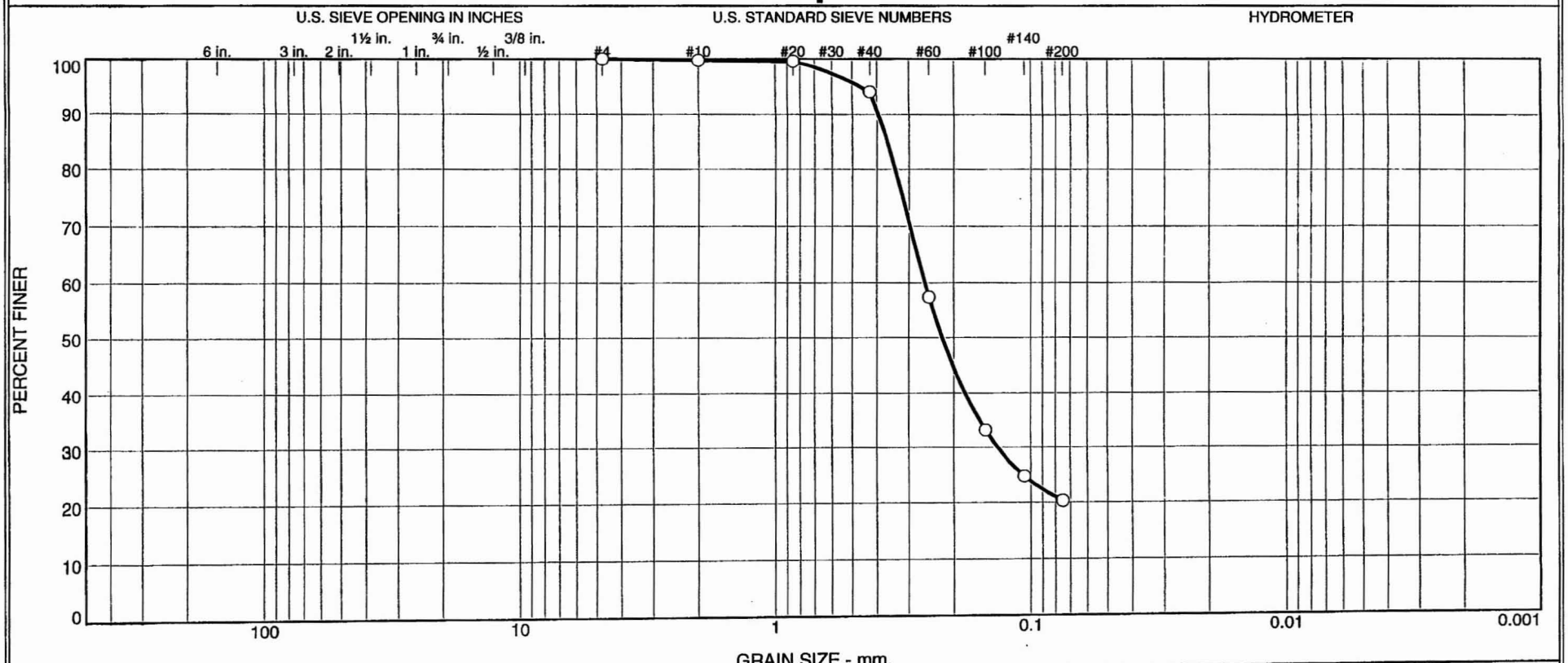
Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.2	5.8	73.7	20.3	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-20	84.5-86	12-13-07	SC	Light Gray Clayey SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
ND = Not determined

Tested By: CS Checked By: LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 84.5-86 **Sample Number:** SS-20
Material Description: Light Gray Clayey SAND (Visual)
Date: 12-13-07 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SC
Testing Remarks: SIEVE ANALYSIS ONLY
ND = Not determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
257.07	0.00	0.00	#4	0.00	100.0
			#10	0.56	99.8
97.25	0.00	0.00	#20	0.22	99.6
			#40	5.60	94.0
			#60	41.30	57.4
			#100	64.91	33.2
			#140	73.15	24.7
			#200	77.44	20.3

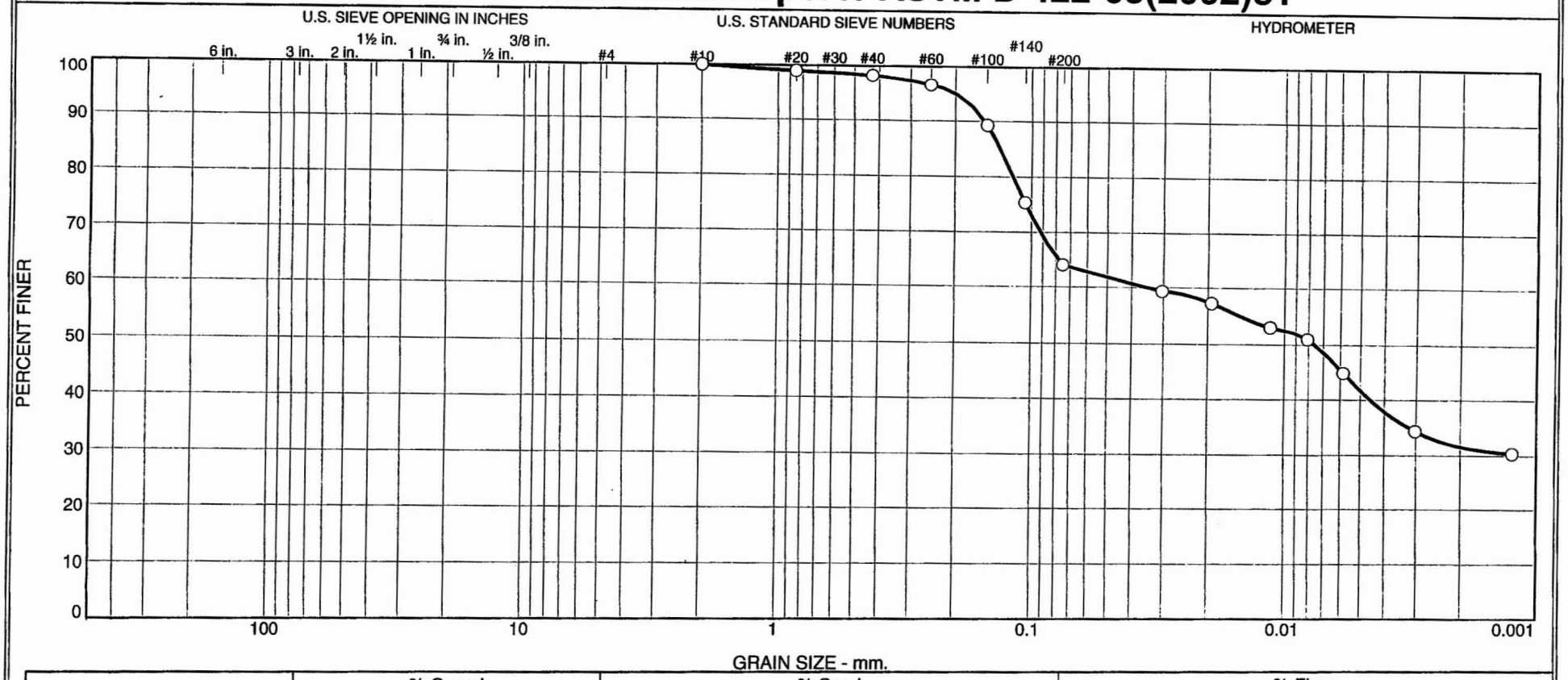
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	5.8	73.7	79.7			20.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.1346	0.2219	0.2595	0.3387	0.3636	0.3935	0.4640

Fineness Modulus
0.99

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	1.7	34.2	22.4	41.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-21	89.5-91	12-13-07	CL	Light Gray Sandy Lean CLAY	18.4	34	14

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.696 (ASTM D854-06)
Organic content = 5.2% ASTM (D2794-07)

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 89.5-91 **Sample Number:** SS-21
Material Description: Light Gray Sandy Lean CLAY
Date: 12-13-07 **Natural Moisture:** 18.4
Liquid Limit: 34 **Plastic Limit:** 14 **USCS Class.:** CL
Testing Remarks: Specific Gravity = 2.696 (ASTM D854-06)
Organic content = 5.2% ASTM (D2794-07)
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
208.49	0.00	0.00	#10	0.00	100.0
48.83	0.00	0.00	#20	0.47	99.0
			#40	0.84	98.3
			#60	1.64	96.6
			#100	5.21	89.3
			#140	12.01	75.4
			#200	17.53	64.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.83
Hygroscopic moisture correction:
Moist weight and tare = 28.20
Dry weight and tare = 27.90
Tare weight = 15.30
Hygroscopic moisture = 2.4%
Table of composite correction values:

Temp., deg. C:	12.3	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.696
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	22.1	33.0	28.6	0.0131	34.0	10.7	0.0304	59.4
5.00	22.1	32.0	27.6	0.0131	33.0	10.9	0.0194	57.3
15.00	22.0	30.0	25.6	0.0131	31.0	11.2	0.0114	53.1
30.00	22.0	29.0	24.6	0.0131	30.0	11.4	0.0081	51.0
60.00	22.0	26.0	21.6	0.0131	27.0	11.9	0.0058	44.8
240.00	22.0	21.0	16.6	0.0131	22.0	12.7	0.0030	34.4
1440.00	22.2	19.0	14.6	0.0131	20.0	13.0	0.0012	30.4

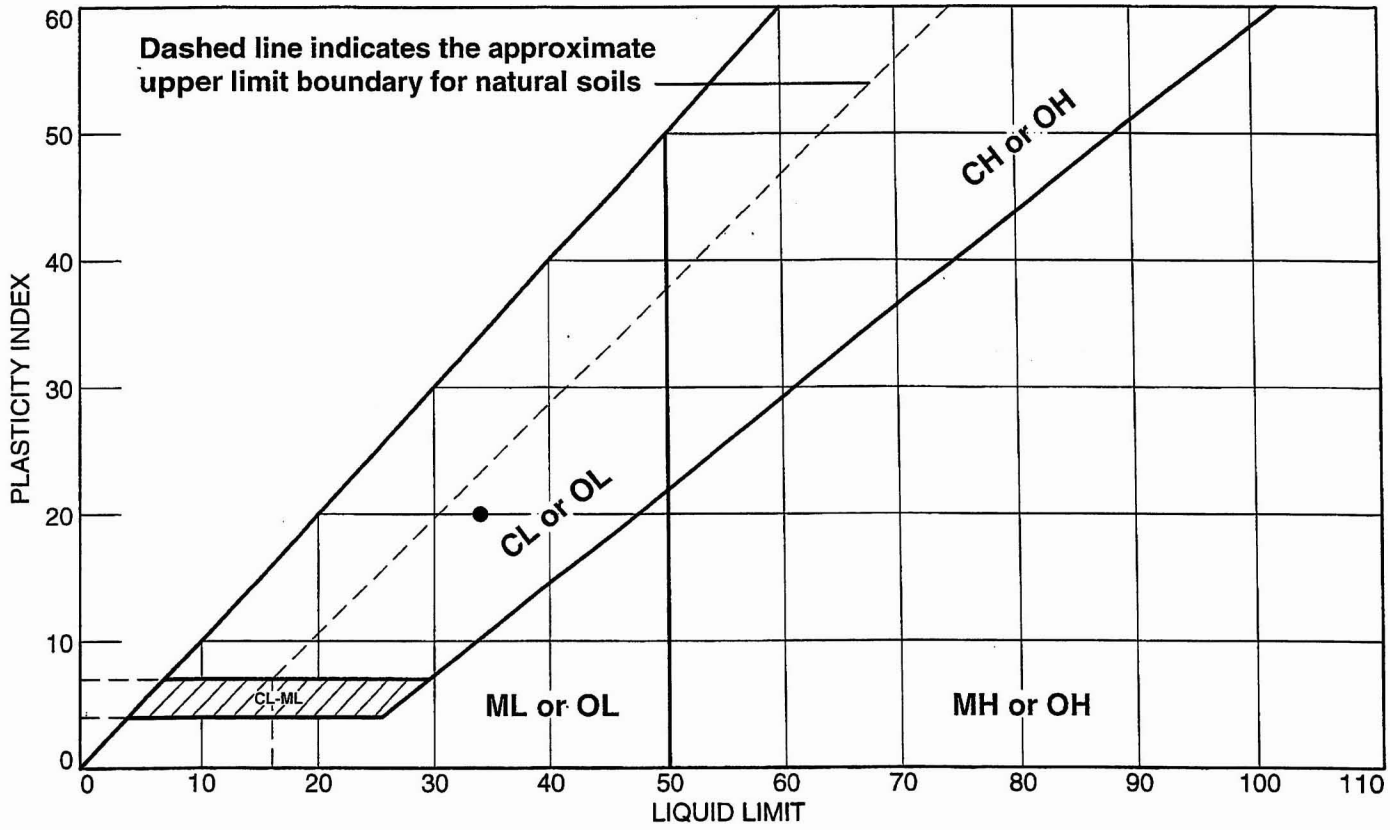
Fractional Components

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	34.2	35.9	22.4	41.7	64.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0075	0.0345	0.1181	0.1330	0.1534	0.1990

Fineness Modulus
0.15

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-2151	SS-21	89.5-91	18.4	14	34	20	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

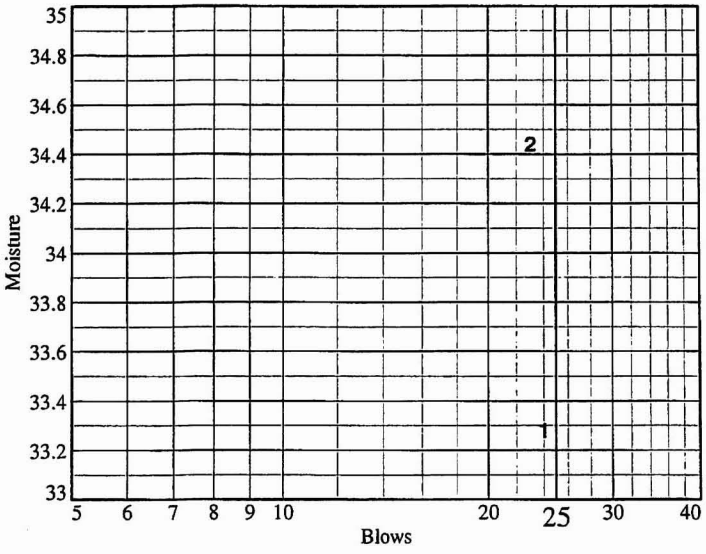
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 89.5-91 **Sample Number:** SS-21
Material Description: Light 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	24.17	24.05				
Dry+Tare	22.00	21.98				
Tare	15.48	15.97				
# Blows	24	23				
Moisture	33.3	34.4				



Liquid Limit= 34
Plastic Limit= 14
Plasticity Index= 20
Natural Moisture= 18.4
Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.49	22.21			
Dry+Tare	21.63	21.41			
Tare	15.50	15.62			
Moisture	14.0	13.8			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
138.54	118.16	7.23	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: 12/23/07

SAMPLE IDENTIFICATION: B-2151 SS-21

(A) Mass of oven-dried soil, grams:		50.62
(B) Mass of pycnometer filled with water at test temperature (T), grams:		654.91
(C) Mass of pycnometer, water and soil, grams:		686.77
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.1
(G) Specific Gravity at observed temperature:	A / [A + (B - C)]	2.698
(F)	***Correction factor:***	0.99931
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.696

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

PYCNOMETER : P-4

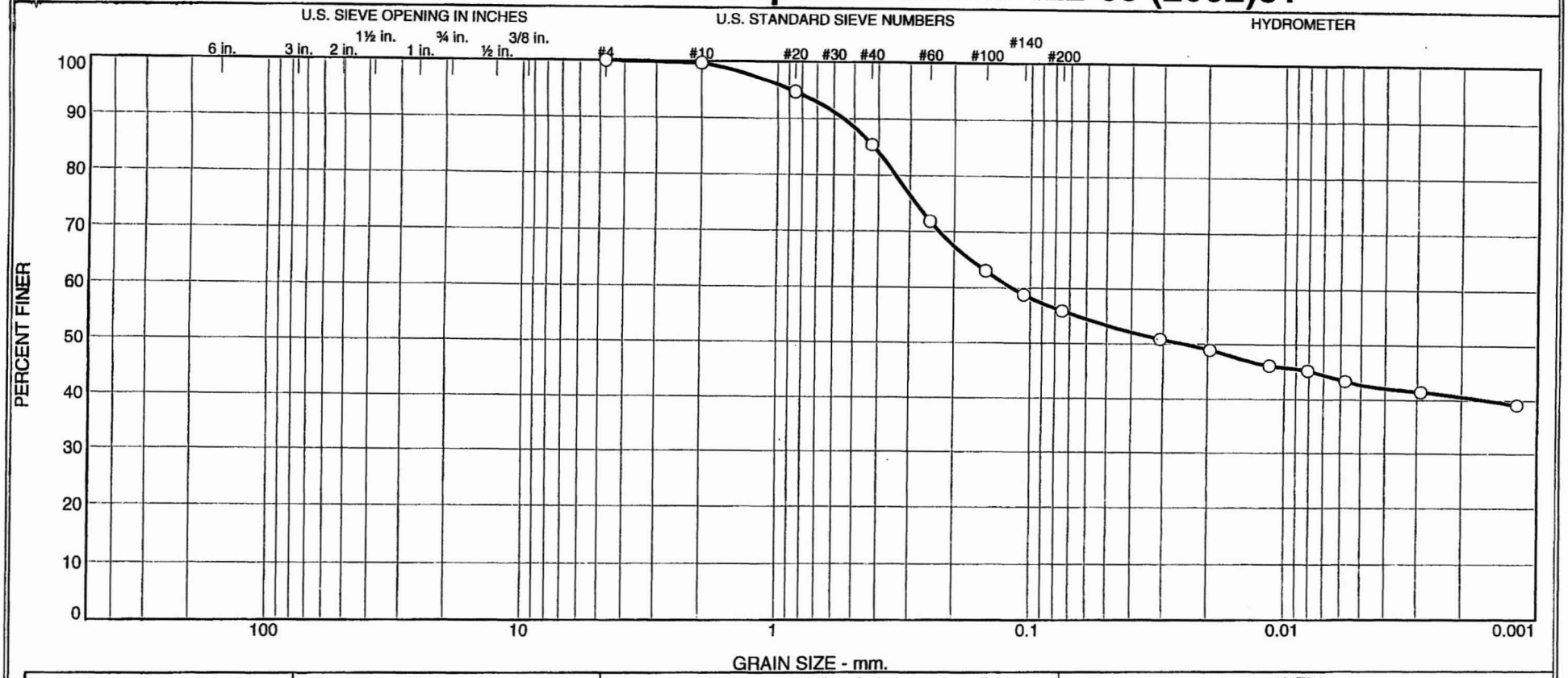
TESTED BY: CS

\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	0.3	14.2	29.5	13.3	42.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-22	94.5-96'	12-13-07	CL	Light Gray Sandy Lean CLAY (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS AND HYDROMETER ONLY
Specific gravity is assumed
ND = Not determined.

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 94.5-96' **Sample Number:** SS-22
Material Description: Light Gray Sandy Lean CLAY (Visual)
Date: 12-13-07 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** CL
Testing Remarks: SIEVE ANALYSIS AND HYDROMETER ONLY
Specific gravity is assumed
ND = Not determined.
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
234.24	0.00	0.00	#4	0.00	100.0
234.24	0.00	0.00	#10	0.72	99.7
52.02	0.00	0.00	#20	2.63	94.7
			#40	7.42	85.5
			#60	14.53	71.8
			#100	19.10	63.1
			#140	21.34	58.8
			#200	22.82	56.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.7
Weight of hydrometer sample =52.02
Hygroscopic moisture correction:
Moist weight and tare = 27.75
Dry weight and tare = 27.65
Tare weight = 15.54
Hygroscopic moisture = 0.8%
Table of composite correction values:

Temp., deg. C:	12.3	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.1	31.0	26.6	0.0131	32.0	11.0	0.0308	50.9
5.00	22.1	30.0	25.6	0.0131	31.0	11.2	0.0196	48.9
15.00	22.2	28.5	24.1	0.0131	29.5	11.5	0.0114	46.1
30.00	22.4	28.0	23.7	0.0131	29.0	11.5	0.0081	45.3
60.00	22.4	27.0	22.7	0.0131	28.0	11.7	0.0058	43.4
240.00	22.5	26.0	21.7	0.0130	27.0	11.9	0.0029	41.5
1440.00	21.7	25.0	20.5	0.0132	26.0	12.0	0.0012	39.2

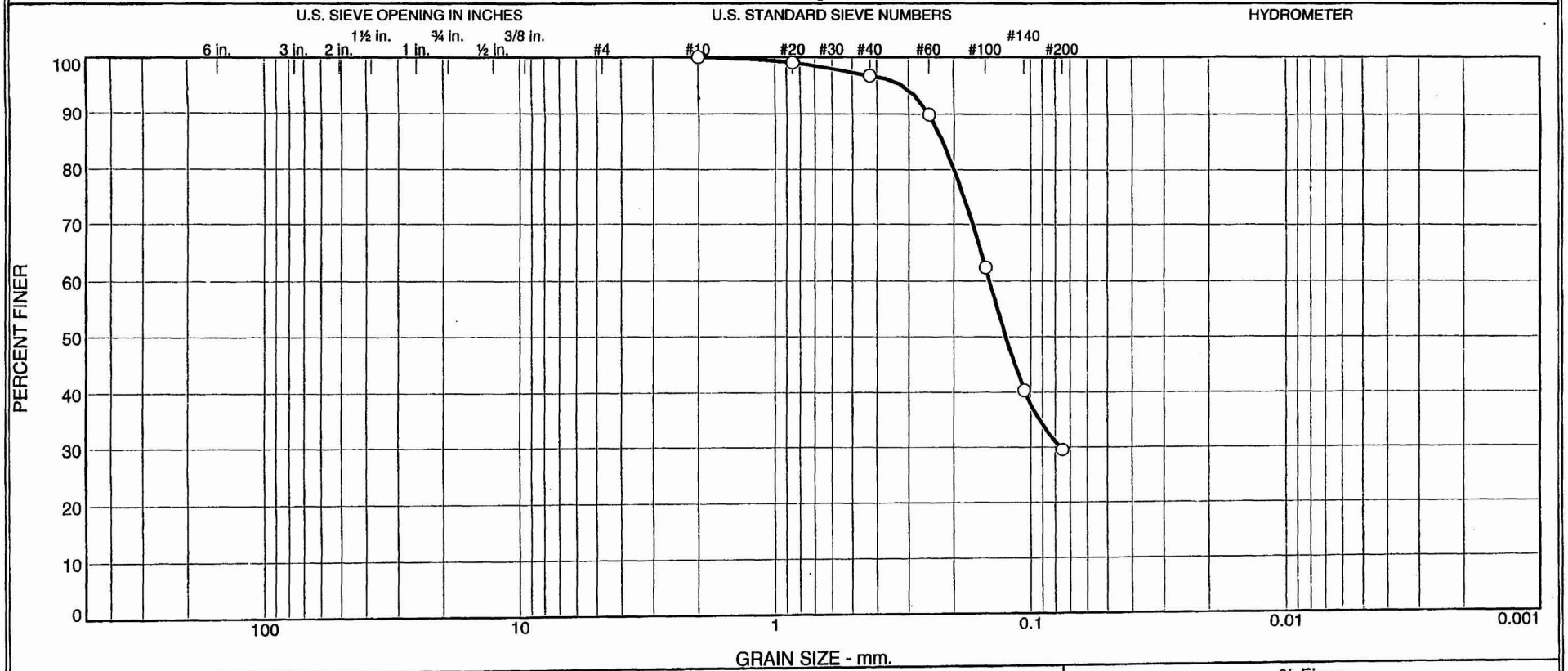
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	14.2	29.5	44.0	13.3	42.7	56.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0249	0.1182	0.3417	0.4162	0.5463	0.8873

Fineness Modulus
0.72

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	3.3	67.2	29.5	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-23	99.5-101.0'	12-13-07	SC	Pale Yellow Clayey SAND (Visual)	ND	ND	ND

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

MACTEC, Inc.
Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
Specific Gravity = 2.668 (ASTM D854-06)
ND = Not determined

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 99.5-101.0' **Sample Number:** SS-23
Material Description: Pale Yellow Clayey SAND (Visual)
Date: 12-13-07 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SC
Testing Remarks: SIEVE ANALYSIS ONLY
Specific Gravity = 2.668 (ASTM D854-06)
ND = Not determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
201.36	0.00	0.00	#10	0.00	100.0
92.13	0.00	0.00	#20	0.90	99.0
			#40	3.05	96.7
			#60	9.28	89.9
			#100	34.67	62.4
			#140	54.95	40.4
			#200	64.95	29.5

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	3.3	67.2	70.5			29.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0766	0.1252	0.1449	0.1992	0.2203	0.2506	0.3189

