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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](http://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**

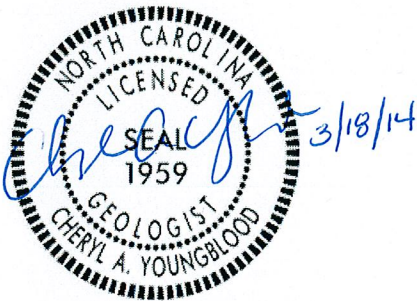
The groundwater level is anticipated to be at elevations similar to Shaddox Creek. Seasonal fluctuations in the water table can be expected.

Prepared by,



Isaiah B. Washington *fw*

Prepared by,



Cheryl A. Youngblood, PG  
Senior Project Geological Engineer

Attachments: gINT logs (5 pages)  
Materials and Test Lab Results (2 pages)



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 33712.1.1		TIP B-4461		COUNTY CHATHAM		GEOLOGIST Whalen, C. M.										
SITE DESCRIPTION Replace Bridge 10 on SR 1916 (Corinth Rd) over Shaddox Creek							GROUND WTR (ft)									
BORING NO. B1		STATION 17+50		OFFSET 26 ft LT		ALIGNMENT -L-	0 HR. 3.0									
COLLAR ELEV. N/A		TOTAL DEPTH 5.0 ft		NORTHING 671,826		EASTING 1,986,981	24 HR. N/A									
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A										
DRILLER N/A		START DATE 12/09/13		COMP. DATE 12/09/13		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
																GROUND SURFACE 0.0
											S-1	M			RESIDUAL	
											S-2	Sat.			Gray, brown, moist, very soft to very stiff, sandy silt w/ trace sand and gravel	5.0
															Boring Terminated at Depth 5.0 ft SILTY CLAY	



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 33712.1.1		TIP B-4461		COUNTY CHATHAM		GEOLOGIST Whalen, C. M.											
SITE DESCRIPTION Replace Bridge 10 on SR 1916 (Corinth Rd) over Shaddox Creek							GROUND WTR (ft)										
BORING NO. B2		STATION 13+50		OFFSET 18 ft RT		ALIGNMENT -LDET-	0 HR. N/A										
COLLAR ELEV. N/A		TOTAL DEPTH 7.0 ft		NORTHING 671,904		EASTING 1,987,049	24 HR. N/A										
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A											
DRILLER N/A		START DATE 12/11/13		COMP. DATE 12/11/13		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			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
																GROUND SURFACE	0.0
											S-8	M				RESIDUAL Dark Brown, Soft to Stiff, Silty Sand	7.0
																Boring Terminated at Depth 7.0 ft SILTY CLAY	

NCDOT BORE SINGLE B4461\_GEO\_RDWY\_BH.GPJ NC\_DOT.GDT 3/18/14



# NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 33712.1.1		TIP B-4461		COUNTY CHATHAM		GEOLOGIST Whalen, C. M.										
SITE DESCRIPTION Replace Bridge 10 on SR 1916 (Corinth Rd) over Shaddox Creek							GROUND WTR (ft)									
BORING NO. B3		STATION 16+11		OFFSET 9 ft LT		ALIGNMENT -LDET-	0 HR. N/A									
COLLAR ELEV. N/A		TOTAL DEPTH 7.0 ft		NORTHING 672,141		EASTING 1,986,932	24 HR. N/A									
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A										
DRILLER N/A		START DATE 12/09/13		COMP. DATE 12/09/13		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						ELEV. (ft)
																GROUND SURFACE 0.0
											S-7	M				ROADWAY EMBANKMENT Tan, Brown, Orange, Soft to Stiff, Sandy Silt w/ trace of Organics
																7.0
																Boring Terminated at Depth 7.0 ft SILTY CLAY

