

REFERENCE: U-4424

PROJECT: 39062

**CONTENTS**

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-9	BORE LOGS
10	SITE PHOTOGRAPHS

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY EDGECOMBE  
PROJECT DESCRIPTION NC III (WILSON ST) TO NC 122  
(MCNAIR RD) TO US 64 ALTERNATE (WESTERN BLVD)

SITE DESCRIPTION BRIDGE 152 ON -L- (NC III)  
OVER US 64 BYPASS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4424	1	10

**CAUTION NOTICE**

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

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

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

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

PERSONNEL

H. FISCHER

M. SHIPMAN, EIT

B. WORLEY, PG

M. MOSELEY

J. MOSELEY

INVESTIGATED BY B. WORLEY, PG

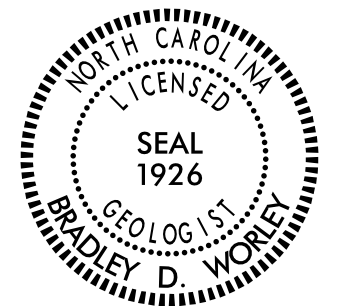
DRAWN BY B. WORLEY and B. SMITH

CHECKED BY D. DEWEY, PE

SUBMITTED BY B. WORLEY

DATE SEPTEMBER 2019

Prepared in the Office of:



DocuSigned by:

*Bradley D. Worley*

4/13/2021

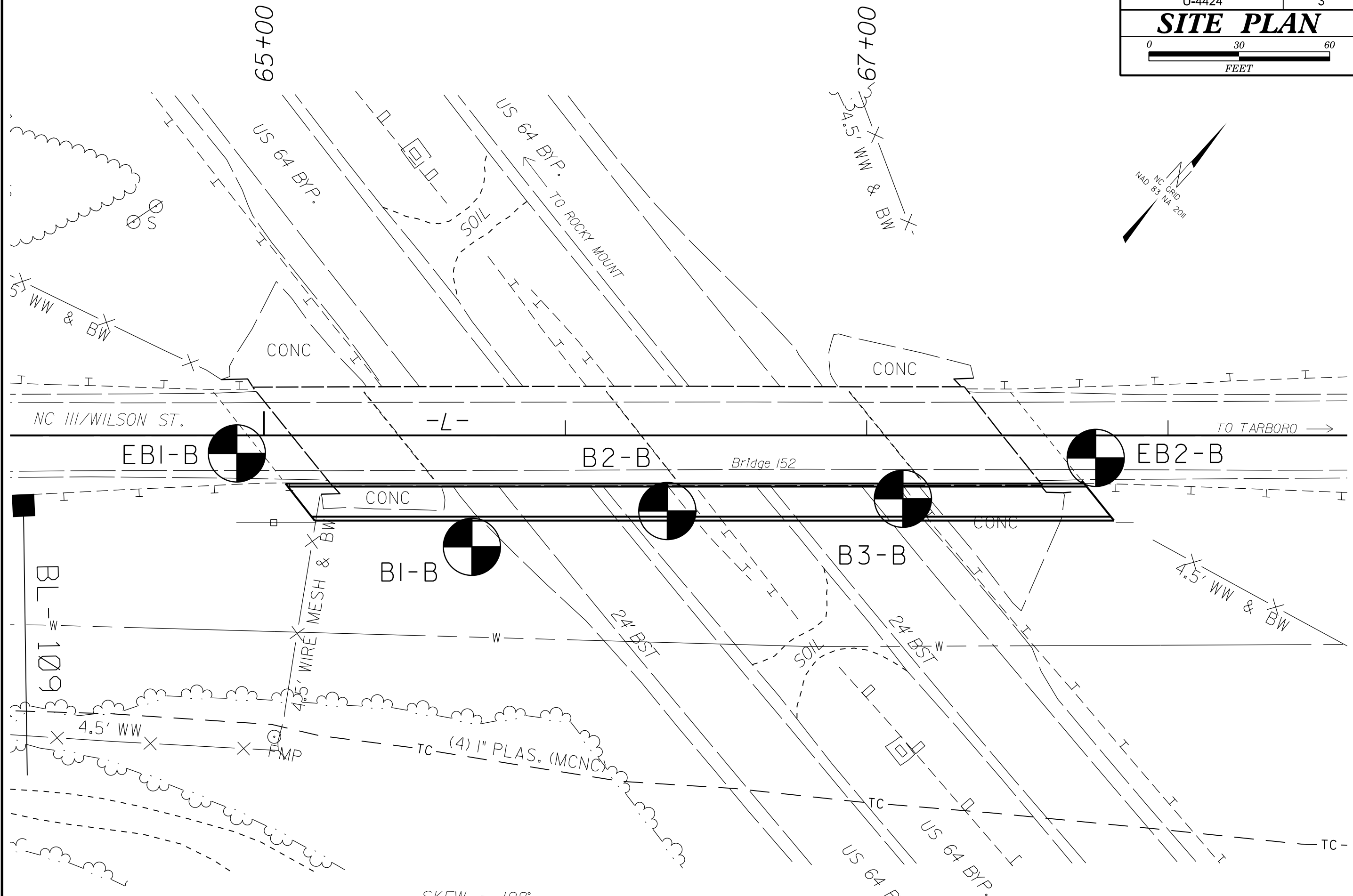
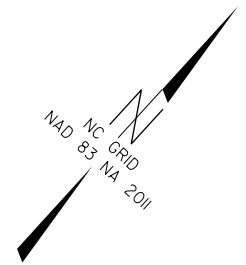
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**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT  
SUBSURFACE INVESTIGATION  
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

