

REFERENCE: U-3330

PROJECT: 36591

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3330	1	16

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN AND PROFILE
4-15	BORING LOGS, CORE LOGS, AND CORE PHOTOS
16	ROCK STRENGTH TEST RESULTS

STRUCTURE  
SUBSURFACE INVESTIGATION

COUNTY NASH  
PROJECT DESCRIPTION US 301 BYPASS FROM SR 1836  
(MAY DR.) TO NC 43-48 (BENVENUE RD.)  
  
SITE DESCRIPTION NOISE WALL 2 ALONG US 301 BYPASS  
FROM -L- STA 30+81 TO STA 38+46

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:
1. 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.
  2. 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

B. KEANEY

B. HOWEY

C. JONES

B. THOMPSON

D. TIGNOR

**HDR ENGINEERING, INC.**

INVESTIGATED BY F&R, INC.

DRAWN BY CBJ

CHECKED BY ECH

SUBMITTED BY HDR ENGINEERING, INC.

DATE 3/2016



DocuSigned by:

Elizabeth C. Howey

3/23/2016

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SIGNATURE

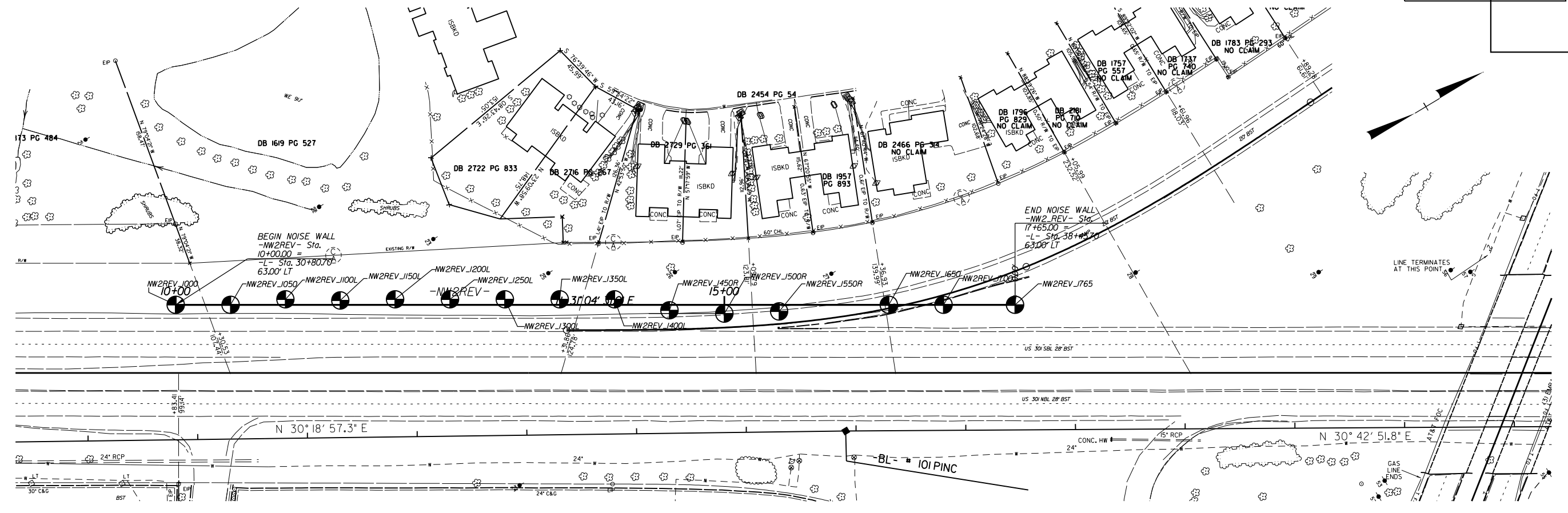
DATE

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

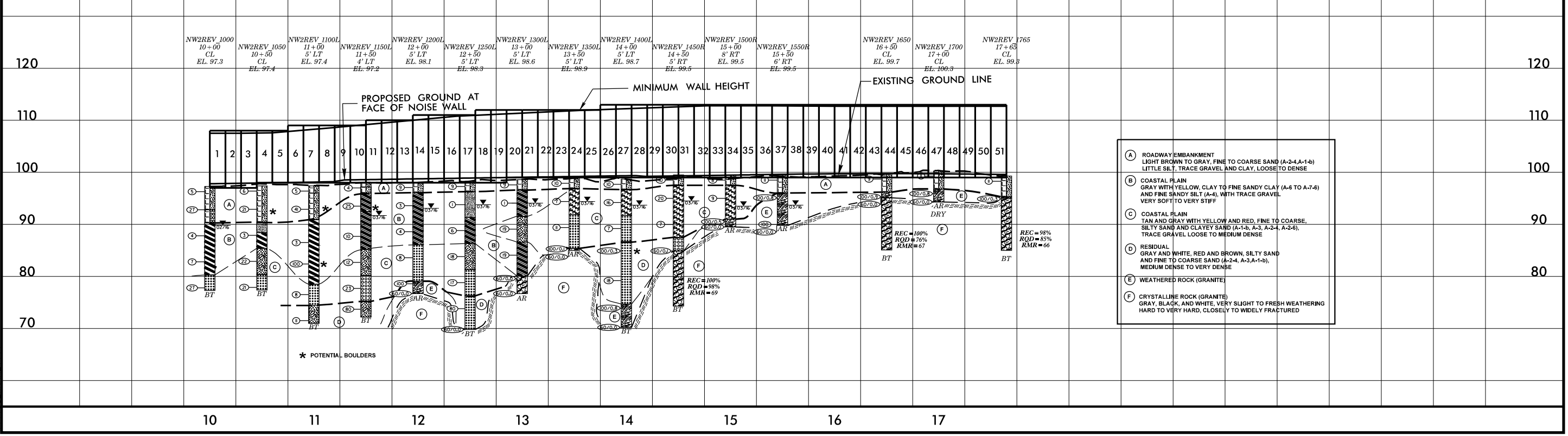
SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																													
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></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 (IN 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>																													
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>										<b>ANGULARITY OF GRAINS</b>										<b>WEATHERED ROCK (WR)</b>										<b>CRYSTALLINE ROCK (CR)</b>																													
<p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <b>ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</b></p>										<p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</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>																													
<b>MINERALOGICAL COMPOSITION</b>										<b>COMPRESSION</b>										<b>NON-CRYSTALLINE ROCK (NCR)</b>										<b>COASTAL PLAIN SEDIMENTARY ROCK (CP)</b>																													
<p>SLIGHTLY COMPRESSIBLE LL &lt; 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL &gt; 50</p>										<p>PERCENTAGE OF MATERIAL</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>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>									
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<b>GROUND WATER</b>										<b>WEATHERING</b>										<b>FRESH</b>										<b>VERY SLIGHT (V SL.)</b>																													
