

REFERENCE: BR-0097

PROJECT: 67097

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY ROCKINGHAM
PROJECT DESCRIPTION REPLACE BRIDGE NO. 178
ON SR 1929 (ESTES ROAD) OVER US 29

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GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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PERSONNEL

D. KUBINSKI

TRIGON EXPLORATION

INVESTIGATED BY D. KUBINSKI


DRAWN BY T. WELLS

CHECKED BY X. BARRETT

SUBMITTED BY KLEINFELDER, INC.

DATE JULY 2022

Prepared in the Office of:



KLEINFELDER
Bright People. Right Solutions.
422 GALLIMORE DAIRY ROAD, SUITE B
GREENSBORO, NORTH CAROLINA 27409
NC ENGINEERING FIRM LICENSE NO. F-1312



DocuSigned by:
Thomas R. Wells 07/06/2022

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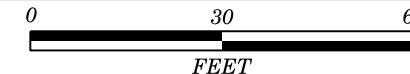
**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT**

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

| SOIL DESCRIPTION
 | | | | | | | | | | GRADATION | | | | | ROCK DESCRIPTION | | | | | TERMS AND DEFINITIONS
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 209, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>
 | | | | | | | | | | <p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p> | | | | | <p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p> | | | | | <p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
AQUIFER - A WATER BEARING FORMATION OR STRATA.
ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL.
FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS
THAN 0.1 FOOT PER 60 BLOWS.
STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="6">GRANULAR MATERIALS (≤ 35% PASSING #200)</th> <th colspan="6">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1</th> <th>A-3</th> <th>A-2</th> <th>A-2-4</th> <th>A-2-5</th> <th>A-2-6</th> <th>A-2-7</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-1, A-2</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>GROUP CLASS.</td> <td>A-1-a</td> <td>A-1-b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>A-7-5</td> <td>A-7-6</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SYMBOL</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>% PASSING #10 #40 #200</td> <td>50 MX 30 MX 15 MX</td> <td>50 MX 25 MX</td> <td>51 MN 35 MX</td> <td>35 MX</td> <td>35 MX</td> <td>35 MX</td> <td>35 MX</td> <td>36 MN</td> <td>36 MN</td> <td>36 MN</td> <td>36 MN</td> <td>36 MN</td> <td>36 MN</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>MATERIAL PASSING #40 LL PI</td> <td>-</td> <td>-</td> <td>40 MX 10 MX</td> <td>41 MN 10 MX</td> <td>40 MX 10 MX</td> <td>41 MN 11 MN</td> <td>40 MX 10 MX</td> <td>41 MN 10 MX</td> <td>40 MX 10 MX</td> <td>41 MN 11 MN</td> <td>40 MX 11 MN</td> <td>41 MN 11 MN</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td> <td>0</td> <td>0</td> <td>4 MX</td> <td>8 MX</td> <td>12 MX</td> <td>16 MX</td> <td>NO MX</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS. GRAVEL, AND SAND</td> <td>FINE SAND</td> <td>SILTY OR CLAYEY GRAVEL AND SAND</td> <td>SILTY SOILS</td> <td>CLAYEY SOILS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GEN. RATING AS SUBGRADE</td> <td colspan="6">EXCELLENT TO GOOD</td> <td colspan="4">FAIR TO POOR</td> <td>FAIR TO POOR</td> <td>POOR</td> <td>UNSUITABLE</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10">PI OF A-7-5 SUBGROUP IS ≤ LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30</td> <td colspan="5"></td> <td colspan="5"></td> </tr> <tr> <td colspan="10"> <p style="text-align: center;">CONSISTENCY OR DENSENESS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PRIMARY SOIL TYPE</th> <th>COMPACTNESS OR CONSISTENCY</th> <th>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</th> <th>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</th> </tr> </thead> <tbody> <tr> <td>GENERALLY GRANULAR MATERIAL (NON-COHESIVE)</td> <td>VERY LOOSE
LOOSE
MEDIUM DENSE
DENSE
VERY DENSE</td> <td>< 4
4 TO 10
10 TO 30
30 TO 50
> 50</td> <td>N/A</td> </tr> <tr> <td>GENERALLY SILT-CLAY MATERIAL (COHESIVE)</td> <td>VERY SOFT
SOFT
MEDIUM STIFF
STIFF
VERY STIFF
HARD</td> <td>< 2
2 TO 4
4 TO 8
8 TO 15
15 TO 30
> 30</td> <td>< 0.25
0.25 TO 0.5
0.5 TO 1.0
1 TO 2
2 TO 4
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 | | | ORGANIC MATERIALS | | | A-1 | A-3 | A-2 | A-2-4 | A-2-5 | A-2-6 | A-2-7 | A-4 | A-5 | A-6 | A-7 | A-1, A-2 | A-4, A-5 | A-6, A-7 | | | | GROUP CLASS. | A-1-a | A-1-b | | | | | | | | | A-7-5 | A-7-6 | | | | | | SYMBOL | | | | | | | | | | | | | | | | | | % PASSING #10 #40 #200 | 50 MX 30 MX 15 MX | 50 MX 25 MX | 51 MN 35 MX | 35 MX | 35 MX | 35 MX | 35 MX | 36 MN | 36 MN | 36 MN | 36 MN | 36 MN | 36 MN | | | | | MATERIAL PASSING #40 LL PI | - | - | 40 MX 10 MX | 41 MN 10 MX | 40 MX 10 MX
| 41 MN 11 MN | 40 MX 10 MX | 41 MN 10 MX | 40 MX 10 MX | 41 MN 11 MN | 40 MX 11 MN | 41 MN 11 MN | | | | | | GROUP INDEX | 0 | 0 | 0 | 4 MX | 8 MX | 12 MX | 16 MX | NO MX | | | | | | | | | | USUAL TYPES OF MAJOR MATERIALS | STONE FRAGS. GRAVEL, AND SAND | FINE SAND | SILTY OR CLAYEY GRAVEL AND SAND | SILTY SOILS | CLAYEY SOILS | | | | | | | | | | | | | GEN. RATING AS SUBGRADE | EXCELLENT TO GOOD | | | | | | FAIR TO POOR | | | | FAIR TO POOR | POOR | UNSUITABLE | | | | | PI OF A-7-5 SUBGROUP IS ≤ LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30 | | | | | | | | | | | | | | | | | | | | <p style="text-align: center;">CONSISTENCY OR DENSENESS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PRIMARY SOIL TYPE</th> <th>COMPACTNESS OR CONSISTENCY</th> <th>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</th> <th>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</th> </tr> </thead> <tbody> <tr> <td>GENERALLY GRANULAR MATERIAL (NON-COHESIVE)</td> <td>VERY LOOSE
LOOSE
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- VOID RATIO</td> <td>F - FINE</td> <td>FOSS. - FOSSILIFEROUS</td> <td>FRAC. - FRACTURED, FRACTURES</td> <td>FRAGS. - FRAGMENTS</td> <td>HI. - HIGHLY</td> <td>MED. - MEDIUM</td> <td>MICA. - MICACEOUS</td> <td>MOD. - MODERATELY</td> <td>NP - NON PLASTIC</td> <td>ORG. - ORGANIC</td> <td>PMT - PRESSUREMETER TEST</td> <td>SAP. - SAPROLITIC</td> <td>SD. - SAND, SANDY</td> <td>SL. - SILT, SILTY</td> <td>SLI. - SLIGHTLY</td> <td>TCR - TRICONE REFUSAL</td> <td>w - MOISTURE CONTENT</td> <td>V - VERY</td> <td>VST - VANE SHEAR TEST</td> <td>WEA. - WEATHERED</td> <td>UNIT WEIGHT</td> <td>DRY UNIT WEIGHT</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | | | | | AR - AUGER REFUSAL | CL. - CLAY | CPT - COARSE PENETRATION TEST | CSE. - COARSE | DMT - DILATOMETER TEST | DPT - DYNAMIC PENETRATION TEST | e - VOID RATIO | F - FINE | FOSS. - FOSSILIFEROUS | FRAC. - FRACTURED, FRACTURES | FRAGS. - FRAGMENTS | HI. - HIGHLY | MED. - MEDIUM | MICA. - MICACEOUS | MOD. - MODERATELY | NP - NON PLASTIC | ORG. - ORGANIC | PMT - PRESSUREMETER TEST | SAP. - SAPROLITIC | SD. - SAND, SANDY | SL. - SILT, SILTY | SLI. - SLIGHTLY | TCR - TRICONE REFUSAL | w - MOISTURE CONTENT | V - VERY | VST - VANE SHEAR TEST | WEA. - WEATHERED | UNIT WEIGHT | DRY UNIT WEIGHT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <p style="text-align: center;">TEXTURE OR GRAIN SIZE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>U.S. STD. 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| GENERAL CLASS.
 | GRANULAR MATERIALS (≤ 35% PASSING #200) | | | | | | SILT-CLAY MATERIALS (> 35% PASSING #200) | | | | | | ORGANIC MATERIALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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 | A-1 | A-3 | A-2 | A-2-4 | A-2-5 | A-2-6 | A-2-7 | A-4 | A-5 | A-6 | A-7 | A-1, A-2 | A-4, A-5 | A-6, A-7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| GROUP CLASS.
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| <p style="text-align: center;">CONSISTENCY OR DENSENESS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PRIMARY SOIL TYPE</th> <th>COMPACTNESS OR CONSISTENCY</th> <th>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</th> <th>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</th> </tr> </thead> <tbody> <tr> <td>GENERALLY GRANULAR MATERIAL (NON-COHESIVE)</td> <td>VERY LOOSE
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 | SLI. - SLIGHTLY | TCR - TRICONE REFUSAL | w - MOISTURE CONTENT | V - VERY | VST - VANE SHEAR TEST | WEA. - WEATHERED | UNIT WEIGHT | DRY UNIT WEIGHT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;">TEXTURE OR GRAIN SIZE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <th>4</th> <th>10</th> <th>40</th> <th>60</th> <th>200</th> <th>270</th> </tr> </thead> <tbody> <tr> <td></td> <td>4.76</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> </tr> <tr> <td>BOULDER (BLDR.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>COBBLE (COB.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GRAVEL (GR.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>COARSE SAND (CSE. SD.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>FINE SAND (F SD.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SILT (SL.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CLAY (CL.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>
 | | | | | | | | | | U.S. STD. SIEVE SIZE OPENING (MM) | 4 | 10 | 40 | 60 | 200 | 270 | | 4.76 | 2.00 | 0.42
 | 0.25 | 0.075 | 0.053 | BOULDER (BLDR.) | | | | | | | COBBLE (COB.) | | | | | | | GRAVEL (GR.) | | | | | | | COARSE SAND (CSE. SD.) | | | | | | | FINE SAND (F SD.) | | | | | | | SILT (SL.) | | | | | | | CLAY (CL.) | | | | | | | <p style="text-align: center;">EQUIPMENT USED ON SUBJECT PROJECT</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>DRILL UNITS:</td> <td>ADVANCING TOOLS:</td> <td>HAMMER TYPE:</td> </tr> <tr> <td><input type="checkbox"/> CME-45C</td> <td><input type="checkbox"/> CLAY BITS</td> <td><input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL</td> </tr> <tr> <td><input checked="" type="checkbox"/> CME-55</td> <td><input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER</td> <td>CORE SIZE:</td> </tr> <tr> <td><input type="checkbox"/> CME-550</td> <td><input checked="" type="checkbox"/> 8" HOLLOW AUGERS</td> <td><input type="checkbox"/> -B <input type="checkbox"/> -H <input type="checkbox"/> -N</td> </tr> <tr> <td><input type="checkbox"/> VANE SHEAR TEST</td> <td><input type="checkbox"/> HARD FACED FINGER BITS</td> <td>HAND TOOLS:</td> </tr> <tr> <td><input type="checkbox"/> PORTABLE HOIST</td> <td><input type="checkbox"/> TUNG-CARBIDE INSERTS</td> <td><input type="checkbox"/> POST HOLE DIGGER</td> </tr> <tr> <td><input type="checkbox"/> MOBILE B-57</td> <td><input type="checkbox"/> CASING <input type="checkbox"/> w/ ADVANCER</td> <td><input type="checkbox"/> HAND AUGER</td> </tr> <tr> <td></td> <td><input type="checkbox"/> TRICONE <input type="checkbox"/> STEEL TEETH</td> <td><input type="checkbox"/> SOUNDING ROD</td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/> TRICONE 2-1/2" TUNG-CARB.</td> <td><input type="checkbox"/> VANE SHEAR TEST</td> </tr> <tr> <td></td> <td><input type="checkbox"/> CORE BIT</td> <td></td> </tr> </tbody> </table> | | | | | DRILL UNITS: | ADVANCING TOOLS: | HAMMER TYPE: | <input type="checkbox"/> CME-45C | <input type="checkbox"/> CLAY BITS | <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL | <input checked="" type="checkbox"/> CME-55 | <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER | CORE SIZE: | <input type="checkbox"/> CME-550 | <input checked="" type="checkbox"/> 8" HOLLOW AUGERS | <input type="checkbox"/> -B <input type="checkbox"/> -H <input type="checkbox"/> -N | <input type="checkbox"/> VANE SHEAR TEST | <input type="checkbox"/> HARD FACED FINGER BITS | HAND TOOLS: | <input type="checkbox"/> PORTABLE HOIST | <input type="checkbox"/> TUNG-CARBIDE INSERTS | <input type="checkbox"/> POST HOLE DIGGER | <input type="checkbox"/> MOBILE B-57 | <input type="checkbox"/> CASING <input type="checkbox"/> w/ ADVANCER | <input type="checkbox"/> HAND AUGER | | <input type="checkbox"/> TRICONE <input type="checkbox"/> STEEL TEETH | <input type="checkbox"/> SOUNDING ROD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | <input checked="" type="checkbox"/> TRICONE 2-1/2" TUNG-CARB. | <input type="checkbox"/> VANE SHEAR TEST | | <input type="checkbox"/> CORE BIT | | <p style="text-align: center;">SOIL MOISTURE - CORRELATION OF TERMS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</th> <th>FIELD MOISTURE DESCRIPTION</th> <th>GUIDE FOR FIELD MOISTURE DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>LL</td> <td>LIQUID LIMIT</td> <td></td> </tr> <tr> <td>PL</td> <td>PLASTIC LIMIT</td> <td></td> </tr> <tr> <td>OM</td> <td>OPTIMUM MOISTURE SHRINKAGE LIMIT</td> <td></td> </tr> <tr> <td></td> <td>- SATURATED - (SAT.)</td> <td>USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE</td> </tr> <tr> <td></td> <td>- WET - (W)</td> <td>SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE</td> </tr> <tr> <td></td> <td>- MOIST - (M)</td> <td>SOLID; AT OR NEAR OPTIMUM MOISTURE</td> </tr> <tr> <td></td> <td>- DRY - (D)</td> <td>REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE</td> </tr> </tbody> </table> | | | | | SOIL MOISTURE SCALE (ATTERBERG LIMITS) | FIELD MOISTURE DESCRIPTION | GUIDE FOR FIELD MOISTURE DESCRIPTION | LL | LIQUID LIMIT | | PL | PLASTIC LIMIT | | OM | OPTIMUM MOISTURE SHRINKAGE LIMIT | | | - SATURATED - (SAT.) | USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE | | - WET - (W) | SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | | - MOIST - (M) | SOLID; AT OR NEAR OPTIMUM MOISTURE | | - DRY - (D) | REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | <p style="text-align: center;">FRACATURE SPACING</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>TERM</th> <th>SPACING</th> </tr> </thead> <tbody> <tr> <td>VERY WIDE</td> <td>MORE THAN 10 FEET</td> </tr> <tr> <td>WIDE</td> <td>3 TO 10 FEET</td> </tr> <tr> <td>MODERATELY CLOSE</td> <td>1 TO 3 FEET</td> </tr> <tr> <td>CLOSE</td> <td>0.16 TO 1 FOOT</td> </tr> <tr> <td>VERY CLOSE</td> <td>LESS THAN 0.16 FEET</td> </tr> </tbody> </table> | | | | | TERM | SPACING | VERY WIDE | MORE THAN 10 FEET | WIDE | 3 TO 10 FEET | MODERATELY CLOSE | 1 TO 3 FEET | CLOSE | 0.16 TO 1 FOOT | VERY CLOSE | LESS THAN 0.16 FEET | <p style="text-align: center;">BEDDING</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>TERM</th> <th>THICKNESS</th> </tr> </thead> <tbody> <tr> <td>VERY THICKLY BEDDED</td> <td>4 FEET</td> </tr> <tr> <td>THICKLY BEDDED</td> <td>1.5 - 4 FEET</td> </tr> <tr> <td>THINLY BEDDED</td> <td>0.16 - 1.5 FEET</td> </tr> <tr> <td>VERY THINLY BEDDED</td> <td>0.03 - 0.16 FEET</td> </tr> <tr> <td>THICKLY LAMINATED</td> <td>0.008 - 0.03 FEET</td> </tr> <tr> <td>THINLY LAMINATED</td> <td>< 0.008 FEET</td> </tr> </tbody> </table> | | | | | TERM | THICKNESS | VERY THICKLY BEDDED | 4 FEET | THICKLY BEDDED | 1.5 - 4 FEET | THINLY BEDDED | 0.16 - 1.5 FEET | VERY THINLY BEDDED | 0.03 - 0.16 FEET | THICKLY LAMINATED | 0.008 - 0.03 FEET | THINLY LAMINATED | < 0.008 FEET | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;">PLASTICITY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">PLASTICITY INDEX (PI)</th> <th rowspan="2">DRY STRENGTH</th> </tr> <tr> <th>0-5</th> <th>6-15</th> </tr> </thead> <tbody> <tr> <td>NON PLASTIC</td> <td>0-5</td> <td>VERY LOW</td> </tr> <tr> <td>SLIGHTLY PLASTIC</td> <td>6-15</td> <td>SLIGHT</td> </tr> <tr> <td>MODERATELY PLASTIC</td> <td>16-25</td> <td>MEDIUM</td> </tr> <tr> <td>HIGHLY PLASTIC</td> <td>26 OR MORE</td> <td>HIGH</td> </tr> </tbody> </table>
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 | SLIGHT | MODERATELY PLASTIC | 16-25 | MEDIUM | HIGHLY PLASTIC | 26 OR MORE | HIGH | <p style="text-align: center;">INDURATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</td> <td></td> </tr> <tr> <td>FRIABLE</td> <td>RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</td> </tr> <tr> <td>MODERATELY INDURATED</td> <td>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</td> </tr> <tr> <td>INDURATED</td> <td>GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</td> </tr> <tr> <td>EXTREMELY INDURATED</td> <td>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</td> </tr> </tbody> </table> | | | | | FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. | | FRIABLE | RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. | MODERATELY INDURATED | GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. | INDURATED | GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. | EXTREMELY INDURATED | SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| FRIABLE
 | RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| MODERATELY INDURATED
 | GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| INDURATED
 | GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| EXTREMELY INDURATED
 | SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;">COLOR</p> <p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>
 | | | | | | | | | | <p style="text-align: center;">FRACATURE SPACING</p> <p>TERM: N/A</p> | | | | | <p style="text-align: center;">TERMS AND DEFINITIONS</p> <p>ELEVATION: N/A FEET</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;">NOTES:</p> <p>FIAD - FILLED IMMEDIATELY AFTER DRILLING</p> <p>THE BORINGS WERE SURVEYED BY SEPIENGINEERING & CONSTRUCTION, INC. USING A SUB CENTIMETER GPS.</p>
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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SITE PLAN

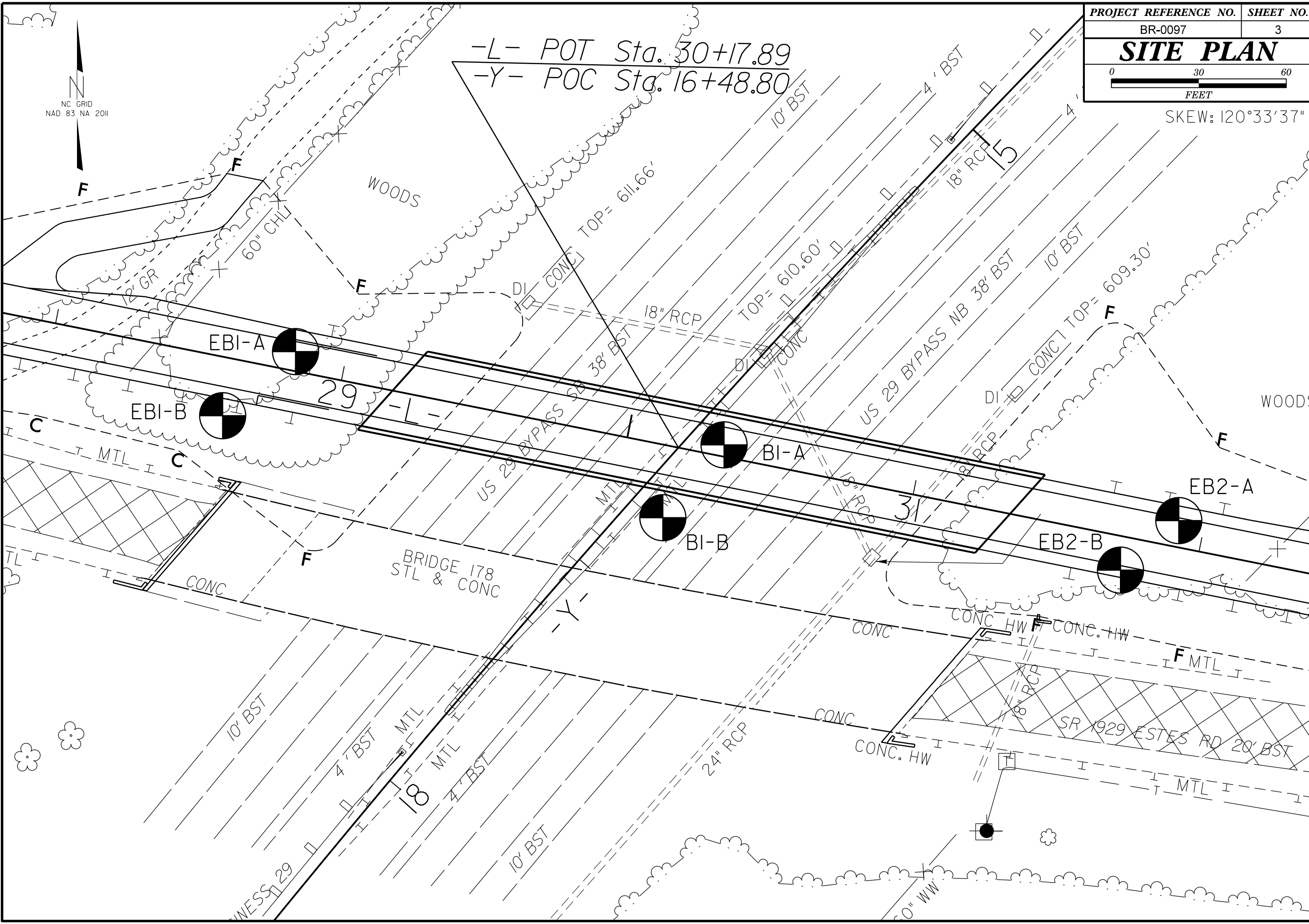


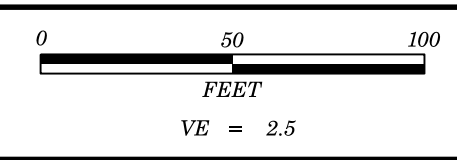
SKEW: 120°33'37"

