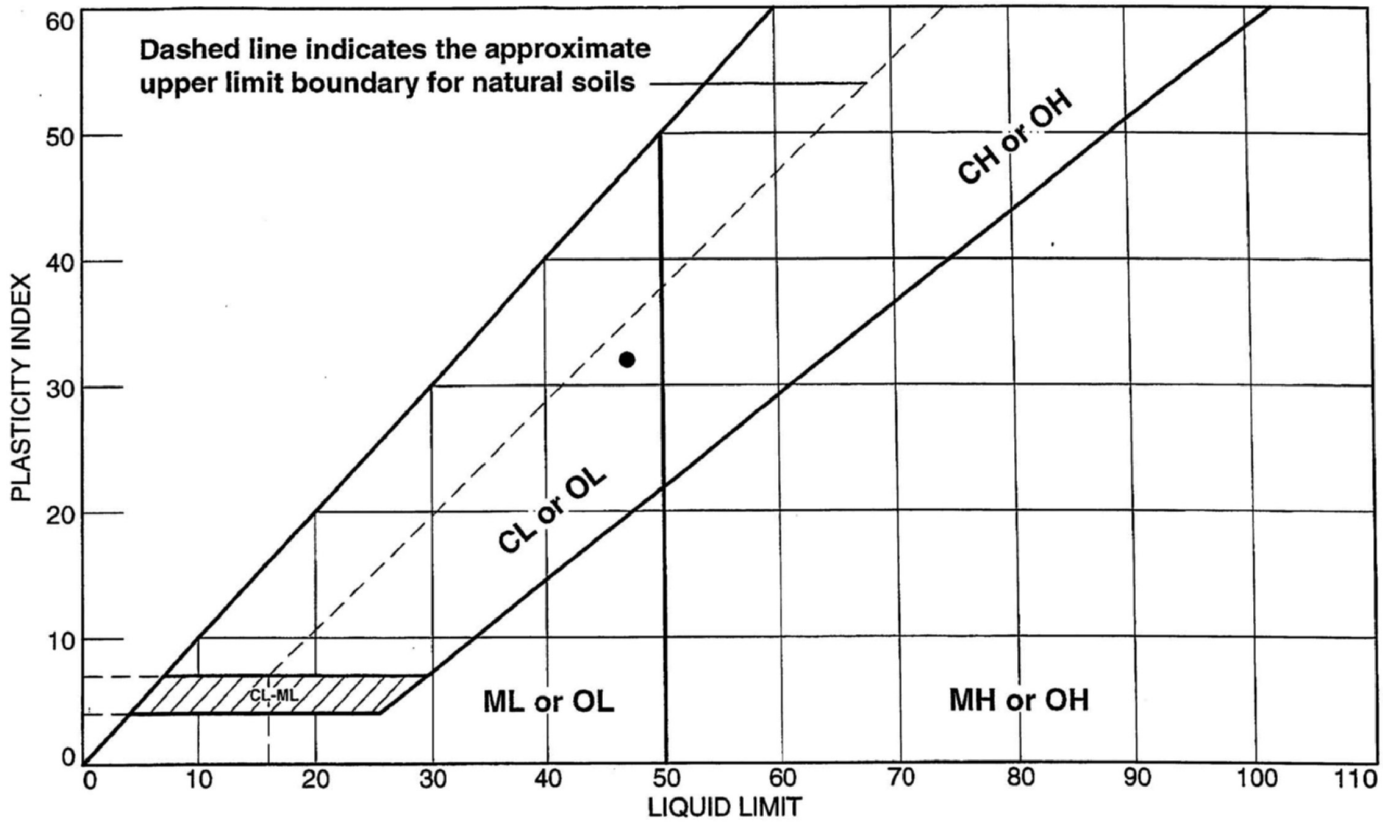
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.4	1.2	22.1	23.7	25.9	50.4	76.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0048	0.0155	0.1007	0.1271	0.1575	0.2126

Fineness Modulus
0.16

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-2321	SS-3	6-7.5	18.3	15	47	32	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

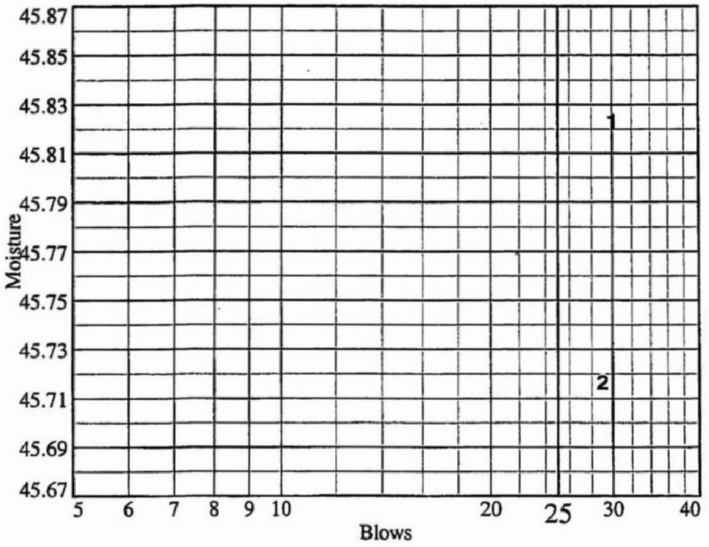
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 6-7.5 **Sample Number:** SS-3
Material Description: Light Brownish Gray Lean CLAY with sand
USCS: CL **AASHTO:** A-7-6(23)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.37	32.63				
Dry+Tare	27.72	27.24				
Tare	15.39	15.45				
# Blows	30	29				
Moisture	45.8	45.7				



