

REFERENCE: B-5835

PROJECT: 45788

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY AVERY
 PROJECT DESCRIPTION REPLACE BRIDGE NO. 125
ON SR 1306 (-L-) OVER ELK RIVER

SITE DESCRIPTION STA. 14 + 40.00 -L-

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5835	1	22

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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

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PERSONNEL

M. STANBURY, PG

M. AKLAND, PG

B. SMITH, PG

SUBTERRA EXP.

INVESTIGATED BY B. SMITH, PG

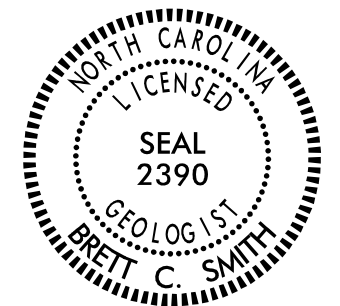
DRAWN BY B. SMITH, PG

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DATE JUNE, 2024

PREPARED IN THE OFFICE OF:



DocuSigned by:

 D2AD1A971B55426 SIGNATURE DATE 6/7/2024

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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			
	A-1	A-3	A-2	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-1, A-2	A-3	A-4, A-5
GROUP CLASS.	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-1, A-2	A-3	A-4, A-5	A-6, A-7
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT	
MATERIAL PASSING #40 LL PI	-	-	40 MX 10 MN	41 MN 10 MN	40 MX 11 MN	41 MN 11 MN	40 MX 11 MN	41 MN 11 MN	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER	HIGHLY ORGANIC SOILS		
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	UNSATURABLE					

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 RESISTANCE (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 OPENING (MM)	4	10	40	60	200	270
	4.75	2.00	0.42	0.25	0.075	0.053
BOULDER (BLDR.)						
COBBLE (COB.)						
GRAVEL (GR.)						
COARSE SAND (CS, SD.)						
FINE SAND (F SD.)						
SILT (SL.)						
CLAY (CL.)						
GRAIN SIZE	305	75	2.0	0.25	0.05	0.005
MM						
IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
LL - LIQUID LIMIT	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
PL - PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM - OPTIMUM MOISTURE SHRINKAGE LIMIT	- 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-BROWN). 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
- 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
- DIP & DIP DIRECTION OF ROCK STRUCTURES
- TEST BORING
- AUGER BORING
- CORE BORING
- MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

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 - COANE 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
- W - UNIT WEIGHT
- W_g - DRY UNIT WEIGHT
- S - BULK
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RS - ROCK
- RT - RECOMPACTED TRIAXIAL
- CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

- DRILL UNITS:
 - CME-45C
 - CME-55
 - CME-550
 - VANE SHEAR TEST
 - PORTABLE HOIST
 - D-50 TRACK
- ADVANCING TOOLS:
 - CLAY BITS
 - 6" CONTINUOUS FLIGHT AUGER
 - 8" HOLLOW AUGERS
 - HARD FACED FINGER BITS
 - TUNG-CARBIDE INSERTS
 - CASING W/ ADVANCER
 - TRICONE * STEEL TEETH
 - TRICONE * TUNG-CARB.
 - CORE BIT
- HAMMER TYPE:
 - AUTOMATIC MANUAL
- CORE SIZE:
 - B -H
 - N Q2
- 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 IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

- WEATHERED ROCK (WR)
NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
- CRYSTALLINE ROCK (CR)
FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
- NON-CRYSTALLINE ROCK (NCR)
FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
- COASTAL PLAIN SEDIMENTARY ROCK (CP)
COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

- FRESH** - ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
- VERY SLIGHT (IV 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 (IV 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 PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
- SOFT** - CAN BE GROOVED 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 FINGER NAIL.

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

- 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 DISLOADED 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.
- SLICKENISE** - 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 (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: BM-3

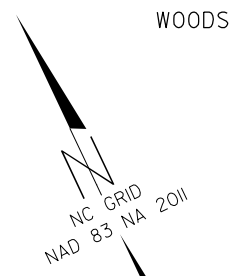
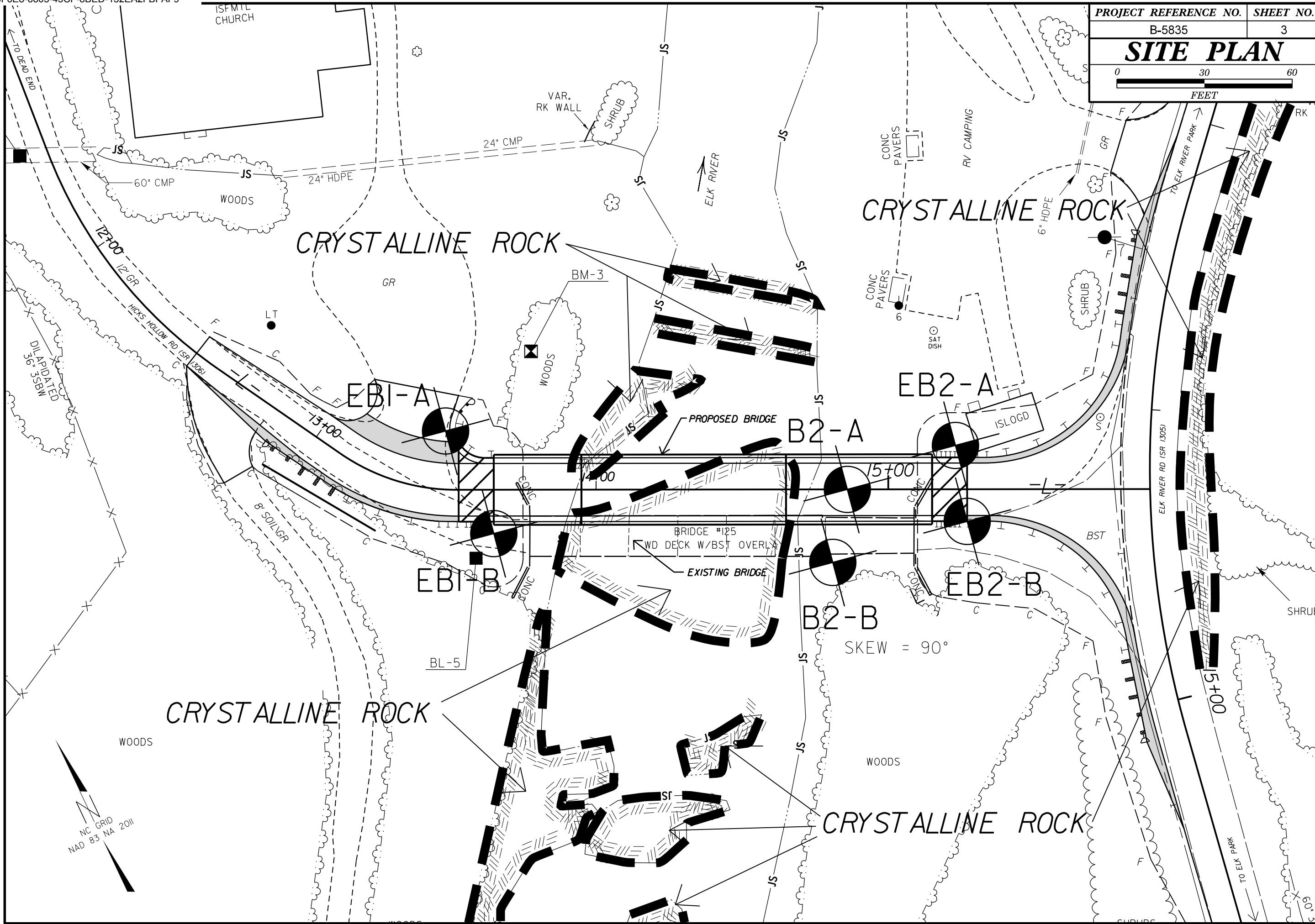
BL STATION 16+24.00 66' LT (N:897638/E:125284)

