

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5554 46312.3.F1	1	6

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY TRANSYLVANIA

PROJECT DESCRIPTION EXPRESS DESIGN-BUILD
BRIDGE REPLACEMENT

SITE DESCRIPTION BRIDGE NO. 73 ON NC-215 OVER
BEETREE FORK

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-6	BORE LOGS

PERSONNEL

DC ELLIOTT

CJ COFFEY

DO CHEEK

INVESTIGATED BY PQ LOCKAMY

DRAWN BY _____

CHECKED BY JC KUHNE

SUBMITTED BY JC KUHNE

DATE 12-09-2014

CAUTION NOTICE

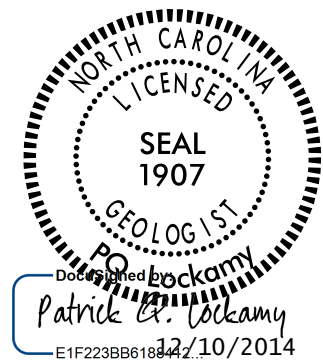
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING 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 TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
- BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.



SIGNATURE

DATE

REFERENCE: B-5554

PROJECT: 46312

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 SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6										GRADATION WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES. ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED. MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE. COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50 PERCENTAGE OF MATERIAL <table><tr><td>ORGANIC MATERIAL</td><td>GRANULAR SOILS</td><td>SILT - CLAY SOILS</td><td>OTHER MATERIAL</td></tr><tr><td>TRACE OF ORGANIC MATTER</td><td>2 - 3%</td><td>3 - 5%</td><td>TRACE 1 - 10%</td></tr><tr><td>LITTLE ORGANIC MATTER</td><td>3 - 5%</td><td>5 - 12%</td><td>LITTLE 10 - 20%</td></tr><tr><td>MODERATELY ORGANIC</td><td>5 - 10%</td><td>12 - 20%</td><td>SOME 20 - 35%</td></tr><tr><td>HIGHLY ORGANIC</td><td>> 10%</td><td>> 20%</td><td>HIGHLY 35% AND ABOVE</td></tr></table> GROUND WATER WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP										ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE 1 - 10%	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE 10 - 20%	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME 20 - 35%	HIGHLY ORGANIC	> 10%	> 20%	HIGHLY 35% AND ABOVE																																																																																																					
ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL																																																																																																																																									
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE 1 - 10%																																																																																																																																									
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE 10 - 20%																																																																																																																																									
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME 20 - 35%																																																																																																																																									
HIGHLY ORGANIC	> 10%	> 20%	HIGHLY 35% AND ABOVE																																																																																																																																									
SOIL LEGEND AND AASHTO CLASSIFICATION <table><tr><th>GENERAL CLASS.</th><th colspan="6">GRANULAR MATERIALS (≤ 35% PASSING #200)</th><th colspan="4">SILT-CLAY MATERIALS (> 35% PASSING #200)</th><th colspan="2">ORGANIC MATERIALS</th></tr><tr><th>GROUP CLASS.</th><th>A-1</th><th>A-3</th><th colspan="2">A-2</th><th colspan="2">A-2-6</th><th>A-5</th><th>A-6</th><th>A-7</th><th>A-1, A-2</th><th>A-4, A-5</th></tr><tr><th>SYMBOL</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>% PASSING</th><td>#10 #40 #200</td><td>50 MX 30 MX 15 MX</td><td>50 MX 30 MX 15 MX</td><td>50 MN 30 MN 15 MN</td><td>35 MX 35 MX 35 MX</td><td>35 MX 35 MX 35 MX</td><td>35 MX 35 MX 35 MX</td><td>35 MN 35 MN 35 MN</td><td>35 MN 35 MN 35 MN</td><td>35 MN 35 MN 35 MN</td><td>35 MN 35 MN 35 MN</td></tr><tr><th>MATERIAL PASSING #40</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>LL</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>PI</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>GROUP INDEX</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>USUAL TYPES OF MAJOR MATERIALS</th><td>STONE FRAGS, GRAVEL, AND SAND</td><td>FINE SAND</td><td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td><td colspan="2">SILTY SOILS</td><td colspan="2">CLAYEY SOILS</td><td colspan="2">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td><td>HIGHLY ORGANIC SOILS</td></tr><tr><th>GEN. RATING AS SUBGRADE</th><td colspan="6">EXCELLENT TO GOOD</td><td colspan="2">FAIR TO POOR</td><td>FAIR TO POOR</td><td>POOR</td><td>UNSATISFACTORY</td></tr></table> PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30										GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)						SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		GROUP CLASS.	A-1	A-3	A-2		A-2-6		A-5	A-6	A-7	A-1, A-2	A-4, A-5	SYMBOL												% PASSING	#10 #40 #200	50 MX 30 MX 15 MX	50 MX 30 MX 15 MX	50 MN 30 MN 15 MN	35 MX 35 MX 35 MX	35 MX 35 MX 35 MX	35 MX 35 MX 35 MX	35 MN 35 MN 35 MN	35 MN 35 MN 35 MN	35 MN 35 MN 35 MN	35 MN 35 MN 35 MN	MATERIAL PASSING #40												LL												PI												GROUP INDEX												USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL, AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND		SILTY SOILS		CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS	GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD						FAIR TO POOR		FAIR TO POOR	POOR	UNSATISFACTORY										
GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)						SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS																																																																																																																																	
GROUP CLASS.	A-1	A-3	A-2		A-2-6		A-5	A-6	A-7	A-1, A-2	A-4, A-5																																																																																																																																	
SYMBOL																																																																																																																																												
% PASSING	#10 #40 #200	50 MX 30 MX 15 MX	50 MX 30 MX 15 MX	50 MN 30 MN 15 MN	35 MX 35 MX 35 MX	35 MX 35 MX 35 MX	35 MX 35 MX 35 MX	35 MN 35 MN 35 MN	35 MN 35 MN 35 MN	35 MN 35 MN 35 MN	35 MN 35 MN 35 MN																																																																																																																																	
MATERIAL PASSING #40																																																																																																																																												
LL																																																																																																																																												
PI																																																																																																																																												
GROUP INDEX																																																																																																																																												
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL, AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND		SILTY SOILS		CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS																																																																																																																																	
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD						FAIR TO POOR		FAIR TO POOR	POOR	UNSATISFACTORY																																																																																																																																	
CONSISTENCY OR DENSENESS <table><tr><th>PRIMARY SOIL TYPE</th><th>COMPACTNESS OR CONSISTENCY</th><th>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</th><th>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</th></tr><tr><td rowspan="3">GENERALLY GRANULAR MATERIAL (NON-COHESIVE)</td><td>VERY LOOSE</td><td>< 4</td><td rowspan="3">N/A</td></tr><tr><td>LOOSE</td><td>4 TO 10</td></tr><tr><td>MEDIUM DENSE</td><td>10 TO 30</td></tr><tr><td rowspan="3">GENERALLY SILT-CLAY MATERIAL (COHESIVE)</td><td>DENSE</td><td>30 TO 50</td><td rowspan="3">< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4</td></tr><tr><td>VERY DENSE</td><td>> 50</td></tr><tr><td>VERY SOFT</td><td>< 2</td></tr><tr><td rowspan="3">GENERALLY SILT-CLAY MATERIAL (COHESIVE)</td><td>SOFT</td><td>2 TO 4</td><td rowspan="3">0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4</td></tr><tr><td>MEDIUM STIFF</td><td>4 TO 8</td></tr><tr><td>STIFF</td><td>8 TO 15</td></tr><tr><td rowspan="3">GENERALLY SILT-CLAY MATERIAL (COHESIVE)</td><td>VERY STIFF</td><td>15 TO 30</td><td rowspan="3">2 TO 4 > 4</td></tr><tr><td>HARD</td><td>> 30</td></tr></table>										PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)	GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	< 4	N/A	LOOSE	4 TO 10	MEDIUM DENSE	10 TO 30	GENERALLY SILT-CLAY MATERIAL (COHESIVE)	DENSE	30 TO 50	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4	VERY DENSE	> 50	VERY SOFT	< 2	GENERALLY SILT-CLAY MATERIAL (COHESIVE)	SOFT	2 TO 4	0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4	MEDIUM STIFF	4 TO 8	STIFF	8 TO 15	GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY STIFF	15 TO 30	2 TO 4 > 4	HARD	> 30																																																																																																	
PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)																																																																																																																																									
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	< 4	N/A																																																																																																																																									
	LOOSE	4 TO 10																																																																																																																																										
	MEDIUM DENSE	10 TO 30																																																																																																																																										
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	DENSE	30 TO 50	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4																																																																																																																																									
	VERY DENSE	> 50																																																																																																																																										
	VERY SOFT	< 2																																																																																																																																										
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	SOFT	2 TO 4	0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4																																																																																																																																									
	MEDIUM STIFF	4 TO 8																																																																																																																																										
