C202037 (B-4015)

Ashe County

SUBSURFACE INFORMATION

(NOTE: No Borings were performed for this project)

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

February 22, 2005

MEMORANDUM TO: Mr. Jay Bennett, PE
State Roadway Design Engineer

ATTENTION: Teresa Bruton, PE
Roadway Project Engineer

FROM: for Njoroge W. Wainaina, PE
State Geotechnical Engineer

STATE PROJECT: 33383.1.1 (B-4015)
FEDERAL PROJECT: BRZ-1362(1)
COUNTY: Ashe

DESCRIPTION: Approaches to Bridge No. 165 over Big Horse Creek on SR 1362 (Big Horse Creek Road)

SUBJECT: Geotechnical Report – Design and Construction Recommendations

The Geotechnical Engineering Unit has completed its investigation of this project and presents the following recommendations. No inventory has been prepared for this project.

Bridge No. 165 is located in northern Ashe County approximately 3 miles north of the town of Lansing. The bridge is to be rebuilt on the existing alignment, with construction of a temporary detour approximately 40 feet Left. Widening the approach on the north side of the stream will involve a Right Side cut at least 20 feet high in hard rock. Construction will otherwise involve only a few feet of ditch line cuts in residual soil and in railroad embankment, and shallow side fill over stony floodplain soil.

The railroad was abandoned and tracks removed many years ago. The land is in forest and scattered trees and brush. There are no dwellings in the immediate vicinity of the project.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088
FAX: 919-250-4237

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

I. Slope/Embankment/Structure Stability

Slope Design

We recommend that fill slopes be designed at angles not greater than 2:1 (H:V)

We recommend that cut slopes be designed at angles not greater than 1.5:1 (H:V), with the following exception:

Station 14+00 to 15+50, Right Side

Fresh, hard rock is abundantly exposed in the existing cut in this interval. The rock extends down from the ground surface with little or no overburden, and it appears to be of good or very good quality throughout. Cleavage, which is only weakly developed, dips into the cut at 30-45 degrees. Much of the existing cut face here is a natural joint face dipping 85 degrees toward the road. The lithology is monzonite or quartz-monzonite. We can recommend with confidence that the cut slope in this interval be designed at an angle of 0.25:1.

II. Subgrade Stability

Fabric for Soil Stabilization

As a contingency, we recommend 500 square yards of Fabric for Soil Stabilization, to be used at the discretion of the engineer.

Subdrainage-Underdrain

As a contingency, we recommend 300 feet of underdrain to be used at the discretion of the engineer.

Undercut

As a contingency, we recommend 500 cubic yards of undercut, to be used at the discretion of the engineer.

III. Borrow Specifications

Shrinkage/Swell Factor

We recommend that a shrinkage factor of 15 percent be used in earthwork calculations.

We recommend a swell factor of 25 percent.

Select Granular Material

As a contingency, we recommend a quantity of 500 cubic yards of Select Granular Material Class II and III for use as backfill for Fabric for Soil Stabilization.

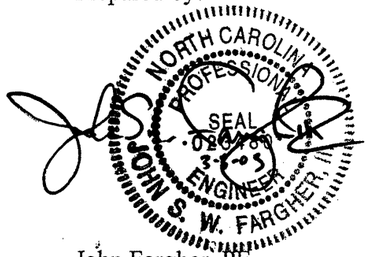
As a contingency, we recommend a quantity of 600 tons of Class IV Subgrade Stabilization Material, to be used at the discretion of the engineer.

IV. Miscellaneous

Unclassified Excavations

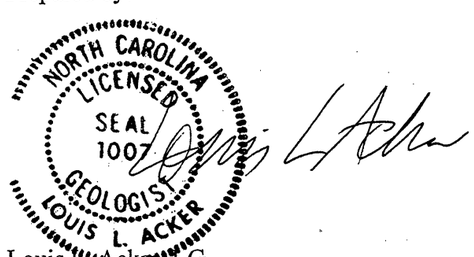
It is estimated that 300 cubic yards will be lost to clearing and grubbing operations.

Prepared by:



John Fargher, PE
Geotechnical Project Engineer

Prepared by:



Louis L. Acker, LG
Project Engineering Geologist

RD10S01C

Volumes in Cubic Yards

PROJECT: B-4015 COUNTY: ASHE DATE: 7-Sep-07 COMPILED BY: BAM SHEET _____ OF _____ SHEETS

STATION	STATION	EXCAVATION TOTAL UNCLASS.	EXCAVATION ROCK	EXCAVATION UNDERCUT	EXCAVATION UNSUIT. UNCLASS.	EXCAVATION SUITABLE UNCLASS.	EMBANKMENT TOTAL	EMBANKMENT ROCK	EMBANKMENT EARTH	EMBANKMENT EMBANK. (+) 15%	BORROW	WASTE ROCK	WASTE SUITABLE	WASTE UNSUIT.	WASTE T0TAL
SUMMARY 1															
DETOUR 10+67.35 TO 13+15.00		5550				5550	11		11	13			5537		5537
DETOUR 14+30.00 TO 15+35.71		2				2	171		171	197	195				
SUBTOTAL 1		5552				5552	182		182	210	195		5537		5537
SUMMARY 2															
L 10+00.00 TO 12+75.00		10				10	132		132	152	142				
L 13+60.00 TO 16+00.00		732	732				142		142	163	163	732			732
SUBTOTAL 2		742	732			10	274		274	315	305	732			732
SUMMARY 3															
DETOUR 10+67.35 TO 13+15.00		34				34							34		34
DETOUR 14+30.00 TO 15+35.71		88				88							88		88
SUBTOTAL 3		122				122							122		122
PROJECT SUBTOTAL		6416	732			5684	456		456	525	500	732	5659		6391
LOSS DUE TO C & G		-300				-300							-300		-300
ROCK WASTE TO REPL. BORROW															
ADJUST FOR ROCK WASTE															
EARTH WASTE TO REPL. BORROW											-500		-500		-500
EST. SHOULDER MATERIAL															
ADDITIONAL UNDERCUT															
PROJECT TOTAL		6116	732			5384	456		456	525			4859		5591
EST. 5% TO REPLACE TOPSOIL															
GRAND TOTAL		6116				5384	456		456	525			4859		5591
SAY		6400													6000

UNDERCUT EXCAVATION = 500 CY (PER GEOTECHNICAL ENGINEERING UNIT MEMO DATED 2/22/2005)

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.