STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

December 10, 2013

STATE PROJECT: 40151.1.1 (B-4959)
FEDERAL PROJECT: N/A
COUNTY: Guilford

DESCRIPTION: Bridge No. 193 on SR 2719 (High Rock Road) over Buffalo Creek

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. 193 on SR 2719, along the existing alignment. The total length of the roadway portion of the project is 0.127 miles. The roadway will be widened for improved service.

A geotechnical investigation was conducted during November of 2013. Two hand auger borings were performed at selected locations to the left and right of the -L- alignment between Station 12+00 and Station 18+70. Soil samples were collected and tested for quality by the Materials & Test Unit.

Physiography & Geology

The project is located Northeast of McLeansville, North Carolina in Guilford County. The site is situated within the Piedmont Physiographic Province. Geologically, the site is located within the Carolina Slate Belt.

Soil Properties

Soils encountered at the site include residual soils. 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 weathering of the underlying weathered rock and crystalline rock. Roadway Embankment and Alluvial soils were observed on site but not encountered in the hand auger borings.

MAILING ADDRESS:
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RALEIGH NC 27699-1589

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WEBSITE: www.NCDOT.GOV

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

Groundwater

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

Prepared by,

Samuel C. Eddy

Prepared by,

NORTH CAROLINA LICENSED SEAL 1959 GEOLOGIST CHERYL A. YOUNGBLOOD

12/10/13

Cheryl A. Youngblood, PG
Senior Project Geological Engineer

Attachments: gINT logs (4 pages)
Materials and Test Lab Results (1 pages)

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 40151.1.1	**TIP** B-4959	**COUNTY** GUILFORD	**GEOLOGIST** Whalen, C. M.	
SITE DESCRIPTION Bridge No. 169 on SR 1148 (Anthony Rd) over Gum Creek				**GROUND WTR (ft)**
BORING NO. HA-1	**STATION** 17+50	**OFFSET** 25 ft RT	**ALIGNMENT** N/A	**0 HR.** N/A
COLLAR ELEV. 639.0 ft	**TOTAL DEPTH** 7.0 ft	**NORTHING** 875,482	**EASTING** 1,818,817	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER N/A	**START DATE** 11/06/13	**COMP. DATE** 11/06/13	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
640											
							S-1	M		639.0 GROUND SURFACE	0.0
							S-2			638.5 **RESIDUAL** Brown stiff SILTY CLAY with little Organics (A-7-5)	0.5
635							S-4			**RESIDUAL** Orange Brown to Tan, soft to v. stiff SILTY SANDY CLAY with trace Rock Fragments (A-6)	
										632.0 Boring Terminated at Elevation 632.0 ft in SILTY SANDY CLAY	7.0

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 40151.1.1	**TIP** B-4959	**COUNTY** GUILFORD	**GEOLOGIST** Whalen, C. M.	
SITE DESCRIPTION Bridge No. 169 on SR 1148 (Anthony Rd) over Gum Creek				**GROUND WTR (ft)**
BORING NO. BR-1	**STATION** 13+15	**OFFSET** 70 ft LT	**ALIGNMENT** N/A	**0 HR.** N/A
COLLAR ELEV. 645.8 ft	**TOTAL DEPTH** 5.8 ft	**NORTHING** 875,044	**EASTING** 1,818,730	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER N/A	**START DATE** 11/06/13	**COMP. DATE** 11/06/13	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
650											
645	645.8	0.0								645.8 GROUND SURFACE	0.0
	644.8	1.0	N/A	7	7	14				644.4 **RESIDUAL** Orange Brown and Grey stiff SILTY SANDY CLAY with trace Rock Fragments (A-6)	1.4
	643.8	2.0	N/A	12	18	30					
	642.8	3.0	N/A	45	40	85					
	641.8	4.0	N/A	40	52	92					
640	640.8	5.0	N/A	47	49	96				640.0 **RESIDUAL** Orange and Grey soft to med. stiff SILTY CLAY (A-7-5)	5.8
			N/A	60	40/0.3	100/0.8				Boring Terminated at Elevation 640.0 ft in SILTY CLAY	

Rod refusal at 5.8' on Weathered Rock. Nearby hand auger terminated at 7' in SILTY CLAY. Rod at 2' east advanced to 10'.

