

PROJECT: DF18311.2014030.PR REFERENCE: N/A

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY CALDWELL
 SITE DESCRIPTION REPLACE BRIDGE NO. 161 ON
SR 1358 (EDGEMONT CHURCH PL.) OVER WILSON
CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18311.2014030.PR	1	

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 PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS 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:
1. 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.
 2. 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

C. BRAKE, G.I.T.
S. DAVIS
TY. BEARD

INVESTIGATED BY F&R, Inc.
 DRAWN BY T.T. WALKER
 CHECKED BY P. ALTON, P.E.
 SUBMITTED BY C. WANG, P.E.
 DATE MAY 2025



SIGNATURE _____ DATE _____

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
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 (ASHOTO 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, 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.	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: WEATHERED ROCK (WR) NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR) FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTARY ROCK (CP) COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	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 INTRODUCED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (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. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERING FRESH - ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI.) - 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 (SLI.) - 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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> 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. <i>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</i> 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. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i> 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.	TERMS AND DEFINITIONS
GENERAL 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 MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	CRISTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)	
COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50	PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER 2 - 3% LITTLE ORGANIC MATTER 3 - 5% MODERATELY ORGANIC 5 - 10% HIGHLY ORGANIC > 10% GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL TRACE 1 - 10% LITTLE 10 - 20% SOME 20 - 35% HIGHLY 35% AND ABOVE		
GROUP INDEX 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20	GROUND WATER WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP		
USUAL TYPES OF MAJOR MATERIALS STONE FRAGS. GRAVEL, AND SAND FINE SAND SILTY OR CLAYEY GRAVEL AND SAND SILTY SOILS CLAYEY SOILS	MISCELLANEOUS SYMBOLS ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE		
CONSISTENCY OR DENSENESS PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)			
TEXTURE OR GRAIN SIZE U.S. STD. SIEVE SIZE OPENING (MM) BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F. SD.) SILT (SL.) CLAY (CL.)	RECOMMENDATION SYMBOLS UNDERCUT SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK	ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT	
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	ABBREVIATIONS AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE. - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL. - HIGHLY MED. - MEDIUM MICA. - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLL. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED % - UNIT WEIGHT % - DRY UNIT WEIGHT SAMPLE ABBREVIATIONS SS - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO		
PLASTICITY NON PLASTIC SLIGHTLY PLASTIC MODERATELY PLASTIC HIGHLY PLASTIC	EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: CME-45C CME-55 CME-550 VANE SHEAR TEST PORTABLE HOIST CME-750X ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG.-CARBIDE INSERTS CASING w/ ADVANCER TRICONE *STEEL TEETH TRICONE *TUNG.-CARB. CORE BIT HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B H N Q3 HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST	ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT	
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.		FRACURE SPACING TERM VERY WIDE WIDE MODERATELY CLOSE CLOSE VERY CLOSE SPACING MORE THAN 10 FEET 3 TO 10 FEET 1 TO 3 FEET 0.15 TO 1 FOOT LESS THAN 0.16 FEET BEDDING TERM VERY THICKLY BEDDED THICKLY BEDDED THINLY BEDDED VERY THINLY BEDDED THICKLY LAMINATED THINLY LAMINATED THICKNESS 4 FEET 1.5 - 4 FEET 0.16 - 1.5 FEET 0.03 - 0.16 FEET 0.008 - 0.03 FEET < 0.008 FEET	NOTES: FIAD= FILLED IMMEDIATELY AFTER DRILLING NM= NOT MEASURED
		INDURATION FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE MODERATELY INDURATED INDURATED EXTREMELY INDURATED RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	BENCH MARK: GPS-13016I-2= STA. -YI- II+3, 19' LT NORTHING: 831,533.95, EASTING: 1,179,343.98 ELEVATION: 1,566J FEET

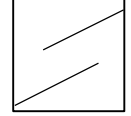
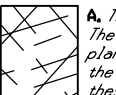
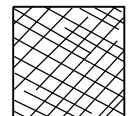
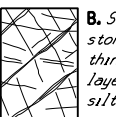
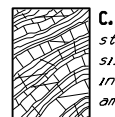
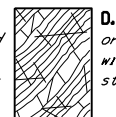




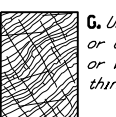

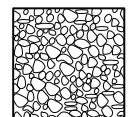
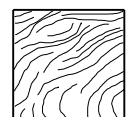
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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SUBSURFACE INVESTIGATION

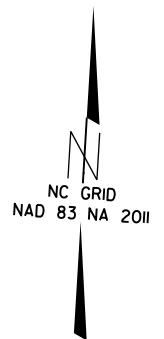
SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

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

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

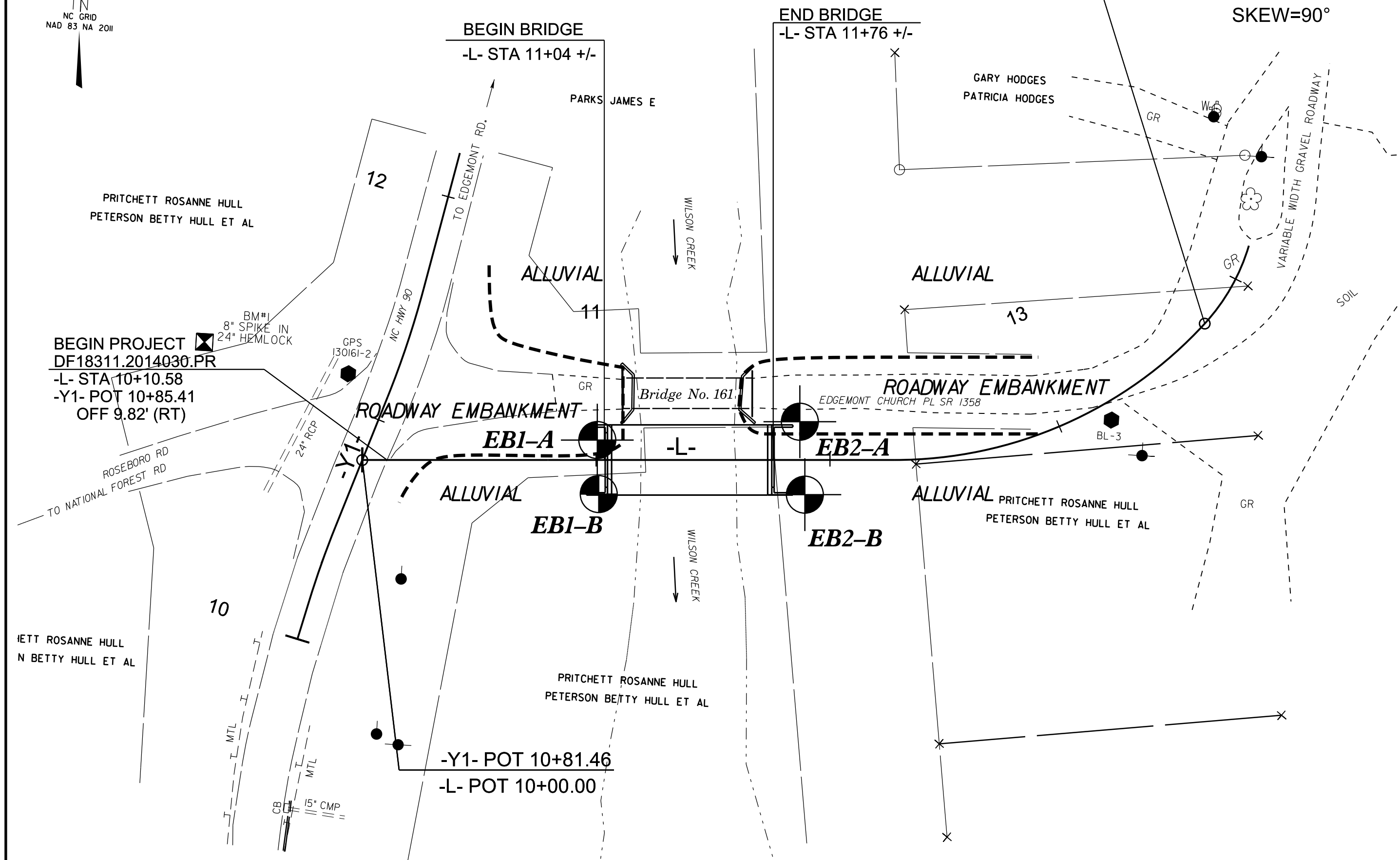
GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000) From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that 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 DECREASING SURFACE QUALITY → <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">VERY GOOD Very rough, fresh unweathered surfaces</td> <td style="width: 20%;">GOOD Rough, slightly weathered, iron stained surfaces</td> <td style="width: 20%;">FAIR Smooth, moderately weathered and altered surfaces</td> <td style="width: 20%;">POOR Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments</td> <td style="width: 20%;">VERY POOR Slickensided, highly weathered surfaces with soft clay coatings or fillings</td> </tr> </table>					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	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) <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">VERY GOOD - Very Rough, fresh unweathered surfaces</td> <td style="width: 20%;">GOOD - Rough, slightly weathered surfaces</td> <td style="width: 20%;">FAIR - Smooth, moderately weathered and altered surfaces</td> <td style="width: 20%;">POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments</td> <td style="width: 20%;">VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings</td> </tr> </table>					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
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																						
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																						
STRUCTURE		COMPOSITION AND STRUCTURE																								
 INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities	90 80 N/A N/A					 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.	70 60 A																			
 BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets	70 60					 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	50 40 B C D E																			
 VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets	50 40 30					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	30 20 F																			
 BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity	30 20 10					 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.	10 G H																			
 DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces	10					→ Means deformation after tectonic disturbance																				
 LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	N/A N/A																									

