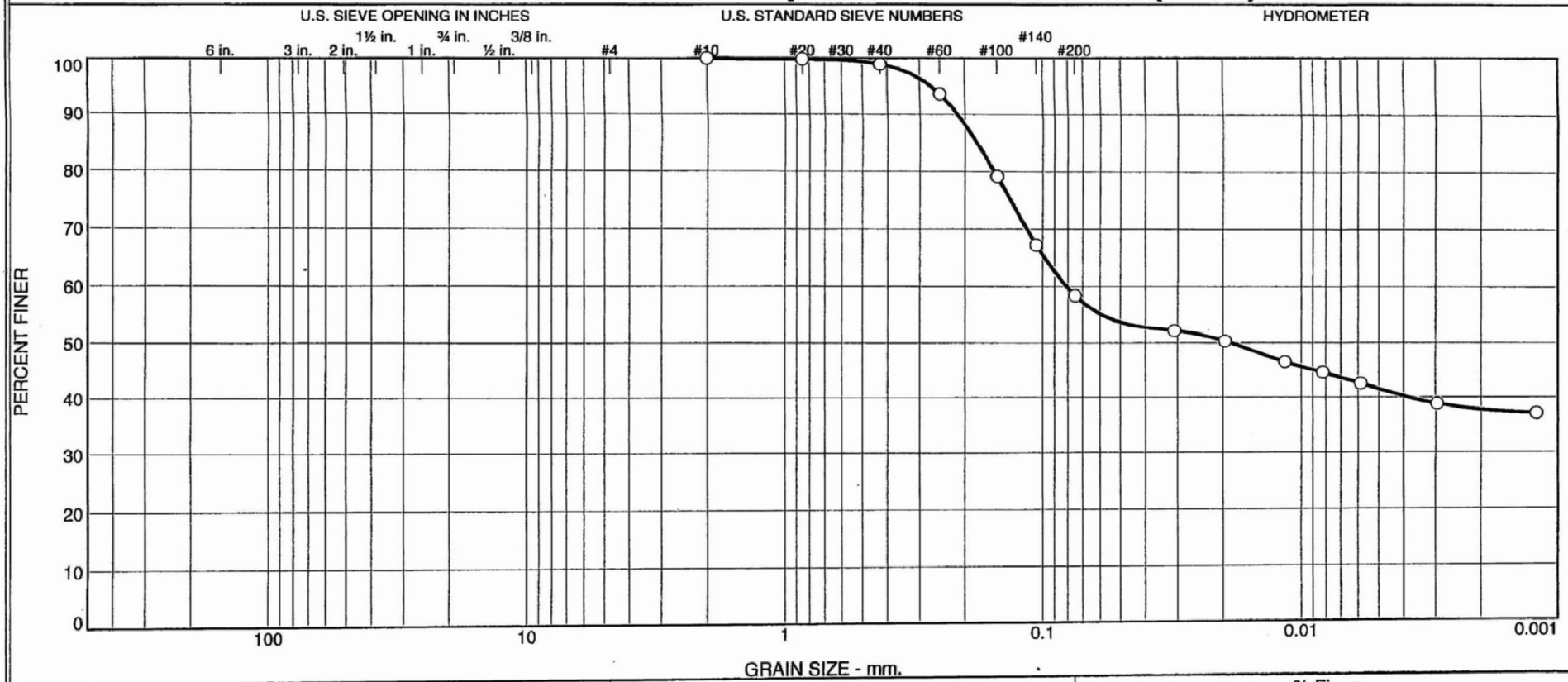
# Particle Size Distribution Report / ASTM D422-63(2002)e1




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 40.4 | 17.0 | 41.5 |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-2321 | SS-14 | 53.5-55.0 | 12-15-07 | CL | Light Gray Sandy Lean CLAY | 16.5 | 41 | 12 |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

○ Specific Gravity is assumed

**Tested By:** CS **Checked By:** LBJ DSC 2-27-08

## GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 53.5-55.0 **Sample Number:** SS-14
**Material Description:** Light Gray Sandy Lean CLAY
**Date:** 12-15-07 **Natural Moisture:** 16.5
**Liquid Limit:** 41 **Plastic Limit:** 12 **USCS Class.:** CL
**Testing Remarks:** Specific Gravity is assumed
**Tested by:** CS **Checked by:** LBJ

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 261.82 | 0.00 | 0.00 | #10 | 0.00 | 100.0 |
| 52.62 | 0.00 | 0.00 | #20 | 0.11 | 99.8 |
| | | | #40 | 0.58 | 98.9 |
| | | | #60 | 3.40 | 93.5 |
| | | | #100 | 10.98 | 79.1 |
| | | | #140 | 17.21 | 67.3 |
| | | | #200 | 21.86 | 58.5 |

### Hydrometer Test Data

**Hydrometer test uses material passing #10**
**Percent passing #10 based upon complete sample =** 100.0
**Weight of hydrometer sample =**52.62
**Hygroscopic moisture correction:**
**Moist weight and tare =** 28.76
**Dry weight and tare =** 28.35
**Tare weight =** 15.71
**Hygroscopic moisture =** 3.2%
**Table of composite correction values:**

| | | |
|---|---|---|
| **Temp., deg. C:** | 13.0 | 29.8 |
| **Comp. corr.:** | -8.0 | -2.0 |

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

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 21.3 | 32.0 | 27.0 | 0.0132 | 33.0 | 10.9 | 0.0309 | 52.3 |
| 5.00 | 21.3 | 31.0 | 26.0 | 0.0132 | 32.0 | 11.0 | 0.0197 | 50.4 |
| 15.00 | 21.3 | 29.0 | 24.0 | 0.0132 | 30.0 | 11.4 | 0.0115 | 46.5 |
| 30.00 | 21.3 | 28.0 | 23.0 | 0.0132 | 29.0 | 11.5 | 0.0082 | 44.6 |
| 60.00 | 21.1 | 27.0 | 21.9 | 0.0133 | 28.0 | 11.7 | 0.0059 | 42.5 |
| 240.00 | 21.4 | 25.0 | 20.0 | 0.0132 | 26.0 | 12.0 | 0.0030 | 38.8 |
| 1440.00 | 21.7 | 24.0 | 19.1 | 0.0132 | 25.0 | 12.2 | 0.0012 | 37.1 |

**MACTEC, Inc.**

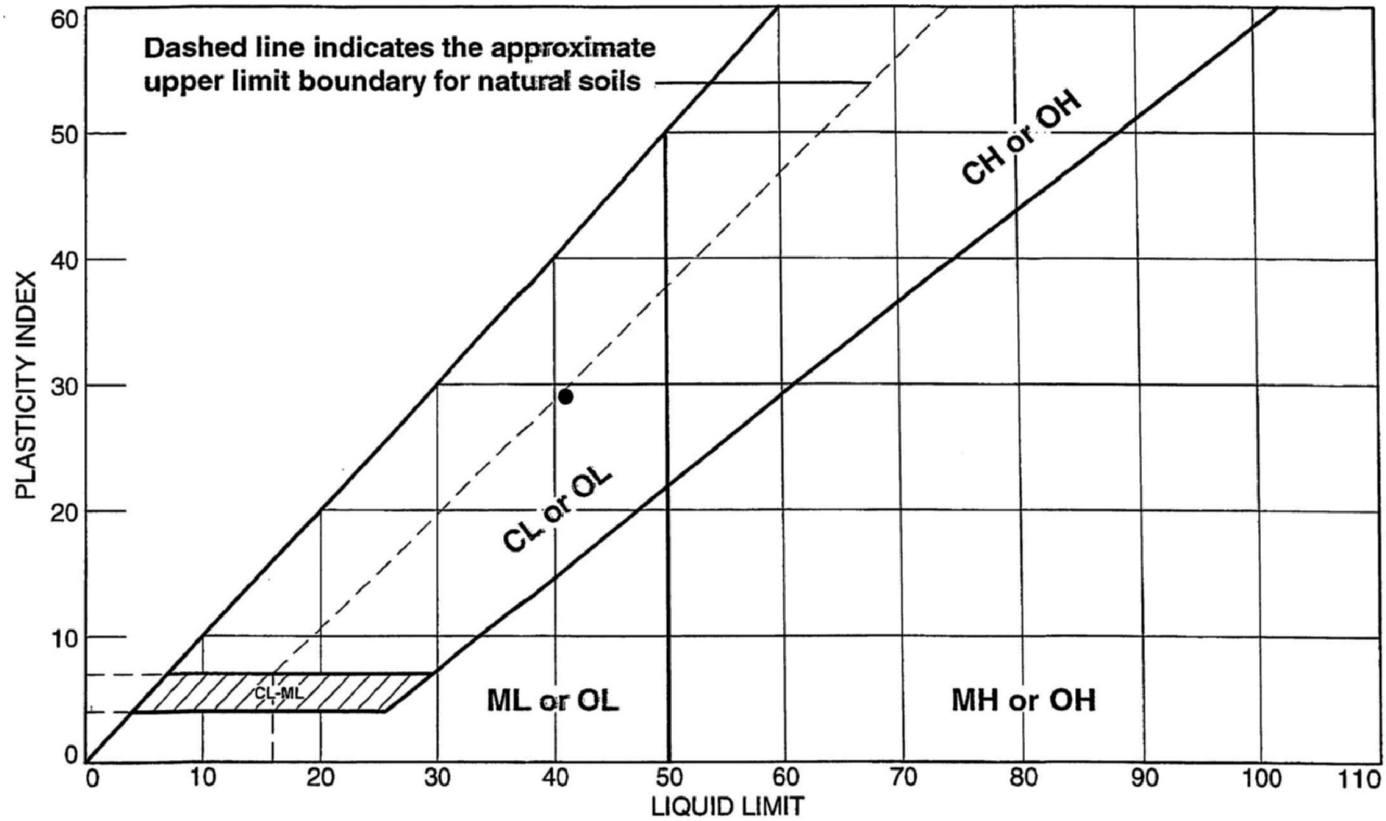
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 40.4 | 41.5 | 17.0 | 41.5 | 58.5 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.0186 | 0.0809 | 0.1539 | 0.1794 | 0.2138 | 0.2719 |

| Fineness Modulus |
|---|
| 0.25 |

# 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-2321 | SS-14 | 53.5-55.0 | 16.5 | 12 | 41 | 29 | CL |

**MACTEC, Inc.**

**Raleigh, North Carolina**

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

**Tested By:** CS **Checked By:** LBJ DSC 2-27-08

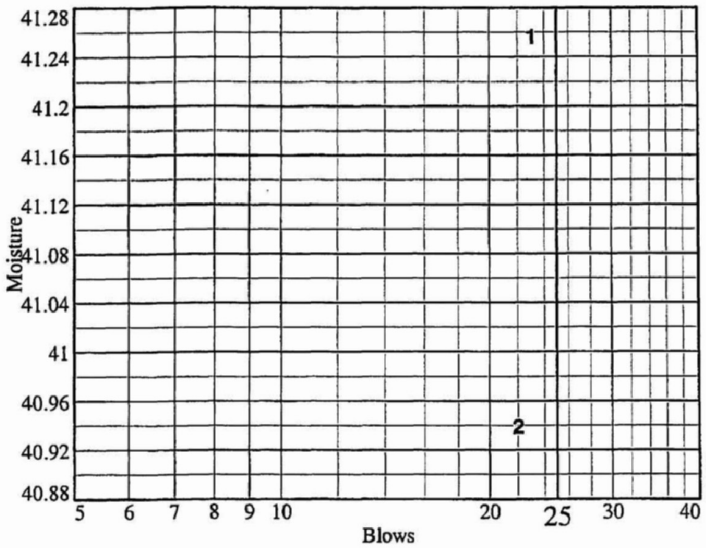
## LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 53.5-55.0 **Sample Number:** SS-14
**Material Description:** Light Gray Sandy Lean CLAY
**USCS:** CL **AASHTO:** A-7-6(13)
**Tested by:** CS **Checked by:** LBJ