Liquid Limit= 47
Plastic Limit= 15
Plasticity Index= 32
Natural Moisture= 18.3
Liquidity Index= 0.1

Plastic Limit Data

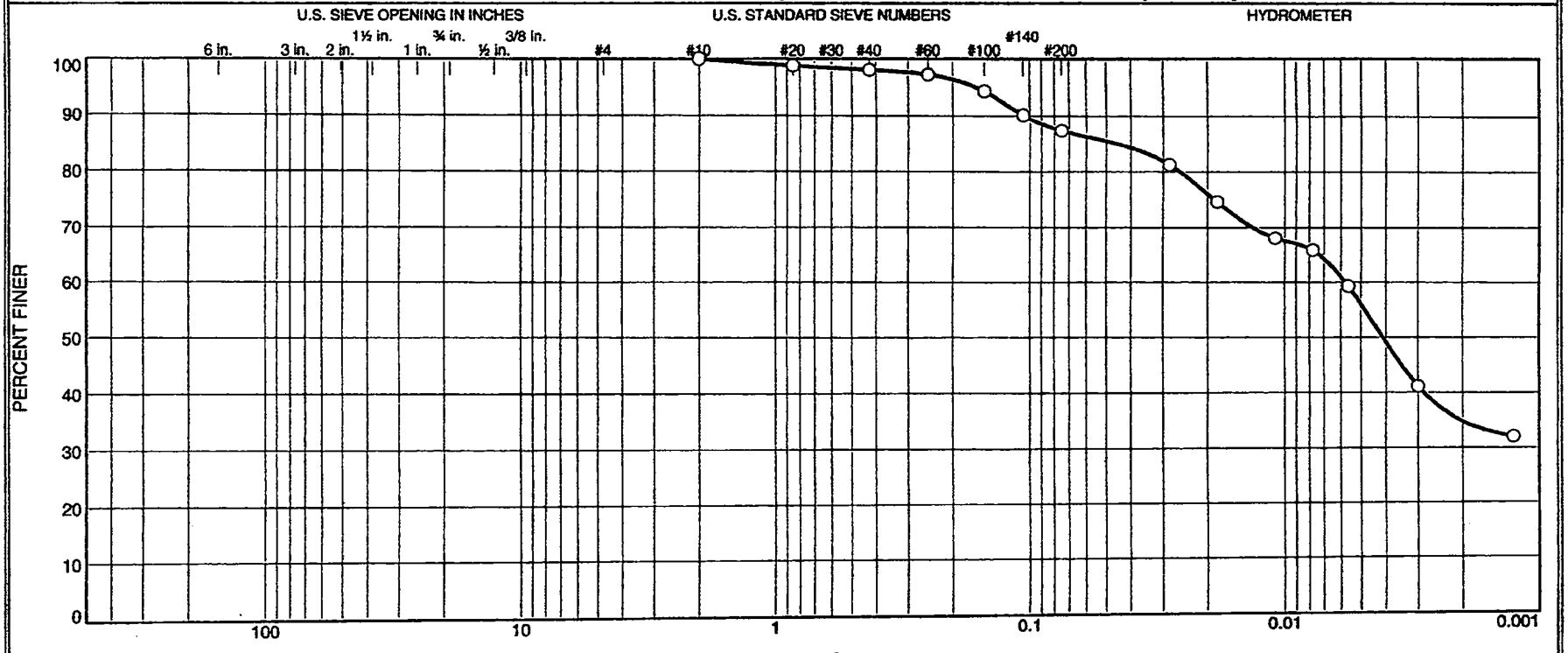
Run No.	1	2	3	4	
Wet+Tare	24.64	25.51			
Dry+Tare	23.48	24.21			
Tare	15.49	15.50			
Moisture	14.5	14.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
128.56	109.80	7.02	18.3

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.0	1.9	10.7	31.3	56.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2321	SS-4	8.5-10.0	12-14-07	CH	Brownish Yellow Fat CLAY	16.5	52	19

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O 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-2321
Depth: 8.5-10.0 **Sample Number:** SS-4
Material Description: Brownish Yellow Fat CLAY
Date: 12-14-07 **Natural Moisture:** 16.5
Liquid Limit: 52 **Plastic Limit:** 19 **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
209.09	0.00	0.00	#10	0.00	100.0
46.27	0.00	0.00	#20	0.53	98.9
			#40	0.87	98.1
			#60	1.27	97.3
			#100	2.64	94.3
			#140	4.55	90.2
			#200	5.84	87.4

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =46.27
Hygroscopic moisture correction:
Moist weight and tare = 27.06
Dry weight and tare = 26.80
Tare weight = 15.35
Hygroscopic moisture = 2.3%
Table of composite correction values:

Temp., deg. C:	13.0	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 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	42.0	37.2	0.0131	43.0	9.2	0.0282	81.3
5.00	21.9	39.0	34.2	0.0131	40.0	9.7	0.0183	74.7
15.00	21.8	36.0	31.1	0.0131	37.0	10.2	0.0109	68.1
30.00	21.8	35.0	30.1	0.0131	36.0	10.4	0.0077	65.9
60.00	21.8	32.0	27.1	0.0131	33.0	10.9	0.0056	59.3
240.00	20.9	24.0	18.8	0.0133	25.0	12.2	0.0030	41.1
1440.00	20.5	20.0	14.7	0.0134	21.0	12.9	0.0013	32.1

MACTEC, Inc.

