

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.43	1	18

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY Cleveland
PROJECT DESCRIPTION DIVISION 12 LOW IMPACT
BRIDGE REPLACEMENT

SITE DESCRIPTION BRIDGE NO. 022275 ON SR 1603
(CARPENTER HOYLE ROAD) OVER KNOB CREEK

REFERENCE: N/A

PROJECT: 17BP.12.R.43

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PERSONNEL

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DATE March, 2015

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NORTH CAROLINA
LICENSED
SEAL
1500
GEOLOGIST
PAUL M. WEAVER





Paul M. Weaver
SIGNATURE

3/26/15
DATE

**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)

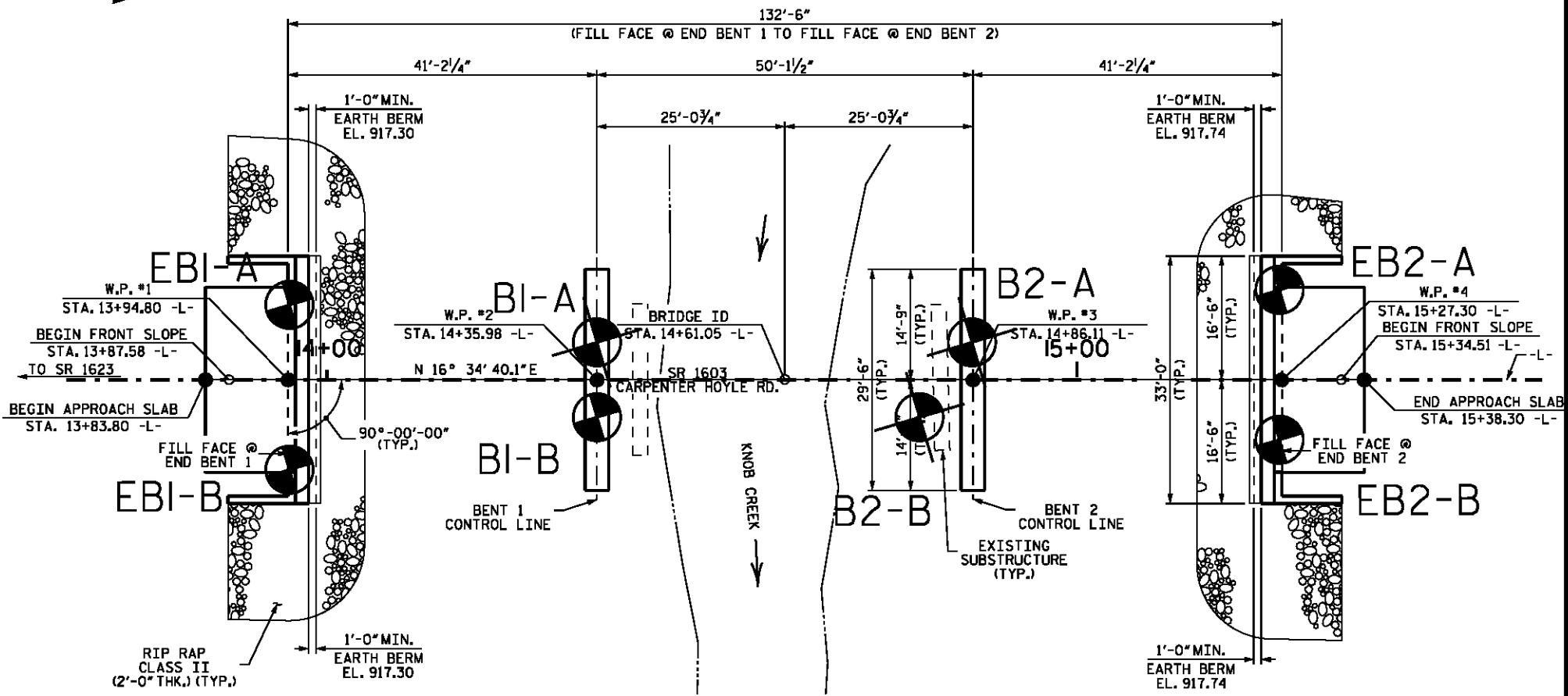
ROCK DESCRIPTION		TERMS AND DEFINITIONS	
<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 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.</p> <p>AQUIFER - A WATER BEARING FORMATION OR STRATA.</p> <p>ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p>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.</p> <p>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.</p> <p>CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p>COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p>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.</p> <p>DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p>DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p>DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p>FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.</p> <p>FIBSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p>FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.</p> <p>FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p>FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p>JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p>LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p>LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p>MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p>RESIDUAL (RESJ) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p>ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.</p> <p>SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>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.</p> <p>SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 148 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.</p> <p>STRATA CORE RECOVERY (SREC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p>STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.</p> <p>TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>	
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 (V SLJ)		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 (SLJ)		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 > 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 < 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 0.08 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 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-2; STA 15+33.11, 14.88' LT			
N 654618.14, E 1245551.71			
ELEVATION: 923.30 FEET			
NOTES:			
F.I.A.D. = FILLED IMMEDIATELY AFTER DRILLING			
DATE: 8-15-14			

