To: Mike Hedges, P.E, Asset Management and Performance Bureau, Budget and Programming Manager

AKF CEE

From: Alex Flinn, Rotation Engineer via Callie Ewald, P.E., Geotechnical Engineering

Manager

Date: June 21st, 2017

Subject: Johnson-Morristown STP 2919(1) –Geotechnical Data Report

1.0 INTRODUCTION

As requested, we have completed an additional geotechnical investigation for a potential full-depth reclamation project along VT Route 15 located in the towns of Johnson, Hyde Park, and Morristown, Vermont. Borings were also performed on a section of Historic VT Route 100 and VT Route 15A in Morristown. This investigation included 64 pavement cores along VT 15, three roadway borings with pavement cores along VT 15A.

The original investigation was performed by Terracon Consultants of Manchester, NH and consisted of 67 roadway borings, five test pits, visual pavement observations, and laboratory testing for the 8.548 mile section of VT 15 between Johnson and Morristown. The results of the previous subsurface investigation can be found in the geotechnical report provided to Callie Ewald dated December 30, 2016. Our additional investigation was performed to confirm the original pavement thickness measurements and to provide subsurface data for the additional roadway sections along Historic VT Route 100 and VT Route 15A.

Contained herein are the results of field measurements, sampling, testing, and laboratory analyses of soil borings performed in the roadway.

2.0 FIELD INVESTIGATION

The field investigation was conducted between May 15th and 19th, 2017 and consisted of a total of 74 pavement cores and ten solid-stem auger borings. The solid stem auger borings were performed in general accordance with AASHTO test method T 306, *Processing Auger Borings for Geotechnical Explorations*. 64 of the 74 pavement cores (C-1 to C-16, C-18 to C-42, and C-44 to C-66) were collected along VT 15 between Johnson and Morristown, in the vicinity of the original roadway borings performed by Terracon in September 2016. These cores were performed to measure pavement thickness. Some locations could not be cored due to traffic control issues (C-17 and C-43).

The remaining ten pavement cores were collected from seven locations along VT 15A (B-200 to B-206) and three locations along Historic VT 100 (B-207 to B-209). Once the pavement core was extracted, a 4-inch solid stem auger flight was rotary drilled through each of these ten pavement cores to 5 feet below the top of the roadway at each location. The auger was then removed so that 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. A summary of the locations and results of the pavement cores for VT 15, VT

15A, and VT 100 can be found in Tables 2.1,2.2, and 2.3, respectively, as well as attached to this report.

Table 2.1: Pavement Core Locations on VT 15

Town	Boring No.	Approx. Mile Marker	Offset from C/L (ft.)	Asphalt Pavement Thickness (ft.)
Johnson	C-1	4.43	9.6	0.49
Johnson	C-2	4.56	-8.5	0.54
Johnson	C-3	4.70	8.9	0.70
Johnson	C-4	4.84	-7.4	0.37
Johnson	C-5	4.96	-9.8	0.35
Johnson	C-6	5.10	8.8	Not Measured*
Johnson	C-7	5.27	-7.7	0.37
Johnson	C-8	5.39	-8.4	0.38
Johnson	C-9	5.50	-10.4	0.36
Johnson	C-10	5.67	7.1	0.31
Johnson	C-11	5.81	7.7	0.30
Johnson	C-12	5.95	7.8	0.45
Johnson	C-13	6.10	-8.1	0.34
Johnson	C-14	6.25	7.2	0.28
Johnson	C-15	6.39	-6.0	0.28
Johnson	C-16	6.53	8.7	0.45
Johnson	C-17	6.67	Not Measured	Not Cored**
Johnson	C-18	6.81	6.1	0.32
Hyde Park	C-19	0.17	-8.0	0.31
Hyde Park	C-20	0.25	7.5	0.29
Hyde Park	C-21	0.38	-5.1	0.27
Hyde Park	C-22	0.54	9.7	0.60
Hyde Park	C-23	0.67	-9.2	0.55
Hyde Park	C-24	0.83	9.6	0.57
Hyde Park	C-25	0.99	-8.6	0.56
Hyde Park	C-26	1.12	9.9	0.54
Hyde Park	C-27	1.26	-8.2	0.61
Hyde Park	C-28	1.39	10.9	0.70
Hyde Park	C-29	1.55	-9.3	0.21
Hyde Park	C-30	1.69	10.0	0.38
Hyde Park	C-31	1.99	10.3	0.56
Hyde Park	C-32	2.14	-9.2	0.20
Hyde Park	C-33	2.27	11.0	0.22

