

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.9.R.25(SF-280271)	1	25

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

**STRUCTURE  
SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 17BP.9.R.25(SF-280271) F.A. PROJ. N/A

COUNTY DAVIDSON

PROJECT DESCRIPTION BRIDGE NO. 271 ON -L- (SR-2501,  
LICK CREEK CHURCH ROAD) OVER LICK CREEK

SITE DESCRIPTION \_\_\_\_\_

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PERSONNEL

**C. NORVILLE**

**M. BAHIRADAN**

**J. HAMM**

**T. EVANS**

**TRIGON**

INVESTIGATED BY TE / JH / MB

CHECKED BY M. BAHIRADAN

SUBMITTED BY FALCON ENG.

DATE OCTOBER 2012

**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. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

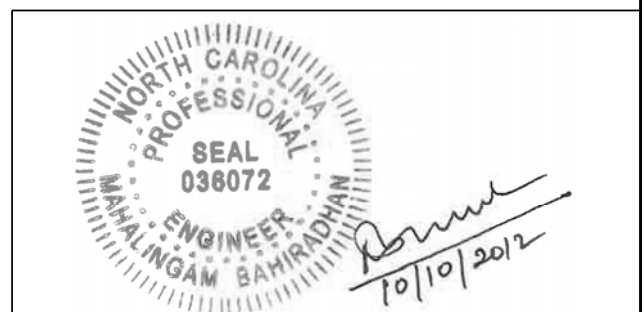
GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND 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 THIS 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.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.




