



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

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October 22, 2004

STATE PROJECT: 32589.1.1 B-1303  
FEDERAL PROJECT: BRSTP-258 (5)  
COUNTY: Northampton

DESCRIPTION: Bridge No. 76 over the Roanoke River Overflow on US 258 SW of Rich Square at  
-L- Station 18+81.0

SUBJECT: Geotechnical Report – Structure Inventory

**Site Description**

This project consists of a 180-foot long three span bridge to be constructed in place over the Roanoke River Overflow. An onsite detour will be used to divert traffic during construction. The project is located in Northampton County approximately three and one half miles southwest of the town of Rich Square. The proposed bridge has a 90° skew and will replace the existing 100-foot long five span bridge. The area is wooded west and east of the existing structure.

The geotechnical field investigation was conducted in September 2004. Borings were advanced using bentonite drilling fluid and a CME-550 drill machine with a manual hammer. Standard Penetration Tests were performed at each location. Representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit.

**Physiography and Geology**

The project is located in flat to gently sloping terrain in the Coastal Plain Physiographic Province. The project occurs within an area where Coastal Plain sediments of the Pliocene age Yorktown Formation disconformably overlie Cretaceous sediments of the Cape Fear Formation. Surficial alluvial soils were encountered along the project and are underlain by the Yorktown Formation.

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ENTRANCE B-2  
1020 BIRCH RIDGE DRIVE  
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**Soil Properties**

Soils encountered at the project site include roadway embankment, alluvial, and coastal plain sediments.

Roadway embankment fill soil occurs at both end bents of the proposed structure. These soils are eleven to twelve feet in thickness. Fill soil at End Bent 1 consists of 3± feet of medium stiff to very stiff sandy clay (AASHTO classification of A-6) underlain by 9 feet of sandy silt (A-4). At End Bent 2 fill soils are generally soft to medium stiff fine sandy clay (A-7-6) with the upper three feet being medium dense silty sand (A-2-4). The fill soil overlies alluvial soil across the bridge site.

Alluvial soil occurs in all borings and consists of ten to thirteen feet of very soft to very stiff clayey sandy silt (A-4) and sandy clay (A-7-6) overlying the Yorktown Formation.

The Pliocene age Yorktown Formation consists of a five- to ten-foot layer of sand (A-3) overlying the Cretaceous Cape Fear Formation. The Cretaceous Cape Fear Formation is comprised of alternating five- to ten-foot beds of clay (A-7-6), clayey sand (A-2-7, A-2-6) and sand (A-3, A-1-b).

**Groundwater**

Groundwater was encountered at each bent location. Groundwater elevations ranged from 36± feet to 37± feet. Surface water elevation in the overflow was measured at 36.2 feet at boring B1-B on September 8, 2004.

**Notice**

This Geotechnical foundation report is based on the bent locations provided in the memo "Request for Foundation Recommendations", dated July 28, 2004, and the Hydraulic Bridge Survey Report dated April 13, 2004. If significant changes are made in the design, or location of the proposed structure, the subsurface information should be reviewed and modified as necessary.

Prepared by:

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NWW/KBM