

REFERENCE: R-2707C

PROJECT: 34497

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2707C	1	20

STRUCTURE
SUBSURFACE INVESTIGATION

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COUNTY Cleveland
PROJECT DESCRIPTION US 74 Bypass from East of NC 226 to East of NC 150

SITE DESCRIPTION Proposed Bridge Structure 3 on -Y2- over -L-

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 (919) 707-6850. 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

Robbie DeLost

Mike Morgan

Harold Morris

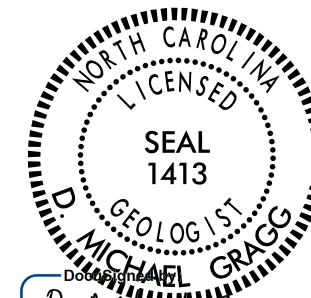
INVESTIGATED BY D. Michael Gragg

DRAWN BY Tamara Stivers

CHECKED BY Kenneth Bussey

SUBMITTED BY HDR|ICA

DATE July 2, 2015



D. Michael Gragg

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8/7/2015

SIGNATURE

DATE



Kenneth R. Bussey, Jr.

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8/10/2015

SIGNATURE

DATE

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 208, 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 DISLODGED 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-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-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</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> </tr> <tr> <th>SYMBOL</th> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> </tr> <tr> <th>% PASSING #10 #40 #200</th> <td>50 MX 30 MX 15 MX</td> <td>50 MX 25 MX 10 MX</td> <td>51 MN 35 MX 35 MX</td> <td>40 MX 35 MX 35 MX</td> <td>41 MN 35 MX 35 MX</td> <td>41 MN 35 MX 35 MX</td> <td>41 MN 35 MX 35 MX</td> <td>40 MX 36 MN 36 MN</td> <td>41 MN 36 MN 36 MN</td> <td>40 MX 36 MN 36 MN</td> <td>41 MN 36 MN 36 MN</td> <td colspan="2">GRANULAR SOILS</td> <td colspan="2">SILT-CLAY SOILS</td> <td>MUCK, PEAT</td> </tr> <tr> <th>MATERIAL PASSING #40 LL PI</th> <td colspan="2">-</td> <td>NP</td> <td>40 MX 10 MX</td> <td>41 MN 10 MX</td> <td>41 MN 11 MN</td> <td>41 MN 11 MN</td> <td>40 MX 10 MX</td> <td>41 MN 10 MX</td> <td>40 MX 11 MN</td> <td>41 MN 11 MN</td> <td colspan="2">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td colspan="3">HIGHLY ORGANIC SOILS</td> </tr> <tr> <th>GROUP INDEX</th> <td colspan="2">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 colspan="2"></td> <td colspan="2"></td> <td colspan="3"></td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <td colspan="2">STONE FRAGS. GRAVEL, AND SAND</td> <td>FINE SAND</td> <td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td> <td colspan="2">SILTY SOILS</td> <td colspan="2">CLAYEY SOILS</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="3"></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 colspan="4">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-COHESSIVE)</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 (COHESSIVE)</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> ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</td> <td> DIP & DIP DIRECTION OF ROCK STRUCTURES</td> <td> SLOPE INDICATOR INSTALLATION</td> </tr> <tr> <td> SOIL SYMBOL</td> <td> TEST BORING</td> <td> CONE PENETROMETER TEST</td> </tr> <tr> <td> ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</td> <td> AUGER BORING</td> <td> SOUNDING ROD</td> </tr> <tr> <td> INFERRED SOIL BOUNDARY</td> <td> CORE BORING</td> <td> TEST BORING WITH CORE</td> </tr> <tr> <td> INFERRED ROCK LINE</td> <td> MONITORING WELL</td> <td> SPT N-VALUE</td> </tr> <tr> <td> ALLUVIAL SOIL BOUNDARY</td> <td> PIEZOMETER INSTALLATION</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> UNDERCUT EXCAVATION</td> <td> UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</td> <td> UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADED ROCK</td> </tr> <tr> <td> SHALLOW UNDERCUT</td> <td></td> <td></td> </tr> </table> </td> <td colspan="10"> <p style="text-align: center;">ROCK HARDNESS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>TERM</th> <th>DESCRIPTION</th> </tr> <tr> <td>VERY HARD</td> <td>CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</td> </tr> <tr> <td>HARD</td> <td>CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</td> </tr> <tr> <td>MODERATELY HARD</td> <td>CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.</td> </tr> <tr> <td>MEDIUM HARD</td> <td>CAN BE GROUDED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.</td> </tr> <tr> <td>SOFT</td> <td>CAN BE GROUDED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.</td> </tr> <tr> <td>VERY SOFT</td> <td>CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.</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> <th>4</th> <th>10</th> <th>40</th> <th>60</th> <th>200</th> <th>270</th> </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 (CS.E. SD.)</th> <th>FINE SAND (F SD.)</th> <th>SILT (SL.)</th> <th>CLAY (CL.)</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>GRAIN SIZE</th> <th>MM</th> <th>305</th> <th>75</th> <th>2.0</th> <th>0.25</th> <th>0.05</th> <th>0.005</th> </tr> <tr> <td></td> <td>IN.