-L- POT Sta. 30+17.89

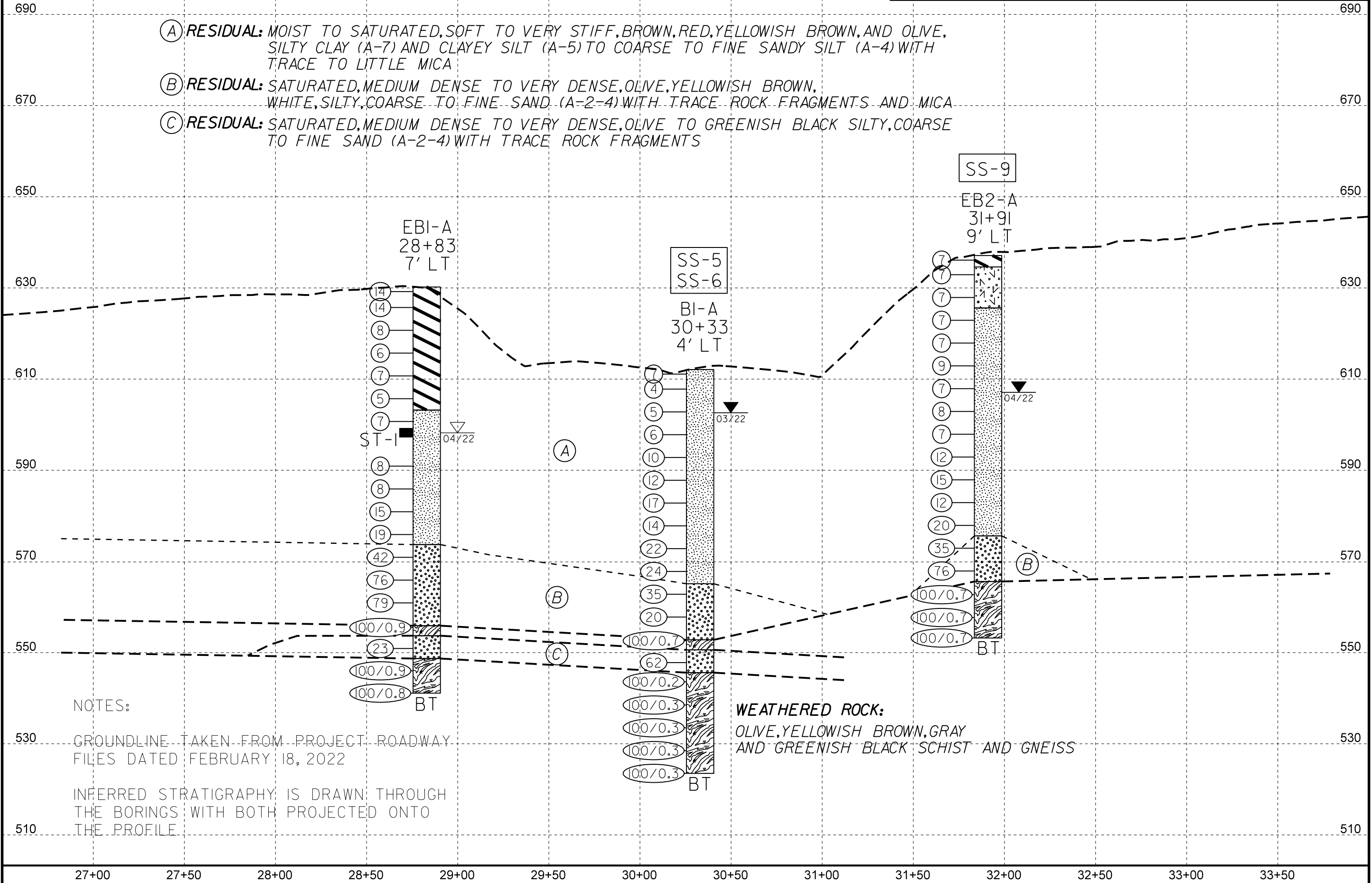
-Y- POC Sta. 16+48.80

NC GRID
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PROJECT REFERENCE NO.	SHEET NO.
BR-0097	4
CENTERLINE PROFILE ON BRIDGE NO. 178 ON SR 1929 (-L-) OVER US 29 (-Y-)	



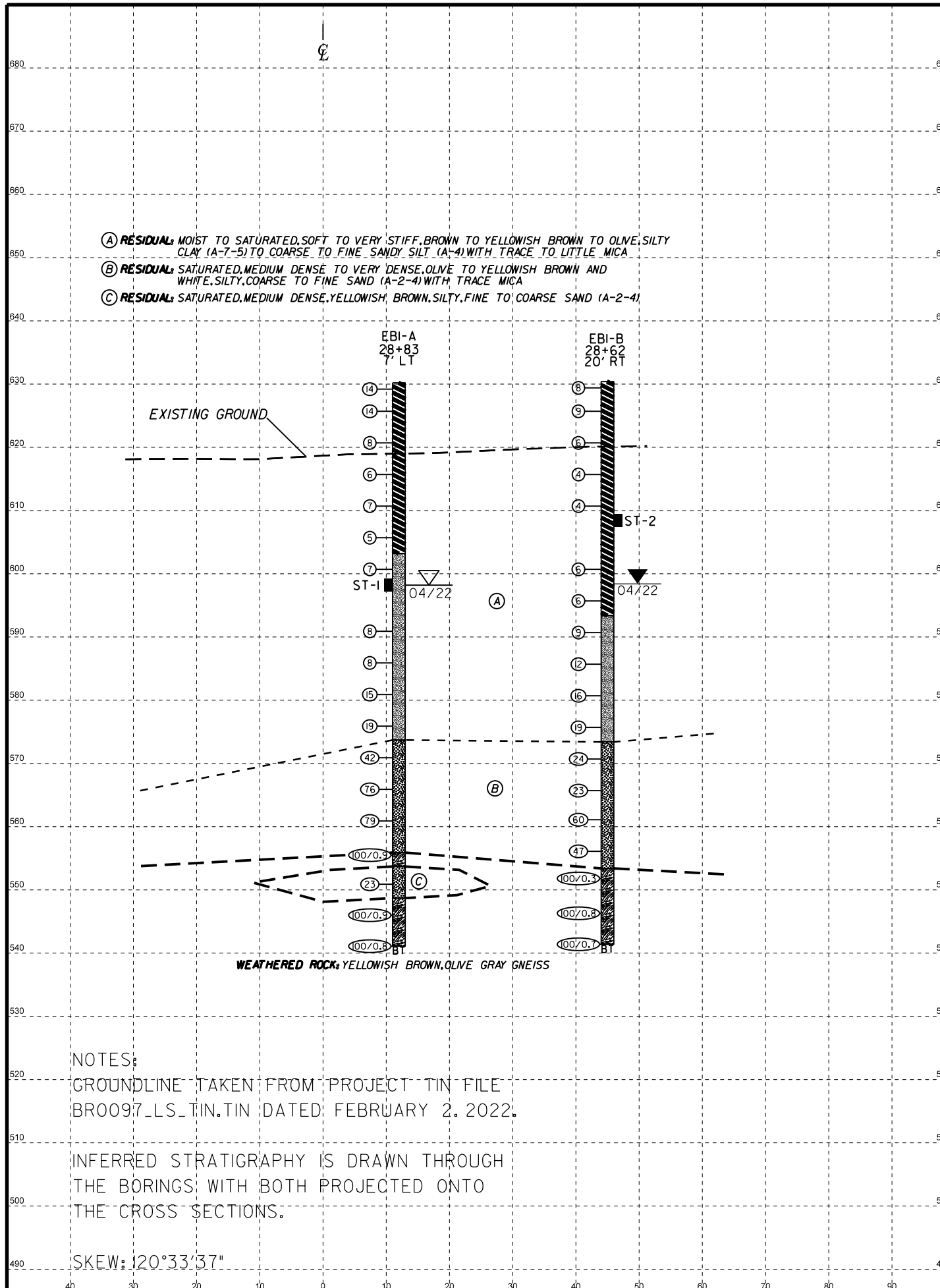
- Ⓐ **RESIDUAL:** MOIST TO SATURATED, SOFT TO VERY STIFF, BROWN, RED, YELLOWISH BROWN, AND OLIVE, SILTY CLAY (A-7) AND CLAYEY SILT (A-5) TO COARSE TO FINE SANDY SILT (A-4) WITH TRACE TO LITTLE MICA
- Ⓑ **RESIDUAL:** SATURATED, MEDIUM DENSE TO VERY DENSE, OLIVE, YELLOWISH BROWN, WHITE, SILTY, COARSE TO FINE SAND (A-2-4) WITH TRACE ROCK FRAGMENTS AND MICA
- Ⓒ **RESIDUAL:** SATURATED, MEDIUM DENSE TO VERY DENSE, OLIVE TO GREENISH BLACK SILTY, COARSE TO FINE SAND (A-2-4) WITH TRACE ROCK FRAGMENTS

NOTES:

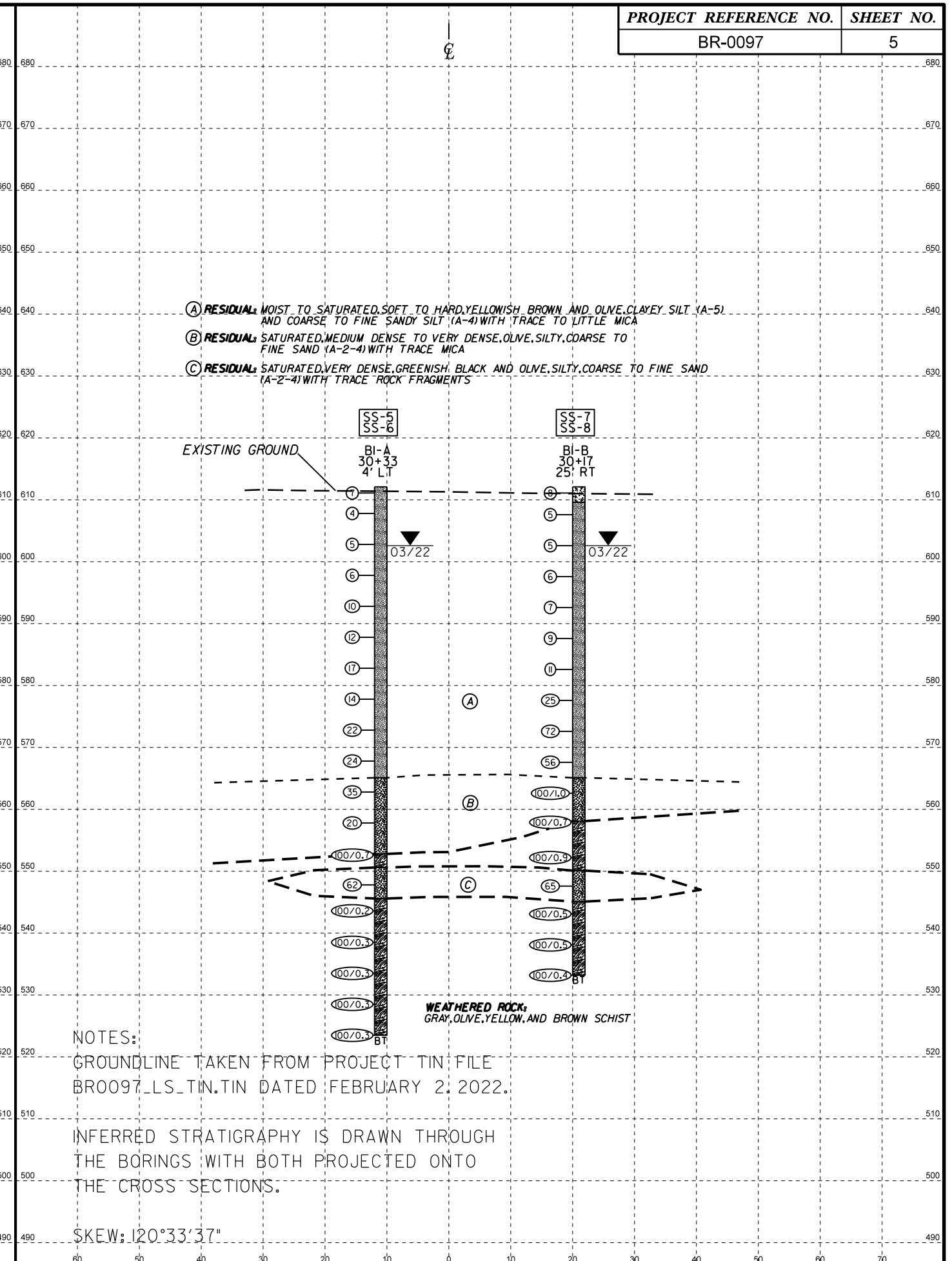
GROUNDLINE TAKEN FROM PROJECT ROADWAY FILES DATED FEBRUARY 18, 2022

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

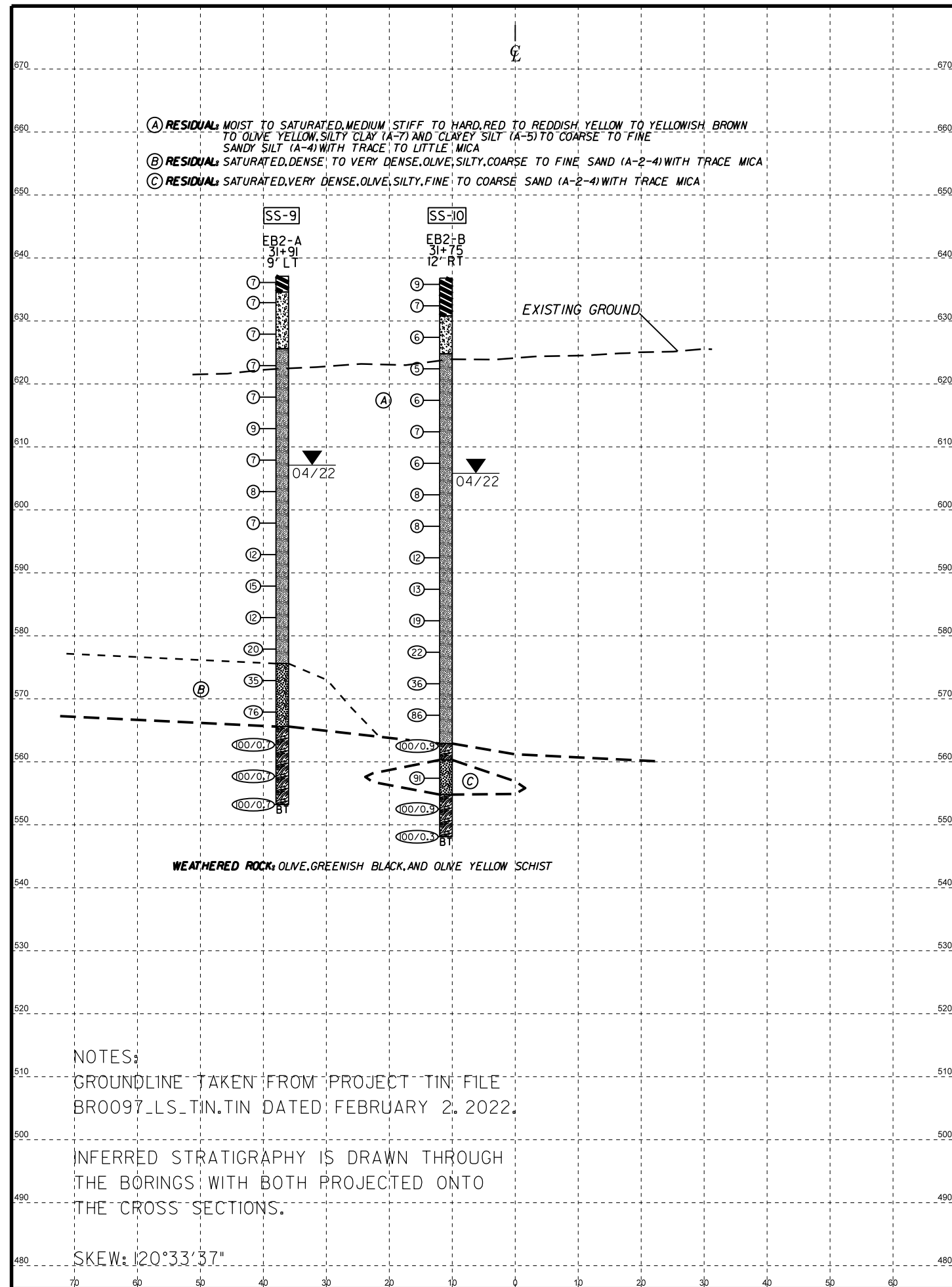
WEATHERED ROCK:
OLIVE, YELLOWISH BROWN, GRAY AND GREENISH BLACK SCHIST AND GNEISS



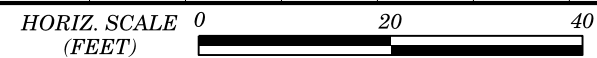
- (A) RESIDUAL: MOIST TO SATURATED, SOFT TO VERY STIFF, BROWN TO YELLOWISH BROWN TO OLIVE, SILTY CLAY (A-7-5) TO COARSE TO FINE SANDY SILT (A-4) WITH TRACE TO LITTLE MICA
- (B) RESIDUAL: SATURATED, MEDIUM DENSE TO VERY DENSE, OLIVE TO YELLOWISH BROWN AND WHITE, SILTY, COARSE TO FINE SAND (A-2-4) WITH TRACE MICA
- (C) RESIDUAL: SATURATED, MEDIUM DENSE, YELLOWISH, BROWN, SILTY, FINE TO COARSE SAND (A-2-4)



- (A) RESIDUAL: MOIST TO SATURATED, SOFT TO HARD, YELLOWISH BROWN AND OLIVE, CLAYEY SILT (A-5) AND COARSE TO FINE SANDY SILT (A-4) WITH TRACE TO LITTLE MICA
- (B) RESIDUAL: SATURATED, MEDIUM DENSE TO VERY DENSE, OLIVE, SILTY, COARSE TO FINE SAND (A-2-4) WITH TRACE MICA
- (C) RESIDUAL: SATURATED, VERY DENSE, GREENISH, BLACK AND OLIVE, SILTY, COARSE TO FINE SAND (A-2-4) WITH TRACE ROCK FRAGMENTS



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VE = 1

**CROSS SECTION ALONG
END BENT NO. 2 AT STA. 31+34**

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67097.1.1		TIP BR-0097		COUNTY ROCKINGHAM		GEOLOGIST D. Kubinski								
SITE DESCRIPTION Replace Bridge No. 178 on SR 1929 (Estes Road) over US 29							GROUND WTR (ft)							
BORING NO. EB1-B		STATION 28+62		OFFSET 20 ft RT		ALIGNMENT -L-								
COLLAR ELEV. 630.4 ft		TOTAL DEPTH 89.0 ft		NORTHING 980,976		EASTING 1,832,513								
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 82% 04/23/2021		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER R. Toothman		START DATE 04/01/22		COMP. DATE 04/04/22		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
635														
630	630.4	0.0	1	3	5									630.4 GROUND SURFACE 0.0
625	626.7	3.7	3	4	5									RESIDUAL Red to Reddish Yellow to Brown, Silty CLAY (A-7-5)
620	621.7	8.7	2	3	3									
615	616.7	13.7	4	2	2									
610	611.7	18.7	2	2	2									
605														
600	601.7	28.7	2	2	4									
595	596.7	33.7	2	2	4									
590	591.7	38.7	2	4	5									593.4 Yellowish Brown, Coarse to Fine Sandy SILT (A-4) 37.0
585	586.7	43.7	3	4	8									
580	581.7	48.7	3	6	10									
575	576.7	53.7	4	8	11									
570	571.7	58.7	5	10	14									573.4 Olive to Brown, Silty, Coarse to Fine SAND (A-2-4), Trace Mica 57.0
565	566.7	63.7	6	9	14									
560	562.1	68.3	21	28	32									
555	557.1	73.3	20	25	22									

