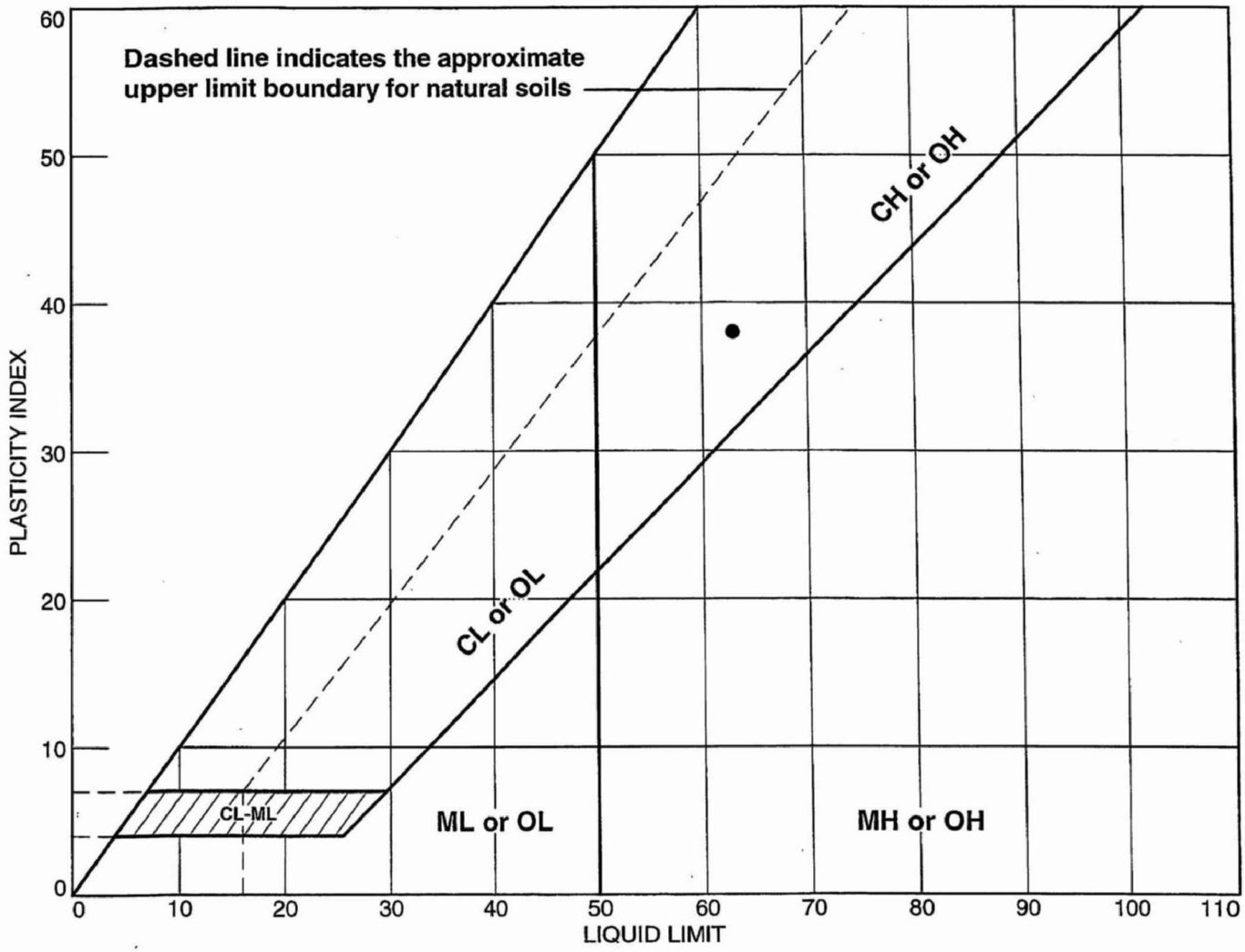
LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2170R	SS-15	58.5-60.0	22.3	25	63	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 KAW 1/26/08

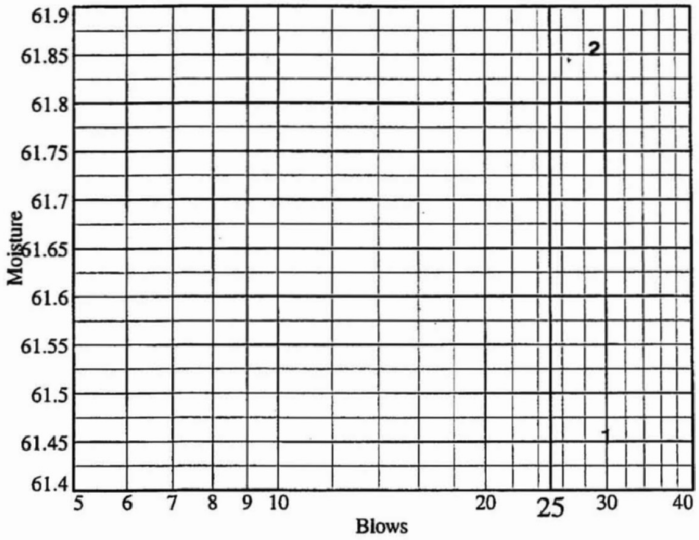
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2170R
Depth: 58.5-60.0 **Sample Number:** SS-15
Material Description: Pale Brown 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	29.12	33.00				
Dry+Tare	23.97	26.27				
Tare	15.59	15.39				
# Blows	30	29				
Moisture	61.5	61.9				



Liquid Limit= 63
Plastic Limit= 25
Plasticity Index= 38
Natural Moisture= 22.3
Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.36	23.07			
Dry+Tare	21.04	21.58			
Tare	15.62	15.65			
Moisture	24.4	25.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
182.98	151.30	9.10	22.3

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-2170R SS-15

(A) Mass of oven-dried soil, grams:		53.36
(B) Mass of pycnometer filled with water at test temperature (T), grams:		657.24
(C) Mass of pycnometer, water and soil, grams:		690.85
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		16.8
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.702
(F)	***Correction factor:***	1.00061
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.703

