

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2302UD

Depth: 120.5-122.5

Sample Number: UD-16

Material Description: Very Pale Brown Fat CLAY

USCS: CH

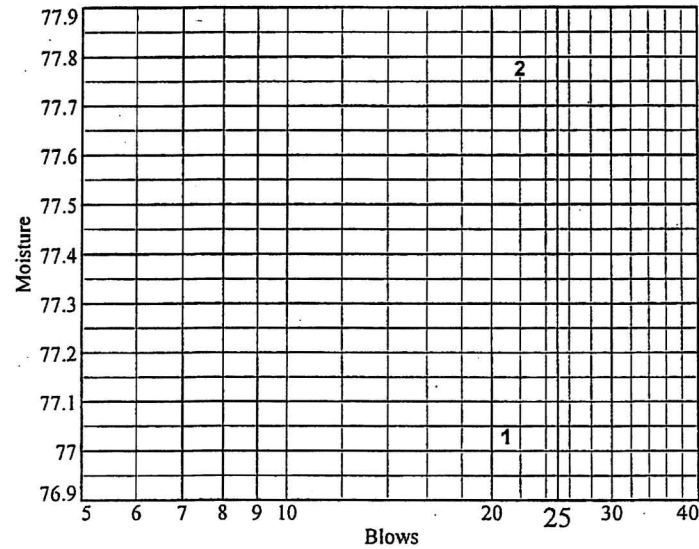
AASHTO: A-7-6(56)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	20.01	24.13				
Dry+Tare	16.12	20.35				
Tare	11.07	15.49				
# Blows	21	22				
Moisture	77.0	77.8				



Liquid Limit= 76  
 Plastic Limit= 16  
 Plasticity Index= 60  
 Natural Moisture= 25.5  
 Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	21.66	21.60		
Dry+Tare	20.79	20.77		
Tare	15.57	15.55		
Moisture	16.7	15.9		

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: 4/18/08

SAMPLE IDENTIFICATION: B-2302UD UD-16

(A) Mass of oven-dried soil, grams:		52.69
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.68
(C) Mass of pycnometer, water and soil, grams:		688.97
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.9
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$	2.716
(F)	<b>Correction factor:</b>	0.99959
(G x F)	<b>SPECIFIC GRAVITY @ 20°C:</b>	2.715

MATERIAL TESTED:

- # 4

- # 10

PREPARATION METHOD:

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-3

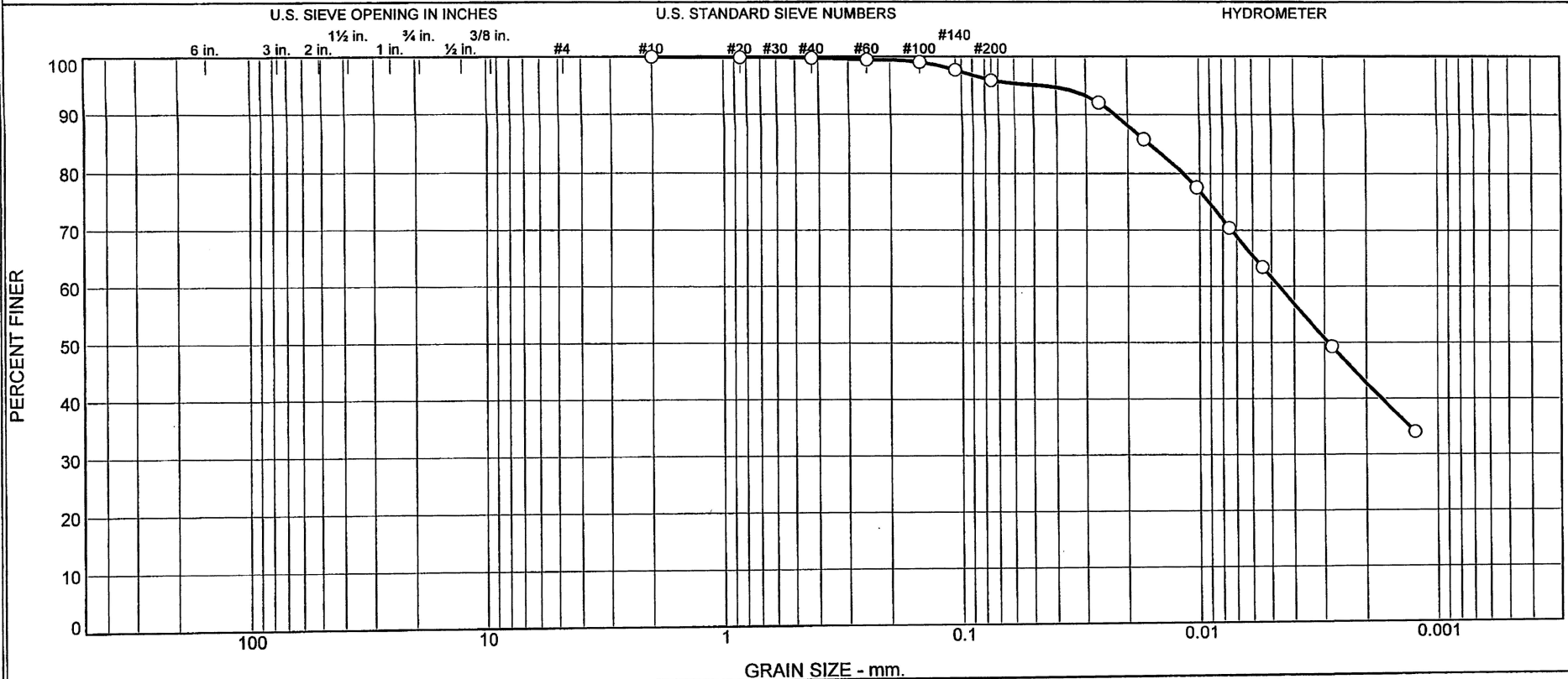
TESTED BY: CS

REVIEWED BY: Brian Johnson

**KAW 5/8/08**



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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	4.0	34.1	61.7

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B-2302UD	UD-19	145.5-147.3	2/7/08	CL	Pale Brown Lean CLAY	19.4	49	15

Client Bechtel	<b>MACTEC, Inc.</b>	○ Specific Gravity = 2.688 (ASTM D854-06) ND = Not determined NM determined from consolidation test specimen
Project Exelon Texas COL (Victoria Reservoir)		
Project No. 6468071777      Figure <i>NA</i>		
<b>Raleigh, North Carolina</b>		

KAW 5/12/08

Tested By: CS                      Checked By: LBJ

**GRAIN SIZE DISTRIBUTION TEST DATA**

5/12/2008

**Client:** Bechtel

**Project:** Exelon Texas COL (Victoria Reservoir)

**Project Number:** 6468071777

**Location:** Boring B-2302UD

**Depth:** 145.5-147.3

**Sample Number:** UD-19

**Material Description:** Pale Brown Lean CLAY

**Date:** 2/7/08

**Natural Moisture:** 19.4

**Liquid Limit:** 49

**Plastic Limit:** 15

**USCS Class.:** CL

**Testing Remarks:** Specific Gravity = 2.688 (ASTM D854-06)

ND = Not determined

NM determined from consolidation test specimen

**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
379.08	0.00	0.00	#10	0.00	100.0
50.41	0.00	0.00	#20	0.05	99.9
			#40	0.12	99.8
			#60	0.26	99.5
			#100	0.47	99.1
			#140	1.17	97.7
			#200	2.11	95.8

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =50.41

Hygroscopic moisture correction:

Moist weight and tare = 28.30

Dry weight and tare = 27.76

Tare weight = 15.43

Hygroscopic moisture =4.4%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.688

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	50.0	44.8	0.0132	51.0	7.9	0.0264	92.0
5.00	21.5	47.0	41.8	0.0132	48.0	8.4	0.0172	85.8
15.00	21.5	43.0	37.8	0.0132	44.0	9.1	0.0103	77.6
30.00	21.5	39.5	34.3	0.0132	40.5	9.7	0.0075	70.4
60.00	21.9	36.0	30.9	0.0132	37.0	10.2	0.0054	63.5
250.00	22.3	29.0	24.0	0.0131	30.0	11.4	0.0028	49.3
1440.00	20.7	22.0	16.6	0.0134	23.0	12.5	0.0012	34.0

MACTEC, Inc.

**Fractional Components**

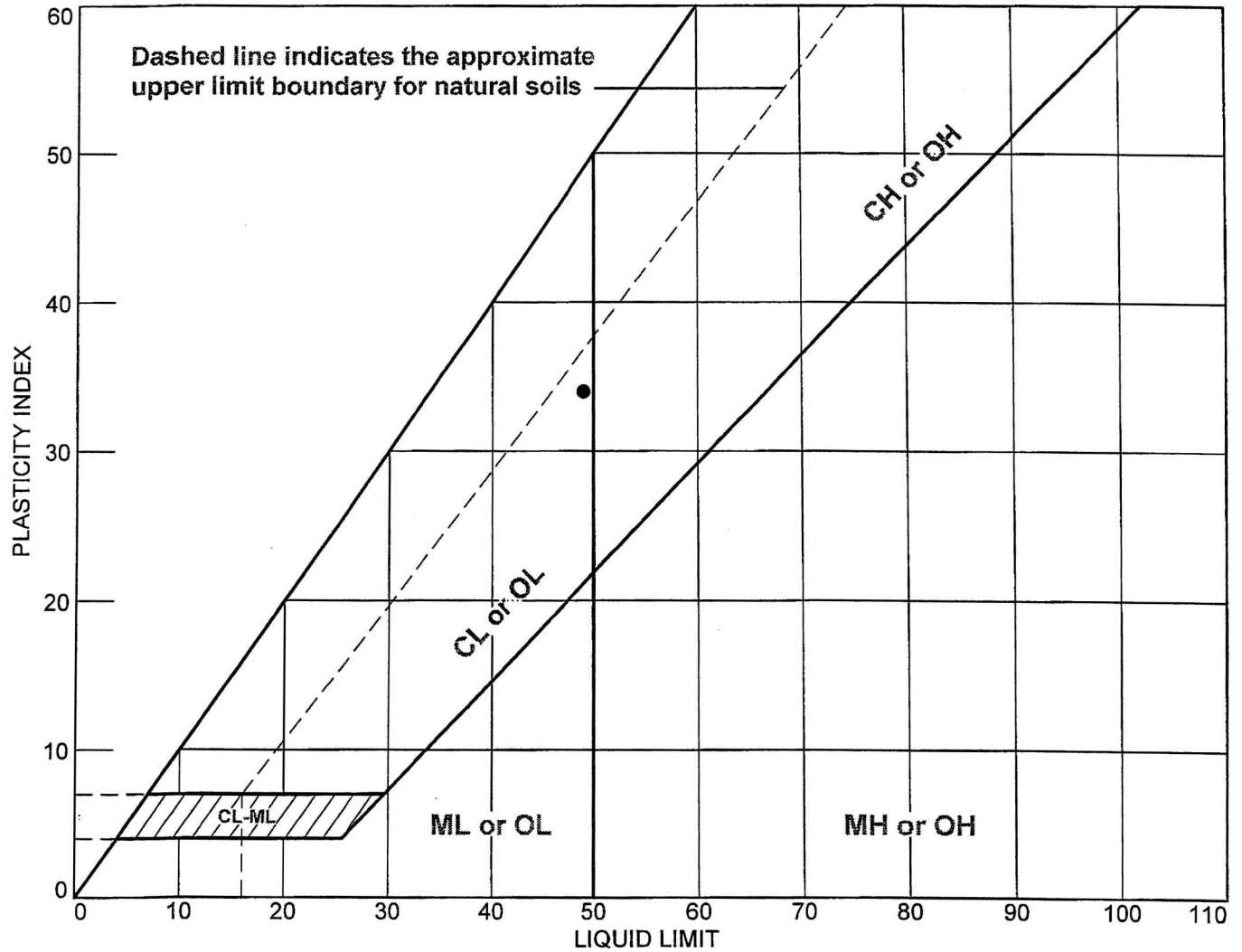
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	4.0	4.2	34.1	61.7	95.8

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
				0.0029	0.0046	0.0117	0.0163	0.0226	0.0511

<b>Fineness Modulus</b>
0.02

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-2302UD	UD-19	145.5-147.3	19.4	15	49	34	CL

<b>MACTEC, Inc.</b>  <b>Raleigh, North Carolina</b>	Client: Bechtel Project: Exelon Texas COL (Victoria Reservoir)
	Project No.: 6468071777

