



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

LYNDO TIPPETT  
SECRETARY

September 30, 2003

STATE PROJECT: 8.2090201 B-3871  
FEDERAL PROJECT: BRSTP-1001(19)  
COUNTY: Martin  
DESCRIPTION: Bridge No. 64 over Dog Branch on SR 1001  
SUBJECT: Bridge Inventory Report – Bridge Foundation Investigation for Bridge No. 64 on SR 1001 over Dog Branch at -L- Station 16+67.5

**Site Description**

The proposed project is located at the existing SR 1001 bridge over Dog Branch just south of Williamston. The replacement structure will be located at the same site as the existing bridge. There will be an off-site detour during construction of this project. Based on the proposed design, the new structure will consist of two spans having a total length of 95 feet and the bents will have a skew of 90 degrees. Alternate interior bent locations (B1-XA and B2-XB) were also investigated at the request of the NCDOT Hydraulics Unit in the case that resource agencies decide it is necessary to span the creek channel.

A total of six Standard Penetration Test borings were made on or near each of the proposed bent locations, and as close to the end of the bent as site conditions would allow. Due to high bearing material present in the upper part of the Yorktown sediments at End Bent 1, two borings were made along this proposed bent. It was noted that subsurface conditions are somewhat similar throughout the site. The borings were made using an ATV (CME-45B) drill machine and advanced by rotary drill methods using bentonite drilling fluid.

The project is located in the Coastal Plain Physiographic Province and is underlain by Recent alluvium, the Pliocene Yorktown Formation, and the Miocene Pungo River Formation. The topography of the surrounding area is nearly level to gently rolling with elevations at the site ranging from 31± feet above sea level along the stream bed to 41± feet above sea level along the

existing SR 1001. Dog Branch is a slow flowing stream in a rural setting typically 15 to 30 feet wide and up to 3± feet deep. During our investigation, water levels in the bore holes and the surface of Dog Branch were measured at elevations ranging from 34.5± to 36.5± feet.

**Soil Description**

Subsurface conditions at the site are somewhat typically uniform varying primarily in soil density. The entire site is underlain by 4± to 8± feet of Recent alluvial soils typically consisting very loose to medium dense granular (A-2-4, A-3) sediments with some medium stiff fine sandy silt (A-4) layers. Organic debris is generally present within the Recent deposits.

Pliocene age sediments of the Yorktown Formation underlie the Recent alluvial soils at elevations ranging from 27± to 33± feet. The initial 7 to 14 feet primarily consist of very loose to medium dense sandy soils (A-2-4, A-3), very soft to stiff sandy silt (A-4) and sandy to silty clay (A-6, A-7-6) with some shell fragments. A variation in soil density was noted in the lower 4± feet of the silty sand at B1-B, where it had a blow count of 100+ BPF. Below the upper sand and clay layer at an elevation of 16 to 20 feet, approximately 70 feet of soft to very stiff silty clay (A-7-6) with clayey sand layers (A-2-6, A-2-7) was encountered. It was noted in borings EB1-A and EB1-B that at an elevation of 12± feet a clayey sand layer marked the top of a 13± feet thick very dense clayey sand and very stiff to hard silty clay (A-7-6) layer. Blow counts in this layer ranged from 16 to 100+BPF. This higher density layer was not encountered in the rest of the borings at the site.

Relatively dense silty phosphatic sand (A-2-4) of the Miocene Pungo River Formation was encountered near an elevation of -50± feet. Within the deepest boring, B2-XB, stiff sandy and silty clay (A-6, A-7-6) was encountered at an elevation of -75.5 feet. Boring B2-XB was extended to near elevation -90 feet with no significant change in stratigraphy noted.

Based on the proposed design, the existing grade will be raised 3± feet at the end bents. The existing embankment generally consists of 3 to 5 feet of loose to dense silty fine sand (A-2-4). The proposed end slopes will be constructed partially within the existing fill and partially on natural ground. Borrow meeting Coastal Plain criteria should be available in nearby areas. Slope protection methods should be used on the end slopes.

The Geotechnical foundation report is based on the bridge survey report for Dog Branch dated February 26, 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,

John McCray,  
Project Geologist

JRM