NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

SHEET	DESCRIPTION				
1	TITLE SHEET				
2	<i>LEGEND</i>				
<i>3</i>	INVENTORY REPORT				
4	BORE LOG				

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 38367.1.1 (B-4440) F.A. PROJ. BRZ-1349(1)
COUNTY BRUNSWICK
SITE DESCRIPTION BRIDGE NO. 163 ON SR 1349
OVER MULBERRY SWAMP

INVENTORY

STATE STATE PROJECT REFERENCE NO. SHEET STOTALS.

N.C. B-4440 1 4

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 BORNG LOGS, ROCK CORES, AND SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN PALEICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, CEGTECHNICAL ENGINEERING UNIT AT 1919 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS. NOR THE FIELD BORNING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE, THE LABORATIONY SAMPLE DATA AND THE IN STILL INTERPLACE TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INMERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOSTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS AND VARY CONSIDERABLY WITH TAX 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 CLARARITEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MODE, NOT HE INTERPRETATIONS MODE, OR DPINON OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE EXCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE CEEMS PLEASEAST VO SATISTY HANGEL AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE HIDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL **JDG**

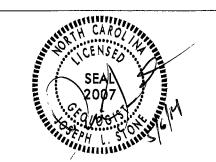
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INVESTIGATED BY J.L. STONE

