REFERENCE: R-3430B

PROJECT: 34544

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3430B	1	58

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BURKE / CALDWELL

PROJECT DESCRIPTION BRIDGE NO. 10 ON SR 1001 OVER RHODHISS LAKE

CONTENTS

CAUTION NOTICE

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12/13/2022

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
R-3430B	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	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
MATERIAL PASSING #40 LL	—		—	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PI	6 MX		NP	10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
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
GRAIN SIZE 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	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- 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 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:
- [X] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] D-50
- [X] D-25

ADVANCING TOOLS:
- [X] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [X] CASING [X] W/ ADVANCER
- [X] TRICONE 2 3/4 " STEEL TEETH
- [ ] TRICONE ____ " TUNG.-CARB.
- [X] 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 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. *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: BL-44 N: 748793.0 E: 1251102.3

ELEVATION: 1017.92 FEET

NOTES:

FIAD = FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET NO.
R-3430B	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

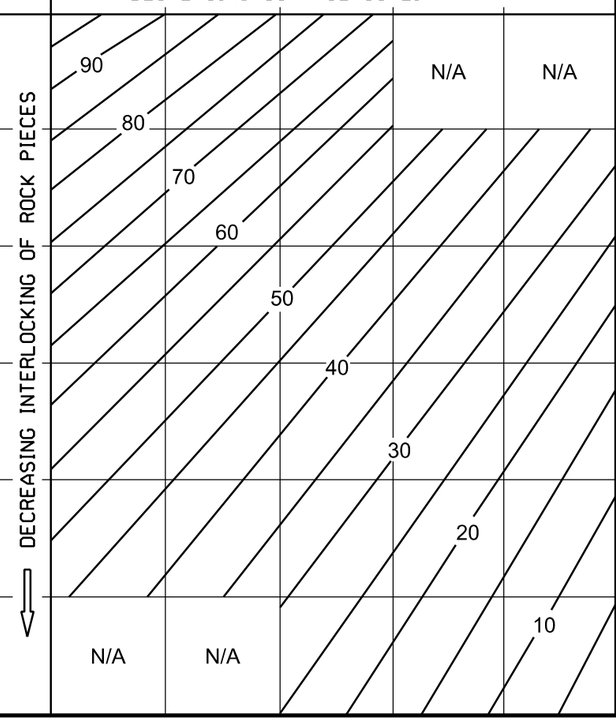
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

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

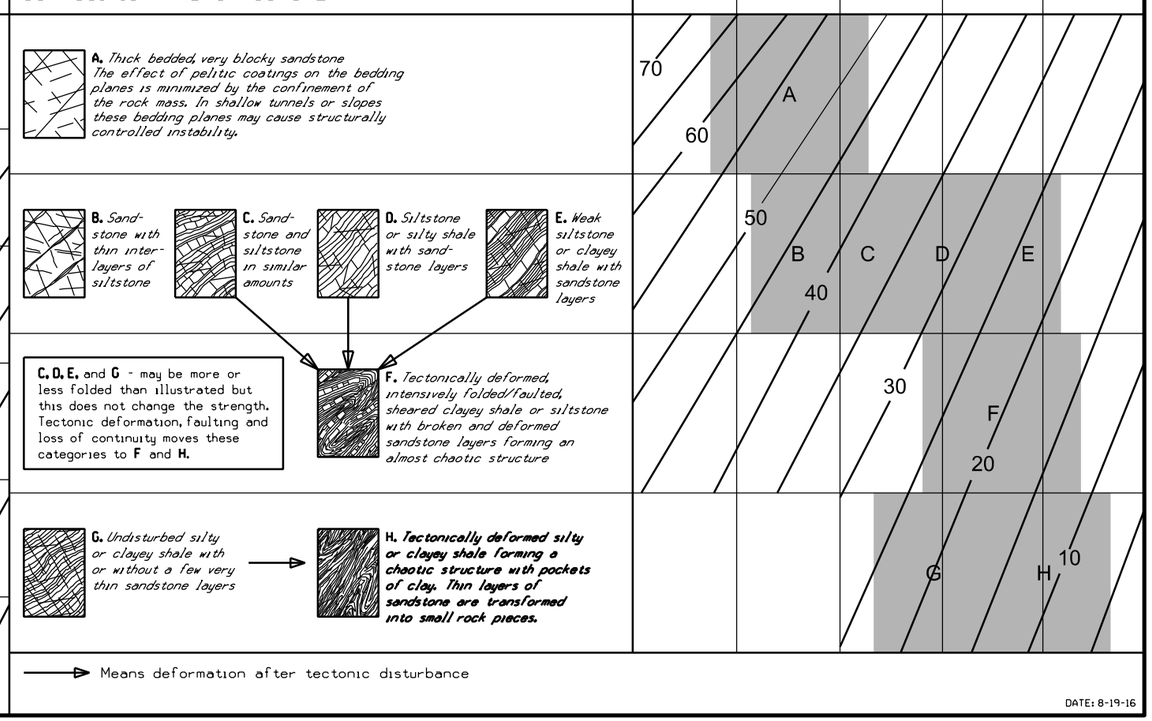


AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

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



DATE: 8-19-16

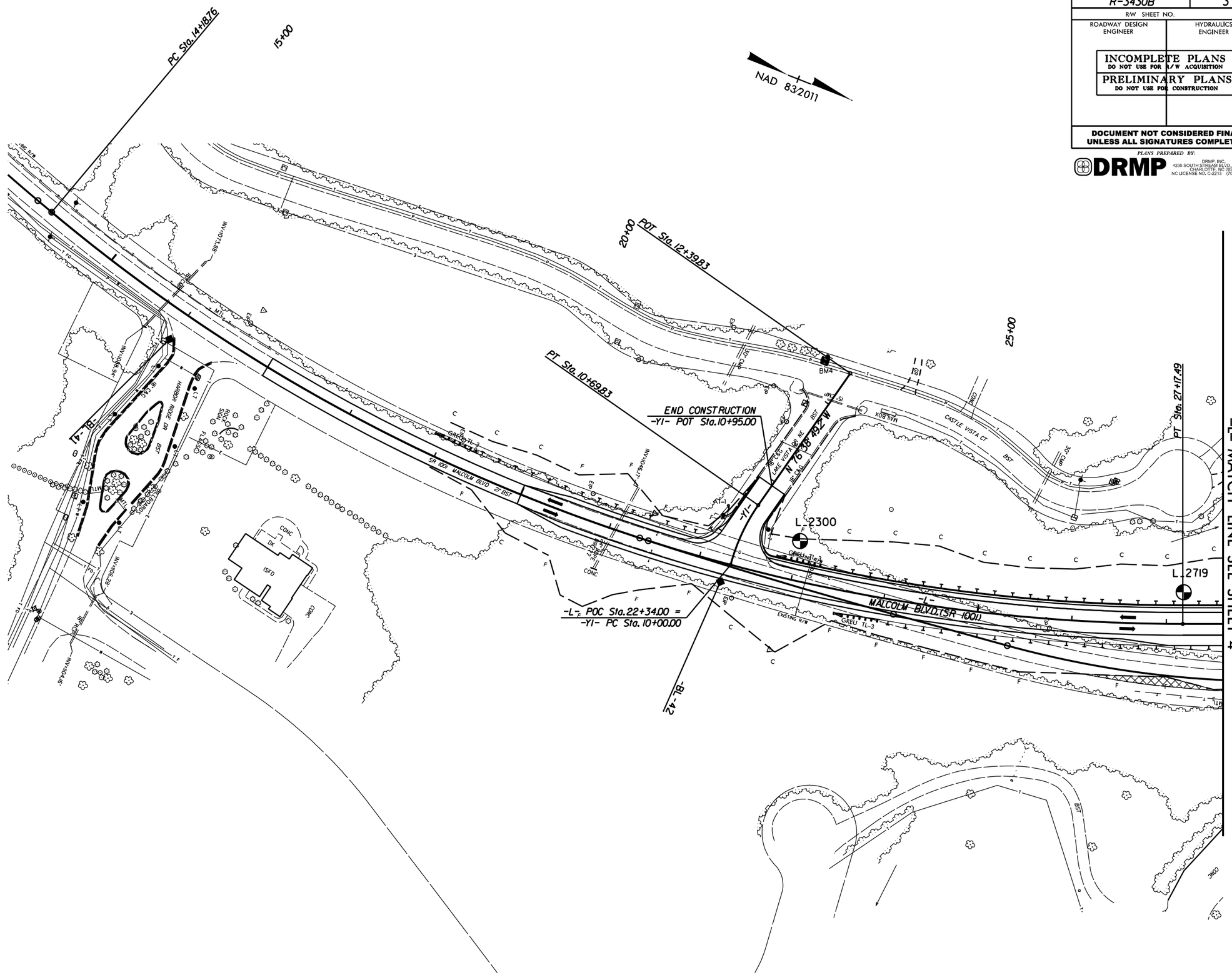
PROJECT REFERENCE NO.	SHEET NO.
R-3430B	3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
DRMP
DRMP, INC.
4235 SOUTH STREAM BLVD., SUITE 150
CHARLOTTE, NC 28217
NC LICENSE NO. C-2213 (704) 332-2289



REVISIONS

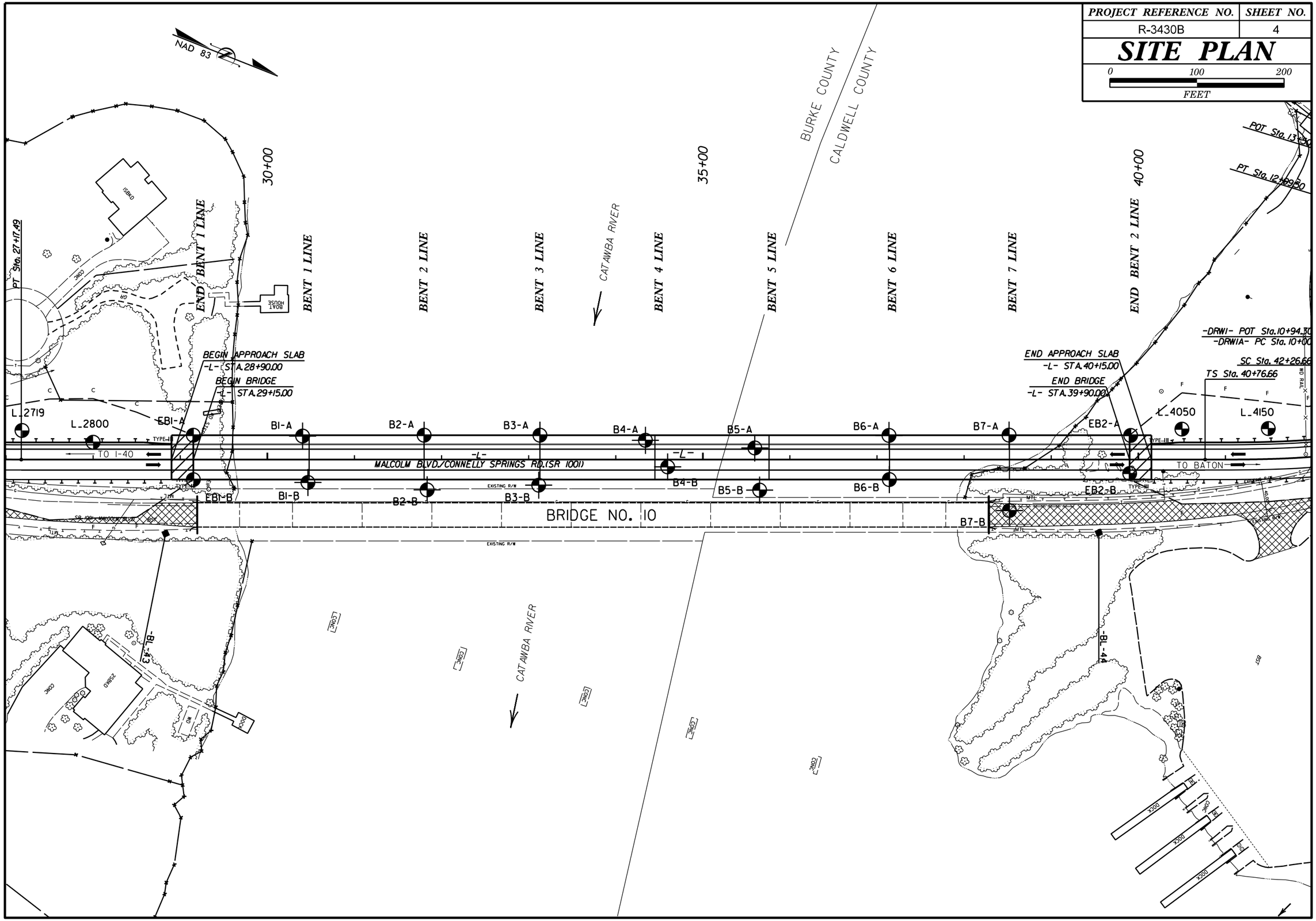
8/17/99

$DATE$ $$TIME$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$

PROJECT REFERENCE NO.	SHEET NO.
R-3430B	4

SITE PLAN

0 100 200
FEET

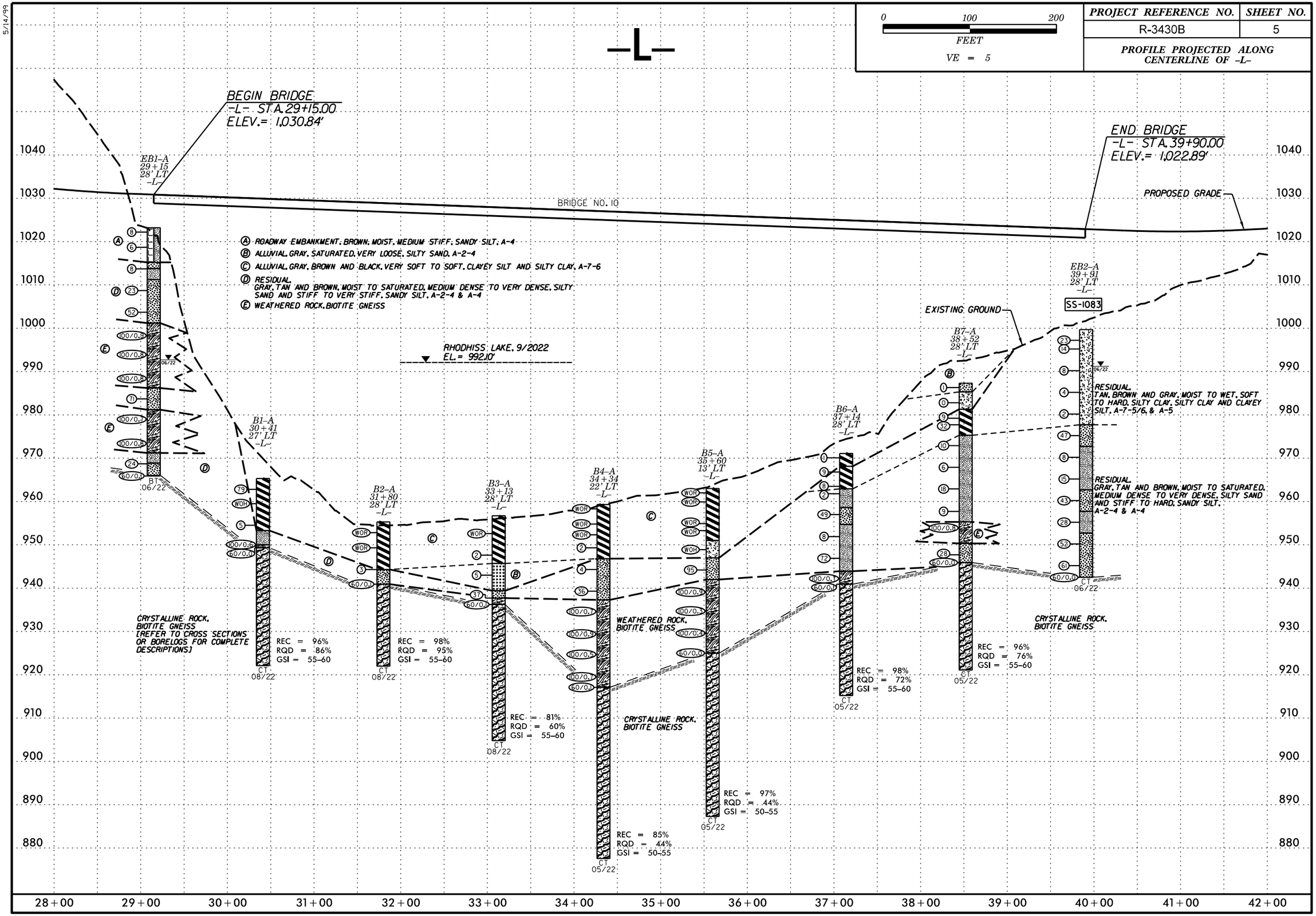


5/14/99

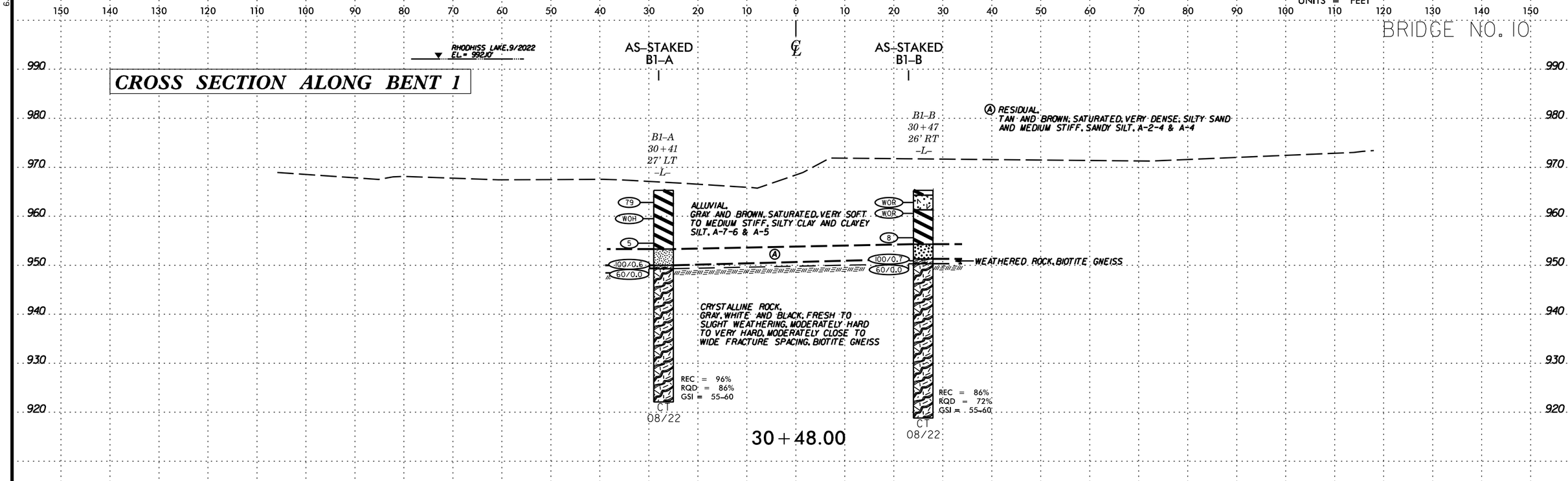
PROJECT REFERENCE NO.	SHEET NO.
R-3430B	5

PROFILE PROJECTED ALONG CENTERLINE OF -L-

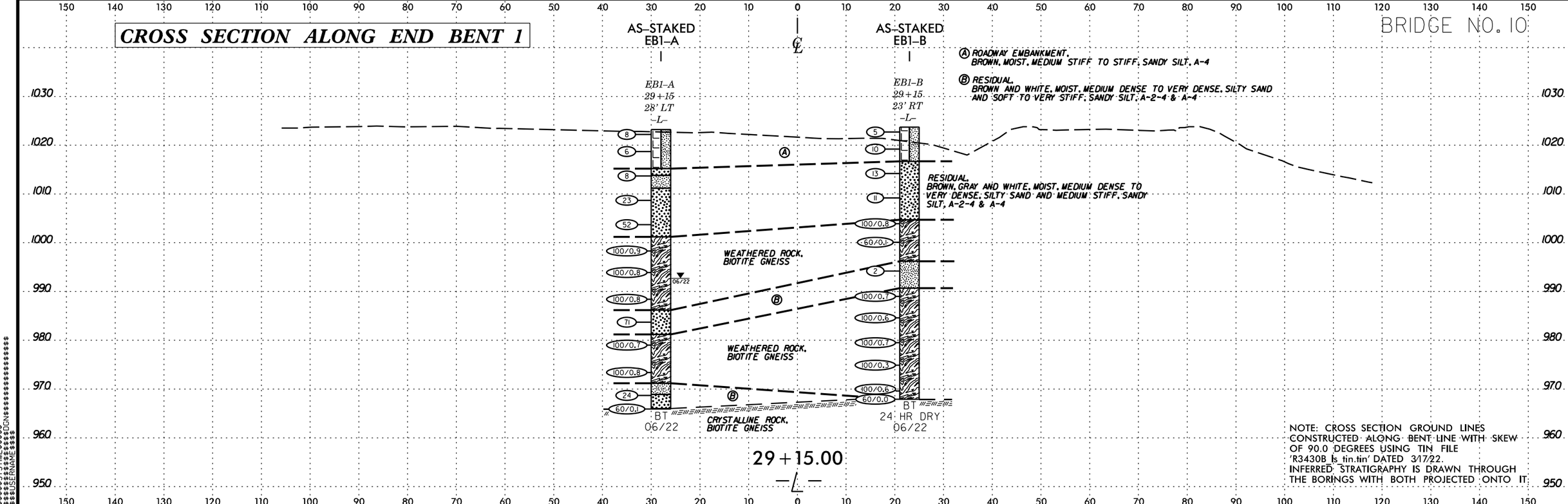
0 100 200
FEET
VE = 5



CROSS SECTION ALONG BENT 1



CROSS SECTION ALONG END BENT 1



NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 90.0 DEGREES USING TIN FILE 'R3430B_ls_tin.tin' DATED 3/17/22.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