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-6

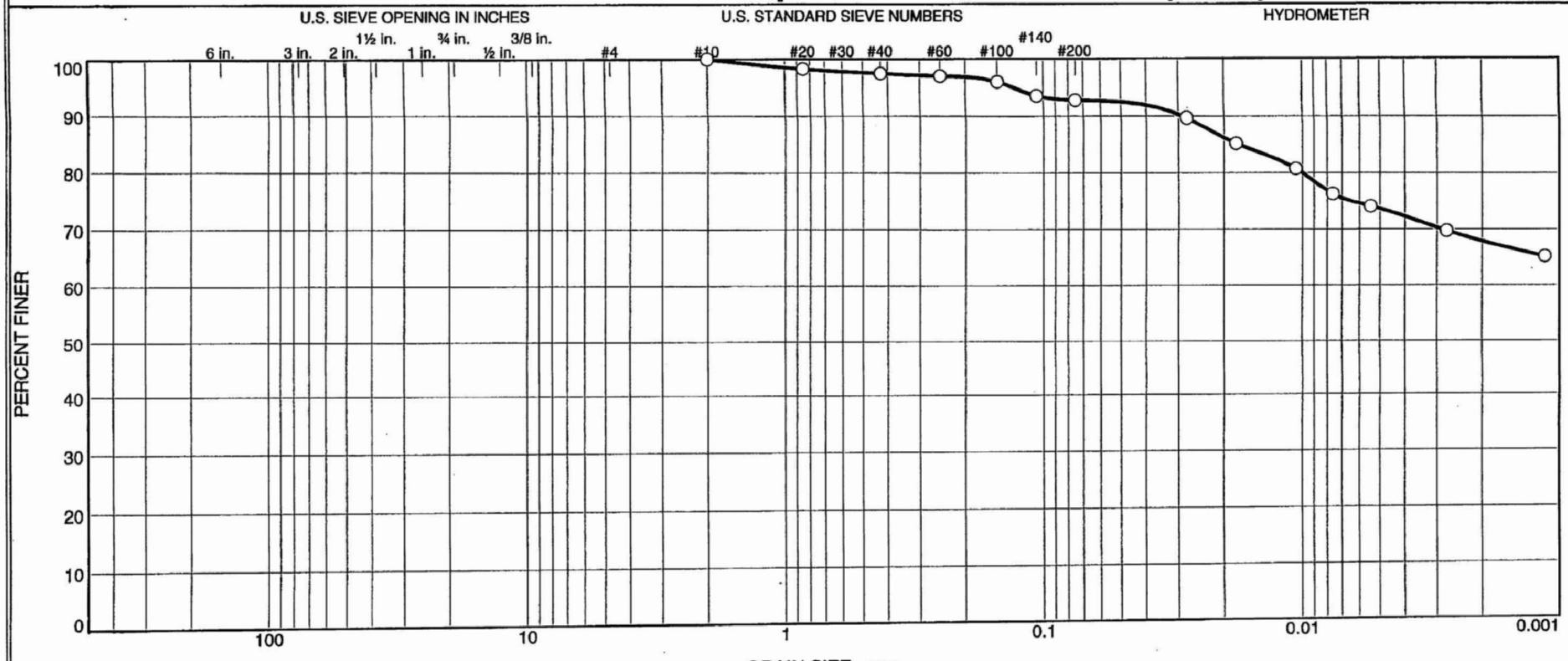
TESTED BY: CS

\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
O	0.0	0.0	0.0	0.0	2.5	4.8	19.1	73.6

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2170R	SS-16	63.5-65.0	1-4-08	CH	Pale Brown Fat CLAY	27.1	77	27

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure N/A

MACTEC, Inc.

Raleigh, North Carolina

O Specific Gravity is assumed

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

GRAIN SIZE DISTRIBUTION TEST DATA

1/26/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2170R
Depth: 63.5-65.0 **Sample Number:** SS-16
Material Description: Pale Brown Fat CLAY
Date: 1-4-08 **Natural Moisture:** 27.1
Liquid Limit: 77 **Plastic Limit:** 27 **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
251.82	0.00	0.00	#10	0.00	100.0
46.73	0.00	0.00	#20	0.80	98.3
			#40	1.19	97.5
			#60	1.40	97.0
			#100	1.90	95.9
			#140	3.04	93.5
			#200	3.40	92.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =46.73
Hygroscopic moisture correction:
Moist weight and tare = 27.22
Dry weight and tare = 26.60
Tare weight = 15.50
Hygroscopic moisture = 5.6%
Table of composite correction values:

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

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.6	45.0	40.2	0.0133	46.0	8.8	0.0279	89.7
5.00	20.6	43.0	38.2	0.0133	44.0	9.1	0.0180	85.2
15.00	20.6	41.0	36.2	0.0133	42.0	9.4	0.0106	80.8
30.00	20.6	39.0	34.2	0.0133	40.0	9.7	0.0076	76.3
60.00	20.6	38.0	33.2	0.0133	39.0	9.9	0.0054	74.1
240.00	20.8	36.0	31.2	0.0133	37.0	10.2	0.0027	69.7
1440.00	20.8	34.0	29.2	0.0133	35.0	10.6	0.0011	65.3

MACTEC, Inc.

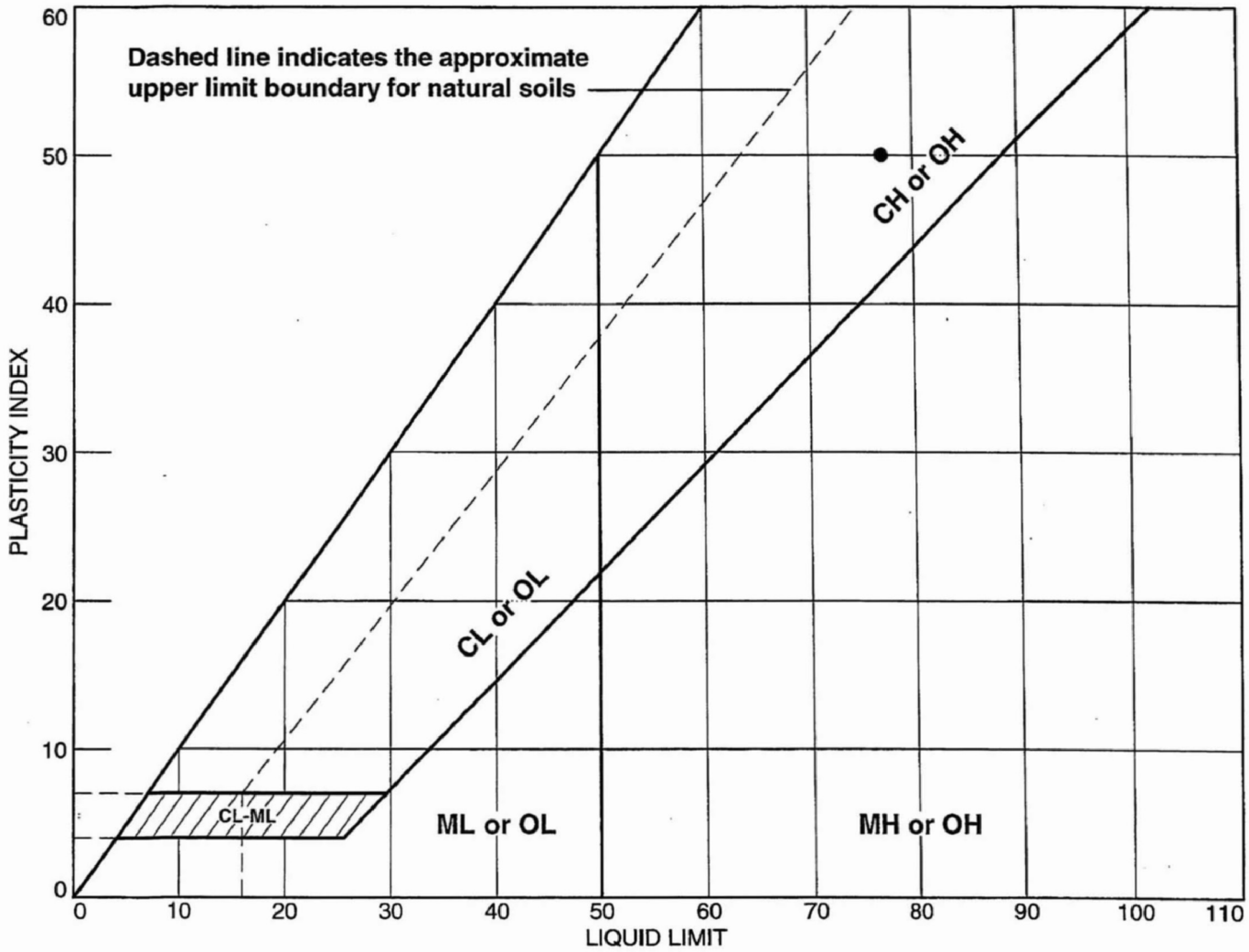
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.5	4.8	7.3	19.1	73.6	92.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0100	0.0175	0.0289	0.1312

Fineness Modulus
0.10

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-2170R	SS-16	63.5-65.0	27.1	27	77	50	CH

MACTEC, Inc.

