

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-050027	1	14

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

**STRUCTURE
SUBSURFACE INVESTIGATION**

COUNTY AVERY

PROJECT DESCRIPTION BRIDGE NO. 27 ON US 221
(LINVILLE FALLS HWY.) OVER LINVILLE RIVER

REFERENCE: SF-050027

PROJECT: 17BP.11.R.122

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2, 2A	LEGEND
3	BORING LOCATION PLAN
4-14	BORING LOGS

PERSONNEL

HPC
GOODNIGHT, D.J.

INVESTIGATED BY GOODNIGHT, D.J.
DRAWN BY CROCKETT, S.
CHECKED BY HAMM, J.H. 12/2017
SUBMITTED BY FALCON ENG.
DATE MAY 2019

CAUTION NOTICE

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

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

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE 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.



DocuSigned by:
Jeremy R Hamm 5/23/2019
ED7938089E22487...
SIGNATURE DATE

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

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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SUBSURFACE INVESTIGATION





SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 1 OF 2)

SOIL DESCRIPTION										GRADATION																																						
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										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.																																						
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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																																						
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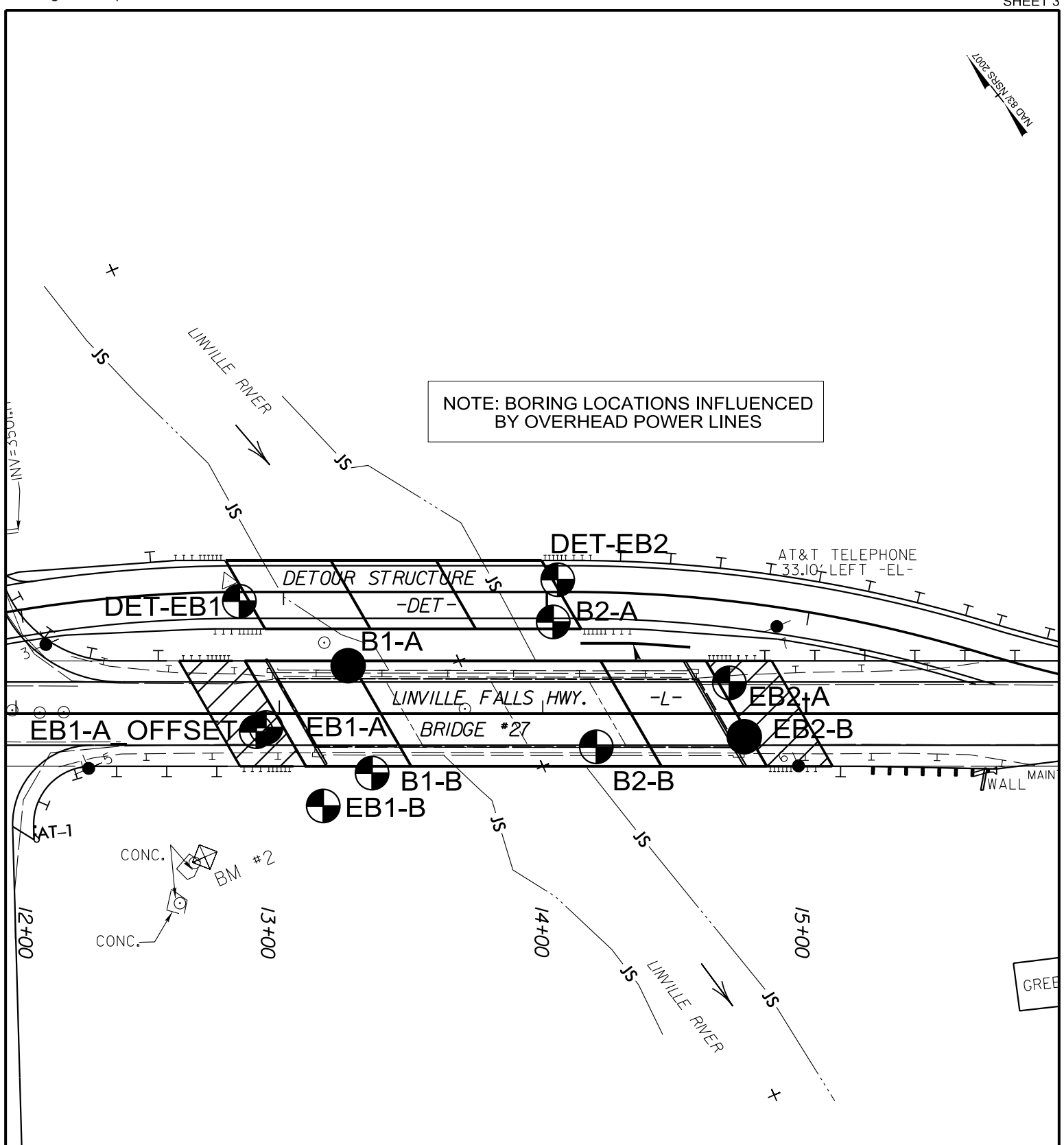
SUBSURFACE INVESTIGATION