Fineness Modulus
0.46

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: 1/04/08

SAMPLE IDENTIFICATION: B-2151 SS-23

(A) Mass of oven-dried soil, grams:		53.21
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.61
(C) Mass of pycnometer, water and soil, grams:		689.89
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.1
(G) Specific Gravity at observed temperature:	A / [A + (B - C)]	2.670
(F)	***Correction factor:***	0.99931
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.668

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100%

Clayey SAND (SC) - visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-6

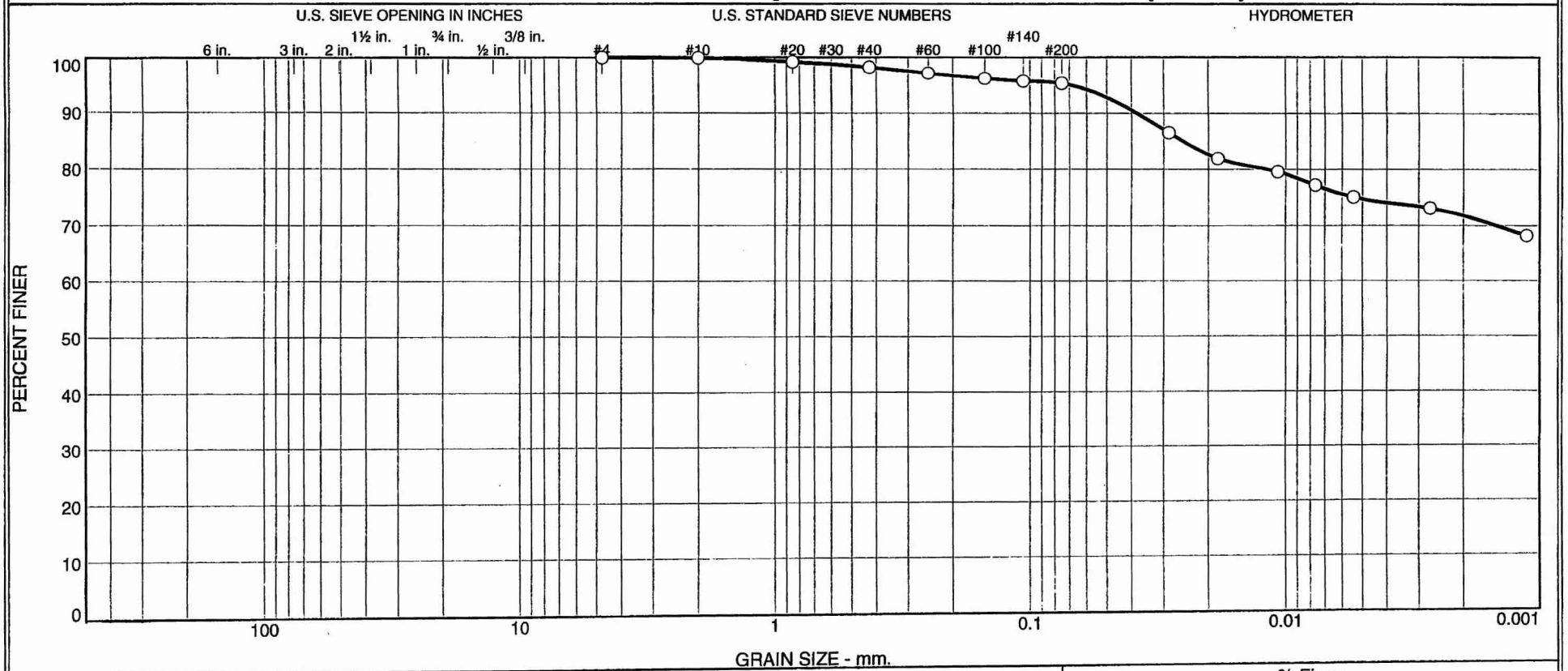
TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 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	1.7	3.0	20.6	74.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-24	109.5-111'	12-13-07	CH	Light Gray Fat CLAY	34.6	82	28

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 109.5-111' **Sample Number:** SS-24
Material Description: Light Gray Fat CLAY
Date: 12-13-07 **Natural Moisture:** 34.6
Liquid Limit: 82 **Plastic Limit:** 28 **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
188.92	0.00	0.00	#4	0.00	100.0
			#10	0.09	100.0
44.72	0.00	0.00	#20	0.33	99.2
			#40	0.76	98.3
			#60	1.25	97.2
			#100	1.67	96.2
			#140	1.89	95.7
			#200	2.06	95.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =44.72
Hygroscopic moisture correction:
Moist weight and tare = 28.69
Dry weight and tare = 27.76
Tare weight = 15.40
Hygroscopic moisture = 7.5%
Table of composite correction values:

Temp., deg. C:	12.3	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	41.0	36.5	0.0132	42.0	9.4	0.0286	86.6
5.00	21.6	39.0	34.5	0.0132	40.0	9.7	0.0184	81.9
15.00	21.6	38.0	33.5	0.0132	39.0	9.9	0.0107	79.6
30.00	21.6	37.0	32.5	0.0132	38.0	10.1	0.0076	77.2
60.00	22.0	36.0	31.6	0.0131	37.0	10.2	0.0054	75.1
240.00	22.7	35.0	30.8	0.0130	36.0	10.4	0.0027	73.1
1440.00	22.4	33.0	28.7	0.0131	34.0	10.7	0.0011	68.2

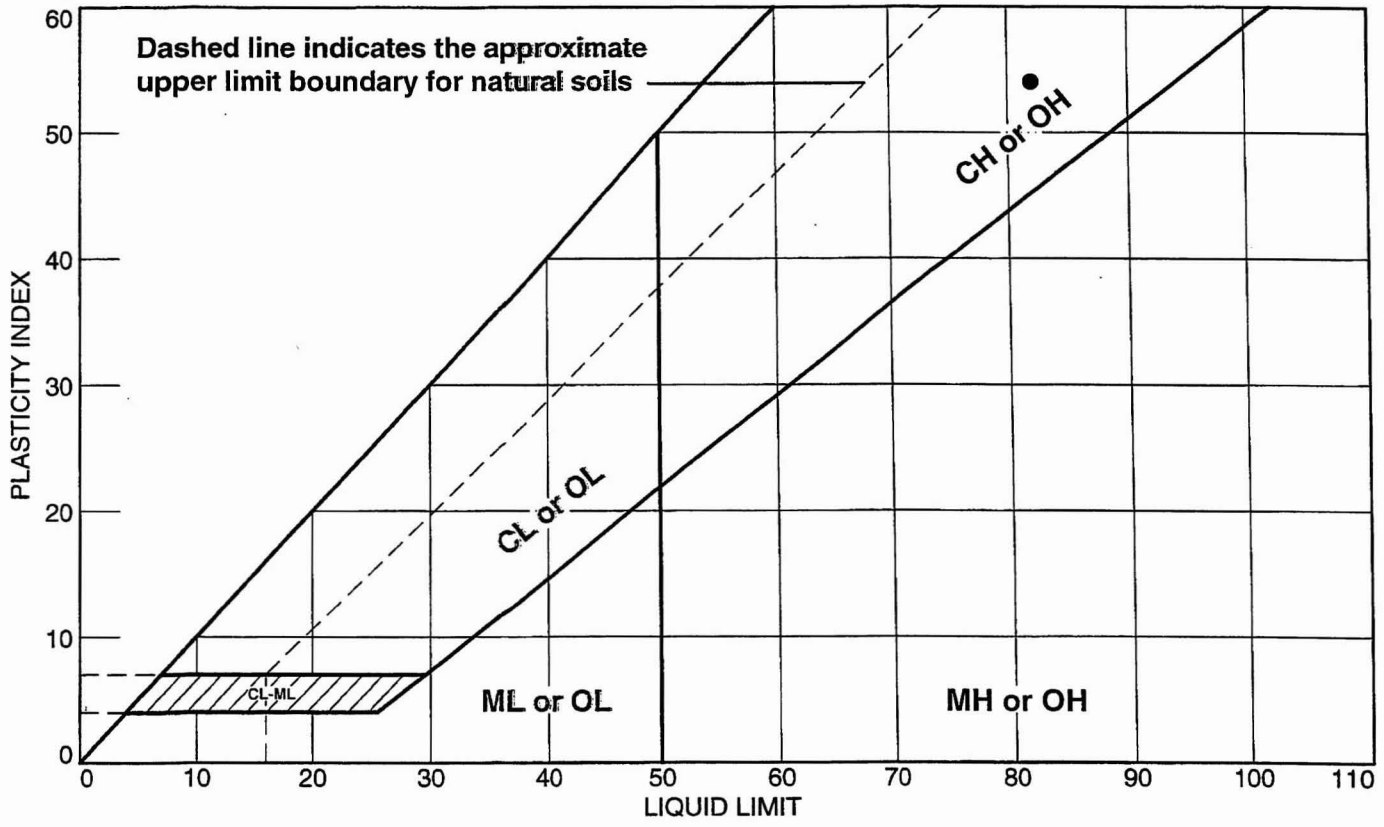
Fractional Components

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	3.0	4.7	20.6	74.7	95.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0117	0.0250	0.0380	0.0684

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-2151	SS-24	109.5-111'	34.6	28	82	54	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

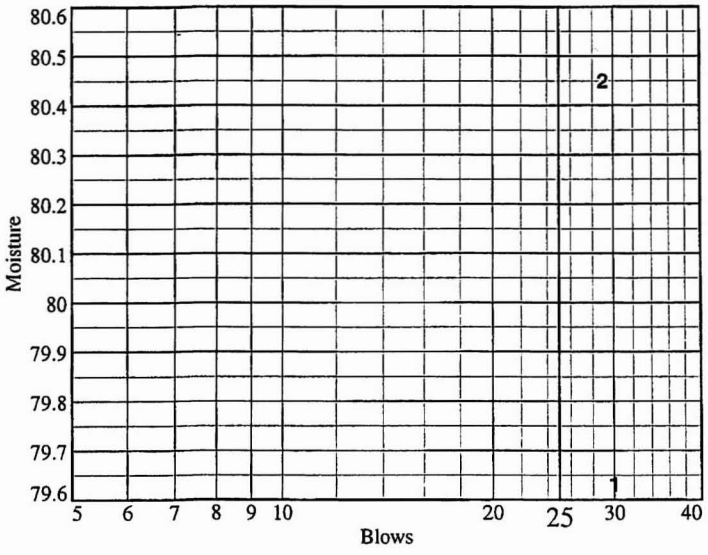
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 109.5-111'
Sample Number: SS-24
Material Description: Light Gray Fat CLAY
USCS: CH
AASHTO: A-7-6(60)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.11	27.65				
Dry+Tare	22.48	22.30				
Tare	15.41	15.65				
# Blows	30	29				
Moisture	79.6	80.5				



Liquid Limit= 82
Plastic Limit= 28
Plasticity Index= 54
Natural Moisture= 34.6
Liquidity Index= 0.1

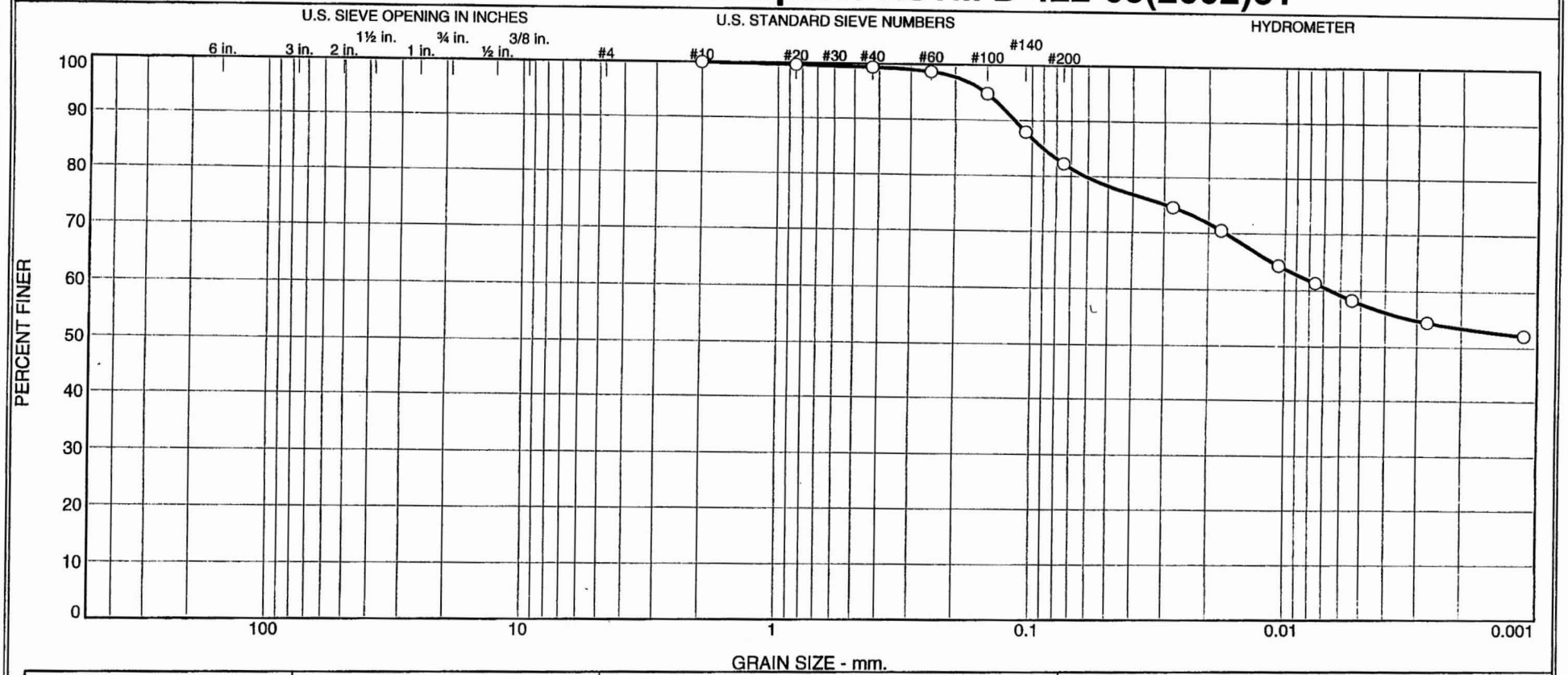
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.15	23.00			
Dry+Tare	20.69	21.36			
Tare	15.50	15.65			
Moisture	28.1	28.7			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
126.48	95.66	6.65	34.6

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	0.6	17.1	24.6	57.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-25	119.5-121'	12-13-07	CH	Light Gray Fat CLAY with sand	23.2	60	17

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.764 (ASTM D854-06)
Organic content = 4.8% (ASTM D2794-07)

Tested By: CS Checked By: LBL DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 119.5-121' **Sample Number:** SS-25
Material Description: Light Gray Fat CLAY with sand
Date: 12-13-07 **Natural Moisture:** 23.2
Liquid Limit: 60 **Plastic Limit:** 17 **USCS Class.:** CH
Testing Remarks: Specific Gravity = 2.764 (ASTM D854-06)
Organic content = 4.8% (ASTM D2794-07)
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
222.08	0.00	0.00	#10	0.00	100.0
50.32	0.00	0.00	#20	0.17	99.7
			#40	0.32	99.4
			#60	0.68	98.6
			#100	2.63	94.8
			#140	6.02	88.0
			#200	8.92	82.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.32
Hygroscopic moisture correction:
Moist weight and tare = 28.17
Dry weight and tare = 27.60
Tare weight = 15.48
Hygroscopic moisture = 4.7%
Table of composite correction values:

Temp., deg. C:	12.3	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.764
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	22.5	41.0	36.7	0.0128	42.0	9.4	0.0278	74.5
5.00	22.5	39.0	34.7	0.0128	40.0	9.7	0.0179	70.5
15.00	22.5	36.0	31.7	0.0128	37.0	10.2	0.0106	64.4
30.00	22.5	34.5	30.2	0.0128	35.5	10.5	0.0076	61.3
60.00	22.5	33.0	28.7	0.0128	34.0	10.7	0.0054	58.3
240.00	22.9	31.0	26.8	0.0127	32.0	11.0	0.0027	54.5
1440.00	22.4	30.0	25.7	0.0128	31.0	11.2	0.0011	52.2

MACTEC, Inc.

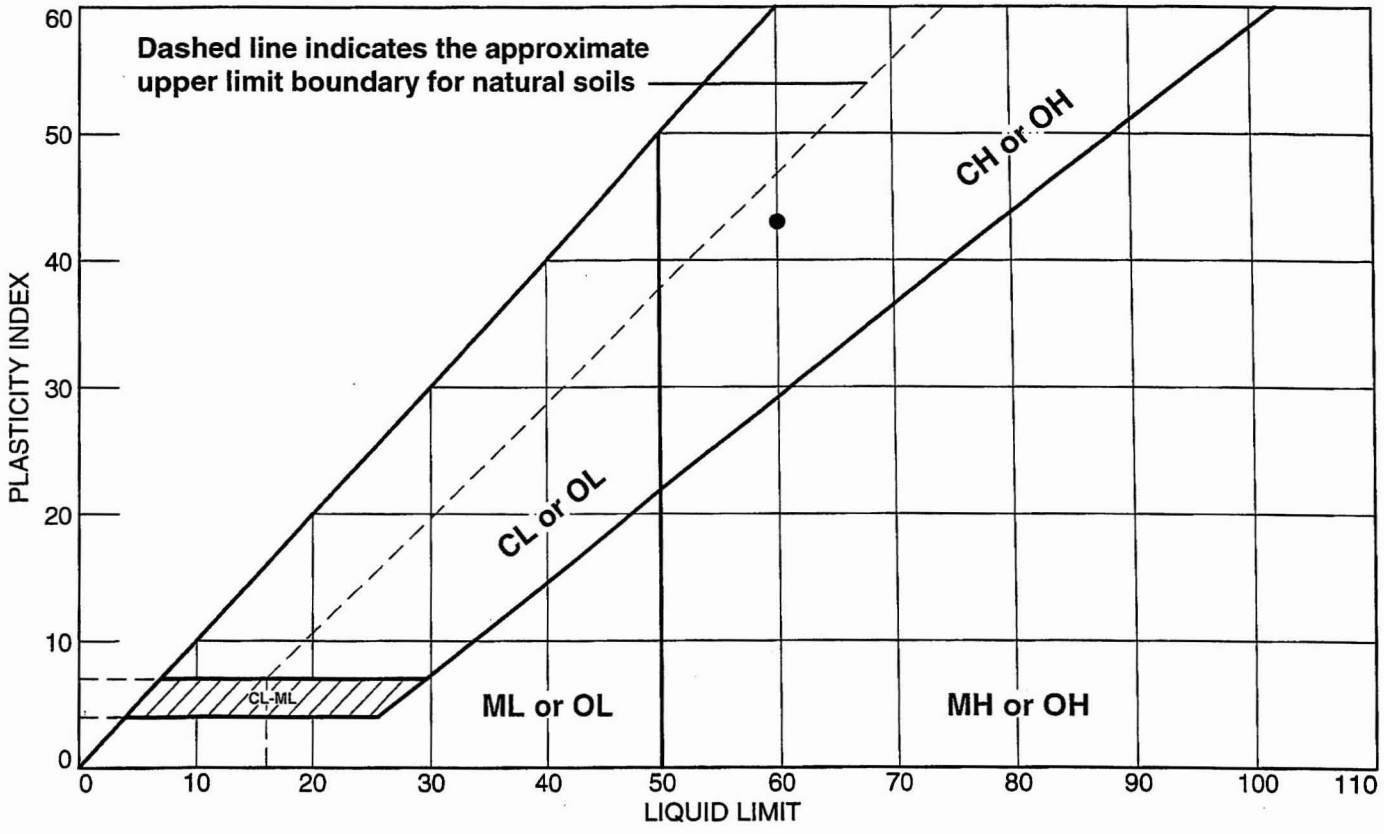
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	17.1	17.7	24.6	57.7	82.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0065	0.0614	0.0899	0.1167	0.1523

Fineness Modulus
0.07

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-2151	SS-25	119.5-121'	23.2	17	60	43	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

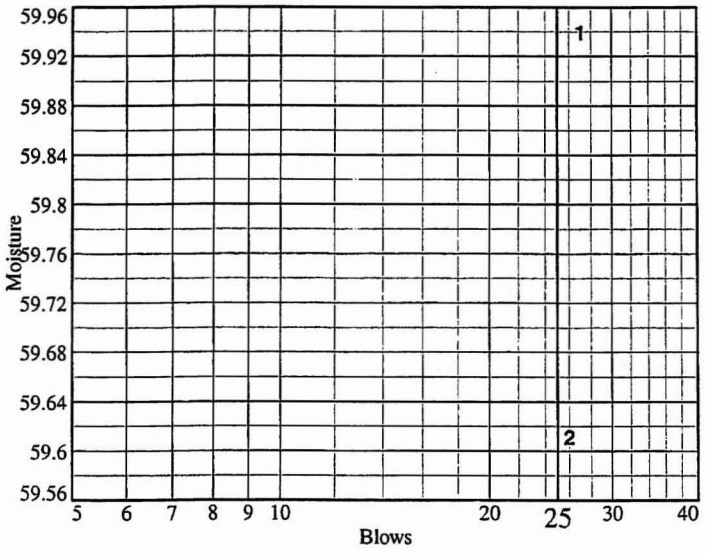
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 119.5-121'
Sample Number: SS-25
Material Description: Light Gray 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	26.28	23.75				
Dry+Tare	22.30	20.68				
Tare	15.66	15.53				
# Blows	27	26				
Moisture	59.9	59.6				



Liquid Limit= 60
Plastic Limit= 17
Plasticity Index= 43
Natural Moisture= 23.2
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.56	23.29			
Dry+Tare	21.52	22.18			
Tare	15.58	15.54			
Moisture	17.5	16.7			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
145.13	119.6	9.34	23.2

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: 1/07/08

SAMPLE IDENTIFICATION: B-2151 SS-25

(A) Mass of oven-dried soil, grams:	50.22
(B) Mass of pycnometer filled with water at test temperature (T), grams:	622.00
(C) Mass of pycnometer, water and soil, grams:	687.06
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.3
(G) Specific Gravity at observed temperature: A / [A + (B - C)]	2.765
(F) ***Correction factor:***	0.99950
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.764

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **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

PYCNOMETER : P-4

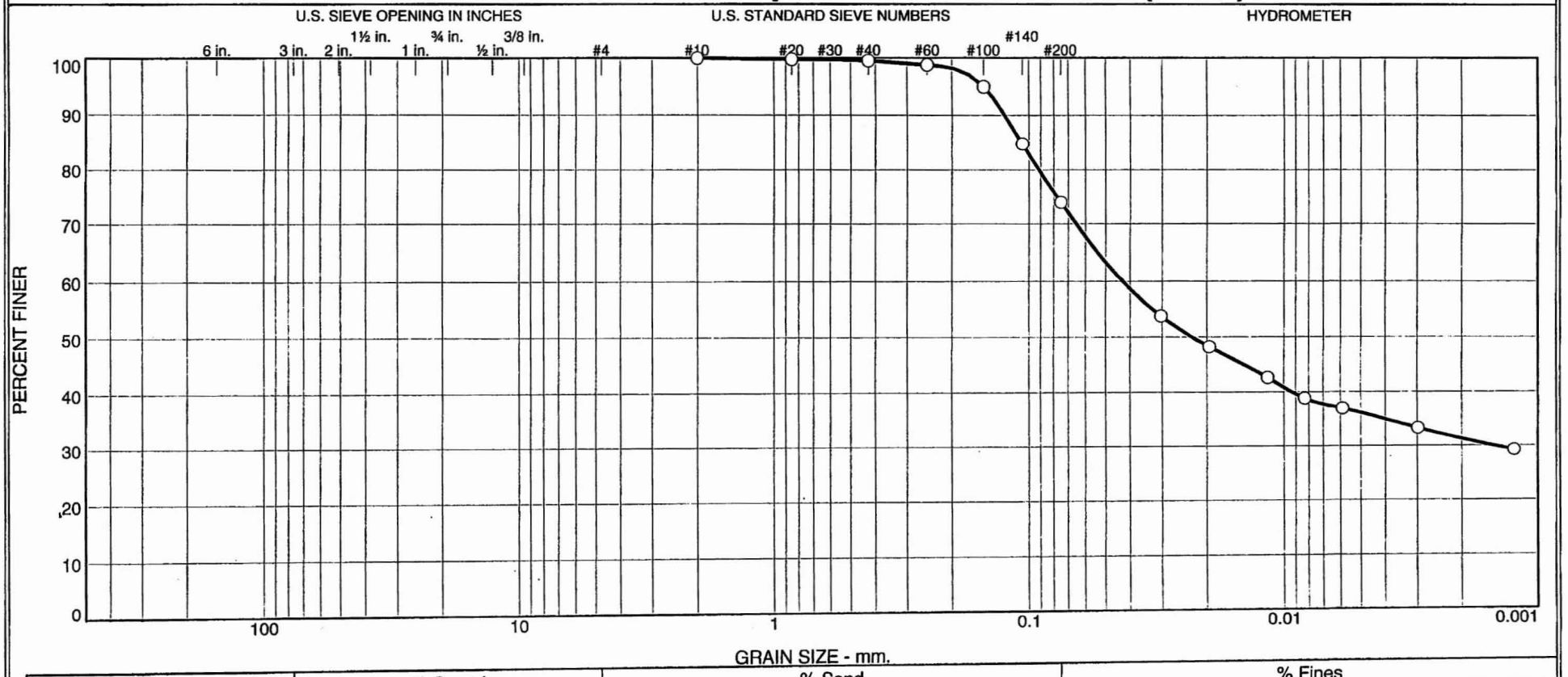
TESTED BY: CS

\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	25.6	37.7	36.2

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-26	129.5-131	12-13-07	CL	Light Gray Lean CLAY with sand	22.7	45	16

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Based on visual observation of the sample complete classification tests were performed.
Specific gravity is assumed.

