



ENGINEERING CONSULTANTS, INC.

P.O. Box 18846 • Zip 27419-8846 • 313 Gallimore Dairy Road • Greensboro, NC 27409 • (336) 668-0093 • FAX (336) 668-3868



STATE PROJECT: 8.2721501 (B-3808)
WBS ELEMENT : 33263.1.1
FEDERAL PROJECT: BRZ-1126(2)
COUNTY: Avery
DESCRIPTION: Bridge No. 58 Over Henson Creek on SR 1126 (Henson Creek Road)
SUBJECT: Geotechnical Report of Subsurface Exploration

Trigon Engineering Consultants, Inc. has completed the authorized geotechnical investigation for the above referenced project in Avery 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 southeast portion of Avery 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. 58 over Henson Creek on SR 1126". Topographically, the site slopes moderately to steeply down towards Henson Creek and Henson Creek Road (SR 1126), while Henson Creek Road slopes moderately towards the southeast in the immediate vicinity of the project. A large outcrop of rock is present on the left side of Henson Creek Road on the south side of the existing bridge, and a steep slope containing numerous colluvial boulders is present on the right side of Henson Creek Road in the immediate vicinity of the

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existing bridge. A floodplain is not readily evident at the subject site. The topography of the general site vicinity is mountainous.

At the time of this exploration, a single-span bridge (existing Bridge No. 58) was present at the location of the proposed bridge. The existing bridge consists of a timber deck on steel girders with timber pile end bents and timber bulkhead abutments. The existing bridge is approximately 26 feet in length and approximately 18 feet in width.

The creek water surface elevation surveyed by Trigon on December 31, 2003 was ± 3172 feet. According to the Bridge Survey and Hydraulic Report, the normal creek water surface elevation is approximately 3171.5 feet, the 25-year flood water surface elevation is approximately 3178.5 feet, the 50-year flood water surface elevation is approximately 3180.2 feet, the 100-year flood elevation is approximately 3181.1 feet, and the 500-year flood elevation is approximately 3182.1 feet. Debris, including boulders and logs, was present during this exploration under the existing bridge against the southern stream bank.

2.0 PROJECT DESCRIPTION

Proposed for construction is a new, single-span structure to replace the existing Bridge No. 58 on SR 1126 (Henson Creek Road). Information for the proposed bridge structure was obtained from the Bridge Survey & Hydraulic Design Report dated October 15, 2003. The proposed bridge will be 45 feet in length and approximately 27 feet in width (clear roadway). A skew angle of $60^{\circ}00'00''$ is proposed for each bent. The proposed grade along the -L- centerline of the new bridge will be approximately 1 foot higher than the existing grade. 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. Approximately 280 cubic yards of excavation is proposed between the old and new abutments to increase stream capacity under the proposed bridge. This excavation will involve both horizontal and vertical excavation, with vertical excavation extending to approximately 3 feet below the existing top-of-soil in this area. Slopes on the order of 12(H):1(V) are proposed for the newly formed stream sides extending between the new abutments and the stream.

The Bridge Survey & Hydraulic Design Report is in English units with feet as the primary unit of length.