**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS
(PAGE 2 OF 2)**

ROCK DESCRIPTION		TERMS AND DEFINITIONS	
<p>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:</p>		<p>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 IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (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.</p>	
<p>WEATHERED ROCK (WR)</p>		<p>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.</p>	
<p>CRYSTALLINE ROCK (CR)</p>		<p>FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p>	
<p>NON-CRYSTALLINE ROCK (NCR)</p>		<p>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.</p>	
<p>COASTAL PLAIN SEDIMENTARY ROCK (CP)</p>		<p>COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>	
WEATHERING			
<p>FRESH</p>	<p>ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p>		
<p>VERY SLIGHT (V SL.)</p>	<p>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.</p>		
<p>SLIGHT (SL.)</p>	<p>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.</p>		
<p>MODERATE (MOD.)</p>	<p>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.</p>		
<p>MODERATELY SEVERE (MOD. SEV.)</p>	<p>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p>		
<p>SEVERE (SEV.)</p>	<p>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</i></p>		
<p>VERY SEVERE (V SEV.)</p>	<p>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i></p>		
<p>COMPLETE</p>	<p>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.</p>		
ROCK HARDNESS			
<p>VERY HARD</p>	<p>CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</p>		
<p>HARD</p>	<p>CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</p>		
<p>MODERATELY HARD</p>	<p>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.</p>		
<p>MEDIUM HARD</p>	<p>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.</p>		
<p>SOFT</p>	<p>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.</p>		
<p>VERY SOFT</p>	<p>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.</p>		
FRACTURE SPACING		BEDDING	
<p>TERM</p>	<p>SPACING</p>	<p>TERM</p>	<p>THICKNESS</p>
<p>VERY WIDE</p>	<p>MORE THAN 10 FEET</p>	<p>VERY THICKLY BEDDED</p>	<p>4 FEET</p>
<p>WIDE</p>	<p>3 TO 10 FEET</p>	<p>THICKLY BEDDED</p>	<p>1.5 - 4 FEET</p>
<p>MODERATELY CLOSE</p>	<p>1 TO 3 FEET</p>	<p>THINLY BEDDED</p>	<p>0.16 - 1.5 FEET</p>
<p>CLOSE</p>	<p>0.16 TO 1 FOOT</p>	<p>VERY THINLY BEDDED</p>	<p>0.03 - 0.16 FEET</p>
<p>VERY CLOSE</p>	<p>LESS THAN 0.16 FEET</p>	<p>THICKLY LAMINATED</p>	<p>0.008 - 0.03 FEET</p>
		<p>THINLY LAMINATED</p>	<p>< 0.008 FEET</p>
INDURATION			
<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p>			
<p>FRIABLE</p>	<p>RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p>		
<p>MODERATELY INDURATED</p>	<p>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p>		
<p>INDURATED</p>	<p>GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p>		
<p>EXTREMELY INDURATED</p>	<p>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>		
<p>BENCH MARK: BM #2, STA. 12+71.6 -L-, 54.5' RT. RR SPIKE IN CUT-OFF POLE N: 841895 E: 1143620 ELEVATION: 3503.85 FEET</p>			
<p>NOTES: FIAD - FILLED IMMEDIATELY AFTER DRILLING</p>			

