



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
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 GOVERNOR SECRETARY

January 7, 2000

STATE PROJECT: 6.439001T R-2562D  
 FEDERAL PROJECT:  
 COUNTY: Bladen  
 DESCRIPTION: NC 87 from SR 1191 to NC 41/NC 87 Bus.  
 SUBJECT: Geotechnical Report - Inventory

**Project Description**

The proposed NC 87 project generally consists of constructing a five lane facility from the beginning of the project to NC 41 and a four lane divided facility with a variable width median along the remainder of the project. Curb and gutter is proposed through Dublin. The project begins at SR 1191 and proceeds 6.7± kilometers southeast to NC 41/NC 87 Bus. The northwestern and southeastern termini of the project tie in with R-2562C and R-0522, respectively. The investigation of subsurface conditions was confined to the corridor of proposed new construction.

The following lines were investigated for this project:

Line	Station
-L-Rev.	10+53 to 50+31
-L1-	9+09 to 19+35
-L2-	9+19 to 19+35
-L3-	19+35 to 34+65
-L4-	34+65 to 41+08
-L5-	34+65 to 41+02
-Y1-	10+00 to 11+26
-Y2-	10+00 to 11+00
-Y4A-	10+00 to 10+50
-Y6-	10+00 to 10+30
-Y9-	10+00 to 10+50

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**Physiography and Geology**

The project corridor is located in Bladen County and generally northwest and southeast of Dublin. Topography is typical of the Coastal Plain and ranges from flat to moderately sloping. A tributary to Bakers Creek is the major drainage feature on this project north of Dublin with flood plain elevations of 37± meters. Drainage from the intersection of NC 41 and NC 87 to the end of the project is generally south into a Carolina Bay named Sheriff White Bay at an elevation of 38± meters. Natural ground elevations along upland portions of the project generally range from 39 to 47 meters. Surface drainage is generally fair to good.

The geology of this region primarily consists of Quaternary to Recent age sediments. The 1985 Geologic Map of North Carolina indicates this project is underlain by the Black Creek Formation of Cretaceous age, although none of these soils were encountered within the scope of our investigation.

**Ground Water**

Ground water data was collected primarily from September, 1999 to November, 1999 during above average to average rainfall conditions. During our investigation, the water table was generally between 1 and 3 meters below the natural ground surface along the upland areas. However, during the wet season or after heavy precipitation, water levels may rise 1± meter. In flood plain and adjacent areas, water is typically at or near the surface. During the wet season, the water in the flood plains will generally be above the surface.

**Soils**

Soils encountered during this investigation are separated into four major categories based on origin and published data. These categories are alluvial soils, Quaternary soils, rootmat and embankment soils.

Recent alluvial soils noted in the unnamed tributary to Bakers Creek (-L-Rev. station 23+55± to 24+55±) consist of 0.3± meters of sandy silt (A-4). The silty sediments are generally underlain by very loose to medium dense fine to coarse sand (A-2-4). Engineering properties of the silt soils range from fair to poor.

The Quaternary soils along this project generally consist of 2.0 or more meters of very loose to medium dense fine to coarse sand (A-2-4, A-3) and clayey sand (A-2-6) with thin (< 1 meter) discontinuous silt (A-4) and clay (A-6, A-7-6) layers. The silt-clay deposits generally have more than 50 percent passing the 75µm sieve and typically exhibit fair to poor engineering properties. The silt soils have a low plasticity index (6± PI) and relatively high moisture contents. The clay soils have a medium to high plasticity index (17 to 40) and moisture contents

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Line	Station
-Y12-	10+00 to 10+73
Ramp A	10+00 to 16+23

**Areas of Special Geotechnical Interest**

1) The following sections contain silt-clay soils which typically have medium to high plasticity indices, a high percentage passing the 75µm sieve and/or high moisture contents:

Line	Station (±)
-L-Rev.	18+20 to 19+80
-L-Rev.	21+90 to 22+80
-L-Rev.	24+60 to 25+40
-L-Rev.	25+80 to 27+20

2) The following intervals were found to exhibit a high water table, seasonal high ground water or the potential for ground water related construction problems:

Line	Station(±)
-L-Rev.	10+53 to 49+40
-L1-	9+09 to 11+40
-L1-	12+70 to 19+35
-L2-	9+19 to 12+60
-L2-	14+00 to 19+35
-L3-	19+35 to 34+65
-L4-	34+65 to 37+00
-L5-	34+65 to 39+00
-Y1-	10+00 to 11+26
-Y2-	10+00 to 11+00
-Y4A-	10+00 to 10+50
-Y6-	10+00 to 10+30
-Y9-	10+00 to 10+50
-Y12-	10+00 to 10+73
Ramp A	10+00 to 16+23

3) Several businesses along this project were identified as potentially hazardous waste sites by the GeoEnvironmental Section in their report dated February 15, 1999. Please refer to this report for locations of the contamination.

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ranging from 26 to 37 percent. The engineering properties of the granular soils range from good to excellent.

Rootmat is surficial organic debris derived from the decomposition of plant material. Rootmat along the project is primarily confined to wooded areas of the project and ranges in thickness from 0.05 to 0.1 meters. No other significant organic deposits were noted along the project.

Embankments are man-made fills built during construction of existing roadways. The fill material generally consists of very loose to loose fine to coarse sand (A-2-4). Thickness of the fill material ranges from 0.3 to 2.0 meters and has good to excellent engineering properties. This material was primarily encountered along existing NC 87 and associated -Y- lines.

Respectfully submitted,

*Dean N. Argenbright*  
 Dean N. Argenbright, L. G.  
 Project Geologist

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PROJECT REFERENCE NUMBER	SHEET NO.	TOTAL SHEETS
	3A	45
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION