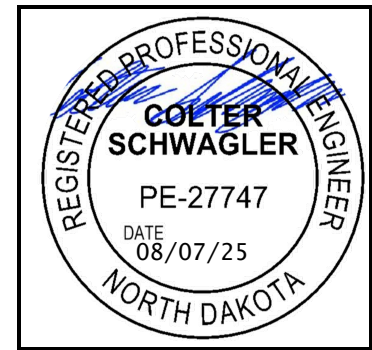


# SLOPE STABILITY ANALYSIS

|                        |                                                |
|------------------------|------------------------------------------------|
| <b>TO:</b>             | <b>File</b>                                    |
| <b>FROM:</b>           | <b>Geotechnical Section</b>                    |
| <b>DATE:</b>           | <b>8/5/2025</b>                                |
| <b>HIGHWAY:</b>        | <b>I-94</b>                                    |
| <b>PROJECT NUMBER:</b> | <b>IM-2-094(210)237</b>                        |
| <b>PCN:</b>            | <b>24461</b>                                   |
| <b>LOCATION:</b>       | <b>1.3 Miles West of Cleveland Interchange</b> |
| <b>SUBJECT:</b>        | <b>Slope Stability Analysis</b>                |



In order to construct a grade raise on I-94, approximately 16 feet of fill will be placed above the existing roadway, up to an elevation of approximately 1822 ft, in order to adequately raise the roadway profile to avoid future overtopping.

The geotechnical section was asked to evaluate temporary slopes and embankment construction requirements. A soil boring was performed at the location shown on Figure 1 below. Soil samples were taken and tests were run to identify the stratigraphy of the site and the engineering parameters of the different soil layers. Table 1 below shows the properties of the soil layers that were used for the slope stability analysis. In addition, see Appendix A for the soil boring log and Appendix B for the soil test results, including the triaxial testing results.



**Figure 1 - Project Location**

**Table 1 – Simplified Soil Profile at Centerline**

| Layer                                               | Depth<br>(feet) | Elevation<br>(feet) | Total Stress Strength<br>Parameters | Unit Weight<br>(lb/ft <sup>3</sup> ) |
|-----------------------------------------------------|-----------------|---------------------|-------------------------------------|--------------------------------------|
| Fill                                                | 0.0-16.0        | 1822.0-1806.0       | Su = 1250 psf                       | 123.3                                |
| Soft Brown Lean Clay                                | 16.0-28.0       | 1806.0-1794.0       | Su = 1010 psf                       | 120.0                                |
| Medium Stiff to Stiff<br>Brown/Gray Fat Clay        | 28.0-45.0       | 1794.0-1777.0       | Su = 1010 psf                       | 124.9                                |
| Medium Stiff to Stiff<br>Brown/Gray Sandy Lean Clay | 45.0-53.0       | 1777.0-1769.0       | Su = 1010 psf                       | 120.0                                |
| Stiff Gray/Brown Fat Clay                           | 53.0-60.0       | 1769.0-1762.0       | Su = 1790 psf                       | 119.3                                |

Existing and proposed cross-sections were provided from Design, and these cross sections were imported into Slope/W to analyze the stability of the grade raise with a temporary 2:1 slope. After completing the analysis, it was determined that the grade raise can be constructed with a temporary 2:1 slope without timing constraints on the fill being placed, and an acceptable factor of safety was obtained. See Appendix C for the slope stability results from the Slope/W analysis.

If there are any questions or concerns please contact Aaron Lehman [alehman@nd.gov](mailto:alehman@nd.gov) or Colter Schwagler [cschwagler@nd.gov](mailto:cschwagler@nd.gov) of the NDDOT Geotechnical Section.