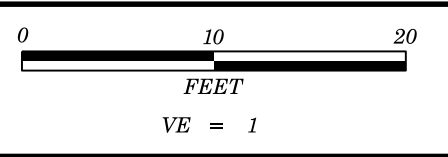
PROJECT REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	3
SITE PLAN	



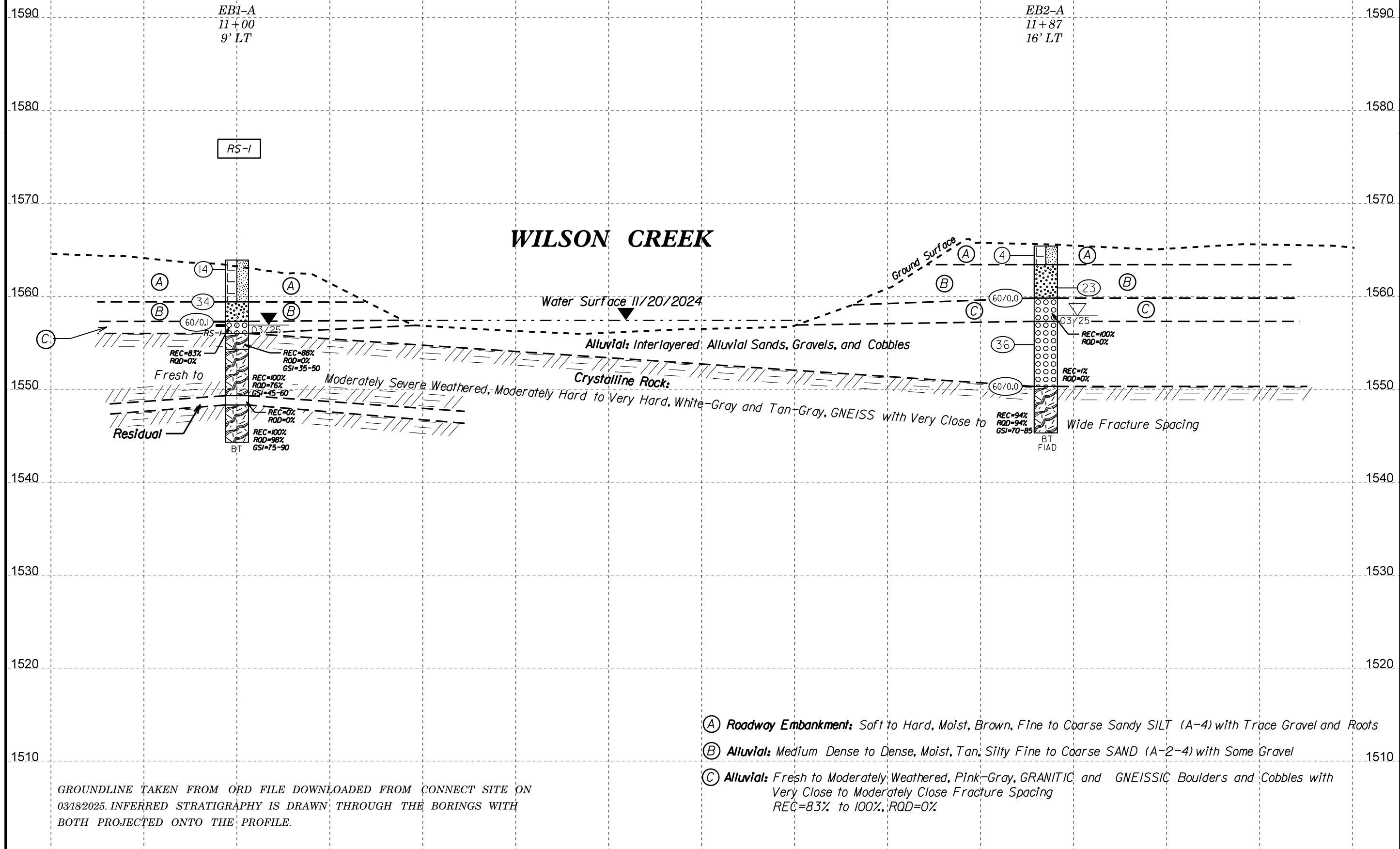
END PROJECT
DF18311.2014030.PR
-L- STA 13+76.75

SKEW=90°





PROJECT REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	4
PROFILE BORINGS PROJECTED ALONG CENTERLINE OF -L-	



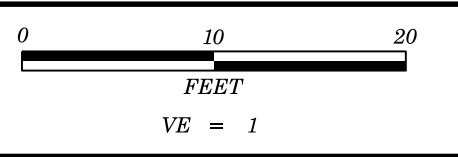
- (A) **Roadway Embankment:** Soft to Hard, Moist, Brown, Fine to Coarse Sandy SILT (A-4) with Trace Gravel and Roots
- (B) **Alluvial:** Medium Dense to Dense, Moist, Tan, Silty Fine to Coarse SAND (A-2-4) with Some Gravel
- (C) **Alluvial:** Fresh to Moderately Weathered, Pink-Gray, GRANITIC and GNEISSIC Boulders and Cobbles with Very Close to Moderately Close Fracture Spacing
REC=83% to 100%, RQD=0%

GROUNDLINE TAKEN FROM ORD FILE DOWNLOADED FROM CONNECT SITE ON 03/18/2025. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