Tested By: CS Checked By: LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 129.5-131 **Sample Number:** SS-26
Material Description: Light Gray Lean CLAY with sand
Date: 12-13-07 **Natural Moisture:** 22.7
Liquid Limit: 45 **Plastic Limit:** 16 **USCS Class.:** CL
Testing Remarks: Based on visual observation of the sample complete classification tests were performed. 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
180.69	0.00	0.00	#10	0.00	100.0
52.84	0.00	0.00	#20	0.12	99.8
			#40	0.25	99.5
			#60	0.64	98.8
			#100	2.67	94.9
			#140	8.02	84.8
			#200	13.77	73.9

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =52.84
Hygroscopic moisture correction:
Moist weight and tare = 28.92
Dry weight and tare = 28.87
Tare weight = 15.68
Hygroscopic moisture = 0.4%
Table of composite correction values:

Temp., deg. C:	12.3	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.2	33.0	28.6	0.0131	34.0	10.7	0.0303	53.8
5.00	22.3	30.0	25.7	0.0131	31.0	11.2	0.0196	48.2
15.00	22.3	27.0	22.7	0.0131	28.0	11.7	0.0115	42.6
30.00	22.3	25.0	20.7	0.0131	26.0	12.0	0.0083	38.8
60.00	22.4	24.0	19.7	0.0131	25.0	12.2	0.0059	37.0
240.00	22.5	22.0	17.7	0.0130	23.0	12.5	0.0030	33.3
1440.00	21.9	20.0	15.6	0.0131	21.0	12.9	0.0012	29.2

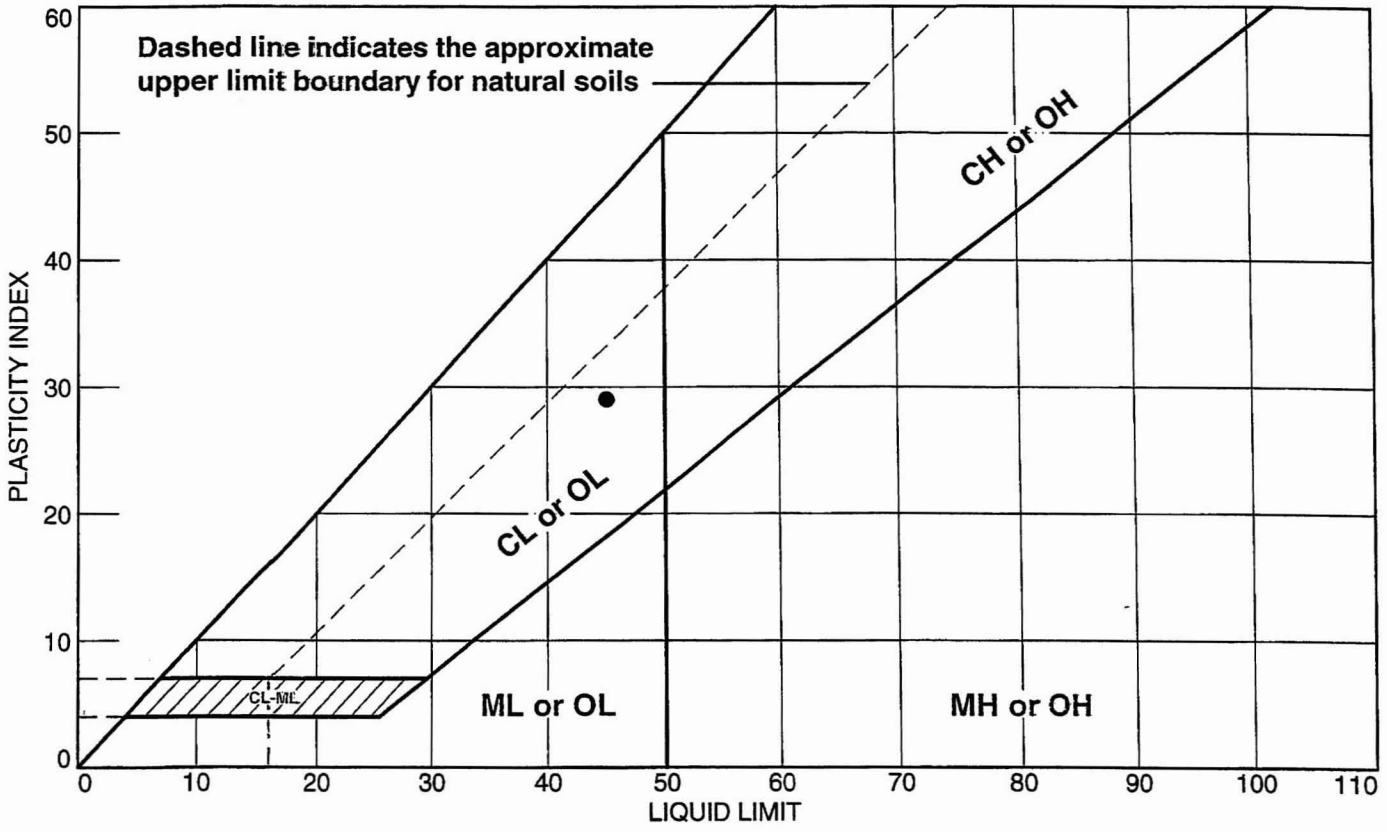
Fractional Components

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	25.6	26.1	37.7	36.2	73.9

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0015	0.0229	0.0428	0.0914	0.1066	0.1243	0.1504

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-2151	SS-26	129.5-131	22.7	16	45	29	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

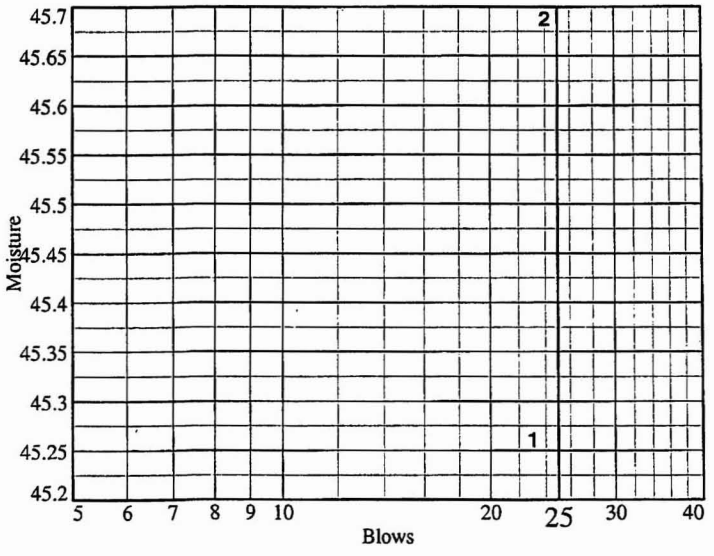
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 129.5-131 **Sample Number:** SS-26
Material Description: Light Gray Lean CLAY with sand
USCS: CL **AASHTO:** A-7-6(20)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.67	31.11				
Dry+Tare	26.90	27.56				
Tare	20.78	19.79				
# Blows	23	24				
Moisture	45.3	45.7				



Liquid Limit= 45
Plastic Limit= 16
Plasticity Index= 29
Natural Moisture= 22.7
Liquidity Index= 0.2

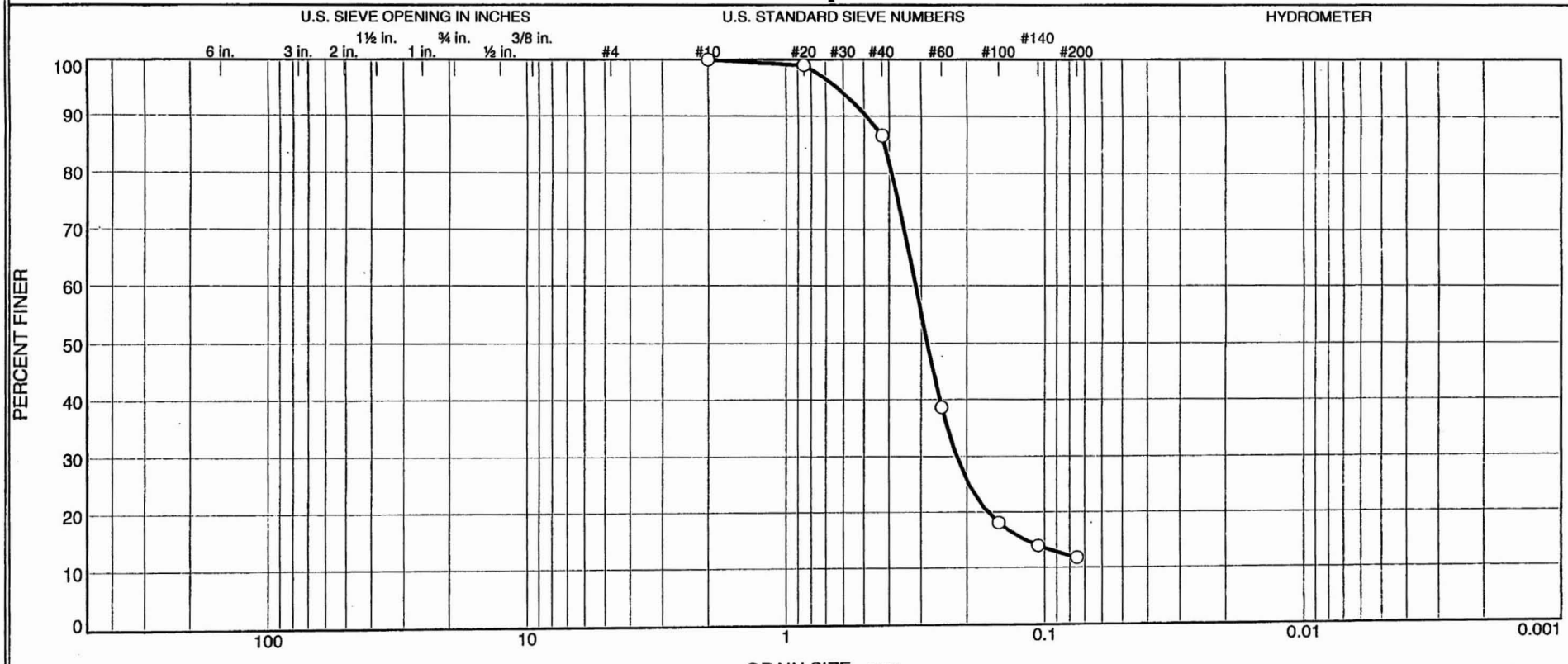
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	28.80	28.51			
Dry+Tare	27.03	26.74			
Tare	15.75	15.50			
Moisture	15.7	15.7			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
98.14	81.26	6.75	22.7

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	13.4	74.9	11.7	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-27	139.6-141.1'	12-14-07	SP-SC	Light Gray Poorly Graded SAND with clay (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
Specific Gravity = 2.753 (ASTM D854-06)
ND = Not determined

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 139.6-141.1' **Sample Number:** SS-27
Material Description: Light Gray Poorly Graded SAND with clay (Visual)
Date: 12-14-07 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SP-SC
Testing Remarks: SIEVE ANALYSIS ONLY
Specific Gravity = 2.753 (ASTM D854-06)
ND = Not determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
126.01	0.00	0.00	#10	0.00	100.0
102.50	0.00	0.00	#20	1.07	99.0
			#40	13.71	86.6
			#60	62.85	38.7
			#100	83.97	18.1
			#140	88.26	13.9
			#200	90.47	11.7

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	13.4	74.9	88.3			11.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.1197	0.1653	0.2184	0.2849	0.3156	0.3897	0.4153	0.4901	0.6342

Fineness Modulus
1.34

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: 12/26/07

SAMPLE IDENTIFICATION: B-2151 SS-27

(A) Mass of oven-dried soil, grams:	47.56
(B) Mass of pycnometer filled with water at test temperature (T), grams:	654.93
(C) Mass of pycnometer, water and soil, grams:	685.22
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.1
(G) Specific Gravity at observed temperature: A / [A + (B - C)]	2.754
(F) ***Correction factor:***	0.99954
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.753

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100%

Poorly Graded SAND with clay (SP-SC) - visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

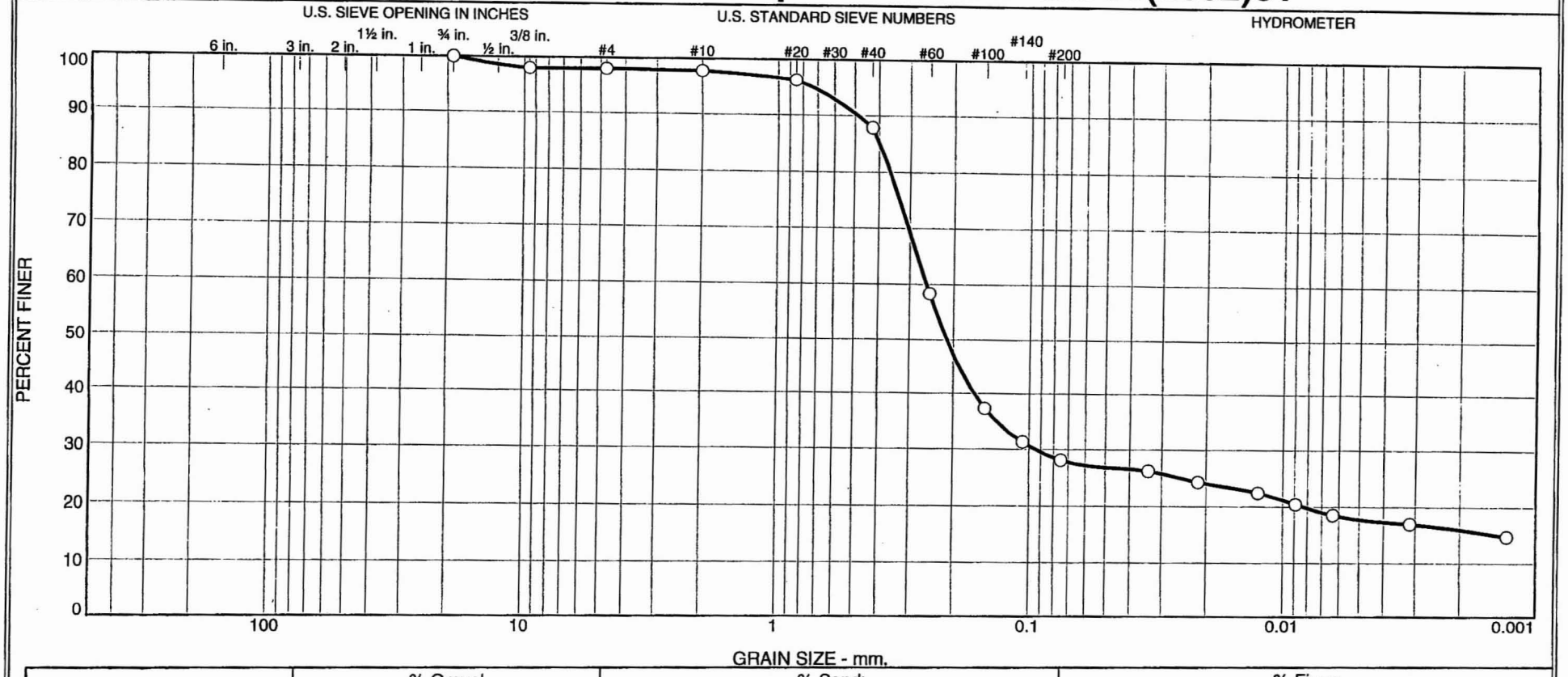
THERMOMETER : 5.1.01

PYCNOMETER : P-5

TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls **REVIEWED BY: Brian Johnson**

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	1.9	0.3	9.9	59.8	10.3	17.8

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2151	SS-28	149.6-151.1'	12-14-07	SC	Light Gray Clayey SAND	22.4	19	10

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.684 (ASTM D854-06)
Organic content = 1.7% (ASTM D2794-07)

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 149.6-151.1' **Sample Number:** SS-28
Material Description: Light Gray Clayey SAND
Date: 12-14-07 **Natural Moisture:** 22.4
Liquid Limit: 19 **Plastic Limit:** 10 **USCS Class.:** SC
Testing Remarks: Specific Gravity = 2.684 (ASTM D854-06)
Organic content = 1.7% (ASTM D2794-07)
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
229.90	0.00	0.00	3/4	0.00	100.0
			3/8	4.45	98.1
			#4	4.45	98.1
			#10	4.96	97.8
50.52	0.00	0.00	#20	0.81	96.3
			#40	5.11	87.9
			#60	20.40	58.3
			#100	31.28	37.3
			#140	34.36	31.3
			#200	36.00	28.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 97.8
Weight of hydrometer sample =50.52
Hygroscopic moisture correction:
Moist weight and tare = 28.98
Dry weight and tare = 28.90
Tare weight = 15.72
Hygroscopic moisture = 0.6%
Table of composite correction values:

Temp., deg. C:	12.3	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.684
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	22.0	18.0	13.6	0.0132	19.0	13.2	0.0338	26.3
5.00	22.0	17.0	12.6	0.0132	18.0	13.3	0.0215	24.3
15.00	22.1	16.0	11.6	0.0132	17.0	13.5	0.0125	22.5
30.00	22.0	15.0	10.6	0.0132	16.0	13.7	0.0089	20.5
60.00	22.0	14.0	9.6	0.0132	15.0	13.8	0.0063	18.5
240.00	22.8	13.0	8.8	0.0131	14.0	14.0	0.0032	17.0
1440.00	22.3	12.0	7.7	0.0131	13.0	14.2	0.0013	14.8

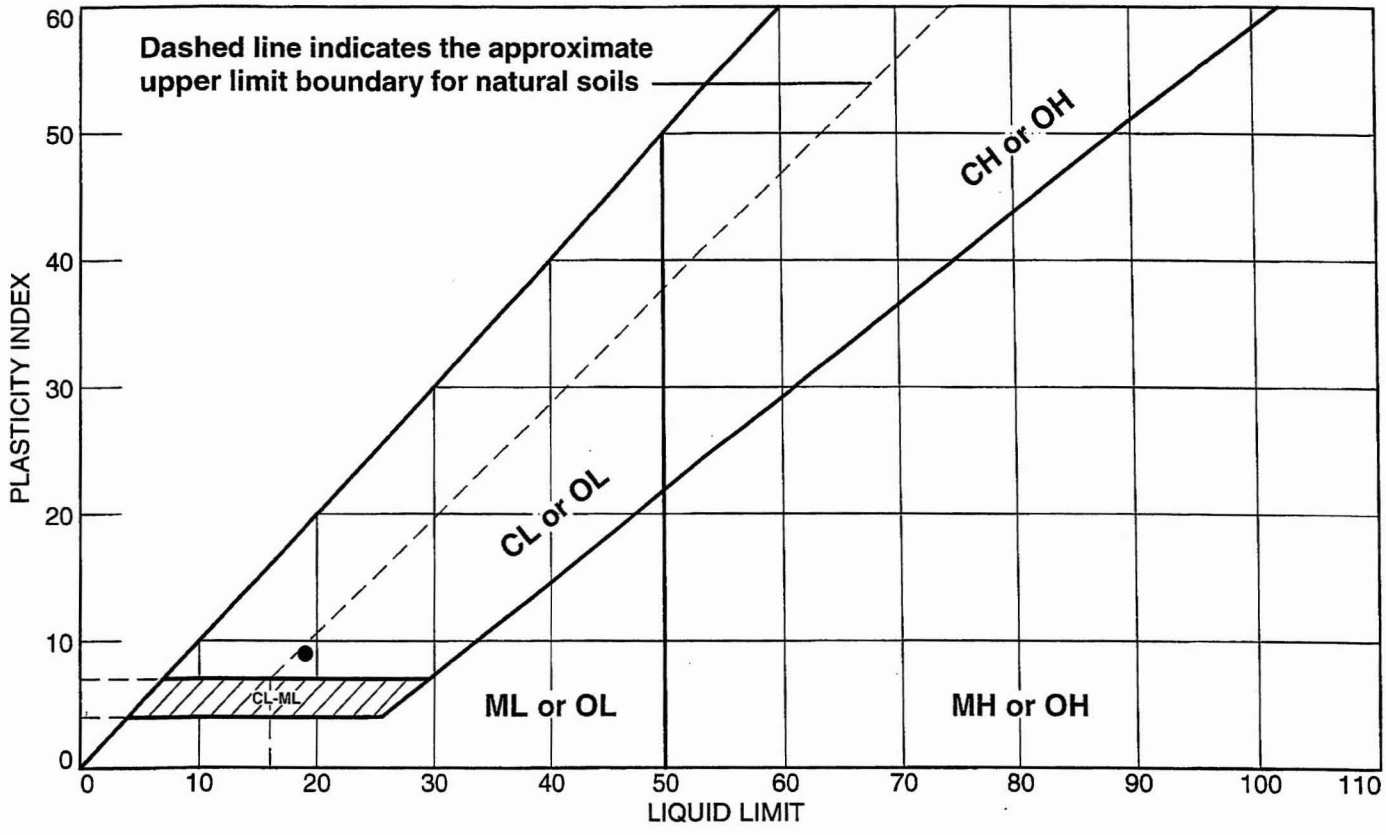
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.9	1.9	0.3	9.9	59.8	70.0	10.3	17.8	28.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0014	0.0083	0.0943	0.2129	0.2574	0.3600	0.3970	0.4844	0.7310

Fineness Modulus
1.10

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-2151	SS-28	149.6-151.1'	22.4	10	19	9	SC

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

Tested By: CS **Checked By:** LBJ DSC 1-25-08

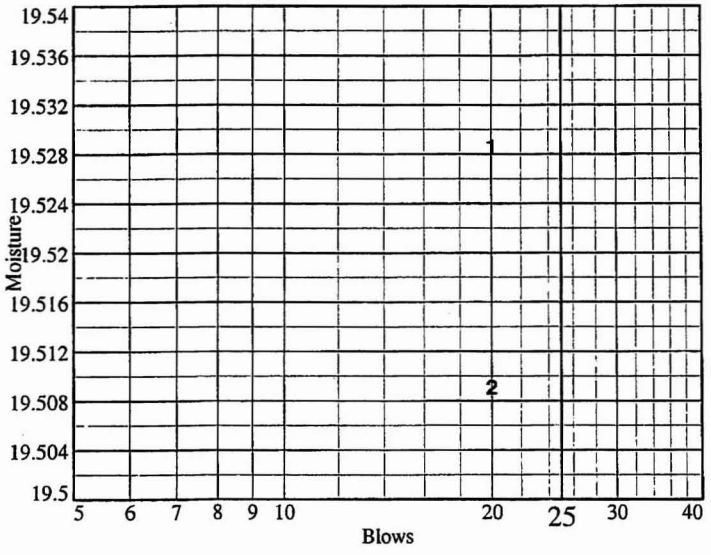
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 149.6-151.1'
Sample Number: SS-28
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	33.28	34.40				
Dry+Tare	30.38	31.30				
Tare	15.53	15.41				
# Blows	20	20				
Moisture	19.5	19.5				



Liquid Limit= 19
Plastic Limit= 10
Plasticity Index= 9
Natural Moisture= 22.4
Liquidity Index= 1.4

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	24.73	28.32			
Dry+Tare	23.89	27.19			
Tare	15.44	15.58			
Moisture	9.9	9.7			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
156.40	129.02	6.65	22.4

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: 12/28/07

SAMPLE IDENTIFICATION: B-2151 SS-28

(A) Mass of oven-dried soil, grams:		49.73
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.70
(C) Mass of pycnometer, water and soil, grams:		687.91
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		22.3
(G) Specific Gravity at observed temperature:	A / [A + (B - C)]	2.685
(F)	***Correction factor:***	0.99950
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.684