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 25.83 | 28.21 | | | | |
| Dry+Tare | 22.81 | 24.55 | | | | |
| Tare | 15.49 | 15.61 | | | | |
| # Blows | 23 | 22 | | | | |
| Moisture | 41.3 | 40.9 | | | | |




**Liquid Limit=** 41
**Plastic Limit=** 12
**Plasticity Index=** 29
**Natural Moisture=** 16.5
**Liquidity Index=** 0.2

### Plastic Limit Data

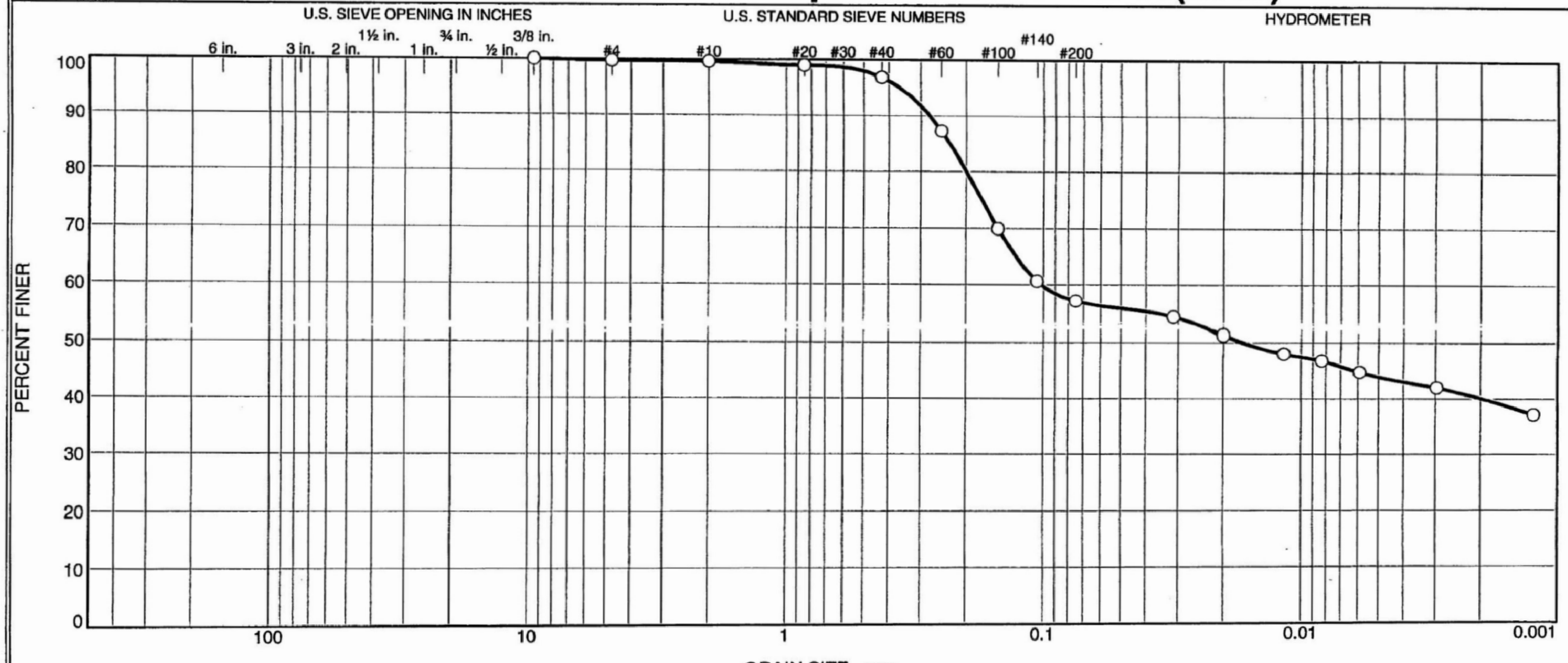
| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | 22.80 | 23.25 | | | |
| Dry+Tare | 21.99 | 22.43 | | | |
| Tare | 15.50 | 15.48 | | | |
| Moisture | 12.5 | 11.8 | | | |

### Natural Moisture Data

| Wet+Tare | Dry+Tare | Tare | Moisture |
|---|---|---|---|
| 93.76 | 81.47 | 6.81 | 16.5 |

MACTEC, Inc.

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




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| O | 0.0 | 0.0 | 0.3 | 0.1 | 2.7 | 39.8 | 13.2 | 43.9 |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| O | Boring B-2321 | SS-15 | 58.5-60.0 | 12-15-07 | CL | Light Gray and Brownish Yellow Sandy Lean CLAY | 15.8 | 41 | 18 |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

O Specific Gravity = 2.681 (ASTM D854-06)

**Tested By:** CS **Checked By:** LBJ DSC 2-27-08

## GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 58.5-60.0 **Sample Number:** SS-15
**Material Description:** Light Gray and Brownish Yellow Sandy Lean CLAY
**Date:** 12-15-07 **Natural Moisture:** 15.8
**Liquid Limit:** 41 **Plastic Limit:** 18 **USCS Class.:** CL
**Testing Remarks:** Specific Gravity = 2.681 (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 |
|---|---|---|---|---|---|
| 257.74 | 0.00 | 0.00 | .375 | 0.00 | 100.0 |
| | | | #4 | 0.69 | 99.7 |
| | | | #10 | 1.02 | 99.6 |
| 48.76 | 0.00 | 0.00 | #20 | 0.31 | 99.0 |
| | | | #40 | 1.33 | 96.9 |
| | | | #60 | 6.02 | 87.3 |
| | | | #100 | 14.51 | 70.0 |
| | | | #140 | 19.06 | 60.7 |
| | | | #200 | 20.81 | 57.1 |

### Hydrometer Test Data

**Hydrometer test uses material passing #10**
**Percent passing #10 based upon complete sample =** 99.6
**Weight of hydrometer sample =**48.76
**Hygroscopic moisture correction:**
**Moist weight and tare =** 45.49
**Dry weight and tare =** 45.08
**Tare weight =** 31.89
**Hygroscopic moisture =** 3.1%
**Table of composite correction values:**

| | | |
|---|---|---|
| **Temp., deg. C:** | 13.0 | 29.8 |
| **Comp. corr.:** | -8.0 | -2.0 |

**Meniscus correction only =** 1.0
**Specific gravity of solids =** 2.681
**Hydrometer type =** 152H
**Hydrometer effective depth equation: L =** 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 21.3 | 31.0 | 26.0 | 0.0133 | 32.0 | 11.0 | 0.0313 | 54.3 |
| 5.00 | 21.3 | 29.5 | 24.5 | 0.0133 | 30.5 | 11.3 | 0.0200 | 51.2 |
| 15.00 | 21.3 | 28.0 | 23.0 | 0.0133 | 29.0 | 11.5 | 0.0117 | 48.0 |
| 30.00 | 21.1 | 27.5 | 22.4 | 0.0133 | 28.5 | 11.6 | 0.0083 | 46.8 |
| 60.00 | 21.1 | 26.5 | 21.4 | 0.0133 | 27.5 | 11.8 | 0.0059 | 44.7 |
| 240.00 | 21.6 | 25.0 | 20.1 | 0.0133 | 26.0 | 12.0 | 0.0030 | 42.0 |
| 1440.00 | 20.8 | 23.0 | 17.8 | 0.0134 | 24.0 | 12.4 | 0.0012 | 37.2 |

**MACTEC, Inc.**

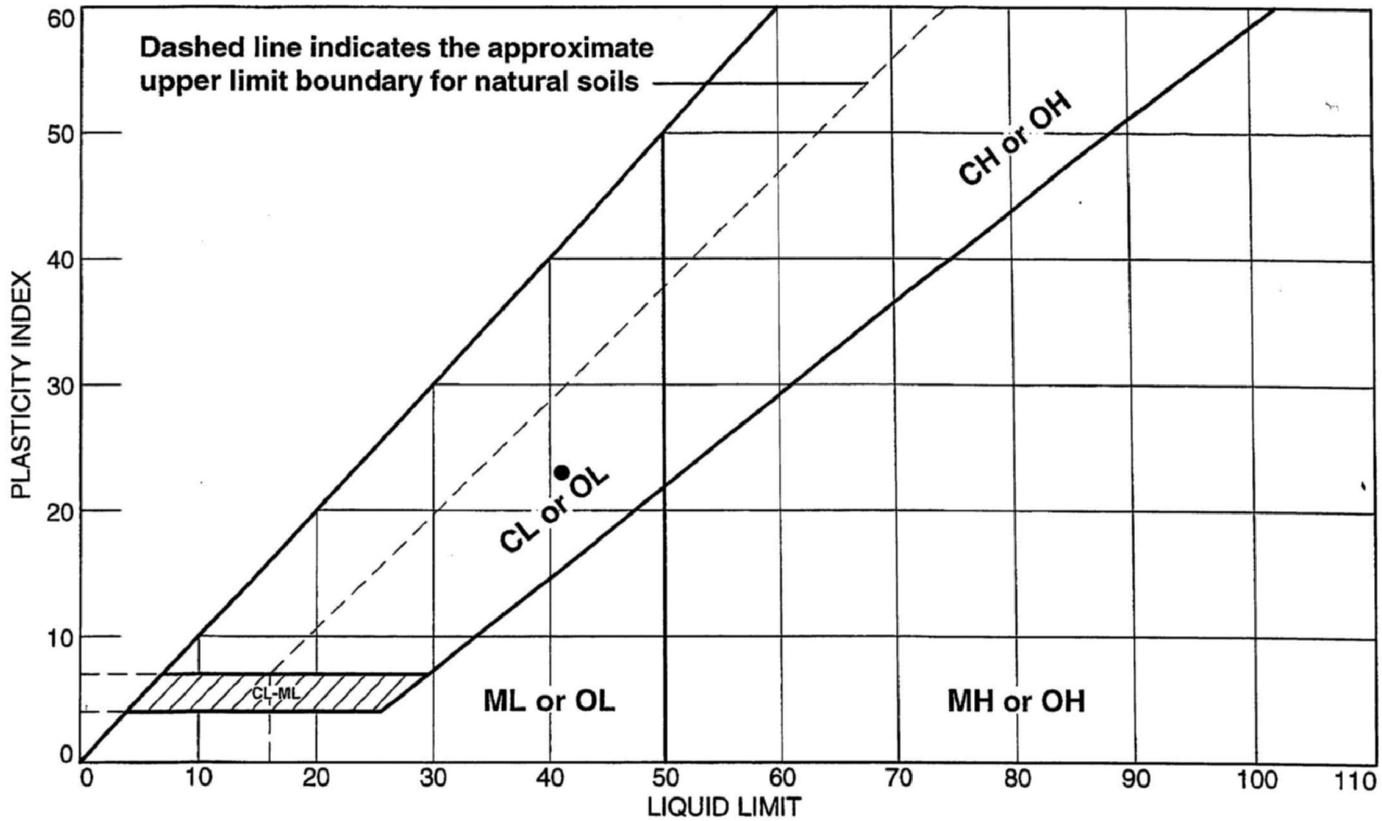
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.3 | 0.3 | 0.1 | 2.7 | 39.8 | 42.6 | 13.2 | 43.9 | 57.1 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.0169 | 0.1019 | 0.1995 | 0.2315 | 0.2770 | 0.3610 |

| Fineness Modulus |
|---|
| 0.41 |

# 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-2321 | SS-15 | 58.5-60.0 | 15.8 | 18 | 41 | 23 | CL |

| | |
|---|---|
| **MACTEC, Inc.**<br>**Raleigh, North Carolina** | **Client:** Bechtel<br>**Project:** Exelon Texas COL (Victoria Reservoir)<br>**Project No.:** 6468071777 **Figure** N A |