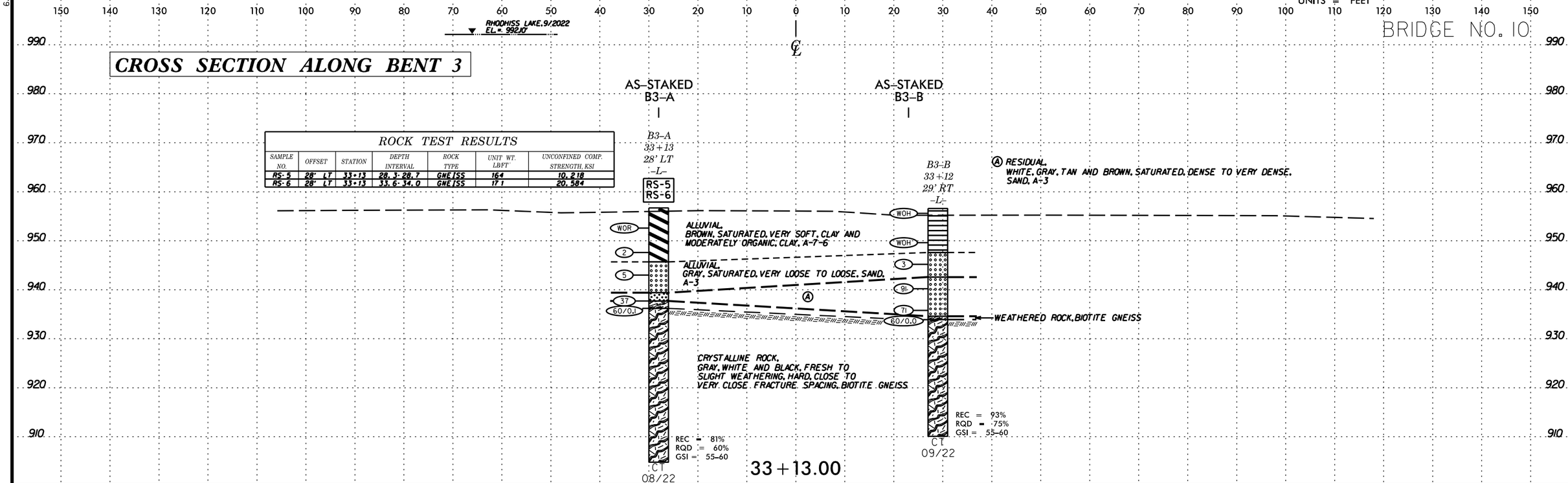
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-3430B	7

0 5 10 UNITS = FEET

BRIDGE NO. 10

CROSS SECTION ALONG BENT 3

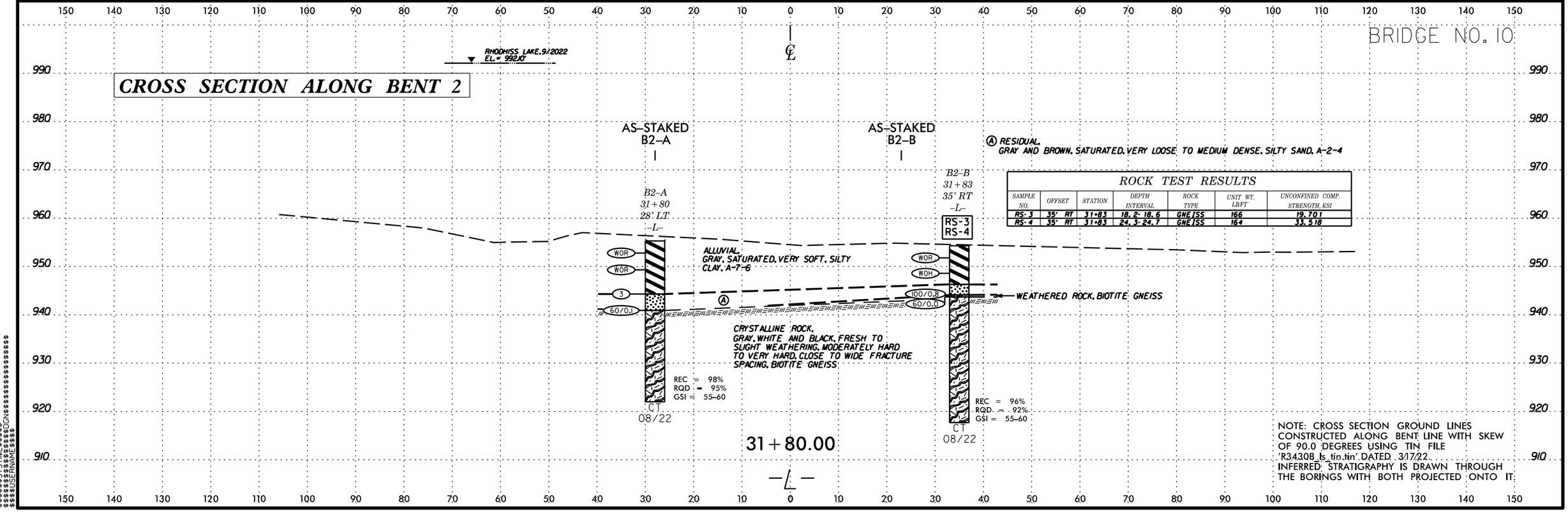


ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ROCK TYPE	UNIT WT. LB/FT	UNCONFINED COMP. STRENGTH, KSI
RS-5	28' LT	33+13	28.3-28.7	GNEISS	164	10.218
RS-6	28' LT	33+13	33.6-34.0	GNEISS	171	20.584

BRIDGE NO. 10

CROSS SECTION ALONG BENT 2



ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ROCK TYPE	UNIT WT. LB/FT	UNCONFINED COMP. STRENGTH, KSI
RS-3	35' RT	31+83	18.2-18.6	GNEISS	166	19.701
RS-4	35' RT	31+83	24.3-24.7	GNEISS	164	33.518

NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 90.0 DEGREES USING TIN FILE 'R3430B_ls_tin.tin' DATED 3/17/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

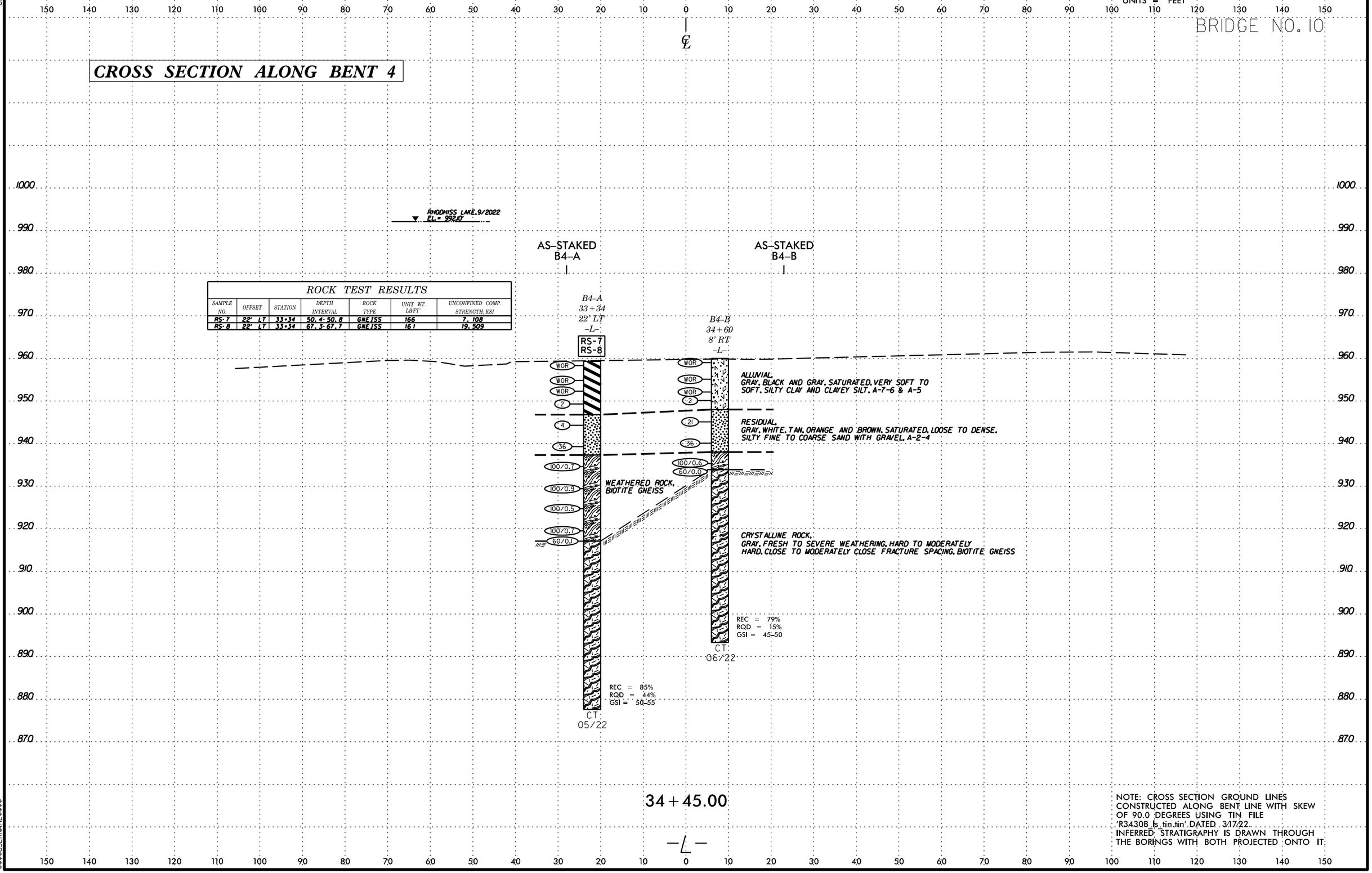
$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$$

PROJ. REFERENCE NO.	SHEET NO.
R-3430B	8

0 5 10 UNITS = FEET

BRIDGE NO. 10

CROSS SECTION ALONG BENT 4



ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ROCK TYPE	UNIT WT. LB/FT³	UNCONFINED COMP. STRENGTH, KSI
RS-7	22' LT	33+34	50.4-50.8	GNEISS	166	7.108
RS-8	22' LT	33+34	67.3-67.7	GNEISS	161	19.509

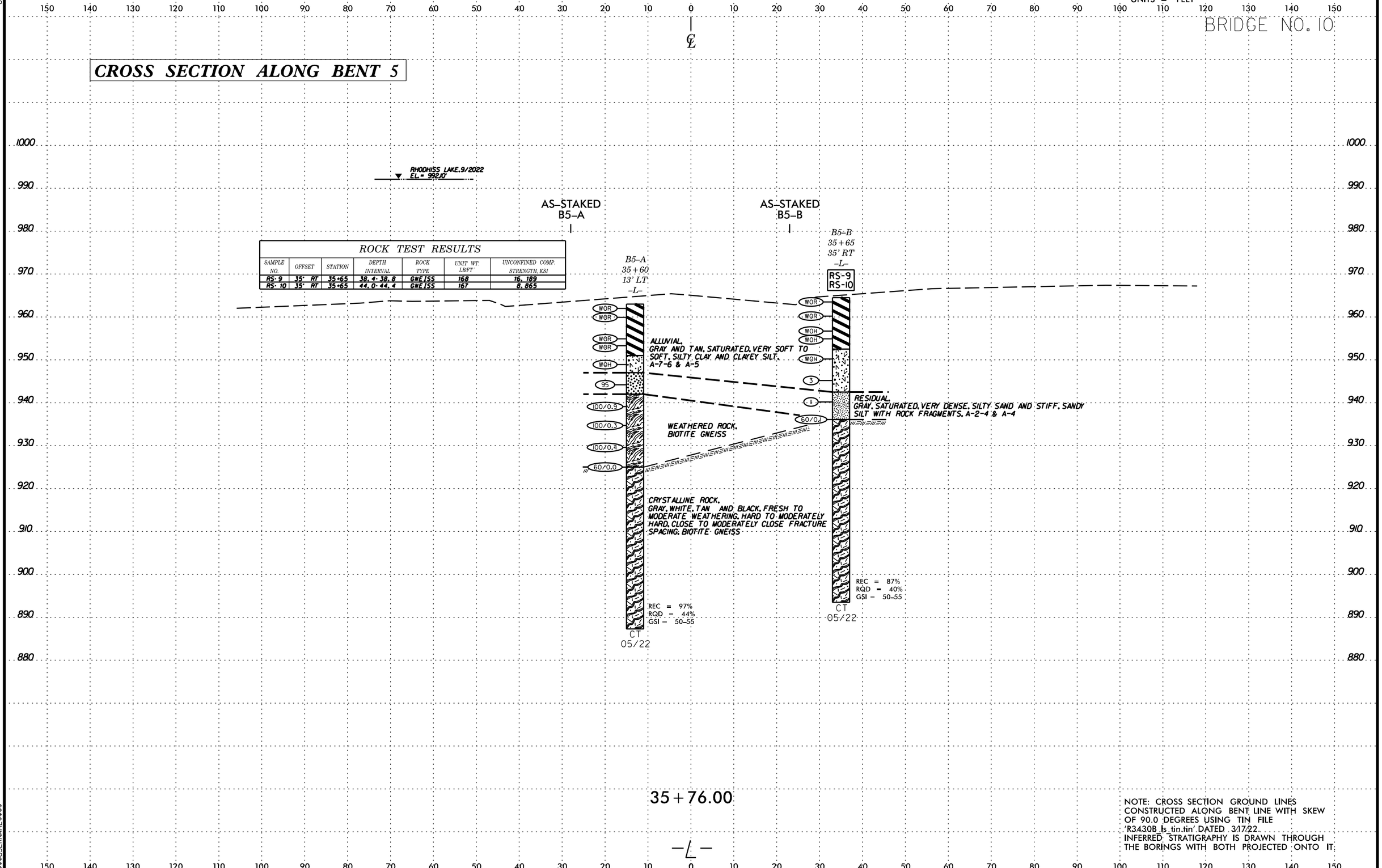
NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 90.0 DEGREES USING TIN FILE 'R3430B_ls_tin.tin' DATED 3/17/22.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

PROJ. REFERENCE NO.	SHEET NO.
R-3430B	9

0 5 10 UNITS = FEET

BRIDGE NO. 10

CROSS SECTION ALONG BENT 5



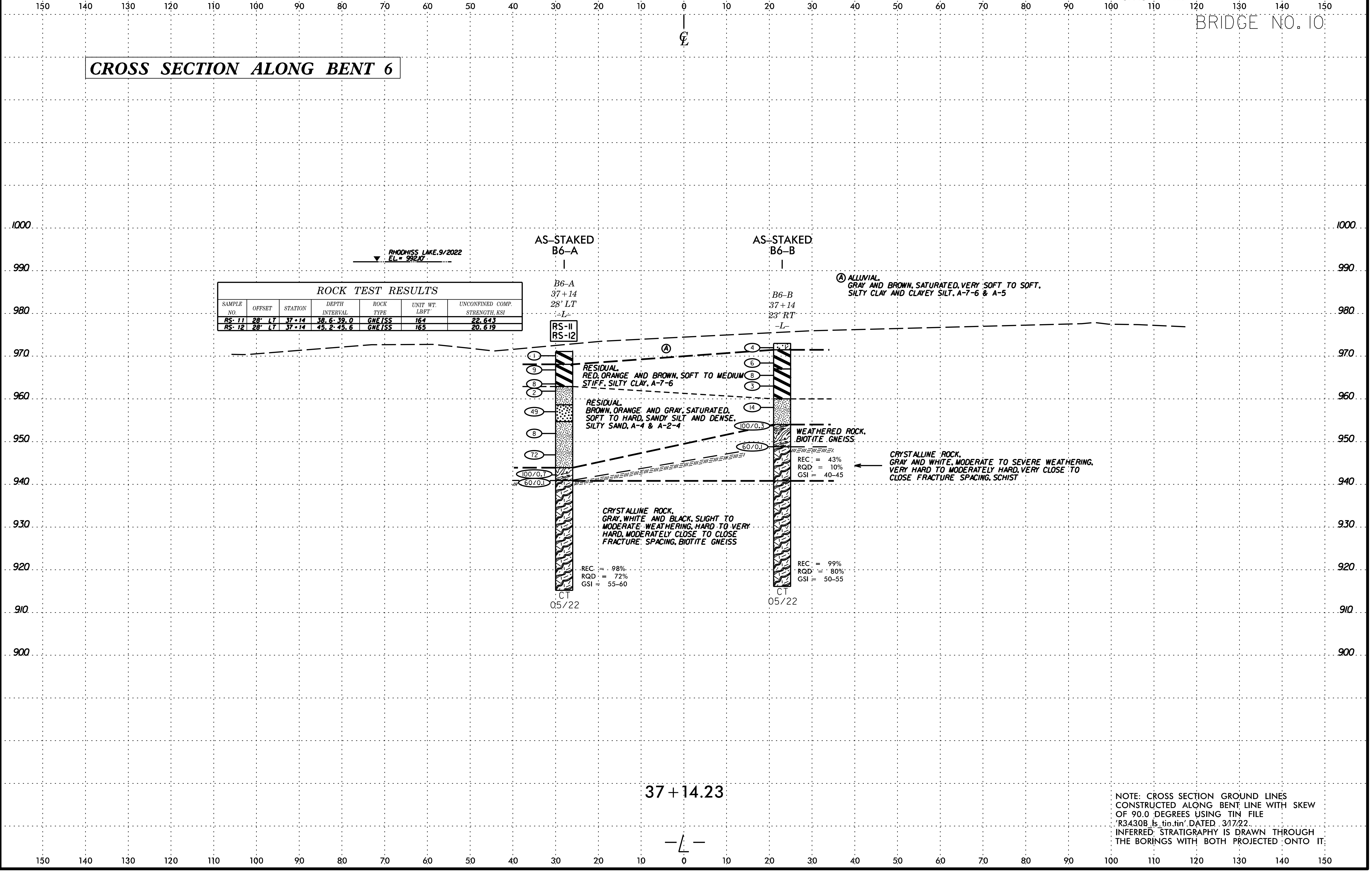
ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ROCK TYPE	UNIT WT. LB/FT	UNCONFINED COMP. STRENGTH, KSI
RS-9	35' RT	35+65	38.4-38.8	GNEISS	168	16.189
RS-10	35' RT	35+65	44.0-44.4	GNEISS	167	8.865

NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 90.0 DEGREES USING TIN FILE 'R3430B_ls_tin.tin' DATED 3/7/22.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

BRIDGE NO. 10

CROSS SECTION ALONG BENT 6



ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ROCK TYPE	UNIT WT. LB/FT³	UNCONFINED COMP. STRENGTH, KSI
RS-11	28' LT	37+14	38.6-39.0	GNEISS	164	22.643
RS-12	28' LT	37+14	45.2-45.6	GNEISS	165	20.619

