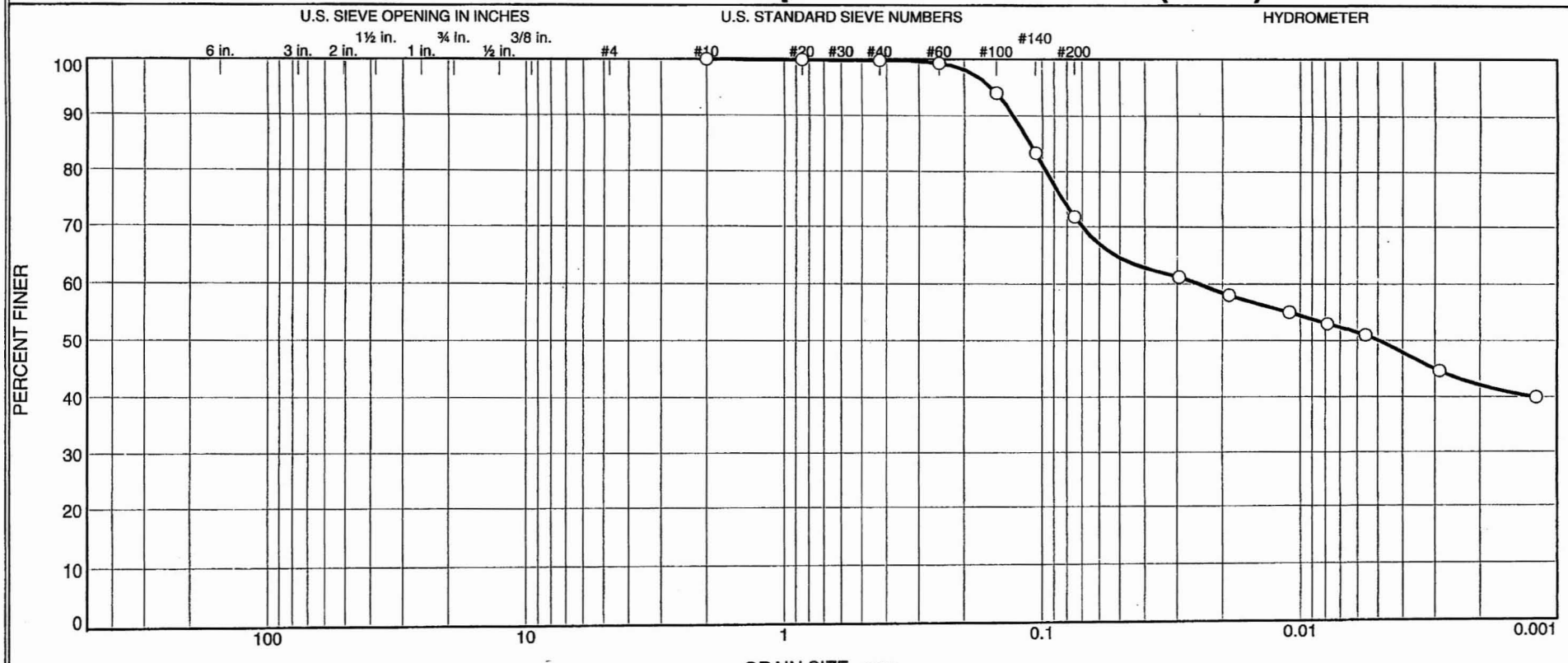
Particle Size Distribution Report / ASTM D-422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.2	28.0	21.7	50.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-12	45.4-46.9'	11/8/07	CH	Brownish Yellow Fat CLAY with sand	20.0	53	17

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-2269
Depth: 45.4-46.9' **Sample Number:** SS-12
Material Description: Brownish Yellow Fat CLAY with sand
Date: 11/8/07 **Natural Moisture:** 20.0
Liquid Limit: 53 **Plastic Limit:** 17 **USCS Class.:** CH
Testing Remarks: Specific gravity is assumed.
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
228.86	0.00	0.00	#10	0.00	100.0
50.20	0.00	0.00	#20	0.06	99.9
			#40	0.12	99.8
			#60	0.38	99.2
			#100	3.04	93.9
			#140	8.32	83.4
			#200	14.15	71.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.2
Hygroscopic moisture correction:
Moist weight and tare = 26.56
Dry weight and tare = 26.17
Tare weight = 15.49
Hygroscopic moisture = 3.7%
Table of composite correction values:

Temp., deg. C:	10.5	29.8
Comp. corr.:	-8.0	-3.5

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	23.3	35.0	30.0	0.0129	36.0	10.4	0.0294	61.2
5.00	23.2	33.5	28.5	0.0129	34.5	10.6	0.0189	58.1
15.00	23.3	32.0	27.0	0.0129	33.0	10.9	0.0110	55.1
30.00	23.3	31.0	26.0	0.0129	32.0	11.0	0.0078	53.1
60.00	23.3	30.0	25.0	0.0129	31.0	11.2	0.0056	51.0
240.00	22.6	27.0	21.8	0.0130	28.0	11.7	0.0029	44.6
1440.00	21.4	25.0	19.5	0.0132	26.0	12.0	0.0012	39.9

MACTEC, Inc.

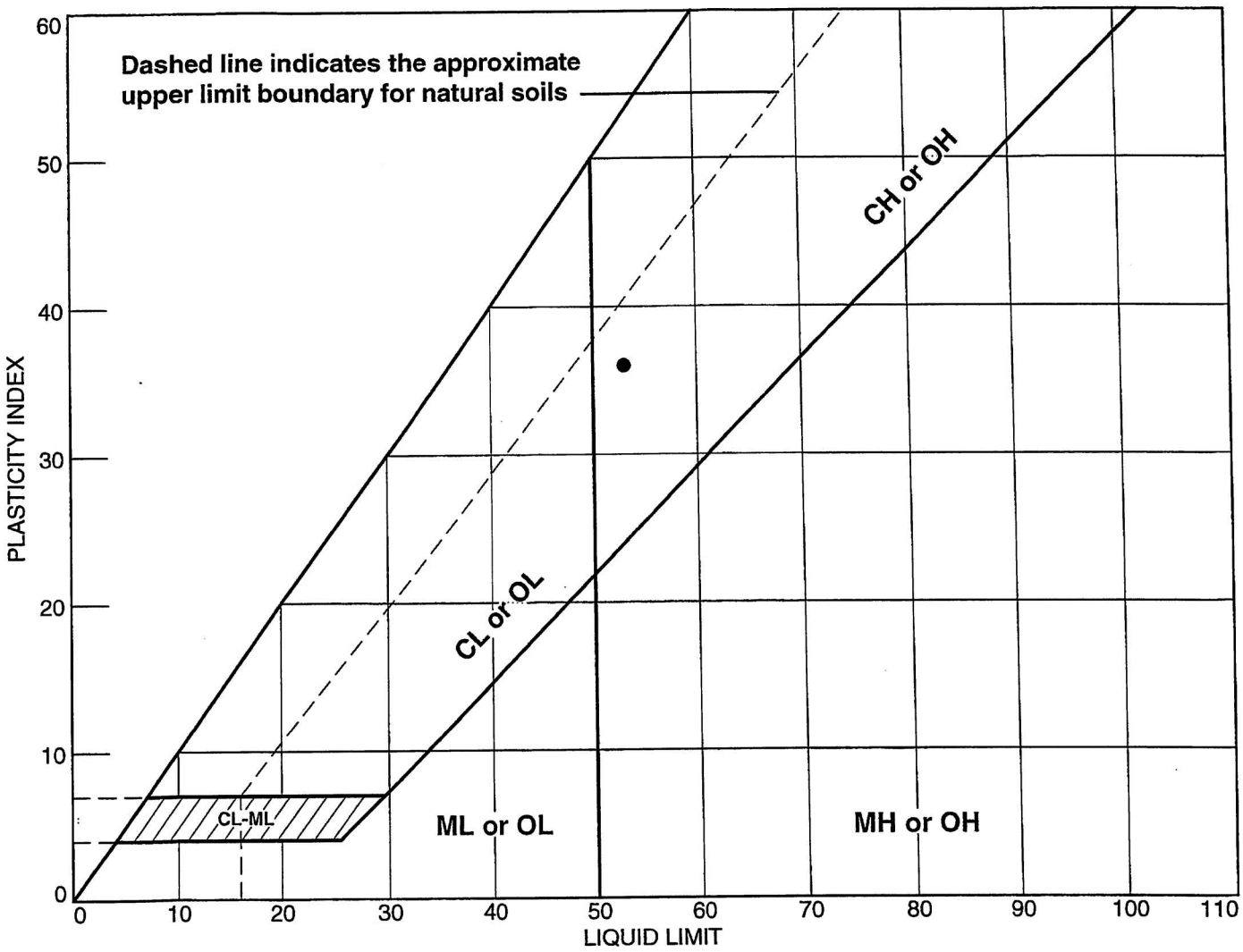
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	28.0	28.2	21.7	50.1	71.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0049	0.0245	0.0963	0.1109	0.1292	0.1579

Fineness Modulus
0.07

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-2269	SS-12	45.4-46.9'	20.0	17	53	36	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

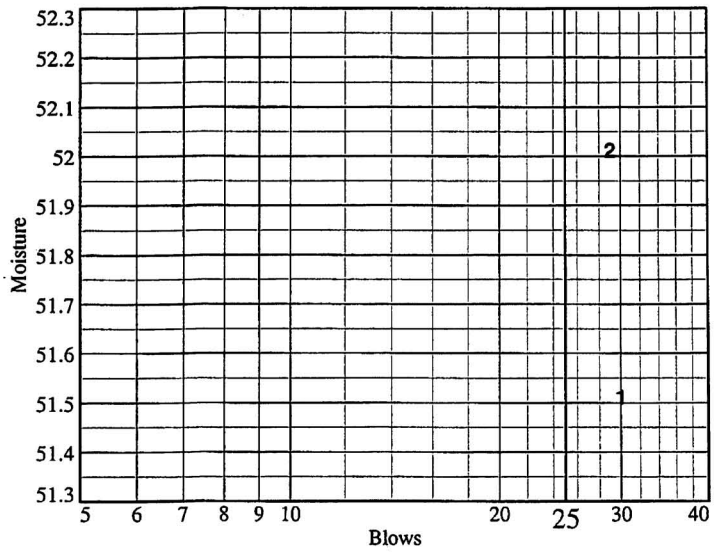
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 45.4-46.9'
Sample Number: SS-12
Material Description: Brownish Yellow Fat CLAY with sand
USCS: CH
AASHTO: A-7-6(25)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.44	29.11				
Dry+Tare	24.67	24.46				
Tare	15.41	15.52				
# Blows	30	29				
Moisture	51.5	52.0				



Liquid Limit= 53
Plastic Limit= 17
Plasticity Index= 36
Natural Moisture= 20.0
Liquidity Index= 0.1

Plastic Limit Data

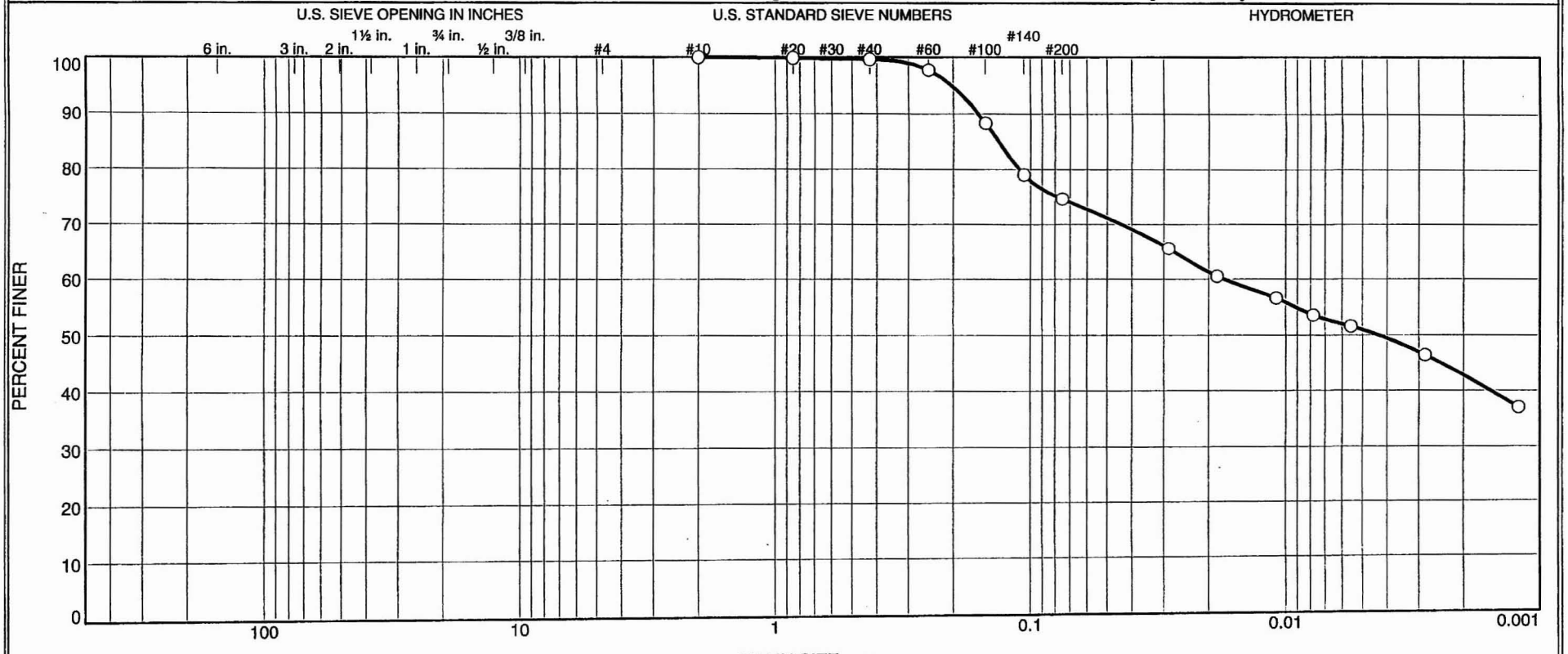
Run No.	1	2	3	4	
Wet+Tare	23.30	24.20			
Dry+Tare	22.20	22.90			
Tare	15.50	15.30			
Moisture	16.4	17.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
155.47	131.06	9.10	20.0

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.4	24.9	23.7	51.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-13	50.4-51.9'	11/8/07	CH	Light Gray Fat CLAY with sand	20.3	53	16

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-2269
Depth: 50.4-51.9' **Sample Number:** SS-13
Material Description: Light Gray Fat CLAY with sand
Date: 11/8/07 **Natural Moisture:** 20.3
Liquid Limit: 53 **Plastic Limit:** 16 **USCS Class.:** CH
Testing Remarks: Specific gravity is assumed.
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
212.06	0.00	0.00	#10	0.00	100.0
51.45	0.00	0.00	#20	0.07	99.9
			#40	0.20	99.6
			#60	1.15	97.8
			#100	5.96	88.4
			#140	10.78	79.0
			#200	13.01	74.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =51.45
Hygroscopic moisture correction:
Moist weight and tare = 28.44
Dry weight and tare = 28.04
Tare weight = 15.39
Hygroscopic moisture = 3.2%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	23.4	38.0	33.1	0.0129	39.0	9.9	0.0287	65.5
5.00	23.3	35.5	30.5	0.0129	36.5	10.3	0.0185	60.5
15.00	23.4	33.5	28.6	0.0129	34.5	10.6	0.0109	56.6
30.00	23.3	32.0	27.0	0.0129	33.0	10.9	0.0078	53.6
60.00	23.3	31.0	26.0	0.0129	32.0	11.0	0.0055	51.6
240.00	22.9	28.5	23.4	0.0130	29.5	11.5	0.0028	46.5
1440.00	21.6	24.0	18.6	0.0132	25.0	12.2	0.0012	36.9

MACTEC, Inc.

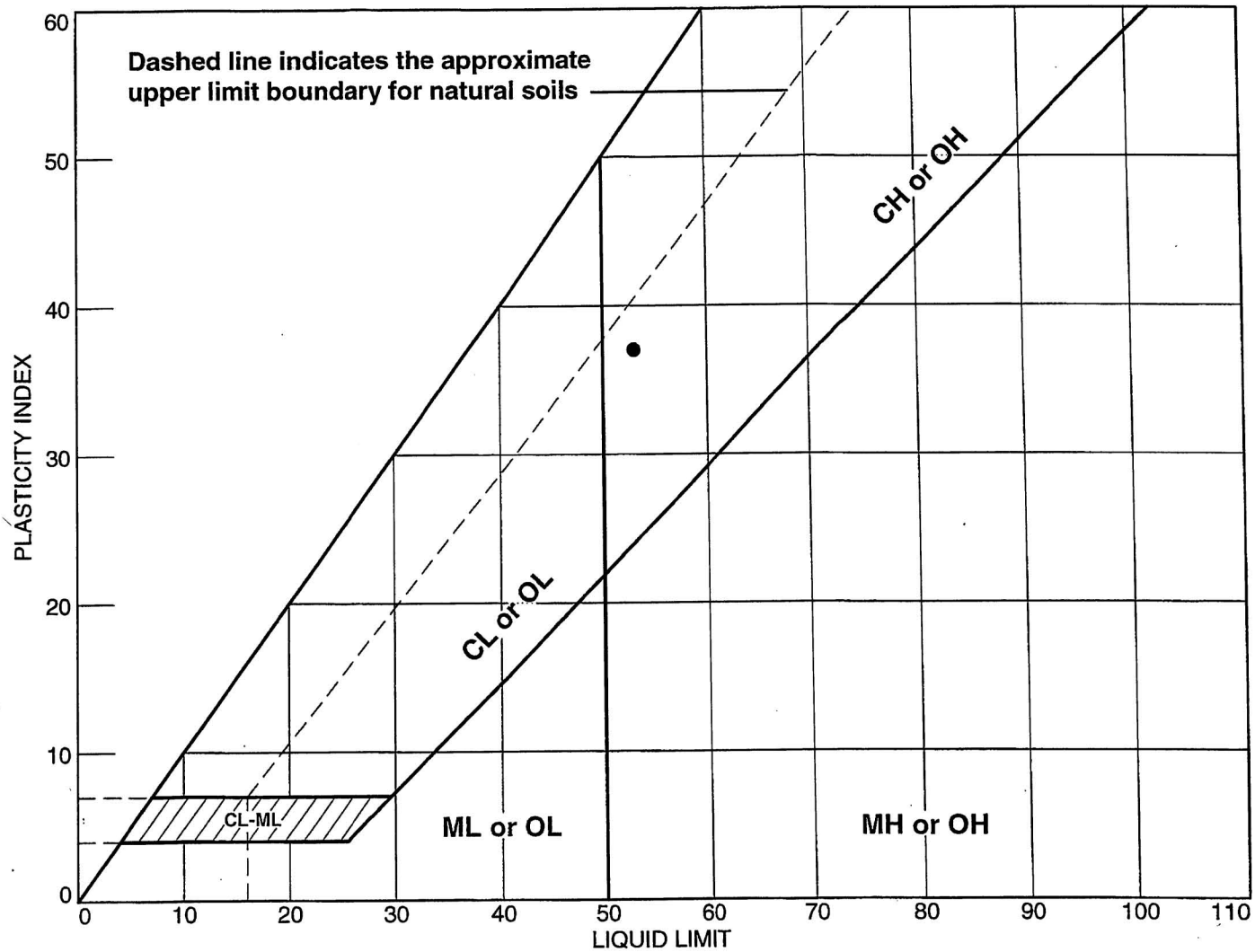
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	24.9	25.3	23.7	51.0	74.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0043	0.0174	0.1107	0.1330	0.1594	0.2026

Fineness Modulus
0.13

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-2269	SS-13	50.4-51.9'	20.3	16	53	37	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

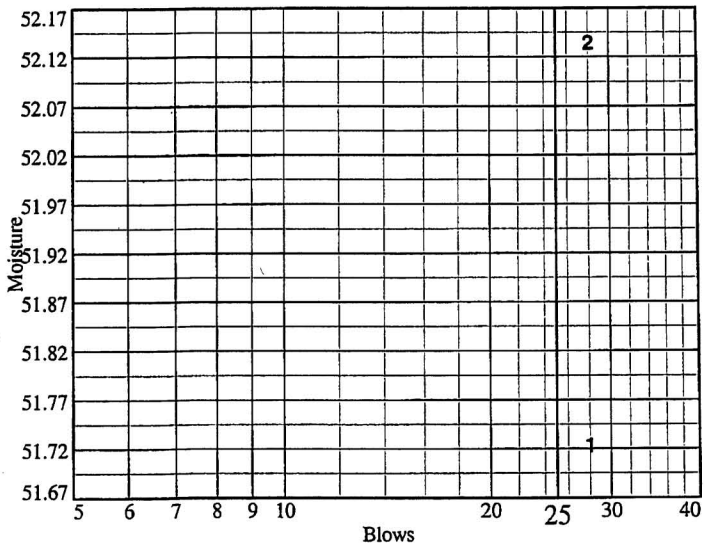
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 50.4-51.9'
Sample Number: SS-13
Material Description: Light Gray Fat CLAY with sand
USCS: CH
AASHTO: A-7-6(27)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.30	25.96				
Dry+Tare	21.30	22.42				
Tare	15.50	15.63				
# Blows	28	28				
Moisture	51.7	52.1				



Liquid Limit= 53
Plastic Limit= 16
Plasticity Index= 37
Natural Moisture= 20.3
Liquidity Index= 0.1

Plastic Limit Data

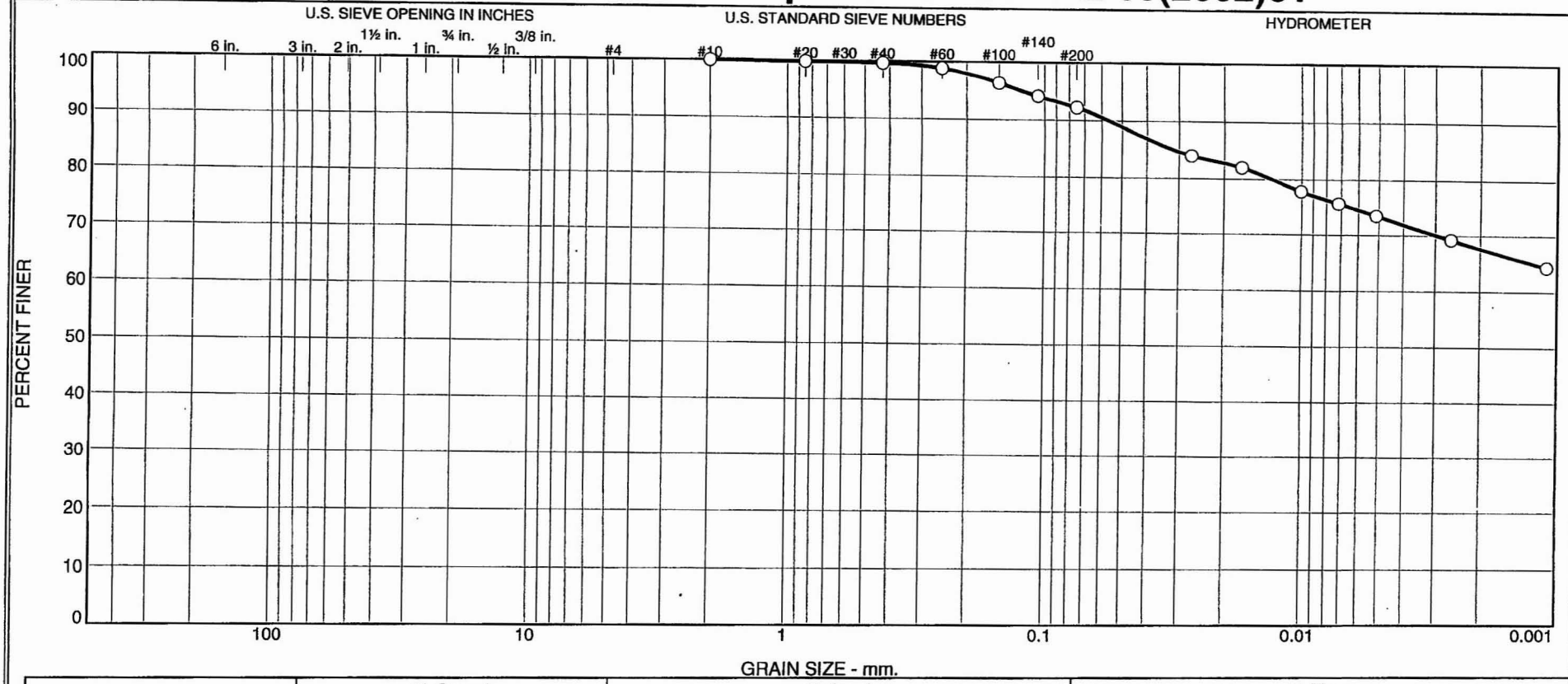
Run No.	1	2	3	4	
Wet+Tare	22.56	24.60			
Dry+Tare	21.60	23.37			
Tare	15.62	15.43			
Moisture	16.1	15.5			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
172.27	144.32	6.88	20.3

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.3	7.5	18.8	73.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-14	55.4-56.9'	11/8/07	CH	Light Gray Fat CLAY	32.1	85	25

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific gravity = 2.738 (ASTM D 854-06)

Tested By: CS **Checked By:** LBJ DSC 3-13-08

GRAIN SIZE DISTRIBUTION TEST DATA

3/12/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 55.4-56.9' **Sample Number:** SS-14
Material Description: Light Gray Fat CLAY
Date: 11/8/07 **Natural Moisture:** 32.1
Liquid Limit: 85 **Plastic Limit:** 25 **USCS Class.:** CH
Testing Remarks: Specific gravity = 2.738 (ASTM D 854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
201.95	0.00	0.00	#10	0.00	100.0
48.66	0.00	0.00	#20	0.08	99.8
			#40	0.16	99.7
			#60	0.56	98.8
			#100	1.75	96.4
			#140	2.86	94.1
			#200	3.78	92.2

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.66
Hygroscopic moisture correction:
Moist weight and tare = 27.80
Dry weight and tare = 27.29
Tare weight = 15.49
Hygroscopic moisture = 4.3%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

Meniscus correction only = 1.0
Specific gravity of solids = 2.738
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	23.0	45.0	40.0	0.0128	46.0	8.8	0.0268	84.0
5.00	23.2	44.0	39.0	0.0128	45.0	8.9	0.0171	82.0
15.00	23.2	42.0	37.0	0.0128	43.0	9.2	0.0100	77.8
30.00	23.1	41.0	36.0	0.0128	42.0	9.4	0.0072	75.7
60.00	23.0	40.0	35.0	0.0128	41.0	9.6	0.0051	73.5
240.00	22.9	38.0	32.9	0.0128	39.0	9.9	0.0026	69.3
1440.00	21.6	36.0	30.6	0.0130	37.0	10.2	0.0011	64.4

MACTEC, Inc.