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-6

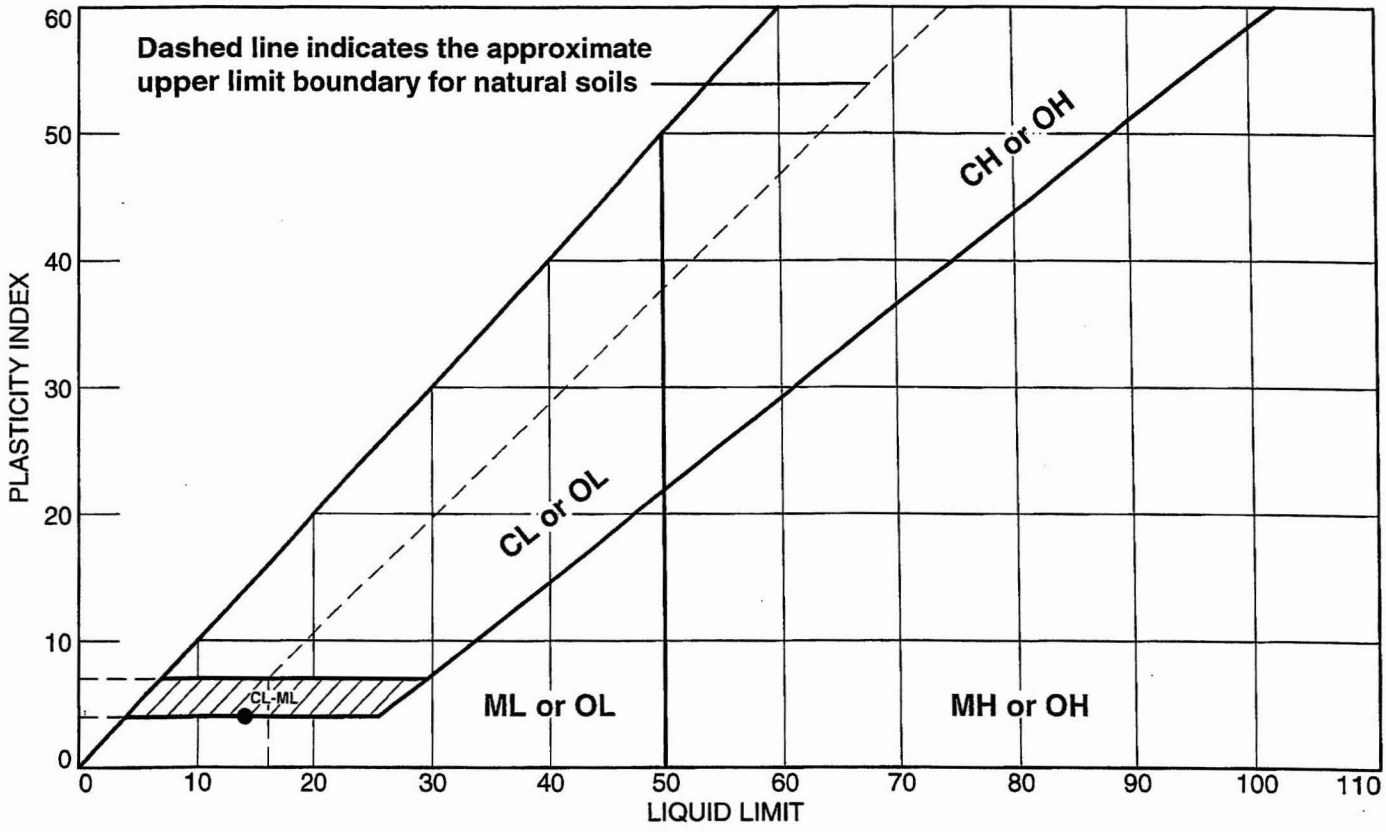
TESTED BY: CS

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

REVIEWED BY: Brian Johnson

DSC 1-25-08

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-2151	SS-30	169.6-171.1'	ND	10	14	4	SW-SM

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

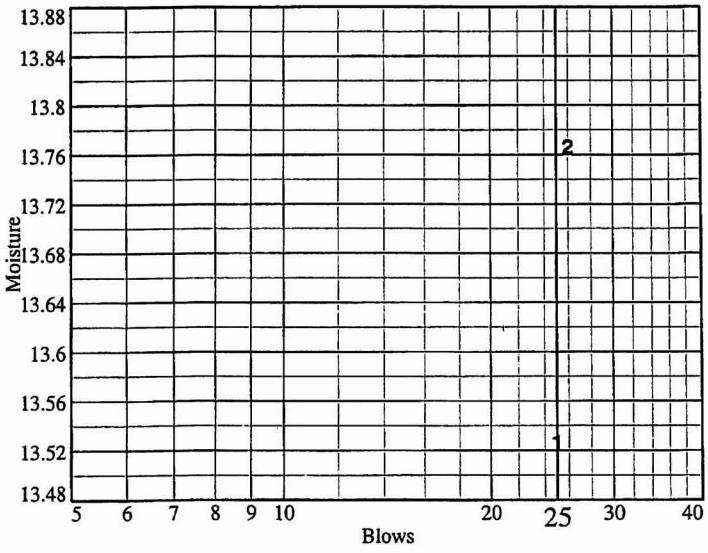
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 169.6-171.1' **Sample Number:** SS-30
Material Description: Light Gray Well Graded SAND with silt (Visual)
ATTERBERG LIMITS TESTING ONLY.
USCS: SW-SM **AASHTO:** ND
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.65	34.87				
Dry+Tare	29.74	32.52				
Tare	15.62	15.45				
# Blows	25	26				
Moisture	13.5	13.8				



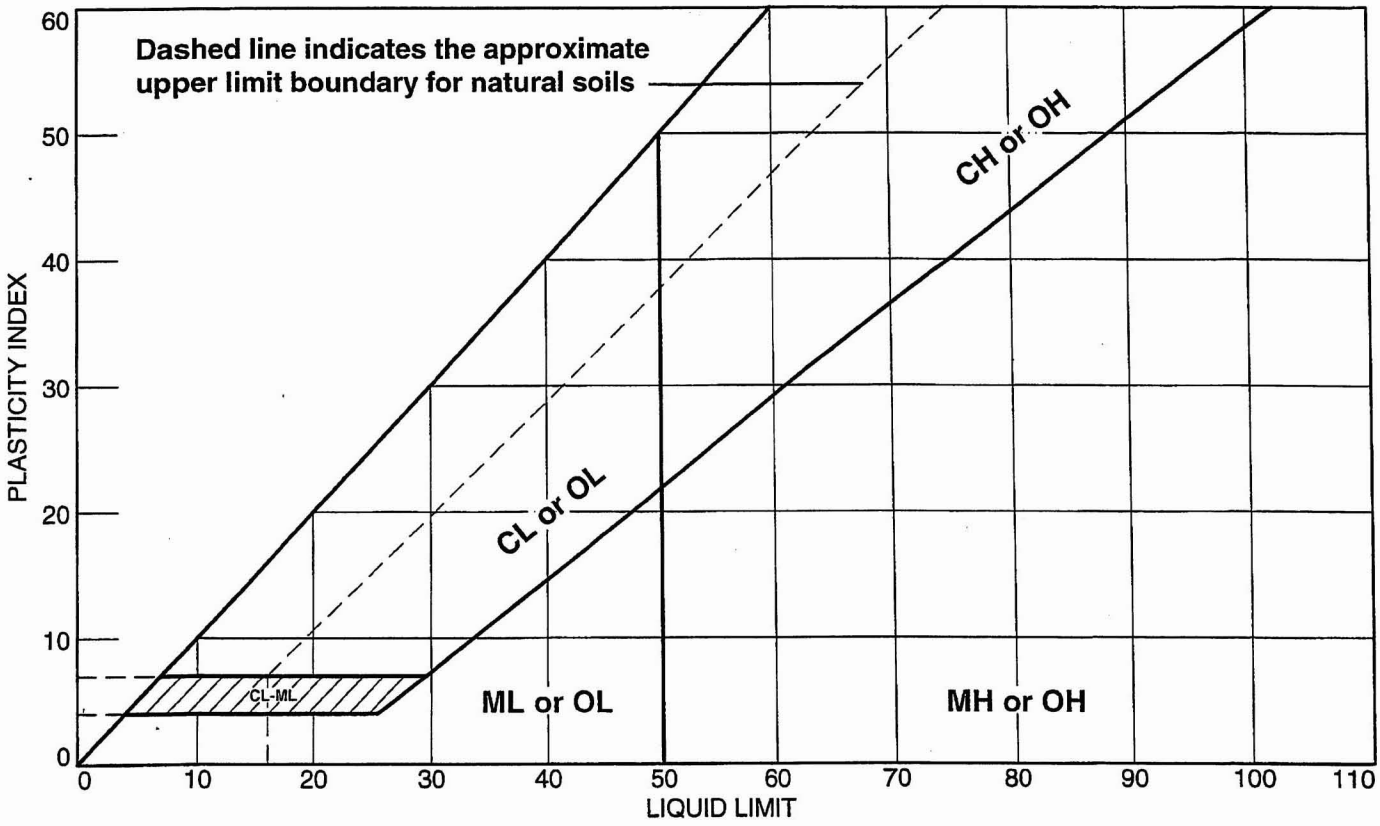
Liquid Limit= 14
Plastic Limit= 10
Plasticity Index= 4
Natural Moisture= ND

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.33	24.44			
Dry+Tare	21.72	23.67			
Tare	15.27	15.68			
Moisture	9.5	9.6			

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-2151	SS-31	179.6-181.1'	N/D	NP	NV	NP	SW

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project No.: 6468071777 **Figure** N/A

Tested By: CS **Checked By:** LBJ DSC 1-25-08

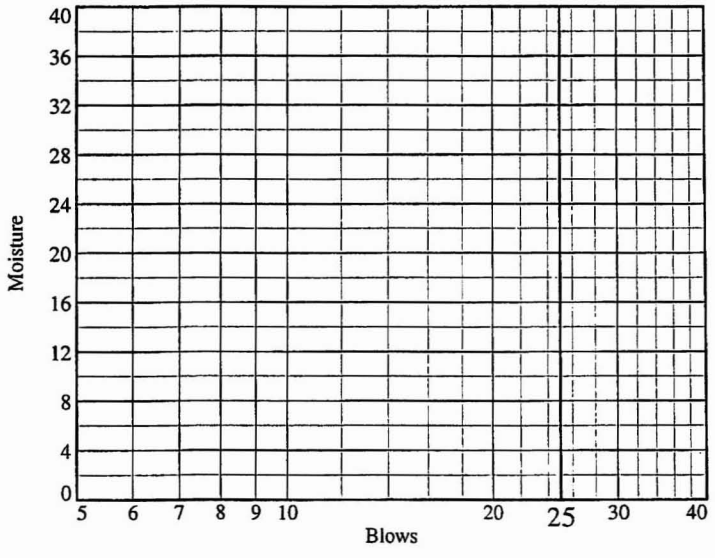
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2151
Depth: 179.6-181.1' **Sample Number:** SS-31
Material Description: Light Gray Well Graded SAND (Visual)
ATTERBERG LIMITS TESTING ONLY; sample was determined to be nonplastic.
USCS: SW **AASHTO:** ND
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= N/D

Plastic Limit Data

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

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: 1/2/08

SAMPLE IDENTIFICATION: B-2151 SS-31

(A) Mass of oven-dried soil, grams:		76.47
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.05
(C) Mass of pycnometer, water and soil, grams:		702.76
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.9
(G) Specific Gravity at observed temperature:	A / [A + (B - C)]	2.659
(F)	***Correction factor:***	0.99959
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.658

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100%

Well Graded SAND (SW) - visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-4

TESTED BY: CS

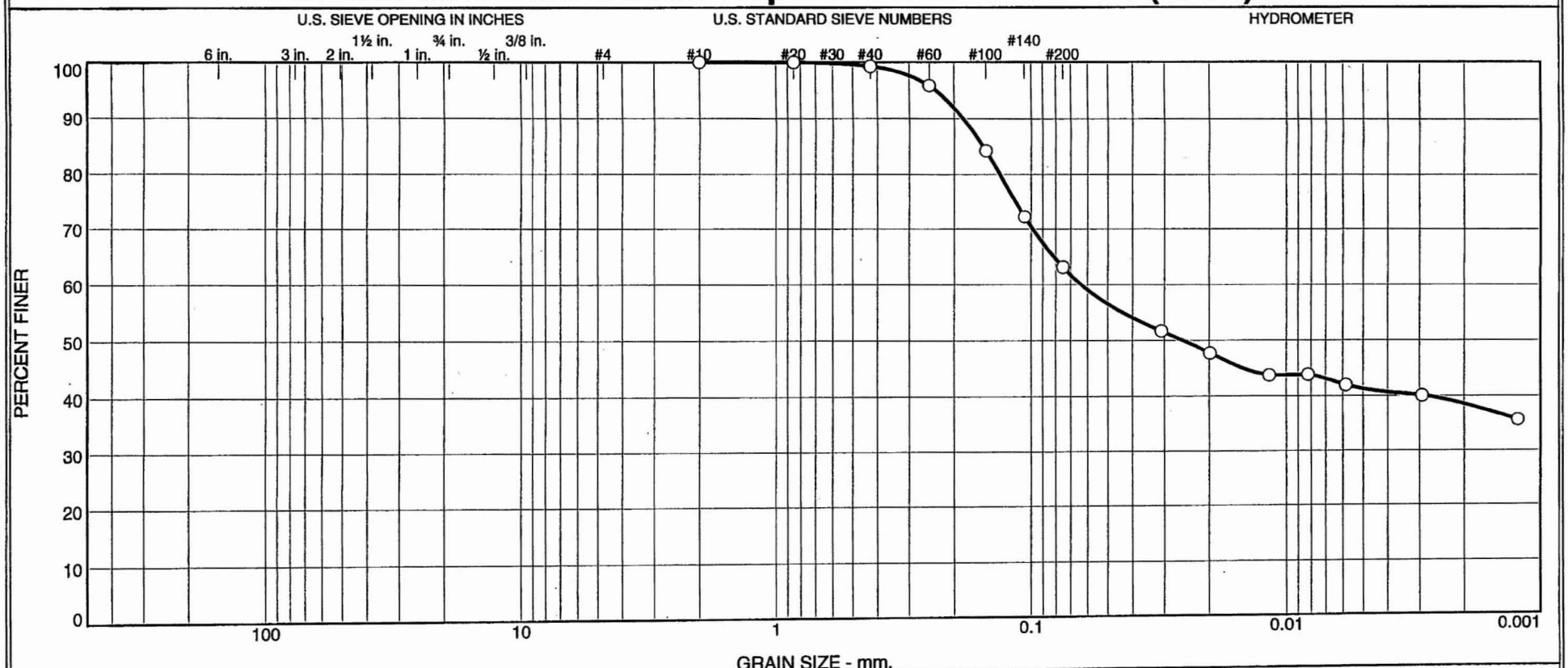
\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Brian Johnson

DSC 1-25-08

Boring B-2160

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	0.7	36.2	21.9	41.2

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-1	0.0-1.5	11-11-07	CH	Dark Gray Sandy Fat CLAY	13.0	50	15

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed
Organic content = 2.9% (ASTM D 2794-07)

Tested By: CS Checked By: LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 0.0-1.5 **Sample Number:** SS-1
Material Description: Dark Gray Sandy Fat CLAY
Date: 11-11-07 **Natural Moisture:** 13.0
Liquid Limit: 50 **Plastic Limit:** 15 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Organic content = 2.9% (ASTM D 2794-07)
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
176.31	0.00	0.00	#10	0.00	100.0
51.87	0.00	0.00	#20	0.03	99.9
			#40	0.38	99.3
			#60	2.17	95.8
			#100	8.15	84.3
			#140	14.38	72.3
			#200	19.12	63.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =51.87
Hygroscopic moisture correction:
Moist weight and tare = 27.30
Dry weight and tare = 27.06
Tare weight = 15.41
Hygroscopic moisture = 2.1%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.1	31.0	26.6	0.0131	32.0	11.0	0.0308	51.7
5.00	21.9	29.0	24.5	0.0131	30.0	11.4	0.0198	47.7
15.00	21.7	27.0	22.5	0.0132	28.0	11.7	0.0116	43.7
30.00	21.9	27.0	22.5	0.0131	28.0	11.7	0.0082	43.8
60.00	22.0	26.0	21.5	0.0131	27.0	11.9	0.0058	41.9
240.00	22.2	25.0	20.6	0.0131	26.0	12.0	0.0029	40.1
1440.00	21.3	23.0	18.3	0.0132	24.0	12.4	0.0012	35.7

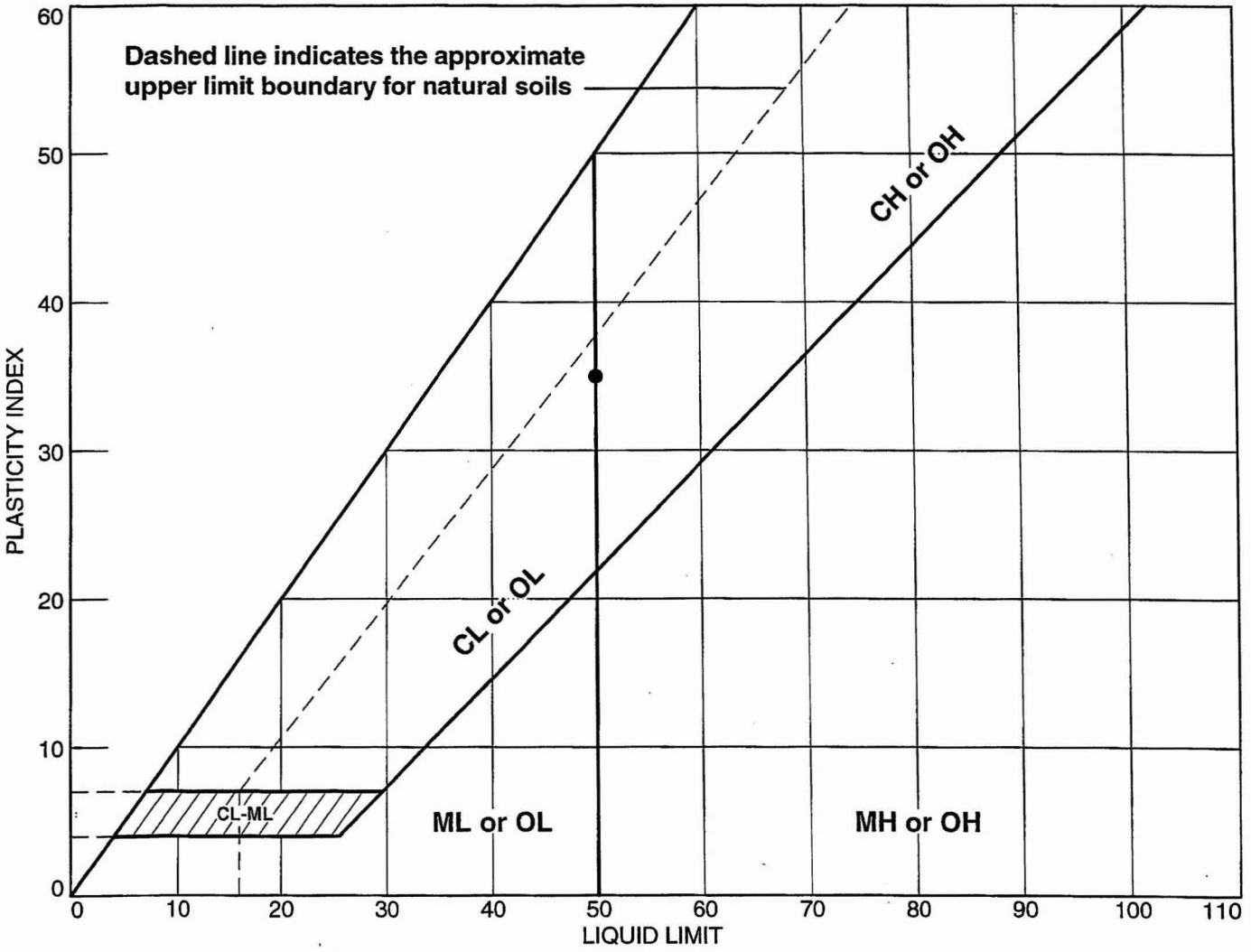
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.7	36.2	36.9	21.9	41.2	63.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0254	0.0635	0.1323	0.1534	0.1835	0.2361

Fineness Modulus
0.18

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-2160	SS-1	0.0-1.5	13.0	15	50	35	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

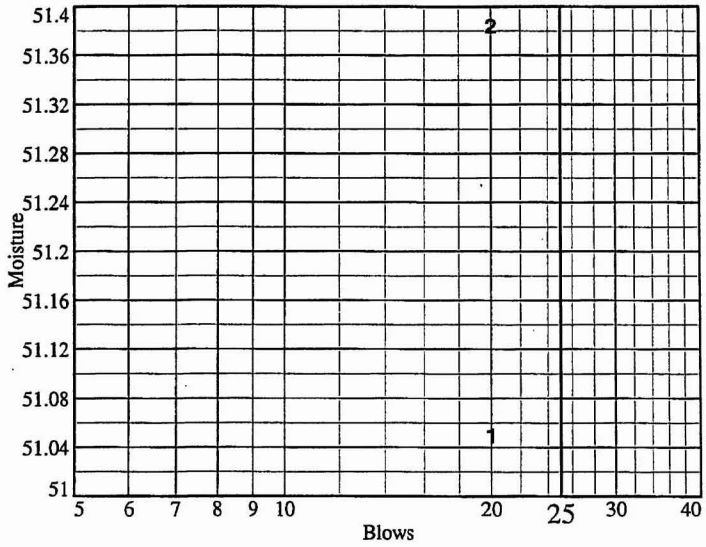
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 0.0-1.5 **Sample Number:** SS-1
Material Description: Dark Gray Sandy Fat CLAY
USCS: CH **AASHTO:** A-7-6(19)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.95	25.38				
Dry+Tare	23.06	22.04				
Tare	15.44	15.54				
# Blows	20	20				
Moisture	51.0	51.4				



Liquid Limit= 50
Plastic Limit= 15
Plasticity Index= 35
Natural Moisture= 13.0
Liquidity Index= -0.1

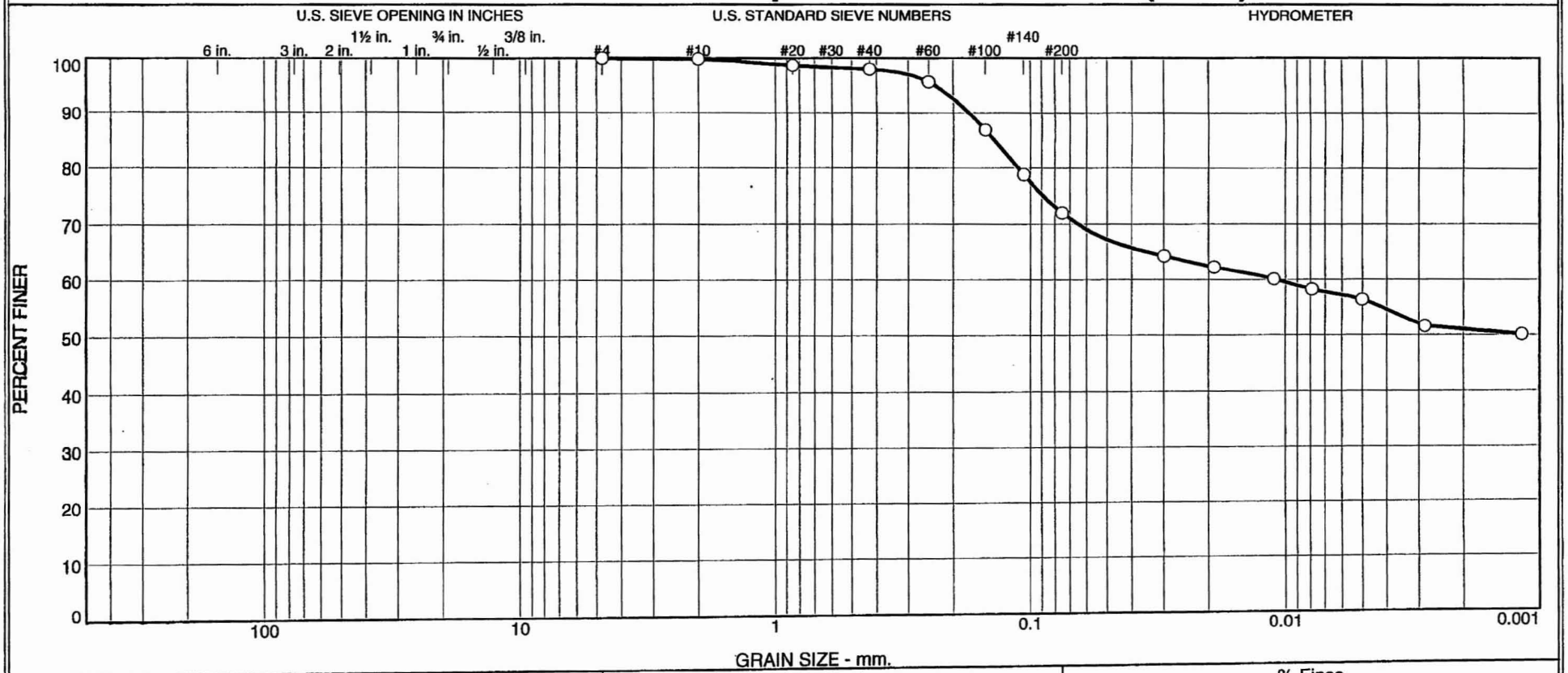
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	25.50	24.50			
Dry+Tare	24.25	23.30			
Tare	15.50	15.40			
Moisture	14.3	15.2			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
109.31	97.78	9.16	13.0