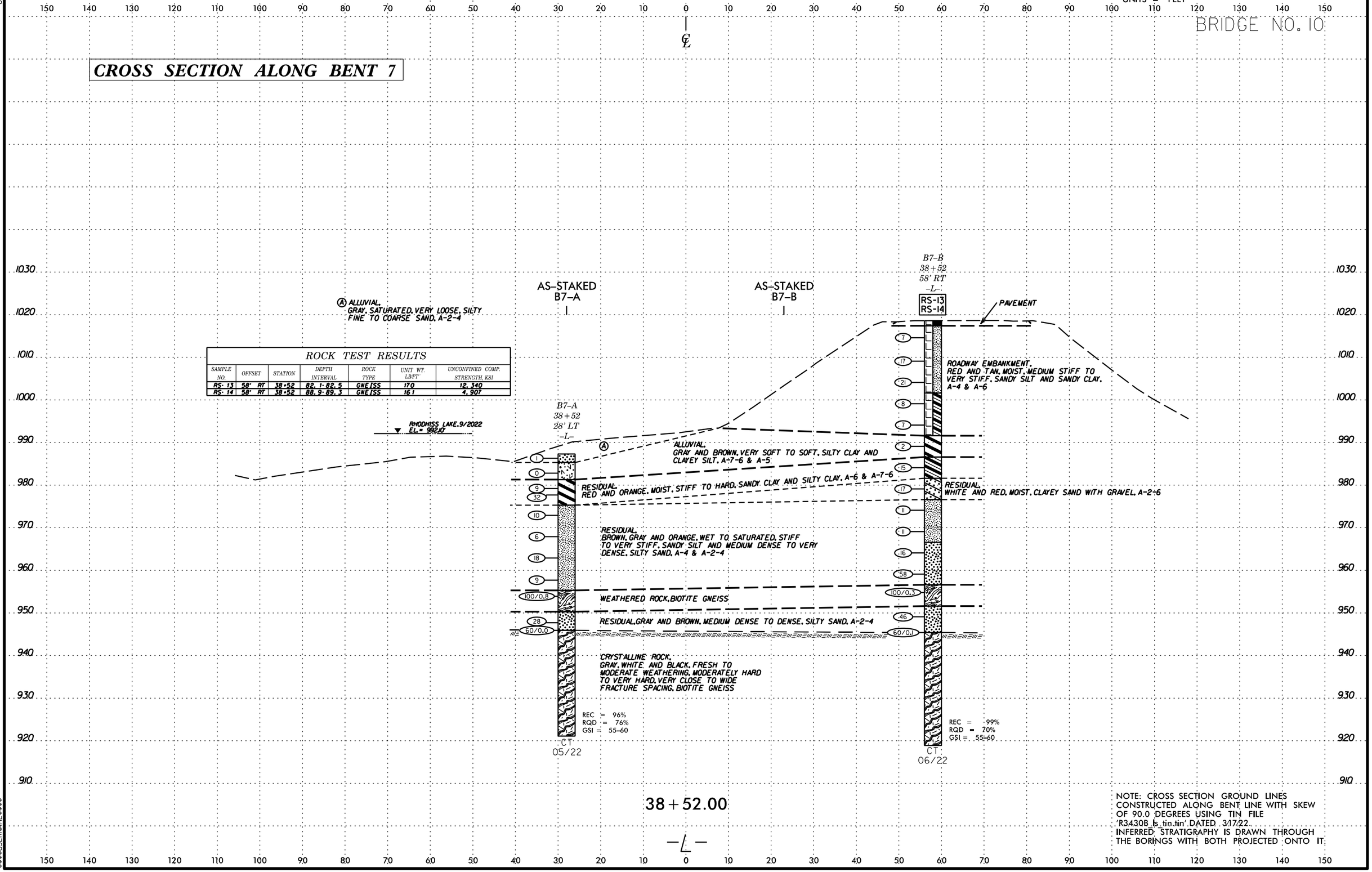
NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 90.0 DEGREES USING TIN FILE 'R3430B_ls_tin.tin' DATED 3/17/22.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

PROJ. REFERENCE NO.	SHEET NO.
R-3430B	11

0 5 10 UNITS = FEET

BRIDGE NO. 10

CROSS SECTION ALONG BENT 7



ROCK TEST RESULTS

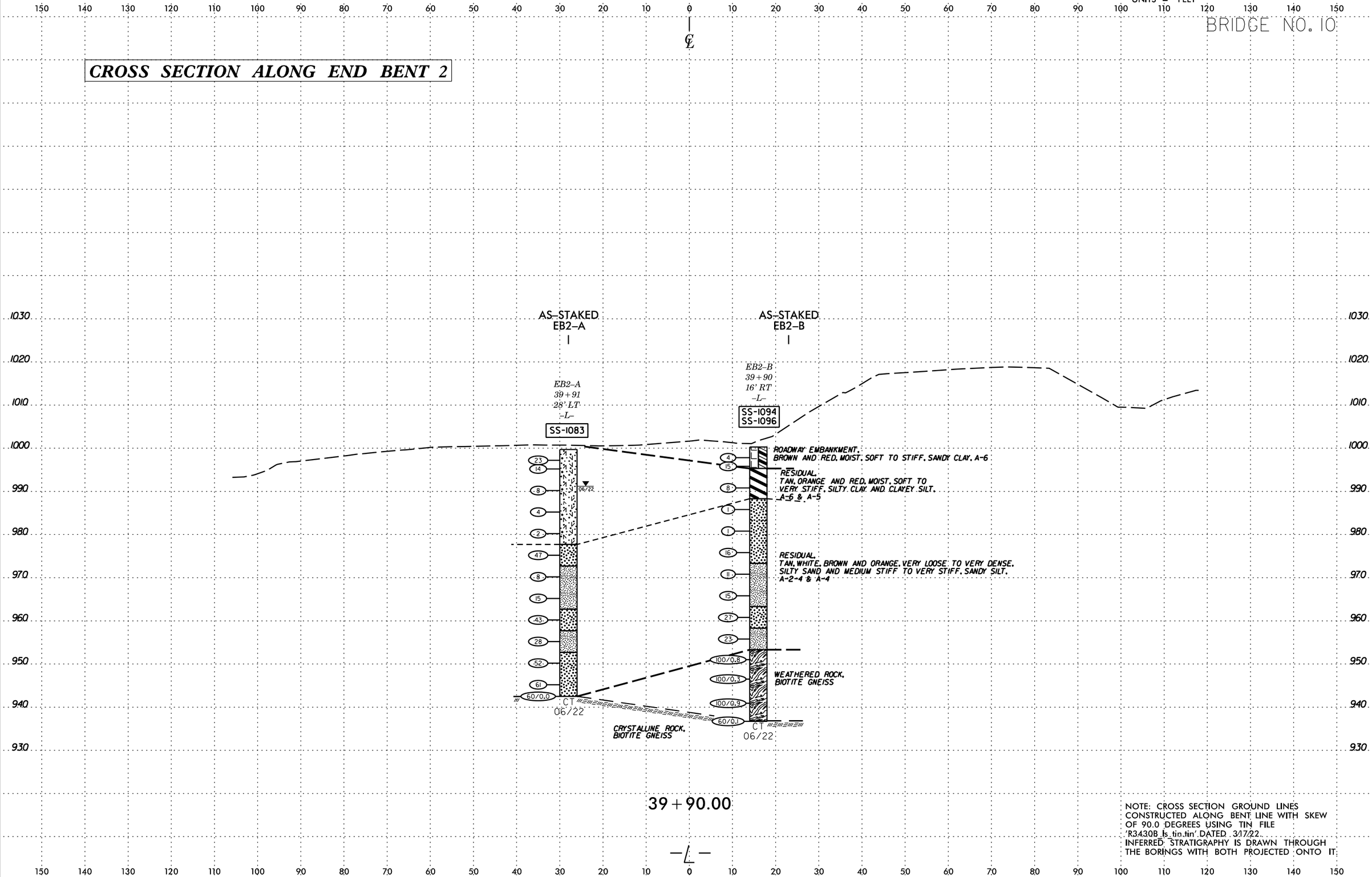
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ROCK TYPE	UNIT WT. LB/FT³	UNCONFINED COMP. STRENGTH, KSI
RS-13	58' RT	38+52	82.1-82.5	GNEISS	170	12.340
RS-14	58' RT	38+52	88.9-89.3	GNEISS	161	4.907

NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 90.0 DEGREES USING TIN FILE 'R3430B_ls_tin.tin' DATED 3/7/22. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

UNITS = FEET (0 5 10)	PROJ. REFERENCE NO.	SHEET NO.
	R-3430B	12

BRIDGE NO. 10

CROSS SECTION ALONG END BENT 2



NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 90.0 DEGREES USING TIN FILE 'R3430B_ls_tin.tin' DATED 3/7/22.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Binder, N.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 29+15	**OFFSET** 28 ft LT	**ALIGNMENT** -L- / **0 HR.** 31.4
COLLAR ELEV. 1,023.2 ft	**TOTAL DEPTH** 57.3 ft	**NORTHING** 747,785	**EASTING** 1,251,380 / **24 HR.** 30.5
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gowan, S.	**START DATE** 06/14/22	**COMP. DATE** 06/14/22	**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)
1025											
	1,023.2	0.0	3	4	4	8		M		1,023.2 GROUND SURFACE	0.0
1020	1,019.7	3.5	3	3	3	6		M		**ROADWAY EMBANKMENT** BROWN, MEDIUM STIFF, SANDY SILT (A-4)	
1015	1,014.7	8.5	4	5	3	8		M		1,015.2 **RESIDUAL** WHITE, LOOSE, SILTY SAND (A-2-4)	8.0
1010	1,009.7	13.5	18	12	11	23		M		1,013.8 BROWN, MEDIUM STIFF, SANDY SILT (A-4)	9.4
1005	1,004.7	18.5	13	23	29	52		M		1,011.2 BROWN AND WHITE, MEDIUM DENSE TO VERY DENSE, SILTY SAND (A-2-4)	12.0
1000	999.7	23.5	28	72/0.4		100/0.9				1,001.2 **WEATHERED ROCK** (BIOTITE GNEISS)	22.0
995	994.7	28.5	47	53/0.3		100/0.8					
990	989.7	33.5	26	55	45/0.3	100/0.8					
985	984.7	38.5	26	30	41	71		M		986.2 **RESIDUAL** BROWN AND WHITE, VERY DENSE, SILTY SAND (A-2-4)	37.0
980	979.7	43.5	61	39/0.2		100/0.7				981.2 **WEATHERED ROCK** (BIOTITE GNEISS)	42.0
975	974.7	48.5	5	43	57/0.3	100/0.8					
970	969.7	53.5	11	12	12	24		M		971.2 **RESIDUAL** BROWN, VERY STIFF, SANDY SILT (A-4)	52.0
	966.0	57.2	60/0.1			60/0.1				968.9 BROWN AND WHITE, MEDIUM DENSE, SILTY SAND (A-2-4)	54.3
										966.0 965.9 **CRYSTALLINE ROCK** (BIOTITE GNEISS)	57.2 57.3
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 965.9 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Binder, N.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 29+15	**OFFSET** 23 ft RT	**ALIGNMENT** -L- / **0 HR.** 38.8
COLLAR ELEV. 1,023.7 ft	**TOTAL DEPTH** 55.8 ft	**NORTHING** 747,804	**EASTING** 1,251,428 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gowan, S.	**START DATE** 06/15/22	**COMP. DATE** 06/15/22	**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	DEPTH (ft)
1025											
	1,023.7	0.0	2	2	3	5		M		1,023.7 GROUND SURFACE	0.0
1020	1,020.2	3.5	4	3	7	10		M		**ROADWAY EMBANKMENT** BROWN, MEDIUM STIFF TO STIFF, SANDY SILT (A-4)	
1015	1,015.2	8.5	6	7	6	13		M		1,016.7 **RESIDUAL** BROWN, GRAY AND WHITE, MEDIUM DENSE, SILTY SAND (A-2-4)	7.0
1010	1,010.2	13.5	14	7	4	11		M			
1005	1,005.2	18.5	12	51	49/0.3	100/0.8				1,004.7 **WEATHERED ROCK** (BIOTITE GNEISS)	19.0
1000	1,000.2	23.5	60/0.1			60/0.1					
995	995.2	28.5	6	1	1	2		M		996.2 **RESIDUAL** NO RECOVERY; ASSUME BROWN, SOFT, SANDY SILT (A-4)	27.5
990	990.2	33.5	18	74	26/0.2	100/0.7				990.7 **WEATHERED ROCK** (BIOTITE GNEISS)	33.0
985	985.2	38.5	88	12/0.1		100/0.6					
980	980.2	43.5	32	68/0.2		100/0.7					
975	975.2	48.5	100/0.3			100/0.3					
970	970.2	53.5	91	9/0.1		100/0.6					
	967.9	55.8	60/0.0			60/0.0				967.9 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 967.9 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)	55.8

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 30+41	**OFFSET** 27 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 965.3 ft	**TOTAL DEPTH** 43.4 ft	**NORTHING** 747,902	**EASTING** 1,251,335 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/16/22	**COMP. DATE** 08/18/22	**SURFACE WATER DEPTH** 25.6ft

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))
990										WATER SURFACE (08/16/22)
985										
980										
975										
970										
965										965.3 MUDLINE 0.0
	963.8	1.5	41	34	45	TESTED ON BOULDER 79		Sat.		**ALLUVIAL** GRAY, VERY SOFT TO SOFT, SILTY CLAY (A-7-6)
960	960.5	4.8	WOH	WOH	WOH	0		Sat.		
955	955.5	9.8	1	2	3	5		Sat.		953.3 **RESIDUAL** 12.0 TAN, MEDIUM STIFF, SANDY SILT (A-4)
950	950.5	14.8	3	4	96/0.1					949.5 15.8
	949.4	15.9	60/0.0			100/0.6 60/0.0				949.4 15.9 **WEATHERED ROCK** (BIOTITE GNEISS) **CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, HARD, MODERATELY CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS REC = 96% RQD = 86% GSI = 55-60
945										
940										
935										
930										
925										921.9 43.4 Boring Terminated at Elevation 921.9 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT BORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 30+41	**OFFSET** 27 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 965.3 ft	**TOTAL DEPTH** 43.4 ft	**NORTHING** 747,902	**EASTING** 1,251,335 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/16/22	**COMP. DATE** 08/18/22	**SURFACE WATER DEPTH** 25.6ft
CORE SIZE NQ	**TOTAL RUN** 27.5 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))
949.41											Begin Coring @ 15.9 ft
	949.4	15.9	4.9	*N=60/0.0* 8:10/0.9 13:00/1.0 10:30/1.0 15:55/1.0 17:35/1.0	(3.7) 76%	(2.0) 41%		(26.3) 96%	(23.7) 86%		949.4 **CRYSTALLINE ROCK** 15.9 GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, HARD, MODERATELY CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS GSI = 55-60
945	944.5	20.8	5.0	16:05/1.0 39:40/1.0 33:55/1.0 4:25/1.0 5:15/1.0	(5.0) 100%	(4.8) 96%					
940	939.5	25.8	5.0	3:00/1.0 3:55/1.0 4:05/1.0 4:35/1.0 4:45/1.0	(5.0) 100%	(4.8) 96%					
935	934.5	30.8	5.0	3:25/1.0 3:00/1.0 3:05/1.0 3:20/1.0 3:00/1.0	(5.0) 100%	(5.0) 100%					
930	929.5	35.8	5.0	2:40/1.0 2:50/1.0 3:00/1.0 3:35/1.0 2:55/1.0	(5.0) 100%	(4.5) 90%					
925	924.5	40.8	2.6	3:20/1.0 3:55/1.0 2:10/0.6	(2.6) 100%	(2.6) 100%					921.9 43.4 Boring Terminated at Elevation 921.9 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)
	921.9	43.4									

NCDOT CORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 30+47	**OFFSET** 26 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 965.3 ft	**TOTAL DEPTH** 46.5 ft	**NORTHING** 747,928	**EASTING** 1,251,383 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/18/22	**COMP. DATE** 08/18/22	**SURFACE WATER DEPTH** 26.5ft

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)
										WATER SURFACE (08/18/22)	
965.3										MUDLINE	0.0
964.3										**ALLUVIAL** GRAY, VERY SOFT, SILTY CLAY (A-7-6) / GRAY, VERY SOFT, CLAYEY SILT (A-5)	1.0
961.3										GRAY AND BROWN, MEDIUM STIFF, SILTY CLAY (A-7-6)	4.0
954.3										**RESIDUAL** BROWN, VERY DENSE, SILTY SAND WITH GRAVEL (A-2-4)	11.0
951.3										**WEATHERED ROCK** (BIOTITE GNEISS)	14.0
950.3										**CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, MODERATELY HARD TO VERY HARD, MODERATELY CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS REC = 86% RQD = 72% GSI = 55-60	15.0
918.8										Boring Terminated at Elevation 918.8 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	46.5

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT	SAMP. NO.	MOI
963.8	1.5		WOR	WOR	WOR	0		Sat.
961.6	3.7		WOR	WOR	WOR	0		Sat.
956.6	8.7		1	3	5	8		Sat.
951.6	13.7		38	62/0.2				
950.3	15.0		60/0.0			100/0.7 60/0.0		

NCDOT BORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 30+47	**OFFSET** 26 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 965.3 ft	**TOTAL DEPTH** 46.5 ft	**NORTHING** 747,928	**EASTING** 1,251,383 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/18/22	**COMP. DATE** 08/18/22	**SURFACE WATER DEPTH** 26.5ft
CORE SIZE NQ	**TOTAL RUN** 31.5 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)
950.3											Begin Coring @ 15.0 ft	
	950.3 / 948.8	15.0 / 16.5	1.5	*N=60/0.0* 0:55/0.5 2:05/1.0	(0.7) 47%	(0.6) 40%		(27.0) 86%	(22.8) 72%		**CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, MODERATELY HARD TO VERY HARD, MODERATELY CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS GSI = 55-60	950.3 / 15.0
	943.8	21.5	5.0	3:30/1.0 4:00/1.0 4:45/1.0 4:55/1.0 5:10/1.0	(4.9) 98%	(3.2) 64%						
	938.8	26.5	5.0	3:25/1.0 4:55/1.0 5:30/1.0 5:45/1.0 4:50/1.0	(5.0) 100%	(5.0) 100%						
	933.8	31.5	5.0	3:25/1.0 5:05/1.0 4:40/1.0 5:00/1.0 5:25/1.0	(5.0) 100%	(4.4) 88%						
	928.8	36.5	5.0	3:35/1.0 4:15/1.0 4:15/1.0 4:00/1.0 5:55/1.0	(5.0) 100%	(4.7) 94%						
	923.8	41.5	5.0	3:55/1.0 5:40/1.0 4:30/1.0 4:25/1.0 4:35/1.0	(1.6) 32%	(1.2) 24%						
	918.8	46.5	5.0	4:00/1.0 3:45/1.0 4:10/1.0 3:30/1.0 3:30/1.0	(4.8) 96%	(3.7) 74%					918.8	46.5
											Boring Terminated at Elevation 918.8 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	

NCDOT CORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.	
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE				**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 31+80	**OFFSET** 28 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 955.3 ft	**TOTAL DEPTH** 33.3 ft	**NORTHING** 748,032	**EASTING** 1,251,283	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic	
DRILLER Coogan, M.	**START DATE** 08/24/22	**COMP. DATE** 08/24/22	**SURFACE WATER DEPTH** 35.9ft	

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)
990										WATER SURFACE (08/24/22)
985										
980										
975										
970										
965										
960										
955										955.3 MUDLINE 0.0
	953.8	1.5	WOR	WOR	WOR	0		Sat.		**ALLUVIAL** GRAY, VERY SOFT, SILTY CLAY (A-7-5)
950	950.3	5.0	WOR	WOR	WOR	0		Sat.		
945	945.3	10.0	1	2	1	3		Sat.		944.3 11.0 **RESIDUAL** GRAY AND BROWN, VERY LOOSE, SILTY SAND (A-2-4)
940	941.0	14.3	60/0.1			60/0.1				940.9 14.4 **CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, HARD TO VERY HARD, MODERATELY CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS REC = 98% RQD = 95% GSI = 55-60
935										
930										
925										922.0 33.3 Boring Terminated at Elevation 922.0 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT BORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.	
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE				**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 31+80	**OFFSET** 28 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 955.3 ft	**TOTAL DEPTH** 33.3 ft	**NORTHING** 748,032	**EASTING** 1,251,283	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic	
DRILLER Coogan, M.	**START DATE** 08/24/22	**COMP. DATE** 08/24/22	**SURFACE WATER DEPTH** 35.9ft	
CORE SIZE NQ	**TOTAL RUN** 18.9 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)
940.86											Begin Coring @ 14.4 ft
940	940.9	14.4	3.9	2:30/0.9 4:25/1.0 4:00/1.0 2:40/1.0	(3.6) 92%	(3.5) 90%		(18.6) 98%	(18.0) 95%		940.9 14.4 **CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, HARD TO VERY HARD, MODERATELY CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS GSI = 55-60
	937.0	18.3	5.0	4:40/1.0 4:10/1.0 4:00/1.0 4:10/1.0 5:15/1.0	(5.0) 100%	(4.8) 96%					
935	932.0	23.3	5.0	3:00/1.0 4:00/1.0 3:55/1.0 4:45/1.0 4:35/1.0	(5.0) 100%	(5.0) 100%					
930	927.0	28.3	5.0	2:05/1.0 3:15/1.0 3:10/1.0 3:40/1.0 4:30/1.0	(5.0) 100%	(4.7) 94%					
925	922.0	33.3									922.0 33.3 Boring Terminated at Elevation 922.0 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT CORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 31+83	**OFFSET** 35 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 954.3 ft	**TOTAL DEPTH** 36.6 ft	**NORTHING** 748,058	**EASTING** 1,251,340 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/23/22	**COMP. DATE** 08/24/22	**SURFACE WATER DEPTH** 36.9ft

