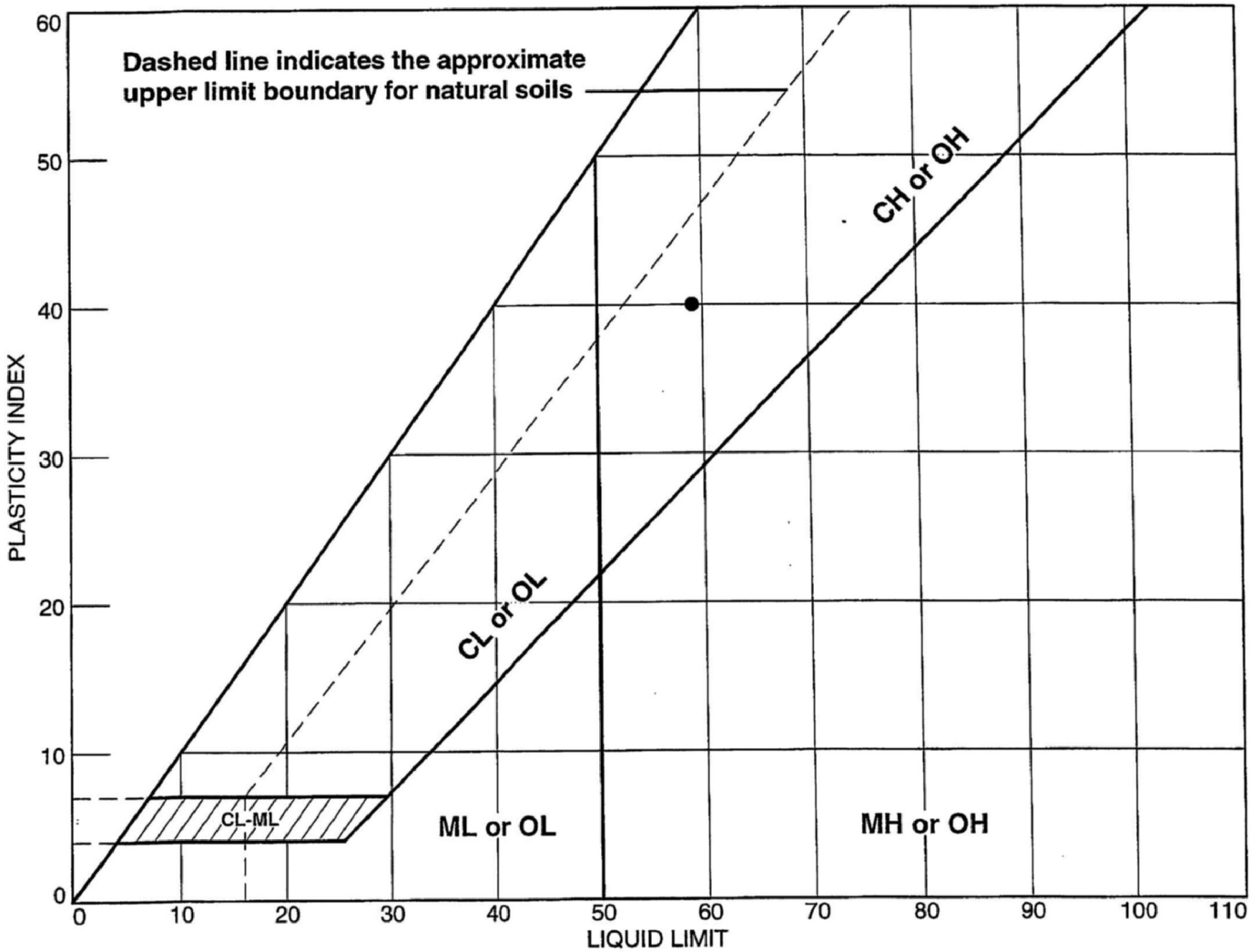
LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2174UDR	UD-30	570-572.5	19.6	19	59	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 ZHU 4-28-08

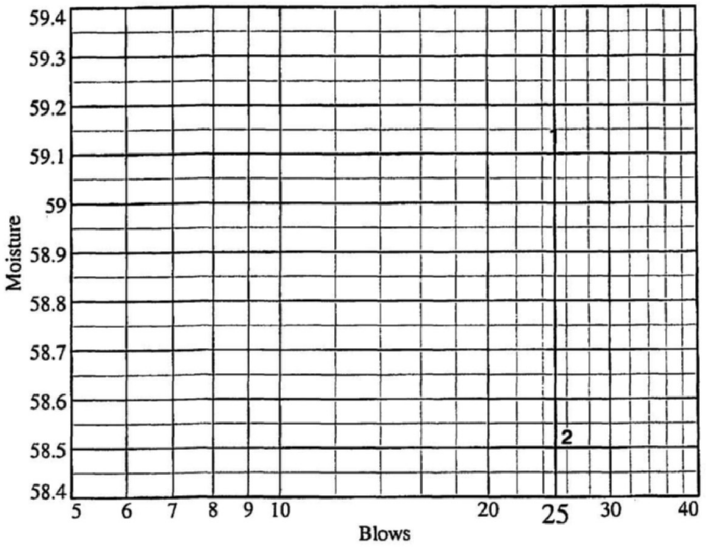
LIQUID AND PLASTIC LIMIT TEST DATA

4/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2174UDR
Depth: 570-572.5 **Sample Number:** UD-30
Material Description: Light Gray Sandy Fat CLAY
USCS: CH **AASHTO:** A-7-6(26)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.97	27.40				
Dry+Tare	25.21	23.04				
Tare	15.47	15.59				
# Blows	25	26				
Moisture	59.1	58.5				



Liquid Limit= 59
Plastic Limit= 19
Plasticity Index= 40
Natural Moisture= 19.6
Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	23.35	24.90		
Dry+Tare	22.10	23.45		
Tare	15.50	15.51		
Moisture	18.9	18.3		

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
134.98	114.37	9.16	19.6

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: 3/27/08

SAMPLE IDENTIFICATION: B-2174UDR, UD-30

(A) Mass of oven-dried soil, grams:	51.20
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.52
(C) Mass of pycnometer, water and soil, grams:	689.07
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.4
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.745
(F) ***Correction factor:***	0.99970
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.744

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

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

REMARKS: Estimated % Passing # 4 : 100

Sandy Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER :5.1.01

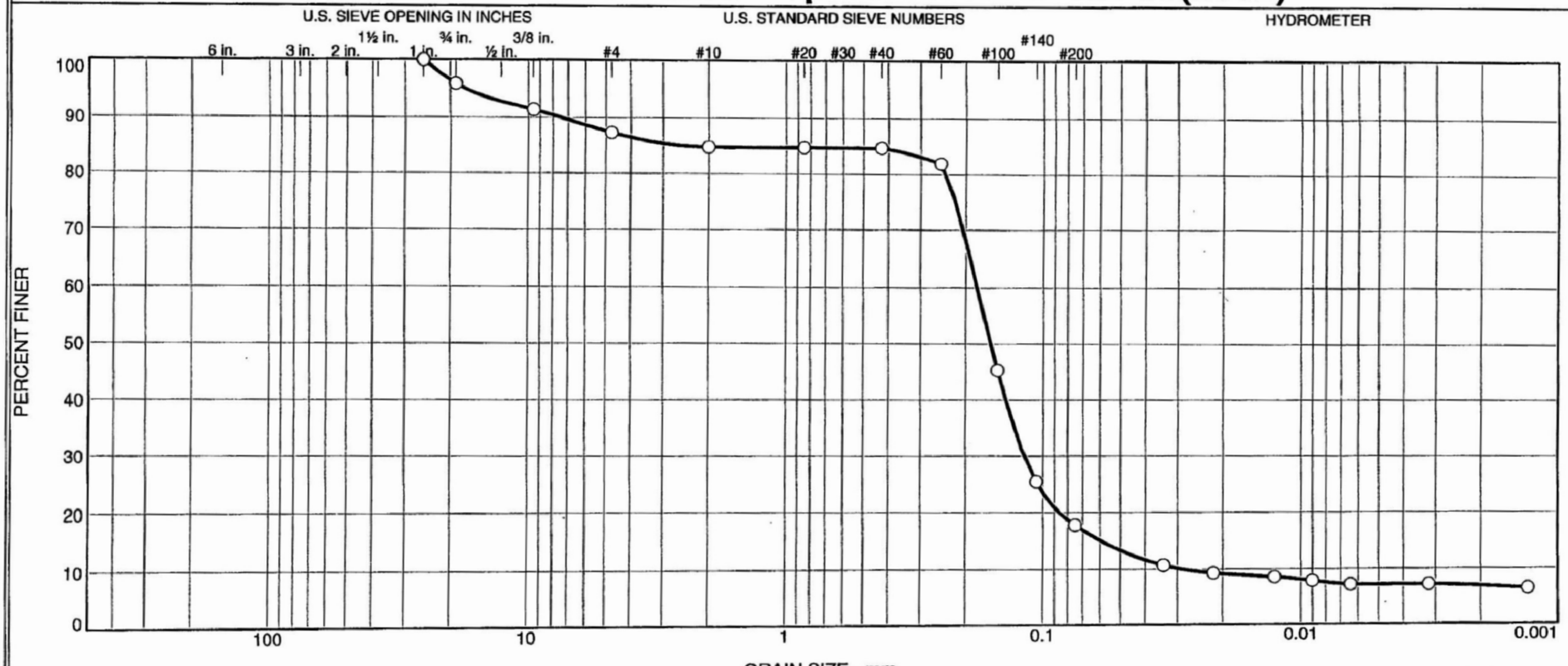
PYCNOMETER : P-6

TESTED BY: CS

REVIEWED BY: **Brian Johnson**

ZHU 4-28-08

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	4.1	8.5	2.6	0.1	66.9	10.6	7.2