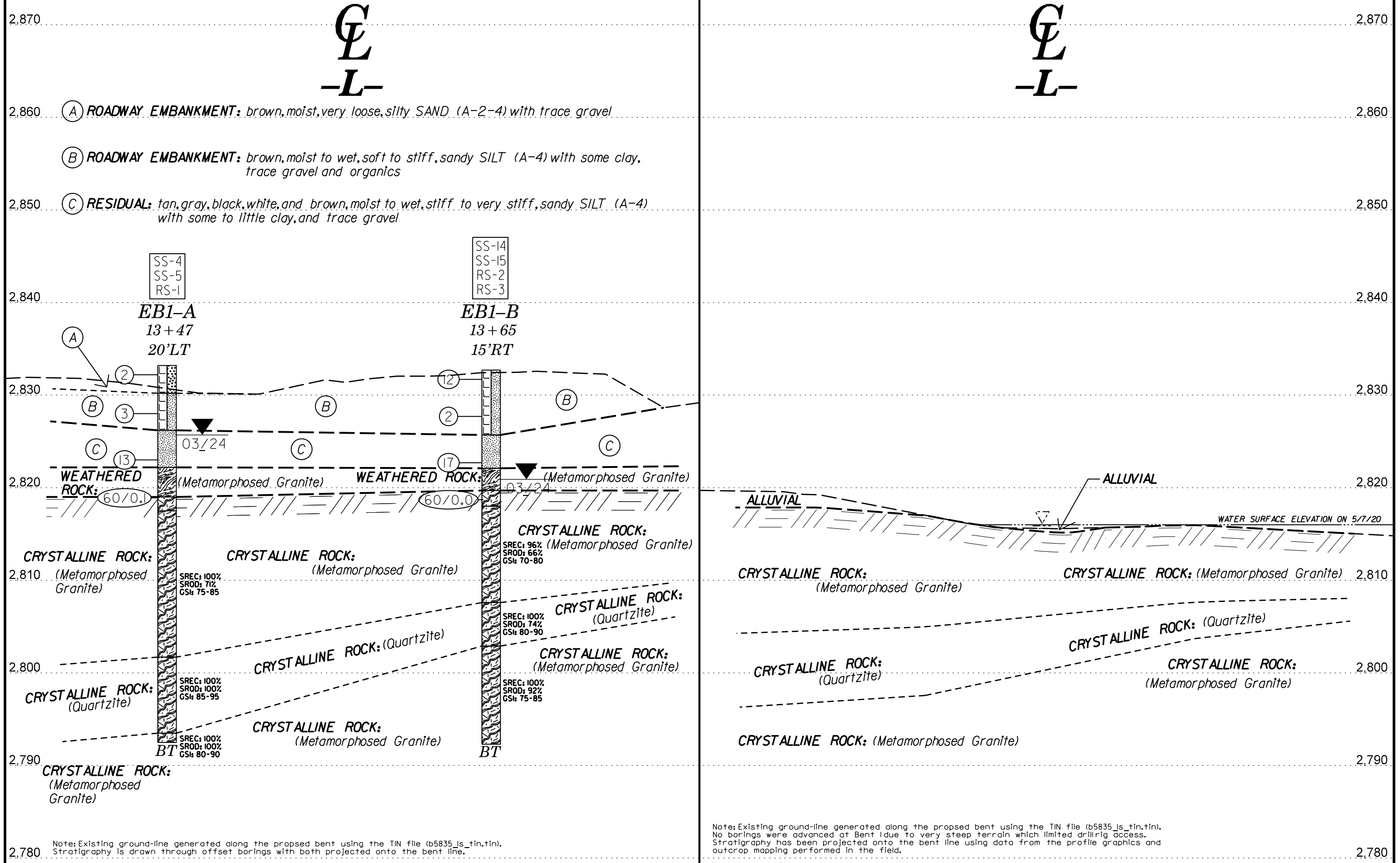
RR SPIKE IN 24' OAK ELEVATION: 2830.12 FEET

NOTES:

FIAD = FILLED IMMEDIATELY AFTER DRILLING

PROJECT REFERENCE NO.	SHEET NO.
B-5835	3
SITE PLAN	





VE = 1:1

BRIDGE NO. 125 (END BENT 1)

