

REFERENCE: BR-0047

PROJECT: 67047

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0047	1	13

STRUCTURE
SUBSURFACE INVESTIGATION

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
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COUNTY STOKES

PROJECT DESCRIPTION REPLACE BRIDGE NO. 10 ON
SR 1105 (MEADOWBROOK DRIVE) OVER US 52

SITE DESCRIPTION STATION 18+27.98 -L- / 13+57.28 -Y2-

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919 T07-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

P.M. WEAVER

C.R. PASTRANA

D.V. TINSON

INVESTIGATED BY ESP Associates, Inc.

DRAWN BY C.R. PASTRANA

CHECKED BY P.M. WEAVER

SUBMITTED BY ESP Associates, Inc.

DATE SEPTEMBER 2019

 **ESP ASSOCIATES, INC.**
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SUITE E
GREENSBORO, NC 27409
FIRM # C-0587
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Designed by:
Paul M. Weaver

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9/24/2019

SIGNATURE DATE

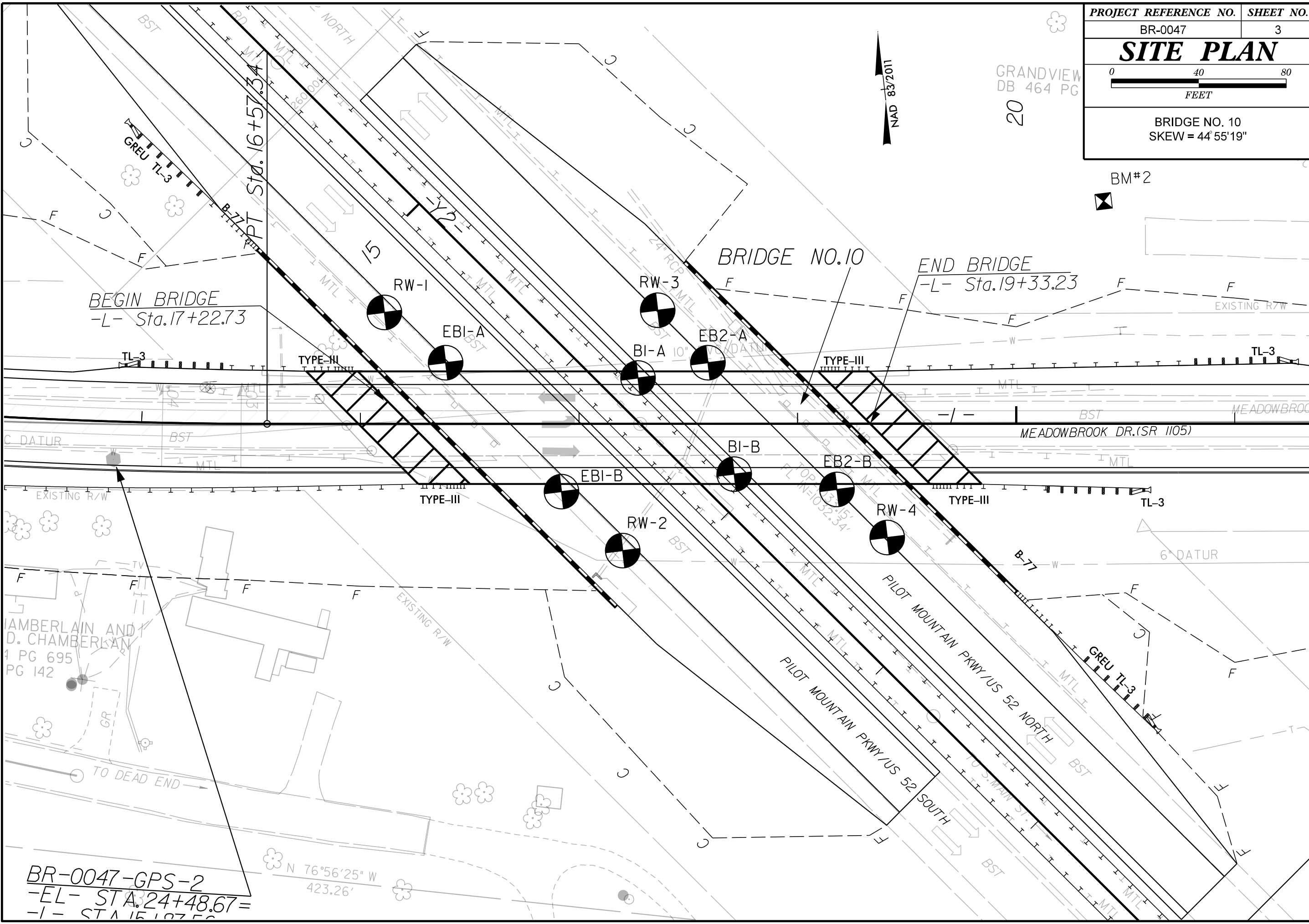
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
<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 206, 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 (RQD) - 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 (N 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>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="5">GRANULAR MATERIALS (≤ 35% PASSING #200)</th> <th colspan="5">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="5">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1</th> <th>A-1-b</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-3</th> <th>A-4, A-5</th> <th>A-6, A-7</th> </tr> <tr> <th>GROUP CLASS.</th> <td>A-1-a</td> <td>A-1-b</td> <td>A-2-4</td> <td>A-2-5</td> <td>A-2-6</td> <td>A-2-7</td> <td>A-4</td> <td>A-5</td> <td>A-6</td> <td>A-7</td> <td>A-1, A-2</td> <td>A-3</td> <td>A-4, A-5</td> <td>A-6, A-7</td> <td></td> </tr> <tr> <th>SYMBOL</th> <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> <th>% PASSING #10 #40 #200</th> <td>50 MX 30 MX 15 MX</td> <td>50 MX 25 MX</td> <td>51 MN 35 MX 35 MX</td> <td>40 MX 41 MN 40 MX 41 MN</td> <td>40 MX 41 MN 40 MX 41 MN</td> <td>40 MX 41 MN 40 MX 41 MN</td> <td>40 MX 41 MN 40 MX 41 MN</td> <td>36 MN 36 MN 36 MN</td> <td>36 MN 36 MN 36 MN</td> <td>36 MN 36 MN 36 MN</td> <td>36 MN 36 MN 36 MN</td> <td>GRANULAR SOILS</td> <td>SILT-CLAY SOILS</td> <td>MUCK, PEAT</td> <td></td> </tr> <tr> <th>MATERIAL PASSING #40 LL PI</th> <td>-</td> <td>-</td> <td>40 MX 41 MN NP</td> <td>40 MX 41 MN 11 MN</td> <td>40 MX 41 MN 11 MN</td> <td>40 MX 41 MN 11 MN</td> <td>40 MX 41 MN 11 MN</td> <td>40 MX 41 MN 11 MN</td> <td>40 MX 41 MN 11 MN</td> <td>40 MX 41 MN 11 MN</td> <td>40 MX 41 MN 11 MN</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>GROUP INDEX</th> <td>0</td> <td>0</td> <td>0</td> <td>1 MX</td> <td>0 MX</td> <td>0 MX</td> <td>0 MX</td> <td>0 MX</td> <td>0 MX</td> <td>0 MX</td> <td>0 MX</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <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>SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td>HIGHLY ORGANIC SOILS</td> <td></td> <td></td> </tr> <tr> <th>GEN. RATING AS SUBGRADE</th> <td colspan="5">EXCELLENT TO GOOD</td> <td colspan="5">FAIR TO POOR</td> <td>FAIR TO POOR</td> <td>POOR</td> <td>UNSATURABLE</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="10"></td> <td colspan="10"></td> </tr> <tr> <td colspan="10"> <p style="text-align: center;">CONSISTENCY OR DENSENESS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <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> <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 > 4</td> </tr> </table> </td> <td colspan="10"> <p style="text-align: center;">MISCELLANEOUS SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> </td> <td colspan="10"> <p style="text-align: center;">RECOMMENDATION SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> </td> <td colspan="10"> <p style="text-align: center;">ABBREVIATIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>AR - AUGER REFUSAL</td> <td>CL. - CLAY</td> <td>DMT - DILATOMETER TEST</td> <td>DR - DRY UNIT WEIGHT</td> <td>W - WEATHERED</td> </tr> <tr> <td>BT - BORING TERMINATED</td> <td>CPT - COARSE PENETRATION TEST</td> <td>DPT - DYNAMIC PENETRATION TEST</td> <td>SS - SPLIT SPOON</td> <td>WEA. - WEATHERED</td> </tr> <tr> <td>CL. - CLAY</td> <td>CSE. - COARSE</td> <td>DR - DRY UNIT WEIGHT</td> <td>ST - SHELBY TUBE</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>NP - NON PLASTIC</td> <td>F - FINE</td> <td>SS - SAND, SANDY</td> <td>RS - ROCK</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>ORG. - ORGANIC</td> <td>FOSS. - FOSSILIFEROUS</td> <td>SL. - SILT, SILTY</td> <td>RT - RECOMPACTED TRIAXIAL</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>PMT - PRESSUREMETER TEST</td> <td>FRAC. - FRACTURED, FRACTURES</td> <td>SLI. - SLIGHTLY</td> <td>RS - ROCK</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>SAP. - SAPROLITE</td> <td>FRAGS. - FRAGMENTS</td> <td>TCR - TRICONE REFUSAL</td> <td>RT - RECOMPACTED TRIAXIAL</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>SD. - SAND, SANDY</td> <td>HI. - HIGHLY</td> <td>W - MOISTURE CONTENT</td> <td>RS - ROCK</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>SL. - SILT, SILTY</td> <td></td> <td>V - VERY</td> <td>RT - RECOMPACTED TRIAXIAL</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>SLI. - SLIGHTLY</td> <td></td> <td></td> <td>RS - ROCK</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>TCR - TRICONE REFUSAL</td> <td></td> <td></td> <td>RT - RECOMPACTED TRIAXIAL</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>W - MOISTURE CONTENT</td> <td></td> <td></td> <td>RS - ROCK</td> <td>UNIT WEIGHT</td> </tr> <tr> <td>V - VERY</td> <td></td> <td></td> <td>RT - RECOMPACTED TRIAXIAL</td> <td>UNIT WEIGHT</td> </tr> </table> </td> </tr> <tr> <td colspan="10"> <p style="text-align: center;">TEXTURE OR GRAIN SIZE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <td>4</td> <td>10</td> <td>40</td> <td>60</td> <td>200</td> <td>270</td> </tr> <tr> <td></td> <td>4.75</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> </tr> <tr> <th>BOULDER (BLDR.)</th> <th>COBBLE (COB.)</th> <th>GRAVEL (GR.)</th> <th>COARSE SAND (CSE. 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MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p> </td> <td colspan="10"> <p style="text-align: center;">INDURATION</p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <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> </table> </td> </tr> <tr> <td colspan="10"> <p style="text-align: center;">NOTES:</p> <p>F.J.A.D. = FILLED IMMEDIATELY AFTER DRILLING</p> </td> <td colspan="10"> <p style="text-align: center;">BENCH MARK: BM #2; RR SPIKE SET IN 10' DIA. MAPLE; STA. 24+06.73</p> <p style="text-align: center;">-BL-; 97.48' LEFT; N920889 E1594363</p> <p style="text-align: right;">ELEVATION: 1049.82 FEET</p> </td> </tr> </table>										GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)					SILT-CLAY MATERIALS (> 35% PASSING #200)					ORGANIC MATERIALS					A-1	A-1-b	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-3	A-4, A-5	A-6, A-7	GROUP CLASS.	A-1-a	A-1-b	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-3	A-4, A-5	A-6, A-7		SYMBOL																% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 35 MX 35 MX	40 MX 41 MN 40 MX 41 MN	40 MX 41 MN 40 MX 41 MN	40 MX 41 MN 40 MX 41 MN	40 MX 41 MN 40 MX 41 MN	36 MN 36 MN 36 MN	36 MN 36 MN 36 MN	36 MN 36 MN 36 MN	36 MN 36 MN 36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT		MATERIAL PASSING #40 LL PI	-	-	40 MX 41 MN NP	40 MX 41 MN 11 MN	40 MX 41 MN 11 MN	40 MX 41 MN 11 MN	40 MX 41 MN 11 MN	40 MX 41 MN 11 MN	40 MX 41 MN 11 MN	40 MX 41 MN 11 MN	40 MX 41 MN 11 MN					GROUP INDEX	0	0	0	1 MX	0 MX	0 MX	0 MX	0 MX	0 MX	0 MX	0 MX					USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND	SILTY SOILS	CLAYEY SOILS							SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER	HIGHLY ORGANIC SOILS			GEN. 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MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>										<p style="text-align: center;">INDURATION</p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <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> </table>										FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	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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;">INDURATION</p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <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> </table>										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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<p style="text-align: center;">NOTES:</p> <p>F.J.A.D. = FILLED IMMEDIATELY AFTER DRILLING</p>										<p style="text-align: center;">BENCH MARK: BM #2; RR SPIKE SET IN 10' DIA. MAPLE; STA. 24+06.73</p> <p style="text-align: center;">-BL-; 97.48' LEFT; N920889 E1594363</p> <p style="text-align: right;">ELEVATION: 1049.82 FEET</p>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

