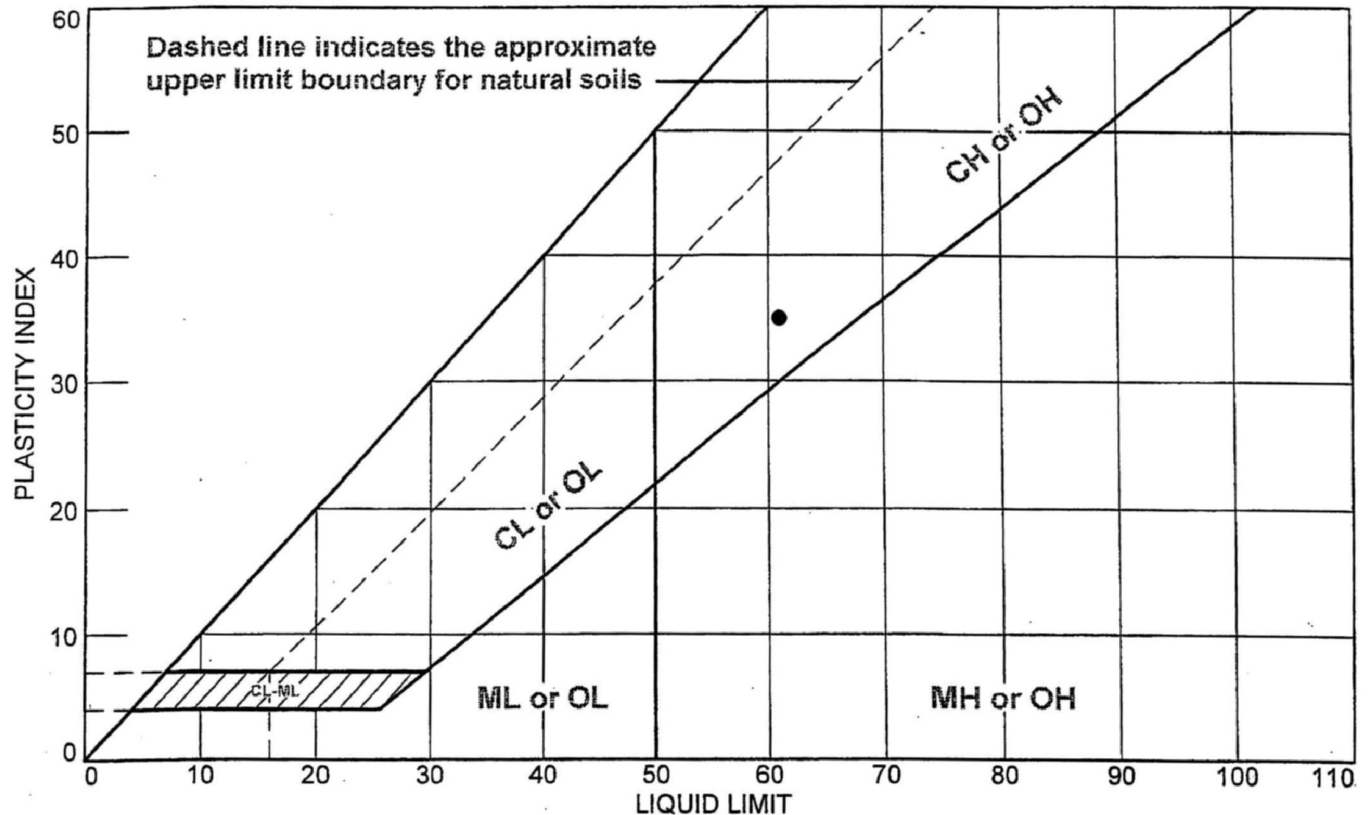


LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



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

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure 1A

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

Sample Number: UD-8

Material Description: Mottled Brownish Yellow and Pale Yellow Fat CLAY

USCS: CH

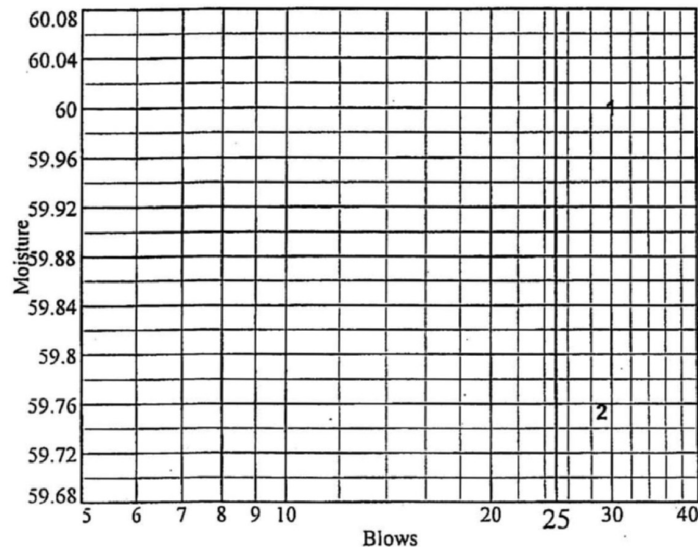
AASHTO: A-7-6(38)

Tested by: CS

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) Correction factor:	0.99983
(G x F) SPECIFIC GRAVITY @ 20°C:	2.712

MATERIAL TESTED:

☒ X

- # 4

☐

- # 10

PREPARATION METHOD:

☒ X

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

PYCNO METER : P-6

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

GRAIN SIZE DISTRIBUTION 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
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	
Sieve	Cumul. Wt. retained	Percent finer
# 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