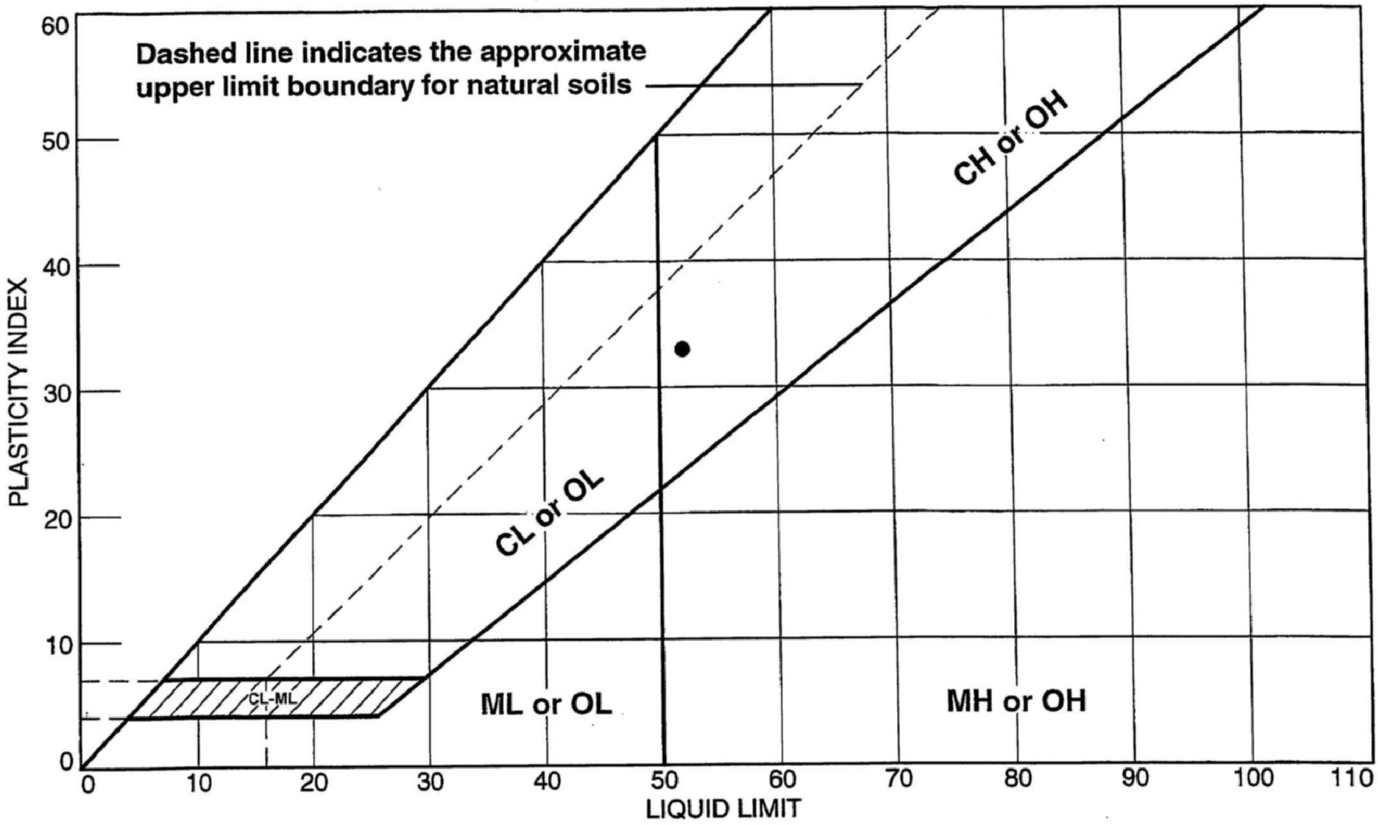
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.9	10.7	12.6	31.3	56.1	87.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0041	0.0057	0.0256	0.0451	0.1044	0.1616

Fineness Modulus
0.10

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-2321	SS-4	8.5-10.0	16.5	19	52	33	CH

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

Tested By: CS **Checked By:** LBJ DSC 2-22-08

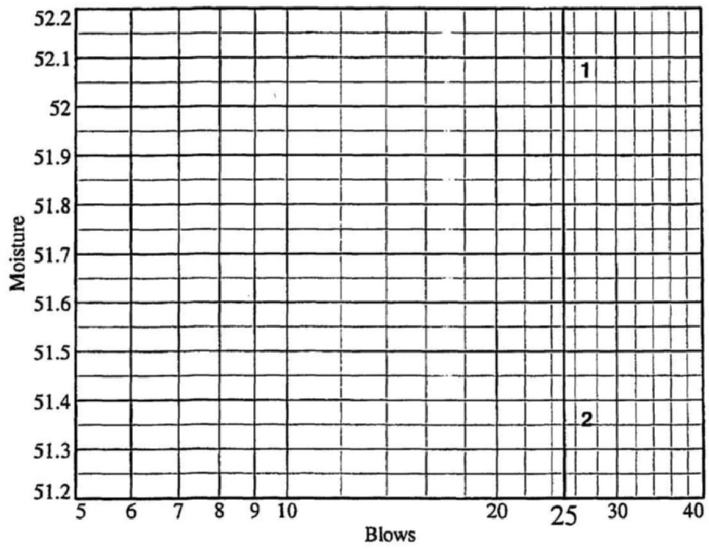
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 8.5-10.0 **Sample Number:** SS-4
Material Description: Brownish Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-6(30)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.53	26.17				
Dry+Tare	20.77	22.59				
Tare	15.47	15.62				
# Blows	27	27				
Moisture	52.1	51.4				