<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>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>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>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>																													
<b>MISCELLANEOUS SYMBOLS</b>										<b>MODERATE (MOD.)</b>										<b>MODERATELY SEVERE (MOD. SEV.)</b>										<b>SEVERE (SEV.)</b>																													
<p>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION 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 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>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. IF TESTED, WOULD YIELD SPT REFUSAL</p>																													
<b>TEXTURE OR GRAIN SIZE</b>										<b>RECOMMENDATION SYMBOLS</b>										<b>VERY HARD</b>										<b>HARD</b>																													
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<b>COLOR</b>										<b>FRACATURE SPACING</b>										<b>BEDDING</b>										<b>VERY HARD</b>																													
<p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>										<p>TERM SPACING VERY WIDE MORE THAN 10 FEET WIDE 3 TO 10 FEET MODERATELY CLOSE 1 TO 3 FEET CLOSE 0.16 TO 1 FOOT VERY CLOSE LESS THAN 0.16 FEET</p>										<p>TERM THICKNESS VERY THICKLY BEDDED 4 FEET THICKLY BEDDED 1.5 - 4 FEET THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED &lt; 0.008 FEET</p>										<p>CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.</p>																													
<b>INDURATION</b>										<b>FRACATURE SPACING</b>										<b>BEDDING</b>										<b>VERY HARD</b>																													
<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p>										<p>FRACATURE SPACING</p>										<p>BEDDING</p>										<p>FRAGILE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p>																													
<b>INDURATION</b>										<b>FRACATURE SPACING</b>										<b>BEDDING</b>										<b>VERY HARD</b>																													
<p>FRAGILE 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>																													
<b>INDURATION</b>										<b>FRACATURE SPACING</b>										<b>BEDDING</b>										<b>VERY HARD</b>																													
<p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>										<p>FRACATURE SPACING</p>										<p>BEDDING</p>										<p>FRAGILE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p>																													