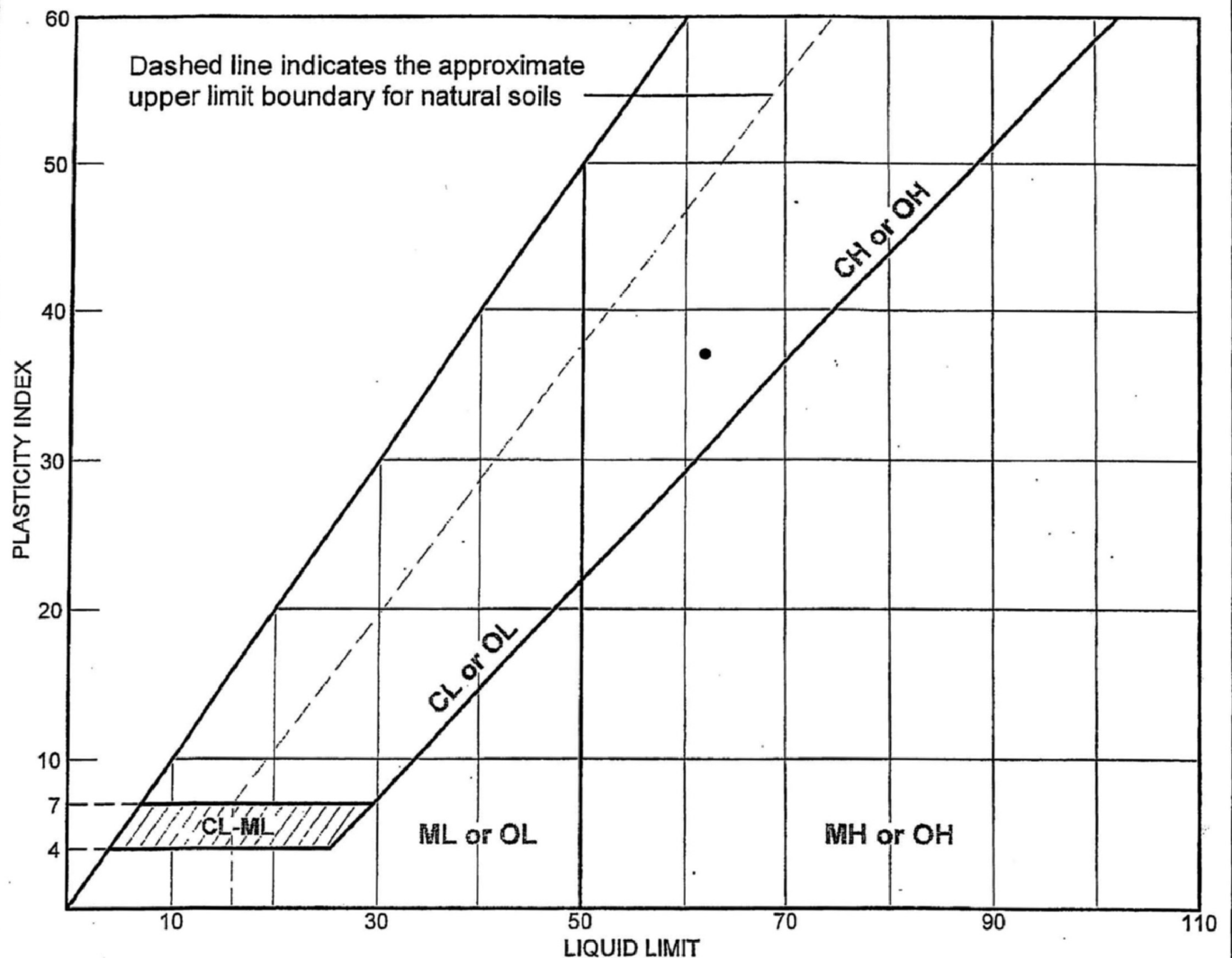
% COBBLES = % GRAVEL =

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

% SILT = 17.1 % CLAY = 66.6

D₈₅ = 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

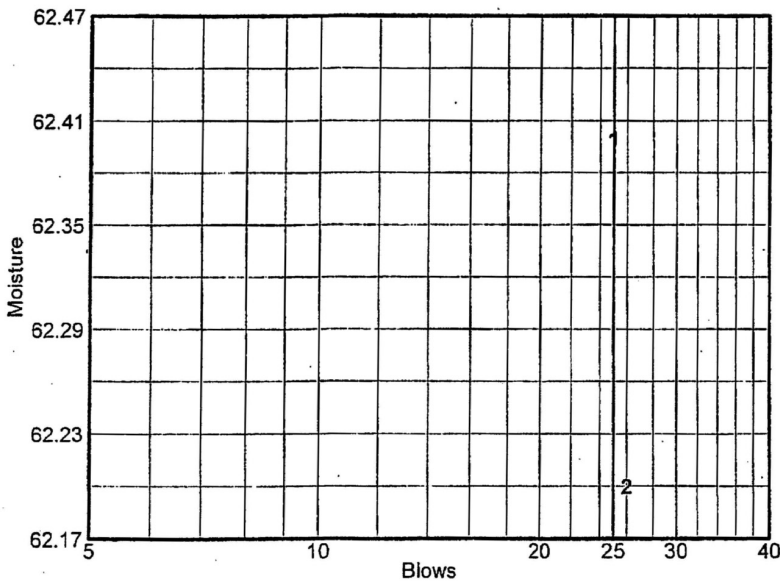
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

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:	$A / [B - (C - A)]$ 2.742
(F)	Correction factor: 0.99952
(G x F)	SPECIFIC GRAVITY @ 20°C: 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