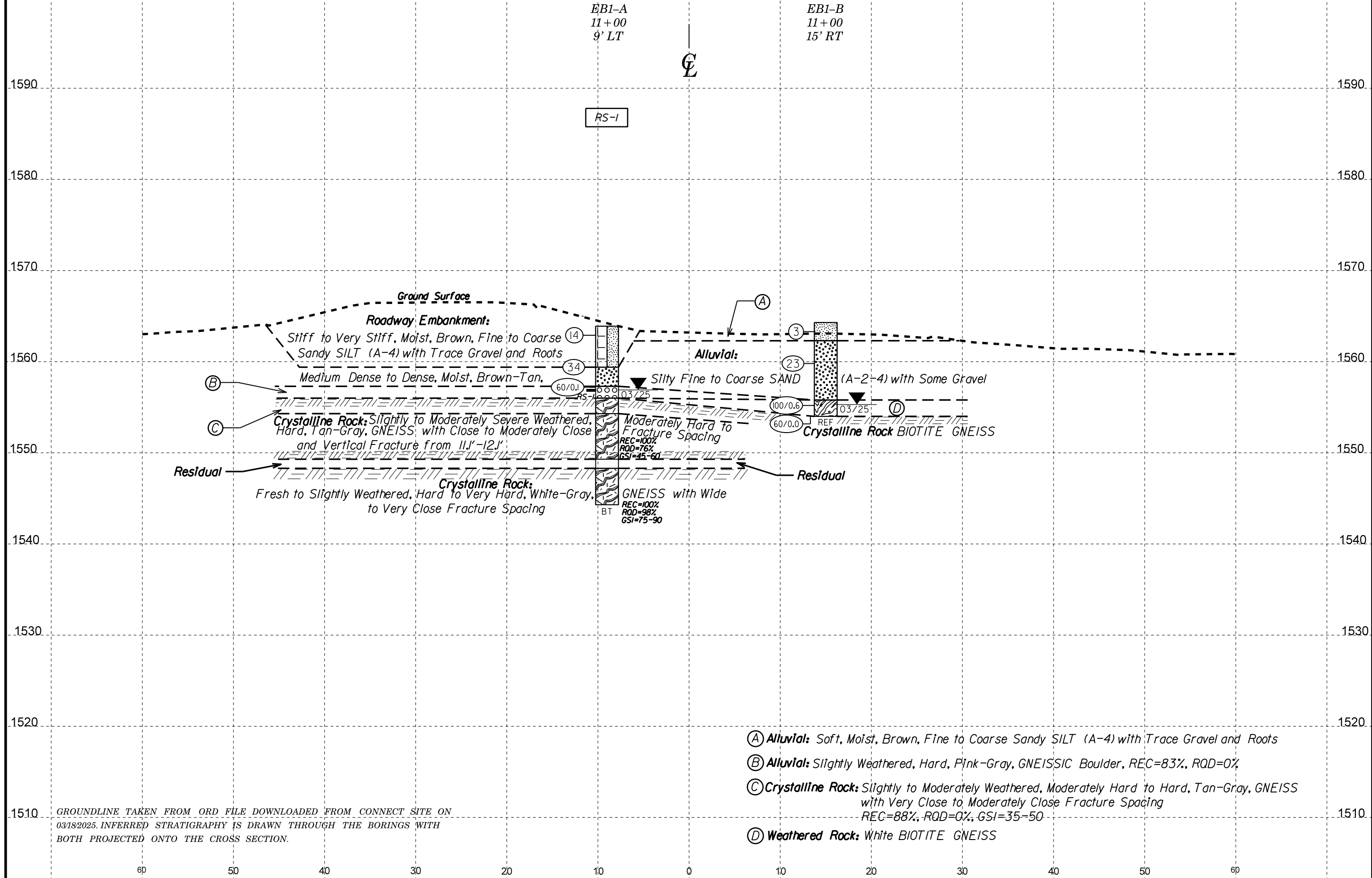
11+00

11+50

12+00



PROJECT REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	5
CROSS SECTION THROUGH	
-L- STATION 11+00.00	
SKEW=90°	



EBI-A
11+00
9' LT

EBI-B
11+00
15' RT

RS-1

CL

Ground Surface

Roadway Embankment:
Stiff to Very Stiff, Moist, Brown, Fine to Coarse Sandy SILT (A-4) with Trace Gravel and Roots

Medium Dense to Dense, Moist, Brown-Tan, (60/0.1)

Crystalline Rock: Slightly to Moderately Severe Weathered, Hard, Tan-Gray, GNEISS with Close to Moderately Close and Vertical Fracture from 11.1'-12.1'

Residual

Crystalline Rock: Fresh to Slightly Weathered, Hard to Very Hard, White-Gray, to Very Close Fracture Spacing

BT
REC=100%
RQD=98%
GSI=75-90

Alluvial:
Silty Fine to Coarse SAND (A-2-4) with Some Gravel

Crystalline Rock BIOTITE GNEISS

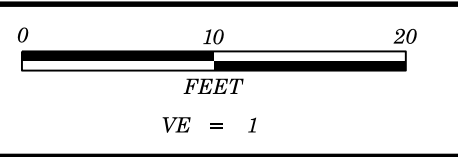
Residual

REF

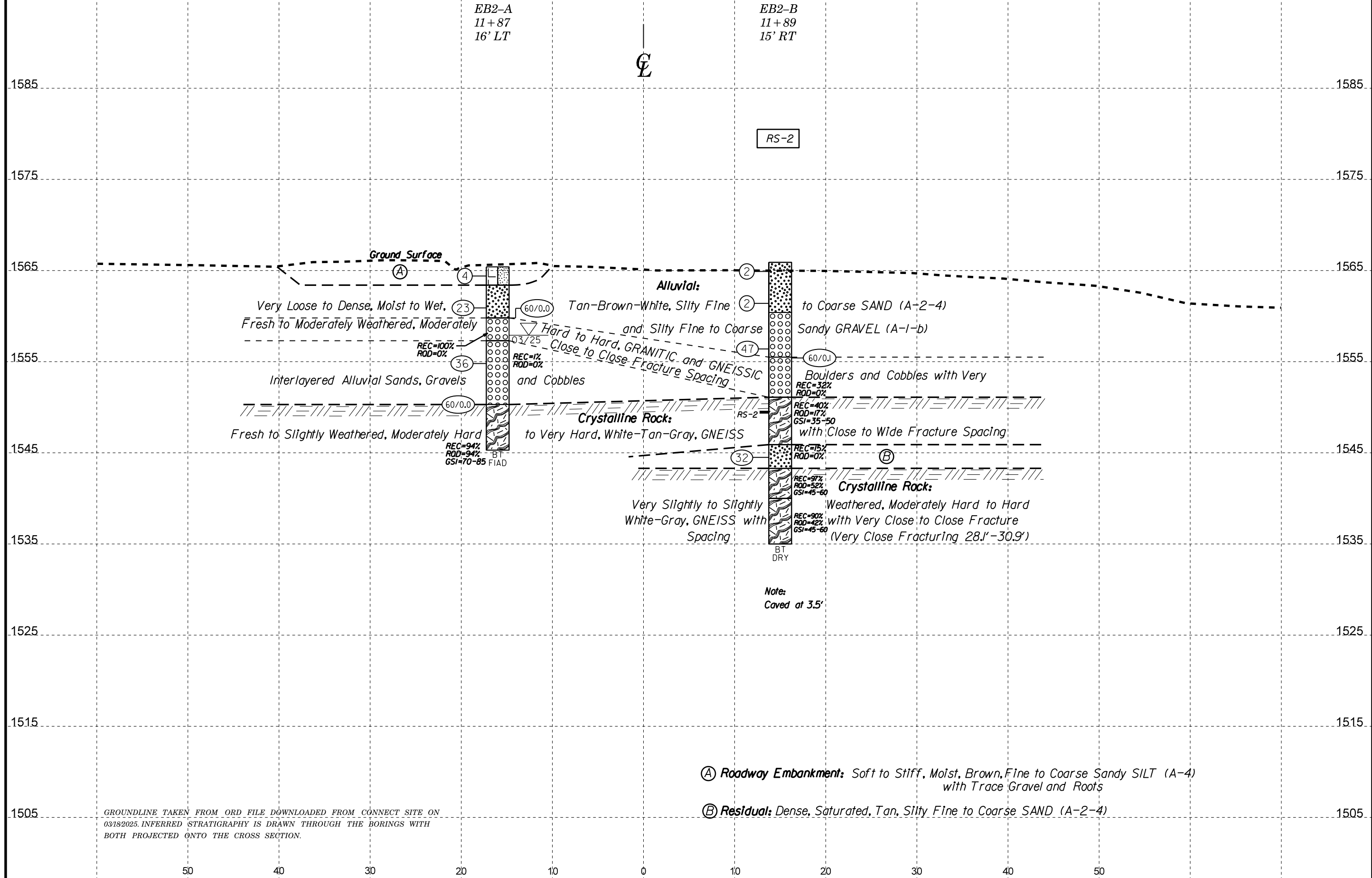
- (A) Alluvial: Soft, Moist, Brown, Fine to Coarse Sandy SILT (A-4) with Trace Gravel and Roots
- (B) Alluvial: Slightly Weathered, Hard, Pink-Gray, GNEISSIC Boulder, REC=83%, RQD=0%
- (C) Crystalline Rock: Slightly to Moderately Weathered, Moderately Hard to Hard, Tan-Gray, GNEISS with Very Close to Moderately Close Fracture Spacing
REC=88%, RQD=0%, GSI=35-50
- (D) Weathered Rock: White BIOTITE GNEISS