Town	Boring No.	Approx. Mile Marker	Offset from C/L (ft.)	Asphalt Pavement Thickness (ft.)
Hyde Park	C-34	2.43	-7.9	0.30
Hyde Park	C-35	2.55	10.2	0.28
Hyde Park	C-36	2.69	-9.7	0.71
Hyde Park	C-37	2.76	8.9	0.36
Morristown	C-38	0.09	-9.3	0.40
Morristown	C-39	0.21	9.7	0.30
Morristown	C-40	0.33	-10.0	0.29
Morristown	C-41	0.47	9.8	0.31
Morristown	C-42	0.62	-9.0	0.70
Morristown	C-43	0.77	Not Measured	Not Cored**
Morristown	C-44	0.93	Not Measured	0.56
Morristown	C-45	1.06	7.0	0.25
Morristown	C-46	1.22	-6.0	0.29
Morristown	C-47	1.34	8.0	0.26
Morristown	C-48	1.47	-7.3	0.29
Morristown	C-49	1.65	6.1	0.26
Morristown	C-50	1.79	-8.6	0.21
Morristown	C-51	1.92	7.8	0.30
Morristown	C-52	2.09	-7.4	0.29
Morristown	C-53	2.20	7.6	0.46
Morristown	C-54	2.33	-7.8	0.33
Morristown	C-55	2.47	6.9	0.35
Morristown	C-56	2.66	-9.1	0.31
Morristown	C-57	2.81	5.7	0.31
Morristown	C-58	2.95	-6.7	0.29
Morristown	C-59	3.08	6.4	0.58
Morristown	C-60	3.23	-8.4	0.83
Morristown	C-61	3.37	6.0	0.90
Morristown	C-62	3.53	-6.8	0.79
Morristown	C-63	3.66	5.2	0.83
Morristown	C-64	3.75	-7.0	0.92
Morristown	C-65	3.96	6.0	0.69
Morristown	C-66	4.05	-7.5	0.77

^{*}C-6 was stuck in the core barrel and could not be removed for measurement ** C-17 and C-43 locations were not cored due to traffic control constraints

Approx. Asphalt Offset from Boring Route **Town** Mile **Pavement** No. Number **C/L** (ft.) Marker Thickness (ft.) VT-15A 0.36 B-200 8.7 Morristown 1.25 VT-15A 0.55 Morristown B-201 -7.4 0.30 VT-15a 0.76 8.0 Morristown B-202 0.55 VT-15A Morristown B-203 0.96 -6.7 0.50 VT-15A B-204 1.17 7.5 0.50 Morristown VT-15a 1.38 -7.5 B-205 0.47 Morristown VT-15A 1.52 B-206 8.1 0.85 Morristown

Table 2.2: Pavement Core Locations on VT-15A

Table 2.2: Pavement Core Locations on VT-100

Town	Boring No.	Route Number	Approx. Mile Marker	Offset from C/L (ft.)	Asphalt Pavement Thickness (ft.)
Morristown	B-207	VT-100	6.20	11.0	0.70
Morristown	B-208	VT-100	6.40	-12.6	0.63
Morristown	B-209	VT-100	6.55	15.6	0.65

All pavement cores were performed using the Acker trailer-mounted coring machine and the roadway auger borings were performed using the Mobile truck-mounted auger rig.

For each auger boring, soil samples were visually identified and taken back to the Construction and Materials Bureau Central Laboratory for testing and classification. Pavement cores were measured in the field and were not saved for testing.

3.0 FIELD AND LABORATORY TESTING

3.1 Pavement Cores

Pavement cores were measured in the field to the nearest hundredth of a foot. Care was taken to separate any Reclaimed-Stabilized Base (RSB) material from the pavement cores that may have adhered to the pavement and could affect accurate pavement thickness measurements. It should be noted that the coring of the RSB material was attempted, however, the material would typically crumble upon coring and extraction.

3.2 Pavement Auger Borings

Laboratory tests were conducted on samples to evaluate grain size, moisture content, and percent finer than No. 200 sieve. 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 SUBSURFACE PROFILE

4.1 Pavement Cores

Review of the field measurements of pavement cores revealed the following subsurface information:

For the VT 15 section of the project, the thickness of bituminous pavement varied from a minimum of 0.20 feet (2.4 inches) at location C-32 (mile marker 2.14 in Hyde Park) to a maximum of 0.92 feet (11 inches) at location C-64 (mile marker 3.75 in Morristown). The average thickness of pavement for the VT 15 section was 0.44 feet (5.3 inches).

For the additional sections of the project, the thickness of bituminous pavement varied from a minimum of 0.30 feet (3.6 inches) at location B-201 (mile marker 0.55 on VT 15A in Morristown) to a maximum of 1.25 feet (15 inches) at location B-200 (mile marker 0.36 on VT 15a in Morristown). The average thickness of pavement for the additional sections was 0.64 feet (7.7 inches). Pavement thickness measurements varied widely across the section of VT 15A but were consistent at about 0.65 feet along the section of VT 100.

4.2 Roadway Auger Borings

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

Soils underlying the pavement along VT 15A generally consisted of brown silty sandy gravel in borings B-200 to B-203 and brown gravelly silty sand in borings B-204 to B-206. A sandy silt layer was encountered at a depth of 4 feet in boring B-203 but was not observed in other borings. Groundwater was not encountered during drilling, however the moisture contents of the 4 to 5 foot samples in B-203 and B-204 both exceeded 20 percent.