	STIFF	8 TO 15																																																																																																																																										
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY STIFF	15 TO 30	2 TO 4 > 4																																																																																																																																									
	HARD	> 30																																																																																																																																										
	TEXTURE OR GRAIN SIZE <table><tr><th>U.S. STD. SIEVE SIZE OPENING (MM)</th><th>4</th><th>10</th><th>40</th><th>60</th><th>200</th><th>270</th></tr><tr><th></th><th>4.76</th><th>2.00</th><th>0.42</th><th>0.25</th><th>0.075</th><th>0.053</th></tr><tr><th>BOULDER (BLDR.)</th><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>COBBLE (COB.)</th><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>GRAVEL (GR.)</th><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>COARSE SAND (CSE. SD.)</th><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>FINE SAND (F SD.)</th><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>SILT (SL.)</th><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><th>CLAY (CL.)</th><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th>GRAIN SIZE</th><th>MM</th><th>305</th><th>75</th><th>2.0</th><th>0.25</th><th>0.05</th><th>0.005</th></tr><tr><th>IN.</th><th>12</th><th>3</th><th></th><th></th><th></th><th></th><th></th></tr></table>										U.S. STD. SIEVE SIZE OPENING (MM)	4	10	40	60	200	270		4.76	2.00	0.42	0.25	0.075	0.053	BOULDER (BLDR.)							COBBLE (COB.)							GRAVEL (GR.)							COARSE SAND (CSE. SD.)							FINE SAND (F SD.)							SILT (SL.)							CLAY (CL.)							GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005	IN.	12	3																																																								
U.S. STD. SIEVE SIZE OPENING (MM)	4	10	40	60	200	270																																																																																																																																						
	4.76	2.00	0.42	0.25	0.075	0.053																																																																																																																																						
BOULDER (BLDR.)																																																																																																																																												
COBBLE (COB.)																																																																																																																																												
GRAVEL (GR.)																																																																																																																																												
COARSE SAND (CSE. SD.)																																																																																																																																												
FINE SAND (F SD.)																																																																																																																																												
SILT (SL.)																																																																																																																																												
CLAY (CL.)																																																																																																																																												
GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005																																																																																																																																					
IN.	12	3																																																																																																																																										
SOIL MOISTURE - CORRELATION OF TERMS <table><tr><th>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</th><th>FIELD MOISTURE DESCRIPTION</th><th>GUIDE FOR FIELD MOISTURE DESCRIPTION</th></tr><tr><td rowspan="2">LL PLASTIC RANGE (PI) PL</td><td>- SATURATED - (SAT.)</td><td>USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE</td></tr><tr><td>- WET - (W)</td><td>SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE</td></tr><tr><td rowspan="2">OM SL</td><td>- MOIST - (M)</td><td>SOLID; AT OR NEAR OPTIMUM MOISTURE</td></tr><tr><td>- DRY - (D)</td><td>REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE</td></tr></table>										SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION	LL PLASTIC RANGE (PI) PL	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE	OM SL	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE																																																																																																																						
SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION																																																																																																																																										
LL PLASTIC RANGE (PI) PL	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE																																																																																																																																										
	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE																																																																																																																																										
OM SL	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE																																																																																																																																										
