

REFERENCE: 750305

PROJECT: BP8.R027.1

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP8.R027.1	1	

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY RANDOLPH
 SITE DESCRIPTION BRIDGE NO. 305 ON SR 2863
(UNION GROVE CHURCH ROAD) OVER MEADOW
CREEK

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DATE NOVEMBER 2023

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS
(PAGE 1 OF 2)

SOIL DESCRIPTION										GRADATION									
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, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6										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.									
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS									
GENERAL CLASS. GRANULAR MATERIALS (≤ 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS										THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.									
GROUP CLASS. A-1 A-1-b A-3 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										MINERALOGICAL COMPOSITION									
SYMBOL										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.									
% PASSING #10 #40 #200										COMPRESSIBILITY									
MATERIAL PASSING #40 LL PI										SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50									
GROUP INDEX										PERCENTAGE OF MATERIAL									
USUAL TYPES OF MAJOR MATERIALS										ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL									
GEN. RATING AS SUBGRADE										TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% 5 - 10% > 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% 12 - 20% > 20% MODERATELY ORGANIC 5 - 10% 12 - 20% HIGHLY ORGANIC > 10% > 20%									
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30										GROUND WATER									
CONSISTENCY OR DENSENESS																			
PRIMARY SOIL TYPE										MISCELLANEOUS SYMBOLS									
COMPACTNESS OR CONSISTENCY										ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION									
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)										DIP & DIP DIRECTION OF ROCK STRUCTURES									
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)										SLOPE INDICATOR INSTALLATION									
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)										SOIL SYMBOL									
GENERALLY SILT-CLAY MATERIAL (COHESIVE)										ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT									
										INFERRED SOIL BOUNDARY									
										INFERRED ROCK LINE									
										ALLUVIAL SOIL BOUNDARY									
TEXTURE OR GRAIN SIZE										RECOMMENDATION SYMBOLS									
U.S. STD. SIEVE SIZE OPENING (MM)										UNDERCUT									
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)										SHALLOW UNDERCUT									
GRAIN SIZE MM IN.										UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE									
										UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL									
										UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK									
SOIL MOISTURE - CORRELATION OF TERMS										ABBREVIATIONS									
SOIL MOISTURE SCALE (ATTERBERG LIMITS)										AR - AUGER REFUSAL									
FIELD MOISTURE DESCRIPTION										MED. - MEDIUM									
GUIDE FOR FIELD MOISTURE DESCRIPTION										BT - BORING TERMINATED									
- SATURATED - (SAT.)										MICA - MICACEOUS									
- WET - (W)										MOD. - MODERATELY									
- MOIST - (M)										CPT - CONE PENETRATION TEST									
- DRY - (D)										CSE. - COARSE									
										DMT - DILATOMETER TEST									
										DPT - DYNAMIC PENETRATION TEST									
										e - VOID RATIO									
										FOSS. - FOSSILIFEROUS									
										FRAC. - FRACTURED, FRACTURES									
										FRAGS. - FRAGMENTS									
										HI. - HIGHLY									
										SAMPLE ABBREVIATIONS									
										S - BULK									
										SS - SPLIT SPOON									
										ST - SHELBY TUBE									
										RS - ROCK									
										RT - RECOMPACTED TRIAXIAL RATIO									
										CBR - CALIFORNIA BEARING RATIO									
PLASTICITY										EQUIPMENT USED ON SUBJECT PROJECT									
PLASTICITY INDEX (PI) DRY STRENGTH										DRILL UNITS:									
NON PLASTIC 0-5 VERY LOW										<input type="checkbox"/> CME-45C									
SLIGHTLY PLASTIC 6-15 SLIGHT										<input checked="" type="checkbox"/> CME-55									
MODERATELY PLASTIC 16-25 MEDIUM										<input type="checkbox"/> CME-550									
HIGHLY PLASTIC 26 OR MORE HIGH										<input type="checkbox"/> VANE SHEAR TEST									
										<input type="checkbox"/> PORTABLE HOIST									
										<input type="checkbox"/> ADVANCING TOOLS:									
										<input type="checkbox"/> CLAY BITS									
										<input type="checkbox"/> 6' CONTINUOUS FLIGHT AUGER									
										<input checked="" type="checkbox"/> 8" HOLLOW AUGERS									
										<input type="checkbox"/> HARD FACED FINGER BITS									
										<input type="checkbox"/> TUNG.-CARBIDE INSERTS									
										<input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER									
										<input type="checkbox"/> TRICONE _____ * STEEL TEETH									
										<input type="checkbox"/> TRICONE _____ * TUNG.-CARB.									
										<input type="checkbox"/> CORE BIT									
										HAMMER TYPE:									
										<input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL									
										CORE SIZE:									
										<input type="checkbox"/> -B <input type="checkbox"/> -H									
										<input checked="" type="checkbox"/> -N Q2									
										HAND TOOLS:									
										<input type="checkbox"/> POST HOLE DIGGER									
										<input checked="" type="checkbox"/> HAND AUGER									
										<input type="checkbox"/> SOUNDING ROD									
										<input type="checkbox"/> VANE SHEAR TEST									
										<input type="checkbox"/>									
COLOR																			
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																			

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SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 2 OF 2)

ROCK DESCRIPTION		TERMS AND DEFINITIONS	
<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.</p> <p>AQUIFER - A WATER BEARING FORMATION OR STRATA.</p> <p>ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p>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.</p> <p>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.</p> <p>CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p>COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p>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.</p> <p>DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p>DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p>DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p>FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.</p> <p>FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p>FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.</p> <p>FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p>FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p>JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p>LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p>LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p>MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p>RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p>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.</p> <p>SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>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.</p> <p>SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>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.</p> <p>STRATA CORE RECOVERY (SREC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p>STRATA ROCK QUALITY DESIGNATION (SRQD) - 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.</p> <p>TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>	
WEATHERING			
FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.		
VERY SLIGHT (V SL.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.		
SLIGHT (SL.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.		
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.		
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <u>IF TESTED, WOULD YIELD SPT REFUSAL.</u>		
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</u>		
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>		
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.		
ROCK HARDNESS			
VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.		
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.		
MODERATELY HARD	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.		
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.		
SOFT	CAN BE GROVED 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.		
VERY SOFT	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 FINGERNAIL.		
FRACTURE SPACING		BEDDING	
TERM	SPACING	TERM	THICKNESS
VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED	4 FEET
WIDE	3 TO 10 FEET	THICKLY BEDDED	1.5 - 4 FEET
MODERATELY CLOSE	1 TO 3 FEET	THINLY BEDDED	0.16 - 1.5 FEET
CLOSE	0.16 TO 1 FOOT	VERY THINLY BEDDED	0.03 - 0.16 FEET
VERY CLOSE	LESS THAN 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET
		THINLY LAMINATED	< 0.008 FEET
INDURATION			
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.		
		<p>BENCH MARK: BL-102= NORTHING: 649,300.274, EASTING: 1,787,979.434</p> <p>-L- STATION 15+62.77, 14.7' LT</p> <p style="text-align: right;">ELEVATION: 468.656 FEET</p>	
NOTES:			
FIAD= FILLED IMMEDIATELY AFTER DRILLING			
NM= NOT MEASURED			
HABT= HAND AUGER BORING TERMINATED			
HAREF= HAND AUGER REFUSAL			
DATE: 8-15-14			