## APPENDIX A

### Boring Log

PROJECT NUMBER IM-2-094(210)237

**DATE STARTED** 8/26/24

**COMPLETED** 8/26/24

PCN 24461

**ELEVATION** 1803 ft

**LOCATION** Stutsman County

**RP+Feet** 237+4142 ft

Offset 28 Rt EBL

**DRILLED BY** Dallan

**LOGGED BY** Jamie

## DRILLING METHOD

## ENGINEER

## NOTES

| ELEVATION (ft) | DEPTH (ft) | MATERIAL DESCRIPTION                                                                      | GRAPHIC LOG | AASHTO | USCS | SAMPLE TYPE & NUMBER | RECOVERY (%) | SPT N VALUE | LIQUIDITY LIMITS  |    |    | TESTS & REMARKS                                                        |
|----------------|------------|-------------------------------------------------------------------------------------------|-------------|--------|------|----------------------|--------------|-------------|-------------------|----|----|------------------------------------------------------------------------|
|                |            |                                                                                           |             |        |      |                      |              |             | PL                | MC | LL |                                                                        |
|                |            |                                                                                           |             |        |      |                      |              |             | CLAY FRACTION (%) |    |    |                                                                        |
| 1800           | 0          | Soft Brown Lean Clay with Sand and I.O. Deposits                                          |             |        |      |                      |              |             |                   |    |    |                                                                        |
| 1795           | 5          |                                                                                           |             | A-7-6  | CL   | 472                  | 50           |             | 17                | 42 |    |                                                                        |
|                |            |                                                                                           |             | A-7-6  | CL   | 473                  | 60           | 4           | 18                | 45 |    |                                                                        |
|                | 9.0        | 1794.0 ft                                                                                 |             |        |      |                      |              |             |                   |    |    |                                                                        |
| 1790           | 10         | Medium Stiff to Stiff Brown/Gray Fat Clay with Silt, Sand, and I.O. Deposits              |             | A-7-6  | CH   | 474                  | 60           | 6           | 20                | 59 |    |                                                                        |
|                | 15         |                                                                                           |             | A-7-5  | ML   | 475                  | 75           |             | 30                | 45 |    | $\gamma_d = 101.1$ pcf<br>$\gamma = 123.3$ pcf<br>UU test: Su=2596 psf |
| 1785           | 15         |                                                                                           |             | A-7-6  | CH   | 476                  | 70           | 15          | 21                | 55 |    |                                                                        |
|                | 20         |                                                                                           |             | A-7-6  | CH   | 477                  | 75           | 4           | 19                | 50 |    |                                                                        |
| 1780           | 25         |                                                                                           |             | A-7-6  | CH   | 478                  | 90           |             | 25                | 58 |    | $\gamma_d = 94.3$ pcf<br>$\gamma = 124.9$ pcf<br>UU test: Su=1010 psf  |
|                | 26.0       | 1777.0 ft                                                                                 |             |        |      |                      |              |             |                   |    |    |                                                                        |
| 1775           | 27         | Medium Stiff to Stiff Brown/Gray Sandy Lean Clay with I.O. Deposits, Water Bearing at 29' |             | A-7-6  | CL   | 479                  | 70           | 9           | 18                | 42 |    |                                                                        |
|                | 30         |                                                                                           |             | A-6    | CL   | 480                  | 90           | 7           | 15                | 33 |    |                                                                        |
| 1770           | 34.0       | 1769.0 ft                                                                                 |             |        |      |                      |              |             |                   |    |    |                                                                        |
|                | 35         | Stiff Gray/Brown Fat Clay with I.O. and Silt Laminations                                  |             | A-7-6  | CH   | 481                  | 90           |             | 23                | 68 |    | $\gamma_d = 90.3$ pcf<br>$\gamma = 119.3$ pcf<br>UU test: Su=1790 psf  |
|                |            |                                                                                           |             | A-7-6  | CH   | 482                  | 70           | 10          | 23                | 65 |    |                                                                        |
| 1765           | 40         |                                                                                           |             | A-7-6  | CH   | 483                  | 100          | 11          | 21                | 54 |    |                                                                        |
|                | 41.0       | 1762.0 ft                                                                                 |             |        |      |                      |              |             |                   |    |    |                                                                        |
|                |            | Bottom of borehole at 41.0 ft                                                             |             |        |      |                      |              |             |                   |    |    |                                                                        |