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	0.1	1.9	26.0	15.6	56.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-2	3.5-5.0	11-11-07	CH	Gray Fat CLAY with sand	22.8	53	15

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.680 (ASTM D854-06)
Organic content =3.9% (ASTM D2794-07)

Tested By: CS Checked By: LBJ DSC 1-26-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 3.5-5.0 **Sample Number:** SS-2
Material Description: Gray Fat CLAY with sand
Date: 11-11-07 **Natural Moisture:** 22.8
Liquid Limit: 53 **Plastic Limit:** 15 **USCS Class.:** CH
Testing Remarks: Specific Gravity = 2.680 (ASTM D854-06)
Organic content =3.9% (ASTM D2794-07)
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
218.74	0.00	0.00	#4	0.00	100.0
			#10	0.28	99.9
49.83	0.00	0.00	#20	0.59	98.7
			#40	0.94	98.0
			#60	2.10	95.7
			#100	6.46	86.9
			#140	10.50	78.8
			#200	13.89	72.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.9
Weight of hydrometer sample =49.83
Hygroscopic moisture correction:
Moist weight and tare = 27.70
Dry weight and tare = 27.40
Tare weight = 15.52
Hygroscopic moisture = 2.5%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.680
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	22.0	36.0	31.5	0.0132	37.0	10.2	0.0298	64.4
5.00	22.0	35.0	30.5	0.0132	36.0	10.4	0.0190	62.3
15.00	21.8	34.0	29.5	0.0132	35.0	10.6	0.0111	60.2
30.00	22.0	33.0	28.5	0.0132	34.0	10.7	0.0079	58.2
75.00	22.3	32.0	27.6	0.0131	33.0	10.9	0.0050	56.4
240.00	22.8	29.5	25.3	0.0131	30.5	11.3	0.0028	51.6
1440.00	22.0	29.0	24.5	0.0132	30.0	11.4	0.0012	50.1

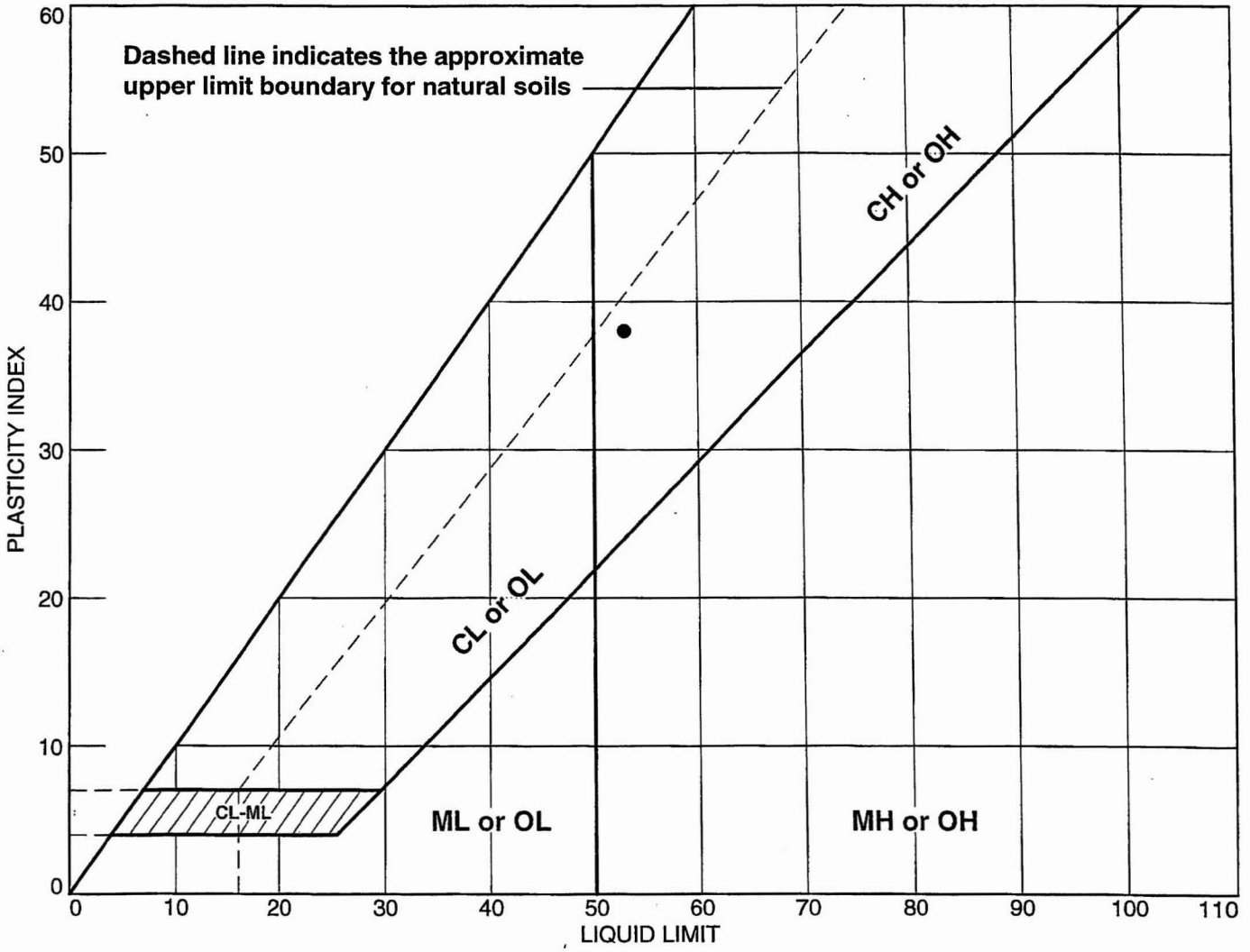
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	1.9	26.0	28.0	15.6	56.4	72.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0107	0.1116	0.1379	0.1734	0.2357

Fineness Modulus
0.19

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-2160	SS-2	3.5-5.0	22.8	15	53	38	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

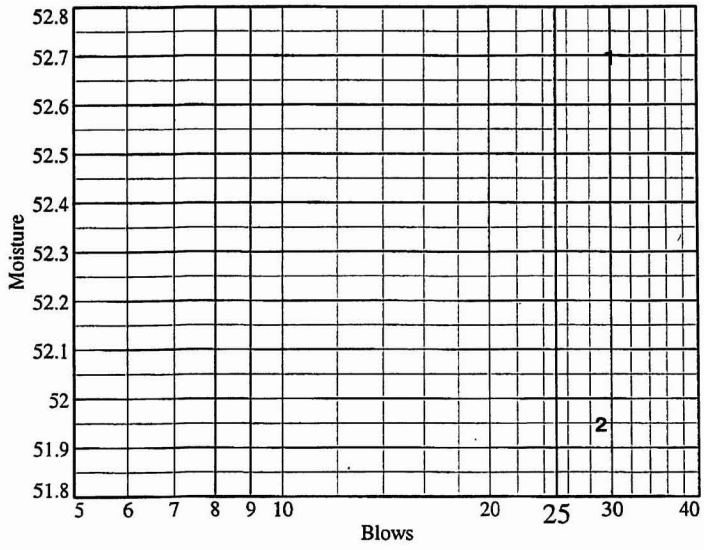
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 3.5-5.0 **Sample Number:** SS-2
Material Description: Gray Fat CLAY with sand
USCS: CH **AASHTO:** A-7-6(26)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.42	23.48				
Dry+Tare	22.00	20.68				
Tare	15.51	15.29				
# Blows	30	29				
Moisture	52.7	51.9				



Liquid Limit= 53
Plastic Limit= 15
Plasticity Index= 38
Natural Moisture= 22.8
Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.09	22.20			
Dry+Tare	21.23	21.30			
Tare	15.47	15.58			
Moisture	14.9	15.7			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
169.45	139.27	6.77	22.8

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: 1/16/08

SAMPLE IDENTIFICATION: B-2160 SS-2

(A) Mass of oven-dried soil, grams:	51.65
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.62
(C) Mass of pycnometer, water and soil, grams:	689.01
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	23.0
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.682
(F) ***Correction factor:***	0.99933
(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%
Fat CLAY with sand (CH)

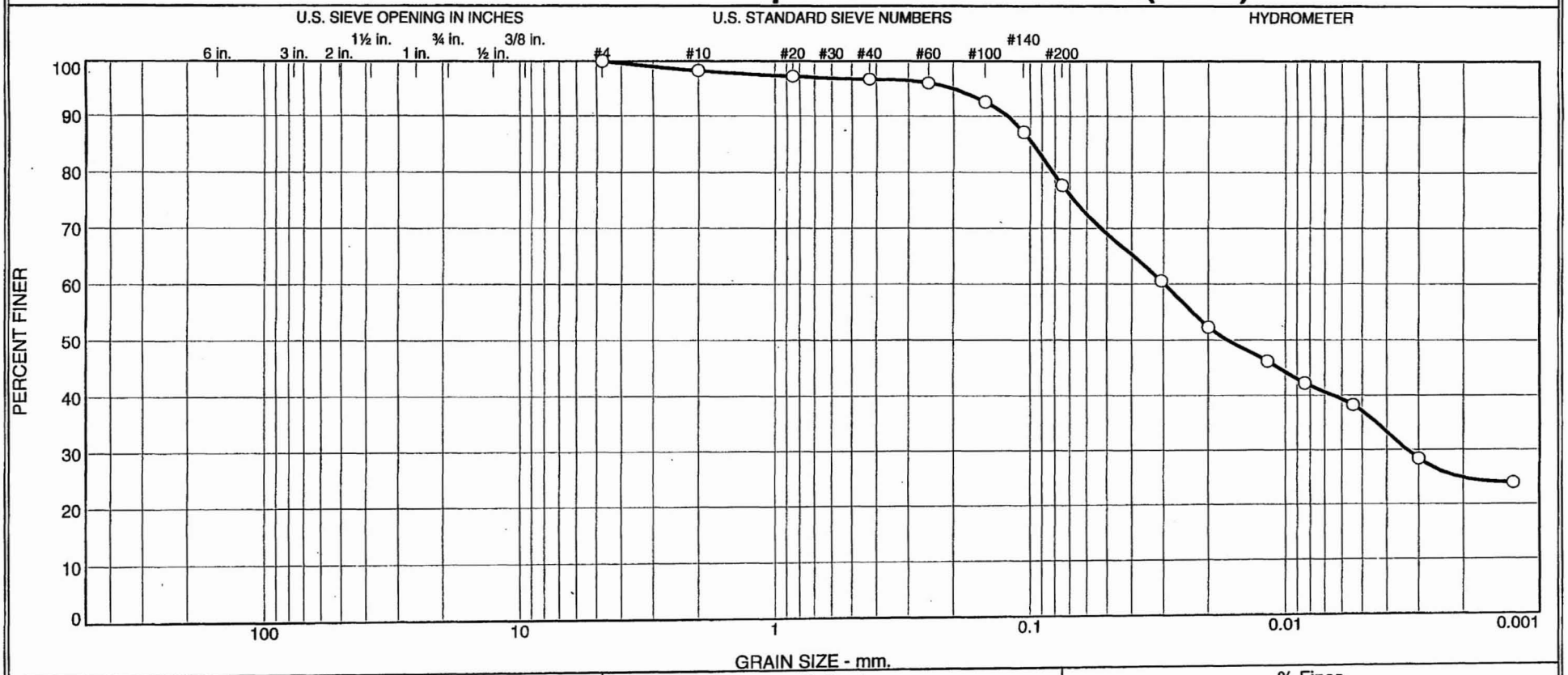
EQUIPMENT USED
SCALES : 3.1.19
OVEN : 5.1.16
THERMOMETER : 5.1.01
PYCNOMETER : P-5

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	1.7	1.6	19.0	40.6	37.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-3	6.0-7.5	11-11-07	CL	Pale Brown Lean CLAY with sand	19.8	36	14

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 6.0-7.5 **Sample Number:** SS-3
Material Description: Pale Brown Lean CLAY with sand
Date: 11-11-07 **Natural Moisture:** 19.8
Liquid Limit: 36 **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
211.21	0.00	0.00	#4	0.00	100.0
			#10	3.56	98.3
47.57	0.00	0.00	#20	0.50	97.3
			#40	0.78	96.7
			#60	1.10	96.0
			#100	2.78	92.6
			#140	5.36	87.2
			#200	9.97	77.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 98.3
Weight of hydrometer sample =47.57
Hygroscopic moisture correction:
Moist weight and tare = 29.09
Dry weight and tare = 28.90
Tare weight = 15.53
Hygroscopic moisture = 1.4%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x **Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.9	34.0	29.2	0.0133	35.0	10.6	0.0305	60.6
5.00	20.9	30.0	25.2	0.0133	31.0	11.2	0.0199	52.3
15.00	21.0	27.0	22.3	0.0133	28.0	11.7	0.0117	46.1
30.00	21.3	25.0	20.3	0.0132	26.0	12.0	0.0084	42.2
73.00	21.7	23.0	18.5	0.0132	24.0	12.4	0.0054	38.3
248.00	22.6	18.0	13.7	0.0130	19.0	13.2	0.0030	28.4
1440.00	22.1	16.0	11.6	0.0131	17.0	13.5	0.0013	24.0

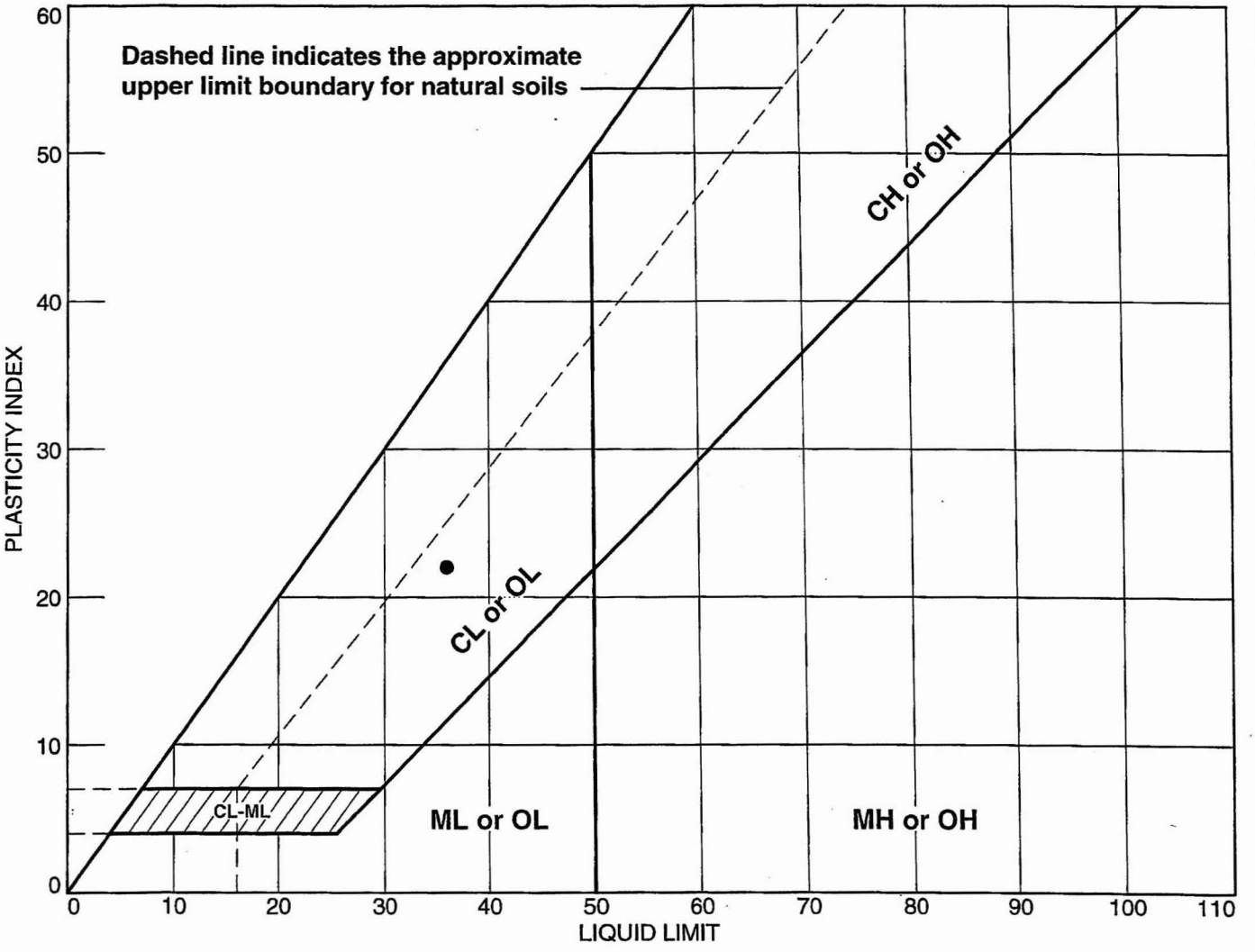
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.7	1.6	19.0	22.3	40.6	37.1	77.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0033	0.0168	0.0296	0.0814	0.0970	0.1225	0.2012

Fineness Modulus
0.18

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-2160	SS-3	6.0-7.5	19.8	14	36	22	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

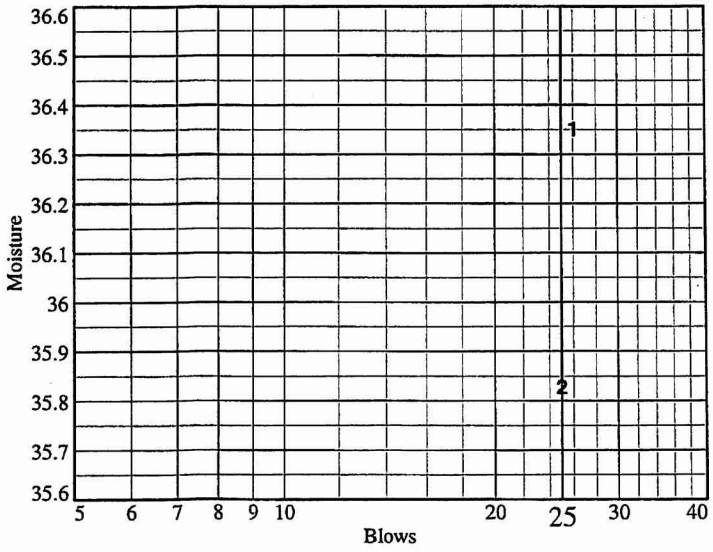
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 6.0-7.5 **Sample Number:** SS-3
Material Description: Pale Brown Lean CLAY with sand
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	26.47	25.66				
Dry+Tare	23.62	22.98				
Tare	15.78	15.50				
# Blows	26	25				
Moisture	36.4	35.8				



Liquid Limit= 36
Plastic Limit= 14
Plasticity Index= 22
Natural Moisture= 19.8
Liquidity Index= 0.3

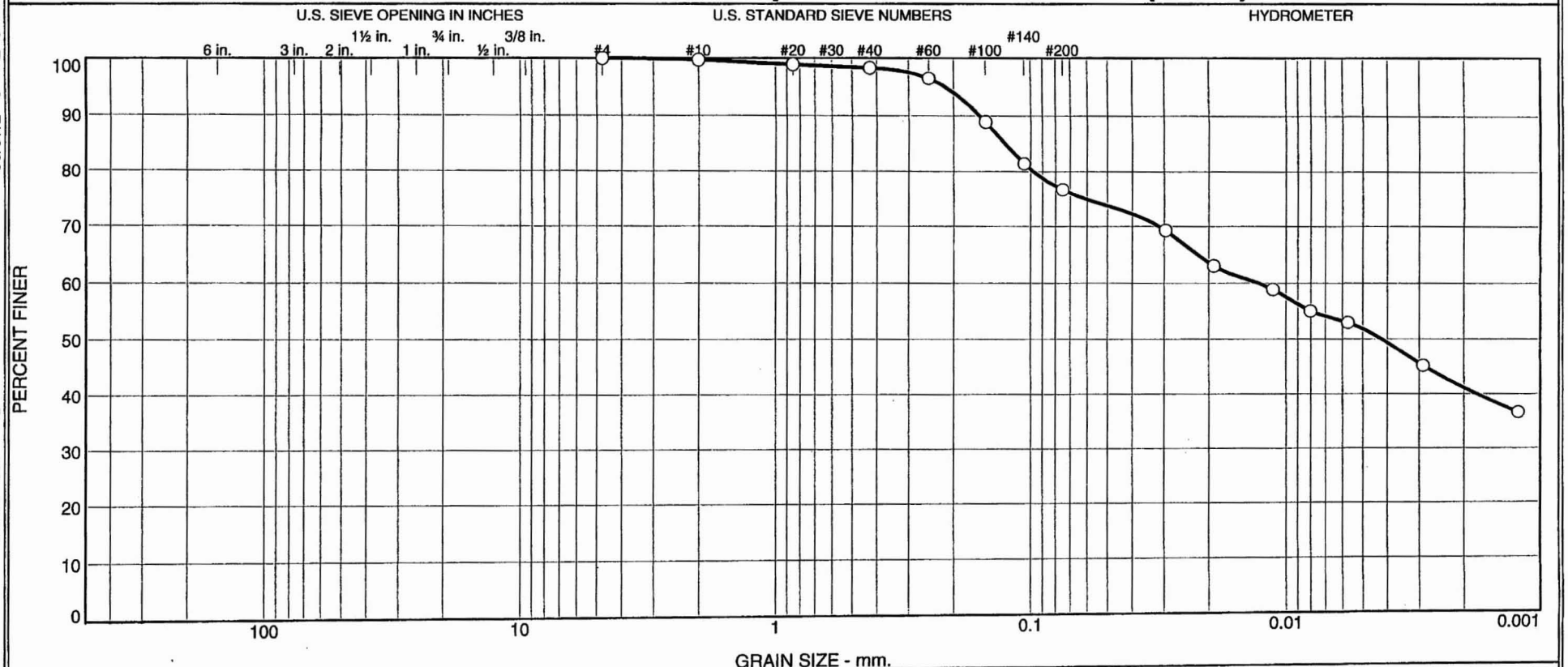
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.45	23.64			
Dry+Tare	22.45	22.63			
Tare	15.51	15.49			
Moisture	14.4	14.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
148.53	125.48	9.10	19.8

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	0.3	1.4	21.7	24.7	51.9

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-4	8.5-10	11-11-07	CL	Light Gray Lean CLAY with sand	15.1	43	12

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed
Organic content = 2.9% (ASTM D2794-07)

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 8.5-10 **Sample Number:** SS-4
Material Description: Light Gray Lean CLAY with sand
Date: 11-11-07 **Natural Moisture:** 15.1
Liquid Limit: 43 **Plastic Limit:** 12 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Organic content = 2.9% (ASTM D2794-07)
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
225.55	0.00	0.00	#4	0.00	100.0
			#10	0.60	99.7
48.47	0.39	0.00	#20	0.39	98.9
			#40	0.67	98.3
			#60	1.57	96.5
			#100	5.17	89.0
			#140	8.84	81.4
			#200	11.13	76.6

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.7
Weight of hydrometer sample =48.47
Hygroscopic moisture correction:
Moist weight and tare = 27.49
Dry weight and tare = 27.20
Tare weight = 15.43
Hygroscopic moisture = 2.5%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.9	38.0	33.2	0.0133	39.0	9.9	0.0296	69.3
5.00	21.0	35.0	30.3	0.0133	36.0	10.4	0.0191	63.1
15.00	21.0	33.0	28.3	0.0133	34.0	10.7	0.0112	58.9
30.00	21.5	31.0	26.4	0.0132	32.0	11.0	0.0080	55.0
60.00	21.5	30.0	25.4	0.0132	31.0	11.2	0.0057	53.0
240.00	22.5	26.0	21.7	0.0130	27.0	11.9	0.0029	45.2
1440.00	22.1	22.0	17.6	0.0131	23.0	12.5	0.0012	36.6