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

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 (ASTM 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.			
SOIL LEGEND AND AASHTO CLASSIFICATION				ANGULARITY OF GRAINS			
GENERAL CLASS. GRANULAR MATERIALS (≤ 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS				THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.			
GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-1-A-2, A-3, A-4, A-5, A-6, A-7				MINERALOGICAL 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				SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50			
GROUP INDEX				PERCENTAGE OF MATERIAL			
USUAL TYPES OF MAJOR MATERIALS				ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL			
GENERAL RATING AS SUBGRADE				TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 6 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE			
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30				GROUND WATER			
CONSISTENCY OR DENSENESS				▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING ▽ STATIC WATER LEVEL AFTER 24 HOURS ▽PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA ○ SPRING OR SEEP			
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)				MISCELLANEOUS SYMBOLS			
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)				ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION 25/825 DIP & DIP DIRECTION OF ROCK STRUCTURES SOIL SYMBOL SPT DMT DPT PNT TEST BORING ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING INFERRED SOIL BOUNDARY CORE BORING INFERRED ROCK LINE MONITORING WELL ALLUVIAL SOIL BOUNDARY PIEZOMETER INSTALLATION			
GENERALLY SILT-CLAY MATERIAL (COHESIVE)				SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE			
TEXTURE OR GRAIN SIZE				RECOMMENDATION SYMBOLS			
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				UNDERCUT EXCAVATION UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK			
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE, SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)				ABBREVIATIONS			
GRAIN SIZE MM 300 75 2.0 0.25 0.05 0.005 IN. 12 3				AR - AUGER REFUSAL MED. - MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA - MICACEOUS WEA. - WEATHERED CL - CLAY MOD. - MODERATELY UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC ? - UNIT WEIGHT CSE - COARSE DPT - PRESSUREMETER TEST 2/100 - DRY UNIT WEIGHT DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAG. - FRAGMENTS HL - HIGHLY V - VERY			
SOIL MOISTURE - CORRELATION OF TERMS				SAMPLE ABBREVIATIONS			
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION				S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO			
LL - LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID, VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE							
PLASTIC RANGE (PI) 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				EQUIPMENT USED ON SUBJECT PROJECT			
NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH				DRILL UNITS: CME-45C, CME-55, CME-550, VANE SHEAR TEST, PORTABLE HOIST, CME-550X ADVANCING TOOLS: CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 6" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING w/ ADVANCER, TRICONE STEEL TEETH, TRICONE TUNG-CARB., CORE BIT, 3/4" HOLLOW AUGER HAMMER TYPE: AUTOMATIC, MANUAL CORE SIZE: B, H, N Q HAND TOOLS: POST HOLE DIGGER, HAND AUGER, SOUNDING ROD, VANE SHEAR TEST			
COLOR							
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.							

