



# GEOTECHNICAL BASELINE REPORT

S-17-58 over Beaverdam Creek  
Dillon County, South Carolina



## PREPARED FOR

SCDOT

955 Park Street

Columbia, South Carolina 29201



## PREPARED BY

F&ME Consultants, Inc.

211 Business Park Boulevard

Columbia, South Carolina 29203

SCDOT Project ID.: PO43715

FME Project No.: G7100.010

April 8, 2025

April 8, 2025

Mr. Trapp Harris, P.E.  
Geotechnical Engineer – Office of Alternative Delivery  
South Carolina Department of Transportation  
955 Park Street  
Columbia, South Carolina 29201

Re: Geotechnical Baseline Report  
S-17-58 over Beaverdam Creek  
Dillon County, South Carolina  
SCDOT Project ID.: P043715  
FME Project No.: G7100.010

Mr. Harris:

Submitted herein is F&ME Consultants, Inc.'s (FME) Geotechnical Baseline Report for the S-17-58 over Beaverdam Creek project. Included is a summary of the subsurface investigation, the subsurface findings, the soil laboratory test results, and our conceptual geotechnical assessment of the assumed bridge foundation systems and bridge/roadway embankments.

Please notify us if there are any questions or if we can be of further assistance.

Sincerely,

F&ME CONSULTANTS



John F. Hamilton, PE  
Geotechnical Design Manager

Attachments

JFH/rl:jfh



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## 1. PROJECT DESCRIPTION

The project site is located along SC State Road S-17-58 (Gaddy's Mill Road), located approximately three (3) miles northeast of Hayestown in Dillon County, South Carolina. A site location plan is presented in the Appendix.

The project consists of demolishing the existing bridge and replacing it with a new bridge structure. The new bridge will be a multi-span structure. We assume that the proposed bridge substructure elements will consist of driven pile foundations at the end bents and the interior bents.

This bridge site qualifies as "Low-Volume" based on the criteria established in SCDOT's *Supplemental Design Criteria for Low Volume Bridge Replacement Projects* (PCDM-11).

The geotechnical subsurface investigation was performed in general accordance with the 2022 SCDOT Geotechnical Design Manual (GDM). The field exploration methods and laboratory testing procedures were conducted in general accordance with the current American Association of State Highway and Transportation Officials (AASHTO), American Society of Testing and Materials (ASTM) Standards. The conceptual bridge foundation analyses and the development of conceptual design recommendations, provided herein, were performed in general accordance with the GDM and/or the AASHTO LRFD Bridge Design Specifications.

## 2. SUBSURFACE EXPLORATION

From February 26 through March 1, 2025, FME performed three (3) Soil Test Borings, six (6) Manual Auger Borings, and two (2) bulk soil samples.

The recovered soils were visually classified in the field based upon the Unified Soil Classification System (USCS) in general accordance with ASTM D2488. Test locations and target exploration depths were provided by the SCDOT. A Boring Location Plan displaying the test locations performed during the subsurface exploration is provided in the Appendix.

### 2.1. SOIL TEST BORINGS

Soil Test Borings were performed utilizing a CME 45B trailer-mounted drill rig. The Soil Test Borings utilized rotary wash drilling techniques to maintain a stable borehole. In general, Standard Penetration Testing was conducted at standard testing intervals relative to the SCDOT GDM requirements. The soil borings were continuously sampled in the top ten (10) feet. Following the continuous sampling, SPT testing was performed on standard five (5) foot intervals, thereafter, until the target boring depth was achieved. SPT sampling was performed in general accordance with ASTM D1586 to determine the relative densities and consistencies of the subsurface soils and to collect subsurface soil samples. An automatic hammer with a calibrated Energy Transfer Ratio (ETR) was used to perform the SPTs. The measured ETR for the CME 45B was 86%. The SPT hammer calibration records are provided in the Appendix. The following table summarizes the performed soil borings.



**Table 1 – Field Exploration Summary Table – Soil Test Borings**

| Test ID      | Test Type | Bridge/Air/Water Gap (ft) | Total Boring Depth (ft) | Latitude    | Longitude    | Elevation (ft-MSL) |
|--------------|-----------|---------------------------|-------------------------|-------------|--------------|--------------------|
| B-1          | STB       | N/A                       | 100.0                   | 34.39329371 | -79.23941112 | 91.7               |
| B-2          | STB       | 20.9                      | 120.9                   | 34.39338652 | -79.23921838 | 91.6               |
| B-3          | STB       | N/A                       | 100.0                   | 34.3934765  | -79.23902365 | 91.5               |
| <b>Total</b> |           | <b>20.9</b>               | <b>320.9</b>            |             |              |                    |

## 2.2. MANUAL AUGER BORINGS

Six (6) locations were identified to collect pavement cores of the existing pavement structure and perform shallow soil borings at the pavement subgrade. Below each of the pavement core locations, FME performed Manual Auger Borings with Dynamic Cone Penetration (DCP) testing. DCPs were performed on one (1) foot testing interval depths. Following completion of the manual auger borings, the pavement cores were bagged and transported to FME’s laboratory facility. These cores were measured and photographed to document thickness, distress and existing surface conditions. The manual auger boring logs are provided in the Appendix. The photos of the pavement cores are also provided in the Appendix. The following table summarizes the performed pavement coring and manual auger borings.

**Table 2 – Field Exploration Summary Table – Manual Auger Borings**

| Test ID      | Test Type | Test Depth (ft) | Latitude    | Longitude    | Elevation (ft-MSL) |
|--------------|-----------|-----------------|-------------|--------------|--------------------|
| P-1          | MAB       | 5.3             | 34.39240086 | -79.24155207 | 102.0              |
| P-2          | MAB       | 5.1             | 34.39263876 | -79.24079675 | 100.4              |
| P-3          | MAB       | 5.3             | 34.39297325 | -79.24008412 | 95.5               |
| P-4          | MAB       | 5.6             | 34.39379464 | -79.23835317 | 90.8               |
| P-5          | MAB       | 5.4             | 34.39413001 | -79.23763608 | 91.0               |
| P-6          | MAB       | 5.2             | 34.39455862 | -79.23701637 | 91.0               |
| <b>Total</b> |           | <b>31.9</b>     |             |              |                    |

## 2.3. BULK SOIL SAMPLES

Two (2) Bulk Soil Samples (designated as BS-1 and BS-2) were collected at the site. BS-1 was collected at the proposed beginning of bridge location, near soil boring B-3. Bulk Soil Sample BS-2 was collected as a composite sample from the upper five (5) feet of auger cuttings encountered within the six (6) Manual Auger Borings. BS-1 was performed for the purpose of performing triaxial laboratory testing on remolded samples compacted to 95% of the Standard Proctor testing. BS-2 was performed for the primary purpose of performing California Bearing Ratio testing. The following table summarizes the performed bulk soil sampling.

**Table 3 – Field Exploration Summary Table – Bulk Soil Samples**

| Test ID           | Test Type | Test Depth (ft) | Latitude         | Longitude        | Elevation (ft-MSL) |
|-------------------|-----------|-----------------|------------------|------------------|--------------------|
| BS-1              | BS/MAB    | 5.0             | 34.39342985      | -79.2389907      | 91.2               |
| BS-2 <sup>1</sup> | BS/MAB    | 5.0             | N/A <sup>1</sup> | N/A <sup>1</sup> | N/A <sup>1</sup>   |
| TOTAL             |           | 10.0            |                  |                  |                    |

<sup>1</sup>Composite Bulk Soil Sample BS-2 was Created from Upper Six (5) feet of Auger Cuttings Collected within Soil Test Borings P-1 through P-6.

## 2.4. GROUNDWATER

In each soil boring, groundwater depths were recorded at the time of boring (TOB) and/or twenty-four (24) hours following boring completion. The groundwater depth measurements are noted on the individual logs provided in the Appendix. The groundwater depths are discussed in further sections of this report.

## 3. LABORATORY TESTING

Following completion of the subsurface investigation, soil samples were selected by FME personnel for laboratory testing. The tests were conducted in an AASHTO certified laboratory in accordance with applicable ASTM/AASHTO standards.

The laboratory testing performed on the soil samples collected from the Soil Test Borings is summarized in the table below. Data sheets containing the results from this testing are provided in the Appendix.

**Laboratory Testing Summary Table – Soil Test Boring (Split-Spoon Samples)**

| Type of Test                        | Quantity | Procedure                          |
|-------------------------------------|----------|------------------------------------|
| Moisture Content                    | 15       | AASHTO T265 (ASTM D2216)           |
| Atterberg Limits                    | 15       | AASHTO T89/T90 (ASTM D4318)        |
| Grain-Size Distribution w/ Wash 200 | 11       | ASTM D6913/AASHTO T11 (ASTM D1140) |
| Hydrometer and Grain Size           | 4        | ASTM D7928/D6913                   |
| pH                                  | 1        | AASHTO T289/ASTM G51               |
| Resistivity                         | 1        | AASHTO T288                        |
| Chloride Content                    | 1        | AASHTO T291                        |
| Sulfate                             | 1        | AASHTO T290 (ASTM C1580)           |

The laboratory testing performed on the Bulk Soil Samples are summarized in the table below. The data sheets containing the results from this testing are provided in the Appendix.

**Laboratory Testing Summary Table – Bulk Soil Samples**

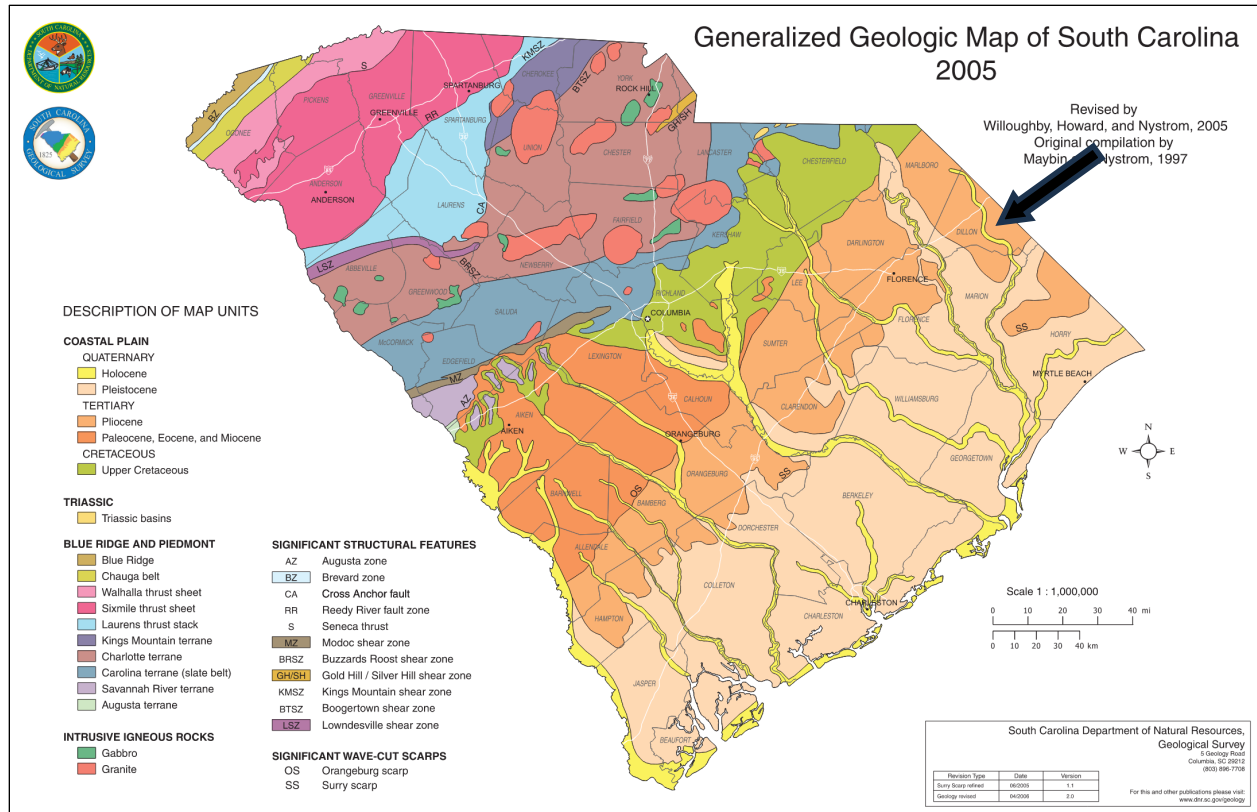
| Type of Test                        | Quantity | Procedure                          |
|-------------------------------------|----------|------------------------------------|
| Moisture Content                    | 2        | AASHTO T265 (ASTM D2216)           |
| Atterberg Limits                    | 2        | AASHTO T89/T90 (ASTM D4318)        |
| Grain-size Distribution w/ Wash 200 | 2        | ASTM D6913/AASHTO T11 (ASTM D1140) |
| CU Triaxial                         | 1        | AASHTO T297 (ASTM D4767)           |
| California Bearing Ratio Test       | 1        | AASHTO T193                        |

## 4. SUBSURFACE CONDITIONS

### 4.1. SITE GEOLOGY

The bridge site is located within the Middle Coastal Plain geologic unit of South Carolina. The Coastal Plain unit has a gently dipping topography towards the ocean and is comprised of several geologic formations, which represent sedimentary sequences believed to have been formed during periods of eustatic sea level rise/fall or tectonic uplift/subsidence over geologic time.

The following figure displays the location of the site relative to the Generalized Geologic Map of South Carolina. The available quadrangle maps developed by the South Carolina Geologic Survey and the North Carolina Geologic Survey near the project site were also used to delineate the various coastal plain geologic stratigraphy.



The following geologic strata were encountered in the subsurface investigation. The strata are presented in descending order relative to their age (youngest to oldest).

- Existing Embankment Fill
- Alluvium (Holocene)
- Black Creek Group (Cretaceous)

Below the existing embankment fill, the Holocene-aged alluvium represents the surficial soils of the naturally occurring flood-plain. The soil composition of the Alluvium is primarily sandy. Based on laboratory testing performed on limited samples from the subsurface investigation, the alluvial material is expected to be primarily non-plastic. The SPT blow counts in the Alluvium generally suggest very loose to loose sands.

Below the Alluvium, the Cretaceous-aged Black Creek Group soils were encountered. At this site and to the depths explored, the Black Creek Group is predominantly clayey. The SPT blow counts in the Black Creek Group generally suggest very stiff to hard calys.

## 4.2. SOIL STRATIGAPHY

The soil test borings indicate three (3) geologic strata at the site: Existing Embankment Fill, Alluvium, and Black Creek Group. The following table summarizes the geologic stratigraphy.

Soil Stratification Table

| Geology                        | <sup>1</sup> Elevation of Top of Layer (ft-MSL) | USCS Soil Type    | SPT N-Values (bpf) |
|--------------------------------|---|-------------------|--------------------|
| Existing Fill                  | +92   | SP & SP-SM        | 6 to 32            |
| Alluvium (Holocene)            | +77   | SP, SM, SP-SM, CL | WOH to 9           |
| Black Creek Group (Cretaceous) | +46   | SC, ML, CL        | 10 to 58           |

<sup>1</sup> Elevations are generalized from the totality of subsurface information collected

## 4.3. GROUNDWATER

Groundwater table measurements were recorded immediately following completion of the borings and/or 24-hours following completion of the borings. In general, the encountered groundwater table is located at a depth of approximately four (4) to five (5) feet below the existing roadway grade at the time of our investigation. This corresponds to a groundwater table elevation of approximately 87 ft-NAVD. This elevation is approximately twelve (12) feet above the surface water elevation within the creek. The high groundwater table readings may be a result of perched groundwater conditions. Perched groundwater occurs when stormwater runoff temporarily sits atop of a fine-grained soil layer with low permeability. The water will eventually seep to the static groundwater table elevation, which we would expect to be similar to that of the surface water elevation in the creek. During and following periods of rainfall, the groundwater table elevation may be encountered at higher elevations than shown on the boring logs.

## 5. GEOTECHNICAL SEISMIC HAZARD POTENTIAL

In accordance with PCDM-11, this bridge site qualifies as “Low Volume”. As such, seismic soil shear strength loss (SSL) calculations, seismic embankment slope stability analyses, and seismic foundation design are not required. No discussion is provided herein relative to the seismic design of embankments and bridge foundations.

## 6. CONCEPTUAL GEOTECHNICAL ASSESSMENT FOR BRIDGE & ROADWAY DESIGN

Based on our understanding of the project, the following elements were considered for the conceptual geotechnical design provided herein:

- Bridge foundations

A global discussion of the conceptual geotechnical design of the elements noted above is provided in the proceeding sections of this report. In accordance with PCDM-11, embankment slope stability and settlement analyses are not required for sites that qualify as “Low Volume”. As such, a discussion on embankment slope stability and settlement is not provided in this report. Other elements such as earth retaining structures, drainage structures (ie. pipe culverts greater than 48 inch diameter and box culverts), sound barrier walls, and miscellaneous structures are not expected to be included with this project and a discussion of these elements is not provided in this report.

### 6.1. BRIDGE FOUNDATIONS

Deep foundations are anticipated for support of the new bridge structure. We assume typical, steel HP pile foundations will be used at the end bents. At the interior bents, we expect driven pre-stressed concrete pile foundations will be used. The conceptual geotechnical assessment of these foundation elements is globally discussed in the following sections.

#### 6.1.1. SUBSURFACE STEEL CORROSION & CONCRETE DETERIORATION

In accordance with AASHTO LRFD Bridge Design Specifications, the following soil or site conditions are considered indicative of a potential for steel and/or concrete deterioration or corrosion.

- Resistivity less than 2,000 ohm-cm;
- pH less than 5.5;
- Chloride concentrations greater than 500 mg/kg;
- Sulfate concentrations greater than 1,000 mg/kg;

The results from the performed corrosion series laboratory testing are summarized in the following table.

**Corrosion Series Laboratory Test Result Summary**

| Test ID | Depth (ft) | Resistivity (ohm-cm) | pH  | Chloride (mg/kg) | Sulfate (mg/kg) |
|---------|------------|----------------------|-----|------------------|-----------------|
| B-1     | 0-4        | 7,973                | 5.3 | 28.9             | 49.6            |

The corrosion series laboratory testing results are provided in the Appendix. Based on the lab test results, subsurface steel corrosion should be accounted for at this site based on the pH test result. Subsurface sulfate attack on concrete elements is not expected at the site. We note that additional corrosion series laboratory testing is recommended for the final bridge design.



## 6.1.2. DRIVEN PILE FOUNDATIONS

Driven piles are anticipated for support of the bridge end bents and interior bents. Specific driven pile design and construction topics are discussed in the following sections.

### 6.1.2.1. AXIAL RESISTANCE

For the end bent HP pile foundations, the Strength limit state axial loading conditions are expected to govern the geotechnical driven pile foundation design. The driven HP piles are expected to develop the required driving resistance through predominantly skin friction in the Black Creek Group soils. As is typical with driving piles in the Coastal Plain, the required driving resistance will likely not be observed during the initial pile driving. A prescribed wait period may be required for development of pile freeze following the initial pile driving. This is even more prominent given the presence of clay-like soils within the bearing stratum.

For the interior bent PSC pile foundations, the Design-Team should carefully evaluate the subsurface soil conditions relative to a displacement pile type. At this site, the Black Creek Group soils contain an appreciable amount of fines content. When driving displacement pile in these types of soils, the pore pressures that are developed during pile driving become too high to allow for any measurable amount of pile advancement. We would expect minimal PSC embedment in the Black Creek Group with pile driving equipment typically used on SCDOT projects.

To mitigate the risks associated with driving displacement piles in Coastal Plain soils with high fines contents, a composite PSC pile with an HP pile extension can be used. For these types of composite piles, the Strength Limit State axial loading conditions typically govern the foundation design. At this site and considering the lengths of each type of pile, each pile type would likely be installed in separate driving sequences for constructability purposes and to properly maintain pile plumbness.

### 6.1.2.2. LATERAL RESISTANCE

At the end bents, we expect that the driven HP pile foundations can be installed with impact pile driving equipment to the minimum tip elevation required for lateral stability. We do not anticipate that pre-drilling operation will be required for the end bent piles.

At the interior bents and assuming approximately ten (10) feet of scour, we expect that the driven PSC pile foundations will require a longer HP pile extension in order to extend the pile tip elevation to the minimum tip elevation required for lateral stability. We would not expect much PSC pile penetration into the Black Creek Group soils.

For the Extreme Event I limit state, we expect that the driven piles will develop the required lateral stability in the Black Creek Group soils. In accordance with the GDM, the available bridge abutment backwall passive pressure is on the order of 1.0 ksf for a 5.5 foot high backwall and an assumed sandy, cohesionless backfill material. The remaining lateral resistance, following use of the bridge abutment backwall resistance, will have to be carried by the piles. If the bridge design is such that the end bents are responsible for absorbing a significant amount of the lateral loads, then we anticipate that large piles and/or multiple rows of piles may be required. If the end bent piles are used for slope stabilizing purposes for the seismic event, then an additional lateral soil movement loading would be applied to the foundations which should be accounted for in the lateral design analyses. The procedure provided in Appendix K of the GDM should be used to evaluate the magnitude of the soil movement loading acting on the pile foundations.

### 6.1.2.3. DRIVABILITY

The driven piles will likely use a diesel impact pile hammer. We anticipate that the pile lengths will extend into the Black Creek Group. Based on the anticipated pile length and the assumed construction logistics, we expect that the PSC piles may be driven in at least two (2) sequences to allow for connecting the HP section to the PSC section. For the assumed end bent HP pile lengths, we anticipate small to medium sized pile hammers (40-80 k-ft) will be required to effectively mobilize the required driving resistance. For the assumed interior bent PSC pile lengths, we anticipate larger pile hammers (80-120 k-ft) will be required.

Based on the soils conditions encountered, we anticipate that the required driving resistance will not be observed during the initial pile driving. Allowing time for pile freeze to develop, the required driving resistance is typically observed.

In general, we do not anticipate any pile driving issues for successful installation of the driven piles. For a properly sized pile driving hammer, the pile driving compressive and tensile stresses are expected to conform to the SCDOT criteria.

## 7. EXISTING PAVEMENT

In addition to the soil borings performed for the bridge design, six (6) shallow manual auger borings (MAB) were performed at the site. At each bridge end bent soil boring and MAB location, asphalt cores of the existing pavement were collected. The core thicknesses generally range from three (3) inches to seven (7) inches.

From the soil test borings and subsequent CBR testing, we note that the quality of the subgrade material below the existing paved shoulders is considered good relative to secondary roadway pavements. The following table summarizes the conditions at the existing paved roadway shoulders.

**Existing Pavement Data**

| Boring ID | Pavement Thickness (in) | CBR @ 95% Compaction |
|-----------|-------------------------|----------------------|
| B-1       | 6.3                     | N/A                  |
| B-3       | 5.5                     | N/A                  |
| P-1       | 3.3                     | 15.9                 |
| P-2       | 3.0                     |                      |
| P-3       | 3.0                     |                      |
| P-4       | 7.3                     |                      |
| P-5       | 4.5                     |                      |
| P-6       | 2.5                     |                      |

## 8. LIMITATIONS OF REPORT

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to the referenced bridge project. The conclusions and recommendations contained herein are based upon the provided test borings and test result data, contained within, and applicable standards in this geographic area at the time this report was prepared. No other warranty, expressed or implied, is made.

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

---

# **APPENDIX**

|                   |                                       |
|-------------------|---------------------------------------|
| <b>SECTION 1</b>  | <b>SITE LOCATION PLAN</b>             |
| <b>SECTION 2</b>  | <b>BORING LOCATION PLAN</b>           |
| <b>SECTION 3</b>  | <b>SUBSURFACE EXPLORATION LOGS</b>    |
| <b>SECTION 3A</b> | <b>SOIL TEST BORING (STB) LOGS</b>    |
| <b>SECTION 3B</b> | <b>MANUAL AUGER BORING (MAB) LOGS</b> |
| <b>SECTION 3C</b> | <b>BULK SOIL SAMPLE (BS) LOGS</b>     |
| <b>SECTION 4</b>  | <b>LABORATORY TEST RESULTS</b>        |
| <b>SECTION 4A</b> | <b>SPLIT SPOON SAMPLES (SS)</b>       |
| <b>SECTION 4B</b> | <b>BULK SOIL SAMPLES (BS)</b>         |
| <b>SECTION 4C</b> | <b>CORROSION SERIES TESTING</b>       |
| <b>SECTION 5</b>  | <b>ON-SITE DRILL RIG PHOTOS</b>       |
| <b>SECTION 6</b>  | <b>PAVEMENT CORE PHOTOS</b>           |
| <b>SECTION 7</b>  | <b>SPT HAMMER CALIBRATION</b>         |
| <b>SECTION 8</b>  | <b>GEOSCOPING FORM</b>                |

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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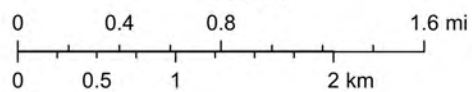
# **APPENDIX**

## **SECTION 1**

## **SITE LOCATION PLAN**



1:58,000



F&ME CONSULTANTS, INC.  
COLUMBIA, SC

|       |     |             |                         |
|-------|-----|-------------|-------------------------|
| 4     |     |             |                         |
| 3     |     |             |                         |
| 2     |     |             |                         |
| 1     |     |             |                         |
| REV.  | BY  | DATE        | DESCRIPTION OF REVISION |
| TOPO. |     | DATE        |                         |
| DWG.  | CTC | DATE 3.7.25 | GROUP -- --             |
| R/W   |     | DATE        |                         |

S-17-58 OVER BEAVERDAM CREEK  
DILLON COUNTY, SOUTH CAROLINA

SITE LOCATION PLAN

SCDOT PROJECT ID: P043715

FME JOB NO. G7100.010 TASK 00002

SCALE: AS NOTED

FIGURE 1



# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**


## **SECTION 2      BORING LOCATION PLAN**




| SUBSURFACE TESTING DATA  |           |            |             |             |              |                      |                 |
|--|-----------|------------|-------------|-------------|--------------|----------------------|-----------------|
| Boring ID  | Test Type | Northing   | Easting     | Latitude    | Longitude    | Test Elevation (MSL) | Test Depth (ft) |
| B-1  | STB       | 935935.799 | 2531069.063 | 34.39329371 | -79.23941112 | 91.7                 | 100.0           |
| B-2  | STB       | 935970.557 | 2531126.620 | 34.39338652 | -79.23921838 | 91.6                 | 120.9           |
| B-3  | STB       | 936004.298 | 2531184.795 | 34.39347650 | -79.23902365 | 91.5                 | 100.0           |
| BS-1   | BS/MAB    | 935987.492 | 2531195.024 | 34.39342985 | -79.23899070 | 91.2                 | 5.0             |
| P-1  | MAB       | 935599.945 | 2530428.851 | 34.39240086 | -79.24155207 | 102.0                | 5.0             |
| P-2  | MAB       | 935690.384 | 2530655.195 | 34.39263876 | -79.24079675 | 100.4                | 5.0             |
| P-3  | MAB       | 935815.743 | 2530868.063 | 34.39297325 | -79.24008412 | 95.5                 | 5.0             |
| P-4  | MAB       | 936123.496 | 2531385.049 | 34.39379464 | -79.23835317 | 90.8                 | 5.0             |
| P-5  | MAB       | 936249.208 | 2531599.251 | 34.39413001 | -79.23763608 | 91.0                 | 5.0             |
| P-6  | MAB       | 936408.344 | 2531783.502 | 34.39455862 | -79.23701637 | 91.0                 | 5.0             |
| Composite Bulk Soil Sample BS-2 is composed of the upper 5-ft. of auger cuttings encountered within Manual Auger Borings P-1 through P-6 |           |            |             |             |              |                      |                 |



LEGEND:

 SOIL TEST BORING LOCATION

 MANUAL AUGER BORING TEST LOCATION

|       |     |             |                         |
|-------|-----|-------------|-------------------------|
| 4     |     |             |                         |
| 3     |     |             |                         |
| 2     |     |             |                         |
| 1     |     |             |                         |
| REV.  | BY  | DATE        | DESCRIPTION OF REVISION |
| TOPO. |     | DATE        |                         |
| DWG.  | CTC | DATE 3.7.25 | GROUP -                 |
| R/W   |     | DATE        |                         |

 F&ME CONSULTANTS, INC.  
COLUMBIA, SC

S-17-58 OVER BEAVERDAM CREEK  
DILLON COUNTY, SOUTH CAROLINA

BORING LOCATION PLAN

|                           |                                  |
|---------------------------|----------------------------------|
| SCDOT PROJECT ID: P043715 | FME JOB NO. G7100.010 TASK 00002 |
| SCALE: NTS                | FIGURE 2                         |

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**

## **SECTION 3      SUBSURFACE EXPLORATION LOGS**



## Boring Log Descriptors

### Correlation of Penetration Resistance with Relative Density and Consistency

| Coarse Grained Soils (Sand/Gravel) |                  | Fine Grained Soils (Silt/Clay) |             |
|------------------------------------|------------------|--------------------------------|-------------|
| SPT Blow Count                     | Relative Density | SPT Blow Count                 | Consistency |
| ≤4                                 | Very Loose       | ≤2                             | Very Soft   |
| 5 – 10                             | Loose            | 3 – 4                          | Soft        |
| 11 – 30                            | Medium Dense     | 5 – 8                          | Firm        |
| 31 – 50                            | Dense            | 9 – 15                         | Stiff       |
| ≥51                                | Very Dense       | 16 – 30                        | Very Stiff  |
|                                    |                  | ≥31                            | Hard        |

### Particle Size Identification

| Gravel | Sieve Size       |
|--------|------------------|
| Fine   | #4 to 3/4-in.    |
| Coarse | 3/4-in. to 3-in. |

| Sand   | Sieve Size  |
|--------|-------------|
| Fine   | #200 to #40 |
| Medium | #40 to #10  |
| Coarse | #10 to #4   |

| Clay/Silt     | Sieve Size |
|---------------|------------|
| Fines Content | <#200      |

| SYMBOL | PRINT CODE* | TYPICAL DESCRIPTION    |
|--------|-------------|------------------------|
|        | SCCT        | CONCRETE               |
|        | SCAT        | ASPHALT                |
|        | SCTS        | TOPSOIL/PEAT           |
|        | SCSAND      | SAND                   |
|        | SCSTSAND    | SILTY SAND/SANDY SILT  |
|        | SCCLSAND    | CLAYEY SAND/SANDY CLAY |
|        | SCCLAY      | CLAY                   |
|        | SCSILT      | SILT                   |
|        | SCSTCLAY    | SILTY CLAY/CLAYEY SILT |
|        | SCSAP       | SAPROLITE              |
|        | SCLS        | LIMESTONE              |
|        | SCBR        | GRANITE (BEDROCK)      |
|        | SCMARL      | MARL                   |

### SOIL CLASSIFICATION CHART

| MAJOR DIVISIONS      |                           |   | SYMBOLS |        | TYPICAL DESCRIPTIONS   |
|----------------------|---------------------------|---|---------|--------|--|
|                      |                           |   | GRAPH   | LETTER |  |
| COARSE GRAINED SOILS | GRAVEL AND GRAVELLY SOILS | CLEAN GRAVELS<br>(LITTLE OR NO FINES)               |         | GW     | WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES  |
|                      |                           | GRAVELS WITH FINES<br>(APPRECIABLE AMOUNT OF FINES) |         | GP     | POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES  |
|                      |                           |   |         | GM     | SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES   |
|                      | SAND AND SANDY SOILS      | CLEAN SANDS<br>(LITTLE OR NO FINES)                 |         | SW     | WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES  |
|                      |                           | SANDS WITH FINES<br>(APPRECIABLE AMOUNT OF FINES)   |         | SP     | POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES   |
|                      |                           |   |         | SM     | SILTY SANDS, SAND-SILT MIXTURES  |
| FINE GRAINED SOILS   | SILTS AND CLAYS           | LIQUID LIMIT LESS THAN 50                           |         | ML     | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY |
|                      |                           |   |         | CL     | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS                  |
|                      |                           |   |         | OL     | ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY  |
|                      | SILTS AND CLAYS           | LIQUID LIMIT GREATER THAN 50                        |         | MH     | INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS  |
|                      |                           |   |         | CH     | INORGANIC CLAYS OF HIGH PLASTICITY   |
|                      |                           |   |         | OH     | ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS  |
| HIGHLY ORGANIC SOILS |                           |   |         | PT     | PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS  |

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS



# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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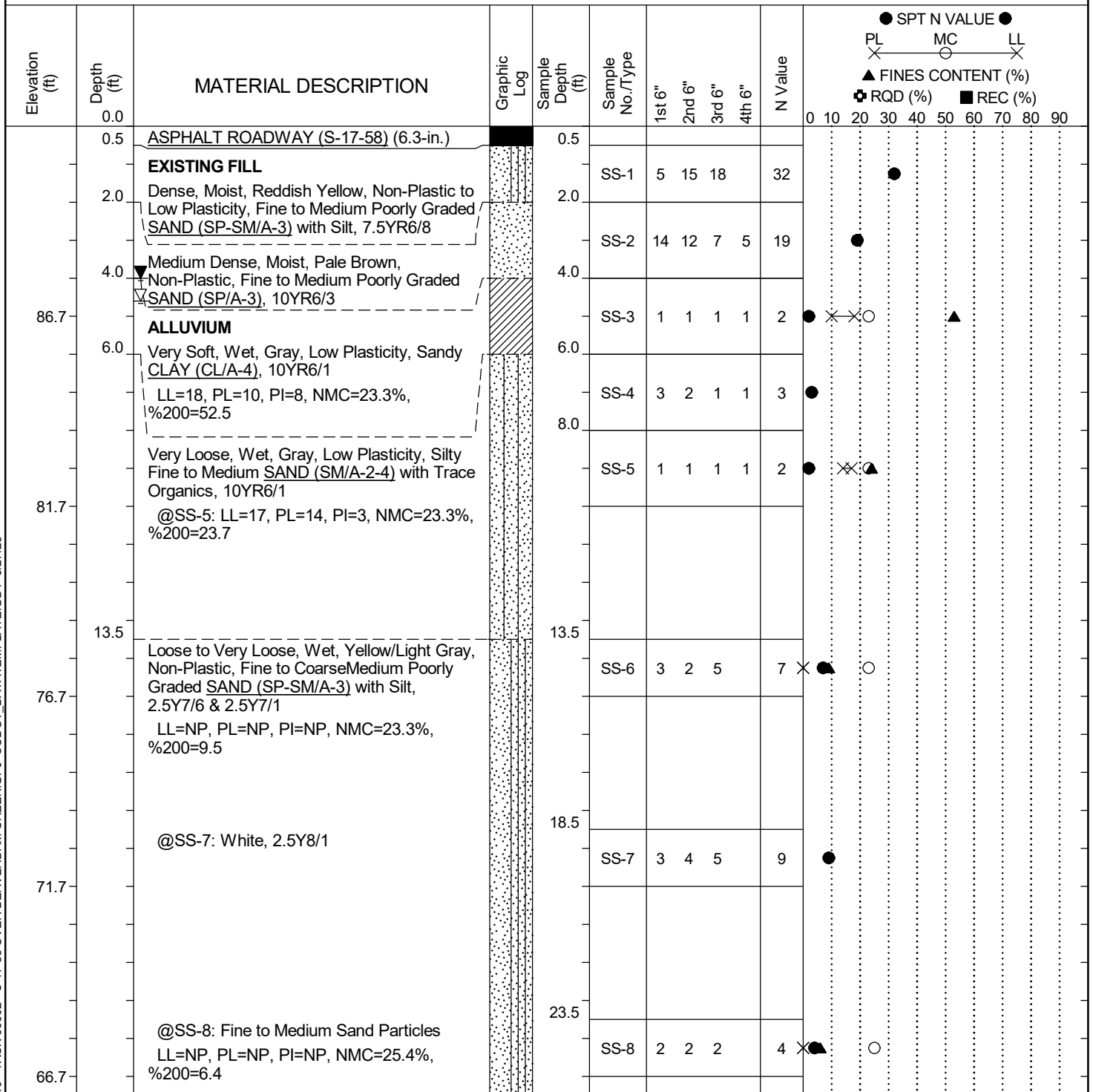
# **APPENDIX**

## **SECTION 3      SUBSURFACE EXPLORATION LOGS**

### **SECTION 3A      SOIL TEST BORING (STB) LOGS**

# SCDOT Soil Test Log

|                                 |                              |                              |             |                        |                    |
|---------------------------------|------------------------------|------------------------------|-------------|------------------------|--------------------|
| <b>Project ID:</b>              | P043715                      | <b>County:</b>               | Dillon      | <b>Boring No.:</b>     | B-1                |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |                              |             | <b>Route:</b>          | S-17-58            |
| <b>Eng./Geo.:</b>               | W. Pitts                     | <b>Boring Location:</b>      | N/A         | <b>Offset:</b>         | N/A                |
| <b>Elev.:</b>                   | 91.7 ft                      | <b>Latitude:</b>             | 34.39329371 | <b>Longitude:</b>      | -79.23941112       |
| <b>Date Started:</b>            | 2/26/2025                    |                              |             |                        |                    |
| <b>Total Depth:</b>             | 100 ft                       | <b>Soil Depth:</b>           | 100 ft      | <b>Core Depth:</b>     | N/A ft             |
| <b>Date Completed:</b>          | 2/27/2025                    |                              |             |                        |                    |
| <b>Bore Hole Diameter (in):</b> | 3                            | <b>Sampler Configuration</b> |             | <b>Liner Required:</b> | Y (N)              |
| <b>Liner Used:</b>              | Y (N)                        |                              |             |                        |                    |
| <b>Drill Machine:</b>           | CME 45B                      | <b>Drill Method:</b>         | RW          | <b>Hammer Type:</b>    | Automatic          |
| <b>Energy Ratio:</b>            | 86.4%                        |                              |             |                        |                    |
| <b>Core Size:</b>               | N/A                          | <b>Driller:</b>              | D. Harris   | <b>Groundwater:</b>    | TOB                |
|                                 |                              |                              |             | 4.6(cave 89.4)         | 24HR               |
|                                 |                              |                              |             |                        | 4.0(wet cave 33.6) |



## LEGEND

Continued Next Page

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

SC.DOT G7100.010 - TASK 00002 - S-17-58 OVER BEAVERDAM CREEK.GPJ SCDOT\_DATATEMPLATE.GDT 3/27/25



# SCDOT Soil Test Log

|                                 |                              |                              |             |                        |                    |
|---------------------------------|------------------------------|------------------------------|-------------|------------------------|--------------------|
| <b>Project ID:</b>              | P043715                      | <b>County:</b>               | Dillon      | <b>Boring No.:</b>     | B-1                |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |                              |             | <b>Route:</b>          | S-17-58            |
| <b>Eng./Geo.:</b>               | W. Pitts                     | <b>Boring Location:</b>      | N/A         | <b>Offset:</b>         | N/A                |
| <b>Elev.:</b>                   | 91.7 ft                      | <b>Latitude:</b>             | 34.39329371 | <b>Longitude:</b>      | -79.23941112       |
| <b>Date Started:</b>            | 2/26/2025                    |                              |             |                        |                    |
| <b>Total Depth:</b>             | 100 ft                       | <b>Soil Depth:</b>           | 100 ft      | <b>Core Depth:</b>     | N/A ft             |
| <b>Date Completed:</b>          | 2/27/2025                    |                              |             |                        |                    |
| <b>Bore Hole Diameter (in):</b> | 3                            | <b>Sampler Configuration</b> |             | <b>Liner Required:</b> | Y (N)              |
| <b>Liner Used:</b>              | Y (N)                        |                              |             |                        |                    |
| <b>Drill Machine:</b>           | CME 45B                      | <b>Drill Method:</b>         | RW          | <b>Hammer Type:</b>    | Automatic          |
| <b>Energy Ratio:</b>            | 86.4%                        |                              |             |                        |                    |
| <b>Core Size:</b>               | N/A                          | <b>Driller:</b>              | D. Harris   | <b>Groundwater:</b>    | TOB 4.6(cave 89.4) |
| <b>24HR</b>                     | 4.0(wet cave 33.6)           |                              |             |                        |                    |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION   | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | 4th 6" | N Value | <div> ● SPT N VALUE ●<br/> PL X MC X LL X<br/> ▲ FINES CONTENT (%)<br/> ⊕ RQD (%) ■ REC (%) </div> |
|----------------|------------|--|-------------|-------------------|-----------------|--------|--------|--------|--------|---------|--|
| 61.7           |            | @SS-9: Light Gray, 2.5Y7/1<br>LL=NP, PL=NP, PI=NP, NMC=27.2%, %200=5.9   |             | 28.5              | SS-9            | 1      | 1      | 1      |        | 2       | ●▲○  |
| 56.7           |            | @SS-10: LL=NP, PL=NP, PI=NP, NMC=24.7%, %200=5.8   |             | 33.5              | SS-10           | 1/12"  | 1      |        |        | 1       | ●▲○  |
| 51.7           |            |  |             | 38.5              | SS-11           | 2      | 3      | 4      |        | 7       | ●  |
| 46.7           |            | @SS-12: Light Gray/Reddish Yellow, 2.5Y7/1 & 5YR7/8  |             | 43.5              | SS-12           | 4      | 4      | 5      |        | 9       | ●  |
| 41.7           | 48.5       | <b>BLACK CREEK GROUP</b> (Cretaceous)<br>Stiff, Moist, Dark Gray, Medium Plasticity to High Plasticity, Lean <u>CLAY (CL/A-6)</u> with Sand, 2.5Y4/1 |             | 48.5              | SS-13           | 4      | 5      | 8      |        | 13      | ●  |

## LEGEND

Continued Next Page

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

# SCDOT Soil Test Log

|                                 |                              |                              |             |                        |  |
|---------------------------------|------------------------------|------------------------------|-------------|------------------------|--|
| <b>Project ID:</b>              | P043715                      | <b>County:</b>               | Dillon      | <b>Boring No.:</b>     | B-1  |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |                              |             | <b>Route:</b>          | S-17-58                                    |
| <b>Eng./Geo.:</b>               | W. Pitts                     | <b>Boring Location:</b>      | N/A         | <b>Offset:</b>         | N/A  |
| <b>Elev.:</b>                   | 91.7 ft                      | <b>Latitude:</b>             | 34.39329371 | <b>Longitude:</b>      | -79.23941112                               |
| <b>Date Started:</b>            | 2/26/2025                    |                              |             |                        |  |
| <b>Total Depth:</b>             | 100 ft                       | <b>Soil Depth:</b>           | 100 ft      | <b>Core Depth:</b>     | N/A ft                                     |
| <b>Date Completed:</b>          | 2/27/2025                    |                              |             |                        |  |
| <b>Bore Hole Diameter (in):</b> | 3                            | <b>Sampler Configuration</b> |             | <b>Liner Required:</b> | Y (N)                                      |
| <b>Liner Used:</b>              | Y (N)                        |                              |             |                        |  |
| <b>Drill Machine:</b>           | CME 45B                      | <b>Drill Method:</b>         | RW          | <b>Hammer Type:</b>    | Automatic                                  |
| <b>Energy Ratio:</b>            | 86.4%                        |                              |             |                        |  |
| <b>Core Size:</b>               | N/A                          | <b>Driller:</b>              | D. Harris   | <b>Groundwater:</b>    | TOB 4.6(cave 89.4) 24HR 4.0(wet cave 33.6) |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION  | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | 4th 6" | N Value | <div> <div> ● SPT N VALUE ● </div> <div> PL X MC X LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> ⊕ RQD (%) ■ REC (%) </div> </div> |
|----------------|------------|---|-------------|-------------------|-----------------|--------|--------|--------|--------|---------|---|
| 53.5           | 36.7       | Very Stiff, Moist, Dark Gray, Medium Plasticity to High Plasticity, Lean <u>CLAY</u> (CL/A-6), 2.5Y4/1    |             | 53.5              | SS-14           | 9      | 12     | 18     |        | 30      |   |
| 58.5           | 31.7       | Very Stiff, Moist, Gray, Low Plasticity to Medium Plasticity, Sandy Lean <u>CLAY</u> (CL/A-6), 2.5Y6/1    |             | 58.5              | SS-15           | 8      | 8      | 13     |        | 21      |   |
| 63.5           | 26.7       |   |             | 63.5              | SS-16           | 6      | 8      | 14     |        | 22      |   |
| 68.5           | 21.7       | Very Stiff to Hard, Moist, Gray, Medium Plasticity to High Plasticity, Lean <u>CLAY</u> (CL/A-6), 2.5Y5/1 |             | 68.5              | SS-17           | 6      | 10     | 15     |        | 25      |   |
| 73.5           |            | @SS-18: Reddish Gray, 5R5/1   |             | 73.5              | SS-18           | 9      | 12     | 20     |        | 32      |   |