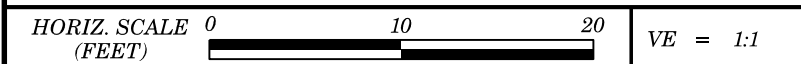
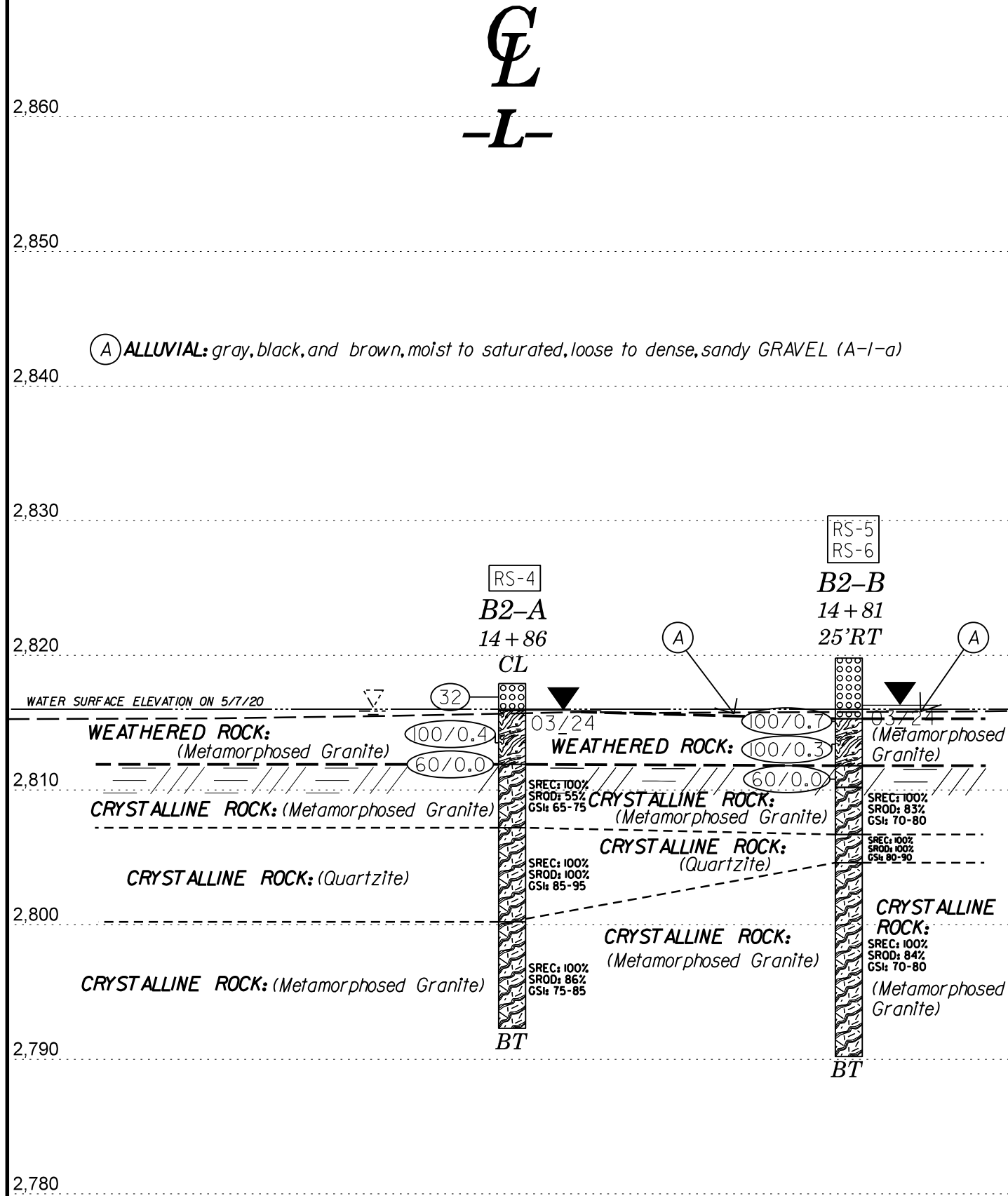


VE = 1:1

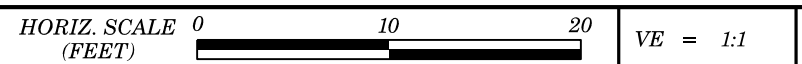
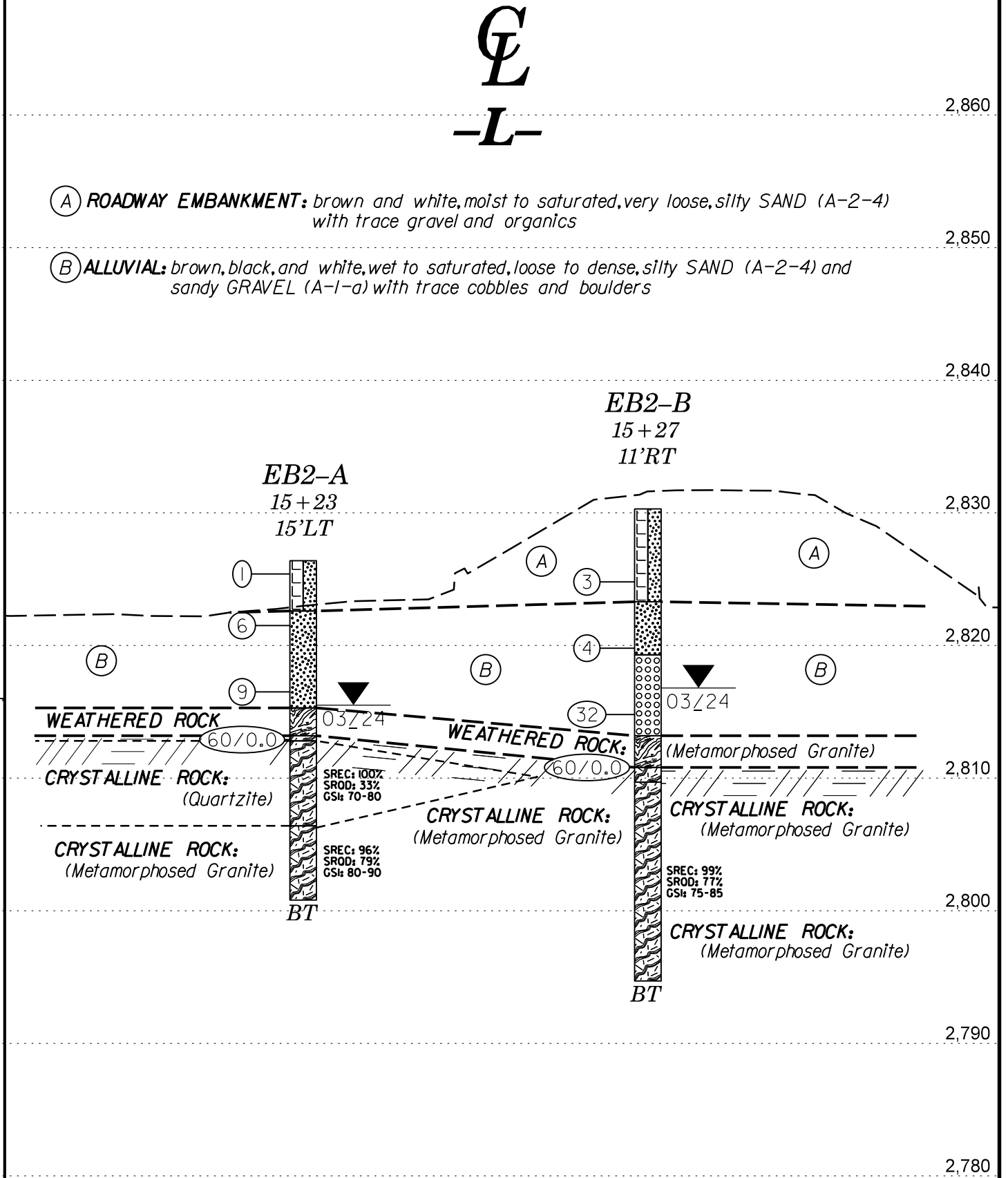
BRIDGE NO. 125 (BENT 1)