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.43	3
SITE PLAN	



PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 17BP.12.R.43	TIP N/A	COUNTY CLEVELAND	GEOLOGIST Rogers, E.
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek			GROUND WTR (ft)
BORING NO. EB1-A	STATION 13+95	OFFSET 10 ft LT	ALIGNMENT -L-
COLLAR ELEV. 924.3 ft	TOTAL DEPTH 44.1 ft	NORTHING 654,483	EASTING 1,245,517
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Skoglund, G.	START DATE 03/16/15	COMP. DATE 03/16/15	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)	
925														924.3	0.0	GROUND SURFACE
														923.6	0.7	0.7' Asphalt
920	920.8	3.5	2	2	2								M			ROADWAY EMBANKMENT Reddish Brown to Tan and Brown, Medium Stiff to Soft, Clayey, Fine Sandy SILT (A-5)
915	915.8	8.5	2	1	2								W			
910	910.8	13.5	2	1	1								Sat.	910.3	14.0	ALLUVIAL Dark Gray, Very Loose, Silty, Coarse to Fine SAND (A-2-4)
905	905.8	18.5	1	1	4								Sat.	904.8	19.5	Tan, Loose to Medium Dense, Fine to Coarse SAND and Gravel (A-1-b) Note: Blow Count Influenced by Gravel
900	900.8	23.5	13	11	11								Sat.			
895	895.8	28.5	8	14	10								W	895.3	29.0	RESIDUAL Tan, Brown, and Gray; Medium Dense; Silty; Coarse to Fine SAND (A-2-4)
890	890.8	33.5	35	40	60									892.9	31.4	WEATHERED ROCK Tan, Brown, Gray, and White; METAMORPHOSED GRANITIC ROCK
885	885.8	38.5	100/0.5													
	880.8	43.5	60	60/0.1												
																Boring Terminated with Standard Penetration Test Refusal at Elevation 880.2 ft on Crystalline Rock: METAMORPHOSED GRANITIC ROCK

NCDOT BORE SINGLE_BRIDGE 022275 GINT LOGS.GPJ NC_DOT.GDT 3/24/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 17BP.12.R.43		TIP N/A		COUNTY CLEVELAND		GEOLOGIST Rogers, E.												
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek							GROUND WTR (ft)											
BORING NO. EB1-B		STATION 13+95		OFFSET 12 ft RT		ALIGNMENT -L-	0 HR. 11.5											
COLLAR ELEV. 924.3 ft		TOTAL DEPTH 36.0 ft		NORTHING 654,477		EASTING 1,245,538	24 HR. FIAD											
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER Skoglund, G.		START DATE 02/23/15		COMP. DATE 02/23/15		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)			
925															924.3	GROUND SURFACE	0.0	
															923.6	0.7' Asphalt	0.7	
920	920.8	3.5	2	1	2								M		ROADWAY EMBANKMENT Reddish Brown, Soft to Medium Stiff, Coarse to Fine Sandy, Clayey SILT (A-5)			
915	915.8	8.5	2	2	2								W					
910	910.8	13.5	1	2	1								W		909.1	ALLUVIAL	15.2	
905	905.8	18.5	2	4	3								Sat.		Tan, Loose to Medium Dense, Fine to Coarse SAND (A-1-b) with Little Gravel			
900	900.8	23.5	6	5	6								Sat.					
895	895.8	28.5	36	62	38/0.4										898.3	RESIDUAL	26.0	
															895.3	Tan Brown and Gray, Silty, Fine SAND (A-3)	29.0	
890	890.8	33.5	17	30	70											WEATHERED ROCK Tan, Brown, and Gray; METAMORPHOSED GRANITIC ROCK		
	888.3	36.0	60/0.0												888.3	Boring Terminated with Standard Penetration Test Refusal at Elevation 888.3 ft on Crystalline Rock: METAMORPHOSED GRANITIC ROCK		36.0

NCDOT BORE SINGLE BRIDGE 022275 GINT LOGS.GPJ NC_DOT_GDT 3/24/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 17BP.12.R.43	TIP N/A	COUNTY CLEVELAND	GEOLOGIST Rogers, E.
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek			GROUND WTR (ft)
BORING NO. B1-A	STATION 14+36	OFFSET 5 ft LT	ALIGNMENT -L-
COLLAR ELEV. 912.3 ft	TOTAL DEPTH 32.9 ft	NORTHING 654,521	EASTING 1,245,533
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Skoglund, G.	START DATE 03/16/15	COMP. DATE 03/16/15	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)	
925																
920																
915																
910															912.3	GROUND SURFACE
																ROADWAY EMBANKMENT
																Boulder Fill
905	905.6	6.7	2	1	2										905.6	ALLUVIAL
																Brown and Gray, Very Loose, Fine to Coarse SAND (A-2-4) with Trace Gravel, Silt, and Mica
900	900.6	11.7	3	24	54										900.1	RESIDUAL
																Tan, Brown, Gray, and White; Very Dense; Silty; Coarse to Fine SAND (A-2-4)
895	895.6	16.7	16	45	19											
890	890.6	21.7													892.0	CRYSTALLINE ROCK
	889.4	22.9													889.4	Gray and White, METAMORPHOSED GRANITIC ROCK
885																CRYSTALLINE ROCK
																Gray and White, Very Slightly Weathered to Fresh, Very Hard, METAMORPHOSED GRANITIC ROCK with Wide Fracture Spacing
880															879.4	Boring Terminated at Elevation 879.4 ft in Crystalline Rock: METAMORPHOSED GRANITIC ROCK