Liquid Limit= 52
Plastic Limit= 19
Plasticity Index= 33
Natural Moisture= 16.5
Liquidity Index= -0.1

Plastic Limit Data

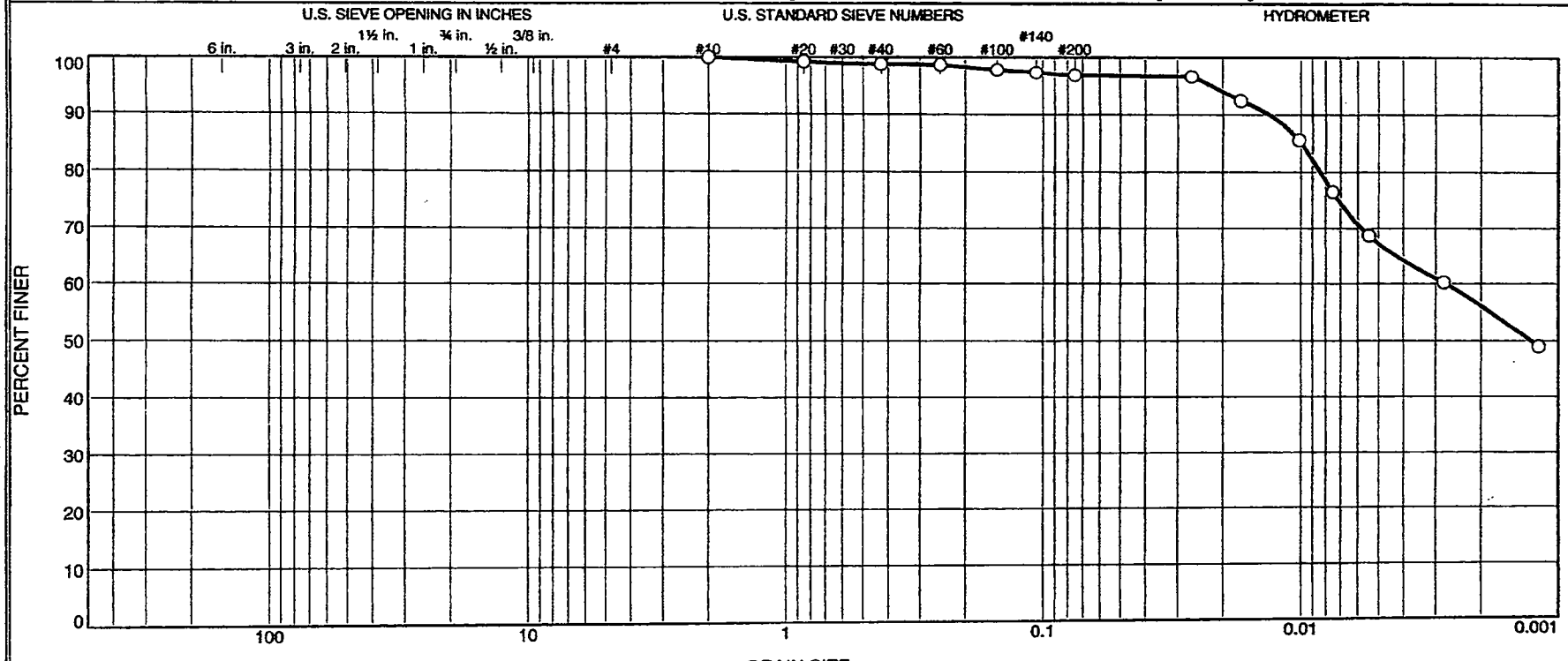
Run No.	1	2	3	4	
Wet+Tare	22.23	21.92			
Dry+Tare	21.15	20.88			
Tare	15.47	15.65			
Moisture	19.0	19.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
94.01	81.70	6.87	16.5

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.0	1.1	2.1	29.5	67.3

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2321	SS-5	11-12.5	12-4-07	CH	Light Yellowish Brown Fat CLAY	18.7	62	16

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O 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-2321
Depth: 11-12.5 **Sample Number:** SS-5
Material Description: Light Yellowish Brown Fat CLAY
Date: 12-4-07 **Natural Moisture:** 18.7
Liquid Limit: 62 **Plastic Limit:** 16 **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
230.54	0.00	0.00	#10	0.00	100.0
47.90	0.00	0.00	#20	0.35	99.3
			#40	0.55	98.9
			#60	0.63	98.7
			#100	1.05	97.8
			#140	1.26	97.4
			#200	1.51	96.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =47.90
Hygroscopic moisture correction:
Moist weight and tare = 28.88
Dry weight and tare = 28.34
Tare weight = 15.52
Hygroscopic moisture = 4.2%
Table of composite correction values:

Temp., deg. C:	13.0	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 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.1	50.0	44.9	0.0133	51.0	7.9	0.0264	96.6
5.00	21.1	48.0	42.9	0.0133	49.0	8.3	0.0170	92.3
15.00	20.9	45.0	39.8	0.0133	46.0	8.8	0.0102	85.7
30.00	20.2	41.0	35.6	0.0134	42.0	9.4	0.0075	76.5
60.00	21.2	37.0	31.9	0.0132	38.0	10.1	0.0054	68.7
240.00	21.4	33.0	28.0	0.0132	34.0	10.7	0.0028	60.2
1440.00	20.8	28.0	22.8	0.0133	29.0	11.5	0.0012	49.0

MACTEC, Inc.