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE <u>MAY</u> 2014



ONTRA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

				SOIL AND RO	CK LEGEND, TERM	IS, SYMB	OLS, AND ABB	REVIATIONS		
	SOIL DESCRIPTION	 		GRADATION				ROCK DESCRIPTION		TERMS AND DEFINITIONS
	SOLIDATED, SEMI-CONSOLIDATED, OR WEAT		WELL GRADED - INDICATES A G UNIFORM - INDICATES THAT SO	000 REPRESENTATION OF PARTICLE SIZES F IL PARTICLES ARE ALL APPROXIMATELY THE	FROM FINE TO COARSE. E SAME SIZE.(ALSO			RIAL THAT IF TESTED, WOULD YIELD SPT IICH NON-COASTAL PLAIN MATERIAL WOUL		ALLUYJUM (ALLUY,) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
	ITINUOUS FLIGHT POWER AUGER, AND YIELI TANDARD PENETRATION TEST (AASHTO T20		PODRLY GRADED)	KTURE OF UNIFORM PARTICLES OF TWO OR N				IT SPOON SAMPLER EQUAL TO OR LESS TRANSITION BETWEEN SOIL AND ROCK IS		ADUIFER - A WATER BEARING FORMATION OR STRATA.
	HTO SYSTEM. BASIC DESCRIPTIONS GENER E, AASHTO CLASSIFICATION, AND OTHER PE			ANGULARITY OF GRAINS		OF WEATHE				ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULA	ARITY, STRUCTURE, PLASTICITY, ETC. EXAM	PLE:	THE ANGULARITY OR ROUNDNES SUBANGULAR, SUBROUNDED, OR	S OF SOIL GRAINS IS DESIGNATED BY THE	TERMS: ANGULAR,	WEATHERED	SI//SI//A	DASTAL PLAIN MATERIAL THAT WOULD YI	ELD COT N. VALUES N. 100	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
	CLAY, MONST WITH INTERBEDDED FINE SAND LAVERS, HIGHLY			MINERALOGICAL COMPOSITION)NI	ROCK (WR)	BLOW!	PER FOOT IF TESTED.		ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL.
GENERAL GRANULAR MATERI	ID AND AASHTO CLASSIFI IALS SILT-CLAY MATERIALS			TZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE U		CRYSTALLINE	FINE YOUL	TO COARSE GRAIN IGNEOUS AND METAMOR	PHIC ROCK THAT	AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CLASS. (≤ 35% PASSING *		ORGANIC MATERIALS	WHENEVER THEY ARE CONSIDERE			ROCK (CR)	J. J. GNEIS	S, GABBRO, SCHIST, ETC. TO COARSE GRAIN METAMORPHIC AND NON-	·	CALCAREDUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
GROUP A-1 A-3	A-2 A-4 A-5 A-6 A-7	J,		COMPRESSIBILITY		NON-CRYSTALL ROCK (NCR)	LINE SEDIM	ENTARY ROCK THAT WOULD YEILD SPT RE		COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
000000000000000000000000000000000000000	-2-5 A-2-6 A-2-7	A-3 A-6, A-7	SLIGHTLY COMPRESSI MODERATELY COMPRES		LESS THAN 31 EQUAL TO 31-50	COASTAL PLAI		DES PHYLLITE, SLATE, SANDSTONE, ETC. AL PLAIN SEDIMENTS CEMENTED INTO ROO	CK, BUT MAY NOT YIELD	OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL
SYMBOL COCOGOGOGO			HIGHLY COMPRESSIBL		GREATER THAN 50	SEDIMENTARY (CP)		EFUSAL. ROCK TYPE INCLUDES LIMESTONE BEDS.ETC.	, SANDSTONE, CEMENTED	LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
% PASSING # 10 50 MX		GRANULAR SILT- MUCK,		PERCENTAGE OF MATERIAL GRANULAR SILT - CLAY		-	1 1 1 1 1 1 1	WEATHERING		DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
# 40 30 MX 50 MX 51 MN	5 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN	SOILS CLAY PEAT	UKGANIL MATERIAL	SOILS SOILS	OTHER MATERIAL ACE 1 - 10%	FRESH		HT, FEW JOINTS MAY SHOW SLIGHT STAIN	ING. ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
			LITTLE ORGANIC MATTER	3 - 5% 5 - 12% LJT	TLE 10 - 20%	VEDY CLICUT	HAMMER IF CRYSTALLINE.	NTS STAINED, SOME JOINTS MAY SHOW TH	IN CLAY COATINGS IF OPEN	HORIZONTAL.
וויים	IMN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 3 MX 41 MN 11 MN 10 MX 16 MX 11 MN 11 MN	LITTLE OR HIGHLY	MODERATELY ORGANIC HIGHLY ORGANIC	5 - 10% 12 - 20% SON >10% >20% HIG	ME 20 - 35% SHLY 35% AND ABOVE			CIMEN FACE SHINE BRIGHTLY. ROCK RING		DIP DIRECTION (DIP AZIMUTH) THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX 0 0 0	4 MX 8 MX 12 MX 16 MX No M	MODERATE DRGANIC		GROUND WATER		SL16HT		NTS STAINED AND DISCOLORATION EXTEND	S INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