NCDOT BORE DOUBLE BR0097_GINT.GPJ NC_DOT.GDT 6/16/22

WBS 67097.1.1		TIP BR-0097		COUNTY ROCKINGHAM		GEOLOGIST D. Kubinski								
SITE DESCRIPTION Replace Bridge No. 178 on SR 1929 (Estes Road) over US 29							GROUND WTR (ft)							
BORING NO. EB1-B		STATION 28+62		OFFSET 20 ft RT		ALIGNMENT -L-								
COLLAR ELEV. 630.4 ft		TOTAL DEPTH 89.0 ft		NORTHING 980,976		EASTING 1,832,513								
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 82% 04/23/2021		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER R. Toothman		START DATE 04/01/22		COMP. DATE 04/04/22		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
555														
550	552.1	78.3												Match Line
545	547.1	83.3	38	62	0.3									553.4 WEATHERED ROCK Yellowish Brown to Olive GNEISS 77.0
	542.1	88.3	60	40	0.2									541.4 Boring Terminated at Elevation 541.4 ft in WEATHERED ROCK: GNEISS
														Other Samples: ST-2 (21.0 - 23.0)

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67097.1.1		TIP BR-0097		COUNTY ROCKINGHAM		GEOLOGIST D. Kubinski										
SITE DESCRIPTION Replace Bridge No. 178 on SR 1929 (Estes Road) over US 29							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 31+75		OFFSET 12 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 636.8 ft		TOTAL DEPTH 88.7 ft		NORTHING 980,923		EASTING 1,832,821										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 82% 04/23/2021			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER R. Toothman		START DATE 03/29/22		COMP. DATE 03/30/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
640																
	636.8	0.0	2	4	5										636.8	GROUND SURFACE
635																RESIDUAL Red to Orange, Silty CLAY (A-7)
	633.4	3.4	2	3	4											
630															630.8	Reddish Yellow, Clayey SILT (A-5) with Trace Mica
	628.4	8.4	2	3	3											
625															624.8	Reddish Yellow to Yellowish Brown to Olive, Coarse to Fine Sandy SILT (A-4) with Trace to Little Mica
	623.4	13.4	2	2	3											
620																
	618.4	18.4	1	3	3											
615																
	613.4	23.4	3	4	3											
610																
	608.4	28.4	1	3	3											
605																
	603.4	33.4	2	3	5											Sat.
600																
	598.4	38.4	1	3	5											Sat.
595																
	593.4	43.4	2	5	7											Sat.
590																
	588.4	48.4	4	5	8											Sat.
585																
	583.4	53.4	6	7	12											Sat.
580																
	578.4	58.4	6	9	13											Sat.
575																
	573.4	63.4	10	16	20											Sat.
570																
	568.4	68.4	15	26	60											Sat.
565																
	563.4	73.4	22	78/0.4												Sat.
560																
															562.9	WEATHERED ROCK Olive SCHIST
															560.3	

NCDOT BORE DOUBLE BR0097_GEO BRDG_GINT.GPJ_NC_DOT.GDT 6/16/22

WBS 67097.1.1		TIP BR-0097		COUNTY ROCKINGHAM		GEOLOGIST D. Kubinski										
SITE DESCRIPTION Replace Bridge No. 178 on SR 1929 (Estes Road) over US 29							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 31+75		OFFSET 12 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 636.8 ft		TOTAL DEPTH 88.7 ft		NORTHING 980,923		EASTING 1,832,821										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 82% 04/23/2021			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER R. Toothman		START DATE 03/29/22		COMP. DATE 03/30/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
560																
	558.4	78.4	12	35	56											Match Line
555																RESIDUAL Olive, Silty, Fine to Coarse SAND (A-2-4) with Trace Mica (continued)
	553.4	83.4	29	71/0.4												554.8
550																WEATHERED ROCK Olive Yellow SCHIST
	548.4	88.4	100/0.3													548.1
																Boring Terminated at Elevation 548.1 ft in WEATHERED ROCK: SCHIST

LABORATORY SUMMARY SHEET FOR SOIL SAMPLES

SHEET 13

WBS NO. (TIP NO.): 67097.1.1 (BR-0097)

PROJECT ID: 39271

COUNTY: ROCKINGHAM

DESCRIPTION: REPLACE BRIDGE NO. 178 ON SR 1929 (ESTES ROAD) OVER US 29

Sample No.	Boring Number	Alignment	Station	Offset	Sample Depth (ft.)	Natural Moisture Content (%)	AASHTO Class.	N-Value (blows/ ft.)	Atterberg Limits			Gradation Results							
									L.L.	P.L.	P.I.	Retained #4 Sieve	Pass #10 Sieve	Pass #40 Sieve	Pass #200 Sieve	Coarse Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)
SS-5	B1-A	-L-	30+33	4' LT	13.3 - 14.8	--	A-4	6	NP	NP	NP	0.0	99.0	97.4	62.7	4.9	62.3	18.4	14.3
SS-6	B1-A	-L-	30+33	4' LT	28.3 - 29.8	--	A-4	17	NP	NP	NP	1.0	96.0	89.1	55.0	17.3	38.6	31.8	12.4
SS-7	B1-B	-L-	30+17	25' RT	18.5 - 20.0	--	A-4	7	NP	NP	NP	1.0	98.0	96.1	64.5	7.2	42.4	38.2	12.1
SS-8	B1-B	-L-	30+17	25' RT	38.5 - 40.0	--	A-4	72	NP	NP	NP	3.0	89.0	82.8	42.7	22.4	48.0	19.6	10.0
SS-9	EB2-A	-L-	31+91	9' LT	28.2 - 29.7	--	A-4	7	NP	NP	NP	0.0	98.0	96.3	50.0	9.6	67.5	8.6	14.2
SS-10	EB2-B	-L-	31+75	12' RT	13.4 - 14.9	--	A-4	5	NP	NP	NP	1.0	97.0	96.3	72.6	6.0	33.9	42.0	18.2
ST-1	EB1-A	-L-	28+83	7' LT	31.0 - 33.0	53.8	A-4	--	NP	NP	NP	0.0	99.9	97.0	49.0	7.9	52.0	23.3	16.8
ST-2	EB1-B	-L-	28+62	20' RT	21.0 - 23.0	50.5	A-7-5	--	64	46	18	0.2	99.8	97.0	70.5	5.4	31.7	39.5	23.4

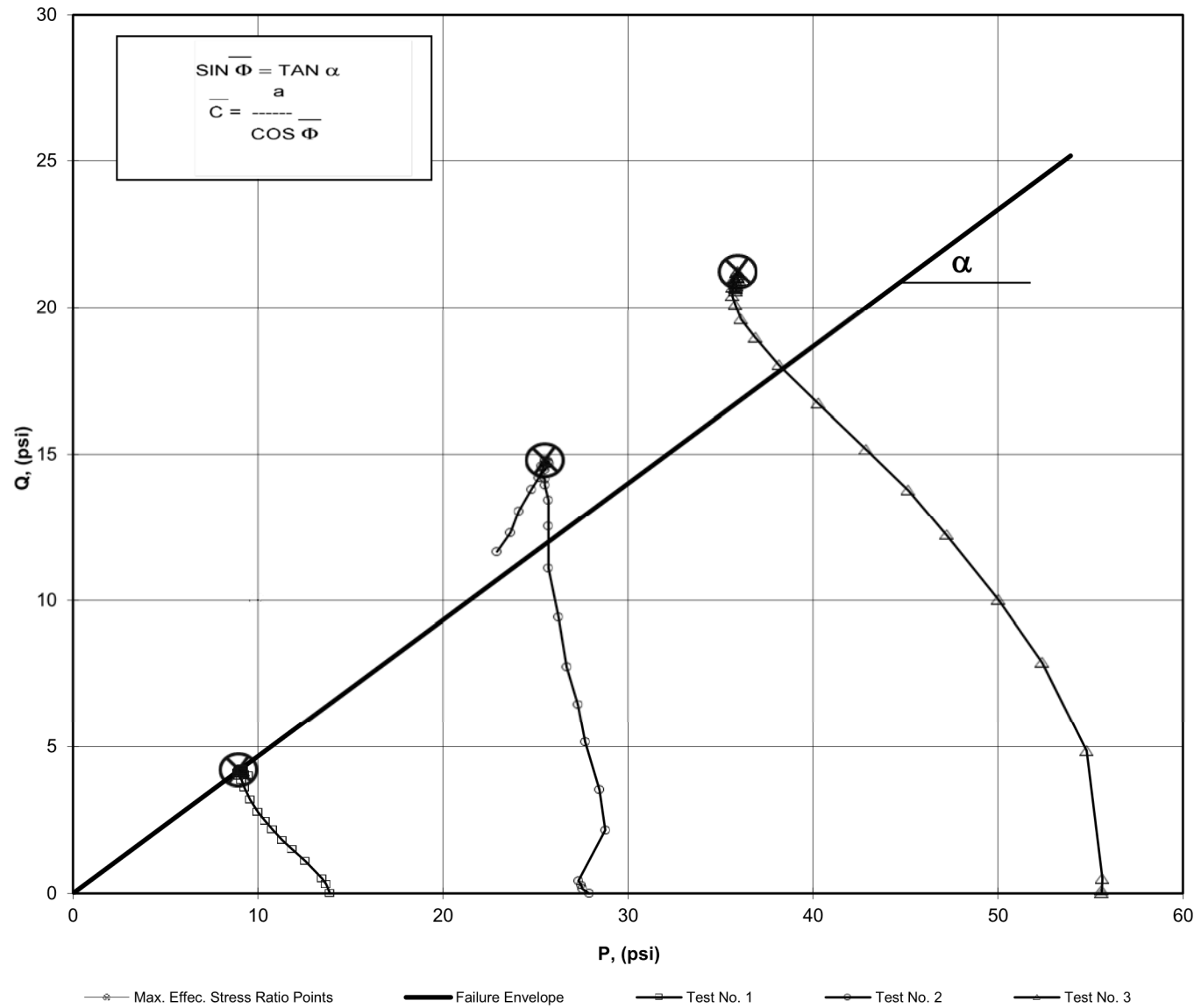
**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001

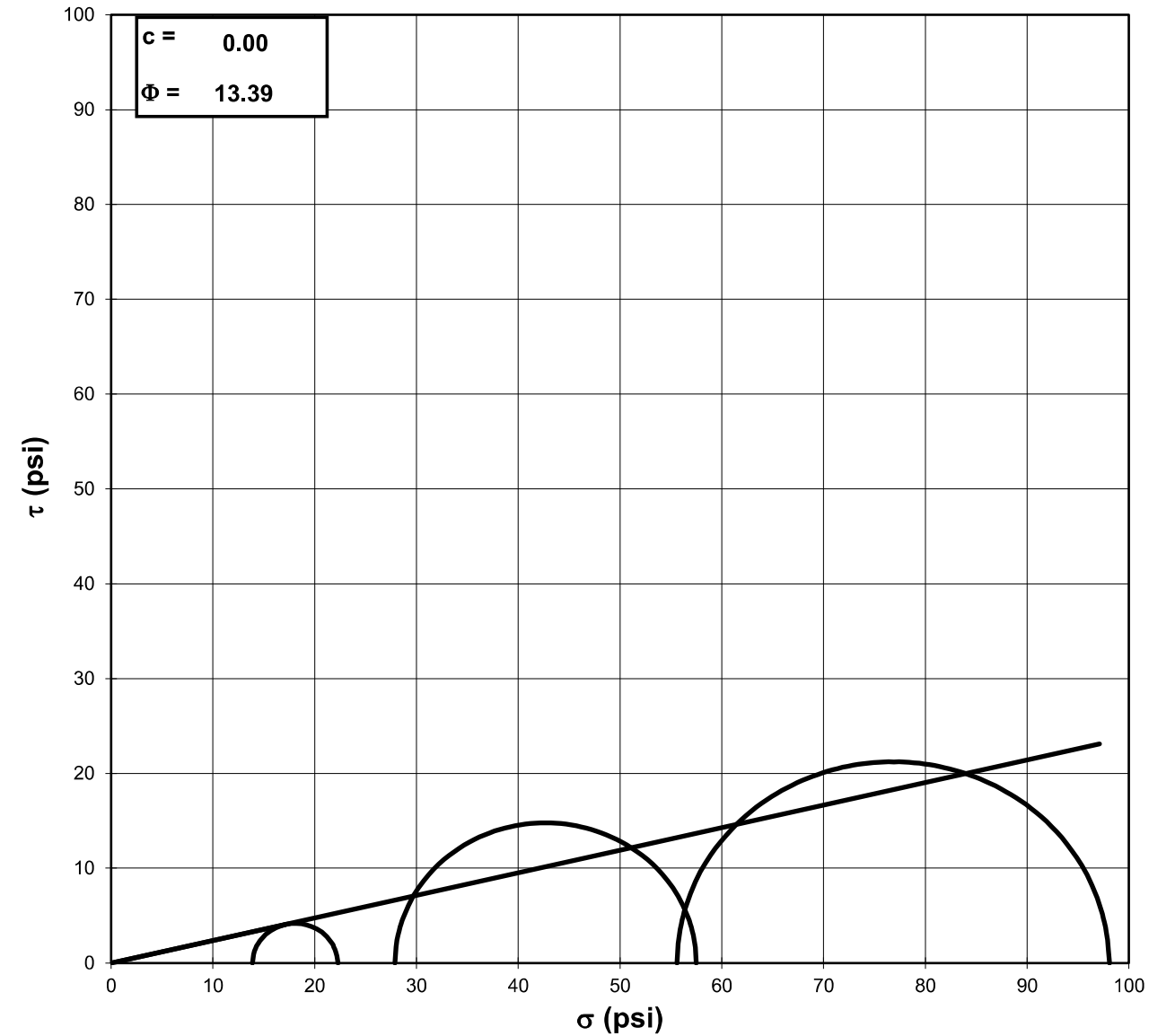
**MOHR TOTAL STRENGTH ENVELOPE
AASHTO T-297**

Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001
 Visual Description: Orange Clayey Silt (UNDISTURBED)

Consolidated Undrained Triaxial Test with Pore Pressure



a	=	0.00	\overline{C}	=	0.00
α	=	25.0	$\overline{\Phi}$	=	27.82



Failure Based on Maximum Effective Principal Stress Ratio

NOTE: GRAPH NOT TO SCALE

Tested By: 129-07-0411 Date: 4/27/22 Approved By: MPS Date: 5/5/22

Tested By: 129-07-0411 Date: 4/27/22 Approved By: MPS Date: 5/5/22

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297



Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001

Visual Description: Orange Clayey Silt (UNDISTURBED)

Stage No.	0
Test No.	1

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	5.962	Diameter 1:	2.833
Length 2:	5.971	Diameter 2:	2.836
Length 3:	5.994	Diameter 3:	2.846
Length 4:	5.999	Diameter 4:	2.848
Avg. Length:	5.982	Avg. Diam.:	2.841

PRESSURES (psi)	
Cell Pressure (psi)	63.89
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	13.9
Pore Pressure Response (%)	99

VOLUME CHANGE	
Initial Burette Reading (ml)	46.7
Final Burette Reading (ml)	26.7
Final Change (ml)	20.0

MAXIMUM OBLIQUITY POINTS	
\bar{P} =	8.97
Q =	4.18

Initial Dial Reading (mil)	308
Dial Reading After Saturation (mil)	308
Dial Reading After Consolidation (mil)	389

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
6.3	0.000	50.0
10.0	0.001	50.5
12.6	0.003	50.9
20.0	0.009	52.4
24.9	0.014	53.5
28.8	0.020	54.4
33.4	0.030	55.3
37.0	0.039	56.0
41.0	0.051	56.7
46.4	0.072	57.5
51.7	0.103	58.2
55.4	0.140	58.6
57.5	0.175	58.9
58.9	0.217	59.1
59.6	0.246	59.1
60.4	0.289	59.1
61.6	0.346	59.1
62.4	0.407	59.1
63.0	0.451	59.1
63.8	0.512	59.0
64.4	0.558	59.0
64.6	0.603	59.0
65.1	0.649	58.9
65.3	0.678	58.9
65.3	0.708	58.9
65.2	0.738	58.9
65.3	0.768	58.8
65.4	0.813	58.8
65.1	0.858	58.7
64.9	0.888	58.4
64.4	0.918	58.3

Tested By: 129-07-0411 Date: 4/27/22 Input Checked By: GEM Date: 5/5/22
 page 3 of 10 DCN: CT-S28 DATE: 4/12/13 REVISION: 3 Sigmatrax.xls



**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001

Visual Description: Orange Clayey Silt (UNDISTURBED)

Effective Confining Pressure (psi)	13.9	Stage No.	0
		Test No.	1

INITIAL DIMENSIONS	
Initial Sample Length (in)	5.98
Initial Sample Diameter (in)	2.84
Initial Sample Area (in ²)	6.34
Initial Sample Volume (in ³)	37.91

VOLUME CHANGE	
Volume After Consolidation (in ³)	36.69
Length After Consolidation (in)	5.90
Area After Consolidation (in ²)	6.218

Strain (%)	Deviator Stress PSI	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principal Stress Ratio	\bar{A}	\bar{P}	Q
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0.03	0.60	0.50	13.99	13.4	1.045	0.84	13.69	0.30
0.06	1.02	0.94	13.97	13.0	1.079	0.93	13.46	0.51
0.15	2.20	2.44	13.65	11.5	1.192	1.12	12.55	1.10
0.24	3.00	3.54	13.34	10.3	1.289	1.19	11.85	1.50
0.34	3.61	4.38	13.13	9.5	1.380	1.22	11.32	1.81
0.50	4.34	5.28	12.95	8.6	1.504	1.23	10.78	2.17
0.66	4.91	5.96	12.84	7.9	1.619	1.23	10.39	2.45
0.87	5.53	6.66	12.76	7.2	1.764	1.22	10.00	2.76
1.22	6.37	7.50	12.77	6.4	1.997	1.19	9.58	3.19
1.74	7.18	8.21	12.86	5.7	2.263	1.15	9.27	3.59
2.37	7.72	8.64	12.97	5.3	2.470	1.13	9.11	3.86
2.97	7.99	8.93	12.95	5.0	2.610	1.13	8.96	3.99
3.68	8.15	9.06	12.98	4.8	2.686	1.12	8.91	4.07
4.18	8.22	9.11	13.01	4.8	2.720	1.12	8.89	4.11
4.89	8.28	9.08	13.10	4.8	2.720	1.11	8.96	4.14
5.87	8.37	9.11	13.15	4.8	2.750	1.10	8.97	4.18
6.89	8.40	9.08	13.22	4.8	2.746	1.09	9.01	4.20
7.65	8.43	9.06	13.26	4.8	2.746	1.09	9.04	4.21
8.68	8.44	9.01	13.32	4.9	2.730	1.08	9.10	4.22
9.45	8.47	8.98	13.37	4.9	2.726	1.07	9.14	4.23
10.22	8.43	8.96	13.36	4.9	2.708	1.07	9.15	4.21
10.99	8.42	8.92	13.39	5.0	2.692	1.07	9.18	4.21
11.50	8.39	8.91	13.38	5.0	2.684	1.07	9.18	4.20
12.00	8.35	8.88	13.37	5.0	2.665	1.07	9.19	4.18
12.51	8.30	8.85	13.33	5.0	2.648	1.08	9.19	4.15
13.02	8.26	8.82	13.33	5.1	2.628	1.08	9.20	4.13
13.78	8.19	8.78	13.31	5.1	2.603	1.08	9.21	4.10
14.55	8.08	8.66	13.32	5.2	2.545	1.08	9.27	4.04
15.06	8.01	8.40	13.49	5.5	2.460	1.06	9.49	4.00
15.57	7.89	8.31	13.47	5.6	2.414	1.06	9.52	3.94

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**



Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001

Visual Description: Orange Clayey Silt (UNDISTURBED)

Stage No.	0
Test No.	2

INITIAL SAMPLE DIMENSIONS (in)

Length 1:	6.228	Diameter 1:	2.851
Length 2:	6.143	Diameter 2:	2.857
Length 3:	6.228	Diameter 3:	2.853
Length 4:	6.195	Diameter 4:	2.836
Avg. Length	6.199	Avg. Diam.:	2.849

PRESSURES (psi)

Cell Pressure (psi)	77.89
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	27.9
Pore Pressure Response (%)	97

VOLUME CHANGE

Initial Burette Reading (ml)	46.0
Final Burette Reading (ml)	15.6
Final Change (ml)	30.4

MAXIMUM OBLIQUITY POINTS

\bar{P} =	25.52
Q =	14.80

Initial Dial Reading (mil)	365
Dial Reading After Saturation (mil)	375
Dial Reading After Consolidation (mil)	528

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
12.2	0.000	50.0
14.1	0.001	50.5
15.7	0.003	50.7
17.6	0.009	51.0
39.0	0.014	51.3
56.2	0.020	53.0
76.5	0.029	55.4
92.8	0.038	57.0
109.1	0.052	58.9
130.7	0.073	61.1
152.3	0.104	63.3
171.6	0.142	64.7
184.1	0.179	65.6
192.0	0.222	66.3
195.8	0.253	66.5
199.2	0.297	66.9
204.3	0.357	67.0
209.7	0.418	67.2
210.4	0.465	67.0
211.0	0.527	67.2
213.2	0.574	67.1
215.8	0.621	66.9
218.2	0.667	67.0
218.3	0.698	66.8
216.6	0.729	66.9
213.9	0.760	66.9
209.6	0.791	66.9
200.5	0.838	66.8
191.2	0.885	66.5
182.9	0.917	66.6
175.9	0.948	66.5

Tested By: 129-07-0411 Date: 4/27/22 Input Checked By: GEM Date: 5/5/22

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**



Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001

Visual Description: Orange Clayey Silt (UNDISTURBED)

