



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 6, 2005

STATE PROJECT: 33568.1.1 B-4224
F.A. PROJECT: BRZ-1305(2)
COUNTY: Pender/Duplin
DESCRIPTION: Bridge No. 63 Over Doctor's Creek on SR 1305 and SR 1155
SUBJECT: Geotechnical Report – Structure Inventory

Site Description

The proposed structure is 145 feet long and comprised of 3 spans. The project is located on the Pender-Duplin County line approximately four miles west of the town of Wallace. The proposed bridge is on a 90° skew and will replace the existing bridge. An offsite detour will be used to re-direct traffic during construction.

Borings were advanced with bentonite drilling fluid using a CME-45B and a CME-550 drill machine. Standard Penetration Tests were performed and 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 nearly flat terrain within the Coastal Plain Physiographic Province. The project encompasses an area where Recent alluvial soils overlie Coastal Plain sediments of the Cretaceous age Peedee Formation.

Soil Properties

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

Alluvial deposits were noted in all borings. Alluvial material consists of 3± feet of very soft to soft sandy silt (A-4) at EB1 and grades into 5 to 10 feet of very loose to medium dense sand from B1-B to EB2-A. At B1-A 6± feet of medium stiff to stiff sandy clay was encountered at the surface.

Coastal Plain deposits at the site belong to the Cretaceous age Peedee Formation. The Peedee Formation is primarily composed of alternating 4± to 15± foot thick beds of very loose to very dense clayey sand and sand (A-2-6, A-2-4) and stiff to hard sandy clay (A-6). Some calcium cemented sandstone and limestone layers were encountered across the site. An upper limestone layer was encountered at elevation 20 to 24 feet at Bent 1, Bent 2 and End Bent 2 and ranged in thickness from 2.5 to 3.5 feet. A sandstone layer was noted at End Bent 2 at an elevation of 8 feet. The boring was terminated in this unit at elevation 5.9 feet. A similar sandstone layer was noted at End Bent 1, Bent 1 and Bent 2 at elevation -14 to -11.6 feet and ranged in thickness from 6 to 10 feet or more. A lower limestone unit was encountered at elevation -27 to -25 feet at End Bent 1 and Bent 1.

Groundwater

Artesian groundwater conditions exist at this site. The piezometric head was measured at an elevation of 34.7 feet. The water elevation of Doctor's Creek was noted at 29.4 feet in December 2004.

Notice

This Geotechnical foundation report is based on the bent locations provided in the "Bridge Survey and Hydraulic Design Report", dated December 20, 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:

Kevin B. Miller, GIT
Engineering Geologist II