**Tested By:** CS **Checked By:** LBJ DSC 2-27-08

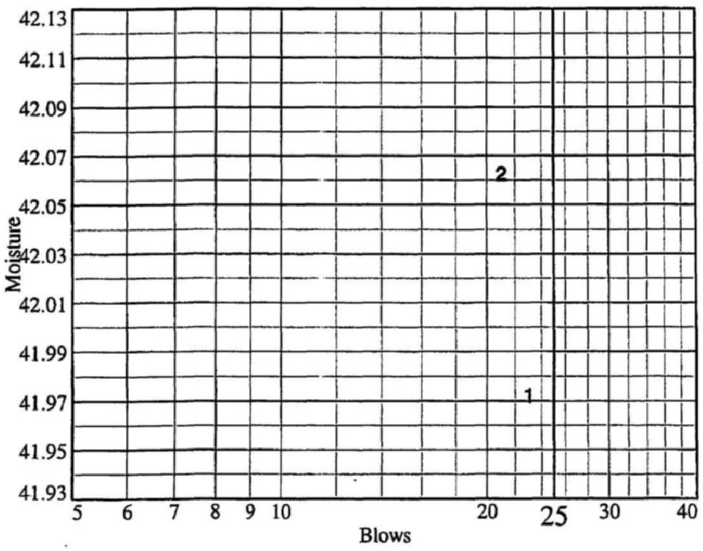
## LIQUID AND PLASTIC LIMIT TEST DATA

**2/27/2008**

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 58.5-60.0 **Sample Number:** SS-15
**Material Description:** Light Gray and Brownish Yellow Sandy Lean CLAY
**USCS:** CL **AASHTO:** A-7-6(10)
**Tested by:** CS **Checked by:** LBJ

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 28.69 | 30.51 | | | | |
| Dry+Tare | 23.54 | 24.76 | | | | |
| Tare | 11.27 | 11.09 | | | | |
| # Blows | 23 | 21 | | | | |
| Moisture | 42.0 | 42.1 | | | | |




**Liquid Limit=** 41
**Plastic Limit=** 18
**Plasticity Index=** 23
**Natural Moisture=** 15.8
**Liquidity Index=** -0.1

### Plastic Limit Data

| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | 22.43 | 23.16 | | | |
| Dry+Tare | 21.36 | 22.00 | | | |
| Tare | 15.48 | 15.45 | | | |
| Moisture | 18.2 | 17.7 | | | |

### Natural Moisture Data

| Wet+Tare | Dry+Tare | Tare | Moisture |
|---|---|---|---|
| 120.75 | 105.24 | 6.84 | 15.8 |

**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: 2/13/2008

SAMPLE IDENTIFICATION: B-2321,SS-15

| | | |
|---|---|---|
| (A) Mass of oven-dried soil, grams: | | 51.37 |
| (B) Mass of pycnometer filled with water at test temperature (T), grams: | | 655.92 |
| (C) Mass of pycnometer, water and soil, grams: | | 688.13 |
| (T) Temperature of pycnometer, water and soil, °C when mass (C) determined: | | 19.7 |
| (G) Specific Gravity at observed temperature: | A / [ B - ( C - A )] | 2.681 |
| (F) | ***Correction factor:*** | 1.00006 |
| (G x F) | **SPECIFIC GRAVITY @ 20°C:** | 2.681 |

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

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

**REMARKS: Estimated % Passing # 4 : 100**

**Sandy Lean CLAY (CL)**

**EQUIPMENT USED**

**SCALES : 3.1.99**

**OVEN :5.1.16**

**THERMOMETER :5.1.01**

**PYCNOMETER : P-6**

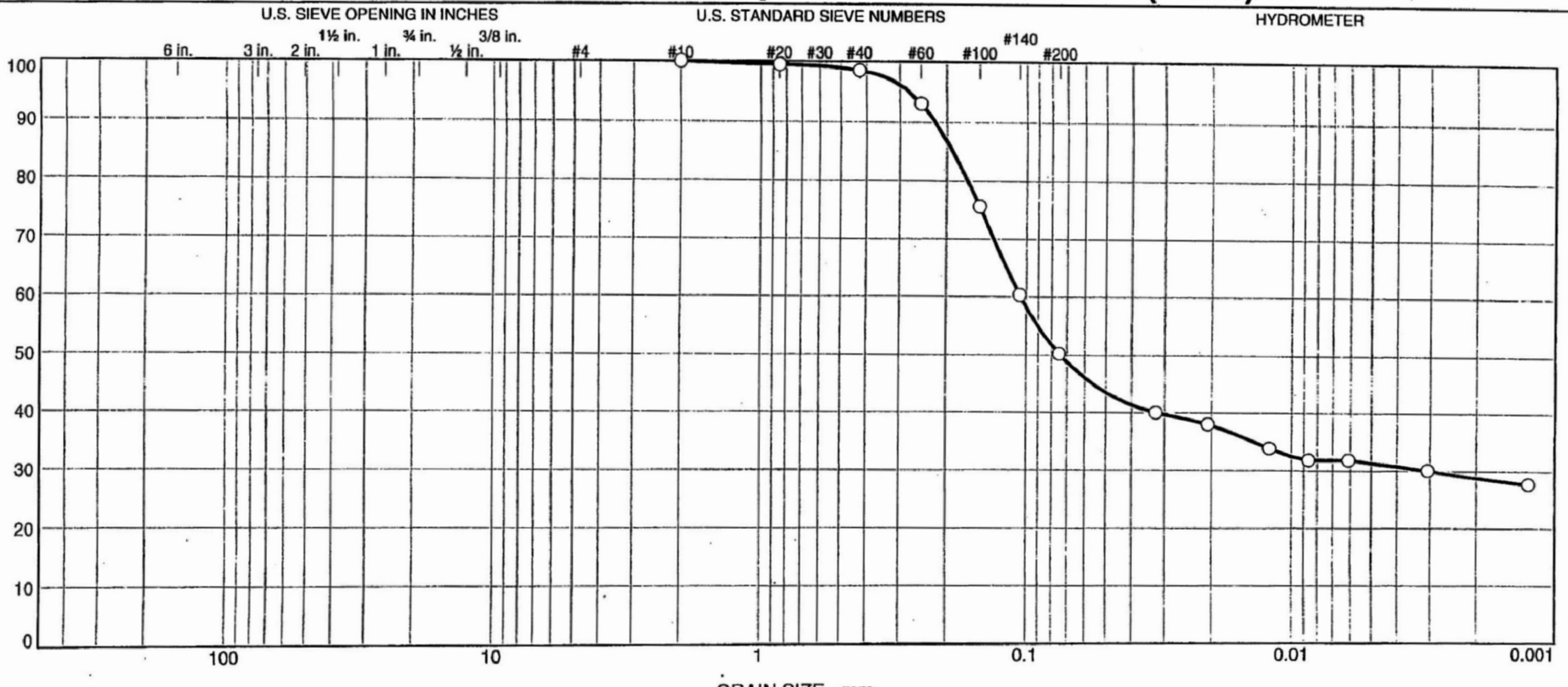
**TESTED BY: CS**

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

**REVIEWED BY:** **Brian Johnson**

DSC 2-28-08

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




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| O | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 48.2 | 18.9 | 31.4 |
| | | | | | | | | |
| | | | | | | | | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| O | Boring B-2321 | SS-16 | 63.5-65.0 | 12-15-07 | CL | Light Gray Sandy Lean CLAY | 16.0 | 31 | 14 |
| | | | | | | | | | |
| | | | | | | | | | |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

O Specific Gravity is assumed

Tested By: CS Checked By: LBJ DSC 2-27-08

## GRAIN SIZE DISTRIBUTION TEST DATA

2/21/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 63.5-65.0 **Sample Number:** SS-16
**Material Description:** Light Gray Sandy Lean CLAY
**Date:** 12-15-07 **Natural Moisture:** 16.0
**Liquid Limit:** 31 **Plastic Limit:** 14 **USCS Class.:** CL
**Testing Remarks:** Specific Gravity is assumed
**Tested by:** CS **Checked by:** LBJ

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 248.68 | 0.00 | 0.00 | #10 | 0.00 | 100.0 |
| 50.36 | 0.00 | 0.00 | #20 | 0.25 | 99.5 |
| | | | #40 | 0.74 | 98.5 |
| | | | #60 | 3.45 | 93.1 |
| | | | #100 | 12.29 | 75.6 |
| | | | #140 | 19.96 | 60.4 |
| | | | #200 | 25.05 | 50.3 |

### Hydrometer Test Data

**Hydrometer test uses material passing #10**
**Percent passing #10 based upon complete sample =** 100.0
**Weight of hydrometer sample =**50.36
**Hygroscopic moisture correction:**
**Moist weight and tare =** 29.03
**Dry weight and tare =** 28.75
**Tare weight =** 15.93
**Hygroscopic moisture =** 2.2%
**Table of composite correction values:**

| | | |
|---|---|---|
| **Temp., deg. C:** | 13.0 | 29.8 |
| **Comp. corr.:** | -8.0 | -2.0 |

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

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 21.3 | 25.0 | 20.0 | 0.0132 | 26.0 | 12.0 | 0.0324 | 40.1 |
| 5.00 | 21.3 | 24.0 | 19.0 | 0.0132 | 25.0 | 12.2 | 0.0207 | 38.1 |
| 15.00 | 21.1 | 22.0 | 16.9 | 0.0133 | 23.0 | 12.5 | 0.0121 | 33.9 |
| 30.00 | 21.1 | 21.0 | 15.9 | 0.0133 | 22.0 | 12.7 | 0.0086 | 31.9 |
| 60.00 | 21.1 | 21.0 | 15.9 | 0.0133 | 22.0 | 12.7 | 0.0061 | 31.9 |
| 240.00 | 21.4 | 20.0 | 15.0 | 0.0132 | 21.0 | 12.9 | 0.0031 | 30.1 |
| 1440.00 | 20.9 | 19.0 | 13.8 | 0.0133 | 20.0 | 13.0 | 0.0013 | 27.7 |