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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SUBSURFACE INVESTIGATION

**SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
 FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (PAGE 1 OF 2)**

AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

**GEOLOGICAL STRENGTH INDEX (GSI) FOR
 JOINTED ROCKS (Hoek and Marinos, 2000)**

From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.

SURFACE CONDITIONS

VERY GOOD
 Very rough, fresh unweathered surfaces

GOOD
 Rough, slightly weathered, iron stained surfaces

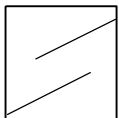
FAIR
 Smooth, moderately weathered and altered surfaces

POOR
 Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments

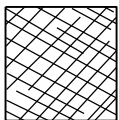
VERY POOR
 Slickensided, highly weathered surfaces with soft clay coatings or fillings

DECREASING SURFACE QUALITY →

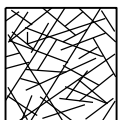
STRUCTURE



INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities



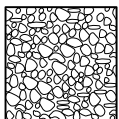
BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets



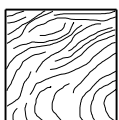
VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets



BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity



DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces



LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes

DECREASING INTERLOCKING OF ROCK PIECES ↓

	90			N/A	N/A
	80				
		70			
			60		
				50	
					40
					30
					20
					10
	N/A	N/A			

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

**SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
 FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (PAGE 2 OF 2)**

AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

**GSI FOR HETEROGENEOUS ROCK MASSES SUCH
 AS FLYSCH (Marinos, P and Hoek E., 2000)**

From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.

**SURFACE CONDITIONS OF
 DISCONTINUITIES**
 (Predominantly bedding planes)

VERY GOOD - Very Rough, fresh unweathered surfaces

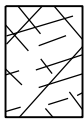
GOOD - Rough, slightly weathered surfaces

FAIR - Smooth, moderately weathered and altered surfaces

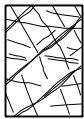
POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments

VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings

COMPOSITION AND STRUCTURE



A. Thick bedded, very blocky sandstone
 The effect of pelitic coatings on the bedding planes is minimized by the confinement of the rock mass. In shallow tunnels or slopes these bedding planes may cause structurally controlled instability.



B. Sandstone with thin inter-layers of siltstone



C. Sandstone and siltstone in similar amounts



D. Siltstone or silty shale with sandstone layers



E. Weak siltstone or clayey shale with sandstone layers

C, D, E, and G - may be more or less folded than illustrated but this does not change the strength. Tectonic deformation, faulting and loss of continuity moves these categories to **F** and **H**.