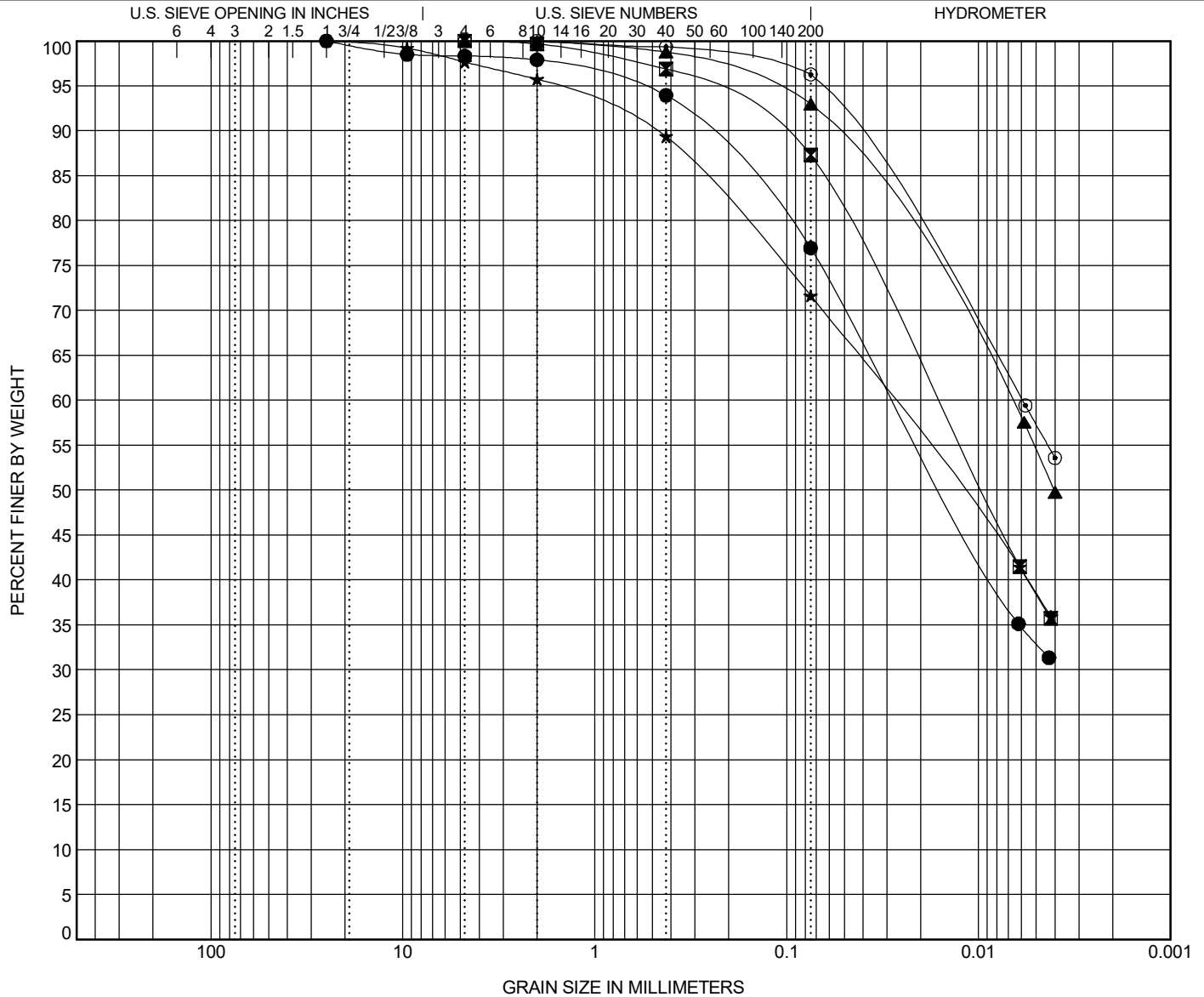
## APPENDIX B

### Lab Results

PROJECT NUMBER IM-2-094(210)237

LOCATION Stutsman County

PCN 24461

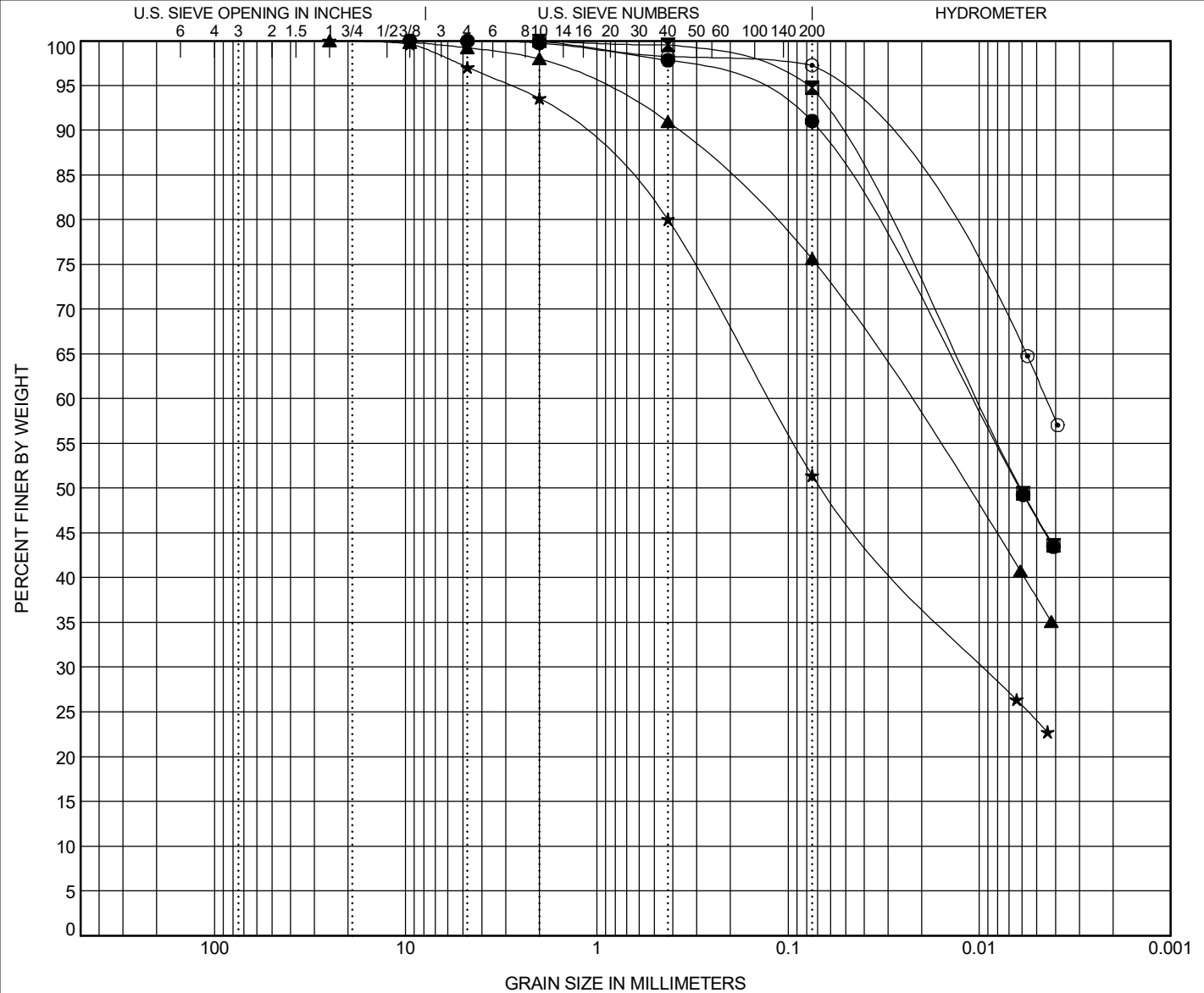


# GRAIN SIZE DISTRIBUTION

PROJECT NUMBER IM-2-094(210)237

LOCATION Stutsman County

PCN 24461

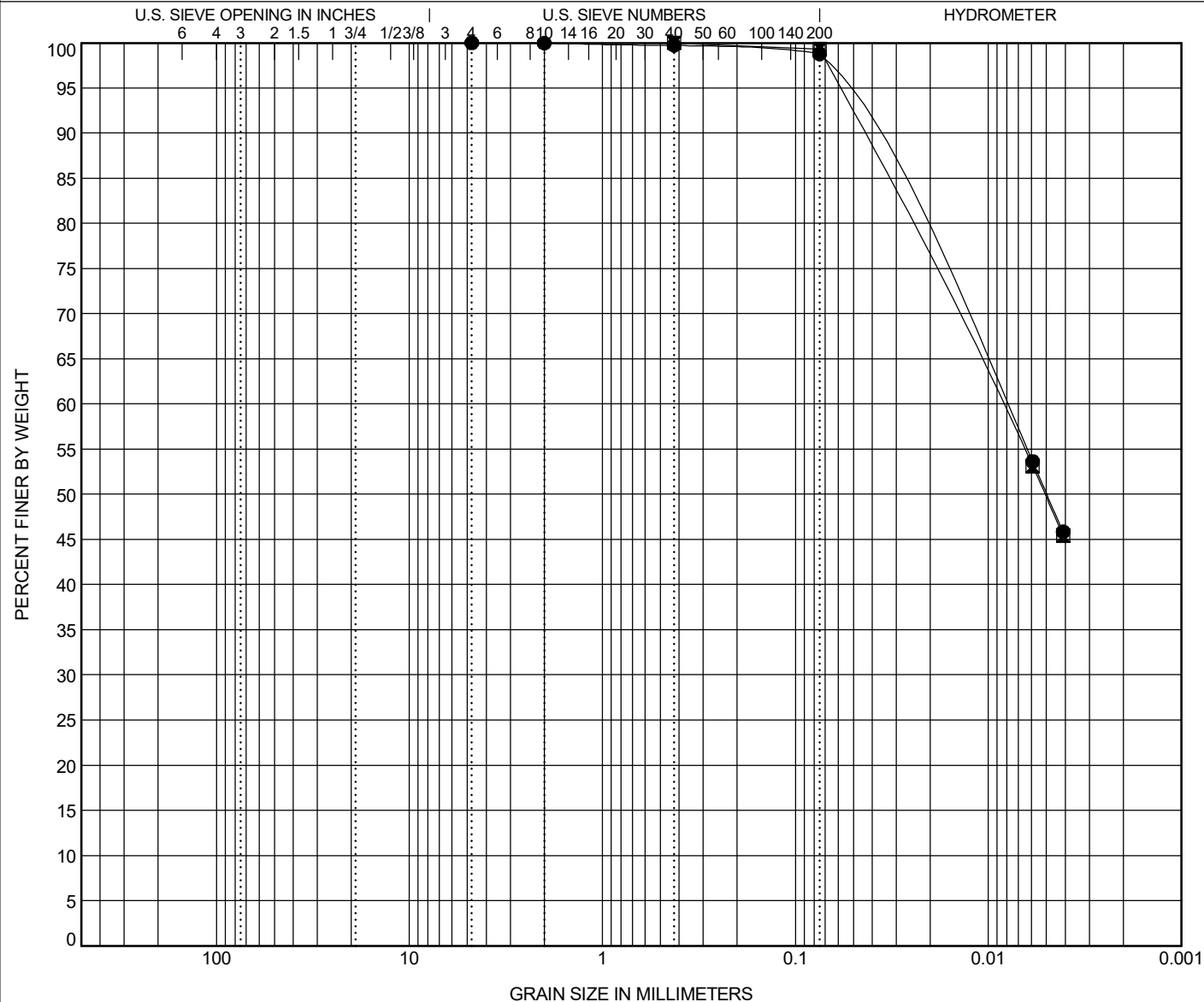


# GRAIN SIZE DISTRIBUTION

PROJECT NUMBER IM-2-094(210)237

LOCATION Stutsman County

PCN 24461



| COBBLES | GRAVEL |      | SAND   |        |      | SILT OR CLAY |
|---------|--------|------|--------|--------|------|--------------|
|         | coarse | fine | coarse | medium | fine |              |

| BOREHOLE | DEPTH | AASHTO Classification |       | USCS Classification |     | LL      | PL    | PI    | Cc    | Cu |
|----------|-------|-----------------------|-------|---------------------|-----|---------|-------|-------|-------|----|
| ● SB - 1 | 36.0  | A-7-6 (48)            |       | CH                  |     | 65      | 23    | 42    |       |    |
| ☒ SB - 1 | 39.0  | A-7-6 (37)            |       | CH                  |     | 54      | 21    | 33    |       |    |
