



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

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**State Project:** 8.1600901 (R-2568B)  
**Federal Project:** STP-109(1)  
**County:** Davidson  
**Description:** Widen and Improve NC 109 from North of I-85 Business to North of SR 1756, (Lexington Ave).  
**Subject:** Geotechnical Report - Inventory

**Project Description**

This is a report of the geotechnical investigation for a metric units project that will straighten and improve a 4.6km section of NC 109, north of Thomasville. About 3/4 of the project will be on new alignment and 1/4 will be road widening. The field work was accomplished during the winter of 2000-2001 during drought conditions. Groundwater conditions can and do change over time, and the measurements presented are not meant to be absolute. The total construction project length including "Y" lines is 5.623km.

The following lines were investigated for a total length of 6.3km:

L Line from 23+20 to 79+43	4620m
Y Line from 10+00 to 13+58	358m
Y1 10+00 to 11+60	160m
Y9 11+20 to 13+40	220m
Y10 10+00 to 12+00	200m
Y10A 10+00 to 11+20	120m
Y11 10+00 to 13+28	328m
Y12 09+89 to 11+40	151m
Y12DET 9+90 to 11+40	150m
Y13 10+00 to 11+10	110m
Y14 10+00 to 10+81	81m

Total 6.296km

The investigation included a culvert investigation at -L- 46+85 and preliminary borings for the bridge at Rich Fork at -L- 61+20. Any additional formal bridge investigations will be completed separately from this report.

**Areas of Special Geotechnical Interest**

**Hard Rock**

The following sections were found to have hard rock within 3.34 meters of finished grade, but rock is not necessarily limited to these sections.

-L-25+60 to -L-28+30  
-L- 28+70 to -L-28+80  
-L-30+80 to -L-33+40  
-L-45+20  
-L-45+60  
-L-61+90 to -L-62+30

**Weathered Rock**

The following sections were found to have weathered rock within indicated cut, above finished grade. Weathered rock is not necessarily limited to these sections. The weathered rock classification does not imply that the material will or will not have to be blasted prior to excavation.<sup>1</sup>

-L-25+60 to -L-28+40  
-L-31+00 to -L-33+20  
-L-34+40 to -L-35+20  
-L-38+40 to -L-39+20  
-L-44+70 to -L-45+60  
-L-52+00 to -L-53+30  
-L-57+20 to -L-59+80  
-L-62+00 to -L-64+20  
-L-69+00 to -L-69+80  
-L-76+80 to -L-79+20

**Physiography and Geology**

The project is located within the Piedmont physiographic province. It is underlain by metamorphosed and weathered "Czg" granitic rock of the Charlotte litho-tectonic Belt.

**Topographic Setting**

The Project Area begins at Hunts Fork, on the northwest side of Thomasville, then crosses two northeast trending ridges before ending short of Abbots Creek. Elevation of the project is 214m elevation at the start, then rises to 253m. It drops to 230m into an un-named drainage then rises to 243m before descending to Rich Fork at 214m. From there, the road rises to 240m and then drops to 235m at the end of the project short of Abbots Fork at 222m. Relief on the project is about 40m over 860m.

<sup>1</sup> Weathered rock is defined as material that requires more than 100 blows per 30cm of SPT penetration, but yields penetration of more than 2.5cm in 50 blows. Ex, 60 blows for 30cm, then 40 blows for 2.6cm indicates weathered rock and is logged with a blow count of 100.