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STATE PROJECT: 33253.1.1

TIP : B-3714

FEDERAL PROJECT: BRSTP-268(7)

COUNTY: Wilkes

DESCRIPTION: Bridge No. 83 Over Mulberry Creek on NC 268

SUBJECT: Geotechnical Report of Structure Subsurface Investigation

Trigon Engineering Consultants, Inc. has completed the authorized geotechnical investigation for the above referenced project in Wilkes County, North Carolina. The purpose of this exploration was to investigate the subsurface conditions at the proposed bridge bent locations and to provide general construction considerations based on the subsurface conditions.

1.0 SITE DESCRIPTION

The project site is located in the central portion of Wilkes County, approximately 2 miles north of the town of North Wilkesboro, at the approximate location shown on the Site Vicinity Map (Drawing No. 1) located behind this report. The site and project description of the proposed project is "Bridge No. 83 over Mulberry Creek on NC 268". Topographically, the site slopes moderately down towards Mulberry Creek with steep slopes down to the floodplain from the existing roadway embankment. The floodplain at the location of the existing bridge appears to be greater than 1,000 feet wide. The topography of the general site vicinity consists of gently rolling hills.

Thank you for our success.

At the time of this investigation, a three-span bridge (existing Bridge No. 83) was present just south of the proposed bridge. The distance between the centerline of the existing bridge to the centerline of the proposed bridge is approximately 40 feet. The existing bridge consists of a reinforced concrete deck on reinforced concrete girders. The existing end bents consist of reinforced concrete caps on steel piles, while the existing interior bents consist of three-column reinforced concrete web on piles. The existing bridge is approximately 127.5 feet in length and approximately 26 feet (clear roadway) in width.

At the time of this investigation, high-tension overhead power lines bisected the -L- line in the vicinity of the proposed End Bent-1. On the east (upstation) end of the proposed bridge, a drainage ditch paralleled the existing roadway along the left side of the roadway, crossed the proposed End Bent-2 and Bent-2 locations at approximately the centerline of the proposed bridge, and emptied into Mulberry Creek just downstation of the centerline of the proposed Bent-2. This drainage ditch was approximately 5 feet deep and approximately 9 feet wide.

The creek water surface elevation surveyed by Trigon on December 17, 2004 was ±981 feet. According to the Bridge Survey and Hydraulic Report, the normal creek water surface elevation is approximately 980.0 feet, the 10-year floodwater surface elevation is approximately 988.3 feet, the 50-year floodwater surface elevation is approximately 990.6 feet, the 100-year flood elevation is approximately 991.4 feet, and the 500-year flood elevation is approximately 997.9 feet. A moderate amount of debris, including trees and limbs, was present during this exploration against the upstream (left) side of Bent-1 of the existing bridge. A sewer pipe with concrete supports is present on the downstream (right) side of the existing bridge.

2.0 PROJECT DESCRIPTION

Proposed for construction is a new, three-span structure to replace the existing Bridge No. 83 on US 268 over Mulberry Creek. Information for the proposed bridge structure was obtained from the Bridge Survey & Hydraulic Design Report dated June 2, 2004 and the Preliminary General Drawing dated June 3, 2004. Both the Bridge Survey & Hydraulic Design Report and the Preliminary General Drawing were provided to Trigon by the NCDOT. The proposed bridge will be 150 feet in length and approximately 37.3 feet in width (out to out). A skew angle of 90°00'00" is proposed for each bent. The proposed grade along the -L- centerline of the new bridge will be approximately 13 feet higher than the existing grade at End Bent-1 and approximately 9 feet higher than the existing grade at End Bent-2. The proposed grade along the -L- centerline at the interior bents will remain essentially unchanged from the existing grade. Excavation of the End Bent-1 and End Bent-2 embankment slopes is proposed between the old and new abutments. This excavation will involve both