STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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STATE PROJECT: 33608.1.1
I.D. : B-4266
COUNTY: Rutherford
DESCRIPTION: Bridge No. 110 on SR 1991 over Hill's Creek

SUBJECT: Geotechnical Report - Bridge Foundation Investigation

SITE DESCRIPTION AND GEOLOGY

The site is located in southeastern Rutherford County, near the town of Henrietta. The proposed replacement structure will be a cored slab bridge with one span of 30.0', one span of 40.00', and one span of 30.0'. The skew is approximately 105 degrees to line -L- (SR 1991). The new structure will be in the same location as the existing structure.

The Geotechnical Unit performed a total of four Standard Penetration Test (SPT) borings and three core borings at this site. All coring was done with NX wireline. The predominant rock type encountered in our core borings was gray/white, mica schist and metamorphosed granitic rock. The benchmark (elev. 759.25') used to survey our collar elevations is located in the base of a 24" sycamore at 14+26 –L-, 74.3' right.

Four to 10.0' of sandy alluvial soils were encountered within the project corridor. Residual soils, where encountered, are approximately three to 24.4' in thickness and consist of very loose to dense silty sand (A-2-4, A-2-5, A-1-b). In addition, a 2.5' layer of riprap was encountered in the boring performed at proposed B1-A. An estimated eight feet of roadway fill will be encountered at the proposed end Bents.

FOUNDATION SUMMARY

End Bent One (EB1)

Roadway fill soils encountered at this location are approximately nine feet thick and consist of soft, sandy clay (A-7). Alluvial soils on this bent are four to 10.0' thick and consist of medium dense silty sand and gravel (A-3, A-1-b). Residual soils found at this location are approximately seven to 24.4' thick and consist of loose to medium dense, very micaceous, silty sand (A-2-5).

Weathered rock was encountered near elevation 740.00' in the boring performed at EB1-A. Hard, crystalline rock (tri-cone bit refusal) was encountered across the bent between elevation 725.90' and 736.30'. At the time of our investigation, groundwater was between elevation 752.80' and 752.30' across the bent.

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Interior Bent One (B1)

Due to an overhead power line at proposed B1-B, only one boring (B1-A) was performed at this location. Alluvial soils encountered are eight feet thick and consist of loose, wet, silty sand (A-3). Included in this eight foot alluvial layer is a 2.5' layer of riprap that was placed at this location as an erosion control measure. The riprap layer extends the entire length of the stream bank at the proposed bent.

Residual soils encountered at this bent are approximately 9.50' thick and consist of loose, wet to saturated, silty sand (A-2-5). Weathered, metamorphosed, granitic rock was encountered at elevation 739.30' in the boring performed at B1-A. Hard, crystalline rock (auger refusal) is present on this bent near elevation 737.00'. Rock core retrieved at this location consisted of slightly weathered and hard, metamorphosed granite and mica schist rocks. RQD's are between 89% and 100%. Groundwater was encountered along this bent near elevation 751.00'.

Interior Bent Two (B2)

Roadway fill soils encountered in the boring perfórmed at B2-B are approximately seven feet thick and consist of soft, moist, sandy clay (A-7). Alluvial soils encountered are up to 12.6' thick and consist of loose to medium dense, wet, silty sand (A-3, A-2-4, A-1-b). Residual soils encountered at B2-B are 6.40' thick and consist of dense, moist, silty sand (A-1-b).

Weathered, metamorphosed, granitic rock was encountered between elevations 739.40' and 744.40' across the bent. Hard, crystalline rock (auger refusal) is present on this bent between elevations 738.30' and 739.80'. Rock core retrieved at this location consisted of slightly weathered to fresh and hard, metamorphosed granite and mica schist rocks. RQD's are between 84% and 100%. Groundwater was encountered along this bent near elevation 752.00'.

End Bent Two (EB2)

Roadway fill soils encountered at this location are approximately eight feet thick and consist of soft, sandy clay (A-7). Alluvial soils on this bent are approximately 11.0' to 12.0' thick and consist of loose, silty sand (A-1-b) as well as soft, sandy silt (A-4). Residual soils found at EB2-A are approximately three feet thick and consist of medium dense, very micaceous, silty sand (A-2-4).

Weathered rock was encountered on this bent between elevations741.80' and 746.00'. Hard, crystalline rock (tri-cone bit refusal) was encountered between elevation 740.20' and 740.80'. At the time of our investigation, groundwater was near elevation 752.00' at this location.

Respectfully submitted,

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