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE																																																																																																																																										
PLASTICITY <table><tr><th>NON PLASTIC</th><th>SLIGHTLY PLASTIC</th><th>MODERATELY PLASTIC</th><th>HIGHLY PLASTIC</th></tr><tr><td></td><td></td><td></td><td></td></tr></table> <table><tr><th>PLASTICITY INDEX (PI)</th><th>DRY STRENGTH</th></tr><tr><td>0-5</td><td>VERY LOW</td></tr><tr><td>6-15</td><td>SLIGHT</td></tr><tr><td>16-25</td><td>MEDIUM</td></tr><tr><td>26 OR MORE</td><td>HIGH</td></tr></table>										NON PLASTIC	SLIGHTLY PLASTIC	MODERATELY PLASTIC	HIGHLY PLASTIC					PLASTICITY INDEX (PI)	DRY STRENGTH	0-5	VERY LOW	6-15	SLIGHT	16-25	MEDIUM	26 OR MORE	HIGH																																																																																																																	
NON PLASTIC	SLIGHTLY PLASTIC	MODERATELY PLASTIC	HIGHLY PLASTIC																																																																																																																																									
PLASTICITY INDEX (PI)	DRY STRENGTH																																																																																																																																											
0-5	VERY LOW																																																																																																																																											
6-15	SLIGHT																																																																																																																																											
16-25	MEDIUM																																																																																																																																											
26 OR MORE	HIGH																																																																																																																																											
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.																																																																																																																																												
MISCELLANEOUS SYMBOLS <table><tr><td></td><td>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</td><td></td><td>DIP & DIP DIRECTION OF ROCK STRUCTURES</td></tr><tr><td></td><td>SOIL SYMBOL</td><td></td><td>TEST BORING</td></tr><tr><td></td><td>ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</td><td></td><td>AUGER BORING</td></tr><tr><td></td><td>INFERRED SOIL BOUNDARY</td><td></td><td>CORE BORING</td></tr><tr><td></td><td>INFERRED ROCK LINE</td><td></td><td>MONITORING WELL</td></tr><tr><td></td><td>ALLUVIAL SOIL BOUNDARY</td><td></td><td>PIEZOMETER INSTALLATION</td></tr><tr><td></td><td></td><td></td><td>SOUNDING ROD</td></tr><tr><td></td><td></td><td></td><td>TEST BORING WITH CORE</td></tr><tr><td></td><td></td><td></td><td>SPT N-VALUE</td></tr></table>											ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION		DIP & DIP DIRECTION OF ROCK STRUCTURES		SOIL SYMBOL		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				SOUNDING ROD				TEST BORING WITH CORE				SPT N-VALUE																																																																																															
	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION		DIP & DIP DIRECTION OF ROCK STRUCTURES																																																																																																																																									
	SOIL SYMBOL		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																																																																																																																																									
			SOUNDING ROD																																																																																																																																									
			TEST BORING WITH CORE																																																																																																																																									
			SPT N-VALUE																																																																																																																																									
RECOMMENDATION SYMBOLS <table><tr><td></td><td>UNDERCUT EXCAVATION</td><td></td><td>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</td><td></td><td>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</td></tr><tr><td></td><td>SHALLOW UNDERCUT</td><td></td><td>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</td><td></td><td></td></tr></table>											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																																																																																																																									
	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																																																																																																																																									