Soils underlying the pavement along VT 100 consisted of brown silty sand that appeared to be of mostly uniform structure in each boring but with slightly higher silt percentages in B-209. Groundwater was not encountered during drilling.

The attached drilling notes contain specific information regarding particle percentages, depths, and additional tests, if applicable. Visual representations of the various strata are provided in the attached subsurface profiles.

5.0 CONCLUSION

We have also provided the boring locations and important information in a spreadsheet that has been requested by the pavement management section for other projects. If any further analysis is needed or you would like to discuss this report, please contact us at (802) 828-1235.

Attachments: Drilling Notes (3 pages)

Boring Locations (3 pages) Boring Profile Sheet (1 page)

cc: Mike Fowler, P.E., Pavement Management

Electronic Read File/DJH

Project File/CEE

AKF

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

PROJECT NAME:	Johnson-Morristown	PROJECT NUMBER:	STP2919(1)	SITE:	VT-15A	DATE:	6/6/2017
BORING CREW:	Garrow, Mazzei, Olden	TESTED BY:	J. Daigneault	REV	VIEWED BY:	A. Flim	ı; Rotation Engineer

					Ä	FIELD DESCRIPTION			LAB	ORATO	RY RESU	JLTS		
BORING No.	DATE	MILE	OFFSET (FT)	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE, COLOR, MOISTURE	% MOISTURE	AASHTO CLASS.	SOIL DES.	% GRAVEL	% SAND	% FINES	LIQUID	PLASTIC LIMIT
				0-1.25	Core	Asphalt Pavement								
				1.25-5.0		Si Sa Gr, brn, M	8.8	A-1-b	Gr Sa	32.4	51.8	15.9	NP	NP
B-200	5/22/17	0.36	8.7		Solid Stem	Field Note: No groundwater encounted	ered							
					Auger									
					1									
				0-0.3	Core	Asphalt Pavement								
				0.3-5.0		Si Sa Gr, brn, M	6.1	A-2-4	Si Gr Sa	31.7	42.3	26.1	NP	NP
B-201	5/22/17	0.55	-7.4		Solid Stem	Field Note: No groundwater encounter	ered						•	•
					Auger									
					1									
				0-0.55	Core	Asphalt Pavement								
				0.55-5.0		Si Sa Gr, brn, M	4.5	A-1-b	Sa Gr	44.4	36.2	19.4	NP	NP
B-202	5/22/17	0.76	8.0		Solid Stem	Field Note: No groundwater encounter	ered				•		•	•
					Auger									
					-				•		l		·	
				0-0.5	Core	Asphalt Pavement								
				0.5-4.0		Si Sa Gr, brn, M	5.6	A-1-b	Sa Gr	42.4	40.5	17.2	NP	NP
B-203	5/22/17	0.96	-6.7	4.0-5.0	Solid Stem	Sa Si, Lt/brn, MTW	31.6	A-4	Sa Si	1.8	28.3	69.9	NP	NP
					Auger	Field Note: No groundwater encounter	ered	1			1		1	



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

PROJECT NAME:	Johnson-Morristown	PROJECT NUMBER:	STP2919(1)	SITE:	VT-15A	DATE:	6/6/2017
BORING CREW:	Garrow, Mazzei, Olden	TESTED BY:	J. Daigneault	REV	VIEWED BY:	A. Flinn;	Rotation Engineer

					Ĕ	FIELD DESCRIPTION			LAB	ORATO	RY RESU	JLTS		
BORING No.	DATE	MILE	OFFSET (FT)	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE, COLOR, MOISTURE	% MOISTURE	AASHTO CLASS.	SOIL DES.	% GRAVEL	% SAND	% FINES	LIQUID	PLASTIC LIMIT
				0-0.5	Core	Asphalt Pavement								
				0.5-4.0		Gr Si Sa, brn, M	6.9	A-2-4	Gr Si Sa	23.1	49.7	27.2	NP	NP
B-204	5/22/17	1.17	7.5	4.0-5.0	Solid Stem	Si Sa, brn, Wet	21	A-2-4	Si Sa	2.4	73.8	23.8	NP	NP
					Auger	Field Note: Possible water table at 4.3	3 ft.							
				0-0.47	Core	Asphalt Pavement								
				0.47-5.0		Gr Si Sa, brn, M	11	A-2-4	Si Sa	15.7	55.4	28.8	NP	NP
B-205	5/22/17	1.38	-7.5		Solid Stem	Field Note: No groundwater encounter	ered							
					Auger									
				0-0.85	Core	Asphalt Pavement								
				0.85-5.0		Gr Si Sa, brn, M	6.8	A-2-4	Si Sa	16.1	49	34.8	NP	NP
B-206	5/22/17	1.52	8.1		Solid Stem	Field Note: No groundwater encounter	ered							
					Auger									
					1									



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

PROJECT NAME:	Johnson-Morristown	PROJECT NUMBER:	STP2919(1)	SITE:	VT-100	DATE:	6/6/2017
BORING CREW:	Garrow, Mazzei, Olden	TESTED BY:	J. Daigneault	REV	/IEWED BY:	A. Flinn;	Rotation Engineer

