

- E. The area between -L- stations 238+40 to 239+90 contains A-7-5 clay with a Plasticity Index of 36. This stiff silty sandy clay extends from the ground surface to approximately 2 meters in depth.
- F. The area between -RPA- stations 14+35 to 15+50 contains A-7-5 clay with a Plasticity Index of 30. This stiff silty sandy clay extends from the ground surface to approximately 2.5 meters in depth.
- G. The area between -RPB- stations 12+20 to 14+30 contains A-7-5 clay with a Plasticity Index of 30. This stiff sandy silty clay extends from the ground surface to approximately 2 meters in depth.

3. Rock:

Hard rock was encountered only in a few instances throughout the proposed project corridor. The following is a list of locations where rock was discovered at or above proposed grade.

The area between -L- stations 221+70 to 222+30, and 225+37 to 226+10 contains rock above proposed grade.

Additionally, the area at the end of the project corridor that ties back into existing NC 16 has intrusions of Quartzite rock in certain locations. The intrusions are typically less than 10 meters in width and the structure of the rock is such that its joint planes are dipping almost vertically. The area is also littered with large Quartzite Boulders. Alignments and station ranges that will intermittently encounter this Quartzite rock and boulders are as follows: -SBL- stations 267+50 to 274+60, -NBL- stations 10+00 to 13+88, and -LDET- station 10+00 to 15+25

Physiography/Geology:

The project corridor is located in the western piedmont region of North Carolina on the Lincoln and Catawba County lines. Geologically this site is part of the Charlotte Belt and is underlain by metamorphosed quartz diorite and granitic rock. The topography consists of gently rolling hills and gently sloping interstream areas ranging in elevation from approximately 230 to 300 meters. The proposed project corridor is surrounded primarily by densely wooded areas and open fields that are bisected by several small streams and wet weather drainage features.

Soil Properties:

1. Residual Soils:

Residual soils are derived from in place weathering of parent materials. They occur in a variety of consistencies, classifications, and stratigraphic sequences. Residual soils are further subdivided into clays, silts, and sands.

Clays are found consistently throughout the project corridor as both near surface soils and subsoils. They consist primarily of medium stiff to very stiff red-brown, brown and tan micaceous silty clay, and sandy silty clay (A-6, A-7-5, A-7-6) 0.5 to 8 meters thick. These soils are typically well drained and possess Atterburg Limits in the intermediate range. Soil test results for these soils indicate a plasticity index range of 11 to 53 and a liquid limit range of 30 to 91.

Silts encountered on the project were of both the A-4 and A-5 AASHTO Classifications and occur as both near surface soils and subsoils. They generally consist of medium stiff to very stiff red-brown, red orange, and brown clayey sandy silt with depths ranging from 0.5 to 10 meters thick.

Sands encountered on the project were of the A-1-b, A-2-4, A-2-5, and A-2-7 AASHTO Classifications and occur as both surface soils and subsoils with a thickness of up to 12 meters. They consist primarily of medium dense to dense red-brown and tan-brown silty sand.

2. Alluvial Soils:

Alluvial soils originate from water transportation and deposition in a floodplain environment. These deposits are usually shallow, but range up to 4 meters in thickness. Alluvial soils consist of very soft to medium stiff tan-brown sandy silt (A-4), very soft to medium stiff silty clay (A-6, A-7-5, A-7-6), and very loose to loose silty sand (A-2-4).

3. Fill Soils:

- A. An area of artificial fill exists between -L- stations 195+20 to 195+60. A topographic low area is being filled by the current property owner with tree stumps, limbs, and various other wood products. Depth of the fill material ranges from 2-5 meters with an estimated quantity of 4000 cubic meters.
- B. An area of artificial fill soil exists between -L- stations 229+48 to 232+65. The artificial soil is waste generated from the Martin Marietta quarry. The quarry dumpsite contains large boulders, soil, and tree stumps. The estimated quantity of material is approximately 350,000 cubic meters according to the Martin Marietta Plant Manager.

Rock Properties:

Rock is defined as that material which refuses penetration of power augers. Hard rock was encountered only in a few instances along the project corridor.

Groundwater:

Groundwater was encountered sporadically throughout the project corridor. Groundwater was found at grade only between -L- stations 229+40 to 230+60.

Well Locations:

Wells within the proposed project corridor were located off -L- at the following locations: 198+44, 38 RT; 216+20, 5 LT; 245+45, 3 RT; and 248+29, 29 RT.

Respectfully Submitted,

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