

REFERENCE: BR-0100

PROJECT: 67100

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY RUTHERFORD
PROJECT DESCRIPTION REPLACE BRIDGE NO. 40
ON NC 226 OVER N. FORK FIRST BROAD CREEK

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0100	1	19

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919 T07-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

J. KARDON

TRIGON EXPLORATION

INVESTIGATED BY J. KARDON

DRAWN BY T. WELLS

DocuSigned by:


CHECKED BY X. BARRETT

D. Matt Mull

SUBMITTED BY KLEINFELDER, INC.

DATE OCTOBER 2022

Prepared in the Office of:



KLEINFELDER
Bright People. Right Solutions.
422 GALLIMORE DAIRY ROAD, SUITE B
GREENSBORO, NORTH CAROLINA 27409
NC ENGINEERING FIRM LICENSE NO. F-1312



DocuSigned by:
Thomas R. Wells 12/07/2022

7DA5D2D0518E4A0 SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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 208, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

Table with columns for General Class, Granular Materials (A-1 to A-7), and Organic Materials (A-1 to A-7). Includes symbols for soil types and a legend for soil moisture scales (LL, PL, OM, SL).

CONSISTENCY OR DENSENESS

Table mapping soil types (e.g., Granular Material, Silty-Clay Material) to consistency/denseness levels (e.g., Very Loose, Medium Dense, Very Dense).

TEXTURE OR GRAIN SIZE

Table showing U.S. Std. Sieve Size (mm) and corresponding grain size ranges for Boulder, Cobble, Gravel, Coarse Sand, Fine Sand, Silt, and Clay.

SOIL MOISTURE - CORRELATION OF TERMS

Table correlating Soil Moisture Scale (Atterberg Limits) with Field Moisture Description (Saturated, Wet, Moist, Dry) and Plasticity Limits (Liquid, Plastic, Optimum Moisture, Shrinkage Limit).

PLASTICITY

Table showing Plasticity Index (PI) ranges (0-5, 6-15, 16-25, 26 or more) and corresponding Dry Strength levels (Very Low, Slight, Medium, 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.

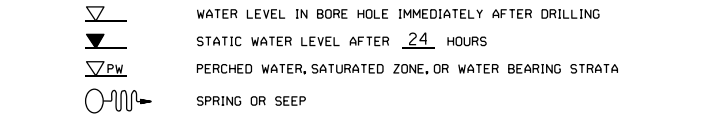
COMPRESSIBILITY

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

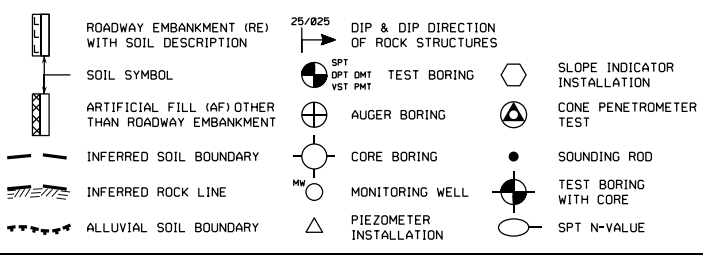
PERCENTAGE OF MATERIAL

Table showing percentages for Organic Material, Granular Soils, Silty-Clay Soils, and Other Material.

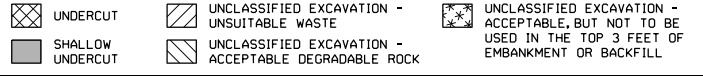
GROUND WATER



MISCELLANEOUS SYMBOLS



RECOMMENDATION SYMBOLS



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. - SILTY, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
W - UNIT WEIGHT
Wg - DRY UNIT WEIGHT
SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

- DRILL UNITS:
[] CME-45C
[X] CME-55
[] CME-550
[] VANE SHEAR TEST
[] PORTABLE HOIST
ADVANCING TOOLS:
[] CLAY BITS
[] 6" CONTINUOUS FLIGHT AUGER
[X] 8" HOLLOW AUGERS
[] HARD FACED FINGER BITS
[] TUNG-CARBIDE INSERTS
[X] CASING [] w/ ADVANCER
[] TRICONE [] STEEL TEETH
[X] TRICONE [] 1-1/2" TUNG-CARB.
[X] CORE BIT
HAMMER TYPE:
[] 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:

Table defining rock types: Weathered Rock (WR), Crystalline Rock (CR), Non-Crystalline Rock (NCR), and Coastal Plain Sedimentary Rock (CP). Includes symbols for each type.

WEATHERING

Table describing weathering levels: Fresh, Very Slight (V SLI), Slight (SLI), Moderate (MOD), Moderately Severe (MOD. SEV.), Severe (SEV), Very Severe (V SEV), and Complete. Includes descriptions of rock characteristics and SPT refusal values.

ROCK HARDNESS

Table describing rock hardness levels: Very Hard, Hard, Moderately Hard, Medium Hard, Soft, and Very Soft. Includes descriptions of how the rock can be scratched or broken.

FRACTURE SPACING

Table mapping fracture spacing terms (Very Wide, Wide, Moderately Close, Close, Very Close) to spacing ranges (More than 10 feet, 3 to 10 feet, 1 to 3 feet, 0.16 to 1 foot, Less than 0.16 feet).

BEDDING

Table mapping bedding terms (Very Thickly Bedded, Thickly Bedded, Thinly Bedded, Very Thinly Bedded, Thickly Laminated, Thinly Laminated) to thickness ranges (4 feet, 1.5 - 4 feet, 0.16 - 1.5 feet, 0.03 - 0.16 feet, 0.008 - 0.03 feet, < 0.008 feet).

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

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 (ROD) - 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 (SCREC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: N/A

ELEVATION: N/A FEET

NOTES:

FIAD - FILLED IMMEDIATELY AFTER DRILLING
THE BORINGS WERE SURVEYED BY SEPIENGINEERING & CONSTRUCTION, INC. USING A SUB CENTIMETER GPS.

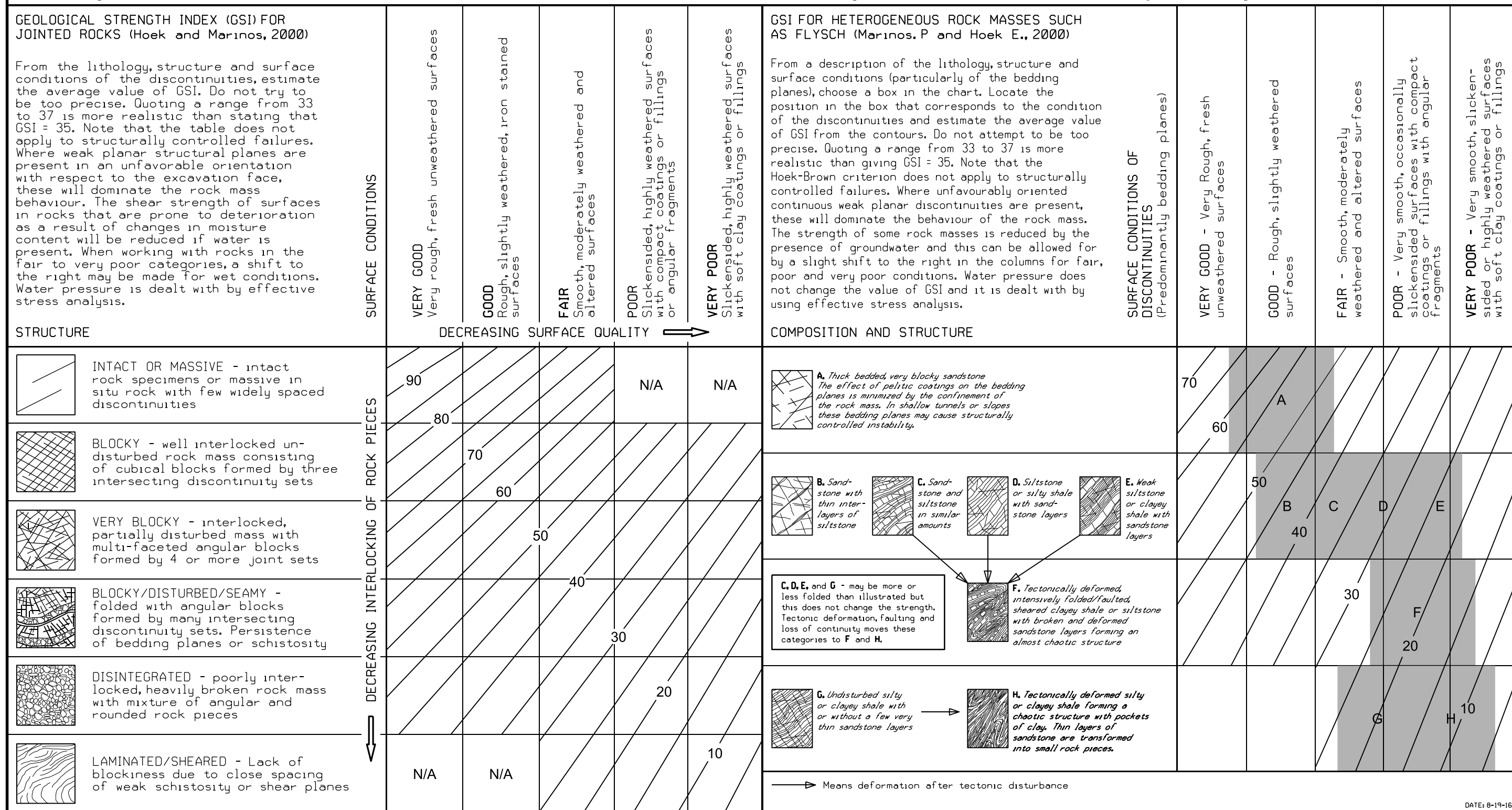
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

