

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP11.R024	1	12

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

STRUCTURE  
SUBSURFACE INVESTIGATION

COUNTY WILKES  
SITE DESCRIPTION REPLACE BRIDGE NO. 228 OVER  
LITTLE ELKIN CREEK ON SR 2024 (LUFFMAN  
ROAD)

CONTENTS

SHEET NO.	DESCRIPTION
I	TITLE SHEET
2, 2A	LEGEND (SOIL & ROCK)
3	SITE PLAN
4 TO II	BORE LOGS
12	LABORATORY TESTING SUMMARY
13	SITE PHOTOGRAPHS

PERSONNEL  
HOWARD, J. P.  
ODOM, C.  
HOFFMAN, T.

INVESTIGATED BY TERRACON  
DRAWN BY HARTMAN, M. L.  
CHECKED BY PLUMMER, K. R.  
SUBMITTED BY RIGGS, JR., A. F.  
DATE JUNE 2024

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. 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.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. 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 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.

Prepared in the Office of:



3401 BRENTWOOD ROAD, SUITE 107  
RALEIGH, NORTH CAROLINA 27604  
NC REGISTERED ENGINEERING FIRM F-0869  
NC REGISTERED GEOLOGIC FIRM C-367



DocuSigned by:  
Abner Riggs Jr. 1/23/2025  
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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

REFERENCE: BP11.R024

PROJECT: BP11.R024





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**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, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>																								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.											
SOIL LEGEND AND AASHTO CLASSIFICATION												ANGULARITY OF GRAINS																							
GENERAL CLASS.												THE ANGULARITY OR ROUNDEDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.																							
GROUP CLASS.												MINERALALOGICAL COMPOSITION																							
SYMBOL												MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.																							
% PASSING #10 #40 #200												COMPRESSIBILITY																							
MATERIAL PASSING #40 LL PI												PERCENTAGE OF MATERIAL																							
GROUP INDEX												GROUND WATER																							
USUAL TYPES OF MAJOR MATERIALS												MISCELLANEOUS SYMBOLS																							
GEN. RATING AS SUBGRADE												RECOMMENDATION SYMBOLS																							
CONSISTENCY OR DENSENESS												ABBREVIATIONS																							
PRIMARY SOIL TYPE												EQUIPMENT USED ON SUBJECT PROJECT																							
TEXTURE OR GRAIN SIZE																																			
SOIL MOISTURE - CORRELATION OF TERMS																																			
PLASTICITY																																			
COLOR																																			