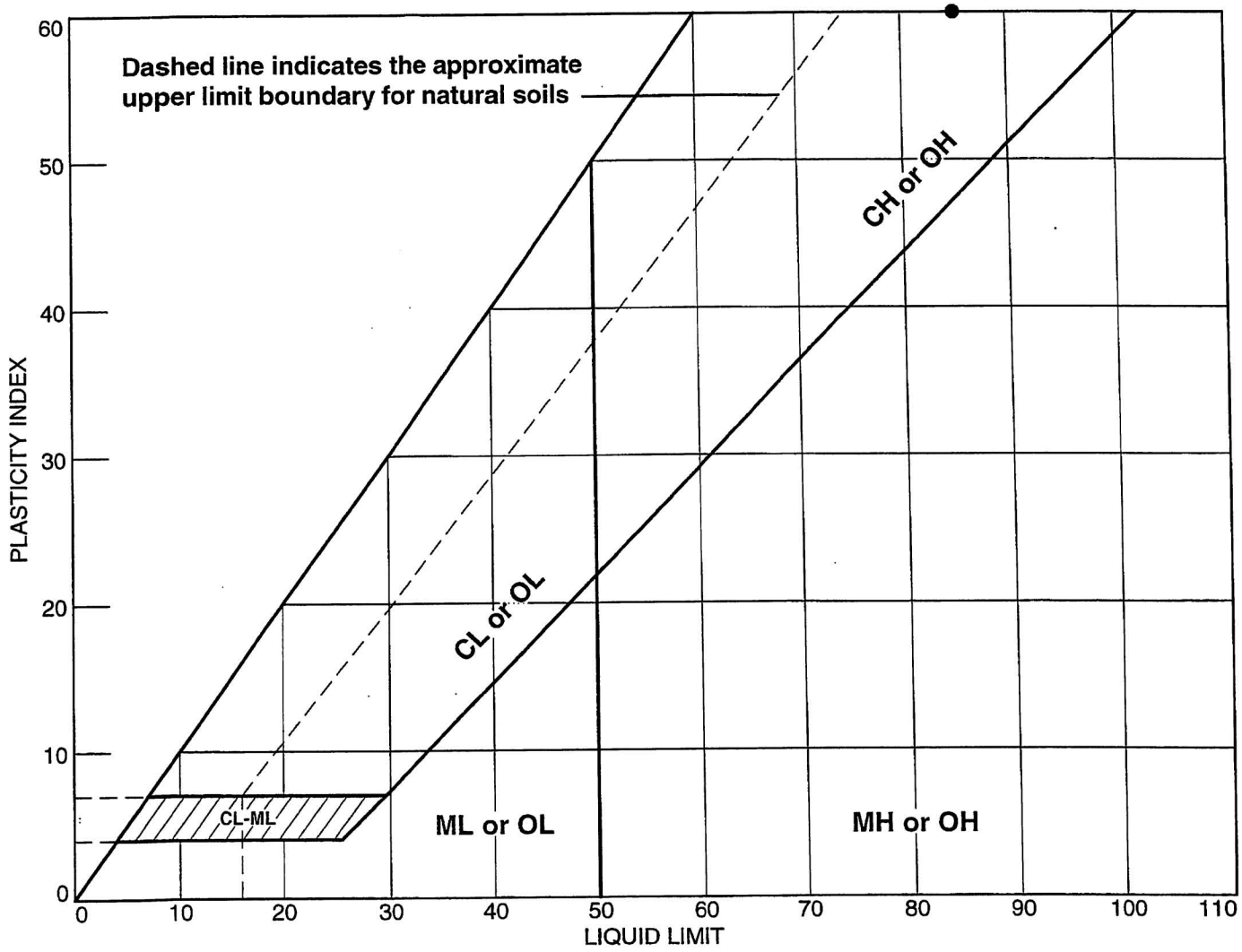
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	7.5	7.8	18.8	73.4	92.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0130	0.0313	0.0560	0.1217

Fineness Modulus
0.05

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-2269	SS-14	55.4-56.9'	32.1	25	85	60	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 3-13-08

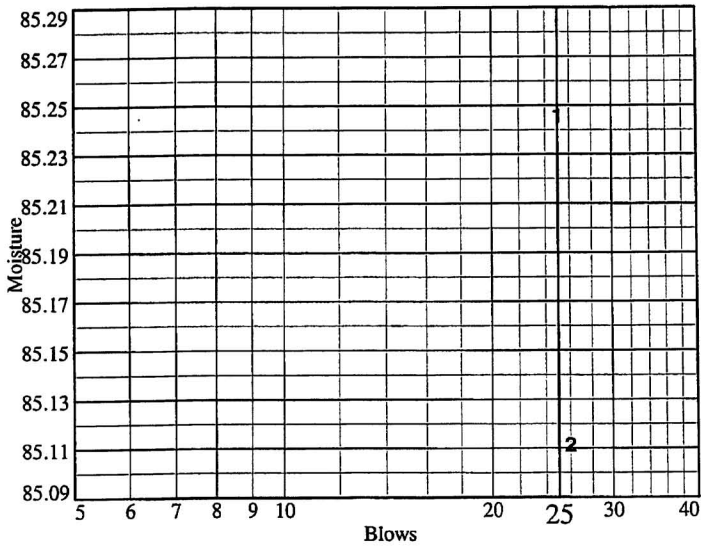
LIQUID AND PLASTIC LIMIT TEST DATA

3/12/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 55.4-56.9'
Sample Number: SS-14
Material Description: Light Gray Fat CLAY
USCS: CH
AASHTO: A-7-6(63)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	22.42	22.95				
Dry+Tare	19.30	19.52				
Tare	15.64	15.49				
# Blows	25	26				
Moisture	85.2	85.1				



Liquid Limit= 85
Plastic Limit= 25
Plasticity Index= 60
Natural Moisture= 32.1
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.92	23.34			
Dry+Tare	20.64	21.81			
Tare	15.62	15.56			
Moisture	25.5	24.5			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
113.93	87.91	6.86	32.1

MACTEC, Inc.

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT [VICTORIA]

PROJECT NUMBER: 6468071777

DATE: 11/16/07

SAMPLE IDENTIFICATION: B-2269 SS-14

(A) Mass of oven-dried soil, grams:		52.83
(B) Mass of pycnometer filled with water at test temperature (T), grams:		654.71
(C) Mass of pycnometer, water and soil, grams:		688.30
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		24.0
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.746
(F)	***Correction factor:***	0.99730
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.738

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

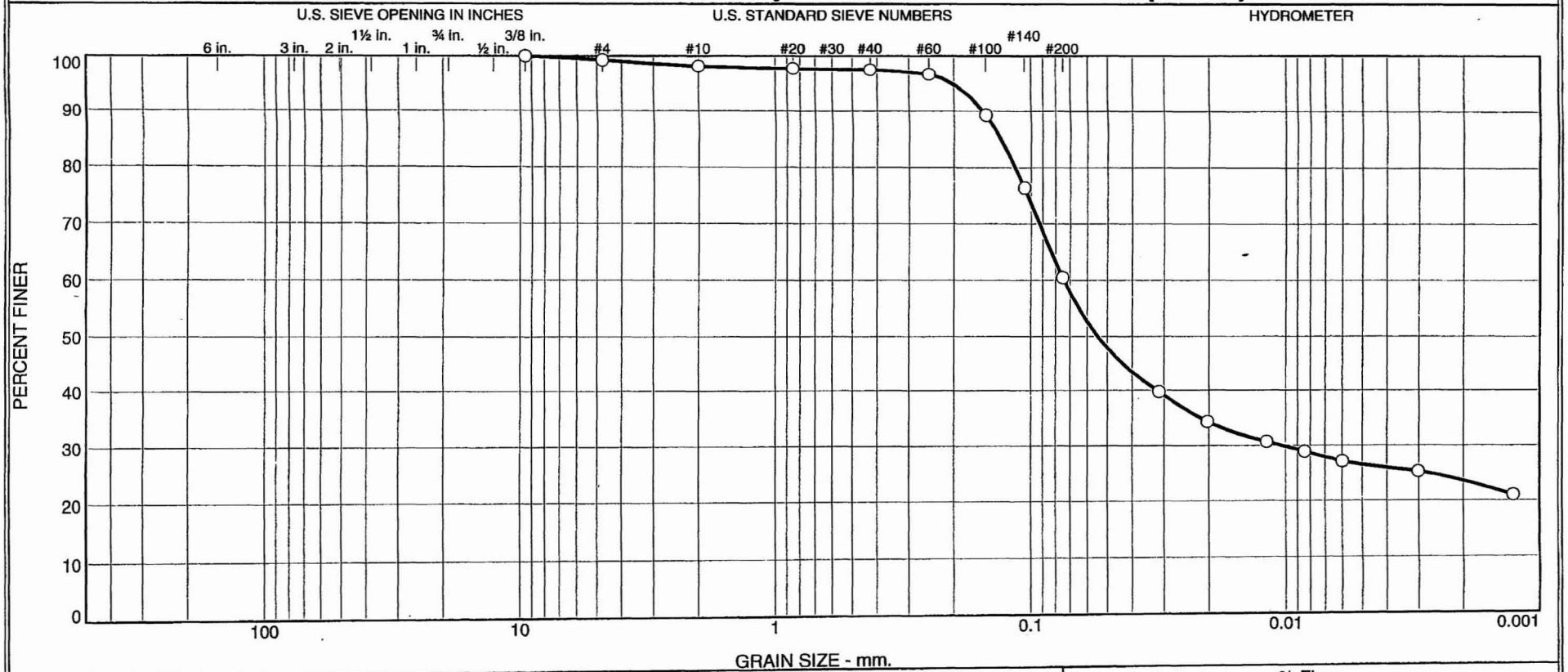
TESTED BY: CS

\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
O	0.0	0.0	0.7	1.1	0.7	37.0	34.0	26.5

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2269	SS-15	60.4-61.9'	11/8/07	CL	Light Gray Sandy Lean CLAY	20.9	35	16

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O Specific gravity is assumed.

Tested By: CS **Checked By:** LBJ ZHU 4/30/08

GRAIN SIZE DISTRIBUTION TEST DATA

4/9/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 60.4-61.9' **Sample Number:** SS-15
Material Description: Light Gray Sandy Lean CLAY
Date: 11/8/07 **Natural Moisture:** 20.9
Liquid Limit: 35 **Plastic Limit:** 16 **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
211.22	0.00	0.00	3/8"	0.00	100.0
			#4	1.56	99.3
			#10	3.87	98.2
54.56	0.00	0.00	#20	0.25	97.7
			#40	0.39	97.5
			#60	0.85	96.6
			#100	4.92	89.3
			#140	12.08	76.4
			#200	20.91	60.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 98.2
Weight of hydrometer sample =54.56
Hygroscopic moisture correction:
Moist weight and tare = 26.90
Dry weight and tare = 26.71
Tare weight = 15.73
Hygroscopic moisture = 1.7%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	23.0	27.0	22.0	0.0130	28.0	11.7	0.0313	39.8
5.00	23.0	24.0	19.0	0.0130	25.0	12.2	0.0202	34.3
15.00	23.0	22.0	17.0	0.0130	23.0	12.5	0.0118	30.7
30.00	23.1	21.0	16.0	0.0129	22.0	12.7	0.0084	28.9
60.00	23.2	20.0	15.0	0.0129	21.0	12.9	0.0060	27.2
240.00	23.1	19.0	14.0	0.0129	20.0	13.0	0.0030	25.3
1440.00	21.5	17.0	11.6	0.0132	18.0	13.3	0.0013	21.0

MACTEC, Inc.

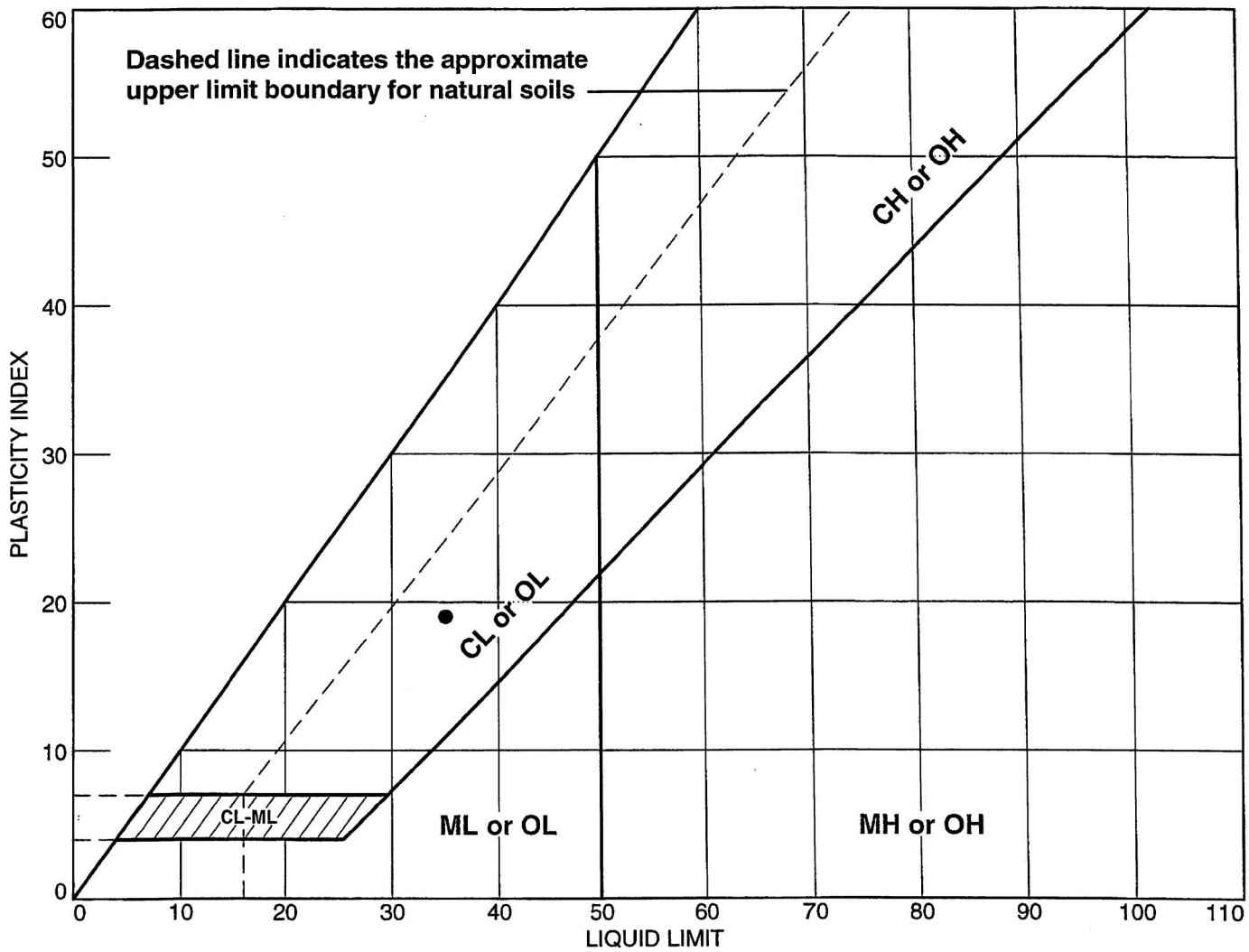
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.7	0.7	1.1	0.7	37.0	38.8	34.0	26.5	60.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0103	0.0545	0.0740	0.1151	0.1309	0.1539	0.2033

Fineness Modulus
0.21

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-2269	SS-15	60.4-61.9'	20.9	16	35	19	CL

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

Tested By: CS **Checked By:** LBJ ZHU 4/30/08

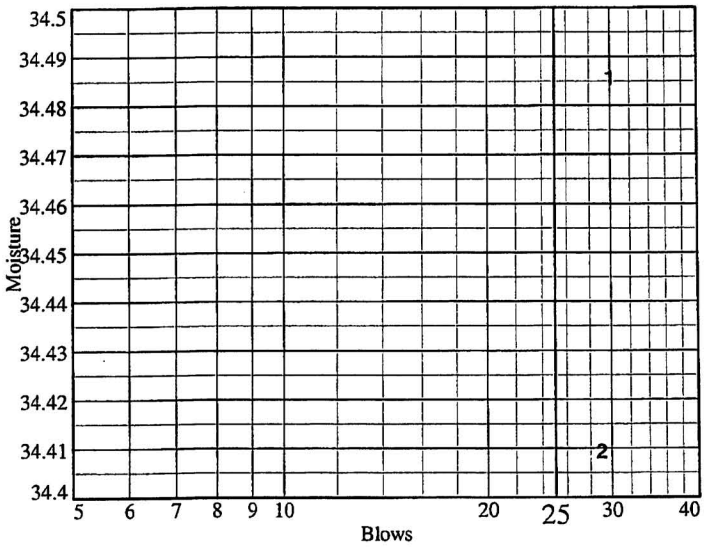
LIQUID AND PLASTIC LIMIT TEST DATA

4/9/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 60.4-61.9'
Sample Number: SS-15
Material Description: Light Gray Sandy Lean CLAY
USCS: CL
AASHTO: A-6(8)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.11	31.42				
Dry+Tare	27.12	27.37				
Tare	15.55	15.60				
# Blows	30	29				
Moisture	34.5	34.4				



Liquid Limit= 35
Plastic Limit= 16
Plasticity Index= 19
Natural Moisture= 20.9
Liquidity Index= 0.3

Plastic Limit Data

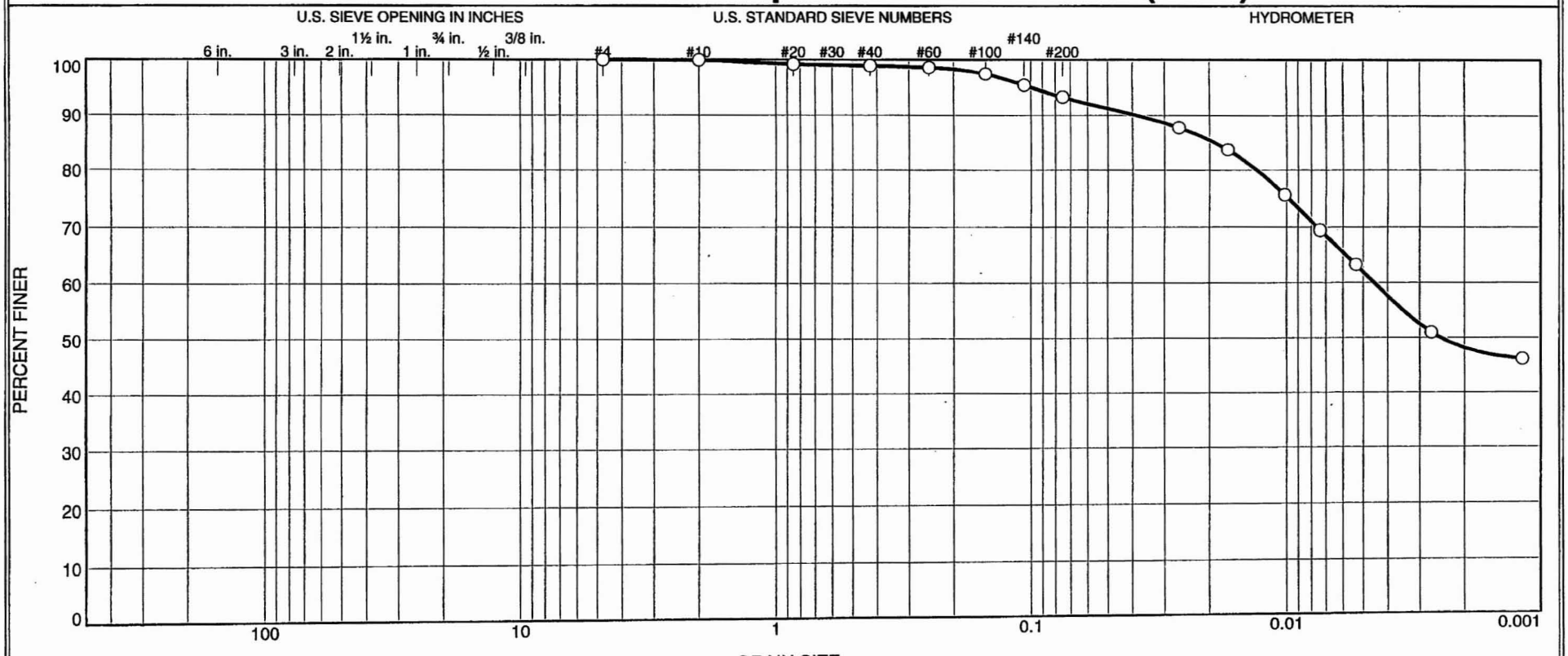
Run No.	1	2	3	4	
Wet+Tare	23.30	25.00			
Dry+Tare	22.20	23.70			
Tare	15.50	15.50			
Moisture	16.4	15.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
164.20	137.35	9.13	20.9

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.1	1.0	5.6	31.3	62.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-16	65.4-66.9'	11/8/07	CH	Light Gray Fat CLAY	23.3	67	32

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific gravity is assumed.
Organic content = 0.9% (ASTM D 2974-07)

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-2269
Depth: 65.4-66.9' **Sample Number:** SS-16
Material Description: Light Gray Fat CLAY
Date: 11/8/07 **Natural Moisture:** 23.3
Liquid Limit: 67 **Plastic Limit:** 32 **USCS Class.:** CH
Testing Remarks: Specific gravity is assumed.
Organic content = 0.9% (ASTM D 2974-07)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
225.96	0.00	0.00	#4	0.00	100.0
			#10	0.14	99.9
50.08	0.00	0.00	#20	0.37	99.2
			#40	0.51	98.9
			#60	0.67	98.6
			#100	1.25	97.4
			#140	2.27	95.4
			#200	3.34	93.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.9
Weight of hydrometer sample =50.08
Hygroscopic moisture correction:
Moist weight and tare = 26.97
Dry weight and tare = 26.58
Tare weight = 15.42
Hygroscopic moisture = 3.5%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	23.1	48.0	43.0	0.0129	49.0	8.3	0.0263	87.8
5.00	23.1	46.0	41.0	0.0129	47.0	8.6	0.0170	83.7
15.00	23.2	42.0	37.0	0.0129	43.0	9.2	0.0101	75.6
30.00	23.2	39.0	34.0	0.0129	40.0	9.7	0.0074	69.5
60.00	23.2	36.0	31.0	0.0129	37.0	10.2	0.0053	63.3
258.00	23.0	30.0	25.0	0.0130	31.0	11.2	0.0027	51.0
1440.00	21.5	28.0	22.6	0.0132	29.0	11.5	0.0012	46.2

MACTEC, Inc.