Raleigh, North Carolina

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

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

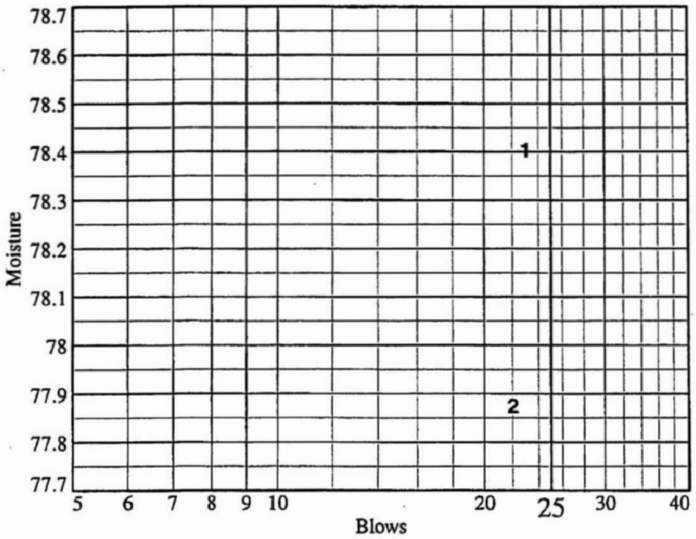
LIQUID AND PLASTIC LIMIT TEST DATA

1/26/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2170R
Depth: 63.5-65.0 **Sample Number:** SS-16
Material Description: Pale Brown Fat CLAY
USCS: CH **AASHTO:** A-7-6(54)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.43	33.59				
Dry+Tare	22.73	25.67				
Tare	15.46	15.5				
# Blows	23	22				
Moisture	78.4	77.9				



Liquid Limit= 77
Plastic Limit= 27
Plasticity Index= 50
Natural Moisture= 27.1
Liquidity Index= 0.0

Plastic Limit Data

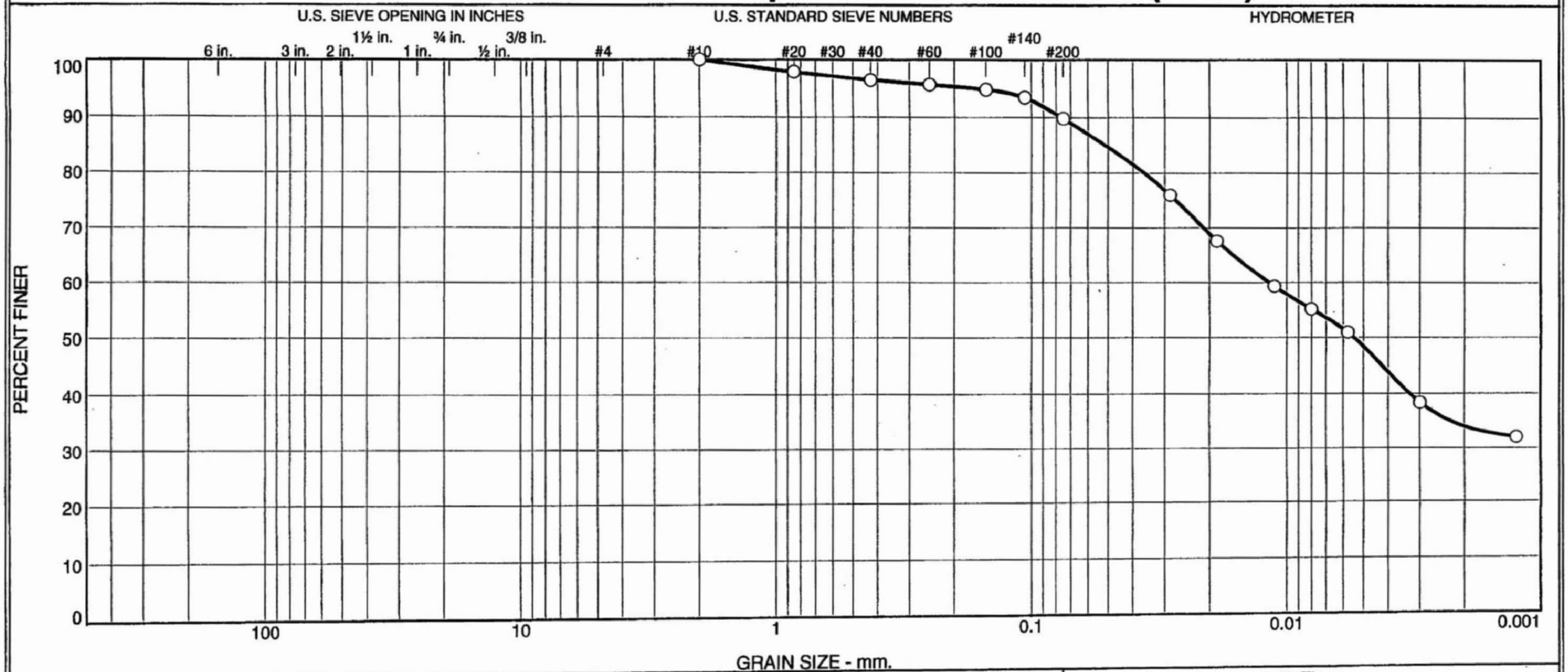
Run No.	1	2	3	4	
Wet+Tare	22.33	22.90			
Dry+Tare	20.90	21.32			
Tare	15.45	15.42			
Moisture	26.2	26.8			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
104.40	83.57	6.72	27.1

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	3.5	6.7	41.4	48.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2170R	SS-17	68.5-70.0	1-4-08	CL	Very Pale Brown Lean CLAY	19.8	44	15

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

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

GRAIN SIZE DISTRIBUTION TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2170R
Depth: 68.5-70.0 **Sample Number:** SS-17
Material Description: Very Pale Brown Lean CLAY
Date: 1-4-08 **Natural Moisture:** 19.8
Liquid Limit: 44 **Plastic Limit:** 15 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
247.54	0.00	0.00	#10	0.00	100.0
48.74	0.00	0.00	#20	1.05	97.8
			#40	1.73	96.5
			#60	2.13	95.6
			#100	2.54	94.8
			#140	3.20	93.4
			#200	4.96	89.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.74
Hygroscopic moisture correction:
Moist weight and tare = 27.22
Dry weight and tare = 26.90
Tare weight = 15.60
Hygroscopic moisture = 2.8%
Table of composite correction values:

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

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.6	41.0	36.4	0.0132	42.0	9.4	0.0286	76.0
5.00	21.6	37.0	32.4	0.0132	38.0	10.1	0.0187	67.7
15.00	21.6	33.0	28.4	0.0132	34.0	10.7	0.0111	59.3
30.00	21.6	31.0	26.4	0.0132	32.0	11.0	0.0080	55.1
60.00	21.5	29.0	24.4	0.0132	30.0	11.4	0.0057	50.9
240.00	21.5	23.0	18.4	0.0132	24.0	12.4	0.0030	38.4
1440.00	21.4	20.0	15.4	0.0132	21.0	12.9	0.0012	32.1

MACTEC, Inc.

