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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PAT MCCRORY GOVERNOR ANTHONY J. TATA SECRETARY

March 18, 2014

STATE PROJECT:

33712.1.1 (B-4461)

FEDERAL PROJECT:

BRSTP-1916(6)

COUNTY:

Chatham

DESCRIPTION:

Bridge No. 10 over Shaddox Creek on SR 1916 (Corinth Rd.)

SUBJECT:

Geotechnical Report – Inventory

The Geotechnical Engineering Unit has completed a 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

The project consists of the proposed replacement of Bridge No. 10 on SR 1916, along the existing alignment. The total length of the roadway portion of the project is 0.189 miles. The roadway will be widened for improved service.

A geotechnical investigation was conducted during December of 2013. Two hand auger borings were performed at selected locations to the left and right of the -L- alignment between Station 13+50 and Station 21+70. Soil samples were collected and tested for quality by the Materials & Test Unit.

Physiography & Geology

The project is located northeast of Sanford, North Carolina in Chatham County. The site is situated within the Piedmont Physiographic Province. Geologically, the site is located within the Triassic Basin.

Soil Properties

Soils encountered at the site include residual soils and roadway embankment. Roadway Embankment consist of brown, orange, tan, soft to stiff, with trace of organics sandy silt (A-4). Residual soils consist of brown, orange, and grey, medium stiff to very stiff, dry to moist, low to highly plastic, silty clay (A-7) and orange brown to tan to orange and grey, soft to stiff, dry to moist, low to medium plastic, silty sandy clay (A-6). Residual soils are derived from

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.GOV

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

weathering of the underlying weathered rock and crystalline rock. Alluvial soils were observed on site but not encountered in the hand auger borings.

Groundwater

The groundwater level is anticipated to be at elevations similar to Shaddox Creek. Seasonal fluctuations in the water table can be expected.

Prepared by,

Isaiah B. Washington

Prepared by,

CENSES 3/18/14
1959
3/18/14
1959
3/18/14

Cheryl A. Youngblood, PG Senior Project Geological Engineer

Attachments: gINT logs (5 pages)

Materials and Test Lab Results (2 pages)

NCDOT BORE SINGLE B4461_GEO_RDWY_BH.GPJ NC_DOT.GDT 3/18/14

	_ /		DU	REI		J	KEP	JKI							
WBS	33712	2.1.1			Т	ΙP	B-4461	Į	COUNT	Y CHATHA	M			GEOLOGIST Whalen, C.	M.
SITE	DESCR	IPTION	l Rep	olace E	Bridge	10	on SR 19	16 (Cori	nth Rd) ov	ver Shaddox	Creek)				GROUND WTR (ft)
BOR	ING NO	. B1			s	TA	TION 17	+50		OFFSET	26 ft LT			ALIGNMENT -L-	0 HR. 3.0
COL	LAR EL	EV. N	/A				AL DEPTH			NORTHING		326		EASTING 1,986,981	24 HR. N/A
	RIG/HA			TE N						L			D F		AMMER TYPE N/A
	LER N					TA	RT DATE	12/09/1	13	COMP. DA				SURFACE WATER DEPTH	
ELEV	DRIVE ELEV	DEPTH	BLO	OW CO		TT			PER FOOT	L	SAMP.	T	1		
(ft)	ELEV (ft)	(ft)	0.5ft				2,5			75 100	NO.	MOI	O G	SOIL AND ROCK	DESCRIPTION DEPTH (ft
	. ,					Ħ	1		I.	•	1	14.0.	Ĭ		
														GROUND S	URFACE 0.0
						$\dagger \dagger$					S-1	М		RESID	UAL
				Ì							S-2	Sat.		Gray, brown, moist, ve sandy silt w/ trace	
						Ш									5.0
														Boring Terminated at CLA	
				l											
			ĺ												
İ															
-															

WBS 33						4461		COUNT						GEOLOGIST Whalen, C. M.	T
			olace E					rinth Rd) c	_						GROUND WTR (ft)
BORING	NO . B2			s	TATIO	ON 13-	+50		+		8 ft RT			ALIGNMENT -LDET-	0 HR. N/A
COLLAR	ELEV.	N/A	····	T	OTAL	. DEPTH	1 7.0 f	t	NOR	THING	671,9	004		EASTING 1,987,049	24 HR. N/A
	HAMMER	EFF./DA	TE N/										D Ha	and Auger HAMM	ER TYPE N/A
DRILLER					TART	DATE				P. DA1	E 12/			SURFACE WATER DEPTH N	Ά
EV EL (1	IVE DEPT EV (ft)	·	0.5ft		0	25 		50	75 	100	SAMP. NO.	MOI	C G	SOIL AND ROCK DESC ELEV. (ft)	CRIPTION DEPTH (ft)
														GROUND SURFA	ACE 0.0
_					 						S-8	М		RESIDUAL	
														Dark Brown, Soft to Stiff,	Silly Sand
					Ш		 				ļ			Boring Terminated at Depti	7.0 1.7.0 ft SILTY