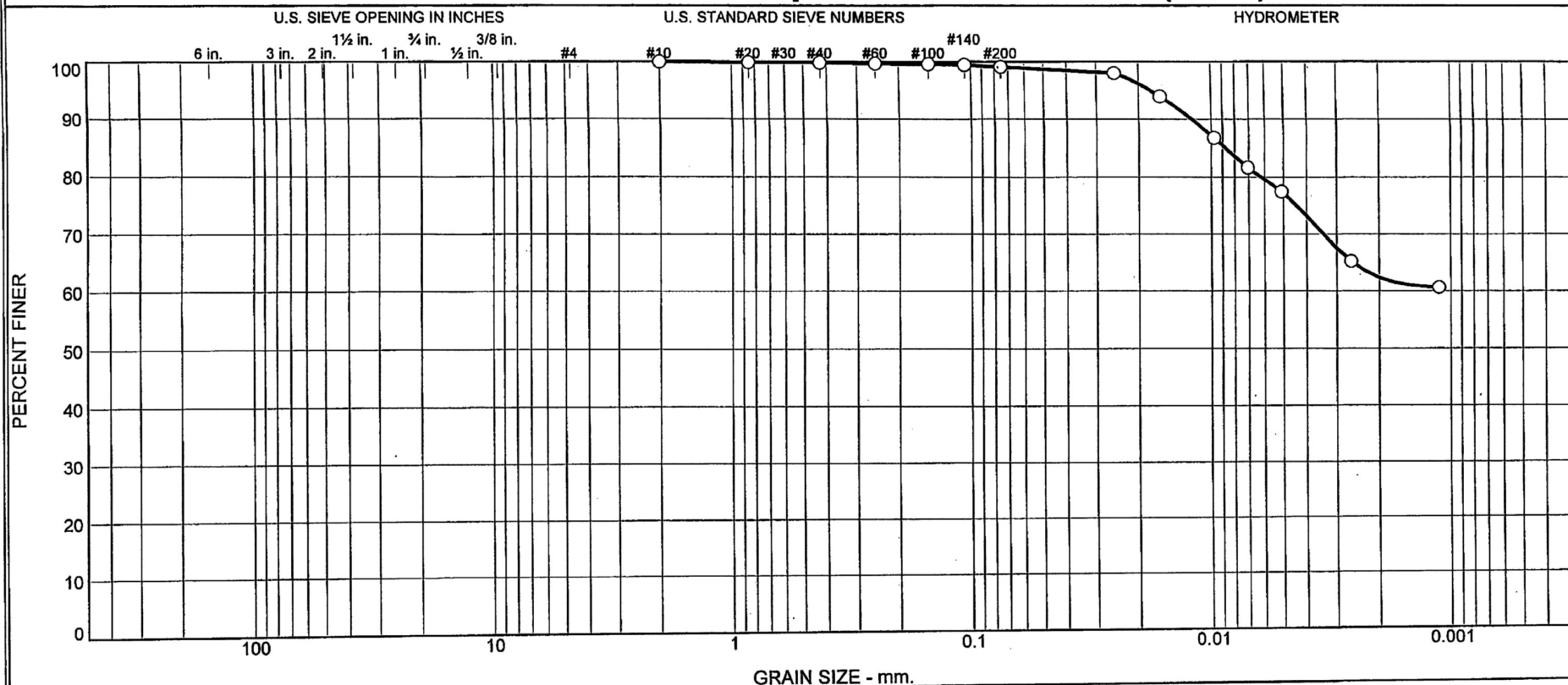
\\Test Reports\\Soils\\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: Harry Johnson

HD

KAW 4.15.08

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



GRAIN SIZE - mm.							
% +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

[illegible]

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777