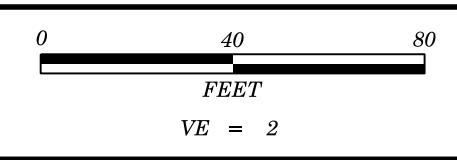
SOIL DESCRIPTION												GRADATION												ROCK DESCRIPTION												TERMS AND DEFINITIONS																																																																																																							
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 209, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>												<p><b>WELL GRADED</b> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. <b>UNIFORMLY GRADED</b> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. <b>GAP-GRADED</b> - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p>												<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>												<p><b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA. <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. <b>ARTESIAN</b> - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. <b>FORMATION (FM.)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. <b>ROCK QUALITY DESIGNATION (RQD)</b> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. <b>SILL</b> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. <b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. <b>STRATA ROCK QUALITY DESIGNATION (SROD)</b> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																							
SOIL LEGEND AND AASHTO CLASSIFICATION												ANGULARITY OF GRAINS												WEATHERED ROCK (WR)												CRYSTALLINE ROCK (CR)												NON-CRYSTALLINE ROCK (NCR)												COASTAL PLAIN SEDIMENTARY ROCK (CP)																																																																															
<p><b>MINERALOGICAL COMPOSITION</b> MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p>												<p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <b>ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</b></p>												<p>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</p>												<p>FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p>												<p>FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</p>												<p>COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>																																																																															
COMPRESSION												MINERALOGICAL COMPOSITION												WEATHERING												FRESH												VERY SLIGHT (V SL.)												SLIGHT (SL.)												MODERATE (MOD.)												MODERATELY SEVERE (MOD. SEV.)												SEVERE (SEV.)												VERY SEVERE (V SEV.)												COMPLETE																			
<p>SLIGHTLY COMPRESSIBLE LL &lt; 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL &gt; 50</p>												<p><b>PERCENTAGE OF MATERIAL</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </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>&gt; 10%</td> <td>&gt; 20%</td> <td>HIGHLY 35% AND ABOVE</td> </tr> </table>												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	<p><b>FRESH</b> ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p>												<p><b>VERY SLIGHT (V SL.)</b> ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.</p>												<p><b>SLIGHT (SL.)</b> ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</p>												<p><b>MODERATE (MOD.)</b> SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.</p>												<p><b>MODERATELY SEVERE (MOD. SEV.)</b> ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p>												<p><b>SEVERE (SEV.)</b> ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES &gt; 100 BPF</i></p>												<p><b>VERY SEVERE (V SEV.)</b> ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</i></p>												<p><b>COMPLETE</b> ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. FABRIC MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</p>											
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<p>▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING ▽ STATIC WATER LEVEL AFTER 24 HOURS ▽PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA ○ SPRING OR SEEP</p>												<p>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY</p> <p>DIP &amp; DIP DIRECTION OF ROCK STRUCTURES SPT DMT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION</p> <p>SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE</p>												<p>UNDERCUT SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</p>												<p>AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HI. - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED γ<sub>u</sub> - UNIT WEIGHT γ<sub>d</sub> - DRY UNIT WEIGHT SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO</p>																																																																																																							
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<p>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.</p>												<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>												<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>												<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>																																																																																																							



