STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2577A	1	

REFERENCE: R-2577A

PROJECT: 37405

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY *FORSYTH*

PROJECT DESCRIPTION *US 158 (REIDSVILLE RD) FROM NORTH OF US 421/I-40 BUS. TO SR 1965 (BELEWS CREEK RD)*

SITE DESCRIPTION *DUAL BRIDGES ON US 158 (REIDSVILLE RD) OVER LOWERY MILL CREEK BETWEEN SR 2405 (OLD BELLOWS CREEK RD) AND SR 2405 (WILLIAM TUCKER ROAD)*

CONTENTS

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

B. FARMER

J. MIZE (2019)

S&ME PERSONELL (2019)

SUMMIT PERSONELL

INVESTIGATED BY *RK&K, LLP*

DRAWN BY *B. FARMER*

CHECKED BY *G. GOINS*

SUBMITTED BY *RK&K, LLP*

DATE *DECEMBER 2022*

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

NORTH CAROLINA PROFESSIONAL SEAL 041709 ENGINEER GREGORY K. GOINS

DocuSigned by:
Gregory Goins 12/14/2022
A40B119A1E2B43C... SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX	 25 MX	50 MX 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL PI	—		—	40 MX 10 MX	41 MN 10 MX	40 MX 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
	6 MX		NP											
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	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 (COHESIVE)	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

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	26 OR MORE	HIGH

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.

GRADATION

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.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	> 10%	> 20%	HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

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
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT / CPT / DPT / DMT / VST / PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

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
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] CME 550X
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [X] -N Q

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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 YEILD 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.

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 (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. *IF TESTED, WOULD YIELD SPT REFUSAL*
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. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
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. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
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

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FOOT
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

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.

TERMS AND DEFINITIONS

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 (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.

BENCH MARK: N/A

ELEVATION: N/A FEET

NOTES:

BORING ELEVATIONS FOR BORINGS L 139+00 AND L 141+00 WERE DETERMINED FROM THE PROVIDED TIN DATED 12/18/2020
ALL REMAINING BORING ELEVATIONS WERE DETERMINED USING A SURVEY GRADE GPS. TIN FILE: R2577A_ddc_tin.tin

ABBREVIATIONS:

FIAD - FILLED IMMEDIATELY AFTER DRILLING
CT - CORING TERMINATED
AR - AUGER AND STANDARD PENETRATION TEST REFUSAL

BORINGS AT EBI-B NBL, BI-B NBL, AND BI-A NBL WERE DRILLED IN OFFSET LOCATIONS DUE TO DRILLING COMPLICATIONS (SEE BORING LOGS)

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	2A

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

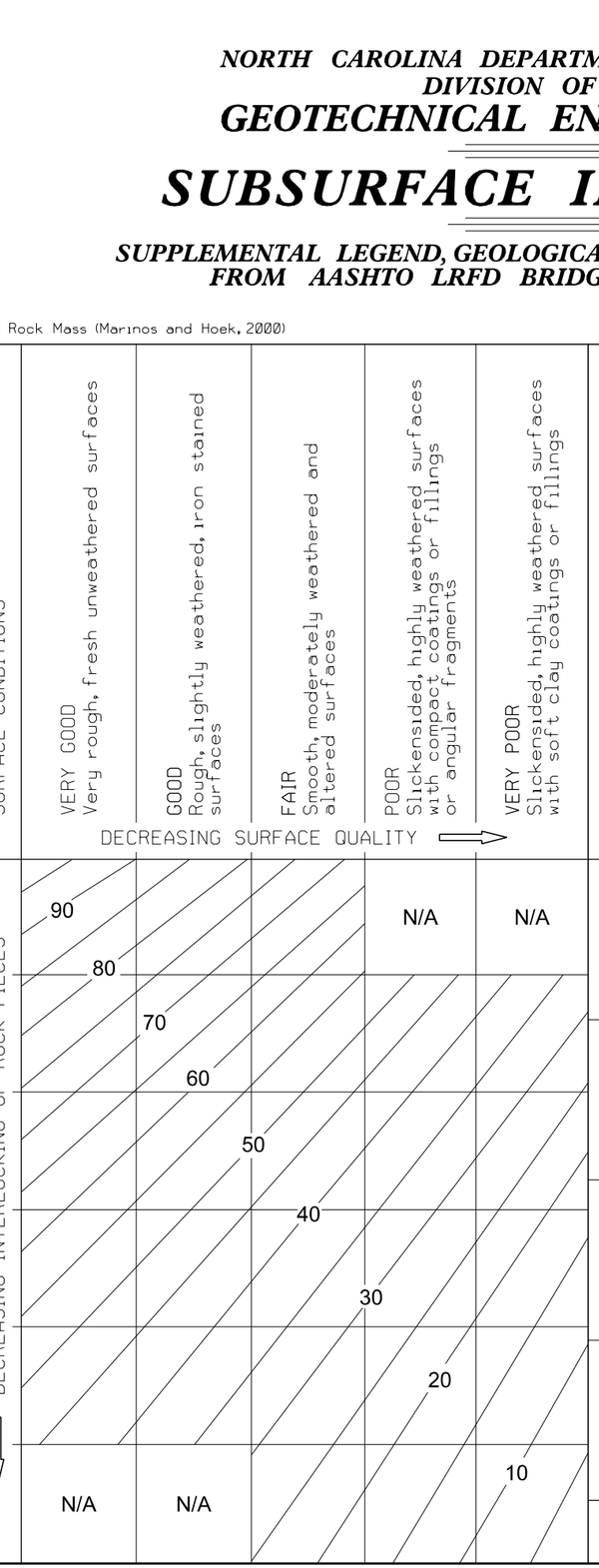
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

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.

