

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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GOVERNOR

SECRETARY

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STATE PROJECT: 33240.1.1 (B-3700)

Stanly

COUNTY: DESCRIPTION:

Bridge #187 over Long Creek on SR 1214 (Austin Rd.)

SUBJECT:

Geotechnical Report – Bridge Foundation Investigation

The proposed structure replacement for bridge # 187 is a single span 2-lane design on same location as the existing bridge. Proposed structure dimensions are 110 feet in length and 30 feet in width, with a skew angle of 115 degrees. Recommended structure design is a 63" prestressed girder, modified bulb tree. Embankment slopes are to be constructed at 1.5:1 (H:V) with Class II rip rap slope protection.

Foundation test borings were performed with a CME-550X drill machine utilizing Hollow Stem Augers, and automatic drop hammer. The field investigation for this project was conducted in June of 2004.

Physiography/Geology

The project area is located northwest of the city of Albemarle in Stanly County on SR 1214 over Long Creek. Geologically this site is part of the Carolina Slate Belt and is underlain by rocks associated with the Yadkin Formation. Rock types in the area are shown to be sandstone and siltstone on the NC Geologic Map.

Site specific soils encountered during our bridge investigation include roadway fill, alluvium, artificial fill, and residual soils. Existing roadway fill material associated with SR 1214 (Austin Rd.) was encountered at each end bent. Roadway fill consists of soft to medium stiff sandy silty clay (A-6, A-7-6), and soft to medium stiff sandy clayey silt (A-4). At each end bent location roadway fill soils sit on top of alluvium. Alluvial soils are comprised of soft to medium stiff sandy silty clay (A-7-5). Areas of artificial fill soil noted at the site appear to be the result of left over construction debris from the last paving and bridge maintenance operation. The fill material contains a mixture of asphalt, soil, and bridge materials pushed along the southern bank (right of -L-) of the bridge approaches. Artificial fill material appears to be as thick as 8 feet from top of slope and the approximate area is delineated on the accompanying plan view. Residual soil was

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encountered at each end bent and consists of medium dense to dense silty sand (A-2-4), very stiff sandy silt (A-4), and dense clayey silty sand (A-2-4) with gravel. Weathered and/or hard rock was encountered at all boring locations.

Foundation Materials

End Bent 1:

This bent is to the west of Long Creek. Two borings performed at this bent location encountered 12.2 to 13.1 feet of existing roadway fill soil. Fill material overlies a thin residual soil layer in boring EB1-B and weathered rock at boring EB1-A. Roadway fill consists of brown-tan-gray soft to medium stiff sandy silty clay (A-6) and tan-brown soft to medium stiff sandy clayey silt (A-4). The residual soil layer beneath the fill is approximately 1 foot in thickness and consists of gray medium dense silty sand (A-2-4). Weathered and hard rock boundaries occur at the following elevations for each boring:

Boring #	Weathered Rock Elevation (feet)	Hard Rock Elevation (feet)
EB1-A	475.45	471.15
EB1-B	474.00	472.30

End Bent 2:

This bent is located east of Long Creek. Two borings performed at this bent location encountered 13.7 feet of existing roadway fill soils overlying alluvial and residual soils. Roadway fill consists of red-brown-orange very soft to medium stiff sandy clayey silt (A-4) and tan-yellow-brown medium stiff to very stiff sandy silty clay (A-7-6). Alluvial soils underlying fill at approximate elevation 475.3 feet are up to 5 feet in thickness and consist of blue-gray medium stiff sandy silty clay (A-7-6). Residual soils underlie alluvium and range in thickness from 6.8 to 9.7 feet. Residual material consists of tanyellow medium stiff sandy silty clay (A-7-6), brown-tan-gray very stiff sandy silt (A-4), and blue-gray dense clayey silty coarse sand (A-2-4) with gravel. Weathered and/or hard rock underlies residual soil in each boring instance. The weathered and hard rock soil horizons occur at the following elevations in each boring location:

Boring #	Weathered Rock Elevation (feet)	Hard Rock Elevation (feet)
EB2-A	460.55	459.05
EB2-B	N/A	468.36

Groundwater

Groundwater was measured after 24 hours at each boring location in order to determine the static groundwater table. Based on measurements at all four boring locations we estimate the groundwater table to be at approximate elevation 476 feet.

Respectfully submitted,

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J.E. Beverly, Project Geologist