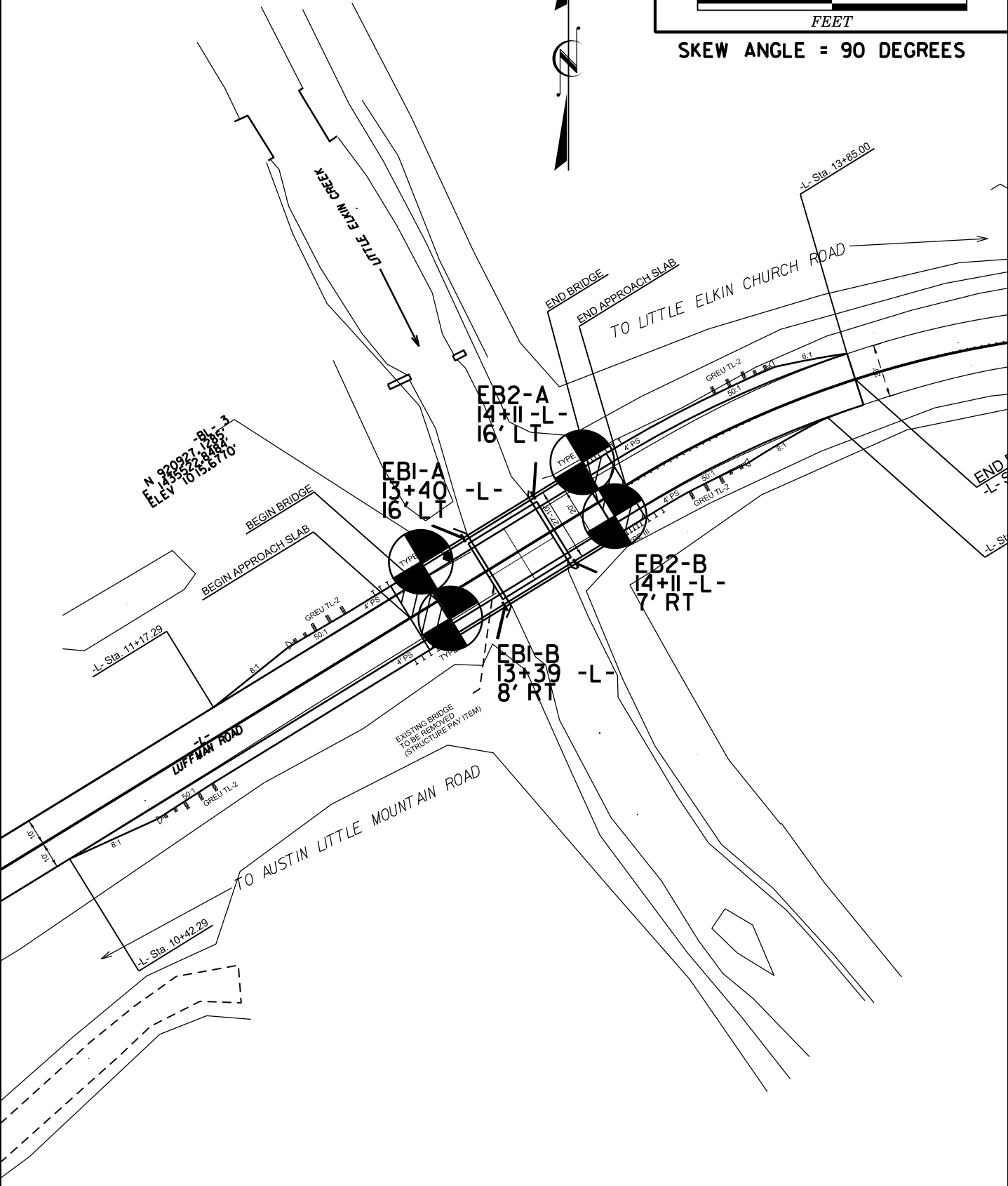
PROJECT REFERENCE NO.	SHEET NO.
BP11.R024	2A

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**  
**SUBSURFACE INVESTIGATION**  
**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**  
**(PAGE 2 OF 2)**