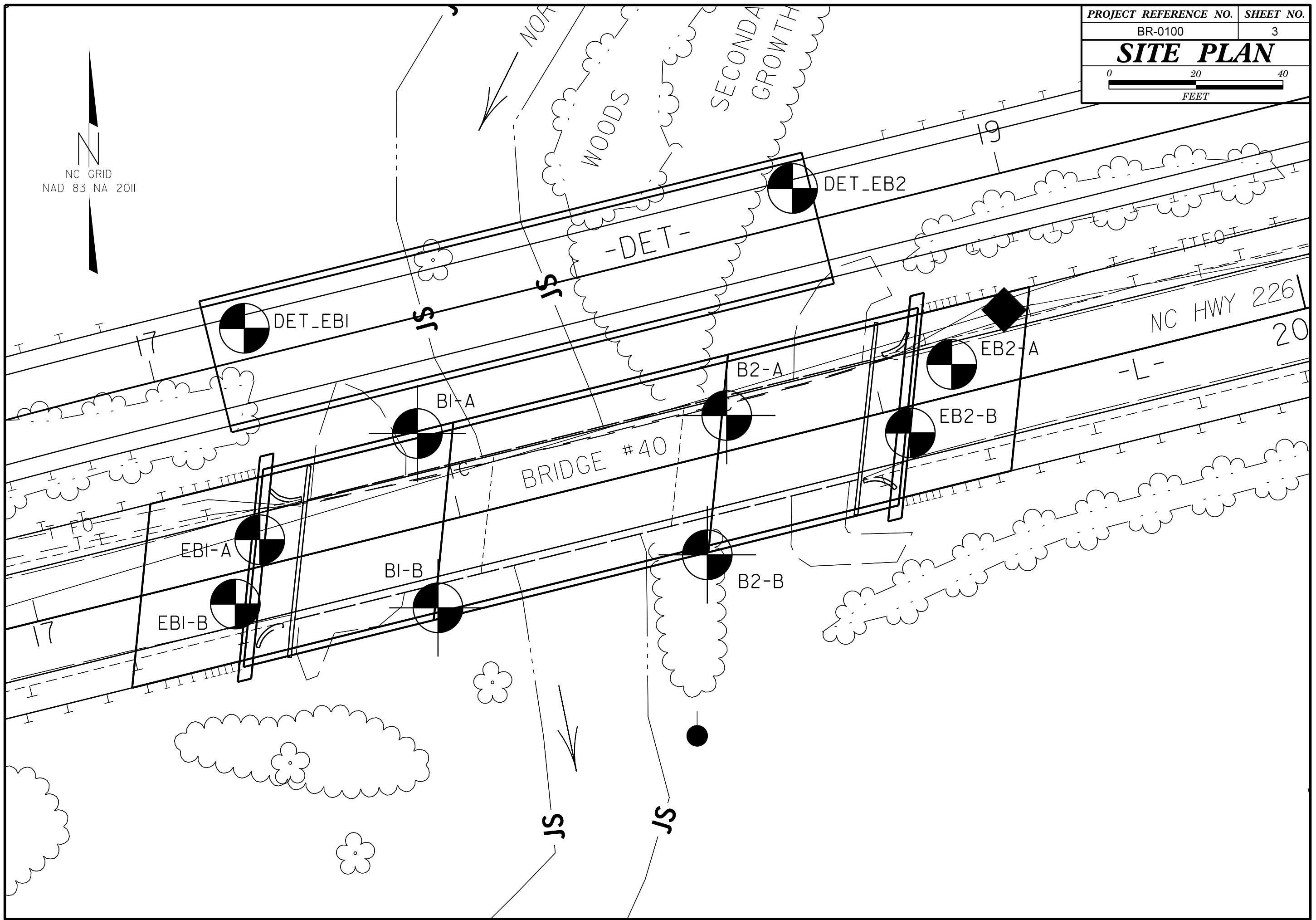
SUBSURFACE INVESTIGATION

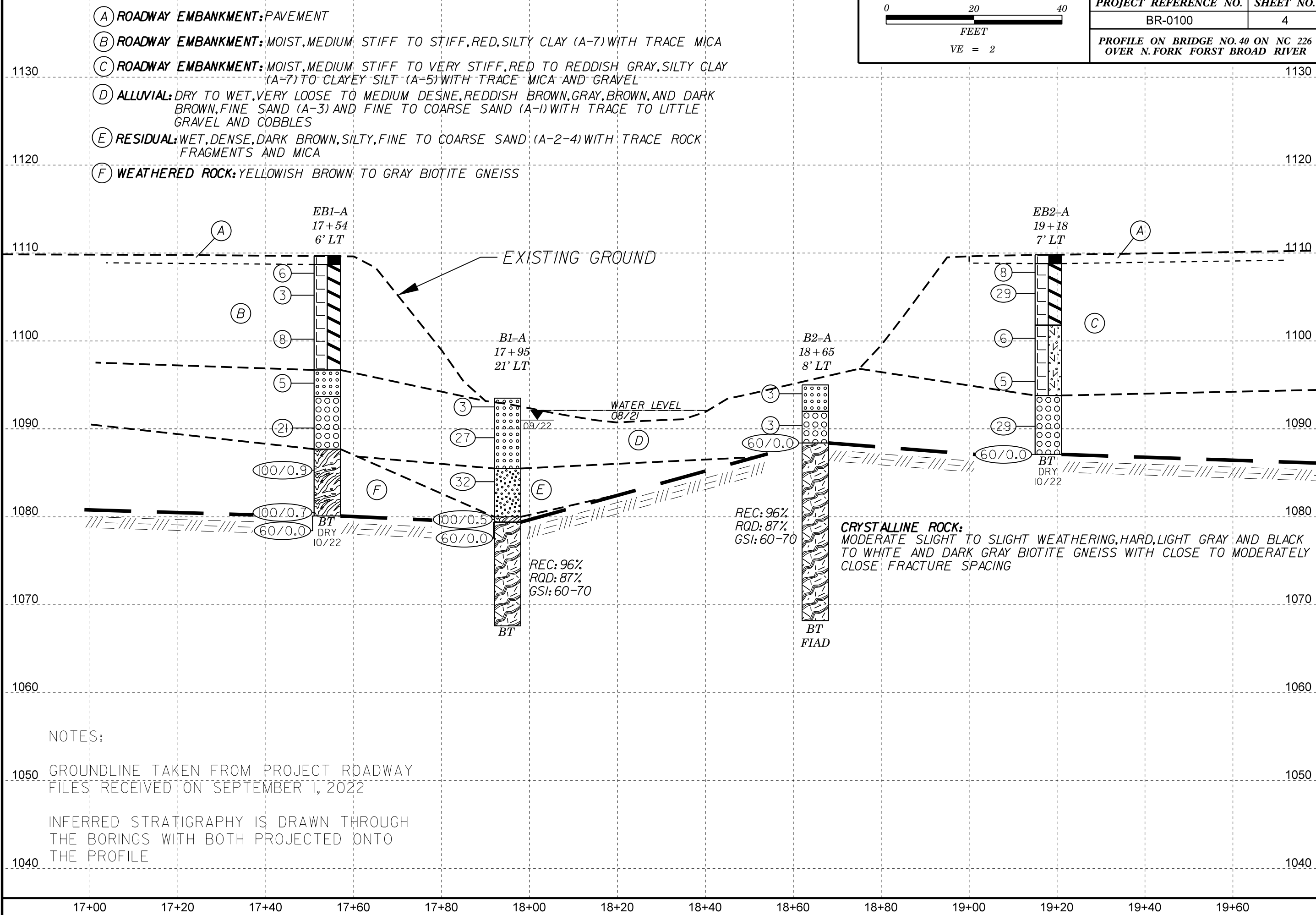
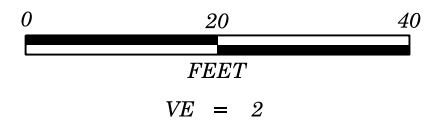
SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

