

STATE PROJECT: 8.2407901 (B-3704)

WBS ELEMENT : 33244.1.1

FEDERAL PROJECT: BRZ-1834(2)

COUNTY: Wake

DESCRIPTION: Bridge No. 108 Over Lower Barton's Creek on SR 1834 (Norwood Rd.)

SUBJECT: Geotechnical Report of Subsurface Exploration

Trigon Engineering Consultants, Inc. has completed the authorized geotechnical investigation for the above referenced project in Wake County, North Carolina. The purpose of this exploration was to investigate the subsurface conditions at the proposed bridge bent locations.

1.0 SITE DESCRIPTION

The project site is located in the northern portion of Wake County, at the approximate location shown on the Site Vicinity Map (Drawing No. 1) contained herein. The site and project description of the proposed project is "Bridge No. 108 over Lower Barton's Creek on SR 1834". Topographically, the site slopes down towards Lower Barton's Creek from each end of the existing bridge with an approximately 50-foot wide floodplain in the vicinity of the existing bridge. At the time of the exploration the channel of Lower Barton's Creek in the vicinity of the existing bridge was approximately 24 feet wide. The topography of the general site vicinity consists of gently rolling hills. The end bent slopes on either side of Lower Barton's Creek near the proposed

structure are fairly steep (ranging from a high elevation of ± 281 feet to a low elevation of ± 260 feet) and are covered by soil, grass and small brush on both sides. The End Bent 2 slope also contains rip rap on the slope underneath and adjacent to the existing bridge. The site is located in an area of moderate traffic flow approximately one mile west of the intersection of SR 1834 (Norwood Road) and SR 1005 (Six Forks Road).

At the time of this exploration, a six-span bridge (existing Bridge No. 108) was present at the location of the proposed bridge. The existing bridge consists of a concrete deck on timber joists with a substructure comprised of timber caps on timber piles. The end bents consisted of timber piles with timber beam abutments and timber wingwalls. The existing bridge is approximately 104 feet in length and approximately 23 feet in width. The third and fourth bents of the existing bridge are within the channel of Lower Barton's Creek. All of the remaining bents of the existing bridge are located within the floodplain.

A small drainage ditch feeds into the main channel approximately 40 feet upstream from the northwest and a drainage ditch intersects the main channel approximately 20 feet downstream of the existing bridge from the northwest as well. The creek channel in the area upstream of the existing bridge is predominantly sandy with boulders and cobbles embedded in the sediment. Downstream from the existing bridge the channel consists mainly of coarse sand and gravel, and in some areas, rock outcrops and large boulders are exposed along the channel banks and in the channel itself.

The river water surface elevation surveyed by Trigon on June 19, 2003 was 259.62 feet. According to the Bridge Survey and Hydraulic Report, the normal river water surface elevation is approximately 259.5 feet, the existing 25-year flood water surface elevation is approximately 269.3 feet, the 50-year flood water surface elevation is approximately 269.8 feet, the 100-year flood elevation is approximately 270.3 feet, and the 500-year flood elevation is approximately 274.5 feet.

2.0 PROJECT DESCRIPTION

Proposed for construction is a new, three-span structure to replace the existing Bridge No. 108 on SR 1834 (Norwood Road). Information for the proposed bridge structure was obtained from the Bridge Survey & Hydraulic Design Report dated April 23, 2003 as well as from the Request For Proposal of Additional Work from the NCDOT Geotechnical Unit dated September 30, 2003. The proposed bridge will be 150 feet in length and approximately 32 feet in width. The proposed bridge is to have 1 span length at 40.0 feet and 2 spans at