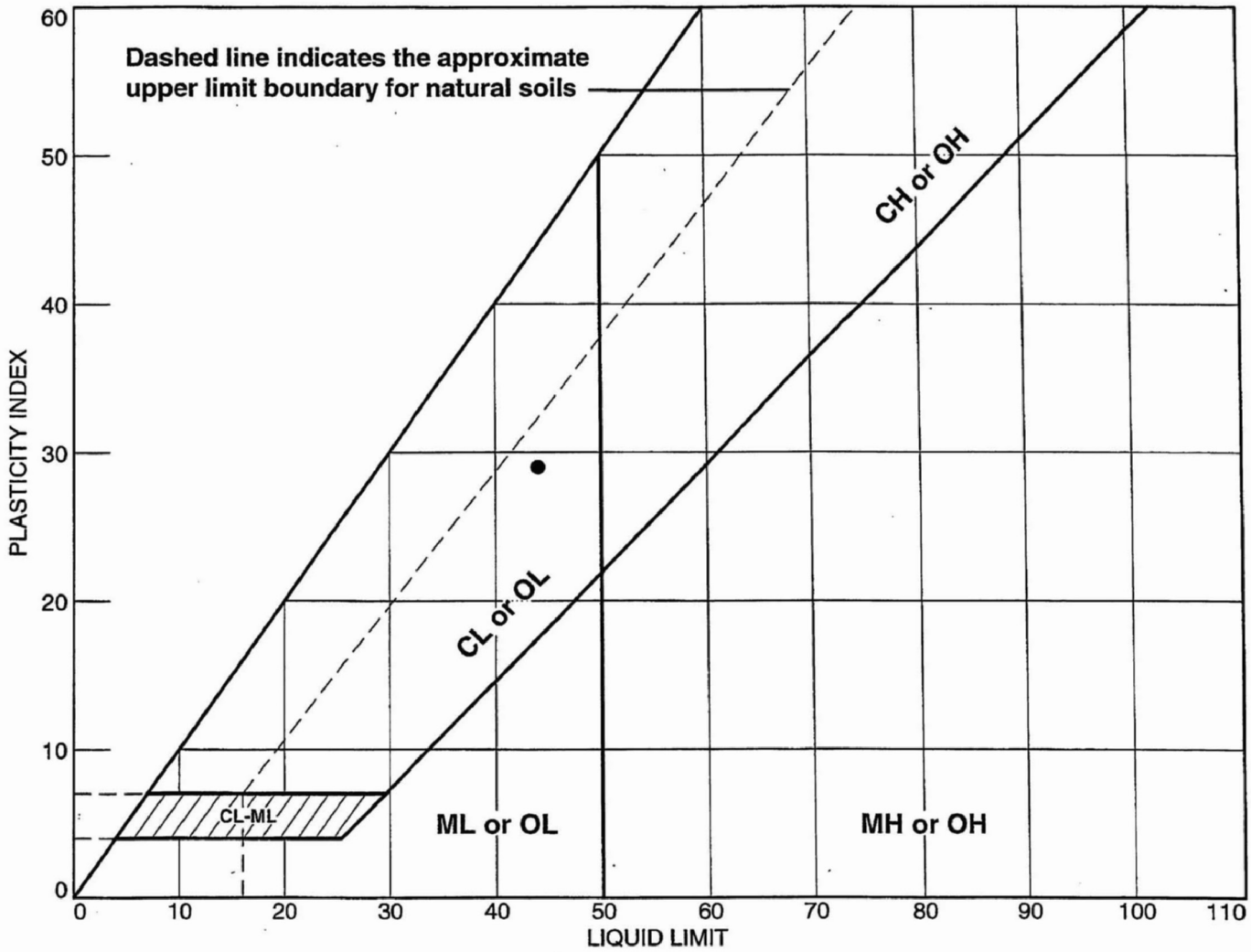
Fractional Components

Cobbles	Gravel			Sand				Fines
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	
0.0	0.0	0.0	0.0	0.0	3.5	6.7	10.2	89.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0054	0.0117	0.0361	0.0510	0.0761	0.1675

Fineness Modulus
0.14

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-2170R	SS-17	68.5-70.0	19.8	15	44	29	CL

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

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

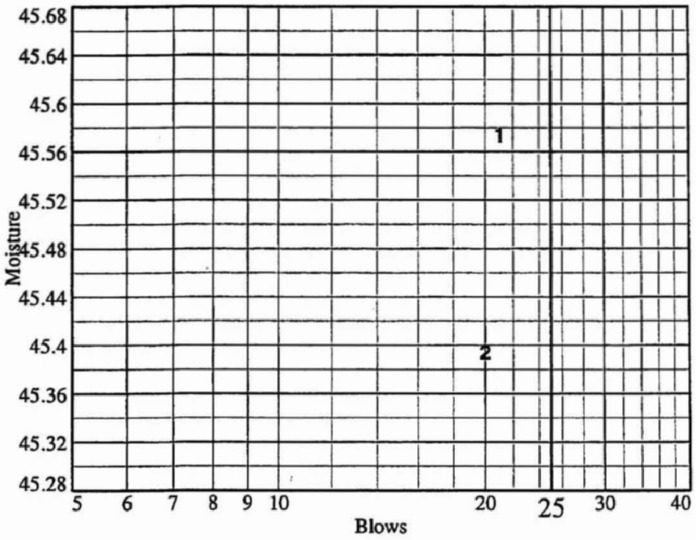
LIQUID AND PLASTIC LIMIT TEST DATA

1/26/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2170R
Depth: 68.5-70.0 **Sample Number:** SS-17
Material Description: Very Pale Brown Lean CLAY
USCS: CL **AASHTO:** A-7-6(26)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.22	24.27				
Dry+Tare	20.80	21.51				
Tare	15.49	15.43				
# Blows	21	20				
Moisture	45.6	45.4				



Liquid Limit= 44
Plastic Limit= 15
Plasticity Index= 29
Natural Moisture= 19.8
Liquidity Index= 0.2

Plastic Limit Data

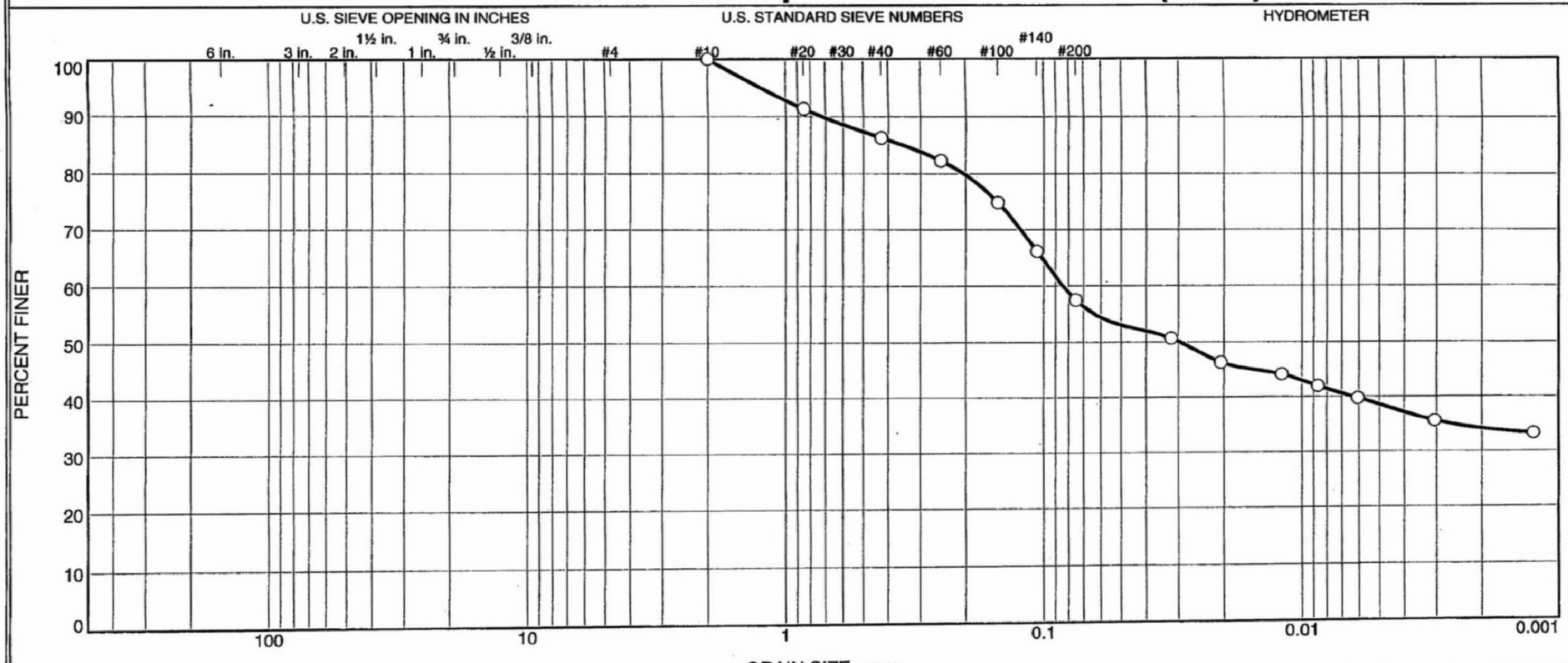
Run No.	1	2	3	4	
Wet+Tare	25.82	25.34			
Dry+Tare	24.50	24.00			
Tare	15.45	15.43			
Moisture	14.6	15.6			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
89.33	76.84	13.66	19.8