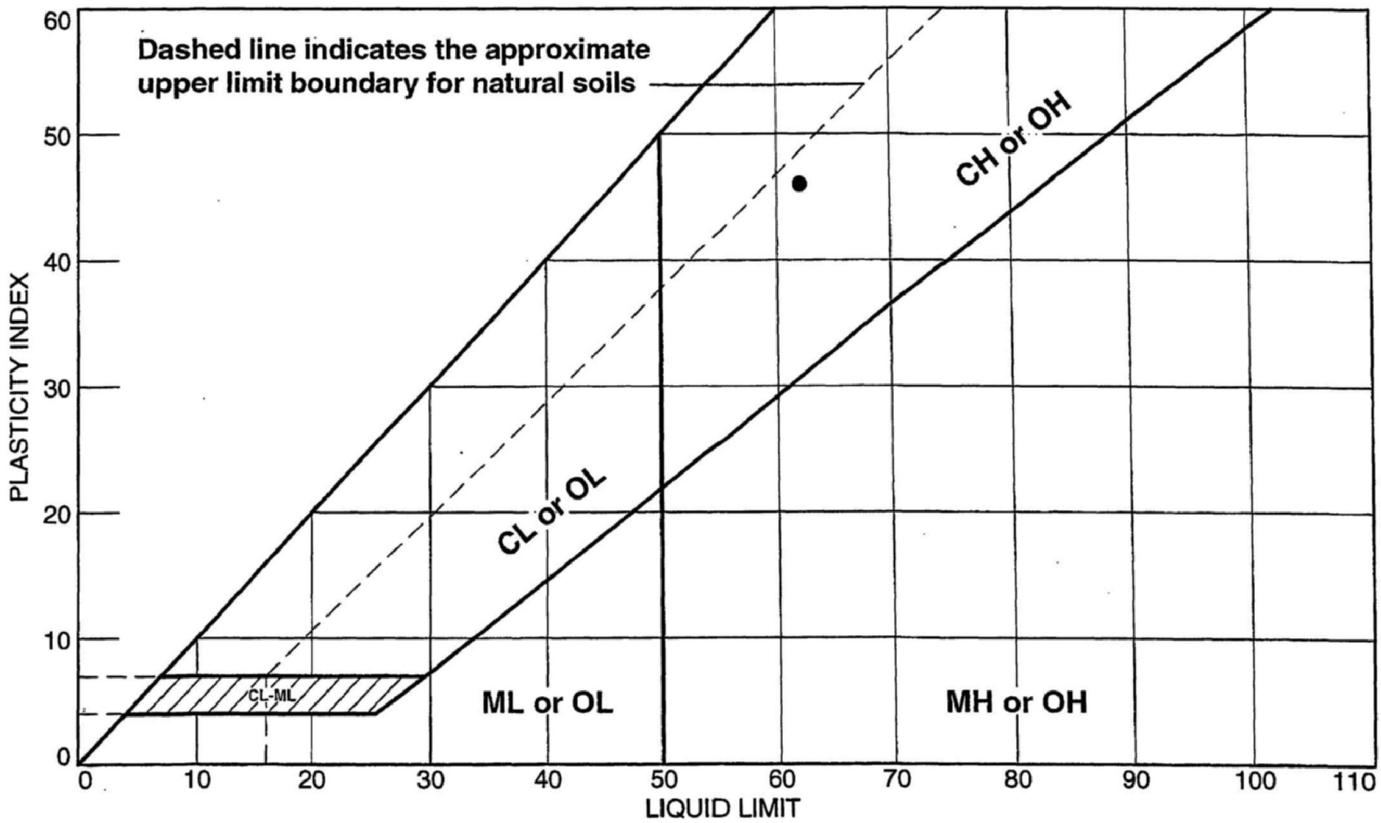
Fraction Components

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	2.1	3.2	29.5	67.3	96.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0013	0.0027	0.0084	0.0099	0.0132	0.0222

Fineness Modulus
0.05

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-2321	SS-5	11-12.5	18.7	16	62	46	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 DSC 2-27-08

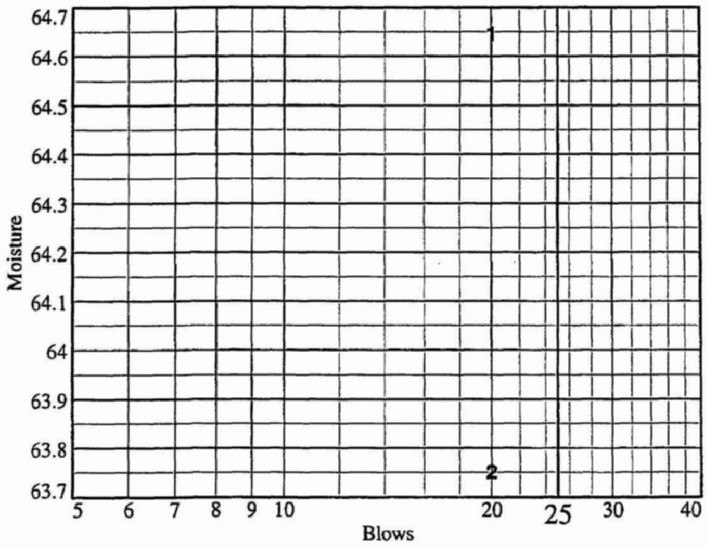
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 11-12.5 **Sample Number:** SS-5
Material Description: Light Yellowish Brown Fat CLAY
USCS: CH **AASHTO:** A-7-6(49)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.42	23.12				
Dry+Tare	21.58	20.13				
Tare	15.64	15.44				
# Blows	20	20				
Moisture	64.6	63.8				



Liquid Limit= 62
Plastic Limit= 16
Plasticity Index= 46
Natural Moisture= 18.7
Liquidity Index= 0.1