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

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





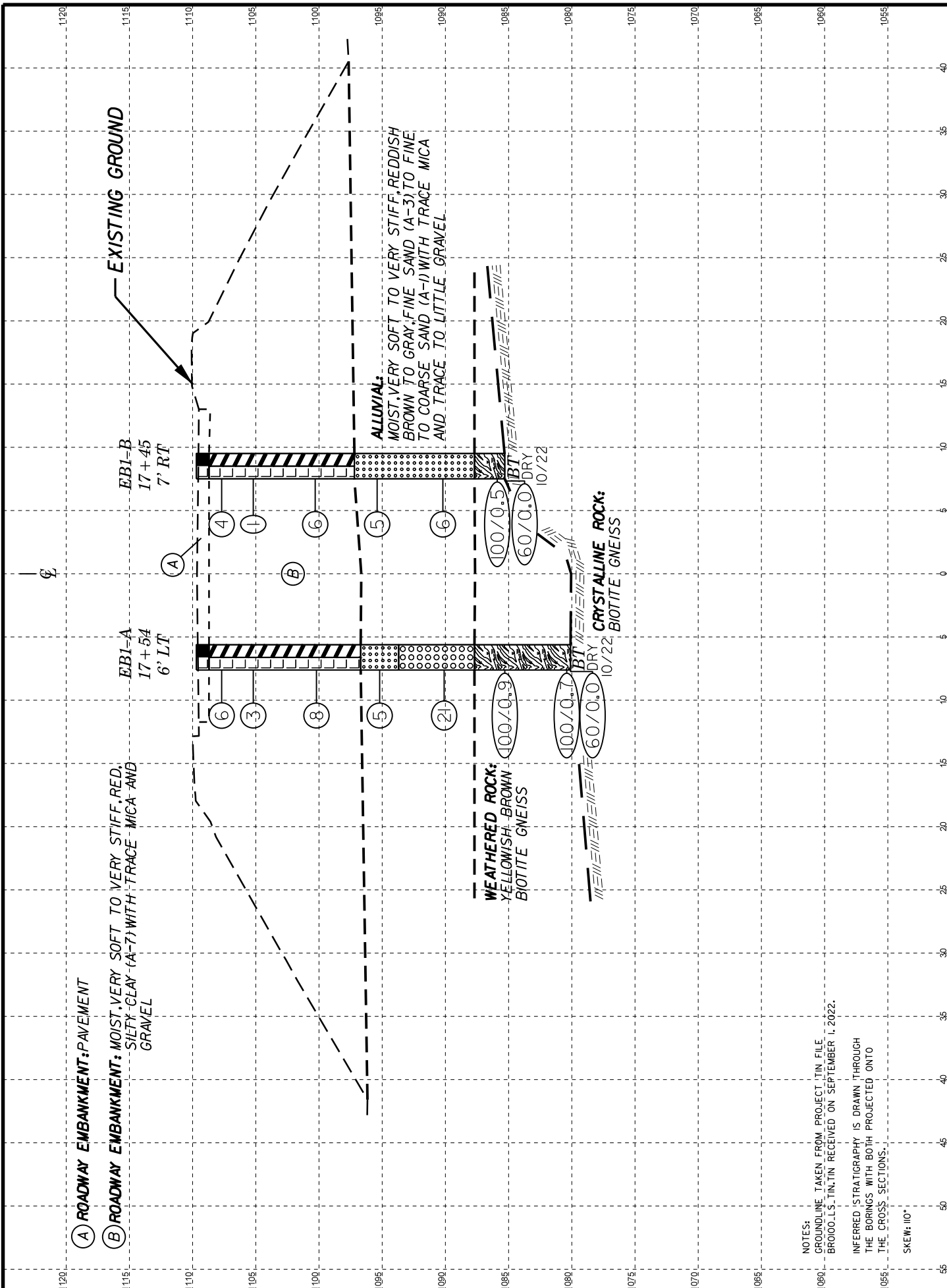


- (A) ROADWAY EMBANKMENT: PAVEMENT
- (B) ROADWAY EMBANKMENT: MOIST, MEDIUM STIFF TO STIFF, RED, SILTY CLAY (A-7) WITH TRACE MICA
- (C) ROADWAY EMBANKMENT: MOIST, MEDIUM STIFF TO VERY STIFF, RED TO REDDISH GRAY, SILTY CLAY (A-7) TO CLAYEY SILT (A-5) WITH TRACE MICA AND GRAVEL
- (D) ALLUVIAL: DRY TO WET, VERY LOOSE TO MEDIUM DENSE, REDDISH BROWN, GRAY, BROWN, AND DARK BROWN, FINE SAND (A-3) AND FINE TO COARSE SAND (A-1) WITH TRACE TO LITTLE GRAVEL AND COBBLES
- (E) RESIDUAL: WET, DENSE, DARK BROWN, SILTY, FINE TO COARSE SAND (A-2-4) WITH TRACE ROCK FRAGMENTS AND MICA
- (F) WEATHERED ROCK: YELLOWISH BROWN TO GRAY BIOTITE GNEISS

CRYSTALLINE ROCK:
MODERATE SLIGHT TO SLIGHT WEATHERING, HARD, LIGHT GRAY AND BLACK TO WHITE AND DARK GRAY BIOTITE GNEISS WITH CLOSE TO MODERATELY CLOSE FRACTURE SPACING

