SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

## STATE OF NORTH CAROLINA

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

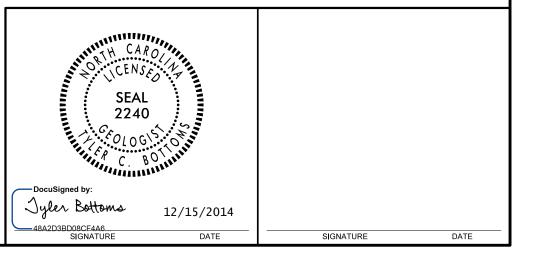
# **ROADWAY** SUBSURFACE INVESTIGATION

COUNTY WILSON

PROJECT DESCRIPTION REPLACE BRIDGE NO. 109 ON SR 1002 OVER TOWN CREEK

**INVENTORY** 

 $\sim$ 



STATE N.C.

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#### **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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATIO GEOTECHNICL ENGINEERING UNIT AT 1991 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOLE 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 INVESTIGATIONS ARE AS RECORDED AT YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INVESTIGATION AND AS ANY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INVESTIGATION AND AS ANY 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 CALIDANE 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 WADE, NOR THE INTERPRETATIONS MADE, OR OPNION 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 INVESTIGATION AS HE DEEMS NECESSARY TO SATISTY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONS TO DE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONS TO BE INCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

- ES: 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 CLAINS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

J.K. CRENSHAW

R.E. SMITH

C.E. CONGLETON

INVESTIGATED BY \_\_T.C. BOTTOMS

DRAWN BY \_\_\_\_. TURNER

CHECKED BY \_\_\_\_\_\_. D.N. ARGENBRIGHT

SUBMITTED BY \_\_\_\_\_\_.