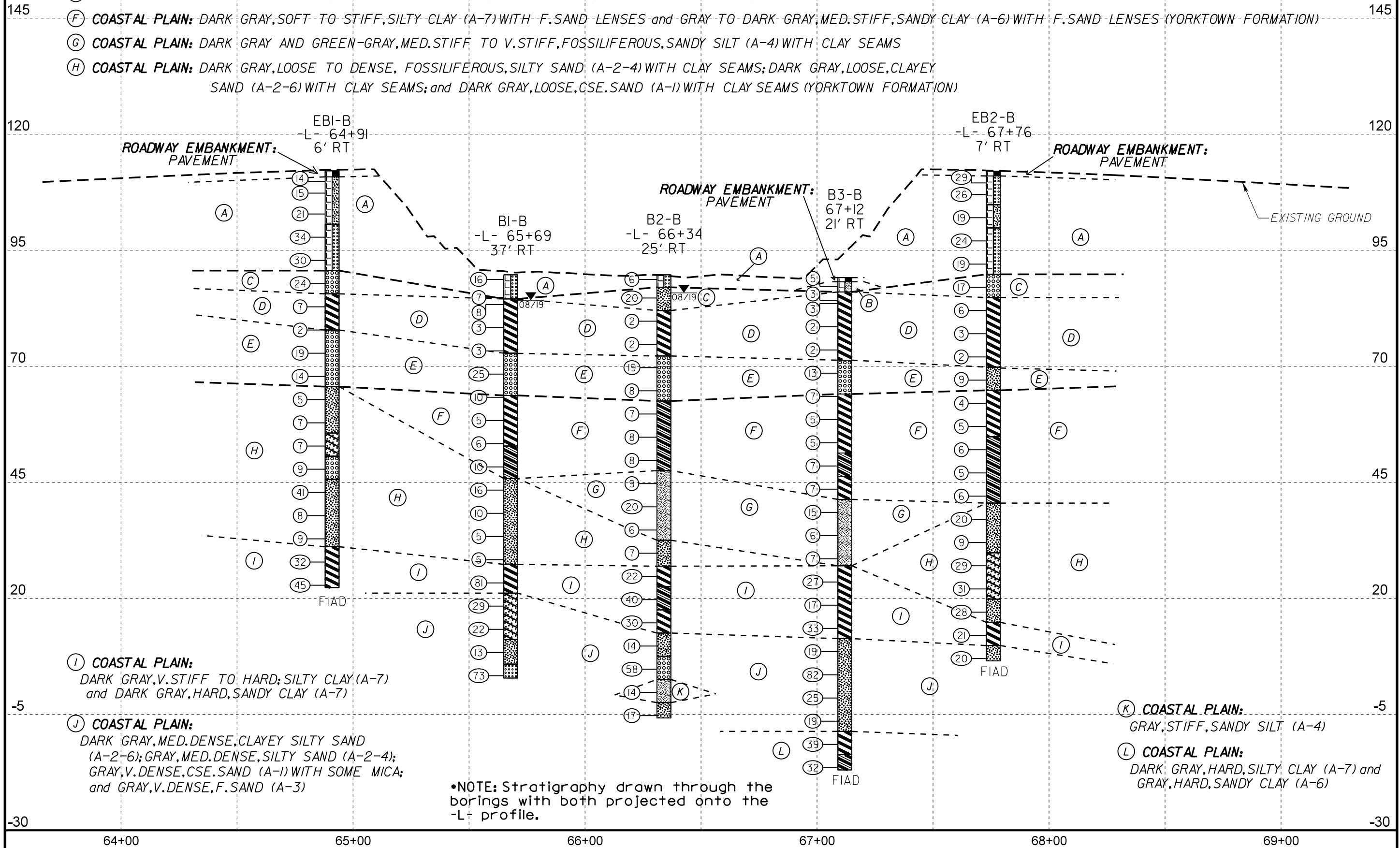
SKEW = 128°

BL-109

- (A) ROADWAY EMBANKMENT: TAN, MED. DENSE TO DENSE, SILTY SAND (A-2-4) and TAN, LOOSE TO MED. DENSE, F. SAND (A-3)
- (B) ROADWAY EMBANKMENT: BROWN-GRAY, MED. STIFF, SANDY SILT (A-4) WITH TRACE ORGANICS (WOOD)
- (C) ALLUVIAL: TAN, MED. DENSE, CSE. SAND (A-1) and TAN TO BROWN, MED. DENSE, SILTY SAND (A-2-4)
- (D) ALLUVIAL: GRAY TO DARK GRAY, SOFT TO MED. STIFF, SILTY CLAY (A-7)
- (E) ALLUVIAL: GRAY TO BROWN AND TAN, LOOSE TO MED. DENSE, CSE. SAND (A-1); and DARK GRAY, LOOSE, SILTY SAND (A-2-4)
- (F) COASTAL PLAIN: DARK GRAY, SOFT TO STIFF, SILTY CLAY (A-7) WITH F. SAND LENSES and GRAY TO DARK GRAY, MED. STIFF, SANDY CLAY (A-6) WITH F. SAND LENSES (YORKTOWN FORMATION)
- (G) COASTAL PLAIN: DARK GRAY AND GREEN-GRAY, MED. STIFF TO V. STIFF, FOSSILIFEROUS, SANDY SILT (A-4) WITH CLAY SEAMS
- (H) COASTAL PLAIN: DARK GRAY, LOOSE TO DENSE, FOSSILIFEROUS, SILTY SAND (A-2-4) WITH CLAY SEAMS; DARK GRAY, LOOSE, CLAYEY SAND (A-2-6) WITH CLAY SEAMS; and DARK GRAY, LOOSE, CSE. SAND (A-1) WITH CLAY SEAMS (YORKTOWN FORMATION)



PROJECT REFERENCE NO.	SHEET NO.
U-4424	4
PROFILE BRIDGE 152 ON -L- OVER US 64 ALT	



- (I) COASTAL PLAIN: DARK GRAY, V. STIFF TO HARD; SILTY CLAY (A-7) and DARK GRAY, HARD, SANDY CLAY (A-7)
- (J) COASTAL PLAIN: DARK GRAY, MED. DENSE, CLAYEY SILTY SAND (A-2-6); GRAY, MED. DENSE, SILTY SAND (A-2-4); GRAY, V. DENSE, CSE. SAND (A-1) WITH SOME MICA; and GRAY, V. DENSE, F. SAND (A-3)

- (K) COASTAL PLAIN: GRAY, STIFF, SANDY SILT (A-4)
- (L) COASTAL PLAIN: DARK GRAY, HARD, SILTY CLAY (A-7) and GRAY, HARD, SANDY CLAY (A-6)

\*NOTE: Stratigraphy drawn through the borings with both projected onto the -L- profile.

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 39062.1.2		TIP U-4424		COUNTY EDGECOMBE		GEOLOGIST Fischer, H./Worley, B.	
SITE DESCRIPTION NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass							GROUND WTR (ft)
BORING NO. EB1-B		STATION 64+91		OFFSET 6 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 112.1 ft		TOTAL DEPTH 89.8 ft		NORTHING 779,298		EASTING 2,423,412	
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 81% 04/23/2019				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Moseley, M.G.		START DATE 08/01/19		COMP. DATE 08/01/19		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					
115															
110	110.8	1.3													
	108.3	3.8	8	7	7										
105	103.8	8.3	4	7	8										
	103.8	8.3	8	8	13										
100	98.8	13.3													
	98.8	13.3	14	16	18										
95	93.8	18.3													
	93.8	18.3	11	15	15										
90	88.8	23.3													
	88.8	23.3	11	13	11										
85	83.8	28.3													
	83.8	28.3	3	3	4										
80	78.8	33.3													
	78.8	33.3	WOH	1	1										
75	73.8	38.3													
	73.8	38.3	7	9	10										
70	68.8	43.3													
	68.8	43.3	7	6	8										
65	63.8	48.3													
	63.8	48.3	2	2	3										
60	58.8	53.3													
	58.8	53.3	2	3	4										
55	53.8	58.3													
	53.8	58.3	3	3	4										
50	48.8	63.3													
	48.8	63.3	2	4	5										
45	43.8	68.3													
	43.8	68.3	8	18	23										
40	38.8	73.3													
	38.8	73.3	3	4	4										
35															

NCDOT BORE DOUBLE U4424\_GEO\_BRDG\_SUMMIT\_GINT.GPJ\_NC\_DOT.GDT 8/30/19

WBS 39062.1.2		TIP U-4424		COUNTY EDGECOMBE		GEOLOGIST Fischer, H./Worley, B.	
SITE DESCRIPTION NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass							GROUND WTR (ft)
BORING NO. EB1-B		STATION 64+91		OFFSET 6 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 112.1 ft		TOTAL DEPTH 89.8 ft		NORTHING 779,298		EASTING 2,423,412	
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 81% 04/23/2019				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Moseley, M.G.		START DATE 08/01/19		COMP. DATE 08/01/19		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					
35															
	33.8	78.3													
	33.8	78.3	3	4	5										
30	28.8	83.3													
	28.8	83.3	4	13	19										
25	23.8	88.3													
	23.8	88.3	17	21	24										