1510 GROUNDLINE TAKEN FROM ORD FILE DOWNLOADED FROM CONNECT SITE ON 03/18/2025. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

60 50 40 30 20 10 0 10 20 30 40 50 60



PROJECT REFERENCE NO.	SHEET NO.
DF18311.2014030.PR	6
CROSS SECTION THROUGH	
-L- STATION 12+00.00	
SKEW=90°	



GROUNDLINE TAKEN FROM ORD FILE DOWNLOADED FROM CONNECT SITE ON 03/18/2025. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

- Ⓐ **Roadway Embankment:** Soft to Stiff, Moist, Brown, Fine to Coarse Sandy SILT (A-4) with Trace Gravel and Roots
- Ⓑ **Residual:** Dense, Saturated, Tan, Silty Fine to Coarse SAND (A-2-4)

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS DF18311.2014030.PR		TIP N/A		COUNTY CALDWELL		GEOLOGIST C. Brake									
SITE DESCRIPTION Bridge 130161 on SR 1358 (Edgemont Church Pl.) over Wilson Creek							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 11+00		OFFSET 9 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 1,563.9 ft		TOTAL DEPTH 19.6 ft		NORTHING 831,132		EASTING 1,179,452									
DRILL RIG/HAMMER EFF./DATE F&R7348 CME-750X 87% 12/20/2024				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic									
DRILLER S. Davis		START DATE 03/26/25		COMP. DATE 03/26/25		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					
1565	1,563.9	0.0	2	8	6									GROUND SURFACE	0.0
														ROADWAY EMBANKMENT Brown, Fine to Coarse Sandy SILT (A-4) with Trace Gravel and Roots	
1560	1,560.4	3.5	29	12	22									ALLUVIAL Tan, Silty Fine to Coarse SAND (A-2-4) with Some Gravel	4.5
														ALLUVIAL Slightly Weathered, Hard, Pink-Gray, GNEISSIC Boulder REC=83%, RQD=0% RS-1: qu=10,840 psi	6.7
1555	1,557.3	6.6	60/0.1											CRYSTALLINE ROCK Slightly to Moderately Weathered, Moderately Hard to Hard, White-Gray GNEISS with Very Close to Moderately Close Fracture Spacing REC=88%, RQD=0%, GSI=35-50	9.6
														Slightly to Moderately Severe Weathered, Moderately Hard to Hard, Tan-Gray GNEISS with Close to Moderately Close Fracture Spacing and Vertical Fractures from 11.1' to 12.1'	14.6
1550														RESIDUAL REC=100%, RQD=76%, GSI=45-60	15.6
														Fresh to Slightly Weathered, Hard to Very Hard, White-Gray, GNEISS with Wide to Very Close Fracture Spacing REC=100%, RQD=98%, GSI=75-90	19.6
1545														Boring Terminated at Elevation 1,544.3 ft in Crystalline Rock GNEISS	
Notes: 1. Auger Refusal at 6.6' 2. Start Coring at 6.7'															