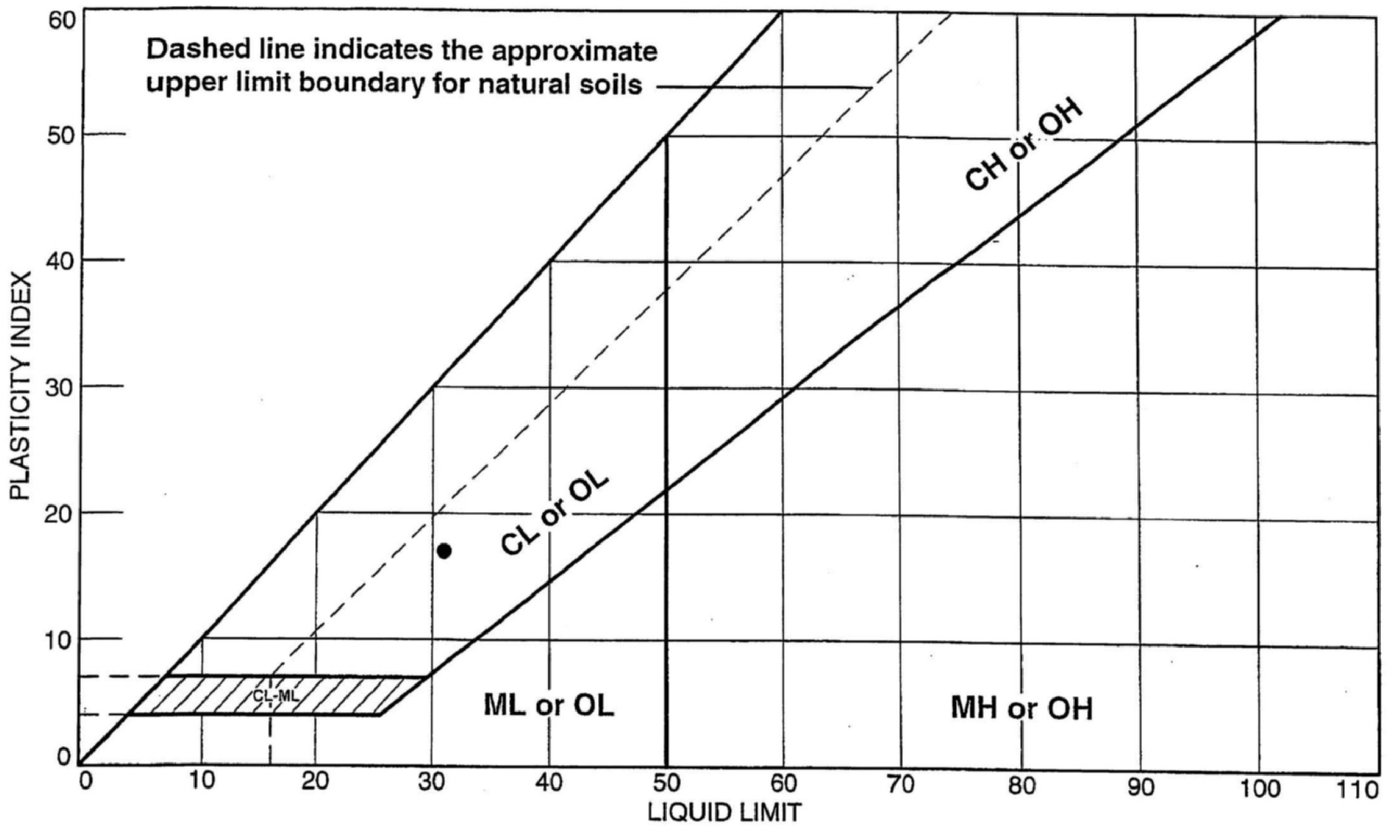
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 48.2 | 49.7 | 18.9 | 31.4 | 50.3 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | 0.0030 | 0.0741 | 0.1050 | 0.1663 | 0.1892 | 0.2207 | 0.2759 |

| Fineness Modulus |
|---|
| 0.29 |

# 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-2321 | SS-16 | 63.5-65.0 | 16.0 | 14 | 31 | 17 | CL |

| | |
|---|---|
| **MACTEC, Inc.**<br>**Raleigh, North Carolina** | **Client:** Bechtel<br>**Project:** Exelon Texas COL (Victoria Reservoir)<br>**Project No.:** 6468071777 **Figure** NA |

**Tested By:** CS 7/18/2008 **Checked By:** BJ DSC 2-27-08 DCN# EXE808

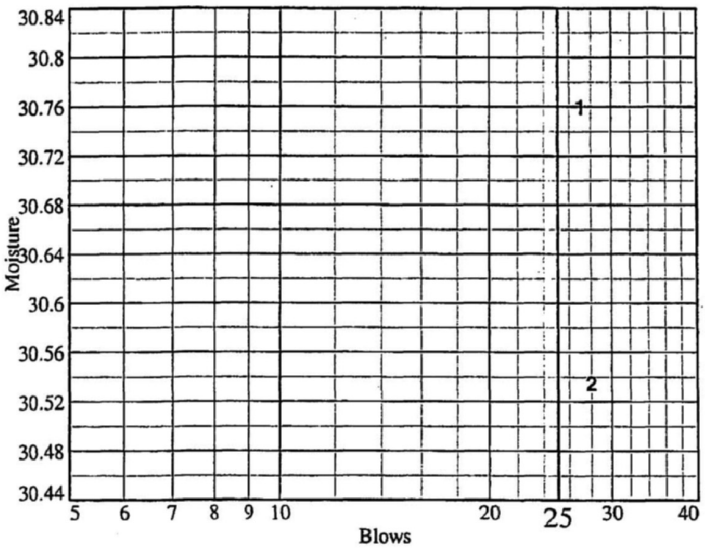
## LIQUID AND PLASTIC LIMIT TEST DATA

2/21/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 63.5-65.0 **Sample Number:** SS-16
**Material Description:** Light Gray Sandy Lean CLAY
**USCS:** CL **AASHTO:** A-6(5)
**Tested by:** CS **Checked by:** LBJ

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 26.39 | 26.37 | | | | |
| Dry+Tare | 23.84 | 23.86 | | | | |
| Tare | 15.55 | 15.64 | | | | |
| # Blows | 27 | 28 | | | | |
| Moisture | 30.8 | 30.5 | | | | |




**Liquid Limit=** 31
**Plastic Limit=** 14
**Plasticity Index=** 17
**Natural Moisture=** 16.0
**Liquidity Index=** 0.1

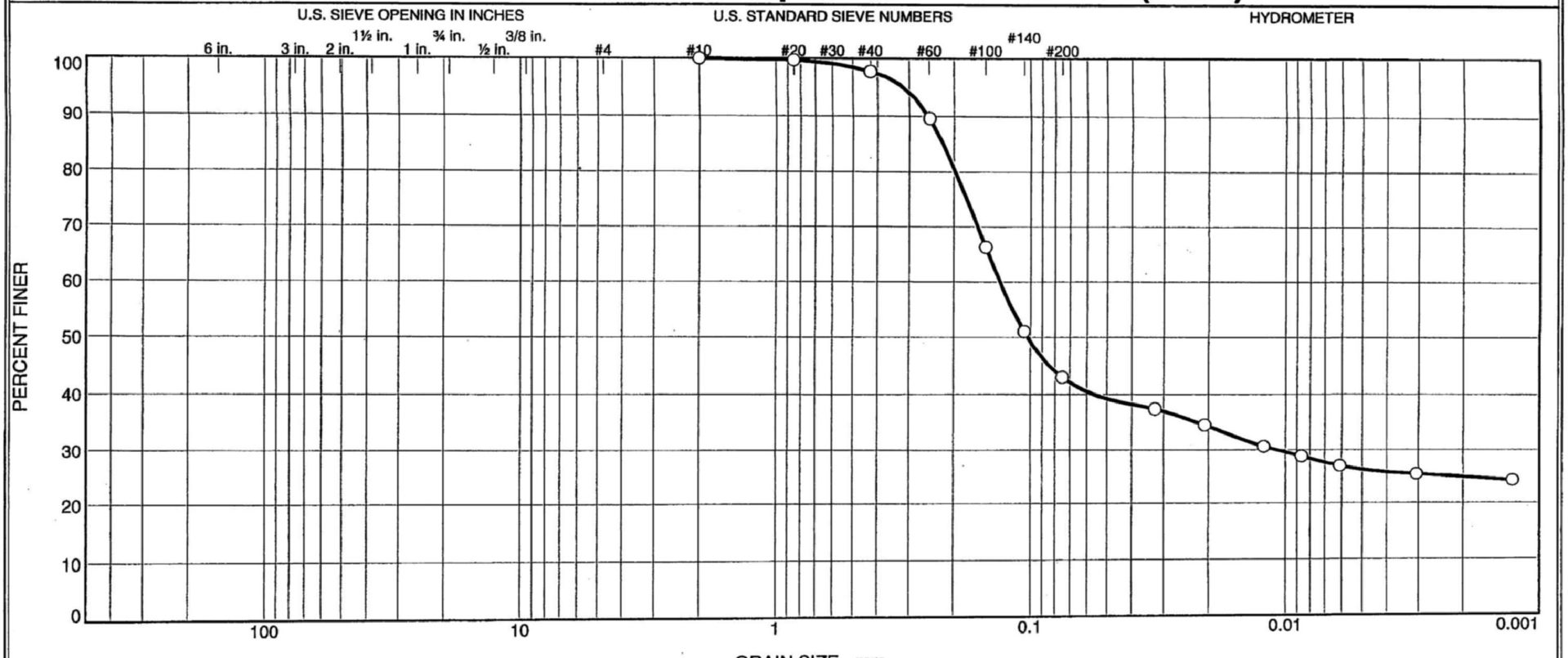
### Plastic Limit Data

| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | 23.46 | 22.96 | | | |
| Dry+Tare | 22.46 | 22.04 | | | |
| Tare | 15.51 | 15.51 | | | |
| Moisture | 14.4 | 14.1 | | | |

### Natural Moisture Data

| Wet+Tare | Dry+Tare | Tare | Moisture |
|---|---|---|---|
| 118.44 | 102.99 | 6.71 | 16.0 |

# 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 | 2.4 | 54.6 | 16.6 | 26.4 |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-2321 | SS-17 | 68.5-70.0 | 12-15-07 | SC | Light Gray Clayey SAND | 16.3 | 30 | 17 |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