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2174UDR	UD-31	590.5-593.0	1-31-08	SM	Pale Brown Silty SAND	14.2	17	15

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.653 (ASTM D854-06)

Tested By: CS **Checked By:** LBJ ZHU 4-28-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2174UDR
Depth: 590.5-593.0 **Sample Number:** UD-31
Material Description: Pale Brown Silty SAND
Date: 1-31-08 **Natural Moisture:** 14.2
Liquid Limit: 17 **Plastic Limit:** 15 **USCS Class.:** SM
Testing Remarks: Specific Gravity = 2.653 (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
284.69	0.00	0.00	1	0.00	100.0
			3/4	11.56	95.9
			3/8"	24.45	91.4
			#4	35.94	87.4
			#10	43.23	84.8
103.23	0.00	0.00	#20	0.02	84.8
			#40	0.08	84.7
			#60	3.47	82.0
			#100	48.12	45.3
			#140	72.30	25.4
			#200	81.58	17.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 84.8
Weight of hydrometer sample =121.73
Hygroscopic moisture correction:
Moist weight and tare = 29.52
Dry weight and tare = 29.42
Tare weight = 15.58
Hygroscopic moisture = 0.7%
Table of composite correction values:

Temp., deg. C:	11.2	28.4
Comp. corr.:	-8.0	-4.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.653
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	20.9	21.0	15.3	0.0135	22.0	12.7	0.0340	10.7
5.00	20.9	19.0	13.3	0.0135	20.0	13.0	0.0218	9.3
15.00	20.9	18.0	12.3	0.0135	19.0	13.2	0.0126	8.6
30.00	20.8	17.0	11.2	0.0135	18.0	13.3	0.0090	7.9
60.00	20.9	16.0	10.3	0.0135	17.0	13.5	0.0064	7.2
240.00	21.1	16.0	10.3	0.0134	17.0	13.5	0.0032	7.2
1440.00	21.1	15.0	9.3	0.0134	16.0	13.7	0.0013	6.5

MACTEC, Inc.

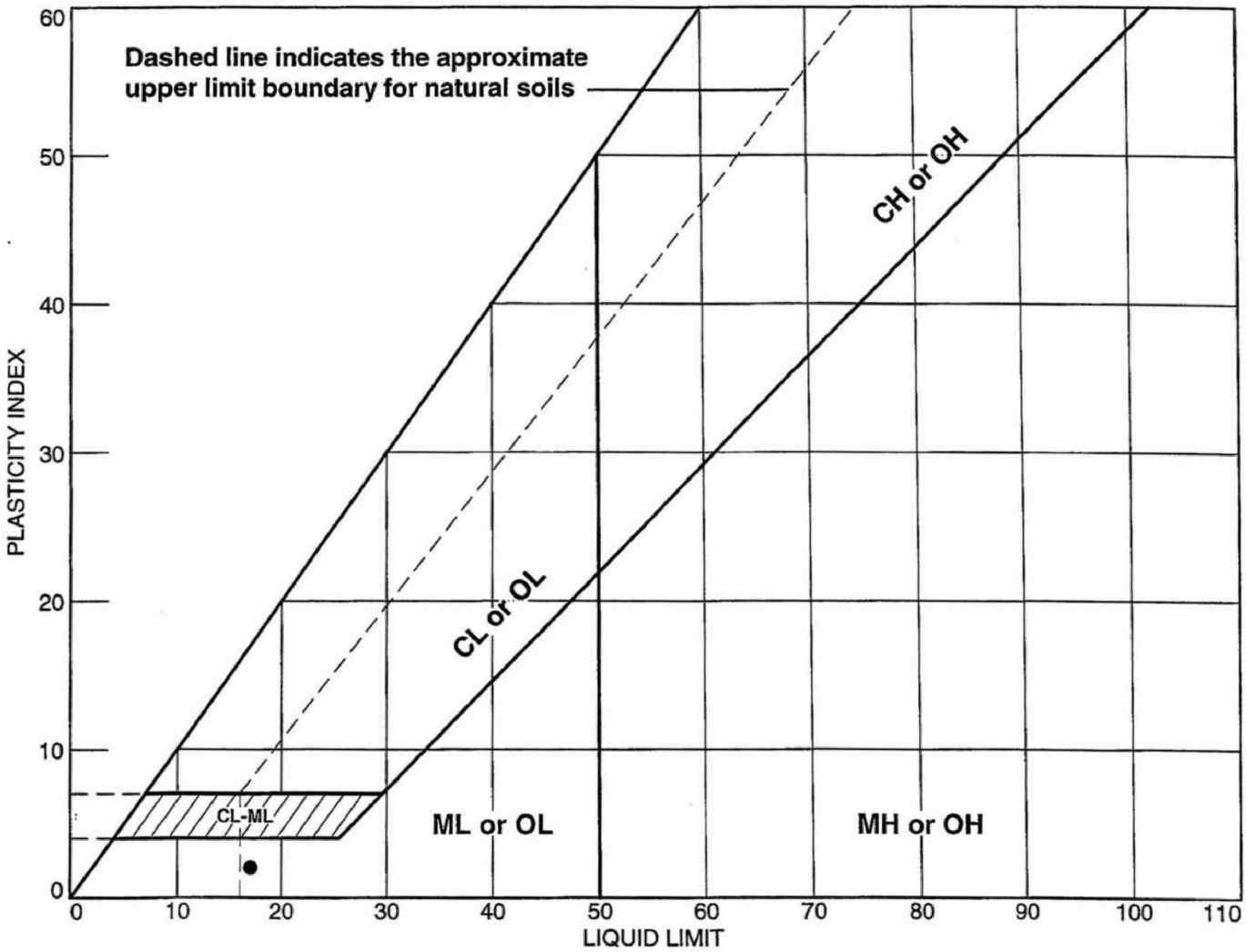
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	4.1	8.5	12.6	2.6	0.1	66.9	69.6	10.6	7.2	17.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0287	0.0595	0.0866	0.1177	0.1594	0.1802	0.2396	2.4191	7.3959	17.4384

Fineness Modulus	C_u	C_c
1.42	6.28	2.68

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-2174UDR	UD-31	590.5-593.0	14.2	15	17	2	SM

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

Tested By: CS **Checked By:** LBJ 4-28-08 ZHY

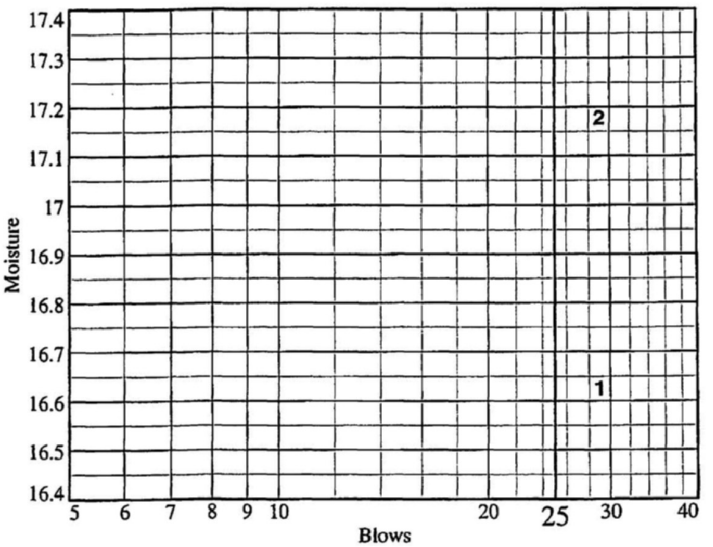
LIQUID AND PLASTIC LIMIT TEST DATA

4/24/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2174UDR
Depth: 590.5-593.0
Sample Number: UD-31
Material Description: Pale Brown Silty SAND
USCS: SM
AASHTO: A-2-4(0)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.10	31.04				
Dry+Tare	28.02	28.75				
Tare	15.51	15.42				
# Blows	29	29				
Moisture	16.6	17.2				