PROJECT REFERENCE NO.	SHEET NO.
BR-0047	3
SITE PLAN	
 0 40 80 FEET	
BRIDGE NO. 10 SKEW = 44° 55' 19"	

GRANDVIEW
DB 464 PG
20



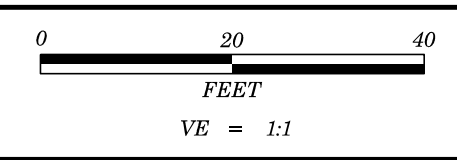
BEGIN BRIDGE
-L- Sta. 17+22.73

END BRIDGE
-L- Sta. 19+33.23

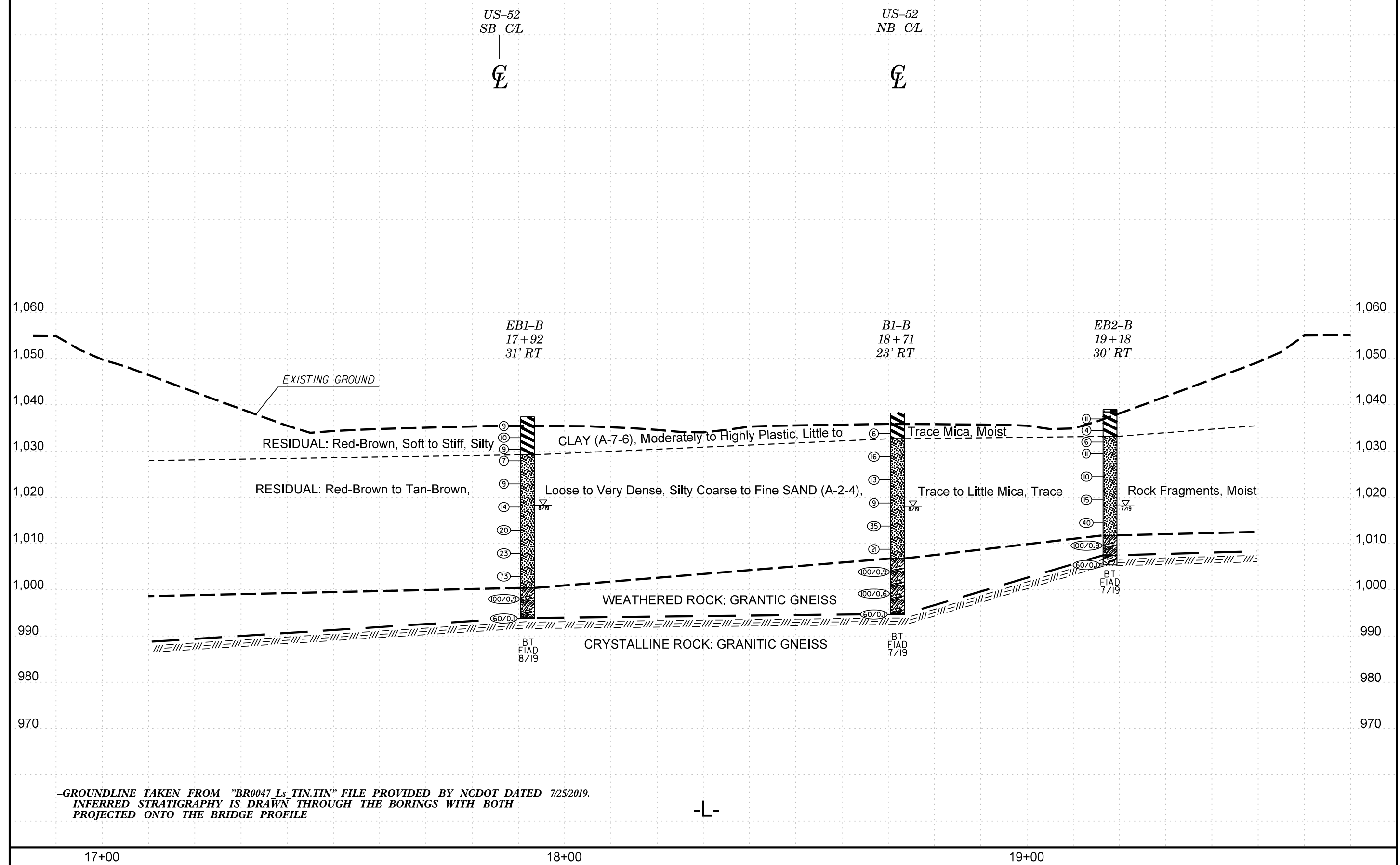
CHAMBERLAIN AND
D. CHAMBERLAIN
4 PG 695
PG 142

BR-0047-GPS-2
-EL- STA. 24+48.67 =
-L- STA. 15+127.50

N 76°56'25" W
423.26'



PROJECT REFERENCE NO.	SHEET NO.
BR-0047	4