Note: Existing ground-line generated along the proposed bent using the TIN file (b5835_ls_tin.tin). Stratigraphy is drawn through offset borings with both projected onto the bent line.
Bent Skew = 90°

Note: Existing ground-line generated along the proposed bent using the TIN file (b5835_ls_tin.tin). No borings were advanced at Bent 1 due to very steep terrain which limited drilling access. Stratigraphy has been projected onto the bent line using data from the profile graphics and outcrop mapping performed in the field.
Bent Skew = 90°



BRIDGE NO. 125 (BENT 2)



BRIDGE NO. 125 (END BENT 2)

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Stanbury, M.									
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 13+47		OFFSET 20 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 2,833.2 ft		TOTAL DEPTH 40.7 ft		NORTHING 897,626		EASTING 1,125,246									
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023			DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic										
DRILLER Morgan, M.		START DATE 03/20/24		COMP. DATE 03/21/24		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					
2835	2,833.2	0.0	2	1	1							M	2,833.2	GROUND SURFACE	0.0
2830	2,829.0	4.2	1	1	2							SS-4	2,830.2	ROADWAY EMBANKMENT brown, very loose, silty SAND (A-2-4) with trace gravel	3.0
2825	2,824.0	9.2	4	7	6							SS-5	2,826.2	RESIDUAL brown, soft, sandy SILT (A-4) with some clay and trace gravel	7.0
2820	2,819.0	14.2	60/0.1										2,822.2	WEATHERED ROCK black and white, stiff, sandy SILT (A-4) with little clay and trace gravel	11.0
2815													2,819.0	WEATHERED ROCK (Metamorphosed Granite)	14.2
2810													2,817.5	CRYSTALLINE ROCK (Metamorphosed Granite)	15.7
2805														CRYSTALLINE ROCK (Metamorphosed Granite) REC: 100% RQD: 71% GSI: 75-85	
2800														CRYSTALLINE ROCK (Metamorphosed Granite) REC: 100% RQD: 100% GSI: 85-95	
2795														CRYSTALLINE ROCK (Metamorphosed Granite) REC: 100% RQD: 100% GSI: 80-90	
														Boring Terminated at Elevation 2,792.5 ft in Crystalline Rock (Metamorphosed Granite)	
														- Hard Drilling noted at 11.0 feet interpreted as the top of Weathered Rock.	
														- Advanced Casing to 15.7 feet to begin coring.	
														- RS-1 = 17,275 PSI	

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Stanbury, M.					
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)				
BORING NO. EB1-A		STATION 13+47		OFFSET 20 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 2,833.2 ft		TOTAL DEPTH 40.7 ft		NORTHING 897,626		EASTING 1,125,246					
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023			DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic						
DRILLER Morgan, M.		START DATE 03/20/24		COMP. DATE 03/21/24		SURFACE WATER DEPTH N/A					
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
2817.5	2,817.5	15.7	5.0	2:39/1.0 2:32/1.0 2:12/1.0 2:15/1.0 2:31/1.0	(5.0) 100%	(1.5) 30%	(15.8) 100%	(11.2) 71%		Begin Coring @ 15.7 ft	
2815										CRYSTALLINE ROCK brown, gray, black, and pink, very slight to fresh weathering, very hard, close to wide fracture spacing, METAMORPHOSED GRANITE (META-GRANITE). GSI = 75-85	15.7
2810	2,812.5	20.7	5.0	1:52/1.0 1:48/1.0 2:31/1.0 2:32/1.0 2:01/1.0	(5.0) 100%	(3.9) 78%					
2805	2,807.5	25.7	5.0	2:13/1.0 3:20/1.0 4:00/1.0 4:42/1.0 6:23/1.0	(5.0) 100%	(5.0) 100%			RS-1		
2800	2,802.5	30.7	5.0	4:51/1.0 6:31/1.0 7:23/1.0 9:24/1.0 10:57/1.0	(5.0) 100%	(5.0) 100%	(8.2) 100%	(8.2) 100%		gray, fresh weathering, very hard, wide fracture spacing, QUARTZITE. GSI = 85-95	31.5
2795	2,797.5	35.7	5.0	6:26/1.0 3:56/1.0 4:23/1.0 4:45/1.0 4:43/1.0	(5.0) 100%	(5.0) 100%					
	2,792.5	40.7					(1.0) 100%	(1.0) 100%		gray, black, and pink, fresh weathering, very hard, wide fracture spacing, METAMORPHOSED GRANITE (META-GRANITE). GSI = 80-90	39.7 40.7
										Boring Terminated at Elevation 2,792.5 ft in Crystalline Rock (Metamorphosed Granite)	
										- Hard Drilling noted at 11.0 feet interpreted as the top of Weathered Rock.	
										- Advanced Casing to 15.7 feet to begin coring.	
										- RS-1 = 17,275 PSI	