Plastic Limit Data

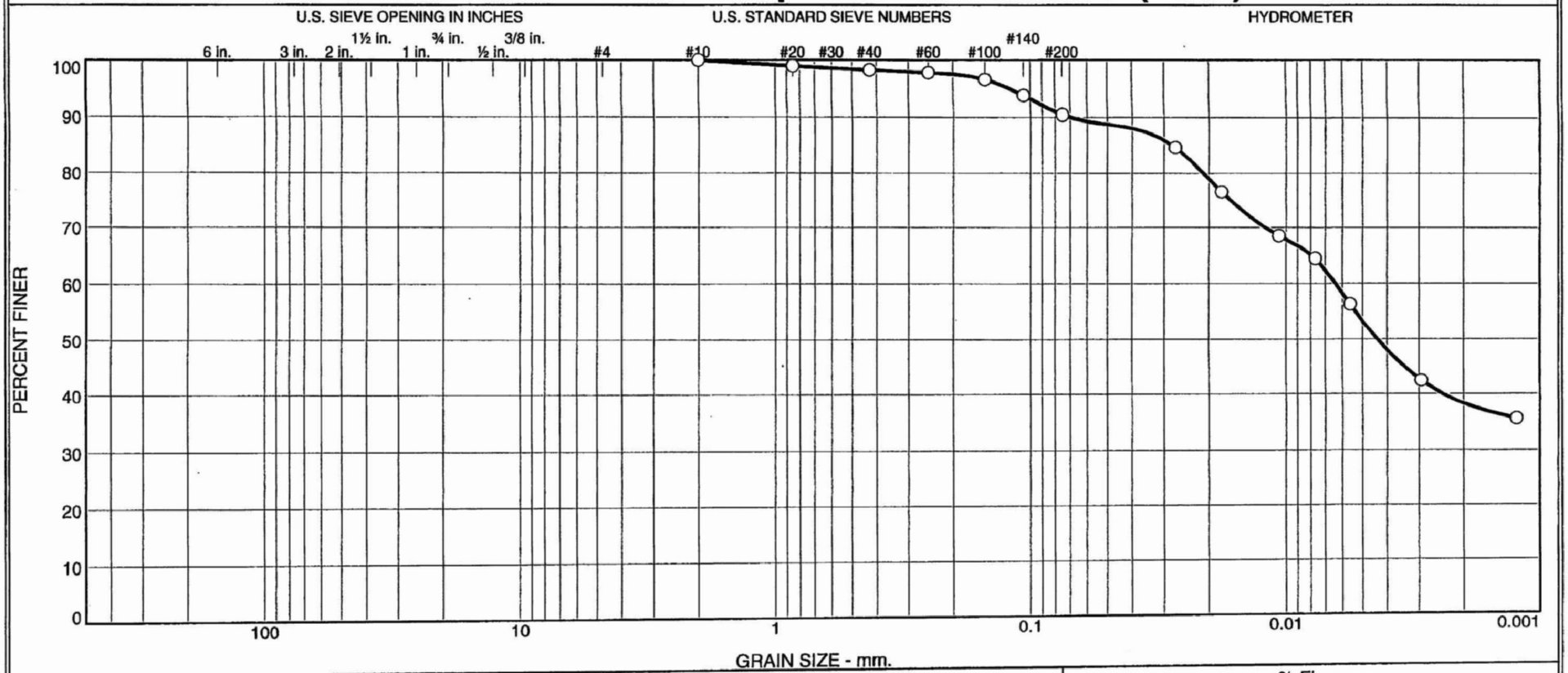
Run No.	1	2	3	4	
Wet+Tare	23.59	22.49			
Dry+Tare	22.46	21.53			
Tare	15.51	15.63			
Moisture	16.3	16.3			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
149.52	127.05	6.63	18.7

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.0	1.7	7.8	37.2	53.3

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2321	SS-6	13.5-15	12-14-07	CL	Brownish Yellow Lean CLAY	14.4	44	19

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O 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-2321
Depth: 13.5-15 **Sample Number:** SS-6
Material Description: Brownish Yellow Lean CLAY
Date: 12-14-07 **Natural Moisture:** 14.4
Liquid Limit: 44 **Plastic Limit:** 19 **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
238.76	0.00	0.00	#10	0.00	100.0
50.00	0.00	0.00	#20	0.51	99.0
			#40	0.87	98.3
			#60	1.12	97.8
			#100	1.73	96.5
			#140	3.12	93.8
			#200	4.76	90.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.00
Hygroscopic moisture correction:
Moist weight and tare = 32.70
Dry weight and tare = 32.48
Tare weight = 20.78
Hygroscopic moisture = 1.9%
Table of composite correction values:

Temp., deg. C:	13.0	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 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	47.0	42.0	0.0132	48.0	8.4	0.0271	84.7
5.00	21.4	43.0	38.0	0.0132	44.0	9.1	0.0178	76.6
15.00	21.4	39.0	34.0	0.0132	40.0	9.7	0.0106	68.5
30.00	21.4	37.0	32.0	0.0132	38.0	10.1	0.0077	64.5
60.00	21.3	33.0	28.0	0.0132	34.0	10.7	0.0056	56.3
240.00	21.5	26.0	21.0	0.0132	27.0	11.9	0.0029	42.4
1440.00	20.5	23.0	17.7	0.0134	24.0	12.4	0.0012	35.6

MACTEC, Inc.