Figure NA

KAW S/12/09

Tested By: CS Checked By: LBJ

**LIQUID AND PLASTIC LIMIT TEST DATA**

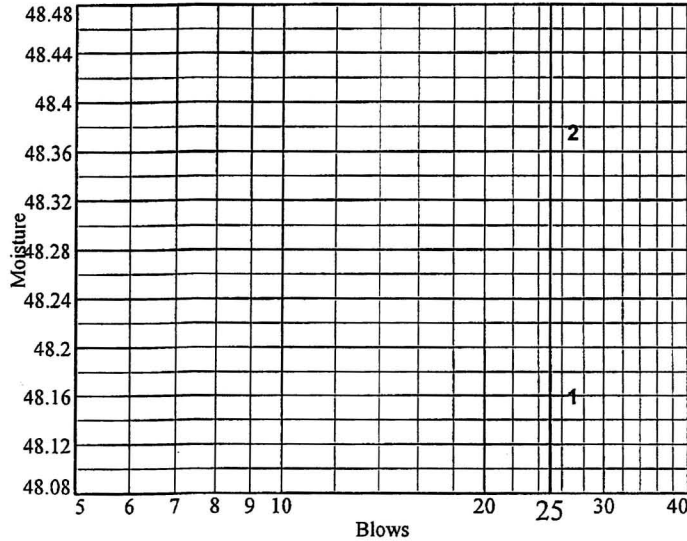
5/12/2008

Client: Bechtel  
 Project: Exelon Texas COL (Victoria Reservoir)  
 Project Number: 6468071777  
 Location: Boring B-2302UD  
 Depth: 145.5-147.3  
 Material Description: Pale Brown Lean CLAY  
 USCS: CL  
 Tested by: CS

Sample Number: UD-19  
 AASHTO: A-7-6(34)  
 Checked by: LBJ

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
Wet+Tare	30.02	36.03				
Dry+Tare	25.31	29.33				
Tare	15.53	15.48				
# Blows	27	27				
Moisture	48.2	48.4				



Liquid Limit= 49  
 Plastic Limit= 15  
 Plasticity Index= 34  
 Natural Moisture= 19.4  
 Liquidity Index= 0.1

**Plastic Limit Data**

Run No.	1	2	3	4
Wet+Tare	23.34	23.90		
Dry+Tare	22.30	22.23		
Tare	15.56	11.29		
Moisture	15.4	15.3		

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: 5/7/08

SAMPLE IDENTIFICATION: B-2302UD UD-19

(A) Mass of oven-dried soil, grams:		50.13
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.75
(C) Mass of pycnometer, water and soil, grams:		687.24
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.3
(G) Specific Gravity at observed temperature:	$A / [ B - ( C - A ) ]$	2.689
(F)	<b>Correction factor:</b>	0.99972
(G x F)	<b>SPECIFIC GRAVITY @ 20°C:</b>	2.688

MATERIAL TESTED:

- # 4

- # 10

PREPARATION METHOD:

DRY

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100%

Lean CLAY (CL)

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

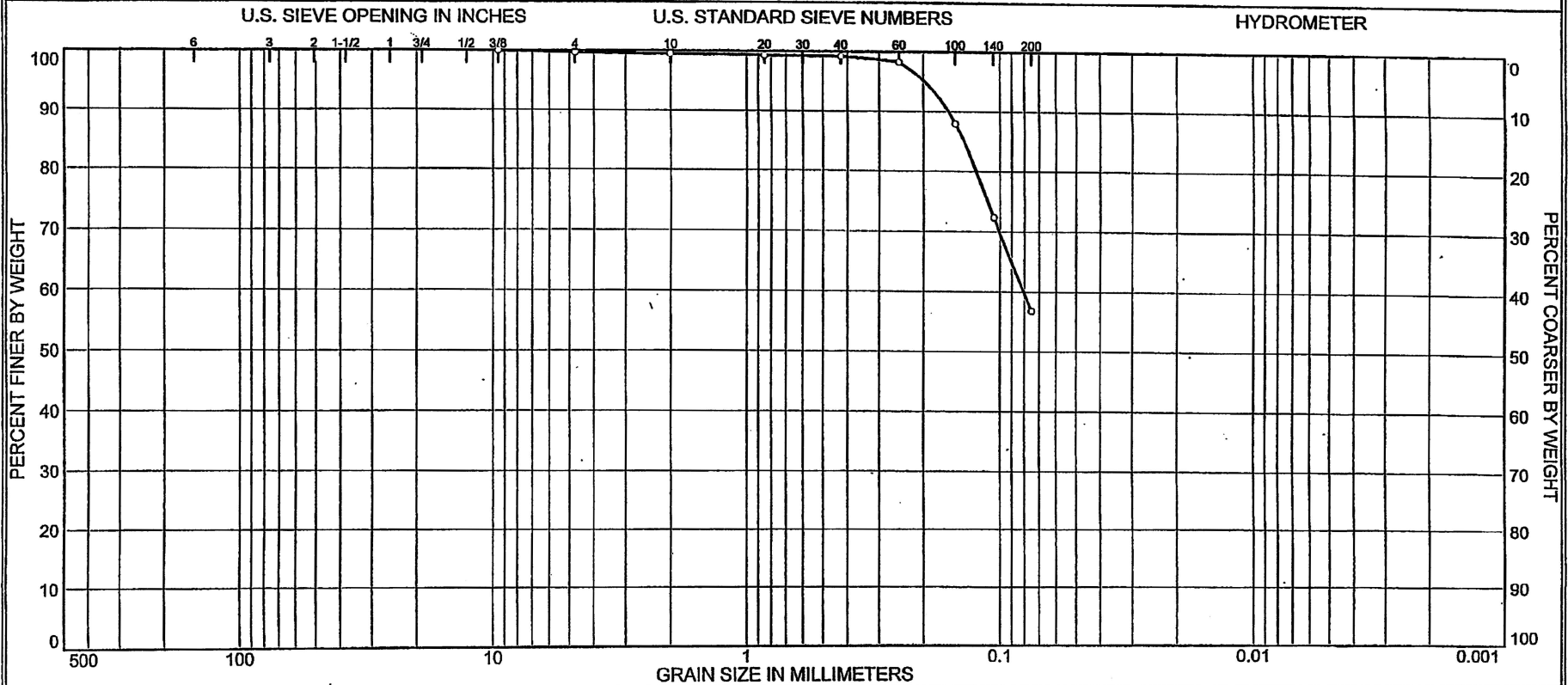
PYCNOMETER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/12/08

# Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.3	0.2	0.3	42.4	56.8	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2304UD	UD-2	11-13.3 Ft	1/30/08	ML	Light Yellowish Brown Sandy SILT (Visual)	11.9	ND	ND

Client Bechtel	<b>MACTEC ENGINEERING AND CONSULTING, INC.</b>	Tested by: EH    Reviewed by: HJ <i>HJ</i>
Project Exelon Texas COL (Victoria)		Sieve Analysis Only
Project No. 6468-07-1777    Lab No. 8348		NM value from average of strength tests performed. Specific Gravity = 2.74 (ASTM D 854-06) ND = Not Determined

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**GRAIN SIZE DISTRIBUTION TEST DATA**

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

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**Sample Data**

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Source: B-2304UD  
Sample No.: UD-2  
Elev. or Depth: 11-13.3 Ft                      Sample Length(in./cm.): ID#8348  
Location: B-2304UD  
Description: Light Yellowish Brown Sandy SILT (Visual)  
Date: 1/30/08                      PL: ND                      LL: ND                      PI: ND  
USCS Classification: ML                      AASHTO Classification:  
Testing Remarks: Tested by: EH                      Reviewed by: HJ

Sieve Analysis Only  
NM value from average of strength tests performed.  
Specific Gravity = 2.74 (ASTM D 854-06)  
ND = Not Determined

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**Mechanical Analysis Data**

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	<b>Initial</b>	
Dry sample and tare=	262.57	
Tare =	113.89	
Dry sample weight =	148.68	
Tare for cumulative weight retained=	.00	
<b>Sieve</b>	<b>Cumul. Wt.</b>	<b>Percent</b>
	<b>retained</b>	<b>finer</b>
.375 inch	0.00	100.0
# 4	0.44	99.7
# 10	0.81	99.5
# 20	1.00	99.3
# 40	1.18	99.2
# 60	2.53	98.3
# 100	17.81	88.0
# 140	41.14	72.3
# 200	64.17	56.8

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**Fractional Components**

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Gravel/Sand based on #4  
Sand/Fines based on #200  
% COBBLES =                      % GRAVEL = 0.3                      (% coarse =                      % fine = 0.3)  
% SAND = 42.9                      (% coarse = 0.2                      % medium = 0.3                      % fine = 42.4)  
% FINES = 56.8

D<sub>85</sub> = 0.14    D<sub>60</sub> = 0.08



**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: 4/7/08

SAMPLE IDENTIFICATION: B-2304UD, UD-2 @ 11-13.3 Ft.

(A) Mass of oven-dried soil, grams:	37.32
(B) Mass of pycnometer filled with water at test temperature (T), grams:	365.95
(C) Mass of pycnometer, water and soil, grams:	389.64
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.7
(G) Specific Gravity at observed temperature:	A / [ B - ( C - A ) ]
(F) <i>Correction factor:</i>	0.99892
(G x F)	<b>SPECIFIC GRAVITY @ 20°C: 2.735</b>

MATERIAL TESTED:  - # 4       - # 10

PREPARATION METHOD:  DRY       WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100  
Sandy SILT (ML) - Visual

EQUIPMENT USED  
SCALES : 418  
OVEN : 144  
THERMOMETER : 2759  
PYCNOMETER : 2193

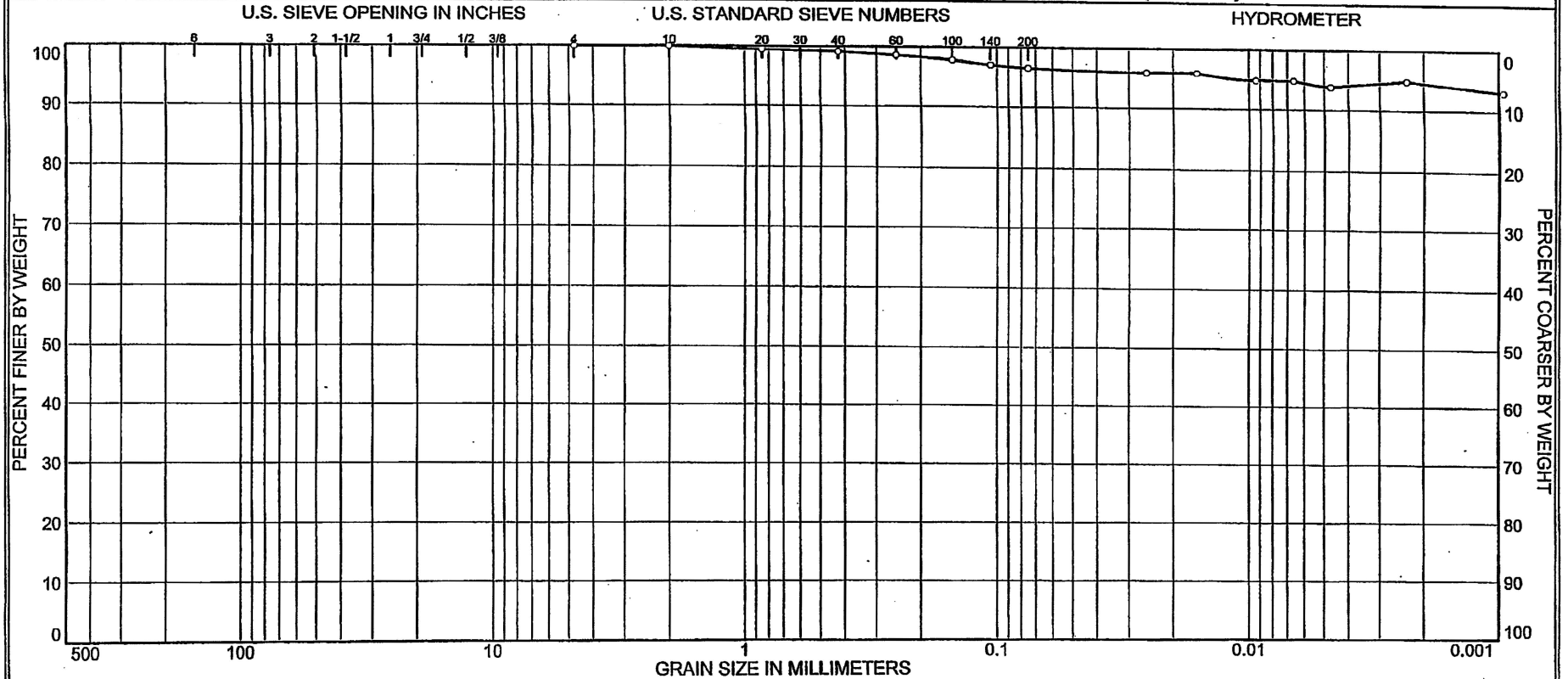
TESTED BY: EH

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

REVIEWED BY: Harry Johnson *HJ*

KAW 4-15-08

# 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	0.0	0.0	0.9	2.6	2.6	93.9

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2304UD	UD-7	73.5-75.5 Ft	1/31/08	MH	Mottled Brownish Yellow and Pale Yellow Elastic SILT	27.6	69	34