</td> <td>12</td> <td>3</td> <td></td> <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>HL - HIGHLY</td> <td>V - VERY</td> </tr> <tr> <td>BT - BORING TERMINATED</td> <td>MED. - MEDIUM</td> <td>VST - VANE SHEAR TEST</td> </tr> <tr> <td>CL - CLAY</td> <td>MICA - MICACEOUS</td> <td>WEA. - WEATHERED</td> </tr> <tr> <td>CPT - CONE PENETRATION TEST</td> <td>MOD. - MODERATELY</td> <td>W - UNIT WEIGHT</td> </tr> <tr> <td>CSE. - COARSE</td> <td>NP - NON PLASTIC</td> <td>W_u - DRY UNIT WEIGHT</td> </tr> <tr> <td>DMT - DILATOMETER TEST</td> <td>ORG. - ORGANIC</td> <td colspan="2" style="text-align: center;">SAMPLE ABBREVIATIONS</td> </tr> <tr> <td>DPT - DYNAMIC PENETRATION TEST</td> <td>PMT - PRESSUREMETER TEST</td> <td>S - BULK</td> <td></td> </tr> <tr> <td>e - VOID RATIO</td> <td>SAP. - SAPROLITIC</td> <td>SS - SPLIT SPOON</td> <td></td> </tr> <tr> <td>F - FINE</td> <td>SD. - SAND, SANDY</td> <td>ST - SHELBY TUBE</td> <td></td> </tr> <tr> <td>FIAD - FLL IN AFTER DRILLING</td> <td>SL. - SILT, SILTY</td> <td>RS - ROCK</td> <td></td> </tr> <tr> <td>FOSS. - FOSSILIFEROUS</td> <td>SLI. - SLIGHTLY</td> <td>RT - RECOMPACTED TRIAXIAL</td> <td></td> </tr> <tr> <td>FRAC. - FRACTURED, FRACTURES</td> <td>TCR - TRICONE REFUSAL</td> <td>CBR - CALIFORNIA BEARING RATIO</td> <td></td> </tr> <tr> <td>FRAGS. - FRAGMENTS</td> <td>w - MOISTURE CONTENT</td> <td></td> <td></td> </tr> </table> </td> </tr> <tr> <td colspan="10"> <p style="text-align: center;">SOIL MOISTURE - CORRELATION OF TERMS</p> <table border="1" style="width: 100%; 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MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. 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GRANULAR MATERIALS (≤ 35% PASSING #200)					SILT-CLAY MATERIALS (> 35% PASSING #200)					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-3	A-4, A-5	A-6, A-7	GROUP CLASS.	A-1-a	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	SYMBOL	[Pattern]					[Pattern]					[Pattern]					% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX 10 MX	51 MN 35 MX 35 MX	40 MX 35 MX 35 MX	41 MN 35 MX 35 MX	41 MN 35 MX 35 MX	41 MN 35 MX 35 MX	40 MX 36 MN 36 MN	41 MN 36 MN 36 MN	40 MX 36 MN 36 MN	41 MN 36 MN 36 MN	GRANULAR SOILS		SILT-CLAY SOILS		MUCK, PEAT	MATERIAL PASSING #40 LL PI	-		NP	40 MX 10 MX	41 MN 10 MX	41 MN 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS			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	UNSATURABLE				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;"> <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-COHESSIVE)</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 (COHESSIVE)</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>										PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)	GENERALLY GRANULAR MATERIAL (NON-COHESSIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A	GENERALLY SILT-CLAY MATERIAL (COHESSIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4	<p style="text-align: center;">MISCELLANEOUS SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td> ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</td> <td> DIP & DIP DIRECTION OF ROCK STRUCTURES</td> <td> SLOPE INDICATOR INSTALLATION</td> </tr> <tr> <td> SOIL SYMBOL</td> <td> TEST BORING</td> <td> CONE PENETROMETER TEST</td> </tr> <tr> <td> ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</td> <td> AUGER BORING</td> <td> SOUNDING ROD</td> </tr> <tr> <td> INFERRED SOIL BOUNDARY</td> <td> CORE BORING</td> <td> TEST BORING WITH CORE</td> </tr> <tr> <td> INFERRED ROCK LINE</td> <td> MONITORING WELL</td> <td> SPT N-VALUE</td> </tr> <tr> <td> ALLUVIAL SOIL BOUNDARY</td> <td> PIEZOMETER INSTALLATION</td> <td></td> </tr> </table>										ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION	DIP & DIP DIRECTION OF ROCK STRUCTURES	SLOPE INDICATOR INSTALLATION	SOIL SYMBOL	TEST BORING	CONE PENETROMETER TEST	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT	AUGER BORING	SOUNDING ROD	INFERRED SOIL BOUNDARY	CORE BORING	TEST BORING WITH CORE	INFERRED ROCK LINE	MONITORING WELL	SPT N-VALUE	ALLUVIAL SOIL BOUNDARY	PIEZOMETER INSTALLATION		<p style="text-align: center;">RECOMMENDATION SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td> UNDERCUT EXCAVATION</td> <td> UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</td> <td> UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADED ROCK</td> </tr> <tr> <td> SHALLOW UNDERCUT</td> <td></td> <td></td> </tr> </table>										UNDERCUT EXCAVATION	UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE	UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADED ROCK	SHALLOW UNDERCUT			<p style="text-align: center;">ROCK HARDNESS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>TERM</th> <th>DESCRIPTION</th> </tr> <tr> <td>VERY HARD</td> <td>CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. 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MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. 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GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)					SILT-CLAY MATERIALS (> 35% PASSING #200)					ORGANIC MATERIALS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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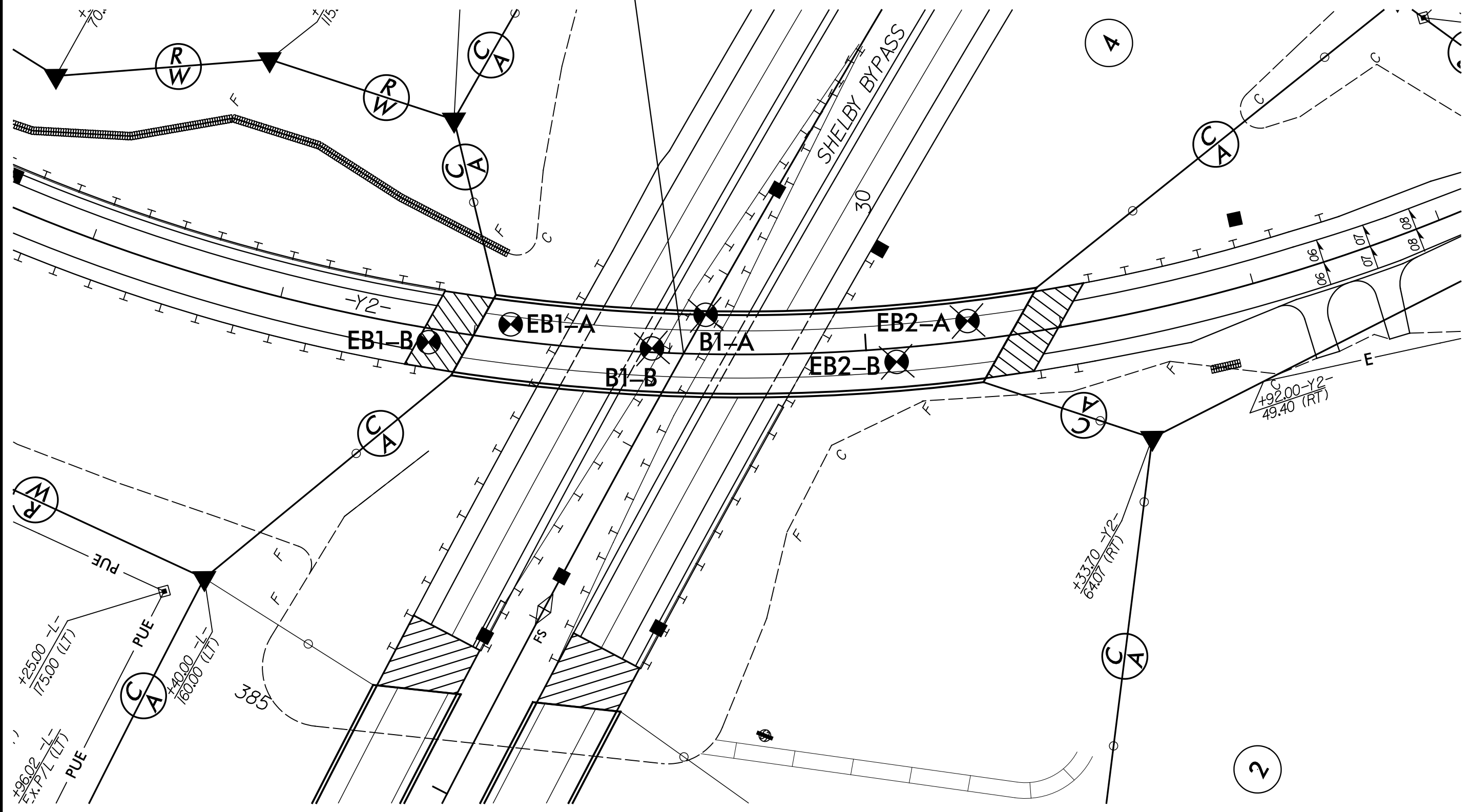
BORING LOCATION PLAN
 Proposed Bridge
 Structure 3
 on -Y2- over -L-
 WBS 34497.1.2
 Cleveland County, North Carolina

-L- POC 387+54.08
 -Y2- POC 29+07.16
 $\Delta = 62^\circ 34' 38.2''$

PROJECT REFERENCE NO. R-2707C	SHEET NO. 3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



REVISIONS



2

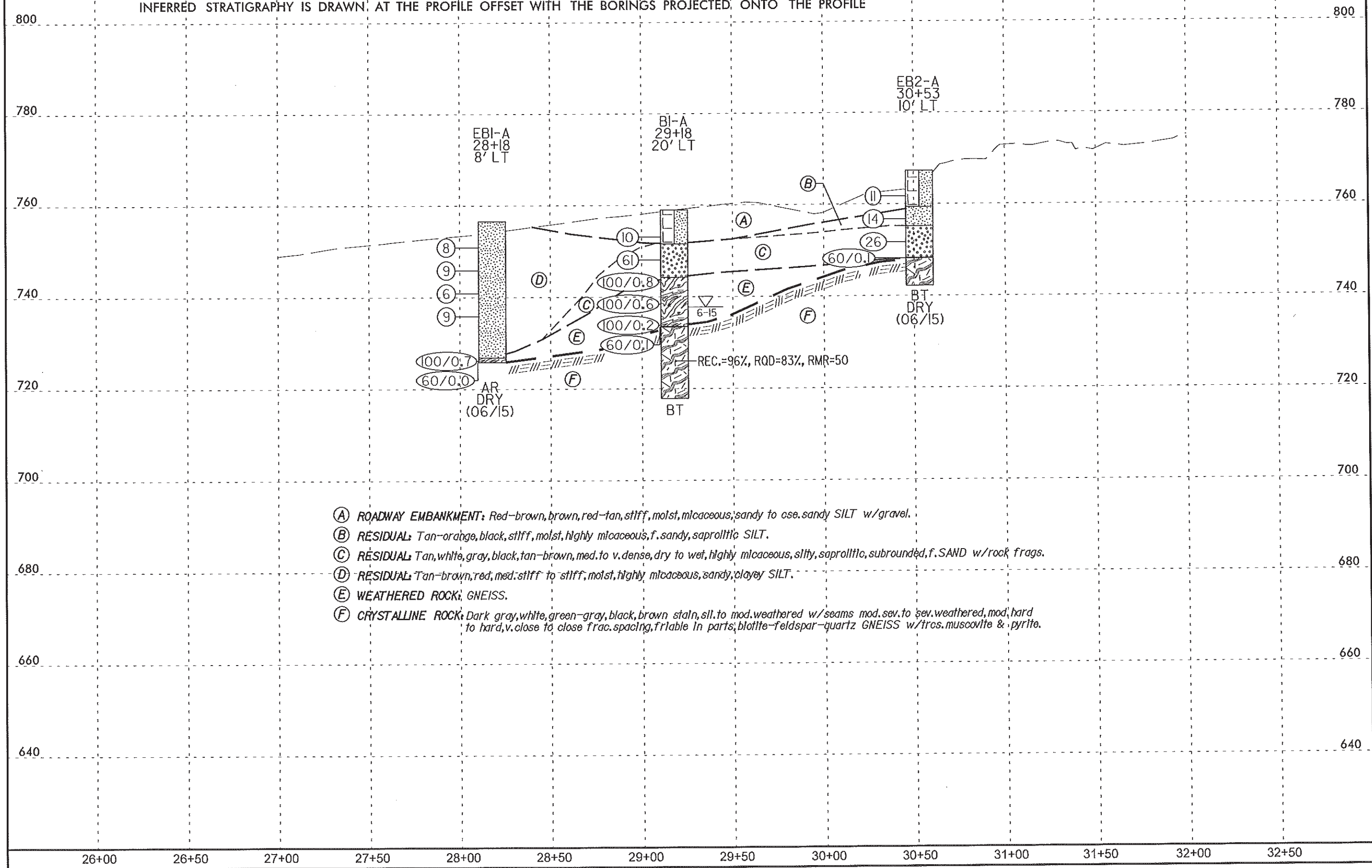
0 50 100
 SCALE IN FEET

\$\$\$SYTIME\$\$\$
 \$\$\$DESIGN\$\$\$
 \$\$\$DATE\$\$\$

GENERALIZED SUBSURFACE PROFILE 20' Lt. of -Y2-

GROUNDLINE PROFILE OBTAINED FROM DTM PROVIDED BY OTHERS
 INFERRRED STRATIGRAPHY IS DRAWN AT THE PROFILE OFFSET WITH THE BORINGS PROJECTED ONTO THE PROFILE

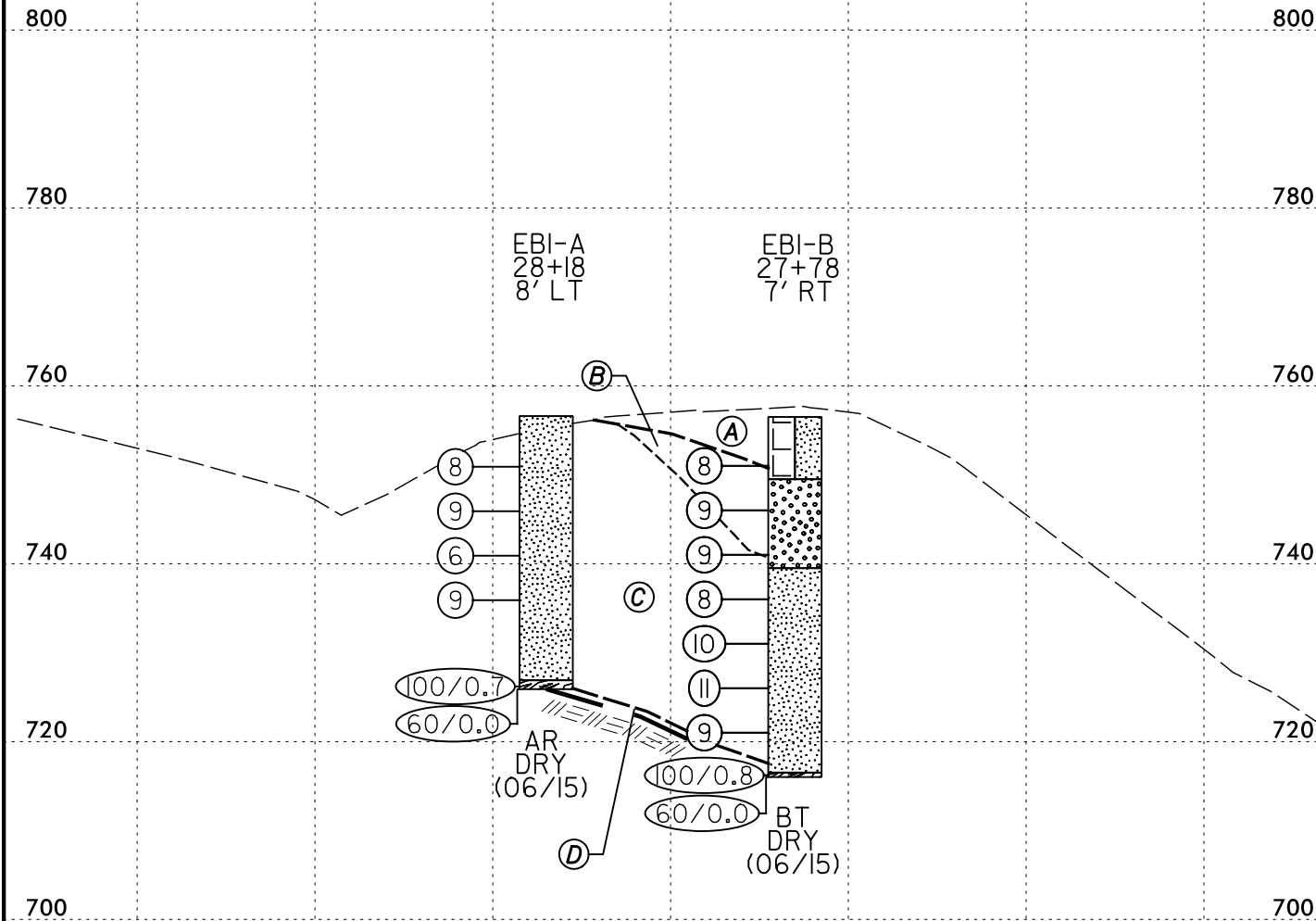
	PROJECT REFERENCE NO. R-2707C	SHEET NO. 4
PROFILE		



- (A) ROADWAY EMBANKMENT: Red-brown, brown, red-tan, stiff, moist, micaceous, sandy to cse. sandy SILT w/gravel.
- (B) RESIDUAL: Tan-orange, black, stiff, moist, highly micaceous, f. sandy, saprolitic SILT.
- (C) RESIDUAL: Tan, white, gray, black, tan-brown, med. to v. dense, dry to wet, highly micaceous, silty, saprolitic, subrounded, f. SAND w/rock frags.
- (D) RESIDUAL: Tan-brown, red, med. stiff to stiff, moist, highly micaceous, sandy, clayey SILT.
- (E) WEATHERED ROCK: GNEISS.
- (F) CRYSTALLINE ROCK: Dark gray, white, green-gray, black, brown stain, sil. to mod. weathered w/seams mod. sev. to sev. weathered, mod. hard to hard, v. close to close frac. spacing, friable in parts; biotite-feldspar-quartz GNEISS w/trcs. muscovite & pyrite.