F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure

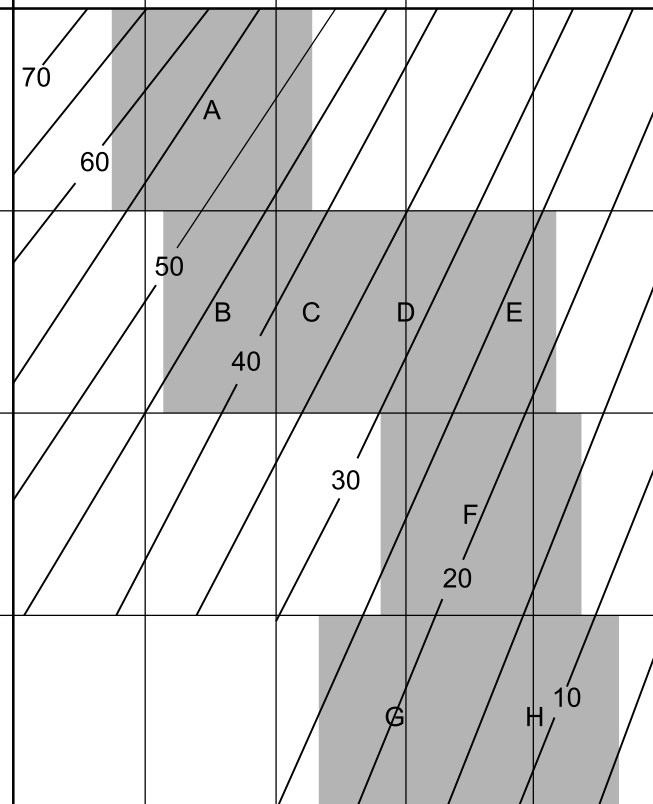


G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers

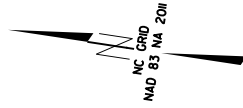


H. Tectonically deformed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces.

➡ Means deformation after tectonic disturbance



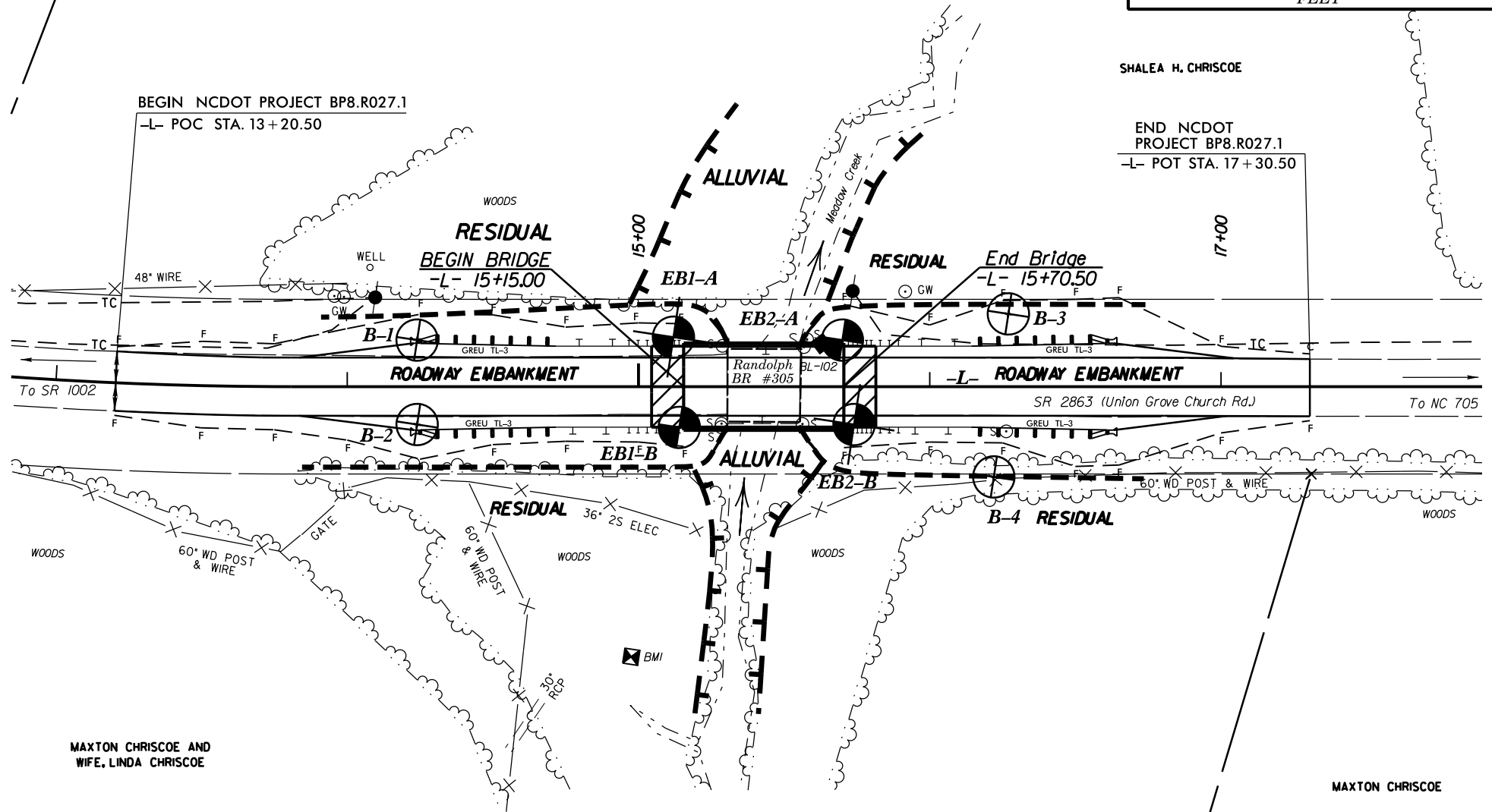
PROJECT REFERENCE NO.	SHEET NO.
BP8.R027.1	3
SITE PLAN	



SHALEA H. CHRISCOE

END NCDOT PROJECT BP8.R027.1
-L- POT STA. 17+30.50

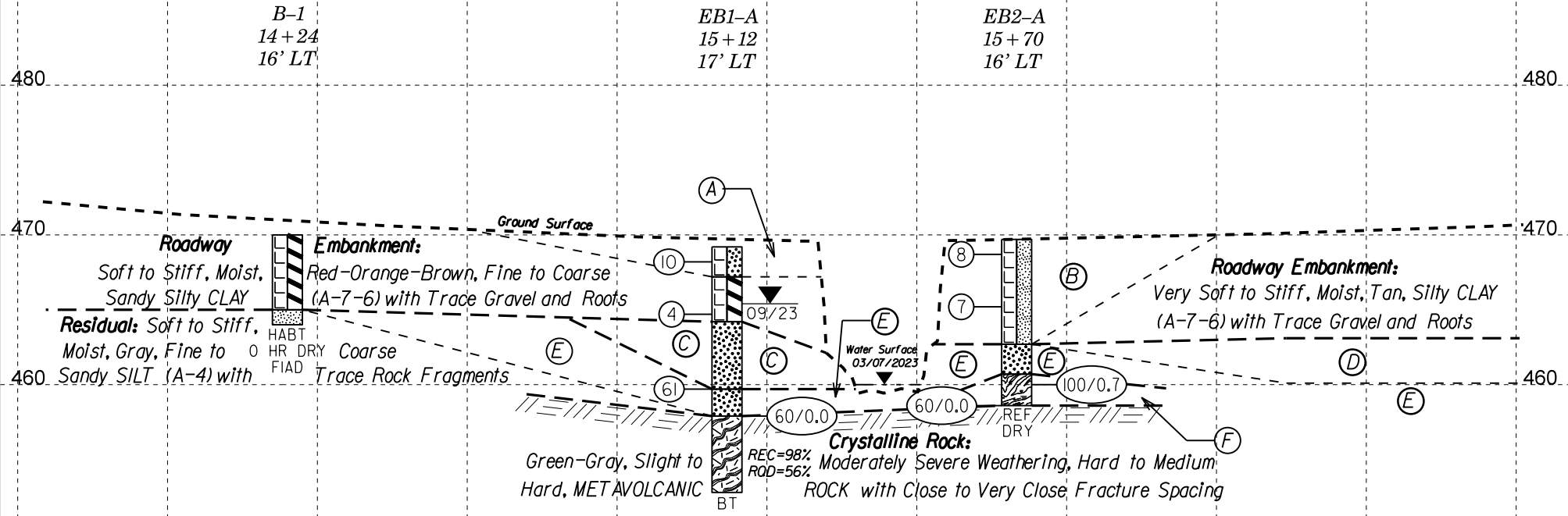
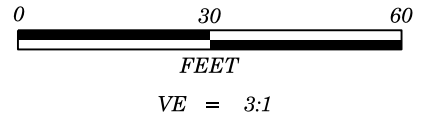
BEGIN NCDOT PROJECT BP8.R027.1
-L- POC STA. 13+20.50