Match Line

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 39062.1.2		TIP U-4424		COUNTY EDGECOMBE		GEOLOGIST Fischer, H./Shipman, M.	
SITE DESCRIPTION NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass							GROUND WTR (ft)
BORING NO. B1-B		STATION 65+69		OFFSET 37 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 89.7 ft		TOTAL DEPTH 86.9 ft		NORTHING 779,327		EASTING 2,423,490	
0 HR. N/A		24 HR. 5.5					
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 81% 04/23/2019				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Moseley, M.G.		START DATE 08/07/19		COMP. DATE 08/07/19		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
90	89.7	0.0	3	8	8									GROUND SURFACE 89.7
													M	ROADWAY EMBANKMENT Tan, loose to med. dense, Fine SAND (A-3)
85	85.8	3.9	4	3	4								M	
	84.3	5.4	4	3	5								M	ALLUVIAL Dark gray, soft to med. stiff, Silty CLAY (A-7) (Driller states harder drilling at 16.9 feet)
80	79.3	10.4	1	1	2								M	
75	74.3	15.4	WOH	2	1								M	
70	69.3	20.4	9	13	12								Sat.	
65	64.3	25.4	4	4	6								M	COASTAL PLAIN (Yorktown Formation) Dark gray, med. stiff, Silty CLAY (A-7), with fine sand lenses (Strat change in spoon at 26.0 feet)
60	59.3	30.4	2	2	3								M	
55	54.3	35.4	2	3	3								M	
50	49.3	40.4	4	4	6								W	
45	44.3	45.4	6	5	11								W	Dark gray, loose to med. dense, Silty SAND (A-2-4), fossiliferous
40	39.3	50.4	2	3	7								Sat.	
35	34.3	55.4	3	2	3								Sat.	
30	29.3	60.4	3	2	3								Sat.	
25	24.3	65.4	23	39	42								W	Dark gray, hard, Silty CLAY (A-7), fossiliferous (Driller indicates change at 62.4')
20	19.3	70.4	11	12	17								M	Dark gray, med. dense, Clayey Silty SAND (A-2-6)
15	14.3	75.4	8	10	12								M	
10														11.1

