

STATE PROJECT: 8.1602101 (B-4096)

WBS ELEMENT : 33454.1.1

FEDERAL PROJECT: BRSTP-29(20)

COUNTY: Davidson

DESCRIPTION: Bridge No. 140 Over Rich Fork Creek on US 29-70/I-85 Business

SUBJECT: Geotechnical Report of Subsurface Exploration

Trigon Engineering Consultants, Inc. has completed the authorized geotechnical investigation for the above referenced project in Davidson 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 northeastern portion of Davidson County, at the approximate location shown on the Project Vicinity Map (Drawing No. 1) located in Appendix A. The site and project description of the proposed project is "Bridge No. 140 over Rich Fork Creek on US 29-70/I-85 Business". Topographically, the site slopes moderately down towards Rich Fork Creek. The floodplain at the location of the existing bridge appears to be approximately 450 feet wide. The topography of the general site vicinity consists of gently rolling hills.

At the time of this exploration, a five-span bridge (existing Bridge No. 140) was present at the location of the proposed bridge. 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 two-column reinforced concrete post and web on piles. The existing bridge is approximately 213 feet in length and approximately 30 feet in width.

The creek water surface elevation surveyed by Trigon on March 9, 2004 was ± 652 feet. According to the Bridge Survey and Hydraulic Report, the normal creek water surface elevation is approximately 653.0 feet, the 10-year floodwater surface elevation is approximately 661.2 feet, the 50-year floodwater surface elevation is approximately 663.1 feet, the 100-year flood elevation is approximately 663.9 feet, and the 500-year flood elevation is approximately 665.8 feet. Minor amounts of debris, including trash and relatively small limbs, was present during this exploration under the existing bridge against the timber piles left in the stream from a previous bridge or bridges.

2.0 PROJECT DESCRIPTION

Proposed for construction is a new, three-span structure to replace the existing Bridge No. 140 on US 29-70/I-85 Business over Rich Fork Creek. Information for the proposed bridge structure was obtained from the Bridge Survey & Hydraulic Design Report and the preliminary plans provided to Trigon by the NCDOT. The proposed bridge will be 225 feet in length and approximately 36 feet in width (clear roadway). A skew angle of $120^{\circ}00'00''$ is proposed for each bent. The proposed grade along the -L- centerline of the new bridge will be approximately the same as the existing grade with the exception of proposed excavation of the existing end bent slope. New embankment fill will be required above the existing ground surface on the sides of the existing embankment fills at the end bents to accommodate the proposed wider roadway. Excavation of the End Bent-1 and End Bent-2 embankment slopes totaling approximately 905 and 660 cubic yards, respectively, is proposed between the old and new abutments. This excavation will involve both horizontal and vertical excavation, with vertical excavation extending to approximately 10 feet below the existing top-of-soil in this area. Slopes on the order of 1.5(H):1(V) are proposed for the new embankment slopes.

The Bridge Survey & Hydraulic Design Report and the Preliminary Plans are in English units with feet as the primary unit of length.