	OR CLAYEY SILTY CLAYEY	ORGANIC	1	VEL IN BORE HOLE IMMEDIATELY AFTER (DRILLING	(SL1.)		ONTAIN CLAY. IN GRANITOID ROCKS SOME SCOLORED. CRYSTALLINE ROCKS RING UND		FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SAND BRAVE	EL AND SAND SOILS SOILS	MATTER	STATIC WA	ATER LEVEL AFTER 24 HOURS		MODERATE		OCK SHOW DISCOLORATION AND WEATHERIN		FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR DRIG:NAL POSITION AND DISLODGED FROM
GEN. RATING AS A EXCELLENT TO GO	ODD FAIR TO POOR	FAIR TO POOR UNSUITABLE	VP₩ PERCHED V	WATER, SATURATED ZONE, OR WATER BEARI	NG STRATA	(MOD.)	GRANITOID ROCKS, MOST FELI	OSPARS ARE DULL AND DISCOLORED, SOME BLOWS AND SHOWS SIGNIFICANT LOSS OF	SHOW CLAY. ROCK HAS	PARENT MATERIAL.
SUBGRADE		POUR	SPRING OR	SEEP			WITH FRESH ROCK,	BEBRS AND SHOWS SIGNIFICANT ESSS OF	STREAM AS COM ARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
	S ≤ LL - 30;PlOF A-7-6 SUBG ISISTENCY OR DENSENESS			MISCELLANEOUS SYMBOLS	<u> </u>	MODERATELY SEVERE		ISCOLDRED OR STAINED. IN GRANITOID RO DRITY SHOW KADLINIZATION. ROCK SHOWS		FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN
TOAGMOO	RANGE OF STANDARD	RANGE OF UNCONFINED	III ROADWAY EMBANKM					H A GEOLOGIST'S PICK. ROCK GIVES 'CLUI		THE FIELD.
PRIMARY SOIL TYPE CONSIS		COMPRESSIVE STRENGTH (TDNS/FT ²)	WITH SOIL DESCRI		W/ CORE	SEVERE		<u>REPUSAL</u> ISCOLORED OR STAINED. ROCK FABRIC CLE	AR AND EVIDENT BUT REDUCED	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
GENERALLY VERY LOSS			SOIL SYMBOL	auger Boring	SPT N-VALUE	(SEV.)	IN STRENGTH TO STRONG SO	IL. IN GRANITOID ROCKS ALL FELDSPARS F STRONG ROCK USUALLY REMAIN.		LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
MATERIAL MEDIUM	DENSE 10 TO 30	N/A	ARTIFICIAL FILL	AF) OTHER - CORE BORING	(REF)— SPT REFUSAL		IF TESTED, YIELDS SPT N VI			LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
(NON-COHESIVE) DENSI			THAN ROADWAY EM	BANKMENT T	<u> </u>			ISCOLORED OR STAINED. ROCK FABRIC ELI		MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GODD DRAINAGE.
VERY SI		<0.25	- INFERRED SOIL BO	UNDARY "O MONITORING WEI	LL	(V SEV.)	REMAINING. SAPROLITE IS AN	REDUCED TO SOIL STATUS, WITH ONLY FRA I EXAMPLE OF ROCK WEATHERED TO A DE	GREE SUCH THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN
GENERALLY SOFT SILT-CLAY MEDIUM		0,25 TD 0,50	INFERRED ROCK LI	NE A PIEZOMETER INSTALLATION				ROCK FABRIC REMAIN. <u>IF TESTED, YIELD</u>		INTERVENING IMPERVIOUS STRATUM.
MATERIAL STIFF	F 8 TO 15	0.5 TO 1.0 1 TO 2	***** ALLUVIAL SOIL BO		DR .			K FABRIC NOT DISCERNIBLE, OR DISCERNIE OUARTZ MAY BE PRESENT AS DIKES OR		RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY S'		2 TO 4 >4	25/025 DIP & DIP DIRECT:	ION OF INSTALLATION			ALSO AN EXAMPLE.			ROCK SEGMENTS EDUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND
TE	EXTURE OR GRAIN SIZE	1	RDCK STRUCTURES	CONE PENETROM	ETER TEST			ROCK HARDNESS		EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE
U.S. STD. SIEVE SIZE	4 10 40 60 20	0 270]	SDUNDING ROD		VERY HARD	CANNOT BE SCRATCHED BY SEVERAL HARD BLOWS OF T	KNIFE OR SHARP PICK. BREAKING OF HANI HE GEOLOGIST'S PICK.	SPECIMENS REQUIRES	PARENT ROCK.
	4.76 2.00 0.42 0.25 0.0			ABBREVIATIONS		HARD		E OR PICK ONLY WITH DIFFICULTY. HARD	HAMMER 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
BOULDER COBBLE G	GRAVEL COARSE FIN		AR - AUGER REFUSAL	HI HIGHLY	₩ MOISTURE CONTENT		TO DETACH HAND SPECIMEN.			TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