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))
990										WATER SURFACE (08/23/22)
985										
980										
975										
970										
965										
960										
955										954.3 MUDLINE 0.0
	952.8	1.5	WOR	WOR	WOR	0		Sat.		**ALLUVIAL** GRAY, VERY SOFT, SILTY CLAY (A-7-5)
950	949.6	4.7	WOH	WOH	WOH	0		Sat.		
										946.3 8.0
945	944.6	9.7								**RESIDUAL** GRAY AND BROWN, MEDIUM DENSE, SILTY SAND (A-2-4) 944.1 10.2
	943.8	10.5	14	86/0.3		100/0.8 60/0.0				943.8 10.5
			60/0.0							**WEATHERED ROCK** (BIOTITE GNEISS)
940										**CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, MODERATELY HARD TO HARD, CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS
935							RS-3			REC = 96% RQD = 92% GSI = 55-60
930							RS-4			
925										
920										917.7 36.6
										Boring Terminated at Elevation 917.7 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT BORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 31+83	**OFFSET** 35 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 954.3 ft	**TOTAL DEPTH** 36.6 ft	**NORTHING** 748,058	**EASTING** 1,251,340 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/23/22	**COMP. DATE** 08/24/22	**SURFACE WATER DEPTH** 36.9ft
CORE SIZE NQ	**TOTAL RUN** 26.1 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))
943.83											Begin Coring @ 10.5 ft
	943.8	10.5	1.1	N=60/0.0	(0.7)	(0.4)		(25.2)	(24.0)		943.8 **CRYSTALLINE ROCK** 10.5
	942.7	11.6	5.0	0:15/0.1 2:45/1.0	64%	36%		97%	92%		GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, MODERATELY HARD TO HARD, CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS
940				4:05/1.0 4:35/1.0 4:25/1.0 5:30/1.0	(4.5) 90%	(3.7) 74%					GSI = 55-60
	937.7	16.6	5.0	4:45/1.0 3:40/1.0 4:30/1.0 4:00/1.0 4:30/1.0 5:50/1.0	(5.0) 100%	(5.0) 100%	RS-3				
935											
	932.7	21.6	5.0	3:45/1.0 6:15/1.0 5:00/1.0 8:10/1.0 9:50/1.0	(5.0) 100%	(5.0) 100%	RS-4				
930											
	927.7	26.6	5.0	8:00/1.0 5:50/1.0 4:55/1.0 2:55/1.0 2:30/1.0	(5.0) 100%	(4.9) 98%					
925											
	922.7	31.6	5.0	2:30/1.0 3:05/1.0 3:50/1.0 4:20/1.0 4:50/1.0	(5.0) 100%	(5.0) 100%					
920											
	917.7	36.6									917.7 36.6
											Boring Terminated at Elevation 917.7 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT CORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Daily, J.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B3-A	**STATION** 33+13	**OFFSET** 28 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 956.7 ft	**TOTAL DEPTH** 51.9 ft	**NORTHING** 748,155	**EASTING** 1,251,234 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/25/22	**COMP. DATE** 08/26/22	**SURFACE WATER DEPTH** 35.0ft

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)
990										WATER SURFACE (08/25/22)	
985											
980											
975											
970											
965											
960											
955										956.7 MUDLINE	0.0
	953.6	3.1	WOR	WOR	WOR	0		Sat.		**ALLUVIAL** BROWN, VERY SOFT, CLAY (A-7-6)	
950											
	948.6	8.1	WOR	1	1	2		Sat.			
945										945.7	11.0
	944.0	12.7	1	3	2	5		Sat.		GRAY, LOOSE, FINE TO COARSE, SAND (A-3)	
940										939.4	17.3
	938.7	18.0	3	6	31	37		Sat.		**RESIDUAL** BROWN, DENSE, SILTY SAND (A-2-4)	
	936.3	20.4	60/0.1			60/0.1				937.2 / 936.2 **WEATHERED ROCK** (BIOTITE GNEISS)	19.5 / 20.5
935										**CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, HARD, CLOSE FRACTURE SPACING, BIOTITE GNEISS	
930											
925							RS-5			REC = 81% RQD = 60% GSI = 55-60	
920							RS-6				
915											
910											

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Daily, J.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B3-A	**STATION** 33+13	**OFFSET** 28 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 956.7 ft	**TOTAL DEPTH** 51.9 ft	**NORTHING** 748,155	**EASTING** 1,251,234 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/25/22	**COMP. DATE** 08/26/22	**SURFACE WATER DEPTH** 35.0ft

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
910						Match Line				
905										904.8 / 51.9
										Boring Terminated at Elevation 904.8 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Daily, J.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B3-A	**STATION** 33+13	**OFFSET** 28 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 956.7 ft	**TOTAL DEPTH** 51.9 ft	**NORTHING** 748,155	**EASTING** 1,251,234	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/25/22	**COMP. DATE** 08/26/22	**SURFACE WATER DEPTH** 35.0ft
CORE SIZE NQ	**TOTAL RUN** 31.4 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))
936.22											Begin Coring @ 20.5 ft
935	936.2 934.8	20.5 21.9	1.4	0:20/0.4 3:15/1.0	(0.7) 50%	(0.0) 0%		(25.4) 81%	(18.9) 60%		936.2 **CRYSTALLINE ROCK** 20.5 GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, HARD, CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 55-60
930	929.8	26.9	5.0	1:55/1.0 1:45/1.0 1:00/1.0 1:50/1.0 5:15/1.0	(1.8) 36%	(0.4) 8%					
925	924.8	31.9	5.0	2:55/1.0 3:50/1.0 4:00/1.0 3:20/1.0 5:50/1.0	(4.8) 96%	(3.4) 68%	RS-5				
920	919.8	36.9	5.0	2:00/1.0 3:50/1.0 5:00/1.0 4:45/1.0 5:20/1.0	(4.6) 92%	(3.6) 72%	RS-6				
915	914.8	41.9	5.0	8:00/1.0 3:35/1.0 4:50/1.0 5:00/1.0 4:55/1.0	(3.6) 72%	(3.1) 62%					
910	909.8	46.9	5.0	2:35/1.0 3:50/1.0 3:45/1.0 4:00/1.0 5:30/1.0	(5.0) 100%	(4.8) 96%					
905	904.8	51.9	5.0	2:40/1.0 3:20/1.0 3:35/1.0 3:30/1.0 3:35/1.0	(4.9) 98%	(3.6) 72%					904.8 51.9
											Boring Terminated at Elevation 904.8 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Swartley, J.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 33+12	**OFFSET** 29 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 956.6 ft	**TOTAL DEPTH** 46.5 ft	**NORTHING** 748,175	**EASTING** 1,251,288 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/30/22	**COMP. DATE** 09/01/22	**SURFACE WATER DEPTH** 35.5ft

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)
990										WATER SURFACE (08/30/22)	
985											
980											
975											
970											
965											
960											
955	956.6	0.0	WOH	WOH	WOH	0		Sat.		MUDLINE	0.0
950	950.6	6.0	WOH	WOH	WOH	0		Sat.		**ALLUVIAL** BROWN, VERY SOFT, MODERATELY ORGANIC CLAY (A-7-6)	
945	946.2	10.4	2	1	2	3		Sat.		947.6 GRAY, LOOSE, FINE TO COARSE, SAND (A-3)	9.0
940	941.2	15.4	2	6	85	91		Sat.		942.6 **RESIDUAL** WHITE, GRAY AND TAN, VERY DENSE, SAND (A-3)	14.0
935	936.8	19.8	47	16	55	71		Sat.		934.6	22.0
930	933.9	22.7	60/0.0			60/0.0				933.9 **WEATHERED ROCK** (BIOTITE GNEISS) **CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, HARD, CLOSE TO VERY CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 93% RQD = 75% GSI = 55-60	22.7
925											
920											
915										910.1	46.5

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Swartley, J.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 33+12	**OFFSET** 29 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 956.6 ft	**TOTAL DEPTH** 46.5 ft	**NORTHING** 748,175	**EASTING** 1,251,288 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/30/22	**COMP. DATE** 09/01/22	**SURFACE WATER DEPTH** 35.5ft

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
910						Match Line				Boring Terminated at Elevation 910.1 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Swartley, J.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 33+12	**OFFSET** 29 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 956.6 ft	**TOTAL DEPTH** 46.5 ft	**NORTHING** 748,175	**EASTING** 1,251,288	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MID0314 D-25 83% 02/28/2019		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Coogan, M.	**START DATE** 08/30/22	**COMP. DATE** 09/01/22	**SURFACE WATER DEPTH** 35.5ft
CORE SIZE NQ	**TOTAL RUN** 23.8 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))
933.91											Begin Coring @ 22.7 ft
	933.9	22.7	3.8	N=60/0.0 1:20/0.8 3:00/1.0 3:30/1.0 3:10/1.0	(3.3) 87%	(2.3) 61%		(22.1) 93%	(17.8) 75%		933.9 / 22.7 **CRYSTALLINE ROCK** GRAY, WHITE AND BLACK, FRESH TO SLIGHT WEATHERING, HARD, CLOSE TO VERY CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 55-60
930	930.1	26.5	5.0	6:00/1.0 6:10/1.0 5:50/1.0 6:15/1.0 5:45/1.0	(4.3) 86%	(3.9) 78%					
925	925.1	31.5	5.0	6:00/1.0 6:15/1.0 5:10/1.0 6:20/1.0 5:45/1.0	(5.0) 100%	(2.9) 58%					
920	920.1	36.5	5.0	6:10/1.0 5:15/1.0 6:30/1.0 6:45/1.0 6:10/1.0	(4.7) 94%	(4.4) 88%					
915	915.1	41.5	5.0	5:00/1.0 5:05/1.0 4:50/1.0 4:55/1.0 5:05/1.0	(4.8) 96%	(4.3) 86%					
	910.1	46.5									910.1 / 46.5 Boring Terminated at Elevation 910.1 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B4-A	**STATION** 34+34	**OFFSET** 22 ft LT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 959.3 ft	**TOTAL DEPTH** 81.7 ft	**NORTHING** 748,270	**EASTING** 1,251,195 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/20/22	**COMP. DATE** 05/24/22	**SURFACE WATER DEPTH** 33.4ft

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)
										WATER SURFACE (05/20/22)	
990											
985											
980											
975											
970											
965											
960	959.3	0.0	WOR	WOR	WOR	0		W		959.3 MUDLINE	0.0
955	955.8	3.5	WOR	WOR	WOR	0		W		**ALLUVIAL** GRAY, VERY SOFT, SILTY CLAY (A-7-5)	
	953.3	6.0	WOR	WOR	WOR	0		W			
950	950.3	9.0	1	1	1	2		W		946.8	12.5
945	945.3	14.0	5	2	2	4		W		**RESIDUAL** GRAY, WHITE AND TAN, LOOSE TO DENSE, SILTY SAND WITH GRAVEL (A-2-4)	
940	940.3	19.0	10	13	23	36		M		937.3	22.0
935	935.3	24.0	68	32/0.2		100/0.7				**WEATHERED ROCK** (BIOTITE GNEISS)	
930	930.3	29.0	38	62/0.4		100/0.9					
925	925.2	34.1	100/0.5			100/0.5					
920	920.2	39.1	52	48/0.2		100/0.7					
	917.2	42.1	60/0.1			60/0.1				917.1	42.2
915											
910											

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B4-A	**STATION** 34+34	**OFFSET** 22 ft LT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 959.3 ft	**TOTAL DEPTH** 81.7 ft	**NORTHING** 748,270	**EASTING** 1,251,195 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/20/22	**COMP. DATE** 05/24/22	**SURFACE WATER DEPTH** 33.4ft

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
910						Match Line				
905							RS-7			**CRYSTALLINE ROCK** GRAY, FRESH TO SEVERE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS
900										REC = 85% RQD = 44% GSI = 50-55 *(continued)*
895										
890							RS-8			
885										
880										877.6 — 81.7 Boring Terminated at Elevation 877.6 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B4-A	**STATION** 34+34	**OFFSET** 22 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 959.3 ft	**TOTAL DEPTH** 81.7 ft	**NORTHING** 748,270	**EASTING** 1,251,195	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/20/22	**COMP. DATE** 05/24/22	**SURFACE WATER DEPTH** 33.4ft
CORE SIZE NQ	**TOTAL RUN** 39.5 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))
917.06											Begin Coring @ 42.2 ft
915	917.1	42.2	4.5	0:55/0.5 3:00/1.0 2:35/1.0 2:30/1.0 2:40/1.0	(1.6) 36%	(0.4) 9%		(33.6) 85%	(17.3) 44%		917.1 **CRYSTALLINE ROCK** 42.2 GRAY, FRESH TO SEVERE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 50-55
	912.6	46.7	5.0	2:45/1.0 3:30/1.0 4:25/1.0 3:00/1.0 3:05/1.0	(4.9) 98%	(3.8) 76%	RS-7				
910	907.6	51.7	5.0	3:30/1.0 3:45/1.0 5:30/1.0 3:40/1.0 3:25/1.0	(5.0) 100%	(2.1) 42%					
905	902.6	56.7	5.0	2:10/1.0 2:40/1.0 2:10/1.0 1:55/1.0 2:05/1.0	(4.6) 92%	(0.8) 16%					
900	897.6	61.7	5.0	2:20/1.0 2:00/1.0 2:35/1.0 2:10/1.0 2:25/1.0	(5.0) 100%	(2.4) 48%					
895	892.6	66.7	5.0	2:00/1.0 2:25/1.0 2:40/1.0 2:20/1.0 3:30/1.0	(5.0) 100%	(3.3) 66%	RS-8				
890	887.6	71.7	5.0	2:30/1.0 2:15/1.0 2:35/1.0 2:25/1.0 2:35/1.0	(5.0) 100%	(2.1) 42%					
885	882.6	76.7	5.0	2:00/1.0 2:05/1.0 1:35/1.0 1:25/1.0 1:25/1.0	(2.5) 50%	(2.4) 48%					
880	877.6	81.7									877.6 81.7 Boring Terminated at Elevation 877.6 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B4-B	**STATION** 34+60	**OFFSET** 8 ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 960.0 ft	**TOTAL DEPTH** 66.7 ft	**NORTHING** 748,305	**EASTING** 1,251,214 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Norwood, R.	**START DATE** 06/13/22	**COMP. DATE** 06/14/22	**SURFACE WATER DEPTH** 33.2ft

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))
995										
								▼		WATER SURFACE (06/13/22)
990										
985										
980										
975										
970										
965										
960	960.0	0.0	WOR	WOR	WOR	0		Sat.		960.0 MUDLINE 0.0
										ALLUVIAL BLACK AND GRAY, VERY SOFT TO SOFT, CLAYEY SILT (A-5) [NO RECOVERY FROM DEPTHS 6.9'-10.4'; ASSUME SAME MATERIAL]
955	956.1	3.9	WOR	WOR	WOR	0		Sat.		
	953.1	6.9	WOR	WOR	WOR	0		Sat.		
950	951.1	8.9	1	1	1	2		Sat.		948.0 12.0
										RESIDUAL ORANGE AND BROWN, MEDIUM DENSE TO DENSE, SILTY FINE TO COARSE SAND (A-2-4)
945	946.1	13.9	6	8	13	21		Sat.		
940	941.1	18.9	9	12	24	36		Sat.		938.0 22.0
										WEATHERED ROCK (BIOTITE GNEISS)
935	935.9	24.1	70	30/0.1		100/0.6				
	933.9	26.1	60/0.0			60/0.0				933.9 26.1
										CRYSTALLINE ROCK GRAY, FRESH TO SEVERE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 79% RQD = 15% GSI = 45-50
930										
925										
920										
915										

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B4-B	**STATION** 34+60	**OFFSET** 8 ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 960.0 ft	**TOTAL DEPTH** 66.7 ft	**NORTHING** 748,305	**EASTING** 1,251,214 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Norwood, R.	**START DATE** 06/13/22	**COMP. DATE** 06/14/22	**SURFACE WATER DEPTH** 33.2ft

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
915						Match Line				
910										**CRYSTALLINE ROCK** GRAY, FRESH TO SEVERE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 79% RQD = 15% GSI = 45-50 *(continued)*
905										
900										
895										893.3 66.7
										Boring Terminated at Elevation 893.3 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B4-B	**STATION** 34+60	**OFFSET** 8 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 960.0 ft	**TOTAL DEPTH** 66.7 ft	**NORTHING** 748,305	**EASTING** 1,251,214	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Norwood, R.	**START DATE** 06/13/22	**COMP. DATE** 06/14/22	**SURFACE WATER DEPTH** 33.2ft
CORE SIZE NQ	**TOTAL RUN** 40.6 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 (ELEV. (ft) / DEPTH (ft))
933.86											Begin Coring @ 26.1 ft
	933.9 / 933.3	26.1 / 26.7	0.6	N=60/0.0	(0.4) 67%	(0.4) 67%		(32.1) 79%	(6.1) 15%		933.9 / 26.1 **CRYSTALLINE ROCK** GRAY, FRESH TO SEVERE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 45-50
930			5.0	1:30/0.6 2:00/1.0 2:45/1.0 2:15/1.0	(2.1) 42%	(0.0) 0%					
	928.3	31.7		2:15/1.0 3:30/1.0							
925			5.0	2:30/1.0 3:15/1.0 3:15/1.0 1:45/1.0	(2.4) 48%	(0.0) 0%					
	923.3	36.7		3:00/1.0							
920			5.0	2:00/1.0 2:15/1.0 2:00/1.0 3:45/1.0	(4.1) 82%	(0.3) 6%					
	918.3	41.7		4:00/1.0							
915			5.0	1:30/1.0 2:45/1.0 2:30/1.0 3:30/1.0	(4.4) 88%	(1.7) 34%					
	913.3	46.7		3:15/1.0							
910			5.0	3:30/1.0 2:30/1.0 2:30/1.0 2:00/1.0	(5.0) 100%	(1.3) 26%					
	908.3	51.7		2:00/1.0							
905			5.0	2:15/1.0 2:15/1.0 2:15/1.0 2:30/1.0	(4.4) 88%	(0.8) 16%					
	903.3	56.7		3:00/1.0							
900			5.0	3:00/1.0 3:00/1.0 3:00/1.0 2:30/1.0	(4.3) 86%	(0.3) 6%					
	898.3	61.7		2:30/1.0							
895			5.0	2:15/1.0 2:00/1.0 2:00/1.0 2:30/1.0	(5.0) 100%	(1.3) 26%					
	893.3	66.7		2:15/1.0							893.3 / 66.7 Boring Terminated at Elevation 893.3 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B5-A	**STATION** 35+60	**OFFSET** 13 ft LT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 963.0 ft	**TOTAL DEPTH** 75.7 ft	**NORTHING** 748,390	**EASTING** 1,251,157 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/16/22	**COMP. DATE** 05/17/22	**SURFACE WATER DEPTH** 29.1ft

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)
995											
								▼		WATER SURFACE (05/16/22)	
990											
985											
980											
975											
970											
965											
	963.0	0.0								963.0 MUDLINE	0.0
			WOR	WOR	WOR	0		W		**ALLUVIAL** GRAY, VERY SOFT, SILTY CLAY (A-7-5)	
960	960.9	2.1	WOR	WOR	WOR	0		W			
955	955.9	7.1	WOR	WOR	WOR	0		W			
	954.3	8.7	WOR	WOR	WOR	0		W			
										951.0	12.0
950	949.9	13.1	WOH	WOH	WOH	0		M		GRAY AND TAN, VERY SOFT, SILT (A-5), TRACE MICA	
										947.0	16.0
945	945.2	17.8	19	32	63	95		M		**RESIDUAL** GRAY, VERY DENSE, SILTY FINE TO COARSE SAND (A-2-4)	
										942.0	21.0
940	940.0	23.0	40	60/0.4		100/0.9				**WEATHERED ROCK** (BIOTITE GNEISS)	
935	935.0	28.0	100/0.3			100/0.3					
930	930.0	33.0	100/0.4			100/0.4					
925	925.0	38.0	60/0.0			60/0.0				925.0	38.0
										CRYSTALLINE ROCK GRAY, FRESH TO MODERATE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 97% RQD = 44% GSI = 50-55	
920											
915											

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B5-A	**STATION** 35+60	**OFFSET** 13 ft LT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 963.0 ft	**TOTAL DEPTH** 75.7 ft	**NORTHING** 748,390	**EASTING** 1,251,157 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/16/22	**COMP. DATE** 05/17/22	**SURFACE WATER DEPTH** 29.1ft

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
915						Match Line				
910										**CRYSTALLINE ROCK** GRAY, FRESH TO MODERATE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 97% RQD = 44% GSI = 50-55 *(continued)*
905										
900										
895										
890										
										887.3 — 75.7
										Boring Terminated at Elevation 887.3 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B5-A	**STATION** 35+60	**OFFSET** 13 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 963.0 ft	**TOTAL DEPTH** 75.7 ft	**NORTHING** 748,390	**EASTING** 1,251,157	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/16/22	**COMP. DATE** 05/17/22	**SURFACE WATER DEPTH** 29.1ft
CORE SIZE NQ	**TOTAL RUN** 37.7 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 (ELEV. (ft) / DEPTH (ft))
926.54											Begin Coring @ 38.0 ft
	925.0	38.0	2.7	N=60/0.0 1:20/0.7 3:00/1.0	(2.3) 85%	(0.0) 0%		(36.5) 97%	(16.4) 44%		925.0 / 38.0 **CRYSTALLINE ROCK** GRAY, FRESH TO MODERATE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 50-55
	922.3	40.7	5.0	2:05/1.0 1:55/1.0 1:50/1.0 1:45/1.0 2:05/1.0 1:50/1.0	(4.7) 94%	(1.6) 32%					
920	917.3	45.7	5.0	2:20/1.0 2:00/1.0 1:50/1.0 1:55/1.0 2:15/1.0	(5.0) 100%	(2.5) 50%					
915	912.3	50.7	5.0	1:45/1.0 1:55/1.0 1:40/1.0 1:35/1.0 1:45/1.0	(4.6) 92%	(2.2) 44%					
910	907.3	55.7	5.0	2:00/1.0 1:25/1.0 1:40/1.0 1:45/1.0 1:55/1.0	(4.9) 98%	(1.8) 36%					
905	902.3	60.7	5.0	2:00/1.0 1:50/1.0 2:00/1.0 2:05/1.0 1:50/1.0	(5.0) 100%	(2.2) 44%					
900	897.3	65.7	5.0	1:55/1.0 2:10/1.0 1:40/1.0 2:10/1.0 2:25/1.0	(5.0) 100%	(3.5) 70%					
895	892.3	70.7	5.0	1:55/1.0 1:55/1.0 1:40/1.0 1:45/1.0 1:50/1.0	(5.0) 100%	(2.6) 52%					
890	887.3	75.7									887.3 / 75.7 Boring Terminated at Elevation 887.3 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B5-B	**STATION** 35+65	**OFFSET** 35 ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 964.5 ft	**TOTAL DEPTH** 71.0 ft	**NORTHING** 748,413	**EASTING** 1,251,200 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/18/22	**COMP. DATE** 05/19/22	**SURFACE WATER DEPTH** 28.1ft