NCDOT BORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/9/24

NCDOT CORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/9/24

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Stanbury, M.										
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)									
BORING NO. B2-A		STATION 14+86		OFFSET CL		ALIGNMENT -L-										
COLLAR ELEV. 2,817.9 ft		TOTAL DEPTH 25.6 ft		NORTHING 897,549		EASTING 1,125,361										
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023		DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic												
DRILLER Morgan, M.		START DATE 03/20/24		COMP. DATE 03/20/24		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						
2820																
	2,817.9	0.0	8	11	21									2,817.9	GROUND SURFACE	0.0
2815														2,815.9	ALLUVIAL brown, dense, sandy GRAVEL (A-1-a)	2.0
	2,813.9	4.0													WEATHERED ROCK (Metamorphosed Granite)	
	2,811.9	6.0	100/0.4											2,811.9	CRYSTALLINE ROCK (Metamorphosed Granite)	6.0
2810			60/0.0												REC: 100% RQD: 55% GSI: 65-75	
														2,807.2	(Quartzite)	10.7
															REC: 100% RQD: 100% GSI: 85-95	
2805																
														2,800.2	(Metamorphosed Granite)	17.7
2800															REC: 100% RQD: 86% GSI: 75-85	
														2,792.3		25.6
2795																
Boring Terminated at Elevation 2,792.3 ft in Crystalline Rock (Metamorphosed Granite) - Hard Drilling noted at 2.0 feet interpreted as the top of Weathered Rock. - Advanced Casing to 6.0 feet to begin coring. - RS-4 = 55,051 PSI																

NCDOT BORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/7/24

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Stanbury, M.						
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)					
BORING NO. B2-A		STATION 14+86		OFFSET CL		ALIGNMENT -L-						
COLLAR ELEV. 2,817.9 ft		TOTAL DEPTH 25.6 ft		NORTHING 897,549		EASTING 1,125,361						
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023		DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic								
DRILLER Morgan, M.		START DATE 03/20/24		COMP. DATE 03/20/24		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)	
					REC. (%)	RQD (%)	REC. (%)	RQD (%)				
2811.9												
	2,811.9	6.0	4.6	N=60/0.0 5:23/1.0 2:44/1.0 2:25/1.0 2:20/1.0 1:37/0.6	(4.6) 100%	(2.6) 57%	(4.7) 100%	(2.6) 55%		2,811.9	Begin Coring @ 6.0 ft CRYSTALLINE ROCK	6.0
2810												
	2,807.3	10.6	5.0	1:55/1.0 2:05/1.0 2:07/1.0 2:36/1.0 3:05/1.0	(5.0) 100%	(5.0) 100%	(7.0) 100%	(7.0) 100%		2,807.2	gray, black, and orange, slight to very slight weathering, hard to very hard, close fracture spacing, METAMORPHOSED GRANITE (META-GRANITE) with Quartzite vein from 7.8 - 8.8 feet. Some iron oxide staining, especially near fractures. GSI = 65-75	10.7
2805												
	2,802.3	15.6	5.0	2:35/1.0 2:29/1.0 2:34/1.0 1:30/1.0 2:46/1.0	(5.0) 100%	(4.5) 90%	(7.9) 100%	(6.8) 86%		2,800.2	gray, black, and white, very slight to fresh weathering, very hard, wide fracture spacing, QUARTZITE. GSI = 85-95	17.7
2800												
	2,797.3	20.6	5.0	2:17/1.0 2:11/1.0 2:23/1.0 2:29/1.0 3:06/1.0	(5.0) 100%	(4.3) 86%						
2795												
	2,792.3	25.6								2,792.3	Boring Terminated at Elevation 2,792.3 ft in Crystalline Rock (Metamorphosed Granite) - Hard Drilling noted at 2.0 feet interpreted as the top of Weathered Rock. - Advanced Casing to 6.0 feet to begin coring. - RS-4 = 55,051 PSI	25.6

NCDOT BORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/7/24

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Stanbury, M.											
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)										
BORING NO. B2-B		STATION 14+81		OFFSET 25 ft RT		ALIGNMENT -L-											
COLLAR ELEV. 2,819.8 ft		TOTAL DEPTH 29.6 ft		NORTHING 897,528		EASTING 1,125,346											
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023			DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic												
DRILLER Morgan, M.		START DATE 03/19/24		COMP. DATE 03/19/24		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
2820														2,819.8	GROUND SURFACE	0.0	
															ALLUVIAL gray, black, and brown, loose to dense, sandy GRAVEL (A-1-a)		
2815	2,815.8	4.0	18	82/0.2										2,815.3	WEATHERED ROCK (Metamorphosed Granite)	4.5	
	2,813.7	6.1	100/0.3											2,811.8	CRYSTALLINE ROCK (Metamorphosed Granite)	8.0	
2810	2,810.8	9.0	60/0.0											2,810.2	CRYSTALLINE ROCK (Metamorphosed Granite)	9.6	
														2,806.7	REC: 100% RQD: 83% GSI: 70-80 (Quartzite)	13.1	
2805														2,804.6	REC: 100% RQD: 100% GSI: 80-90 (Metamorphosed Granite)	15.2	
2800																	
2795																	
														2,790.2	Boring Terminated at Elevation 2,790.2 ft in Crystalline Rock (Metamorphosed Granite)	29.6	
- Advanced Casing to 9.6 feet to begin coring. - RS-5 = 32,640 PSI - RS-6 = 18,614 PSI																	