Effective Confining Pressure (psi)	27.9	Stage No.	0
		Test No.	2

INITIAL DIMENSIONS

Initial Sample Length (in)	6.20
Initial Sample Diameter (in)	2.85
Initial Sample Area (in ²)	6.38
Initial Sample Volume (in ³)	39.52

VOLUME CHANGE

Volume After Consolidation (in ³)	37.48
Length After Consolidation (in)	6.04
Area After Consolidation (in ²)	6.209

Strain (%)	Deviator Stress PSI	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principal Stress Ratio	\bar{A}	\bar{P}	Q
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0.02	0.30	0.50	27.69	27.4	1.011	1.72	27.54	0.15
0.05	0.56	0.70	27.75	27.2	1.021	1.28	27.47	0.28
0.15	0.86	1.00	27.75	26.9	1.032	1.20	27.32	0.43
0.24	4.30	1.27	30.92	26.6	1.162	0.30	28.77	2.15
0.34	7.06	2.96	31.99	24.9	1.283	0.43	28.46	3.53
0.48	10.30	5.35	32.84	22.5	1.457	0.54	27.69	5.15
0.64	12.90	7.04	33.75	20.8	1.619	0.56	27.30	6.45
0.86	15.47	8.94	34.42	19.0	1.816	0.60	26.69	7.73
1.21	18.85	11.07	35.67	16.8	2.121	0.61	26.24	9.43
1.73	22.17	13.28	36.79	14.6	2.517	0.62	25.70	11.09
2.34	25.07	14.72	38.24	13.2	2.903	0.61	25.71	12.53
2.97	26.86	15.62	39.13	12.3	3.189	0.60	25.70	13.43
3.69	27.89	16.33	39.44	11.6	3.413	0.60	25.50	13.94
4.19	28.32	16.55	39.66	11.3	3.497	0.60	25.50	14.16
4.92	28.63	16.94	39.59	11.0	3.614	0.61	25.27	14.32
5.91	29.10	17.01	39.98	10.9	3.676	0.60	25.43	14.55
6.93	29.60	17.17	40.31	10.7	3.762	0.60	25.52	14.80
7.71	29.46	17.04	40.31	10.9	3.714	0.60	25.58	14.73
8.73	29.21	17.17	39.93	10.7	3.724	0.61	25.33	14.61
9.51	29.30	17.06	40.13	10.8	3.704	0.60	25.48	14.65
10.28	29.42	16.91	40.39	11.0	3.679	0.59	25.69	14.71
11.05	29.51	16.96	40.44	10.9	3.701	0.59	25.68	14.76
11.57	29.35	16.82	40.42	11.1	3.650	0.59	25.75	14.67
12.08	28.94	16.88	39.96	11.0	3.628	0.60	25.48	14.47
12.59	28.39	16.91	39.37	11.0	3.586	0.61	25.17	14.20
13.11	27.62	16.92	38.58	11.0	3.518	0.63	24.78	13.81
13.89	26.11	16.85	37.15	11.0	3.364	0.67	24.10	13.05
14.66	24.60	16.54	35.95	11.3	3.168	0.69	23.65	12.30
15.19	23.31	16.62	34.58	11.3	3.069	0.74	22.92	11.65
15.70	22.23	16.52	33.59	11.4	2.955	0.77	22.48	11.11

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001

Visual Description: Orange Clayey Silt (UNDISTURBED)

Stage No.	0
Test No.	3

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	6.113	Diameter 1:	2.811
Length 2:	6.133	Diameter 2:	2.840
Length 3:	6.132	Diameter 3:	2.835
Length 4:	6.164	Diameter 4:	2.827
Avg. Length:	6.136	Avg. Diam.:	2.828

PRESSURES (psi)

Cell Pressure (psi)	105.6
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	55.6
Pore Pressure Response (%)	97

VOLUME CHANGE	
Initial Burette Reading (ml)	92.8
Final Burette Reading (ml)	21.7
Final Change (ml)	71.1

MAXIMUM OBLIQUITY POINTS

\bar{P}	=	35.93
\bar{Q}	=	21.22

Initial Dial Reading (mil)	240
Dial Reading After Saturation (mil)	248
Dial Reading After Consolidation (mil)	534

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
18.4	0.000	50.0
19.6	0.001	50.1
24.2	0.002	50.4
75.0	0.008	55.6
110.6	0.014	61.1
135.6	0.020	65.6
161.7	0.030	70.6
180.1	0.039	74.2
196.7	0.051	77.9
215.8	0.072	82.0
232.3	0.102	85.4
245.0	0.140	87.7
254.1	0.177	89.1
261.8	0.220	89.9
266.9	0.251	90.4
272.6	0.294	90.6
278.9	0.353	90.9
284.3	0.414	90.9
287.0	0.460	90.9
288.7	0.522	90.8
290.2	0.568	90.7
292.0	0.614	90.7
293.5	0.660	90.5
294.3	0.691	90.6
295.7	0.722	90.6
296.6	0.753	90.5
297.5	0.783	90.5
299.3	0.830	90.4
301.4	0.876	90.4
302.0	0.908	90.3
302.7	0.938	90.3

Tested By: 129-07-0411 Date: 4/27/22 Input Checked By: GEM Date: 5/5/22
 page 7 of 10 DCN: CT-S28 DATE: 4/12/13 REVISION: 3

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001

Visual Description: Orange Clayey Silt (UNDISTURBED)

Effective Confining Pressure (psi)	55.6	Stage No.	0
		Test No	3

INITIAL DIMENSIONS	VOLUME CHANGE
--------------------	---------------

Initial Sample Length (in)	6.14	Volume After Consolidation (in ³)	34.06
Initial Sample Diameter (in)	2.83	Length After Consolidation (in)	5.84
Initial Sample Area (in ²)	6.28	Area After Consolidation (in ²)	5.830
Initial Sample Volume (in ³)	38.55		

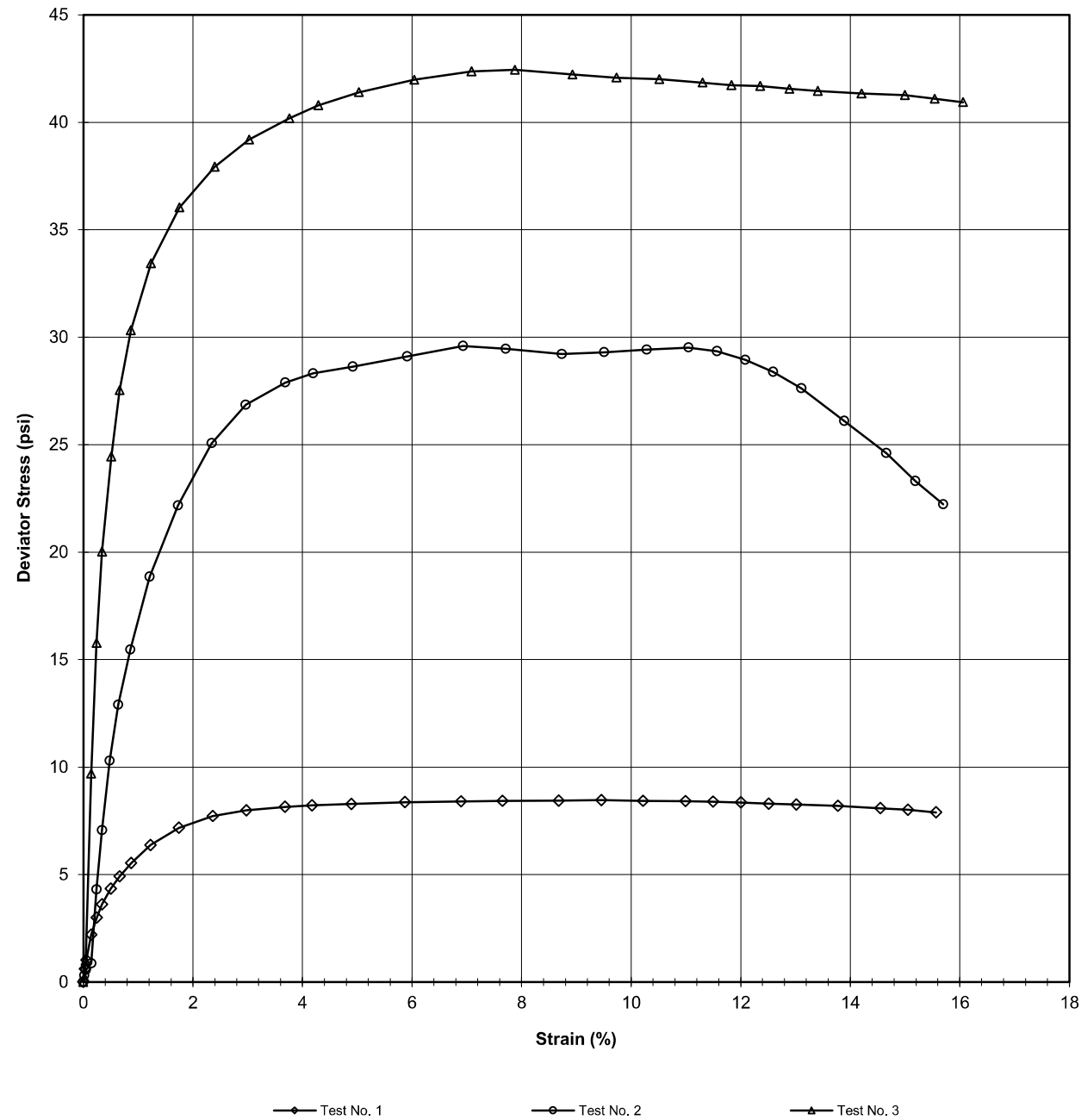
Strain (%)	Deviator Stress PSI	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principal Stress Ratio	\bar{A}	\bar{P}	\bar{Q}
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0.02	0.20	0.09	55.71	55.5	1.004	0.48	55.61	0.10
0.04	0.99	0.45	56.14	55.2	1.018	0.47	55.65	0.49
0.14	9.69	5.64	59.65	50.0	1.194	0.60	54.80	4.84
0.24	15.77	11.10	60.27	44.5	1.354	0.73	52.39	7.88
0.34	20.03	15.58	60.05	40.0	1.501	0.80	50.03	10.01
0.51	24.45	20.60	59.45	35.0	1.699	0.87	47.22	12.23
0.66	27.54	24.22	58.92	31.4	1.878	0.91	45.15	13.77
0.87	30.32	27.88	58.04	27.7	2.094	0.95	42.88	15.16
1.23	33.43	32.02	57.01	23.6	2.418	0.99	40.29	16.71
1.75	36.04	35.45	56.19	20.2	2.788	1.01	38.17	18.02
2.40	37.93	37.69	55.84	17.9	3.117	1.02	36.88	18.96
3.03	39.20	39.08	55.72	16.5	3.373	1.03	36.12	19.60
3.76	40.17	39.88	55.90	15.7	3.555	1.02	35.81	20.09
4.29	40.78	40.35	56.03	15.2	3.675	1.02	35.64	20.39
5.03	41.40	40.63	56.37	15.0	3.765	1.01	35.67	20.70
6.04	41.98	40.85	56.73	14.7	3.846	1.00	35.74	20.99
7.09	42.37	40.90	57.07	14.7	3.884	1.00	35.88	21.19
7.88	42.44	40.89	57.15	14.7	3.886	0.99	35.93	21.22
8.93	42.23	40.76	57.07	14.8	3.845	1.00	35.96	21.11
9.73	42.08	40.73	56.96	14.9	3.829	1.00	35.92	21.04
10.51	42.00	40.67	56.93	14.9	3.814	1.00	35.93	21.00
11.31	41.84	40.52	56.92	15.1	3.775	1.00	36.00	20.92
11.83	41.72	40.60	56.73	15.0	3.781	1.00	35.86	20.86
12.35	41.69	40.59	56.70	15.0	3.778	1.00	35.85	20.85
12.89	41.56	40.53	56.63	15.1	3.758	1.01	35.85	20.78
13.41	41.45	40.47	56.58	15.1	3.740	1.01	35.86	20.73
14.21	41.34	40.45	56.49	15.2	3.729	1.01	35.82	20.67
15.00	41.26	40.38	56.47	15.2	3.711	1.01	35.85	20.63
15.54	41.09	40.32	56.36	15.3	3.689	1.01	35.82	20.54
16.06	40.93	40.28	56.26	15.3	3.672	1.01	35.79	20.47

page 8 of 10

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: EB1-B
 Client Reference: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001
 Visual Description: Orange Clayey Silt (UNDISTURBED)



Tested By: 129-07-0411 Date: 4/27/22 Approved By: MPS Date: 5/5/22

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-11**

Client: Kleinfelder
 Client Reference: BR-0097
 Project No.: R-2022-091-002
 Lab ID: R-2022-091-002-001
 Visual Description: Orange Clayey Silt (UNDISTURBED)

Specific Gravity (assumed) 2.68

SAMPLE CONDITION SUMMARY

	EB1-B 21.0-23.0 ST-1	EB1-B 21.0-23.0 ST-1	EB1-B 21.0-23.0 ST-1
Boring No.:	EB1-B	EB1-B	EB1-B
Depth (ft):	21.0-23.0	21.0-23.0	21.0-23.0
Sample No.:	ST-1	ST-1	ST-1
Test No.	T1	T2	T3
Deformation Rate (in/min)	0.002	0.002	0.002
Back Pressure (psi)	50.0	50.0	50.0
Consolidation Time (days)	1	1	1
Moisture Content (%) (INITIAL)	47.8	47.8	47.8
Total Unit Weight (pcf)	100.6	103.9	108.5
Dry Unit Weight (pcf)	68.0	70.3	73.4
Moisture Content (%) (FINAL)	58.9	45.6	42.6
Initial State Void Ratio, e	1.459	1.381	1.279
Void Ratio at Shear, e	1.380	1.258	1.014



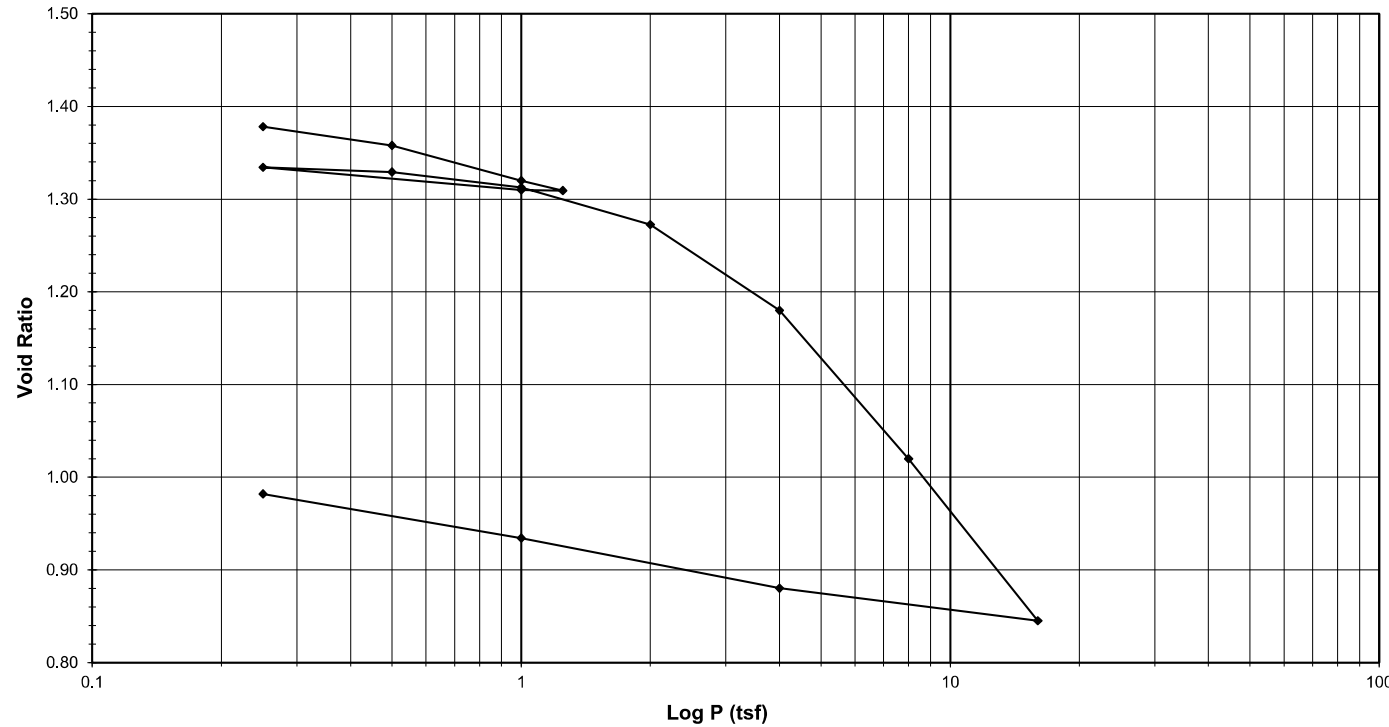
Tested By: 129-07-0411 Date: 4/27/22 Input Checked By: GEM Date: 5/5/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

Sample Conditions: Undisturbed, Inundated, Double Drained



Tested By MY Date 4/27/22 Approved By MPS Date 5/6/22

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

Sample Conditions: Undisturbed, Inundated, Double Drained

Consolidometer No. R-409
1 Division = 0.0001 (in.)

Sample Properties

	Initial	Final
Water Content		
Tare Number	485	473
Wt. of Tare & WS (g)	412.41	222.53
Wt. of Tare & DS (g)	311.15	189.13
Wt. of Water (g)	101.26	33.40
Wt. of Tare (g)	99.33	97.81
Wt. of DS (g)	211.82	91.32
Water Content (%)	47.80	36.57

	Initial	Final
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.0000	0.8286
Sample Volume (cm ³)	80.44	66.65
Wt. of Wet Sample + Ring (g)	347.89	337.77
Wt. of Ring (g)	214.67	214.67
Wt. of Wet Sample (g)	133.22	123.10
Wet Density (pcf)	103.34	115.24
Wet Density (g/cm ³)	1.66	1.85
Water Content (%)	47.80	36.57
Wt. of Dry Sample (g)	90.13	90.13
Dry Density (pcf)	69.92	84.38
Dry Density (g/cm ³)	1.12	1.35
Void Ratio	1.3918	0.9819
Saturation (%)	92.05	99.83
Specific Gravity	2.68	Assumed

Test Data Summary

Applied Pressure (tsf)	Final Dial Reading (div)	Machine Deflection (div)	Corrected Reading (div)	Height of Sample (mm)	Volume (cm ³)	Dry Density (g/cm ³)	Void Ratio
Seating	0	0	0	25.400	80.440	1.12050	1.39180
0.25	106.2	49.4	56.8	25.256	79.983	1.12689	1.37822
0.5	208.6	67.4	141.2	25.041	79.304	1.13655	1.35802
1	385.6	84.9	300.7	24.636	78.021	1.15523	1.31988
1.25	437.7	92.9	344.8	24.524	77.666	1.16051	1.30933
1	435.2	91.7	343.5	24.528	77.677	1.16035	1.30965
0.25	313.4	73.2	240.2	24.790	78.507	1.14808	1.33434
0.5	341.4	79.5	261.9	24.735	78.333	1.15063	1.32915
1	420.8	89.0	331.8	24.557	77.771	1.15895	1.31244
2	612.9	114.4	498.5	24.134	76.430	1.17929	1.27256
4	1033.5	148.1	885.5	23.151	73.317	1.22935	1.18001
8	1742.6	188.0	1554.6	21.451	67.934	1.32676	1.01996
16	2520.6	234.8	2285.7	19.594	62.053	1.45250	0.84510
4	2314.8	175.5	2139.3	19.966	63.232	1.42543	0.88013
1	2054.7	142.1	1912.6	20.542	65.055	1.38549	0.93434
0.25	1823.7	109.9	1713.8	21.047	66.654	1.35225	0.98188

Tested By MY Date 4/27/22 Checked By MPS Date 5/6/22

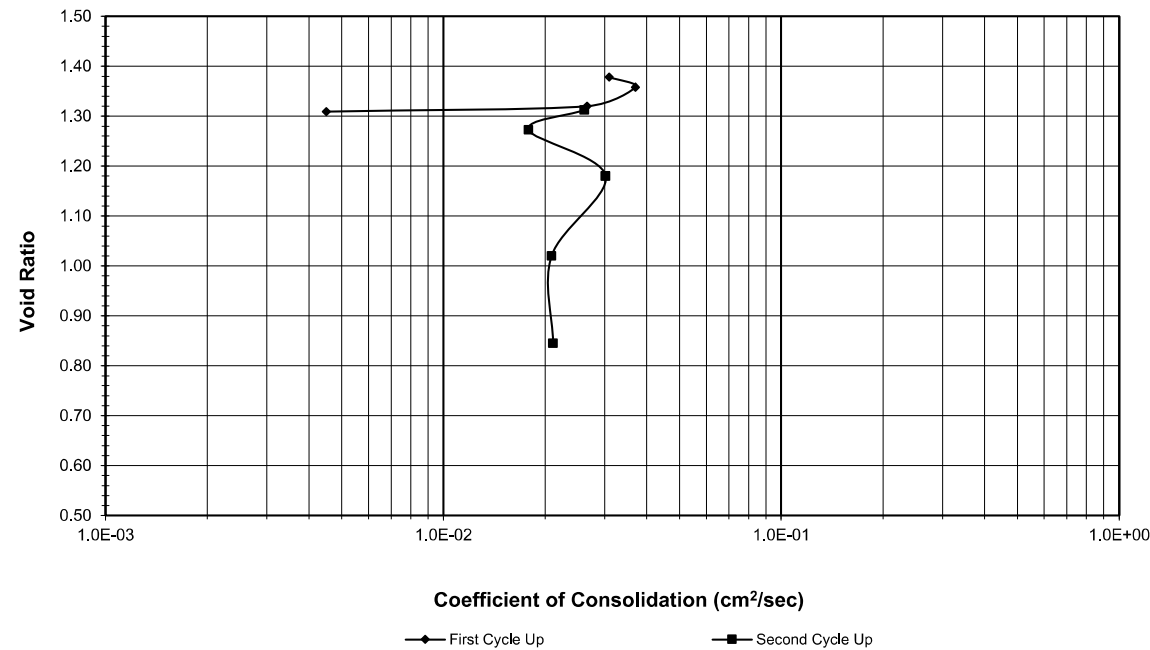
ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216



Client: Kleinfelder
Client Project: BR-0097
Project No.: R-2022-091-002
Lab ID: R-2022-091-002-001

Boring No.: EB1-B
Depth (ft): 21.0-25.0
Sample No.: ST-1 & ST-2
Visual Description: Orange Elastic Silt

Sample Conditions: Undisturbed, Inundated, Double Drained



Tested By MY Date 4/27/22 Checked By MPS Date 5/6/22

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216



Client: Kleinfelder
Client Project: BR-0097
Project No.: R-2022-091-002
Lab ID: R-2022-091-002-001

Boring No.: EB1-B
Depth (ft): 21.0-23.0
Sample No.: ST-1
Visual Description: Orange Elastic Silt

Sample Conditions: Undisturbed, Inundated, Double Drained
Consolidometer No. R-409
1 Division = 0.0001 (in.)

