



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

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SECRETARY

June 9, 2003

STATE PROJECT: 8.2281301 B-4270  
FEDERAL PROJECT: BRZ-1240(1)  
COUNTY: Sampson  
DESCRIPTION: Bridge No. 93 on SR 1240 over Little Coharie Creek

SUBJECT: Geotechnical Report - Bridge Foundation Investigation for  
SR 1240 over Little Coharie Creek at -L- Station 14+60

**Site Description**

The proposed bridge site is located on SR 1240 at the existing bridge over Little Coharie Creek approximately 3 miles east of Roseboro. The replacement structure will be constructed along the existing alignment. Based on the proposed design, the new structure will consist of four spans having an overall length of 180 feet. The bents will have a skew of 90 degrees.

One Standard Penetration Test (SPT) boring was made at or near each bent location to provide subsurface information relative to foundation design. The borings were made with an ATV mounted CME-45B drill machine and advanced by rotary drilling methods using bentonite drilling fluid.

The bridge site is located in the Coastal Plain Physiographic Province and underlain by Recent alluvium and deltaic sediments belonging to the Black Creek Formation of Upper Cretaceous age. Little Coharie Creek is a moderately flowing stream approximately 60 feet wide and typically 5 to 9 feet deep. Elevations at the bridge site range from 70± feet in the stream channel to 86± feet on the existing embankment. A 0.4± mile wide flood plain lying at an elevation of 76 to 80± feet borders the creek. Water levels in the bore holes and the surface of Little Coharie Creek were measured near an elevation of 78.5± feet.

**Foundation Description**

Subsurface conditions at the site are generally uniform. Surficial alluvial soils typically consist of 5 to 9 feet of very soft silty sandy clay (A-7-6) and slightly organic clayey sandy silt (A-4) underlain by a 3 to 6 foot thick bed of loose to medium dense fine to coarse sand (A-2-4, A-3). The alluvium is underlain by the Black Creek Formation at an elevation of 66 to 68 feet. The Black Creek Formation at the bridge site typically consists of a 2 to 5 foot thick discontinuous bed of stiff to hard silty clay (A-7-5) occurring at the alluvium/Black Creek

Formation contact. The stiff to hard Cretaceous clay is interbedded with and underlain by an 11 to 17 foot thick bed of medium dense to very dense fine to coarse sand (A-2-4, A-3) and clayey sand (A-2-6). Very stiff to hard silty and fine sandy clay (A-7-5, A-7-6, A-6) underlies the granular sediments at an elevation of 49 to 52 feet. Typical samples tested for moisture content show the silt and clay alluvium near 46 percent and the Cretaceous clay at 39 to 54 percent moisture. A typical sample of alluvial clayey sandy silt was tested at an organic content of 7.4 percent. Boring B1-A was extended to an elevation of 6.5 feet with no significant change in stratigraphy noted.

Based on the proposed design, the existing grade will be raised 0.5 to 1.0 foot at the end bents. The existing embankment is 5 to 6 feet high and constructed of loose to medium dense clayey sand (A-2-4). The proposed end slopes will mainly be constructed within the existing embankment. Some additional fill may be required for construction of the end bent and side slopes. Borrow meeting Coastal Plain criteria should be available in nearby areas.

The Geotechnical Foundation report is based on the Bridge Survey Report and Hydraulic Design Report dated November 21, 2002. 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,

*E. A. Witort*

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Project Geologist

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