NCDOT BORE DOUBLE U4424\_GEO\_BRDG\_SUMMIT\_GINT.GPJ\_NC\_DOT.GDT 8/30/19

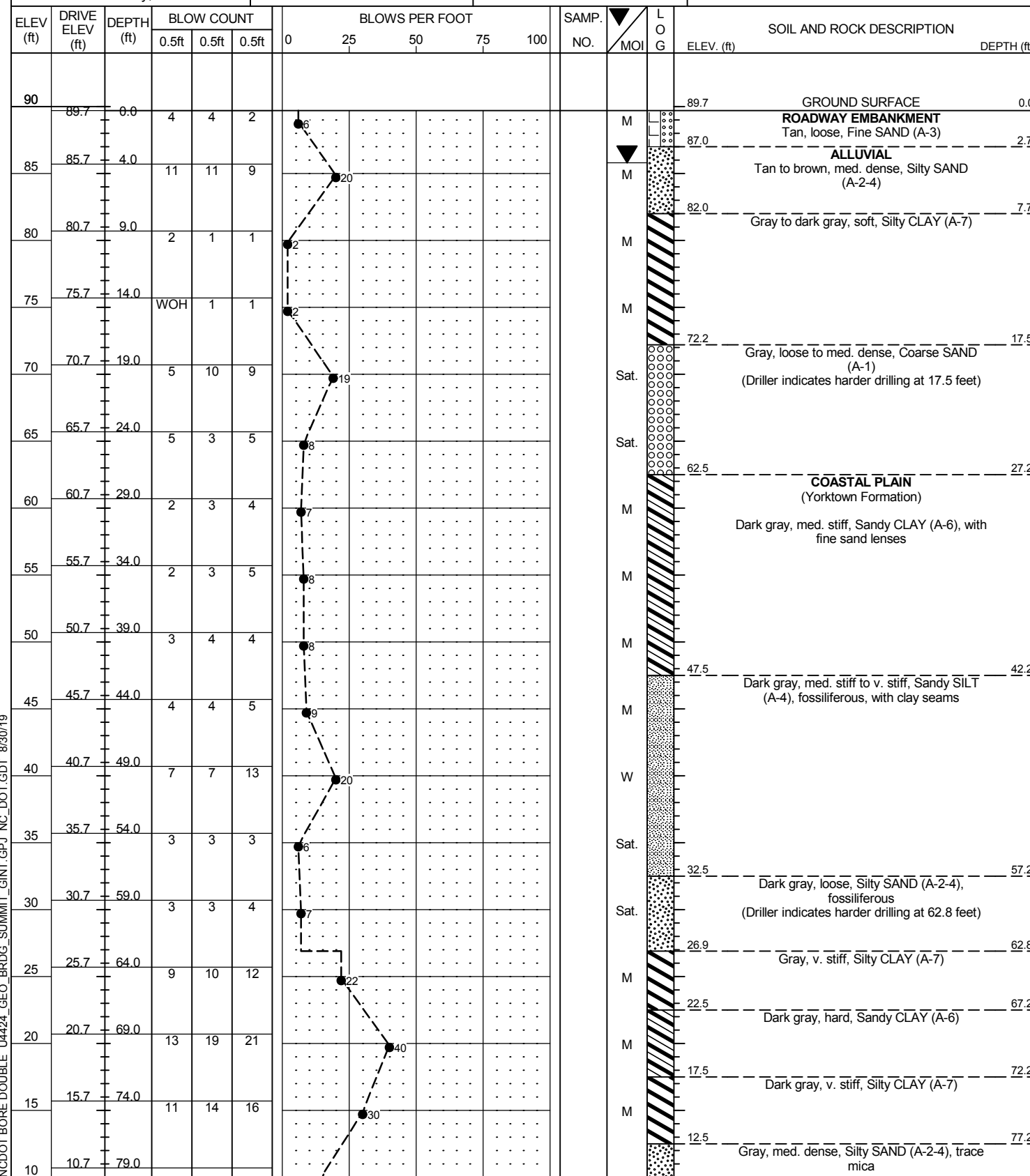
WBS 39062.1.2		TIP U-4424		COUNTY EDGECOMBE		GEOLOGIST Fischer, H./Shipman, M.	
SITE DESCRIPTION NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass							GROUND WTR (ft)
BORING NO. B1-B		STATION 65+69		OFFSET 37 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 89.7 ft		TOTAL DEPTH 86.9 ft		NORTHING 779,327		EASTING 2,423,491	
0 HR. N/A		24 HR. 5.5					
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 81% 04/23/2019				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Moseley, M.G.		START DATE 08/07/19		COMP. DATE 08/07/19		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
10	9.3	80.4	4	5	8									Match Line
5	4.3	85.4	29	38	35								W	Gray, med. dense, Silty SAND (A-2-4), trace mica (continued)
													Sat.	Gray, v. dense, Fine SAND (A-3)
														2.8
														86.9
														Boring Terminated at Elevation 2.8 ft In Coastal Plain Fine SAND (A-3)