Sample Properties	Initial	Final
Water Content		
Tare Number	485	473
Wt. of Tare & WS (g)	412.41	222.53
Wt. of Tare & DS (g)	311.15	189.13
Wt. of Water (g)	101.26	33.40
Wt. of Tare (g)	99.33	97.81
Wt. of DS (g)	211.82	91.32
Water Content (%)	47.80	36.57
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.0000	0.8286
Sample Volume (cm ³)	80.44	66.65
Wt. of Wet Sample + Ring (g)	347.89	337.77
Wt. of Ring (g)	214.67	214.67
Wt. of Wet Sample (g)	133.22	123.10
Wet Density (pcf)	103.34	115.24
Wet Density (g/cm ³)	1.66	1.85
Water Content (%)	47.80	36.57
Wt. of Dry Sample (g)	90.13	90.13
Dry Density (pcf)	69.92	84.38
Dry Density (g/cm ³)	1.12	1.35
Void Ratio	1.3918	0.9819
Saturation (%)	92.05	99.83
Specific Gravity	2.68	Assumed

C_v Test Data Summary

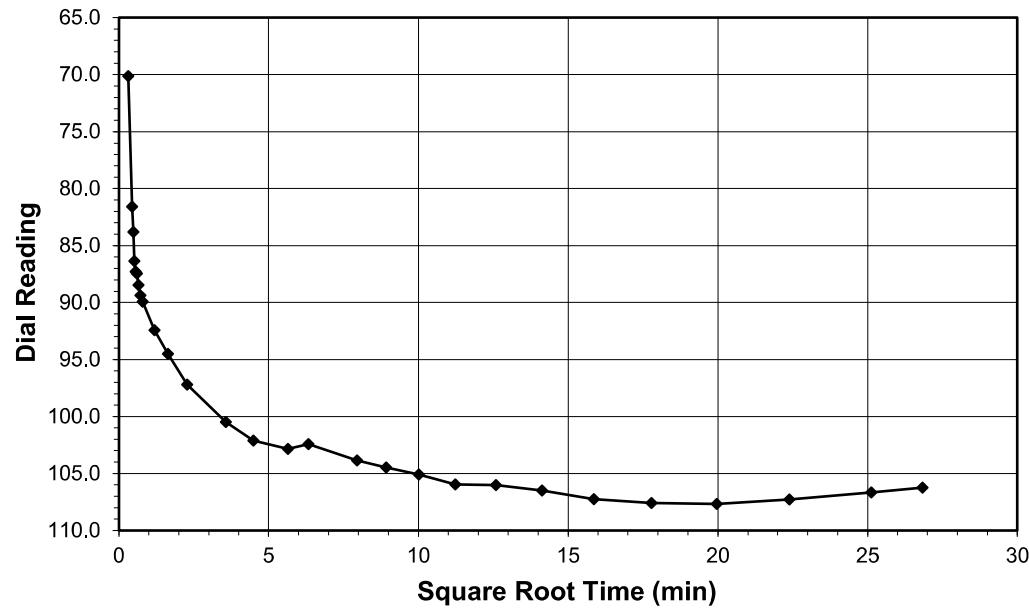
Load Increment (tsf)	Dial Reading @ t ₅₀ (div)	Machine Deflection (div)	Corrected Dial Reading @ t ₅₀ (div)	Sample Height @ t ₅₀ (cm)	Time t ₅₀ (min.)	C _v (cm ² /sec)
0 - 0.25	77.9	49.4	28.5	2.533	0.17	0.0310
0.25 - 0.5	176.6	67.4	109.1	2.512	0.14	0.0370
0.5 - 1	314.6	84.9	229.7	2.482	0.19	0.0266
1 - 1.25	421.6	92.9	328.7	2.457	1.10	0.0045
1.25 - 1	NA	91.7	NA	NA	NA	NA
1 - 0.25	NA	NA	NA	NA	NA	NA
0.25 - 0.5	NA	NA	NA	NA	NA	NA
0.5 - 1	405.7	89.0	316.7	2.460	0.19	0.0261
1 - 2	573.0	114.4	458.6	2.424	0.27	0.0179
2 - 4	899.1	148.1	751.0	2.349	0.15	0.0302
4 - 8	1532.2	188.0	1344.2	2.199	0.19	0.0209
8 - 16	2247.9	234.8	2013.1	2.029	0.16	0.0211
16 - 4	NA	175.5	NA	NA	NA	NA
4 - 1	NA	NA	NA	NA	NA	NA
1 - 0.25	NA	NA	NA	NA	NA	NA
0.25 - 0	NA	NA	NA	NA	NA	NA

Tested By MY Date 4/27/22 Checked By MPS Date 5/6/22

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

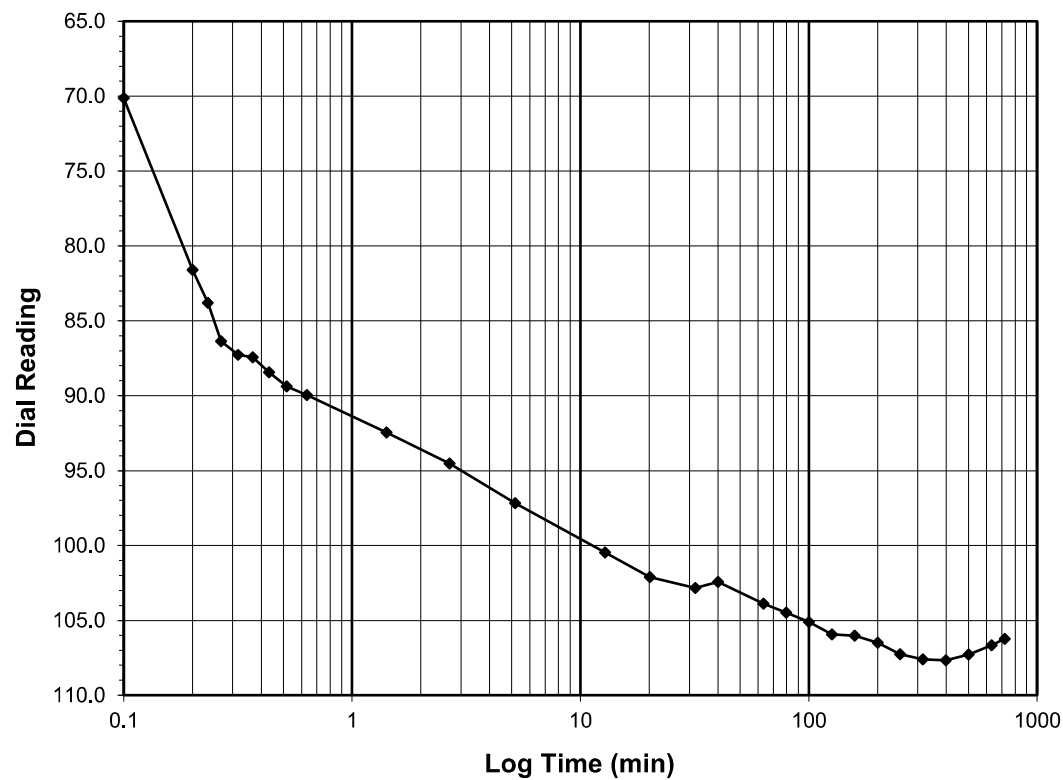
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **0 - 0.25**
 Final Reading (div) **106.2**
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 4/27/22
 Start Time 10:41:22

Elapsed Time (min)	Dial Reading (div)
Initial	0.0
0.10	70.1
0.20	81.6
0.23	83.8
0.27	86.4
0.32	87.3
0.37	87.4
0.43	88.4
0.52	89.4
0.63	89.9
1.42	92.4
2.67	94.5
5.18	97.2
12.78	100.5
20.15	102.1
31.83	102.8
40.02	102.4
63.32	103.9
79.65	104.5
100.23	105.1
126.13	106.0
158.72	106.0
199.77	106.5
251.43	107.3
316.47	107.6
398.35	107.7
501.43	107.3
631.22	106.7
720.17	106.2

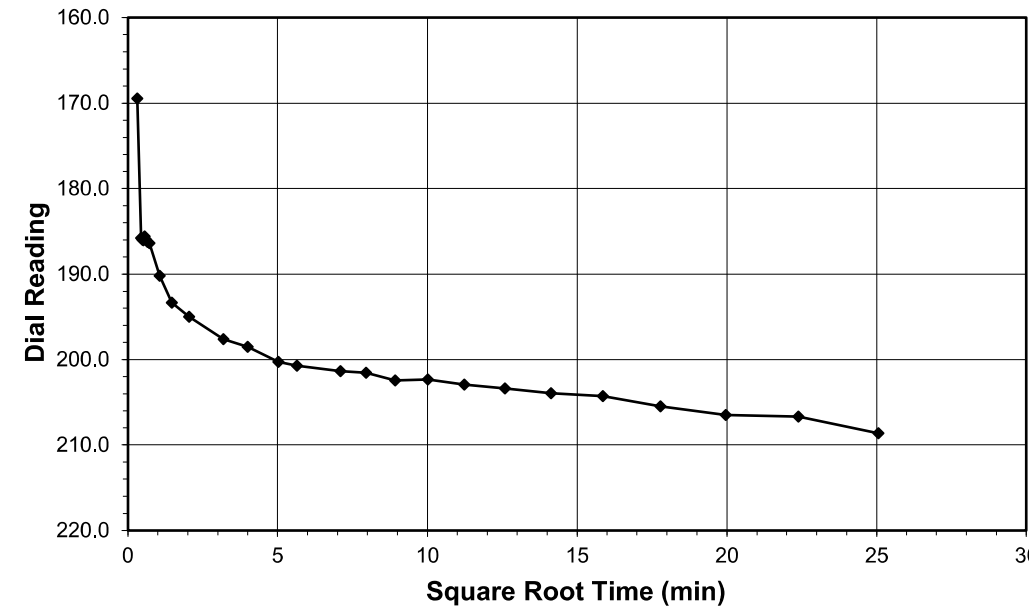


Tested By 129-07-0411 Date 4/27/22 Checked By MPS Date 5/6/22

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

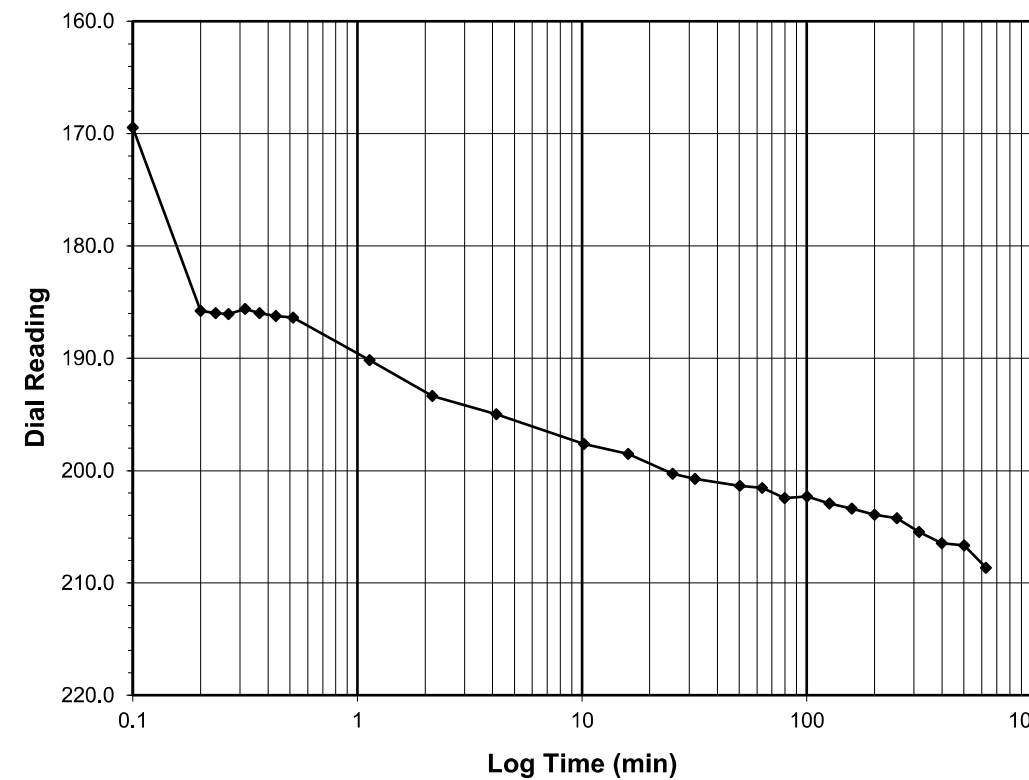
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **0.25 - 0.5**
 Final Reading (div) **208.6**
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 4/27/22
 Start Time 22:41:32

Elapsed Time (min)	Dial Reading (div)
Initial	106.2
0.10	169.4
0.20	185.8
0.23	186.0
0.27	186.1
0.32	185.6
0.37	186.0
0.43	186.2
0.52	186.4
1.13	190.2
2.15	193.4
4.15	195.0
10.18	197.6
16.05	198.5
25.32	200.3
31.83	200.7
50.33	201.4
63.32	201.6
79.67	202.5
100.23	202.3
126.13	202.9
158.73	203.4
199.78	203.9
251.45	204.3
316.48	205.5
398.37	206.5
501.45	206.7
627.53	208.6



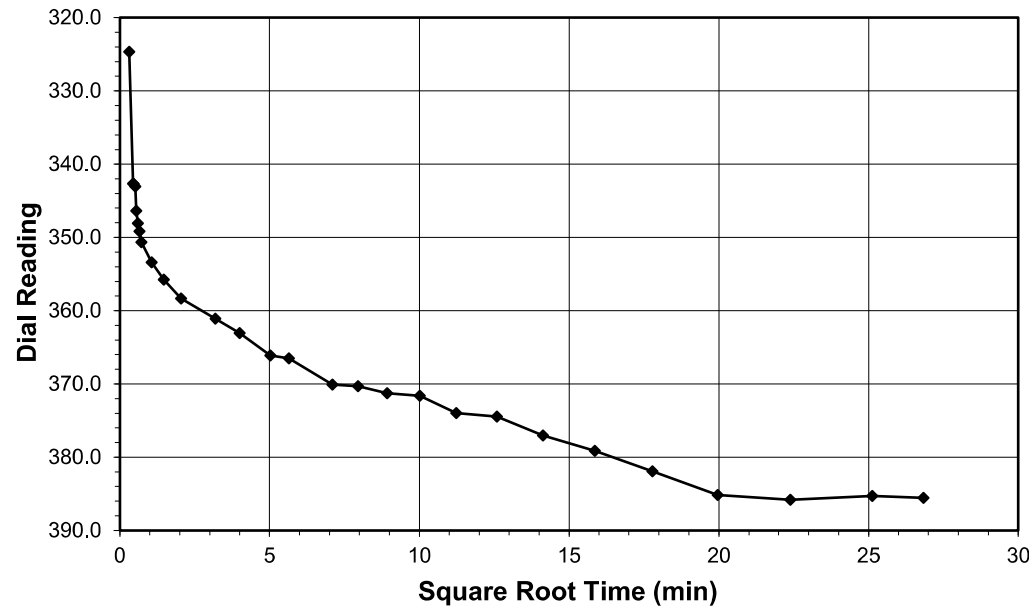
Tested By 129-07-0411 Date 4/27/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

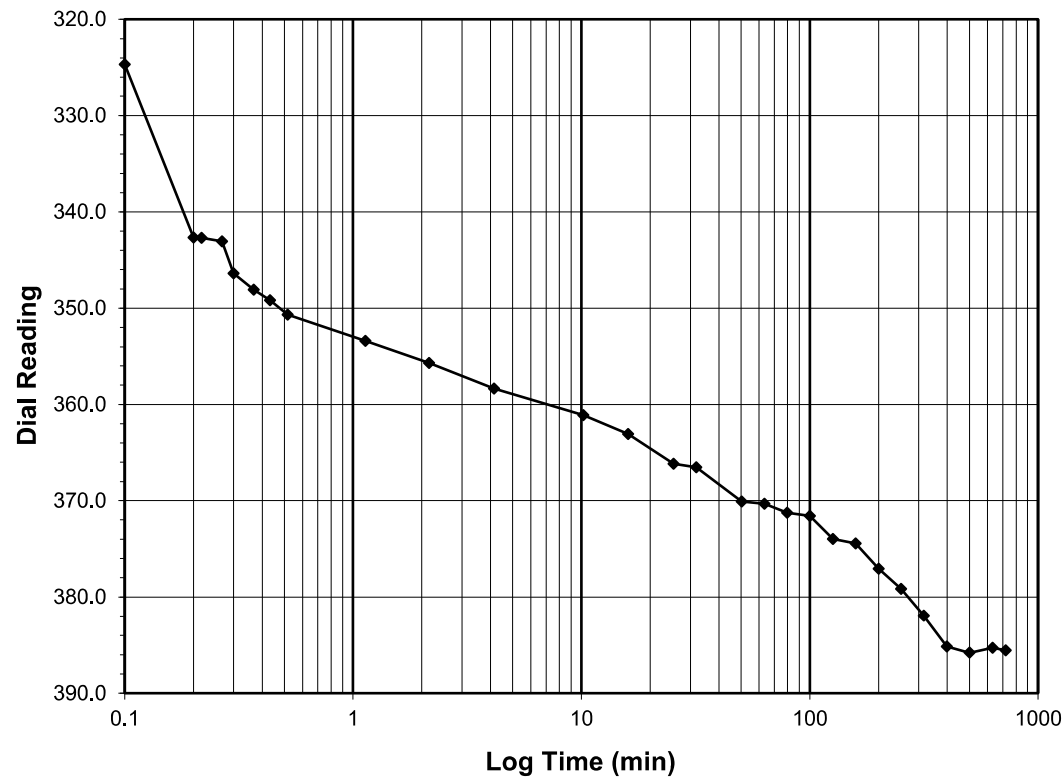
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 0.5 - 1
 Final Reading (div) 385.6
 Consolidometer No. R-409
 1 Division (in) 0.0001

Start Date 4/28/22
 Start Time 9:09:05

Elapsed Time (min)	Dial Reading (div)
Initial	208.6
0.10	324.7
0.20	342.7
0.22	342.7
0.27	343.1
0.30	346.4
0.37	348.1
0.43	349.2
0.52	350.7
1.13	353.4
2.15	355.7
4.15	358.3
10.17	361.1
16.03	363.1
25.30	366.1
31.82	366.5
50.32	370.1
63.30	370.3
79.63	371.3
100.22	371.6
126.12	374.0
158.72	374.4
199.75	377.1
251.42	379.1
316.47	381.9
398.35	385.2
501.43	385.8
631.20	385.3
720.37	385.6



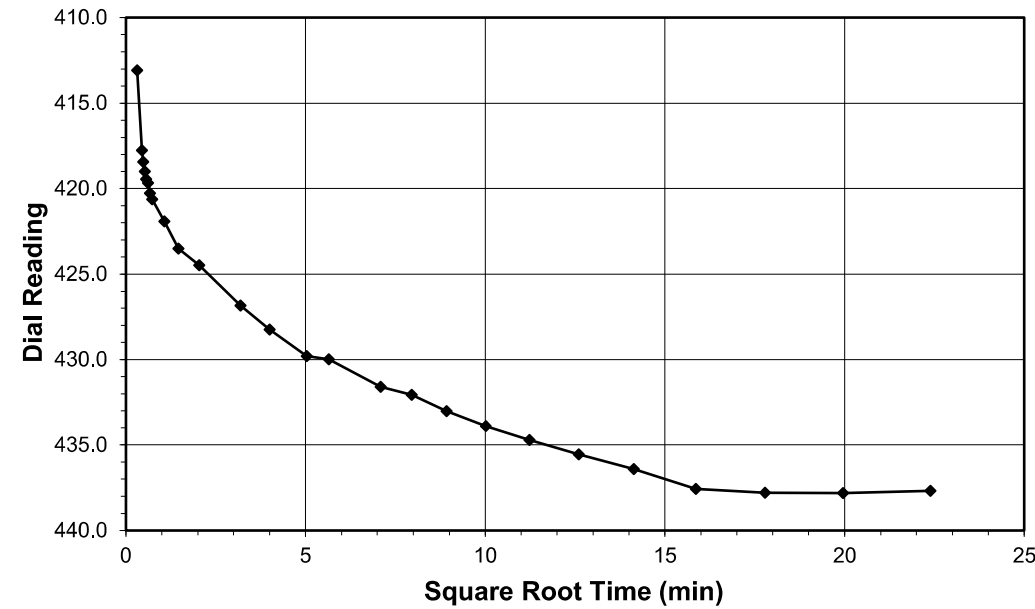
Tested By '29-07-041' Date 4/28/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