## LEGEND

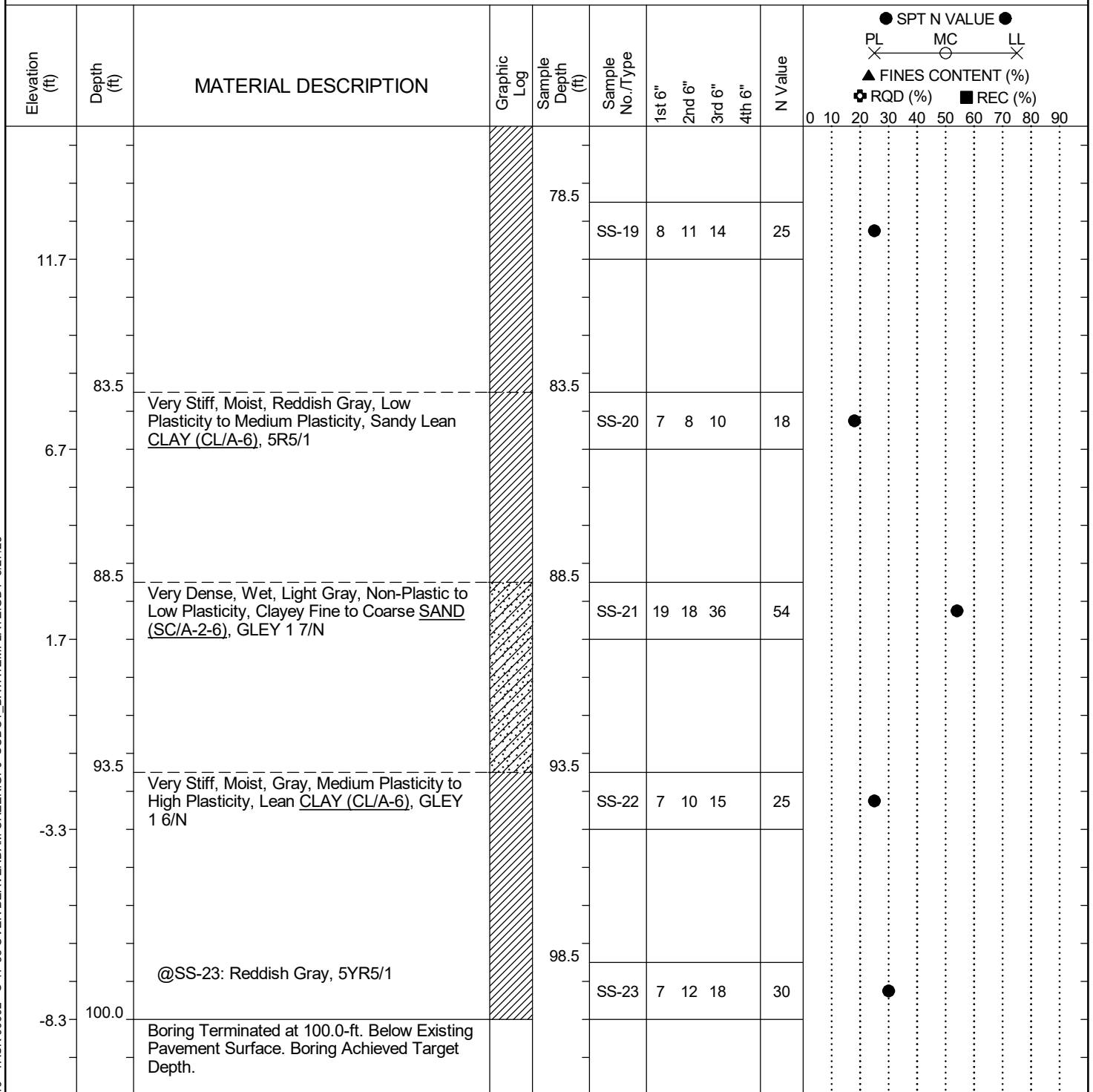
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| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

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# SCDOT Soil Test Log

|                                 |                              |                              |             |                        |                    |
|---------------------------------|------------------------------|------------------------------|-------------|------------------------|--------------------|
| <b>Project ID:</b>              | P043715                      | <b>County:</b>               | Dillon      | <b>Boring No.:</b>     | B-1                |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |                              |             | <b>Route:</b>          | S-17-58            |
| <b>Eng./Geo.:</b>               | W. Pitts                     | <b>Boring Location:</b>      | N/A         | <b>Offset:</b>         | N/A                |
| <b>Elev.:</b>                   | 91.7 ft                      | <b>Latitude:</b>             | 34.39329371 | <b>Longitude:</b>      | -79.23941112       |
| <b>Date Started:</b>            | 2/26/2025                    |                              |             |                        |                    |
| <b>Total Depth:</b>             | 100 ft                       | <b>Soil Depth:</b>           | 100 ft      | <b>Core Depth:</b>     | N/A ft             |
| <b>Date Completed:</b>          | 2/27/2025                    |                              |             |                        |                    |
| <b>Bore Hole Diameter (in):</b> | 3                            | <b>Sampler Configuration</b> |             | <b>Liner Required:</b> | Y (N)              |
| <b>Liner Used:</b>              | Y (N)                        |                              |             |                        |                    |
| <b>Drill Machine:</b>           | CME 45B                      | <b>Drill Method:</b>         | RW          | <b>Hammer Type:</b>    | Automatic          |
| <b>Energy Ratio:</b>            | 86.4%                        |                              |             |                        |                    |
| <b>Core Size:</b>               | N/A                          | <b>Driller:</b>              | D. Harris   | <b>Groundwater:</b>    | TOB 4.6(cave 89.4) |
| <b>24HR</b>                     | 4.0(wet cave 33.6)           |                              |             |                        |                    |



## LEGEND

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

SC.DOT G7100.010 - TASK 00002 - S-17-58 OVER BEAVERDAM CREEK.GPJ SCDOT\_DATATEMPLATE.GDT 3/27/25

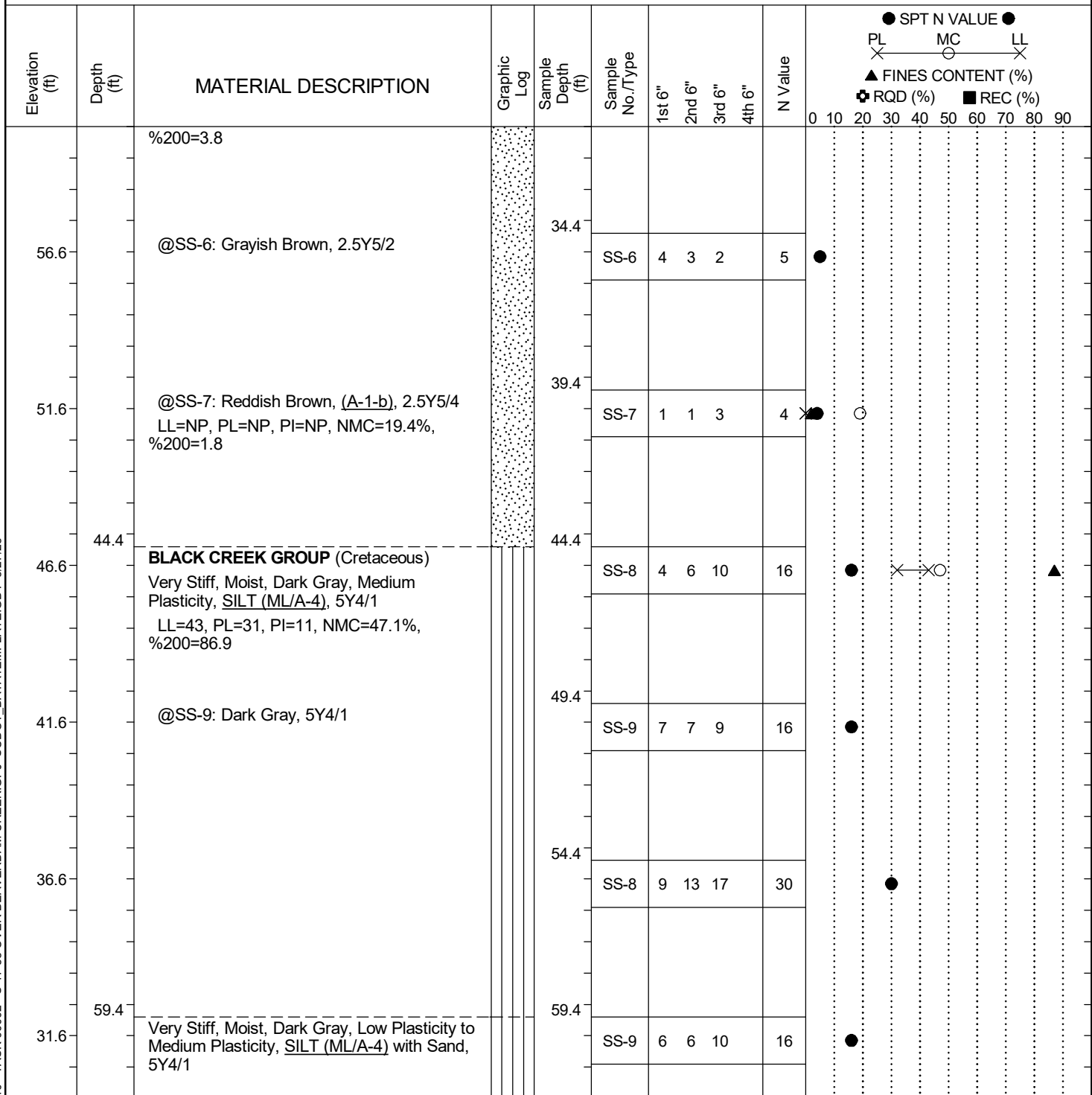
| Elevation<br>(ft) | Depth<br>(ft) | MATERIAL DESCRIPTION   | Graphic Log | Sample Depth<br>(ft) | Sample No./Type | 1st 6"  | 2nd 6" | 3rd 6" | 4th 6" | N Value | SPT N VALUE | PL | MC | LL | FINES CONTENT (%) | RQD (%) | REC (%) |
|-------------------|---------------|--|-------------|----------------------|-----------------|---------|--------|--------|--------|---------|-------------|----|----|----|-------------------|---------|---------|
| 0.0               | 0.3           | ASPHALT ROADWAY (S-17-58) (4.0-in.)  |             |                      |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
|                   | 1.0           | CONCRETE (8.0-in.)   |             |                      |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
|                   |               | AIR GAP (16.0-ft.)   |             |                      |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
| 86.6              |               |  |             |                      |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
| 81.6              |               |  |             |                      |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
| 76.6              |               |  |             |                      |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
| 17.0              |               | WATER (4.0-ft.)  |             |                      |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
| 71.6              |               |  |             |                      |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
| 20.9              |               | ALLUVIUM   |             | 20.9                 |                 |         |        |        |        |         |             |    |    |    |                   |         |         |
|                   |               | Very Loose to Loose, Wet, Pale Brown, Non-Plastic, Fine to Coarse Poorly Graded SAND (SP/A-1-b), 10YR6/3 |             |                      | SS-1            | WOH/24" |        |        |        | WOH     |             |    |    |    |                   |         |         |
|                   |               | @SS-2: Fine to Medium Sand Particles LL=NP, PL=NP, PI=NP, NMC=24.2%, %200=3.8                            |             | 22.9                 | SS-2            | WOH/18" | 1      |        |        | WOH     |             |    |    |    |                   |         |         |
| 66.6              |               | @SS-3: Light Brownish Gray, 2.5Y6/2  |             | 24.9                 | SS-3            | WOH/18" | 1      |        |        | WOH     |             |    |    |    |                   |         |         |
|                   |               |  |             | 26.9                 | SS-4            | 1/12"   | 1      | 1      |        | 1       |             |    |    |    |                   |         |         |
| 61.6              |               | @SS-5: Light Yellowish Brown, (A-3), 2.5Y6/4 LL=NP, PL=NP, PI=NP, NMC=20.1%,                             |             | 28.9                 | SS-5            | 2       | 1      | 1      | 2      | 2       |             |    |    |    |                   |         |         |

## Continued Next Page

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

# SCDOT Soil Test Log

|                                 |                              |                              |             |                        |              |
|---------------------------------|------------------------------|------------------------------|-------------|------------------------|--------------|
| <b>Project ID:</b>              | P043715                      | <b>County:</b>               | Dillon      | <b>Boring No.:</b>     | B-2          |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |                              |             | <b>Route:</b>          | S-17-58      |
| <b>Eng./Geo.:</b>               | W. Pitts                     | <b>Boring Location:</b>      | N/A         | <b>Offset:</b>         | N/A          |
| <b>Elev.:</b>                   | 91.6 ft                      | <b>Latitude:</b>             | 34.39338652 | <b>Longitude:</b>      | -79.23921838 |
| <b>Date Started:</b>            | 2/26/2025                    |                              |             |                        |              |
| <b>Total Depth:</b>             | 120.9 ft                     | <b>Soil Depth:</b>           | 100 ft      | <b>Core Depth:</b>     | N/A ft       |
| <b>Date Completed:</b>          | 2/27/2025                    |                              |             |                        |              |
| <b>Bore Hole Diameter (in):</b> | 3                            | <b>Sampler Configuration</b> |             | <b>Liner Required:</b> | Y (N)        |
| <b>Liner Used:</b>              | Y (N)                        |                              |             |                        |              |
| <b>Drill Machine:</b>           | CME 45B                      | <b>Drill Method:</b>         | RW          | <b>Hammer Type:</b>    | Automatic    |
| <b>Energy Ratio:</b>            | 86.4%                        |                              |             |                        |              |
| <b>Core Size:</b>               | N/A                          | <b>Driller:</b>              | D. Harris   | <b>Groundwater:</b>    | TOB 17 ft    |
| <b>24HR</b>                     | 17 ft                        |                              |             |                        |              |



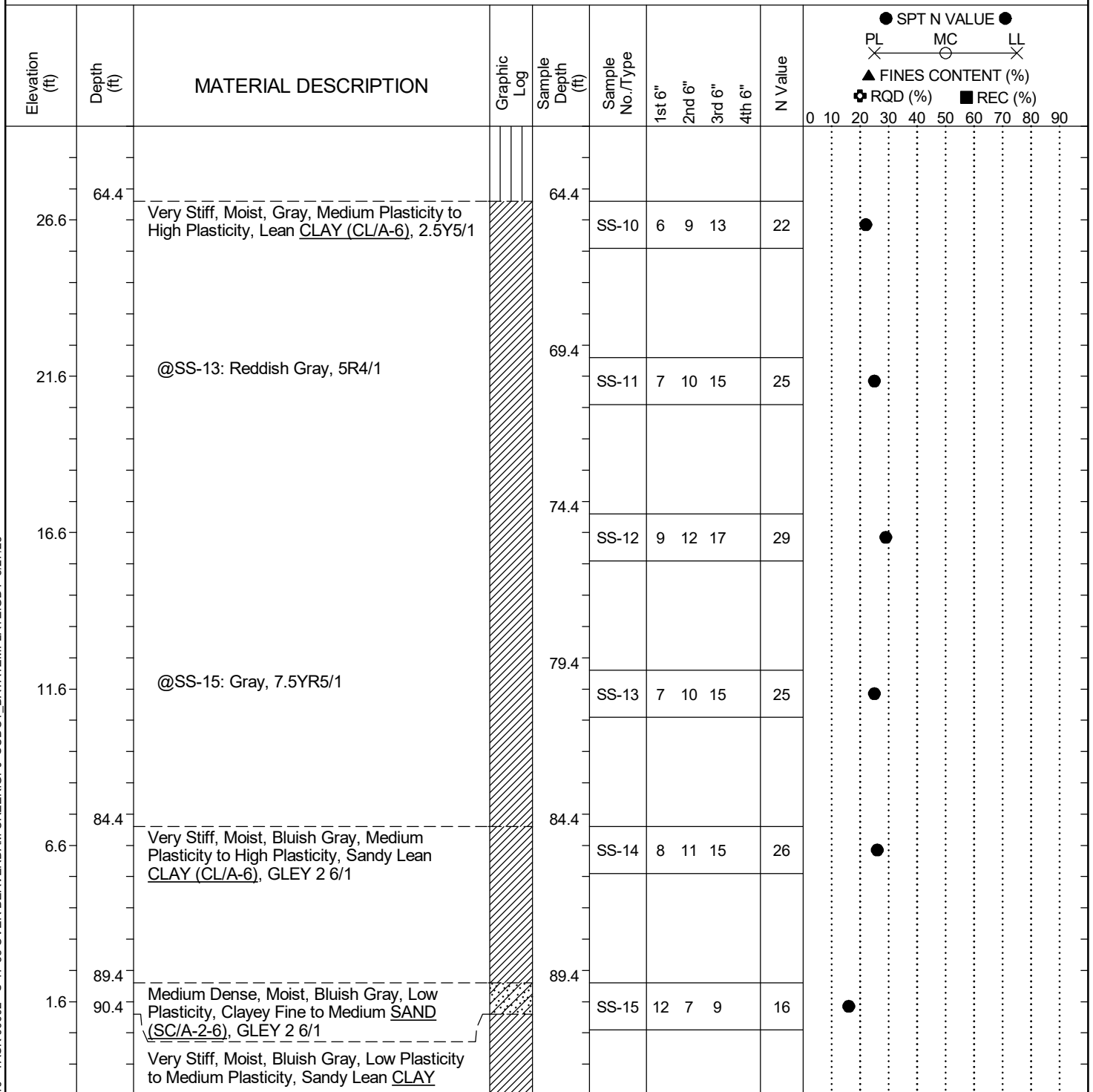
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| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

# SCDOT Soil Test Log

|                                 |          |                              |                         |                      |                              |                   |                |                        |                      |                   |           |                        |           |       |  |
|---------------------------------|----------|------------------------------|-------------------------|----------------------|------------------------------|-------------------|----------------|------------------------|----------------------|-------------------|-----------|------------------------|-----------|-------|--|
| <b>Project ID:</b>              | P043715  |                              |                         |                      | <b>County:</b>               | Dillon            |                |                        | <b>Boring No.:</b>   | B-2               |           |                        |           |       |  |
| <b>Site Description:</b>        |          | S-17-58 over Beaverdam Creek |                         |                      |                              |                   |                |                        | <b>Route:</b>        | S-17-58           |           |                        |           |       |  |
| <b>Eng./Geo.:</b>               | W. Pitts |                              | <b>Boring Location:</b> |                      | N/A                          |                   | <b>Offset:</b> | N/A                    |                      | <b>Alignment:</b> | Existing  |                        |           |       |  |
| <b>Elev.:</b>                   | 91.6 ft  |                              | <b>Latitude:</b>        | 34.39338652          |                              | <b>Longitude:</b> | -79.23921838   |                        | <b>Date Started:</b> |                   | 2/26/2025 |                        |           |       |  |
| <b>Total Depth:</b>             |          | 120.9 ft                     |                         | <b>Soil Depth:</b>   |                              | 100 ft            |                | <b>Core Depth:</b>     |                      | N/A ft            |           | <b>Date Completed:</b> | 2/27/2025 |       |  |
| <b>Bore Hole Diameter (in):</b> |          |                              | 3                       |                      | <b>Sampler Configuration</b> |                   |                | <b>Liner Required:</b> |                      | Y (N)             |           | <b>Liner Used:</b>     |           | Y (N) |  |
| <b>Drill Machine:</b>           |          | CME 45B                      |                         | <b>Drill Method:</b> |                              | RW                |                | <b>Hammer Type:</b>    |                      | Automatic         |           | <b>Energy Ratio:</b>   |           | 86.4% |  |
| <b>Core Size:</b>               |          | N/A                          |                         | <b>Driller:</b>      |                              | D. Harris         |                | <b>Groundwater:</b>    |                      | TOB 17 ft         |           | <b>24HR</b>            |           | 17 ft |  |



## LEGEND

Continued Next Page

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |



# SCDOT Soil Test Log

|                                 |                              |                              |             |                        |              |
|---------------------------------|------------------------------|------------------------------|-------------|------------------------|--------------|
| <b>Project ID:</b>              | P043715                      | <b>County:</b>               | Dillon      | <b>Boring No.:</b>     | B-2          |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |                              |             | <b>Route:</b>          | S-17-58      |
| <b>Eng./Geo.:</b>               | W. Pitts                     | <b>Boring Location:</b>      | N/A         | <b>Offset:</b>         | N/A          |
| <b>Elev.:</b>                   | 91.6 ft                      | <b>Latitude:</b>             | 34.39338652 | <b>Longitude:</b>      | -79.23921838 |
| <b>Date Started:</b>            | 2/26/2025                    |                              |             |                        |              |
| <b>Total Depth:</b>             | 120.9 ft                     | <b>Soil Depth:</b>           | 100 ft      | <b>Core Depth:</b>     | N/A ft       |
| <b>Date Completed:</b>          | 2/27/2025                    |                              |             |                        |              |
| <b>Bore Hole Diameter (in):</b> | 3                            | <b>Sampler Configuration</b> |             | <b>Liner Required:</b> | Y (N)        |
| <b>Liner Used:</b>              | Y (N)                        |                              |             |                        |              |
| <b>Drill Machine:</b>           | CME 45B                      | <b>Drill Method:</b>         | RW          | <b>Hammer Type:</b>    | Automatic    |
| <b>Energy Ratio:</b>            | 86.4%                        |                              |             |                        |              |
| <b>Core Size:</b>               | N/A                          | <b>Driller:</b>              | D. Harris   | <b>Groundwater:</b>    | TOB 17 ft    |
| <b>24HR</b>                     | 17 ft                        |                              |             |                        |              |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION   | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | 4th 6" | N Value | <div> ● SPT N VALUE ●<br/> PL — MC — LL<br/> X — X — X<br/> ▲ FINES CONTENT (%)<br/> + RQD (%) ■ REC (%) </div> |
|----------------|------------|--|-------------|-------------------|-----------------|--------|--------|--------|--------|---------|---|
| -3.4           | 99.4       | (CL/A-6) GLEY 2 61<br>@SS-16: Dark Greenish Gray, GLEY 2 4/1   |             | 94.4              | SS-16           | 5      | 9      | 14     |        | 23      |   |
| -8.4           | 99.4       | Very Stiff, Moist, Bluish Gray, Medium Plasticity to High Plasticity, Lean CLAY (CL/A-6), GLEY 2 4/1 |             | 99.4              | SS-17           | 6      | 9      | 15     |        | 24      |   |
| -13.4          |            |  |             | 104.4             | SS-18           | 6      | 9      | 13     |        | 22      |   |
| -18.4          |            |  |             | 109.4             | SS-19           | 7      | 10     | 14     |        | 24      |   |
| -23.4          |            |  |             | 114.4             | SS-20           | 8      | 10     | 14     |        | 24      |   |
| -28.4          | 120.9      | Boring Terminated at 120.9-ft. Below Existing Pavement Surface. Boring Achieved Target Depth.        |             | 119.4             | SS-21           | 9      | 11     | 14     |        | 25      |   |

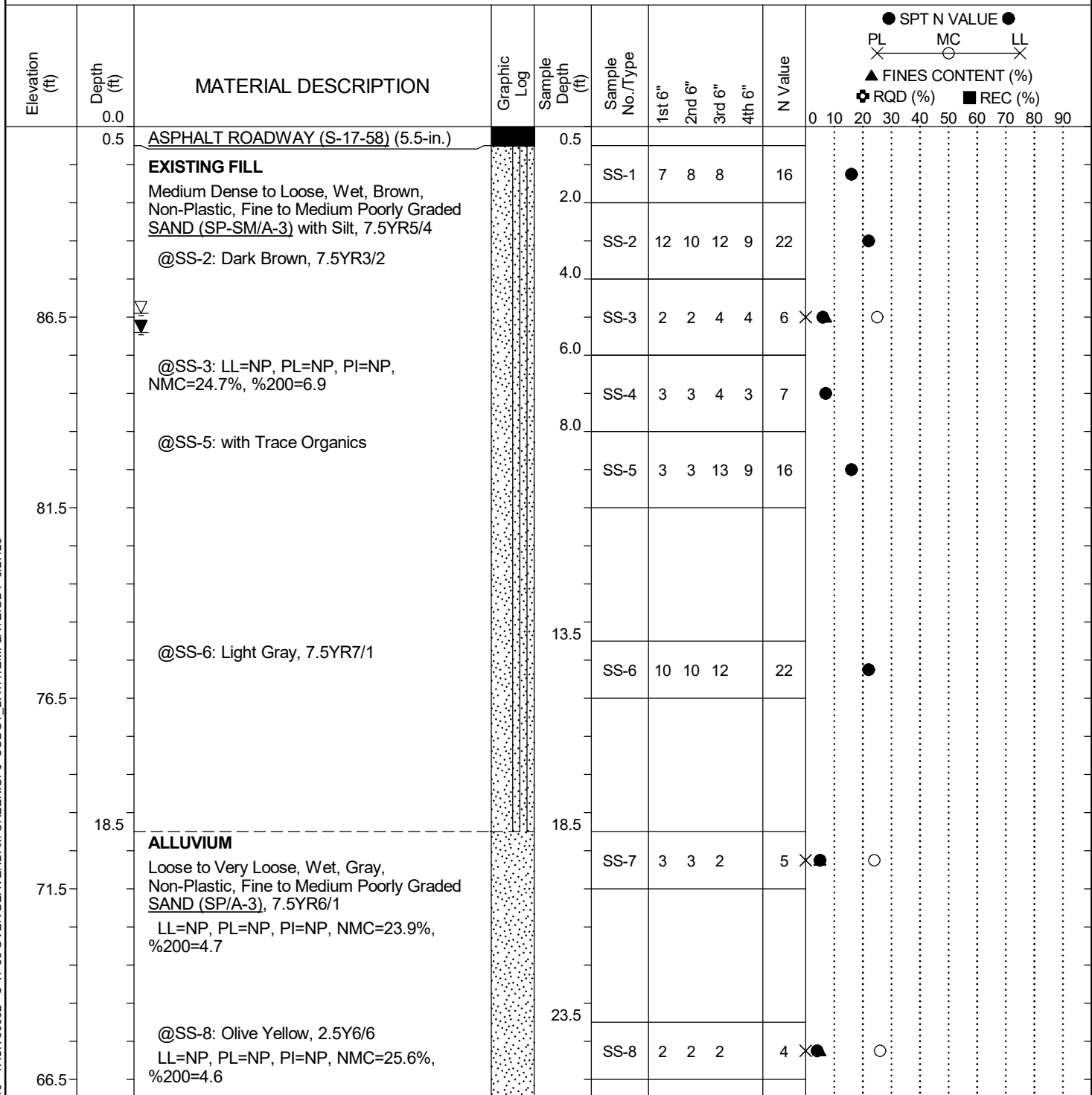
## LEGEND

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

SC.DOT G7100.010 - TASK 00002 - S-17-58 OVER BEAVERDAM CREEK.GPJ SCDOT\_DATATEMPLATE.GDT 3/27/25

# SCDOT Soil Test Log

|                                 |                              |                              |            |                        |              |
|---------------------------------|------------------------------|------------------------------|------------|------------------------|--------------|
| <b>Project ID:</b>              | P043715                      | <b>County:</b>               | Dillon     | <b>Boring No.:</b>     | B-3          |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |                              |            | <b>Route:</b>          | S-17-58      |
| <b>Eng./Geo.:</b>               | W. Pitts                     | <b>Boring Location:</b>      | N/A        | <b>Offset:</b>         | N/A          |
| <b>Elev.:</b>                   | 91.5 ft                      | <b>Latitude:</b>             | 34.3934765 | <b>Longitude:</b>      | -79.23902365 |
| <b>Total Depth:</b>             | 100 ft                       | <b>Soil Depth:</b>           | 100 ft     | <b>Date Started:</b>   | 2/28/2025    |
| <b>Core Depth:</b>              | N/A ft                       | <b>Date Completed:</b>       | 3/1/2025   |                        |              |
| <b>Bore Hole Diameter (in):</b> | 3.0                          | <b>Sampler Configuration</b> |            | <b>Liner Required:</b> | Y (N)        |
| <b>Drill Machine:</b>           | CME 45B                      | <b>Drill Method:</b>         | RW         | <b>Liner Used:</b>     | Y (N)        |
| <b>Hammer Type:</b>             | Automatic                    | <b>Energy Ratio:</b>         | 86.4%      |                        |              |
| <b>Core Size:</b>               | N/A                          | <b>Driller:</b>              | D. Harris  | <b>Groundwater:</b>    | TOB 4.9 ft   |
|                                 |                              |                              |            | <b>24HR</b>            | 5.4 ft       |



## LEGEND

Continued Next Page

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

# SCDOT Soil Test Log

|                                 |                              |  |                              |            |                |                        |              |                    |                        |                    |        |
|---------------------------------|------------------------------|--|------------------------------|------------|----------------|------------------------|--------------|--------------------|------------------------|--------------------|--------|
| <b>Project ID:</b>              | P043715                      |  |                              |            | <b>County:</b> | Dillon                 |              | <b>Boring No.:</b> | B-3                    |                    |        |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |  |                              |            |                |                        |              | <b>Route:</b>      | S-17-58                |                    |        |
| <b>Eng./Geo.:</b>               | W. Pitts                     |  | <b>Boring Location:</b>      |            |                | N/A                    |              | <b>Offset:</b>     | N/A                    |                    |        |
| <b>Alignment:</b>               |                              |  |                              |            |                |                        |              |                    | Existing               |                    |        |
| <b>Elev.:</b>                   | 91.5 ft                      |  | <b>Latitude:</b>             | 34.3934765 |                | <b>Longitude:</b>      | -79.23902365 |                    | <b>Date Started:</b>   | 2/28/2025          |        |
| <b>Total Depth:</b>             | 100 ft                       |  | <b>Soil Depth:</b>           | 100 ft     |                | <b>Core Depth:</b>     | N/A ft       |                    | <b>Date Completed:</b> | 3/1/2025           |        |
| <b>Bore Hole Diameter (in):</b> | 3.0                          |  | <b>Sampler Configuration</b> |            |                | <b>Liner Required:</b> |              | Y (N)              |                        | <b>Liner Used:</b> | Y (N)  |
| <b>Drill Machine:</b>           | CME 45B                      |  | <b>Drill Method:</b>         | RW         |                | <b>Hammer Type:</b>    | Automatic    |                    | <b>Energy Ratio:</b>   | 86.4%              |        |
| <b>Core Size:</b>               | N/A                          |  | <b>Driller:</b>              | D. Harris  |                | <b>Groundwater:</b>    | <b>TOB</b>   | 4.9 ft             |                        | <b>24HR</b>        | 5.4 ft |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION   | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | 4th 6" | N Value | <div> ● SPT N VALUE ●<br/> PL X MC X LL X<br/> ▲ FINES CONTENT (%)<br/> ⊕ RQD (%) ■ REC (%) </div> |
|----------------|------------|--|-------------|-------------------|-----------------|--------|--------|--------|--------|---------|--|
| 61.5           |            | @SS-9: LL=NP, PL=NP, PI=NP, NMC=27.7%, %200=4.0  |             | 28.5              | SS-9            | 2      | 1      | 1      |        | 2       | ●  |
| 56.5           |            | @SS-10: Light Brownish Gray, (A-1-b), 2.5Y6/2<br>LL=NP, PL=NP, PI=NP, NMC=24.4%, %200=4.1  |             | 33.5              | SS-10           | 3      | 2      | 3      |        | 5       | ●  |
| 51.5           |            | @SS-11: Light Brownish Gray/Light Reddish Brown, 2.5Y6/2 & 2.5YR6/4  |             | 38.5              | SS-11           | 3      | 3      | 4      |        | 7       | ●  |
| 46.5           | 43.5       | <b>BLACK CREEK GROUP</b> (Cretaceos)<br>Stiff to Very Stiff, Wet, Black, Low Plasticity to Medium Plasticity, Sandy Lean <u>CLAY</u> (CL/A-6), 5Y2.5/2 |             | 43.5              | SS-12           | 3      | 5      | 5      |        | 10      | ●  |
| 41.5           |            | @SS-13: Most, Very Dark Gray, 5Y3/1  |             | 48.5              | SS-13           | 8      | 10     | 18     |        | 28      | ●  |

## LEGEND

Continued Next Page

| SAMPLER TYPE |                      | DRILLING METHOD |                            |
|--------------|----------------------|-----------------|----------------------------|
| SS           | - Split Spoon        | HSA             | - Hollow Stem Auger        |
| UD           | - Undisturbed Sample | CFA             | - Continuous Flight Augers |
| AWG          | - Rock Core, 1-1/8"  | DC              | - Driving Casing           |
| NQ           | - Rock Core, 1-7/8"  | RW              | - Rotary Wash              |
| CU           | - Cuttings           | RC              | - Rock Core                |
| CT           | - Continuous Tube    |                 |                            |

# SCDOT Soil Test Log

|                                 |                              |  |                              |            |                |                        |              |                    |                        |                    |        |
|---------------------------------|------------------------------|--|------------------------------|------------|----------------|------------------------|--------------|--------------------|------------------------|--------------------|--------|
| <b>Project ID:</b>              | P043715                      |  |                              |            | <b>County:</b> | Dillon                 |              | <b>Boring No.:</b> | B-3                    |                    |        |
| <b>Site Description:</b>        | S-17-58 over Beaverdam Creek |  |                              |            |                |                        |              | <b>Route:</b>      | S-17-58                |                    |        |
| <b>Eng./Geo.:</b>               | W. Pitts                     |  | <b>Boring Location:</b>      |            |                | N/A                    |              | <b>Offset:</b>     | N/A                    |                    |        |
| <b>Alignment:</b>               |                              |  |                              |            |                |                        |              |                    | Existing               |                    |        |
| <b>Elev.:</b>                   | 91.5 ft                      |  | <b>Latitude:</b>             | 34.3934765 |                | <b>Longitude:</b>      | -79.23902365 |                    | <b>Date Started:</b>   | 2/28/2025          |        |
| <b>Total Depth:</b>             | 100 ft                       |  | <b>Soil Depth:</b>           | 100 ft     |                | <b>Core Depth:</b>     | N/A ft       |                    | <b>Date Completed:</b> | 3/1/2025           |        |
| <b>Bore Hole Diameter (in):</b> | 3.0                          |  | <b>Sampler Configuration</b> |            |                | <b>Liner Required:</b> |              | Y (N)              |                        | <b>Liner Used:</b> | Y (N)  |
| <b>Drill Machine:</b>           | CME 45B                      |  | <b>Drill Method:</b>         | RW         |                | <b>Hammer Type:</b>    | Automatic    |                    | <b>Energy Ratio:</b>   | 86.4%              |        |
| <b>Core Size:</b>               | N/A                          |  | <b>Driller:</b>              | D. Harris  |                | <b>Groundwater:</b>    | <b>TOB</b>   | 4.9 ft             |                        | <b>24HR</b>        | 5.4 ft |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION   | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | 4th 6" | N Value | <div> ● SPT N VALUE ●<br/> PL X MC X LL X<br/> ▲ FINES CONTENT (%)<br/> + RQD (%) ■ REC (%) </div> |
|----------------|------------|--|-------------|-------------------|-----------------|--------|--------|--------|--------|---------|--|
| 36.5           | 58.5       | Very Stiff, Moist, Dark Olive Gray, Low Plasticity to Medium Plasticity, Lean CLAY (CL/A-6), 5Y3/2 |             | 53.5              | SS-14           | 6      | 6      | 10     |        | 16      | ●  |
| 31.5           |            |  |             | 58.5              | SS-15           | 5      | 7      | 9      |        | 16      | ●  |
| 26.5           |            |  |             | 63.5              | SS-16           | 5      | 7      | 12     |        | 19      | ●  |
| 21.5           |            | @SS-17: Very Dark Gray, 5Y3/2  |             | 68.5              | SS-17           | 6      | 10     | 12     |        | 22      | ●  |
| 16.5           |            |  |             | 73.5              | SS-18           | 6      | 9      | 13     |        | 22      | ●  |

## LEGEND

Continued Next Page

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

# SCDOT Soil Test Log

|                              |  |                              |  |                         |  |                          |                |  |
|------------------------------|--|------------------------------|--|-------------------------|--|--------------------------|----------------|--|
| Project ID: P043715          |  |                              |  | County: Dillon          |  | Boring No.: B-3          |                |  |
| Site Description:            |  | S-17-58 over Beaverdam Creek |  |                         |  |                          | Route: S-17-58 |  |
| Eng./Geo.: W. Pitts          |  | Boring Location: N/A         |  | Offset: N/A             |  | Alignment: Existing      |                |  |
| Elev.: 91.5 ft               |  | Latitude: 34.3934765         |  | Longitude: -79.23902365 |  | Date Started: 2/28/2025  |                |  |
| Total Depth: 100 ft          |  | Soil Depth: 100 ft           |  | Core Depth: N/A ft      |  | Date Completed: 3/1/2025 |                |  |
| Bore Hole Diameter (in): 3.0 |  | Sampler Configuration        |  | Liner Required: Y (N)   |  | Liner Used: Y (N)        |                |  |
| Drill Machine: CME 45B       |  | Drill Method: RW             |  | Hammer Type: Automatic  |  | Energy Ratio: 86.4%      |                |  |
| Core Size: N/A               |  | Driller: D. Harris           |  | Groundwater: TOB 4.9 ft |  | 24HR 5.4 ft              |                |  |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION  | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | 4th 6" | N Value | <div> ● SPT N VALUE ●<br/> PL X MC X LL X<br/> ▲ FINES CONTENT (%)<br/> + RQD (%) ■ REC (%) </div> |
|----------------|------------|---|-------------|-------------------|-----------------|--------|--------|--------|--------|---------|--|
| 11.5           | 78.5       | Very Dense to Dense, Wet, Gray, Low Plasticity to Medium Plasticity, Clayey Fine to Medium SAND (SC/A-2-6), 7.5R6/1 |             | 78.5              | SS-19           | 6      | 8      | 14     |        | 22      | ●  |
| 83.5           | 83.5       |   |             | 83.5              | SS-20           | 11     | 25     | 33     |        | 58      | ●  |
| 6.5            | 88.5       |   |             | 88.5              | SS-21           | 9      | 10     | 22     |        | 32      | ●  |
| 1.5            | 93.5       | Very Stiff, Wet, Dark Olive Gray, Low Plasticity to Medium Plasticity, Sandy Lean CLAY (CL/A-6), 5Y3/2              |             | 93.5              | SS-22           | 7      | 9      | 15     |        | 24      | ●  |
| -3.5           | 98.5       | Very Stiff, Moist, Very Dark Gray, Low Plasticity to Medium Plasticity, Lean CLAY (CL/A-6), 5Y3/1                   |             | 98.5              | SS-23           | 6      | 9      | 13     |        | 22      | ●  |
| -8.5           | 100.0      | Boring Terminated at 100.0-ft. Below Existing Pavement Surface. Boring Achieved Target Depth.                       |             |                   |                 |        |        |        |        |         |  |

## LEGEND

| SAMPLER TYPE            |                        | DRILLING METHOD                |                  |
|-------------------------|------------------------|--------------------------------|------------------|
| SS - Split Spoon        | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings          | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube   | DC - Driving Casing            |                  |

SC.DOT G7100.010 - TASK 00002 - S-17-58 OVER BEAVERDAM CREEK.GPJ SCDOT\_DATATEMPLATE.GDT 3/27/25

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**

## **SECTION 3      SUBSURFACE EXPLORATION LOGS**

### **SECTION 3B      MANUAL AUGER BORING (MAB) LOGS**

# SCDOT Manual Auger Log

|  |                              |                         |                          |                    |              |
|--|------------------------------|-------------------------|--------------------------|--------------------|--------------|
| <b>Project ID:</b>                               | P043715                      | <b>County:</b>          | Dillon                   | <b>Boring No.:</b> | P-1          |
| <b>Site Description:</b>                         | S-17-58 over Beaverdam Creek |                         |                          | <b>Route:</b>      | S-17-58      |
| <b>Driller:</b>                                  | T. Peterson                  | <b>Boring Location:</b> | N/A                      | <b>Offset:</b>     | N/A          |
| <b>Elev.:</b>                                    | 102.0 ft                     | <b>Latitude:</b>        | 34.39240086              | <b>Longitude:</b>  | -79.24155207 |
| <b>Date Started:</b>                             | 2/26/2025                    |                         |                          |                    |              |
| <b>Total Depth:</b>                              | 5.3 ft                       | <b>Groundwater:</b>     | TOB                      | <b>NE</b>          | 24 hr        |
| <b>Backfilled:</b>                               | Date Completed: 2/26/2025    |                         |                          |                    |              |
| <b>Dynamic Cone Penetrometer Test Procedure:</b> |                              |                         | Sowers and Hedges (1966) |                    |              |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION  | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 1-3/4" | 2nd 1-3/4" | 3rd 1-3/4" | DCP-Value | DCP-VALUE | PL | MC | LL | FINES CONTENT (%) |
|----------------|------------|---|-------------|-------------------|-----------------|------------|------------|------------|-----------|-----------|----|----|----|-------------------|
|                | 0.0        |   |             |                   |                 |            |            |            |           |           |    |    |    |                   |
|                | 0.3        | ASPHALT ROADWAY (S-17-58) (3.3-in.)   |             | 0.3               |                 |            |            |            |           |           |    |    |    |                   |
|                |            | EXISTING FILL   |             |                   |                 |            |            |            |           |           |    |    |    |                   |
|                |            | Medium Dense, Moist, Brownish Yellow, Non-Plastic, Fine to Medium Poorly Graded SAND (SP-SM/A-3) with Silt, 10YR6/6 |             |                   | DS-1            | 20         | 25+        |            | 13        |           |    |    |    |                   |
|                | 1.3        | Stiff to Firm, Moist, Light Yellowish Brown, Non-Plastic to Low Plasticity, Sandy SILT (ML/A-4), 10YR6/6            |             | 1.3               | DS-2            | 13         | 25+        |            | 13        |           |    |    |    |                   |
|                |            | @DS-3: Light Yellowish Brown/Pale Brown, 10YR6/6 & 10YR6/3  |             | 2.3               | DS-3            | 6          | 8          | 11         | 8         |           |    |    |    |                   |
|                | 3.3        | Stiff, Moist, Yellowish Brown, Low Plasticity to Medium Plasticity, Sandy Lean CLAY (CL/A-6), 10YR5/4               |             | 3.3               | DS-4            | 8          | 11         | 25+        | 11        |           |    |    |    |                   |
|                |            | @DS-5: Light Yellowish Brown, 10YR6/4   |             | 4.3               | DS-5            | 11         | 21         | 25+        | 13        |           |    |    |    |                   |
|                |            | @DS-6: Yellowish Brown, 10YR5/4   |             | 4.8               | DS-6            | 17         | 25+        |            | 13        |           |    |    |    |                   |
|                | 5.3        | Boring Terminated at 5.3-ft. Below Existing Roadway Surface. Boring Achieved Target Depth.                          |             |                   |                 |            |            |            |           |           |    |    |    |                   |

## LEGEND

| SAMPLER TYPE            |                                 |                                | DRILLING METHOD  |  |
|-------------------------|---------------------------------|--------------------------------|------------------|--|
| SS - Split Spoon        | DCP - Dynamic Cone Penetrometer | HSA - Hollow Stem Auger        | RW - Rotary Wash |  |
| UD - Undisturbed Sample | CU - Cuttings                   | CFA - Continuous Flight Augers | RC - Rock Core   |  |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube            | DC - Driving Casing            |                  |  |



# SCDOT Manual Auger Log

|  |                              |                         |             |                    |              |
|--|------------------------------|-------------------------|-------------|--------------------|--------------|
| <b>Project ID:</b>                               | P043715                      | <b>County:</b>          | Dillon      | <b>Boring No.:</b> | P-2          |
| <b>Site Description:</b>                         | S-17-58 over Beaverdam Creek |                         |             | <b>Route:</b>      | S-17-58      |
| <b>Driller:</b>                                  | T. Peterson                  | <b>Boring Location:</b> | N/A         | <b>Offset:</b>     | N/A          |
| <b>Elev.:</b>                                    | 100.4 ft                     | <b>Latitude:</b>        | 34.39263876 | <b>Longitude:</b>  | -79.24079675 |
| <b>Date Started:</b>                             | 2/26/2025                    |                         |             |                    |              |
| <b>Total Depth:</b>                              | 5.1 ft                       | <b>Groundwater:</b>     | TOB         | <b>NE</b>          | 24 hr        |
| <b>Date Completed:</b>                           | 2/26/2025                    |                         |             |                    |              |
| <b>Dynamic Cone Penetrometer Test Procedure:</b> | Sowers and Hedges (1966)     |                         |             |                    |              |