GENERALIZED SUBSURFACE CROSS SECTION STA. 28+00

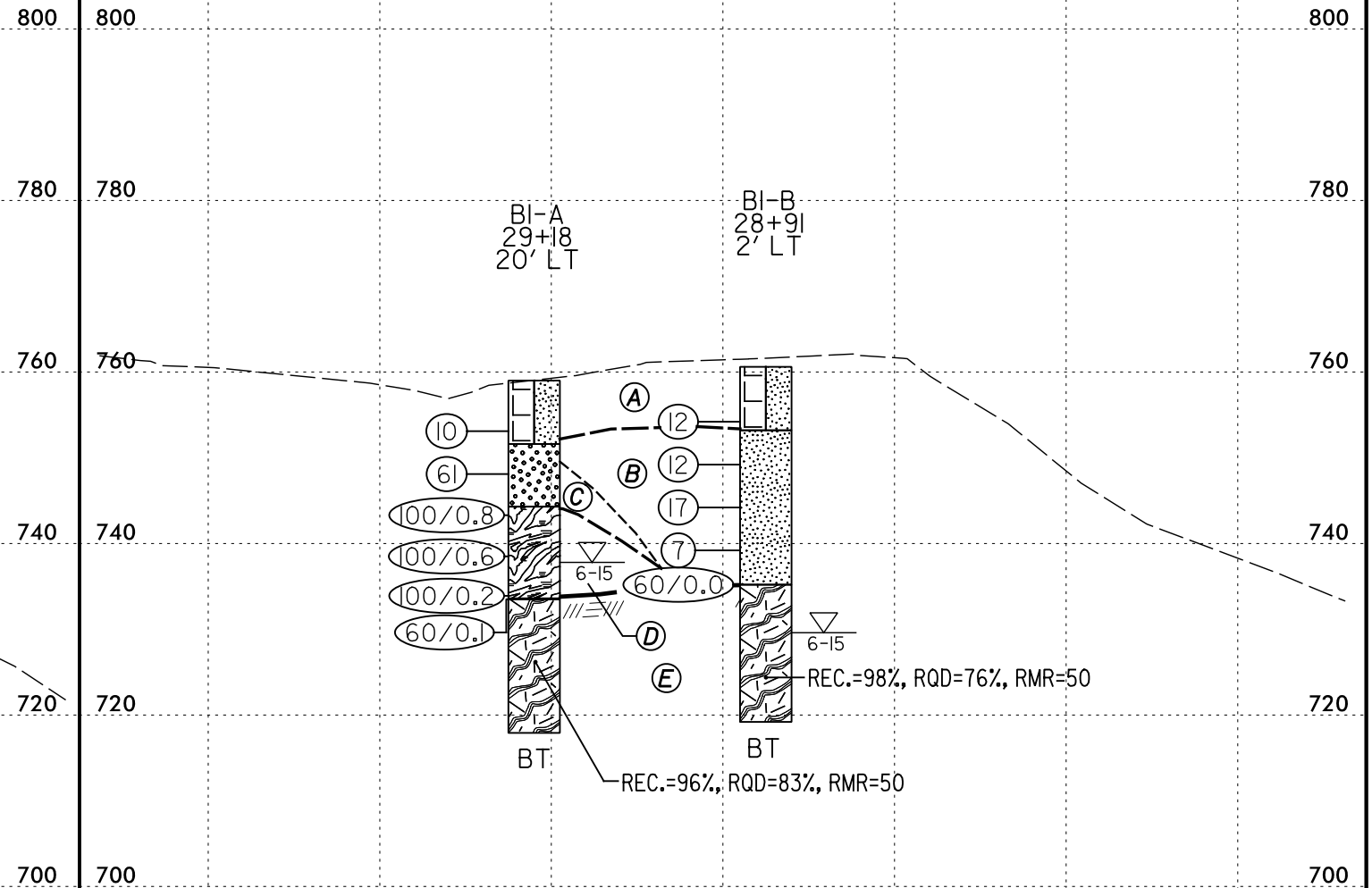
111°14'34" SKEW RIGHT
-Y2-



- (A) ROADWAY EMBANKMENT: Red-brown, stiff, moist, highly micaceous, clayey SILT w/gravel.
- (B) RESIDUAL: Tan-orange, white, gray, loose, dry, highly micaceous, silty, f. to cse. SAND w/rock frags.
- (C) RESIDUAL: Tan-brown, red, red-brown, med. stiff to stiff, moist, mod. to highly micaceous, sandy, clayey SILT w/rock frags.
- (D) WEATHERED ROCK: GNEISS.