	(GR.) (CSE. SD.) (F S	SD.) (SL.) (CL.)	BT - BORING TERMINATED CL CLAY	MED MEDIUM MICA MICACEDUS	V - VERY VST - VANE SHEAR TEST	HARD	EXCAVATED BY HARD BLOW	FE OR PICK. GOUGES OR GROOVES TO 0.29 OF A GEOLOGIST'S PICK. HAND SPECIMENS		SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
GRAIN MM 305 75 SIZE IN. 12 3	2.0 0.25	0.0 5 0.00 5	CPT - CONE PENETRATION T CSE CDARSE		WEA WEATHERED	MEDĪUM	BY MODERATE BLOWS. CAN BE GROOVED OR GOUGE	D 0.05 INCHES DEEP BY FIRM PRESSURE	OF KNIFE OR PICK POINT.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) DF
	TURE - CORRELATION OF	TERMS	OMT - DILATOMETER TEST	DRG DRGANIC	7 - DRY UNIT WEIGHT	HARD	CAN BE EXCAVATED IN SMA	LL CHIPS TO PEICES I INCH MAXIMUM SIZ		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 EDUAL TO OR LESS
SOIL MOISTURE SCALE	FIELD MOISTURE GUIDE FOR	R FIELD MOISTURE DESCRIPTION	DPT - DYNAMIC PENETRATIO - VOID RATIO	ON TEST PMT - PRESSUREMETER TEST SAP SAPROLITIC		SOFT	POINT OF A GEOLOGIST'S P CAN BE GROVED OR GOUGED	ick. Readily by knife or pick. Can be exi	CAVATED IN FRAGMENTS	THAN 0.1 FOOT PER 60 BLOWS.
(ATTERBERG LIMITS)	DESCRIPTION		F - FINE FOSS FOSSILIFEROUS	SD SAND, SANDY SL SILT, SILTY				CHES IN SIZE BY MODERATE BLOWS OF 4		STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
		LIQUID; VERY WET, USUALLY LOW THE GROUND WATER TABLE	FRAC FRACTURED, FRACTUR	RES SLI SLIGHTLY		VERY	CAN BE CARVED WITH KNIFE	. CAN BE EXCAVATED READILY WITH POIN		STRATA ROCK QUALITY DESIGNATION (SROD) - 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
PLASTIC LIQUID LIMIT		0.050,4050,00,400,70	FRAGS FRAGMENTS	TCR - TRICONE REFUSAL		SOFT	OR MORE IN THICKNESS CAN FINGERNAIL.	I BE BROKEN BY FINGER PRESSURE. CAN I	BE SCRATCHED READILY BY	TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
RANGE <		D; REOUIRES DRYING TO PTIMUM MOISTURE	EQUI	IPMENT USED ON SUBJECT F	PROJECT	FF	RACTURE SPACING		DING	<u>IDPSDJL (TS.)</u> - SURFACE SDJLS USUALLY CONTAINING ORGANIC MATTER.
PL PLASTIC LIMIT			DRILL UNITS:	ADVANCING TOOLS:	HAMMER TYPE:	TERM		VEDY TUICKLY DECORED	THICKNESS > 4 FEET	BENCH MARK:
OM OPTIMUM MOISTURE	- MOIST - (M) SOLID; A	AT OR NEAR OPTIMUM MOISTURE		CLAY BITS	AUTOMATIC MANUAL	VERY WIDE	E MORE THAN 10 3 TO 10 FEET	THICKLY BEDDED	1.5 - 4 FEET	ELEVATION: FT.
SL SHRINKAGE LIMIT			MOBILE B	6' CONTINUOUS FLIGHT AUGER	CORE SIZE:	MODERATE CLOSE	LY CLOSE 1 TO 3 FEET 0.16 TO 1 FEET	THINLY BEDDED VERY THINLY BEDDED	0.16 - 1.5 FEET 0.03 - 0.16 FEET	
		ADDITIONAL WATER TO PPTIMUM MOISTURE	BK-5i	8' HOLLOW AUGERS	l <u> </u>	VERY CLD			0.008 - 0.03 FEET < 0.008 FEET	NOTES:
	PLASTICITY		4 🗔	HARD FACED FINGER BITS	B			INDURATION		
	PLASTICITY INDEX (PI)	DRY STRENGTH	CME-45B	TUNGCARBIDE INSERTS		FOR SEDIMENT	ARY ROCKS, INDURATION IS TH	E HARDENING OF THE MATERIAL BY CEME	NTING, HEAT, PRESSURE, ETC.	
NONPLASTIC	0-5	VERY LOW	CME-750	CASING W/ ADVANCER	H_ <u>-</u>	FR	IABLE	RUBBING WITH FINGER FREES NUMEROUS GENTLE BLOW BY HAMMER DISINTEGRATE		
LOW PLASTICITY MED. PLASTICITY	6-15 16-25	SLIGHT MEDIUM	PORTABLE HOIST	TRICONE STEEL TEETH	HAND TOOLS:			GRAINS CAN BE SEPARATED FROM SAMPI		
HIGH PLASTICITY	26 DR MDRE	HIGH	FORTHOUGH HOUSE	TRICONE TUNG,-CARB.	POST HOLE DIGGER X HAND AUGER	MOI	DERATELY INDURATED	BREAKS EASILY WHEN HIT WITH HAMMER		
	COLOR		┥╚┚───── │	CORE BIT	SOUNDING ROD	IND	DURATED	GRAINS ARE DIFFICULT TO SEPARATE W	ITH STEEL PROBE;	
1	R OR COLOR COMBINATIONS (TAN, RED, RK, STREAKED, ETC. ARE USED TO DESC				VANE SHEAR TEST	Fut	TREMELY INDURATED	DIFFICULT TO BREAK WITH HAMMER. SHARP HAMMER BLOWS REQUIRED TO BR	EAK SAMPLE:	
FIODIFICIO SUCH HS CIUMI, DHR	SAN STREETINED, ETGINNE USED TO DESC	SHIPE THE CHARACTE				EXI	INCINCET INDONATED	SAMPLE BREAKS ACROSS GRAINS.		