NCDOT BORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/7/24

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Stanbury, M.						
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)					
BORING NO. B2-B		STATION 14+81		OFFSET 25 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 2,819.8 ft		TOTAL DEPTH 29.6 ft		NORTHING 897,528		EASTING 1,125,346						
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023			DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic							
DRILLER Morgan, M.		START DATE 03/19/24		COMP. DATE 03/19/24		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
2810.2	2,810.2	9.6	5.0	1:37/1.0 2:04/1.0 2:10/1.0 2:45/1.0 3:20/1.0	(5.0) 100%	(4.0) 80%		(3.5) 100%	(2.9) 83%		Begin Coring @ 9.6 ft	9.6
											CRYSTALLINE ROCK gray, pink, and black, very slight to fresh weathering, very hard, close fracture spacing, METAMORPHOSED GRANITE (META-GRANITE). GSI = 70-80	13.1
2805	2,805.2	14.6	5.0	3:36/1.0 3:44/1.0 4:32/1.0 5:45/1.0 6:47/1.0	(5.0) 100%	(4.3) 86%	RS-5	(2.1) 100%	(2.1) 100%		gray, very slight to fresh weathering, very hard, moderately close fracture spacing, QUARTZITE. GSI = 80-90	15.2
2800	2,800.2	19.6	5.0	4:34/1.0 5:36/1.0 6:47/1.0 5:55/1.0 6:01/1.0 13:43/1.0	(5.0) 100%	(3.8) 76%	RS-6	(14.4) 100%	(12.1) 84%		gray, pink, and black, slight to fresh weathering, close fracture spacing, METAMORPHOSED GRANITE (META-GRANITE) with some iron-oxide staining, especially around fractures. GSI = 70-80	
2795	2,795.2	24.6	5.0	4:38/1.0 4:00/1.0 6:47/1.0 3:03/1.0 5:33/1.0	(5.0) 100%	(5.0) 100%						
	2,790.2	29.6									Boring Terminated at Elevation 2,790.2 ft in Crystalline Rock (Metamorphosed Granite)	29.6
- Advanced Casing to 9.6 feet to begin coring. - RS-5 = 32,640 PSI - RS-6 = 18,614 PSI												

NCDOT CORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/7/24

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Akland, M.									
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 15+23		OFFSET 15 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 2,826.4 ft		TOTAL DEPTH 25.6 ft		NORTHING 897,547		EASTING 1,125,401									
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023		DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic											
DRILLER Morgan, M.		START DATE 03/26/24		COMP. DATE 03/26/24		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					
2830															
2825	2,826.4	0.0	1	WOH	1							M	GROUND SURFACE	0.0	
													ROADWAY EMBANKMENT		
													brown, very loose, silty SAND (A-2-4) with trace organics		
2820	2,822.5	3.9	2		3	3						W	ALLUVIAL	3.8	
													brown, loose, silty SAND (A-2-4) with trace cobbles and boulders		
2815	2,817.5	8.9	2		3	6						W		11.1	
													WEATHERED ROCK		
													(Metamorphosed Granite)		
2810	2,812.9	13.5	60/0.0										CRYSTALLINE ROCK	13.2	
													(Metamorphosed Granite)	13.6	
													CRYSTALLINE ROCK		
													(Quartzite)		
													REC: 100% RQD: 33% GSI: 70-80		
2805													(Metamorphosed Granite)	20.0	
													REC: 96% RQD: 79% GSI: 80-90		
														25.6	
Boring Terminated at Elevation 2,800.8 ft in Crystalline Rock (Metamorphosed Granite)															
- Very Slow Drilling reported from 2.8 - 3.5 feet was interpreted as Alluvial Boulder(s).															
- Slow Drilling reported from 11.1 - 13.2 feet was interpreted as Weathered Rock.															
- Very Slow Drilling reported from 13.2 - 13.6 feet was interpreted as Crystalline Rock.															
- Advanced Casing to 13.6 feet to begin coring.															

NCDOT BORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/7/24

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Akland, M.						
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)					
BORING NO. EB2-A		STATION 15+23		OFFSET 15 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 2,826.4 ft		TOTAL DEPTH 25.6 ft		NORTHING 897,547		EASTING 1,125,401						
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023		DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic								
DRILLER Morgan, M.		START DATE 03/26/24		COMP. DATE 03/26/24		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. (ft)	RQD (ft)		REC. (%)	RQD (%)			
2812.8												
	2,812.8	13.6	2.0	3:34/1.0	(2.0)	(0.8)		(6.4)	(2.1)		Begin Coring @ 13.6 ft	
2810	2,810.8	15.6	5.0	3:28/1.0	100%	40%		100%	33%		CRYSTALLINE ROCK	13.6
				2:32/1.0	(4.9)	(1.3)					gray, white, and black, slight to fresh weathering, very hard, close fracture spacing, QUARTZITE. GSI = 70-80	
				3:24/1.0	98%	26%						
				3:39/1.0								
				3:45/1.0								
2805	2,805.8	20.6	5.0	4:38/1.0	(4.9)	(4.4)		(5.4)	(4.4)			20.0
				4:31/1.0	98%	88%		96%	79%		gray, black, white, and pink, very slight to fresh weathering, very hard, moderately close fracture spacing, METAMORPHOSED GRANITE (META-GRANITE). GSI = 80-90	
				5:11/1.0								
				5:52/1.0								
				3:58/1.0								
	2,800.8	25.6		2:58/1.0								25.6
Boring Terminated at Elevation 2,800.8 ft in Crystalline Rock (Metamorphosed Granite)												
- Very Slow Drilling reported from 2.8 - 3.5 feet was interpreted as Alluvial Boulder(s).												
- Slow Drilling reported from 11.1 - 13.2 feet was interpreted as Weathered Rock.												
- Very Slow Drilling reported from 13.2 - 13.6 feet was interpreted as Crystalline Rock.												
- Advanced Casing to 13.6 feet to begin coring.												

