Physiography and Geology

The project is located in the Piedmont Province. Land use along the project corridor consists of residential, commercial businesses and woods. Geologically, the project is located within the Carolina Slate Belt. Felsic metavolcanic rock (CZfv) was encountered at the project site. Little River and its tributaries and a few ditches drain the project towards south and southeast in general.

Soil Properties

Soils encountered at the project site include roadway embankment, artificial fill, alluvial, residual, weathered rock and crystalline rock of felsic metavolcanic tuff.

Roadway Embankment soils are present along the existing NC 24/27. These soils consist of red, orange and brown, medium stiff to very stiff, clayey sandy silt with gravel, and silty sandy clays (A-4, A-6) with Plasticity Index ranging from 4 to 7.

Artificial fill soils were encountered primarily along gravel and soil driveways and utility easements, consisting of red, orange and brown, medium stiff to very stiff, sandy silt and clay (A-4, A-6). The artificial fill is underlain by residual soils.

Alluvial deposits are located within the floodplains of Little River, ditches and wetland areas that traverse the project. These soils are primarily brown and gray, very soft to stiff, silt and clay (A-4, A-6, A-7) with Liquid Limit ranging from 22 to 43 and Plasticity Index ranging from 1 to 13, and gray, loose to medium dense, silty sand (A-2-4).

Residual soils were encountered throughout the project. These soils consist primarily of red, orange and brown, soft to hard silt and clay (A-4, A-5, A-6, A-7) with Liquid Limit ranging from 22 to 78 and Plasticity Index ranging from 1 to 38, to gray, orange and tan, medium dense to very dense, silty sand (A-2-4).

Rock Properties

Weathered rock was encountered during the roadway investigation at elevations ranging from 379.5 to 633.7 feet. It originates from the underlying felsic tuff.

Crystalline rock was encountered during the roadway investigation at elevations ranging from 365.6 to 624.4 feet, and consists of felsic tuff. Refer to the “Areas of Special Geotechnical Interest” for areas of rock outcrops or rock encountered within 6 feet of proposed grade.

Very limited surface data indicates a dip angle of 54° with a dip direction of 260°.

Ground Water

Groundwater was encountered in multiple borings and ranges in elevation from 374.1 to 624.8 feet. Groundwater may fluctuate with seasonal precipitation.

Culvert

Station 204+38 -L-
The proposed structure is a 2 @ 12' x 8' RCBC, Overall length is 200 feet. Three borings were conducted along the approximate alignment, located in a narrow floodplain, indicating the top of residual soil at elevations of 479.6 to 481.2 feet. The proposed culvert has inlet elevation of 477.8 feet and outlet of 475.8 feet, indicating the culvert will be founded on very stiff to hard residual sandy silt. Weathered rock was encountered underneath the residual soils and extended to elevations of 467.9 to 457.5 feet underlain by hard rock.

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BULK SAMPLES
The following bulk samples were taken for tests to determine the engineering properties of the soil:

Sample No.	Line	Station	Offset (ft)	Depth (ft)	Test
MR-1X	-L-	112+02	6 RT	0-5.0	Resilient Modulus
MR-2X	-L-	162+00	3 RT	10.0-20.0	Resilient Modulus
MR-3X	-L-	196+01	10 LT	10.0-30.0	Resilient Modulus
MR-4X	-L-	276+01	9 LT	1.0-15.0	Resilient Modulus
MR-5X	-L-	322+55	48 RT	0-15.0	Resilient Modulus
MR-6X	-L-	346+43	107 RT	0-13.0	Resilient Modulus