|          |       |                       |       |                     |     |         |       |       |       |    |
|          |       |                       |       |                     |     |         |       |       |       |    |
| BOREHOLE | DEPTH | D100                  | D60   | D30                 | D10 | %Gravel | %Sand | %Silt | %Clay |    |
| ● SB - 1 | 36.0  | 4.75                  | 0.008 |                     |     | 0.0     | 1.2   | 98.8  |       |    |
| ☒ SB - 1 | 39.0  | 0.425                 | 0.009 |                     |     | 0.0     | 0.7   | 99.3  |       |    |
|          |       |                       |       |                     |     |         |       |       |       |    |
|          |       |                       |       |                     |     |         |       |       |       |    |
|          |       |                       |       |                     |     |         |       |       |       |    |



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION  
300 AIRPORT ROAD  
BISMARCK, ND 58504

## SUMMARY OF LABORATORY RESULTS

PAGE 1 OF 1

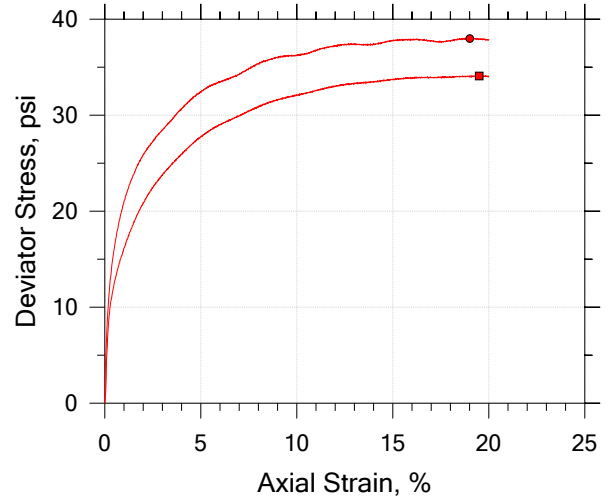
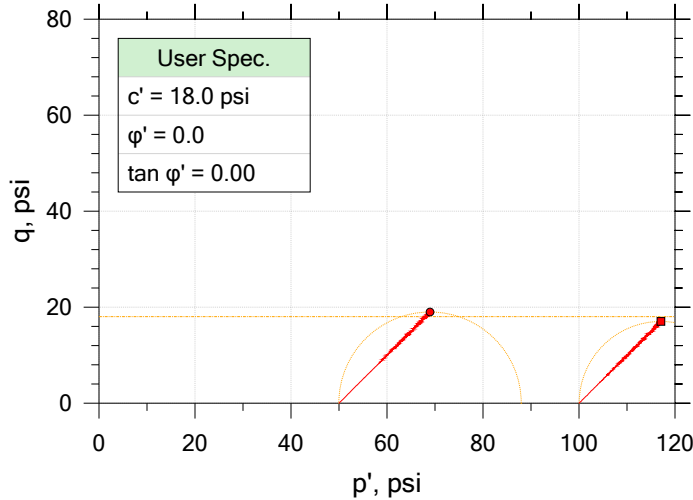
PROJECT NUMBER IM-2-094(210)237