NCDOT BORE SINGLE BRIDGE 022275 GINT LOGS.GPJ NC_DOT.GDT 3/24/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

WBS 17BP.12.R.43		TIP N/A		COUNTY CLEVELAND		GEOLOGIST Rogers, E.					
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek							GROUND WTR (ft)				
BORING NO. B1-A		STATION 14+36		OFFSET 5 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 912.3 ft		TOTAL DEPTH 32.9 ft		NORTHING 654,521		EASTING 1,245,533					
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic					
DRILLER Skoglund, G.		START DATE 03/16/15		COMP. DATE 03/16/15		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 10.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %			
889.4										Begin Coring @ 22.9 ft	
	889.4	22.9	5.0	2:25/1.0 N=60/0.0	(4.7) 94%	(4.7) 94%		(9.7) 97%	(9.7) 97%		889.4
885	884.4	27.9	5.0	2:25/1.0 3:15/1.0 2:58/1.0 3:24/1.0 4:04/1.0					CRYSTALLINE ROCK Gray and White, Very Slightly Weathered to Fresh, Very Hard, METAMORPHOSED GRANITIC ROCK with Wide Fracture Spacing		22.9
880	879.4	32.9		4:15/1.0 2:38/1.0 3:24/1.0 4:07/1.0 6:03/1.0	(5.0) 100%	(5.0) 100%					879.4
Boring Terminated at Elevation 879.4 ft in Crystalline Rock: METAMORPHOSED GRANITIC ROCK											

NCDOT CORE SINGLE BRIDGE 022275 GINT LOGS.GPJ_NC_DOT.GDT_3/24/15

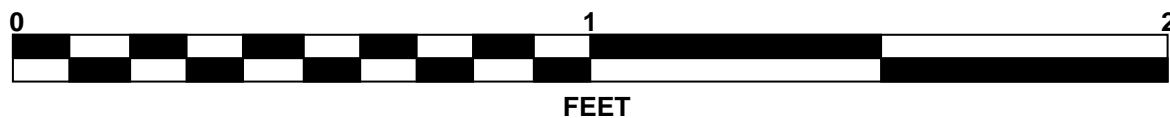
CORE PHOTOGRAPH

WBS No. 17BP.12.R.43

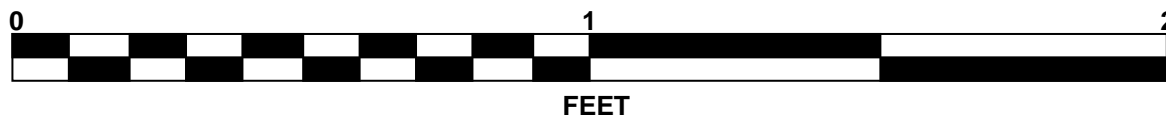
Project Description: Bridge No. 275 on SR 1603 Carpenter Hoyle Road) over Knob Creek
Cleveland County, North Carolina

B1- A

22.9 Feet to 27.9 Feet



27.9 Feet to 32.9 Feet





NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 17BP.12.R.43	TIP N/A	COUNTY CLEVELAND	GEOLOGIST Rogers, E.
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek			GROUND WTR (ft)
BORING NO. B1-B	STATION 14+36	OFFSET 5 ft RT	ALIGNMENT -L-
COLLAR ELEV. 911.4 ft	TOTAL DEPTH 35.7 ft	NORTHING 654,518	EASTING 1,245,543
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER Skoglund, G.	START DATE 02/23/15	COMP. DATE 02/23/15	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)	
925																
920																
915																
910														911.4	GROUND SURFACE	0.0
															ROADWAY EMBANKMENT Boulder Fill	
905	907.6	3.8	4	4	7									905.9	ALLUVIAL Gray and Brown, Medium Dense to Loose, Silty, Coarse to Fine SAND (A-2-4) with Trace Gravel	5.5
	905.9	5.5	3	3	2											
900	900.9	10.5	42	58/0.3										902.0	WEATHERED ROCK Tan, Brown, Gray, and White; METAMORPHOSED GRANITIC ROCK	9.4
895	895.9	15.5	100/0.2													
890	890.9	20.5	36	65												
885	885.9	25.5	100/0.3													
880	880.9	30.5	100/0.2													
	875.9	35.5	100/0.2											875.7	Boring Terminated at Elevation 875.7 ft in Weathered Rock: METAMORPHOSED GRANITIC ROCK	35.7