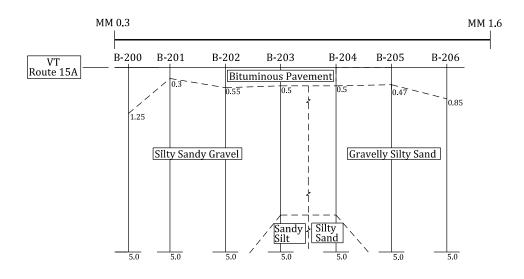
						FIELD DESCRIPTION LABORATORY RESULTS								
<u>.</u>		~	_		PE	FIELD DESCRIPTION			LAB		RY RESU	JLTS	ı	
BORING No.	DATE	MILE MARKER	OFFSET (FT)	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE, COLOR, MOISTURE	% MOISTURE	AASHTO CLASS.	SOIL DES.	% GRAVEL	% SAND	% FINES	LIQUID	PLASTIC LIMIT
				0-0.7	Core	Asphalt Pavement								
				0.7-5.0		Si Sa, brn, M	5.4	A-2-4	Si Sa	1.9	72.5	25.5	NP	NP
B-207	5/22/17	6.20	11.0		Solid Stem	Field Note: No groundwater encounted	ered							
					Auger									
											_		_	
				0-0.63	Core	Asphalt Pavement								
				0.63-5.0		Si Sa, brn, M	7.7	A-2-4	Si Sa	0.2	75.5	24.3	NP	NP
B-208	5/22/17	6.40	-12.6		Solid Stelli	Field Note: No groundwater encounter	ered	1		1				
					Auger									
											<u> </u>		<u> </u>	
				0-0.65	Core	Asphalt Pavement								
				0.65-5.0		Si Sa, brn, M	12.8	A-4	Si Sa	9.5	53.7	36.9	NP	NP
B-209	5/22/17	6.55	15.6		Solid Stem	Field Note: No groundwater encounter	ered				ı	1	ı	1
					Auger									
					_									
					-									