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	13.7	28.7	19.0	38.6

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2170R	SS-18	73.5-75.0	1-4-08	CL	Very Pale Brown Sandy Lean CLAY	19.0	42	16

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed
Organic Content = 4.1% (ASTM D 2974-07)

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-2170R
Depth: 73.5-75.0 **Sample Number:** SS-18
Material Description: Very Pale Brown Sandy Lean CLAY
Date: 1-4-08 **Natural Moisture:** 19.0
Liquid Limit: 42 **Plastic Limit:** 16 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Organic Content = 4.1% (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
277.67	0.00	0.00	#10	0.00	100.0
47.13	0.00	0.00	#20	4.10	91.3
			#40	6.47	86.3
			#60	8.35	82.3
			#100	11.83	74.9
			#140	15.97	66.1
			#200	20.00	57.6

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =47.13
Hygroscopic moisture correction:
Moist weight and tare = 27.34
Dry weight and tare = 26.85
Tare weight = 15.44
Hygroscopic moisture = 4.3%
Table of composite correction values:

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

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.7	28.0	23.2	0.0133	29.0	11.5	0.0320	50.7
5.00	20.7	26.0	21.2	0.0133	27.0	11.9	0.0205	46.3
15.00	20.7	25.0	20.2	0.0133	26.0	12.0	0.0119	44.2
29.00	20.7	24.0	19.2	0.0133	25.0	12.2	0.0086	42.0
60.00	20.7	23.0	18.2	0.0133	24.0	12.4	0.0060	39.8
240.00	21.1	21.0	16.3	0.0133	22.0	12.7	0.0030	35.6
1440.00	20.9	20.0	15.2	0.0133	21.0	12.9	0.0013	33.3

MACTEC, Inc.

Fractional Components

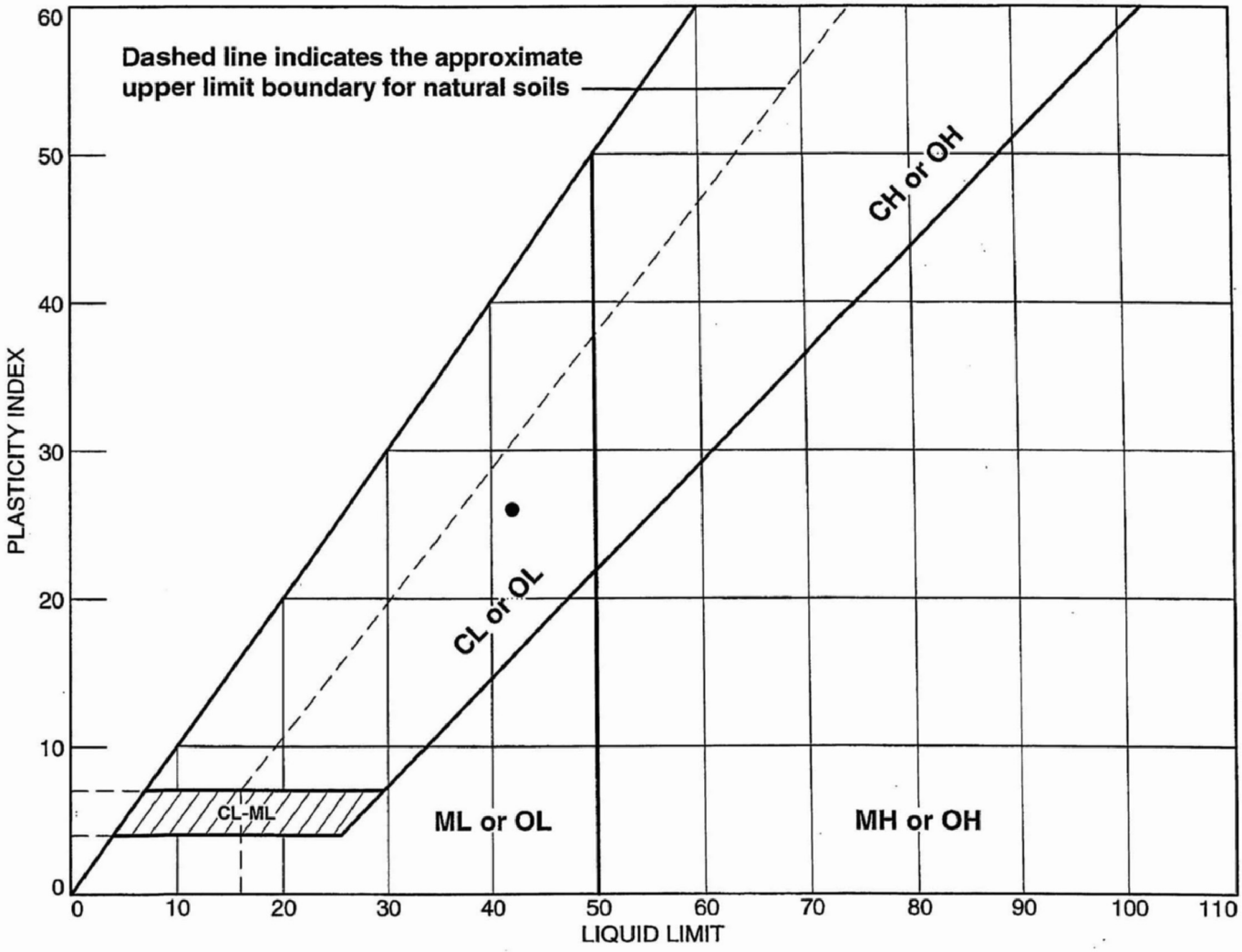
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	13.7	28.7	42.4	19.0	38.6	57.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0296	0.0840	0.2034	0.3510	0.7249	1.2548

Fineness Modulus
0.58

MACTEC, Inc.