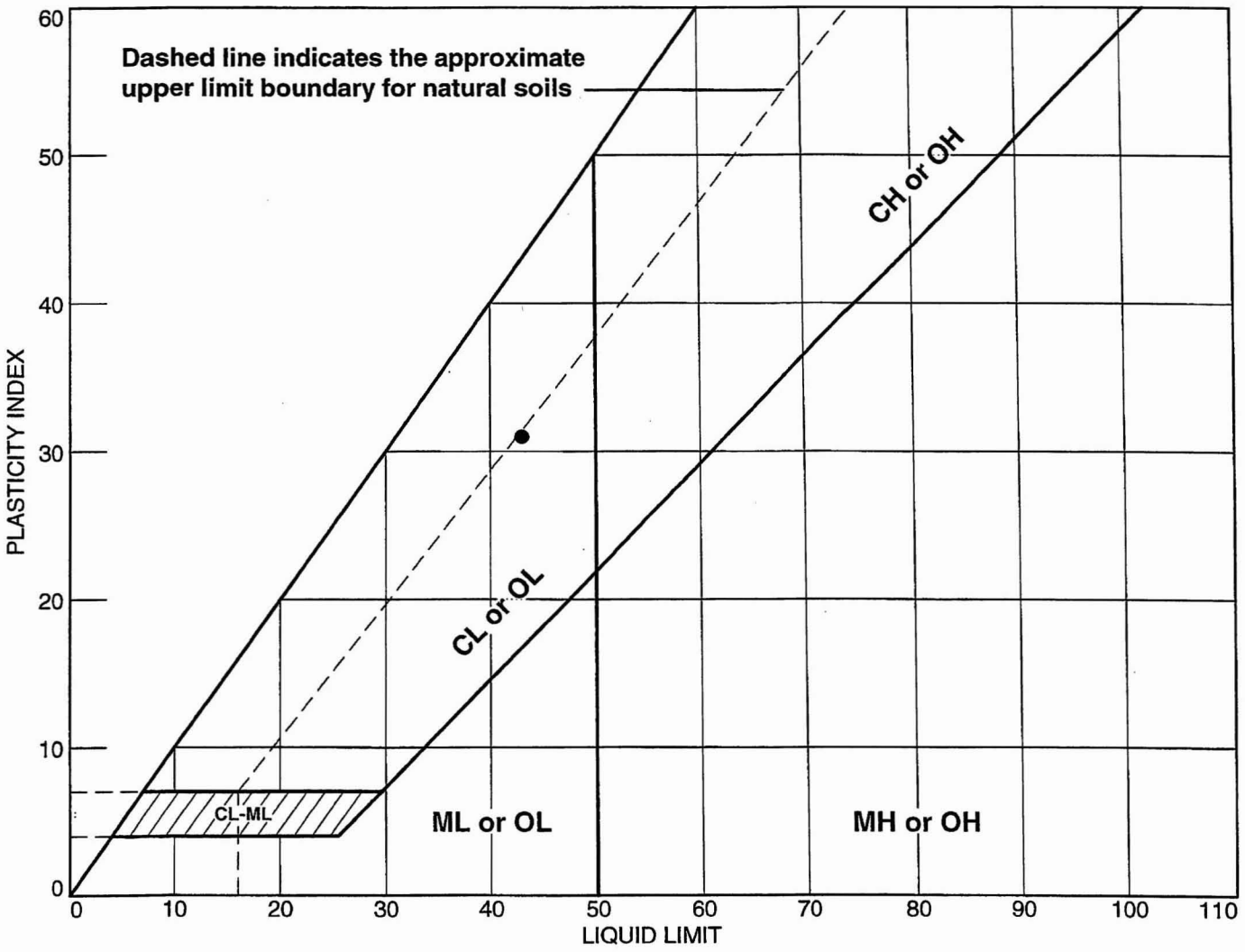
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	1.4	21.7	23.4	24.7	51.9	76.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0042	0.0127	0.0979	0.1255	0.1574	0.2157

Fineness Modulus
0.16

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-2160	SS-4	8.5-10	15.1	12	43	31	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

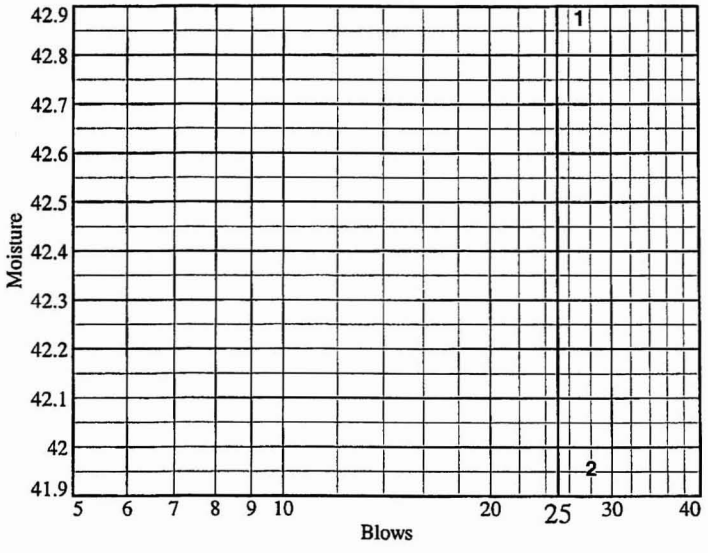
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 8.5-10 **Sample Number:** SS-4
Material Description: Light Gray Lean CLAY with sand
USCS: CL **AASHTO:** A-7-6(22)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.89	27.34				
Dry+Tare	22.79	23.87				
Tare	15.56	15.60				
# Blows	27	28				
Moisture	42.9	42.0				



Liquid Limit= 43
Plastic Limit= 12
Plasticity Index= 31
Natural Moisture= 15.1
Liquidity Index= 0.1

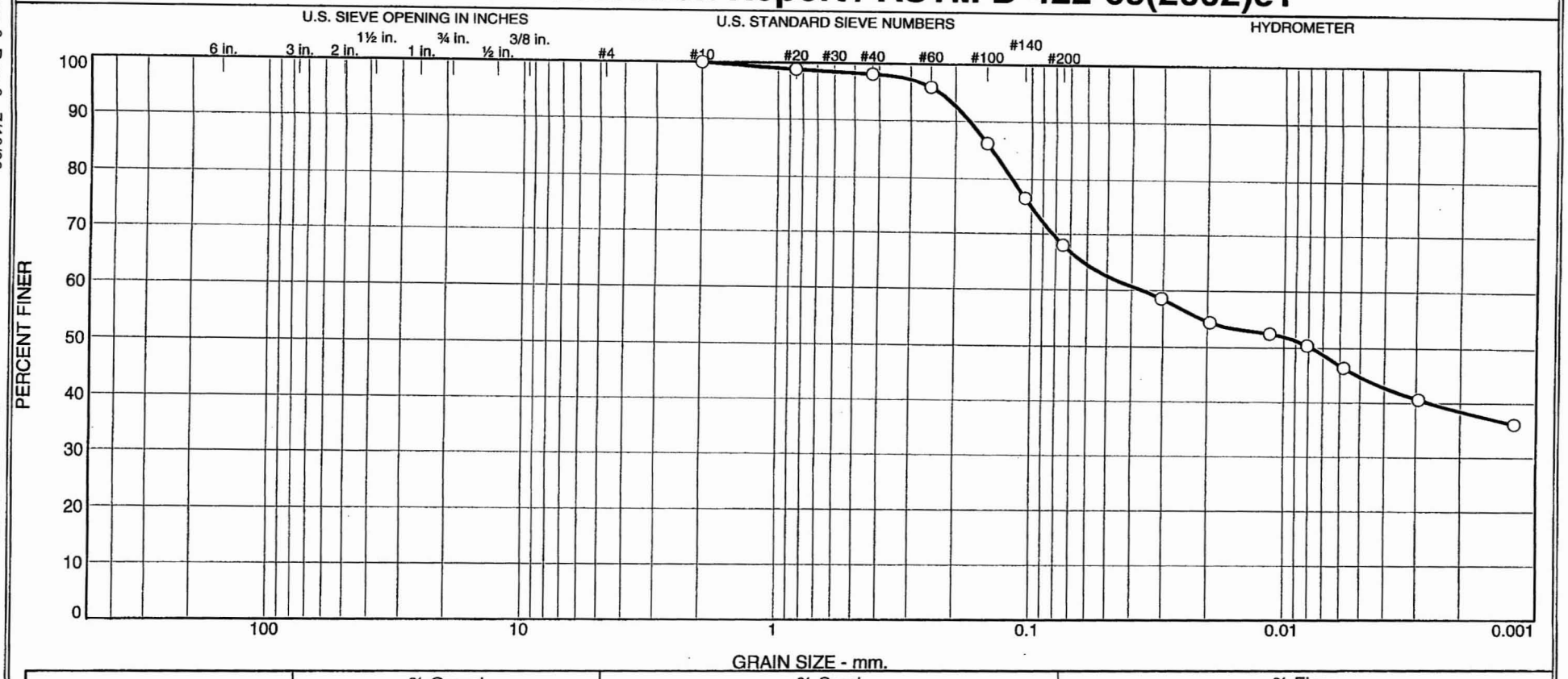
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.76	22.40			
Dry+Tare	21.96	21.65			
Tare	15.53	15.40			
Moisture	12.4	12.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
120.79	106.17	9.18	15.1

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	1.9	30.1	23.3	44.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-5	11-12.5	11-11-07	CL	Pale Brown Sandy Lean CLAY	13.3	40	13

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 11-12.5 **Sample Number:** SS-5
Material Description: Pale Brown Sandy Lean CLAY
Date: 11-11-07 **Natural Moisture:** 13.3
Liquid Limit: 40 **Plastic Limit:** 13 **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
262.81	0.00	0.00	#10	0.00	100.0
48.62	0.00	0.00	#20	0.57	98.8
			#40	0.92	98.1
			#60	2.05	95.8
			#100	6.66	86.3
			#140	11.37	76.6
			#200	15.55	68.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.62
Hygroscopic moisture correction:
Moist weight and tare = 28.85
Dry weight and tare = 28.70
Tare weight = 15.40
Hygroscopic moisture = 1.1%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	33.0	28.5	0.0131	34.0	10.7	0.0304	58.6
5.00	21.7	31.0	26.5	0.0132	32.0	11.0	0.0196	54.4
15.00	21.9	30.0	25.5	0.0131	31.0	11.2	0.0114	52.5
30.00	21.9	29.0	24.5	0.0131	30.0	11.4	0.0081	50.4
60.00	22.0	27.0	22.5	0.0131	28.0	11.7	0.0058	46.4
240.00	22.7	24.0	19.7	0.0130	25.0	12.2	0.0029	40.6
1440.00	22.1	22.0	17.6	0.0131	23.0	12.5	0.0012	36.1

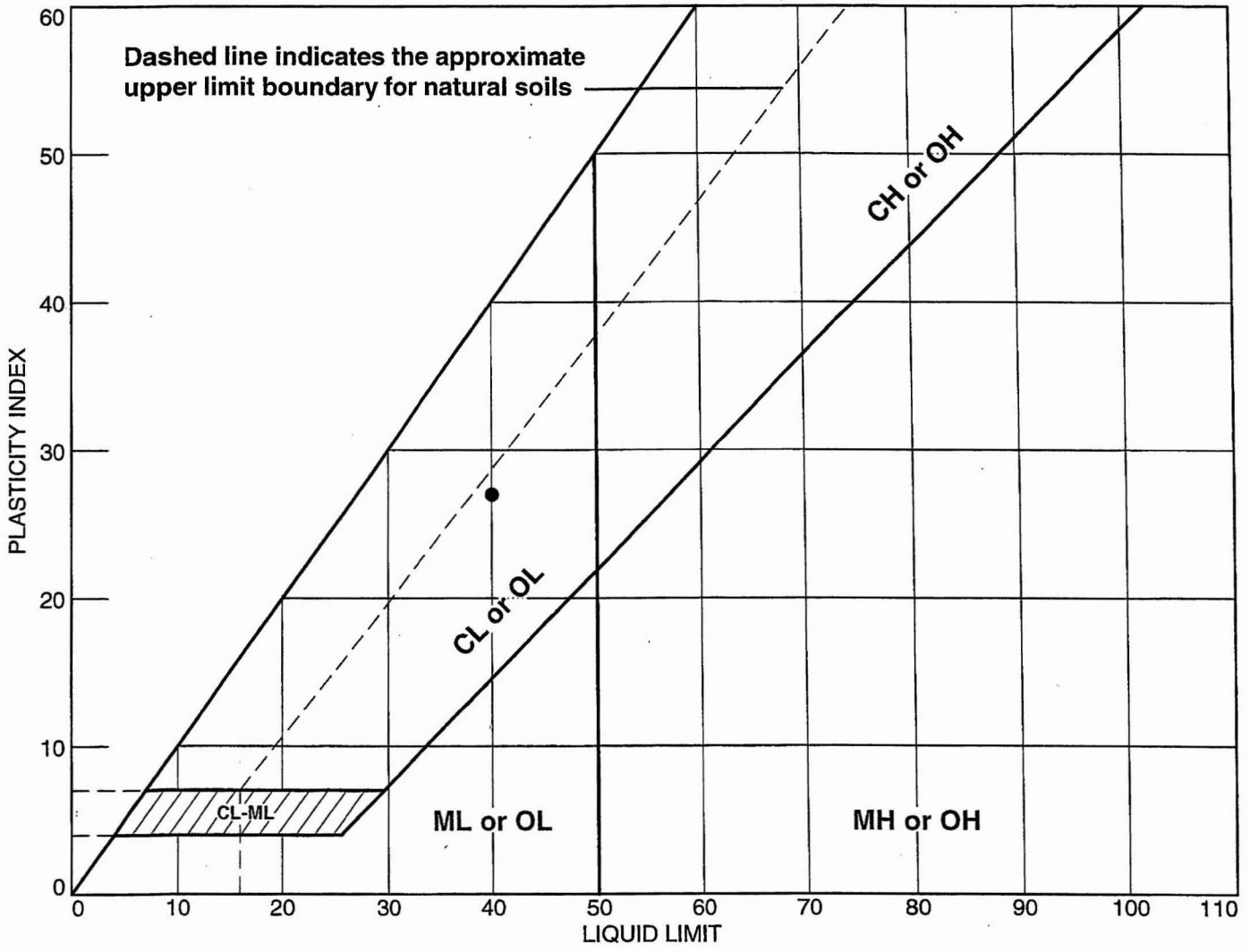
Fractional Components

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	30.1	32.0	23.3	44.7	68.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0078	0.0363	0.1194	0.1427	0.1754	0.2338

Fineness Modulus
0.19

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-2160	SS-5	11-12.5	13.3	13	40	27	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

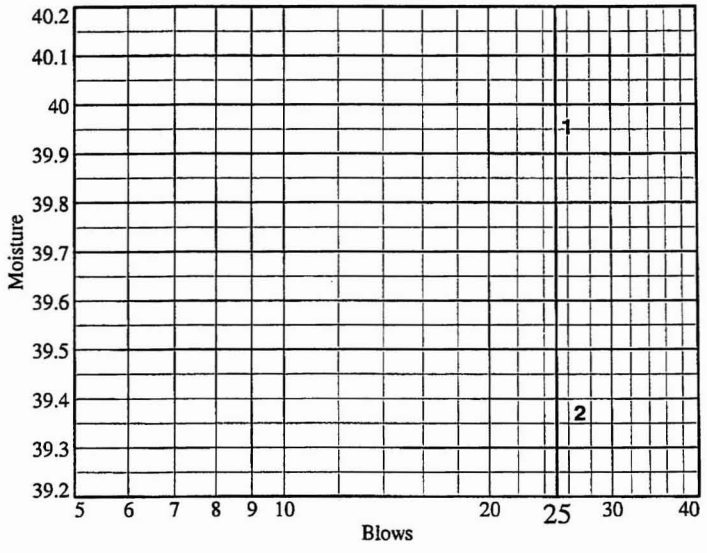
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 11-12.5 **Sample Number:** SS-5
Material Description: Pale Brown Sandy Lean CLAY
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	28.22	31.00				
Dry+Tare	24.62	26.61				
Tare	15.61	15.46				
# Blows	26	27				
Moisture	40.0	39.4				



Liquid Limit= 40
Plastic Limit= 13
Plasticity Index= 27
Natural Moisture= 13.3
Liquidity Index= 0.0

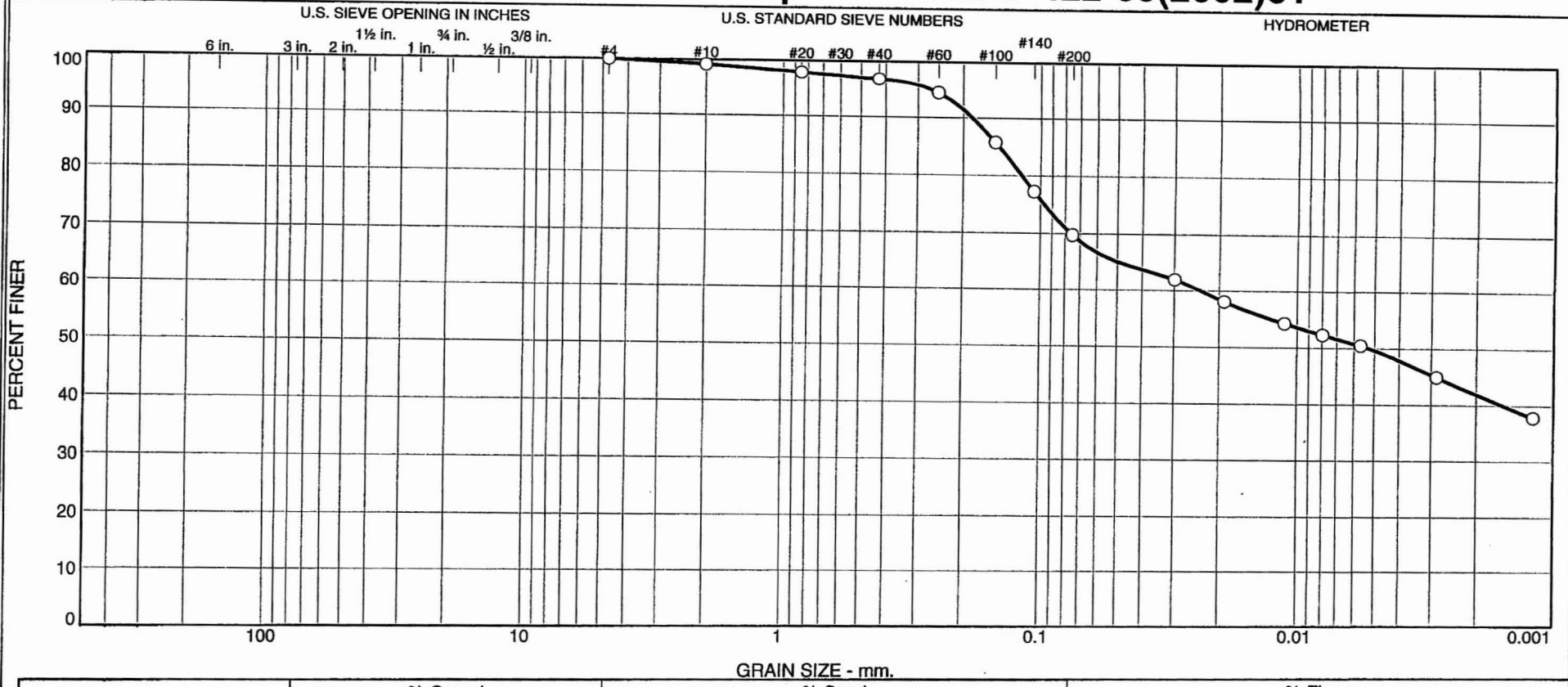
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.39	22.74			
Dry+Tare	22.47	21.89			
Tare	15.61	15.49			
Moisture	13.4	13.3			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
150.42	133.57	6.83	13.3

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	0.8	2.4	27.0	20.2	49.6

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-6	13.5-15	11-11-07	CL	Pale Brown Sandy Lean CLAY	16.4	49	15

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.730 ASTM D854-06)
Organic content = 3.9% (ASTM 2794-07)

Tested By: CS Checked By: LBL DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 13.5-15 **Sample Number:** SS-6
Material Description: Pale Brown Sandy Lean CLAY
Date: 11-11-07 **Natural Moisture:** 16.4
Liquid Limit: 49 **Plastic Limit:** 15 **USCS Class.:** CL
Testing Remarks: Specific Gravity = 2.730 ASTM D854-06)
Organic content = 3.9% (ASTM 2794-07)
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
255.74	0.00	0.00	#4	0.00	100.0
			#10	2.16	99.2
50.30	0.00	0.00	#20	0.65	97.9
			#40	1.22	96.8
			#60	2.41	94.4
			#100	6.79	85.8
			#140	11.09	77.3
			#200	14.91	69.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.2
Weight of hydrometer sample =50.30
Hygroscopic moisture correction:
Moist weight and tare = 26.37
Dry weight and tare = 26.10
Tare weight = 15.56
Hygroscopic moisture = 2.6%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.730
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	20.8	36.0	31.2	0.0132	37.0	10.2	0.0298	62.0
5.00	20.9	34.0	29.2	0.0132	35.0	10.6	0.0191	58.1
15.00	21.2	32.0	27.3	0.0131	33.0	10.9	0.0112	54.3
30.00	21.2	31.0	26.3	0.0131	32.0	11.0	0.0080	52.3
60.00	21.5	30.0	25.4	0.0131	31.0	11.2	0.0057	50.5
240.00	22.3	27.0	22.6	0.0130	28.0	11.7	0.0029	44.9
1440.00	22.1	23.5	19.1	0.0130	24.5	12.3	0.0012	37.9

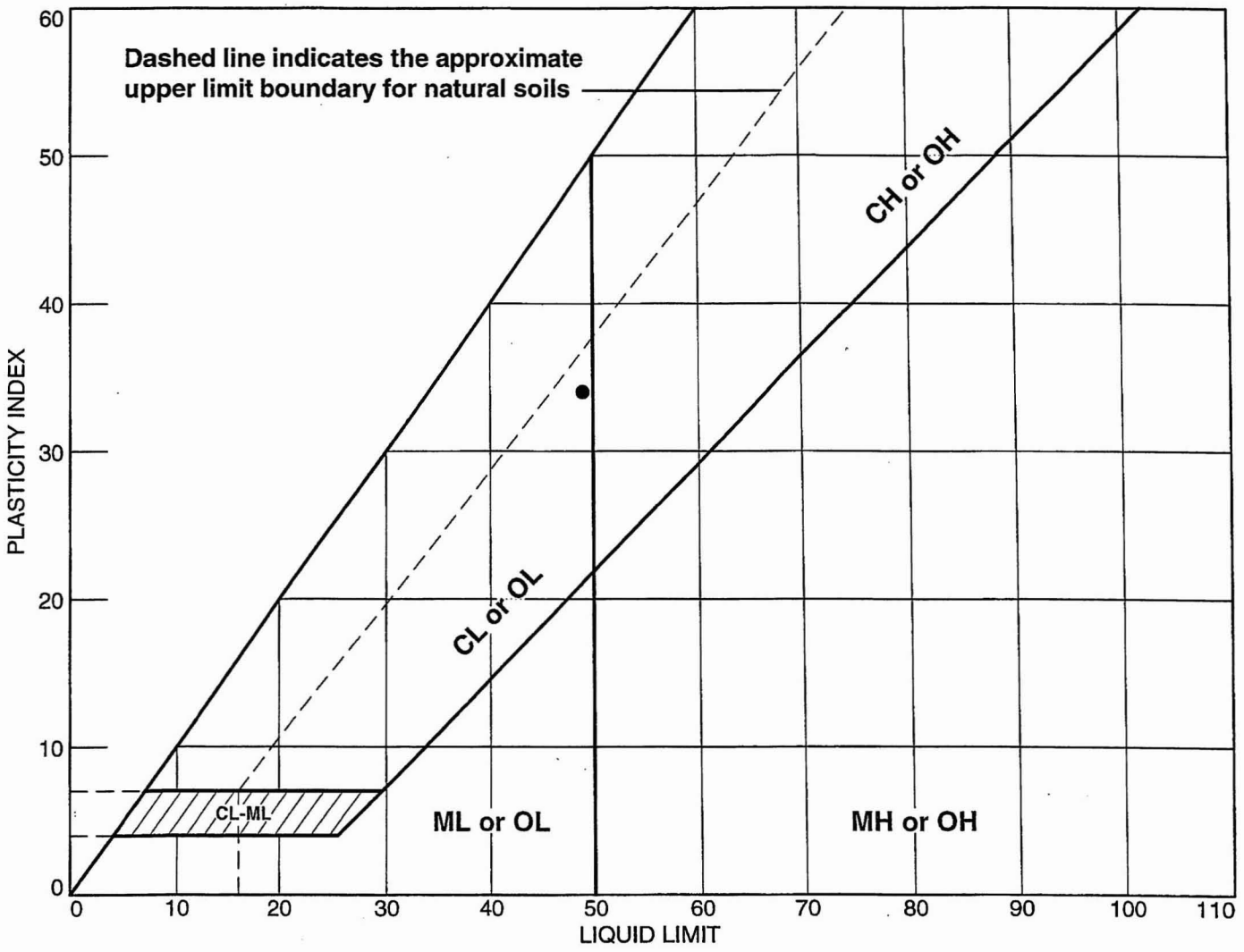
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.8	2.4	27.0	30.2	20.2	49.6	69.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0053	0.0236	0.1182	0.1451	0.1841	0.2671

Fineness Modulus
0.23

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-2160	SS-6	13.5-15	16.4	15	49	34	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

