STATE OF NORTH CAROLINA
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STATE PROJECT: 33321.1.1 (B-3877)
FEDERAL PROJECT: BRZ-1101(7)
COUNTY: Nash

DESCRIPTION: Bridge No. 52 over Turkey Creek on SR 1101 (Claude Lewis Road)

SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

This project consists of the approaches to a proposed replacement bridge over Turkey Creek located at the site of the existing bridge. The project is approximately 0.2 miles in length. The grade is being raised approximately 3 feet at the west end of the bridge, and as much as 6 feet at the east end.

The subsurface investigation was conducted during March of 2004 using a CME-550 drill machine with an automatic hammer. Six Standard Penetration Test borings were performed along the proposed roadway (see Plan Sheet No. 4). Representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

1) Hard Rock: Hard rock was encountered at the following location:

Alignment	Station	Offset
-L-	30+50	LT & RT

Excavation of hard rock may require blasting (for further details see the discussion of Rock Properties below).

PHYSIOGRAPHY AND GEOLOGY

The project is located at the eastern limits of the Piedmont physiographic province, approximately 4 miles southeast of the town of Middlesex. The area is rural, with scattered single-family homes and farms located along Claude Lewis Road. The areas adjacent to the site are wooded.

Geologically, the project is located within the Eastern Slate Belt. Soils are derived from the weathering of the underlying metamorphosed mudstone (meta-mudstone) and granitic bedrock.

SOIL PROPERTIES

Roadway Embankment Soils: Embankment fill soil occurs at both ends of the existing bridge and is approximately 6 to 8 feet in thickness (see Profile Sheet No. 5). The fill soil consists of medium stiff to stiff, moist, silty sandy clay (AASHTO classification of A-7-5 and A-7-6). The fill soil overlies both the alluvial soil directly adjacent to Turkey Creek, as well as the residual soils west and east of the bridge. Also, a remnant of a former bridge approach embankment occurs east of Turkey Creek and south of the existing embankment (see Cross-section Sheet No. 9, -L- Sta. 26+50/RT). The embankment soil is estimated to be 4 to 5 feet in thickness.

Alluvial Soils: The alluvial soil within the Turkey Creek floodplain consists of medium stiff to stiff, moist to wet, sandy silt (A-4). The alluvial soil is 6 to 8 feet in thickness (see Profile Sheet No. 5 and Cross-section Sheet Nos.6 through 9). The alluvial sandy silt overlies either residual soil or weathered rock.

Residual Soils: The residual soils are derived from the in-place weathering of the underlying meta-mudstone and granitic bedrock. West of Turkey Creek, the residual soil consisted of very stiff, moist, sandy silt (A-4). East of the creek, the residual soils included loose to medium dense, silty sand (A-2-4) and clayey sand (A-2-6).

ROCK PROPERTIES

Weathered rock was encountered in three of the six borings. The weathered rock is derived from the underlying meta-mudstone and granitic bedrock. Crystalline rock occurs beneath the weathered rock at the eastern end of the project (see Cross-section Sheet No. 11, -L- Sta. 30+50).

GROUNDWATER

Groundwater was only encountered in the borings which penetrated alluvial soil. The groundwater occurred at elevations ranging from 149 to 152 feet. Surface water elevation in Turkey Creek was estimated at 149 feet at the time of this investigation.

Prepared by,

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