DRAWN BY: T. EVANS

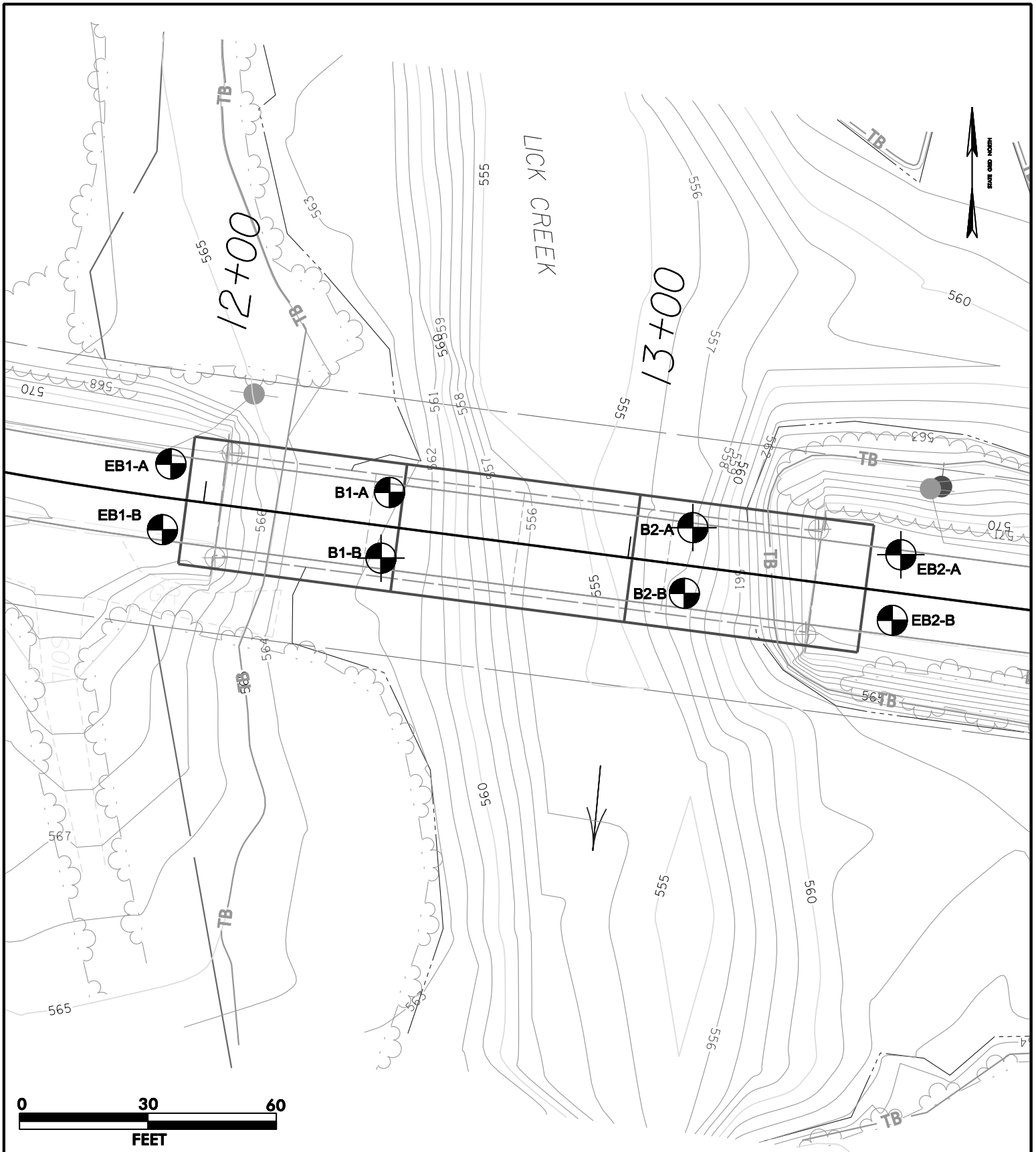


**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**  
**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION										GRADATION									
SOIL IS CONSIDERED TO BE THE 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 STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.									
										ANGULARITY OF GRAINS									
SOIL LEGEND AND AASHTO CLASSIFICATION										MINERALOGICAL COMPOSITION									
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.									
GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-1-A-2, A-4-A-5, A-6, A-7										COMPRESSIBILITY									
SYMBOL (Patterned boxes for soil types)										SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50									
% PASSING #10, #40, #200 (Values for various soil types)										PERCENTAGE OF MATERIAL									
LIQUID LIMIT PLASTIC INDEX (Values for various soil types)										ORGANIC MATERIAL GRANULAR SILTS SILT-CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE									
GROUP INDEX (Values for various soil types)										GROUND WATER									
USUAL TYPES OF MAJOR MATERIALS (STONE FRAGS, GRAVEL, AND SAND; FINE SAND; SILTY OR CLAYEY GRAVEL AND SAND; SILTY SOILS; CLAYEY SOILS)										WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP									
GEN. RATING AS A SUBGRADE (EXCELLENT TO GOOD; FAIR TO POOR; FAIR TO POOR; POOR; UNSUITABLE)										MISCELLANEOUS SYMBOLS									
CONSISTENCY OR DENSENESS										ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES									
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )										SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD									
GENERALLY GRANULAR MATERIAL (NON-COHESIVE) VERY LOOSE, MEDIUM DENSE, DENSE, VERY DENSE										GENERALLY SILT-CLAY MATERIAL (COHESIVE) VERY SOFT, MEDIUM STIFF, STIFF, VERY STIFF, HARD									
TEXTURE OR GRAIN SIZE										ABBREVIATIONS									
U.S. STD. SIEVE SIZE OPENING (MM) 4, 10, 40, 60, 200, 270										AR - AUGER REFUSAL MED. - MEDIUM BT - BORING TERMINATED MICA - MICACEOUS CL - CLAY MOD. - MODERATELY CPT - CONE PENETRATION TEST NP - NON PLASTIC CSE. - COARSE ORG. - ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST DPT - DYNAMIC PENETRATION TEST SAP. - SAPROLITIC e - VOID RATIO SD. - SAND, SANDY F - FINE SL. - SILT, SILTY FOSS. - FOSSILIFEROUS SLL. - SLIGHTLY FRAC. - FRACTURED, FRACTURES TCR - TRICONE REFUSAL FRAGS. - FRAGMENTS W - MOISTURE CONTENT HI. - HIGHLY V - VERY									
BOULDER (BLDR.), COBBLE (COB.), GRAVEL (GR.), COARSE SAND (CSE. SD.), FINE SAND (F SD.), SILT (SL.), CLAY (CL.)										EQUIPMENT USED ON SUBJECT PROJECT									
GRAIN SIZE (MM, IN.) 305, 75, 2.0, 0.25, 0.05, 0.005										DRILL UNITS: MOBILE B-57, BK-51, CME-45C, CME-550, PORTABLE HOIST, CME-55 ATV ADVANCING TOOLS: CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 8" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING w/ ADVANCER, TRICONE 3 1/8" STEEL TEETH, TRICONE TUNG-CARB., CORE BIT									
SOIL MOISTURE - CORRELATION OF TERMS										HAMMER TYPE: AUTOMATIC, MANUAL CORE SIZE: B, N-02, H HAND TOOLS: POST HOLE DIGGER, HAND AUGER, SOUNDING ROD, VANE SHEAR TEST									
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION										SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION									
LL - LIQUID LIMIT, PL - PLASTIC LIMIT, OM - OPTIMUM MOISTURE, SL - SHRINKAGE LIMIT										- SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE									
PLASTICITY										COLOR									
NONPLASTIC, LOW PLASTICITY, MED. PLASTICITY, HIGH PLASTICITY										PLASTICITY INDEX (PI) DRY STRENGTH (VERY LOW, SLIGHT, MEDIUM, HIGH)									
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.																			

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ROCK DESCRIPTION		TERMS AND DEFINITIONS	
<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, 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><b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA.  <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.  <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.  <b>ARTESIAN</b> - 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.  <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.  <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.  <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.  <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.  <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.  <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.  <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.  <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.  <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.  <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.  <b>FORMATION (FM.)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.  <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.  <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.  <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.  <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.  <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.  <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.  <b>ROCK QUALITY DESIGNATION (ROD)</b> - 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.  <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.  <b>SILL</b> - 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.  <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.  <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - 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.  <b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  <b>STRATA ROCK QUALITY DESIGNATION (SRQD)</b> - 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.  <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>	
<p><b>WEATHERED ROCK (WR)</b></p> 	<p>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</p>		
<p><b>CRYSTALLINE ROCK (CR)</b></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><b>NON-CRYSTALLINE ROCK (NCR)</b></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><b>COASTAL PLAIN SEDIMENTARY ROCK (CP)</b></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			
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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i>		
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. <i>IF TESTED, YIELDS SPT N VALUES &gt; 100 BPF</i>		
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES &lt; 100 BPF</i>		
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 GROUDED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.		
SOFT	CAN BE GROUDED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.		
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.		
FRACTURE SPACING		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 FEET	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 THE 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.		
		<p><b>BENCH MARK:</b></p> <p>_____</p> <p>ELEVATION: _____ FT.</p>	
<p><b>NOTES:</b> FIAD - FILLED IMMEDIATELY AFTER DRILLING</p>			



**NOTES:**

- PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM ATKINS DATED OCTOBER 2012.
- APPROXIMATE BORING LOCATIONS WERE LOCATED IN THE FIELD AS REQUESTED USING MEASUREMENTS TAKEN IN THE FIELD FROM EXISTING SITE FEATURES AND SURVEY MARKS PLACED BY OTHERS.

**FALCON ENGINEERING**  
 FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 RALEIGH, NC 27607  
 PHONE: 919.871.0800  
 FAX: 919.871.0803

BORING LOCATION PLAN		
BRIDGE NO. 271 ON I- (SR-2501, LICK CREEK CHURCH ROAD) OVER LICK CREEK DAVIDSON COUNTY, NORTH CAROLINA		
OCTOBER 2012	PROJECT NO.: G11034.02	SHEET 7



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 17BP.9.R.10	TIP SF-280271	COUNTY Davidson	GEOLOGIST Bahi
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek			GROUND WTR (ft)
BORING NO. EB1-A	STATION 11+91	OFFSET 7 ft RT	ALIGNMENT L
COLLAR ELEV. 572.0 ft	TOTAL DEPTH 16.5 ft	NORTHING 671,498	EASTING 1,643,262
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Wendell	START DATE 05/08/12	COMP. DATE 05/08/12	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					
575															
570	571.0	1.0	3	3	3							M	EXISTING PAVEMENT 4" BITUMINOUS CONCRETE 4" AGGREGATE BASE COURSE	0.0	
	568.5	3.5	2	3	2							M	ROADWAY EMBANKMENT RED-BROWN AND TAN, MED. STIFF, SILTY CLAY (A-7) W/ ROOTS		
565	566.0	6.0	1	2	3							M		BROWN AND TAN, MED. STIFF TO V. STIFF, FN. SANDY CLAY (A-6) W/ ROCK FRAGS	5.5
	563.5	8.5	7	13	14							D			
560	558.5	13.5											WEATHERED ROCK GREEN AND GRAY, META-ARGILLITE	11.5	
	555.5	16.5											Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 555.5 ft on CR: META-ARGILLITE	16.5	