# GEOTECHNICAL BORING REPORT

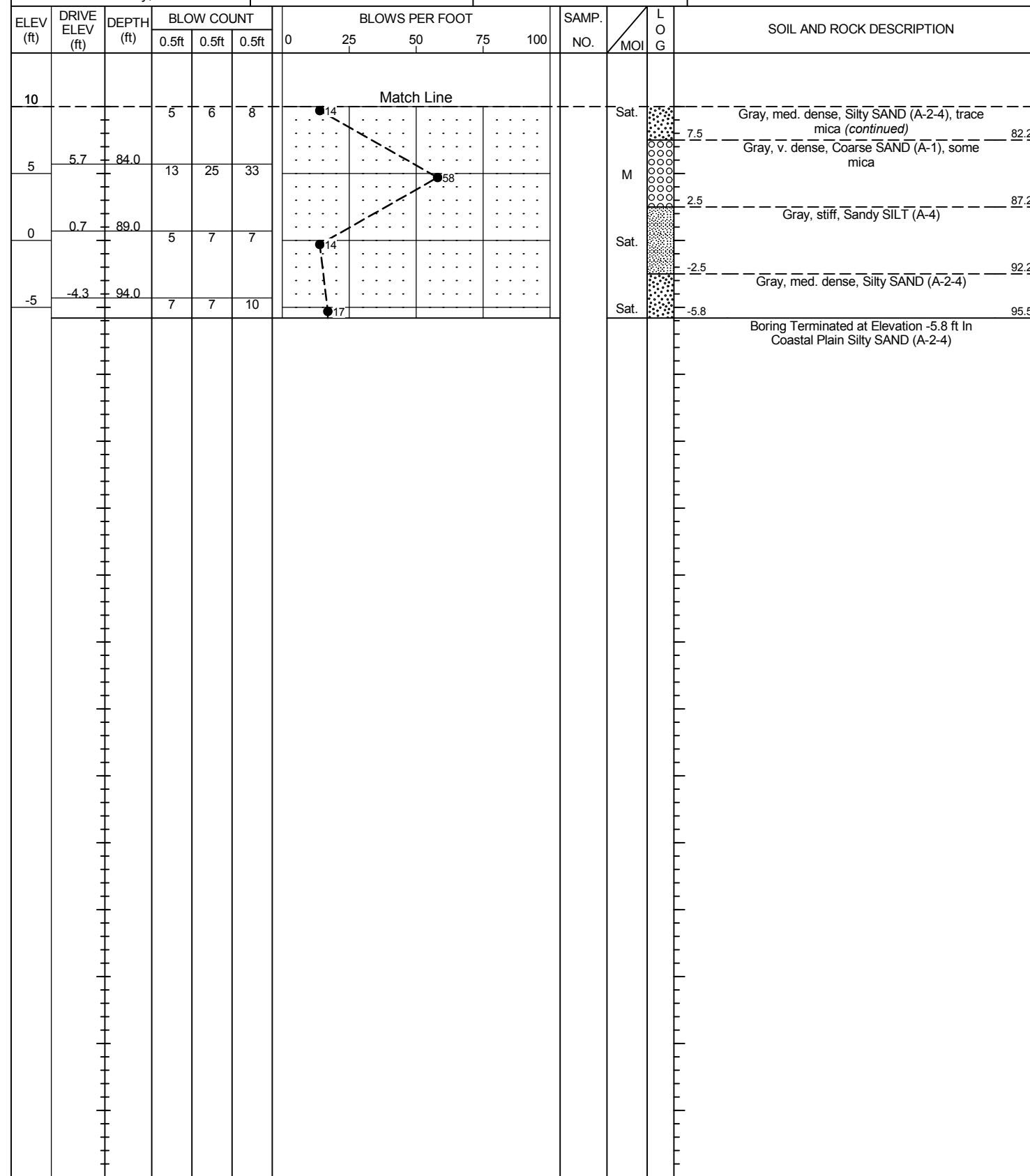
## BORE LOG

<b>WBS</b> 39062.1.2	<b>TIP</b> U-4424	<b>COUNTY</b> EDGECOMBE	<b>GEOLOGIST</b> Fischer, H./Shipman, M.
<b>SITE DESCRIPTION</b> NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass			<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> B2-B	<b>STATION</b> 66+34	<b>OFFSET</b> 25 ft RT	<b>ALIGNMENT</b> -L-
<b>COLLAR ELEV.</b> 89.7 ft	<b>TOTAL DEPTH</b> 95.5 ft	<b>NORTHING</b> 779,380	<b>EASTING</b> 2,423,530
<b>DRILL RIG/HAMMER EFF./DATE</b> SUM2603 CME-550X 81% 04/23/2019		<b>DRILL METHOD</b> Mud Rotary	<b>HAMMER TYPE</b> Automatic
<b>DRILLER</b> Moseley, M.G.	<b>START DATE</b> 08/06/19	<b>COMP. DATE</b> 08/06/19	<b>SURFACE WATER DEPTH</b> N/A



NCDOT BORE DOUBLE U4424\_GEO\_BRDG\_SUMMIT\_GINT.GPJ NC\_DOT.GDT 8/30/19

<b>WBS</b> 39062.1.2	<b>TIP</b> U-4424	<b>COUNTY</b> EDGECOMBE	<b>GEOLOGIST</b> Fischer, H./Shipman, M.
<b>SITE DESCRIPTION</b> NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass			<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> B2-B	<b>STATION</b> 66+34	<b>OFFSET</b> 25 ft RT	<b>ALIGNMENT</b> -L-
<b>COLLAR ELEV.</b> 89.7 ft	<b>TOTAL DEPTH</b> 95.5 ft	<b>NORTHING</b> 779,380	<b>EASTING</b> 2,423,530
<b>DRILL RIG/HAMMER EFF./DATE</b> SUM2603 CME-550X 81% 04/23/2019		<b>DRILL METHOD</b> Mud Rotary	<b>HAMMER TYPE</b> Automatic
<b>DRILLER</b> Moseley, M.G.	<b>START DATE</b> 08/06/19	<b>COMP. DATE</b> 08/06/19	<b>SURFACE WATER DEPTH</b> N/A