PROFILE BORINGS PROJECTED	
ALONG -L-	
SKEW = 44°55'19"	



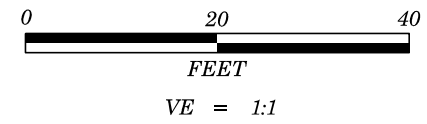
-GROUNDLINE TAKEN FROM "BR0047 Ls TIN.TIN" FILE PROVIDED BY NCDOT DATED 7/25/2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE BRIDGE PROFILE

17+00

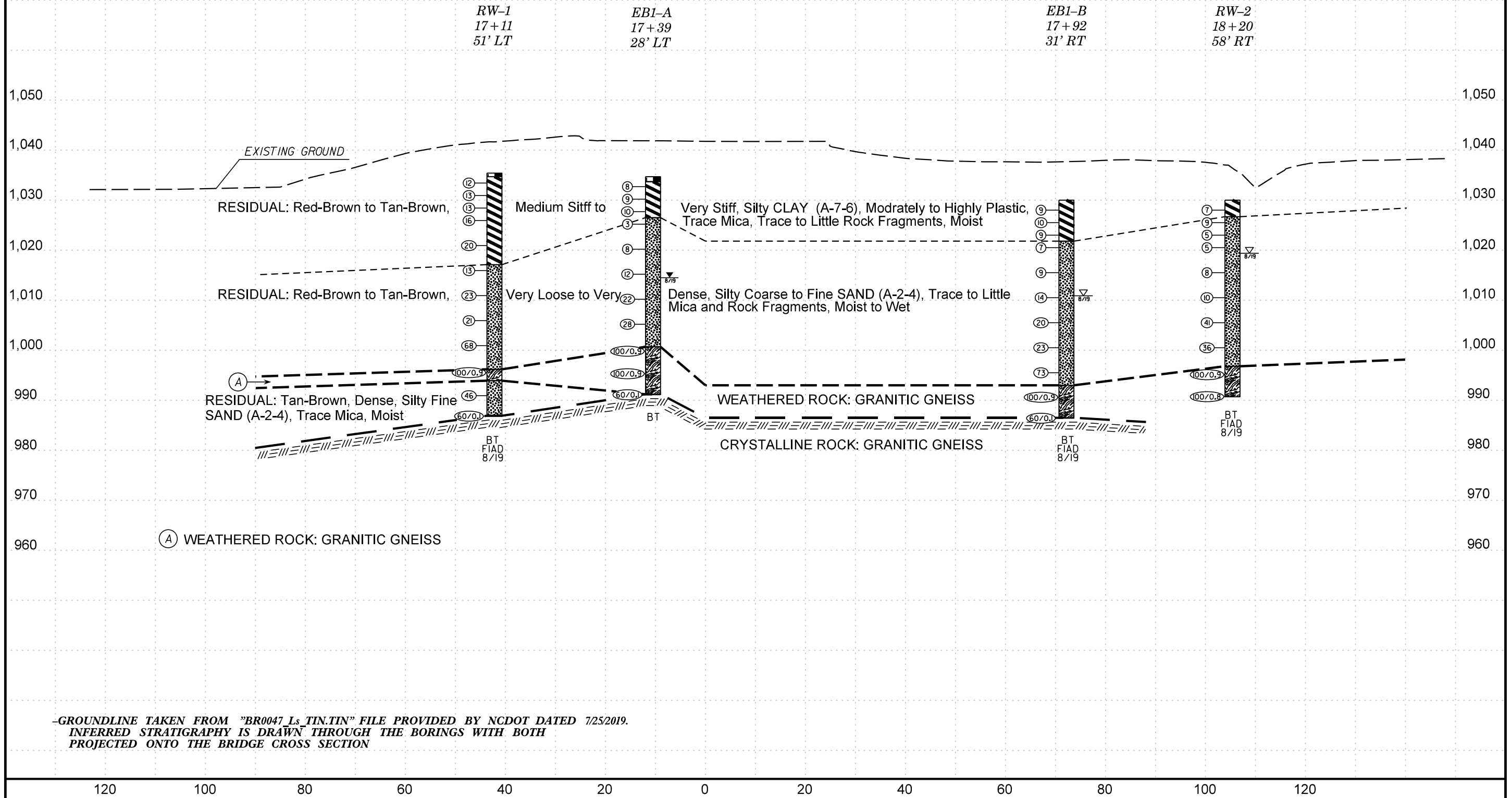
18+00

19+00

-L- 17+22.73

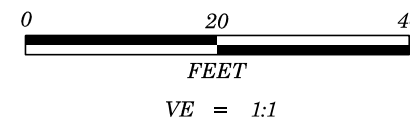


PROJECT REFERENCE NO.	SHEET NO.
BR-0047	5
SECTION THROUGH END BENT 1	
SKEW = 44°55'19"	