Ä PROJE VICINITY MAP (NOT TO SCALE)

See Sheet 1-A For Index of Sheets See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

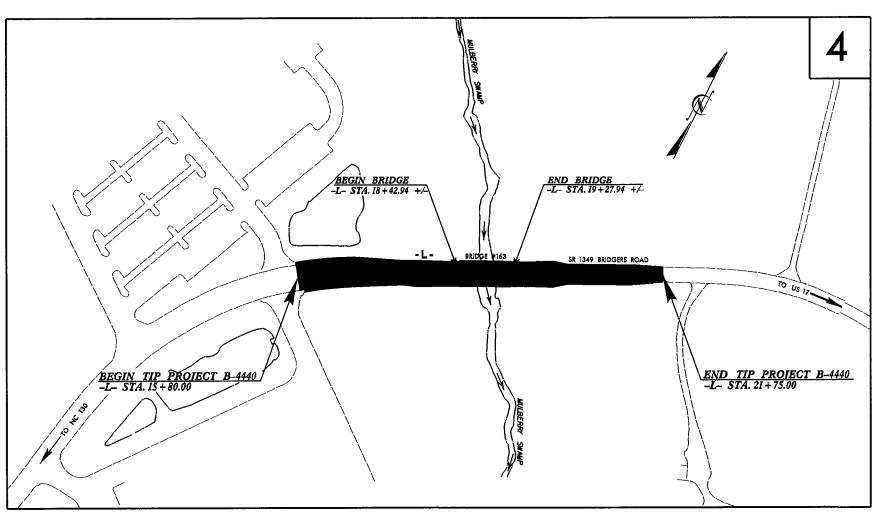
BRUNSWICK COUNTY

LOCATION: REPLACE BRIDGE NO. 163 OVER MULBERRY SWAMP ON SR 1349

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

STATE	E STATE PROJECT REFERENCE NO.			SHEE	
N.C.		3-4440	2A	4	
STATE PR	OJ. NO.	P. A. PROL NO.	P.E.		
3836	7.1.1	BRZ-1349(1)			
	7 . 1 . 1	DIG-1047(1)			
		<u> </u>			





THIS PROJECT IS WITHIN THE SHALLOTTE MUNICIPAL BOUNDARIES. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS

GRAPHIC SCALES

PROFILE (HORIZONTAL)

DESIGN DATA

ADT 2016 = 3,792 ADT 2036 = 6,432

K = 11 % D = 55 %

T = 7 % *V = 40 MPH*(TTST 1% + DUAL 6%)