DATE DECEMBER 2014

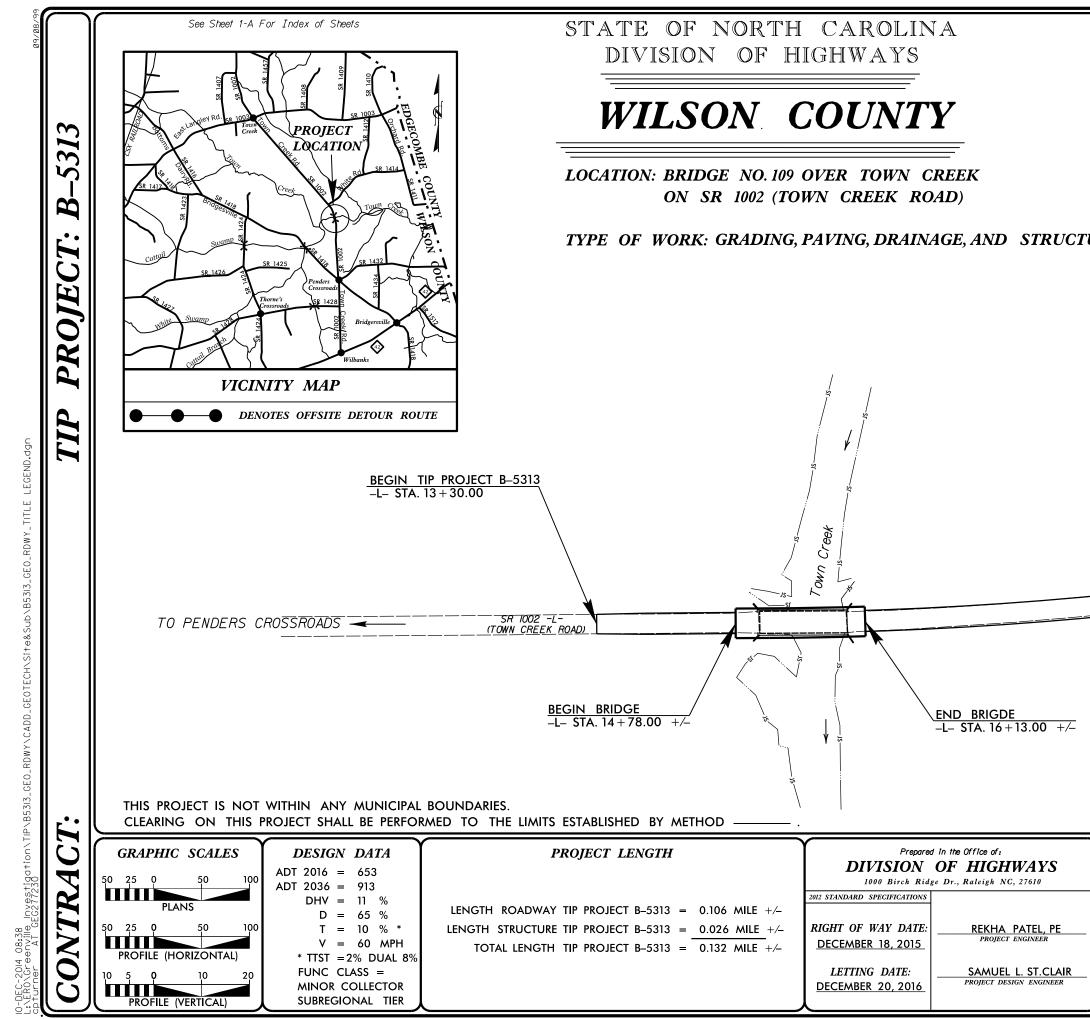
# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION
SOLL 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, ASTH DISB6). SOLL CLASSIFICATION IS BASED ON THE AASHTD SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MONISTURE, AASHTD CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNFORMLY 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	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTI ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0. BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK REPRESENTED BY A ZONE OF WEATHERED ROCK.
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	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED,	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT ROCK (WR) 100 BLOWS PER FOOT IF TESTED.
GENERAL         GRANULAR MATERIALS         SILT-CLAY MATERIALS         ORGANIC MATERIALS           CLASS.         (≤ 35%, PASSING *200)         (> 35%, PASSING *200)         (> 35%, PASSING *200)         ()	MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS OUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	CRYSTALLINE
CROUP         A-1         A-3         A-2         A-4         A-5         A-6         A-7         A-1, A-2         A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) GNEISS, GABBRO, SCHIST, ETC.
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-75 A-3 A-6, A-7		POCK (NCP)
SYMBOL COCCOUNTS CONTRACTOR	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT
2 PASSING 10 50 MX GRANULAR SILT-	HIGHLY COMPRESSIBLE LL > 50 PERCENTAGE OF MATERIAL	SEDIMENTARY ROCK SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDS (CP) SHELL BEDS, ETC.
*40 30 MX 50 MX 51 MN SOILS CLAY PEAT	GRANULAR SILT - CLAY	WEATHERING
• 280         15 MX         25 MX         18 MX         35 MX         35 MX         35 MX         36 MN         36 MN <th< td=""><td>ORGANIC MATERIAL         SOILS         SOILS         OTHER MATERIAL           TRACE OF ORGANIC MATTER         2 - 3%         3 - 5%         TRACE         1 - 10%           LITTLE ORGANIC MATTER         3 - 5%         5 - 12%         LITTLE         10 - 20%           MODERATEL Y ORGANIC         5 - 10%         12 - 20%         SOME         20 - 35%</td><td>FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY CI</td></th<>	ORGANIC MATERIAL         SOILS         SOILS         OTHER MATERIAL           TRACE OF ORGANIC MATTER         2 - 3%         3 - 5%         TRACE         1 - 10%           LITTLE ORGANIC MATTER         3 - 5%         5 - 12%         LITTLE         10 - 20%           MODERATEL Y ORGANIC         5 - 10%         12 - 20%         SOME         20 - 35%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY CI
LL — — — — — 44 MX 41 MN 44 MX 41 MN 44 MX 41 MN 44 MX 41 NN 48 MX 41 NN PI 6 MX NP 18 MX 18 MX 11 MN 11 MN 18 MX 18 MX 11 NN 11 MN 100 MX FROMP NDFX 8 4 8 4 4 MX 8 MX 19 MX 16 MX ND MX AMDURTS OF ORGANIC	HIGHLY ORGANIC 3-10% 12 - 20% SUME 20 - 30% HIGHLY ORGANIC > 10% 20% HIGHLY 35% AND ABOVE	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER H OF A CRYSTALLINE NATURE. SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO RO
USUAL TYPES STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER ORGANIC SUILS OF MAJOR GRAVEL, AND SAND CRAVE SOLITS SOLITS	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING ✓ STATIC WATER LEVEL AFTER <u>24</u> HOURS	(SLI.) I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONA CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMEF
MATERIALS SANU GEN. RATING EVICELENT TO COOD CALE TO DOOP FAIR TO POOP LINGUITABLE	Yes         State when center a rear center         Total           Yes         Perched water, saturated zone, or water bearing strata	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECT: (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLA DULL SOUND UNDER HAMMER BLOWS AND SHOW SIGNIFICANT LOSS OF STRENGTH
AS SUBGRADE PI OF A-7-5 SUBGRAUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGRAUP IS > LL - 30	- O-MA- SPRING OR SEEP	WITH FRESH ROCK.
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL F SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE L
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY CONSISTENCY (N-VALUE) COMPRESSIVE STRENGTH (N-VALUE) (TONS/F1 <sup>2</sup> )	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION WITH SOIL DESCRIPTION OF ROCK STRUCTURES	(MOD, SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND ' IF TESTED, WOULD YIELD SPT REFUSAL SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND E