○ Specific Gravity is assumed

Tested By: CS Checked By: LBJ DSC 2-27-08

## GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 68.5-70.0 **Sample Number:** SS-17
**Material Description:** Light Gray Clayey SAND
**Date:** 12-15-07 **Natural Moisture:** 16.3
**Liquid Limit:** 30 **Plastic Limit:** 17 **USCS Class.:** SC
**Testing Remarks:** Specific Gravity is assumed
**Tested by:** CS **Checked by:** LBJ

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 276.75 | 0.00 | 0.00 | #10 | 0.00 | 100.0 |
| 52.98 | 0.00 | 0.00 | #20 | 0.17 | 99.7 |
| | | | #40 | 1.25 | 97.6 |
| | | | #60 | 5.52 | 89.6 |
| | | | #100 | 17.86 | 66.3 |
| | | | #140 | 25.94 | 51.0 |
| | | | #200 | 30.19 | 43.0 |

### Hydrometer Test Data

**Hydrometer test uses material passing #10**
**Percent passing #10 based upon complete sample =** 100.0
**Weight of hydrometer sample =**52.98
**Hygroscopic moisture correction:**
**Moist weight and tare =** 28.35
**Dry weight and tare =** 28.06
**Tare weight =** 15.46
**Hygroscopic moisture =** 2.3%
**Table of composite correction values:**

| | | |
|---|---|---|
| **Temp., deg. C:** | 13.0 | 29.8 |
| **Comp. corr.:** | -8.0 | -2.0 |

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

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 21.7 | 24.5 | 19.6 | 0.0132 | 25.5 | 12.1 | 0.0324 | 37.4 |
| 5.00 | 21.7 | 23.0 | 18.1 | 0.0132 | 24.0 | 12.4 | 0.0207 | 34.6 |
| 15.00 | 21.6 | 21.0 | 16.1 | 0.0132 | 22.0 | 12.7 | 0.0121 | 30.7 |
| 30.00 | 21.7 | 20.0 | 15.1 | 0.0132 | 21.0 | 12.9 | 0.0086 | 28.8 |
| 60.00 | 21.9 | 19.0 | 14.2 | 0.0131 | 20.0 | 13.0 | 0.0061 | 27.1 |
| 240.00 | 22.4 | 18.0 | 13.4 | 0.0131 | 19.0 | 13.2 | 0.0031 | 25.5 |
| 1440.00 | 20.6 | 18.0 | 12.7 | 0.0133 | 19.0 | 13.2 | 0.0013 | 24.3 |

**MACTEC, Inc.**

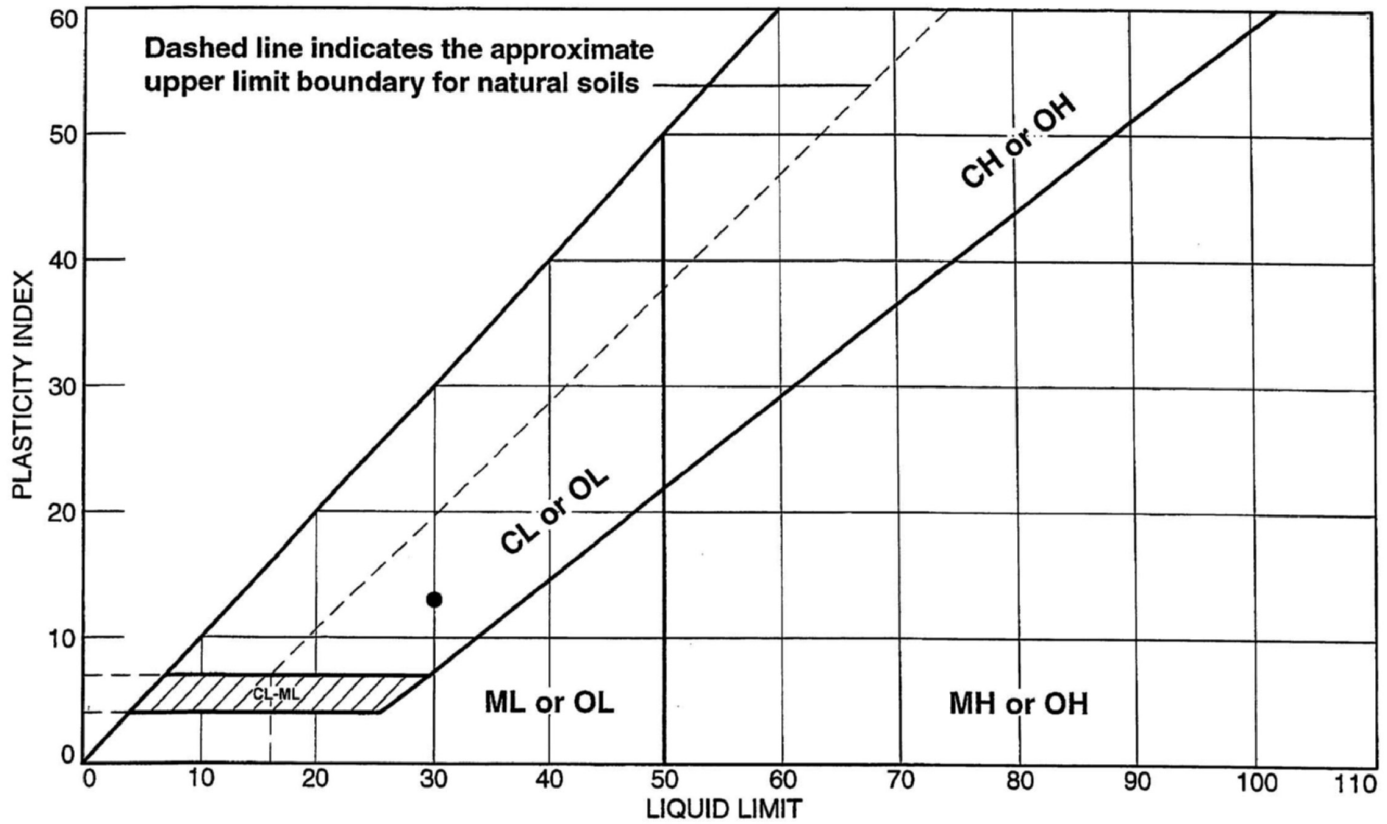
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 54.6 | 57.0 | 16.6 | 26.4 | 43.0 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | 0.0107 | 0.1027 | 0.1318 | 0.1973 | 0.2208 | 0.2534 | 0.3178 |

| Fineness Modulus |
|---|
| 0.41 |

# 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-2321 | SS-17 | 68.5-70.0 | 16.3 | 17 | 30 | 13 | SC |

| | |
|---|---|
| **MACTEC, Inc.**<br><br>**Raleigh, North Carolina** | **Client:** Bechtel<br>**Project:** Exelon Texas COL (Victoria Reservoir)<br><br>**Project No.:** 6468071777 **Figure** NA |

**Tested By:** CS **Checked By:** LBJ DSC 2-27-08

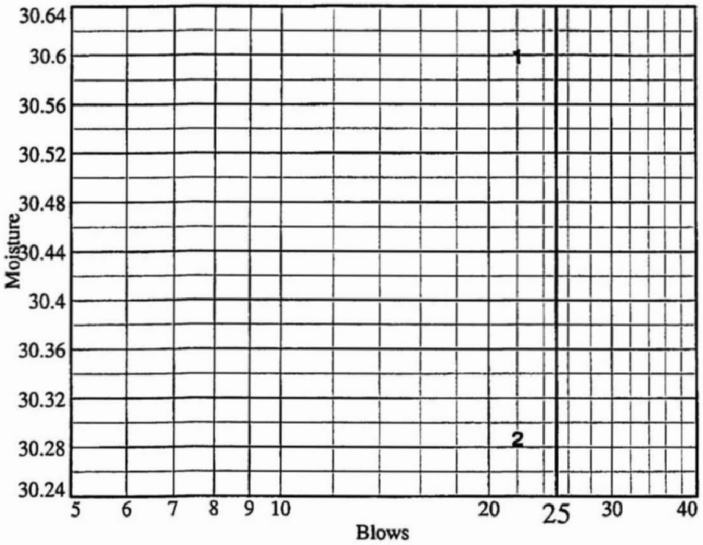
## LIQUID AND PLASTIC LIMIT TEST DATA

2/27/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 68.5-70.0 **Sample Number:** SS-17
**Material Description:** Light Gray Clayey SAND
**USCS:** SC **AASHTO:** A-6(2)
**Tested by:** CS **Checked by:** LBJ

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 25.57 | 25.42 | | | | |
| Dry+Tare | 23.22 | 23.10 | | | | |
| Tare | 15.54 | 15.44 | | | | |
| # Blows | 22 | 22 | | | | |
| Moisture | 30.6 | 30.3 | | | | |




**Liquid Limit=** 30
**Plastic Limit=** 17
**Plasticity Index=** 13
**Natural Moisture=** 16.3
**Liquidity Index=** -0.1

### Plastic Limit Data

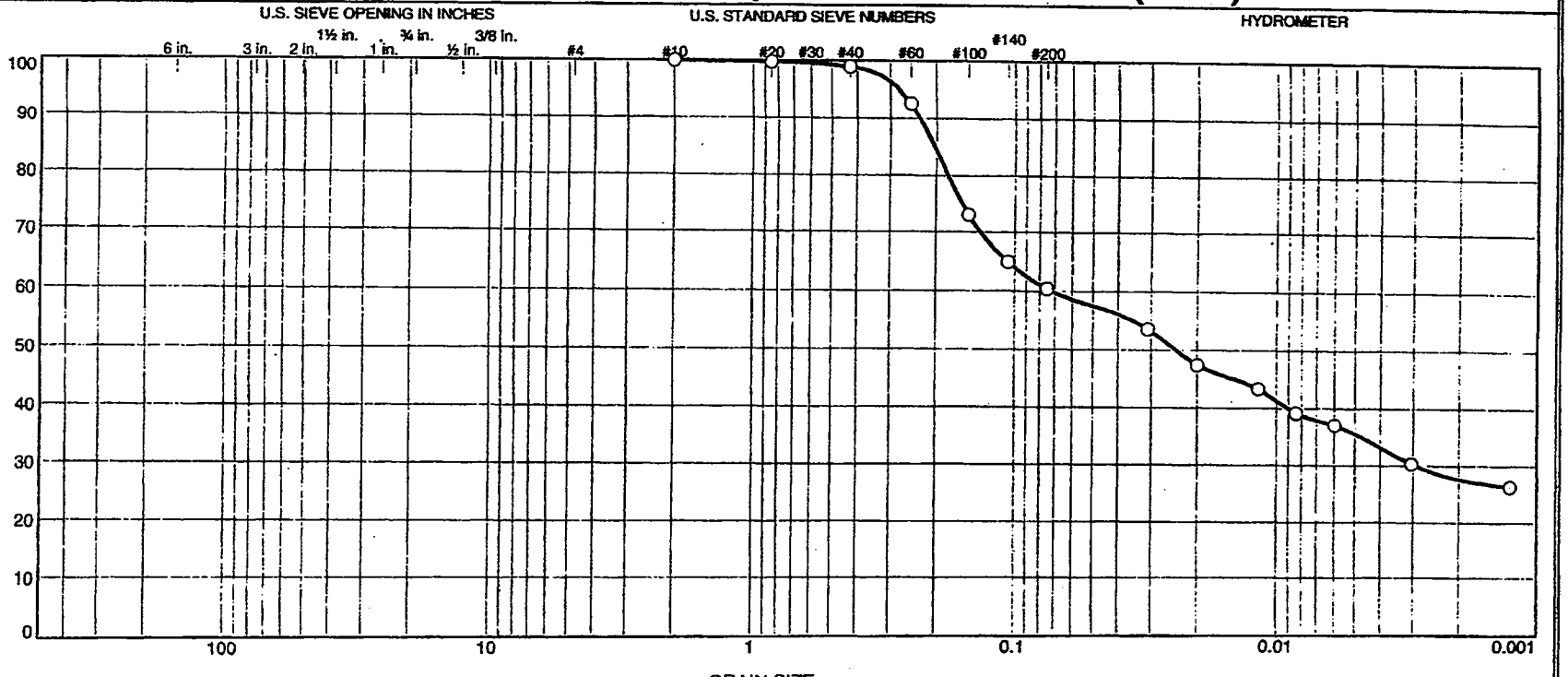
| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | 22.22 | 21.81 | | | |
| Dry+Tare | 21.23 | 20.93 | | | |
| Tare | 15.40 | 15.51 | | | |
| Moisture | 17.0 | 16.2 | | | |

### Natural Moisture Data

| Wet+Tare | Dry+Tare | Tare | Moisture |
|---|---|---|---|
| 154.00 | 133.36 | 6.80 | 16.3 |

MACTEC, Inc.