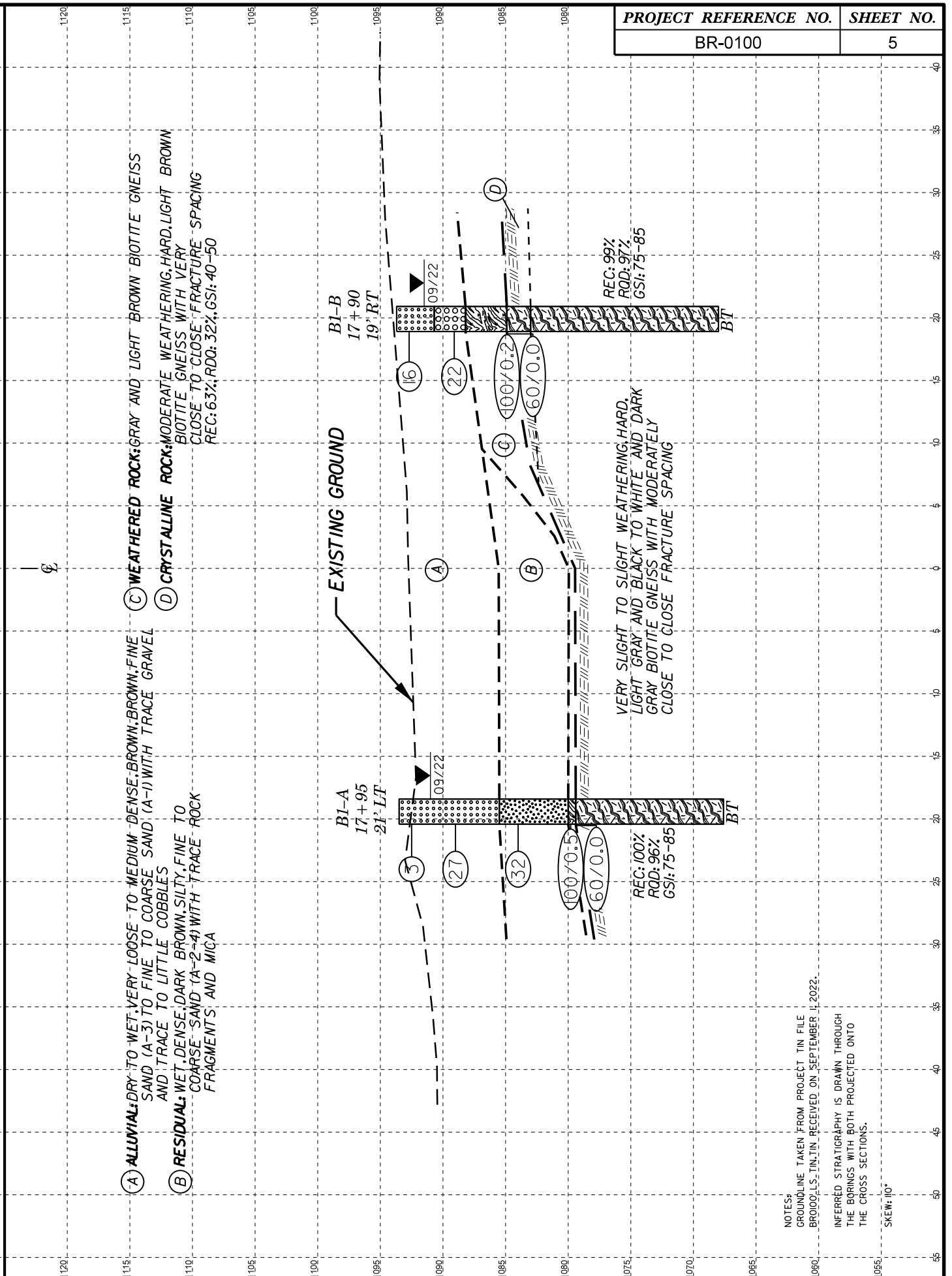
NOTES:
 1050 GROUNDLINE TAKEN FROM PROJECT ROADWAY
 FILES RECEIVED ON SEPTEMBER 1, 2022
 INFERRED STRATIGRAPHY IS DRAWN THROUGH
 THE BORINGS WITH BOTH PROJECTED ONTO
 1040 THE PROFILE

17+00 17+20 17+40 17+60 17+80 18+00 18+20 18+40 18+60 18+80 19+00 19+20 19+40 19+60