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NOTE: BORING LOCATIONS INFLUENCED BY OVERHEAD POWER LINES



NOTES:

- PLANS ADOPTED FROM ELECTRONIC SURVEY FILES RECEIVED FROM RK&K DATED AUGUST 2017.
- BRIDGE SKEW: 60°

FALCON ENGINEERING
 FALCON ENGINEERING, INC.
 1210 TRINITY ROAD, SUITE 110
 CARY, NC 27513
 PHONE: 919.871.0800

BORING LOCATION PLAN

BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.)
 OVER LINVILLE RIVER
 AVERY COUNTY, NORTH CAROLINA
 WBS NO.: 17BP.11.R.122 | TIP NO.: SF-050027
 FALCON PROJECT NO.: G16021.05

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.11.R.122			TIP SF-050027			COUNTY AVERY			GEOLOGIST GOODNIGHT, D.J.							
SITE DESCRIPTION BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.) OVER LINVILLE RIVER									GROUND WTR (ft)							
BORING NO. EB1-A			STATION 12+95			OFFSET 5 ft RT			ALIGNMENT -L-							
COLLAR ELEV. 3,509.5 ft			TOTAL DEPTH 16.5 ft			NORTHING 841,931			EASTING 1,143,661							
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER Contract Driller			START DATE 11/09/17			COMP. DATE 11/09/17			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
3510																
	3,508.5	1.0	4	3	2	5									GROUND SURFACE	0.0
	3,506.0	3.5	3	2	3	5									0.7' BITUMINOUS CONCRETE 0.7' AGGREGATE BASE COURSE	1.4
3505															ROADWAY EMBANKMENT	
	3,503.5	6.0	3	3	2	5									TAN LIGHT GRAY AND BROWN, SILTY SAND (A-2-4) WITH TRACE TO LITTLE GRAVEL	
3500																
	3,501.0	8.5	9	6	5	11										
3495																
	3,496.0	13.5	5	11	34	45									RESIDUAL	14.0
	3,493.0	16.5													BROWN, FINE SANDY SILT (A-4) SAPROLITIC	15.0
															NON-CRYSTALLINE ROCK	16.5
															GRAY, META-SANDSTONE	
															Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 3,493.0 ft IN: NON-CRYSTALLINE ROCK (META-SANDSTONE)	

NCDOT BORE SINGLE_SF050027_BORINGS.GPJ_NC_DOT.GDT_1/3/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.11.R.122			TIP SF-050027			COUNTY AVERY			GEOLOGIST GOODNIGHT, D.J.						
SITE DESCRIPTION BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.) OVER LINVILLE RIVER									GROUND WTR (ft)						
BORING NO. EB1-A_OFFSET			STATION 12+91			OFFSET 7 ft RT			ALIGNMENT -L-						
COLLAR ELEV. 3,509.5 ft			TOTAL DEPTH 28.0 ft			NORTHING 941,931			EASTING 1,143,657						
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER Contract Driller			START DATE 11/09/17			COMP. DATE 11/09/17			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
3510														GROUND SURFACE	0.0
														0.7' BITUMINOUS CONCRETE	1.4
														0.7' AGGREGATE BASE COURSE	
3505														AUGER PROBE	
3500															
3495															
3490	3,491.0	18.5								100/0.2				WEATHERED ROCK	16.5
														TAN AND BROWN, META-SILTSTONE	
3485	3,486.0	23.5	17	34	59									RESIDUAL	22.0
														TAN, FINE SANDY SILT (A-4)	25.0
														WEATHERED ROCK	25.0
	3,481.5	28.0								60/0.0				TAN AND BROWN, META-SILTSTONE	28.0
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 3,481.5 ft ON: NON-CRYSTALLINE ROCK (META-SANDSTONE)	