MAXTON CHRISCOE AND WIFE, LINDA CHRISCOE

MAXTON CHRISCOE

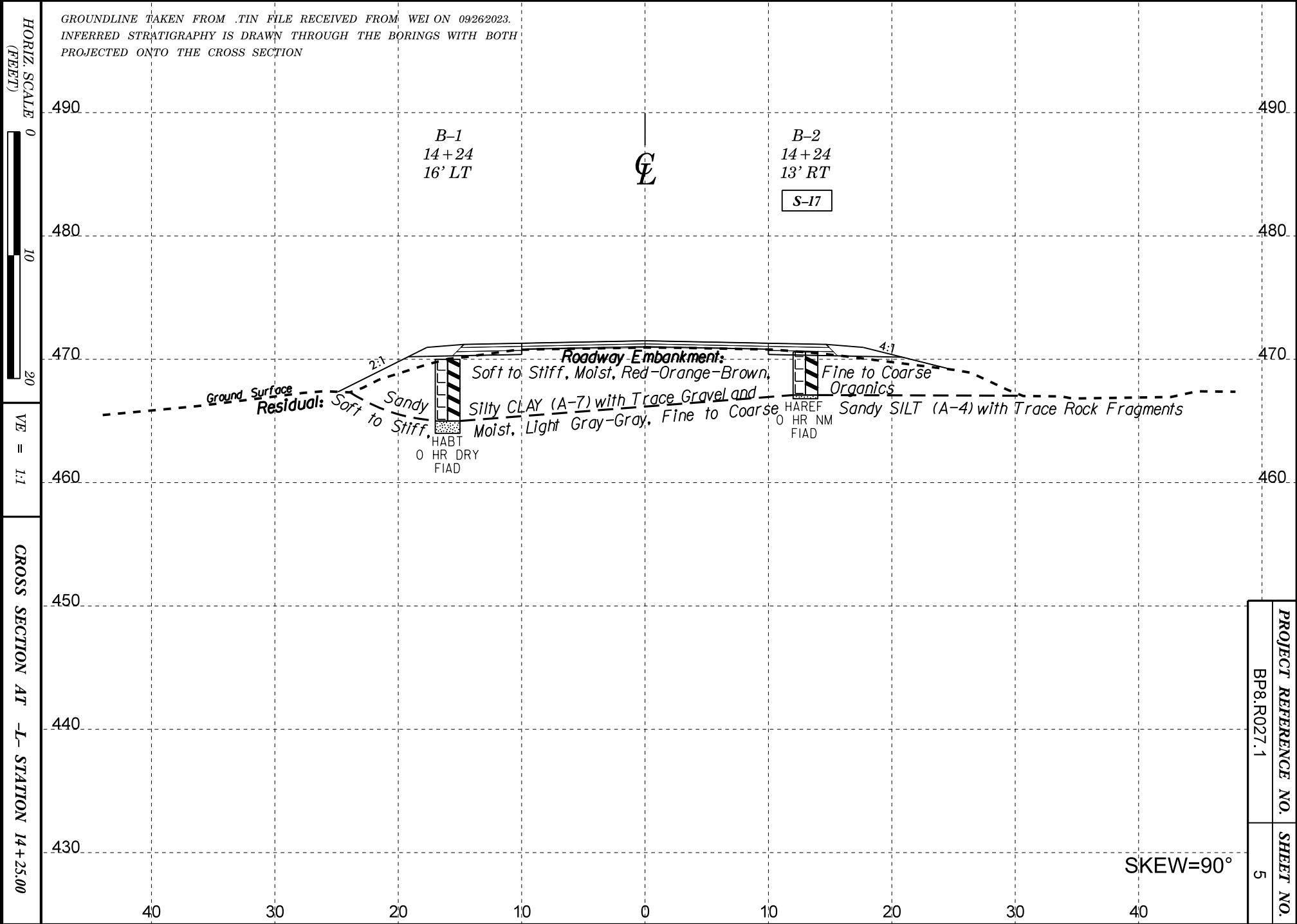
SKEW=90°



- Ⓐ **Roadway Embankment:** Loose to Medium Dense, Moist, Green-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel
- Ⓑ **Roadway Embankment:** Medium Stiff to Stiff, Moist, Tan-Gray, Fine to Coarse Sandy SILT (A-4) with Trace Roots
- Ⓒ **Alluvial:** Loose, Moist, Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel
- Ⓓ **Residual:** Medium Stiff to Stiff, Moist, Yellow-Tan, Fine to Coarse Sandy SILT (A-4) with Trace Roots and Rock Fragments
- Ⓔ **Residual:** Very Dense, Moist, Tan-Yellow-Brown-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Rock Fragments
- Ⓕ **Weathered Rock:** Light Gray (METAVOLCANIC ROCK)

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED FROM WEI ON 09/26/2023.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE PROFILE.

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED FROM WEI ON 09/26/2023.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION



PROJECT REFERENCE NO.	SHEET NO.
BP8.R027.1	5

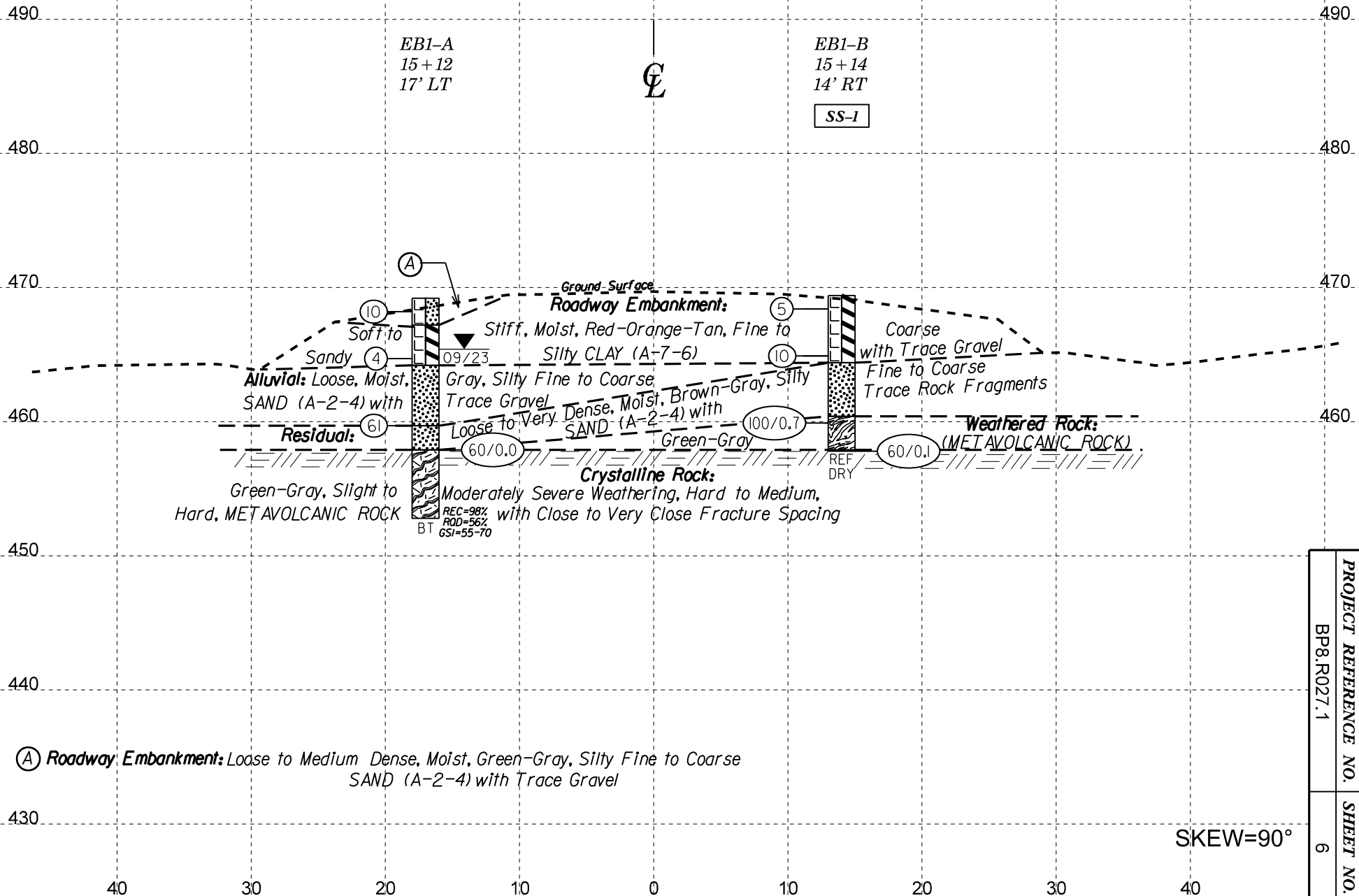
GROUNDLINE TAKEN FROM .TIN FILE RECEIVED FROM WEI ON 09/26/2023.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

HORIZ. SCALE
 (FEET)



VE = 1:1

CROSS SECTION THROUGH END BENT 1
 AT -L- STATION 15+15.50



Ⓐ **Roadway Embankment:** Loose to Medium Dense, Moist, Green-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel

PROJECT REFERENCE NO.	BP8.R027.1
SHEET NO.	6

SKEW=90°

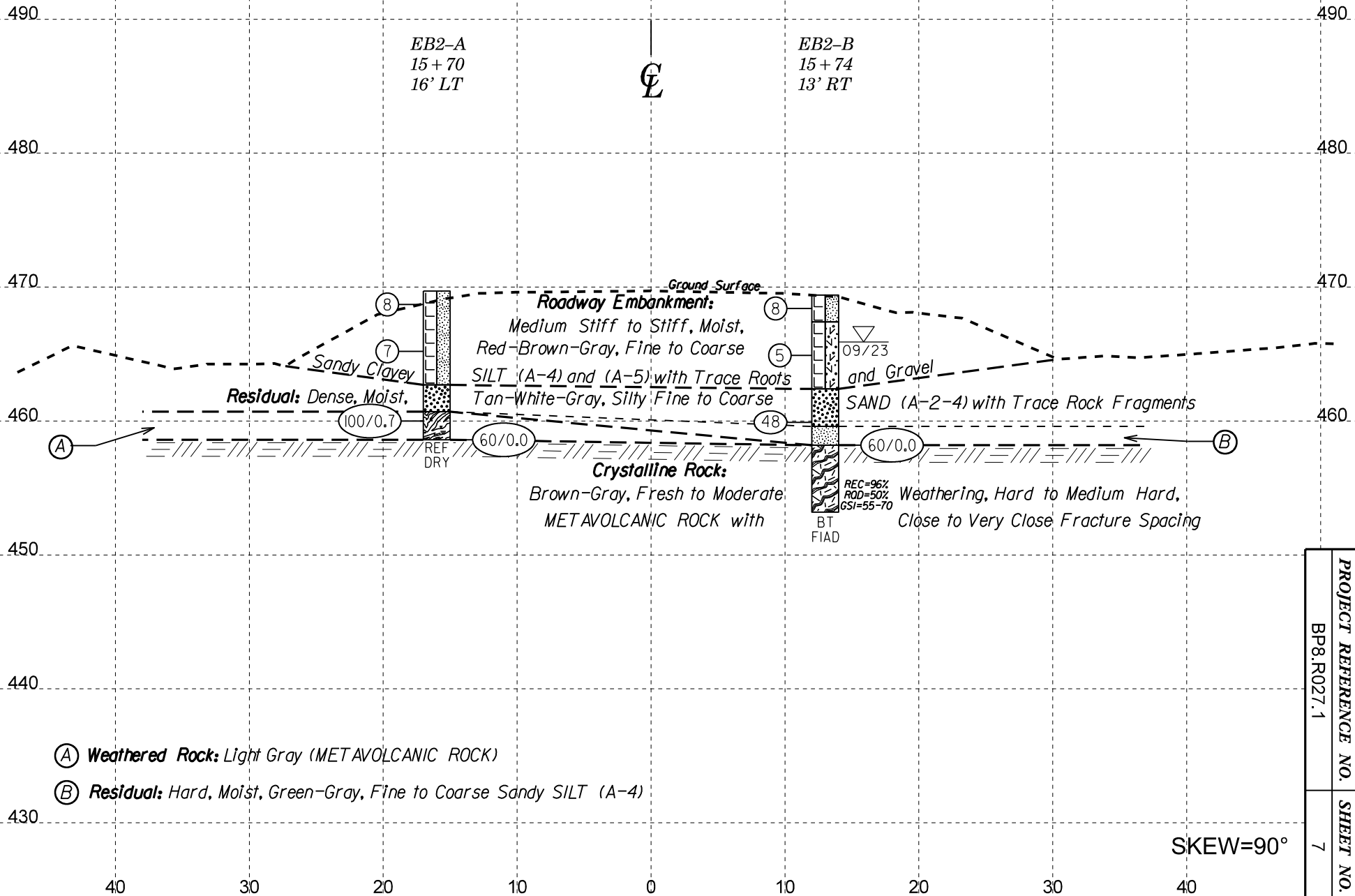
GROUNDLINE TAKEN FROM .TIN FILE RECEIVED FROM WEI ON 09/26/2023.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