Client Bechtel	<b>MACTEC ENGINEERING AND CONSULTING, INC.</b>	Tested by: EH    Reviewed by: HJ
Project Exelon Texas COL (Victoria)		NM value from first strength test performed. Specific Gravity = 2.78 (ASTM D 854-06)
Project No. 6468-07-1777    Lab No. 8349		

KAW 4-15-08

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**GRAIN SIZE DISTRIBUTION TEST DATA**

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

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**Sample Data**

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**Source:** B-2304UD  
**Sample No.:** UD-7  
**Elev. or Depth:** 73.5-75.5 Ft                      **Sample Length(in./cm.):** ID#8349  
**Location:** B-2304UD  
**Description:** Mottled Brownish Yellow and Pale Yellow Elastic SILT  
**Date:** 1/31/08                      **PL:** 34                      **LL:** 69                      **PI:** 35  
**USCS Classification:** MH                      **AASHTO Classification:**  
**Testing Remarks:** Tested by: EH                      Reviewed by: HJ

NM value from first strength test performed.  
Specific Gravity = 2.78 (ASTM D 854-06)

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**Mechanical Analysis Data**

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	Initial	
Dry sample and tare=	61.70	
Tare =	15.31	
Dry sample weight =	46.39	
Tare for cumulative weight retained=	.00	
<b>Sieve</b>	<b>Cumul. Wt.</b>	<b>Percent</b>
	<b>retained</b>	<b>finer</b>
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.26	99.4
# 40	0.42	99.1
# 60	0.65	98.6
# 100	1.04	97.8
# 140	1.37	97.0
# 200	1.61	96.5

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**Hydrometer Analysis Data**

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Separation sieve is #200  
Percent -#200 based upon complete sample= 96.5  
Weight of hydrometer sample: 44.78  
Calculated biased weight= 46.40  
Automatic temperature correction  
Composite correction at 20 deg C = -5.4  
  
Meniscus correction only= 0  
Specific gravity of solids= 2.777  
Specific gravity correction factor= 0.973  
Hydrometer type: 152H  
Effective depth L= 16.294964 - 0.164 x Rm

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Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.8	50.5	45.7	0.0127	50.5	8.0	0.0254	95.9
5.00	22.8	50.5	45.7	0.0127	50.5	8.0	0.0161	95.9
15.00	22.8	50.0	45.2	0.0127	50.0	8.1	0.0093	94.8
30.00	22.8	50.0	45.2	0.0127	50.0	8.1	0.0066	94.8
60.00	22.8	49.5	44.7	0.0127	49.5	8.2	0.0047	93.8
240.00	22.8	50.0	45.2	0.0127	50.0	8.1	0.0023	94.8
1440.00	23.3	49.0	44.3	0.0126	49.0	8.3	0.0010	93.0

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**Fractional Components**

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Gravel/Sand based on #4

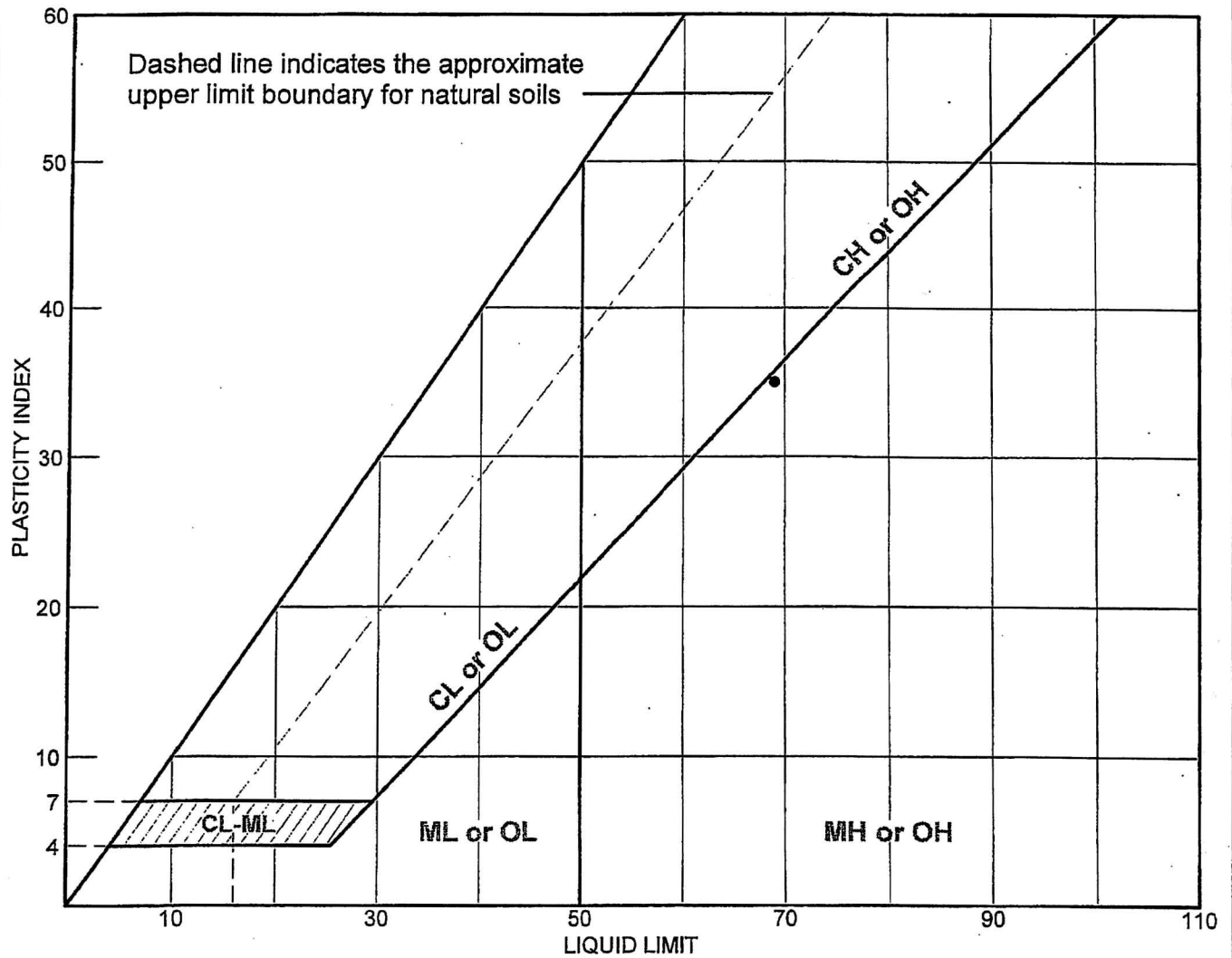
Sand/Fines based on #200

% COBBLES =                      % GRAVEL =

% SAND = 3.5      (% coarse = 0.0      % medium = 0.9      % fine = 2.6)

% SILT = 2.6              % CLAY = 93.9              (% CLAY COLLOIDS = 93.1)

# 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
•	B-2304UD	UD-7	73.5-75.5 Ft	27.6	34	69	35	MH

<b>MACTEC ENGINEERING AND CONSULTING, INC.</b>	Client: Bechtel	Lab No. 8349
	Project: Exelon Texas COL (Victoria)	
	Project No.: 6468-07-1777	

**LIQUID AND PLASTIC LIMIT TEST DATA**

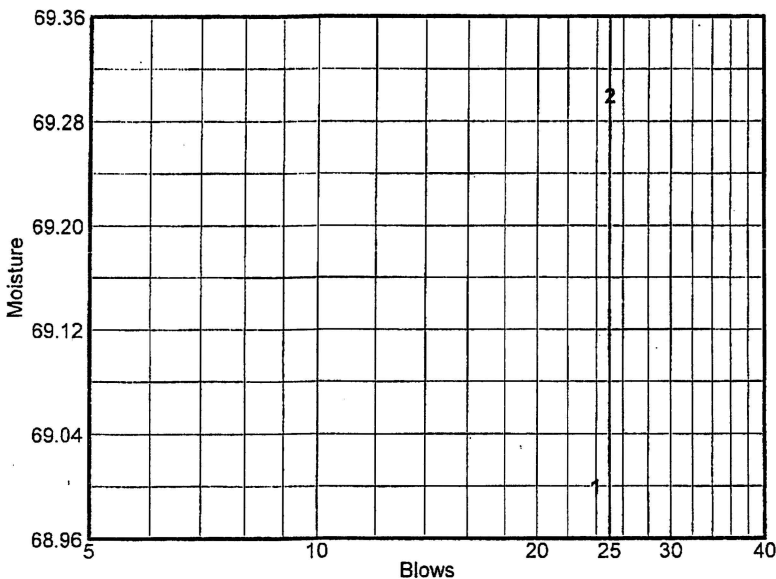
Client: Bechtel  
 Project: Exelon Texas COL (Victoria)  
 Project Number: 6468-07-1777

**Sample Data**

Source: B-2304UD  
 Sample No.: UD-7  
 Elev. or Depth: 73.5-75.5 Ft                      Sample Length(in./cm.): ID#8349  
 Location: B-2304UD  
 Description: Mottled Brownish Yellow and Pale Yellow Elastic SILT  
 Water Content: 27.6                      USCS: MH                      AASHTO:

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
Wet+Tare	31.20	30.88				
Dry+Tare	26.63	26.73				
Tare	20.01	20.74				
# Blows	24	25				
Moisture	69.0	69.3				



Liquid Limit= 69  
 Plastic Limit= 34  
 Plasticity Index= 35

**Plastic Limit Data**

Run No.	1	2	3	4
Wet+Tare	29.26	27.25		
Dry+Tare	27.06	25.42		
Tare	20.50	20.03		
Moisture	33.5	34.0		

**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: 4/7/08

SAMPLE IDENTIFICATION: B-2304UD, UD-7 @ 73.5-75.5 Ft.

(A) Mass of oven-dried soil, grams:	36.70
(B) Mass of pycnometer filled with water at test temperature (T), grams:	341.30
(C) Mass of pycnometer, water and soil, grams:	364.79
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.2
(G) Specific Gravity at observed temperature:	$A / [ B - ( C - A ) ]$ 2.778
(F)	<b>Correction factor:</b> 0.99952
(G x F)	<b>SPECIFIC GRAVITY @ 20°C:</b> 2.777

MATERIAL TESTED:  - # 4       - # 10

PREPARATION METHOD:  DRY       WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100  
Elastic SILT (MH)

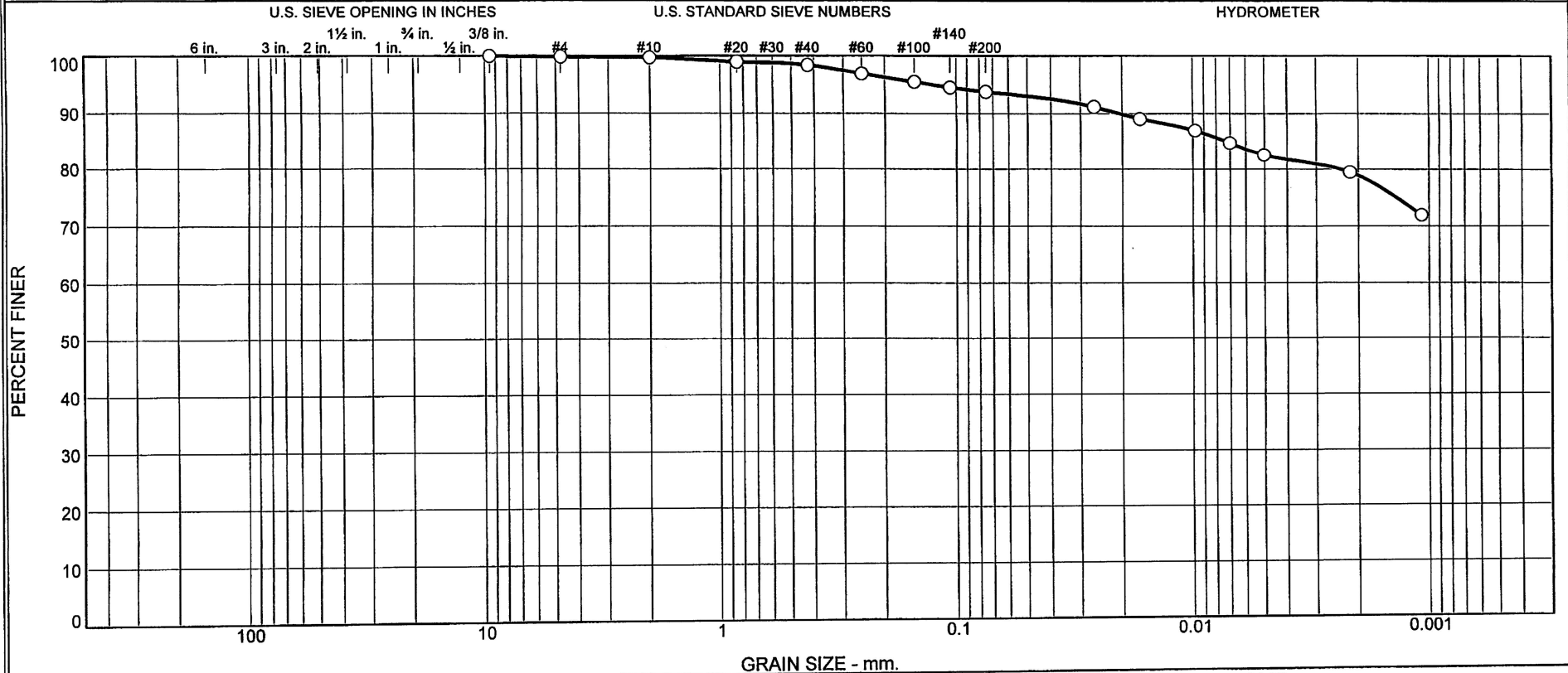
EQUIPMENT USED  
 SCALES : 418  
 OVEN : 144  
 THERMOMETER : 2759  
 PYCNOMETER : 2055