GENERALLY         VERY LOOSE         < 4           GRANULAR         LOOSE         4 TO 10           WEDIUM DENSE         10 TO 30         N/A	SOIL SYMBOL	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS A TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YELD SPT IN VALUES > 100 BPF
MATERIAL (NDN-COHESIVE)         DENSE VERY DENSE         30 TO 50 > 50         N/H           VERY SOFT         < 2	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER THAN ROADWAY EMBANKMENT CORE BORING SOUNDING ROD	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS AR SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF (V SEV.) REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT
GENERALLY         SOFT         2 TO 4         0.25 TO 0.5           SILT-CLAY         MEDIUM STIFF         4 TO 8         0.5 TO 1.0           MATERIAL         STIFF         8 TO 15         1 TO 2	TIEST BORING WO MONITORING WELL + TEST BORING WITH CORE	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YELD SPT N V</u> COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS
(COHESIVE)         VERY STIFF         15 TO 30         2 TO 4           HARD         > 30         > 4	TTTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER SPT N-VALUE	ALSO AN EXAMPLE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMEN
U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNCLASSIFIED EXCAVATION - CONTRACTOR - CONTR	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BI TO DETACH HAND SPECIMEN.
BOULDER COBBLE GRAVEL SAND SAND (SL.) CLAY (BLDR.) (COB.) (GR.) (GR.) (GR.) (GSE, SD.) (F SD.) (SL.) (CL.)	ABBRE VIATIONS AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DE HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DI BY MODERATE BLOWS.
GRAIN         MM         305         75         2.0         0.25         0.05         0.005           SIZE         IN.         12         3         3         SOIL         MOISTURE         - CORRELATION OF TERMS	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED CL CLAY MOD MODERATELY $\gamma$ - UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE O HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD
SOIL MOISTURE SCALE FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	$\begin{array}{ccc} \mbox{CPT} & -\mbox{CONE} \mbox{PRETATION TEST} & \mbox{NP} & -\mbox{NON PLASTIC} & \mbox{$\mathcal{T}_{d}$}^{-} \mbox{DRY UNIT WEIGHT} \\ \mbox{CSE.} & -\mbox{Coarse} & \mbox{ORGANIC} \\ \mbox{DMT} & -\mbox{DILATOMETER TEST} & \mbox{PMT} & -\mbox{PRESSURMETER TEST} & \mbox{SAMPLE ABBREVIATIONS} \end{array}$	POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POIN
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT,) FROM BELOW THE GROUND WATER TABLE	OPT - DYNAMIC PENETRATION TEST         SAP, - SAPROLITIC         S - BULK           e - VOID RATIO         SD SAND, SANDY         SS - SPLIT SPOON           F - FINE         SL SILT, SILTY         ST - SHELBY TUBE	PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCH
LL LIOUID LIMIT PLASTIC	FOSS FOSSLIFEROUS SLI- SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL FRAGS FRAGMENTS // - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FINCEMALL.
	HI HIGHLY V - VERY RATIO	TERM SPACING TERM
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	EOUIPMENT USED ON SUBJECT PROJECT           DRILL UNITS:         ADVANCING TOOLS:           HAMMER TYPE:	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED WIDE 3 TO 10 FEET THICKLY BEDDED 1. MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.1
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	CME-45C CLAY BITS AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.0 VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.00 THINLY LAMINATED <
PLASTICITY	В ноцгом AUGERS Пн	INDURATION
PLASTICITY INDEX (PI)         DRY STRENGTH           NON PLASTIC         Ø-5         VERY LOW           SLIGHTLY PLASTIC         6-15         SLIGHT	CME-550 HARD FACED FINGER BITS -N	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HE RUBBING WITH FINCER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	Image: Verse Shere Test     Image: Casing imag	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH ST BREAKS EASILY WHEN HIT WITH HAMMER.
	TRICONE	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL DIFFICULT TO BREAK WITH HAMMER.
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.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE SAMPLE BREAKS ACROSS GRAINS.