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

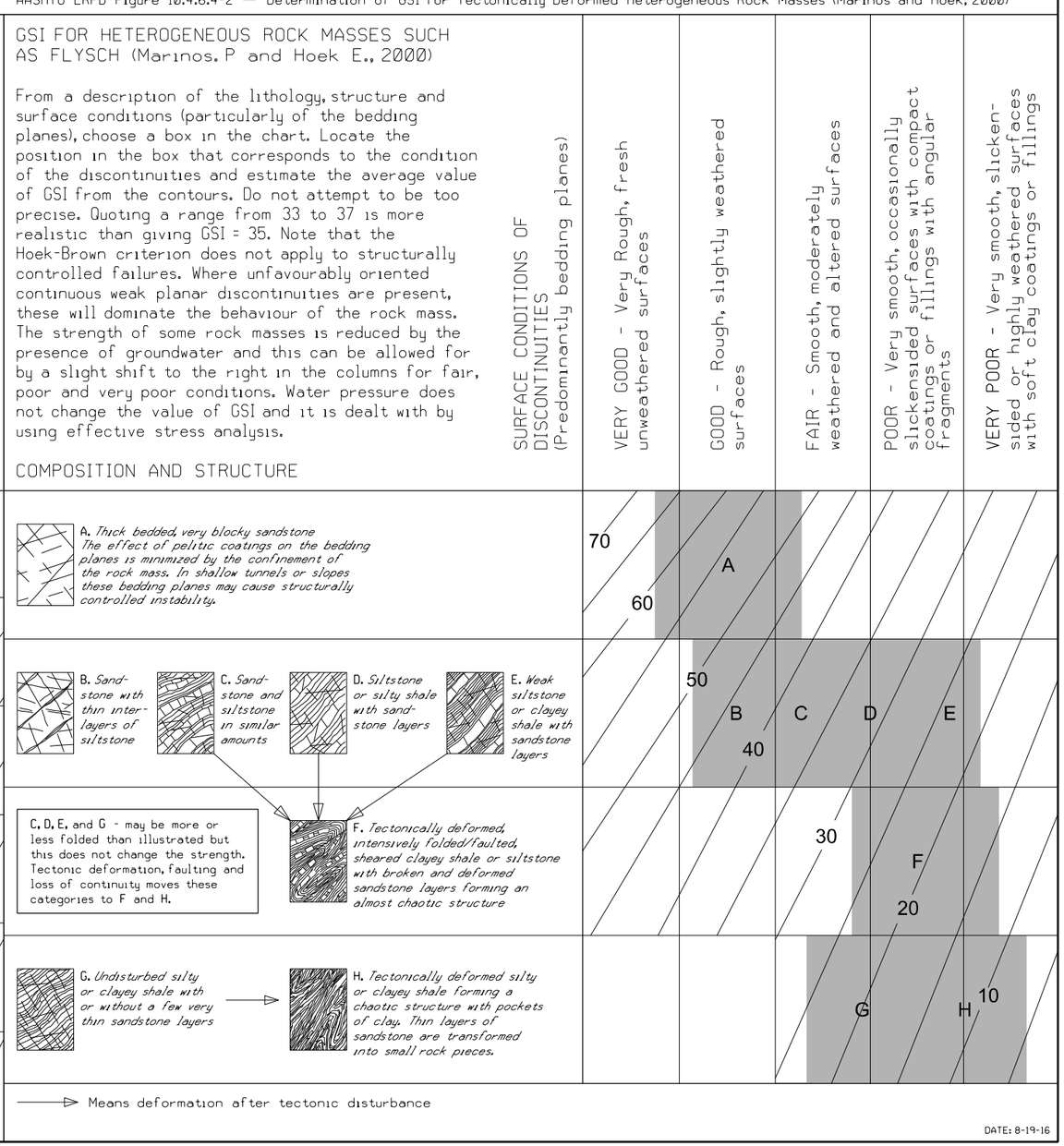


AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

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.

COMPOSITION AND STRUCTURE



→ Means deformation after tectonic disturbance

DATE: 8-19-16

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0 50 100
FEET

NAD 83

MATCHLINE -Y14- STA. 10+88

MATCHLINE -L- STA. 137+66

MATCHLINE -L- STA. 143+89

-Y14-

-L-

-Y13-

11+00

12+00

140+00

143+00

END BENT 1
139+54.50

BENT 1
140+64.50

END BENT 2
141+24.50

Left Lane

Right Lane

EBI-A SBL

EBI-B SBL

BI-A SBL

BI-B SBL

EB2-A SBL

BI-B NBL (core)

BI-A NBL (SPT)

L 139+50

L 141+00

EB2-B SBL

BI-A NBL (core)

EBI-B NBL (SPT)
EBI-B NBL (core)

BI-B NBL (SPT)
BI-B NBL (3)

EB2-B NBL

BI-B NBL (4)

LOWERY MILL CREEK

POND

LEFT LANE SKEW = 60°
RIGHT LANE SKEW = 60°

L 139+50 AND L 141+00 WERE DRILLED IN 2019

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

0	50	100

FEET

VE = 5:1

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	4

PROFILE THROUGH LEFT LANE BORINGS PROJECTED ALONG –L–

PROPOSED GRADE

EXISTING GROUND

PROPOSED BRIDGE

EB1-A
SBL
41 LT

B1-A
SBL
50 LT

EB2-B
SBL
8 LT

890
880
870
860
850
840
830
820
810

(A) ROADWAY EMBANKMENT Brown, medium stiff, silty fine to coarse sandy CLAY (A-6), trace mica

(B) RESIDUAL Brown, stiff, fine to coarse sandy and sandy clayey SILT (A-4, A-5), trace mica, trace rock fragments

(C) RESIDUAL Brown to orange, stiff to very stiff, fine to coarse sandy and sandy silty CLAY (A-6, A-7-5), trace mica, trace rock fragments

(D) ALLUVIAL Brown, stiff to very stiff, fine to coarse sandy CLAY (A-6), trace mica

(E) WEATHERED ROCK GNEISS

CRYSTALLINE ROCK GNEISS

NOTE: GROUND PROFILE DRAWN FROM PROVIDED TIN FILE ALONG CENTERLINE OF -L-

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS PROJECTED ONTO THE PROFILE

10
9
12
100/0.7
60/0.1
AR
DRY
6/22

5
20
60/0.0
CT
DRY
6/22

12
23
06/22
60/0.0
CT

136+00 137+00 138+00 139+00 140+00 141+00 142+00

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	5

PROFILE THROUGH RIGHT LANE
BORINGS PROJECTED ALONG –L–

0 50 100
FEET
VE = 5:1

ROCK TEST RESULTS

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	HEIGHT (in)	DIAMETER (in)	AREA (sq in)	H:D	Mass (g)	Unit Weight (pcf)	Load (lbs)	Comp. Strength (psi)
RS-1	140+73	16 RT	23.1-23.6	4.26	1.87	2.75	2.28	491.91	160.9	32950	11982

PROPOSED GRADE

EXISTING GROUND

EBI-B NBL (SPT+ core) 39 RT

BI-B NBL (SPT) 39 RT

BI-A NBL (SPT+ core) 16 RT RS-1

EB2-B NBL 46 RT

PROPOSED BRIDGE

PAVEMENT

PAVEMENT

Ⓐ *ROADWAY EMBANKMENT* Red–brown, medium stiff to stiff, fine to coarse sandy and sandy clayey SILT (A–4, A–5), trace gravel, trace mica, moist

Ⓑ *ROADWAY EMBANKMENT* Red to gray, medium dense, silty and clayey fine to coarse SAND (A–2–4, A–2–6), some gravel, moist

Ⓒ *RESIDUAL* Red, medium stiff to stiff, fine to coarse sandy and clayey SILT (A–4, A–5), trace rock fragments, trace mica, moist

Ⓓ *RESIDUAL* Red, very soft to medium stiff, fine to coarse sandy and sandy silty and silty CLAY (A–6, A–7–6), with interbedded layers of silt, trace mica, wet

Ⓔ *RESIDUAL* Gray to red, very dense, silty and clayey fine to coarse SAND (A–2–4, A–2–6), trace mica, trace to some rock fragments, moist

Ⓕ *WEATHERED ROCK* GNEISS

Ⓖ *CRYSTALLINE ROCK* GNEISS

NOTE: GROUND PROFILE DRAWN FROM PROVIDED TIN FILE ALONG CENTERLINE OF -L-

CT FIAD

CT FIAD

CT FIAD

AR DRY 06/22

EBI-B NBL AND BI-A NBL CORE BORING DRILLED AT AN OFFSET FROM SPT BORING

890 880 870 860 850 840 830 820 810

136+00 137+00 138+00 139+00 140+00 141+00 142+00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2577A	6

(A) ROADWAY EMBANKMENT Brown to black, loose to medium dense, clayey and silty fine to coarse SAND and sandy GRAVEL (A-1-b, A-2-4, A-2-6), little gravel, moist