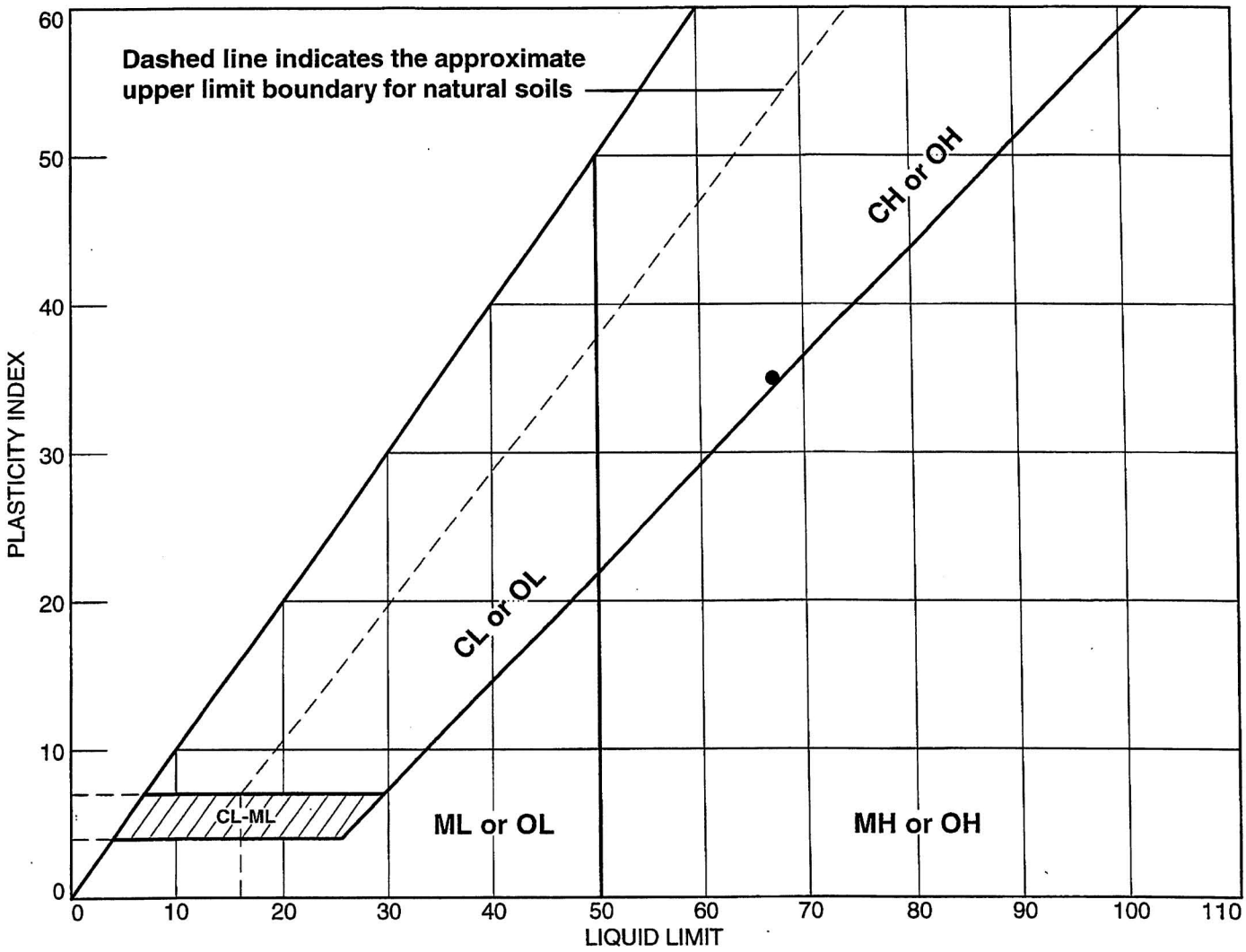
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	1.0	5.6	6.7	31.3	62.0	93.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0025	0.0045	0.0131	0.0190	0.0383	0.0995

Fineness Modulus
0.05

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-2269	SS-16	65.4-66.9'	23.3	32	67	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 DJC 1-25-08

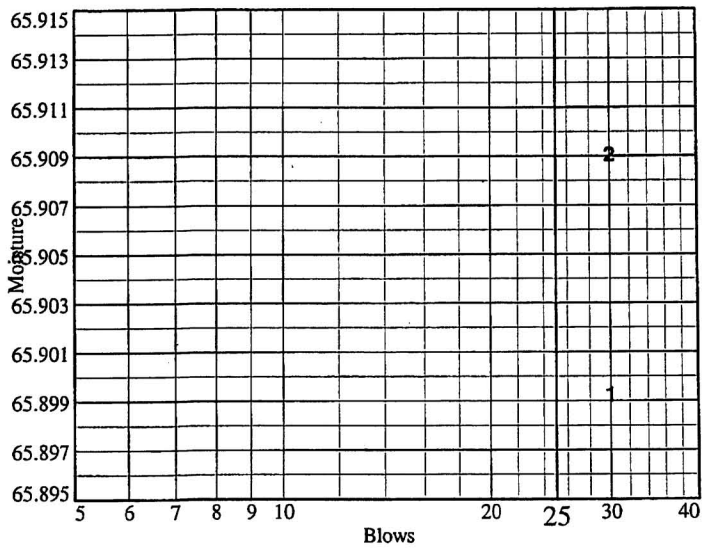
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 65.4-66.9'
Sample Number: SS-16
Material Description: Light Gray Fat CLAY
USCS: CH
AASHTO: A-7-5(39)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.04	26.52				
Dry+Tare	22.46	22.17				
Tare	15.51	15.57				
# Blows	30	30				
Moisture	65.9	65.9				



Liquid Limit= 67
Plastic Limit= 32
Plasticity Index= 35
Natural Moisture= 23.3
Liquidity Index= -0.2

Plastic Limit Data

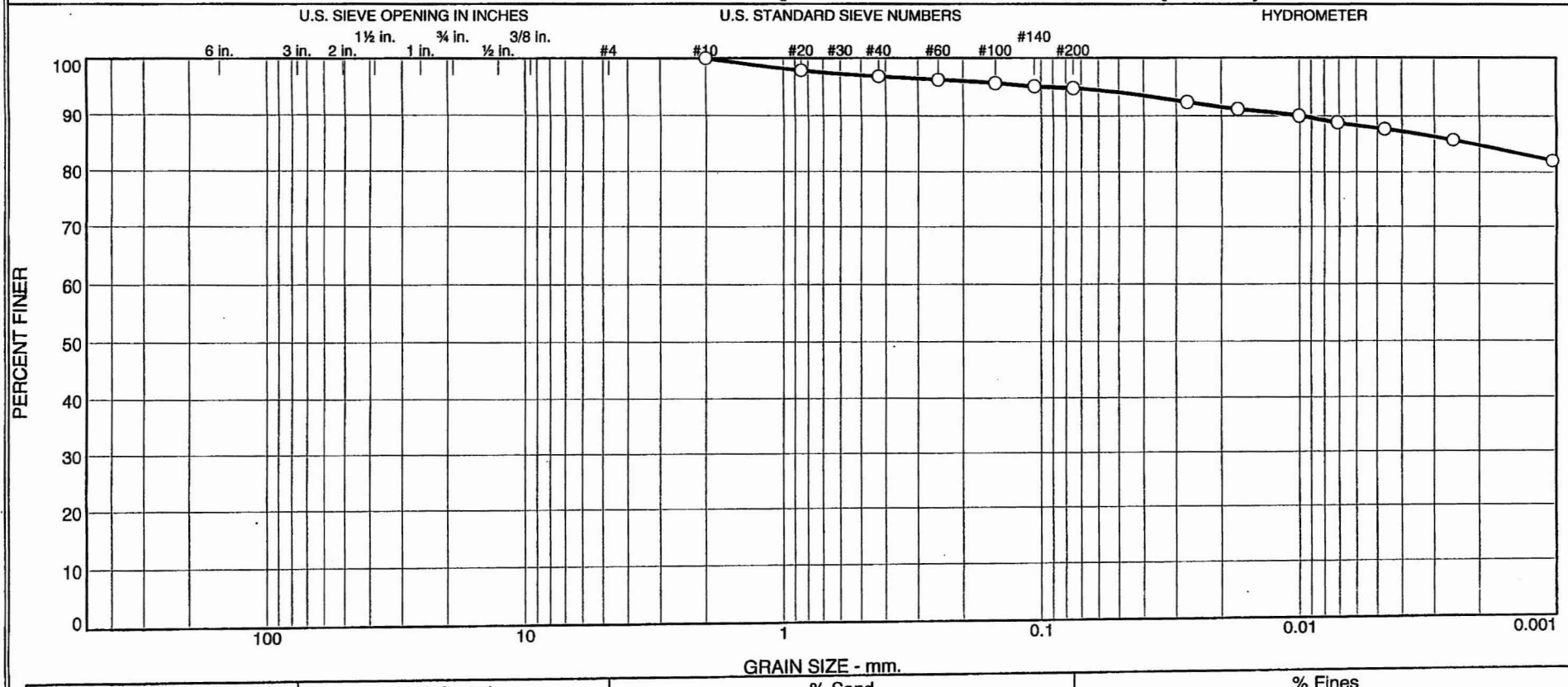
Run No.	1	2	3	4	
Wet+Tare	22.60	22.80			
Dry+Tare	20.89	20.99			
Tare	15.60	15.40			
Moisture	32.3	32.4			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
145.19	119.05	6.63	23.3

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	3.3	2.0	6.7	88.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-17	70.4-71.9'	11/8/07	CH	Gray Fat CLAY	36.8	69	29

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-2269
Depth: 70.4-71.9'
Sample Number: SS-17
Material Description: Gray Fat CLAY
Date: 11/8/07
Natural Moisture: 36.8
Liquid Limit: 69
Plastic Limit: 29
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
176.73	0.00	0.00	#10	0.00	100.0
48.23	0.00	0.00	#20	1.06	97.8
			#40	1.57	96.7
			#60	1.86	96.1
			#100	2.15	95.5
			#140	2.41	95.0
			#200	2.56	94.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.23
Hygroscopic moisture correction:
Moist weight and tare = 26.48
Dry weight and tare = 25.64
Tare weight = 15.51
Hygroscopic moisture = 8.3%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	21.4	47.0	41.6	0.0132	48.0	8.4	0.0271	92.3
5.00	21.3	46.5	41.1	0.0132	47.5	8.5	0.0173	91.2
15.00	21.3	46.0	40.6	0.0132	47.0	8.6	0.0100	90.1
30.00	21.3	45.5	40.1	0.0132	46.5	8.7	0.0071	88.9
70.00	21.3	45.0	39.6	0.0132	46.0	8.8	0.0047	87.8
240.00	21.8	44.0	38.7	0.0131	45.0	8.9	0.0025	85.9
1440.00	23.2	42.0	37.0	0.0129	43.0	9.2	0.0010	82.2

MACTEC, Inc.

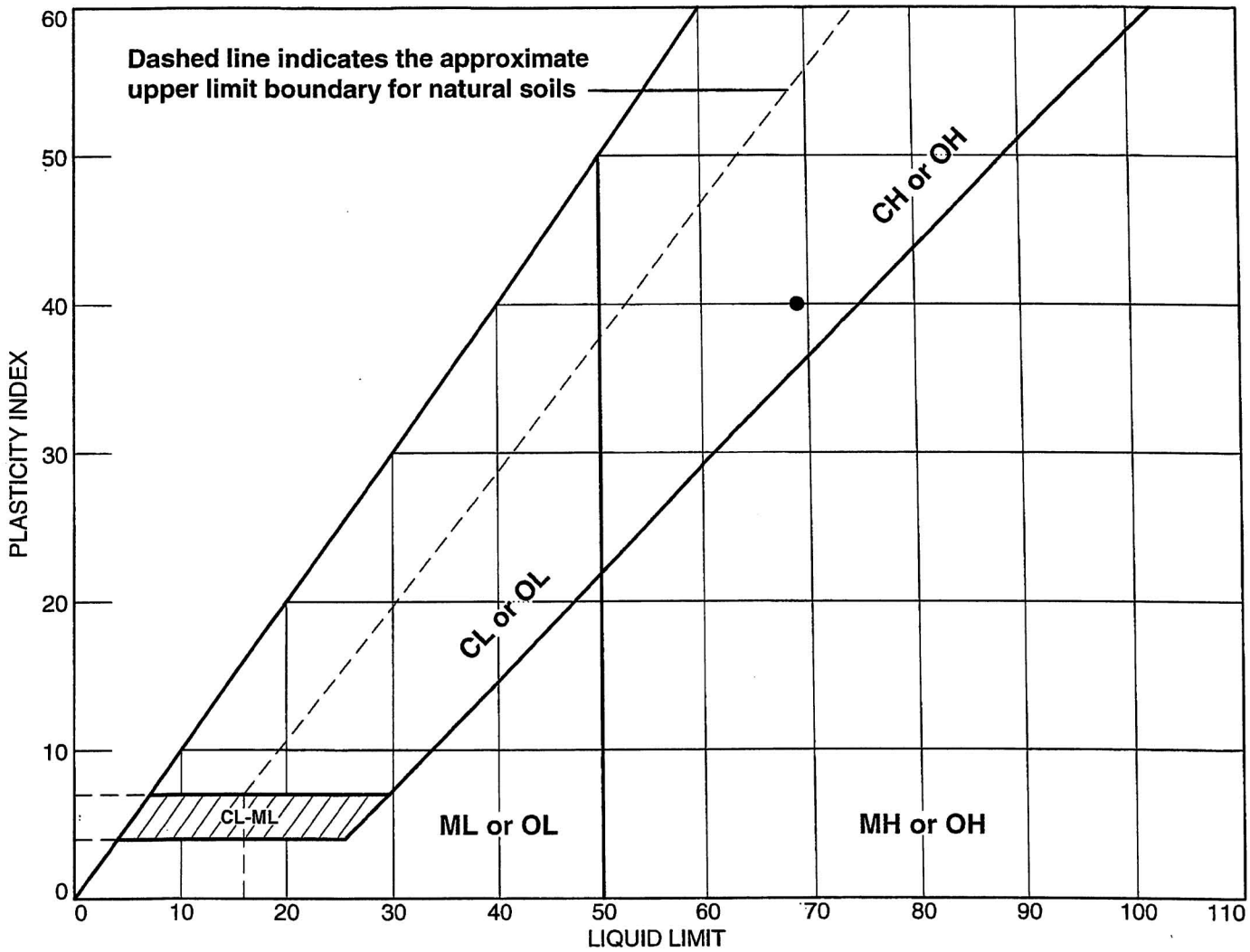
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	3.3	2.0	5.3	6.7	88.0	94.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
							0.0020	0.0098	0.1057

Fineness Modulus
0.12

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-2269	SS-17	70.4-71.9'	36.8	29	69	40	CH

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

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

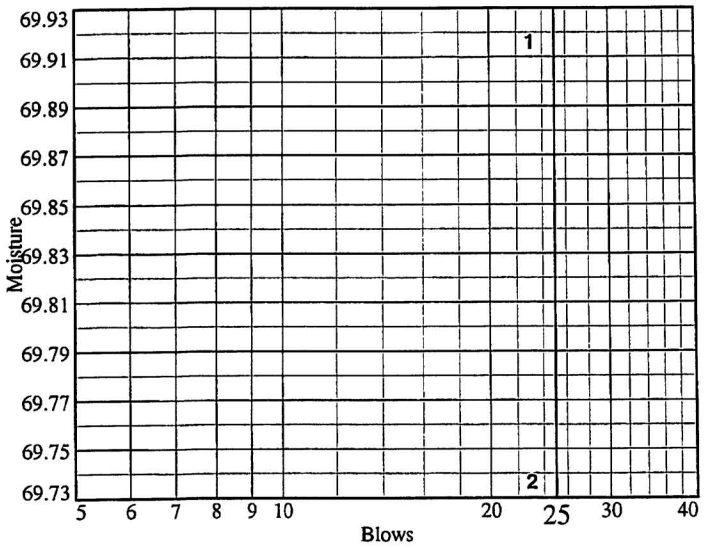
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 70.4-71.9'
Sample Number: SS-17
Material Description: Gray Fat CLAY
USCS: CH
AASHTO: A-7-6(45)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.80	28.40				
Dry+Tare	22.78	23.10				
Tare	15.60	15.50				
# Blows	23	23				
Moisture	69.9	69.7				



Liquid Limit= 69
Plastic Limit= 29
Plasticity Index= 40
Natural Moisture= 36.8
Liquidity Index= 0.2

Plastic Limit Data

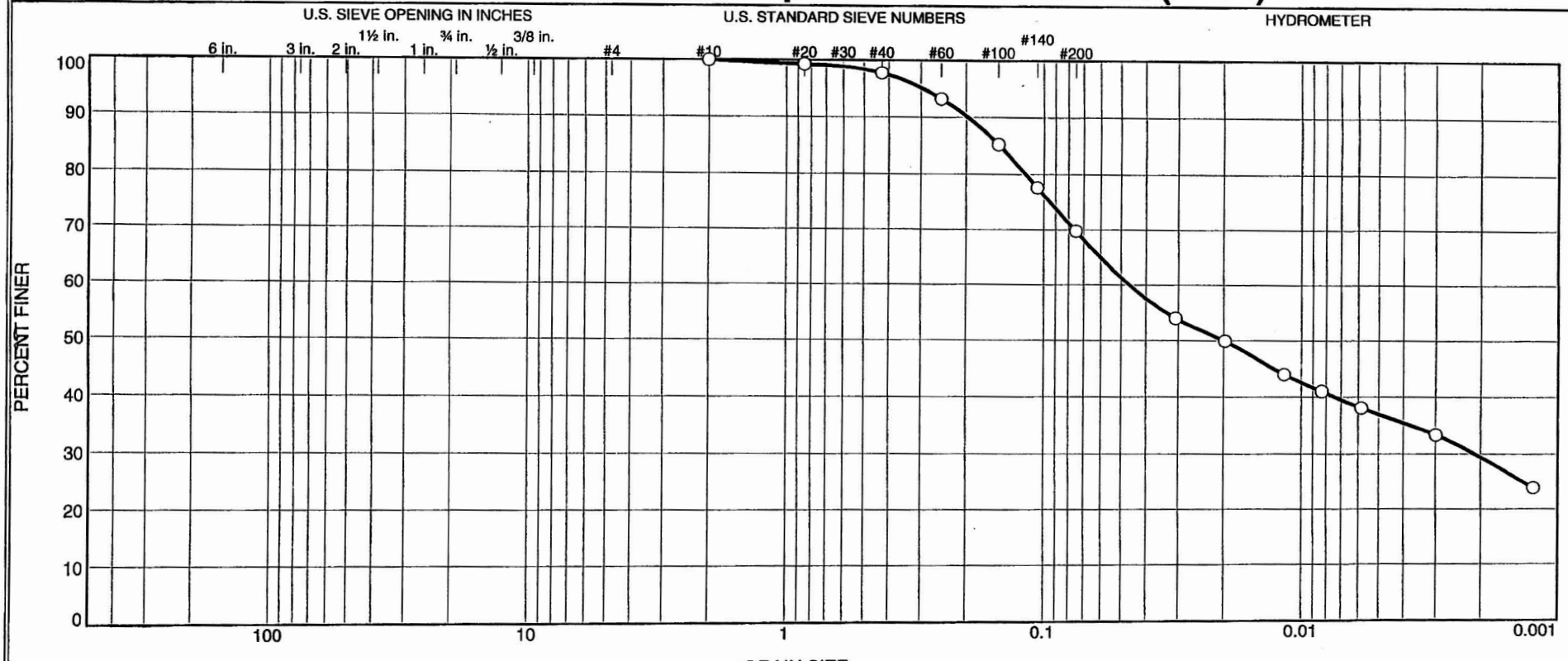
Run No.	1	2	3	4	
Wet+Tare	23.20	21.70			
Dry+Tare	21.50	20.29			
Tare	15.50	15.40			
Moisture	28.3	28.8			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
113.71	85.55	9.09	36.8

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	2.2	28.1	32.8	36.9

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-18	75.4-76.9'	11/9/07	CL	Gray Sandy Lean CLAY	19.3	33	12

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-2269
Depth: 75.4-76.9'
Sample Number: SS-18
Material Description: Gray Sandy Lean CLAY
Date: 11/9/07
Natural Moisture: 19.3
Liquid Limit: 33
Plastic Limit: 12
USCS Class.: CL
Testing Remarks: Specific gravity is assumed.
Tested by: CS
Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
308.15	0.00	0.00	#10	0.00	100.0
50.77	0.00	0.00	#20	0.37	99.3
			#40	1.13	97.8
			#60	3.43	93.2
			#100	7.48	85.3
			#140	11.36	77.6
			#200	15.36	69.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.77
Hygroscopic moisture correction:
Moist weight and tare = 28.59
Dry weight and tare = 28.30
Tare weight = 15.45
Hygroscopic moisture = 2.3%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	21.4	32.5	27.1	0.0132	33.5	10.8	0.0307	53.9
5.00	21.3	30.5	25.1	0.0132	31.5	11.1	0.0197	49.9
15.00	21.4	27.5	22.1	0.0132	28.5	11.6	0.0116	44.0
30.00	21.4	26.0	20.6	0.0132	27.0	11.9	0.0083	41.0
62.00	21.5	24.5	19.1	0.0132	25.5	12.1	0.0058	38.1
240.00	22.1	22.0	16.7	0.0131	23.0	12.5	0.0030	33.4
1440.00	23.2	17.0	12.0	0.0129	18.0	13.3	0.0012	23.9

MACTEC, Inc.

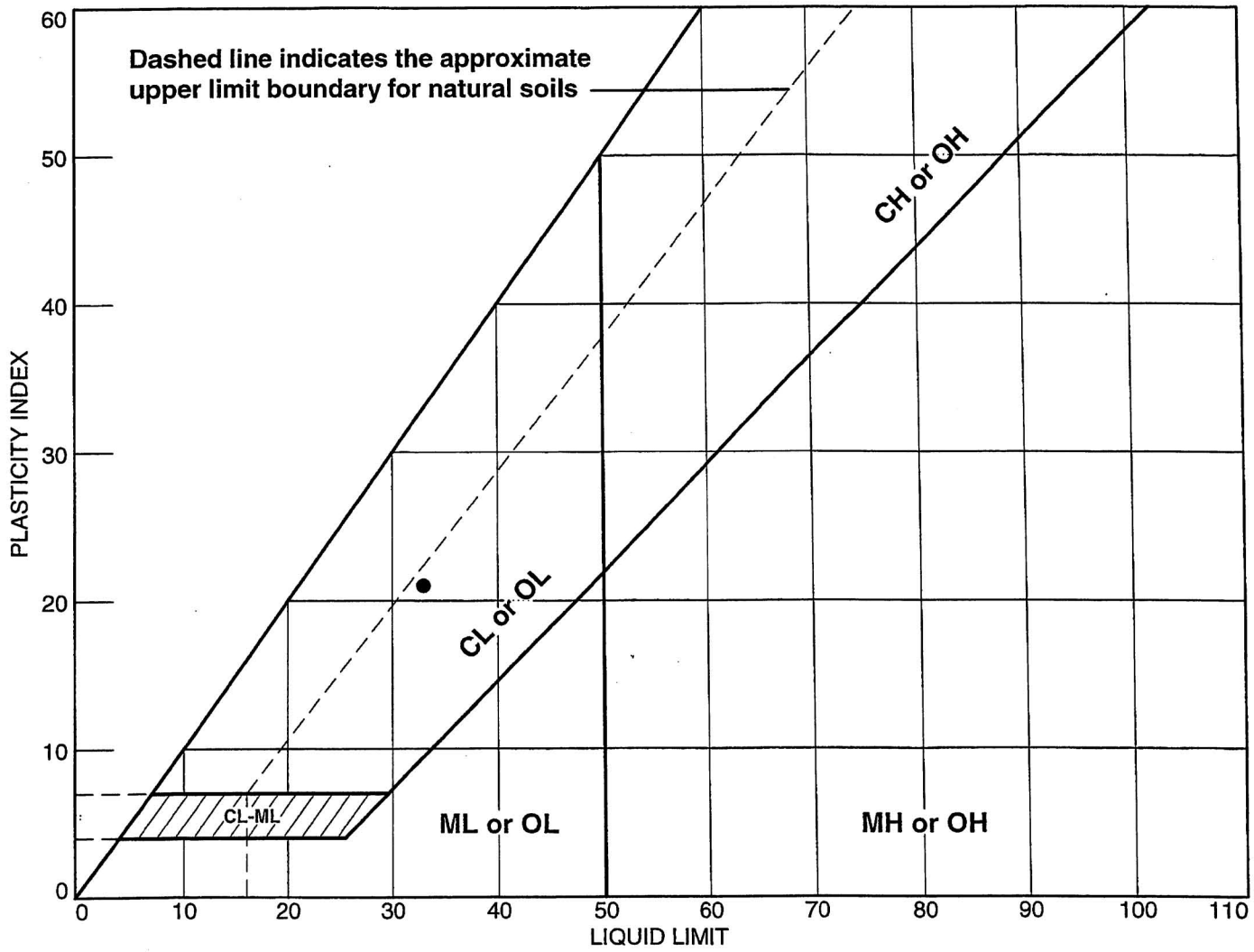
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.2	28.1	30.3	32.8	36.9	69.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0021	0.0199	0.0464	0.1175	0.1480	0.1967	0.2938

Fineness Modulus
0.21

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-2269	SS-18	75.4-76.9'	19.3	12	33	21	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

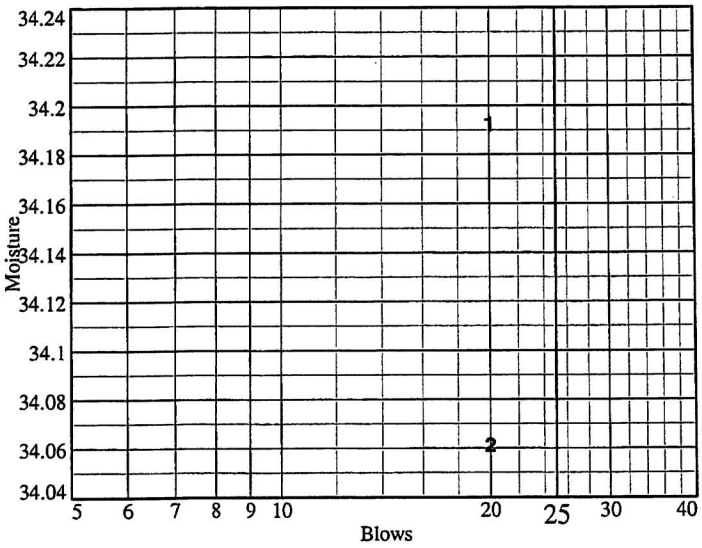
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 75.4-76.9'
Sample Number: SS-18
Material Description: Gray Sandy Lean CLAY
USCS: CL
AASHTO: A-6(12)
Tested by: cs
Checked by: lbj

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.20	28.90				
Dry+Tare	28.69	25.47				
Tare	15.50	15.40				
# Blows	20	20				
Moisture	34.2	34.1				



Liquid Limit= 33
Plastic Limit= 12
Plasticity Index= 21
Natural Moisture= 19.3
Liquidity Index= 0.3

Plastic Limit Data

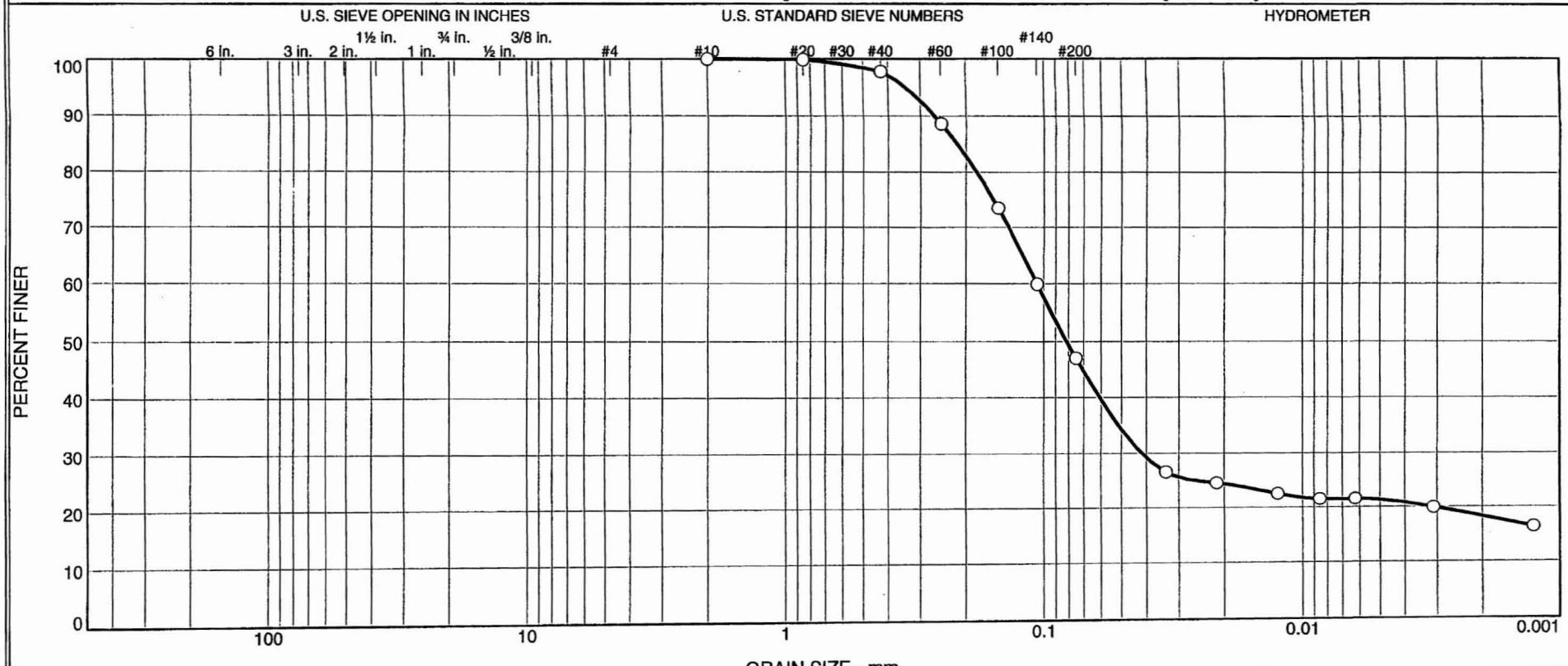
Run No.	1	2	3	4	
Wet+Tare	24.20	23.37			
Dry+Tare	23.30	22.53			
Tare	15.47	15.51			
Moisture	11.5	12.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
141.73	120.25	9.16	19.3

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.0	2.2	50.8	25.6	21.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2269	SS-19	80.4-81.9'	11/9/07	SC	Light Gray Clayey SAND	17.4	26	14

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O Specific gravity = 2.721 (ASTM D 854-06)

Tested By: CS **Checked By:** LBJ ZHU 4/30/08

GRAIN SIZE DISTRIBUTION TEST DATA

4/9/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 80.4-81.9' **Sample Number:** SS-19
Material Description: Light Gray Clayey SAND
Date: 11/9/07 **Natural Moisture:** 17.4
Liquid Limit: 26 **Plastic Limit:** 14 **USCS Class.:** SC
Testing Remarks: Specific gravity = 2.721 (ASTM D 854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
280.48	0.00	0.00	#10	0.00	100.0
49.13	0.00	0.00	#20	0.06	99.9
			#40	1.09	97.8
			#60	5.56	88.7
			#100	13.01	73.5
			#140	19.70	59.9
			#200	26.02	47.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =49.13
Hygroscopic moisture correction:
Moist weight and tare = 27.16
Dry weight and tare = 26.97
Tare weight = 15.47
Hygroscopic moisture = 1.7%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

Meniscus correction only = 1.0
Specific gravity of solids = 2.721
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	21.4	18.5	13.1	0.0131	19.5	13.1	0.0336	26.6
5.00	21.4	17.5	12.1	0.0131	18.5	13.3	0.0214	24.6
15.00	21.4	16.5	11.1	0.0131	17.5	13.4	0.0124	22.6
32.00	21.4	16.0	10.6	0.0131	17.0	13.5	0.0085	21.6
60.00	21.5	16.0	10.6	0.0131	17.0	13.5	0.0062	21.6
240.00	22.3	15.0	9.8	0.0130	16.0	13.7	0.0031	20.0
1440.00	23.4	13.0	8.1	0.0128	14.0	14.0	0.0013	16.4

MACTEC, Inc.

