STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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STATE PROJECT: 33422.1.1 (B-4058)
F.A. PROJECT: BRZ-1767(1)
COUNTY: Caswell

DESCRIPTION: Bridge No. 85 on SR 1767 (Gunn-Poole Rd.) over North Hyco Creek

SUBJECT: Geotechnical Report – Structure Inventory Report

Project Description

A three-span bridge, 140-feet in length with a 75° skew, is proposed on -L- (SR 1767) over North Hyco Creek to replace the existing structure. The new bridge will be 90 feet longer than the existing bridge. The project is located in Caswell County about seven miles southeast of Yanceyville.

The subsurface investigation was conducted during December of 2003 using an ATV-mounted CME 750 drill machine. Two Standard Penetration Test borings were performed at each of the four proposed bent locations. All borings were advanced until weathered rock or crystalline rock was encountered. Representative soil samples were obtained for visual classification in the field and selected samples were sent to the Materials and Test Unit for laboratory analysis.

Physiography and Geology

The project is located in gently rolling terrain of the Piedmont Physiographic Province. Geologically, the site is located within the Carolina Slate Belt, and is underlain by meta-volcanic, biotite schist and slate. The area consists of a mixture of wooded land and sparse homes. North Hyco Creek is a tributary of the Roanoke River.

Soil Properties

Soils encountered at the project site include roadway embankment, alluvial and residual soils.

Roadway embankment soils were encountered in a thin layer at both end bents and at bent 2. These soils consist primarily of brown and gray, wet, loose, silty sand (A-2-4) and very soft to medium stiff, sandy silt (A-4). These soils are 1.5 to 2.0 feet thick and are underlain by alluvial soils.

Alluvial soils were encountered in all borings and range in thickness from 16.1 to 28.0 feet. Alluvial soils consist predominantly of green to dark gray, dry to wet, very loose to dense, silty and coarse sand (A-1-b, A-2-4) and soft to stiff, sandy silt (A-4). Lesser amounts of dark green-gray, wet, medium stiff, sandy clay (A-6) are also present. The alluvial soils were deposited on residual soil and weathered rock.

Residual soils were encountered in most borings and range in thickness from 2.5 to 5.9 feet. These soils consist primarily of orange-brown to black, wet, medium dense to very dense, coarse sand (A-1-a, A-1-b). Residual soils are derived from the underlying weathered rock

Rock Properties

Weathered rock was derived from the underlying meta-volcanic rock, and ranges in thickness from 0.9 to 9.5 feet where it is present. The top of weathered rock was encountered at elevations ranging from 506.1 to 494.7 feet.

Crystalline rock was penetrated with N casing and advancer with difficulty to a depth of 5.1 feet in boring B1-A. The top of crystalline rock was encountered from elevation 505.2 to 484.4 feet across the site.

Groundwater

Groundwater was encountered at each bent location. Groundwater elevations ranged from 524.7 to 523.5 feet. Surface water in the North Hyco Creek was at elevation 524.1 feet (12-12-03).

Notice

This Geotechnical foundation report is based on the bridge survey report for North Hyco Creek dated August 29, 2003. If significant changes are made in the design or location of the proposed structure, the subsurface information should be reviewed and modified as necessary.

Respectfully submitted,

Neil T. Roberson

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Project Geologist