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))
995										
990										WATER SURFACE (05/18/22)
985										
980										
975										
970										
965	964.5	0.0	WOR	WOR	WOR	0		W		964.5 MUDLINE 0.0 — **ALLUVIAL** GRAY, VERY SOFT, SILTY CLAY (A-7-6)
	961.2	3.3	WOR	WOR	WOR	0		W		
960	957.7	6.8	WOH	WOH	WOH	0		W		
	955.9	8.6	WOH	WOH	WOH	0		W		
955										952.5 12.0 — TAN AND GRAY, VERY SOFT TO SOFT, CLAYEY SILT (A-5)
	951.2	13.3	WOH	WOH	WOH	0		W		
950										
	946.2	18.3	20	2	1	3		W		
945										942.5 22.0 — **RESIDUAL** GRAY, STIFF, SANDY SILT (A-4), TRACE ROCK FRAGMENTS
	941.2	23.3	19	4	7	11		M		
940										
	936.2	28.3	60/0.1			60/0.1				936.1 28.4 — **CRYSTALLINE ROCK** GRAY AND TAN, FRESH TO MODERATE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 87% RQD = 40% GSI = 50-55
935										
930										
925							RS-9			
920							RS-10			
915										

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B5-B	**STATION** 35+65	**OFFSET** 35 ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 964.5 ft	**TOTAL DEPTH** 71.0 ft	**NORTHING** 748,413	**EASTING** 1,251,200 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/18/22	**COMP. DATE** 05/19/22	**SURFACE WATER DEPTH** 28.1ft

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
915						Match Line				
910										**CRYSTALLINE ROCK** GRAY AND TAN, FRESH TO MODERATE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 87% RQD = 40% GSI = 50-55 *(continued)*
905										
900										
895										893.5 71.0 — Boring Terminated at Elevation 893.5 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B5-B	**STATION** 35+65	**OFFSET** 35 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 964.5 ft	**TOTAL DEPTH** 71.0 ft	**NORTHING** 748,413	**EASTING** 1,251,200	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/18/22	**COMP. DATE** 05/19/22	**SURFACE WATER DEPTH** 28.1ft
CORE SIZE NQ	**TOTAL RUN** 42.6 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 (ELEV. (ft) / DEPTH (ft))
936.07											Begin Coring @ 28.4 ft
935	936.1	28.4	2.6	0:50/0.6 1:30/1.0 1:30/1.0	(2.0) 77%	(0.0) 0%		(37.1) 87%	(17.2) 40%		936.1 — 28.4 **CRYSTALLINE ROCK** GRAY AND TAN, FRESH TO MODERATE WEATHERING, HARD TO MODERATELY HARD, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 50-55
	933.5	31.0									
			5.0	1:35/1.0 3:00/1.0 2:15/1.0 2:45/1.0 2:10/1.0	(4.6) 92%	(2.3) 46%					
930											
	928.5	36.0									
			5.0	2:15/1.0 2:00/1.0 2:15/1.0 2:10/1.0 2:30/1.0	(5.0) 100%	(4.1) 82%	RS-9				
925											
	923.5	41.0									
			5.0	2:10/1.0 2:10/1.0 2:20/1.0 1:55/1.0 2:40/1.0	(3.7) 74%	(1.9) 38%	RS-10				
920											
	918.5	46.0									
			5.0	4:10/1.0 2:35/1.0 2:45/1.0 1:35/1.0 1:55/1.0	(2.0) 40%	(0.0) 0%					
915											
	913.5	51.0									
			5.0	1:15/1.0 2:10/1.0 2:00/1.0 2:05/1.0 1:55/1.0	(4.9) 98%	(2.6) 52%					
910											
	908.5	56.0									
			5.0	1:40/1.0 1:45/1.0 2:05/1.0 1:50/1.0 1:50/1.0	(5.0) 100%	(2.3) 46%					
905											
	903.5	61.0									
			5.0	1:30/1.0 1:35/1.0 1:10/1.0 1:40/1.0 1:45/1.0	(5.0) 100%	(2.0) 40%					
900											
	898.5	66.0									
			5.0	1:55/1.0 1:35/1.0 1:40/1.0 1:30/1.0 2:00/1.0	(4.9) 98%	(2.0) 40%					
895											
	893.5	71.0									893.5 — 71.0
											Boring Terminated at Elevation 893.5 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.	
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE				**GROUND WTR (ft)**
BORING NO. B6-A	**STATION** 37+14	**OFFSET** 28 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 971.1 ft	**TOTAL DEPTH** 55.9 ft	**NORTHING** 748,528	**EASTING** 1,251,087	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic	
DRILLER Pugh, S.	**START DATE** 05/11/22	**COMP. DATE** 05/12/22	**SURFACE WATER DEPTH** 19.1ft	

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)
990										WATER SURFACE (05/11/22)	
985											
980											
975											
970	971.1	0.0	WOH	WOH	1					971.1 MUDLINE	0.0
	967.8	3.3	3	4	5			Sat.		968.1 **ALLUVIAL** GRAY AND BROWN, VERY SOFT, CLAYEY SILT (A-7-5)	3.0
965	964.5	6.6	4	4	4			M		**RESIDUAL** RED AND BROWN, STIFF, SILTY CLAY (A-7-6), TRACE MICA	
	962.8	8.3	2	1	1			M		962.9	8.2
960								Sat.		ORANGE AND BROWN, SOFT, SANDY SILT (A-4), TRACE MICA	
	958.0	13.1	20	29	20			W		958.6 GRAY, DENSE, SILTY FINE TO COARSE SAND (A-2-4)	12.5
955	952.9	18.2	4	4	4			W		954.7 ORANGE AND BROWN, MEDIUM STIFF TO HARD, SANDY SILT (A-4)	16.4
950	947.9	23.2	27	9	63			W		TRACE ROCK FRAGMENTS	
945	942.9	28.2	30	70/0.2						943.9 **WEATHERED ROCK** (BIOTITE GNEISS)	27.2
940	941.0	30.1	60/0.1				RS-11			940.9 **CRYSTALLINE ROCK** GRAY AND WHITE, SLIGHT TO MODERATE WEATHERING, VERY HARD TO HARD, MODERATELY CLOSE TO CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 98% RQD = 72% GSI = 55-60	30.2
935											
930											
925							RS-12				
920										915.2 Boring Terminated at Elevation 915.2 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	55.9

NCDOT BORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.	
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE				**GROUND WTR (ft)**
BORING NO. B6-A	**STATION** 37+14	**OFFSET** 28 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 971.1 ft	**TOTAL DEPTH** 55.9 ft	**NORTHING** 748,528	**EASTING** 1,251,087	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic	
DRILLER Pugh, S.	**START DATE** 05/11/22	**COMP. DATE** 05/12/22	**SURFACE WATER DEPTH** 19.1ft	
CORE SIZE NQ	**TOTAL RUN** 25.7 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 ELEV. (ft)	DEPTH (ft)
940.85											Begin Coring @ 30.2 ft	
940	940.9	30.2	0.7	1:30/0.7	(0.6) 86%	(0.0) 0%		(25.2) 98%	(18.6) 72%		940.9 **CRYSTALLINE ROCK** GRAY AND WHITE, SLIGHT TO MODERATE WEATHERING, VERY HARD TO HARD, MODERATELY CLOSE TO CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 55-60	30.2
	940.2	30.9	5.0	2:45/1.0 2:45/1.0 2:15/1.0 2:15/1.0 2:30/1.0	(5.0) 100%	(3.8) 76%						
935	935.2	35.9	5.0	2:30/1.0 2:00/1.0 4:00/1.0 3:15/1.0 5:00/1.0	(4.7) 94%	(3.1) 62%	RS-11					
930	930.2	40.9	5.0	4:30/1.0 4:30/1.0 6:00/1.0 5:00/1.0 2:30/1.0	(4.9) 98%	(3.9) 78%						
925	925.2	45.9	5.0	2:30/1.0 2:00/1.0 1:30/1.0 2:00/1.0 2:00/1.0	(5.0) 100%	(3.9) 78%	RS-12					
920	920.2	50.9	5.0	2:00/1.0 3:00/1.0 4:00/1.0 2:15/1.0 2:00/1.0	(5.0) 100%	(3.9) 78%						
	915.2	55.9									915.2 Boring Terminated at Elevation 915.2 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	55.9

NCDOT CORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B6-B	**STATION** 37+14	**OFFSET** 23 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 973.0 ft	**TOTAL DEPTH** 56.9 ft	**NORTHING** 748,547	**EASTING** 1,251,134 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/12/22	**COMP. DATE** 05/13/22	**SURFACE WATER DEPTH** 18.3ft

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)
990										WATER SURFACE (05/12/22)	
985											
980											
975											
	973.0	0.0								973.0 MUDLINE	0.0
			1	2	2	4		Sat.		971.5 **ALLUVIAL** GRAY, SOFT, SILT (A-5)	1.5
970	969.4	3.6								**RESIDUAL** RED AND BROWN, MEDIUM STIFF, SILTY CLAY (A-7-6)	
			2	2	4	6		M			
	966.5	6.5								967.0 ORANGE AND BROWN, SOFT TO MEDIUM STIFF, CLAYEY SILT (A-7-5)	6.0
965			4	4	4	8		M			
	964.0	9.0									
			2	1	2	3		W			
960										960.0 BROWN, STIFF, SANDY SILT (A-4), TRACE MICA	13.0
	959.0	14.0									
			3	7	7	14		W			
955											
	954.0	19.0								954.0 **WEATHERED ROCK** (SCHIST)	19.0
			100/0.3			100/0.3					
950											
	948.9	24.1								948.8 **CRYSTALLINE ROCK** GRAY, WHITE AND BROWN, MODERATE TO SEVERE WEATHERING, VERY HARD TO MODERATELY HARD, VERY CLOSE TO CLOSE FRACTURE SPACING, SCHIST	24.2
			60/0.1			60/0.1					
945											
940										940.8 REC = 43% RQD = 10% GSI = 40-45	32.2
935										GRAY AND WHITE, SLIGHT TO MODERATE WEATHERING, VERY HARD TO HARD, MODERATELY CLOSE TO CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 99% RQD = 80% GSI = 50-55	
930											
925											
920											
										916.1 Boring Terminated at Elevation 916.1 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	56.9

NCDOT BORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B6-B	**STATION** 37+14	**OFFSET** 23 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 973.0 ft	**TOTAL DEPTH** 56.9 ft	**NORTHING** 748,547	**EASTING** 1,251,134 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/12/22	**COMP. DATE** 05/13/22	**SURFACE WATER DEPTH** 18.3ft
CORE SIZE NQ	**TOTAL RUN** 32.7 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 ELEV. (ft)	DEPTH (ft)
948.78											Begin Coring @ 24.2 ft	
	948.8	24.2	2.7	0:30/0.7 2:00/1.0 1:15/1.0	(1.3) 48%	(0.8) 30%		(3.4) 43%	(0.8) 10%		948.8 **CRYSTALLINE ROCK** GRAY, WHITE AND BROWN, MODERATE TO SEVERE WEATHERING, VERY HARD TO MODERATELY HARD, VERY CLOSE TO CLOSE FRACTURE SPACING, SCHIST GSI = 40-45	24.2
	946.1	26.9										
945			5.0	0:45/1.0 1:00/1.0 1:00/1.0 1:00/1.0 1:00/1.0	(1.8) 36%	(0.0) 0%						
	941.1	31.9									940.8 GRAY AND WHITE, SLIGHT TO MODERATE WEATHERING, VERY HARD TO HARD, MODERATELY CLOSE TO CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 50-55	32.2
940			5.0	1:30/1.0 2:00/1.0 1:30/1.0 2:00/1.0 2:15/1.0	(5.0) 100%	(3.0) 60%		(24.5) 99%	(19.8) 80%			
	936.1	36.9										
935			5.0	2:15/1.0 2:15/1.0 2:15/1.0 2:30/1.0 2:15/1.0	(5.0) 100%	(3.7) 74%						
	931.1	41.9										
930			5.0	2:15/1.0 3:00/1.0 3:30/1.0 5:00/1.0 3:45/1.0	(4.9) 98%	(3.5) 70%						
	926.1	46.9										
925			5.0	2:00/1.0 1:45/1.0 2:30/1.0 3:00/1.0 4:45/1.0	(5.0) 100%	(4.7) 94%						
	921.1	51.9										
920			5.0	6:00/1.0 4:00/1.0 3:30/1.0 2:45/1.0 2:15/1.0	(4.9) 98%	(4.9) 98%						
	916.1	56.9									916.1 Boring Terminated at Elevation 916.1 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	56.9

NCDOT CORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B7-A	**STATION** 38+52	**OFFSET** 28 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 987.3 ft	**TOTAL DEPTH** 66.2 ft	**NORTHING** 748,656	**EASTING** 1,251,036 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/09/22	**COMP. DATE** 05/10/22	**SURFACE WATER DEPTH** 3.7ft

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))
990										WATER SURFACE (05/09/22)
	987.3	0.0								987.3 MUDLINE 0.0
985			WOH	WOH	1	1		Sat.		**ALLUVIAL** 985.3 GRAY, VERY LOOSE, SILTY FINE TO COARSE SAND (A-2-4) 2.0
	983.8	3.5	2	0	0	0		Sat.		GRAY AND BROWN, VERY SOFT, CLAYEY SILT (A-5) 981.3 6.0
980	980.2	7.1								**RESIDUAL**
	978.7	8.6	2	3	6	9		M		RED AND ORANGE, STIFF TO HARD, SILTY CLAY (A-7-5)
975			4	18	14	32		M		975.3 12.0
	973.9	13.4	7	4	6	10		M		BROWN AND ORANGE, MEDIUM STIFF TO VERY STIFF, SANDY SILT (A-4), TRACE MICA
970	968.9	18.4	2	3	3	6		W		
965	963.9	23.4	7	6	12	18		M		
960	958.7	28.6	4	4	5	9		M		
955	954.7	32.6	40	60/0.3		100/0.8				955.3 32.0 **WEATHERED ROCK** (BIOTITE GNEISS)
950	948.7	38.6	7	7	21	28		M		950.3 37.0 **RESIDUAL** GRAY AND BROWN, MEDIUM DENSE, SILTY FINE SAND (A-2-4), TRACE MICA
945	945.9	41.4	60/0.0			60/0.0				945.9 41.4 **CRYSTALLINE ROCK** WHITE AND GRAY, SLIGHT TO MODERATE WEATHERING, VERY HARD TO HARD, VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS REC = 96% RQD = 76% GSI = 55-60
940										
935										
930										
925										921.1 66.2 Boring Terminated at Elevation 921.1 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT BORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Rodriguez, A.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B7-A	**STATION** 38+52	**OFFSET** 28 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 987.3 ft	**TOTAL DEPTH** 66.2 ft	**NORTHING** 748,656	**EASTING** 1,251,036 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE SME2204 CME-45C 82% 12/22/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Pugh, S.	**START DATE** 05/09/22	**COMP. DATE** 05/10/22	**SURFACE WATER DEPTH** 3.7ft
CORE SIZE NQ	**TOTAL RUN** 24.8 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))
945.88											Begin Coring @ 41.4 ft
945	945.9	41.4	4.8	*N=60/0.0* 1:00/0.8 1:15/1.0 1:45/1.0 2:30/1.0 2:00/1.0	(4.4) 92%	(3.4) 71%		(23.8) 96%	(18.8) 76%		945.9 41.4 **CRYSTALLINE ROCK** WHITE AND GRAY, SLIGHT TO MODERATE WEATHERING, VERY HARD TO HARD, VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING, BIOTITE GNEISS GSI = 55-60
940	941.1	46.2	5.0	3:30/1.0 3:00/1.0 2:30/1.0 2:15/1.0 3:30/1.0	(5.0) 100%	(4.2) 84%					
935	936.1	51.2	5.0	4:30/1.0 4:15/1.0 5:15/1.0 3:00/1.0 5:45/1.0	(4.6) 92%	(3.1) 62%					
930	931.1	56.2	5.0	2:15/1.0 2:45/1.0 4:00/1.0 4:45/1.0 3:30/1.0	(5.0) 100%	(4.4) 88%					
925	926.1	61.2	5.0	3:00/1.0 5:00/1.0 5:00/1.0 3:15/1.0 4:30/1.0	(4.8) 96%	(3.7) 74%					
	921.1	66.2									921.1 66.2 Boring Terminated at Elevation 921.1 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

NCDOT CORE DOUBLE R3430B_GEO_BRDG0010.GPJ NC_DOT.GDT 12/12/22

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B7-B	**STATION** 38+52	**OFFSET** 58 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 1,018.6 ft	**TOTAL DEPTH** 99.7 ft	**NORTHING** 748,688	**EASTING** 1,251,116 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Millwood, J.	**START DATE** 06/20/22	**COMP. DATE** 06/21/22	**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)
1020											
										1,018.6 GROUND SURFACE	0.0
										1,017.4 **ROADWAY EMBANKMENT** (PAVEMENT)	1.2
1015	1,015.6	3.0	5	4	3	7		M		TAN, MEDIUM STIFF TO VERY STIFF, SANDY SILT (A-4)	
1010	1,010.1	8.5	6	7	10	17		M			
1005	1,005.1	13.5	5	8	13	21		M			
										1,001.6 RED AND TAN, MEDIUM STIFF, SANDY CLAY (A-6)	17.0
1000	1,000.1	18.5	3	4	4	8		M			
995	995.1	23.5	3	4	3	7		M			
										991.6 **ALLUVIAL** BROWN, VERY SOFT, CLAY (A-7-6)	27.0
990	990.1	28.5	2	1	1	2		W			
										986.6 **RESIDUAL** RED, STFF, SANDY CLAY (A-6)	32.0
985	985.1	33.5	6	6	9	15		M			
										981.6 WHITE AND RED, MEDIUM DENSE, CLAYEY SAND WITH GRAVEL (A-2-6)	37.0
980	980.1	38.5	30	11	6	17		M			
										976.6 BROWN AND GRAY, STIFF, SANDY SILT (A-4)	42.0
975	975.1	43.5	6	6	5	11		M			
970	970.1	48.5	6	4	7	11		M			
										966.6 BROWN AND GRAY, MEDIUM DENSE, SILTY SAND WITH GRAVEL (A-2-4)	52.0
965	965.1	53.5	8	5	11	16		M			
960	960.1	58.5	30	17	41	58		M			
										956.6 **WEATHERED ROCK** (SCHIST)	62.0
955	955.1	63.5	100/0.3			100/0.3					
										951.6 **RESIDUAL** BROWN, DENSE, SILTY SAND WITH GRAVEL (A-2-4)	67.0
950	950.1	68.5	19	25	21	46		M			
945	945.5	73.1	60/0.1			60/0.1				945.4	73.2
940											