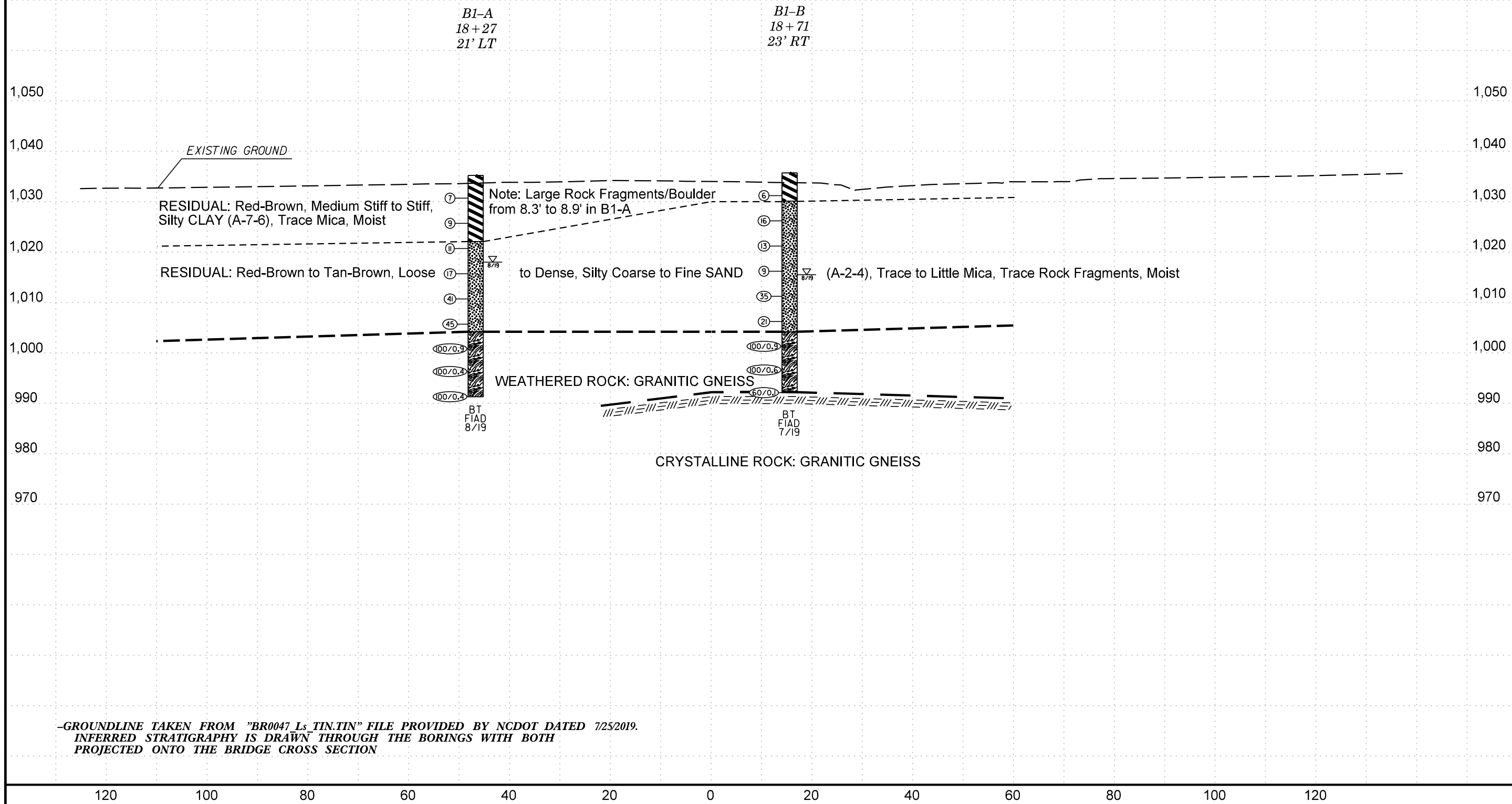


-GROUNDLINE TAKEN FROM "BR0047 Ls_TIN.TIN" FILE PROVIDED BY NCDOT DATED 7/25/2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE BRIDGE CROSS SECTION

-L- 18+27.98

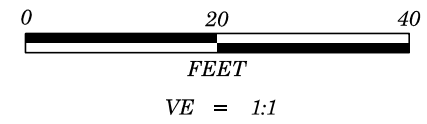


PROJECT REFERENCE NO.	SHEET NO.
BR-0047	6
SECTION THROUGH BENT 1 SKEW = 44°55'19"	