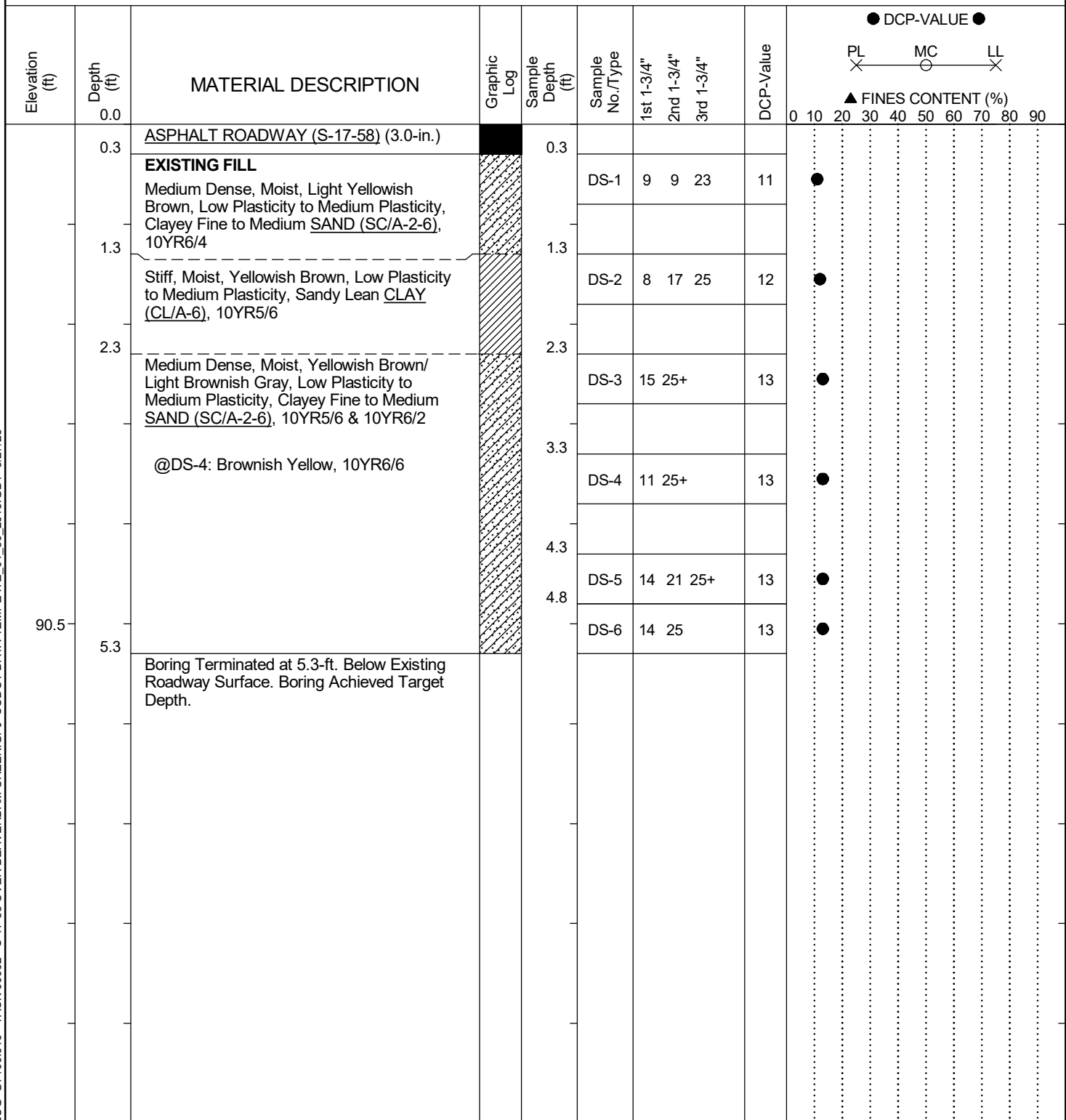
| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION   | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 1-3/4" | 2nd 1-3/4" | 3rd 1-3/4" | DCP-Value | DCP-VALUE | PL | MC | LL | FINES CONTENT (%) |
|----------------|------------|--|-------------|-------------------|-----------------|------------|------------|------------|-----------|-----------|----|----|----|-------------------|
|                | 0.0        |  |             |                   |                 |            |            |            |           |           |    |    |    |                   |
|                | 0.3        | ASPHALT ROADWAY (S-17-58) (3.0-in.)  |             | 0.3               |                 |            |            |            |           |           |    |    |    |                   |
|                |            | <b>EXISTING FILL</b><br>Medium Dense to Loose, Moist, Yellowish Brown, Low Plasticity to Medium Plasticity, Clayey Fine to Medium SAND (SC/A-2-6), 10YR5/6<br><br>@DS-2: Pale Brown, 10YR6/3 |             |                   | DS-1            | 7          | 21         | 25         | 13        |           |    |    |    |                   |
|                | 1.3        |  |             | 1.3               |                 |            |            |            |           |           |    |    |    |                   |
|                |            |  |             |                   | DS-2            | 6          | 7          | 9          | 6         |           |    |    |    |                   |
|                | 2.3        |  |             | 2.3               |                 |            |            |            |           |           |    |    |    |                   |
|                |            | Firm to Stiff, Moist, Pale Brown, Low Plasticity to Medium Plasticity, Sandy Lean CLAY (CL/A-6), 10YR6/3<br><br>@DS-4: Pale Brown/Light Yellowish Brown, 10YR6/3 & 10YR6/4                   |             |                   | DS-3            | 3          | 6          | 9          | 6         |           |    |    |    |                   |
|                | 3.3        |  |             | 3.3               |                 |            |            |            |           |           |    |    |    |                   |
|                |            |  |             |                   | DS-4            | 8          | 13         | 13         | 9         |           |    |    |    |                   |
|                | 4.3        |  |             | 4.3               |                 |            |            |            |           |           |    |    |    |                   |
|                |            |  |             |                   | DS-5            | 12         | 13         | 12         | 9         |           |    |    |    |                   |
|                | 4.8        |  |             | 4.8               |                 |            |            |            |           |           |    |    |    |                   |
|                |            |  |             |                   | DS-6            | 12         | 13         | 13         | 9         |           |    |    |    |                   |
|                | 5.3        | Boring Terminated at 5.3-ft. Below Existing Roadway Surface. Boring Achieved Target Depth.   |             |                   |                 |            |            |            |           |           |    |    |    |                   |

## LEGEND

| SAMPLER TYPE            |                                 |                                | DRILLING METHOD  |  |
|-------------------------|---------------------------------|--------------------------------|------------------|--|
| SS - Split Spoon        | DCP - Dynamic Cone Penetrometer | HSA - Hollow Stem Auger        | RW - Rotary Wash |  |
| UD - Undisturbed Sample | CU - Cuttings                   | CFA - Continuous Flight Augers | RC - Rock Core   |  |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube            | DC - Driving Casing            |                  |  |

# SCDOT Manual Auger Log

|   |  |                              |  |                                  |  |
|---|--|------------------------------|--|----------------------------------|--|
| <b>Project ID:</b> P043715                            |  | <b>County:</b> Dillon        |  | <b>Boring No.:</b> P-3           |  |
| <b>Site Description:</b> S-17-58 over Beaverdam Creek |  |                              |  | <b>Route:</b> S-17-58            |  |
| <b>Driller:</b> T. Peterson                           |  | <b>Boring Location:</b> N/A  |  | <b>Offset:</b> N/A               |  |
| <b>Elev.:</b> 95.5 ft                                 |  | <b>Latitude:</b> 34.39297325 |  | <b>Longitude:</b> -79.24008412   |  |
| <b>Total Depth:</b> 5.3 ft                            |  | <b>Groundwater:</b> TOB      |  | <b>Date Started:</b> 2/26/2025   |  |
|   |  | <b>NE 24 hr</b> Backfilled   |  | <b>Date Completed:</b> 2/26/2025 |  |
| <b>Dynamic Cone Penetrometer Test Procedure:</b>      |  |                              |  | Sowers and Hedges (1966)         |  |



## LEGEND

| SAMPLER TYPE            |                               | DRILLING METHOD                |                  |
|-------------------------|-------------------------------|--------------------------------|------------------|
| SS - Split Spoon        | DCP Dynamic Cone Penetrometer | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings                 | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube          | DC - Driving Casing            |                  |

# SCDOT Manual Auger Log

|  |                              |                         |                          |                    |              |
|--|------------------------------|-------------------------|--------------------------|--------------------|--------------|
| <b>Project ID:</b>                               | P043715                      | <b>County:</b>          | Dillon                   | <b>Boring No.:</b> | P-4          |
| <b>Site Description:</b>                         | S-17-58 over Beaverdam Creek |                         |                          | <b>Route:</b>      | S-17-58      |
| <b>Driller:</b>                                  | T. Peterson                  | <b>Boring Location:</b> | N/A                      | <b>Offset:</b>     | N/A          |
| <b>Elev.:</b>                                    | 90.8 ft                      | <b>Latitude:</b>        | 34.39379464              | <b>Longitude:</b>  | -79.23835317 |
| <b>Date Started:</b>                             | 2/26/2025                    |                         |                          |                    |              |
| <b>Total Depth:</b>                              | 5.6 ft                       | <b>Groundwater:</b>     | TOB                      | <b>NE</b>          | 24 hr        |
| <b>Date Completed:</b>                           | 2/26/2025                    |                         |                          |                    |              |
| <b>Dynamic Cone Penetrometer Test Procedure:</b> |                              |                         | Sowers and Hedges (1966) |                    |              |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION  | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 1-3/4" | 2nd 1-3/4" | 3rd 1-3/4" | DCP-Value | DCP-VALUE | PL | MC | LL | FINES CONTENT (%) |
|----------------|------------|---|-------------|-------------------|-----------------|------------|------------|------------|-----------|-----------|----|----|----|-------------------|
|                | 0.0        | ASPHALT ROADWAY (S-17-58) (7.3-in.)   |             |                   |                 |            |            |            |           |           |    |    |    |                   |
|                | 0.6        | EXISTING FILL   |             | 0.6               | DS-1            | 11         | 21         | 25+        | 13        |           |    |    |    |                   |
|                | 1.6        | Medium Dense, Moist, Light Yellowish Brown/Dark Yellowish Brown, Low Plasticity, Fine to Medium Poorly Graded SAND (SP-SC/S-2-4), 10YR6/4 & 10YR4/4 |             | 1.7               | DS-2            | 5          | 7          | 8          | 6         |           |    |    |    |                   |
|                | 2.6        | Loose, Moist, Light Gray/Yellowish Brown, Low Plasticity to Medium Plasticity, Clayey Fine to Medium SAND (SC/A-2-6) with Clay, 10YR7/2 & 10YR6/4   |             | 2.6               | DS-3            | 11         | 12         | 10         | 8         |           |    |    |    |                   |
|                | 3.1        | Loose, Moist, Light Gray, Low Plasticity, Dine to Medium Poorly Graded SAND (SP-SC/A-2-4) with Clay, 10YR7/2  |             | 3.6               | DS-4            | 1          | 2          | 3          | 2         |           |    |    |    |                   |
|                | 3.6        | Firm, Moist, Light Gray, Low Plasticity to Medium Plasticity, Sandy Lean CLAY (CL/A-6), 10YR7/2   |             | 4.6               | DS-5            | 3          | 23         | 25+        | 13        |           |    |    |    |                   |
|                | 5.1        | Very Soft, Moist, Light Greenish Gray, Medium Plasticity to High Plasticity, Lean CLAY (CL/A-6), 7/4 GLEY 1   |             | 5.1               | DS-6            | 11         | 17         | 15         | 11        |           |    |    |    |                   |
|                | 5.6        | @DS-5: Stiff  |             |                   |                 |            |            |            |           |           |    |    |    |                   |
|                |            | Medium Dense, Moist, Light Gray, Low Plasticity to Medium Plasticity, Clayey Fine to Medium SAND (SC/A-2-6), GLEY 1 7/N                             |             |                   |                 |            |            |            |           |           |    |    |    |                   |
|                |            | Boring Terminated at 5.6-ft. Below Existing Roadway Surface. Boring Achieved Target Depth.  |             |                   |                 |            |            |            |           |           |    |    |    |                   |

## LEGEND

| SAMPLER TYPE            |                               |                                | DRILLING METHOD  |  |
|-------------------------|-------------------------------|--------------------------------|------------------|--|
| SS - Split Spoon        | DCP Dynamic Cone Penetrometer | HSA - Hollow Stem Auger        | RW - Rotary Wash |  |
| UD - Undisturbed Sample | CU - Cuttings                 | CFA - Continuous Flight Augers | RC - Rock Core   |  |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube          | DC - Driving Casing            |                  |  |

# SCDOT Manual Auger Log

|  |                              |                         |                          |                    |              |
|--|------------------------------|-------------------------|--------------------------|--------------------|--------------|
| <b>Project ID:</b>                               | P043715                      | <b>County:</b>          | Dillon                   | <b>Boring No.:</b> | P-5          |
| <b>Site Description:</b>                         | S-17-58 over Beaverdam Creek |                         |                          | <b>Route:</b>      | S-17-58      |
| <b>Driller:</b>                                  | T. Peterson                  | <b>Boring Location:</b> | N/A                      | <b>Offset:</b>     | N/A          |
| <b>Elev.:</b>                                    | 91.0 ft                      | <b>Latitude:</b>        | 34.39413001              | <b>Longitude:</b>  | -79.23763608 |
| <b>Date Started:</b>                             | 2/26/2025                    |                         |                          |                    |              |
| <b>Total Depth:</b>                              | 5.4 ft                       | <b>Groundwater:</b>     | TOB                      | <b>NE</b>          | 24 hr        |
| <b>Backfilled:</b>                               | Date Completed: 2/26/2025    |                         |                          |                    |              |
| <b>Dynamic Cone Penetrometer Test Procedure:</b> |                              |                         | Sowers and Hedges (1966) |                    |              |

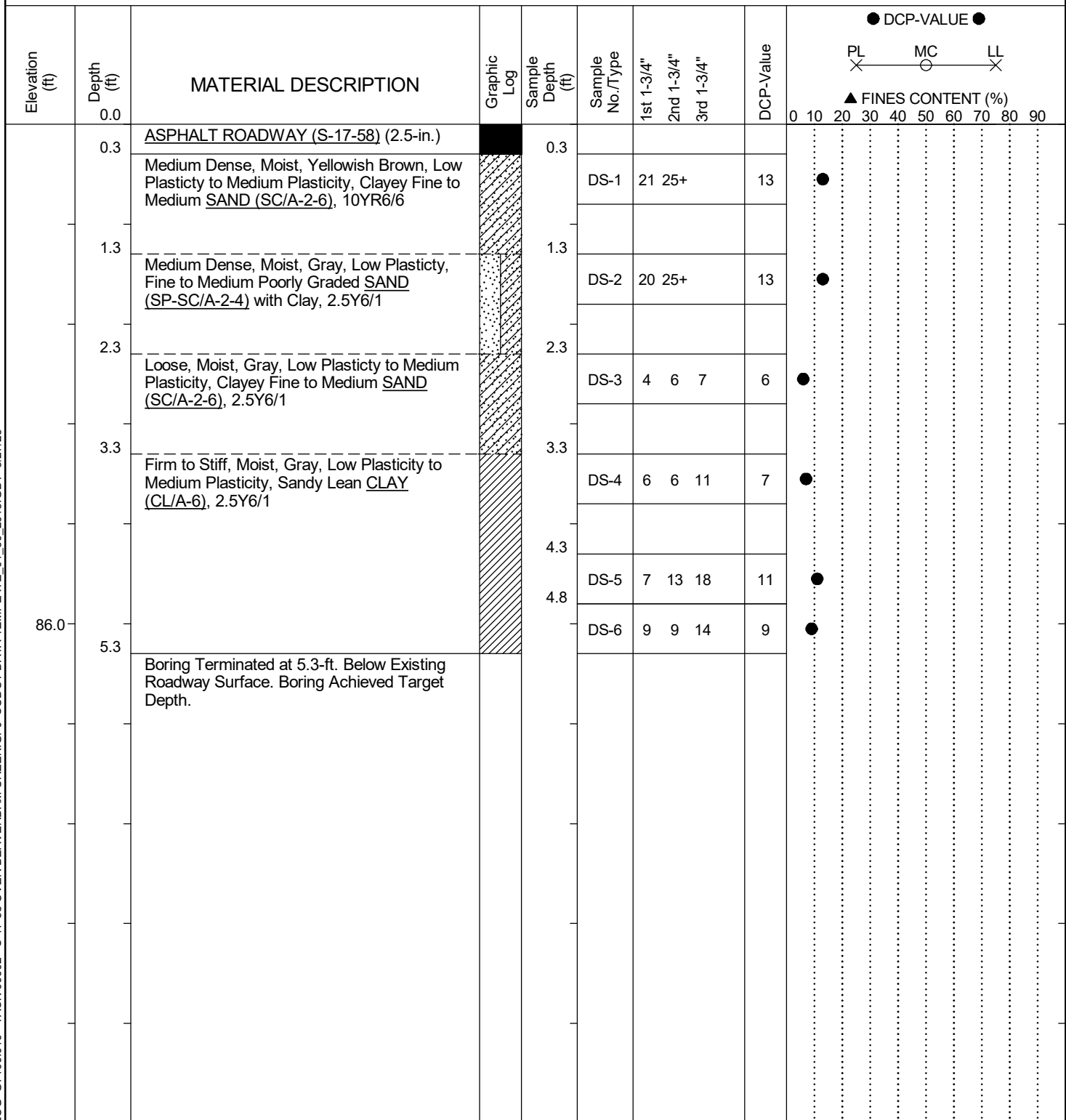
| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION   | Graphic Log | Sample Depth (ft) | Sample No./Type | 1st 1-3/4" | 2nd 1-3/4" | 3rd 1-3/4" | DCP-Value | DCP-VALUE | PL | MC | LL | FINES CONTENT (%) |
|----------------|------------|--|-------------|-------------------|-----------------|------------|------------|------------|-----------|-----------|----|----|----|-------------------|
|                | 0.0        | ASPHALT ROADWAY (S-17-58) (4.5-in.)  |             |                   |                 |            |            |            |           |           |    |    |    |                   |
|                | 0.4        | Stiff, Moist, Brownish Yellow, Non-Plastic to Low Plasticity, Sandy SILT (ML/A-4), 10YR6/6   |             | 0.4               | DS-1            | 12         | 15         | 21         | 11        |           |    |    |    |                   |
|                | 1.4        | Stiff, Moist, Yellowish Brown, Low Plasticity to Medium Plasticity, Sandy Lean CLAY (CL/A-6), 10YR5/6                                  |             | 1.4               | DS-2            | 8          | 12         | 25         | 12        |           |    |    |    |                   |
|                | 2.4        | Loose, Moist, Light Gray/Very Dark Gray, Low Plasticity to Medium Plasticity, Clayey Fine to Medium SAND (SC/A-2-6), 20YR7/1 & 2.5Y4/1 |             | 2.4               | DS-3            | 5          | 8          | 13         | 8         |           |    |    |    |                   |
|                | 3.4        | @DS-4: Wet, with Trace Organics  |             | 3.4               | DS-4            | 3          | 6          | 8          | 6         |           |    |    |    |                   |
|                | 4.4        | Loose, Wet, Very Dark Gray, Non-Plastic, Fine to Medium Poorly Graded SAND (SP-SM/A-4) with Silt & Trace Organics, 10YR4/1             |             | 4.4               | DS-5            | 8          | 14         | 12         | 9         |           |    |    |    |                   |
|                | 4.9        |  |             | 4.9               | DS-6            | 6          | 7          | 7          | 6         |           |    |    |    |                   |
|                | 5.4        | Boring Terminated at 5.4-ft. Below Existing Roadway Surface. Boring Achieved Target Depth.   |             |                   |                 |            |            |            |           |           |    |    |    |                   |

## LEGEND

| SAMPLER TYPE            |                                 | DRILLING METHOD                |                  |
|-------------------------|---------------------------------|--------------------------------|------------------|
| SS - Split Spoon        | DCP - Dynamic Cone Penetrometer | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings                   | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube            | DC - Driving Casing            |                  |

# SCDOT Manual Auger Log

|  |                              |  |                         |                          |        |                   |                  |                    |                        |           |  |
|--|------------------------------|--|-------------------------|--------------------------|--------|-------------------|------------------|--------------------|------------------------|-----------|--|
| <b>Project ID:</b>                               | P043715                      |  |                         | <b>County:</b>           | Dillon |                   |                  | <b>Boring No.:</b> | P-6                    |           |  |
| <b>Site Description:</b>                         | S-17-58 over Beaverdam Creek |  |                         |                          |        |                   |                  | <b>Route:</b>      | S-17-58                |           |  |
| <b>Driller:</b>                                  | T. Peterson                  |  | <b>Boring Location:</b> | N/A                      |        | <b>Offset:</b>    | N/A              |                    | <b>Alignment:</b>      | Existing  |  |
| <b>Elev.:</b>                                    | 91.0 ft                      |  | <b>Latitude:</b>        | 34.39455862              |        | <b>Longitude:</b> | -79.23701637     |                    | <b>Date Started:</b>   | 2/26/2025 |  |
| <b>Total Depth:</b>                              | 5.2 ft                       |  | <b>Groundwater:</b>     | TOB                      |        | <b>NE</b>         | 24 hr Backfilled |                    | <b>Date Completed:</b> | 2/26/2025 |  |
| <b>Dynamic Cone Penetrometer Test Procedure:</b> |                              |  |                         | Sowers and Hedges (1966) |        |                   |                  |                    |                        |           |  |



## LEGEND

| LEGEND                  |                               |                                |                  |
|-------------------------|-------------------------------|--------------------------------|------------------|
| SAMPLER TYPE            |                               | DRILLING METHOD                |                  |
| SS - Split Spoon        | DCP Dynamic Cone Penetrometer | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings                 | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube          | DC - Driving Casing            |                  |

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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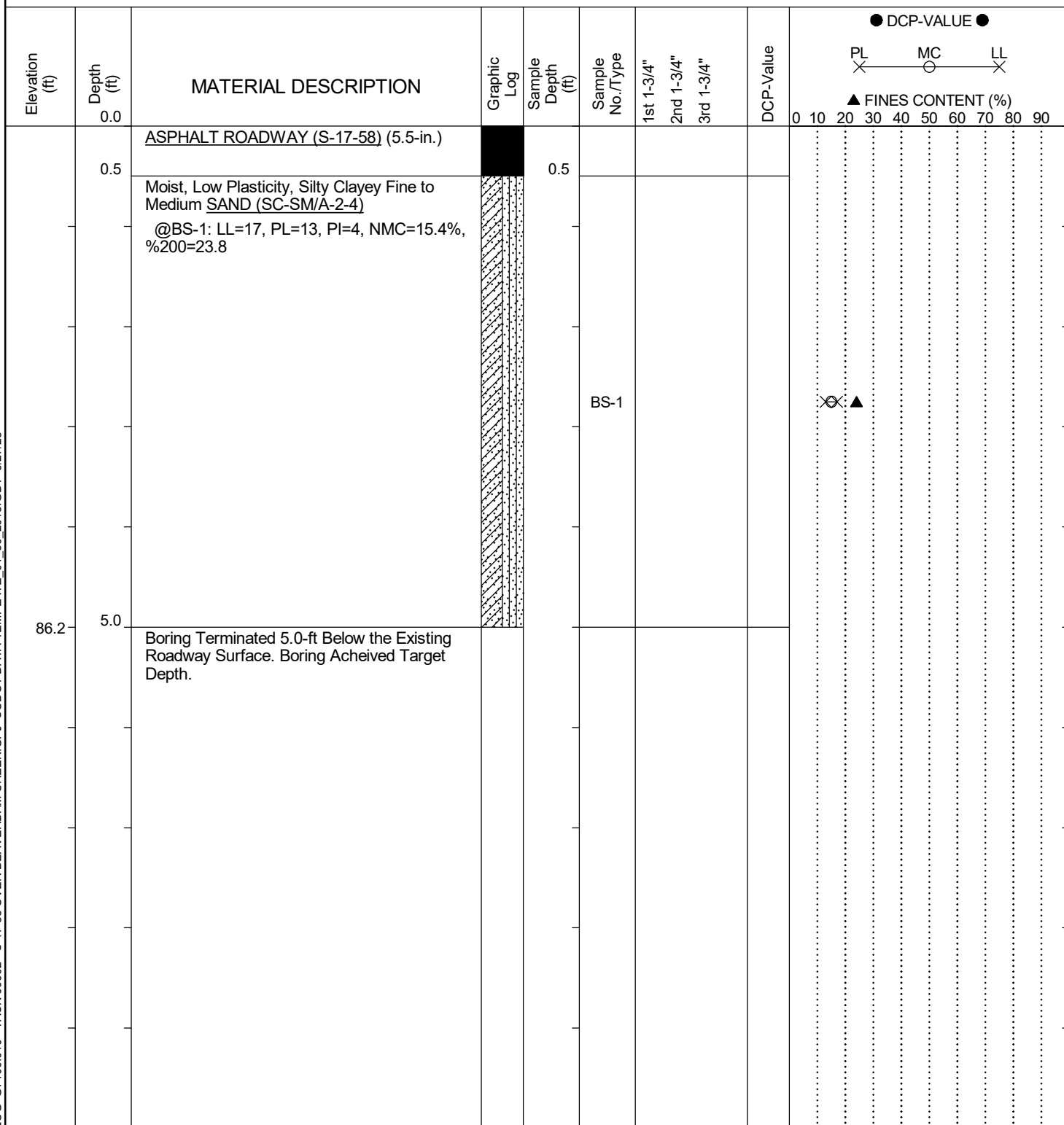
# **APPENDIX**

## **SECTION 3          SUBSURFACE EXPLORATION LOGS**

### **SECTION 3C          BULK SOIL SAMPLE (BS) LOGS**

# SCDOT Manual Auger Log

|  |                              |  |                         |                |        |                   |                  |                    |                        |           |  |
|--|------------------------------|--|-------------------------|----------------|--------|-------------------|------------------|--------------------|------------------------|-----------|--|
| <b>Project ID:</b>                               | P043715                      |  |                         | <b>County:</b> | Dillon |                   |                  | <b>Boring No.:</b> | BS-1                   |           |  |
| <b>Site Description:</b>                         | S-17-58 over Beaverdam Creek |  |                         |                |        |                   |                  | <b>Route:</b>      | S-17-58                |           |  |
| <b>Driller:</b>                                  | T. Peterson                  |  | <b>Boring Location:</b> | N/A            |        | <b>Offset:</b>    | N/A              |                    | <b>Alignment:</b>      | Existing  |  |
| <b>Elev.:</b>                                    | 91.2 ft                      |  | <b>Latitude:</b>        | 34.39342985    |        | <b>Longitude:</b> | -79.2389907      |                    | <b>Date Started:</b>   | 2/26/2025 |  |
| <b>Total Depth:</b>                              | 5 ft                         |  | <b>Groundwater:</b>     | TOB            |        | <b>NE</b>         | 24 hr Backfilled |                    | <b>Date Completed:</b> | 2/26/2025 |  |
| <b>Dynamic Cone Penetrometer Test Procedure:</b> |                              |  |                         | ASTM D6951     |        |                   |                  |                    |                        |           |  |



## LEGEND

| SAMPLER TYPE            |                               | DRILLING METHOD                |                  |
|-------------------------|-------------------------------|--------------------------------|------------------|
| SS - Split Spoon        | DCP Dynamic Cone Penetrometer | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings                 | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube          | DC - Driving Casing            |                  |



# SCDOT Manual Auger Log

|  |                              |  |                         |                |        |                   |       |                    |                        |           |  |
|--|------------------------------|--|-------------------------|----------------|--------|-------------------|-------|--------------------|------------------------|-----------|--|
| <b>Project ID:</b>                               | P043715                      |  |                         | <b>County:</b> | Dillon |                   |       | <b>Boring No.:</b> | BS-2                   |           |  |
| <b>Site Description:</b>                         | S-17-58 over Beaverdam Creek |  |                         |                |        |                   |       | <b>Route:</b>      | S-17-58                |           |  |
| <b>Driller:</b>                                  | T. Peterson                  |  | <b>Boring Location:</b> | N/A            |        | <b>Offset:</b>    | N/A   |                    | <b>Alignment:</b>      | Existing  |  |
| <b>Elev.:</b>                                    | N/A ft                       |  | <b>Latitude:</b>        | 0              |        | <b>Longitude:</b> | 0     |                    | <b>Date Started:</b>   | 2/26/2025 |  |
| <b>Total Depth:</b>                              | 5 ft                         |  | <b>Groundwater:</b>     | TOB            |        | <b>NE</b>         | 24 hr |                    | <b>Date Completed:</b> | 2/26/2025 |  |
| <b>Dynamic Cone Penetrometer Test Procedure:</b> |                              |  |                         | ASTM D6951     |        |                   |       |                    |                        |           |  |

| Elevation<br>(ft) | Depth<br>(ft) | MATERIAL DESCRIPTION   | Graphic<br>Log | Sample<br>Depth<br>(ft) | Sample<br>No./Type | 1st 1-3/4" | 2nd 1-3/4" | 3rd 1-3/4" | DCP-Value | <div> <div>● DCP-VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div> |
|-------------------|---------------|--|----------------|-------------------------|--------------------|------------|------------|------------|-----------|---|
|                   | 0.0           | Moist, Medium Plasticity, Clayey Fine to Medium <u>SAND (SC/A-6)</u><br>@BS-2: LL=28, PL=12, PI=16,<br>NMC=15.6%, %200=36.1<br><i>Composite Bulk Soil Sample BS-2 was Formed Using the Upper 5.0-ft. of Auger Cuttings Encountered within Soil Test Borings P-1 Through P-6.</i> |                | 0.0                     |                    |            |            |            |           | <div> <div>×</div> <div>○</div> <div>×</div> </div> <div>▲</div>  |
|                   | 5.0           | Boring Terminated 5.0-ft Below the Existing Roadway Surface. Boring Acheived Target Depth.   |                |                         | BS-2               |            |            |            |           |   |

## LEGEND

| SAMPLER TYPE            |                               | DRILLING METHOD                |                  |
|-------------------------|-------------------------------|--------------------------------|------------------|
| SS - Split Spoon        | DCP Dynamic Cone Penetrometer | HSA - Hollow Stem Auger        | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings                 | CFA - Continuous Flight Augers | RC - Rock Core   |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube          | DC - Driving Casing            |                  |

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**

## **SECTION 4**

## **LABORATORY TEST RESULTS**

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**

## **SECTION 4      LABORATORY TEST RESULTS**

### **SECTION 4A      SPLIT SPOON SAMPLES (SS)**



# SUMMARY OF LABORATORY RESULTS

PAGE 1 OF 1

PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon

| Borehole | Depth | Liquid Limit | Plastic Limit | Plasticity Index | Maximum Size (mm) | %<#200 Sieve | Classification | Water Content (%) | Dry Density (pcf) | Saturation (%) | Void Ratio |
|----------|-------|--------------|---------------|------------------|-------------------|--------------|----------------|-------------------|-------------------|----------------|------------|
| B-1      | 6.0   | 18           | 10            | 8                | 9.51              | 53           | CL             | 23.3              |                   |                |            |
| B-1      | 10.0  | 17           | 14            | 3                | 9.51              | 24           | SM             | 23.3              |                   |                |            |
| B-1      | 15.0  | NP           | NP            | NP               | 9.51              | 9            | SP-SM          | 23.3              |                   |                |            |
| B-1      | 25.0  | NP           | NP            | NP               | 4.76              | 6            | SP-SM          | 25.4              |                   |                |            |
| B-1      | 30.0  | NP           | NP            | NP               | 4.76              | 6            | SP-SM          | 27.2              |                   |                |            |
| B-1      | 35.0  | NP           | NP            | NP               | 4.76              | 6            | SP-SM          | 24.7              |                   |                |            |
| B-2      | 24.9  | NP           | NP            | NP               | 4.76              | 4            | SP             | 24.2              |                   |                |            |
| B-2      | 30.9  | NP           | NP            | NP               | 19                | 4            | SP             | 20.1              |                   |                |            |
| B-2      | 40.9  | NP           | NP            | NP               | 4.76              | 2            | SP             | 19.4              |                   |                |            |
| B-2      | 45.9  | 43           | 32            | 11               | 2                 | 87           | ML             | 47.1              |                   |                |            |
| B-3      | 6.0   | NP           | NP            | NP               | 19                | 7            | SP-SM          | 24.7              |                   |                |            |
| B-3      | 20.0  | NP           | NP            | NP               | 19                | 5            | SP             | 23.9              |                   |                |            |
| B-3      | 25.0  | NP           | NP            | NP               | 4.76              | 5            | SP             | 25.6              |                   |                |            |
| B-3      | 30.0  | NP           | NP            | NP               | 4.76              | 4            | SP             | 27.7              |                   |                |            |
| B-3      | 35.0  | NP           | NP            | NP               | 4.76              | 4            | SP             | 24.4              |                   |                |            |



# INDEX PROPERTIES VERSUS DEPTH

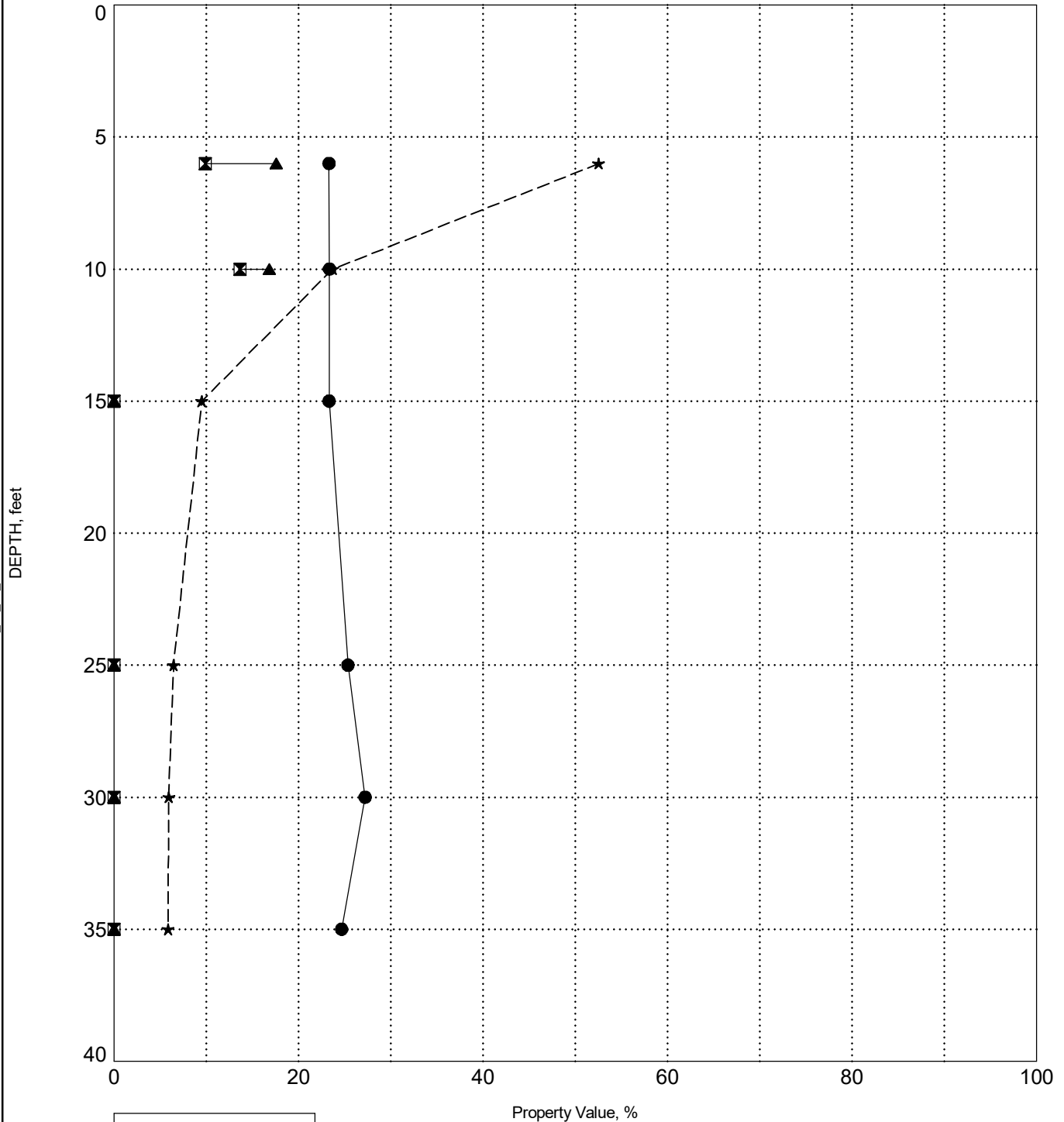
PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon

SURFACE ELEVATION: 91.7

## BORING B-1



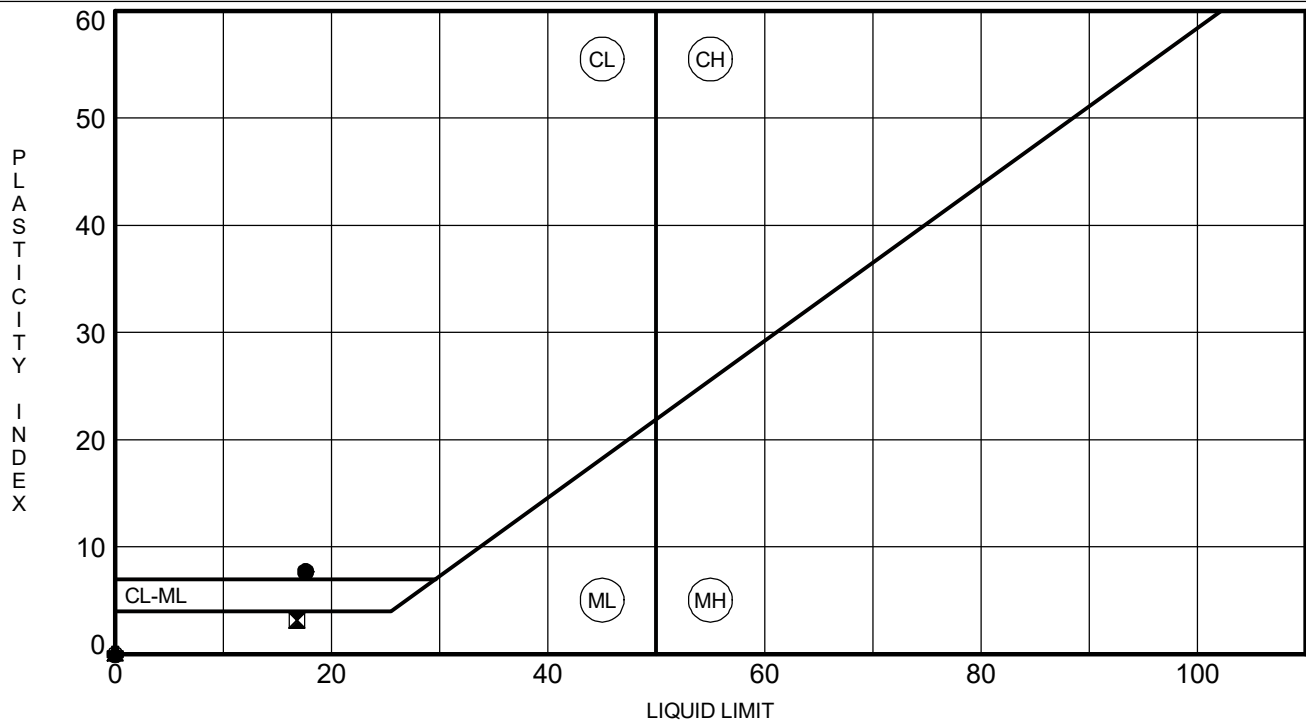
| LEGEND |               |
|--------|---------------|
| ●      | Water Content |
| ☒      | Plastic Limit |
| ▲      | Liquid Limit  |
| ★      | Fines         |

## ATTERBERG LIMITS' RESULTS

**PROJECT ID** P043715

**PROJECT NAME** S-17-58 over Beaverdam Creek

**PROJECT COUNTY** Dillon

[illegible]

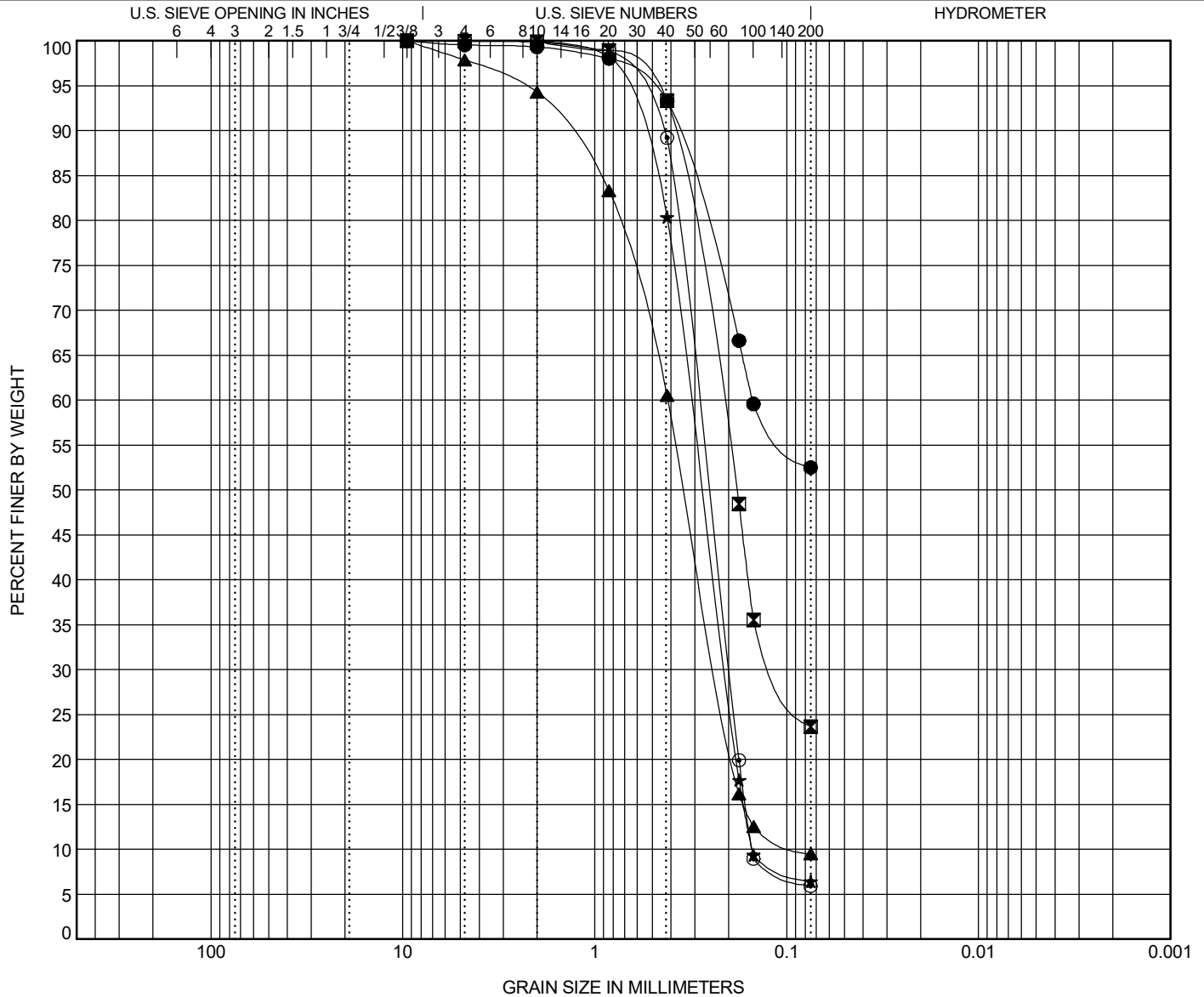


# GRAIN SIZE DISTRIBUTION

PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon



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

| BOREHOLE | DEPTH | Classification                           |       |       |       |         | LL    | PL    | PI | Cc    | Cu   |
|----------|-------|--|-------|-------|-------|---------|-------|-------|----|-------|------|
| ● B-1    | 6.0   | SANDY LEAN CLAY (CL/A-4)                 |       |       |       |         | 18    | 10    | 8  |       |      |
| ☒ B-1    | 10.0  | SILTY SAND (SM/A-2-4)                    |       |       |       |         | 17    | 14    | 3  |       |      |
| ▲ B-1    | 15.0  | POORLY GRADED SAND with SILT (SP-SM/A-3) |       |       |       |         | NP    | NP    | NP | 1.54  | 4.95 |
| ★ B-1    | 25.0  | POORLY GRADED SAND with SILT (SP-SM/A-3) |       |       |       |         | NP    | NP    | NP | 0.92  | 2.10 |
| ⊙ B-1    | 30.0  | POORLY GRADED SAND with SILT (SP-SM/A-3) |       |       |       |         | NP    | NP    | NP | 0.91  | 1.93 |
| BOREHOLE | DEPTH | D90                                      | D60   | D30   | D10   | %Gravel | %Sand | %Silt |    | %Clay |      |
| ● B-1    | 6.0   | 0.377                                    | 0.151 |       |       | 0.5     | 47.0  | 52.5  |    |       |      |
| ☒ B-1    | 10.0  | 0.394                                    | 0.221 | 0.108 |       | 0.0     | 76.3  | 23.7  |    |       |      |
| ▲ B-1    | 15.0  | 1.422                                    | 0.416 | 0.232 | 0.084 | 2.1     | 88.4  | 9.5   |    |       |      |
| ★ B-1    | 25.0  | 0.609                                    | 0.317 | 0.21  | 0.151 | 0.0     | 93.6  | 6.4   |    |       |      |
| ⊙ B-1    | 30.0  | 0.444                                    | 0.292 | 0.201 | 0.151 | 0.0     | 94.1  | 5.9   |    |       |      |





**F&ME CONSULTANTS, INC**  
**211 Business Park Blvd.**  
**Columbia, SC 29203**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

|                             |                              |                          |          |
|-----------------------------|------------------------------|--------------------------|----------|
| <b>PROJECT:</b>             | S-17-58 over Beaverdam Creek | <b>SCDOT PROJECT ID:</b> | P043715  |
| <b>SAMPLE NUMBER:</b>       | 25-0632                      | <b>DATE REQUESTED:</b>   | 3/5/2025 |
| <b>DESCRIPTION OF SOIL:</b> | VARIOUS                      |                          |          |
| <b>TESTED BY:</b>           | AC/KB                        | <b>DATE OF TESTING:</b>  | 3/6/2025 |
| <b>WEIGHED BY:</b>          | AAB                          | <b>DATE OF WEIGHING:</b> | 3/7/2025 |

|                   |           |            |             |             |             |
|-------------------|-----------|------------|-------------|-------------|-------------|
| BORING NO.        | B-1       | B-1        | B-1         | B-1         | B-1         |
| SAMPLE NO.        | SS-3      | SS-5       | SS-6        | SS-8        | SS-9        |
| SAMPLE DEPTH      | 4.0 - 6.0 | 8.0 - 10.0 | 13.5 - 15.0 | 23.5 - 25.0 | 28.5 - 30.0 |
| WATER CONTENT, W% | 23.3      | 23.3       | 23.3        | 25.4        | 27.2        |

|                   |             |  |  |  |  |
|-------------------|-------------|--|--|--|--|
| BORING NO.        | B-1         |  |  |  |  |
| SAMPLE NO.        | SS-10       |  |  |  |  |
| SAMPLE DEPTH      | 33.5 - 35.0 |  |  |  |  |
| WATER CONTENT, W% | 24.7        |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |



# INDEX PROPERTIES VERSUS DEPTH

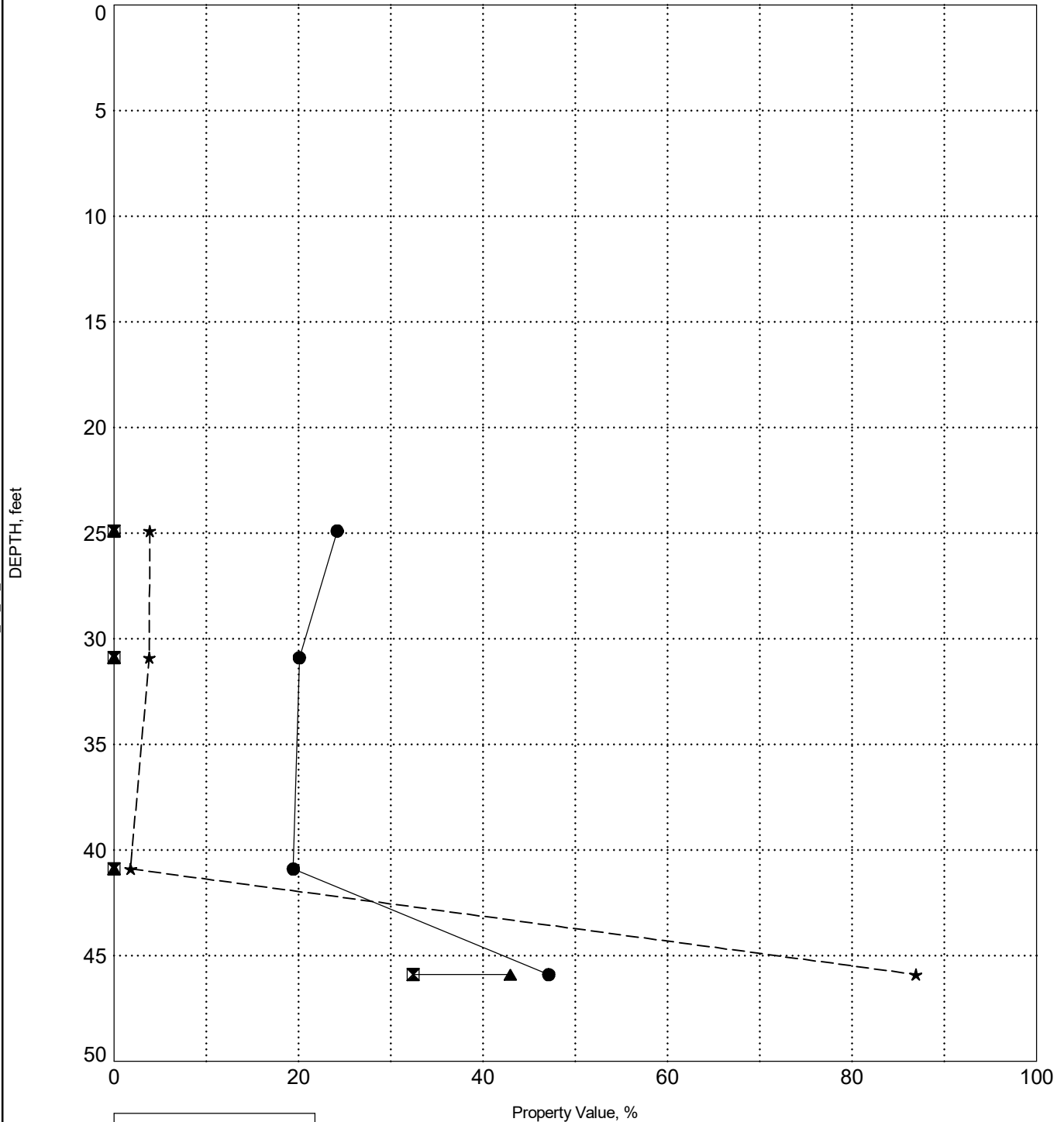
PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon

SURFACE ELEVATION: 91.6

## BORING B-2



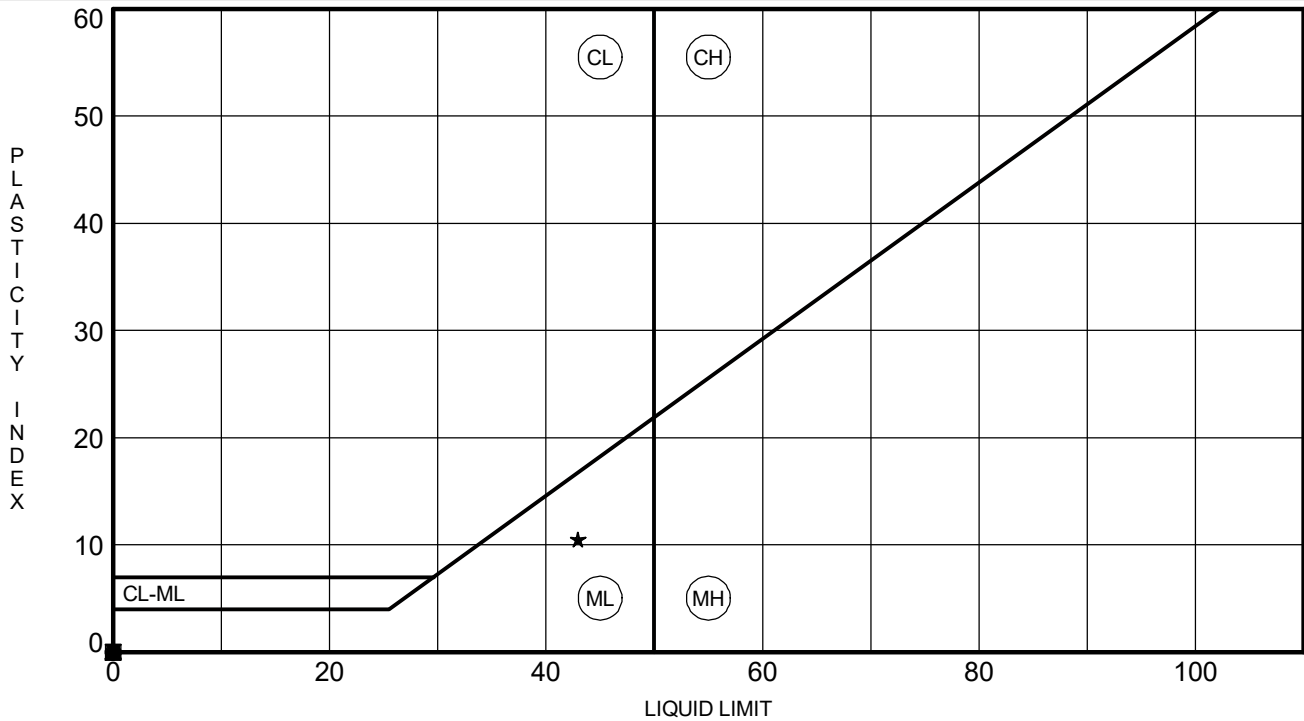
| LEGEND |               |
|--------|---------------|
| ●      | Water Content |
| ⊠      | Plastic Limit |
| ▲      | Liquid Limit  |
| ★      | Fines         |

## ATTERBERG LIMITS' RESULTS

**PROJECT ID** P043715

**PROJECT NAME** S-17-58 over Beaverdam Creek

**PROJECT COUNTY** Dillon

[illegible]

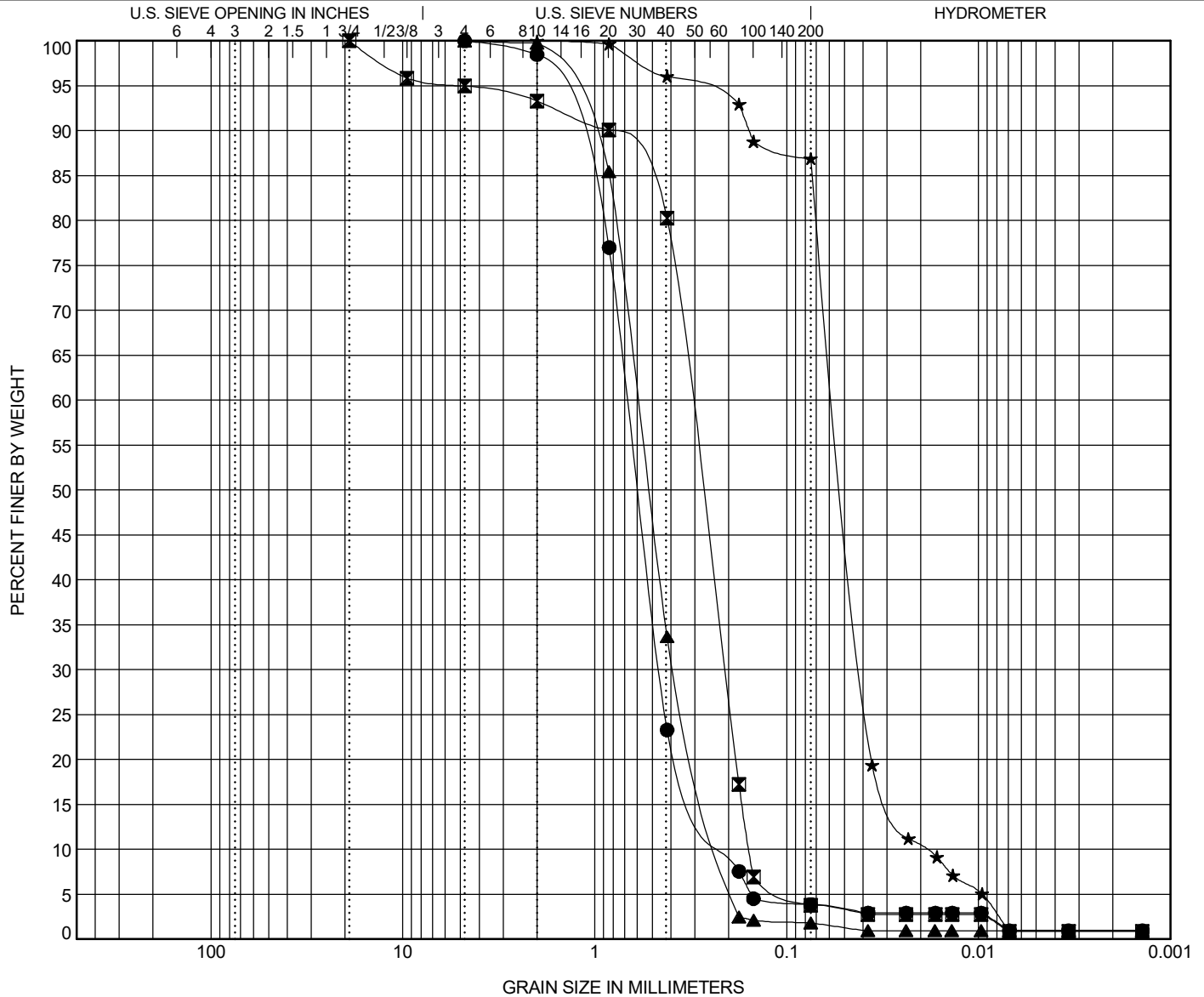


# GRAIN SIZE DISTRIBUTION

PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon



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

| BOREHOLE | DEPTH | Classification                | LL | PL | PI | Cc   | Cu   |
|----------|-------|-------------------------------|----|----|----|------|------|
| ● B-2    | 24.9  | POORLY GRADED SAND (SP/A-1-b) | NP | NP | NP | 1.54 | 3.33 |
| ☒ B-2    | 30.9  | POORLY GRADED SAND (SP/A-3)   | NP | NP | NP | 0.89 | 2.03 |
| ▲ B-2    | 40.9  | POORLY GRADED SAND (SP/A-1-b) | NP | NP | NP | 1.10 | 2.74 |
| ★ B-2    | 45.9  | SILT (ML/A-7-5)               | 43 | 32 | 11 | 1.53 | 2.95 |

| BOREHOLE | DEPTH | D90   | D60   | D30   | D10   | %Gravel | %Sand | %Silt | %Clay |
|----------|-------|-------|-------|-------|-------|---------|-------|-------|-------|
| ● B-2    | 24.9  | 1.421 | 0.675 | 0.458 | 0.202 | 0.0     | 96.1  | 2.9   | 0.9   |
| ☒ B-2    | 30.9  | 0.834 | 0.318 | 0.211 | 0.157 | 5.0     | 91.2  | 2.9   | 0.9   |
| ▲ B-2    | 40.9  | 1.107 | 0.598 | 0.379 | 0.218 | 0.0     | 98.2  | 0.8   | 1.0   |
| ★ B-2    | 45.9  | 0.157 | 0.056 | 0.04  | 0.019 | 0.0     | 13.1  | 85.9  | 1.0   |

**F&ME CONSULTANTS, INC**  
**211 Business Park Blvd.**  
**Columbia, SC 29203**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

|                             |                              |                          |          |
|-----------------------------|------------------------------|--------------------------|----------|
| <b>PROJECT:</b>             | S-17-58 over Beaverdam Creek | <b>SCDOT PROJECT ID:</b> | P043715  |
| <b>SAMPLE NUMBER:</b>       | 25-0633                      | <b>DATE REQUESTED:</b>   | 3/5/2025 |
| <b>DESCRIPTION OF SOIL:</b> | VARIOUS                      |                          |          |
| <b>TESTED BY:</b>           | AC/KB                        | <b>DATE OF TESTING:</b>  | 3/6/2025 |
| <b>WEIGHED BY:</b>          | AAB                          | <b>DATE OF WEIGHING:</b> | 3/7/2025 |

|                   |             |             |             |             |  |
|-------------------|-------------|-------------|-------------|-------------|--|
| BORING NO.        | B-2         | B-2         | B-2         | B-2         |  |
| SAMPLE NO.        | SS-2        | SS-5        | SS-7        | SS-8        |  |
| SAMPLE DEPTH      | 22.9 - 24.9 | 28.9 - 30.9 | 39.4 - 40.9 | 44.4 - 45.9 |  |
| WATER CONTENT, W% | 24.2        | 20.1        | 19.4        | 47.1        |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |



# INDEX PROPERTIES VERSUS DEPTH

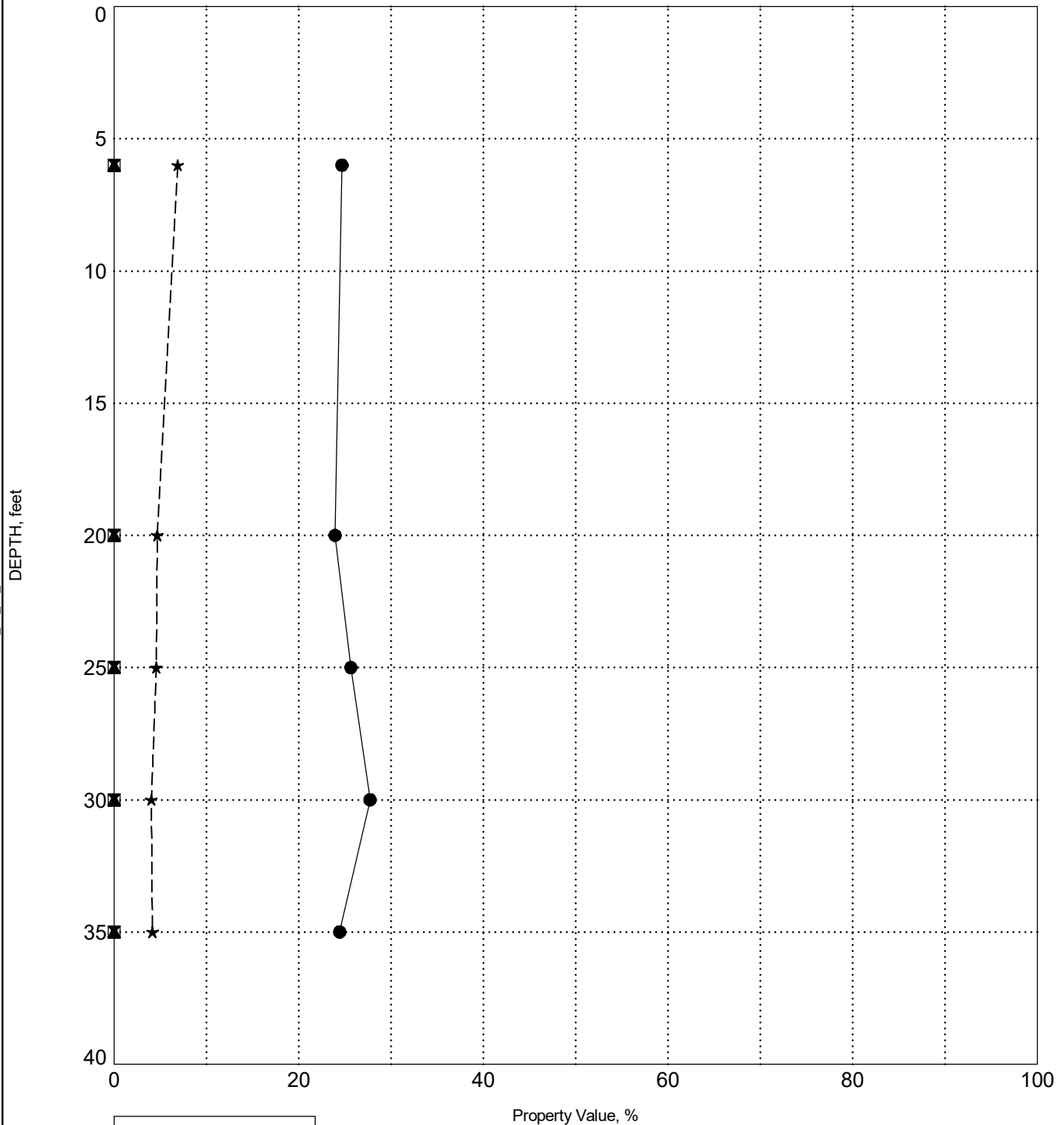
PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon

SURFACE ELEVATION: 91.5

## BORING B-3



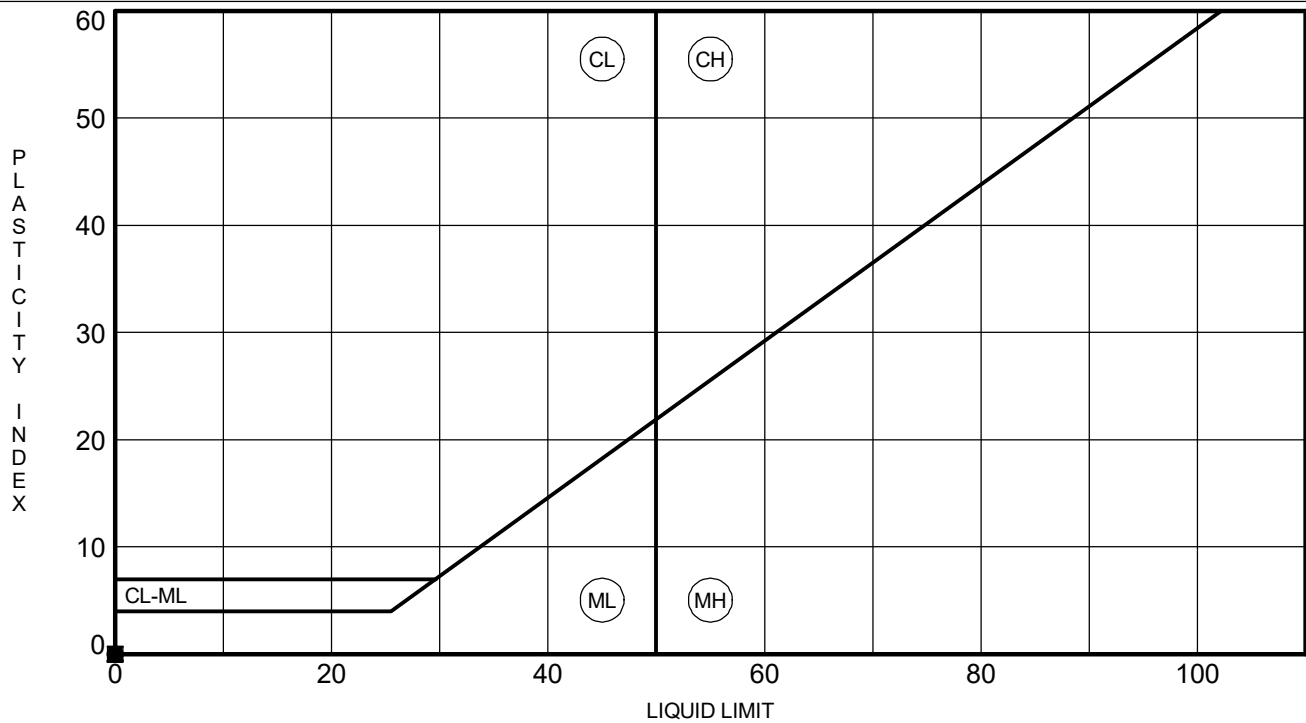
| LEGEND |               |
|--------|---------------|
| ●      | Water Content |
| ■      | Plastic Limit |
| ▲      | Liquid Limit  |
| ★      | Fines         |

## ATTERBERG LIMITS' RESULTS

**PROJECT ID** P043715

**PROJECT NAME** S-17-58 over Beaverdam Creek

**PROJECT COUNTY** Dillon

[illegible]



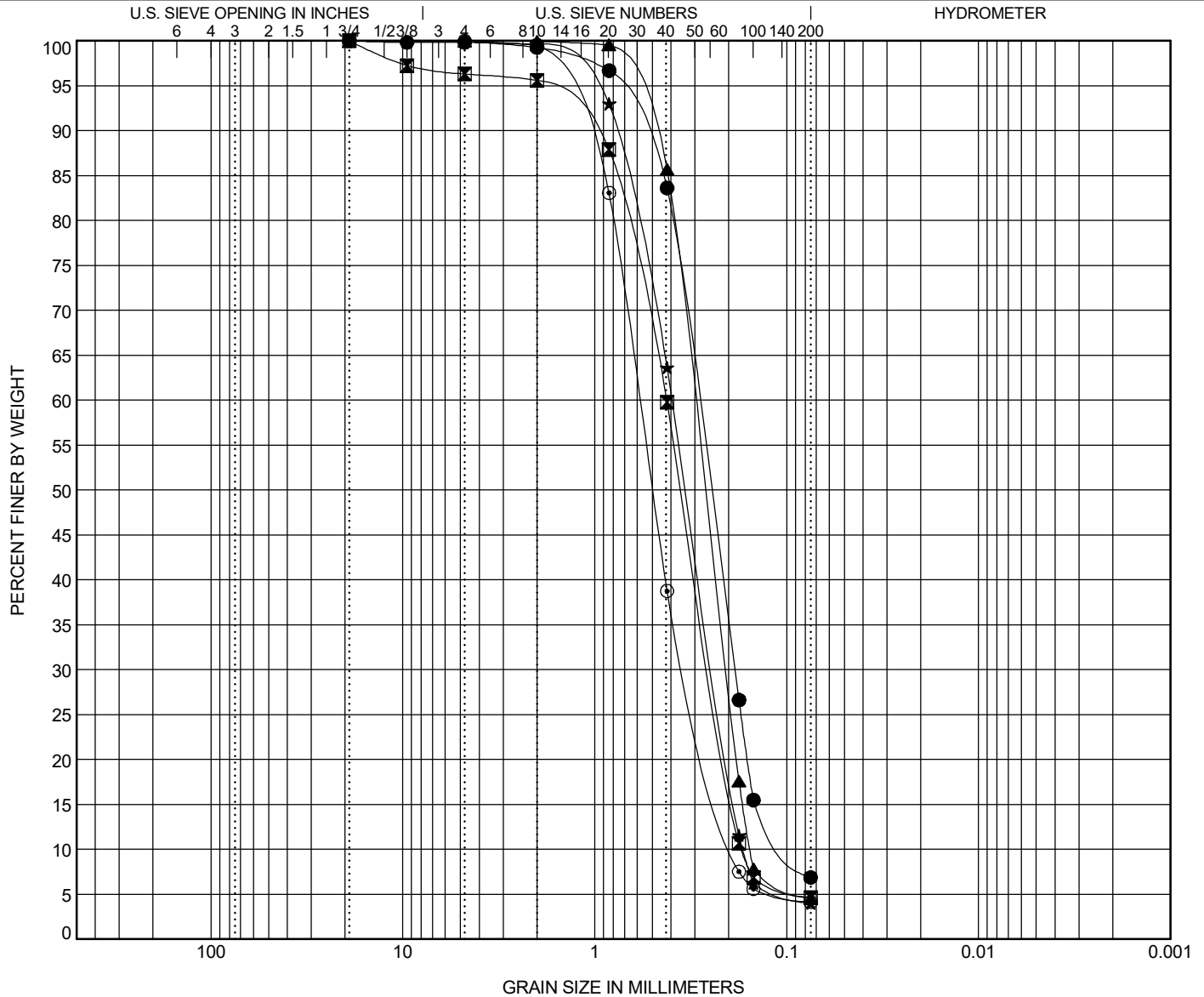


# GRAIN SIZE DISTRIBUTION

PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon



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

| BOREHOLE | DEPTH | Classification                           |       |       |       |         | LL    | PL    | PI | Cc    | Cu   |
|----------|-------|--|-------|-------|-------|---------|-------|-------|----|-------|------|
| ● B-3    | 6.0   | POORLY GRADED SAND with SILT (SP-SM/A-3) |       |       |       |         | NP    | NP    | NP | 1.23  | 3.05 |
| ☒ B-3    | 20.0  | POORLY GRADED SAND (SP/A-3)              |       |       |       |         | NP    | NP    | NP | 0.85  | 2.46 |
| ▲ B-3    | 25.0  | POORLY GRADED SAND (SP/A-3)              |       |       |       |         | NP    | NP    | NP | 0.91  | 1.96 |
| ★ B-3    | 30.0  | POORLY GRADED SAND (SP/A-3)              |       |       |       |         | NP    | NP    | NP | 0.87  | 2.35 |
| ⊙ B-3    | 35.0  | POORLY GRADED SAND (SP/A-1-b)            |       |       |       |         | NP    | NP    | NP | 0.98  | 3.09 |
| BOREHOLE | DEPTH | D90                                      | D60   | D30   | D10   | %Gravel | %Sand | %Silt |    | %Clay |      |
| ● B-3    | 6.0   | 0.589                                    | 0.294 | 0.186 | 0.096 | 0.2     | 93.0  | 6.9   |    |       |      |
| ☒ B-3    | 20.0  | 1.062                                    | 0.422 | 0.249 | 0.172 | 3.7     | 91.7  | 4.7   |    |       |      |
| ▲ B-3    | 25.0  | 0.521                                    | 0.303 | 0.207 | 0.155 | 0.0     | 95.4  | 4.6   |    |       |      |
| ★ B-3    | 30.0  | 0.783                                    | 0.395 | 0.24  | 0.168 | 0.0     | 96.0  | 4.0   |    |       |      |
| ⊙ B-3    | 35.0  | 1.21                                     | 0.586 | 0.33  | 0.19  | 0.0     | 95.9  | 4.1   |    |       |      |

GRAIN SIZE G7100.010 - TASK 00002 - S-17-58 OVER BEAVERDAM CREEK.GPJ SCDOT DATA TEMPLATE\_01\_30\_2015.GDT 3/10/25

**F&ME CONSULTANTS, INC**  
**211 Business Park Blvd.**  
**Columbia, SC 29203**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

|                             |                              |                          |          |
|-----------------------------|------------------------------|--------------------------|----------|
| <b>PROJECT:</b>             | S-17-58 over Beaverdam Creek | <b>SCDOT PROJECT ID:</b> | P043715  |
| <b>SAMPLE NUMBER:</b>       | 25-0644                      | <b>DATE REQUESTED:</b>   | 3/5/2025 |
| <b>DESCRIPTION OF SOIL:</b> | VARIOUS                      |                          |          |
| <b>TESTED BY:</b>           | AC/KB                        | <b>DATE OF TESTING:</b>  | 3/6/2025 |
| <b>WEIGHED BY:</b>          | AAB                          | <b>DATE OF WEIGHING:</b> | 3/7/2025 |

|                   |           |             |             |             |             |
|-------------------|-----------|-------------|-------------|-------------|-------------|
| BORING NO.        | B-3       | B-3         | B-3         | B-3         | B-3         |
| SAMPLE NO.        | SS-3      | SS-7        | SS-8        | SS-9        | SS-10       |
| SAMPLE DEPTH      | 4.0 - 6.0 | 18.5 - 20.0 | 23.5 - 25.0 | 28.5 - 30.0 | 33.5 - 35.0 |
| WATER CONTENT, W% | 24.7      | 23.9        | 25.6        | 27.7        | 24.4        |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

---

# **APPENDIX**

## **SECTION 4      LABORATORY TEST RESULTS**

### **SECTION 4B      BULK SOIL SAMPLES (BS)**



## SUMMARY OF LABORATORY RESULTS

PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon

| Boring No. | Sample Depth (ft.) | Liquid Limit | Plastic Limit | Plasticity Index | %<#200 Sieve | Soil Classification | Moisture Content (%) | Max Dry Density (PCF) | Optimum Moisture Content (%) | C (psi) | $\phi$ (Degrees) | C' (psi) | $\phi'$ (Degrees) |
|------------|--------------------|--------------|---------------|------------------|--------------|---------------------|----------------------|-----------------------|------------------------------|---------|------------------|----------|-------------------|
| BS-1       | 0.5 – 5.0          | 17           | 13            | 4                | 23.8         | SC-SM               | 15.4                 | 124.8                 | 9.8                          | 6.4     | 10.4             | 1.1      | 34.1              |
| BS-2       | 0.0 – 5.0          | 28           | 12            | 16               | 36.1         | SC                  | 15.6                 | 121.7                 | 11.5                         | --      | --               | --       | --                |



# INDEX PROPERTIES VERSUS DEPTH

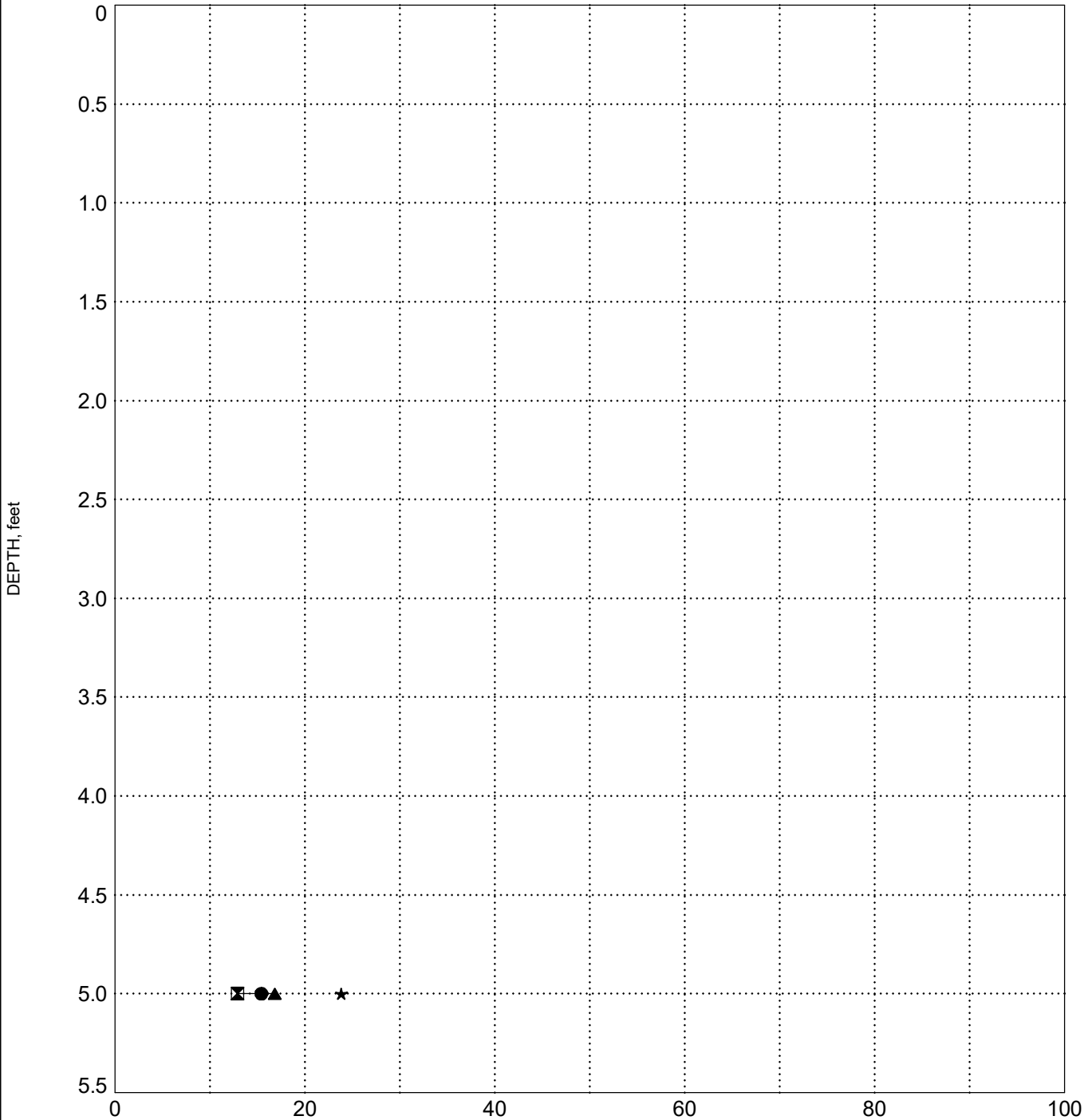
PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon

SURFACE ELEVATION: 91.2

## BORING BS-1



| LEGEND |               |
|--------|---------------|
| ●      | Water Content |
| ⊠      | Plastic Limit |
| ▲      | Liquid Limit  |
| ★      | Fines         |



**PROJECT COUNTY** Dillon

[illegible]

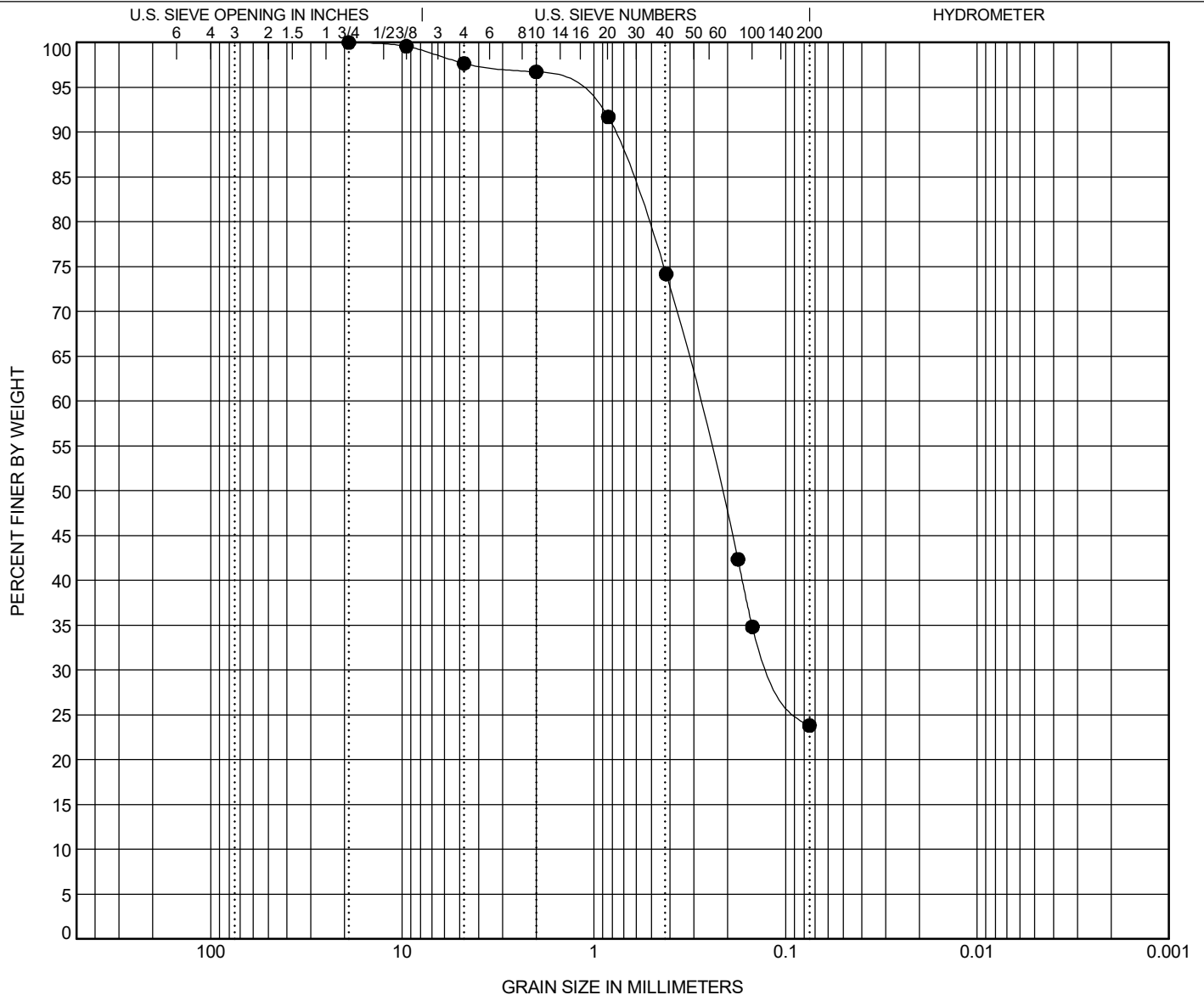


# GRAIN SIZE DISTRIBUTION

PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon



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

| BOREHOLE | DEPTH | Classification                   |       |      |     |         | LL    | PL    | PI | Cc    | Cu |
|----------|-------|----------------------------------|-------|------|-----|---------|-------|-------|----|-------|----|
| ● BS-1   | 5.0   | SILTY, CLAYEY SAND (SC-SM/A-2-4) |       |      |     |         | 17    | 13    | 4  |       |    |
|          |       |                                  |       |      |     |         |       |       |    |       |    |
|          |       |                                  |       |      |     |         |       |       |    |       |    |
|          |       |                                  |       |      |     |         |       |       |    |       |    |
| BOREHOLE | DEPTH | D90                              | D60   | D30  | D10 | %Gravel | %Sand | %Silt |    | %Clay |    |
| ● BS-1   | 5.0   | 0.786                            | 0.286 | 0.11 |     | 2.3     | 73.8  | 23.8  |    |       |    |
|          |       |                                  |       |      |     |         |       |       |    |       |    |
|          |       |                                  |       |      |     |         |       |       |    |       |    |
|          |       |                                  |       |      |     |         |       |       |    |       |    |

GRAIN SIZE G7100.010 - TASK 00002 - S-17-58 OVER BEAVERDAM CREEK.GPJ SCDOT DATA TEMPLATE\_01\_30\_2015.GDT 3/4/25

**F&ME CONSULTANTS, INC**  
**211 Business Park Blvd.**  
**Columbia, SC 29203**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

|                             |                                  |                          |           |
|-----------------------------|----------------------------------|--------------------------|-----------|
| <b>PROJECT:</b>             | S-17-58 over Beaverdam Creek     | <b>SCDOT PROJECT ID:</b> | P043715   |
| <b>SAMPLE NUMBER:</b>       | 25-0589                          | <b>DATE REQUESTED:</b>   | 2/26/2025 |
| <b>DESCRIPTION OF SOIL:</b> | SILTY, CLAYEY SAND (SC-SM/A-2-4) |                          |           |
| <b>TESTED BY:</b>           | AG & AB                          | <b>DATE OF TESTING:</b>  | 2/27/2025 |
| <b>WEIGHED BY:</b>          | TE                               | <b>DATE OF WEIGHING:</b> | 2/28/2025 |

|                   |           |  |  |  |  |
|-------------------|-----------|--|--|--|--|
| BORING NO.        | BS-1      |  |  |  |  |
| SAMPLE NO.        | --        |  |  |  |  |
| SAMPLE DEPTH      | 0.0 - 5.0 |  |  |  |  |
| WATER CONTENT, W% | 15.4      |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |



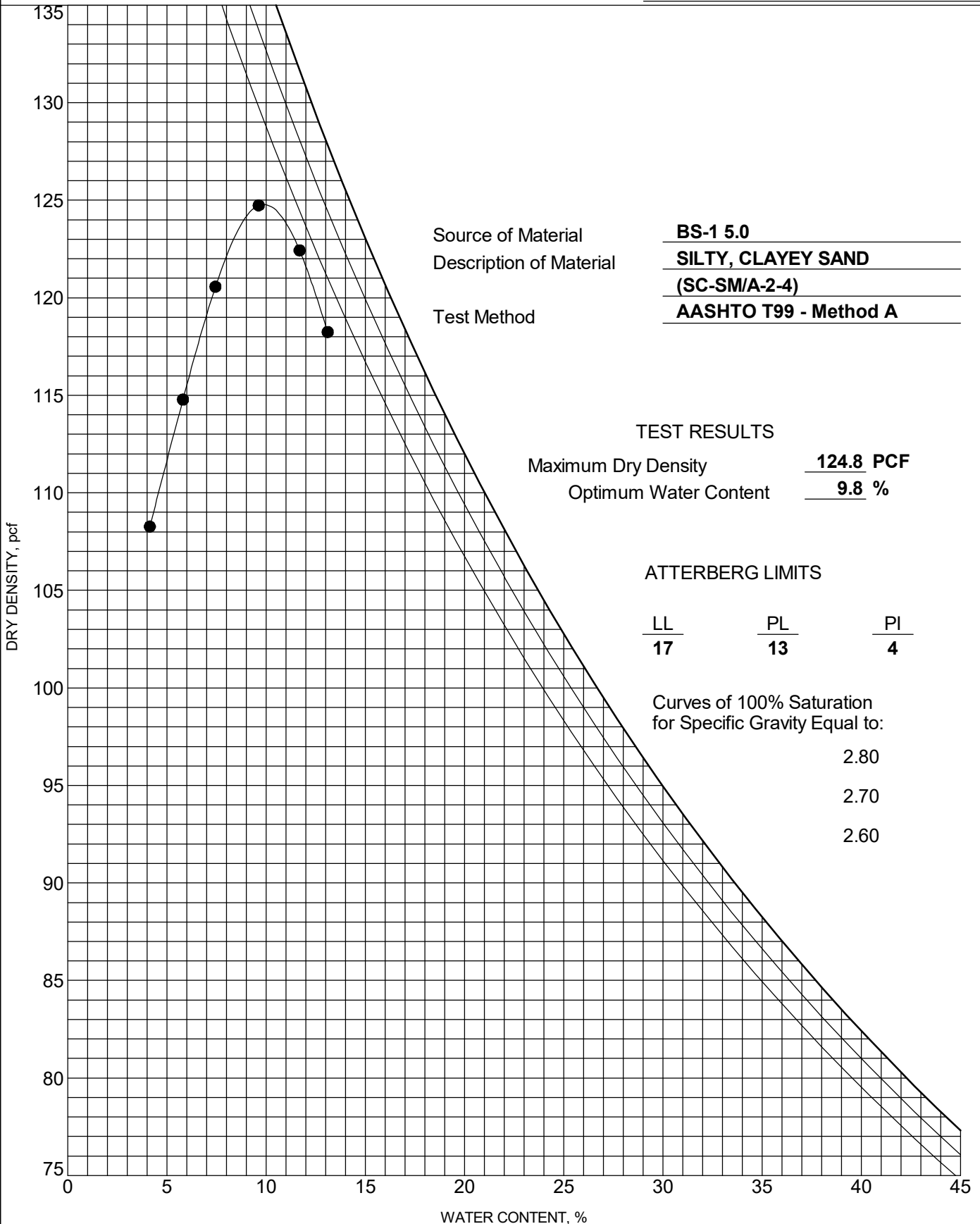


# MOISTURE-DENSITY RELATIONSHIP

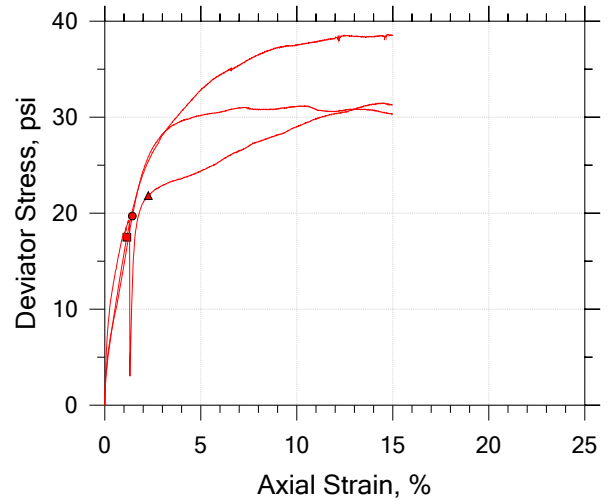
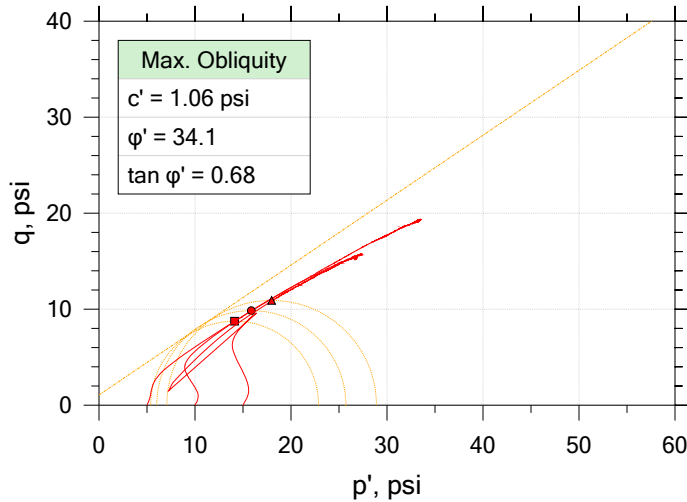
PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon



# Consolidated Undrained by AASHTO T297

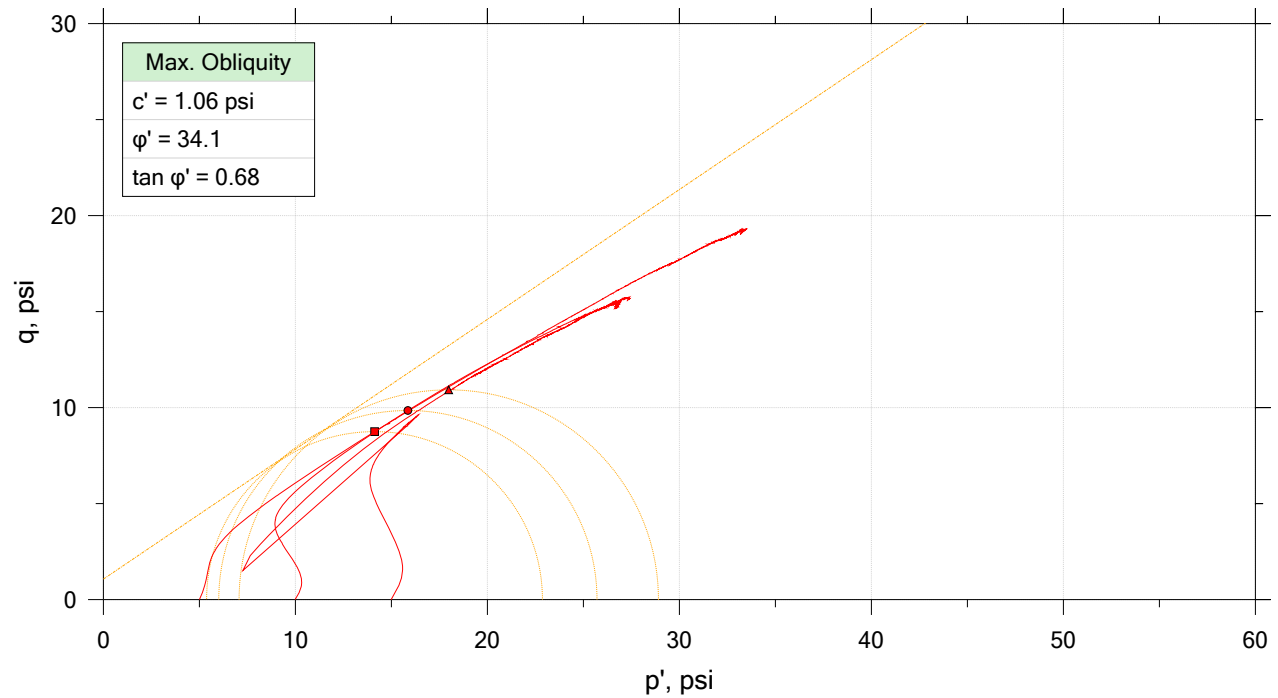
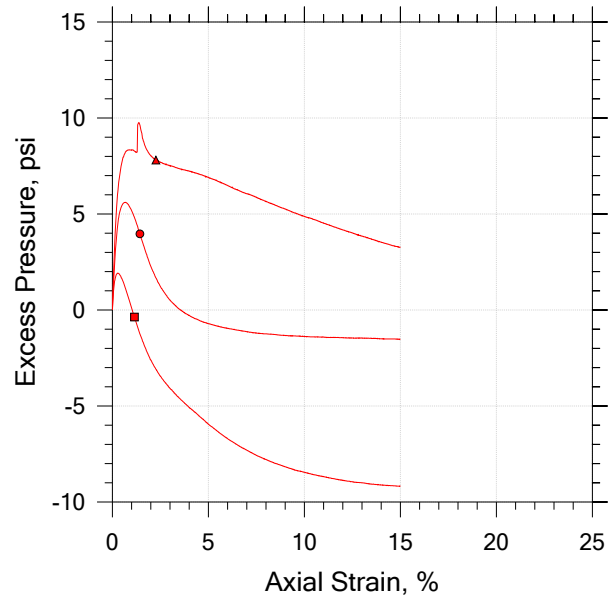
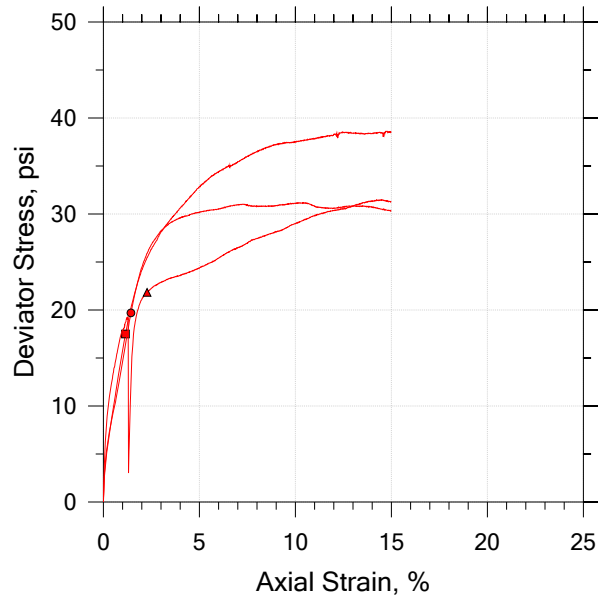


|  |             |             |             |  |
|--|-------------|-------------|-------------|--|
| Symbol   | ■           | ●           | ▲           |  |
| Sample ID  | 25-0589     | 25-0589     | 25-0589     |  |
| Depth  | 0.0' - 5.0' | 0.0' - 5.0' | 0.0' - 5.0' |  |
| Test Number                                      | A           | B           | C           |  |
| Initial  |             |             |             |  |
| Height, in                                       | 6.000       | 6.000       | 6.000       |  |
| Diameter, in                                     | 2.800       | 2.800       | 2.800       |  |
| Moisture Content (from Cuttings), %              | 9.6         | 9.6         | 9.3         |  |
| Dry Density, pcf                                 | 119.        | 119.        | 119.        |  |
| Saturation (Wet Method), %                       | 62.8        | 62.8        | 61.5        |  |
| Void Ratio                                       | 0.409       | 0.408       | 0.405       |  |
| Final  |             |             |             |  |
| Moisture Content, %                              | 14.8        | 14.4        | 14.4        |  |
| Dry Density, pcf                                 | 120.        | 121.        | 121.        |  |
| Cross-Sectional Area (Method A), in <sup>2</sup> | 6.117       | 6.094       | 6.096       |  |
| Saturation, %                                    | 100.0       | 100.0       | 100.0       |  |
| Void Ratio                                       | 0.395       | 0.387       | 0.385       |  |
| Back Pressure, psi                               | 101.0       | 101.0       | 101.0       |  |
| Vertical Effective Consolidation Stress, psi     | 4.994       | 9.971       | 14.95       |  |
| Horizontal Effective Consolidation Stress, psi   | 5.005       | 9.982       | 14.99       |  |
| Vertical Strain after Consolidation, %           | 0.08581     | 0.2127      | 0.3075      |  |
| Volumetric Strain after Consolidation, %         | 0.3007      | 0.6418      | 1.066       |  |
| Time to 50% Consolidation, min                   | 0.3000      | 0.2000      | 0.2200      |  |
| Shear Strength, psi                              | 8.748       | 9.849       | 10.92       |  |
| Strain at Failure, %                             | 1.15        | 1.43        | 2.27        |  |
| Strain Rate, %/min                               | 0.0005000   | 0.0005000   | 0.0005000   |  |
| Deviator Stress at Failure, psi                  | 17.50       | 19.70       | 21.84       |  |
| Effective Minor Principal Stress at Failure, psi | 5.372       | 6.008       | 7.063       |  |
| Effective Major Principal Stress at Failure, psi | 22.87       | 25.71       | 28.90       |  |
| B-Value  | 0.94        | 0.87        | 0.93        |  |


Notes:  
 - Before Shear Saturation set to 100% for phase calculation.  
 - Moisture Content determined by ASTM D2216.  
 - Atterberg Limits determined by ASTM D4318.  
 - 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: S-17-58 over Beaverdam Creek   | Location: Dillon County | Project Number: P043715 |
|  | Boring Number: BS-1  | Tester: RMC             | Checker: WAP/ WJG       |
|  | Sample Number: 25-0589   | Test Date: 3/5/2025     | Depth: 0.0' - 5.0'      |
|  | Test Number: ABC   | Preparation: Remolded   | Elevation: 91.2         |
|  | Description: SILTY, CLAYEY SAND (SC-SM/A-2-4) LL=17, PL=13, PI=4, %200=23.8            |                         |                         |
|  | Remarks: Max Dry Density=124.8 pcf, OMC=9.8%, Samples Molded at 95% of Max Dry Density |                         |                         |

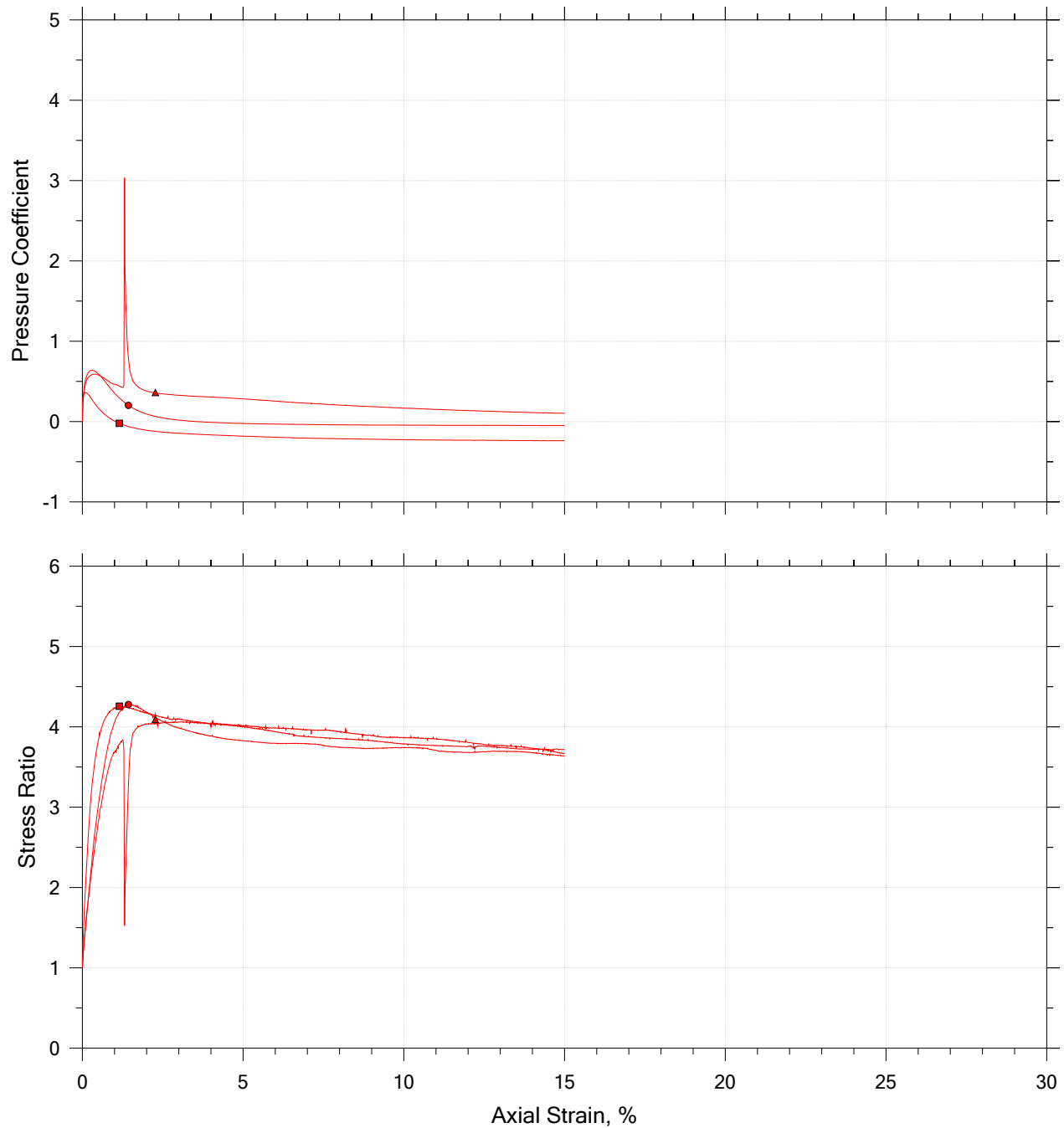
# Consolidated Undrained by AASHTO T297




|   | Sample No. | Test No. | Depth       | Tested By | Test Date | Checked By | Check Date | Test File                      |
|---|------------|----------|-------------|-----------|-----------|------------|------------|--------------------------------|
| ■ | 25-0589    | A        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestA.dat |
| ● | 25-0589    | B        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestB.dat |
| ▲ | 25-0589    | C        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestC.dat |

|   |  |                         |                         |
|---|--|-------------------------|-------------------------|
|  | Project Name: S-17-58 over Beaverdam Creek   | Location: Dillon County | Project Number: P043715 |
|   | Boring Number: BS-1  | Tester: RMC             | Checker: WAP/ WJG       |
|   | Sample Number: 25-0589   | Test Date: 3/5/2025     | Depth: 0.0' - 5.0'      |
|   | Test Number: ABC   | Preparation: Remolded   | Elevation: 91.2         |
|   | Description: SILTY, CLAYEY SAND (SC-SM/A-2-4) LL=17, PL=13, PI=4, %200=23.8            |                         |                         |
|   | Remarks: Max Dry Density=124.8 pcf, OMC=9.8%, Samples Molded at 95% of Max Dry Density |                         |                         |

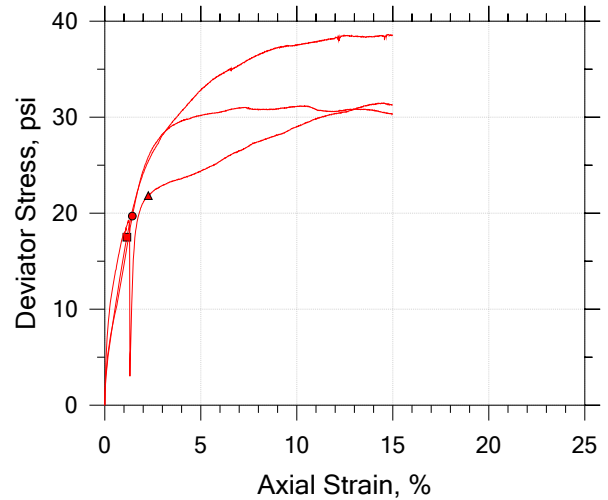
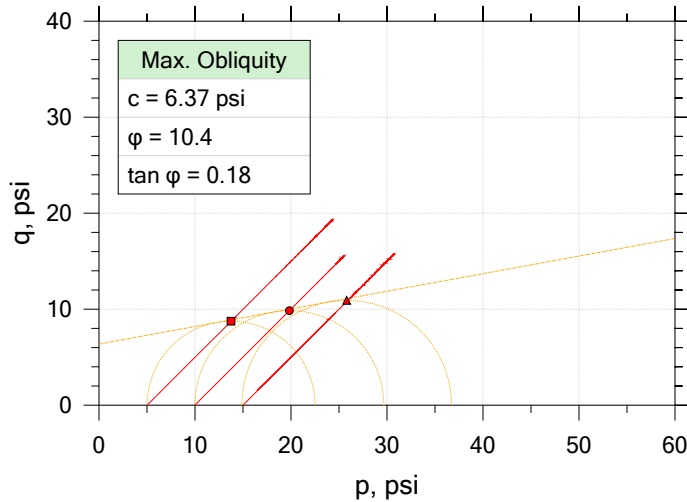
## Consolidated Undrained by AASHTO T297



|   | Sample No. | Test No. | Depth       | Tested By | Test Date | Checked By | Check Date | Test File                      |
|---|------------|----------|-------------|-----------|-----------|------------|------------|--------------------------------|
| ■ | 25-0589    | A        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestA.dat |
| ● | 25-0589    | B        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestB.dat |
| ▲ | 25-0589    | C        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestC.dat |

|   |  |                         |                         |
|---|--|-------------------------|-------------------------|
|  | Project Name: S-17-58 over Beaverdam Creek   | Location: Dillon County | Project Number: P043715 |
|   | Boring Number: BS-1  | Tester: RMC             | Checker: WAP/ WJG       |
|   | Sample Number: 25-0589   | Test Date: 3/5/2025     | Depth: 0.0' - 5.0'      |
|   | Test Number: ABC   | Preparation: Remolded   | Elevation: 91.2         |
|   | Description: SILTY, CLAYEY SAND (SC-SM/A-2-4) LL=17, PL=13, PI=4, %200=23.8            |                         |                         |
|   | Remarks: Max Dry Density=124.8 pcf, OMC=9.8%, Samples Molded at 95% of Max Dry Density |                         |                         |

## Consolidated Undrained by AASHTO T297

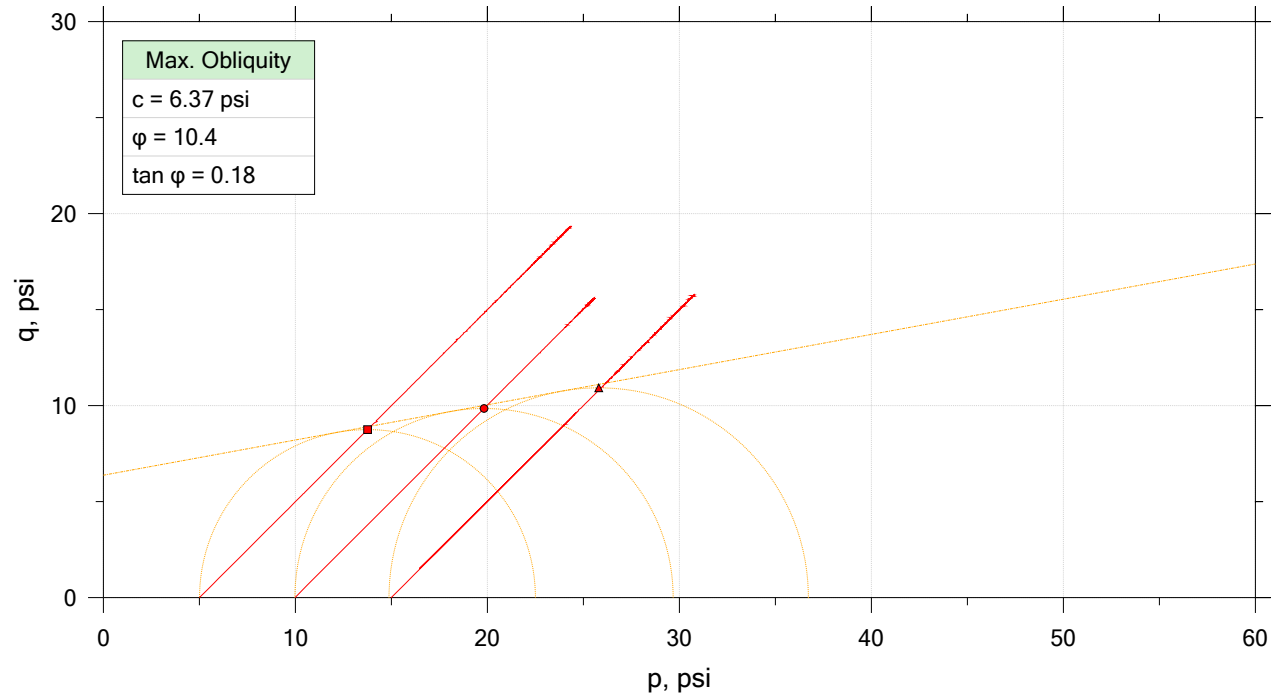
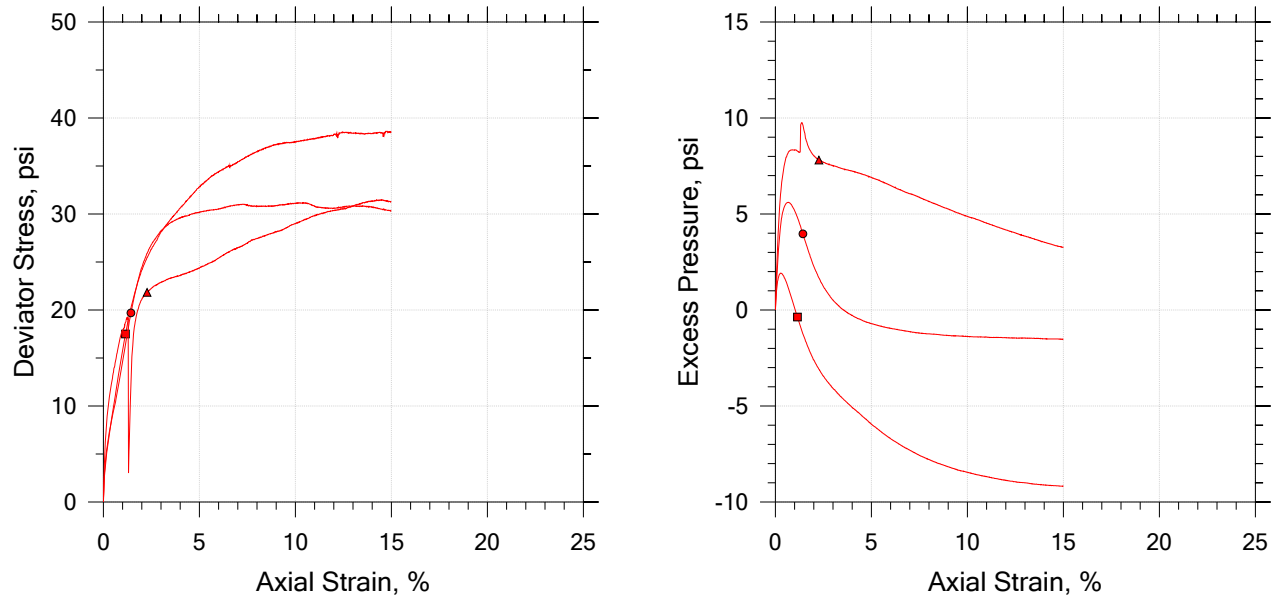


|  |             |             |             |  |
|--|-------------|-------------|-------------|--|
| Symbol   | ■           | ●           | ▲           |  |
| Sample ID  | 25-0589     | 25-0589     | 25-0589     |  |
| Depth  | 0.0' - 5.0' | 0.0' - 5.0' | 0.0' - 5.0' |  |
| Test Number                                      | A           | B           | C           |  |
| Initial  |             |             |             |  |
| Height, in                                       | 6.000       | 6.000       | 6.000       |  |
| Diameter, in                                     | 2.800       | 2.800       | 2.800       |  |
| Moisture Content (from Cuttings), %              | 9.6         | 9.6         | 9.3         |  |
| Dry Density, pcf                                 | 119.        | 119.        | 119.        |  |
| Saturation (Wet Method), %                       | 62.8        | 62.8        | 61.5        |  |
| Void Ratio                                       | 0.409       | 0.408       | 0.405       |  |
| Final  |             |             |             |  |
| Moisture Content, %                              | 14.8        | 14.4        | 14.4        |  |
| Dry Density, pcf                                 | 120.        | 121.        | 121.        |  |
| Cross-Sectional Area (Method A), in <sup>2</sup> | 6.117       | 6.094       | 6.096       |  |
| Saturation, %                                    | 100.0       | 100.0       | 100.0       |  |
| Void Ratio                                       | 0.395       | 0.387       | 0.385       |  |
| Back Pressure, psi                               | 101.0       | 101.0       | 101.0       |  |
| Vertical Effective Consolidation Stress, psi     | 4.994       | 9.971       | 14.95       |  |
| Horizontal Effective Consolidation Stress, psi   | 5.005       | 9.982       | 14.99       |  |
| Vertical Strain after Consolidation, %           | 0.08581     | 0.2127      | 0.3075      |  |
| Volumetric Strain after Consolidation, %         | 0.3007      | 0.6418      | 1.066       |  |
| Time to 50% Consolidation, min                   | 0.3000      | 0.2000      | 0.2200      |  |
| Shear Strength, psi                              | 8.748       | 9.849       | 10.92       |  |
| Strain at Failure, %                             | 1.15        | 1.43        | 2.27        |  |
| Strain Rate, %/min                               | 0.0005000   | 0.0005000   | 0.0005000   |  |
| Deviator Stress at Failure, psi                  | 17.50       | 19.70       | 21.84       |  |
| Effective Minor Principal Stress at Failure, psi | 5.372       | 6.008       | 7.063       |  |
| Effective Major Principal Stress at Failure, psi | 22.87       | 25.71       | 28.90       |  |
| B-Value  | 0.94        | 0.87        | 0.93        |  |


Notes:  
 - Before Shear Saturation set to 100% for phase calculation.  
 - Moisture Content determined by ASTM D2216.  
 - Atterberg Limits determined by ASTM D4318.  
 - 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: S-17-58 over Beaverdam Creek   | Location: Dillon County | Project Number: P043715 |
|  | Boring Number: BS-1  | Tester: RMC             | Checker: WAP/ WJG       |
|  | Sample Number: 25-0589   | Test Date: 3/5/2025     | Depth: 0.0' - 5.0'      |
|  | Test Number: ABC   | Preparation: Remolded   | Elevation: 91.2         |
|  | Description: SILTY, CLAYEY SAND (SC-SM/A-2-4) LL=17, PL=13, PI=4, %200=23.8            |                         |                         |
|  | Remarks: Max Dry Density=124.8 pcf, OMC=9.8%, Samples Molded at 95% of Max Dry Density |                         |                         |

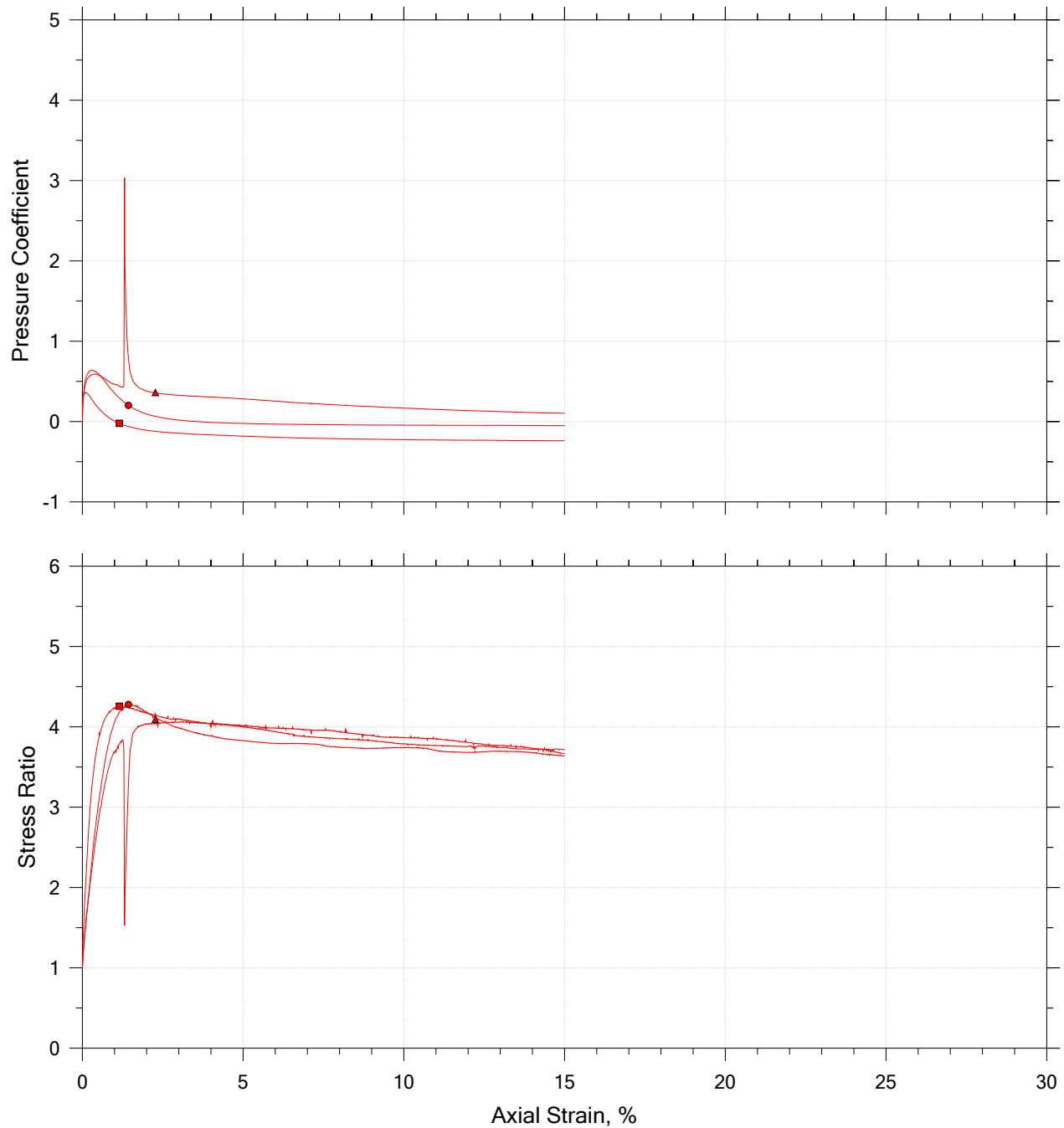
## Consolidated Undrained by AASHTO T297




|   | Sample No. | Test No. | Depth       | Tested By | Test Date | Checked By | Check Date | Test File                      |
|---|------------|----------|-------------|-----------|-----------|------------|------------|--------------------------------|
| ■ | 25-0589    | A        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestA.dat |
| ● | 25-0589    | B        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestB.dat |
| ▲ | 25-0589    | C        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestC.dat |

|   |  |                         |                         |
|---|--|-------------------------|-------------------------|
|  | Project Name: S-17-58 over Beaverdam Creek   | Location: Dillon County | Project Number: P043715 |
|   | Boring Number: BS-1  | Tester: RMC             | Checker: WAP/ WJG       |
|   | Sample Number: 25-0589   | Test Date: 3/5/2025     | Depth: 0.0' - 5.0'      |
|   | Test Number: ABC   | Preparation: Remolded   | Elevation: 91.2         |
|   | Description: SILTY, CLAYEY SAND (SC-SM/A-2-4) LL=17, PL=13, PI=4, %200=23.8            |                         |                         |
|   | Remarks: Max Dry Density=124.8 pcf, OMC=9.8%, Samples Molded at 95% of Max Dry Density |                         |                         |

## Consolidated Undrained by AASHTO T297



|   | Sample No. | Test No. | Depth       | Tested By | Test Date | Checked By | Check Date | Test File                      |
|---|------------|----------|-------------|-----------|-----------|------------|------------|--------------------------------|
| ■ | 25-0589    | A        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestA.dat |
| ● | 25-0589    | B        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestB.dat |
| ▲ | 25-0589    | C        | 0.0' - 5.0' | RMC       | 3/5/2025  | WAP/ WJG   | 3/11/2025  | G7100.010.00002_BS-1_TestC.dat |

|   |  |                         |                         |
|---|--|-------------------------|-------------------------|
|  | Project Name: S-17-58 over Beaverdam Creek   | Location: Dillon County | Project Number: P043715 |
|   | Boring Number: BS-1  | Tester: RMC             | Checker: WAP/ WJG       |
|   | Sample Number: 25-0589   | Test Date: 3/5/2025     | Depth: 0.0' - 5.0'      |
|   | Test Number: ABC   | Preparation: Remolded   | Elevation: 91.2         |
|   | Description: SILTY, CLAYEY SAND (SC-SM/A-2-4) LL=17, PL=13, PI=4, %200=23.8            |                         |                         |
|   | Remarks: Max Dry Density=124.8 pcf, OMC=9.8%, Samples Molded at 95% of Max Dry Density |                         |                         |
|   |  |                         |                         |



# INDEX PROPERTIES VERSUS DEPTH

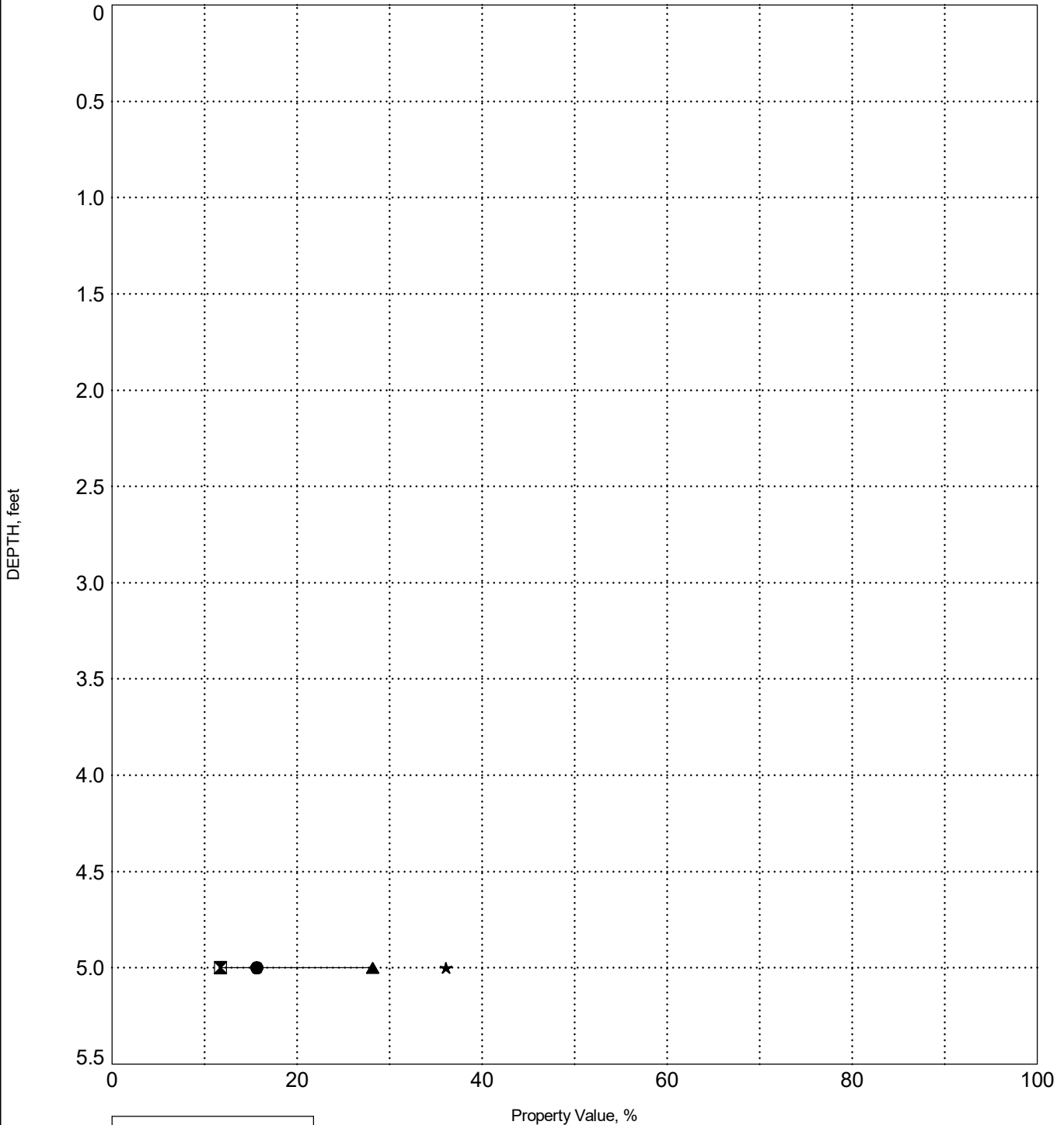
PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon

SURFACE ELEVATION: N/A

## BORING BS-2

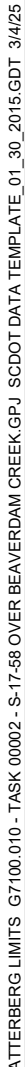


| LEGEND |               |
|--------|---------------|
| ●      | Water Content |
| ☒      | Plastic Limit |
| ▲      | Liquid Limit  |
| ★      | Fines         |





**PROJECT COUNTY** Dillon

[illegible]

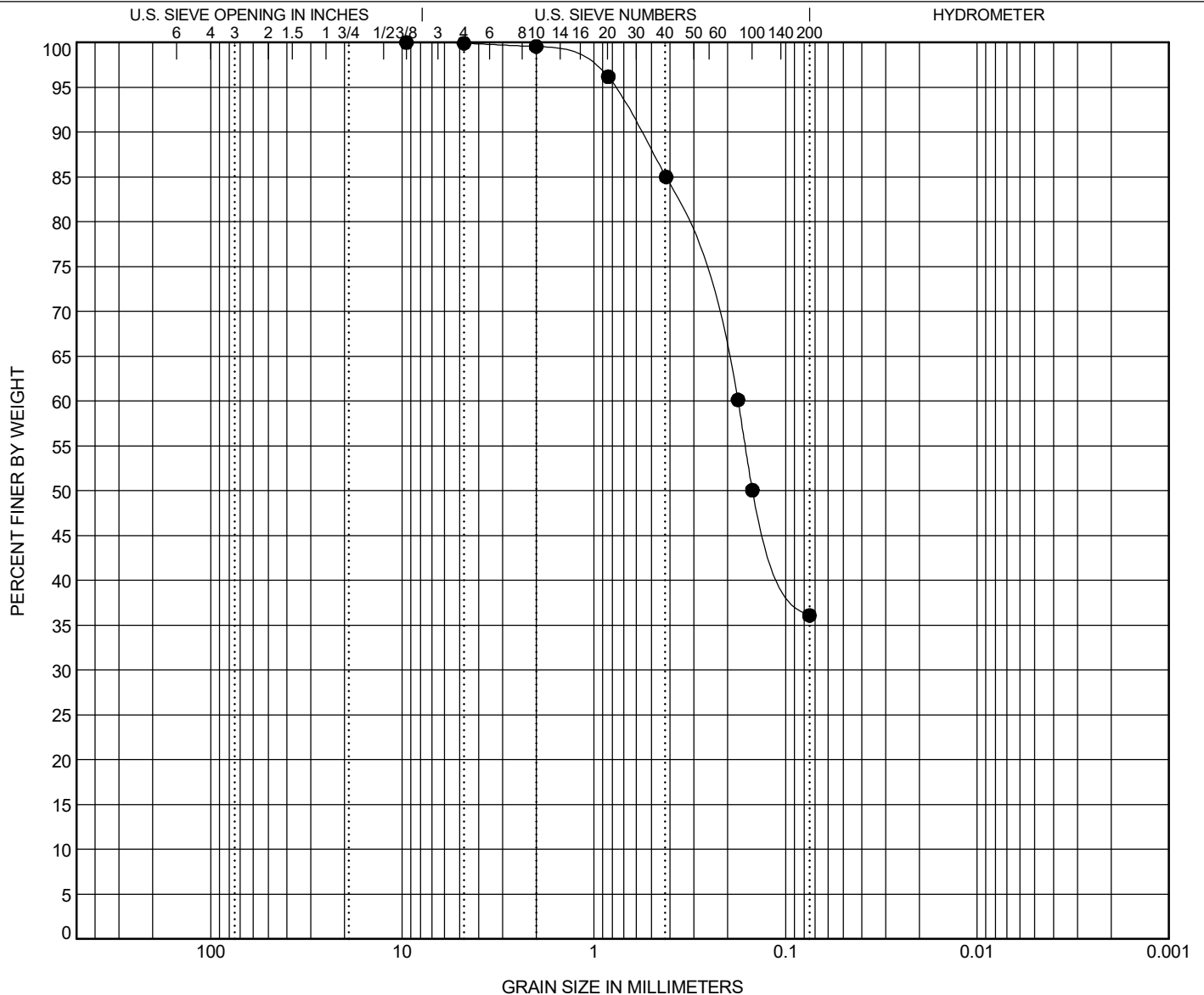


# GRAIN SIZE DISTRIBUTION

PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon



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

| BOREHOLE | DEPTH | Classification       |       |     |     |         | LL    | PL    | PI | Cc    | Cu |
|----------|-------|----------------------|-------|-----|-----|---------|-------|-------|----|-------|----|
| ● BS-2   | 5.0   | CLAYEY SAND (SC/A-6) |       |     |     |         | 28    | 12    | 16 |       |    |
|          |       |                      |       |     |     |         |       |       |    |       |    |
|          |       |                      |       |     |     |         |       |       |    |       |    |
|          |       |                      |       |     |     |         |       |       |    |       |    |
| BOREHOLE | DEPTH | D90                  | D60   | D30 | D10 | %Gravel | %Sand | %Silt |    | %Clay |    |
| ● BS-2   | 5.0   | 0.573                | 0.177 |     |     | 0.1     | 63.8  | 36.1  |    |       |    |
|          |       |                      |       |     |     |         |       |       |    |       |    |
|          |       |                      |       |     |     |         |       |       |    |       |    |
|          |       |                      |       |     |     |         |       |       |    |       |    |

GRAIN SIZE G7100.010 - TASK 00002 - S-17-58 OVER BEAVERDAM CREEK.GPJ SCDOT DATA TEMPLATE\_01\_30\_2015.GDT 3/4/25

**F&ME CONSULTANTS, INC**  
**211 Business Park Blvd.**  
**Columbia, SC 29203**

**MOISTURE CONTENT DETERMINATION**  
**(AASHTO T265)**

|                             |                              |                          |           |
|-----------------------------|------------------------------|--------------------------|-----------|
| <b>PROJECT:</b>             | S-17-58 over Beaverdam Creek | <b>SCDOT PROJECT ID:</b> | P043715   |
| <b>SAMPLE NUMBER:</b>       | 25-0590                      | <b>DATE REQUESTED:</b>   | 2/26/2025 |
| <b>DESCRIPTION OF SOIL:</b> | CLAYEY SAND (SC/A-6)         |                          |           |
| <b>TESTED BY:</b>           | AG & AB                      | <b>DATE OF TESTING:</b>  | 2/27/2025 |
| <b>WEIGHED BY:</b>          | TE                           | <b>DATE OF WEIGHING:</b> | 2/28/2025 |

|                   |           |  |  |  |  |
|-------------------|-----------|--|--|--|--|
| BORING NO.        | BS-2      |  |  |  |  |
| SAMPLE NO.        | --        |  |  |  |  |
| SAMPLE DEPTH      | 0.0 - 5.0 |  |  |  |  |
| WATER CONTENT, W% | 15.6      |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

|                   |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| BORING NO.        |  |  |  |  |  |
| SAMPLE NO.        |  |  |  |  |  |
| SAMPLE DEPTH      |  |  |  |  |  |
| WATER CONTENT, W% |  |  |  |  |  |

