STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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January 15, 2004

STATE PROJECT: 8.2341901 B-4327
FEDERAL PROJECT: BRZ-1131(7)
COUNTY: Wilson
DESCRIPTION: Bridge No. 52 and Approaches over Turkey Creek on SR 1131

SUBJECT: Geotechnical Report - Inventory

Project Description

The project consists of constructing the approaches for the replacement structure by widening the existing SR 1131 embankment and raising the existing grade up to 8± feet. The length of the project is approximately 0.24 miles. An off-site detour will be utilized during the construction of the replacement structure. The Geotechnical investigation of subsurface conditions at this site was confined to the corridor of new construction.

The following base line was investigated for this project:

Line	Station
-L-	18+00 to 30+50

Areas of Special Geotechnical Interest

1) Medium plasticity cohesive soils occur throughout the majority of the project.

2) Hard rock is present in the existing ditches and back slopes at the following stations:

28+60 to 29+50	Left side
28+65 to 29+30	Right side

3) High water levels (within 6 feet of natural ground) were typically noted outside the existing embankment from the beginning of the project to -L- Station 26+50±.

Physiography and Geology

The project is located in the western portion of Wilson County within the Carolina Slate Belt of the Lower Piedmont Physiographic Province. Topography along most of the project is nearly flat to gently sloping. However, relatively steeper terrain occurs along the eastern approach. Natural ground elevations generally range from 140± feet along the bed of Turkey Creek to 191± feet along upland portions of the project. Elevations along the upland segments of the project (Station 18+00 to 19+00± and 25+80± to 30+50) range from 150± to 191± feet. At this site, Turkey Creek is a slow moving stream approximately 150 feet wide. The Turkey Creek flood plain was noted from -L- Station 19+00± to 23+00± and 24+50 to 26+80± and lies at an elevation of 147± feet. The geology of the project area basically consists of residual material derived from granitic rock of probable Pennsylvanian to Permian age. Outcrops of granitic rock were noted along the eastern approach from station 28+60 to 29+50±.

Ground Water

Ground water data was collected primarily in August and November of 2003. During our investigation, water was near or above the natural ground surface from the beginning of the project to station 26+50±. From station 26+50± to the end of the project, the water table typically lies 6 feet or more below the surface. Water was generally at or near the natural ground surface within the Turkey Creek flood plain. During wet seasons or heavy precipitation, the water levels are generally 0.5 to 1.5 feet above natural ground within the flood plain areas.

Soils and Rock

Residual soils derived from the in-place weathering of granitic rock were encountered throughout the project and typically consist of loose to medium dense fine to coarse sand (A-2-4, A-1-b) and medium stiff sandy silty clay (A-6, A-7-6). The clay soils typically exhibit fair to poor engineering qualities which include plasticity indices of 16 or more, relatively high moisture contents and 40 percent or more passing the number 200 sieve. Vane Shear tests performed in the cohesive deposits typically exhibit shear strengths of 400 to 1200 psf. No significant alluvial and/or organic sediments were noted along the project.

Hard rock of granitic origin was present in both the left and right existing ditches and back slopes from -L- station 28+60± to 29+50±. Based on a deeper boring made near Turkey Creek, hard granitic rock underlies 30± feet of residual sands and clays at an elevation of 113± feet. Hard weathered granitic rock was noted along the eastern approach at an elevation of 158± to 188± feet. However, based on the current grade, our investigation indicates the rock will not be encountered during the construction of the approaches for this project.