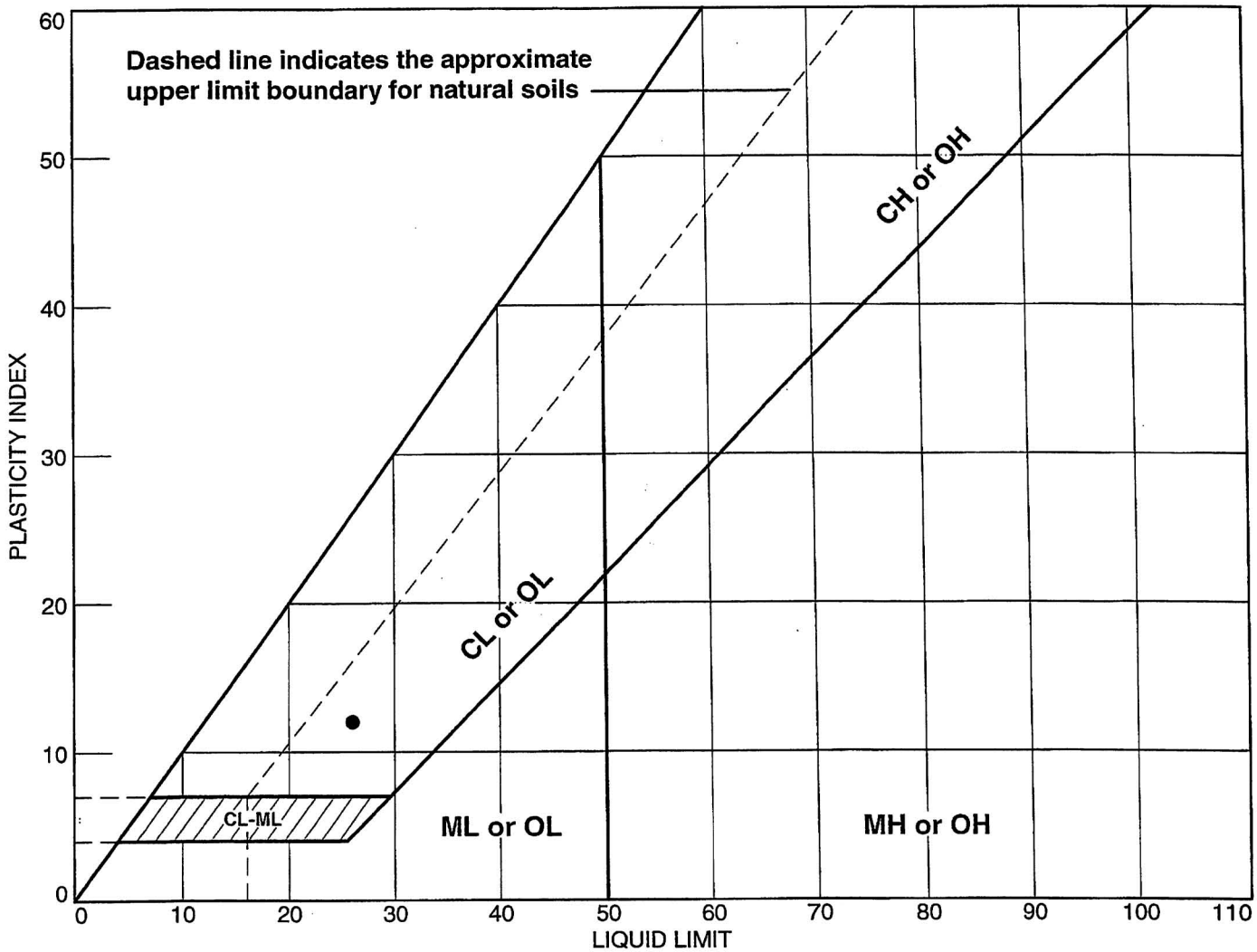
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.2	50.8	53.0	25.6	21.4	47.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0031	0.0416	0.0815	0.1063	0.1817	0.2160	0.2648	0.3432

Fineness Modulus
0.35

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-2269	SS-19	80.4-81.9'	17.4	14	26	12	SC

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

Tested By: CS **Checked By:** LBJ ZHU 4/30/08

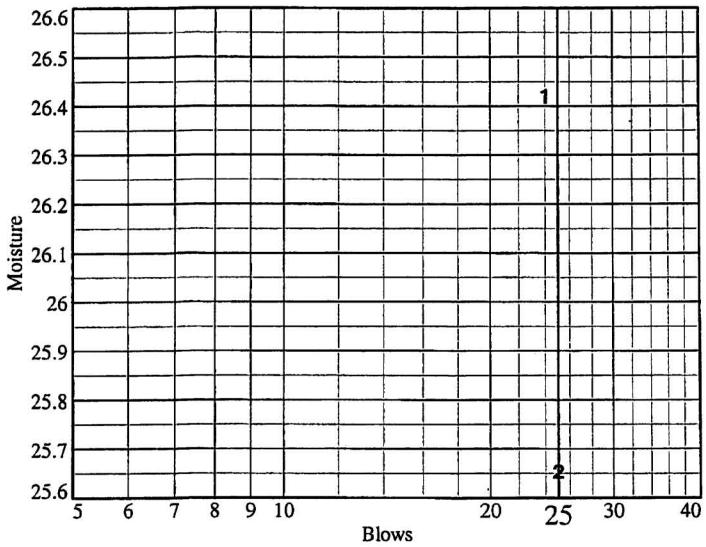
LIQUID AND PLASTIC LIMIT TEST DATA

4/9/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 80.4-81.9'
Sample Number: SS-19
Material Description: Light Gray Clayey SAND
USCS: SC
AASHTO: A-6(2)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.30	29.90				
Dry+Tare	29.58	26.96				
Tare	15.50	15.50				
# Blows	24	25				
Moisture	26.4	25.7				



Liquid Limit= 26
Plastic Limit= 14
Plasticity Index= 12
Natural Moisture= 17.4
Liquidity Index= 0.3

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.96	24.02			
Dry+Tare	22.98	22.96			
Tare	15.70	15.41			
Moisture	13.5	14.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
136.80	117.55	6.80	17.4

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: 11/16/07

SAMPLE IDENTIFICATION: B-2269 SS-19

(A) Mass of oven-dried soil, grams:		75.00
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.60
(C) Mass of pycnometer, water and soil, grams:		704.06
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.1
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.723
(F)	***Correction factor:***	0.99931
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.721

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

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

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

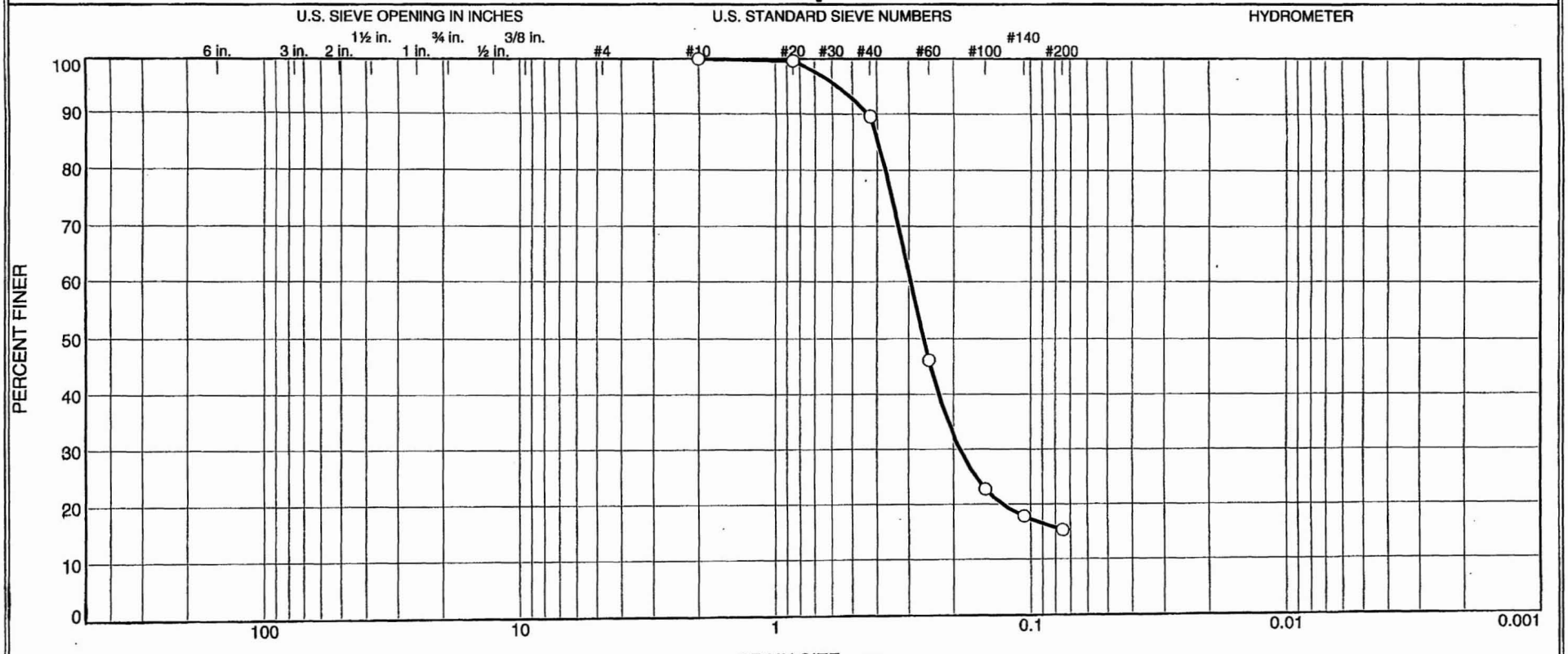
EQUIPMENT USED
SCALES : 3.1.19
OVEN : 5.1.16
THERMOMETER : 5.1.01
PYCNOMETER : P-6

TESTED BY: CS

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

REVIEWED BY: **Brian Johnson**
DSC 1-25-08

Particle Size Distribution Report / ASTM D-6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	10.4	74.3	15.3	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-20	85.4-86.9'	11/9/07	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-2269
Depth: 85.4-86.9'
Sample Number: SS-20
Material Description: Light Gray Clayey SAND (Visual)
Date: 11/9/07
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
305.37	0.00	0.00	#10	0.00	100.0
103.77	0.00	0.00	#20	0.41	99.6
			#40	10.81	89.6
			#60	55.90	46.1
			#100	80.14	22.8
			#140	85.30	17.8
			#200	87.90	15.3

Fractional Components

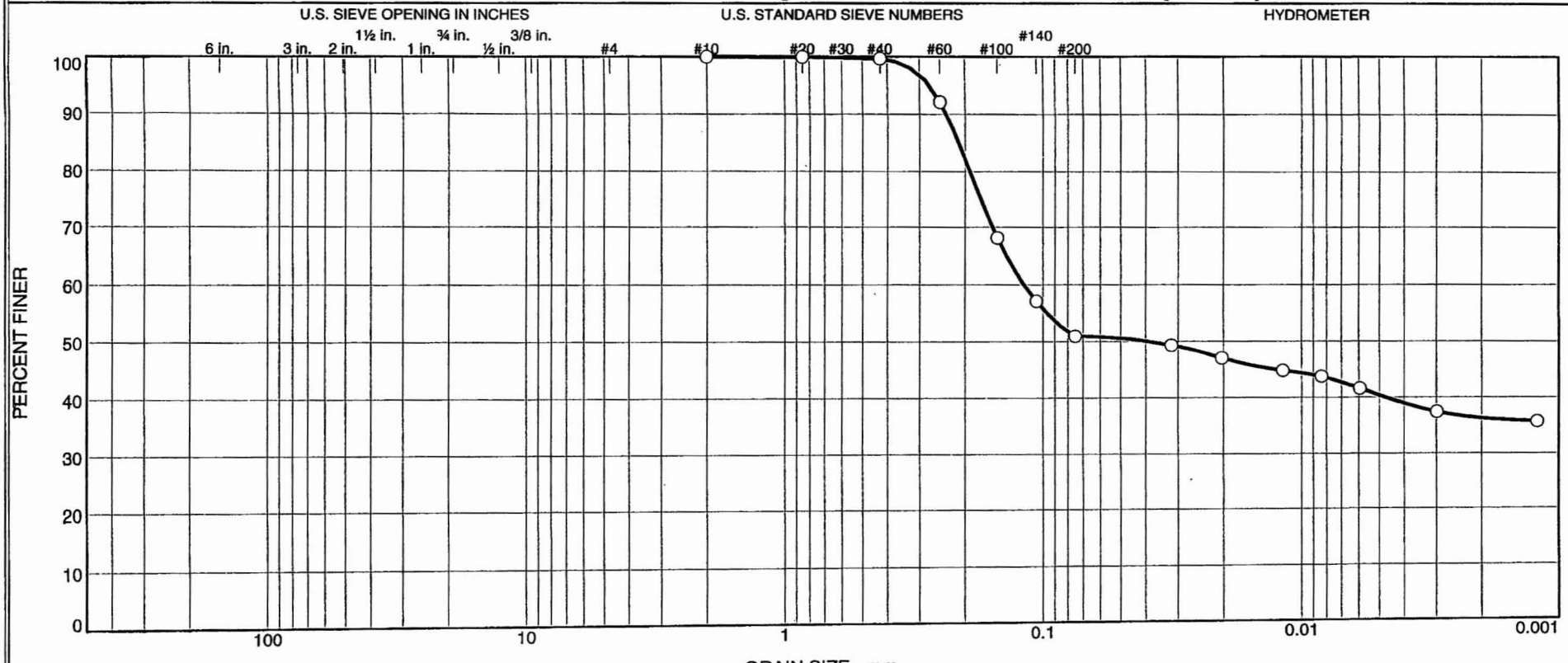
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	10.4	74.3	84.7			15.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.1290	0.1887	0.2627	0.2951	0.3709	0.3962	0.4337	0.5742

Fineness Modulus
1.20

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.3	48.7	10.6	40.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-21	90.4-91.9'	11/9/07	CL	Light Gray Sandy Lean CLAY	28.2	36	16

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific gravity is assumed.
Organic content = 1.1% (ASTM D 2974-07)

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-2269
Depth: 90.4-91.9' **Sample Number:** SS-21
Material Description: Light Gray Sandy Lean CLAY
Date: 11/9/07 **Natural Moisture:** 28.2
Liquid Limit: 36 **Plastic Limit:** 16 **USCS Class.:** CL
Testing Remarks: Specific gravity is assumed.
Organic content = 1.1% (ASTM D 2974-07)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
235.60	0.00	0.00	#10	0.00	100.0
48.10	0.00	0.00	#20	0.03	99.9
			#40	0.16	99.7
			#60	3.80	92.1
			#100	15.35	68.1
			#140	20.58	57.2
			#200	23.58	51.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.1
Hygroscopic moisture correction:
Moist weight and tare = 27.20
Dry weight and tare = 26.28
Tare weight = 15.50
Hygroscopic moisture = 8.5%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	21.4	27.5	22.1	0.0132	28.5	11.6	0.0318	49.3
5.00	21.4	26.5	21.1	0.0132	27.5	11.8	0.0203	47.0
15.00	21.4	25.5	20.1	0.0132	26.5	11.9	0.0118	44.8
30.00	21.5	25.0	19.6	0.0132	26.0	12.0	0.0084	43.7
60.00	21.6	24.0	18.6	0.0132	25.0	12.2	0.0059	41.6
240.00	22.3	22.0	16.8	0.0131	23.0	12.5	0.0030	37.5
1440.00	23.3	21.0	16.0	0.0129	22.0	12.7	0.0012	35.8

MACTEC, Inc.

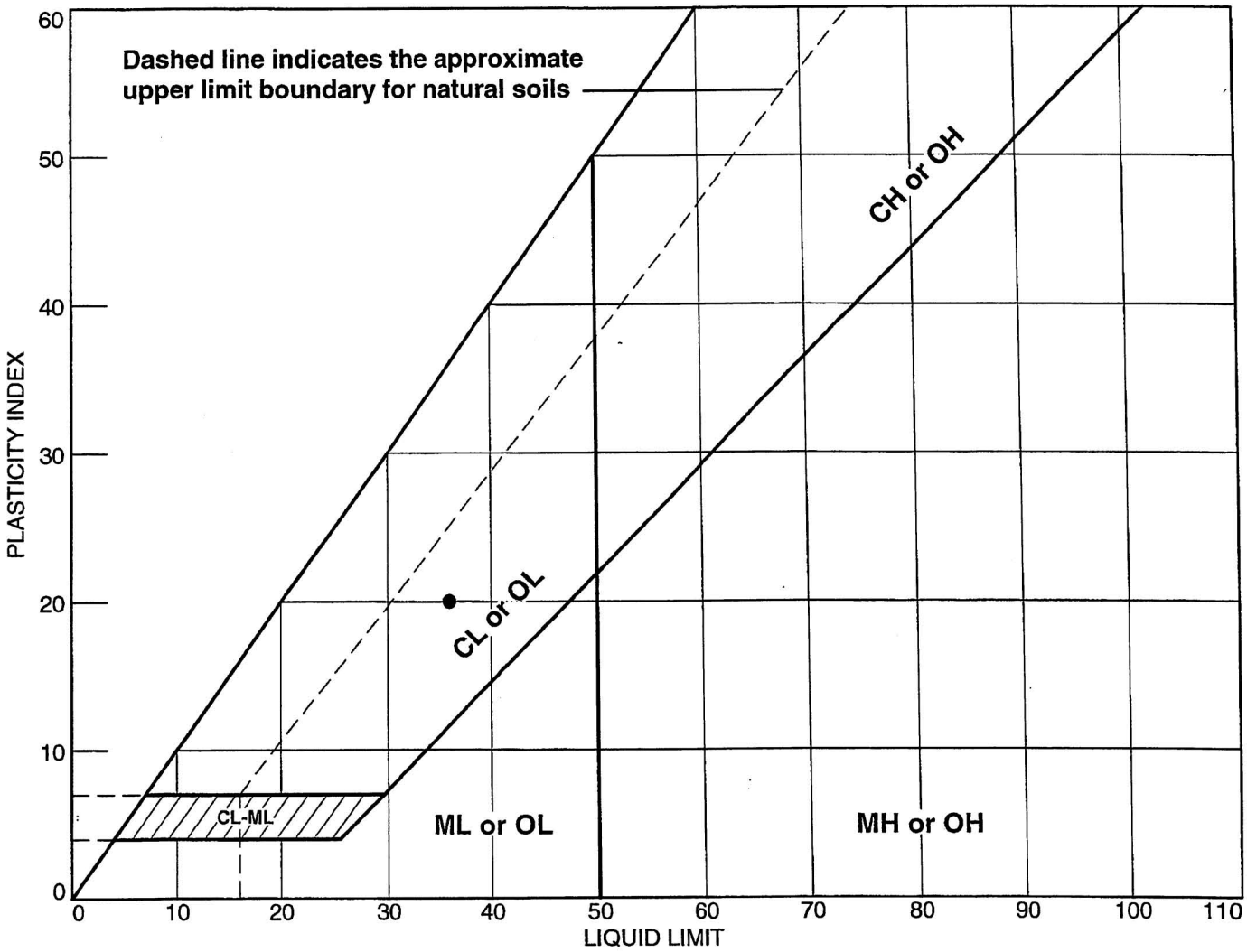
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	48.7	49.0	10.6	40.4	51.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0393	0.1183	0.1915	0.2116	0.2365	0.2755

Fineness Modulus
0.35

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-2269	SS-21	90.4-91.9'	28.2	16	36	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

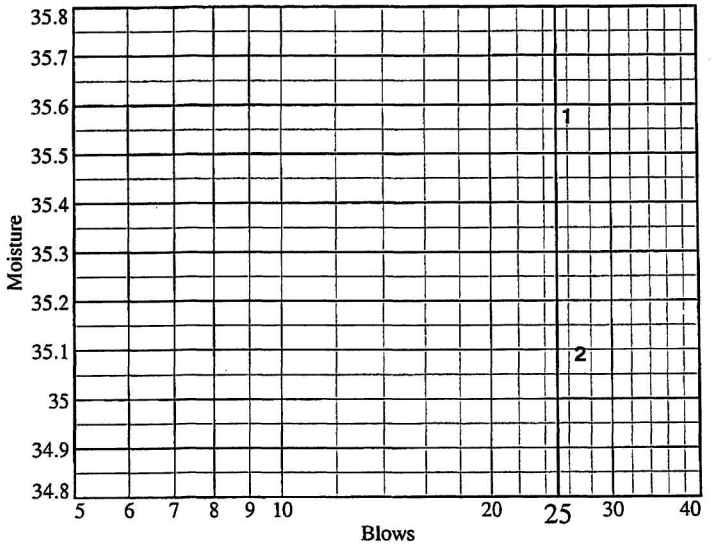
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 90.4-91.9'
Sample Number: SS-21
Material Description: Light Gray Sandy Lean CLAY
USCS: CL
AASHTO: A-6(6)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.60	32.60				
Dry+Tare	25.90	28.21				
Tare	15.50	15.70				
# Blows	26	27				
Moisture	35.6	35.1				



Liquid Limit= 36
Plastic Limit= 16
Plasticity Index= 20
Natural Moisture= 28.2
Liquidity Index= 0.6

Plastic Limit Data

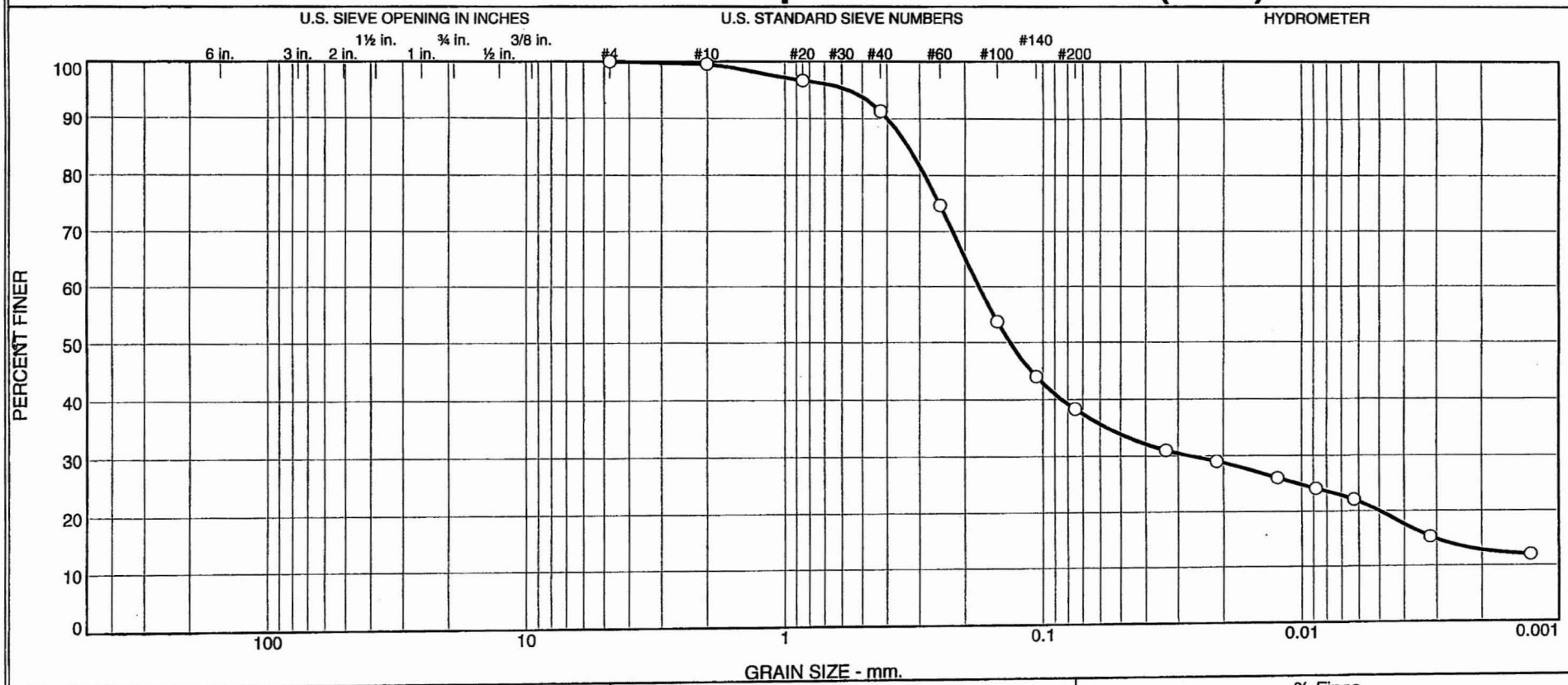
Run No.	1	2	3	4	
Wet+Tare	22.11	25.49			
Dry+Tare	21.20	24.10			
Tare	15.51	15.31			
Moisture	16.0	15.8			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
144.40	114.63	9.10	28.2

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.4	8.3	53.0	18.2	20.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-22	95.4-96.9'	11/9/07	SC-SM	Light Gray and Brownish Yellow Silty, Clayey SAND	20.1	20	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-2269
Depth: 95.4-96.9' **Sample Number:** SS-22
Material Description: Light Gray and Brownish Yellow Silty, Clayey SAND
Date: 11/9/07 **Natural Moisture:** 20.1
Liquid Limit: 20 **Plastic Limit:** 13 **USCS Class.:** SC-SM
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
312.50	0.00	0.00	#4	0.00	100.0
			#10	1.34	99.6
49.50	0.00	0.00	#20	1.45	96.7
			#40	4.12	91.3
			#60	12.36	74.7
			#100	22.81	53.7
			#140	27.62	44.0
			#200	30.44	38.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.6
Weight of hydrometer sample =49.5
Hygroscopic moisture correction:
Moist weight and tare = 27.93
Dry weight and tare = 27.89
Tare weight = 15.36
Hygroscopic moisture = 0.3%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	21.3	21.0	15.6	0.0132	22.0	12.7	0.0333	31.0
5.00	21.3	20.0	14.6	0.0132	21.0	12.9	0.0212	29.1
15.00	21.4	18.5	13.1	0.0132	19.5	13.1	0.0123	26.1
30.00	21.4	17.5	12.1	0.0132	18.5	13.3	0.0088	24.1
60.00	21.4	16.5	11.1	0.0132	17.5	13.4	0.0062	22.1
240.00	21.9	13.0	7.7	0.0131	14.0	14.0	0.0032	15.4
1440.00	23.3	11.0	6.0	0.0129	12.0	14.3	0.0013	12.0

MACTEC, Inc.