NCDOT BORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 17BP.9.R.10	TIP SF-280271	COUNTY Davidson	GEOLOGIST Bahi
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek			GROUND WTR (ft)
BORING NO. EB1-B	STATION 11+91	OFFSET 8 ft LT	ALIGNMENT L
COLLAR ELEV. 572.0 ft	TOTAL DEPTH 18.0 ft	NORTHING 671,482	EASTING 1,643,260
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Wendell	START DATE 05/07/12	COMP. DATE 05/07/12	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						
575																
570	571.0	1.0	4	5	5								D	EXISTING PAVEMENT	0.0	
															5" BITUMINOUS CONCRETE	0.7
															3" AGGREGATE BASE COURSE	
	568.5	3.5	2	4	5								D	ROADWAY EMBANKMENT		
															RED-BROWN AND TAN, STIFF, SILTY CLAY (A-7) W/ ROOTS	5.5
565	566.0	6.0	8	6	8								D	RED-BROWN AND TAN, STIFF, SANDY CLAY (A-6) W/ GRAVEL	8.0	
	563.5	8.5	8	9	10								M	TAN AND RED, MOTTLED, V. STIFF, FN. SANDY SILT (A-4)	11.5	
560	558.5	13.5	100/0.5												WEATHERED ROCK	
															GRAY, META-ARGILLITE	
555	554.0	18.0	60/0.0												Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 554.0 ft on CR: META-ARGILLITE	18.0

NCDOT BORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 17BP.9.R.10	TIP SF-280271	COUNTY Davidson	GEOLOGIST Bahi
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek			GROUND WTR (ft)
BORING NO. B1-A	STATION 12+43	OFFSET 6 ft RT	ALIGNMENT L
COLLAR ELEV. 563.0 ft	TOTAL DEPTH 9.7 ft	NORTHING 671,491	EASTING 1,643,313
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Wendell	START DATE 05/08/12	COMP. DATE 05/08/12	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				
565	563.0	0.0	1	WOH	WOH								GROUND SURFACE	0.0
560	559.5	3.5	5	6	8								ROADWAY EMBANKMENT GRAY BROWN AND BLACK, V. SOFT, SILTY CLAY (A-7) W/ GRAVEL	3.0
	557.0	6.0	4	5	8								TAN AND BROWN, STIFF, SILTY CLAY (A-6) W/ ROCK FRAGS	5.0
555	554.5	8.5	100/0.3										ALLUVIAL GRAY AND TAN, STIFF, SANDY CLAY (A-6)	8.5
	553.3	9.7	60/0.1										WEATHERED ROCK DK. GRAY META-ARGILLITE	9.7

NCDOT BORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 17BP.9.R.10	TIP SF-280271	COUNTY Davidson	GEOLOGIST Bahi
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek			GROUND WTR (ft)
BORING NO. B1-B	STATION 12+43	OFFSET 8 ft LT	ALIGNMENT L
COLLAR ELEV. 563.0 ft	TOTAL DEPTH 31.0 ft	NORTHING 671,476	EASTING 1,643,311
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Wendell	START DATE 05/09/12	COMP. DATE 05/09/12	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
565	563.0	0.0	1	WOH	1									GROUND SURFACE	0.0	
560	559.5	3.5	9		8	10								ROADWAY EMBANKMENT BROWN AND TAN, V. SOFT, SANDY CLAY (A-6)	3.0	
	557.0	6.0	5		6	11								BROWN AND TAN, V. STIFF, FN. SANDY CLAY (A-6) W/ TRACE ORGANICS	5.5	
555	554.5	8.5	100/0.2							100/0.2				RESIDUAL GRAY AND TAN, V. STIFF, SANDY SILT (A-4) W/ ROCK FRAGS	8.5	
	552.5	10.5	60/0.1							60/0.1				WEATHERED ROCK GRAY META-ARGILLITE	10.5	
550														CRYSTALLINE ROCK GRAY, SLIGHTLY WEATHERED, HARD TO V. HARD, CLOSELY TO MOD. WIDELY FRACTURED, META-ARGILLITE		
545																
540																
535																
															Boring Terminated at Elevation 532.0 ft in CR: META-ARGILLITE	31.0

