



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2610B	4	59
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
6.529005T		P.E.	
		CONST.	



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

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April 15, 2002

STATE PROJECT: 6.529005T (R-2610B)
 COUNTY: Chatham
 DESCRIPTION: US 421 from approximately 1.0 km north of SR 1010 to the 4-lane bypass south of Siler City.
 SUBJECT: Geotechnical Report- Inventory

Project Description

The project is located in west central Chatham County south of Siler City. The proposed construction consists of upgrading the existing 6.2 meter roadway to a 10.8 meter facility with full depth paved shoulders. The length of the construction project is 11.980 km.

A geotechnical investigation was conducted from September 2001 to January 2002 utilizing a truck-mounted B-47 drill machine. Borings were advanced with continuous flight and hollow stem augers. Standard Penetration Tests were conducted at select locations and representative soil samples were obtained for visual classification in the field and for laboratory analysis by the Materials and Test Unit.

Subsurface information is provided for the following base line.

<u>Line</u>	<u>Station.</u>
-L-	10+00 to 129+80

Areas of Special Geotechnical Interest

1. Groundwater: No groundwater was found within 2 meters of proposed subgrade at any location throughout the project. This investigation was performed during an extended dry period that may have lowered the water table.

2. Hard Rock: Hard rock was encountered within 2 meters of proposed subgrade at the following locations.

<u>Line</u>	<u>Approximate Station</u>
-L-	10+00 to 10+40
-L-	88+30 to 88+70
-L-	108+90 to 109+30
-L-	124+70 to 125+90

Physiography and Geology

The project is located south of Siler City within the Piedmont Physiographic Province. The project has topography typical of the Piedmont with gently rolling terrain and wide, well defined stream valleys. The project is drained by Bear Creek, Tick Creek and several small unnamed tributaries of the Deep River. Geologically, the project is underlain by intermediate and felsic meta-volcanic rocks, meta-argillite and meta-sedimentary rocks of the Carolina Slate Belt.

Soils Properties

Soils present on this project are separated into three major categories based on origin. These categories are residual, alluvial and artificial fill.

Residual soils were present throughout the project and are derived from weathering of the felsic meta-volcanic rocks underlying the project. These soils generally consist of tan-brown, gray-brown, and orange-brown sandy silt (A-4) and red and orange-brown sandy and silty clay (A-6, A-7-5, A-7-6) with lesser amounts of silty sand (A-2-4). The residual clays have plasticity indices ranging from 13 to 57, the majority of which are below 30. Approximately 15% of residual clays have high plasticity indices (35-57). The majority of these high PI clays occur above proposed subgrade elevation in the deeper cut sections.

Alluvial soils were found in association with several drainage features which cross the project. These soils are predominantly tan-brown and orange-brown silty/ clayey sand (A-2-4, A-2-6), sandy silt (A-4), and sandy clay (A-6). These layers of alluvial soils are generally less than 1 meter thick and are very slightly compressible.

Artificial fill was encountered in the areas throughout the project where partial grading of the proposed widening was performed during construction of the original roadway and in areas of deep embankment where the existing slope extends out to and under the proposed widening. These soils generally consist of tan-brown, gray-brown, and orange-brown sandy silt (A-4) and sandy and silty clay (A-6, A-7-5, A-7-6) taken from the adjacent cut sections.