Liquid Limit= 17
Plastic Limit= 15
Plasticity Index= 2
Natural Moisture= 14.2
Liquidity Index= -0.4

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.31	21.17			
Dry+Tare	20.56	20.42			
Tare	15.42	15.52			
Moisture	14.6	15.3			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
173.35	152.60	6.87	14.2

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

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

PROJECT NAME:EXELON COL PROJECT (Victoria)

PROJECT NUMBER: 6468071777

DATE: 3/27/08

SAMPLE IDENTIFICATION: B-2174UDR, UDR-31, (593.0')

(A) Mass of oven-dried soil, grams:		74.05
~~(B) Mass of pycnometer filled with water at test temperature (T), grams:~~		~~655.74~~
(C) Mass of pycnometer, water and soil, grams:		701.89
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.4
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.654
(F)	***Correction factor:***	0.99970
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.653

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

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

REMARKS: % Passing # 4 : 87.4

Silty SAND (SM)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER :5.1.01

PYCNOMETER : P-3

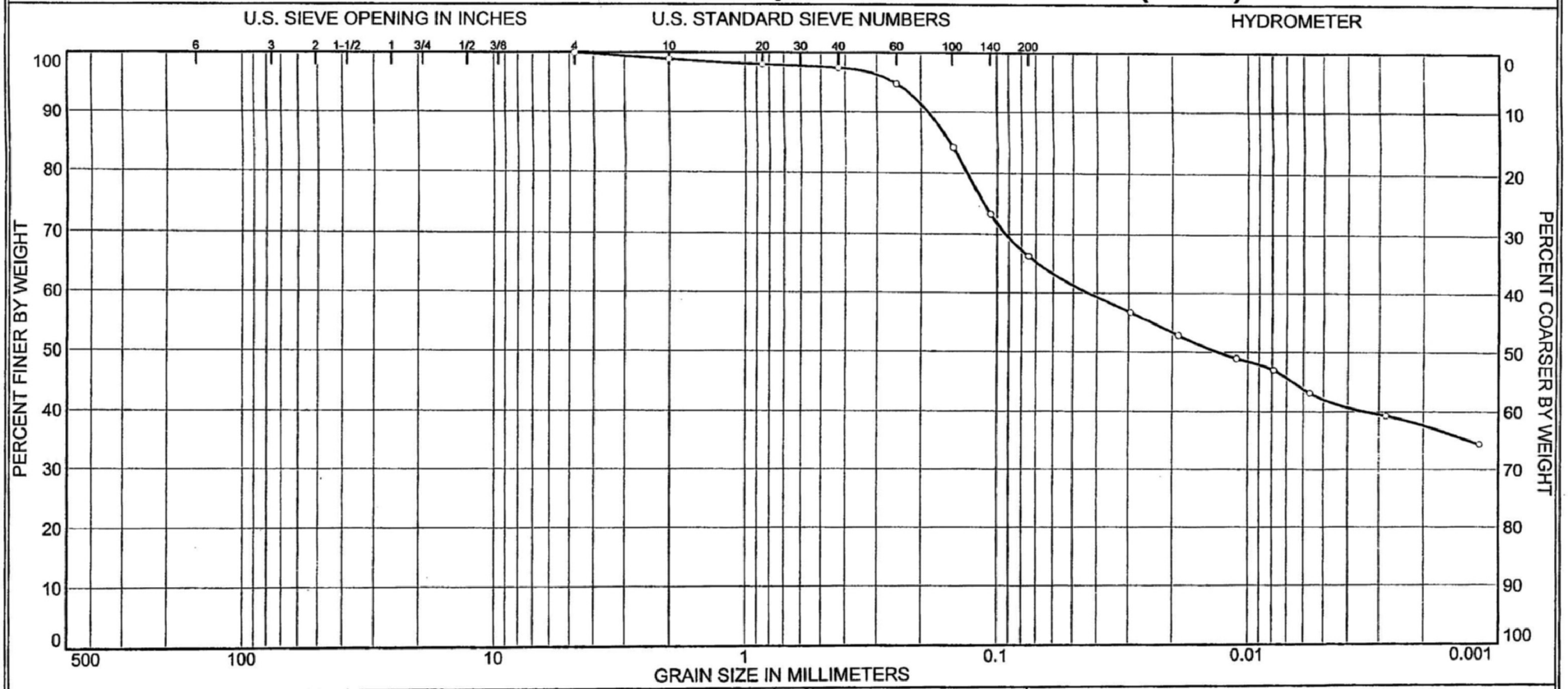
TESTED BY: CS

REVIEWED BY: **Brian Johnson**

DSC 4-30-08

Boring B-2182UD

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



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	1.1	1.5	31.1	24.2	42.1

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	2182UD	UD-1	10-11.7 Ft.	12/11/07	CL	Light Gray Sandy Lean CLAY	14.0	37	14

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8177

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: EH Reviewed by: HJ

HJ

NM value from first strength test performed.
Specific Gravity = 2.76 (ASTM D 854-06)

DSC
3-3-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2182UD
Sample No.: UD-1
Elev. or Depth: 10-11.7 Ft **Sample Length(in./cm.):** ID#8177
Location: B-2182UD
Description: Light Gray Sandy Lean CLAY
Date: 12/11/07 **PL:** 14 **LL:** 37 **PI:** 23
USCS Classification: CL **AASHTO Classification:**
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.76 (ASTM D 854-06)

Mechanical Analysis Data

	Initial
Dry sample and tare=	66.96
Tare =	16.59
Dry sample weight =	50.37

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.54	98.9
# 20	0.99	98.0
# 40	1.32	97.4
# 60	2.60	94.8
# 100	7.95	84.2
# 140	13.44	73.3
# 200	16.95	66.3

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 66.3
Weight of hydrometer sample: 33.42
Calculated biased weight= 50.41
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.761
Specific gravity correction factor= 0.976
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

DSC 4-30-08

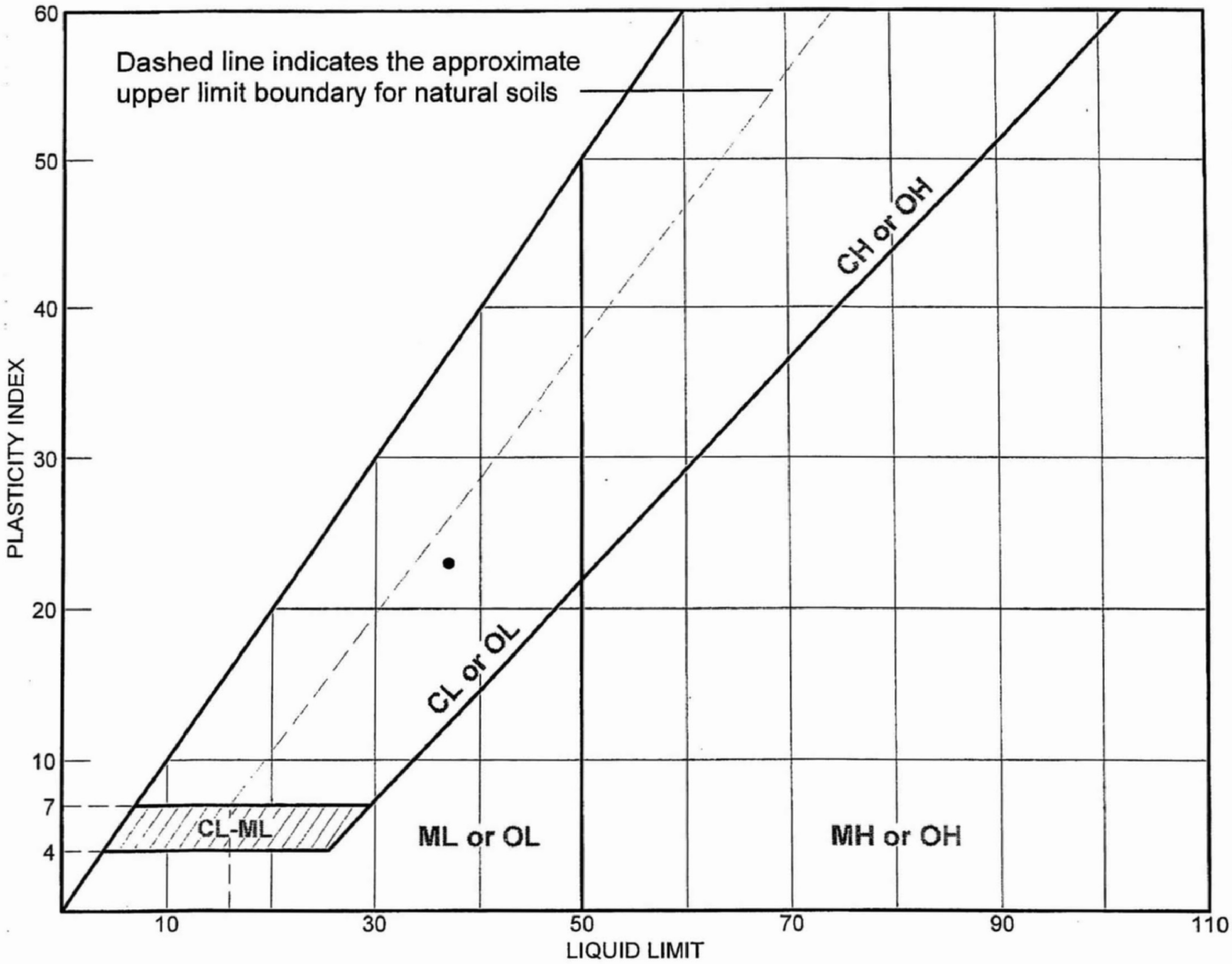
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	23.1	34.0	29.3	0.0127	34.0	10.7	0.0294	56.7
5.00	23.1	32.0	27.3	0.0127	32.0	11.0	0.0189	52.8
15.00	23.1	30.0	25.3	0.0127	30.0	11.4	0.0111	49.0
30.00	23.1	29.0	24.3	0.0127	29.0	11.5	0.0079	47.0
60.00	23.1	27.0	22.3	0.0127	27.0	11.9	0.0057	43.2
250.00	23.1	25.0	20.3	0.0127	25.0	12.2	0.0028	39.3
1440.00	23.1	22.5	17.8	0.0127	22.5	12.6	0.0012	34.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =**
% SAND = 33.7 (**% coarse** = 1.1 **% medium** = 1.5 **% fine** = 31.1)
% SILT = 24.2 **% CLAY** = 42.1