NCDOT BORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12

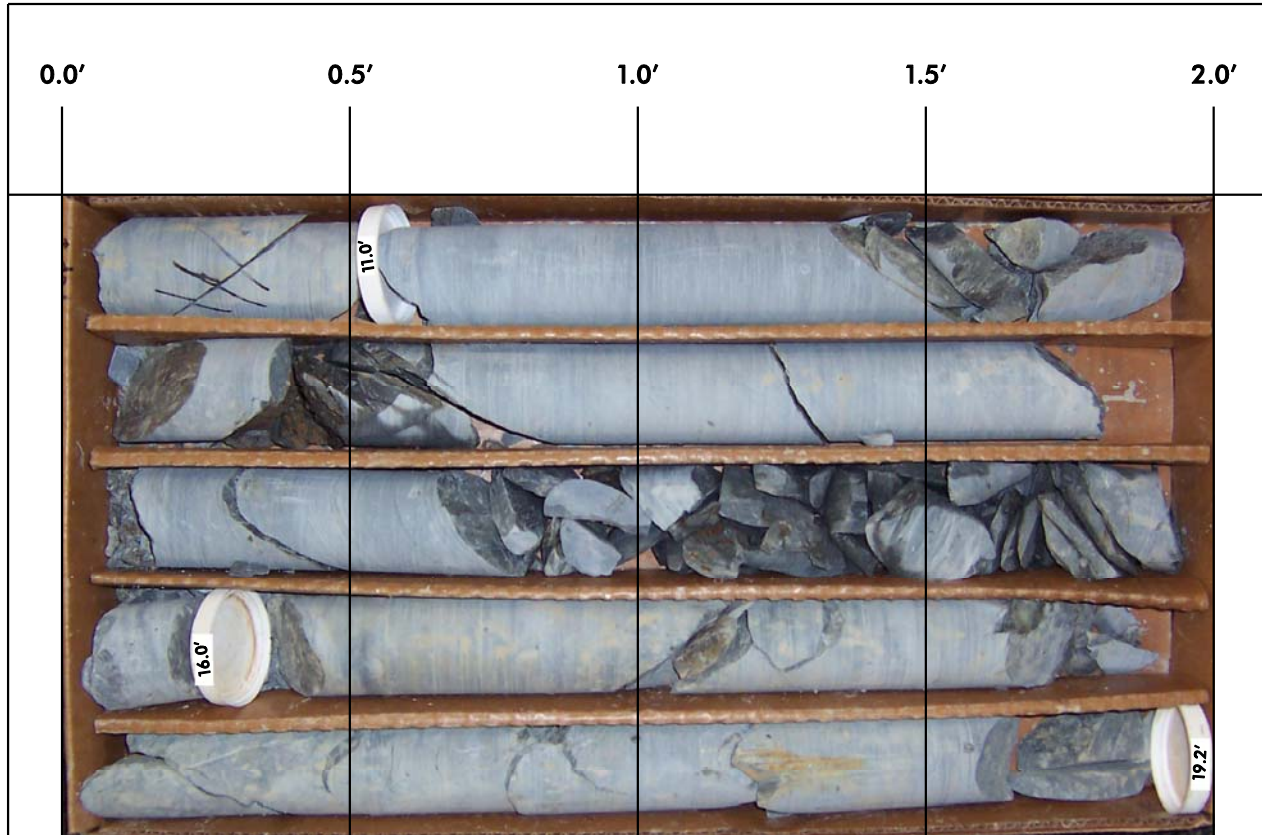




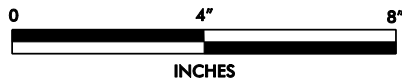
# NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

WBS 17BP.9.R.10			TIP SF-280271			COUNTY Davidson			GEOLOGIST Bahi			
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek										GROUND WTR (ft)		
BORING NO. B1-B			STATION 12+43			OFFSET 8 ft LT			ALIGNMENT L			
COLLAR ELEV. 563.0 ft			TOTAL DEPTH 31.0 ft			NORTHING 671,476			EASTING 1,643,311			
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic			
DRILLER Wendell			START DATE 05/09/12			COMP. DATE 05/09/12			SURFACE WATER DEPTH N/A			
CORE SIZE NQ			TOTAL RUN 20.5 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
552.5	552.5	10.5	0.5	1:52/0.5	(0.5)	(0.0)		(19.2)	(6.5)		Begin Coring @ 10.5 ft	
550	552.0	11.0	5.0	2:14/1.0 1:47/1.0 4:23/1.0 1:24/1.0 3:08/1.0	100%	0%		94%	32%		CRYSTALLINE ROCK GRAY, SLIGHTLY WEATHERED, HARD TO V. HARD, CLOSELY TO MOD. WIDELY FRACTURED, META-ARGILLITE	10.5
545	547.0	16.0	5.0	2:31/1.0 2:18/1.0 2:20/1.0 2:31/1.0 2:41/1.0	98%	(2.7)						
540	542.0	21.0	5.0	2:25/1.0 2:13/1.0 2:08/1.0 4:05/1.0 3:54/1.0	(4.0)	(1.3)						
535	537.0	26.0	5.0	3:38/1.0 3:02/1.0 3:54/1.0 3:13/1.0 3:42/1.0	98%	(0.8)						
	532.0	31.0									Boring Terminated at Elevation 532.0 ft in CR: META-ARGILLITE	31.0

