



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

May 17, 2005

STATE PROJECT: 33394.1.1 B-4027  
FEDERAL PROJECT: BRZ-1219(1)  
COUNTY: Bertie  
DESCRIPTION: Bridge No. 11 over Cashie River on SR 1219  
  
SUBJECT: Geotechnical Report - Bridge Foundation Investigation for  
SR 1219 over Cashie River at -L- Station 18+50

**Site Description**

The proposed bridge site is located at the existing SR 1219 bridge over Cashie River approximately 13± miles northwest of Windsor. The replacement structure will be constructed along the existing alignment. Based on the proposed design, the new structure will have four spans with a length of 160 feet. The bents will have a skew of 90 degrees.

One Standard Penetration Test (SPT) boring was made at or near each proposed bent location to provide subsurface information relative to foundation design. The borings were made with a truck mounted Mobile B-47 and ATV mounted CME 45B and 45C drill machines and were advanced by rotary drill methods using bentonite drilling fluid.

The project is primarily located on terrain where the natural topography is nearly flat. Elevations at the site range from 34± feet along the creek bed to 46± feet along the existing SR 1219 embankment. During this investigation, water levels within the boreholes and the surface of Cashie River were measured at an elevation of 40± feet.

**Soil Description**

Subsurface conditions at the site are relatively uniform. Surficial alluvial soils generally consist of 4± to 10± feet of very loose to medium dense fine to coarse sand (A-1-b, A-2-4, A-3). Soils belonging to the Pleistocene age Yorktown Formation underlie the alluvial deposits at an elevation of 30± to 34± feet. Soils of the Yorktown Formation consist of 10± feet of very soft to soft silty clay (A-7-6). Moisture content of a tested clay sample was

76 percent. The cohesive deposits are underlain by very loose to dense fine to coarse sand (A-2-4, A-3), slightly clayey clayey sand (A-2-6) and very soft to stiff clayey sandy silt (A-4). Some discontinuous stiff to very stiff clay (A-6, A-7-6) layers were noted within the granular deposits along Bents 2 and 3 at various elevations. The Yorktown deposits are underlain at elevations ranging from -15± to -24± feet by the Cretaceous age Cape Fear Formation. Soils within the Cape Fear Formation consist of very stiff to hard sandy and silty clay (A-6, A-7-6), sandy clayey silt (A-4) and medium dense to dense clayey sand (A-2-6). A 5 foot thick dense fine to coarse sand (A-2-4) layer was noted in End Bent 1.

Based on the proposed design, the existing grade will be raised 1± foot at the bridge site. The existing roadway embankment at the end bents consists of 6 feet of very loose to medium dense fine to coarse sand (A-2-4). The proposed end bent slopes will be mainly constructed within the existing embankment. Some additional fill will be required for construction of the end bent and side slopes. Borrow meeting Coastal Plain criteria is available in nearby areas.

The Geotechnical foundation report is based on the bridge survey and hydraulic design report dated October 1, 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:

Fred M. Wescott III  
Project Engineering Geologist

MAILING ADDRESS:  
NC DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL ENGINEERING UNIT  
1589 MAIL SERVICE CENTER  
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088  
FAX: 919-250-4237  
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:  
CENTURY CENTER COMPLEX  
ENTRANCE B-2  
1020 BIRCH RIDGE DRIVE  
RALEIGH NC