TESTED BY: EH

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

REVIEWED BY: Harry Johnson *HJ*  
 KAW 4.15.08

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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.2	1.3	4.7	11.1	82.6

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B2304UD	UD-8	83.5-85.5	1/3/08	CH	Mottled Brownish Yellow and Pale Yellow Fat CLAY	30.2	61	26

Client Bechtel	<b>MACTEC, Inc.</b>	○ Specific Gravity = 2.712 (ASTM D854-06) NM is average of values obtained from consolidation and triaxial test specimens
Project Exelon Texas COL (Victoria Reservoir)		
Project No. 6468071777		
Figure <i>NA</i>	<b>Raleigh, North Carolina</b>	

KAW 5/8/08



**GRAIN SIZE DISTRIBUTION TEST DATA**

5/8/2008

**Client:** Bechtel

**Project:** Exelon Texas COL (Victoria Reservoir)

**Project Number:** 6468071777

**Location:** Boring B2304UD

**Depth:** 83.5-85.5

**Sample Number:** UD-8

**Material Description:** Mottled Brownish Yellow and Pale Yellow Fat CLAY

**Date:** 1/3/08

**Natural Moisture:** 30.2

**Liquid Limit:** 61

**Plastic Limit:** 26

**USCS Class.:** CH

**Testing Remarks:** Specific Gravity = 2.712 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

**Tested by:** CS

**Checked by:** LBJ

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
257.49	0.00	0.00	3/8"	0.00	100.0
			#4	0.35	99.9
			#10	0.69	99.7
50.46	0.00	0.00	#20	0.39	99.0
			#40	0.66	98.4
			#60	1.41	96.9
			#100	2.16	95.5
			#140	2.65	94.5
			#200	3.03	93.7

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.7

Weight of hydrometer sample =50.46

Hygroscopic moisture correction:

Moist weight and tare = 27.39

Dry weight and tare = 26.67

Tare weight = 15.42

Hygroscopic moisture =6.4%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.712

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.0	49.0	43.9	0.0131	50.0	8.1	0.0263	91.1
5.00	22.0	48.0	42.9	0.0131	49.0	8.3	0.0168	89.1
15.00	22.0	47.0	41.9	0.0131	48.0	8.4	0.0098	87.0
30.00	21.7	46.0	40.9	0.0131	47.0	8.6	0.0070	84.7
60.00	21.6	45.0	39.8	0.0131	46.0	8.8	0.0050	82.6
330.00	21.6	43.5	38.3	0.0131	44.5	9.0	0.0022	79.5
1440.00	21.1	40.0	34.7	0.0132	41.0	9.6	0.0011	72.0

MACTEC, Inc.

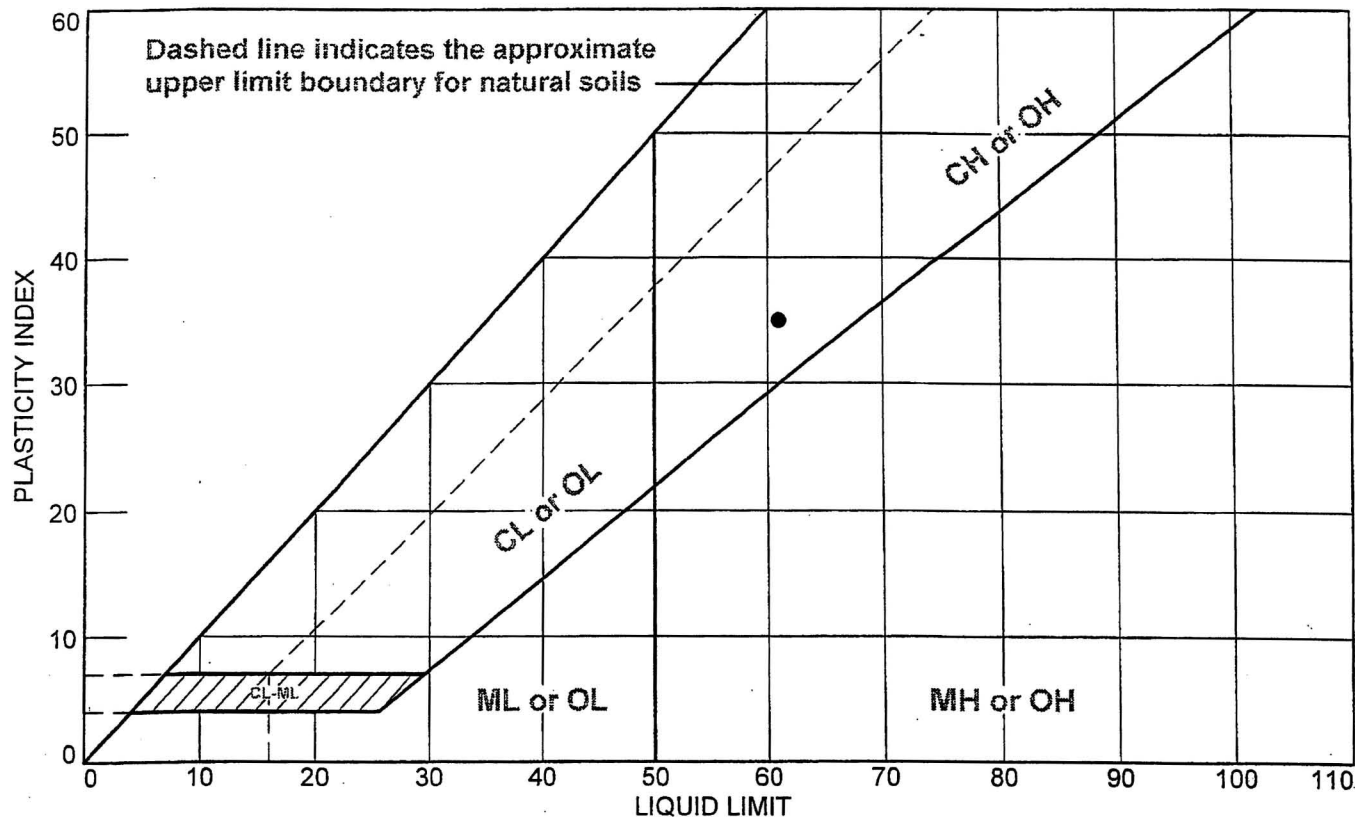
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	0.2	1.3	4.7	6.2	11.1	82.6	93.7

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
						0.0024	0.0073	0.0206	0.1277

<b>Fineness Modulus</b>
0.09

# 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 B2304UD	UD-8	83.5-85.5	30.2	26	61	35	CH

<b>MACTEC, Inc.</b>  <b>Raleigh, North Carolina</b>	Client: Bechtel Project: Exelon Texas COL (Victoria Reservoir)
	Project No.: 6468071777

Figure *MA*

Tested By: CS

Checked By: LBJ

KAW 5/8/08

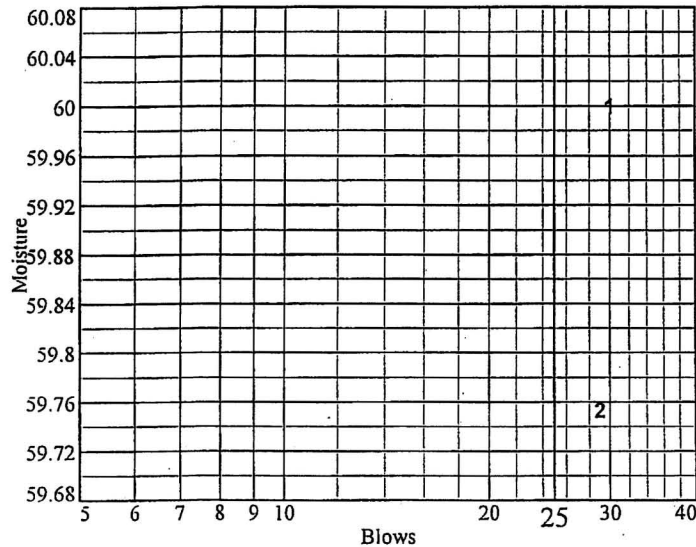
LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel  
 Project: Exelon Texas COL (Victoria Reservoir)  
 Project Number: 6468071777  
 Location: Boring B2304UD  
 Depth: 83.5-85.5  
 Material Description: Mottled Brownish Yellow and Pale Yellow Fat CLAY  
 USCS: CH  
 Tested by: CS  
 Sample Number: UD-8  
 AASHTO: A-7-6(38)  
 Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.51	23.27				
Dry+Tare	21.76	20.36				
Tare	15.51	15.49				
# Blows	30	29				
Moisture	60.0	59.8				



Liquid Limit= 61  
 Plastic Limit= 26  
 Plasticity Index= 35  
 Natural Moisture= 30.2  
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	22.02	22.40		
Dry+Tare	20.66	21.00		
Tare	15.50	15.55		
Moisture	26.4	25.7		

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: 4/16/08

SAMPLE IDENTIFICATION: B-2304UD, UD-8

(A) Mass of oven-dried soil, grams:	47.08
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.59
(C) Mass of pycnometer, water and soil, grams:	686.31
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	20.8
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.712
(F) <b>Correction factor:</b>	0.99983
(G x F) <b>SPECIFIC GRAVITY @ 20°C:</b>	2.712

MATERIAL TESTED:  - # 4       - # 10

PREPARATION METHOD:  DRY       WET (dispersed)

REMARKS: Estimated % Passing # 4 : 99.9  
Fat CLAY (CH)