D_{85}= 0.15 D_{60}= 0.04 D_{50}= 0.01

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	2182UD	UD-1	10-11.7 Ft.	14.0	14	37	23	CL

MACTEC ENGINEERING AND CONSULTING, INC.	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria) **Project No.:** 6468-07-1777 **Lab No.** 8177

DSC 3-3-08

LIQUID AND PLASTIC LIMIT TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2182UD
Sample No.: UD-1
Elev. or Depth: 10-11.7 Ft **Sample Length(in./cm.):** ID#8177
Location: B-2182UD
Description: Light Gray Sandy Lean CLAY
Water Content: 14.0 **USCS:** CL **AASHTO:**

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.91	28.56				
Dry+Tare	29.06	26.24				
Tare	21.31	19.94				
# Blows	29	29				
Moisture	36.8	36.8				

Liquid Limit= 37
Plastic Limit= 14
Plasticity Index= 23

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.56	26.93			
Dry+Tare	26.72	26.14			
Tare	20.74	20.5			
Moisture	14.0	14.0			

MACTEC ENGINEERING AND CONSULTING, 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: 2/8/08

SAMPLE IDENTIFICATION: B-2182UD,UD-1 @ 10-11.7 Ft.

(A) Mass of oven-dried soil, grams:		37.74
(B) Mass of pycnometer filled with water at test temperature (T), grams:		341.25
(C) Mass of pycnometer, water and soil, grams:		365.33
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.0
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.763
(F)	***Correction factor:***	0.99933
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.761

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

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

REMARKS: Estimated % Passing # 4 : 100 %
Sandy Lean CLAY (CL)

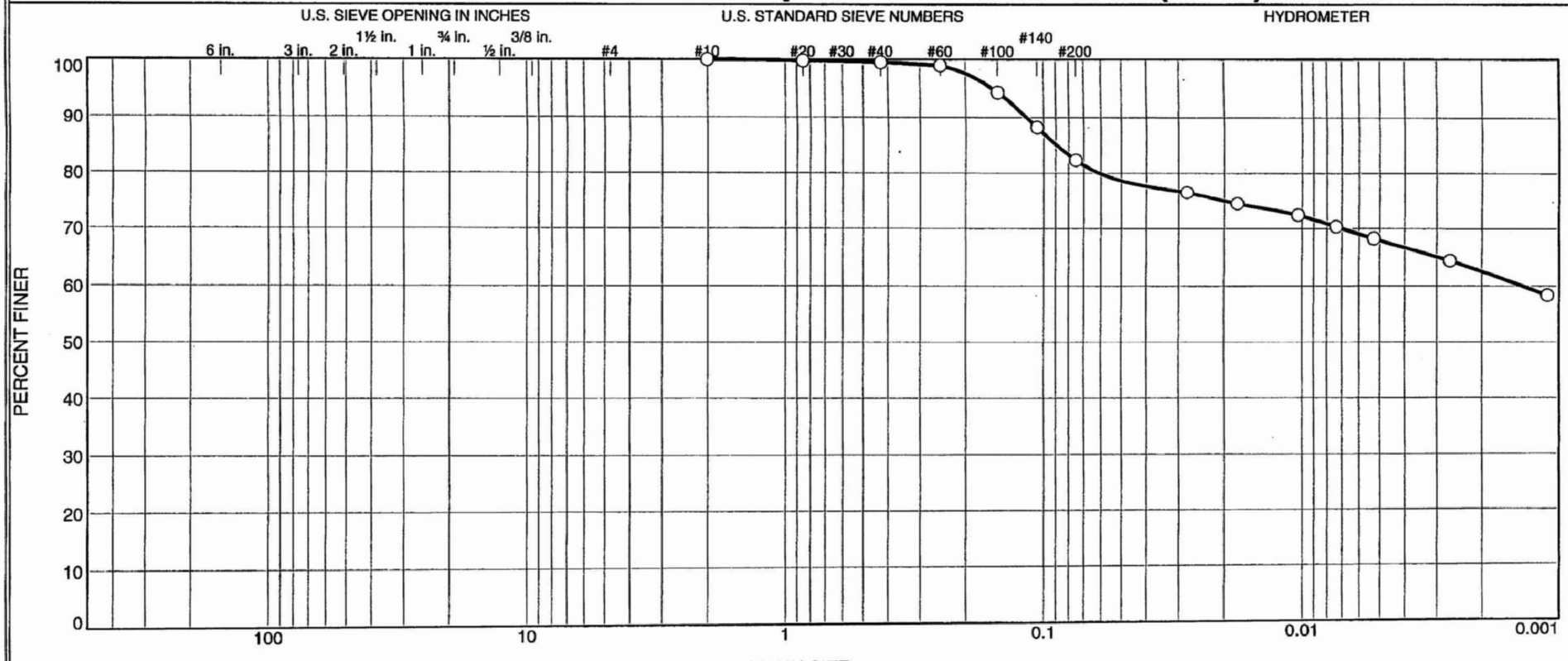
EQUIPMENT USED
SCALES : 418
OVEN : 144
THERMOMETER :2759
PYCNOMETER : 2197

TESTED BY: EH
\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson

DSC
3-3-08

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



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.5	17.1	14.4	68.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2182UD	UD-3	16.0	12-11-07	CH	Light Gray with Brownish Yellow Fat CLAY with sand	19.3	58	18

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468071777 Figure N4

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.695 (ASTM D854-06)

Tested By: CS **Checked By:** LBJ DSC 4-30-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/10/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2182UD
Depth: 16.0 **Sample Number:** UD-3
Material Description: Light Gray with Brownish Yellow Fat CLAY with sand
Date: 12-11-07 **Natural Moisture:** 19.3
Liquid Limit: 58 **Plastic Limit:** 18 **USCS Class.:** CH
Testing Remarks: Specific Gravity = 2.695 (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
192.31	0.00	0.00	#10	0.00	100.0
50.52	0.00	0.00	#20	0.11	99.8
			#40	0.26	99.5
			#60	0.53	99.0
			#100	2.89	94.3
			#140	5.91	88.3
			#200	8.91	82.4

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.52
Hygroscopic moisture correction:
Moist weight and tare = 28.51
Dry weight and tare = 28.05
Tare weight = 15.48
Hygroscopic moisture = 3.7%
Table of composite correction values:

Temp., deg. C:	12.9	29.9
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.695
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	23.2	42.0	37.6	0.0129	43.0	9.2	0.0278	76.4
5.00	23.2	41.0	36.6	0.0129	42.0	9.4	0.0178	74.4
15.00	23.2	40.0	35.6	0.0129	41.0	9.6	0.0103	72.4
30.00	23.2	39.0	34.6	0.0129	40.0	9.7	0.0074	70.4
60.00	23.2	38.0	33.6	0.0129	39.0	9.9	0.0053	68.3
240.00	23.5	36.0	31.7	0.0129	37.0	10.2	0.0027	64.5
1441.00	23.5	33.0	28.7	0.0129	34.0	10.7	0.0011	58.4

MACTEC, Inc.