**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION  
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

# PLAN AND PROFILE OF NOISE WALL 2REV



NOISE WALL 2REV DESIGN DATA						
PANEL NUMBER	1-5	6-10	11-13	14-17	18-25	26-51
TOP ELEVATION	108'	109'	110'	111'	112'	113'
PANEL LENGTH	75'	75'	45'	60'	120'	390'



- (A) ROADWAY EMBANKMENT  
LIGHT BROWN TO GRAY, FINE TO COARSE SAND (A-2-4, A-1-b)  
LITTLE SILT, TRACE GRAVEL AND CLAY, LOOSE TO DENSE
- (B) COASTAL PLAIN  
GRAY WITH YELLOW, CLAY TO FINE SANDY CLAY (A-6 TO A-7-6)  
AND FINE SANDY SILT (A-4), WITH TRACE GRAVEL  
VERY SOFT TO VERY STIFF
- (C) COASTAL PLAIN  
TAN AND GRAY WITH YELLOW AND RED, FINE TO COARSE,  
SILTY SAND AND CLAYEY SAND (A-1-b, A-3, A-2-4, A-2-6),  
TRACE GRAVEL LOOSE TO MEDIUM DENSE
- (D) RESIDUAL  
GRAY AND WHITE, RED AND BROWN, SILTY SAND  
AND FINE TO COARSE SAND (A-2-4, A-3, A-1-b),  
MEDIUM DENSE TO VERY DENSE
- (E) WEATHERED ROCK (GRANITE)
- (F) CRYSTALLINE ROCK (GRANITE)  
GRAY, BLACK, AND WHITE, VERY SLIGHT TO FRESH WEATHERING  
HARD TO VERY HARD, CLOSELY TO WIDELY FRACTURED

8/6/13  
 SYSTEMS TIME

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson									
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)								
BORING NO. NW2REV_1000		STATION 10+00		OFFSET CL		ALIGNMENT -NW2REV-									
COLLAR ELEV. 97.3 ft		TOTAL DEPTH 20.0 ft		NORTHING 805,122		EASTING 2,347,811									
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 02/26/16		COMP. DATE 02/26/16		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					
100															
	97.3	0.0	3	3	2								D	97.3 GROUND SURFACE	0.0
	93.8	3.5	3	9	18								D	ROADWAY EMBANKMENT Brown, fine SAND (A-2-4), little silt, loose	4.5
	90.3												D	Gray, fine to coarse SAND (A-1-b) with coarse gravel, some clay, medium dense	7.0
	88.8	8.5	1	2	2								M	COASTAL PLAIN Gray, yellow marbling, CLAY (A-7-6), little organics, soft to medium	8.5
	83.8	13.5	4	3	4								M		13.5
	78.8	18.5	4	9	18								W	White, fine to coarse SAND (A-3), medium dense	18.5
													W	Boring Terminated at Elevation 77.3 ft IN SAND (COASTAL PLAIN)	20.0

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson									
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)								
BORING NO. NW2REV_1050		STATION 10+50		OFFSET CL		ALIGNMENT -NW2REV-									
COLLAR ELEV. 97.4 ft		TOTAL DEPTH 20.0 ft		NORTHING 805,024		EASTING 2,347,751									
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 02/26/16		COMP. DATE 02/26/16		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					
100															
	97.4	0.0	3	4	2								D	97.4 GROUND SURFACE	0.0
	93.9	3.5	3	13	8								D	ROADWAY EMBANKMENT Light brown to brown, fine to coarse SAND (A-2-4), little silt, trace fine gravel and clay, loose to medium dense	3.5
	90.4												D	Hard drilling from 5.0' to 7.5' (likely boulder)	7.0
	88.9	8.5	WOH	1	2								D	COASTAL PLAIN Gray, fine sandy SILT (A-4), very soft	8.5
	85.4												D	Gray, CLAY (A-7-6), yellow marbling, soft	12.0
	83.9	13.5	8	12	10								D	Gray, fine SAND (A-2-4), medium dense	13.5
	80.4	18.5	14	7	14								W	Red and brown, fine to coarse SAND (A-3), medium dense	18.5
	77.4												W	Boring Terminated at Elevation 77.4 ft IN SAND (COASTAL PLAIN)	20.0