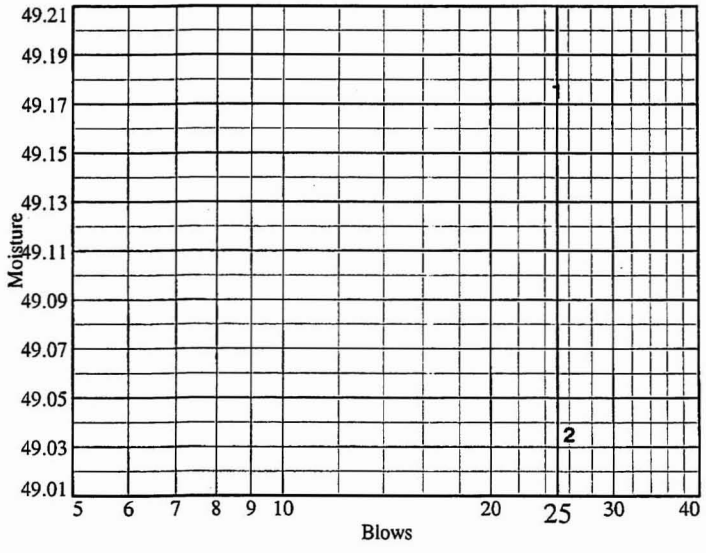
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 13.5-15 **Sample Number:** SS-6
Material Description: Pale Brown Sandy Lean CLAY
USCS: CL **AASHTO:** A-7-6(22)
Tested by: CS **Checked by:** LB

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.36	24.81				
Dry+Tare	22.08	21.76				
Tare	15.41	15.54				
# Blows	25	26				
Moisture	49.2	49.0				



Liquid Limit= 49
Plastic Limit= 15
Plasticity Index= 34
Natural Moisture= 16.4
Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.75	21.13			
Dry+Tare	21.82	20.42			
Tare	15.46	15.51			
Moisture	14.6	14.5			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
188.8	163.11	6.79	16.4

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: 1/16/08

SAMPLE IDENTIFICATION: B-2160 SS-6

(A) Mass of oven-dried soil, grams:		51.68
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.61
(C) Mass of pycnometer, water and soil, grams:		689.37
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.1
(G) Specific Gravity at observed temperature:	A / [B- (C - A)]	2.732
(F)	***Correction factor:***	0.99931
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.730

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100%

Sandy Lean CLAY (CL)

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-5

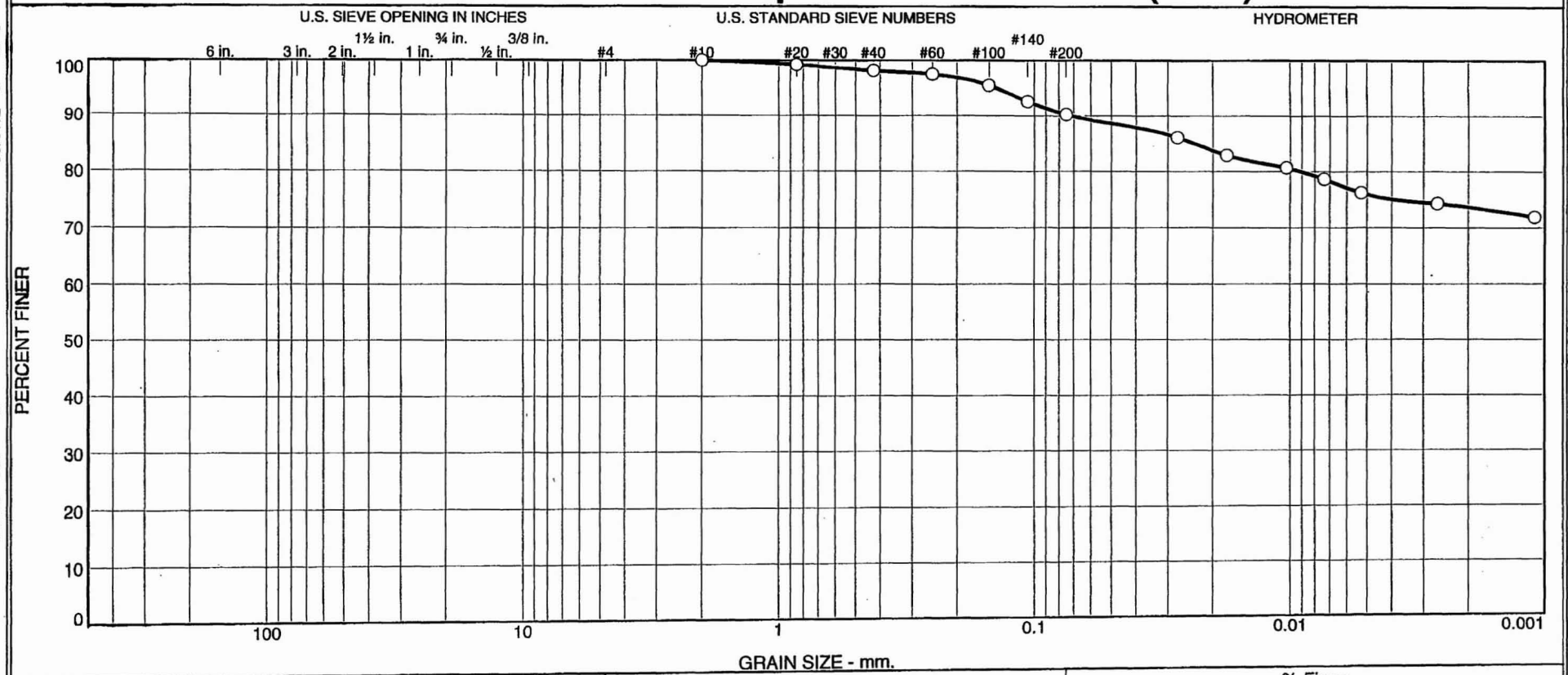
TESTED BY: CS

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

REVIEWED BY: **Brian Johnson**

DJC 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	1.8	8.0	14.2	76.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-7	18.5-20	11-11-07	CH	Pale Brown Fat Clay	25.9	84	23

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS Checked By: LBJ KAW 1/26/08

GRAIN SIZE DISTRIBUTION TEST DATA

1/26/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 18.5-20 **Sample Number:** SS-7
Material Description: Pale Brown Fat Clay
Date: 11-11-07 **Natural Moisture:** 25.9
Liquid Limit: 84 **Plastic Limit:** 23 **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
201.56	0.00	0.00	#10	0.00	100.0
48.19	0.00	0.00	#20	0.38	99.2
			#40	0.88	98.2
			#60	1.20	97.5
			#100	2.17	95.5
			#140	3.58	92.6
			#200	4.71	90.2

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.19
Hygroscopic moisture correction:
Moist weight and tare = 27.79
Dry weight and tare = 27.22
Tare weight = 15.51
Hygroscopic moisture = 4.9%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	44.5	40.0	0.0131	45.5	8.8	0.0276	86.1
5.00	21.9	43.0	38.5	0.0131	44.0	9.1	0.0177	82.9
15.00	21.8	42.0	37.5	0.0131	43.0	9.2	0.0103	80.7
30.00	22.0	41.0	36.5	0.0131	42.0	9.4	0.0073	78.6
60.00	21.6	40.0	35.4	0.0132	41.0	9.6	0.0053	76.2
240.00	22.0	39.0	34.5	0.0131	40.0	9.7	0.0026	74.3
1440.00	21.6	38.0	33.4	0.0132	39.0	9.9	0.0011	71.9

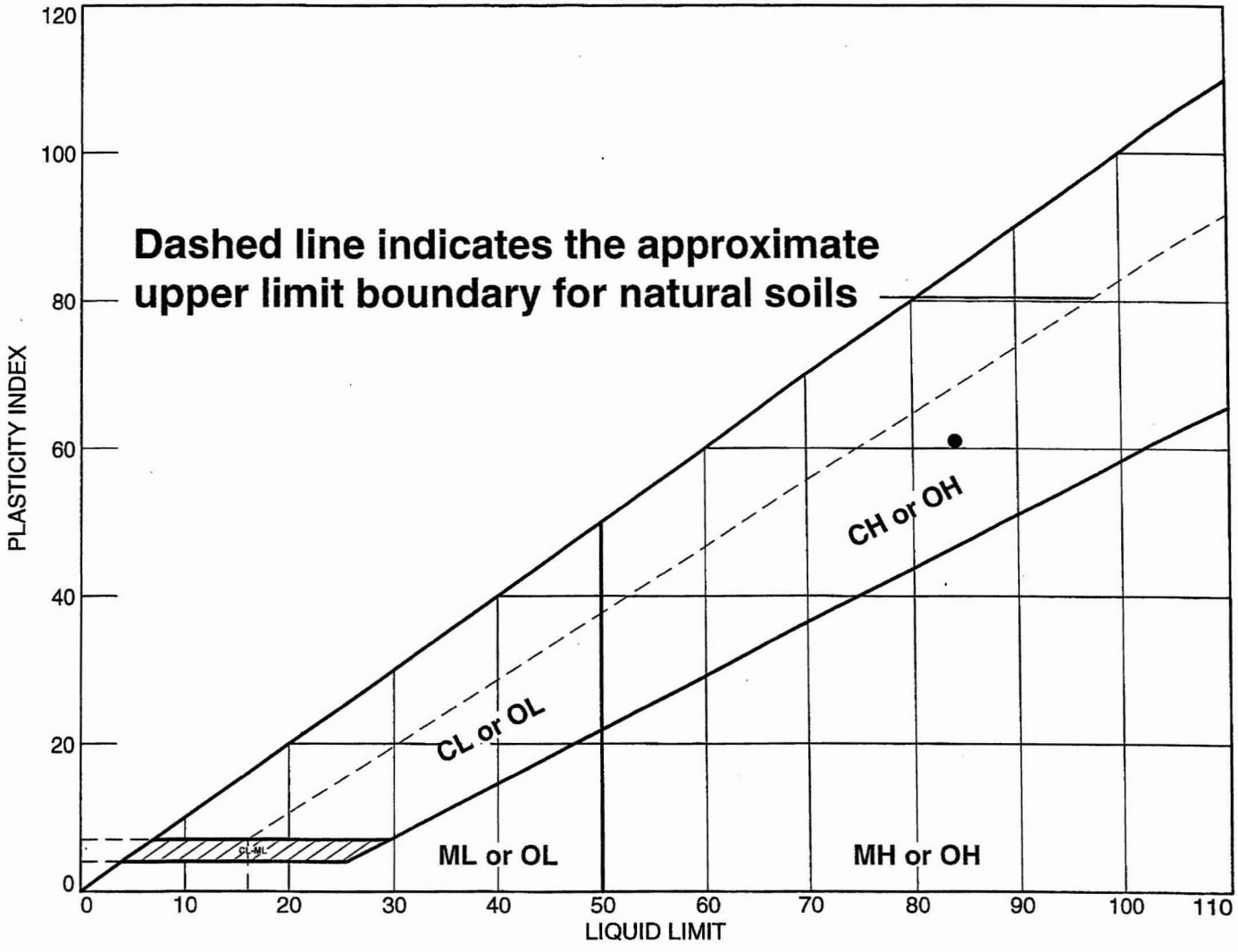
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.8	8.0	9.8	14.2	76.0	90.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0091	0.0237	0.0717	0.1404

Fineness Modulus
0.08

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-2160	SS-7	18.5-20	25.9	23	84	61	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project No.: 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ KAW 1/26/08

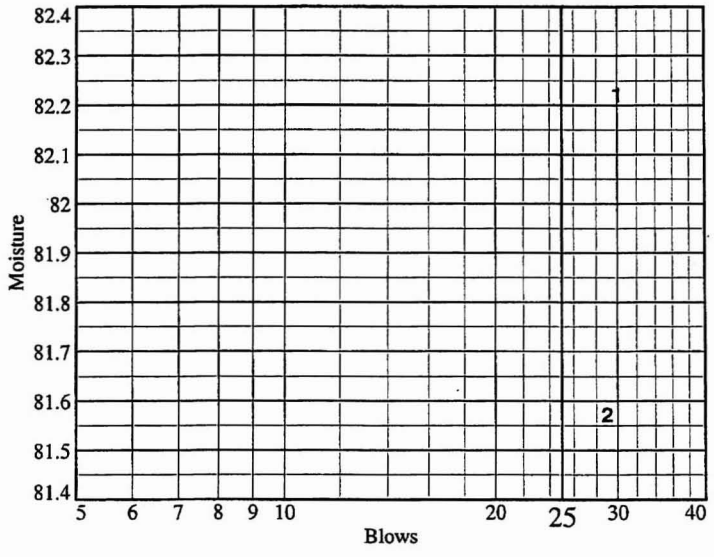
LIQUID AND PLASTIC LIMIT TEST DATA

1/26/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 18.5-20 **Sample Number:** SS-7
Material Description: Pale Brown 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	22.93	23.55				
Dry+Tare	19.60	19.92				
Tare	15.55	15.47				
# Blows	30	29				
Moisture	82.2	81.6				



Liquid Limit= 84
Plastic Limit= 23
Plasticity Index= 61
Natural Moisture= 25.9
Liquidity Index= 0.0

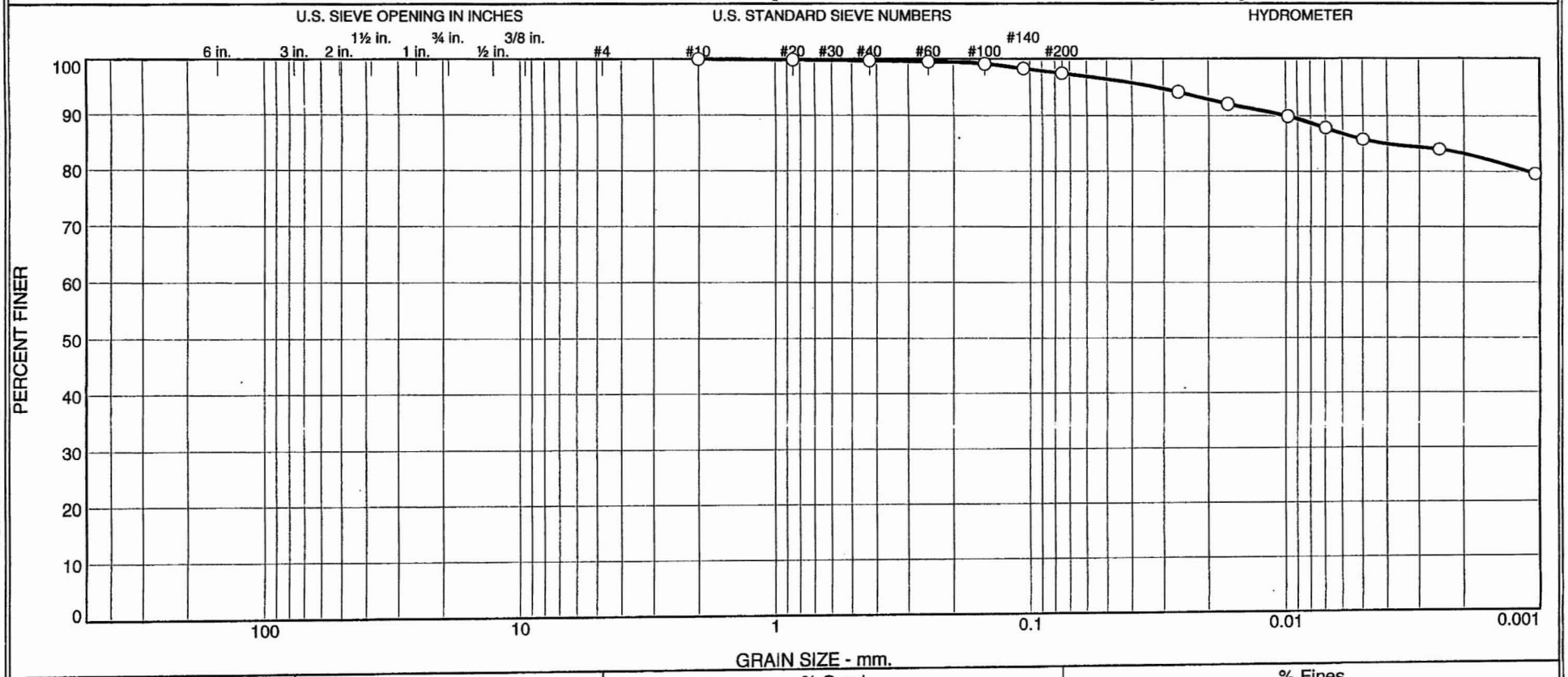
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.12	22.56			
Dry+Tare	20.90	21.30			
Tare	15.64	15.65			
Moisture	23.2	22.3			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
171.52	137.61	6.56	25.9

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	0.3	2.3	11.6	85.8

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-8	23.5-25	11-11-07	CH	Brownish Yellow Fat CLAY	26.1	81	22

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed
Organic content =5.9 % (ASTM D2794-07)

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 23.5-25 **Sample Number:** SS-8
Material Description: Brownish Yellow Fat CLAY
Date: 11-11-07 **Natural Moisture:** 26.1
Liquid Limit: 81 **Plastic Limit:** 22 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Organic content =5.9 % (ASTM D2794-07)
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
203.02	0.00	0.00	#10	0.00	100.0
49.66	0.00	0.00	#20	0.08	99.8
			#40	0.15	99.7
			#60	0.23	99.5
			#100	0.43	99.1
			#140	0.85	98.3
			#200	1.27	97.4

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =49.66
Hygroscopic moisture correction:
Moist weight and tare = 22.60
Dry weight and tare = 22.15
Tare weight = 11.20
Hygroscopic moisture = 4.1%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	50.0	45.4	0.0132	51.0	7.9	0.0263	94.1
5.00	21.5	49.0	44.4	0.0132	50.0	8.1	0.0168	92.0
15.00	21.5	48.0	43.4	0.0132	49.0	8.3	0.0098	90.0
30.00	21.6	47.0	42.4	0.0132	48.0	8.4	0.0070	88.0
60.00	21.5	46.0	41.4	0.0132	47.0	8.6	0.0050	85.8
240.00	22.0	45.0	40.5	0.0131	46.0	8.8	0.0025	84.0
1440.00	21.5	43.0	38.4	0.0132	44.0	9.1	0.0010	79.6

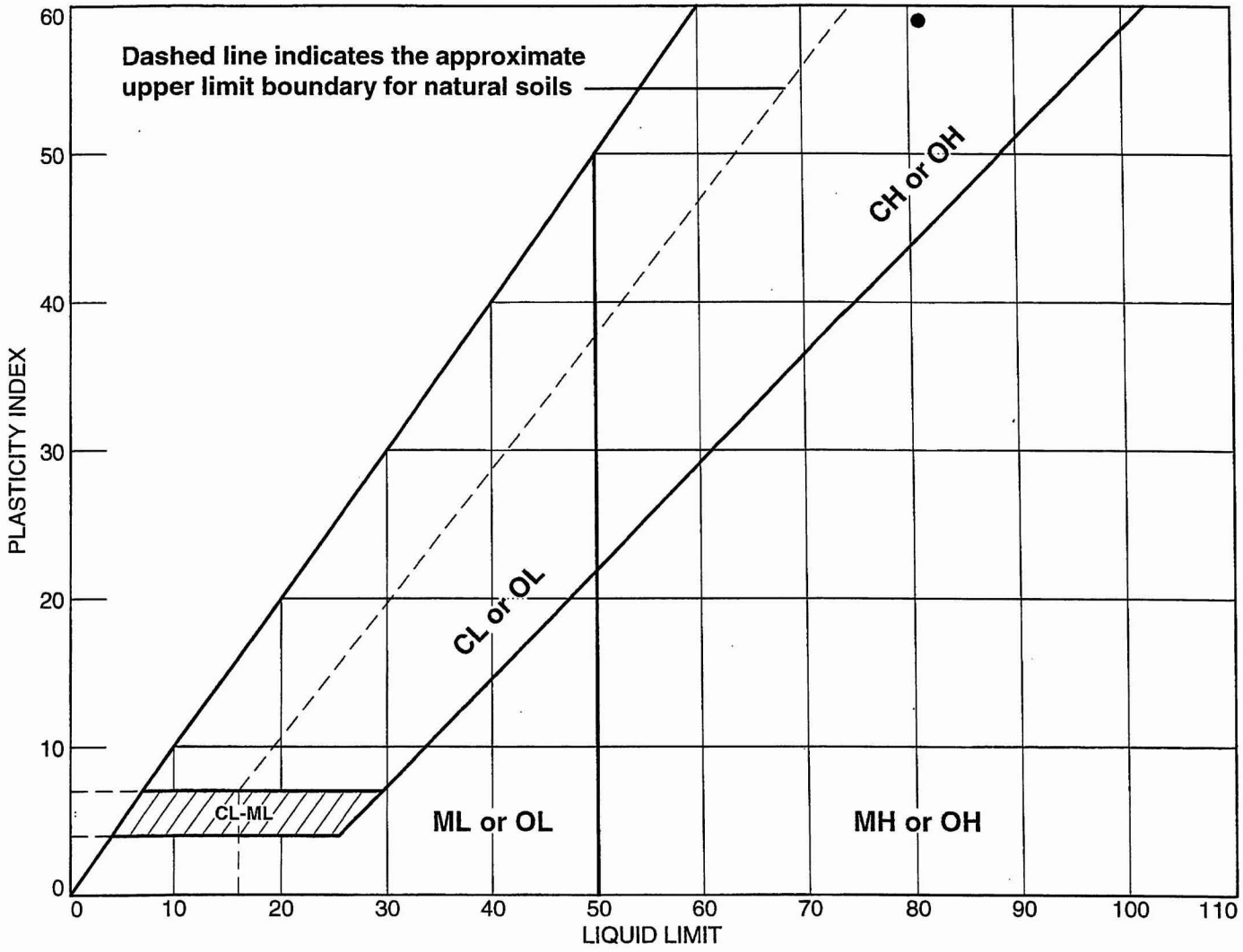
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	2.3	2.6	11.6	85.8	97.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0011	0.0040	0.0098	0.0325

Fineness Modulus
0.02

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-2160	SS-8	23.5-25	26.1	22	81	59	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

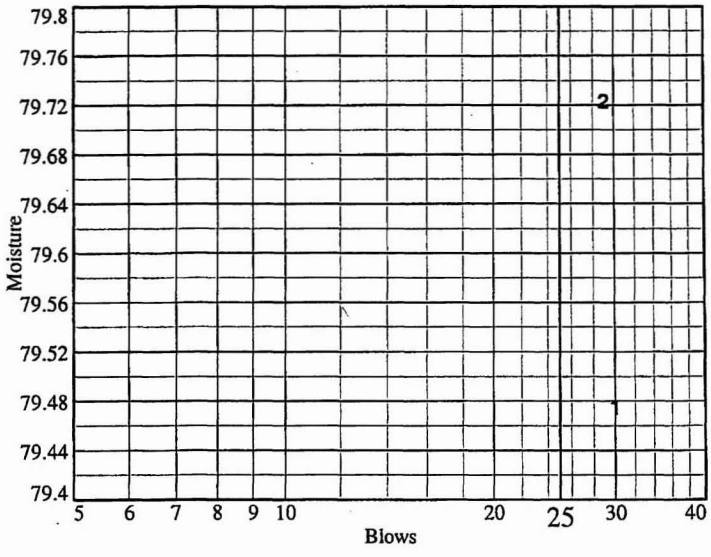
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 23.5-25 **Sample Number:** SS-8
Material Description: Brownish 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	23.18	23.28				
Dry+Tare	19.85	19.82				
Tare	15.66	15.48				
# Blows	30	29				
Moisture	79.5	79.7				



Liquid Limit= 81
Plastic Limit= 22
Plasticity Index= 59
Natural Moisture= 26.1
Liquidity Index= 0.1

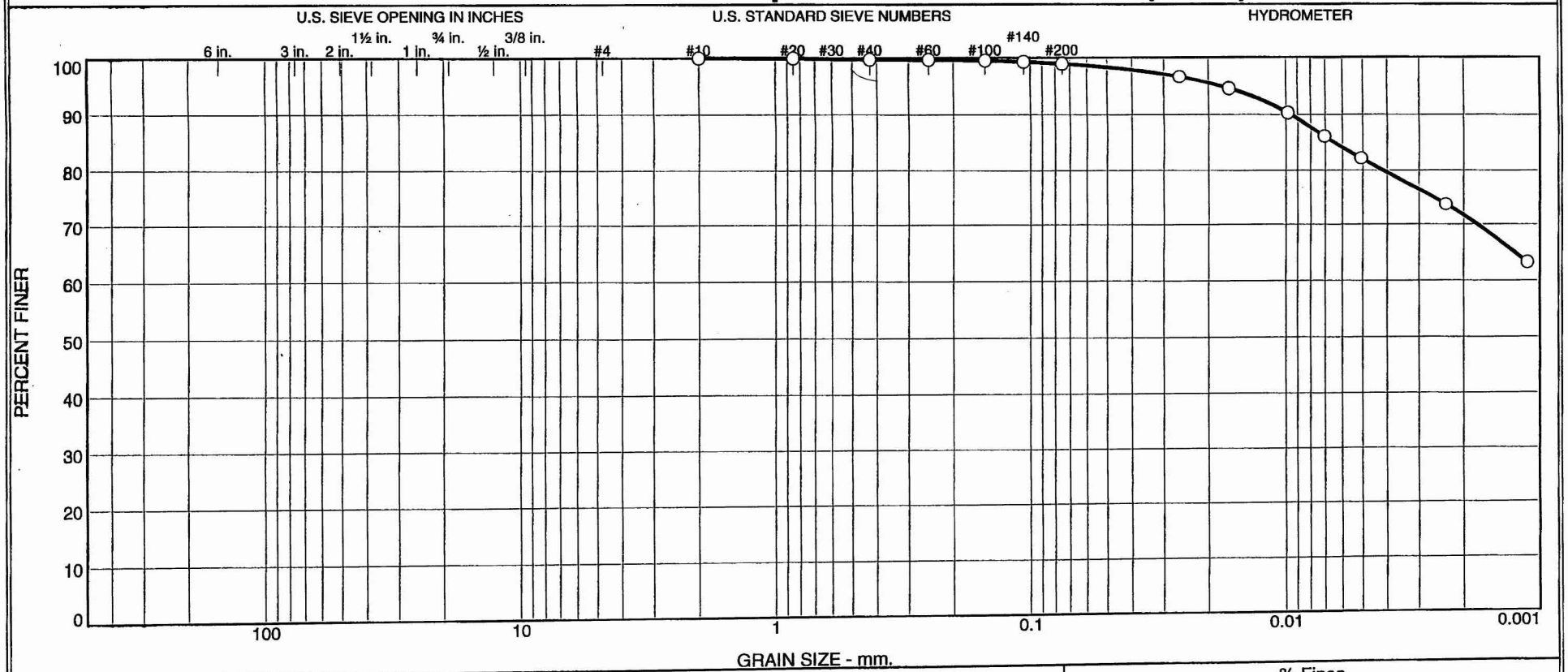
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.75	23.66			
Dry+Tare	21.45	22.13			
Tare	15.53	15.45			
Moisture	22.0	22.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
133.99	107.72	7.00	26.1