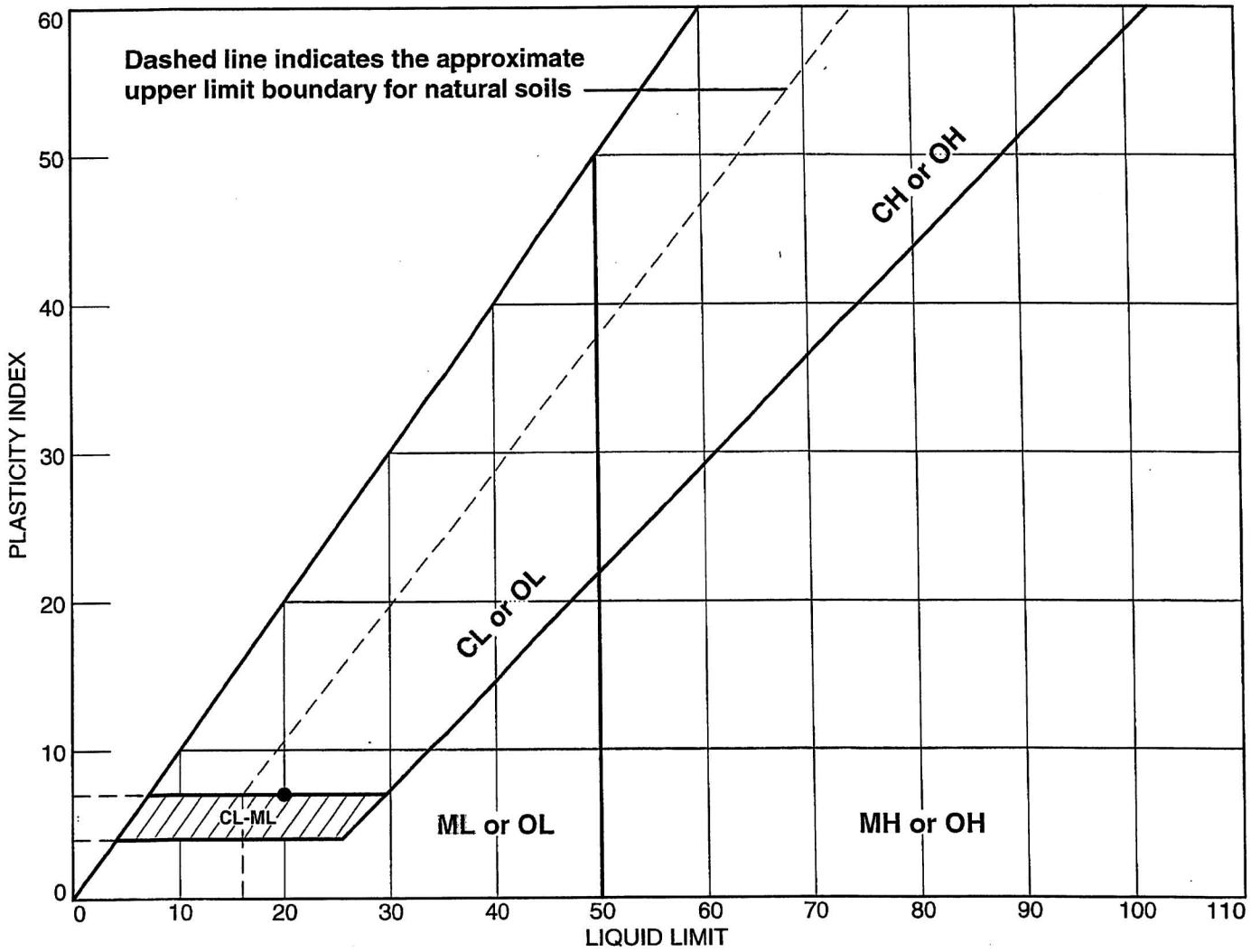
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.4	8.3	53.0	61.7	18.2	20.1	38.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0030	0.0050	0.0265	0.1340	0.1767	0.2867	0.3322	0.3999	0.5659

Fineness Modulus
0.72

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-2269	SS-22	95.4-96.9'	20.1	13	20	7	SC-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

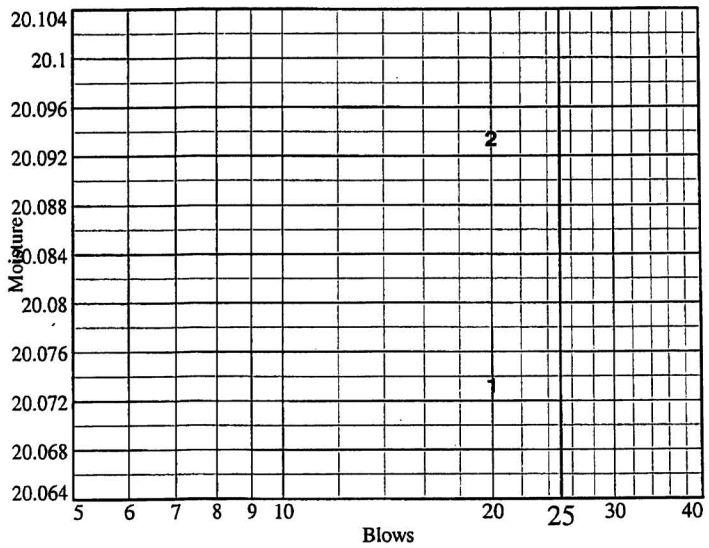
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 95.4-96.9' **Sample Number:** SS-22
Material Description: Light Gray and Brownish Yellow Silty, Clayey SAND
USCS: SC-SM **AASHTO:** A-4(0)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.84	35.98				
Dry+Tare	29.10	32.54				
Tare	15.45	15.42				
# Blows	20	20				
Moisture	20.1	20.1				



Liquid Limit= 20
Plastic Limit= 13
Plasticity Index= 7
Natural Moisture= 20.1
Liquidity Index= 1.0

Plastic Limit Data

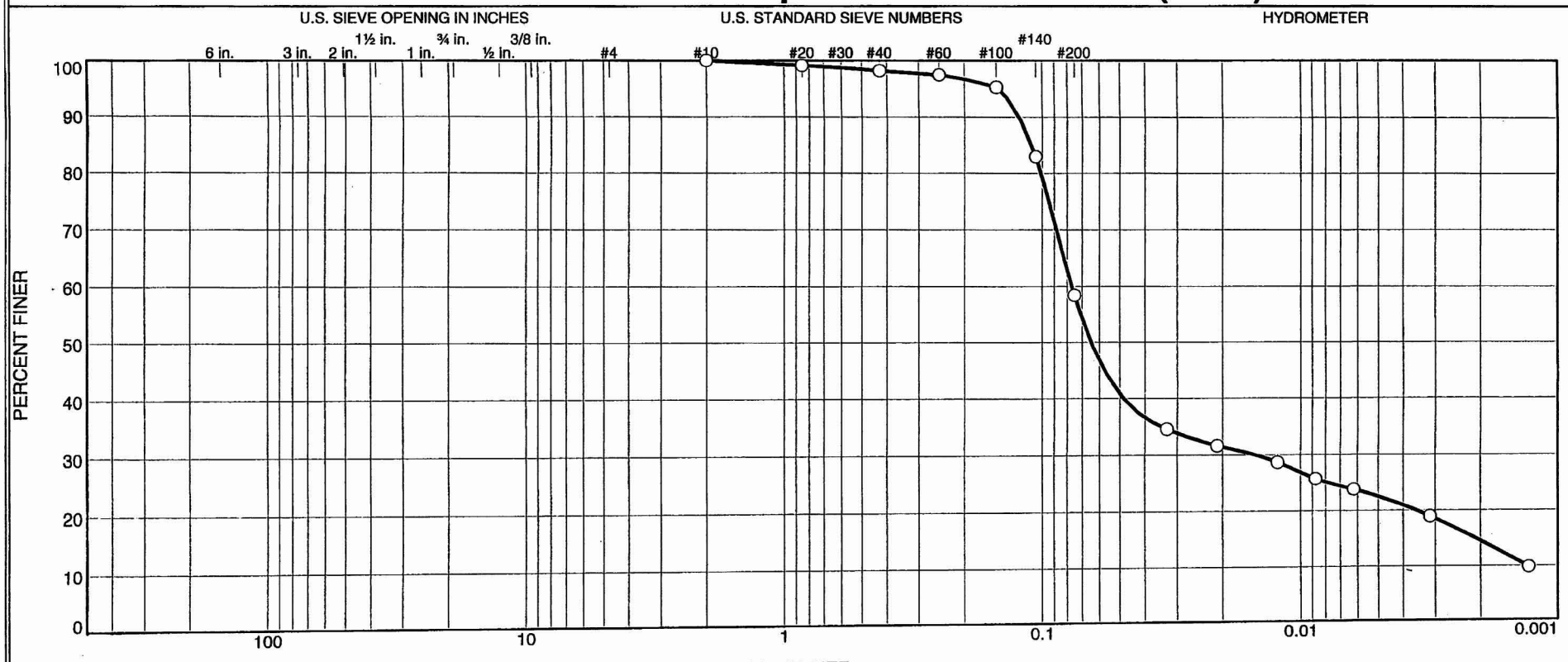
Run No.	1	2	3	4	
Wet+Tare	26.26	26.95			
Dry+Tare	25.03	25.69			
Tare	15.58	15.50			
Moisture	13.0	12.4			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
175.30	147.10	6.80	20.1

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	1.8	39.8	35.9	22.5

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-23	100.4-101.9'	11/9/07	CL-ML	Light Gray Sandy Silty CLAY	16.5	22	17

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-2269
Depth: 100.4-101.9' **Sample Number:** SS-23
Material Description: Light Gray Sandy Silty CLAY
Date: 11/9/07 **Natural Moisture:** 16.5
Liquid Limit: 22 **Plastic Limit:** 17 **USCS Class.:** CL-ML
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
321.60	0.00	0.00	#10	0.00	100.0
50.85	0.00	0.00	#20	0.44	99.1
			#40	0.93	98.2
			#60	1.30	97.4
			#100	2.43	95.2
			#140	8.65	83.0
			#200	21.13	58.4

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.85
Hygroscopic moisture correction:
Moist weight and tare = 32.93
Dry weight and tare = 32.77
Tare weight = 21.06
Hygroscopic moisture = 1.4%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	21.4	23.0	17.6	0.0132	24.0	12.4	0.0328	34.7
5.00	21.4	21.5	16.1	0.0132	22.5	12.6	0.0210	31.7
15.00	21.4	20.0	14.6	0.0132	21.0	12.9	0.0122	28.7
30.00	21.4	18.5	13.1	0.0132	19.5	13.1	0.0087	25.8
60.00	21.4	17.5	12.1	0.0132	18.5	13.3	0.0062	23.8
240.00	21.6	15.0	9.6	0.0132	16.0	13.7	0.0031	19.0
1440.00	23.1	10.0	5.0	0.0129	11.0	14.5	0.0013	9.8

MACTEC, Inc.

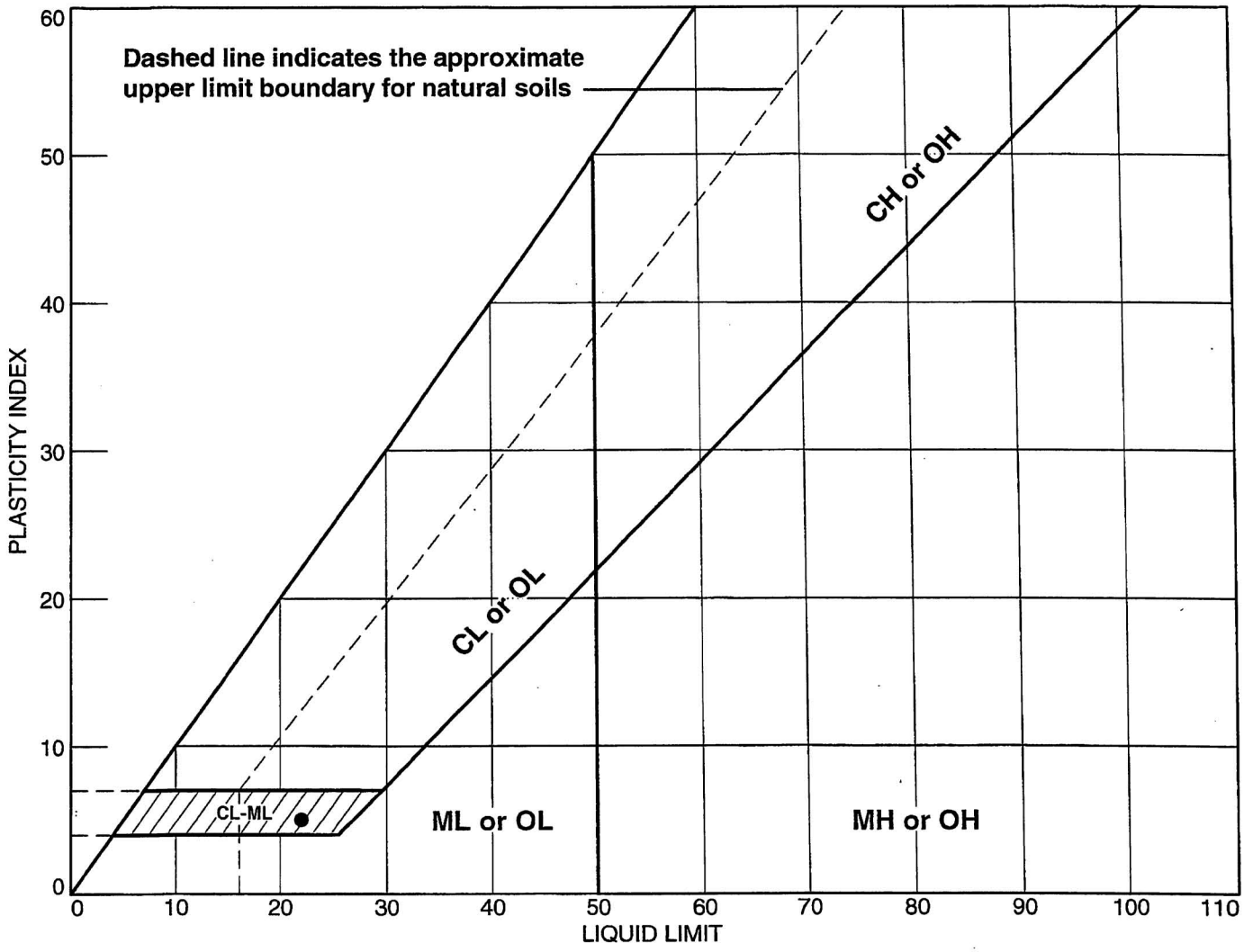
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.8	39.8	41.6	35.9	22.5	58.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0013	0.0021	0.0035	0.0148	0.0646	0.0768	0.1011	0.1099	0.1228	0.1481

Fineness Modulus	C_u	C_c
0.09	58.19	2.16

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-2269	SS-23	100.4-101.9'	16.5	17	22	5	CL-ML

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

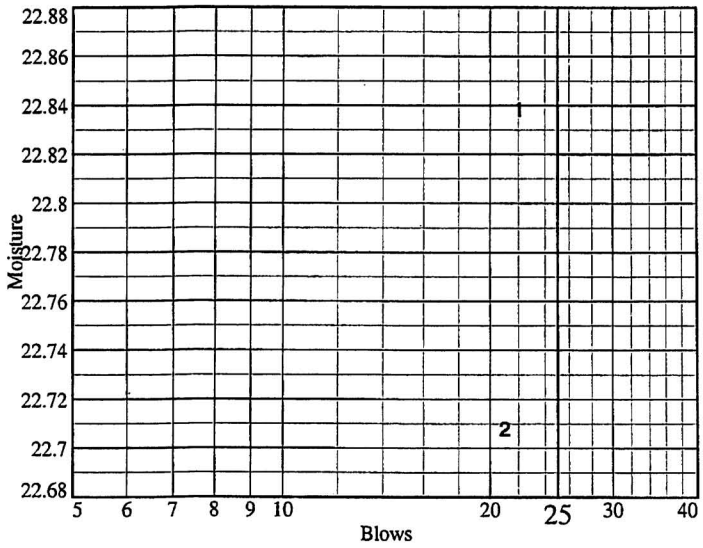
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 100.4-101.9'
Sample Number: SS-23
Material Description: Light Gray Sandy Silty CLAY
USCS: CL-ML
AASHTO: A-4(0)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.58	30.03				
Dry+Tare	27.78	27.33				
Tare	15.52	15.44				
# Blows	22	21				
Moisture	22.8	22.7				



Liquid Limit= 22
Plastic Limit= 17
Plasticity Index= 5
Natural Moisture= 16.5
Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.07	27.22			
Dry+Tare	24.58	25.56			
Tare	15.56	15.49			
Moisture	16.5	16.5			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
157.50	136.59	9.50	16.5

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT [VICTORIA]

PROJECT NUMBER: 6468071777

DATE: 11/19/07

SAMPLE IDENTIFICATION: B-2269 SS-24

(A) Mass of oven-dried soil, grams:		75.00
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.55
(C) Mass of pycnometer, water and soil, grams:		703.50
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.5
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.674
(F)	***Correction factor:***	0.99921
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.671

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

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

REMARKS: Estimated % Passing # 4 : 100%

Well Graded SAND (SW) - field classification

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-6

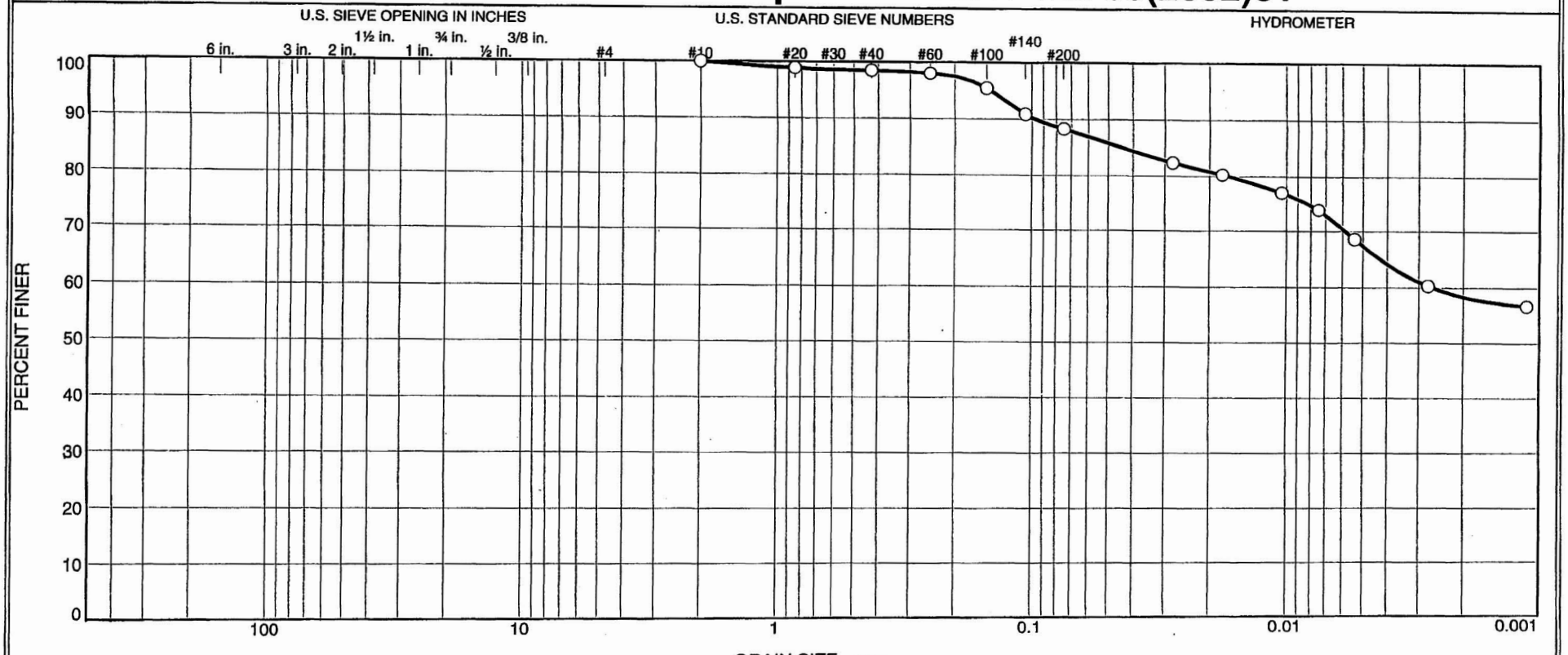
TESTED BY: CS

\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	1.5	10.1	21.0	67.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-25	120.4-121.9'	11/9/07	CH	Light Gray Fat CLAY	33.1	62	19

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-2269
Depth: 120.4-121.9'
Sample Number: SS-25
Material Description: Light Gray Fat CLAY
Date: 11/9/07
Natural Moisture: 33.1
Liquid Limit: 62
Plastic Limit: 19
USCS Class.: CH
Testing Remarks: Specific gravity is assumed.
Tested by: CS
Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
192.94	0.00	0.00	#10	0.00	100.0
49.10	0.00	0.00	#20	0.54	98.9
			#40	0.76	98.5
			#60	0.98	98.0
			#100	2.24	95.4
			#140	4.47	90.9
			#200	5.72	88.4

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =49.1
Hygroscopic moisture correction:
Moist weight and tare = 36.55
Dry weight and tare = 35.88
Tare weight = 24.79
Hygroscopic moisture = 6.0%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	21.4	44.0	38.6	0.0132	45.0	8.9	0.0279	82.4
5.00	21.4	43.0	37.6	0.0132	44.0	9.1	0.0178	80.3
15.00	21.4	41.5	36.1	0.0132	42.5	9.3	0.0104	77.1
30.00	21.5	40.0	34.6	0.0132	41.0	9.6	0.0075	73.9
60.00	21.5	37.5	32.1	0.0132	38.5	10.0	0.0054	68.6
240.00	22.1	33.5	28.2	0.0131	34.5	10.6	0.0028	60.3
1440.00	23.4	31.5	26.6	0.0129	32.5	11.0	0.0011	56.7

MACTEC, Inc.