NCDOT CORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12



**BORING B1-B, BOX 1 OF 3, 10.5 FEET TO 19.2 FEET.**



FALCON ENGINEERING, INC.  
 2736 ROWLAND RD.  
 RALEIGH, NC 27615  
 PHONE: 919.871.0800  
 FAX: 919.871.0803

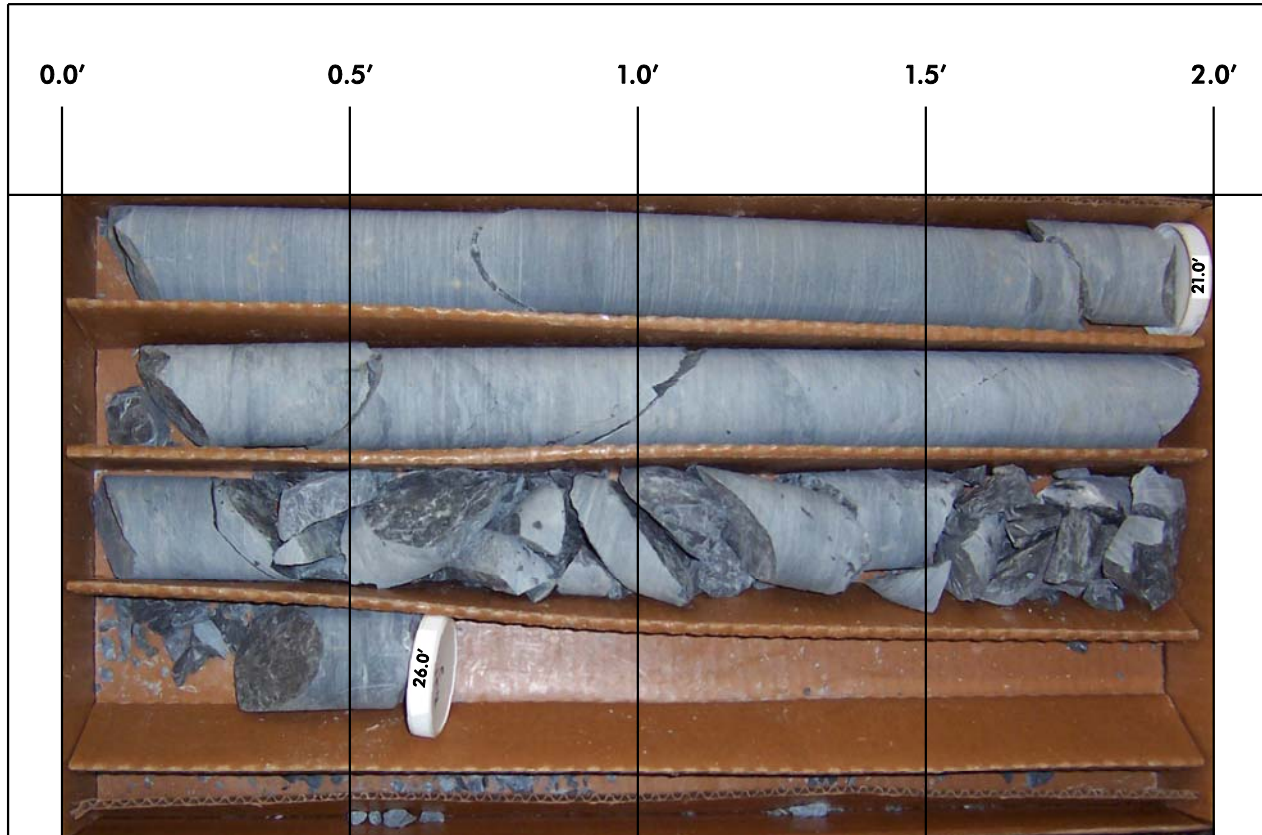
**ROCK CORE PHOTOS**

BRIDGE NO. 271 ON -L- (SR-2501, LICK CREEK  
 CHURCH ROAD) OVER LICK CREEK  
 DAVIDSON COUNTY, NORTH CAROLINA

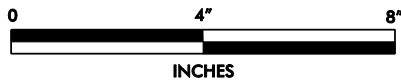
OCTOBER 2012

PROJECT NO.:  
 GT1034.02

SHEET 13



**BORING B1-B, BOX 2 OF 3, 19.2 FEET TO 26.0 FEET.**



FALCON ENGINEERING, INC.  
 2736 ROWLAND RD.  
 RALEIGH, NC 27615  
 PHONE: 919.871.0800  
 FAX: 919.871.0803

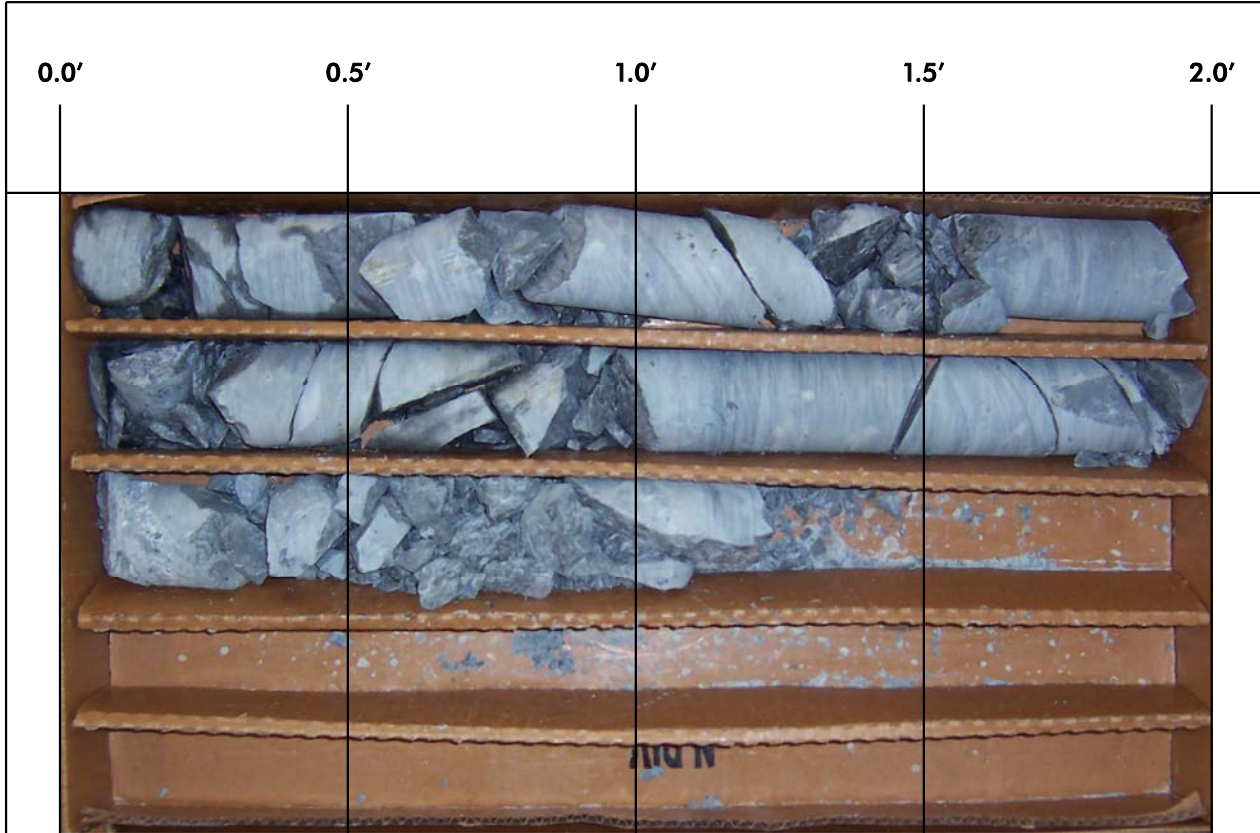
**ROCK CORE PHOTOS**

BRIDGE NO. 271 ON -L- (SR-2501, LICK CREEK  
 CHURCH ROAD) OVER LICK CREEK  
 DAVIDSON COUNTY, NORTH CAROLINA

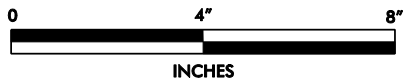
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PROJECT NO.:  
 G11034.02