NCDOT BORE SINGLE B4461_GEO_RDWY_BH.GPJ NC_DOT.GDT 3/18/14

	<u> / Ų</u>		DU.	KEI		U	KEP	UKI											
WBS	33712	2.1.1			-	TIP	B-446	1	COUNT	ry CH	ATHAI	M			GEOLOGI	ST Whalen,	C. M.		
SITE	DESCR	IPTION	I Rep	olace E	3ridge	e 10	0 on SR 1	916 (Cori	nth Rd) c	ver Sha	addox	Creek)						GROUND	WTR (ft)
BOR	ING NO	B3				STA	ATION 16	5+11		OFFS	ET 9	ft LT			ALIGNME	NT -LDET-		0 HR.	N/A
COL	LAR ELI	EV. N	/A		-	TO:	TAL DEPT	H 7.0 ft		NORT	THING	672,1	141		EASTING	1,986,932		24 HR.	N/A
DRILI	RIG/HA	MMER E	FF./DA	TE N/	/A					-1	ļ	DRILL N	METHO	D H	and Auger		НАММ	ER TYPE N	/A
	LER N					STA	ART DATE	12/09/1	 13	COME	 P. DAT	E 12/	09/13		SURFACE	WATER DEF	TH N	 /A	
ELEV	DRIVE	DEPTH	BLC	OW CO		Т			PER FOO			SAMP.		11					
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5f	t	0 2		50	75	100	NO.	мог	O G	ELEV. (ft)	SOIL AND RO	CK DES	CRIPTION	DEPTH (ft)
						T							1		In in the V . (11)				
																GROUN	D SURF	ACE	0.0
						T			T					L	~	ROADWAY	EMBAN	KMENT	
													м		ıan	Brown, Orange w/ trace	of Orga		III
												S-7	1 ""						
						L													7.0
															Вс	oring Terminated)	d at Depti CLAY	h 7.0 ft SILTY	
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<u> </u>	S-33712		l Dor	Jana F		10 on S		Corinth R	JNTY CI					GEOLOGIST -Whalen, C	GROUND	VA/TD (#4)
-	RING NO		ı Ket	ласе в			21+70	Connun R			25 ft RT			ALIGNMENT -L-	0 HR.	N/A
	LLAR EL				-		EPTH 5	0.6			672,2			EASTING 1,986,879	24 HR.	N/A
	LLAR EL LL RIG/HA			TE N		OTALD	EPIH 3	.0 10	NOR	CITING					HAMMER TYPE N	
			rr./DA	IE N/		TADTO	ATE 40	100112	001	4D DA						/A
	LLER N	1	DI C)M(CO		IAKID	ATE 12			MP. DA	TE 12/	Y2	1 - 1	SURFACE WATER DEPT	H N/A	
(ft)	ELEV (ft)	DEPTH (ft)	0.5ft		0.5ft	0	25	50 1	75 1	100	NO.	MOI	0	SOIL AND ROCE	K DESCRIPTION	DEPTH (ft
NCDOT BORE SINGLE 84461_GEO_RDWY_BH.GPJ NC_DOT.GDT 3/18/14 (3) THE STANDAY BH.GPJ NC_DOT.GDT 3/18/14	CLCV	DEPTH (ft)	-	0.5ft				DWS PER F		100	SAMP. NO.		0	GROUND ROADWAY E Brown and Orange, S w/ trace RESI Tan, Orange, Ve RESI Orange and Gray Boring Terminated a	SURFACE MBANKMENT Soft to Stiff, Sandy Si organics DUAL Pry Stiff Silty Clay DUAL T, Stiff Sandy Clay	0.0 lt 2.0 3.2 5.0
BORE SINGLE B4461_GEO_RD																
NCDOT																