HORIZ. SCALE
 (FEET)



VE = 1:1

CROSS SECTION THROUGH END BENT 2
 AT -L- STATION 15+70.50



PROJECT REFERENCE NO.	BP8.R027.1
SHEET NO.	7

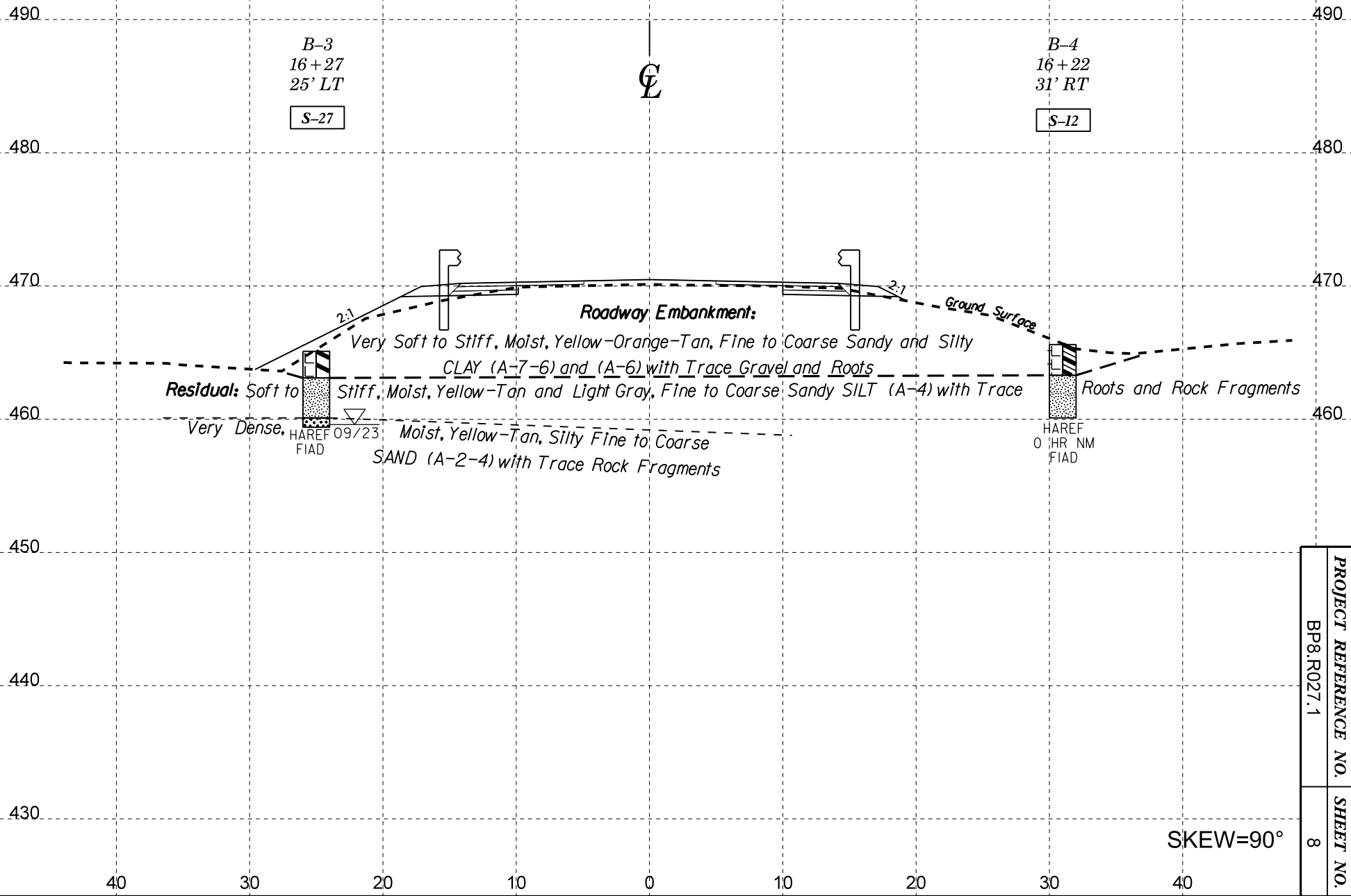
GROUNDLINE TAKEN FROM .TIN FILE RECEIVED FROM WEI ON 09/26/2023.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

HORIZ. SCALE
 (FEET)



VE = 1:1

CROSS SECTION AT -L- STATION 16+25.00



SKEW=90°

PROJECT REFERENCE NO.	SHEET NO.
BP8.R027.1	8

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R027.1		TIP N/A		COUNTY RANDOLPH		GEOLOGIST C. Brake											
SITE DESCRIPTION Bridge No. 305 on SR 2863 (Union Grove Church Rd.) over Meadow Creek							GROUND WTR (ft)										
BORING NO. B-1		STATION 14+24		OFFSET 16 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 470.0 ft		TOTAL DEPTH 6.0 ft		NORTHING 649,438		EASTING 1,787,960											
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A											
DRILLER A. Busha		START DATE 09/12/23		COMP. DATE 09/12/23		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)		
470															470.0	0.0	GROUND SURFACE
465															465.0	5.0	ROADWAY EMBANKMENT Soft to Stiff, Orange-Brown, Fine to Coarse Sandy Silty CLAY (A-7) with Trace Gravel and Roots
															464.0	6.0	RESIDUAL Soft to Stiff, Gray, Fine to Coarse Sandy SILT (A-4) with Trace Rock Fragments Boring Terminated at Elevation 464.0 ft in Residual (SILT)