SHEET 14



**BORING B1-B, BOX 3 OF 3, 26.0 FEET TO 31.0 FEET.**



FALCON ENGINEERING, INC.  
2736 ROWLAND RD.  
RALEIGH, NC 27615  
PHONE: 919.871.0800  
FAX: 919.871.0803

**ROCK CORE PHOTOS**

BRIDGE NO. 271 ON -L- (SR-2501, LICK CREEK  
CHURCH ROAD) OVER LICK CREEK  
DAVIDSON COUNTY, NORTH CAROLINA

OCTOBER 2012

PROJECT NO.:  
G11034.02

SHEET 15





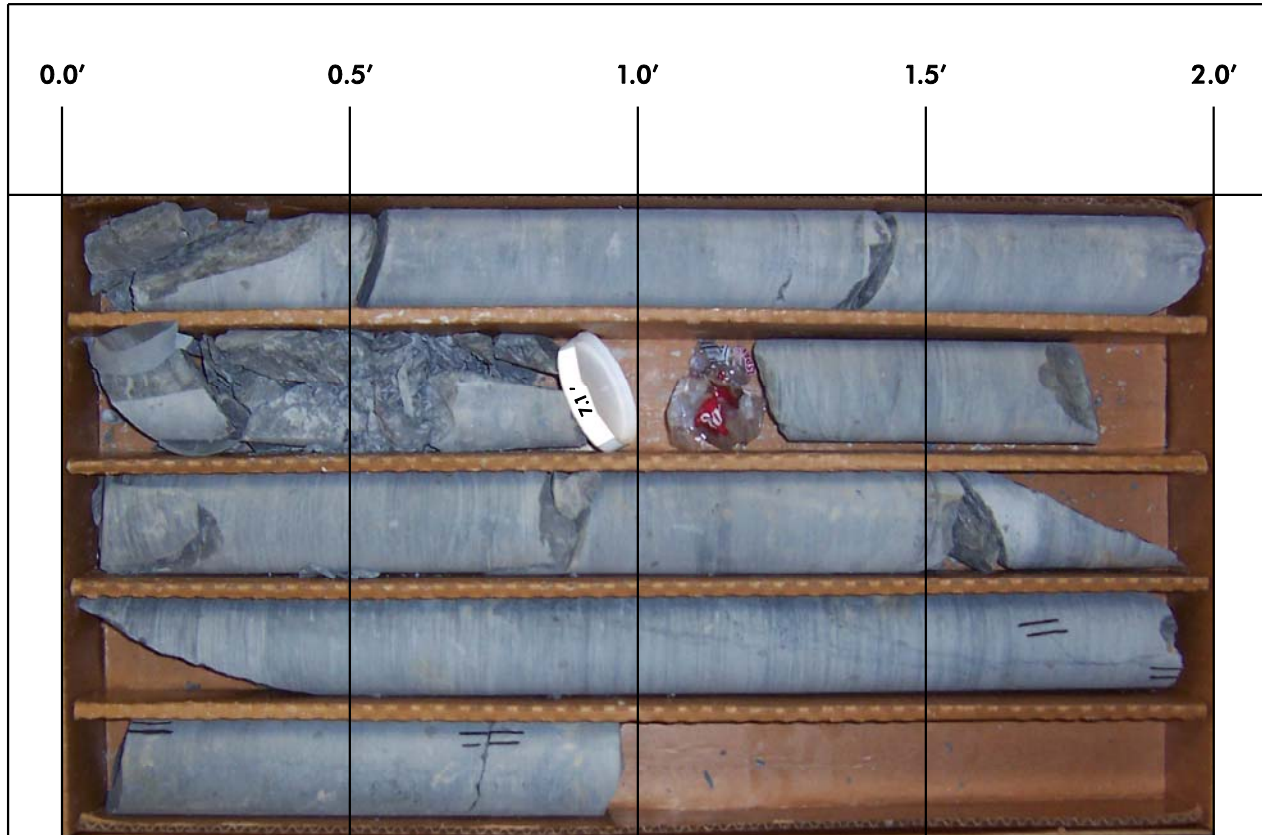
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## CORE BORING REPORT

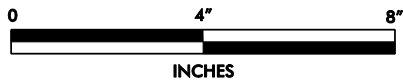
WBS 17BP.9.R.10		TIP SF-280271		COUNTY Davidson		GEOLOGIST J. Hamm					
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek							GROUND WTR (ft)				
BORING NO. B2-A		STATION 13+14		OFFSET 8 ft RT		ALIGNMENT L					
COLLAR ELEV. 557.0 ft		TOTAL DEPTH 20.1 ft		NORTHING 671,483		EASTING 1,643,383					
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic					
DRILLER Wendell		START DATE 05/10/12		COMP. DATE 05/10/12		SURFACE WATER DEPTH 4.0ft					
CORE SIZE NQ		TOTAL RUN 15.5 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) %	REC. (ft) %	RQD (ft) %			
552.4											
	552.4	4.6	2.5	3:15/1.0	(2.5)	(1.4)					
	549.9	7.1		2:35/1.0	100%	56%					
			5.0	1:20/0.5							
				2:50/1.0	(4.9)	(3.9)					
				3:00/1.0	98%	78%					
				3:05/1.0							
	544.9	12.1		3:10/1.0							
			5.0	3:15/1.0							
				2:45/1.0	(4.8)	(3.3)					
				2:40/1.0	96%	66%					
				3:05/1.0							
	539.9	17.1		3:10/1.0							
			3.0	3:15/1.0							
				2:10/1.0	(3.0)	(2.1)					
				2:00/1.0	100%	70%					
	536.9	20.1		1:20/1.0							
Boring Terminated at Elevation 536.9 ft in CR: META-ARGILLITE											