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 39062.1.2		TIP U-4424		COUNTY EDGECOMBE		GEOLOGIST Fischer, H./Shipman, M.	
SITE DESCRIPTION NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass						GROUND WTR (ft)	
BORING NO. B3-B		STATION 67+12		OFFSET 21 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 89.1 ft		TOTAL DEPTH 106.1 ft		NORTHING 779,435		EASTING 2,423,585	
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 81% 04/23/2019		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic			
DRILLER Moseley, M.G.		START DATE 08/08/19		COMP. DATE 08/08/19		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
90																
	88.2	0.9		4	3	2										
	86.0	3.1		1	1	2										
85	84.5	4.6		1	1	2										
			WOH	1	2											
80	79.5	9.6		2	1	1										
75	74.5	14.6		2	1	1										
70	69.5	19.6		3	4	9										
65	64.5	24.6		3	3	4										
60	59.5	29.6		2	2	3										
55	54.5	34.6		2	2	3										
50	49.5	39.6		3	3	4										
45	44.5	44.6		2	3	4										
40	39.5	49.6		9	7	8										
35	34.5	54.6		3	3	3										
30	29.5	59.6		3	4	3										
25	24.5	64.6		9	13	14										
20	19.5	69.6		7	7	10										
15	14.5	74.6		10	15	18										
10																

WBS 39062.1.2		TIP U-4424		COUNTY EDGECOMBE		GEOLOGIST Fischer, H./Shipman, M.	
SITE DESCRIPTION NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass						GROUND WTR (ft)	
BORING NO. B3-B		STATION 67+12		OFFSET 21 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 89.1 ft		TOTAL DEPTH 106.1 ft		NORTHING 779,435		EASTING 2,423,585	
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 81% 04/23/2019		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic			
DRILLER Moseley, M.G.		START DATE 08/08/19		COMP. DATE 08/08/19		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
10	9.5	79.6		6	8	11										
5	4.5	84.6		23	36	46										
0	-0.5	89.6		7	10	15										
-5	-5.5	94.6		8	8	11										
-10	-10.5	99.6		10	17	22										
-15	-15.5	104.6		10	13	19										

NCDOT BORE DOUBLE U4424\_GEO\_BRDG\_SUMMIT\_GINT.GPJ NC\_DOT.GDT 8/30/19



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 39062.1.2		TIP U-4424		COUNTY EDGECOMBE		GEOLOGIST Fischer, H./Shipman, M.	
SITE DESCRIPTION NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass							GROUND WTR (ft)
BORING NO. EB2-B		STATION 67+76		OFFSET 7 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 112.0 ft		TOTAL DEPTH 105.5 ft		NORTHING 779,492		EASTING 2,423,620	
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 81% 04/23/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER Moseley, M.G.		START DATE 08/02/19		COMP. DATE 08/02/19		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					
115															
110	110.5	1.5	7	14	15										
	108.0	4.0	11	12	14										
105	103.0	9.0	10	6	13										
100	98.0	14.0	10	12	12										
95	93.0	19.0	11	9	10										
90	88.0	24.0	11	10	7										
85	83.0	29.0	2	3	3										
80	78.0	34.0	WOH	1	2										
75	73.0	39.0	WOH	1	1										
70	68.0	44.0	4	5	4										
65	63.0	49.0	2	2	2										
60	58.0	54.0	2	2	3										
55	53.0	59.0	2	3	3										
50	48.0	64.0	2	2	3										
45	43.0	69.0	3	3	3										
40	38.0	74.0	12	9	11										
35															

WBS 39062.1.2		TIP U-4424		COUNTY EDGECOMBE		GEOLOGIST Fischer, H./Shipman, M.	
SITE DESCRIPTION NC 111 from NC 122 to US 64 Alternate - Bridge 152 on -L- (NC 111) over US 64 Bypass							GROUND WTR (ft)
BORING NO. EB2-B		STATION 67+76		OFFSET 7 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 112.0 ft		TOTAL DEPTH 105.5 ft		NORTHING 779,492		EASTING 2,423,620	
DRILL RIG/HAMMER EFF./DATE SUM2603 CME-550X 81% 04/23/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER Moseley, M.G.		START DATE 08/02/19		COMP. DATE 08/02/19		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					
35															
	33.0	79.0	4	5	4										
30	28.0	84.0	3	11	18										
25	23.0	89.0	10	15	16										
20	18.0	94.0	6	10	18										
15	13.0	99.0	10	10	11										
10	8.0	104.0	6	9	11										

NCDOT BORE DOUBLE U4424\_GEO\_BRDG\_SUMMIT\_GINT.GPJ\_NC\_DOT.GDT 8/30/19

# SITE PHOTOGRAPHS

Bridge No. 152 on -L- (NC 111) over US 64 Bypass



Standing on NC 111 (W. Wilson St.) looking northeast toward End Bent 1



View of proposed Bridge 152 widening, view facing west from US 64 Bypass



Standing on NC 111 (W. Wilson St.) looking southwest toward End Bent 2

Note: Images are courtesy Google Maps street view.