Figure *NA*

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.719 (ASTM D854-06)
NM is average of values from consolidation and triaxial test specimens

KAW 518/08

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

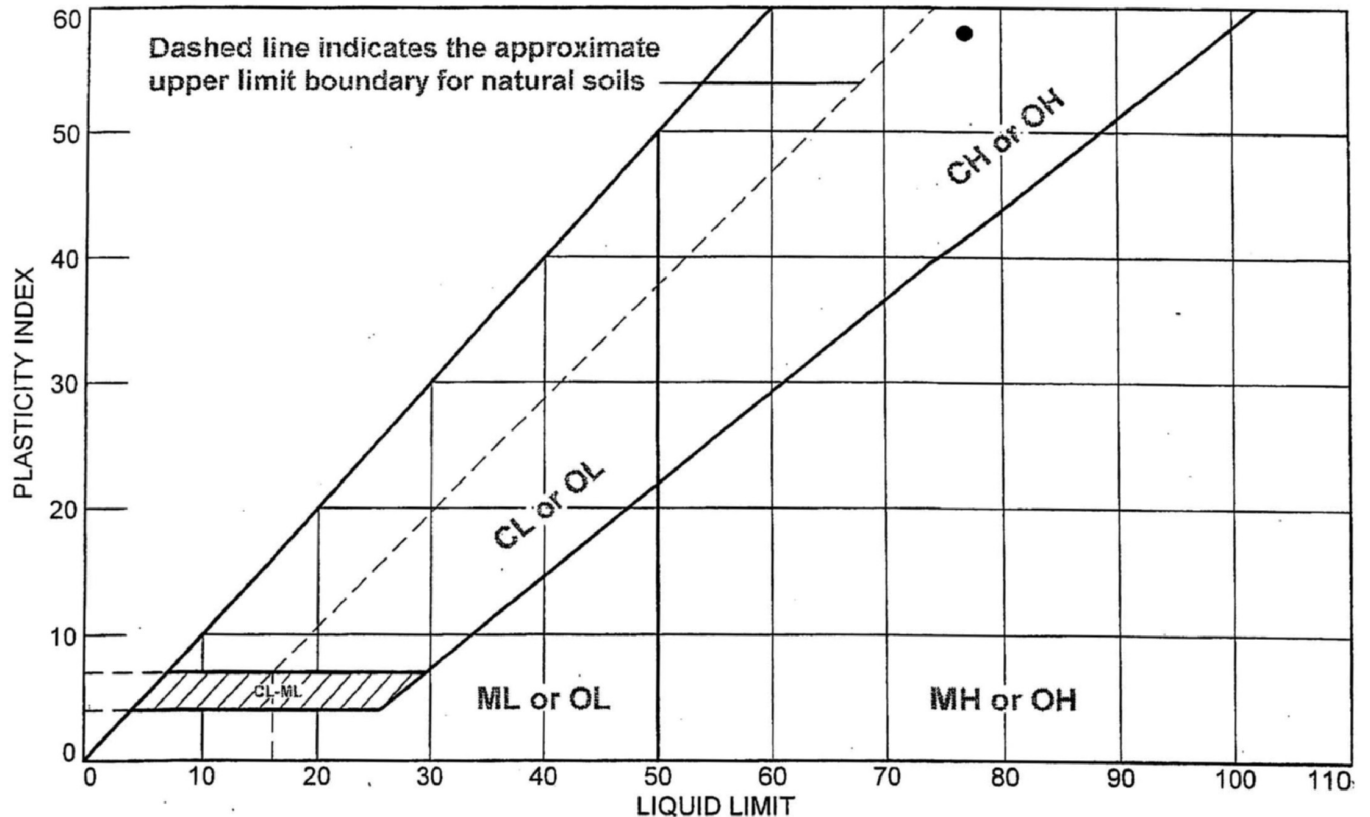
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.9	21.9	77.2	99.1