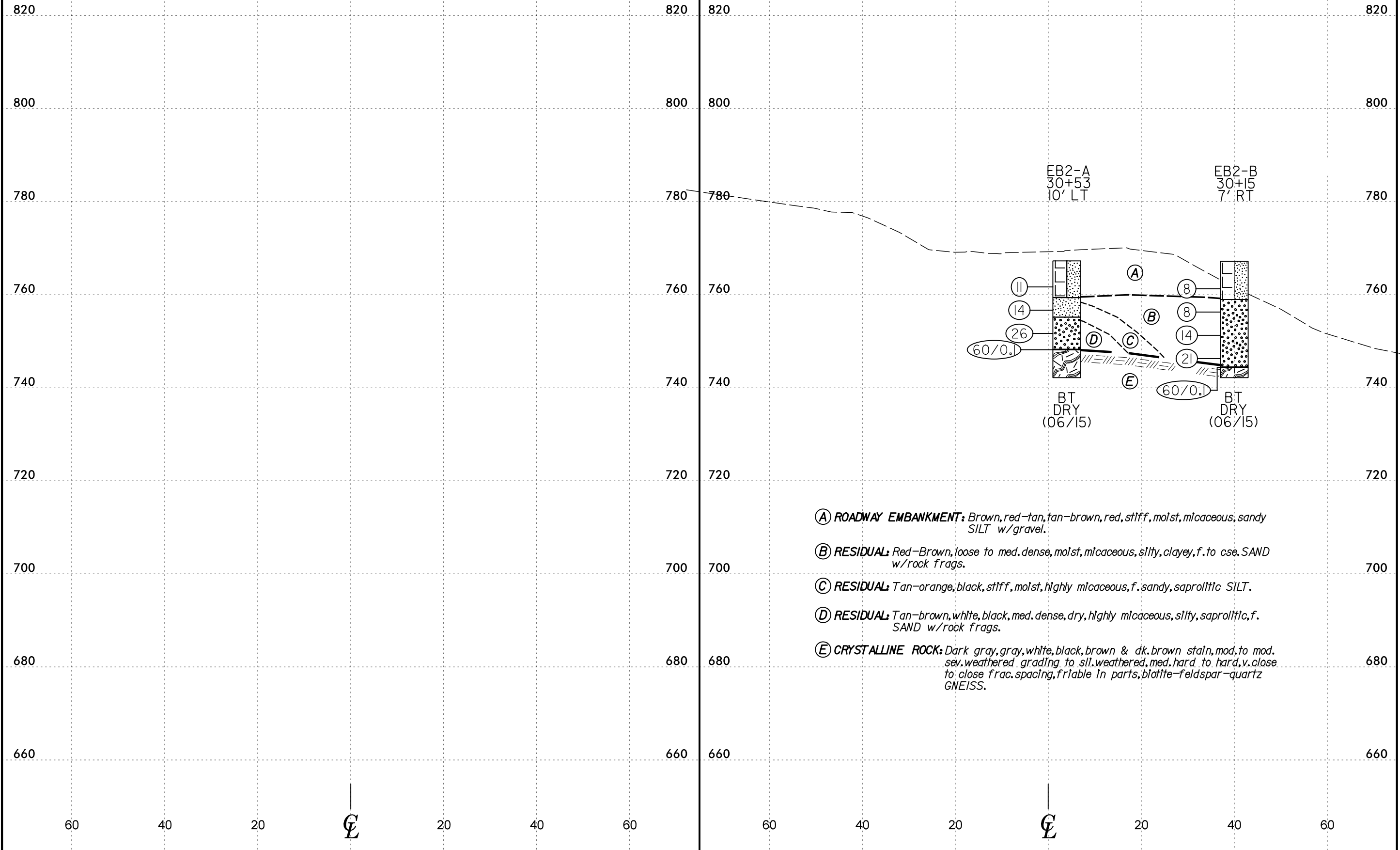
GENERALIZED SUBSURFACE CROSS SECTION STA. 29+07

117°25'22" SKEW RIGHT
-Y2-



- (A) ROADWAY EMBANKMENT: Red-brown, stiff, moist, micaceous, cse. sandy SILT w/gravel.
- (B) RESIDUAL: Tan-brown, red, med. stiff to v. stiff, moist, highly micaceous, f. sandy, saprolitic SILT w/rock frags.
- (C) RESIDUAL: Tan, gray, white, v. dense, wet, highly micaceous, silty, saprolitic, subrounded, f. SAND.
- (D) WEATHERED ROCK: GNEISS.
- (E) CRYSTALLINE ROCK: Dark gray, white, green-gray, black, brown stain, sil. to mod. weathered w/seams mod. sev. to sev. weathered, mod. hard to hard, v. close to close frac. spacing, friable in parts, blötte-feldspar-quartz GNEISS w/trcs. muscovite & pyrite.

**GENERALIZED SUBSURFACE
CROSS SECTION STA. 30+74**
125°16'58" SKEW RIGHT
-Y2-



- Ⓐ **ROADWAY EMBANKMENT:** Brown, red-tan, tan-brown, red, stiff, moist, micaceous, sandy SILT w/gravel.
- Ⓑ **RESIDUAL:** Red-Brown, loose to med. dense, moist, micaceous, silty, clayey, f. to cse. SAND w/rock frags.
- Ⓒ **RESIDUAL:** Tan-orange, black, stiff, moist, highly micaceous, f. sandy, saprolitic SILT.
- Ⓓ **RESIDUAL:** Tan-brown, white, black, med. dense, dry, highly micaceous, silty, saprolitic, f. SAND w/rock frags.
- Ⓔ **CRYSTALLINE ROCK:** Dark gray, gray, white, black, brown & dk. brown stain, mod. to mod. sev. weathered grading to sil. weathered, med. hard to hard, v. close to close frac. spacing, friable in parts, biotite-feldspar-quartz GNEISS.

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST DeLost, Robbie					
SITE DESCRIPTION Proposed Bridge (Structure 3) on -Y2- over -L-							GROUND WTR (ft)				
BORING NO. B1-A		STATION 29+18		OFFSET 20 ft LT		ALIGNMENT -Y2-	0 HR. 21.2				
COLLAR ELEV. 759.0 ft		TOTAL DEPTH 41.1 ft		NORTHING 581,287		EASTING 1,236,726	24 HR. FIAD				
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 90% 08/25/2014				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic					
DRILLER Morgan, M.		START DATE 06/09/15		COMP. DATE 06/10/15		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 15.6 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
733.5	733.5	25.5	0.6	0:35/0.6	(0.6)	(0.4)	(14.9)	(12.9)		Begin Coring @ 25.5 ft	25.5
730	732.9	26.1	5.0	1:28 0:50 1:26 1:50 1:44	100% (4.3)	67% (2.7)	96%	83%		CRYSTALLINE ROCK Dark gray, green-gray, white, slightly to moderately weathered w/ seams, moderately severely to severely weathered (26.6'-28.0'), hard to mod. hard, very close to close frac. spacing, friable in parts, biotite-feldspar-quartz Gneiss w/trcs. muscovite & pyrite. 28 0°-10° some w/iron stain; 2 35° w/iron stain R1=4, R2=17, R3=10, R4=12, R5=7, RMR=50 Rock Type E	
725	727.9	31.1	5.0	1:37 1:50 1:57 2:05 1:36	(5.0) 100%	(5.0) 100%			RS-6		
720	722.9	36.1	5.0	1:07 1:25 1:53 1:50 1:52	(5.0) 100%	(4.8) 96%			RS-7		
	717.9	41.1									Boring Terminated at Elevation 717.9 ft in Crystalline Rock (Gneiss).