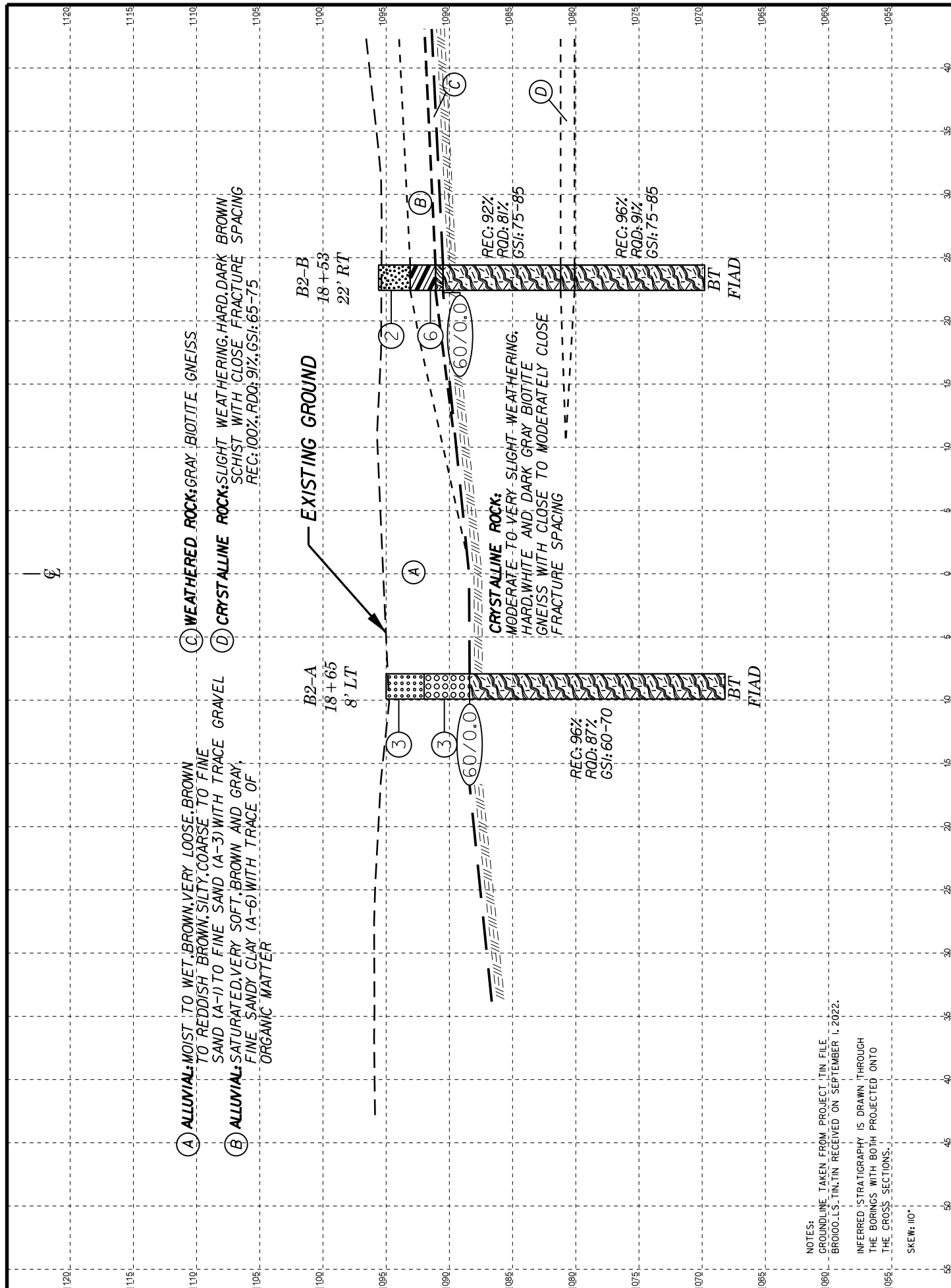
HORIZ. SCALE 0 10 20 (FEET) VE = 1

CROSS SECTION ALONG END BENT NO. 1 AT STA. 17+51



HORIZ. SCALE 0 20 40 (FEET) VE = 1

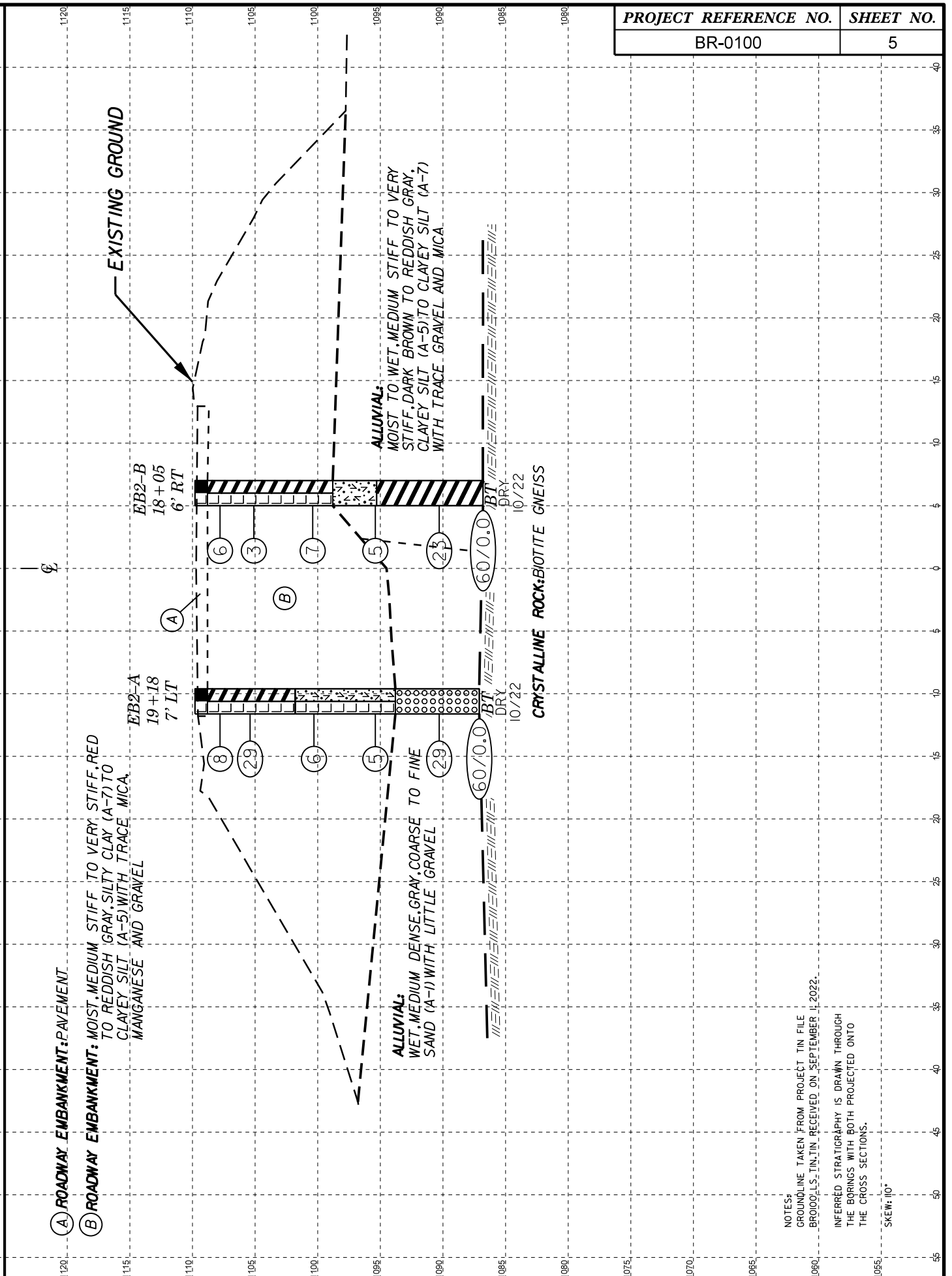
CROSS SECTION ALONG BENT NO. 1 AT STA. 17+96



HORIZ. SCALE 0 10 20 (FEET)

VE = 1

CROSS SECTION ALONG BENT NO. 2 AT STA. 18+61



HORIZ. SCALE 0 20 40 (FEET)

VE = 1

CROSS SECTION ALONG END BENT NO. 2 AT STA. 19+06

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Kardon, J.										
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 17+54		OFFSET 6 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,109.7 ft		TOTAL DEPTH 29.6 ft		NORTHING 657,861		EASTING 1,173,884										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Toothman, R.		START DATE 10/03/22		COMP. DATE 10/03/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
1110																1,109.7 GROUND SURFACE 0.0
	1,108.7	1.0	6	3	3											1,108.7 ROADWAY EMBANKMENT 1.0
1105	1,106.2	3.5	5	2	1											Pavement: Asphalt (0.0 to 0.3 ft), ABC Stone (0.3 to 1.0 ft)
																Red, Silty CLAY (A-7) with Trace Mica
1100	1,101.2	8.5	2	3	5											
1095	1,096.2	13.5	4	3	2											1,096.7 ALLUVIAL 13.0
																Reddish Brown Fine SAND (A-3) with Trace Mica
1090	1,091.1	18.6	4	9	12											1,093.7 Gray Fine to Coarse SAND (A-1) with Little Gravel 16.0
1085	1,086.3	23.4	26	29	71/0.4											1,087.7 WEATHERED ROCK 22.0
																Yellowish Brown BIOTITE GNEISS
	1,081.3	28.4														1,080.1 Boring Terminated with Standard Penetration Test Refusal at Elevation 1,080.1 ft on CRYSTALLINE ROCK: BIOTITE GNEISS 29.6
	1,080.1	29.6	32	43	57/0.2											
		60/0.0														
																100/0.7 60/0.0

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Kardon, J.										
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 17+45		OFFSET 7 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,109.7 ft		TOTAL DEPTH 24.4 ft		NORTHING 657,846		EASTING 1,173,879										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Toothman, R.		START DATE 10/03/22		COMP. DATE 10/03/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
1110																1,109.7 GROUND SURFACE 0.0
	1,108.7	1.0	7	2	2											1,108.7 ROADWAY EMBANKMENT 1.0
1105	1,106.2	3.5	WOH	WOH	1											Pavement: Asphalt (0.0 to 0.3 ft), ABC Stone (0.3 to 1.0 ft)
																Red to Reddish Brown, Silty CLAY (A-7) with Trace Mica and Gravel
1100	1,101.3	8.4	3	3	3											
1095	1,096.4	13.3	4	3	2											1,097.2 ALLUVIAL 12.5
																Reddish Brown Fine SAND (A-3) with Trace Gravel
1090	1,091.2	18.5	2	2	4											1,087.7 WEATHERED ROCK 22.0
																White BIOTITE GNEISS
	1,086.4	23.3														1,085.3 Boring Terminated with Standard Penetration Test Refusal at Elevation 1,085.3 ft on CRYSTALLINE ROCK: BIOTITE GNEISS 24.4
	1,085.3	24.4	100/0.5													
		60/0.0														
																100/0.5 60/0.0