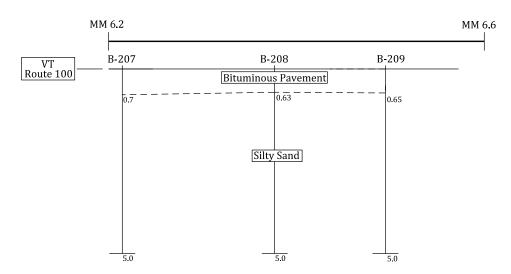
C-1							Laboratory Results (provided for locations where performed)							
C-2	Boring ID	Location	from C/L	Northing	Easting	Asphalt	Depth (ft)	% Moisture		% Gravel	% Sand	% Fines	· ·	Plastic Limit
C-3 4.70 J 8.9 775879.954 1594477.745 0.70 C-4 4.84 J 7.7 775188.114 1594083.298 0.37 C-5 4.96 J 9.8 774566.28 1594364.361 0.35 C-6 5.10 J 8.8 774141.915 1594686.444 NM- stuck in core barrel C-7 5.27 J 7.7 773977.677 1595347.527 0.37 C-8 5.39 J 8.4 773640.092 1596999.155 0.38 C-9 5.50 J -10.4 773075.472 1596763.128 0.36 C-10 5.67 J 7.1 772148.282 1597910.869 0.30 C-11 5.81 J 7.7 772148.282 1597910.869 0.30 C-13 6.10 J 8.1 770643.995 1599625.423 0.28 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-16 <td>C-1</td> <td>4.43 J</td> <td>9.6</td> <td>777531.436</td> <td>1594699.449</td> <td>0.49</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	C-1	4.43 J	9.6	777531.436	1594699.449	0.49								
C-4 4.84 J J -7.4 775188.114 1594083.298 0.37 C-5 4.96 J J -9.8 774566.288 1594364.361 0.35 C-6 5.10 J 8.8 774141.915 1594686.444 NN- stuck in core barrel C-7 5.27 J J -7.7 773977.677 1595347.527 0.37 C-8 5.39 J -8.4 773640.092 1596099.155 0.38 0.36 C-10 5.67 J 7.1 772542.269 1597321.453 0.31 0.36 C-11 5.81 J 7.7 772148.282 1597910.869 0.30 0.30 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 0.28 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 0.28 C-15 6.39 J 1-60 770138.476 1600063.854 0.28 0.28 C-16 6.53 J 8.7 769679.511 1600753.707 0.45<	C-2	4.56 J	-8.5	776494.388	1594638.076	0.54								
C-5	C-3	4.70 J	8.9	775879.954	1594477.745	0.70								
C-6 5.10 J 8.8 774141.915 1594686.444 NM - stuck in core barrel C-7 5.27 J -7.7 773977.677 1595347.527 0.37 C-8 5.39 J -8.4 773640.092 1596099.155 0.38 C-9 5.50 J -10.4 773075.472 1596763.128 0.36 C-10 5.67 J 7.1 772542.699 1597321.453 0.31 C-11 5.81 J 7.7 772148.282 1597910.869 0.30 C-12 5.95 J 7.8 771371.512 1598375.694 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J -6.0 770138.476 160063.854 0.28 C-16 6.53 J 8.7 7696795.911 1600755.707 0.45 <t< td=""><td>C-4</td><td>4.84 J</td><td>-7.4</td><td>775188.114</td><td>1594083.298</td><td>0.37</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	C-4	4.84 J	-7.4	775188.114	1594083.298	0.37								
C-7 5.27 J -7.7 773977.677 1595347.527 0.37 C-8 5.39 J -8.4 773640.092 1596099.155 0.38 C-9 5.50 J -10.4 773075.472 1596763.128 0.36 C-10 5.67 J 7.1 772542.269 1597321.453 0.31 C-11 5.81 J 7.7 772148.282 1597910.869 0.30 C-12 5.95 J 7.8 771371.512 1598375.694 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J 8.7 769679.511 1600753.707 0.45 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-17 6.67 J Not Cored 0.31 C-19 0.17 H <td>C-5</td> <td>4.96 J</td> <td>-9.8</td> <td>774566.288</td> <td>1594364.361</td> <td>0.35</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	C-5	4.96 J	-9.8	774566.288	1594364.361	0.35								
C-8 5.39 J -8.4 773640.092 1596099.155 0.38 C-9 5.50 J -10.4 773075.472 1596763.128 0.36 C-10 5.67 J 7.1 772542.269 1597321.453 0.31 C-11 5.81 J 7.7 772148.282 1597910.869 0.30 C-12 5.95 J 7.8 771371.512 1598375.694 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J -6.0 770138.476 1600063.854 0.28 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-17 6.67 J Not Cored J 10.2 10.2 10.2 10.2 10.	C-6	5.10 J	8.8	774141.915	1594686.444	NM - stuck	in core bar	rel						
C-9 5.50 J -10.4 773075.472 1596763.128 0.36 C-10 5.67 J 7.1 772542.269 1597321.453 0.31 C-11 5.81 J 7.7 772148.282 1597910.869 0.30 C-12 5.95 J 7.8 771371.512 1598375.694 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J -6.0 770138.476 1600063.854 0.28 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-17 6.67 J Not Cored Not Cored 0.31 C-18 6.81 J 6.1 768385.236 1602025.210 0.32 C-19 0.17 H -8.0 768385.236 1602025.40 0.31 C-20 0.25 <t< td=""><td>C-7</td><td>5.27 J</td><td>-7.7</td><td>773977.677</td><td>1595347.527</td><td>0.37</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	C-7	5.27 J	-7.7	773977.677	1595347.527	0.37								