NCDOT BORE SINGLE BRIDGE 022275 GINT LOGS.GPJ NC_DOT_GDT 3/24/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 17BP.12.R.43	TIP N/A	COUNTY CLEVELAND	GEOLOGIST Rogers, E.	
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek				GROUND WTR (ft)
BORING NO. B2-A	STATION 14+86	OFFSET 5 ft LT	ALIGNMENT -L-	0 HR. 3.7
COLLAR ELEV. 912.0 ft	TOTAL DEPTH 22.4 ft	NORTHING 654,569	EASTING 1,245,547	24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic	
DRILLER Skoglund, G.	START DATE 03/17/15	COMP. DATE 03/17/15	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						
925																
920																
915																
910														912.0	GROUND SURFACE	0.0
															ROADWAY EMBANKMENT	
															Boulder Fill	
905	906.0	6.0	3	1	3									906.0		6.0
															ALLUVIAL	
															Tan and Brown, Loose, Coarse to Fine SAND (A-2-4) with Little Silt and Trace Mica	9.2
															WEATHERED ROCK	11.0
900	901.0	11.0													White, Gray, and Brown; METAMORPHOSED GRANITIC ROCK	
															CRYSTALLINE ROCK	13.4
															Gray and White, Moderately Hard to Hard, Slightly to Very Slightly Weathered, METAMORPHOSED GRANITIC ROCK with Close Fracture Spacing	
895															Note: Some Iron Staining of Fracture Faces	17.9
															Gray and White, Moderately Hard to Hard, Moderately to Slightly Weathered, METAMORPHOSED GRANITIC ROCK with Wide Fracture Spacing	
890															Note: Very Close Fracture Spacing 17.0' to 17.7'	22.4
															Gray and White, Very Slightly Weathered to Fresh, Hard to Very Hard, METAMORPHOSED GRANITIC ROCK with Wide Fracture Spacing	
															Boring Terminated at Elevation 889.6 ft in Crystalline Rock: METAMORPHOSED GRANITIC ROCK	

NCDOT BORE SINGLE BRIDGE 022275 GINT LOGS.GPJ NC_DOT.GDT 3/24/15



NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

WBS 17BP.12.R.43		TIP N/A		COUNTY CLEVELAND		GEOLOGIST Rogers, E.					
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek							GROUND WTR (ft)				
BORING NO. B2-A		STATION 14+86		OFFSET 5 ft LT		ALIGNMENT -L-	0 HR. 3.7				
COLLAR ELEV. 912.0 ft		TOTAL DEPTH 22.4 ft		NORTHING 654,569		EASTING 1,245,547	24 HR. FIAD				
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic					
DRILLER Skoglund, G.		START DATE 03/17/15		COMP. DATE 03/17/15		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 11.4 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
901										Begin Coring @ 11.0 ft	
900	901.0 899.6	11.0 12.4	1.4 5.0	2:02/1.0 N=60/0.0 2:02/1.0 3:35/0.4	(1.1) 79%	(1.1) 79%	(1.6) 67%	(1.5) 63%		CRYSTALLINE ROCK	11.0
				2:13/1.0 2:07/1.0 4:22/1.0 4:19/1.0 1:05/1.0	(4.3) 86%	(4.1) 82%	(4.1) 91%	(3.9) 87%		Gray and White, Moderately Hard to Hard, Slightly to Very Slightly Weathered, METAMORPHOSED GRANITIC ROCK with Close Fracture Spacing Note: Some Iron Staining of Fracture Faces	13.4
895	894.6	17.4	5.0	1:15/1.0 2:08/1.0 3:24/1.0 9:06/1.0 22:10/1.0	(4.8) 96%	(4.7) 94%	(4.5) 100%	(4.5) 100%		Gray and White, Moderately Hard to Hard, Moderately to Slightly Weathered, METAMORPHOSED GRANITIC ROCK with Wide Fracture Spacing Note: Very Close Fracture Spacing 17.0' to 17.7'	17.9
890	889.6	22.4								Gray and White, Very Slightly Weathered to Fresh, Hard to Very Hard, METAMORPHOSED GRANITIC ROCK with Wide Fracture Spacing Boring Terminated at Elevation 889.6 ft in Crystalline Rock: METAMORPHOSED GRANITIC ROCK	22.4