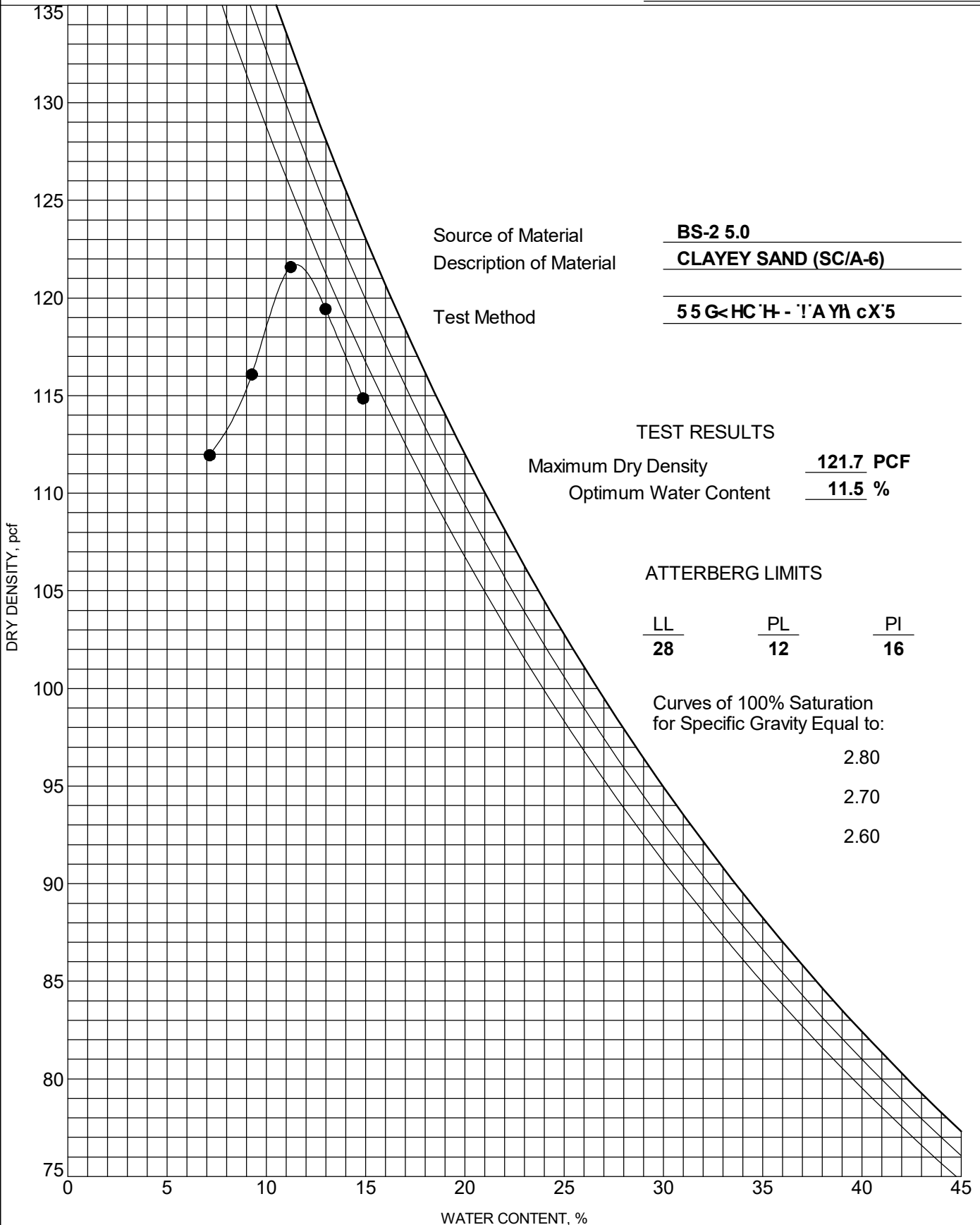


# MOISTURE-DENSITY RELATIONSHIP

PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon



# CALIFORNIA BEARING RATIO (CBR) AASHTO T193

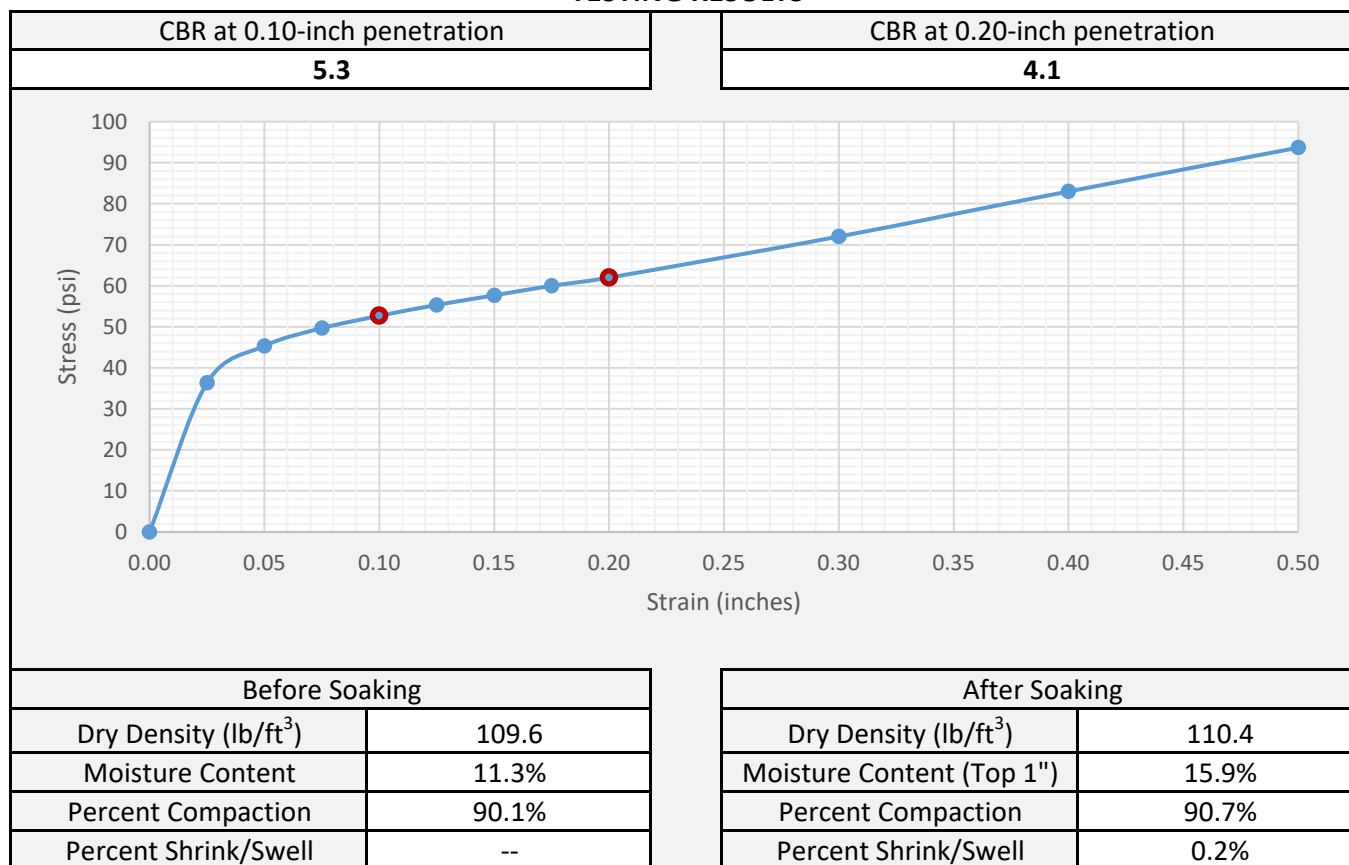
## SAMPLE INFORMATION

|                  |                             |                |         |               |                        |
|------------------|-----------------------------|----------------|---------|---------------|------------------------|
| Project Name     | S-17-58 RBO Beaverdam Creek |                |         | Project No.   | G7100.009 - Task 00020 |
| Sample Location  | BS-2                        |                |         | FME Lab ID    | 25-0590                |
| Soil Description | Clayey SAND (SC/A-6)        |                |         | Depth/Elev.   | 0.0 - 5.0              |
| Date Sampled     | --                          | Sampled By:    | JTP     | Date Received | 2/26/2025              |
| Date Test Began  | 3/6/2025                    | Date Completed | 3/10/25 | Tested By     | DH                     |

## MOLDING CHARACTERISTICS


|                                       |                       |                              |      |
|---------------------------------------|-----------------------|------------------------------|------|
| Method                                | AASHTO T99 - Method A | % Retained on 3/4" Sieve     | 0%   |
| Max Dry Density (lb/ft <sup>3</sup> ) | 121.7                 | Optimum Moisture Content (%) | 11.5 |
| Soak Time (hr)                        | 96                    | Surcharge Weight (lb)        | 10.0 |

## TESTING RESULTS



## ADDITIONAL COMMENTS

Target %Compaction = 90%

|   |   |  |                |
|---|---|--|----------------|
|  | <b>F&amp;ME Consultants, Inc.</b><br><small>211 Business Park Blvd., Columbia, South Carolina 29203</small> |  | <b>3/11/25</b> |
|   |   | Reviewed By  | Date           |

# CALIFORNIA BEARING RATIO (CBR) AASHTO T193

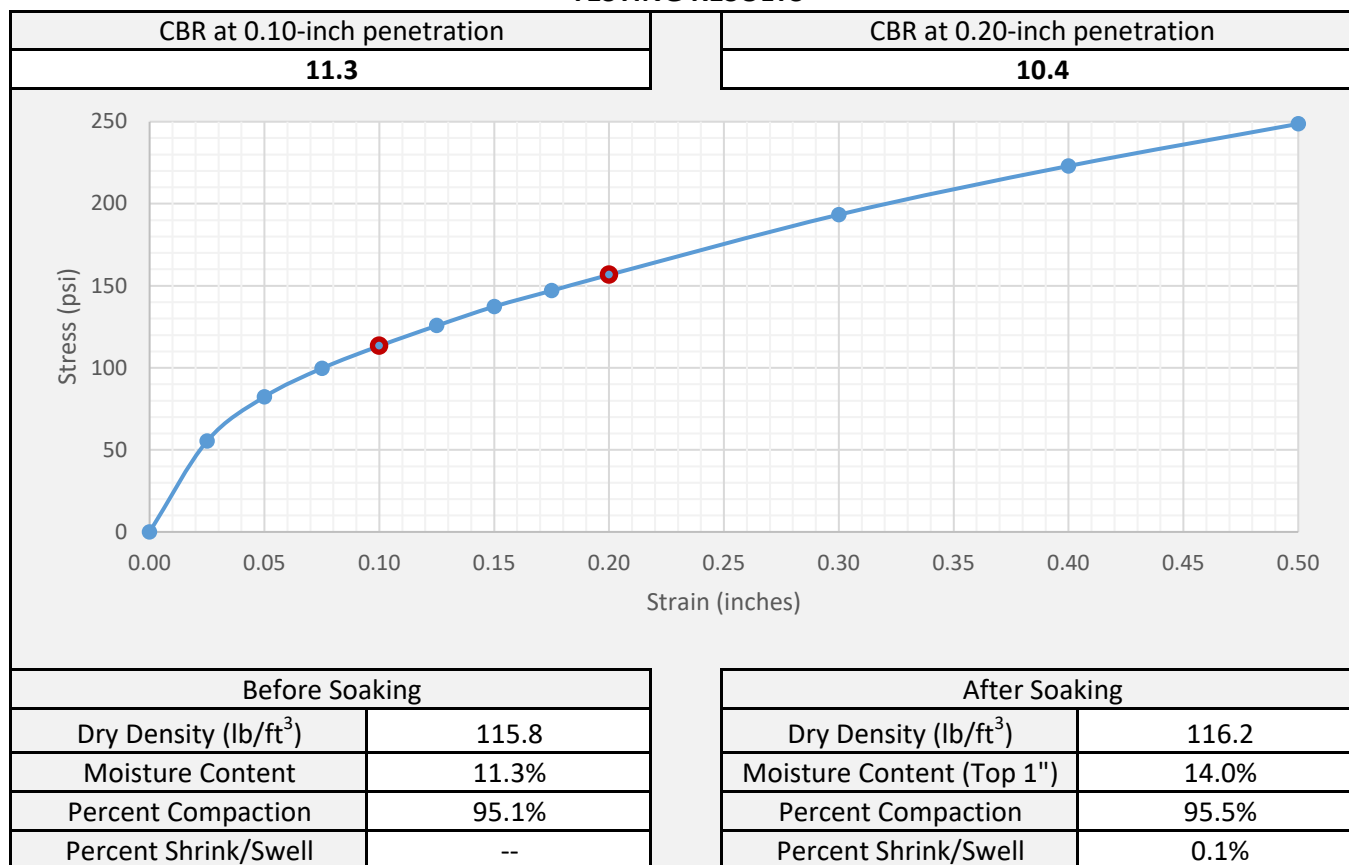
## SAMPLE INFORMATION

|                  |                             |                |         |               |                        |
|------------------|-----------------------------|----------------|---------|---------------|------------------------|
| Project Name     | S-17-58 RBO Beaverdam Creek |                |         | Project No.   | G7100.009 - Task 00020 |
| Sample Location  | BS-2                        |                |         | FME Lab ID    | 25-0590                |
| Soil Description | Clayey SAND (SC/A-6)        |                |         | Depth/Elev.   | 0.0 - 5.0              |
| Date Sampled     | --                          | Sampled By:    | JTP     | Date Received | 2/26/2025              |
| Date Test Began  | 3/6/2025                    | Date Completed | 3/10/25 | Tested By     | DH                     |

## MOLDING CHARACTERISTICS

|                                       |                       |                              |      |
|---------------------------------------|-----------------------|------------------------------|------|
| Method                                | AASHTO T99 - Method A | % Retained on 3/4" Sieve     | 0%   |
| Max Dry Density (lb/ft <sup>3</sup> ) | 121.7                 | Optimum Moisture Content (%) | 11.5 |
| Soak Time (hr)                        | 96                    | Surcharge Weight (lb)        | 10.0 |

## TESTING RESULTS



## ADDITIONAL COMMENTS

Target %Compaction = 95%

|   |   |   |                       |
|---|---|---|-----------------------|
|  | <b>F&amp;ME Consultants, Inc.</b><br><small>211 Business Park Blvd., Columbia, South Carolina 29203</small> | <br><hr/> Reviewed By | <hr/> 3/11/25<br>Date |
|   |   |   |                       |

# CALIFORNIA BEARING RATIO (CBR) AASHTO T193

## SAMPLE INFORMATION

|                  |                             |                |         |               |                        |
|------------------|-----------------------------|----------------|---------|---------------|------------------------|
| Project Name     | S-17-58 RBO Beaverdam Creek |                |         | Project No.   | G7100.009 - Task 00020 |
| Sample Location  | BS-2                        |                |         | FME Lab ID    | 25-0590                |
| Soil Description | Clayey SAND (SC/A-6)        |                |         | Depth/Elev.   | 0.0 - 5.0              |
| Date Sampled     | --                          | Sampled By:    | JTP     | Date Received | 2/26/2025              |
| Date Test Began  | 3/6/2025                    | Date Completed | 3/10/25 | Tested By     | DH                     |

## MOLDING CHARACTERISTICS

|                                       |                       |                              |      |
|---------------------------------------|-----------------------|------------------------------|------|
| Method                                | AASHTO T99 - Method A | % Retained on 3/4" Sieve     | 0%   |
| Max Dry Density (lb/ft <sup>3</sup> ) | 121.7                 | Optimum Moisture Content (%) | 11.5 |
| Soak Time (hr)                        | 96                    | Surcharge Weight (lb)        | 10.0 |

## TESTING RESULTS

|   |        |                                   |        |
|---|--------|-----------------------------------|--------|
| CBR at 0.10-inch penetration  |        | CBR at 0.20-inch penetration      |        |
| 14.8  |        | 15.5                              |        |
| <p>The graph plots Stress (psi) on the y-axis (0 to 450) against Strain (inches) on the x-axis (0.00 to 0.50). A blue curve represents the soil's stress-strain behavior. Two specific points are highlighted with red dots: one at 0.10 inches strain (150 psi) and another at 0.20 inches strain (230 psi). The curve starts at (0,0) and rises steadily, reaching approximately 430 psi at 0.50 inches strain.</p> |        |                                   |        |
| Before Soaking  |        | After Soaking                     |        |
| Dry Density (lb/ft <sup>3</sup> )   | 121.8  | Dry Density (lb/ft <sup>3</sup> ) | 121.7  |
| Moisture Content  | 11.3%  | Moisture Content (Top 1")         | 13.0%  |
| Percent Compaction  | 100.0% | Percent Compaction                | 100.0% |
| Percent Shrink/Swell  | --     | Percent Shrink/Swell              | 0.1%   |

## ADDITIONAL COMMENTS

Target %Compaction = 100%

|  |   |  |         |
|--|---|--|---------|
|  | <b>F&amp;ME Consultants, Inc.</b><br><small>211 Business Park Blvd., Columbia, South Carolina 29203</small> |  | 3/11/25 |
|  |   |  | Date    |

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**

## **SECTION 4      LABORATORY TEST RESULTS**

### **SECTION 4C      CORROSION SERIES TESTING**



# CORROSION SERIES SUMMARY

PAGE 1 OF 1



PROJECT ID P043715

PROJECT NAME S-17-58 over Beaverdam Creek

PROJECT COUNTY Dillon

| Borehole | Sample No. | Sample Depth<br>(ft.) | pH of Soil in<br>Distilled Water | Electrical Resistivity<br>( $\Omega$ -cm) | Chloride Content<br>(mg/kg (ppm)) | Sulfate Content<br>(mg/kg (ppm)) |
|----------|------------|-----------------------|----------------------------------|---|-----------------------------------|----------------------------------|
| B-1      | SS-1/SS-2  | 0.5 – 4.0             | 5.3                              | 7,973                                     | 28.9                              | 49.6                             |

**pH DETERMINATION  
(AASHTO T289)**

|                        |                              |                         |           |
|------------------------|------------------------------|-------------------------|-----------|
| Project Name:          | S-17-58 over Beaverdam Creek | SCDOT Project Number:   | P043715   |
| FME Project No.:       | G7100.010 - Task 00002       | Sample Elevation/Depth: | B-1       |
| Description of Sample: | Soil (Composite)             | Date Received           | 2/28/2025 |
| Tested By:             | JM                           | Date Tested:            | 3/7/2025  |

|                    |           |
|--------------------|-----------|
| Boring ID          | B-1       |
| Boring Depth (ft.) | 0.5 - 4.0 |
| FME Lab ID No.     | 25-0632   |
| pH Value           | 5.26      |
| Temperature (°C)   | 20.8      |

Date Reviewed: 3/12/2025Reviewed By: A. Abernethy

**SOIL RESISTIVITY  
(AASHTO T288)**

|                   |                              |                 |           |
|-------------------|------------------------------|-----------------|-----------|
| Project Name:     | S-17-58 over Beaverdam Creek | Project ID:     | P043715   |
| Location:         | B-1                          | FME Lab ID No.: | 25-0632   |
| Sampled By:       | WAP                          | Date Sampled:   | 2/26/2025 |
| Soil Description: | Soil (Composite)             | Date Received:  | 2/27/2025 |
| Tested By:        | JM                           | Date Tested:    | 3/7/2025  |

| Boring No. | Sample Depth (ft.) | Minimum Soil Resistivity,<br>$\Omega$ -cm |
|------------|--------------------|---|
| B-1        | 0.5 - 4.0          | 7,973                                     |

Date Reviewed: 3/7/2025 Reviewed By: A. Abernethy

## CHLORIDE ION CONTENT IN SOILS

AASHTO T 291 - 94 (2018) (Method B)

Client: F&ME Consultants, Inc.  
 Client Reference: Beaverdam Cr. G7100.010  
 Project No.: 2025-160-001  
 Lab ID: 2025-160-001-001

Boring No.: B-1  
 Depth (ft): 0.5-4.0'  
 Sample No.: SS-1 & SS-2  
 Description: Brown

( - # 10 Sieve material )

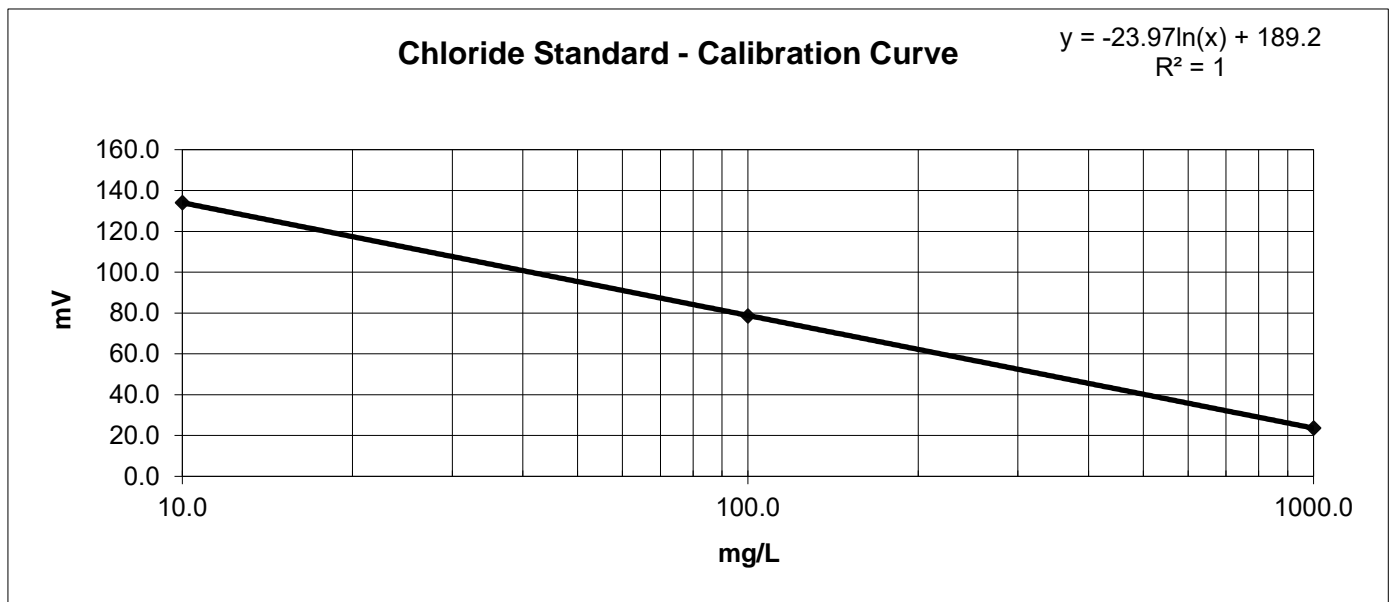
### CHLORIDE STANDARD: CALIBRATION CURVE

| STANDARD    | MILLIVOLTS<br>(mV) |
|-------------|--------------------|
| 10.0 mg/L   | 134.1              |
| 100.0 mg/L  | 78.6               |
| 1000.0 mg/L | 23.7               |

### MEASUREMENT OF CHLORIDES

|                              |       |               |               |
|------------------------------|-------|---------------|---------------|
| Sample Weight (g):           | 100.0 | CONCENTRATION | CONCENTRATION |
| Water added to Sample (ml):  | 100.0 | (mg/L)        | (mg/kg)       |
| Size of Sample Aliquot (ml): | 25.0  |               |               |
| Sample Reading (mV):         | 108.6 | 28.85         | 28.85         |

Notes: 1) Samples and standards were buffered by the addition of an equal volume of the 0.2 M KNO<sub>3</sub> solution (1:1 volume).  
 2) Samples were dried for a minimum of 12 hours at 110 °F. 5°C.



Notes:

Tested By JAM

Date 3/26/25

Checked By EG

Date 3/27/25

## Water-Soluble Sulfate Ion Content in Soil

### AASHTO T 290-95 (2020)

|                   |                         |                         |
|-------------------|-------------------------|-------------------------|
| Client:           | F&ME Consultants, Inc.  | Boring No.: B-1         |
| Client Reference: | Beaverdam Cr. G7100.010 | Depth (ft): 0.5-4.0'    |
| Project No.:      | 2025-160-001            | Sample No.: SS-1 & SS-2 |
| Lab ID:           | 2025-160-001-001        | Soil Description: Brown |

#### Sulfate Standard - Calibration Curve Spectrophotometer Readings

| <u>Sulfate Ion Concentrations (mg/L)</u> |            |      |      |      |      |      |      |       |
|--|------------|------|------|------|------|------|------|-------|
| 0.0                                      | 4.0        | 10.0 | 20.0 | 30.0 | 40.0 | 60.0 | 80.0 | 100.0 |
| <u>Spectrophotometer Readings (FAU)</u>  |            |      |      |      |      |      |      |       |
| Underrange                               | Underrange | 8    | 17   | 44   | 68   | 129  | 184  | 227   |

#### Measurement of Barium Chloride Turbidity

(Sample contains 5.0 mL NaCl solution and 0.3 g BaCl<sub>2</sub>·2H<sub>2</sub>O)

**Sample Weight (g):** 100.0  
**Water added to Sample (mL):** 300.0  
**Size of Sample Aliquot (mL):** 50.0  
**Sample Reading (FAU):** 14

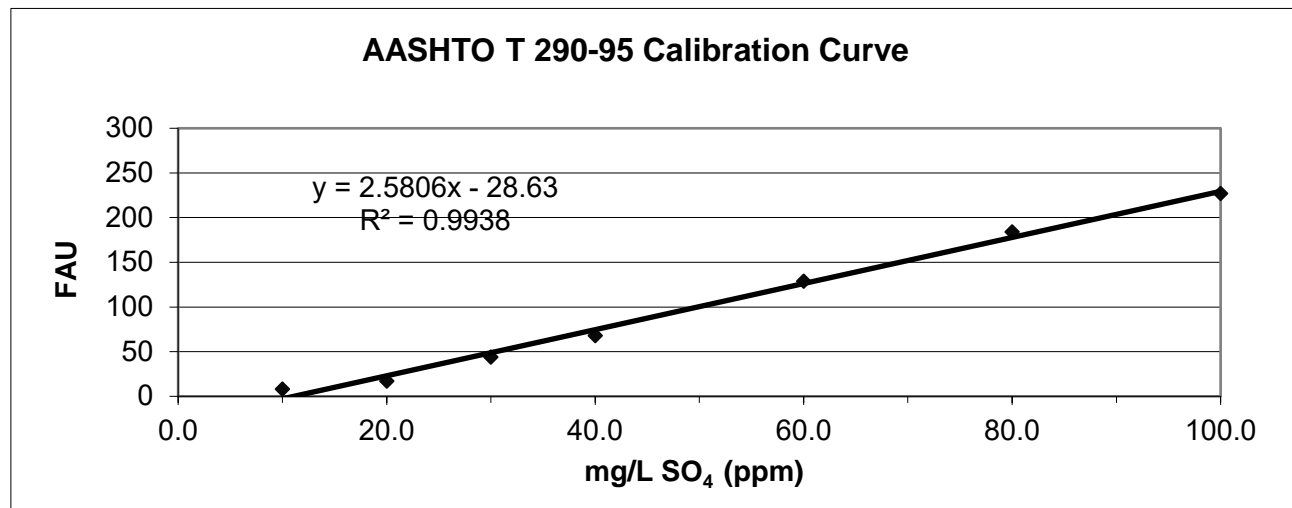
**Sample Diluted:** No

#### Sample Moisture Content

**Tare Number:** 1744  
**Weight of Tare & Wet Sample (g):** 229.71  
**Weight of Tare & Dry Sample (g):** 229.51  
**Weight of Tare (g):** 82.90  
**Weight of Water (g):** 0.20  
**Weight of Dry Sample (g):** 146.61  
**Moisture Content (%):** 0.14

**Sulfate Solution Added (ml):** 0

|  |       |  |
|--|-------|--|
| <b>Sample Sulfate Ion Concentration:</b> | 16.52 | <b>mg/L SO<sub>4</sub> (ppm)</b>                         |
| <b>Sample Sulfate Ion Content:</b>       | 49.6  | <b>mg/Kg SO<sub>4</sub> (not corrected for moisture)</b> |
| <b>Sample Sulfate Ion Content:</b>       | 49.6  | <b>mg/Kg SO<sub>4</sub> (corrected for moisture)</b>     |



|                |               |                |                 |
|----------------|---------------|----------------|-----------------|
| Tested by: JAM | Date: 3/26/25 | Checked by: EG | Date: 3/27/2025 |
|----------------|---------------|----------------|-----------------|

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**

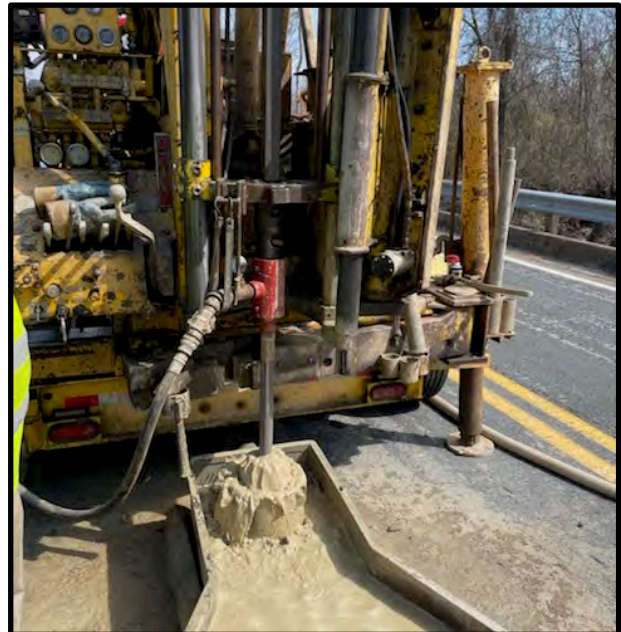
## **SECTION 5**

## **ON-SITE DRILL RIG PHOTOS**

## On-Site Drill Rig Set Up Photographs



**B-1**



**B-2**



**B-3**



**P-1**



## On-Site Drill Rig Set Up Photographs



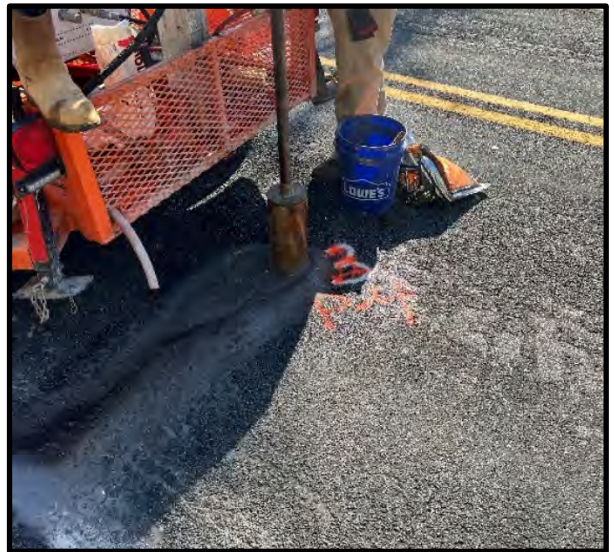
**P-1 (Equipment Failure)**



**P-2**



**P-3**



**P-4**



## On-Site Drill Rig Set Up Photographs



P-5

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**

## **SECTION 6**

## **PAVEMENT CORE PHOTOS**

## Pavement Core Photos



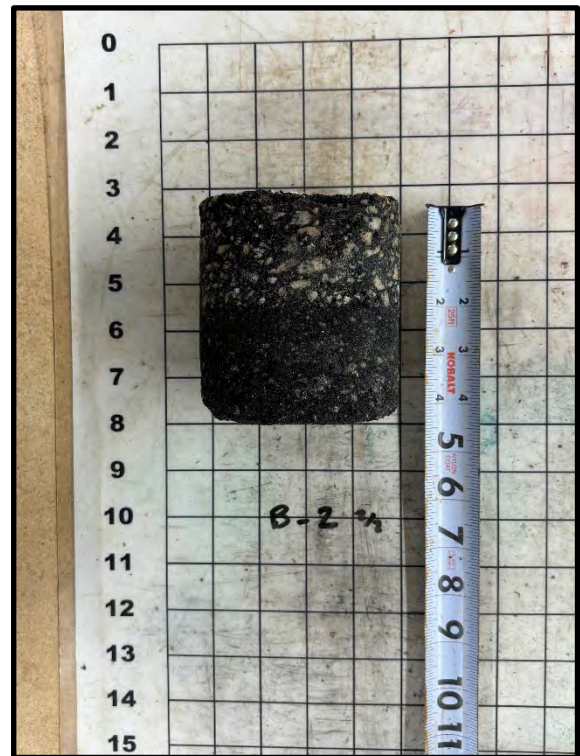
B-1 Side 1



B-1 Side 2



B-2 Side 1



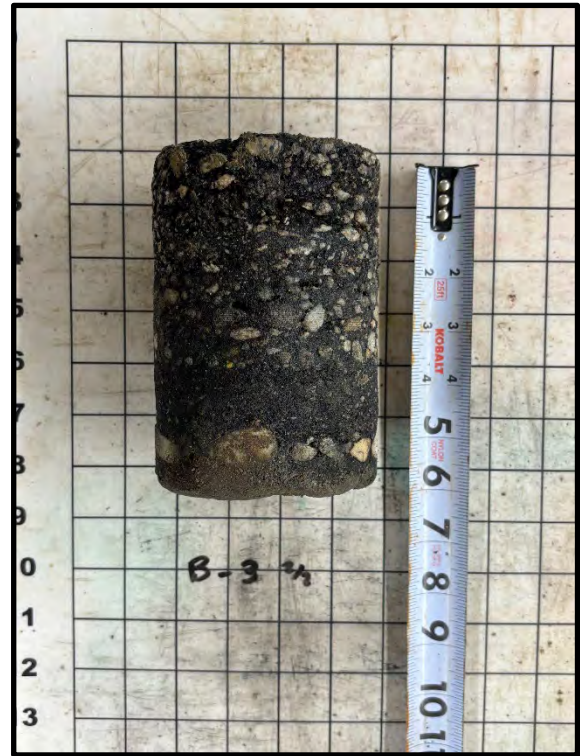
B-2 Side 2



## Pavement Core Photos



B-3 Side 1



B-3 Side 2



P-1 Side 1



P-1 Side 2



## Pavement Core Photos



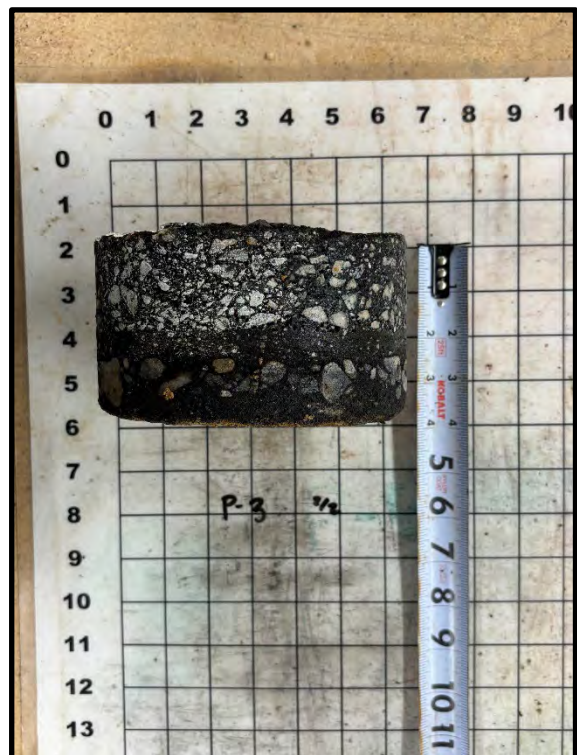
P-2 Side 1



P-2 Side 2



P-3 Side 1



P-3 Side 2



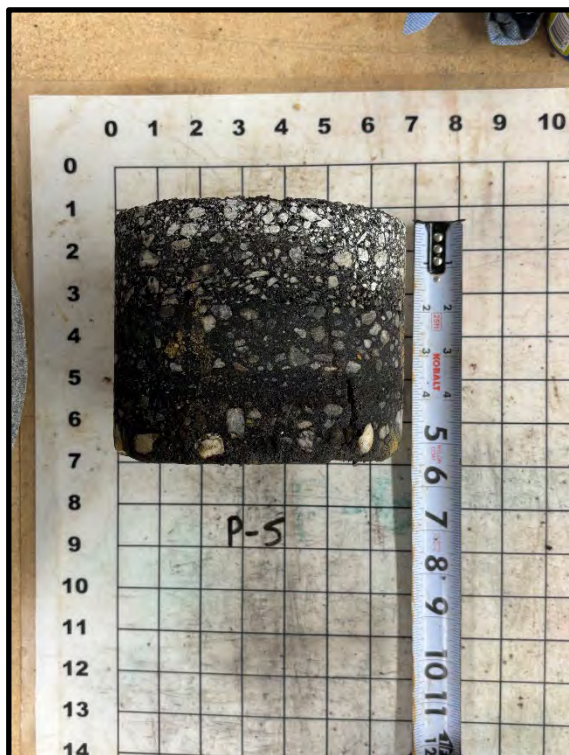
## Pavement Core Photos



P-4 Side 1



P-4 Side 2



P-5 Side 1



P-5 Side 2

## Pavement Core Photos



**P-6**

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

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# **APPENDIX**

## **SECTION 7**

## **SPT HAMMER CALIBRATION**



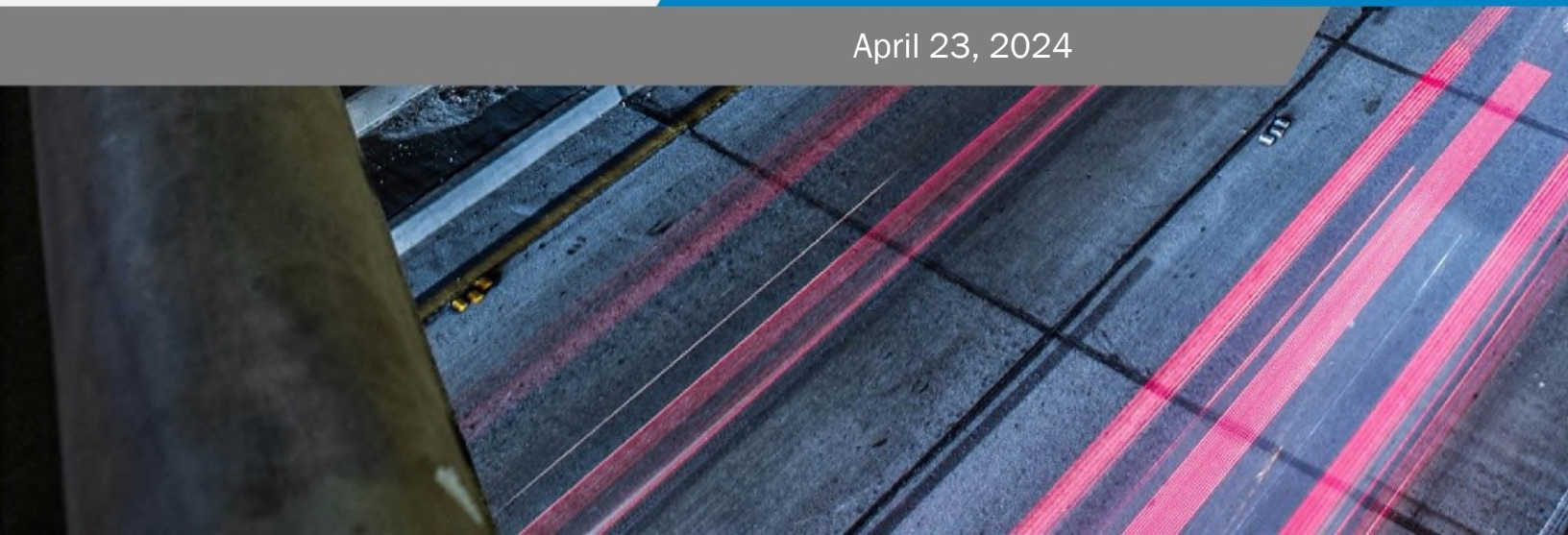


**CAROLINAS  
GEOTECHNICAL  
GROUP**

## **Report of SPT Hammer Energy**

Prepared for:  
Breccia Construction, LLC  
620-B Industrial Way  
Chester, South Carolina 29706

April 23, 2024





2400 Crownpoint Executive Drive  
Suite 800  
Charlotte, NC 28227



(980) 339-8684



contact@carolinasgeotech.com



www.carolinasgeotech.com

April 23, 2024

Mr. Adam J. Shannon  
Breccia Construction, LLC  
620-B Industrial Way  
Chester, South Carolina 29706

SUBJECT: **Report of SPT Hammer Energy**  
Breccia Construction, LLC CME 45B Trailer Rig (SN 303304)  
Chester, South Carolina  
CG2 Project No.: 240021095

Dear Mr. Shannon:

Carolinas Geotechnical Group, PLLC (CG2) has completed the Standard Penetration Test (SPT) energy measurements on the automatic hammer mounted on a Breccia Construction, LLC (Breccia) CME 45B trailer-mounted drill rig with a serial number of 303304, see attached Drill Rig Photo Log. This service was performed by Mr. Robert E. Kral, PE on April 12, 2024. SPT energy testing was performed in general accordance with ASTM D4633 and the most recent revision of the North Carolina Department of Transportation (NCDOT), Geotechnical Engineering Unit's requirements. The testing procedures, equipment used during testing, and detailed results are presented in this report.

CG2 recommends Breccia submit this Report of SPT Hammer Energy to the NCDOT Geotechnical Engineering Unit at [SPT\\_Hammer\\_Energy\\_Submittal@ncdot.gov](mailto:SPT_Hammer_Energy_Submittal@ncdot.gov) for review and approval no later than May 10, 2024.

#### DYNAMIC TESTING METHODOLOGY

Testing was performed using a model SPT (Serial No. 4553 TB) Pile Driving Analyzer™ (PDA) manufactured by Pile Dynamics, Inc. The PDA was used to record and interpret data from two piezoresistive accelerometers (Serial Nos. K10959 and K10960) bolted to a 2-foot long AWJ drill rod (SN 728AWJ) internally instrumented with two strain transducers. The instrumented AWJ drill rod has a cross-sectional area of 1.13 square inches, an outside diameter of approximately 1.75 inches, and an inside diameter of 1.25 inches at the gauge location. The accelerometers and strain gauges, which are mounted on opposing axis near the middle of the instrumented rod, monitor acceleration and strain for each hammer blow. The analyzer converts the data to velocities and forces and computes the maximum transferred hammer energies with the "EFV" method described in ASTM D4633. Preliminary results are recorded and displayed in real-time for each blow. Calibration sheets for the PDA, accelerometers, and the instrumented rod are included in Appendix III.



## Report of SPT Hammer Energy

Chester, South Carolina

CG2 Project No.: 240021095

### TESTING AND OBSERVATIONS

CG2 personnel was on site April 12, 2024 to observe and perform high-strain dynamic testing during SPT sampling on the CME 45B trailer-mounted drill rig operated by D. Harris of Breccia. The measurements were taken during drilling operations at 1817 Lowrys Highway in Chester, South Carolina (Chester County). The approximate coordinates (not professionally surveyed) for the test location are 34.7704252, -81.2454632. No Soil Test Boring Log was maintained. SPT energy measurements were recorded during three intervals at depths of approximately 28½, 33½, and 38½ feet below the existing ground surface. The information presented in the table below summarizes the equipment tested and tooling used during the SPT energy measurements.

**Table 1: SPT Field Data**

| Drill Rig Information                     |              |
|---|--------------|
| Manufacturer                              | CME          |
| Model                                     | 45B          |
| Serial Number                             | 303304       |
| Operator                                  | D. Harris    |
| Carrier                                   | Trailer      |
| Hammer Information                        |              |
| Model / Type                              | CME / Auto   |
| Serial Number                             | N/A          |
| Anvil Height (inches)                     | 11.5         |
| Anvil Diameter (inches)                   | 2.5          |
| Drop Height (inches)                      | 30           |
| Ram Weight (pounds)                       | 140          |
| Ram Serial Number                         | N/A          |
| Drilling and Instrumented Rod Information |              |
| Drill Rod Type                            | AWJ          |
| OD (inches)                               | 1.75         |
| ID (inches)                               | 1.25         |
| Cross-Sectional Area (in <sup>2</sup> )   | 1.13         |
| Typical Lengths (feet)                    | 5            |
| Instrumented Rod Type                     | AWJ (SN 728) |
| OD (inches)                               | 1.75         |
| ID (inches)                               | 1.25         |
| Cross-Sectional Area (in <sup>2</sup> )   | 1.13         |
| Total Instrumented Rod Length (feet)      | 2.00         |
| Length Below Gages (feet)                 | 0.70         |
| Split-Spoon Length (feet)                 | 2.85         |

## Report of SPT Hammer Energy

Chester, South Carolina

CG2 Project No.: 240021095

### DYNAMIC TESTING RESULTS

The total rod length from the instrumentation to the tip of the split-spoon sampler was determined by adding 3.6 feet to the required drill rod length at each sample depth. Based on the test data recorded, the automatic hammer on the CME 45B trailer-mounted drill rig operated at a rate of about 53.3 to 58.8 BPM during dynamic testing. The measured transferred hammer energy (EFV) ranged from 288.7 to 323.1 foot-pounds, which corresponds to Energy Transfer Ratio (ETR) values of 82.5 to 92.3%, respectively. These data ranges are based on the overall minimum and maximum values for the last 12 inches of each sample interval.

The SPT Energy Measurement Data Summary tables in Appendix I present the test data from every hammer blow at each sampling interval along with representative force and velocity traces for each test interval. The reported blow counts, obtained by the drill rig personnel, a summary of the test data, and average computed BPM, EFV, and ETR values are provided in Table 2. The BPM, EFV, and ETR values presented in Table 2 were computed by averaging data from the last 12 inches of each sample interval. Plots and tables of the following are also included in Appendix I and present the test data with depth for each test interval:

- Penetration vs. BLC
- Penetration vs. CSX
- Average ETR vs. Rod Length
- Penetration vs. FMX
- Penetration vs. VMX
- ETR vs. Rod Length
- Penetration vs. EFV
- Penetration vs. ETR

**Table 2: Summary of Dynamic Testing Results**

| Data Set ID     | Sample Depth (ft) | Drill Rod Length (ft) | Instrumentation to Sampler Tip Length (ft) | Blows per 6" Increment / N-value | Soil Sample Description (Piedmont Residual) | Avg. BPM | Avg. EFV (ft-lbs) | Avg. ETR (%) |
|-----------------|-------------------|-----------------------|--|----------------------------------|---|----------|-------------------|--------------|
| 1               | 28½ - 30          | 30                    | 33.6                                       | 4-9-11 / 20                      | SA SILT                                     | 53.8     | 299.4             | 85.5         |
| 2               | 33½ - 35          | 35                    | 38.6                                       | 4-7-10 / 17                      | SA SILT                                     | 58.3     | 311.7             | 89.1         |
| 3               | 38½ - 40          | 40                    | 43.6                                       | 5-7-10 / 17                      | SA SILT                                     | 54.5     | 297.0             | 84.9         |
| Overall Average |                   |                       |  |                                  |   | 55.4     | 302.5             | 86.4         |

The average hammer rate, transferred energy, and transfer ratio were calculated for each depth interval. Per ASTM D4633, only the blows from the final foot of each sample interval (i.e., the blows that determine the N-value) were included when computing the average values shown in Table 2. The overall average transferred hammer energy for the automatic hammer on the CME 45B truck-mounted drill rig (for all the depth intervals included in Table 2) was 302.5 foot-pounds, with an average ETR of 86.4%.

**Report of SPT Hammer Energy**

Chester, South Carolina

CG2 Project No.: 240021095

**LIMITATIONS OF REPORT**

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The information contained in this report were based on the applicable standards of our profession in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

**CLOSING**

CG2 is pleased to have the opportunity to provide these services to you. If you have questions concerning the content of this report, or if CG2 can be of further service, please contact CG2 at (980) 339-8684.

Sincerely,  
**Carolinas Geotechnical Group, PLLC**

DocuSigned by:



F926DBFBA80F4FE...

Pressley M. Perry, EIT  
Staff Professional

DocuSigned by:



8AD703B2A8484F4...