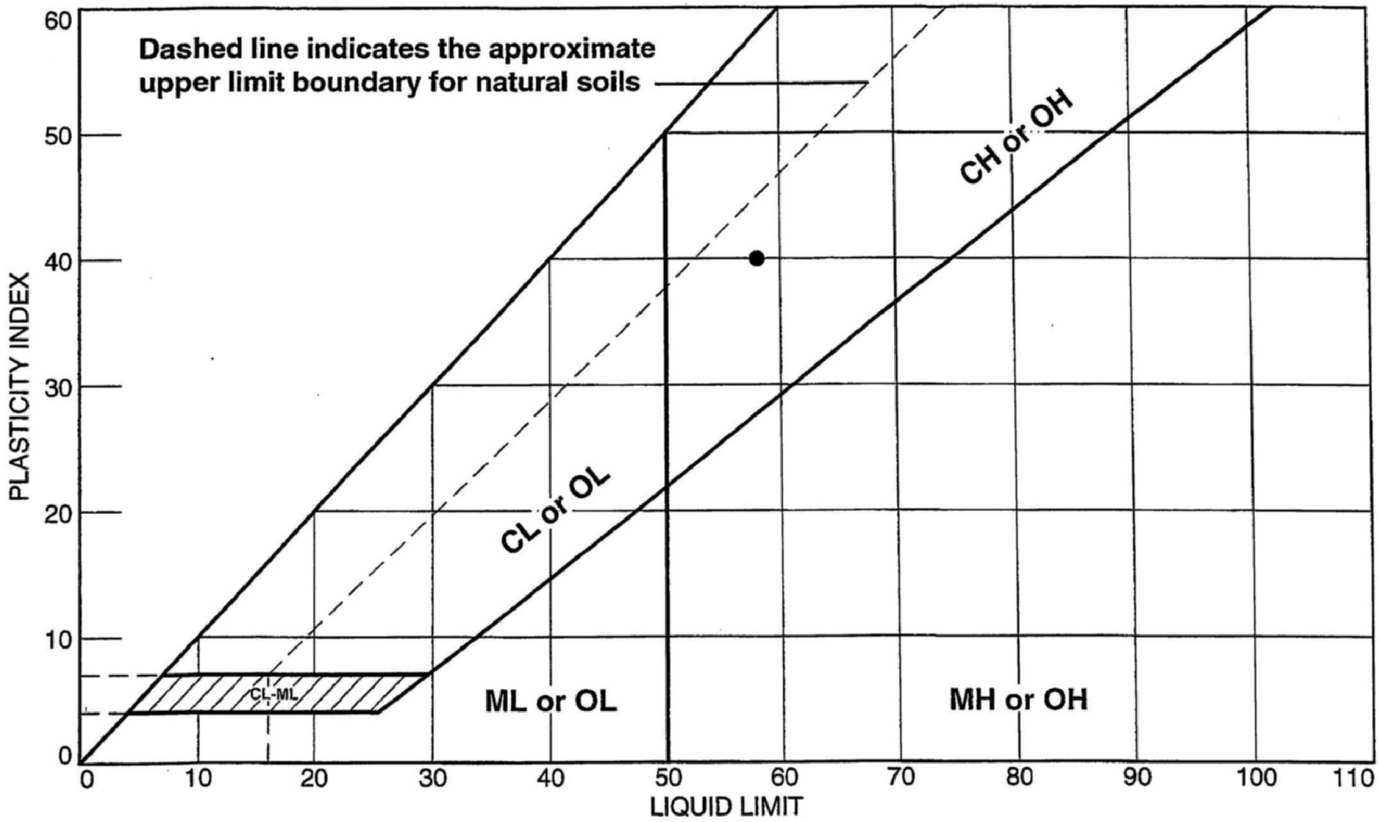
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	17.1	17.6	14.4	68.0	82.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0014	0.0609	0.0885	0.1162	0.1579

Fineness Modulus
0.07

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2182UD	UD-3	16.0	19.3	18	58	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 DSC 4-30-08

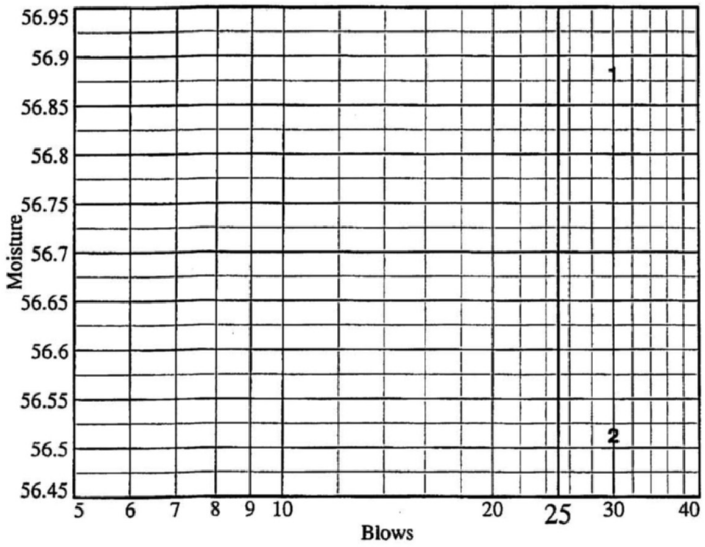
LIQUID AND PLASTIC LIMIT TEST DATA

4/10/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468071777
Location: Boring B-2182UD
Depth: 16.0 **Sample Number:** UD-3
Material Description: Light Gray with Brownish Yellow Fat CLAY with sand
USCS: CH **AASHTO:** A-7-6(34)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.10	31.04				
Dry+Tare	24.81	25.40				
Tare	15.51	15.42				
# Blows	30	30				
Moisture	56.9	56.5				



Liquid Limit= 58
Plastic Limit= 18
Plasticity Index= 40
Natural Moisture= 19.3
Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.31	21.17			
Dry+Tare	20.42	20.31			
Tare	15.42	15.51			
Moisture	17.8	17.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
202.11	170.95	9.20	19.3

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: 3/15/08

SAMPLE IDENTIFICATION: B-2182UD, UD-3

(A) Mass of oven-dried soil, grams:		49.86
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.50
(C) Mass of pycnometer, water and soil, grams:		686.87
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.1
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.697
(F)	***Correction factor:***	0.99931
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.695

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

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

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY with sand (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN 5.1.16:

THERMOMETER :5.1.01

PYCNOMETER :P-3

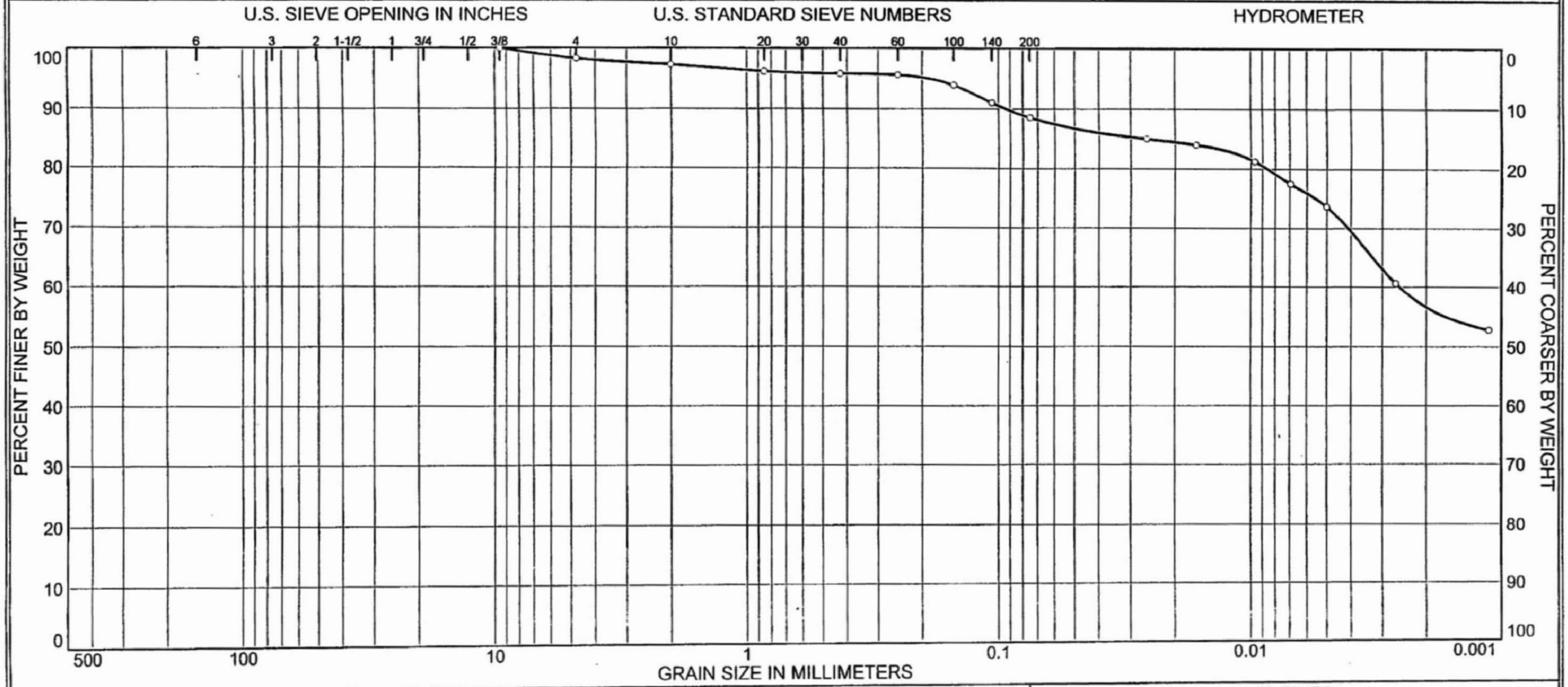
TESTED BY: CS

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

REVIEWED BY: **Brian Johnson**

DSC 3-15-08

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



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	1.7	1.0	1.5	7.2	14.9	73.7

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	2182UD	UD-5	33-34.7 Ft.	12/11/07	CH	Brownish Yellow Mottled Light Gray Fat CLAY	29.6	68	26