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




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| O | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 38.6 | 24.7 | 35.7 |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| O | Boring B-2321 | SS-18 | 73.5-75.0 | 12-15-07 | CL | Light Gray Sandy Lean CLAY | 20.1 | 32 | 14 |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

O Specific Gravity is assumed

Tested By: CS Checked By: LBJ DSC 2-27-08

## GRAIN SIZE DISTRIBUTION TEST DATA

2/21/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 73.5-75.0 **Sample Number:** SS-18
**Material Description:** Light Gray Sandy Lean CLAY
**Date:** 12-15-07 **Natural Moisture:** 20.1
**Liquid Limit:** 32 **Plastic Limit:** 14 **USCS Class.:** CL
**Testing Remarks:** Specific Gravity is assumed
**Tested by:** CS **Checked by:** LBJ

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 219.98 | 0.00 | 0.00 | #10 | 0.00 | 100.0 |
| 49.34 | 0.00 | 0.00 | #20 | 0.11 | 99.8 |
| | | | #40 | 0.50 | 99.0 |
| | | | #60 | 3.65 | 92.6 |
| | | | #100 | 13.30 | 73.0 |
| | | | #140 | 17.28 | 65.0 |
| | | | #200 | 19.53 | 60.4 |

### Hydrometer Test Data

**Hydrometer test uses material passing #10**
**Percent passing #10 based upon complete sample =** 100.0
**Weight of hydrometer sample =**49.34
**Hygroscopic moisture correction:**
**Moist weight and tare =** 28.21
**Dry weight and tare =** 27.89
**Tare weight =** 15.75
**Hygroscopic moisture =** 2.6%
**Table of composite correction values:**

| | | |
|---|---|---|
| **Temp., deg. C:** | 13.0 | 29.8 |
| **Comp. corr.:** | -8.0 | -2.0 |

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

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 21.7 | 31.0 | 26.1 | 0.0132 | 32.0 | 11.0 | 0.0309 | 53.7 |
| 5.00 | 21.7 | 28.0 | 23.1 | 0.0132 | 29.0 | 11.5 | 0.0200 | 47.5 |
| 15.00 | 21.7 | 26.0 | 21.1 | 0.0132 | 27.0 | 11.9 | 0.0117 | 43.4 |
| 30.00 | 21.6 | 24.0 | 19.1 | 0.0132 | 25.0 | 12.2 | 0.0084 | 39.2 |
| 60.00 | 21.6 | 23.0 | 18.1 | 0.0132 | 24.0 | 12.4 | 0.0060 | 37.2 |
| 240.00 | 22.1 | 19.5 | 14.8 | 0.0131 | 20.5 | 12.9 | 0.0030 | 30.3 |
| 1440.00 | 20.9 | 18.0 | 12.8 | 0.0133 | 19.0 | 13.2 | 0.0013 | 26.4 |

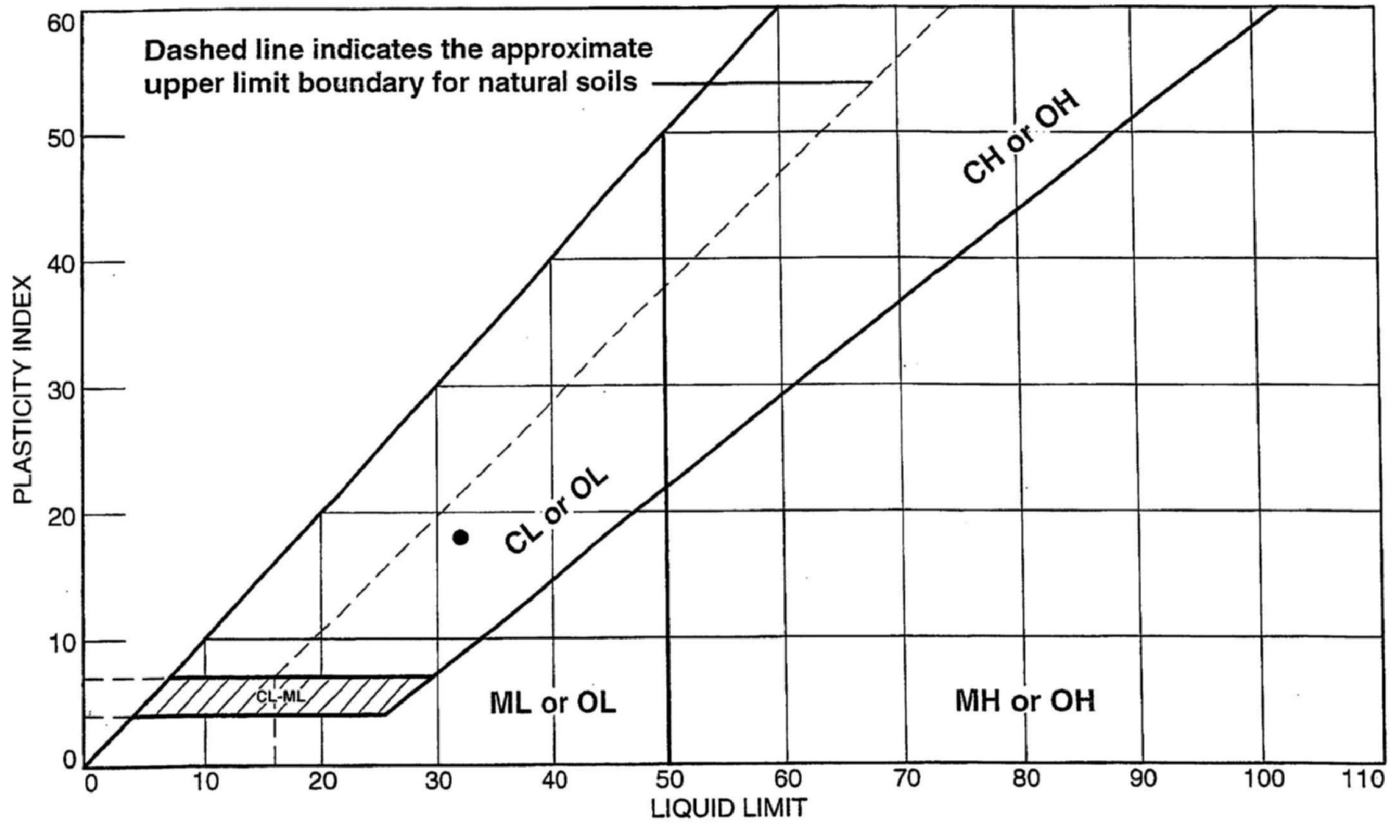
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 38.6 | 39.6 | 24.7 | 35.7 | 60.4 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | 0.0029 | 0.0240 | 0.0717 | 0.1799 | 0.2028 | 0.2307 | 0.2754 |

| Fineness Modulus |
|---|
| 0.31 |

# 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-2321 | SS-18 | 73.5-75.0 | 20.1 | 14 | 32 | 18 | CL |

| | |
|---|---|
| **MACTEC, Inc.**<br><br>**Raleigh, North Carolina** | **Client:** Bechtel<br>**Project:** Exelon Texas COL (Victoria Reservoir)<br><br>**Project No.:** 6468071777 **Figure** NA |

Tested By: CS 2/18/2008 Checked By: BJ DSC 2-27-08 DCN# EXE808

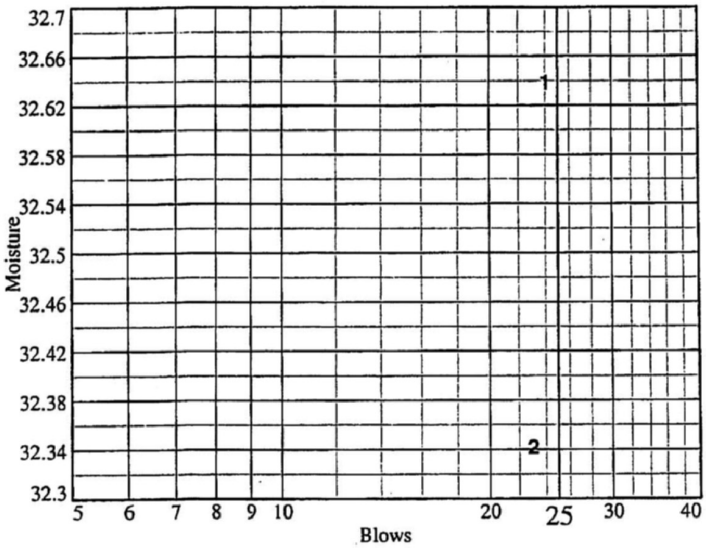
## LIQUID AND PLASTIC LIMIT TEST DATA

2/21/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 73.5-75.0 **Sample Number:** SS-18
**Material Description:** Light Gray Sandy Lean CLAY
**USCS:** CL **AASHTO:** A-6(8)
**Tested by:** CS **Checked by:** LBJ

### Liquid Limit Data

| Run No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Wet+Tare | 25.14 | 26.71 | | | | |
| Dry+Tare | 22.79 | 23.99 | | | | |
| Tare | 15.59 | 15.58 | | | | |
| # Blows | 24 | 23 | | | | |
| Moisture | 32.6 | 32.3 | | | | |