NCDOT CORE SINGLE BRIDGE 022275 GINT LOGS.GPJ NC_DOT.GDT 3/24/15

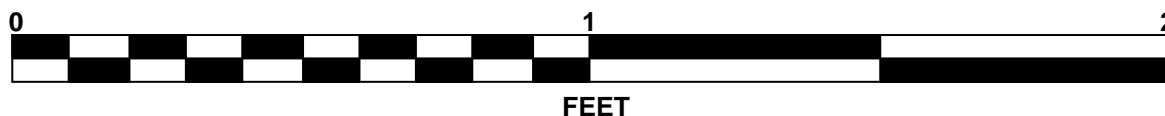
CORE PHOTOGRAPH

WBS No. 17BP.12.R.43

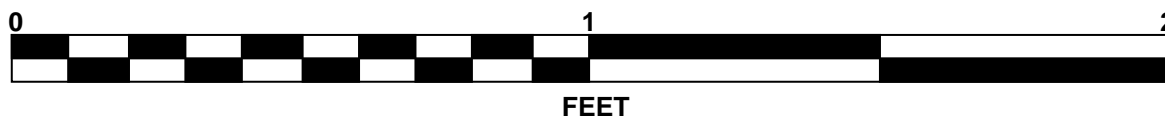
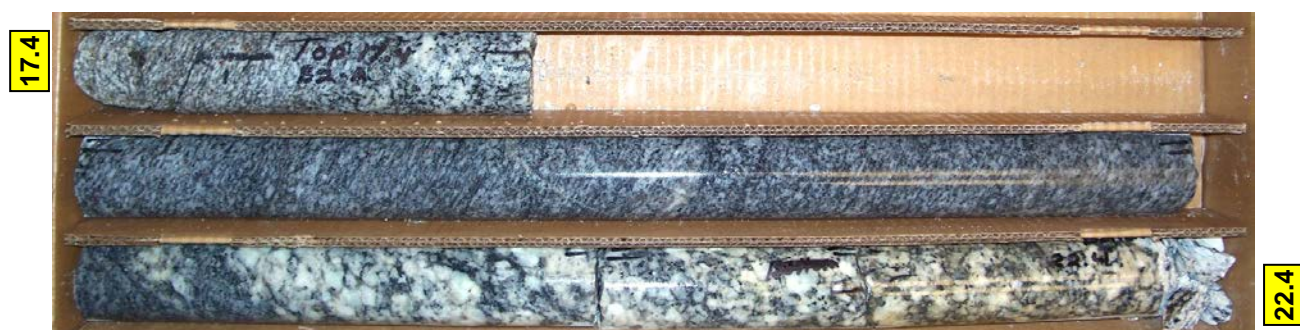
Project Description: Bridge No. 275 on SR 1603 Carpenter Hoyle Road) over Knob Creek
Cleveland County, North Carolina

B2-A

11.0 Feet to 17.4 Feet



17.4 Feet to 22.4 Feet





NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 17BP.12.R.43	TIP N/A	COUNTY CLEVELAND	GEOLOGIST Rogers, E.
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek			GROUND WTR (ft)
BORING NO. B2-B	STATION 14+79	OFFSET 5 ft RT	ALIGNMENT -L-
COLLAR ELEV. 913.1 ft	TOTAL DEPTH 33.8 ft	NORTHING 654,560	EASTING 1,245,555
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Skoglund, G.	START DATE 03/18/15	COMP. DATE 03/18/15	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					
925															
920															
915															
910													913.1	GROUND SURFACE	0.0
														ROADWAY EMBANKMENT Boulder Fill	
905	905.6	7.5											905.6		7.5
	903.9	9.2	74	26/0.3						100/0.8			903.9	WEATHERED ROCK Tan, Brown, and Gray; METAMORPHOSED GRANITIC ROCK	9.2
			60/0.0							60/0.0					
900													900.0	CRYSTALLINE ROCK Gray and White, Very Slightly to Slightly Weathered, Hard to Moderately Hard, METAMORPHOSED GRANITIC ROCK with Very Close to Close Fracture Spacing	13.1
													898.6	CRYSTALLINE ROCK White and Gray, METAMORPHOSED GRANITIC ROCK with Moderate Iron Staining of Fracture Faces	14.5
895													895.8		17.3
													894.0	WEATHERED ROCK White and Gray, METAMORPHOSED GRANITIC ROCK	19.1
													893.0		20.1
890													890.3	CRYSTALLINE ROCK White and Gray, Slightly to Very Slightly Weathered, Moderately Hard to Hard, METAMORPHOSED GRANITIC ROCK with Moderately Close to Close Fracture Spacing	22.8
														CRYSTALLINE ROCK White and Gray, Very Slightly Weathered, Hard, METAMORPHOSED GRANITIC ROCK with Very Close Fracture Spacing	
885															
														CRYSTALLINE ROCK White and Gray, Slightly Weathered, Moderately Hard, METAMORPHOSED GRANITIC ROCK with Close to Moderately Close Fracture Spacing	
880														WEATHERED ROCK Mostly Core Loss in METAMORPHOSED GRANITIC ROCK	
													879.3	CRYSTALLINE ROCK Gray and White, Very Slightly Weathered to Fresh, Hard to Very Hard, METAMORPHOSED GRANITIC ROCK with Close to Wide Fracture Spacing	33.8
														Boring Terminated at Elevation 879.3 ft in Crystalline Rock: METAMORPHOSED GRANITIC ROCK	