NCDOT BORE SINGLE BP8.R0271_GEO_BH_BRDG0305.GPJ NC_DOT.GDT 11/10/23

Note:
1. Surficial Organic Soils= 0.0'-0.3'

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R027.1	TIP N/A	COUNTY RANDOLPH	GEOLOGIST C. Brake
SITE DESCRIPTION Bridge No. 305 on SR 2863 (Union Grove Church Rd.) over Meadow Creek			GROUND WTR (ft)
BORING NO. EB1-A	STATION 15+12	OFFSET 17 ft LT	ALIGNMENT -L-
COLLAR ELEV. 469.2 ft	TOTAL DEPTH 16.3 ft	NORTHING 649,351	EASTING 1,787,974
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 84% 07/28/2023		DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic
DRILLER C. Ingo	START DATE 09/11/23	COMP. DATE 09/11/23	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	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
470	469.2	0.0												GROUND SURFACE	0.0
			4	5	5									ROADWAY EMBANKMENT	
465	465.7	3.5	3	2	2									Green-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel	2.0
														Red-Orange-Tan, Fine Sandy Silty CLAY (A-7-6)	5.0
460	460.7	8.5	3	3	58									ALLUVIAL	
														Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel	9.5
	457.9	11.3	60/0.0											RESIDUAL	
														Brown-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Rock Fragments	11.3
455														CRYSTALLINE ROCK	
														Green-Gray, Slight to Moderately Severe Weathering, Hard to Medium Hard, METAVOLCANIC ROCK with Close to Very Close Fracture Spacing	16.3
														Boring Terminated at Elevation 452.9 ft in Crystalline Rock (METAVOLCANIC ROCK)	

- Notes:
1. Surficial Organic Soils= 0.0'-0.2'
 2. Auger Refusal at 11.3'
 3. Start Coring at 11.3'

NCDOT BORE SINGLE BP8.R0271_GEO_BH_BRDG0305.GPJ NC_DOT.GDT 11/13/23

GEOTECHNICAL BORING REPORT

CORE LOG

WBS BP8.R027.1				TIP N/A		COUNTY RANDOLPH				GEOLOGIST C. Brake			
SITE DESCRIPTION Bridge No. 305 on SR 2863 (Union Grove Church Rd.) over Meadow Creek										GROUND WTR (ft)			
BORING NO. EB1-A				STATION 15+12			OFFSET 17 ft LT			ALIGNMENT -L-			0 HR. 3.0
COLLAR ELEV. 469.2 ft				TOTAL DEPTH 16.3 ft			NORTHING 649,351			EASTING 1,787,974			24 HR. 3.8
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 84% 07/28/2023						DRILL METHOD SPT Core Boring				HAMMER TYPE Automatic			
DRILLER C. Ingo				START DATE 09/11/23			COMP. DATE 09/11/23			SURFACE WATER DEPTH N/A			
CORE SIZE NQ2				TOTAL RUN 5.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)	
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %				
457.9											Begin Coring @ 11.3 ft		
	457.9	11.3	5.0	1:57/1.0 2:10/1.0 3:07/1.0 3:57/1.0 4:55/1.0	(4.9) 98%	(2.8) 56%		(4.9) 98%	(2.8) 56%		457.9 Green-Gray, Slight to Moderately Severe Weathering, Hard to Medium Hard, METAVOLCANIC ROCK with Close to Very Close Fracture Spacing GSI=55-70	11.3	
455	452.9	16.3									452.9 Boring Terminated at Elevation 452.9 ft in Crystalline Rock (METAVOLCANIC ROCK)	16.3	
Notes: 1. Surficial Organic Soils= 0.0'-0.2' 2. Auger Refusal at 11.3' 3. Start Coring at 11.3'													

NCDOT CORE SINGLE BP8.R0271_GEO.BH_BRDG0305.GPJ NC_DOT.GDT 11/14/23



**Bridge 305 Randolph County
BP8.R027.1**

**EB1-A: -L- 15+12, 17' LT
CORE PHOTOGRAPHS:**

**Begin Run 1
11.3 feet**



**End Run 1
16.3 feet**

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R027.1			TIP N/A			COUNTY RANDOLPH			GEOLOGIST C. Brake							
SITE DESCRIPTION Bridge No. 305 on SR 2863 (Union Grove Church Rd.) over Meadow Creek										GROUND WTR (ft)						
BORING NO. EB1-B			STATION 15+14			OFFSET 14 ft RT			ALIGNMENT -L-							
COLLAR ELEV. 469.4 ft			TOTAL DEPTH 11.6 ft			NORTHING 649,344			EASTING 1,787,944							
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 84% 07/28/2023						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER C. Ingo			START DATE 09/11/23			COMP. DATE 09/11/23			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)	
470	469.4	0.0	4	2	3										469.4	0.0
465	465.9	3.5	3	5	5										464.4	5.0
460	460.9	8.5	11	50	50/0.2										460.4	9.0
	457.9	11.5	60/0.1							100/0.7					457.9	11.5
															457.8	11.6

GROUND SURFACE

ROADWAY EMBANKMENT
Red-Orange-Tan, Silty CLAY (A-7-6) with Trace Gravel

RESIDUAL
Brown-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Rock Fragments

WEATHERED ROCK
Green-Gray (METAVOLCANIC ROCK)

CRYSTALLINE ROCK
(METAVOLCANIC ROCK)

Boring Terminated with Standard Penetration Test Refusal at Elevation 457.8 ft in Crystalline Rock (METAVOLCANIC ROCK)

- Notes:
1. Surficial Organic Soils= 0.0'-0.2'
 2. Auger Refusal at 11.5'