LOCATION Stutsman County

PCN 24461

| Borehole | Depth | Liquid Limit | Plastic Limit | Plasticity Index | Maximum Size (mm) | %<#200 Sieve | AASHTO Classification | USCS Classification | Water Content (%) | Avg. Water Content (%) | Dry Density (pcf) | Saturation (%) | Void Ratio |
|----------|-------|--------------|---------------|------------------|-------------------|--------------|-----------------------|---------------------|-------------------|------------------------|-------------------|----------------|------------|
| SB - 1   | 4.0   | 42           | 17            | 25               | 25                | 77           | A-7-6 (18)            | CL                  | 21.8              | 21.8                   |                   |                |            |
| SB - 1   | 6.0   | 45           | 18            | 27               | 4.75              | 87           | A-7-6 (24)            | CL                  | 27.7              | 27.7                   |                   |                |            |
| SB - 1   | 9.0   | 59           | 20            | 39               | 4.75              | 93           | A-7-6 (40)            | CH                  | 35.0              | 35.0                   |                   |                |            |
| SB - 1   | 14.0  | 45           | 30            | 15               | 25                | 72           | A-7-5 (11)            | ML                  | 21.9              | 21.9                   | 101.1             |                |            |
| SB - 1   | 16.0  | 55           | 21            | 34               | 4.75              | 96           | A-7-6 (36)            | CH                  | 28.3              | 28.3                   |                   |                |            |
| SB - 1   | 19.0  | 50           | 19            | 31               | 9.5               | 91           | A-7-6 (30)            | CH                  | 35.3              | 35.3                   |                   |                |            |
| SB - 1   | 24.0  | 58           | 25            | 33               | 2                 | 95           | A-7-6 (36)            | CH                  | 32.4              | 32.4                   | 94.3              |                |            |
| SB - 1   | 26.0  | 42           | 18            | 24               | 25                | 76           | A-7-6 (17)            | CL                  | 25.4              | 25.4                   |                   |                |            |
| SB - 1   | 29.0  | 33           | 15            | 18               | 25                | 51           | A-6 (6)               | CL                  | 25.1              | 25.1                   |                   |                |            |
| SB - 1   | 34.0  | 68           | 23            | 45               | 4.75              | 97           | A-7-6 (50)            | CH                  | 32.2              | 32.2                   | 90.3              |                |            |
| SB - 1   | 36.0  | 65           | 23            | 42               | 4.75              | 99           | A-7-6 (48)            | CH                  | 32.6              | 32.6                   |                   |                |            |
| SB - 1   | 39.0  | 54           | 21            | 33               | 0.425             | 99           | A-7-6 (37)            | CH                  | 35.5              | 35.5                   |                   |                |            |