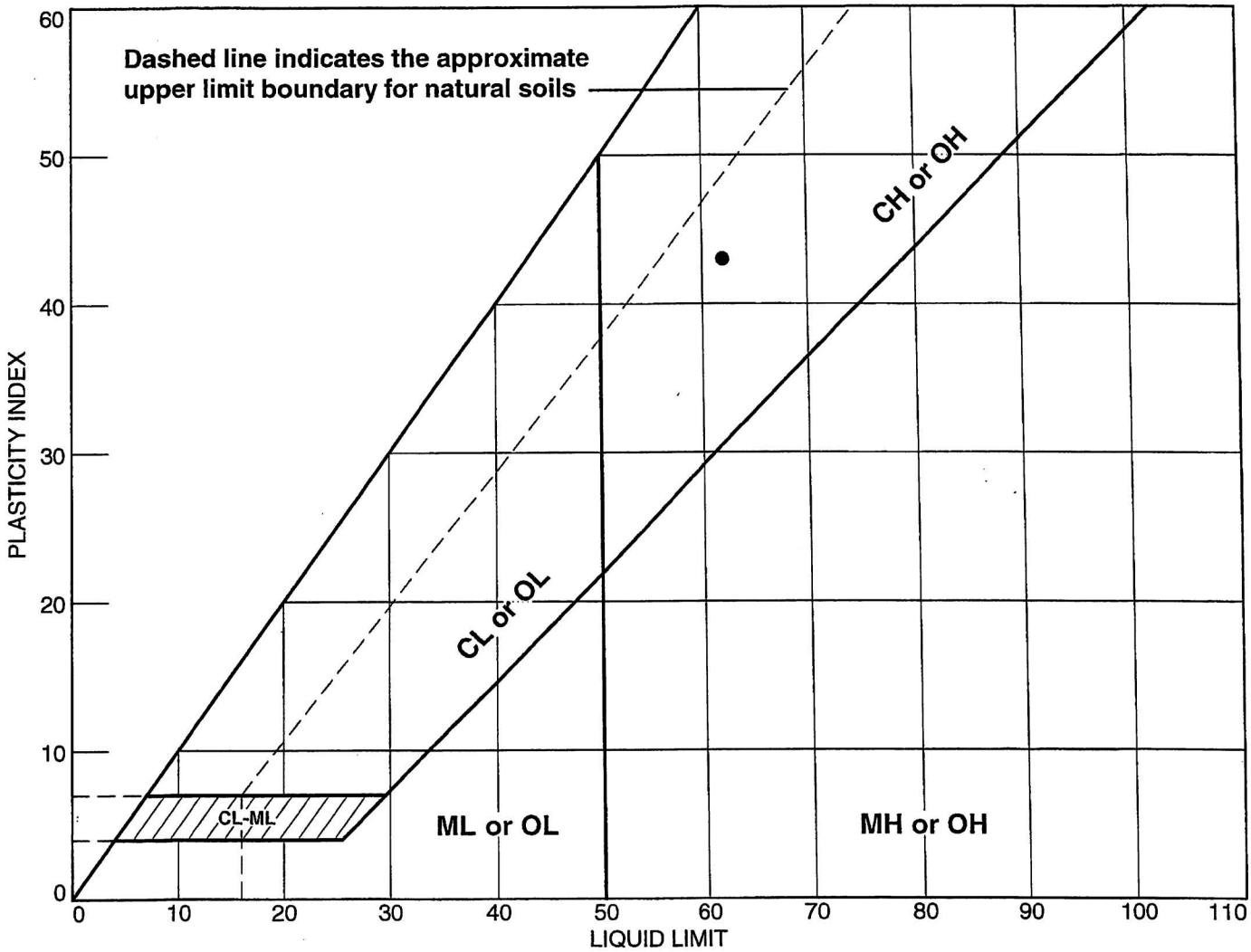
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.5	10.1	11.6	21.0	67.4	88.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0026	0.0169	0.0436	0.0966	0.1445

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-2269	SS-25	120.4-121.9'	33.1	19	62	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

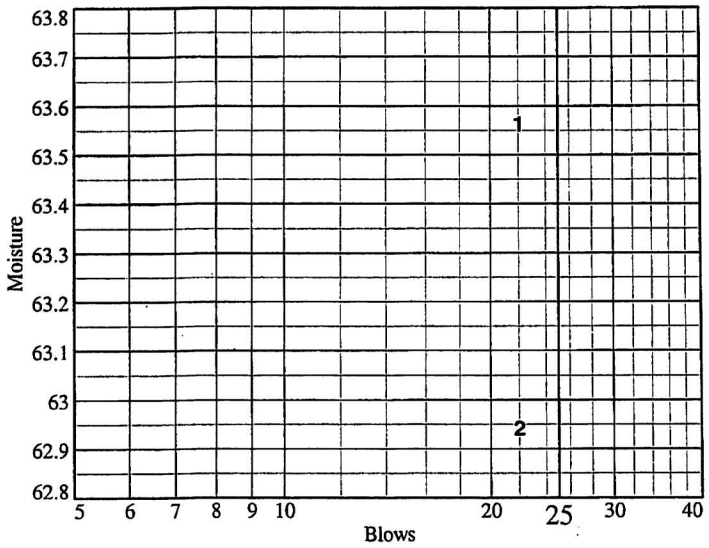
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 120.4-121.9'
Sample Number: SS-25
Material Description: Light Gray Fat CLAY
USCS: CH
AASHTO: A-7-6(41)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.80	27.90				
Dry+Tare	23.02	23.11				
Tare	15.50	15.50				
# Blows	22	22				
Moisture	63.6	62.9				



Liquid Limit= 62
Plastic Limit= 19
Plasticity Index= 43
Natural Moisture= 33.1
Liquidity Index= 0.3

Plastic Limit Data

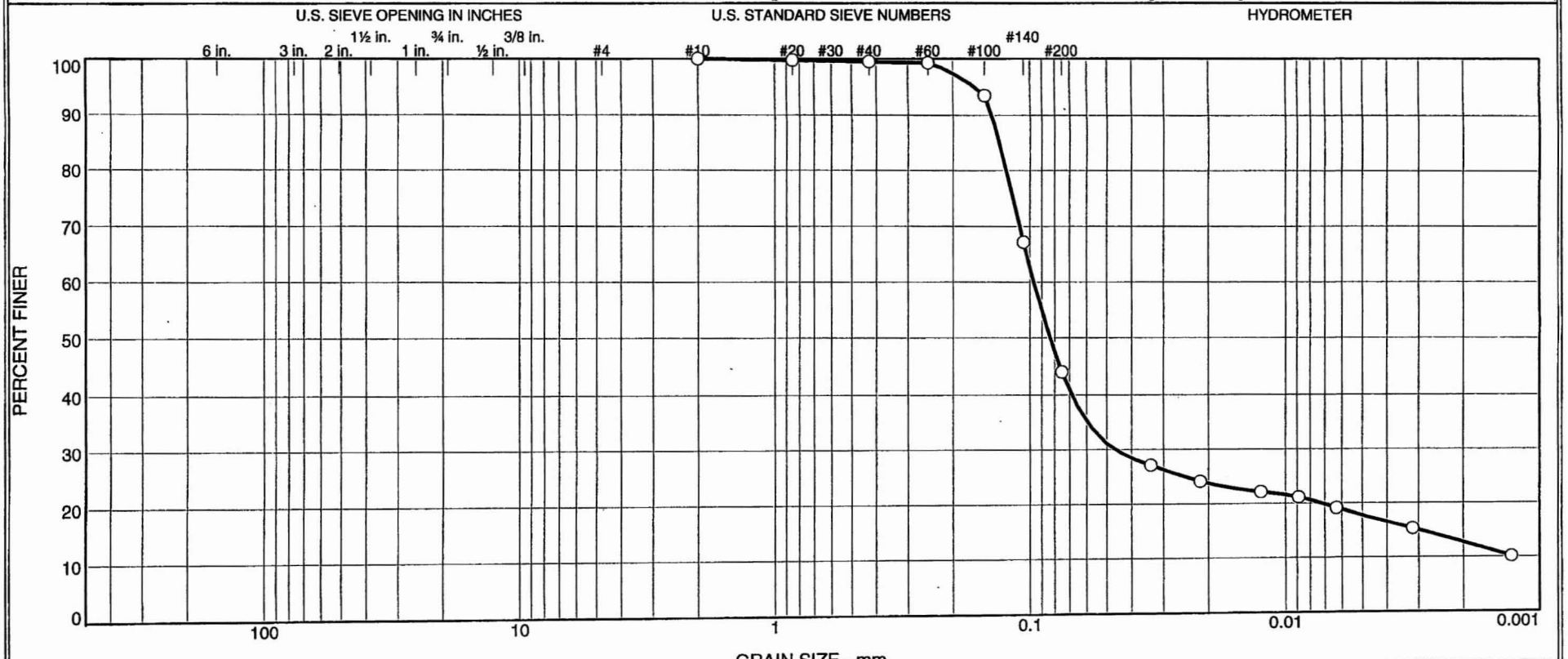
Run No.	1	2	3	4	
Wet+Tare	23.47	24.85			
Dry+Tare	22.20	23.40			
Tare	15.42	15.53			
Moisture	18.7	18.4			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
103.80	80.25	9.20	33.1

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.5	55.4	26.3	17.8

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-26	130.4-131.9'	11/9/07	SC-SM	Pale Yellow Silty, Clayey SAND	21.6	19	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-2269
Depth: 130.4-131.9'
Sample Number: SS-26
Material Description: Pale Yellow Silty, Clayey SAND
Date: 11/9/07
Natural Moisture: 21.6
Liquid Limit: 19
Plastic Limit: 14
USCS Class.: SC-SM
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
324.29	0.00	0.00	#10	0.00	100.0
50.34	0.00	0.00	#20	0.14	99.7
			#40	0.27	99.5
			#60	0.37	99.3
			#100	3.30	93.4
			#140	16.50	67.2
			#200	28.16	44.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.34
Hygroscopic moisture correction:
Moist weight and tare = 33.83
Dry weight and tare = 33.63
Tare weight = 21.16
Hygroscopic moisture = 1.6%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	19.0	13.6	0.0132	20.0	13.0	0.0337	27.2
5.00	21.4	17.5	12.1	0.0132	18.5	13.3	0.0215	24.1
15.00	21.5	16.5	11.1	0.0132	17.5	13.4	0.0125	22.2
30.00	21.5	16.0	10.6	0.0132	17.0	13.5	0.0089	21.2
60.00	21.5	15.0	9.6	0.0132	16.0	13.7	0.0063	19.2
240.00	22.0	13.0	7.7	0.0131	14.0	14.0	0.0032	15.4
1440.00	23.5	10.0	5.1	0.0129	11.0	14.5	0.0013	10.1

MACTEC, Inc.

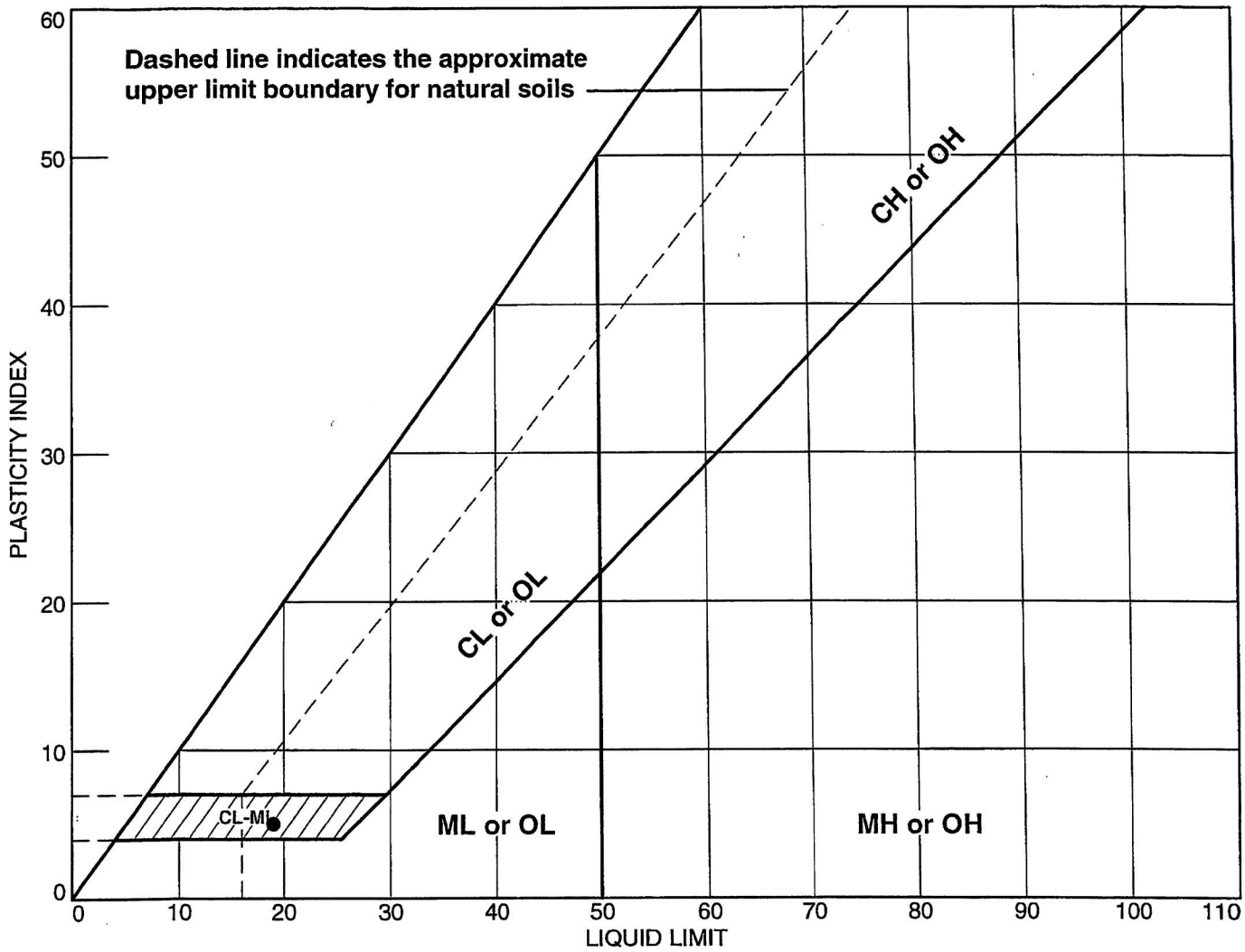
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	55.4	55.9	26.3	17.8	44.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0029	0.0072	0.0461	0.0834	0.0966	0.1235	0.1316	0.1413	0.1656

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-2269	SS-26	130.4-131.9'	21.6	14	19	5	SC-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

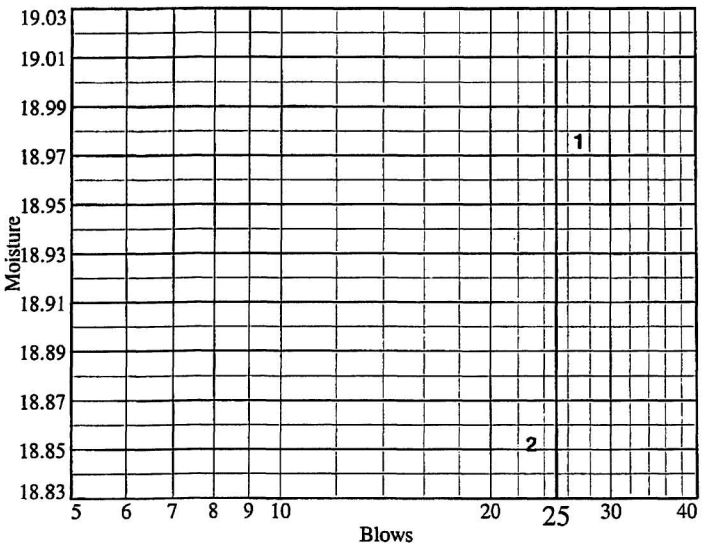
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 130.4-131.9'
Sample Number: SS-26
Material Description: Pale Yellow Silty, Clayey SAND
USCS: SC-SM
AASHTO: A-4(0)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.40	33.20				
Dry+Tare	28.88	30.44				
Tare	15.60	15.80				
# Blows	27	23				
Moisture	19.0	18.9				



Liquid Limit= 19
Plastic Limit= 14
Plasticity Index= 5
Natural Moisture= 21.6
Liquidity Index= 1.5

Plastic Limit Data

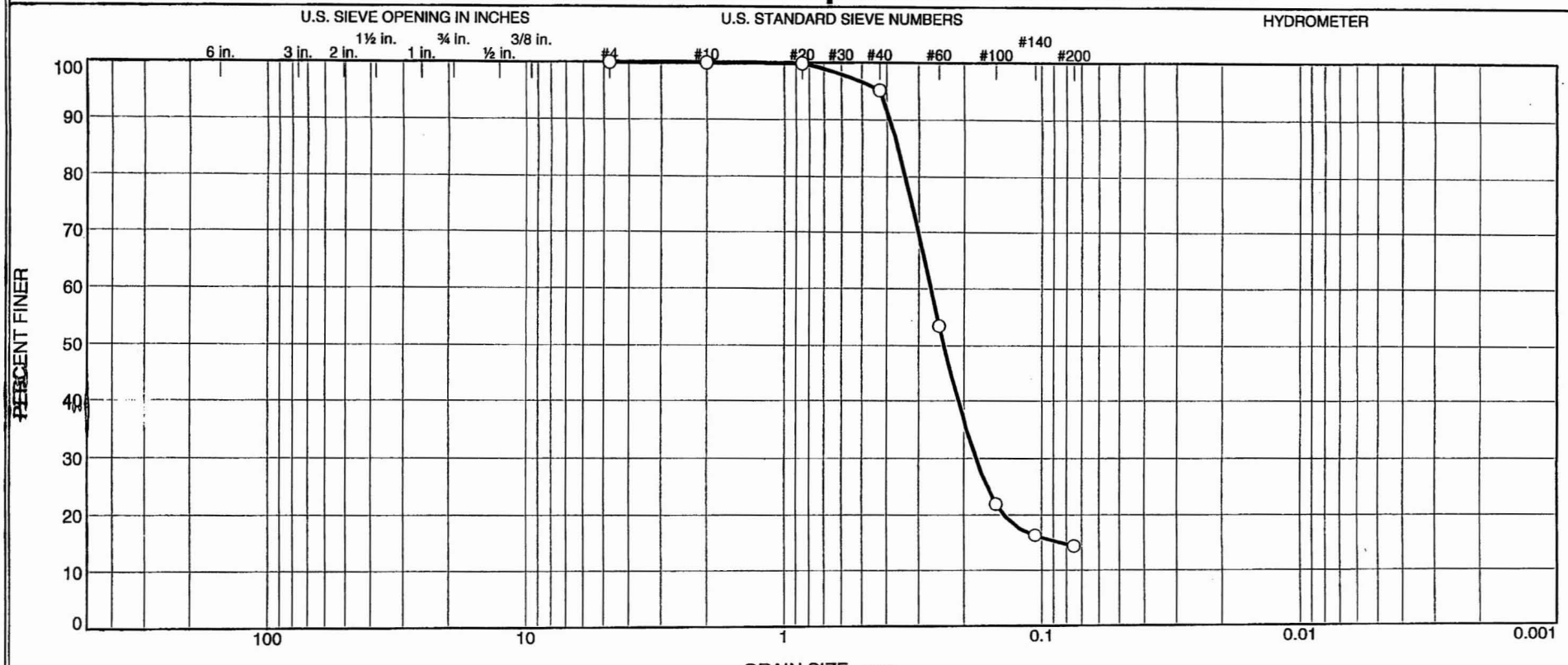
Run No.	1	2	3	4	
Wet+Tare	23.70	26.22			
Dry+Tare	22.71	24.81			
Tare	15.60	15.30			
Moisture	13.9	14.8			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
145.90	121.66	9.20	21.6

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.0	4.8	80.8	14.4	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2269	SS-27	140.4-141.9'	11/9/07	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

O SIEVE ANALYSIS ONLY
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-2269
Depth: 140.4-141.9'
Sample Number: SS-27
Material Description: Light Gray Clayey SAND (Visual)
Date: 11/9/07
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
232.10	0.00	0.00	#4	0.00	100.0
			#10	0.07	100.0
101.76	0.00	0.00	#20	0.10	99.9
			#40	4.86	95.2
			#60	47.30	53.5
			#100	79.37	22.0
			#140	85.09	16.4
			#200	87.09	14.4

Fractional Components

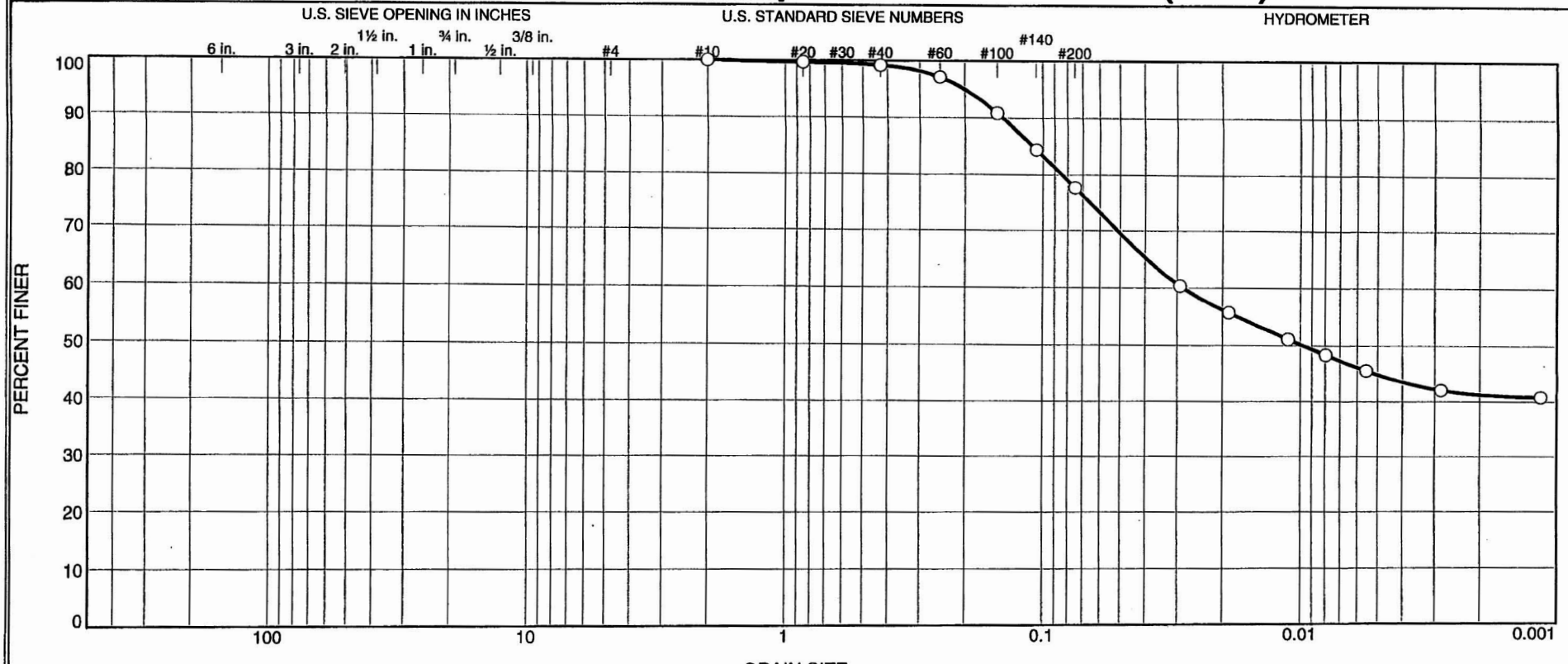
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	4.8	80.8	85.6			14.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0841	0.1397	0.1797	0.2397	0.2695	0.3391	0.3615	0.3882	0.4233

Fineness Modulus
1.11

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.8	21.5	32.8	44.9

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-28	150.4-151.9'	11/9/07	CH	Light Gray Fat CLAY with sand	23.1	55	17

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific gravity = 2.721 (ASTM D 854-06).

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-2269
Depth: 150.4-151.9' **Sample Number:** SS-28
Material Description: Light Gray Fat CLAY with sand
Date: 11/9/07 **Natural Moisture:** 23.1
Liquid Limit: 55 **Plastic Limit:** 17 **USCS Class.:** CH
Testing Remarks: Specific gravity = 2.721 (ASTM D 854-06).
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
230.13	0.00	0.00	#10	0.00	100.0
53.30	0.00	0.00	#20	0.17	99.7
			#40	0.44	99.2
			#60	1.53	97.1
			#100	4.87	90.9
			#140	8.28	84.5
			#200	11.87	77.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =53.3
Hygroscopic moisture correction:
Moist weight and tare = 27.52
Dry weight and tare = 27.47
Tare weight = 15.49
Hygroscopic moisture = 0.4%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

Meniscus correction only = 1.0
Specific gravity of solids = 2.721
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	21.3	38.0	32.6	0.0131	39.0	9.9	0.0293	60.4
5.00	21.3	35.5	30.1	0.0131	36.5	10.3	0.0189	55.7
15.00	21.3	33.0	27.6	0.0131	34.0	10.7	0.0111	51.1
30.00	21.4	31.5	26.1	0.0131	32.5	11.0	0.0079	48.4
63.00	21.4	30.0	24.6	0.0131	31.0	11.2	0.0055	45.6
245.00	21.9	28.0	22.7	0.0131	29.0	11.5	0.0028	42.1
1440.00	23.2	27.0	22.0	0.0128	28.0	11.7	0.0012	40.8

MACTEC, Inc.