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

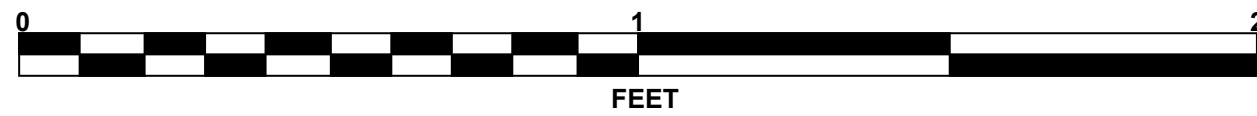
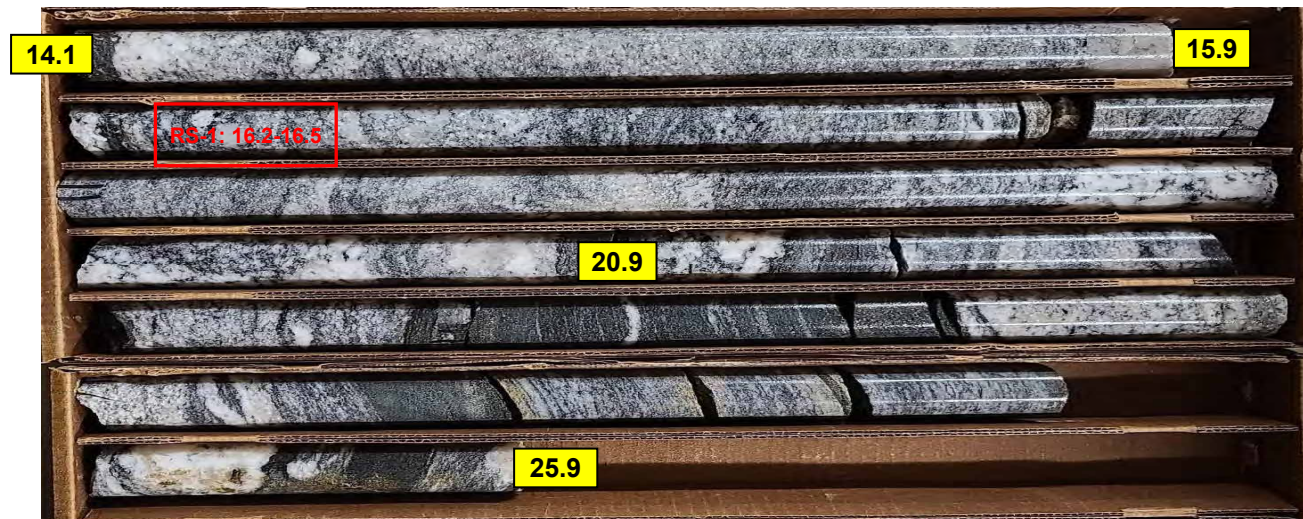
WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Wells, T.										
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)									
BORING NO. B1-A		STATION 17+95		OFFSET 21 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,093.5 ft		TOTAL DEPTH 25.9 ft		NORTHING 657,885		EASTING 1,173,920										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022			DRILL METHOD H.S. Augers/NQ Core		HAMMER TYPE Automatic											
DRILLER Toothman, R.		START DATE 09/26/22		COMP. DATE 09/26/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
1095	1,093.5	0.0	3	2	1									1,093.5	0.0	GROUND SURFACE
1090	1,090.0	3.5	7	14	13									1,085.5	8.0	ALLUVIAL Brown Fine SAND (A-3) with Trace Gravel and Cobbles
1085	1,085.0	8.5	9	13	19									1,080.0	13.5	RESIDUAL Dark Brown, Silty, Fine to Coarse SAND (A-2-4) with Trace Rock Fragments and Mica
1080	1,080.0	13.5												1,079.4	14.1	WEATHERED ROCK Gray BIOTITE GNEISS
1075	1,079.4	14.1	100/0.5											1,067.6	25.9	CRYSTALLINE ROCK Gray and Black BIOTITE GNEISS
1070			60/0.0													Boring Terminated at Elevation 1,067.6 ft in CRYSTALLINE ROCK: BIOTITE GNEISS

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Wells, T.					
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)				
BORING NO. B1-A		STATION 17+95		OFFSET 21 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 1,093.5 ft		TOTAL DEPTH 25.9 ft		NORTHING 657,885		EASTING 1,173,920					
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022			DRILL METHOD H.S. Augers/NQ Core		HAMMER TYPE Automatic						
DRILLER Toothman, R.		START DATE 09/26/22		COMP. DATE 09/26/22		SURFACE WATER DEPTH N/A					
CORE SIZE NQ				TOTAL RUN 11.8 ft							
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
					REC. (%)	RQD (%)		REC. (%)	RQD (%)		
1079.4	1,079.4	14.1	1.8	N=60/0.0 2:20/0.8 5:30/1.0	(1.8)	(1.8)		(11.8)	(11.3)		Begin Coring @ 14.1 ft
1075	1,077.6	15.9	5.0	5:00/1.0 5:15/1.0 4:00/1.0 3:15/1.0 7:20/1.0	100%	100%	RS-1	100%	96%		CRYSTALLINE ROCK Very Slight to Slight Weathering, Hard, Light Gray and Black BIOTITE GNEISS with Close to Moderately Close Fracture Spacing (GSI: 75 - 85)
1070	1,072.6	20.9	5.0	4:45/1.0 4:15/1.0 4:45/1.0 4:20/1.0 3:55/1.0	100%	92%					
	1,067.6	25.9									Boring Terminated at Elevation 1,067.6 ft in CRYSTALLINE ROCK: BIOTITE GNEISS

NCDOT BORE DOUBLE BR0100_GEO_BRDG040.GPJ NC_DOT.GDT 10/26/22

CORE PHOTOGRAPHS

B1-A
BOXES 1 & 2: 14.1 - 25.9 FEET



GEOTECHNICAL BORING REPORT

BORE LOG

GEOTECHNICAL BORING REPORT

CORE LOG

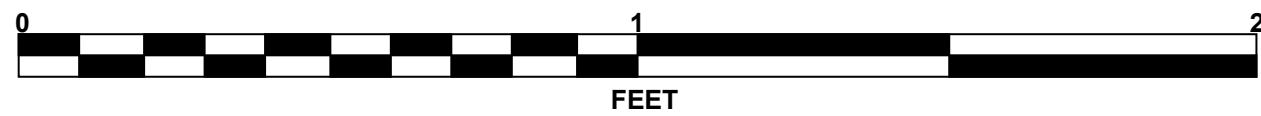
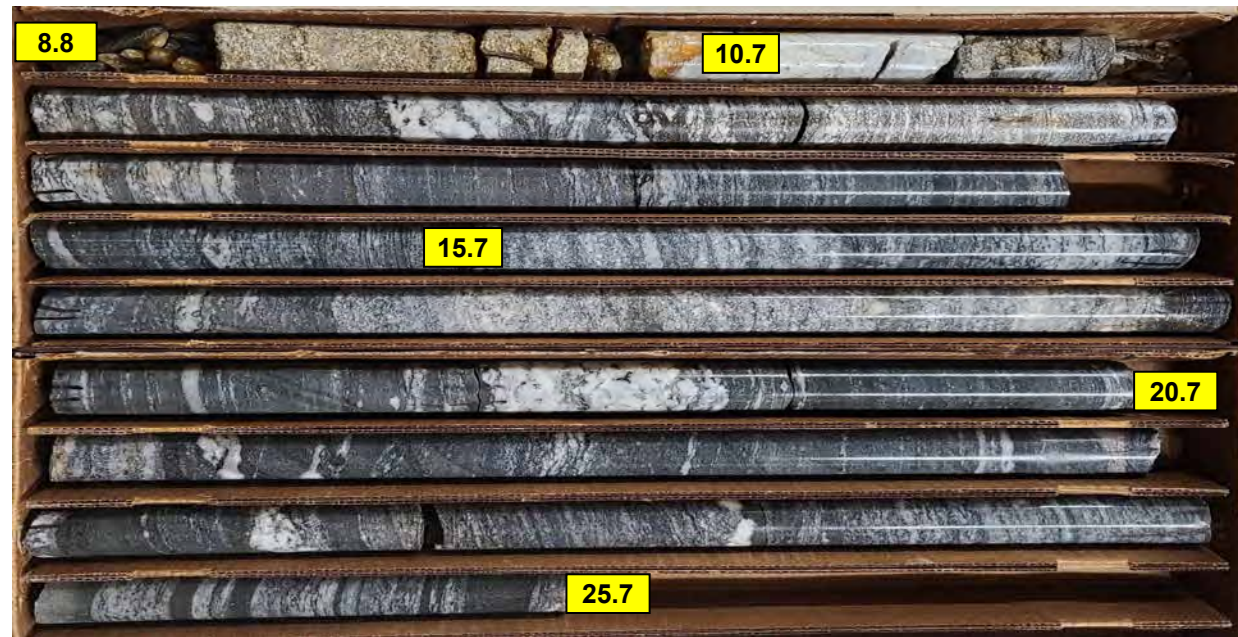
WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Wells, T.									
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)								
BORING NO. B1-B		STATION 17+90		OFFSET 19 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 1,093.7 ft		TOTAL DEPTH 25.7 ft		NORTHING 657,845		EASTING 1,173,925									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022		DRILL METHOD H.S. Augers/NQ Core		HAMMER TYPE Automatic											
DRILLER Toothman, R.		START DATE 09/26/22		COMP. DATE 09/26/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
1095	1,093.7	0.0	5	9	7								1,093.7	GROUND SURFACE	0.0
1090	1,090.1	3.6	5	11	11								1,090.7	ALLUVIAL Brown Fine SAND (A-3) with Trace Cobbles	3.0
1085	1,085.1	8.6											1,088.2	WEATHERED ROCK Gray and Light Brown BIOTITE GNEISS	5.5
1080	1,084.9	8.8	100/0.2										1,084.9	CRYSTALLINE ROCK Light Brown BIOTITE GNEISS	8.8
1075													1,083.0	White and Dark Gray BIOTITE GNEISS	10.7
1070													1,068.0	Boring Terminated at Elevation 1,068.0 ft in CRYSTALLINE ROCK: BIOTITE GNEISS	25.7