Robert E. Kral, PE  
Geotechnical Design Manager  
NC Registration No. 042642

**Appendices:**

- Appendix I - CME 45B Trailer Rig (SN 303304) SPT Energy Measurements Summary Plots and Tables
- Appendix II - SPT Hammer Energy Field Form (Field Log) and Drill Rig Photo Log
- Appendix III - Instrumented Rod and Accelerometer Calibration Sheets
- Appendix IV - Certificate of Proficiency



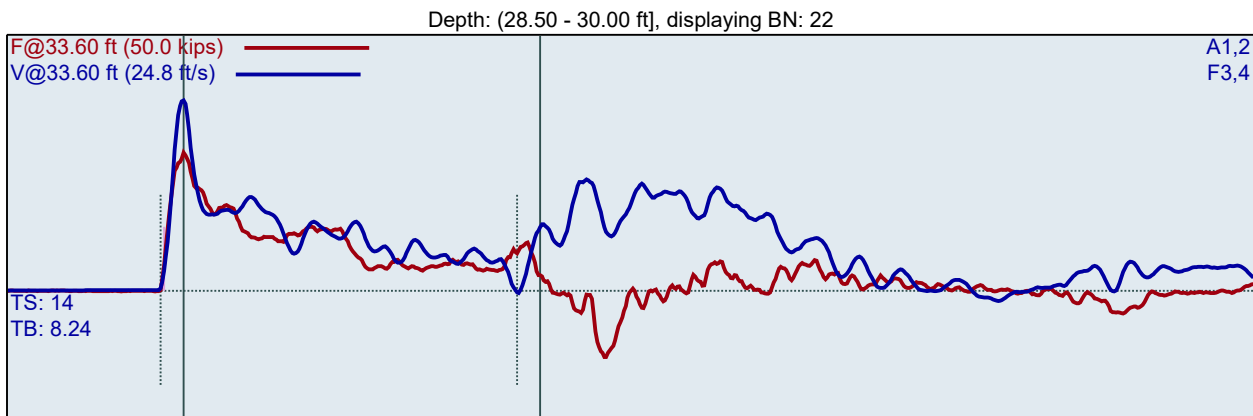
# APPENDIX I

CME 45B (SN 303304)  
REK  
B-2

B-2  
Interval start: 4/12/2024

AR: 1.13 in<sup>2</sup>  
LE: 33.60 ft  
WS: 16807.9 ft/s

SP: 0.492 k/ft<sup>3</sup>  
EM: 30000 ksi



F3 : [728AWJ1] 224.649 PDICAL (1) FF1  
F4 : [728AWJ2] 224.139 PDICAL (1) FF1

A1 (PR): [K10959] 413.827 mv/6.4v/5000g (1) VF1  
A2 (PR): [K10960] 419.894 mv/6.4v/5000g (1) VF1

BPM: Blows/Minute

FMX: Maximum Force

VMX: Maximum Velocity

DMX: Maximum Displacement

CSX: Compression Stress Maximum

DFN: Final Displacement

EFV: Maximum Energy

ETR: Energy Transfer Ratio - Rated

| LP    | BL# | BC  | BPM  | FMX  | VMX  | DMX | CSX  | DFN | EFV   | ETR  |
|-------|-----|-----|------|------|------|-----|------|-----|-------|------|
| ft    |     | /6" | bpm  | kips | ft/s | in  | ksi  | in  | ft-lb | %    |
| 28.63 | 1   | 4   | 8.8  | 27.6 | 15.9 | 2.3 | 24.5 | 1.5 | 291.9 | 83.4 |
| 28.75 | 2   | 4   | 52.7 | 26.6 | 16.0 | 1.7 | 23.5 | 1.5 | 292.4 | 83.5 |
| 28.88 | 3   | 4   | 53.3 | 27.4 | 17.6 | 1.5 | 24.2 | 1.5 | 293.9 | 84.0 |
| 29.00 | 4   | 4   | 53.6 | 27.0 | 15.9 | 1.5 | 23.9 | 1.5 | 288.7 | 82.5 |
| 29.06 | 5   | 9   | 53.4 | 27.4 | 17.4 | 1.3 | 24.3 | 0.7 | 294.5 | 84.1 |
| 29.11 | 6   | 9   | 53.8 | 27.6 | 16.9 | 1.2 | 24.4 | 0.7 | 291.2 | 83.2 |
| 29.17 | 7   | 9   | 54.1 | 27.6 | 17.8 | 1.1 | 24.5 | 0.7 | 296.5 | 84.7 |
| 29.22 | 8   | 9   | 53.3 | 27.3 | 18.3 | 1.1 | 24.1 | 0.7 | 299.4 | 85.5 |
| 29.28 | 9   | 9   | 53.8 | 28.3 | 16.9 | 1.0 | 25.1 | 0.7 | 288.7 | 82.5 |
| 29.33 | 10  | 9   | 53.9 | 28.1 | 17.8 | 1.0 | 24.9 | 0.7 | 295.3 | 84.4 |
| 29.39 | 11  | 9   | 53.5 | 26.9 | 18.1 | 1.0 | 23.8 | 0.7 | 298.1 | 85.2 |
| 29.44 | 12  | 9   | 54.1 | 27.3 | 17.8 | 1.0 | 24.2 | 0.7 | 298.6 | 85.3 |
| 29.50 | 13  | 9   | 53.6 | 27.5 | 17.9 | 0.9 | 24.4 | 0.7 | 298.4 | 85.3 |
| 29.55 | 14  | 11  | 54.2 | 27.6 | 17.1 | 0.9 | 24.4 | 0.5 | 290.2 | 82.9 |
| 29.59 | 15  | 11  | 53.5 | 27.7 | 16.4 | 0.9 | 24.5 | 0.5 | 291.8 | 83.4 |
| 29.64 | 16  | 11  | 53.6 | 27.4 | 16.5 | 0.8 | 24.3 | 0.5 | 293.2 | 83.8 |
| 29.68 | 17  | 11  | 54.1 | 28.0 | 16.3 | 0.9 | 24.8 | 0.5 | 304.3 | 86.9 |
| 29.73 | 18  | 11  | 53.6 | 28.1 | 17.7 | 0.8 | 24.8 | 0.5 | 306.1 | 87.4 |
| 29.77 | 19  | 11  | 54.0 | 26.4 | 19.2 | 0.8 | 23.4 | 0.5 | 309.1 | 88.3 |
| 29.82 | 20  | 11  | 53.4 | 27.7 | 18.0 | 0.7 | 24.6 | 0.5 | 303.1 | 86.6 |
| 29.86 | 21  | 11  | 54.0 | 28.4 | 17.7 | 0.8 | 25.1 | 0.5 | 311.9 | 89.1 |
| 29.91 | 22  | 11  | 53.4 | 27.0 | 18.4 | 0.7 | 23.9 | 0.5 | 307.9 | 88.0 |
| 29.95 | 23  | 11  | 53.7 | 28.3 | 17.4 | 0.7 | 25.1 | 0.5 | 308.5 | 88.1 |
| 30.00 | 24  | 11  | 54.2 | 27.7 | 17.8 | 0.7 | 24.5 | 0.5 | 301.3 | 86.1 |

|         |      |      |      |     |      |     |       |      |
|---------|------|------|------|-----|------|-----|-------|------|
| Average | 53.8 | 27.6 | 17.6 | 0.9 | 24.4 | 0.6 | 299.4 | 85.5 |
| Std Dev | 0.3  | 0.5  | 0.7  | 0.2 | 0.4  | 0.1 | 6.7   | 1.9  |
| Maximum | 54.2 | 28.4 | 19.2 | 1.3 | 25.1 | 0.7 | 311.9 | 89.1 |
| Minimum | 53.3 | 26.4 | 16.3 | 0.7 | 23.4 | 0.5 | 288.7 | 82.5 |

N-value: 20

Sample Interval Time: 24.64 seconds.

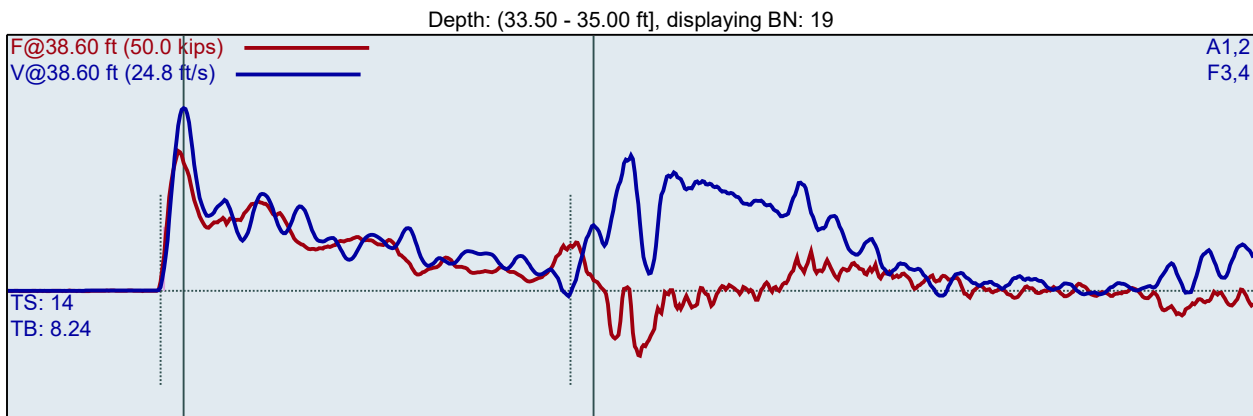


CME 45B (SN 303304)  
REK  
B-2

B-2  
Interval start: 4/12/2024

AR: 1.13 in<sup>2</sup>  
LE: 38.60 ft  
WS: 16807.9 ft/s

SP: 0.492 k/ft<sup>3</sup>  
EM: 30000 ksi



F3 : [728AWJ1] 224.649 PDICAL (1) FF1  
F4 : [728AWJ2] 224.139 PDICAL (1) FF1

A1 (PR): [K10959] 413.827 mv/6.4v/5000g (1) VF1  
A2 (PR): [K10960] 419.894 mv/6.4v/5000g (1) VF1

| LP<br>ft | BL# | BC<br>/6" | BPM<br>bpm | FMX<br>kips | VMX<br>ft/s | DMX<br>in | CSX<br>ksi | DFN<br>in | EFV<br>ft-lb | ETR<br>% |
|----------|-----|-----------|------------|-------------|-------------|-----------|------------|-----------|--------------|----------|
| 33.63    | 1   | 4         | 1.9        | 27.9        | 18.1        | 1.9       | 24.7       | 1.5       | 312.2        | 89.2     |
| 33.75    | 2   | 4         | 57.9       | 27.8        | 18.5        | 1.6       | 24.6       | 1.5       | 310.4        | 88.7     |
| 33.88    | 3   | 4         | 57.8       | 28.1        | 17.7        | 1.6       | 24.8       | 1.5       | 306.4        | 87.5     |
| 34.00    | 4   | 4         | 57.9       | 28.2        | 17.9        | 1.6       | 25.0       | 1.5       | 311.8        | 89.1     |
| 34.07    | 5   | 7         | 57.7       | 28.0        | 17.8        | 1.2       | 24.7       | 0.9       | 309.4        | 88.4     |
| 34.14    | 6   | 7         | 58.8       | 27.5        | 17.3        | 1.2       | 24.3       | 0.9       | 301.7        | 86.2     |
| 34.21    | 7   | 7         | 57.9       | 27.5        | 17.5        | 1.1       | 24.3       | 0.9       | 305.5        | 87.3     |
| 34.29    | 8   | 7         | 58.5       | 27.8        | 17.7        | 1.1       | 24.6       | 0.9       | 313.5        | 89.6     |
| 34.36    | 9   | 7         | 58.3       | 27.8        | 17.6        | 1.1       | 24.6       | 0.9       | 320.7        | 91.6     |
| 34.43    | 10  | 7         | 58.5       | 27.8        | 17.7        | 1.0       | 24.6       | 0.9       | 311.8        | 89.1     |
| 34.50    | 11  | 7         | 58.5       | 28.7        | 18.4        | 0.9       | 25.4       | 0.9       | 319.2        | 91.2     |
| 34.55    | 12  | 10        | 58.3       | 28.1        | 17.8        | 0.9       | 24.9       | 0.6       | 311.0        | 88.9     |
| 34.60    | 13  | 10        | 58.5       | 27.8        | 17.6        | 0.9       | 24.6       | 0.6       | 313.5        | 89.6     |
| 34.65    | 14  | 10        | 58.3       | 26.9        | 16.8        | 1.1       | 23.8       | 0.6       | 303.2        | 86.6     |
| 34.70    | 15  | 10        | 58.5       | 27.4        | 17.5        | 0.9       | 24.2       | 0.6       | 309.0        | 88.3     |
| 34.75    | 16  | 10        | 58.3       | 27.2        | 17.3        | 1.0       | 24.1       | 0.6       | 310.8        | 88.8     |
| 34.80    | 17  | 10        | 58.1       | 28.0        | 18.2        | 0.8       | 24.8       | 0.6       | 310.6        | 88.7     |
| 34.85    | 18  | 10        | 58.7       | 27.8        | 17.7        | 0.7       | 24.6       | 0.6       | 307.0        | 87.7     |
| 34.90    | 19  | 10        | 58.4       | 27.3        | 17.7        | 0.9       | 24.1       | 0.6       | 315.2        | 90.0     |
| 34.95    | 20  | 10        | 58.0       | 28.2        | 18.5        | 0.9       | 25.0       | 0.6       | 323.1        | 92.3     |
| 35.00    | 21  | 10        | 58.5       | 27.7        | 18.6        | 0.8       | 24.5       | 0.6       | 313.3        | 89.5     |
| Average  |     |           | 58.3       | 27.7        | 17.7        | 1.0       | 24.5       | 0.7       | 311.7        | 89.1     |
| Std Dev  |     |           | 0.3        | 0.4         | 0.4         | 0.1       | 0.4        | 0.1       | 5.6          | 1.6      |
| Maximum  |     |           | 58.8       | 28.7        | 18.6        | 1.2       | 25.4       | 0.9       | 323.1        | 92.3     |
| Minimum  |     |           | 57.7       | 26.9        | 16.8        | 0.7       | 23.8       | 0.6       | 301.7        | 86.2     |

N-value: 17

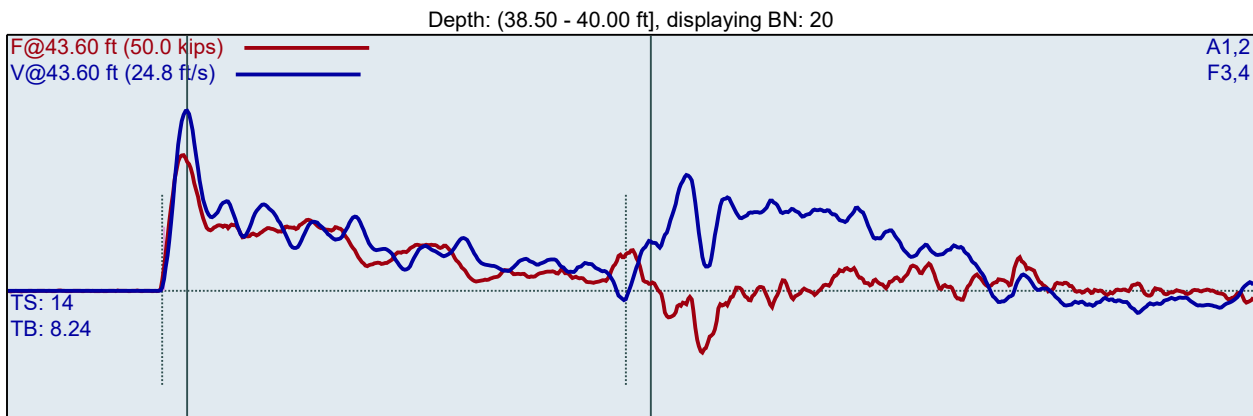
Sample Interval Time: 20.53 seconds.

CME 45B (SN 303304)  
REK  
B-2

B-2  
Interval start: 4/12/2024

AR: 1.13 in<sup>2</sup>  
LE: 43.60 ft  
WS: 16807.9 ft/s

SP: 0.492 k/ft<sup>3</sup>  
EM: 30000 ksi



F3 : [728AWJ1] 224.649 PDICAL (1) FF1  
F4 : [728AWJ2] 224.139 PDICAL (1) FF1

A1 (PR): [K10959] 413.827 mv/6.4v/5000g (1) VF1  
A2 (PR): [K10960] 419.894 mv/6.4v/5000g (1) VF1

| LP<br>ft    | BL# | BC<br>/6" | BPM<br>bpm | FMX<br>kips | VMX<br>ft/s | DMX<br>in | CSX<br>ksi | DFN<br>in | EFV<br>ft-lb | ETR<br>% |
|-------------|-----|-----------|------------|-------------|-------------|-----------|------------|-----------|--------------|----------|
| 38.60       | 1   | 5         | 1.9        | 27.8        | 18.7        | 2.0       | 24.6       | 1.2       | 310.8        | 88.8     |
| 38.70       | 2   | 5         | 52.2       | 26.3        | 17.6        | 1.6       | 23.3       | 1.2       | 298.0        | 85.1     |
| 38.80       | 3   | 5         | 53.0       | 26.7        | 18.9        | 1.5       | 23.6       | 1.2       | 311.1        | 88.9     |
| 38.90       | 4   | 5         | 54.7       | 26.7        | 19.0        | 1.3       | 23.6       | 1.2       | 304.6        | 87.0     |
| 39.00       | 5   | 5         | 54.5       | 26.4        | 17.6        | 1.4       | 23.4       | 1.2       | 295.3        | 84.4     |
| 39.07       | 6   | 7         | 54.5       | 27.2        | 18.7        | 1.2       | 24.0       | 0.9       | 304.9        | 87.1     |
| 39.14       | 7   | 7         | 54.5       | 26.9        | 18.7        | 1.1       | 23.8       | 0.9       | 306.3        | 87.5     |
| 39.21       | 8   | 7         | 54.4       | 26.9        | 17.8        | 1.1       | 23.8       | 0.9       | 298.2        | 85.2     |
| 39.29       | 9   | 7         | 54.4       | 26.8        | 18.0        | 1.0       | 23.7       | 0.9       | 295.3        | 84.4     |
| 39.36       | 10  | 7         | 54.3       | 26.8        | 17.7        | 0.9       | 23.7       | 0.9       | 292.1        | 83.5     |
| 39.43       | 11  | 7         | 54.5       | 27.1        | 18.5        | 1.0       | 24.0       | 0.9       | 302.1        | 86.3     |
| 39.50       | 12  | 7         | 54.6       | 26.7        | 17.9        | 0.9       | 23.7       | 0.9       | 294.1        | 84.0     |
| 39.55       | 13  | 10        | 54.1       | 26.6        | 17.9        | 0.8       | 23.5       | 0.6       | 290.0        | 82.9     |
| 39.60       | 14  | 10        | 54.8       | 26.5        | 17.9        | 0.9       | 23.5       | 0.6       | 294.1        | 84.0     |
| 39.65       | 15  | 10        | 54.9       | 26.2        | 17.6        | 0.9       | 23.2       | 0.6       | 290.8        | 83.1     |
| 39.70       | 16  | 10        | 54.8       | 26.3        | 17.4        | 0.7       | 23.3       | 0.6       | 289.7        | 82.8     |
| 39.75       | 17  | 10        | 54.4       | 26.3        | 17.3        | 0.8       | 23.3       | 0.6       | 289.3        | 82.7     |
| 39.80       | 18  | 10        | 54.5       | 26.4        | 17.3        | 0.8       | 23.4       | 0.6       | 297.0        | 84.9     |
| 39.85       | 19  | 10        | 54.3       | 26.4        | 17.4        | 0.8       | 23.4       | 0.6       | 299.3        | 85.5     |
| 39.90       | 20  | 10        | 54.8       | 26.5        | 17.4        | 0.8       | 23.4       | 0.6       | 297.4        | 85.0     |
| 39.95       | 21  | 10        | 54.3       | 27.7        | 18.0        | 0.8       | 24.5       | 0.6       | 308.1        | 88.0     |
| 40.00       | 22  | 10        | 54.6       | 27.3        | 17.7        | 0.7       | 24.2       | 0.6       | 300.9        | 86.0     |
| Average     |     |           | 54.5       | 26.7        | 17.8        | 0.9       | 23.7       | 0.7       | 297.0        | 84.9     |
| Std Dev     |     |           | 0.2        | 0.4         | 0.4         | 0.1       | 0.3        | 0.1       | 5.8          | 1.6      |
| Maximum     |     |           | 54.9       | 27.7        | 18.7        | 1.2       | 24.5       | 0.9       | 308.1        | 88.0     |
| Minimum     |     |           | 54.1       | 26.2        | 17.3        | 0.7       | 23.2       | 0.6       | 289.3        | 82.7     |
| N-value: 17 |     |           |            |             |             |           |            |           |              |          |

Sample Interval Time: 23.19 seconds.

**Summary of SPT Test Results**

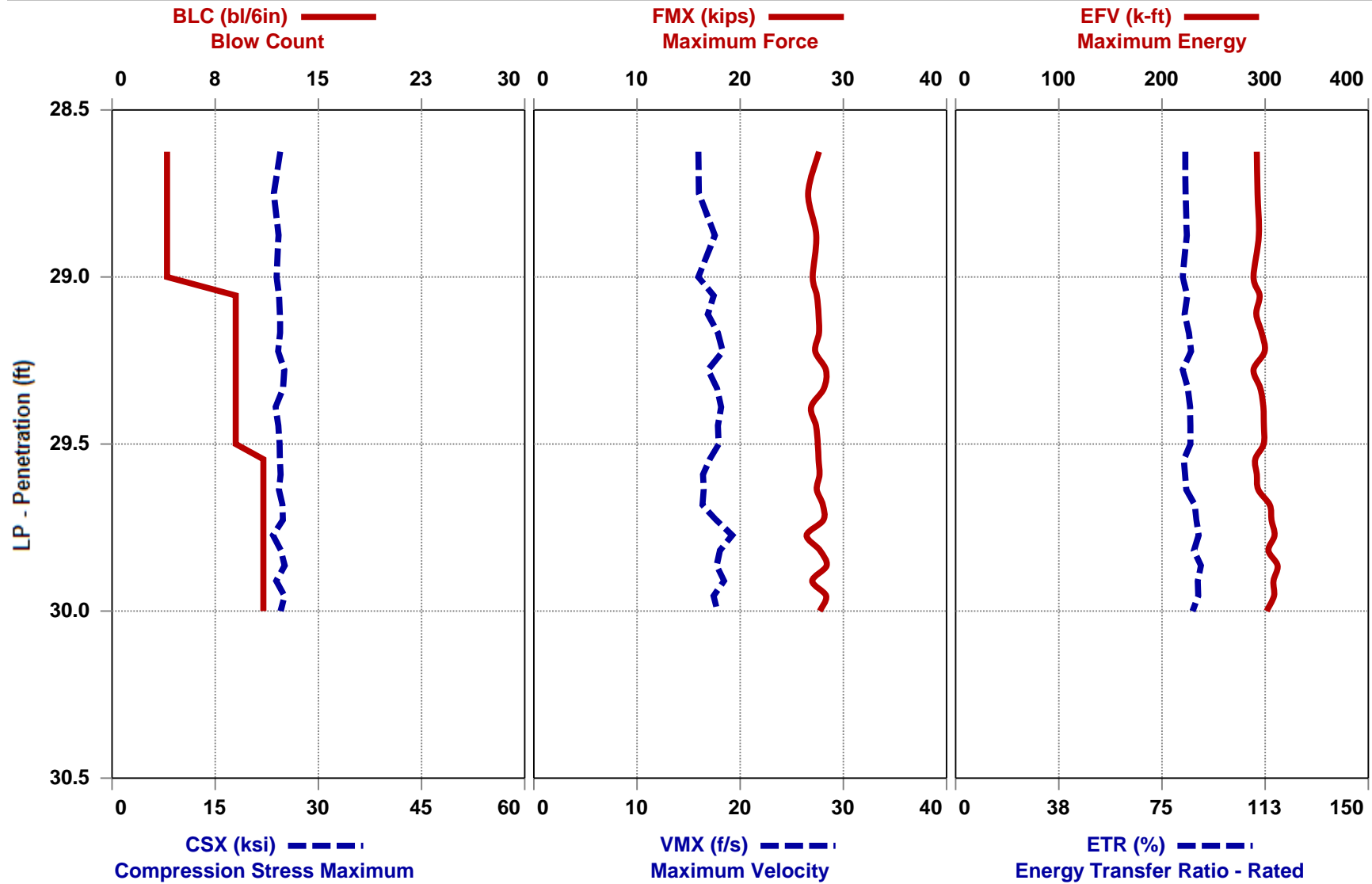
Project: CME 45B (SN 303304), Test Date: 4/12/2024

| BPM: Blows/Minute              |                      |                      |                         |            |              | CSX: Compression Stress Maximum    |                        |                        |                      |                       |                      |                         |                     |
|--------------------------------|----------------------|----------------------|-------------------------|------------|--------------|------------------------------------|------------------------|------------------------|----------------------|-----------------------|----------------------|-------------------------|---------------------|
| FMX: Maximum Force             |                      |                      |                         |            |              | DFN: Final Displacement            |                        |                        |                      |                       |                      |                         |                     |
| VMX: Maximum Velocity          |                      |                      |                         |            |              | EFV: Maximum Energy                |                        |                        |                      |                       |                      |                         |                     |
| DMX: Maximum Displacement      |                      |                      |                         |            |              | ETR: Energy Transfer Ratio - Rated |                        |                        |                      |                       |                      |                         |                     |
| Instr.<br>Length<br>ft         | Start<br>Depth<br>ft | Final<br>Depth<br>ft | Blows<br>Applied<br>/6" | N<br>Value | N60<br>Value | Average<br>BPM<br>bpm              | Average<br>FMX<br>kips | Average<br>VMX<br>ft/s | Average<br>DMX<br>in | Average<br>CSX<br>ksi | Average<br>DFN<br>in | Average<br>EFV<br>ft-lb | Average<br>ETR<br>% |
| 33.60                          | 28.50                | 30.00                | <b>4-9-11</b>           | <b>20</b>  | <b>28</b>    | 53.8                               | 27.6                   | 17.6                   | 0.9                  | 24.4                  | 0.6                  | 299.4                   | 85.5                |
| 38.60                          | 33.50                | 35.00                | <b>4-7-10</b>           | <b>17</b>  | <b>24</b>    | 58.3                               | 27.7                   | 17.7                   | 1.0                  | 24.5                  | 0.7                  | 311.7                   | 89.1                |
| 43.60                          | 38.50                | 40.00                | <b>5-7-10</b>           | <b>17</b>  | <b>24</b>    | 54.5                               | 26.7                   | 17.8                   | 0.9                  | 23.7                  | 0.7                  | 297.0                   | 84.9                |
| <b>Overall Average Values:</b> |                      |                      |                         |            |              | 55.4                               | 27.4                   | 17.7                   | 0.9                  | 24.2                  | 0.7                  | 302.5                   | 86.4                |
| <b>Standard Deviation:</b>     |                      |                      |                         |            |              | 2.0                                | 0.6                    | 0.6                    | 0.1                  | 0.5                   | 0.1                  | 8.8                     | 2.5                 |
| <b>Overall Maximum Value:</b>  |                      |                      |                         |            |              | 58.8                               | 28.7                   | 19.2                   | 1.3                  | 25.4                  | 0.9                  | 323.1                   | 92.3                |
| <b>Overall Minimum Value:</b>  |                      |                      |                         |            |              | 53.3                               | 26.2                   | 16.3                   | 0.7                  | 23.2                  | 0.5                  | 288.7                   | 82.5                |



CME 45B (SN 303304) - 28.5 TO 30.0

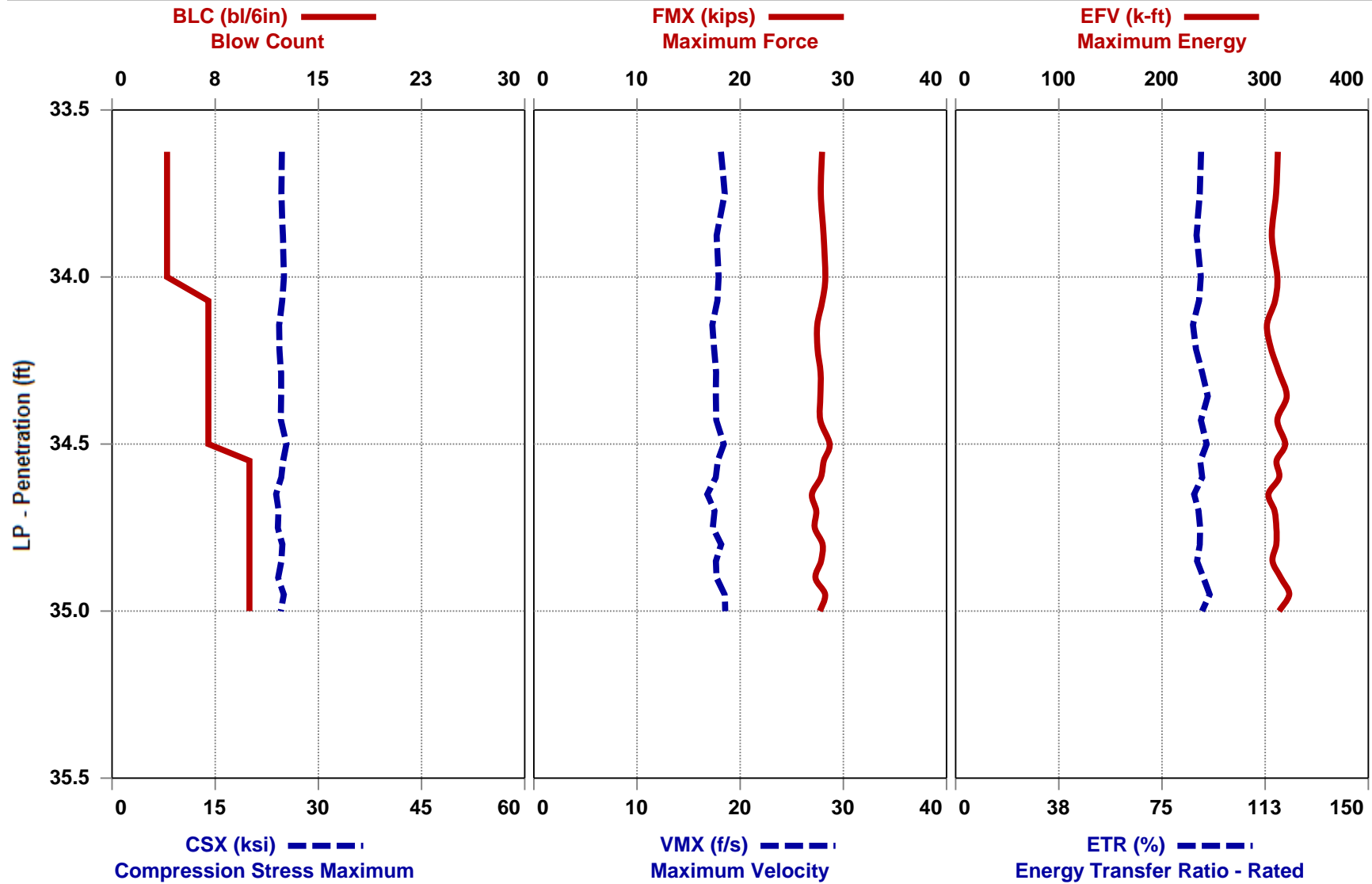
B-2





CME 45B (SN 303304) - 33.5 TO 35.0

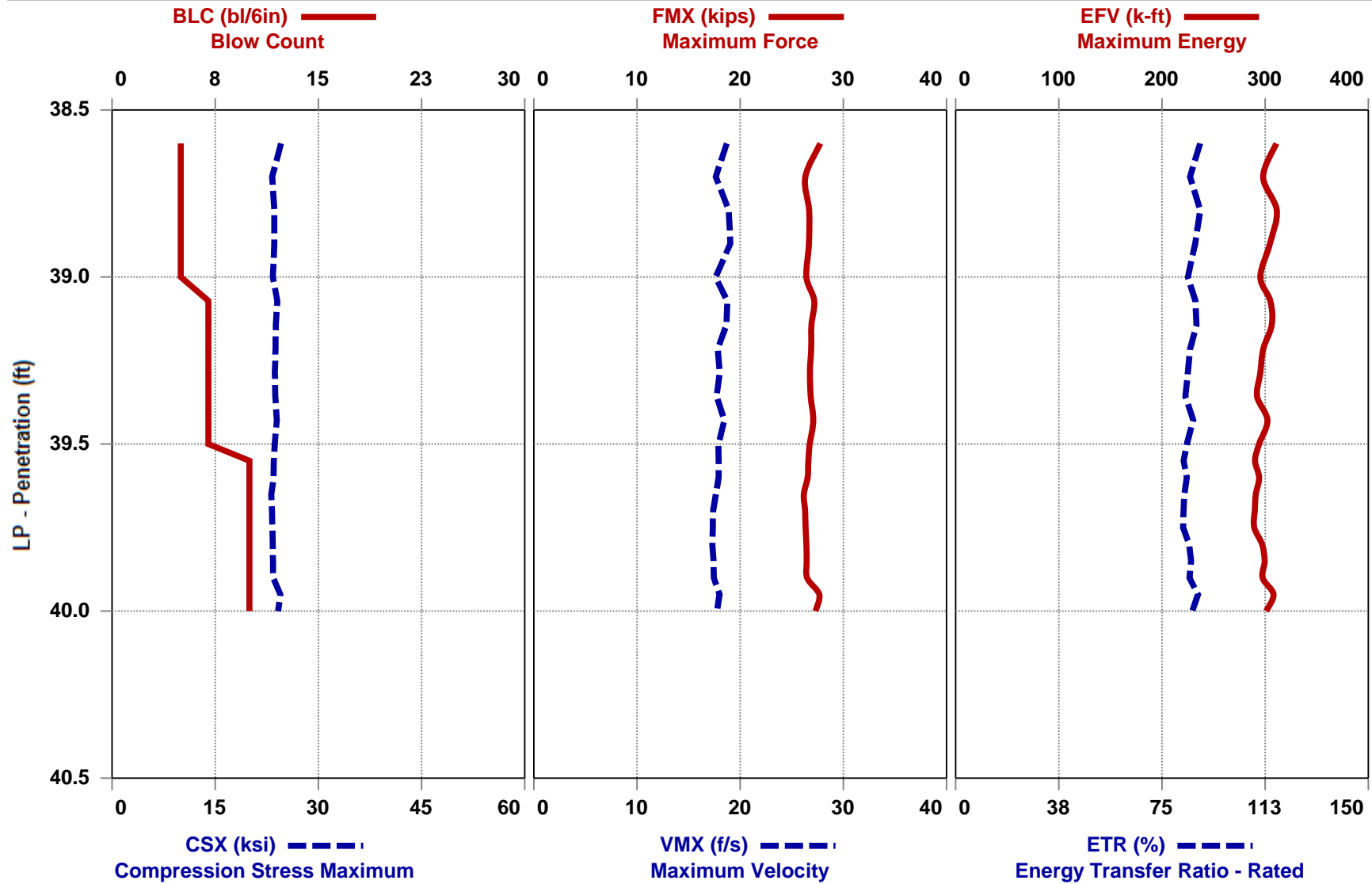
B-2

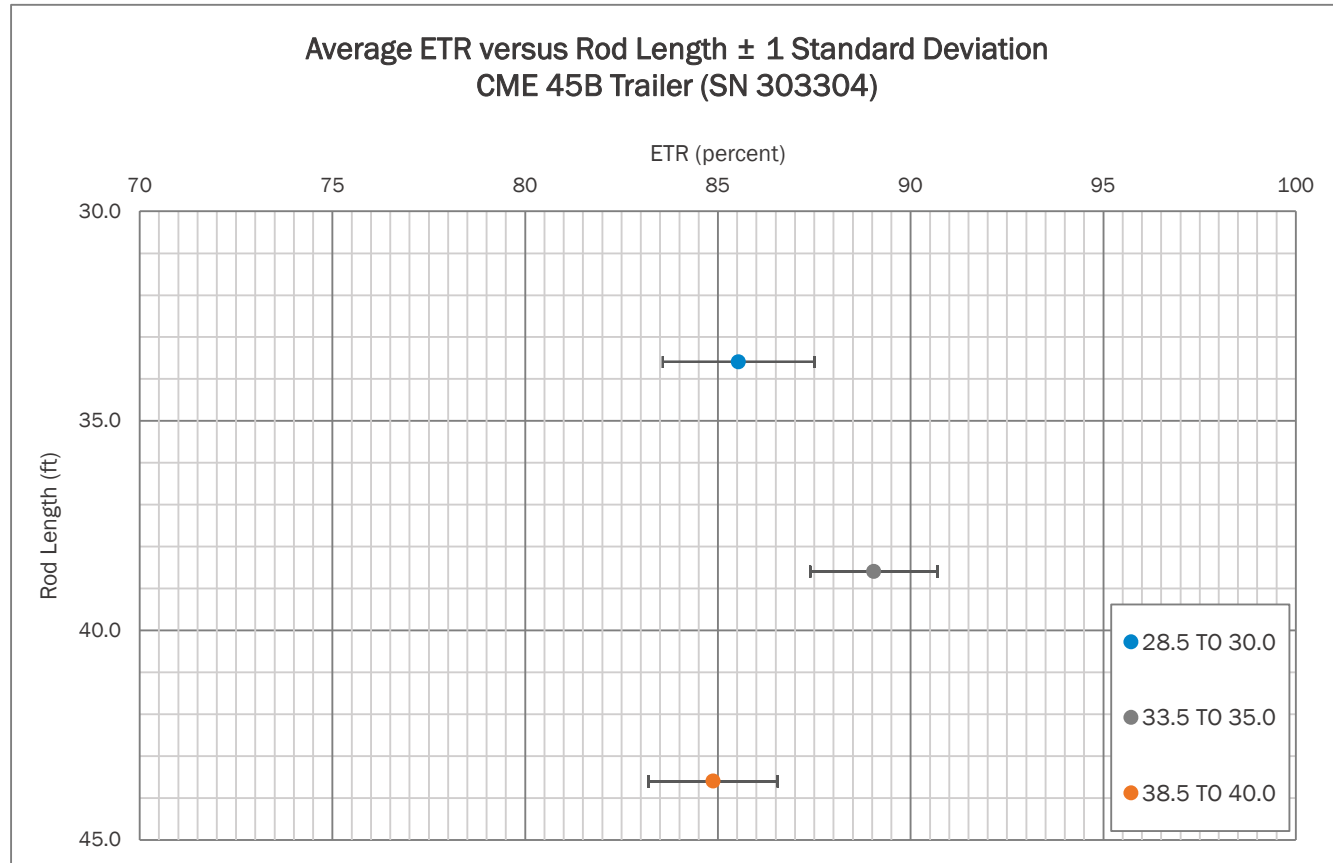
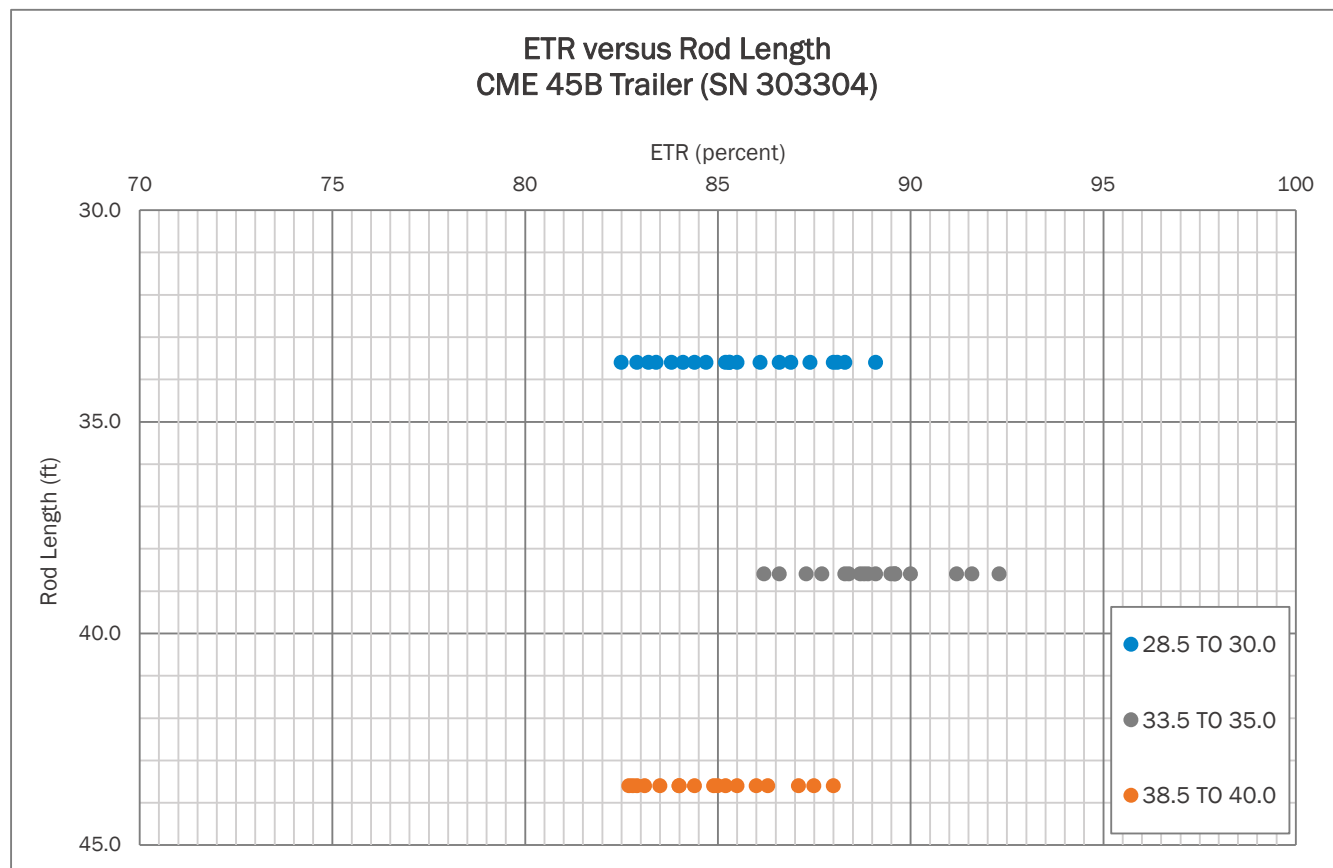




CME 45B (SN 303304) - 38.5 TO 40.0

B-2







## APPENDIX II



# SPT Hammer Energy Field Form

**Project:** SPT HAMMER ENERGY  
**Project No.:** 240021095  
**Boring No.:** B-2

**Date:** 4/12/2024  
**Weather:** 50's CLEAR  
**Drill Rod Type:** AWJ

## On-site Personnel

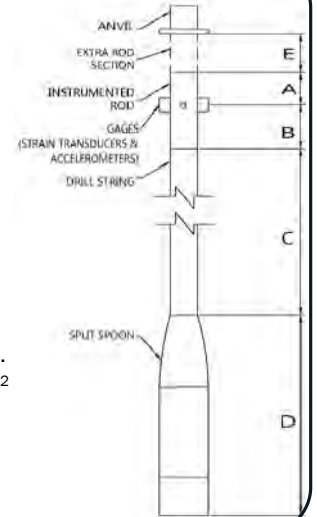
Drilling Company: BRECCIA CONSTRUCTION, LLC  
 Rig Operator: D. HARRIS  
 Engr/Geologist: N/A  
 Client Rep.: N/A  
 Analyzer Oper.: R. KRAL

## Rig/Hammer Info

Drill Rig Make/Model: CME 45B  
 Carrier Type: TRAILER  
 Rig Serial No.: 303304  
 Hammer Type/Model: CME  
 Hammer Serial No.: N/A  
 Hammer Drop System: AUTO  
 Lubrication Condition: PER MANUFACTURER  
 Manufacturer Recommended  
 Operation Rate (bpm): 55  
 Drop Height (in.): 30  
 Hammer Weight (lbs): 140  
 Anvil Dimension (in.): 11.5  
 Drilling Method: 2.25 HSA

## Rod Info

**(A + E)** Impact Surface to Gages Length: 1.36 ft  
**(B)** Instr. Rod Length below Gages: 0.70 ft  
**(A) + (B)** Instr. Rod Length: 2.00 ft  
**(D)** Spoon Length: 2.85 ft  
**(E)** Rod Length Above Instr. Rod (if applicable): 0.06 ft  
 Instr. Rod S/N: 728AWJ  
 Instr. Rod Outside Dia.: 1.75 in.  
 Instr. Rod Area: 1.13 in<sup>2</sup>  
 PDA Make/Model: SPT  
 PDA Serial No.: 4553 TB  
 Calib. Pulse Test (y/n): Y



## Gage Info

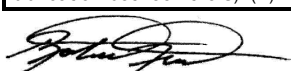
| Gage   |    | Serial No. | Calibration No. |
|--------|----|------------|-----------------|
| Accel. | A3 | K10959     | 413.83          |
|        | A4 | K10960     | 419.89          |
| Strain | F3 | 728AWJ-1   | 224.65          |
|        | F4 | 728AWJ-2   | 224.14          |

| Date of Test | Test Depth Increment<br>(ft to ft) | Test Time Start / Stop<br>(military) | Length of Drill String<br>(ft)<br>(C) | (LE) Length below Gages<br>(ft)<br>(B) + (C) + (D) | Avg. Meas. Hammer Rate<br>(BPM) | SPT Blow Counts |     |     |         | Drop Height in Tolerance<br>(y/n) | Soil Class. |
|--------------|------------------------------------|--------------------------------------|---------------------------------------|--|---------------------------------|-----------------|-----|-----|---------|-----------------------------------|-------------|
|              |                                    |                                      |                                       |  |                                 | 6"              | 12" | 18" | N-Value |                                   |             |
| 12-Apr       | 28.5 TO 30.0                       | 0822/0822                            | 30                                    | 33.6   | 53                              | 4               | 9   | 11  | 20      | Y                                 | SA SI       |
| 12-Apr       | 33.5 TO 35.0                       | 0830/0831                            | 35                                    | 38.6   | 57                              | 4               | 7   | 10  | 17      | Y                                 | SA SI       |
| 12-Apr       | 38.5 TO 40.0                       | 0838/0838                            | 40                                    | 43.6   | 54                              | 5               | 7   | 10  | 17      | Y                                 | SA SI       |
|              |                                    |                                      |                                       |  |                                 |                 |     |     |         |                                   |             |
|              |                                    |                                      |                                       |  |                                 |                 |     |     |         |                                   |             |
|              |                                    |                                      |                                       |  |                                 |                 |     |     |         |                                   |             |
|              |                                    |                                      |                                       |  |                                 |                 |     |     |         |                                   |             |
|              |                                    |                                      |                                       |  |                                 |                 |     |     |         |                                   |             |

## Notes:

TESTING PERFORMED AT 1817 LOWRYS HIGHWAY IN CHESTER, SOUTH CAROLINA (CHESTER COUNTY). THE APPROXIMATE COORDINATES ARE 34.7704252, - 81.2454632.

NOTE: (1) Note any unusual hammer operating conditions that affect the hammer performance, or changes in operating conditions (e.g. verticality, weather, or lubrication between trials). (2) Note any changes in rod diameter along drill string and record locations of short rod sections.