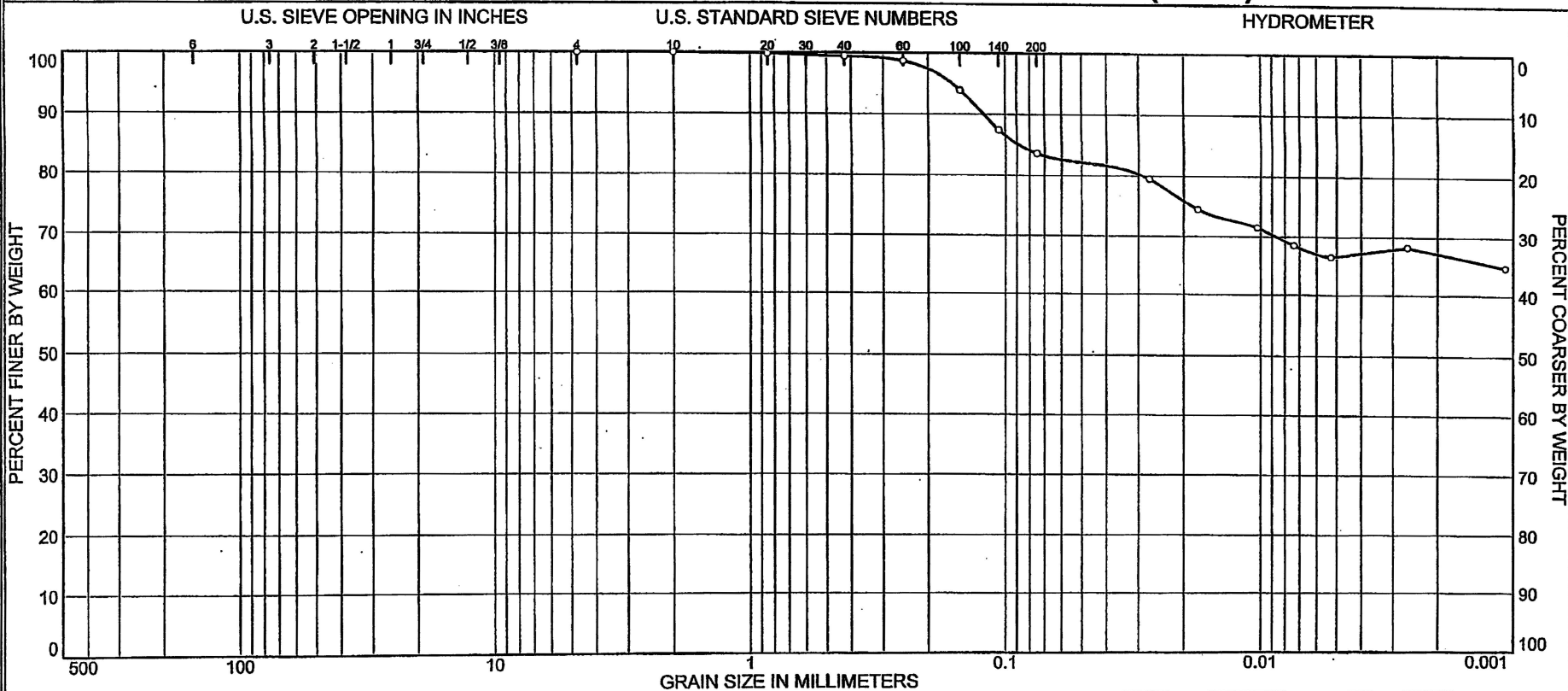
EQUIPMENT USED  
SCALES : 3.1.99  
OVEN : 5.1.16  
THERMOMETER : 5.1.01  
PYCNOMETER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

*KAW 5/8/08*

# 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	0.0	0.0	0.6	15.7	17.1	66.6

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2304UD	UD-9	98.5-101.0 Ft	1/31/08	CH	Mottled Pale Yellow and Yellow Fat CLAY with Sand	22.8	62	25

Client Bechtel Project Exelon Texas COL (Victoria)	<b>MACTEC ENGINEERING AND CONSULTING, INC.</b>	Tested by: EH    Reviewed by: HJ NM value from first strength test performed. Specific Gravity = 2.74 (ASTM D 854-06)
Project No. 6468-07-1777    Lab No. 8350		

KAW 4.15.09

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**GRAIN SIZE DISTRIBUTION TEST DATA**

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

---

**Sample Data**

---

**Source:** B-2304UD  
**Sample No.:** UD-9  
**Elev. or Depth:** 98.5-101.0 Ft                      **Sample Length(in./cm.):** ID#8350  
**Location:** B-2304UD  
**Description:** Mottled Pale Yellow and Yellow Fat CLAY with Sand  
**Date:** 1/31/08                      **PL:** 25                      **LL:** 62                      **PI:** 37  
**USCS Classification:** CH                      **AASHTO Classification:**  
**Testing Remarks:** Tested by: EH                      Reviewed by: HJ

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

---

**Mechanical Analysis Data**

---

	Initial	
Dry sample and tare=	64.24	
Tare =	15.28	
Dry sample weight =	48.96	
Tare for cumulative weight retained=	.00	
<b>Sieve</b>	<b>Cumul. Wt.</b>	<b>Percent</b>
	<b>retained</b>	<b>finer</b>
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.09	99.8
# 40	0.27	99.4
# 60	0.62	98.7
# 100	2.92	94.0
# 140	6.11	87.5
# 200	7.99	83.7

---

**Hydrometer Analysis Data**

---

Separation sieve is #200  
Percent -#200 based upon complete sample= 83.7  
Weight of hydrometer sample: 40.97  
Calculated biased weight= 48.95  
Automatic temperature correction  
Composite correction at 20 deg C = -5.4  
  
Meniscus correction only= 0  
Specific gravity of solids= 2.741  
Specific gravity correction factor= 0.980  
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	22.8	44.5	39.7	0.0128	44.5	9.0	0.0272	79.5
5.00	22.8	42.0	37.2	0.0128	42.0	9.4	0.0176	74.5
15.00	22.8	40.5	35.7	0.0128	40.5	9.7	0.0103	71.5
30.00	22.8	39.0	34.2	0.0128	39.0	9.9	0.0074	68.5
60.00	22.8	38.0	33.2	0.0128	38.0	10.1	0.0053	66.5
240.00	22.2	39.0	34.1	0.0129	39.0	9.9	0.0026	68.2
1440.00	23.3	37.0	32.3	0.0128	37.0	10.2	0.0011	64.8

---

**Fractional Components**

---

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES =                      % GRAVEL =

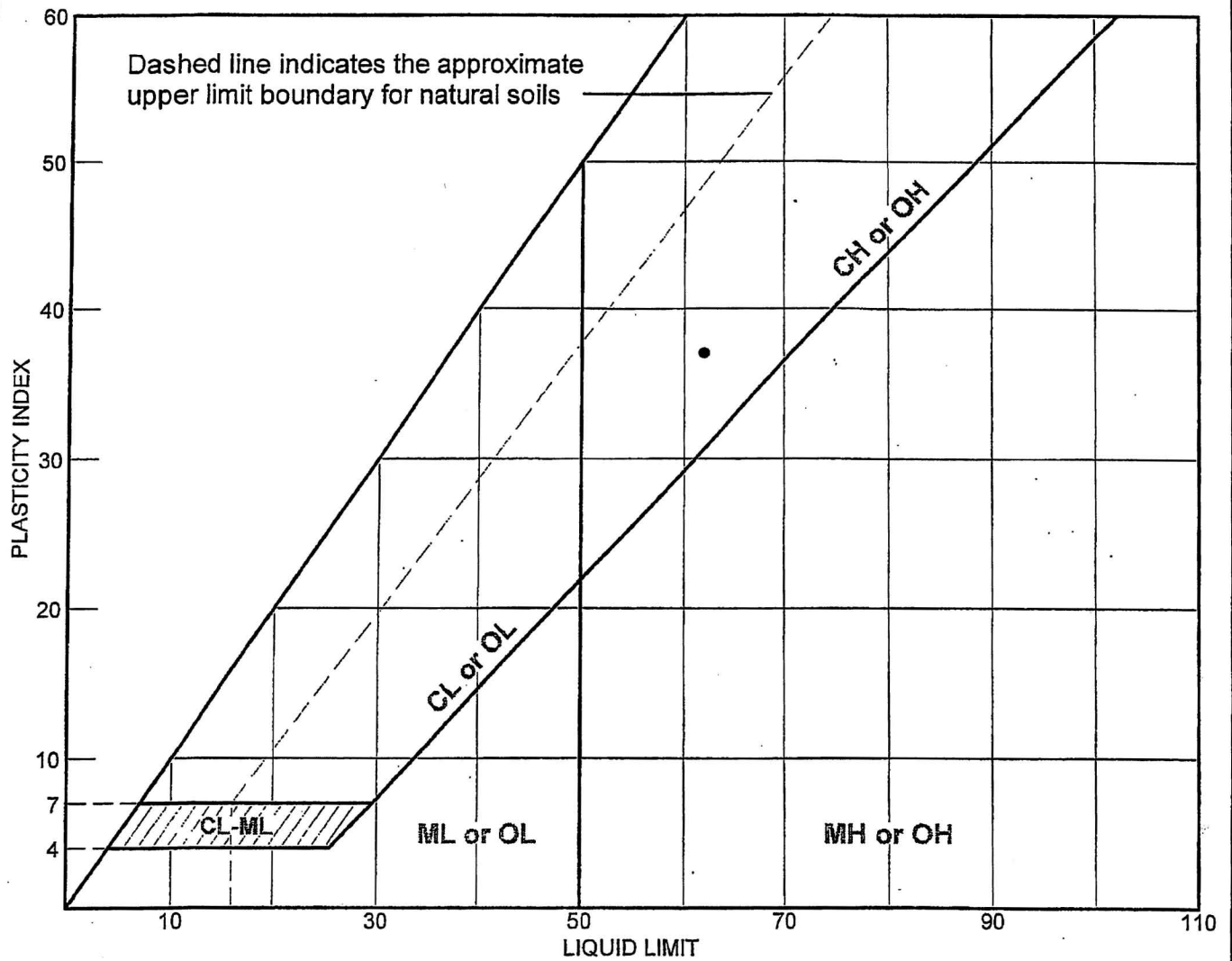
% SAND = 16.3    (% coarse = 0.0    % medium = 0.6    % fine = 15.7)

% SILT = 17.1    % CLAY = 66.6

D<sub>85</sub> = 0.09



# 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
•	B-2304UD	UD-9	98.5-101.0 Ft	22.8	25	62	37	CH

**MACTEC ENGINEERING AND CONSULTING, INC.**

Client: Bechtel  
 Project: Exelon Texas COL (Victoria)  
 Project No.: 6468-07-1777

Lab No. 8350

**LIQUID AND PLASTIC LIMIT TEST DATA**

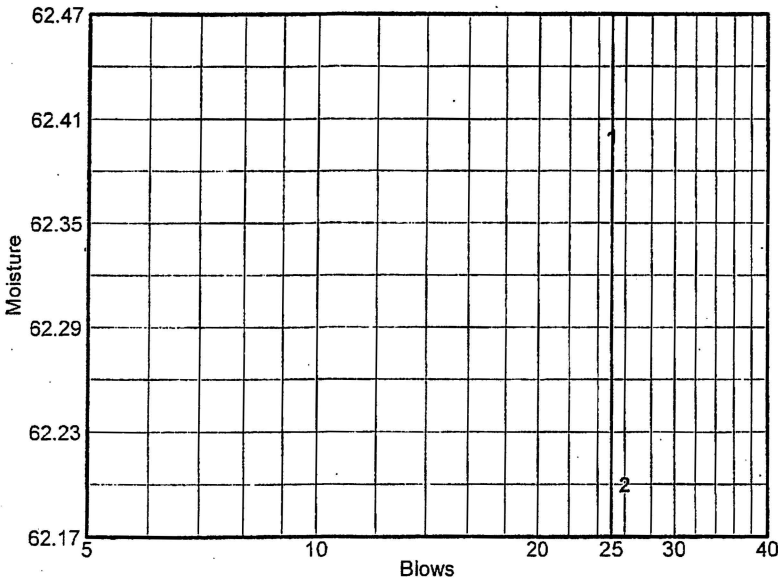
Client: Bechtel  
 Project: Exelon Texas COL (Victoria)  
 Project Number: 6468-07-1777

**Sample Data**

Source: B-2304UD  
 Sample No.: UD-9  
 Elev. or Depth: 98.5-101.0 Ft                      Sample Length(in./cm.): ID#8350  
 Location: B-2304UD  
 Description: Mottled Pale Yellow and Yellow Fat CLAY with Sand  
 Water Content: 22.8                      USCS: CH                      AASHTO:

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
Wet+Tare	31.47	31.05				
Dry+Tare	27.40	27.25				
Tare	20.88	21.14				
# Blows	25	26				
Moisture	62.4	62.2				



Liquid Limit= 62  
 Plastic Limit= 25  
 Plasticity Index= 37

**Plastic Limit Data**

Run No.	1	2	3	4
Wet+Tare	28.40	28.53		
Dry+Tare	26.78	26.91		
Tare	20.21	20.24		
Moisture	24.7	24.3		

**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: 3/4/08

SAMPLE IDENTIFICATION: B-2304UD, UD-9 @ 98.5-101.0 Ft.