NCDOT BORE SINGLE_SF050027_BORINGS.GPJ_NC_DOT.GDT_1/3/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.11.R.122	TIP SF-050027	COUNTY AVERY	GEOLOGIST GOODNIGHT, D.J.
SITE DESCRIPTION BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.) OVER LINVILLE RIVER			GROUND WTR (ft)
BORING NO. EB1-B	STATION 13+17	OFFSET 35 ft RT	ALIGNMENT -L-
COLLAR ELEV. 3,497.0 ft	TOTAL DEPTH 29.2 ft	NORTHING 841,895	EASTING 1,143,669
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/06/17	COMP. DATE 11/06/17	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
3500																
														3,497.0	GROUND SURFACE	0.0
															ROADWAY EMBANKMENT	
3495	3,496.0	1.0	2	1	3										BROWN, SANDY SILT (A-4) with TRACE ORGANICS AND GRAVEL	
	3,493.5	3.5	WOH	WOH	2									3,492.5		4.5
	3,491.0	6.0												3,491.5	ALLUVIAL	5.5
3490	3,488.5	8.5	33	62	38/0.2										GRAY, FINE TO COARSE SAND (A-1-b) with TRACE GRAVEL	8.0
	3,488.5	8.5	40	60/0.3						100/0.7					WEATHERED ROCK	
										100/0.8					TAN AND BROWN, META-SILTSTONE	
3485	3,483.5	13.5												3,485.0	TAN AND GRAY, META-ARKOSE	12.0
															RESIDUAL	
															TAN AND GRAY, SILTY SAND (A-2-4)	
3480	3,478.5	18.5												3,480.0		17.0
															WEATHERED ROCK	
															TAN AND BROWN, META-ARKOSE	
3475	3,473.5	23.5												3,475.0		22.0
															RESIDUAL	
															TAN AND BROWN, FINE SANDY SILT (A-4)	
3470	3,468.5	28.5												3,470.0		27.0
															WEATHERED ROCK	
														3,467.8	TAN AND BROWN, META-SILTSTONE	29.2
															Boring Terminated at Elevation 3,467.8 ft IN: WEATHERED ROCK (META-SILTSTONE)	

NCDOT BORE SINGLE_SF050027_BORINGS.GPJ_NC_DOT.GDT 1/3/18

GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.11.R.122		TIP SF-050027		COUNTY AVERY		GEOLOGIST GOODNIGHT, D.J.	
SITE DESCRIPTION BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.) OVER LINVILLE RIVER							GROUND WTR (ft)
BORING NO. B1-B		STATION 13+35		OFFSET 23 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 3,496.0 ft		TOTAL DEPTH 35.3 ft		NORTHING 841,899		EASTING 1,143,691	
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER Contract Driller		START DATE 11/06/17		COMP. DATE 11/06/17		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
3500																	
3495	3,495.0	1.0													3,496.0	GROUND SURFACE	0.0
															3,495.5	0.5' TOPSOIL	0.5
	3,492.5	3.5	39	10	14										3,493.0	COLLUVIAL LIGHT GRAY AND BROWN, SILTY SAND with GRAVEL AND COBBLES (A-1-a)	3.0
3490	3,490.0	6.0	80	20/0.1						100/0.6						WEATHERED ROCK PINK AND GRAY, META-ARKCOSE	
			100/0.4							100/0.4					3,487.7	RESIDUAL BROWN, FINE SANDY SILT (A-4)	8.3
3485	3,487.5	8.5	4	24	56					80							
															3,482.0	WEATHERED ROCK TAN AND BROWN, META-SILTSTONE	14.0
3480	3,482.5	13.5	21	65	35/0.1					100/0.6							
3475	3,477.5	18.5	21	45	55/0.2					100/0.7							
3470	3,472.5	23.5								100/0.3							
			100/0.3							100/0.3							
3465	3,467.5	28.5								100/0.2							
			100/0.2							100/0.2							
	3,462.5	33.5								100/0.5							
	3,460.7	35.3								100/0.5					3,460.7	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 3,460.7 ft ON: NON-CRYSTALLINE ROCK (META-SILTSTONE)	35.3
		60/0.0								60/0.0							