Prepared By (print/signature)

4/12/2024  
Date



Figure No. 1: Rear View of Drill Rig



Figure No. 2: Side View of Drill Rig



Figure No. 3: Serial Number Plate



Figure No. 4: Automatic Hammer



## APPENDIX III



# *Certificate of Calibration*

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model SPT

Serial Number: 4553 TB

was calibrated on 18 December 2023  
using a PDA Calibration Box whose output was calibrated with test equipment  
traceable to NIST.

This certificate is valid for 2 years from above date.



Tested by [Signature]

Pile Dynamics, Inc.  
30725 Aurora Road  
Cleveland, Ohio 44139 USA





# *Certificate of Calibration*

**Pile Dynamics, Inc. certifies that the**

**Pile Driving Analyzer®, Model SPT**

**Serial Number: 4549 TB**

was calibrated on 14 July 2022

using a PDA Calibration Box whose output was calibrated with test equipment  
traceable to NIST.

This certificate is valid for 2 years from above date.



Tested by

*MC*



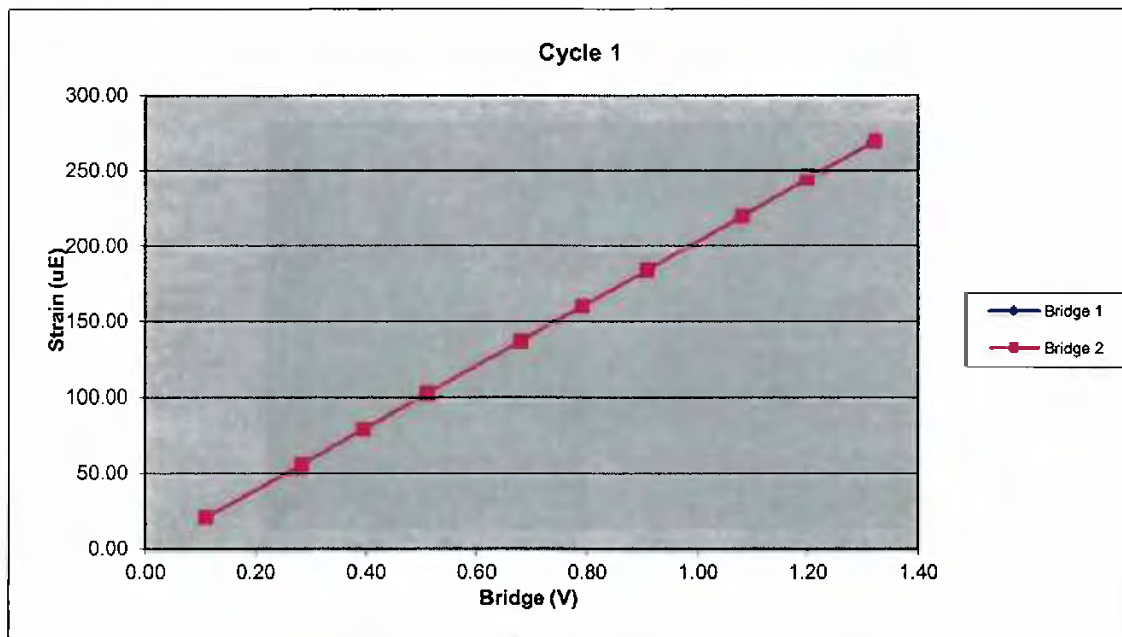
Pile Dynamics, Inc.  
30725 Aurora Road  
Cleveland, Ohio 44139 USA



| 528AWJ |            | Cycle 1                  |              |              |
|--------|------------|--------------------------|--------------|--------------|
| Sample | Force (lb) | Strain ( $\mu\text{E}$ ) | Bridge 1 (V) | Bridge 2 (V) |
| 1      | 0.00       | 0.00                     | 0.00         | 0.00         |
| 2      | 803.20     | 21.15                    | 0.11         | 0.11         |
| 3      | 2080.73    | 56.33                    | 0.28         | 0.28         |
| 4      | 2904.01    | 79.79                    | 0.39         | 0.39         |
| 5      | 3765.89    | 103.49                   | 0.51         | 0.51         |
| 6      | 5005.11    | 138.03                   | 0.68         | 0.68         |
| 7      | 5828.59    | 161.56                   | 0.79         | 0.79         |
| 8      | 6692.71    | 185.68                   | 0.91         | 0.91         |
| 9      | 7962.93    | 221.03                   | 1.08         | 1.08         |
| 10     | 8831.54    | 245.89                   | 1.20         | 1.20         |
| 11     | 9736.80    | 270.68                   | 1.32         | 1.32         |

| Bridge 1                               |          | Bridge 2                               |          |
|--|----------|--|----------|
| Force Calibration (lb/V)               | 7358.13  | Force Calibration (lb/V)               | 7351.82  |
| Offset                                 | 3.52     | Offset                                 | 6.26     |
| Correlation                            | 0.999999 | Correlation                            | 0.999999 |
| Strain Calibration ( $\mu\text{E/V}$ ) | 205.90   | Strain Calibration ( $\mu\text{E/V}$ ) | 205.73   |
| Offset                                 | -1.56    | Offset                                 | -1.48    |
| Correlation                            | 0.999995 | Correlation                            | 0.999996 |

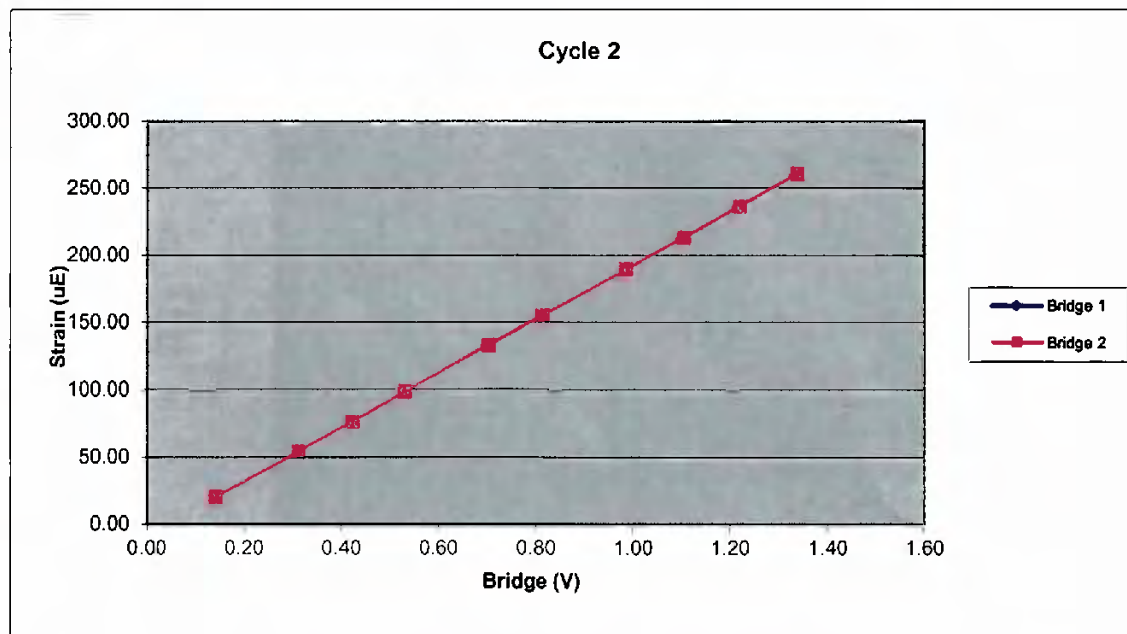
| Force Strain Calibration |          |
|--------------------------|----------|
| EA (Kips)                | 35735.87 |
| Offset                   | 59.29    |
| Correlation              | 0.999995 |



| 528AWJ |            | Cycle 2                  |              |              |
|--------|------------|--------------------------|--------------|--------------|
| Sample | Force (lb) | Strain ( $\mu\text{E}$ ) | Bridge 1 (V) | Bridge 2 (V) |
| 1      | 0.00       | 0.00                     | 0.00         | 0.00         |
| 2      | 1038.71    | 19.60                    | 0.14         | 0.14         |
| 3      | 2288.25    | 53.30                    | 0.31         | 0.31         |
| 4      | 3093.11    | 75.49                    | 0.42         | 0.42         |
| 5      | 3893.00    | 97.84                    | 0.53         | 0.53         |
| 6      | 5167.50    | 132.26                   | 0.70         | 0.70         |
| 7      | 5988.25    | 154.39                   | 0.81         | 0.81         |
| 8      | 7248.72    | 188.87                   | 0.98         | 0.98         |
| 9      | 8125.71    | 212.29                   | 1.10         | 1.10         |
| 10     | 8976.19    | 235.45                   | 1.22         | 1.22         |
| 11     | 9854.85    | 259.50                   | 1.33         | 1.34         |

| Bridge 1                                      |          | Bridge 2                                      |          |
|---|----------|---|----------|
| Force Calibration (lb/V)                      | 7381.92  | Force Calibration (lb/V)                      | 7365.94  |
| Offset  | -0.76    | Offset  | 4.69     |
| Correlation                                   | 0.999998 | Correlation                                   | 0.999999 |
| Strain Calibration ( $\mu\text{E}/\text{V}$ ) | 200.83   | Strain Calibration ( $\mu\text{E}/\text{V}$ ) | 200.40   |
| Offset  | -8.59    | Offset  | -8.44    |
| Correlation                                   | 0.999997 | Correlation                                   | 0.999996 |

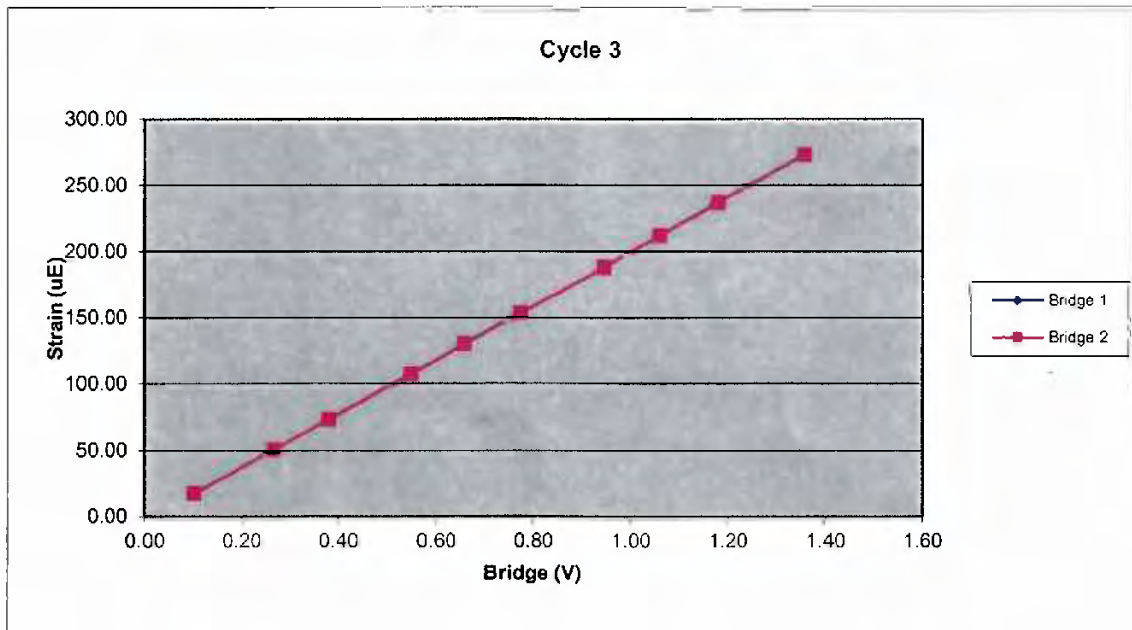
| Force Strain Calibration |          |
|--------------------------|----------|
| EA (Kips)                | 36756.34 |
| Offset                   | 315.07   |
| Correlation              | 0.999995 |



| 528AWJ |            | Cycle 3                  |              |              |
|--------|------------|--------------------------|--------------|--------------|
| Sample | Force (lb) | Strain ( $\mu\text{E}$ ) | Bridge 1 (V) | Bridge 2 (V) |
| 1      | 0.00       | 0.00                     | 0.00         | 0.00         |
| 2      | 734.68     | 18.74                    | 0.10         | 0.10         |
| 3      | 1943.58    | 51.94                    | 0.26         | 0.26         |
| 4      | 2781.29    | 75.07                    | 0.38         | 0.38         |
| 5      | 4027.81    | 108.88                   | 0.55         | 0.55         |
| 6      | 4829.55    | 131.78                   | 0.66         | 0.66         |
| 7      | 5689.29    | 155.36                   | 0.77         | 0.77         |
| 8      | 6956.49    | 190.12                   | 0.95         | 0.95         |
| 9      | 7799.46    | 214.09                   | 1.06         | 1.06         |
| 10     | 8693.90    | 238.78                   | 1.18         | 1.18         |
| 11     | 10007.88   | 275.06                   | 1.36         | 1.36         |

| Bridge 1                               |          | Bridge 2                               |          |
|--|----------|--|----------|
| Force Calibration (lb/V)               | 7366.71  | Force Calibration (lb/V)               | 7364.49  |
| Offset                                 | -6.17    | Offset                                 | -9.40    |
| Correlation                            | 0.999998 | Correlation                            | 0.999999 |
| Strain Calibration ( $\mu\text{E/V}$ ) | 203.78   | Strain Calibration ( $\mu\text{E/V}$ ) | 203.72   |
| Offset                                 | -2.08    | Offset                                 | -2.17    |
| Correlation                            | 0.999989 | Correlation                            | 0.999993 |

| Force Strain Calibration |          |
|--------------------------|----------|
| EA (Kips)                | 36149.33 |
| Offset                   | 69.26    |
| Correlation              | 0.999994 |





Bridge Excitation (V) 5  
Shunt Resistor (ohm) 60.4k

|                              |          |                              |        |
|------------------------------|----------|------------------------------|--------|
| Calibration Factors          | 528AWJ   |                              |        |
| Bridge 1 ( $\mu\text{E/V}$ ) | 203.51   | Bridge 2 ( $\mu\text{E/V}$ ) | 203.28 |
| EA Factor (Kips)             | 36213.85 | Area ( $\text{in}^2$ )       | 1.21   |

Calibrated by:



Calibrated Date:

7/18/2022

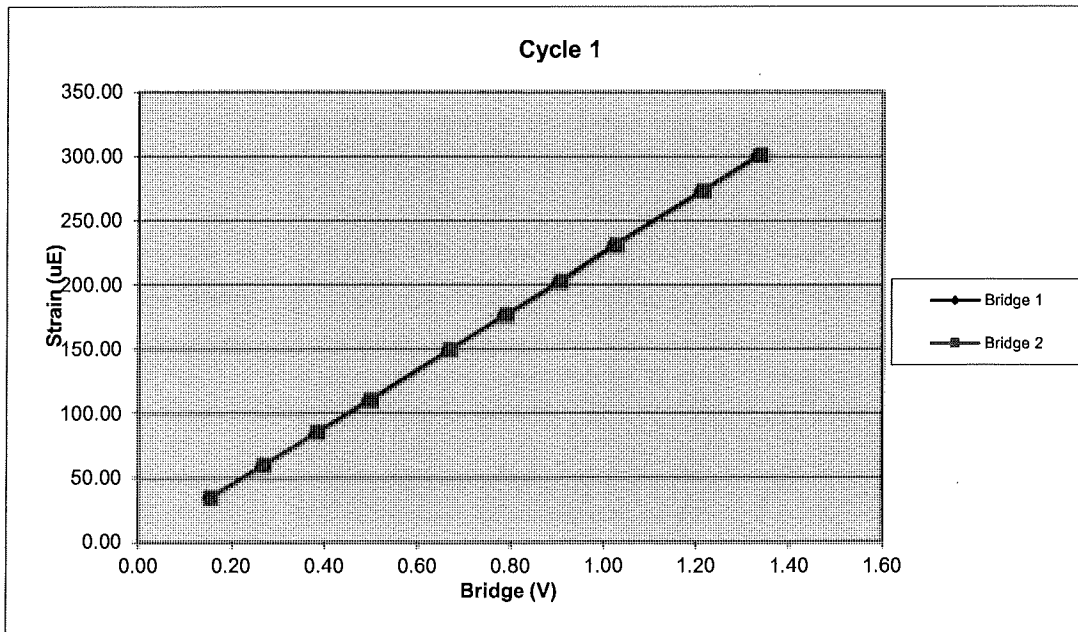
Pile Dynamics Inc  
30725 Aurora Rd  
Solon, OH 44139

Traceable to N.I.S.T.

| 728AWJ |            | Cycle 1           |              |              |
|--------|------------|-------------------|--------------|--------------|
| Sample | Force (lb) | Strain ( $\mu$ E) | Bridge 1 (V) | Bridge 2 (V) |
| 1      | 0.00       | 0.00              | 0.00         | 0.00         |
| 2      | 1199.06    | 34.33             | 0.16         | 0.16         |
| 3      | 2052.76    | 59.72             | 0.27         | 0.27         |
| 4      | 2924.20    | 85.27             | 0.38         | 0.39         |
| 5      | 3782.68    | 110.02            | 0.50         | 0.50         |
| 6      | 5074.34    | 149.22            | 0.67         | 0.67         |
| 7      | 5985.06    | 176.19            | 0.79         | 0.79         |
| 8      | 6869.47    | 202.19            | 0.90         | 0.91         |
| 9      | 7768.10    | 230.48            | 1.02         | 1.03         |
| 10     | 9202.28    | 272.31            | 1.21         | 1.22         |
| 11     | 10126.06   | 300.27            | 1.33         | 1.34         |

| Bridge 1                        |          | Bridge 2                        |          |
|---------------------------------|----------|---------------------------------|----------|
| Force Calibration (lb/V)        | 7583.03  | Force Calibration (lb/V)        | 7557.58  |
| Offset                          | 20.67    | Offset                          | 0.95     |
| Correlation                     | 1.000000 | Correlation                     | 0.999999 |
| Strain Calibration ( $\mu$ E/V) | 226.02   | Strain Calibration ( $\mu$ E/V) | 225.27   |
| Offset                          | -1.27    | Offset                          | -1.86    |
| Correlation                     | 0.999984 | Correlation                     | 0.999979 |

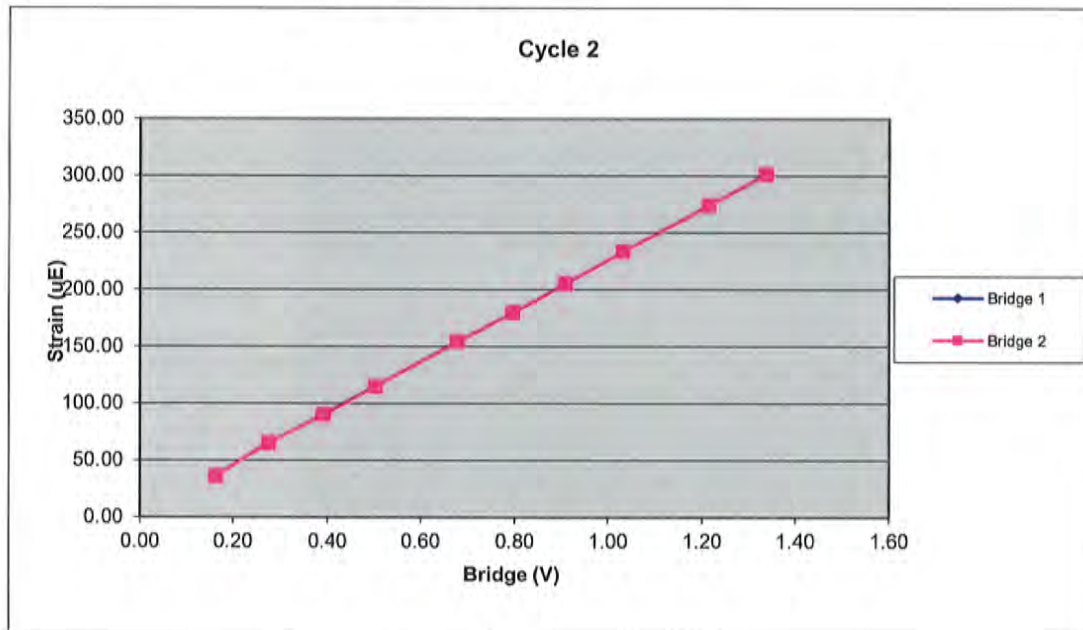
| Force Strain Calibration |          |
|--------------------------|----------|
| EA (Kips)                | 33548.47 |
| Offset                   | 63.54    |
| Correlation              | 0.999983 |



| 728AWJ |            | Cycle 2           |              |              |
|--------|------------|-------------------|--------------|--------------|
| Sample | Force (lb) | Strain ( $\mu$ E) | Bridge 1 (V) | Bridge 2 (V) |
| 1      | 0.00       | 0.00              | 0.00         | 0.00         |
| 2      | 1236.98    | 35.69             | 0.16         | 0.16         |
| 3      | 2108.61    | 64.71             | 0.28         | 0.28         |
| 4      | 2976.64    | 89.52             | 0.39         | 0.39         |
| 5      | 3811.14    | 114.45            | 0.50         | 0.50         |
| 6      | 5141.89    | 153.54            | 0.68         | 0.68         |
| 7      | 6032.24    | 178.92            | 0.80         | 0.80         |
| 8      | 6903.48    | 204.54            | 0.91         | 0.91         |
| 9      | 7825.42    | 232.64            | 1.03         | 1.03         |
| 10     | 9217.58    | 273.43            | 1.22         | 1.22         |
| 11     | 10151.02   | 300.79            | 1.34         | 1.34         |

| Bridge 1                        |          | Bridge 2                        |          |
|---------------------------------|----------|---------------------------------|----------|
| Force Calibration (lb/V)        | 7561.16  | Force Calibration (lb/V)        | 7576.28  |
| Offset                          | 14.33    | Offset                          | 4.68     |
| Correlation                     | 0.999997 | Correlation                     | 0.999995 |
| Strain Calibration ( $\mu$ E/V) | 223.39   | Strain Calibration ( $\mu$ E/V) | 223.84   |
| Offset                          | 1.55     | Offset                          | 1.27     |
| Correlation                     | 0.999945 | Correlation                     | 0.999943 |

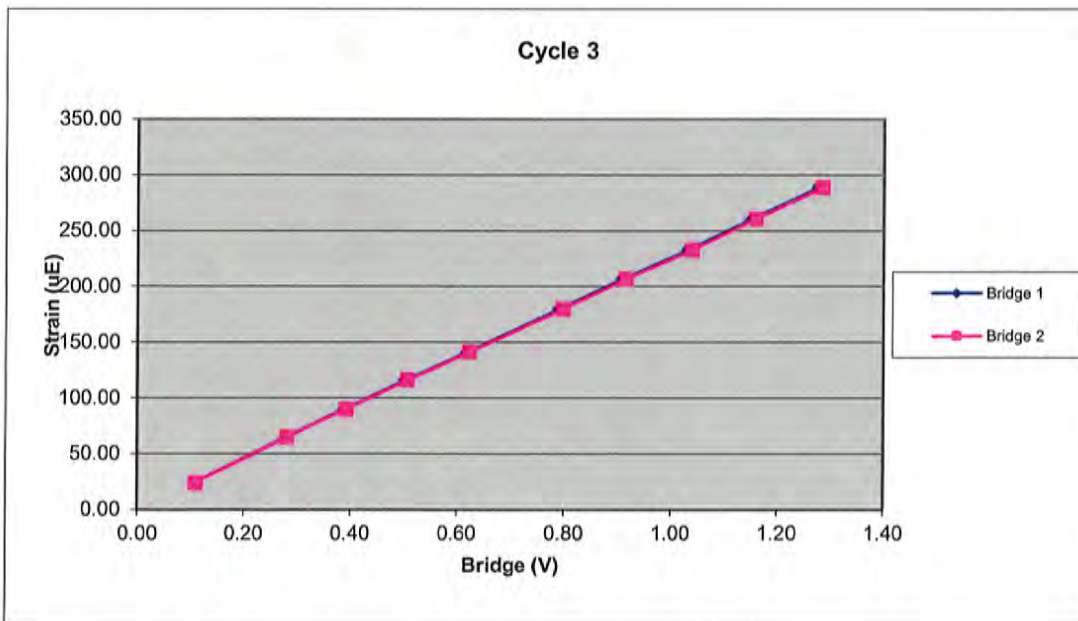
| Force Strain Calibration |          |
|--------------------------|----------|
| EA (Kips)                | 33843.24 |
| Offset                   | -37.68   |
| Correlation              | 0.999950 |



| 728AWJ |            | Cycle 3                  |              |              |
|--------|------------|--------------------------|--------------|--------------|
| Sample | Force (lb) | Strain ( $\mu\text{E}$ ) | Bridge 1 (V) | Bridge 2 (V) |
| 1      | 0.00       | 0.00                     | 0.00         | 0.00         |
| 2      | 822.90     | 24.10                    | 0.11         | 0.11         |
| 3      | 2132.69    | 64.89                    | 0.28         | 0.28         |
| 4      | 2972.74    | 89.98                    | 0.39         | 0.39         |
| 5      | 3841.65    | 115.75                   | 0.50         | 0.51         |
| 6      | 4741.16    | 141.06                   | 0.62         | 0.62         |
| 7      | 6043.35    | 179.33                   | 0.79         | 0.80         |
| 8      | 6961.58    | 206.39                   | 0.91         | 0.92         |
| 9      | 7901.94    | 232.60                   | 1.03         | 1.04         |
| 10     | 8816.85    | 260.36                   | 1.15         | 1.16         |
| 11     | 9759.65    | 288.75                   | 1.28         | 1.29         |

| Bridge 1                                      |          | Bridge 2                                      |          |
|---|----------|---|----------|
| Force Calibration (lb/V)                      | 7644.24  | Force Calibration (lb/V)                      | 7602.69  |
| Offset  | -5.25    | Offset  | -12.15   |
| Correlation                                   | 0.999999 | Correlation                                   | 0.999997 |
| Strain Calibration ( $\mu\text{E}/\text{V}$ ) | 224.53   | Strain Calibration ( $\mu\text{E}/\text{V}$ ) | 223.31   |
| Offset  | 1.57     | Offset  | 1.37     |
| Correlation                                   | 0.999950 | Correlation                                   | 0.999942 |

| Force Strain Calibration |          |
|--------------------------|----------|
| EA (Kips)                | 34041.33 |
| Offset                   | -58.11   |
| Correlation              | 0.999945 |



Bridge Excitation (V) 5  
Shunt Resistor (ohm) 60.4k

|                     |          |                 |        |
|---------------------|----------|-----------------|--------|
| Calibration Factors | 728AWJ   |                 |        |
| Bridge 1 (µE/V)     | 224.65   | Bridge 2 (µE/V) | 224.14 |
| EA Factor (Kips)    | 33811.01 | Area (in^2)     | 1.13   |

Calibrated by: Sean Bonner  
Calibrated Date: 2/6/2024

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30725 Aurora Rd  
Solon, OH 44139

Traceable to N.I.S.T.

# Accelerometer Calibration Certificate

## Pile Dynamics, Inc.



Calibrated by Pile Dynamics, Inc.  
Calibration performed on 14Jun2022

Serial No: K10959 Temperature: 79.0 °F

Model: PR Humidity: 50%

Calibrated on: Channel 3 on 8G 5161 LE

### PDA CALIBRATION FACTOR

413.8 mv/5000g

(82.8  $\mu$ v/g)

R<sup>2</sup>: 0.999956 [Chip programmed]

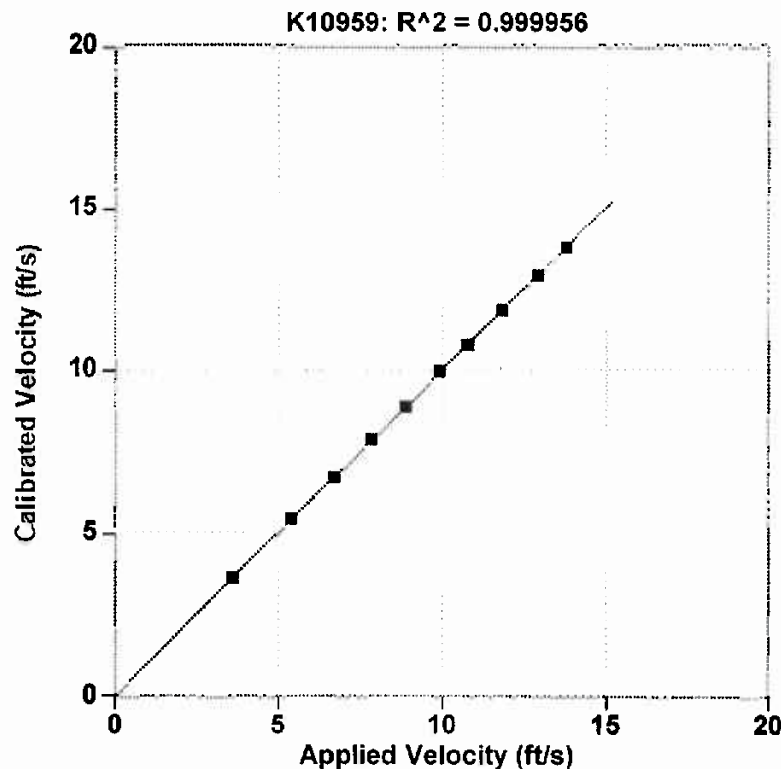
Ref Acc 1: 72517! Cal on: 24Mar2022  
1049 g's/volt

Ref Acc 2: 72505! Cal on: 24Mar2022  
1035 g's/volt

Operator: William Johnson

  
Signed

Reference accelerometer calibrations are traceable to  
the United States National Institute of Standards and  
Technology (NIST).



| Reference Velocity | S/N K10959 Velocity |
|--------------------|---------------------|
| ft/s               | ft/s                |
| 3.605              | 3.589               |
| 5.397              | 5.412               |
| 6.705              | 6.699               |
| 7.841              | 7.862               |
| 8.877              | 8.913               |
| 9.904              | 9.929               |
| 10.746             | 10.721              |
| 11.807             | 11.815              |
| 12.910             | 12.889              |
| 13.783             | 13.762              |

Maximum Acceleration: 935 g's

# Accelerometer Calibration Certificate

## Pile Dynamics, Inc.



Calibrated by Pile Dynamics, Inc.  
Calibration performed on 14Jun2022

Serial No: K10960 Temperature: 79.0 °F

Model: PR Humidity: 50%

Calibrated on: Channel 3 on 8G 5161 LE

### PDA CALIBRATION FACTOR

**419.9 mv/5000g**

(84.0  $\mu\text{v/g}$ )

R<sup>2</sup>: 0.999944 [Chip programmed]

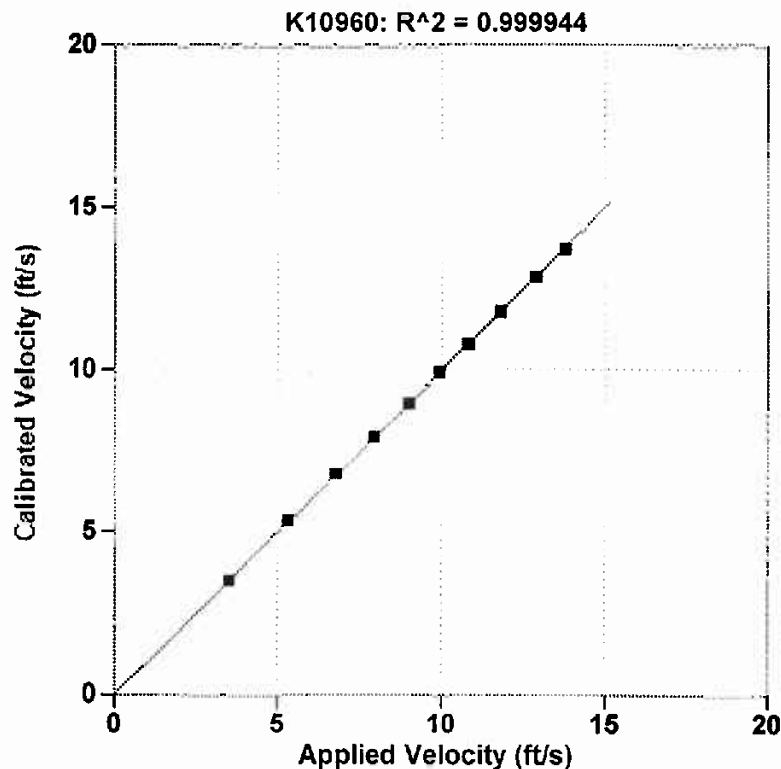
Operator: William Johnson

Ref Acc 1: 72517! Cal on: 24Mar2022  
1049 g's/volt

Ref Acc 2: 72505! Cal on: 24Mar2022  
1035 g's/volt

Signed

Reference accelerometer calibrations are traceable to  
the United States National Institute of Standards and  
Technology (NIST).



| Reference Velocity | S/N K10960 Velocity |
|--------------------|---------------------|
| ft/s               | ft/s                |
| 3.513              | 3.540               |
| 5.322              | 5.345               |
| 6.769              | 6.796               |
| 7.933              | 7.937               |
| 8.998              | 9.037               |
| 9.912              | 9.923               |
| 10.788             | 10.775              |
| 11.781             | 11.779              |
| 12.877             | 12.863              |
| 13.771             | 13.732              |

Maximum Acceleration: 934 g's

# Accelerometer Calibration Certificate

## Pile Dynamics, Inc.



Calibrated by Pile Dynamics, Inc.  
Calibration performed on 14Jun2022

Serial No: K11957 Temperature: 79.0 °F

Model: PR Humidity: 50%

Calibrated on: Channel 3 on 8G 5161 LE

### PDA CALIBRATION FACTOR

409.6 mv/5000g

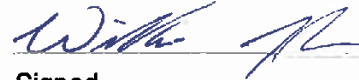
(81.9  $\mu$ v/g)

R<sup>2</sup>: 0.999919 [Chip programmed]

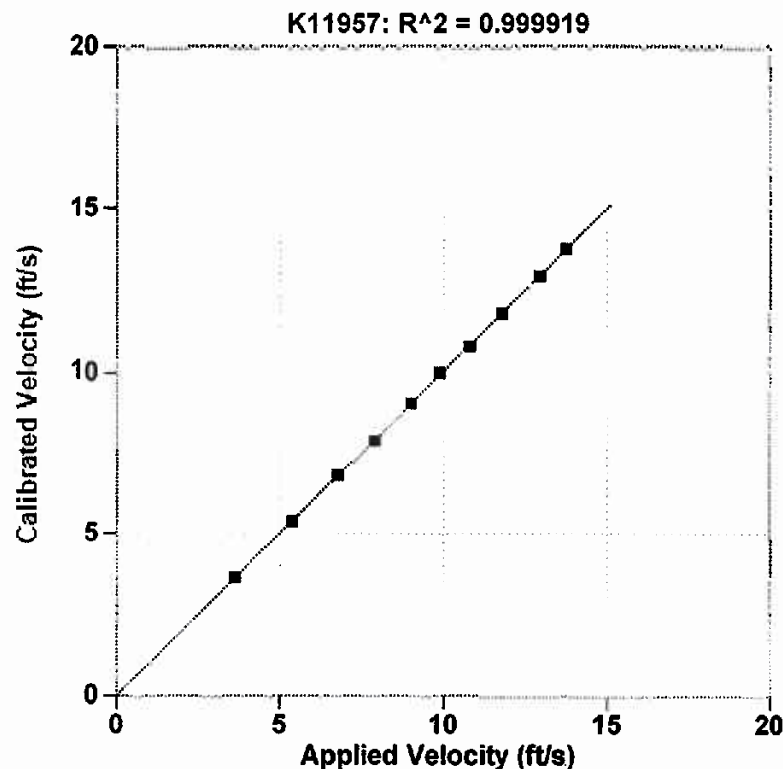
Operator: William Johnson

Ref Acc 1: 72517! Cal on: 24Mar2022  
1049 g's/volt

Ref Acc 2: 72505! Cal on: 24Mar2022  
1035 g's/volt

  
Signed

Reference accelerometer calibrations are traceable to  
the United States National Institute of Standards and  
Technology (NIST).



| Reference Velocity<br>ft/s | S/N K11957<br>Velocity<br>ft/s |
|----------------------------|--------------------------------|
| 3.643                      | 3.661                          |
| 5.377                      | 5.363                          |
| 6.761                      | 6.783                          |
| 7.895                      | 7.905                          |
| 8.973                      | 8.989                          |
| 9.864                      | 9.918                          |
| 10.780                     | 10.730                         |
| 11.763                     | 11.749                         |
| 12.920                     | 12.894                         |
| 13.735                     | 13.746                         |

Maximum Acceleration: 931 g's





## APPENDIX IV



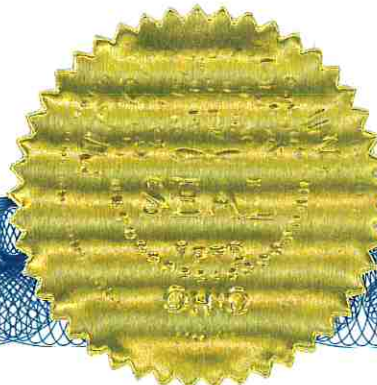
This documents that  
**Robert E. Kral**  
**Carolinas Geotechnical Group**  
has on May 20, 2016 achieved the rank of  
**ADVANCED**


**on the Dynamic Measurement and Analysis Proficiency Test.**

The individual identified on this document demonstrated to the degree granted above an understanding of theory, data quality evaluation, interpretation and signal matching for high strain dynamic testing of deep foundations. ***It is recommended that individuals at the Advanced level seek Master or Expert levels through additional study within six years of the date of this document.***

The ability of the individual named to provide appropriate knowledge and advice on a specific project is not implied or warranted by the Pile Driving Contractors Association or Pile Dynamics, Inc. **This certificate can be verified at [www.PDAproficiencytest.com](http://www.PDAproficiencytest.com).** The Pile Driving Contractors Association or Pile Dynamics, Inc. assumes no liability for foundation testing and analysis work performed by the bearer of this certificate.

  
Steven A. Hall, Executive Director  
Pile Driving Contractors Association



  
Garland Likins, Senior Partner  
Pile Dynamics, Inc.

No. 2072

# **S-17-58 over Beaverdam Creek**

## **Geotechnical Baseline Report**

---

# **APPENDIX**

## **SECTION 8**

## **GEOSCOPING FORM**



# GeoScoping Form

| PROJECT INFORMATION             |  |
|---------------------------------|--|
| Project ID: <u>P043715</u>      | Date of Trip: <u>2/26/25 - 2/28/25</u>                           |
| County: <u>Dillon</u>           | Location: <u>Over Beaverdam Creek, South of Gaddys Mill Pond</u> |
| Rd/Route: <u>S-17-58</u>        | Local Name: <u>Gaddys Mill Rd.</u>                               |
| Attendees: <u>William Pitts</u> |  |

| EXISTING BRIDGE INFORMATION                            |  |
|--|--|
| Bridge Length: <u>105'</u>                             | Bridge Width: <u>28'</u>                             |
| Superstructure Type: <u>Concrete</u>                   | Substructure Type: <u>Timber Pile</u>                |
| Begin Bridge Sta.: <u>N/A</u>                          | End Bridge Sta.: <u>N/A</u>                          |
| Begin Bridge Embankment Sta. <sup>1</sup> : <u>N/A</u> | End Bridge Embankment Sta. <sup>1</sup> : <u>N/A</u> |
| Structure Number:                                      | Posted Weight Limit: <u>No Signage</u>               |
| Crossing: <u>Beaverdam Creek</u>                       | Skew: <u>-</u>                                       |
| Latitude: <u>34.393387</u>                             | Longitude: <u>-79.239258</u>                         |
| Existing Fill Height: <u>Approx 4.0'</u>               | Approximate Existing Slope Angle: <u>20°-30°</u>     |

<sup>1</sup>Begin and End Bridge Embankment 100 feet down station or up station from bridge, respectively

| EXISTING ROADWAY EMBANKMENT INFORMATION   |  |
|---|--|
| Begin Project Sta.: <u>N/A</u>  | Begin Bridge Embankment Sta. <sup>1</sup> : <u>N/A</u> |
| Accessibility Issues: <u>None</u>   |  |
| Ground Cover: <u>Stonebase / Fill Soil / Top Soils</u>  |  |
| Existing Fill Height: <u>Approx 4.0' under Existing Road</u>  | Approximate Existing Slope Angle: <u>0°-5°</u>         |
| Local Development (undeveloped, developed residential, developed commercial, developed industrial, etc.): <u>undeveloped / Farmland / Residential</u> |  |
| Topography (level, flat, rolling, steep, hillside, valley, swamp, gully, etc.): <u>Flat / Slight Grade / Swamp</u>                                    |  |
| Traffic Control Necessary (Y/N): <u>NO</u>  |  |
| Surface Soil: <u>Sand with Silt (SP-SM)</u>   |  |
| Muck (Y/N): <u>NO</u>   |  |
| Exposed Rock (Y/N): <u>NO</u>   | In Stream Bed (Y/N): <u>Yes</u>                        |
| In Banks (Y/N): <u>Yes</u>  |  |
| Wetlands On-Site (Y/N): <u>Yes</u>  | Wetlands Adjacent (Y/N): <u>Yes</u>                    |
| Depth EG to Water: <u>Approx. 4.0'</u>  | Water Depth: <u>Approx. 4.0'</u>                       |
| Depth to Existing Ground: <u>on grade</u>   |  |
| Scour Condition at EB: <u>Minimal</u>   | Scour Condition at IB: <u>Assessed undetermined</u>    |
| End Bridge Embankment Sta. <sup>1</sup> : <u>N/A</u>  | End Project Sta.: <u>N/A</u>                           |
| Accessibility Issues: <u>None</u>   |  |
| Ground Cover: <u>Stonebase / Fill Soil / Top Soils</u>  |  |
| Existing Fill Height: <u>Approx 4.0' under Existing Road</u>  | Approximate Existing Slope Angle: <u>0°-5°</u>         |
| Local Development (undeveloped, developed residential, developed commercial, developed industrial, etc.): <u>undeveloped / Farmland / Residential</u> |  |
| Topography (level, flat, rolling, steep, hillside, valley, swamp, gully, etc.): <u>Flat / Slight Grade / Swamp</u>                                    |  |
| Traffic Control Necessary (Y/N): <u>Yes</u>   |  |
| Surface Soil: <u>Silty Sand (SM)</u>  |  |
| Muck (Y/N): <u>NO</u>   |  |
| Exposed Rock (Y/N): <u>NO</u>   | In Stream Bed (Y/N): <u>Yes</u>                        |
| In Banks (Y/N): <u>Yes</u>  |  |
| Wetlands On-Site (Y/N): <u>Yes</u>  | Wetlands Adjacent (Y/N): <u>Yes</u>                    |
| Depth EG to Water: <u>Approx. 4.0'</u>  | Water Depth: <u>Approx. 4.0'</u>                       |
| Depth to Existing Ground: <u>on grade</u>   |  |
| Scour Condition at EB: <u>Minimal</u>   | Scour Condition at IB: <u>undetermined</u>             |

## GeoScoping Form

| UTILITIES INFORMATION   |   |
|-------------------------|---|
| Attached:               | Fiber Optic (spectrum) / Water line / Power lines                                 |
| Above Ground/ Overhead: | Fiber optic and Water Run along side of Existing Bridge. Power lines Run overhead |
| Underground:            | Fiber optic and waterlines are both underground as well                           |

| COMMENTS |
|----------|
|          |

Instructions:

1. Attach boring location plan for bridge and roadway.
2. Attach all photographs taken, photographs to be labeled as to direction looking in and what is being depicted.
3. Fill out GeoScoping Form as completely as possible, using additional sheets as necessary to describe site conditions.
4. If representative of GEC on site during GeoScoping, include GEC representative's name and contact number in Attendees block.



## GeoScoping Form



**Approach Boring B-1 Looking Southwest**



**Approach Boring B-1 Looking Southwest**



**Approach Boring B-3 looking Northeast**



**East Approach Looking North**



## GeoScoping Form



**Gas Line**



**Guardrail Looking Northeast**



**Looking Northeast, Pile Header**



**Looking Southwest, Bridge underside**



## GeoScoping Form



**On Bridge Looking North**



**On Bridge Looking South**



**On Site Looking Northeast, Left Approach**



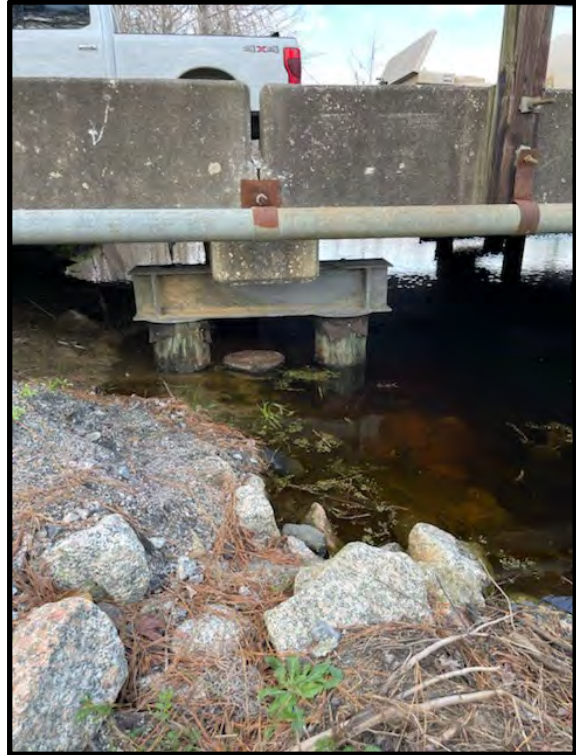
**On Site Looking Southwest, Left Approach**



## GeoScoping Form



**On Site Looking Southwest, Right Approach**



**Pile Cap**



**Signage**



**Utility Marker**



## GeoScoping Form



Utility Marker



Utility Marker



Utility Marker



Utility Marker