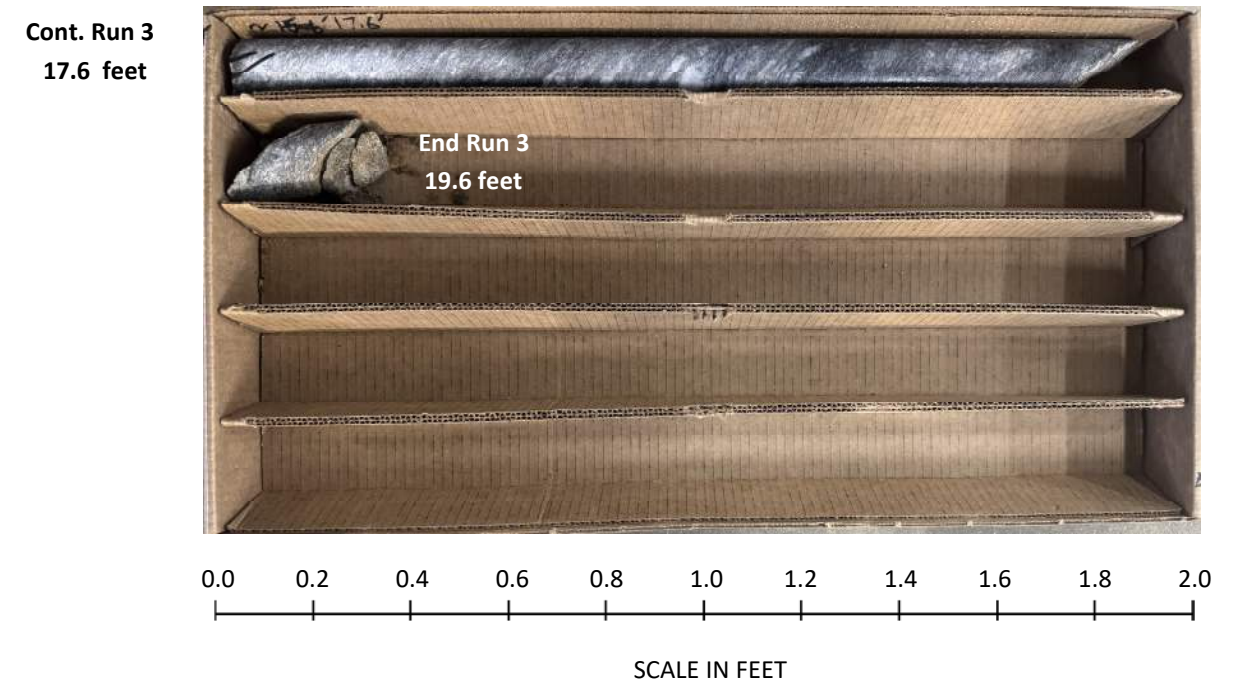
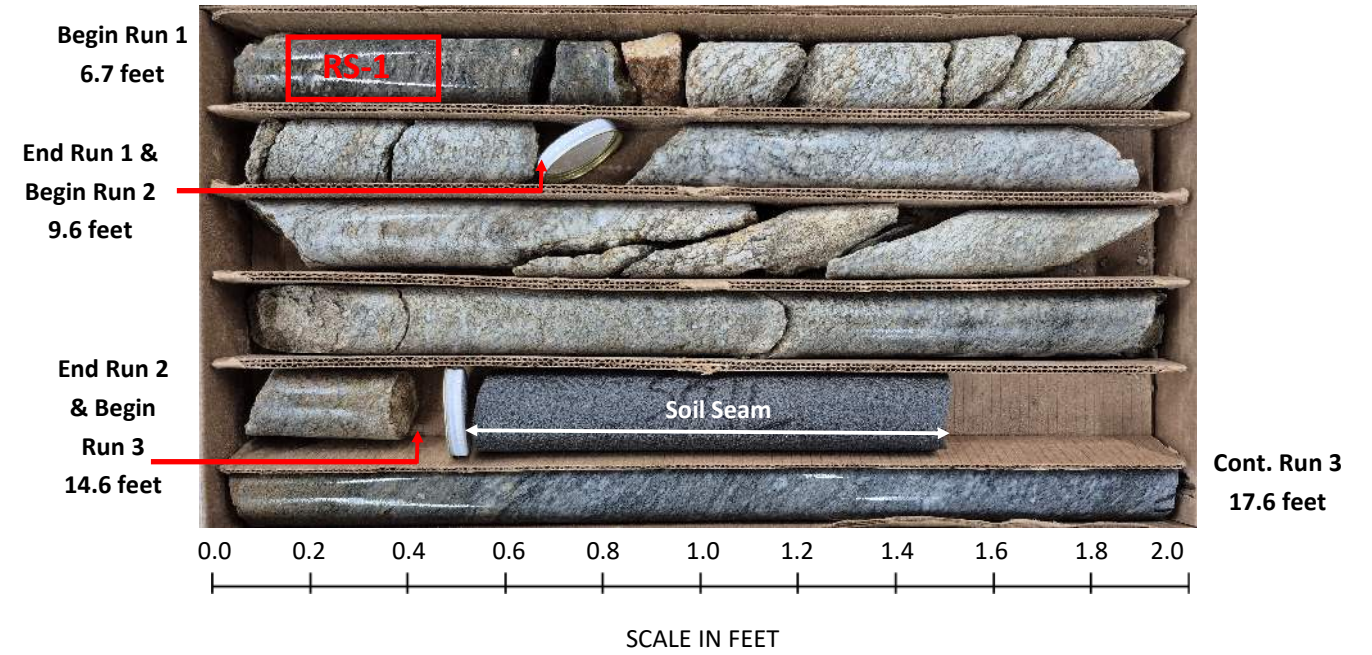
WBS DF18311.2014030.PR		TIP N/A		COUNTY CALDWELL		GEOLOGIST C. Brake				
SITE DESCRIPTION Bridge 130161 on SR 1358 (Edgemont Church Pl.) over Wilson Creek							GROUND WTR (ft)			
BORING NO. EB1-A		STATION 11+00		OFFSET 9 ft LT		ALIGNMENT -L-				
COLLAR ELEV. 1,563.9 ft		TOTAL DEPTH 19.6 ft		NORTHING 831,132		EASTING 1,179,452				
DRILL RIG/HAMMER EFF./DATE F&R7348 CME-750X 87% 12/20/2024				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic				
DRILLER S. Davis		START DATE 03/26/25		COMP. DATE 03/26/25		SURFACE WATER DEPTH N/A				
CORE SIZE NQ3		TOTAL RUN 12.9 ft		RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.			
1557.2	1,557.2	6.7	2.9	2:22/1.0	(2.5) 86%	(0.0) 0%	RS-1	(1.0) 83%	(0.0) 0%	1557.2
				1:25/1.0				(1.5) 88%	(0.0) 0%	1556.0
1555	1,554.3	9.6	5.0	0:37/1.0	(5.0) 100%	(3.8) 76%		(5.0) 100%	(3.8) 76%	1554.3
				1:28/0.9						
				1:28/1.0						
				1:31/1.0						
				1:46/1.0						
1550	1,549.3	14.6	5.0	1:50/1.0	(4.0) 80%	(3.9) 78%		(0.0) 0%	(0.0) 0%	1549.3
				1:09/1.0				(4.0) 100%	(3.9) 98%	1548.3
				1:26/1.0						
1545	1,544.3	19.6		1:33/1.0						1544.3
Boring Terminated at Elevation 1,544.3 ft in Crystalline Rock GNEISS										
Notes: 1. Auger Refusal at 6.6' 2. Start Coring at 6.7'										

NCDOT BORE DOUBLE DF18311.2014030.PR_GEO_BH_BRDG0161.GPJ_NC_DOT.GDT 5/6/25

NCDOT BORE DOUBLE DF18311.2014030.PR_GEO_BH_BRDG0161.GPJ_NC_DOT.GDT 5/6/25



CORE PHOTOGRAPHS:
Bridge 161 on SR 1358 over Wilson Creek
EB1-A: -L- Station 11+00, 9' LT



GEOTECHNICAL BORING REPORT BORE LOG

WBS DF18311.2014030.PR		TIP N/A		COUNTY CALDWELL		GEOLOGIST C. Brake													
SITE DESCRIPTION Bridge 130161 on SR 1358 (Edgemont Church Pl.) over Wilson Creek							GROUND WTR (ft)												
BORING NO. EB1-B		STATION 11+00		OFFSET 15 ft RT		ALIGNMENT -L-													
COLLAR ELEV. 1,564.3 ft		TOTAL DEPTH 10.3 ft		NORTHING 831,109		EASTING 1,179,454													
DRILL RIG/HAMMER EFF./DATE F&R7348 CME-750X 87% 12/20/2024				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic													
DRILLER S. Davis		START DATE 03/25/25		COMP. DATE 03/25/25		SURFACE WATER DEPTH N/A													
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)					
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					ELEV. (ft)				
1565	1,564.3	0.0												1,564.3	0.0				
			1	1	2								1,562.3	2.0					
1560	1,560.8	3.5	7	10	13													1,555.8	8.5
1555	1,555.8	8.5	65	35/0.1										1,554.0	10.3				
	1,554.0	10.3	60/0.0											1,554.0	10.3				

NCDOT BORE DOUBLE DF18311.2014030.PR_GEO_BH_BRD0161.GPJ NC_DOT_GDT 5/5/25

GROUND SURFACE 0.0

ALLUVIAL
Brown, Fine to Coarse Sandy SILT (A-4) with Trace Gravel and Roots

WEATHERED ROCK
White BIOTITE GNEISS

Boring Terminated with Standard Penetration Test Refusal at Elevation 1,554.0 ft on Crystalline Rock BIOTITE GNEISS

Note:
Auger Refusal at 10.3'

