



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

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STATE PROJECT: 8.2271401 B-3887  
FEDERAL PROJECT: BRZ-1520(3)  
COUNTY: Pender  
DESCRIPTION: Bridge No. 116 on SR 1520 over Shaken Creek  
SUBJECT: Geotechnical Report - Bridge Foundation Investigation for  
Bridge No. 116 on SR 1520 over Shaken Creek at -L- Station  
15+64.5

Site Description

The proposed bridge site is located at the existing SR 1520 bridge over Shaken Creek approximately 5 miles southwest of Maple Hill. The replacement structure will be constructed along the existing alignment. Based on the proposed design, the new structure will have three spans having a total length of 115 feet. The bents will have a skew of 80 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 ATV mounted CME 45B drill machine and advanced by rotary drill methods using bentonite drilling fluid.

The bridge site is located in the Coastal Plain Physiographic Province and is underlain by Recent alluvial deposits, Tertiary sediments and Cretaceous age soils of the Peedee Formation. Shaken Creek is a slow flowing stream typically 30 to 45 feet wide and 4 to 10 feet deep. Topography along the project is nearly flat to gently sloping. Elevations at the site range from -3± feet along the stream bed to 15 to 19 feet along the existing SR 1520 embankment. The existing approach embankments are bordered by a 300± foot wide flood plain lying at elevations ranging from 7 to 14 feet. During this investigation, water levels within the bore holes and the surface of Shaken Creek were measured at elevations ranging from 5.5± to 6.5± feet.

(3)

Foundation Description

Surficial alluvial sediments at the bridge site generally consist of 5 to 13 feet of very loose to loose fine to coarse sand (A-2-4, A-3). However, the granular alluvial material was not noted at EB1-A. Soils of probable Tertiary age were encountered throughout the bridge site at elevations ranging from 0 to -8 feet along Bents 1, 2 and End bent 2. Borings indicate that these sediments are present near an elevation of 10± feet at End Bent 1. The Tertiary sediments primarily consist of 8 to 17 feet of very soft to hard silty sandy clay (A-6, A-7-6).

The Peedee Formation underlies the Tertiary deposits at elevations ranging from -7± to -17± feet. Soils within this formation typically consist of medium dense to very dense fine to coarse indurated sand (A-1-b, A-2-4) and clayey sandy silt (A-4) with limestone fragments. The Peedee's indurated granular material along the right side of Bent 2 was cored at 5 foot intervals using a NWD-4 core barrel to an elevation of -43.1 feet. However, very little or no recovery was made during this investigation. There were some pieces of limestone typically less than 4 inches in length recovered. Borings B1-B was extended to near an elevation of -68.5 feet with no significant change in stratigraphy noted.

Based on the proposed design, the existing grade will be maintained at the bridge site. The existing fill at the end bents consists of 6± feet of loose to medium dense fine 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 report for Shaken Creek dated July 11, 2003. 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,

Fred M. Wescott III  
Project Engineering Geologist