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8179

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: EH Reviewed by: HJ HJ

NM value from first strength test performed.
Specific Gravity = 2.77 (ASTM D 854-06) DSC 3-3-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2182UD
Sample No.: UD-5
Elev. or Depth: 33-34.7 Ft **Sample Length(in./cm.):** ID#8179
Location: B-2182UD
Description: Brownish Yellow Mottled Light Gray Fat CLAY
Date: 12/11/07 **PL:** 26 **LL:** 68 **PI:** 42
USCS Classification: CH **AASHTO Classification:**
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.77 (ASTM D 854-06)

Mechanical Analysis Data

	Initial
Dry sample and tare=	66.89
Tare =	15.40
Dry sample weight =	51.49

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.89	98.3
# 10	1.38	97.3
# 20	1.95	96.2
# 40	2.14	95.8
# 60	2.25	95.6
# 100	3.14	93.9
# 140	4.65	91.0
# 200	5.85	88.6

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 88.6
Weight of hydrometer sample: 45.64
Calculated biased weight= 51.51
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.769
Specific gravity correction factor= 0.975
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

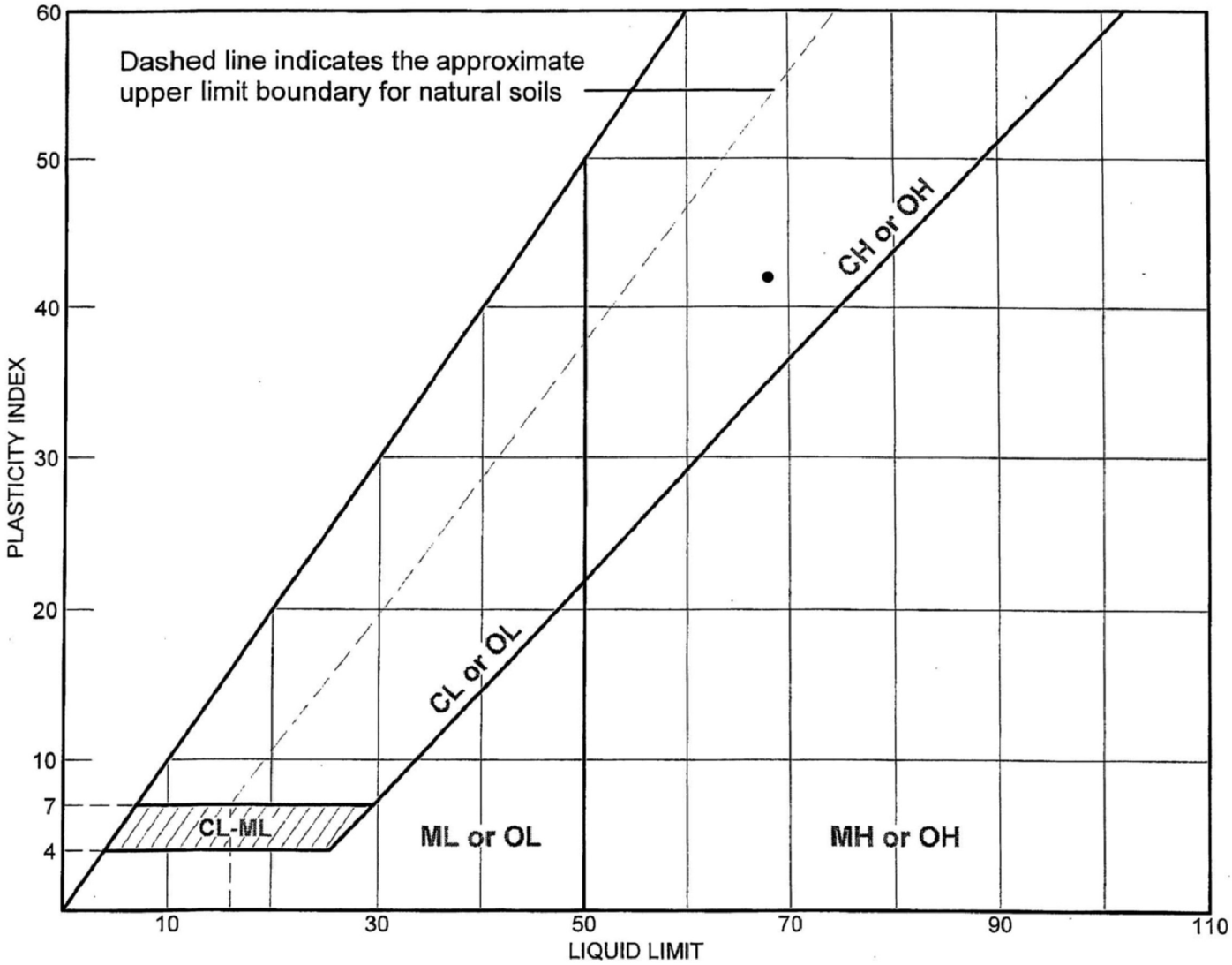
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	21.9	50.0	45.0	0.0129	50.0	8.1	0.0259	85.1
5.00	21.9	49.5	44.5	0.0129	49.5	8.2	0.0165	84.2
15.00	21.9	48.0	43.0	0.0129	48.0	8.4	0.0096	81.4
30.00	21.9	46.0	41.0	0.0129	46.0	8.8	0.0070	77.6
60.00	21.9	44.0	39.0	0.0129	44.0	9.1	0.0050	73.8
240.00	22.2	37.0	32.1	0.0128	37.0	10.2	0.0026	60.7
1440.00	21.7	33.0	27.9	0.0129	33.0	10.9	0.0011	52.9

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 1.7 (**% coarse =** **% fine** = 1.7)
% SAND = 9.7 (**% coarse** = 1.0 **% medium** = 1.5 **% fine** = 7.2)
% SILT = 14.8 **% CLAY** = 73.8

D_{85}= 0.02 D_{60}= 0.00

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	2182UD	UD-5	33-34.7 Ft.	29.6	26	68	42	CH

MACTEC ENGINEERING AND CONSULTING, INC.	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria) **Project No.:** 6468-07-1777 **Lab No.** 8179

DSC 3-08

LIQUID AND PLASTIC LIMIT TEST DATA

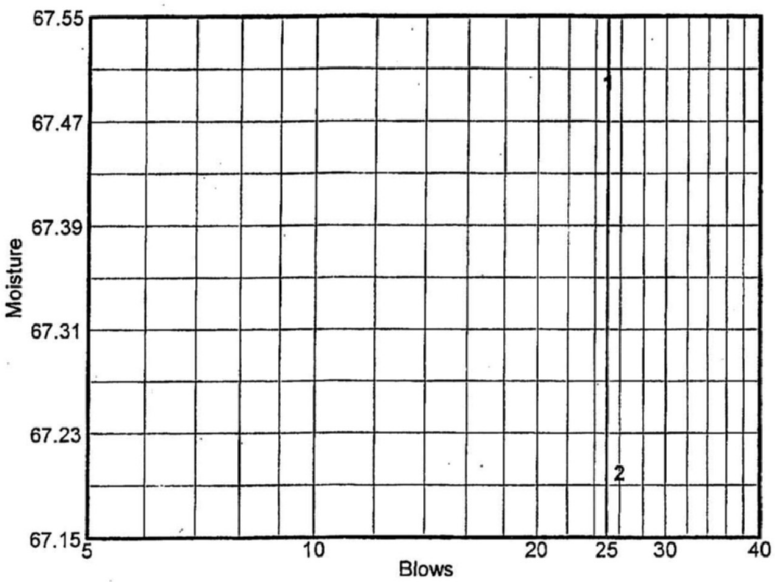
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2182UD
Sample No.: UD-5
Elev. or Depth: 33-34.7 Ft **Sample Length(in./cm.):** ID#8179
Location: B-2182UD
Description: Brownish Yellow Mottled Light Gray Fat CLAY
Water Content: 29.6 **USCS:** CH **AASHTO:**

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.46	28.77				
Dry+Tare	26.28	25.02				
Tare	20.09	19.44				
# Blows	25	26				
Moisture	67.5	67.2				



Liquid Limit= 68
Plastic Limit= 26
Plasticity Index= 42

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	25.46	25.76			
Dry+Tare	24.18	24.47			
Tare	19.3	19.41			
Moisture	26.2	25.5			

MACTEC ENGINEERING AND CONSULTING, 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: 2/8/08

SAMPLE IDENTIFICATION: B-2182UD,UD-5 @ 33-34.7 Ft.