NCDOT CORE DOUBLE R2707C_GEO_BRDG_Y2 OVER L.GPJ NC_DOT.GDT 7/6/15

CORE PHOTOGRAPHIC RECORD
PROPOSED BRIDGE STRUCTURE 3 ON -Y2- OVER -L-
WBS 34497.1.2 TIP R-2707C



B1-A, 29+18, 20' LT. Box 1 of 2



B1-A, 29+18, 20' LT. Box 2 of 2



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 34497.1.2	TIP R-2707C	COUNTY CLEVELAND	GEOLOGIST DeLost, Robbie
SITE DESCRIPTION Proposed Bridge (Structure 3) on -Y2- over -L-			GROUND WTR (ft)
BORING NO. B1-B	STATION 28+91	OFFSET 2 ft LT	ALIGNMENT -Y2-
COLLAR ELEV. 760.6 ft	TOTAL DEPTH 41.4 ft	NORTHING 581,297	EASTING 1,236,695
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 90% 08/25/2014		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Morgan, M.	START DATE 06/10/15	COMP. DATE 06/10/15	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				ELEV. (ft)	DEPTH (ft)
765															
760													760.6	GROUND SURFACE	
755	755.2	5.4	4	6	6								753.2	ROADWAY EMBANKMENT No sample recovery, inferred from cuttings, red, stiff, micaceous SILT w/gravel (A-4).	
750	750.2	10.4	4	5	7								7.4	RESIDUAL Tan-brown, red, med. stiff to v. stiff, highly micaceous, f. sandy, saprolitic SILT w/rock frags. (A-4).	
745	745.2	15.4	4	7	10										
740	740.2	20.4	3	3	4										
735	735.2	25.4	60/0.0										60/0.0	735.2	CRYSTALLINE ROCK Gneiss
730															
725															
720															
														719.2	Boring Terminated at Elevation 719.2 ft in Crystalline Rock (Gneiss).

NCDOT BORE DOUBLE R2707C_GEO_BRDG_Y2 OVER L.GPJ NC_DOT.GDT 6/30/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST DeLost, Robbie					
SITE DESCRIPTION Proposed Bridge (Structure 3) on -Y2- over -L-							GROUND WTR (ft)				
BORING NO. B1-B		STATION 28+91		OFFSET 2 ft LT		ALIGNMENT -Y2-					
COLLAR ELEV. 760.6 ft		TOTAL DEPTH 41.4 ft		NORTHING 581,297		EASTING 1,236,695					
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 90% 08/25/2014				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic					
DRILLER Morgan, M.		START DATE 06/10/15		COMP. DATE 06/10/15		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 16.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
735.2	735.2	25.4	1.0	N=60/0.0	(0.9)	(0.4)	(15.7)	(12.2)		Begin Coring @ 25.4 ft	25.4
	734.2	26.4	5.0	1:28	90%	40%	98%	76%		CRYSTALLINE ROCK Dark gray, white, black, brown stain, slightly to moderately weathered w/seams, moderately severely to severely weathered (31.3'-31.6' & 34.0'-34.7'), moderately hard to hard, very close to close frac. spacing, friable in parts, biotite-feldspar-quartz Gneiss w/trcs. muscovite & pyrite. 37 0°-10° few w/pyrite trcs.; 2 20° R1=4, R2=17, R3=10, R4=12, R5=7, RMR=50 Rock Type E	
730	729.2	31.4		1:19 1:20 1:16 1:23 1:20	(4.9) 98%	(3.8) 76%					
			5.0	1:17 1:33 1:16 1:19 1:58	(4.9) 98%	(3.0) 60%					
725	724.2	36.4									
			5.0	1:18 1:40 1:50 1:39 1:49	(5.0) 100%	(5.0) 100%					
720	719.2	41.4								Boring Terminated at Elevation 719.2 ft in Crystalline Rock (Gneiss).	41.4

NCDOT CORE DOUBLE R2707C_GEO_BRDG_Y2 OVER L.G.P.J. NC_DOT.GDT 7/6/15

CORE PHOTOGRAPHIC RECORD

PROPOSED BRIDGE STRUCTURE 3 ON -Y2- OVER -L-
WBS 34497.1.2 TIP R-2707C



B1-B, 28+91, 2' LT. Box 1 of 2



B1-B, 28+91, 2' LT. Box 2 of 2

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34497.1.2	TIP R-2707C	COUNTY CLEVELAND	GEOLOGIST DeLost, Robbie
SITE DESCRIPTION Proposed Bridge (Structure 3) on -Y2- over -L-			GROUND WTR (ft)
BORING NO. EB2-A	STATION 30+53	OFFSET 10 ft LT	ALIGNMENT -Y2-
COLLAR ELEV. 767.3 ft	TOTAL DEPTH 25.1 ft	NORTHING 581,185	EASTING 1,236,812
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 90% 08/25/2014		DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic
DRILLER Morgan, M.	START DATE 06/11/15	COMP. DATE 06/11/15	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)		
770															767.3	GROUND SURFACE	0.0
765															762.7	ROADWAY EMBANKMENT Brown, red-tan, stiff, micaceous, sandy SILT w/gravel (A-4).	
760	762.7	4.6	3	5	6								M		759.4	RESIDUAL Tan-orange, black, stiff, highly micaceous, f. sandy, saprolitic SILT (A-4).	7.9
755	757.7	9.6	3	6	8								M		755.2	Tan-brown, white, black, med. dense, highly micaceous, silty, saprolitic, f. sand w/rock frags. (A-2-4).	12.1
750	752.7	14.6	15	13	13								D		748.3	CRYSTALLINE ROCK Gneiss	19.0
745	748.3	19.0	60/0.1												748.2	CRYSTALLINE ROCK Gneiss	19.1
															742.2	Boring Terminated at Elevation 742.2 ft in Crystalline Rock (Gneiss).	25.1