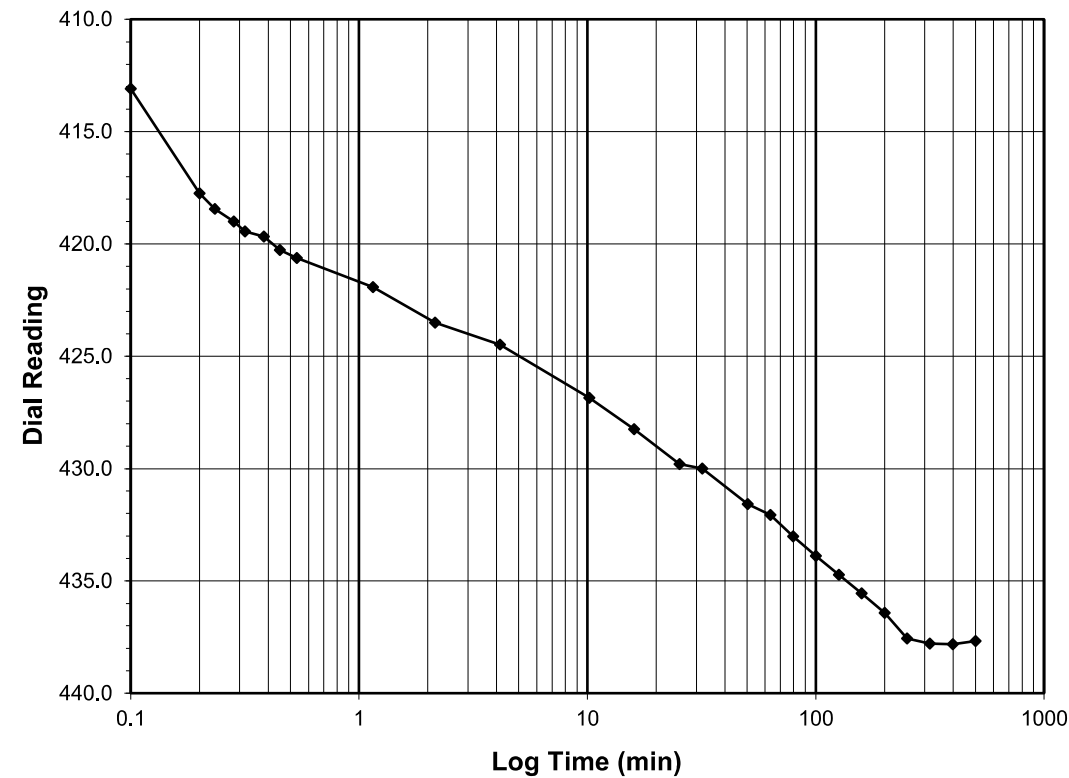
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1 - 1.25
 Final Reading (div) 437.7
 Consolidometer No. R-409
 1 Division (in) 0.0001

Start Date 4/28/22
 Start Time 21:09:27

Elapsed Time (min)	Dial Reading (div)
Initial	385.6
0.10	413.1
0.20	417.7
0.23	418.4
0.28	419.0
0.32	419.4
0.38	419.7
0.45	420.3
0.53	420.6
1.15	421.9
2.15	423.5
4.15	424.5
10.18	426.8
16.05	428.2
25.32	429.8
31.83	430.0
50.33	431.6
63.32	432.1
79.65	433.0
100.23	433.9
126.13	434.7
158.73	435.6
199.77	436.4
251.43	437.6
316.48	437.8
398.37	437.8
501.45	437.7



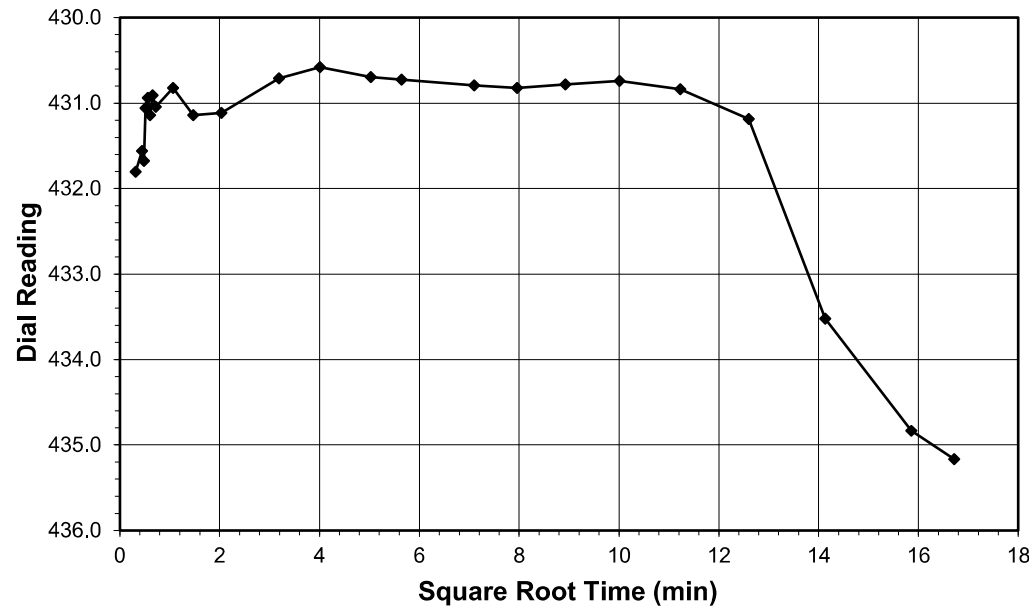
Tested By '29-07-041' Date 4/28/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

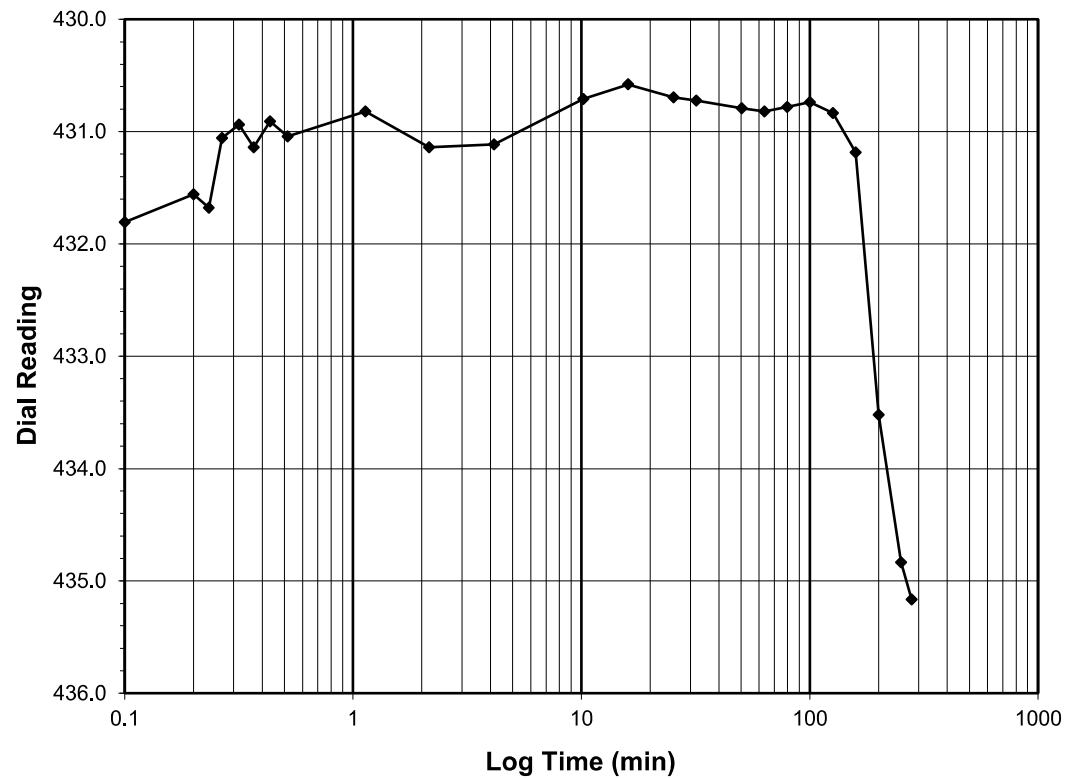
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1.25 - 1
 Final Reading (div) 435.2
 Consolidometer No. R-409
 1 Division (in) 0.0001

Start Date 4/29/22
 Start Time 8:56:26

Elapsed Time (min)	Dial Reading (div)
Initial	437.7
0.10	431.8
0.20	431.6
0.23	431.7
0.27	431.1
0.32	430.9
0.37	431.1
0.43	430.9
0.52	431.0
1.13	430.8
2.15	431.1
4.15	431.1
10.18	430.7
16.05	430.6
25.32	430.7
31.83	430.7
50.33	430.8
63.32	430.8
79.65	430.8
100.23	430.7
126.13	430.8
158.73	431.2
199.77	433.5
251.43	434.8
279.33	435.2



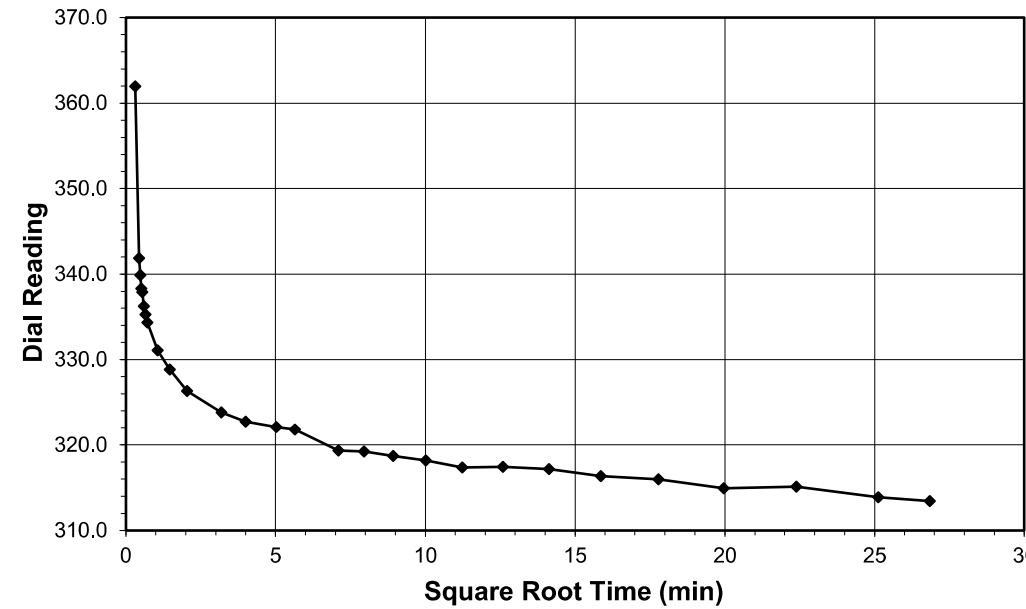
Tested By '29-07-041' Date 4/29/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

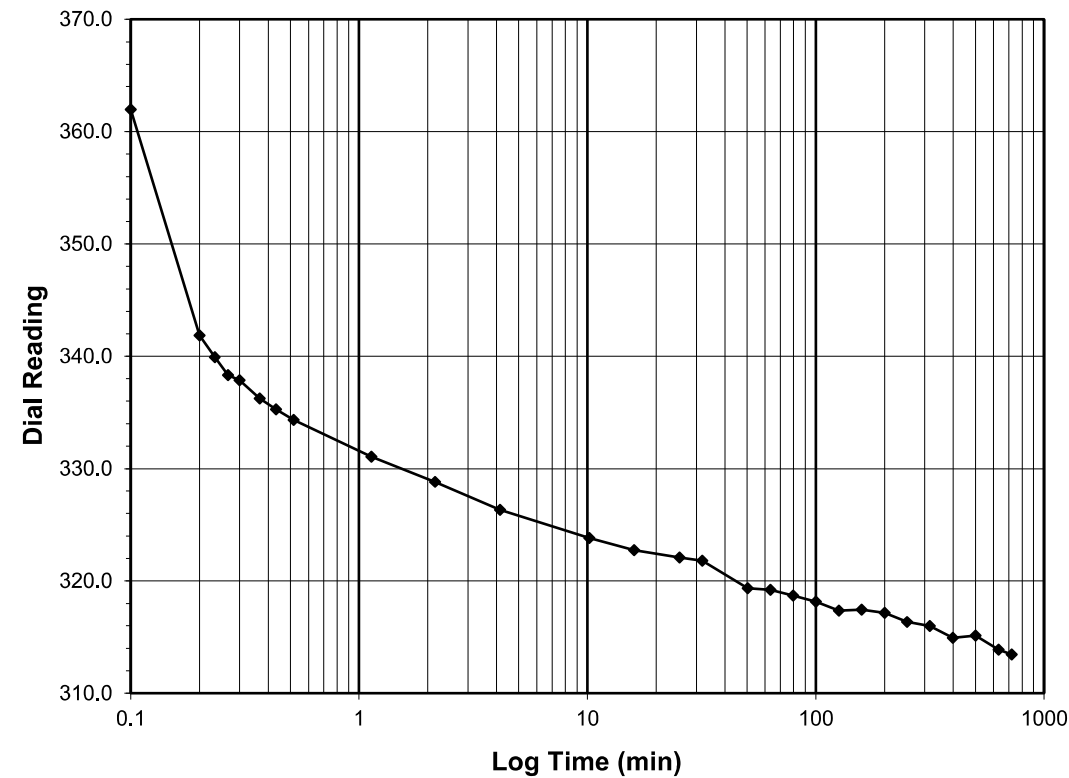
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1 - 0.25
 Final Reading (div) 313.4
 Consolidometer No. R-409
 1 Division (in) 0.0001

Start Date 4/29/22
 Start Time 13:35:47

Elapsed Time (min)	Dial Reading (div)
Initial	435.2
0.10	362.0
0.20	341.9
0.23	339.9
0.27	338.3
0.30	337.9
0.37	336.2
0.43	335.3
0.52	334.3
1.13	331.1
2.15	328.8
4.15	326.3
10.18	323.8
16.03	322.7
25.32	322.1
31.82	321.8
50.33	319.4
63.32	319.2
79.65	318.7
100.23	318.2
126.13	317.4
158.73	317.4
199.77	317.2
251.43	316.3
316.48	316.0
398.37	314.9
501.45	315.1
631.22	313.9
720.48	313.4



Tested By '29-07-041' Date 4/29/22 Checked By MPS Date 5/6/22

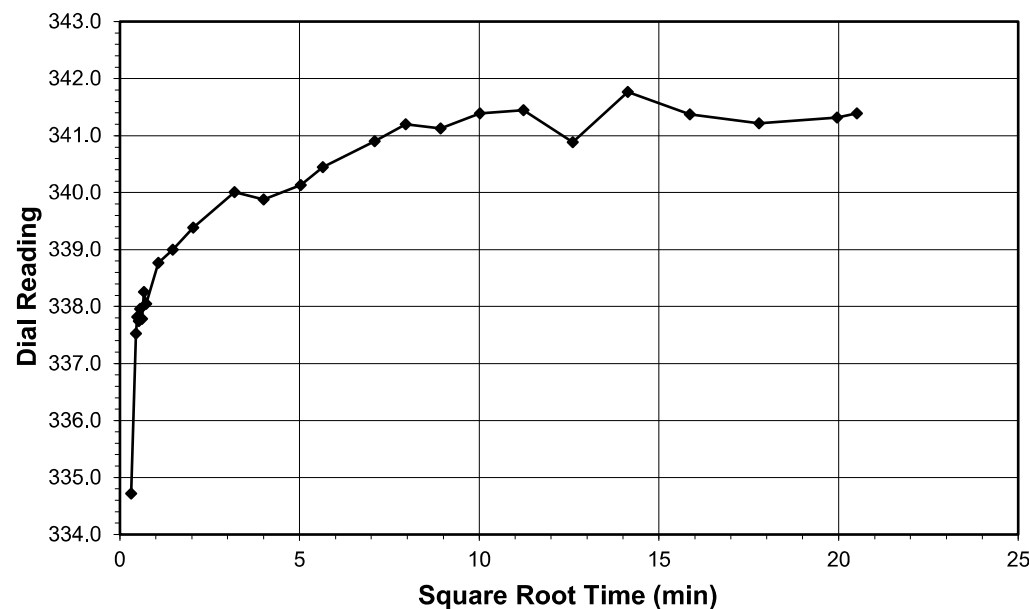


ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 0.25 - 0.5
 Final Reading (div) 341.4
 Consolidometer No. R-409
 1 Division (in) 0.0001
 Start Date 4/30/22
 Start Time 1:36:16

Elapsed Time (min)	Dial Reading (div)
Initial	313.4
0.10	334.7
0.20	337.5
0.23	337.8
0.28	337.7
0.32	338.0
0.38	337.8
0.45	338.3
0.53	338.0
1.15	338.8
2.17	339.0
4.17	339.4
10.20	340.0
16.05	339.9
25.33	340.1
31.83	340.4
50.33	340.9
63.32	341.2
79.67	341.1
100.23	341.4
126.13	341.4
158.73	340.9
199.78	341.8
251.45	341.4
316.48	341.2
398.37	341.3
420.42	341.4



Tested By '29-07-041' Date 4/30/22 Checked By MPS Date 5/6/22

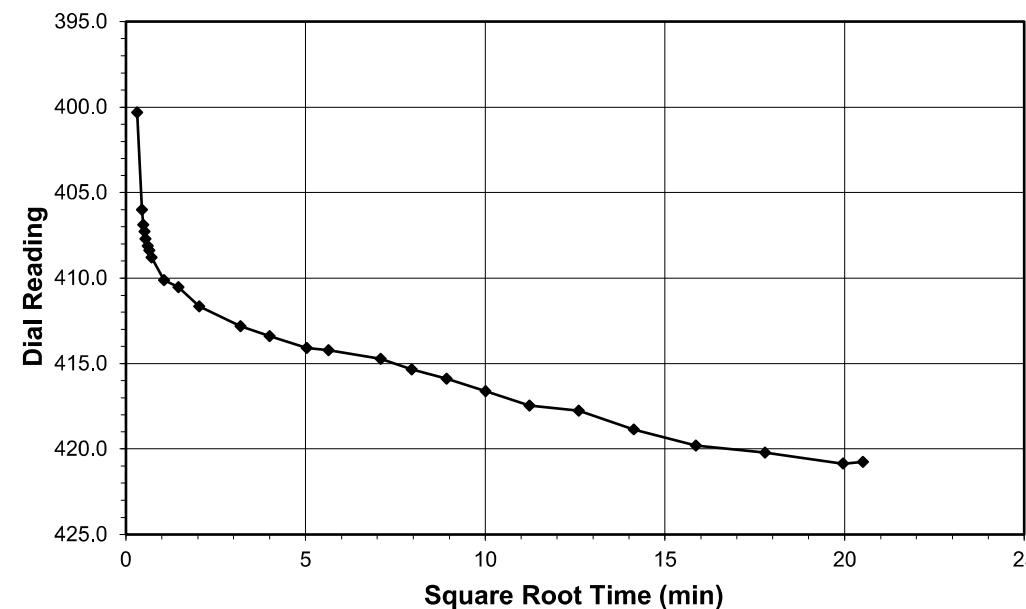


ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

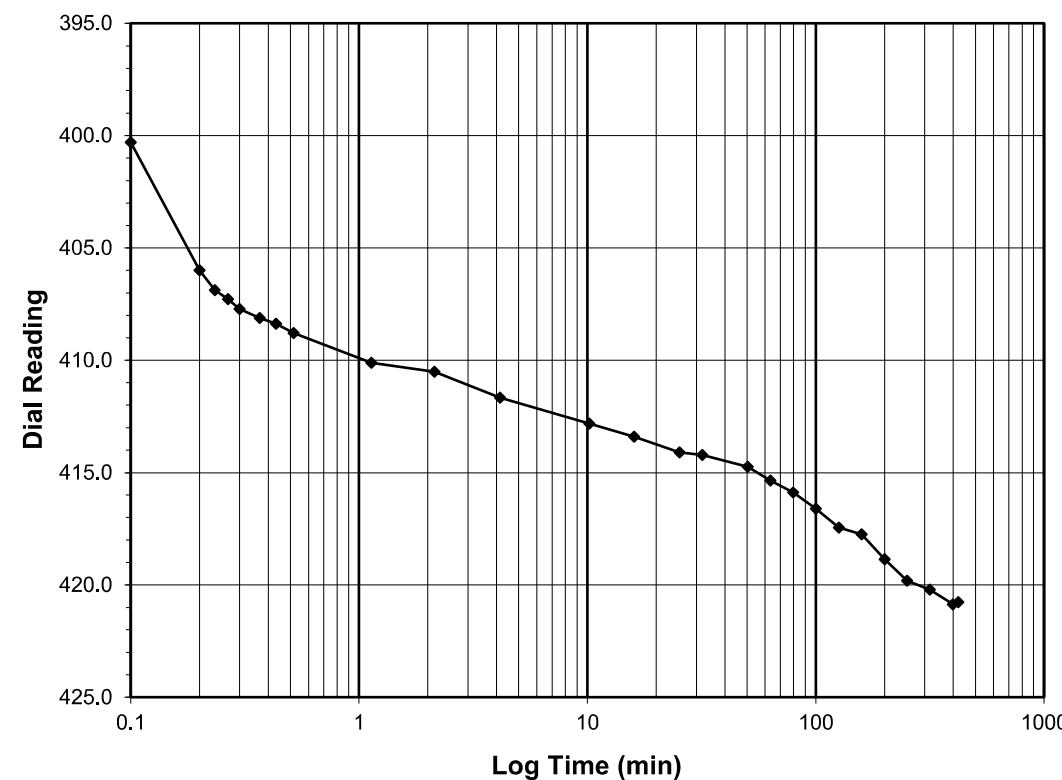
Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 0.5 - 1
 Final Reading (div) 420.8
 Consolidometer No. R-409
 1 Division (in) 0.0001
 Start Date 4/30/22
 Start Time 8:36:42