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

Fineness Modulus
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

MACTEC, Inc.

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

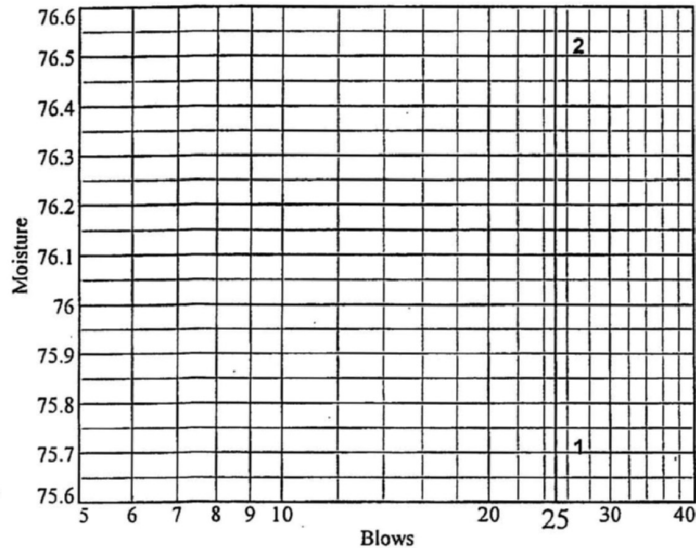
AASHTO: A-7-6(65)

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)	Correction factor: 0.99987
(G x F)	SPECIFIC GRAVITY @ 20°C: 2.719

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

PYCNO METER : P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

Client Bechtel		MACTEC, Inc. Raleigh, North Carolina	○ Specific Gravity = 2.708 (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>		

○ Specific Gravity = 2.708 (ASTM D854-06)
NM is average of values obtained from consolidation and triaxial test specimens

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: 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