C-10 5.67 J 7.1 772542.269 1597321.453 0.31 C-11 5.81 J 7.7 772148.282 1597910.869 0.30 C-12 5.95 J 7.8 771371.512 1598375.694 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J -6.0 770138.476 1600063.854 0.28 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-16 6.81 J 6.1 768898.123 1602025.210 0.32 C-19 0.17 H -8.0 768385.236 1602719.654 0.31 C-20 0.25 H 7.5 767702.119 1603153.117 0.29 C-21 0.54 H 9.7 766459.622 1604014.843 0.60 C-22 0.54 H	C-8	5.39 J	-8.4	773640.092	1596099.155	0.38								
C-11 5.81 J 7.7 772148.282 1597910.869 0.30 C-12 5.95 J 7.8 771371.512 1598375.694 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J -6.0 770138.476 1600063.854 0.28 C-16 6.53 J 8.7 769679.511 160753.707 0.45 C-17 6.67 J Not Cored Not Cored O.32 C-18 6.81 J 6.1 768898.123 1602025.210 0.32 C-19 0.17 H -8.0 768385.236 1602719.654 0.31 C-20 0.25 H 7.5 767702.119 1603153.117 0.29 C-21 0.38 H -5.1 766985.098 1603476.921 0.27 C-22 0.54 <t< td=""><td>C-9</td><td>5.50 J</td><td>-10.4</td><td>773075.472</td><td>1596763.128</td><td>0.36</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	C-9	5.50 J	-10.4	773075.472	1596763.128	0.36								
C-12 5.95 J 7.8 771371.512 1598375.694 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J -6.0 770138.476 1600053.874 0.28 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-17 6.67 J Not Cored C-18 6.81 J 6.1 768898.123 1602719.654 0.31 C-19 0.17 H -8.0 768385.236 1602719.654 0.31 C-20 0.25 H 7.5 767702.119 1603153.117 0.29 C-21 0.38 H -5.1 766985.098 1603476.921 0.27 C-22 <t< td=""><td>C-10</td><td>5.67 J</td><td>7.1</td><td>772542.269</td><td>1597321.453</td><td>0.31</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	C-10	5.67 J	7.1	772542.269	1597321.453	0.31								
C-12 5.95 J 7.8 771371.512 1598375.694 0.45 C-13 6.10 J -8.1 770964.541 1598925.657 0.34 C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J -6.0 770138.476 1600063.854 0.28 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-17 6.67 J Not Cored C-18 6.81 J 6.1 768898.123 1602719.654 0.31 C-19 0.17 H -8.0 768385.236 1602719.654 0.31 C-20 0.25 H 7.5 767702.119 1603153.117 0.29 C-21 0.38 H -5.1 766985.098 1603476.921 0.27 C-22 <t< td=""><td>C-11</td><td>5.81 J</td><td>7.7</td><td>772148.282</td><td>1597910.869</td><td>0.30</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	C-11	5.81 J	7.7	772148.282	1597910.869	0.30								
C-14 6.25 J 7.2 770433.995 1599625.423 0.28 C-15 6.39 J -6.0 770138.476 1600063.854 0.28 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-17 6.67 J Not Cored Image: Not Cored Core Core Core Core Core Core Core Core	C-12	5.95 J	7.8			0.45								
C-15 6.39 J -6.0 770138.476 1600063.854 0.28 C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-17 6.67 J Not Cored Image: Not Cored Section	C-13	6.10 J	-8.1	770964.541	1598925.657	0.34								
C-16 6.53 J 8.7 769679.511 1600753.707 0.45 C-17 6.67 J Not Cored Not Cored C-18 6.81 J 6.1 768898.123 1602025.210 0.32 C-19 0.17 H -8.0 768385.236 1602719.654 0.31 C-20 0.25 H 7.5 767702.119 1603153.117 0.29 C-21 0.38 H -5.1 766985.098 1603476.921 0.27 C-22 0.54 H 9.7 766469.622 1604014.843 0.60 C-23 0.67 H -9.2 766996.418 1604485.748 0.55 C-24 0.83 H 9.6 765787.976 1605178.142 0.57 C-25 0.99 H -8.6 765479.968 1606105.682 0.54 C-27 1.26 H -8.2 765315.551 160721.6485 0.61 C-28 1.39 H <th< td=""><td>C-14</td><td>6.25 J</td><td>7.2</td><td>770433.995</td><td>1599625.423</td><td>0.28</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	C-14	6.25 J	7.2	770433.995	1599625.423	0.28								
C-17 6.67 J Not Cored C-18 6.81 J 6.1 768898.123 1602025.210 0.32 C-19 0.17 H -8.0 768385.236 1602719.654 0.31 C-20 0.25 H 7.5 767702.119 1603153.117 0.29 C-21 0.38 H -5.1 766985.098 1603476.921 0.27 C-22 0.54 H 9.7 766469.622 1604014.843 0.60 C-23 0.67 H -9.2 766096.418 1604485.748 0.55 C-24 0.83 H 9.6 765787.976 1605178.142 0.57 C-25 0.99 H -8.6 765479.968 1606105.682 0.56 C-26 1.12 H 9.9 765394.462 1606721.963 0.54 C-27 1.26 H -8.2 765315.551 1607216.485 0.61 C-28 1.39 H 10.9 764904.649 1607811.762 0.70 C-30 1.69 H 10.	C-15	6.39 J	-6.0	770138.476	1600063.854	0.28								
C-17 6.67 J Not Cored C-18 6.81 J 6.1 768898.123 1602025.210 0.32 C-19 0.17 H -8.0 768385.236 1602719.654 0.31 C-20 0.25 H 7.5 767702.119 1603153.117 0.29 C-21 0.38 H -5.1 766985.098 1603476.921 0.27 C-22 0.54 H 9.7 766469.622 1604014.843 0.60 C-23 0.67 H -9.2 766096.418 1604485.748 0.55 C-24 0.83 H 9.6 765787.976 1605178.142 0.57 C-25 0.99 H -8.6 765479.968 1606105.682 0.56 C-26 1.12 H 9.9 765394.462 1606721.963 0.54 C-27 1.26 H -8.2 765315.551 1607216.485 0.61 C-28 1.39 H 10.9 764904.649 1607811.762 0.70 C-30 1.69 H 10.	C-16	6.53 J	8.7	769679.511	1600753.707	0.45								