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	0.3	0.8	16.9	82.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-9	28.5-30	11-11-07	CH	Brownish Yellow Fat CLAY	23.6	74	21

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 1-26-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 28.5-30 **Sample Number:** SS-9
Material Description: Brownish Yellow Fat CLAY
Date: 11-11-07 **Natural Moisture:** 23.6
Liquid Limit: 74 **Plastic Limit:** 21 **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
214.69	0.00	0.00	#10	0.00	100.0
49.37	0.00	0.00	#20	0.03	99.9
			#40	0.13	99.7
			#60	0.16	99.7
			#100	0.23	99.5
			#140	0.34	99.3
			#200	0.52	98.9

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =49.37
Hygroscopic moisture correction:
Moist weight and tare = 28.60
Dry weight and tare = 28.11
Tare weight = 15.60
Hygroscopic moisture = 3.9%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	51.0	46.4	0.0132	52.0	7.8	0.0260	96.6
5.00	21.5	50.0	45.4	0.0132	51.0	7.9	0.0166	94.5
15.00	21.5	48.0	43.4	0.0132	49.0	8.3	0.0098	90.3
30.00	21.6	46.0	41.4	0.0132	47.0	8.6	0.0071	86.2
60.00	21.8	44.0	39.5	0.0131	45.0	8.9	0.0051	82.2
300.00	21.6	40.0	35.4	0.0132	41.0	9.6	0.0024	73.7
1440.00	21.6	35.0	30.4	0.0132	36.0	10.4	0.0011	63.3

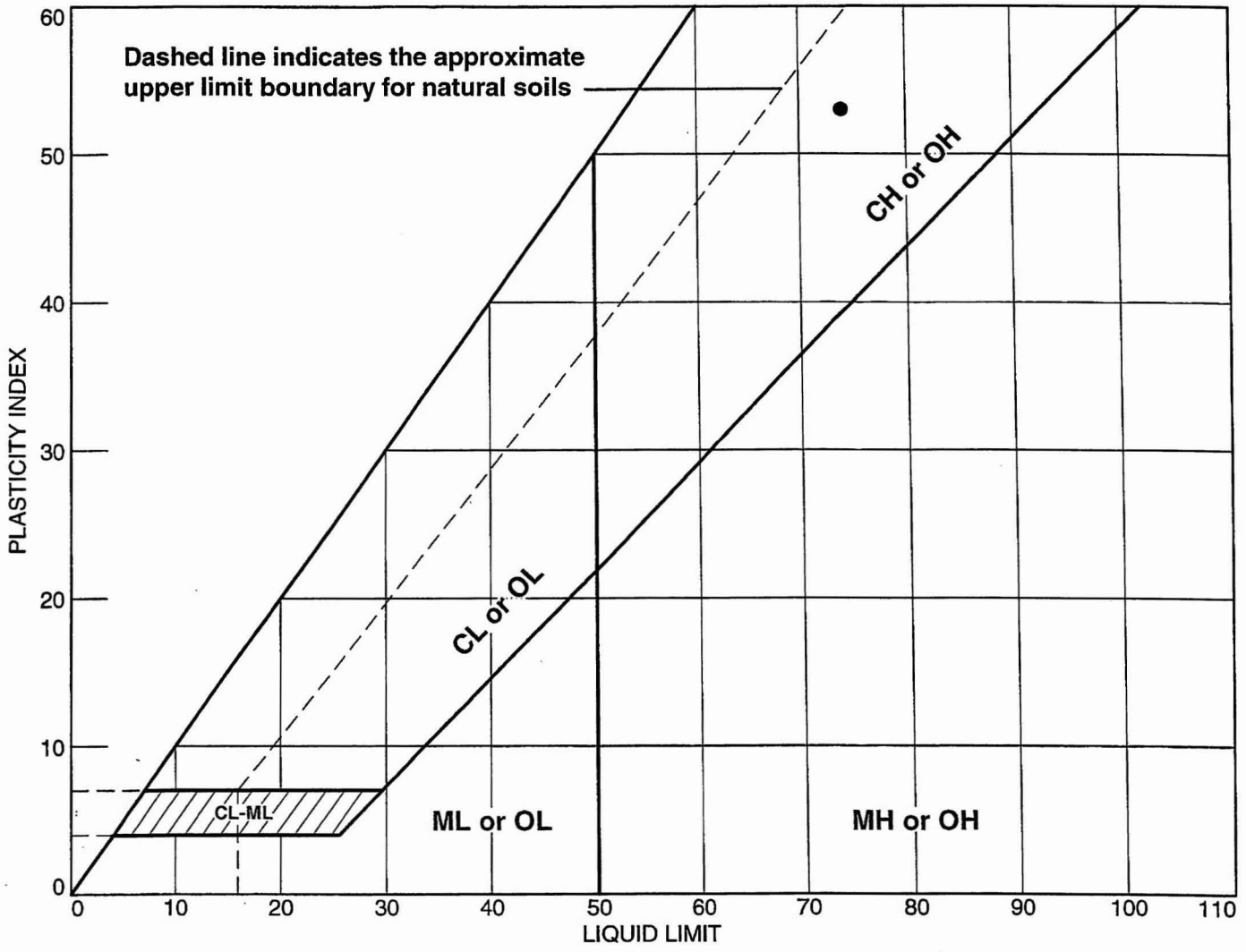
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.1	16.9	82.0	98.9

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0042	0.0064	0.0095	0.0182

Fineness Modulus
0.01

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-2160	SS-9	28.5-30	23.6	21	74	53	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 1-26-08

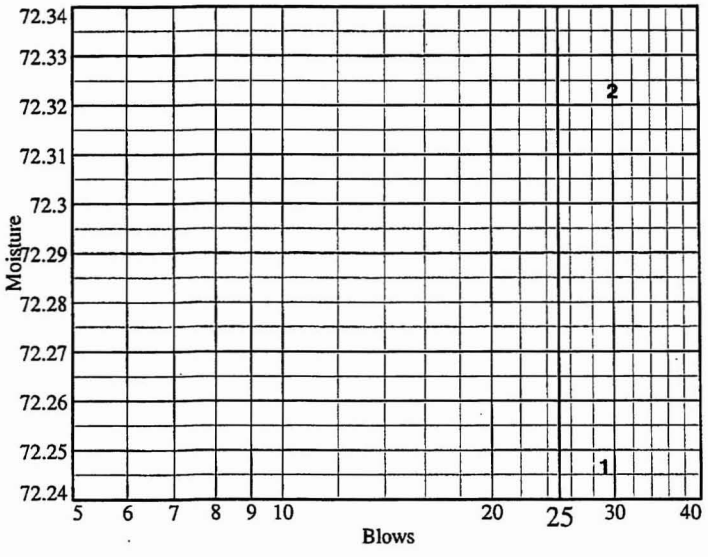
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 28.5-30 **Sample Number:** SS-9
Material Description: Brownish Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-6(60)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.25	26.07				
Dry+Tare	19.97	21.68				
Tare	15.43	15.61				
# Blows	29	30				
Moisture	72.2	72.3				



Liquid Limit= 74
Plastic Limit= 21
Plasticity Index= 53
Natural Moisture= 23.6
Liquidity Index= 0.0

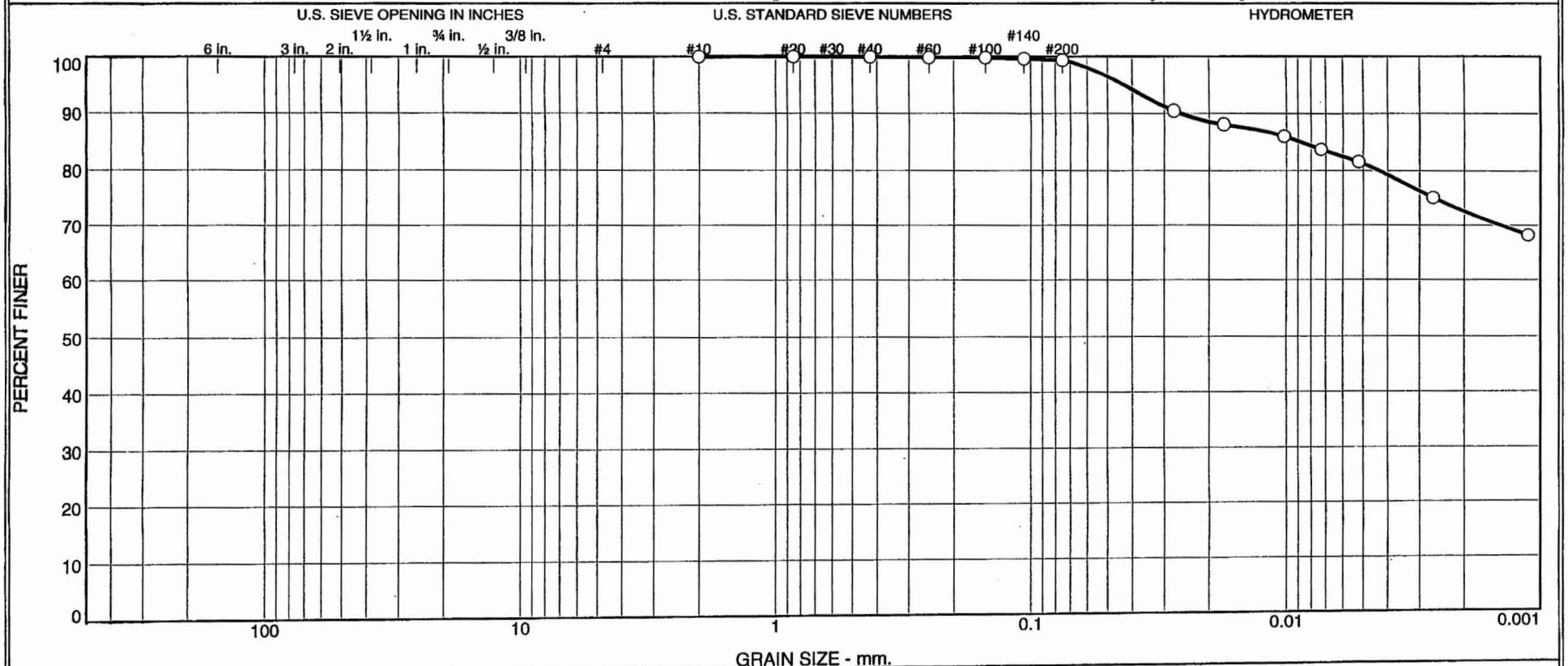
Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	24.83	23.01			
Dry+Tare	23.19	21.73			
Tare	15.46	15.52			
Moisture	21.2	20.6			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
178.24	145.54	6.82	23.6

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	0.6	18.0	81.3

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-10	32.5-35	11-11-07	CH	Brownish Yellow Fat CLAY	24.1	73	21

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.690 (ASTM D854-06)
Organic content = 5.1% (ASTM D2794-07)

Tested By: CS **Checked By:** LBJ DSC 1-26-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 32.5-35 **Sample Number:** SS-10
Material Description: Brownish Yellow Fat CLAY
Date: 11-11-07 **Natural Moisture:** 24.1
Liquid Limit: 73 **Plastic Limit:** 21 **USCS Class.:** CH
Testing Remarks: Specific Gravity = 2.690 (ASTM D854-06)
Organic content = 5.1% (ASTM D2794-07)
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
264.09	0.00	0.00	#10	0.00	100.0
45.31	0.00	0.00	#20	0.00	100.0
			#40	0.03	99.9
			#60	0.06	99.9
			#100	0.08	99.8
			#140	0.17	99.6
			#200	0.30	99.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =45.31
Hygroscopic moisture correction:
Moist weight and tare = 27.13
Dry weight and tare = 26.90
Tare weight = 15.46
Hygroscopic moisture = 2.0%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.690
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	22.0	45.0	40.5	0.0132	46.0	8.8	0.0275	90.5
5.00	22.0	44.0	39.5	0.0132	45.0	8.9	0.0176	88.2
15.00	22.3	43.0	38.6	0.0131	44.0	9.1	0.0102	86.2
30.00	22.1	42.0	37.6	0.0131	43.0	9.2	0.0073	83.8
60.00	22.1	41.0	36.6	0.0131	42.0	9.4	0.0052	81.6
240.00	22.5	38.0	33.7	0.0131	39.0	9.9	0.0027	75.1
1440.00	22.1	35.0	30.6	0.0131	36.0	10.4	0.0011	68.2

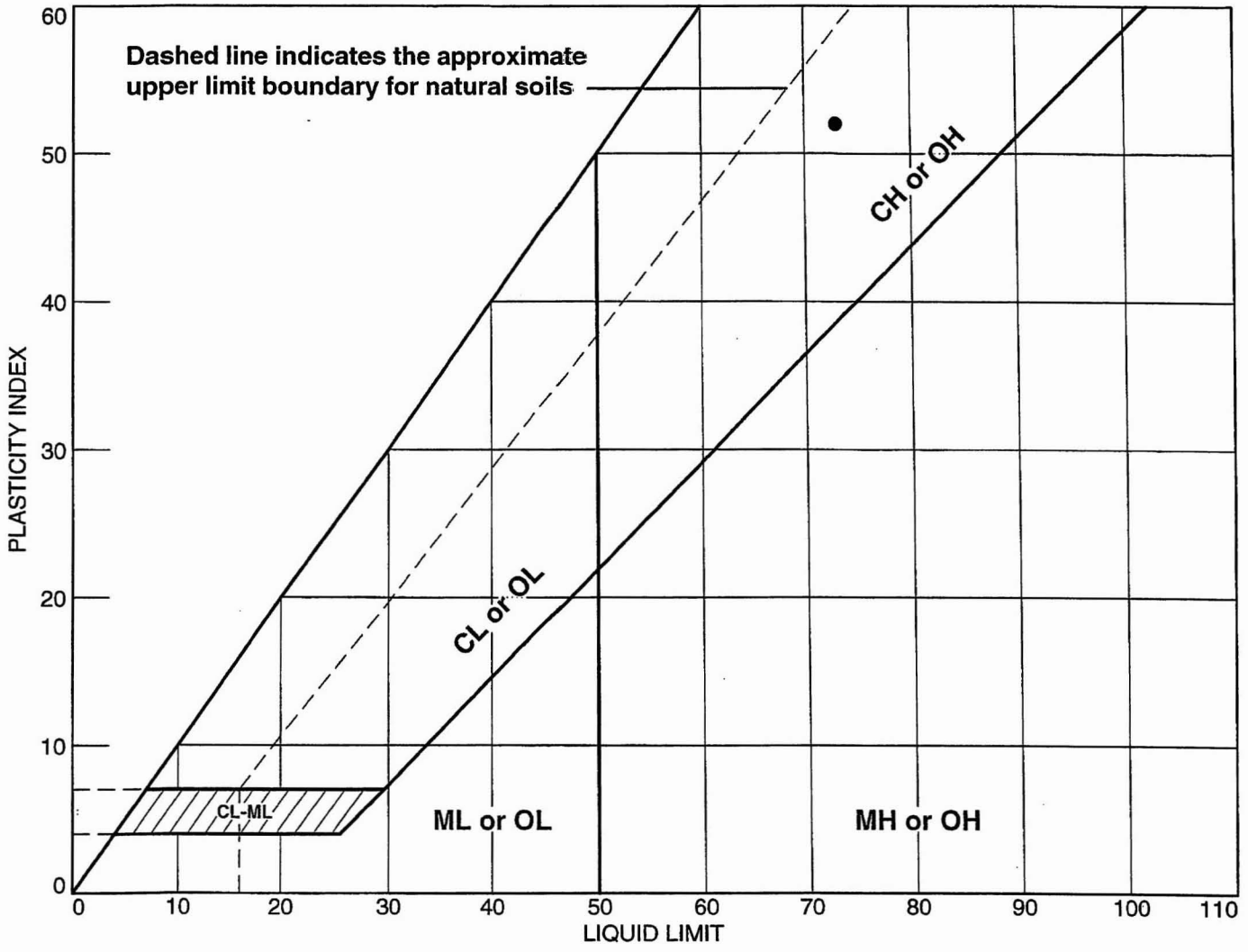
Fractional Components

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	0.6	0.7	18.0	81.3	99.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0043	0.0086	0.0258	0.0436

Fineness Modulus
0.00

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-2160	SS-10	32.5-35	24.1	21	73	52	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Project No.: 6468071777

Figure N/A

Tested By: CS **Checked By:** LBJ DSC 1-25-08

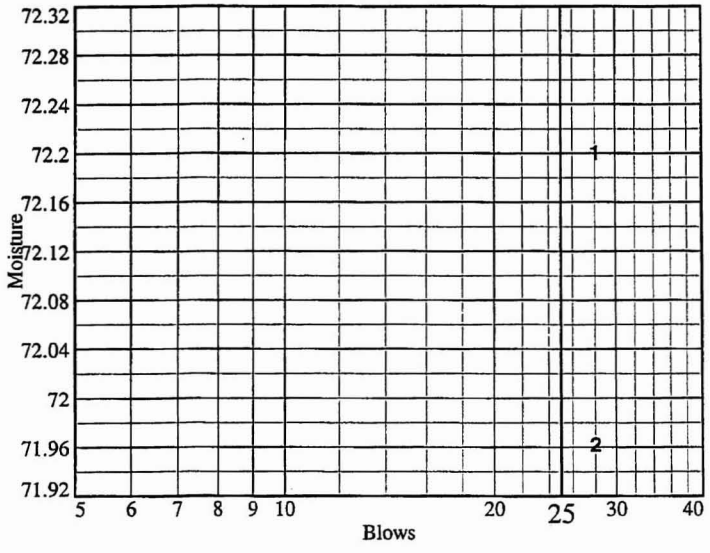
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 32.5-35 **Sample Number:** SS-10
Material Description: Brownish Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-6(59)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.38	26.47				
Dry+Tare	20.64	21.85				
Tare	15.46	15.43				
# Blows	28	28				
Moisture	72.2	72.0				



Liquid Limit= 73
Plastic Limit= 21
Plasticity Index= 52
Natural Moisture= 24.1
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.56	20.93			
Dry+Tare	16.46	20.05			
Tare	11.20	15.69			
Moisture	20.9	20.2			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
160.08	130.34	6.70	24.1

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: 1/15/08

SAMPLE IDENTIFICATION: B-2160 SS-10

(A) Mass of oven-dried soil, grams:		51.89
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.51
(C) Mass of pycnometer, water and soil, grams:		689.13
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.9
(G) Specific Gravity at observed temperature:	A / [B- (C - A)]	2.693
(F)	***Correction factor:***	0.99912
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.690

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **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-5

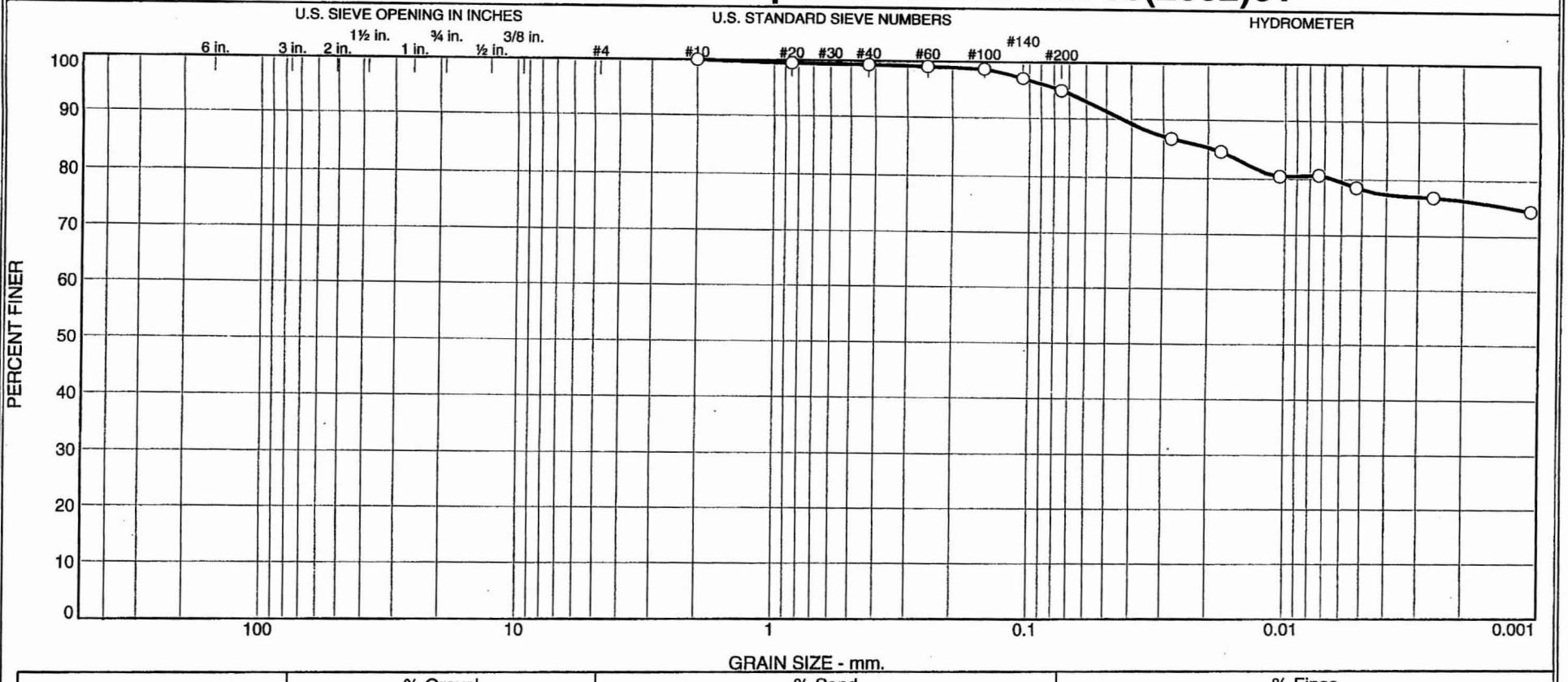
TESTED BY: CS

\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	0.7	4.5	16.5	78.3

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2160	SS-11	38.5-40.0	11-11-07	CH	Brownish Yellow Fat CLAY	28.3	87	26

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 1-25-08

GRAIN SIZE DISTRIBUTION TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2160
Depth: 38.5-40.0 **Sample Number:** SS-11
Material Description: Brownish Yellow Fat CLAY
Date: 11-11-07 **Natural Moisture:** 28.3
Liquid Limit: 87 **Plastic Limit:** 26 **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
225.17	0.00	0.00	#10	0.00	100.0
48.01	0.00	0.00	#20	0.24	99.5
			#40	0.34	99.3
			#60	0.44	99.1
			#100	0.63	98.7
			#140	1.43	97.0
			#200	2.49	94.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.01
Hygroscopic moisture correction:
Moist weight and tare = 30.00
Dry weight and tare = 29.28
Tare weight = 15.40
Hygroscopic moisture = 5.2%
Table of composite correction values:

Temp., deg. C:	12.8	27.3
Comp. corr.:	-7.0	-3.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.4	45.0	40.1	0.0134	46.0	8.8	0.0280	86.9
5.00	20.4	44.0	39.1	0.0134	45.0	8.9	0.0179	84.7
15.00	20.5	42.0	37.1	0.0134	43.0	9.2	0.0105	80.4
30.00	20.9	42.0	37.2	0.0133	43.0	9.2	0.0074	80.7
60.00	21.0	41.0	36.3	0.0133	42.0	9.4	0.0053	78.6
240.00	21.9	40.0	35.5	0.0131	41.0	9.6	0.0026	76.9
1440.00	21.6	39.0	34.4	0.0132	40.0	9.7	0.0011	74.6