NCDOT BORE SINGLE_SF050027_BORINGS.GPJ_NC_DOT.GDT 1/3/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.11.R.122		TIP SF-050027		COUNTY AVERY		GEOLOGIST GOODNIGHT, D.J.	
SITE DESCRIPTION BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.) OVER LINVILLE RIVER							GROUND WTR (ft)
BORING NO. B2-A		STATION 14+04		OFFSET 35 ft LT		ALIGNMENT -L-	0 HR. 2.7
COLLAR ELEV. 3,497.4 ft		TOTAL DEPTH 49.5 ft		NORTHING 841,924		EASTING 1,143,777	24 HR. N/A
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER Contract Driller		START DATE 11/08/17		COMP. DATE 11/08/17		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100								
3500																		
	3,496.4	1.0														3,497.4	GROUND SURFACE	0.0
3495	3,493.9	3.5	2	2	1									M	ALLUVIAL BROWN, FINE SANDY SILT (A-4) with TRACE GRAVEL AND ORGANICS	3.0		
	3,491.4	6.0	9	9	12									W	TAN, SILTY FINE TO COARSE SAND A-1-b) with SOME GRAVEL AND COBBLES			
3490	3,488.9	8.5	15	14	13									Sat.				
	3,483.9	13.5	28	12	23									M	RESIDUAL TAN, FINE SANDY SILT (A-4)	9.0		
3485	3,478.9	18.5	21	60	40/0.1										WEATHERED ROCK TAN, META-SILTSTONE	14.0		
3480	3,473.9	23.5	8	8	16									M	RESIDUAL BROWN TAN AND LIGHT GRAY, FINE SANDY SILT (A-4)	17.5		
3475	3,468.9	28.5	18	10	11									M				
3470	3,463.9	33.5	45	55/0.1											WEATHERED ROCK TAN AND BROWN, META-SANDSTONE	27.0		
3465	3,458.9	38.5	100/0.3															
3460	3,453.9	43.5	100/0.3												WEATHERED ROCK TAN AND BROWN, META-SILTSTONE	37.0		
3455	3,448.9	48.5	34	37	63/0.4													
3450	3,447.9	49.4	100/0.9															
	3,448.0	49.4	100/0.2															
	3,447.9	49.4	60/0.1															

NON-CRYSTALLINE ROCK
 TAN AND BROWN, META-SILTSTONE
 Boring Terminated WITH STANDARD
 PENETRATION TEST REFUSAL at
 Elevation 3,447.9 ft IN: NON-CRYSTALLINE
 ROCK (META-SILTSTONE)

NCDOT BORE SINGLE_SF050027_BORINGS.GPJ_NC_DOT.GDT_1/3/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 17BP.11.R.122	TIP SF-050027	COUNTY AVERY	GEOLOGIST GOODNIGHT, D.J.
SITE DESCRIPTION BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.) OVER LINVILLE RIVER			GROUND WTR (ft)
BORING NO. B2-B	STATION 14+20	OFFSET 13 ft RT	ALIGNMENT -L-
COLLAR ELEV. 3,495.6 ft	TOTAL DEPTH 34.8 ft	NORTHING 841,874	EASTING 1,143,773
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 11/08/17	COMP. DATE 11/08/17	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
3500																	
3495	3,494.6	1.0	1	1	1										3,495.6	GROUND SURFACE	0.0
	3,492.1	3.5	10	8	8										3,492.6	ALLUVIAL TAN AND BROWN, FINE SAND (A-3) with SOME GRAVEL AND COBBLES	3.0
3490	3,489.6	6.0	28	63	37/0.3										3,489.1	TAN AND BROWN, SLIGHTLY SILTY FINE TO COARSE SAND (A-1-b) WITH SOME GRAVEL AND COBBLES	6.5
	3,487.1	8.5	12	28	60					100/0.8					3,487.6	WEATHERED ROCK TAN, META-SILTSTONE	8.0
3485															3,485.6	RESIDUAL TAN, FINE SANDY SILT (A-4)	10.0
	3,482.1	13.5	56	43/0.2						100/0.7						WEATHERED ROCK TAN, META-SILTSTONE	
3480																	
	3,477.1	18.5	30	70/0.3						100/0.8							
3475																	
	3,472.1	23.5	30	38	62/0.4					100/0.9							
3470																	
	3,467.1	28.5	70	30/0.1						100/0.6							
3465																	
	3,462.1	33.5	25	60	40/0.3					100/0.8							
															3,460.8		34.8
Boring Terminated at Elevation 3,460.8 ft IN: WEATHERED ROCK (META-SILTSTONE)																	