# Unconsolidated Undrained by ASTM D4767

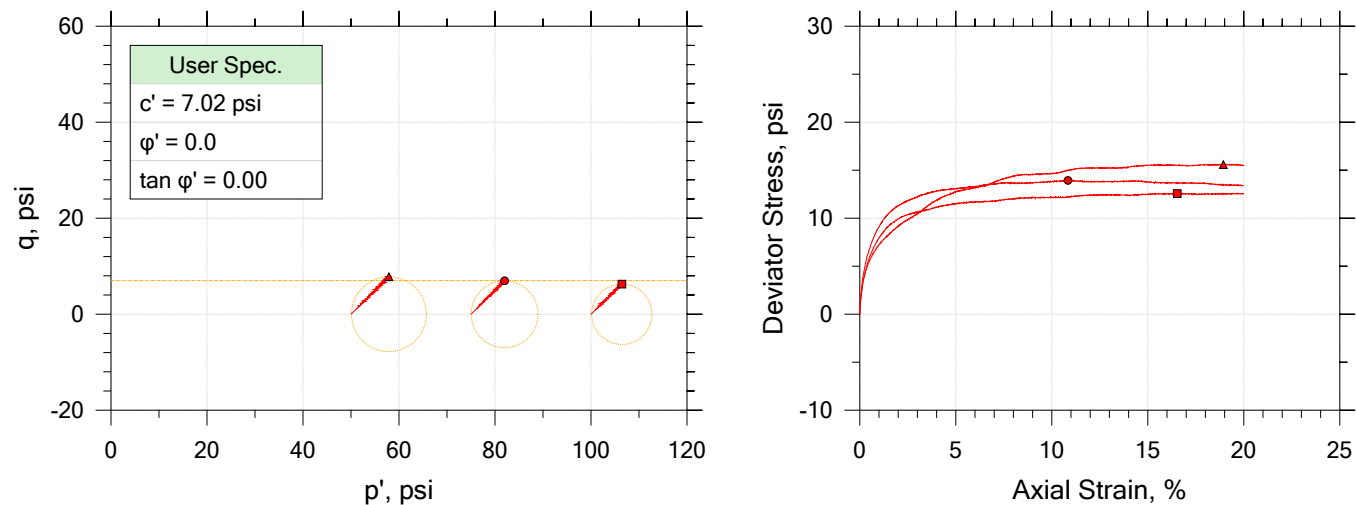


|                                                  |             |             |  |  |
|--------------------------------------------------|-------------|-------------|--|--|
| Symbol                                           | ■           | ●           |  |  |
| Sample ID                                        | SS -475- 24 | SS -475- 24 |  |  |
| Depth                                            | 14.0 - 16.0 | 14.0 - 16.0 |  |  |
| Test Number                                      | UU- 53 - 24 | UU- 54 - 24 |  |  |
| Initial                                          |             |             |  |  |
| Height, in                                       | 5.756       | 5.755       |  |  |
| Diameter, in                                     | 2.840       | 2.844       |  |  |
| Moisture Content (from Cuttings), %              | 21.9        | 26.4        |  |  |
| Dry Density, pcf                                 | 104.        | 98.2        |  |  |
| Saturation (Wet Method), %                       | 95.4        | 100.8       |  |  |
| Void Ratio                                       | 0.616       | 0.703       |  |  |
| Final                                            |             |             |  |  |
| Moisture Content, %                              | 22.1        | 25.6        |  |  |
| Dry Density, pcf                                 | 105.        | 99.3        |  |  |
| Cross-Sectional Area (Method A), in <sup>2</sup> | 6.273       | 6.308       |  |  |
| Saturation, %                                    | 100.0       | 100.0       |  |  |
| Void Ratio                                       | 0.592       | 0.685       |  |  |
| Back Pressure, psi                               | 0.0000      | 0.0000      |  |  |
| Vertical Effective Consolidation Stress, psi     | 100.0       | 50.00       |  |  |
| Horizontal Effective Consolidation Stress, psi   | 99.99       | 50.00       |  |  |
| Vertical Strain after Consolidation, %           | 0.0000      | 0.0000      |  |  |
| Volumetric Strain after Consolidation, %         | 0.0000      | 0.0000      |  |  |
| Time to 50% Consolidation, min                   | 0.0000      | 0.0000      |  |  |
| Shear Strength, psi                              | 17.05       | 19.00       |  |  |
| Strain at Failure, %                             | 19.5        | 19.0        |  |  |
| Strain Rate, %/min                               | 1.000       | 1.000       |  |  |
| Deviator Stress at Failure, psi                  | 34.10       | 37.99       |  |  |
| Effective Minor Principal Stress at Failure, psi | 100.0       | 49.96       |  |  |
| Effective Major Principal Stress at Failure, psi | 134.1       | 87.95       |  |  |
| B-Value                                          | ---         | ---         |  |  |

Notes:  
 - Before Shear Saturation set to 100% for phase calculation.  
 - Moisture Content determined by ASTM D2216.  
 - Deviator Stress includes membrane correction.  
 - Values for  $c$  and  $\phi$  determined from best-fit straight line for the specific test conditions.  
 Actual strength parameters may vary and should be determined by an engineer for site conditions.

|                                                            |                        |                    |
|------------------------------------------------------------|------------------------|--------------------|
| Project Name: IM-2-094(210)237                             | Location: Bismarck, ND | Project Number:    |
| Boring Number: 1                                           | Tester: MD             | Checker: DT        |
| Sample Number: SS -475- 24                                 | Test Date: 11/07/24    | Depth: 14.0 - 16.0 |
| Test Number: UU- 53 - 24                                   | Preparation:           | Elevation:         |
| Description: 23" Brn Gry Blk Cly with I.O. & Silt Deposits |                        |                    |
| Remarks: Sample Test Depth 14.1 - 14.6                     |                        |                    |

Unconsolidated Undrained by ASTM D4767

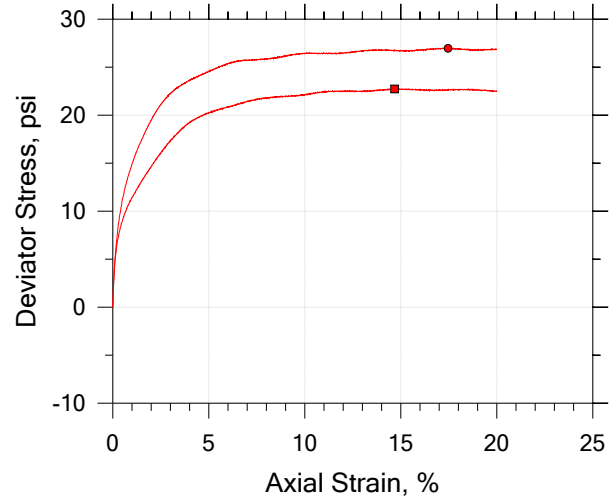
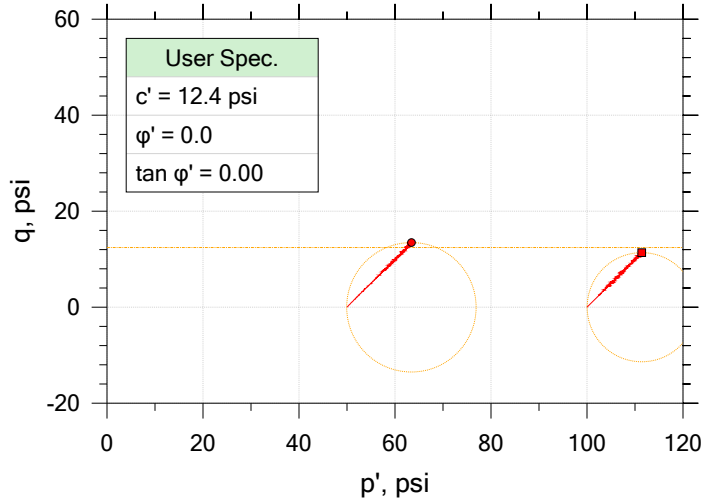