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-2170R	SS-18	73.5-75.0	19.0	16	42	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 KAW 1/26/08

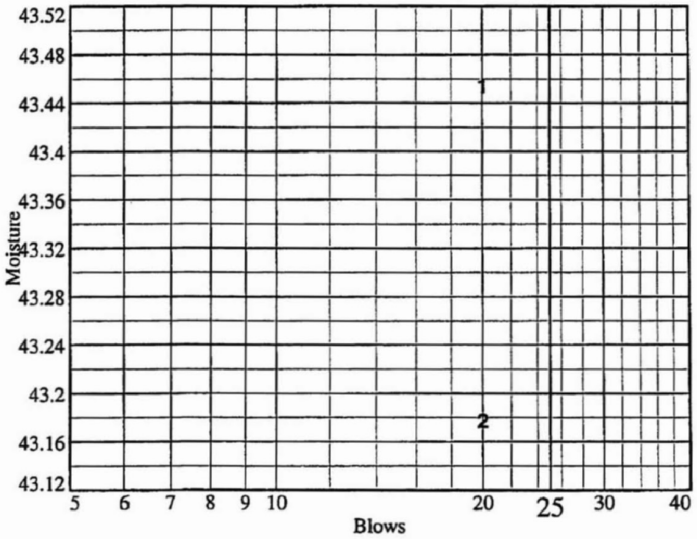
LIQUID AND PLASTIC LIMIT TEST DATA

1/25/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2170R
Depth: 73.5-75.0 **Sample Number:** SS-18
Material Description: Very Pale Brown 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	31.24	32.82				
Dry+Tare	26.46	27.63				
Tare	15.46	15.61				
# Blows	20	20				
Moisture	43.5	43.2				



Liquid Limit= 42
Plastic Limit= 16
Plasticity Index= 26
Natural Moisture= 19.0
Liquidity Index= 0.1

Plastic Limit Data

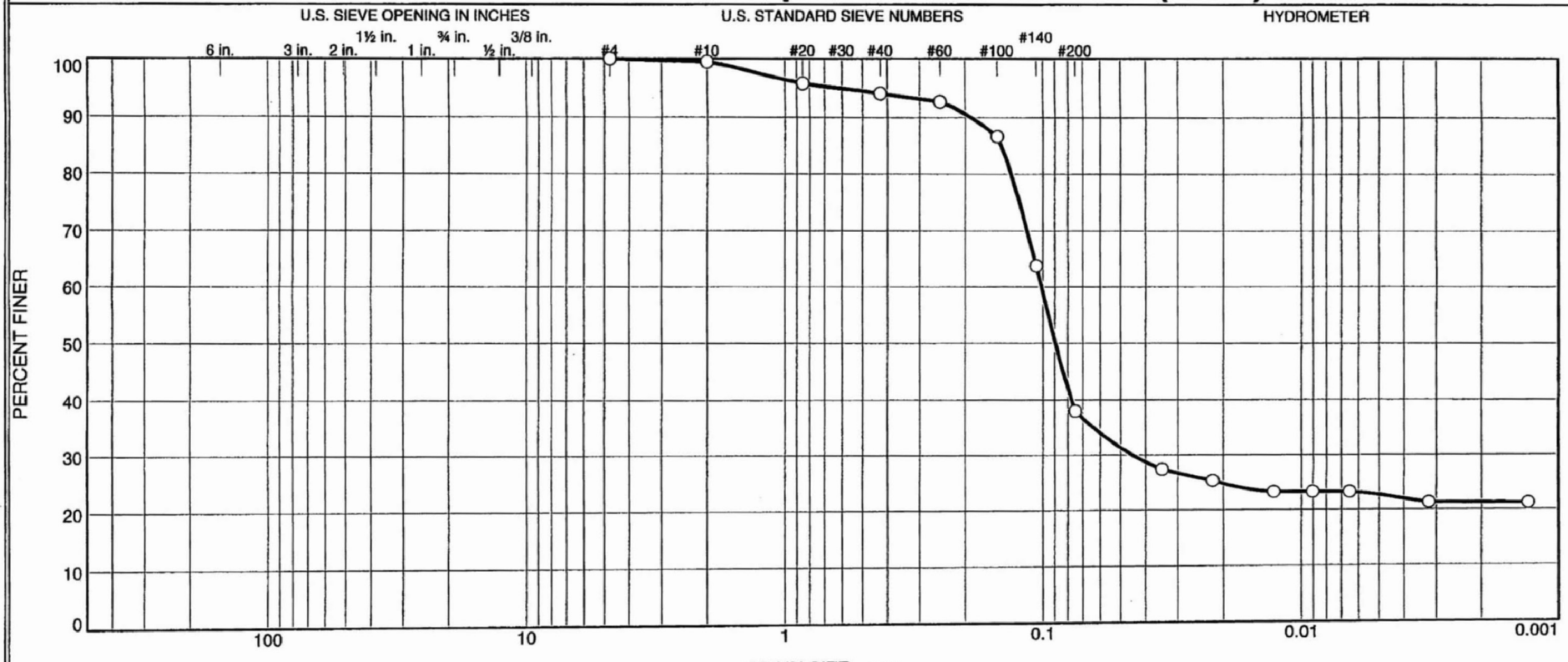
Run No.	1	2	3	4	
Wet+Tare	22.35	22.25			
Dry+Tare	21.39	21.32			
Tare	15.43	15.56			
Moisture	16.1	16.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
187.81	158.85	6.75	19.0

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	0.5	5.4	56.1	15.3	22.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2170R	SS-19	78.5-80.0	1-4-08	SC-SM	Light Gray Silty, Clayey SAND	20.7	28	21

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O Specific Gravity = 2.662(ASTM D854-06).

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-2170R
Depth: 78.5-80.0 **Sample Number:** SS-19
Material Description: Light Gray Silty, Clayey SAND
Date: 1-4-08 **Natural Moisture:** 20.7
Liquid Limit: 28 **Plastic Limit:** 21 **USCS Class.:** SC-SM
Testing Remarks: Specific Gravity = 2.662(ASTM D854-06).
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
271.06	0.00	0.00	#4	0.00	100.0
			#10	1.36	99.5
48.75	0.00	0.00	#20	1.81	95.8
			#40	2.66	94.1
			#60	3.33	92.7
			#100	6.27	86.7
			#140	17.52	63.7
			#200	30.13	38.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.5
Weight of hydrometer sample =48.75
Hygroscopic moisture correction:
Moist weight and tare = 27.51
Dry weight and tare = 27.28
Tare weight = 15.55
Hygroscopic moisture = 2.0%
Table of composite correction values:

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

Meniscus correction only = 1.0
Specific gravity of solids = 2.662
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.8	18.0	13.2	0.0135	19.0	13.2	0.0346	27.4
5.00	20.8	17.0	12.2	0.0135	18.0	13.3	0.0220	25.3
15.00	20.8	16.0	11.2	0.0135	17.0	13.5	0.0128	23.3
30.00	20.8	16.0	11.2	0.0135	17.0	13.5	0.0090	23.3
58.00	20.8	16.0	11.2	0.0135	17.0	13.5	0.0065	23.3
240.00	21.0	15.0	10.3	0.0134	16.0	13.7	0.0032	21.3
1440.00	20.8	15.0	10.2	0.0135	16.0	13.7	0.0013	21.2

MACTEC, Inc.