NCDOT BORE SINGLE_SF050027_BORINGS.GPJ_NC_DOT.GDT_1/3/18

GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.11.R.122		TIP SF-050027		COUNTY AVERY		GEOLOGIST GOODNIGHT, D.J.										
SITE DESCRIPTION BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.) OVER LINVILLE RIVER								GROUND WTR (ft)								
BORING NO. DET-EB1		STATION 12+85		OFFSET 43 ft LT		ALIGNMENT -DET-		0 HR.	19.6							
COLLAR ELEV. 3,502.2 ft		TOTAL DEPTH 28.7 ft		NORTHING 841,979		EASTING 1,143,671		24 HR.	6.8							
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Contract Driller		START DATE 11/07/17		COMP. DATE 11/07/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
3505																
	3,501.2	1.0												3,502.2	GROUND SURFACE	0.0
3500																
	3,498.7	3.5	2	2	5									3,499.2	ROADWAY EMBANKMENT BROWN, FINE SANDY SILT(A-4) with TRACE ROOTS	3.0
	3,496.2	6.0	9	9	12											
3495														3,496.7	ALLUVIAL TAN, FINE TO COARSE SAND (A-A-a) with SOME GRAVEL	5.5
	3,493.7	8.5	15	17	19											
	3,493.7	8.5	10	25	46											
3490																
	3,488.7	13.5	21	48	52/0.3											
	3,488.7	13.5	21	48	52/0.3									3,488.2	RESIDUAL TAN, FINE SANDY SILT (A-4) with TRACE ROCK FRAGMENTS	14.0
3485																
	3,483.7	18.5	24	63	37/0.1											
	3,483.7	18.5	24	63	37/0.1											
3480																
	3,478.7	23.5	70	30/0.1												
	3,478.7	23.5	70	30/0.1												
3475																
	3,473.7	28.5												3,473.5	WEATHERED ROCK TAN, META-SILTSTONE	28.7
	3,473.7	28.5	100/0.2													

NCDOT BORE SINGLE_SF050027_BORINGS.GPJ NC_DOT.GDT 1/3/18

GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.11.R.122		TIP SF-050027		COUNTY AVERY		GEOLOGIST GOODNIGHT, D.J.	
SITE DESCRIPTION BRIDGE NO. 27 ON US 221 (LINVILLE FALLS HWY.) OVER LINVILLE RIVER							GROUND WTR (ft)
BORING NO. DET-EB2		STATION 14+06		OFFSET 50 ft LT		ALIGNMENT -DET-	
COLLAR ELEV. 3,498.0 ft		TOTAL DEPTH 33.8 ft		NORTHING 841,938		EASTING 1,143,785	
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic			
DRILLER Contract Driller		START DATE 11/07/17		COMP. DATE 11/07/17		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
3500															
	3,497.0	1.0	1	2	5								M	GROUND SURFACE	0.0
3495	3,494.5	3.5	8	7	5								W	ALLUVIAL TAN, SAND (A-3) with TRACE GRAVEL	3.0
	3,492.0	6.0	7	8	5								Sat.	BROWN, SANDY SILT (A-4) with SOME GRAVEL AND COBBLES	5.5
3490	3,489.5	8.5	4	16	21								M	TAN, FINE TO COARSE SAND (A-1-a) with SOME GRAVEL AND COBBLES	9.0
3485	3,484.5	13.5	20	25	21								M	RESIDUAL TAN, FINE SANDY SILT (A-4)	
3480	3,479.5	18.5	6	11	18								W		
3475	3,474.5	23.5	30	37	62								M		
3470	3,469.5	28.5	30	64	36/0.1									WEATHERED ROCK TAN, META-SILTSTONE	25.0
3465	3,464.5	33.5	100/0.3												33.8
														Boring Terminated at Elevation 3,464.2 ft IN: WEATHERED ROCK (META-SILTSTONE)	