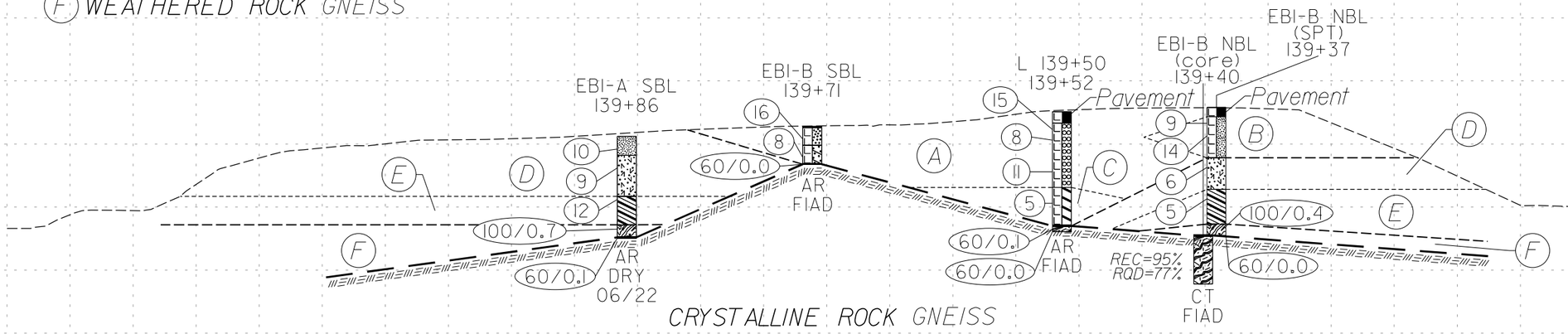
(B) ROADWAY EMBANKMENT Red-brown, stiff, fine to coarse sandy SILT (A-4), trace mica, trace gravel, moist

(C) ROADWAY EMBANKMENT Gray-brown, medium stiff, sandy CLAY (A-7-6), trace gravel, moist

(D) RESIDUAL Brown to red, medium stiff to stiff, clayey and fine to coarse sandy and sandy clayey SILT (A-4, A-5), trace mica, trace rock fragments, moist

(E) RESIDUAL Brown to red, medium stiff to stiff, fine to coarse sandy CLAY (A-6), trace mica, trace rock fragments, moist to wet

(F) WEATHERED ROCK GNEISS



CRYSTALLINE ROCK GNEISS

NOTE: GROUND LINE IS DRAWN FROM PROVIDED TIN FILE ALONG LINE OF BENT, SKEW APPROXIMATELY 60°

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS PROJECTED ONTO THE CORSS SECTION

EB1-B NBL CORE BORING DRILLED AT AN OFFSET FROM SPT BORING

CROSS SECTION ALONG END BENT 1 (139+54.50)

—L—

ROCK TEST RESULTS											
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	HEIGHT (in)	DIAMETER (in)	AREA (sq in)	H:D	Mass (g)	Unit Weight (pcf)	Load (lbs)	Comp. Strength (psi)
RS-1	140+73	16 RT	23.1-23.6	4.26	1.87	2.75	2.28	491.91	160.9	32950	11982
RS-2	140+98	50 LT	12.5-12.9	3.94	1.85	2.69	2.13	472.28	169.8	14600	5428

(A) ROADWAY EMBANKMENT Red-brown, medium stiff to stiff, sandy and fine to coarse sandy clayey SILT (A-4, A-5), trace gravel, trace to little mica, moist to wet

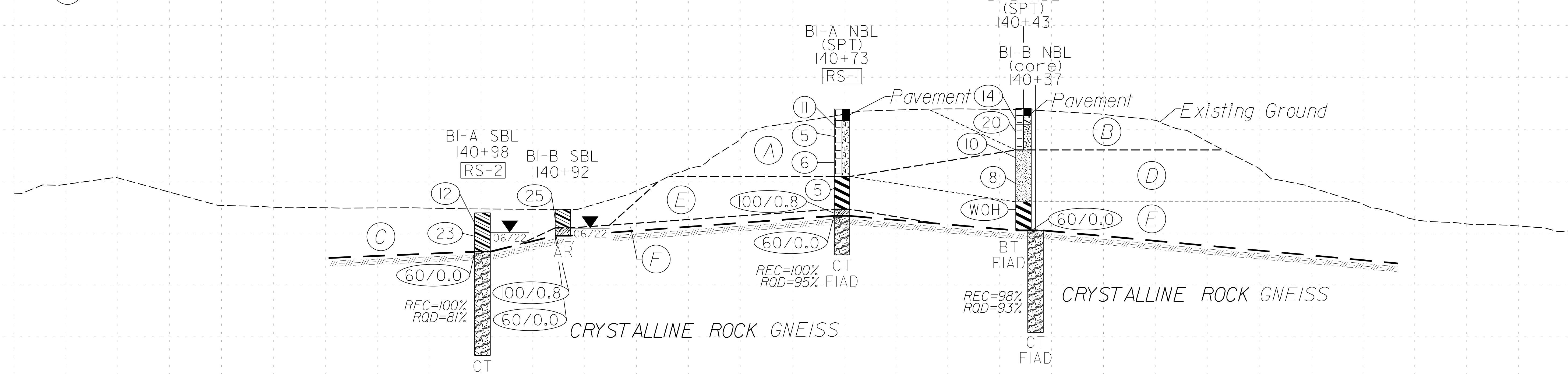
(B) ROADWAY EMBANKMENT Red to gray, medium dense, silty and clayey fine to coarse SAND (A-2-4, A-2-6), some gravel, moist

(C) ALLUVIAL Brown, stiff to very stiff, fine to coarse sandy CLAY (A-6), trace mica, little gravel, wet to saturated

(D) RESIDUAL Red, medium stiff to stiff, fine to coarse sandy SILT (A-4), trace mica, trace rock fragments, moist

(E) RESIDUAL Red, very soft to medium stiff, sandy and silty CLAY (A-7-5), trace mica, wet

(F) WEATHERED ROCK GNEISS



NOTE: GROUND LINE IS DRAWN FROM PROVIDED TIN FILE ALONG LINE OF BENT, SKEW APPROXIMATELY 60°

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS PROJECTED ONTO THE CORSS SECTION

B1-B NBL CORE BORING DRILLED AT AN OFFSET FROM SPT BORING

CROSS SECTION ALONG BENT 1 (140+64.50)

-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2577A	8

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

940
930
920
910
900
890
880
870
860
850
840
830
820

(A) ROADWAY EMBANKMENT Brown, medium stiff to stiff, silty and fine to coarse sandy CLAY (A-6), trace mica, wet

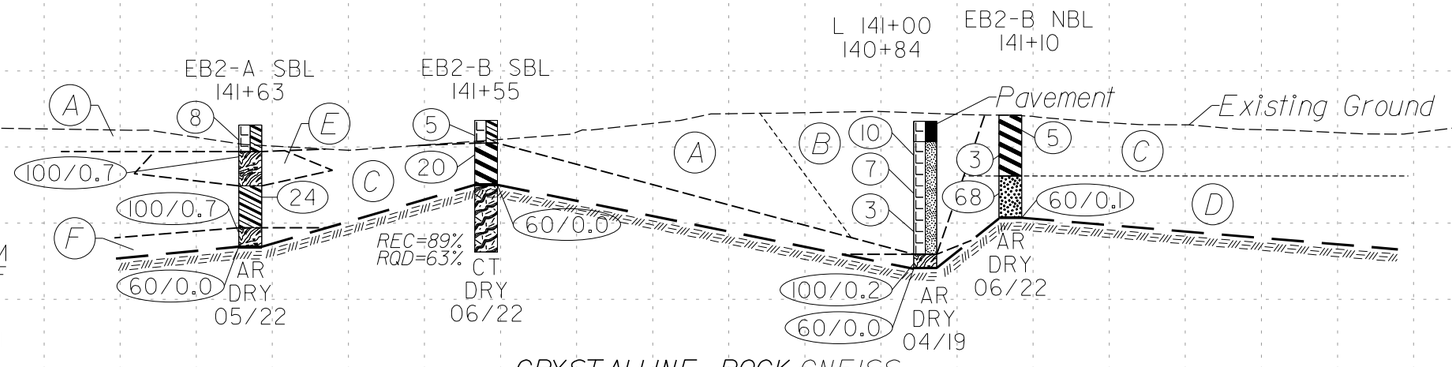
(B) ROADWAY EMBANKMENT Brown to red-brown, soft to stiff, sandy SILT (A-4), little mica, trace gravel, moist to wet