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B7-B	**STATION** 38+52	**OFFSET** 58 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 1,018.6 ft	**TOTAL DEPTH** 99.7 ft	**NORTHING** 748,688	**EASTING** 1,251,116 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Millwood, J.	**START DATE** 06/20/22	**COMP. DATE** 06/21/22	**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
940						Match Line				
935							RS-13			**CRYSTALLINE ROCK** GRAY, WHITE AND BROWN, FRESH TO MODERATE WEATHERING, MODERATELY HARD TO HARD, CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS
930							RS-14			REC = 99% RQD = 70% GSI = 55-60 *(continued)*
925										
920										918.9 99.7
										Boring Terminated at Elevation 918.9 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. B7-B	**STATION** 38+52	**OFFSET** 58 ft RT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 1,018.6 ft	**TOTAL DEPTH** 99.7 ft	**NORTHING** 748,688	**EASTING** 1,251,116 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** NW Casing w/ Core	**HAMMER TYPE** Automatic
DRILLER Millwood, J.	**START DATE** 06/20/22	**COMP. DATE** 06/21/22	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 26.5 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))
945.39											Begin Coring @ 73.2 ft
945	945.4	73.2	1.5	0:30/0.5 1:05/1.0	(1.2) 80%	(0.9) 60%		(26.2) 99%	(18.6) 70%		945.4 / 73.2 **CRYSTALLINE ROCK** GRAY, WHITE AND BROWN, FRESH TO MODERATE WEATHERING, MODERATELY HARD TO HARD, CLOSE TO WIDE FRACTURE SPACING, BIOTITE GNEISS GSI = 55-60
	943.9	74.7	5.0	1:10/1.0 1:15/1.0 1:20/1.0 1:20/1.0 1:30/1.0	(5.0) 100%	(3.1) 62%					
940	938.9	79.7	5.0	1:10/1.0 1:05/1.0 1:00/1.0 1:00/1.0 1:10/1.0	(5.0) 100%	(4.1) 82%	RS-13				
935	933.9	84.7	5.0	1:05/1.0 1:25/1.0 1:20/1.0 1:30/1.0 1:35/1.0	(5.0) 100%	(3.3) 66%	RS-14				
930	928.9	89.7	5.0	1:30/1.0 1:15/1.0 1:20/1.0 1:00/1.0 1:05/1.0	(5.0) 100%	(3.5) 70%					
925	923.9	94.7	5.0	1:15/1.0 1:25/1.0 1:10/1.0 1:05/1.0 1:30/1.0	(5.0) 100%	(3.7) 74%					
920	918.9	99.7									918.9 / 99.7 Boring Terminated at Elevation 918.9 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.	
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE				**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 39+91	**OFFSET** 28 ft LT	**ALIGNMENT** -L-	**0 HR.** 7.4
COLLAR ELEV. 999.7 ft	**TOTAL DEPTH** 57.2 ft	**NORTHING** 748,786	**EASTING** 1,250,985	**24 HR.** 8.5
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Millwood, J.	**START DATE** 06/22/22	**COMP. DATE** 06/22/22	**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)
1000										999.7 GROUND SURFACE	0.0
	998.2	1.5	9	11	12	23		M		**RESIDUAL** TAN AND ORANGE, SOFT TO VERY STIFF, CLAYEY SILT (A-5)	
	996.2	3.5	5	6	8	14		M			
995											
	991.2	8.5	3	3	5	8	SS-1083	36%			
990											
	986.2	13.5	1	2	2	4		M			
985											
	981.2	18.5	1	1	1	2		M			
980											
	976.2	23.5	15	20	27	47		M		977.7 ORANGE, DENSE, SILTY SAND (A-2-4)	22.0
975											
	971.2	28.5	5	4	4	8		M		972.7 TAN AND ORANGE, STIFF, SANDY SILT (A-4)	27.0
970											
	966.2	33.5	4	7	8	15		M			
965										962.7 TAN AND WHITE, DENSE, SILTY SAND (A-2-4)	37.0
	961.2	38.5	16	25	18	43		M			
960											
	956.2	43.5	8	10	18	28		M		957.7 TAN AND BROWN, VERY STIFF, SANDY SILT (A-4)	42.0
955											
	951.2	48.5	11	22	30	52		M		952.7 BROWN, VERY DENSE, SILTY SAND WITH GRAVEL (A-2-4)	47.0
950											
	946.2	53.5	32	21	40	61		M			
945											
	942.5	57.2	60/0.0			60/0.0				942.5 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 942.5 ft ON CRYSTALLINE ROCK (BIOTITE GNEISS)	57.2

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Moloney, C.	
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE				**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 39+90	**OFFSET** 16 ft RT	**ALIGNMENT** -L-	**0 HR.** 9.7
COLLAR ELEV. 1,000.3 ft	**TOTAL DEPTH** 63.6 ft	**NORTHING** 748,801	**EASTING** 1,251,026	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Millwood, J.	**START DATE** 06/23/22	**COMP. DATE** 06/23/22	**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	DEPTH (ft)
1005											
1000										1,000.3 GROUND SURFACE	0.0
	998.8	1.5	3	2	2	4		M		**ROADWAY EMBANKMENT** BROWN AND RED, SOFT, SANDY CLAY (A-6)	
	996.8	3.5	4	6	9	15	SS-1094	35%		997.3 **RESIDUAL** RED, STIFF, SILTY CLAY (A-7-5)	3.0
995											
	991.8	8.5	3	4	4	8		M			
990											
	986.8	13.5	1	1	0	1	SS-1096	44%		988.3 TAN AND RED, VERY LOOSE, SILTY SAND (A-2-4)	12.0
985											
	981.8	18.5	1	1	0	1		M			
980											
	976.8	23.5	11	7	9	16		M		978.3 BROWN AND TAN, MEDIUM DENSE, SILTY SAND, MICACEOUS (A-2-4)	22.0
975											
	971.8	28.5	4	5	6	11		M		973.3 TAN AND WHITE, STIFF, SANDY SILT (A-4)	27.0
970											
	966.8	33.5	6	7	8	15		M			
965										963.3 BROWN, MEDIUM DENSE, SILTY SAND (A-2-4)	37.0
	961.8	38.5	32	8	19	27		M			
960											
	956.8	43.5	14	10	13	23		M		958.3 BROWN AND TAN, VERY STIFF, SANDY SILT (A-4)	42.0
955											
	951.8	48.5	59	41/0.3		100/0.8				953.3 **WEATHERED ROCK** (BIOTITE GNEISS)	47.0
950											
	946.8	53.5	100/0.3			100/0.3					
945											
	941.8	58.5	48	52/0.4		100/0.9					
940											
	936.8	63.5	60/0.1			60/0.1				936.8 **CRYSTALLINE ROCK** (BIOTITE GNEISS)	63.5
										936.7 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 936.7 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	63.6

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Binder, N.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. L_2300	**STATION** 23+00	**OFFSET** 42 ft LT	**ALIGNMENT** -L- / **0 HR.** Dry
COLLAR ELEV. 1,053.0 ft	**TOTAL DEPTH** 23.1 ft	**NORTHING** 747,203	**EASTING** 1,251,546 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gowan, S.	**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)
1055											
	1,053.0	0.0	4	8	11	19		M		1,053.0 GROUND SURFACE	0.0
1050	1,049.5	3.5	16	13	16	29		M		**RESIDUAL** BROWN AND WHITE, MEDIUM DENSE, SILTY SAND (A-2-4)	
1045	1,044.5	8.5	42	58/0.4		100/0.9				1,044.5 **WEATHERED ROCK** (BIOTITE GNEISS)	8.5
1040	1,039.5	13.5	10	10	14	24		M		1,041.0 **RESIDUAL** BROWN AND WHITE, MEDIUM DENSE, SILTY SAND (A-2-4)	12.0
1035	1,034.5	18.5	74	26/0.2		100/0.7				1,036.0 **WEATHERED ROCK** (BIOTITE GNEISS)	17.0
1030	1,030.0	23.0	60/0.1			60/0.1				1,030.0 / 1,029.9 **CRYSTALLINE ROCK** (BIOTITE GNEISS) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 1,029.9 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	23.0 / 23.1

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Binder, N.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. L_2719	**STATION** 27+19	**OFFSET** 34 ft LT	**ALIGNMENT** -L- / **0 HR.** Dry
COLLAR ELEV. 1,056.3 ft	**TOTAL DEPTH** 63.6 ft	**NORTHING** 747,601	**EASTING** 1,251,447 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gowan, S.	**START DATE** 06/13/22	**COMP. DATE** 06/14/22	**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
1060										
	1,056.3	0.0	2	4	4	8		M		1,056.3 GROUND SURFACE 0.0
1055	1,052.8	3.5	3	3	4	7		M		**RESIDUAL** BROWN, GRAY AND WHITE, LOOSE TO MEDIUM DENSE, SILTY SAND, MICACEOUS (A-2-4)
1050	1,047.8	8.5	5	6	6	12		M		
1045	1,042.8	13.5	8	6	6	12		M		
1040	1,037.8	18.5	5	5	8	13		M		
1035	1,032.8	23.5	4	4	7	11	SS-1018	19%		
1030	1,027.8	28.5	4	4	6	10		M		
1025	1,022.8	33.5	33	45	55/0.3	100/0.8				1,023.3 **WEATHERED ROCK** (BIOTITE GNEISS) 33.0
1020	1,017.8	38.5	100/0.5			100/0.5				
1015	1,012.8	43.5	60/0.1			60/0.1				
1010	1,007.8	48.5	57	43/0.2		100/0.7				
1005	1,002.8	53.5	60/0.1			60/0.1				
1000	997.8	58.5	85	15/0.1		100/0.6				
995	992.8	63.5	60/0.1			60/0.1				992.8 / 992.7 **CRYSTALLINE ROCK** (BIOTITE GNEISS) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 992.7 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS) 63.5 / 63.6

*potential soil seams within WR layers based on inconsistent drilling rates

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Binder, N.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. L_2800	**STATION** 28+00	**OFFSET** 20 ft LT	**ALIGNMENT** -L- — **0 HR.** Dry
COLLAR ELEV. 1,056.6 ft	**TOTAL DEPTH** 57.8 ft	**NORTHING** 747,681	**EASTING** 1,251,430 — **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gowan, S.	**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))
1060										
	1,056.6	0.0								1,056.6 GROUND SURFACE 0.0
1055			3	4	4	8		M		**RESIDUAL** BROWN, GRAY AND WHITE, LOOSE TO VERY DENSE, SILTY SAND, MICACEOUS (A-2-4)
	1,053.1	3.5	3	3	5	8		M		
1050										
	1,048.1	8.5	3	3	3	6		M		
1045										
	1,043.1	13.5	3	3	5	8		M		
1040										
	1,038.1	18.5	4	5	7	12		M		
1035										
	1,033.1	23.5	6	7	7	14		M		
1030										
	1,028.1	28.5	12	12	13	25	SS-1006	14%		
1025										
	1,023.1	33.5	7	8	10	18		M		
1020										
	1,018.1	38.5	18	17	17	34		M		
1015										
	1,013.1	43.5	12	14	46	60		M		
1010										
	1,008.1	48.5	6	40	40	80		M		
1005										1,004.6 52.0
	1,003.1	53.5	90	10/0.1		100/0.6				**WEATHERED ROCK** (BIOTITE GNEISS)
1000										
	998.9	57.7	60/0.1			60/0.1				998.9 57.7 / 998.8 57.8 **CRYSTALLINE ROCK** (BIOTITE GNEISS) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 998.8 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Binder, N.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. L_4050	**STATION** 40+50	**OFFSET** 35 ft LT	**ALIGNMENT** -L- — **0 HR.** Dry
COLLAR ELEV. 1,001.6 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 748,838	**EASTING** 1,250,957 — **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gowan, S.	**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
1005										
	1,001.6	0.0								1,001.6 GROUND SURFACE 0.0
1000			5	7	6	13		M		**RESIDUAL** RED AND TAN, STIFF, SILTY CLAY, TRACE MICA (A-7-5)
	998.1	3.5	4	5	6	11	SS-1063	27%		
995										
	993.1	8.5	4	5	5	10	SS-1064	34%		
990										
	988.1	13.5	3	4	4	8		M		986.6 15.0
										Boring Terminated at Elevation 986.6 ft IN STIFF SANDY CLAY (RESIDUAL)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34544.1.4	**TIP** R-3430B	**COUNTY** CALDWELL/BURKE	**GEOLOGIST** Binder, N.
SITE DESCRIPTION BRIDGE NO. 10 ON SR 1001 (-L-) OVER RHODHISS LAKE			**GROUND WTR (ft)**
BORING NO. L_4150	**STATION** 41+50	**OFFSET** 35 ft LT	**ALIGNMENT** -L- / **0 HR.** Dry
COLLAR ELEV. 1,008.4 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 748,930	**EASTING** 1,250,920 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE SME383 DIEDRICH D-50 88% 08/12/2021		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gowan, S.	**START DATE** 06/17/22	**COMP. DATE** 06/20/22	**SURFACE WATER DEPTH** N/A

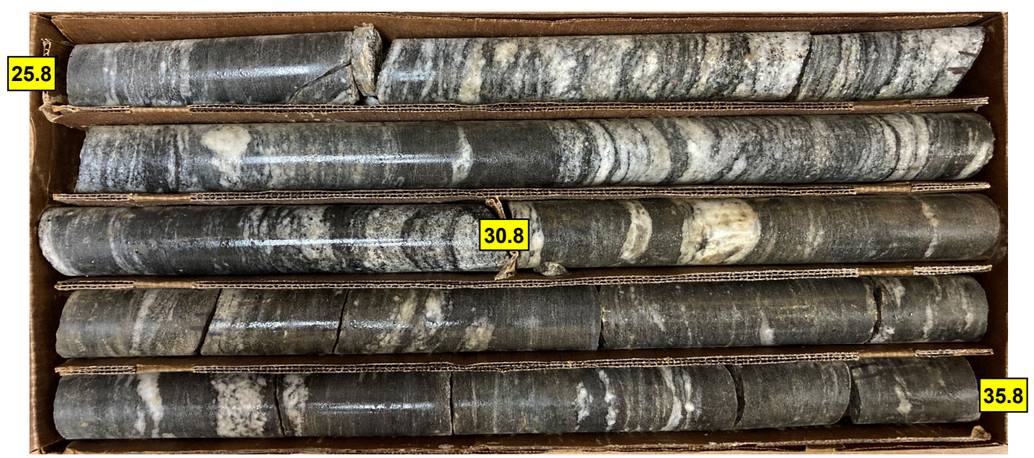
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
1010											
	1,008.4	0.0								1,008.4 GROUND SURFACE	0.0
			6	10	12	22		M		**ROADWAY EMBANKMENT** RED AND TAN, VERY STIFF, SANDY CLAY, TRACE MICA (A-6)	
1005	1,004.9	3.5								1,005.4	3.0
			8	3	12	15	SS-1059	25%		**RESIDUAL** RED AND TAN, STIFF TO VERY STIFF, SILTY CLAY, TRACE MICA (A-7-5)	
1000	999.9	8.5									
			5	7	9	16		M			
995	994.9	13.5									
			4	5	8	13		M		993.4	15.0

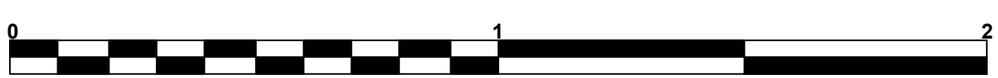
Boring Terminated at Elevation 993.4 ft IN STIFF SANDY CLAY (RESIDUAL)