ROCK DESCRIPTION			TERMS AND DEFINITIONS		
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:			<u>ALLUVIUM (ALLUV.)</u> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. <u>AQUIFER</u> - A WATER BEARING FORMATION OR STRATA. <u>ARENACEOUS</u> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. <u>ARGILLACEOUS</u> - 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. <u>ARTESIAN</u> - 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. <u>CALCAREOUS (CALC.)</u> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. <u>COLLUVIUM</u> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. <u>CORE RECOVERY (REC.)</u> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. <u>DIKE</u> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. <u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. <u>DIP DIRECTION (DIP AZIMUTH)</u> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. <u>FAULT</u> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. <u>FISSILE</u> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. <u>FLOAT</u> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. <u>FLOOD PLAIN (FP)</u> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. <u>FORMATION (FM.)</u> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. <u>JOINT</u> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. <u>LEDGE</u> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. <u>LENS</u> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. <u>MOTTLED (MOT.)</u> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. <u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. <u>RESIDUAL (RES.) SOIL</u> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. <u>ROCK QUALITY DESIGNATION (RQD)</u> - 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. <u>SAPROLITE (SAP.)</u> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. <u>SILL</u> - 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. <u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. <u>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</u> - 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. <u>STRATA CORE RECOVERY (SREC.)</u> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. <u>STRATA ROCK QUALITY DESIGNATION (SROD)</u> - 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. <u>TOPSOIL (TS.)</u> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.		
		NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.			
		FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.			
		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 SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.			
WEATHERING					
FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.				
VERY SLIGHT (V SL.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.				
SLIGHT (SL.)	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. <u>IF TESTED, WOULD YIELD SPT REFUSAL</u>				
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. <u>IF TESTED, WOULD YIELD SPT N VALUES &gt; 100 BPF</u>				
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</u>				
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 GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.				
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.				
FRACTURE SPACING			BEDDING		
TERM	SPACING		TERM	THICKNESS	
VERY WIDE	MORE THAN 10 FEET		VERY THICKLY BEDDED	4 FEET	
WIDE	3 TO 10 FEET		THICKLY BEDDED	1.5 - 4 FEET	
MODERATELY CLOSE	1 TO 3 FEET		THINLY BEDDED	0.16 - 1.5 FEET	
CLOSE	0.16 TO 1 FOOT		VERY THINLY BEDDED	0.03 - 0.16 FEET	
VERY CLOSE	LESS THAN 0.16 FEET		THICKLY LAMINATED	0.008 - 0.03 FEET	
			THINLY LAMINATED	< 0.008 FEET	
INDURATION					
FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.					
FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.				
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.				
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.				
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.				
BENCH MARK: BL-3; STA. 11+12.78 -L-,			N:920927.1285 , E:1435522.8484		
			ELEVATION: 1015.68 FEET		
NOTES:					
FIAD - FILLED IMMEDIATELY AFTER DRILLING					
DATE: 8-15-14					

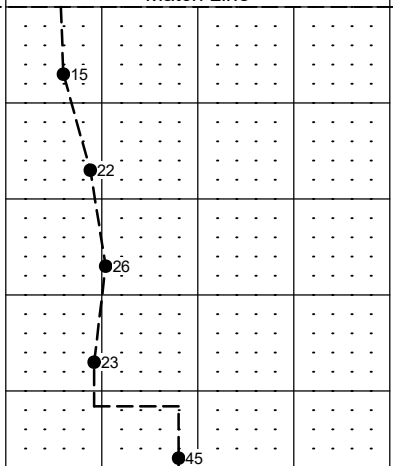
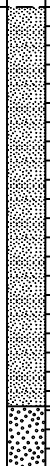

<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
BP11.R024	3
<b>SITE PLAN</b>	
0 50 100 FEET	

SKREW ANGLE = 90 DEGREES



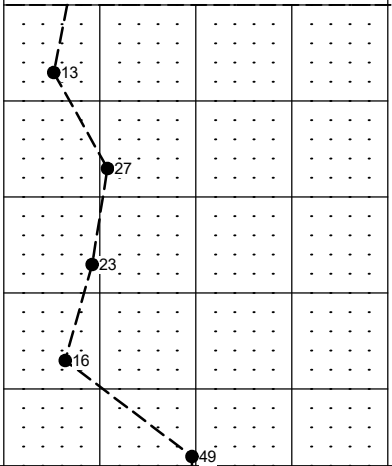
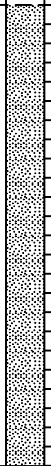
WBS			BP11.R024.1			TIP			BP11.R024.1			COUNTY			WILKES			GEOLOGIST			J. Howard												
SITE DESCRIPTION															Replacement of Bridge No. 228 on Luffman Road over Little Elkin Creek										GROUND WTR (ft)								
BORING NO.			EB1-A			STATION			13+40			OFFSET			16 ft LT			ALIGNMENT			-L-			0 HR.	N/A								
COLLAR ELEV.			1,016.2 ft			TOTAL DEPTH			100.2 ft			NORTHING			920,925			EASTING			1,435,513			24 HR.	FIAD								
DRILL RIG/HAMMER EFF./DATE										CG20446 Diedrich D50 87% 05/10/2022										DRILL METHOD					Mud Rotary					HAMMER TYPE		Automatic	
DRILLER			C. Odom			START DATE			10/13/23			COMP. DATE			10/13/23			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)																		
1020																																	
1015	1,015.2	1.0																															
1010	1,012.5	3.7	2	3	4	7																											
	1,010.2	6.0	3	2	3	5																											
1005	1,007.5	8.7	4	2	3	5																											
	1,002.5	13.7	1	1	3	4																											
1000			7	4	4	3																											
995	997.5	18.7																															
	992.5	23.7	1	1	2	3																											
990	987.5	28.7																															
	982.5	33.7	1	3	4	7																											
975	977.5	38.7	1	2	4	6																											
	972.5	43.7	2	2	4	6																											
965	967.5	48.7																															
	962.5	53.7	2	3	4	7																											
955	957.5	58.7	2	3	4	7																											
	952.5	63.7																															
945	947.5	68.7	2	3	5	8																											
	942.5	73.7	3	5	7	12																											
940			4	6	8	14																											