Elapsed Time (min)	Dial Reading (div)
Initial	341.4
0.10	400.3
0.20	406.0
0.23	406.9
0.27	407.3
0.30	407.7
0.37	408.1
0.43	408.4
0.52	408.8
1.13	410.1
2.13	410.5
4.15	411.7
10.18	412.8
16.03	413.4
25.32	414.1
31.82	414.2
50.32	414.7
63.30	415.3
79.65	415.9
100.22	416.6
126.12	417.5
158.72	417.7
199.77	418.9
251.43	419.8
316.47	420.2
398.35	420.9
420.50	420.8



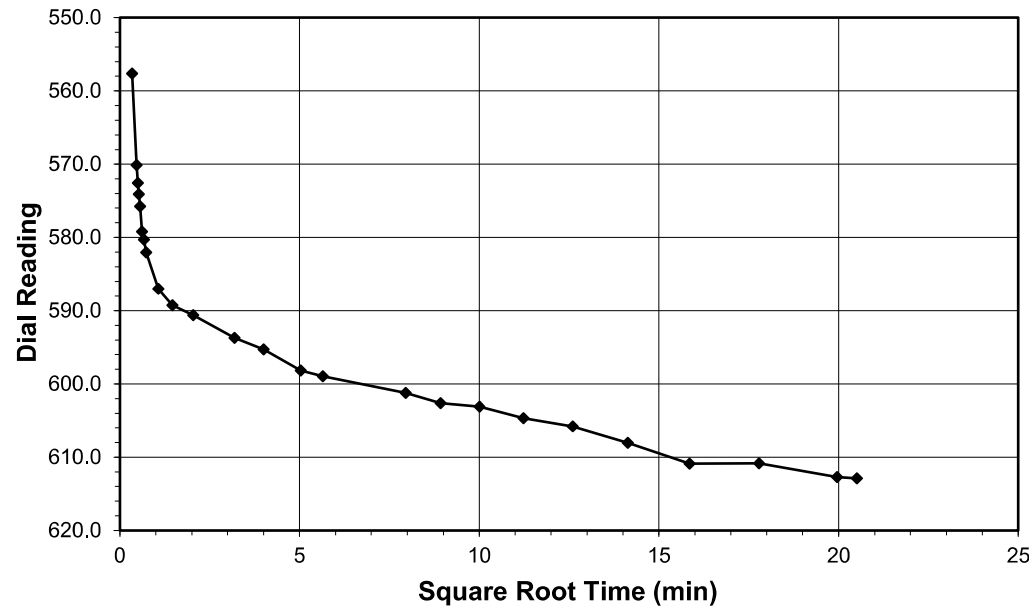
Tested By '29-07-041' Date 4/30/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

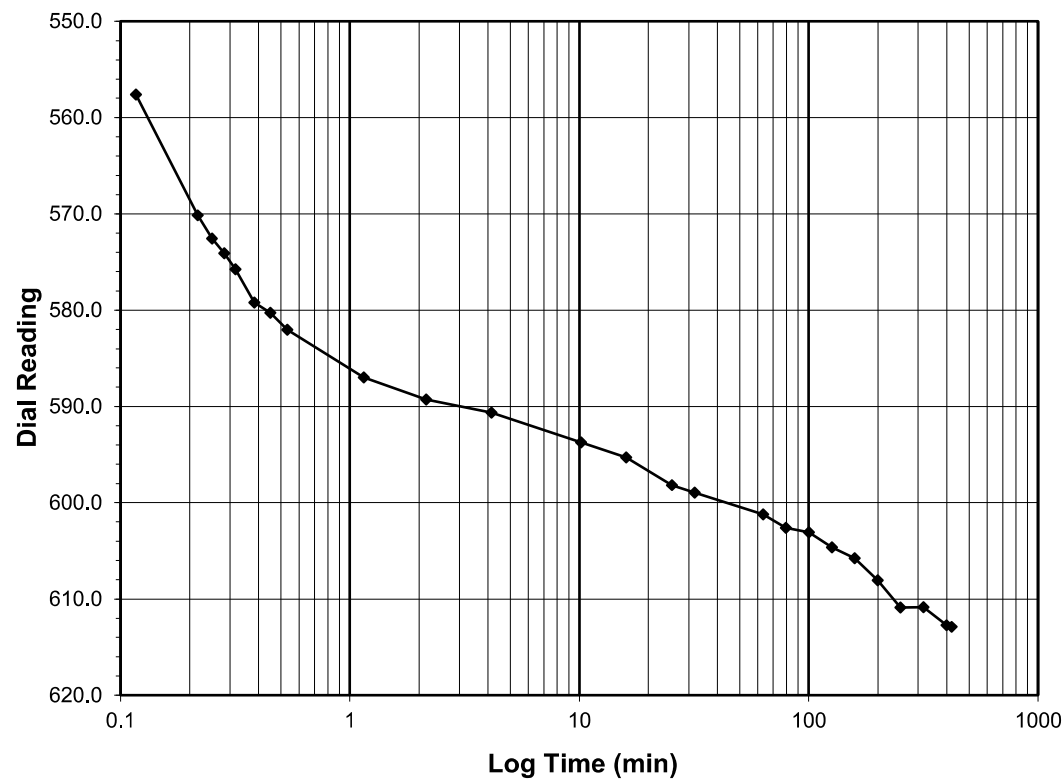
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1 - 2
Final Reading (div) 612.9
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 4/30/22
 Start Time 15:37:13

Elapsed Time (min)	Dial Reading (div)
Initial	420.8
0.12	557.6
0.22	570.1
0.25	572.6
0.28	574.1
0.32	575.7
0.38	579.2
0.45	580.3
0.53	582.0
1.15	587.0
2.15	589.3
4.15	590.6
10.18	593.7
16.05	595.3
25.32	598.2
31.83	599.0
63.30	601.2
79.65	602.6
100.22	603.1
126.12	604.6
158.72	605.8
199.75	608.1
251.42	610.9
316.47	610.9
398.35	612.7
420.48	612.9



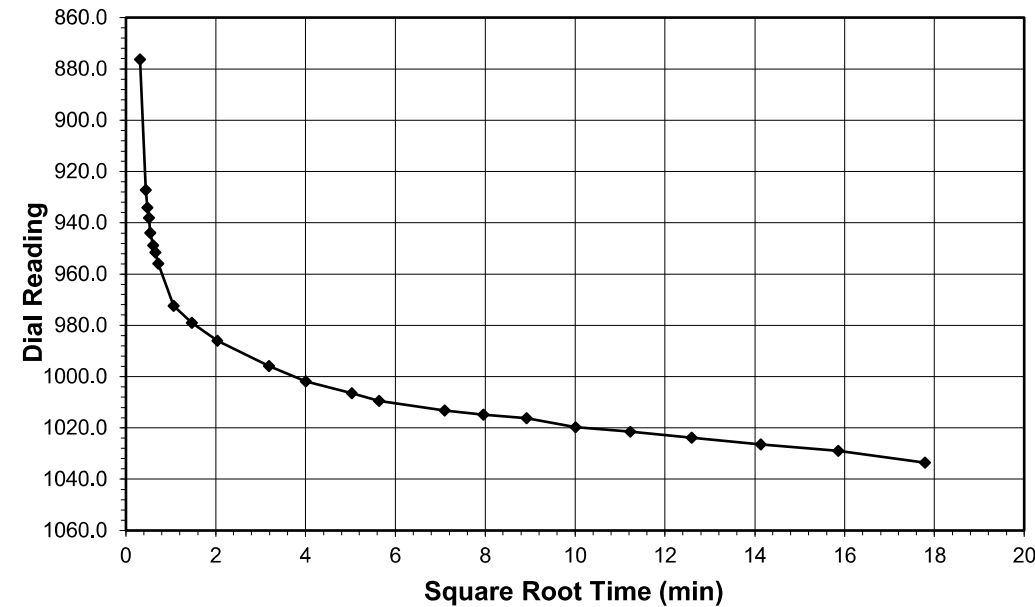
Tested By '29-07-041' Date 4/30/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

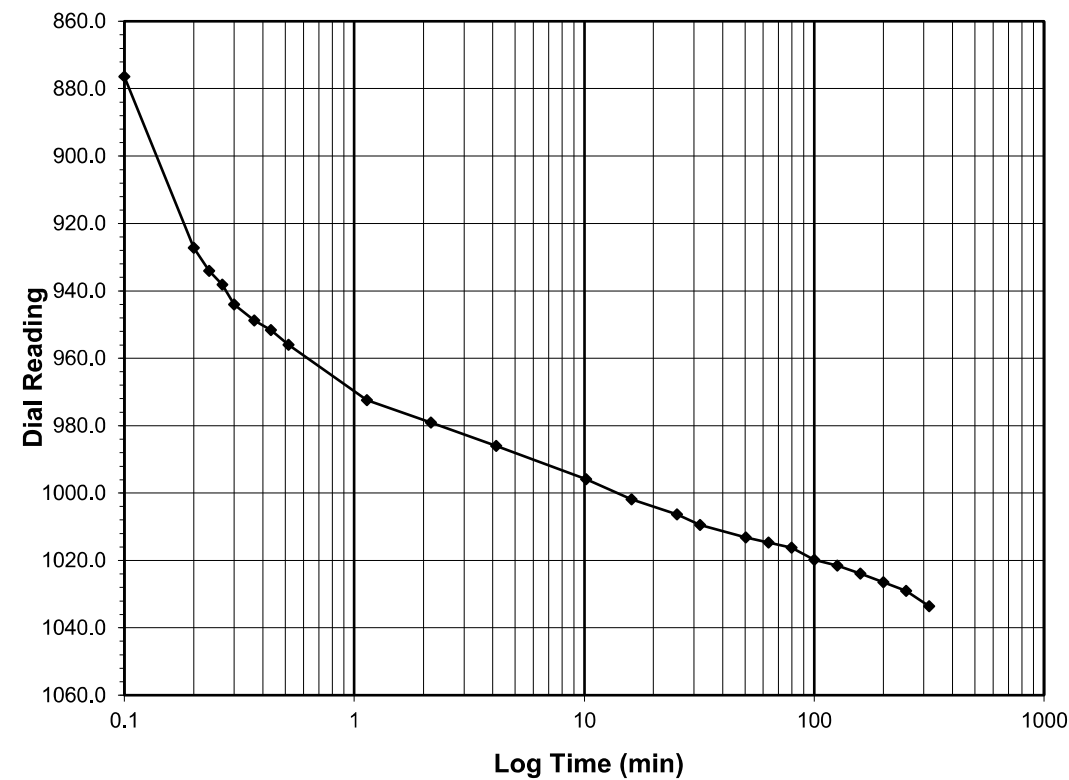
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 2 - 4
Final Reading (div) 1033.5
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 4/30/22
 Start Time 22:37:41

Elapsed Time (min)	Dial Reading (div)
Initial	612.9
0.10	876.4
0.20	927.3
0.23	934.1
0.27	938.1
0.30	944.0
0.37	948.8
0.43	951.6
0.52	955.9
1.13	972.5
2.15	979.1
4.15	986.0
10.18	995.9
16.05	1001.9
25.32	1006.4
31.83	1009.5
50.33	1013.2
63.32	1014.7
79.65	1016.2
100.23	1019.8
126.13	1021.5
158.73	1023.9
199.77	1026.4
251.43	1029.0
316.48	1033.5



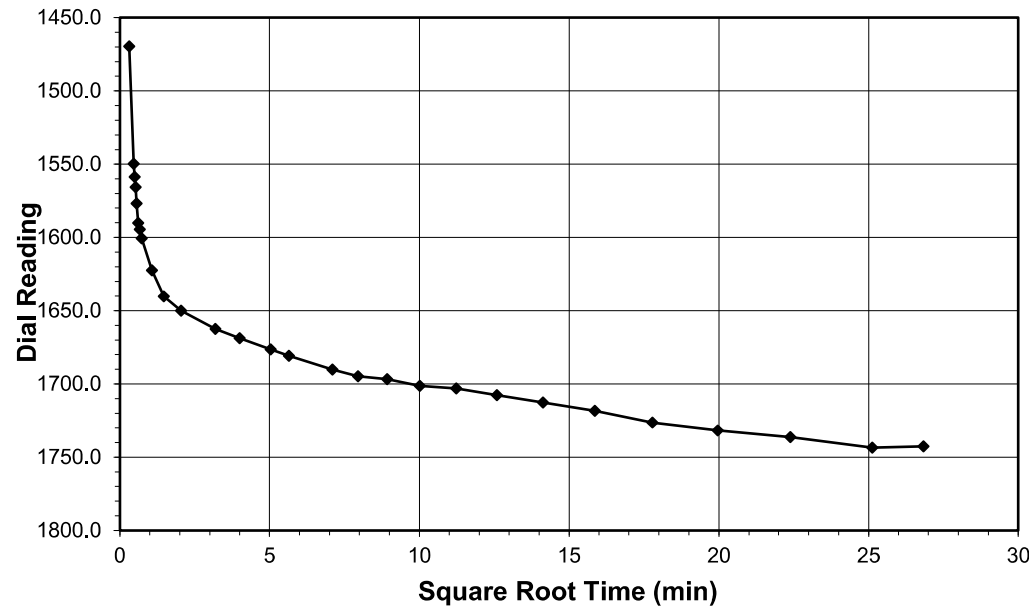
Tested By '29-07-041' Date 4/30/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

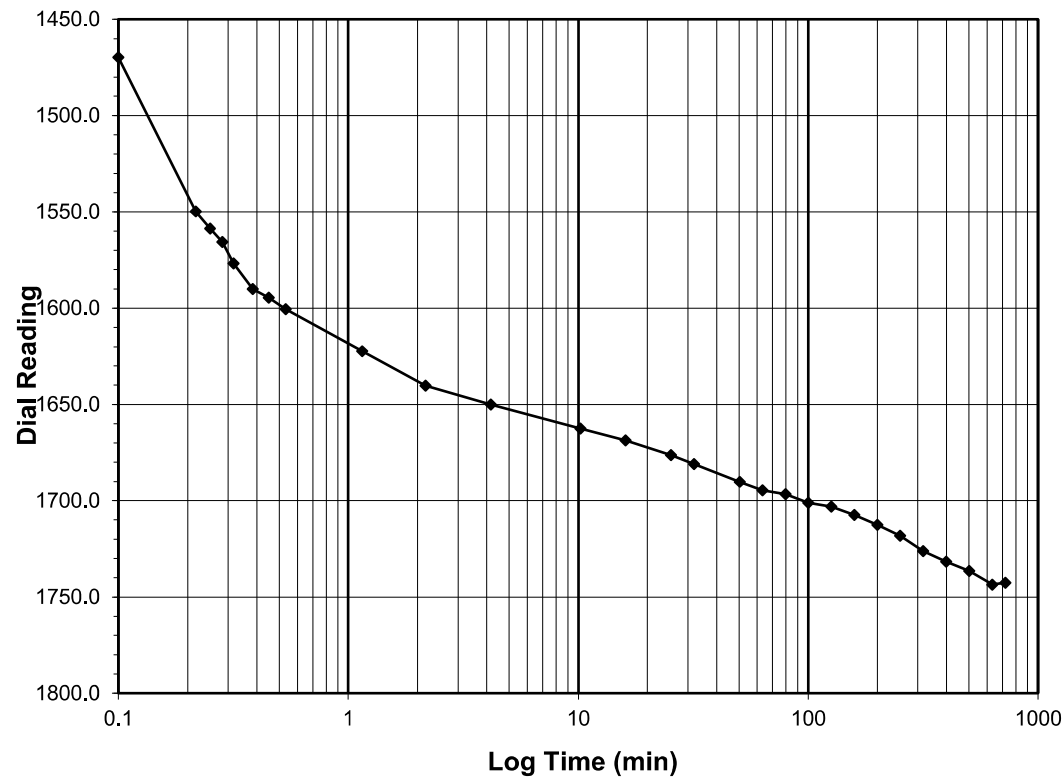
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **4 - 8**
 Final Reading (div) **1742.6**
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 5/1/22
 Start Time 5:38:00

Elapsed Time (min)	Dial Reading (div)
Initial	1033.5
0.10	1469.7
0.22	1549.8
0.25	1558.6
0.28	1565.7
0.32	1576.8
0.38	1590.1
0.45	1594.6
0.53	1600.5
1.15	1622.4
2.17	1640.3
4.17	1650.1
10.20	1662.4
16.05	1668.7
25.33	1676.4
31.85	1680.9
50.35	1690.2
63.33	1694.7
79.67	1696.7
100.25	1701.2
126.15	1703.1
158.75	1707.5
199.78	1712.5
251.45	1718.2
316.50	1726.2
398.38	1731.7
501.47	1736.4
631.23	1743.5
720.22	1742.6



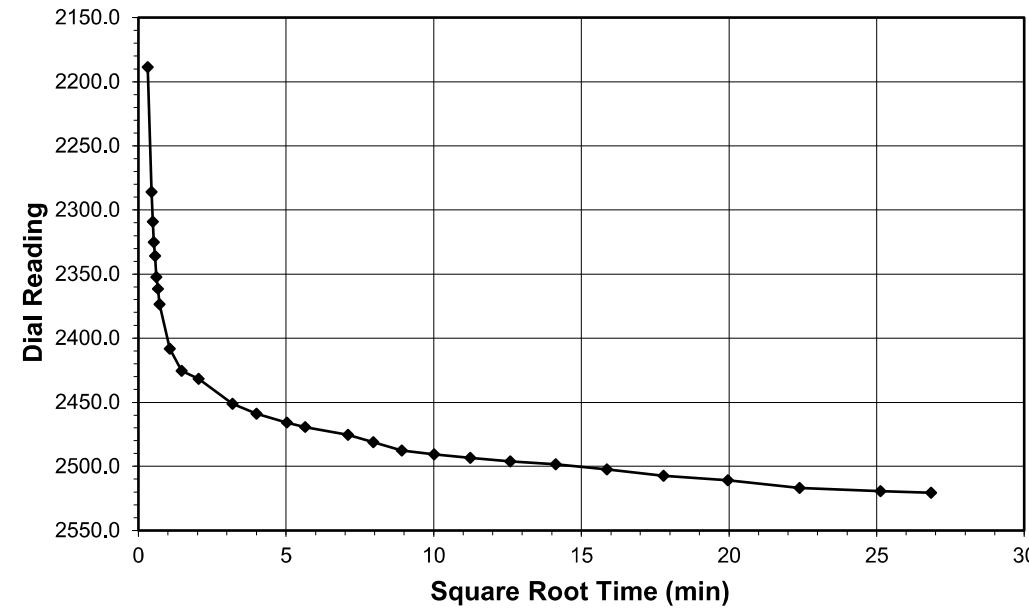
Tested By '29-07-041' Date 5/1/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

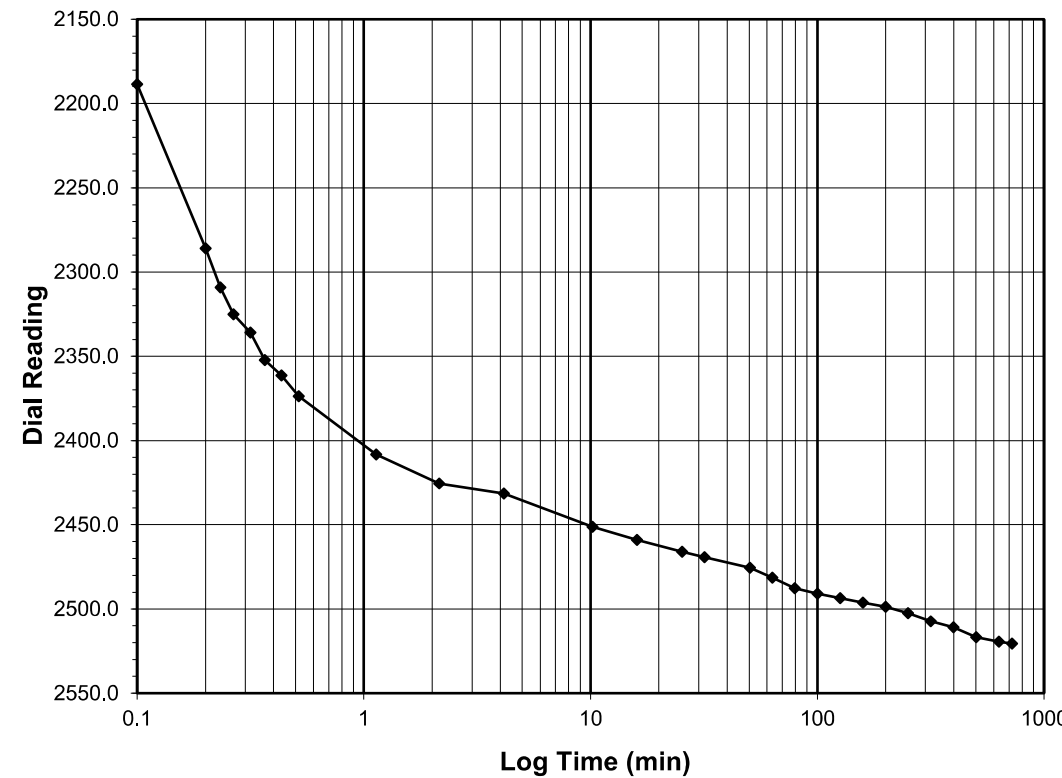
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **8 - 16**
 Final Reading (div) **2520.6**
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 5/1/22
 Start Time 17:38:13