GEOTECHNICAL BORING REPORT

BORE LOG

GEOTECHNICAL BORING REPORT

CORE LOG

WBS DF18311.2014030.PR		TIP N/A		COUNTY CALDWELL		GEOLOGIST C. Brake										
SITE DESCRIPTION Bridge 130161 on SR 1358 (Edgemont Church Pl.) over Wilson Creek							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 11+87		OFFSET 16 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,565.4 ft		TOTAL DEPTH 20.1 ft		NORTHING 831,145		EASTING 1,179,538										
DRILL RIG/HAMMER EFF./DATE F&R7348 CME-750X 87% 12/20/2024			DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 03/26/25		COMP. DATE 03/26/25		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						
1570																
1565	1,565.4	0.0	1	2	2									1,565.4	GROUND SURFACE	0.0
														1,563.4	ROADWAY EMBANKMENT Brown, Fine to Coarse Sandy SILT (A-4) with Trace Gravel and Roots	2.0
	1,561.9	3.5	12	12	11										ALLUVIAL Tan-Brown, Silty Fine to Coarse SAND (A-2-4)	
1560	1,559.8	5.6	60/0.0											1,559.8	ALLUVIAL Fresh to Moderately Weathered, GRANITIC and GNEISSIC Boulders and Cobbles with Very Close to Moderately Close Fracture Spacing REC=100%, RQD=0%	5.6
	1,555.8	9.6	15	20	16									1,557.3	Interlayered Alluvial Sands, Gravels, & Cobbles REC=1%, RQD=0%	8.1
1555																
1550	1,550.3	15.1	60/0.0											1,550.3	CRYSTALLINE ROCK Fresh to Slightly Weathered, Very Hard to Hard, White-Gray, GNEISS with Wide Fracture Spacing REC=94%, RQD=94%, GSI=70-85	15.1
														1,545.3	Boring Terminated at Elevation 1,545.3 ft in Crystalline Rock GNEISS	20.1
Notes: 1. Auger Refusal at 5.6' 2. Start Coring at 5.6' 3. Switch to Casing Advancer at 15.1'																

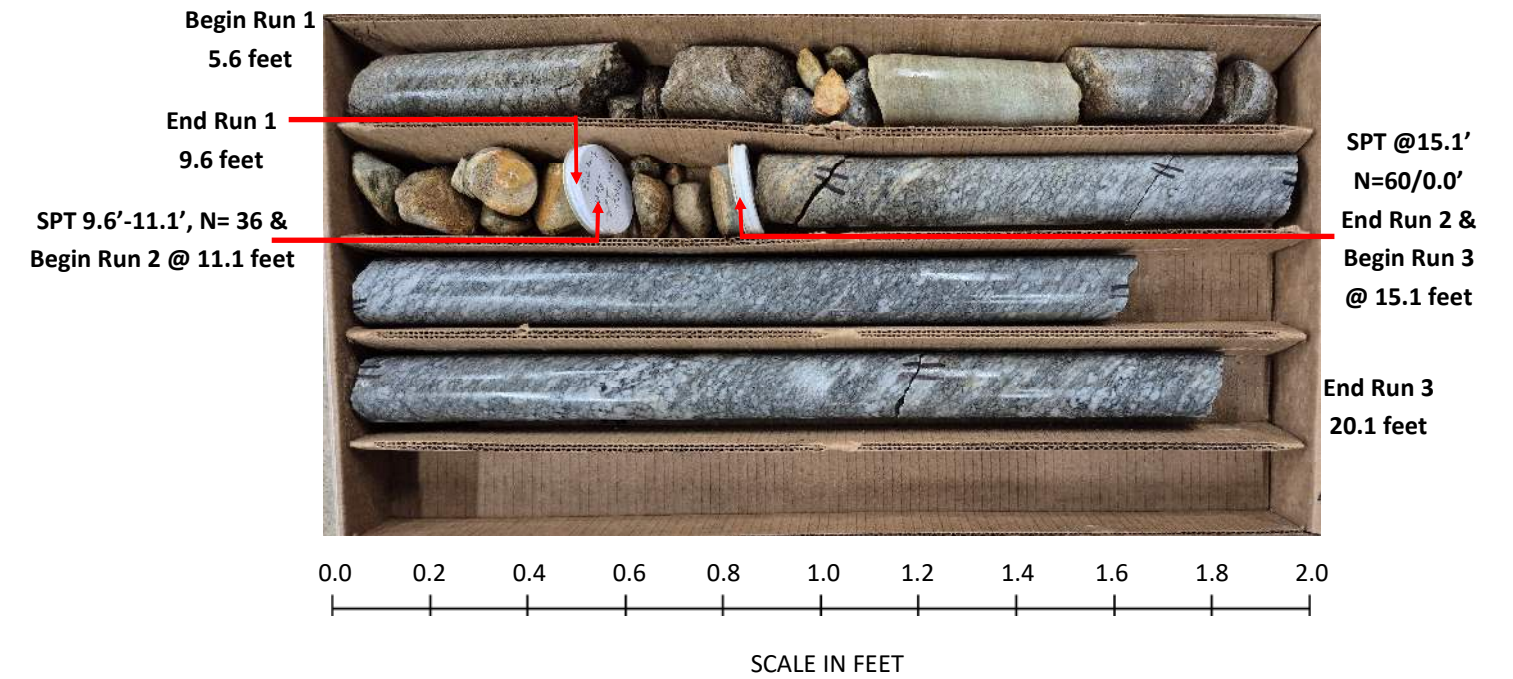
WBS DF18311.2014030.PR		TIP N/A		COUNTY CALDWELL		GEOLOGIST C. Brake					
SITE DESCRIPTION Bridge 130161 on SR 1358 (Edgemont Church Pl.) over Wilson Creek							GROUND WTR (ft)				
BORING NO. EB2-A		STATION 11+87		OFFSET 16 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 1,565.4 ft		TOTAL DEPTH 20.1 ft		NORTHING 831,145		EASTING 1,179,538					
DRILL RIG/HAMMER EFF./DATE F&R7348 CME-750X 87% 12/20/2024			DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic					
DRILLER S. Davis		START DATE 03/26/25		COMP. DATE 03/26/25		SURFACE WATER DEPTH N/A					
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) %			
1559.8	1,559.8	5.6	4.0	N=60/0.0 1:20/1.0 1:05/1.0 0:56/1.0 0:48/1.0	(2.5) 63%	(0.4) 10%	(2.5) 100%	(0.0) 0%		Begin Coring @ 5.6 ft	5.6
										Fresh to Moderately Weathered, GRANITIC and GNEISSIC Boulders and Cobbles with Very Close to Moderately Close Fracture Spacing	
										Interlayered Alluvial Sands, Gravels, & Cobbles	8.1
1555	1,555.8	9.6		N=36			(0.1) 1%	(0.0) 0%			
	1,554.3	11.1	4.0	0:45/1.0 0:34/1.0 0:44/1.0 0:44/1.0	(0.1) 3%	(0.0) 0%					
1550	1,550.3	15.1	5.0	N=60/0.0 1:11/1.0 1:55/1.0 2:24/1.0 2:37/1.0 3:40/1.0	(4.7) 94%	(4.7) 94%	(4.7) 94%	(4.7) 94%		CRYSTALLINE ROCK Fresh to Slightly Weathered, Very Hard to Hard, White-Gray, GNEISS with Wide Fracture Spacing GSI=70-85	15.1
	1,545.3	20.1								Boring Terminated at Elevation 1,545.3 ft in Crystalline Rock GNEISS	20.1
Notes: 1. Auger Refusal at 5.6' 2. Start Coring at 5.6' 3. Switch to Casing Advancer at 15.1'											