NCDOT BORE DOUBLE U-3330 NOISE WALLS.GPJ NC\_DOT.GDT 3/16/16



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson										
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)									
BORING NO. NW2REV_1150		STATION 11+50		OFFSET CL		ALIGNMENT -NW2REV-										
COLLAR ELEV. 98.0 ft		TOTAL DEPTH 5.5 ft		NORTHING 804,981		EASTING 2,347,726										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER D. Tignor		START DATE 02/29/16		COMP. DATE 02/29/16		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						
100	98.0	0.0	1	2	2									98.0	0.0	GROUND SURFACE
														96.0	2.0	ROADWAY EMBANKMENT Brown, fine SAND (A-2-4), trace silt, little organics, loose
95	94.5	3.5	2	10	15									92.5	5.5	Yellow and brown, CLAY (A-6) with sand, little gravel, very stiff Hard drilling from 5.0' to 5.5' (likely boulder) Boring terminated due to boulder at 5.5' Boring Terminated BY AUGER REFUSAL at Elevation 92.5 ft IN CLAY (ROADWAY EMBANKMENT)

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson										
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)									
BORING NO. NW2REV_1150L		STATION 11+50		OFFSET 4 ft LT		ALIGNMENT -NW2REV-										
COLLAR ELEV. 97.2 ft		TOTAL DEPTH 25.0 ft		NORTHING 804,598		EASTING 2,347,489										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER D. Tignor		START DATE 02/29/16		COMP. DATE 02/29/16		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						
100														97.2	0.0	GROUND SURFACE
																See boring NW2REV_1150 for soil description from 0'-8.5'
														91.7	5.5	COASTAL PLAIN Gray, CLAY (A-6), with fine sand, stiff
														85.2	12.0	Gray, fine SAND (A-2-4), little silt, trace organics, medium dense
														80.2	17.0	Light brown, gravelly fine to coarse SAND (A-1-b), medium dense
														75.2	22.0	RESIDUAL Gray, silty SAND (A-2-4), little rock fragments, very dense
														72.2	25.0	Boring Terminated at Elevation 72.2 ft IN SAND (RESIDUAL)
Notes 1) Boring offset from NW2REV_1150 approximately 4 feet west																

NCDOT BORE DOUBLE U-3330 NOISE WALLS.GPJ NC\_DOT.GDT 3/16/16

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson										
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)									
BORING NO. NW2REV_1200L		STATION 12+00		OFFSET 5 ft LT		ALIGNMENT -NW2REV-										
COLLAR ELEV. 98.1 ft		TOTAL DEPTH 21.4 ft		NORTHING 804,938		EASTING 2,347,700										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER D. Tignor		START DATE 02/29/16		COMP. DATE 02/29/16		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						
100	98.1	0.0	1	5	4									98.1	0.0	GROUND SURFACE
													D	96.1	2.9	ROADWAY EMBANKMENT Brown, fine to coarse SAND (A-2-4), trace silt and fine gravel, loose
95	94.6	3.5	1	2	1								D			COASTAL PLAIN Gray with light brown marbling, CLAY (A-6), trace fine sand, soft
90	89.6	8.5	WOH	2	2								M			
85	84.6	13.5	3	4	4								W	86.1	12.0	Gray, red, and brown, fine to coarse SAND (A-3), trace silt, loose to medium dense
80	79.6	18.5	15	59	52									79.1	19.0	WEATHERED ROCK Gray, GRANITE
	76.7	21.4	60/0.0											76.7	21.4	Hard drilling from 19.5' to 21.4' Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 76.7 ft ON CRYSTALLINE ROCK (GRANITE)
																Auger refusal at 21.4'