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Wells, T.						
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)					
BORING NO. B1-B		STATION 17+90		OFFSET 19 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 1,093.7 ft		TOTAL DEPTH 25.7 ft		NORTHING 657,845		EASTING 1,173,925						
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022		DRILL METHOD H.S. Augers/NQ Core		HAMMER TYPE Automatic								
DRILLER Toothman, R.		START DATE 09/26/22		COMP. DATE 09/26/22		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
1084.9	1,084.9	8.8	1.9	N=60/0.0 1:50/0.9 3:10/1.0	(1.2)	(0.6)		(1.2)	(0.6)		1,084.9	Begin Coring @ 8.8 ft
1080	1,083.0	10.7	5.0	2:40/1.0 3:40/1.0 3:35/1.0 5:45/1.0	(5.0)	(4.7)		(14.8)	(14.5)		1,083.0	CRYSTALLINE ROCK Moderate Weathering, Hard, Light Brown BIOTITE GNEISS with Very Close to Close Fracture Spacing (GSI: 40-50)
1075	1,078.0	15.7	5.0	4:40/1.0 4:10/1.0 4:10/1.0 3:30/1.0 5:30/1.0	(5.0)	(5.0)		99%	97%			Very Slight to Slight Weathering, Hard, White and Dark Gray BIOTITE GNEISS with Moderately Close to Close Fracture Spacing (GSI: 75-85)
1070	1,073.0	20.7	5.0	5:15/1.0 4:50/1.0 5:50/1.0 6:45/1.0 9:20/1.0	(4.8)	(4.8)						
	1,068.0	25.7									1,068.0	Boring Terminated at Elevation 1,068.0 ft in CRYSTALLINE ROCK: BIOTITE GNEISS

CORE PHOTOGRAPHS

B1-B

BOXES 1 & 2: 8.8 - 25.7 FEET



GEOTECHNICAL BORING REPORT

BORE LOG

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Kardon, J.										
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)									
BORING NO. B2-A		STATION 18+65		OFFSET 8 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,095.0 ft		TOTAL DEPTH 26.8 ft		NORTHING 657,889		EASTING 1,173,992										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022				DRILL METHOD Mud Rotary/NQ Core		HAMMER TYPE Automatic										
DRILLER Toothman, R.		START DATE 10/04/22		COMP. DATE 10/04/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
1095	1,095.0	0.0	2	1	2							M		1,095.0	GROUND SURFACE	0.0
	1,091.4	3.6	3	2	1							W		1,092.0	ALLUVIAL Reddish Brown Fine SAND (A-3) with Trace Mica	3.9
1090															Reddish Brown Fine to Coarse SAND (A-1) with Trace Gravel	
	1,088.4	6.6	60/0.0											1,088.4	CRYSTALLINE ROCK White and Dark Gray BIOTITE GNEISS	6.6
1085																
1080																
1075																
1070																
														1,068.2	Boring Terminated at Elevation 1,068.2 ft in CRYSTALLINE ROCK: BIOTITE GNEISS	26.8

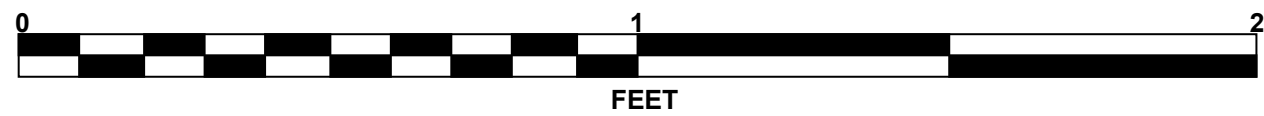
WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Kardon, J.					
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)				
BORING NO. B2-A		STATION 18+65		OFFSET 8 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 1,095.0 ft		TOTAL DEPTH 26.8 ft		NORTHING 657,889		EASTING 1,173,992					
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022				DRILL METHOD Mud Rotary/NQ Core		HAMMER TYPE Automatic					
DRILLER Toothman, R.		START DATE 10/04/22		COMP. DATE 10/04/22		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 20.2 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
					REC. (%)	RQD (%)		REC. (%)	RQD (%)		
1088.4	1,088.2	6.6	0.2	N=60/0.0 0:17/0.2	(0.2)	(0.0)		(19.4)	(17.6)		Begin Coring @ 6.6 ft
			5.0	4:12/1.0 5:18/1.0 4:59/1.0	100%	0%					1,088.4
1085				4:14/1.0 3:13/1.0	(4.5)	(3.5)					Moderate to Slight Weatehring, Hard, White and Dark Gray BIOTITE GNEISS with Close to Moderately Close Fracture Spacing (GSI: 60-70)
			5.0	3:59/1.0 5:01/1.0 5:05/1.0	94%	88%					
1080				4:02/1.0 4:28/1.0							
			5.0	5:03/1.0 4:08/1.0	(5.0)	(4.7)					
1075				5:07/1.0 5:04/1.0	100%	94%					
			5.0	4:40/1.0 4:44/1.0	(5.0)	(5.0)					
1070				5:15/1.0 5:35/1.0	100%	100%					
			5.0	7:45/1.0							
											1,068.2
											Boring Terminated at Elevation 1,068.2 ft in CRYSTALLINE ROCK: BIOTITE GNEISS

NCDOT BORE DOUBLE BR0100_GEO_BRDG040.GPJ NC_DOT.GDT 10/26/22

CORE PHOTOGRAPHS

B2-A

BOXES 1, 2 & 3: 6.6 - 26.8 FEET



GEOTECHNICAL BORING REPORT

BORE LOG

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Wells, T.										
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)									
BORING NO. B2-B		STATION 18+53		OFFSET 22 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,095.6 ft		TOTAL DEPTH 25.8 ft		NORTHING 657,857		EASTING 1,173,987										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022				DRILL METHOD H.S. Augers/NQ Core		HAMMER TYPE Automatic										
DRILLER Toothman, R.		START DATE 09/28/22		COMP. DATE 09/28/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
1100																
1095	1,095.6	0.0	1	1	1										1,095.6	GROUND SURFACE
1090	1,092.5	3.1	WOH WOH			16									1,093.1	ALLUVIAL Brown, Silty, Coarse to Fine SAND (A-2-4)
1090	1,090.5	5.1	60/0.0			60/0.0									1,091.1	Brown and Gray, Fine Sandy CLAY (A-6) with Trace of Organic Matter
1085															1,090.5	WEATHERED ROCK Gray BIOTITE GNEISS
1085																CRYSTALLINE ROCK White and Dark Gray BIOTITE GNEISS
1080															1,081.2	Dark Brown SCHIST
1080															1,080.1	White and Dark Gray BIOTITE GNEISS
1075																
1070															1,069.8	Boring Terminated at Elevation 1,069.8 ft in CRYSTALLINE ROCK: BIOTITE GNEISS