NCDOT BORE DOUBLE R2707C_GEO_BRDG_Y2 OVER L.GPJ NC_DOT.GDT 6/30/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST DeLost, Robbie						
SITE DESCRIPTION Proposed Bridge (Structure 3) on -Y2- over -L-							GROUND WTR (ft)					
BORING NO. EB2-A		STATION 30+53		OFFSET 10 ft LT		ALIGNMENT -Y2-						
COLLAR ELEV. 767.3 ft		TOTAL DEPTH 25.1 ft		NORTHING 581,185		EASTING 1,236,812						
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 90% 08/25/2014				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic						
DRILLER Morgan, M.		START DATE 06/11/15		COMP. DATE 06/11/15		SURFACE WATER DEPTH N/A						
CORE SIZE NQ2		TOTAL RUN 6.0 ft										
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)	
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %				
748.2	748.2	19.1	2.0	0:55	(1.4)	(0.0)	(5.4)	(2.8)		Begin Coring @ 19.1 ft	19.1	
	746.2	21.1		0:56	70%	0%	90%	47%		748.2	CRYSTALLINE ROCK	
745			4.0	1:09	(4.0)	(2.8)				742.2	Dark gray, white, black, brown stain, moderately to moderately severely weathered grading to slightly weathered, moderately hard to hard, very close to close frac. spacing, friable in parts, biotite-feldspar-quartz Gneiss.	
	742.2	25.1		1:07	100%	70%				30+ 0°-10° some w/iron stain	25.1	
				1:22						Boring Terminated at Elevation 742.2 ft in Crystalline Rock (Gneiss).		
				1:21								

NCDOT CORE DOUBLE R2707C_GEO_BRDG_Y2 OVER L.GPJ NC_DOT.GDT 7/6/15

CORE PHOTOGRAPHIC RECORD
PROPOSED BRIDGE STRUCTURE 3 ON -Y2- OVER -L-
WBS 34497.1.2 TIP R-2707C



EB2-A, 30+53, 10' LT. Box 1 of 1



NCDOT GEOTECHNICAL ENGINEERING UNIT


BORELOG REPORT

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST DeLost, Robbie											
SITE DESCRIPTION Proposed Bridge (Structure 3) on -Y2- over -L-							GROUND WTR (ft)										
BORING NO. EB2-B		STATION 30+15		OFFSET 7 ft RT		ALIGNMENT -Y2-											
COLLAR ELEV. 767.2 ft		TOTAL DEPTH 25.0 ft		NORTHING 581,198		EASTING 1,236,772											
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 90% 08/25/2014				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic											
DRILLER Morgan, M.		START DATE 06/11/15		COMP. DATE 06/11/15		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			ELEV. (ft)	DEPTH (ft)			
770														767.2	0.0	GROUND SURFACE	
765																ROADWAY EMBANKMENT	
	762.3	4.9	2	3	5											Tan-brown, red, stiff, highly micaceous, sandy SILT (A-4).	
760																	
	757.3	9.9	2	4	4											RESIDUAL	
755																Red-brown, loose to med. dense, micaceous, silty, clayey, f. to cse. SAND w/rock frags. (A-2-5).	
	752.3	14.9	3	7	7												
750																	
	747.3	19.9	4	10	11												
745																	
	744.5	22.7	60/0.1														CRYSTALLINE ROCK
														744.5	22.7	Gneiss	
														744.4	22.8	CRYSTALLINE ROCK	
														742.2	25.0	Gneiss	
																Boring Terminated at Elevation 742.2 ft in Crystalline Rock (Gneiss).	

NCDOT BORE DOUBLE R2707C_GEO_BRDG_Y2 OVER L.GPJ NC_DOT_GDT 7/27/15



NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

WBS 34497.1.2		TIP R-2707C		COUNTY CLEVELAND		GEOLOGIST DeLost, Robbie					
SITE DESCRIPTION Proposed Bridge (Structure 3) on -Y2- over -L-							GROUND WTR (ft)				
BORING NO. EB2-B		STATION 30+15		OFFSET 7 ft RT		ALIGNMENT -Y2-					
COLLAR ELEV. 767.2 ft		TOTAL DEPTH 25.0 ft		NORTHING 581,198		EASTING 1,236,772					
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 90% 08/25/2014				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER Morgan, M.		START DATE 06/11/15		COMP. DATE 06/11/15		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 2.2 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
744.4	744.4	22.8	2.2	0:48/1.2	(1.7)	(0.0)	(1.7)	(0.0)		Begin Coring @ 22.8 ft CRYSTALLINE ROCK	22.8
	742.2	25.0		0:54	77%	0%	77%	0%		742.2	Gray, white, black, dark brown stain, moderately severely weathered, medium to moderately hard, very close frac. spacing, friable in parts, biotite-feldspar-quartz Gneiss. 13 0°-15°; 1 60° Boring Terminated at Elevation 742.2 ft in Crystalline Rock (Gneiss).

NCDOT CORE DOUBLE R2707C_GEO_BRDG_Y2 OVER L.GPJ NC_DOT.GDT 7/6/15

CORE PHOTOGRAPHIC RECORD
PROPOSED BRIDGE STRUCTURE 3 ON -Y2- OVER -L-
WBS 34497.1.2 TIP R-2707C



EB2-B, 30+15, 7' RT. Box 1 of 1