(C) RESIDUAL Orange to red to brown, soft to very stiff, fine to coarse sandy and sandy silty and silty CLAY (A-6, A-7-5), trace mica, trace roots, with interbedded layers of silt, moist to wet

(D) RESIDUAL Gray, very dense, silty fine to coarse SAND (A-2-4), trace mica, trace rock fragments, moist

(E) WEATHERED ROCK RIP RAP

(F) WEATHERED ROCK GNEISS



NOTE: GROUND LINE IS DRAWN FROM PROVIDED TIN FILE ALONG LINE OF BENT, SKEW APPROXIMATELY 60°

INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS PROJECTED ONTO THE CORSS SECTION

CRYSTALLINE ROCK GNEISS

CROSS SECTION ALONG END BENT 2 (141+24.50)

—L—

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB1-A SBL	**STATION** 139+86	**OFFSET** 41 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 861.2 ft	**TOTAL DEPTH** 16.1 ft	**NORTHING** 872,446	**EASTING** 1,657,159	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/07/22	**COMP. DATE** 06/07/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) — DEPTH (ft)
865										
										861.2 — GROUND SURFACE — 0.0
860	860.2	1.0	6	6	4	10		M		**RESIDUAL** Brown, fine to coarse sandy SILT (A-4), trace mica, trace rock fragments
	857.2	4.0	11	5	4	9		M		858.2 — 3.0 Brown, sandy clayey SILT (A-5), trace mica, trace rock fragments
855										
	852.2	9.0	13	7	5	12		M		851.7 — 9.5 Brown, fine to coarse sandy CLAY (A-6), trace mica, trace rock fragments
850										
	847.2	14.0	11	89/0.2		100/0.7				847.2 — 14.0 **WEATHERED ROCK**
	845.2	16.0	60/0.1			60/0.1				845.2 — GNEISS — 16.0 845.1 — 16.1 **CRYSTALLINE ROCK** GNEISS Boring Terminated with Standard Penetration Test Refusal at Elevation 845.1 ft in Crystalline Rock: GNEISS

NCDOT BORE DOUBLE R-2577A_GEO_BRDG.GPJ NC_DOT.GDT 7/21/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB1-B NBL (SPT)	**STATION** 139+37	**OFFSET** 38 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 865.8 ft	**TOTAL DEPTH** 22.9 ft	**NORTHING** 872,357	**EASTING** 1,657,188	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/16/22	**COMP. DATE** 06/16/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
870											
865										865.8 GROUND SURFACE	0.0
	864.3	1.5	6	4	5	9 14		M		864.3 **ROADWAY EMBANKMENT** 1.1' Asphalt 0.4' ABC	1.5
	862.3	3.5	6	8	6			M		Red-brown, fine to coarse sandy SILT (A-4), trace mica, trace gravel	
860											
	857.3	8.5	2	3	3	6		M		857.8 **RESIDUAL** Red, clayey SILT (A-5), trace mica	8.0
855											
	852.3	13.5	2	3	2	5		W		852.8 Red, fine to coarse sandy CLAY (A-6), trace mica	13.0
850											
	847.3	18.5	100/0.4			100/0.4				847.3 **WEATHERED ROCK** GNEISS	18.5
845	845.5	20.3	60/0.0			60/0.0				845.5 **CRYSTALLINE ROCK** GNEISS	20.3
										842.9 Boring Terminated with Standard Penetration Test Refusal at Elevation 842.9 ft on Crystalline Rock: GNEISS	22.9
										Core boring offset from SPT boring due to hydraulic hose leak and traffic control time restrictions.	

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB1-B NBL (core)	**STATION** 139+40	**OFFSET** 38 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 865.7 ft	**TOTAL DEPTH** 28.0 ft	**NORTHING** 872,360	**EASTING** 1,657,190	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/17/22	**COMP. DATE** 06/17/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
870										
865										865.7 GROUND SURFACE 0.0
										SPT completed in boring EB1-B NBL (SPT)
860										
855										
850										
845										845.4 20.3
										CRYSTALLINE ROCK GNEISS
840										837.7 28.0
										Boring Terminated at Elevation 837.7 ft in Crystalline Rock: GNEISS
										Core boring offset from SPT boring due to hydraulic hose leak and traffic control time restrictions.

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB1-B NBL (SPT)	**STATION** 139+37	**OFFSET** 38 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 865.8 ft	**TOTAL DEPTH** 20.3 ft	**NORTHING** 872,357	**EASTING** 1,657,188	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/16/22	**COMP. DATE** 06/16/22	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ2	**TOTAL RUN** 2.5 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
845.4											Begin Coring @ 20.4 ft
	845.4	20.4	2.5		(2.5) 100%	(2.5) 100%		(2.5) 100%	(2.5) 100%		**CRYSTALLINE ROCK**
	842.9	22.9									ELEV. (ft) 842.9 — DEPTH (ft) 22.9 Black, white, slight weathering, hard, moderately close fracture spacing, GNEISS GSI=60 to 70 Boring Terminated with Standard Penetration Test Refusal at Elevation 845.5 ft on Crystalline Rock: GNEISS Core boring offset from SPT boring due to hydraulic hose leak and traffic control time restrictions.

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer								
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek										**GROUND WTR (ft)**	
BORING NO. EB1-B NBL (core)	**STATION** 139+40	**OFFSET** 38 ft RT	**ALIGNMENT** -L-							**0 HR.**	N/A
COLLAR ELEV. 865.7 ft	**TOTAL DEPTH** 28.0 ft	**NORTHING** 872,360	**EASTING** 1,657,190							**24 HR.**	N/A
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic								
DRILLER M. Moseley	**START DATE** 06/17/22	**COMP. DATE** 06/17/22	**SURFACE WATER DEPTH** N/A								
CORE SIZE NQ2	**TOTAL RUN** 7.7 ft										

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
845											Begin Coring @ 20.3 ft
	845.4	20.3	2.7	01:01/0.7 01:35/1.0 02:58/1.0	(2.3) 85%	(1.2) 44%		(7.3) 95%	(5.9) 77%		845.4 **CRYSTALLINE ROCK** 20.3 Black, white, slight to moderate weathering, hard, close fracture spacing, BIOTITE GNEISS GSI=60 to 70
	842.7	23.0									
840			5.0	01:14/1.0 01:54/1.0 02:39/1.0 02:47/1.0 04:43/1.0	(5.0) 100%	(4.7) 94%					
	837.7	28.0									837.7 28.0 Boring Terminated at Elevation 837.7 ft in Crystalline Rock: GNEISS Core boring offset from SPT boring due to hydraulic hose leak and traffic control time restrictions.