NCDOT CORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/7/24

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Akland, M.									
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 15+27		OFFSET 11 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 2,830.3 ft		TOTAL DEPTH 35.6 ft		NORTHING 897,521		EASTING 1,125,394									
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023			DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic										
DRILLER Morgan, M.		START DATE 03/25/24		COMP. DATE 03/25/24		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					
2835															
2830														2,830.3	0.0
2825	2,825.8	4.5	1	2	1									2,823.3	7.0
2820	2,820.8	9.5	1	2	2									2,819.3	11.0
2815	2,815.8	14.5	32	20	12									2,813.2	17.1
2810	2,810.8	19.5	60	0	0									2,810.8	19.5
2805														2,809.7	20.6
2800															
2795														2,794.7	35.6

WBS 45788.1.1		TIP B-5835		COUNTY AVERY		GEOLOGIST Akland, M.				
SITE DESCRIPTION Replace Bridge No. 125 on SR 1306 over Elk River							GROUND WTR (ft)			
BORING NO. EB2-B		STATION 15+27		OFFSET 11 ft RT		ALIGNMENT -L-				
COLLAR ELEV. 2,830.3 ft		TOTAL DEPTH 35.6 ft		NORTHING 897,521		EASTING 1,125,394				
DRILL RIG/HAMMER EFF./DATE SEL0435 DIEDRICH D-50 91% 09/07/2023			DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic					
DRILLER Morgan, M.		START DATE 03/25/24		COMP. DATE 03/25/24		SURFACE WATER DEPTH N/A				
CORE SIZE		TOTAL RUN		RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.			
2809.7	2,809.7	20.6	5.0	2:20/1.0 3:00/1.0 2:57/1.0 2:51/1.0 3:00/1.0	(5.0) 100%	(3.6) 72%		(14.9) 99%	(11.5) 77%	2809.7
2805	2,804.7	25.6	5.0	2:42/1.0 3:06/1.0 3:00/1.0 3:26/1.0 2:48/1.0	(4.9) 98%	(3.4) 68%				2809.7
2800	2,799.7	30.6	5.0	3:48/1.0 4:40/1.0 6:33/1.0 2:10/1.0 2:17/1.0	(5.0) 100%	(4.5) 90%				2809.7
2795	2,794.7	35.6								2,794.7

NCDOT BORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/7/24

NCDOT CORE DOUBLE B5835_GEO_RDWY_BH.GPJ NC_DOT.GDT 5/7/24

Boring Terminated at Elevation 2,794.7 ft in Crystalline Rock (Metamorphosed Granite)

- Slow Drilling reported from 14.1 - 15.9 feet was interpreted as Alluvial Boulder(s).
- Very Slow Drilling reported from 17.1 - 19.5 feet was interpreted as Weathered Rock.
- Advanced Casing to 20.6 feet to begin coring.

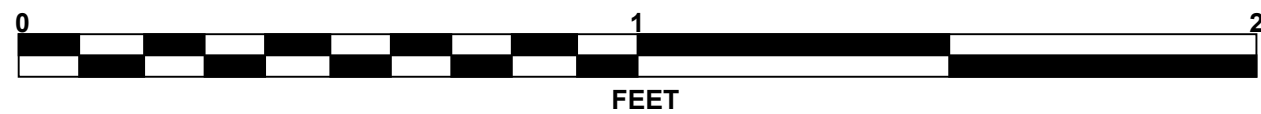
Boring Terminated at Elevation 2,794.7 ft in Crystalline Rock (Metamorphosed Granite)

- Slow Drilling reported from 14.1 - 15.9 feet was interpreted as Alluvial Boulder(s).
- Very Slow Drilling reported from 17.1 - 19.5 feet was interpreted as Weathered Rock.
- Advanced Casing to 20.6 feet to begin coring.

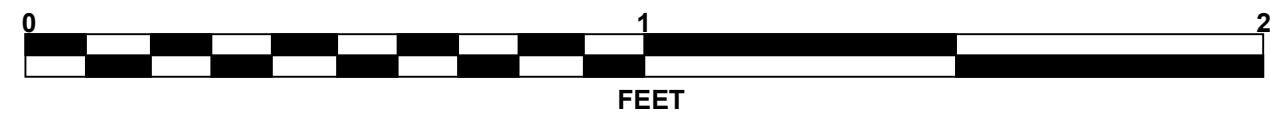
Begin Coring @ 20.6 ft
CRYSTALLINE ROCK
white, black, and pink, slight to fresh weathering, very hard, close to moderately close fracture spacing, METAMORPHOSED GRANITE (META-GRANITE). GSI = 75-85