FUNC CLASS = RURAL SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4440 = 0.097 MI

LENGTH STRUCTURE TIP PROJECT B-4440 = 0.016 MI

TOTAL LENGTH OF TIP PROJECT B-4440 = 0.113 MI

Prepared in the Office of: **DIVISION OF HIGHWAYS**

1000 Birch Ridge Dr., Raleigh, NC 27610 2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 20, 2015

LETTING DATE: FEBRUARY 16, 2016 GARY LOVERING, PE

SUSAN C. LANCASTER, PE

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER





STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

May 6, 2014

STATE PROJECT:

38367.1.1 (B-4440)

F.A. PROJECT:

BRZ-1349 (1)

COUNTY:

Brunswick

DESCRIPTION:

Bridge No. 163 on SR 1349 over Mulberry Swamp

SUBJECT:

Geotechnical Report – Inventory

The Geotechnical Engineering Unit has completed a reconnaissance and subsurface investigation for this project and presents the following inventory. No plans, profiles, or cross sections will be submitted for this roadway project.

Project Description

This project consists of the construction of the approaches for the replacement bridge over Mulberry Swamp. This investigation was confined to the limits of proposed construction.

Hand auger borings were performed at various locations along the project alignment. Representative samples were collected for visual classification in the field. A copy of the boring logs is attached.

Physiography and Geology

The project corridor is located in the Coastal Plain Physiographic Province and is underlain by alluvial sediments. Ground elevations within the project range from $16\pm$ feet along SR 1349 to $-3\pm$ feet in the bed of Mulberry Swamp.

<u>Soils</u>

Soils encountered during this investigation have been classified as artificial fill and alluvial. Alluvial soils and are composed of 6 or more feet of loose sand (A-3) with less than a foot of soft sandy clay (A-6). Artificial fill soils are composed of 1 or less feet of gravel with sand and clay (A-1-b).

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.ncdot.org./doh

LOCATION: CENTURY CENTER COMPLEX ENTRANCE B-2 1020 BIRCH RIDGE DRIVE RALEIGH NC 38367.1.1 (B-4440) Sheet 3

Ground Water

Ground water data was collected during April 2014. Ground water levels were found to be 0.1± feet to 1.0± feet below the ground surface.

Submitted by,

Joseph L Stone, L.G. Project Geological Engineer

				 PROJECT REFERENCE ND.	SHEET NO.
				B-4440	3A
·					
		D 47 4310E	0.225		
	EARTHWORK	BALANCE	SHEET		

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LINE	PROJECT	<u>B-4440</u>	DATE 4/23/2014		
L		BRUNSWICK			
	NOTES BY			:	
					EST.
	DEPTH	SAMP	DESCRIPTION		CLASS
20+00	0.0-6.0		LOOSE TAN GRAY SAND, (ALLUVIAL)	M/S	A-3
18' LT				-	<u> </u>
H2O: 1.0					
19+50	0.0-3.5		LOOSE TAN GRAY SAND, (ALLUVIAL)	M/S	
24' RT	3.5-4.5 4.5-6.0		SOFT GRAY SANDY CLAY, (ALLUVIAL) LOOSE GRAY SAND, (ALLUVAIL)	W S	A-6 A-3
H20: 0.8	14.0-0.0		COOL SIVI SIND, (ILLOVILL)	ľ	7.0
18+00	0.0-6.0		LOOSE TAN GRAY SAND, (ALLUVIAL)	M/S	A-3
31' LT				-	
H20: 0.7					
16+00 27' RT	0.0-1.5		LOOSE GRAY SAND WITH GRAVEL AND CLAY	IM/S	A-1-b
27 KI	1.5-6.0		(ARTIFICIAL FILL) LOOSE GRAY SAND, (ALLUVIAL)	S	A-3
H2O: 0.1	1.0-0.0		COOL SIVIT STAD, VILLOVIAL)		7.0
		1.		 	
				 -	
				<u> </u>	
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