NCDOT CORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12





**BORING B2-A, BOX 1 OF 2, 4.6 FEET TO 12.1 FEET.**



FALCON ENGINEERING, INC.  
 2736 ROWLAND RD.  
 RALEIGH, NC 27615  
 PHONE: 919.871.0800  
 FAX: 919.871.0803

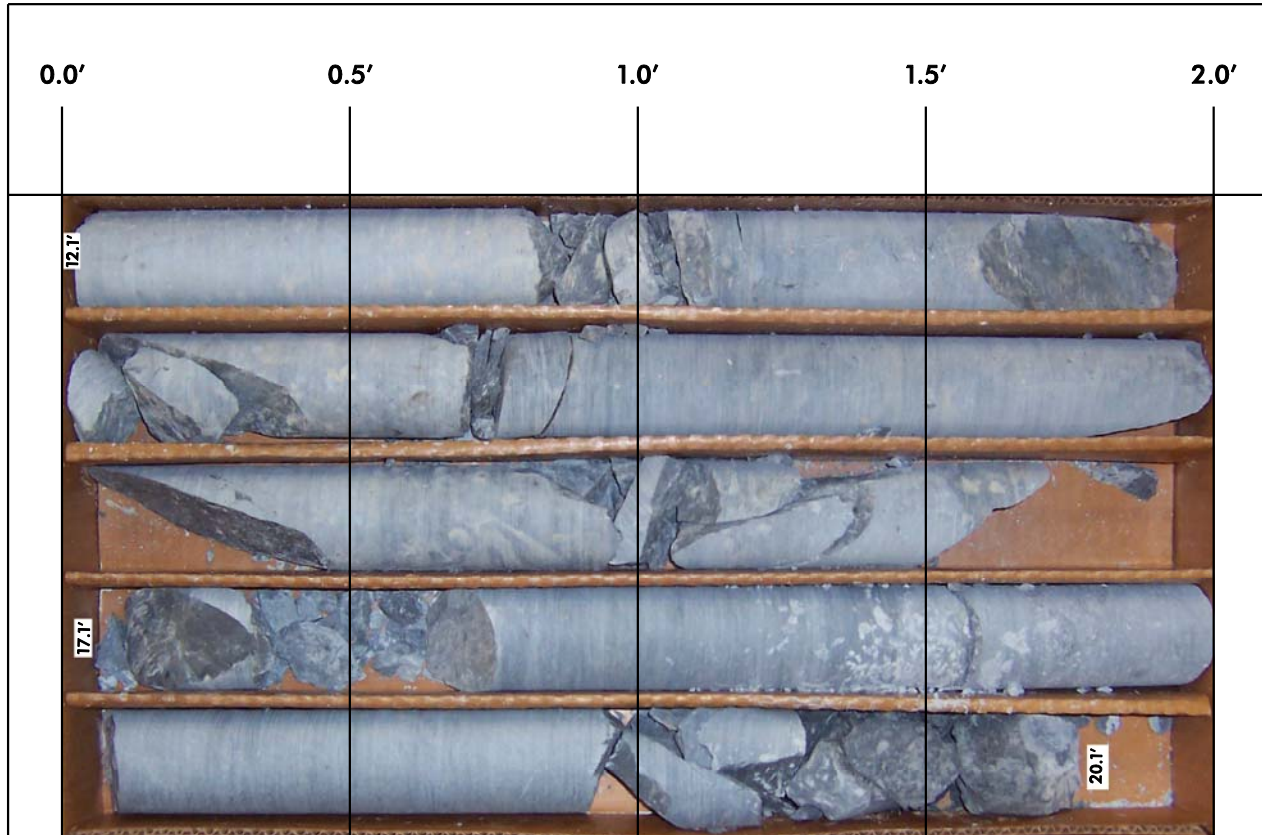
**ROCK CORE PHOTOS**

BRIDGE NO. 271 ON -L- (SR-2501, LICK CREEK  
 CHURCH ROAD) OVER LICK CREEK  
 DAVIDSON COUNTY, NORTH CAROLINA

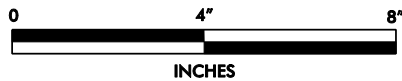
OCTOBER 2012

PROJECT NO.:  
 G11034.02

SHEET 18



**BORING B2-A, BOX 2 OF 2, 12.1 FEET TO 20.1 FEET.**



FALCON ENGINEERING, INC.  
 2736 ROWLAND RD.  
 RALEIGH, NC 27615  
 PHONE: 919.871.0800  
 FAX: 919.871.0803

**ROCK CORE PHOTOS**

BRIDGE NO. 271 ON -L- (SR-2501, LICK CREEK  
 CHURCH ROAD) OVER LICK CREEK  
 DAVIDSON COUNTY, NORTH CAROLINA

OCTOBER 2012

PROJECT NO.:  
 G11034.02

SHEET 19







# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 17BP.9.R.10	TIP SF-280271	COUNTY Davidson	GEOLOGIST Bahi
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek			GROUND WTR (ft)
BORING NO. EB2-A	STATION 13+63	OFFSET 6 ft RT	ALIGNMENT L
COLLAR ELEV. 572.0 ft	TOTAL DEPTH 20.8 ft	NORTHING 671,476	EASTING 1,643,432
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Wendell	START DATE 05/08/12	COMP. DATE 05/08/12	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					
575															
570	571.0	1.0	2	4	6									EXISTING PAVEMENT	0.0
	568.5	3.5	3	4	4									3.5" BITUMINOUS CONCRETE 3" AGGREGATE BASE COURSE	0.9
	566.0	6.0	3	4	5									<b>ROADWAY EMBANKMENT</b> BROWN TAN AND GRAY, STIFF, FN. SANDY CLAY (A-6) W/ GRAVEL	
565	563.5	8.5	3	1	4									BROWN AND TAN, STIFF, FN. SANDY CLAY (A-7) W/ GRAVEL, TRACE ORGANICS	7.0
560	558.5	13.5	20	54	46/0.2										
555	556.2	15.8	60/0.1							100/0.7				<b>WEATHERED ROCK</b> GRAY, META-ARGILLITE	14.0
										60/0.1				<b>CRYSTALLINE ROCK</b> GRAY, SLIGHTLY WEATHERED, HARD TO V. HARD, CLOSELY FRACTURED, META-ARGILLITE	15.8
														Boring Terminated at Elevation 551.2 ft in CR: META-ARGILLITE	20.8