NCDOT BORE SINGLE BP8.R0271_GEO_BH_BRDG0305.GPJ NC_DOT.GDT 11/10/23

GEOTECHNICAL BORING REPORT


BORE LOG

WBS BP8.R027.1	TIP N/A	COUNTY RANDOLPH	GEOLOGIST C. Brake
SITE DESCRIPTION Bridge No. 305 on SR 2863 (Union Grove Church Rd.) over Meadow Creek			GROUND WTR (ft)
BORING NO. EB2-B	STATION 15+74	OFFSET 13 ft RT	ALIGNMENT -L-
COLLAR ELEV. 469.4 ft	TOTAL DEPTH 16.2 ft	NORTHING 649,285	EASTING 1,787,954
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 84% 07/28/2023		DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic
DRILLER C. Ingo	START DATE 09/12/23	COMP. DATE 09/12/23	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						
470	469.4	0.0												GROUND SURFACE	0.0	
														ROADWAY EMBANKMENT		
	467.4	3.5	5	5	3									Tan-Red-Brown, Fine to Coarse Sandy SILT (A-4) with Trace Gravel	2.0	
465	465.9	3.5	2	2	3									Red-Orange-Brown, Fine to Coarse Sandy Clayey SILT (A-5)		
	462.4	8.5												RESIDUAL	7.0	
460	460.9	8.5	11	14	34									Tan and White, Silty Fine to Coarse SAND (A-2-4) with Trace Rock Fragments	9.8	
	458.2	11.2	60/0.0											Green-Gray, Fine to Coarse Sandy SILT (A-4)	11.2	
														CRYSTALLINE ROCK		
455														Brown-Gray, Fresh to Moderate Weathering, Hard to Medium Hard METAVOLCANIC ROCK with Close to Very Close Fracture Spacing	16.2	
														Boring Terminated at Elevation 453.2 ft in Crystalline Rock (METAVOLCANIC ROCK)		
														Notes: 1. Surficial Organic Soils= 0.0'-0.2' 2. Auger Refusal at 11.2' 3. Start Coring at 11.2'		

NCDOT BORE SINGLE BP8.R0271_GEO_BH_BRDG0305.GPJ NC_DOT.GDT 11/10/23

GEOTECHNICAL BORING REPORT CORE LOG

WBS BP8.R027.1			TIP N/A			COUNTY RANDOLPH			GEOLOGIST C. Brake		
SITE DESCRIPTION Bridge No. 305 on SR 2863 (Union Grove Church Rd.) over Meadow Creek										GROUND WTR (ft)	
BORING NO. EB2-B			STATION 15+74			OFFSET 13 ft RT			ALIGNMENT -L-		0 HR. 3.5
COLLAR ELEV. 469.4 ft			TOTAL DEPTH 16.2 ft			NORTHING 649,285			EASTING 1,787,954		24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 84% 07/28/2023						DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic		
DRILLER C. Ingo			START DATE 09/12/23			COMP. DATE 09/12/23			SURFACE WATER DEPTH N/A		
CORE SIZE NQ2			TOTAL RUN 5.0 ft								
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
458.2										Begin Coring @ 11.2 ft	
	458.2	11.2	5.0	3:24/1.0 4:06/1.0 5:55/1.0 6:33/1.0 4:58/1.0	(4.8) 96%	(2.5) 50%	(4.8) 96%	(2.5) 50%		458.2	11.2
455	453.2	16.2								453.2	16.2
Boring Terminated at Elevation 453.2 ft in Crystalline Rock (METAVOLCANIC ROCK)											
Notes: 1. Surficial Organic Soils= 0.0'-0.2' 2. Auger Refusal at 11.2' 3. Start Coring at 11.2'											

NCDOT CORE SINGLE BP8.R0271_GEO.BH_BRDG0305.GPJ NC_DOT.GDT 11/10/23



Bridge 305 Randolph County

BP8.R027.1

EB2-B: -L- 15+74, 13' RT

CORE PHOTOGRAPHS:

**Begin Run 1
11.2 feet**



**End Run 1
16.2 feet**

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP8.R027.1			TIP N/A			COUNTY RANDOLPH			GEOLOGIST C. Brake							
SITE DESCRIPTION Bridge No. 305 on SR 2863 (Union Grove Church Rd.) over Meadow Creek									GROUND WTR (ft)							
BORING NO. B-3			STATION 16+27			OFFSET 25 ft LT			ALIGNMENT -L-							
COLLAR ELEV. 465.1 ft			TOTAL DEPTH 5.7 ft			NORTHING 649,238			EASTING 1,787,999							
DRILL RIG/HAMMER EFF./DATE N/A						DRILL METHOD Hand Auger			HAMMER TYPE N/A							
DRILLER A. Busha			START DATE 09/12/23			COMP. DATE 09/12/23			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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
470																
465														465.1	GROUND SURFACE	0.0
460										S-27	27%			463.1	ROADWAY EMBANKMENT Very Soft to Soft, Tan, Fine Silty CLAY (A-7-6) with Trace Gravel and Roots	2.0
														460.1	RESIDUAL Medium Stiff to Stiff, Yellow-Tan, Fine to Coarse Sandy SILT (A-4) with Trace Roots and Rock Fragments	5.0
														459.4	Very Dense, Yellow-Tan, Silty Fine to Coarse SAND (A-2-4) with Trace Rock Fragments	5.7
															Boring Terminated by Auger Refusal at Elevation 459.4 ft in Residual (SAND)	
															Note: 1. Surficial Organic Soils= 0.0'-0.3'	

NCDOT BORE SINGLE BP8.R0271_GEO_BH_BRDGO305.GPJ NC_DOT.GDT 11/10/23



PROJECT REFERENCE NO.	SHEET NO.
BP8.R027.1	21

County: Randolph

Description: Bridge 305 on SR 2863 (Union Grove Church Rd) over Meadow Branch

SOIL TEST RESULTS

SAMPLE NO.	-L- STATION	LOCATION	OFFSET *	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-17	14+24	B-2	13' RT	0.3-2.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	16.8	3.6
SS-1	15+14	EB1-B	14' RT	0.3-1.5	A-7-6 (23)	49	21	2.4	3.6	37.2	56.8	98.9	97.2	94.7	26.0	NT
S-27	16+27	B-3	25' LT	0.3-1.0	A-7-6 (32)	60	36	5.2	18.0	48.9	27.9	99.6	97.4	82.4	27.1	NT
S-12	16+22	B-4	31' RT	0.2-1.0	A-6 (11)	38	11	2.8	8.2	55.9	33.1	97.5	95.6	90.5	34.0	NT

NP = Not Plastic
 NT = Not Tested
 ND = Not Determined

D. Council _____
 Lab Manager, Certification No. 101-02-0603

C.Wang, P.E. _____
 Soils Engineer



**Bridge 305 Randolph County
BP8.R027.1**

SITE PHOTOGRAPHS:



Photograph No. 1: View looking north at End Bent 1 from End Bent 2



Photograph No. 2: View looking north