(A) Mass of oven-dried soil, grams:	36.77
(B) Mass of pycnometer filled with water at test temperature (T), grams:	363.80
(C) Mass of pycnometer, water and soil, grams:	387.16
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.2
(G) Specific Gravity at observed temperature:	A / [ B - ( C - A ) ]
(F) <b>Correction factor:</b>	0.99952
(G x F) <b>SPECIFIC GRAVITY @ 20°C:</b>	2.741

MATERIAL TESTED:  - # 4       - # 10

PREPARATION METHOD:  DRY       WET (dispersed)

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

EQUIPMENT USED  
 SCALES : 418  
 OVEN : 144  
 THERMOMETER : 2759  
 PYCNOMETER : 2184

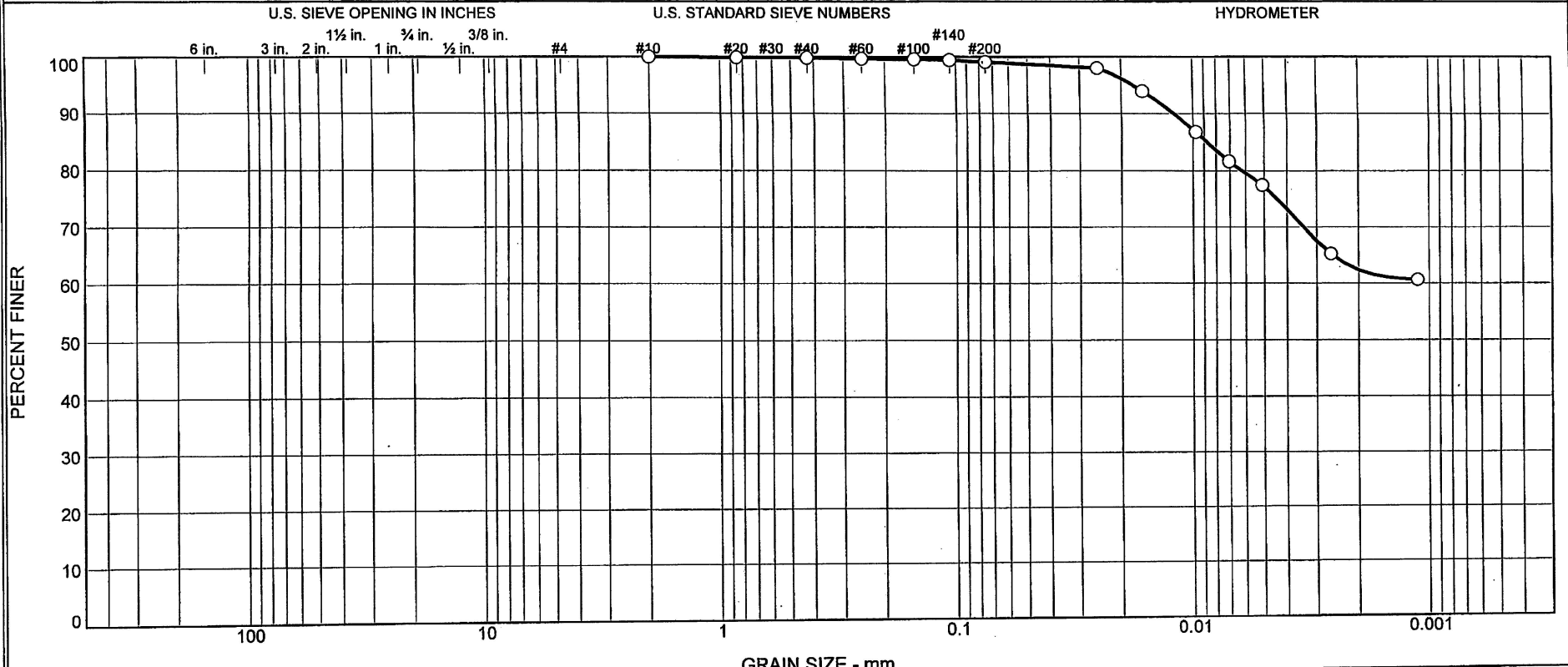
TESTED BY: EH

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

REVIEWED BY: Harry Johnson *HJ*

KAW 4.15.08

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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	0.7	21.9	77.2

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B2304UD	UD-11	111.0-112.5	2/1/08	CH	Mottled Pale Yellow and Yellow Fat CLAY	22.2	77	19

Client Bechtel	<h2 style="margin: 0;">MACTEC, Inc.</h2> <h3 style="margin: 0;">Raleigh, North Carolina</h3>	○ Specific Gravity = 2.719 (ASTM D854-06) NM is average of values from consolidation and triaxial test specimens
Project Exelon Texas COL (Victoria Reservoir)		
Project No. 6468071777      Figure <i>NA</i>		

KAW 5/8/08

Tested By: CS      Checked By: LBJ

**GRAIN SIZE DISTRIBUTION TEST DATA**

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 111.0-112.5

Sample Number: UD-11

Material Description: Mottled Pale Yellow and Yellow Fat CLAY

Date: 2/1/08

Natural Moisture: 22.2

Liquid Limit: 77

Plastic Limit: 19

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.719 (ASTM D854-06)

NM is average of values from consolidation and triaxial test specimens

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
200.13	0.00	0.00	#10	0.00	100.0
49.44	0.00	0.00	#20	0.05	99.9
			#40	0.09	99.8
			#60	0.16	99.7
			#100	0.20	99.6
			#140	0.27	99.5
			#200	0.44	99.1

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =49.45

Hygroscopic moisture correction:

Moist weight and tare = 28.74

Dry weight and tare = 28.39

Tare weight = 15.49

Hygroscopic moisture =2.7%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.719

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	53.0	47.9	0.0131	54.0	7.4	0.0252	98.0
5.00	21.9	51.0	45.9	0.0131	52.0	7.8	0.0163	93.9
15.00	21.9	47.5	42.4	0.0131	48.5	8.3	0.0097	86.8
30.00	21.9	45.0	39.9	0.0131	46.0	8.8	0.0071	81.6
60.00	21.7	43.0	37.9	0.0131	44.0	9.1	0.0051	77.4
250.00	21.9	37.0	31.9	0.0131	38.0	10.1	0.0026	65.3
1440.00	21.0	35.0	29.7	0.0132	36.0	10.4	0.0011	60.7

MACTEC, Inc.

**Fractional Components**

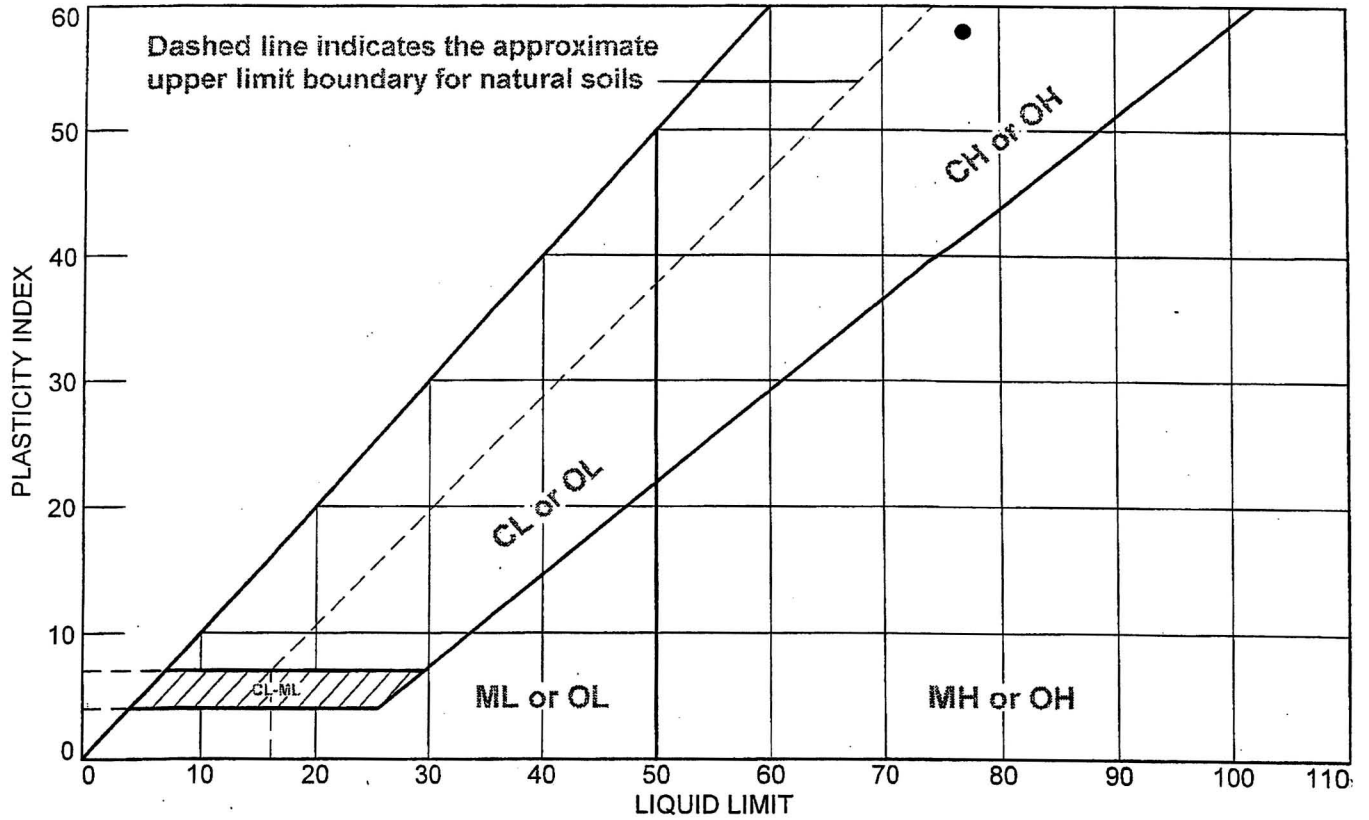
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.9	21.9	77.2	99.1

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
						0.0062	0.0088	0.0120	0.0179

<b>Fineness Modulus</b>
0.01

MACTEC, Inc.

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA							
SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
• Boring B2304UD	UD-11	111.0-112.5	22.2	19	77	58	CH

<b>MACTEC, Inc.</b> Raleigh, North Carolina	Client: Bechtel Project: Exelon Texas COL (Victoria Reservoir)
	Project No.: 6468071777

Figure *NA*

Tested By: CS

Checked By: LBJ

**KAW 5/8/08**

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 111.0-112.5

Sample Number: UD-11

Material Description: Mottled Pale Yellow and Yellow Fat CLAY

USCS: CH

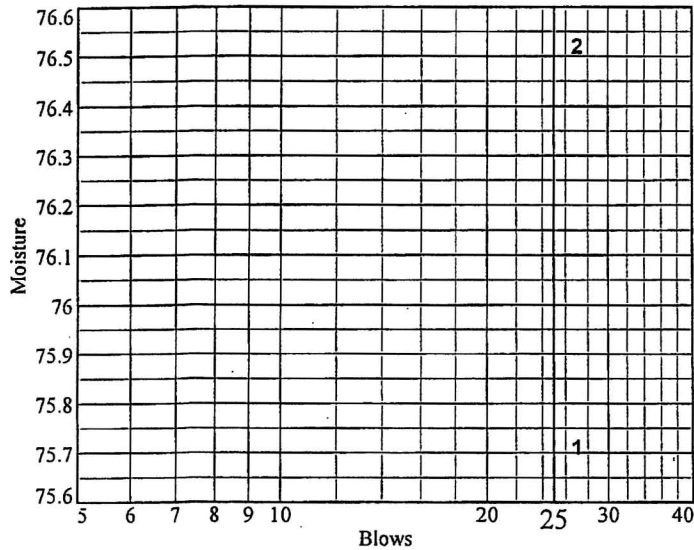
AASHTO: A-7-6(65)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.71	23.59				
Dry+Tare	20.25	20.07				
Tare	15.68	15.47				
# Blows	27	27				
Moisture	75.7	76.5				



Liquid Limit= 77  
 Plastic Limit= 19  
 Plasticity Index= 58  
 Natural Moisture= 22.2  
 Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	22.50	17.45		
Dry+Tare	21.36	16.48		
Tare	15.52	11.20		
Moisture	19.5	18.4		

MACTEC, Inc.