**Liquid Limit=** 32
**Plastic Limit=** 14
**Plasticity Index=** 18
**Natural Moisture=** 20.1
**Liquidity Index=** 0.3

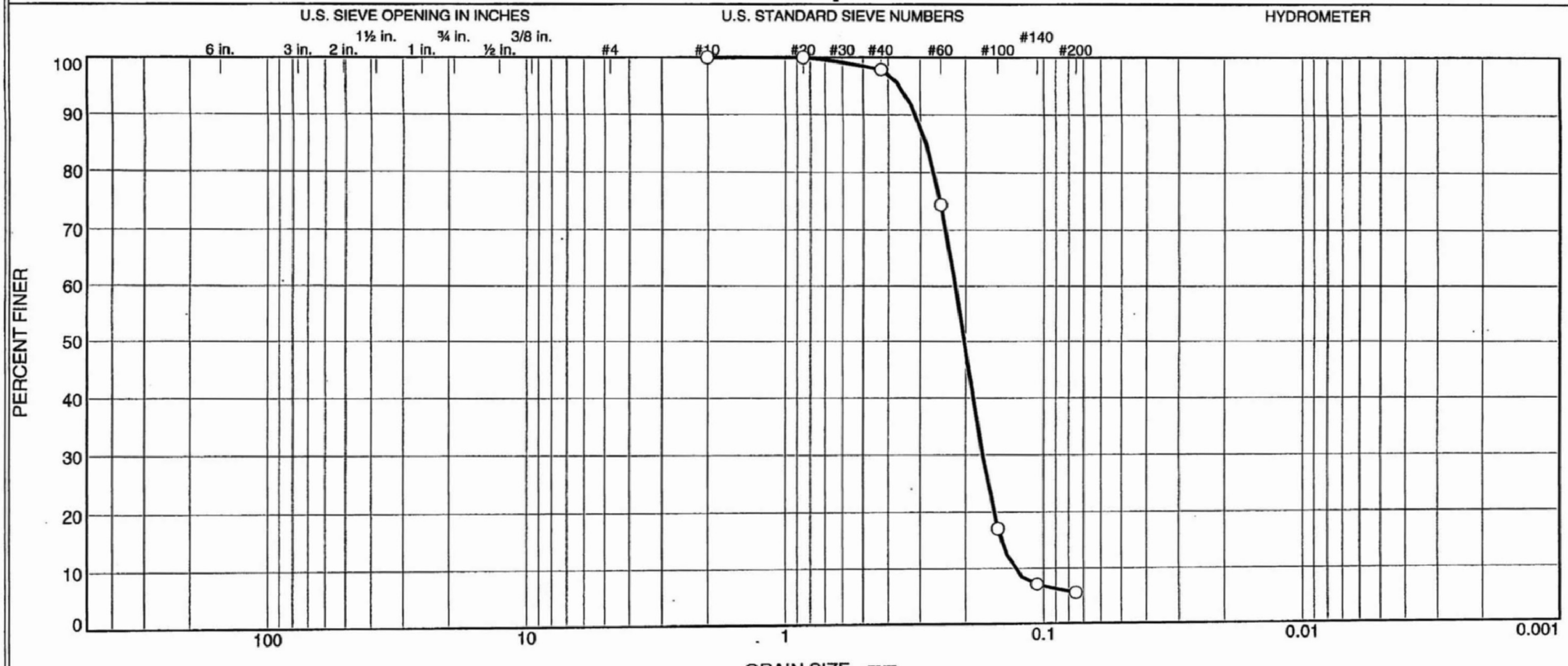
### Plastic Limit Data

| Run No. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Wet+Tare | 22.88 | 23.19 | | | |
| Dry+Tare | 21.93 | 22.26 | | | |
| Tare | 15.45 | 15.70 | | | |
| Moisture | 14.7 | 14.2 | | | |

### Natural Moisture Data

| Wet+Tare | Dry+Tare | Tare | Moisture |
|---|---|---|---|
| 131.69 | 111.16 | 9.14 | 20.1 |

# Particle Size Distribution Report / ASTM D6913-04e1




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 92.3 | 5.6 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-2321 | SS-19 | 78.5-80.0 | 12-15-07 | SP-SC | Pale Yellow Poorly Graded SAND with clay (Visual) | ND | ND | ND |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

○ Specific Gravity = 2.651 (ASTM D854-06)
SIEVE ANALYSIS ONLY
ND = Not Determined

**Tested By:** CS **Checked By:** LBJ DSC 2-27-08

## GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 78.5-80.0 **Sample Number:** SS-19
**Material Description:** Pale Yellow Poorly Graded SAND with clay (Visual)
**Date:** 12-15-07 **Natural Moisture:** ND
**Liquid Limit:** ND **Plastic Limit:** ND **USCS Class.:** SP-SC
**Testing Remarks:** Specific Gravity = 2.651 (ASTM D854-06)
SIEVE ANALYSIS ONLY
ND = Not Determined
**Tested by:** CS **Checked by:** LBJ

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 218.96 | 0.00 | 0.00 | #10 | 0.00 | 100.0 |
| 100.46 | 0.00 | 0.00 | #20 | 0.01 | 100.0 |
| | | | #40 | 2.14 | 97.9 |
| | | | #60 | 25.74 | 74.4 |
| | | | #100 | 83.20 | 17.2 |
| | | | #140 | 93.27 | 7.2 |
| | | | #200 | 94.87 | 5.6 |

### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 92.3 | 94.4 | | | 5.6 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.1295 | 0.1452 | 0.1555 | 0.1720 | 0.2027 | 0.2196 | 0.2665 | 0.2857 | 0.3131 | 0.3617 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.96 | 1.70 | 1.04 |

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: 2/11/2008

SAMPLE IDENTIFICATION: B-2321,SS-19

| | |
|---|---|
| (A) Mass of oven-dried soil, grams: | 49.94 |
| (B) Mass of pycnometer filled with water at test temperature (T), grams: | 655.68 |
| (C) Mass of pycnometer, water and soil, grams: | 686.79 |
| (T) Temperature of pycnometer, water and soil, °C when mass (C) determined: | 21.9 |
| (G) Specific Gravity at observed temperature: A / [ B - ( C - A )] | 2.652 |
| (F) ***Correction factor:*** | 0.99959 |
| (G x F) **SPECIFIC GRAVITY @ 20°C:** | 2.651 |

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

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

**REMARKS: Estimated % Passing # 4 : 100**

**Poorly Graded SAND with clay (SP-SC) - Visual**

**EQUIPMENT USED**

**SCALES : 3.1.99**

**OVEN :5.1.16**

**THERMOMETER :5.1.01**

**PYCNOMETER : P-6**

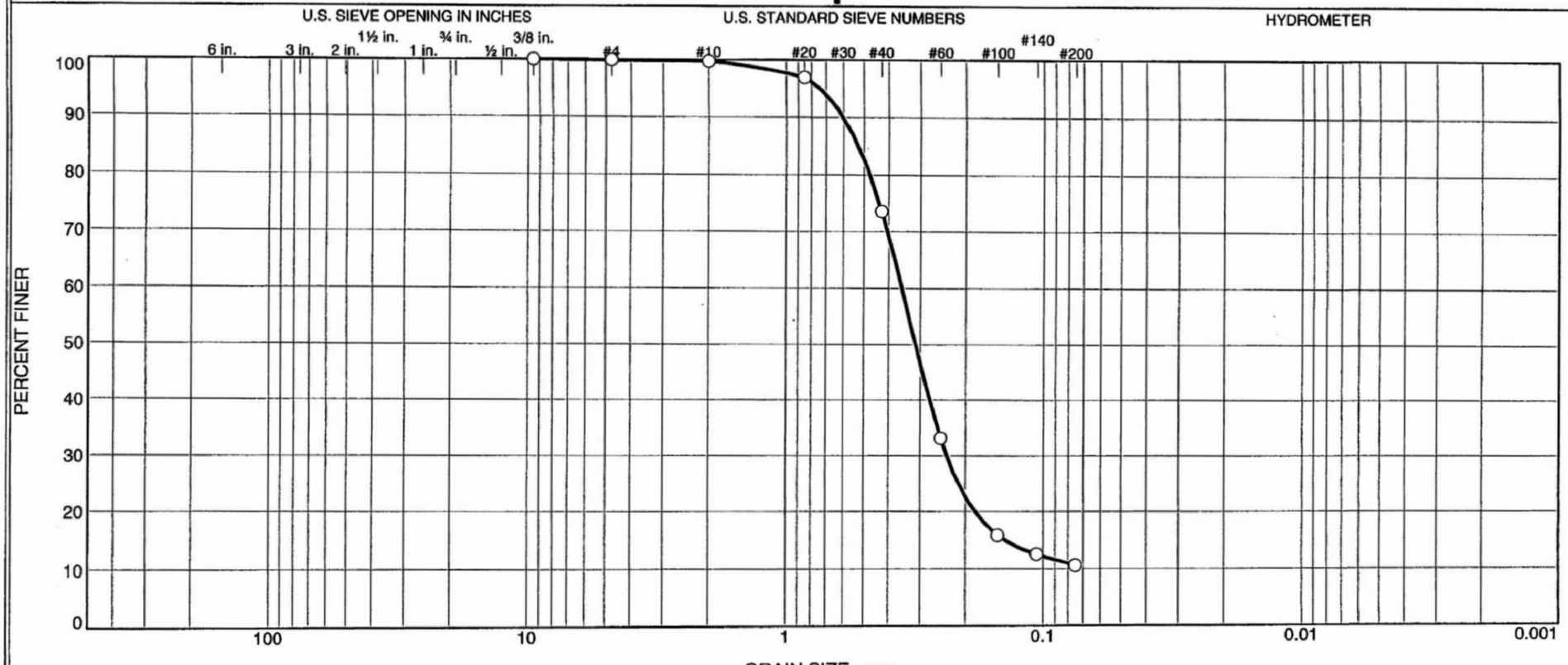
**TESTED BY: CS**

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

**REVIEWED BY:** **Brian Johnson**

DSC 2-27-08

# Particle Size Distribution Report / ASTM D6913-04e1




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.1 | 0.2 | 26.0 | 63.1 | 10.6 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-2321 | SS-20 | 83.5-85.0 | 12-16-08 | SP-SC | Pale Yellow Poorly Graded SAND with clay (Visual) | ND | ND | ND |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

○ SIEVE ANALYSIS ONLY
ND= Not Determined

**Tested By:** CS **Checked By:** LBJ DSC 2-27-08

## GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 83.5-85.0 **Sample Number:** SS-20
**Material Description:** Pale Yellow Poorly Graded SAND with clay (Visual)
**Date:** 12-16-08 **Natural Moisture:** ND
**Liquid Limit:** ND **Plastic Limit:** ND **USCS Class.:** SP-SC
**Testing Remarks:** SIEVE ANALYSIS ONLY
ND= Not Determined
**Tested by:** CS **Checked by:** LBJ

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 239.26 | 0.00 | 0.00 | 3/8" | 0.00 | 100.0 |
| | | | #4 | 0.29 | 99.9 |
| | | | #10 | 0.67 | 99.7 |
| 101.79 | 0.00 | 0.00 | #20 | 2.91 | 96.9 |
| | | | #40 | 26.60 | 73.7 |
| | | | #60 | 67.92 | 33.2 |
| | | | #100 | 85.62 | 15.8 |
| | | | #140 | 88.97 | 12.6 |
| | | | #200 | 90.94 | 10.6 |