CORE PHOTOGRAPHS

B1-A

BOXES 1 & 2: 15.9 - 35.8 FEET





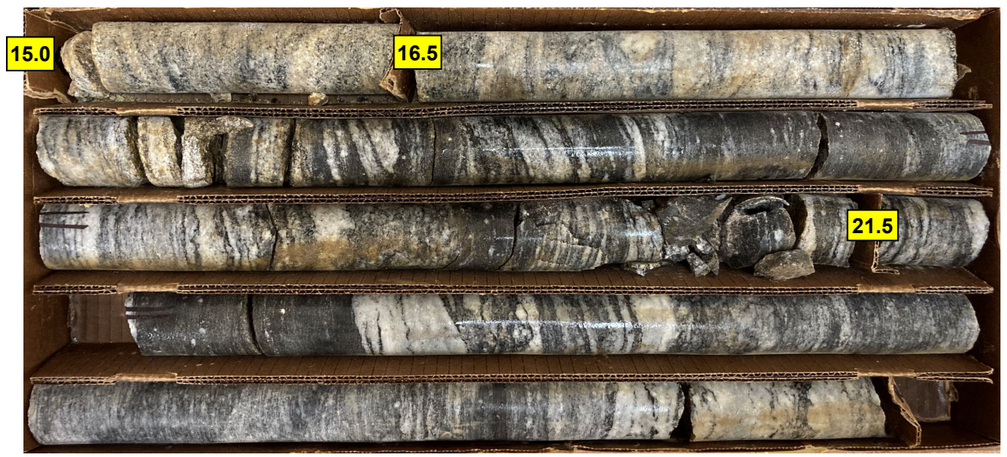
B1-A

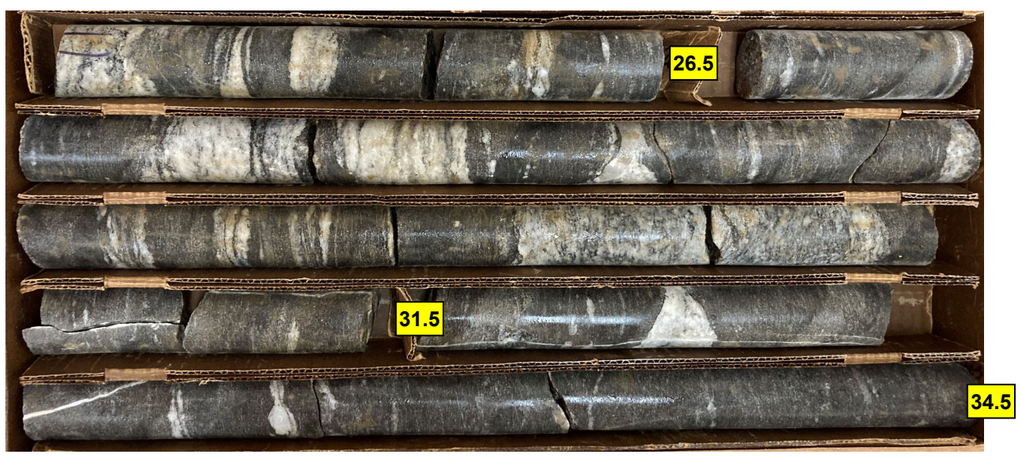
BOX 3: 35.8 - 43.4 FEET

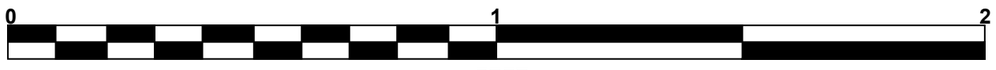
CORE PHOTOGRAPHS

B1-B

BOXES 1 & 2: 15.0 - 34.5 FEET

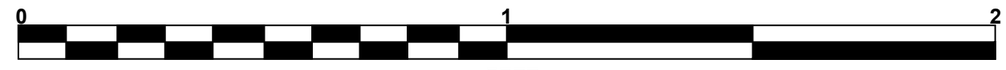






B1-B

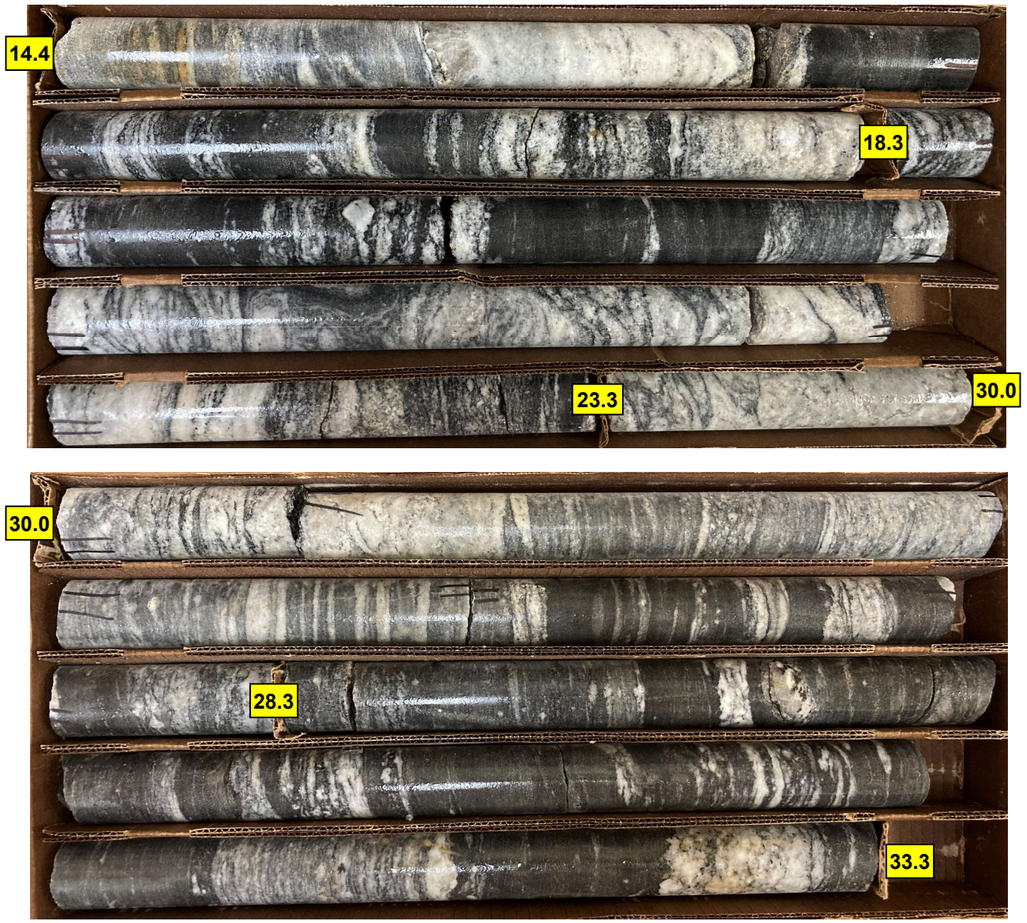
BOXES 3 & 4: 34.5 - 46.5 FEET

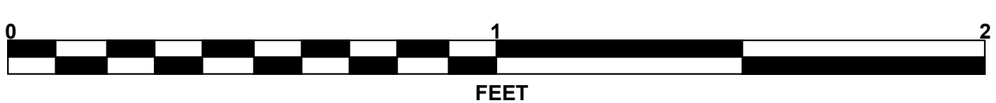


CORE PHOTOGRAPHS

B2-A

BOXES 1 & 2: 14.4 - 33.3 FEET

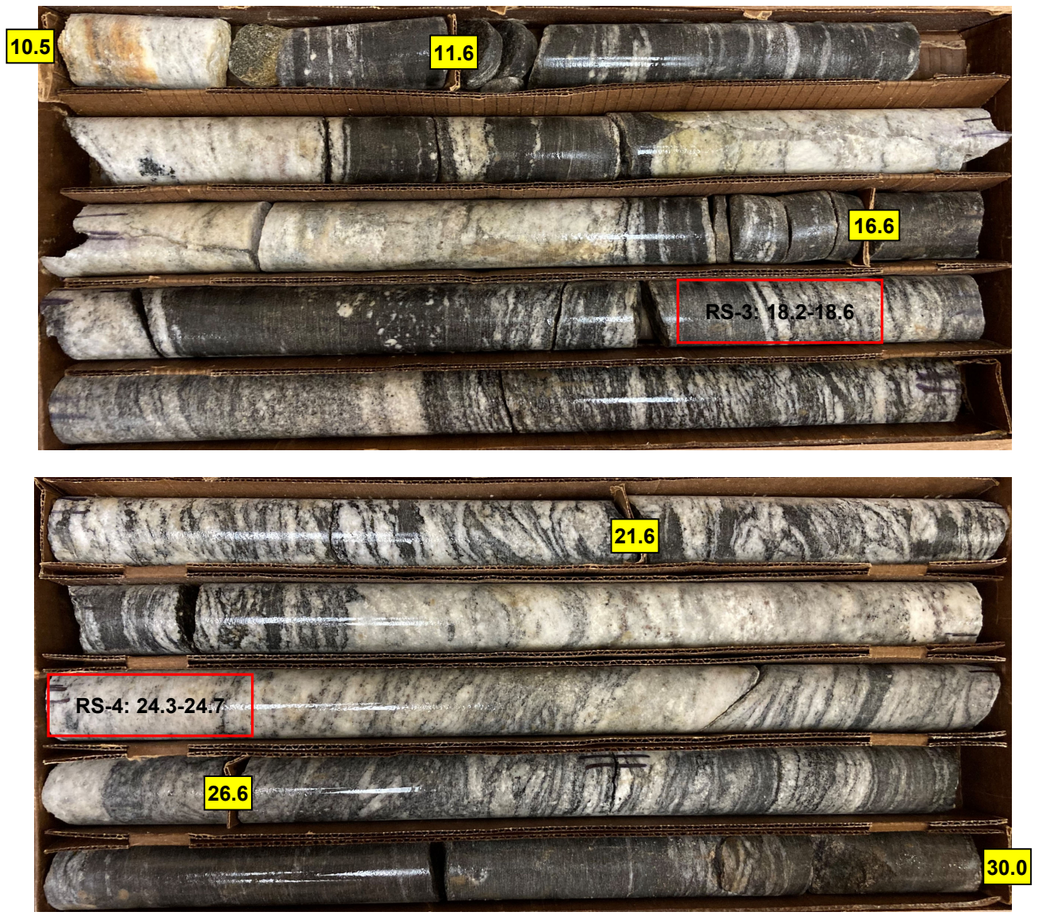


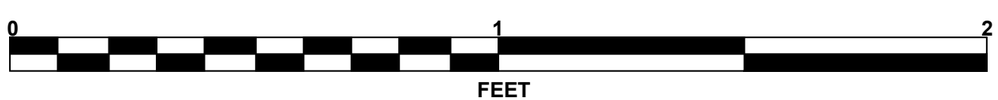


CORE PHOTOGRAPHS

B2-B

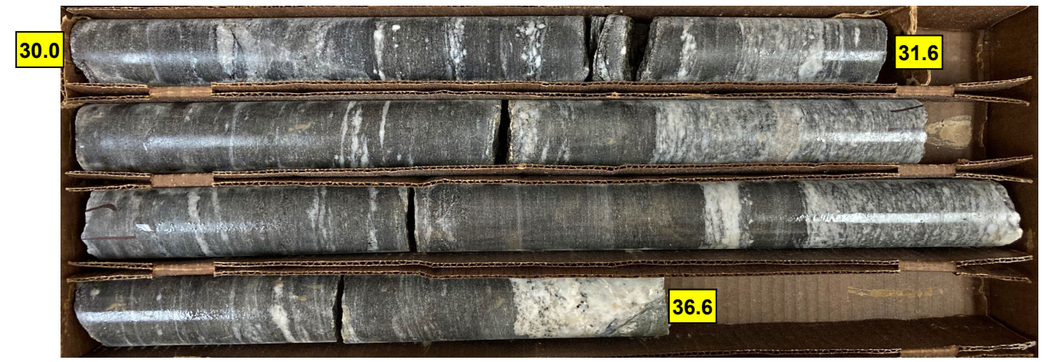
BOXES 1 & 2: 10.5 - 30.0 FEET

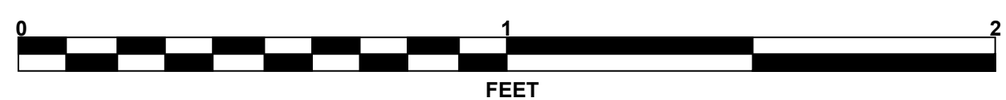




B2-B

BOX 3: 30.0 - 36.6 FEET

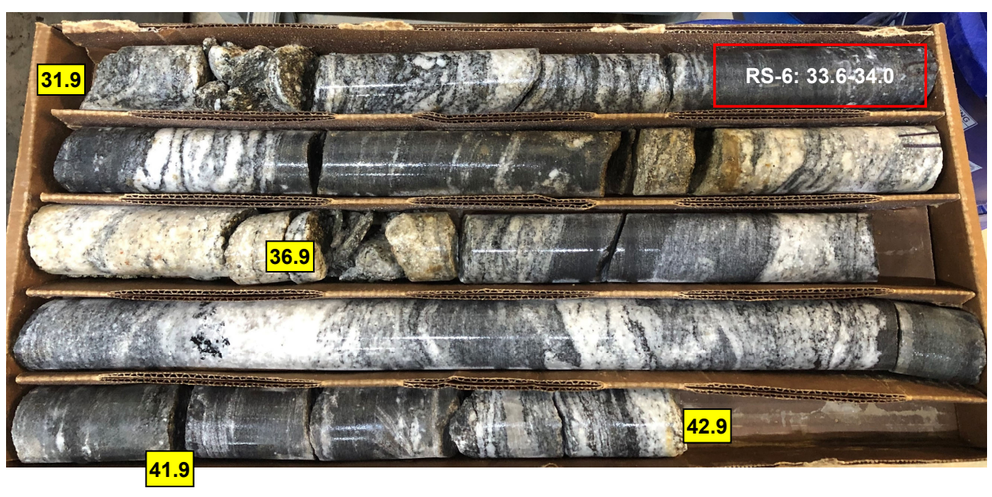


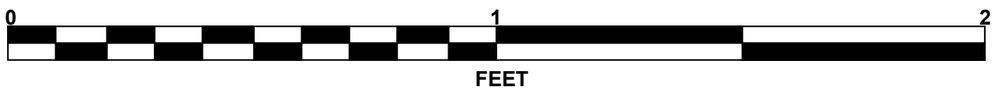


CORE PHOTOGRAPHS

B3-A

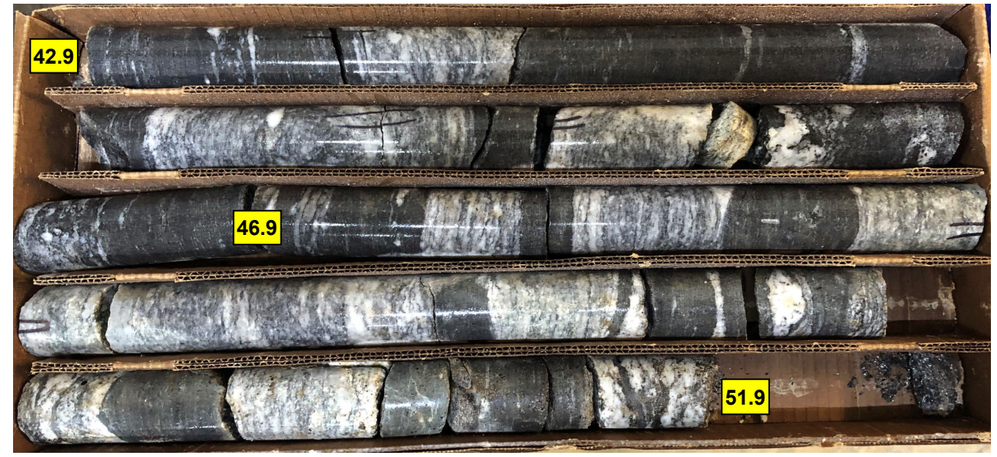
BOXES 1 & 2: 20.5 - 42.9 FEET

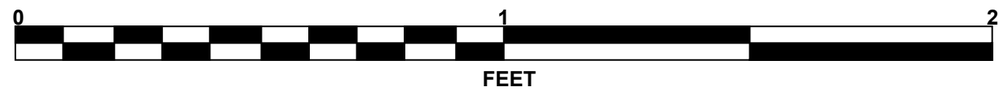




B3-A

BOX 3: 42.9 - 51.9 FEET

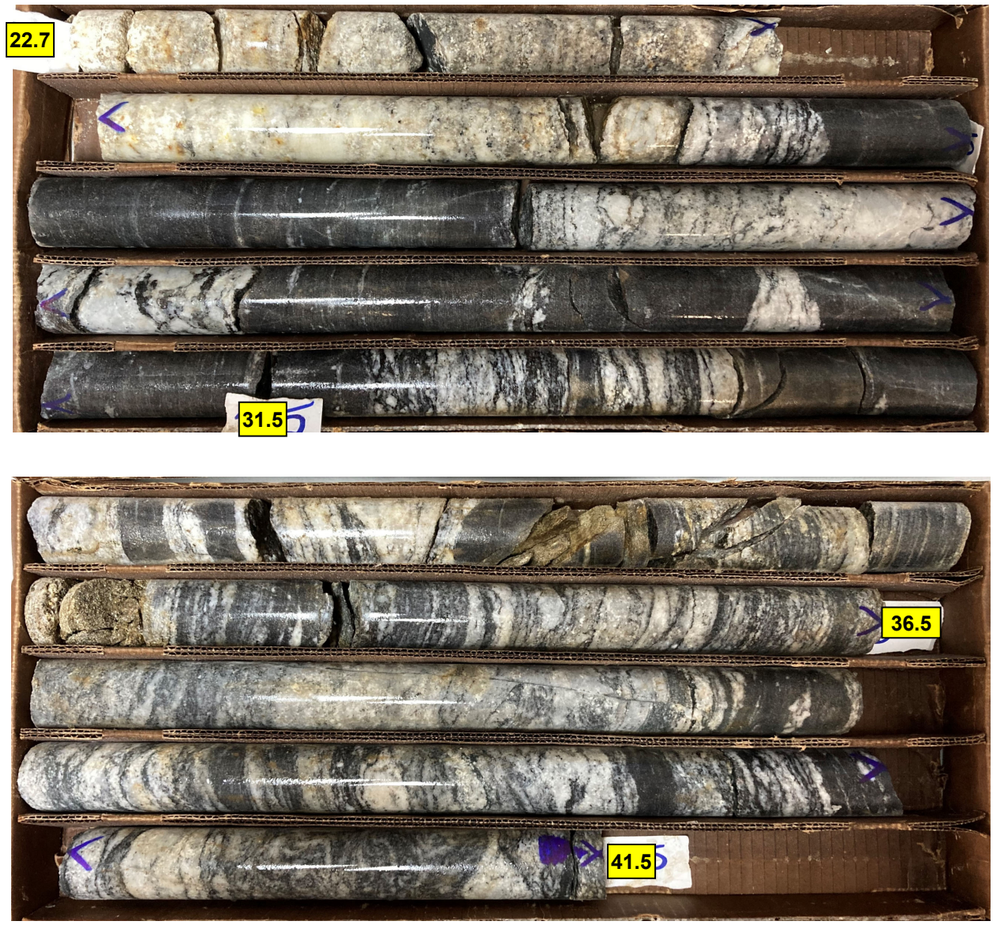


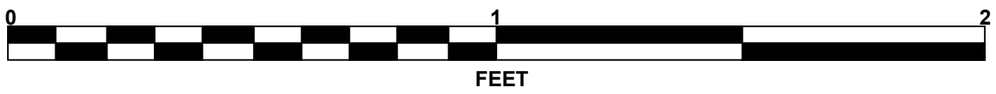


CORE PHOTOGRAPHS

B3-B

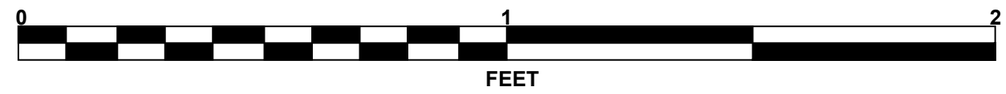
BOXES 1 & 2: 22.7 - 41.5 FEET





B3-B

BOX 3: 41.5 - 46.5 FEET



CORE PHOTOGRAPHS

B4-A

BOXES 1 & 2: 42.2 - 63.7 FEET

0 1 2
FEET

B4-A

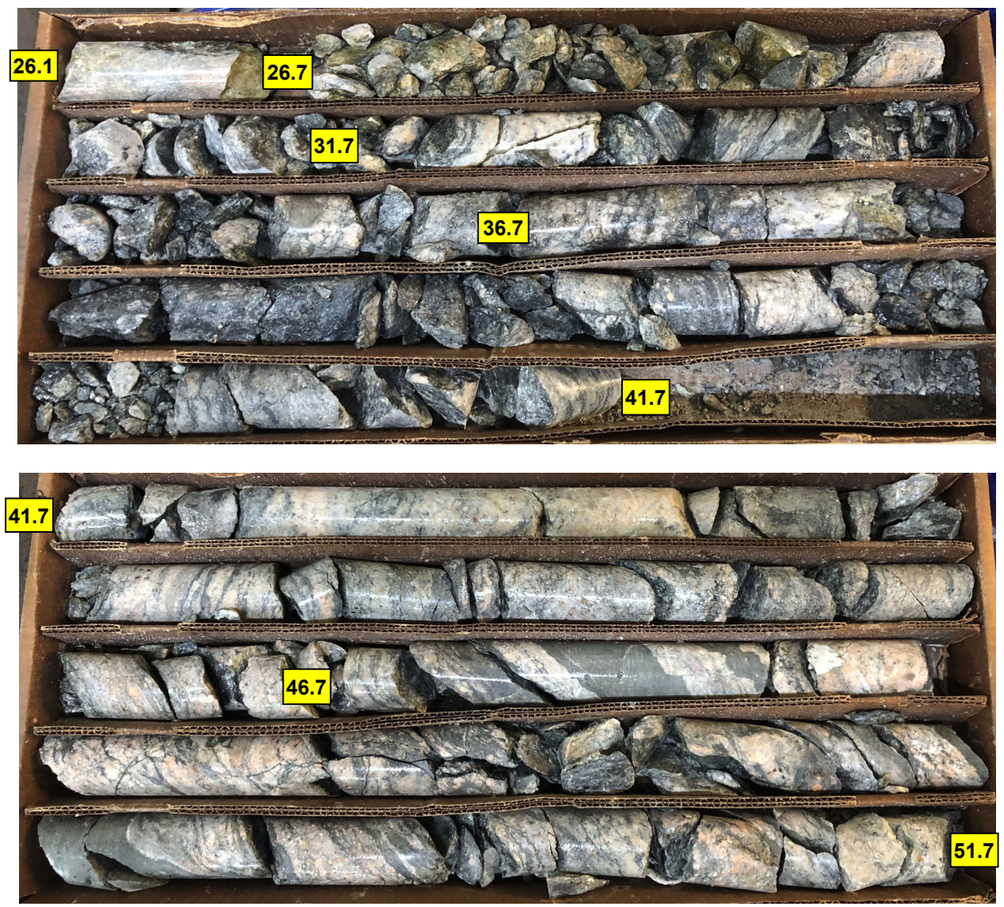
BOXES 3 & 4: 63.7 - 81.7 FEET

0 1 2
FEET

CORE PHOTOGRAPHS

B4-B

BOXES 1 & 2: 26.1 - 51.7 FEET



0 1 2
FEET

B4-B

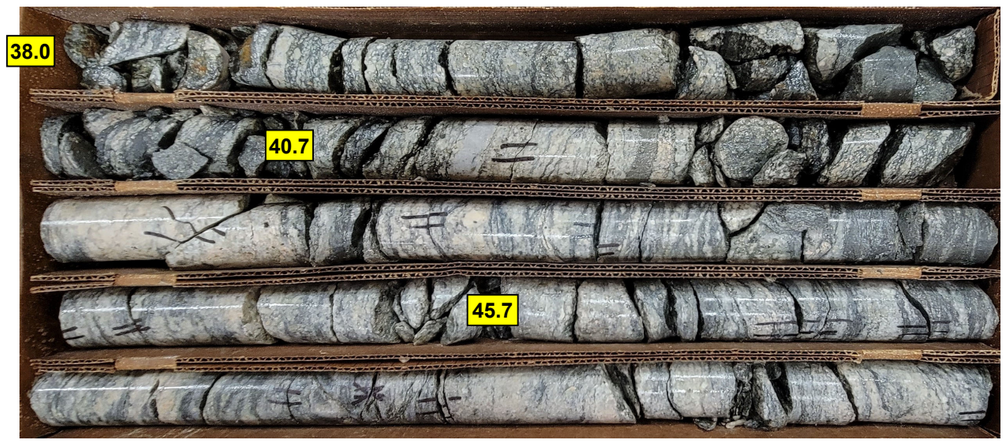
BOXES 3 & 4: 51.7 - 66.7 FEET

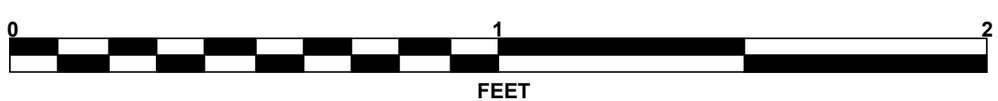
0 1 2
FEET

CORE PHOTOGRAPHS

B5-A

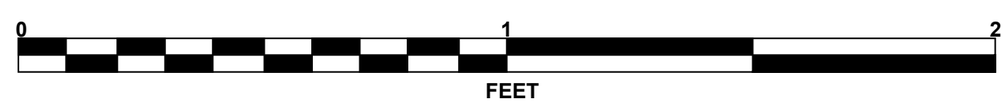
BOXES 1 & 2: 38.0 - 58.7 FEET





B5-A

BOXES 3 & 4: 58.7 - 75.7 FEET



CORE PHOTOGRAPHS

B5-B

BOXES 1 & 2: 28.4 - 53.0 FEET

B5-B

BOXES 3 & 4: 53.0 - 71.0 FEET

CORE PHOTOGRAPHS

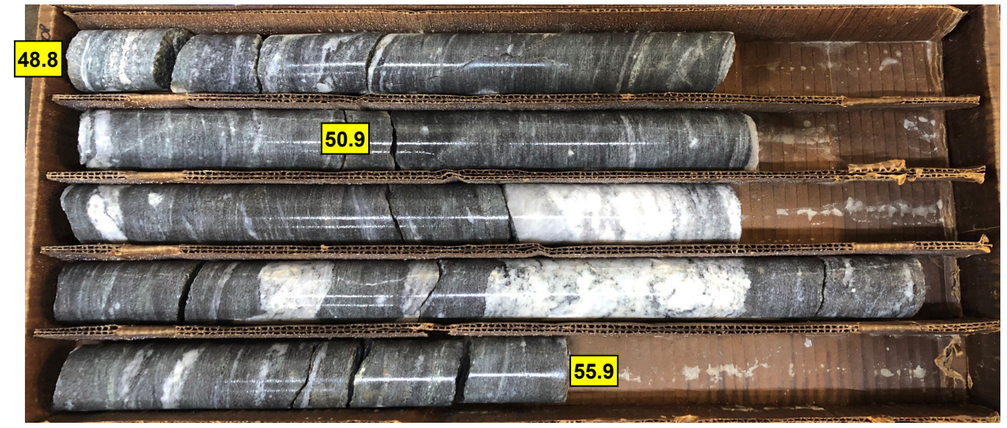
B6-A

BOXES 1 & 2: 30.2 - 48.8 FEET

0 1 2
FEET

B6-A

BOX 3: 48.8 - 55.9 FEET

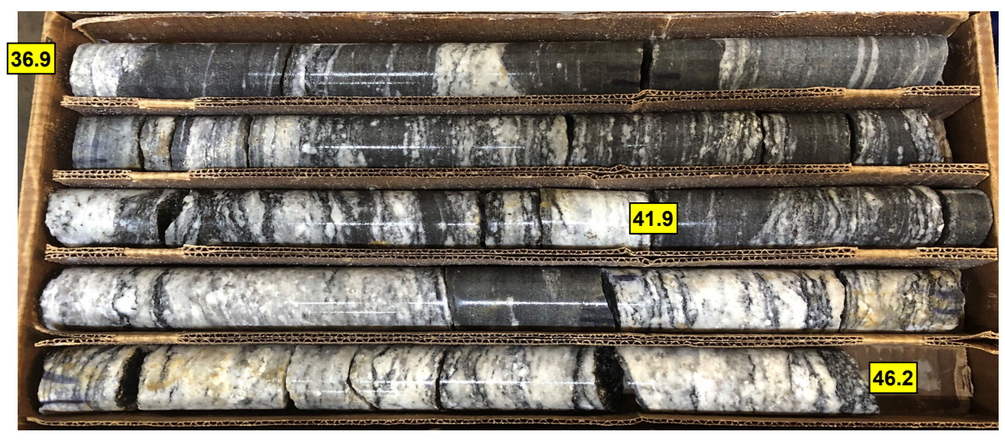


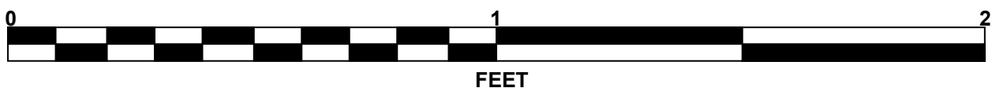
0 1 2
FEET

CORE PHOTOGRAPHS

B6-B

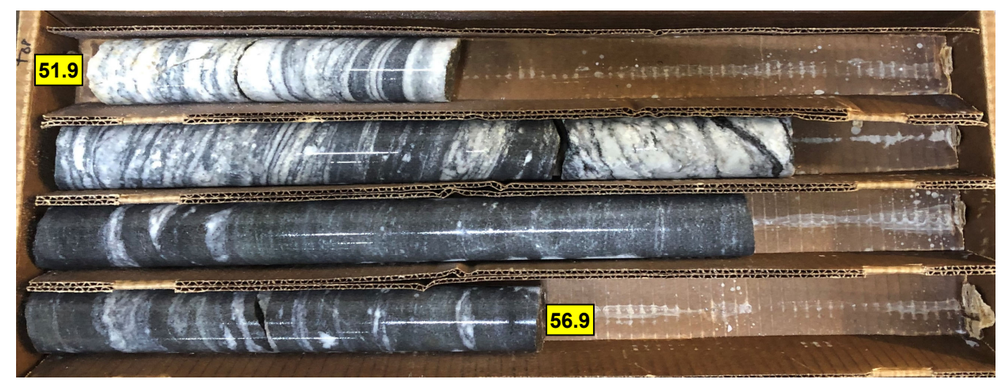
BOXES 1 & 2: 24.2 - 46.2 FEET

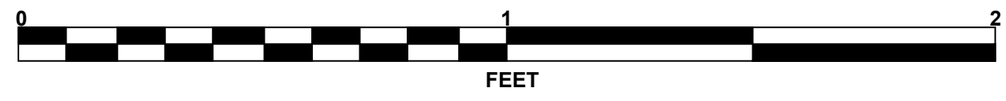




B6-B

BOXES 3 & 4: 46.2 - 56.9 FEET

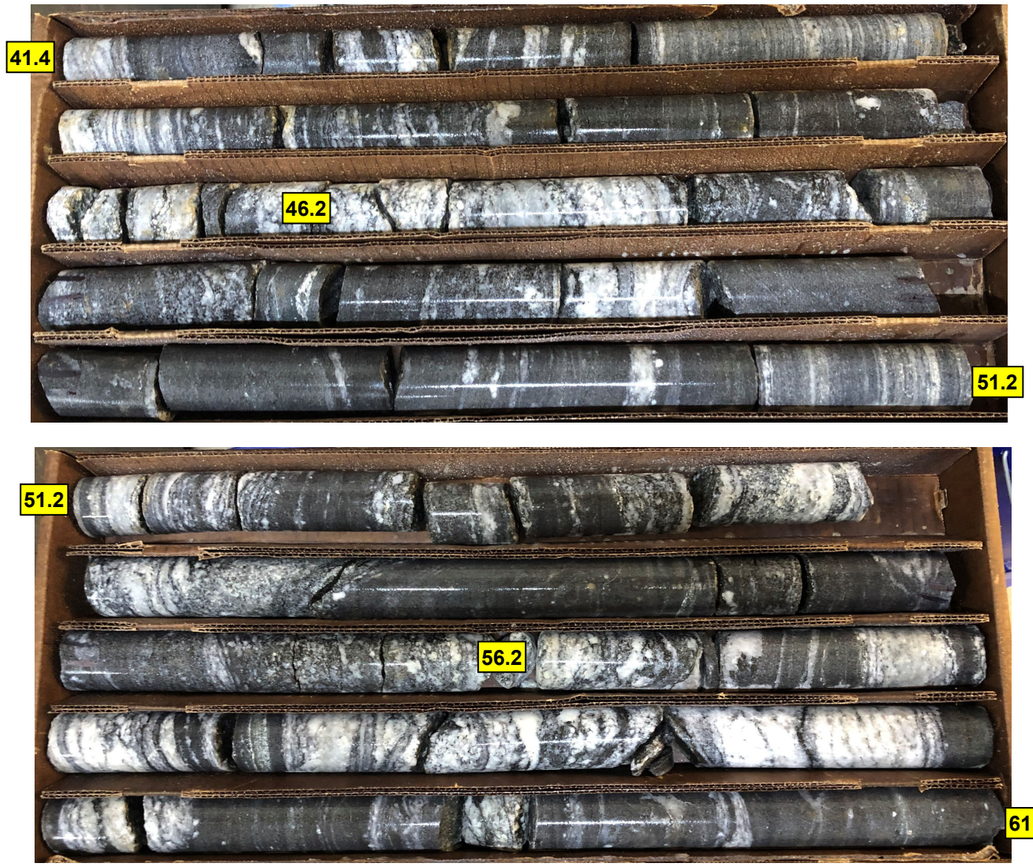




CORE PHOTOGRAPHS

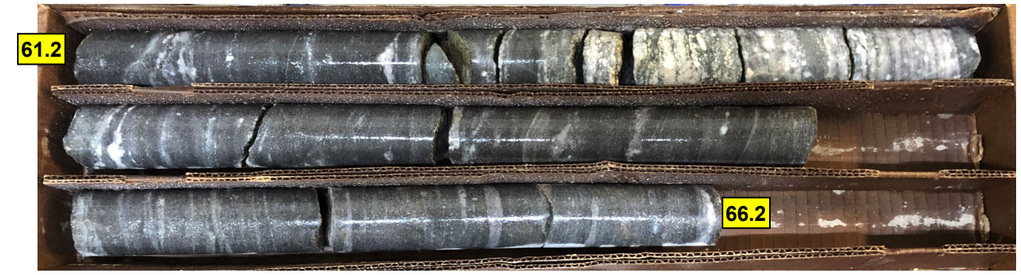
B7-A

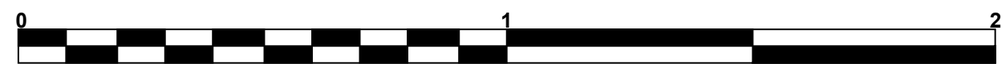
BOXES 1 & 2: 41.4 - 61.2 FEET



B7-A

BOX 3: 61.2 - 66.2 FEET





CORE PHOTOGRAPHS

B7-B

BOXES 1 & 2: 73.2 - 92.7 FEET

0 1 2
FEET

B7-B

BOX 3: 92.7 - 99.7 FEET

0 1 2
FEET

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	215719			Date Report:	12/5/2022
State Project No.:	34544.1.4	County:	Caldwell/Burke	Date Tested:	10/1/2022-12/4/2022
Federal ID No.:	NA	TIP No.:	R-3430B		
Project Name:	Bridge No. 10 on SR 1001 over Rhodhiss Lake				
Client Name:	NCDOT GEU	Client Address:	Raleigh, NC		

Sample No.	Boring No.	Station No.	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve #				Total Mortar Fraction (%)				LL	PL	PI	Organic	Moist. %
								10	40	60	200	Coarse Sand	Fine Sand	Silt	Clay					
SS-1006	L_2800	28+00	20' LT	-L-	28.5-30.0	A-2-4	(0)	85	81	66	18	22	61	9	8	NP	NP	NP	-	14.1
SS-1018	L_2719	27+19	34' LT	-L-	23.5-25.0	A-2-4	(0)	100	100	70	15	30	58	3	9	NP	NP	NP	-	19.1
SS-1059	L_4150	41+50	35' LT	-L-	3.5-5.0	A-7-5	(13)	98	89	82	66	17	19	9	55	55	36	19	-	25.4
SS-1063	L_4050	40+50	35' LT	-L-	3.5-5.0	A-7-5	(10)	99	91	85	69	14	19	10	57	48	34	14	-	26.8
SS-1064	L_4050	40+50	35' LT	-L-	8.5-10.0	A-7-5	(15)	100	97	95	82	5	18	21	56	52	34	18	-	33.5
SS-1083	EB2-A	39+91	28' LT	-L-	8.5-10.0	A-5	(6)	100	100	98	62	2	44	19	35	42	32	10	-	35.9
SS-1094	EB2-B	39+90	16' RT	-L-	3.5-5.0	A-7-5	(23)	100	98	96	83	5	17	20	58	57	33	24	-	34.9
SS-1096	EB2-B	39+90	16' RT	-L-	13.5-15.0	A-2-4	(0)	100	100	95	33	5	68	13	14	NP	NP	NP	-	44.4

References / Comments / Deviations: ND=Not Detemined.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT

AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Karen Warner		NCDOT 118-06-0305	Joey Daily	Project Manager
Technician Name:	Signature	Certification #	Technical Responsibility:	Position

Form No. TR-43-D7012C-02
Revision No. : 0
Revision Date: 08/22/18

UNCONFINED COMPRESSION
(ASTM D7012 Method C)

S&ME, Inc. - Knoxville 1413 Topside Road, Louisville, TN 37777

Project Name: R-3430B Bridge 10 over Rhodhiss Lake
Project Number: 215719

Report Date: December 7, 2022
Reviewed By: Lindsey Deskins

Boring No.	Sample No.	Depth (ft)	Dimensions, in.		Shape (See Key)	Area (in^2)	Unit Weight (lbs/ft^3)	Loading Rate (psi/sec)	Maximum Load (lbs)	Strength (psi)	Moisture (%)
			Length	Diameter							
B2-B	RS-3	18.2 - 18.55	4.31	1.98	A	3.08	166.2	85	60,679	19,701	0.0
B2-B	RS-4	24.3 - 24.65	4.31	1.98	A	3.1	164.4	91	103,236	33,518	0.0
B3-A	RS-5	28.3 - 28.65	4.51	1.98	B	3.08	164.0	71	31,472	10,218	0.1
B3-A	RS-6	36.6 - 36.95	4.69	1.98	A	3.08	171.0	89	63,398	20,584	0.0
B4-A	RS-7	50.4 - 50.75	4.04	1.87	A	2.75	166.1	76	19,546	7,108	0.2
B4-A	RS-8	67.3 - 67.65	4.38	1.87	D	2.75	160.5	94	53,651	19,509	0.2
B5-B	RS-9	38.4 - 38.75	4.54	1.87	A	2.75	167.5	94	44,521	16,189	0.1
B5-B	RS-10	44.0 - 44.35	4.20	1.87	A	2.75	167.0	79	24,379	8,865	0.1
B6-A	RS-11	38.6 - 38.95	4.44	1.86	A	2.72	163.8	101	61,588	22,643	0.1
B6-A	RS-12	45.2 - 45.55	4.45	1.86	A	2.72	164.8	100	56,084	20,619	0.1
