

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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GOVERNOR

SECRETARY

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STATE PROJECT: 8.1830501 (R-2206C)

COUNTY:

Catawba

DESCRIPTION:

Bridge on NC 16 (-L-) over NC 150 (-Y14-)

SUBJECT:

Geotechnical Report – Bridge Foundation Investigation

This is a proposed 4 lane dual structure on new location. The bridge is on proposed NC 16 (-L-) over NC 150 (-Y14-). Each structure is comprised of a single span at a length of 44 meters for left lane and 42.4 meters for right lane. Skew angles for each bent are essentially 86 degrees with some variance of less than 1 degree. The width of each structure is 11.7 meters with composite deck on plate girders. Slopes are proposed at 1 1/2:1 with 150mm concrete slope protection.

Foundation test borings were performed with a CME-550 drill machine utilizing tri-cone roller bit, bentonite drilling fluid and automatic drop hammer. The field investigation for this project was conducted in May to June of 2003.

Physiography/Geology

Geologically this site is within the Kings Mountain Belt. Saprolite samples were consistent with "High Shoals Granite" as mapped. The topography of the bridge site is relatively flat and open. Some roadway fill soil is associated with existing NC 150. Residual soils were encountered at all boring locations, and consist of 2.5 to 3.5 meters of medium stiff to stiff micaceous sandy silty clay (A-7-5) and up to 24 meters of medium stiff to hard micaceous clayey sandy silt (A-4, A-5). Four of the 8 borings performed encountered weathered rock at depth.

Foundation Materials

End Bent 1:

This proposed bent is located southeast of proposed NC 150. A total of four borings were performed at this bent location to encompass both left and right lane structures. Beginning at the ground surface, residual soils were encountered and consist of 2.5 to 3.5 meters of medium stiff to stiff red-brown-tan micaceous sandy silty clay (A-7-5)

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overlying up to 24.4 meters of medium stiff to hard gray-brown-white-black micaceous clayey sandy silt (A-4, A-5). Approximate elevation 283 meters denotes the residual clay / silt soil horizon. Weathered rock was encountered only in boring EB1-A LT LN at elevation 258.58 meters.

End Bent 2:

This proposed bent is located northwest of proposed NC 150. A total of four borings were performed at this bent location to encompass both left and right lane structures. Beginning at the ground surface, 2.5 meters of residual medium stiff to stiff red-browntan micaceous sandy silty clay (A-7-5) was encountered overlying up to 21.6 meters of medium stiff to hard gray-brown-white-black micaceous clayey sandy silt (A-4, A-5). Approximate elevation 284 meters denotes the residual clay / silt soil horizon. Weathered rock was encountered at 3 boring locations along this bent. These were boring EB2-A LT LN at elevation 266.71 meters, EB2-A RT LN at elevation 263.29 meters, and EB2-B RT LN at elevation 262.48 meters.

Groundwater

Static groundwater measurements were not obtained at this location due to all holes caving or plugging immediately after drilling. Our drilling method of using bentonite drilling mud and tri-cone roller resulted in all holes plugging close to the ground surface. A review of hollow stem borings performed during our roadway investigation in August of 2000 at the NC 150 interchange shows no groundwater to a depth of 10 meters.

Respectfully submitted,

FOR: J.E. Beverly, Project Geologist