NCDOT BORE SINGLE WILKES.GPJ NC\_DOT.GDT 6/5/24

WBS				BP11.R024.1		TIP		BP11.R024.1		COUNTY		WILKES		GEOLOGIST		J. Howard											
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BORING NO.				EB1-A		STATION				13+40		OFFSET				16 ft LT		ALIGNMENT		-L-		0 HR.		N/A			
COLLAR ELEV.				1,016.2 ft		TOTAL DEPTH				100.2 ft		NORTHING				920,925		EASTING				1,435,513		24 HR.		FIAD	
DRILL RIG/HAMMER EFF./DATE										CG20446 Diedrich D50 87% 05/10/2022						DRILL METHOD				Mud Rotary				HAMMER TYPE		Automatic	
DRILLER				C. Odom		START DATE				10/13/23		COMP. DATE				10/13/23		SURFACE WATER DEPTH						N/A			
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼ MOI	L O G	SOIL AND ROCK DESCRIPTION				DEPTH (ft)									
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)				DEPTH (ft)									
940						Match Line																					
935	937.5	78.7	4	6	9							W		SOFT TO VERY STIFF, WHITE, BROWN, GRAY, TAN, ORANGE, SANDY SILT, WET TO SATURATED (A-4) (continued)													
	932.5	83.7	6	10	12							W															
930	927.5	88.7	6	11	15							W															
	922.5	93.7	3	8	15							W															
920	917.5	98.7	9	15	30							M			919.2	VERY DENSE, LIGHT GRAY, SILTY FINE SAND, MOIST (A-2-4)				97.0							
														916.0	Boring Terminated at Elevation 916.0 ft IN RESIDUAL: VERY DENSE SILTY SAND				100.2								

WBS			BP11.R024.1			TIP			BP11.R024.1			COUNTY			WILKES			GEOLOGIST			J. Howard																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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BORING NO.			EB1-B			STATION			13+39			OFFSET			8 ft RT			ALIGNMENT			-L-			0 HR.		N/A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
COLLAR ELEV.			1,016.2 ft			TOTAL DEPTH			100.2 ft			NORTHING			920,904			EASTING			1,435,524			24 HR.		11.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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NCDOT BORE SINGLE WILKES.GPJ NC\_DOT.GDT 6/5/24

WBS BP11.R024.1			TIP BP11.R024.1			COUNTY WILKES			GEOLOGIST J. Howard						
SITE DESCRIPTION Replacement of Bridge No. 228 on Luffman Road over Little Elkin Creek								GROUND WTR (ft)							
BORING NO. EB1-B			STATION 13+39			OFFSET 8 ft RT			ALIGNMENT -L-						
COLLAR ELEV. 1,016.2 ft			TOTAL DEPTH 100.2 ft			NORTHING 920,904			EASTING 1,435,524						
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic						
DRILLER C. Odom			START DATE 10/11/23			COMP. DATE 10/11/23			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					
940						Match Line									
935	937.5	78.7	8	5	8							M		STIFF TO HARD, BROWN, ORANGE, WHITE, GRAY, TAN, RED, SANDY SILT, MOIST (A-4) (continued)	
	932.5	83.7	11	14	13						M				
930	927.5	88.7	7	10	13								M		
	922.5	93.7	4	6	10								M		
920	917.5	98.7	3	19	30								M		
	Boring Terminated at Elevation 916.0 ft IN RESIDUAL: HARD SANDY SILT  CAVED @ 13.8														