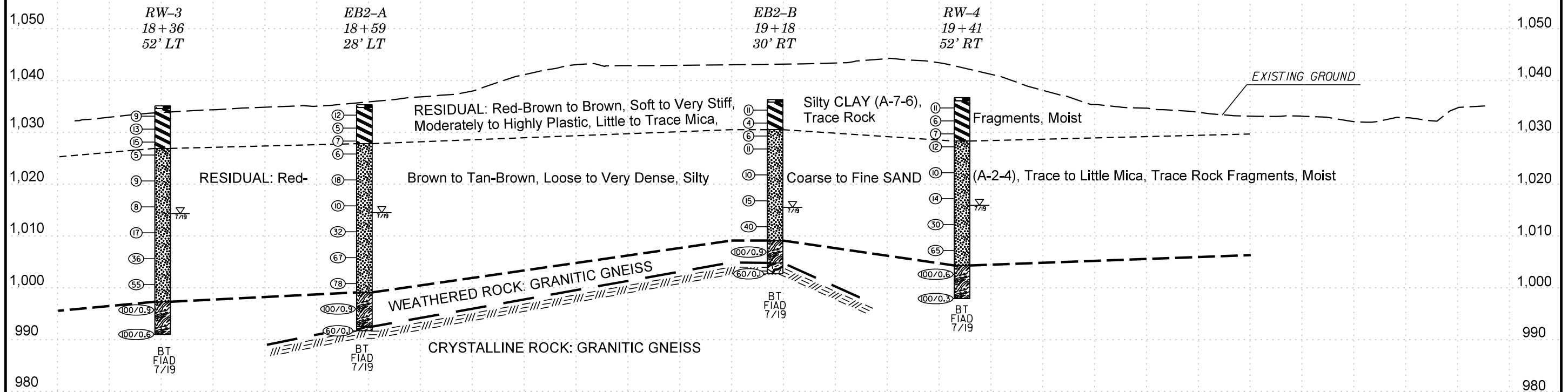


-GROUNDLINE TAKEN FROM "BR0047 Ls TIN.TIN" FILE PROVIDED BY NCDOT DATED 7/25/2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE BRIDGE CROSS SECTION

-L- 19+33.23



PROJECT REFERENCE NO.	SHEET NO.
BR-0047	7
SECTION THROUGH END BENT 2	
SKEW = 44°55'19"	



-GROUNDLINE TAKEN FROM "BR0047 Ls TINTIN" FILE PROVIDED BY NCDOT DATED 7/25/2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE BRIDGE CROSS SECTION

120 100 80 60 40 20 0 20 40 60 80 100 120

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.								
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)							
BORING NO. RW-1		STATION 17+11		OFFSET 51 ft LT		ALIGNMENT -L-								
COLLAR ELEV. 1,035.4 ft		TOTAL DEPTH 48.6 ft		NORTHING 920,878		EASTING 1,594,031								
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic								
DRILLER Seiler, M.		START DATE 08/05/19		COMP. DATE 08/06/19		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				
1040														
1035	1,034.4	1.0	4	5	7								M	GROUND SURFACE 0.0 0.5' ASPHALT over 0.2' ABC 0.7
1030	1,031.9	3.5	5	6	7								M	RESIDUAL Red-Brown, Silty CLAY, Moderately to Highly Plastic, Trace Mica, Trace Rock Fragments
1025	1,029.4	6.0	4	6	7								M	
1020	1,026.9	8.5	3	6	10								M	
1015	1,021.9	13.5	8	9	11								M	
1010	1,016.9	18.5	8	6	7								M	1,017.1 Tan-Brown, Silty Coarse to Fine SAND, Trace Rock Fragments 18.3
1005	1,011.9	23.5	11	12	11								M	
1000	1,006.9	28.5	12	10	11								M	
995	1,001.9	33.5	10	23	45								M	
990	996.9	38.5	33	43	57/0.4								M	996.2 WEATHERED ROCK GRANITIC GNEISS 39.2
	991.9	43.5	48	26	20								M	993.9 GRANITIC GNEISS 41.5
	986.9	48.5	60/0.1										M	986.9 RESIDUAL Tan-Brown, Silty Fine SAND, Trace Mica 48.5 986.8 CRYSTALLINE ROCK GRANITIC GNEISS 48.5 Boring Terminated with Standard Penetration Test Refusal at Elevation 986.8 ft In Crystalline Rock: GRANITIC GNEISS Note: Hole caved in at 3.8'

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.								
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)							
BORING NO. EB1-A		STATION 17+39		OFFSET 28 ft LT		ALIGNMENT -L-								
COLLAR ELEV. 1,034.7 ft		TOTAL DEPTH 43.6 ft		NORTHING 920,852		EASTING 1,594,056								
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic								
DRILLER Seiler, M.		START DATE 08/05/19		COMP. DATE 08/05/19		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				
1035														
1030	1,033.7	1.0	4	4	4								M	GROUND SURFACE 0.0 0.6' ASPHALT over 0.4' ABC 1.0
1025	1,031.2	3.5	4	4	5								M	RESIDUAL Red-Brown, Silty CLAY, Moderately to Highly Plastic, Trace Mica, Trace Rock Fragments
1020	1,028.7	6.0	4	5	5								M	
1015	1,026.2	8.5	3	2	1								M	
1010	1,021.2	13.5	4	4	4								M	
1005	1,016.2	18.5	5	6	6								M	
1000	1,011.2	23.5	10	12	10								M	
995	1,006.2	28.5	9	14	14								M	
	1,001.2	33.5	42	50	50/0.4								M	1,000.7 WEATHERED ROCK GRANITIC GNEISS 34.0
	996.2	38.5	48	52/0.4									M	
	991.2	43.5	60/0.1										M	991.2 CRYSTALLINE ROCK GRANITIC GNEISS 43.5 991.1 GRANITIC GNEISS 43.6 Boring Terminated with Standard Penetration Test Refusal at Elevation 991.1 ft In Crystalline Rock: GRANITIC GNEISS

NCDOT BORE DOUBLE BR0047_GINT LOGS.GPJ NC_DOT.GDT 9/10/19

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.										
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 17+92		OFFSET 31 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,034.7 ft		TOTAL DEPTH 43.6 ft		NORTHING 920,787		EASTING 1,594,101										
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER Seiler, M.		START DATE 08/01/19		COMP. DATE 08/04/19		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
1035														1,034.7	0.0	GROUND SURFACE
	1,033.7	1.0	4	5	4											RESIDUAL Red-Brown, Silty CLAY, Moderately to Highly Plastic, Trace Mica,
1030	1,031.2	3.5	4	4	6											
	1,028.7	6.0	4	5	4											
1025	1,026.2	8.5	4	4	3									1,026.5	8.2	Tan-Brown, Silty Coarse to Fine SAND, Trace Mica, Trace Rock Fragments
1020	1,021.2	13.5	4	5	4											
1015	1,016.2	18.5	6	7	7											
1010	1,011.2	23.5	9	11	9											
1005	1,006.2	28.5	4	10	13											
1000	1,001.2	33.5	32	35	38											
995	996.2	38.5	65	35/0.4										997.7	37.0	WEATHERED ROCK GRANITIC GNEISS
	991.2	43.5	60/0.1											991.2	43.5	CRYSTALLINE ROCK GRANITIC GNEISS
														991.1	43.6	Boring Terminated with Standard Penetration Test Refusal at Elevation 991.1 ft In Crystalline Rock: GRANITIC GNEISS