NCDOT BORE SINGLE B4461\_GEO\_RDWY\_BH.GPJ NC\_DOT\_GDT 3/18/14



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 33712.1.1		TIP B-4461		COUNTY CHATHAM		GEOLOGIST Whalen, C. M.										
SITE DESCRIPTION Replace Bridge 10 on SR 1916 (Corinth Rd) over Shaddox Creek							GROUND WTR (ft)									
BORING NO. B4		STATION 21+70		OFFSET 25 ft RT		ALIGNMENT -L-	0 HR. N/A									
COLLAR ELEV. N/A		TOTAL DEPTH 5.0 ft		NORTHING 672,236		EASTING 1,986,879	24 HR. N/A									
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A										
DRILLER N/A		START DATE 12/09/13		COMP. DATE 12/09/13		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
																GROUND SURFACE 0.0
																ROADWAY EMBANKMENT
											S-4	M				Brown and Orange, Soft to Stiff, Sandy Silt
											S-5	M				w/ trace organics
											S-6	D				RESIDUAL
																Tan, Orange, Very Stiff Silty Clay
																RESIDUAL
																Orange and Gray, Stiff Sandy Clay
																Boring Terminated at Depth 5.0 ft SANDY CLAY

NCDOT BORE SINGLE B4461\_GEO\_RDWY\_BH.GPJ NC\_DOT.GDT 3/18/14



# NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 33712-1.1		TIP B-4461		COUNTY CHATHAM		GEOLOGIST Whalen, C. M.										
SITE DESCRIPTION Replace Bridge 10 on SR 1916 (Corinth Rd) over Shaddox Creek							GROUND WTR (ft)									
BORING NO. B5		STATION 21+00		OFFSET 20 ft RT		ALIGNMENT -L-										
COLLAR ELEV. N/A		TOTAL DEPTH 5.0 ft		NORTHING 672,155		EASTING 1,986,862										
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A										
DRILLER N/A		START DATE 12/09/13		COMP. DATE 12/09/13		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
																GROUND SURFACE 0.0
											S-3	M				ROADWAY EMBANKMENT Dark Gray, Orange, Tan, Moist, Coarse to Stiff, Sandy Silt 5.0
																Boring Terminated at Depth 5.0 ft SILTY CLAY

NCDOT BORE SINGLE B4461\_GEO\_RDWY\_BH.GPJ NC\_DOT.GDT 3/18/14



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

T. I. P. No. B-4461**REPORT ON SAMPLES OF SOILS FOR QUALITY**Project 33712.1.1 County CHATHAM Owner Date: Sampled 12/9/13 Received 12/16/13 Reported 12/20/13Sampled from RDWY By C A YOUNGBLOODSubmitted by J L PILIPCHUK 1995 Standard Specifications788949 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	%	-	-	-	-	-	-

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 Engineer

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

T. I. P. No. B-4461**REPORT ON SAMPLES OF SOILS FOR QUALITY**Project 33712 1.1 County CHATHAM Owner \_\_\_\_\_Date: Sampled 12/9/13 Received 12/16/13 Reported 12/20/13Sampled from RDWY By C A YOUNGBLOODSubmitted by J L PILIPCHUK 1995 Standard Specifications

788949 TO 788956

3/18/14

**TEST RESULTS**

Proj. Sample No.		S-7	S-8			
Lab. Sample No.		788955	788956			
Retained #4 Sieve	%	-	-			
Passing #10 Sieve	%	100	100			
Passing #40 Sieve	%	100	83			
Passing #200 Sieve	%	93	13			

**MINUS NO. 10 FRACTION**

SOIL MORTAR - 100%						
Coarse Sand Ret - #60	%	0.4	47.1			
Fine Sand Ret - #270	%	17.0	41.8			
Silt 0.05 - 0.005 mm	%	58.5	6.1			
Clay < 0.005 mm	%	24.0	5.0			
Passing #40 Sieve	%	-	-			
Passing #200 Sieve	%	-	-			

L. L.		22	28			
P. I.		0	5			
AASHTO Classification		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 Engineer