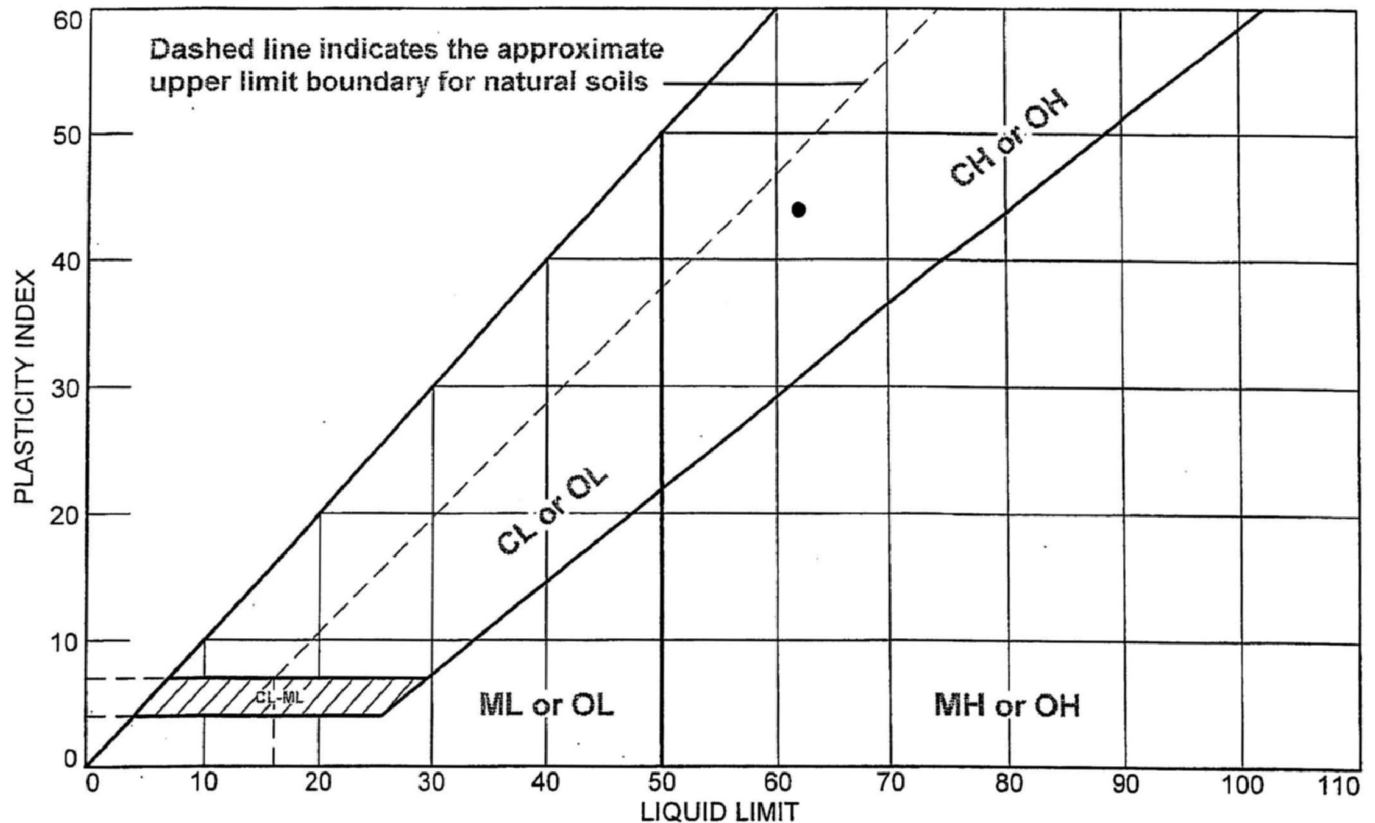
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.1	6.0	7.1	20.2	72.7	92.9

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

Fineness Modulus
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

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel

Project: Exelon Texas COL (Victoria Reservoir)

Project No.: 6468071777

Figure 1A

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

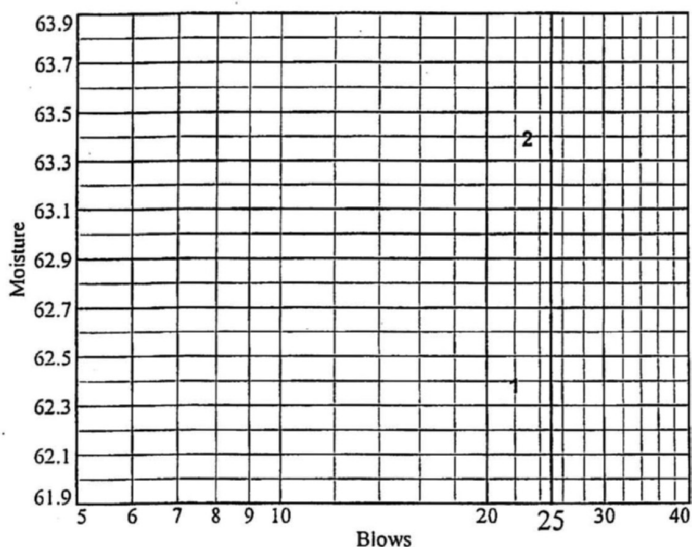
AASHTO: A-7-6(44)

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.