CORE PHOTOGRAPHS

EB1-B NBL (SPT)

-L- 139+37 38 RT

BOX 1: 20.4-22.9 FEET

CORE PHOTOGRAPHS

EB1-B NBL (core)

-L- 139+40 38 RT

BOX 1: 20.3-28.0 FEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB1-B SBL	**STATION** 139+71	**OFFSET** 17 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 862.8 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 872,418	**EASTING** 1,657,168	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/06/22	**COMP. DATE** 06/06/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
865											
	862.8	0.0								862.8 GROUND SURFACE	0.0
	861.8	1.0								**ROADWAY EMBANKMENT** 0.2' Gravel Driveway	0.2
860			15	7	9	16		M		859.8 Brown, silty fine to coarse SAND (A-2-4), little gravel	3.0
	858.9	3.9	8	4	4	8		M		856.8 Brown-red, clayey fine to coarse SAND (A-2-6), little gravel	6.0
	856.8	6.0	60/0.0			60/0.0				Boring Terminated with Standard Penetration Test Refusal at Elevation 856.8 ft on Crystalline Rock: GNEISS	

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** J Mize	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. L 139+50	**STATION** 139+52	**OFFSET** 17 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 865.1 ft	**TOTAL DEPTH** 19.0 ft	**NORTHING** 872,382	**EASTING** 1,657,182	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER T Williams	**START DATE** 04/23/19	**COMP. DATE** 04/23/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
870											
865										865.1 GROUND SURFACE	0.0
	863.3	1.8								0.6' Asphalt, 1.2' ABC	
	861.6	3.5	12	8	7	15		M		863.3 **ROADWAY EMBANKMENT** Brown-black, loose to medium dense, sandy GRAVEL (A-1-b)	1.8
860			5	4	4	8		M			
	856.6	8.5	8	5	6	11		M		853.1 Gray-brown, medium stiff, sandy CLAY (A-7-6), trace gravel	12.0
855											
	851.6	13.5	2	3	2	5		M			
850										847.0	18.1
	846.6	18.5	60/0.1			60/0.1				846.1 **CRYSTALLINE ROCK** GRANITE	19.0
	846.1	19.0	60/0.0			60/0.0				Boring Terminated at Elevation 846.1 ft in Crystalline Rock: GRANITE	
										Boring elevation determined from existing TIN dated 12/18/2020	

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-A NBL (SPT)	**STATION** 140+73	**OFFSET** 16 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 863.9 ft	**TOTAL DEPTH** 28.1 ft	**NORTHING** 872,476	**EASTING** 1,657,259	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/06/22	**COMP. DATE** 06/06/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
865										863.9 / 0.0 GROUND SURFACE
	861.7	2.2								**ROADWAY EMBANKMENT**
			6	6	5	11		M		861.7 / 2.2 1.4' Asphalt, 0.8' ABC
860	859.6	4.3								Red-brown, fine to coarse sandy clayey SILT (A-5), trace gravel, trace mica
			2	2	3	5		M		
855	854.6	9.3								
			2	3	3	6				
850	849.6	14.3								850.9 / 13.0 **RESIDUAL**
			2	2	3	5		W		Red, silty CLAY (A-7-5), trace mica
845	844.6	19.3								844.6 / 19.3
	843.6	20.3	46	54/0.3		100/0.8				843.3 / 20.6 **WEATHERED ROCK** GNEISS
			60/0.0			60/0.0				**CRYSTALLINE ROCK** GNEISS
840							RS-1			
										835.8 / 28.1 Boring Terminated at Elevation 835.8 ft in Crystalline Rock: GNEISS
										Core boring offset from SPT boring due to damaged (loose diamonds) core bit.

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-A NBL (core)	**STATION** 140+71	**OFFSET** 16 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 863.9 ft	**TOTAL DEPTH** 31.0 ft	**NORTHING** 872,474	**EASTING** 1,657,257	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/07/22	**COMP. DATE** 06/07/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
865										863.9 / 0.0 GROUND SURFACE
										SPT completed in boring B1-A NBL (SPT)
860										
855										
850										
845										843.2 / 20.7 **CRYSTALLINE ROCK** GNEISS
840										
835										835.9 / 28.0 Metal object lodged in coring equipment
										832.9 / 31.0 Boring Terminated at Elevation 832.9 ft in Crystalline Rock: GNEISS
										Metal object lodged in coring equipment, could not continue rock coring.

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-A NBL (SPT)	**STATION** 140+73	**OFFSET** 16 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 863.9 ft	**TOTAL DEPTH** 28.1 ft	**NORTHING** 872,476	**EASTING** 1,657,259	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/06/22	**COMP. DATE** 06/06/22	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 7.5 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
843.3											Begin Coring @ 20.6 ft
	843.3	20.6	2.5	04:07/1.0 04:56/1.0 02:40/0.5	(2.5) 100%	(2.5) 100%		(7.5) 100%	(7.1) 95%		**CRYSTALLINE ROCK** (ELEV. 843.3 ft, DEPTH 20.6 ft) Gray, black, fresh to very slight weathering, hard, close to moderately close fracture spacing, GNEISS GSI=80 to 90
840	840.8	23.1	5.0	03:53/1.0 05:07/1.0 02:57/1.0 04:36/1.0 07:33/1.0	(5.0) 100%	(4.6) 92%	RS-1				
	835.8	28.1									(835.8 ft, DEPTH 28.1 ft) Boring Terminated at Elevation 835.8 ft in Crystalline Rock: GNEISS Core boring offset from SPT boring due to damaged (loose diamonds) core bit.

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-A NBL (core)	**STATION** 140+71	**OFFSET** 16 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 863.9 ft	**TOTAL DEPTH** 31.0 ft	**NORTHING** 872,474	**EASTING** 1,657,257	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/07/22	**COMP. DATE** 06/07/22	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 10.3 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
843.2											Begin Coring @ 20.7 ft
	843.2	20.7	2.5	08:55/1.0 10:40/1.0 03:48/0.5	(2.5) 100%	(1.9) 76%		(7.3) 100%	(6.6) 90%		**CRYSTALLINE ROCK** (ELEV. 843.2 ft, DEPTH 20.7 ft) Black, gray, fresh to very slight weathering, hard, close to moderately close fracture spacing, GNEISS GSI=60 to 70 Lost Circulation ~27'
840	840.7	23.2	4.8	06:22/1.0 06:06/1.0 06:18/1.0 04:15/1.0 04:51/1.0	(4.8) 100%	(4.7) 98%					
	835.9	28.0									(835.9 ft, DEPTH 28.0 ft) Metal object lodged in coring equipment
835	832.9	31.0	3.0	10:10/1.0 09:21/1.0 04:22/1.0	(0.0) 0%	(0.0) 0%					(832.9 ft, DEPTH 31.0 ft) Boring Terminated at Elevation 832.9 ft in Crystalline Rock: GNEISS Metal object lodged in coring equipment, could not continue rock coring.

CORE PHOTOGRAPHS

B1-A NBL (SPT)

-L- 140+73 16 RT

BOX 1: 20.6-31.0 FEET

CORE PHOTOGRAPHS

B1-A NBL (core)

-L- 140+71 16 RT

BOX 1: 20.7-28.2 FEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-A SBL	**STATION** 140+98	**OFFSET** 50 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 843.9 ft	**TOTAL DEPTH** 27.5 ft	**NORTHING** 872,537	**EASTING** 1,657,224	**24 HR.** 3.8
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 05/31/22	**COMP. DATE** 05/31/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
845										843.9 0.0 GROUND SURFACE
	842.9	1.0	4	7	5	12		W		**ALLUVIAL** Brown, fine to coarse sandy CLAY (A-6), trace mica
840	840.4	3.5	5	4	19	23		Sat.		
	836.4	7.5	60/0.0			60/0.0				836.4 7.5 **CRYSTALLINE ROCK** GNEISS
835										
830							RS-2			
825										
820										816.4 27.5 Boring Terminated at Elevation 816.4 ft in Crystalline Rock: GNEISS