|                                                  |             |             |             |  |
|--------------------------------------------------|-------------|-------------|-------------|--|
| Symbol                                           | ■           | ●           | ▲           |  |
| Sample ID                                        | SS -478- 24 | SS -478- 24 | SS -478- 24 |  |
| Depth                                            | 24.0 - 26.0 | 24.0 - 26.0 | 24.0 - 26.0 |  |
| Test Number                                      | UU- 50 - 24 | UU- 51 - 24 | UU- 52 - 24 |  |
| Initial                                          |             |             |             |  |
| Height, in                                       | 5.742       | 5.753       | 5.748       |  |
| Diameter, in                                     | 2.831       | 2.833       | 2.833       |  |
| Moisture Content (from Cuttings), %              | 32.4        | 27.5        | 27.1        |  |
| Dry Density, pcf                                 | 91.4        | 93.7        | 97.9        |  |
| Saturation (Wet Method), %                       | 104.5       | 94.0        | 102.4       |  |
| Void Ratio                                       | 0.830       | 0.785       | 0.709       |  |
| Final                                            |             |             |             |  |
| Moisture Content, %                              | 30.3        | 28.5        | 25.7        |  |
| Dry Density, pcf                                 | 92.4        | 94.9        | 99.1        |  |
| Cross-Sectional Area (Method A), in <sup>2</sup> | 6.251       | 6.251       | 6.252       |  |
| Saturation, %                                    | 100.0       | 100.0       | 100.0       |  |
| Void Ratio                                       | 0.811       | 0.763       | 0.688       |  |
| Back Pressure, psi                               | 0.0000      | 0.0000      | 0.0000      |  |
| Vertical Effective Consolidation Stress, psi     | 99.94       | 75.00       | 49.99       |  |
| Horizontal Effective Consolidation Stress, psi   | 99.93       | 74.99       | 50.00       |  |
| Vertical Strain after Consolidation, %           | 0.0000      | 0.0000      | 0.0000      |  |
| Volumetric Strain after Consolidation, %         | 0.0000      | 0.0000      | 0.0000      |  |
| Time to 50% Consolidation, min                   | 0.0000      | 0.0000      | 0.0000      |  |
| Shear Strength, psi                              | 6.284       | 6.969       | 7.796       |  |
| Strain at Failure, %                             | 16.5        | 10.8        | 18.9        |  |
| Strain Rate, %/min                               | 1.000       | 1.000       | 1.000       |  |
| Deviator Stress at Failure, psi                  | 12.57       | 13.94       | 15.59       |  |
| Effective Minor Principal Stress at Failure, psi | 100.1       | 75.04       | 50.10       |  |
| Effective Major Principal Stress at Failure, psi | 112.7       | 88.98       | 65.70       |  |
| B-Value                                          | ---         | ---         | ---         |  |

|                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| Notes:<br>- Before Shear Saturation set to 100% for phase calculation.<br>- Moisture Content determined by ASTM D2216.<br>- Deviator Stress includes membrane correction.<br>- Values for $c$ and $\phi$ determined from best-fit straight line for the specific test conditions.<br>Actual strength parameters may vary and should be determined by an engineer for site conditions. |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|

|                                                 |                        |                    |
|-------------------------------------------------|------------------------|--------------------|
| Project Name: IM-2-094(210)237                  | Location: Bismarck, ND | Project Number:    |
| Boring Number: 1                                | Tester: MD             | Checker: DT        |
| Sample Number: SS -478- 24                      | Test Date: 10/31/24    | Depth: 24.0 - 26.0 |
| Test Number: UU- 50 - 24                        | Preparation:           | Elevation:         |
| Description: 23" Brn Gry Cly with I.O. Deposits |                        |                    |
| Remarks: Sample Test Depth 24.2 - 24.7          |                        |                    |

# Unconsolidated Undrained by ASTM D4767



|                                                  |             |             |  |  |
|--------------------------------------------------|-------------|-------------|--|--|
| Symbol                                           | ■           | ●           |  |  |
| Sample ID                                        | SS -481- 24 | SS -481- 24 |  |  |
| Depth                                            | 32.0 - 34.0 | 32.0 - 34.0 |  |  |
| Test Number                                      | UU- 55 - 24 | UU- 56 - 24 |  |  |
| Initial                                          |             |             |  |  |
| Height, in                                       | 5.730       | 5.738       |  |  |
| Diameter, in                                     | 2.865       | 2.861       |  |  |
| Moisture Content (from Cuttings), %              | 32.2        | 31.0        |  |  |
| Dry Density, pcf                                 | 88.6        | 91.9        |  |  |
| Saturation (Wet Method), %                       | 97.2        | 101.0       |  |  |
| Void Ratio                                       | 0.888       | 0.821       |  |  |
| Final                                            |             |             |  |  |
| Moisture Content, %                              | 31.4        | 29.3        |  |  |
| Dry Density, pcf                                 | 90.8        | 93.6        |  |  |
| Cross-Sectional Area (Method A), in <sup>2</sup> | 6.340       | 6.347       |  |  |
| Saturation, %                                    | 100.0       | 100.0       |  |  |
| Void Ratio                                       | 0.842       | 0.787       |  |  |
| Back Pressure, psi                               | 0.0000      | 0.0000      |  |  |
| Vertical Effective Consolidation Stress, psi     | 100.0       | 49.99       |  |  |
| Horizontal Effective Consolidation Stress, psi   | 100.0       | 50.00       |  |  |
| Vertical Strain after Consolidation, %           | 0.0000      | 0.0000      |  |  |
| Volumetric Strain after Consolidation, %         | 0.0000      | 0.0000      |  |  |
| Time to 50% Consolidation, min                   | 0.0000      | 0.0000      |  |  |
| Shear Strength, psi                              | 11.37       | 13.49       |  |  |
| Strain at Failure, %                             | 14.7        | 17.5        |  |  |
| Strain Rate, %/min                               | 1.000       | 1.000       |  |  |
| Deviator Stress at Failure, psi                  | 22.73       | 26.98       |  |  |
| Effective Minor Principal Stress at Failure, psi | 100.0       | 49.93       |  |  |
| Effective Major Principal Stress at Failure, psi | 122.8       | 76.91       |  |  |
| B-Value                                          | ---         | ---         |  |  |

