

To: Paul Libby, Project Manager, Highway Safety & Design

From: Eric Denardo, Geotechnical Engineer via Callie Ewald, P.E., Senior Geotechnical Engineer

Date: September 3rd, 2014

Subject: Wallingford STP 0138(11) Geotechnical Investigation

1.0 INTRODUCTION

We have completed our geological and geotechnical investigation of a section of VT Route 140 east of Wallingford, Vermont. As requested, an investigation was performed on a 0.3 mile section starting 325 feet southwest of mile marker 3.0 and extending 1400 feet east along Route 140. A preceding geotechnical report dated July 17th, 2014 for the proposed slope project along this section of Route 140 to stabilize the ledge cut and soil slope were provided to Paul Libby. These borings were performed to provide pavement information for the roadway adjacent to the slope project. It is our understanding that cold plane and overlay of pavement is proposed for a large section of Route 140. Contained herein are the results of field sampling, testing, and laboratory analyses of soil.

2.0 FIELD INVESTIGATION

The field investigation was conducted on August 21st, 2014. Three solid stem auger borings were performed in general accordance with AASHTO test method T 306, *Processing Auger Borings for Geotechnical Explorations*, to determine the pavement thickness, subbase material, and depth to bedrock along the area of the slide. A summary of the location of each boring is provided below in Table 2.1. The boring locations were provided by Erik Atkins of Green International Affiliates, Inc. with the Geotechnical Services Request Form dated July 23rd, 2014.

Table 2.1: Boring Locations

Boring #	Station (ft)	Offset (ft)	Pavement Thickness (ft)	Bedrock Depth (ft)
C-101	202+33.2	-9.5	0.68	2.7
C-102	208+36.3	9.6	0.78	1.8
C-103	214+70.0	-8.9	0.54	2.2

All borings were performed using the CME 45C trailer mounted skid rig. A 4-inch auger flight was rotary drilled to 5 feet below the top of roadway at each location. The auger was then removed so a visual observation of the soil profile could be made. This method has proven to be an efficient and reasonably accurate way to view changes in strata and obtain samples off the auger flights.

For each boring, soil samples were visually identified and taken back to the Materials and Research Laboratory for classification and testing.

3.0 FIELD AND LABORATORY TESTING

Laboratory tests were conducted on samples to evaluate grain size, moisture content, percent finer than No. 200 sieve, and liquid and plastic limits when applicable. This testing, along with field descriptions, was conducted on all of the soil samples and can be found on the attached drilling notes.

4.0 SOIL PROFILE

Review of the lab data, borings, and field testing revealed the following information about soil strata for the borings:

The thickness of bituminous pavement varied from 0.54 to 0.78 feet thick. The pavement overlies a granular material of either silty sand, gravelly sand, or silty gravelly sand. This layer of granular material extends to refusal.

Refusal was encountered in all three of the borings. The amount of overburden soil was consistent and ranged from 1.8 to 2.7 feet. It was not confirmed by coring whether auger refusal was bedrock or a boulder, however based on the consistency of the depth to refusal and the ledge outcrop just to the north of Route 140, we anticipate the refusal to be on bedrock. No groundwater was encountered in any of the borings.

The attached drilling notes contain specific information regarding particle percentages, moisture content, and depths.

6.0 CONCLUSION

If you have any questions, or you would like to discuss this report, please contact us at (802) 828-2561. Typed Drilling Notes are attached and are available in the CADD design files: M:\Projects\12c408\Materials&Research.

Enclosures: Drilling Notes (1 Page)

c: Electronic Read File
Project File/CEE
END



**STATE OF VERMONT
 AGENCY OF TRANSPORTATION
 CONSTRUCTION & MATERIALS BUREAU
 GEOTECHNICAL ENGINEERING SECTION
 DRILLING NOTES**

PROJECT NAME: WALLINGFORD PROJECT NUMBER: STP 0138(11) SITE: VT RT 140 DATE: 8/21/2014
 BORING CREW: Daigneault, Denardo, Judkins, Whitlock TESTED BY: J. Touchette REVIEWED BY: E. Denardo

BORING No.	DATE DRILLED	Station	OFFSET (FT)	DEPTH (FT)	SAMPLE TYPE	FIELD DESCRIPTION	LABORATORY RESULTS							
						SOIL TYPE, COLOR, MOISTURE	% MOISTURE	AASHTO CLASS.	SOIL DES.	% GRAVEL	% SAND	% FINES	LIQUID LIMIT	PLASTIC LIMIT
C-101	8/21/14	202+33.2	-9.5	0.0-0.68	SSA	Asphalt	7.8	A-4	SiSa	16.6	46.6	36.7	NP	NP
				0.68-2.7		Sa brn/gry M								
C-102	8/21/14	208+36.3	9.6	0.0-0.78	SSA	Asphalt	3.8	A-1-b	GrSa	41.3	45.2	13.5	NP	NP
				0.78-1.8		Sa								
C103	8/21/14	214+70.0	-8.9	0.0-0.54	SSA	Asphalt	6.6	A-1-b	SiGrSa	34.3	45.3	20.4	NP	NP
				0.54-2.2		Sa								