GEOTECHNICAL BORING REPORT
CORE LOG

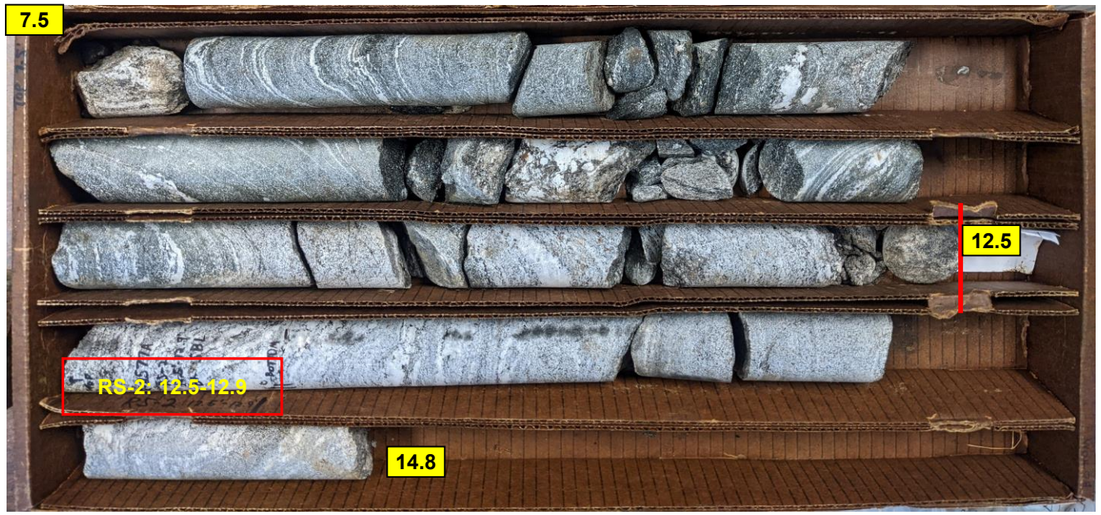
WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-A SBL	**STATION** 140+98	**OFFSET** 50 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 843.9 ft	**TOTAL DEPTH** 27.5 ft	**NORTHING** 872,537	**EASTING** 1,657,224	**24 HR.** 3.8
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 05/31/22	**COMP. DATE** 05/31/22	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 20.0 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) DEPTH (ft)
836.4											Begin Coring @ 7.5 ft
835	836.4	7.5	5.0	03:22/1.0 03:20/1.0 05:16/1.0 06:01/1.0 10:19/1.0	(5.0) 100%	(2.5) 50%		(20.0) 100%	(16.1) 81%		836.4 7.5 **CRYSTALLINE ROCK** Black, white, fresh to very slight weathering, hard, close to moderately close fracture spacing, GNEISS GSI=60 to 70
	831.4	12.5									
830			5.0	16:37/1.0 02:40/1.0 02:48/1.0 02:47/1.0 03:20/1.0	(5.0) 100%	(4.6) 92%	RS-2				
	826.4	17.5									
825			5.0	04:16/1.0 03:38/1.0 03:29/1.0 01:43/1.0 04:16/1.0	(5.0) 100%	(4.3) 86%					
	821.4	22.5									
820			5.0	03:11/1.0 02:37/1.0 03:55/1.0 04:27/1.0 05:39/1.0	(5.0) 100%	(4.7) 94%					
	816.4	27.5									816.4 27.5 Boring Terminated at Elevation 816.4 ft in Crystalline Rock: GNEISS

CORE PHOTOGRAPHS
B1-A SBL

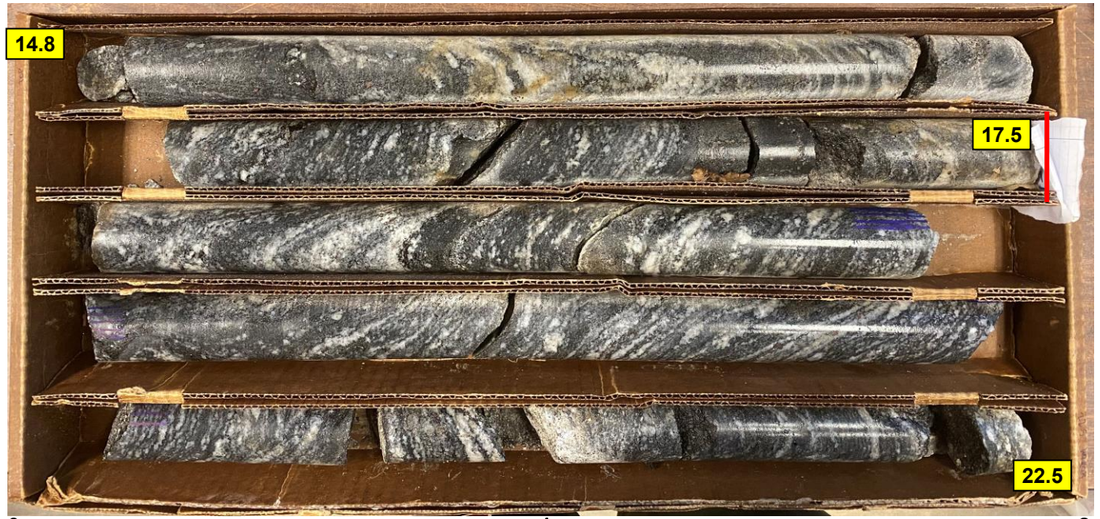
-L- 140+98 50 LT

BOX 1: 7.5-14.8 FEET



0 1 2
FEET

BOX 2: 14.8-22.5 FEET



0 1 2
FEET

BOX 3: 22.5-27.5 FEET

0 1 2
FEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-B NBL (SPT)	**STATION** 140+43	**OFFSET** 39 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 864.0 ft	**TOTAL DEPTH** 28.1 ft	**NORTHING** 872,438	**EASTING** 1,657,257	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/13/22	**COMP. DATE** 06/13/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) — DEPTH (ft)
865										864.0 — 0.0 GROUND SURFACE
	862.8	1.2						M		862.6 — 1.4 **ROADWAY EMBANKMENT** 1.2' Asphalt 0.3' ABC
860	860.5	3.5	17	9	5	14 20		M		861.0 — 3.0 Red, clayey fine to coarse SAND (A-2-6) Gray, silty fine to coarse SAND (A-2-4), some gravel
	855.5	8.5	15	8	12			M		856.0 — 8.0 **RESIDUAL** Red, fine to coarse sandy SILT (A-4), trace mica, trace rock fragments
855			4	5	5	10				
850	850.5	13.5	1	4	4	8		M		
845	845.5	18.5	WOH	WOH	WOH	0		W		846.0 — 18.0 Red, sandy silty CLAY (A-7-5), trace mica
840	839.5	24.5	60/0.0			60/0.0				840.5 — 23.5 **CRYSTALLINE ROCK** Issues during drilling. See boring B1-B NBL (core)
										835.9 — 28.1 Boring Terminated at Elevation 835.9 ft in Crystalline Rock: GNEISS Core boring offset from SPT boring due to lost outer core barrel.

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-B NBL (core)	**STATION** 140+37	**OFFSET** 39 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 863.8 ft	**TOTAL DEPTH** 42.8 ft	**NORTHING** 872,434	**EASTING** 1,657,253	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/17/22	**COMP. DATE** 06/17/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
865										863.8 — 0.0 GROUND SURFACE SPT completed in B1-B-NBL (SPT)
860										
855										
850										
845										
840										840.7 — 23.1 **CRYSTALLINE ROCK** GNEISS
835										
830										
825										821.0 — 42.8 Boring Terminated at Elevation 821.0 ft in Crystalline Rock: GNEISS Core boring offset from SPT boring due to lost outer core barrel.