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson										
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)									
BORING NO. NW2REV_1250L		STATION 12+50		OFFSET 5 ft LT		ALIGNMENT -NW2REV-										
COLLAR ELEV. 98.3 ft		TOTAL DEPTH 28.5 ft		NORTHING 804,895		EASTING 2,347,674										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER D. Tignor		START DATE 02/29/16		COMP. DATE 02/29/16		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						
100	98.3	0.0	2	6	3									98.3	0.0	GROUND SURFACE
													D	96.3	2.0	ROADWAY EMBANKMENT Dark brown, fine to coarse SAND (A-2-4), little fine to coarse gravel, loose
95	94.8	3.5	WOH	WOH	1								M			COASTAL PLAIN Dark gray, SILT (A-4), little fine sand, trace organics, very soft
90	89.8	8.5	1	2	4								D	91.3	7.0	Gray, sandy CLAY (A-6), medium stiff
85	84.8	13.5	3	6	12								W	86.3	12.0	Light brown, fine to coarse SAND (A-2-4), trace silt, medium dense
80	79.8	18.5	5	8	9								W	81.3	17.0	Light brown, fine to coarse SAND (A-3), trace gravel, medium dense
													W	76.3	22.0	RESIDUAL Red and brown, fine to coarse SAND (A-3), very dense
75	74.8	23.5	17	36	44											
70	69.8	28.5	60/0.0													Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 69.8 ft ON CRYSTALLINE ROCK (GRANITE)

NCDOT BORE DOUBLE U-3330 NOISE WALLS.GPJ NC\_DOT.GDT 3/16/16

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson										
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)									
BORING NO. NW2REV_1300L		STATION 13+00		OFFSET 5 ft LT		ALIGNMENT -NW2REV-										
COLLAR ELEV. 98.6 ft		TOTAL DEPTH 21.9 ft		NORTHING 805,122		EASTING 2,347,811										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER D. Tignor		START DATE 02/29/16		COMP. DATE 02/29/16		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						
100	98.6	0.0	2	4	5									98.6	GROUND SURFACE	0.0
												D	ROADWAY EMBANKMENT			
95	95.1	3.5	3	1	WOH								Light brown, fine to coarse SAND (A-2-4), trace fine gravel and silt, medium dense	2.0		
												D	COASTAL PLAIN			
													Yellow and light brown, sandy CLAY (A-6), very soft	7.0		
90	90.1	8.5	4	8	11								Light yellow and brown, fine to coarse SAND (A-2-4), little silt, trace gravel, medium dense	7.0		
												D				
85	85.1	13.5	7	8	11								Gray, CLAY (A-6), little fine sand, very stiff	12.0		
80	80.1	18.5	34	60/0.0									CRYSTALLINE ROCK	19.0		
													Gray, CRYSTALLINE ROCK (GRANITE)	21.9		
	76.7	21.9	60/0.0										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 76.7 ft IN CRYSTALLINE ROCK (GRANITE)			
													Auger refusal at 21.9'			

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson										
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)									
BORING NO. NW2REV_1350L		STATION 13+50		OFFSET 5 ft LT		ALIGNMENT -NW2REV-										
COLLAR ELEV. 98.9 ft		TOTAL DEPTH 13.9 ft		NORTHING 804,810		EASTING 2,347,622										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER D. Tignor		START DATE 02/29/16		COMP. DATE 02/29/16		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						
100	98.9	0.0	2	5	5									98.9	GROUND SURFACE	0.0
												D	ROADWAY EMBANKMENT			
95	95.4	3.5	1	3	4								Light brown, fine to coarse SAND (A-2-4), little silt, trace fine gravel, medium dense	2.0		
												D	COASTAL PLAIN			
													Light brown, clayey fine SAND (A-2-6), loose	7.0		
90	90.4	8.5	5	6	5								Light brown, red and brown, fine to coarse SAND (A-3), trace gravel, medium dense to very dense	7.0		
85	85.4	13.5	100/0.1	60/0.0									CRYSTALLINE ROCK	13.5		
	85.0	13.9	100/0.1	60/0.0									Gray, CRYSTALLINE ROCK (GRANITE)	13.9		
													Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 85.0 ft IN CRYSTALLINE ROCK (GRANITE)			
													Auger refusal at 13.9'			