NCDOT BORE DOUBLE DF18311.2014030.PR_GEO_BH_BRDG0161.GPJ_NC_DOT.GDT 5/6/25

NCDOT CORE DOUBLE DF18311.2014030.PR_GEO_BH_BRDG0161.GPJ_NC_DOT.GDT 5/6/25



**CORE PHOTOGRAPHS:
Bridge 161 on SR 1358 over Wilson Creek
EB2-A: -L- Station 11+87, 16' LT**



GEOTECHNICAL BORING REPORT

BORE LOG

GEOTECHNICAL BORING REPORT

CORE LOG

WBS DF18311.2014030.PR		TIP N/A		COUNTY CALDWELL		GEOLOGIST C. Brake									
SITE DESCRIPTION Bridge 130161 on SR 1358 (Edgemont Church Pl.) over Wilson Creek						GROUND WTR (ft)									
BORING NO. EB2-B		STATION 11+89		OFFSET 15 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 1,565.9 ft		TOTAL DEPTH 30.9 ft		NORTHING 831,114		EASTING 1,179,542									
DRILL RIG/HAMMER EFF./DATE F&R7348 CME-750X 87% 12/20/2024				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic									
DRILLER S. Davis		START DATE 03/27/25		COMP. DATE 03/27/25		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					
1570															
	1,565.9	0.0												1,565.9	0.0
			WOH	WOH	2										
1565															
	1,562.4	3.5	2	1	1										
1560															
	1,557.4	8.5	35	27	20										
1555															
	1,555.5	10.4	60/0.1												
1550															
	1,545.5	20.4	19	18	14										
1545															
	1,543.3														
1540															
	1,540.0														
1535															
	1,535.0														
Boring Terminated at Elevation 1,535.0 ft in Crystalline Rock GNEISS															
Notes: 1. Harder Drilling Indicated by Driller at 5.5' 2. Auger Refusal at 10.4' 3. Start Coring at 10.5' 4. Cave-in Depth at 3.5'															

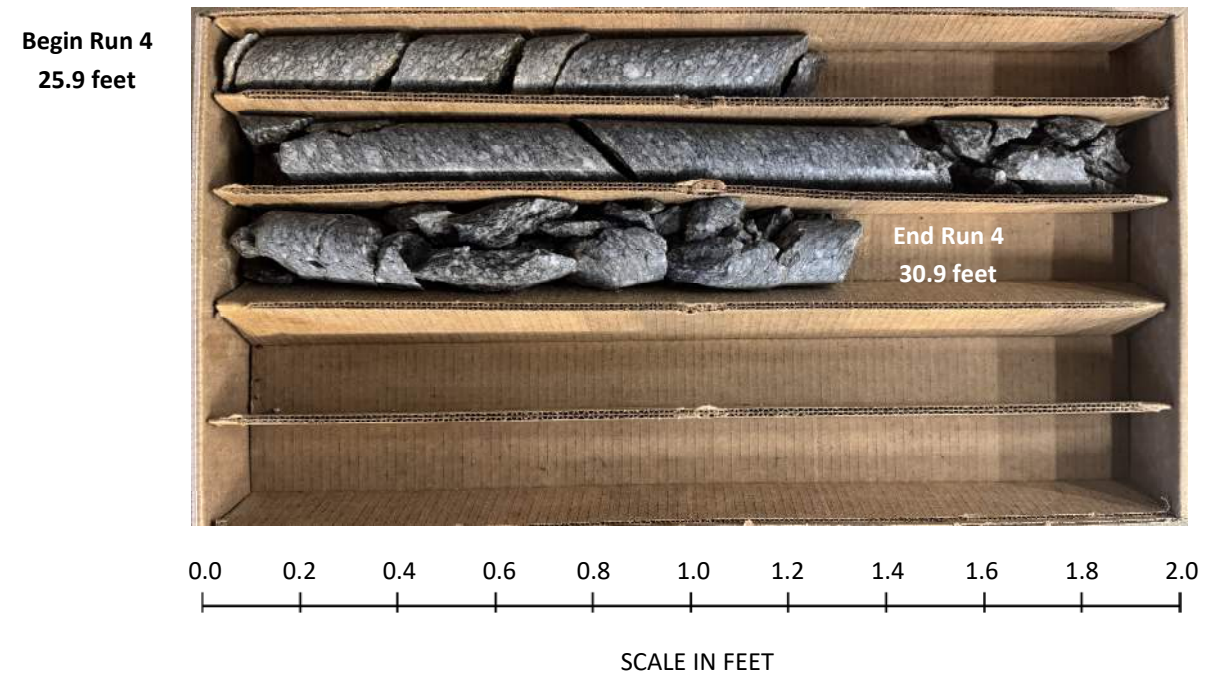
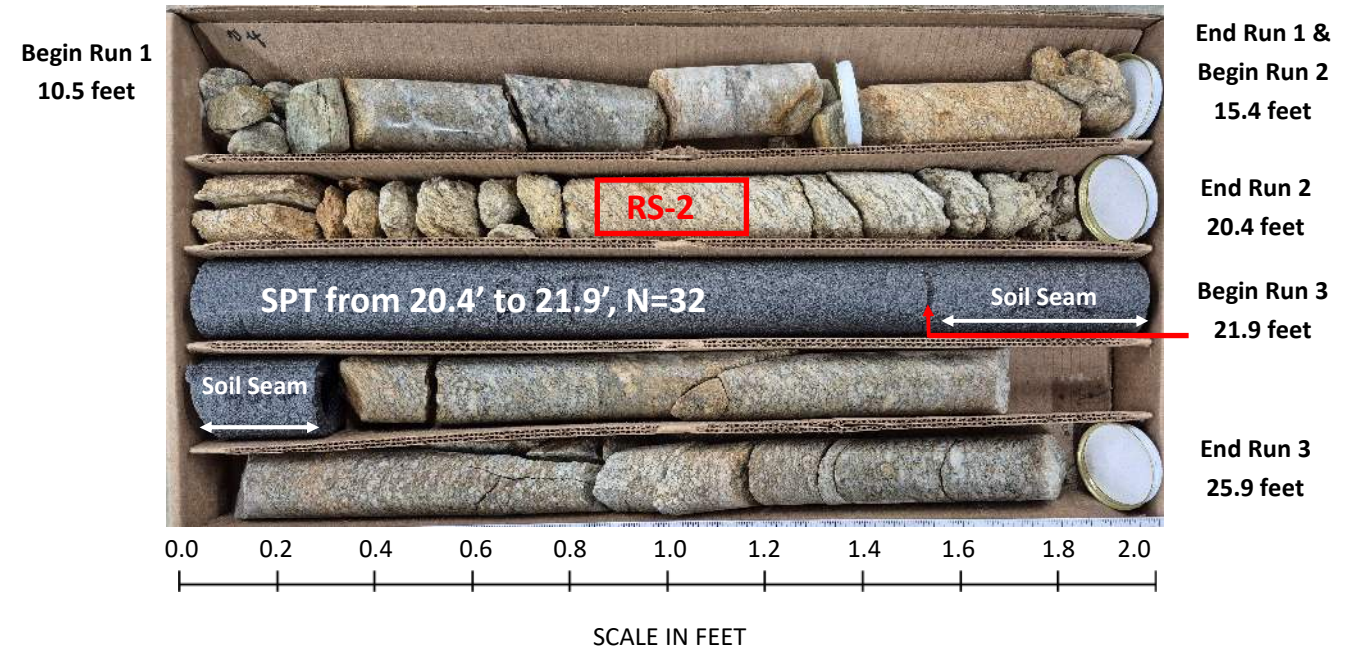
WBS DF18311.2014030.PR		TIP N/A		COUNTY CALDWELL		GEOLOGIST C. Brake								
SITE DESCRIPTION Bridge 130161 on SR 1358 (Edgemont Church Pl.) over Wilson Creek						GROUND WTR (ft)								
BORING NO. EB2-B		STATION 11+89		OFFSET 15 ft RT		ALIGNMENT -L-								
COLLAR ELEV. 1,565.9 ft		TOTAL DEPTH 30.9 ft		NORTHING 831,114		EASTING 1,179,542								
DRILL RIG/HAMMER EFF./DATE F&R7348 CME-750X 87% 12/20/2024				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic								
DRILLER S. Davis		START DATE 03/27/25		COMP. DATE 03/27/25		SURFACE WATER DEPTH N/A								
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)		
					REC. (%)	RQD (%)		REC. (%)	RQD (%)					
1555.4														
	1,555.4	10.5	4.9	0:31/0.9 1:25/1.0 0:47/1.0 0:43/1.0 1:03/1.0	(2.0) 41%	(0.3) 6%		(1.4) 33%	(0.0) 0%		Begin Coring @ 10.5 ft ALLUVIAL Slightly to Moderately Weathered, Moderately Hard to Hard, Granitic Alluvial Boulder with Very Close to Close Fracture Spacing	10.5		
1550														
	1,550.5	15.4	5.0	0:18/1.0 0:37/1.0 0:47/1.0 0:56/1.0 1:00/1.0	(1.8) 36%	(0.5) 10%	RS-2	(2.1) 40%	(0.9) 17%		CRYSTALLINE ROCK Moderately to Very Severely Weathered, Soft to Hard, White-Tan, GNEISS with Very Close to Close Fracture Spacing RS-2: 16.3'-16.6', qu=900 psi GSI=35-50	14.8		
1545														
	1,545.5	20.4		N=32				(0.4) 15%	(0.0) 0%		RESIDUAL Tan, Silty Fine to Coarse SAND (A-2-4)	20.0		
	1,544.0	21.9												
			4.0	1:32/1.0 1:39/1.0 1:28/1.0 1:38/1.0	(3.3) 83%	(1.8) 45%		(3.2) 97%	(1.7) 52%		CRYSTALLINE ROCK Very Slightly to Slightly Weathered, Moderately Hard to Hard, White-Gray GNEISS with Close Fracture Spacing GSI=45-60	22.6		
1540														
	1,540.0	25.9						(4.5) 90%	(2.1) 42%		Very Slightly to Slightly Weathered, Moderately Hard to Hard, White-Gray, GNEISS with Very Close to Moderately Close Fracture Spacing (Very Close Fracturing from 28.1'-30.9') GSI=45-60	25.9		
1535														
	1,535.0	30.9												
Boring Terminated at Elevation 1,535.0 ft in Crystalline Rock GNEISS														
Notes: 1. Harder Drilling Indicated by Driller at 5.5' 2. Auger Refusal at 10.4' 3. Start Coring at 10.5' 4. Cave-in Depth at 3.5'														