ABBREVIATIONS <table><tr><td>AR - AUGER REFUSAL</td><td>MED. - MEDIUM</td><td>VST - VANE SHEAR TEST</td></tr><tr><td>BT - BORING TERMINATED</td><td>MICA - MICACEOUS</td><td>WEA. - WEATHERED</td></tr><tr><td>CL - CLAY</td><td>MOD. - MODERATELY</td><td>γ - UNIT WEIGHT</td></tr><tr><td>CPT - CONE PENETRATION TEST</td><td>NP - NON PLASTIC</td><td>γ_d - DRY UNIT WEIGHT</td></tr><tr><td>CSE. - COARSE</td><td>ORG. - ORGANIC</td><td></td></tr><tr><td>DMT - DILATOMETER TEST</td><td>PMT - PRESSUREMETER TEST</td><td>SAMPLE ABBREVIATIONS</td></tr><tr><td>DPT - DYNAMIC PENETRATION TEST</td><td>SAP. - SAPROLITIC</td><td>S - BULK</td></tr><tr><td>e - VOID RATIO</td><td>SD. - SAND, SANDY</td><td>SS - SPLIT SPOON</td></tr><tr><td>F - FINE</td><td>SL. - SILT, SILTY</td><td>ST - SHELBY TUBE</td></tr><tr><td>FOSS. - FOSSILIFEROUS</td><td>SLI. - SLIGHTLY</td><td>RS - ROCK</td></tr><tr><td>FRAC. - FRACTURED, FRACTURES</td><td>TCR - TRICONE REFUSAL</td><td>RT - RECOMPACTED TRIAXIAL</td></tr><tr><td>FRAGS. - FRAGMENTS</td><td>w - MOISTURE CONTENT</td><td>CBR - CALIFORNIA BEARING RATIO</td></tr><tr><td>HI. - HIGHLY</td><td>V - VERY</td><td></td></tr></table>										AR - AUGER REFUSAL	MED. - MEDIUM	VST - VANE SHEAR TEST	BT - BORING TERMINATED	MICA - MICACEOUS	WEA. - WEATHERED	CL - CLAY	MOD. - MODERATELY	γ - UNIT WEIGHT	CPT - CONE PENETRATION TEST	NP - NON PLASTIC	γ _d - DRY UNIT WEIGHT	CSE. - COARSE	ORG. - ORGANIC		DMT - DILATOMETER TEST	PMT - PRESSUREMETER TEST	SAMPLE ABBREVIATIONS	DPT - DYNAMIC PENETRATION TEST	SAP. - SAPROLITIC	S - BULK	e - VOID RATIO	SD. - SAND, SANDY	SS - SPLIT SPOON	F - FINE	SL. - SILT, SILTY	ST - SHELBY TUBE	FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY	RS - ROCK	FRAC. - FRACTURED, FRACTURES	TCR - TRICONE REFUSAL	RT - RECOMPACTED TRIAXIAL	FRAGS. - FRAGMENTS	w - MOISTURE CONTENT	CBR - CALIFORNIA BEARING RATIO	HI. - HIGHLY	V - VERY																																																																																													
AR - AUGER REFUSAL	MED. - MEDIUM	VST - VANE SHEAR TEST																																																																																																																																										
BT - BORING TERMINATED	MICA - MICACEOUS	WEA. - WEATHERED																																																																																																																																										
CL - CLAY	MOD. - MODERATELY	γ - UNIT WEIGHT																																																																																																																																										
CPT - CONE PENETRATION TEST	NP - NON PLASTIC	γ _d - DRY UNIT WEIGHT																																																																																																																																										
CSE. - COARSE	ORG. - ORGANIC																																																																																																																																											
DMT - DILATOMETER TEST	PMT - PRESSUREMETER TEST	SAMPLE ABBREVIATIONS																																																																																																																																										
DPT - DYNAMIC PENETRATION TEST	SAP. - SAPROLITIC	S - BULK																																																																																																																																										
e - VOID RATIO	SD. - SAND, SANDY	SS - SPLIT SPOON																																																																																																																																										
F - FINE	SL. - SILT, SILTY	ST - SHELBY TUBE																																																																																																																																										
FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY	RS - ROCK																																																																																																																																										
FRAC. - FRACTURED, FRACTURES	TCR - TRICONE REFUSAL	RT - RECOMPACTED TRIAXIAL																																																																																																																																										
FRAGS. - FRAGMENTS	w - MOISTURE CONTENT	CBR - CALIFORNIA BEARING RATIO																																																																																																																																										
HI. - HIGHLY	V - VERY																																																																																																																																											
EQUIPMENT USED ON SUBJECT PROJECT <table><tr><td>DRILL UNITS: ☒ CME-45C ☐ CME-55 ☐ CME-550 ☐ VANE SHEAR TEST ☐ PORTABLE HOIST ☐</td><td>ADVANCING TOOLS: ☐ CLAY BITS ☐ 6" CONTINUOUS FLIGHT AUGER ☐ 8" HOLLOW AUGERS ☐ HARD FACED FINGER BITS ☐ TUNG-CARBIDE INSERTS ☐ CASING ☐ W/ ADVANCER ☐ TRICONE ☐ STEEL TEETH ☐ TRICONE ☐ TUNG.-CARB. ☐ CORE BIT ☐</td><td>HAMMER TYPE: ☒ AUTOMATIC ☐ MANUAL CORE SIZE: ☐ -B ☐ -H ☐ -N HAND TOOLS: ☐ POST HOLE DIGGER ☐ HAND AUGER ☐ SOUNDING ROD ☐ VANE SHEAR TEST ☐</td></tr></table>										DRILL UNITS: ☒ CME-45C ☐ CME-55 ☐ CME-550 ☐ VANE SHEAR TEST ☐ PORTABLE HOIST ☐	ADVANCING TOOLS: ☐ CLAY BITS ☐ 6" CONTINUOUS FLIGHT AUGER ☐ 8" HOLLOW AUGERS ☐ HARD FACED FINGER BITS ☐ TUNG-CARBIDE INSERTS ☐ CASING ☐ W/ ADVANCER ☐ TRICONE ☐ STEEL TEETH ☐ TRICONE ☐ TUNG.-CARB. ☐ CORE BIT ☐	HAMMER TYPE: ☒ AUTOMATIC ☐ MANUAL CORE SIZE: ☐ -B ☐ -H ☐ -N HAND TOOLS: ☐ POST HOLE DIGGER ☐ HAND AUGER ☐ SOUNDING ROD ☐ VANE SHEAR TEST ☐																																																																																																																																
DRILL UNITS: ☒ CME-45C ☐ CME-55 ☐ CME-550 ☐ VANE SHEAR TEST ☐ PORTABLE HOIST ☐	ADVANCING TOOLS: ☐ CLAY BITS ☐ 6" CONTINUOUS FLIGHT AUGER ☐ 8" HOLLOW AUGERS ☐ HARD FACED FINGER BITS ☐ TUNG-CARBIDE INSERTS ☐ CASING ☐ W/ ADVANCER ☐ TRICONE ☐ STEEL TEETH ☐ TRICONE ☐ TUNG.-CARB. ☐ CORE BIT ☐	HAMMER TYPE: ☒ AUTOMATIC ☐ MANUAL CORE SIZE: ☐ -B ☐ -H ☐ -N HAND TOOLS: ☐ POST HOLE DIGGER ☐ HAND AUGER ☐ SOUNDING ROD ☐ VANE SHEAR TEST ☐																																																																																																																																										

