



February 20, 2017

STATE PROJECT: 17BP.8.R.118 (SF-750122)  
PROJECT ID: 29450  
COUNTY: Randolph  
DESCRIPTION: Bridge No. 122 on SR 2111 (Bull Run Creek Rd.) over Bull Run Creek

**SUBJECT: GEOTECHNICAL REPORT - INVENTORY**

**PROJECT DESCRIPTION**

This project consists of the reconstruction of SR 2111 (-L-) which is a two-lane roadway as part of the replacement of Bridge No. 122 over Bull Run Creek.

The geotechnical investigation was conducted in December of 2016. Standard Penetration Test borings were advanced with a CME 55 utilizing an automatic hammer. Hand auger borings were also completed. Representative soil samples were collected for visual classification in the field.

The following alignment, totaling 500 feet, was investigated.

<u>LINE</u>	<u>STATIONS</u>
-L-	12+65 to 17+65

**PHYSIOGRAPHY AND GEOLOGY**

The project is located in the Piedmont Physiographic Province. The project corridor is comprised primarily of residential, undeveloped and agricultural properties. The general topography along the project consists of rolling hills with severe slopes towards Bull Run Creek.

Geologically, the site is located within the Carolina Slate Belt. Soils are derived from the underlying metamorphic bedrock. The bedrock primarily consists of Felsic Metavolcanic Rock.

**SOIL PROPERTIES**

Materials encountered during this investigation are separated into three categories based on origin. They consist of roadway embankment, alluvial, and residual soil.

Roadway Embankment soils are present along the existing roadway (-L-) on the project. These soils consist of moist, loose to medium dense, non-plastic, fine to coarse sandy gravels and silty, fine to coarse sands (A-1, A-2-4), moist, soft to medium stiff, slightly to moderately plastic, silty clays (A-6), and moist, medium stiff, slightly plastic, fine sandy silts (A-4).

Soils identified as alluvial consist of wet, soft, slightly plastic to potentially highly plastic, fine sandy clays and silty clays (A-6, A-7).

Soils identified as residual consist of moist, medium dense, non-plastic to slightly plastic, fine to coarse sand with rock fragments and silty, fine to coarse sands (A-1, A-2-4), moist, stiff, non-plastic, coarse to fine sandy silts (A-4), and moist, medium stiff, slightly plastic, fine sandy clays (A-6).

### **ROCK PROPERTIES**

Weathered rock was encountered along the existing roadway (-L-) at elevations ranging from 672.3 to 679.1 feet (MSL). The weathered rock consists of gray felsic metavolcanic rock. Crystalline rock was encountered along the existing roadway (-L-) at elevations ranging from 670.3 to 680.6 feet (MSL). The crystalline rock consists of felsic metavolcanic rock.

### **GROUNDWATER**

Groundwater was encountered at elevations ranging from 672.3 to 680.58 feet MSL along the proposed roadways of the project. Some fluctuation in groundwater levels can occur with climatic and seasonal variations. Therefore, subsurface water conditions at other times may be different from those described in this report.

### **KLEINFELDER**

Prepared by,

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Attachment



Documented by:

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3/2/2017

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# GEOTECHNICAL BORING REPORT BORE LOG

WBS 17BP.8.R.118			TIP SF-750122			COUNTY RANDOLPH			GEOLOGIST B. Johnson								
SITE DESCRIPTION Bridge No. 122 on SR 2111 (Bull Run Creek Road) over Bull Run Creek										GROUND WTR (ft)							
BORING NO. L_1300			STATION 13+00			OFFSET 22 ft LT			ALIGNMENT -L-								
COLLAR ELEV. 707.1 ft			TOTAL DEPTH 10.0 ft			NORTHING 760,371			EASTING 1,773,454								
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic								
DRILLER R. Toothman			START DATE 12/27/16			COMP. DATE 12/27/16			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							
710																	
	707.1	0.0													707.1	GROUND SURFACE	0.0
705			5	5	4	●	●	●	●	●		M		RESIDUAL Brown, Orange, and Yellow, Coarse to Fine Sandy SILT with Trace Gravel			
	703.6	3.5	4	5	5	●	●	●	●	●		M					
700												M					
	698.6	8.5	4	6	5	●	●	●	●	●		M		697.1	10.0	Boring Terminated at Elevation 697.1 ft in RESIDUAL: Sandy SILT  Topsoil (0.0 to 0.3 foot)	