(A) Mass of oven-dried soil, grams:		34.08
(B) Mass of pycnometer filled with water at test temperature (T), grams:		366.25
(C) Mass of pycnometer, water and soil, grams:		388.03
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.0
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.771
(F)	***Correction factor:***	0.99933
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.769

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

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

REMARKS: Estimated % Passing # 4 : 98 %

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER :2759

PYCNOMETER : 2057

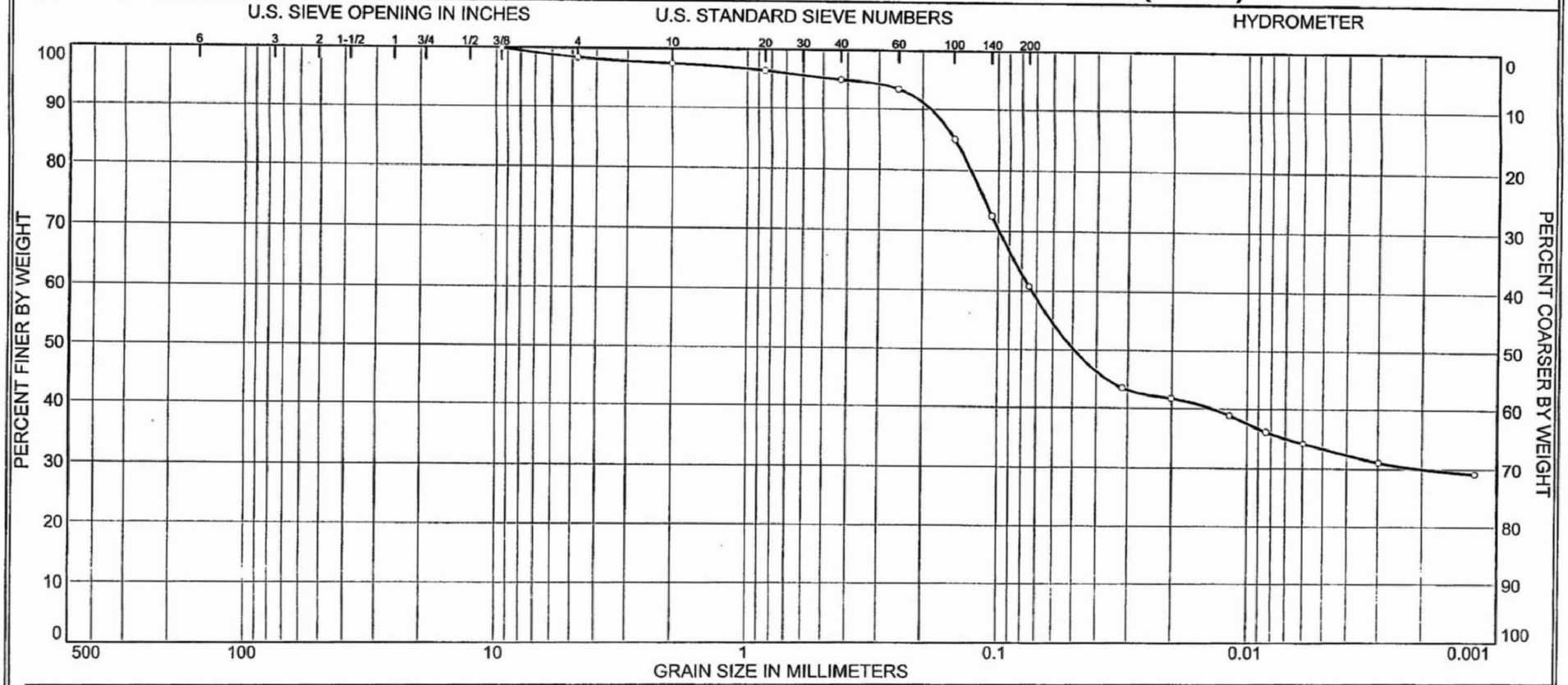
TESTED BY: EH

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

REVIEWED BY: Harry Johnson HJ

DSC
3-3-08

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



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	1.6	0.9	2.5	34.2	27.4	33.4

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	2182UD	UD-6	37-38.5 Ft.	12/11/07	CL	Light Gray Sandy Lean CLAY	16.1	33	16

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8180

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: EH Reviewed by: HJ HJ

NM value from first strength test performed.
Specific Gravity = 2.75 (ASTM D 854-06)

DSC 3-3-08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2182UD
Sample No.: UD-6
Elev. or Depth: 37-38.5 Ft **Sample Length(in./cm.):** ID#8180
Location: B-2182UD
Description: Light Gray Sandy Lean CLAY
Date: 12/11/07 **PL:** 16 **LL:** 33 **PI:** 17
USCS Classification: CL **AASHTO Classification:**
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.75 (ASTM D 854-06)

Mechanical Analysis Data

	Initial
Dry sample and tare=	69.00
Tare =	15.97
Dry sample weight =	53.03

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.86	98.4
# 10	1.32	97.5
# 20	1.91	96.4
# 40	2.65	95.0
# 60	3.52	93.4
# 100	7.90	85.1
# 140	14.57	72.5
# 200	20.80	60.8

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 60.8
Weight of hydrometer sample: 32.35
Calculated biased weight= 53.21
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.752
Specific gravity correction factor= 0.978
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

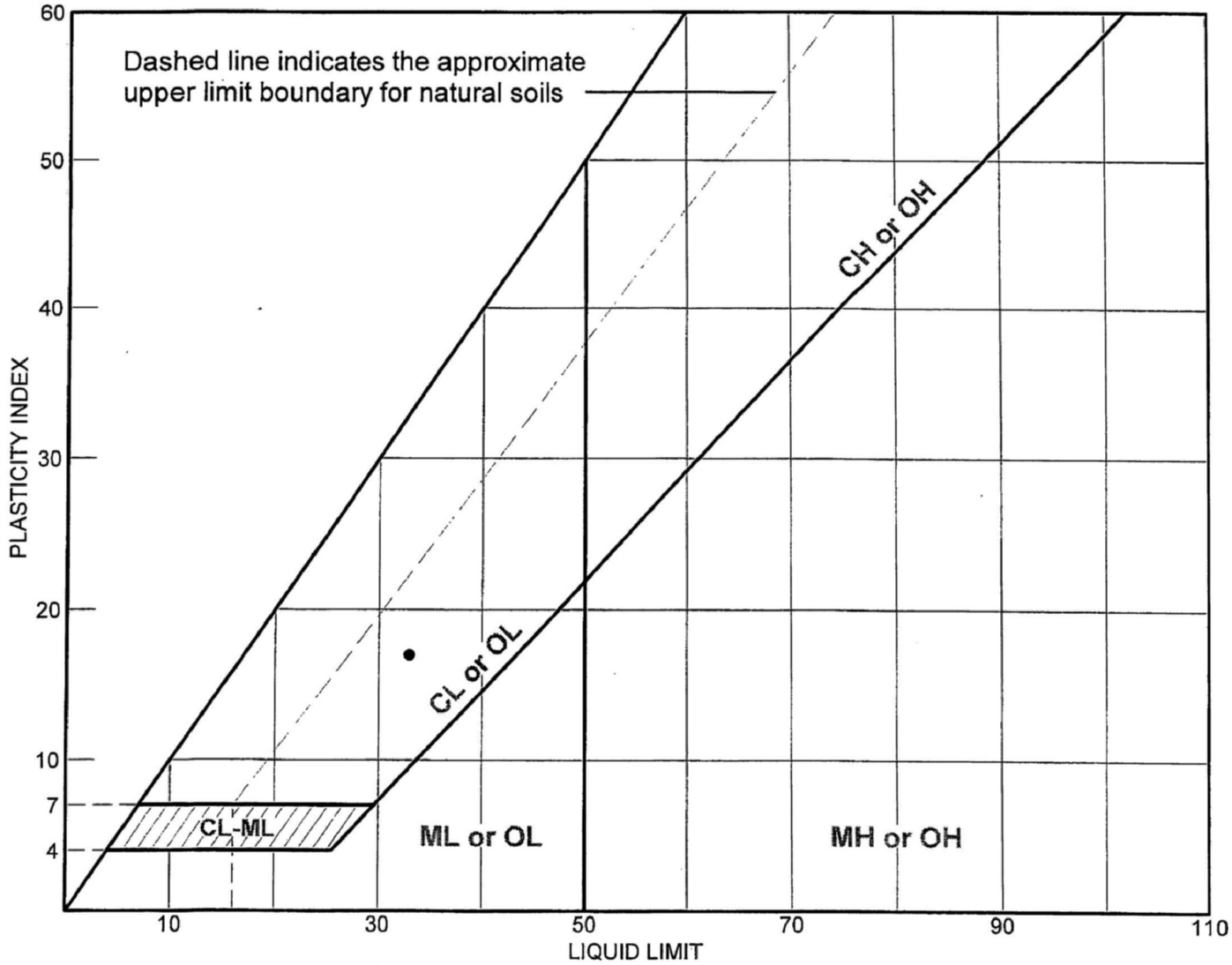
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	20.6	29.0	23.7	0.0131	29.0	11.5	0.0316	43.5
5.00	20.6	28.0	22.7	0.0131	28.0	11.7	0.0201	41.7
15.00	20.6	26.5	21.2	0.0131	26.5	11.9	0.0117	38.9
30.00	20.6	25.0	19.7	0.0131	25.0	12.2	0.0084	36.2
60.00	20.6	24.0	18.7	0.0131	24.0	12.4	0.0060	34.3
240.00	21.7	22.0	16.9	0.0130	22.0	12.7	0.0030	31.1
1440.00	21.4	21.0	15.9	0.0130	21.0	12.9	0.0012	29.2

