



ENGINEERING CONSULTANTS, INC.



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**STATE PROJECT:** 33296.1.1  
**TIP :** B-3848  
**FEDERAL PROJECT:** BRZ-2124(1)  
**COUNTY:** Guilford  
**DESCRIPTION:** Bridge No. 102 Over Lake Higgins/Brush Creek on SR 2124  
**SUBJECT:** Geotechnical Report of Structure Subsurface Investigation

Trigon Engineering Consultants, Inc. has completed the authorized geotechnical investigation for the above referenced project in Guilford 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 northwest portion of Guilford County, northwest of the city of Greensboro, 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. 102 over Lake Higgins/Brush Creek on SR 2124 (Lewiston Road)". Topographically, the site slopes moderately down towards Lake Higgins/Brush Creek along the existing roadway upstation and downstation of the existing bridge. Relatively steep slopes down to Lake Higgins are present along each side of the existing roadway embankment and in front of the existing end bents.

*Thank you for our success.*

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.

At the time of this investigation, a five-span bridge (existing Bridge No. 102) was present at the site of the proposed bridge. The centerline of the existing bridge matches the centerline of the proposed bridge. The existing bridge consists of a timber deck with asphalt overlay bearing on timber beams and timber piles. Steel H-piles with steel girders were in place at the interior bents for the purpose of shoring up the existing interior bents. The existing bridge is approximately 108 feet in length and approximately 22 feet (clear roadway) in width.

Riprap and boulders placed for scour protection were present on the existing abutment slopes and extending along the sides of the roadway embankment. The extent, quantity, and relative sizes of the riprap and boulders could not be determined due to the abundant brush and weeds obscuring them from view.

The lake water surface elevation surveyed by Trigon on May 30, 2005 was 763.7 feet. According to the Bridge Survey and Hydraulic Report, the normal water surface elevation is 763.4 feet, the 10-year floodwater surface elevation is approximately 766.9 feet, the 25-year floodwater surface elevation is 767.6 feet, the 100-year flood elevation is 769.5 feet, and the 500-year flood elevation is 772.8 feet.

## 2.0 PROJECT DESCRIPTION

Proposed for construction is a new, three-span structure to replace the existing Bridge No. 102 on SR 2124 (Lewiston Road) over Lake Higgins/Brush Creek. The new bridge will be a replacement-in-place of the existing bridge. Information for the proposed bridge structure was obtained from the Bridge Survey & Hydraulic Design Report dated March 7, 2005 and the Preliminary General Drawing dated April 8, 2005. Both the Bridge Survey & Hydraulic Design Report and the Preliminary General Drawing were provided to Trigon by the NCDOT. The proposed bridge will be 128 feet in length and approximately 39 feet in width (out to out). A skew angle of 90°00'00" is proposed for each bent. The proposed grades along the -L- centerline of the new bridge 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 horizontal and vertical excavation, with vertical excavation extending to approximately 5 feet below the existing top-of-soil at the -L- centerline. Slopes on the order of 1.5(H):1(V) are proposed for the new embankment slopes.