NCDOT BORE SINGLE BRIDGE 022275 GINT LOGS.GPJ NC_DOT.GDT 3/24/15



NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

WBS 17BP.12.R.43		TIP N/A		COUNTY CLEVELAND		GEOLOGIST Rogers, E.					
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek							GROUND WTR (ft)				
BORING NO. B2-B		STATION 14+79		OFFSET 5 ft RT		ALIGNMENT -L-					
COLLAR ELEV. 913.1 ft		TOTAL DEPTH 33.8 ft		NORTHING 654,560		EASTING 1,245,555					
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014				DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic					
DRILLER Skoglund, G.		START DATE 03/18/15		COMP. DATE 03/18/15		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 24.6 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
903.9										Begin Coring @ 9.2 ft	
	903.9	9.2	4.6	1:45/1.0 N=60/0.0	(4.4)	(3.0)	(3.9)	(3.0)		CRYSTALLINE ROCK	9.2
				1:45/1.0 2:08/1.0	96%	65%	100%	77%		Gray and White, Very Slightly to Slightly Weathered, Hard to Moderately Hard, METAMORPHOSED GRANITIC ROCK with Very Close to Close Fracture Spacing	
900	899.3	13.8		3:22/1.0 4:45/0.6			(1.2)	(0.0)		900.0	13.1
				1:16/1.0 1:41/1.0			(2.8)	(2.5)		Note: Moderate Iron Staining of Fracture Faces	14.5
			5.0	2:03/1.0 3:12/1.0	(5.0)	(2.5)	86%	0%		WEATHERED ROCK	
				1:24/1.0 1:18/1.0	100%	50%	100%	89%		White and Gray, METAMORPHOSED GRANITIC ROCK	17.3
895	894.3	18.8		1:45/1.0 3:12/1.0			(1.8)	(0.0)		CRYSTALLINE ROCK	19.1
				1:24/1.0 1:18/1.0	(3.4)	(2.4)	100%	0%		White and Gray, Slightly to Very Slightly Weathered, Moderately Hard to Hard, METAMORPHOSED GRANITIC ROCK with Moderately Close to Close Fracture Spacing	20.1
			5.0	1:45/1.0 2:02/1.0	68%	48%	100%	100%		Note: Heavy Iron Staining of Fracture Faces	22.8
890	889.3	23.8		3:40/1.0			(0.7)	(0.0)		CRYSTALLINE ROCK	
				1:52/1.0 2:47/1.0	(4.6)	(4.1)	26%	0%		White and Gray, Very Slightly Weathered, Hard, METAMORPHOSED GRANITIC ROCK with Very Close Fracture Spacing	
			5.0	2:51/1.0 2:15/1.0	92%	82%	100%	90%		CRYSTALLINE ROCK	
				2:15/1.0 2:07/1.0			(11.0)	(9.9)		White and Gray, Slightly Weathered, Moderately Hard, METAMORPHOSED GRANITIC ROCK with Close to Moderately Close Fracture Spacing	
885	884.3	28.8		2:08/1.0 2:11/1.0	(5.0)	(4.4)	100%	88%		WEATHERED ROCK	
				2:24/1.0 3:00/1.0						Mostly Core Loss in METAMORPHOSED GRANITIC ROCK	
			5.0	2:24/1.0 3:00/1.0	100%	88%				CRYSTALLINE ROCK	
880	879.3	33.8		4:14/1.0						Gray and White, Very Slightly Weathered to Fresh, Hard to Very Hard, METAMORPHOSED GRANITIC ROCK with Close to Wide Fracture Spacing	33.8
										Boring Terminated at Elevation 879.3 ft in Crystalline Rock: METAMORPHOSED GRANITIC ROCK	

NCDOT CORE SINGLE BRIDGE 022275 GINT LOGS.GPJ_NC_DOT.GDT_3/24/15

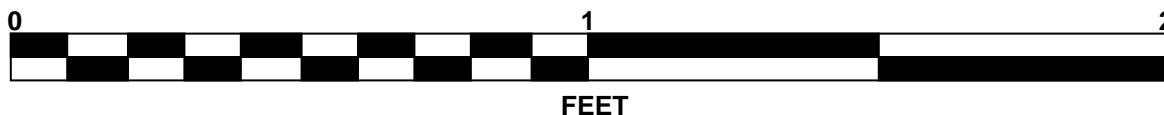
CORE PHOTOGRAPH

WBS No. 17BP.12.R.43

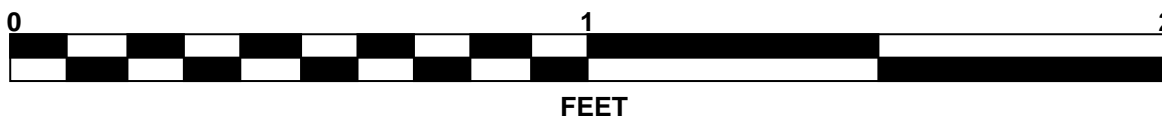
Project Description: Bridge No. 275 on SR 1603 Carpenter Hoyle Road) over Knob Creek
Cleveland County, North Carolina

B2-B

9.2 Feet to 13.8 Feet



13.8 Feet to 23.8 Feet



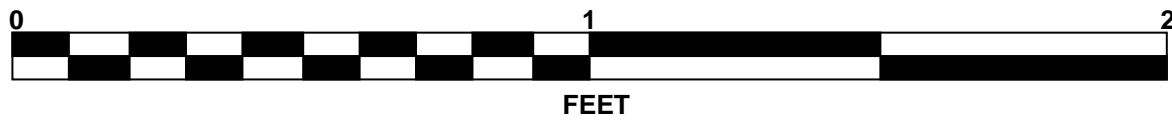
CORE PHOTOGRAPH

WBS No. 17BP.12.R.43

Project Description: Bridge No. 275 on SR 1603 Carpenter Hoyle Road) over Knob Creek
Cleveland County, North Carolina

B2-B (continued)

23.8 Feet to 33.8 Feet





NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 17BP.12.R.43		TIP N/A		COUNTY CLEVELAND		GEOLOGIST Rogers, E.											
SITE DESCRIPTION Bridge No. 022275 on SR 1603 (Carpenter Hoyle Road) over Knob Creek							GROUND WTR (ft)										
BORING NO. EB2-A		STATION 15+27		OFFSET 12 ft LT		ALIGNMENT -L-	0 HR. Dry										
COLLAR ELEV. 924.4 ft		TOTAL DEPTH 16.0 ft		NORTHING 654,610		EASTING 1,245,552	24 HR. FIAD										
DRILL RIG/HAMMER EFF./DATE SDS1873 CME-550X 87% 09/05/2014				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Skoglund, G.		START DATE 03/17/15		COMP. DATE 03/17/15		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)		
925															924.4	GROUND SURFACE	0.0
															923.5	0.6' Asphalt over 0.3' Gravel	0.9
920	920.9	3.5	28	7	5								M		ROADWAY EMBANKMENT Reddish Brown, Stiff to Soft, Fine Sandy, Clayey SILT (A-5)		
915	915.9	8.5	1	2	1								W				
910	910.9	13.5	2	3	47								M				
	908.4	16.0	60/0.0			60/0.0									909.9	RESIDUAL	
															908.9	Red, Tan, and Gray; Dense to Very Dense; Silty; Coarse to Fine SAND (A-2-4)	
															908.4	CRISTALLINE ROCK Gray and White, METAMORPHOSED GRANITIC ROCK	
																Boring Terminated with Standard Penetration Test Refusal at Elevation 908.4 ft on Crystalline Rock: METAMORPHOSED GRANITIC ROCK	