NCDOT BORE DOUBLE DF18311.2014030.PR_GEO_BH_BRD0161.GPJ NC_DOT.GDT 5/6/25

NCDOT CORE DOUBLE DF18311.2014030.PR_GEO_BH_BRD0161.GPJ NC_DOT.GDT 5/6/25



CORE PHOTOGRAPHS:
Bridge 161 on SR 1358 over Wilson Creek
EB2-B: -L- Station 11+89, 15' RT





<i>PROJECT REFERENCE NO.</i>	<i>SHEET NO.</i>
DF18311.2014030.PR	14

County: Caldwell

Description: Bridge 161 on SR 1358 (Edgemont Church Pl.) over Wilson Creek

ROCK TEST RESULTS															
<i>SAMPLE NO.</i>	<i>BORING NO.</i>	<i>ALIGNMENT</i>	<i>STATION</i>	<i>OFFSET</i>	<i>NORTH</i>	<i>EAST</i>	<i>DEPTH INTERVAL</i>	<i>ROCK TYPE</i>	<i>Geologic Map Unit</i>	<i>Run RQD</i>	<i>Length (in)</i>	<i>Diameter (in)</i>	<i>Unit Weight (pcf)</i>	<i>Unconfined Compressive Strength (psi)</i>	<i>GSI</i>
RS-1	EB1-A	-L-	11+00	9' Lt.	831,132	1,179,452	6.9-7.2'	Gneiss	Ybgg	0%	3.56	1.77	162.9	10,840	45-60
RS-2	EB2-B	-L-	11+89	15' Rt.	831,114	1,179,542	16.3'-16.6'	Gneiss	Ybgg	10%	4.09	1.77	148.2	900	30-45

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

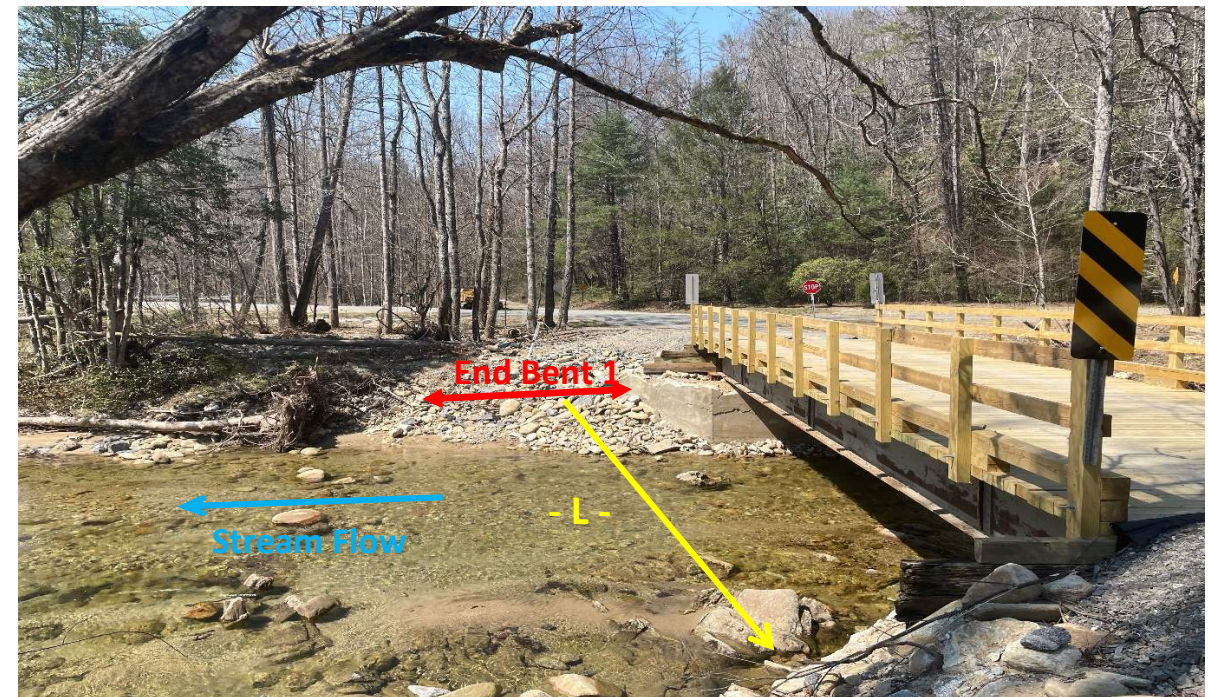
H. Sanchez
 Lab Manager, Certification No. 101-04-0603

C.Wang, P.E.
 Soils Engineer

**Bridge No. 161 on SR 1358 (Edgemont Church Pl) over Wilson Creek
SITE PHOTOGRAPHS**



Photograph No. 1: Looking east at the beginning of the existing bridge



Photograph No. 3: View looking northwest at the end of the existing bridge



Photograph No. 2: View from bridge looking east downstream



Photograph No. 4: Looking south downstream at the existing bridge