Elapsed Time (min)	Dial Reading (div)
Initial	1742.6
0.10	2188.6
0.20	2285.9
0.23	2309.2
0.27	2325.1
0.32	2335.8
0.37	2352.4
0.43	2361.4
0.52	2373.7
1.13	2408.3
2.15	2425.5
4.15	2431.6
10.18	2451.2
16.05	2458.9
25.32	2465.9
31.83	2469.3
50.33	2475.5
63.32	2481.3
79.67	2487.6
100.23	2490.8
126.13	2493.4
158.73	2496.2
199.78	2498.5
251.45	2502.4
316.48	2507.3
398.37	2510.9
501.45	2516.8
631.23	2519.4
720.37	2520.6



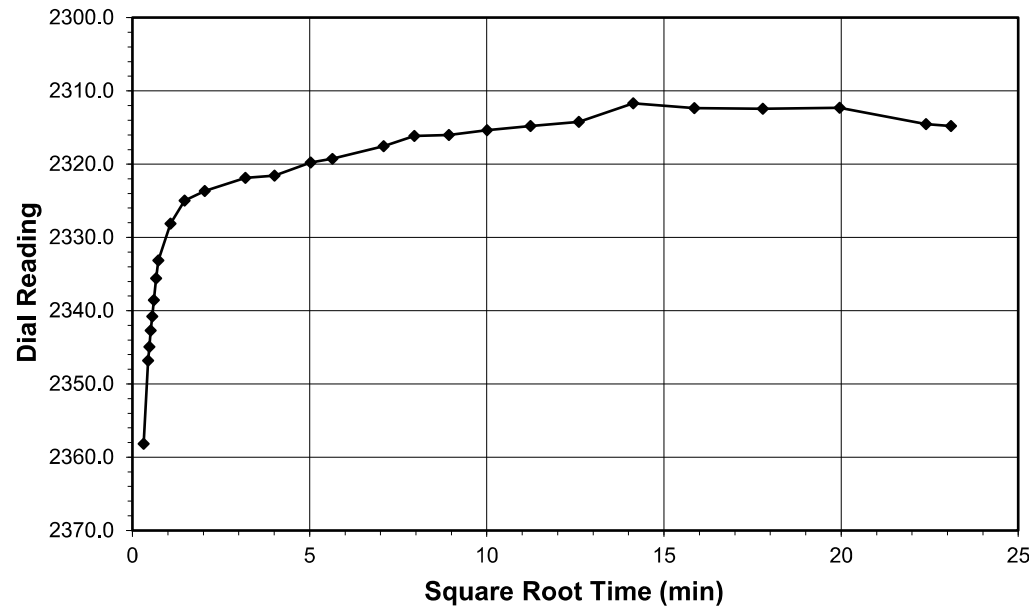
Tested By '29-07-041' Date 5/1/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

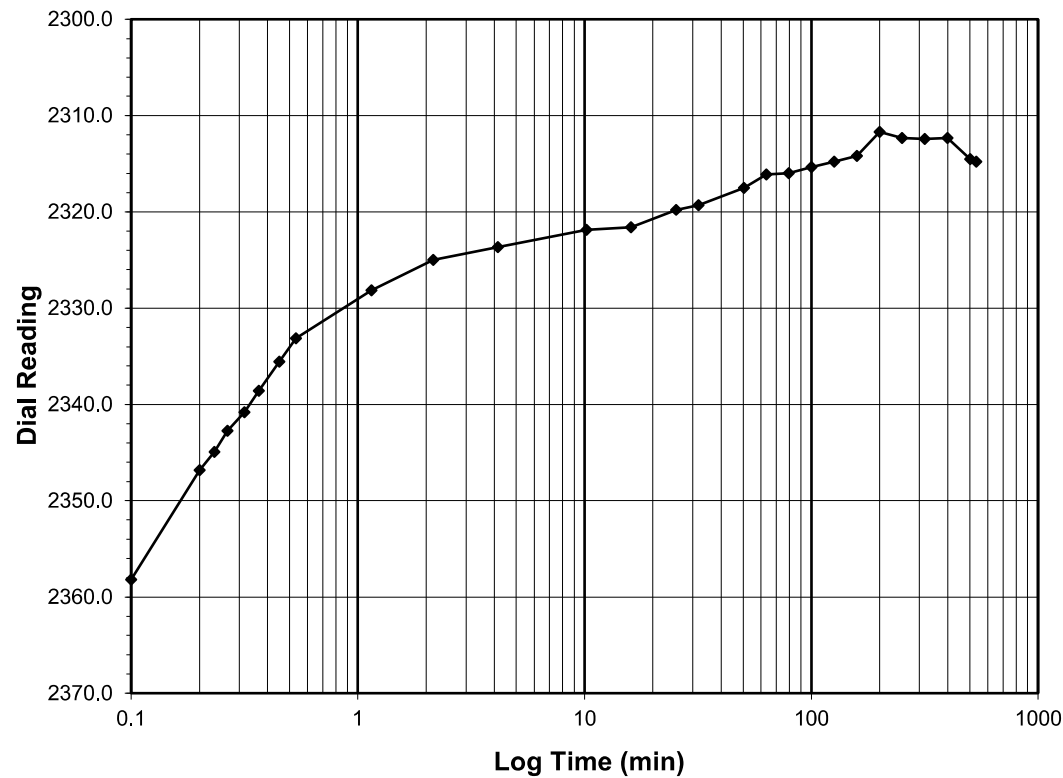
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **16 - 4**
 Final Reading (div) **2314.8**
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 5/2/22
 Start Time 5:38:36

Elapsed Time (min)	Dial Reading (div)
Initial	2520.6
0.10	2358.2
0.20	2346.8
0.23	2344.9
0.27	2342.7
0.32	2340.8
0.37	2338.6
0.45	2335.6
0.53	2333.1
1.15	2328.1
2.15	2325.0
4.15	2323.7
10.18	2321.9
16.05	2321.6
25.32	2319.8
31.83	2319.3
50.33	2317.5
63.32	2316.1
79.65	2316.0
100.23	2315.4
126.13	2314.8
158.73	2314.2
199.77	2311.7
251.43	2312.3
316.48	2312.4
398.37	2312.3
501.45	2314.5
533.77	2314.8



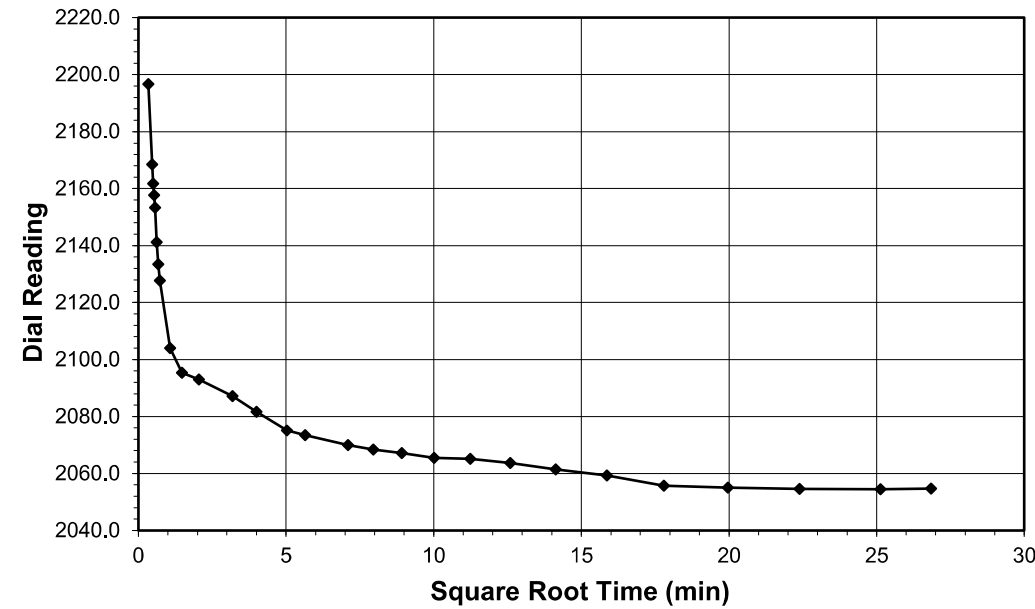
Tested By '29-07-041' Date 5/2/22 Checked By MPS Date 5/6/22



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

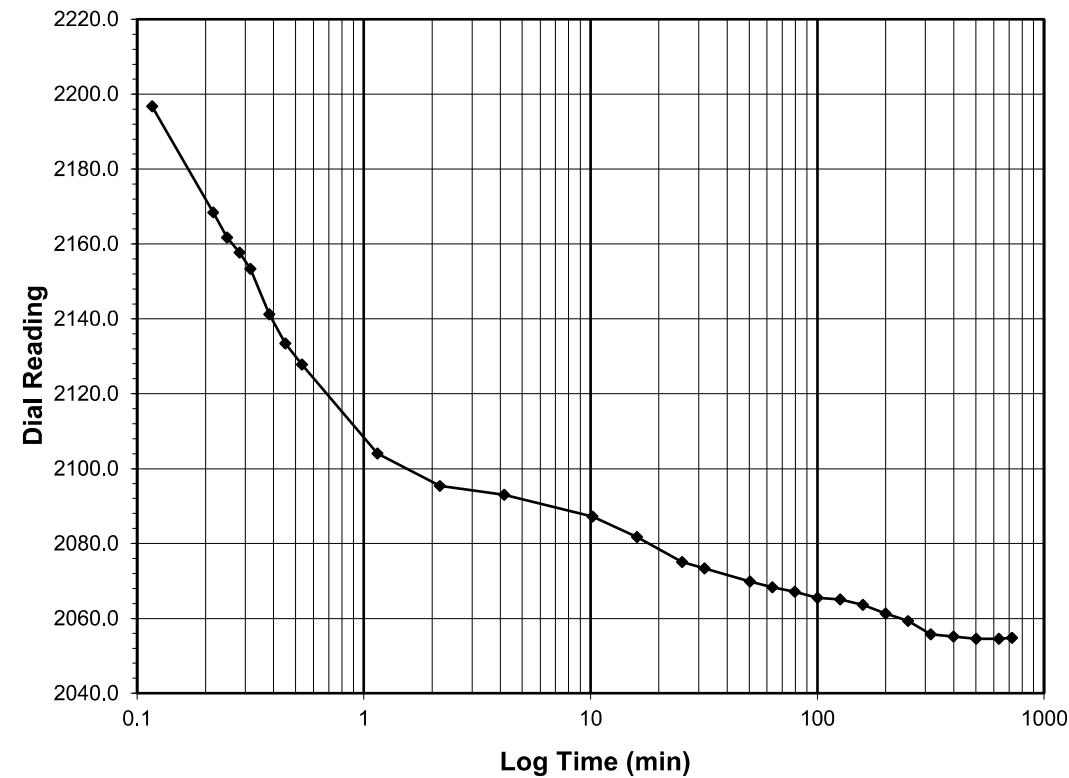
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **4 - 1**
 Final Reading (div) **2054.7**
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 5/2/22
 Start Time 14:32:23

Elapsed Time (min)	Dial Reading (div)
Initial	2314.8
0.12	2196.7
0.22	2168.5
0.25	2161.7
0.28	2157.7
0.32	2153.3
0.38	2141.3
0.45	2133.5
0.53	2127.7
1.15	2104.0
2.17	2095.4
4.17	2093.0
10.20	2087.1
16.05	2081.8
25.33	2075.1
31.83	2073.4
50.35	2069.9
63.33	2068.3
79.67	2067.2
100.25	2065.5
126.15	2065.1
158.75	2063.6
199.78	2061.4
251.45	2059.3
316.50	2055.7
398.38	2055.1
501.47	2054.5
631.23	2054.5
720.35	2054.7



Tested By '29-07-041' Date 5/2/22 Checked By MPS Date 5/6/22

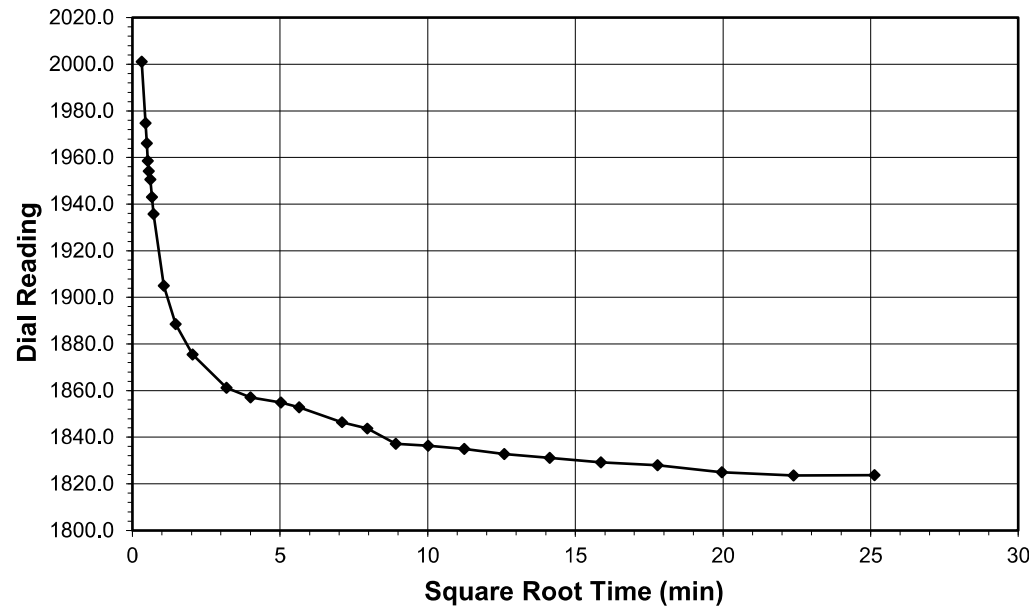


ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

Client: Kleinfelder Boring No.: EB1-B
 Client Project: BR-0097 Depth (ft): 21.0-23.0
 Project No.: R-2022-091-002 Sample No.: ST-1
 Lab ID: R-2022-091-002-001 Visual Description: Orange Elastic Silt

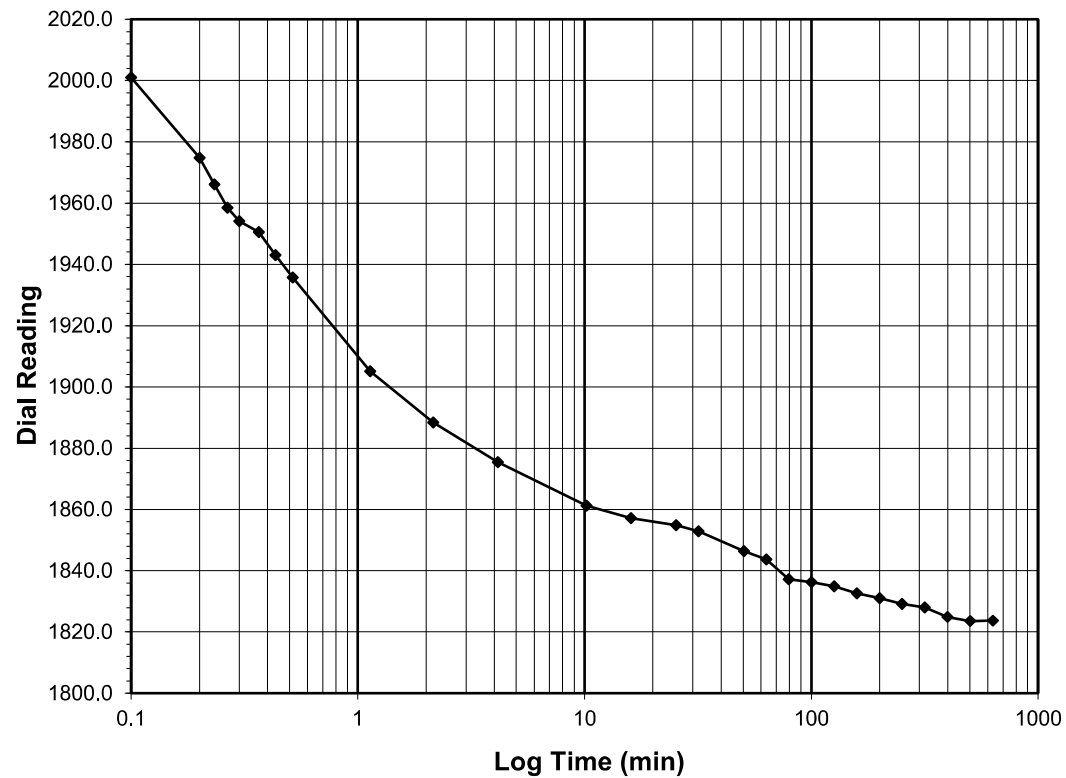
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1 - 0.25
Final Reading (div) 1823.7
 Consolidometer No. **R-409**
 1 Division (in) 0.0001

Start Date 5/3/22
 Start Time 2:32:43

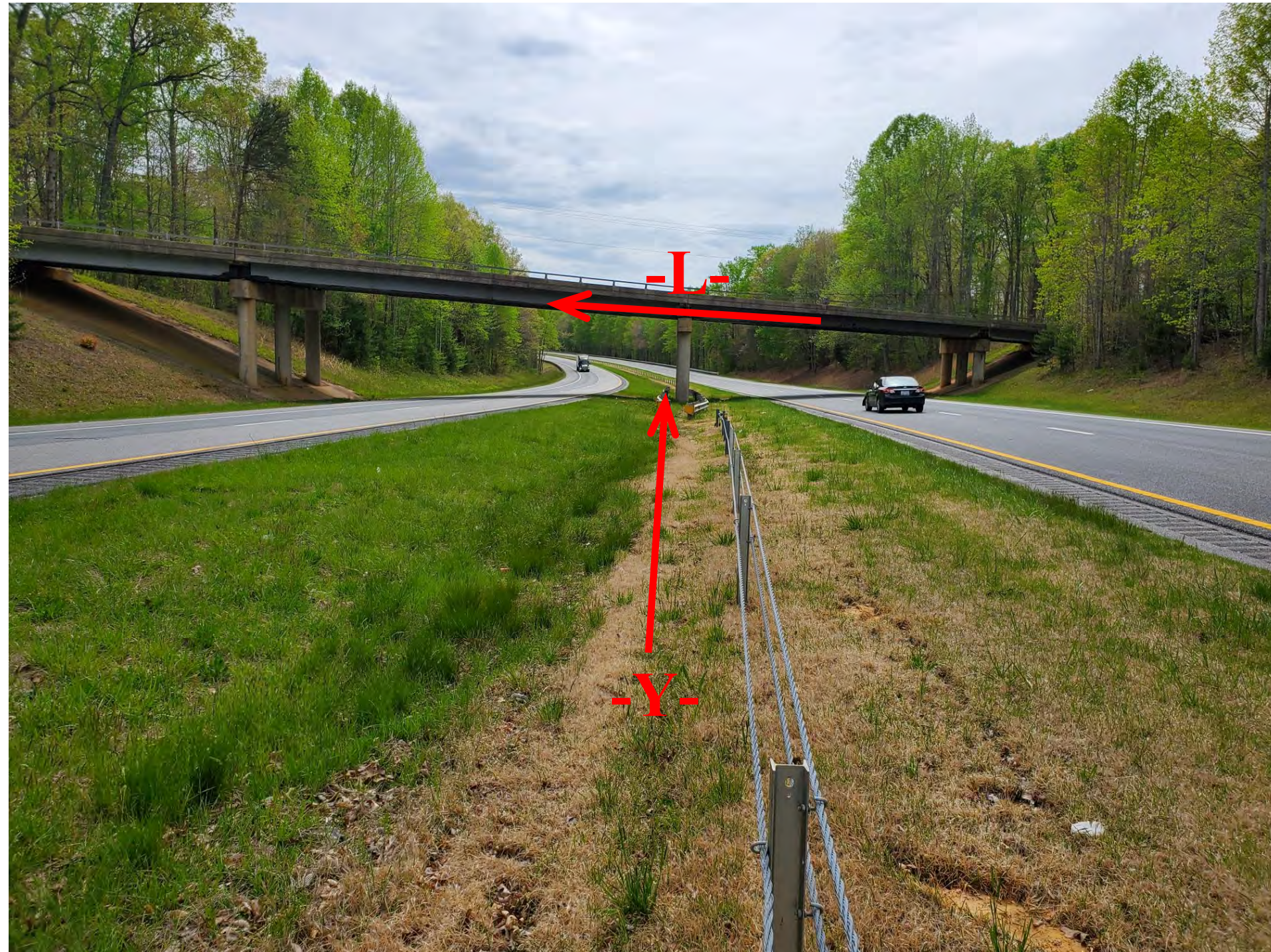
Elapsed Time (min)	Dial Reading (div)
Initial	2054.7
0.10	2001.0
0.20	1974.8
0.23	1966.2
0.27	1958.5
0.30	1954.1
0.37	1950.6
0.43	1943.0
0.52	1935.7
1.13	1905.0
2.15	1888.4
4.15	1875.5
10.18	1861.2
16.05	1857.1
25.32	1854.9
31.83	1852.9
50.33	1846.4
63.32	1843.7
79.65	1837.2
100.23	1836.3
126.12	1834.9
158.72	1832.7
199.77	1831.0
251.43	1829.2
316.48	1828.0
398.35	1824.9
501.43	1823.6
631.22	1823.7



Tested By '29-07-041' Date 5/3/22 Checked By MPS Date 5/6/22

SITE PHOTOGRAPH

Bridge No. 178 on -L- (SR 1929) over US 29



Looking Southwest Towards Bent No. 1 at Bridge No. 178