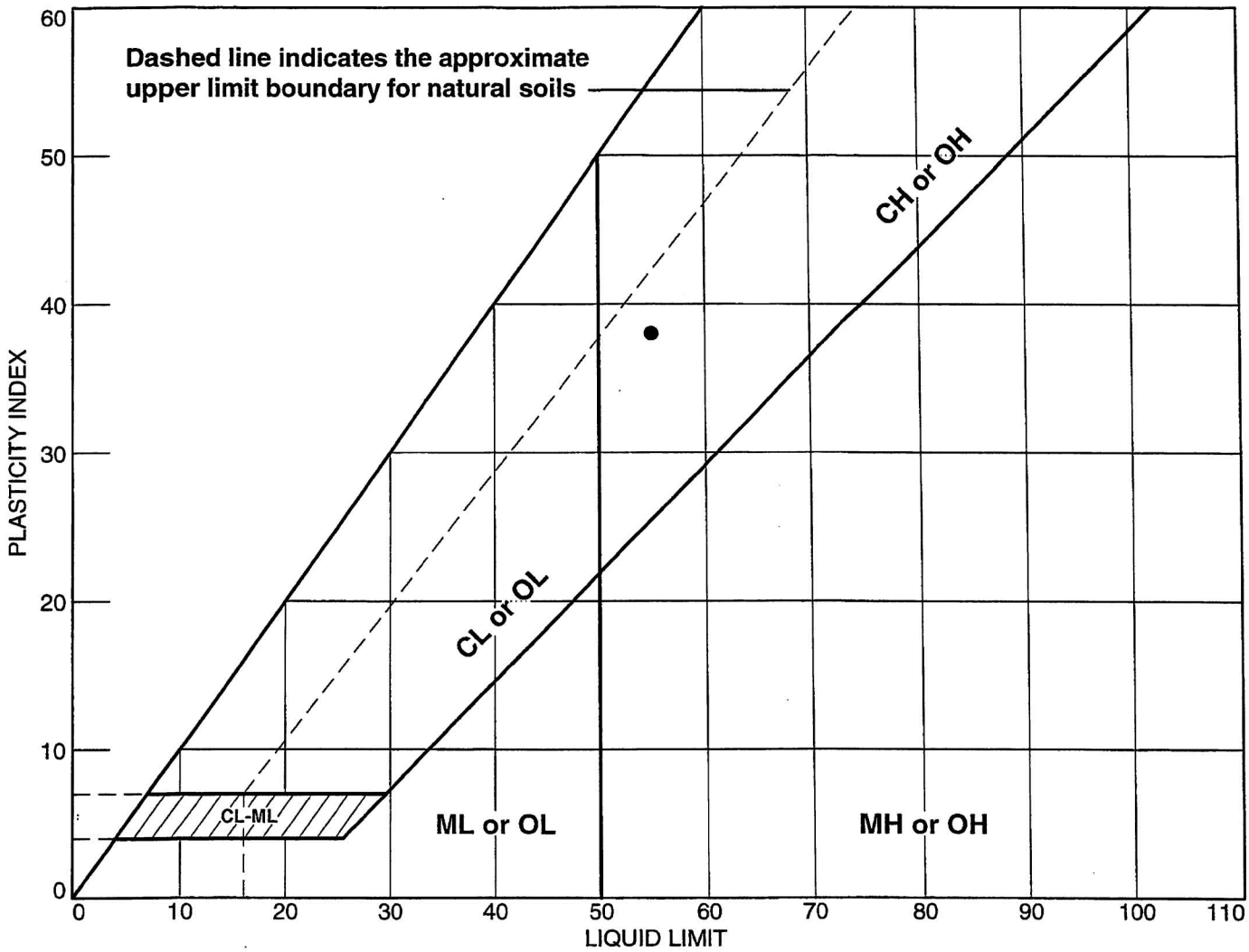
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.8	21.5	22.3	32.8	44.9	77.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0097	0.0284	0.0842	0.1090	0.1426	0.2007

Fineness Modulus
0.12

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-2269	SS-28	150.4-151.9'	23.1	17	55	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

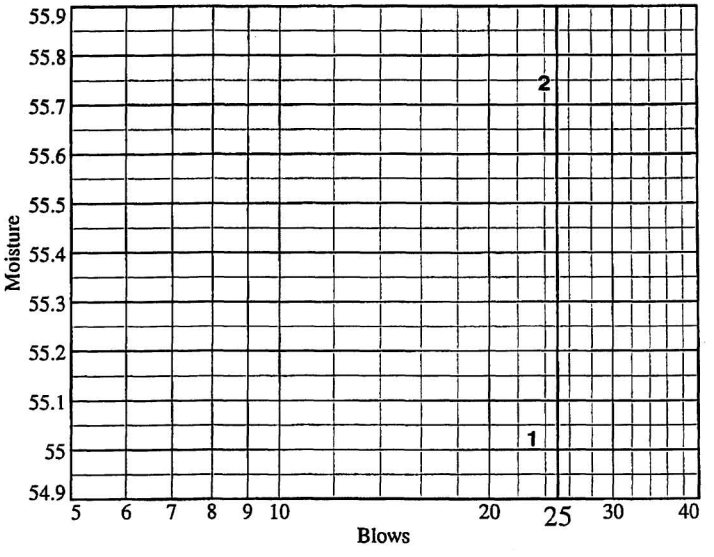
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 150.4-151.9'
Sample Number: SS-28
Material Description: Light Gray Fat CLAY with sand
USCS: CH
AASHTO: A-7-6(29)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.07	25.50				
Dry+Tare	24.25	21.91				
Tare	15.49	15.47				
# Blows	23	24				
Moisture	55.0	55.7				



Liquid Limit= 55
Plastic Limit= 17
Plasticity Index= 38
Natural Moisture= 23.1
Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.30	23.70			
Dry+Tare	21.32	22.50			
Tare	15.50	15.40			
Moisture	16.8	16.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
119.70	98.49	6.60	23.1

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT [VICTORIA]

PROJECT NUMBER: 6468071777

DATE: 3/12/08

SAMPLE IDENTIFICATION: B-2269 SS-28

(A) Mass of oven-dried soil, grams:		49.10
(B) Mass of pycnometer filled with water at test temperature (T), grams:		654.83
(C) Mass of pycnometer, water and soil, grams:		685.90
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.0
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.723
(F)	***Correction factor:***	0.99933
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.721

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

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

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

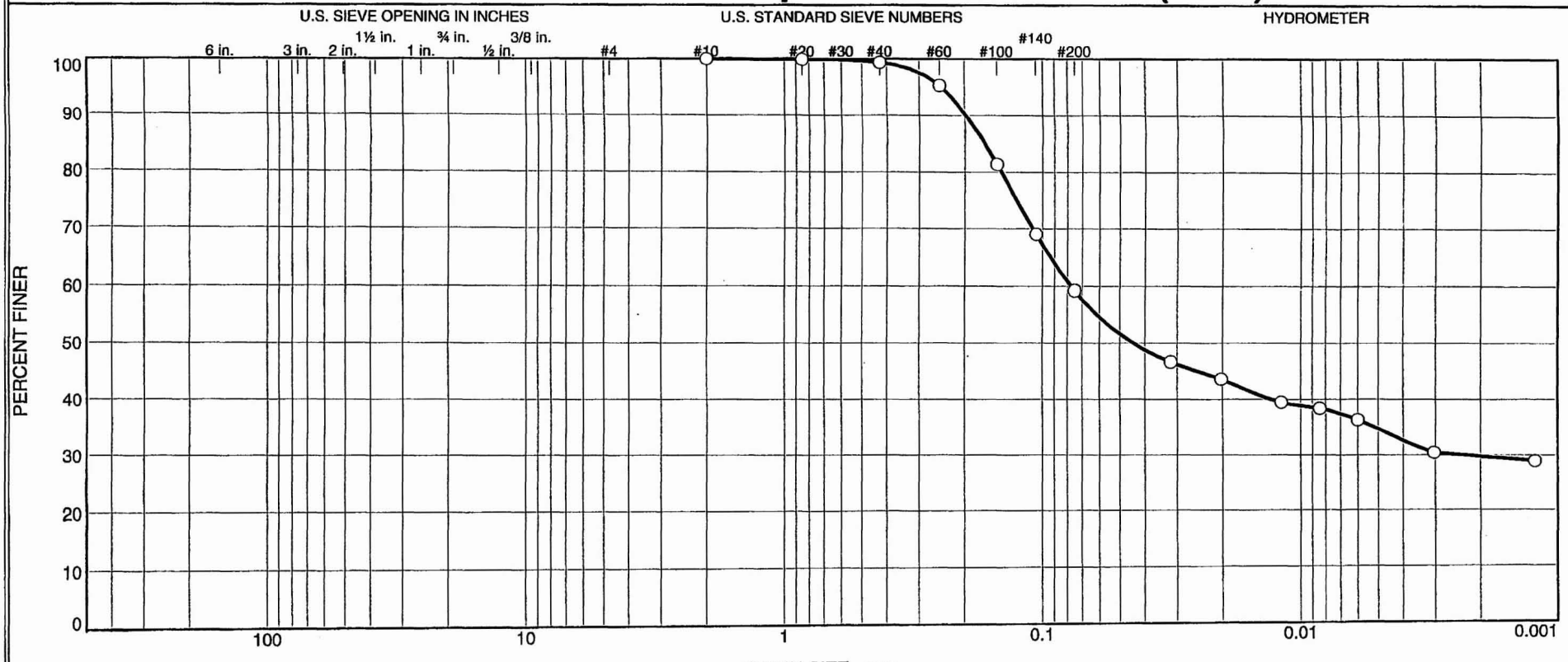
EQUIPMENT USED
SCALES : 3.1.19
OVEN : 5.1.16
THERMOMETER : 5.1.01
PYCNOMETER : P-5

TESTED BY: CS

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

REVIEWED BY: **Brian Johnson**
DSC 3-13-08

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	0.6	40.1	24.6	34.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-29	161.7-163.2'	11/10/07	CL	Light Gray Sandy Lean CLAY	23.2	41	15

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific gravity is assumed.
Organic content = 4.2% (ASTM D 2974-07)

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-2269
Depth: 161.7-163.2' **Sample Number:** SS-29
Material Description: Light Gray Sandy Lean CLAY
Date: 11/10/07 **Natural Moisture:** 23.2
Liquid Limit: 41 **Plastic Limit:** 15 **USCS Class.:** CL
Testing Remarks: Specific gravity is assumed.
Organic content = 4.2% (ASTM D 2974-07)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
253.77	0.00	0.00	#10	0.00	100.0
49.30	0.00	0.00	#20	0.04	99.9
			#40	0.32	99.4
			#60	2.38	95.2
			#100	9.17	81.4
			#140	15.26	69.0
			#200	20.07	59.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =49.3
Hygroscopic moisture correction:
Moist weight and tare = 30.23
Dry weight and tare = 29.81
Tare weight = 15.60
Hygroscopic moisture = 3.0%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	21.4	28.0	22.6	0.0132	29.0	11.5	0.0317	46.6
5.00	21.5	26.5	21.1	0.0132	27.5	11.8	0.0203	43.6
15.00	21.5	24.5	19.1	0.0132	25.5	12.1	0.0119	39.5
30.00	21.4	24.0	18.6	0.0132	25.0	12.2	0.0084	38.4
60.00	21.4	23.0	17.6	0.0132	24.0	12.4	0.0060	36.3
240.00	22.1	20.0	14.7	0.0131	21.0	12.9	0.0030	30.5
1440.00	23.3	19.0	14.0	0.0129	20.0	13.0	0.0012	29.0

MACTEC, Inc.

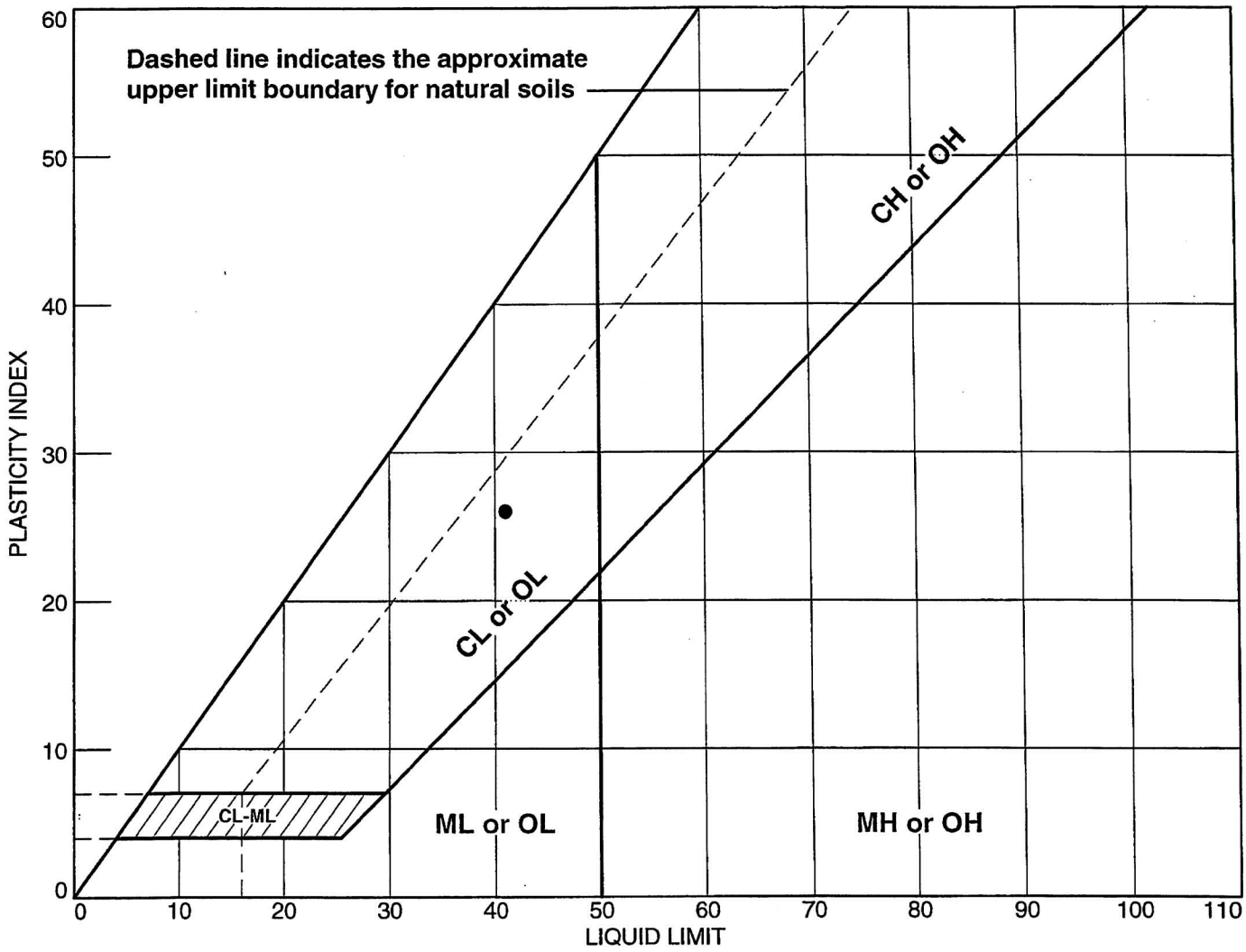
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	40.1	40.7	24.6	34.7	59.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0023	0.0444	0.0773	0.1442	0.1670	0.1978	0.2475

Fineness Modulus
0.21

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-2269	SS-29	161.7-163.2'	23.2	15	41	26	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

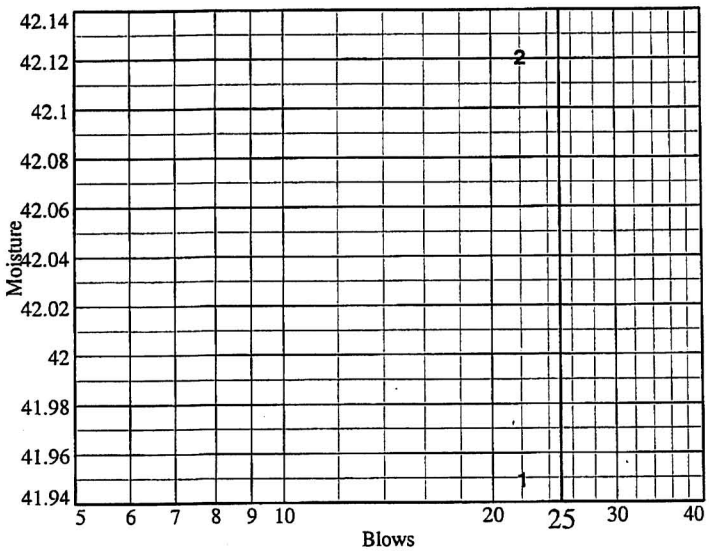
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 161.7-163.2'
Sample Number: SS-29
Material Description: Light Gray Sandy Lean CLAY
USCS: CL
AASHTO: A-7-6(12)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.90	34.80				
Dry+Tare	24.94	29.08				
Tare	15.50	15.50				
# Blows	22	22				
Moisture	41.9	42.1				



Liquid Limit= 41
Plastic Limit= 15
Plasticity Index= 26
Natural Moisture= 23.2
Liquidity Index= 0.3

Plastic Limit Data

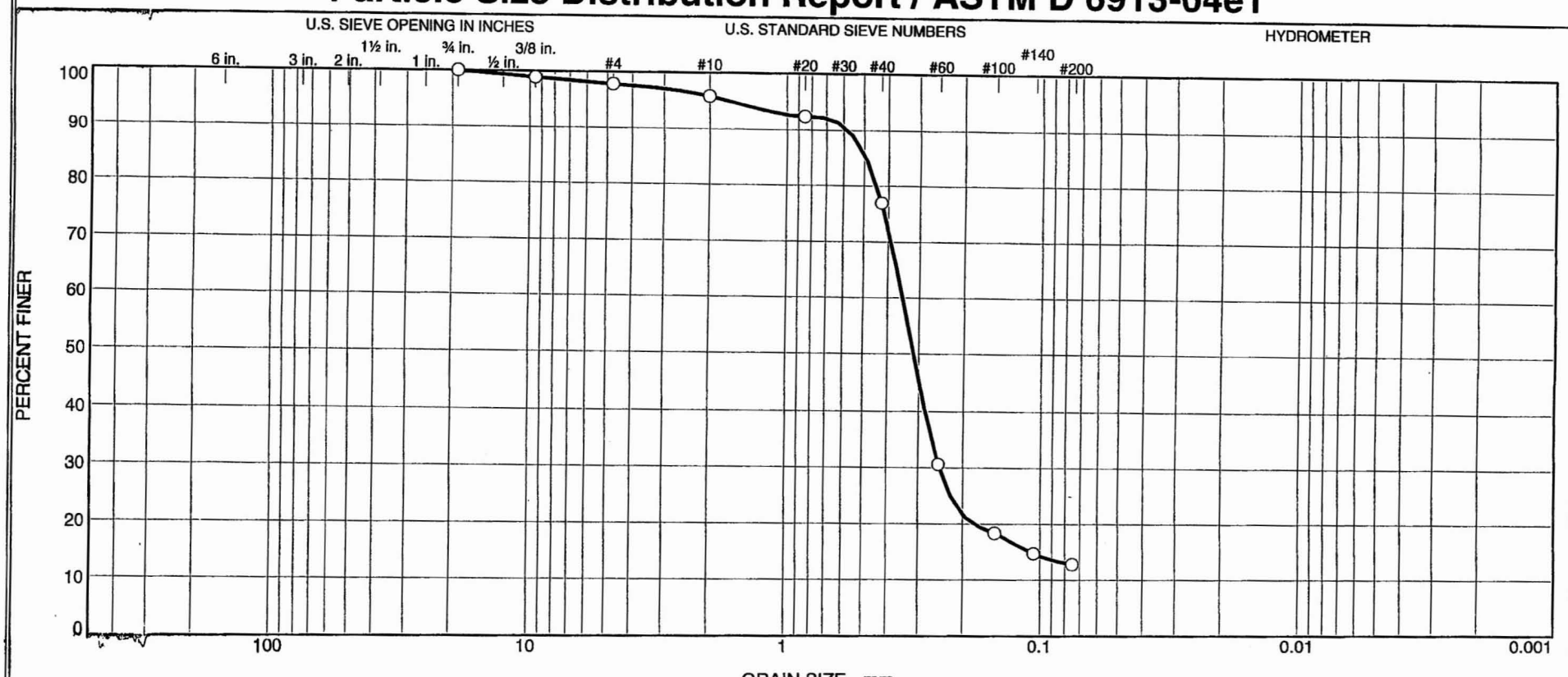
Run No.	1	2	3	4	
Wet+Tare	23.26	24.48			
Dry+Tare	22.30	23.30			
Tare	15.51	15.44			
Moisture	14.1	15.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
120.00	98.71	6.80	23.2

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	2.2	1.9	18.9	64.2	12.8	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-30	171.7-173.2'	11/10/07	SM	Pale Yellow Silty 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

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 171.7-173.2'
Sample Number: SS-30
Material Description: Pale Yellow Silty SAND (Visual)
Date: 11/10/07
Natural Moisture: ND
Liquid Limit: ND
Plastic Limit: ND
USCS Class.: SM
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
294.29	0.00	0.00	3/4	0.00	100.0
			3/8"	3.18	98.9
			#4	6.33	97.8
			#10	12.18	95.9
104.22	0.00	0.00	#20	3.76	92.4
			#40	20.54	77.0
			#60	70.87	30.7
			#100	84.27	18.3
			#140	88.23	14.7
			#200	90.31	12.8

Fractional Components

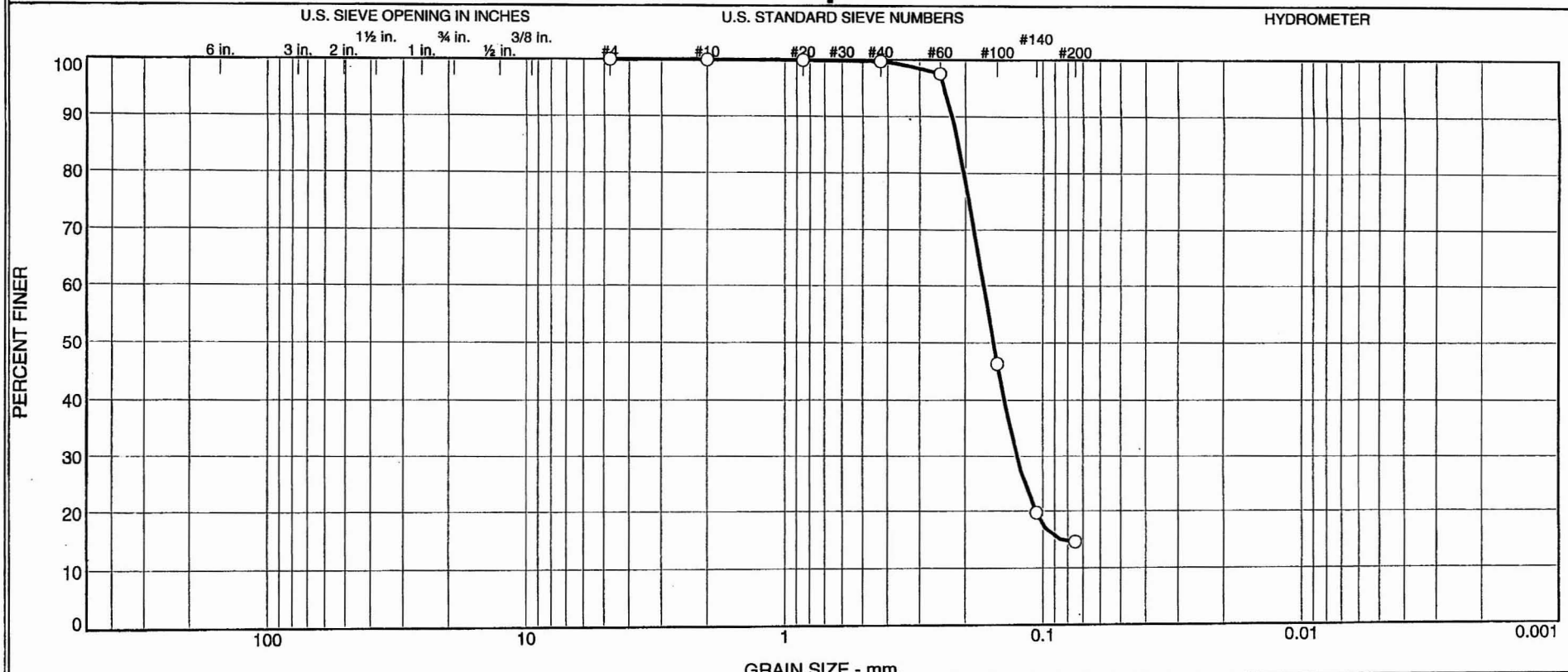
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.2	2.2	1.9	18.9	64.2	85.0			12.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.1094	0.1808	0.2473	0.3150	0.3491	0.4451	0.4902	0.5766	1.6658

Fineness Modulus
1.59

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.3	85.1	14.6	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-31	181.7-183.2'	11/10/07	SM	Brownish Yellow Silty 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

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 181.7-183.2'
Sample Number: SS-31
Material Description: Brownish Yellow Silty SAND (Visual)
Date: 11/10/07
Natural Moisture: ND
Liquid Limit: ND
Plastic Limit: ND
USCS Class.: SM
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
284.50	0.00	0.00	#4	0.00	100.0
			#10	0.10	100.0
106.85	0.00	0.00	#20	0.08	99.9
			#40	0.25	99.7
			#60	2.60	97.5
			#100	57.39	46.3
			#140	85.80	19.7
			#200	91.25	14.6

Fractional Components

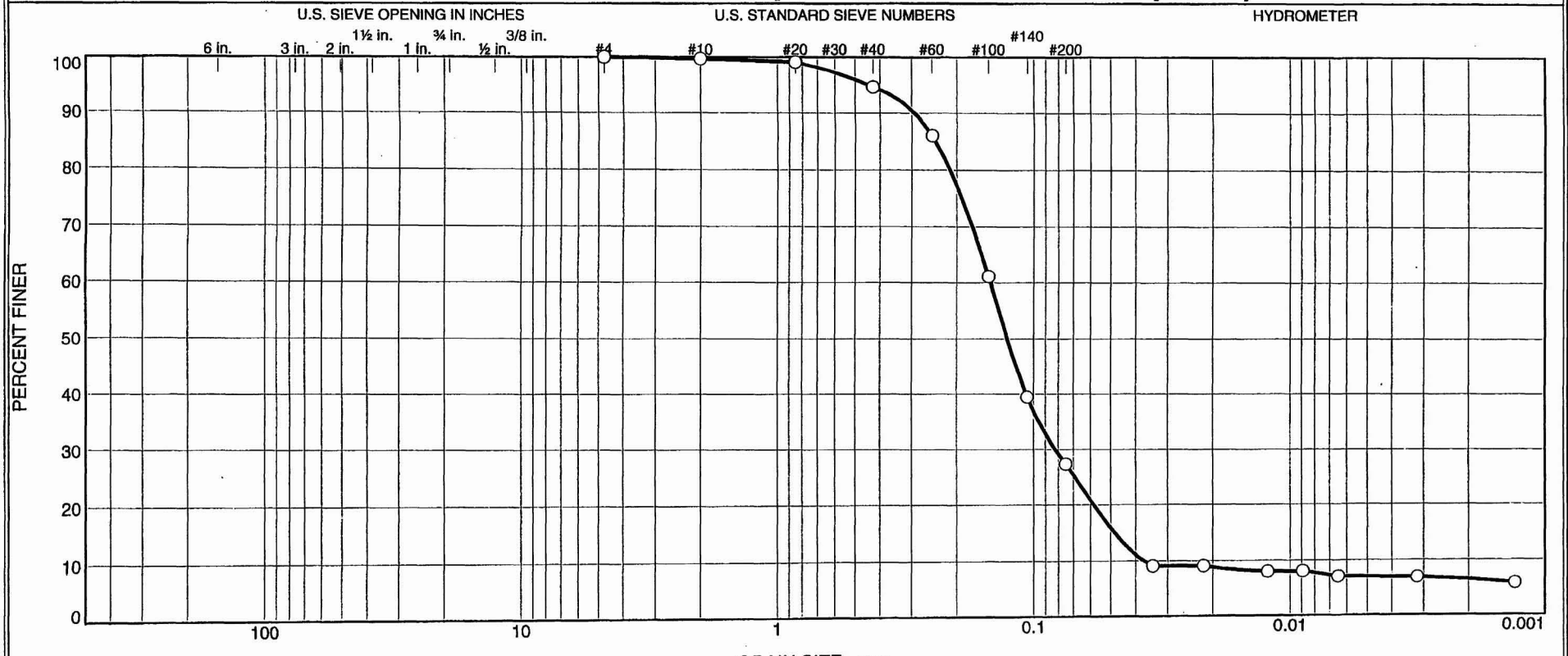
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	85.1	85.4			14.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0854	0.1068	0.1257	0.1553	0.1697	0.2028	0.2130	0.2250	0.2401

Fineness Modulus
0.56

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.3	5.0	67.4	20.2	7.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-33	201.7-203.2'	11/10/07	SC-SM	Pale Yellow Silty, Clayey SAND	27.6	18	12

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-2269
Depth: 201.7-203.2' **Sample Number:** SS-33
Material Description: Pale Yellow Silty, Clayey SAND
Date: 11/10/07 **Natural Moisture:** 27.6
Liquid Limit: 18 **Plastic Limit:** 12 **USCS Class.:** SC-SM
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
246.71	0.00	0.00	#4	0.00	100.0
			#10	0.70	99.7
97.27	0.00	0.00	#20	0.58	99.1
			#40	4.94	94.7
			#60	13.22	86.2
			#100	37.64	61.1
			#140	58.78	39.5
			#200	70.60	27.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.7
Weight of hydrometer sample =97.27
Hygroscopic moisture correction:
Moist weight and tare = 26.97
Dry weight and tare = 26.76
Tare weight = 15.49
Hygroscopic moisture = 1.9%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	22.5	14.0	8.8	0.0130	15.0	13.8	0.0343	9.1
5.00	22.4	14.0	8.8	0.0131	15.0	13.8	0.0217	9.1
16.00	22.4	13.0	7.8	0.0131	14.0	14.0	0.0122	8.1
30.00	22.5	13.0	7.8	0.0130	14.0	14.0	0.0089	8.1
57.00	22.7	12.0	6.9	0.0130	13.0	14.2	0.0065	7.1
240.00	22.1	12.0	6.7	0.0131	13.0	14.2	0.0032	7.0
1440.00	21.8	11.0	5.7	0.0131	12.0	14.3	0.0013	5.9

MACTEC, Inc.