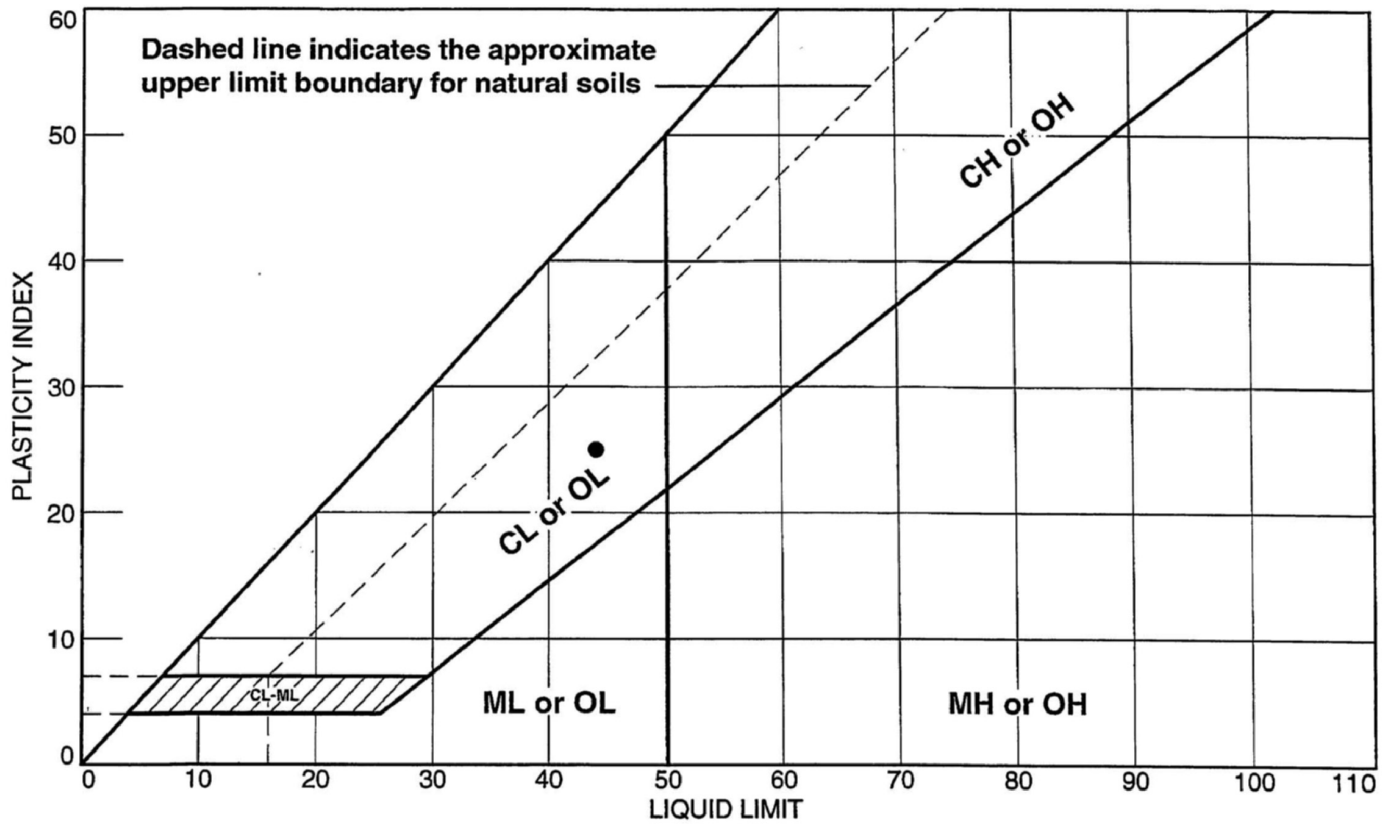
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.7	7.8	9.5	37.2	53.3	90.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0044	0.0064	0.0210	0.0276	0.0695	0.1210

Fineness Modulus
0.08

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-2321	SS-6	13.5-15	14.4	19	44	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

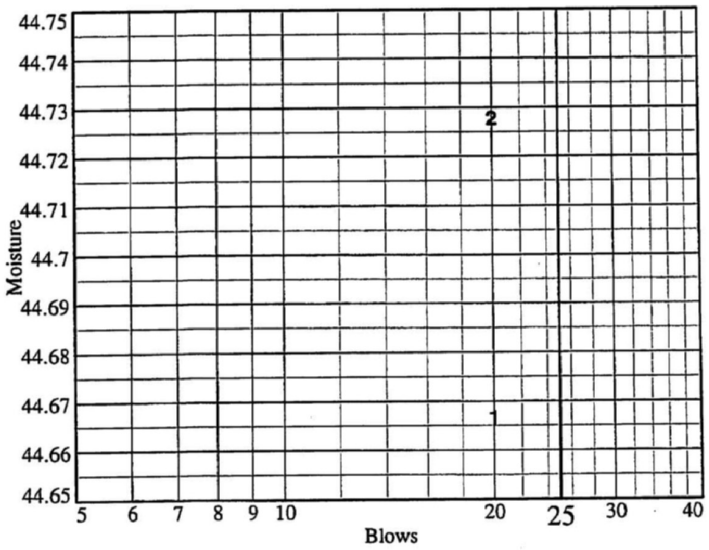
LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2321
Depth: 13.5-15
Sample Number: SS-6
Material Description: Brownish Yellow Lean CLAY
USCS: CL
AASHTO: A-7-6(23)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.72	32.51				
Dry+Tare	26.03	27.25				
Tare	15.53	15.49				
# Blows	20	20				
Moisture	44.7	44.7				



Liquid Limit= 44
Plastic Limit= 19
Plasticity Index= 25
Natural Moisture= 14.4
Liquidity Index= -0.2