Notes:  
- Before Shear Saturation set to 100% for phase calculation.  
- Moisture Content determined by ASTM D2216.  
- Deviator Stress includes membrane correction.  
- Values for  $c$  and  $\phi$  determined from best-fit straight line for the specific test conditions.  
Actual strength parameters may vary and should be determined by an engineer for site conditions.

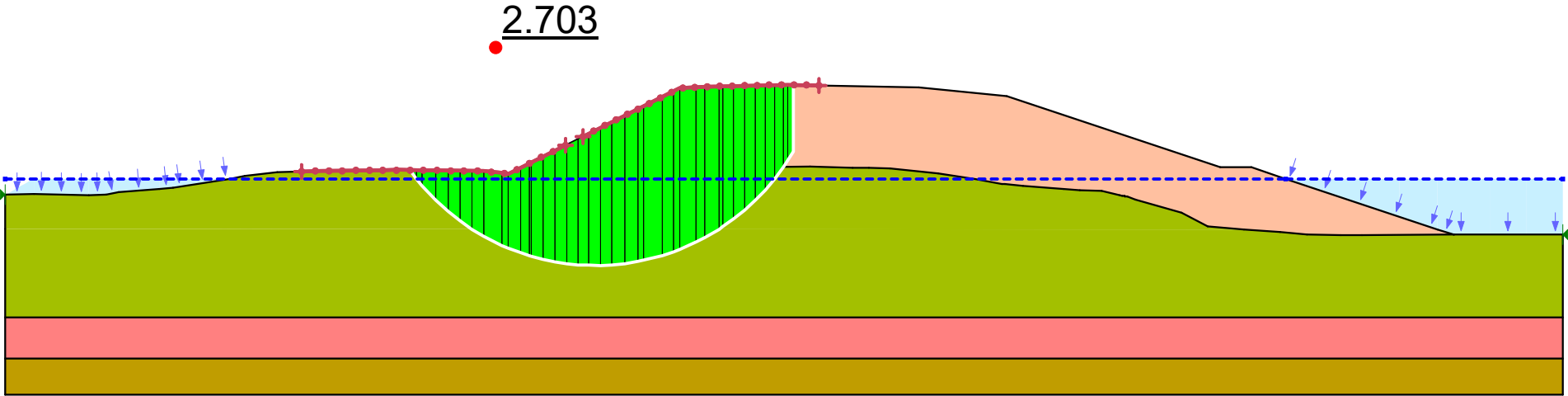
|                                                               |                        |                    |
|---------------------------------------------------------------|------------------------|--------------------|
| Project Name: IM-2-094(210)237                                | Location: Bismarck, ND | Project Number:    |
| Boring Number: 1                                              | Tester: MD             | Checker: DT        |
| Sample Number: SS -481- 24                                    | Test Date: 11/07/24    | Depth: 32.0 - 34.0 |
| Test Number: UU- 55 - 24                                      | Preparation:           | Elevation:         |
| Description: 23" Gry Cly with I.O. Lamination & Silt Deposits |                        |                    |
| Remarks: Sample Test Depth 34.2 - 34.7                        |                        |                    |

## APPENDIX C

### Stability Analysis Outputs

IM-2-094(210)237, PCN 24461  
Total Stress Slope Stability Analysis - Between Eastbound and Westbound Lanes

| Color       | Name       | Slope Stability Material Model | Unit Weight (pcf) | Effective Cohesion (psf) | Effective Friction Angle (°) | Phi-B (°) | Piezometric Surface |
|-------------|------------|--------------------------------|-------------------|--------------------------|------------------------------|-----------|---------------------|
| <div></div> | Layer 1 MC | Mohr-Coulomb                   | 123.3             | 1,250                    | 0                            | 0         | 1                   |
| <div></div> | Layer 3 MC | Mohr-Coulomb                   | 124.9             | 1,010                    | 0                            | 0         | 1                   |
| <div></div> | Layer 4 MC | Mohr-Coulomb                   | 120               | 1,010                    | 0                            | 0         | 1                   |
| <div></div> | Layer 5 MC | Mohr-Coulomb                   | 119.3             | 1,790                    | 0                            | 0         | 1                   |



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Total Stress Slope Stability Analysis - Lake Side

| Color                                                                             | Name       | Slope Stability Material Model | Unit Weight (pcf) | Effective Cohesion (psf) | Effective Friction Angle (°) | Phi-B (°) | Piezometric Surface |
|-----------------------------------------------------------------------------------|------------|--------------------------------|-------------------|--------------------------|------------------------------|-----------|---------------------|
|  | Layer 1 MC | Mohr-Coulomb                   | 123.3             | 1,250                    | 0                            | 0         | 1                   |
|  | Layer 3 MC | Mohr-Coulomb                   | 124.9             | 1,010                    | 0                            | 0         | 1                   |
|  | Layer 4 MC | Mohr-Coulomb                   | 120               | 1,010                    | 0                            | 0         | 1                   |
|  | Layer 5 MC | Mohr-Coulomb                   | 119.3             | 1,790                    | 0                            | 0         | 1                   |