ED. AN INFERRED	TERMS AND DEFINITIONS
D SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
I FOOT PER 60 IS OFTEN	ADUIFER - A WATER BEARING FORMATION OR STRATA.
	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
T N VALUES >	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
OCK THAT NCLUDES GRANITE,	A <u>PTESIAN</u> - 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.
AL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED. C.	$\underline{\text{COLLUVIUM}}$ - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
MAY NOT YIELD STONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
RINGS UNDER	$\underline{DIKE}$ - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
COATINGS IF OPEN.	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
DCK UP TO AL FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
IS. IN AY. ROCK HAS	<u>FLOAT</u> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
H AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL LOSS OF STRENGTH	F <u>ORMATION (FM.)</u> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
EVIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
ARE KAOLINIZED	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
RE DISCERNIBLE DF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
T ONLY MINOR <i>VALUES &lt; 100 BPF</i>	OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.)SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
IN SMALL AND S. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - 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. <u>SAPROLITE (SAP.)</u> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
NS REQUIRES BLOWS REQUIRED	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
DETACHED OR PICK POINT.	OR SLIP PLANE. <u>STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT)</u> - NUMBER OF BLOWS (N OR BPF)OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF I FOOT INTO SOIL
BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
N FRAGMENTS NT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
. PIECES 1 INCH HED READILY BY	<u>STRATA ROCK QUALITY DESIGNATION (SRQD)</u> - 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.
	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
	BENCH MARK:
THICKNESS 4 FEET	ELEVATION: FEET
1.5 - 4 FEET .16 - 1.5 FEET	
03 - 0.16 FEET	NOTES:
08 - 0.03 FEET < 0.008 FEET	
EAT, PRESSURE, ETC.	
• TEEL PROBE:	
PROBE;	
E;	
	DATE: 8-15-14