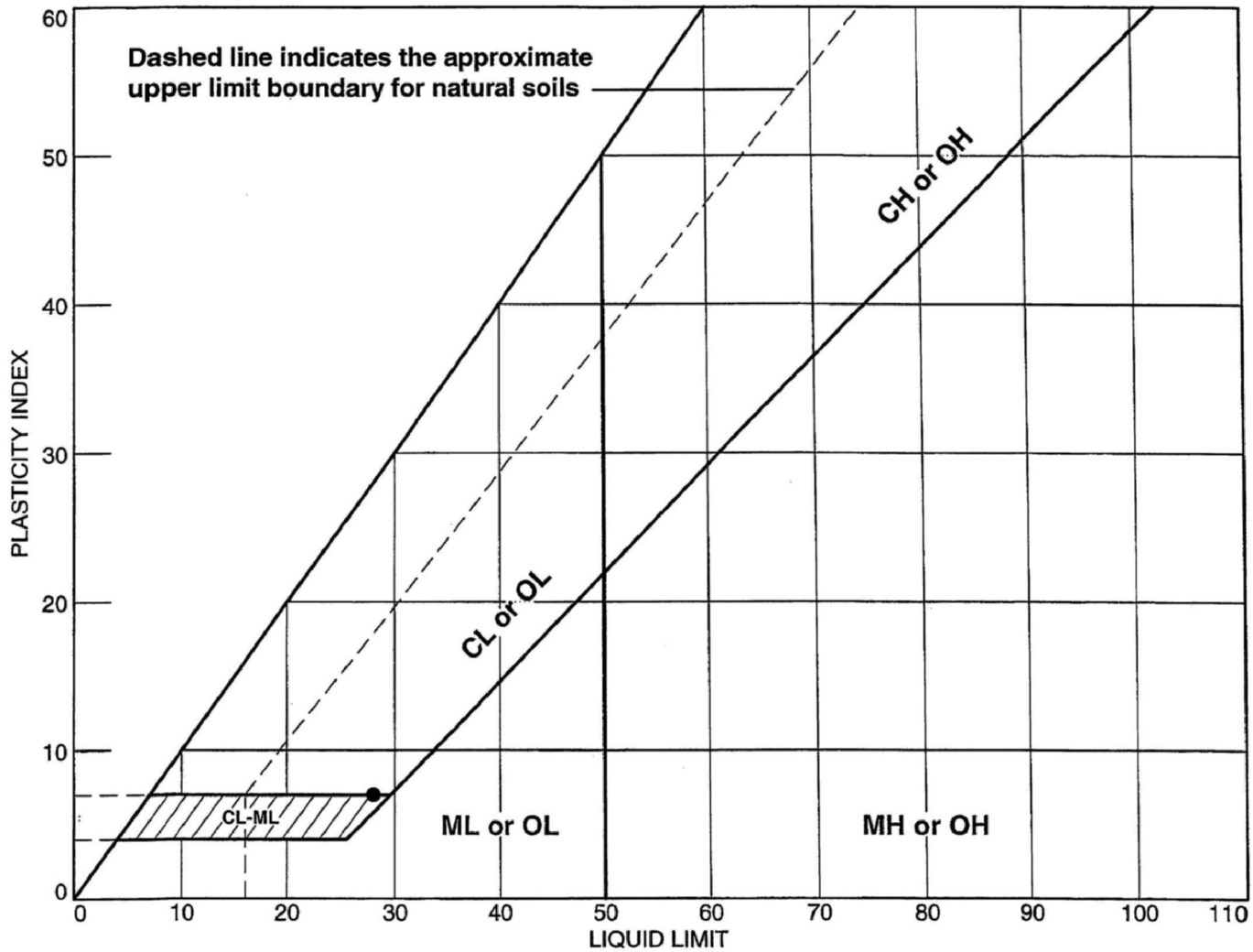
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.5	5.4	56.1	62.0	15.3	22.7	38.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0449	0.0894	0.1012	0.1322	0.1445	0.1892	0.6227

Fineness Modulus
0.28

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-2170R	SS-19	78.5-80.0	20.7	21	28	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 3-13-08

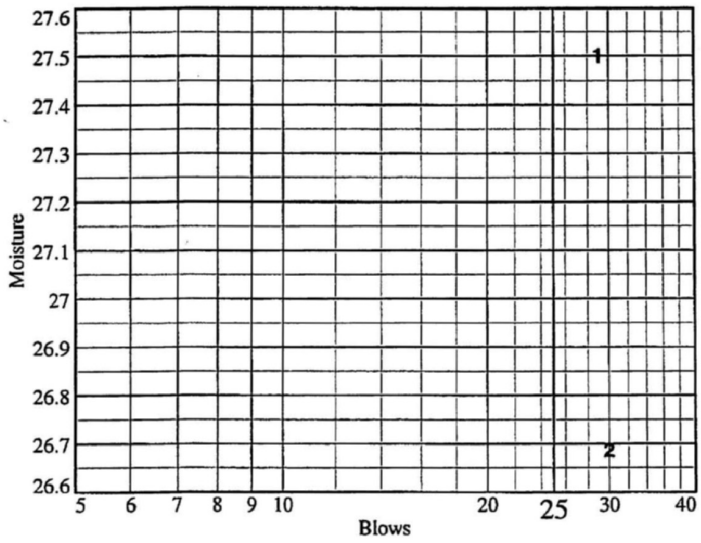
LIQUID AND PLASTIC LIMIT TEST DATA

3/12/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2170R
Depth: 78.5-80.0 **Sample Number:** SS-19
Material Description: Light Gray 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	30.70	35.75				
Dry+Tare	27.43	31.48				
Tare	15.54	15.48				
# Blows	29	30				
Moisture	27.5	26.7				



Liquid Limit= 28
Plastic Limit= 21
Plasticity Index= 7
Natural Moisture= 20.7
Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.79	23.40			
Dry+Tare	21.52	22.03			
Tare	15.46	15.51			
Moisture	21.0	21.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
178.85	149.34	6.64	20.7

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

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

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 3/12/08

SAMPLE IDENTIFICATION: B-2170R SS-19

(A) Mass of oven-dried soil, grams:		51.09
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.70
(C) Mass of pycnometer, water and soil, grams:		688.61
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		22.3
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.664
(F)	***Correction factor:***	0.99950
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.662

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

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

REMARKS: Estimated % Passing # 4 : 100%

Silty, Clayey SAND (SC-SM)