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 40151.1.1	**TIP** B-4959	**COUNTY** GUILFORD	**GEOLOGIST** Whalen, C. M.	
SITE DESCRIPTION Bridge No. 169 on SR 1148 (Anthony Rd) over Gum Creek				**GROUND WTR (ft)**
BORING NO. BR-2	**STATION** 13+17	**OFFSET** 70 ft LT	**ALIGNMENT** N/A	**0 HR.** N/A
COLLAR ELEV. 645.4 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 875,046	**EASTING** 1,818,730	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER N/A	**START DATE** 11/06/13	**COMP. DATE** 11/06/13	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
650											
645	645.4	0.0								645.4 GROUND SURFACE	0.0
	644.4	1.0	N/A	9	7	16				644.0 **RESIDUAL** Orange Brown and Grey stiff SILTY SANDY CLAY with trace Rock Fragments (A-6)	1.4
	643.4	2.0	N/A	12	14	26					
	642.4	3.0	N/A	23	27	50					
	641.4	4.0	N/A	30	30	60					
640	640.4	5.0	N/A	33	32	65				**RESIDUAL** Orange and Grey soft to med. stiff SILTY CLAY (A-7-5)	
	639.4	6.0	N/A	42	40	82					
	638.4	7.0	N/A	36	33	69					
	637.4	8.0	N/A	45	52	97					
	636.4	9.0	N/A	36	39	75					
			N/A	41	41	82				635.4	10.0
										Boring Terminated at Elevation 635.4 ft in SILTY CLAY	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 40151.1.1	**TIP** B-4959	**COUNTY** GUILFORD	**GEOLOGIST** Whalen, C. M.	
SITE DESCRIPTION Bridge No. 169 on SR 1148 (Anthony Rd) over Gum Creek				**GROUND WTR (ft)**
BORING NO. HA-2	**STATION** 13+16	**OFFSET** 70 ft LT	**ALIGNMENT** N/A	**0 HR.** N/A
COLLAR ELEV. 645.6 ft	**TOTAL DEPTH** 7.0 ft	**NORTHING** 875,045	**EASTING** 1,818,730	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER N/A	**START DATE** 11/06/13	**COMP. DATE** 11/06/13	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
650										
645								M		645.6 GROUND SURFACE 0.0
							S-6			644.2 **RESIDUAL** Orange Brown and Grey stiff SILTY SANDY CLAY with trace Rock Fragments (A-6) 1.4
							S-8			
640										**RESIDUAL** Orange and Grey soft to med. stiff SILTY CLAY (A-7-5)
							S-9			638.6 7.0

Boring Terminated at Elevation 638.6 ft in SILTY CLAY

Proposed location 13+00, 70' LT was in the middle of existing -Y1-. Boring moved to 13+16, 70'LT

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

T. I. P. No. B-4959

REPORT ON SAMPLES OF SOILS FOR QUALITY

Project 40151.1.1 **County** GUILFORD **Owner**

Date: Sampled 11/6/13 **Received** 11/20/13 **Reported** 11/26/13

Sampled from RDWY **By** C A YOUNGBLOOD

Submitted by J PILIPCHUK 2006 **Standard Specifications**

788433 TO 788438
11/26/13

TEST RESULTS

Proj. Sample No.		S-1	S-2	S-4	S-6	S-8	S-9
Lab. Sample No.		788433	788434	788435	788436	788437	788438
Retained #4 Sieve	%	-	6	2	14	3	3
Passing #10 Sieve	%	100	87	90	75	84	80
Passing #40 Sieve	%	98	79	82	64	73	66
Passing #200 Sieve	%	92	56	50	45	64	49

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60	%	3.6	16.2	16.6	20.2	15.2	21.6
Fine Sand Ret - #270	%	5.5	24.4	33.3	26.3	13.5	24.4
Silt 0.05 - 0.005 mm	%	38.4	29.1	19.8	27.3	22.8	31.7
Clay < 0.005 mm	%	52.5	30.3	30.3	26.3	48.5	22.2
Passing #40 Sieve	%	-	-	-	-	-	-
Passing #200 Sieve	%	-	-	-	-	-	-

L. L.		75	32	35	38	62	49
P. I.		34	13	16	15	31	15
AASHTO Classification		A-7-5(40)	A-6(5)	A-6(5)	A-6(3)	A-7-5(19)	A-7-5(5)
Station		17+50	17+50	17+50	13+16	13+16	13+16
Offset		25' RT	25' RT	25' RT	70' LT	70' LT	70' LT
Alignment		L	L	L	L	L	L
Location		HA-1	HA-1	HA-1	HA-2	HA-2	HA-2
Depth (Ft)		0.00	0.50	2.70	0.00	1.70	5.30
	to	0.50	1.00	2.90	0.20	2.10	5.70

cc: C A YOUNGBLOOD

Soils Engineer