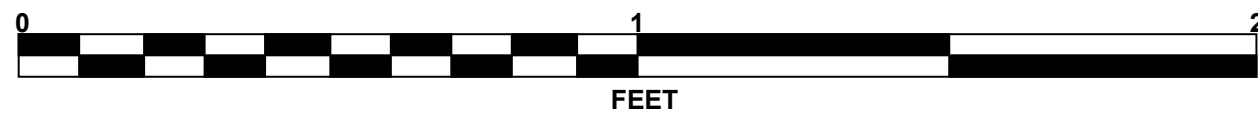
WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Wells, T.							
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)						
BORING NO. B2-B		STATION 18+53		OFFSET 22 ft RT		ALIGNMENT -L-							
COLLAR ELEV. 1,095.6 ft		TOTAL DEPTH 25.8 ft		NORTHING 657,857		EASTING 1,173,987							
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022				DRILL METHOD H.S. Augers/NQ Core		HAMMER TYPE Automatic							
DRILLER Toothman, R.		START DATE 09/28/22		COMP. DATE 09/28/22		SURFACE WATER DEPTH N/A							
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	TOTAL RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)	
					REC. (%)	RQD (%)		REC. (%)	RQD (%)				
1090.5	1,090.5	5.1	0.7	N=60/0.0 2:30/0.7	(0.3)	(0.3)		(8.6)	(7.5)		Begin Coring @ 5.1 ft	5.1	
1085	1,084.8	10.8	5.0	3:15/1.0 2:35/1.0 3:00/1.0 2:30/1.0 3:15/1.0	43%	43%		92%	81%		CRYSTALLINE ROCK Very Slight to Slight Weathering, Hard, White and Dark Gray BIOTITE GNEISS with Moderately Close to Close Fracture Spacing (GSI: 75-85)		
1080	1,079.8	15.8	5.0	1:50/1.0 3:30/1.0 3:40/1.0 3:45/1.0 4:40/1.0	(4.8)	(3.3)		96%	66%		RS-2		
1075	1,074.8	20.8	5.0	3:35/1.0 3:40/1.0 3:45/1.0 3:05/1.0 3:00/1.0	(5.0)	(5.0)		100%	100%				
1070	1,069.8	25.8	5.0	3:50/1.0 3:15/1.0 4:30/1.0 5:00/1.0 5:15/1.0	(4.6)	(4.6)		92%	92%				
												1,081.2	Slight Weathering, Hard, Dark Brown SCHIST with Close Fracture Spacing (GSI: 65-75)
												1,080.1	Very Slight to Slight Weathering, Hard, White and Dark Gray BIOTITE GNEISS with Moderately Close to Close Fracture Spacing (GSI: 75-85)
												1,069.8	Boring Terminated at Elevation 1,069.8 ft in CRYSTALLINE ROCK: BIOTITE GNEISS

NCDOT BORE DOUBLE BR0100_GEO_BRDG040.GPJ NC_DOT.GDT 10/26/22

CORE PHOTOGRAPHS

B2-B

BOXES 1, 2 & 3: 5.1 - 25.8 FEET



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Kardon, J.									
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 19+18		OFFSET 7 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 1,109.8 ft		TOTAL DEPTH 22.7 ft		NORTHING 657,901		EASTING 1,174,043									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Toothman, R.		START DATE 10/03/22		COMP. DATE 10/03/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
1110	1,108.8	1.0	10	5	3									GROUND SURFACE 0.0	
	1,108.8	1.0												ROADWAY EMBANKMENT 1.0	
	1,106.4	3.4	2	19	10									Pavement: Asphalt (0.0 to 0.3 ft), ABC Stone (0.3 to 1.0 ft)	
1105														Red Silty CLAY (A-7) with Trace Mica and Gravel	
	1,101.3	8.5	4	3	3									Reddish Gray Clayey SILT (A-5) with Trace Mica	8.9
1100															
	1,096.4	13.4	3	3	2										
1095															
	1,091.3	18.5	8	12	17									ALLUVIAL 18.0	
														Gray, Coarse to Fine SAND (A-1) with Little Gravel	
1090															
	1,087.1	22.7												Boring Terminated with Standard Penetration Test Refusal at Elevation 1,087.1 ft on CRYSTALLINE ROCK: BIOTITE GNEISS	22.7

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Kardon, J.									
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 19+05		OFFSET 6 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 1,109.8 ft		TOTAL DEPTH 23.0 ft		NORTHING 657,885		EASTING 1,174,034									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Toothman, R.		START DATE 10/03/22		COMP. DATE 10/03/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
1110	1,108.8	1.0	11	3	3									GROUND SURFACE 0.0	
	1,108.8	1.0												ROADWAY EMBANKMENT 1.0	
	1,106.1	3.7	2	1	2									Pavement: Asphalt (0.0 to 0.3 ft), ABC Stone (0.3 to 1.0 ft)	
1105														Red Silty CLAY (A-7) with Trace Mica, Manganese and Gravel	
	1,101.4	8.4	5	3	4										
1100															
	1,096.4	13.4	2	3	2									ALLUVIAL 11.0	
														Dark Brown Clayey SILT (A-5) with Trace Gravel and Mica	
1095														Reddish Brown Silty CLAY (A-7) with Trace Gravel	14.5
	1,091.3	18.5	6	11	12										
1090															
	1,086.8	23.0												Boring Terminated with Standard Penetration Test Refusal at Elevation 1,086.8 ft on CRYSTALLINE ROCK: BIOTITE GNEISS	23.0

NCDOT BORE DOUBLE BR0100_GEO_BRDG040.GPJ NC_DOT.GDT 10/26/22

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Wells, T.									
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)								
BORING NO. DET_EB1		STATION 17+23		OFFSET 7 ft LT		ALIGNMENT -DET-									
COLLAR ELEV. 1,096.5 ft		TOTAL DEPTH 7.7 ft		NORTHING 657,909		EASTING 1,173,881									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Toothman, R.		START DATE 09/28/22		COMP. DATE 09/28/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
1100															
	1,096.5	0.0	2	3	4									1,096.5	0.0
1095	1,093.0	3.5	4	9	10									1,095.0	1.5
	1,090.0													1,090.0	6.5
1090	1,088.8	7.7												1,088.8	7.7
		60/0.0													60/0.0

WBS 67100.1.1		TIP BR-0100		COUNTY RUTHERFORD		GEOLOGIST Wells, T.									
SITE DESCRIPTION Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek							GROUND WTR (ft)								
BORING NO. DET_EB2		STATION 18+53		OFFSET 8 ft LT		ALIGNMENT -DET-									
COLLAR ELEV. 1,096.1 ft		TOTAL DEPTH 5.0 ft		NORTHING 657,942		EASTING 1,174,007									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 83% 05/09/2022			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Toothman, R.		START DATE 09/28/22		COMP. DATE 09/28/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
1100															
	1,096.1	0.0	2	2	3									1,096.1	0.0
1095	1,092.6	3.5	7	93/0.4										1,091.8	4.3
	1,091.1	5.0												1,091.1	5.0
		60/0.0													60/0.0

NCDOT BORE DOUBLE BR0100_GEO_BRDG040.GPJ NC_DOT.GDT 10/28/22

LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

SHEET 18

PROJECT NO.: 67100.1.1 (BR-0100)

COUNTY: RUTHERFORD

REPLACE BRIDGE NO. 40 ON NC 226 OVER N. FORK FIRST BROAD CREEK

Sample No.	Boring #	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD	Length (in)	Diameter (in)	Unit Weight (PCF)	Unconfined Compressive Strength (PSI)	Young's Modulus (PSI)	Splitting Tensile Strength (PSI)	Remarks
RS-1	B1-A	16.2' - 16.5'	GNEISS	CZbg	98	4.25	2.00	161.5	8,070	N/A	N/A	GSI- 75-85
RS-2	B2-B	8.6' - 8.9'	GNEISS	CZbg	94	4.15	2.00	179.9	13,220	N/A	N/A	GSI- 75-85

SITE PHOTOGRAPHS

Replace Bridge No. 40 on NC 226 over N. Fork First Broad Creek



Facing South from North of Existing Bridge



Facing West towards End Bent No. 1