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-5

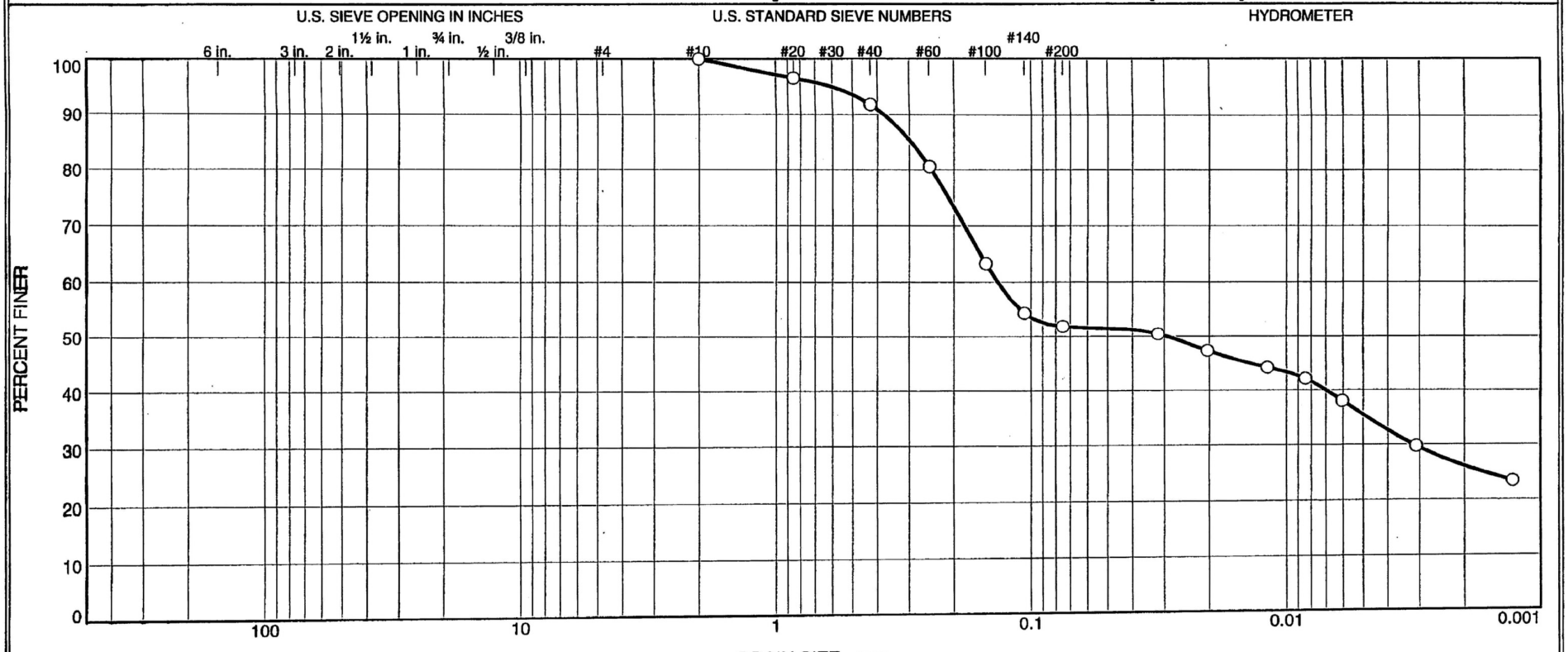
TESTED BY: CS

\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	8.2	39.9	16.4	35.5

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2170R	SS-20	83.5-85.0	1-4-08	CL	Very Pale Brown Sandy Lean CLAY	13.4	29	11

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

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

GRAIN SIZE DISTRIBUTION TEST DATA

1/26/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2170R
Depth: 83.5-85.0 **Sample Number:** SS-20
Material Description: Very Pale Brown Sandy Lean CLAY
Date: 1-4-08 **Natural Moisture:** 13.4
Liquid Limit: 29 **Plastic Limit:** 11 **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
331.64	0.00	0.00	#10	0.00	100.0
48.40	0.00	0.00	#20	1.68	96.5
			#40	3.97	91.8
			#60	9.42	80.5
			#100	17.77	63.3
			#140	22.10	54.3
			#200	23.29	51.9

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.40
Hygroscopic moisture correction:
Moist weight and tare = 23.68
Dry weight and tare = 23.43
Tare weight = 11.14
Hygroscopic moisture = 2.0%
Table of composite correction values:

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

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

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.8	29.0	24.2	0.0133	30.0	11.4	0.0317	50.5
5.00	20.8	27.5	22.7	0.0133	28.5	11.6	0.0203	47.3
15.00	20.8	26.0	21.2	0.0133	27.0	11.9	0.0118	44.2
30.00	20.8	25.0	20.2	0.0133	26.0	12.0	0.0084	42.1
60.00	20.9	23.0	18.2	0.0133	24.0	12.4	0.0060	38.0
240.00	21.0	19.0	14.3	0.0133	20.0	13.0	0.0031	29.7
1440.00	20.9	16.0	11.2	0.0133	17.0	13.5	0.0013	23.4

MACTEC, Inc.

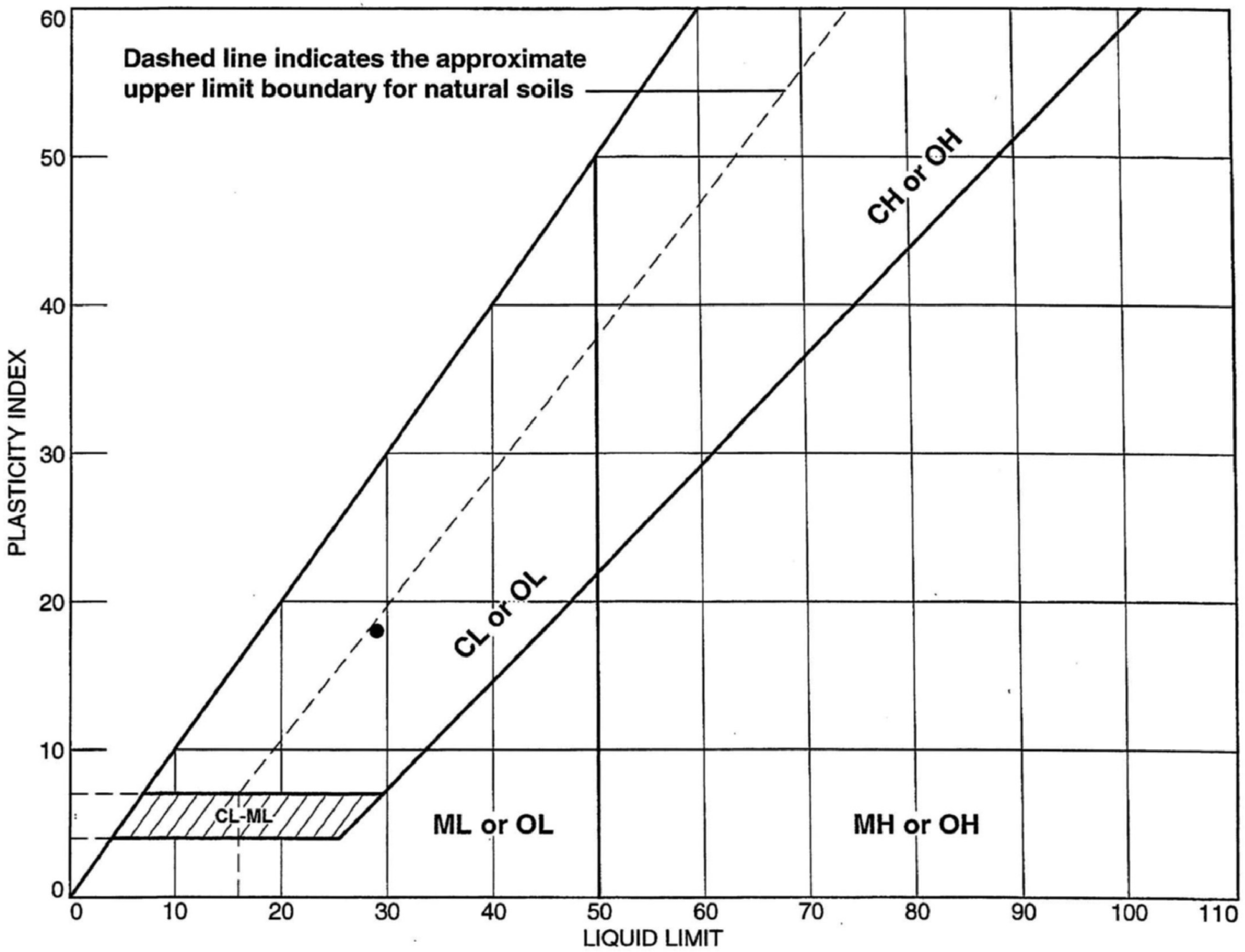
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	8.2	39.9	48.1	16.4	35.5	51.9

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0032	0.0292	0.1350	0.2456	0.2949	0.3767	0.6034

Fineness Modulus
0.59

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-2170R	SS-20	83.5-85.0	13.4	11	29	18	CL

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

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