



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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May 28, 2003

STATE PROJECT: 8.2663501 (B-3623)
COUNTY: Cabarrus
F.A. PROJECT: BRZ-1136(2)
DESCRIPTION: Bridge No. 176 Over Reedy Creek on SR 1136
SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

This geotechnical report addresses the field investigation findings of the proposed roadway realignment for Lower Rocky River Road. The project is located in southwestern Cabarrus County, southwest of Concord, on Lower Rocky River Road (SR 1136) over Reedy Creek. An assay of the site was conducted in March and April of 2003. A drill crew on contract from S&ME along with a state engineering geologist conducted the field investigation of the site.

Borings were advanced using a Diedrich D-50 Remote Control track drill machine equipped with a manual hammer for Standard Penetration Tests. 6" hollow stem augers were used to bore four holes at the end bent locations of the proposed structure and one additional boring in the floodplain. NW casing and NQ wireline were utilized for boring and coring four borings at the interior bent sites along the project. Soil, rock and shelly tube samples from holes drilled were sent to the NCDOT Materials and Tests Unit for analysis.

The following survey line was investigated:

| Line | Station |
|------|----------------|
| -L- | 17+45 to 19+80 |

PHYSIOGRAPHY/GEOLOGY

Geologically, this project is found in the Carolina Slate Belt within the Piedmont Physiographic Province. This belt consists of heated and deformed volcanic and sedimentary rocks. It was the site of a series of oceanic volcanic islands about 550-650 million years ago.

The proposed structure is located in a moderately incised valley beginning on the northwest side of the creek, and transitions to a large flat floodplain on the southeast side of the creek. Most of the floodplain area in the vicinity is open field with surrounding areas covered with forest. The floodplain is up to 350' wide at the creek. The remainder of the project consists of residual soils.

SOIL PROPERTIES

ALLUVIAL SOILS

Alluvium in the floodplain resulted from deposition of particles transported by water overtopping the banks of Reedy Creek. Sediments are contained to the floodplain along Reedy creek. Alluvial soils consist of sandy silty clays, silt, and sand (A-7 and A-6, A-4, A-1 and A-2-4) and reach depths up to 13.5'.

FILL SOILS

Roadway fill soils occur in the roadway approaches to the existing structure. No borings or samples were taken in this area.

RESIDUAL SOILS

Residual soils, up to 19.5' thick, at the foundation site are granitic and volcanic in origin and range from silty sand, to sandy silt, and sandy silty clay (A-1 and A-2-4, A-4, to A-7). Soils in cut areas were visually observed to be brown-tan, medium stiff-stiff, moist, clayey sandy silts.

ROCK PROPERTIES

Rock is defined as material that refuses penetration of power augers or yields SPT refusal (60 blows for less than 0.1' penetration). It was only encountered in structure foundation borings.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

ALLUVIUM

Sediments are confined to the floodplain associated with the creek. Deposits are up to 13.5' in thickness. Alluvial soils consist of sandy silty clays, silt, and sand (A-7 and A-6, A-4, A-1 and A-2-4).

Shelby Tubes, ST-1 and ST-2, were taken in the floodplain along End Bent 2. The undisturbed samples were tested for triaxial cu and consolidation.

ROCK

All rock encountered during the investigation occurred in the bridge foundation borings. 0.5-6.5' of weathered rock overlies crystalline rock. Rock consists of interlayered granite and mafic meta volcanics. Meta dacite tuff is also present in small quantities.

GROUNDWATER

The water table was encountered in borings drilled in the floodplain area. These borings had groundwater elevations near the stream elevation. It is not suspected that groundwater would be