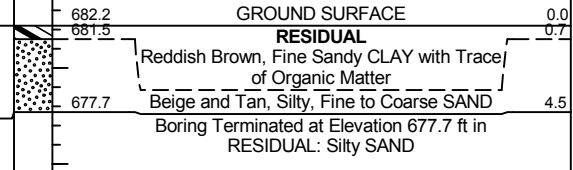
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# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 17BP.8.R.118		TIP SF-750122		COUNTY RANDOLPH		GEOLOGIST B. Johnson											
SITE DESCRIPTION Bridge No. 122 on SR 2111 (Bull Run Creek Road) over Bull Run Creek							GROUND WTR (ft)										
BORING NO. L_1449		STATION 14+49		OFFSET 40 ft RT		ALIGNMENT -L-											
COLLAR ELEV. 682.2 ft		TOTAL DEPTH 4.5 ft		NORTHING 760,529		EASTING 1,773,490											
DRILL RIG/HAMMER EFF./DATE N/A				DRILL METHOD Hand Auger		HAMMER TYPE N/A											
DRILLER N/A		START DATE 12/28/16		COMP. DATE 12/28/16		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	ELEV. (ft)	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
685																	
680												M		682.2		0.0	
												M		681.5		0.7	
												M		677.7		4.5	

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WBS 17BP.8.R.118		TIP SF-750122		COUNTY RANDOLPH		GEOLOGIST B. Johnson										
SITE DESCRIPTION Bridge No. 122 on SR 2111 (Bull Run Creek Road) over Bull Run Creek							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 15+05		OFFSET 12 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 688.2 ft		TOTAL DEPTH 13.5 ft		NORTHING 760,572		EASTING 1,773,427										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER R. Toothman		START DATE 12/27/16		COMP. DATE 12/27/16		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						
690	688.2	0.0	12	8	5										688.2	0.0
685	684.7	3.5	2	1	2	13							M	ROADWAY EMBANKMENT Gray, Fine to Coarse Sandy GRAVEL	2.5	
													M	Red, Fine Sandy CLAY	5.5	
680	679.7	8.5	2	1	1									ALLUVIAL Gray, Fine Sandy CLAY	5.5	
													W	Gray, Silty CLAY	9.5	
675	674.7	13.5	60/0.0											Boring Terminated with Standard Penetration Test Refusal at Elevation 674.7 ft on CRYSTALLINE ROCK: FELSIC METAVOLCANIC ROCK	13.5	
														Topsoil (0.0 to 0.3 foot)		

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SITE DESCRIPTION Bridge No. 122 on SR 2111 (Bull Run Creek Road) over Bull Run Creek			GROUND WTR (ft)
BORING NO. EB1-B	STATION 15+04	OFFSET 15 ft RT	ALIGNMENT -L-
COLLAR ELEV. 688.3 ft	TOTAL DEPTH 18.0 ft	NORTHING 760,577	EASTING 1,773,454
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER R. Toothman	START DATE 12/27/16	COMP. DATE 12/27/16	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					
690	688.3	0.0	11	7	9									GROUND SURFACE	0.0
685	684.8	3.5	3	2	3									<b>ROADWAY EMBANKMENT</b> Gray, Fine to Coarse Sandy GRAVEL Red, Fine Sandy CLAY	2.5
680	679.8	8.5	3	2	2									Beige, Fine Sandy SILT	6.5
675	674.8	13.5	12	9	19									<b>RESIDUAL</b> Gray, Fine to Coarse SAND with Trace Rock Fragments	12.0
	670.8	17.5												<b>WEATHERED ROCK</b> Gray FELSIC METAVOLCANIC ROCK	16.0
	670.3	18.0												Boring Terminated with Standard Penetration Test Refusal at Elevation 670.3 ft on CRYSTALLINE ROCK: FELSIC METAVOLCANIC ROCK	18.0

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SITE DESCRIPTION Bridge No. 122 on SR 2111 (Bull Run Creek Road) over Bull Run Creek									GROUND WTR (ft)							
BORING NO. EB2-B			STATION 15+72			OFFSET 14 ft RT			ALIGNMENT -L-							
COLLAR ELEV. 688.6 ft			TOTAL DEPTH 8.0 ft			NORTHING 760,644			EASTING 1,773,438							
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER R. Toothman			START DATE 12/27/16			COMP. DATE 12/27/16			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						
690	688.6	0.0	9	7	4	•	•	•	•	•				688.6	GROUND SURFACE	0.0
685	685.1	3.5	3	4	4	•	•	•	•	•				686.1	ROADWAY EMBANKMENT Gray, Fine to Coarse Sandy GRAVEL	2.5
	680.6	8.0	60/0.0			•	•	•	•	•				680.6	Red, Fine Sandy CLAY with Trace Gravel	8.0
															Boring Terminated with Standard Penetration Test Refusal at Elevation 680.6 ft on CRYSTALLINE ROCK: FELSIC METAVOLCANIC ROCK	

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