NCDOT BORE SINGLE WILKES.GPJ NC\_DOT.GDT 6/5/24



WBS			BP11.R024.1			TIP			BP11.R024.1			COUNTY			WILKES			GEOLOGIST			J. Howard																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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BORING NO.			EB2-A			STATION			14+11			OFFSET			16 ft LT			ALIGNMENT			-L-			0 HR.		N/A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
COLLAR ELEV.			1,015.9 ft			TOTAL DEPTH			84.4 ft			NORTHING			920,962			EASTING			1,435,573			24 HR.		11.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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NCDOT BORE SINGLE WILKES.GPJ NC\_DOT.GDT 6/5/24

WBS BP11.R024.1			TIP BP11.R024.1			COUNTY WILKES			GEOLOGIST J. Howard							
SITE DESCRIPTION Replacement of Bridge No. 228 on Luffman Road over Little Elkin Creek									GROUND WTR (ft)							
BORING NO. EB2-A			STATION 14+11			OFFSET 16 ft LT			ALIGNMENT -L-							
COLLAR ELEV. 1,015.9 ft			TOTAL DEPTH 84.4 ft			NORTHING 920,962			EASTING 1,435,573							
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic							
DRILLER C. Odom			START DATE 10/12/23			COMP. DATE 10/12/23			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		MOI	G	ELEV. (ft)	DEPTH (ft)	
940						Match Line										
	938.0	77.9	15	17	18						M		938.9	77.0	DENSE, LIGHT GRAY, ORANGE, TAN, SILTY FINE SAND, MOIST (A-2-4)	
935	933.0	82.9	12	15	22						M		931.5	84.4	Boring Terminated at Elevation 931.5 ft IN RESIDUAL: DENSE SILTY FINE SAND  CAVED @ 13.0	

WBS			BP11.R024.1			TIP			BP11.R024.1			COUNTY			WILKES			GEOLOGIST			J. Howard																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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BORING NO.			EB2-B			STATION			14+11			OFFSET			7 ft RT			ALIGNMENT			-L-			0 HR.		N/A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
COLLAR ELEV.			1,015.3 ft			TOTAL DEPTH			85.1 ft			NORTHING			920,942			EASTING			1,435,585			24 HR.		13.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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NCDOT BORE SINGLE WILKES.GPJ NC\_DOT.GDT 6/5/24

WBS BP11.R024.1			TIP BP11.R024.1			COUNTY WILKES			GEOLOGIST J. Howard						
SITE DESCRIPTION Replacement of Bridge No. 228 on Luffman Road over Little Elkin Creek									GROUND WTR (ft)						
BORING NO. EB2-B			STATION 14+11			OFFSET 7 ft RT			ALIGNMENT -L-						
COLLAR ELEV. 1,015.3 ft			TOTAL DEPTH 85.1 ft			NORTHING 920,942			EASTING 1,435,585						
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic						
DRILLER C. Odom			START DATE 10/11/23			COMP. DATE 10/12/23			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)
940						Match Line									
935	936.7	78.6	60/0.0			60/0.0								936.8	78.5
	931.7	83.6	11	11	15	26								930.2	85.1
Boring Terminated at Elevation 930.2 ft IN RESIDUAL: STIFF SANDY CLAYEY SILT															

PROJECT NUMBER: 70225222

**TIP:** BP11.R024

COUNTY: Wilkes

**DESCRIPTION:** \_\_\_\_\_ Bridge 228 over Little Elkin Creek

NP - NON-PLASTIC

Certified Lab Technician Signature

114-01-1203

Certification Number

# SITE PHOTOGRAPH

Bridge No. 228 on –L– (SR 2024) over Little Elkin Creek



Looking southeast toward end bent 2 (downstream)