Plastic Limit Data

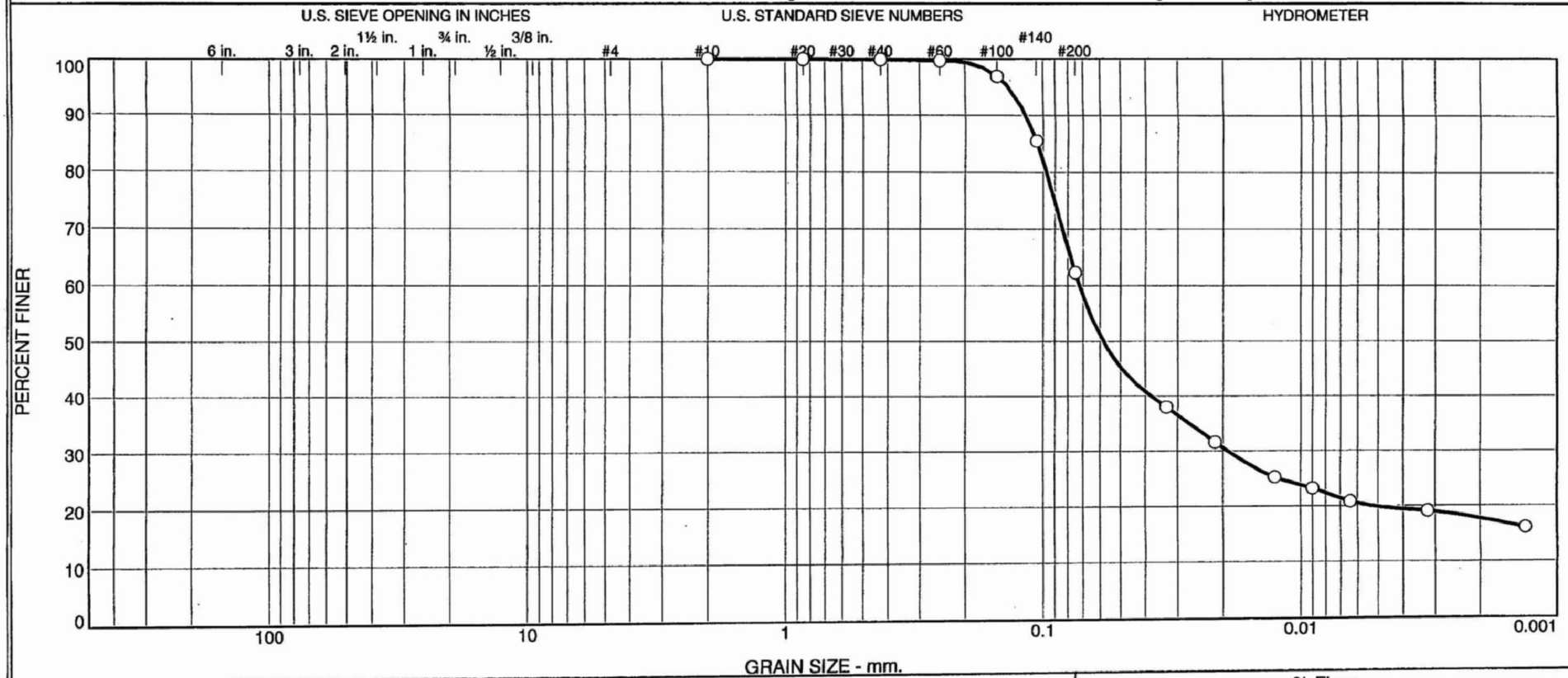
Run No.	1	2	3	4	
Wet+Tare	23.72	23.78			
Dry+Tare	22.44	22.48			
Tare	15.55	15.49			
Moisture	18.6	18.6			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
123.18	108.48	6.70	14.4

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	0.1	37.6	42.5	19.8

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2321	SS-7	18.5-20.0	12-14-07	CL	Light Yellowish Brown Sandy Lean CLAY	16.6	24	16

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.663 (ASTM D854-06)

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-2321
Depth: 18.5-20.0 **Sample Number:** SS-7
Material Description: Light Yellowish Brown Sandy Lean CLAY
Date: 12-14-07 **Natural Moisture:** 16.6
Liquid Limit: 24 **Plastic Limit:** 16 **USCS Class.:** CL
Testing Remarks: Specific Gravity = 2.663 (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
214.40	0.00	0.00	#10	0.00	100.0
48.32	0.00	0.00	#20	0.03	99.9
			#40	0.05	99.9
			#60	0.14	99.7
			#100	1.50	96.9
			#140	7.01	85.5
			#200	18.20	62.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.32
Hygroscopic moisture correction:
Moist weight and tare = 34.24
Dry weight and tare = 33.95
Tare weight = 19.83
Hygroscopic moisture = 2.1%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.663
Hydrometer type = 152H
Hydrometer effective depth equation: 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	21.5	23.0	18.0	0.0133	24.0	12.4	0.0332	38.0
5.00	21.4	20.0	15.0	0.0134	21.0	12.9	0.0214	31.6
15.00	21.4	17.0	12.0	0.0134	18.0	13.3	0.0126	25.3
30.00	21.4	16.0	11.0	0.0134	17.0	13.5	0.0090	23.2
60.00	21.1	15.0	9.9	0.0134	16.0	13.7	0.0064	20.8
240.00	21.6	14.0	9.1	0.0133	15.0	13.8	0.0032	19.1
1440.00	20.5	13.0	7.7	0.0135	14.0	14.0	0.0013	16.2

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