**MACTEC ENGINEERING AND CONSULTING, INC.  
RALEIGH, NORTH CAROLINA**

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

PROJECT NAME: EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 4/6/08

SAMPLE IDENTIFICATION: B-2304UD, UD-11

(A) Mass of oven-dried soil, grams:	48.65
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.81
(C) Mass of pycnometer, water and soil, grams:	686.57
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	20.6
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$ 2.719
(F) <i>Correction factor:</i>	0.99987
(G x F) <b>SPECIFIC GRAVITY @ 20°C:</b>	<b>2.719</b>

MATERIAL TESTED:  - # 4       - # 10

PREPARATION METHOD:  DRY       WET (dispersed)

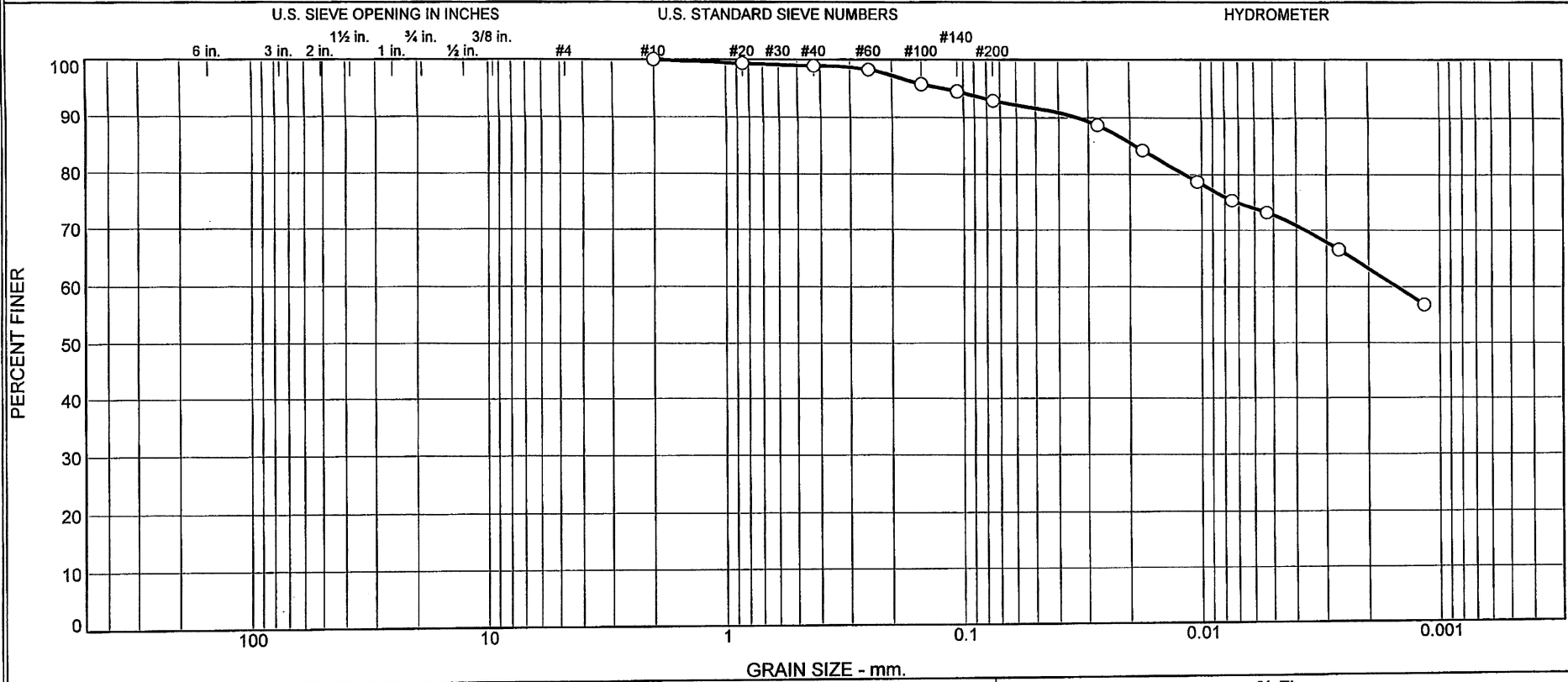
REMARKS: Estimated % Passing # 4 : 100  
Fat CLAY (CH)

**EQUIPMENT USED**  
SCALES : 3.1.99  
OVEN : 5.1.16  
THERMOMETER : 5.1.01  
PYCNOMETER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson  
*KAW 5/8/08*

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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.1	6.0	20.2	72.7

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
Boring B2304UD	UD-13	121-123	2/1/08	CH	Mottled Pale Yellow and Yellow Fat CLAY	19.8	62	18

Client <b>Bechtel</b> Project <b>Exelon Texas COL (Victoria Reservoir)</b> Project No. <b>6468071777</b>	<b>MACTEC, Inc.</b>  <b>Raleigh, North Carolina</b>	◊ Specific Gravity = 2.708 (ASTM D854-06) NM is average of values obtained from consolidation and triaxial test specimens
Figure <i>NA</i>	<b>KAW 5/8/08</b>	

Tested By: CS

Checked By: LBJ

**GRAIN SIZE DISTRIBUTION TEST DATA**

5/8/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 121-123

Sample Number: UD-13

Material Description: Mottled Pale Yellow and Yellow Fat CLAY

Date: 2/1/08

Natural Moisture: 19.8

Liquid Limit: 62

Plastic Limit: 18

USCS Class.: CH

Testing Remarks: Specific Gravity = 2.708 (ASTM D854-06)

NM is average of values obtained from consolidation and triaxial test specimens

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
179.63	0.00	0.00	#10	0.00	100.0
46.68	0.00	0.00	#20	0.30	99.4
			#40	0.51	98.9
			#60	0.83	98.2
			#100	1.99	95.7
			#140	2.57	94.5
			#200	3.32	92.9

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =46.68

Hygroscopic moisture correction:

Moist weight and tare = 29.03

Dry weight and tare = 28.37

Tare weight = 15.43

Hygroscopic moisture =5.1%

Table of composite correction values:

Temp., deg. C: 11.3 29.5

Comp. corr.: -8.0 -3.0

Meniscus correction only =1.0

Specific gravity of solids =2.708

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.9	45.0	39.9	0.0131	46.0	8.8	0.0274	88.7
5.00	21.9	43.0	37.9	0.0131	44.0	9.1	0.0177	84.3
15.00	21.9	40.5	35.4	0.0131	41.5	9.5	0.0104	78.7
30.00	21.9	39.0	33.9	0.0131	40.0	9.7	0.0075	75.4
60.00	21.9	38.0	32.9	0.0131	39.0	9.9	0.0053	73.2
250.00	22.0	35.0	29.9	0.0131	36.0	10.4	0.0027	66.5
1440.00	20.7	31.0	25.6	0.0133	32.0	11.0	0.0012	56.9

MACTEC, Inc.

**Fractional Components**

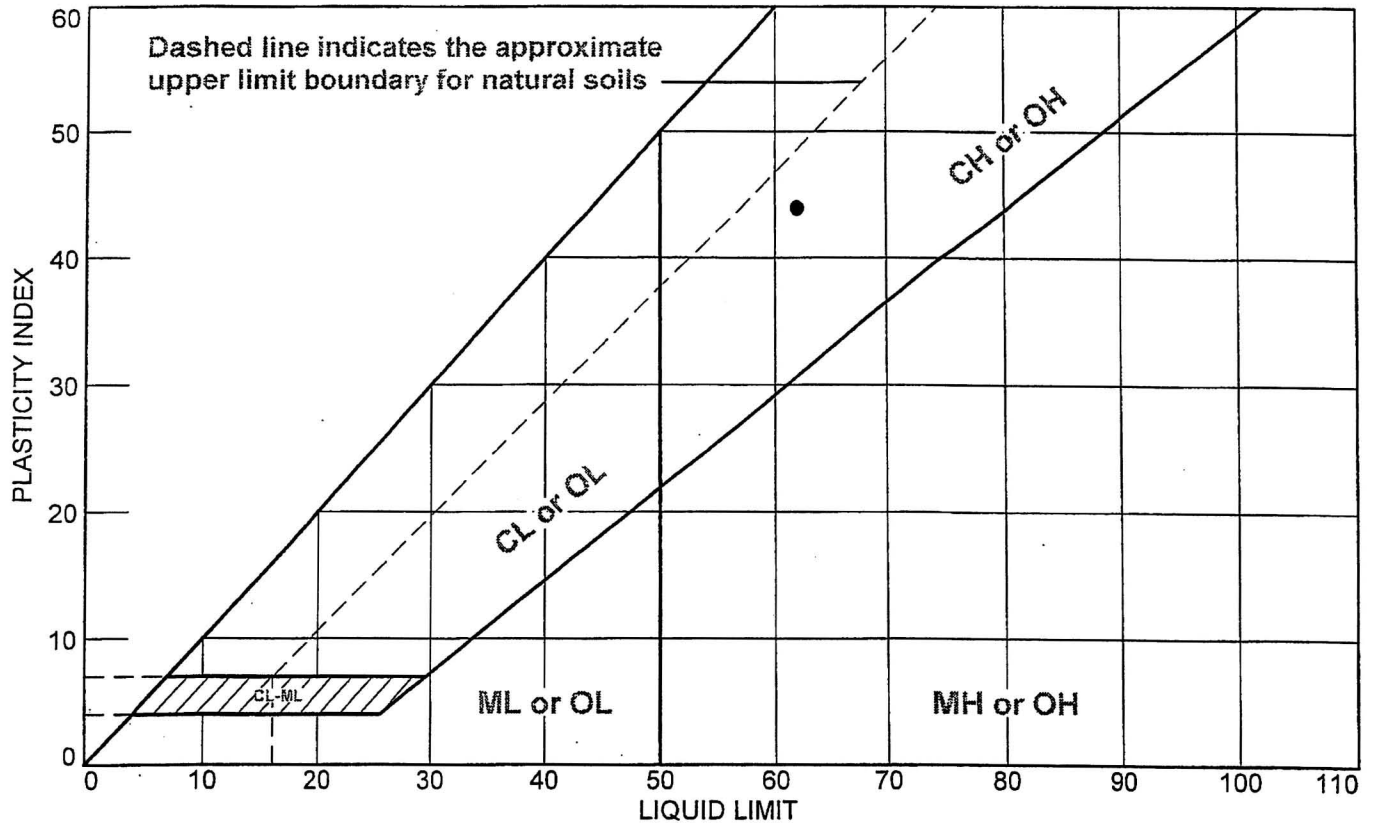
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.1	6.0	7.1	20.2	72.7	92.9

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
					0.0015	0.0118	0.0189	0.0332	0.1220

<b>Fineness Modulus</b>
0.07

MACTEC, Inc.

# LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA							
SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
• Boring B2304UD	UD-13	121-123	19.8	18	62	44	CH

<b>MACTEC, Inc.</b>  <b>Raleigh, North Carolina</b>	Client: Bechtel Project: Exelon Texas COL (Victoria Reservoir)
	Project No.: 6468071777

Figure *PA*

Tested By: CS

Checked By: LBJ

KAW 5/8/08

LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project Number: 6468071777

Location: Boring B2304UD

Depth: 121-123

Sample Number: UD-13

Material Description: Mottled Pale Yellow and Yellow Fat CLAY

USCS: CH

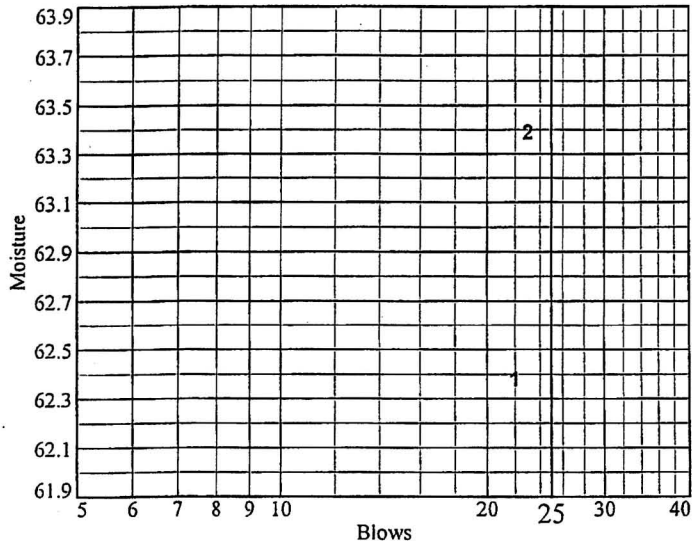
AASHTO: A-7-6(44)

Tested by: CS

Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.03	22.77				
Dry+Tare	20.73	19.93				
Tare	15.44	15.45				
# Blows	22	23				
Moisture	62.4	63.4				



Liquid Limit= 62  
 Plastic Limit= 18  
 Plasticity Index= 44  
 Natural Moisture= 19.8  
 Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	21.76	22.01		
Dry+Tare	20.83	21.02		
Tare	15.56	15.63		
Moisture	17.6	18.4		

MACTEC, Inc.