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL** = 1.6 (**% coarse =** **% fine** = 1.6)
% SAND = 37.6 (**% coarse** = 0.9 **% medium** = 2.5 **% fine** = 34.2)
% SILT = 27.4 **% CLAY** = 33.4

D_{85}= 0.15 D_{60}= 0.07 D_{50}= 0.05
D_{30}= 0.00

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	2182UD	UD-6	37-38.5 Ft.	16.1	16	33	17	CL

MACTEC ENGINEERING AND CONSULTING, INC.	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria) **Project No.:** 6468-07-1777 **Lab No.** 8180

DSC 3-3-08

LIQUID AND PLASTIC LIMIT TEST DATA

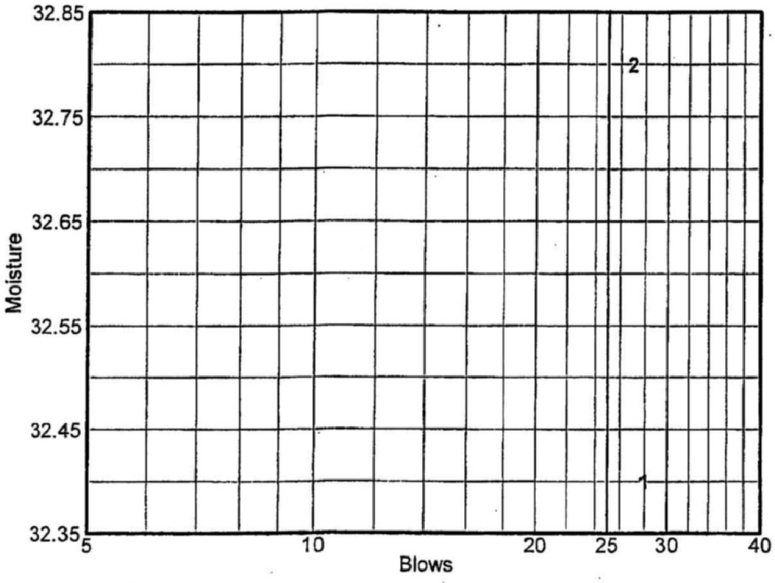
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2182UD
Sample No.: UD-6
Elev. or Depth: 37-38.5 Ft **Sample Length(in./cm.):** ID#8180
Location: B-2182UD
Description: Light Gray Sandy Lean CLAY
Water Content: 16.1 **USCS:** CL **AASHTO:**

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	21.4	19.92				
Dry+Tare	19.19	18				
Tare	12.37	12.15				
# Blows	28	27				
Moisture	32.4	32.8				



Liquid Limit= 33
Plastic Limit= 16
Plasticity Index= 17

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	19.46	20.12			
Dry+Tare	18.47	19.06			
Tare	12.21	12.33			
Moisture	15.8	15.8			

MACTEC ENGINEERING AND CONSULTING, 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: 2/8/08

SAMPLE IDENTIFICATION: B-2182UD,UD-6 @ 37-38.5 Ft.

(A) Mass of oven-dried soil, grams:		36.48
(B) Mass of pycnometer filled with water at test temperature (T), grams:		338.45
(C) Mass of pycnometer, water and soil, grams:		361.68
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.7
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.753
(F)	***Correction factor:***	0.99963
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.752

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

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

REMARKS: Estimated % Passing # 4 : 98 %

Sandy Lean CLAY (CL)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER :2759

PYCNOMETER : 2192

TESTED BY: EH

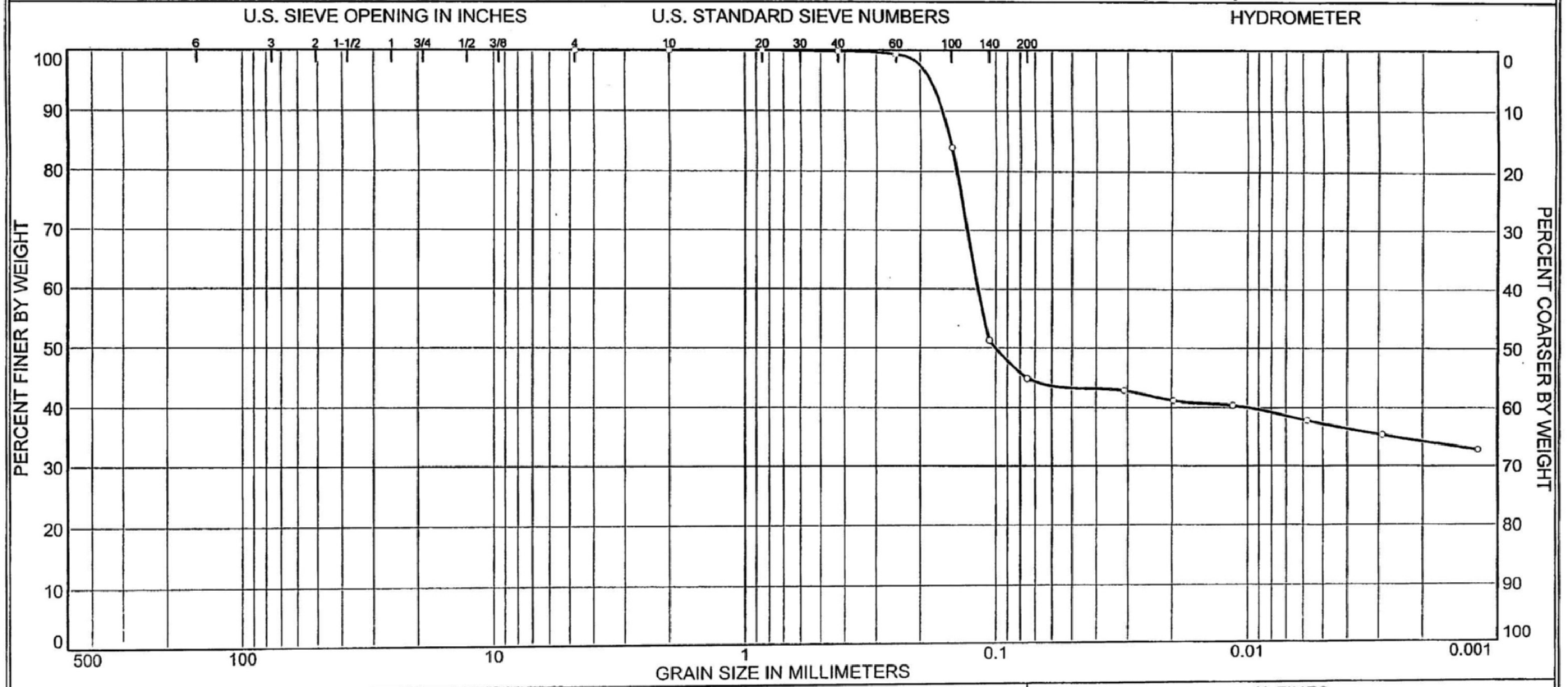
\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson

DSC
3-3-08

HJ

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



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	0.0	0.2	54.9	7.7	37.2

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	2182UD	UD-7	65-66.7 Ft.	12/12/07	SC	Light Olive Gray Clayey SAND	25.0	27	17

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8181

MACTEC ENGINEERING AND CONSULTING, INC.

○ Tested by: EH Reviewed by: HJ HJ

NM value from first strength test performed.
Specific Gravity = 2.74 (ASTM D 854-06) DSC 3-3-08