C-19 0.17 H -8.0 768385.236 1602719.654 0.31 0.31 0.29 0.25 H 7.5 767702.119 1603153.117 0.29 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27	C-17	6.67 J		Not	Cored									
C-20 0.25 H 7.5 767702.119 1603153.117 0.29 C-21 0.38 H -5.1 766985.098 1603476.921 0.27 C-22 0.54 H 9.7 766469.622 1604014.843 0.60 C-23 0.67 H -9.2 766096.418 1604485.748 0.55 C-24 0.83 H 9.6 765787.976 1605178.142 0.57	C-18	6.81 J	6.1	768898.123	1602025.210	0.32								
C-21 0.38 H -5.1 766985.098 1603476.921 0.27 C-22 0.54 H 9.7 766469.622 1604014.843 0.60 C-23 0.67 H -9.2 766096.418 1604485.748 0.55 C-24 0.83 H 9.6 765787.976 1605178.142 0.57 C-25 0.99 H -8.6 765479.968 1606105.682 0.56 C-26 1.12 H 9.9 765394.462 1606721.963 0.54 C-27 1.26 H -8.2 765315.551 1607216.485 0.61 C-28 1.39 H 10.9 764904.649 1607811.762 0.70 C-29 1.55 H -9.3 764657.972 1608517.997 0.21 C-30 1.69 H 10.0 764488.139 1609236.590 0.38 C-31 1.99 H 10.3 764118.753 1610710.384 0.56	C-19	0.17 H	-8.0	768385.236	1602719.654	0.31								
C-22 0.54 H 9.7 766469.622 1604014.843 0.60 C-23 0.67 H -9.2 766096.418 1604485.748 0.55 C-24 0.83 H 9.6 765787.976 1605178.142 0.57 C-25 0.99 H -8.6 765479.968 1606105.682 0.56 C-26 1.12 H 9.9 765394.462 1606721.963 0.54 C-27 1.26 H -8.2 765315.551 1607216.485 0.61 C-28 1.39 H 10.9 764904.649 1607811.762 0.70 C-29 1.55 H -9.3 764657.972 1608517.997 0.21 C-30 1.69 H 10.0 764488.139 1609236.590 0.38 C-31 1.99 H 10.3 764118.753 1610710.384 0.56	C-20	0.25 H	7.5	767702.119	1603153.117	0.29								
C-23 0.67 H -9.2 766096.418 1604485.748 0.55 C-24 0.83 H 9.6 765787.976 1605178.142 0.57 C-25 0.99 H -8.6 765479.968 1606105.682 0.56 C-26 1.12 H 9.9 765394.462 1606721.963 0.54 C-27 1.26 H -8.2 765315.551 1607216.485 0.61 C-28 1.39 H 10.9 764904.649 1607811.762 0.70 C-29 1.55 H -9.3 764657.972 1608517.997 0.21 C-30 1.69 H 10.0 764488.139 1609236.590 0.38 C-31 1.99 H 10.3 764118.753 1610710.384 0.56	C-21	0.38 H	-5.1	766985.098	1603476.921	0.27								
C-24 0.83 H 9.6 765787.976 1605178.142 0.57 C-25 0.99 H -8.6 765479.968 1606105.682 0.56 C-26 1.12 H 9.9 765394.462 1606721.963 0.54 C-27 1.26 H -8.2 765315.551 1607216.485 0.61 C-28 1.39 H 10.9 764904.649 1607811.762 0.70 C-29 1.55 H -9.3 764657.972 1608517.997 0.21 C-30 1.69 H 10.0 764488.139 1609236.590 0.38 C-31 1.99 H 10.3 764118.753 1610710.384 0.56	C-22	0.54 H	9.7	766469.622	1604014.843	0.60								
C-25 0.99 H -8.6 765479.968 1606105.682 0.56 C-26 1.12 H 9.9 765394.462 1606721.963 0.54 C-27 1.26 H -8.2 765315.551 1607216.485 0.61 C-28 1.39 H 10.9 764904.649 1607811.762 0.70 C-29 1.55 H -9.3 764657.972 1608517.997 0.21 C-30 1.69 H 10.0 764488.139 1609236.590 0.38 C-31 1.99 H 10.3 764118.753 1610710.384 0.56	C-23	0.67 H	-9.2	766096.418	1604485.748	0.55								
C-26 1.12 H 9.9 765394.462 1606721.963 0.54 C-27 1.26 H -8.2 765315.551 1607216.485 0.61 C-28 1.39 H 10.9 764904.649 1607811.762 0.70 C-29 1.55 H -9.3 764657.972 1608517.997 0.21 C-30 1.69 H 10.0 764488.139 1609236.590 0.38 C-31 1.99 H 10.3 764118.753 1610710.384 0.56	C-24	0.83 H	9.6	765787.976	1605178.142	0.57								
C-27 1.26 H -8.2 765315.551 1607216.485 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.61 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70<	C-25	0.99 H	-8.6	765479.968	1606105.682	0.56								
C-28 1.39 H 10.9 764904.649 1607811.762 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.70<	C-26	1.12 H	9.9	765394.462	1606721.963	0.54								
C-29 1.55 H -9.3 764657.972 1608517.997 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21<	C-27	1.26 H	-8.2	765315.551	1607216.485	0.61								
C-30 1.69 H 10.0 764488.139 1609236.590 0.38 C-31 1.99 H 10.3 764118.753 1610710.384 0.56	C-28	1.39 H	10.9	764904.649	1607811.762	0.70								
C-31 1.99 H 10.3 764118.753 1610710.384 0.56	C-29	1.55 H	-9.3	764657.972	1608517.997	0.21								
	C-30	1.69 H	10.0	764488.139	1609236.590	0.38								
	C-31	1.99 H	10.3	764118.753	1610710.384	0.56								
C-32 2.14 H -9.2 763560.670 1611353.073 0.20	C-32	2.14 H	-9.2	763560.670	1611353.073	0.20								