NCDOT BORE DOUBLE U-3330 NOISE WALLS.GPJ NC\_DOT.GDT 3/16/16



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson										
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)									
BORING NO. NW2REV_1400L		STATION 14+00		OFFSET 5 ft LT		ALIGNMENT -NW2REV-										
COLLAR ELEV. 98.7 ft		TOTAL DEPTH 28.5 ft		NORTHING 804,767		EASTING 2,347,597										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 02/29/16		COMP. DATE 02/29/16		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			ELEV. (ft)	DEPTH (ft)		
100														98.7	0.0	GROUND SURFACE
	98.7	0.0	3	5	5	10							D	96.7	2.0	ROADWAY EMBANKMENT Brown, fine to coarse SAND (A-2-4), trace fine gravel, loose
95	95.2	3.5	5	5	11	16							D	91.7	7.0	COASTAL PLAIN Light brown, clayey SAND (A-2-6), trace gravel, medium dense
90	90.2	8.5	3	4	3	7							M			Light brown, fine SAND (A-3), loose
85	85.2	13.5	100/0.3										D	86.7	12.0	RESIDUAL Light brown, fine to coarse SAND (A-3), very dense
80	80.2	18.5	5	8	10	18							D			
75	75.2	23.5	12	36	64/0.3								D	74.7	24.0	WEATHERED ROCK Light gray and light brown, GRANITE
	70.2	28.5	60/0.0											70.2	28.5	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 70.2 ft ON CRYSTALLINE ROCK (GRANITE)

NCDOT BORE DOUBLE U-3330 NOISE WALLS.GPJ NC\_DOT.GDT 3/16/16



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson									
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)								
BORING NO. NW2REV_1500R		STATION 15+00		OFFSET 8 ft RT		ALIGNMENT -NW2REV-									
COLLAR ELEV. 99.5 ft		TOTAL DEPTH 10.0 ft		NORTHING 804,893		EASTING 2,347,678									
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 03/01/16		COMP. DATE 03/01/16		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					
100	99.5	0.0	4	3	5									GROUND SURFACE	0.0
	96.0	3.5	2	3	6									ROADWAY EMBANKMENT Brown, coarse to fine SAND (A-2-4), trace silt, trace organics (grass and roots), loose	2.0
95	91.0	8.5												COASTAL PLAIN Reddish-brown, clayey SAND, (A-2-6), loose	
	89.5	10.0												WEATHERED ROCK Dark brown, GRANITE	8.5
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 89.5 ft ON CRYSTALLINE ROCK (GRANITE)	10.0
														Auger refusal at 10.0'	

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson									
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)								
BORING NO. NW2REV_1550R		STATION 15+50		OFFSET 6 ft RT		ALIGNMENT -NW2REV-									
COLLAR ELEV. 99.5 ft		TOTAL DEPTH 9.7 ft		NORTHING 804,935		EASTING 2,347,705									
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 03/01/16		COMP. DATE 03/01/16		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					
100	99.5	0.0	3	4	7									GROUND SURFACE	0.0
	96.0	3.5												ROADWAY EMBANKMENT Brown, coarse to fine SAND (A-2-4), trace silt, medium dense	3.5
95	91.0	8.5												WEATHERED ROCK Gray to white, GRANITE	
	89.8	9.7												Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 89.8 ft ON CRYSTALLINE ROCK (GRANITE)	9.7
														Auger refusal at 9.7'	

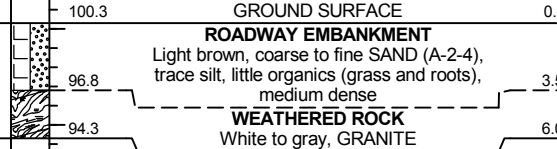
NCDOT BORE DOUBLE U-3330 NOISE WALLS.GPJ NC\_DOT.GDT 3/16/16



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 36591.1.1		TIP U-3330		COUNTY NASH		GEOLOGIST B. Thompson									
SITE DESCRIPTION US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)							GROUND WTR (ft)								
BORING NO. NW2REV_1700		STATION 17+00		OFFSET CL		ALIGNMENT -NW2REV-									
COLLAR ELEV. 100.3 ft		TOTAL DEPTH 6.0 ft		NORTHING 805,066		EASTING 2,347,777									
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 73% 02/15/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER D. Tignor		START DATE 03/01/16		COMP. DATE 03/01/16		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			ELEV. (ft)	DEPTH (ft)	
105															
100	100.3	0.0	2	4	7									100.3	0.0
	96.8	3.5	50	50/0.3										96.8	3.5
95	94.3	6.0	60/0.0											94.3	6.0