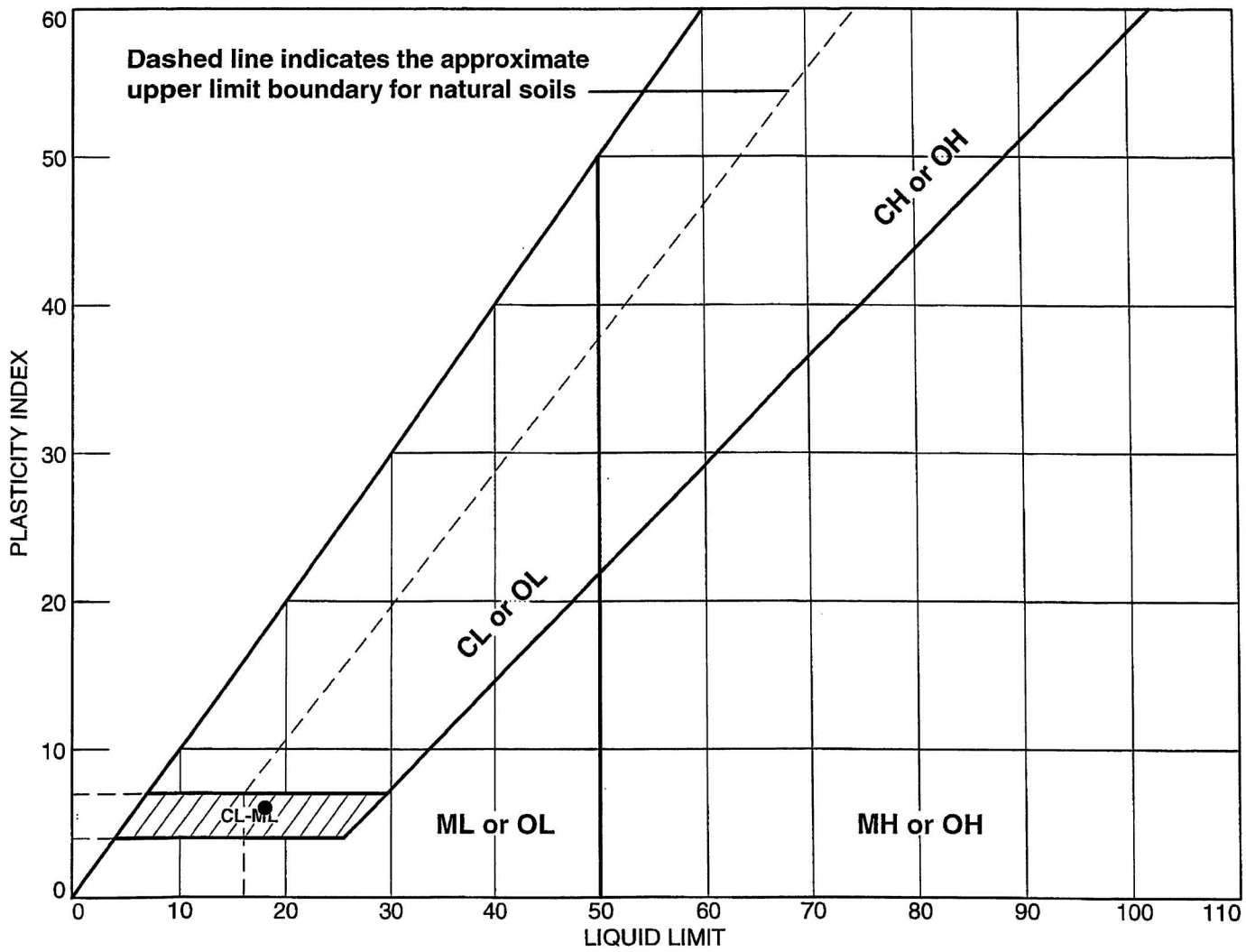
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	5.0	67.4	72.7	20.2	7.1	27.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0372	0.0483	0.0583	0.0823	0.1268	0.1474	0.2119	0.2411	0.2914	0.4433

Fineness Modulus	C_u	C_c
0.52	3.96	1.23

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-2269	SS-33	201.7-203.2'	27.6	12	18	6	SC-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

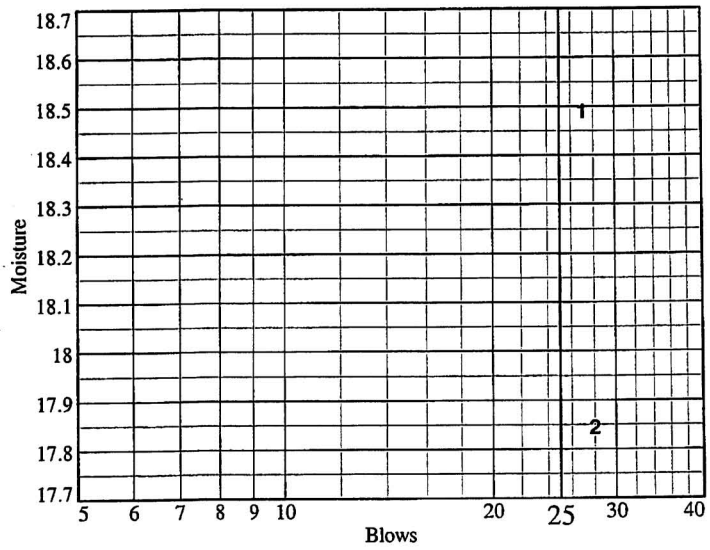
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 201.7-203.2'
Sample Number: SS-33
Material Description: Pale Yellow Silty, Clayey SAND
USCS: SC-SM
AASHTO: A-2-4(0)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	34.34	31.07				
Dry+Tare	31.40	28.70				
Tare	15.50	15.42				
# Blows	27	28				
Moisture	18.5	17.8				



Liquid Limit= 18
Plastic Limit= 12
Plasticity Index= 6
Natural Moisture= 27.6
Liquidity Index= 2.6

Plastic Limit Data

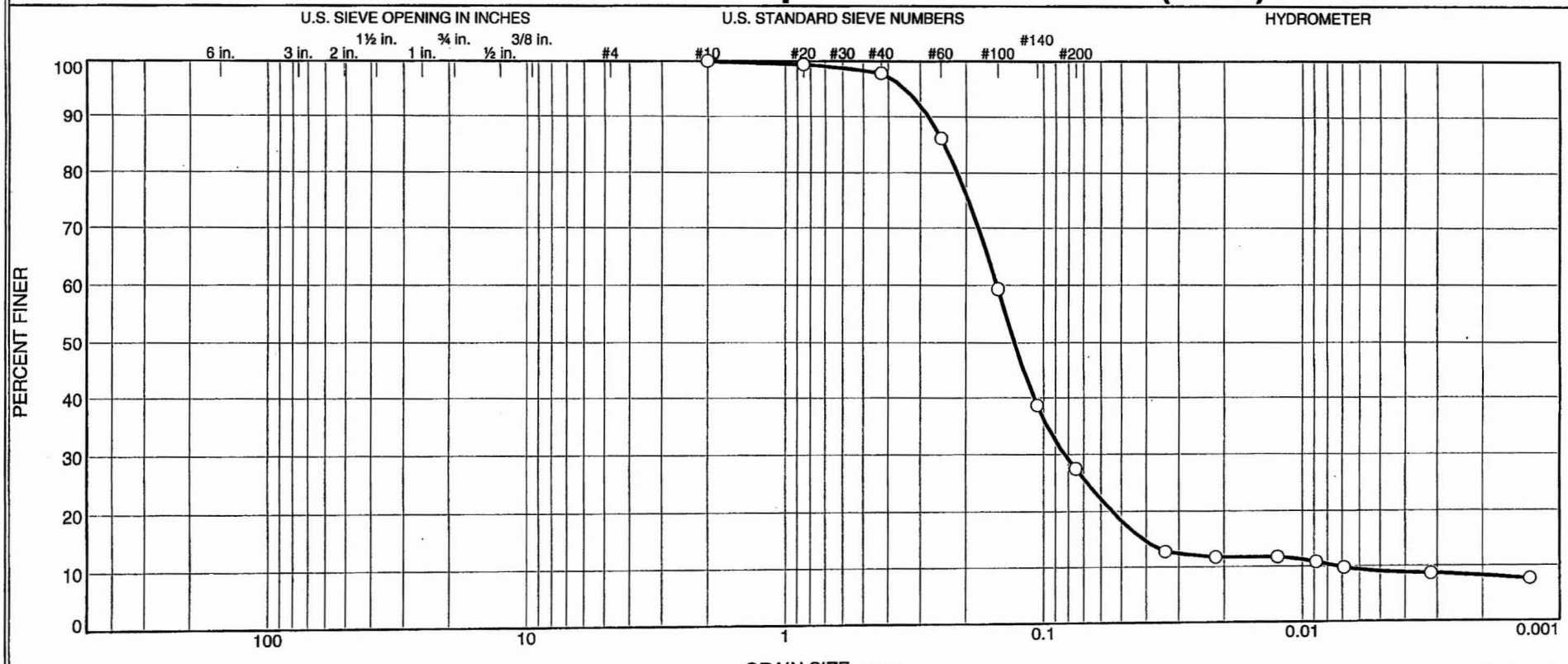
Run No.	1	2	3	4	
Wet+Tare	29.36	24.72			
Dry+Tare	27.90	23.75			
Tare	15.25	15.57			
Moisture	11.5	11.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
126.71	100.80	6.87	27.6

MACTEC, Inc.

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	2.2	70.2	18.5	9.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-34	221.7-223.2'	1/10/07	SC	Light Gray Clayey SAND	21.1	25	14

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific gravity = 2.664 (ASTM D 854-06)

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-2269
Depth: 221.7-223.2'
Sample Number: SS-34
Material Description: Light Gray Clayey SAND
Date: 1/10/07
Natural Moisture: 21.1
Liquid Limit: 25
Plastic Limit: 14
USCS Class.: SC
Testing Remarks: Specific gravity = 2.664 (ASTM D 854-06)
Tested by: CS
Checked by: LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
248.95	0.00	0.00	#10	0.00	100.0
102.34	0.00	0.00	#20	0.61	99.4
			#40	2.21	97.8
			#60	14.10	86.2
			#100	41.56	59.4
			#140	62.78	38.7
			#200	74.13	27.6

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =102.34
Hygroscopic moisture correction:
Moist weight and tare = 26.71
Dry weight and tare = 26.50
Tare weight = 15.54
Hygroscopic moisture = 1.9%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

Meniscus correction only = 1.0
Specific gravity of solids = 2.664
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	18.0	12.8	0.0132	19.0	13.2	0.0338	12.7
5.00	22.4	17.0	11.8	0.0132	18.0	13.3	0.0216	11.7
15.00	22.3	17.0	11.8	0.0132	18.0	13.3	0.0125	11.7
30.00	22.6	16.0	10.9	0.0132	17.0	13.5	0.0088	10.8
50.00	22.6	15.0	9.9	0.0132	16.0	13.7	0.0069	9.8
240.00	22.3	14.0	8.8	0.0132	15.0	13.8	0.0032	8.7
1440.00	22.1	13.0	7.7	0.0132	14.0	14.0	0.0013	7.7

MACTEC, Inc.

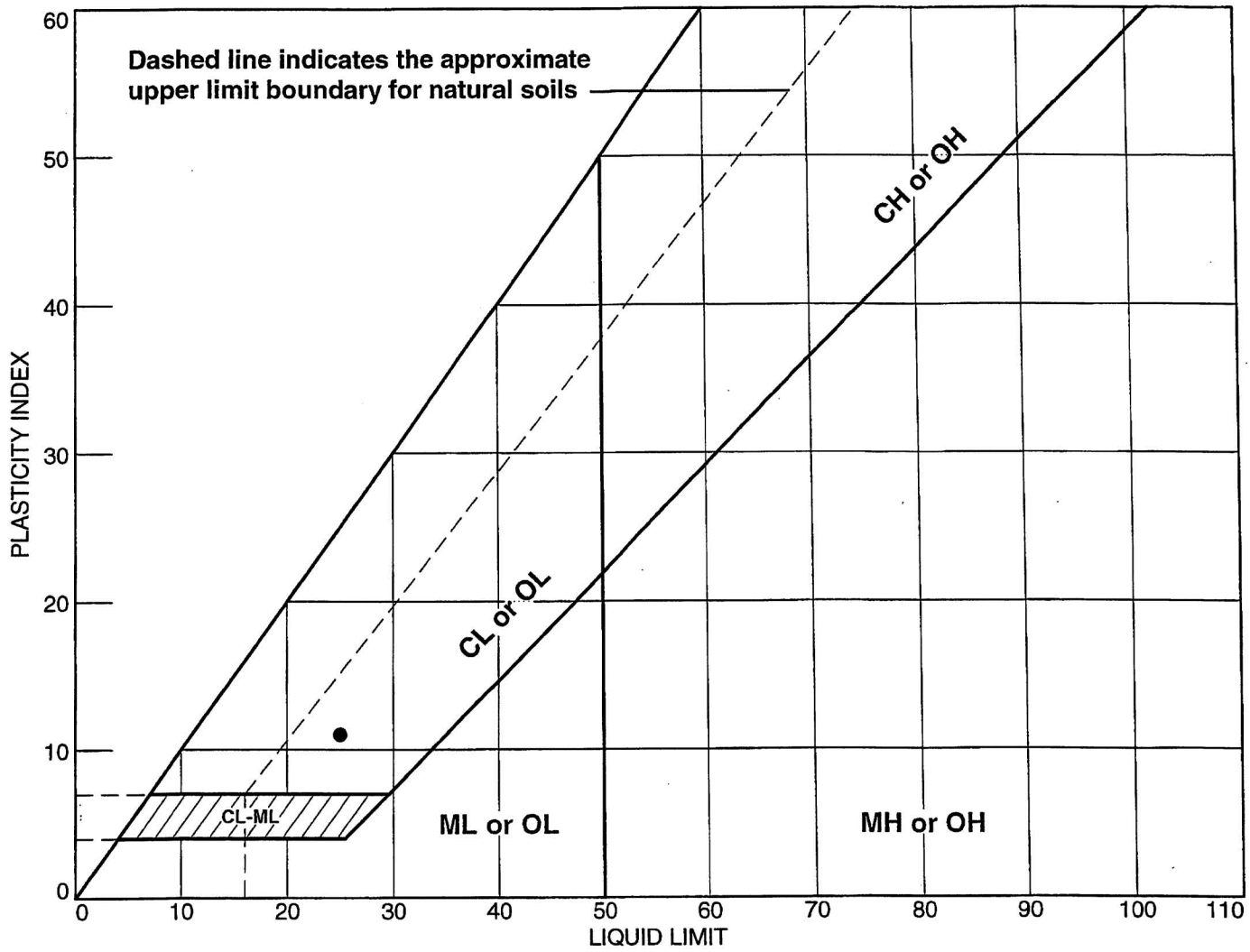
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.2	70.2	72.4	18.5	9.1	27.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0073	0.0411	0.0541	0.0826	0.1296	0.1514	0.2161	0.2423	0.2796	0.3448

Fineness Modulus	C_u	C_c
0.50	20.82	6.20

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-2269	SS-34	221.7-223.2'	21.1	14	25	11	SC

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

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

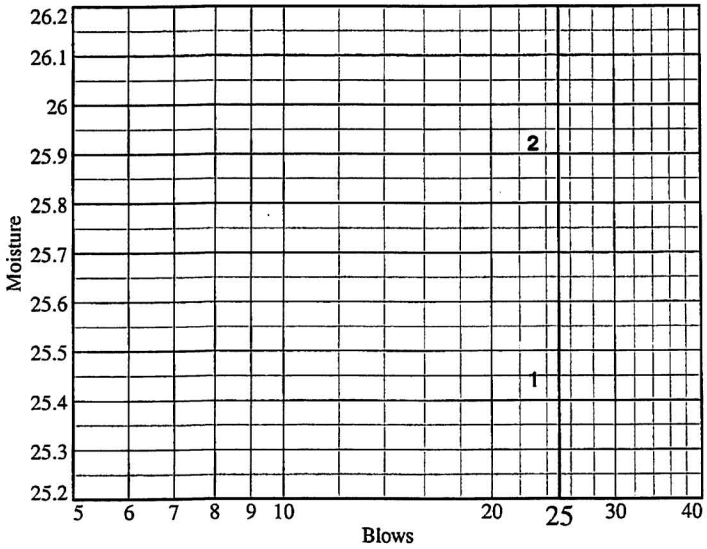
LIQUID AND PLASTIC LIMIT TEST DATA

1/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2269
Depth: 221.7-223.2'
Sample Number: SS-34
Material Description: Light Gray Clayey SAND
USCS: SC
AASHTO: A-2-6(0)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.80	31.87				
Dry+Tare	24.50	28.50				
Tare	15.46	15.50				
# Blows	23	23				
Moisture	25.4	25.9				



Liquid Limit= 25
Plastic Limit= 14
Plasticity Index= 11
Natural Moisture= 21.1
Liquidity Index= 0.6

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.55	24.43			
Dry+Tare	21.70	23.36			
Tare	15.58	15.51			
Moisture	13.9	13.6			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
140.84	117.90	9.20	21.1

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: 11/23/07

SAMPLE IDENTIFICATION: B-2269 SS-34

(A) Mass of oven-dried soil, grams:		52.50
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.70
(C) Mass of pycnometer, water and soil, grams:		689.50
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		22.2
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.665
(F)	***Correction factor:***	0.99952
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.664

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

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

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

EQUIPMENT USED
SCALES : 3.1.19
OVEN : 5.1.16
THERMOMETER : 5.1.01
PYCNOMETER : P-6

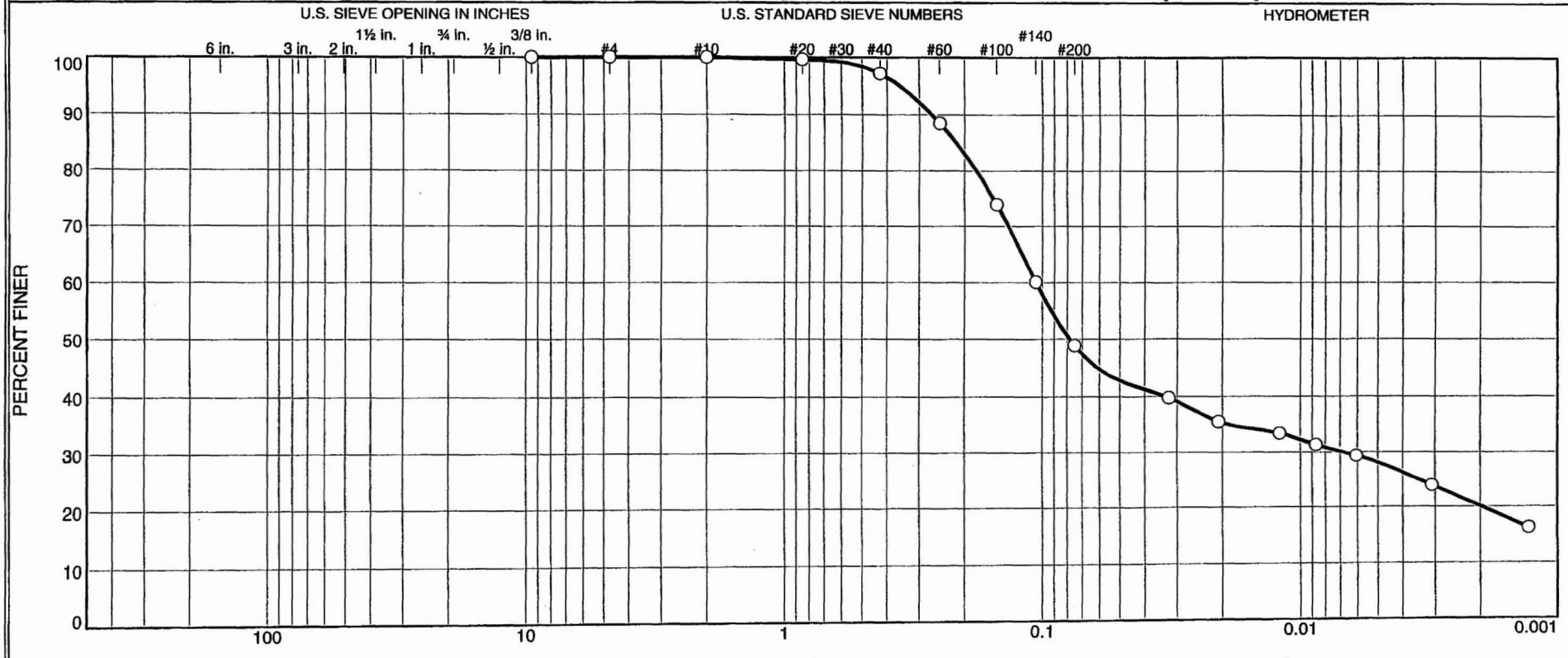
TESTED BY: CS

\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	2.8	48.3	20.8	28.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2269	SS-35	241.8-243'	11/11/07	SC	Light Gray Clayey SAND	15.9	28	12

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-2269
Depth: 241.8-243' **Sample Number:** SS-35
Material Description: Light Gray Clayey SAND
Date: 11/11/07 **Natural Moisture:** 15.9
Liquid Limit: 28 **Plastic Limit:** 12 **USCS Class.:** SC
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
236.79	0.00	0.00	3/8"	0.00	100.0
			#4	0.00	100.0
			#10	0.00	100.0
47.79	0.00	0.00	#20	0.19	99.6
			#40	1.36	97.2
			#60	5.48	88.5
			#100	12.45	73.9
			#140	19.07	60.1
			#200	24.43	48.9

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =47.79
Hygroscopic moisture correction:
Moist weight and tare = 26.51
Dry weight and tare = 26.27
Tare weight = 15.61
Hygroscopic moisture = 2.3%
Table of composite correction values:

Temp., deg. C:	10.5	29.5
Comp. corr.:	-8.0	-3.5

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	22.3	24.0	18.8	0.0131	25.0	12.2	0.0323	39.8
5.00	22.3	22.0	16.8	0.0131	23.0	12.5	0.0207	35.5
15.00	22.3	21.0	15.8	0.0131	22.0	12.7	0.0120	33.4
29.00	22.4	20.0	14.8	0.0131	21.0	12.9	0.0087	31.4
60.00	22.7	19.0	13.9	0.0130	20.0	13.0	0.0061	29.4
240.00	22.4	16.5	11.3	0.0131	17.5	13.4	0.0031	23.9
1440.00	21.9	13.0	7.7	0.0131	14.0	14.0	0.0013	16.3

MACTEC, Inc.