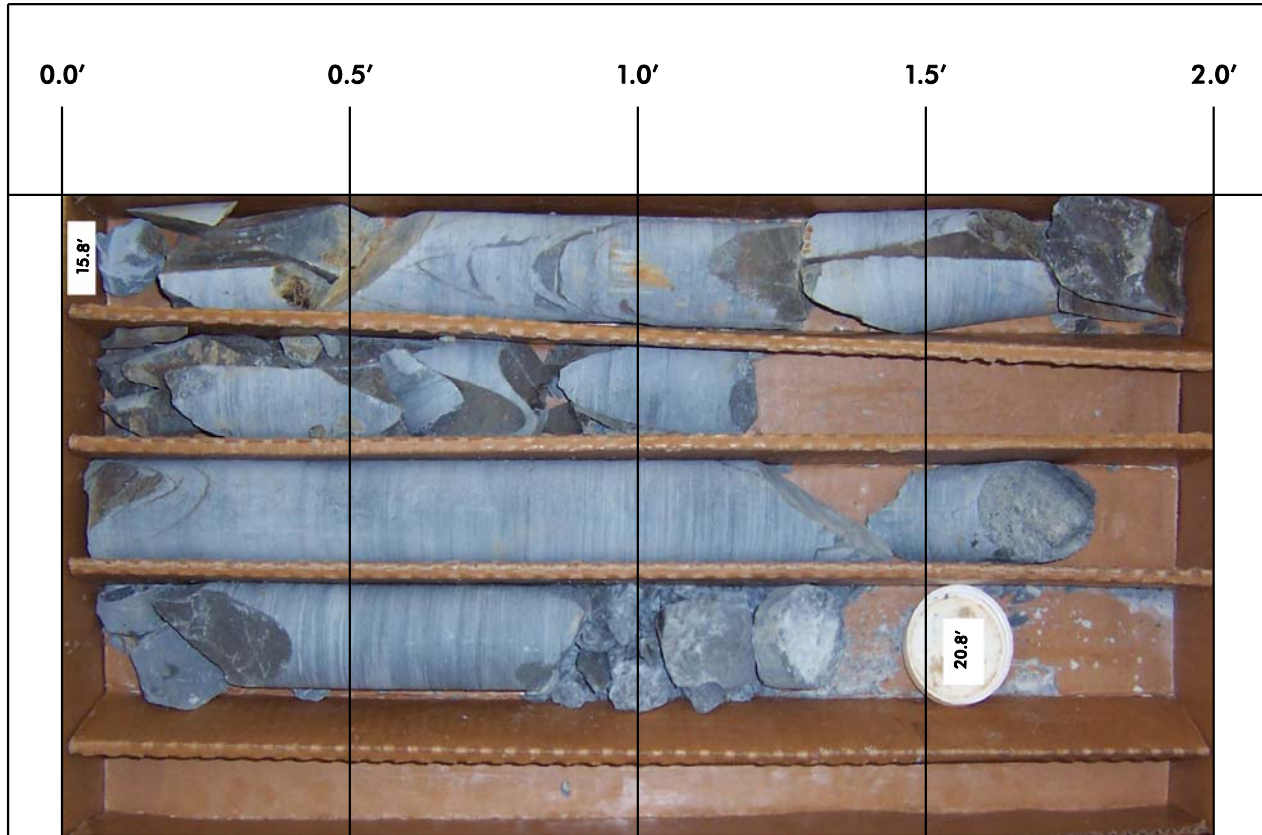
NCDOT BORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12



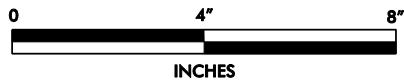
# NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

WBS 17BP.9.R.10			TIP SF-280271			COUNTY Davidson			GEOLOGIST Bahi			
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek										GROUND WTR (ft)		
BORING NO. EB2-A			STATION 13+63			OFFSET 6 ft RT			ALIGNMENT L			
COLLAR ELEV. 572.0 ft			TOTAL DEPTH 20.8 ft			NORTHING 671,476			EASTING 1,643,432			
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic			
DRILLER Wendell			START DATE 05/08/12			COMP. DATE 05/08/12			SURFACE WATER DEPTH N/A			
CORE SIZE NQ			TOTAL RUN 5.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
556.2												
555	556.2	15.8	5.0	3:41/1.0 2:59/1.0 4:59/1.0 3:31/1.0 2:30/1.0	(5.0) 100%	(1.8) 36%		(5.0) 100% 1.8			556.2	15.8
	551.2	20.8									551.2	20.8
<p>Begin Coring @ 15.8 ft</p> <p><b>CRYSTALLINE ROCK</b></p> <p>GRAY, SLIGHTLY WEATHERED, HARD TO V. HARD, CLOSELY FRACTURED, SLATE</p> <p>Boring Terminated at Elevation 551.2 ft in CR: META-ARGILLITE</p>												

NCDOT CORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12



BORING EB2-A, BOX 1 OF 1, 15.8 FEET TO 20.8 FEET.



FALCON ENGINEERING, INC.  
 2736 ROWLAND RD.  
 RALEIGH, NC 27615  
 PHONE: 919.871.0800  
 FAX: 919.871.0803

**ROCK CORE PHOTOS**

BRIDGE NO. 271 ON -L- (SR-2501, LICK CREEK  
 CHURCH ROAD) OVER LICK CREEK  
 DAVIDSON COUNTY, NORTH CAROLINA

OCTOBER 2012

PROJECT NO.:  
 GT1034.02

SHEET 23



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 17BP.9.R.10	TIP SF-280271	COUNTY Davidson	GEOLOGIST Bahi
SITE DESCRIPTION Bridge No. 271 on -L- (SR-2501, Lick Creek Church Road) over Lick Creek			GROUND WTR (ft)
BORING NO. EB2-B	STATION 13+63	OFFSET 8 ft LT	ALIGNMENT L
COLLAR ELEV. 572.0 ft	TOTAL DEPTH 17.0 ft	NORTHING 671,461	EASTING 1,643,430
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Wendell	START DATE 05/08/12	COMP. DATE 05/08/12	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
575																
570	571.0	1.0	3	2	4									EXISTING PAVEMENT	0.0	
	568.5	3.5	2	2	3									4" BITUMINOUS CONCRETE	0.7	
	566.0	6.0												4" AGGREGATE BASE COURSE		
565	566.0	6.0	3	5	4									<b>ROADWAY EMBANKMENT</b>		
	563.5	8.5	2	4	4									BROWN AND TAN, MED. STIFF TO STIFF,		
														FN. SANDY CLAY (A-6) W/ GRAVEL,		
														TRACE ORGANICS		
560	558.5	13.5	2	16	84/0.4											
555	555.0	17.0												<b>WEATHERED ROCK</b>	14.5	
														BLUE-GRAY, META-ARGILLITE	17.0	
														Boring Terminated WITH STANDARD		
														PENETRATION TEST REFUSAL at		
														Elevation 555.0 ft on CR: META-ARGILLITE		

NCDOT BORE SINGLE G11034.02 BRIDGE 271.GPJ NC\_DOT.GDT 10/10/12