							Laborato	ry Results (prov	ided for loc	ations whe	re perform	ed)	
Boring ID	Boring Location (MM)	Offset from C/L (ft)	Northing	Easting	Reported Asphalt Depth (ft)	Depth (ft)	% Moisture	AASHTO Classification	% Gravel	% Sand	% Fines	Liquid Limit	Plastic Limit
C-33	2.27 H	11.0	763028.639	1611899.732	0.22								
C-34	2.43 H	-7.9	762397.038	1612483.594	0.30								
C-35	2.55 H	10.2	761675.617	1612993.580	0.28								
C-36	2.69 H	-9.7	761313.115	1613283.704	0.71								
C-37	2.76 H	8.9	760896.297	1613547.239	0.36								
C-38	0.09 M			1614001.903	0.40								
C-39	0.21 M	9.7		1614434.382	0.30								
C-40	0.33 M			1614913.643	0.29								
C-41	0.47 M			1615051.263	0.31								
C-42	0.62 M			1615386.443	0.70								
C-43	0.77 M			Cored									
C-44	0.93 M		756449.661	1616509.118	0.56								
C-45	1.06 M			1617191.595	0.25								
C-46	1.22 M	-6.0		1617756.582	0.29								
C-47	1.34 M	8.0	754768.798	1618213.465	0.26								
C-48	1.47 M	-7.3	754240.793	1618545.113	0.29								
C-49	1.65 M	6.1	753776.867	1619324.698	0.26								
C-50	1.79 M	-8.6	753793.867	1619694.936	0.21								
C-51	1.92 M	7.8	753739.632	1620682.640	0.30								
C-52	2.09 M	-7.4	753533.639	1621770.466	0.29								
C-53	2.20 M	7.6	753484.657	1622187.799	0.46								
C-54	2.33 M	-7.8	753359.745	1622843.534	0.33								
C-55	2.47 M	6.9	753048.476	1623426.890	0.35								
C-56	2.66 M	-9.1	753039.475	1624393.588	0.31								
C-57	2.81 M	5.7	753026.350	1625196.510	0.31								
C-58	2.95 M	-6.7	753197.880	1625904.414	0.29								
C-59	3.08 M	6.4		1626645.602	0.58								
C-60	3.23 M			1627340.834	0.83								
C-61	3.37 M			1627899.391	0.90								
C-62	3.53 M			1628518.795	0.79								
C-63	3.66 M			1629262.547	0.83								
C-64	3.75 M		753832.299	1630007.990	0.92								
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						Laboratory Results (provided for locations where performed)							
Boring ID	Boring Location (MM)	Offset from C/L (ft)	Northing	Easting	Reported Asphalt Depth (ft)	Depth (ft)	% Moisture	AASHTO Classification	% Gravel	% Sand	% Fines	Liquid Limit	Plastic Limit
C-65	3.96 M	6.0	753994.877	1630743.882	0.69								
C-66	4.047 M	-7.5	754162.791	1631481.616	0.77								
B-200	0.36 M	8.7	752230.998	1616537.999	1.25	1.25-5.0	8.8	A-1-b	32.4	51.8	15.9	NP	NP
B-201	0.55 M	-7.4	752482.331	1617497.260	0.3	0.3-5.0	6.1	A-2-4	31.7	42.3	26.1	NP	NP
B-202	0.76 M	8.0	752637.849	1618567.786	0.55	0.55-5.0	4.5	A-1-b	44.4	36.2	19.4	NP	NP
B-203	0.96 M	-6.7	752840.684	1619611.519	0.5	0.5-4.0	5.6	A-1-b	42.4	40.5	17.2	NP	NP
B-204	1.17 M	7.5	752748.179	1620694.664	0.5	0.5-4.0	6.9	A-2-4	23.1	49.7	27.2	NP	NP
B-205	1.38 M	-7.5	752638.087	1621817.442	0.47	0.47-5.0	11.0	A-2-4	15.7	55.4	28.8	NP	NP
B-206	1.52 M	8.1	752494.775	1622514.533	0.85	0.85-5.0	6.8	A-2-4	16.1	49	34.8	NP	NP
B-207	6.2 M	11.0	754672.189	1615231.411	0.7	0.7-5.0	5.4	A-2-4	1.9	72.5	25.5	NP	NP
B-208	6.4 M	-12.6	755595.066	1615782.988	0.63	0.63-5.0	7.7	A-2-4	0.2	75.5	24.3	NP	NP
B-209	6.55 M	15.6	756306.983	1616182.481	0.65	0.65-5.0	12.8	A-4	9.5	53.7	36.9	NP	NP

JOHNSON-MORRISTOWN STP 2919(1) - Auger Borings -





- NOTES:
 1. Lithologic descriptions are broad descriptions of soils encountered in the borings conducted for this report (B-200 through B-209). Lithologic conditions between borings may vary.
 2. See Drilling Notes for individual bore hole information.
 3. Vertical depths in feet.

- 4. Groundwater was not encountered during drilling.