



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 2003

STATE PROJECT: 8.2951701 (B-3662)
COUNTY: Henderson
DESCRIPTION: Approaches to Bridge No. 20 on SR-1006 over Featherstone Creek
SUBJECT: Geotechnical Report – Inventory

Introduction

This project is located in north-central Henderson County on Howard Gap Road (SR-1006), approximately 0.5 miles southeast of the intersection of Howard Gap Road and Brookside Camp Road. It is about 4 miles southeast of the town of Fletcher. The surrounding area is composed of residential sites. Land use adjacent to the proposed roadway is primarily residential as well.

The project investigation comprises of five borings conducted between Stations 11+00 to 24+50 on alignment -L-. Proposed construction calls for replacing Bridge No. 20 with a three barrel 11' x 9' RCBC with low flow sills in two outer barrels that will be located approximately 60 feet to the southwest along the proposed realignment of the roadway.

The Geotechnical Unit conducted a subsurface investigation for this project in late December 2002 and early January 2003. Five auger borings were made with a CME-550 power-drilling machine using 8-inch hollow-stem augers. Standard Penetration Tests (SPT's) were conducted in soils at 5-foot intervals and soil samples were submitted to a DOT laboratory for quality tests. One boring was carried to alluvium, three were carried to saprolite, and one was carried to weathered rock.

Soil Characteristics

The soils on this project are mainly alluvium, saprolite, and weathered rock. Alluvial soil was encountered at every boring as the proposed roadway is routed primarily on floodplain material. Laboratory analysis shows this material ranging widely from medium stiff silty clay (A-6) to very soft to stiff clayey silt (A-4) to very loose sand (A-2). Alluvial gravel was encountered in two borings.

Saprolite, encountered at Borings No. 2, 3, and 5 is primarily dense to very dense silty sand (A-2). A weathered rock seam was encountered between saprolite layers at Boring No. 3. Saprolite is also found at the ground surface at the beginning of the project between approximate -L- Stations 11+00 to 15+00.

Weathered rock was encountered below alluvium in Borings No. 4 and 5.

Geotechnical Descriptive Analysis

This project is primarily a new construction and will involve the emplacement of embankments on two approaches at either side of a new proposed bridge site.

-L- Stations 11+00 to 16+00

This segment extends from the beginning of the roadway relocation, Station 11+00, through Station 16+00. Plans call for a cut on the right and left side from Station 11+50 to Station 16+00.

The cut will have a maximum depth of 15 feet at approximately Station 12+50 on the right side.

The beginning of this segment is underlain by existing roadway embankment. Borings were not performed along this segment and rock is not exposed at the proposed cut area and soils should consist of alluvial and residual material.

-L- Stations 16+00 to 20+00

This segment extends from the top of an alluvial terrace through the proposed bridge site and floodplain adjacent to the creek. Embankment fill is intended for this section of proposed roadway. The proposed embankment will have a maximum height of about 6 feet. It will overlie alluvial floodplain soils comprising of silty clay (A-6), clayey silt (A-4), and very loose sand (A-2). The alluvial material overlies dense to very dense silty sand saprolite and weathered rock encountered intermittently.

-L- Stations 20 to 24+50

This segment continues in the floodplain and ties into the existing roadway at the end of construction. Proposed construction consists of 5 feet or less of embankment fill tapering to less than 2 feet beyond Station 23+00. A cut area of 3 feet or less also exists along this segment.