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:			
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 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 > 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 0.05 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	
		ELEVATION: 3265.570 FEET	
NOTES:			
-			

DATE: 8-15-14



PROJECT REFERENCE NO.	SHEET NO.
B-5554 46312	3
SITE PLAN	
0 20 40 FEET	

[illegible]



WBS 46312.3.f1				TIP B5554				COUNTY TRANSYLVANIA				GEOLOGIST Elliott, D. C.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
SITE DESCRIPTION TRANSYLVANIA CO. BR. 73 ON NC-215 OVER BEETREE FORK												GROUND WTR (ft)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
BORING NO. 2				STATION N/A				OFFSET N/A				ALIGNMENT EXISTING				0 HR. 10.2 FIAD																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
COLLAR ELEV. 3,266.7 ft				TOTAL DEPTH 13.5 ft				NORTHING 571,587				EASTING 834,709				24 HR. N/A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
DRILL RIG/HAMMER EFF./DATE 030-0076 CME-45								DRILL METHOD NW Casing w/ SPT								HAMMER TYPE Automatic																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
DRILLER Cheek, D. O.				START DATE 12/03/14				COMP. DATE 12/03/14				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																ELEV. (ft)																DEPTH (ft)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3270																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

SHEET

6/6

WBS 46312.3.f1		TIP B5554		COUNTY TRANSYLVANIA		GEOLOGIST Elliott, D. C.	
SITE DESCRIPTION TRANSYLVANIA CO. BR. 73 ON NC-215 OVER BEETREE FORK							GROUND WTR (ft)
BORING NO. 3		STATION N/A		OFFSET N/A		ALIGNMENT EXISTING	0 HR. FIAD
COLLAR ELEV. 3,266.8 ft		TOTAL DEPTH 12.4 ft		NORTHING 571,580		EASTING 834,714	24 HR. N/A
DRILL RIG/HAMMER EFF./DATE 030-0076 CME-45				DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic	
DRILLER Cheek, D. O.		START DATE 12/03/14		COMP. DATE 12/03/14		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					
3270															
3265														GROUND SURFACE	0.0
														ASPHALT	0.5
3260	3,261.6	5.2	8	9	7									EMBANKMENT: BROWN AND GRAY SILTY SAND WITH GRAVEL, COBBLES AND BOULDERS	
3255	3,256.6	10.2	3	97/3										ALLUVIUM: SILTY SAND WITH SOME SANDY SILT WITH TRACE ORGANICS	11.0
														CRYSTALLINE ROCK	12.4
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 3,254.4 ft IN CRYSTALLINE ROCK	