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.										
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)									
BORING NO. RW-2		STATION 18+20		OFFSET 58 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,035.2 ft		TOTAL DEPTH 39.3 ft		NORTHING 920,757		EASTING 1,594,126										
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER Seiler, M.		START DATE 08/04/19		COMP. DATE 08/04/19		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
1040														1,035.2	0.0	GROUND SURFACE
	1,034.2	1.0	5	4	3											RESIDUAL Red-Brown, Silty CLAY, Moderatly Plastic, Trace Mica, Trace Rock Fragments
1035	1,031.7	3.5	5	4	5									1,031.9	3.3	Red-Brown to Tan-Brown, Silty Coarse to Fine SAND, Little to Trace Mica
1030	1,029.2	6.0	2	2	3											
1025	1,026.7	8.5	2	2	3											
1020	1,021.7	13.5	3	4	4											
1015	1,016.7	18.5	3	5	5											
1010	1,011.7	23.5	4	5	36											
1005	1,006.7	28.5	12	18	18											
1000	1,001.7	33.5	34	36	64/0.4											
	996.7	38.5	47	53/0.3										1,002.0	33.2	WEATHERED ROCK GRANITIC GNEISS
														995.9	39.3	Boring Terminated at Elevation 995.9 ft In Weathered Rock: GRANITIC GNEISS

NCDOT BORE DOUBLE BR0047_GINT LOGS.GPJ NC_DOT.GDT 9/10/19

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.										
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)									
BORING NO. B1-A		STATION 18+27		OFFSET 21 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,035.2 ft		TOTAL DEPTH 43.9 ft		NORTHING 920,834		EASTING 1,594,142										
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER Seiler, M.		START DATE 08/01/19		COMP. DATE 08/01/19		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
1040																
1035														1,035.2	0.0	
1030	1,031.7	3.5	3	3	4								M	RESIDUAL Red-Brown, Silty CLAY, Moderately Plastic Note: Large Rock Fragment/Boulder from 8.3' to 8.9'		
1025	1,026.7	8.5	9	5	4								M			
1020	1,021.7	13.5	6	5	6								M	1,022.1	13.1	
1015	1,016.7	18.5	10	8	9								M	Tan-Brown, Silty Coarse to Fine SAND, Trace Mica		
1010	1,011.7	23.5	19	21	20								M			
1005	1,006.7	28.5	15	22	23								M			
1000	1,001.7	33.5	55	45/0.4									M	1,004.2	31.0	
995	996.7	38.5	100/0.4										M	WEATHERED ROCK GRANITIC GNEISS		
	991.7	43.5	100/0.4										M			
															991.3	43.9
Boring Terminated at Elevation 991.3 ft In Weathered Rock: GRANITIC GNEISS																

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.										
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)									
BORING NO. B1-B		STATION 18+71		OFFSET 23 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,035.7 ft		TOTAL DEPTH 43.6 ft		NORTHING 920,785		EASTING 1,594,181										
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER Seiler, M.		START DATE 07/29/19		COMP. DATE 07/30/19		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
1040																
1035														1,035.7	0.0	
1030	1,032.2	3.5	3	3	3								M	RESIDUAL Red-Brown, Silty CLAY, Trace Mica		
1025	1,027.2	8.5	10	10	6								M	1,030.1	5.6	
1020	1,022.2	13.5	8	8	5								M	Red-Brown to Tan-Brown, Silty Fine to Coarse SAND, Trace to Little Mica, Trace Rock Fragments		
1015	1,017.2	18.5	7	5	4								M			
1010	1,012.2	23.5	13	17	18								M			
1005	1,007.2	28.5	8	11	10								M			
1000	1,002.2	33.5	47	53/0.4									M	1,004.2	31.5	
995	997.2	38.5	60	40/0.1									M	WEATHERED ROCK GRANITIC GNEISS		
	992.2	43.5	60/0.1										M			
															992.2	43.5
															992.1	43.6
Boring Terminated with Standard Penetration Test Refusal at Elevation 992.1 ft In Crystalline Rock: GRANITIC GNEISS																

NCDOT BORE DOUBLE BR0047_GINT LOGS.GPJ NC_DOT.GDT 9/10/19

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.								
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)							
BORING NO. RW-3		STATION 18+36		OFFSET 52 ft LT		ALIGNMENT -L-								
COLLAR ELEV. 1,035.1 ft		TOTAL DEPTH 44.1 ft		NORTHING 920,864		EASTING 1,594,155								
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic								
DRILLER Seiler, M.		START DATE 07/31/19		COMP. DATE 07/31/19		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				
1040														
1035	1,034.1	1.0	4	4	5									GROUND SURFACE 0.0
	1,034.6													0.9
	1,031.6	3.5	4	7	6									RESIDUAL
1030	1,029.1	6.0	9	7	8									Red-Brown, Silty CLAY, Moderately to Highly Plastic, Trace Mica, Trace Rock Fragments
	1,026.6	8.5	3	3	2									
1025	1,021.6	13.5	4	4	5									Tan-Brown, Silty Coarse to Fine SAND, Trace to Little Mica
	1,016.6	18.5	4	4	4									
1020	1,011.6	23.5	8	8	9									
	1,006.6	28.5	15	18	18									
1015	1,001.6	33.5	20	27	28									
	996.6	38.5	49	51/0.4										
1010	991.6	43.5	75	25/0.1										
														WEATHERED ROCK GRANITIC GNEISS
														997.3 37.8
														991.0 44.1
														Boring Terminated at Elevation 991.0 ft In Weathered Rock: GRANITIC GNEISS