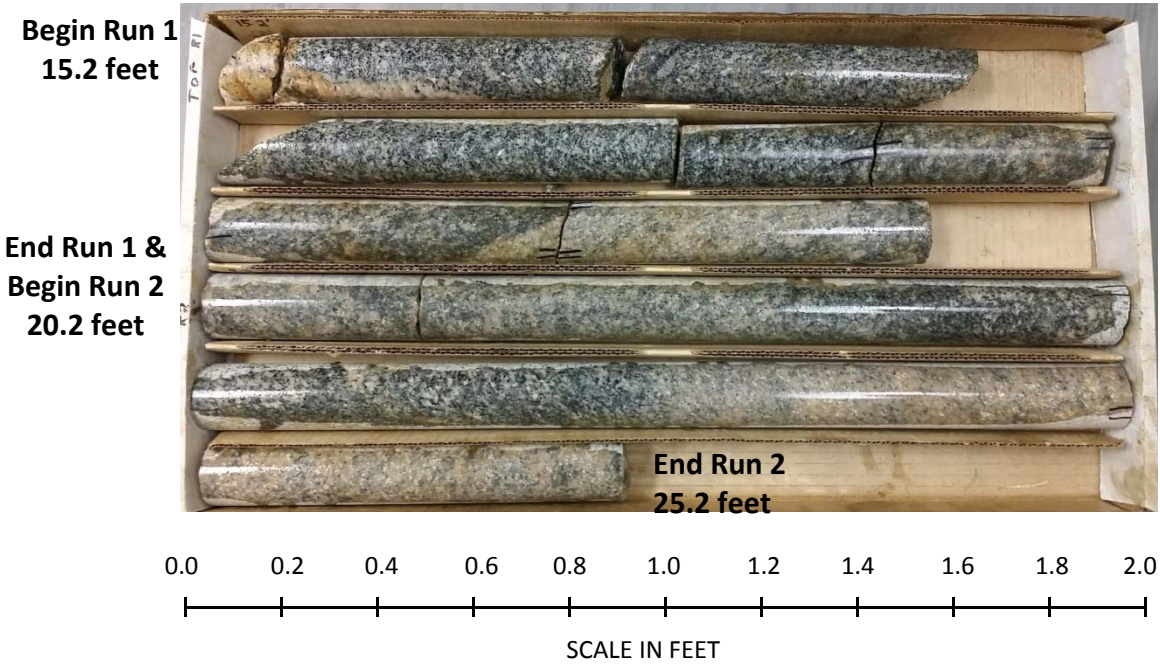
NCDOT BORE DOUBLE U-3330 NOISE WALLS.GPJ NC\_DOT.GDT 3/16/16







**CORE PHOTOGRAPHS: NW2REV\_1450R, NW2REV\_1650, and NW2REV\_1765: Station 14+50 to 17+65**

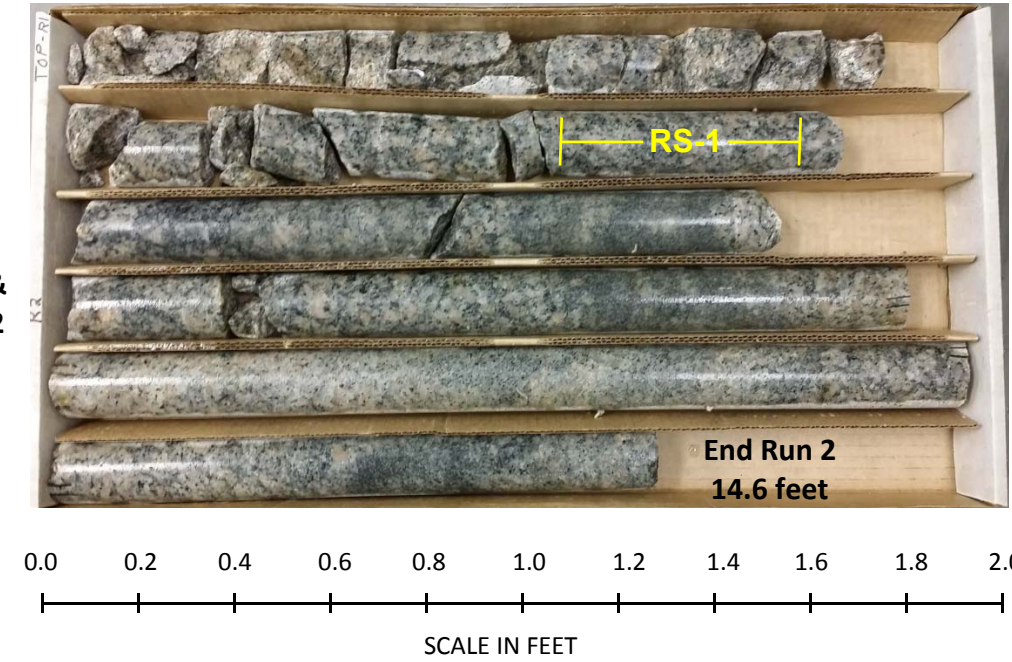


**BORING NW2REV\_1450R**  
Station 14+50, 5 RT  
Run 1: 15.2-20.2 feet  
100% REC, 96% RQD

Run 2: 20.2-25.2 feet  
100% REC, 100% RQD

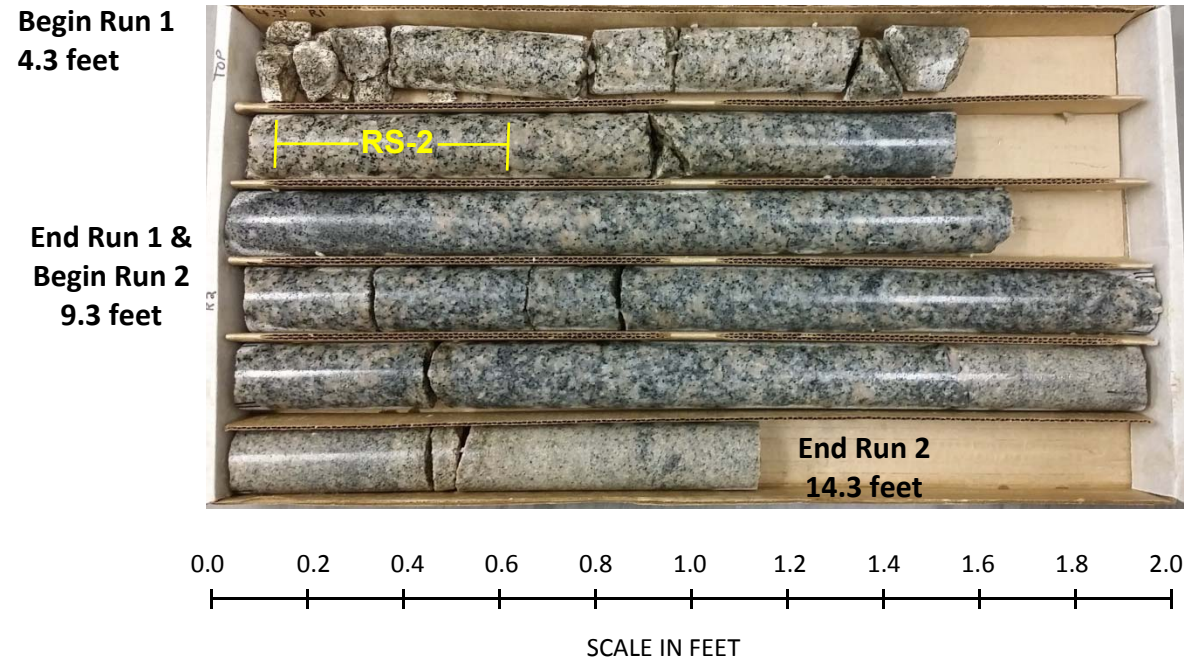
Begin Run 1  
4.6 feet

End Run 1 &  
Begin Run 2  
9.6 feet



**BORING NW2REV\_1650**  
Station 16+50  
Run 1: 4.6-9.6 feet  
100% REC, 52% RQD

Run 2: 9.6-14.6 feet  
100% REC, 100% RQD



**BORING NW2REV\_1765**  
Station 17+65  
Run 1: 4.3-9.3 feet  
96% REC, 80% RQD

Run 2: 9.3-14.3 feet  
100% REC, 90% RQD

## LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

PROJECT NO.:

TIP NO.: U-3330

COUNTY: Nash

DESCRIPTION: Noise Wall 2 - US 301 Bypass from SR 1836 (May Dr.) to NC 43-48 (Benvenue Rd.)

Sample #	Boring #	Alignment	Station	Offset	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD	Length (in)	Diameter (in)	Unit Weight (pcf)	Unconfined Compressive Strength (psi)	RMR
RS-1	NW2REV_1650	-NW2REV-	16+50	CL	7.8-8.2	Granite	PPmg	52%	4.05	1.78	163.9	16,080	67
RS-2	NW2REV_1765	-NW2REV-	17+65	CL	6.1-6.5	Granite	PPmg	80%	3.75	1.78	164.9	11,490	66