**MACTEC ENGINEERING AND CONSULTING, INC.  
RALEIGH, NORTH CAROLINA**

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

PROJECT NAME: EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 4/14/08

SAMPLE IDENTIFICATION: B-2304UD, UD-13

(A) Mass of oven-dried soil, grams:	49.87
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.75
(C) Mass of pycnometer, water and soil, grams:	687.21
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.3
(G) Specific Gravity at observed temperature:	A / [ B - ( C - A ) ]
(F) Correction factor:	0.99972
(G x F) SPECIFIC GRAVITY @ 20°C:	2.708

MATERIAL TESTED:

- # 4

- # 10

PREPARATION METHOD:

DRY

WET (dispersed)

REMARKS: Estimated % Passing # 4 : 99.9

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-3

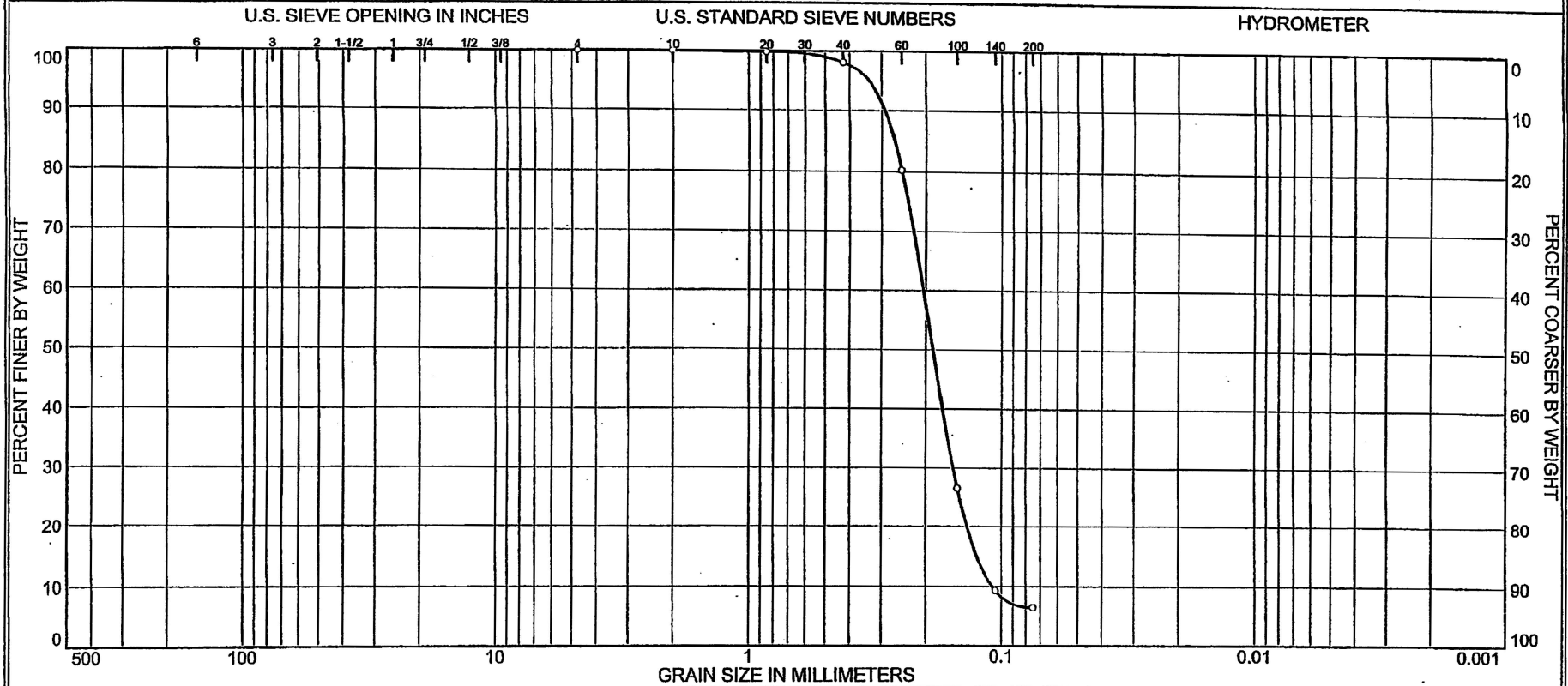
TESTED BY: CS

REVIEWED BY:

Brian Johnson

KAW 5/8/08

# Particle Size Distribution Report ASTM D6913-04 e1



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	1.9	91.6	6.5	

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2304UD	UD-15	141-143.5 Ft	2/2/08	SP-SM	Pale Brown Poorly Graded SAND with Silt (Visual)	17.9	ND	ND

Client Bechtel Project Exelon Texas COL (Victoria)	<b>MACTEC ENGINEERING AND CONSULTING, INC.</b>	Tested by: EH    Reviewed by: HJ <i>HJ</i> Sieve Analysis Only NM value from average of strength tests performed. Specific Gravity = 2.68 (ASTM D 854-06) ND = Not Determined
Project No. 6468-07-1777    Lab No. 8351		



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**GRAIN SIZE DISTRIBUTION TEST DATA**

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

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**Sample Data**

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**Source:** B-2304UD  
**Sample No.:** UD-15  
**Elev. or Depth:** 141-143.5 Ft                      **Sample Length(in./cm.):** ID#8351  
**Location:** B-2304UD  
**Description:** Pale Brown Poorly Graded SAND with Silt (Visual)  
**Date:** 2/2/08                      **PL:** ND                      **LL:** ND                      **PI:** ND  
**USCS Classification:** SP-SM                      **AASHTO Classification:**  
**Testing Remarks:** Tested by: EH                      Reviewed by: HJ

Sieve Analysis Only  
NM value from average of strength tests performed.  
Specific Gravity = 2.68 (ASTM D 854-06)  
ND = Not Determined

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**Mechanical Analysis Data**

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	<b>Initial</b>	
Dry sample and tare=	215.90	
Tare =	87.87	
Dry sample weight =	128.03	
Tare for cumulative weight retained=	.00	
<b>Sieve</b>	<b>Cumul. Wt. retained</b>	<b>Percent finer</b>
# 4	0.00	100.0
# 10	0.05	100.0
# 20	0.30	99.8
# 40	2.41	98.1
# 60	25.24	80.3
# 100	94.07	26.5
# 140	116.06	9.3
# 200	119.67	6.5

---

**Fractional Components**

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Gravel/Sand based on #4  
Sand/Fines based on #200  
% COBBLES =                      % GRAVEL =  
% SAND = 93.5    (% coarse = 0.0                      % medium = 1.9                      % fine = 91.6)  
% FINES = 6.5

D<sub>85</sub>= 0.27    D<sub>60</sub>= 0.20    D<sub>50</sub>= 0.19  
D<sub>30</sub>= 0.16    D<sub>15</sub>= 0.13    D<sub>10</sub>= 0.11  
C<sub>c</sub>= 1.0882    C<sub>u</sub>= 1.8737

**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: 4/7/08

SAMPLE IDENTIFICATION: B-2304UD, UD-15 @ 141-143.5 Ft.

(A) Mass of oven-dried soil, grams:		37.60
(B) Mass of pycnometer filled with water at test temperature (T), grams:		339.40
(C) Mass of pycnometer, water and soil, grams:		362.96
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		24.2
(G) Specific Gravity at observed temperature:	$A / [B - (C - A)]$	2.678
(F)	<i>Correction factor:</i>	0.99904
(G x F)	<b>SPECIFIC GRAVITY @ 20°C:</b>	2.675

MATERIAL TESTED:

  
- # 4

  
- # 10

PREPARATION METHOD:

  
DRY

  
WET (dispersed)

REMARKS: Estimated % Passing # 4 : 100  
Poorly Graded SAND with Silt (SP-SM) - Visual

**EQUIPMENT USED**

SCALES : 418

OVEN : 144

THERMOMETER : 2759

PYCNOMETER : 2053

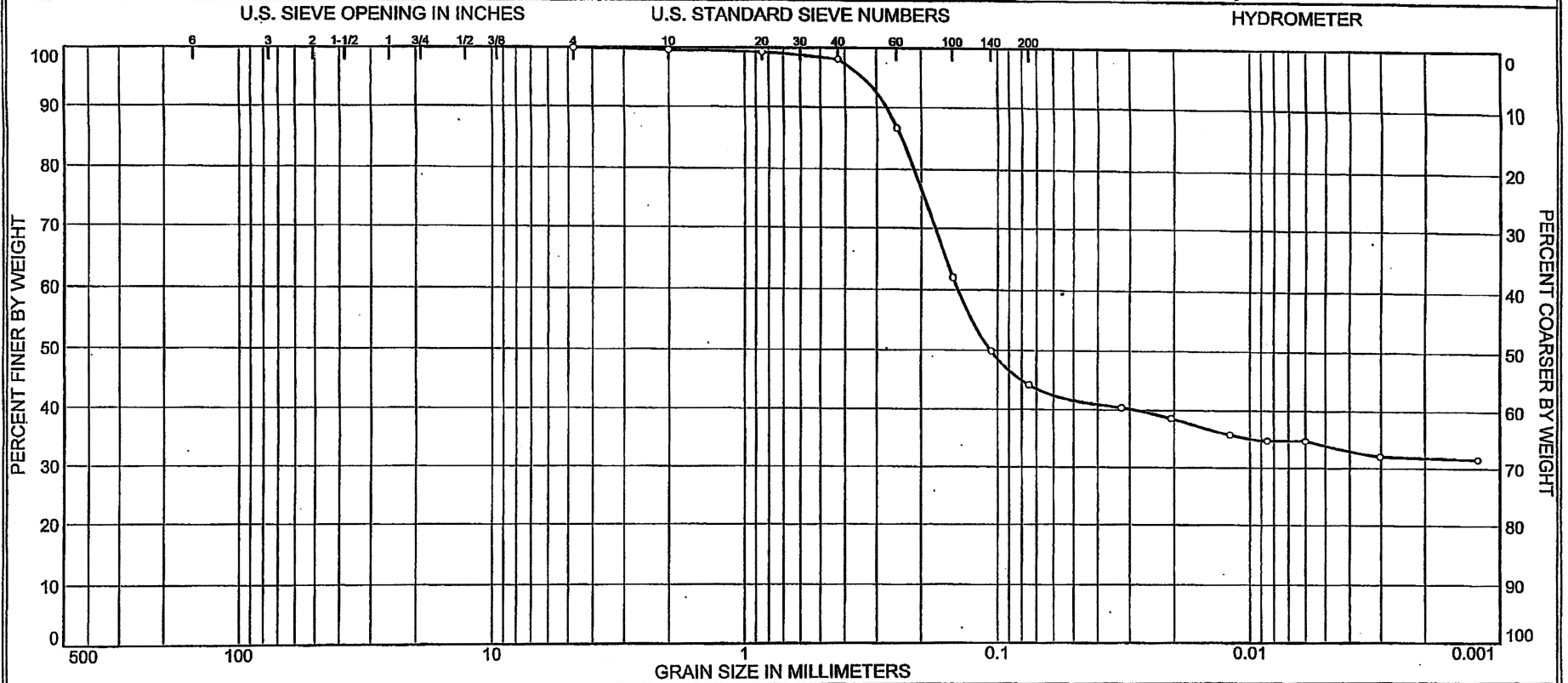
TESTED BY: EH

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

REVIEWED BY: Harry Johnson *HJ*

KAW 4-15-08

# 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	0.0	0.4	1.5	53.9	10.2	34.0

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-2319UD	UD-2	5.5-7.5 Ft	2/2/08	SC	Grayish Brown Clayey SAND	13.7	37	16

Client <b>Bechtel</b> Project <b>Exelon Texas COL (Victoria)</b>	<b>MACTEC ENGINEERING AND CONSULTING, INC.</b>	Tested by: EH    Reviewed by: HJ <span style="float: right;">HJ</span> NM value from first strength test performed. Specific Gravity = 2.73 (ASTM D 854-06)
Project No. <b>6468-07-1777</b> Lab No. <b>8352</b>		

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**GRAIN SIZE DISTRIBUTION TEST DATA**

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

---

**Sample Data**

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**Source:** B-2319UD  
**Sample No.:** UD-2  
**Elev. or Depth:** 5.5-7.5 Ft      **Sample Length(in./cm.):** ID#8352  
**Location:** B-2319UD  
**Description:** Grayish Brown Clayey SAND  
**Date:** 2/2/08      **PL:** 15.5      **LL:** 36.6      **PI:** 21.1  
**USCS Classification:** SC      **AASHTO Classification:**  
**Testing Remarks:** Tested by: EH      Reviewed by: HJ

NM value from first strength test performed.  
Specific Gravity = 2.73 (ASTM D 854-06)

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**Mechanical Analysis Data**

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	Initial	
Dry sample and tare=	68.56	
Tare =	15.77	
Dry sample weight =	52.79	
Tare for cumulative weight retained=	.00	
Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.22	99.6
# 20	0.36	99.3
# 40	0.98	98.1
# 60	6.93	86.9
# 100	20.05	62.0
# 140	26.47	49.9
# 200	29.48	44.2

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**Hydrometer Analysis Data**

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Separation sieve is #200  
Percent -#200 based upon complete sample= 44.2  
Weight of hydrometer sample: 23.31  
Calculated biased weight= 52.74  
Automatic temperature correction  
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0  
Specific gravity of solids= 2.726  
Specific gravity correction factor= 0.983  
Hydrometer type: 152H  
Effective depth L= 16.294964 - 0.164 x Rm