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-B NBL (SPT)	**STATION** 140+43	**OFFSET** 39 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 864.0 ft	**TOTAL DEPTH** 28.1 ft	**NORTHING** 872,438	**EASTING** 1,657,257	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/13/22	**COMP. DATE** 06/13/22	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 4.6 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
840											Begin Coring @ 23.5 ft
	840.5	23.5	4.6		(4.5) 98%	(2.3) 49%		(4.5) 98%	(2.3) 49%		ELEV. (ft) 840.5 DEPTH (ft) 23.5 **CRYSTALLINE ROCK** Black, white, slight to moderate weathering, hard, close fracture spacing, GNEISS GSI=40 to 50
	835.9	28.1									835.9 28.1 Boring Terminated at Elevation 835.9 ft in Crystalline Rock: GNEISS
											Core boring offset from SPT boring due to lost outer core barrel.

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-B NBL (core)	**STATION** 140+37	**OFFSET** 39 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 863.8 ft	**TOTAL DEPTH** 42.8 ft	**NORTHING** 872,434	**EASTING** 1,657,253	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/17/22	**COMP. DATE** 06/17/22	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ2	**TOTAL RUN** 19.7 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
840											Begin Coring @ 23.1 ft
	840.7	23.1	4.7	01:15/0.7 02:15/1.0 01:45/1.0 01:54/1.0 02:14/1.0	(4.7) 100%	(3.9) 83%		(19.7) 100%	(18.3) 93%		840.7 **CRYSTALLINE ROCK** 23.1 Black, white, slight weathering, hard, close to moderately close fracture spacing, BIOTITE GNEISS GSI=50 to 60
835	836.0	27.8	5.0	02:11/1.0 01:49/1.0 01:46/1.0 01:29/1.0 01:17/1.0	(5.0) 100%	(4.5) 90%					
830	831.0	32.8	5.0	01:44/1.0 01:32/1.0 01:55/1.0 02:36/1.0 02:32/1.0	(5.0) 100%	(5.0) 100%					
825	826.0	37.8	5.0	02:50/1.0 02:34/1.0 03:30/1.0 03:52/1.0 03:15/1.0	(5.0) 100%	(4.9) 98%					
	821.0	42.8									821.0 42.8 Boring Terminated at Elevation 821.0 ft in Crystalline Rock: GNEISS
											Core boring offset from SPT boring due to lost outer core barrel.

CORE PHOTOGRAPHS

B1-B NBL (SPT)

-L- 140+43 39 RT

BOX 1: 23.5-28.1 FEET

CORE PHOTOGRAPHS
B1-B NBL (core)
-L- 140+37 39 RT

BOX 1: 23.1-31.2 FEET

BOX 2: 31.2-37.8 FEET

BOX 3: 37.8-42.8 FEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-B NBL (3)	**STATION** 140+35	**OFFSET** 39 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 863.8 ft	**TOTAL DEPTH** 23.1 ft	**NORTHING** 872,432	**EASTING** 1,657,252	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/16/22	**COMP. DATE** 06/16/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
865										863.8 GROUND SURFACE	0.0
										SPT completed in B1-B NBL (SPT)	
860											
855											
850											
845										843.2	20.6
										842.8 CONCRETE	21.0
										840.7 CRYSTALLINE ROCK GNEISS	23.1
										Boring Terminated at Elevation 840.7 ft in Crystalline Rock: GNEISS	
										Stopped coring early due to encountering unexpected concrete between soil and rock.	

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. B1-B NBL (3)	**STATION** 140+35	**OFFSET** 39 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 863.8 ft	**TOTAL DEPTH** 23.1 ft	**NORTHING** 872,432	**EASTING** 1,657,252	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/16/22	**COMP. DATE** 06/16/22	**SURFACE WATER DEPTH** N/A	
CORE SIZE N/A	**TOTAL RUN** 2.5 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
843.2											Begin Coring @ 20.6 ft	
	843.2	20.6	2.5		(0.8) 32%	(0.0) 0%		(0.8) 38%	(0.0) 0%		843.2 CONCRETE	20.6
	840.7	23.1									842.8 CRYSTALLINE ROCK	21.0
											840.7 Black, white, moderate weathering, hard, close fracture spacing, GNEISS GIS=30 to 40	23.1
											Boring Terminated at Elevation 840.7 ft in Crystalline Rock: GNEISS	

CORE PHOTOGRAPHS

B1-B NBL (3)

-L- 140+35 39 RT

BOX 1: 20.6-23.1 FEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	TIP R-2577A	COUNTY FORSYTH	GEOLOGIST B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				GROUND WTR (ft)
BORING NO. B1-B NBL (4)	STATION 140+35	OFFSET 36 ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 863.9 ft	TOTAL DEPTH 1.2 ft	NORTHING 872,434	EASTING 1,657,250	24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
DRILLER M. Moseley	START DATE 06/16/22	COMP. DATE 06/16/22	SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) / DEPTH (ft)
865										
										863.9 GROUND SURFACE 0.0
										862.7 **ROADWAY EMBANKMENT** 1.2
										1.2' Asphalt
										Boring Terminated at Elevation 862.7 ft on Concrete
										Stopped drilling because this was the only boring location where concrete was found directly under asphalt.

WBS 37405.1.1	TIP R-2577A	COUNTY FORSYTH	GEOLOGIST B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				GROUND WTR (ft)
BORING NO. B1-B SBL	STATION 140+92	OFFSET 35 ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 844.6 ft	TOTAL DEPTH 5.1 ft	NORTHING 872,523	EASTING 1,657,231	24 HR. 3.7
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
DRILLER M. Moseley	START DATE 06/01/22	COMP. DATE 06/01/22	SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) / DEPTH (ft)
845										
	843.6	1.0								844.6 GROUND SURFACE 0.0
			3	17	8	25		W		**ALLUVIAL**
										Brown, fine to coarse sandy CLAY (A-6), trace mica, little gravel
	841.0	3.6								841.0 3.6
840			55	45/0.3		100/0.8				**WEATHERED ROCK**
	839.5	5.1	60/0.0			60/0.0				GNEISS 839.5 5.1
										Boring Terminated with Standard Penetration Test Refusal at Elevation 839.5 ft on Crystalline Rock: GNEISS

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB2-A SBL	**STATION** 141+63	**OFFSET** 39 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 862.9 ft	**TOTAL DEPTH** 16.0 ft	**NORTHING** 872,580	**EASTING** 1,657,274	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 05/31/22	**COMP. DATE** 05/31/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
865										
	862.9	0.0								GROUND SURFACE
	861.9	1.0	2	1	7	8		W		**ROADWAY EMBANKMENT** Brown, fine to coarse sandy CLAY (A-6), trace mica
860	859.4	3.5	62	38/0.2		100/0.7				**WEATHERED ROCK** RIPRAP
	854.9	8.0								
855	854.4	8.5	2	7	17	24		W		**RESIDUAL** Brown, fine to coarse sandy CLAY (A-6), trace mica, trace roots
850	849.4	13.5	32	68/0.2		100/0.7				**WEATHERED ROCK** GNEISS
	846.9	16.0	60/0.0			60/0.0				Boring Terminated with Standard Penetration Test Refusal at Elevation 846.9 ft on Crystalline Rock: GNEISS

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB2-B NBL	**STATION** 141+10	**OFFSET** 46 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 864.2 ft	**TOTAL DEPTH** 13.6 ft	**NORTHING** 872,485	**EASTING** 1,657,305	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/07/22	**COMP. DATE** 06/07/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
865										
	864.2	0.0								GROUND SURFACE
	863.2	1.0	5	3	2	5		M		**RESIDUAL** Red, silty CLAY (A-7-5), trace mica, with interbedded layers of silt
860	859.9	4.3	3	1	2	3		M		
	856.2	8.0								
855	854.9	9.3	6	12	56	68		M		Gray, silty fine to coarse SAND (A-2-4), trace mica, trace rock fragments
	850.7	13.5	60/0.1			60/0.1				
	850.6	13.6								**CRYSTALLINE ROCK** GNEISS
										Boring Terminated with Standard Penetration Test Refusal at Elevation 850.6 ft in Crystalline Rock: GNEISS