### Fractional Components

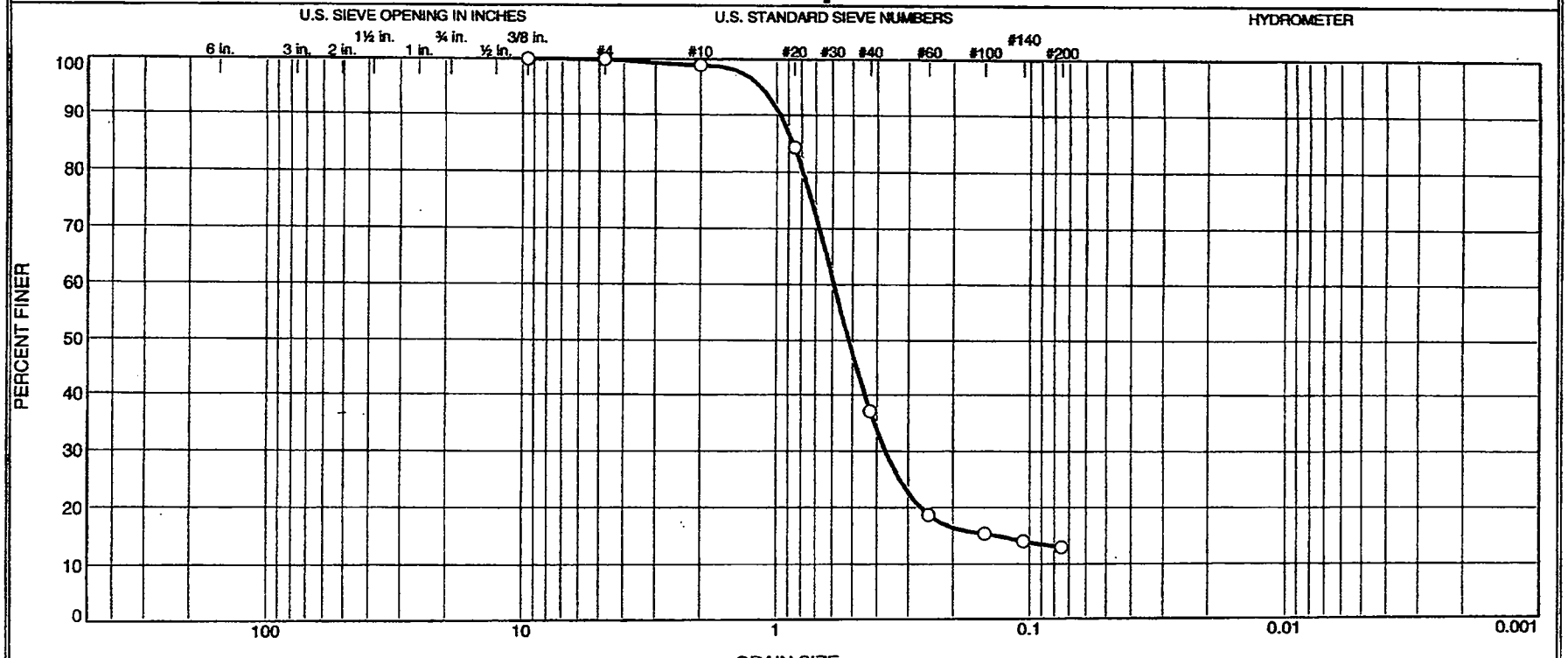
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 26.0 | 63.1 | 89.3 | | | 10.6 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | 0.1409 | 0.1842 | 0.2367 | 0.3138 | 0.3544 | 0.4724 | 0.5240 | 0.6008 | 0.7447 |

| Fineness Modulus |
|---|
| 1.50 |

MACTEC, Inc.

# Particle Size Distribution Report / ASTM D6913-04e1




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.1 | 1.0 | 61.8 | 24.1 | 13.0 | |
| | | | | | | | | |
| | | | | | | | | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-2321 | SS-21 | 88.5-90.0 | 12-15-07 | SC | Pale Yellow Clayey SAND (Visual) | ND | ND | ND |
| | | | | | | | | | |
| | | | | | | | | | |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

○ SIEVE ANALYSIS ONLY
ND = Not Determined

**Tested By:** CS **Checked By:** LBJ DSC 2-27-08

## GRAIN SIZE DISTRIBUTION TEST DATA

2/27/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 88.5-90.0 **Sample Number:** SS-21
**Material Description:** Pale Yellow Clayey SAND (Visual)
**Date:** 12-15-07 **Natural Moisture:** ND
**Liquid Limit:** ND **Plastic Limit:** ND **USCS Class.:** SC
**Testing Remarks:** SIEVE ANALYSIS ONLY
ND = Not Determined
**Tested by:** CS **Checked by:** LBJ

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 273.47 | 0.00 | 0.00 | 3/8 | 0.00 | 100.0 |
| | | | #4 | 0.15 | 99.9 |
| | | | #10 | 2.97 | 98.9 |
| 101.49 | 0.00 | 0.00 | #20 | 15.02 | 84.3 |
| | | | #40 | 63.42 | 37.1 |
| | | | #60 | 82.32 | 18.7 |
| | | | #100 | 85.67 | 15.4 |
| | | | #140 | 87.03 | 14.1 |
| | | | #200 | 88.13 | 13.0 |

### Fractional Components

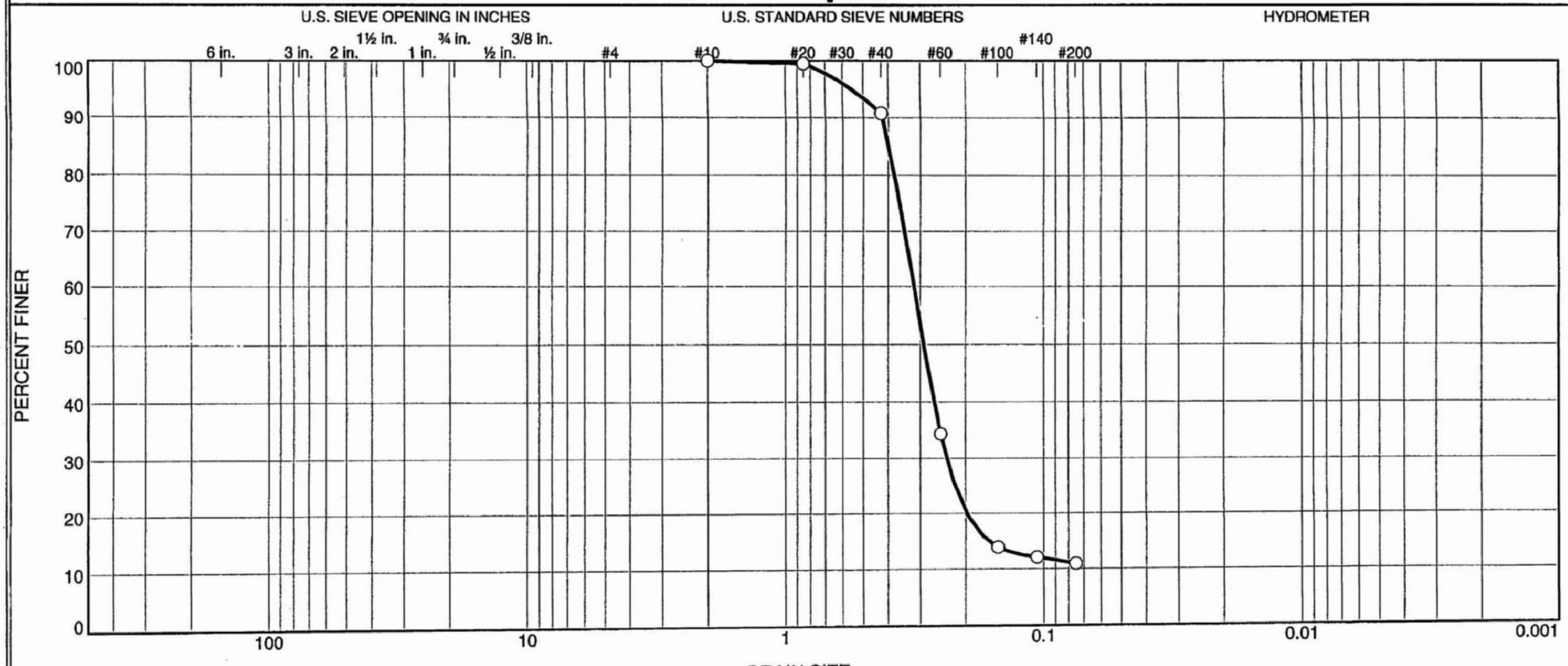
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.1 | 0.1 | 1.0 | 61.8 | 24.1 | 86.9 | | | 13.0 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | 0.1332 | 0.2694 | 0.3700 | 0.5163 | 0.5910 | 0.7876 | 0.8622 | 0.9678 | 1.1524 |

| Fineness Modulus |
|---|
| 2.06 |

MACTEC, Inc.

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




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 9.3 | 79.8 | 10.9 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | Boring B-2321 | SS-22 | 93.5-95.0 | 12-15-07 | SP-SC | Pale Yellow and Brownish Yellow Poorly Graded SAND with clay (Visual) | ND | ND | ND |

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

**MACTEC, Inc.**

**Raleigh, North Carolina**

○ SIEVE ANALYSIS ONLY
ND = Not Determined

**Tested By:** CS **Checked By:** LBJ DSC 4-1-08

## GRAIN SIZE DISTRIBUTION TEST DATA

4/1/2008

**Client:** Bechtel
**Project:** Exelon Texas COL (Victoria Reservoir)
**Project Number:** 6468071777
**Location:** Boring B-2321
**Depth:** 93.5-95.0 **Sample Number:** SS-22
**Material Description:** Pale Yellow and Brownish Yellow Poorly Graded SAND with clay (Visual)
**Date:** 12-15-07 **Natural Moisture:** ND
**Liquid Limit:** ND **Plastic Limit:** ND **USCS Class.:** SP-SC
**Testing Remarks:** SIEVE ANALYSIS ONLY
ND = Not Determined
**Tested by:** CS **Checked by:** LBJ

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Cumulative Pan Tare Weight (grams) | Sieve Opening Size | Cumulative Weight Retained (grams) | Percent Finer |
|---|---|---|---|---|---|
| 255.85 | 0.00 | 0.00 | #10 | 0.00 | 100.0 |
| 101.59 | 0.00 | 0.00 | #20 | 0.52 | 99.5 |
| | | | #40 | 9.42 | 90.7 |
| | | | #60 | 66.69 | 34.4 |
| | | | #100 | 87.48 | 13.9 |
| | | | #140 | 89.31 | 12.1 |
| | | | #200 | 90.49 | 10.9 |

### 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 | 9.3 | 79.8 | 89.1 | | | 10.9 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | 0.1635 | 0.1978 | 0.2369 | 0.2911 | 0.3171 | 0.3779 | 0.3974 | 0.4210 | 0.5556 |

| Fineness Modulus |
|---|
| 1.37 |

MACTEC, Inc.