B7-B	RS-13	82.1 - 82.45	4.44	1.98	A	3.08	170.2	78	38,006	12,340	0.1
B7-B	RS-14	88.9 - 89.25	4.64	1.98	B	3.08	161.3	74	15,114	4,907	0.1

NOTES: Effective (as received) unit weight as determined by RTH 109-93.
Loading rates were selected to target reaching failure between 2 and 15 minutes.
Test results for specimens not meeting the requirements of ASTM D4543-19 may differ from a test specimen that meets the requirements of ASTM D4543.

SHAPE KEY

ASTM D4543-19 Standard Practice for Preparing Rock Core as Cylindrical Test Specimens and Verifying Conformance to Dimensional and Shape Tolerance Section 1.2 - "Rock is a complex engineering material that can vary greatly as a function of lithology, stress history, weathering, moisture content and chemistry, and other natural geologic processes. As such, it is not always possible to obtain or prepare rock core specimens that satisfy the desirable tolerances given in this practice. Most commonly, this situation presents itself with weaker, more porous, and poorly cemented rock types and rock types containing significant or weak (or both) structural features. For rock types which are difficult to prepare, all reasonable efforts shall be made to prepare a specimen in accordance with this practice and for the intended test procedure. However, when it has been determined by trial and error that this is not possible, prepare the rock specimen to the closest tolerances practicable and consider this to be the best effort and report it as such and if allowable or necessary for the intended test, capping the ends of the specimen as discussed in this practice is permitted."

A Test specimen measurements met the desired shape tolerances of ASTM D4543-19 (side straightness, end flatness & parallelism, and end perpendicularity to axis)
B Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness & parallelism, and end perpendicularity to axis. Specimen did not meet the desired tolerance for side straightness. Specimen prepared to closest tolerances practicable.
C Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness & parallelism. Specimen did not meet the desired tolerances for side straightness and end perpendicularity to axis. Specimen prepared to closest tolerances practicable.
D Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness. Specimen did not meet the desired tolerances for side straightness, parallelism and end perpendicularity to axis. Specimen prepared to closest tolerances practicable.
E Test specimen measurements met the desired shape tolerances of ASTM D4543-19 for end flatness and end perpendicularity to axis. Specimen did not meet the desired tolerance for side straightness and parallelism. Specimen prepared to closest tolerances practicable.


Date: 12/6/2022

Photographer: Victoria Igoe

1	**Location / Orientation**	B2-B, RS-3 (18.2′ – 18.55′)
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)


Date: 12/6/2022

Photographer: Victoria Igoe

2	**Location / Orientation**	B2-B, RS-4 (24.3′ – 24.65′)
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

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Date: 12/6/2022

Photographer: Victoria Igoe

3	**Location / Orientation**	B3-A, RS-5 (28.3′ – 28.65′)
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)


Date: 12/6/2022

Photographer: Victoria Igoe

4	**Location / Orientation**	B3-A, RS-6 (36.6′ – 36.95′)
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

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Date: 12/6/2022

Photographer: Victoria Igoe

5	**Location / Orientation**	B4-A, RS-7 (50.4′ – 50.75′)
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

Date: 12/6/2022

Photographer: Victoria Igoe

6	**Location / Orientation**	B4-A, RS-8 (67.3′ – 67.65′)
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

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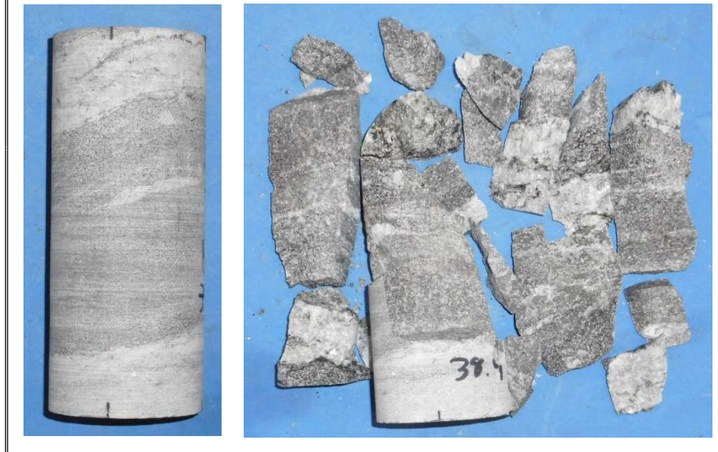

Date: 12/6/2022

Photographer: Victoria Igoe

7	**Location / Orientation**	B5-B, RS-9 (38.4′ – 38.75′)
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

Date: 12/6/2022

Photographer: Victoria Igoe

8	**Location / Orientation**	B5-B, RS-10 (44.0′ – 44.35′)
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

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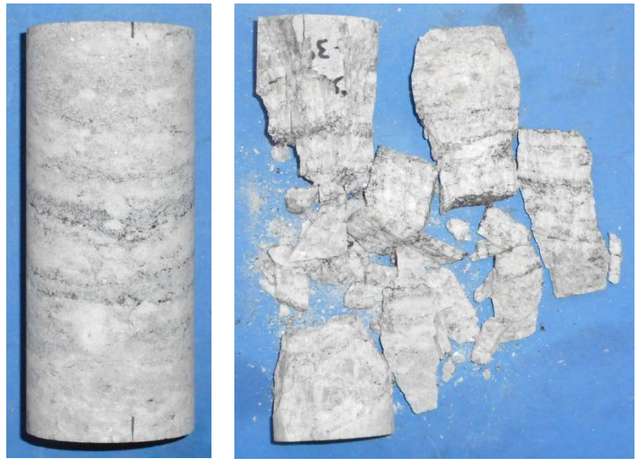

Date: 12/6/2022

Photographer: Victoria Igoe

9	**Location / Orientation**	B6-A, RS-11 (38.6' – 38.95')
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

Date: 12/6/2022

Photographer: Victoria Igoe

10	**Location / Orientation**	B6-A, RS-12 (45.2' – 45.55')
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

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Date: 12/6/2022

Photographer: Victoria Igoe

11	**Location / Orientation**	B7-B, RS-13 (82.1' – 82.45')
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

Date: 12/6/2022

Photographer: Victoria Igoe

12	**Location / Orientation**	B7-B, RS-14 (88.9' – 89.25')
	Remarks	Unconfined Compressive Strength of Rock Core Specimen Before/After (ASTM D7012 Method C)

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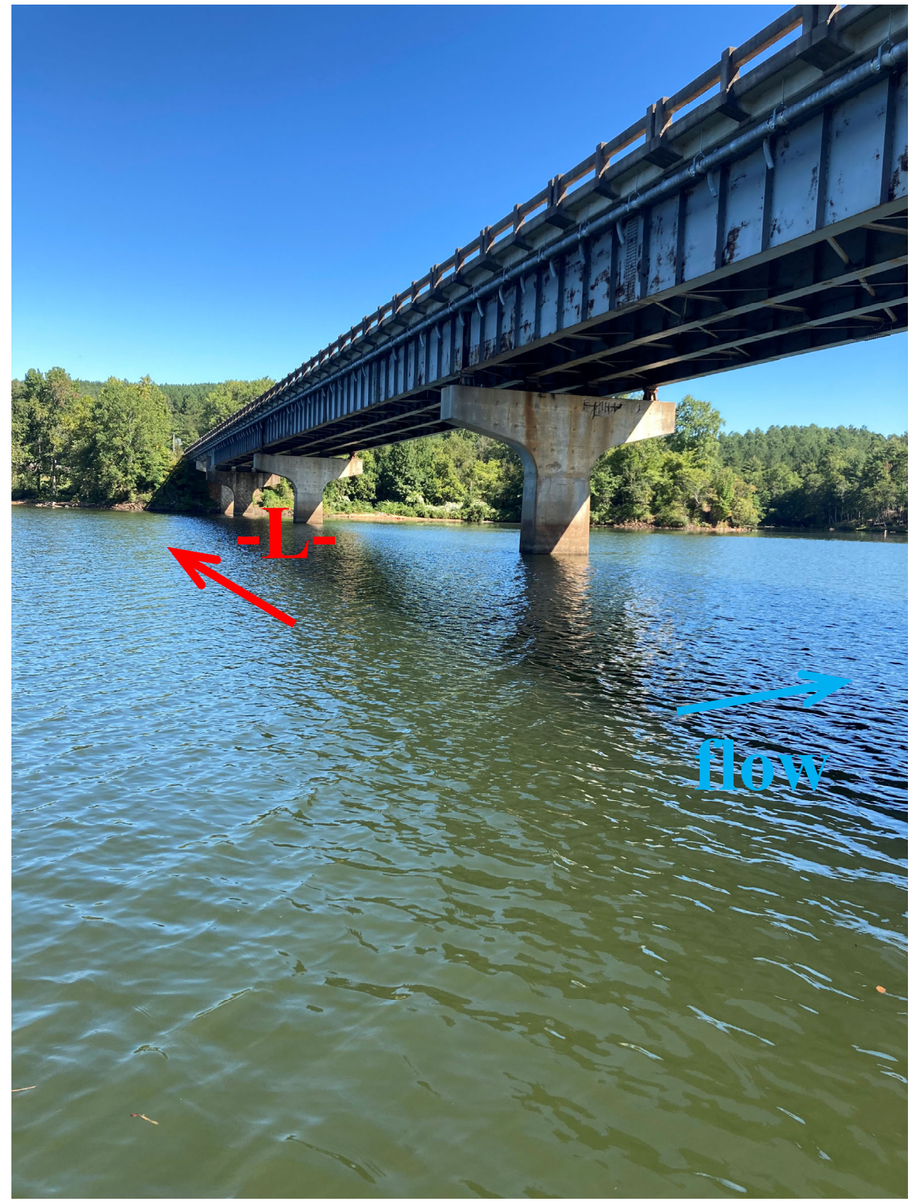
SITE PHOTOGRAPH

Bridge No. 10 on –L– (SR 1001) over Rhodhiss Lake



Looking North towards End Bent 2