NCDOT BORE SINGLE B4461_GEO_RDWY_BH.GPJ NC_DOT.GDT 3/18/14

	/ <u>\</u>	<u> </u>	50	NLL			KLP		-1							
WBS	33712	.1.1			⊢ ⊤	IP-	B-446	<u> </u>	COUNT	Y—CHA	THAN	VI			GEOLOGIST Whalen, CM.	
SITE	DESCR	IPTION	Rep	lace B	ridge	10	on SR 1	916 (Cor	inth Rd) o	ver Shac	ldox (Creek)				GROUND WTR (ft)
	NG NO.				÷		TION 21			OFFSE					ALIGNMENT -L-	0 HR. N/A
										NORTH						24 HR. N/A
⊢	AR ELE					ŲΙ	AL DEPT	Η 5.0 π		NORTH						
DRILL	. RIG/HAI	MMER E	FF./DA	TE N/	Α							DRILL N	METHO	D H	land Auger HAMME	ER TYPE N/A
DRIL	LER N	/A			s	TA	RT DATE	12/09/	13	COMP.	DAT	E 12/0	09/13		SURFACE WATER DEPTH N//	4
ELEV	DRIVE	DEPTH	BLC	w cou	JNT	П		BLOWS	PER FOOT	Γ		SAMP.	lacksquare	Ĺ	DOU AND BOOK DEGO	PIDTION
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	1	0 2	5	50	75	100	NO.	MOI	O	SOIL AND ROCK DESC ELEV. (ft)	DEPTH (ft)
						Ħ		···						Ť		
						$\downarrow \downarrow$								1 1990	GROUND SURFA ROADWAY EMBANK	
															Dark Gray, Orange, Tan, Mo	ist, Coarse to
												S-3_	М	l-M	Stiff, Sandy Silt	;
													<u> </u>			5.0
															Boring Terminated at Depth CLAY	5.0 ft SIL1Y
li															5	
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAY MATERIALS & TESTS UNIT SOILS LABORATORY

T. I. P. No.	B-4461				
	REPORT ON SAMP	LES OF	SOILS FOR QUALI	ГҮ	
Project	33712.1.1	County	СНАТНАМ	Owner	
Date: Sampled	12/9/13	Received	12/16/13	Reported	12/20/13
Sampled from	RDWY		Ву	C A YOU	NGBLOOD
Submitted by	J L PILIPCHUK			1995	Standard Specifications

788949 TO 788956 3/18/14

TEST RESULTS

Proj. Sample No.	S-1	S-2	S-3	S-4	S-5	S-6
Lab. Sample No.	788949	788950	788951	788952	788953	788954
Retained #4 Sieve %	-	-	1	3	-	-
Passing #10 Sieve %	100	100	96	91	100	100
Passing #40 Sieve %	96	96	93	79	95	97
Passing #200 Sieve %	82	83	70	65	86	66

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	6.0	6.4	6.0	17.6	6.6	7.8
Fine Sand Ret - #270	%	21.4	20.4	29.9	16.8	12.6	34.1
Silt 0.05 - 0.005 mm	%	50.5	47.1	40.1	41.5	34.7	28.1
Clay < 0.005 mm	%	22,0	26.1	24.0	24.0	46.1	30.1
Passing #40 Sieve	%	-	-		-	-	
Passing #200 Sieve	%	-	-	-			1

L. L.	32	32	27	27	51	30
P. I.	7	8	4	7	29	13
AASHTO Classification	A-4(6)	A-4(6)	A-4(1)	A-4(3)	A-7-6(26)	A-6(6)
Station	17+50	17+50	21+00	21+70	21+70	21+70
Offset	26 FT LT	26 FT LT	26 FT LT	25 FT RT	25 FT RT	25 FT RT
Alignment	L	L	L	L	L	L
Location	B-1	B-1	B-5	B-4	B-4	B-4
Depth (Ft)	0.5 FT	2.4 FT	2.3 FT	1.0 FT	2.0 FT	3.2 FT
to	1.1 FT	3.3 FT	2.9 FT	1.2 FT	2.2 FT	3.8 FT

cc: C A YOUNGBLOOD

Soils Engine	e
Soils Engine	e

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAY MATERIALS & TESTS UNIT SOILS LABORATORY

T. I. P. No.	B-4461							
	REPORT ON	SAMI	PLES OF	SOILS FO	R QUALI	ТҮ		
Project	33712.1.1		County	СНАТНА	M	Owner		
Date: Sampled	12/9/13		Received	12/16/13		Reported	12/20/13	
Sampled from	RDWY				Ву	C A YOU	NGBLOOI)
Submitted by	J L PILIPCHU	K			•	1995	Standard S	pecifications
788949 TO 7889 3/18/14	956		TE	ST RESUI	LTS			
Proj. Sample N	0.		S-7	S-8				
Lab. Sample N			788955	788956				
Retained #4 S		%	-					
Passing #10 S		%	100	100				
Passing #40 S		%	100	83				
Passing #200 S	Sieve	%	93	13				
			MINUS	NO. 10 FR	ACTION			
SOIL MORTA								
Coarse Sand	Ret - #60	%	0.4	47.1				
Fine Sand Re		%	17.0	41.8				
Silt 0.05 - 0.	005 mm	%	58.5	6.1				
Clay < 0.005		%	24.0	5.0				
Passing #40 S		%		-		<u></u> ,		
Passing #200 S	Sieve	%	-	-				
L. L.			22	28				
P. I.			0	5				
AASHTO Clas	sification		A-4(0)	A-2-4(0)				
Station			16+11	13+50				
Offset			9 FT LT	18 FT RT				
Alignment			L DET	L DET				
Location			B-3	B-2				
Depth (Ft)			2.9 FT	0.2 FT				
		to	3.6 FT	1.3 FT				

cc: C A YOUNGBLOOD

	Soils	En	gin	ee	r