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.								
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)							
BORING NO. EB2-A		STATION 18+59		OFFSET 28 ft LT		ALIGNMENT -L-								
COLLAR ELEV. 1,035.3 ft		TOTAL DEPTH 43.6 ft		NORTHING 920,837		EASTING 1,594,175								
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic								
DRILLER Seiler, M.		START DATE 07/31/19		COMP. DATE 07/31/19		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				
1040														
1035	1,034.3	1.0	5	6	6									GROUND SURFACE 0.0
	1,034.8													0.9
	1,031.8	3.5	2	2	3									RESIDUAL
1030	1,029.3	6.0	3	3	4									Red-Brown, Silty CLAY, Trace to Little Mica, Trace Rock Fragments
	1,026.8	8.5	3	3	3									
1025	1,021.8	13.5	9	10	8									Tan-Brown, Silty Coarse to Fine SAND, Little to Trace Mica, Trace Rock Fragments
	1,016.8	18.5	4	5	5									
1020	1,011.8	23.5	11	16	16									
	1,006.8	28.5	19	32	35									
1015	1,001.8	33.5	25	37	41									
	996.8	38.5	45	55/0.4										
1010	991.8	43.5	60/0.1											
														WEATHERED ROCK GRANITIC GNEISS
														999.1 36.2
														992.5 42.8
														991.7 43.6
														CRYSTALLINE ROCK GRANITIC GNEISS
														Boring Terminated with Standard Penetration Test Refusal at Elevation 991.7 ft In Crystalline Rock: GRANITIC GNEISS

NCDOT BORE DOUBLE BR0047_GINT LOGS.GPJ NC_DOT.GDT 9/10/19

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.									
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 19+18		OFFSET 30 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 1,036.3 ft		TOTAL DEPTH 33.6 ft		NORTHING 920,772		EASTING 1,594,226									
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Seiler, M.		START DATE 07/30/19		COMP. DATE 07/31/19		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
1040															
1035	1,035.3	1.0	5	6	5									GROUND SURFACE 0.0	0.0
	1,032.8	3.5	3	2	2									0.5' ASPHALT 0.5	0.5
1030	1,030.3	6.0	3	3	3									RESIDUAL Red-Brown, Silty CLAY, Moderately to Highly Plastic, Little to Trace Mica, 5.8	5.8
	1,027.8	8.5	5	6	5									Red-Brown to Tan-Brown, Silty Coarse to Fine SAND, Trace Mica	
1025	1,022.8	13.5	4	5	5										
1020	1,017.8	18.5	6	7	8										
1015	1,012.8	23.5	12	20	20										
1010	1,007.8	28.5	40	60/0.4										WEATHERED ROCK GRANITIC GNEISS 27.2	27.2
1005	1,002.8	33.5	60/0.1											CRYSTALLINE ROCK GRANITIC GNEISS 31.5	31.5
														Boring Terminated with Standard Penetration Test Refusal at Elevation 1,002.7 ft In Crystalline Rock: GRANITIC GNEISS 33.6	33.6

WBS 67047.1.1		TIP BR-0047		COUNTY STOKES		GEOLOGIST Tinson, D.									
SITE DESCRIPTION Replace Bridge No. 10 on SR 1105 (Meadowbrook Dr.) over US 52							GROUND WTR (ft)								
BORING NO. RW-4		STATION 19+41		OFFSET 52 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 1,036.7 ft		TOTAL DEPTH 38.8 ft		NORTHING 920,748		EASTING 1,594,247									
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Seiler, M.		START DATE 07/30/19		COMP. DATE 07/30/19		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
1040															
1035	1,035.7	1.0	5	5	6									GROUND SURFACE 0.0	0.0
	1,033.2	3.5	2	3	3									0.6' ASPHALT 0.6	0.6
1030	1,030.7	6.0	2	3	4									RESIDUAL Brown, Silty CLAY, Moderately to Highly Plastic, Trace Mica	
	1,028.2	8.5	8	6	6									Red-Brown to Tan-Brown, Silty Coarse to Fine SAND, Trace to Little Mica, Trace Rock Fragments 8.4	8.4
1025	1,023.2	13.5	4	5	5										
1020	1,018.2	18.5	5	7	7										
1015	1,013.2	23.5	15	14	16										
1010	1,008.2	28.5	21	30	35										
1005	1,003.2	33.5	80	20/0.1										WEATHERED ROCK GRANITIC GNEISS 32.4	32.4
1000	998.2	38.5	100/0.3											Boring Terminated at Elevation 997.9 ft In Weathered Rock: GRANITIC GNEISS 38.8	38.8

NCDOT BORE DOUBLE BR0047_GINT LOGS.GPJ NC_DOT.GDT 9/10/19

SITE PHOTOGRAPHS
State Project No. 67047.1.1 – TIP BR-0047 – Replace Bridge No. 10 on SR 1105 over US 52 – Stokes County, NC

View of Existing Bridge No. 10 – -L- Looking Upstation



View of Existing Bridge No. 10 – End Bent 1 – Looking Left to Right



View of Existing Bridge No. 10 – Bent 1 – Looking Left to Right



View of Existing Bridge No. 10 – End Bent 2 – Looking Left to Right