CORE PHOTOGRAPHS

EB1-A
BOXES 1 & 2: 15.7 - 32.6 FEET



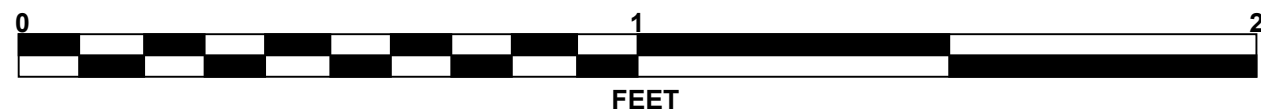
EB1-A
BOX 3: 32.6 - 40.7 FEET



CORE PHOTOGRAPHS

EB1-B

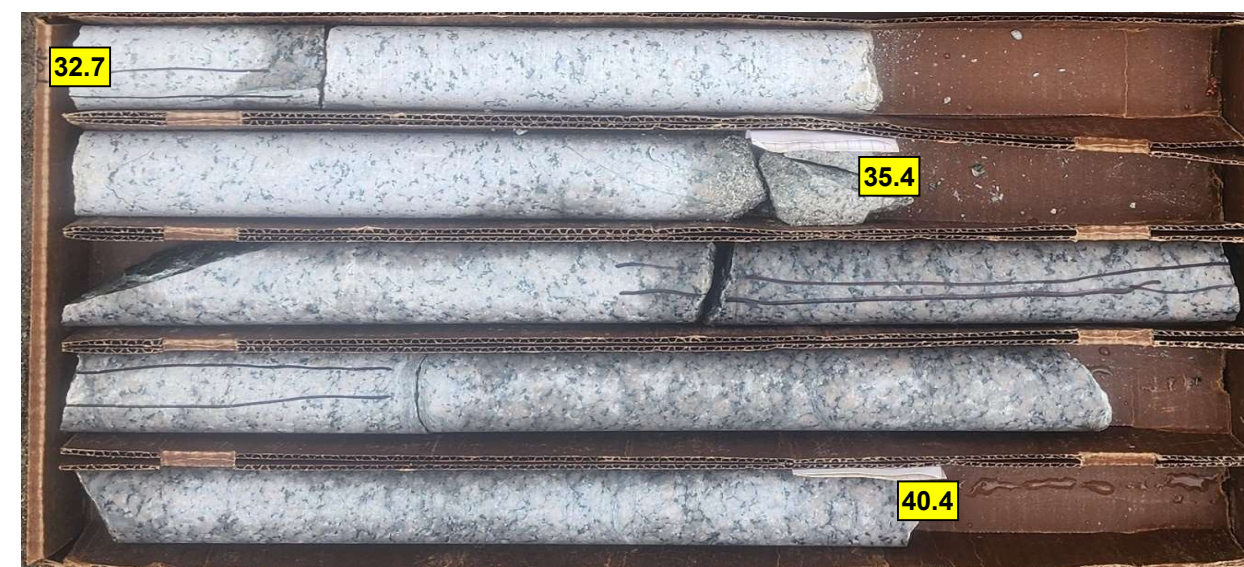
BOXES 1 & 2: 14.7 - 32.7 FEET



FEET

EB1-B

BOX 3: 32.7 - 40.4 FEET



FEET

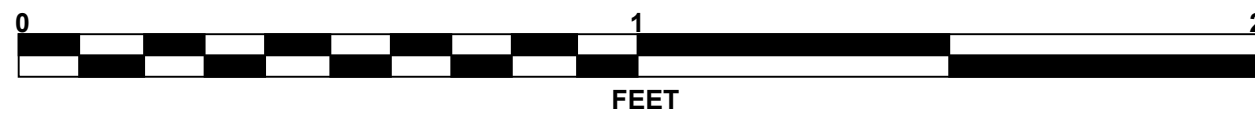
CORE PHOTOGRAPHS

B2-A
BOXES 1 & 2: 6.0 - 25.6 FEET

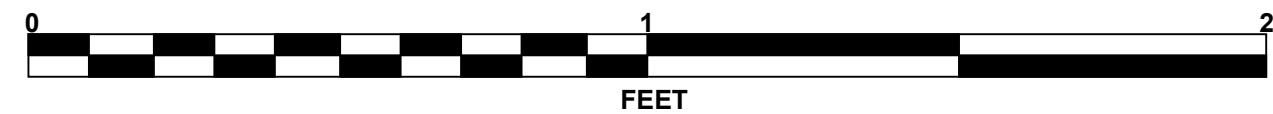


CORE PHOTOGRAPHS

B2-B
BOXES 1 & 2: 9.6 - 24.6 FEET



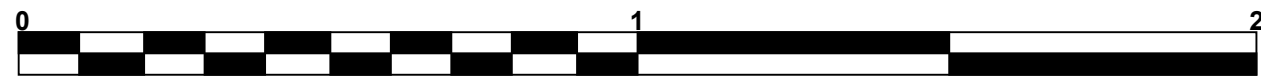
B2-B
BOX 3: 24.6 - 29.6 FEET



CORE PHOTOGRAPHS

EB2-A

BOXES 1 & 2: 13.6 - 25.6 FEET

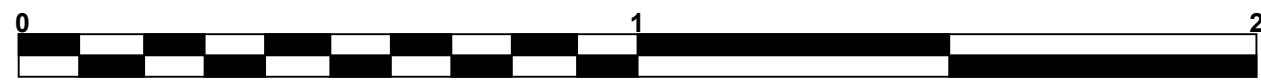


FEET

CORE PHOTOGRAPHS

EB2-B

BOXES 1 & 2: 20.6 - 35.6 FEET



FEET

Laboratory Testing Summary

Project Number: 45788.1.1
TIP Number: B-5835
County: Avery County, NC
Description: Replace Bridge No. 125 on SR 1306 over Elk River

Boring No.	Sample No.	Station	Offset (feet)	Depth Interval (feet)	Lab ID	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
									Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
EB1-A	SS-4	13+47	20'LT	4.2-5.7	24-0649	A-4 (5)	34	8	16.2	12.9	44.3	26.6	1.2	95.9	85.6	68.2	31.3%	
EB1-A	SS-5	13+47	20'LT	9.2-10.7	24-0650	A-4 (0)	NP	NP	19.2	16.0	45.5	19.3	3.8	91.8	80.5	59.8	21.6%	
EB1-B	SS-14	13+65	15'RT	4.0-5.5	24-0651	A-4 (0)	NP	NP	12.0	10.6	46.5	30.9	7.4	90.8	84.3	70.5	39.3%	
EB1-B	SS-15	13+65	15'RT	9.0-10.5	24-0652	A-4 (0)	NP	NP	9.7	14.3	55.5	20.5	0.0	99.4	94.1	75.8	22.7%	

Chad Hawkins

Certified Lab Technician Signature

147-02-0821

Certification Number

Laboratory Testing Summary

Project Number: 45788.1.1
TIP Number: B-5835
County: Avery County, NC
Description: Replace Bridge No. 125 on SR 1306 over Elk River

Boring No.	Sample No.	Allignment	Station	Offset (feet)	Depth Interval (feet)	Lab ID	Rock Type	Geologic Map Unit	Run RQD %	Length (inches)	Diameter (inches)	Unit Weight (PCF)	Unconfined Compressive Strength (PSI)
EB1-A	RS-1	-L-	13+47	20' LT	24.7-25.1	24-0760	Meta-Granite	Zg	100%	3.94	1.970	163.363	17,275
EB1-B	RS-2	-L-	13+65	15' RT	22.8-23.2	24-0761	Meta-Granite	Zg	82%	3.97	1.970	163.238	13,206
EB1-B	RS-3	-L-	13+65	15' RT	25.5-25.9	24-0762	Quartzite	Zg	70%	3.96	1.970	165.922	46,343
B2-A	RS-4	-L-	14+86	CL	16.1-16.5	24-0763	Quartzite	Zg	90%	3.96	1.970	166.358	55,051
B2-B	RS-5	-L-	14+81	25' RT	13.2-13.6	24-0764	Quartzite	Zg	80%	3.96	1.980	168.293	32,640
B2-B	RS-6	-L-	14+81	25' RT	18.6-19.0	24-0765	Meta-Granite	Zg	86%	3.98	1.980	165.485	18,614

Chad Hawkins

Certified Lab Technician Signature

147-02-0821

Certification Number

SITE PHOTOGRAPH

Bridge No. 125 on SR 1306 over Elk River



Standing Near End Bent 1 Looking Up Station towards End Bent 2