NCDOT BORE SINGLE_SF050027_BORINGS.GPJ_NC_DOT.GDT_1/3/18



1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PHONE: 919.871.0800
www.falconengineers.com

PROJECT NO. G16021.05		PROJECT LOCATION Avery County			LOGGED BY Goodnight, D		GROUND WATER	O HOUR	STATIC
PROJECT NAME Bridge No. 27 on US 158 (Linville Falls Hwy.) over Linville River							HOLE		
BORING NO. B1-A		BORING LOCATION 1326 18 FT LT -L-					DEPTH		
ELEVATION (ft) 3494.1		NORTHING (ft) 841940		DRILL MACHINE NA				DATE 11/10/2017	
TOTAL DEPTH (ft) 3.8		EASTING (ft) 1143699		DRILLER Goodnight, D			SURFACE WATER DEPTH (ft)		
DATE STARTED 11/10/2017			DATE COMPLETED 11/10/2017		DRILL METHOD Sounding Rods		HAMMER TYPE 16 lb Hammer		

ELEV. (ft)	DEPTH (ft)	BLOW COUNT		BLOWS PER FOOT	SAMP. NO.	LOG	Elev. (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)
		0.5 ft	0.5 ft						
				0 15 30 45 60 75 90 105 120 135 150			3494.1		0.0
	0.0	1	7						
	1.0	10	7	8				ROD SOUNDING ONLY - NO SAMPLES TAKEN	
	2.0	14	46	17					
	3.0	75	73/0.3	60					
3490							3490.3		3.8
				148/0.8				Rod Sounding Refusal at 3.8 feet Below Current Ground Surface in	
3485									
3480									
3475									
3470									

ROD SOUNDING LOG - SR LOGS.GPJ - FALCON FORMAT.GDT 12/13/17



1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

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PROJECT NO. G16021.05	PROJECT LOCATION Avery County	LOGGED BY Goodnight, D	GROUND WATER	0 HOUR	STATIC
PROJECT NAME Bridge No. 27 on US 158 (Linville Falls Hwy.) over Linville River			HOLE		
BORING NO. EB2-B	BORING LOCATION 1477 9 FT RT -L-	DEPTH			
ELEVATION (ft) 3509.8	NORTHING (ft) 841855	DRILL MACHINE NA	DATE	9/23/2016	
TOTAL DEPTH (ft) 17.8	EASTING (ft) 1143826	DRILLER Goodnight, D	SURFACE WATER DEPTH (ft)		
DATE STARTED 9/23/2016	DATE COMPLETED 9/23/2016	DRILL METHOD Sounding Rods	HAMMER TYPE 16 lb Hammer		

ELEV. (ft)	DEPTH (ft)	BLOW COUNT		BLOWS PER FOOT														SAMP. NO.	LOG	Elev. (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)
		0.5 ft	0.5 ft	0	15	30	45	60	75	90	105	120	135	150								
	0.0	1	0																3509.8		0.0	
	1.0	1	1																	ROD SOUNDING ONLY - NO SAMPLES TAKEN		
	2.0	2	1																			
	3.0	2	3																			
	4.0	2	2																			
3505	5.0	5	4																			
	6.0	5	5																			
	7.0	7	5																			
	8.0	6	6																			
	9.0	8	8																			
3500	10.0	6	9																			
	11.0	8	7																			
	12.0	13	8																			
	13.0	9	9																			
	14.0	8	8																			
3495	15.0	10	10																			
	16.0	10	17																			
	17.0	35	113/0.3																			
																			3492.0		17.8	
																				ROD Sounding Refusal at 17.8 feet Below Current Ground Surface in		
3490																						
3485																						

ROD SOUNDING LOG - SR LOGS.GPJ FALCON_FORMAT.GDT 12/13/17