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** J Mize	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. L 141+00	**STATION** 140+84	**OFFSET** 18 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 863.4 ft	**TOTAL DEPTH** 19.4 ft	**NORTHING** 872,483	**EASTING** 1,657,267	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER T Williams	**START DATE** 04/23/19	**COMP. DATE** 04/23/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
865										
										863.4 GROUND SURFACE 0.0
										0.8' Asphalt, 1.9' ABC
860	859.9	3.5								860.7 2.7
			4	5	5	10		M		**ROADWAY EMBANKMENT** Brown to red-brown, soft to stiff, sandy SILT (A-4), little mica, trace gravel
855	854.9	8.5								
			6	3	4	7		M		
850	849.9	13.5								
			2	2	1	3		W		
845	844.9	18.5								845.9 17.5
	844.0	19.4	100/0.2			100/0.2				844.0 **WEATHERED ROCK** GRANITE 19.4
			60/0.0			60/0.0				Boring Terminated at Elevation 844.0 ft on Crystalline Rock: GRANITE
										Boring elevation determined from existing TIN dated 12/18/2020

NCDOT BORE DOUBLE R-2577A_GEO_RDWY.GPJ NC_DOT.GDT 7/27/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB2-B SBL	**STATION** 141+55	**OFFSET** 8 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 863.5 ft	**TOTAL DEPTH** 17.3 ft	**NORTHING** 872,554	**EASTING** 1,657,293	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/01/22	**COMP. DATE** 06/01/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
865										863.5 GROUND SURFACE 0.0
	862.5	1.0								**ROADWAY EMBANKMENT**
860	860.0	3.5	2	3	2	5		W		Brown, silty fine to coarse sandy CLAY (A-6), trace mica 860.5 3.0
			4	2	18	20		W		**RESIDUAL** Orange, fine to coarse sandy silty CLAY (A-7-5), trace mica
855	855.0	8.5	60/0.0			60/0.0				855.0 8.5 **CRYSTALLINE ROCK** GNEISS
850										846.2 17.3 Boring Terminated at Elevation 846.2 ft in Crystalline Rock: GNEISS

NCDOT BORE DOUBLE R-2577A_GEO_BRDG.GPJ NC_DOT.GDT 7/21/22

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 37405.1.1	**TIP** R-2577A	**COUNTY** FORSYTH	**GEOLOGIST** B. Farmer	
SITE DESCRIPTION US 158 (Reidsville Rd.) Dual Bridges over Lowery Mill Creek				**GROUND WTR (ft)**
BORING NO. EB2-B SBL	**STATION** 141+55	**OFFSET** 8 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 863.5 ft	**TOTAL DEPTH** 17.3 ft	**NORTHING** 872,554	**EASTING** 1,657,293	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 83% 11/12/2021		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic	
DRILLER M. Moseley	**START DATE** 06/01/22	**COMP. DATE** 06/01/22	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 8.8 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) DEPTH (ft)
855											Begin Coring @ 8.5 ft
	855.0	8.5	3.8	01:06/0.8 00:51/1.0 01:01/1.0 01:07/1.0	(3.0) 79%	(1.5) 39%		(7.8) 89%	(5.5) 63%		855.0 **CRYSTALLINE ROCK** 8.5 Black, white, fresh to slight weathering, hard to moderately hard, close to moderately close fracture spacing, GNEISS GSI=40 to 50
850	851.2	12.3	5.0	01:38/1.0 02:33/1.0 03:12/1.0 02:59/1.0	(4.8) 96%	(4.0) 80%					
	846.2	17.3									846.2 17.3 Boring Terminated at Elevation 846.2 ft in Crystalline Rock: GNEISS

NCDOT CORE DOUBLE R-2577A_GEO_BRDG.GPJ NC_DOT.GDT 7/21/22

CORE PHOTOGRAPHS

EB2-B SBL

-L- 141+55 8 LT

BOX 1: 8.5-17.3 FEET

ASTM D7012 - Method C

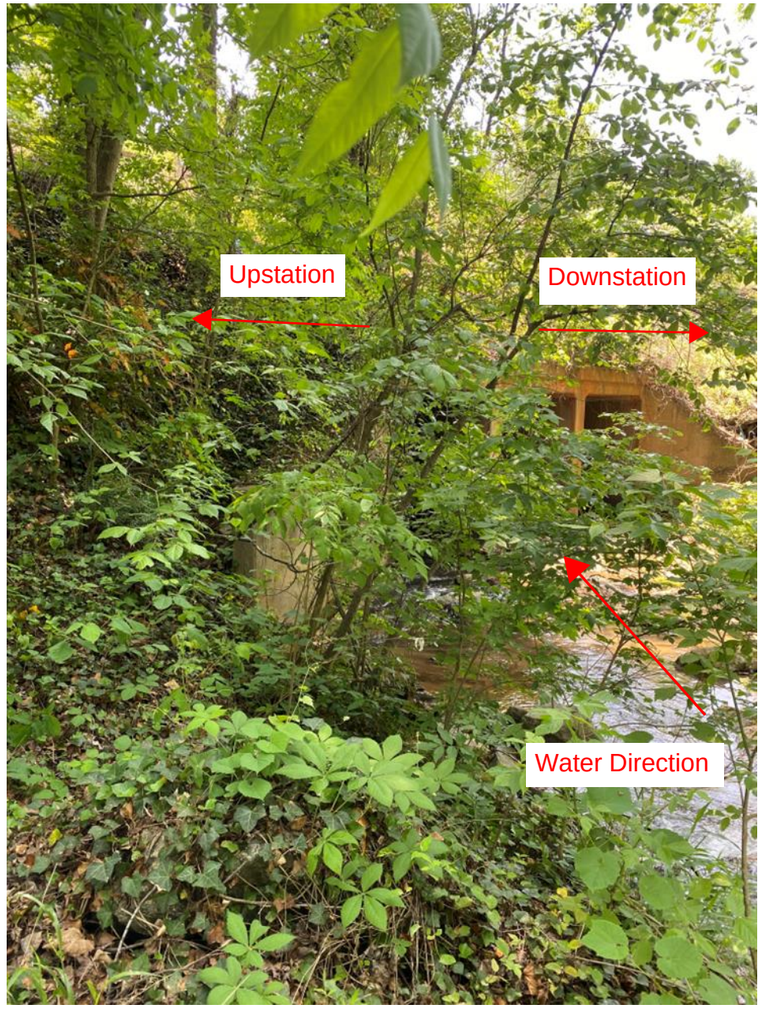
Unconfined Compression Test

Client: RK&K
Report Date: 7/6/2022
Project: Forsyth County R-2577A
Project No.: R-2577A

SAMPLE NO.	*STATION*	*OFFSET*	*DEPTH INTERVAL*	*HEIGHT (in)*	*DIAMETER (in)*	*AREA (sq in)*	*H:D*	*Mass (g)*	*Unit Weight (pcf)*	*Moisture (%)*	*Load (lbs)*	*Comp. Strength (psi)*
RS-1	140+73	16 RT	23.1-23.6	4.26	1.87	2.75	2.28	491.91	160.9	0.2	32950	11982
RS-2	140+98	50 LT	12.5-12.9	3.94	1.85	2.69	2.13	472.28	169.8	0.1	14600	5428

Drill Rig Photo on Bridge (-L-)

Lowery Mill Creek Downstream



Lowery Mill Creek Upstream