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### STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PAT MCCRORY GOVERNOR

ANTHONY J. TATA SECRETARY

December 10, 2014

STATE PROJECT:	46027.1.1 (B-5313)
F.A. PROJECT:	BRZ-1002(40)
COUNTY:	Wilson
DESCRIPTION:	Bridge No. 109 on SR 1002 (Town Creek Rd.) over Town Creek

SUBJECT:

Geotechnical Inventory Report

#### **Project Description**

This project begins approximately 3 miles north of the NC 42 and Town Creek Rd. intersection in Wilson County, and extends north for 695 feet across Town Creek. Proposed construction consists of widening SR 1002 to accommodate the bridge replacement over Town Creek. This geotechnical investigation was confined to the areas of proposed construction.

Fieldwork was conducted during December of 2014. Hand auger borings were completed at various offsets along the project corridor. Representative soil samples were collected for visual classification in the field.

The following alignment was investigated. Subsurface profile and cross sections of this alignment are not included in this report.

> Line Station(±) 13+30 to 20+25 -L-

#### **Areas of Special Geotechnical Interest**

1) The entire project was found to exhibit a high water table, seasonal high ground water or the potential for ground water related construction problems:

MAILING ADDRESS: NC DEPARTMENT OF TRANSPORTATION GEOTECHNICAL ENGINEERING UNIT 1589 MAIL SERVICE CENTER RALEIGH NC 27699-1589

TELEPHONE: 919-707-6850 FAX: 919-250-4237 WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION: CENTURY CENTER COMPLEX ENTRANCE B-2 1020 BIRCH RIDGE DRIVE RALEIGH NC

2) The following sections contain cohesive soils which have the potential to cause embankment/subgrade and or slope stability problems during construction.

Line

-L--L-

3) The entire project was found to exhibit seasonal high ground water.

#### **Physiography and Geology**

This project corridor is located within the Coastal Plain Physiographic Province. Topography along the project is nearly flat to gently sloping. Natural ground elevations ranged from  $67\pm$  feet in the bed of Town Creek to 78± feet above sea level on the existing SR 1002 roadway embankment.

Surficial soils in this area are classified as alluvial sediments.

### **Ground Water**

Ground water data was collected in December of 2014, during a time of normal precipitation. Ground water elevations ranged from  $73\pm$  to  $74\pm$  feet above sea level.

### Soils

Soils encountered within this project area have been divided into two categories: roadway embankment and alluvial.

Roadway embankment soils were found along the existing SR 1002 corridor. Where encountered it was composed of  $2\pm$  to  $6\pm$  feet of loose sand (A-2-4).

Alluvial soils are composed of  $2\pm$  to  $6\pm$  feet of loose sand (A-2-4, A-3) and soft silty clay (A-7-6).

Sheet 4

### $Station(\pm)$

13+30 to 15+00 16+25 to 17+00

LINE	PROJECT: B-5	313 DATE 12/1/2014				
	COUNTY: WIL					
L		NOTES BY: J.K. CRENSHAW				
L			EST.			
STATION	DEPTH SAMP	DESCRIPTION	MOI.	CLASS		
19+50	0.0-1.5	LOOSE BROWN SAND (RE)	М	A-2-4		
13' LT	1.5-4.5	LOOSE TAN AND GRAY SAND (ALLUVIAL)	M-S	A-2-4		
	4.5-6.0	LOOSE TAN AND GRAY SAND (ALLUVIAL)	S	A-3		
24 HR: 2.7'						
18+50	0.0-3.0	LOOSE TAN SAND (ALLUVIAL)	М	A-2-4		
23' RT	3.0-6.0	LOOSE TAN AND GRAY SAND (ALLUVIAL)	S	A-3		
24 HR: 3.0'						
17+50	0.0-2.0	LOOSE BROWN SAND (RE)	М	A-2-4		
19' LT	2.0-6.0	LOOSE BROWN AND TAN SAND (ALLUVIAL)	M-S	A-3		
24 HR: 2.7'						
16+50	0.0-4.5	LOOSE BROWN AND TAN SAND (RE)	M-S	A-2-4		
26' RT	4.5-6.0	SOFT GRAY SILTY CLAY (ALLUVIAL)	W	A-7-6		
24 HR: 3.5'						
14+50	0.0-6.0	LOOSE BROWN SAND (RE)	M-S	A-2-4		
23' LT						
24 HR: 3.6'						
13+50	0.0-2.0	LOOSE BROWN AND TAN SAND (RE)	М	A-2-4		
18' RT	2.0-4.5	LOOSE BROWN SAND (ALLUVIAL)	M-S	A-3		
	4.5-6.0	SOFT GRAY SILTY CLAY (ALLUVIAL)	W	A-7-6		
24 HR: 3.1'						
-						

Sheet 5